

NATIONAL OCEAN SERVICE
OPERATIONS RESEARCH AND FACILITIES
FY 2008 OVERVIEW

SUMMARIZED FINANCIAL DATA

(\$ in thousands)

Operations Research and Facilities	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Navigation Services	171,197	112,300	142,071	143,771	1,700
Ocean Resources Conservation and Assessment	209,928	92,340	128,120	156,320	28,200
Ocean and Coastal Management	129,762	110,500	128,698	136,698	8,000
TOTAL	510,887	315,140	398,889	436,789	37,900
FTE	1,202	1,210	1,212	1,219	7

For FY 2008, NOAA requests an increase of \$37,900,000 and 7 FTE for a total of \$436,789,000 for the National Ocean Service (NOS) Operations, Research and Facilities account.

The National Ocean Service (NOS) is the primary Federal agency working for the Nation through the observation, measurement, assessment, and management of the Nation's coastal and ocean areas, as well as conducting response and restoration activities to protect vital coastal resources. An estimated 154 million people lived in coastal counties in 2004. Although coastal population growth has generally reflected the same rate of growth as the entire Nation since 1980, the limited land area of coastal counties is increasingly strained by the density of the population growth. This increasing density, coupled with the fast-growing economy of coastal areas, makes the task of managing coastal resources increasingly difficult, especially with the Nation's coastal population expected to increase by more than 6 million by 2008 and 11 million by 2015 (*Population Trends Along the Coastal United States: 1980-2008*).

As a national leader for coastal stewardship, NOS promotes a wide range of research activities to create the strong science foundation required to advance the sustainable use of our coastal systems. NOS provides improvements in the quality, quantity, geographic distribution, and timeliness of ocean and coastal observations. Observations by NOS assets and NOS partners are critical components of the Nation's Integrated Ocean Observing System, as well as fundamental contributors to the Global Earth Observation System of Systems. NOS mapping, charting, geodetic, and oceanographic activities build on marine and coastal observations collected to increase the efficiency and safety of maritime commerce, support coastal resource management and address

coastal flooding and water quality concerns. NOS protects and restores coastal resources injured by releases of oil and other hazardous materials. NOS also manages marine sanctuaries and, in partnership with the coastal states, helps manage the Nation's valuable coastal zones and nationally significant estuarine reserves. NOS helps federal, state, local, and international managers build the suite of skills needed to protect, restore, and use coastal ecosystems by providing technical assistance, process and technical skill training, and other capacity building activities.

NOS has three subactivities: Navigation Services, Ocean Resources Conservation and Assessment, and Ocean and Coastal Management. The objectives of the Navigation Services subactivity are to:

- Build, maintain, and deliver a Nautical Charting Database
- Update nautical surveys
- Define the national shoreline
- Develop the National Spatial Reference System
- Provide real-time observations and forecasts of water levels, tides, and currents

To achieve these objectives, NOAA conducts activities in several program areas within the Office of Coast Survey, the National Geodetic Survey, and the Center for Operational Oceanographic Products and Services. NOAA also represents these programs on the Interagency Committee for the Marine Transportation System.

The objectives of the Ocean Resources Conservation and Assessment subactivity are to:

- Establish the framework through which the authorities of Federal and state agencies can be focused to protect and restore coastal resources.
- Recommend management actions to minimize the cumulative effects of coastal development on natural resources, especially NOAA's trust resources.
- Conduct research to define the nature and extent of human activities and conditions that threaten the health and productivity of the Nation's coastal resources.
- Conduct damage assessments to support negotiated settlements and litigation for recovering funds for restoration of injuries to NOAA's trust resources.
- Apply scientific expertise to mitigate the effects of human activities and facilitate environmental recovery, and undertake actions to restore ecosystem functions and resource values.
- Develop a Federal/state capability to research, monitor, assess, and predict coastal ecosystem structure and function to detect changes, evaluate management strategies, and identify actions to effectively manage threats to ecosystem health.
- Develop means for valuing non-market ecological resources and clarify the causes and significance of ecosystem changes.
- Facilitate the development and transfer of tools and technology that provide more effective mechanisms to protect, restore and use coastal ecosystems.

- Improve public understanding of functions and values of coastal ecosystems and enhance public access to information on coastal environmental quality and health risks from pollutants.
- Support NOAA's and the Nation's obligations under international treaties and conventions, and increase effectiveness of international programs for coastal environmental science and technology, integrated coastal zone management, and sustainability of coastal resources.

This subactivity contains the programs managed by the National Centers for Coastal Ocean Science (NCCOS), the Office of Response and Restoration (ORR), the Coastal Services Center (CSC) and the Cooperative Institute for Coastal and Estuarine Technology (CICEET), co-administered by NOS' Office of Ocean and Coastal Resource Management and the University of New Hampshire. The goals of this subactivity use the authorities established in the Clean Water Act, Coastal Zone Management (CZM) Act, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA/Superfund), Oil Pollution Act, National Coastal Monitoring Act, Marine Protection Research and Sanctuaries Act, Harmful Algal Bloom and Hypoxia Research and Control Act, Estuaries Restoration Act, Coral Reef Conservation Act, and other legislation to protect, conserve, and restore natural resources and the environmental quality of the Nation's coastal ecosystems.

The objectives of the Ocean and Coastal Management subactivity are to:

- Maintain and improve the quality and utility of the Nation's coastal lands and waters through a national network of Federally-approved, coordinated, and supported state management programs.
- Maintain the balance between resource protection and coastal-dependent economic activity.
- Provide technical assistance to states in the development, implementation, and improvement of state CZM programs and estuarine research reserves.
- Identify areas of the marine environment of special national significance due to their resource or human-use values.
- Develop the framework for a national network of marine protected areas.
- Support and coordinate scientific research on, and monitoring of, resources in protected areas.
- Coordinate the development of information, tools, strategies, and guidance to enhance and expand the protection of marine protected areas.
- Conduct a comprehensive, coordinated program of conservation and management of special marine areas.
- Enhance public awareness and understanding of the marine environment.
- Facilitate public/private uses of the resources of special marine areas compatible with resource protection.

To achieve these objectives, NOAA conducts activities in several program areas within the Office of Ocean and Coastal Resource Management, the Marine Protected Areas Center and the National Marine Sanctuary Program Office.

In addition, NOS contributes significantly to achieving two of NOAA's Strategic Plan Mission Goals: Support the Nation's commerce with information for safe, efficient, and environmentally sound transportation, and Protect, restore, and manage the use of coastal and ocean resources through ecosystem-based

management. While these two goals capture much of the National Ocean Services' activities, NOS also supports and makes important contributions to NOAA's other mission goals: Understand climate variability and change to enhance society's ability to plan and respond, Serve society's needs for weather and water information, and Mission Support.

Research and Development Investments:

The NOAA FY 2008 Budget estimates for its activities, including research and development programs, are the result of an integrated, requirements-based Planning, Programming, Budgeting, and Execution System (PPBES) that provides the structure to link NOAA's strategic vision with programmatic detail, budget development, and the framework to maximize resources while optimizing capabilities. The PPBES process incorporates the President's Management Agenda and the Office of Science and Technology Policy's Research and Development Investment Criteria (relevance, quality, and performance) for NOAA's R&D programs, and leads to NOAA budget proposals that reflect the R&D investment criteria.

Significant Adjustments-to-Base (ATBs):

NOAA requests a net increase of two FTE and \$4,434,000 to fund adjustments for National Ocean Service activities. Within this increase, program totals will fund inflationary adjustments for labor and non-labor.

In addition, NOAA has collapsed four Geodesy Height Modernization lines for NGS Implementation, CA, NC, and SC worth \$2,541,000 into a single line called National Height Modernization. This technical ATB will allow NOAA to conduct Height Modernization work according to national priorities.

Subactivity: Navigation Services
Line Item: Mapping & Charting

GOAL STATEMENT:

NOAA's National Ocean Service (NOS) will reduce the risks to life, property and the coastal environment and enhance NOS' role of coastal stewardship by providing a comprehensive set of products and services to meet the Nation's need for accurate and up-to-date marine navigation information.

BASE DESCRIPTION:

NOAA's Mapping and Charting Program is carried out by the Office of Coast Survey. Established by President Thomas Jefferson in 1807, the Coast Survey is the oldest scientific organization in the U.S., with a long history of supporting and facilitating maritime commerce. Today, it continues to support safe and efficient transportation in U.S. waters by delivering navigation products to meet the needs of vastly larger ships carrying people, cargo and hazardous materials. NOAA collects, manages, and maintains a variety of marine data important to navigators, including the nature and form of the coast, the depths of the water, general character and configuration of the sea bottom, locations of dangers to navigation, the rise and fall of the tides, and locations of aids to navigation. These data enable NOAA to construct and maintain the national suite of 1,000 nautical charts, and develop other products such as the Coast Pilot publication, which is a series of books that supplement the nautical charts with valuable information difficult to portray on a chart (e.g. channel descriptions, ice conditions, pilotage). These products support commercial shipping, the fishing industry, U.S. Navy deployment and Coast Guard Homeland Security operations, state and local governments, and recreational boaters throughout the United States. The Mapping and Charting Program also conducts research and development activities to improve the accuracy, efficiency, and productivity of data collection, chart compilation and chart production.

The Mapping and Charting Line Item consists of five primary program elements. Each program element within the Mapping and Charting Line directly supports NOAA's Commerce and Transportation, Weather and Water, and Ecosystems goals. The Mapping and Charting Line Item also includes grant funding for the Joint Center for Hydrographic Excellence (JHC) at the University of New Hampshire, which operates in partnership with NOS. The program serves as a learning center for government and private sector hydrographers, as well as a research and development center for new hydrographic technologies and applications. The JHC is a national center for expertise in ocean mapping and hydrographic sciences.

Program Assessment and Rating Tool (PART): NOAA's Mapping and Charting program was reviewed with OMB's PART during FY 2006. As a result, NOAA's Mapping and Charting program will perform a rigorous analysis of hydrographic surveying components to ensure that NOAA uses the most effective approach to addressing hydrographic surveying requirements. The Budget also proposes investments in state-of-the-art technology to increase the efficiency of hydrographic survey data collection.

Base activities support the objective, “Support the Nation’s commerce with information for safe, efficient, and environmentally sound transportation” under the Department of Commerce Strategic Goal of “Observe, protect, and manage the Earth’s resources to promote environmental needs.”

NAUTICAL CHARTING PROGRAM

The Nautical Charting Program is carried out by NOS’ Office of Coast Survey (OCS). NOAA is responsible for surveying and charting U.S. and territorial waters to the limits of the Exclusive Economic Zone (EEZ), an area of about 3.4 million square nautical miles. NOAA is authorized by the Coast and Geodetic Survey Act of 1947 to provide nautical charts and products for safe maritime commerce. Title 33 of the Code of Federal Regulations requires NOAA charts be carried on all self-propelled vessels greater than 1600 gross tons. Nautical charts and related navigation publications are the basic tools for marine navigation, ocean operations, and marine resources planning and management. NOAA’s digital nautical charting products, such as Electronic Navigational Charts (ENCs), serve as the basic information component required to operate new electronic navigation systems that will meet demands for greater protection of life, property, and the environment, as well as significantly improve the efficiency of maritime commerce. Products like NOAA’s ENCs give the user more complete and valuable information than the paper chart, and will provide much greater accuracy than existing chart products. More than just a picture, ENCs are essentially a database of chart features that are intelligently processed and displayed by electronic charting systems. An ENC displayed by an electronic charting system, when combined with input from other sources such as GPS and real-time oceanographic data, is able to warn of hazards to navigation and situations where the vessel’s current track will take it into danger. The U.S. Coast Guard will promulgate regulations for electronic chart carriage in U.S. waters in 2007.

HYDROGRAPHIC SURVEY PROGRAM

The Hydrographic Survey Program is also carried out by OCS. The program addresses the critical hydrographic surveys needed in U.S. waters. These hydrographic surveys provide the most basic data for the production of nautical charts. Coastal and ocean hydrographic data are also fundamental components of the Nation’s Integrated Ocean Observing System. NOAA is responsible for surveying and charting U.S. and territorial waters to the limits of the EEZ, an area of about 3.4 million square nautical miles. In 1994, NOAA identified approximately 510,000 square nautical miles of the U.S. Exclusive Economic Zone as navigationally significant and in need of resurvey. Since that time, NOAA has focused primarily on surveying in the highest priority areas, many of which carry heavy commercial traffic, and are less than 30 meters deep. In addition, because of the dynamic nature of the commercial shipping industry, shipping lanes are changing constantly, and thus their charting needs change constantly as well. These characteristics significantly increase the risk to marine transportation. However, this critical area constitutes only a small portion (8%) of the entire navigationally significant area used by large commercial vessels and recreational boaters. NOAA’s surveying activities employ the latest full bottom coverage sounding technologies to survey the Nation’s coastal areas for navigation. NOAA utilizes private contractors to supplement its internal resources to conduct hydrographic data collection. All funding for the operation and maintenance of NOAA’s hydrographic survey vessels is requested by NOAA’s Office of Marine and Aviation Operations.

MARINE MODELING AND GEOSPATIAL TECHNOLOGY PROGRAM

OCS also carries out the Marine Modeling and Geospatial Technology Program, as the research and development focal point for NOAA's mapping and charting work. The program studies advancements in the cartographic, hydrographic, and oceanographic systems used by NOAA to provide products and services for the coastal marine community, particularly in support of safe and efficient navigation and the utilization and protection of the coast. The program develops techniques and methods for the analysis, simulation and accurate real-time prediction of oceanographic, atmospheric and water quality parameters. Projects include estuarine and port modeling and forecasting, coastal modeling and forecasting, and operational data resources. These models are an important contributor to the utility of a national Integrated Ocean Observing System, because they provide the capacity for data integration. The program also develops techniques and technology for improving nautical charts, providing vector data for marine Geographic Information Systems, efficiently and accurately measuring depths, shoreline and bottom characteristics, and locating underwater hazards. Efforts include bathymetric/topographic projects, vector electronic chart standards development, technology advances in shallow-water multibeam and high-speed high-resolution side-scan sonars, and on-the-fly Global Positioning System (GPS) for settlement and squat determination and vertical control of hydrographic surveys.

NAVIGATION SERVICES PROGRAM

Finally, OCS connects with stakeholders through the Navigation Services Program. This Program provides a focal point for customer requests and associated responses on charting issues, conducts fast-response hydrographic surveys to verify chart changes and accuracies, and maintains the Coast Pilot, a supplemental aid to the nautical chart. NOAA Navigation Managers are regionally based representatives who resolve charting and navigation questions, educate constituents on emerging charting technologies and their uses, and solicit feedback on NOAA's navigation products and services from the commercial maritime industry. This face-to-face contact improves NOAA's response to customer needs and issues. NOAA's Navigation Response Teams (NRTs) are another crucial means of connecting with the maritime community. These teams have proven their worth in a number of ways. Established under the guidelines of the Hydrographic Services Improvement Act of 1998, the NRTs are designed to be fully mobile regional survey teams. The NRTs conduct ENC validation surveys, chart discrepancy and shoreline boundary examinations using diving operations, data collection, and mapping support capabilities. Because NRTs operate and are on call 365 days a year, at any hour, they also provide a critical emergency response role for stakeholder survey requests following natural or man-made disasters. NOAA's NRTs perform post-hurricane surveys to ensure safety of navigation and resumption of maritime commerce, survey in the wake of maritime accidents to locate cause and debris, and support Homeland Security efforts through the testing of equipment and the supply of sea bottom data for the Defense Technology Support Working Group, U.S. Coast Guard, and U.S. Navy Mine Counter Measures. NOAA deployed four of its NRTs to the Hurricane Katrina/Rita/Wilma response in order to locate hazards to navigation and re-open impacted ports to maritime commerce and recovery efforts.

COASTAL MAPPING PROGRAM

The Coastal Mapping Program is carried out by NOS' National Geodetic Survey (NGS). The primary objective of the program is to define the national shoreline in support of nautical charting, although the program performs a number of other activities with important applications. The national shoreline is the delineation of the 95,000 miles of U.S. shoreline on a map or in a digital database. Since it is the official U.S. shoreline, measurements must be

accurate, consistent, and up-to-date. The national shoreline provides the critical baseline data for defining America's marine territorial limits, including its EEZ, and for the geographic reference needed to manage coastal resources and many other uses. These shoreline data are considered authoritative when determining the official shoreline for the United States. The Hydrographic Services Improvement Act of 1998 provides NOAA with explicit authority to promulgate national standards for all information acquired for nautical charting purposes, which includes shoreline. NOAA recommends that critical portions of the national shoreline around port areas be redefined on a 5-year cycle (a 10-year cycle is recommended for other areas). Products of the Coastal Mapping Program are essential to NOAA's nautical charting program and other environmental programs dealing with the coastal zone.

PROPOSED LEGISLATION:

NOAA will work with Congress to reauthorize the Hydrographic Services Improvement Act.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Navigation Services	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Mapping & Charting					
Mapping & Charting Base	58,135	39,300	44,757	45,457	700
Joint Hydrographic Center	7,391	-	7,424	7,424	-
Electronic Navigational Charts	4,241	-	6,128	6,128	-
Shoreline Mapping	2,415	-	2,424	2,424	-
Address Survey Backlog/Contracts	20,648	29,000	31,173	31,173	-
Address Survey Backlog-EEZ Outer Continental Shelf Ocean Bottom Claims	2,167	-	-	-	-
Address Survey Backlog-Gulf of Alaska	3,448	-	-	-	-
MS/LA Digital Coast	986	-	-	-	-
Vessel/Time Charter	11,191	-	-	-	-
Dune System Assessment & Shoreline Change Analysis	493	-	-	-	-
Coastal Environmental Mapping Consortium	789	-	-	-	-
River Studies	740	-	-	-	-
Subtotal: Mapping & Charting	112,644	68,300	91,906	92,606	700
TOTAL	112,644	68,300	91,906	92,606	700
FTE	306	311	313	313	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Mapping and Charting (0 FTE and +\$700,000): NOAA requests an increase of \$700,000 to integrate new technology into its ocean surveying and mapping efforts for more cost-effective, multi-mission operations. NOAA will incorporate hydrographic sensors on Autonomous Underwater Vehicles (AUVs) to maximize survey platform capacity and hydrographic survey data collection. The proposed area of investment contributes significantly to NOAA's efforts to: build an Integrated Ocean Observing System (IOOS); respond to the U.S. Ocean Commission's recommendations on sustaining IOOS, modernizing ocean data and information systems, and supporting marine commerce and transportation; and implement the Administration's Ocean Action Plan with respect to IOOS and Integrated Ocean and Coastal Mapping (IOCM).

Statement of Need

One of NOAA's primary missions is to deliver accurate nautical charts and related hydrographic information into the hands of mariners navigating on U.S. waters. NOAA's navigation products and services are designed to support safe marine transportation and efficient movement of commerce. As the Nation's dependence on the Marine Transportation System (MTS) grows with the impending doubling of container trade by 2020, it is crucial for mariners to know where and when changes occur in our ports, harbors, and waterways to help prevent accidents and groundings. Reducing these risks to lives, cargo and the environment will be achieved, in part, by improving the quality, quantity, and timeliness of navigation information that NOAA provides to the Nation.

NOAA is responsible for surveying the 3.4 million square nautical miles of the U.S. Exclusive Economic Zone (EEZ). NOAA has evaluated the EEZ to determine which areas truly are navigationally significant, and of these, which are the top priority for survey. At present survey capacity, it will take over 12 years to survey the most critical areas. Incorporating AUVs into NOAA survey operations will expand the capacity of NOAA's existing platforms to collect more data on each survey project in less time.

Proposed Actions

The requested funds will improve navigation safety by enabling NOAA to transition from ongoing AUV research to AUV operations in FY 2008. AUVs can gather more survey data more quickly and can operate in areas where surface vessels cannot, such as rough seas or between sheltered inshore and open water. AUVs will initially be used with side scan sonar, which will conservatively increase launch survey performance by 25%.

NOAA's research into hydrographic AUVs has occurred on a small scale and in partnership with the Defense Department's Technology Support Working Group to assess the utility of AUVs in underwater object detection for Homeland Security. In FY 2006, NOAA finalized Phase 1 accuracy and efficiency testing with its prototype AUV. In FY 2007, the team will deploy an AUV aboard an operational hydrographic survey vessel for development of operational methods and infrastructure requirements. By FY 2008, Phase 1 AUVs will be ready for deployment. However, additional funding is needed for deployment. At \$500K to fund hardware and \$200K for ship readiness activities, the deployment aboard NOAA vessels will allow adequate time for installation of required infrastructure and shipboard training.

Benefits

The primary function of NOAA's hydrographic data is to support safe and efficient marine navigation, but it also supports multiple NOAA missions and applications, and provides basic data for engineering, scientific and other commercial and industrial activities. The integration of AUVs into NOAA's current hydrographic survey operations offers the following potential gains:

- In a one-to-one comparison with a NOAA hydrographic survey launch, the AUV will conservatively increase launch performance by 25%. Survey coverage will be increased by approximately 50 square nautical miles per year per AUV. When fully incorporated into NOAA's

survey fleet, the relatively low additional operating cost of AUVs will substantially decrease the overall cost per square nautical mile over time of surveying the navigationally significant areas in U.S. waters.

- More effective deployment of personnel and fleet resources to survey complicated inshore areas while AUVs survey relatively simple regions in open water.
- Increased survey operation hours - because AUVs operate while submerged, they are able to acquire more high-quality data under a wider range of weather conditions than surface vessels, therefore leading to less surveying “down-time.”
- Greater accuracy and efficiency in ship-based multibeam surveying by using AUVs to automate water column sampling for data validation.

Performance Goals and Measurement Data

This increase will support the objectives, “Support the Nation’s commerce with information for safe, efficient, and environmentally sound transportation” and “Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management” under the Department of Commerce Strategic Goal of “Observe, protect, and manage the Earth's resources to promote environmental needs.”

Performance Goal: Commerce and Transportation Performance Measure: Reduce the hydrographic survey backlog within navigationally significant areas (snm per year)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Without Increase	2500	1350	3200	3200	3200	3200
With Increase – one AUV added per year	N/A	N/A	3250	3300	3350	3400

Subactivity: Navigation Services

Line Item: Geodesy

GOAL STATEMENT:

Within the United States and its territories, anyone should be able to obtain centimeter level accuracy in positions (latitude, longitude, and height) anywhere, anyplace, anytime.

BASE DESCRIPTION:

The mission of the NOAA Geodesy Program is to evolve and deliver the Nation's foundation of reference for positioning activities to support public safety, economic prosperity, and environmental well being. NOAA's Geodesy Program is carried out by the National Geodetic Survey (NGS), which manages the National Spatial Reference System (NSRS) – the national coordinate system that specifies latitude, longitude, height, scale, gravity, and orientation throughout the Nation. NSRS must continually evolve to meet the growing demand for more accurate, timely, and consistent positioning services. The Geodesy Line Item can be grouped into five major overlapping program elements: Permanent Network infrastructure, Continuously Operating Reference Stations (CORS) support, Height Modernization, Data Access and Outreach, and Tool and Model Development. Each program element within the Geodesy Line directly supports NOAA's Commerce and Transportation Goal.

Base activities support the objective, "Support the Nation's commerce with information for safe, efficient, and environmentally sound transportation" under the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental needs."

PERMANENT NETWORK

A major component of NSRS is a network of permanently marked points including the Federal Base Network (FBN), the Cooperative Base Network, and the User Densification Network. These networks form a crucial foundation for all geographically referenced activities conducted in the U.S.

NOAA's primary network responsibility is the development of the national geodetic framework, the FBN. NOAA is committed to establishing, observing, monitoring, and maintaining a very high-accuracy, four-dimensional network of monumented stations at a 1 degree by 1 degree (75 km to 125 km) nominal spacing throughout the U.S. and its territories. The network contains additional stations as needed in areas of crustal motion in support of Federal aircraft navigational requirements. The goal of the FBN is to supply the highest level accuracies of geodetic latitudes, longitudes, and heights to benefit all users of positioning services.

NATIONAL CORS

NOAA collects and distributes GPS observational data from a nationwide network of permanently operating GPS receivers. The CORS System, consisting of these stations, a central data facility and a mirror-site in Boulder, CO, make observational data available over the Internet from the network presently consisting of over 500 GPS receivers, with 100 percent of the conterminous U.S. being within 200 km of at least one CORS. The primary

objective of National CORS is to provide local users with ties to the NSRS for post-processing position determination. CORS stations have been positioned, three dimensionally, at the 1-to 3-centimeter level (1/2 to 1 1/2 inches), and are used to greatly improve the accuracy of users' GPS positioning activities through the use of Differential GPS (DGPS) techniques. National CORS primarily serves the surveying, civil engineering, and geographic information system communities for locating, building, monitoring, and maintaining the Nation's physical infrastructure in support of the broader national economy.

The US Department of Transportation operates the Coast Guard Maritime DGPS and the Nationwide DGPS. Both systems are used for transportation and navigation and both systems are incorporated into the National CORS network. NOAA, through National CORS, provides the integrity monitoring for these systems, helping to ensure their reliability for real-time transportation applications.

HEIGHT MODERNIZATION

Height Modernization is an NGS-led effort to enhance the vertical aspect of NSRS through the establishment of accurate, reliable heights using GPS technology in conjunction with traditional leveling, gravity work, and remote sensing information. Height Modernization will provide better access to accurate and consistent height data at the local level. Applications that benefit include:

- Sea level rise monitoring,
- Coastal erosion rates,
- Floodplain mapping,
- Storm surge modeling,
- Subsidence and uplift monitoring,
- Pollution trajectory modeling,
- Navigation: under-keel and under-bridge clearance,
- Precision agriculture,
- Structural monitoring: bridges, dams, and buildings,
- Intelligent transportation systems, and
- Surveying and mapping.

NOAA administers the national Height Modernization program through four cornerstone states: California, Wisconsin, Louisiana, and North Carolina (partnering with South Carolina). In NOAA's plan for national implementation of Height Modernization, these four states will serve as regional leaders for nationwide expansion of the Height Modernization program. Establishing one regional center to serve several states with common issues will establish the program management structure that is more likely to optimize the resources, technology, and benefits.

To fully expand Height Modernization nationwide is an enormous undertaking that will take many years. The task cannot be carried out entirely by the Federal Government. NOAA has been implementing Height Modernization since 1999 through collaboration with state governments, local partners, the private sector, and other federal agencies. NOAA has determined that rather than implementing Height Modernization on a state-by-state basis, a regional approach is preferable for a number of reasons. Many of the elevation issues addressed by Height Modernization are regional in nature. Issues such as coastal and riverine flooding in the Mid-Atlantic, tectonic movement along the West Coast, post-glacial rebound and improved efficiencies of intermodal transportation in the Great Lakes, and subsidence along the Gulf of Mexico, reach across state boundaries to affect entire geographical regions. A regional approach is also a more efficient use of both NOAA and partner funds and workforce.

NSRS TOOLS AND MODELS

NOAA's NGS develops standards, specifications, guidelines, and best practices for the surveying and positioning industry, as well as a variety of models describing geophysical and atmospheric phenomena that affect spatial measurements. These tools and models are crucial to scientific and commercial positioning activities.

NSRS DATA ACCESS AND OUTREACH

NOAA's NGS archives and provides access to geodetic control, shoreline, and aeronautical survey data from its own surveys and from cooperating organizations. These data are made available via the Internet on a full time basis. As part of its technology transfer efforts, NGS conducts a series of workshops and constituent forums in various parts of the country. NGS also manages the State Geodetic Advisor Program, which is a cost-sharing program that provides a liaison between NOAA and the host state to guide and assist the state's geodetic and surveying programs. This program covers over half the states, and responds to the states' desire to improve their surveying techniques to meet Federal standards and specifications.

PROPOSED LEGISLATION:

No legislation is proposed.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Navigation Services	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Geodesy					
Geodesy Base	19,860	22,000	22,261	22,261	-
National Spatial Reference System	1,942	-	-	-	-
National Height Modernization	-	-	2,541	2,541	-
Height Modernization Regional Expansion - NGS Implementation	222	-	-	-	-
Height Modernization Regional Expansion - AL	1,943	-	-	-	-
Height Modernization Regional Expansion - CA	920	-	-	-	-
Height Modernization Regional Expansion - NC	920	-	-	-	-
Height Modernization Study - MS	590	-	-	-	-
Height Modernization Regional Expansion - SC	461	-	-	-	-
Height Modernization - TX	740	-	-	-	-
Geodetic Survey - AL	(4)	-	-	-	-
Geodetic Survey - AZ	494	-	-	-	-
Geodetic Survey - KY	493	-	-	-	-
Geodetic Survey - WI	2,959	-	-	-	-
TOTAL	31,540	22,000	24,802	24,802	-
FTE	183	183	183	183	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

No program changes are proposed for FY 2008.

Subactivity: Navigation Services
Line Item: Tide & Current Data

GOAL STATEMENT:

Provide the navigation community with access to real-time data and predictions of current speed and direction, water levels, and meteorological data (wind speed and direction, gusts, barometric pressure, etc.) to enable safer and more efficient vessel routing, flood warnings, emergency response operations to spills of hazardous materials, homeland security, and for real-time control of harbor maintenance dredging.

BASE DESCRIPTION:

The Tide and Current Data Program (TCDP) is a significant component of the integrated, comprehensive suite of NOAA information products required by the maritime community to ensure safe and efficient navigation, homeland security, improve oil and other hazardous material spill response, and support coastal resource management. NOAA is statutorily authorized to collect, analyze, and provide datums related to tide and water levels. The Act of August 6, 1947 (61 STAT, 787) 33 U.S.C. §§ 883 a-f authorizes collection and dissemination of water level data; Section 883a authorizes NOAA to conduct "Hydrographic ... tide and current observations;" Section 883b authorizes NOAA "to analyze and predict tide and current data, and process and publish data, information, compilations, and reports." The TCDP is operated by the Center for Operational Oceanographic Products and Services (CO-OPS). Observations and predictions of water levels and currents are collected, quality controlled, and distributed to the marine transportation community and other users. The Tide and Current Data Line Item is composed of four primary program elements, each of which contributes to NOAA's Commerce and Transportation Goal and Weather and Water Goal.

Base activities support the objective, "Support the Nation's commerce with information for safe, efficient, and environmentally sound transportation" under the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental needs."

NATIONAL WATER LEVEL PROGRAM

CO-OPS operates and maintains the National Water Level Observation Network (NWLON), a system of 187 long-term observation stations located in U.S. coastal areas, the Great Lakes, and U.S. Territories and possessions. Information from the NWLON ranges from the high frequency content in the record (tsunamis and storm surge) to the long-term content (sea level trends and lake level trends). It provides vertical reference datums for all marine boundary applications, for national shoreline and nautical chart products, for coastal construction, dredging, for habitat restoration projects and for hurricane evacuation route planning. The NWLON system provides a nationwide capability for storm surge monitoring, and serves as an observing system for the NOAA Tsunami Warning System. Some of the records stretch over 150 years and represent some of the oldest continuous geophysical records in the U.S. The data are increasingly valuable to climate change researchers.

CO-OPS performs quality assurance procedures on the data from NWLON stations, computes tidal and Great Lakes datums and predicts tides for all U.S. coastal areas. NWLON is a critical underpinning for tools such as the Physical Oceanographic Real-Time System (PORTS®) and also serves as a federal backbone for the Integrated Ocean Observation System. NOAA is in the process of enhancing all of the NWLON stations to provide real-time data. Data collected by the NWLON supports all four of NOAA's Strategic Mission Goals.

NATIONAL CURRENT PROGRAM

NOAA and its predecessor agencies have been collecting information on the currents in various ports and harbors, and the Gulf Stream, since the mid-1800's. The Coast and Geodetic Survey first published tidal current predictions for use by mariners in 1890 for the East Coast and in 1898 for the West Coast. The program is presently operated by NOAA's Center for Operational Oceanographic Products and Services. NOAA's tidal current prediction tables are used by the largest ship operators down to the fishing industry, and the small recreational boater, kayakers, and wind surfers. Updated, accurate predictions are essential for these users to support safe and efficient navigation and for fishers to determine best catch times. In addition, accurate measurements of the currents are essential to test oil spill response strategies and provide on-site response to an emergency spill. The data are used to fine tune strategies and verify current trajectories for models.

PHYSICAL OCEANOGRAPHIC REAL TIME SYSTEMS (PORTS®)

Physical Oceanographic Real Time Systems (PORTS®) is a decision support tool that integrates and disseminates real-time environmental observations, forecasts and other geospatial information. In partnership with local port authorities, pilot associations, the U.S. Coast Guard, the U.S. Army Corps of Engineers, the U.S. Navy, academia, and others, PORTS® has been implemented in various bays and harbors in the U.S. to measure and disseminate water levels, currents, salinity, winds, and atmospheric pressure to various users. PORTS® is a cost-sharing program requiring local partners to bear the cost of installation, operation and maintenance of the sensor systems. This recognizes the local benefits of such systems. NOAA's responsibility is to provide the basic oceanography and design for the systems, as well as the ongoing quality control of the real time data. Thirteen PORTS® (Tampa, New York, San Francisco, Narragansett Bay, Chesapeake Bay, Anchorage, Soo Locks (MI), Los Angeles/Long Beach, Delaware Bay, Houston/Galveston, Tacoma, New Haven, and Columbia River) are currently operating around the U.S. These PORTS® service 39 U.S. seaports through which 42 percent of U.S. cargo by tonnage transits on an annual basis. PORTS® information is used by mariners, port authorities, and the shipping industry to support safe and efficient navigation. Access to accurate real-time water level data and model forecast guidance allows U.S. port authorities and maritime shippers to make sound decisions regarding maximizing tonnage (based on available bottom clearance), and limiting passage times, without compromising safety.

OPERATIONAL FORECAST MODELS PROGRAM

CO-OPS also operates nowcast and forecast models, typically in conjunction with PORTS®, that provide short-term water level and other environmental forecasts that enable better planning and decision making, particularly for vessel transits.

Historically, mariners in the United States have had only NOAA's Tide and Tidal Current Prediction Tables to depend on for the best estimate of expected water levels and currents at a given time in the future. While these tables provide accurate predictions of the astronomic tide, they do not account for a

number of other physical factors that affect water levels, such as wind, air pressure, and river flow. NOAA has developed and is currently operating three dimensional hydrodynamic models which take such variables into account, and are able to forecast water levels and currents up to 24 hours in advance. Operational Systems currently exist for the Chesapeake Bay, the Port of New York / New Jersey, Houston/Galveston, the St. John's River, and all five Great Lakes. NOAA's models of oceanographic and atmospheric conditions, which are provided through PORTS[®], provide crucial advance data for re-routing of vessel traffic, port conditions forecasts, and low visibility navigation to keep traffic moving and prevent congestion or delays in other less affected areas. Marine modeling also supports predictions of the oceanic and atmospheric dispersion of hazardous materials to protect people and the environment.

PROPOSED LEGISLATION:

No legislation is proposed.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Navigation Services	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Tide & Current Data					
Tide & Current Data Base	18,114	22,000	25,363	26,363	1,000
PORTS (CT)	3,477	-	-	-	-
Great Lakes NWLON	1,965	-	-	-	-
National Water Level Observation Network	3,457	-	-	-	-
TOTAL	27,013	22,000	25,363	26,363	1,000
FTE	107	107	107	107	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Tide and Current Data (0 FTE and +\$1,000,000): NOAA requests an increase of \$1,000,000 to improve and enhance the delivery of real time navigation information through the National Water Level Program (NWLP) by upgrading 45 priority National Water Level Observation Network (NWLON) stations with meteorological sensors per year beginning in FY 2008. This funding supports the U.S. Ocean Action Plan and NOAA's effort to advance the Integrated Ocean Observing System (IOOS). This increase builds on the President's FY 2007 request to harden NWLON stations, further enhancing NOAA's ability to deliver real time navigation information. Accurate, reliable, and timely information is critical to ensure that marine transportation at U.S. ports is safe and efficient, thus enhancing commerce and economic growth, and protecting the environment from marine accidents that spill hazardous materials and cause other damage. Through the NWLP, NOAA provides water level data, predictions and vertical control (tidal datums) to support safe marine navigation by users of the US Marine Transportation System (MTS). Multi-tasking technology utilized by the National Water Level Observation Network, the observing component of the NWLP, also allows other environmental parameters such as winds, air and water temperature, and barometric pressure to be monitored and used in support of multiple NOAA missions such as forecasting storm surge and responding to hurricanes, tsunamis, and other extreme events that threaten the Nation's coastal areas.

Statement of Need

Physical environmental data is crucial when extreme weather and water events including hurricanes, tsunamis, and nor'easters impact U.S. coasts. Accurate real time storm tide and associated meteorological data improves NWS forecasts and provides emergency responders with actual conditions upon

which to base better decisions. As demonstrated by the devastating impacts of Hurricanes Katrina and Rita in 2005, coastal communities need improved, robust products and services to help them plan for, respond to, and recover from coastal storms. Economic losses from Hurricane Katrina are expected to exceed \$125B due to the impacts of storm surge, flooding and wind associated with the storm (Source: Risk Management Solutions, Newark, CA). Faced with increasing vulnerability of coastal communities, coastal and emergency managers have expressed a need for comprehensive, timely and accessible information to aid in making decisions at critical times.

The US Coast and Geodetic Survey Act of 1947 mandates that NOAA collect tide and current data to support safe and efficient marine navigation. The 1999 "Assessment of the Marine Transportation System" report provided to Congress by the interagency Marine Transportation System Task Force noted that the highest priority for MTS stakeholders was the need for accurate, reliable, and timely navigation information. The Nation's commerce which passes through our seaports is an economic lifeline of our country. More than 95 percent of U.S. overseas trade by volume and 37 percent by value, including nine million barrels of imported oil daily, transits through our seaports. Mariners need decision support tools that provide them with a complete understanding of the physical environment in which they operate.

Proposed Actions

With the requested funding NOAA will upgrade 45 priority NWLON sites per year beginning in FY 2008 that have been identified by the NWS (\$450,000 for equipment and \$550,000 for contracts). The requested funds will procure meteorological sensors and supporting components such as towers, and utilize contract services to add meteorological packages to NWLON stations. The NWLON has traditionally been an oceanographic observing system established and operated primarily to service the marine transportation sector. However, NWLON technology allows multiple other types of sensors to be added, including meteorological sensors such as wind speed/direction/gusts, air temperature, and barometric pressure. Navigation data users require a complete picture of their operating environment to make the best safety and efficiency decisions, and local meteorological data is a part of that. Optimization through augmentation of existing platforms is a fundamental principle of IOOS as integration into the existing observing infrastructure is much more cost effective than establishing new observing platforms. To date, 80 NWLON stations have been upgraded with meteorological packages in piecemeal fashion at high priority locations identified by the navigation community and NWS. All NWLON data, both oceanographic and meteorological, are passed directly through the NWS telecommunications gateway to users such as NCEP, the WFOs, the River Forecast Centers and others. In addition, with the conversion of the entire NWLON to real time data dissemination completed by the end of FY 2007 (an Ocean Action Plan deliverable), the meteorological data will also be made available directly to the marine transportation sector, emergency responders and other users in real time via the internet and voice based systems.

Benefits

The additional meteorological data will improve the accuracy of NWS forecasts of storm surge, marine wind speed, and marine wave heights for use by both the marine navigation and coastal communities when extreme weather events occur. The real time information will be used by emergency responders to make sound decisions based upon what coastal areas are flooding, which evacuation routes are still viable, and other situations requiring a good understanding of the current state of the physical environment.

In a typical large port, the shipping and port industries alone may have an economic impact of approximately \$12 billion dollars to the local economy. The safe and efficient transit of the ever-larger and deeper draft vessels in our Nation’s constricted ports and harbors relies on accurate and timely navigation data. Knowledge of accurate oceanographic data such as tides and currents helps vessels to avoid groundings, collisions, and allisions with stationary objects such as bridges, rocks, and docks. Meteorological data such as wind speed and direction are critical to the safe maneuvering of large commercial vessels within constrained harbors and shipping channels. The economic and environmental consequences of a marine accident, particularly when hazardous materials are spilled, can run into the millions or even billions of dollars.

Performance Goals and Measurement Data

This increase will support the objectives, “Support the nation’s commerce with information for safe, efficient, and environmentally sound transportation” and “Serve society’s needs for weather and water information“ under the Department of Commerce strategic goal of “Observe, protect, and manage the Earth’s resources to promote environmental needs.” This increase supports NOAA’s Weather and Water Performance Goal “To improve accuracy and timeliness of weather and water information so as to improve the ability to reduce coastal hazard impacts” and the Commerce and Transportation performance objective “Enhance navigational safety and efficiency by improving information products and services” and the following performance measures.

Performance Goal: Commerce and Transportation Performance Measure: Number of NWLON stations providing real time meteorological data to improve navigation safety (cumulative)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Without Increase	80	80	80	80	80	80
With Increase	--	--	125	170	170	170

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Subactivity: Ocean Resources Conservation and Assessment
Line Item: Ocean Assessment Program (OAP)

GOAL STATEMENT:

NOAA's National Ocean Service (NOS) promotes healthy coastal ecosystems by ensuring that economic development in coastal areas of the U.S. is managed in ways that maintain biodiversity and long-term productivity necessary for sustained use. Working in partnerships with Federal and State agencies NOAA provides coastal managers with the scientific understanding, information, products and services needed to balance the environmental, social, and economic goals of coastal communities and NOAA.

BASE DESCRIPTION:

Several NOS programs are located within the Ocean Assessment Program Line Item, including NOAA's Coastal Services Center, the NOAA Coral Reef Program, NOAA's Coastal Storms Program, and the Cooperative Institute for Coastal and Estuarine Environmental Technology.

Base activities support the objective, "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management" under the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental needs."

COASTAL SERVICES CENTER

The NOAA Coastal Services Center's (Center) mission is to build capacity for informed decision making about our coasts. The Center conducts its mission under several authorities, including 16 U.S.C. 1456c, which authorizes NOAA to provide coastal managers with technical assistance. The Center's primary customers are the Nation's coastal managers, including natural resource managers, planners, and emergency officials. The Center provides services, products, and expertise to this community that would otherwise be unavailable or unaffordable. By doing so, the Center is effectively "buying down" the cost of improving state and local coastal management programs, thereby enabling more effective and targeted implementation of the Coastal Zone Management Act. Partnerships between the Center and state and local coastal management organizations and their partners give rise to more than 100 projects each year. These projects produce new tools and approaches that often are applied nationwide. The Center has developed a collaborative strategy, building effective working relationships not only across NOAA but also with other federal mission agencies.

In developing projects, the Center focuses on issues identified as important to the coastal resource management community—including hazards, habitat, the national spatial data infrastructure, coastal growth, and ocean and coastal observing systems. Customer requirements for programs and activities are determined through statutory guidance, direct interactions, needs assessments, surveys, evaluations, prototyping, CONOPS processes, competitive analysis, and partnering. Projects and activities must be 1) customer oriented; 2) focused on results; 3) undertaken in partnership; and 4) national in scope, yet local in approach. The Center is composed of employees from throughout the bureau, and the Center's annual operating plan is coordinated among all of NOAA's Line Offices. The Center's functional areas of expertise include coastal management; access to information and technology; data development, integration and management; geographic information systems; remote sensing; technical assistance and training; and capacity building. The Center also

leads the NOS-wide coordination of the Pacific Services Center in Hawaii, which brings NOS services to the State of Hawaii and other U.S. Pacific flag islands territories, and is deploying assets to other coastal areas to support and enhance NOAA's regional interactions and delivery of products and services. The Center is co-coordinating the Coastal Storms Program, a cross-NOAA Line Office effort, with the National Weather Service, and is working with multiple NOAA, interagency, and non-federal partners to help establish a combined regional and national framework and sustained capacity for an Integrated Ocean Observing System.

CORAL REEF PROGRAM

The NOAA Coral Reef Conservation Program implements priority actions to fulfill the Coral Reef Conservation Act and the U.S. Coral Reef Task Force's National Action Plan to Conserve Coral Reefs. NOAA is undertaking a series of activities to reduce human impacts on coral reefs and restore reef environments. The rapid decline and loss of these valuable marine ecosystems has significant social, economic, and environmental consequences in the U.S. and around the world. With government and non-government partners, the program supports a wide variety of priority activities including mapping and monitoring of reef ecosystems, support for state/territorial coral reef management, improved management of reef fisheries and implementation of coral reef marine protected areas.

Coral reefs are some of the most biologically rich and economically valuable ecosystems on Earth. These biologically complex ecosystems have great economic, social and cultural importance to the U.S. and other countries. They provide a wide variety of valuable products and services including:

- economic stability and food security for millions of people;
- chemicals and pharmaceuticals that contribute to improved human health;
- environmental services such as shoreline protection and climate change mitigation;
- areas of natural beauty and biodiversity; and
- significant sources of revenue and employment through tourism and other industries.

The global value of products and services from coral reef ecosystems has been estimated at over \$300 billion. Coral reef ecosystems and their products and services are now seriously threatened by a variety of human impacts and environmental factors. Key threats include: over-exploitation and destructive fishing practices; pollution and sedimentation associated with urban development, deforestation and agriculture; habitat loss resulting from dredging and shoreline modification; vessel groundings and other direct physical impacts; invasive species; disease outbreaks; and impacts associated with climate change such as coral bleaching.

COASTAL STORMS

The Coastal Storms Program will harness and leverage NOAA and community resources to reduce the adverse impacts of coastal storms by developing improved and integrated products and services that address specific state/local decision-maker needs. The Coastal Storms Program brings NOAA-wide

expertise, products, and services to specific regions to address challenges unique to those regions. Efforts to integrate existing product service lines to meet unique needs are also included. Targeted geographies include the St. John's water management district in northeast Florida, the coastal portion of the Lower Columbia River watershed, and the Southern California Bight. The specific issues addressed are determined by regional needs as articulated by users. Commonalities are emerging in observations, modeling, outreach, risk and vulnerability, and decision-maker needs assessments among pilot regions.

COOPERATIVE INSTITUTE FOR COASTAL AND ESTUARINE ENVIRONMENTAL TECHNOLOGY

The Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET) was established in 1997 as a partnership between the University of New Hampshire (UNH) and NOAA. The mission of CICEET is to provide the scientific basis for understanding and reversing the impacts of coastal and estuarine degradation through the development and application of environmental technologies and methods. CICEET operates in partnership with the National Estuarine Research Reserve System, which enables research to be conducted at controlled, relatively undisturbed sites. CICEET works with coastal managers to select projects relevant to their technology needs and transfer technology when completed.

PROPOSED LEGISLATION:

NOAA will work with Congress to reauthorize the Coral Reef Conservation Act.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Ocean Resources Conservation and Assessment	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Ocean Assessment Program (OAP)					
Ocean Assessment Program Base (ECO)	7,784	-	-	-	-
Ocean Research Priorities Plan Implementation	-	-	-	10,000	10,000
IOOS Regional Observations	-	-	-	11,500	11,500
Gulf of Mexico Regional Collaboration	-	-	-	5,000	5,000
Coastal Ocean Research & Monitoring Program	493	-	-	-	-
NOAA IOOS	7,392	-	-	2,500	2,500
NOAA/UNH Joint Ocean Observing Technology Center	1,972	-	-	-	-
Gulf of Alaska Ecosystem Monitoring Program	1,676	-	-	-	-
Gulf of Maine Observing System	493	-	-	-	-
Long Island Sound Observing System	986	-	-	-	-
Central Gulf of Mexico Observing System (USM)	1,972	-	-	-	-
So Cal Coastal Ocean Observing System (Scripps)	1,480	-	-	-	-
Center for Integrated Marine Technologies	2,022	-	-	-	-
Alliance for Coastal Technologies	2,959	-	-	-	-
Center for Coastal Ocean Observation and Analysis	2,466	-	-	-	-
Carolina Coastal Ocean Observing and Prediction System	2,022	-	-	-	-
Wallops Ocean Observation Project	1,963	-	-	-	-
Coastal Storms	1,225	-	2,874	2,874	-
Cook Inlet Coastal Monitoring and Habitat	986	-	-	-	-
Coastal Services Center	19,721	10,000	19,835	19,835	-
Digital Earth Model - MS	2,959	-	-	-	-
Pacific Coastal Services Center	4,433	-	-	-	-
Coastal Change Analysis	493	-	-	-	-
Lake Pontchartrain	1,972	-	-	-	-
CREST	986	-	-	-	-

Subactivity: Ocean Resources Conservation and Assessment	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
CI-CORE	2,466	-	-	-	-
Aquatic Research Consortium MS	2,466	-	-	-	-
Coop Institute for Coastal and Estuarine Enviro Tech	6,697	-	6,662	6,662	-
Hawaii Coral Reef Initiative	1,480	-	-	-	-
Nat'l Coral Reef Institute - Florida	986	-	-	-	-
Coral Reef - Puerto Rico	493	-	-	-	-
Coral Reef	24,632	26,000	25,797	25,797	-
National Fish and Wildlife Foundation - NFWF	690	-	-	-	-
Ocean Health Initiative	4,808	-	-	1,000	1,000
White Water to Blue Water	986	-	-	-	-
Oregon Ocean Observing	493	-	-	-	-
SURA Coastal Ocean Observing System	2,466	-	-	-	-
National Maritime Center	1,972	-	-	-	-
Lake Erie Monitoring	494	-	-	-	-
Louisiana Long Term Estuary Assessment	986	-	-	-	-
TOTAL	120,570	36,000	55,168	85,168	30,000
FTE	65	65	65	68	3

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Integrated Ocean Observing System (0 FTE and \$2,500,000): NOAA requests an increase of \$2,500,000 to build an Initial Operating Capability for the Integrated Ocean Observing System (IOOS). This increase will support the initial implementation of Data Management and Communications (DMAC) by a phased integration of core IOOS variables within a data integration framework that relies on the development and deployment of interoperability standards and protocols. The First IOOS Development Plan identified 20 priority core variables (i.e. temperature, salinity, bathymetry, etc.) required to address the seven societal goals: Weather & Climate, Marine Operations, Natural hazards, National Security, Public Health, Healthy Ecosystems, and Sustained Resources. This investment will demonstrate data interoperability, on a variable by variable basis, beginning with core IOOS variables collected by NOAA's existing systems, and establish methods and procedures for future integration with other NOAA and non-NOAA elements of the national network. The goal is to provide an understandable data integration framework and business process that improves customer access to integrated data

streams. This will aid development of new and improved data products and services, and will enable the test, evaluation, verification and benchmarking of product improvements. The requested increase will allow NOAA to provide national leadership in implementing the President's Ocean Action Plan, assist in execution of the NOAA elements of the Global Earth Observing System of Systems (GEOSS), and help NOAA fulfill the First U.S. IOOS Development Plan recommendations.

Statement of Need

NOAA's need for integrated data is derived from its mission goals. The inability to share data and information between existing federal observing systems is a critical gap. In addition, existing non-federal observing systems cannot be integrated into the system due to a lack of a common framework. NOAA needs a coordinated approach and methodology to successfully integrate data streams to meet NOAA and IOOS objectives. Without resources for coordinating IOOS data integration across NOAA, the full value of existing ocean observing system data cannot be realized due to the fragmented nature of legacy observing systems and their data production techniques. This investment is necessary to maximize the value of taxpayer investments in observation systems through complete access to interoperable core IOOS data, enabling NOAA and other end users to develop new or enhanced decision tools and information services to serve the Nation's needs.

Proposed Actions

NOAA proposes building an Initial Operating Capability for IOOS. This will be achieved through the development of a data integration framework that will enable integration of an initial set of 5 variables by FY2009. The 5 variables are temperature, salinity, sea level, surface currents, and ocean color. The FY2008 request will fund integration of temperature, salinity, and sea level. The 5 variables selected for initial integration by FY2009 are among the set of 20 core variables identified as priority in the First Annual IOOS Development Plan. The data integration framework will enable identification of data streams and data distribution nodes and focus technical work on developing interoperability through:

- Development of FGDC compliant metadata which is cataloged and discoverable by any public user
- Standardization of the content and format of the data products
- Development of documented and standard data quality control protocols
- Use of community defined, open data transport and data access protocols for use on the public internet
- Internet Data Registration
- Documentation and definition of archive service requirements
- Implement Information Technology security protocols to ensure data integrity and availability over the public internet

Modelers will use the newly interoperable data sets within their models. Once a model, using the new data, provides an improved product that meets its desired purpose and use, the improved product will be benchmarked for operational use.

The requested increase will fund standards development in collaboration with the NOAA data integration processes, and the interagency DMAC Steering Team, consistent with national efforts to implement GEOSS. The selection of additional core IOOS variables for integration will be based on an assessment of which variables are most likely to provide measurable improvements to current decision-making tools or enable new product developments, and maximize opportunities to leverage other data integration and management efforts undertaken by other federal agencies and stakeholders.

Benefits

The data integration framework enables integrated data sets and modernizes the way NOAA delivers data, products, and services. Integrated data has the potential to expedite new product development and improve model accuracy for a suite of existing NOAA products and services including, but not limited to, hurricane intensity models, harmful algal bloom (HAB) forecasts, integrated ecosystem assessments, and coastal inundation models. Interoperable data sets have the potential to stimulate private sector investments in the development of new commercial products and services as evidenced by commercial access to interoperable weather data. The integrated data framework supports data integration for not only ocean data, but for other NOAA data systems, agency partners and stakeholders. With more than half of the U.S. population living within coastal regions, the need for timely, accurate access to information is critical for saving lives, livelihoods, and improving quality of life. Ultimately an integrated approach will allow optimization of observing system investments and provide a consistent capability for all users to build value-added products and services and realize a wide range of social, environmental, and economic benefits.

Performance Goals and Measurement Data

This increase will support all objectives under the Department of Commerce strategic goal of “Observe, protect, and manage the Earth’s resources to promote environmental needs.”

Performance Goal: All Goals	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Performance Measure: Proposed GPRA –Number of IOOS Core variables integrated into NOAA’s Data Integration Framework (20 total)						
Without Increase	0	0	0	0	0	0
With Increase	0	0	3	5	7	9

Performance Goal: All Goals	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Performance Measure: Proposed GPRA –Number of data products (models and assessments) tested and evaluated for baseline improvements						
Without Increase	0	0	0	0	0	0
With Increase	0	0	1	2	3	4

Oceans and Human Health Initiative (0 FTE and +\$1,000,000): NOAA requests an increase of \$1,000,000 to implement Ocean and Human Health initiative strategic plan developed in response to the US Ocean Action Plan (OAP) and the Oceans and Human Health Act (P.L. 108-447). The OAP specifically highlights action to “Implement New Legislation on Oceans and Human Health.” The goal of the Oceans and Human Health Initiative (OHHI) is to understand and predict the connections between the condition of oceans, coasts, Great Lakes waters, and human health, while providing information focused on reducing current and future risks to public health, and enhancing efforts to provide curative agents and natural products from the sea. This initiative also supports expanding science education in direct support of NOAA’s mission.

Statement of Need

As the coastal population increases, so does the number of people who are exposed to infectious diseases, harmful algal bloom toxins and a broad range of pollutants through eating contaminated seafood or coming into direct contact with contaminated coastal waters. Across the country, the number of shellfish bed and recreational beach closures is on the rise, resulting in substantial economic losses as well as threats to human health. Marine-derived toxins in

seafood alone are likely responsible for at least 60,000 illnesses a year on a global basis and additional risks are posed by consumption of contaminated seafood.

Proposed Action

With the proposed funds, the OHHI will:

- Continue support for NOAA's **National Centers of Excellence in Oceans and Human Health** (\$500,000). NOAA's OHH Centers build on regional partnerships and exemplify in practice the "One NOAA" philosophy as they are located, respectively in NOAA's Ocean Service (OHH Center at the Hollings Marine Laboratory, Charleston, SC), NOAA Research (OHH Center at the Great Lakes Environmental Research Laboratory, Ann Arbor, MI), and NOAA Fisheries (OHH Center at the Northwest Fisheries Science Center, Seattle, WA). The Centers conduct and coordinate research, outreach, education and data management programs across NOAA and with a host of external partners. Additional NOAA offices such as the National Weather Service and National Satellite and Information Service are also active partners
- Support **Traineeship activities** to build a cadre of scientists skilled in working at the interface of ocean and biomedical and public health disciplines (\$500,000).

Benefits

The OHHI will continue to develop tools, technologies and environmental health information to discover, identify, monitor, detect, predict, reduce and prevent coastal and ocean related human health risks. OHHI will deliver and transfer information, tools, and technologies to public health and natural resource managers, decision-makers and the public. Through the combined efforts of NOAA scientists and the external research community, the OHHI will continue to conduct research leading to new understanding of ocean health-human health relationships in nearly every coastal region of the United States in order to:

- Identify existing and emerging marine and coastal related risks to public health;
- Produce biological and chemical sensors to rapidly measure threats to human health in ocean and coastal waters and incorporate them into the Integrated Ocean Observing System;
- Identify sentinel species and habitats to aid in understanding and monitoring coastal conditions;
- Develop and transfer environmental and public health monitoring and assessment capabilities;
- Develop and transfer early warning systems and forecasts for existing and emerging ocean and coastal health risks;
- Leverage partnerships to discover and identify marine natural products and pharmaceuticals for human health benefits;
- Assess and improve the safety and health benefits of seafood;
- Coordinate environmental sampling and analysis for emergency response to natural disasters;
- Improve ability to forecast likely effects of extreme events and natural disasters on the movement and fate of pathogens, contaminants; and toxins in estuarine, coastal and marine environments to reduce human exposure and prevent human disease.

Human interaction with the oceans is central to NOAA’s ecosystem-based approach to management of the Nation’s living marine resources and the habitats on which they depend. The NOAA OHHI will bring NOAA’s understanding and assessment of the oceans full circle since it evaluates both the impact of humans on the oceans, as well as the impact of the oceans on human health.

Performance Measures

This increase will support the objective, “Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management” under the Department of Commerce Strategic Goal of “Observe, protect, and manage the Earth’s resources to promote environmental stewardship.

Performance Goal: Ecosystem Performance Measure: Number of tools and technologies developed through OHHI partnerships and research activities for science-based warning systems that decrease human health risks.	FY 2006	FY2007	FY 2008	FY 2009	FY 2010	FY 2011
Without increase	3	0	0	0	0	0
With increase	3	0	1	1	1	1

Regional Development of the Integrated Ocean Observing Systems (2 FTE and +\$11,500,000): NOAA requests an increase of \$11,500,000 to develop the regional component of the Integrated Ocean Observing System (IOOS) through the activities of the 11 Regional Associations. This increase builds on competitively-awarded cooperative agreements funded to initiate the Regional Associations as the entities responsible for identifying local and regional needs for ocean information. The regional component of IOOS complements Federal ocean observing assets by providing additional data, models, and information products tailored to the economic and environmental requirements of the community. The Regional Associations are developing criteria that will allow them to be the mechanism to: 1) leverage regional resources, 2) coordinate regional coastal observing system (RCOOS) assets to meet regional requirements, and 3) ensure Federal data management and observing system standards are met. The Regional Association activities will broaden the impact of Federal observing system assets by enhancing the NOAA partnership network at the regional and local levels including augmentation of federal observing capabilities to improve resolution. The resulting partnerships, data, and products will support multiple NOAA missions such as forecasting storm surge and responding to other coastal hazards, improving navigation and transportation information, protecting public health, and managing coastal resources using an ecosystem-based approach.

Statement of Need

The Integrated Ocean Observing System Development Plan (OceanUS, 2006) calls for an integrated system of observations that support national and regional priorities. NOAA has been designated the lead agency for the implementation of IOOS. The IOOS Development Plan distinguishes between those observing and data infrastructure components managed directly by Federal agencies to meet national priorities and those infrastructure components managed at the regional level, termed Regional Coastal Ocean Observing Systems (RCOOS). The two are co-dependent components of IOOS.

The responsibility for identifying regional priorities is directed to the Regional Associations. The Regional Associations are assisting NOAA in its mission by determining how national priorities will be addressed in the diverse regions of the country. While there are efforts underway to integrate observing system assets within regions, development of regional observing system capacity has taken place largely at the sub-regional level, through the efforts of individual institutions, companies, and organizations. With the funding provided by this program change, the Regional Associations will provide the guidance that will allow the RCOOS to be developed in a manner that leverages existing observing and data infrastructure components within the region, addresses the regional priorities, and complements federal efforts. The Regional Associations will have the opportunity to demonstrate the capability to provide NOAA with a sustainable integrated ocean observing data stream and to develop products and services that meet regional needs and address national priorities. Through these Regional Associations, NOAA will have access to the more than 550 partners representing local, tribal, state government, industry, non-profit organizations, education institution, and regional federal agencies that have been engaged by the Regional Associations.

Proposed Actions

With the requested increase, NOAA will further enhance development of the regional component of IOOS through the Regional Associations that provide coordination of regional assets with Federal, local, and regional partners. The funding will allow NOAA to award competitive grants and contracts within the 11 regions to engage stakeholders, determine regional priorities, coordinate and integrate regional observing systems, and demonstrate the capability of the regions to collect and integrate data and to provide useful products to stakeholders. A competitive grants process will be used to award funding to lead each Regional Association. Regional Associations that meet criteria approved by the Interagency Working Group on Ocean Observations (IWGOO) will be eligible to compete for contracts to further develop infrastructure and demonstrate capabilities for delivering data and products. Criteria for the eligibility of Regional Associations will include existence of an organization that has the structure to make decisions on behalf of its members, the capacity to receive and disburse funds, and has completed a business plan that guides investment to address regional (and national) priorities for observational information and products. NOAA will work with the IWGOO to establish appropriate selection and performance criteria for the Regional Associations. The funding mechanisms will accommodate a competitive process, allow for the variability that is inherent in regional partnerships, data collection, and product development, and ensure accountability in data and product development. Funding the administrative functions of Regional Associations will be limited (approx \$300K each) so that resources will be applied to demonstrate the regional IOOS concept. Additional personnel (2 FTE) will administer funding, conduct site visits to monitor progress, and coordinate regional with federal efforts.

Benefits

Integrating federal and regional observing system assets will improve our understanding, forecasting, stewardship, and use of coastal waters. In the current state, observing systems have been developed by individual agencies and entities to accomplish their own missions and needs and operate under different protocols and standards. The IOOS will make more effective use of these resources and establish an integrated information network that will help NOAA to address national priorities. Support to develop the operational capabilities of the regions will establish coastal and ocean observing systems that complement the federal capabilities to manage and deliver region-specific data and information to users, while at the same time contributing data and information for national priorities.

Performance Goals and Measurement Data

This increase will support the objectives “Serve Society’s needs for weather and water information“ under the Department of Commerce strategic goal of “Observe, protect, and manage the Earth’s resources to promote environmental needs.”

Performance Goal: Weather and Water Performance Measure: Number of RAs supported	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Without Increase	--	--	0	0	0	0
With Increase	--	--	11	11	11	11

Ocean Research Priorities Plan – Response of Coastal Ecosystems to Persistent Forcing and Extreme Events (0 FTE and +\$5,000,000): NOAA requests an increase of \$5,000,000 to support end-to-end development and integration of observations, research, and forecast models. Specifically, this development and integration will lead to decision-support tools to help policy makers and managers (coastal, resource, and emergency) anticipate and prepare for the response to extreme weather events, natural disasters, and changing natural and human influences.

Effective integration of observational and forecast systems with research products will provide coastal resource managers, coastal zone planners, and emergency and public health officials with short and long-term forecasts of changing coastal conditions. Key federal partners include USGS, EPA , US Army Corps of Engineers, and the National Science Foundation. Building off of the US Group on Earth Observations and NSTC Subcommittee for Disaster Reduction’s Improved Observations for Disaster Reduction Near Term Opportunity Plan, this near-term priority identified in the Ocean Research Priorities Plan (ORPP) will focus on three pilot regions: the northern Gulf of Mexico, Southern California, and the Southeast U.S. Initial efforts in all three pilot regions would begin in FY 2008. For the pilot regions, these managers and officials will have the tools and knowledge to ensure that decisions about land and resource use, management practices, and development in the coastal zone and adjacent watersheds will be evaluated with a complete understanding of the probable effects on public health, coastal ecosystems, and community hazard resilience. The leveraging of capabilities across all sectors and the development of regionally relevant decision support tools will be clearly demonstrated in the pilot areas with lessons learned identified for broader national implementation.

Statement of Need

Every year, natural and technological hazards in the United States cost an estimated \$1 billion per week in the form of lives lost and public and private properties destroyed. In 2004, more than 60 major disasters, including floods, hurricanes, earthquakes, tornadoes, and wildfires, struck the United States. The 2005 hurricane season was the costliest ever, with losses estimated at \$200 billion, due to the impacts of storm surge, flooding and wind associated with the storms. In 2005, Southern California experienced severe winter storms that resulted in debris flows that destroyed property and adversely affected water quality. El Nino conditions are pointing to increased storm activity for this region this winter. Although we have greatly reduced the number of lives lost each year to natural disasters, the costs of major disasters continue to rise, as 71 percent (\$7B) of annual U.S. disaster losses occur in coastal areas where dense populations live and work in the paths of strong storms.

As demonstrated by the devastating impacts of Hurricanes Katrina and Rita in 2005, coastal communities need improved, robust products and services to help them plan for, respond to, and recover from coastal storms. Faced with increasing vulnerability of coastal communities, coastal and emergency managers have expressed a need for comprehensive, timely and accessible information to aid in making decisions at critical times. As such, this increase will support priorities identified by State, regional, and interagency alliances and working groups (including, for example, the Gulf of Mexico Alliance, the California Sediment Management Working Group, and the National Science & Technology Council's Group on Earth Observations, Joint Subcommittee on Ocean Science and Technology, and NSTC Subcommittee on Disaster Reduction).

Proposed Actions

With the requested funding, NOAA will provide and integrate observations, research results, forecasts and decision-support tools at regional and system-scales for the Ocean Research Priority Plan's near-term opportunities. Initial implementation of this research priority will require assessment of Federal, regional and state programs, needs and capabilities, as well as the "state of knowledge," to identify the requirements for specific forecasts and tools. Initial activities will build on ongoing agency activities and focuses on three primary capability areas: observations, forecasting and applications. Specific actions include the following:

- Acquisition, integration and assimilation of monitoring and mapping data from existing and enhanced observation platforms including tide and water levels. Workshops conducted with stakeholders to develop specific regional requirements for forecasts, and tools for preparedness, planning, response, and recovery. Collaborate directly with USGS on the geospatial framework (as part of the National Map) and implementation of the National Water Quality Monitoring Network (NWQMN). The RCOOS FY2008 budget request also supports this effort and will coordinate with implementation of the Hurricanes and Watershed Influences near term opportunity plan. Specifically, observation parameters collected by the Regional Coastal Ocean Observing Systems (RCOOS) (e.g., tides, water levels) will be important contributors to this effort. The IOOS Regional Associations will contribute to stakeholder outreach regarding observing needs and the integration of observations into decision support tools. (\$1,675,000)
- Community inundation and ecosystem modeling to provide critical information for anticipating storm vulnerability, oil spill movements, and ecological and human dimension impacts. (\$1,835,000)
- Building a geospatial framework and digital elevation models (DEM) in pilot areas essential for decision support tools including socio-economic indices to address regional decision making, planning and community awareness. For example, DEMs would contribute to the development of GIS

based decision support tools that include model output and real time and historical observations related to coastal inundation (e.g., storm surge) for emergency, floodplain and coastal managers. (\$1,490,000)

Benefits

Reducing economic, environmental and social losses requires collaboration at all levels and a coordinated, interagency approach. These activities will address regional needs and leverage and advance national efforts. Integration of existing federal and non-federal programs and capabilities will provide the full suite of observational, research, and modeling assets required for meaningful application of research results in support of coastal policy, planning, management, and response. High-priority research and technology investments, coupled with sound decision-making at all levels, will dramatically enhance community resilience and reduce vulnerability. In particular, improved understanding and integration of information related to the ecosystem impacts of coastal storms (water quality, transport of nutrients, sediment, and contaminants, waves and water levels, and the coastal response to hurricane processes) will be addressed. In five years, coastal planners, resource and emergency managers, and policy makers at all governmental levels will have a wider variety of decision support tools, borne of diverse observations and models, at their disposal to make the best decisions for their coastal constituents and economies regarding to coastal hazards.

Performance Goals and Measurement Data

This increase will support all objectives, under the Department of Commerce strategic goal of “Observe, protect, and manage the Earth’s resources to promote environmental needs.”

Performance Goal: Weather & Water						
Performance Measure: Number of regions with benchmark data and decision support tools to address watershed impacts of coastal storms.	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Without Increase	--	--	0	0	0	0
With Increase	--	--	1	2	3	3

Ocean Research Priorities Plan -- Sensors for Marine Ecosystems (1 FTE and +\$5,000,000): NOAA requests an increase of \$5,000,000 and 1 FTE to develop and improve sensors for ocean biological and physical parameters at multiple spatial (from individual cells to the global ocean) and temporal (from seconds to decades) scales. These multi-scale oceanographic observations, combined with existing data, will provide a new way of “seeing” and better understanding ecosystem function and response to environmental stressors including climate variability and change. This information will be used to support improved ecosystem management strategies and protection of public health, including use for beach closure forecasts related to pathogens and harmful algal blooms, fisheries and protected species management, and coastal ecosystem health assessments. This request is in direct response to the near-

term priorities in the Ocean Research Priorities Plan (ORPP) and consistent with the goals and objectives of the Interagency Oceans and Human Health Research Implementation Plan.

Statement of Need

Through recreation, residential and commercial development, and employment, human populations are coming into increasing contact with our oceans and coastal waters. Continued coastal development, changes in land use, a varying climate, and altered ecosystem diversity add a complexity of environmental and human stresses, the consequences of which we do not yet fully understand and are ill prepared to manage. Approximately 100 million Americans use the marine environment for recreation each year, yet pollution impairs the use of 51 percent of assessed estuarine square miles. In 2004, there were nearly 20,000 days of closings and advisories at ocean, bay and Great Lakes beaches, of which 73 percent were attributed to unknown sources and cost millions to local economies. *Vibrio parahaemolyticus*, long linked to seafood-borne infections in Asia, is increasing in US waters; a recent outbreak in Prince William Sound was attributed in part to warmer than usual ocean temperatures. Management of our Nation's fisheries—for food supply and for economic security—could be significantly improved with appropriate information about overall ecosystem functions necessary to sustain and optimize fisheries yield.

Great strides are being made in observing the ocean at large spatial scales, such as overall circulation patterns, changes in sea surface temperature and salinity, and the movement of large masses of algae. In order to use these tools to improve ecosystem-based management of fisheries, protected species, and public health, however, additional small scale and more rapidly delivered information about water quality in the near shore and coastal environments, and about the ocean biology underpinning fisheries production and protected species management is necessary. The ability to rapidly and accurately monitor and assess biodiversity and marine ecosystem health, at levels from the genetic to the ecosystem, is an essential component of any effort to effectively implement an ecosystem approach to resource management and protect public health. Efforts to develop marine genomic tools and technologies and employ them to construct biosensors are just beginning and must be supported in order to garner a more complete understanding of ecosystem health and the effects of environmental stressors on marine organisms and humans. Similarly, the ability to rapidly and accurately identify and enumerate planktonic stages of marine organisms is crucial to understanding the feeding, reproduction and recruitment of species of particular interest. Currently, taxonomy and identification of marine organisms is labor intensive, slow, and subject to misinterpretation. Plankton video recorders are now being used in a highly-specialized research mode but must be enhanced to become operational for routine deployment across a broader range of applications, including the management of protected species, including Right Whales. To integrate these innovative tools into future environmental monitoring, assessment, and management programs, we must gain a clearer understanding of both the genomic level responses and the ecosystem context for these responses. Both biosensors and plankton recorders have significant potential for development and deployment as part of the IOOS within the next five to seven years, although both require further development and testing

NOAA-supported researchers already can accurately test for the presence of up to ten species of toxic algae in less than four hours; are linking remotely sensed sea surface data with the presence of the human disease-causing organism, *Vibrio parahaemolyticus*; and are remotely tracking and modeling sewage spills in the Great Lakes and correlating pathogens with surface temperature for the development of a functional beach closure forecast. While promising technologies are currently being developed and used by NOAA and its partners (e.g., DNA bar-coding of some organisms under the Census of

Marine Life effort, and video plankton recorders), there is no common library of marine genomics or barcodes, and plankton recorder technology remains limited. Because the volume of data generated is so high, this approach must also include investment in building extensive libraries of DNA and video taxonomic information, a strong bioinformatics component, and development of additional computer processing capabilities from the outset. These building blocks for health forecasting systems and fisheries management have already proven their worth, but require additional investment and effort to become operational on a routine, nationwide basis.

Proposed Actions

Over the next five years, NOAA and its partners will markedly increase our efforts to develop and apply genomic microarrays and other technologies that will allow rapid and accurate detection, identification, and quantification of numerous species of microbes in marine waters and seafood, and of health threats in sentinel marine organisms which may indicate health risks to humans. NOAA will transition a highly sophisticated research-based plankton video recording technology to an operational mode with expanded range of applications, including both fisheries and protected species. The agency will significantly expand work to develop and share DNA libraries for numerous marine organisms, and to investigate changes in gene expression in oysters, shrimp, marine mammals, and other species in response to environmental conditions and disease.

With the requested funding NOAA will:

- Develop *in situ* sensors for rapid detection of pathogens, harmful algae and their toxins and determine how such sensors can be deployed within the Integrated Ocean Observing System including methods to integrate biosensor data with other ocean observations, especially those associated with extreme events such as hurricanes (\$1,500,000)
- Develop, evaluate, and validate microarrays and other genomic and proteomic tools and essential supporting bioinformatics infrastructure to elucidate effects of multiple environmental stressors on key marine organisms, leading to new levels of understanding of ecosystem processes and impacts of individual and cumulative stresses, including climate change (\$1,500,000)
- Develop genomic libraries and associated information to support DNA-based identification of a range of marine organisms in order to advance understanding of marine biodiversity and its role in ecosystem processes, as well as species abundance and distribution (\$1,000,000)
- Improve video plankton recorders and related technology and demonstrate utility for recruitment process studies, leading to improved resource management (\$1,000,000)

The first four years of the proposed activity would be spent in laboratory and field studies, while the fifth year would be used to synthesize, assess, and report findings and identify the most useful new technologies, including documentation of accuracy, precision, and reliability. The program would be managed through the NOAA Coastal Services Center's (CSC) Oceans and Human Health Initiative (OHHI) in coordination with other ORPP activities. Funds would be distributed both internally within NOS and NMFS and through an external grant competition. Limited funds would be provided to the

OHHI for program management. If appropriate, funds may also be spent collaboratively with NSF and NASA on marine sensors. If other agencies are also working on the development of marine sensors, consideration will be given to making funds for the external research community available through a joint interagency process such as the NOPP Broad Agency Announcement.

Benefits

These funds will allow NOAA and its external partners to advance the development of marine biological sensors to initial operational phases and begin testing their use for operational beach closure forecasts and coastal ecosystem health assessments. These funds will also allow the transition of currently used highly-specialized, research-oriented plankton video recorders to dependable and deployable operational technology which will be used to improve ecosystem based management for fisheries and protected species. Linking the work of external scientists directly to NOAA’s efforts will ensure rapid testing and transfer of technologies to operational observing systems. The development of multi-scale oceanographic biological sensors, genomic and proteomic tools, and plankton recorders, and the transition of these to operational status will significantly improve NOAA’s ability to support ecosystem-based management of critical marine and coastal systems and protected species, provide crucial information to safeguard public health and provide useful beach forecasts, and support IOOS and GEOSS societal goals.

Performance Goals and Measurement Data

This increase will support two of NOAA’s primary mission goals –“to protect, restore and manage the use of coastal and ocean resources through ecosystem-based management” and “to understand climate variability and change to enhance society’s ability to plan and respond.”

Performance Goal: Ecosystem Performance Measure: Number of new marine sensors and ecosystem tools developed or applied to enhance ecosystem-based management for fisheries, protected species, and public health	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Without Increase	0	0	0	0	0	0
With Increase	0	0	1	2	3	4

Gulf of Mexico Regional Alliance (0 FTE and +\$5,000,000): NOAA requests an increase of \$5,000,000 to support the Gulf of Mexico Alliance in advancing regional coastal resource priorities defined collaboratively by the five Gulf States in the Gulf of Mexico Alliance’s March 2006 regional action plan, the *Governors’ Action Plan for Healthy and Resilient Coasts*. Through this plan, the five Gulf State governors have outlined focused, short-term actions that address key regional deficiencies; integrate ongoing state, local, and federal efforts; and maximize the impact of resources applied to six priority regional issues in the Gulf of Mexico – hazard resilient coastal communities; healthy beaches and shellfish beds; wetland and coastal restoration; environmental education; identification and characterization of Gulf habitats; and reducing nutrient inputs to coastal ecosystems. This increase allows

NOAA to provide a targeted, competitive grant program, which will leverage additional state and federal partner investments, to support Gulf of Mexico Alliance efforts to implement these actions. At the request of the Council on Environmental Quality (CEQ), and working through the President's new ocean governance structure, NOAA and EPA co-chair a Federal Workgroup coordinating support from 13 federal agencies to the Gulf of Mexico Alliance. This increase will allow NOAA and EPA to ensure collaboration among all federal partners, thereby increasing effective and efficient of federal action in the Gulf of Mexico region.

Statement of Need

In accordance with the President's U.S. Ocean Action Plan (OAP), CEQ directed NOAA and EPA to coordinate federal support for the Gulf of Mexico Alliance. This increase allows NOAA to provide support for all mission-relevant actions in the *Governors' Action Plan*, and ensure coordination and communication among state, local, and federal implementation partners. The socioeconomic need for a regional, ecosystem-based, collaborative approach – as devised by the Gulf of Mexico Alliance – is compelling, and is strongly linked to NOAA mission goals to “Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management” and to “Serve society's needs for weather and water information.” The Gulf of Mexico's population grew by 45 percent from 1980 to 2003 and is expected to grow an additional seven percent from 2003 to 2008, making it the second fastest growing coastal region in the United States (Source: NOAA). As demonstrated by the devastating impacts of Hurricanes Katrina and Rita in 2005, coastal communities need improved, robust products and services to help them plan for, respond to, and recover from coastal storms. Economic losses from Hurricane Katrina are expected to exceed \$125B due to the impacts of storm surge, flooding and wind associated with the storm (Source: Risk Management Solutions, Newark, CA). Faced with increasing vulnerability of coastal communities, coastal and emergency managers have expressed a need for comprehensive, timely and accessible information to aid in making decisions at critical times. Keeping the Gulf of Mexico's beaches safe and clean is an economic imperative, as the Gulf tourist industry encompasses tens of thousands of jobs and brings in over \$20 billion annually (Source: Gulf Coastal Ocean Observing System). Of the Nation's ten leading ports in waterborne tonnage, seven are found in the Gulf of Mexico; of the top seven ports in the world, two are in the Gulf (Source: USACE). In 2000, the commercial fish and shellfish harvest from the five Gulf States was estimated to be 1.7 billion pounds, which was nearly 20 percent of the total domestic landing in the United States (Source: National Ocean Economics Program). Gulf recreational fishing generates nearly 30 percent of U.S. saltwater fishing expenditures and nearly one-quarter of all U.S. saltwater recreational jobs are on the Gulf of Mexico (Source: USEPA Gulf of Mexico Program).

Proposed Actions

With the requested funding NOAA will provide targeted, competitive grant funds – \$4,500,000 in grants and \$500,000 in coordination and administrative costs for NOAA, EPA, and other federal agencies partners – to accomplish regional coastal resource priorities in the *Governors' Action Plan* that are aligned with NOAA's mandates and mission. The NOAA grant program will be strategically-designed to solicit and competitively fund applications for a selection of the 73 action blueprint steps listed in the *Governors' Action Plan*. Eligible grant recipients will include state, local, and tribal governments, institutions of higher education, and non-profit, for-profit, and international organizations. It is anticipated that project awards will range from \$100,000 to \$500,000 each, for one to three year projects, providing from 10 to 30 project awards across the six priority areas – create hazard resilient coastal communities; ensure healthy beaches and shellfish beds; support wetland and coastal restoration; increase environmental education; identify and

characterize Gulf habitats; and reduce nutrient inputs to coastal ecosystems. The review of grant applications will use strict criteria with assigned weights, and will be conducted by at least three independent reviewers, with a focus on strengthening regionally–collaborative solutions. NOAA’s grant program will coordinate closely with other federal partners supporting the Gulf of Mexico Alliance and *Governors’ Action Plan*, and will not cover action steps where the Gulf States indicate that implementation is guaranteed by another partner or source of funding.

