

NOAA

NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION

FEBRUARY 9, 2010



FY2011 BUDGET SUMMARY





DEAR READER

It is my pleasure to present to you NOAA's Budget Summary for fiscal year 2011. In this report, you will find details for our programs and missions, and our plans for achieving the complementary goals of the President, Secretary Locke and NOAA.

Despite the tough challenges facing Americans, I am optimistic that together we can build a better world for ourselves, our children and future generations. Using the best science as our foundation, NOAA is poised to enhance its ability to address urgent global issues. With this budget, we will strengthen the scientific basis for environmental decision-making, improve services that protect life and property, restore our oceans and coasts to be healthy, productive and resilient, ensure satellite continuity, and advance NOAA climate science and services.

NOAA has a track record of excellent science and the commitment to base policy and management decisions on scientific knowledge. We believe that the scientific information should be shared widely and communicated clearly to enhance its utility. This budget strengthens the core competencies and associated science, service and stewardship functions of NOAA needed to address high-level strategic priorities. NOAA's mission and priorities support Secretary of Commerce Gary Locke's priorities through innovation in science and technology, services benefitting the economy and ecosystems, and green and blue businesses underscored by a solid foundation of environmental information and stewardship. NOAA's and the Department's missions are strongly reinforcing; in fact the old assertion that we must choose between the economy and the environment is a false dichotomy. A healthy environment and a strong economy go hand in hand.

Current economic conditions, plus mounting scientific evidence and public concern, demand that we attend more urgently to pressing issues of climate change, degradation and depletion of ocean and coastal resources, energy security, and public health and safety. For example, NOAA provides not only improved understanding of the processes contributing to climate change, but assesses the current and potential impacts of climate change on our communities and natural systems. These impacts include extreme events such as hurricanes and flooding as well as the more gradual impacts of sea level rise and changes in sensitive ecosystems like the Arctic. Recreational and commercial activities, representing billions of dollars in economic impact, depend on healthy coastal, ocean and fresh water environments and the services they provide. NOAA is assisting communities with the data, tools, technology, training, and essential services and knowledge needed to make decisions in diverse disciplines and sectors – from the innovative management of our natural resources to the investments we make in public infrastructure.

Indeed, NOAA's long-standing vision is of an informed society that uses a comprehensive understanding of the role of the oceans, coasts, and atmosphere in the global ecosystem to make the best social and economic decisions. In order to realize this vision, we acknowledge our excellent NOAA workforce, the cooperation of numerous partners, and our ongoing support from members of Congress and a wide range of constituents. I am committed to supporting the President and Secretary Locke in leveraging NOAA's impressive track record and resources to make a difference for the American people, and to create a lasting legacy for our children and our environment.

Jane Lubchenco, Ph.D.
Under Secretary of Commerce for Oceans and Atmosphere

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TERMINOLOGY

The reader should be aware of the specific meaning of several terms as they are used throughout this budget summary:

“FY 2009 Enacted”

Fiscal Year (FY) 2009 Appropriations (P.L. 111-8), not including American Recovery & Reinvestment Act (ARRA) Supplemental Funds (P.L. 111-5)

“FY 2010 Enacted”

Fiscal Year (FY) 2010 Appropriations (P.L. 111-117)

“Terminations”

Reductions to the enacted level for Congressionally directed projects and/or additional funding provided over the requested amount

“Adjustments-to-Base”

The estimated FY 2011 Federal Pay raise of 1.4% and the annualized FY2010 pay raise of 2.4%. Program totals will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from GSA. In addition, ATBs include unique/technical adjustments to the base program, for example transfers of base resources between budget lines

“FY 2011 Base”

Fiscal year (FY) 2010 Enacted, less Terminations, plus Adjustments-To-Base

“Program Change”

The increase/decrease over the FY 2011 base, which is the FY 2010 Enacted minus Terminations, plus Adjustments-to-Base

“FY 2011 Request”

Fiscal Year (FY) 2010 Enacted, less Terminations, plus Adjustments-to-Base, and Program Changes



INTRODUCTION

Ice Divers Katrin Iken and Elisabeth Calvert descend below the ice through a hole in a melt pond while Shawn Harper teds the safety line



INTRODUCTION

For Fiscal Year (FY) 2011, the National Oceanic and Atmospheric Administration (NOAA) requests a total appropriation of \$5,554,458,000 an increase of \$806,105,000, or 17 percent over the FY 2010 Enacted level. This request reflects NOAA's continuing effort to better serve the American people through advancing mission-critical services. The NOAA staff of dedicated professionals, working with extramural researchers and our international partners are extending our knowledge of climate change; expanding meteorological prediction capabilities; improving coastal resource management; charting more of our seas and coasts; and enhancing environmental stewardship.

Total requested calculated Adjustments to Base (ATBs) are \$54,777,000. These adjustments focus on maintaining and investing in our workforce and supporting NOAA's most important resource – our people. NOAA leverages this most valuable asset by applying our people's knowledge, experience, ingenuity and dedication to the challenges of the 21st century. With this increase, the FY 2011 base level will fund the estimated FY 2011 Federal pay raise of 1.4 percent and annualize the FY 2010 pay raise of 2.4 percent. The base level will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Services Administration.



NOS protects and manages over 95,000 miles of coastline

NATIONAL OCEAN SERVICE (+\$46M)

Coastal development and human uses of our coasts are occurring without comprehensive planning and without an understanding of the cumulative effects of our actions. The FY 2011 budget proposal includes \$20 million to support regional ocean partnership grants and an additional \$10 million to support the acquisition and protection of coastal lands. An additional \$9.5 million is provided for the development of sensors to support coastal ecosystem science and management. This includes sensors to monitor constituents of ocean acidification, harmful algal blooms, and issues related to Oceans and Human Health. The FY 2011 budget submission proposes a comprehensive \$6.77 million program that will: identify key ocean habitats and human use patterns and conflicts, develop appropriate spatial planning tools that allow the identification and allocation of marine areas to specific uses, and allow NOAA to combine its various resources to engage in interagency



and regional coordination in coastal and marine spatial planning efforts. The request also includes \$2 million to support the interagency development of a national integrated coastal and marine elevation dataset.

