

BUDGET ACTIVITY: NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE

For FY 2013, NOAA requests a net increase of \$162,043,000 and a net decrease of 9 FTE from the FY 2013 base level for a total of \$2,041,406,000 and 818 FTE for the National Environmental Satellite, Data, and Information Service (NESDIS). This includes \$1,518,000 and 0 FTE in inflationary adjustments.

BASE JUSTIFICATION FOR FY 2013:

NESDIS is responsible for the procurement, launch, and operation of the nation's civil operational environmental satellites. Along with providing for the health, safety and management of the satellites, NESDIS manages the product development and distribution of the corresponding data.

NESDIS has two sub-activities in the Operations, Research and Facilities appropriation: 1) Environmental Satellite Observing Systems, with \$113,520,000 and 409 FTE and 2) Data Centers and Information Services, with \$69,198,000 and 269 FTE:

The goals of the Environmental Satellite Observing Systems sub-activity 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 and interpretations to users; (5) introducing new technology and processes to improve environmental satellite system capabilities; (6) determining requirements for future satellite systems; (7) serving as the lead U.S. agency for the Search and Rescue satellite system, including operating and maintaining the mission control center; (8) monitoring global sea ice conditions to support safe and effective marine transportation; and (9) demonstrating better ways to use and distribute environmental 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 and PPAs for FY 2013:

- Office of Satellite and Product Operations (OSPO), including Satellite Command and Control, NOAA Satellite Operations Facility (NSOF) operations, and Product Processing and Distribution;
- Product Development, Readiness, and Application, including Ocean Remote Sensing and the Joint Center for Satellite Data Assimilation (JCSDA);
- Commercial Remote Sensing Regulatory Affairs;
- Office of Space Commercialization; and
- Group on Earth Observations (GEO).

The goal of the NOAA Data Centers & Information Services sub-activity is: 1) to provide the Nation with the long-term archive of and access to past, present, and future environmental observations and associated data recorded across the U.S. and globally; and 2) 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. 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 2013, the NOAA Data Centers and Information Services sub-activity consists of the following budget line items and PPAs:

- Archive, Access, and Assessment
- Coastal Data Development
- Regional Climate Services
- Environmental Data Systems Modernization

NESDIS has two sub-activities in the Procurement, Acquisition and Construction appropriation: 1) Systems Acquisition and 2) Construction.

The Systems Acquisition sub-activity (\$1,694,417,000 and 149 FTE) includes the PPAs below:

- Geostationary Systems – N Series;
- Geostationary Systems – R Series;
- Polar Orbiting Systems – POES;
- Altimetry Mission – Jason-3;
- Polar Orbiting Systems – Joint Polar Satellite System (JPSS);
- Deep Space Climate Observatory (DSCOVR);
- EOS & Advanced Polar Data Processing, Distribution & Archiving System;
- Critical Single Point of Failure (CIP);
- Comprehensive Large Array Data Stewardship System (CLASS); and
- NPOESS Preparatory Data Exploitation.

The Construction sub-activity includes the Satellite CDA Facility (\$2,228,000 and 0 FTE).

Research and Development Investments:

The NOAA FY 2013 Budget estimates for its activities, including research and development programs, are the result of an integrated requirements-based strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. NESDIS requests \$35,494,000 for investments in R&D and infrastructure to support R&D in the FY 2013 budget.

NOAA's R&D planning is tied to the goals, enterprises, and associated objectives outlined in NOAA's Next Generation Strategic Plan. Specifically, NOAA's Science and Technology Enterprise and underlying objectives of holistic understanding of the Earth system through research; accurate and reliable data from observing systems; and an integrated environmental modeling system, to provide the basis for a set of internal implementation plans covering a 7-year period which guide NOAA's research and development activities. The NOAA Research Council - an internal body composed of senior scientific personnel from every line office in the agency - informs the annual updates to these implementation plans, and is developing the next 5-Year Research and Development Plan for NOAA (FY13-18), which will be publicly available when completed. This new plan will reflect NOAA's strategic objectives, provide a single guiding document for our scientists, the public, and our partners, and inform future internal planning efforts.

Significant Adjustments-to-Base (ATBs):

NOAA requests an increase of \$1,518,000 and 0 FTE to fund adjustments to current programs for NESDIS activities. The increase will also fund the estimated FY 2013 federal pay raise of 0.5 percent. The increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

NESDIS also requests the following technical adjustments and transfers for a net change to NOAA of \$0 and 0 FTE.

NOAA requests a technical adjustment to transfer the NESDIS Satellite Command and Control and Product Processing and Distribution line items to the new NESDIS line item, Office of Satellite and Product Operations (OSPO). No adjustments have been made to the three PPAs, except in the alignment under this new line item.

NOAA requests a technical adjustment to rename the Regional Climate Centers PPA the Regional Climate Services PPA. No funding or FTE changes are associated with this request.

From Office	PPA	To Office	PPA	Amount/FTE
NESDIS	Restoration of Climate Sensors	NESDIS	Joint Polar Satellite System	\$25,880,000/ 0 FTE

NOAA requests a technical adjustment to move \$25,880,000 and 0 FTE from the Restoration of Climate Sensors PPA to the NESDIS Joint Polar Satellite System PPA, in order to more accurately reflect the actual costs of the JPSS program. The measurements provided by the climate sensors funded in the Restoration of Climate Sensors PPA are JPSS program requirements and the sensors are provided to the JPSS program for integration and accommodation on JPSS delivered flight platforms.

Administrative Cost Savings:

The Administration is continuing its pursuit of an aggressive government-wide effort to curb non-essential administrative spending. As a result, the Department of Commerce continues to seek ways to improve the efficiency of programs without reducing their effectiveness. The Department's total savings target for FY 2013 is \$176 million, which includes \$142.8 million in savings initiated in FY 2012 and an additional \$33.2 million planned for FY 2013. Building on NESDIS' administrative savings planned for FY 2012 (\$13.1 million), an additional \$0.8 million in savings is targeted for FY 2013 for a total savings in FY 2013 of \$13.9 million.

Headquarters Administrative Costs:

In FY 2013, NESDIS Line Office headquarters will use \$23,870,900 to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. Specifically, NESDIS will use headquarters administrative funds to support the following:

Headquarters Program Support Type	Description	FY 2013 Amount	FY 2013 FTE associated with NESDIS Line Office HQ
General Management & Direction/Executive Management	Includes Assistant Administrator's office, public affairs, information services	\$7,071,700	34.5
Budget & Finance	Includes Budget, Finance and Accounting	\$3,732,800	21.9
Facilities/Other Administrative (CAO Functions)	Includes Facilities and Security costs, as well as other CAO related activities	\$1,701,200	0
Human Resources	All HR services, including Equal Employment Opportunity	\$2,115,600	13.2
Acquisitions and Grants		\$0	0
Information Technology	Includes IT-related expenses and other CIO related activities	\$9,249,600	16.9
Total		\$23,870,900	86.5

Narrative Information:

Following this section are base justification materials and program change narratives by subactivity for this line office. Please note that no program change narrative is provided for program changes of less than \$100,000, however, a summary exhibit is provided at the end of each subactivity showing the object class detail for the small program changes. Please contact the NOAA budget office if details for any of these changes are required.

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES
SUBACTIVITY: ENVIRONMENTAL SATELLITE OBSERVING SYSTEMS

The objectives of Environmental Satellite Observing Systems are to:

- Provide secure and efficient command and control of NOAA, DOD, and other non-NOAA operational environmental satellites; and
- To ensure timely and uninterrupted delivery of data to users, including product processing, development, and distribution.

To achieve these objectives, NOAA meets the Nation's requirement to provide 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.

OFFICE OF SATELLITE AND PRODUCT OPERATIONS (<http://www.ospo.noaa.gov/>)

The Office of Satellite and Product Operations (OSPO) manages and directs NOAA's 24x7 environmental satellite operations, acquisition, product development and the distribution of environmental data and derived products to domestic and foreign users, and associated services. OSPO manages NOAA's Search and Rescue Satellite Aided Tracking (SARSAT) system and coordinates participation in the International COSPAS-SARSAT Program. OSPO also manages the strategic and tactical environmental and oceanographic ice services at the National Ice Center for the operational requirements of U.S. national interests.

SATELLITE COMMAND AND CONTROL (<http://www.oso.noaa.gov/>)

The goal of the Satellite Command and Control program is to provide efficient and secure command and control of NOAA, DOD, and other non-NOAA operational environmental satellites to ensure timely and uninterrupted delivery of data to users.

The NOAA Satellite Command and Control program forms the backbone of the ground systems that command, control, and acquire data from NOAA's on-orbit satellites 24 hours per day, 365 days per year. 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 NASA during launch, activation, and evaluation of new satellites; and assesses satellite and ground station anomalies. 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 (NWS) mission to protect lives and property during severe weather events.

The Satellite Operations Control Center (SOCC)/Command and Data Acquisition (CDA) Facilities command and control both NOAA and non-NOAA environmental satellites; track the satellites health and safety; and acquire and process all data delivered from the satellites. The SOCC/CDA provides the vital link between the satellites and every data user. SOCC/CDA operations provide uninterrupted availability of critical information and support NOAA's critical national support functions that are not available commercially, such as real-time hurricane support.

NOAA SATELLITE OPERATIONS FACILITY (NSOF) Operations

The NOAA Satellite Operations Facility (NSOF) provides a modern, state-of-the-art-facility and infrastructure that supports uninterrupted 24/7 command, control and communications for NOAA's satellite program operations. The NSOF houses high technology equipment, including 16 antennae, which control Geostationary Operational Environmental Satellites (GOES), Polar-orbiting Operational Environmental Satellites (POES), and DOD's Defense Meteorological Satellite Program (DMSP) environmental satellites. Data from other non-NOAA operational and research satellites are also received to support specific NOAA missions. In addition to satellite operations, the 24/7 critical operations at NSOF provide environmental data used to develop weather and climate products, as well as other information products used daily by industry and citizens across the Nation.

PRODUCT PROCESSING AND DISTRIBUTION (<http://www.osdpd.noaa.gov/ml/index.html>)

The goal of the Product Processing and Distribution (PP&D) program is to provide the Nation with specialized expertise and computing systems that 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 processes data from Earth-observing satellites to provide the highest quality products and services to its users.

PP&D provides products and services using data from NOAA, the Department of Defense (DOD), and NASA environmental satellites, as well as foreign and commercial spacecraft to national and international customers and users on a 24/7 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 wild land 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 (NWS) and supplies the satellite data that makes up approximately 93 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.

PP&D 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 U.S. National Ice Center (NIC), which monitors global sea ice conditions to support safe and effective maritime transportation in the polar regions, Great Lakes, Arctic, and North Atlantic waters. NOAA, the U.S. Navy, and the U.S. Coast Guard jointly operate the U.S. NIC to support the civil and military maritime communities. This service is critical to NWS warnings in ice-prone sea lanes, U.S. Coast Guard ice breaking missions, civilian and military shipping, and commercial fishing communities.

PP&D provides NOAA's contribution to the operations of the U.S. search and rescue satellite-aided tracking (SARSAT) system. SARSAT has contributed to the rescue of more than 28,000 people worldwide, including more than 6,000 people in the U.S., since its inception in 1982.

Schedule & Milestones:¹

Satellite Command & Control and NSOF Operations

- FY 2013:
 - Command and Control 10 NOAA Satellites and support 8 non-NOAA Satellites
 - Maintain Satellite Operation Facilities at Suitland, MD, Wallops, Virginia, and Fairbanks, Alaska
 - Conduct annual penetration testing on all IT Systems
 - Continuous Monitoring of all IT Systems
 - Assessment and Authorization for required IT Systems
- FY 2014:
 - Command and Control 10 NOAA Satellites and support 10 non-NOAA Satellites
 - Maintain Satellite Operation Facilities at Suitland, MD, Wallops, Virginia, and Fairbanks, Alaska
 - Conduct annual penetration testing on all IT Systems
 - Continuous Monitoring of all IT Systems
 - Assessment and Authorization for required IT Systems
- FY 2015:
 - Command and Control 11 NOAA Satellites and support 11 non-NOAA Satellites
 - Maintain Satellite Operation Facilities at Suitland, MD; Wallops, Virginia; and Fairbanks, Alaska
 - Conduct annual penetration testing on all IT systems
 - Continuous Monitoring of all IT Systems
 - Assessment and Authorization for required IT Systems
- FY 2016:
 - Command and Control 13 NOAA Satellites and support 11 non-NOAA Satellites
 - Maintain Satellite Operation Facilities at Suitland, MD; Wallops, Virginia; and Fairbanks, Alaska
 - Conduct annual penetration testing on all IT systems
 - Continuous Monitoring of all IT Systems
 - Assessment and Authorization for required IT Systems
- FY 2017:
 - Command and Control 14 NOAA Satellites and support 12 non-NOAA Satellites
 - Maintain Satellite Operation Facilities at Suitland, MD; Wallops, Virginia; and Fairbanks, Alaska
 - Conduct annual penetration testing on all IT systems
 - Continuous Monitoring of all IT Systems
 - Assessment and Authorization for required IT Systems

Product Processing and Distribution

- FY 2013: Begin processing and distribution of Suomi NPP products (9 operational products processed and distributed in FY 2013); Begin data processing and distribution of OceanSat-2
- FY 2014: Complete Certification and Accreditation of product processing system
- FY 2015: Transition high resolution information transmissions into operations

¹ Schedule and Milestones assume FY 2013 NESDIS program changes for PAC satellite programs

- FY 2016: Distribute validated GOES-R products
- FY 2017: Process and distribute 71 new Suomi NPP products (cumulative) to users within 100% of targeted time; Bring GOES-16 into operation; Bring Metop-C into operation

Deliverables:

Satellite Command and Control and NSOF Operations*

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Infrastructure Maintained # of National/Mission Critical Systems)	8	8	8	8	8	8
*Includes FY 2013 NESDIS Program Changes for PAC satellite programs						

Product Processing and Distribution

- Delivery of Suomi NPP data to users
- New products transitioned into operations
- Upgraded system architecture to meet security needs and to facilitate transition of research products into operations

Performance Goals and Measurement Data:

Satellite Command and Control

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Percentage of GOES satellite data successfully acquired to meet customer quality and timeliness requirements.	Actual 99.8%	Target 99.0%					
Description: Data from NOAA's GOES satellites are received on a daily basis and compiled monthly. This measure is the percentage of GOES datasets received against what was scheduled to be collected.							

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Percentage of POES satellite data successfully acquired to meet customer quality and timeliness requirements.	Actual 99.8%	Target 99.0%					
Description: Data from NOAA's POES satellites are received on a daily basis and compiled monthly. This measure is the percentage of POES datasets received against what was scheduled to be collected.							

Product Processing and Distribution

Performance Measure:	FY						
Percentage of NOAA-managed Satellite Data processed and distributed within targeted time	2011	2012	2013	2014	2015	2016	2017
	Actual	Target	Target	Target	Target	Target	Target
	99.7%	98.5%	98.5%	98.5%	98.5%	98.5%	98.5%
Description: This measure includes data from NOAA's GOES and POES satellites. It tracks the processing and distribution of environmental data to the users. This measure is used to track timeliness and customer satisfaction. The targeted time varies per satellite: GOES is 15 minutes, POES is 180 minutes (which is based on Advanced Television Infra-Red Observation Satellite Operational Vertical Sounder timeliness).							

Performance Measure:	FY						
Number of environmental products implemented into operations	2011	2012	2013	2014	2015	2016	2017
	Actual	Target	Target	Target	Target	Target	Target
	6	10	10	10	14	14	14
Description: This measures the number of validated environmental products (both new and enhanced) that are transitioned from research into operations. Efficiency in managing Research To Operation program resources is reflected by the number of new satellite products that are developed and implemented within the defined schedule and cost criteria for each separate product project.							

Performance Measure:	FY						
Percentage of customer validated, required ice products that are produced and delivered within targeted time	2011	2012	2013	2014	2015	2016	2017
	Actual	Target	Target	Target	Target	Target	Target
	96%	97%	97%	97%	97%	97%	97%
Description: Percentage of Imagery required daily by the National Ice Center (NIC) to generate weekly critical ice forecast and other ice products needed for safe marine transportation							

Performance Measure:	FY						
Transmission percentage rate of SARSAT distress alert and location information to search and rescue authorities within targeted time	2011	2012	2013	2014	2015	2016	2017
	Actual	Target	Target	Target	Target	Target	Target
	94.7%	93%	93%	93%	93%	93%	93%
Description: Performance measure is important to beacon user customer group. The ability to deliver distress alerts in a timely fashion directly affects the chances of survival for the individual(s) in distress. Baseline performance was derived from historical data. The target performance is included in the Interagency SARSAT Operational Requirements document.							

PRODUCT DEVELOPMENT, READINESS & APPLICATION

(<http://www.star.nesdis.noaa.gov/star/index.php>)

The goal of NOAA's Product Development, Readiness, and Application (PDR&A) Line Item 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. This program includes three PPAs.