Benefits

The benefits of a regional, ecosystem-based, collaborative approach are numerous, and are particularly germane in the Gulf of Mexico given the region’s historical hurdles to collaboration, including lack of resources. The regional approach put forth by the five Gulf State governors will greatly increase coordination at the state and federal level, resulting in more efficient and effective government. All actions in the *Governors’ Action Plan* directly support Gulf Coast recovery and contribute to more resilient coastal communities that protect lives and livelihoods. By working together, the five Gulf State Governors are building regional political strength, and are providing a working model of regional ocean governance called for in the President’s OAP and in the U.S. Commission on Ocean Policy report. Action-oriented and working to make on the ground change within 36 months, the *Governors’ Action Plan* intends to build trust in Gulf of Mexico regional collaboration, which should set the stage for a longer-term regional partnership that can address an expanded suite of issues.

The federal agencies represented on the Federal Workgroup bring diverse expertise and established experience – coordinating and integrating these capabilities will maximize the impact of federal resources. Federal Workgroup support to the Gulf of Mexico Alliance will focus on providing Gulf managers with information and knowledge rather than just data. The Federal Workgroup will advance federal collaboration using the Gulf of Mexico as a laboratory for exploring better mechanisms for regional management, applying ecosystem-based management principles, applying integrated coastal and ocean observations for management purposes, and strengthening state-local-federal collaboration.

Performance Goals and Measurement Data

This increase will directly support the objective, “Enhance the conservation and management of coastal and marine resources to meet America’s economic, social, and environmental needs” under the Department of Commerce strategic goal of “Observe, protect, and manage the Earth’s resources to promote environmental needs.” This increase directly supports the performance objectives “Increase number of coastal communities incorporating ecosystem and sustainable development principles into planning and management,” and “Increase portion of population that is knowledgeable of and acting as stewards for coastal and marine ecosystems” under NOAA’s Ecosystems Mission Goal “Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management.” Under NOAA’s Weather and Water Mission Goal “Serve society’s needs for weather and water information,” this increase supports the performance objectives “Increase coordination of weather and water information and services with integration of local, regional, and global observation systems,” and “Enhance environmental literacy and improve understanding, value, and use of weather and water information and services.”

The *Governors' Action Plan* includes 21 specific, measurable 36-month outcomes to track progress and completion of the plan's 11 actions. This increase will directly support the accomplishment of all of these outcomes. The five Gulf States, with support from NOAA and EPA, will track implementation progress using these measures on an annual basis, and report this progress to the Gulf State Governors, CEQ, and the general public.

Performance Goal: Ecosystems						
Performance Measure: Percent of the 21 outcomes in the Gulf of Mexico Alliance <i>Governors' Action Plan</i> accomplished.	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Without Increase *	--	5	10	15	20	20
With Increase	--	--	25	50	75	75

* Assumes funding provided by the U.S. EPA Gulf of Mexico Program

Subactivity: Ocean Resources Conservation and Assessment
Line Item: Response and Restoration

GOAL STATEMENT:

The Office of Response and Restoration (OR&R) responds to threats in order to protect and restore coastal resources.

BASE DESCRIPTION:

NOAA responds to approximately 100 significant oil or chemical spills each year as scientific advisors to the U.S. Coast Guard, and provides solutions to cleanup agencies that protect and restore coastal resources at more than 200 hazardous waste sites each year along the Nation's ocean and Great Lakes coasts. When oil or hazardous substances threaten or injure coastal and marine resources, NOAA and other state and federal natural resource trustees are responsible for ensuring that cleanup actions protect those resources from further injury; for assessing and recovering natural resource damages to restore the injured resources; and for seeking compensation on behalf of the public for the loss of services that the natural resources provided. NOAA's authorities for responding to threats to the Nation's trust resources derive from the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund) and the Oil Pollution Act of 1990 (OPA). NOAA's Office of Response and Restoration (OR&R) implements CERCLA and OPA requirements by providing interdisciplinary scientific response to releases of oil, chemicals, and contaminants; protecting and restoring NOAA trust resources; and extending core expertise to address critical local and regional coastal challenges. OR&R's three primary program elements contribute to NOAA's Strategic Plan Mission Goals to "Support the Nation's commerce with information for safe, efficient, and environmentally sound transportation", and "Protect, restore, and manage the use of coastal and ocean resources through ecosystem-based management."

Base activities support the objective, "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management" under the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental needs."

EMERGENCY RESPONSE PROGRAM

OR&R's interdisciplinary scientific response team responds to oil and chemical spills and other emergencies. It is a key part of the NOAA Emergency Response Program. The team provides scientific advice to support of federal response efforts. OR&R scientists forecast the movement and behavior of spilled oil and chemicals, evaluate the risk to natural resources, and recommend protection priorities and appropriate cleanup actions. OR&R strengthens the Nation's response capabilities by conducting research and monitoring in areas impacted by spills, developing software and technical guidance, and passing on these tools and expertise via local, national, and international training programs.

OR&R field staff is co-located with regional U.S. Coast Guard offices to ensure close cooperation and coordination for planning and responding to spill events and other emergencies. In addition to maintaining a highly prepared response team that coordinates on-scene scientific activities and provides

scientific support for operational decisions during oil or hazardous material spills or other threats, OR&R supports local communities in developing and evaluating oil and hazardous materials response plans, fulfills trustee responsibilities as the Department of Commerce Regional Response Team representative, serves as the Department of Commerce's representative on the National Response Team (NRT), and chairs the NRT's Science and Technology Committee.

HABITAT PROGRAM

OR&R assessment, protection, and restoration activities carry out NOAA's trust mission as part of the agency's Habitat Program. OR&R regional coordinators, scientists, and economists work in partnership with government agencies, the public, and industry to:

- Provide technical advice on ecological risk, contaminated sediments, brownfields, and remedial issues to accelerate natural resource recovery and community and waterfront revitalization.
- Assess impacts to NOAA trust resources by collecting data and conducting studies to determine whether coastal resources have sustained injury.
- Develop cooperative settlements to resolve liability for that damage.
- Plan for restoration and determine how much restoration is required for each injury.
- Work with co-trustees, responsible parties, and communities to implement resource restoration.

To improve protection of trust resources and to advance the field of restoration, OR&R develops and tests new approaches, techniques, and procedures for improved and cost-effective protection and cleanup strategies, damage assessment and remediation, and restoration of trust resources. This knowledge is passed on to other natural resource trustees, coastal managers, and decision-makers through training, technical assistance, and decision-making tools that promote planning—and so efficiencies in protection, clean up, and restoration--within a watershed management context.

Another significant arena of activity is through OR&R's partnership with the NOAA Fisheries Service Restoration Center and General Counsel under the Habitat program. This partnership, known as the Damage Assessment, Remediation, and Restoration Program (DARP) allows NOAA to approach harm to coastal trust resources in an integrated way. During the past decade, DARP injury scientists, economists, restoration specialists, and attorneys have provided expertise and leadership to restore wetlands, fisheries, wildlife, and human uses of these resources.

This program also supports NOAA-wide activities mandated by the Estuary Restoration Act of 2000. NOAA works with other partners to implement a national estuary habitat restoration strategy designed to ensure a comprehensive approach towards habitat restoration projects. NOAA's activities include the development of scientifically sound monitoring protocols and standards for coastal habitat restoration projects. In addition, NOAA is developing restoration databases that provide quick and easy access to accurate and up to date information regarding all projects funded under the Estuary Restoration Act of 2000, as well as information on projects throughout the country that meet the standards established as a part of the Act for monitoring and data collection to provide scientists and resource managers with information critical to successful estuary habitat restoration efforts.

PRIBILOF ISLANDS CLEANUP

Under The Fur Seal Act, The Pribilof Environmental Restoration Act, and the Pribilof Islands Transaction Act, NOAA is responsible for conducting environmental restoration on designated properties, and for transferring those properties to the native Aleuts when restoration is complete. NOAA performs site characterizations, assesses the magnitude and extent of the contamination, evaluates the risk to human health and the environment, and develops corrective action plans for environmental restoration. Site cleanup includes removal of debris, disposal of barrels containing hazardous materials, treatment of petroleum contaminated soils, and ground water monitoring.

PROPOSED LEGISLATION:

No legislation is proposed.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Ocean Resources Conservation and Assessment	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Response and Restoration					
Response and Restoration Base	10,454	15,600	16,763	16,763	-
Estuary Restoration Program	1,184	-	1,188	1,188	-
Damage Assessment Program	2,959	-	-	-	-
Mitigating Coastal Development Impacts/MS State Univ.	986	-	-	-	-
Marine Wildlife Noise Impacts/Univ of RI	493	-	-	-	-
Marine Debris	3,909	-	-	-	-
Marine Debris Removal-Alaska	1,123	-	-	-	-
Aquatic Resources Environmental Initiative	4,438	-	-	-	-
Vieques	986	-	-	-	-
Center for Marine Spill Response Project	2,959	-	-	-	-
Pribilof Islands Cleanup	6,903	7,000	7,227	5,427	(1,800)
TOTAL	36,394	22,600	25,178	23,378	(1,800)
FTE	110	110	110	110	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Pribilof Islands Environmental Cleanup, Long-term monitoring, and Property Transfer (0 FTE and -\$1,800,000): NOAA proposes a decrease of \$1,800,000, for a total of \$5,427,000, to support cleanup, long term monitoring, and land transfer activities on the Pribilof Islands. NOAA is responsible for performing environmental cleanup and restoration activities related to past commercial fur sealing on the Pribilof Islands in Alaska's Bering Sea. The requested funding level will allow NOAA to achieve 100 percent completion of environmental remediation of the Pribilof Islands in cooperation with the State of Alaska by the end of FY 2008. In addition, NOAA will identify any remaining diesel free product recovery needs, continue the process of transferring properties back to the local entities, and begin the transition from active clean-up to long-term monitoring on the islands.

Subactivity: Ocean Resources Conservation and Assessment
Line Item: National Centers for Coastal Ocean Science

GOAL STATEMENT:

NOAA's National Ocean Service (NOS) will conduct and support monitoring, research, assessment, and assistance for the range of NOAA's coastal stewardship responsibilities. Through the National Centers for Coastal Ocean Science, NOS provides a sound scientific and applied basis for effective coastal management decisions and conducts the high-quality science needed to predict the potential impacts of multiple stressors on coastal ecosystems and living resources.

BASE DESCRIPTION:

NOAA's National Centers for Coastal Ocean Science (NCCOS) provide national leadership in ocean, coastal, and Great Lakes science by conducting research, monitoring, and assessments to build the strong scientific foundation essential for sustainable use of coastal resources. NCCOS supports NOAA's coastal mission and builds better linkages among coastal programs of NOS by developing and maintaining a broad base of scientific experts and science capabilities through both intramural and extramural research. Coastal ecosystems are subjected to a variety of stressors including climate change, extreme natural events, invasive species, land and resource use, and pollution. As a focal point for coastal resource research within NOAA, NCCOS' activities primarily support NOAA's Strategic Plan Mission Goal to "Protect, restore, and manage the use of coastal and ocean resources through ecosystem-based management." Through its research into the effects of climate change and freshwater inflow on coastal ecosystems, NCCOS also contributes to NOAA's goals to "Understand climate variability and change to enhance society's ability to plan and respond", and "Serve society's needs for weather and water information."

NCCOS is governed by statutes defining the national oceans policy and much of NCCOS research responds to its legal mandates, including the new Oceans and Human Health Act, the reauthorized Harmful Algal Bloom and Hypoxia Research and Control Act, and the Great Lakes Task Force Executive Order. As part of NOAA's Ecosystem Goal Team and Ecosystem Research Program, NCCOS conducts integrated assessments and ecological forecasts at a regional scale to inform ecosystem-based management.

NCCOS is comprised of four research centers: The Center for Coastal Monitoring and Assessment (CCMA), the Center for Coastal Fisheries Habitat Research (CCFHR), the Center for Coastal Environmental Health and Biomolecular Research (CCEHBR), and the Center for Sponsored Coastal Ocean Research (CSCOR). Each center brings unique and complementary expertise and capabilities to address critical coastal resource issues. NCCOS also includes the Hollings Marine Laboratory, the Kasitsna Bay Laboratory, and the Cooperative Oxford Laboratory.

Base activities support the objective, "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management" under the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental needs."

COASTAL MONITORING AND ASSESSMENT (Silver Spring, MD)

Through monitoring, applied research, and assessment programs, NCCOS' Center for Coastal Monitoring and Assessment (CCMA) evaluates the environmental quality of U.S. coastal, estuarine, and Great Lakes areas and the ecosystem consequences of current and potential anthropogenic stresses on these areas. CCMA monitors toxic contaminants, nutrients, and related properties in biota, water, and sediments at over 300 sites through the National Status and Trends program. The data are used to evaluate the environmental quality at each site, to detect changes, and to determine associated biological effects of chemical contaminants. CCMA also conducts programs in applied research, monitoring, biogeography, and assessment to determine: the distribution of anoxia/hypoxia; the occurrences and environmental relationships of harmful algal blooms (HABs); and the biodiversity, habitat and other ecological characteristics of U.S. estuarine, coastal, and Great Lakes areas.

COASTAL FISHERIES AND HABITAT RESEARCH (Beaufort, NC and Kasitsna Bay, AK)

NCCOS' Center for Coastal Fisheries Habitat Research (CCFHR) in Beaufort, North Carolina has been a focal point for coastal habitat and fisheries research for nearly a century. The Center's research efforts are focused on estuarine processes, near-shore ocean ecosystems, biological productivity, dynamics of reef fishery resources, harmful algal blooms, and the effects of anthropogenic influence on resource productivity. Results of the Center's research are utilized by coastal managers at the Federal, state, and local level to address important environmental issues, such as controversial permit applications, environmental litigation, and the development of effective management policies.

A new CCFHR facility in Kasitsna Bay, AK is improving the capacity of NCCOS researchers to identify the stressors affecting the condition of the sub-arctic ecosystem of Kachemak Bay, determine the processes by which they act, identify their short- and long-term impacts, and forecast future conditions with and without management intervention. Research priorities are based on management-driven information needs as identified by resource managers, scientists, and other key stakeholders.

COASTAL ENVIRONMENTAL HEALTH AND BIOMOLECULAR RESEARCH (Charleston, SC and Oxford, MD)

The Center for Environmental Health and Biomolecular Research (CCEHBR) in Charleston, South Carolina, conducts applied research programs to: develop methods to characterize and detect marine biotoxins and harmful algal blooms (e.g., *Pfiesteria*) and identify hazards to marine resources and seafood consumers; develop and implement new techniques for field assessment of environmental quality and marine ecosystem health; improve detection and measurement of contaminants and evaluation of their significance to marine species and their habitats; and understand the factors linking land use in the coastal zones with the distribution and effect of environmental contaminants on living marine resources and habitats. The CCEHBR Resources Forensics program supports law enforcement agencies by providing technical support and analyses for cases involving protected, threatened, or endangered species, consumer fraud, violation of fisheries closures, and illegal taking of game fish. Identification analyses are used to prosecute illegal activities such as importing and selling sea turtle eggs and meat, selling illegal game fish, and fishing during closure periods, as well as determination of wild versus cultured marine animals.

The Cooperative Oxford Lab in Oxford, MD is affiliated with CCEHBR and provides scientific information required to resolve important issues related to the health of coastal ecosystems. The Oxford Lab specializes in shellfish pathology and habitat restoration research. Scientists investigate the role of

disease in the distribution, abundance, marketability, and edibility of marine animal resources, determine the influence of natural and man-made environmental factors on the occurrence and persistence of diseases, and explore the use of marine animal health as an indicator of environmental health. The Oxford laboratory is the only Federal aquatic research facility on the Chesapeake Bay.

HOLLINGS MARINE LAB (Charleston, SC)

The Hollings Marine Laboratory (HML), located in Charleston, SC, provides science and biotechnology applications to sustain, protect, and restore coastal ecosystems, emphasizing linkages between oceans and human health. HML was formed to integrate the knowledge of marine scientists with that of the medical community. Technologies developed for human health are being applied to better understand and assess the state of marine ecosystems, and to examine the interrelationships between human health and marine environmental health. By applying genomics techniques to define gene sequences that indicate immune responses and disease resistance in marine organisms to various stressors, scientists can make connections between biochemical changes, organism responses, and ecosystem alterations. HML scientists are also developing faster and cheaper indicators of physiological and ecosystem health for use in monitoring and evaluating the status of ecosystems and organisms of interest. Other studies examine the biomolecular effects of different chemical contaminants resulting from human activities. HML was established as a Joint Project Agreement between NOAA, the National Institute of Standards and Technology, the South Carolina Department of Natural Resources, the University of Charleston, SC, and the Medical University of South Carolina.

SPONSORED COASTAL OCEAN RESEARCH (Silver Spring, MD)

The Center for Sponsored Coastal Ocean Research (CSCOR) addresses emerging coastal ocean issues across NOAA's mission responsibilities. CSCOR supports competitive, peer-reviewed, interdisciplinary research investigations with finite life cycles conducted on a regional scale over a 3-5 year period. Funded subject areas, as well as corresponding funding levels, vary from year to year over these life cycles. These operating principles were incorporated into the design for the program to ensure the timeliness and relevance of its research in addressing coastal ocean mandates across the agency. The program relies upon established processes that reflect the requirements and advice of both the management and science communities in setting its priorities to ensure the utility and credibility of its research.

CSCOR coordinates NOAA's research efforts on a number of issues critical to effective coastal resource management. Research funded by CSCOR is designed to improve our ability to forecast the ecological effects of ecosystem stressors to support coastal management decisions. Major ecosystem studies on the joint impact of climate and harvesting on marine populations in the Gulf of Maine, the Pacific Northwest coastal waters, and the coastal Gulf of Alaska are being conducted as the United States component of the Global Ocean Ecosystems Dynamics initiative. The program also seeks to understand the biological, physical, and chemical processes that regulate HABs in major ecosystems like the Gulf of Maine, Chesapeake Bay, and Florida's Gulf Coast, while developing methods to prevent, control and mitigates the impacts of HABs. Land and resource use research focuses on the poorly understood impacts of population shifts to U.S. coastal regions, including habitat modification, nutrient and toxic chemical inputs, and fresh water diversions. CSCOR funded research efforts were integral to the formulation of the Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico, and CSCOR research will aid in determining the impact of mitigation efforts proposed under the Action Plan.

PROPOSED LEGISLATION:

NOAA will continue to work with Congress to reauthorize the Nonindigenous Aquatic Nuisance Prevention and Control Act.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Ocean Resources Conservation and Assessment	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: National Centers for Coastal Ocean Science					
National Center for Coastal Ocean Science (NCCOS)	-	21,740	31,973	31,973	-
Competitive Research	9,862	12,000	15,801	15,801	-
Center for Coastal Environmental Health & Biomolecular Base	14,748	-	-	-	-
Oxford, MD	4,421	-	-	-	-
Oxford, MD Extramural Research	(2)	-	-	-	-
Subtotal: Center for Coastal Environmental Health & Biomolecular Research	19,167	-	-	-	-
CCFHR Base	5,921	-	-	-	-
Subtotal: Center for Coastal Fisheries Habitat Research	5,921	-	-	-	-
CCMA Base	5,650	-	-	-	-
Subtotal: Center for Coastal Monitoring & Assessment	5,650	-	-	-	-
Center for Sponsored Coastal Ocean Research	3,649	-	-	-	-
Coastal Ocean Research Grants (HAB/Pfisteria/GLOBEC)	(1)	-	-	-	-
NCCOS Headquarters	4,776	-	-	-	-
Marine Env Health Research Lab - MEHRL	3,940	-	-	-	-
TOTAL	52,964	33,740	47,774	47,774	-
FTE	239	241	241	241	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

No program changes are proposed for FY 2008.

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Subactivity: Ocean and Coastal Management
Line Item: Coastal Management

GOAL STATEMENT:

The goal of the Coastal Zone Management Act (CZMA) of 1972, as amended, (16 U.S.C. 1451 et seq.), administered by NOS' Office of Ocean and Coastal Resource Management (OCRM), is to ensure the rational use and conservation of the lands and waters of the Nation's 35 coastal and Great Lakes states and territories. OCRM provides financial and management assistance to 34 coastal states and territories, enabling them to: (1) develop and implement comprehensive coastal resource management programs; (2) undertake new and innovative projects to enhance management and protection of the coastal zone; and (3) establish and manage estuarine research reserves to protect estuarine areas for long-term research and education, and support coastal decision-making. OCRM also administers NOAA's implementation of Executive Order 13158, which has the following goals: (1) to develop a national system of marine protected areas (MPAs) and (2) to improve the stewardship of existing MPAs.

BASE DESCRIPTION:

The Nation's coastal and ocean areas represent some of its most ecologically and economically important regions. Congress recognized this fact in 1972 when it passed the CZMA. This act created a national framework for coastal protection through the Coastal Zone Management program and National Estuarine Research Reserve System. Executive Order 13158 recognized the importance of these areas as well, by directing the federal government to significantly strengthen and expand the national system of marine protected areas (MPAs), working closely with state, territorial, local and tribal trustees and other stakeholders.

NOS' OCRM supports this national framework and provides leadership to balance the use and protection of the Nation's coasts and oceans. All programs administered by this Office directly support NOAA's Strategic Plan Mission Goal to "Protect, restore, and manage the use of coastal and ocean resources through ecosystem-based management."

Program Assessment and Rating Tool (PART): A significant portion of NOAA's Coastal Management program was reviewed with OMB's Program Assessment and Rating Tool (PART) during the FY 2005 and 2006 budget processes. NOAA is on track in meeting OMB's PART recommendations, including developing meaningful long-term measures. The program has developed a suite of measures, which have begun to be implemented. In addition, the National Estuarine Research Reserve program continues to integrate with NOAA's research programs by ensuring that the Graduate Research Fellowship Program's focus areas are aligned with NOAA's strategic plan, and by developing links between its environmental monitoring programs and the Nation's Integrated Ocean Observing System.

Base activities support the objective, “Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management” under the Department of Commerce Strategic Goal of “Observe, protect, and manage the Earth's resources to promote environmental needs.”

CZM GRANTS

The purpose of the national Coastal Zone Management (CZM) Program is to maintain and improve the quality and utility of the Nation’s coastal lands and waters through a national network of federally-approved, coordinated, and supported state management programs that seek to maintain the balance between the needs of resource protection and coastal-dependent economic activity. This program recognizes the significance of coastal resources to our Nation’s population and economy and promotes improved management of these important assets. Federal matching funds are provided through cooperative agreements to support state staff and community projects that address the broad spectrum of coastal management issues ranging from habitat conservation and protection of life and property from coastal hazards, to urban waterfront and port revitalization (Section 306/306A CZMA).

The 2008 budget continues the proposal to increase the amount of CZM grant funding that is awarded competitively under sections 306A and 309, with a goal of awarding 50 percent of CZMA funding competitively within in three years. Increased competition and funding flexibility will enable the coastal management program to better focus on significant national issues. NOAA is currently working the coastal management community to undertake a revisioning effort to better define and prioritize those significant national issues. The results of this revisioning effort will be reflected in the grants awards process.

NATIONAL ESTUARINE RESEARCH RESERVE SYSTEM (NERRS)

NERRS (Section 315 CZMA) is a national network of estuarine protected areas representing the diverse biological and physical characteristics of estuarine systems of the United States. Reserves are owned and operated by state agencies or universities and serve as local, regional, and national sources of technical information and testing grounds for the improvement of coastal resource management. As of FY 2006, there are 27 designated reserves in 22 states and territories covering over one million acres of estuarine lands and waters.

CZM PROGRAM ADMINISTRATION

The programs described above, CZM Grants and NERRS, are administered with the resources provided in the budget for CZM Program Administration. In addition to the processing of over 100 grant awards each year, OCRM staff carries out numerous critical functions necessary to execute these programs. These functions include:

- Providing management assistance to states in the development, implementation, and improvement of state CZM program and estuarine research reserves;
- Reviewing federal agency actions for compliance with the federal consistency provisions of Section 307 of the CZMA;
- Conducting outreach and education activities concerning coastal issues;
- Conducting programmatic evaluations of each state CZM program and NERR every three to five years;
- Analyzing national issues and trends in coastal resource management;

- Providing policy guidance and assistance to states on interpretation of CZMA requirements, as well as those of other federal statutes and programs, and;
- Administering outstanding loans and repayments to the Coastal Zone Management Fund from the Coastal Energy Impact Assistance Program.

MARINE PROTECTED AREAS (MPA) PROGRAM

NOAA's MPA Program, in coordination with the Department of the Interior, fills a long-standing need for objective science, analysis and tools that support the effective and equitable use of MPAs for diverse conservation and management objectives. The MPA Center's primary goal is to work with MPA managers and stakeholders to develop a representative national system of MPAs to more effectively conserve and protect our significant areas of natural and cultural marine heritage. Moreover, the Center coordinates the work of these disparate federal, state and tribal MPA programs to address conservation goals that could not be accomplished by individual programs. With a small headquarters in Silver Spring, MD, the MPA Center has regional and scientific support in Boston, Massachusetts, and Monterey and Santa Cruz, California. A diverse MPA Federal Advisory Committee (MPAFAC) -- including representatives of industry, user groups, scientists, and others -- was established in 2003 to provide advice on the establishment and management of MPAs.

PROPOSED LEGISLATION:

NOAA will continue to work with Congress to reauthorize the Coastal Zone Management Act.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Ocean and Coastal Management	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Coastal Management					
CZM Grants	66,080	55,000	66,146	66,146	-
CZMA Program Administration	3,885	6,000	7,854	7,854	-
National Estuarine Research Reserve System	16,171	16,000	16,806	16,806	-
Nonpoint Pollution Implementation Grants	2,754	1,500	-	-	-
Marine Protected Areas	1,480	-	2,128	2,128	-
Baldwin Educational Program	986	-	-	-	-
TOTAL	91,356	78,500	92,934	92,934	-
FTE	55	56	56	56	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

No program changes are proposed for FY 2008.

Subactivity: Ocean and Coastal Management
Line Item: Ocean Management (Marine Sanctuary Program)

GOAL STATEMENT:

The goal of the National Marine Sanctuaries Act (NMSA), as amended, (16 U.S.C. 1431 et seq.), administered by the National Marine Sanctuary Program (NMSP), is to designate, manage, and protect areas of the marine environment which possess conservation, recreational, ecological, historical, research, educational or aesthetic qualities which give them special national significance. The primary purpose of the NMSA is resource conservation and protection.

BASE DESCRIPTION:

In the Ocean Management Line Item, NOAA administers the National Marine Sanctuary System under authority of the NMSA. There are 13 designated national marine sanctuaries and a National Monument in the Northwestern Hawaiian Islands (NWHI). The NWHI Monument (established by the President on June 15, 2006) is the largest single area dedicated to conservation and stretches 1,200 miles, the distance from Chicago to Miami. In addition to the NWHI Monument the 13 designated sanctuaries include: Monitor (NC), Channel Islands (CA), Gray's Reef (GA), Gulf of the Farallones (CA), Fagatele Bay (AS), Cordell Bank (CA), Florida Keys (FL), Flower Garden Banks (TX/LA), Gerry Studds Stellwagen Bank (MA), Monterey Bay (CA), Olympic Coast (WA), Thunder Bay Underwater Preserve (MI) and Hawaiian Islands Humpback Whale (HI). The sanctuaries range in size from one-quarter square mile in Fagatele Bay to over 5,300 square miles in Monterey Bay. Together, these sanctuaries encompass over 18,000 square miles of waters and marine habitats. The special habitats of the sanctuaries include deep ocean and near-shore coral reefs, live bottom, whale migration corridors, deep sea canyons, areas of deep water upwelling, submerged banks that rise close to the ocean surface, kelp forests, and sea grass beds. With the increasing environmental pressures on our Nation's coastal areas, the importance of maintaining a system of marine protected areas is evident. The National Marine Sanctuary System is increasing our knowledge and understanding of complex marine ecosystems. By monitoring human and natural changes, NOAA's marine sanctuaries help preserve the Nation's marine environments.

To support all of these functions, the NMSP has implemented a Small Boat Program, to ensure the safe and efficient operations of the small boats, including maintenance. An inventory of all small boats, incorporating a record of safety inspections, operators, licenses, and safety classes, is also maintained in accordance with the NOS Small Boat Policy. To address the increased requirement for new or replacement boats, the Program also is implementing the recommendations identified in its "Small Boat Requirements Study" (November 2005).

Base activities support the objective, "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management" under the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental needs."

NATIONAL MARINE SANCTUARY PROGRAM (NMSP)

The NMSP operates and coordinates the Nation's system of marine sanctuaries. Individual sanctuary offices are responsible for the daily operation of a wide variety of education, research, monitoring and management programs. The activities that each site undertakes include: development, implementation, and systematic review of comprehensive management plans to protect these unique areas; development and implementation of local research and monitoring programs to better understand the resources and potential impacts on those resources; development and implementation of cultural resource programs to survey and inventory resources to ensure their long-term protection; development and implementation of education and outreach activities to inform the public about the value of marine resources and how human activities impact the marine environment; enforcement of sanctuary regulations; permitting of otherwise prohibited activities to allow valuable research and education activities; management of volunteer programs that monitor and educate on marine resources; and management of citizen advisory councils to ensure that each sanctuary is responsive to community needs. In addition, each site is engaged in a number of partnership relationships with other federal agencies, state agencies, local universities, and other local institutions.

Programmatic oversight, guidance, and support from the headquarters office ensure that the sites function as a coordinated system. Headquarters functions include the development of programmatic initiatives, such as system-wide research, monitoring, cultural resource, education, and outreach programs; policy development; budget development and tracking; legislative and regulatory initiatives; review and revisions of management plans; development and designation of new sites; and overall guidance and program direction. These functions ensure that the NMSP is an integrated system that has greater national impact than the sum of the individual site actions.

PROPOSED LEGISLATION:

NOAA will continue to work with Congress to reauthorize the National Marine Sanctuaries Act.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Ocean and Coastal Management	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Ocean Management (Marine Sanctuary Program)					
Marine Sanctuary Program Base	34,805	32,000	35,764	43,764	8,000
Northeast Hawaiian Islands Research / HI Institute of Marine Biology	2,220	-	-	-	-
Northwest Straits Citizens Advisory Commission	1,381	-	-	-	-
TOTAL	38,406	32,000	35,764	43,764	8,000
FTE	137	137	137	141	4

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Northwestern Hawaiian Islands Marine National Monument (4 FTE and +\$8,000,000): NOAA requests an increase of \$8,000,000 and 4 FTE for management responsibilities associated with the Northwestern Hawaiian Islands (NWHI) Marine National Monument. This Presidential initiative permanently and immediately protects the NWHI. This National Monument is the largest marine protected area in the world dedicated to conservation. In accordance with the Presidential mandate, this marine national monument requires immediate and permanent protection for nearly 140,000 square nautical miles, including the 10 islands and atolls and surrounding waters and submerged lands of the NWHI. To fulfill the requirements of Presidential Proclamation 8031, which established the Northwestern Hawaiian Islands Marine National Monument and meet the high priority needs outlined in the draft monument management plan, additional resources are necessary.

The Presidential Proclamation states,

“The Secretary of Commerce through the National Oceanic and Atmospheric Administration (NOAA), will have the primary responsibility regarding management of the marine areas, in consultation with the Secretary of the Interior. The Secretary of the Interior, through the Fish and Wildlife (FWS), will have sole responsibility for management of the areas of the monument that overlay the Midway Atoll National Wildlife Refuge, the Battle of Midway National Memorial, and the Hawaiian Islands National Wildlife Refuge, in consultation with the Secretary of Commerce.”

Statement of Need:

In order to fulfill the President's commitments, the NMSP requires an additional \$8,000,000 for operation of the Monument in FY2008. These additional funds are needed in order to successfully carry out the action plans and activities outlined in the Monument management plan including ecosystem-level monitoring and research, permitting, enforcement, ocean literacy (education), and Midway Atoll infrastructure and field operations among others. The NMSP will also require 4 additional FTE positions to implement and carry out management activities, particularly impact mitigation, permitting, and research.

Proposed Action:

As mandated by the President, the National monument will:

- Preserve access for Native Hawaiian culture activities;
- Provide for carefully regulated educational and scientific activities;
- Enhance visitation in a special area around Midway Island;
- Prohibit unauthorized access to the monument;
- Phase out commercial fishing over a five-year period; and
- Ban other types of resource extraction and dumping of waste.

To fulfill the requirements of Proclamation 8031, which established the Northwestern Hawaiian Islands Marine National Monument and meet the priority management needs outlined in the draft monument management plan additional resources are need in FY 2008 beyond those originally anticipated during sanctuary designation. The \$8.0M provides funds for the following areas:

1) Management and Administration (\$2,542,000). These funds provide for:

- rent and utilities for the Honolulu and Hilo offices;
- operating and maintaining information systems for management, research, enforcement, permitting, and education purposes; and
- funding State of Hawaii participation for co-management and other partnerships with various Hawaii institutions for education.

2) Vessel Tracking and Enforcement (\$1,940,000). The President's proclamation details a number of activities that are prohibited or regulated within the Mounument. These funds provide for:

- conducting a basic threat assessment;

- vessel tracking and remote surveillance efforts;
- support for on-the-water patrol and response; and
- coordination on joint enforcement issues through NWHI Interagency Enforcement Team.

3) Visitors and Education (\$1,032,000). As mandated by the President, these funds will help bring an understanding of the unique ecosystems of the NWHI to all Americans and the world, specifically by:

- supporting ocean literacy efforts for field-based education programs at Midway;
- developing and acquiring distance learning technologies to “bring the place to the people;” and
- developing outreach materials and educational events/programs for the public regarding the NWHI Marine National Monument.

4) Coordinated Field Operations (\$1,390,000). Establishment of field operations capacity at Midway Atoll is critical to meeting requirements of the Proclamation. The requested increase will establish a NOAA presence at Midway in order to participate fully as a Monument co-trustee. Activities include:

- installation of two 50,000 gallon diesel fuel tanks and one 5,000 gallon gas tank required for small vessel operations;
- initiation of the harbor build-out (upgrade) project at Midway;
- continuation of planning and NEPA document preparations;
- initiation of the build out of dive operations, including recompression chamber, compressor, and small boat needs; and
- development of plans to satisfy all future infrastructure requirements.

5) Ecosystem Characterization and Monitoring (\$906,000). Knowledge of the ecosystem is critical to implementing seamless management for this vast area. These funds provide for:

- funding for ecosystem characterization, monitoring and research efforts focused on the 95 percent of the monument that is deeper than 100ft;
- collaborations with the NOAA Pacific Islands Fisheries Science Center regarding establishment of a baseline for bottomfish and the monitoring of changes over time;
- analyzing and integrating data to inform management decisions; and
- collaboration with monument agencies and other partners on biogeographic assessments and deep-water mapping

6) Marine Debris (\$190,000). Provides funds for the removal of debris. Also, requested funds will increase ‘detection-at-sea’ methods to prevent derelict fishing gear from reaching fragile shallow-water habitats where it can cause greater damage and is more costly to clean up.

Benefits:

The Northwestern Hawaiian Islands are a high priority in the President’s Ocean Action Plan. This request provides for the management of the Monument as outlined by the Presidential Proclamation. The Monument permanently protects the area’s pristine coral reefs and unique marine species. This status provides immediate and permanent protection for 140,000 square miles, including 10 islands and atolls, surrounding waters and submerged islands. In addition, investments in the NWHI Marine National Monument will provide a living laboratory that offers opportunities to pursue advances in science and allow us to better manage ocean ecosystems.

Performance Measures

This increase will support the objective, “Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management” under the Department of Commerce Strategic Goal of “Observe, protect, and manage the Earth’s resources to promote environmental stewardship. Implementation of the management plan will reach 100 percent in FY 2012.

Performance Goal: Ecosystem Performance Measure: Percent of management plan implemented	FY 2006	FY2007	FY 2008	FY 2009	FY 2010	FY 2011
Without increase	0	0	0	0	0	0
With increase	0	10%	30%	50%	70%	90%

Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service
Contribution to the NOAA Strategic Planning Goals and Objectives
(Dollar amounts in thousands)

National Ocean Service	FY 2006 Actuals	FY 2007 Currently Available	FY 2008 Base Program	FY 2008 Estimate	Inc/Dec from Base
	Amount	Amount	Amount	Amount	Amount
Commerce and Transportation					
Commerce and Transportation	174,848	104,565	132,838	134,538	1,700
Total CT	174,848	104,565	132,838	134,538	1,700
Ecosystems					
Ecosystems	272,081	178,038	222,925	241,925	19,000
Total ECO	272,081	178,038	222,925	241,925	19,000
Mission Support					
MS	23,998	26,592	31,222	29,422	(1,800)
Total MS	23,998	26,592	31,222	29,422	(1,800)
Weather and Water					
Weather and Water	39,960	5,945	11,904	30,904	19,000
Total WW	39,960	5,945	11,904	30,904	19,000
Total National Ocean Service	510,887	315,140	398,889	436,789	37,900

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Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar amounts in thousands)

Activity: National Ocean Service		FY 2006		FY 2007		FY 2008		FY 2008		Inc/Dec	
		Actuals		Currently Available		Base Program		Estimate		from Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Navigation Services											
Mapping & Charting	Pos/BA	307	112,644	313	68,300	313	91,906	313	92,606	-	700
	FTE/OBL	294	109,807	311	73,212	313	91,906	313	92,606	-	700
Geodesy	Pos/BA	175	31,540	175	22,000	175	24,802	175	24,802	-	-
	FTE/OBL	141	31,840	183	22,009	183	24,802	183	24,802	-	-
Tide & Current Data	Pos/BA	118	27,013	118	22,000	118	25,363	118	26,363	-	1,000
	FTE/OBL	106	25,260	107	24,392	107	25,363	107	26,363	-	1,000
Total: Navigation Services	Pos/BA	600	171,197	606	112,300	606	142,071	606	143,771	-	1,700
	FTE/OBL	541	166,907	601	119,613	603	142,071	603	143,771	-	1,700
Ocean Resources Conservation and Assessment											
Ocean Assessment Program (OAP)	Pos/BA	69	120,570	69	36,000	69	55,168	73	85,168	4	30,000
	FTE/OBL	134	122,491	65	36,288	65	55,168	68	85,168	3	30,000
Response and Restoration	Pos/BA	115	36,394	115	22,600	115	25,178	115	23,378	-	(1,800)
	FTE/OBL	103	37,235	110	23,248	110	25,178	110	23,378	-	(1,800)
National Centers for Coastal Ocean Science	Pos/BA	247	52,964	247	33,740	247	47,774	247	47,774	-	-
	FTE/OBL	180	53,655	241	33,881	241	47,774	241	47,774	-	-
Total: Ocean Resources	Pos/BA	431	209,928	431	92,340	431	128,120	435	156,320	4	28,200

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
 (Dollar amounts in thousands)

Conservation and Assessment	FTE/OBL	417	213,381	416	93,417	416	128,120	419	156,320	3	28,200
Ocean and Coastal Management											
Coastal Management	Pos/BA	72	91,356	73	78,500	73	92,934	73	92,934	-	-
	FTE/OBL	58	98,576	56	79,868	56	92,934	56	92,934	-	-
Ocean Management (Marine Sanctuary Program)	Pos/BA	136	38,406	136	32,000	136	35,764	142	43,764	6	8,000
	FTE/OBL	135	39,940	137	32,101	137	35,764	141	43,764	4	8,000
Total: Ocean and Coastal Management	Pos/BA	208	129,762	209	110,500	209	128,698	215	136,698	6	8,000
	FTE/OBL	193	138,516	193	111,969	193	128,698	197	136,698	4	8,000

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Ocean Service
 Subactivity: Ocean Resources Conservation and Assessment

Title	Grade	Number	Annual Salary	Total Salaries
Physical Scientist	Silver Spring, MD	1	91,407	91,407
Program Analyst	Charleston, SC	3	76,082	228,246
Total		4		319,653
Less Lapse	25%	-1		(79,913)
Total full-time permanent (FTE)		3		239,740
2007 Pay Adjustment (2.2%)				5,274
2008 Pay Adjustment (3%)				7,350
Total				252,364
Personnel Data		Number		
Full-time permanent		3		
Other than full-time permanent		0		
Total		3		
Authorized Positions				
Full-time permanent		4		
Total		4		

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Ocean Service
 Subactivity: Ocean and Coastal Management

Title	Grade	Number	Annual Salary	Total Salaries
Physical Scientist	Honolulu, HI ZP4	1	87,533	87,533
Program Analyst	Honolulu, HI ZP3	4	62,291	249,164
Regulatory/Permit Specialist	Honolulu, HI ZP4	1	87,533	87,533
Total		6		424,230
Less Lapse	25%	-2		(106,058)
Total full-time permanent (FTE)		4		318,173
2007 Pay Adjustment (2.2%)				7,000
2008 Pay Adjustment (3%)				9,755
Total				334,927
Personnel Data		Number		
Full-time permanent		4		
Other than full-time permanent		0		
Total		4		
Authorized Positions				
Full-time permanent		6		
Total		6		

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
 (Dollar amounts in thousands)

Activity: National Ocean Service
 Subactivity: Navigation Services

	Object Class	2008 Increase
25.1	Advisory and assistance services	550
26	Supplies and materials	80
31	Equipment	1,070
99	Total Obligations	1,700

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean Resources Conservation and Assessment

Object Class	2008 Increase
11 Personnel compensation	
11.1 Full-time permanent	239
11.5 Other personnel compensation	7
11.9 Total personnel compensation	246
12 Civilian personnel benefits	73
21 Travel and transportation of persons	202
24 Printing and reproduction	24
25.1 Advisory and assistance services	2,400
25.2 Other services	12,663
25.3 Other purchases of goods and services from Govt accounts	3,514
26 Supplies and materials	46
31 Equipment	197
41 Grants, subsidies and contributions	10,635
99 Total Obligations	30,000

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
 (Dollar amounts in thousands)

Activity: National Ocean Service
 Subactivity: Ocean Resources Conservation and Assessment

	Object Class	2008 Decrease
22	Transportation of things	(50)
25.2	Other services	(1,700)
31	Equipment	(50)
99	Total Obligations	(1,800)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean and Coastal Management

Object Class	2008 Increase
11 Personnel compensation	
11.1 Full-time permanent	318
11.5 Other personnel compensation	10
11.9 Total personnel compensation	328
12 Civilian personnel benefits	96
21 Travel and transportation of persons	315
22 Transportation of things	10
23.1 Rental payments to GSA	615
23.3 Communications, utilities and miscellaneous charges	605
24 Printing and reproduction	125
25.2 Other services	4,601
26 Supplies and materials	220
31 Equipment	285
41 Grants, subsidies and contributions	800
99 Total Obligations	8,000

NATIONAL MARINE FISHERIES SERVICE
OPERATIONS RESEARCH AND FACILITIES
FY 2008 OVERVIEW

SUMMARIZED FINANCIAL DATA

(\$ in thousands)

Operations Research and Facilities	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Protected Species Research and Management	144,561	108,000	161,245	165,095	3,850
Fisheries Research and Management	285,364	256,800	308,271	325,341	17,070
Enforcement and Observers / Training	66,722	73,500	83,973	86,973	3,000
Habitat Conservation & Restoration	174,535	40,000	40,415	50,415	10,000
Other Activities Supporting Fisheries	69,906	42,800	65,307	76,755	11,448
Alaska Composite Research and Development	50,298	20,000	0	0	0
TOTAL	791,386	541,100	659,211	704,579	45,368
FTE	2,551	2,586	2,596	2,625	29

For FY 2008, NOAA requests an increase of \$45,368,000 and 29 FTE for a total of \$704,579,000 for the National Marine Fisheries Service (NMFS) Operations, Research and Facilities account.

NOAA is responsible, in partnership with other Federal agencies and State and local governments, for managing the Nation's coastal zone and protected areas; planning for, mitigating, and responding to hazardous events; restoring degraded habitats; protecting ocean, coastal, and Great Lakes resources; ensuring wise and appropriate use of ocean, coastal, and Great Lakes resources; and providing advice, technical tools, information, and training to coastal residents, communities, and other decision makers and users of ocean, coastal, and Great Lakes areas. NOAA is also responsible for protecting, restoring, and managing species listed under the Endangered Species Act and Marine Mammal Protection Act, as well as their habitats, and for managing and rebuilding fish stocks to population levels that will support economically viable and sustainable harvest opportunities.

To accomplish these longer-term objectives, NOAA will invest in improving our understanding of ecosystems; identifying regional ecosystems; developing ecosystem health indicators; and applying new methods of governance to establish the necessary knowledge, tools, and capabilities to fully implement an ecosystem approach to management of coastal, ocean, and Great Lakes resources. The following are strategies for implementing the ecosystem goal's objectives:

- Engage and collaborate with our partners to achieve regional objectives by delineating regional ecosystems, forming regional ecosystem councils, and implementing cooperative strategies to improve regional ecosystem health.
- Manage uses of ecosystems by applying scientifically sound observations, assessments, and research findings to ensure the sustainable use of resources and to balance competing uses of coastal and marine ecosystems.
- Improve resource management by advancing our understanding of ecosystems through better simulation and predictive models. Build and advance the capabilities of an ecological component of the NOAA global environmental observing system to monitor, assess, and predict national and regional ecosystem health, and to gather information consistent with established social and economic indicators.
- Develop coordinated regional and national outreach and education efforts to improve public understanding and involvement in stewardship of coastal and marine ecosystems.
- Engage in technological and scientific exchange with our domestic and international partners to protect, restore, and manage marine resources within and beyond the nation's borders.

NMFS Mission Overview:

NOAA's National Marine Fisheries Service (NMFS) is responsible for the management and conservation of living marine resources within the U. S. Exclusive Economic Zone (EEZ) extending from three to 200 nautical miles offshore. NMFS also provides critical support, scientific, and policy leadership in the international arena and plays a key role in the management of living marine resources in coastal areas under State jurisdiction. NMFS implements international agreements on conservation and management measures through science-based conservation and management actions aimed at sustaining long-term use and promoting the health of coastal and marine ecosystems. The result is maximized benefits to the Nation from the use of living marine resources. Programmatic authority for fisheries management, species protection, and habitat conservation activities are derived primarily from the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), Sustainable Fisheries Act (SFA), Marine Mammal Protection Act (MMPA), and Endangered Species Act (ESA). Other acts provide additional authority for enforcement, seafood safety, habitat restoration, and cooperative efforts with States, interstate fish commissions, and other countries. All of these activities rely on a strong scientific and research competency to support the challenging public policy decision process associated with NMFS' stewardship responsibility.

Work is conducted by NMFS field elements with oversight, review, and direction by NMFS headquarters in Silver Spring, Maryland. The field structure consists of six Regional Offices, each with a Science Center that conducts research and directs the work carried out by the other laboratories and satellite/special purpose facilities in that region.

Major NMFS facilities are located at the following sites:

Northeast: Regional Office - Gloucester, MA
 Science Center - Woods Hole, MA
 Major Laboratories - Milford, CT; Narragansett, RI; J.J. Howard, Sandy Hook, NJ
 Satellite/Special Purpose Facilities - Smithsonian (National Systematics Lab), Washington, DC

Southeast: Regional Office - St. Petersburg, FL
 Science Center - Miami, FL
 Major Laboratories - Beaufort, NC; Galveston, TX; Panama City, FL; Pascagoula, MS
 Satellite/Special Purpose Facilities - Stennis Space Center (Bay St. Louis, MS)

Southwest: Regional Office - Long Beach, CA
 Science Center - La Jolla, CA
 Major Laboratories - Santa Cruz, CA
 Satellite/Special Purpose Facilities - Pacific Grove, CA

Northwest: Regional Office - Seattle, WA at Sand Point
 Science Center - Seattle, WA at Montlake
 Satellite/Special Purpose Facilities - Manchester, WA; Mukilteo, WA; Pasco, WA; Newport, OR; Hammond, OR

Alaska: Regional Office - Juneau, AK
 Science Center - Seattle, WA at Sand Point
 Major Laboratories – Ted Stevens Marine Research Institute, AK; Auke Bay, AK; Kodiak, AK
 Satellite/Special Purpose Facilities - Little Port Walter, AK

Pacific Islands: Regional Office – Honolulu, HI
 Science Center – Honolulu, HI

Research and Development Investments

The NOAA FY 2008 Budget estimates for its activities, including research and development programs, are the result of an integrated, requirements-based Planning, Programming, Budgeting, and Execution System (PPBES) that provides the structure to link NOAA’s strategic vision with programmatic detail, budget development, and the framework to maximize resources while optimizing capabilities. The PPBES process incorporates the President’s Management Agenda and the Office of Science and Technology Policy’s Research and Development Investment Criteria (relevance, quality, and performance) for NOAA’s R&D programs, and leads to NOAA budget proposals that reflect the R&D investment criteria.

Significant Adjustments to Base:

NOAA requests an increase of 10 FTE and \$10,223,000 to fund adjustments to current programs for National Marine Fisheries Service activities. Within this increase, program totals will fund inflationary adjustments for labor and non-labor.

NOAA requests the following transfers between accounts for a net change to NOAA of zero.

From	Line	To	Line	Amount
NMFS	Alaska Composite Base	NMFS	Marine Mammals; American Fisheries Act; Survey and Monitoring Project; Observers Training; and Magnuson-Stevens Act Implementation off Alaska	\$36,448,000
NMFS	Fisheries Research and Management Base	NMFS	Aquaculture	\$1,034,000

Subactivity: Protected Species Research and Management
Line Item: Protected Species

GOAL STATEMENT:

Provide accurate and timely information and analyses for the conservation of the Nation's living marine resources, and implement and monitor living marine resource management measures to recover protected species in support of the National Oceanic and Atmospheric Administration (NOAA) Strategic Plan goal to "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management." The ultimate desired outcome is to recover and sustain all protected species to be fully functioning components of their ecosystems.

Base activities support the Departmental objective and NOAA goal to "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management," under the Department of Commerce Strategic Plan Goal to "Observe, protect, and manage the Earth's resources to promote environmental stewardship."

BASE DESCRIPTION:

The Protected Species Program (PSP) is responsible for the conservation of species through implementation of the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA), and other statutes and international treaties and conventions. Protected species are defined as all marine mammals stocks, and all marine and anadromous species listed as threatened or endangered under the ESA. The PSP administers the conservation and management activities, while the Ecosystem Observations Program (EOP) and Ecosystem Research Program (ERP) support the PSP by providing the monitoring, assessment, and research needed for management.

Protected Species Science

Protected species science is administered by the EOP and ERP and conducted within NMFS, other NOAA programs, and non-Federal partners. The EOP is responsible for surveys and assessments, while the ERP is responsible for directed research. Activities consist of investigation and research to inform the recovery, and conservation of protected species, including understanding the dynamics of protected living marine resources within their ecosystems. Protected species science investigates the status of protected species and the effects of human activities (e.g., commercial fishing, commercial and military ship activities, hydroelectric dams and water diversions, polluted effluents, ocean dumping, dredging, and logging) on their continued existence.

Protected species science focuses on three main areas: surveys, assessments, and directed research. Surveys involve the systematic gathering of information on species, including regional densities and overall abundance, seasonal distributions and movements, and sources of human-related mortality and serious injury. Assessments use surveys and other information to develop "status of stocks" assessments in the short term; over the long term they use time series of those assessments and predictive statistical modeling methods to forecast protected species population trends in the context of conservation

actions and natural environmental factors. Directed research focuses on specific questions concerning the effects of human activities on protected species and the resources on which they depend. This research may include more detailed information on habitat use; spatial and temporal distributions; and biological, behavioral, and environmental effects.

Surveys. NMFS uses vessel, aircraft, and remote sensing platforms to obtain fundamental information to support protected species management. Systematic, statistically based surveys collect information on the seasonal distribution of, and habitat types used by, protected species. Additional information collected in conjunction with surveys related to life history (e.g., growth rates, sex and age structure of the population, age of sexual maturity, age-specific birth and death rates, and longevity) allow scientists to assess the status of protected species populations more completely than if they relied on abundance and trend information alone. In recent years, newly developed passive acoustic detection methods have demonstrated the potential for augmenting traditional visual-based surveys by allowing the expansion of surveys in time and space, during conditions of poor visibility, and at night. Autonomous sensing devices (e.g., acoustic recorders) enable cost-effective detection of protected species in habitats and areas not suited to traditional surveys (e.g., polar seas and open ocean during winter) and at minimal risk to human safety. Acoustic monitoring also gathers information on the sources and intensities of ocean noise to which protected species are exposed in the regions they inhabit. Biomolecular genetics and modern approaches to stock identification and stock structure provide data necessary to distinguish population stocks and management units of protected species in support of appropriate and prudent listing determinations.

Assessments. Status of stocks assessments and analyses of population trends over time provide the biological basis for management actions to effectively recover and conserve protected species and minimize the impacts of human activities under Section 7 of the ESA. NMFS is responsible for undertaking timely assessments of the listed species protected under the MMPA and the ESA. Depleted species must be assessed annually, ESA-listed species must be assessed at five-year intervals, and non-listed species must be assessed at regular intervals to track population trends. Assessments inform management on the status of protected species populations and the effects of regulatory actions (e.g., seasonal area closures, bycatch reduction measures, and ocean noise reduction) designed to mitigate harm to and improve the status of protected species.

Directed research. Several emerging issues affect the recovery and wellbeing of protected species and require scientifically based information to support development of meaningful mitigation and regulatory actions. Among these emerging challenges are reducing bycatch in commercial fisheries, reducing the threat of commercial shipping vessel collisions with large whales, and evaluating the effects of anthropogenic ocean noise on protected species. Directed research programs expand and implement novel research and analyses to: 1) identify and quantify the effects of anthropogenic and natural factors on protected species populations and the variability of these effects over time and space; 2) identify and evaluate options for management tools to be used in a wide variety of issues relating to protected species management; and 3) conduct ecosystem and habitat research (e.g., environmental change, food requirements, and habitat requirements) to support an ecosystem approach to protected species management.

Protected Species Conservation and Management

The Protected Species Program shares the responsibility for implementing the ESA and MMPA with the Department of the Interior's Fish and Wildlife Service. NOAA is responsible for the conservation of living marine resources, which includes most marine mammals, most marine and anadromous

fishes, marine turtles at sea, and species of marine invertebrates and marine plants. The Department of the Interior is responsible for the conservation of terrestrial and aquatic (freshwater) organisms and marine turtles on their nesting beaches. The PSP is charged with three main tasks: pursuing proactive conservation efforts, formally listing species in need of protection, and recovery and conservation of species once they are listed.

Proactive conservation efforts serve to prevent the decline and promote the health of species that are approaching the need for listing under the ESA and MMPA. Species in this category are referred to as “species of concern” or “candidate species.” Proactive conservation is a cost effective approach to management, since efforts taken under proactive conservation can prevent the need for listing species under the ESA or MMPA. Preventing listings avoids the potential costs associated with the prescriptive recovery requirements of ESA and MMPA once a species is listed.

Listing of species. Once a species has become threatened or endangered, the PSP is responsible for formally listing the species under the ESA and designating its critical habitat.

After the listing process is completed, the bulk of the program’s work is on conservation and recovery. This involves management and planning to identify, eliminate or minimize human impacts and provide for stable or increasing species levels. Much of this work is conducted in cooperation with Federal, State, tribal, local, international, and private partners.

The Protected Species Program leads outreach and education activities, and international protected species conservation actions. This work cuts across all program sectors, from proactive efforts to recovery, as informing constituents about why and how to conserve protected species can promote understanding and support. Information is developed for both formal (curricula, exhibits) and informal (web-based) education and is delivered through partnerships within NOAA (e.g., National Marine Sanctuary Program). International conservation measures are crucial to successful recovery and conservation as the majority of marine protected species are highly migratory, regularly traversing international boundaries. The PSP’s recovery and conservation capability can be further divided into the following specific program activities.

Recovery planning and implementation. Recovery plans and marine mammal conservation plans are developed or updated for all ESA-listed species and for all marine mammals designated as depleted under MMPA. NMFS recently completed guidance for recovery planning efforts to ensure that all recovery plans meet the requirements of the ESA, involve constituents in their development, identify and quantify the threats to a species and state clear goals for recovery. Recovery plans are key to informing management decisions under ESA section 7 and for assessing the need for directed research. As recovery plans are completed, NMFS works with Federal, State, and local agencies and the public to conduct recovery actions. Recovery programs are evaluated in a five-year review to assess the status of the species and the effectiveness of the recovery program in meeting its goals.

Partnerships with States, tribes, and local entities. The PSP manages agreements with States and Territories under section 6 of the ESA and provides grants to undertake recovery and conservation actions for listed, recently de-listed, and candidate species. Funding supports the development and implementation of management strategies, scientific research, or public outreach and education activities. NMFS currently has section 6 agreements with 11 States, and the PSP is actively working to develop additional agreements. NMFS has also entered into agreements with West Coast States and tribes to

implement the Pacific Coastal Salmon Recovery Fund (PCSRF). The PSP administers the PCSRF by coordinating development of recovery projects with states, and reporting their performance annually to Congress. The PSP has entered into agreements with Alaska Native groups regarding the cooperative management of harvested marine mammal stocks in Alaska. The PSP also works to develop Habitat Conservation Plans under the ESA with non-Federal entities wishing authorization to “take” listed species incidental to an otherwise lawful activity. Currently these efforts are focused on Pacific salmon and marine turtles, and they are being expanded to other species.

Federal agency consultations. The greatest amount of PSP resources are spent on ESA section 7 consultations. Section 7 of the ESA requires Federal agencies to ensure that any action they fund, authorize, or undertake is not likely to jeopardize the continued existence of threatened species or endangered species or result in the destruction or adverse modification of critical habitat that has been designated for such species. The PSP helps agencies fulfill this responsibility by assessing the effects of their proposed actions on listed species and critical habitat. This activity consists of conducting the section 7 consultations, developing and delivering the technical training to consulting biologists and managers, providing quality control review of consultations, and developing and revising guidance. The PSP is required to complete consultation with action agencies under strict timeframes. The PSP has invested heavily in efficiency improvements through streamlining agreements and the use of programmatic consultations.

Marine animal health and stranding response. PSP’s Marine Animal Health and Stranding Response program coordinates response activities through a stranding network, using funds from the Prescott Grant program; administers the National Marine Mammal Tissue Bank; and maintains databases for tracking marine mammal tissue and stranding response activities.

Fishery interactions. This PSP activity reduces the impact of commercial and recreational fisheries on protected species. Efforts include management of the NMFS Tuna/Dolphin program, MMPA fishery registration and authorization, MMPA take reduction planning, and take reduction of sea turtles in fisheries.

Permitting and take authorizations. PSP issues permits and authorizations for the direct and indirect take of listed species under sections 4(d) and 10 of the ESA and sections 101, 104, and 118 of the MMPA. This permitting activity applies to the entire public, unlike ESA section 7 that applies only to Federal activities.

PROPOSED LEGISLATION:

The Administration will work with Congress to reauthorize the Marine Mammal Protection Act, P.L. 103-238, and the Endangered Species Act (ESA), P.L. 100-478.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Protected Species Research and Management	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Protected Species					
Protected Species Base	25,314	22,870	32,403	34,253	1,850
Atlantic Salmon	4,374	3,086	5,926	5,926	-
Pacific Salmon	56,337	56,000	67,735	67,735	-
Marine Turtles	13,438	6,877	9,790	9,790	-
Marine Mammals	40,166	14,827	37,221	39,221	2,000
Other Protected Species	4,932	4,340	8,170	8,170	-
TOTAL	144,561	108,000	161,245	165,095	3,850
FTE	646	657	660	668	8

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Protected Species Management (+ 8 FTEs and \$1,850,000): NOAA requests an increase of \$1,850,000 for the Protected Resources Research and Management Programs line item. The increase will be used to assess the effects of increased ocean noise and other impacts on protected resources by providing NOAA the needed additional resources to evaluate the rising number of requests for permits and authorizations for national defense readiness and energy exploration and development activities. The increase will allow for better-informed determinations in authorizing these activities under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA).

Statement of Need

The taking of resources protected under the MMPA and the ESA is prohibited unless authorized by permit or exemption. Increases in national defense readiness training and offshore energy exploration and development will more than double NOAA's permit workload. As a result, NOAA needs additional staff to be able to issue timely and accurate authorizations for these critically important activities. NOAA needs to work with the Navy to authorize military readiness activities under the MMPA and ESA, focusing on the effects of sonar transmissions on protected resources and the authorization of these activities under section 101(a)(5)(A) and 101(a)(5)(D) of the MMPA and section 7 of the ESA. NOAA and the Navy are working together to comply with the requirements of these statutes. Twenty-five naval exercises are planned between January 2007 and June 2009 nationwide for which the Navy will need Incidental Harassment Authorizations (IHA) under the MMPA, and a similar number of exercises will continue in subsequent years. Likewise, because

energy self-sufficiency is a national priority, energy exploration and development activities have increased and will continue to do so. Increased ocean noise due to seismic surveys has a direct effect on protected species that must be assessed and considered before authorizations are granted. The Navy, the Minerals Management Service, and NOAA will need to consult on the effects of proposed actions on ESA-listed resources pursuant to section 7 of the ESA. These national priority activities represent a new and increased workload for the Agency, well above its current MMPA and ESA workload. The Navy plans to conduct an environmental review for the activities in each of these areas in a Programmatic Environmental Impact Statement. Although NOAA will gain efficiencies in the authorization process by conducting programmatic authorizations, increased resources are still needed to review the Navy's programmatic impact statements and avoid even higher costs should the programmatic reviews not be completed. After this review, NOAA can develop programmatic authorizations for the Navy's operational areas and begin to move away from the need to issue an IHA for each planned activity.

Proposed Action

NOAA is addressing the increase in its workload by: (1) considering the defense readiness exercises planned over the next 2 years and preparing individual IHAs under the MMPA for the Navy's proposed actions; (2) completing interagency consultation under section 7 of the ESA for planned Navy and energy-related activities that may affect protected species; and (3) addressing the Navy's 17 nationwide operational areas, as well as the Mineral Management Service's plans for exploration and development programmatically where possible, and initiating a long-term solution to the regular need for authorizations.

Benefits

Whenever programmatic authorizations can be made, NOAA will not need to analyze each action separately, and any action requiring a more specific analysis will be facilitated by the programmatic assessment. NOAA will also have the flexibility of issuing regulations and letters of authorization (LOA) that would not be subject to the higher litigation risk created by reliance on IHAs. This approach will also provide the Navy and the Minerals Management Service with more certainty, as LOAs are valid for up to 5 years whereas IHAs are only valid for a single year or a single event. Without this increase, NOAA will try to meet these national priority needs, but responses will not be timely and will come at the expense of other national needs, such as authorizations for scientific research and monitoring.

Performance Goals and Measurements Data

This increase will support the Departmental objective and NOAA goal to "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management," under the Department of Commerce Strategic Plan Goal to "Observe, protect, and manage the Earth's resources to promote environmental stewardship." It also supports the GPRA measure, "Number of Protected Species Designated as Threatened, Endangered, or Depleted with Stable or Increasing Population Levels."

The expansion of protected species authorization capabilities will directly affect this measure by improving the quality and quantity of assessment documents and authorizations. The planned actions associated with this requested increase cannot be directly correlated to increases in the number of listed species with stable or increasing population levels. However, NMFS' primary mechanism for protecting and preventing further decline in protected species is through the consultation process. Issuing authorizations and ensuring that mitigation measures are in place to prevent injury and mortality

contribute to the stability of marine mammals and other listed species. Ensuring that populations of listed species are stable or increasing (i.e., recovering) can take years of conservation efforts and of assessments. Although a specific performance increase is not attributed to the budget increase, it is important to note that NMFS is legally mandated to consult and issue authorizations for the Navy exercises and energy exploration and development activities described above.

Performance Goal 3: Ecosystem Performance Measurements	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Number of Protected Species listed as threatened, endangered, or depleted with stable or increasing population levels						
Without Increase	25	26	27	30	33	35
With Increase	25	26	27	30	33	35

Pacific Salmon (0 FTE and -\$3,000,000): NOAA requests a decrease of \$3,000,000 and 0 FTE for the Columbia River Biological Opinion (BiOp) Implementation within the Pacific Salmon line item.

Statement of Need

After two years of full funding, NOAA is slowly decreasing funding for the Columbia River BiOp implementation. By FY 2008, the research, monitoring, and evaluation (RM&E) program will have the data collection infrastructure, data management, and analytical evaluation tools in place to measure status and trends of listed Pacific salmon Evolutionarily Significant Units and the effectiveness of recovery actions. This program requires continued monitoring over at least a ten-year period, but after an initial investment to set up the RM&E program, funding at a reduced level will allow for long-term monitoring.

Proposed Actions

The Columbia River BiOp Implementation line funds RM&E as part of the implementation of the Federal Columbia River Power System (FCRPS). The RM&E program provides the scientific information necessary to assess achievement of the BiOp performance measures. The RM&E Program consists of six principal overarching components: 1) population and environmental status monitoring, 2) action effectiveness monitoring, 3) critical uncertainty research, 4) project implementation monitoring, 5) adaptive management, and 6) regional coordination. At the decreased level, the RM&E program will continue to effectively assess progress in meeting the provisions of the settlement agreement on the management of the FCRPS.

Benefits

This requested decrease will still allow NOAA to fund higher-priority activities, while aligning spending with the required level of effort for the transition to a monitoring program as opposed to a research/development program.

Pacific Salmon (0 FTE and \$3,000,000): NOAA requests an increase of \$3,000,000 and 0 FTE for Klamath River salmon recovery planning and follow-on actions within the Pacific Salmon line item.

Statement of Need

Klamath River coho salmon are part of the Southern Oregon/Northern California Coast coho Evolutionarily Significant Unit (ESU), listed as threatened by NMFS. The requested funding is needed to implement recovery and conservation planning underway in the NMFS Southwest Region. Although funds have been made available for Klamath River projects and recovery planning through Pacific Coastal Salmon Recovery Fund grants and NMFS Pacific salmon funding, additional funds are required to advance recovery for this species.

Proposed Actions

This request provides specific, directed funding for Klamath River salmon recovery projects and will support efforts to establish and implement the governmental/non-governmental Klamath Conservation Implementation Program (CIP). With this requested funding, NMFS will be able to share in funding the implementation of restoration activities through in-kind services and implementation of recovery actions under the Endangered Species Act. Specific actions would include: the completion of recovery planning and recovery implementation plans for Klamath River coho salmon; completion of the larger, region-wide Southern Oregon/Northern California coho salmon recovery plan; and funding of “on the ground” recovery and restoration projects that address limiting factors and threats including fish passage, water availability, water quality, habitat complexity, hatcheries, and harvest activities with specific actions to be identified as part of the recovery and local planning processes currently underway.

Benefits

This requested increase will allow NOAA to direct specific funding toward restoration of Klamath River salmon fishery resources. The request will augment monies already being spent in the Klamath River basin under the Pacific Coast Salmon Recovery Fund on Klamath basin activities. By directing funding to the Klamath River basin for recovery and conservation actions for salmon, NMFS will be increasing its ability to improve the status of Southern Oregon/Northern California coho salmon, which were listed as threatened under the ESA in 1997.

Performance Goals and Measurement Data

NMFS’ request will support the Departmental objective and NOAA goal to “Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management” under the Department of Commerce strategic goal to “Observe, protect, and manage the Earth’s resources to promote environmental stewardship.”

This increase will support the Departmental objective and NOAA goal to “Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management,” under the Department of Commerce Strategic Plan Goal to “Observe, protect, and manage the Earth’s resources to promote environmental stewardship.” It also supports the GPRA measure, “Number of Protected Species Designated as Threatened, Endangered, or Depleted with Stable or Increasing Population Levels.”

Performance Goal 3: Ecosystem Performance Measurements	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Number of Protected Species listed as threatened, endangered, or depleted with stable or increasing population levels						
Without Increase	25	26	27	30	33	35
With Increase	25	26	27	30	33	35

Marine Mammals (+ 0 FTE and \$2,000,000): NOAA requests an increase of \$2,000,000 for the Marine Mammals line item within the Protected Species subactivity. This request will support research addressing management needs of the critically endangered right whale, leading to fewer collisions with ocean vessels and reduced risks of entanglement in fishing gear. This type of research will help increase the survival of right whale adults and calves, and contribute to stabilizing and/or increasing the population trend for this species.

Statement of Need

Right whales are large baleen whales. Adults are generally between 45 and 55 feet long and can weigh up to 70 tons. Listed as endangered since 1973, North Atlantic right whales (*Eubalaena glacialis*) are the rarest of all large whale species that live off the northeastern United States, and they are among the rarest of all large marine mammal species. The North Atlantic population numbers hover around 300. Historically, right whale populations were severely depleted by commercial whaling. Because right whales are slow-moving coastal swimmers with a thick layer of blubber (causing them to float when dead), they were an easy and profitable species for whalers to harvest.

Ship collisions, propeller strikes, and entanglement in fishing gear are now the most common causes of serious injury and death for North Atlantic right whales. Additional disturbances from activities such as whale watching and noise from industrial activities may affect the population as well. The Endangered Species Act of 1973 requires recovery plans to serve as guides to promote the conservation and recovery of listed species. In 2005, NOAA released a revised North Atlantic Right Whale Recovery Plan that provided an overall framework for promoting recovery of the right whale. Measures to reduce risks posed by entanglement in fishing gear are presented in the Agency's Atlantic Large Whale Take Reduction Plan.

NOAA is implementing various mitigation methods to reduce conflicts between ships and whales, including a Mandatory Ship Reporting System (MSRS) in Northeast and Southeast right whale critical habitat; realignment of old or establishment of new lanes for vessel traffic; and reduced speeds in or avoidance of areas occupied by right whales. NOAA has established a team of scientists, fishermen, and non-governmental organization representatives to provide recommendations on ways to reduce the level of serious injury and mortality in whales resulting from fishing gear entanglements. These include time and area closures and modifications to fishing gear and practices.

Knowledge of how right whales use the water column while foraging and transiting would assist in the development of gear designed to reduce the risk of entanglement and serious injury. Similarly, research on foraging ecology may provide invaluable information to characterize habitats, which could help us better understand right whale distribution.

Proposed Action

NOAA's request will enhance designated base funds for right whale conservation efforts. With this additional request of \$2,000,000, NOAA plans to conduct research to:

- Investigate the foraging and diving behavior of right whales in various habitats (i.e., rocky and coral areas as well as areas around wrecks).
- Quantify the availability of right whale prey (e.g., *Calanus copepods*) in New England waters; and
- Characterize behavior distribution of right whales (i.e., coastal Maine, waters deeper than 100 fathoms, and Mid-Atlantic coastal areas).

The findings of the proposed research on right whale foraging behavior and distribution will aid in NOAA's recovery efforts by informing management actions designed to avoid ship strikes and reduce interactions and entanglements of whales with fishing.

Benefits

With this increase, NOAA will make progress toward the recovery of this critically endangered species. Understanding right whale diving behavior will help explain how whales interact with submerged fishing gear and will allow NOAA to better manage fisheries to reduce gear entanglement.

Research on the distribution of right whale prey will not only provide insight into right whale diving, but also will help better define right whale critical habitat. More information on the seasonal distribution of these whales will enable more effective mitigation of ship strike interactions in the Mid-Atlantic and fishery interactions in New England.

Performance Goals and Measurement Data

This increase will support the Departmental objective and NOAA goal to “Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management,” under the Department of Commerce Strategic Plan Goal to “Observe, protect, and manage the Earth’s resources to promote environmental stewardship.” It also supports the FY 2007 GPRA measure, “Number of Protected Species Designated as Threatened, Endangered, or Depleted with Stable or Increasing Population Levels.”

Performance Goal 3: Ecosystem Performance Measurements	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Number of Protected Species listed as threatened, endangered, or depleted with stable or increasing population levels						
Without Increase	25	26	27	30	33	35
With Increase	25	26	27	30	33	35

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Subactivity: Fisheries Research and Management
Line Item: Fish

GOAL STATEMENT:

Provide accurate and timely information and analyses on the biological, ecological, economic, and social aspects of the Nation's fisheries resources and develop, implement, and monitor living marine resource management measures to support the National Oceanic and Atmospheric Administration (NOAA) Strategic Plan goal to, "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management."

BASE DESCRIPTION:

The Ecosystem Observation Program (EOP), through the Office of Science and Technology, administers NOAA's National Marine Fisheries Service (NMFS) fisheries science programs. EOP works in conjunction with NMFS Regional Fisheries Science Centers and uses research vessels and aircraft to support science-based conservation and management activities for the Nation's fisheries and protected living marine resources. Specific research activities include monitoring and assessing fish stocks and protected species populations; monitoring anthropogenic and natural stressors on marine ecosystems; and collecting economic and sociological data on commercial and recreational fishing communities. EOP collects, manages, stores, and disseminates data on the status of living marine resources and their environments.

NMFS' research efforts use scientific data to improve and expand our assessments and management of living marine resources and the human environment. NMFS' research focuses on the connectivity of living and non-living resources within a determined ecosystem. This ecosystems approach to management (EAM) relies upon research and analyses that integrate biological, socio-economic, environmental, and oceanographic data into predictive models that improve the Nation's forecasting capabilities for fisheries management. NMFS' use of EAM increases the ability to make scientifically-sound management decisions that are less prone to risk and more likely to succeed. Improved scientific analyses ensure that constituents receive the most accurate and complete analyses, thereby fostering a constructive public stewardship process.

One of the NMFS' core functions is to research and assess the status of harvested fish and protected marine and anadromous species (i.e., species that migrate from the oceans to breed in fresh water). Stock assessments for these living marine resources focus on various biological processes, including predator-prey relationships, mortality and growth rates, age and gender structure, distribution, and migration. NMFS collects and analyzes these indices to effectively manage over 900 fish stocks and over 230 protected species stocks (marine mammals, sea turtles, and other protected species). These activities provide scientifically sound analyses to fisheries managers, decision makers and stakeholders managing the Nation's resources. NMFS' stock assessments, critical components of living marine resource management, ensure that the Nation has a scientific basis for managing sustainable, robust, and productive fisheries and recovery programs for protected species.

In addition to stock assessments, NMFS also collects socio-economic, commercial, and recreational fisheries data to understand human uses and impacts on ecosystems. These surveys enable NMFS to develop options to manage fisheries for both biological and economic growth and sustainability. NMFS

provides information, analyses, and recommendations on the status of stocks and the effects of current and potential management regulations to Regional Fishery Management Councils, States, interstate commissions, and international treaty regulatory bodies. Technological and methodological enhancements allow for improved integration of data on fishing effort, catch, participation, and on any economic or cultural characteristics of commercial and recreational fisheries. Integration of these socio-economic indices into NMFS' forecasts will allow for improved baseline data that managers from all sectors can use to make better informed decisions. NMFS' assessments are crucial for the successful development of market-based systems for fisheries management, such as individual fishing quotas.

NMFS' fishery research programs also support living marine resource research by establishing links with industry. For example, the Observer Program deploys personnel to collect catch and non-target bycatch data from U.S. commercial fishing and processing vessels. This cooperative research allows industry to participate in NMFS' scientific activities, thereby using the fishermen's unique knowledge and expertise to create a valuable knowledge base.

NMFS' scientists continue to improve the Nation's forecasting and predictive capabilities by broadening the scope of measurements and synthesis used in their research (e.g., oceanographic metrics, economic indices, industry and community profiles, seafood consumption data, and public valuation of ecosystem services). Incorporating environmental, social, and economic analyses into living marine resource assessment and forecasting models enable NMFS to predict, monitor, and evaluate the human impacts of our stewardship decisions.

NOAA's Fisheries Management Program (FMP) applies ecosystem approaches to conserving and managing sustainable fisheries within the broad ecosystem structure defined by jurisdictions of the Regional Fishery Management Councils (Councils), the Atlantic Highly Migratory Species Program, state, interstate and international fisheries. The central focus of the FMP is to maintain and restore productive stocks important to commercial, recreational, tribal, and subsistence fisheries. Coastal and marine fisheries form an integral component of the Nation's heritage and economy. The elimination of overfishing and the rebuilding of overfished stocks through sustainable fisheries management are essential to increasing the long-term economic and social benefits to the Nation.

Commercial and recreational marine fisheries are an important source of economic revenue and jobs. U.S. commercial fishermen landed 9.6 billion pounds valued at \$3.7 billion in 2004. Overall, it is estimated that the commercial fishing industry contributed \$31.6 billion (in value added) to the U.S. Gross National Product. U.S. recreational fishermen took an estimated 81.6 million fishing trips, and harvested 197.1 million fish weighing 254.4 million pounds. In total, U.S. consumers spent an estimated \$61.9 billion for fishing products in 2004.

Management of fisheries requires coordination and consistency among National Marine Fisheries Service (NMFS) headquarters offices, the regional offices, Congress, and the Councils. The FMP develops legislative proposals; reviews, comments and works with the Congress on new bills; provides technical drafting assistance to Congress; and, interprets and evaluates the implications of new legislation. The FMP ensures that NOAA's fishery management activities comply with over a dozen legislative and policy drivers. For example, The Magnuson-Stevens Fisheries Management and Conservation Act (Magnuson-Stevens Act) serves as the primary authority for fisheries management in the Exclusive Economic Zone (EEZ). The Magnuson-Stevens Act establishes authority within the U.S. Department of Commerce, through NMFS and the eight Councils, for management of U.S.

fishing operations. The Magnuson-Stevens Act imposes strict timelines for review and implementation of fishery management plans and regulations submitted by Councils and approved by the Secretary. The Regulatory Streamlining Program (RSP) is a fundamental redesign of the regulatory process within NMFS. The goal of RSP is to improve performance, efficiency and accountability.

Domestic fisheries within the U.S. Exclusive Economic Zone (EEZ) (3-200 nautical miles offshore) of the United States are managed regionally by eight Councils. Atlantic highly migratory species (e.g., tunas, sharks, swordfish, and billfish) are managed directly by the FMP. The FMP partners with the Interstate Marine Fisheries Commissions (Commissions) and states to manage coastal marine fisheries. Councils, their advisory bodies, the Commissions, and states meet regularly during the year to conduct a transparent decision making process for recommending fishery management actions. Before final action is taken, comprehensive ecological and socioeconomic analyses are prepared and presented at public hearings and Council, Advisory Panel, and Commission meetings. These bodies and the FMP are charged with developing and implementing Limited Access Privilege Programs (LAPP) and addressing overfishing, bycatch, essential fish habitat, and rebuilding issues through the development of fishery management plans and amendments. Goals of the FMP include increasing the number of fisheries management with LAPP and improving the status of fish stocks by ending overfishing and increasing stock biomass.

NMFS reviews management programs proposed by the Councils, and if they are approved, NMFS implements the required Federal regulations. The six NMFS Regional Offices facilitate and expedite the approval and implementation of fishery management plans and amendments, including the preparation of analytical documents and management of other activities in support of rulemaking (e.g., implementing regulations, in season actions, permits, etc.) for fisheries and fishery trade activities managed by the FMP under multiple authorities. The FMP considers comments from private sector organizations (commercial and recreational fishing organizations, environmental groups, fishers, general public, etc.) regarding management of U.S. commercial and recreational fisheries activities. The FMP also partners with the Interstate Marine Fisheries Commissions and states to manage coastal marine fisheries through regulatory analysis, evaluation and implementation.

The FMP builds cooperative partnerships to strengthen marine fisheries management and conservation at the state, interregional, and national levels. To accomplish this goal the FMP provides national policy and oversight for interactions with more than 30 coastal states and island territories/commonwealths, three Interstate Marine Fisheries Commissions, and national groups. The FMP implements and oversees the distribution of grants for two national (Interjurisdictional Fisheries Act, Anadromous Fish Conservation Act) and two regional (Atlantic Coastal Fisheries Cooperative Management Act, Atlantic Striped Bass Conservation Act) programs. The FMP works closely with the Atlantic States Marine Fisheries Commission to develop and implement cooperative State-Federal fisheries regulations, under the Atlantic Striped Bass Conservation Act and the Atlantic Coastal Fisheries Cooperative Management Act.

The FMP promotes the economic sustainability of fishermen and fishing communities and provides for healthy seafood and security. The FMP provides for improvements in the fishing fleet and shoreside processing operations, reductions in overcapacity in fisheries, and a voluntary seafood inspection service to assure compliance with all applicable food regulations. The National Seafood Inspection Laboratory provides an analysis laboratory, data management, regulatory compliance risk analysis, and information transfer expertise to support the Department of Commerce's National Seafood

Inspection Program. The seafood inspection program provides voluntary services such as sanitation evaluation, product inspection and certification, auditing of food quality and safety programs, and training. Approximately 10% of the industry uses NOAA services and one-fifth of the seafood consumed in the U.S. is inspected by the seafood inspection program.

The FMP is responsible for the conservation and management of international transboundary fish stocks such as salmon, straddling and shared fish stocks, and highly migratory species including tunas, sharks, swordfish, and billfish. Consequently, the FMP must participate in negotiations of international agreements as well as provide and coordinate support for the U.S. commissioners on international commissions for living marine resources. FMP formulates strategies and positions on fishery trade for bilateral and multilateral negotiations and participates as the Department's fishing industry sector staff, providing technical expertise and negotiating skills to reduce barriers to trade of fish and fishery products. Given opportunities to expand trade and competitiveness, and the use of trade measures to support conservation objectives, FMP provides policymakers with the best information possible to form decisions and evaluate their impact.