NATIONAL MARINE FISHERIES SERVICE (+\$80M)

NOAA is faced with the challenge of ending overfishing and improving fisheries management. In many U.S. fisheries, traditional fisheries management has allowed fishermen to over-harvest. The Nation needs a fishery management system that will sustain fishing economies and incentivize stewardship and conservation. The FY 2011 budget submission seeks an increase of \$80 million to implement transformational changes in how fisheries and ecosystems are managed by the Department of Commerce. Under the reauthorized Magnuson Stevens Fishery Conservation and Management Act of 2006, NOAA must end all overfishing in all domestic fisheries by 2011. Through this budget, NOAA seeks to transform the way fisheries are managed, relying, where appropriate, on systems of catch shares or individual fishing privilege programs, which through competitive market forces allow much more flexibility in business arrangements and a better track record for conservation than do traditional fishery control systems. NOAA proposes an additional \$36.6 million to implement catch share programs for New England and West Coast groundfish, Gulf of Mexico grouper and tilefish, and to continue the expansion of catch shares throughout the United States. The budget also seeks to close the gap in conservation of protected species, including salmon, marine mammals, and sea turtles; and protect and restore key habitats upon which fish, protected species, and ecosystems critically depend. The FY 2011 budget proposes an additional \$3 million for Protected Resources consultations. Also included is \$2.4 million to address gaps in aquaculture research. The budget includes an additional \$20 million to address listed and threatened species through the Species Recovery Grant Program and Community Based Restoration projects that benefit listed and threatened species. An increase of \$15 million over the FY 2010 President's Budget is requested for the Pacific Coastal Salmon Recovery Fund.



Pacific Northwest Mussel Farm

OFFICE OF OCEANIC AND ATMOSPHERIC RESEARCH (+\$56M)

The observed changes in climate are already causing a wide range of impacts, and these impacts are expected to grow. The FY 2011 budget request includes investments for the core climate services needed to enable the Nation to effectively address the impacts of climate change. NOAA proposes \$10M to provide the leadership, expertise, and capacity necessary to support a collaborative, participatory assessment process that engages scientists, government officials, businesses, and communities in the exploration of climate impacts and effective mitigation and adaptation. This program of shared learning and joint problem solving will serve as the foundation of NOAA's climate services. This will include an ongoing process of vulnerability assessments to help the Nation's governments, businesses, and communities to understand and reduce their current and future vulnerability to climate



Launching of a Conductivity, Temperature, and Depth (CTD) profiler



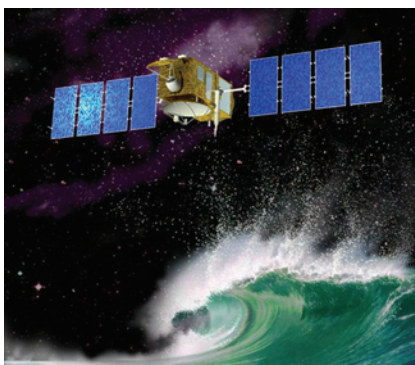
change. The request includes resources for fundamental observations and modeling capabilities to: track the flux of carbon to and from the atmosphere (\$8.0 million), measure key variables in the Arctic (\$3.0 million), the Global Ocean Observing System (\$4.8 million), and earth system modeling (\$7.0 million). An additional \$1.5 million will enable the development of climate services portal. The totality of these investments will provide NOAA with the initial capability to deliver climate services to the Nation. The request also includes an additional \$6.1 million to provide new technologies and ecosystem monitoring systems, better models, and a dedicated research program for ocean acidification. This research and monitoring will allow scientists to better understand and mitigate the impacts of ocean acidification on ecosystems, fisheries, and other marine resources.



*Super cell over York, NE
Photo courtesy Mike Hollingshead*

NATIONAL WEATHER SERVICE (+\$28M)

Concern for public safety drives NOAA to continue to improve the timeliness and accuracy of warnings for all weather-related hazards. NOAA is committed to enhancing timely and accurate weather and climate forecasts through better observations, improved data assimilation, and collaboration with the research community. The FY 2011 budget request seeks an additional \$15.1 million to provide the aviation community with an authoritative and timely source of weather information for decision support. This investment will allow NOAA to make critical investments such as the Weather Information Database to meet the 2013 Initial Operating Capability for the Next Generation Air Transportation System. The FY 2011 request provides an additional \$3.2 million to continue deployment of Dual Polarization for NEXRAD and \$1.6 million to complete the replacement of the NOAA Weather Radio consoles. This investment will lead to improvements in radar coverage and severe weather detection. An increase of \$2.0 million is requested for information technology security improvements for the National Critical Space Weather System.