PDR&A: PDR&A enhances the accuracy of current satellite products and develops new satellite products to meet user requirements. Activities range from planning new satellite instruments to developing new satellite products and applications. This includes transitioning new satellite products to operations, improving satellite products as instruments degrade, and performing calibration/validation activities between instruments.

The Nation needs enhanced satellite data to improve and extend weather forecasts, 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, it is necessary to have both a targeted research program and a cadre of scientists and computing systems dedicated to development of improved satellite data products. The PDR&A activities ensure the highest accuracy of NOAA's current operational environmental satellite data and products via a robust and rigorous satellite data calibration/validation program. This effort improves product quality for the benefit of all users. 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, Oregon State, and the City College of New York). The academic expertise and the results of academic findings 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.

Ocean Remote Sensing (ORS): ORS targets the development of ocean related products and their transition to operations. Its scope includes developing new and improved ocean remote sensing data, products, and capabilities; ensuring continuity of data streams and specifying requirements for next generation satellite sensors; improving the understanding of ocean dynamics; and addressing research and operational needs related to marine ecosystems.

ORS facilitates the delivery and implementation of multiple satellite ocean data streams with continued science maintenance and improvements in research, data acquisition, calibration, and validation, which are required to maintain and enhance satellite-based tools and products utilized by the global and coastal oceans user community. Major activities under ORS include CoastWatch/OceanWatch (including Marine Optical Buoy support), External Research (Cooperative Institute for Oceanographic Satellite Studies), Sea Surface Roughness, and Sea Surface Temperature.

Joint Center for Satellite Data Assimilation (JCSDA): JCSDA increases forecast prediction capabilities using advanced satellite assimilation methods. Its scope is to accelerate and improve the quantitative use of research and operational satellite data in weather, ocean, climate and environmental analysis and prediction systems.

JCSDA accelerates the application of satellite data for improving weather forecasts and other environmental models. The JCSDA was established to speed the development of new satellite data assimilation science into operational capabilities. 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 the JPSS 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.

Schedule & Milestones:

- FY 2013: Establish Jason-3 calibration program
Development of NDE NOAA-unique products
Data assimilation experiments of Suomi NPP observations
- FY 2014: Data exploitation of GCOM-W1 mission
- FY 2015: Provide near-real time ocean surface wind data to the National Hurricane and Central Pacific Hurricane Centers in support of operational wind nowcasts, forecasts, and warnings (These data will come from scatterometers on foreign satellites, such as the Advanced Scatterometer (ASCAT) instrument on EUMETSAT's Metop satellite)
- FY 2016: Post-launch checkout of GOES-R
- FY 2017: Post-launch checkout of JPSS-1

Deliverables:

- FY 2013: Jason-3 calibration program
NDE NOAA-unique product capability
Outputs from data assimilation experiments of Suomi NPP observations
- FY 2014: Initial GCOM-W1 mission products
- FY 2015: Near-real time ocean surface wind data
- FY 2016: Analyses of GOES-R post-launch check out
- FY 2017: Analyses of JPSS-1 post-launch check out

Performance Goals and Measurement Data:

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Number of products, applications, techniques, and systems developed	Actual 11	Target 11	Target 14	Target 14	Target 14	Target 16	Target 16
Description: As new requirements for satellite data and environmental information are identified and understood, research is performed that leads to the creation of new information products, applications, processing techniques, and systems.							

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Number of new satellite products developed and transitioned to operations	Actual 5	Target 9	Target 10	Target 10	Target 14	Target 14	Target 14
Description: To apply its research to operational needs, satellite information products are developed and tested that meet the requirements of customers (e.g. the National Weather Service). After an extensive evaluation, the products that satisfy the requirements are transferred to operations for customer use.							

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Number of refereed papers published	Actual 122	Target 75	Target 75	Target 80	Target 80	Target 80	Target 80
Description: To assure that research is valid, high-quality, and up-to-date, scientific results are published in peer-reviewed journals.							

COMMERCIAL REMOTE SENSING REGULATORY AFFAIRS (CRSRA)
(<http://www.licensing.noaa.gov/>)

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. NOAA's CRSRA program supports these requirements while furthering the Nation's homeland security and national security missions.

The CRSRA 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. Prior to issuing licenses, NOAA must consult with DOD and the Department of State to ensure license compliance with national security and foreign policy, respectively. NOAA works closely with other U.S. Government agencies to implement policy and ensure international coordination. 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. DOC's CRSRA, managed by NOAA, is responsible for enforcement and ensuring compliance with the terms of the license agreements. Worldwide commercial remote sensing space data sales were estimated to be \$735 million in 2007 and are expected to increase to \$2.5-\$3.4 billion by 2017. Dramatic future growth is expected due to growing civil and military user requirements, improvements in aerospace and information technologies, and e-commerce.

Schedule & Milestones:

- FY 2013: Evaluate Kyl-Bingaman limits and establish new threshold if determined necessary
- FY 2014: Evaluate all standard operating procedures to assure effectiveness, gaps, the need for new procedures, or modification of existing procedures
- FY 2015: Examine methodology for licensing of private space systems and determine if the existing license format is relevant or needs to change to better address changes in space systems and their operations
- FY 2016-17: Review regulations for currency and update if appropriate, republish any new regulations

Deliverables:

- Issuance of new licenses, waivers and or amendments to licenses, review and approval of foreign agreements, quarterly and annual audits, annual inspections with appropriate documentation for the record

Performance Goals and Measurement Data:

Performance Measure:	FY 2011 Actual	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Process all regulatory actions within statutory time lines and conduct all required audits	31 audits and inspections of domestic and foreign ground	28 audits and inspections of domestic and foreign ground	30 audits and inspections of domestic and foreign ground	32 audits and inspections of domestic and foreign ground	32 audits and inspections of domestic and foreign ground	34 audits and inspections of domestic and foreign ground	36 audits and inspections of domestic and foreign ground

and inspections	stations. 2 new licenses	stations. Process at least 2 new licenses	stations. Process at least 3 new licenses	stations. Process at least 2 new licenses.	stations. Process at least 4 new licenses.	stations. Process at least 5 new licenses.	stations. Process at least 3 new licenses
<p>Description: Regulatory actions include the submission of new licenses, the amendment of an existing license (both are 120 days by law), review, and approval of any waiver to a license or a foreign agreement (60 days). Audits and inspections are the quarterly and annual review of records, licenses, data protection plans and agreements, and the annual onsite inspection of the company and any station associated with the collection of satellite data. It is the verification for enforcement.</p>							

OFFICE OF SPACE COMMERCIALIZATION (OSC)
(<http://www.space.commerce.gov/remotesensing/>)

OSC, managed by NOAA for DOC, is responsible for developing space-related policies and promotion of the capabilities of the U.S. commercial space industry. OSC represents DOC negotiations with foreign countries to ensure free and fair trade internationally in the areas of space commerce. OSC 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 and space-related markets. OSC identifies commercial solutions for key NOAA and other civil government data acquisition requirements. OSC also acts as a broad industry advocate within the Executive Branch to ensure the Federal Government uses commercially available space goods and services to meet its requirements, avoids legal and regulatory impediments, and does not compete with the U.S. commercial space industry. The 2004 U.S. Space-Based Positioning, Navigation, and Timing (PNT) Policy established, through Presidential Directive, a permanent National PNT Executive Committee (EXCOM) to manage the Global Positioning System (GPS) and its U.S. Government augmentations as a national asset. The policy further directed the EXCOM to establish the National Space-Based PNT Coordination Office (NCO) to serve as the Secretariat and perform those functions delegated by the Executive Committee. The Deputy Secretary of Commerce is a member of the Executive Committee and OSC provides management, personnel and facility support to the NCO in addition to performing studies and related activities to meet Executive Committee tasking and responsibilities.

Schedule & Milestones:

- FY 2013-17: Accomplish two major policy decisions and commercial industry activities per quarter.

Deliverables:

- Increased opportunities for commercial solutions for key NOAA and other civil government data acquisition requirements
- Improved coordination between government and industry on space-related issues and enhance engagement in interagency space-related policy activities

Performance Goals and Measurement Data:

Performance Measure:	FY						
Number of major policy decisions supported and industry studies and related activities executed	2011	2012	2013	2014	2015	2016	2017
	Actual	Target	Target	Target	Target	Target	Target
	8	8	8	8	8	8	8
Description: The target represents specific actions planned to be executed during the year that deal with commercial space issues and industry studies of the market.							

GROUP ON EARTH OBSERVATIONS (GEO) (<http://www.noaa.gov/eos.html>):

The intergovernmental Group on Earth Observations (GEO) is a voluntary international partnership of governments and international organizations that provides a framework where these partners can collaborate globally on Earth observations. Its mission is the implementation of a Global Earth Observation System of Systems (GEOSS). The U.S. government is a founding member of GEO. The Office of Science and Technology Policy, Executive Office of the President leads U.S. engagement with GEO and the Associate Director for Environment serves as U.S. Principal Representative to and Co-Chair of GEO. U.S. government participation in this international activity is coordinated through the interagency U.S. Group on Earth Observations (USGEO). USGEO facilitates domestic coordination of Earth observation initiatives, as well as engagement with the intergovernmental GEO aimed at advancing U.S. goals and objectives relating to Earth observations.

Program resources support the activities of the GEO Secretariat staff in Geneva, who coordinate the 110 cooperative tasks and subtasks of the GEO Work Plan. The work plan is updated annually, with major revisions every three years. Tasks range from data integration and management, to water cycle observations, to Earth observations for climate change adaptation. Program resources also support the domestic cooperative activities of USGEO, including preparations for U.S. government participation in major GEO meetings and events; the development of assessment reports for the Executive Office of the President; planning and coordination meetings focused on federal agency investments in Earth observations, workshops, and other forums.

Global environmental and resource issues are among the great global challenges of our time, including mitigating and adapting to climate change and supporting global food security through sustainable agriculture. Integrated Earth observations are the indispensable foundation for addressing these challenges, of which GEO is a critically important forum for international engagement and cooperation on Earth observations.

The GEOSS endeavor is resulting in unprecedented global access to environmental information, and promises to advance its integration into new data products for the benefit of societies and economies worldwide. It represents a commitment to three important Administration principles: science-based decision making, open access to data and information, and increased international cooperation on science and technology.

In addition to the funding provided in the GEO PPA, NESDIS Headquarters funds labor/ benefits, travel, and supplements the USGEO grant.

Schedule & Milestones:

- FY 2013-17: Support annual meeting of member governments and participating international organizations at GEO Plenary and associated Executive Committee and related meetings

Deliverables:

- Support the development of U.S. positions and contributions to the implementation of the GEOSS Implementation Plan through preparations for U.S. government participation in major GEO meetings and events; the development of reports for the Executive Office of the President as requested; planning and coordination meetings focused on federal agency investments in Earth observations, workshops, and other forums

Performance Goals and Measurement Data:

Performance Measure:	FY						
Number of grants provided in support of annual GEO Plenary meetings of the USGEO Subcommittee of the President's NSTC.	2011	2012	2013	2014	2015	2016	2017
	Actual	Target	Target	Target	Target	Target	Target
	2	1	1	1	1	1	1

Description: Provide support for annual GEO Plenary meetings of the USGEO Subcommittee by providing grants to GEO Secretariat and USGEO Secretariat of the President's National Science and Technology Council (NSTC).

THIS PAGE INTENTIONALLY LEFT BLANK

PROGRAM CHANGES FOR FY 2013:

Satellite Command and Control: Satellite Command and Control (Base Funding: \$40,112,000 and 174 FTE; Program Change: +\$126,000 and +0 FTE: NOAA requests an increase of \$126,000 and 0 FTE for a total of \$40,238,000 and 174 FTE to continue funding for the ground systems that command, control, and acquire data from NOAA's on-orbit satellites 24 hours per day, 365 days per year. The requested increase in FY 2013 will continue to support the communications link to retrieve data from satellites passing over ground stations, and also to deliver primary mission data from NOAA Satellite Command and Control to product processing centers. The communications link, technical support, and network support for the day-to-day operations, maintenance, and modification of the GOES and POES spacecraft ground systems are necessary to maintain operational capability. The near real time data retrieved from the polar and geostationary satellites are critical for the National Weather Service (NWS) to issue warnings and forecasts of hurricanes and severe weather that save lives and property.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: NESDIS

Subactivity: Environmental Satellite Observing Systems

Object Class	2013 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	126
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	126

Product Processing and Distribution: Suomi NPP and Polar Continuity Data Processing and Distribution (Base Funding: \$0 and 0 FTE; Program Change: +\$9,435,000 and +0 FTE): NOAA requests an increase of \$9,435,000 and 0 FTE for a total of \$9,435,000 and 0 FTE to process and distribute environmental data from the Suomi National Polar-orbiting Partnership (Suomi NPP) mission. The Suomi NPP satellite was successfully launched in October 2012. The checkout period under the National Aeronautics and Space Administration (NASA) will be completed during the seven months following the launch.

Proposed Actions:

FY 2013 will be NOAA's first full fiscal-year of operations for processing and distributing Suomi NPP environmental products on a 24x7 basis to NOAA Operational Centers. The requested funding will provide full fiscal-year contractual support for the Suomi NPP Production Environment within the Environmental Satellite Processing Center (ESPC) that will process and distribute NOAA-unique Suomi NPP products to the National Weather Service (NWS), NOAA, and other user communities. This same support will continue for the follow-on program, the Joint Polar Satellite System (JPSS).

Specifically, NOAA will hire contractor support for computer operations to monitor the processing system, secure hardware maintenance and software licenses, train science analysts to monitor and maintain science quality for all products, provide additional support for the help desk to respond to queries and comments from the user community, and maintain the communications network to deliver products to users. With this investment, NOAA assumes the operations for the Suomi NPP processing and distribution system and begins to use NPP operationally.

Statement of Need and Economic Benefits:

The Suomi NPP Data Processing System is a processing and distribution system that will develop NOAA unique products from Suomi NPP satellite measurements into useful environmental products (e.g., ATMS Radiances and Sea Surface Temperature), which are delivered to the NWS and other customers within specific time requirements. The NOAA satellite data processing operational system uses software applications, network and hardware devices, drivers, and interfaces that process environmental data from Level 0, or raw data, to Level 1B, usable products.

Without the processing system to convert environmental data into required products and standard format used by the NWS, the data would be unusable to the NWS for weather models, warnings, watches, forecasts, etc. Without the processing and distribution network to deliver the products to the NWS, the NWS would not receive the products for its models to issue environmental warnings, watches and forecasts that save lives and protect property. Essentially, if the data are not processed and distributed in a timely fashion, they are not useful. Weather forecasts would be made less accurate and warnings less reliable, increasing risk to life and property.

Specifically, the Suomi NPP products are needed to: 1) Support real-time assessments and short-to-medium range forecasts and warnings of environmental conditions that may endanger human safety and health, and safe transportation; 2) Assess vegetation and drought conditions; 3) Provide information on fire locations and burn areas; 4) Develop ocean products to enhance public health, protected species, fisheries and coastal zone management, recreational boating, the offshore oil/minerals industry, tropical (hurricane) cyclone analyses and; 5) Assess seasonal-to-inter-decadal variability of ocean color and sea surface temperature products for El Niño, La Niña, and Pacific Decadal Oscillation climate analyses.

Base Resource Assessment:

The base resources for this activity are described in the Office of Satellite and Product Operations base narrative.

Schedule and Milestones:

- FY 2013: Maintain full-year sustainment of Suomi NPP Data Processing System
- FY 2014: Implement IT Refresh for Suomi NPP data processing equipment
- FY 2015: Sign Transition to Operations Plan for JPSS Processing System
- FY 2016: Accept data processing system from JPSS
- FY 2017: Process and distribute 71 Suomi NPP products to users within 100% of targeted time

Deliverables:

The requested funding will provide contractual support for the Suomi NPP Production Environment (hardware and software) within the Environmental Satellite Processing Center that will process and distribute 71 Suomi NPP products to the NWS, NOAA net, and other user communities.

The 71 NPP environmental products include: CrIS/ATMS (Atmospheric Temperature and Moisture Profiles for NWS); MIRS (Microwave-based moisture products for NWS); and SST (Sea Surface Radiances for NWS and Sea Surface Temperatures for NOS/CoastWatch).

Performance Goals and Measurement Data:

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Number of Suomi NPP operational products processed and distributed	Actual	Target	Target	Target	Target	Target	Target
With Increase	N/A	N/A	19	10	14	14	14
Without Increase		0	0	0	0	0	0
Description: Implement into operations the processing and distribution of environmental data from the Suomi NPP mission and other polar missions. Products include microwave and infrared atmospheric soundings, atmospheric ozone, sea surface temperatures, vegetation health, and fire detection. A total of 71 data products will be transitioned to operational products and distributed by FY 2017.							

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
% of Suomi NPP Satellite Operational Data processed and distributed within targeted time	Actual	Target	Target	Target	Target	Target	Target
With Increase	N/A	N/A	98%	98%	100%	100%	100%
Without Increase		0%	0%	0%	0%	0%	0%
Description: With the current system, the goal is 98% of all available Suomi NPP operational data are processed by Suomi NPP Production Environment within 20 minutes from ingest. After the IT refresh, the goal increases to 100% within the target time of 16 minutes from ingest with 100% available Suomi NPP data.							