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Fisheries Research and Management	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Fish					
Fisheries Research and Management Base	122,438	131,620	133,514	151,014	17,500
Anadromous Grants	1,870	-	2,080	-	(2,080)
American Fisheries Act	-	-	5,224	5,224	-
Interjurisdictional Fisheries Grants	2,554	-	2,567	2,567	-
Economics & Social Science Research	4,043	3,373	10,586	10,586	-
Expand Annual Stock Assessment – Improve Data Collection	24,457	25,000	32,405	32,405	-
Fisheries Information Network/Data Collection	20,491	20,000	22,206	22,206	-
Fisheries Oceanography	493	-	992	992	-
Fisheries Statistics	12,373	12,800	13,183	13,183	-
National Standard 8	986	-	1,016	1,016	-
Product Quality and Safety	6,631	-	6,977	6,977	-
Reduce Fishing Impacts on Essential Fish Habitat (EFH)	493	-	509	509	-
Reduce Bycatch	2,761	-	2,808	2,808	-
Regional Council and Fisheries Commissions	25,051	25,000	26,330	26,330	-
Salmon Management Activities	24,131	26,000	24,280	24,280	-
Survey and Monitoring Project	14,542	10,000	23,594	25,244	1,650
Hurricane Supp. Disaster Assistance FY06	4,995	-	-	-	-
Other fisheries-related projects	17,055	3,007	-	-	-
TOTAL	285,364	256,800	308,271	325,341	17,070
FTE	1,422	1,444	1,451	1,467	16

Note: The dollars in this table represent budget authority.

NMFS – ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2008:

Ocean Research Priorities Plan - Comparative Analysis of Marine Ecosystem Organization (CAMEO) (+6 FTE and \$5,000,000): NOAA is requesting an increase of \$5,000,000 and 6 FTEs to improve forecasting of marine ecosystem responses to various management strategies. This supports the near-term priorities of the Committee on Ocean Policy's and the National Science and Technology Council's Joint Subcommittee on Ocean Science and Technology's Ocean Research Priorities Plan (ORPP). This type of forecasting requires an understanding of the underlying dynamics (e.g., species interactions, population structure, food webs, climate, and anthropogenic impacts) that control and regulate ecosystem stability and sustainability. This request will support research focused on developing cutting-edge quantitative models and science-based forecasting tools to assess how marine ecosystems respond to human impacts and environmental variation.

Statement of Need

In FY 2007, the Committee on Ocean Policy's and the National Science and Technology Council's Joint Subcommittee on Ocean Science and Technology developed an implementation strategy—the Ocean Research Priorities Plan (ORPP)—that outlined an approach for federal science agencies to meet the goals of the Administration's U.S. Ocean Action Plan. The ORPP's Implementation Strategy identified how the various ocean science sectors (government, academic, industry, and other non-governmental entities) would establish national research priorities for ocean science in the United States over the next decade. NOAA is a key federal participant in the ORPP Implementation Strategy. This funding will allow NOAA to guide U.S. efforts in achieving the goals of the ORPP through CAMEO.

The main objective of CAMEO is to improve management of marine ecosystems by understanding how biological components are linked and by evaluating the effectiveness of Marine Protected Areas (MPA) as a management tool. The number and size of MPAs has increased significantly in recent years. Although MPAs are used to preserve ecosystem structure and function, the efficacy of MPAs in meeting their objectives is not well documented. NOAA will use funding for CAMEO to develop new decision-support models on which to base the design and use of MPAs. This new program will provide a greater understanding of processes controlling ecosystem productivity and practical tools for understanding how various management strategies—such as the design of MPAs—may affect those ecosystems. NOAA's participation in this endeavor would provide the nation with the scientific and technical expertise to redefine its relationship with the ocean over the next decade. Authorities and policy guidance related to the ORPP opportunity on CAMEO include the Magnuson-Stevens Fishery Conservation and Management Act of 2006; Executive Order 13158 of May 26, 2000, concerning Marine Protected Areas; the U.S. Ocean Action Plan; and NOAA's 5-Year Research Plan.

Proposed Actions

NOAA will implement CAMEO in three phases at each of NOAA's Fisheries Science Centers. Efforts include:

- development of quantitative models for assessing how ecosystems respond to human impacts and environmental variation
- application of these new models to ecosystem types for which NOAA and other agencies have responsibility (e.g., Georges Bank, Bering Sea, Northwestern Hawaiian Islands Marine National Monument, Gulf of Mexico, etc.)
- rigorous analyses of existing MPAs and their impacts on ecosystem structure, function, and abundance of specific animal populations

Benefits

NOAA's request for CAMEO will improve the management of the nation's marine ecosystems as recommended by the Administration's U.S. Ocean Action Plan and the Ocean Research Priorities Plan. Improvement will only occur when the underlying dynamics affecting ecosystem processes at various scales are understood.

This request benefits society by:

- supporting the development of quantitative models and forecasting tools not presently available—enabling assessment of marine ecosystem responses to human impacts and environmental variation.
- applying these forecasting tools to NOAA's management responsibilities in the Northwestern Hawaiian Islands Marine National Monument, Georges Bank, the Bering Sea, and the Gulf of Mexico.
- evaluating the design of existing MPAs and assessing the effects of MPAs on ecosystem structure, function, and abundance of specific animal populations

This request will not only provide a greater basic understanding of these processes but will support enhanced coordination between the resource management community and the ocean science community.

Performance Goals and Measurement Data

NOAA's request will support the Departmental objective and NOAA goal to, "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management" under the Department of Commerce strategic goal to, "Observe, protect, and manage the Earth's resources to promote environmental stewardship."

NOAA is currently developing a performance measure for CAMEO.

Limited Access Privilege Programs (+10 FTE and \$6,000,000): NOAA requests an increase of \$6,000,000 and 10 FTEs to make greater use of market-based systems for fisheries management by implementing more Limited Access Privilege Programs (LAPPs) —e.g., individual fishing quota (IFQ), community development, cooperative, and area-based quota programs—to reduce overcapacity and end the "race for fish." The Administration's U.S. Ocean Action Plan committed to greater use of these market-based systems for fisheries management, and subsequently set a goal to double the number of LAPPs by 2010.

Statement of Need

A number of U.S. fisheries are characterized by overcapacity and are subject to fisheries closures to rebuild stocks and reduce bycatch. LAPPs are needed to eliminate the "race for fish" inherent in open-access fisheries, which also leads to overcapitalization and contributes to overfishing of ocean resources. NOAA needs additional LAPPs to contribute to safer fisheries, as vessel operators can choose not to fish in bad weather without

fearing that the quota will be taken by someone else; increase the availability of high-quality fresh fish; improve the economic performance of the fishery; and reduce bycatch.

Presently, eight LAPPs are in operation and by 2010 NOAA plans to double this number to 16. Although the benefits of LAPPs are significant, they are also expensive to develop, implement, and operate. One of the most significant cost increases that must be addressed by the Fisheries Management Program is the cost of implementing and operating LAPPs. The Magnuson-Stevens Fishery Conservation and Management Act provides for cost recovery up to three percent of the value of landed catch in an operational LAPP fishery.

Proposed Actions

NOAA currently supports 15 LAPPs: eight in the operation phase, two in the implementation phase, and five in the development phase. With this funding, two additional LAPPs will be fully operational in FY 2008. They are the Tilefish Trawl Individual Quota (TIQ) and the Gulf of Mexico Red Snapper IFQ. The requested funding will support the cost of all three phases of a LAPP (described below), and will primarily be used for the development and implementation of new LAPPs, as well as for the additional, non-recoverable costs of existing operational LAPPs.

1)**Development Phase:** This phase includes: support for Fishery Management Action Teams, development of amendments or frameworks, analyses (e.g., National Environmental Policy Act, Regulatory Flexibility Act), and consultations (e.g., Endangered Species Act, Essential Fish Habitat), and the Council process.

2)**Implementation Phase:** This phase includes: development of regulatory packages, developing databases and computer applications, issuing permits and initial shares, and purchase of Vessel Monitoring System (VMS) units.

3)**The Operation Phase:** This phase includes: enforcement, VMS tracking costs, tracking and monitoring of quota shares and quota pounds, observer program, data analysis, writing reports, operating cost recovery programs, adjustments to computer and accounting systems, and regulatory changes.

Benefits

A number of fisheries are characterized by overcapacity and fisheries closures to rebuild stocks and reduce bycatch. While effective in controlling commercial harvest, commercial quotas often lead to derby conditions, where commercial fishermen compete with each other to harvest as many fish as possible before the commercial quota is taken and the fishery is closed each year. In addition, existing regulations often encourage individual fishery participants to over-invest in their operations so they can be strong competitors within the current state of the fishery. Use of market-based management systems will improve the long term health and sustainability of fisheries by reducing overcapacity and ending the race to fish. Implementing LAPPs can sometimes also avoid early closures. They also contribute to safer fisheries, as vessel operators can choose not to fish in bad weather without fearing that the quota will be taken by someone else. LAPPs also increase the availability of high-quality fresh fish and improve economic performance of the fishery. The U.S. Commission on Ocean Policy recommended increasing the use of LAPPs in fishery management, and the Administration supports their use.

Performance Goals and Measurement Data

This increase supports the Department objective and NOAA goal to “Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management” under the Department of Commerce strategic goal to “Observe, protect, and manage the Earth’s resources to promote environmental stewardship.” This proposed increase would provide funding to create thorough and comprehensive market-based fisheries programs.

Performance Goal: <i>Ecosystems</i>	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Performance Measure: <i>Increase the number of fully operational DAPs by 2010 from a base of 8</i>						
Without Increase	8	8	10	10	10	10
With Increase	8	8	10	12	14	16

Magnuson –Stevens Act (0 FTE and \$6,500,000): NOAA requests an increase of \$6,500,000 to begin to address the new and expanded requirements under the Magnuson – Stevens Fishery Conservation and Management Reauthorization Act of 2006 (Magnuson-Stevens Act). The Magnuson-Stevens Act, signed into law January 12, 2007, sets a firm deadline to end overfishing in America by 2011 for all Federally managed fish stocks, uses market-based incentives to replenish America’s fish stocks, strengthens enforcement of America’s fishing laws, improves information and decisions about the state of ocean ecosystems, and provides new tools to improve cooperative conservation efforts. The requested funding will allow NOAA and the eight regional fishery management councils to begin supporting the mandates of the new law, allowing for better stewardship of America’s ocean resources and shared stocks.

Statement of Need

The Magnuson-Stevens Act places new and expanded requirements on NOAA. To begin meeting these mandates NOAA must focus on four high-priority areas: Council Committees (annual catch limits and stipends); recreational fisheries information; illegal, unregulated and unreported fishing (IUU); and Pacific whiting. Although the signing of the Magnuson-Stevens Act completes one of the goals of the Administration’s U.S. Ocean Action Plan of 2004, it is just an initial step towards ending overfishing by 2011. To meet this goal and the other mandates of Magnuson-Stevens Act, NOAA must also encourage the use of market-based limited access privilege programs; strengthen fisheries enforcement; provide assistance to the Regional Fishery Management Councils for development of regional ecosystem pilot programs; and establish Community Based Restoration Programs that use public-private partnerships to restore fishery and coastal habitat, in line with the President's Cooperative Conservation Agenda.

Additional funding for implementing the reauthorized Magnuson-Stevens Act will help NOAA meet the goal of ending overfishing by 2011 for all Federally-managed fish stocks. This is also a key element of the President's Ocean Action Plan, as is the development of recreational fishery participant registries and an improved data collection program for marine recreational fisheries. The new law requires the Administration to establish both a regionally based participant registry program and an improved data collection program for recreational fisheries.

NOAA has recently made considerable progress in the collection of data and the compilation of statistics for marine recreational fisheries. But, demands for more comprehensive, accurate, and timely statistics continue to increase as the nature and status of recreational fisheries change and management regimes become increasingly more complex. Under the reauthorized Magnuson-Stevens Act, NOAA must establish and implement a regionally-based registry program for recreational fishermen and for-hire fishing vessels, and develop an improved recreational fisheries statistics program that uses the new regional registries and incorporates, to the maximum extent feasible, recommendations of the National Research Council's 2006 "Review of Recreational Fisheries Survey Methods." Additional funding to improve and expand NMFS' data collection efforts for monitoring recreational fisheries impacts will be a major step toward improving relations with the recreational fishing community and improving federal fisheries management.

The Magnuson-Stevens Act also mandates that NOAA reduce illegal, unregulated and unreported (IUU) fishing and bycatch activities through a multilateral process. NOAA will draft a biennial report that will provide a status of shared marine stocks, identify nations engaged in IUU fishing or bycatch, and consider certification that could lead to trade sanctions against such countries. These measures are intended to ensure parity between U.S. and foreign fishing fleets. In addition, the Magnuson-Stevens Act provides implementing language for the U.S.-Canada Pacific Whiting Treaty, which requires collaboration on science and management on this shared stock. The United States is legally obligated to carry out these activities under this signed Treaty.

Proposed Actions

Of the requested funding, NOAA will use \$3,500,000 to develop new and improve current recreational fisheries statistics programs. This process will help NOAA provide comprehensive and timely fisheries statistics needed for stock assessments as identified by the NMFS' Stock Assessment Improvement Plan (SAIP). As a result of the work funded by this increase, NOAA will improve the statistical precision of recreational fishery catch monitoring surveys and will speed integration of state/federal fisheries information into regional/national networks, thereby making it more accessible by stock assessment scientists, fishery managers, and the public.

NOAA will also use \$1,500,000 to build a multilateral process over the next two years to implement a strategy for monitoring IUU and bycatch, thereby reducing these activities. NOAA will also conduct capacity-building activities in other countries and consider trade sanctions against nations not responding to reducing IUU activities. This process will contribute to the sustainability of shared stocks of fish and protected species.

NOAA will use \$500,000 to work with its Canadian counterparts to establish an Advisory Panel, Joint Management and Technical Committees as well as the Scientific Review Group required for implementation of the Pacific Whiting Treaty. This process will lead to a sustainable fishery and viable economic benefits to the U.S. fleet.

NOAA will use \$1,000,000 to improve and enhance the independent peer-review process of scientific data required to appropriately set the annual catch limits. NOAA will also increase payments or stipends to the Councils Scientific and Technical Committees, and enhance the interaction with the domestic Councils, in order to reach the goal of ending overfishing.

Benefits

This additional funding will allow NOAA and the Administration to move closer to the goal of ending overfishing and establishing more effective management of U.S. recreational and commercial fisheries as mandated by the reauthorized Magnuson-Stevens Act. NOAA’s efforts at the bilateral and multilateral levels to address and reduce IUU fishing and bycatch will contribute to the sustainability of shared stocks of fish and conservation of protected species. The agency will be in a better position to monitor and manage recreational fishing impacts on fish stocks, and enhance our fisheries peer review data. Joint scientific and management activities with Canada will help ensure sustainable fisheries and economic benefits to the U.S. fleet.

Performance Goals and Measurement Data

This increase supports the Department objective and NOAA goal to “Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management” under the Department of Commerce strategic goal to “Observe, protect, and manage the Earth’s resources to promote environmental stewardship.” This increase supports the GPRA performance measures presented below.

Performance Goal: <i>Ecosystems</i> <i>GPRA: Fish Stock Sustainability Index (FSSI)</i>	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Without Increase	501	505	506	506	506	520
With Increase	501	505	506	506	506	520

Performance Goal: <i>Ecosystems</i> <i>Percentage of Fish Stocks with Adequate Population Assessments and Forecasts.*</i>	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Without Increase	51.7%	53.9%	57.0%	55.7%	54.8%	53.5%
With Increase	51.7%	53.9%	57.0%	55.7%	54.8%	53.5%

* This is a component of the NMFS GPRA measure *Percentage of Living Marine Resources (LMR) with Adequate Population Assessments and Forecasts*.

Anadromous Grants (0 FTE and -\$2,080,000): NMFS requests a decrease of \$2,080,000 and 0 FTE from the overall Anadromous Grants line item, which would terminate this program to fund higher-priority NOAA initiatives.

Statement of Need

In order to fund higher-priority activities, NMFS is requesting elimination of the Anadromous Grants program.

Proposed Actions

The Anadromous grants program has provided the states and other nonfederal interests funding for the conservation, development, and enhancement of the nation's anadromous fish stocks. Funding has been spread widely across many states (e.g., in FY 2006 16 states received anadromous grant funds ranging in awards from less than \$10,000 to those of more than \$300,000). A required state-match has been a component

of the program and funds have been used for spawning area improvement, installment of fish ways, data collection, construction of fish protection devices and hatcheries, and research to improve management and increase anadromous fish resources. Although project funding through the Anadromous grant program will no longer be available given the proposed elimination of this program, NMFS conducts other anadromous fish conservation and management work. This work is supported by the Pacific Coastal Salmon Recovery Fund, the salmon components of our Protected Species activities, habitat conservation and restoration efforts and the Interjurisdictional Fisheries Grants line.

The Anadromous Grants budget line has funded anadromous fish conservation, monitoring, management, and reintroduction projects for Atlantic salmon, steelhead, Atlantic sturgeon, American shad, river herring, and striped bass managed under the Magnuson-Stevens Fishery Conservation and Management Act, Atlantic Coastal Fisheries Cooperative Management Act, and Striped Bass Act.

Benefits

This requested decrease will allow NOAA to fund higher priority activities.

Survey and Monitoring Projects (0 FTE and + \$1,650,000): NMFS requests a net increase of \$1,650,000 to the Survey and Monitoring Projects line item to enable NOAA's ability to administer two research and monitoring programs in Alaska. NOAA will continue to collaborate with entities in Alaska (independent research institutions, the State of Alaska, the North Pacific Fisheries Management Council, the fishing industry, Alaska coastal communities, and other stakeholders) to conduct crustacean research and monitoring.

Statement of Need

State of Alaska Bering Sea Crab Research

NMFS supports an annual trawl survey in the eastern Bering Sea to estimate crab abundance. NMFS and the State of Alaska will use this information to determine the status of the stocks and to set the harvest levels. Historically, this line supports a cooperative management regime for the Bering Sea Aleutian Islands King and Tanner Crab Fishery Management Plan (FMP). The FMP defers fishery management to the State of Alaska while maintaining federal oversight. Research supported under this NOAA grant is critical to managing crab fisheries for optimal yield in accordance with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). In a region with half the commercial harvest of the nation's seafood, these program increases to the State of Alaska are fundamental to advancing NMFS' strategy of strengthening the coordination of marine fisheries management and conservation between state and federal partners.

Fishery Management Plan Extended Jurisdiction

Funding to the State's Extended Jurisdiction program supports a broad array of work products that feed into the North Pacific Fishery Management Council's decision process and NOAA Fisheries Service's regulatory implementation activities. The cooperative State-Federal management of the Bering Sea and Aleutian Islands (BSAI) crab fishery dates to 1989. NMFS has supported the State of Alaska's research and management costs required to meet mandates of the Magnuson-Stevens Act since 1992. The development of federal management programs which incorporate limited access privileges (crab rationalization— allocating crab resources among harvesters, processors, and coastal communities) requires significant program development coordination

with state personnel. This core program support for research and management of delegated fisheries and the coordinated management of shared groundfish stocks is critical to satisfying federal requirements and ensuring a comprehensive and integrated resource management approach in Alaska waters.

Proposed Action

State of Alaska Bering Sea Crab Research (\$1,000,000)

NMFS requests an increase of \$1,000,000 to the State of Alaska Bering Sea Crab Research line item. The increase will fund the escalating costs resulting from implementing a complex limited access privilege program (crab rationalization) in Alaska. It will also fund costs associated with implementing rebuilding plans for four overfished BSAI king and Tanner crab stocks. Due to the restructuring from rationalization and an increased State/Federal focus on precautionary management measures, there is an increasing need for research and data collection on BSAI crab stocks.

Efforts include:

Bering Sea Crab Test Fish Program (\$431,034) king crab pot and trawl surveys in the BSAI, tagging studies, tagging recoveries, studies on effectiveness of escape mechanisms and soak time in reducing bycatch during crab fisheries, and genetics studies on king, Tanner, and snow crab.

Bering Sea Snow and Tanner Crab Research (\$215,517) Projects to support the Crab Plan Team/North Pacific Fishery Management Council including research on reducing fecundity due to unbalanced sex ratios and implications of male-only harvest strategies on historic declines in some Gulf of Alaska crab stocks.

Aleutian Islands Golden King Crab Pot Survey (\$190,162) Amukta and Yuasaka Islands pot survey to provide the only systematic program for collecting fishery-independent data for golden king crabs in the Aleutian Islands area.

BSAI Crab Observer Database Management (\$163,286) observer and dockside sampling program oversight and preparation of annual report.

Fishery Management Plan Extended Jurisdiction (\$650,000)

These funds will continue cooperative management of fishery management plans associated with crab, scallop and rockfish between the Alaska Department of Fish and Game and NMFS. This work provides results to the North Pacific Fishery Management Council for developing plan amendments and to the Alaska Board of Fisheries for developing state regulations that are consistent with federal FMPs. This funding is pivotal to the coordinated management of shared groundfish stocks. NMFS will use the funds to meet requirements that include: public notice, review and evaluation of state actions for federal consistency, adjusting regulatory regimes to meet changing economics and biological conditions, day-to-day management of FMP species and research to help managers prevent overfishing, maintain stock health and achieve optimum yields as proscribed in the MFSCMA.

Benefits

The request for the Survey and Monitoring line will maintain NMFS' ability to: 1) manage Alaskan crab stocks; 2) estimate the distribution and abundance of the stocks; and 3) provides value-added analyses to the North Pacific Fishery Management Council for developing plan amendments and to the Alaska Board of Fisheries for developing state regulations that are consistent with federal FMPs.

Performance Goals and Measurement Data

NMFS' request will support the Departmental objective and NOAA goal to, "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management" under the Department of Commerce strategic goal to, "Observe, protect, and manage the Earth's resources to promote environmental stewardship."

The State of Alaska Bering Sea Crab Research and Fishery Management Plan Extended Jurisdiction budget lines indirectly support the measure:

Performance Goal: <i>Ecosystems</i> <i>Percentage of Fish Stocks with Adequate Population Assessments and Forecasts.*</i>	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Without Increase	51.7%	53.9%	57.0%	55.7%	54.8%	53.5%
With Increase	51.7%	53.9%	57.0%	55.7%	54.8%	53.5%

* This is a component of the NMFS GPRA measure *Percentage of Living Marine Resources (LMR) with Adequate Population Assessments and Forecasts*. The Survey and Monitoring Program is developing a new performance measure that will track improvement at a finer scale. NMFS will present this measure in the near future.

This overarching performance measure captures NMFS progress (number of adequate stock assessments) based on many activities funded through numerous budget lines, including Survey and Monitoring Projects. Changes in this performance metric are linked principally to assessments funded by the budget line item titled Expand Stock Assessments – Improve Data Collection. Maintaining level performance requires updating stocks with adequate assessments every 5 years (i.e., preventing adequate assessments from expiring), and improving performance requires adding or updating stocks to the adequate list. The Percent of Living Marine Resources with Adequate Population Assessments will show neither an increase nor a decrease in FY 2008. The requested funding for assessments under the Survey and Monitoring Projects line in FY 2008 will prevent the identified stocks from reverting to a less than adequate status in the out years, and is needed to properly manage the fishery.

Subactivity: Enforcement and Observers / Training
Line Item: Enforcement

GOAL STATEMENT:

Provide a comprehensive program for the protection of the Nation's living marine resources through the enforcement of a variety of Federal laws and regulations. The primary objective of the NMFS Office of Law Enforcement (OLE) is to assure compliance with the laws and regulations promulgated to conserve and protect our Nation's living marine resources. OLE activities support the NOAA Ecosystems goal to "Protect, restore, and manage the use of coastal and ocean resources through ecosystem approach to management."

BASE DESCRIPTION:

The NOAA Enforcement Program resides within the NMFS Office for Law Enforcement (OLE). OLE implements three primary capabilities: investigations, monitoring (which includes conducting patrols and inspections), and outreach and education. OLE special agents and officers detect, deter, investigate, and document for prosecution any violations of Federal laws and regulations under the Magnuson-Stevens Fishery Conservation and Management Act, Marine Mammal Protection Act, Endangered Species Act, Lacey Act, and other Federal statutes and international agreements relating to living marine resources. Under current monitoring capabilities OLE manages the vessel monitoring system program (VMS), which provides real time data that significantly increases the ability to monitor and enforce closed areas for protection of endangered species and critical habitat, and rebuilding and maintenance of sustainable fisheries.

The OLE currently expands enforcement and monitoring capabilities and resources by carrying out joint enforcement agreements (JEAs) with marine resource enforcement agencies of coastal states and U.S. territories. OLE has implemented JEAs with 21 coastal states and four U.S. territories. This program provides land-based patrols, near-shore, and some offshore vessel patrols. While OLE is currently authorized to employ 157 Special Agents and 20 Enforcement Officers assigned to 53 offices in the coastal United States and U.S. territories, the Cooperative Enforcement Program makes available more than 2,000 state and territorial enforcement personnel to support OLE. The work performed by the state and territorial agencies under these agreements not only augments the Federal enforcement effort, but also supports enforcement missions of U.S. states and territories.

PROPOSED LEGISLATION:

NOAA, together with the Administration, will work with Congress to reauthorize the Marine Mammal Protection Act (MMPA), P.L. 103-238; and the Endangered Species Act (ESA), P.L. 100-478.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Enforcement and Observers / Training	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Enforcement					
TOTAL	43,547	50,000	54,678	54,678	-
FTE	188	188	188	188	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

No program changes are proposed for FY 2008.

Subactivity: Enforcement and Observers / Training
Line Item: Observers & Training

GOAL STATEMENT:

Provide accurate and timely information and analyses on the biological, ecological, economic, and social aspects of the Nation's fisheries resources and develop, implement, and monitor living marine resource management measures to support the National Oceanic and Atmospheric Administration (NOAA) Strategic Plan goal to "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management."

BASE DESCRIPTION:

Since 1972, NOAA's National Marine Fisheries Service (NMFS) has deployed fishery observers to collect catch and bycatch data from U.S. commercial fishing and processing vessels. Observers have monitored fishing activities on all U.S. coasts, collecting data for a range of conservation and management issues. Observers are fishery biologists deployed at-sea onboard commercial fishing vessels to collect data and information on fishery catch and bycatch (i.e. the incidental capture of unintended fish species and protected species). This includes information on fishing practices, vessel and gear characteristics, fishing locations and times, environmental conditions on the fishing grounds, compliance with fishing regulations, and, for some fisheries, socioeconomic data. Observers also collect biological samples, and may assist in fish tagging and tag recovery, or special data collections for stock assessment programs.

Nearly 40 fisheries are monitored by observer programs each year, and the data they collect are often the best means to gather current information on fisheries status. Without these programs, many fisheries would lack sufficient data for effective management. The authority to place observers on commercial fishing and processing vessels operating in particular fisheries is provided either by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) or the Marine Mammal Protection Act (MMPA).

Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act)

The Magnuson-Stevens Act authorizes the placement of observers to collect information needed for fishery management and conservation. In addition, the Act requires that all fishery management plans establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery. Fishery observers are one of the most reliable methods for reporting bycatch and are a critical component of the reporting methodologies required in several fisheries with known levels of bycatch.

- The information collected by fishery observers ensures that Fishery Management Plans (FMP) are consistent with the requirement for a standardized bycatch reporting methodology. Observer programs also provide data for fishery managers to ensure that national standards for fishery conservation and management identified in Section 301 of the Magnuson-Stevens Act are met.
- National Standard 1: "Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry."
- National Standard 2: "Conservation and management measures shall be based upon the best scientific information possible."

- National Standard 9: “Conservation and management measures shall, to the extent practicable, (a) minimize bycatch and (b) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.”

Marine Mammal Protection Act (MMPA)

MMPA Section 118 governs the incidental taking of marine mammals in the course of commercial fishing operations. It states that the immediate goal shall be to reduce the incidental mortality or serious injury of marine mammals to insignificant levels approaching mortality and serious injury rates of zero. To achieve that goal, Section 118(d) directs NMFS to deploy observers on fishing vessels or remote vessels to monitor incidental mortality and serious injury of marine mammals during commercial fishing operations.

Section 118 describes the duties of observers, establishes guidelines for the distribution of observers among fisheries and among vessels within a fishery, and establishes priorities for the placement of observers. Observers are mandatory for fishermen participating in Category I and II fisheries (fisheries that have frequent or occasional incidental mortalities or serious injuries of marine mammals, respectively), and are voluntary for fishermen participating in Category III fisheries (fisheries that have a remote likelihood or no known incidental mortality or serious injury of marine mammals). Section 118 also directs NMFS to develop and implement take reduction plans for marine mammal stocks that interact with Category I or II fisheries. These plans shall include an estimate of marine mammals incidentally killed or seriously injured each year during the course of commercial fishing operations. Onboard fisheries observers are the most reliable source of this information.

Endangered Species Act (ESA)

ESA requires the Federal Government to protect and conserve species and populations that are endangered or threatened with extinction. Federal or State actions that may impact endangered species, such as permitted fishing operations, must be minimized. Endangered species taken as bycatch in fishing operations include sea turtles, Pacific salmon, seabirds, and marine mammals. Observers monitor impacts and certify that takes of endangered species do not exceed the authorized incidental take limit. Observer data are also used to prepare recovery plans, and generally include a requirement to reduce incidental capture of protected species in commercial fishing operations for marine species. Fisheries may be restricted or terminated if they impose mortality rates on protected species that impede the recovery of the listed population.

NMFS implements observer programs in each of its six regions. In addition, improvements in data collection, observer training, and the integration of observer data with other research are coordinated by the Office of Science and Technology in NMFS headquarters. Collectively, the regional programs and the headquarters office comprise the National Observer Program, which supports observer programs and increases their contribution to NMFS overall goals.

PROPOSED LEGISLATION:

NOAA, together with the Administration, will work with Congress to reauthorize the Marine Mammal Protection Act, P.L. 103-238.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Enforcement and Observers / Training	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Observers & Training					
TOTAL	23,175	23,500	29,295	32,295	3,000
FTE	61	63	63	63	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Observers/Training (+ 0 FTE and \$3,000,000): NOAA requests an increase of \$3,000,000 and 0 FTEs for the overall Observers/Training line item. NOAA will apply the requested increase to the New England Groundfish Observer Program line item to meet regulatory requirements for managing the New England Groundfish and Atlantic Sea Scallop fisheries, restoring funding and observer coverage to FY 2005 historic levels. Stakeholders such as the New England and Mid-Atlantic Fishery Management Councils and the Atlantic States Marine Fisheries Commission will analyze and use the data to support quantitative evaluations of marine populations within the New England Groundfish and Atlantic Sea Scallop fisheries.

Statement of Need

Fisheries observers are trained biologists who monitor and record catch and bycatch data from U.S. commercial fishing vessels and processing facilities. Observer programs are often the best means to retrieve accurate data on the status of many Federally-managed fisheries. Observer training is comprehensive often lasting up to three weeks. During that time, NOAA instructs observers on the identification of fish, marine mammal, seabird, sea turtle, and invertebrate species, as well as gear identification, measurement protocols, and marine safety and survival skills.

Bycatch (i.e., the unintentional catch of any species caught incidentally during the harvest of the intended species or catch size) is a complex problem that affects many major U.S. fisheries. Several laws authorize observer coverage for U.S. commercial fisheries to collect catch data to assess the amount and type of bycatch. They include the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), the Endangered Species Act, and the Marine Mammal Protection Act. These statutes direct NOAA to collect catch data to assess the amount and type of bycatch occurring in a fishery; standardize bycatch reporting methodologies to minimize bycatch in federally managed fisheries; and protect specific endangered or threatened marine plants and animals.

Bycatch reduction leads to more robust fisheries, and aids in the protection of marine mammals, sea turtles, and seabirds. A 2004 NOAA report, *Evaluating Bycatch: A National Approach to Standardized Bycatch Monitoring Programs* (<http://spo.nmfs.noaa.gov/tm>), identified 84 fisheries nationwide that require observer coverage. The report classified the Atlantic Sea Scallop fishery as having a high rate of vulnerability for non-marine mammal protected species (e.g., sea turtles) bycatch and classified the New England Multispecies Groundfish Fishery as having a moderate rate of vulnerability for fish bycatch and a high rate of vulnerability for marine mammal bycatch.

The Atlantic Sea Scallop Fishery

NOAA must meet regulatory requirements related to the implementation of Joint Frameworks 16/39 of the Atlantic Sea Scallop and Northeast (NE) Multispecies Fishery Management Plans (FMP). The New England Fishery Management Council developed the Joint Frameworks in 2004 to establish Sea Scallop Access Areas within the Northeast (NE) multispecies Closed Area I, Closed Area II, and the Nantucket Lightship Closed Area. These regulations established systematic closures of some of these areas to: 1) prevent overfishing by allowing for sea scallop growth; 2) mitigate NE multispecies (e.g., yellowtail flounder, groundfish, and sea turtles) bycatch; and 3) protect essential fish habitat as scallop dredges can damage sea floor habitats.

Implementing the Joint Frameworks has vastly expanded NOAA's observer requirements for documenting sea scallop catch (age and size) and yellowtail flounder bycatch. NOAA must implement management measures such as deploying at-sea observers, restricting days-at-sea, limiting access to fishing areas, and restricting types of gear used in the fishery. For example, NOAA requires all vessels fishing in the Scallop Access Areas to report on total yellowtail flounder bycatch including discards. NOAA monitors yellowtail flounder landings through at-sea observer reports, vessel monitoring system (VMS) reports, and dealer reports. An observer's ability to monitor yellowtail flounder bycatch is a critical component of the yellowtail flounder rebuilding program under the NE Multispecies FMP. The scallop fleet has been allocated a yellowtail flounder Total Allowable Catch (TAC) that is equivalent to 10% of the overall TAC (kept and discarded fish) for yellowtail flounder. When the TAC established for the Sea Scallop Access Area program is or is projected to be caught, the scallop fishery in the affected area will close.

Reduced observer coverage for scallop vessels hampers NOAA's ability to monitor yellowtail flounder bycatch—without adequate observer coverage, vessels could exceed yellowtail flounder TACs. Unless there is adequate observer coverage, NOAA will not have a current source of data to determine when current year bycatch TACs are attained. This would have immediate and/or long-term negative impacts on the Atlantic Sea Scallop fishery resources and the fishing industry if NOAA closed this fishery due to incomplete information. The Atlantic Sea Scallop Fishery was valued at \$145 million in 2004.

The Northeast Multispecies Fishery

NOAA must meet regulatory requirements related to the implementation of Amendment 13 to the Northeast Multispecies FMP. The New England Fishery Management Council developed Amendment 13 to provide a framework to end overfishing, rebuild groundfish stocks, and reduce bycatch under the authority of the Magnuson-Stevens Act. Implementing Amendment 13 has vastly expanded NOAA's observer requirements for documenting catch and bycatch. In addition, there are regulatory requirements mandating extensive observer coverage for fisheries in the U.S.-Canada

Management Area, the Regular B-Day Pilot Program, and Special Access Programs (SAP) to ensure that they do not exceed sector-specific TAC. NOAA needs the additional funding to meet these requirements for high-precision monitoring.

Proposed Actions

Observers for the Atlantic Sea Scallop Fishery (\$1,600,000)

NOAA requests an increase of \$1,600,000 for observer coverage in the Atlantic Sea Scallop fishery. The requested funding would enable NOAA to gather data from over 1,300 observed days at sea for this fishery. Observer coverage would allow continuation of a Closed Area scallop fishery, where observers monitor bycatch levels of groundfish to ensure that the Closed Area scallop fishery TAC is not exceeded. Observers also provide key information for the sea scallop assessments—the only source of information on size and age composition of sea scallop catches. NOAA is required to provide estimates of incidental take of protected species as the result of biological opinions, and observer coverage would support these efforts. Finally, the scientific model used to provide statistically reliable estimates of sea turtle bycatch in the scallop fishery depends on robust observer coverage in the scallop fleet.

Observers for the New England Multispecies Groundfish Fishery (\$1,400,000)

NOAA requests an increase of \$1,400,000 for observer coverage in the New England Multispecies Groundfish fishery. The requested funding would provide 1,170 observed days at sea. The increase in funding will restore observer coverage to historic FY 2005 levels and allow NOAA to ensure observer coverage at a minimum of 5% observed sea days for the groundfish fishery. Additionally, NOAA will provide 50% target coverage level to fisheries in the U.S.-Canada Management Area, the Regular B-Day Pilot Program, and SAPs.

The requested funding will provide for sampling levels of several fisheries currently observed, including the herring and summer flounder fisheries. Increased coverage levels are needed to improve the accuracy of the information collected and support New England Fishery Management Council and Atlantic States Marine Fisheries Commission management decisions. With this request, NOAA expects to increase observer coverage in the herring fishery from three percent in FY 2006 to twenty percent in FY 2008. Increased observer coverage in the summer flounder fishery will provide more accurate information for discard monitoring in this declining population.

Benefits

The fisheries observer program is a proven, valuable source of information on the region's fisheries, unobtainable by any other means. Fisheries observers are the most reliable and unbiased source of catch, bycatch, and discard data in over 40 of the nation's fisheries. Data acquired by this program have been important in identifying the species and size selectivity of several marine fisheries in the Northeast and in reducing bycatch of protected species. Furthermore, these data have improved biological and economic assessments of the region's fisheries.

With the proposed actions, NOAA will have sufficient resources to increase the number of observed days at sea by 1,170 days. Increasing the number of observed days at sea will decrease the gaps in knowledge where bycatch may be occurring but is not documented. Increasing the number of observed days at sea will enable NOAA to effectively manage many of the Northeast Region's economically valuable fisheries. Furthermore, continuation of observer

programs for fisheries with significant bycatch supports implementation of a new national bycatch strategy, one of the priorities set forth in the Administration's *U.S. Ocean Action Plan*.

Performance Goals and Measurement Data

This increase will support the Departmental objective and NOAA goal to, "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management" under the Department of Commerce strategic goal to, "Observe, protect, and manage the Earth's resources to promote environmental stewardship."

Performance Goal: <i>Sea days on board fishing vessels with observers which are NOAA funded.</i>	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Without Increase	38,539	43,937	45,267	44,017	44,017	44,017
With Increase	41,622	47,020	46,437	45,187	45,187	45,187

* This is a component of the NOAA GPRA measure Percentage of Living Marine Resources (LMR) with Adequate Population Assessments and Forecasts.

Subactivity: Habitat Conservation & Restoration
Line Item: Habitat Conservation

GOAL STATEMENT:

Conduct a habitat program working in partnership with government agencies, the public, academia and industry to maintain high economic and ecological productivity of the Nation's living marine resources and support the National Oceanic and Atmospheric Administration (NOAA) Strategic Plan Goal to, "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management." Base activities in the Habitat Program support the Departmental objective and NOAA goal to, "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management," under the Department of Commerce Strategic Plan Goal to, "Observe, protect, and manage the Earth's resources to promote environmental stewardship."

BASE DESCRIPTION:

The Habitat Conservation and Restoration subactivity is an integral part of the NOAA Habitat Program, a program committed to protecting and restoring marine, coastal, and riverine habitats vital to NOAA trust resources, improving the data and techniques to accomplish these ends, and enhancing the interests and abilities of citizens to play active roles in these endeavors. Achieving these goals will require strengthening internal and external partnerships; leveraging resources available to government, the private sector, academic institutions, and individual citizens; and applying up-to-date information together with the best available science to produce management decisions that support sustainable and productive marine, coastal, and riverine habitats.

Sustainable Habitat Management

Efforts relating to Sustainable Habitat Management integrate research and management to provide scientific advice for use in permit, licensing, and management activities by (1) working directly with permit and license seekers to review the environmental acceptability of preliminary concepts; (2) consulting with Federal agencies on proposed actions' impacts to habitat of NOAA trust resources; (3) supporting Regional Fishery Management Councils and interstate commissions in developing positions on specific projects; (4) increasing overall habitat conservation awareness within Federal, state, and local agencies; and (5) improving programs that gather, transfer, and use data on habitats and biological diversity.

Habitat protection activities are the first step in ensuring the long-term survival and health of fishery resources and the habitats that support them. Habitat protection also is integral to ensuring healthy regional ecosystems and the host of societal benefits derived from productive marine, coastal, and riverine habitats. Among the most basic tools in NOAA's habitat protection kit is consultation—working with Federal action agencies and their constituents to ensure that proposed actions that pose threats to marine, coastal, and riverine habitats are undertaken in a manner that prevents, minimizes, or compensates for adverse effects. NOAA uses a streamlined consultation process to provide recommendations for construction projects, applications for dredging and filling wetlands, licenses for hydroelectric power plant operation, waste discharge permits, energy proposals, and other Federal funding and permit activities. The Habitat Program's mandates require coordination with public and private partners to ensure effectiveness and efficiency, as exemplified by

trial-type hearings and alternatives analyses conducted for fishway prescriptions under the Federal Power Act and Energy Policy Act. The agency also coordinates agency efforts to describe and identify essential fish habitat (EFH), designate habitat areas of particular concern (HAPC), and evaluate the effects of fishing activity on EFH/HAPC.

Each year, NOAA's National Marine Fisheries Service (NMFS) regional offices and headquarters provide technical comments on about 4,000 individual actions (preapplication discussions, permit applications, license renewals, environmental analyses, management plans, and draft policies and guidance, and others). Collectively this work reflects stewardship responsibilities under nearly a dozen Federal authorities and represents a major effort to protect marine, estuarine, and riverine habitats that support NOAA trust resources. Technical comments provided by NMFS staff have modified a large majority of the state and Federal projects so that they avoid, minimize, or compensate for adverse effects on the habitats of NOAA trust resources. This success rate on habitat protection reflects the value of NOAA science and management recommendations offered to state and Federal decision makers, as well as NOAA's proactive efforts at educating the development community and conveying proper management applications. The agency works with its partners to develop guidance, best practices, research summaries, and other tools to add efficiency to this major component of its habitat protection effort.

NOAA also uses its expertise to influence decisions at the ecosystem or watershed level, where protection and restoration successes can be more lasting and profound. Using a regional ecosystem approach to management, NOAA couples regional research with on-the-ground conservation with the assistance of local partners, as evidenced in the Chesapeake Bay and the Great Lakes programs. This ecosystem approach to management enhances watersheds and coastal systems. These efforts go toward the program's goals of no net habitat loss, increased yields, streamlined efficiencies, and sustained societal benefits.

Fisheries Habitat Restoration

NOAA's Fisheries Habitat Restoration efforts provide financial support, technical expertise, and coordination for habitat restoration and research. The NOAA Restoration Center oversees activities under this line item through three major programs: the Community-based Restoration Program (CRP); the Damage Assessment, Remediation, and Restoration Program (DARRP); and the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) Program, which collectively provide the greatest contribution to the NOAA and Department performance goal of "number of habitat acres restored" in support of the Government Performance and Results Act.

The Community-based Restoration Program (CRP) restores coastal and estuarine fish habitat by catalyzing partnerships at national, regional and local levels, providing funding, technical assistance, and research capabilities and encouraging volunteer participation.. A model for community collaboration, partnership building, and interagency cooperation, NOAA's CRP promotes hands-on citizen participation in accomplishing on-the-ground restoration projects, and fosters long-term stewardship of the Nation's coastal and marine resources. The power behind CRP is its ability to build partnerships that leverage funding and emphasize volunteer involvement to restore the diverse habitats crucial to recreational and commercial fishing industries. This highly successful national effort advances partnerships with industry, nonprofit organizations, and state and local governments and has regularly leveraged NOAA funding with non-Federal funding by three to five times.. One element of CRP is the Open Rivers Initiative (ORI), a competitive grant program that builds on NOAA's capabilities and utilizes a community-based model to remove small dams and river barriers in coastal states. Over two million dams block the

passage of migratory fish in U.S. streams and rivers, and every dam is built with an expected lifespan. Dams provide numerous benefits for modern society, but they also contribute to the habitat and water quality degradation occurring in estuaries, deltas, and river environments. While most U.S. dams serve their intended functions, many no longer provide the benefits for which they were built. In many cases removal will provide greater economic, environmental, public safety, aesthetic and recreational benefits than dam maintenance, modification and upkeep. The ORI provides funding and technical assistance to help communities remove unwanted barriers and allow fish to reach upstream spawning and rearing habitat.

Through DARRP legal settlements, NOAA claims damages for injuries to marine resources resulting from oil spills, hazardous releases, ship groundings, or other human-induced environmental disturbances. After successful settlement of natural resource damage claims, the NOAA Restoration Center staff administers the portion of DARRP that directs the planning, implementation, and monitoring of case-specific projects to restore NOAA trust resources. Responsible parties provide funds or conduct projects to restore, replace, or acquire the equivalent of the injured resources.

The CWPPRA program was enacted in 1990 to address the wetland loss in Louisiana which is so severe that it threatens infrastructure (i.e., energy, ports, and natural resources) critical to the nation as well as to the safety of its citizens, local traditions and cultures, economy, and environment. CWPPRA is a multi agency reimbursable program administered by the Army Corps of Engineers. As a member of this multi-agency Federal and state effort, the NOAA Fisheries Service has administered approximately \$10 million each year in reimbursements for on-the-ground restoration that has benefited thousands of acres of threatened wetlands and marine habitat. NOAA Restoration Center staff leads all aspects of the restoration process, from site selection and engineering/design to monitoring and maintenance.

The Great Lakes are an important aquatic resources from an economic, geographic, international, ecological and societal perspective. The Department of Commerce is a member of the Great Lakes Interagency Task Force whose mission is to restore, protect, and promote sustainable use of this national priority (Executive Order 13340). NOAA's Great Lakes Habitat Restoration Program focuses on restoring Great Lakes aquatic resources, with an emphasis on commonly occurring lake-wide problems such as the remediation of contaminated sediment and the presence of persistent contaminants and the loss of high quality fish and wildlife habitat.

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Habitat Conservation & Restoration	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Habitat Conservation					
Sustainable Habitat Management	21,796	18,000	19,143	19,143	-
Fisheries Habitat Restoration	24,829	22,000	21,272	31,272	10,000
Hurricane Supp. Oyster Reefs FY06	38,000	-	-	-	-
Hurricane Supp. Shrimp FY06	89,910	-	-	-	-
TOTAL	174,535	40,000	40,415	50,415	10,000
FTE	234	234	234	234	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Fisheries Habitat Restoration (+0 FTE and \$10,000,000): NMFS requests an increase of \$10,000,000 for the Penobscot River Habitat Restoration Project. The requested funding will be used to revive not only native fisheries but social, cultural and economic traditions of New England's second largest river- the Penobscot.

Statement of Need

Historically, the Penobscot River held Maine's largest populations of Atlantic salmon and other sea-run fish with annual salmon runs estimated at 50,000-70,000 adults prior to 1830. Now, populations of many of these fish are at or near all time lows due to migratory barriers, over-harvest, water pollution, and habitat degradation caused by logging and dams. This project will rebuild this once abundant historic fishery, which includes 11 migratory (diadromous) fish species, such as Atlantic salmon and American shad, and will reopen fish access to nearly 1,000 miles of habitat while maintaining hydropower production. NOAA is committed to an ecosystem approach to managing living marine resources and their habitats. In fulfilling this commitment, NOAA actively implements opportunities that will maximize the recovery of trust resources identified by public-private partnerships. The cooperative conservation approach in the Penobscot River watershed builds upon the Open Rivers Initiative partnership model and extends these efforts into large-scale, ecosystem level restoration.

Proposed Action

NOAA seeks to work with partners to fulfill the Lower Penobscot River Comprehensive Settlement Accord (the Agreement) to purchase three hydropower dams on the Penobscot River, removing the two most seaward dams, bypassing the third dam, improving fish passage at four other dams in the watershed, and restoring associated riverine fish habitat. The request will allow for a significant Federal cost-share in this project, which would include the unique opportunity to study and evaluate the ecological and socio-economic implications of a project of such an unprecedented scale. The majority of this funding would go towards the purchase and removal of three dams by the Penobscot River Restoration Trust. In addition, a portion of the funding will be used to 1) provide technical assistance on engineering, site evaluation and restoration planning to ensure maximum benefits for trust resources, 2) provide guidance and assistance on environmental compliance, 3) conduct pre- and post-removal studies to evaluate ecological, economic, and cultural implications of the restorations, and 4) continue monitoring of fish usage of the river system to ensure that trust resources, such as the Atlantic salmon, are recovering.

Benefits

This funding will allow NOAA to ensure benefits Penobscot River habitat are maximized by the removal and bypass of the dams, and the associated restoration efforts. When fully funded through state, private, and federal contributions, the project will open access to nearly 1,000 miles of historical habitat in the Penobscot River watershed, restoring self-sustaining populations of 11 diadromous fish species, including Atlantic salmon, Atlantic and Shortnose sturgeon, American shad, and American eel. The project will open 100% of historic spawning habitat in the lower Penobscot River. The project also provides the opportunity for hydropower generation to be maintained at 95% of the current generating capacity. Over time, a restored river could contribute to the revitalization of social, recreational, and business opportunities along the Penobscot benefiting local citizens, local businesses, and recreational and commercial fisherman. The project is not only an ecologically significant river restoration effort and an economic contributor to local communities, but is also a model for other large-scale cooperative conservation efforts across the country.

Performance Goals and Measurement Data

The increase provides support for the first two stages of the Penobscot River Restoration Project. The first stage includes the acquisition of three dams on the Penobscot River. In the second stage, the two most seaward dams will be removed, and the third will be bypassed. In the second stage, fish passage will also be improved at four additional dams and priority riverine fish habitat restoration efforts will commence. The requested increase will support the objective of “Enhance the conservation and management of coastal and marine resources to meet America’s economic, social, and environmental needs” under the Department of Commerce strategic goal to “Observe, protect, and manage the Earth’s resources to promote environmental stewardship”. It also supports the NOAA Goal to Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management.”

Performance Goal: Stream miles made accessible (miles per year).	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
Without Increase	900	900	900	900	900	900
*With Increase	900	900	900	900	900	1,890

* The number of stream miles made accessible (miles per year) will increase by 990 in FY2012 with the requested increase of \$10.0M for the Penobscot River Restoration Project and sustained funding levels in FY09-FY11.

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Subactivity: Other Activities Supporting Fisheries
Line Item: Other Activities Supporting Fisheries

GOAL STATEMENT:

Base activities in this subactivity support the Departmental objective and NOAA goal to, “Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management,” under the Department of Commerce Strategic Plan Goal to, “Observe, protect, and manage the Earth’s resources to promote environmental stewardship.” These efforts also contribute to the following NOAA performance objectives: increase number of habitat acres conserved or restored, and increase portion of population that is knowledgeable of and acting as stewards for coastal and marine ecosystem.

BASE DESCRIPTION:

“Other Activities Supporting Fisheries” includes items that cross multiple NMFS programs and therefore do not fit under one specific subactivity. Activities funded include computer hardware and software, cooperative research, information analysis and dissemination, Alaska fishery management and habitat conservation projects, the National Environmental Policy Act (NEPA), Chesapeake Bay Studies, and facilities maintenance.

Aquaculture. The NOAA Aquaculture Program (ACQ), a matrix-managed program, is led by the National Marine Fisheries Service (NMFS) in collaboration with the National Ocean Service, the Office of Oceanic and Atmospheric Research (OAR), and the National Environmental Satellite, Data, and Information Service. Base funds support the operation of the NMFS AQC program staff office to lead and coordinate regulatory, research, and outreach activities for marine aquaculture within NMFS and across NOAA. Beginning in FY2008, certain aquaculture and stock enhancement science activities at NMFS laboratories formerly included in the Ecosystem Observation Program will form part of the existing AQC program. In addition to base funds in NMFS, base funds requested through OAR support the National Marine Aquaculture Initiative. This competitive grants program resides within OAR and is also considered part of the NOAA Aquaculture Program.

The AQC program base activities support program objectives of: (1) collaborating with partners to increase production of marine species and associated products through commercial aquaculture; (2) improving resource management capabilities through the application of aquaculture technology to replenish marine resources; (3) providing a regulatory framework for marine aquaculture including the U.S. Exclusive Economic Zone (EEZ); (4) contributing to public understanding and appreciation of the role of aquaculture as a vital national food source; and (5) demonstrating a well-managed and environmentally sound system of “place-based” aquaculture principles and practices that may be adopted world-wide.

Currently, NOAA has mandates and authorities for aquaculture under the National Aquaculture Act of 1980 and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). NOAA also has aquaculture permit regulatory review responsibilities under the Endangered Species Act, the Marine Mammal Protection Act, the Magnuson-Stevens Act, and the National Marine Sanctuary Act. If enacted, the National Offshore Aquaculture Act, submitted to Congress on June 7, 2005, will require NOAA to design and implement a comprehensive regulatory program for

commercial aquaculture in the EEZ. The AQC program will work within NOAA and with the regional fishery management councils and other regional management bodies to develop regulations and/or permitting requirements through existing mandates (e.g., Magnuson-Stevens Act) until a bill is passed.

Cooperative Research. One of the larger programs classified under “Other Activities,” cooperative research enables commercial and recreational fishermen to become involved in collecting fundamental fisheries information to support the development and evaluation of management options. Through cooperative research, industry and other stakeholders can partner with NMFS and university scientists in all phases of the research program-- planning the survey/statistical design, conducting research, analyzing data, and communicating results. The information collected through cooperative research programs assists scientists and managers by supplementing the data currently collected through Federal research programs. This information improves the information base for single species, multi-species, and ecosystem assessment models and ultimately improves the evaluation of stock status and the management of fishery resources. Cooperative research covers a wide range of study areas, including fishery-dependent data, species life history, conservation engineering, species abundance and distribution, habitat, and socioeconomic impacts.

Facilities Maintenance. The NMFS Facilities Operations and Maintenance line supports the lease costs for the Kodiak, AK facility and for the Sandy Hook, NJ facility. The NMFS Facilities Operations and Maintenance line also funds operations and maintenance cost for the Santa Cruz, CA laboratory, one of the NMFS Southwest Science Center’s laboratories. The primary mission of the Sandy Hook laboratory is to conduct ecological research for the Northeast Fisheries Science Center to improve understanding of both coastal and estuarine organisms and the effects of human activities on nearshore marine populations. Research for the Southwest Fisheries Science Center is focused on Pacific Coast Groundfish and Pacific Salmon. Groundfish under study include rockfishes, flatfishes, Pacific whiting, sablefish and lingcod; salmon include coho, Chinook and steelhead. The Kodiak Fisheries Research Center (KFRC) is the primary facility for the Alaska Fisheries Science Center’s (AFSC) RACE (Resource and Conservation Engineering) Shellfish Assessment Program. The KFRC facility also provides offices and research support for other NOAA Fisheries (NMFS) program activities including: Groundfish Assessment Program, North Pacific Groundfish Observer Program, National Marine Mammal Laboratory, Alaska Regional Office, Sustainable Fisheries Division. In FY2007, NOAA will occupy new facilities at Lena Point, AK laboratory.

PROPOSED LEGISLATION:

The Administration is working with Congress to facilitate passage of a National Offshore Aquaculture Act.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Other Activities Supporting Fisheries	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Other Activities Supporting Fisheries					
Antarctic Research	1,442	1,500	1,506	2,106	600
Aquaculture	-	-	1,052	4,052	3,000
Chesapeake Bay Studies	3,452	3,000	1,967	1,967	-
Climate Regimes & Ecosystem Productivity	1,478	-	2,022	2,022	-
Computer Hardware and Software	1,972	-	3,380	3,380	-
Cooperative Research	19,092	9,000	10,515	10,315	(200)
Information Analyses & Dissemination	17,461	17,500	18,934	18,934	-
Magnuson –Stevens (MSA) Implementation off Alaska	-	-	7,918	7,918	-
Marine Resources Monitoring, Assessment & Prediction Program (MarMap)	839	-	842	842	-
National Environmental Policy Act (NEPA)	7,890	7,900	8,075	8,075	-
NMFS Facilities Operations and Maintenance	3,945	3,900	3,998	6,046	2,048
LaJolla Temporary Relocation	-	-	-	1,000	1,000
Southeast Area Monitoring & Assessment Program (SEAMAP)	1,363	-	5,098	5,098	-
Other Projects	10,972	-	-	5,000	5,000
TOTAL	69,906	42,800	65,307	76,755	11,448
FTE	-	-	-	5	5

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Antarctic Research (+ 0 FTE and \$600,000): NMFS is requesting an increase of \$600,000 and no FTEs for the Antarctic Research line item to support NOAA’s goal of managing the use of Southern Ocean resources through an ecosystem approach. The funds will enable the AMLR program to develop an International Polar Year research program and enable NOAA’s Antarctic marine Living Resource (AMLR) program to continue to collect biological and oceanographic information for one of the longest running data streams on the Antarctic marine ecosystem.. The

2008 field season represents the 22nd year of NOAA's only ecosystem-based Antarctic program collecting biological and oceanographic information.

Statement of Need

In recent years, U.S. commercial fishing vessels have become active in the Antarctic, targeting crab, krill, and toothfish. Under the authority of the Antarctic Marine Living Resources Convention Act of 1984 (Public Law 98-623), NOAA must monitor the actions of U.S. fishermen, including observation of fishing operations.

NOAA's AMLR Program is the only U.S. long-term ecosystem-based program designed specifically to address the management issues of the Southern ocean. Since 1986, NOAA's AMLR Program has conducted field studies in Antarctic waters to investigate the effects of krill, crab, and finfish fisheries on the Southern Ocean ecosystem. The principal objective of this program is to collect the scientific information needed to detect, monitor, and predict the effects of harvesting and associated activities on target, dependent, and related species and populations of Antarctic marine living resources, as well as on the ecosystem(s) of which they are a part.

AMLR's research also supports the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR). CCAMLR is an international treaty between 25 nations that seeks to manage Antarctic fisheries with the goal of preserving species diversity and stability of the entire Antarctic marine ecosystem. During the last decade, the AMLR Program has provided leadership to CCAMLR's scientific committees and working groups and has hosted or convened numerous meetings and workshops. NOAA requires these additional funds to continue its active leadership role in polar research in FY 2008.

Proposed Action

The AMLR Program is managed by NOAA's Southwest Fisheries Science Center. This request will enable AMLR to continue to provide scientific and management advice to the U.S. Department of State to ensure continuation of U.S. policy relating to the conservation and management of marine living resources in Antarctic waters.

NOAA's request will enable the continuation of field studies in Antarctic waters to investigate the effects of krill, crab, and finfish fisheries on the ecosystem, including effects on seal and penguin populations. With this request, NOAA will be able to continue the following research:

- Krill - survey and map krill distribution and abundance and measure environmental variables influencing krill off the Antarctic Peninsula.
- Finfish - conduct bottom trawl surveys to characterize finfish population dynamics and relationships to other predator/prey species.
- Penguins and seals - characterize distribution, abundance and life history dynamics (i.e., reproductive success) and abundance.
- Commercial Fisheries - adequately monitor U.S. commercial fleet activities to ensure compliance with international fishing regulations.

Benefits

NOAA's AMLR Program emphasizes directed research to manage Antarctic marine living resources from an ecosystem perspective. AMLR is the most comprehensive research program using land-, sea-, and space-based platforms to gather information on the environment and ecology in the Antarctic Peninsula and Southern Ocean.

The long-term vision for this program is to quantify the functional relationships between finfish and krill, their environment and their predators. Once NOAA elucidates these relationships, CCAMLR will have the capability to manage the marine living resources in the Southern Ocean using an ecosystem approach to ensure sustained harvesting of krill, fish, and crabs.

Performance Goals and Measurement Data

NMFS' request will support the Departmental objective and NOAA goal to "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management" under the Department of Commerce strategic goal to "Observe, protect, and manage the Earth's resources to promote environmental stewardship."

The Antarctic Research line item directly supports the following measure:

Performance Goal: <i>Ecosystems Percentage of Fish Stocks with Adequate Population Assessments and Forecasts.*</i>	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Without Increase	51.7%	53.9%	57.0%	55.7%	54.8%	53.5%
With Increase	51.7%	53.9%	57.0%	55.7%	54.8%	53.5%

* This is a component of the NMFS GPRA measure *Percentage of Living Marine Resources (LMR) with Adequate Population Assessments and Forecasts*.

Aquaculture (+5 FTE and +\$3,000,000): NOAA requests an increase of \$3,000,000 and 5 FTEs to develop a regulatory program for marine aquaculture in the U.S. Exclusive Economic Zone (EEZ) as called for in the Administration's legislative proposal, the National Offshore Aquaculture Act of 2005.

Congress held two hearings on this bill in 2006, and the Administration intends to resubmit the bill to the 110th Congress. The offshore aquaculture legislation fulfills the recommendation in the Administration's *U.S. Ocean Action Plan* of advancing offshore aquaculture in U.S. ocean waters. The budget and staff increase will also be used to improve implementation of mandated regulatory and science activities related to aquaculture under current laws, such as the Magnuson-Stevens Fishery Conservation and Management Act and the Endangered Species Act (ESA). Aquaculture will effectively reduce U.S. dependence on seafood imports, provide job opportunities for economically depressed coastal communities, and increase regional food supply and economic security.

Statement of Need

Worldwide, commercial harvest of marine fish is at maximum levels and is not keeping pace with the demand for seafood. International marine aquaculture production is helping to meet domestic and world demand, but little of this additional marine production is from domestic sources. In addition,

the 2004 report by the United Nations Food and Agriculture Organization (FAO), *State of World Fisheries and Aquaculture*, states that harvest from world capture fisheries is projected to stagnate, while world aquaculture production is projected to increase substantially. Of the expected increase of 43 million tons in global fish production from 1999 to 2015, 73 percent would come from aquaculture. Currently, over 70 percent of the seafood consumed in the United States is imported, with at least 40 percent of these products grown in overseas aquaculture facilities, thus producing an annual seafood trade deficit of nearly \$8 billion.

NOAA needs to establish a program to provide regulatory certainty—a critical prerequisite for private sector investment in offshore aquaculture. NOAA's role in reviewing and processing permits under existing laws, and working with states on marine aquaculture issues, will also be enhanced. NOAA needs to support actions that foster sustainable economic development and environmentally friendly technologies, increase domestic seafood production to complement wild catch, create new employment opportunities, reduce the growth in the trade deficit in seafood products, and enhance regional food supply and security. The requested funding is needed to develop and support the regulatory program, including developing environmental standards and monitoring protocols.

Proposed Action

The Aquaculture (AQC) program will establish a regulatory capacity and enhanced science program to meet the mandates called for in the proposed National Offshore Aquaculture Act. The increase will support the development of regulations and procedures to receive and evaluate applications and issue permits for aquaculture facilities sited and operated in offshore areas and to monitor compliance with permit requirements. With the increase, draft regulations would be promulgated in FY 2008, with final regulations and permitting requirements completed in FY 2009. Specific AQC program activities in support of the offshore legislation would include: prepare a programmatic environmental impact statement and conduct stakeholder meetings; coordinate legal and regulatory issues with states and with other federal agencies; develop regulations and standards for permit approval; design the permit system, associated forms, and guidance documents; identify applicable environmental standards and develop additional environmental standards, as necessary; conduct associated scientific research; establish monitoring requirements; and hire regional and headquarters staff to support and implement these activities. Funding will support the development of the rulemaking and regulation process and allow for related research needed to develop environmental standards and monitoring protocols.

Benefits

An effectively managed domestic marine aquaculture program will provide significant opportunities for the private sector to establish economically and environmentally sustainable aquaculture enterprises in marine waters by providing regulatory certainty, while reducing the number of user conflicts (i.e., recreational versus commercial) in the near-shore environment. In addition, NOAA's role in reviewing and processing permits under existing laws, and working with states on marine aquaculture issues, will be enhanced. These actions will help foster sustainable economic development and environmentally friendly technologies, increase domestic seafood production to complement wild catch, create new employment opportunities, reduce the growth in the trade deficit in seafood products, and enhance regional food supply and security.

Performance Goals and Measurement Data

The United States cannot meet current seafood demand with its existing seafood supply. U.S. seafood demand is expected to grow by over two million metric tons by 2025. To meet this demand, the United States must either increase its reliance on imports or increase its domestic seafood production through aquaculture. With implementation of an offshore aquaculture regulatory program and improvements to existing regulatory programs, NOAA will be in a better position to regulate and manage U.S. aquaculture activities in a way that enables sustainable aquaculture, safeguards the environment and wild stocks, and benefits multiple stakeholders.

The \$3 million requested increase for the AQC program will support the Departmental objective and NOAA goal to "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management" under the Department of Commerce Goal to "Observe, protect, and manage the Earth's resources to promote environmental stewardship." Furthermore, the increase will support NOAA's Strategic Plan performance objective to "increase environmentally sound aquaculture production." Of the 11 program objectives identified in the 2005 *10-Year Plan for the NOAA Aquaculture Program*, the \$3 million increase will allow two to be met and five others to be partially met.

Performance Goals	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Number of Offshore Aquaculture Permits Issued Annually						
Without Increase	0	0	0	0	0	0
With Increase	0	0	0	1	2	3
Regulations Issued						
Without Increase						
With Increase			Draft	Final		

Cooperative Research (+ 0 FTE and -\$200,000): NOAA requests a decrease of \$200,000 and 0 FTE from the overall Cooperative Research line item. NOAA will apply the \$200,000 decrease to higher priority needs. In FY 2008, the net request will include support for continuation of regional partnership opportunities in the Gulf of Mexico, a strategy advocated in the President's U.S. Ocean Action Plan.

Statement of Need

In cooperative research, fishery scientists partner with commercial and recreational fishermen, the fishing industry, nongovernmental organizations, state fisheries management agencies, and universities. Partners in the regional cooperative research programs vary according to regional priorities and opportunities, but all programs involve fishermen, the fishing industry, or other partnership groups to some degree. Through these partnerships the agency gains access to knowledge, tools, techniques, skills, and experiences otherwise unavailable to NOAA scientists. This access enhances the quality of our

scientific recommendations, fosters a better understanding of NOAA science and the processes behind it, and creates greater support for subsequent management policies. Moreover, working together creates synergy, not only for joint problem solving but also for identifying which scientific questions to undertake, setting priorities for them, and determining which approaches to use.

The majority of funds for the National Cooperative Research line item are allocated equally among all NOAA regions to conduct projects in support of regional stock assessment and fisheries management priorities. Many of these projects are ongoing, multi-year efforts. The remaining funds are used to address recommendations in the National Research Council report *Cooperative Research in the National Marine Fisheries Service (2004)* to improve the implementation of agency cooperative research efforts.

Proposed Action

NOAA requests a decrease of \$200,000 in the National Cooperative Research program. With the remaining funds, the National Cooperative Research Program will continue to support a broad range of cooperative projects throughout the United States to improve the science and management of our living marine resources.

Benefits

The decrease will allow the Department of Commerce to fund other high priority work, while maintaining the partnering opportunities provided through our cooperative research programs. Commercial and recreational vessels help fill the time and location gaps in our surveys. Industry vessels can be used for fine-scale surveys, to survey close to shore, to test fishing gear that minimizes wasteful bycatch, at multiple locations simultaneously for tag/recapture studies, and to serve as an early warning system for significant biological and oceanographic events as part of a long-term study fleet. Fishing vessels are also appropriate platforms for standardized stock assessment surveys that use gear less sensitive to changes in vessel type, such as traps, pots, and longlines. Self-contained vans containing specialized acoustic or laboratory equipment can be placed aboard larger vessels to extend fishing vessel capabilities. Industry participants also provide a wealth of knowledge on resource distribution of individual species and stocks that we can use to fine-tune and interpret our broader-scale multispecies surveys.

La Jolla Temporary Relocation (+0 FTE and \$1,000,000): NMFS requests an increase of \$1,000,000 to provide temporary leased space for personnel working in the Southwest Fisheries Science Center (SWFSC) in La Jolla, CA.

Statement of Need

The SWFSC complex is within 25 feet of an eroding 200-foot-high bluff abutting the La Jolla Shores beach on the Pacific Ocean. According to geological studies of existing cliff stability and ongoing erosion at the bluff, the potential exists for future slope failures to affect the structural integrity of the bluff-side SWFSC buildings. Based on this information, NMFS will vacate staff from the Laboratory into leased space pending construction of new facilities. The \$1,000,000 request is required to cover the lease costs.

The SWFSC is situated on a 2.48-acre land parcel. Occupied since 1964, the property was deeded to NOAA by the Regents of the University of California under a 99-year lease. The existing La Jolla Laboratory houses research and support staff in a four-building facility of approximately 100,000 gross square feet.

Proposed Action

NOAA is working with the General Services Administration to identify off-site space to house displaced staff members. This staff primarily includes the protected species division, AUV laboratory, and some administrative support staff. The \$1,000,000 request represents the estimated annual costs and is required at least through FY 2011.

Benefits

The SWFSC conducts research involving Pacific fisheries and other marine resources at La Jolla, California and at three satellite laboratories. La Jolla-based research focuses on highly migratory species, coastal pelagic species, marine mammals and whales, sea turtles, and Antarctic marine resources. By allowing NMFS to expeditiously move personnel out of two of the La Jolla facility buildings, this request ensures that personnel can pursue the Agency's mission in a safe environment with minimal impact on their science activities.

Performance Goals and Measurement Data

NMFS' request will support the Departmental objective and NOAA goal "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management" under the Department of Commerce strategic goal to "Observe, protect, and manage the Earth's resources to promote environmental stewardship."

Pacific Island Region/Center (+ 0 FTE and \$5,000,000): NOAA requests \$5,000,000 to support the NOAA National Marine Fisheries Service (NMFS) Pacific Islands Regional Office (PIRO) and Pacific Islands Fisheries Science Center (PIFSC) in Hawaii. The increase provides resources needed for NOAA to protect, restore, and manage the use of coastal and ocean resources in the Pacific Islands Region through an ecosystem approach to management. NOAA's request provides funding for 33 existing FTEs, supports more effective science-based fishery management decisions, improves grants management, advances peer-reviewed ecosystem science, and institutes overall organizational management efficiency.

NOAA's request provides for enhanced outreach and education capabilities, and our constituents will directly benefit from the requested increase. The capability particularly enables PIRO and PIFSC to efficiently respond to the informational needs of the Western Pacific Fishery Management Council (WPFMC). Furthermore, the increase supports increased administrative capabilities thereby enhancing the ability of NOAA and the WPFMC to deliver timely, accurate advice and scientific input to inquiries from the Department of Commerce, NOAA, NMFS, the State of Hawaii, academia, other federal agencies, and nongovernmental organizations (NGO).

The capability will support NOAA's commitment to the following U.S. Ocean Action Plan recommendations: "advance regional fisheries management" and "advance the use of large marine ecosystems."

Statement of Need

NOAA established PIRO and PIFSC as an independent financial management center beginning in FY 2004. Previously, the Pacific Islands Regional Office and Science Center were subordinate to the NMFS Southwest Region.

Financial constraints associated with splitting two regions prevented NOAA from providing adequate funding for new infrastructure and increased administrative responsibilities. Presently, NOAA is challenged with effectively accomplishing its regulatory mission due to the additional responsibilities associated with the new region.

Proposed Action

This request provides sufficient funding to address the Region's increased administrative and programmatic responsibilities and provides the resources needed for the new Pacific Islands Regional Office and Science Center to fulfill their mission goals in fishery management, protected species and habitat conservation, financial and operational management, and public outreach.

PIRO has operational programs in place for each of its mandates. The request will enhance these capabilities by providing resources to match personnel to the needs of the region, thereby providing overall stability for the PIRO program. Specifically, this increase will allow for the:

1. support for 19 FTEs to conduct fishery management, protected species, habitat conservation, and financial management center (FMC) responsibilities; and
2. support for 14 FTEs to provide science and research leadership; to help meet FMC responsibilities; to institute a sound safety program; and to support new research critical to resource management in the Pacific Islands Region. Additionally, upgrades to workplace safety and safety administration are a priority. The requested increase will enhance leadership and operational oversight capabilities of the Science Center.

Benefits

NOAA will improve upon its high-quality science-based resource management in the central and western Pacific including increasing the percentage of living marine resources with adequate population assessments and forecasts by 3.5%. The increased funding will also strengthen NOAA's ability to protect, restore, and manage the use of coastal and ocean resources in the Pacific Islands Region through an ecosystem approach to management.

Performance Goals and Measurement Data

This request will support the Departmental objective and NOAA goal "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management" under the Department of Commerce strategic goal to "Observe, protect, and manage the Earth's resources to promote environmental stewardship."

NMFS Facilities Operations and Maintenance (+0 FTE and \$2,048,000): NOAA requests an increase of 0 FTE and \$2,048,000 for NMFS Facilities Operations and Maintenance to cover operation and maintenance costs for the NMFS Alaska Fisheries Science Center's new Ted Stevens Marine Research Institute (Lena Point Facility).

Statement of Need

Most of the staff working in the Alaska Fisheries Science Center's Auke Bay Laboratory will relocate to the new Lena Point facility in FY 2007. The facility will contain 69,000 square feet of floor space configured in two stories with a partial basement. The requested \$2,048,000 is necessary because NOAA's current Auke Bay Laboratory Operations and Maintenance budget is not sufficient to support this new facility. In addition, some portions of the old Auke Bay Laboratory will remain in use, requiring continued infrastructure support. The seawater system and storage building are needed to support salmonid and mixed salinity research done only at the Auke Creek site; the pier/float and associated dockside building space, dive locker space, and the specimen storage facility containing the North Pacific Fish Collection will remain at the Auke Bay laboratory.

Proposed Action

NOAA staff at the Alaska Fisheries Science Center's Auke Bay Laboratory will begin to relocate to the facility in February 2007, with final occupancy expected in March 2007. Of the funds requested, \$953,000 is for heating and power costs. This request was based on load estimates provided by the construction contractor. The request also includes \$1,095,000 for maintenance and repair. This amount was calculated using the NRC standard of between two and four percent of the replacement value of the facility.

Benefits

This new facility will allow NOAA to strengthen critical scientific research programs in Alaska. For NOAA to manage for the long-term health of commercial, recreational, subsistence, and environmental resources in the North Pacific, its scientists and managers must understand how these resources interact with each other and their environment over time. Currently, NOAA has no facilities in Alaska with sufficient space or of sufficient quality to address the growing need for scientific information regarding the region's marine resources. The research institute will enable NMFS to bring together various program elements; conduct advanced marine science research, including new laboratory initiatives; and hold interactive management and science meetings. These activities are critical to the future health of Alaska's fishing industry.

The University of Alaska Fairbanks (UAF) School of Fisheries and Ocean Sciences (SFOS) operates a graduate program out of its Juneau Center, and UAF plans to construct a new 31,000-square-foot SFOS building on the NOAA site at Lena Point. The University of Alaska-Fairbanks School of Fisheries and Ocean Sciences has operated in Juneau for more than 20 years next to the NOAA's Auke Bay Laboratories. Co-location will continue the capability of timely and economical exchange of information and collaborative research between NMFS and UAF researchers—a collaboration that has a proven record of contributing information and expertise to benefit Alaska's fishing industries.

Performance Goals and Measurement Data

NMFS' request will support the Departmental objective and NOAA goal "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management" under the Department of Commerce strategic goal to "Observe, protect, and manage the Earth's resources to promote environmental stewardship."

**Subactivity: Alaska Composite Research and Development
Line Item: AK Composite Research and Development Program**

GOAL STATEMENT:

Provide accurate and timely information and analyses on the biological, ecological, economic, and social aspects of Alaska's fisheries resources and develop, implement, and monitor living marine resource management measures to support the National Oceanic and Atmospheric Administration's (NOAA) Strategic Plan goal to, "Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management."

BASE DESCRIPTION:

The FY 2006 *Science, State, Commerce, Justice, and Related Agencies Appropriations Act* enacted funding for a new budget line titled the Alaska Composite Research and Development Program that focused upon Alaska fisheries and marine mammals. The appropriations bill enacted a significant consolidation of the NMFS budget resulting in the realignment of approximately 50 budget lines into a single PPA (Program, Project, or Activity) for the conservation and management of Alaska fisheries and marine mammals.

The Commerce, Justice, Science Subcommittee of the Senate Appropriations Committee recognized that Alaska fisheries management requires data and research on over 900,000 square miles of ocean within the Exclusive Economic Zone off Alaska's coast. Alaska fisheries landings, in 2004, made up 55% of total U.S. landings by weight (5.36 billion pounds), and accounted for over 32% of the total value (\$1.17 billion). Two of the Nation's top three fishing ports, in terms of highest dollar value for commercial landings, are in Alaska. In 2004, Dutch Harbor-Unalaska moved the most fish of any port--886.4 million pounds for a total dollar value of \$155 million. Kodiak, Alaska, was not far behind generating \$91 million for 312.6 million pounds of fish landed.

NOAA, the State of Alaska, and our Alaskan partners—Alaska Native organizations, academia, and non-governmental organizations—conduct scientific and management activities to ensure future sustainable and abundance-based harvests of these living marine resources. Furthermore, the program supports longstanding efforts to promote the sustainability of select marine mammal species such as Steller sea lions, northern fur seals, and beluga whales.

This initiative reflects NOAA's support of the Office of Science and Technology Policy's FY 2008 Research and Development Budget Priorities by supporting technological innovation that spurs economic competitiveness. Alaska's fisheries management requires data and research on over 900,000 square miles of ocean within the Exclusive Economic Zone off Alaska's coast. These funds are critical to provide data collection, analysis and further resource development of these fisheries. Equally important, the Alaska Composite Research and Development Program will provide continued economic opportunity for the State of Alaska and its numerous coastal communities.

Starting with the FY 2008 Budget Request, NOAA will no longer request funding for Alaskan research and conservation activities under the Alaska Composite Research and Development line item. Instead, NOAA will request funding for Alaska activities within the original budget lines that previously funded these activities.