*Jason 3 satellite
(Artist Representation)*

NATIONAL ENVIRONMENTAL SATELLITE, DATA, & INFORMATION SERVICE (+\$848M)

One of the greatest challenges facing NOAA today is ensuring continuity of satellite operations to provide unbroken coverage of weather forecasts and climate measurements into the future. The FY 2011 budget requests an investment of \$49 million in climate sensors and an additional \$30 million to continue development of the JASON-3 satellite altimetry mission, which will provide data for incorporation into climate models. To maintain satellite continuity for weather forecasting and climate monitoring, an increase of \$679 million is requested for the implementation of the restructured next generation polar satellites (formerly known as NPOESS), as well as \$3.1 million to address IT security for NOAA's satellite systems. The FY 2011 request includes new funding for the Constellation Observing System for Meteorology, Ionosphere, and Climate (COSMIC-2) program (\$3.7 million) and the Deep Space Climate Observatory (DSCOVR) (\$9.5 million). The COSMIC-2 constellation uses Global Positioning System Radio Occultation to collect real-time, global atmospheric temperature and moisture data for improving weather



forecasting. The acquisition of the DSCOVER will provide solar wind data and a Coronal Mass Ejection (CME) imager for continuing geomagnetic storm warnings. These warnings are used by industries that manage transportation systems, power grids, telecommunications, and global positioning systems (GPS). The request also includes support for NESDIS's climate activities. Increases are proposed to compile climate data records from legacy and new satellite systems removing non-climate related observing biases (\$11.0 million) and to improve data center operations to ensure users get data in the format they need (\$2.0 million).

PROGRAM SUPPORT/OFFICE OF MARINE AND AVIATION OPERATIONS (+\$54M)

The FY 2011 budget continues the recapitalization of the NOAA's fleet, data acquisition platforms critical to meeting fisheries management mandates. An additional \$4.4 million is requested to complete the construction of FSV 6 and begin design of FSV 5. An increase of \$7.4 million is requested to extend the life of *Miller Freeman* and \$6.2 million to address maintenance of NOAA's fleet.

The FY 2011 request includes \$14 million in increases to complete the IT infrastructure, outfitting, and occupancy for the Main Facility at the new Pacific Regional Center (PRC). An additional \$5 million is requested for Facilities maintenance and repair. An increase of \$8.7 million is provided to address NOAA-wide information technology, including Enterprise IT Security (\$4.7 million) and NOAAnet Single Enterprise Network (\$4.0 million). The request also includes funding to address gaps in NOAA's acquisition and grants programs. This includes additional resources for acquisition management (\$4.35 million), support for the acquisition workforce (\$0.8 million), and a Department-wide Acquisition Internship Program (\$1.1 million).



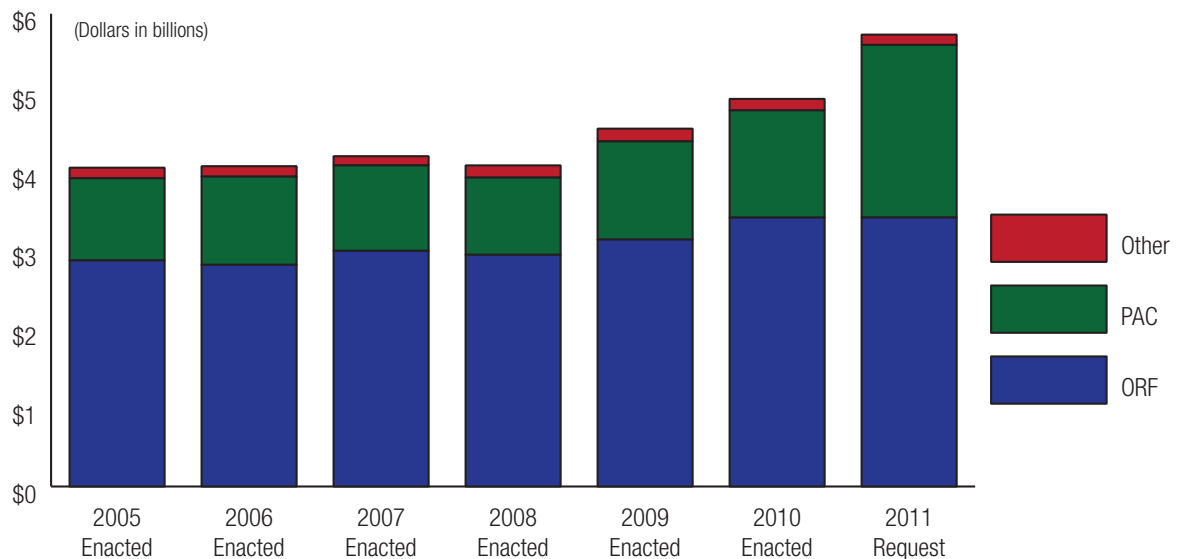
Miller Freeman



INTRODUCTION

(DOLLARS IN THOUSANDS)	FY 2009 ENACTED	FY 2010 ENACTED	FY 2011 REQUEST	INCREASE (DECREASE)
ORF	\$3,134,044	\$3,412,778	\$3,413,681	903
PAC	1,245,647	1,360,353	2,191,091	830,738
Other Funds	163,662	147,180	130,409	(15,627)
Financing	(169,483)	(171,958)	(180,723)	(9,909)
Total Discretionary Budget Authority	\$4,373,870	\$4,748,353	\$5,554,458	\$806,105
FTE	12,101	12,321	12,455	134

Budget Trends FY 2005-2011



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction

Other: Other Accounts





CHAPTER 1

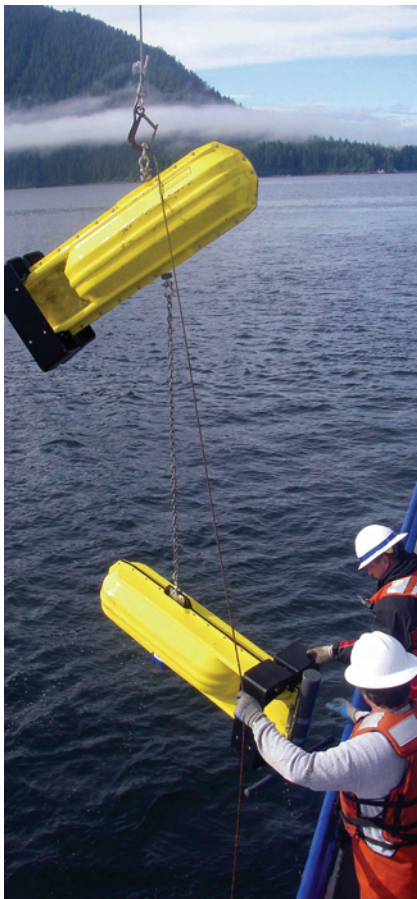
2009 NOAA Accomplishments & Performance Results