During FY 2012, the NPOESS Data Exploitation (NDE) program will continue to process and distribute Suomi NPP test products to the National Weather Service, which may be used for weather prediction; however, NESDIS will be unable to provide 24/7 support for these products, which is the

NOAA standard to operationalize satellite data products. Until the requested increase in FY 2013 is received, NOAA will be unable to process NPP test products into operational products, nor provide 24/7 support for the products.

Processing raw data and distributing the useful products that result are also required to help meet key NWS performance metrics:

- Hurricane Track and Intensity Forecast Accuracy
- Winter Storm Warning Lead Time and Accuracy
- Precipitation Threat Accuracy
- Flood Warning Lead Time and Accuracy
- Marine Wind Speed and Wave Height Forecast Accuracy

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: NESDIS

Subactivity: Environmental Satellite Observing Systems

Object Class	2013 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	2,000
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	6,635
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	800
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>9,435</u>

The following exhibit shows the summary object class detail for Environmental Satellite Observing Systems program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: NESDIS

Subactivity: Environmental Satellite Observing Systems

Object Class	2013 Increase
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	118
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>118</u>

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES
SUBACTIVITY: DATA CENTERS AND INFORMATION SERVICES

Through three NOAA National Data Centers (NNDCs), environmental data, information, products, and services are provided to support atmospheric, oceanographic, and the solid Earth and solar-terrestrial physical sciences to facilitate sustained economic growth, scientifically sound environmental management, and public safety for the Nation and the international community. The sub-activity provides the core funding for the three NNDCs: the National Climatic Data Center (NCDC), the National Oceanographic Data Center (NODC), and the National Geophysical Data Center (NGDC).

The NNDCs provide the Nation with the long-term stewardship archive of past, present, and future environmental observations and associated data recorded across the U.S. 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 climate sensitive and this figure continues to increase.² 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 NOAA National Data Centers (NNDC) receive over one (PB) petabyte (10^{15}) of new data annually; provide access to an archive exceeding 7 PBs; support over one billion web contacts/hits; and provide data transfers to over 15 million customers. By 2018, the projected ingest of new data will exceed 20 PBs per year and the cumulative archive volume managed and accessible to customers will exceed 100 PBs.

ARCHIVE, ACCESS & ASSESSMENT

Climate Archive, Access, and Assessment (<http://www.ncdc.noaa.gov/oa/ncdc.html>)

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 (FRC) for climate data. NCDC is one of two operational sites for NOAA's Comprehensive Large-Array Stewardship System (CLASS). The NCDC receives, processes, archives, provides access, disseminates, and conducts objective assessments of ground based and spaced observations. National and international observing systems provide a regional, national, and global perspective of the 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 is a designated World Data Center (WDC) for Meteorology and WDC for Paleoclimatology.

The NCDC provides data, information, products and climate 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 risks associated with weather and climate extremes. NCDC provides access and data retrieval via the internet and responds to thousands of requests received via e-mail, phone, fax, and the mail. NCDC routinely produces operational products for climate monitoring, such as the weekly and monthly State of the Climate reports, the U.S. and the North American Drought Monitoring Reports, and the Climatology for the U.S. reports. These and other climate assessments support business and government policy makers and implementers. NCDC

² Dutton, John A., Opportunities and priorities in a new era for weather and climate services, Bulletin of the American Meteorological Society, September 2002, Volume 83, no. 9, pp 1303-1311

also works very closely with various regional, state, and local stakeholders.

Approximately 3 PBs of data are now directly accessible from NCDC's website, www.ncdc.noaa.gov. 1.285 PB [1,285 terabytes (TB)] of data were delivered on-line during FY 2011 (a 27-fold increase over FY 2005), with nearly 900 million hits and downloads from NCDC's website during that time. Several factors account for this increase, including: Continued infrastructure improvements at NCDC to accommodate user demand, the Climate Services Portal's continued development (www.climate.gov), and access to large volumes of Climate Forecast System Reanalysis data via the NOAA National Climate Model Portal (NCMP). NOAA climate data users and percent data requests-retrievals are placed into four general categories: Business 44 percent, Public 33 percent, U.S. Government 12 percent and Academia 10 percent. The introduction of the Climate Services Portal website is a major contributor to increased customer interactions with NOAA.

The NCDC, in partnership with NASA scientists, develop long time series, satellite-derived Climate Data Records (CDRs). The NOAA National Climate Model Portal (NCMP) will provide access to the next suite of NOAA's Climate System Reanalysis and Reforecast models and products. NCMP provides an operational archive and access capability for the next generation, high-resolution weather and climate reanalysis datasets generated by sophisticated coupled ocean, air, and land models running on supercomputers across NOAA and its collaborators (National Science Foundation, DOE and others). NCMP is an extension of the National Operational Model Archive and Distribution System (NOMADS). NCDC, in cooperation with scientists and other NOAA activities and federal agencies, has designed and deployed the Nation's first climate quality *in-situ* observing network.

NCDC in partnership with other NOAA offices and agencies is developing the National Integrated Drought Information System (NIDIS) portal. Also, NCDC in partnership with the Climate Program Office and other NOAA agencies is continually improving the NOAA Climate Services Portal prototype (www.climate.gov).

Climate Database Modernization Program

The NCDC manages the conversion and accessibility of historical non-digital data records through the Climate Database Modernization Program (CDMP). CDMP's goal is to preserve and make available climate data going back several hundreds of years that range from the bottom of the ocean to the top of the atmosphere. Many of these holdings, which are part of the U.S. National Archives, were originally recorded on paper, film, and other fragile media, and stored at various NOAA Centers. Prior to CDMP, not only were these valuable data sources mostly unavailable to the scientific community, but storage technology for the archive was becoming obsolete. Today, CDMP has greatly improved the preservation and access to NOAA's holdings by migrating many of these resources to new digital media.

To date over 57 million images have been digitized for on-line access. Over 14 terabytes of data have been keyed and converted to digital format extending the historical climate record back to the early 1800s and in some cases the 1700s. These are now readily accessible via the Internet and other web-based portals.

Ocean Archive, Access, and Assessment (<http://www.nodc.noaa.gov/>)

The National Oceanographic Data Center (NODC), located in Silver Spring, MD, with offices in Stennis, MS; Honolulu, HI; San Diego, CA; Norfolk, VA; and Charleston, SC, is the Nation's permanent archive for oceanographic data, ensuring the public access to and the scientific

stewardship of long-term observational records of the global ocean, and U.S. coastal waters and their ecosystems. These holdings document the physical and chemical properties of the oceans, currents, and biota as observed from ships, buoys, satellites and other ocean and coastal platforms extending back nearly 150 years. NODC provides increased utilization of coastal and oceanographic data using web-based search/access and geographic information system (GIS) techniques to improve the understanding, management and use of coastal areas.

NODC's mission is to ensure that global oceanographic data sets collected are maintained in a permanent archive that is easily accessible. This is accomplished by: building scientifically, quality-controlled global oceanographic databases and providing analysis and climatologies of key ocean variables; supporting ecosystem management by providing access to the Nation's coastal and ocean data resources; and providing information technology services in a secure, sustainable environment.

The NODC serves more than 800,000 users annually through the Internet and provides 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, and 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 (IOC).

Geophysical Archive, Access, and Assessment (<http://www.ngdc.noaa.gov/>)

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 Weather Prediction Center and Office of Coast Survey to provide archive and access of space weather and hydrographic observations. NGDC works with contributors of scientific data to prepare documented reliable data sets, currently maintaining more than 850 digital and analog data sets, and continually developing data management programs that reflect the changing world of geophysics in an era of electronic data access. NGDC provides funding to the National Snow and Ice Data Center (NSIDC) at the University of Colorado for archive services of polar data. NGDC's unique capabilities have attracted other mission-related functions. NGDC is one of two operational sites for NOAA's Comprehensive Large-Array Stewardship System (CLASS) and is the parallel collection site and archive for the Global Positioning System Continuously Operating Reference Stations (GPS CORS). NGDC is responsible for the development and maintenance of the World Magnetic Model for the Department of Defense and also operates World Data Centers for 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.

NGDC acquires, stewards and disseminates long-term climate records of the solar and space environments. Solar activity measures, such as the historical sunspot numbers, provide quantitative measures of solar variability that are incorporated into large-scale climate models. Related to this, NGDC works with climate scientists within the local Boulder area to maintain within NOAA an accurate record of total solar irradiance and solar spectral irradiance derived from satellite measurements and to advocate for measurements of solar irradiance continuity as a primary forcing

function in climate modeling. NGDC is also responsible for monitoring the long-term records of anthropogenic nighttime lighting which are used to calculate changes in impervious surface areas and other factors that can influence local climate variability. NGDC maintains the largest collection of ionospheric sounding data stretching back to the 1930s; this data has been used to infer climate related changes in the upper atmosphere, including the stratosphere and above. Finally, NGDC space weather datasets obtained by sensors on NOAA's fleet of polar and geosynchronous satellites provide a calibrated record of changes in the local space particle environment within the past 30 years.

Comprehensive Large Array data Stewardship System (CLASS) - Operations Systems (Data Center Operations)

The NGDC, NCDC, and NODC Data Centers are utilizing CLASS to ensure the long-term preservation (safe storage) and access for data, information, and metadata, particularly for large data sets. Beginning in FY 2008, components of the CLASS development design began to transition into the Data Centers' operations and become operationally integrated into the data management and customer servicing operations systems. At this time the NGDC, NCDC, and NODC assumed the responsibility for operating and sustaining these components of the CLASS Operations System. The CLASS Operations and Planning Board (COPB), which consists of the Directors of the three Data Centers, are responsible for the execution of the CLASS Operations budget (ORF). The COPB also reviews the requirements and provides guidance to the CLASS Development project manager and the associated CLASS budget. The CLASS project manager's focus is on the information technology required to ingest, store, access, and maintain the submitted data sets. The Data Centers through the COPB are responsible for the sustained operations of the CLASS Operations System, a critical component of NOAA's Enterprise System supporting information preservation and end-to-end stewardship of the archived data, as well as maintaining access interfaces used to support customer service requests.

Regional Climate Services

The Regional Climate Services focus is defining climate service requirements, feeding those requirements back into NOAA's core research infrastructure and translation efforts of emerging research to create more accessible and consistent experimental application within each of the regions. Each Regional Climate Service Director (RCSD) is located at an NWS Regional Office. They are charged with coordinating and organizing relationships and projects within their respective region across NOAA business units, as well as other agencies and non-agencies (government, private, academic, research). Each Regional Climate Center (RCC) provides a range of services and products to NOAA, as well as to state and local agencies, and to regional businesses, among other stakeholders. Each RCC is located on a university campus and is funded from multiple public and private sector sources, as well as NOAA.

The merit-based, competitively selected RCCs ensure effective support for critical NOAA climate services, including,

- Weekly input to the *U.S. Drought Monitor* & other contributions to NIDIS;
- Operation of specialized climate data tools: *Datzilla*, a NOAA reporting and tracking system for observational errors, and *Weather Coder 3*, an operational NWS system to collect and process thousands of daily observations through the Applied Climate Information System (ACIS);
- Contributions to the development of the *NOAA Climate Portal*;

- Support *State of the Climate* reports by providing monthly summaries of regional climate anomalies;
- Acting as a regional hub for State Climatologists for climate information (e.g., support state adaptation programs); and,
- Supporting applied climate research and service development programs to support NOAA and other federal agencies (e.g., USDA, DOI, and the Department of Homeland Security).

Environmental Data Systems Modernization

The goal of the Environmental Data Systems Modernization (EDSM) program is to provide increased access and utility to environmental data, information, products, and services through the use of innovative technologies and techniques.

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.

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 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. A subset of SDS/IOS is the on-line function of making data held within the NOAA Data Centers available to meet customer requirements. The system is known as the Virtual Data System.

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/Integrated Observations System.

Schedule, Milestones, and Deliverables:

Climate Archive, Access and Assessment

Climatic Data Services

Milestones/Deliverables	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Data ingested annually and placed in NCDC primary archive. (Total PBs/yr)	4.1	6.5	6.7	8.6	9.1	11.9
Data & information added annually to on-line access (in-situ + radar +	2.0	4.0	4.0	6.0	8.0	10.0

satellite + model).(Total PB/yr)						
Data/Information available for retrieval via the WWW. (Cumulative Total PBs)	5.0	9.0	13.0	19.0	27.0	37.0
Volume of data (in-situ + radar + satellite) delivered online to customers. (Total TB/yr)	1,200	2,000	3,000	4,500	6,000	8,000
Research Climate Data Sets Transitioned to Operations (transferred to ARC) (Cumulative Total #)	2	3	3	4	4	5
Climate Data Sets Upgraded/ Updated within the Applied Research Center (ARC) (Cumulative Total #)	50	57	64	71	78	84
Paleoclimate Reconstructions (Cumulative Total #)	18	21	24	27	30	33
Climate Extremes Indices providing socioeconomic impacts information (Cumulative Total #)	3	3	3	3	3	3

CLASS Operations

Schedule and Milestones, Deliverables, and Performance Measures are available in the National Climatic Data Center, Data Center Operations program change.

Climate Data Records

FY 2013: Transition 2 CDRs to operations, maintain 13 CDRs in operations cumulative; continue transitioning to Suomi NPP satellite inputs

FY 2014: Transition 1 CDR to operations, maintain 14 CDRs in operations cumulative; continue transitioning to Suomi NPP inputs

FY 2015: Maintain 14 cumulative CDRs in operations; continue transitioning to Suomi NPP; start plans for transition to GOES-R inputs

FY 2016: Transition 1 CDR to operations, maintain 15 CDRs in operations; Suomi NPP operational.

FY 2017: Maintain 15 CDRs in operations cumulative; NPP operational inputs

FY 2016: Transition 1 CDR to operations, maintain 15 CDRs in operations; Suomi NPP operational.

FY 2017: Maintain 15 CDRs in operations cumulative; Suomi NPP operational

Ocean Archive, Access, and Assessment

Oceanographic Data Services

Milestones/Deliverables	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Authoritative, quality controlled, ocean climate data sets/information products transitioned to operations (including chemical and biological data records). (Total #/yr)	2	3	4	4	5	5
Volume of data (and data products) delivered online to customers. (Total TB/yr)	61	67	74	82	90	99
Data ingested annually to the NODC archive. (Total TB/yr)	10	10	10	10	10	10

Environmental Data System Modernization

Deliverables	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Observing systems regularly monitored on an operational basis for nominal system status and for random and time-dependent errors. (Cum Total # of systems monitored)	8	9	10	11	12	12

Performance Goals and Measurement Data:

Performance Measure:	FY 2011 Actual	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Annual percentage of U.S. states and territories that use NOAA climate information and services to improve decision-making in the face of a changing climate (measure 16d).	N/A	22%	22%	24%	25%	27%	29%
Description: This measure is an indicator of societal benefit derived from the use of NOAA climate information in public decision making in states and territories. This performance measure will track the numbers of states and territories that are benefiting from the inclusion of NOAA climate information in their decision making processes. It will also show how these decisions will lead to better results or improved decisions based on inclusion of this climate information.							

Climatic Data Services

Performance Measure:	FY						
Safe Storage (NCDC Primary and Security archive), climate data from NOAA/other observing systems consistent with NARA standards. (Cum Total PBs)	2011	2012	2013	2014	2015	2016	2017
	Actual	Target	Target	Target	Target	Target	Target
	7.4	8.2	13.0	13.4	17.4	18.2	23.8
Description: This measure reflects the amount of data safely stored by NCDC that is derived from NOAA observing systems.							

Climatic Data Services

Performance Measure:	FY						
State of the Climate Annual Report 42 Essential Climate Variables (ECVs) (% & Cum # ECVs fully assessed)	2011	2012	2013	2014	2015	2016	2017
	Actual	Target	Target	Target	Target	Target	Target
	62%	65%	69%	71%	74%	77%	79%
26 of	27 of	29 of	30 of	31 of	32 of	33 of	
42	42	42	42	42	42	42	
Description: Track the increase in the number of essential climate variables that have a quantitative analysis and assessment of long-term trends and variations in climate performed and published in future annual issues of the Annual State of the Climate Report. The target of 100% is 42 essential climate variables that have a quantitative analysis performed. With adequate observing systems in place under the stewardship of NOAA, a comprehensive and quantitative analysis of atmospheric, ocean, and select terrestrial variables considered essential can be performed.							

Climate Data Records

Performance Measure:	FY						
Number of CDRs transitioned to NOAA Operations (Cumulative)	2011	2012	2013	2014	2015	2016	2017
	Actual	Target	Target	Target	Target	Target	Target
	8	11	13	14	14	15	15
Description: The increase will continue transforming raw satellite data into unified and coherent long-term environmental observations and products that are critical to climate modelers and decisions makers concerned with advancing climate change understanding, prediction, mitigation and adaptation strategies, policies, and science.							