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Alaska Composite Research and Development	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: AK Composite Research and Development Program					
TOTAL	50,298	20,000	-	-	-
FTE	-	-	-	-	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

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Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Contribution to the NOAA Strategic Planning Goals and Objectives
(Dollar amounts in thousands)

National Marine Fisheries Service	FY 2006 Actuals	FY 2007 Currently Available	FY 2008 Base Program	FY 2008 Estimate	Inc/Dec from Base
	Amount	Amount	Amount	Amount	Amount
Climate					
Climate	1,478	-	2,022	2,022	-
Total C	1,478	-	2,022	2,022	-
Ecosystems					
Ecosystems	759,850	513,394	628,204	673,572	45,368
Total ECO	759,850	513,394	628,204	673,572	45,368
Mission Support					
MS	30,058	27,706	28,985	28,985	-
Total MS	30,058	27,706	28,985	28,985	-
Total National Marine Fisheries Service	791,386	541,100	659,211	704,579	45,368

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Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service		FY 2006		FY 2007		FY 2008		FY 2008		Inc/Dec	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	from Base	Personnel
Protected Species Research and Management											
Protected Species	Pos/BA	737	144,561	755	108,000	755	161,245	766	165,095	11	3,850
	FTE/OBL	682	144,992	657	109,851	660	161,245	668	165,095	8	3,850
<hr/>											
Total: Protected Species Research and Management	Pos/BA	737	144,561	755	108,000	755	161,245	766	165,095	11	3,850
	FTE/OBL	682	144,992	657	109,851	660	161,245	668	165,095	8	3,850
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Fisheries Research and Management											
Fish	Pos/BA	1,766	285,364	1,766	256,800	1,766	308,271	1,787	325,341	21	17,070
	FTE/OBL	1,141	288,369	1,444	260,389	1,451	308,271	1,467	325,341	16	17,070
<hr/>											
Total: Fisheries Research and Management	Pos/BA	1,766	285,364	1,766	256,800	1,766	308,271	1,787	325,341	21	17,070
	FTE/OBL	1,141	288,369	1,444	260,389	1,451	308,271	1,467	325,341	16	17,070
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Enforcement and Observers / Training											
Enforcement	Pos/BA	248	43,547	248	50,000	248	54,678	248	54,678	-	-
	FTE/OBL	210	56,937	188	50,020	188	54,678	188	54,678	-	-
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Observers & Training	Pos/BA	8	23,175	8	23,500	8	29,295	8	32,295	-	3,000
	FTE/OBL	72	25,030	63	23,984	63	29,295	63	32,295	-	3,000
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Total: Enforcement and	Pos/BA	256	66,722	256	73,500	256	83,973	256	86,973	-	3,000

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar amounts in thousands)

Observers / Training	FTE/OBL	282	81,967	251	74,004	251	83,973	251	86,973	-	3,000
Habitat Conservation & Restoration											
Habitat Conservation	Pos/BA	111	174,535	111	40,000	111	40,415	111	50,415	-	10,000
	FTE/OBL	124	174,772	234	40,583	234	40,415	234	50,415	-	10,000
Total: Habitat Conservation & Restoration	Pos/BA	111	174,535	111	40,000	111	40,415	111	50,415	-	10,000
	FTE/OBL	124	174,772	234	40,583	234	40,415	234	50,415	-	10,000
Other Activities Supporting Fisheries											
Other Activities Supporting Fisheries	Pos/BA	-	69,906	-	42,800	-	65,307	7	76,755	7	11,448
	FTE/OBL	274	71,047	-	43,227	-	65,307	5	76,755	5	11,448
Total: Other Activities Supporting Fisheries	Pos/BA	-	69,906	-	42,800	-	65,307	7	76,755	7	11,448
	FTE/OBL	274	71,047	-	43,227	-	65,307	5	76,755	5	11,448
Alaska Composite Research and Development											
AK Composite Research and Development Program	Pos/BA	-	50,298	-	20,000	-	-	-	-	-	-
	FTE/OBL	182	50,116	-	20,182	-	-	-	-	-	-
Total: Alaska Composite Research and Development	Pos/BA	-	50,298	-	20,000	-	-	-	-	-	-
	FTE/OBL	182	50,116	-	20,182	-	-	-	-	-	-

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Marine Fisheries Service
 Subactivity: Protected Species Research and Management

Title	Grade	Number	Annual Salary	Total Salaries
Attorney	Silver Spring, MD	2	91,407	182,814
Fisheries Biologist	Silver Spring, MD	4	91,407	365,628
Fisheries Biologist	Silver Spring, MD	5	65,048	325,240
Total		11		873,682
Less Lapse	25%	-3		(218,421)
Total full-time permanent (FTE)		8		655,262
2007 Pay Adjustment (2.2%)				14,416
2008 Pay Adjustment (3%)				20,090
Total				689,768
<u>Personnel Data</u>		<u>Number</u>		
Full-time permanent		8		
Other than full-time permanent		0		
Total		8		
 Authorized Positions				
Full-time permanent		11		
Total		11		

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Marine Fisheries Service
Subactivity: Fisheries Research and Management

Title		Grade	Number	Annual Salary	Total Salaries
Fisheries Mgt. Specialist	Juneau, AK	ZP4	1	87,533	87,533
Fisheries Mgt. Specialist	Seattle, WA	ZP4	1	91,741	91,741
Fisheries Mgt. Specialist	St. Petersburg, FL	ZP4	3	87,533	262,599
Scientist	Honolulu, HI	ZP4	1	87,533	87,533
Scientist	La Jolla, CA	ZP4	1	92,721	92,721
Scientist	Miami, FL	ZP4	1	91,671	91,671
Scientist	Seattle, WA	ZP4	2	91,741	183,482
Scientist	Silver Spring, MD	ZP5	1	107,521	107,521
Scientist	Silver Spring, MD	ZP4	1	91,407	91,407
Scientist	Woods Hole, MA	ZP4	1	93,344	93,344
Statistician	Juneau, AK	ZP4	1	87,533	87,533
Statistician	Seattle, WA	ZP4	1	91,741	91,741
Statistician	St. Petersburg, FL	ZP4	2	87,533	175,066
Tech. Information Specialist	Juneau, AK	ZP4	1	87,533	87,533
Tech. Information Specialist	Seattle, WA	ZP4	1	91,741	91,741
Tech. Information Specialist	St. Petersburg, FL	ZP4	2	87,533	175,066
Total			21		1,898,232
Less Lapse	25%		-5		(474,558)
Total full-time permanent (FTE)			16		1,423,674
2007 Pay Adjustment (2.2%)					31,321
2008 Pay Adjustment (3%)					43,650
Total					1,498,645

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE PERSONNEL DETAIL

Personnel Data	Number
Full-time permanent	16
Other than full-time permanent	0
Total	16
Authorized Positions	
Full-time permanent	21
Total	21

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Marine Fisheries Service
 Subactivity: Other Activities Supporting Fisheries

Title	Grade	Number	Annual Salary	Total Salaries	
Aquaculture Coordinator	Silver Spring, MD	ZP4	1	77,353	77,353
Aquaculture Scientist	Silver Spring, MD	ZP4	1	77,353	77,353
Aquaculture Specialist	Gloucester, MA	ZP4	1	78,992	78,992
Aquaculture Specialist	Honolulu, HI	ZP4	1	74,074	74,074
Aquaculture Specialist	Seattle, WA	ZP4	1	77,636	77,636
Aquaculture Specialist	St. Petersburg, FL	ZP4	1	74,074	74,074
Regulatory/Permit Specialist	Silver Spring, MD	ZP3	1	54,272	54,272
Total			7		513,754
Less Lapse	25%		-2		(128,439)
Total full-time permanent (FTE)			5		385,316
2007 Pay Adjustment (2.2%)					8,477
2008 Pay Adjustment (3%)					11,814
Total					405,606
Personnel Data			Number		
Full-time permanent			5		
Other than full-time permanent			0		
Total			5		
Authorized Positions			Number		
Full-time permanent			7		
Total			7		

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Protected Species Research and Management

Object Class	2008 Increase
11 Personnel compensation	
11.1 Full-time permanent	690
11.5 Other personnel compensation	11
11.6 Personnel Compensation	161
11.9 Total personnel compensation	862
12.1 Civilian personnel benefits	197
21 Travel and transportation of persons	184
23.1 Rental payments to GSA	64
23.2 Rental payments to others	100
23.3 Communications, utilities and miscellaneous charges	800
25.1 Advisory and assistance services	10
25.2 Other services	2,157
26 Supplies and materials	252
31 Equipment	1,224
41 Grants, subsidies and contributions	1,000
99 Total Obligations	6,850

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
 (Dollar amounts in thousands)

Activity: National Marine Fisheries Service
 Subactivity: Protected Species Research and Management

	Object Class	2008 Decrease
25.2	Other services	(3,000)
99	Total Obligations	(3,000)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Fisheries Research and Management

Object Class	2008 Increase
11 Personnel compensation	
11.1 Full-time permanent	1,498
11.6 Personnel Compensation	350
11.9 Total personnel compensation	1,848
12.1 Civilian personnel benefits	515
21 Travel and transportation of persons	258
25.1 Advisory and assistance services	23
25.2 Other services	6,290
25.5 Research and development contracts	7,079
31 Equipment	48
41 Grants, subsidies and contributions	3,089
99 Total Obligations	19,150

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
 (Dollar amounts in thousands)

Activity: National Marine Fisheries Service
 Subactivity: Fisheries Research and Management

	Object Class		2008 Decrease
41	Grants, subsidies and contributions		(2,080)
99	Total Obligations		(2,080)

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
 (Dollar amounts in thousands)

Activity: National Marine Fisheries Service
 Subactivity: Enforcement and Observers / Training

	Object Class	2008 Increase
25.2	Other services	3,000
99	Total Obligations	3,000

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
 (Dollar amounts in thousands)

Activity: National Marine Fisheries Service
 Subactivity: Habitat Conservation & Restoration

	Object Class	2008 Increase
25.2	Other services	2,000
41	Grants, subsidies and contributions	8,000
99	Total Obligations	10,000

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Other Activities Supporting Fisheries

Object Class	2008 Increase
11 Personnel compensation	
11.1 Full-time permanent	406
11.5 Other personnel compensation	10
11.6 Personnel Compensation	95
11.9 Total personnel compensation	511
12.1 Civilian personnel benefits	235
21 Travel and transportation of persons	447
22.1 Transportation of things	189
23.1 Rental payments to GSA	1,821
23.2 Rental payments to others	1,000
23.3 Communications, utilities and miscellaneous charges	953
24 Printing and reproduction	21
25.1 Advisory and assistance services	1,883
25.2 Other services	4,389
25.3 Other purchases of goods and services from Govt accounts	10
26 Supplies and materials	58
31 Equipment	50
41 Grants, subsidies and contributions	81
99 Total Obligations	11,648

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
 (Dollar amounts in thousands)

Activity: National Marine Fisheries Service
 Subactivity: Other Activities Supporting Fisheries

	Object Class		2008 Decrease
41	Grants, subsidies and contributions		(200)
99	Total Obligations		(200)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM AND PERFORMANCE: REIMBURSABLE OBLIGATIONS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service		FY 2006		FY 2007		FY 2008		FY 2008		Inc/Dec	
		Actuals		Currently Available		Base Program		Estimate		from Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Protected Species Research and Management											
Protected Species	Pos/BA	41	12,455	41	12,455	41	12,455	41	12,455	-	-
	FTE/OBL	39	14,456	39	12,455	39	12,455	39	12,455	-	-
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Total: Protected Species	Pos/BA	41	12,455	41	12,455	41	12,455	41	12,455	-	-
Research and Management	FTE/OBL	39	14,456	39	12,455	39	12,455	39	12,455	-	-
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Fisheries Research and Management											
Fish	Pos/BA	249	13,300	249	13,300	249	13,300	249	13,300	-	-
	FTE/OBL	240	15,437	240	13,300	240	13,300	240	13,300	-	-
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Total: Fisheries Research and	Pos/BA	249	13,300	249	13,300	249	13,300	249	13,300	-	-
Management	FTE/OBL	240	15,437	240	13,300	240	13,300	240	13,300	-	-
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Enforcement and Observers / Training											
Enforcement	Pos/BA	-	5,391	-	5,391	-	5,391	-	5,391	-	-
	FTE/OBL	-	6,257	-	5,391	-	5,391	-	5,391	-	-
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Total: Enforcement and	Pos/BA	-	5,391	-	5,391	-	5,391	-	5,391	-	-
Observers / Training	FTE/OBL	-	6,257	-	5,391	-	5,391	-	5,391	-	-
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Habitat Conservation & Restoration											
Habitat Conservation	Pos/BA	10	23,219	10	23,219	10	23,219	10	23,219	-	-

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM AND PERFORMANCE: REIMBURSABLE OBLIGATIONS
 (Dollar amounts in thousands)

	FTE/OBL	10	26,950	10	23,219	10	23,219	10	23,219	-	-
Total: Habitat Conservation & Restoration	Pos/BA	10	23,219	10	23,219	10	23,219	10	23,219	-	-
	FTE/OBL	10	26,950	10	23,219	10	23,219	10	23,219	-	-
Inspection and Grading											
Inspection and Grading	Pos/BA	-	16,921	-	16,921	-	16,921	-	16,921	-	-
	FTE/OBL	-	19,641	-	16,921	-	16,921	-	16,921	-	-
Total: Inspection and Grading	Pos/BA	-	16,921	-	16,921	-	16,921	-	16,921	-	-
	FTE/OBL	-	19,641	-	16,921	-	16,921	-	16,921	-	-

**OCEANIC AND ATMOSPHERIC RESEARCH
OPERATIONS RESEARCH AND FACILITIES
FY 2008 OVERVIEW**

SUMMARIZED FINANCIAL DATA

(\$ in thousands)

Operations Research and Facilities	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Climate Research	168,688	184,000	182,538	192,791	10,253
Weather and Air Quality Research	67,146	39,000	42,170	47,170	5,000
Ocean, Coastal, and Great Lakes Research	125,524	92,586	98,947	105,447	6,500
Information Technology and R&D	6,410	12,900	12,969	12,969	0
TOTAL	367,768	328,486	336,624	358,377	21,753
FTE	710	714	714	717	3

For FY 2008, NOAA requests a total of \$358,377,000 and 3 FTE for the Office of Oceanic and Atmospheric Research Operations, Research and Facilities (ORF), a net increase of \$21,753,000.

The primary center for research and development within NOAA is the Office of Oceanic and Atmospheric Research (OAR), also referred to as NOAA Research. The major research themes are Climate Research; Weather and Air Quality Research; Ocean, Coastal and Great Lakes Research; and Information Technology and Research and Development (R&D). The goal of Climate Research is the greater understanding of the climate system to improve predictions on subseasonal through decadal time scales. The goal of Weather and Air Quality Research is to better understand and forecast atmospheric events that endanger lives and property. The goal of Ocean, Coastal and Great Lakes Research is to develop innovative management tools through a better understanding of our ocean and Great Lakes habitats and resources. The goals of Information Technology and Research and Development are to accelerate the adoption of advanced computing, communications, and information technology throughout NOAA.

NOAA Research's FY 2007 Budget introduced a transition to a revised structure of its climate activities. This simplified structure is continued in FY 2008 and is composed of five line items under the Climate Research subactivity: Laboratories & Cooperative Institutes, Competitive Research Program, Climate Operations, Climate Data & Information, and Other Partnership Programs. The new line items (Competitive Research Program, Climate Operations, and Climate Data & Information) have absorbed program activities that formerly were carried under the Climate and Global Change, Climate Observations & Services (including Climate Change Research Initiative), and Arctic Research Programs. The new structure clarifies and better aligns research activities with their appropriate executing offices.

NOAA Research operates through a national network of OAR laboratories and other OAR and university-based research programs. The OAR budget activity is managed through six organizational components: OAR Research Laboratories and Cooperative Institutes, NOAA Climate Program Office, National Sea Grant College Program, Office of Ocean Exploration and Research, Office of Weather & Air Quality, and the NOAA High-Performance Computing and Communications Program. The NOAA Undersea Research Program has been combined with Ocean Exploration, and the Arctic Research Office is now part of the Climate Program Office. With this diverse research “tool kit,” OAR provides national and international leadership on critical environmental issues and addresses environmental R&D needs of internal NOAA customers, states, industry, the Department of Commerce, and other Federal agencies.

NOAA Research Laboratories and Cooperative Institutes

OAR’s seven laboratories and thirteen cooperative institutes are charged to advance scientific understanding of the Earth. The research conducted at the laboratories is divided into three sub-activities: (1) Climate Research, which has the mission of monitoring and understanding the Earth's climate system to predict both the potential long-term changes in global climate as well as shorter-term climate variations that are of societal and economic importance; (2) Weather and Air Quality Research, where researchers strive to provide the Nation with more accurate and timely warnings and forecasts of various high-impact weather and air quality events, such as storms and elevated levels of ozone and aerosols (particulate matter), all of which may disrupt economic productivity, impact human health, or cause loss of life and property; and (3) Ocean, Coastal, and Great Lakes Research, where the research serves to increase our understanding of coastal and marine processes for the purpose of predicting, monitoring, and mitigating the effects on ecosystems of not only climate change but also other environmental and ecosystem changes (e.g., invasive species).

The NOAA Research Laboratories administer and manage OAR programs, emphasizing theoretical and analytical studies, laboratory experiments, and field observations. The primary purposes of OAR’s research are to improve NOAA services and to provide the basis for improved decision making by policymakers and the public. The OAR laboratories collaborate closely with thirteen university-based cooperative institutes and sponsor research through contracts and grants with other universities, state and Federal agencies, and private enterprises. The seven laboratories are:

Air Resources Laboratory (ARL) is headquartered in Silver Spring, MD, with divisions in Oak Ridge, TN; Research Triangle Park, NC; Idaho Falls, ID; Las Vegas, NV. ARL carries out research on processes that affect the quality of the atmosphere. These processes include the transport, transformation, and removal of trace substances through wet and dry deposition and the exchange between the atmosphere and biological and non-biological surfaces as field crops and structures. ARL’s field and laboratory studies lead to the development of air quality simulation models. The Laboratory provides scientific advice to NOAA and other government agencies to assist with emergency preparedness for environmental problems such as nuclear mishaps, volcanic eruptions, and homeland security issues.

ARL climate research studies the biogeochemical cycles of trace substances and their effects and interactions with the radiative balance at the earth’s surface. ARL operates research-grade measurement stations where the exchange of carbon dioxide and water vapor between the air and the biosphere is directly measured. ARL focuses not only on the development of deterministic models to describe the relevant processes, and on the often-dominant role of random variability that cannot be explained by current understanding. Research in all of these areas involves physical and numerical studies, leading to the

development of specialized models. The laboratory provides scientific advice to elements of NOAA and other government agencies on climate issues, and on the role of natural variability.

ARL weather and air quality research conducts physical and numerical studies of the processes affecting the quality of the atmosphere, primarily related to transport, transformation, and removal of trace substances, and uses these results to develop improved air quality forecast and assessment models. Research and development efforts include physical and numerical studies, leading to the development of air quality simulation models for regulatory and policy purposes, and increasingly for forecasting; improvement of understanding of processes that influence air quality, such as complex terrain, local meteorological conditions, and long-range transport; the Real-time Environmental Applications and Demonstration system (READY) as a mechanism for external users to gain access to ARL's suite of air quality forecast products; and providing relevant scientific advice to elements of NOAA and other government agencies, including those associated with homeland security.

Atlantic Oceanographic and Meteorological Laboratory (AOML) in Miami, FL, conducts research in oceanography, tropical meteorology, atmospheric and oceanic chemistry, and acoustics. AOML seeks to understand the physical and biological characteristics and processes of the ocean and the atmosphere, both separately and as a coupled system. AOML scientists study hurricanes, ocean current and temperature structures, ocean/atmosphere chemical exchanges, coral reefs, and the coastal ocean. This is accomplished by using research ships and aircraft, satellite remote sensing techniques, numerical and statistical models, radar, acoustics, and drifting buoys.

The principal focus of AOML is to contribute scientific research that may ultimately lead to improved prediction and forecasting of tropical cyclones and severe weather, better use and management of marine resources, better understanding of the factors affecting both climate and environmental quality, and improved ocean and weather services for the nation.

AOML climate research provides and interprets oceanographic data and conducts research relevant to decadal climate change and coastal ecosystems. This research includes the dynamics of the ocean, its interaction with the atmosphere, and its role in climate and climate change. On a global scale, AOML scientists, in conjunction with the PMEL and CMDL are studying the exchange of CO₂ between the ocean and the atmosphere and its effects on global warming and climate change. This research is conducted through numerous cruises aboard the NOAA Ship *Ronald H. Brown*. AOML hosts NOAA's Global Ocean Observing System Center (GOOS Center), which uses expendable probes and other equipment to provide ocean surface and sub-surface data to NOAA's National Centers for Environmental Prediction (NCEP) in support of seasonal to interannual climate forecasts, as well as data for decadal-scale climate research.

AOML weather and air quality research is NOAA's primary component for research on hurricanes. The aim of this research is to improve the understanding and prediction of hurricane track and intensity change through directed research and the transfer of research results to the operational hurricane forecast components of NOAA.

Research and transition efforts include:

- The annual hurricane field program, supported by the NOAA Aircraft Operation's Center research/reconnaissance aircraft;
- Analysis of data from field programs;
- Theoretical and numerical modeling studies of hurricanes;
- Preparation of storm surge atlases and wind field diagrams;
- Assessment of interannual and decadal hurricane trends;
- Providing critical assistance to the NWS Tropical Prediction Center's forecast improvement; and
- Active participation in and support of the Joint Hurricane Testbed.

AOML ocean, coastal, and Great Lakes research scientists gather, analyze, and report coastal ocean data on land-based sources of pollution and their potential environmental impacts to the coastal environment. Scientists work in cooperation with other NOAA Line Offices, other federal, state, and local authorities, including the EPA and the U.S. Army Corps of Engineers, to maximize research knowledge for use in economically and environmentally important projects in the coastal ocean such as the South Florida Ecosystem Restoration Program. AOML conducts research by monitoring coral reef ecosystems and using the data to make predictions. The Coral Reef Watch Program seeks to accomplish NOAA's goal of ecosystem forecasting and management by improving understanding of the reef ecosystem. Initiation of comprehensive long-term *in situ* coral-reef monitoring stations is intended to provide information essential for sound management decisions, and long-term planning. AOML also generates oceanographic data and conducts research relevant to decadal climate change and coastal ecosystems, such as ocean-atmosphere interactions and its role in climate and climate change. With a diverse scientific staff of physical, chemical, biological, and geological oceanographers, AOML is able to use multi-disciplinary approaches to improve NOAA's management activities.

Earth System Research Laboratory (ESRL) in Boulder, CO, represents a combination of climate and weather research capabilities aimed at undertaking the complex, interdisciplinary research increasingly needed to achieve scientific and technological breakthroughs in today's modern world, including understanding the roles of gases and particles that contribute to climate change, providing climate information related to water management decisions, improving weather prediction, understanding the recovery of the stratospheric ozone layer, and developing air quality forecast models.

ESRL has the collective goal of observing and understanding the Earth system and developing products through a commitment to research that will advance the National Oceanic and Atmospheric Administration's (NOAA's) environmental information and services on global-to-local scales. ESRL achieves this goal through its four major divisions:

Chemical Sciences Division provides the chemical-process measurements, analyses, and understanding that are needed for the Earth System Research Laboratory to address NOAA's Climate Goal (Climate Forcing) and Weather and Water Goal (Air Quality), with the aim of improving NOAA's abilities in two areas: (1) to predict changes in climate, the stratospheric ozone layer, and air quality, and (2) to deliver related science information products that address societal and policy needs.

Global Monitoring Division continuously monitors atmospheric gases, particles, and radiation across the globe to determine trends influencing climate change, ozone depletion, and baseline air quality, and to communicate the findings in usable and understandable forms.

Global Systems Division incorporates new findings in atmospheric, oceanic, and hydrologic sciences. These systems are designed to improve understanding of climate and weather at all time scales through new observation techniques, innovative diagnostic and predictive models, advanced computational analysis, and leading-edge workstation display technology.

Physical Science Division addresses physical science questions with short- and long-term societal and policy relevance within NOAA's Climate and Weather and Water Goals. The division also conducts the physical process research necessary for ESRL to provide the nation with a seamless suite of information and forecast products, ranging from short-term weather forecasts to longer-term climate forecasts and assessments.

Geophysical Fluid Dynamics Laboratory (GFDL) in Princeton, NJ, conducts cutting-edge research on many topics of great practical value, including weather and hurricane forecasts, El Niño prediction, stratospheric ozone depletion, and global warming. GFDL's goal is to understand and predict Earth's climate and weather, including the impact of human activities on climate.

GFDL's *Climate Research* mission is to conduct research to better understand natural climate variability and anthropogenic climate changes via the development and improvement of global climate models. GFDL also works cooperatively in NOAA to provide expert assessments of changes on regional, national, and global climate. To achieve its mission, GFDL conducts comprehensive long lead-time climate research fundamental to expanding the scientific understanding of the physical and chemical processes governing the behavior of the atmosphere and oceans. This research leads to state-of-art global climate models which provide a suite of climate products for decision support by policy makers. To ensure the maintenance of its climate modeling capability, GFDL supports a very large, scalable computer system that provides critical computing, storage, and analysis capabilities, as well as model development and infrastructure support. This computing program allows NOAA to leverage the world-class research staff at GFDL to advance the Nation's climate program.

Weather and Air Quality Research at GFDL is engaged in comprehensive long lead-time research fundamental to NOAA's mission. The goal of the Laboratory's atmospheric research is to expand the scientific understanding of the physical processes governing the behavior of the atmosphere as a complex fluid system. This system can then be modeled mathematically and their phenomenology studied by computer simulation methods. The need for short-term warning and forecast product covers a broad spectrum of environmental events, which have lifetimes ranging from several minutes to several weeks.

Efforts at GFDL are centered on the development of comprehensive numerical global climate models and the frameworks in which the models are embedded. These numerical models are used in the prediction of "short-term" atmospheric phenomena such as hurricanes and coastal storms, and may also be used to study longer-term events such as the climatology of storm tracks over the oceans. The research conducted at GFDL can be developed and transitioned to NOAA operations of numerical models used in the prediction of short-term atmospheric phenomena, including tornadoes, hurricanes, and coastal storms.

Great Lakes Environmental Research Laboratory (GLERL) in Ann Arbor, MI, has a field facility in Muskegon, MI. Under the Ocean, Coastal, and Great Lakes Research line item, GLERL conducts integrated, interdisciplinary environmental research in support of resource management and environmental services in coastal and estuarine waters, with a primary emphasis on the Great Lakes. The laboratory performs field, analytical, and

laboratory investigations to improve understanding and prediction of biological and physical processes in estuaries and coastal areas and their interdependencies with the atmosphere and sediments. GLERL emphasizes a systems approach to problem-oriented research to develop environmental service tools.

National Severe Storms Laboratory (NSSL) in Norman, OK, conducts *Weather and Air Quality* research to improve the accuracy and timeliness of forecasts and warnings of hazardous weather events such as blizzards, ice storms, flash floods, tornadoes, and lightning. NSSL accomplishes this goal through a balanced program of research to:

- Advance the understanding of weather processes;
- Improve forecasting and warning techniques;
- Development of operational applications;
- Transfer of knowledge, techniques, and applications to the NWS and other agencies;
- Development of the NEXRAD Doppler weather radar, the cornerstone Doppler radar network now operated by NWS offices across the United States, and the development of new radar technologies (e.g., dual-polarization and phased array radar); and
- Conduct field programs that use mobile, *in situ*, and remote observational capabilities to collect data that support theoretical research.

Pacific Marine Environmental Laboratory (PMEL) in Seattle, WA, carries out interdisciplinary scientific investigations in oceanography, marine meteorology, and related subjects. PMEL focuses on coastal and open-ocean observations and modeling to improve: (1) our understanding of the physical, biological, and geochemical processes operating in the world oceans, and (2) environmental forecasting capabilities and other supporting services for marine commerce and fisheries. PMEL also supports an undersea observation and research program (VENTS) in Newport, OR.

Climate research at PMEL focuses on coastal and open ocean observations in support of prediction of the ocean environment on daily through decadal time scales. Studies are conducted to improve our understanding of the complex physical and geochemical processes operating in the world oceans, define the forcing functions and the processes driving ocean circulation and the global climate system, and improve environmental forecasting capabilities and other supporting services for marine commerce and fisheries. The internationally known laboratory conducts El Niño research, which has improved climate forecasts and contributed to leading to reduced loss of life and property.

The focus of PMEL's *weather and air quality* activities is to support the NWS tsunami warning centers by conducting research and development on the improvement of tsunami forecasting. NOAA develops and transfers PMEL's research results to NWS to improve forecast abilities and modeling which provides valued information to decision makers. The Tsunami Project seeks to mitigate tsunami hazards in Hawaii, California, Oregon, Washington, and Alaska through improved tsunami warnings using state-of-the-art instrument systems developed by the Laboratory's Engineering Development Division. The goal of this project is to reduce fatalities, damage, and losses caused by these natural hazards.

Ocean, Coastal, and Great Lakes Research at PMEL consists of the following ocean research programs:

- Fisheries Oceanography Coordinated Investigations (FOCI) is a collaborative research effort by scientists at PMEL and the Alaska Fisheries Science Center to improve the prediction of valuable fish (e.g. Pollock) and shellfish stocks in the Gulf of Alaska and the Bering Sea for the Alaska Regional Fisheries Management Council. Forecasts of these changes provide North Pacific fisheries managers with the best available information necessary for allocating fish landings by commercial fishermen.
- The VENTS Program, established in 1984, conducts research on the oceanic impacts and consequences of submarine volcanoes and hydrothermal venting. The program focuses on understanding the chemical and thermal effects of venting along the northeast Pacific Ocean seafloor spreading centers, which provides the foundation for prediction of the global-scale impact of seafloor hydrothermal systems on the ocean.

Cooperative Institutes - OAR has developed cooperative institute partnerships with academic and scientific institutions dedicated to oceanic and atmospheric research. Cooperative Institutes, as described in NOAA's Cooperative Institute policy, foster long-term collaborations that address research topics of importance to NOAA. OAR laboratories rely on the capabilities and expertise at the Cooperative Institutes to conduct long-term research that leads to improvements in NOAA operations. These partnerships are established with a cooperative agreement. By design, most of the Institutes are co-located with one or more NOAA facilities to promote scientific exchange and technology transfer. The primary purpose of each Institute is to bring together the diverse resources of a research university or institution, one or more OAR laboratories, and other branches of NOAA to develop and maintain a center of excellence in research.

The OAR Cooperative Institutes include:

The **Cooperative Institute for Climate Applications and Research (CICAR)** is located at the Lamont-Doherty Earth Observatory Campus of Columbia University in Palisades, NY. CICAR scientists conduct research on earth system modeling, modern and paleoclimate observations, and climate variability and change applications. The strategic vision that under girds all CICAR science emphasizes that ocean observations and coupled ocean-atmosphere modeling are key to understanding long-term climate variability and change, and that paleoclimate research produces climate scenarios quite distinct from those revealed in the short instrumental record, thereby providing a more complete view of the Earth's climate system. A major portion of CICAR's research agenda is accomplished in collaboration with the Climate Program Office and the Geophysical Fluid Dynamics Laboratory.

The **Cooperative Institute for Climate and Ocean Research (CICOR)** is located at the Woods Hole Oceanographic Institution (WHOI) in Woods Hole, MA. CICOR scientists conduct research on coastal ocean and near-shore processes, oceanic participation in climate and climate variability, and marine ecosystem processes analysis. The CICOR-WHOI partnership provides NOAA research excellence in oceanographic research and marine policy and access to research ships and submersibles, remotely operated and autonomous vehicles, and state-of-the-art ocean observing systems. CICOR conducts its research in close collaboration with the Climate Program Office.

The **Cooperative Institute for Climate Science (CICS)** is located at Princeton University's Forrestal Campus in Princeton, NJ. CICS scientists conduct research on earth system studies, biogeochemistry, coastal processes, and paleoclimate. CICS plays a central role in fulfilling the demand for basic and applied research on climate variability and change, environmental impacts, mitigation options and response strategies, as well as training future scientists in

these areas and disseminating research results to policy makers, public school teachers, business leaders, and the general public. CICS is aided in its mission by strong collaborative partnerships with the Climate Program Office and the Geophysical Fluid Dynamics Laboratory.

The Cooperative Institute for Arctic Research (CIFAR) is located at the University of Alaska in Fairbanks, AK. CIFAR scientists conduct research on arctic atmosphere and climate, fisheries oceanography, tsunami research, marine ecosystem studies, contaminant effects, ultraviolet and arctic haze studies, hydrographic and sea ice studies, climate modeling, and data archiving and support. CIFAR is designed to be a focal point for interactions between NOAA and the arctic research community for research that serves the NOAA mission, especially in the Western Arctic/Bering Sea region. CIFAR's key collaborators are the Climate Program Office and the Pacific Marine Environmental Laboratory.

The Cooperative Institute for Limnology and Ecosystems Research (CILER) is located at the University of Michigan in Ann Arbor, MI. CILER scientists conduct research on climate and large lake dynamics, coastal and near shore processes, large lake ecosystem structure and function, remote sensing of large lakes and coastal ocean dynamics, and marine environmental engineering. One of the main objectives of CILER is to improve the effectiveness of NOAA sponsored research on freshwater, coastal and estuarine areas, with particular emphasis on Great Lakes issues. This is accomplished, in large part, by fostering collaboration between the Great Lakes Environmental Research Laboratory and other federal, international, state and local agencies, and the Great Lakes academic research community.

The Cooperative Institute for Marine and Atmospheric Studies (CIMAS) is located at the University of Miami in Miami, FL. CIMAS scientists conduct research on climate variability, fisheries dynamics, regional coastal ecosystem processes, human interactions with the environment, air-sea interactions and exchanges, and integrated ocean observation. Recent growth in CIMAS has been due to a significant great increase in research activities associated with the South Florida Ecosystem Restoration, whose purpose is to rectify the ecological damage done to South Florida and the Everglades due to water diversion projects carried out to mitigate flood damage from hurricane rains. NOAA's Atlantic Oceanographic and Meteorological Laboratory and the Southeast Fisheries Science Center are key CIMAS collaborators.

The Cooperative Institute for Mesoscale Meteorological Studies (CIMMS) is located at the University of Oklahoma (OU) in Norman, OK. CIMMS scientists conduct research on basic convective and mesoscale research, forecast improvements, climatic effects of/controls on mesoscale processes, socioeconomic impacts of mesoscale weather systems and regional-scale climate variations, Doppler weather radar research and development, and climate change monitoring and detection. CIMMS promotes cooperation and collaboration on problems of mutual interest among OU research scientists and students and the National Severe Storms Laboratory, the National Weather Service (NWS) Radar Operations Center for the WSR-88D (NEXRAD) Program, the NWS National Centers for Environmental Prediction Storm Prediction Center, and the NWS Warning Decision Training Branch.

The Cooperative Institute for Research in the Atmosphere (CIRA) is located at the Colorado State University (CSU) in Fort, Collins, CO. CIRA scientists conduct research on global and regional climate, local and mesoscale weather forecasting and evaluation, applied cloud physics, applications of satellite observations, air quality and visibility, societal and economic impacts, and numerical modeling. Current research being performed at CIRA includes that in support of new NESDIS satellite programs – GOES-R (Geostationary Operational Environmental Satellite/R Series) and NPOESS

(National Polar-orbiting Operational Environmental Satellite System). These two weather satellite programs are designed to support weather forecasting for the next two to three decades. NOAA's Earth System Research Laboratory is a key CIRA collaborator.

The **Cooperative Institute for Research in Environmental Sciences (CIRES)** is located at the University of Colorado, in Boulder, CO. CIRES scientists conduct research on advanced modeling and observing systems, climate system variability, geodynamics, integrative activities, planetary metabolism, and regional processes. CIRES research is designed to help decision-makers resolve complex problems by providing sound scientific information to shape informed policy. Examples of such research include assessing the health of Earth's ozone layer, documenting the thinning of polar ice, developing microbial agents for degrading environmental pollutants, and improving earthquake predictions. Collaborative research contributions by CIRES scientists are crucial to research conducted at NOAA's Earth System Research Laboratory.

The **Joint Institute for Marine and Atmospheric Research (JIMAR)** is located at the University of Hawaii in Honolulu, HI. JIMAR scientists conduct research on tsunamis and other long-period ocean waves, equatorial oceanography, climate, fisheries oceanography, and tropical meteorology, and coastal research. Recent growth in the JIMAR research portfolio has been in tsunami research and fisheries and coastal research associated with the creation of the Northwestern Hawaiian Islands Marine National Monument, the single largest conservation area under United States administration and the largest marine conservation area in the world. JIMAR maintains strong collaborative research linkages to NOAA's National Marine Fisheries Service and Pacific Marine Environmental Laboratory.

The **Joint Institute for Marine Observations (JIMO)** is located at Scripps Institution of Oceanography (SIO) at the University of California – San Diego. JIMO scientists conduct research on climate and coastal observations, analysis, and prediction, biological systems, research in extreme environments, and research and development on observations systems. JIMO also oversees NOAA funding for the entire University of California system in a multi-campus effort to promote collaboration and resource pooling. As such, SIO's facilities, including its fleet of four research vessels and one-of-a-kind research platform, are made available to NOAA and other organizations through JIMO collaborations. JIMO conducts its research in close collaboration with the Climate Program Office.

The **Joint Institute for the Study of the Atmosphere and Ocean (JISAO)** is located at the University of Washington in Seattle, WA. JISAO scientists conduct research on climate, environmental chemistry, marine ecosystems, and coastal oceanography. Climate research remains JISAO's dominant research endeavor, a major component of which is devoted to supporting NOAA's ocean monitoring programs. Collaborative research between JISAO and the Pacific Marine Environmental Laboratory, for example, includes the Tropical Atmosphere Ocean project, which supplies real-time data from moored ocean buoys for improved detection, understanding and prediction of El Niño and La Niña. JISAO's collaborative research network also includes the Alaska Fisheries Science Center and the Northwest Fisheries Science Center.

The **Northern Gulf Institute (NGI)** is located at Stennis Space Center, MS and is a consortium of universities, led by Mississippi State University, which includes the University of Southern Mississippi, Louisiana State University, Florida State University, and the Dauphin Island Sea Lab. NGI scientists conduct research on ecosystem management, geospatial data integration and visualization in environmental science, climate change and climate variability effects on regional ecosystems, and coastal hazards. The fundamental philosophy of the NGI is integration – integration of the land-coast-ocean-

atmosphere continuum; integration of research to operations; and integration of individual academic institutional strengths into a holistic research and educational program specifically geared to the needs of Northern Gulf of Mexico users. Research activities at NGI make an important contribution to NOAA's ecosystem, oceanic, and coastal research.

NOAA's Climate Program Office (CPO) - NOAA's Climate Program encompasses activities formerly described within the Office of Global Programs and Climate Observations and Services Program, and Arctic Research Office. OAR's activities within the CPO are executed by multiple line offices (OAR, NESDIS, NWS), and through sponsored research conducted by external partners. The goal of NOAA's CPO is to understand climate variability and change to enhance society's ability to plan and respond. This goal is achieved in OAR through the development of integrated ocean and atmospheric observing systems, research into the forcings and feedbacks contributing to changes in the Earth's climate, improved climate predictive capability from weeks to decades, and the development of climate products and services to enhance decision making capabilities across all sectors of society. To further achieve this goal, in 2006, NOAA established the National Integrated Drought Information System (NIDIS) Office in Boulder, CO, to implement NIDIS and coordinate activities within NOAA, across Federal agencies, and with stakeholders. In addition, CPO serves as the focal point for NOAA's research activities in the Arctic, Bering Sea, North Pacific, and North Atlantic regions: represents NOAA on the Interagency Arctic Research Policy Committee; leads U.S. involvement in the international Arctic Monitoring and Assessment Program; participates in multilateral and bilateral policy discussions through interaction with the Global Earth Observing System of Systems (GEOSS), the UN Framework Convention on Climate Change (UNFCCC), the Intergovernmental Panel on Climate Change (IPCC), the WMO, key bilateral partners, and other climate leadership organizations; and promotes climate literacy and outreach activities.

National Sea Grant College Program - Congress established the National Sea Grant College Program in 1966 to enhance the development, use, and conservation of the Nation's marine and Great Lakes resources. The legislation establishes a network of Sea Grant Colleges to conduct education, training, and research in all fields of marine study. It also directs that grants and contracts may be awarded to: "any individual; any public or private corporation, partnership, or other association or entity (including any Sea Grant College, Sea Grant Institute or other institution) or any State, political subdivision of a State, or agency or officer thereof" [PL 105-160]. The National Sea Grant College Program Office is located in Silver Spring, MD. Currently, there are 30 State Sea Grant programs located in most coastal and Great Lakes states. Most Sea Grant programs include multiple campuses of different universities across the state.

The **Office of Ocean Exploration and Research (OER)** is comprised of the former NOAA Undersea Research Program (NURP) and the Ocean Exploration (OE) Program. Its two most prominent functions are:

Research - Scientists funded by OER conduct wide-ranging research investigations in such areas as the causes behind depletion of fisheries, the impacts of commercial fishing activity on critical habitats, and the role of undersea volcanism in coastal hazards. This program also conducts mandated studies of underwater diving techniques and equipment to advance safety and improve diver performance. In FY 2007, the program provides national support through regional National Undersea Research Centers on both the east and west coasts, including the Aquarius Undersea Laboratory in Florida, and a headquarters office in Silver Spring, MD.

Exploration – NOAA is the only Federal agency with a dedicated program of ocean exploration. This program supports exploration in unknown and poorly known ocean areas, and applies 10% of the yearly budget to marine exploration and science-based education. The program works with other NOAA programs and Federal agencies, as well as the academic community, to identify and prioritize areas of the world's oceans that should be explored, and then funds interdisciplinary science-based exploratory missions and education activities through a peer-review process. The program works with the results obtained from these missions to further NOAA's research and marine management objectives as outlined in the NOAA Strategic Plan. The program provides direct support to several multidisciplinary expeditions per year, facilitates across NOAA program offices to develop and apply data management tools and techniques to appropriately organize, archive, and disseminate data and information collected during expeditions. The four key objectives to the program are:

- Explore unknown and poorly known areas of the ocean;
- Map the physical, geological, biological, chemical, and archaeological aspects of the oceans;
- Develop new sensors and systems for ocean exploration to regain U.S. leadership in marine technology; and
- Connect in innovative ways to stakeholders to improve the literacy of learners of all ages with respect to ocean issues.

The new Office of Ocean Exploration and Research (OER) connects and expands on the activities conducted by NURP and OE, building on the strengths of the two programs. The primary objective of the new program will be to increase the pace and efficiency of discovery in unknown and poorly known ocean areas, and to translate and disseminate the results to further NOAA and the Nation's ecosystem management efforts. The program will support interdisciplinary exploration expeditions, conduct research necessary to transition the results of expeditions to applications, and engage in advanced technology development. The program will include activities to facilitate and manage at-sea operations, manage and disseminate data and information obtained during expeditions, and will continue and expand on education and outreach efforts, which represent an investment of 10% of the overall budget on a yearly basis.

In FY 2005 Congress directed the Department of Defense to provide NOAA with a T-AGOS class vessel and funding to convert the ship into a platform dedicated to support NOAA ocean exploration missions. The ship is currently undergoing conversion, and is scheduled to begin operations in the summer of FY 2008. Once tested and ready for operation, the new vessel will support missions that meet the above objectives and will complement ocean exploration missions currently conducted with other vessels.

Office of Weather & Air Quality - The goal of Weather and Air Quality Research programs is to: (1) provide the Nation with more accurate and timely warnings and forecasts of: (a) weather events, particularly high-impact weather events, that disrupt economic productivity and cause loss of life and property, (b) air quality, particularly ozone and aerosol (particulate matter) that impact human health, cause crop damage, and affect private sector operational planning for power generation; and (c) solar disturbances and their terrestrial effects, including hazards to satellites and disruptions of communications, navigation, and utility systems and (2) provide the scientific basis for developing public policy tools for air quality by: (a) improving the understanding and characterization of air quality (i.e., aerosol, ozone, VOC, NO_x, and SO_x); (b) improving air quality sensor technology to structure the monitoring network; and (c) developing and prototyping air quality models to forecast air quality and to perform diagnostic analysis of air quality episodes.

High Performance Computing and Communications - The Office of High Performance Computing and Communications (HPCC) supports a number of objectives in NOAA's Strategic Plan, primarily through support of IT research targeted at improving NOAA's mission and services and science education. The purposes of the HPCC program are to make major improvements in the Nation's ability to forecast the weather and climate, and to disseminate environmental information. The program also seeks to stimulate modernization of NOAA's computationally intensive services through the use of evolving high performance computing and high-speed networking technologies. Through this program, NOAA participates as a "mission" agency in the Interagency Working Group on Information Technology Research and Development. Improvements in the accuracy and timeliness of NOAA's short-term weather warnings, seasonal forecasts, and regional and global climate predictions are heavily dependent on major advances in high-end computing power, advanced information technology, and the widespread availability of environmental data and information. Timely and responsive dissemination of NOAA's services and information requires full use of modern network and communication technologies.

Support for the NOAA Strategic Plan

OAR's activities support three Mission Goals in the NOAA Strategic Plan:

- Protect, Restore, and Manage the Use of Ocean and Coastal Resources Through an Ecosystem Approach to Management;
- Understand Climate Variability and Change to Enhance Society's Ability to Plan and Respond; and
- Serve Society's Needs for Weather and Water Information.

Activities also support NOAA's Mission Support Goal to Provide Critical Support for NOAA's Mission.

The NOAA Climate Program was rated "Moderately Effective" under the **Program Assessment Rating Tool (PART)** conducted in FY 2004. The assessment found that the program is relatively strong and has undertaken steps to improve program management and focus on results. Additional findings included: (1) NOAA Climate coordinates with other Federal agencies through the Climate Change Science Program; (2) Deficiencies in the management of NOAA's laboratory activities as identified by the NOAA Research Review Team; (3) Need to better integrate performance into budget decisions; and (4) Program has appropriate long-term goals and annual measures that demonstrate progress. In response to these findings, NOAA has sent forward a proposal to consolidate its Boulder laboratories and to implement other management changes recommended by the Review Team. NOAA is also developing an internal data base to track performance and to link performance to the budget. The NOAA Ecosystem Research Program underwent a PART review and was rated "Adequate". Two follow-up actions to be taken: (1) Assess the portfolio of research within NOAA's Ecosystem Research Program to clarify the role of each of the Program's components and eliminate redundancies; (2) Modify planning and management processes so that research activities meet the highest priority science needs and provide a balanced response to local, regional, and national issues.

Research and Development Investments

The NOAA FY 2008 Budget estimates for its activities, including research and development programs, are the result of an integrated, requirements-based Planning, Programming, Budgeting, and Execution System (PPBES) that provides the structure to link NOAA's strategic vision with programmatic detail,

budget development, and the framework to maximize resources while optimizing capabilities. The PPBES process incorporates the President’s Management Agenda and the Office of Science and Technology Policy’s Research and Development Investment Criteria (relevance, quality, and performance) for NOAA’s R&D programs, and leads to NOAA budget proposals that reflect the R&D investment criteria.

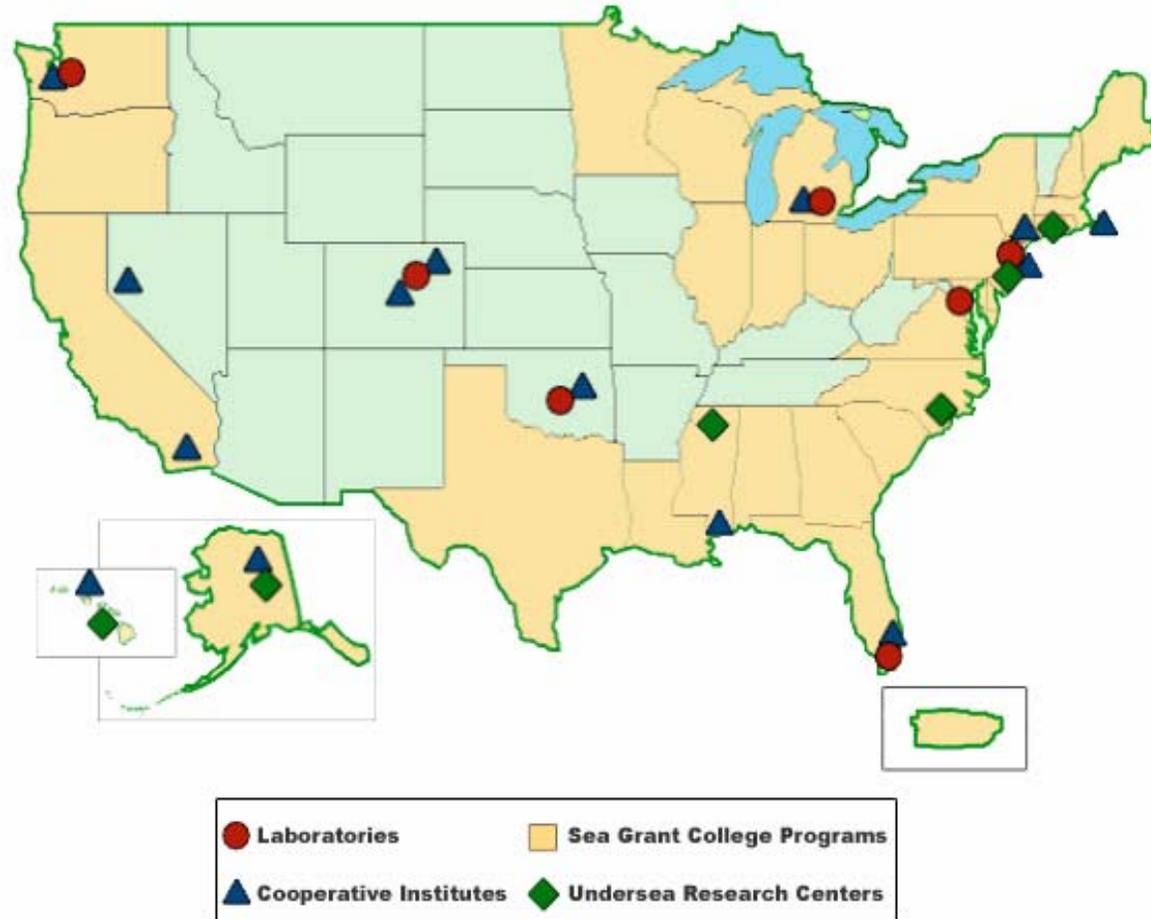
Significant Adjustments-to-Base (ATBs): NOAA requests an increase of 0 FTE and \$2,951,000 to fund adjustments for NOAA Research activities. Within this increase, program totals will fund inflationary adjustments for labor and non-labor.

NOAA Research also requests the following transfer for a net change to NOAA of \$0.

From Office	Line	To Office	Line	Amount
Oceanic and Atmospheric Research	Ocean Exploration and Research	OMAO	OKEANOS EXPLORER	\$4,600

OAR requests a technical adjustment to transfer \$4,600,000 from Ocean Exploration and Research to Marine Services to fund operations and maintenance of the OKEANOS EXPLORER, NOAA's new, dedicated ocean exploration vessel.

The map below shows the locations of OAR Laboratories, National Undersea Research Centers, Cooperative Institutes, and Sea Grant College States.



Subactivity: Climate Research
Line Item: Laboratories & Cooperative Institutes

GOAL STATEMENT:

The goal of the Climate Laboratories and Cooperative Institutes is to develop a more comprehensive understanding of atmospheric and oceanic processes that drive and respond to changes in climate over a variety of spatial and temporal scales through sustained monitoring and research. This research will lead to better understanding and prediction of climate variability and change and help the Nation respond to the risks and opportunities associated with global climate change.

BASE DESCRIPTION:

The OAR Laboratories and Cooperative Institutes are an integral part of the interagency Climate Change Science Program, which links the U.S. Global Change Research Program (USGCRP) and the Administration's Climate Change Research Initiative (CCRI). OAR Laboratories and Cooperative Institutes conduct a wide range of research into complex climate systems. The research aims to improve NOAA's ability to assess climate variability on seasonal to interannual timescales, as well as interdecadal to centennial timescales and beyond. NOAA researchers strive for consistent and uninterrupted monitoring of the Earth's atmosphere and ocean that provide us clues about long-term changes in the global climate. The data collected worldwide by NOAA researchers aids our understanding of, and ability to forecast changes in, complex climatic systems. Using sophisticated computer systems, NOAA researchers work on the numerical modeling of climate systems, which improves the accuracy of climate forecasts. NOAA's strategy is to: (1) acquire the essential data; (2) develop diagnostic and predictive models related to changes in the equatorial oceans; and (3) establish the relationship of those changes to widespread climate variations through data analysis and modeling.

These base activities support the objective, "Advance understanding and predict changes in the Earth's environment to meet America's economic, social, and environmental needs" under the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental needs."

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Climate Research	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Laboratories & Cooperative Institutes					
Laboratories & Cooperative Institutes	48,646	47,000	49,337	50,337	1,000
TOTAL	48,646	47,000	49,337	50,337	1,000
FTE	248	249	249	249	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Research Supercomputing: Computational Support for Assessing Abrupt Climate Change (+0 FTE and +\$1,000,000): NOAA is requesting 0 FTE and \$1,000,000 to provide computational support for assessing abrupt climate change in a warming world. Changes to regional extremes (like Western drought) or extreme events (like Atlantic hurricanes) result from the impact of simultaneous climate phenomena that include global warming and the modes of natural climate variability. NOAA has pioneered progress in the predictive understanding of parts of this paradigm.

Statement of Need:

The Nation requires a significantly better predictive understanding of abrupt climate change and its impact on extreme events and regions throughout the U.S. Recent climate events such as the unprecedented frequency of hurricanes in 2005, the warmest year on record for the U.S. in 2006, and last summer's heat waves in California and Western Europe, have clearly demonstrated the potential for a rapidly changing climate to present significant socioeconomic and policy issues for the U.S. on local, regional, national, and international scales. Five such key problem areas which require improved understanding and future enhanced prediction capabilities are: 1) increased hurricane activity in the Atlantic; 2) prolonged drought in the West; 3) the acceleration in the rate of sea level rise; 4) the role of the Atlantic Meridional Overturning Circulation (AMOC) to force rapid climate change; 5) the potential for an ice free Arctic in summer by mid century.

The building blocks for a systematic program for assessing abrupt change include global ocean observations and data assimilation systems; model development; climate diagnostics and modeling. Progress is being made to implement the global ocean observing system. A key component for the forecast capability needed to make progress in assessing the potential for abrupt change is the ability to do ocean analyses (based on data assimilation techniques) and to use these to initialize the earth system models for decadal (and seasonal) forecasts. An enhanced effort will be required to improve the climate diagnostics and modeling of how a) the various models of climate variability on different timescales interact, and b) how these might be impacted by the trend toward global warming. A central issue is a better understanding of climate variability on decadal timescales. Specific focus areas include:

decadal phenomena in the Indo-Pacific and North Pacific and their impact on the U.S.; understanding of the impacts of high latitude cryospheric processes on sea-level rise and greenhouse gas emissions, and the impact of variability in the AMOC (a program supported through a requested increase in the Competitive Research Program).

Solutions to these critical problems require new computational resources because the use of large scale, state-of-the-art climate modeling is the principal means of addressing these problems within the context of NOAA's research program. This increase will support research supercomputing needed to improve predictive understanding of the climate system and assess abrupt climate change.

Proposed Actions and Deliverables:

Enhance R&D High Performance Computing Systems (\$1,000,000)

This funding for climate computing will be used to enhance NOAA's new R&D High Performance Computing Systems (HPCS) being implemented in FY2007. The R&D HPCS represents a new, holistic, "One NOAA" approach to planning, acquiring, and managing its HPC resources. The enhancements to the HPCS will specifically address computational resources needed for the following five key climate areas:

- \$300K applied to increased hurricane activity in the Atlantic;
- \$200K applied to prolonged drought in the West;
- \$200K applied to the acceleration in the rate of sea level rise;
- \$200K applied to the role of the Atlantic Meridional Overturning Circulation (AMOC) to force rapid climate change;
- \$100K applied to the potential for an ice free Arctic in summer by mid century.

Milestones:

- FY 2008: Augment NOAA Research and Development (R&D) High Performance Computing System (HPCS)
- FY 2009: Upgrade NOAA R&D High Performance Computing System
Unified Ocean Modeling Code
Develop experimental framework for hydroclimate regime studies for last 1000 year climate studies
Prototype high resolution global model for hurricanes (NextH)
- FY 2010: Ocean modeling and assimilation infrastructure
High resolution climate/carbon/ice model for polar regions
Experimental seasonal forecasts with NextH
- FY 2011: Implement routine seasonal NextH forecasts
- FY 2012: Assess decadal prediction understanding for polar regions

FY 2013: Regional Operational ecosystems forecasts
 Assessment of accuracy of sea level rise rates

Benefits:

The ability for the Nation to predict seasonal hurricane activity a year or more in advance, reduce the uncertainty of the location, frequency, and duration of droughts, determine when the Arctic will open for commercial shipping, and assess the impacts of abrupt climate change on our coastline and the ecosystems that reside there, have clear advantages for important sectors in the U.S. economy and for our society. The additional research supercomputing resources will help scientists develop and operationalize forecasting capabilities on decadal timescales and provide the computational support needed to address the five key climate issues identified above. New information products will be developed related to regional impacts and climate extremes resulting from an improved predictive understanding of the climate system, taking into account both natural and anthropogenic factors.

Outcomes:

The development of new research results and reliable products will create an informed public, promote sound decisions on adapting to climate change over the next several decades, and guide policy-makers toward understanding the long-term impacts of mitigation strategies. New routine decadal prediction products will begin to be developed that provide the Nation with

- The likelihood of increased hurricane-related impacts over the US
- Regional US drought outlooks
- Decadal ice forecasts for the Arctic
- Regional decadal sea-level rise outlooks

In particular, experimental products supporting one of the four near-term priorities outlined in the draft implementation plan of the Ocean Research Priorities Plan, namely, Assessing Atlantic Meridional Overturning Circulation Variability and its Implications for Rapid Climate Change will be developed with this additional computational resource.

Subactivity: Climate Research
Line Item: Competitive Research Program

GOAL STATEMENT:

NOAA's Competitive Climate Research Program sponsors scientific research, within eleven elements, aimed at understanding how society can best adapt and respond to climate variability and change. Researchers coordinate activities that jointly contribute to improved predictions and assessments of climate variability over a continuum of timescales ranging from seasonal to decadal and beyond.

BASE DESCRIPTION:

NOAA's Competitive Climate Research Program is an integral part of the interagency U.S. Climate Change Science Program (CCSP), which incorporates the U.S. Global Change Research Program (USGCRP) and the Administration's Climate Change Research Initiative (CCRI). The program addresses an important aspect of global change - understanding the global climate system - and advances research and assessment activities designed to address the interface between scientific information and society's various decision-making needs. Current research activities are organized across the following elements within two main components, Research and Major Observing Systems:

A. Research Programs

The **Atmospheric Composition and Climate Program (ACCP)** pursues two overall research objectives: (1) to improve the predictive understanding of the radiative forcing of the climate system by aerosols (airborne fine particles) and by chemically-active greenhouse gases, such as tropospheric ozone, and (2) to better characterize the recovery of the stratospheric ozone layer and its role in climate change. The integrated research activities that address these objectives involve instrument development, global observations, laboratory studies, and theoretical modeling by NOAA and extramural partners. Activities in FY06 focused on conducting an intensive field study in the Gulf of Mexico region to identify and quantify the sources of climate forcing due to aerosols and to assess the influence of aerosols–cloud interactions. Another significant component of the ACCP is the extramural component of the CCRI *Aerosol-Climate Interactions*. Details of this research are described below.

The **Climate Change Data and Detection (CCDD)** program element ensures that the data needed to understand the climate system are available for analysis. The data and resultant products extend the existing long-term climate record and serve as essential input for predictive models. In addition, CCDD provides support for documenting variations in climate on time scales ranging from seasonal to decadal and beyond. Support is also provided for the analysis of observed climate variations and identifying causes that are consistent with Earth's long-term climate history. This program was heavily involved in the production of the first Climate Change Science Program Synthesis and Assessment Report (S&A 1.1). The report, titled "Temperature Trends in the Lower Atmosphere: Steps for Understanding and Reconciling Differences" tackles some of the long-standing difficulties that have impeded understanding of changes in atmospheric temperatures and the basic causes of these changes. The report concludes there is no longer a discrepancy in the rate of global average temperature increase for the surface compared with higher levels in the atmosphere.

The **Climate Dynamics and Experimental Prediction (CDEP)** program element supports NOAA's efforts toward improved global climate predictions on seasonal to interannual timescales through the Applied Research Centers (ARCs), which help develop and support climate services through applied research, development, and experimental applications. The end-result is a coordinated suite of contributions to the predictions and assessments of climate variability and regional assessments and applications produced by NOAA's Climate Prediction Center (CPC) and the International Research Institute for Climate Prediction (IRI). CDEP also supports the development of new climate reanalysis data sets and the capability to deliver explanations of the causes for observed climate variability and change in coordination with Weather-Climate Research described under the Labs & Cooperative Institute line item, above. This effort represents a key NOAA contribution to the CCSP goal to improve knowledge of the Earth's past and present climate and environment, including its natural variability, and improves understanding of the causes of observed variability and change.

The ultimate goal of the **NOAA Climate Variability and Predictability (CVP)** program element is to develop skillful predictions of climate variability and change on seasonal to multi-decadal time scales and regional spatial scales for optimal use in resource planning and policy decision making. The scientific objective of the NOAA CVP program is to understand the mechanisms of major climate variability and change on seasonal to decadal and longer time scales, including the thresholds and non-linearities of abrupt climate change, and to develop the predictive capability for these climate processes. An initial focus of the leading large-scale phenomena includes the El Nino-Southern Oscillation (ENSO), the Pacific Decadal Oscillation (PDO), Tropical Atlantic Variability (TAV), Arctic Oscillation/North Atlantic Oscillation (AO/NAO), the Meridional Overturning Circulation (MOC) and the American Monsoon systems. CVP research approaches include development of observational, theoretical, and computational means to understand and predict climate variability and change and to make enhanced predictions, where feasible.

The **Climate Prediction Program for the Americas (CPPA)** element seeks to improve operational intra-seasonal to interannual climate and hydrologic forecasting. CPPA seeks to: (1) improve the understanding and model simulation of ocean, atmosphere and land-surface processes through observations, data analysis, and modeling studies; (2) determine the predictability of climate variations on intra-seasonal to interannual time scale, including predictability of the continental-scale monsoon systems across the Americas; (3) advance NOAA's operational climate forecasts, monitoring, and analysis systems; and (4) develop climate-based hydrologic forecasting capabilities and decision support tools for water resource applications.

The **Global Carbon Cycle (GCC)** program element seeks to improve NOAA's ability to predict the sources and sinks of anthropogenic CO₂ and future atmospheric CO₂ concentrations using a combination of atmospheric and oceanic global observations, process-oriented field studies, analysis, and modeling. The GCC program is a part of the interagency Carbon Cycle Science initiative of the Climate Change Science Program. GCC research addresses priorities identified in the U.S. Carbon Cycle Science Plan (1999), the North American Carbon Plan (2002), and the Ocean Carbon and Climate Change Plan (2004). The goal of GCC research is to aid in the achievement of NOAA's climate forecasting goals, including the advancement of understanding of the global carbon cycle and its role in regulating climate. The GCC Program currently supports research to identify the impacts of anthropogenic CO₂ on ocean chemistry and biology. NOAA funded investigators found new evidence of ocean acidification in the north Pacific. This acidification could be the result of the ocean's uptake of anthropogenic CO₂ over the past 16 years. (Feely, R.A. et al. *Anthropogenic ocean acidification over the twenty-first century and its impact on calcifying organisms*. Nature, 437(7059), 681–686 (2005)).

The Transition of Research Applications to Climate Services (TRACS) program is a proposal-driven program that supports the transition of well-developed research and prototype decision products, processes and policy tools that will expand regional decision makers' (e.g., private sector, agriculture, state, and local government) use of climate information. These transition products and tools are the result of the research community's investigations, through programs such as Sector Applications Research Program and Regional Integrated Sciences and Assessments, of the climate information needs of decision makers and the development of user-relevant, place based applications. The program requires structured partnerships between operational staff, decision makers, and prototype developers and requires an extension component to ensure effective use of the application by decision makers. The TRACS Program transitions experimentally mature climate tools, methods, and processes from research mode into settings where they may be applied in an operational and sustained manner. TRACS seeks not only to support implementation of these transitions, but also to learn from users how better to accomplish technology transition processes for public goods applications and improved risk management. TRACS works with universities, NOAA labs and operational units, and stakeholder partners.

The **Regional Integrated Sciences and Assessments (RISA)** program supports integrated, place-based research across a range of social, natural, and physical science disciplines to expand decision-makers' (e.g., private sector, agriculture, state, and local government) options in the face of climate change and variability at the regional level. It does this in a manner that is cognizant of the demands and constraints faced by decision-makers regarding their climate sensitive resources. RISA possesses three distinct qualities: (1) foster interdisciplinary research and assessment synthesis; (2) improve understanding of and bridging the gap among climatic, environmental and societal interactions on various temporal and spatial scales; and (3) contribute to regional decision support and climate information service. A successful RISA program requires innovative and embedded long-term partnerships among a spectrum of interested parties including Federal, State, Native, regional, local and private entities. The program relies heavily on consolidating the results and data from ongoing NOAA-OGP disciplinary program elements, already funded in a region, into an integrated framework. In 2006, as part of the RISA program, NOAA established the Alaska Center for Climate Assessment and Policy, which focuses on transportation and water resource management research.

The **Sector Applications Research Program (SARP)** replaces and refocuses activities formerly supported by Health and Human Dimensions and Environment, Science, and Development. The SARP's main goals are to provide new knowledge to the identification and reduction of vulnerability to climate variability and change through: improved knowledge of the impacts of climate on society specifically in economic, ecologic, and social sectors (e.g., coastal, water resources agriculture, health, etc.); enhanced use of forecast information; increased understanding by scientists and policy makers of the needs of stakeholders impacts of a changing climate; and a better understanding of society's ability to plan for and adapt to future uncertainties. SARP is built upon the evolution and successes of NOAA's Human Dimensions of Global Change; Environment, Science and Development; and Climate Variability and Human Health Programs. SARP is an interdisciplinary program, which promote social science methodologies and scientific findings required to build a knowledge base that addresses climate impact and adaptation uncertainties for stakeholders within sectors most at-risk. Specifically, SARP: (1) funds research projects that provide a better understanding of the impact of climate variability on specific sectors recognizing the role of complex societal and environmental interactions; (2) creates stronger sector communities by operating as a focal point for researchers, policy makers and decision makers to aggregate, evaluate and set evolving requirements for new knowledge critical to decision making; and (3) translates the results of the

research and interactions regarding decision making needs and capacities to relevant programs within the NOAA Climate Office including RISA, TRACS and CPPA and to other programs within the Agency that would benefit from this research such as Sea Grant and the National Weather Service.

The role of the **Arctic Research Program (ARP)** is to improve forecasts of temperature, precipitation, and storms across Alaska and the mainland U.S., and support improvements in forecasting and planning for energy needs, growing seasons, hazardous storms, water resources, and provide for better management of Alaskan and Arctic resources. This will be accomplished by: (1) creating an effective climate observing system focused on the U.S. region of the Arctic to allow for regional-scale climate change detection and development models capable of predicting Arctic climate change; (2) creating and analyzing Arctic physical and biological data sets designed to detect climate change, validate satellite observations, improve and initiate models, and support decision-making; and (3) through partnerships, develop observing and modeling capability to detect and assess Arctic-wide change and impact, and determine how Arctic processes affect North American and global climate systems. In 2006, one of these partnerships between NOAA and two Canadian organizations resulted in the opening of a new Arctic observatory in Eureka, Canada designed to make long-term climate measurements of Arctic clouds and aerosols. The achievement of these tasks will help to assess climate change in the Arctic. The most well known impact of general warming is illustrated by the loss of sea ice and glacier mass, the thawing of permafrost, and other temperature-related phenomena. These changes affect every part of the Arctic environment and have significant impacts on society.

Weather-Climate Research seeks to understand the relationship between sub-seasonal tropical variability and changes in the frequency, location and intensity of extreme weather events over the U.S. An example is El Niño, during which shifts in the Pacific storm track affect the paths of storms approaching the U.S. west coast, and influence weather across the entire country. Observational and modeling efforts document the pattern of variations in tropical rainfall on weekly to monthly time scales as well as air-sea interactions in both tropical systems and in mid-latitude oceanic and land-falling storms. An improved historical reanalysis dataset will substantially reduce uncertainty in historical climate variations and improve the analysis and detection of interannual-to-decadal variability and trends in weather and climate in the 20th century. OAR climate attribution research will enable NOAA to better interpret causes of observed climate variability, which is crucial for meeting the climate information needs of policy-makers on regional climate issues, including major droughts, floods, prolonged warm or cold conditions, climate trends and extremes, and multi-decadal variability. Weather-Climate Research activities culminate in transferring research and observational advances into operational practices at NWS/NCEP Climate Prediction Center.

The Climate Modeling Center will enable the Geophysical Fluid Dynamics Laboratory to take the national lead in the systematic production of model-based products developed in consultation with stakeholders to document, understand, and assess the impacts of climate variability and change on the U.S. Continued development and refinement of computational models capable of simulating past and future conditions of the Earth system are crucial to develop capabilities to provide more accurate projections of future change.

Aerosol-Climate Interactions, Clouds & Climate Change research focuses on attaining a better understanding of the absorption and scattering of radiation by aerosols (fine airborne particles) and the associated heating and cooling roles in the climate system. Aerosols and tropospheric ozone play unique, but poorly quantified roles in the atmospheric radiation budget. The goals of research are to: (1) establish new and augment existing in-situ monitoring sites, in and down wind of major population areas (e.g., Asia, Eastern North America, and South America) to determine temporal and spatial

distributions, trends, and aerosol chemical and radiative properties and (2) develop integrated models used to study regional patterns, evaluate our understanding of source and sink processes, and project future distributions. In collaboration with NPOESS, the program will evaluate and advance the development of algorithms and establish the appropriate in-situ measurements for the calibration and validation of the NPOESS data. In addition, this research will address the development of better decision-support tools that will improve the linkage between sources of emissions of compounds that directly or indirectly contribute to climate-relevant aerosols, which impact climate radiative forcing.

B. Observing Systems

The **Office of Climate Observation (OCO)** is responsible for establishing and maintaining the sustained global ocean observing system necessary for climate research and prediction as well as the long-term monitoring system necessary for climate change detection and attribution. NOAA's ocean climate contributions provide the major U.S. contribution to the Global Component of the U.S. Integrated Ocean Observing System. All of NOAA's contributions to the global ocean observing system are managed internationally in cooperation with the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (WMO: World Meteorological Organization. IOC: Intergovernmental Oceanographic Commission of the United Nations Educational, Science, and Cultural Organization). This international observation network is based on a set of core observations (e.g., temperature, surface wind stress, salinity, sea level, CO₂), consisting of both in situ and remotely sensed measurements that have been identified in national and international reports as needed to satisfy research and operational climate requirements. In 2006, the global ocean observing system reached 53 percent completion. Initial investments in the ocean observing system include:

- **Argo Floats:** These floats, together with satellites, will initiate the oceanic equivalent of today's operational observing system for the global atmosphere. Fourteen nations plus the European Union currently provide floats.
- **Surface Drifting Buoys:** Sea surface temperature is the single most important ocean parameter for the global heat, water, and carbon cycles. A global array of 1,250 surface drifting buoys is maintained by NOAA and 14 international partners to calibrate satellite observations and reduce errors in global measurement. The Buoys also measure surface currents globally and provide critical sea surface data during hurricanes to help improve hurricane landfall projections.
- **Tide Gauge Stations:** Sea level rise is one of the most immediate impacts of climate change. NOAA, in cooperation with 64 nations, is implementing the Global Climate Observing System (GCOS) sea level reference network of 170 tide gauge stations. The stations report in near-real-time and are also used for the tsunami warning system and other marine services.
- **Tropical Moored Buoys:** The Earth's tropics are the ocean's major capacity for heat exchange with the atmosphere. The Pacific El Niño influences global climate and weather. Together with international partners, NOAA is working to instrument all three tropical oceans – the Pacific, Atlantic, and Indian Ocean.

- ***Ocean Reference Stations:*** NOAA, in cooperation with the National Science Foundation and international partners, has implemented a sparse global network of ocean reference station moorings, expanding three pilot stations to a permanent network of 16 by 2010. These stations have provided decadal-to-centennial documentation of changes in ocean properties and are designed to improve seasonal-to-interannual forecasting by providing calibration/validation data for remote sensing of surface flux fields. This network also monitors ocean transports to identify changes in circulation that could provide possible indications of abrupt climate change.
- ***Ships of Opportunity (SOOP):*** The global atmospheric and oceanic data from ships of opportunity have contributed to the understanding of long-term changes in marine climate and are essential input to climate and weather forecast models.
- ***Ocean Carbon:*** Projecting decadal to centennial global climate change is closely linked to assumptions about feedback effects between the ocean and atmosphere related to sequestering of carbon in the ocean and additional input of carbon dioxide into the atmosphere. NOAA, in cooperation with the National Science Foundation and international partners is implementing an ongoing ocean carbon inventory surveying the globe once every ten years and will be supplemented by autonomous carbon dioxide sampling instruments added to the moored arrays .
- ***Arctic Ocean Fluxes:*** Over at least the past 20 years, significant changes have been noted in the Arctic, such as thawing of permafrost, earlier break-up of ice on rivers, and thinning of the ice cover on the Arctic Ocean. NOAA is joining with other Federal agencies and international collaborators to begin a long-term effort to quantify the flux of fresh water from the Arctic to the North Atlantic. The initial steps will be made through deployment of moorings at critical locations in the Arctic.
- ***Dedicated Ships:*** Ocean research vessels from NOAA and university partners are essential elements of the support infrastructure necessary to sustain the ocean observing system. The dedicated ships provide: (1) the highest quality reference data sets, (2) the platforms for the ocean carbon surveys, and (3) platforms for deployment of the moored and drifting buoys and Argo floats.
- ***Data Management, Data Assimilation and Analysis:*** A robust and scalable Data Management and Communications (DMAC) infrastructure is essential to the vision of a sustained ocean observing system. Standards and protocols are essential to enable interoperability across all global and coastal ocean observing systems. Data must be retained and made available for analyses and for assimilation into models to understand and forecast climate change, and for efficiently managing observing system operations and improvements. The advancement of assimilation techniques and the scientific analysis of ocean data are also important components of the observing system.

Base activities support the objective, “Advance understanding and predict changes in the Earth’s environment to meet America’s economic, social, and environmental needs” under the Department of Commerce Strategic Goal of “Observe, protect, and manage the Earth’s resources to promote environmental needs.”

Baseline Observatories (previously funded under CO&S). These funds are used to maintain and expand operations at NOAA's manned Global Atmospheric Baseline Observatories, which measure up to 250 different atmospheric parameters relevant to the study of climate change and ozone depletion at: Barrow, Alaska; Mauna Loa, Hawaii (since 1957); Cape Matatula, American Samoa; and South Pole, Antarctica (also since 1957), and for operations at NOAA's Baseline Air Quality station at Trinidad Head, California. These observations are critical to the collection and continuity of the world's longest atmospheric data time series, supplying information on: (1) the state and recovery of the ozone layer, (2) global carbon dioxide and other trace gases impacting the global climate, and (3) the quality of the air entering the west coast of the U.S. These data are used for assessments of atmospheric change that are valuable for environmental policy.

Carbon Cycle Atmospheric Observing System and other carbon cycle/carbon monitoring activities (previously funded under both CO&S and CCRI). The U.S. scientific community coordinates its carbon cycle activities through an integrated interagency effort that aims to quantify, understand, and project the evolution of global carbon sources and sinks in order to better predict future climate. As part of this multi-agency effort, NOAA has launched a network of airborne and tall-tower based sampling sites over North America. This sampling program will complement local-scale process research managed by other agencies and provide an estimate of the magnitude of regional terrestrial sinks on a continental scale. This monitoring program will provide decision-makers, resource managers, and the American public with solid, quantitative information on the role of the U.S. as a source and a sink for carbon. The information gathered will be useful for international negotiations and identifying regions where mitigation activities are most needed or would have the most impact. Similarly, projections of climate change and the scenarios used to inform assessments will be improved; and additional insight into the societal risks of climate change and human efforts to mitigate climate change will be derived. Recent advancements in the program include expansion of a pilot program using small aircraft and tall towers to profile carbon gases. With input from other agencies, this program forms the foundation for routine spatial carbon “maps” and periodic “State of the Carbon Cycle” reports that will keep scientists and policy-makers abreast of progress in understanding the North American carbon cycle.

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Climate Research	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Competitive Research Program					
Competitive Research Program	110,090	130,000	126,049	133,302	7,253
TOTAL	110,090	130,000	126,049	133,302	7,253
FTE	99	102	102	102	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Water Vapor Process Research (+0 FTE and +\$880,000): NOAA is requesting 0 FTE and \$880,000 to initiate and enhance measurements of water vapor in the lower-atmosphere (mid and upper troposphere) to elucidate its role in altering forcing by greenhouse gases, aerosols, and clouds. It will also undertake efforts to understand the processes that lead to the current distributions and lay the foundation for future prediction of water vapor distributions.

Statement of Need:

Water vapor has the potential to contribute to global climate change because it: (1) accounts for most of the greenhouse effect, (2) amplifies the greenhouse warming capability ascribed to CO₂ and other greenhouse gases, (3) enhances the ability of aerosols to induce climate change, (4) plays a crucial role in aerosol-cloud interactions, (5) alters the concentrations of other greenhouse gases, and (6) is a key component for calculating climate feedbacks. Yet, the distribution of water vapor in the mid-to-upper troposphere and the lower stratosphere are poorly mapped out for climate purposes. Our ability to model the processes that control water vapor is also poor and, hence, not well-represented in models. The sources of water vapor changes in the lower stratosphere are increases in methane and possible changes in transport. Changes in the upper troposphere are not clear. This is a big issue because small perturbations locally by emissions, for example from aircraft, can make large changes in cirrus clouds. The changes come about because of land use change and many other factors. The amount of anthropogenic water vapor forcing will be published as part of the Intergovernmental Panel on Climate Change (IPCC) report and is roughly one-tenth that of CO₂. The exact numbers and uncertainties in the IPCC report will be released at the end of February 2007. The "direct forcing" is small, but non-negligible relative to the indirect forcing. The amount of water from hydrogen fuel is unknown until the amount of hydrogen usage is known. This needs to be evaluated before climate gains can be determined.

It is essential to first measure accurately the water vapor abundances and its distribution, understand the processes that control this distribution, and develop the capability to predict the future levels of water vapor. This program change request takes the first step towards rectifying this deficiency.

Water vapor issues cut across goals and organizations within NOAA, and span many other national and international (e.g., World Climate Research Program's (WCRP) Stratospheric Processes and their Role in Climate (SPARC) and Global Energy and Water Experiment (GEWEX) projects) research efforts. NOAA is uniquely placed to address an important sub-set of the many needed efforts because of the technical expertise in measuring water vapor, the ability to deploy instruments on NOAA aircraft, and the scientific expertise to elucidate the processes. Further, we can reduce costs because these measurements can be carried out during currently on-going NOAA missions (e.g., G-IV flights as a part of the Winter Storm Program, the field studies using WP-3 and Twin Otter aircraft). This effort would be complemented by the work of others in NOAA to acquire long-time series of in-situ data using the Global Hawk, high spatial and temporal data from satellites, and long-time series measurements from reference net works.

Proposed Actions and Deliverables:

Instrument development and deployment (\$500,000)

- Develop some key instrumentation to measure water vapor in-situ and with varying altitude. Specifically, it involves developing a water vapor LIDAR, which is a type of radar known as a laser radar and improving hygrometers, which are instruments used for measuring relative humidity.
- Measure water vapor abundance using sondes (including drop sondes), LIDARs, hygrometers (frost-point and Lyman-alpha), satellite sensors, and other methods. The aim is to (a) measure water at reference radiosonde stations and elsewhere, (b) provide climate quality data (e.g., for long time trends) at select sites, and (c) develop instruments with quantified accuracy to identify what is the best standard for widespread measurements.
- Maintain and operate reference water stations that obtain water vapor vertical profiles using sondes for long-term trends.
- Gather extensive in-situ data in the upper troposphere and lower stratosphere using platforms such as the Global Hawk and WB-57, measure vertical distributions using LIDAR onboard aircraft such as NOAA's G-IV, WP-3 and Twin Otter, and measure from satellite, and compare these observations with radiosondes. Radiosondes have a long history and are archived but only at a few locations. The other platforms provide larger coverage, some with better vertical resolution than others. Together, these observations will provide inter-calibrated data that could be extended in time, if data assimilation is carried out.

Impact analysis and assessments (\$380,000)

- Develop and improve models designed to provide a predictive understanding of the physical processes affecting water vapor concentration in the mid-to-upper troposphere and lower stratosphere; the end result will be the ability to assess how future changes in water vapor impacts mid-upper tropospheric/lower stratospheric temperature which has major implications for future global climate change.
- Assess the role of water vapor in affecting the potential impacts of greenhouse gases, aerosols, and clouds on global climate.

Schedule of Key Milestones:

FY2008:

- Initiate acquisition of components.
- Complete installation of LIDAR and make hygrometers ready.

FY2009:

- Initiate intercomparison studies.

FY2010:

- Complete analysis of intercomparison studies.

FY2011:

- Analyze and develop process understanding of water vapor distributions and incorporation of this data in radiative forcing calculations.

FY2012:

- Complete implementation of water vapor distribution in models and calculation of influence of water vapor in future predictions.

Benefits:

The NOAA water vapor process research will allow more accurate estimation of the ability for water vapor to affect global climate through changes in water vapor concentrations and its interaction with other greenhouse gases. Specifically, it clarifies how much the surface temperature will change for a given change in a greenhouse gas. This research will allow NOAA to more accurately quantify the influence and better understand the role of water vapor on climate change.

Outcomes:

- A data set in the mid- and upper-troposphere for use by Climate and Earth System modelers;
- A better understanding of the processes that control water vapor and hence better representation of these processes in models;
- A better quantification of the forcing by other agents such as aerosols and ozone;
- Improved evaluation of the role of various climate forcing agents and their connection to surface temperature changes;
- Provide some data needed Weather and Water goal.

Performance Goals & Measurement Data:

This increase will support the objective, “Advance understanding and predict changes in the Earth’s environment to meet America’s economic, social, and environmental needs” under the Department of Commerce strategic goal of “Observe, protect, and manage the Earth’s resources to promote environmental needs.” Specifically, water vapor process research will allow more accurate estimation of water vapor distributions in the atmosphere for improved models and climate predictions.

Performance Goal: <i>Climate</i>	FY05 Baseline	FY06	FY07	FY08	FY09	FY10	FY11	FY12
Performance Measure <i>with</i> Adjustment: Better prediction of influence of water vapor on forcing by aerosols and other forcing agents, including water vapor	0%	0%	0%	0%	0%	25%	30%	40%
Performance Measure <i>without</i> Adjustment	0%	0%	0%	0%	0%	0%	0%	0%

* Lead time for implementation of developments and improvements expected to be realized beginning in FY10.