NOAA employees haul bays of oyster shells into Chesapeake bay to restore depleted populations



2009 ACCOMPLISHMENTS

In its first year, the Obama Administration has shown a strong commitment to science and to key NOAA mission areas, from climate and weather to ocean and coastal stewardship. Bolstered by that support, NOAA is making significant progress on many of its core strategic priorities. NOAA is already a recognized leader in the production and provision of both weather and climate information to the nation and the world. A top priority throughout 2009 has been to enhance the agency's capabilities in the area of climate science and service delivery and to provide more relevant and user-friendly information and data that people need to be prepared for a climate changed world.



NOAA's Center for Operational Oceanographic Products and Services (CO-OPS) National Current Observation Program conducted several major surveys of tidal currents in response to user requests in 2009. Here, scientists deploy current meter buoys and anchors used for surveys.

Long-term continuity of our environmental data and our observing systems are critical to all NOAA mission areas and the recent progress toward strengthening the management and planning of our satellite programs marks a major step toward ensuring NOAA can continue to provide this critical data and information to the nation.

This administration has clearly stated that healthy oceans matter. The President's Ocean Policy Task Force, established in June 2009, with NOAA as one of the key federal participants, has taken significant steps toward formulating a National Ocean Policy. A draft policy for coastal and marine spatial planning is now being developed, which, coupled with the National Ocean Policy, will be key to improving our management and stewardship of the nation's ocean resources. These will help improve the resilience of coastal communities and contribute to the nation's food and energy security.

In an effort to support sustainable fisheries, fishing jobs and fishing communities, NOAA has established a Catch Shares Task Force that has consulted broadly with recreational and commercial fisherman and the regional fishery management councils around the country to discuss ways to encourage the use of catch shares programs to improve fisheries management. The draft catch shares policy has been completed and is currently open for public comment until April, 2010. NOAA has also initiated a new and more productive relationship with recreational fishermen, who represent an important constituency and partner in our efforts to better manage fisheries.



The American Recovery and Reinvestment Act, which directed \$830 million to NOAA, funded additional investments in coastal communities and elsewhere, including 50 quality habitat restoration projects around the country, investments in marine navigation, climate modeling and supercomputing, and allowed critical upgrades to ships and infrastructure, furthering NOAA's work and creating jobs across the country.

NOAA has made significant strides on many critical issues in one short year, but more work remains to be done. The President's budget request for fiscal year 2011 presents a significant investment in meeting those demands and demonstrates the Administration's continued commitment to NOAA's science and stewardship missions. The following are just a few of NOAA's accomplishments in 2009.



Coastal and Estuarine Land Conservation Program Protects Over 4,000 Acres

COASTAL AND ESTUARINE LAND CONSERVATION PROGRAM PROTECTS OVER 4,000 ACRES

In 2009, NOAA's Coastal and Estuarine Land Conservation Program (CELCP) worked closely with state and local partners to help protect high-priority coastal land in 13 different states. Approximately 15 CELCP-funded properties were, or are anticipated to be, acquired, or put under easement, protecting more than 4,000 acres of critical coastal habitat. Nine new CELCP projects totaling over \$14 million were also selected for funding from the 54 proposals during the 2009 annual CELCP competition. The 2009 awards will help protect coastal watersheds in Virginia, Puerto Rico, Massachusetts, Florida, Maine, New York, Washington, and Maryland. Since its creation, CELCP has distributed nearly \$200 million in 26 states. Completed projects have protected more than 35,000 acres of land, and the number of acres will grow as more projects come to completion. The program has further leveraged state, local, and private matching contributions, along with thousands of acres of land protected or donated as in-kind match for CELCP-funded land conservation projects.



The NOAA San Francisco Tide Station, in operation for more than 150 years

Throughout 2009, NOS calculated sea-level trends for 70 new global stations, bringing the number of global stations to 114. This information is available in Google Maps and Google Earth interfaces to allow users an easier way to navigate the data. NOS also completed a statistical analysis tool that provides critical sea level background information necessary for the successful design, implementation, and monitoring of sustainable habitat restoration projects. These tools are critical as coastal populations continue to increase (and coastal habitats continue to decline) along with their vulnerability to sea level rise.

MONITORING SEA LEVEL IN THE UNITED STATES



NOAA's air gap technology received the ultimate test on the morning of June 27, 2009. The technology passed with flying colors as the new U.S. Navy LPD ship, the USS New York, sailed down the Mississippi River, clearing the underside of the Huey P. Long Bridge just north of downtown New Orleans by 64 centimeters (2.1 feet).

PHYSICAL OCEANOGRAPHIC REAL-TIME SYSTEM EXPANDED

In 2009, NOAA's Physical Oceanographic Real-Time System (PORTS®) program expanded to two new locations in Louisiana at Lake Charles and New Orleans. These PORTS® are positioned to provide significant safety and economic benefits. Louisiana's lower Mississippi River moves about 500 million tons of cargo each year and provides jobs and income to the region. NOAA's PORTS® program provides accurate real-time oceanographic and meteorological data to mariners, helping reduce the risk of vessel groundings as well as increase the amount of cargo moved through a port. Real-time environmental observations are of ever-increasing importance to the U.S. military as well as recreational boaters and private industry. In the Houston/Galveston area alone, estimates suggest that PORTS® provides nearly \$12 million in direct annual economic benefits and it is estimated that benefits from the Tampa Bay PORTS® is \$4.4 to \$7.0 million. The data are freely accessible at <http://www.tidesandcurrents.noaa.gov/ports.html>.