PROGRAM CHANGES FOR FY 2013:

Archive, Access, and Assessment: National Climatic Data Center, Data Center Operations (Base Funding: \$722,000 and 0 FTE; Program Change; +\$5,822,000 and +0 FTE):

NOAA requests an increase of \$5,822,000 and 0 FTEs for a total of \$6,544,000 and 0 FTEs for Data Center Operations to maintain NOAA's ability to provide long-term preservation (safe storage) and access to the Nation's environmental data and information.

Proposed Actions:

Funding will be used to sustain and operate NOAA's replacement (new generation) Enterprise Archive System, the Comprehensive Large Array Stewardship System (CLASS).

Funds will be used to support the following:

- Maintenance, operations, and upgrades to the new generation archive system;
- Provide high level of "up time" to meet NOAA operational requirements;
- Maintenance contracts/upgrades to software and hardware needed on a recurring basis to keep the system functional and compatible;
- Periodic/routine increase in energy and heating-cooling-humidity demands related to the new operational archive/access system;
- Training to keep operator skill levels current; and,
- Meeting IT security requirements.

Statement of Need and Economic Benefits:

Funding is needed to provide operations and maintenance of NOAA's new Enterprise Archive and Access system and communications bandwidth to deliver large data volumes. The archive system will accommodate data from new or improved observations planned by NOAA: Suomi-NPP, JPSS, GOES-R, and Dual Polarization-modified weather radars. Also accommodated will be data from Jason, Continuously Operating Reference Stations (CORS), and the historical and current satellite and in-situ data already part of the data center holdings that will be transferred into the new archive/access system.

Long-term sustained and reliable archive/access operations are urgent to accommodate a projected 3,000 percent increase in data volume from the Suomi NPP satellite. An additional projected 3,000 percent increase in data volume is expected from JPSS and more from GOES-R, dual polarized Weather radar, and climate/weather models. NOAA is incrementally developing and seamlessly integrating the expanded capabilities into the operational and services management systems, a critical priority for both NOAA and the Data Centers.

Base Resources Assessment:

The base resources assessment is provided in the Archive, Access, and Assessment base narrative.

Schedule and Milestones:

Operations Readiness Schedule	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017+
Next Generation Archive Initial Operational Capability at Data Centers	IOC	EOC	EOC	EOC	EOC	EOC
Expand/Operate & Maintain Capability/ Capacity	X	X	X	X	X	X
Major Data Generating Programs						
NOAA POES (Historical/Current to End of Life	X	X	End	X	X	X

for NOAA-19)						
NOAA GOES (Historical/Current to End of Life for GOES-14/15)	X	X	X	X	X	X
DoD (Historical/Current DMSP & New DWSS)	X	X	X	X	X	X
EUMETSAT (Historical/Current & New - MetOp, GCOM, EPS)	X	X	X	X	X	X
Jason (Jason-2 and future Jason-3)	X	X	X	X	X	X
WxRadar-NEXRAD (Historical/Current & Dual Polar FY 2012/ Future Phased Array FY 2020)	X	X	X	X	X	X
NCEP Models/Reanalysis Products (Historical/Current & Future)	X	X	X	X	X	X
Suomi National Polar-orbiting Partnership (Suomi NPP) (New)	X	X	X	X	X	X
Joint Polar Satellite System (JPSS) (New)						X
GOES R, S, T, U (New)				X	X	X
Other (Legacy Systems Migration (Historical/Current and New)	X	X	X	Done		
CLASS Data Volume (one site) - Cumulative Total in PB	7	12	17	24	33	44

Table based on CLASS 1RD, NESDIS Satellite “Fly-Out” Charts (January/February 2012), and NEXRAD schedule.

(IOC – Initial Operational Capability, EOC – Expanded/Enhanced Operational Capability)

Deliverables:

- FY 12-17: Operate/Sustain new generation Enterprise Archive System (currently referred to as CLASS), with minimum of 99% system availability
- FY 12-15: Safe storage and access for historical data migrated from legacy systems to new system
- FY 14: Additional storage to accommodate anticipated data volume growth (Suomi NPP/NEXRAD DP, etc.)
- Continuously monitor system risk and protect data from loss or damage

Performance Goals and Measurement Data:

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Sustained long-term preservation (safe storage for and access to) for NOAA’s data and information. (Cumulative Total # Data Sets)	Actual	Target	Target	Target	Target	Target	Target
With Increase	2	N/A	5	7	9	11	13
Without Increase		3	3	3	4	5	6
Description: This performance metric is based on “best collective efforts” of a wide range of experts in estimating the current archives yet to be migrated to new archive/access system (aka CLASS) and the projected data volumes from new platforms (Suomi NPP, JPSS, GOES R+, Wx Radars, and Model Reanalyses). The targets represent the cumulative total number of observation systems in the new archive/access system (CLASS).							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: NESDIS

Subactivity: Data Centers & Information Services

Object Class	2013 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	5,822
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>5,822</u>

Archive, Access, and Assessment: National Oceanographic Data Center (Base Funding: \$12,213,000 and 53 FTE; Program Change: -\$3,796,000 and -6 FTE: NOAA requests a decrease of \$3,796,000 and 6 FTE for a total of \$8,417,000 and 47 FTE to consolidate operations at the National Oceanographic Data Center (NODC).

Proposed Actions:

In FY 2013, NODC will begin to consolidate its operations, centralizing Information Technology (IT) functions in Mississippi and administrative functions in Maryland. The consolidation will reduce requirements for contractor support for IT operations. During the consolidation there will be a temporary decrease in the number of data sets going online until the NODC archive is migrated to the Comprehensive Large Array-data Stewardship System. In addition, NODC will continue to focus on a core set of baselines, but will streamline others. This will include eliminating the generation of baselines for key ocean biological and chemical variables and documentation of long term changes of these variables in areas of the world such as the Arctic Ocean. NODC will continue to provide a permanent archive for ocean and coastal data. NODC will investigate how to transition some of its stewardship functions to the academic and private sectors. NODC will also reduce its scientific personnel.

Base Resource Assessment:

The base resources for this activity are described in the Data Centers & Information Services base narrative.

Schedules and Milestones:

By FY 2015, NODC will have migrated its archive to the Comprehensive Large Array-data Stewardship System (CLASS). NODC will continue to provide stewardship (quality control, analysis and management) for ocean and coastal data.

Deliverables:

- Development of authoritative, quality controlled, global and coastal ocean data sets/information products
- Delivery of ocean data (and data products) online to customers

Deliverables	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Number of authoritative global and coastal ocean data sets produced. (Total #/yr)	2	1	1	1	2	2
Volume of ocean data (and data products) delivered online to customers. (Total TB/yr)	61	58	58	58	61	64

Performance Goals and Measurement Data:

N/A

PROGRAM CHANGE PERSONNEL DETAIL

Activity: NESDIS

Subactivity: Data Centers & Information Services

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Information Mgmt	Silver Spring, MD	ZP IV	-1	89,033	(89,033)
IT Specialist	Silver Spring, MD	ZP III	-2	62,467	(124,934)
Admin Support	Silver Spring, MD	ZS IV	-2	42,209	(84,418)
Computer Asst	Silver Spring, MD	ZS IV	-1	42,209	(42,209)
Total			-6		(340,594)
less Lapse		0%	0		0
Total full-time permanent (FTE)			-6		(340,594)
2012 Pay Adjustment (0%)					0
2013 Pay Adjustment (2%)					0
TOTAL					(340,594)

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-6
Other than full-time permanent	0
Total	-6
Authorized Positions:	
Full-time permanent	-6
Other than full-time permanent	0
Total	-6

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: NESDIS
Subactivity: Data Centers & Information Services

Object Class	2013 Decrease
11 Personnel compensation	
11.1 Full-time permanent	(\$341)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>(341)</u>
12 Civilian personnel benefits	(145)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(3,310)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(3,796)</u>

Archive, Access, & Assessment: National Geophysical Data Center (Base Funding: \$6,206,000 and 48 FTE; Program Change: -\$578,000 and -3 FTE: NOAA requests a decrease of \$578,000 and 3 FTE for a total of \$5,628,000 and 45 FTE to discontinue specific sea-ice products developed for the National Snow and Ice Data Center and reduce staffing at NGDC.

Proposed Actions:

With this reduction, NOAA will not support specific sea-ice products that are developed for the National Snow and Ice Data Center; some of these products could potentially be funded through other sources outside of NGDC or NOAA. Two FTE will be reduced from the NGDC division responsible for providing scientific data stewardship for the nation’s operational space environmental data and information; even with this reduction, NGDC maintains the ability to provide mission critical space weather data sets to support NOAA’s forecasting and monitoring abilities. An additional one FTE will be reduced from the NGDC division responsible for archiving and assimilating natural hazard information, since funding provided by sources outside of NGDC was already scheduled to decrease.

Base Resource Assessment:

The base resources for this activity are described in the Archive, Access, and Assessment base narrative.

Schedules, Milestones, and Deliverables:

Deliverables (excluding CLASS)	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Cumulative total of data ingested and placed in the archive. Unit of measure is Terabytes (TB).	634	685	739	799	863	932
Volume of data and information delivered online to customers. (TB/yr)	146	158	170	184	199	200

Performance Goals and Measurement Data:

N/A

PROGRAM CHANGE PERSONNEL DETAIL

Activity: NESDIS
 Subactivity: Data Centers and Information Services

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Physical Scientist	Boulder, CO	ZP IV	-1	87,815	(87,815)
Physical Scientist	Boulder, CO	ZP III	-1	61,612	(61,612)
Scientific Data Technician	Boulder, CO	ZS II	-1	26,758	(26,758)
Total			<u>-3</u>		<u>(176,185)</u>
less Lapse		0%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			<u>-3</u>		<u>(176,185)</u>
2012 Pay Adjustment (0%)					0
2013 Pay Adjustment (0.5%)					0
TOTAL					<u>(176,185)</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-3
Other than full-time permanent	0
Total	<u>-3</u>
Authorized Positions:	
Full-time permanent	-3
Other than full-time permanent	0
Total	<u>-3</u>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: NESDIS

Subactivity: Data Centers & Information Services

Object Class	2013 Decrease
11 Personnel compensation	
11.1 Full-time permanent	(\$176)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	(176)
12 Civilian personnel benefits	(94)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(38)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(270)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(578)

Archive, Access, and Assessment: Climate Database Modernization Program (CDMP) (Base Funding: \$2,000,000 and 0 FTE; Program Change: -\$2,000,000 and -0 FTE): NOAA requests a decrease of \$2,000,000 and 0 FTE to terminate the Climate Database Modernization Program. This program scans images and keys data from paper and microfilm of new incoming and historical records and makes the digital data available on the web to businesses and members of the climate and environmental communities.

Proposed Actions:

NOAA will terminate the CDMP program. The CDMP program is a partnership with four private sector contractors, currently supporting approximately 35 contractor personnel. CDMP's goal is to preserve and make available climate data going back several hundred years. To date, over 57 million images have been digitized for online access. Over 14 terabytes of data have been keyed and converted to digital format, extending the historical climate record back to the early 1800s, and in some cases, the 1700s. These are now readily accessible via the Internet and other web-based portals. Environmental publications and historical documents are now available in electronic form and can be downloaded to a computer.

Monthly current observations from over 2,650 National Weather Service (NWS) Cooperative Observer Program stations, as well as approximately 1,600 NWS hydrological stations, are also digitized and then merged with historical long term climate data records going back decades to 100+ years. The Budget proposes to discontinue the conversion of new observations from paper to digital format. NWS is in the process of digitally converting its remaining stations that still record and report via paper, which will reduce the immediate operational need for CDMP supported service.

Base Resource Assessment:

The base resources for this activity are described in the Data Centers & Information Services base narrative.

Schedule and Milestones:

Terminate program in FY 2013

Deliverables:

None

Performance Goals and Measurement Data:

None

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: NESDIS
Subactivity: Data Centers & Information Services

Object Class	2013 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(2,000)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(2,000)</u>

Coastal Data Development: Coastal Data Development (Base Funding: \$4,500,000 and 16 FTE; Program Change: -\$500,000 and 0 FTE: NOAA requests a decrease of \$500,000 and 0 FTE for a total of \$4,000,000 and 16 FTE to reduce regional product development at the National Coastal Data Development Center (NCDDC) , a division of the National Oceanographic Data Center (NODC).

Proposed Actions:

This request will reduce regional project development and science contractor support at the National Coastal Data Development Center, a division of NODC. NODC will continue to identify and obtain coastal data sets for ingest into the national ocean and coastal archive.

Base Resource Assessment:

The base resources for this activity are described in the Data Center & Information Services base narrative.

Schedules and Milestones:

Continue regional product development

Deliverables:

- Development of regional products and services in support of NOAA’s Oceans, Climate and Coastal goals

Deliverables	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Number of regional products (multiple data elements) produced. (Total #/yr)	3	2	2	3	3	3

Performance Goals and Measurement Data:

N/A

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: NESDIS
Subactivity: Data Centers & Information Services

Object Class	2013 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	(500)
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>(500)</u>

Regional Climate Services: Regional Climate Services (Base Funding: \$6,800,000 and 6 FTE; Program Change: -\$1,048,000 and -0 FTE): NOAA requests a decrease of \$1,048,000 and 0 FTE for a total of \$5,752,000 and 6 FTE for Regional Climate Services (RCS), which includes the six Regional Climate Centers (RCCs) and the six Regional Climate Services Directors (RCSDs).

Proposed Actions:

The current contract period for the RCCs ends April 1, 2013. The acquisition package for open competition will be prepared in FY 2012 and the solicitation will follow. Through the competitive award process, six new RCC contracts will be awarded for FY 2013. Each RCSD will directly manage the NOAA contract for a specific RCC, thereby reducing the management overhead costs under the contract and providing improved contract oversight regarding deliverables, performance measures, etc.

The intent is to better align the areas of responsibility of the RCCs with the geographical regions (area of responsibilities) managed by NOAA through the RCSDs and the NWS regions. Together, the RCSDs and RCCs will serve as trans-boundary experts identifying stakeholder needs and matching those needs with the emerging science and observations developed through NOAA's Data Centers, labs and partners. Ultimately, the goal is to promote the development and delivery of timely, place-based climate information to meet stakeholder demand. Initial sectors targeted will include water resources (including drought), sea level rise and coasts, and living marine resources. The work will be guided by regional and national climate assessment activities as well as Action Plans that will be developed by the RCSDs in FY 2012. In addition, the work will be guided by NOAA's MOU with the Department of the Interior and the work of the Interagency Climate Change Adaptation Task Force.

Base Resource Assessment:

The base resources for this activity are described in the Data Centers & Information Services base narrative.

Schedules and Milestones:

- FY 2012: Initial Regional Climate Services Action Plans developed for all 6 regional networks, incorporating other federal agencies where applicable, including plans to retrieve user feedback to evaluate services
- FY 2012-17: Establish and implement a continuous process for characterizing regional customer/partner requirements, starting with an initial baseline assessment of needs for products, services, tools, and capacity building
- FY 2012-17: Develop and implement a continuous system for conducting product and service delivery to the customers/partners of the climate service network.
- FY 2013-17: Establish a regionally based process for new product and service development and transition, focusing on closing high priority research gaps, and transitioning science to applications through active engagement with academic, private, and federal research sectors in the regions.

Deliverables:

- Integrated tools and outreach that enhance risk management strategies for decision makers, such as GIS-enabled NOAA climate data products focused initially on Sea-level rise and water management
- Competency-building training sessions for professional development to enhance use of regionally- or sectorally-relevant climate products/services; includes rigorous feedback mechanisms (e.g., user evaluations, surveys)
- Updated regional contributions to the Climate Services Portal

	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Numbers of customer requirements activities conducted	3	3	6	8	8	8
Numbers of products or tools developed	2	2	3	4	4	5
Numbers of models developed	0	0	3	4	4	6
Numbers of collaboration meetings held	4	4	5	5	5	5
Number of science to application projects/products	5	4	4	4	5	5
Total	14	13	21	25	26	29

Performance Goals and Measurement Data:

Performance Measure:	FY 2011 Actual	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
New regional products and services provided and used by the public, private sector, and decision support communities for climate related decisions (cumulative per year)							
With Decrease	0	N/A	8	9	10	11	12
Without Decrease		7	8	9	10	11	12

Description: Examples of potential RCC products and services in FY 2012 include Applied Climate Information System web tools for gridded data, including historical gridded data sets; regional content for the Climate Portal; a new application that allows growers to receive pertinent climate information on their smart phones; and decision support tools for cereal crop producers.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: NESDIS
Subactivity: Data Centers and Information Services

Object Class	2013 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(1,048)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(1,048)

Environmental Data Systems Modernization: Satellite Active Archive (Base Funding: \$1,500,000 and 0 FTE; Program Change: +\$800,000 and +0 FTE: NOAA requests an increase of \$800,000 and 0 FTE for a total of \$2,300,000 and 0 FTE to continue funding for the Satellite Active Archive (SAA) for web-based digital access to satellite data.