NIDIS: Improving NOAA Climate Forecasts (+0 FTE and +\$1,065,000): NOAA is requesting 0 FTE and \$1,065,000 to develop and transition research advances in drought monitoring and prediction into enhanced NOAA climate forecasts and application products.

Statement of Need:

NOAA has identified a significant demand for a concentrated research effort that assesses the nation’s vulnerability to drought based on experiences with stakeholders in drought-affected regions and recent reports on drought and stakeholder needs. Specifically, NOAA needs to work with stakeholders to develop products to support drought planning and communicating climate impact information that are tailored to specific regional needs. In response to this demand and a request from the Western Governors’ Association (WGA), NOAA has taken the lead on the development and implementation of a National Intergrated Drought Information System (NIDIS) in partnership with other federal, regional and state organizations. This initiative will implement a critical component of the NIDIS Drought Early Warning System (DEWS) through the delivery of enhanced drought information products for risk management. The DEWS includes 1) a real-time drought monitoring system based on NCEP operational global and regional analyses of atmosphere, ocean, and land surface conditions, 2) a state-of-the-art seasonal drought forecasting system based in part on the next generation NCEP fully coupled Climate Forecast System, and 3) an interactive drought information delivery system for drought monitoring and prediction products – including an internet portal for forecasts, data, GIS products, etc. (see complimentary NIDIS narrative under Climate Data & Information). The latter will be a collaborative effort with the Climate Prediction Center (CPC) and the National Drought Mitigation Center to provide real-time drought monitoring and forecast products and develop interactive drought maps. These efforts will directly support the development of next generation U.S. Drought Monitor and U.S. Seasonal Drought Outlook products, while contributing to improvements in the skill of the official U.S. 6-10 day, 8-14 day, monthly and seasonal precipitation and temperature forecast products. This work will also draw on and contribute to other components of NIDIS including coordinated monitoring, forecast, and impacts research, and improved dissemination and feedback. Additional activities to develop and transition research advances in drought monitoring and

prediction that support NIDIS will include drought monitoring and drought prediction on time scales from a week to a year with multiple land-surface hydrologic models, execution of high resolution land models for snowpack and runoff simulations, implementation of localized seasonal drought prediction products, and generation of a long-term 25-30 year North American land surface dataset.

This initiative will address two critical elements of NOAA climate forecast operations and services: (a) **improving** NOAA's operational intraseasonal to seasonal drought and climate forecast capability by utilizing ensembles of multiple state-of-the-art coupled climate models to better quantify forecast uncertainties and reduce forecast errors, and (b) **increasing** the scope and applicability of NOAA's operational climate forecasts by developing new and improved drought forecast products to meet the needs of decision makers. These model and forecast improvements will enable businesses, academia, and government agencies to minimize the impacts of drought.

FY 2008 Proposed Actions and Deliverables:

A. Competitive Transition Projects (\$615,000)

Initiate a number of transition projects through competitive grants aimed at: (1) assessing, testing and transitioning state-of-the-art coupled climate forecast models developed at various U.S. institutions towards an operational multi-model ensemble forecast system; (2) developing and evaluating new drought monitoring and forecast products for a wide range of national, regional and sectoral applications in support of drought prediction and NIDIS, water resource management, agriculture applications, wild fire risk outlooks; and (3) providing the broader climate research community with enhanced access to models and data sets to enable collaborative research for improved understanding and attribution of drought and accelerating future improvements of NOAA operational climate forecast and application products..

B. Visiting Scientist Program (\$250,000)

Supporting a visiting scientist program at NOAA's National Centers for Environmental Prediction for testing and transitioning models, data sets, analysis methods, etc. to NOAA climate forecast operations.

C. Infrastructure (\$200,000)

Provide management and contractors for scientific, technical and logistic support for transition activities.

Schedule of Key Milestones:

FY2008:

- Establish System Support Team
- Establish Visiting Scientist Program
- Initiate Competitive Transition Projects Announcement of Opportunity

FY2009:

- Implement state-of-the-art land surface model in NCEP's operational Coupled Forecast System
- Implement operational drought monitoring and seasonal drought prediction capability for NIDIS

FY2010:

- Implement DEWS for NIDIS
- Tailor, QC, provide and archive special products for the climate community, including GEWEX and CLIVAR projects.
- Upgrade operational drought monitoring and seasonal drought prediction capability for NIDIS using multiple models via uncoupled North American Land Data Assimilation System (NLDAS).

FY2011:

- Implement retrospective and realtime Global Land Data Assimilation (GLDAS) with new land surface model for land-state initial conditions and next-generation NCEP global reanalysis
- Implement downscaled seasonal drought prediction for NIDIS via Regional Climate Models (RCMs)

FY2012:

- Upgrade land surface model physics and physical parameters
- Demonstrate improved seasonal prediction skill of NCEP Climate Forecast System (CFS) via land component

Benefits:

This initiative will strengthen cooperative partnerships between NOAA operational centers and the broader research community by providing an operational testing environment to accelerate the transition of research advances into improved NOAA operational climate forecasts and increase the scope and applicability of operational forecasts for the external user community.

Outcomes:

- A DEWS as an integral component of NIDIS for real-time drought monitoring, seasonal drought forecasting, and interactive drought information delivery of drought monitoring and prediction products;
- New and improved data sets and components for operational models;
- New and improved methods to provide more accurate intraseasonal and interannual climate forecasts;
- New and improved climate forecast products for use in decision making (e.g., energy, agriculture, water resources, health, human dimensions);

- Greater understanding of operational model strengths/weaknesses via assessment and detailed analyses of model diagnostics;
- Improved use of climate observations for enhanced operational climate forecast and application products; and
- Evaluation and refined requirements for observing systems.

Performance Goals & Measurement Data:

This increase will support the objective, “Advance understanding and predict changes in the Earth’s environment to meet America’s economic, social, and environmental needs” under the Department of Commerce strategic goal, “Observe, protect, and manage the Earth’s resources to promote environmental needs.” This investment will address two critical elements of NOAA’s climate forecast operations and services by improving NOAA’s operational intraseasonal to seasonal drought and climate forecast capability and by increasing the scope and applicability of NOAA’s operational climate forecasts.

Performance Goal: <i>Climate</i>	FY05 Baseline	FY06	FY07	FY08*	FY09	FY10	FY11	FY12
Performance Measure <i>with</i> Adjustment								
Improvement in climate predictive skill over a range of time scales	0	18	19	19	21	22	23	24
Performance Measure <i>without</i> Adjustment	0	18	19	19	20	21	21	22

* Lead time for implementation of developments and improvements expected to be realized beginning in FY2010.

Ocean Research Priorities Plan: Assessing Atlantic Meridional Overturning Circulation Variability - Implications for Rapid Climate Change

(+0 FTE and +\$5,000,000): NOAA is requesting 0 FTE and \$5,000,000 as part of an interagency effort with NASA and NSF to improve understanding of the mechanisms behind fluctuations of the Atlantic Meridional Overturning Circulation (MOC) and the impact of those fluctuations. This research activity will lead to new capabilities for monitoring and making predictions of MOC changes (an abrupt change early warning system), assessing the risks of rapid climate changes, and identifying impacts of these changes on the ocean, climate, extreme weather events, regional sea level changes, ecosystems, and carbon budgets.

Statement of Need:

In 2000, Congress tasked the U.S. Commission on Ocean Policy to investigate and provide recommendations for a “coordinated and comprehensive national ocean policy,” which led to the development of the U.S. Ocean Action Plan. This funding supports one of the four NOAA lead near-term priorities identified by the Joint Subcommittee on Ocean Science and Technology (JSOST) Ocean Research Priorities Plan.

Decadal variability in the Atlantic has been linked to the recent upswing in Atlantic hurricane seasons, persistent droughts in surrounding continental areas, and enhanced warming in the Arctic. None of these changes was anticipated and, if they persist, would require significant adaptation. A pragmatic definition of abrupt or rapid climate change is changes on decadal or multidecadal timescales to which human or natural systems have difficulty in adapting. Hence rapid climate change could be going on right now, and we might not be aware of it. This decadal variability is partly linked to changes in the Atlantic Meridional Overturning Circulation, an element of the global scale ocean circulation responsible for long-term climate variations. Atlantic Meridional Overturning Circulation refers to the process through which the warm, saline surface water from the North Atlantic Subtropical Gyre flows northward and eventually begins to sink into the deep ocean as its density increases due to cooling. MOC changes are thought to play a key role in the abrupt changes evident in the paleoclimate record.

Given current limited understanding of the MOC, fundamental research to describe the MOC, its variability, and critical process, and the ability to model these will be an early and ongoing emphasis of the proposed program. In an effort to address the impact of MOC fluctuations on regional and global climate and ecosystems, NOAA, NASA, and NSF will develop observing, nowcasting (short-term weather forecasting) and forecasting capabilities for the MOC and improve understanding of the physical mechanisms behind fluctuations in the MOC and the potential for prediction of those fluctuations.

This research effort is founded on federal and international initiatives to understand and forecast this large-scale ocean phenomenon and its potential for global impacts. The coordinated activities will be able to expand upon existing collaboration with international partners, such as the UK RAPID program and the European Union DAMOCLES program. The U.S. has a rare opportunity to leverage UK and EU observing and modeling capabilities in pursuit of answers to critical questions by implementing a complementary, not duplicate, program, as well as to take advantage of an unprecedented suite of ocean remote sensing satellites that can contribute to the focused MOC research program. In addition, activities will be established to engage the end-user communities to assess the impacts of decadal climate variability on their decision-making processes and to identify future product suites that would provide needed information.

NOAA’s involvement in research, modeling and forecasting make it an appropriate partner for this interagency research effort. As an operational agency, whose strengths are in observing and prediction capabilities after a research phase, NOAA would assume the responsibilities for routine monitoring for decadal and abrupt changes and production of the operational decadal predictions. NSF’s primary focus is on research and NASA on the demonstration of satellite technologies as applied to this problem.

Proposed Actions and Deliverables:

Conduct Fundamental Research: Current understanding of the MOC is limited; research to describe the MOC, its variability, and critical processes is fundamental. (\$2,500,000)

- Conduct research on the origins, dynamics, and structure of MOC variability and trends.
- Conduct research on the potential for climate and process thresholds and feedbacks, which might accelerate changes.
- Conduct potential predictability studies utilizing statistical and dynamical approaches.

Develop Nowcasting Capabilities and Experimental Products: New nowcasting and forecasting capabilities are dependent on appropriate ocean observing systems, data assimilation systems that combine the observations with models results, ocean models that incorporate both observations and process mechanics. These capabilities are critical to predicting the current MOC state, changes on a decadal scale, and assessing the potential for abrupt changes (\$1,750,000)

- Develop ocean data assimilation, targeted model parameterization, and capability for observing system design experiments. Develop and implement required high-resolution ocean and ice models. Implement routine ocean data assimilation (analysis - now casting) capability. Establish program of systematic observing system simulation studies to establish future observations required for MOC monitoring and prediction.
- Conduct experimental decadal predictability studies (joint with CCSP). Establish a routine program of decadal predictions of the MOC and related phenomena.

Assess Potential Impacts of Rapid MOC Changes: The combined capabilities of observations, modeling, analyses, and nowcasting will enable the assessment and forecasting of potential impacts of decadal and rapid changes on ecosystems, carbon budgets, regional sea level changes, regional climate and socioeconomic systems.(\$750,000)

- Conduct simulation studies of impacts of MOC changes on extreme events and global climate (joint with CCSP). Extend research and modeling studies to impacts of MOC variability on ecosystems, fisheries, carbon budgets and suggestions of the required observing systems.
- Establish research program to establish the socioeconomic impacts of rapid and decadal climate change

Schedule of Key Milestones:

Conduct Fundamental Research		Develop Nowcasting Capabilities and Experimental Products	Assess Potential Impacts of Rapid MOC Changes
FY2008	Establish Interagency Project Office Establish program of research grants	Implement program of ocean data assimilation development for MOC	Establish socio-economic impacts project
FY2009		Deliver last 15 years of ocean analyses related to the MOC	
FY2010	Report of interpretation of last 15 years of MOC related analyses	Deliver report on observing system simulation experiments for MOC arrays designs	Report on assessment of MOC changes on regional climate and extremes
FY2011	Report of methodology for assessing risks of rapid climate change Report of interpretation of last 55 years of MOC related analyses	International workshop to establish design of MOC observing system Deliver last 55 years of ocean analyses related to the MOC	Report of socio-economic impacts of MOC variations and rapid climate changes
FY2012		Implement routine nowcasting capability for MOC Implement prototype system for decadal outlooks for MOC variations	Report on assessment of MOC impacts on ecosystems and carbon cycle

Benefits:

NOAA’s research component is an important aspect of the interagency research effort to increase understanding and prediction of the MOC. Through these efforts a comprehensive observation and monitoring program for the MOC will be designed and implemented as part of the attempt to nowcast and forecast fluctuations in the MOC and their associated impacts.

Outcomes:

- Documentation and understanding of MOC changes during the last 15 years (a period intensely observed) and the past 55 years based on ocean reanalyses and attribution studies
- A modeling, observing, and data assimilation framework for routine monitoring of the Atlantic, and to a lesser extent, the global ocean for decadal and rapid changes
- An objective design for the ocean observing system required to monitor for MOC changes
- Robust and credible assessments of risks of MOC changes to regional climate and extremes and rapid climate changes
- Assessment of the socio-economic benefits of MOC monitoring and prediction
- Reduced uncertainty in MOC projects based on prototype decadal forecast systems

Performance Goals & Measurement Data:

This increase will support the one of the four near-term priorities outlined in the draft implementation plan developed by the NSTC, one of the immediate and long-term actions specified in the US Ocean Action Plan. It will also support the CCSP objective to assess abrupt changes in a warming world.

Performance Goal: <i>Climate</i>	FY07 Baseline	FY08	FY09	FY10	FY11	FY12
Performance Measure <i>with</i> Adjustment: Major milestones completed toward the goal of prediction of MOC changes and impacts (milestones per year). Accomplishment of these requires a supporting program of 10-15 grants per year.	0	4	1	3	5	3
Performance Measure <i>without</i> Adjustment	0	0	0	0	0	0

Analysis of Unmanned Aircraft Systems (UAS) Data from the Arctic Test Base - (Climate Program Office) (+0 FTE, +\$308,000): NOAA requests 0 FTE and \$308,000 to provide focused application of data from Unmanned Aircraft Systems (UAS) to be deployed from the Arctic Test Base. The UAS platforms will be deployed as part of NOAA’s Weather Research, Science and Technology Infusion Acceleration program to address critical weather and

climate observation gaps in regions important to the U.S., *e.g.* the Central Pacific Ocean and the Arctic. The funds requested here will provide the ability to analyze UAS data from the Arctic Test Base in an international context, thereby multiplying the value of the UAS data. Also funds will be used to purchase additional sondes for use in the Arctic to improve density of data collected. This initiative will be closely coordinated with the UAS activities under the Weather Research Program.

Statement of Need

The well-documented recent changes in the Arctic climate and the influence of Arctic climate processes on the northern hemisphere make this a pressing issue. This initiative will provide a focused means for analyzing novel UAS-derived Arctic data and blending it with relevant data from international sources as part of the International Polar Year (IPY). The analytical approaches developed during the IPY will be continued over the longer term to provide climate-relevant analysis and application.

Proposed Actions

NOAA will plan deployment strategies from the Arctic Test Base, conduct analysis of UAS data, and build integrated data sets for broader, Arctic-wide analysis. Reports from these analyses will be published in scientific literature and made available for future assessments and modeling activities on climate change in the Arctic. After the initial data analysis, consideration will be given to acquiring additional sondes or sensors to complement those provided under Weather Research to improve the ability of the UAS to provide climate-relevant data from the Arctic Test Base.

Benefits

NOAA believes that deployment of UAS from the Arctic Test Base will provide a significant new type of data to complement that available from satellites and infrequent ship-based observations of the Arctic atmosphere. The analyses to be conducted under this initiative will also demonstrate the utility of UAS in climate observations in the Arctic, and the value of these observations in improving the output from global and regional climate models and forecasts.

Performance Goals and Measurement Data

Performance Goal: Climate		FY06	FY07	FY08	FY09	FY10
Performance Measure: Updates to State of the Arctic Report Based on UAS Data	Annual	0	0	0	1	1
Performance Measure: Updates to NOAA Global Climate Model Based in UAS Data	Annual	0	0	0	1	1

In addition, these activities will support improvements to other NOAA services, such as weather forecasting performance measures by providing improved observing capabilities, improved scientific understanding, and input for numerical weather models.

Subactivity: Climate Research
Line Item: Climate Operations

GOAL STATEMENT:

The goal of NOAA's Climate Operations is to provide accurate and timely climate information/forecasts to best serve the public and private sector. The goal will be achieved via improved climate forecasts on timescales from subseasonal through interannual and beyond.

BASE DESCRIPTION:

Seasonal and interannual climate variability impact life and property on local, regional, and global scales. Since societal impacts from climate variability and change extend down to sub-seasonal time scales, connections between climate and extreme weather events must be identified. The establishment of climate/weather links will improve the forecast timing and location of extreme weather events thereby minimizing their impacts on the lives and property of U.S. inhabitants. Activities funded under Climate Operations include Operational Forecasts. This is a primary mission of NOAA to provide improved forecasts on subseasonal through interannual timescales and beyond. This will be achieved by improving model performance, developing new forecast designs, and upgrading existing datasets. The end-result will be the ability to produce and disseminate operational forecast products to private industry and the public resulting in the preservation of life and property.

Base activities support the objective, "Advance understanding and predict changes in the Earth's environment to meet America's economic, social, and environmental needs" under the Department of Commerce Strategic Goal of "observe, protect and manage the Earth's resources to promote environmental needs."

Under the new FY 2007 OAR budget structure, the Climate Operations line item remains as defined in the FY 2006 budget, including operational climate activities funded under former CO&S lines: Regional Assessments Education and Outreach, Climate Data and Information, and Weather-Climate Connection.

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Climate Research	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Climate Operations					
Climate Operations	363	867	886	886	-
TOTAL	363	867	886	886	-
FTE	-	-	-	-	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

Subactivity: Climate Research
Line Item: Climate Data & Information

GOAL STATEMENT:

NOAA's Climate Data and Information Program manages the Nation's resource of global climatological in-situ and remotely sensed data and information to promote global environmental stewardship; to describe, monitor and assess the climate; and to support efforts to predict changes in the Earth's environment. This effort requires the cooperation of national and international meteorological services for the acquisition, quality control, processing, summarization, dissemination, and preservation of a vast array of climatological data.

BASE DESCRIPTION:

The primary goal of climate observing networks is to assemble, develop, and communicate data and information about the trends and predictions of climate and weather events to public and private sector decision makers (e.g., energy, agriculture, state and local officials). To accomplish this goal, NOAA must develop the required infrastructure which addresses: (1) improving access and data management activities with, large-volume climate databases supplied by satellite and ground-based instruments; (2) implementation of operational updates to NOAA's long-term ocean and atmospheric reference data sets; and (3) improving the performance of the observational network consisting of the U.S. Surface Hourly, Upper-Air, and Buoy Networks. The following activities are funded under the Climate Data and Information line item:

- **The U.S. Climate Reference Network (USCRN)** (previously funded under CO&S) provides baseline, high-quality surface observations of air temperature and precipitation to detect long-term changes in climate through a robust climate record. The Climate Reference Network is an integral component of NOAA's plans for IOOS and contributes to the integrated GEOSS. USCRN observations will provide benchmark measurements for an improved national climate and weather monitoring network. CRN data already serve over 100,000 users each year from government, academia, and the private sector. Full implementation of the network of reference stations will fulfill the ultimate goal of routinely explaining at least 95% of national annual average precipitation variance and 98% of national annual average temperature variance for the contiguous U.S. The network is currently 52% complete (58 commissioned out of 110 planned stations); full implementation of the network is slated for 2009.
- **Data and Information Products:** The improvement in the quality and integrity of observed datasets is fundamental to our Nation's and the global climate and weather monitoring programs. Early detection and remediation of network problems that can adversely affect the quality of data records and diminish our ability to evaluate climate variability and change will be provided through NOAA's Observing System Monitoring Program. This will alert Observing System Managers in near real time to problems that in the past have been discovered long after the data became part of the historical archive, and thus too late to take immediate corrective action.

- **Global Climate Atmospheric Observing System:** The Climate Data and Information line item remains as defined in the FY 2006 budget with one additional change. In addition to climate activities funded under former CO&S lines: Regional Assessments Education and Outreach, Climate Data and Information, and Climate Reference Network, the Climate Data and Information line item now includes the Global Climate Atmospheric Observing System.

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Climate Research	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Climate Data & Information					
Climate Data & Information	2,401	6,133	6,266	8,266	2,000
TOTAL	2,401	6,133	6,266	8,266	2,000
FTE	4	3	3	3	-

Note: Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

NIDIS Implementation: U.S. Drought Portal and Soil Moisture Sensors (+0 FTEs and +\$3,300,000): NOAA requests \$3,300,000 and 0 FTEs to: (1) establish the U.S. Drought Portal (USDP) on an expedited basis to provide user-friendly access to historical and real-time data and products from National Integrated Drought Information System (NIDIS) partners, and (2) install soil moisture and temperature sensors at an accelerated rate at U.S. Climate Reference Network stations (USCRN), consistent with the U.S. Global Earth Observations Near-Term Opportunity (NTO) NIDIS Implementation Plan.

Statement of Need:

The National Drought Policy Commission reported in 2000 that the US needed to improve collaboration among scientists and managers to enhance the effectiveness of observation networks, monitoring, prediction, information delivery, and applied research and to foster public understanding of and preparedness to drought.

Persistent periods of drought have a cumulative effect on humans and society with significant impacts on the economies of the affected regions and the U.S. The Federal Emergency Management Agency estimates the annual direct losses to the U.S. due to drought is \$6-8 billion, the highest average annual cost of any natural disaster. This is on par with losses due to shorter-term weather fluctuations, such as tornadoes and hurricanes which are more apparent. Recent evidence points to the possibility that U.S. droughts may intensify and over the next 10 years. During the next 10-25 years scientists believe the U.S. may experience more frequent droughts which last longer than current droughts, and may cover a larger portion of the U.S. (Bulletin of the American Meteorological Society (AMS), 1998, Vol 29, No. 12).

Drought is a multifaceted, natural disaster that occurs on time-scales of months through years to decades, and beyond. There is a need to provide the capability to assemble and provide efficient access to observations and assessments related to monitoring and evaluating drought conditions and trends at the regional and national levels. NOAA will establish and maintain a “Drought Portal” that will improve the access and sharing of drought related data and

information among all users regionally, locally, and nationally. This system was authorized on December 22, 2006 in P.L. 109-430, the National Integrated Drought Information System Act of 2006.

The number and location of ground based observing stations equipped with soil moisture and temperature sensors is inadequate for drought monitoring purposes. This deficiency particularly impacts agribusiness. The installation of soil moisture sensors to existing observational monitoring climate networks is required to turn long-term climatology into information useful to agricultural and other drought risk sensitive business sectors. Current inadequacies, such as the lack of soil sensors, prevent drought experts from quickly and accurately analyzing drought conditions in the U.S. Drought Monitor, as well as forecasts related to agricultural and water management operational plans and longer term future annual, inter-annual, and even decadal policies.

The following list includes drivers for the creation of the NIDIS Drought Portal and installation of soil moisture sensors:

- Creating a Drought Early Warning System, for the 21st Century: The NIDIS 2004, Western Governors' Association.
- White House Science and Technology Council, Committee on Environment and Natural Resources, Subcommittee on Disaster Reduction. 2005.
- Grand Challenges for Disaster Reduction.
- National Drought Preparedness Act of 2005.
- U.S. GEO. 2005. Near-Term Opportunity Implementation Plan for NIDIS.
- Global Earth Observing System of Systems.
- National Drought Policy Commission Report, 2000, Preparing for Drought in the 21st Century.
- National Integrated Drought Information Systems Act of 2006.

Proposed Actions:

A. U.S. Drought Portal (\$2,150,000).

- NOAA will establish the USDP in FY 2008 the *programmatic* and *information technology* infrastructure that will support the NIDIS vision to be a dynamic and accessible drought information system that provides users with the ability to determine the risk of drought and its associated impacts, while also providing them with needed decision support tools. The USDP goals are to support the ability to graph relevant data and products spatially and temporally, and interactively compose maps, allow users to arrange and save selected products for a specific geographic area for easy return visits, and support links to specific decision support systems describing drought conditions at county, state, regional, and national scales.

The USDP will:

- Provide user-friendly, internet navigation from national to county levels;

- Be populated with historical and real-time drought data and products from a variety of partners; and
- Support easy to understand interpretations of relevant drought products designed for the lay person.

Examples of products to be included in the USDP are:

- Observed elements at multiple time and spatial scales, as both station and gridded datasets: precipitation, snow pack, stream flows, reservoir levels, ground water, crop moisture, soil moisture, temperature, anomalies, and drought impacts.
- Derived products and indexes: U.S. Drought Monitor, Palmer Drought Severity Index (PDSI), Standardized Precipitation Index (SPI), Objective Blends, Surface Water Supply Index (SWSI), Vegetation Drought Response Index (VegDRI), and the Keetch-Bryam Fire Index.
- Forecast products: water supply, stream flow, climate, snow pack, and U.S. Drought Outlook.
- Educational products: Information that educates the user on what data are used to construct specific products, uncertainty in the observations, indexes, and forecasts.

Schedule

FY2008 activities include establishing, operating, maintaining, and maturing the portal capability and capacity. Development activities include:

- Portal Software and Hardware Deployment: Establish portal environment using "drought.gov" domain in compliance with IT security and management standards. (\$950,000)
- Portal Incorporation of Drought Resources: Inclusion of core data sets and linking to drought-related data resources using portlets and other web-based applications. (\$350,000)
- Portal Design and Mapping Capabilities: Assure robust Geographic Information System (GIS) capabilities and incorporate professionally designed graphical elements in collaboration with partner resources. (\$350,000)
- USDP Project Management and Education and Outreach development. (\$200,000)
- Help Desk within the NIDIS Operations Center. (\$300,000)

B. Soil Moisture Sensors (\$1,150,000)

Measurements of soil moisture are one of the most critical parameters for evaluating and understanding the state of drought throughout the country. Today, only one small national network of stations measuring soil moisture exists, the Soil Climate Analysis Network (SCAN) consisting of 111 stations in 38

states. Although all sites provide automatic reports of observations on a daily basis, the total number of SCAN sites is not sufficient to monitor and evaluate soil conditions across most regions or nationally.

The plan will double the number of soil moisture/soil temperature monitoring points across the U.S. by installing reference-quality soil moisture and temperature sensors at each USCRN station across the contiguous 48 states during the period FY 2008-2012, inclusive. The number of USCRN stations currently commissioned is 79 and there are plans to commission an additional 12 stations in FY 2008. The increase in FY 2008 funding will be directed toward installing as many soil sensor suites as possible in FY 2008, thus accelerating the completion of soil sensor suites at all 114 USCRN stations. The remainder of the USCRN stations not yet installed and commissioned should be completed no later than FY 2009, for a network total of 114 USCRN stations.

In conjunction with the use of the U.S. Drought Portal, significant improvements in data availability and access to climate-related parameters, such as soil moisture and temperature can be realized by the deployment of these sensors. Several factors support the selection of the USCRN as the network of choice for enhancing soil moisture capacity throughout the U.S.:

- The USCRN network is well established and designed to provide the highest quality long-term record of climate conditions coupled with real-time access to current conditions, while being specifically engineered for easy augmentation with new sensors.
- The existing observing and data management infrastructure is well suited to supporting the addition of extremely precise, highly calibrated soil moisture and soil temperature sensors at the lowest possible cost of initial investment and life cycle operations and management costs.
- Monitoring of the performance of the USCRN individual sensors, each integrated station and the network as a whole is conducted on a daily basis to identify any anomalies and deterioration of sensor and/or station performance. The health of the network (HON) monitoring system automatically initiates maintenance actions to correct failing components.
- Each USCRN station footprint (60 x 60 feet) has sufficient area set aside for expansion instrumentation to be installed.
- Each USCRN station has an operational Site License Agreement that enables additional instrumentation to be placed at each station.
- The USCRN maintenance program, which was designed to ensure the continued accuracy and reliability of every CRN station, will guarantee the continued integrity of the soil moisture and temperature measurements throughout the network's 50+ year lifetime.

Benefits:

The enhanced network of point-based soil measurements will reveal large-scale soil moisture patterns. In addition to supporting drought monitoring, preparedness, and response, the increased number of observations of soil moisture will benefit climate forecasting and modeling, reservoir management, irrigation scheduling, crop yield forecasting, contribute to independent verification and validation (IV&V) and calibration of satellite based sensors and measurements as well as maximizes the value and utility of satellite measurements, and minimizes the number of point ground based sensors over large areas because high confidence in the satellite measurements.

Proposed Actions:

US Drought Portal

FY 2008

- Establish, operate, and maintain (update/improve) U.S. Drought Portal (USDP).
- Mapping capabilities incorporated.
- Advanced communities of users capability established.

FY 2009

- Steady increase in volume of data and comprehensive information products delivered through the USDP.

Soil Moisture Sensors

FY 2008

- Install 60 soil suites.

FY 2010

- Complete installation of soil moisture and soil temperature sensors at all USCRN sites (114 stations planned).
- Number of soil and temperature sensor stations will increase from the 111 SCAN stations to include 114 USCRN stations for a total of 225 sampling points.

Performance Goals and Measurement Data:

Performance Goal: <i>Climate</i>	FY05 Baseline	FY06	FY07	FY08*	FY09	FY10	FY11	FY12
Performance Measure <i>with</i> Adjustment								
Number of drought monitoring products/tools provided to regional, state and local users (Cumulative total number)				5	10	11	13	15
Performance Measure <i>without</i> Adjustment	0	0	0	3	9	9	12	14
Performance Measure <i>with</i> Adjustment								
Number of soil moisture and temperature sensors suites installed and operational at	0	0	0	60	87	114	-	-

USCRN stations with real-time reporting. (Cumulative Total Number)								
Performance Measure <i>without</i> Adjustment				12	30	51	72	93 (114 by 2013)

U.S. Global Climate Observing System (+0 FTE, -\$1,300,000): NOAA requests a decrease of 0 FTE and -\$1,300,000 from the FY 2007 base funding level for Climate Data & Information, specifically in the U.S. Global Climate Observing System (GCOS) project.

The GCOS project contributes to NOAA's development of Effective Strategic Partnerships and Integrated Information Services. U.S. GCOS works with other national and international entities to provide the comprehensive, high-quality observing system needed to support climate assessments and forecasts. Specifically, U.S. GCOS is a key driver supporting a sustained global infrastructure of complementary *in-situ* data management and access subsystems to accurately document the global state of Earth's climate system, necessary for more reliable climate predictions and projections.

The request will reduce FY 2008 funding for GCOS from \$2,743,000 in the FY 2007 President's Budget to \$1,443,000. This will be due to the following adjustments in the observing system:

- Suspend support for: Global Atmosphere Watch's Quality Assurance/Science Applications Center for the Americas for Precipitation Chemistry Data (-\$300,000), the GCOS portion of NOAA's Central UV Calibration Facility (CUCF) (-\$50,000), and radiosondes for 4 GCOS Upper Air Network (GUAN) sites in developing nations (-\$350,000).
- Eliminate planned installation of one new GUAN reference site (-\$150,000) and 2 new GCOS Surface Network reference sites (-\$150,000).
- Reduce support for GCOS Secretariat's Operations (-\$300,000).

Subactivity: Climate Research
Line Item: Other Partnership Programs

GOAL STATEMENT:

The strength of NOAA Research is that it does not operate in isolation but rather in partnership with a multitude of external experts in its fields of research. These partnerships extend to other parts of NOAA; other Federal, state, and local government entities; universities; and industry. The contribution of the unique strengths of each partner greatly enhances the accomplishments of NOAA Research.

BASE DESCRIPTION:

Other Partnership Programs contains various programs appropriated by Congress. NOAA Research manages these programs in a manner that leverages their objectives in concert with NOAA's mission responsibilities and requirements.

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Climate Research	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Other Partnership Programs					
East Tennessee Ozone Study	291	-	-	-	-
Climate System Research Center	740	-	-	-	-
Univ of AL Huntsville Climate Research	979	-	-	-	-
Abrupt Climate Change Research	247	-	-	-	-
Drought Research Study	986	-	-	-	-
Coastal Vulnerability to Climate Change	1,480	-	-	-	-
Center for Urban Environmental Research	986	-	-	-	-
Advanced Study Institute for Environmental Prediction	1,479	-	-	-	-
TOTAL	7,188	-	-	-	-
FTE	-	-	-	-	-

PROGRAM CHANGES FOR FY 2008:

None.

Subactivity: Weather and Air Quality Research
Line Item: Laboratories & Cooperative Institutes

GOAL STATEMENT:

NOAA's Weather and Air Quality Research Programs work towards fulfilling of two goals: (1) to provide the Nation with more accurate and timely warnings and forecasts of: (a) weather events, particularly high-impact weather events that disrupt economic productivity and cause loss of life and property, and (b) air quality, particularly ozone and aerosols (particulate matter) that impact human health, and (2) to provide the scientific basis to develop public policy for air quality.

BASE DESCRIPTION:

The Weather and Air Quality Research objectives for the laboratories and cooperative institutes are to provide theoretical frameworks, remote sensing technologies, and scientific understanding to: (1) develop and assess new, cost-effective atmospheric observing systems; (2) develop data acquisition, management, analysis, and display systems; (3) develop and verify numerical models and other techniques to provide prediction guidance for all types of weather, particularly high-impact events; and (4) transfer research results to both aid the research and policy communities and improve operational warnings and forecasts. Included in the four activities are: daily and extreme weather forecasts; air quality forecasts; and crosscuts of weather, air quality, and climate change.

Improved forecasts and warnings require more frequent and higher-density observations, faster communications, and better local data-handling systems. NOAA has implemented a major capital investment that substantially upgrades its ability to collect weather data. In support of this modernization effort, research is needed to improve the spatial and temporal resolution of remote observations of the atmosphere and to integrate the resulting data into descriptions of the atmosphere for use in weather forecasting research and operations. The primary research activities currently include:

- Development of dual-polarization, phased-array, and multi-frequency Doppler radars and passive radiometers to study convective storms, in order to improve rainfall estimates, to detect damaging winds and tornadoes;
- Improvement of short-range (1-12 hour) forecasting by the development and evaluation of new local data system technologies and techniques;
- Incorporation of satellite-observed wind profile data into forecast models to determine whether the accuracy of weather forecasts is improved;
- Application of current wind-profiler radar technology to coastal environments, using both land-based and buoy-mounted systems will allow better characterization of coastal weather and improve short-term forecasts of hazardous events;
- Development of airborne radiometric and optical instruments designed to map ocean color and salinity along coastal waterways and in the open ocean. Airborne instruments address this fundamental gap in current observational technology (between in-situ buoy-mounted instruments and the low spatial and temporal resolution of satellite-borne instruments) by virtue of their ability to map relatively broad ocean regions with high

spatial resolution and a temporal resolution governed by the frequency of the flights. Ocean color provides information about the onset and dissipation of harmful algal blooms. Salinity maps can be used to identify and estimate the strength of ocean circulation drivers.

- Transition hurricane model and forecast decision aide improvements to operations;
- Development and transition to operational use air quality forecasting capabilities to include additional key pollutants (e.g., particulate matter) and extend forecast lead times;
- Identification and policy-relevant explanation of key atmospheric causes of serious air pollution problems;
- Accelerate improvements in medium range (3-14 day) numerical weather prediction and;
- Development of improved atmospheric profiling systems to continuously measure vertical profiles of wind speed and direction, temperature, and humidity using ground and satellite-based remote sensing;
- Development of advanced light detecting and ranging systems and infrared Doppler multi-frequency radars as research tools to improve our knowledge of atmospheric winds, turbulence, aerosols, and moisture processes.

Base activities support the objective, “Advance understanding and predict changes in the Earth’s environment to meet America’s economic, social, and environmental needs” under the Department of Commerce Strategic Goal of “Observe, protect, and manage the Earth’s resources to promote environmental needs.”

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Weather and Air Quality Research	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Laboratories & Cooperative Institutes					
Laboratories & Cooperative Institutes	35,258	36,000	39,198	44,198	5,000
NOAA Joint Institute for Northern Gulf of Mexico	2,959	-	-	-	-
TOTAL	38,217	36,000	39,198	44,198	5,000
FTE	178	182	182	185	3

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Unmanned Aircraft Systems (UAS) - (Earth Systems Research Laboratory, Boulder, CO) (+3 FTE, +\$3,000,000): NOAA requests an increase of 3 FTE (4 positions) and \$3,000,000 to implement an end-to-end initiative to accelerate the research and development, and transition of innovative new observational platforms and forecast tools to advance NOAA's Earth-system product, service, and information enterprise. Specifically, NOAA will develop, test, and evaluate UAS platforms, payloads, and applications to determine their role in filling critical observational gaps in order to improve NOAA's environmental monitoring and prediction capabilities. UAS platforms are part of a larger Weather Research Science, Technology and Infusion Acceleration program effort. These platforms help NOAA by addressing our Nation's water resources information needs. This UAS initiative advances the development of observing systems and 21st century forecast tools and accelerates their infusion into the operational environment. UAS platforms represent a collaborative effort of several organizations within NOAA, including NOAA laboratories, NOAA National Weather Service, NOAA National Ocean Service, NOAA Marine and Aircraft Operations, and NOAA Cooperative Institutes. This initiative is linked closely to the needs of multiple Federal, state, and local agencies.

Statement of Need

NOAA's Strategic Plan and Mission include observing, describing, and predicting changes in the Earth system as a means of informing and protecting the public and managing our Nation's resources. A specific example of this mission is the need to meet long standing challenges in weather forecasting and climate monitoring, including the need for accurate predictions of precipitation and associated storms. As a first step in this goal and to support improvements in other research and operations areas, this effort will focus on the development and testing of UAS platforms, payloads, and applications to determine their future role in helping achieve NOAA mission objectives by filling current critical observational gaps. A key initial strategy is the establishment of regional UAS test bases and associated research campaigns.

Proposed Actions

NOAA will carry out demonstration missions using currently available UAS platforms, including those in the class known as High-Altitude Long-Endurance (HALE), which have the most potential to improve NOAA’s ability to carry out its diverse missions. These platforms must be large enough to carry remote sensors and durable enough to reach remote areas. NOAA will lease existing aircraft suitable for top priority applications and develop associated diagnostic and forecasting tools to use the new UAS-acquired data. The missions will develop and integrate the necessary sensors, plan and conduct field tests, analyze results, and explore the elements required to operate and maintain UASs in the future. A range of operating conditions and applications will be chosen for testing and evaluating diverse applications.

NOAA will conduct field tests for at least four applications in FY 2008, including at least one using a HALE-class UAS. They will focus on data collection over large remote areas, e.g., the Central Pacific Ocean and/or the Arctic, and will document phenomena that connect weather and climate, including hurricanes and the atmospheric water budget. The hurricane tests will address both operational surveillance needs and scientific research requirements. In the Central Pacific, we face important data gaps that hinder both weather and climate monitoring, including the key role of atmospheric rivers in global and regional water vapor transport. Understanding water vapor transport will lead to better predictions of such climate hazards as winter flooding and such key seasonal conditions as snow pack in the western U.S. The Arctic is important because key changes there influence climate and weather, and is the focus of the International Polar Year. The UAS tests will aid NOAA in scientific discovery and assessment of data gaps impeding monitoring and prediction, and will provide the foundational experience to perform a Cost and Operational Effectiveness (CORE) analysis that will inform NOAA of the potential value of implementing an operational UAS capability. (The risk of platform loss in adverse weather will be addressed in any potential lease agreements so as to avoid a potentially open-ended liability.)

The following table summarizes the spending plan and specific activities associated with this increase, including 50% for contracts, 25% for Federal staff-related costs, and 25% for other objects, such as equipment:

UAS Spending plan				
Task / Positions	Level	Type	Cost \$K	Notes
Planning and management	Senior	Fed	300,000	1 position; Coordinates plans across NOAA; interacts and coordinates with external partners.
Major Field Tests	Mid	Contract	1,000,000	2 positions; Develops and coordinates platform and field deployment costs through contractors.
Sensors	Mid	Fed	550,000	1 position; Develops, integrates, and operates sensors; includes funds for sensor development materials.
Applications tool development	Mid	Fed	250,000	1 position; Develops and tests new diagnostic and forecasts tools/processes.
Analysis of tests	Mid	Fed and Contract	900,000	2 positions; Fed leads evaluation of test results; coordinates test analyses among technologists, scientists, and forecasters; contractor does analysis

Total			3,000,000	4 Federal positions, 3 contractors; balance of 50% internal NOAA capability/capacity building and 50% contracts
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Benefits

Much like the advent of radar in the 1940s and satellites in the 1960s/'70s, the development of UAS in the 1990s (initially to meet military requirements) has the potential to revolutionize our ability to monitor the global environment by filling critical information gaps over expansive, remote reaches of the oceans and poles. This project explores key potential civilian applications, providing the critical experience needed to guide NOAA's decisions regarding major future investments in this technology. This project will also help strengthen U.S. scientific and technical leadership, thereby enhancing our global competitiveness. UAS is a technology whose time has come for civilian application. NOAA, in partnership with NASA, DOE and other agencies, is poised to develop major applications of this technology that will help our economy through improved environmental monitoring and prediction as well as strengthened scientific and technical capability. Specific applications that will be explored through this FY 2008 investment include:

Climate: The proposed UAS project will test two important climate issues: (1) Climate models show that the upper atmosphere over the Arctic Ocean should have warmed by 3° F by late in the current decade. Existing measurements taken at different spatial locations do not allow comparison of temperatures at the same location over time. By dropping sondes at locations chosen during the International Polar Year, we can address this important question of whether or not the models are right. (2) Similarly, the change of water vapor in the upper and lower atmosphere over the tropics is crucial to evaluating climate models. The proposed Pacific test will measure water vapor with higher accuracy and denser spatial specificity than has been possible in the past and will test the ability of UASs to monitor atmospheric rivers, which currently are poorly observed but yet are believed to be crucial to both the global water budget and weather prediction.

Weather Research: The potential for UAS to aid in hurricane reconnaissance and research will be evaluated. The central Pacific UAS project will test the ability of UAS to fill gaps in satellite data that currently limit our ability to monitor water vapor transport over the ocean.

Fisheries Enforcement: Over parts of both Alaska and Hawaii, NOAA will test new concepts of fisheries enforcement using advanced sensors on UAS platforms.

Coastal Zone Studies: NOAA will test and evaluate UAS applications in Marine Sanctuaries for monitoring whale migrations and other phenomena occurring over extensive areas that currently cannot be monitored using manned ships or aircraft.

Performance Goals and Measurement Data

Performance Goal: Weather & Water		FY05	FY06	FY07	FY10
Performance Measure: Flash Flood Warning	Lead-Time in minutes	48	48	49	50
	Accuracy in percent	89	90	90	91
Performance Measure: Winter Storm Warning Lead- Time and Accuracy	Lead-Time in hours	15	15	15	17
	Accuracy in percent	90	90	90	92

These activities support improvements to these and other NOAA National Weather Service weather forecasting performance measures and climate research by providing improved observing capabilities, improved scientific understanding, and input for numerical weather and climate prediction models.

Hurricane Intensity Research (+0 FTE and +\$2,000,000): NOAA is requesting 0 FTE and \$2,000,000 to improve NOAA’s ability to forecast hurricane intensity.

Statement of Need:

The impact and risks from hurricanes have been clearly illustrated during the past several years. In addition to the significant loss of life, hurricanes have very large economic impacts. Although coastal watershed counties account for only a quarter of the Nation's total land area, they contain half of the Nation's population and economic output, and are among the most prone to flooding. Further, the H. John Heinz III Center for Science, Economics and the Environment has reported that coastal storms account for 71% of recent U.S. disaster losses, including Katrina (\$40.0 billion insured losses), Rita (\$4.7 billion), and Wilma (\$6.1 billion).

Although NOAA’s forecasts of hurricane path have improved significantly over the past decade and increased lead-time from three to five days, hurricane intensity forecasts have improved only slightly. For instance, the rapid changes in intensity by hurricanes Katrina, Rita, and Wilma in 2005 were not well forecast. Obviously, better predictions of hurricane intensity would be crucial information for emergency managers, allowing them to initiate appropriate risk mitigation actions.

Limited scientific understanding of the factors underlying the physical processes within hurricanes constrains our ability to forecast accurate changes in intensity. For instance, although we know that ocean-atmosphere exchanges of heat, moisture, and momentum critically influence hurricane intensity, our

existing simulations do not model these processes with a high degree of reliability due to extreme conditions that are poorly represented in studies in more calm conditions. Key to success are better measurements of the interface between the atmosphere and ocean, which in hurricanes is characterized by very high waves, and strong winds lifting up a tremendous volume of water droplets from the surface. Despite such difficulties, NOAA must collect measurements in actual hurricane conditions to improve our understanding of these physical processes during extreme conditions and use that information to improve the numerical simulation models of hurricanes and improve hurricane intensity forecasts.

In addition to physical and modeling research, we also need to research better ways to communicate hurricane risks to emergency managers and the public. As more accurate predictions become available, we need to determine what types of information about hurricane strength (*e.g.*, maximum wind speed, breadth of strong winds, etc.) will enable people to make appropriate decisions. Sound social science research can help maximize the value of this information for decision-makers and the public.

FY 2008 Proposed Actions:

NOAA will expand its efforts to understand the physical processes that contribute to hurricane intensity and changes in storm structure. The Hurricane Research Division of NOAA's Atlantic Oceanographic and Meteorological Laboratory in Miami, FL, will partner with other NOAA labs and organizations to develop and demonstrate methods to significantly improve hurricane intensity forecasts by:

- Filling key gaps in existing observations of hurricane processes that affect intensity changes. NOAA will take advanced observations of air-sea interactions from buoys along likely hurricane tracks and will also use land-based instruments to measure wind structures and turbulence as hurricanes reach shore. Obviously, these instruments will be designed and constructed to collect information in extreme conditions.
- Analyzing and integrating existing observations (including measurements from airborne Doppler radar and from satellites) with the new observations to understand the factors that drive hurricane intensity. NOAA will synthesize and incorporate these new insights into numerical models and will confirm that they lead to more accurate simulations of hurricanes.
- Improve the societal value of hurricane intensity research by focusing on those measures (*e.g.*, peak wind speed, the breadth of the region of high winds, etc.) that best convey critical information to users in ways that can be accurately interpreted. This research should lead to new methods for communicating information about hazards. Ensuring that predictions align with how people use information will help emergency managers and the public better understand the hazards that threaten them so they can respond effectively.

Schedule of Key Milestones:

- Use advanced models and new high-quality specialized observations to assess operational numerical model guidance.
- Each year, evaluate current operational as well as advanced research model performance to ascertain the impacts of quality, quantity, sampling strategy, and type of observations.
- Each year, use evaluations to advise operational centers, focusing primarily on augmented field collection efforts (2009 through 2011).

Proposed Program	FY08	FY09	FY10	FY11	FY12
Diagnostic Study Results (Storms)	3	4	4	3	4
New&Updated Algorithms for HWRF	0	1	2	1	2
Quality controlled datasets (Storms)	3	4	4	4	3
WP-3 Sea spray 0.3-mm Doppler Radar	Integrate Install	Flight tests	Deploy 2 storms	Deploy 4 storms	Deploy 4 storms
Land-based hardened wind sensors	Design & Test prototype	Field trials	Acquire Deploy 2	Acquire Deploy 2	Acquire Deploy 2
WP-3 GPS-based storm surge sensor	Deploy research unit	Deploy research unit	Design Acquire prototype	Deploy prototype	Deploy prototype
Buoy-based hardened turbulence sensors	Design & Test prototype	Field trials	Acquire Deploy 2	Acquire Deploy 2	Acquire Deploy 1

Benefits:

These activities will significantly improve NOAA’s ability to forecast hurricane intensity and provide better and more usable information for emergency managers and the public to decide how to respond to approaching storms. These activities address key objectives of NOAA’s operational hurricane forecasters in addition to opening new lines of attack on the hurricane intensity problem, laying the basis for ongoing improvements in forecast accuracy in future years.

Outcomes:

The proposed work will contribute to a number of societal outcomes, including the following:

- Communities will experience fewer deaths and injuries and reduced property damage by using improved forecasts to guide mitigation efforts.
- Communities will ensure well orchestrated and proactive planning, preparedness, and response/recovery through improved access to timely and reliable weather and water information.
- The global competitiveness of the Nation's commerce and industry will be enhanced by reducing costs associated with weather and water conditions and related uncertainties.

Performance Goals & Measurement Data:

This increase will support the objective, “Advance understanding and predict changes in the Earth’s environment to meet America’s economic, social, and environmental needs” under the Department of Commerce strategic goal, “Observe, protect, and manage the Earth’s resources to promote environmental needs.” The key performance measure will be based on improvement in the official TPC/NHHC 48-hr hurricane intensity forecast (the FY 2005 RMS error was 15.8 kts).

Performance Goal: <i>Weather and Water</i>	FY05 Baseline	FY06	FY07	FY08*	FY09	FY10	FY11	FY12
Performance Measure <i>with</i> Adjustment (Cumulative 48-hr improvement, kts)	0	0.15	0.30	0.45	.60	1.0	1.4	1.8
Performance Measure <i>without</i> Adjustment (Historical cumulative 48-hr improvement, kts)	0	0.15	0.30	0.45	0.60	0.75	0.90	1.05

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Subactivity: Weather and Air Quality Research
Line Item: Weather & Air Quality Research Programs

GOAL STATEMENT:

The strength of NOAA Research is that it operates in partnership with a multitude of external experts in its fields of research. These partnerships extend to other parts of NOAA; other Federal, state, and local government entities; universities; and industry. The contribution of the unique strengths of each partner greatly enhances the accomplishments of NOAA Research.

BASE DESCRIPTION:

Tornado/Severe Storm Research (Phased-Array Radar): NOAA is developing new technologies for forecasting and detecting tornadoes and other forms of severe weather and to disseminate this information to emergency managers, the media, and the general public. Phased-array radar has the potential to significantly extend lead times for tornadoes and other forms of severe and hazardous weather. Faster scan rates can reduce the time it takes to make a complete Doppler radar observation from six minutes to less than one minute. Coupled with artificial-intelligence-based decision-support systems, tornado lead times could be almost doubled from 12 to 22 minutes.

Major components of this program are continued research support and the construction of and experimentation with a phased-array research testbed at the National Severe Storms Laboratory (NSSL) in Norman, OK. Congress established a joint R&D program for NOAA, DOD, and FAA to investigate the feasibility and benefits of using military phased- array radars for improving severe weather forecast and warning systems. U.S. Navy SPY-1 Phased-Array Radar technology holds considerable promise for making significant improvements to the existing WSR-88D system. Using multiple beams and frequencies, The SPY-1 Phased-Array Radar reduces the scan time for severe weather from six minutes to less than one minute, which can lead to increased lead times for warnings of tornadoes and other forms of hazardous weather. NOAA/NSSL is designated to operate and maintain the equipment, provide facilities, approve associated research, and otherwise assist in all related efforts.

Base activities support the objective, “Advance understanding and predict changes in the Earth’s environment to meet America’s economic, social, and environmental needs” under the Department of Commerce Strategic Goal of “Observe, protect, and manage the Earth’s resources to promote environmental needs.”

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Weather and Air Quality Research	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Weather & Air Quality Research Programs					
Tornado Severe Storm Research / Phased Array Radar	3,945	3,000	2,972	2,972	-
Coordinate NASA-NOAA Severe Storm R&D	1,972	-	-	-	-
TOTAL	5,917	3,000	2,972	2,972	-
FTE	2	2	2	2	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

Subactivity: Weather and Air Quality Research
Line Item: Other Partnership Programs

GOAL STATEMENT:

The strength of NOAA Research is that it operates in partnership with a multitude of external experts in its fields of research. These partnerships extend to other parts of NOAA; other Federal, state, and local government entities; universities; and industry. The contribution of the unique strengths of each partner greatly enhances the accomplishments of NOAA Research.

BASE DESCRIPTION:

The Other Partnership Programs line item contains various programs initiated by Congress. NOAA Research manages these programs in a manner that leverages their objectives consistent with key NOAA mission responsibilities and requirements.

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Weather and Air Quality Research	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Other Partnership Programs					
New England Air Quality Study	2,924	-	-	-	-
NE Center for Atmospheric Science and Policy	1,480	-	-	-	-
Inst. For Study of Earth, Oceans & Space (AirMap - CCRC)	4,931	-	-	-	-
Risk Reduction in Water Forecasts (MSU)	1,972	-	-	-	-
Remote Sensing Research (ISU/BCAL)	493	-	-	-	-
STORM (U. of N. Iowa)	641	-	-	-	-
Central CA Air Quality Study	370	-	-	-	-
Great Plains Center for Atmosphere and Human Health	986	-	-	-	-
Urbanet	5,917	-	-	-	-
High Altitude Air Study	346	-	-	-	-
Reducing Wind-Induced Damages from Storms	986	-	-	-	-
Targeted Wind Sensing	1,966	-	-	-	-
TOTAL	23,012	-	-	-	-
FTE	-	-	-	-	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

Subactivity: Ocean, Coastal, and Great Lakes Research
Line Item: Laboratories & Cooperative Institutes

GOAL STATEMENT:

NOAA's Ocean, Coastal, and Great Lakes Research programs seek to improve the protection, restoration, and management of coastal and ocean resources through research and monitoring activities that support ecosystem-based management. These programs accomplish this goal by providing:

- Ecosystem research to analyze ecosystem management decisions and their outcomes;
- Integrated observing and data management systems;
- Outreach and education to improve public understanding and use of coastal and marine ecosystems;
- Partnerships for place-based ecosystem approaches to management; and
- International diplomacy, negotiation, and partnerships.

BASE DESCRIPTION:

To be an effective steward of the ocean, coastal, and Great Lakes environments, NOAA relies on state-of-the-art research conducted at in-house laboratories and by external partners. The three OAR laboratories supporting the agency under this subactivity provide long-term research and scientific expertise to meet NOAA's stewardship mission. Three partnership programs also support this activity primarily through peer-reviewed proposals to the external research community. These labs and programs are the Atlantic Oceanographic and Meteorological Laboratory (Florida), Great Lakes Environmental Research Laboratory (Michigan), Pacific Marine Environmental Laboratory (Washington), the National Sea Grant College Program, the Ocean Exploration Program, and the National Undersea Research Program. Ocean, Coastal, and Great Lakes Research laboratories and programs are regularly evaluated by outside experts for quality and relevance to NOAA's management mission. High quality, peer-reviewed research is the basis of sound decision-making.

The primary objective for Ocean, Coastal, and Great Lakes Research is to protect and restore ocean, coastal, and Great Lakes resources. In support of this objective, NOAA Research has identified the following priority research areas:

- Ecosystem Observations - monitor coastal and ocean ecosystems.
- Ecosystem Research - activities in support of ecosystem modeling and forecasting, technology transfer, undersea research and exploration.
- Aquaculture - research and outreach efforts focusing on near shore and offshore systems development, genetics, physiology, endocrinology.
- Corals - health and monitoring activities.
- Coastal and Marine Resources - activities that support improved resource management decision-making.
- Habitat - invasive species research and outreach.

Benefits of our approach:

- NOAA is a science-based agency whose scientists have the expertise to conduct the highest quality research, subject to peer-review by outside experts.
- In-house experts provide objective answers and direction to managers and the public.
- Long-term (5-10 year), sustained research investment by NOAA labs and their academic partners leads to agency-specific technology and forecasting models that can not be achieved by either entity separately.

Base activities support NOAA's mission goal to "Protect, Restore, and Manage the Use of Coastal and Ocean Resources through an Ecosystem Approach to Management." In addition, they support the objective, "Enhance the conservation and management of coastal and marine resources to meet America's economic, social, and environmental needs" under the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental stewardship."

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Ocean, Coastal, and Great Lakes Research	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Laboratories & Cooperative Institutes					
Laboratories & Cooperative Institutes	22,637	19,000	20,185	20,185	-
TOTAL	22,637	19,000	20,185	20,185	-
FTE	123	119	119	119	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

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Subactivity: Ocean, Coastal, and Great Lakes Research
Line Item: National Sea Grant College Program

GOAL STATEMENT:

NOAA's National Sea Grant College Program seeks to:

- Conduct research to enable NOAA to tackle priority problems and opportunities identified by coastal residents and businesses and local, regional, state and Federal agencies;
- Transfer scientific research results to user groups such as natural resource managers and coastal business people;
- Provide training opportunities for K-12 teachers to bring the sciences into the classroom and for undergraduate and graduate students to be mentored by senior researchers; and
- Inform the public about marine and coastal issues through extension and communications projects.

BASE DESCRIPTION:

Sea Grant Network – NOAA's National Sea Grant College Program enhances the development, use, and conservation of the Nation's marine and Great Lakes resources through a network of Sea Grant Colleges that conduct education, training, and research in all fields of marine and Great Lakes study. The 30 state Sea Grant programs, located in every coastal and Great Lakes state and Puerto Rico, serve as the core of a dynamic national network of more than 300 participating institutions involving more than 3,000 scientists, engineers, outreach experts, educators and students. The Sea Grant network addresses key issues and opportunities in areas such as aquaculture, aquatic invasive species, coastal community development, estuarine research, fisheries management, coastal hazards, marine biotechnology, marine engineering, seafood safety and water quality. As a non-regulatory program, Sea Grant focuses on generating and disseminating science-based information to a wide range of groups. Some of these include: commercial and recreational fishermen, educators, fish farmers, state and local planning officials, port and harbor commissioners, seafood processors and retailers, and natural resource, water and environmental quality managers.

Sea Grant is developing a system of regional networks that allows for organizing multi-state responses to regional/ecosystem-level problems. This effort supports the U.S. Ocean Action Plan and a major Ocean Commission recommendation that NOAA move to a regional ecosystem management approach and develop research and information plans that identify priority actions to coordinate ocean and coastal activities in each region. Sea Grant will play a key role in NOAA's efforts by applying its resources to engage regional and local stakeholders through the 30 state Sea Grant programs. Sea Grant expects these regional plans to be completed by FY 2009. Once the plans are completed, Sea Grant will target research, education, extension, and outreach resources to support the priority actions identified in the plans. This new regional focus will enhance Sea Grant's ability to make a critical contribution to this NOAA effort.

Research – Sea Grant funds high-quality research that is responsive to user needs, leveraging university expertise to solve today's marine environmental problems. Each of the Sea Grant colleges conducts research to solve problems and explore new uses for the world's marine, Great Lakes and coastal resources. This work addresses priority problems and opportunities identified by coastal resource managers and users. As a national network of research institutions, Sea Grant leads the Nation's efforts in the emerging field of marine biotechnology, and is addressing critical medical, food and environmental concerns.

Education – For three decades, Sea Grant has provided national leadership to enhance marine literacy for grades K-12 and in the development of professionals who understand marine and aquatic science and research. Sea Grant programs offer programs such as summer in-service programs, newsletters, speakers and curriculum materials. By developing innovative science curricula and teacher training programs, and embracing new technologies to enhance learning and pique students' curiosity, Sea Grant helps students understand how relevant science is to their lives. At the university level, Sea Grant recruits and trains undergraduate and graduate students, and employs senior researchers who form a national brain trust for dealing with coastal economic and environmental challenges.

Outreach and Extension – One of Sea Grant's greatest strengths is its ability to help clients use knowledge and research results through a broad multidisciplinary approach to outreach. The results of Sea Grant research are communicated to users at all levels in various ways. Outreach education activities for the public and private sectors are conducted through NOAA and: (1) a *communications program* comprised of writers, editors and media specialists who create a variety of printed and electronic information products for many audiences, including the general public; and (2) an *extension program* consisting of an interactive network of about 300 specialists and field agents (mostly university-based), who transfer information and research results to the marine and aquatic community. The overall goal of extension education is to encourage individuals, groups and institutions to use science-based information.

Technology Transfer – Sea Grant advisory specialists and coastal field agents convey the needs of the marine communities to university scientists, and transfer research results to resource users and managers at the local level. Sea Grant communications specialists package and deliver research, outreach and educational information on a wide range of topics, from fishing vessel safety to coastal erosion, using the full spectrum of modern print, electronic and mass media. Sea Grant organizes and hosts hundreds of scientific and public conferences and workshops each year on topics including: zebra mussels and other invasive species, commercial fishing, seafood processing, aquaculture, autonomous underwater vehicles, and offshore structures.

Program Evaluation – Sea Grant has implemented a rigorous four-year external performance review process for its federally sponsored university-based state programs. Performance review teams are comprised of highly experienced, distinguished, and knowledgeable individuals. Performance is judged quantitatively using performance benchmarks, and metrics developed with the help of outside experts. Foremost among these benchmarks is a program's impact on mission and programmatic objectives including its connection with users of science-based information. Individual program performance is used to determine merit-based funding for each state program.

Benefits:

- Stable partnerships between NOAA and the Sea Grant institutions allow the Agency to address long-term programmatic goals and develop constituent relationships and local leadership nationwide.
- Local management ensures NOAA's investments flow to the highest local priorities, bringing the most appropriate university resources to bear on these problems.
- Sea Grant's extension and outreach infrastructure enables rapid transfer of objective information to users, timely identification of emerging issues and a forum to engage local constituencies in policy and priority setting.
- Sea Grant reaches millions of people through its communication, education and extension networks. In a world where public awareness and knowledge of the environment will be increasingly critical to public policy, Sea Grant capabilities play an important role to transfer objective information to a diverse, nationwide audience.
- Sea Grant plays a unique and important role advancing our national interest in marine resources. Together with the Office of Naval Research and the National Science Foundation, Sea Grant and other NOAA programs provide the only sustained federal contact and funding source for universities with marine research capabilities. Sea Grant provides a regional and national research focus while supporting marine and coastal resource research of immediate public importance and application. It is virtually the only source of funding in the United States for marine policy studies.
- By employing the expertise and skills of the network's universities, research institutions and programs, Sea Grant activities have spurred economic growth and cost savings, created new products and services, enhanced coastal and marine resource management, reduced the loss of life and property, and educated tens of thousands of K-12 and university students.

Base activities support NOAA's mission goal to "Protect, Restore, and Manage the Use of Coastal and Ocean Resources Through an Ecosystem Approach to Management." In addition, they support the objective, "Enhance the conservation and management of coastal and marine resources to meet America's economic, social, and environmental needs" under the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental stewardship."

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Ocean, Coastal, and Great Lakes Research	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: National Sea Grant College Program					
National Sea Grant College Program Base (Base)	48,277	52,000	54,900	54,900	-
Aquatic Nuisance Species/Zebra Mussel Research	986	-	-	-	-
Gulf of Mexico Oyster Initiative	986	-	-	-	-
Oyster Disease Research	986	-	-	-	-
National Sea Grant Law Center	1,480	-	-	-	-
Fisheries Extension/Outreach Program (Sea Grant)	986	-	-	-	-
TOTAL	53,701	52,000	54,900	54,900	-
FTE	23	23	23	23	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

Subactivity: Ocean, Coastal, and Great Lakes Research
Line Item: Ocean Exploration and Research

GOAL STATEMENT:

NOAA seeks an investment in undersea exploration, science, and technology in the deep ocean and areas of special concern, such as the U.S. Exclusive Economic Zone (EEZ) and marine protected areas such as National Marine Sanctuaries (NMS). The NOAA Office of Ocean Exploration and Research (OER) will conduct multidisciplinary expeditions, document and disseminate the results, and engage partners in other federal agencies, academia, and industry to develop and apply the "tools of tomorrow" in order to increase the pace and efficiency of exploration. It is envisioned that OER will provide a strong foundation for building strategic connections between "discoveries" and future investments in research and management to increase our knowledge of the ocean realm to support NOAA's goal of Ecosystem Management. The activities undertaken seek to:

- Increase the pace of discovery in unknown and poorly known areas of the world's ocean;
- Provide data and information to promote effective ecosystem management;
- Foster stewardship of the ocean's resources;
- Develop appropriate technologies for undersea exploration and research;
- Develop innovative education & outreach efforts through partners.

BASE DESCRIPTION:

Under the direction of the Assistant Administrator for Oceanic and Atmospheric Research, an Office of Ocean Exploration and Research (OER) has been created from the former NOAA Undersea Research Program (NURP) and the Ocean Exploration (OE) Program. The new OER program will support a matrix of exploration, research, and advanced technology development efforts. The synergy of these efforts will expand the efficiency, pace, and scope of discovery and increased understanding through a robust program of advanced ocean technology development and applications. The new program will consist of the following functions:

Exploration – The scope of exploration includes visiting unknown areas of the ocean; returning to poorly known areas to refine our understanding of what resources and processes they contain; mapping the bathymetry and the physical, biological, geological, and chemical nature of the ocean habitat; discovery of living and non-living resources, and discovery and preservation of the world's cultural heritage. The outcomes from exploration will provide NOAA programs with information critical for their work and for making decisions, and will provide a framework for NOAA to consider future missions and investments. Exploration will provide the Nation with knowledge of the ocean, its resources, and its inhabitants, and will enhance our ability to describe and predict how the ocean and its interrelated ecosystems function.

Advanced Technology Development – The advanced undersea technology development program will identify and anticipate NOAA’s priority undersea exploration and research technology needs and support development, testing, and transition of the solutions to these needs. It will address cutting-edge challenges to include those in the fields of AUV applications, ecosystem modeling, and undersea sampling and monitoring. Solutions may include new or innovative uses of existing hardware, procedures, or techniques. The program will approach this challenge comprehensively, ensuring that new technologies are tested, evaluated, and applied to furthering the Nation’s undersea exploration objectives. Furthermore, the program will include activities to transition these technologies to meet other, at now unforeseen, needs.

Research – The scope of research supports both of the above functions and includes: (1) research necessary to translate discoveries to applications; and (2) research that is integral to the identification, development, testing, and transition of undersea technologies.

Undersea Operations – The merged organization will facilitate the deployment of undersea equipment to further its exploration, undersea technology development, and research missions, as well as supporting NOAA’s scientific activities. This facilitation may include owning, leasing, or contracting assets. FY 2008 marks the first field season of the only federal vessel designed specifically for the purposes of ocean exploration. NOAA ship OKEANOS EXPLORER will support three primary missions: (1) deep water mapping to 6,000 meters; (2) exploring, filming, and sampling using a sophisticated dual system remotely operated vehicle (ROV); and (3) providing data and information, including video, real-time to shore-based stations using satellite technology. The ship will also be equipped to collect standard oceanographic observations. As designed, the ship will provide NOAA with the ability to explore little known areas of the oceans in a consistent, systematic manner, complementing – not replacing – the current projects and expeditions that OE supports through the annual proposal process.

Education and Outreach – OER’s education component will enhance ocean science literacy through NOAA OER for K-16/formal and informal and the general public as it relates to discovery and understanding of new resources and ecosystem processes; mapping and characterizing key features and habitats; and identifying, developing and applying science tools to increase the pace, efficiency and scope of discovery and understanding of the ocean, coastal waters, and Great Lakes. The OER outreach component will communicate the excitement and importance of ocean exploration, research, and associated advanced technology development in ways that inform, educate and motivate individuals and organizations in general and targeted audiences. Ten percent of OER’s budget will be dedicated to education and outreach initiatives.

Data Management – The OER data function will focus on meeting the data and information management needs of the other NOAA programs, partner agencies and institutions, the education community, and the general public. The scope of the OER data function will include the actions necessary to facilitate/support the following office activities: (1) management of proposal process documentation; (2) science and field operations planning; (3) project management and reporting; (4) product development; and (5) data dissemination.

The merged program will consist of a core headquarters capability, strengthened by extramural partnerships. These partnerships will augment the program through participation in specific functions defined above. These partners will be geographically distributed with a focus on serving NOAA regional needs.

Benefits:

NOAA's OER Program is a national and international program, providing the opportunity of discovery to scientists in academia, federal agencies, and commercial sector. No other dedicated source of funding or logistics exists for discovery-based ocean science. While the economic and social benefits of anticipated discovery are potentially significant, the promise of discovery is clear; wherever the program has looked, new discoveries and information are found. The OER program will combine the best of the two programs to provide capabilities in the mission areas of: ocean exploration and transitional research, undersea technology development, and undersea services. The program will support a variety of NOAA's needs such as:

- Access to tools and technologies currently unavailable through other NOAA programs;
- Greater knowledge of living marine resources, their habitats, and ecosystems enhances fisheries and ocean stewardship;
- Comprehensive site surveys and inventories inform NOAA's National Marine Sanctuaries management;
- Characterization of the EEZ improves habitat and marine resource management;
- Inventories our Nation's and other submerged cultural and historic resources are significantly increased; and
- Governance and scientific investigation in support of the international Census of Marine Life.

Base activities support NOAA's mission goal to "Protect, Restore, and Manage the Use of Coastal and Ocean Resources through an Ecosystem Approach to Management." In addition, they support the objective, "Enhance the conservation and management of coastal and marine resources to meet America's economic, social, and environmental needs" under the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental stewardship."

PROPOSED LEGISLATION:

In FY 2005, the 109th Congress introduced two Bills: H.R. 3835 and S. 39 to support the National Ocean Exploration and Undersea Research programs within NOAA. In January 2007, the 110th Congress reintroduced S. 39.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Ocean, Coastal, and Great Lakes Research	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Ocean Exploration and Research					
Ocean Exploration and Research	23,276	16,000	19,763	27,763	8,000
TOTAL	23,276	16,000	19,763	27,763	8,000
FTE	17	17	17	17	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Ocean Exploration and Research (0 FTE, +\$8,000,000): The NOAA budget includes an increase of 0 FTE and +\$8,000,000 for its Ocean Exploration and Research program for the purpose exploring and defining the limits of the U.S. Extended Continental Shelf (ECS). One of the primary goals of the NOAA Ocean Exploration and Research Program is to map the physical, geological, biological, chemical, and archaeological aspects of the ocean to provide information to policy makers, regulators, commercial ventures, researchers, and educators. As such, the program supports interdisciplinary expeditions to map and assess unknown and poorly known ocean areas. The increase in funds includes an investment of up to \$4.6M of base funds and a \$3.4M of research efforts to support expeditions to collect and analyze data that describe the depth, shape, geophysical, and biological characteristics of the seabed and sub-sea floor for the purpose of redefining the ECS. This will be accomplished using a variety of assets, including but not limited to, the new NOAA ocean exploration vessel OKEANOS EXPLORER, UNOLS vessels, and other vessels equipped for mapping. NOAA will use a wide array of tools and technologies in this effort, including multi-beam and side-scan sonars, autonomous underwater vehicles (AUVs), and remotely operated vehicles (ROVs) equipped with high-resolution cameras to collect video and still photography that can be geo-referenced and accessed in geographic information systems (GIS). The increase will enable the program to strengthen connections with other NOAA programs, including the NOS Office of Coast Survey and NESDIS, as well as other Federal agencies and such NOAA partners as the Joint Hydrographic Center at the University of New Hampshire and the Institute for Exploration at the University of Rhode Island to ensure that the data collected are appropriately processed, archived, and made accessible to users.

Statement of Need

This effort supports the NOAA Strategic Goal to "Protect, Restore, and Manage the Use of Coastal and Ocean Resources Through an Ecosystem Approach to Management", as well as Article 76 of the United Nations Conference on Law of the Sea (LOS). Under LOS, the ECS is defined as the area of the continental shelf that lies beyond the 200 nautical mile limit of the U.S. Exclusive Economic Zone (EEZ), which may contain important mineral and

natural resources. Identifying the true extent and nature of the ECS is a priority, enabling the U.S. to establish sovereign rights for the exploration, exploitation, and conservation of natural resources.

Proposed Actions

NOAA will partner with other agencies and the private sector to engage in interdisciplinary expeditions using a variety of vessels, tools, and technologies to collect comprehensive data and information on areas of the U.S. continental shelf that are not included in the U.S. EEZ, for the purpose of describing and defining the presence and extent of natural resources in support of defining the limits of the ECS. The expeditions will include technicians and researchers to collect, organize, assess, and develop products from the information collected. In the case of the NOAA Ship OKEANOS EXPLORER, when it is working on ECS-related missions, the information collected will be transmitted to shore-based stations via broadband satellite connections for more rapid assessment.

As a prerequisite, the NOAA Ocean Exploration and Research program will work with the Interagency Committee on Ocean Science and Resource Management Integration (ICOSRMI), the subcommittee on oceans policy, a subgroup of the Global Environment Policy Coordinating Committee, the Joint Subcommittee on Ocean Science and Technology (JSOST), the Subcommittee on Integrated Management of Ocean Resources (SIMOR), and the Integrated Working Group on Ocean and Coastal Mapping (IWG-OCM) to identify priority areas for the expeditions, identify opportunities to leverage funding from other agencies and institutions with shared ECS objectives (potentially increasing the annual number of coastal, marine, and Great Lakes ecological characterizations that meet management needs). An anticipated result of this activity will be a mapping plan that will include the joint collection of data and information, the processing and archiving of such data, and the development and dissemination of critical products.

Benefits

Conducting comprehensive surveys of areas of the continental shelf outside of the EEZ will allow the U.S. to define and declare sovereign rights to resources that are currently outside of US jurisdiction. The potential value of these resources is estimated to be at least \$1 trillion. A comprehensive approach that transcends standard bathymetric surveys and includes the collection of video and still photography, and samples will provide for the description and delineation of mineral and living marine resources. The data and information and products derived from this effort will allow decision-makers to establish the ECS, plan for the use and conservation of resources, manage the construction and positioning of pipelines and other infrastructure, and manage human activities so as to reduce the potential for the destruction of critical resources.

Performance Goals and Measurement Data

Performance Goal: Ecosystems	FY07	FY08	FY09	FY10	FY11	FY12
Performance Measure: Annual number of coastal, marine, and Great Lakes ecological characterizations that meet management needs	0	6	6	5	5	4

For this performance measure, an ecological characterization is defined as a 20-day mapping survey that includes the collection of sonar data (multibeam, side scan, etc.), video and still photography, and samples required to verify the presence and extent of natural resources. Each characterization includes the collection and processing of data, as well as the development of georeferenced products for use by natural resource managers, other decision-makers, scientists, and educators. At a steady rate of investment, the number of characterizations is estimated to decrease over time due to inflation.

Subactivity: Ocean, Coastal, and Great Lakes Research
Line Item: Other Ecosystems Programs

GOAL STATEMENT:

In addition to supporting its individual Ocean, Coastal, and Great Lakes Research laboratories, NOAA Research also seeks to initiate and maintain research and development programs that cut across its own intramural foundation and other NOAA and university research programs in an effort to advance the cutting edge of NOAA research capabilities.

BASE DESCRIPTION:

NOAA Aquatic Invasive Species (AIS) Program: Aquatic invasive species disrupt the stability of coastal ecosystems, affecting recreational, economic, and other beneficial uses of coastal resources. They constitute one of the largest present and future threats to coastal ecosystems, coastal economies, protected habitats and species, and human health in coastal regions. Invasive species are one of the two greatest threats to endangered species (second only to habitat loss), and they have been responsible for some of the most dramatic fishery losses in recent times (e.g., Lake trout, turbot, whitefish, and salmon in the Great Lakes). Hundreds of millions of dollars are spent each year to mitigate the effects of non-indigenous aquatic species in our coastal and Great Lakes ecosystems and to prevent new invasions. The AIS program implements a national program to detect, monitor, and control aquatic invasive species. Currently, this program focuses on the prevention and control of invasive species. In the outyears, this item will include research for the development of new control technologies. Activities under the AIS program include, but are not limited to, ballast water research, education and outreach, and control activities, which include eradication, population reduction, preventing further spread, and/or mitigating the impact of invasive species on user groups.

Efforts undertaken by the NOAA AIS Program involve cooperation and coordination between NOAA Research (including the National Sea Grant College Program), National Ocean Service, and National Marine Fisheries Service, eight other federal agencies, and the academic community. This program is a critical component of the Department of Commerce's support of the interagency Aquatic Nuisance Species Task Force and National Invasive Species Council. NOAA co-chairs each of these two policy bodies. The AIS program responds to the mandates identified in the National Aquatic Nuisance Prevention and Control Act, the National Sea Grant College Program Act, and Executive Order 13112. All of these mandates identify the need for early detection, monitoring, and reducing the impact of aquatic invasive species.

Benefits

- An AIS program that is responsive to legal mandates and the most urgent national needs related to the growing AIS problem;
- Partially meet legislative prevention mandates;
- Increased number of pathways and high-risk species identified, and effective approaches developed to reduce invasion risk to resources for which NOAA is the Nation's steward;

- One or more ballast water treatment technologies and management approaches verified and available for use;
- Other pathways reduced or interdicted through targeted risk-reduction actions, education, and increased public awareness and participation;
- Increased ability to detect new AIS invasions early enough to allow targeted rapid response;
- Availability of management information to help control invasive species, (e.g., life- history parameters, potential range, and potential pathways identification); and
- Development of new control technologies, which will reduce the economic and environmental costs of highly invasive species.

NOAA Marine Aquaculture Program: OAR is responsible for the NOAA Marine Aquaculture Program, which provides the science and technology capability for the larger NOAA Aquaculture Program, a matrix-managed effort led by the National Marine Fisheries Service (NMFS) in collaboration with the National Ocean Service, OAR, and the National Environmental Satellite, Data, and Information Service (NESDIS). OAR is responsible for the program’s science and technology capability, including overseeing the National Marine Aquaculture Initiative, a competitive research grants program. This initiative funds external partners to: (1) expand regional efforts in developing new species suitable for aquaculture; and (2) promote sustainable aquaculture through support for projects that: (a) field-test new environmentally compatible production systems; (b) develop new technologies, including offshore, near-shore, and re-circulating aquaculture systems; and (c) improve and clarify the regulatory framework and coastal zoning for aquaculture. These projects lead to technical developments in genetics, nutrition, disease, hormone manipulation, biotechnology, and mitigation of environmental impacts. In addition, the Program develops collaborative studies with international partners on ecosystem effects and carrying capacities for coastal ecosystems. NOAA’s aquaculture education and extension network facilitates the transfer of research into business operations as well as informs the public and practitioners about key issues and information related to aquaculture. The program promotes an environmentally friendly and profitable aquaculture industry that will alleviate stress on natural fish stocks, create jobs, provide healthy protein to Americans at a reasonable cost, improve food safety, and help alleviate our Nation’s trade deficit.

Background:

The United States faces a “seafood deficit” amounting to \$8 billion annually. We import more than 70 percent of the fish and shellfish we consume. Marine aquaculture in U.S. waters has the potential to provide up to 25 percent of our seafood within the next 20 years and providing the seed to rebuild some fishery stocks. The NOAA Marine Aquaculture Program will be at the forefront of efforts to grow the U.S. marine aquaculture industry through an integrated program of research, education, and technology transfer that is focused on key scientific, engineering, environmental, and socioeconomic issues that currently inhibit this emerging industry.

Benefits:

The NOAA Marine Aquaculture Program will work to:

- Offset the current \$8 billion annual U.S. trade deficit in seafood through increased domestic production from marine aquaculture;
- Ensure the sustainability of marine aquaculture; and
- Spur job creation in both the production and processing of fishery products, thereby revitalizing fishing communities devastated by collapsing fisheries industries.

Base activities support NOAA's mission goal to "Protect, Restore, and Manage the Use of Coastal and Ocean Resources through an Ecosystem Approach to Management." In addition, they support the objective, "Enhance the conservation and management of coastal and marine resources to meet America's economic, social, and environmental needs" under the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental stewardship."

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Ocean, Coastal, and Great Lakes Research	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Other Ecosystems Programs					
Aquatic Invasive Species Program	986	-	2,485	985	(1,500)
Marine Aquaculture Program	4,558	-	1,614	1,614	-
TOTAL	5,544	-	4,099	2,599	(1,500)
FTE	3	4	4	4	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Aquatic Invasive Species (+0 FTE, -\$1,500,000). NOAA requests a decrease of 0 FTE and -\$1,500,000 from its FY 2007 base funding level for its Aquatic Invasive Species program. As a result of this decrease, NOAA will reduce work with the Regional Fisheries Management Councils intended to reduce the risk both to human health and to the commercial fishery industry from the venomous predator Lionfish and other aquarium fish that escape into the wild and edge out commercially valuable native fish populations. This decrease will also reduce NOAA's effort to develop ballast water technologies necessary for implementation of ballast water management program. NOAA will, however, continue about half of its current work with the Pacific States Marine Fisheries Commission and EPA to study and halt the spread of invasive green crabs (which threaten a \$40M shellfish industry in the Pacific Northwest) as well as work with Canada's Department of Fisheries and Oceans (DFO) to attack the spread of invasive tunicates threatening near- and off-shore shellfish beds on U.S. & Canadian coasts. This decrease will fund higher priority items within OAR.