In September 2009, out of work oystermen were hired with NOAA Recovery Act funds in North Carolina to help rebuild 49 acres of oyster reefs

In 2009, NOAA awarded 50 grants for habitat restoration with funds received from the American Recovery and Reinvestment Act of 2009. In an unprecedented effort to ensure these funds were made available as quickly as possible to sustain healthy coastal habitats and to support the U.S. economy, NMFS processed and evaluated more than 800 proposals from 34 states and 5 territories totaling more than \$3 billion in requests between the 30-day competitive solicitation announced in March. When complete, the projects will have restored 8,770 acres of habitat and removed obsolete and unsafe dams that will open more than 700 stream miles where fish migrate and spawn. The projects will also remove more than 850 metric tons of marine debris, rebuild oyster and other shellfish habitat, and reduce threats to 11,750 acres of coral reefs. These projects are located in 22 states and two territories, many in areas of high unemployment, including California, Oregon, and Michigan. The selected projects will employ Americans with a range of skills including laborers, nursery workers, design engineers, restoration ecologists, landscape architects, hydrologists, and specialized botanists, and will create indirect jobs in industries that supply materials as well as administrative, clerical, and managerial services.

NOAA AWARDS 50 GRANTS TO RESTORE HABITAT THROUGH THE AMERICAN RECOVERY AND REINVESTMENT ACT



Thousands of pounds of Jack Mackerel

NOAA TAKES CRUCIAL STEPS TOWARD SUSTAINABLE FISHERIES

NMFS has made significant progress toward meeting the Magnuson Stevens Reauthorization Act (MSRA) of 2007 deadlines. Overall, NOAA has successfully completed 54 of 79 specific tasks mandated in the MSRA, for a completion rate of 68 percent. More precisely, 83 percent of MSRA tasks that had mandatory deadlines have been completed. NMFS and regional Fishery Management Councils (FMCs) have made significant progress toward meeting the implementation of annual catch limits (ACL) and accountability measures (AMs). ACLs and AMs must be implemented in 2010 in fisheries subject to overfishing and in 2011 in all other fisheries. NMFS published guidelines for the FMCs to use in implementing ACLs and AMs, which became effective February 17, 2009. NMFS successfully worked with the Gulf of Mexico FMC to define ACLs and AMs for all stocks classified as experiencing overfishing in the Gulf of Mexico one year in advance of the 2010 deadline. For illegal, unregulated, and unreported (IUU) fishing, NMFS published a proposed rule regarding certification procedures to address fishing activities and bycatch of protected living marine resources. To support Limited Access Privilege Programs (LAPS), NMFS published guidelines and procedures for referenda required in the Northeast and Gulf of Mexico fisheries. In addition, NMFS published proposed regulations to govern the requests for determinations of fishery resource disasters; and drafted a proposed rule to strengthen National Standard 2 guidelines that mandate the use of the best available science.



Right whale and calf

NMFS implemented new measures in FY 2009 to protect highly endangered North Atlantic right whales. Due to the North Atlantic Right Whales' slow-moving nature and migration patterns through East coast shipping lanes, ship strikes have become their primary threat. NMFS implemented a requirement for large ships to reduce speeds to ten knots in areas where the whales feed and reproduce and moved shipping lanes into Boston. These measures are estimated to reduce the risk of right whale ship strikes by 74% during April-July. Approximately 3,500 ships move through the entire Boston shipping lanes every year and more than half of the world's North Atlantic right whales are known to be in this area during the spring. The new ship strike reduction measures combined with existing protective actions, including surveying whale migration routes by aircraft and mandatory ship reporting systems that provide advisories and information on right whale locations to mariners, form a comprehensive approach to help right whales recover. With approximately 300 right whales remaining in the population, these are among the most endangered whales in the world.

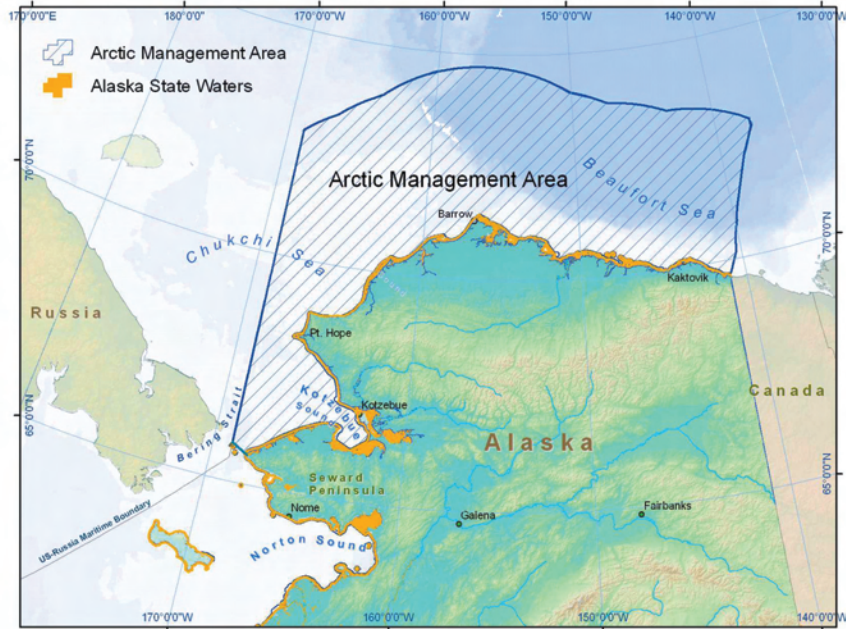
NOAA TAKES KEY ACTIONS TO PROTECT ENDANGERED NORTH ATLANTIC RIGHT WHALES FROM SHIP STRIKES