Proposed Actions:

FY 2013 funds will be used for the communications circuits specific to connecting the CLASS archive system at the National Climatic Data Center, Asheville, NC, and National Geophysical Data Center, Boulder, CO, to the satellite providers “landing zone” pick-up point at the NOAA Satellite Operations Facility (NSOF), Suitland, MD.

Statement of Need and Economic Benefits:

The NOAA Satellite Active Archive mission is to provide robust and safe archive storage and stewardship, and open access to data sets and derived climate model products for present and future generations of users. This next generation archival and access capability enables NOAA and the Nation to maintain and improve its science programs in support of economic growth and improved environmental stewardship. Business, research, and government leaders 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 assist in predicting future environmental conditions and events. These funds will address the cost of CLASS related communications.

Base Resource Assessment:

The base resources for this activity are described in the Data Centers & Information Services base narrative.

Schedules and Milestones:

N/A

Deliverables:

- FY 12: Archive and service GOES, POES, and Suomi NPP data from the new system (aka CLASS)
- FY 12-15: Safe storage and access for historical data migrated from legacy systems to new system
- FY 12-18: Operate/Sustain new generation Enterprise Archive System (currently referred to as CLASS), with minimum system availability of 95% for each node, and of 99% for the combined nodes
- FY 14: Additional storage to accommodate anticipated data volume growth (Suomi NPP/NEXRAD Dual Polarization, etc.).
- Continuously monitor system risk and protect data from loss or damage.

Performance Goals and Measurement Data

N/A

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: NESDIS

Subactivity: Data Centers & Information Services

Object Class	2013 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	800
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>800</u>

APPROPRIATION ACCOUNT: PROCUREMENT, ACQUISITION, AND CONSTRUCTION
SUBACTIVITY: SYSTEMS ACQUISITION

Geostationary Operational Environmental Satellite Program

The goals of the Geostationary Operational Environmental Satellite (GOES) program are to continue the procurement of spacecraft, instruments, launch services, and ground systems equipment; provide satellite and instrument anomaly support to the on-orbit GOES satellites; and maintain the ground system for GOES satellite operations which is necessary to maintain an uninterrupted flow of environmental data collected from geosynchronous satellites to users.

GOES data provide:

- Cloud images and precipitation estimates for hurricanes and other coastal storms;
- NOAA CoastWatch sea surface temperature (SST) products for locating commercial and sport fish as well as protected marine species;
- New research products, such as ocean surface currents, that support both ecosystems management and safety of marine navigation;
- Primary information in the Nation's Climate Reference Network, providing reference quality data for surface temperature and precipitation monitoring;
- Images of the United States and adjacent ocean areas to enable the detection of hurricanes and other major weather events;
- Data collection from remote fixed in-situ observing platforms such as buoys and rain gauges for use in numerical weather prediction models and flood/drought assessments;
- Weather information to emergency managers for use during severe weather and other disasters;
- A means to obtain quantitative environmental data such as temperature, moisture, wind, radiation and solar energy particle flux for use in weather predictions, hydrometeorological flux, climate long term trending, ecosystems management, commercial economic gain, and transportation safety;
- Unique monitoring capabilities that support air, land, and marine transportation.

The GOES system provides an uninterrupted, continuous flow of data and information that meets customers' spatial, temporal and accuracy requirements, providing significant customer benefit within an established life cycle cost target. The procurement of GOES satellites is a cooperative venture between NOAA and NASA. Historically, NOAA defines requirements, manages, funds, implements system integration, procures ground segments, and operates the GOES satellites. NASA serves as the agency with multi-disciplinary engineering expertise, develops detailed system specifications, procures and launches the spacecraft, and assists NOAA in system integration.

NOAA GOES satellite systems are designed, developed, acquired, and operated as a single end-to-end system. The system includes the observing platform (space-based instruments); command and control of the platform; product generation and distribution; archive and access; and user interface. GOES contributes to an Integrated Global Observation System, which is an end-to-end approach linking requirements to services. The system delivers critical real-time data and information needed for sound decision making, addresses needs to support expanded climate services, and works with global partners.

The GOES program operates a two-satellite constellation in geosynchronous orbit above the equator and observes about 60 percent of the Earth with at least one satellite placed in on-orbit storage. GOES observations allow continuous monitoring from the same angle during the tracking/detection of severe storms, atmospheric moisture changes, mesoscale scanning, currents flow dynamics, and atmospheric chemicals (particles) that cannot be achieved from a non-stationary orbit without

increased error rates and lost data segments. NOAA maintains an on-orbit spare to complement the two operational GOES satellites. This on-orbit spare philosophy allows NOAA to quickly replace a failed satellite by re-positioning an on-orbit satellite to ensure there is no loss in continuous coverage. To facilitate this strategy, NOAA plans the launch of the next satellite to coincide with the planned switchover of the on-orbit spare to operational status.

A primary function of the GOES program is supporting the NWS in forecasting, tracking, and monitoring severe storms. The improved accuracy of the NWS forecasts by using GOES data results in dissemination of timely weather forecasting and advisories to impacted areas to ensure authorities and the public are equipped with decision-making information to protect lives and property.

GOES-N SERIES (http://www.osd.noaa.gov/GOES/goes_n.htm)

The NOAA GOES-N program serves the public by generating timely and accurate environmental data, images, and other weather information. The GOES-N Series program includes GOES-13, GOES-14, and GOES-15 satellites, launched May 2006, June 2009, and March 2010, respectively.

GOES-N satellites provide many weather images seen on U.S. television newscasts every day. The GOES-N imaging and sounding instruments feature flexible scans for small-scale area viewing in regions of the visible and infrared spectrum allowing meteorologists to improve short-term forecasts. The GOES-N satellites provide nearly continuous imaging and sounding, which allow forecasters to better measure changes in atmospheric temperature and moisture distributions and, hence, increase the accuracy of their forecasts. GOES-N environmental information is used for a host of applications, including weather monitoring and prediction models, ocean temperatures and moisture locations, climate studies, cryosphere (ice, snow, glaciers) detection and extent, land temperatures and crop conditions, and hazards detection.

During the week of April 10, 2011, tornadoes were reported in Oklahoma, Mississippi, Arkansas, Alabama, North Carolina, South Carolina and Virginia. The GOES-13 satellite provided images that tracked those tornadoes and thereby facilitated the NWS in issuing timely advisory warnings. Additionally, GOES-N satellites produced some of the first images to track smoke from the oil fire that later became the Deepwater Horizon Oil Spill in the Gulf of Mexico. Scientists and environmentalists used and continue to use the GOES data and images to assess environmental impact to that region.

GOES-N satellites measure the Earth’s atmosphere, its surface, cloud cover, and the solar and geosynchronous space environment; and provide a platform for the Imager, Sounder, Solar X-Ray Imager (SXI), and space environment monitoring instruments. The system also supports land and ocean-based Data Collection Platforms, transmits Imager and Sounder data, relays Low Rate Information Transmission data, relays GOES variable reformatted Imager and Sounder data, relays Emergency Managers Weather Information Network broadcasts, and participates in the international COSPAS-Search and Rescue Satellite-Aided Tracking (SARSAT) system.

Spacecraft	Date Launched	Operational Date
GOES-13	May 2006	2010-2015
GOES-14	June 2009	2015-2020
GOES-15	March 2010	2012-2017

See the Program Change for the proposed schedule/milestones, deliverables, performance goals and measurement data, and the budget profile.

GOES-R SERIES (<http://www.goes-r.gov/>)

The GOES-R program will provide end-to-end system integration through the acquisition, deployment, maintenance, and operations of the space, ground, and launch segments.

The needs and benefits of GOES-R series satellites are as follows:

- Maintains continuous real-time observations for severe storms, hurricanes, and weather monitoring to the Nation;
- Needed as a backup to GOES-14 or -15 as part of a system of two operational satellites and an on-orbit spare;
- Provides advances in NOAA's observation capabilities for all NOAA mission goals including improvements to coastal, space weather, and lightning observations; and,
- Incorporates key enhancements in spatial and spectral information, coverage, and timeliness.

Average annual damage from tornadoes, hurricanes, and floods is \$11.4 billion with about 100 deaths annually³. Approximately \$4 billion per year is lost in economic efficiencies as a result of weather-related air traffic delays⁴. Lightning causes between \$4 and \$5 billion in losses each year in the civilian sector with about 47 deaths and 303 injuries per year⁵. By helping to produce more accurate forecasts and warnings, the GOES-R series will minimize these losses.

Funding is used for the following activities:

- Continued development of GOES-R & S spacecraft and ground system. The program will complete the Mission Operations (MOR) and Systems Integration Review (SIR) for the GOES-R System;
- Continuation of instruments already under contract: Advanced Baseline Imager (ABI), Solar Ultra Violet Imager (SUVI), Extreme Ultra Violet Sensor/X-Ray Sensor Irradiance Sensor (EXIS), Space Environmental In- Situ Suite (SEISS), and Geostationary Lightning Mapper (GLM); Initial Flight Models for each instrument will be delivered in FY 2013 and continue development of satellite activities;
- Continued development of GOES-T & U spacecraft and instruments; and
- Continuation of the ground system integration and test activities including the new antennas.

Spacecraft	Launch Readiness Date	Planned Operational Date
GOES-R	Oct 2015	Dec 2016
GOES-S	Feb 2017	Apr 2020
GOES-T	Apr 2019	Mar 2025
GOES-U	Oct 2024	Jul 2028

³ Extreme Weather Sourcebook 2001: *Economic & Other Societal Impacts Related to Hurricanes, Floods, Tornadoes, Lightning, and Other U.S. Weather Phenomena*. Collaborative Program on the Societal Impacts and Economic Benefits of Weather Information, Boulder, CO).

⁴ NOAA, 2002: GOES-R Sounder and Imager Cost/Benefit Analysis, NOAA NESDIS Office of Systems Development, Silver Spring, MD)

⁵ NOAA, 2004: GOES-R Sounder and Imager Cost/Benefit Analysis - Phase III. NOAA/NESDIS/Office of Systems Development, Silver Spring, MD

See the Program Change for the proposed schedule/milestones, deliverables, performance goals and measurement data, and the budget profile.

Polar-orbiting Operational Environmental Satellite Programs

The goals of the Polar-orbiting Operational Environmental Satellite programs are to continue the procurement of spacecraft, instruments, launch services, and ground systems equipment necessary to maintain an uninterrupted flow of weather and environmental data to users.

Polar satellites provide a continuous flow of global weather and environmental observations in support of the following operational requirements:

- Environmental monitoring, and weather and marine forecasting;
- Climate assessment and change prediction;
- Detecting weather systems and significant environmental events such as volcanic eruptions, oil spills, and wildfires;
- Measuring atmospheric ozone and the space environment;
- Collecting environmental data from other surface platforms such as buoys; and
- Performing search and rescue functions.

POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITE (POES) **(<http://www.oso.noaa.gov/poes/>)**

POES is NOAA's current operational polar satellite system, with the last satellite in the series (NOAA-19) launched on February 6, 2009. As part of an international agreement with the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), the POES program also includes the European Polar Weather Satellite program, Metop. Metop satellites carry U.S. instruments and provide data services coverage from a mid-morning polar orbit through 2020.

NOAA has the responsibility to provide forecasts and warnings for the U.S., its territories, adjacent waters and ocean area; for the protection of life and property and the enhancement of the national economy. This mission requires an enduring capability to acquire global data from satellites, and the capability to process and disseminate environmental data on an extensive spatial range (global, regional and local) within a variety of time scales (minutes to days) to central processing centers and distributed direct users. These data include, but are not limited to global imagery; cloud and precipitation parameters; atmospheric profiles of temperature, moisture, wind, aerosols and ozone; surface conditions concerning ice, snow and vegetation; ocean parameters of sea temperature, color and state; and solar and in-situ space environment conditions.

These data are critical for,

- Severe storm and flood warnings;
- Tropical cyclone and hurricane reconnaissance and warnings;
- Hydrologic forecasts and forecasts of the ocean surface and internal structures;
- Medium range weather forecast (out to fifteen days);
- Solar and space environmental forecasts;
- Aviation forecasts (domestic, military, and international);
- Forecasts of ice conditions;
- Seasonal and inter-annual climate forecasts;
- Decadal-scale monitoring of climate variability;
- Assessment of long-term global environmental change;
- Environmental air quality monitoring and emergency response;
- Detection and analysis of fires and volcanic eruptions; and
- Short-term and mesoscale forecasts.

Continued funding supports the following activities:

- Satellite and instrument anomaly support to the on-orbit POES satellites;
- Maintaining the ground system for operations; and
- Procurement, maintenance and testing of the U.S. instruments on the European Metop satellites.

Schedule and Milestones:

- FY 12: Continue satellite and instrument anomaly support for on-orbit POES satellites
- FY13 - 15: Support annual reactivation for MetOp-C
- FY16: Prepare to support the launch of MetOp-C
- FY 17: Post-launch support of MetOp-C

Deliverables:

- Engineering support for the on-orbit POES satellites and support to EUMETSAT for U.S. instruments for Metop satellites, either in orbit or waiting to be launched.

Performance Goals and Measurement Data:

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Percentage of NOAA managed satellite data processed and distributed within 60 minutes	Actual	Target	Target	Target	Target	Target	Target
	99.8%	95%	95%	95%	95%	95%	95%
Description: Provide the necessary polar observations from the primary polar spacecraft tracked from observation through availability to the user. This measure is used to track timeliness and customer satisfaction. Note that in 2017, NOAA-19 will have exceeded its design life and Suomi NPP will be close to its nominal end of life; for FY 2017 this measure assumes funding from the JPSS program.							

Outyear Funding Estimates (\$ in thousands):*

POES**	FY 2012 & Prior	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	CTC	Total
Change from FY 2013 Base		-	-	-	(4,171)	(26,562)		
Total Request	2,441,566	32,241	32,241	32,241	28,070	5,679	0	2,572,038

*Outyears are estimates only. Future requests will be determined through the annual budget process.

**Given the 28 years of prior budget records for the POES program, the vast majority of which was recorded on paper rather than digitally, along with a number of funding modifications from the enacted levels (rescissions, supplementals, Hollings scholarships, etc.), a breakout of FY 2012 and prior funding is not available at this time. At Congress' request, NESDIS will conduct an audit of these records to obtain a more detailed breakout.

JOINT POLAR SATELLITE SYSTEM (JPSS)

JPSS will address NOAA's requirements to provide global environmental data such as cloud imagery, sea surface temperature, atmospheric profiles of temperature and moisture, atmospheric ozone concentrations, search and rescue, direct read-out, and data collection services. These data

are used in numerical weather prediction models primarily for 2-7 day forecasts and for climate monitoring.

JPSS will provide continuity of polar satellite coverage and will improve the nation's ability to collect and distribute higher resolution data and products. This is achieved through the modernization of sensors and systems to ensure improved performance, compatibility, supportability, and maintainability. JPSS data will improve weather forecasts, climate monitoring, and warning lead times for severe storms benefiting agriculture, transportation, and energy production. In accordance with the Administration's February 2010 restructuring of the program, DOD manages satellite acquisition for the morning orbit and NOAA – with the assistance of NASA – manages acquisition for the afternoon orbit. NOAA/NASA will continue to provide joint ground system support.

See the Program Change for the proposed schedule/milestones, deliverables, performance goals and measurement data, and the budget profile.

SATELLITE ALTIMETRY MISSION – JASON-3

Jason-3 is a joint satellite altimetry mission between NOAA and the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT). Jason-3 will provide continuity of precise measurement of sea [ocean] surface heights for applications in,

- Ocean Climatology: global sea-level rise, decadal variability in the ocean, seasonal/inter-annual variability, and coastal variability & its impact on ecosystems; and,
- Ocean Weather: operational oceanography, surface wave forecasting & evaluation, and hurricane intensity forecasting.

Jason-3 is a five-year development and integration effort that started in FY 2010. NOAA is providing a microwave radiometer, precision orbit determination components (e.g., GPS, Laser Retroreflector Array (LRA)), launch services, ground system and operations, and associated engineering services for Jason-3. Through an interagency agreement, NASA is NOAA's acquisition and development agent, but NOAA will retain overall program management responsibility. EUMETSAT is providing the spacecraft, altimeter, additional precision orbit components, ground system and operations.

Jason-3 will follow in the tradition of the previous altimetry missions, Topex/Poseidon, Jason-1 and -2. The Jason series has been transitioned as a research endeavor from NASA and the Centre National d'Etudes Spatiales (CNES), the French Space Agency, to NOAA and EUMETSAT for joint implementation as a sustained and systematic (i.e., operational) capability.

NASA on behalf of NESDIS has started acquisition of the mission instruments and started a feasibility study to identify a suitable launch vehicle. Continued funding supports the ongoing acquisition of Jason-3 components and launch services.

See the Program Change for the proposed schedule/milestones, deliverables, performance goals and measurement data, and the budget profile.