Subactivity: Ocean, Coastal, and Great Lakes Research
Line Item: Other Partnership Programs

GOAL STATEMENT:

NOAA's Ocean, Coastal, and Great Lakes Research Other Partnership Programs seek to improve protection, restoration, and management of coastal and ocean resources through research and monitoring activities that support ecosystem-based management. These programs accomplish this goal by providing:

- Outreach and education to improve public understanding and use of coastal and marine ecosystems;
- Ecosystem approaches to management decision making;
- Partnerships for place-based ecosystem approaches to management;
- Ecosystem research to analyze ecosystem management decisions and their outcomes;
- Integrated observing and data management systems; and
- International diplomacy, negotiation and partnerships.

BASE DESCRIPTION:

The Other Partnership Programs line item contains various programs initiated by Congress.

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Ocean, Coastal, and Great Lakes Research	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Other Partnership Programs					
Invasive Species and Ocean Partnership Programs	-	5,586	-	-	-
Aquatic Ecosystems - Canaan Valley Institute	5,917	-	-	-	-
Atmospheric Dispersion Forecasting / Jackson State Univ	1,480	-	-	-	-
Gulf of Maine Council	740	-	-	-	-
Lake Champlain Research Consortium	346	-	-	-	-
NISA/Ballast Water Demonstrations	2,959	-	-	-	-
NISA/Alaska	1,480	-	-	-	-
Invasive Milfoil	246	-	-	-	-
HI Micronesia Invasive Species Program	493	-	-	-	-
Cooperative Institute for New England Mariculture and Fisheries	1,972	-	-	-	-
Pacific Tropical Ornamental Fish	493	-	-	-	-
Center for Aquaculture Development	986	-	-	-	-
West Alabama Shrimp Acquaculture Program	493	-	-	-	-
Urban Coastal Institute	493	-	-	-	-
Lake Champlain Emerging Threats	493	-	-	-	-
Center for the Environment	789	-	-	-	-
Bio-screening Technology for Imported Seafood	986	-	-	-	-
TOTAL	20,366	5,586	-	-	-
FTE	-	-	-	-	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

Subactivity: Information Technology and R&D
Line Item: High Performance

GOAL STATEMENT:

NOAA's Information Technology and R&D programs seek to make major improvements in NOAA's ability to forecast weather and climate and disseminate environmental information. They also seek to stimulate the modernization of NOAA's computationally intensive services through the use of evolving high-performance computing and communication (HPCC) technologies.

BASE DESCRIPTION:

High-Performance Computing and Communication: The purpose of the HPCC program is to make major improvements in NOAA's ability to forecast the Nation's weather and climate, to model ecosystems and the ocean, and to disseminate environmental information. Improvements in the accuracy and timeliness of NOAA's short-term weather warnings, seasonal forecasts, and regional and global climate predictions are heavily dependent on major advances in high-end computing power, advanced information technology, and the availability of environmental data and information.

Current funding supports software development for improved weather modeling, including hurricanes, tornadoes, aviation, and other severe weather forecasts. However, thirteen GPRA performance measures across all four NOAA Mission Goals, including hurricane forecast tracking, winter storm warning accuracy, regional climate forecasts, and the accuracy of wave heights and wind speed forecasts, will not be met as scheduled. NOAA is requesting a budget increase in FY 2007 to restore the HPCC funding to prevent further performance delays. Improvements to NOAA's services require continually evolving computer technology, high-speed networking, and communications technologies that cannot be met at the base budget level.

The HPCC supports objectives in NOAA's Strategic Plan through IT research. These critical investments allow NOAA to meet its Mission in delivering vital services and science education to the public. The program allows NOAA to participate as a "mission" agency in the Interagency Working Group on Information Technology Research and Development, assuring coordination with Federal initiatives. The HPCC primarily serves the Environmental Modeling objective of the NOAA Strategic Goal to: "Serve Society's Needs for Weather and Water Information."

Base activities support the objectives: "Advance understanding and predict changes in the Earth's environment to meet America's economic, social, and environmental needs" and "Enhance the conservation and management of coastal and marine resources to meet America's economic, social, and environmental needs" under the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental needs."

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Information Technology and R&D	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: High Performance					
High Performance	6,410	12,900	12,969	12,969	-
TOTAL	6,410	12,900	12,969	12,969	-
FTE	13	13	13	13	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

Department of Commerce
National Oceanic and Atmospheric Administration
Oceanic and Atmospheric Research
Contribution to the NOAA Strategic Planning Goals and Objectives
(Dollar amounts in thousands)

Oceanic and Atmospheric Research	FY 2006 Actuals	FY 2007 Currently Available	FY 2008 Base Program	FY 2008 Estimate	Inc/Dec from Base
	Amount	Amount	Amount	Amount	Amount
Climate					
Climate	160,077	175,631	173,836	184,089	10,253
Total C	160,077	175,631	173,836	184,089	10,253
Ecosystems					
Ecosystems	123,236	91,053	97,250	103,750	6,500
Total ECO	123,236	91,053	97,250	103,750	6,500
Mission Support					
MS	18,352	12,007	12,519	12,519	-
Total MS	18,352	12,007	12,519	12,519	-
Weather and Water					
Weather and Water	66,103	49,795	53,019	58,019	5,000
Total WW	66,103	49,795	53,019	58,019	5,000
Total Oceanic and Atmospheric Research	367,768	328,486	336,624	358,377	21,753

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Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar amounts in thousands)

Activity: Oceanic and Atmospheric Research		FY 2006		FY 2007		FY 2008		FY 2008		Inc/Dec		
		Actuals		Currently Available		Base Program		Estimate		from Base		
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	
Climate Research												
Laboratories & Cooperative Institutes	Pos/BA	259	48,646	259	47,000	259	49,337	259	50,337	-	1,000	
	FTE/OBL	170	41,253	249	47,378	249	49,337	249	50,337	-	1,000	
Climate Data & Information	Pos/BA	4	2,401	4	6,133	4	6,266	4	8,266	-	2,000	
	FTE/OBL	-	-	3	6,133	3	6,266	3	8,266	-	2,000	
Competitive Research Program	Pos/BA	105	110,090	105	130,000	105	126,049	105	133,302	-	7,253	
	FTE/OBL	150	121,365	102	130,293	102	126,049	102	133,302	-	7,253	
Climate Operations	Pos/BA	-	363	-	867	-	886	-	886	-	-	
	FTE/OBL	-	-	-	867	-	886	-	886	-	-	
Other Partnership Programs	Pos/BA	-	7,188	-	-	-	-	-	-	-	-	
	FTE/OBL	1	7,197	-	3	-	-	-	-	-	-	
Total: Climate Research		Pos/BA	368	168,688	368	184,000	368	182,538	368	192,791	-	10,253
		FTE/OBL	321	169,815	354	184,674	354	182,538	354	192,791	-	10,253
Weather and Air Quality Research												
Laboratories & Cooperative Institutes	Pos/BA	182	38,217	187	36,000	187	39,198	191	44,198	4	5,000	
	FTE/OBL	184	38,556	182	36,441	182	39,198	185	44,198	3	5,000	
Weather & Air Quality	Pos/BA	3	5,917	3	3,000	3	2,972	3	2,972	-	-	

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar amounts in thousands)

Research Programs	FTE/OBL	1	5,917	2	3,000	2	2,972	2	2,972	-	-
Other Partnership Programs	Pos/BA	-	23,012	-	-	-	-	-	-	-	-
	FTE/OBL	7	22,807	-	270	-	-	-	-	-	-
Total: Weather and Air Quality Research	Pos/BA	185	67,146	190	39,000	190	42,170	194	47,170	4	5,000
	FTE/OBL	192	67,280	184	39,711	184	42,170	187	47,170	3	5,000
Ocean, Coastal, and Great Lakes Research											
Laboratories & Cooperative Institutes	Pos/BA	127	22,637	122	19,000	122	20,185	122	20,185	-	-
	FTE/OBL	103	22,742	119	19,283	119	20,185	119	20,185	-	-
National Sea Grant College Program	Pos/BA	25	53,701	25	52,000	25	54,900	25	54,900	-	-
	FTE/OBL	13	56,186	23	52,070	23	54,900	23	54,900	-	-
Ocean Exploration and Research	Pos/BA	20	23,276	20	16,000	20	19,763	20	27,763	-	8,000
	FTE/OBL	21	23,479	17	16,117	17	19,763	17	27,763	-	8,000
Other Ecosystems Programs	Pos/BA	4	5,544	4	-	4	4,099	4	2,599	-	(1,500)
	FTE/OBL	3	5,363	4	181	4	4,099	4	2,599	-	(1,500)
Other Partnership Programs	Pos/BA	-	20,366	-	5,586	-	-	-	-	-	-
	FTE/OBL	5	20,745	-	5,613	-	-	-	-	-	-
Total: Ocean, Coastal, and Great Lakes Research	Pos/BA	176	125,524	171	92,586	171	98,947	171	105,447	-	6,500
	FTE/OBL	145	128,515	163	93,264	163	98,947	163	105,447	-	6,500

Information Technology and R&D

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
 (Dollar amounts in thousands)

High Performance	Pos/BA	15	6,410	15	12,900	15	12,969	15	12,969	-	-
	FTE/OBL	11	6,741	13	12,948	13	12,969	13	12,969	-	-
Total: Information Technology and R&D	Pos/BA	15	6,410	15	12,900	15	12,969	15	12,969	-	-
	FTE/OBL	11	6,741	13	12,948	13	12,969	13	12,969	-	-

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Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE PERSONNEL DETAIL

Activity: Oceanic and Atmospheric Research
 Subactivity: Weather and Air Quality Research

Title		Grade	Number	Annual Salary	Total Salaries
Engineer	Boulder, CO	ZP3	1	70,000	70,000
Meteorologist	Boulder, CO	ZP4	1	95,000	95,000
Physical Scientist	Boulder, CO	ZP4	1	95,000	95,000
Physical Scientist	Boulder, CO	ZP5	1	120,000	120,000
Total			4		380,000
Less Lapse	25%		-1		(95,000)
Total full-time permanent (FTE)			3		285,000
2007 Pay Adjustment (2.2%)					6,270
2008 Pay Adjustment (3%)					8,738
Total					300,008

Personnel Data	Number
Full-time permanent	3
Other than full-time permanent	0
Total	3
Authorized Positions	
Full-time permanent	4
Other than full-time permanent	0
Total	4

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Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Oceanic and Atmospheric Research
Subactivity: Climate Research

Object Class	2008 Increase
21 Travel and transportation of persons	153
23.3 Communications, utilities and miscellaneous charges	850
25.2 Other services	1,606
25.5 Research and development contracts	200
26 Supplies and materials	358
31 Equipment	608
41 Grants, subsidies and contributions	7,778
99 Total Obligations	<u>11,553</u>

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Oceanic and Atmospheric Research
Subactivity: Climate Research

	Object Class	2008 Decrease
25.2	Other services	(350)
31	Equipment	(300)
41	Grants, subsidies and contributions	(650)
99	Total Obligations	(1,300)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Oceanic and Atmospheric Research
Subactivity: Weather and Air Quality Research

Object Class	2008 Increase
11 Personnel compensation	
11.1 Full-time permanent	380
11.9 Total personnel compensation	380
21 Travel and transportation of persons	125
22 Transportation of things	175
24 Printing and reproduction	20
25.2 Other services	1,400
25.4 Operation and maintenance of facilities	300
25.5 Research and development contracts	350
26 Supplies and materials	150
31 Equipment	1,400
41 Grants, subsidies and contributions	700
99 Total Obligations	5,000

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
 (Dollar amounts in thousands)

Activity: Oceanic and Atmospheric Research
 Subactivity: Ocean, Coastal, and Great Lakes Research

	Object Class	2008 Increase
23.3	Vessel charter	6,000
41	Grants, subsidies and contributions	2,000
99	Total Obligations	8,000

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Oceanic and Atmospheric Research
Subactivity: Ocean, Coastal, and Great Lakes Research

Object Class	2008 Decrease
22 Transportation of things	(60)
24 Printing and reproduction	(25)
25.2 Other services	(310)
25.5 Research and development contracts	(480)
26 Supplies and materials	(25)
41 Grants, subsidies and contributions	(600)
99 Total Obligations	(1,500)

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NATIONAL WEATHER SERVICE
OPERATIONS RESEARCH AND FACILITIES
FY 2008 OVERVIEW

SUMMARIZED FINANCIAL DATA

(\$ in thousands)

Operations Research and Facilities	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Operations and Research	670,662	689,023	703,128	711,462	8,334
Systems Operation & Maintenance (O&M)	84,748	95,590	96,345	96,345	0
TOTAL	755,410	784,613	799,473	807,807	8,334
FTE	4,593	4,625	4,627	4,627	0

For FY 2008, NOAA requests a total of \$807,807,000 for the National Weather Service Operations, Research and Facilities (ORF), a net increase of \$8,334,000.

Our Mission

The National Weather Service (NWS) provides weather, water, and climate forecasts and warnings for the United States, its territories, adjacent waters, and ocean areas for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure, which can be used by other governmental agencies, the private sector, the public, and the global community.

Our Vision

NWS is a world-class team of professionals who are working together to provide the best weather, water, and climate information in the world by:

- Producing and delivering information you can trust when you need it
- Incorporating proven advances in science and technology
- Measuring, reporting, and evaluating our performance
- Reducing weather- and water-related fatalities
- Working with others to make the weather, water, and climate enterprise more effective

Our Goals

NWS supports several mission goals in the NOAA strategic plan. These include:

Mission Goal: Understand Climate Variability and Change to Enhance Society's Ability to Plan and Respond

Intraseasonal to interannual climate forecasts will become more accurate and more detailed. Increasing climate expertise at local NWS forecast offices will enhance regional specificity of climate forecasts for local customers and partners. NWS will take advantage of technological advances in climate modeling and will transition the results of research on climate variability into routine operations. Forecasts will describe their inherent uncertainty more carefully, and will be more closely coupled to effects on society and the economy; aiding, for example, emergency managers, farmers, and energy providers with resource allocation decisions. NWS will continue to expand the coverage and capabilities of the Advanced Hydrologic Prediction Service (AHPS) to translate improved climate predictions into effects on the Nation's fresh water system, hydroelectric power, and flood controls.

NWS recognizes its responsibility to future users of our climatological and oceanographic data we collect. NWS recognizes the importance of gathering quality observations to produce a climate record, and will ensure that climate needs are incorporated into weather and ocean observing systems whenever possible. NWS will invest resources to modernize the Cooperative Observer Program. NWS will do its part to ensure that NOAA customers and partners receive an integrated service that meets their need for information across all time and space scales – whether the information is produced by NWS or another NOAA organization, and whether the initial point of contact is an NWS office or some other NOAA organization.

Goals of NWS Climate activities

- Increased use and effectiveness of climate observations to improve long-range climate, weather, and water predictions.
- Increased use and effectiveness of climate information for decision makers and managers (e.g., for industry, natural resource and water managers, community planners, and public health professionals).
- Increased use of the knowledge of how climate variability and change affect commerce.

Mission Goal: Serve Society's Needs for Weather and Water Information

More and more sectors of the economy recognize the impacts of weather and water on their businesses, and are becoming more sophisticated at using weather and water information to improve performance. Concern for public safety drives NWS to improve the timeliness and accuracy of warnings for all weather-related hazards. To do so, NWS weather and water predictions need to be at the limits of what science, technology, and a highly trained workforce can provide.

NWS is committed to expand these limits by enhancing observing capabilities and by improving data assimilation to effectively use all the relevant data NWS and others collect; by improving collaboration with the research community through creative approaches such as community modeling; by rapidly transforming scientific advances in modeling into improved operational products; by improving the techniques used by our expert forecasters; by making NWS information available quickly, efficiently, and in a useful form (e.g., the National Digital Forecast Database); by including information on forecast uncertainty to help customers make fully informed decisions; by taking advantage of emerging technologies to disseminate this information; and by maintaining an up-to-date technology base and a workforce trained to use all of these tools to maximum effect. However, the entire weather and water enterprise is larger than NWS – today and tomorrow the NWS depends on partners in the private, academic, and public sectors (starting with other line offices within NOAA) to acquire data, conduct research, provide education and training, help disseminate critical environmental information, and provide advice to make best use of NWS information. NWS will work even more closely with existing partners, and will develop new partnerships to achieve greater public and industry satisfaction with our weather and water information and to honor our commitment to excellent customer service.

Goals of NWS Weather and Water activities

- Increased accuracy and amount of lead time for severe weather (by category of storm type, e.g. hurricanes).
- Save lives and property through more accurate and timely severe weather prediction.
- Increased satisfaction with and benefits from NOAA information and warning services, as determined by surveys and analysis of emergency managers, first responders, natural resource and water managers, public health professionals, industry, government and the public.
- Increased number of observations obtained and used from partners, both international and domestic.
- Increased number of observations archived, available, and accessible.
- Increased number of new multi-use observing systems deployed.
- Improved effectiveness of NOAA's observing systems.
- Increased number of forecasters trained in the newest techniques.
- Increased volume of forecast and warning information formatted to clarify the uncertainty of an event (e.g., space weather, air quality, water and weather forecasts).
- Improved performance of NOAA's weather and water, air quality, and space weather prediction suite.
- Increased number of favorable scores on public surveys of citizen knowledge about appropriate actions under hazardous weather and water related conditions.
- Increased percentage of the public reporting timely receipt of warnings as measured by public surveys.
- Increased number of communities with plans in place to act on weather warnings and to reduce the impacts of coastal hazards.
- Increased community knowledge of, use of, and satisfaction with NOAA information that supports local air quality monitoring and forecast programs.
- Increased assistance to international partners to improve response capabilities to weather and water predictions.

Mission Goal: Support the Nation's Commerce with Information for Safe, Efficient, and Environmentally Sound Transportation

NWS services are critical to the safe and efficient transportation of people and goods by sea, air and over land. The approximately \$825B per year transportation and public utility sector is almost entirely weather and climate dependent.

NWS will work to provide aviation forecast improvements to help mitigate air traffic delays and reduce weather-related aviation accidents; improve snow precipitation and water forecasting, which affects surface transportation; and improve ocean and wind forecasting, which affects sea-borne transport from the high seas to our coasts and in the Great Lakes. NWS is committed to working with our partners to continue to improve weather information services in support of all modes of transportation.

Goals of NWS Commerce and Transportation activities

- Increased safety and productivity of transportation systems.
- Increased reliability, frequency, and use of marine, aviation, and surface transportation-related observations.
- Increased accuracy and use of weather and marine forecasts to increase efficiency of all land, water and air transportation systems.

Finally, the NWS supports the NOAA Mission Support Goal to Provide Critical Support for NOAA's Mission.

Research and Development Investments

The NOAA FY 2008 Budget estimates for its activities, including research and development programs, are the result of an integrated, requirements-based Planning, Programming, Budgeting, and Execution System (PPBES) that provides the structure to link NOAA's strategic vision with programmatic detail, budget development, and the framework to maximize resources while optimizing capabilities. The PPBES process incorporates the President's Management Agenda and the Office of Science and Technology Policy's Research and Development Investment Criteria (relevance, quality, and performance) for NOAA's R&D programs, and leads to NOAA budget proposals that reflect the R&D investment criteria.

Significant Adjustments-to-Base (ATBs): NOAA requests an increase of 0 FTE and \$18,297,000 to fund adjustments for NWS activities. Within this increase, program totals will fund inflationary adjustments for labor and non-labor.

Below are transfers within the NWS that result in a net change to the NWS of zero.

- \$3,270,000 is transferred from the NOAA Profiler Network PPA of Operations, Research, and Facilities to the NOAA Profiler Conversion PPA of Procurement, Acquisition, and Construction. This transfer has no net effect on overall NWS or NOAA funding and was done to reflect the accurate activity of the funds within the program.
- \$7,347,000 and 51 FTEs are transferred from the Space Environment Center to the Local Warnings and Forecast Base PPA within the Local Warning and Forecast line. This transfer has no net effect on overall NWS funding.

Subactivity: Operations and Research
Line Item: Local Warnings and Forecasts

GOAL STATEMENT:

See the Overview for the National Weather Service Operations, Research, and Facilities for a discussion of our goals.

BASE DESCRIPTION:

NOAA provides around-the-clock weather and flood warning and forecast services to the general public to protect life and property, and to meet the forecasting needs of all segments of the economy. Weather services are provided primarily by a national network of 122 Weather Forecast Offices (WFOs) and 13 River Forecast Centers (RFCs), assisted by 13 Data Collection Offices (DCOs). The provision of services by the National Weather Service (NWS), described in the following pages, depends on the coordination, management, and centrally-funded support provided by NWS' national and regional headquarters. This infrastructure includes such diverse functions as the maintaining and coordinating of the NOAA Weather Radio Network, the logistics of spare parts for all NWS observing systems, testing and evaluation of new observing sensors and systems, and coordinating and funding centralized employee training. Management and support for the NWS is provided by a national headquarters, four regional headquarters offices within the continental United States, plus regional offices for Alaska and the Pacific region, the National Data Buoy Center in Bay St. Louis, MS, and the National Logistics Support Center and National Training Centers, both located in Kansas City, MO.

Weather warnings and forecasts: NWS forecasters issue local warnings of severe weather such as tornadoes, severe thunderstorms, flash floods, and extreme winter weather at 122 WFOs nationwide. WFOs prepare forecasts for zones, which are comprised of counties or portions of counties that experience similar weather. Each WFO has forecast responsibility for multiple zones. WFOs also provide the main field forecast support for the marine and aviation programs as well as guidance for the fire weather program supporting federal lands management and wildfire control.

Each county in the United States is assigned to a specific WFO for warning purposes. The WFO issues and distributes local warnings of severe weather for its assigned counties. WFOs are the recognized weather, water, and climate experts for their local areas and issue severe weather and flash flood warnings. In preparing local warnings and forecasts, WFOs use forecast guidance prepared by the National Centers for Environmental Protection (NCEP).

Beginning in FY 2004, NOAA entered the digital forecast arena. This significant step takes NOAA from a product-centered organization to a true environmental information agency. The initial digital capability includes a national digital forecast database that aggregates digital forecasts of maximum and minimum temperatures, sky cover, probability of precipitation, wind speed and direction, and significant wave height across the conterminous United States. The database allows private sector weather providers and weather-sensitive businesses to take the data and create products and services useful to themselves and their customers. In FY 2006 the following forecast elements will become operational in the database: wind speed and direction, relative

humidity, and apparent temperature. Experimental tropical cyclone surface wind speed probabilities from the Tropical Prediction Center will also be added. In FY 2007, the database will be expanded to include forecast parameters for Alaska, operational significant wave height forecasts, and convective weather probabilities from the Storm Prediction Center. The expansion of digital forecast services continues in FY 2008 with plans to add more spatial and temporal resolution in the forecast database. In order to provide better and more valuable information to help save lives and property, new hazardous weather and fire weather forecast elements will also be provided.

NWS' Office of Science & Technology (OST) develops techniques for predicting mesoscale phenomena (e.g., heavy precipitation, tornadoes, and severe thunderstorms). These techniques are being developed and improved to use digital data from observing systems, such as NEXRAD (Next Generation Weather Radar), and the latest geostationary satellites. OST develops models to improve hurricane tracking, hurricane probability estimates, and analyses; and storm surge models to assist in developing hurricane evacuation plans for coastal basins. Through these activities, OST works to best exploit and improve the capability of weather data observing and processing systems to meet hydrologic, meteorological, and service requirements.

Aviation weather services: NWS provides a broad range of services in support of the aviation community. WFOs prepare site-specific airport terminal forecasts four times per day with amendments as needed for 575 public use airports in the 50 states and U.S. territories around the globe. These offices also produce approximately 300 individual route-oriented forecasts three times per day. WFOs also take observations to meet local aviation requirements. The NWS is currently undertaking a long-term, ten-year initiative to improve its aviation weather services, which began in FY 2003. Since then, the NWS began issuing new turbulence, icing and convective (thunderstorm) forecast products to support commercial and general aviation; acquired aircraft-based water vapor sensors and partnered with airlines to install the sensors and provide the data; developed and fielded new low ceiling and visibility forecast training for NWS meteorologists; and partnered with industry to produce training seminars for pilots. Results have been impressive since 2004, exceeding goal expectations each year through 2006. For example, the False Alarm Rates of Low Ceiling and Visibility Forecasts at Airports have improved 13%.

During FY 2008 the NWS expects to see continued improvement of aviation forecasts through the implementation of an improved observational sensing strategy where we obtain thousands of daily vertical profiles of moisture from aircraft. In addition, higher resolution forecast models and improved guidance tools will be integrated into the standard NWS forecast production system. Key to this effort is working with the FAA's Weather Research and Development program to transition and sustain 5 new forecast products required by aviation users. NWS will improve the Advanced Weather Interactive Processing System (AWIPS) and the Aviation Forecast Preparatory System to enable our meteorologists to focus on the site-specific airport terminal forecasts. NWS will transition a new automated National Convective Weather Forecast product, indicating the probabilistic onset of thunderstorms out to two hours, as well as new automated products for icing, turbulence and low ceiling and visibility.

Marine and Coastal weather services: Management of the Nation's marine, coastal and tropical weather services is led by the Marine and Coastal Weather Services Branch within the Office of Climate, Water, and Weather Services. Products and services such as forecasts, analyses, watches, warnings and advisories of maritime conditions as well as coastal and tropical hazards are provided by forty seven WFOs and three components of the NCEP. Products are issued for the coastal waters, offshore, high seas waters, and Great Lakes nearshore and open lake waters.

Using observational data sources such as buoy observations and satellite imagery, numerical model forecast guidance provided by various sources such as the NCEP and the Great Lakes Environmental Research Laboratory (GLERL), and analyses of ice from the National Ice Center (NIC), the forecasters at tropical and marine centers and coastal and Great Lakes offices maintain a continuous monitoring of weather conditions over marine zones. Routine forecast products and analyses, watches, warnings and advisories are disseminated in alphanumeric, gridded, and graphical formats to describe maritime conditions and tropical and coastal hazards. Marine and coastal products describe wind, waves, visibility, icing, coastal flooding, severe weather, high surf, and rip currents. Tropical products describe hazards associated with tropical cyclones such as storm surge, winds, waves, cyclone intensity, and inland impacts.

Efforts in FY 2008 will be focused on enhanced forecaster training, increased customer outreach, and implementation of new products. One area of focus will be to educate emergency managers and all users on the strengths, limitations, and application of new tropical cyclone probabilistic wind speed products. Enhanced customer outreach and training will be provided for coastal hazards such as rip currents and high surf. The number of gridded products provided for marine and tropical conditions over the marine zones will be expanded.

Fire weather services: In FY 2008, NOAA's National Weather Service (NWS) will implement and supply digital weather files to complement currently-provided Spot Forecasts. This will enable Fire Behavior Analysts from partnering land management agencies to directly input weather data into their fire weather behavior and spread models. NWS will also work toward national implementation of improved gridded fire weather element forecasts to be used as input into more accurate fire danger assessments. In addition, NWS will continue coordination to maintain excellent Inter-agency relations with the wildland fire community through technology transfer and policy coordination, highlighted by the implementation of a new Interagency Agreement for Meteorological Services. The NWS fire program will also continue to improve software for NOAA Incident Meteorologists and assure that the proper equipment and personnel are ready to respond to All-Hazards incidents critical to the Nation.

Tsunami warnings: Tsunami watches and warnings for all U.S. communities at risk are prepared and issued by the Richard H. Hagemeyer Pacific Tsunami Warning Center (PTWC) at Ewa Beach, Hawaii, and the West Coast/Alaska Tsunami Warning Center (WC/ATWC) at Palmer, Alaska. NWS collects and analyzes observational data from an international network of seismological observatories and sea level observing stations that operate on a cooperative basis. The centers use these data to prepare watches and warnings covering all U.S. territories and states bordering on the Pacific and Atlantic Ocean Basins and disseminate them to WFOs, Federal and state disaster agencies, military organizations, private broadcast media, and other facilities that can furnish warning information to the public.

In FY 2004, NWS assumed operational responsibility for the National Tsunami Hazard Mitigation Program (NTHMP). The goal of the NTHMP is to ensure adequate advance warning of tsunamis along all U.S. coastal areas and appropriate community emergency response to a tsunami event. In FY 2005 and FY 2006, in response to the destructive Indian Ocean Tsunami, the U.S. Tsunami Warning Program including the NTHMP was upgraded and expanded (\$17.2M in FY 2005 and \$9.5M in FY 2006) to enhance the monitoring, detection, warning and communications designed to protect lives and property for all U.S. communities at risk. This two-year, \$26.7M investment expanded the existing six Pacific Ocean DART buoy array to a 32 DART buoy array and added a 7-DART Buoy array for the Caribbean/Atlantic Ocean. This new investment also expanded NOAA's National Water Level

Observing Network (NWLON) adding 16 new NWLON stations and upgrading 33 existing NWLON sites. Additionally, the PTWC and the WC/ATWC were upgraded to 24/7 operations; and NOAA accelerated required tsunami inundation mapping and modeling for all at-risk U.S. coastal areas and accelerated community-based tsunami hazard mitigation programs and community-based tsunami education and outreach programs (TsunamiReady). In FY 2008 U.S. Tsunami Warning Program will achieve full operating capability and complete deployment of all DART II buoys.

River & flood forecasts and guidance: NWS provides river-flow and flood-forecast services using prediction models and databases. Hydrologists and hydrometeorologists develop this forecast information at 13 River Forecast Centers (RFCs); this information is the basis for flash-flood and flood-warning programs implemented at WFOs. These services support emergency management and water resources activities. NWS is improving these services by implementing the Advanced Hydrologic Prediction Service (AHPS). AHPS applies new science, providing more accurate forecasts for river conditions ranging from droughts to floods. AHPS provides more information in a timely and user-friendly manner, which can be posted on the web. AHPS extends existing one- to three-day river forecasts to 14-day and longer outlooks, provides greater information than prior systems and maximizes NOAA resources to deliver more accurate and comprehensive predictions of river height and flood potential. By the end of FY 2007 AHPS will be deployed at 1,974 forecast points in the Midwest, Northeast, Middle Atlantic, Southeast, South, West and Alaska. In FY 2008, the NWS plans, within current funding levels, to continue nationwide implementation of AHPS, with deployment at an additional 308 forecast points in these areas. The FY 2008 budget also supports extramural partnerships to carry out operationally-oriented hydrologic research, deployment of new flash-flood forecasting tools, and introduction of more effective river forecasting models.

Water resource forecasts: This activity establishes NOAA's capability to provide water resource managers with localized water and soil condition forecasts via a national digital database incorporating assimilation of all available hydrometeorological data and observations; and a Community Hydrologic Prediction System (CHPS) necessary to advance water prediction science. This will allow NOAA's research and development enterprise and operational service delivery infrastructure to be integrated and leveraged with other federal water agency activities and the private sector to form the backbone of a national water information system. Through this, NOAA will produce a new suite of high-resolution forecasts (including estimates of uncertainty) for streamflow, soil moisture, soil temperature, and many other variables directly related to watershed conditions, via collaboration and sharing of data and algorithms with the university and private sector research groups. Furthermore, these activities enable NOAA to deliver a national database of drought analyses and predictions, and generate user friendly Geographic Information Systems (GIS) products for monitoring drought. This activity contributes to the National Integrated Drought Information System (NIDIS).

The Office of Climate, Weather, & Water Services (OCWWS) provides several centralized guidance and operational support functions to the RFCs. In addition, OCWWS provides hotline support to field users, and provides a focal point for assembling and disseminating real-time hydrologic information.

The Office of Hydrologic Development (OHD) manages the application of hydrological forecasting techniques and provides hydrologic model development for field operations. OHD also develops improved hydrologic and hydrometeorological models and procedures in support of national flood and water resources forecasting programs including: specialized flood and flash flood forecasting procedures using linked hydrological, meteorological, and climatological models/products; improvements to the Ensemble Streamflow Prediction model and its complementary models in the NWS River

Forecast System; algorithms to combine NEXRAD precipitation estimates with data from satellites and other ground based observation systems; development of remotely-sensed (airborne and satellite) snow-water equivalent and snow cover data products in near real-time; and integration of hydrologic conditions and forecasts.

Forecast coordination: At each WFO, a Warning and Coordination Meteorologist (WCM) is responsible for the coordination of local forecast and warning information with local emergency management and other state and local officials, both leading up to and during severe weather events. This ensures the most effective dissemination of NWS forecasts and warnings, and adequate public response to weather warnings. The WCMs serve as NOAA's service representatives and work with local partners to ensure they know how best to use NOAA services, and to assess requirements for improved services.

Dissemination/communication: In order to disseminate data, forecasts, watches, and warnings, NWS relies on the following systems: NOAA Weather Wire Service, NOAA Weather Radio network, central radar data collection and distribution, Emergency Management Weather Information Network, NOAA/Geostationary Operational Environmental Satellite (GOES) communications, and Family of Services. The AWIPS Local Data Access and Dissemination (LDAD) capability allows two-way information exchange between WFOs and local users, including emergency management, leading up to and during severe weather events.

Space Weather: The Space Environment Center (SEC) in Boulder, CO, provides real-time monitoring and forecasting of solar and geophysical events, conducts research in solar-terrestrial physics, and develops techniques for forecasting solar and geophysical disturbances. SEC provides services to a broad user community of government agencies, industries, public institutions, and private individuals involved in satellite operation, space exploration, radio navigation, high-altitude polar flights, high-frequency communications, remote intelligence gathering, long-line power and data transmissions, and geophysical exploration. SEC serves many government, industry and private-sector clients, and such end-product users as the power industry the airline industry, satellite operators, and the National Aeronautics and Space Administration (NASA). SEC's research scientists study the sun's electromagnetic, particle, and plasma emissions and the processes by which they affect the near-Earth space environment. SEC takes a leading role in advocating and specifying new space-environment sensors for operational use. The SEC, with the U.S. Air Force, jointly operates the national civilian space weather operations center. Forecasts, alerts, and warnings are provided to customers on a 24 hour-per-day, seven day a week basis. SEC products are synthesized from over 1,400 data streams providing observations of the solar terrestrial environment, including x-ray flux, charged particles, and magnetic field changes on the sun, in interplanetary space, and at Earth.

U. S. Weather Research Program (USWRP): The goal of the USWRP is to accelerate improvement in NOAA's forecasting capability for high-impact and routinely disruptive weather through improved forecasts of timing, location, and specific rainfall amounts associated with hurricane landfall and flood events that significantly affect the lives and property of U.S. population. NOAA's investment in the USWRP continues the cooperative effort among NWS, OAR and NESDIS within NOAA, four other USWRP agencies (The National Science Foundation (NSF), NASA, the U.S. Navy and the U.S. Air Force), and the university community. The USWRP supports research and development grants and activities focused on improving weather data analysis, numerical weather prediction models and other forecasting techniques, provides field observational support, and strives for information science and

technology transfer to operations and services within the USWRP agencies, in order to reach performance goals defined for the following high priority areas:

Hurricanes at Landfall: USWRP focuses on predicting hurricane track five days in advance, improving forecasts of where a hurricane will make landfall, improving forecasts of hurricane intensity at landfall, improving surface wind forecasts, and providing more precise quantitative rainfall forecasts where it could lead to inland flooding.

Optimal Mix of Observations/Quantitative Precipitation Forecasts (QPF): This effort seeks to use data from advanced observing systems to improve weather prediction.

The Observing System Research and Predictability Experiment (THORPEX) - A World Weather Research Program: NOAA's goal in this program is to double the rate of improvement in 3 to 14 day high impact weather forecasts seen over the past 20 years. This will significantly expand NOAA's operational weather and water prediction capabilities. For the first time, NOAA will be ready to issue operational daily weather forecasts for the second week, and detailed precipitation forecasts for days 3 to 7. The expanded product suite will greatly increase the socio-economic benefits to the nation from weather and water forecasts.

These goals will be achieved through coordinated research in the following areas:

- **Observing system:** Design and testing of new atmospheric, ocean, and land surface observing systems in the framework of the Global Earth Observing System of Systems (GEOSS) for global weather forecasting;
- **Data Assimilation:** Development and testing of new methods for the more efficient use of new and existing observations;
- **Numerical modeling and predictability:** Design and testing of new Numerical Weather Prediction techniques, including multi-center ensemble systems;
- **Socio-economic applications:** Design and testing of new weather and water forecast products, and new user application procedures.

In this ambitious global program NOAA partners with NASA, the U.S. Navy and the NSF, as well as a large number of countries from five continents, including Canada, China, France, Germany, India, Japan, Korea, the United Kingdom, the Russian Federation, and Australia, and other major global programs like the International Polar Year (IPY). In addition to improved 3 to 14 day weather and water forecasts over the U.S., the enhanced global forecast capabilities will be used to further NOAA's goal of environmental safety across the globe. Advance weather and water forecasts will be distributed, and their use promoted to developing nations for the prevention and mitigation of environmental disasters in an effort coordinated by the World Meteorological Organization.

NOAA Profiler Network (NPN): The NPN was established as a demonstration network in 1992 containing 35 stations within the Central U.S., Alaska, and New York. The NPN provides high quality wind profiles at 72 vertical levels through 53,000 feet above ground level and low level temperature profiles every 6 minutes. Wind measurements from the demonstration NPN have improved the skill and accuracy of NOAA's weather forecasts and warnings in

network areas. The current NPN radars use an experimental transmitter frequency of 404 mega hertz (MHz) issued by the National Telecommunications and Information Administration (NTIA). NTIA has since given the 404 MHz frequency to search and rescue satellites (SARSAT) and granted the NPN permanent use of 449 MHz. To be used operationally, 30 wind profiler transmitters (currently operating at 404 MHz) need to be converted to 449 MHz by the end of the FY 2010 when a new series of European Space Agency GPS satellites (Galileo) will require shut-down of NPN 404 MHz frequency use.

In FY 2004, Congress directed NOAA to perform a Cost and Operational Effectiveness Analysis (COEA) for the NPN. The COEA clearly demonstrated the NPN's benefits to several important NWS missions: severe weather warnings (for tornadoes, flash floods, and winter storms), watches, and short-term forecasts. Based on these findings, NOAA has initiated actions to transition the NPN to operational status in FY 2005 and integrate it into its upper air observing system. In FY 2007, NOAA will continue to operate and maintain the current network of wind profilers and is converting the profilers to a different frequency to prevent interference with new GPS satellites. In FY 2008 NOAA will continue the frequency conversion effort.

Air Quality Forecasts: In FY 2004, NOAA began operational production of air quality forecast guidance with the implementation of NOAA's Air Quality Forecast capability over the northeastern U.S. This capability is an integrated, end-to-end forecast system that provides timely, reliable forecast guidance to accurately predict the onset, severity and duration of poor air quality. Forecast guidance consists of next-day ground-level ozone predictions, at hourly intervals and 12km grid resolution. Forecast products are available via the NWS Telecommunications Gateway, and NOAA's partner agency, the Environmental Protection Agency (EPA), who provides health-based interpretations of the forecast guidance. NOAA's products meet customer requirements from federal, state and local, and public sectors with state-of-the-science information, both to assist state and local air quality forecasters who issue health-based air quality alerts for designated cities, and to provide information for people at risk from poor air quality at any time of day or night, on any day of the week in any month of the year, in cities, suburbs, and rural areas alike.

Phased development and testing activities are in progress to extend the initial ozone-based, regional capability. By FY 2006, ahead of schedule, coverage expanded to cover the entire eastern U.S. By FY 2007 the guidance is planned to cover the contiguous U.S., and plans call for national coverage by FY 2010. Development and testing of additional components needed for particulate matter (PM) forecasts is also in progress, aimed at extending the operational capability to include in an initial PM forecast capability in FY 2013. Real-time air chemistry observations will be incorporated into forecast models as needed for extended forecasting improvements.

The Climate Services Division at NWS headquarters provides the strategic vision for climate services at NWS and oversees the NWS climate services program. It develops policy and requirements for climate prediction products and other services related to the period of week two out to one year, including seasonal forecasts and threat assessments. The division also sets NWS field policies and procedures for climate prediction products, defines service and mission needs, solicits user feedback to evaluate new products and services, and approves final product design. The Climate Services program maintains strong ties with other countries; across NOAA lines, specifically through the NOAA Climate Office; with federal agencies; the university community; and the private sector, and encourages collaborative arrangements among the Regional Climate Centers, NOAA Regional Integrated Science and Assessments (RISAs), State Climatologists, NWS WFOs, and Regional headquarters to tailor climate forecasts for local users.

Base activities support the objective, “Advance understanding and predict changes in the Earth’s environment to meet America’s economic, social, and environmental needs” under the Department of Commerce Strategic Goal of “Observe, protect, and manage the Earth’s resources to promote environmental needs.”

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Operations and Research	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Local Warnings and Forecasts					
Local Warnings and Forecasts Base	535,255	563,936	586,085	591,465	5,380
Tsunami Hazard Mitigation	2,260	-	-	-	-
Tsunami Warning & Environmental Obs for AK (TWEAK)	1,972	2,000	-	-	-
Strengthen US Tsunami Warning Network	6,016	20,415	21,496	23,196	1,700
Air Quality Forecasting	2,959	5,445	5,445	5,445	-
Alaska Data Buoys	-	1,683	1,683	1,683	-
Sustain Cooperative Observer Network	881	1,871	1,871	1,871	-
Hurricane Mitigation Alliance (SUSF)	2,071	-	-	-	-
Susquehanna River Basin Flood System	1,972	-	-	-	-
NOAA Profiler Network	2,858	6,336	3,066	4,736	1,670
Pacific Island Compact	3,452	3,515	3,515	3,515	-
Space Environment Center	5,630	5,000	-	-	-
US Weather Research Program	3,573	7,456	7,456	6,000	(1,456)
Vermont Northeast Weather With Data Integration	217	-	-	-	-
Coastal & Inland Hurricane Monitoring & Prediction Program	1,480	-	-	-	-
Coastal Weather Monitoring for Catastrophic Events	468	-	-	-	-
Western Kentucky Environmental Monitoring Network	1,479	-	-	-	-
National Data Buoy Center	22,920	-	-	-	-
Shenandoah Air Quality Forecasting	1,726	-	-	-	-
TAU & PIRATA Arrays	2,959	-	-	-	-
Sea Level Monitoring & Tide Guage Network	237	-	-	-	-
Subtotal: Local Warnings and Forecasts	600,385	617,657	630,617	637,911	7,294
Advanced Hydrological Prediction Services	4,931	6,037	6,037	6,037	-
Aviation Weather	3,452	4,653	4,653	4,653	-

Subactivity: Operations and Research	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Subtotal: Aviation Weather	3,452	4,653	4,653	4,653	-
WFO Maintenance	8,277	7,316	7,316	7,316	-
Weather Radio Transmitters Base	2,289	2,297	2,297	2,297	-
NOAA Weather Radio Transmitters - MS	197	-	-	-	-
NOAA Weather Radio Transmitters - AI	50	-	-	-	-
Subtotal: Weather Radio Transmitters	2,536	2,297	2,297	2,297	-
TOTAL	619,581	637,960	650,920	658,214	7,294
FTE	4,112	4,131	4,133	4,133	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

TAO Tropical Moored Buoy Technology Refresh (+0 FTE and +\$1,100,000): NOAA requests an increase of 0 FTE and \$1,100,000 to replace obsolete components of the Nation's foremost climate observing system. Total funding required to replace obsolete components for the 55 buoys in this array is \$6.6M. This effort will be accomplished over a six year period beginning in FY 2008.

Statement of Need

Many components of TAO are no longer supported by their manufacturers and alternate components must be purchased to continue operation of this array of buoys designed to detect the onset of, and assess the intensity of, El Nino and La Nina. Early detection has substantial positive economic benefits for the global economy because it allows decision-makers to more effectively manage agricultural and water resources, fisheries, and grain and fuel reserves. The U.S. Climate Change Science Program also relies on TAO data to further improve climate models for improved understanding and predictions of global climate. Funds are requested to replace obsolete components of the array with new components commercially available and to upgrade communications to provide reporting necessary to calibrate and validate the coupled ocean-atmosphere Climate Forecast System. Subsurface sensor arrays used to measure temperature and salinity at up to 11 depths, the topside CPU/data logger and modem, and the compass used to provide earth-referenced coordinates for wind velocity measurements are obsolete and no longer supportable. Continued reliance on these components will result in loss of buoys and data critical to our ability to detect and assess the strength of El Nino and La Nina and to plan for the impacts they create.

The Tropical Moored Buoy network is being extended to all oceans by NOAA's Office of Oceanic and Atmospheric Research in cooperation with international partners. The technology refreshed TAO buoys will eventually be used for the Atlantic and Indian Oceans as well as the Pacific. Without this

investment, sustained operations of the arrays will deteriorate and atmosphere and ocean models will be unable to adequately initialize to take into account the global components of ocean temperature and density and atmospheric forcing. Without measurements from these arrays, true understanding of the global heat engine, necessary to begin to understand the actual impacts of human activities on climate change, will be impossible.

Proposed actions

This funding will enable NWS to replace obsolete components of the TAO array for 9 buoys and 8 spares. (Note: Buoys must be serviced every 6-9 months due to bio-fouling of subsurface sensors. In addition, several are in transit at any given moment hence the high proportionate number of spares.)

- \$578K Subsurface sensor arrays for temperature and salinity observations at up to 11 depths
- \$255K CPU/data logger and modem for more reliable real-time data access
- \$34K Compass to provide earth-referenced coordinates for wind velocity measurements
- \$51K Iridium Communications to provide improved real-time reporting necessary to calibrate the Climate Forecast System
- \$63K Sensor interfaces
- \$119K Enclosures/connectors

Benefits

Without funding for replacement and refresh of obsolete components, the Nation and the world will lose the ability for early detection of El Nino and La Nina events so that it can take action to mitigate the economic, ecological, and human impact of these events. Better predictions of the potential for extreme climate episodes like floods and droughts could save the United States billions of dollars in damage costs. Predicting the life cycle and strength of a Pacific warm or cold episode is critical in helping water, energy and transportation managers, and farmers plan for, avoid, or mitigate potential losses. Advances in improved climate predictions will also result in significantly enhanced economic opportunities, particularly for the national agriculture, fishing, forestry and energy sectors, as well as social benefits. Without this adjustment, the capability to detect La Nina and El Nino will rapidly decline as buoys become unrepairable due to unavailability of replacements for failed components. By FY 2009, data will become too sparse to reliably predict the onset of these events.

Performance Goals & Measurement Data:

- Array has 55 sites with 16 sensors at each site reporting daily; obsolescence will cause loss of 10% of the buoys a year.
- Adjustment has 55 Refreshed sites with 16 sensors at each site reporting hourly.

Performance Goal: <i>Weather and Water</i>	FY04 Baseline	FY05	FY06	FY07	FY08 Refresh	FY09 Refresh	FY10 Refresh	FY11 Refresh	FY12 Refresh	FY13 Refresh
Observational Availability <i>with</i> adjustment	88%	90%	88%	88%	89%	90%	91%	91%	91%	91%
Observational Availability <i>without</i> adjustment	88%	90%	89%	89%	80%	71%	62%	53%	44%	35%

Number of Sites Operating Performance Measure <i>with</i> adjustment	55	55	55	55	55	55	55	55	55	55
Number of Sites Operating Performance Measure <i>without</i> adjustment	55	55	55	55	50	45	40	35	30	25
Observations per day from Array Performance Measure <i>with</i> Adjustment	880	880	880	880	4,192*	7,504*	10,816*	14,128*	17,440*	21,120*
Observations per day from array Performance Measure <i>without</i> Adjustment	880	880	880	880	800	720	640	560	480	400

* Increased observations necessary to calibrate and validate the coupled ocean-atmosphere Climate Forecast system will become available as buoys are deployed with improved communications capability.

Florida/Caribbean Hurricane Data Buoy (Operation and Maintenance) (+0 FTE and +\$3,000,000): NOAA requests an increase of 0 FTEs and \$3,000,000 for a total of \$4,400,000 to operate and maintain 15 weather data buoys (eight buoys funded under the FY 2006 Hurricane Supplemental Appropriation and seven funded in by the FY 2005 Hurricane Supplemental Appropriation) for enhanced real time hurricane data observations and storm monitoring in the Caribbean, Gulf of Mexico, and the Atlantic Ocean to support the NOAA hurricane warning and forecast mission.

Statement of Need

The eight newly installed Hurricane Supplemental data buoys require annual maintenance and shore-side operating/infrastructure support to maintain reliable data output. Without funding for continued operation and maintenance, the National Data Buoy Center (NDBC) will be unable to maintain this supplemental Hurricane Observational data buoy network. Real time data from these stations will assist the Tropical Prediction Center / National Hurricane Center (TPC/NHC) to more accurately determine hurricane formation or dissipation; the extent of tropical hurricane wind circulation; the location and center of hurricanes; direction, height, and distribution of ocean waves generated by hurricanes; the maximum hurricane intensity; and the quality of measurements and estimates obtained from remote-sensing reconnaissance aircraft and satellites.

The eight new Hurricane Supplemental data buoys consist of four 6-meter, and four 12-meter buoys. The seven FY 2005 Hurricane Supplemental data buoys consist of one 3-meter, two 6-meter, two 10-meter, and two 12-meter buoys. These buoys require increased ship-time for scheduled service due to their large distance from the U.S., are an average of four days of ship time apart, and require a ship with substantial lift capability (especially for the 12-meter buoys). The hired buoy tender vessel will provide scheduled maintenance to all buoys in one continuous trip to minimize ship cost (\$25K per day). In addition, failures during hurricane season must be repaired as soon as possible, requiring a dedicated service trip to the failed buoy.

Proposed actions

FY2008 (For all 15 Buoys):

- \$1,100K Provide field service and maintenance
- \$2,110K Ship Cost
- \$540K Provide shore-side operation/infrastructure support
- \$650K Provide and maintain spare equipment/buoy to support field maintenance strategy

Benefits

Real time data from these strategically sited data buoy stations will assist the Tropical Prediction Center / National Hurricane Center (TPC/NHC) to more accurately determine hurricane formation or dissipation; the extent of hurricane wind circulation; the location and center of hurricanes; direction, height, and distribution of ocean waves generated by hurricanes; the maximum hurricane intensity; and the quality of measurements and estimates obtained from remote-sensing reconnaissance aircraft and satellites. Proper maintenance and continued operation of the supplemental buoy network, the resulting data, and its contribution to the forecast and warning process are key components helping NOAA meet its national and international analysis and forecast responsibilities aiding the public and government in making preparation and evacuation decisions regarding tropical hurricanes.

Performance Goals & Measurement Data

O&M funding for the buoys will continue the real time data stream. The Hurricane Buoys will produce over 120K observations per year. Without the maintenance funding the data stream will decay.

Performance Goal: <i>Weather and Water</i>	FY06 Baseline	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Number of Observations/year <i>with</i> Adjustment	0	>55K	>121K	>121K	>121K	>121K	>121K	>121K
Number of Observations/year <i>without</i> Adjustment	0	>55K	>55K	>55K	>55K	>55K	>55K	>55K

- Currently it is not possible to quantify the incremental improvement for the hurricane program that can be credited to the supplemental buoys. The new buoys are expected to allow the TPC/NHC to determine more accurately hurricane formation and dissipation, extent of wind field (radii of 34, 50 and 64 knot winds), center location, maximum intensity and ocean wave characteristics. Such improvements to analyses should translate into more accurate short-term forecasts of these quantities in TPC/NHC products. To establish metrics for the buoys, TPC/NHC will review its Tropical Cyclone Discussion, Tropical Weather Outlook, and other products (as necessary) to document the frequency and magnitude (where known) of changes to TPC/NHC analyses and/or forecasts of the above meteorological and oceanographic measures.

- Because tropical hurricanes are relatively rare events at any single location, TPC/NHC anticipates that a period of two or three years of storms and storm observations will be necessary to generate information about the contribution of the buoys.

Ocean Sensor Operation and Maintenance (+0 FTE and +\$1,350,000): NOAA requests an increase of 0 FTEs and \$1,350,000 for ongoing operation and maintenance of the Congressionally mandated ocean instrumentation which was funded and installed by National Ocean Service “Convert Weather Buoys Initiative.” These sensors augment fixed and buoy observational sites. In keeping with NOAA's commitment of increased interoperability and cost effective approach to oceanographic observing, the NOS Convert Weather Buoy project augments existing National Weather Service buoys with oceanographic sensors. This national network of weather observing buoys has been augmented with oceans sensors to measure directional waves and wave heights, and ocean current, temperature, and salinity profiles.

Statement of Need:

Congress has provided NOS over \$12,000,000 to add oceanographic sensors to the existing NWS marine observational backbone. However, ongoing operations and maintenance funding has not been provided for long-term support of the systems. In FY 2008, 98 sites along the U.S. coastline will be outfitted with oceanographic sensors. Without operations and maintenance funding, this equipment will be unsupportable and the \$12,000,000 investment will become inoperable. Buoys require annual maintenance and shore-side operating/infrastructure support to maintain reliable data output. Buoys outfitted with weather sensors generally only require an at-sea replacement once every three years. However, subsurface oceanographic sensors require an at-sea maintenance visit every nine months. Thus the cost of ship time alone is four times greater.

Proposed actions

FY2008:

- \$1,000K Provide field service and maintenance (includes ship support)
- \$50K Provide shore-side operation/infrastructure support
- \$300K Provide and maintain spare equipment/buoy to support field maintenance strategy

Benefits:

By converting weather buoys to dual purpose buoys, NOAA obtains oceanographic data in an exceptionally cost effective manner. These real time ocean observations are used by weather forecaster in both the government and private sector, coastal managers, recreation and commercial fishing industry, search and rescue, and hazard spill mitigation just to mention a few. These data are also re-used by Industry to generate value-added products for the private sector. Continued operation of these sensors meets the international priorities of the Integrated Ocean Observing System (IOOS) and the recommendations of the U.S. Commission on Ocean Policy.

Performance Goals & Measurement Data

O&M funding for the buoys will continue the real time data stream.

Performance Goal: <i>Weather and Water</i>	FY06 Baseline	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Number of Ocean Observations/year <i>with</i> Adjustment	0	>300K	>900K	>900K	>900K	>900K	>900K	>900K
Number of Ocean Observations/year <i>without</i> Adjustment	0	>300K	0	0	0	0	0	0

Ongoing Operations and Maintenance for Systems/Equipment Purchased to Meet Requirements of Hurricane Supplemental (0 FTE and + \$1,230,000): NOAA requests 0 FTE and \$1,230,000 to pay ongoing operations and maintenance costs for Incident Meteorologist equipment, software support, and communications, ASOS and NWR backup power units, and backup communications for coastal Weather Forecast Offices and Next Generation Weather Radars.

Statement of Need:

The FY 2006 Hurricane Supplemental provided funding to: (1) equip five coastal Weather Forecast Offices (WFOs) with all-hazards support capability for incident meteorologists deployed to provide on-site tactical forecasting in times of disaster; (2) equip 150 hurricane-prone Automated Surface Observing System (ASOS) sites and (3) 126 NOAA Weather Radio (NWR) All Hazards transmitters located in hurricane-prone areas with backup power capability so that they can continue to provide critical weather observations and life-saving emergency broadcasts during times of disaster when commercial power is disrupted; and (4) backup satellite communications at 25 coastal WFOs and 10 NEXRAD sites to provide transmission of forecasts, watches, warnings, and radar products during times of disaster when land-line communications have been disrupted. All of these systems and capabilities require ongoing funding to continue to be operated and maintained. Ongoing operations and maintenance funding is necessary to ensure the capital investments made as a result of the Hurricane Supplemental continue to provide the live-saving services they were intended to support.

Proposed Actions:

All systems, equipment, and communications provided by the Hurricane Supplemental will be deployed by FY 2008. FY 2008 operations and maintenance activities include:

- Maintaining and keeping the portable systems and communications used by incident meteorologists secure and up-to-date.
- Maintaining 150 emergency backup systems for ASOS, including providing fuel for diesel generators used for back up power.
- Maintaining 126 emergency backup systems for NWR All-Hazards, including providing fuel for diesel generators used for back up power.
- Continuing lease and maintenance of on-site satellite communications equipment at 25 coastal WFOs and 10 Next Generation Weather Radar sites as well as lease of satellite bandwidth.

FY 2008 Deliverables:

- Lease IMET communications, maintain IMET equipment, provide tech refresh of IMET equipment (\$250,000)
- Maintenance/diesel fuel for 150 ASOS emergency backup power systems (\$230,000)
- Maintenance/diesel fuel for 126 NWR emergency backup power systems (\$150,000)

- Lease of satellite communications for 25 coastal WFOs and 10 coastal NEXRADS (\$600,000)

Benefits:

Equipment for Incident Meteorologists facilitates rapid deployment of tactical meteorology capabilities to sites of hurricanes as well as to other disaster sites. Uninterrupted data from coastal ASOS's will provide forecasters with reliable real-time observations during any type of severe weather event, including hurricanes. These observations will prevent degradation of short-term forecast quality during times when accuracy counts most. In addition, uninterrupted ASOS observations will maintain the quality of surface analyses at the National Centers for Environmental Prediction, improve the integrity of the climate record, particularly in recording extreme events, and aid research and understanding of tropical cyclone events. Sustained recording of high winds during severe weather events will provide information to improve building codes, thereby mitigating loss of life and property. Emergency backup power for NWR all hazards will increase reliability of broadcasts of severe weather information, leading to lives and property saved. It will also ensure broadcast of critical information during homeland security events.

Performance Goals & Measurement Data:

This increase will support the objective: "Advance understanding and predict changes in the Earth's environment to meet America's economic, social, and environmental needs" under the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental needs." It links directly to the Weather and Water Mission Goal Outcome: "better, quicker, and more valuable weather and water information to support improved decisions" and to the Weather and Water Performance Objective "improve predictability of the onset, duration, and impact of hazardous and severe weather and water events."

Providing on-site meteorological support at disaster sites assures decision makers have direct access to critical information on a continuous basis.

Reducing ASOS data loss during and after land falling tropical cyclones supports the following Government Performance Results Act (GPRA) measures:

- Aviation Forecasting: Probability of Detection (POD) and False Alarm Rate (FAR) of Instrument Flight Rule conditions. ASOS data are the cornerstone of NOAA's aviation verification program. Forecasters can obtain individual scores and assess their strengths and weaknesses during and after extreme events-overall improving aviation POD and FARs. Software that helps create first-guess TAFs and uses conditional climatology relies on ASOS observations. The ASOS observations remain the key driver in formulating these outputs.
- Hurricane Forecasting: Hurricane Track Forecast. NOAA is working to improve the prediction of tropical cyclone forecast tracks and intensity. This depends on an optimal analysis of all field observations, to include those from ASOS, to enhance the understanding of the interactions between a tropical cyclone and its environment.
- Marine Forecasting: Wind Speed and Wave Height for Coastal Waters. ASOS wind speed observations at coastal sites are used to develop wind speed and wave height forecasts for the coastal waters, and storm surge information for all coastal interests from tropical and extra tropical cyclones.
- Flash Flood Warnings. ASOS precipitation data are key input/criteria for issuing flash flood warnings.

The impact of reducing NWR All Hazards transmitter loss on property and lives saved during severe weather events such as Katrina and Rita is difficult to measure. However, five transmitters went down during Katrina and Rita, leaving tens of thousands of people without NWR All Hazards broadcast of information regarding the hurricanes and without warnings of the tornados and floods that followed landfall. One site could not be restored until March when NWS installed an emergency power generator because commercial power still was not available at that site.

During Katrina four Weather Forecast Offices/River Forecast Centers were left without AWIPS landline communications to disseminate forecasts and warnings. The satellite communications backup for 25 coastal WFOs and 10 Next Generation Weather Radar sites has an availability of .9996 over a 12-month period.

In summary, funds to pay ongoing operations and maintenance costs for backup power and communications at NWS sites will mitigate the following losses experienced during Rita and Katrina: Loss of landline communications at four field offices and loss of five Automated Surface Observing sites and five NWR All Hazards transmitters.

Space Environment Center (SEC) (+0 FTE and -\$1,300,000): NOAA requests a reduction in SEC funding of \$1,300,000 to \$6,187,000 to reflect funding of higher-priority NWS requirements. This \$1,300,000 reduction will reduce SEC model development and transition of models to operations; and eliminates outreach efforts. The \$6,187,000 funding level supports SEC real-time monitoring and forecasting of solar and geophysical events.

Strengthening the U.S. Tsunami Warning Program (+0 FTE and +\$1,700,000): NOAA requests an increase of 0 FTE and \$1,700,000 for a total of \$23,196,000 in FY 2008 to sustain the Administration's commitment to strengthen the U.S. Tsunami Warning Network. Funds are required to operate and maintain the expanded U.S. Tsunami Detection and Warning System put in place in FY 2004-2007 and complete deployment of the DART Buoy Network.

Lessons learned from the 2004 Indian Ocean Tsunami indicate that there are four key interlocking components of an effective Tsunami Warning/Response System: (1) Tsunami Hazard Assessment (including comprehensive coastal US risk assessments/inundation mapping); (2) Tsunami Warning Guidance (including 24/7 tsunami detection and warning systems and the dissemination of accurate and timely tsunami forecasts and warnings); (3) Tsunami Mitigation (including community-based emergency response plans, public education/awareness, the National Tsunami Hazard Mitigation Program, TsunamiReady communities and inundation/evacuation mapping), and (4) Tsunami Research. This investment is one of the high priority investments required for NOAA's implementation of the Integrated Ocean Observing System (IOOS) as the coastal and open ocean component of the Global Earth Observing System of Systems (GEOSS). Combined with other like-identified IOOS investments across NOAA, it is part of NOAA's strategy to provide initial benefits of an integrated ocean observing system, focusing on enhancing key observational capabilities throughout NOAA, and our ability to provide customers with enhanced coastal data and information.

Statement of Need

In response to the 2004 Indian Ocean Tsunami, the Administration proposed expanding the U.S. Tsunami Warning Program to protect U.S. lives and property along all coasts (Pacific, Gulf of Mexico, Atlantic and the Caribbean). Requested funds are required to operate and maintain the expanded DART network, sea-level monitoring stations, and the upgraded local seismic networks supporting the West Coast /Alaska Tsunami Warning Center (WC/ATWC) and the Richard H. Hagemeyer Pacific Tsunami Warning Center (PTWC) and to operate both the WC/ATWC and PTWC as 24/7 Operation Centers. Funds are also requested to continue NOAA's plan to provide effective, community-based tsunami hazard mitigation actions including inundation forecast modeling efforts, and community-based public education/awareness/preparedness for all U.S. communities at risk. Funds will also support NOAA's tsunami research activities, focusing on the development of the fundamental scientific and technical products and detection systems essential to improve tsunami forecast coverage and data needed for rapid and reliable tsunami warnings.

Emergency managers and other officials are in urgent need of operational tools that will provide accurate tsunami forecasts as guidance for rapid, critical decisions in which lives and property are at stake. NOAA's Tsunami Warning Centers are tasked to issue tsunami warnings for the U.S. and other nations around the Pacific. Tsunami warnings allow for immediate actions by local authorities to mitigate potentially deadly wave inundation at a coastal community. More timely and precise warnings allow local emergency managers to take effective actions, potentially saving more lives and property. At present, the Tsunami Warning Centers are issuing tsunami warnings based on incomplete and ambiguous data. The initial warning decisions are based on indirect measurements of seismic waves. Additionally, tsunami confirmation by coastal tide gages may arrive too late for timely evacuation measures. This lack of information can lead to a high false alarm rate and ineffective local response to the tsunami warning. A high false alarm rate undermines public confidence and dilutes the impact of alerts. An unnecessary evacuation in Hawaii in 1994 cost an estimated \$30 million in business disruptions and other costs. Tsunami forecasting tools based on new tsunami measurement technology and the latest modeling techniques will provide crucial additional information to guide tsunami mitigation measures in real time during a tsunami.

Proposed Actions

In FY 2008, the total funding of \$23,196,000 will be used to:

- Deploy the final 10 DART buoys (\$3,265,000)
- Operate and maintain the expanded DART network of 29 buoys (\$10,000,000)
 - DART O&M costs \$4,640,000
 - DART O&M ship-time costs \$4,640,000
 - Emergency DART Repair \$500,000
 - Continue NDBC DART Program Management (\$220,000)
- Continue DART R&D (\$470,000)
- Operate and maintain the expanded "tsunami-reporting" sea-level monitoring network (\$800,000)
 - Includes \$100,000 for the State of Alaska sea level monitoring network

- Operate and maintain the expanded and upgraded seismic networks for PTWC and WC/ATWC (\$450,000)
 - Includes \$250,000 for the State of Alaska seismic monitoring network
- Maintain 24/7 operations at the PTWC and WC/ATWC (\$1,991,000)
- Maintain expanded ITIC operations (\$175,000)
- Continue the tsunami inundation forecast modeling efforts for all U.S. communities at risk (\$2,350,000)
 - Includes \$350,000 for State of Alaska tsunami inundation mapping & modeling activities
- Continue tsunami education/outreach activities (TsunamiReady program) to improve community preparedness for U.S. communities at risk (\$600,000)
 - Includes \$300,000 for State of Alaska TsunamiReady (community preparedness) activities
- Continue NOAA's research program to improve our understanding of Tsunami processes and impacts and to develop more accurate models as well as efficient and effective warning and mitigation measures (\$470,000)
- Continue archiving of tsunami data at the National Geophysical Data Center (\$200,000)
- Continue support to the PRSN to provide local and regional tsunami warning capabilities for the Caribbean (\$340,000)
- Continues funding for the National Tsunami Hazard Mitigation Program (\$2,085,000)

FY 2008 Deliverables

- Completion of the planned 39-DART buoy Network.
- Completion of 9 additional inundation forecast models for a total of 35.
- Completion of 5 additional TsunamiReady communities for a total of 47.

Benefits

Following the Alaska earthquake on November 17, 2003, NOAA's tsunami warning centers issued a warning within five minutes of the earthquake. Within an hour, the warning was cancelled because real-time tsunami detection buoys off the Alaska coastline provided the necessary data to inform decision makers that a tsunami was not imminent. The early cancellation of this warning avoided an unnecessary evacuation of Hawaii coastlines, saving millions of dollars. A similar event occurred in 1986, but, without the deep ocean data the warning was not cancelled until after an evacuation had taken place. The Hawaii Department of Business, Economic Development and Tourism estimated the cost to Hawaii in lost productivity in 1986 was \$40M. Adjusted for inflation, a similar evacuation in 2003 would have cost Hawaii \$70M in lost productivity.

Performance Goal and Measurement Data

This increase will support the objective: "Advance understanding and predict changes in the Earth's environment to meet America's economic, social, and environmental needs" under the DOC Strategic Goal of 'Observe, protect, and manage the Earth's resources to promote environmental needs'. Specifically, this increase supports NOAA's Weather and Water strategic goal and the performance measures below.

Performance Measures	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11
Tsunami False Alarm Rate								
Local	75%	75%	75%	75%	75%	75%	75%	75%
Distant	75%	75%	75%	50%	40%	25%	25%	25%
<i>with</i> Adjustment								
Tsunami False Alarm Rate								
Local	75%	75%	75%	75%	75%	75%	75%	75%
Distant	75%	75%	75%	75%	75%	75%	75%	75%
<i>without</i> Adjustment								
Tsunami Warning Lead Time * (minutes)								
Local Tsunamis	15	10	8	6	5	5	5	5
Distant Tsunamis	30	30	30	20	15	15	15	15
<i>with</i> Adjustment								
Tsunami Warning Lead Time * (minutes)								
Local Tsunamis	15	10	8	8	8	8	8	8
Distant Tsunamis	30	30	30	30	30	30	30	30
<i>without</i> Adjustment								

*Tsunami Warning Lead Time measures the amount of time between when a seismic event occurs and when the tsunami warning is issued.

NOAA Profiler Network Operations and Maintenance (+0FTE and + \$1,670,000): NOAA requests an increase of 0 FTE and \$1,670,000 for a total of \$4,736,000. This \$1,670,000 increase reflects the increased operations and maintenance costs for the NPN due to the need to continue operating all but three of the 37 sites for all of FY 2008 while needing to put in place the infrastructure for operations and maintenance of the frequency replacement.

The Wind Profilers, vertical looking radars installed in 1988, are used as input for numerical (computer) weather models that predict clouds, precipitation, and temperature. The data also provide important indicators of where severe weather such as tornadoes and winter storms may form and is used for issuing aviation advisories and wildfire predictions. Research has shown Wind Profiler data improves accuracy and lead times for tornado, severe thunderstorm, flash flood, and winter storm warnings

Thirty-two of the 37 wind profiles are using an experimental transmitter frequency of 404 mega hertz (MHz) issued by the National Telecommunications and Information Administration (NTIA). NTIA has given the 404 MHz frequency to search and rescue satellites (SARSAT) and granted the NPN permanent use of 449 MHz. Thirty operational 404 MHz wind profilers require their transmitters to be converted from 404 to 449 MHz by the end of the FY 2008 when the new SARSATS are launched.

In addition to the 30 operational sites using 404MHz, there are two additional 404 MHz wind profilers at the National Reconditioning Center and National Weather Service Training Center (used for testing and training). There are also five wind profilers in the NPN that operate at the non-interfering 449 MHz frequency: three in Alaska, one in Syracuse, NY and one in Platteville, CO.

Statement of Need

Because the 32 of the 37 wind profilers and search and rescue (SAR) satellites both operate at 404 MHz, whenever a satellite is overhead, the profilers are turned off to prevent any interference. Right now, this only occurs about 90 minutes per day. The European Space Agency began launching a constellation of 30 satellites called *Galileo* in FY 2006. These satellites will have a SAR capability with an operating frequency of 404 MHz. These SARSATS will be overhead for hours instead of minutes. Under these conditions, NPN profilers operating at 404MHz will have to shut down more than 23:30 hours per day by the start of FY 2010, rendering the network useless. The solution is to change the operating frequency to the non-interfering 449 MHz, a primary shared frequency for wind profilers and DOD testing.

In 2009, the NPN will have been installed for 20 years without any technology refresh during its life cycle. Therefore a second priority is tech refresh for the entire 37 wind profiler network. This tech refresh includes replacing the 5 existing 449 MHz profilers, replacing the network's VAX system computers and re-hosting the software on a LINUX platform; improving the telecommunications network, replacing site modems, data collection modems and uninterruptible power systems, and providing a major overhaul of site shelters, facility electric distribution, replacement of RASS components and upgraded satellite communications equipment.

The 30 operational wind profilers operating at 404MHz are located in the central U.S. along “tornado alley.” Studies have shown the following improvements in tornado detection as a result of wind profiler data:

	WFOs within NPN*	WFO Nat'l. Ave.	WFOs Outside NPN*
Probability of Detection	0.79	0.72	0.62
False Alarm Rate	0.68	0.74	0.85
Critical Success Index	0.29	0.24	0.14
Lead Time (minutes)	12.9	11.5	9.5

Accuracy Performance Measures for WFOs, 1999 through 2003 (Wolf, 2004)

*Selected Weather Forecast Offices in areas where tornadoes occur often.

The Senate Appropriations Committee requested, as part of a Cost and Operational Effective Analysis (COEA), “the cost to upgrade the NOAA Profiler Network (NPN) over the next decade versus the short, medium, and long-term costs of ending the NPN program.” The results of the COEA demonstrate

that high-frequency wind data benefit several important NWS missions: severe weather warnings (for tornadoes, flash floods, and winter storms), watches, and short-term forecasts. These products are important for public safety, aviation, and wildfire-suppression support.

Proposed actions

Increased operations and maintenance costs during the transition are due to the need to establish and ramp up staffing (by contractor) for a 24/7 monitoring center for the new systems while maintaining the monitoring and processing center for the old systems, the need to develop new maintenance training courses, the need to develop a depot repair capability for the new systems including fault isolation test equipment, and the need to provide specialized test equipment for electronic technicians maintaining the new equipment in the field. The current program requires \$3.14M per year to operate and maintain (O&M) the existing NPN. This base O&M support funds five NWS FTEs as well as support contract tasks including specialized field engineers who assist field technicians when antenna alignments or complicated repairs are required. Current NPN O&M costs include managing data flow to the Severe Storms Prediction Lab, the NCDC, and NWS Region/WFO data users, as well as the web distribution of the data. The (two-year) incremental O&M increase of \$1.67M is required to establish the necessary infrastructure for the new NPN system. Much of the cost would be for contract support not associated with the acquisition of the frequency conversion and technical refresh. This contract support effort fills needs to set up:

- the National Logistics Center (one contract person) for the new parts;
- the National Reconditioning Center (one contract person) for the depot space, installing equipment, generating bench repair equipment and part;
- NWS Training Center (one contract person) training courses for both wind profiler repair and operations teaching staff and installing equipment;
- Radar Operations Center (initially contract 4 people) to install operations and monitoring equipment and provide contract support for second level engineering and monitoring of new operational systems. Installation activities will be contracted directly with specialty companies.

FY 08 Deliverables

Establish monitoring center--\$.8M

Develop maintenance training course--\$.1M

Depot repair test equipment--\$.55M

Test equipment for field electronic technicians--\$.22M

Benefits

As part of the COEA (May 2004), a cost-effectiveness analysis shows that sustaining the NPN, including upgrading the frequency, is the most cost-efficient method of obtaining high-frequency wind profiles. Six independent attributes were used to judge wind-profiling system performance: 1) frequency of observation, 2) geographic coverage, 3) vertical reach, 4) horizontal spacing, 5) number of vertical levels, and 6) measurement accuracy. Frequency of observation is the number of profile reports per day.

The best combination of performance and cost is to maintain the NPN system and modify its frequency so as not to interfere with reception by SARSAT satellites of signals from Search and Rescue beacons.

Alternatives considered:

- 1) Changing the NPN operating frequency and maintaining the current network
- 2) Terminating the NPN network
- 3) Replacing the network with either existing or new technologies potentially capable of providing data that would provide a similar improvement in forecasting performance. The alternate technologies considered: Existing and additional use of radiosondes (weather balloons), automated aircraft reporting (Meteorological Data Collection and Reporting System (MDCRS)), WSR-88D Doppler radar, and object tracking by Geostationary Operational Environmental Satellite (GOES).

Conclusions: COEA results indicate the best solution for both performance and cost is to maintain the NPN network and modify its frequency so as not to interfere with reception with SARSAT satellites.

Performance Goals & Measurement Data

The table below reflects performance measures for those WFOs within the National Wind Profiler Network

Performance Goal: <i>Weather and Water</i>	FY04 Baseline	FY05	FY06	FY07	FY08	FY09	FY10	FY11
GPRM Performance Measure Tornado Warning Probability of detection <i>with</i> adjustment *	.79	.79	.79	.79	.63	.24	.46	.79
GPRM Performance Measure Tornado Warning Probability of detection <i>without</i> adjustment *	.79	.79	.79	.79	.62	.62	.62	.62
GPRM Performance Measure Tornado Warning False Alarm Ratio <i>with</i> adjustment *	.68	.68	.68	.68	.84	.88	.75	.68
GPRM Performance Measure Tornado Warning False Alarm Ratio <i>without</i> adjustment *	.68	.68	.68	.68	.85	.85	.85	.85
GPRM Performance Measure Tornado Warning Lead Time (min.) <i>with</i> adjustment *	12.9	12.9	12.9	12.9	9.6	10.5	11.4	12.4
GPRM Performance Measure Tornado Warning Lead Time (min.) <i>without</i> adjustment *	12.9	12.9	12.9	12.9	9.5	9.5	9.5	9.5
Tornado Warning: Critical Success Index <i>with</i> adjustment	.29	.29	.29	.29	.15	.16	.20	.25
Tornado Warning: Critical Success Index <i>without</i> adjustment	.29	.29	.29	.29	.14	.14	.14	.14
Wind Profiler Product Availability <i>with</i> Adjustment	80 %	80 %	80 %	80 %	72 %	46%	60%	85%
Wind Profiler Product Availability <i>without</i> Adjustment	80 %	80 %	80 %	80 %	71%	29%	0 %	0%

Accuracy Performance Measures for Weather Forecast Offices, 1999 through 2003 (Wolf 2004). GPRA measure targets reflect Wind Profiler Impact only; do not reflect other improvements that impact the national GPRA targets, which are more accelerated. The drop in performance during FY09 reflects the shut down of the Profiler network due to SARSAT interference. Performance goes up in FY10 after completion of the frequency upgrade and the return of the network to operations.

US Weather Research Program (USWRP) (+0 FTE and -\$1,456,000): NOAA requests a reduction in USWRP/THORPEX funding of \$1,456,000 to \$6,000,000 to reflect funding of higher-priority NWS requirements. This reduction will reduce support for THORPEX, including a multi-national experiment in the North Pacific targeted to improving high impact winter weather forecasts on the U.S. Pacific Coast. This field experiment will end a grants program between NOAA and the academic community focused on accelerating 1-14 day forecasts.

In FY08 the remaining USWRP funding of \$6,000,000 will support improvements for NOAA's (1) forecasting capabilities for high impact and routinely disruptive weather events; (2) air quality research and forecasting program and (3) THORPEX program. This effort includes improving NOAA's hurricane forecasts (track, intensity and rainfall via NOAA's Joint Hurricane Testbed; initial testing and development of an air quality particulate matter (PM) forecast capability and (reduced support) for The Observing System Research and Predictability Experiment (THORPEX) whose objective is to double the rate of improvements in 3-14 day high impact weather forecasts.

Subactivity: Operations and Research
Line Item: Central Forecast Guidance

GOAL STATEMENT:

See the Overview for the National Weather Service Operations, Research, and Facilities for a discussion of our goals.

BASE DESCRIPTION:

The modernized field office structure emphasizes warnings and short-range forecasts. The process by which these products are generated begins with centralized processing of weather observations, followed by the application of high-resolution computer simulations of the atmosphere on NOAA supercomputers, and adjustment by skilled National Centers for Environmental Prediction (NCEP) forecasters. The results are forwarded to local Weather Forecast Office (WFO) forecasters, who use them as the basis for local forecast products. Typically, local forecasters add the greatest value in the shortest forecast ranges. Beyond about three days, forecasts depend almost exclusively on NCEP output. The total forecast process depends critically on both NCEP products and local forecast efforts to enhance both accuracy and uniformity of service across the country.

In addition to their role in the local WFO forecast product generation, NCEP also provides the principal means through which NOAA provides operational weather, ocean, and climate prediction services for large areas, up to and including the entire globe, to a vast assortment of domestic and international users. These services typically exceed the domain of a single WFO, and require a large supercomputer. Efficiency demands that they be generated centrally.

The NCEP consists of seven science-based, service-oriented centers that generate environmental prediction products and two central activities supporting those services. The centers provide an integrated suite of forecast guidance and specific forecast products from the short-term through seasonal, interannual, decadal, and centennial time frames. Each service center depends on the observational infrastructure, the data assimilation systems, the numeric modeling function, and the application of model output statistics to produce value-added forecast guidance products for NWS field offices and direct users.

Storm Prediction Center: The Storm Prediction Center (SPC), located in Norman, Oklahoma, focuses on hazardous weather events such as severe thunderstorms and tornadoes, ice or heavy snow, fire weather and flash floods, with emphasis on the first few hours of the forecast period. Products issued from the SPC give the WFOs specific guidance as to the probability and intensity of severe weather occurrences for regional to local geographic scales.

Hydrometeorological Prediction Center: The Hydrometeorological Prediction Center (HPC), located in Camp Springs, Maryland, is responsible for preparing quantitative precipitation forecasts (QPF) that are used by WFOs to develop local rainfall, snow, and ice forecasts and by the Regional Forecast Centers (RFC) to develop local river and flood forecasts. The HPC provides special QPFs and coordination to other federal agencies such as the Federal

Emergency Management Agency (FEMA) during major flood events. The HPC also provides an array of analysis and forecasts of frontal systems, pressure patterns, temperature, and precipitation for use by WFOs and the private weather community.

Ocean Prediction Center: The Ocean Prediction Center (OPC), located in Camp Springs, Maryland, discharges U.S. international meteorological obligations to marine interests under the International Convention for Safety of Life at Sea, to which the U.S. is a signatory. It provides one-stop-shopping for marine interests operating outside the domain of coastal WFOs. The OPC provides weather and sea state warnings and forecasts for the high seas of the Northern Hemisphere for planning and operational purposes. Its warnings and products go directly to ships at sea, and are vital for the protection of life and property. The OPC also provides guidance forecasts for WFOs with coastal responsibilities, which extend out to about 100 nautical miles. Coastal WFOs have responsibility for local forecasts and warnings out to that limit; for the high seas beyond, the responsibility has been centralized in the HPC.