Chesapeake Bay shellfish farming

NOAA WORKS WITH PARTNERS TO DELIVER RECOMMENDATIONS FOR IMPLEMENTING THE EXECUTIVE ORDER FOR CHESAPEAKE BAY PROTECTION AND RESTORATION

NOAA launched three interagency teams in June 2009 to develop strategies and actions to meet the charge of the Executive Order on Chesapeake Bay Protection and Restoration (E.O. 13508). The Executive Order calls for greater shared federal leadership and acceleration of efforts to restore and protect the Chesapeake Bay, the Nation's largest estuary. NMFS served as co-lead for development of three of the seven reports required by the Executive Order. These reports emphasized actions to connect timely and accurate science to management decisions via a recommended ecosystem-based management framework; established priorities to deliver climate information and adaptation strategies to managers and jurisdictions for realistic adaptation planning; and drew the connections between protecting and restoring habitats to promoting sustainable resources and communities in the watershed. In September 2009, the three reports were delivered to the Executive Order's Federal Leadership Committee for a coordinated implementation strategy designed to transform the Bay's restoration activities into a true application of ecosystem-based management.



The Arctic Management Area is the EEZ waters north of Bering Strait (Cape Prince of Wales to Cape Deshneva) including the Chukchi and Beaufort Seas

In February 2009, the North Pacific Fishery Management Council, with scientific support from NMFS, recommended a Fishery Management Plan for the fish resources of the Arctic Management Area. This Plan was approved by the Secretary of Commerce on August 20, 2009. This Plan is vital as the loss of seasonal sea ice in the Alaskan Arctic from warming ocean temperatures due to climate change may lead to commercial fishing activities in areas with little or no scientific information. The emergence of inadequately regulated commercial fisheries in the Arctic EEZ could have adverse effects on the sensitive ecosystem and marine resources of this area. The Plan initially prohibits commercial fishing in this region until more information is available, but it does not prohibit subsistence or recreational fishing. It proactively establishes a framework for sustainably managing Arctic marine resources using judicious and responsible fisheries management practices based on sound scientific research and analysis.

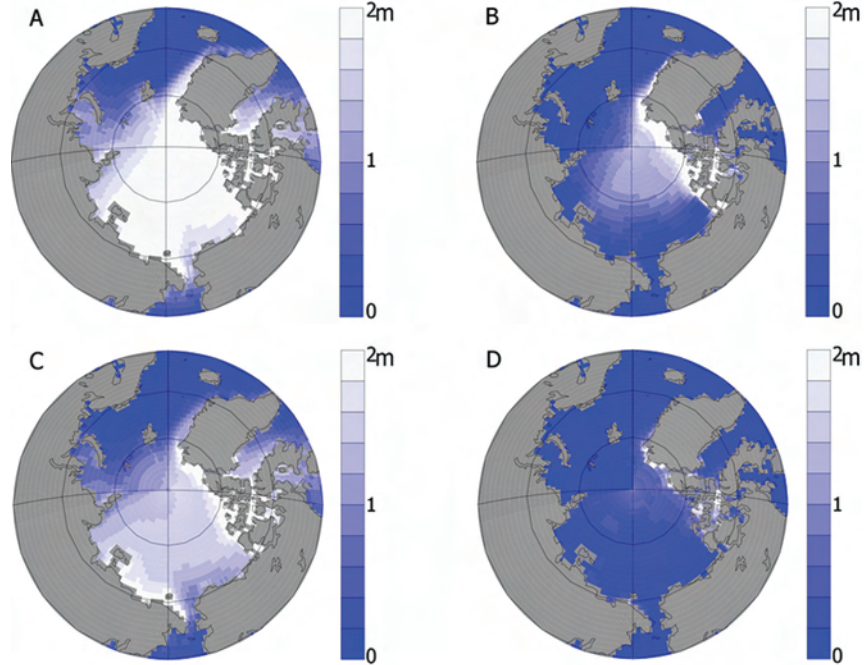
NOAA IMPLEMENTS FISHERY MANAGEMENT PLAN FOR FISH RESOURCES IN THE ARCTIC



Lightning striking behind a VORTEX2 mobile mesonet

COMPLETION OF LARGEST TORNADO FIELD EXPERIMENT

The National Severe Storms Laboratory (NSSL) in Norman, OK, and numerous research partners conducted the first phase of the Verification of the Origins of Rotation in Tornadoes Experiment – 2 (VORTEX2) in 2009. VORTEX2 is the largest tornado field experiment in history and aims to answer detailed questions about how, when, and why tornadoes form. New advances will allow for a more detailed sampling of a storm's wind, temperature and moisture environment and lead to improved warnings and increased warning time for people to reach safety. NSSL also used VORTEX2 as an opportunity to reach out to the public through social networking, including Facebook and Twitter.



Mean sea ice thickness in meters for March (left) and September (right) based on six models. Top panels: September ice extent reached the current level by these models. Bottom panels: Arctic reached nearly "ice-free summer" conditions

Arctic summers may be ice-free in as few as 30 years, not at the end of the century as previously thought, based on research conducted by NOAA's Pacific Marine Environmental Laboratory in Seattle, WA. The updated forecast is the result of a new analysis of computer models coupled with the most recent summer ice measurements. The area covered by summer sea ice is expected to decline from its current 4.6 million square kilometers (about 1.8 million square miles) to about 1 million square kilometers (about 390,000 square miles). Much of the sea ice would remain in the area north of Canada and Greenland and decrease between Alaska and Russia in the Pacific Arctic. Temperature increases, a near-record loss of summer sea ice, and melting of surface ice in Greenland are among some of the evidence of continued warming in the Arctic, according to an annual review of conditions in the Arctic issued by NOAA and its university, agency, and international partners. The Arctic is a sensitive system and often reflects changes in relatively fast and dramatic ways. The year 2007 was the warmest on record for the Arctic, continuing a general Arctic-wide warming trend that began in the mid-1960s.