DEEP SPACE CLIMATE OBSERVATORY (DSCOVR)

Refurbishment of NASA's DSCOVR satellite will allow NOAA to maintain continuity of solar wind data used for geomagnetic storm warnings. NOAA will manage the DSCOVR mission as an operational sentinel to give notice of approaching solar storms with potentially calamitous consequences for terrestrial electrical grids, communications, GPS navigation, air travel, satellite operations and human spaceflight. This program is being conducted in partnership with the U.S. Air Force (USAF), which will provide the launch vehicle and services.

NOAA has an operational requirement for continuous solar wind data. These data are the sole source of geomagnetic storm alerts. Geomagnetic storms are the costliest form of space weather and have the greatest potential economic impact on the largest number of customers.

See the Program Change for the proposed schedule/milestones, deliverables, performance goals and measurement data, and the budget profile.

CRITICAL SINGLE POINT OF FAILURE/CRITICAL INFRASTRUCTURE PROTECTION (CIP)

The Critical Infrastructure Protection project will provide backup systems at the Wallops Command and Data Acquisition Station (WCDAS) and will perform all mission critical operations and critical product data processing functions in the event of a catastrophic outage at the NSOF primary site.

The CIP is a backup facility to the NSOF/Environmental Satellite Processing Center (ESPC) operations and ensures the continuity of the nation's environmental satellite data images and critical products used by the NWS and DOD as inputs to analyses and forecast models. CIP will ensure continuity of the issuance of life-saving NWS watches and short-term warnings to the public in the event the primary ESPC system at the NSOF becomes inoperable.

The NOAA Product Processing and Distribution (PP&D) Office is a critical single point of failure for every operational NOAA satellite product and service that NWS and other users rely on for weather information. Satellite data represents approximately 93 percent of the input to numerical weather prediction models.

Schedule and Milestones:

- FY 2013: Build back-up systems for ESPC applications in order to address Research-to-Operations missions and continuing evolution of the Office of Satellite Data Processing and Distribution/ESPC systems and products.
- FY 2014-17: Maintenance and Operations

Deliverables:

- The CIP project will provide backup systems that will perform mission critical operations and critical product data processing functions in the event of a catastrophic outage of the primary site, the satellite operations facility at NSOF. CIP will deliver continuity of operations of NOAA products and services generated by the environmental satellites.

Performance Goals and Measurement Data:

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
% of critical satellite data processed and distributed in the event of a catastrophic outage at the NSOF primary site	Actual	Target	Target	Target	Target	Target	Target
	100%	90%	90%	95%	95%	95%	95%
Description: Provide critical satellite data product processing backup in the event of a catastrophic outage of the primary satellite operations facility at NSOF. Critical satellite data is data that has been approved for CIP backup by the Satellite Products and Services Review Board (SPSRB).							

Performance Measure:	FY						
% of satellite data processed and distributed within 4 hours of CIP activation	2011	2012	2013	2014	2015	2016	2017
	Actual	Target	Target	Target	Target	Target	Target
	100%	95%	95%	95%	95%	95%	99%
Description: The CIP requirement is to have Priority 1 operational products available within 24 hours of CIP activation (complete product list in found at http://www.osdpd.noaa.gov/ml/cip.html).							

Outyear Funding Estimates (BA in thousands):*

CIP	FY	FY	FY	FY	FY	FY	CTC	Total
	2012 &	2013	2014	2015	2016	2017		
	Prior							
Change from FY 2013 Base		-	-	-	-	-		
Total Request	27,656	2,772	2,772	2,772	2,772	2,772	2,842	44,358

*Outyears are estimates only. Future requests will be determined through the annual budget process.

NPOESS PREPARATORY DATA EXPLOITATION (NDE)

The NDE project is developing and implementing capabilities to process and distribute Suomi NPP and future Joint Polar Satellite System (JPSS) products and services, once the data have been delivered to NOAA. NOAA must implement capabilities to process the observations into useful products that meet the requirements of NOAA's operational centers and other civilian users. The NDE program will generate measurements of atmospheric and surface properties with smaller biases and less noise that will improve and extend the NWS's capability to provide weather forecasts and warnings. NESDIS and the NWS have collaborated to establish a priority for NDE product developments. As a result, the NDE program will provide the capability to generate the following data products for NOAA within two years after the Suomi NPP launch: atmospheric and ocean surface radiances, snow cover, sea surface temperature, vegetation fraction, tropical cyclone products, polar winds, atmospheric moisture, ocean color and ozone profiles.

The NDE project is developing the IT infrastructure and science code necessary to ingest and add value to Suomi NPP and JPSS observations. By mid-FY 2012, NDE will have procured and integrated the Suomi NPP Production Environment, a data processing system designated to address the unique needs of the NOAA user community. Once validation and verification of the system and science products are complete, the Production Environment will be turned over to NESDIS Operations which will then assume 24/7 operations in mid FY 2013. The performance of this IT system will also be evaluated during the Suomi NPP post-launch period in FY 2012. Following the transition of the Suomi NPP Production Environment to operations, NDE will focus development on new Suomi NPP-based products to provide polar continuity products to the user community.

Schedule & Milestones:

- FY 2012: Train NESDIS Operations staff to monitor the NDE Production Environment before NESDIS Operators assume 24x7 monitoring of NDE systems in July 2012
- FY 2013: Complete transition of NDE Production Environment to NESDIS Operations. Integrate second set of products into NDE Production Environment
- FY 2014: Continue to integrate new products into NDE Production Environment
- FY 2015: Continue integration of new Suomi NPP-based products into operations
- FY 2016: Implement an NDE Backup System
- FY 2017: Provide infrastructure for JPSS Data Exploitation (JDE)

Deliverables/Outputs:

- Initiate delivery of the NDE Production Environment to NESDIS Operations in FY 2012. This System will enable NESDIS Operations to generate and deliver 57 products to the NWS and other users in FY 2012-FY 2016.

Performance Goals and Measurement Data:

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Number of new Science Products Tested within NDE Science	Actual	Target	Target	Target	Target	Target	Target
Algorithm Development and Integration Environment (SADIE)	3	12	12	10	10	10	3

Description: NDE integrates new science algorithms, provided by NOAA scientists, into the NDE SADIE to conduct functional and end-to-end testing of the products generated from those algorithms. Once it is determined that the code is ready for operations, NDE will transition the algorithms to the Production Environment for routine operations. The process of testing new algorithms and integrating them into operations takes approximately one year. All algorithms listed in FY 11-16 will generate new operational products from Suomi NPP one year later. After the JPSS launch in 2017, JPSS Data Exploitation will provide 3 data products after completion of the calibration and validation period.

Outyear Funding Estimates (BA in thousands):*

NPOESS Data Exploitation	FY 2012 & Prior	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	CTC	Total
Change from FY 2013 Base		-	-	-	-	-		
Total Request	27,097	4,455	4,455	4,455	4,455	4,455	4,525	53,897

*Outyears are estimates only. Future requests will be determined through the annual budget process.

EARTH OBSERVING SYSTEM (EOS) & ADVANCED POLAR DATA PROCESSING, DISTRIBUTION, AND ARCHIVING

NOAA is committed to preserve the NASA Earth Observing System (EOS) data per NOAA's long-term management agreement with NASA. EOS & Advanced Polar Data Processing, Distribution and Archiving System support is directed toward the NOAA CLASS Development project. It takes the NASA EOS data requirements for archive and access and provides funding to ensure the CLASS Development team designs and engineers the appropriate capabilities and capacities into the CLASS Operating System. NOAA will use the funds to procure additional media storage hardware and telecommunications to safely store and provide access to NASA EOS data.

NOAA is currently responsible for the stewardship of over three petabytes (PB) of environmental data and information, which is expected to grow to well over 14 PBs in FY 2012. NOAA spends more than one billion dollars each year collecting environmental data in support of its mission. NASA launched the Suomi NPP satellite in FY 2012, which NOAA will follow with the first launch of Joint Polar Satellite System satellite scheduled in FY 2017. The environmental data generated will be a 100-fold increase in data volume per satellite.

Outyear Funding Estimates (\$ in thousands):*

EOS & Advanced Polar Data Processing, Distribution, & Archiving Systems	FY 2012 & Prior	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	CTC	Total
Change from FY 2013 Base		-	-	-	-	-		
Total Request	14,330	990	990	990	990	990	992	20,272

*Outyears are estimates only. Future requests will be determined through the annual budget process.

COMPREHENSIVE LARGE ARRAY DATA STEWARDSHIP SYSTEM (CLASS) – DEVELOPMENT

CLASS is the NOAA Enterprise System IT capability for the Data Centers, acting as a web-based data storage and distribution system for NOAA's environmental data. It is currently utilized by the NOAA Data Centers for the distribution of operational environmental satellite data from NOAA's Geostationary and Polar (GOES and POES) operational satellites and derived data products. CLASS is under development to support additional satellite data streams, such as GOES-R, Suomi NPP, and JPSS. In addition, NEXRAD and modeled data are planned for inclusion in CLASS and the system is being evolved to provide a configurable set of tools for data ingest to allow rapid response to new requirements, additional tools for data management and stewardship by data center experts, and generalized access interfaces to allow tailored tools for data access.

In the near term, efforts will focus upon operations and maintenance of CLASS components that have transitioned from development to operational status. Longer-term plans for CLASS include expanding the safe storage/access capacity to meet the data influx expected from the operational introduction of data from radar, models, and new satellites. The current CLASS configuration can provide services for approximately four PBs of data. Management of these data can be accomplished through expanding storage capacity at the Data Centers and automating the means of data ingest, quality control, and access through phased systems procurement. The early implementation of this archive and access system has paved the way to accommodate additional massive data volumes from the Earth Observing System Satellites.

Schedule and Milestones:

N/A

Deliverables

- Safe Storage and Access Capability/Capacities “just in time” ready to meet phased-in introduction of new major observing systems (Satellites, Radars, Model Data, Other)
- Long-term, safe storage that meets the NOAA Data Centers’ legislative requirements.

Performance Goals and Measurement Data:

Performance Measure:	FY 2011 Actual	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Measure 1: CLASS Development System components integrated into the Data Centers'	8	9	9	10	10	11 GOES-R	12 JPSS-1

operational architecture (CLASS Operations System) ready to support NEW Satellite Launches/RADAR DP and PH Upgrades, Model Data, etc. (Cum # systems the CLASS Ops System is ready to support)							
Measure 2: Annual Increase - New Data/Year (PB/FY)*	1.0	4.7	5.1	5.1	6.6	7.6	9.8
Measure 3: Cumulative Total Data (PB)*	1.97	6.7	11.8	16.9	23.5	31.1	40.9
Description: Measure 1 measures the cumulative number of systems ready to be supported by the CLASS Ops System. Measure 2 measures the annual increase of new data measured in terabytes per year (TB/FY). Measure 3 measures the cumulative total data measured in terabytes (TB).							

* Safe Storage and Access Capability and Capacity (Volumes are only for One Copy/One Site) Mapped against January 2012 Satellite "Fly Out" Chart, Radar Upgrades, Model Data, Other Data

Outyear Funding Estimates (\$ in thousands):*

CLASS	FY 2012 & Prior	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	CTC	Total
Change from FY 2013 Base		-	-	-	(4,111)	(6,476)		
Total Request	74,758	6,476	6,476	6,476	2,365	0	0	96,551

*Outyears are estimates only. Future requests will be determined through the annual budget process.

THIS PAGE INTENTIONALLY LEFT BLANK

PROGRAM CHANGES FOR FY 2013:

GOES-N: GOES-N (Base Funding: \$32,467,000 and 20 FTE; Program Change: -\$2,567,000 and -0 FTE): NOAA requests a decrease of \$2,567,000 and 0 FTE for a total of \$29,900,000 and 20 FTE for the GOES-N program.

Proposed Actions:

A planned decrease in funding is proposed to reflect reduced requirements in NASA's system engineering and support based on the launch of the last satellite in the GOES-N series in March 2010. With the successful handover of GOES-15 command and control from NASA to NOAA, funds are still required to support ground systems, continue product development, and provide technical management, maintenance support and operations of the on-orbit assets. The purpose of the GOES-N Series is to provide environmental satellite continuity of the eastern and western hemispheres.

Statement of Need and Economic Benefits:

Since 1975 when GOES-1 (A) was launched, the benefits derived from the GOES Program were immediate. Specifically, geostationary satellite information has become a standard tool used to generate advisories to inform the public of severe weather conditions. NWS and news stations depend on the data generated by the geostationary satellites. The images of hurricanes shown on news stations in the U.S. and around the world are due to these critical satellites.

The GOES-N Series program aids the public by generating timely and accurate environmental data/weather information. A primary function of the GOES Program is supporting the NWS in forecasting, tracking, and monitoring severe storms. The improved accuracy of the NWS forecasts by using GOES data for severe storms results in weather forecasting/advisories to impacted areas to ensure authorities and the public are equipped with decision-making information to protect lives and property.

The GOES Program continuity schedule was created to minimize disruptions of satellite observations that will significantly impact customers' decision-making and the development of scientific analyses that could negatively impact NOAA's ability to accomplish its mission. Maintaining GOES continuity is necessary to provide continuous global weather monitoring from two geostationary orbital locations to provide near total Western Hemispheric coverage.

Base Resource Assessment:

The base resources for this activity are described in the Systems Acquisition base narrative.

Schedule and Milestones:

GOES-14 has a planned operational date of 2015.

Deliverables:

Continued operational support and maintenance of the GOES ground systems and on-orbit assets

Performance Goals and Measurement Data:

Performance Measure:	FY 2011 Actual	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Percentage of NOAA-managed satellite data processed and distributed within 15 minutes							
With Decrease	99.7%	N/A	98%	98%	98%	98%	98%
Without Decrease		98%	98%	98%	98%	98%	98%
<p>Description: This measure includes observations from the primary geostationary spacecraft tracked from observation through availability to the user. This measure is used to track timeliness and customer satisfaction. The targeted time for GOES is 15 minutes.</p>							

Outyear Funding Estimates (\$ in thousands):*

GOES-N**	FY 2012 & Prior*	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Total
Change from FY 2013 Base	-	(2,567)	(2,567)	(2,567)	(2,567)	(7,467)	(7,467)	(7,467)	(16,379)	-
Total Request	2,088,754	29,900	29,900	29,900	29,900	25,000	25,000	25,000	16,088	2,299,442

*Outyears are estimates only. Future requests will be determined through the annual budget process.

**Given the 17 years of prior budget records for the GOES-N program, the majority of which was recorded on paper rather than digitally, along with a number of funding modifications from the enacted levels (rescissions, supplementals, Hollings scholarships, etc.), a breakout of FY 2012 and Prior funding is not available at this time. At Congress' request, NESDIS will conduct an audit of these records to obtain a more detailed breakout.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: NESDIS
Subactivity: Systems Acquisition

Object Class	2013 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(2,567)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(2,567)

GOES-R: GOES-R (Base Funding: \$615,622,000 and 46 FTE; Program Change: +\$186,378,000 and +0 FTE): NOAA requests an increase of \$186,378,000 and 0 FTE for a total of \$802,000,000 and 46 FTE to provide continued satellite engineering development and production activities for the GOES-R Series (GOES-R, -S, -T, & U) program that are necessary to meet a Q1 FY 2016 launch readiness date (LRD).

The GOES-R Series will provide continuity of GOES data coverage after the GOES-N series. GOES-R is the next-generation series of NOAA geostationary satellites and provides GOES mission continuity through 2036. The procurement of GOES satellites and ground systems is a cooperative venture between NOAA and NASA. NOAA defines requirements for the program based on user needs; budgets and funds program resources and contracts; manages the integrated NOAA/NASA Program Office; procures ground segments; and operates the GOES satellites. NASA procures and launches the spacecraft, manages the system integration and mission assurance activities, and provides satellite acquisition and engineering expertise.

Proposed Actions:

The GOES-R budget request for FY 2013 is for the continuation of a four satellite GOES program (GOES-R, S, T, & U) with enhanced capabilities above the current GOES-N Series. FY 2013 GOES-R funding will be used for,

- Continued development of GOES-R Series spacecraft, to include the subsystem fabrication, system integration and testing (I&T), and the start of instrument I&T onto the spacecraft;
- Continued development of the ground system, to include continuing I&T for and completing the release of the mission management software, and completing the operational and back-up facilities for GOES-R;
- Integration, testing and delivery of initial Flight Units for: Advanced Baseline Imager (ABI), Solar Ultra Violet Imager (SUVI), Extreme Ultra Violet Sensor/X-Ray Sensor Irradiance Sensor (EXIS), Space Environmental In-Situ Suite (SEISS), and Geostationary Lightning Mapper (GLM).
- Continue with launch vehicle procurement and launch services; and,
- Continuation and ramp-up of the ground system integration and test activities, including the delivery of two new antennas to Wallops and a retrofit of one existing antenna at NSOF.