Tropical Prediction Center/National Hurricane Center: The NCEP experts in the area of tropical meteorology are concentrated at the Tropical Prediction Center (TPC)/National Hurricane Center (NHC) in Miami, Florida. Services provided by the TPC/NHC include advisories, watches, and warnings for tropical cyclones in the north Atlantic and eastern north Pacific oceans, the Caribbean Sea, and the Gulf of Mexico, including the portions of the U.S. coastline threatened by such storms. In addition, TPC forecasters provide aviation and marine analyses and forecast products for the same areas of responsibility. The TPC/NHC functions both to provide guidance, coordination, and tropical weather expertise to WFO forecasters and to serve users of centrally generated products.

Aviation Weather Center: The Aviation Weather Center (AWC), located in Kansas City, Missouri, is the mechanism by which the U.S. discharges its weather forecasting obligations to the aviation community under an international agreement through the International Civil Aviation Organization. The AWC provides wind, temperature, and flight hazard (e.g., icing, and turbulence) forecasts for flight planning and en route aircraft operations for the U.S., the north Atlantic and north Pacific routes, and some routes in the southern hemisphere. In addition to the en route weather support provided for the aviation industry, the AWC also produces guidance products for use by WFOs in support of the airport terminal forecast function. Thus, the AWC discharges large-scale, global aviation functions which can be sensibly centralized, while the WFOs discharge local aviation functions based on centralized guidance provided by the AWC.

Climate Prediction Center: The Climate Prediction Center (CPC), located in Camp Springs, Maryland, produces climate services consisting of operational prediction of climate variability; monitoring of the climate system and development of databases for determining current climate anomalies and trends; and analysis and assessment of their origins and linkages to the rest of the climate system. These services cover climate time scales ranging from weeks to seasons, extending into the future as far as technically feasible, and cover the domain of land, ocean and atmosphere, extending into the stratosphere. WFOs, as well as the public, private industry, and the international research community use CPC climate services.

NCEP also maintains two critical support organizations to facilitate the central forecast guidance process:

NCEP Central Operations: The Central Operations (NCO) of NCEP operates the NOAA Central Computing Facility, manages the computer production suite upon which all NCEP services are based and the communications linking the several parts of NCEP, and provides operational quality assurance of incoming observations and outgoing products. NCO staff also provides central support for software development for data processing, display, interaction, and product generation. The NCO is the technical transition point between the development of numerical weather and climate prediction models and their operational use by forecasters at the NCEP and WFOs. The NCO staff also provides central support for software development for data processing, display, interaction, and product generation. The NCO consists of computing, communications, and software specialists, as well as meteorologists with special knowledge of numerical modeling operations.

Environmental Modeling Center: NCEP's Environmental Modeling Center (EMC) develops, enhances, and maintains complex data assimilation and numerical model systems that span the globe. The computer models and other numerical forecast products developed by the EMC provide the basic guidance that meteorologists at the NCEP and WFOs use in making weather and climate predictions. EMC serves as the integrator of numerical modeling research and development performed in universities and research laboratories. Model impact studies are conducted by the EMC to validate data sets that lead to new data requirements from observing technologies (satellites, radar, etc.).

Base activities support the objective, “Advance understanding and predict changes in the Earth’s environment to meet America’s economic, social, and environmental needs” under the Department of Commerce strategic goal of “Observe, protect, and manage the Earth's resources to promote environmental needs.”

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Operations and Research	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Central Forecast Guidance					
Central Forecast Guidance	45,360	51,063	52,208	53,248	1,040
National Hurricane Center	5,721	-	-	-	-
TOTAL	51,081	51,063	52,208	53,248	1,040
FTE	299	306	306	306	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Hurricane/Environmental Modeling Improvements (+0 FTE and +\$1,040,000): NOAA is requesting \$1,040,000 and 0 FTE for operational support and maintenance of the next-generation hurricane and storm surge prediction system. As a result of the active 2005 hurricane season, NOAA was provided hurricane supplemental funding to accelerate the next-generation hurricane and storm surge prediction system. This request provides the necessary operations and maintenance funding to support these systems on a daily, routine basis leading to improved hurricane and storm surge prediction. This environmental modeling investment is necessary support operationally the next-generation hurricane prediction system and to integrate NOAA's several environmental prediction models into a single environmental modeling prediction system to meet demands for more accurate forecast products in weather, climate, ocean and coastal ocean and ecosystems. Operational hurricane intensity and storm surge predictions at landfall will be highlighted in this effort, which will capitalize on proven research, lay the groundwork for a national prediction system meeting civil, military, and homeland defense needs, and regain NOAA's position as a world leader in environmental prediction.

Statement of Need

NOAA has transitioned to operations and improved the GFDL Hurricane Prediction System from 1995 to the present. However, at this time a new, more complex system must be developed and put into operations to keep pace with current requirements for improved hurricane intensity and storm surge prediction. This new system, based on the community Weather Research and Forecast (WRF) system, is under accelerated development with one-time Congressional funding, but operational and maintenance funding is required for sustained improvements over the next decade. The new system will focus on the impacts of storm surge and other inundations associated with landfalling hurricanes and includes a coupled ocean, wave, hurricane, estuary, inundation, storm surge modeling system for supporting the operational hurricane forecast and warning capability of the National Weather Service. This request is a direct follow-on to the one-time supplemental appropriations in FY2005 and FY 2006 for improved hurricane and storm surge forecasts, and is needed to sustain the improvements gained with these additional appropriated funds. These new capabilities have increased the need for increased

operational support and maintenance of the models, including maintaining and updating the models as changes occur in the coast and coastal environment due to natural (e.g. changes in barrier islands) and manmade (new levees, roads, canals etc) causes. Without these additional funds, improvements made due to supplemental funding will not be able to put into operations.

NOAA, DOD, and the broader scientific community have made significant advances in the science of environmental analysis and prediction. However, the United States must become the world's leader in Environmental Prediction due to having the most complex, weather-dependent economy with the world's largest spectrum of dangerous, high-impact weather (hurricanes, tornadoes, floods, drought, etc). Mitigating the impacts to the US population along the coasts from flooding and hurricanes absolutely require ever more accurate predictions not just 2 days in advance but 3 to 5 days in advance. The prediction technology is being developed, both in Government and in academia. However, to bring this technology to bear on the Nation's needs, and to provide sustaining support to the system as part of NOAA's operations, additional resources are required to integrate support, maintain, and sustain NOAA's environmental prediction systems and to extend their capabilities beyond numerical weather prediction to environmental prediction. Significant investments have been made in the research community to develop and test these systems; however end-to-end planning requires additional support to manage the operations, maintenance, and architecture of these new environmental prediction capabilities.

Proposed actions

For FY 2008 efforts include:

- Procurement of 8 contractors and initiation of sustaining support for the storm surge modeling system, including basin information and land profile and next-generation hurricane modeling system, to include capability to couple to the ocean model, wave model, estuary models, and storm surge model. (HWRF) (\$1.040M and 8 contractors).

Benefits

Improvements in hurricane forecasts, especially out to 5 days will save lives, improve the capability of emergency managers to plan and execute evacuations more effectively, and eliminate millions of dollars per year of unnecessary costs to evacuate coastal areas under threat from hurricanes. The sustained support for future hurricane and storm-surge modeling systems will enable the NWS to meet its current GPRA targets over the next seven years. This will result in saved lives and less disruption to the national economy from unnecessary evacuations.

Performance Goals & Measurement Data

This increase will support the objective: "Advance understanding and predict changes in the Earth's environment to meet America's economic, social, and environmental needs" under the DOC Strategic Goal of 'Observe, protect, and manage the Earth's resources to promote environmental needs'. Specifically, this increase supports NOAA's Weather and Water strategic goal and the performance measures below.

Performance Goal: <i>Weather and Water</i>	FY05 Baseline	FY06	FY07	FY08	FY09	FY10	FY11	FY12
Hurricane Track Forecasts Error (48 hours) Nautical Miles	101	101	110	109	103	101	100	100

Subactivity: Systems Operation & Maintenance (O&M)
Line Item: Systems Operation & Maintenance

GOAL STATEMENT:

See the Overview for the National Weather Service Operations, Research, and Facilities for a discussion of our goals.

BASE DESCRIPTION:

This subactivity reflects the costs of on-going operations and maintenance of major NWS observing and processing systems.

Next Generation Weather Radar (NEXRAD): NEXRAD is the joint NWS/FAA/DOD weather radar system consisting of 158 operational radars. NEXRAD utilizes Doppler technology and hydrometeorological processing to provide significant improvements over the previous generation of weather radars for tornado and thunderstorm warnings, air safety, flash flood warnings, and water resources management. The system is modular in design, upgradeable, has long life-cycle expectancy, and provides its principal users with a wide array of automated weather information that will increase their capability to meet their respective operational requirements. In FY 2008, the NWS will continue to operate and maintain its network of 123 NEXRAD systems.

Automated Surface Observing System (ASOS): ASOS is the joint NWS/FAA/DOD automated surface observation system consisting of 887 operational systems. ASOS provides reliable, 24-hour per day, continuous surface weather observations. Implementation of ASOS into NWS field operations provides continuous weather watch and yields improved staff productivity. NWS operates and maintains 315 NWS ASOS units, and under a reimbursable funding arrangement, operates and maintains 572 FAA ASOS units. In FY 2008 the NWS will continue operations and maintenance of its 315 ASOS systems.

Advanced Weather Interactive Processing System (AWIPS)/NOAAPort: AWIPS is the cornerstone of the modernized NWS. This system is required to integrate and display all hydrometeorological data at NWS field offices. AWIPS acquires and processes data from modernized sensors and local sources, provides computational and display functions at operational sites, provides an interactive communications system to interconnect NWS operational sites, and disseminates weather and flood warnings and forecasts in a rapid and highly reliable manner. This system integrates satellite and NEXRAD Doppler weather radar data and provides to the local field forecaster capabilities to significantly improve forecasts and warnings. AWIPS provides the only display for the NEXRAD Doppler weather radar at NWS Weather Forecast Offices (WFOs) and River Forecast Centers (RFCs). The AWIPS NOAAPort satellite broadcast offers the communications capability to provide internal and external users with open access to much of NOAA's real-time environmental data.

Base activities support the objective, “Advance understanding and predict changes in the Earth’s environment to meet America’s economic, social, and environmental needs” under the Department of Commerce strategic goal of “Observe, protect, and manage the Earth’s resources to promote environmental needs.”

In FY 2008 NWS will:

- Continue operations and maintenance of 169 fielded systems under a new, performance based O&M contract;
- Continue in-service engineering to ensure the system is available 24 hours per day, 365 days per year, to support the Weather Service mission of providing climate, water, and weather forecasts and warnings to protect life and property and enhance the national economy, and to prevent system obsolescence.

NWS Telecommunications Gateway Backup: The NWS is establishing the National Weather Service Telecommunication Gateway (NWS TG) backup facility, which will provide backup operations for the primary NWS TG within 12 hours of a failure.

The NWS TG is the Nation's hub for the collection and distribution of weather data and products. The NWS TG provides national and global real-time exchange services using automated communication resources to collect and distribute a wide-variety of environmental data such as observations, analysis, and forecast products. These time-perishable products are distributed as received to ensure the fastest availability of the information. Thousands of customers worldwide use data distributed by the NWS TG, and these data affect a wide-range of economic and emergency management decisions. Without this backup capability, the NWS TG is a single point of failure, vulnerable to natural disasters, human error, computer viruses, hacker attacks, and terrorism. If the NWS TG failed, more than 90% of the in-situ weather observations necessary for numerical weather prediction models would be lost and forecast accuracy would be degraded. The NWS TG ensures that the delivery of critical meteorological data necessary for the protection of life and property and the economic well being of the Nation continues uninterrupted, providing increased operational availability and reducing risk vulnerability in the event of lost access to the NWS TG for whatever reason.

In conjunction with the NWS TG Backup, the Legacy Replacement Project will replace the legacy NWS TG core mainframe based message switching system with current server based technology, upgrade the facility support infrastructure, and establish a technology refresh program to ensure the IT keeps up with the demand and avoids another full system replacement. The Legacy Replacement will utilize the same IT software and hardware technology demonstrated and currently being implemented in the NWS TG Backup Project. In April 2004, the NWS TG Backup and Legacy Replacement were established as a joint project to more efficiently manage the two integrated efforts and achieve economies of scale where possible. In FY 2005 and FY 2006 NWS will complete and test integration of the message switching software and associated hardware and telecommunications components. Full operational capability of the NWS TG legacy system replacement was achieved in September of FY 2006. NWS TG backup has reached initial operational capability and has been fully tested. Full operational capability for the backup gateway is scheduled for 3rd quarter FY2007.

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Systems Operation & Maintenance (O&M)	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Systems Operation & Maintenance					
NEXRAD	39,630	43,759	44,176	44,176	-
ASOS	8,498	8,716	8,891	8,891	-
AWIPS	33,611	37,603	37,766	37,766	-
NWSTG Backup – CIP	3,009	5,512	5,512	5,512	-
TOTAL	84,748	95,590	96,345	96,345	-
FTE	182	188	188	188	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
Contribution to the NOAA Strategic Planning Goals and Objectives
(Dollar amounts in thousands)

National Weather Service	FY 2006 Actuals	FY 2007 Currently Available	FY 2008 Base Program	FY 2008 Estimate	Inc/Dec from Base
	Amount	Amount	Amount	Amount	Amount
Climate					
Climate	10,860	12,202	12,493	13,593	1,100
Total C	10,860	12,202	12,493	13,593	1,100
Commerce and Transportation					
Commerce and Transportation	17,159	18,801	19,169	20,369	1,200
Total CT	17,159	18,801	19,169	20,369	1,200
Mission Support					
MS	28,016	29,732	37,864	37,864	-
Total MS	28,016	29,732	37,864	37,864	-
Weather and Water					
Weather and Water	699,375	723,878	729,947	735,981	6,034
Total WW	699,375	723,878	729,947	735,981	6,034
Total National Weather Service	755,410	784,613	799,473	807,807	- 8,334

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Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar amounts in thousands)

Activity: National Weather Service		FY 2006		FY 2007		FY 2008		FY 2008		Inc/Dec	
		Actuals		Currently Available		Base Program		Estimate		from Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Operations and Research											
Local Warnings and Forecasts	Pos/BA	4,277	619,581	4,289	637,960	4,289	650,920	4,289	658,214	-	7,294
	FTE/OBL	4,222	625,493	4,131	640,063	4,133	650,920	4,133	658,214	-	7,294
Central Forecast Guidance	Pos/BA	316	51,081	316	51,063	316	52,208	316	53,248	-	1,040
	FTE/OBL	299	51,417	306	51,063	306	52,208	306	53,248	-	1,040
Total: Operations and Research	Pos/BA	4,593	670,662	4,605	689,023	4,605	703,128	4,605	711,462	-	8,334
	FTE/OBL	4,521	676,910	4,437	691,126	4,439	703,128	4,439	711,462	-	8,334
Systems Operation & Maintenance (O&M)											
Systems Operation & Maintenance	Pos/BA	184	84,748	184	95,590	184	96,345	184	96,345	-	-
	FTE/OBL	188	83,898	188	96,864	188	96,345	188	96,345	-	-
Total: Systems Operation & Maintenance (O&M)	Pos/BA	184	84,748	184	95,590	184	96,345	184	96,345	-	-
	FTE/OBL	188	83,898	188	96,864	188	96,345	188	96,345	-	-

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Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS

Activity: National Weather Service
 Subactivity: Operations and Research

	Object Class	2008 Increase
25.2	Other services	12,090
99	Total Obligations	12,090

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS

Activity: National Weather Service
 Subactivity: Operations and Research

	Object Class	2008 Decrease
25.2	Other services	(3,756)
99	Total Obligations	(3,756)

NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE
OPERATIONS RESEARCH AND FACILITIES
FY 2008 OVERVIEW

SUMMARIZED FINANCIAL DATA

(\$ in thousands)

Operations Research and Facilities	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Environmental Satellite Observing Systems	102,761	97,250	99,452	105,152	5,700
NOAA's Data Centers & Information Services	71,672	48,000	52,750	52,650	-100
TOTAL	174,433	145,250	152,202	157,802	5,600
FTE	716	678	678	678	0

For FY 2008, NOAA is requesting a total of \$157,802,000 and 0 FTE for National Environmental Satellite, Data, and Information Service (NESDIS) Operations, Research, and Facilities, a net increase of \$5,600,000, and 0 FTE. As the NOAA satellite and information service, NESDIS is responsible for managing all aspects of remotely gathered environmental data. This includes procurement, launch, operation, product development, and product distribution for the nation's civil operational environmental satellites. Additionally, NESDIS manages the NOAA environmental data collections, provides assessments that describe the climate, and disseminates data and information to meet the needs of users in commerce, industry, agriculture, science and engineering, as well as federal, state, and local government.

NESDIS has two sub-activities in the Operations, Research and Facilities appropriation: 1) Environmental Satellite Observing Systems; and 2) NOAA Data Centers and Information Services.

The goals of the Environmental Satellite Observing Systems include: (1) maintaining a system of polar-orbiting satellites to obtain global environmental data; (2) maintaining a system of geostationary satellites to provide near-continuous environmental observations of the Earth's western hemisphere; (3) acquiring, processing, and analyzing data from NOAA, the Department of Defense (DoD), and other earth-observing satellites; (4) supplying data, interpretations, and consulting services to users; (5) introducing new technology and processes to improve environmental satellite system capabilities; (6) determining requirements for future satellite systems, (7) operating, maintaining, and serving as the lead US agency for the Search and Rescue mission control center; (8) monitoring global sea ice conditions to support safe and effective marine transportation, (9) and demonstrating better ways to use and distribute data from NOAA, the National Aeronautic and Space Administration (NASA), and other satellites, aircraft, and laboratory investigations.

The Environmental Satellite Observing Systems sub-activity includes the following budget line items for FY 2008:

- Satellite Command and Control, including NOAA Satellite Operations Facility (NSOF) operations
- Product Processing and Distribution
- Product Development, Readiness, and Application
- Commercial Remote Sensing Licensing and Enforcement

The goal of the NOAA Data Centers & Information Services sub-activity is to provide worldwide environmental data and information products and services in the atmospheric, oceanographic, marine, solid earth, and solar-terrestrial sciences to meet the needs of users in commerce, industry, agriculture, science and engineering, the general public, and Federal, state, and local agencies. Environmental data and information maintained by NOAA are vital to every economic sector and are used in making decisions critical to; national defense; industrial productivity; energy development and distribution; management and planning of water resources; world food supplies; public health, safety, and welfare; and development of natural resources. Environmental scientists and observers also have a critical need for a long time-series of historical and recent global data to assess long-term environmental trends, to evaluate the current state of the environment, and to predict future environmental conditions and events.

In FY 2008, the NOAA Data Centers and Information Services sub-activity consists of the following budget line items:

- Archive, Access, and Assessment
- Coastal Data Development
- Regional Climate Centers
- Environmental Data Systems Modernization

NESDIS' activities support all four Mission Goals in the NOAA Strategic Plan: Protect, Restore, and Manage The Use of Coastal and Ocean Resources through an Ecosystem Approach to Management; Understand Climate Variability and Change To Enhance Society's Ability To Plan and Respond; Serve Society's Needs For Weather and Water Information; and Support The Nation's Commerce With Information For Safe, Efficient, and Environmentally Sound Transportation. Activities also support NOAA's Mission Support Goal to Provide Critical Support for NOAA's Mission.

Research and Development Investments

The NOAA FY 2008 Budget estimates for its activities, including research and development programs, are the result of an integrated, requirements-based Planning, Programming, Budgeting, and Execution System (PPBES) that provides the structure to link NOAA's strategic vision with programmatic detail, budget development, and the framework to maximize resources while optimizing capabilities. The PPBES process incorporates the President's Management Agenda and the Office of Science and Technology Policy's Research and Development Investment Criteria (relevance, quality, and performance) for NOAA's R&D programs, and leads to NOAA budget proposals that reflect the R&D investment criteria.

Significant Adjustments-to-Base (ATBs):

NOAA requests an increase of 0 FTE and \$2,623,000 to fund adjustments for NESDIS activities. Within this increase, program totals will fund inflationary adjustments for labor and non-labor.

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Subactivity: Environmental Satellite Observing Systems
Line Item: Satellite Command and Control

GOAL STATEMENT:

The goal of the Satellite Command and Control program is to provide efficient and secure command and control of NOAA and Department of Defense (DoD) operational environmental satellites to ensure timely and uninterrupted delivery of data to users.

BASE DESCRIPTION:

The Nation requires an environmental satellite system capable of providing timely and accurate environmental data. Early warning of major weather events saves countless lives and prevents substantial property damage. Billions of dollars in damage and hundreds of lives are lost each year due to natural disasters. These losses would be significantly worse if NOAA satellite data and services were unavailable due to interference with, or the failure of, critical satellite command and data acquisition infrastructure.

The NOAA Satellite Command and Control program forms the backbone of the ground systems that command, control, and acquire data from on-orbit satellites with an estimated value of \$4.5 billion on 24 hours per day, 365 days per year basis. The Satellite Command and Control program monitors satellite health and safety; schedules satellite operations and data acquisition to meet user needs; evaluates satellite systems performance; commands spacecraft; supports the National Aeronautics and Space Administration (NASA) during launch, activation, and evaluation of new satellites; and assesses satellite and ground station anomalies.

The Satellite Command and Control program provides the day-to-day operations of the NOAA Satellite Operations Control Center in Suitland, Maryland, and satellite command and data acquisition stations in Wallops, Virginia, and Fairbanks, Alaska. From these ground stations, NOAA operates and acquires data from Polar-orbiting Operational Environmental Satellites (POES), Geostationary Operational Environmental Satellites (GOES), and DoD Meteorological Satellite Program (DMSP). Data from other non-NOAA operational and research satellites are also received to support specific NOAA missions. The NOAA Satellite Command and Control program ensures acquisition and near real-time delivery of satellite data to product processing centers that, in turn, support NOAA's National Weather Service mission to protect lives and property during severe weather events.

Base activities support Objective 3.5 "Provide Critical Support for NOAA's Mission" under the Department of Commerce Strategic Goal of "Observe, Protect, and Manage the Earth's Resources to Promote Environmental Stewardship".

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Environmental Satellite Observing Systems	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Satellite Command and Control					
Satellite Command and Control	34,094	36,219	36,968	36,968	-
NSOF Operations	6,377	7,531	7,531	7,531	-
TOTAL	40,471	43,750	44,499	44,499	-
FTE	179	179	179	179	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

Subactivity: Environmental Satellite Observing Systems
Line Item: Product Processing and Distribution

GOAL STATEMENT:

The Product Processing and Distribution (PP&D) program provides the Nation with specialized expertise and computing systems that ingest, process, analyze and distribute satellite-derived products and services that protect U.S. lives and property while enhancing the Nation's environmental, national, homeland, and economic security. PP&D ingests data from Earth-observing satellites to provide the highest quality products and services to its users.

BASE DESCRIPTION:

PP&D provides satellite-derived products and services using data from NOAA, the Department of Defense, and NASA environmental satellites, as well as foreign and commercial spacecraft, to national and international customers and users on a 24 hours-per-day, 7 days-per-week basis. PP&D products enable NOAA to accurately track the location, extent and duration of severe weather such as hurricanes, tornadoes, and winter storms; support development of flash flood warnings; track volcanic ash clouds and severe winds that threaten aviation safety; detect remote wildland fires; monitor coastal ecosystem health; identify and monitor maritime hazards from sea ice; and assist in search and rescue activities. PP&D is the operational interface with NOAA's National Weather Service and supplies the satellite data that makes up more than 99 percent of the information used in numerical weather prediction models. PP&D provides approximately 450 operational products organized into three categories: Atmospheric, Oceanographic, and Terrestrial.

The PP&D program is constantly assessing and using data from advanced satellite sensors to improve operational support to its customers. It also supports activities to improve the effectiveness and interoperability of national systems for sharing natural disaster information. By using maps and data generated by remote- and land-based sensors, this information is made widely accessible to all government agencies and other entities involved in managing and mitigating the impacts of disasters. PP&D products are widely used by all branches of the U.S. Armed Services and the Department of Homeland Security.

Included in the PP&D operations is NOAA's contribution to the joint National Ice Center, which monitors global sea ice conditions to support safe and effective maritime transportation in the Polar Regions, Great Lakes, and Arctic and North Atlantic waters. This service is critical to National Weather Service warnings in ice-prone sea lanes, U.S. Coast Guard rescue attempts, and civilian and military shipping communities.

PP&D provides NOAA's contribution to the operations of the U.S. mission control center for satellite-assisted search and rescue program (SARSAT). Since SARSAT's inception, more than 18,500 people have been saved worldwide. In 2003, NOAA expanded the SARSAT program to include the use of Global Positioning System (GPS) Personal Locator Beacons. This has greatly improved the SARSAT program's ability to save lives faster than before.

NOAA, the U.S. Navy and the U.S. Coast Guard jointly operate the U.S. National Ice Center (NIC). The NIC supports civil and military maritime communities by monitoring global sea ice conditions to support safe and effective marine transportation.

Satellites provide the basic capability to rapidly and accurately observe these events; however, unprocessed satellite data cannot be used directly by these or other critical applications without the around-the-clock PP&D operations.

Base activities support Objectives 3.4 "Support the Nation's Commerce with Information for Safe, Efficient, and Environmentally Sound Transportation" and 3.5 "Provide Critical Support for NOAA's Mission" under the Department of Commerce Strategic Goal of "Observe, Protect, and Manage the Earth's Resources to Promote Environmental Stewardship".

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Environmental Satellite Observing Systems	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Product Processing and Distribution					
Product Processing and Distribution	27,161	27,100	27,808	30,408	2,600
TOTAL	27,161	27,100	27,808	30,408	2,600
FTE	126	123	123	123	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Enterprise IT Security (0 FTE and +\$2,600,000): NESDIS requests 0 FTE and an increase of \$2,600,000 to provide essential IT Security infrastructure for NESDIS Systems located in the new NOAA Satellite Operations Facility (NSOF). This funding increase will address security shortfalls identified in the FY 2005 Certification Accreditation process and provide minimal baseline IT security controls for NSOF systems - five of which are National Critical systems that provide critical infrastructure services to the American people. The systems that will most benefit from this increase are defined as follows:

–ESPC NOAA5001 (will replace CEMSCS): This system provides the high-performance computational resources necessary to prepare daily weather forecasts, track hurricanes, and supply the nation with public weather warnings.

–GOES NOAA5003: This system provides infrastructure and computational resources necessary to prepare advanced warnings of thunderstorms, flash floods, hurricanes, and other severe weather.

–POES NOAA5026: This system provides infrastructure necessary to collect global data on a daily basis for a broad range of environmental monitoring applications including weather analysis and forecasting, climate research and prediction, volcanic eruption monitoring, forest fire detection, global vegetation analysis and search and rescue.

–DMSP NOAA5027: This system provides the space and ground-based system used for collection and timely dissemination of global environmental data to the DOD and other governmental agencies.

–DCS NOAA5004: This system provides Federal, state and local agencies the ability to monitor the environment through distribution of observations from surface-based platforms via NOAA satellites.

–SARSAT NOAA 5023: This system provides the operations and maintenance for the Search and Rescue Satellite Aided Tracking system (SARSAT). This includes the ground systems and local user terminal infrastructure necessary to relay signals from emergency beacons to federal search and rescue authorities. This system also serves as a backup (redundant) system capabilities for search and rescue activities in Australia, Japan and Canada.

This funding increase represents a down payment on NESDIS IT security infrastructure requirements that are a result of security requirements that were largely unrecognized until the institution of a markedly more rigorous Certification and Accreditation process in FY 2005. Since the original identification of this issue, requirements have continued to escalate and we believe that trend will continue for the foreseeable future. This funding request covers only the most critical of IT assets in the NESDIS portfolio, and is intended to fund the implementation of the National Institute of Standards and Technology (NIST) Federal Information Processing Standard (FIPS) 200 minimum required security controls. These security controls are mandated and can not be waived, making the implementation a non-discretionary action. NESDIS has diligently labored to improve its IT security program, but without additional funding, further improvements are not possible. NOAA's future missions require enhanced capabilities to manage better and more secure information in support of the nine societal benefits established under the framework of the Global Earth Observation System of Systems (GEOSS). Adequately funded NSOF enterprise IT security will provide enduring solutions to high-risk problems and offer the potential to save millions of dollars, dramatically improve service to the American public, strengthen public confidence and trust in the performance and accountability of NOAA's data and information.

Statement of Need:

All NOAA National Critical (High Impact), Mission Critical (Moderate Impact) and Business Essential (Low Impact) Systems must be in full compliance with the Federal Information Security Management Act (FISMA), Clinger Cohen Act, Office of Management and Budget (OMB) Circular A-130, Appendix III, Security of Federal Automated Information Resources, National Institute of Standards and Technology Publications/Guidance and Federal Information Processing Standards, and the Department of Commerce IT Security Policies. NESDIS has diligently labored to improve its IT security program. This funding addresses only the most critical requirements for a minimally acceptable IT security posture. The bulk of this funding will address particularly vexing problems in implementing legally mandated security controls in a legacy system environment, containing the majority of NOAA's National Critical (High Impact) systems. In addition, these National Critical systems make up a major portion of DOC National Critical systems and correcting level II Security control inadequacies will have a major impact on the overall security posture of the Department.

FY 2008 Proposed Actions:

Funding will be used to hire contractor support for improving NSOF physical security, monitoring security controls, strengthening security program management and maintaining and enhancing critical infrastructure protection. Typical work activities will include ongoing configuration of systems (i.e. hardware and software), continuous update and maintenance of system security documentation (including system's certification and accreditation

package), intrusion detection and prevention, incident handling, rapid response to evolving cyber security laws, polices and standards, and system reporting such as the Plan of Action and Milestones (POAM) reports.

Benefits:

This budget increase begins to address a gap in providing adequate security resources to protect and maintain these information assets, continuously monitor the current accreditation baseline, respond to increasing cyber security requirements (especially those issued by NIST) and to create a mature security presence within the NOAA Satellite Operations Facility.

Performance Goals and Measurement Data:

This increase will support Objective 3.5 “Provide Critical Support for NOAA’s Mission” under the Department of Commerce Strategic Goal of "Observe, Protect, and Manage the Earth’s Resources to Promote Environmental Stewardship".

- Percent of NOAA managed satellite data processed and distributed to customers within targeted time
- Percent of non-NOAA managed satellite data processed and distributed within targeted time

Performance Measure	Without FY 2008 Increase	With FY 2008 Increase
Provide timely and efficient environmental satellite data/products	Inability to ensure the continued operation of information systems and ensure data integrity in support of NOAA’s four mission goals. Failed compliance with NOAA and DOC IT security regulations and Federal law.	Ensure the continued production of accurate, quality-controlled satellite data/products to NOAA’s stakeholders. Compliance with law, rule and regulation.

Subactivity: Environmental Satellite Observing Systems
Line Item: Product Development, Readiness & Application

GOAL STATEMENT:

The goal of the NOAA's Product Development, Readiness, and Applications program (PDR&A) is to provide applications-focused research that will develop and evaluate prototype products, algorithms, and pre-operational products to improve existing operational satellite products and services using data from current and next generation environmental satellites.

BASE DESCRIPTION:

The Nation needs to enhance its use of satellite data to improve and extend weather forecasts, to expand environmental monitoring and assessment capabilities, and to provide new and improved tools for scientifically-based ecosystems management. In the next few years, the number and quality of satellite instruments will grow significantly, providing enhanced data capable of allowing major improvements in weather prediction accuracy. To make these improvements, targeted research and a cadre of scientists and computing systems dedicated to development is necessary. The PDR&A program ensures the highest accuracy of NOAA's current satellite data and products via a robust and rigorous operational environmental satellite data calibration/validation program. This effort improves product quality for the benefit of all users. The program supports pre-operational development of products for weather, atmospheric, climate, land, wildland fire, and oceans and coastal applications. NOAA's Ocean Remote Sensing Program supports sea surface temperature, ocean color, satellite altimetry, oceanic rainfall measurements, and coastal monitoring tools for the CoastWatch program.

PDR&A supports a portion of the funding for the Joint Center for Satellite Data Assimilation (JCSDA), which accelerates the application of satellite data for improving weather forecast and other environmental models. The JCSDA was established to speed the development of new satellite data assimilation science. NOAA (NWS, OAR, and NESDIS), NASA and DoD are partners in this coordinated national effort to more fully realize the potential of the vast quantities of new satellite data that are becoming available. The JCSDA is also a risk reduction measure designed to accelerate NPOESS and GOES-R data utilization for the development of numerical weather prediction models, and forecast models that will lead to increased accuracy and longer-range forecasts. In the next few years, the number and quality of satellite instruments will grow significantly, providing an exponential increase in higher quality data capable of allowing major improvements in the accuracy of weather prediction. PDR&A also incorporates the latest academic findings into its work through competitively awarded Cooperative Institutes with academic institutions (Universities of Wisconsin, Maryland, Colorado State, and Oregon State, City College of New York). The academic expertise and the results of investigations are infused into product development, readiness, and applications that either lead to improvements in existing products or to the development of new products or sensors.

Base activities support Objectives 3.1 "Protect, Restore, and Manage the Use of Coastal and Ocean Resources Through an Ecosystem Approach to Management", 3.3 "Serve Society's Need for Weather and Water Information", and 3.5 "Provide Critical Support for NOAA's Mission" under the Department of Commerce Strategic Goal of "Observe, Protect, and Manage the Earth's Resources to Promote Environmental Stewardship".

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Environmental Satellite Observing Systems	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Product Development, Readiness & Application					
Product Development, Readiness & Application	16,987	16,744	17,415	20,015	2,600
Product Development, Readiness & Application (Ocean Remote Sensing)	3,925	3,861	3,861	3,861	-
Coral Reef Monitoring	-	737	737	737	-
Research to Ops / NOAA-NASA partnerships	3,945	-	-	-	-
Joint Center/Accelerate Use of Satellites	3,247	3,258	3,258	3,258	-
Global Wind Demo	3,649	-	-	-	-
Remote Sensing Center	1,972	-	-	-	-
TOTAL	33,725	24,600	25,271	27,871	2,600
FTE	102	101	101	101	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Product Development, Readiness & Application (0 FTE and +\$2,600,000): NOAA requests an increase of 0 FTE and \$2,600,000 for a total of \$27,871,000. The requested increase will be used for the following:

Calibration and Validation of Engineering Data (0 FTE and +\$2,600,000): NOAA requests an increase of 0 FTE and \$2,600,000 to provide calibration and validation of engineering data to environmental measurements. This activity will improve science and technical capabilities, and accelerate research to operations for new system and instrument capabilities for improved weather forecast models. The new generation of weather forecast models; the Weather Research and Forecast (WRF) model and the Global Forecast System (GFS) will be enhanced by the development of better products and data

This funding provides critical and sustained science improvement, calibration, validation and quality control commensurate with increasing operational systems such as MetOp, the Infrared Atmospheric Sounding Interferometer (IASI), and the Advanced Scatterometer (ASCAT). This

increase will provide for developing multidisciplinary multi-satellite products from new satellites/instruments to meet national needs for automated quality control, cascading product streams and product timeliness and instrument improvements to increase the usefulness of operational satellite data.

Statement of Need:

Without calibration and validation, satellite data will be unusable or degrade over time, resulting in reduced accuracy of NOAA's operational forecasts, warnings and assessments. Additional funding is required to sustain and improve data and product accuracy requirements for new capabilities such as MetOp (IASI, ASCAT). Given the delays to NPOESS, MetOp will provide the only source of hyperspectral instrument coverage. This data is essential to assist with the mitigation efforts to bridge the potential gaps between the last POES satellite and the first NPOESS satellite. Without this data, we will be missing key drivers in long-range weather forecast models. We also need to address requirements for the NPOESS Preparatory Project (NPP), which will play an important role in NPOESS risk reduction and continuity of polar observations. Calibration for MetOp includes new technology (Infrared Atmospheric Sounding Interferometer or IASI) plus many of the POES heritage instruments. MetOp calibration and validation activities add to the workload while we maintain the POES mission flyouts. This is true because each instrument has its own unique characteristics and must be handled individually even though the instrument design may be exactly the same. In addition, the instruments are increasing in complexity and data rate. For example, the current operational sounder (High Resolution Infrared Radiation Sounder or HIRS) has 20 spectral wavelength bands and the key MetOp instrument (IASI) has 8000 spectral wavelength bands. This significant change in instrument capability and complexity adds to the workload of calibrating the instrument and validating the many products derived from the data.

Cal/val is an ongoing activity for a given spacecraft and needs to be maintained until the instruments fail or the system is turned off. In addition, after the instrument has been deactivated, the satellite data is reanalyzed for climate applications to help meet climate requirements and specify climate trends. Without continuous cal/val the return on investment in all the products generated from these satellites will be significantly reduced. Without Cal/val, the sustained accuracy of weather forecasts and warnings cannot be maintained. This will put lives and property at risk through less accurate forecasts generated and distributed by NOAA and less accurate decisions by users. Ninety-nine percent of the data used in the National Weather Service prediction models comes from satellite data.

FY 2008 Proposed Actions:

FY 2008 funds will be used to provide contract support for calibration and validation of new data received from MetOp-A IASI and ASCAT, and NPP. Activities funded under the FY 2008 request will result in operational web sites with the latest calibration coefficients, tracking of data stream statistical properties, product validation on a daily and running average basis and other quantities that will make the data immediately useful for numerical weather prediction and other users.

Benefits:

This funding will ensure sustained calibration and validation of MetOp-A IASI and ASCAT data which is essential to filling the void between NASA instruments and the availability of the first NPOESS satellite.

Performance Goals and Measurement Data:

This increase will support Objective 3.5 “Provide Critical Support for NOAA’s Mission” under the Department of Commerce Strategic Goal of "Observe, Protect, and Manage the Earth’s Resources to Promote Environmental Stewardship".

- Number of new or significantly improved products transitioned to operations
- Number of sensors calibrated to deliver required accuracy

Performance Measure	Without FY 2008 Increase	With FY 2008 Increase
Number of MetOp and NPP sensors / products validated and intercalibrated.	FY 2008 - 0 FY 2009 - 0	FY 2008 - 8 FY 2009 - 12
New or significantly improved products transitioned to operations	Degradation in products and risk accuracy of NOAA’s operational forecasts, warnings, and assessments.	Provide accurate, quality-controlled satellite data/products to NOAA’s stakeholders

Subactivity: Environmental Satellite Observing Systems
Line Item: Office of Space Commercialization

GOAL STATEMENT:

NOAA manages the Office of Space Commercialization (OSC) for the Department of Commerce. The Department of Commerce plays a key role in the development of U.S. Government policies that foster the growth and competitiveness of the U.S. commercial space industry. It serves as an advocate for the industry within interagency deliberations affecting the future of space, encouraging the promotion of commercial interests as well as national security, foreign policy, and other interests. NOAA supports the Department's efforts to advance the development and implementation of the Administration's new space sector policies for: commercial remote-sensing; Positioning, Navigation, and Timing (PNT); and space transportation.

The National Space-Based PNT Executive Committee is a senior-level policy making body chaired jointly by the Departments of Defense and Transportation. Its membership includes the Departments of State, Commerce, Homeland Security, as well as NASA. The Department of Commerce committed to hosting the NPCO and through NOAA's Office of Space Commercialization (OSC) and providing staff support to interagency PNT activities.

BASE DESCRIPTION:

Office of Space Commercialization

The Office of Space Commercialization (OSC), managed by NOAA for the Department of Commerce, is responsible for developing space-related policies and promotion of the capabilities of the U.S. commercial space industry. OSC represents the Department of Commerce in negotiations with foreign countries to ensure free and fair trade internationally in the areas of space commerce. The Office assists U.S. commercial providers in their efforts to expand their business with the U.S. Government and promotes commercial provider investment by performing economic analysis on space markets. OSC acts as an industry advocate within the executive branch of the Federal Government to ensure the Federal Government uses commercially available space goods and services to meet their requirements, avoids legal and regulatory impediments, and does not compete with the U.S. commercial space industry.

National Space-Based PNT Coordination Office (NPCO)

The Office of Space Commercialization, on behalf of the Department of Commerce, also provides support to the National Space-Based Positioning, Navigation, and Timing (PNT) Executive Committee. The 2004 U.S. Space-Based PNT Policy established, through Presidential Directive, a permanent National PNT Executive Committee to manage the Global Positioning System (GPS) and its U.S. Government augmentations as a national asset. 2004 U.S. Space-Based Positioning, Navigation, and Timing (PNT) National Policy established, through Presidential Directive, a permanent National Space-Based PNT Executive Committee to manage the Global Positioning System (GPS) and its U.S. Government augmentations as a national asset. The policy further directed the Executive Committee to establish the National Space-Based PNT Coordination Office (NPCO) to serve as the Secretariat and perform

those functions delegated by the Executive Committee. This same policy dissolved the Interagency GPS Executive Board that was established in 1996 to perform these functions. The Deputy Secretary of Commerce is a member of the Executive Committee and OSC provides personnel and facility support in addition to performing studies and related activities in response to NPCO tasking and Executive Committee responsibilities.

Base activities support Objective 3.4 “Support the Nation’s Commerce with Information for Safe, Efficient, and Environmentally Sound Transportation” under the Department of Commerce Strategic Goal of "Observe, Protect, and Manage the Earth’s Resources to Promote Environmental Stewardship". Base activities also support NOAA’s FY 2006-FY 2011 Strategic Plan Goals through the Commerce & Transportation Goal by advocating the use of cost-effective remote-sensing, PNT, and other commercial space capabilities to further NOAA’s mission.

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Environmental Satellite Observing Systems	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Office of Space Commercialization					
TOTAL	176	588	612	612	-
FTE	4	4	4	4	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

Subactivity: Environmental Satellite Observing Systems
Line Item: Group on Earth Observations (GEO)

GOAL STATEMENT:

The intergovernmental *Group on Earth Observations* (GEO) is leading a worldwide effort to build a Global Earth Observation System of Systems (GEOSS) over the next 10 years. GEOSS will work with and build upon existing national, regional, and international systems to provide comprehensive, coordinated Earth observations from thousands of instruments worldwide, transforming the data they collect into vital information for society.

BASE DESCRIPTION:

GEO comprises 64 member countries, the European Commission and 43 participating international organizations. GEO is established on a voluntary and legally non-binding basis, with voluntary contributions to support activities. GEO consists of a Plenary, an Executive Committee, a Secretariat, and committees and working groups. GEO meets in plenary at least annually at the senior-official level, and periodically at the Ministerial level. GEO takes decisions by consensus of its Members. The GEO Secretariat was established in Geneva in May 2005, serves as the center of international coordination for the worldwide GEOSS effort.

Base activities support the objective, “Advance understanding and predict changes in the Earth’s environment to meet America’s economic, social, and environmental needs” under the Department of Commerce strategic goal of “Observe, protect, and manage the Earth’s resources to promote environmental needs.”

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Environmental Satellite Observing Systems	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Group on Earth Observations (GEO)					
TOTAL	-	-	-	500	500
FTE	-	-	-	-	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Group on Earth Observations (0 FTE and +\$500,000): NESDIS requests 0 FTE and an increase of \$500,000 to fund the Group on Earth Observations (GEO).

Statement of Need: GEO would cease to exist without the voluntary contributions of its members. NOAA has been a primary “driver” for GEO because of the benefits to be realized for NOAA, the Department of Commerce, our nation and the world. NOAA has provided strong leadership to GEO since its organization as an *ad hoc* group on July 31, 2003 and through its formation as a permanent international body. The NOAA Administrator serves as a Co-Chair of the GEO Executive Committee. The role of the *GEO Executive Committee*, which consists of representatives of 12 regionally elected GEO Members, is to facilitate the decisions of the GEO Plenary and to oversee and to make recommendations on the implementation of those decisions.

The NOAA Assistant Administrator for Satellite and Information Services serves as the Co-Chair of the U.S. Group on Earth Observations (USGEO). USGEO, a standing subcommittee of the White House Committee on Environment and Natural Resources, is the U.S. interface with GEO and is supporting GEO through its *Strategic Plan for the U.S. Integrated Earth Observation System (IEOS)* and the U.S. Ocean Action Plan, consistent with FY 2007 Administration Research and Development priorities.

Proposed Actions: In direct support of the FY 2007 Administration Research and Development Budget Priorities (OMB/OSTP letter, dated July 8, 2005, same subject), NOAA proposes contributing to the GEO Secretariat operating fund to ensure the goals of GEOSS are achieved.

Benefits: GEOSS, an international effort of over 60 countries and over 40 intergovernmental organizations working together to affect significant societal benefits, is a key initiative featured prominently in the G-8 Science and Technology Plan. The societal benefits to be addressed by GEOSS, developed by GEO and published in the GEOSS 10-Year Implementation Plan are:

- Reducing loss of life and property from natural and human induced disasters
- Understanding environmental factors affecting human health and well-being
- Improving management of energy resources
- Understanding, assessing, predicting, mitigating, and adapting to climate variability and change
- Improving water resource management through better understanding of the water cycle
- Improving weather information, forecasting, and warning
- Improving the management and protection of terrestrial, coastal and marine ecosystems
- Supporting sustainable agriculture and combating desertification
- Understanding monitoring, and conserving biodiversity

Performance Goals and Measurement Data

This increase will support Objective 3.5 “Provide Critical Support for NOAA’s Mission” under the Department of Commerce Strategic Goal of "Observe, Protect, and Manage the Earth’s Resources to Promote Environmental Stewardship".

Performance Measure	Without FY 2008 Increase	With FY 2008 Increase
Supplement NOAA’s strong position of leadership on the Group on Earth Observations with financial support.	NOAA will not be able to honor its commitment to share financial support of GEO with other sponsoring organizations and member countries.	NOAA will be able to bolster its strong leadership position of this critical effort by providing financial support.

Subactivity: Environmental Satellite Observing Systems
Line Item: Commercial Remote Sensing Licensing & Enforcement

GOAL STATEMENT:

The Commercial Remote Sensing Licensing and Enforcement (CRSL&E) program works with its interagency and international partners to facilitate timely and well-informed regulatory decisions, which advance U.S. economic, foreign policy, and national security interests. The program licenses remote sensing space systems; performs associated research, monitoring and compliance activities; and ensures that the operation of these systems is consistent with the terms and conditions of their operating licenses.

BASE DESCRIPTION:

The Nation requires a consistent and transparent regulatory process for licensing commercial remote sensing space systems in order to promote U.S. technological competitiveness and economic security, while ensuring satellite operation is consistent with our national security, intelligence, and foreign policy needs. The CRSL&E program supports these requirements while furthering the Nation's homeland security and national security missions.

The CRSL&E program coordinates interagency review of satellite license applications, amendments, and significant foreign agreements. NOAA licenses commercial remote sensing space systems and performs associated monitoring and compliance pursuant to the Secretary of Commerce's statutory responsibilities, which have been delegated to NOAA. Prior to issuing licenses, NOAA must consult with the Departments of Defense and State to ensure license compliance with national security and foreign policy, respectively. NOAA reviews licensees' ongoing procedures to protect sensitive data. NOAA also works closely with other U.S. Government agencies to implement policy and ensure international coordination. During national security or foreign policy crises, the Secretary of Commerce may exercise limitations on routine commercial operations in response to a request from the Secretary of Defense or the Secretary of State.

Major monitoring and compliance activities supported by NOAA include review of quarterly license reports, on-site inspections, audits, license violation enforcement, and implementation of restrictions during national security and foreign policy crises. The number of license applications and revocations vary each year, and are not predictable. The Department of Commerce's Bureau of Industry and Security is responsible for enforcement and ensuring compliance with the terms of the license agreements.

The current estimated global market for remote sensing imagery and services is approximately \$2.9 billion, and is forecast to grow to \$6.0 billion by 2010. Dramatic future growth is expected due to growing civil and military user requirements, improvements in aerospace and information technologies, and e-commerce.

U.S. companies will provide exciting new sources of environmental products and services, which will strengthen our military capabilities, safeguard our economic infrastructure, and protect our natural resources. The regulatory framework, pursuant to the 2003 U.S. Commercial Remote Sensing Policy,

recognizes the support that is required for growth of this industry. The CRSL&E program ensures a vigorous U.S. commercial remote sensing industry to support critical U.S. national security, foreign policy, and homeland security requirements, and advance our economic and technological interests worldwide.

Base activities support Objective 3.4 “Support the Nation’s Commerce with Information for Safe, Efficient, and Environmentally Sound Transportation” under the Department of Commerce Strategic Goal of "Observe, Protect, and Manage the Earth’s Resources to Promote Environmental Stewardship".

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Environmental Satellite Observing Systems	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Commercial Remote Sensing Licensing & Enforcement					
Commercial Remote Sensing Licensing & Enforcement	1,228	1,212	1,262	1,262	-
TOTAL	1,228	1,212	1,262	1,262	-
FTE	2	2	2	2	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

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Subactivity: NOAA's Data Centers & Information Services
Line Item: Archive, Access & Assessment

GOAL STATEMENT:

The goal of Archive, Access, and Assessment (AAA) is to provide long-term archive, access (customer service), stewardship, and assessments of observation data to a wide range of worldwide users. Through NOAA's three National Data Centers (NNDCs), environmental data, information, products, and services support atmospheric, oceanographic, and the solid earth and solar-terrestrial physical sciences to facilitate sustained economic growth, scientifically sound environmental management, and public safety to the Nation and the international community.

BASE DESCRIPTION:

The AAA line item provides the core funding for the three NNDCs: the National Climatic Data Center, the National Oceanographic Data Center, and the National Geophysical Data Center. This line item also supports the nation-wide NOAA library system, and data rescue activities through the Climate Database Modernization Program (CDMP).

The NNDCs provide the Nation with the long-term stewardship archive of past, present, and future environmental observations and associated data recorded across the United States and globally. Access to long time series of environmental data is critical to satisfying the Nation's wide range of needs related to the national security, the economy, the environment, and public safety. Approximately one-third of U. S. economic activity is weather sensitive and this figure continues to increase. Business and government policies and decisions impacting water and energy management, manufacturing, transportation, food production, public health, and many other socio-economic issues depend on quality climate and weather data records. Collectively, the three national data centers acquire over one petabyte (10^{15}) of new data annually, provide access to an archive exceeding 3.5 petabytes, and support over 100 million worldwide queries per year, providing data transfers to over two million customers. By 2017, the projected ingest of new data will exceed seven petabytes per year and the cumulative archive volume managed and accessible to customers will exceed 144 petabytes.

Climate Archive, Access, and Assessment: The National Climatic Data Center (NCDC), located in Asheville, North Carolina, is the largest climate data center in the world, and is the Nation's designated federal records center for climate data. The NCDC receives, processes, archives, provides access, disseminates, and conducts objective assessments of remote (satellite) and in-situ (land, ocean, and atmosphere) observations. National and international observing systems provide both a national and a global perspective state of the Earth's weather and climate. Paleoclimate "proxy" records, i.e., pre-instruments, such as ice and coral cores, and tree rings, are also collected, archived, and made available to the global community of researchers and other interested users.

The NCDC also manages the conversion of historical data records to electronic format and accessibility via the Internet through the Climate Database Modernization Program. Over the past three years, the NCDC, in cooperation with scientists and other NOAA activities and federal agencies, has designed

and is deploying the Nation's first climate quality observing network, the U. S. Climate Reference Network (USCRN). The NCDC is a designated World Data Center (WDC) for Meteorology and WDC for Paleoclimatology.

The NCDC provides data, information, products and services to all sectors of the economy, delivering weather and climate data and information to nearly two million customers each year for planning, operations, and minimizing the risk of weather and climate extremes. Over one-third of the Gross National Product is weather and climate sensitive. The NCDC provides access and data retrieval via the worldwide web/Internet, and also responds to thousands of requests received via e-mail, phone, fax, and the mail. The NCDC routinely produces operational products for climate monitoring, such as the weekly and monthly State of the Climate reports, including the U.S. and the North American Drought Monitoring Reports. These and other assessments support business and government policy and decision makers and implementers. The NCDC works very closely with the Regional Climate Centers and state climatologists to provide support and services at regional and local levels.

Ocean Archive, Access, and Assessment: The National Oceanographic Data Center (NODC), located in Silver Spring Maryland, is the nation's permanent archive for oceanographic data, ensuring the public's access to and the scientific stewardship of the long-term observational record of the global ocean, U.S. coastal waters and their ecosystems. These holdings document the physical and chemical properties of the oceans, currents, weather and biota as observed from ships, buoys, satellites and other ocean and coastal platforms extending back nearly 150 years. The NODC serves more than 800,000 users annually through the Internet and a variety of publications including atlases and technical reports published on digital media and paper. Examples of the most requested products include the World Ocean Database and Atlas, the International Atlas of the Ocean series, sea surface temperature climatology derived from satellites, and data sets gathered from operational ocean observing systems worldwide. The user community includes resource managers, researchers, educators, and maritime industry professionals from federal, state and local agencies as well as academia and the public. NODC is a designated World Data Center for Oceanography and provides leadership for international data exchange programs through the Intergovernmental Oceanographic Commission and provides national leadership in data management for the U.S. Integrated Ocean Observing System.

The NOAA library, located within the NODC, operates on behalf of all agency programs to support NOAA staff in their work and provide public access to NOAA information. It includes the central library located in Silver Spring Maryland, and regional libraries in Seattle Washington, and Miami Florida. The central library also organizes agency-wide information services such as journal subscriptions and online reference services to support NOAA employees nationwide through 37 affiliated libraries at NOAA facilities throughout the United States. The NOAA library's collection currently consists of over 1.7 million volumes and thousands of electronic documents and visual images on topics related to NOAA's diverse missions.

Geophysical Archive, Access, and Assessment: The National Geophysical Data Center (NGDC), located in Boulder Colorado, builds and maintains long-term archives of scientific data, with a special emphasis on scientific stewardship of data acquired by NOAA observing systems. Data holdings include bathymetry, solar, geophysical, space environment, and earth observing satellite data. The NGDC plays an integral role in the Nation's research into the environment, at the same time providing public domain data to a wide group of users. The NGDC: works very closely with NOAA's Space Environment Center to provide archive and access of space-based and terrestrial space weather observations; works with contributors of scientific data to

prepare documented, reliable data sets, currently maintaining more than 850 digital and analog data sets; and continually develops data management programs that reflect the changing world of geophysics in an era of electronic data access.

The NGDC operates World Data Centers for solid earth geophysics, marine geology and geophysics, solar terrestrial physics, and glaciology for the International Council of Science under the auspices of the U.S. National Academy of Sciences.

Base activities at NOAA's Data Centers support all five objectives under the Department of Commerce Strategic goal of "Observe, Protect, and Manage the Earth's Resources to Promote Environmental Stewardship."

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: NOAA's Data Centers & Information Services	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Archive, Access & Assessment					
Archive, Access & Assessment	25,574	30,045	34,677	34,677	-
Climate Database Modernization KY	7,692	1,361	1,361	1,361	-
Climate Database Modernization MD	5,426	993	993	993	-
Quality Assurance/Quality Control (NC)	-	275	275	275	-
Climate Database Modernization WV	7,692	1,434	1,434	1,434	-
GOES Data Archive Project	2,466	-	-	-	-
National Climatic Data Center	296	-	-	-	-
Integrated Environmental Applications & Information Center	2,959	-	-	-	-
TOTAL	52,105	34,108	38,740	38,740	-
FTE	290	256	256	256	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

Subactivity: NOAA's Data Centers & Information Services
Line Item: Coastal Data Development

GOAL STATEMENT:

The goal of the Coastal Data Development (CDD) program is to provide increased utilization of coastal and oceanographic data using web-based search and access and geographic information systems (GIS) techniques, which will improve understanding, management and use of coastal areas.

BASE DESCRIPTION:

The CDD program is located at and managed by the National Coastal Data Development Center (NCDDC) at the Stennis Space Center, Mississippi. The focus of NCDDC is to improve the quality of web-based search and access tools and implement web-based access to priority data sets from federal, state, and local repositories. Geospatial display capabilities have been added that allow the user to link the data to coastal imagery, charts, bathymetry to obtain a complete “data picture” of the ecosystem of interest. To identify priority data sets, NCDDC coordinates with Federal, State, and local agencies, academic institutions, non-profit organizations and the private sector to create a unified, long term database of coastal data sets available from a variety of sources. The NCDDC develops and maintains a catalog of available coastal data, builds gateways to these sources, ensures the equality of the metadata, populates and updates the databases, and provides on-line search and access and geospatial display for the coastal user community.

The CDD program supports NOAA’s Ecosystem strategic goal which aims to build the capacity of federal, state, local, and international managers to make decisions that protect, restore, and use coastal ecosystem services. The Earth’s coastal ecosystems are home to a wealth of natural resources, and the lives and livelihoods of people are linked to these national treasures. Sustainable growth of our coastal regions is critical to our economy by supporting commercial and recreational fishing, waterborne commerce, home construction, and tourism.

Base activities support Objective 3.1 “Protect, Restore, and Manage the Use of Coastal and Ocean Resources Through an Ecosystem Approach to Management” under the Department of Commerce Strategic Goal of "Observe, Protect, and Manage the Earth’s Resources to Promote Environmental Stewardship".

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: NOAA's Data Centers & Information Services	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Coastal Data Development					
Coastal Data Development	5,380	4,546	4,606	4,506	(100)
TOTAL	5,380	4,546	4,606	4,506	(100)
FTE	-	-	-	-	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Coastal Data Development (0 FTE and -\$100,000): NOAA requests a decrease of 0 FTE and \$100,000 for a total of \$4,506,000 for the Coastal Data Development program. The reduction will be used to offset increases in other higher priority programs.

Subactivity: NOAA's Data Centers & Information Services
Line Item: Regional Climate Centers

GOAL STATEMENT:

The National Climatic Data Center's Regional Climate Centers (RCC) Program was developed to meet local and regional needs for climate data, research-based information, and expertise.

BASE DESCRIPTION:

NOAA will contract with the six regional climate centers to improve access to accurate and reliable climate information. The centers also monitor and report current climate conditions in the regions they serve. The expertise and data resources of the RCC are available to assist in interpreting present conditions, quantifying climate variability, and assessing the likelihood of extreme weather events that often produce major social, economic and environmental impacts in a region.

RCC activities support Objective 3.2 "Understand Climate Variability and Change to Enhance Society's Ability to Plan and Respond" under the Department of Commerce Strategic Goal of "Observe, Protect, and Manage the Earth's Resources to Promote Environmental Stewardship".

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: NOAA's Data Centers & Information Services	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Regional Climate Centers					
Regional Climate Centers	2,959	-	-	-	-
International Pacific Research Ctr (U of H)	1,972	-	-	-	-
TOTAL	4,931	-	-	-	-
FTE	-	-	-	-	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

Subactivity: NOAA's Data Centers & Information Services
Line Item: Environmental Data Systems Modernization

GOAL STATEMENT:

The goal of Environmental Data Systems Modernization (EDSM) is to provide increased access and utility to environmental data, information, products, and services through the use of innovative technologies and techniques.

BASE DESCRIPTION:

Environmental data and information under the stewardship of NOAA are vital to a wide range of weather sensitive sectors of the economy such as, energy and water resources management, aviation, construction, engineering, utilities, food production (agriculture and aquaculture businesses), multi-modal commerce, tourism, manufacturing, and the insurance industry. Business and government leaders and researchers have critical needs for quality long time-series of historical and recent national and global data to evaluate the current status of the environment, to assess long-term environmental trends, and to predict future environmental conditions and events.

Environmental Data Systems Modernization (EDSM) consists of two components: Satellite Active Archive (SAA), and Scientific Data Stewardship / Integrated Observations System (SDS/IOS). The SAA provides immediate web-based digital access to satellite data and is an important part of the Comprehensive Large Array Data Stewardship System (CLASS). SDS/IOS (i.e., collecting, processing, product development, access, distribution, archiving) consists of an integrated suite of functions to preserve and exploit the full scientific value of NOAA's environmental data. Successful implementation of stewardship will maximize the value and utility of NOAA's environmental data, now and in the future.

NOAA is developing an integrated, national and global observing system that will bring together all aspects of environmental monitoring on common platforms to ensure data quality, to manage data efficiently for the long-term, and to make these data easily and readily accessible. NOAA plans to accomplish these goals through a program of Scientific Data Stewardship and the Integrated Observations System..

Base activities support Objective 3.2 "Understand Climate Variability and Change to Enhance Society's Ability to Plan and Respond" under the Department of Commerce Strategic Goal of "Observe, Protect, and Manage the Earth's Resources to Promote Environmental Stewardship".

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: NOAA's Data Centers & Information Services	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Environmental Data Systems Modernization					
TOTAL	9,256	9,346	9,404	9,404	-
FTE	13	13	13	13	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

Department of Commerce
National Oceanic and Atmospheric Administration
National Environmental Satellite, Data, and Information Service
Contribution to the NOAA Strategic Planning Goals and Objectives
(Dollar amounts in thousands)

National Environmental Satellite, Data, and Information Service	FY 2006 Actuals	FY 2007 Currently Available	FY 2008 Base Program	FY 2008 Estimate	Inc/Dec from Base
	Amount	Amount	Amount	Amount	Amount
Climate					
Climate	50,864	27,331	29,794	29,794	-
Total C	50,864	27,331	29,794	29,794	-
Commerce and Transportation					
Commerce and Transportation	10,037	8,689	9,199	9,199	-
Total CT	10,037	8,689	9,199	9,199	-
Ecosystems					
Ecosystems	11,554	11,671	12,912	12,812	(100)
Total ECO	11,554	11,671	12,912	12,812	(100)
Mission Support					
MS	89,657	89,069	91,598	97,298	5,700
Total MS	89,657	89,069	91,598	97,298	5,700
Weather and Water					
Weather and Water	12,321	8,490	8,699	8,699	-
Total WW	12,321	8,490	8,699	8,699	-

Department of Commerce
 National Oceanic and Atmospheric Administration
 National Environmental Satellite, Data, and Information Service
Contribution to the NOAA Strategic Planning Goals and Objectives
 (Dollar amounts in thousands)

Total National Environmental Satellite, Data, and Information Service	174,433	145,250	152,202	157,802	5,600
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Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar amounts in thousands)

Activity: National Environmental
Satellite, Data, and Information
Service

		FY 2006		FY 2007		FY 2008		FY 2008		Inc/Dec	
		Actuals		Currently Available		Base Program		Estimate		from Base	
		Personnel Amount		Personnel Amount		Personnel Amount		Personnel Amount		Personnel Amount	
Environmental Satellite Observing Systems											
Satellite Command and Control	Pos/BA	187	40,471	187	43,750	187	44,499	187	44,499	-	-
	FTE/OBL	159	45,245	179	43,767	179	44,499	179	44,499	-	-
Product Processing and Distribution	Pos/BA	131	27,161	131	27,100	131	27,808	131	30,408	-	2,600
	FTE/OBL	109	27,643	123	27,118	123	27,808	123	30,408	-	2,600
Product Development, Readiness & Application	Pos/BA	107	33,725	107	24,600	107	25,271	107	27,871	-	2,600
	FTE/OBL	92	34,211	101	24,604	101	25,271	101	27,871	-	2,600
Office of Space Commercialization	Pos/BA	4	176	4	588	4	612	4	612	-	-
	FTE/OBL	6	782	4	621	4	612	4	612	-	-
Group on Earth Observations (GEO)	Pos/BA	-	-	-	-	-	-	-	500	-	500
	FTE/OBL	-	-	-	-	-	-	-	500	-	500
Commercial Remote Sensing Licensing & Enforcement	Pos/BA	2	1,228	2	1,212	2	1,262	2	1,262	-	-
	FTE/OBL	14	1,294	2	1,224	2	1,262	2	1,262	-	-
Total: Environmental Satellite Observing Systems	Pos/BA	431	102,761	431	97,250	431	99,452	431	105,152	-	5,700
	FTE/OBL	380	109,175	409	97,334	409	99,452	409	105,152	-	5,700

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar amounts in thousands)

NOAA's Data Centers & Information Services											
Archive, Access & Assessment	Pos/BA	302	52,105	302	34,108	302	38,740	302	38,740	-	-
	FTE/OBL	172	53,013	256	34,111	256	38,740	256	38,740	-	-
Coastal Data Development	Pos/BA	-	5,380	-	4,546	-	4,606	-	4,506	-	(100)
	FTE/OBL	13	5,406	-	4,548	-	4,606	-	4,506	-	(100)
Regional Climate Centers	Pos/BA	-	4,931	-	-	-	-	-	-	-	-
	FTE/OBL	3	4,931	-	3	-	-	-	-	-	-
Environmental Data Systems Modernization	Pos/BA	13	9,256	13	9,346	13	9,404	13	9,404	-	-
	FTE/OBL	44	9,662	13	9,346	13	9,404	13	9,404	-	-
Total: NOAA's Data Centers & Information Services	Pos/BA	315	71,672	315	48,000	315	52,750	315	52,650	-	(100)
	FTE/OBL	232	73,012	269	48,008	269	52,750	269	52,650	-	(100)

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
 (Dollar amounts in thousands)

Activity: National Environmental Satellite, Data, and Information Service
 Subactivity: Environmental Satellite Observing Systems

	Object Class	2008 Increase
21	Travel and transportation of persons	25
25.2	Other services	3,100
25.5	Research and development contracts	2,050
31	Equipment	25
41.1	Grants, subsidies and contributions	500
99	Total Obligations	5,700

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
 (Dollar amounts in thousands)

Activity: National Environmental Satellite, Data, and Information Service
 Subactivity: NOAA's Data Centers & Information Services

	Object Class	2008 Decrease
25.2	Other services	(100)
99	Total Obligations	(100)

**PROGRAM SUPPORT
OPERATIONS RESEARCH AND FACILITIES
FY 2008 OVERVIEW**

SUMMARIZED FINANCIAL DATA

(\$ in thousands)

Operations Research and Facilities	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Corporate Services	182,243	176,044	195,628	195,628	0
NOAA Education Program	37,664	25,385	19,361	19,361	0
Facilities	11,764	20,117	22,954	18,954	-4,000
Marine Operations & Maintenance and Aviation Operations	131,126	120,029	142,759	155,569	12,810
TOTAL	362,797	341,575	380,702	389,512	8,810
FTE	1,897	1,907	1,936	1,989	53

For FY 2008 NOAA requests a total of \$389,512,000 for Program Support Operations, Research and Facilities, a net increase of 53 FTE and \$8,810,000.

Program Support is comprised of four distinct subactivities: 1) Corporate Services, 2) the NOAA Education Program 3) Facilities and 4) the Office of Marine and Aviation Operations (OMAO).

Within Corporate Services there are two line items: 1) NOAA's Under Secretary and Associate Offices; 2) NOAA Wide Corporate Services and Agency Management. The Under Secretary and Associate Offices budget line item funds centralized executive-management policy, formulation and direction. In addition, there are various staff offices, to include the offices of the Deputy Under Secretary; Legislative Affairs; Public, Constituent, and Intergovernmental Affairs; International Affairs; Education and Sustainable Development; the Federal Coordinator for Meteorology; and the General Counsel. The NOAA Wide Corporate Services and Agency Management line item funds such activities as financial, procurement, and human resource services.

The second sub-activity in Program Support is the NOAA Education Program, which provides expert support on education activities to NOAA Line, Program, and Staff Offices, while promoting NOAA services and products, and their benefits to the public. The Office of Education (OEd) consults within NOAA and with the Department of Commerce, and identifies opportunities for the deployment of coordinated interagency/intergovernmental policy strategies that recognize the importance of linking economic and environmental goals.

The third subactivity in Program Support is Facilities, which provides funds to address facilities management; repair, restoration and other construction, and environmental compliance and safety issues NOAA-wide. NOAA is continuing efforts to comply with E.O. 13327 (Federal Real Property Asset Management) and to effectively manage its facilities portfolio through investments in strategic long-range facility planning and modernization; annual facility condition assessments; and repair and restoration projects to address facility maintenance, repair, safety, and compliance issues. Our goal is to conduct required maintenance and periodic life-cycle replacement of major building systems and components to maintain NOAA's owned facilities at a safe and effective operational state. Funds for new construction and selected major facility projects are requested separately in the Procurement, Acquisition and Construction account.

The fourth subactivity, the Office of Marine and Aviation Operations (OMAO), is headquartered in Silver Spring, Maryland. It provides support to NOAA programs through the operation of NOAA ships and aircraft as well as by outsourcing these activities. This subactivity also funds ship maintenance and repair and NOAA's operational diving program.

OMAO initiates the development of annual vessel allocation plans; develops and updates long-range plans for inspection, repair, and operations; updates standard fleet procedures; conducts vessel-safety inspections; and provides medical guidance and support for NOAA ship personnel. OMAO's Commissioned Personnel Center (CPC) in Silver Spring, Maryland, provides centralized management for recruitment, training personnel assignments, and payroll for the NOAA Commissioned Officer Corps. It also provides health-care contractual support for NOAA Commissioned Officers and Wage Marine personnel and their dependents.

OMAO also provides NOAA with centralized aircraft management and coordination of a fleet of 12 aircraft. These modern, integrated aircraft observation platforms are equipped with comprehensive data-collection systems. OMAO develops, with the guidance of NOAA's Aircraft Allocation Council comprised of NOAA's Deputy Under Secretary and NOAA Assistant Administrators, the annual aircraft-time allocation schedules based on program requirements.

The NOAA Corps supports the fleet and NOAA Line Offices as well. This line item funds the majority of the NOAA Corps payroll, except for contributions to an accrual fund for future health care benefits for Medicare-eligible retired officers, dependents, which are provided by permanent, indefinite appropriation such as the FY 2003 Defense Authorization Act, P.L. 107-314.

Significant Adjustments-to-Base (ATBs): NOAA requests an increase of 1 FTE and \$12,000,000 for Program Support activities. Within this increase, program totals will fund inflationary adjustments for labor and non-labor. NOAA also requests \$5,613,000 to cover increased fuel charges associated with the operation of its fleet.

NOAA also requests the following transfers for a net change to NOAA of \$0:

From Office	Line	To Office	Line	Amount
Program Support	NOAA Facilities Management	OMAO	Marine Services	\$236,000

Oceanic and Atmospheric Research	Ocean Exploration and Research	OMAO	OKEANOS EXPLORER	\$4,600,000
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NOAA requests a technical adjustment to move \$236,000 from NOAA Facilities Management and Construction to Marine Services to centrally fund safety for the NOAA fleet. In addition, OMAO requests a technical adjustment to transfer \$4,600,000 from Ocean Exploration to Marine Services to fund operations and maintenance of the OKEANOS EXPLORER, NOAA's new, dedicated ocean exploration vessel.

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Subactivity: Corporate Services
Line Item: Under Secretary and Associate Offices

GOAL STATEMENT:

To provide executive direction for the implementation of agency policies to all NOAA and DOC programs and missions. Programs in this sub-activity support the Mission Support goal in NOAA's Strategic Plan.

BASE DESCRIPTION:

The Under Secretary and Associate Offices (USAO)

The Under Secretary and Associate Offices provides the top leadership and management for NOAA. USAO formulates and executes policies and programs for achieving NOAA's objectives; coordinates actions required of NOAA in response to executive branch policy decisions; develops, plans, and coordinates major program efforts; exercises delegated authority in committing NOAA to courses of action; and represents NOAA in executive level liaison with other federal agencies, the Congress, and private industry. The Under Secretary, Assistant Secretary, and the Deputy Under Secretary comprise the top of NOAA's leadership. The Associate Offices, more commonly known as NOAA's Staff Offices, are:

- Office of General Counsel (OGC)
Serves as the chief legal office for all legal matters arising in connection with the functions of NOAA, except for legal issues common to all Department bureaus, which are handled by the Department of Commerce General Counsel.
- Office of Communications (OC)
Manages NOAA's corporate communications and outreach programs and improves understanding, communication, integration, and coordination of NOAA programs for internal and external stakeholders.
- Office of Legislative Affairs (OLA)
Serves as the primary liaison for NOAA with the members and staff of Congress. The office is also responsible for the planning, direction, and coordination of legislative programs that are of immediate concern to the Office of the Under Secretary.
- Office of International Affairs (OIA)
Plans and coordinates NOAA's international programs and carries out, as directed by the Office of the Under Secretary, tasks of special interest related to international activities. The Deputy Assistant Secretary for International Affairs exercises a leadership role in establishing policies, guidelines, and procedures for NOAA's international programs.

- Office of the Federal Coordinator for Meteorology (OFCM)
Establishes procedures for systematic and continuing review of national basic specialized meteorological and oceanographic requirements for services and supporting research; and brings federal agencies concerned with international activities and programs in meteorological and oceanographic programs into close consultation and coordination.

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Corporate Services	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Under Secretary and Associate Offices					
Under Secretary and Associate Offices Base	26,019	25,433	30,009	30,009	-
TOTAL	26,019	25,433	30,009	30,009	-
FTE	226	228	229	229	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

Subactivity: Corporate Services
Line Item: NOAA Wide Corporate Services & Agency Management

GOAL STATEMENT:

To support all NOAA and Department of Commerce (DOC) programs and missions by developing and acquiring major support systems and providing administrative, budgetary, information technology, and finance services. Programs and services in this sub-activity support the Mission Support goal in NOAA's Strategic Plan. In addition to these mission goals, NOAA has established five crosscutting priorities, one of which is developing, valuing, and sustaining a world-class workforce. NOAA's stakeholders and employees strongly agree that NOAA needs to make this a priority to improve NOAA's core capabilities.

BASE DESCRIPTION:

NOAA Wide Corporate Services and Agency Management provide the planning, administrative, financial, and infrastructure services that are essential to the successful performance of NOAA's mission. These activities specifically support the *people* and programs of NOAA, ensuring that they have the proper work environment, the necessary tools and equipment, and the vital personnel and finance services which, in turn, allow them to provide the finest possible service to the American people, our economy and our environment.

The objectives of this line item are to develop and implement policy, planning and program oversight, and evaluation of the following: program operations and service delivery; financial, information technology, and administrative management that ensures timely, high-quality, cost-effective support to NOAA and DOC programs; and compliance with applicable laws, regulations, and guidelines. In addition to funding NOAA-Wide Corporate Services and Agency Management, this line item funds the policy formulation and management direction of the following offices: Civil Rights; Audits, Internal Controls, and Information Management; and Diversity.

Under the broad umbrella of NOAA Wide Corporate Services and Agency Management, NOAA's major Program Support activities are as follows:

- Office of Acquisition and Grants
- Office of the Chief Administrative Officer
- Office of the Chief Financial Officer
- Office of Human Resources
- Office of Program Analysis and Evaluation
- Office of the Chief Information Officer and High Performance Computing and Communications

- Office of Program, Planning and Integration

Office of Acquisition and Grants

To a significant degree, NOAA relies upon its partners in the commercial, state and local government, non-profit and academia communities to accomplish its mission. The NOAA Office of Acquisition and Grants (AGO) provides support to NOAA line and staff offices, and a number of other Department of Commerce bureaus, with the planning, solicitation, award, administration and close-out of acquisitions and financial assistance funding mechanisms. The Acquisition Division acquires everything from day-to-day operating supplies to services to support NOAA's mission to ships and super computers. Financial assistance awards (grants and cooperative agreements) are utilized to transfer funds to a variety of partners (state, tribal and local governments, universities, individuals, non-profit and for-profit organizations) to assist the agency in achieving our mission. Through its services, AGO helps NOAA execute its day-to-day responsibilities and assists the agency in providing critical services to the Nation.

Significant efforts have been expended to improve the internal process for faster and better acquisitions and financial assistance awards. Beginning in FY 2005 the Grants Management Division, in partnership with the OCIO and the NOAA Line Offices, implemented an end-to-end electronic grants process. FY 2006 is the first year that the Grants Online system is fully operational for the entire fiscal year. The results of this re-engineering effort have been dramatic—a 31.7% improvement in awards (i.e., decrease in the number) made in the month of September; a 124% increase in the number of grants awarded prior to their start date; a reduction in the number of grant awards made in the 4th quarter from 66% to 37%; a formal grant and program officer certification program; expansion of the Grants Online tool to permit recipients to electronically administer their grants (submit financial and progress reports; request adjustments to budgets and changes in personnel). In addition to automation efforts, NOAA is implementing new business processes based on the recommendations of the business process re-engineering study completed in FY 2005.

Partnering with the Department of Commerce, the acquisition function has been undergoing a business process re-engineering study to improve the acquisition process. The AGO has established a NOAA Acquisition Handbook which standardizes processes across the agency, has implemented a formal advance acquisition planning process and has begun an on-going initiative to conduct routine spend analyses to identify opportunities to leverage NOAA's buying power. In addition, NOAA AGO has assumed responsibility for agency Interagency and Other Special Agreements (IOSAs) policies, and will implement necessary tracking and database management of all IOSAs consistent with DOC direction upon receipt of DOC policy, which is under development in FY 2007. Of significant note, the DOC OIG reviewed acquisitions executed in the aftermath of Hurricanes Katrina and Rita and noted there were no deficiencies or violation of law, statute or regulation. Comprehensive oversight of acquisition offices has been instituted and in FY 2007 this oversight will be extended, formally, to purchase card transactions and those offices with delegated procurement authority.

Office of the Chief Administrative Officer

The NOAA Office of the Chief Administrative Officer (OCAO) provides planning management and support services essential to NOAA's program mission success. The OCAO is responsible for NOAA's facility management program, including capital investment planning and management for NOAA's substantial facility portfolio totaling over \$4 billion in owned and leased facilities; facility construction and modernization; and, real and personal property management. The OCAO manages NOAA's technology and deemed export control program to ensure continued NOAA-wide compliance with Export Administration Regulations, and oversees NOAA's Office of Inspector General and Government Accountability Office audit coordination and resolution program. The OCAO also manages NOAA's Freedom of Information Act compliance, competitive sourcing program, executive correspondence and document management program, and NOAA's civil rights program. These programs provide basic services essential for NOAA to achieve its mission.

The OCAO has responsibility under E.O. 13327 (Federal Real Property Asset Management) to effectively plan, acquire, dispose and manage NOAA's real property portfolio, including integrated, long-range capital investment and planning; planning, programming, management and execution of construction projects; facility inspection and maintenance programs; and real property acquisition, lease, and disposal. Major efforts continue to ensure NOAA's real and personal property tracking and management systems support effective management and planning for NOAA's real and personal property assets. These efforts have enabled NOAA to address the property-related findings in previous agency financial statement audits.

Office of the Chief Financial Officer

The Chief Financial Officer (CFO) serves as the principal financial manager for an organization whose appropriated resources approach nearly \$4 billion and whose recorded capital asset value exceeds \$8 billion. The CFO's Office has the responsibility under the CFO Act to provide the leadership necessary for NOAA to obtain a yearly unqualified opinion in the audit of its consolidated financial statements. The CFO directs the activities of the Budget and Finance Offices. Both the Budget and Finance Offices perform studies using methods and procedures analysis, and systems and organizational analysis to provide support to senior management in making executive decisions to ensure operational efficiencies within NOAA.

- **Budget Office** – The Budget Office is responsible for the oversight and management of NOAA's budget process. The Budget Office assists senior management, line, program, and staff offices in the formulation of NOAA's budget. It develops overall guidance, reviews proposals, and prepares supporting justification and documentation. This includes coordinating the preparation of NOAA budget submissions to the Department, the Office of Management and Budget (OMB), and the Congress, including data on budget authority, obligations, outlays, permanent positions, and full-time equivalent employment. The Office provides for the proper allocation and control of the execution of all budgetary resources as required under the Congressional Budget and Impoundment Act of 1974 (31 U.S.C. 11) and related statutes, and as specified by the Office of Management and Budget (OMB). The Office provides NOAA with improved financial management for agency-wide administrative and financial support services. NOAA is continuing to build on the Activity Based Cost/Management (ABC/M) initiative begun in FY 2002 to improve the efficiency, management and performance of its corporate services. Activity and unit cost data have been

captured since FY 2003, providing the basis for developing cost trends for each business line. Implementing ABC/M will provide business managers with cost data that can be measured, tracked and controlled. The Budget Office also maintains a staff that focuses on outreach and communication, particularly with the staff of Congressional Appropriations committees, as well as other Executive Branch agencies.

- **Finance Office** – The Finance Office performs the full spectrum of accounting services and financial reporting NOAA-wide and works to ensure that NOAA’s consolidated financial statements and reports accurately reflect NOAA’s fiduciary status at the end of the fiscal year, as required of all government agencies under the CFO Act of 1990. It operates NOAA’s financial management system to ensure that NOAA’s managers have access to timely financial data necessary to make informed programmatic decisions. The Finance Office is also responsible for ensuring that NOAA’s bills are paid in a timely manner and that receivables are billed promptly. Under the direction of the Finance Officer, the Commerce Business System (CBS) is the official accounting system of record for NOAA. CBS produces NOAA Annual Financial Statements, and will contribute to NOAA’s ongoing priority of achieving and maintaining an unqualified opinion on its financial controls and statements. The current program resources are used to fund on-going operational activities, including help desk support and outreach to clients; conducting functional requirements analysis to support user change requests and regulatory changes; preparing design documents, coding and testing for new requirements; preparing operating procedures, manuals and training materials and conducting training sessions; supporting audit requirements; performing IT Security functions and disaster recovery of CBS; and performing data base administrator functions. NOAA’s goal is to employ modern technology to provide managers with standardized, accurate and timely information to manage their resources, while reducing administrative costs.