ICE-FREE ARCTIC SUMMERS LIKELY SOONER THAN EXPECTED



U. S. Climate Reference Network (USCRN) operational station in San Diego's Santa Margarita Ecological Reserve

NOAA INSTALLS 10 HISTORICAL CLIMATOLOGY NETWORK MODERNIZATION SITES

The U.S. Historical Climatology Network Modernization program deployed a new automated network for Regional Climate monitoring focused on collecting temperature and precipitation with greater temporal resolution (5-minute observations). This Network will meet the nation's growing need for higher quality climate data at the regional level. In June and July 2009, 10 new sites were installed in the Southwest Climate Region (Arizona, Colorado, New Mexico, Utah). The new sites have a triple configuration of high-quality sensing equipment that allows for early identification and correction of errors, leading to higher confidence in the regional climate signal. The network will provide future long-term homogeneous observations of temperature and precipitation that can be coupled to long-term historical observations for the detection and attribution of present and future climate change.



Nicholas Younghaus of Hoggard High School in Wilmington, North Carolina receives the NWS StormReady designation

In December 2008, the teachers and students of John T. Hoggard High School in Wilmington, NC, became part of the first high school in the country to prepare an action plan and practice drills making them ready for a tornado or other severe weather. This preparation has earned them the designation as a NWS StormReady Supporter. To achieve this status, the school met rigorous guidelines, which included developing severe weather safety plans, actively promoting severe weather safety through awareness activities and conducting safety training. StormReady® communities are better prepared to save lives from the onslaught of severe weather through advanced planning, education and awareness. No community is storm proof, but being Storm-Ready can help communities save lives.

This achievement is largely the result of Nicholas Younghaus, an autistic Hoggard High School senior who interned at the NWS Wilmington Weather Forecast Office.

NOAA DECLARES NATION'S FIRST HIGH SCHOOL STORMREADY SUPPORTER



Installing a RECON (Real-time Environmental Coastal observations Network) buoy, a wireless Internet observation system that collects meteorological data and provides sub-surface measurements of chemical, biological, and physical parameters

NOAA IMPROVES GREAT LAKES COASTAL MARINE OBSERVATION NETWORK AND FORECASTS

NOAA's NWS has made a significant investment in the expansion of the Great Lakes coastal marine observation network that provides access to information on the climate, meteorology, chemistry, geology, biology, and human activities that affect the Great Lakes. This investment includes the formation of the Great Lakes Observing System (GLOS), a regional component of the U.S. National Integrated Ocean Observing System (IOOS). In the past 5 years, the NOAA NWS Central and Eastern Regions have added over 30 new meteorological observing packages along the Great Lakes coasts. Another critical component of NOAA operations is the recent transition from research to operations of the Great Lakes Forecasting System (GLFS). This system creates forecasts of prevailing over-lake winds, waves, water level, water temperature, and lake circulations. All of these investments enhance NOAA's abilities to help the region improve safety and efficiency of navigation, monitor and adapt to climate change, and protect drinking water supplies.



NOAA-N Prime launch from Vandenberg Air Force base

On February 6, 2009, NOAA-N Prime successfully launched from the Vandenberg Air Force Base in California aboard a Delta-II rocket. The new NOAA polar-orbiting operational environmental satellite supports NOAA's efforts to forecast and monitor the environment by circling the globe every 102 minutes taking images and measurements. NOAA-N Prime, renamed NOAA-19 after reaching orbit, joins METOP-A, a European satellite, as the operational satellites in polar orbit that NOAA uses in its forecasts. NOAA-19 carries six scientific instruments, two search and rescue instruments, and a data recording system. Unique with this satellite is an advanced data collection system that will relay meteorological and oceanographic data—even track migration patterns of wildlife—to help researchers improve their study of Earth's environment. Data from NOAA-19 supports several NOAA programs, including: weather analysis and forecasting; climate research and prediction; global sea surface temperature measurements; atmospheric soundings of temperature and humidity; ocean dynamics research; volcanic eruption monitoring; forest fire detection; global vegetation analysis; and search and rescue operations. NOAA-19 data helps NOAA monitor current conditions in the atmosphere and oceans and keep tabs on long-term climate trends. These data are increasingly important in Polar Regions, given the potential effects of climate change on the polar ice cap and sea ice extent. NESDIS is working closely with the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) to ensure seamless polar satellite coverage. Under an agreement, two of NOAA's polar-orbiting satellites—NOAA-18 and NOAA-19, both in afternoon orbits—carry a EUMETSAT instrument. In return, EUMETSAT is carrying key NOAA instruments on board its first three Metop satellites, which fly in morning orbits.

LAUNCHED NEW POLAR-ORBITING SATELLITE



GOES-14 launching from Kennedy Space Center

LAUNCHED NOAA GEOSTATIONARY OPERATIONAL ENVIRONMENTAL SATELLITE-0 (GOES-0)

On June 27, 2009, the NOAA and NASA announced that the GOES-O Satellite, now renamed GOES-14, successfully launched and reached orbit from the Kennedy Space Center and joined three other GOES spacecraft that help NOAA forecasters track life-threatening weather and solar storms. With more than a thousand tornadoes touching down in the United States each year, and with hurricanes posing a serious risk to residents along the Gulf and East coastlines, it is critical that GOES-14 is in orbit and ready when needed. GOES-14 is the second spacecraft in the GOES-N/O/P series and carries instruments that capture high-resolution images of weather patterns and atmospheric measurements. The imagery and data that NOAA gets from GOES spacecraft are key to NOAA's ability to continuously monitor and diagnose weather in the tropics. Continued improvements in the type and quality of GOES data will improve tropical cyclone forecasts. GOES-14 also provides expanded measurements for space and solar environment monitoring using a Solar X-Ray Imager (SXI). The SXI data are improving forecasts and warnings for solar disturbances, protecting billions of dollars of commercial and government assets in space and on the ground and lessening the effect of power surges for satellite-based electronics and the communications industry.