Statement of Need and Economic Benefits:

The GOES system provides an uninterrupted, continuous flow of environmental data and information that is critical to the Nation's weather forecasting capabilities. The needs and benefits of GOES-R series satellites are as follows:

- Maintains continuous real-time observations for severe storms, hurricanes, and weather monitoring to the Nation;
- Provides advances in NOAA's observation capabilities for all NOAA mission goals, including improvements to coastal, space weather, and lightning observations;
- Needed as a backup to GOES-14 or -15, as part of a system of two operational satellites and an on-orbit spare; and
- Incorporates key enhancements in spatial and spectral information, coverage, and timeliness to help generate more timely and accurate weather forecasts.

The GOES-R Series satellites are being developed as the follow-on to the GOES-N series. The GOES-R Series will minimize losses to life, property and the economy by giving early warning for severe weather events, which can cause significant impacts to people and property such as:

- \$11.4 billion in average annual damage from tornadoes, hurricanes, and floods with about 100 deaths annually⁶.
- Approximately \$4 billion per year is lost in economic efficiencies as a result of weather-related air traffic delays⁷.
- \$4 and \$5 billion in losses each year due to lightning in the civilian sector with about 47 deaths and 303 injuries per year⁸

Base Resource Assessment:

The base resources for this activity are described in the Systems Acquisition base narrative.

Schedule and Milestones:

Spacecraft	Launch Readiness Date	Planned Operational Date
GOES-R	Oct 2015	Dec 2016
GOES-S	Feb 2017	Apr 2020
GOES-T	Apr 2019	Mar 2025
GOES-U	Oct 2024	Jul 2028

Deliverables:

- Delivery of first Flight Model (FM) for ABI, SUVI, SEISS, GLM, and EXIS
- Continue development of software and acquisition of hardware for Ground System
- Continue development of Spacecraft and Antennas for Ground System

Performance Goals and Measurement Data:

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Improvement in the accuracy of hurricane intensity forecasts in the 24-to 48-hour time frame.	Actual	Target	Target	Target	Target	Target	Target
With Increase	N/A	N/A	N/A	N/A	N/A	N/A	10%
Without Increase	N/A	N/A	N/A	N/A	N/A	N/A	0
Description: Improvement in the accuracy of hurricane intensity forecasts, in the 24-48 hour time frame, as a result of the continuous monitoring of total lightning flash rate from the GLM together with improvements in observations from the ABI. Performance Measure improvement does not take place until FY 2017, when GOES-R becomes operational.							

⁶ Extreme Weather Sourcebook 2001: *Economic & Other Societal Impacts Related to Hurricanes, Floods, Tornadoes, Lightning, and Other U.S. Weather Phenomena*. Collaborative Program on the Societal Impacts and Economic Benefits of Weather Information, Boulder, CO

⁷ NOAA, 2002: GOES-R Sounder and Imager Cost/Benefit Analysis, NOAA NESDIS Office of Systems Development, Silver Spring, MD

⁸ NOAA, 2004: GOES-R Sounder and Imager Cost/Benefit Analysis - Phase III. NOAA/NESDIS/Office of Systems Development, Silver Spring, MD

Performance Measure:	FY						
Improvement in hurricane track forecasts out to 5 day	2011	2012	2013	2014	2015	2016	2017
	Actual	Target	Target	Target	Target	Target	Target
With Increase	N/A	N/A	N/A	N/A	N/A	N/A	5%
Without Increase		N/A	N/A	N/A	N/A	N/A	0
Description: Improvement in the accuracy of hurricane track forecasts, out to day 5, as a result of the continuous monitoring of total lightning flash rate from the GLM together with improvements in observations from the ABI. Performance Measure improvement does not take place until FY 2017, when GOES-R becomes operational.							

Performance Measure:	FY						
Improvement in tornado warning lead times (in minutes)	2011	2012	2013	2014	2015	2016	2017
	Actual	Target	Target	Target	Target	Target	Target
With Increase	N/A	N/A	N/A	N/A	N/A	N/A	7
Without Increase		N/A	N/A	N/A	N/A	N/A	0
Description: Improvement in the tornado warning lead time as a result of the continuous monitoring of total lightning flash rate from the GLM together with improvements in observations from the ABI. Performance Measure improvement does not take place until FY 2017, when GOES-R becomes operational.							

Outyear Funding Estimates (\$ in thousands):*

GOES-R	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Change from FY 2013 Base	-	-	-	-	-	-	-	-	-	-
Total Request	3,300	20,162	25,338	15,300	101,778	151,036	219,299	253,040	234,791	465,000

GOES-R	FY** 2010	FY 2011	FY*** 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Change from FY 2013 Base	-	-	-	186,378	335,139	229,122	166,031	90,629	(36,911)	(203,728)
Total Request	641,500	662,373	615,622	802,000	950,761	844,744	781,653	706,251	578,711	411,894

GOES-R	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
Change from FY 2013 Base	(315,710)	(415,503)	(353,877)	(258,887)	(243,158)	(524,281)	(543,245)	(542,995)	(542,745)	(542,595)
Total Request	299,912	200,119	261,745	356,735	372,464	91,341	72,377	72,627	72,877	73,027

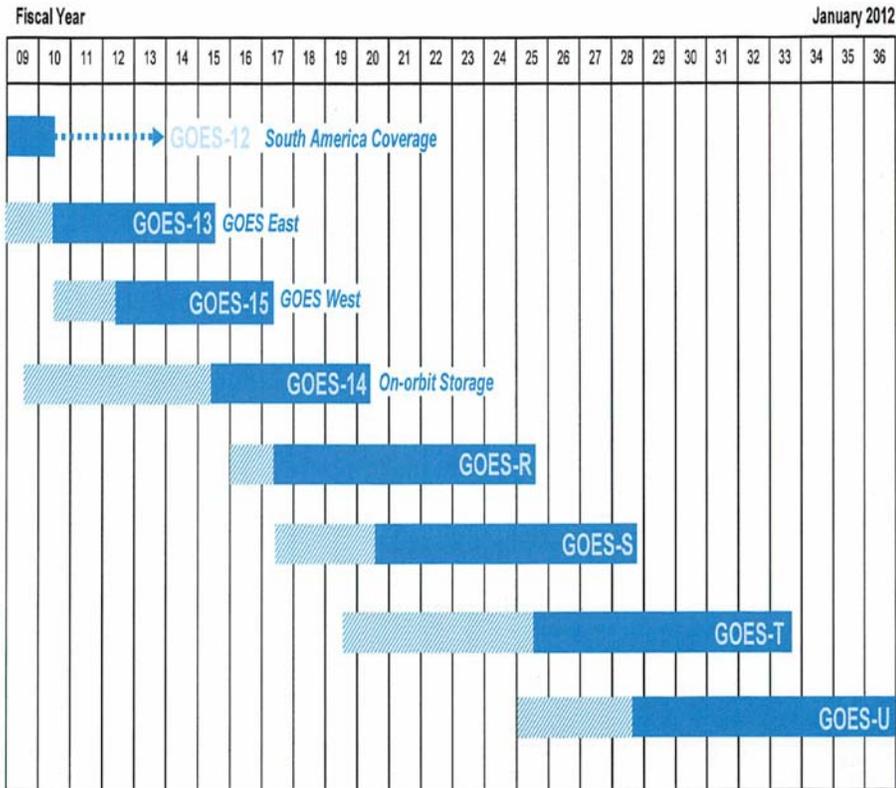
GOES-R	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Total
Change from FY 2013 Base	(542,270)	(542,295)	(542,370)	(543,495)	(543,495)	(544,395)	(548,545)	-
Total Request	73,352	73,327	73,252	72,127	72,127	71,227	67,077	10,860,266

*Outyears are estimates only. Future requests will be determined through the annual budget process.

** FY 2010 includes a \$26M reduction from a NOAA rescission

*** FY 2012: GOES-T and -U were added to the profile to extend the Life Cycle from 2028 to 2036.

Continuity of NOAA's Geostationary Operational Satellite Programs



Approved: *Mary E. King*
 Assistant Administrator for
 Satellite and Information Services

Signed on: 1/25/12

.....> Satellite is operational beyond design life
 [Hatched Blue Box] Post Launch Test / On-orbit storage
 [Solid Blue Box] Operational

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: NESDIS
Subactivity: Systems Acquisition

Object Class	2013 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	115,680
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	70,698
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	186,378

Jason-3: Jason-3 (Base Funding: \$19,700,000 and 0 FTE; Program Change: +\$10,300,000 and +0 FTE): NOAA requests an increase of \$10,300,000 and 0 FTE for a total of \$30,000,000 and 0 FTE to continue the development of the Jason-3 satellite in partnership with EUMETSAT and CNES. Jason-3 will provide continuity of precise measurement of sea surface heights for applications in ocean climatology and ocean weather.

Proposed Actions:

The increase is required for NOAA to complete development activities on the U.S. instruments: a microwave radiometer and precision orbit determination components (e.g., GPS). Funds will also continue to support, launch services and associated engineering services for Jason-3. EUMETSAT and CNES are providing the spacecraft, altimeter, precision orbit components, ground system, and operations.

Statement of Need and Economic Benefits:

The most accurate measurements of sea surface heights are made by the Jason series of satellites. It is critical to our understanding of global and regional climate variability that we continue to collect, analyze and maintain a continuous record of sea surface height data.

While its latest projections for Global Sea Level Rise (GSLR) over the coming century range from 28 to 79 cm, the Intergovernmental Panel for Climate Change (IPCC) states "...the upper values of the ranges given are not to be considered upper bounds..." for GSLR because existing models are unable to account for uncertainties such as changes in ice sheet flow. Additionally, the U.S. Climate Change Science Program has recently stated that these uncertainties "...will likely lead to sea-level projections for the end of the 21st century that substantially exceed the [latest IPCC] projection." Because this will impact the 146 million people worldwide living within 1 meter of the mean high water mark, it is critical that systematic observations of global sea level be collected on a continuing basis until these uncertainties are successfully addressed.

The Jason-3 altimetry mission is needed to provide continuity of precise measurement of sea surface heights for applications in the areas of ocean climatology and ocean weather.

- Ocean Climatology Benefits
 - Global sea-level rise - A fundamental indicator of climate change. An altimeter time series of several decades will be needed to distinguish signals related to anthropogenic warming from those related to natural variability, as well as to clarify whether the rate of sea-level rise is accelerating.
 - Decadal variability in the ocean – This variability has been shown to have an impact on fishery regime changes and correlates with droughts and changes in hurricane activity.
 - Seasonal/inter-annual variability - On seasonal to inter-annual timescales, ocean-atmosphere interactions in the tropical Pacific, the El Niño / Southern Oscillation (ENSO) phenomena, currently provide much of the signal for seasonal forecasts.
- Ocean Weather Benefits:
 - Operational Oceanography - Input to operational integrative services based on global and regional ocean models are necessary to provide real time and prognostic information on the state of the global ocean. This capability helps its users understand and monitor the world's marine environment and facilitate a safe, non-polluting and sustainable human exploitation of the ocean environment.
 - Surface wave forecasting and evaluation - Accurate surface wave forecasts are a major requirement for offshore operators. Over the last decade altimeter-derived significant wave height data have been critical for improvements in wave prediction systems.

- Hurricane intensity forecasting - The knowledge of the upper ocean heat content (OHC) is a critical factor in forecasting the intensity of hurricanes as they approach the U.S. East and Gulf Coasts where high OHC is quite variable.
- Coastal variability and its impact on ecosystems - Observations for modelling the ocean basin and the broader coastal area are critical. Coastal forecasting is needed in responding to environmental problems such as oil spills and harmful algal blooms, as well as forecasting tides and currents important to commercial shipping.

Base Resource Assessment:

The base resources for this activity are described in the Systems Acquisition base narrative.

Schedule and Milestones:

- FY 2012: Select and begin procurement of Launch Vehicle
- FY 2013: Complete the development of the U.S. provided instruments and deliver them to Europe for integration with the satellite; continue Launch Vehicle development
- FY 2014: Support instrument integration onto spacecraft; continue Launch Vehicle development
- FY 2015: Launch Jason-3⁹; perform calibration and validation and begin routine operations
- FY 2016 - 19: Continue routine operations

Deliverables:

- NOAA will provide a microwave radiometer, precision orbit determination components (e.g. GPS), launch services, and associated engineering services for Jason-3
- Continue 20 plus years of sea level observations, a critical climate monitoring variable, and provide operational ocean weather products using Jason-3 observations

Performance Goals and Measurement Data:

Performance Measure:	FY	FY	FY	FY	FY	FY	FY
Number of ocean science products produced	2011	2012	2013	2014	2015	2016	2017
	Actual	Target	Target	Target	Target	Target	Target
With Increase	0	N/A	0	0	5 ⁹	5 ⁹	5 ⁹
Without Increase		0	0	0	0	0	0
Description: Jason-3 altimetry products will provide important data for ocean climatology studies and ocean weather forecasting as defined above under the Statement of Need and Economic Benefits. Products are Sea Level Height, El Niño Forecasting, Hurricane Intensity Forecasting, Ocean Waveheight Forecast, and Ocean Surface Current.							

⁹ Launch vehicle selection in FY 2012 can affect the launch schedule, performance measure, and the total life cycle cost.

Outyear Funding Estimates (\$ in thousands):*

Jason-3	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	Total
Change from FY 2013 Base	-	-	-	10,300	20,300	(13,700)	(13,700)	(13,700)	(13,700)	(14,360)	-
Total Request	20,000	19,960	19,700	30,000	40,000	6,000	6,000	6,000	6,000	5,340	159,000

*Outyears are estimates only. Future requests will be determined through the annual budget process.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: NESDIS
Subactivity: Systems Acquisition

Object Class	2013 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	10,300
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>10,300</u>

Joint Polar Satellite System (JPSS): JPSS (Base Funding: \$949,894,000 and 61 FTE; Program Change: -\$33,530,000 and -0 FTE): NOAA requests a decrease of \$33,530,000 and 0 FTE for a total of \$916,364,000 and 61 FTE to continue development of the JPSS instruments, ground system, and the spacecraft.

The JPSS program continues a number of management and acquisition reforms initiated in FY 2010 to deliver polar observations for weather and climate information. All program activities are managed and monitored in accordance with strict acquisition strategies, program requirements documents, and a management control plan. Sensor activities include post delivery support to prime contractors (e.g., for installation, integration, test launch and on-orbit calibration/validation).

Proposed Actions:

The Administration and NOAA understand the critical importance of efficiently allocating scarce resources, and are committed to maintaining a total Life Cycle Cost (LCC) through FY 2028 of \$12.9 billion or less for the JPSS program. This LCC is a revision from the previously submitted LCC of \$11.9 billion through FY 2024 and reflects an additional four years of operations. In order to meet this lifecycle cost, it is possible that the program will need to make tradeoffs between enhanced capabilities, risk, and cost or may not be able to accommodate all currently planned instruments. NOAA will continue to work with NASA and others in the Administration to determine the best available options for the program going forward.

The FY 2013 profile maintains all planned weather instruments and supports a second quarter FY 2017 Launch Readiness Date for the first JPSS satellite to minimize any gap in weather coverage between the Suomi NPP satellite and the launch of the first JPSS satellite. FY 2013 funding is necessary to continue development of the JPSS ground system, spacecraft and instruments, including sensors for measuring ozone, earth radiation and solar irradiance. FY 2013 funding will complete the development of the Total Solar Irradiance Sensor (TSIS)-1 and the Clouds and Earth Radiant Energy System instrument (CERES), and continue the development of the Ozone Mapping Profiler Suite-Nadir instrument (OMPS-Nadir). CERES will sustain the measurement from the Suomi NPP satellite. TSIS-1 cannot be accommodated on the JPSS-1 spacecraft, and NOAA and NASA are evaluating options for flying the instrument. FY 2013 funds will:

- Support the ground operations and data uplink of Suomi NPP
- Continue to develop the selected suite of instruments: Visible/Infrared Imager/Radiometer Suite (VIIRS), Cross-track Infrared Sounder (CrIS), and Advanced Technology Microwave Sounder (ATMS), and OMPS-Nadir
- Complete development of the TSIS-1 instrument and the CERES Flight Model-6 (CERES FM-6) instrument.
- Continue development of the JPSS-1 spacecraft bus for the afternoon orbit
- Continue to upgrade the ground system to address IT security and operational satellite/redundancy deficiencies and to begin development of capability to support JPSS-1

Outyear funding will continue to support the accommodation of French and Canadian provided instruments for A-DCS and the SARRSAT system, as well as the launch dates below.

Spacecraft	Date
JPSS-1 Launch Readiness	Q2 FY 2017
JPSS-1 Launch	Q2 FY 2017
JPSS-2 Launch Readiness	Q2 FY 2021
JPSS-2 Launch	Q1 FY 2023

The JPSS program will not support the following activities:

- DOD follow-on program for the early morning polar orbit; the JPSS program will continue to engage DOD on the follow-on program, requirements definition and analysis of alternatives
- Two data processing sites for the Navy's Fleet Numerical Meteorology and Oceanography Center (FNMOC) and the Naval Oceanographic Office (NAVO)
- Data Latency of 30 minutes by JPSS-2*

*Data latency will improve from the current POES standard of 120 minutes to 80 minutes for both JPSS-1 and -2.