Office of Human Resources

NOAA’s employees are its most important asset. Their competence, creativity, commitment, diversity, and innovation are vital to accomplishment of the NOAA mission and the Nation’s interests. The NOAA Office of Human Resources (HRO) provides policies, programs, and processes that facilitate the recruitment, hiring, development, and retention of a diverse, highly skilled, motivated, and effective workforce capable of accomplishing the Agency’s mission.

The HRO provides NOAA-wide leadership to workforce management functions including strategic human capital planning, labor-management and employee relations, performance management and incentive awards, executive resources, distance learning, leadership development, training and career development and human resources data management and automation initiatives. Policy functions include family-friendly workplace practices such as telework, staffing and Demonstration Project guidance. The HRO also serves as the operating human resources office for NOAA providing the full range of recruitment, staffing, pay administration, classification, and management advisory services, retirement and benefits counseling, personnel and payroll processing and partnership with management to carry out NOAA's mission.

Office of Program Analysis and Evaluation

The Office of Program Analysis and Evaluation (PA&E) contributes to the NOAA corporate level management and decision-making process through independent and objective analysis. PA&E evaluates programs relative to NOAA's mission and capabilities and identifies the linkage between program requirements and available resources. PA&E provides a strong analytical foundation for programmatic decisions by evaluating opportunities, establishing priorities, and evaluating process, policy and program alternatives to ensure NOAA's programs are the most efficient and effective. This analysis forms the basis for an integrated NOAA five-year program recommendation, which provides a strong, programmatic baseline for the NOAA budget.

In addition, PA&E prepares independent, unbiased, comprehensive reports and position papers for the Under Secretary, Deputy Under Secretary, and other key leaders, using operational research analysis to present options for implementation of recommendations to ensure programs and policies are compatible with NOAA's organizational structure, functions, and goals. An integrated, requirements-based, fiscally and strategically balanced NOAA Program and credible and relevant analysis that supports sound leadership decisions are PA&E's contribution to a strong corporate NOAA.

Office of the Chief Information Officer and High Performance Computing and Communications

The NOAA Office of the Chief Information Officer and High Performance Computing and Communications (OCIO/HPCC) supports all NOAA and DOC programs and missions by providing information technology (IT) policy, planning, services and program oversight. The OCIO/HPCC is responsible for operating the Messaging Operations Center, Network Operations Center and Web Operations Center, which provide the essential support services necessary to assist NOAA in providing service to the Nation. The Office directs the improvement of NOAA's IT systems operations and service delivery and promotes the effective use of IT to facilitate the accomplishment of NOAA's mission. The OCIO/HPCC leads the development and implementation of the NOAA IT Enterprise Architecture (EA), ensuring integration into the DOC IT EA and OMB's Federal Enterprise Architecture. Through the NOAA (HPCC) program, the office coordinates NOAA's principal IT research.

The OCIO/HPCC provides NOAA agency-level advice on information resources and information systems management; promotes and shapes an effective strategic and operational IT planning process; and coordinates the preparation of NOAA's IT budget. The OCIO/HPCC provides IT security and incident response and enterprise network services; and operates NOAA's administrative computing center, providing oversight, systems analysis, design, and programming support for NOAA's financial and administrative applications. The OCIO/HPCC is responsible for oversight and implementation of the provisions of the Clinger-Cohen Act; the Federal Information Management Security Act (FISMA); the E-Government Act; the High Performance Computing and Communications Act; the Paperwork Reduction Act; other directives regarding the acquisition, management, and use of information and IT resources; and the Information Quality Act. Additionally, the office manages NOAA's Homeland Security Program, coordinating all plans, programs and policies to promote the safety and security of NOAA's people and facilities and ensure continuity of operations and service delivery.

Office of Program Planning and Integration

The Office of Program Planning and Integration (PPI) provides corporate management to coordinate NOAA's many lines of service with the Nation's many needs for environmental information and stewardship. It ensures that agency investments and actions are guided by a strategic plan, are based on sound social and economic analysis, adhere to executive and legislative science, technology and environmental policy, and integrate the full breadth of NOAA's resources, knowledge and talent to meet its stated mission goal. PPI provides NOAA four distinct capabilities: 1) Strategic Planning, 2) Performance Evaluation, 3) Program Integration, and 4) Policy Integration.

- **Strategic Planning** - PPI is responsible for managing the NOAA's strategic planning process by assuming responsibility for managing the NOAA-wide planning cycle and for producing its outputs. These include the annual updates to the NOAA Strategic Plan and release of the Annual Guidance Memorandum (AGM), which articulates yearly investment priorities. PPI designs planning guidance for NOAA programs; oversees their planning processes; and monitors and evaluates program implementation. PPI also manages the interface with NOAA stakeholders and acquires, synthesizes and responds to their inputs. The strategic planning element employs PPI's expertise in social, economic and policy analysis to understand and evaluate the societal impact of NOAA programs.
- **Performance Evaluation** - PPI leads NOAA's development of performance measurements, both at the program and the corporate level. It refines their content over time and ensures their consistent and appropriate use across diverse management and reporting processes. PPI is the interface to NOAA's Budget Office regarding performance evaluation methods, performance metrics, and performance-based management practices.
- **Program Integration** - PPI provides oversight of the direction, integrity and performance of NOAA programs and program structure. NOAA has adopted a matrix organizational structure to ensure that its functions meet its mission goals. PPI develops the capacity and integrity of programs within the matrix. This includes the integration of social science research and analysis capabilities. PPI improves the efficiency and effectiveness of the Planning, Programming, Budgeting and Execution System (PPBES) across the agency. It works closely with NOAA's Programs, Goal Teams and Councils to strengthen the PPBES process and strategic decision-making in general.
- **Policy Integration** - NOAA is a leader among federal agencies in ensuring National Environmental Policy Act (NEPA) compliance for endangered and threatened species and living marine resource habitats. PPI represents NOAA in interagency forums, including its compliance with the NEPA, the U.S. Climate Change Science Program, and the U. S. Ocean Action Plan. PPI catalyzes, launches and monitors the implementation of new internal policies that are needed to advance program integration and improve program performance. The Office guides and monitors the progress of policies on such issues as the transition of research to applications, partnerships with the private and academic sectors, and NOAA's use of social science to measure performance and prioritize activities.

Base activities support both objectives under the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental stewardship."

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Corporate Services	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: NOAA Wide Corporate Services & Agency Management					
NOAA Wide Corporate Services & Agency Management Base	111,050	105,310	117,069	115,069	(2,000)
Commerce Business System (CBS) formerly CAMS	9,862	9,484	10,098	10,098	-
Office of the Chief Financial Officer (CFO)	-	-	-	2,000	2,000
Program Planning and Integration	1,780	1,882	1,977	1,977	-
Payment to the DOC Working Capital Fund	33,532	32,977	34,425	34,425	-
TOTAL	156,224	149,653	163,569	163,569	-
FTE	773	774	774	774	-

Note: The dollars in this table represents budget authority.

PROGRAM CHANGES FOR FY 2008:

Activity Based Budgeting (+0 FTE and -\$500,000): NOAA requests a decrease of 0 FTE and \$500,000 to reflect a reassessment of NOAA's required level of funding for Activity Based Budgeting.

Administration Business Process Reengineering (+0 FTE and -\$1,500,000): NOAA request a decrease of 0 FTE and \$1,500,000 to reflect a reassessment of NOAA's required level of funding for Administration Business Process Reengineering.

End-to-End Resource Management System (+0 FTE and +\$2,000,000): NOAA request an increase of 0 FTE and \$2,000,000 to acquire and implement an integrated system to supporting NOAA's planning, programming, budgeting, and execution processes.

Statement of Need

Other than the Commerce Business System (formerly CAMS), which supports the Execution phase, information technology support for the other phases of the other Planning, Programming, and Budgeting, and Execution System (PPBES) phases within NOAA consists of two quick fix interim systems, a database budget formulation document generation system with limited functionality, a series of spreadsheets, word processing documents and other paper-

based input. The interim systems support the NOAA budget process. There is no capability to move or share data in an automated manner which results in considerable duplicative data entry, and an inherently error-prone process that consumes personnel resources for the necessary but unproductive activity of error correction. The current, limited automated support for resource management – especially the support for formulating NOAA’s complex budget – constitutes a serious risk to NOAA’s ability to acquire and manage the resources necessary to execute its critical mission.

The Government Performance and Results Act (GPRA) and OMB Circular A-11 require that agencies develop a strategic plan and use performance-based management and budgeting for their programs. To effectively use this sophisticated method of resource management, managers need access to the information on resources and performance. NOAA has 45 programs within its five strategic goals; these programs encompass several hundred appropriated PPAs, which are required for budget formulation and execution. Many of the programs employ matrix management and so require timely access to large amounts of interrelated information. The lack of an integrated system, which uses one common set of corporate data for these processes, is significantly limiting NOAA’s ability to have timely access to the information needed to effectively manage within a performance-based framework.

The requested increase will allow NOAA to reduce manual processes, increase user friendliness, speed information to decision makers, and lessen reliance on "cuff" systems to formulate, execute and track NOAA's budget. Additionally, these funds will enable NOAA an automated way to consolidate or view resource or performance information on a program in different phases of the process and to allow NOAA to utilize more and better information to drive the decision-making process. For example, in August 2006, while in the planning phase for a program for FY 2009, you could not extract information on:

- the current Congressional action on the FY 2007 request
- the planned or obligated amounts in FY 2006 execution

Proposed Actions

Implementation of an integrated end to end resource management system will provide the information needed for the effective implementation of GPRA within NOAA. Integration of this system will provide NOAA the ability to:

- support an integrated budget process, enabling one common set of corporate data to be used in all processes
- provide end-to-end planning, programming, formulation, execution and presentation capability for financial management of NOAA's 45 programs as well as the appropriated budget structure
- support budget development and production, including budget justifications and all necessary exhibits
- interface with the Commerce Business Systems, the NOAA/DOC Data Warehouses and the Commerce Reporting System
- provide views of the data from the various processes reflecting current information from each process/cycle
- provide the ability to conduct analyses with comparisons across the various cycles and processes and
- have a user friendly interface and much greater user accessibility

The major activities/milestones are:

- By May 2005, the comprehensive functional requirements for the End-to-End Resource Management system were defined, including information needed to fully support the OMB 300.

- In FY 2005 a Business Process Review examining the existing Budget processes within NOAA was conducted. A process re-engineering for some budget processes occurred in FY 2006.
- During FY 2007, NOAA will continue to do minor but important upgrades to the interim planning, programming and formulation systems to produce near-term business process improvements – enhancing the foundation for the FY08 investment and develop a better understanding of detailed requirements of the End to End Resource Management system.
- These efforts will substantially reduce the risk associated with contracting for integration of new systems with legacy systems, particularly since this investment will involve integrating of one or more new systems with the CBS, at a minimum.
- By early-FY 2007 a detailed requirements specifications for use in a Request for Proposal will be completed.
- A contract for the development and implementation of the End to End Resource management system will be awarded in the first quarter of FY 2008. The system will be fully implemented by the end of FY 2008.

Description of FY 2008 Costs	\$\$\$ In thousands
Hardware: Database server(s) and application server(s)	\$200
COTS Software	\$870
Support Services: Configuration, interface to other systems, database, web application development	\$800
End-user training	\$130
Total Cost	\$2,000

Benefits

This initiative directly supports the President’s Management Agenda item of tying budget decisions to program performance by providing continuity from the planning phase to program performance measurement at the end of the execution phase. A seamless End-to End process will:

- Substantially improve the data available for resource management, in particular during the planning and programming cycles where data related to changes in other cycles can be incorporated.
- Save time and labor by avoiding the need to compile data from multiple sources and compare data from various cycles.
- Modernize and streamline the formulation, execution, and presentation of NOAA’s budget, and continue to move NOAA from the time and labor-intensive manual process to a streamlined and efficient process. This will enable staff to spend more time on the more valuable activities of analysis and quality assurance of our products.
- Improve timeliness of delivery of information to DOC, OMB and Congress.
- Increase user friendliness, and lessen the reliance on “cuff” systems to formulate, track and execute NOAA’s budget.

Performance Goals and Measurement Data

This increase will support the Department of Commerce Strategic Goal of “Observe, protect, and manage the Earth’s resources to promote environmental stewardship.” Specifically, this increase supports the NOAA Mission Support Goal and the following performance measure. This program change supports the Financial Services measurement of increased efficiency and performance of transactions and services (appropriation timeliness of working days). This measure tracks progress toward achieving the Strategic Plan outcome of a safe operating environment and efficient and effective financial, administrative and support services.

Performance Goal: Mission Support Performance Measure: Increased efficiency and performance of transactions and services (appropriation timeliness of working days)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
Without Increase	15	15	15	15	15	15	15
With Increase	15	15	15	14	13	12	11

Subactivity: Corporate Services
Line Item: Office of Chief Information Officer (CIO)

GOAL STATEMENT:

To support all NOAA and DOC programs and missions by providing information technology (IT) policy, planning, management, security, enterprise network services, High Performance Computing, and Homeland Security functions. Programs in this sub-activity support the Mission Support goal in NOAA's Strategic Plan.

BASE DESCRIPTION:

The objectives of this line item are to develop policies and to provide oversight of the implementation of information technology policies as required under the Clinger-Cohen Act of 1996, the Federal Information Management Security Act (FISMA), and the Paperwork Reduction Act within NOAA, statutory and other legal requirements; and Department of Commerce Policies. The line also provides management of NOAA's Homeland Security Activities; enterprise network services; administration of the IT Capital Planning and Investment Control process; oversight and funding of High Performance Computing and Communications activities; and Information Technology Security for NOAA's systems.

The Office of the CIO (OCIO) consists of: 1) Planning, Policy, and Analysis Office, 2) Information Technology Operations Office, 3) High Performance Computing and Communications Office, 4) IT Security Office, and 5) Homeland Security Activities.

The OCIO is responsible for:

- Developing and overseeing policies on the acquisition of information technology resources, management of IT projects, information technology security, and the use of IT resources to meet NOAA mission requirements;
- Implementing the High Performance Computing and Communications Act of 1991 through the NOAA High Performance Computing and Communications (HPCC) Program; and coordinating NOAA IT research within the program;
- Coordinating the preparation of NOAA's IT budget;
- Leading the development and implementation of the NOAA IT EA, integrating NOAA's IT Enterprise Architecture into the Department of Commerce's IT EA and OMB's Federal Enterprise Architecture;
- Developing policies for and overseeing implementation of FISMA, DOC security policies, and the NOAA IT Security Architecture, and operation of the enterprise Computer Incident Response Team (CIRT).
- Overseeing NOAA-wide operational IT systems, networks, and services;
- Coordinating all plans, programs and policies regarding homeland security; and plans for continuity of operations and evacuations; ensuring development and execution of plans for continued delivery of services, and developing plans and procedures to promote the safety and security of NOAA's people and facilities.

Base activities support both objectives under the Department of Commerce Strategic Goal of “Observe, protect, and manage the Earth's resources to promote environmental stewardship.”

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Corporate Services	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Office of Chief Information Officer (CIO)					
IT Security	-	958	2,050	2,050	-
TOTAL	-	958	2,050	2,050	-
FTE	-	-	-	-	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

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Subactivity: NOAA Education Program
Line Item: NOAA Education Program

GOAL STATEMENT:

To provide executive direction for the implementation of agency policies to all NOAA and DOC programs and missions. Programs in this sub-activity support the Mission Support goal in NOAA's Strategic Plan. This line item also contains various NOAA educational programs including the Educational Partnership Program with Minority Serving Institutions, the JASON Program, the Ernest F. Hollings Undergraduate Scholarship and the Nancy Foster Scholarship Programs.

BASE DESCRIPTION:

The Office of Education (OEd) activities are dedicated to achieving success on NOAA's strategic cross-cutting priorities of promoting environmental literacy and developing, valuing, and sustaining a World-class workforce. OEd consults within NOAA to improve coordination across Line, Program and Staff Offices, while promoting NOAA services and products, and their benefits to the public. OEd also implements targeted education programs on behalf of the Agency. Such activities include administration of the Ernest F. Hollings Undergraduate Scholarship Program, the JASON program and development of Education Partnership Program with Minority Serving Institution (EPP/MSI). These programs are specifically focused on increasing education and training opportunities for individuals pursuing NOAA-related fields of study with the goal of encouraging students to pursue applied research and education in atmospheric and oceanic sciences, and science education. The EPP program funding directly supports the development of NOAA-related research capability in MSIs. The JASON Foundation for Education and the Institute for Exploration/Immersion Institute works toward the development of 4th through 9th grade multi-disciplinary, oceans related products in support of the NOAA Education Plan and priorities identified by the NOAA Education Council.

Base activities support both objectives under the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental stewardship."

PROPOSED LEGISLATION:

Propose that Section 214(f) of Public Law 108-447 and National Marine Sanctuaries Act (16 U.S.C. 1431 et seq.) be amended to provide further that up to \$4,100,000 be authorized to be appropriated annually.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: NOAA Education Program	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: NOAA Education Program					
NOAA Education Program / Education Initiative	6,283	6,073	-	-	-
Hollings Scholarship	4,112	3,700	3,700	3,700	-
Nancy Foster Scholarship	-	400	400	400	-
Educational Partnership Program/Minority Serving Institutions (EPPMSI)	14,201	14,212	14,261	14,261	-
JASON Education and Outreach	2,466	1,000	1,000	1,000	-
BWET Hawaii	1,480	-	-	-	-
BWET California	1,972	-	-	-	-
BWET Chesapeake Bay	3,452	-	-	-	-
Hawaii Humpback Education Program	1,726	-	-	-	-
Gulf Coast Exploreum	986	-	-	-	-
Chesapeake Bay Interpretive Buoys	493	-	-	-	-
Narragansett Bay Marine Education (Save the Bay)	493	-	-	-	-
TOTAL	37,664	25,385	19,361	19,361	-
FTE	-	-	-	-	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

Subactivity: Facilities

Line Item: NOAA Facilities Management, Construction and Maintenance

GOAL STATEMENT:

To support NOAA's mission accomplishment by providing effective long-range facility planning and capital investment planning, facility condition assessment, and management and execution of NOAA facility repair and construction projects. The Facilities Management program is designed to keep facilities in well-maintained condition, return substandard facilities to their full potential, construct and renovate facilities to meet mission needs, and, dispose of facilities not required by mission need.

BASE DESCRIPTION:

NOAA Facilities Management, Construction and Maintenance

The Facilities Management and Modernization Program provides program direction and oversight to NOAA's major construction program and has been the focal point for facility master planning, project planning formulation and development, and project management oversight to support critical NOAA mission requirements. Funds in this line item support an integrated capital investment planning process; an integrated facility condition inspection program; systems and technology tools to enable maximum efficiency in project and facility management planning; and investments required to support repair and modernization of NOAA's facilities.

As NOAA-owned facilities age, investments in maintenance, repairs and modernization increase in priority. NOAA's owned capital assets total more than 400 owned building valued at nearly \$2 billion. Many facilities are well past their life expectancy and are in need of major repair or replacement to ensure that the facilities remain safe, effective, and efficient in support of NOAA's programs. This program provides funding to conduct facility condition inspections, and supports investments in necessary facility repairs and modernization. This line item also includes funds needed to support operations at NOAA's state-of-the-art laboratory building in Boulder, Colorado. This facility houses staff and programs from three NOAA line organizations (OAR, NESDIS, and NWS) as well as NOAA's program support units for the region. The work conducted in Boulder is necessary for NOAA's climate, weather research and support services.

This program oversees a centrally-managed and integrated national project construction program. The CAO has responsibility for policy development and guidance, long-term facility master planning, and construction program planning and execution (for new facilities, as well as repair and modernization projects). The CAO organization is responsible for managing the total project life-cycle for facility construction and modernization projects, including environmental and safety projects.

The facilities program supports achieving the Strategic Plan goal of improved safety and facility conditions. The program also supports a sustainable and strategic facilities master planning process with a 5 to 10-year planning horizon, and specifically promotes progress toward meeting the objective of increasing the number of facilities with improved co-location of NOAA services and partners. A robust facilities capability should lead to lower life-cycle cost of occupancy and facilities that better meet requirements in support of the NOAA mission goals.

Base activities support both objectives under the Department of Commerce Strategic Goal of “Observe, protect, and manage the Earth's resources to promote environmental stewardship.”

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Facilities	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: NOAA Facilities Management, Construction and Maintenance					
NOAA Facilities Mgmt & Construction (previously Maintenance, Repairs & Safety)	4,896	12,404	14,305	10,305	(4,000)
Boulder Facilities Operations	4,501	3,881	4,519	4,519	-
TOTAL	9,397	16,285	18,824	14,824	(4,000)
FTE	-	-	-	-	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Facilities Business Process Reengineering (0 FTE and -\$4,000,000): NOAA requests a decrease of 0 FTE and \$4,000,000 to reflect a reassessment of NOAA's required level of funding for Facilities Business Process Reengineering.

Subactivity: Facilities
Line Item: Environmental Compliance & Safety

GOAL STATEMENT:

To provide NOAA programs with a safe and environmentally-compliant working environment in the most economical, efficient and effective manner.

BASE DESCRIPTION:

The NOAA Environmental Compliance and Safety Program provides the resources necessary to comply with all existing federal, state, and local laws, regulations and safety requirements; and identify environmental compliance and safety issues requiring remediation. NOAA is responsible for ensuring continued compliance with applicable environmental and safety laws. NOAA continues to implement a management system to increase awareness, oversight and assessment; and ensure compliance with applicable laws and regulations.

Base activities support both objectives under the Department of Commerce Strategic Goal of “Observe, protect, and manage the Earth's resources to promote environmental stewardship.”

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Facilities	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Environmental Compliance & Safety					
Environmental Compliance	2,367	3,832	4,130	4,130	-
TOTAL	2,367	3,832	4,130	4,130	-
FTE	-	-	-	-	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

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Subactivity: Marine Operations & Maintenance and Aviation Operations
Line Item: Marine Operations & Maintenance

GOAL STATEMENT:

To operate and maintain a fleet of vessels that are appropriately designed, equipped, and outfitted to safely collect hydrographic and coastal-assessment data; conduct fisheries scientific and survey operations; conduct sustained oceanographic and atmospheric data collection in various marine environments; and to collect data through outsourced ship support. The vessels have the unique operating capabilities to: 1) provide the measurements and observations needed to protect, restore, and manage the ecosystem; 2) understand climate variability and change; 3) provide weather and water information; and 4) support the Nation's commerce by providing information for safe and efficient transportation. Marine Services' goals also: 1) to design, develop, and engineer ship systems in order to ensure cost-effective operations and to meet user requirements and safety/legal regulations; 2) maintain and repair existing ships to ensure their reliable operations; 3) provide centralized management of the NOAA Commissioned Corps; 4) provide centralized management of NOAA's operational diving program; 5) manage NOAA's Teacher at Sea program; 6) provide centralized guidance for ship and aircraft outsourcing; and 7) provide centralized guidance for NOAA's small-boat safety program.

BASE DESCRIPTION:

Marine Services

The objectives of this line item are to:

- Ensure the operational readiness and maximum capability of the NOAA fleet to support present and future at-sea, data-collection requirements for NOAA programs.
- Provide adequate maintenance and repairs to allow NOAA ships to meet the rigorous demands of NOAA's at-sea, data-collection requirements.
- Develop plans for future ship support.
- Provide properly trained personnel, fuel, stores, laboratory and deck equipment, and other scientific equipment necessary to meet user requirements and schedules.
- Develop, with the guidance of the Fleet Council, annual ship-time allocation schedules based on program requirements.
- Provide centralized management and coordination, scheduling, port services, operating procedures, and engineering support for the NOAA fleet.
- Safely operate the NOAA fleet, providing guidance and support for effective outsourcing, and outsource at-sea, data-collection where appropriate.
- Train and qualify NOAA personnel to ensure safe and effective diving operations.
- Train and certify NOAA Commissioned Corps officers, crew, and scientists in at-sea safety requirements for their positions according to the Standards of Training, Certification and Watchkeeping for Seafarers and the International Maritime Organization conventions.
- Provide Commissioned Officers trained as engineers and scientists in NOAA program disciplines to provide mobile operational and other support.
- Provide oversight and support to enhance safety of NOAA's small-boat operations.

Marine Services' funding provides some outsourcing support and provides centralized management for NOAA's fleet of 21 active ships. NOAA vessels, ranging in length from 90 to 274 feet, conduct operations that support NOAA's programs in nautical charting, bathymetric mapping, fisheries research, resource assessment, marine environmental baseline assessment, coastal-ocean circulation, and oceanographic and atmospheric research. Using Marine Services' funds in FY 2008, operation of NOAA's vessels will provide approximately 4,400 operating days and outsourcing will provide 727 operating days to support NOAA's highest priority programs.

The Marine Operations Center (MOC), with the Atlantic and Pacific regional offices located in Norfolk, Virginia, and Seattle, Washington, respectively, and with a small support staff at the home port of most ships, provides regional fleet management, maintenance, stores, supplies, repair facilities, data-processing facilities, operational support, and administrative support for NOAA's ten East and Gulf Coast vessels and ten West Coast vessels. NOAA vessels are staffed by NOAA Commissioned Corps officers, Wage Marine employees, and General Schedule technicians. The vessels are deployed for multi-program or specialized use depending on the size, range, laboratory space, equipment, and accommodations necessary to meet requirements. The Class I and II vessels have the size, endurance, and equipment to conduct surveys and investigations in the deep ocean outward from the continental shelf or in remote areas such as Alaska and Antarctica. The smaller Class III, IV, and V vessels are designed for continental shelf and near-shore operations. The programs supported by ships are organizationally housed within NOAA's National Marine Fisheries Services (NMFS), Office of Oceanic and Atmospheric Research (OAR), National Ocean Service (NOS), and National Weather Service (NWS), with occasional support to other NOAA components.

The NOAA Commissioned Corps supports the fleet of ships and aircraft as well as NOAA Line Offices. Marine Services funds the majority of the NOAA Commissioned Corps payroll but does not include contributions to the Medicare-eligible account, which was mandated in the FY 2003 Defense Authorization Act (P.L. 107-314).

Marine Services' funds also provide diver training, safety standards, certification, technical advice, a standardized equipment program, and the NOAA Diving Manual for NOAA's 400 divers who perform over 15,000 dives annually in support of NOAA's programs. In compliance with domestic and international maritime codes, Marine Services provides safe navigation training and certification to NOAA Commissioned Corps officers and vessel crew members.

The NOAA Small Boat Safety Program within Marine Services reduces risk to and enhances safety of NOAA employees that operate or work in small boats. The program monitors or conducts small-boat inspections, facilitates small-boat activities by hosting workshops and sharing related information with Line Offices, and provides technical and engineering assistance to Line Offices concerning small boats.

Marine Services' funds also support the participation of up to 30 teachers per year in the NOAA Teacher at Sea Program and the management of the program. As of FY 2005, over 400 teachers have participated in the program. Teachers at the kindergarten through college level are able to work with NOAA scientists on research vessels in support of NOAA programs and provide a valuable connection between NOAA and their students. Additionally,

NOAA's Teacher in the Air (TIA) program is a pilot program that started in April 2004 as a spin-off to the now 15-year-old NOAA Teacher at Sea program. Two alumni of the at-sea program pioneered the airborne offshoot. The TIA pilot program flies between 2-5 teachers on NOAA aircraft each year.

NOAA Ship RONALD H. BROWN, a state-of-the-art Class I oceanographic and atmospheric research platform, is the largest vessel in the NOAA fleet. With its highly advanced instruments and sensors, RONALD H. BROWN travels worldwide supporting scientific studies to increase our understanding of the world's oceans and climate. Commissioned on July 19, 1997 in its home port of Charleston, South Carolina, RONALD H. BROWN has sailed in the Pacific, Atlantic, and Indian Oceans. The ship was named for the former Secretary of the Department of Commerce, Ronald H. Brown.

NOAA Ship RAINIER is a highly capable platform for conducting coastal hydrographic survey operations. The ship primarily operates in Alaskan coastal waters. It is equipped with an intermediate depth multi-beam swath survey system. RAINIER carries six aluminum survey launches equipped with multi-beam swath, single-beam echo sounders, and a hydrographic data acquisition system. The vessel also has three small boats providing support to shore stations and dive operations.

NOAA Ship FAIRWEATHER is a hydrographic survey vessel that conducts hydrographic surveys in Alaskan coastal waters. The ship was originally commissioned by NOAA in 1968 and conducted hydrographic surveys until it was deactivated in 1989. It was reactivated in 2004 and is homeported in Ketchikan, AK. The ship is equipped with the latest in hydrographic survey technology: multi-beam survey systems; high-speed, high-resolution side-scan sonar; and on-board data-processing.

NOAA Ship KA'IMIMOANA primarily supports the research programs of NOAA's Tropical Atmosphere-Ocean (TAO) Project. These programs are designed to improve our understanding of the role of the tropical ocean in modifying the world's climate. The ship deploys, recovers, and services deep sea surface and subsurface moorings that measure ocean currents, ocean temperatures, and atmospheric variables, throughout the equatorial Pacific Ocean. KA'IMIMOANA also deploys, recovers, and services Tsunami DART (Deep-ocean Assessment and Reporting of Tsunamis) moorings in the south Pacific. In addition to buoy measurements, which are transmitted in real time to the NOAA Pacific Marine Environmental Laboratory (PMEL) in Seattle, the ship measures upper ocean currents, surface salinity, carbon dioxide content, and takes upper air atmospheric soundings while underway. A census of barnacles and marine life that inhabit the recovered moorings and the periodic replacement of undersea hydrophone moorings used to locate undersea spreading centers and hydrothermal vents on the East Pacific Rise are also conducted on an ongoing basis.

NOAA Ship MILLER FREEMAN is a stern trawler capable of a wide range of biological and oceanographic operations. Her research and biological studies provide fisheries stock assessments, marine mammal population densities and ocean dynamics as related to biological production. The wide variety of acoustical instrumentation on MILLER FREEMAN is mounted such that the sensors lie beneath vessel generated acoustic interference layers. She has a unique electronics laboratory dedicated to operation and analysis of the acoustical instrumentation. Her primary operating areas are the West Coast of the United States and Alaskan waters.

NOAA Ship McARTHUR II is a multiple-disciplinary platform capable of a broad range of missions. She conducts oceanographic research and marine-mammal assessments throughout the eastern Pacific, including the U.S. West Coast and Central and South America. McARTHUR II is involved in studies in several of the National Marine Sanctuaries on the West Coast of the United States. McARTHUR II engages in measurements of chemical, meteorological, and biological sampling for several large-scale programs within NOAA.

NOAA Ship OREGON II conducts fishery and living marine resource studies in support of the research for the NOAA Fisheries Southeast Science Center in Pascagoula, Mississippi. The ship collects fish and crustacean specimens using trawls and benthic longlines, fish larvae and eggs, and plankton using plankton nets and surface and midwater larval nets. The OREGON II normally operates in the Gulf of Mexico, the Atlantic Ocean, and the Caribbean Sea.

NOAA Ship DAVID STARR JORDAN conducts physical oceanography and biological studies which provide fisheries stock assessments, marine mammal population densities and ocean dynamics related to biological production for the National Marine Fisheries Service (NMFS) La Jolla Laboratory. She is an integral part of the marine mammal surveys conducted by the Protected Resources Division of NMFS Southwest Fisheries Science Center. These surveys include the *Stenella* Abundance Research Project (STAR), a study designed to assess the status of dolphin stocks that have been taken as incidental catch by the yellowfin tuna purse-seine fishery in the eastern tropical Pacific. She operates on the West Coast of the United States and eastern tropical Pacific and was named after Dr. David Starr Jordan.

NOAA Ship THOMAS JEFFERSON, (xUSNS LITTLEHALES (TAGS-52)), is one of a fleet of research and survey vessels used by NOAA to improve our understanding of the marine environment. The ship is homeported in Norfolk, Virginia, and primarily operates along the Atlantic and Gulf coasts, including Puerto Rico and the U.S. Virgin Islands. The primary mission of the THOMAS JEFFERSON is to conduct hydrographic surveys to update NOAA's nautical charts. The data is acquired by THOMAS JEFFERSON and its two survey launches equipped with specialized echo sounders, multibeam sonars, and side-scan sonars.

NOAA Ship GORDON GUNTER conducts fishery and marine resource research supporting NOAA's National Fisheries Southeast Science Center in Pascagoula, Mississippi. The ship collects fish and crustacean specimens using trawls and benthic longlines and fish larvae and eggs and collects plankton using plankton nets and surface and midwater larval nets. GORDON GUNTER normally operates in the Gulf of Mexico and Caribbean Sea. The ship was originally the USNS RELENTLESS (T-AGOS 18) and was operated by the Military Sealift Command as an Ocean Surveillance Ship until transferred to NOAA on March 17, 1993.

NOAA Ship OSCAR ELTON SETTE is a multiple-disciplinary platform capable of a broad range of missions. She primarily conducts fishery and marine resource research supporting NOAA's National Marine Fisheries Service, Honolulu Laboratory. OSCAR ELTON SETTE conducts fisheries assessment surveys, physical and chemical oceanography, marine mammal projects, and coral reef research. She collects fish and crustacean specimens using bottom trawls, longlines and fish traps. Plankton, fish larvae and eggs are also collected with plankton nets and surface and mid-water larval nets. OSCAR ELTON SETTE normally operates in the Northwestern Hawaiian Islands and throughout the central and western Pacific.

NOAA Ship DELAWARE II conducts fishery and living marine resource research in support of NOAA's Northeast Fisheries Science Center in Woods Hole, MA. The ship's normal operating area is the Gulf of Maine, Georges Bank, and the continental shelf and slope from Southern New England to Cape Hatteras, NC. Typical work includes groundfish assessment surveys and Marine Resources Monitoring, Assessment and Prediction surveys. Research conducted from the DELAWARE II provides an understanding of the physical and biological processes that control year-class strength of key economical fish species.

NOAA Ship JOHN N. COBB conducts fishery and living marine resource research in Southeast Alaska and in U.S. Pacific coastal waters, supporting the research of the NOAA's Alaska Fisheries Science Center in Juneau, Alaska. JOHN N. COBB collects fish and crustacean specimens using trawls and benthic longlines, fish larvae and eggs and collects plankton using plankton nets and surface and mid-water larval nets. JOHN N. COBB is capable of conducting bottom trawls down to depths of over 300 fathoms. Marine mammal surveys of whales, porpoise, and seals are also conducted aboard by scientists from the National Marine Mammal Laboratory located in Seattle, Washington.

NOAA Ship NANCY FOSTER was originally built as a Navy yard torpedo test (YTT) craft. The Navy transferred the vessel to NOAA in 2001, and NOAA outfitted the ship to conduct coastal research along the U.S. Atlantic and Gulf coasts. NANCY FOSTER continues the work of its predecessor, FERREL, in support of NOAA's Office of Ocean and Coastal Resource Management and the National Sea Grant College Program. Operations include the characterization of various habitats in NOAA's National Marine Sanctuaries, pollution assessment, and studies to improve understanding of the connection between marine habitats and estuaries.

NOAA Ship HI'IALAKAI, Hawaiian for "embracing pathways to the sea", conducts coral reef ecosystem mapping, bio-analysis assessments, and coral reef health and fish stock studies. Scuba diving operations play a major role in scientific operations aboard HI'IALAKAI, and the ship is well suited to support both shallow and deep-water dive projects. The ship is equipped to carry two to five small work boats to transport divers to and from working areas, an extensive dive locker to store scientific gear and equipment, and air compressors to fill scuba cylinders. The ship is also outfitted with a three-person, double-lock recompression chamber to support remote and advanced diving missions.

NOAA Ship OSCAR DYSON is the first of four new fisheries survey ships built by NOAA. The vessel is a stern trawler designed with state-of-the-art research ship capabilities. OSCAR DYSON conducts a wide variety of fisheries and oceanographic research. Foremost among the vessel's capabilities is acoustic quieting technology that allows sampling of fish populations without altering their behavior. The ship's primary objective is to study and monitor Alaskan pollock and other fisheries in the Bering Sea and Gulf of Alaska. OSCAR DYSON also conducts habitat assessments, and surveys marine mammal and marine bird populations.

NOAA Ship HENRY B. BIGELOW is under construction at VT Halter Marine, in Pascagoula, Mississippi and will be come on line in FY 2007. HENRY B. BIGELOW is the second of four new Class II fisheries survey ships to be built by NOAA. The ship will eventually replace ALBATROSS IV and continue its fishery and living marine resource research mission.

NOAA Ship OKEANOS EXPLORER (xUSNS CAPABLE) will support NOAA's Ocean Exploration program. After conversion, the 224-foot ship will support a dedicated science-class, deep-ocean robot (ROV). The ship will carry 10,000 meters of umbilical cable, weighing more than 22,000 pounds. Up to 6,000 meters will be used to lower a tow sled close to the ocean floor. Another 30 meters of separate cable will connect the tow sled with a mobile ROV equipped with a robust sampling capability. The long umbilical cable from the ship to tow sled will funnel commands to and collect data and images from the ROV. NOAA's ship for ocean exploration will also be equipped with a hull-mounted, state-of-the-art multibeam mapping sonar system as well as other sampling and surveying instrument systems, and the ship will offer scientists an ROV control center, a mapping lab, a technology center to process scientific data, and standard wet and dry labs. The ship's advanced data-transmission and processing capability will provide shore-based scientists with telepresence (ability of land-based scientists to operate at-sea equipment remotely).

In FY 2008, FSV 3 joins the fleet and will provide high-quality series surveys and data collection for the NOAA Fisheries Southeast Science Center. Its acoustically quiet, multi-mission capability enables the ship to comply with noise and vibration specifications that promote accurate readings and thereby avoid sub-optimal recommendations on fishing quotas. FSV 3 will be homeported in Pascagoula, Mississippi.

FSV 4, planned for delivery in late FY 2008, will collect data to manage fish stocks, such as Pacific Whiting, and to protect mammals in the Pacific Northwest. The vessel will operate and be homeported on the West Coast.

NOAA Ship RUDE performs inshore hydrographic surveys along the northeast coast in support of NOAA's nautical charting mission, specializing in the location and accurate positioning of submerged hazards to navigation. RUDE is equipped with some of the most technically advanced hydrographic and navigation equipment available, including differential global positioning systems, a multibeam bathymetric sonar system, and side-scan sonar. Aside from hydrographic surveying, RUDE is called upon to assist the U.S. Coast Guard and Navy in search, rescue, and recovery operations. The RUDE located the TWA flight 800 wreckage off of Moriches, NY in 1996, and more recently, located John F. Kennedy Jr.'s plane wreckage off Martha's Vineyard, MA.

NOAA's fleet includes the ships listed below:

Vessel	Length-Class	Mission	Home Port	Status
RONALD H. BROWN	274 ft. - I	1,4	Charleston, SC	Active
RAINIER	231 ft. - II	3	Seattle, WA	Active
FAIRWEATHER	231 ft. - II	3	Ketchikan, AK	Active
KA'IMIMOANA	224 ft. - III	1	Honolulu, HI	Active
MILLER FREEMAN	215 ft. - II	1,2,5	Seattle, WA	Active
MCARTHUR II	224 ft. - III	1,2,4	Seattle, WA	Active
OREGON II	175 ft. - III	2	Pascagoula, MS	Active
THOMAS JEFFERSON	208 ft. - II	3	Norfolk, VA	Active
DAVID STARR JORDAN	171 ft. - IV	2	San Diego, CA	Active
GORDON GUNTER	224 ft. - III	2	Pascagoula, MS	Active
OSCAR ELTON SETTE	224 ft. - III	2	Honolulu, HI	Active
DELAWARE II	155 ft. - IV	2	Woods Hole, MA	Active
JOHN N. COBB	93 ft. - V	2	Seattle, WA	Active
RUDE	90 ft. - V	3	Norfolk, VA	Active
NANCY FOSTER	187 ft. - III	14	Charleston, SC	Active
HI'IALAKAI	224 ft. - III	1,4	Honolulu, HA	Active
OSCAR DYSON	208 ft. - II	2	Kodiak, AK	Active
HENRY B. BIGELOW	208 ft. - II	2	TBD	Active
OKEANOS EXPLORER	224 ft. - III	1	TBD	Active
FSV 3	208 ft. - II	2	Pascagoula, MS	Active
FSV 4	208 ft. - II	2	West Coast	Active

Mission:

- 1= Oceanographic Research
- 2 = Fisheries Research
- 3 = Hydrographic Surveys
- 4 = Environmental Assessment

Base activities support both objectives under the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental needs."

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Marine Operations & Maintenance and Aviation Operations	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Marine Operations & Maintenance					
Data Acquisition Base	95,032	82,001	95,807	97,507	1,700
OKEANAS EXPLORER (xUSNS CAPABLE)	-	-	4,600	5,600	1,000
Operating Differential for NOAA Ships	-	4,500	4,875	9,475	4,600
UNOLS	-	-	10	10	-
OE and NOAA Corps Pay Differential	1,479	-	-	-	-
Subtotal: Marine Services	96,511	86,501	105,292	112,592	7,300
TOTAL	96,511	86,501	105,292	112,592	7,300
FTE	806	813	841	882	41

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

NOAA requests a net increase in this subactivity of 41 FTE and \$10,900,000 for a total of 882 FTE and \$1,000,000 to promote maritime crew safety and rotation and to provide operations and maintenance for several of NOAA's newer ship

Maritime Crew Safety and Rotation 29 FTE and \$1,700,000: NOAA requests an increase of 29 FTE and \$1,700,000 for a total of 29 FTEs and \$2,500,000 for maritime crew rotation and Standards of Training, Certification and Watchkeeping (STCW) safety training. This request is the second phase of an initiative to enhance safety aboard all NOAA vessels. A request for \$800,000 is included in the FY 2007 President's Request to improve crew safety and rotation on four of NOAA's 21 active vessels. The principal intent of crew rotation and safety training is to provide sufficient manpower in order to safely navigate; to conduct safe operations; to respond to potential emergencies (fire, accidents, etc.); and to provide adequate maintenance services on the NOAA Fleet. The FY 2008 request will address safety training and crew attrition on an additional seven ships.

NOAA has an attrition rate of 23 percent for NOAA wage mariners. This rate does not account for absences due to leave taking or for medical reasons; personnel may return to the ship in only a few days, or in the case of medical illness or injury up to a year may elapse before they return to the ship or are found permanently not fit for duty (PNFFD) and retired. Attrition rates are higher on ships that have more arduous schedules (i.e., more days at sea or longer cruises).

Due to the high attrition rate and maritime safety standards, NOAA has had to delay sailing various ships until enough crewmembers could be redeployed to those particular vessels. This detracts from the number of ship operating days available to the programs. Because of increasing numbers of days at sea and inadequate crew rotation, crew members must stay at sea longer than other maritime organizations such as Military Sealift Command and University National Oceanographic Laboratory Systems (UNOLS). This increased sea time for the wage mariners works them at their maximum physical potential, increasing the chance of safety-related accidents. Furthermore, longer schedules at sea have hurt NOAA's ability to recruit and retain maritime workers, because they can work fewer days at sea elsewhere for more money. Inadequate crew rotation has led to inadequate staffing of NOAA ships.

Understaffing on a NOAA vessel means that only a few of the shipboard departments can afford to lose more than one employee. Any loss of personnel, whether through attrition, medical emergency, or leave, requires that an alternate be provided to the ship to meet the safe manning level. A safe manning level is the term used by the U.S Coast Guard for the number of personnel authorized in each of the complements for the NOAA ships.

By FY 2008, the NOAA fleet will have expanded to 21 active ships. Seagoing wage mariner positions will increase from 364 at the start of FY 2007 to 421 by FY 2008, a 16 percent increase. With attrition rates of 23 percent for wage mariners, initial minimum training needs are significantly increased. In addition, most training and certifications are for a fixed time period and must be renewed from every year to every five years, depending on training type. The high attrition rate leads to higher ongoing training and certification requirements and costs.

OMAO currently uses a personnel contract to acquire temporary personnel to fill vacant positions to meet safe manning requirements. However, the contractors, in particular unlicensed personnel, cost twice as much as OMAO pays permanent wage mariner employees to do the same job. In addition, the contract is not used to provide personnel above the ships' authorized complements and thus can not provide a means for personnel to take leave, as is the intent of the Crew Rotation request. This request will provide additional wage mariner personnel over and above current approved complements with the intent to backfill employees while they take leave. By providing more opportunity to take leave, it is expected the attrition rate will decrease. A lower attrition rate will reduce OMAO's requirements for contract personnel to meet ships' minimum safe manning levels.

To adequately staff a ship, a ship that has four departments (engineering, deck, steward, and survey) would need four additional staff members with different skill sets. Thus, to address the staffing needs on seven additional ships, a total of an additional 28 crew members are required. The FY 2008 increase will provide the funds needed for the additional wage mariners, and safety training.

Statement of Need

In accordance with STCW standards, all persons who are assigned duty as officer in charge of a watch or as a rating forming part of a watch must receive a minimum of 10 hours of rest in any 24-hour period. With the crew working at this pace over a period of several weeks at a time at sea leads to fatigue and safety concerns. Attrition rates currently average 23% for wage marine personnel that serve aboard NOAA ships. For ships that have a more arduous (more days at sea or longer cruises), the rates are even higher.

A recent survey of wage marine personnel clearly indicates that the major concerns among wage marine personnel are pay scales and the limited amount of time to be with their families. Management's plan would introduce additional rotational personnel into the staffing structure to provide increased

opportunities for leave taking aboard all NOAA ships along with initiating a prototype “blue/gold” crew rotation for each of NOAA’s three primary, seagoing acquisition of data programs (hydrographic surveys, fisheries, and ocean and coastal research programs).

This proposal represents a minimum requirement and will provide an effective rotation for seven ships. Because NOAA’s fleet is experiencing a high turnover rate, the plan is to use these positions throughout the fleet to improve time-off availability to as many personnel as possible, with the goal of stemming the departure of well-trained personnel.

Additionally, some operating days have been lost due to not being able to fill key positions on NOAA vessels. According to OMAO’s ship logging system, 24 ship days were lost in FY 2005 due to inadequate staffing. These lost days are directly attributable to inadequate staffing where the ships could not meet their safe manning requirements. Aside from the direct losses, not having adequate staff indirectly results in additional lost sea days. Lack of adequate crew such as engineers causes some maintenance to be deferred on ships that already are aging platforms. It is estimated that OMAO lost 175 days during FY 2005 due to system failures, maintenance, and unscheduled repair issues. Some portion of these lost days are attributable to insufficient and/or untrained shipboard personnel.

Proposed Action

A crew rotation will be established for NOAA’s three primary, seagoing acquisition of data programs (hydrographic surveys, fisheries, and ocean and coastal research). This initiative would also cover rotational requirements as a result of medical absences and other unexpected personal situations for the existing NOAA fleet. The goal of the program is to improve crew recruitment, retention, morale, training, professional skills, and safety throughout the NOAA fleet by limiting crew deployments to a target range of 200 - 210 days at sea per year. This initiative will decrease the existing 23% attrition rate among wage marine personnel by providing opportunities to take leave, providing relief from arduous ship operations schedules. The request will help absorb the increase in additional leave days that wage mariners are expected to request while the ships are deployed.

Benefits

The requested increase in wage mariner personnel and 7,000 hours of additional training will permit NOAA to comply with SOLAS requirements and to reduce fatigue and lessen risk among the existing personnel. Compliance with SOLAS will prevent NOAA ships from being potentially detained in foreign ports because of lack of complete certifications and will enable NOAA vessels to meet the intent of industry standards and regulations. The crew rotation personnel will allow the NOAA Fleet to better meet planned missions and to meet annual data-collection requirements.

Performance Goals and Measurement Data

This increase will support the objective, “Advance understanding and predict changes in the Earth’s environment to meet America’s economic, social, and environmental needs” under the Department of Commerce strategic goal of “Observe, protect, and manage the Earth’s resources to promote environmental stewardship.” Specifically, this increase supports all five NOAA Mission Goals and the following performance measure.

Performance Goal: Mission Support						
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Maritime Crew Safety and Rotation	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
STCW Training Without Increase	11,500 hours					
STCW Training With Increase	11,500 hours	18,500 hours				
Crew Attrition Without Increase	35%	23%	23%	23%	23%	23%
Crew Attrition With Increase	23%	19%	19%	19%	19%	19%

Operations and Maintenance for New NOAA Fisheries Survey Vessels (+12 FTE and \$4,600,000): NOAA requests an increase of 12 FTEs and \$4,600,000 for the additional operational and maintenance needs of two new NOAA vessels. These ships are newer, more capable, or larger replacements to NOAA's fleet and have requirements for fuel, supplies, crew, maintenance, repairs, and spare parts that cannot be absorbed in NOAA's current budget. By stocking the vessels with spare parts, the ships may prevent disruptions in scientific cruises due to early returns to homeport or detours to other piers for unexpected repairs. The operation and maintenance needs are listed below:

Fisheries Survey Vessel (FSV) 3 Operations and Maintenance	\$3,925,000
Fisheries Survey Vessel (FSV) 4 Operations and Maintenance	<u>\$ 675,000</u>
Total	\$4,600,000

Statement of Need

FSV 3 is NOAA's third vessel in a four-vessel construction contract. The vessel will be ready to sail in January 2008, and will need to provide a first year of operation in FY 2008. FSV 3 will join the Alaska and North East FSVs in providing high-quality series surveys and data collection for the NOAA Fisheries Southeast Science Center Mississippi Laboratory. The vessel will be homeported in Pascagoula, Mississippi. A total of 6 FTEs also are required for operation of this vessel.

FSV 4 is the fourth ship in an existing four-ship contract and is scheduled for delivery in late FY 2008. The vessel is required to collect data to manage fish stocks and protect mammals. The vessel will operate and be homeported on the West Coast. FSV 4 will deploy state-of-the-art acoustic technologies, combined with a very quiet radiated noise signature, to enhance the effectiveness and efficiency of at-sea resource surveys. These capabilities would

enable FSV 4 to monitor up to nine times more volume of water for the same time and distance traveled by current ships. Enhanced data streams would allow assessment scientists to improve survey designs and ground-truth acoustic surveys using modern trawl gear. FSV4 will replace NOAA Ship DAVID STARR JORDAN. Six additional FTEs are required for operation of this larger vessel.

Proposed Action

NOAA proposes to begin a full year of operation in FY 2008 for FSV 3, as well as hire and train a crew for FSV 4’s shakedown period in FY 2008. The requested funding will be used to hire additional crew members and purchase fuel, supplies, and spare parts. Twelve additional FTE will be hired, with six assigned to FSV 3, and six to FSV 4.

Benefits

Implementing advanced technologies incorporated in the FSVs will enable NOAA to collect the best scientifically valid assessment data. FSVs are acoustically quiet ships that reduce behavioral responses of species during surveys and minimize interference with hydroacoustic signals. The ships also permit extended research missions and are capable of performing multiple missions, including surveys using many different methods of fishing and physical and biological oceanography. FSV 3 and FSV 4 will provide high-quality data necessary to establish allowable amounts of fish that can be taken commercially or recreationally. The science-based decisions from this data will have an economic impact on the participants in the fisheries and the coastal communities that derive benefits from commercial and recreational fisheries.

Performance Goals and Measurement Data

This increase will support the objective, “Advance understanding and predict changes in the Earth’s environment to meet America’s economic, social, and environmental needs” under the Department of Commerce strategic goal of “Observe, protect, and manage the Earth’s resources to promote environmental needs.” This increase supports all five NOAA Mission Goals and the following performance measure.

Performance Goal: Ecosystem	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
FSV 3 Operating Days Without Increase	N/A	N/A	N/A	N/A	N/A	N/A
FSV 3 Operating Days With Increase	N/A	N/A	250	250	250	250
FSV 4 Operating Days Without Increase	N/A	N/A	N/A	N/A	N/A	N/A
FSV 4 Operating Days With Increase	N/A	N/A	30	250	250	250

OKEANOS EXPLORER Operations and Maintenance (0 FTE and \$1,000,000): NOAA requests 0 FTE and \$1,000,000 to operate NOAA’s first dedicated Ocean Exploration vessel, OKEANOS EXPLORER (xCAPABLE). The vessel’s multi-mission capability and modern ocean-mapping systems will support a variety of NOAA’s ocean exploration and ocean mapping missions in the future. The requested funds, in addition to \$4,600,000 transferred from Ocean Exploration will provide a total of \$5,600,000 to provide crew, fuel, supplies, maintenance, repairs, and spare parts for the new vessel. By

stocking the vessels with spare parts, the ships may prevent disruptions in scientific cruises due to early returns to homeport or detours to other piers for unexpected repairs.

Statement of Need

At the direction of Congress, a surplus Navy T-AGOS vessel (USNS CAPABLE) was transferred to NOAA in the FY 2005 Appropriation, along with funds to convert the vessel. Since the conversion will be completed in FY 2007 with delivery planned for Summer 2007, on-going operational funding will be needed beginning in FY 2008.

Proposed Action

The OKEANOS EXPLORER will operate for a full year in FY 2008. The requested funding will be used to hire crew members and purchase fuel, supplies, and spare parts. A total of 30 FTEs, including officers, wage mariner, and civilians will be assigned to OKEANOS EXPLORER , which will be homeported on the East Coast..

Benefits

The intent of Congress is for OKEANOS EXPLORER to provide a platform for exploring the world's oceans. Such a vessel will be unique to the NOAA Fleet, providing scientists with a state-of-the-art platform for conducting multidisciplinary voyages to map and describe new ocean areas and to make new discoveries.

NOAA has engaged scientists, engineers, and ship operators to assist with the development of mission requirements that will best meet ocean exploration objectives. As envisioned by this group, the ship will be converted to meet three primary missions: (1) deep-water habitat mapping; (2) sampling and imaging the seafloor using sophisticated, remotely operated vehicles (ROVs) outfitted with high-definition video and still cameras; and (3) transmitting data real-time to shore-based control centers using satellite technology. The vessel will also be equipped with instruments for gathering standard oceanographic data to complement the information obtained by the mapping and ROV systems.

NOAA has experience with converting and operating T-AGOS class vessels, which makes OKEANOS EXPLORER a feasible option for addressing the organization's growing need to provide baseline information on areas that may contain critical habitat and resources requiring management. The operating and maintenance costs of the T-AGOS class vessels are well understood, and adding a similar vessel to the fleet allows NOAA to benefit from outfitting and operating standards as well as economies of scale. OKEANOS EXPLORER will provide approximately 220 operating days in FY 2008 and each fiscal year thereafter.

Performance Goals and Measurement Data

This increase will support the objective, "Advance understanding and predict changes in the Earth's environment to meet America's economic, social, and environmental needs" under the Department of Commerce strategic goal of "Observe, protect, and manage the Earth's resources to promote environmental needs." Specifically, this increase supports NOAA's Ecosystems Mission Goal and the following performance measure.

Performance Goal: Ecosystem	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
OKEANOS EXPLORER Operating Days Without Increase	N/A	30 *	N/A	N/A	N/A	N/A
OKEANOS EXPLORER Operating Days With Increase	N/A	N/A	220	220	220	220

* The ship will undergo conversion and outfitting during most of FY 2007 and will need approximately 30 operating days in FY 2007 for training and test cruises. NOAA's Office of Ocean Exploration will contribute FY 2007 operating funds for the vessel.

Subactivity: Marine Operations & Maintenance and Aviation Operations
Line Item: Fleet Planning and Maintenance

GOAL STATEMENT:

This line item has been combined with Marine Services to reflect the general practice of funding both operations and maintenance together. This will provide greater flexibility in managing NOAA vessels.

BASE DESCRIPTION:

This line item has been combined with Marine Services to reflect the general practice of funding both operations and maintenance together. This will provide greater flexibility in managing NOAA vessels.

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Marine Operations & Maintenance and Aviation Operations	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Fleet Planning and Maintenance					
Fleet Planning and Maintenance	13,699	15,327	17,184	17,184	-
TOTAL	13,699	15,327	17,184	17,184	-
FTE	3	3	3	3	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

Subactivity: Marine Operations & Maintenance and Aviation Operations
Line Item: Aviation Operations

GOAL STATEMENT:

To provide NOAA with modern, integrated aircraft observation platforms equipped with comprehensive data-collection systems in support of NOAA's airborne data-collection requirements to describe and predict changes in the Earth's environment, conserve and wisely manage the Nation's coastal and marine resources, and collect and process quality research and severe-weather data.

BASE DESCRIPTION:

Aviation Operations

The objectives of this subactivity are to:

- Provide NOAA with centralized aircraft management and coordination of a fleet of 12 aircraft. Acquire, modify, maintain, and operate NOAA's aircraft with a combined work force of specially trained civilians and officers of the NOAA Commissioned Corps. Operate the aircraft worldwide, over open ocean, mountains, and coastal wetlands to meet NOAA's airborne data-collection requirements.
- Maintain NOAA's aircraft at a high level of airworthiness and operating standards to ensure optimum safety along with standardization of systems. Operate the aircraft as public-use aircraft and subject to Federal Aviation Regulations with respect to the use of airspace, control of air traffic, and aircraft registration.
- Develop and operate prototype and operational, scientific-research instrumentation aboard aircraft; conduct applied research to ensure credibility and validity of data collected; recommend and implement specialized modifications, equipment or personnel for particular missions or projects.
- Develop, with the guidance of NOAA's Fleet Council, which is comprised of NOAA's Deputy Assistant Administrators and the Director of OMAO, annual aircraft-time allocation schedules based on airborne data-collection requirements.
- Provide centralized expertise in aviation safety to locate and arrange safe commercial aviation services for NOAA programs using outsourced aircraft.

Aircraft Services: The Aircraft Operations Center (AOC), located at MacDill Air Force Base in Tampa, Florida, ensures the availability and readiness of NOAA's uniquely configured aircraft with enhanced capabilities for research and data collection and required data processing. These platforms support the scientific community in research and data collection used in the support of NOAA's Strategic Goals.

OMAO also ensures that outsourced aviation operations are conducted safely by providing technical support and services to NOAA programs for chartered aircraft.

The Aircraft Services base will provide 1,975 flight hours in FY 2008. NOAA's two WP-3D hurricane hunters and G-IV high-altitude jet will be mission-ready with instruments and personnel for hurricane research, reconnaissance and surveillance during the hurricane season from June 1 to December 1. The G-IV will also be mission-ready with instruments and personnel to collect data for West Coast winter-storm predictions from December 1 to April 1. The Turbo Commander and Shrike will be mission-ready with equipment and personnel for snow surveys needed for flood forecasts and water management from October 1 to May 1. In the FY 2006 Hurricane Supplemental, NOAA received funds to purchase and modify a third P-3 which will become operational in FY 2008.

NOAA's fleet includes the following NOAA aircraft:

- Lockheed WP-3D Orion - N42RF, N43RF and N44RF- Workhorses of the NOAA aircraft fleet, the P-3's are among the most advanced atmospheric and environmental research platforms flying today. Their research and navigation systems provide detailed spatial and temporal observations of a wide range of atmospheric and oceanic parameters in support of observations of climate and global changes, severe-weather research, air-quality studies, air-sea interactions, and ocean dynamics. Instrumentation on the WP-3D's includes: C-Band, lower-fuselage radar; X-Band Doppler radar; dropwindsonde atmospheric profiling system; cloud-particle probes; satellite-data-transmission link; cloud physics system; and an aerosol-sampling system. A third Orion, a surplus Navy P-3C, N44RF, is being brought into service for air chemistry, remote sensing and general science missions and will be used during hurricane season on non-hurricane-related projects to enable the two WP-3D's to be available for tasking from the National Hurricane Center or for hurricane research. N44RF will also be capable of supporting other hurricane-related observations such as ocean heat content sampling and damage surveys.
- Gulfstream G-IV SP - N49RF - NOAA's uniquely configured G-IV jet supports high-altitude research requirements, both for air-quality sampling and investigations of mesoscale features to improve severe-weather predictions in the upper troposphere. The primary mission for this aircraft is providing NOAA with hurricane-surveillance data from atmospheric soundings in the environment surrounding the storm. These data increase the accuracy of computer models used to predict storm tracks. Other missions include data collection for winter-storm research and prediction and clear-air-turbulence research. Instrumentation includes: pressure, temperature, humidity, and navigation sensors; downward-looking radiometer; Global Positioning System (GPS) dropwindsonde; and data-collection systems.
- Dehavilland DHC-6 Twin Otters – N46RF, N48RF and N57RF - The Twin Otters are used to support the Northeast Right Whale Early Warning System and population surveys along the East Coast. They are also used for air-chemistry research, coastal mapping, remote sensing, hurricane-damage assessment, ozone research, Alaska cetacean population studies and other marine mammal surveys, and logistic support. A fourth Twin Otter was purchased in FY 2006 in accordance with the aircraft modernization plan. Instrumentation includes: observation bubble ports; nose mount for video camera; belly-camera observation port; multiple instrument ports; and satellite communication.
- Cessna Citation II - N52RF - This aircraft is used primarily for instrumentation research and development and to obtain precision aerial, multi-spectral imagery, photography, and survey operational data in support of NOAA's Nautical Charting, Coastal Mapping, and Airport Obstruction programs. Airport obstruction surveys are necessary for flight safety and result in changes to the digital displays of the Federal Aviation Administration (FAA). Additionally, the Citation II flies for storm profiling, post-flood photography, environmental monitoring of the Nation's coral-reef systems and natural disaster-damage assessment. Instrumentation includes: dual-mapping camera systems in a modified, pressurized cabin. The unique side-by-side

camera layout allows two different film emulsions to be exposed simultaneously in order to determine the height of objects in the photographs. A high-precision GPS receiver allows centimeter accuracy with the use of a different GPS site.

- AC-500S Shrike Commander - N47RF and N51RF - The Shrike Commander is a light, twin-engine aircraft. N47RF is used to support aerial surveys and remote sensing of the national marine sanctuaries. In addition, NOAA uses this aircraft to support the FAA Flight Edit program. The Flight Edit program produces navigation tools that are necessary for flight safety throughout the United States. N51RF is used to conduct snow-water-equivalent surveys throughout the northern U.S. and southern Canada. Sensors aboard the aircraft measure the amount of gamma radiation attenuated by water molecules contained in snow cover. Instrumentation includes: modern navigation equipment; high-capacity, electrical output-capability, precision aerial camera system; and a gamma ray spectrophotometer.
- AC690A Turbo Commander - N45RF - The Turbo Commander supports the Snow Survey program and aerial photography for NOAA's Nautical Charting, Coastal Mapping, and Airport Obstruction programs. Instrumentation includes: Precision aerial camera system and gamma ray spectrophotometer used for Airborne Snow Survey.

The following table provides information on the aircraft fleet for the current program (missions and support fluctuate based on program priorities):

Aircraft	Type	Mission	Location
HEAVY:			
(3) Lockheed WP-3D	4-engine turbo prop	Atmospheric research (OAR) Hurricane reconnaissance (NWS) Ocean winds (NESDIS)	MacDill AFB, FL
MID:			
(1) Gulfstream G-IVSP	2-engine turbo jet	Hurricane surveillance (NWS) Winter storm reconnaissance (NWS)	MacDill AFB, FL
LIGHT:			
(4) Dehavilland Twin Otter DHC-6	2-engine turbo prop	Aerial surveys (NMFS) Atmospheric research (OAR) Coastal ecology remote sensing (NOS)	MacDill AFB, FL
Cessna Citation II	2-engine turbo jet	Photogrammetry (NOS) High altitude atmospheric research (OAR)/multi-spectral scanner (NOS)	Silver Spring, MD
(2) Rockwell Shrike Commander/AC500S	2-engine reciprocating	Snow survey (NWS) photogrammetry (NOS) aerial surveys/remote sensing sanctuary support (NOS)	Minneapolis, MN (N51RF) MacDill AFB, FL (N47RF)
Jet Prop Commander AC/695	2-engine turbo prop	Snow survey (NWS)	Minneapolis, MN

Base activities support both objectives under the Department of Commerce Strategic Goal of “Observe, protect, and manage the Earth's resources to promote environmental needs.”

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: Marine Operations & Maintenance and Aviation Operations	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: Aviation Operations					
Aircraft Services	20,916	18,201	20,283	25,793	5,510
TOTAL	20,916	18,201	20,283	25,793	5,510
FTE	89	89	89	101	12

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

Third P-3's Operations and Maintenance (12 FTE and \$5,510,000): NOAA requests 12 FTE and \$5,510,000 to operate and maintain NOAA's third P-3, purchase scientific equipment, spare parts and supplies, and provide for the maintenance of the aircraft. The FY 2006 Hurricane Supplemental appropriated one-time funding of \$9,000,000 to acquire, overhaul and modify an additional aircraft to improve observations of hurricanes. The P-3 was chosen due to flight profile, economies of scale and model similarity. Funding did not include ongoing support, operation, or maintenance. The FY 2008 request will cover salaries, benefits, premium pay, training and change of station, as well as \$800,000 for reserve for the 44 month Standard Level Depot Maintenance (SDLM). Required support includes hiring 11 civilian personnel and 4 NOAA Commissioned Corps officers. This will be an ongoing operational requirement that will continue every year to operate the aircraft.

This request also will provide 300 base-funded flight hours for NOAA's third P-3. The flight hours will include fuel, travel, transportation of equipment, ground support in remote areas and dropsondes. These flight hours will be for non-hurricane related missions to allow NOAA 42 and NOAA 43 (WP-3D's) to be available for tasking from the Hurricane Center or for Hurricane Research.

NOAA also needs to acquire and maintain scientific equipment for the third P-3 the additional flight hours. This also will be an ongoing operational requirement that will continue every year to operate the aircraft. The scientific equipment is needed to make the aircraft a scientific platform that is required for NOAA's missions, and spare equipment parts and supplies also will be required to keep the aircraft mission ready. The major components of this request are below:

Crew, Benefits, Training	\$2,250,000
Annual Maintenance	725,000

SDLM Reserve	800,000
300 Flight Hours	1, 235,000
Scientific Equipment and Spare Parts	<u>500,000</u>
	\$5,510,000

Statement of Need

Funding was provided in the PAC account to acquire, overhaul, modify and make airworthy an aircraft to improve hurricane observations. The P-3 was chosen as the “third aircraft” due to flight profile, economies of scale and model similarity. NOAA will bring an ex-US Navy P-3 from Desert Storage to a rework facility and modify the aircraft for research and operational scientific uses. The aircraft will be used during Hurricane Season on non-hurricane related projects to ensure that NOAA 42 and NOAA 43 (WP-3D’s) are available for tasking from the Hurricane Center or Hurricane Research. This P-3 will support the NOAA goals of Climate Forcing, Emergency Response, Air Quality, and Ecosystem Observations. The support requested will provide the personnel required to operate and maintain the aircraft. It also provides funding for the day-to-day maintenance and a reserve funding for the SDLM that will be needed in 2012.

SDLM is required on all P-3 aircraft every 44 months as dictated by the maintenance manuals published by the P-3 model manager, the US Navy. It is performed at a depot-level facility, which means the facility does P-3 work on a large scale. The procedure takes 4-5 months and involves disassembling the aircraft and inspecting/replacing wing, airframe, and engine parts and structures that have reached their service life or need to be replaced by use or fatigue. It is the only way to ensure the aircraft remains in an "airworthy" condition over time. The third P-3 will be ready in FY 2008 because the aircraft’s delivery from its SDLM overhaul is scheduled for September 2007.

Flight crew, fuel and maintenance are required for the aircraft to accomplish the mission. An additional 300 base-funded flight hours will support non-hurricane related projects such as air physics and low altitude mission profiles, ensure that the two current P-3’s are available for tasking from the Hurricane Center or hurricane research during hurricane season.

Proposed Action

NOAA proposes hiring a flight crew and support personnel for an additional P-3 to be used during hurricane season on non-hurricane related projects to ensure that NOAA 42 and NOAA 43 (WP-3D’s) are available for tasking from the Hurricane Center or for hurricane research. NOAA also proposes maintaining the aircraft and funding the 4-year Standard Level Depot Maintenance (SDLM).

The flight personnel will include 2 Electronic Engineers (GS-13), 1 Electronic Technician (GS-12), 1 Electronic Technician (GS-11), 1 Aerospace Engineer Technician (GS-11), 1 Engineer Technician (sheet metal GS-11), 2 Equipment Specialist (flight engineer GS-12), 2 Meteorologist (GS-13), 3 Pilots (NOAA Commissioned Corps officers), 1 Navigator (NOAA Commissioned Corps officer) and 1 Ground Support person (GS-9).

NOAA proposes using the additional P-3 for an estimated 300 base-funded flight hours on ocean heat content sampling, air physics research, and damage surveys along with other non-hurricane related projects. Additionally, NOAA proposes purchasing scientific equipment, spare parts, and supplies to make the aircraft capable of meeting its missions. Aviation Operation Center’s current base budget cannot absorb this additional cost for the third P-3.

Benefits

This P-3 will support the NOAA goals of Climate Forcing, Emergency Response, Air Quality, and Ecosystem Observations. A Heavy Aircraft Study in January 2000 identified a requirement for a heavy aircraft with medium to long-range endurance and significant load carrying capability. Air Physics research within NOAA required operational capability at altitudes from 30 meters to at least 12 kilometers above surface. Mission profiles require low altitudes as well as slow operational speeds for measurements, parameters which are needs conducive to turboprop aircraft. An aircraft is required that can accommodate a large suite of remote sensing and in-situ measurements.

Performance Goals and Measurement Data

This increase will support the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental stewardship." Specifically this increase supports the NOAA Weather and Water Strategic and Climate Goals, the following performance measure and specifically the objectives, “Increase lead time and accuracy for weather and water warnings and forecasts” and “improve predictability of the onset, duration, and impact of hazardous and severe weather and water events”. It will provide support towards non-hurricane related projects to ensure the NOAA 42 and NOAA 43 (WP-3D’s) are available for tasking from the Hurricane Center or for Hurricane Research.

Performance Goal: Supports Fleet Service’s ‘Increase Aircraft Customer Satisfaction Rating’ Performance Measure (scale of 1-4, with 4 being highest score) Third P-3’s Personnel and Operations	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Without Increase	N/A	N/A	N/A	N/A	N/A	N/A
With Increase	3.47	3.5	3.5	3.5	3.5	3.6

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Subactivity: NOAA Corps Retirement Pay (Mandatory)
Line Item: NOAA Corps Retirement Pay (Mandatory)

GOAL STATEMENT:

The objective of this line item is to provide payment of benefits to retired NOAA Commissioned Corps officers and their families.

BASE DESCRIPTION:

The retirement system for the uniformed services provides a measure of financial security after release from active duty for service members and their survivors. It is an important factor in the choice of a career in the uniformed services, and the legal mandate for rates to be paid is the same for all uniformed services, 10 USC. Retired pay is an entitlement to NOAA Commissioned Corps officers under 33 USCA 3044, 33 USCA 3045, and 33 USCA 3046. Retired pay funds are transferred to the U.S. Coast Guard, which handles the payments each year as adjusted pursuant to the Department of Defense Authorization legislation. Healthcare funds for non-Medicare-eligible retirees, dependents, and annuitants are transferred to the U.S. Public Health Service, which administers the healthcare program.

Legal authority for retirement of NOAA Commissioned Corps officers is contained in 33 USCA 3044. Retired officers of the NOAA Commissioned Corps receive retirement benefits that are administered by the Commissioned Personnel Center within the Office of Marine and Aviation Operations.

Significant Adjustments to Base (ATBs): NOAA requests an increase of \$3,797,000 to fund an expected increase in retired pay due to inflation. It will also be used to fund an expected increase in the cost of health benefits for non-Medicare eligible retirees, dependants, and annuitants.

Base activities support both objectives under the Department of Commerce Strategic Goal of “Observe, protect, and manage the Earth's resources to promote environmental needs.”

PROPOSED LEGISLATION:

None.

SUMMARIZED FINANCIAL DATA

(Dollars in thousands)

Subactivity: NOAA Corps Retirement Pay (Mandatory)	FY 2006 ACTUALS	FY 2007 CURRENTLY AVAILABLE	FY 2008 BASE PROGRAM	FY 2008 ESTIMATE	INCREASE / DECREASE
Line Item: NOAA Corps Retirement Pay (Mandatory)					
TOTAL	19,670	19,322	23,119	23,119	-
FTE	-	-	-	-	-

Note: The dollars in this table represent budget authority.

PROGRAM CHANGES FOR FY 2008:

None.

Department of Commerce
National Oceanic and Atmospheric Administration
Program Support
Contribution to the NOAA Strategic Planning Goals and Objectives
(Dollar amounts in thousands)

Program Support - Discretionary	FY 2006 Actuals Amount	FY 2007 Currently Available Amount	FY 2008 Base Program Amount	FY 2008 Estimate Amount	Inc/Dec from Base Amount
Climate					
Climate	3,097	2,988	3,062	3,062	-
Total C	3,097	2,988	3,062	3,062	-
Commerce and Transportation					
Commerce and Transportation	556	454	529	529	-
Total CT	556	454	529	529	-
Mission Support					
MS	358,702	338,044	376,590	385,400	8,810
Total MS	358,702	338,044	376,590	385,400	8,810
Weather and Water					
Weather and Water	442	89	521	521	-
Total WW	442	89	521	521	-
Total Program Support	362,797	341,575	380,702	389,512	8,810

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Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar amounts in thousands)

Activity: Program Support		FY 2006		FY 2007		FY 2008		FY 2008		Inc/Dec		
		Actuals		Currently Available		Base Program		Estimate		from Base		
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	
Corporate Services												
Under Secretary and Associate Offices	Pos/BA	230	26,019	233	25,433	233	30,009	233	30,009	-	-	
	FTE/OBL	203	26,438	228	25,443	229	30,009	229	30,009	-	-	
NOAA Wide Corporate Services & Agency Management	Pos/BA	925	156,224	924	149,653	924	163,569	924	163,569	-	-	
	FTE/OBL	804	152,495	774	149,675	774	163,569	774	163,569	-	-	
Office of Chief Information Officer (CIO)	Pos/BA	-	-	-	958	-	2,050	-	2,050	-	-	
	FTE/OBL	-	-	-	958	-	2,050	-	2,050	-	-	
Total: Corporate Services		Pos/BA	1,155	182,243	1,157	176,044	1,157	195,628	1,157	195,628	-	-
		FTE/OBL	1,007	178,933	1,002	176,076	1,003	195,628	1,003	195,628	-	-
NOAA Education Program												
NOAA Education Program	Pos/BA	-	37,664	-	25,385	-	19,361	-	19,361	-	-	
	FTE/OBL	37	37,975	-	26,057	-	19,361	-	19,361	-	-	
Total: NOAA Education Program		Pos/BA	-	37,664	-	25,385	-	19,361	-	19,361	-	-
		FTE/OBL	37	37,975	-	26,057	-	19,361	-	19,361	-	-
Facilities												
NOAA Facilities Management, Construction and Maintenance	Pos/BA	-	9,397	-	16,285	-	18,824	-	14,824	-	(4,000)	
	FTE/OBL	20	13,932	-	18,505	-	18,824	-	14,824	-	(4,000)	
Environmental Compliance & Safety	Pos/BA	-	2,367	-	3,832	-	4,130	-	4,130	-	-	
	FTE/OBL	19	2,462	-	3,838	-	4,130	-	4,130	-	-	
Total: Facilities		Pos/BA	-	11,764	-	20,117	-	22,954	-	18,954	-	(4,000)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar amounts in thousands)

	FTE/OBL	39	16,394	-	22,343	-	22,954	-	18,954	-	(4,000)
Marine Operations & Maintenance and Aviation Operations											
Marine Operations & Maintenance	Pos/BA	628	96,511	633	86,501	663	105,292	704	112,592	41	7,300
	FTE/OBL	741	96,993	813	87,550	841	105,292	882	112,592	41	7,300
Fleet Planning and Maintenance	Pos/BA	12	13,699	12	15,327	12	17,184	12	17,184	-	-
	FTE/OBL	4	15,213	3	15,343	3	17,184	3	17,184	-	-
Aviation Operations	Pos/BA	91	20,916	91	18,201	91	20,283	104	25,793	13	5,510
	FTE/OBL	97	22,362	89	18,782	89	20,283	101	25,793	12	5,510
Total: Marine Operations & Maintenance and Aviation Operations	Pos/BA	731	131,126	736	120,029	766	142,759	820	155,569	54	12,810
	FTE/OBL	842	134,568	905	121,675	933	142,759	986	155,569	53	12,810

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM CHANGE PERSONNEL DETAIL

Activity:		Program Support				
Subactivity:		Marine Operations & Maintenance and Aviation Operations				
Title:	Location	Grade	Number of Positions	Number of FTE	Annual Salary	Total Salaries
Navigator	Tampa	CO	1	1	86,528	86,528
Pilot	Tampa	CO	3	3	86,528	259,584
Aerospace Engineer Tech	Tampa	GS11	1	1	52,349	52,349
Electronic Technician	Tampa	GS11	1	1	52,349	52,349
Engineer Tech (Sheet Metal)	Tampa	GS11	1	1	52,349	52,349
Electronic Technician	Tampa	GS12	1	1	62,740	62,740
Equip. Specialist (Flt. Eng.)	Tampa	GS12	2	2	62,740	125,480
Electronic Engineer	Tampa	GS13	2	2	74,608	149,216
Meteorologist	Tampa	GS13	2	2	74,608	149,216
Ground Support	Tampa	GS9	1	1	43,267	43,267
3rd Asst Engineer (Watch)	Various	WM	7	10	60,392	422,744
3rd Officer	Pascagoula, MS	WM	1	1	47,840	47,840
Able Bodied Seaman	Various	WM	7	10	29,390	205,730
Fisherman	Pascagoula, MS	WM	1	1	29,345	29,345
Fisherman	Pascagoula, MS	WM	1	1	29,345	29,345
General Vessel Assistant	Pascagoula, MS	WM	1	1	27,261	27,261
General Vessel Assistant	Various	WM	7	10	27,302	191,114
Oiler	Pascagoula, MS	WM	1	1	31,605	31,605
Oiler	Pascagoula, MS	WM	1	1	31,605	31,605
Second Cook	Various	WM	7	10	30,382	212,674

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE PERSONNEL DETAIL

Senior Survey Technician	Pascagoula, MS	WM	1	1	40,812	40,812
Skilled Fisherman	Pascagoula, MS	WM	1	1	33,773	33,773
Skilled Fisherman	Pascagoula, MS	WM	2	1	33,773	67,546
Survey Technician	Pascagoula, MS	WM	1	1	34,007	34,007
Survey Technician	Pascagoula, MS	WM	1	1	34,007	34,007
Total			<u>55</u>	<u>71</u>		<u>2,472,486</u>
less Lapse		25.0%		<u>18</u>		<u>618,122</u>
Total full-time permanent (FTE)				53		1,854,365
2007 Pay Adjustment (2.2%)						40,796
2008 Pay Adjustment (3%)						<u>56,855</u>
TOTAL						<u>1,952,015</u>

Personnel Data	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	71
Other than full-time permanent	<u>0</u>
Total	71
Authorized Positions:	
Full-time permanent	53
Other than full-time permanent	<u>0</u>
Total	53

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
 (Dollar amounts in thousands)

Activity: Program Support
 Subactivity: Corporate Services

	Object Class	2008 Increase
25.1	Advisory and assistance services	2,000
99	Total Obligations	2,000

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
 (Dollar amounts in thousands)

Activity: Program Support
 Subactivity: Corporate Services

	Object Class	2008 Decrease
25.2	Other services	(2,000)
99	Total Obligations	(2,000)

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
 (Dollar amounts in thousands)

Activity: Program Support
 Subactivity: Facilities

	Object Class	2008 Decrease
25.2	Other services	(4,000)
99	Total Obligations	(4,000)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Program Support
Subactivity: Marine Operations & Maintenance and Aviation Operations

Object Class	2008 Increase
11 Personnel compensation	
11 Personnel compensation	538
11.1 Commissioned officers	271
11.1 Wage board/wage marine	1,102
11.5 Other personnel compensation	80
11.5 Overtime	682
11.6 Personnel Compensation	158
11.9 Total personnel compensation	2,831
12.1 Civilian personnel benefits	1,583
12.1 Civil service retirement	46
12.3 FICA	7
21 Travel and transportation of persons	956
22 Transportation of things	74
23 Rent, Communications, and Utilities	250
25 Other contractual services	3,510
25.2 Other services	800
26 Supplies and materials	2,623
31 Equipment	130
99 Total Obligations	12,810