A breakdown of FY 2013 funding is provided below.

Effort	FY 2013 President's Budget Request
Space Segment	391,575
Ground Segment	383,889
Program Management*	140,900
Total, JPSS	916,364

*Program Management includes NOAA Algorithm Development, Science & Technology, and Data Processing; NASA Systems Engineering and Mission Assurance

Statement of Need and Economic Benefits:

Data and imagery obtained from JPSS satellites will help increase timeliness, accuracy, and cost-effectiveness of public warnings and forecasts of climate and weather events, thus reducing the potential loss of human life and property and allowing proactive steps to protect the Nation's economy. This program serves the NWS by providing continuous global temperature and humidity values from polar satellites that provide critical inputs for quality three to five day and long-range temperature, precipitation, and snow forecasts. Simulations have shown that absent NOAA's critical polar satellite data, forecast errors of up to 50 percent are possible in predicting rain and snowfall. Polar satellites also monitor the global sea surface temperature, indicating the location, onset, and severity of El Niño and La Niña events as early as possible. Longer lead times of these impending events allow emergency and agricultural managers to activate plans to reduce the impacts of floods, landslides, fires, oil spills, volcanic eruptions, and droughts.

Base Resource Assessment:

The base resources for this activity are provided in the Systems Acquisition base narrative.

Schedule & Milestones:

- FY 2013: Begin procurement of JPSS-1 launch vehicle; Complete CERES FM-6 instrument for JPSS-1 and deliver to spacecraft integrator; Complete TSIS-1 instrument; Continue development of OMPS-Nadir instrument
- FY 2013 - 2014: Continue development of VIIRS, ATMS, and CrIS instruments
- FY 2013 - 2015: Continue spacecraft bus procurements
- FY 2013 - 2018: Develop, operate and sustain ground systems
- FY 2014 - 2016: Provide post-delivery support to the spacecraft integrator for CERES FM-6
- FY 2017: Launch JPSS-1

Deliverables:

- Complete a delta Critical Design Review (CDR) for the Ground System
- Complete delivery of Block 1.2 of the Ground System, which will address existing deficiencies in the Ground System.
- Complete CDR for JPSS-1 spacecraft

Performance Goals and Measurement Data:

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Percent of data availability to support NOAA operational needs	Actual	Target	Target	Target	Target	Target	Target
With Decrease	98.50%	N/A	99.95%	99.95%	99.95%	99.95%	99.95%
Without Decrease		99.95%	99.95%	99.95%	99.95%	99.95%	99.95%
Description: This measure assumes the continuity of existing satellites and NPP data availability to support civilian and military operational needs. JPSS-1 will continue to meet targets after launch. JPSS-1 launch readiness is FY 2017.							

Outyear Funding Estimates (\$ in thousands):*

NPOESS	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
Change from FY 2013 Base	-	-	-	-	-	-	-	-	-	-
Total Request	16,000	10,500	29,000	34,000	50,000	59,772	73,164	157,269	222,874	273,789

NPOESS	FY 2005	FY 2006	FY 2007	FY 2008	FY** 2009	FY*** 2010	Total
Change from FY 2013 Base	-	-	-	-	-	-	-
Total Request	300,528	316,581	337,532	331,300	313,985	382,200	2,908,494

*Outyears are estimates only. Future requests will be determined through the annual budget process.

** FY 2009 includes \$287,985 in regular appropriation and \$26,000 in ARRA funds totalling \$313,985.

*** FY 2010 the NPOESS Program was restructured and transitioned to NOAA JPSS and DoD DWSS Programs

****Funding for FY 1995 to FY 2010 reflects NOAA share of funding for NPOESS (does not include Department of Defense cost share).

JPSS**	FY 2011	FY 2012	FY*** 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Change from FY 2013 Base	-	-	(33,530)	6,106	8,734	(6,294)	(28,794)	(335,605)	(445,909)	(469,813)
Total Request	471,900	924,014	916,364	956,000	958,628	943,600	921,100	614,289	503,985	480,081

JPSS	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Total****
Change from FY 2013 Base	(499,399)	(538,640)	(598,875)	(699,786)	(726,938)	(738,945)	(737,077)	(767,947)	-
Total Request	450,495	411,254	351,019	250,108	222,956	210,949	212,817	181,947	12,890,000

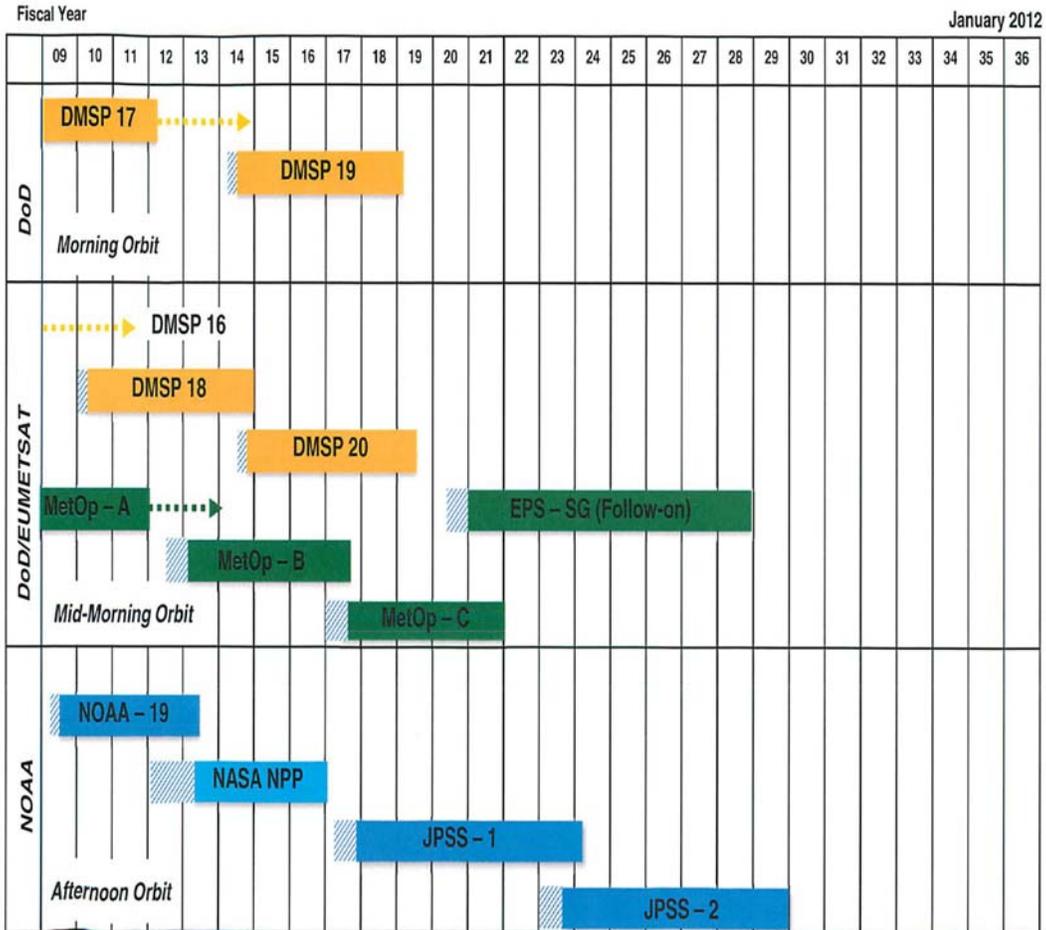
*Outyears are estimates only. Future requests will be determined through the annual budget process.

**JPSS Program Management is in the process of prioritizing content based on requirements and the appropriate phasing of the budget by fiscal year; as a result, outyears estimates are preliminary and may change. NOAA and the Administration are committed to maintaining a Life Cycle Cost of \$12.9 billion or less.

*** Restoration of Climate Sensor funding is transferred to the JPSS Budget PPA in FY 2013 President's Budget

**** Program Life Cycle Total includes \$2,908,494 carried over from the NPOESS Program for FY 2010 and Prior

Continuity of NOAA's Polar (Primary) Operational Satellite Programs



Approved: *Mary E. King*
 Assistant Administrator for
 Satellite and Information Services

Signed on: *2-08-2012*

Satellite is operational beyond design life
 Post Launch Test
 Operational

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: NESDIS
Subactivity: Systems Acquisition

Object Class	2013 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(33,530)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(33,530)

Deep Space Climate Observatory (DSCOVR): DSCOVR (Base Funding: \$29,800,000 and 0 FTE; Program Change: -\$6,917,000 and -0 FTE): NOAA requests a decrease of \$6,917,000 and 0 FTE for a total of \$22,883,000 and 0 FTE to continue the refurbishment of DSCOVR, which will provide solar wind data for geomagnetic storm warnings.

Proposed Actions:

FY 2013 funds will support the continued refurbishment of an existing NASA Satellite, DSCOVR, by the NASA/Goddard Space Flight Center (GSFC). This program is in partnership with the U.S. Air Force (USAF), which will provide the launch vehicle and services. The life-cycle cost of \$85 million will provide for the development and operation of systems for solar wind data processing and distribution, calibration and validation, and data archiving. After launch, NOAA will be responsible for command and control of the satellite, as well as timely processing and distribution of the solar wind data for geomagnetic storm warnings.

Statement of Need and Economic Benefits:

Without timely and accurate alerts and warnings, space weather has demonstrated the potential to disrupt significant portions of the infrastructure system, including transportation systems, power grids, telecommunications, and GPS. NOAA will supply geomagnetic storm warnings to support key industries such as the commercial airline, electric power, and GPS industries. Our national security and economic wellbeing, now dependent on advanced technologies, are at significant risk without accurate advance warning of impending geomagnetic storms. Aircraft that fly polar routes now include space weather as an integral part of pilots' weather pre-briefs, which provides the current status of the flight environment including potential impacts to critical communication and navigation systems, and the potential for hazardous solar radiation exposure.

The frequency and intensity of geomagnetic storms will increase significantly as the next solar maximum approaches in 2013 and lasts for several years. A Solar Maximum is the peak of the 11 year sunspot cycle, and is associated with large increases in all categories of solar activity. Strong storms with the potential to impact critical elements of our Nation's infrastructure can occur over 100 times during a solar cycle. The Nation's advanced technology service providers will be looking to NOAA for the alerts, watches and warnings needed to protect lives and livelihood and ensure continuity of critical operations.

According to a recent report by the National Academies¹⁰, geomagnetic storm-disabled electric power grids and collateral impacts could result in projected economic and societal costs of up to ~\$1-\$2 trillion per extremely large storm, and full recovery could take 4 –10 years. Precision GPS-enhanced agriculture is an \$5.8 billion per year enterprise¹¹, and the Next Generation Air Transportation System is based entirely on GPS-enabled positioning, navigation and timing.

Base Resource Assessment:

The base resources for this activity are described in the Systems Acquisition base narrative.

Schedule and Milestones:

- FY 2012: Initiate the refurbishment of DSCOVR satellite
Initiate Solar Wind Sensor Recalibration

¹⁰ *Severe Space Weather Events – Understanding Societal and Economic Impacts*, National Research Council 2009.

¹¹ National Coordination Office for Space Based PNT, "Current U.S. Economic Benefits of the Global Positioning System," Levenson, 2010 (in review)

U.S. Air Force begins launch vehicle acquisition
Reintegrate Solar Wind Sensors on DSCOVR

- FY 2013: Perform Spacecraft and Sensor Environmental Testing
- FY 2014: Launch Spacecraft
- FY 2014-2018: Maintenance and Operations

The DSCOVR mission's expected end of life is 2018.

Deliverables:

- Launch and operate the DSCOVR satellite
- Provide timely access to operational solar wind data for geomagnetic storm warnings

Performance Goals and Measurement Data:

Performance Measure:	FY						
Lead Time Geomagnetic Storm Warnings (minutes)	2011	2012	2013	2014	2015	2016	2017
	Actual	Target	Target	Target	Target	Target	Target
With Decrease	53	N/A	40	40	40	40	40
Without Decrease		40	40	40	40	40	40
Description: This measure is a Space Weather Prediction Center (SWPC) performance measure that represents the average number of minutes of warning before geomagnetic storm arrival. Once SWPC receives real-time data regarding geomagnetic storm arrival, the alert is posted on their website and email alerts are sent to customers that subscribe. SWPC will also contact high impact customers such as FEMA, Coast Guard, power distributors, airlines, etc. This measure also assumes that NASA's Advanced Composition Explorer satellite continues until the launch of DSCOVR.							

Performance Measure:	FY						
% Warnings Issued Prior to Geomagnetic Storm	2011	2012	2013	2014	2015	2016	2017
	Actual	Target	Target	Target	Target	Target	Target
With Decrease	100%	N/A	100%	100%	100%	100%	100%
Without Decrease		100%	100%	100%	100%	100%	100%
Description: This measure is a SWPC performance measure that ensures issuance of warnings for all geomagnetic storms. Once SWPC receives real-time data regarding geomagnetic storm arrival, the alert is posted on their website and email alerts are sent to customers. SWPC will also contact high impact customers such as FEMA, Coast Guard, power distributors, airlines, etc. This measure also assumes NASA's Advanced Composition Explorer satellite continues until the launch of DSCOVR.							

Outyear Funding Estimates (\$ in thousands):*

DSCOVR	FY	Total							
	2011	2012	2013	2014	2015	2016	2017	2018	
Change from FY 2013 Base	-	-	(6,917)	(10,525)	(26,600)	(26,600)	(27,400)	(27,458)	-
Total Request	2,000	29,800	22,883	19,275	3,200	3,200	2,400	2,342	85,100

*Outyears are estimates only. Future requests will be determined through the annual budget process.

**This table reflects NOAA funding only. It does not include funding from the U.S. Air Force, which will provide the launch vehicle and services.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: NESDIS
Subactivity: Systems Acquisition

Object Class	2013 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(6,917)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(6,917)</u>

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION: PROCUREMENT, ACQUISITION, AND CONSTRUCTION
SUBACTIVITY: CONSTRUCTION

SATELLITE COMMAND AND DATA ACQUISITION (CDA) FACILITY

The Satellite CDA Facilities Program ensures a robust facility and related infrastructure is available for supporting the continuous collection, processing and distribution of environmental data for the issuance of life saving NWS watches and short-term warnings to the public. NOAA's CDA Infrastructure programs at Wallops, VA, and Fairbanks, AK, enable the continuation of the current 99 percent data availability for NOAA environmental satellite systems. The Wallops and Fairbanks facilities continue to undergo significant infrastructure and building upgrades to replace aging infrastructure installed over 40 years ago. The program plans to update major systems operating well past their design lives based on a Facilities Master Planning Process that began for the Operating Stations in 1998. Both facilities continue to require maintenance, repair, and replacement, to aging systems.

Existing buildings and aging infrastructure continue to require resources to continue reliable operations. The Wallops facility, on the Atlantic coast, is subject to a corrosive salt air environment and lies in the path of hurricanes that hit the U.S. East Coast. The Wallops facility is undergoing major electrical infrastructure upgrades to support the reliability necessary to insure 99 percent of data is captured. Associated infrastructure is planned for maintenance, repair, and rehabilitation to support the various missions integral to both locations. Both stations have been determined to be critical national infrastructure elements by a Presidential Decision Directive.

Funding for this budget line item is for repair and replacement of critical infrastructure components necessary to maintain the operational integrity of facilities. The Program's current activities include replacement of the 13M Antenna(s) Electrical Distribution Shelters and Engineering Design and Construction of the Electrical Distribution System upgrade at the Wallops CDAS. Installation of a Fire Suppression System(s) in the 13M Antenna pedestals at the Fairbanks CDAS is also ongoing.

Schedule & Milestones:

- FY 2013: Start design for Electrical Distribution System upgrades at Fairbanks CDAS; Execute Phase 4 of Road Repair Project at Fairbanks CDAS
- FY 2014: Complete Electrical Distribution System upgrades at the Wallops CDAS.
- FY 2014: Complete design & begin Electrical Distribution System upgrades at Fairbanks CDAS
- FY 2015: Start design for Operations Building infrastructure upgrades at Wallops CDAS; Complete Electrical Distribution System upgrades at Fairbanks CDAS
- FY 2016-17: Complete design & begin operations building infrastructure upgrades at Wallops

Deliverables/Outputs:

The Satellite CDA Infrastructure Program will complete the Electrical Distribution System upgrades at the Wallops CDAS, providing a modernized, robust and reliable Electrical Distribution System with increased capacity to meet current and future mission requirements.

Outyear Funding Estimates (\$ in thousands):*

Satellite CDA	FY 2012 & Prior	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	CTC	Total
Change from FY 2013 Base		-	-	-	-	-		
Total Request	17,776	2,228	2,228	2,228	2,228	2,228	2,287	31,203

*Outyears are estimates only. Future requests will be determined through the annual budget process.

THIS PAGE INTENTIONALLY LEFT BLANK

PROGRAM CHANGES FOR FY 2013:

No program changes for this sub-activity.

THIS PAGE INTENTIONALLY LEFT BLANK