Emergency Position Indicating Radio Beacons (EPIRBs) and Personal Locator Beacons (PLBs), tracking transmitters which aid in the detection and location of boats, aircraft, and people in distress, interface with COSPAS-SARSAT

In fiscal year 2009, NOAA satellites were key factors in the rescues of 184 people throughout the United States and its surrounding waters thanks to the Search and Rescue Satellite-Aided Tracking (SARSAT) Program. In each incident, NOAA satellites detected and located a distress signal from an emergency beacon and relayed the information to first responders on the ground. In FY2009, NOAA phased out the older beacons and ushered in a new 406 MHz standard for instant detection capabilities and to provide global coverage. The newer beacons are also more accurate and provide Search and Rescue responders with important registration information from the owner NOAA's polar-orbiting and geostationary satellites, along with Russia's COSPAS spacecraft, which are part of the international Search and Rescue Satellite-Aided Tracking system, called COSPAS-SARSAT. This system uses a network of satellites to quickly detect and locate distress signals from emergency beacons on board aircraft and boats and from handheld personal locator beacons. When a satellite finds the location of a distress signal within the United States or its surrounding waters, the information is relayed to the SARSAT Mission Control Center at NOAA's Satellite Operations Facility in Suitland, Maryland. From there, it is sent to a Rescue Coordination Center, operated by either the U.S. Air Force, for land rescues, or the U.S. Coast Guard, for water rescues. Now in its 27th year, COSPAS-SARSAT has been credited with supporting more than 25,000 rescues worldwide, including 6,134 in the United States and its surrounding waters. The four original member nations (Canada, France, Russia, and the United States) have been joined by 36 other nations that operate 66 ground stations and 29 mission control centers worldwide or serve as search and rescue points of contact.

SARSAT RESCUES 184 PEOPLE



King Air 350ER

AIRCRAFT OPERATIONS

In 2009, Aircraft Operations Center (AOC) provided the newly acquired King Air 350ER aircraft to support NOAA's coastal mapping mission. Aerial surveys are flown in support of the National Ocean Service (NOS) National Geodetic Survey (NGS) Remote Sensing Division (RSD). Coastal mapping surveys are on-going aerial missions conducted to meet the requirements mandated by the Coast and Geodetic Survey and Hydrographic Services Improvement Acts, and provide updates and productions for nautical charts. AOC also provided support for the Chukchi Offshore Monitoring in Drilling Area (COMIDA) project, Bowhead Whale Feeding Study (BOWFEST), and Bowhead Whale Aerial Survey Project (BWASP). In addition, NOAA Twin Otter aircraft were stationed in Barrow, Deadhorse, and Kotzebue, Alaska to target high priority observation areas located in and around rapidly developing petroleum fields. Bowhead whales are an endangered species and the rapid development of petroleum in the Chukchi and western Beaufort Seas presents a potential hazard to the species. The aerial flights provided critical documentation on distribution of marine mammals, effects of environmental factors on distribution patterns and variability in feeding behaviors, and temporal and spatial patterns of large marine mammals.



NOAA Ship *Pisces* is the third of four newly constructed fisheries survey vessels and is homeported in Pascagoula

NOAA Ship, *Pisces*, the Nation's most advanced fisheries survey vessel, was commissioned Nov. 6, 2009, in Pascagoula, MS. The vessel will support fisheries research in the Gulf of Mexico, southeastern United States and the Caribbean. Built by Pascagoula based VT Halter Marine, *Pisces* is equipped with high tech research equipment and quiet-hull technology, allowing scientists to study fish populations and collect oceanographic data with minimal impact on marine animal behavior. The 208-ft ship is the third of four newly constructed NOAA fisheries survey vessels of the same class. *Pisces* is operated by the NOAA Office of Marine and Aviation Operations and is home ported in Pascagoula.

NOAA SHIP *PISCES* ENTERS SERVICE



In July 2009, NOAA Recovery Act funds helped hire out of work fishermen to remove abandoned crab pots from the Oregon coast. With their removal, crab – some of which are threatened in Oregon – continue to be caught in the traps and will eventually die

NOAA SUCCESSFULLY MANAGED AND INVESTED AMERICAN RECOVERY AND REINVESTMENT ACT FUNDS IN 2009

Since the passage of the American Recovery and Reinvestment Act, NOAA has been able to fund 50 quality habitat restoration projects around the country, invest in marine navigation, climate modeling and supercomputing, and further NOAA's critical mission areas by creating jobs for Americans. At the end of FY 2009, NOAA obligated approximately \$528 million of the \$830 million appropriated funds, with plans to obligate the remainder by the FY 2010. NOAA accomplished 89 contract actions and 50 grants for \$223 million and \$297 million in interagency agreements supporting projects with Department of Energy, NASA, Air Force, Navy and Army Corps of Engineers. ARRA funds provided to NOAA are having a positive effect on jobs, research capabilities and livelihoods. For example, of the \$167M for Marine and Coastal Habitat Restoration, NOAA has awarded \$155 million to 50 grantees for habitat restoration to coastal and Great Lakes communities and businesses. The projects will employ Americans with a range of skills including laborers, nursery workers, design engineers, restoration ecologists, landscape architects, hydrologists, and specialized botanists.





NOAA GPRA PERFORMANCE RESULTS

NOAA's mission goals in ecosystems, climate, weather and water, and commerce and transportation are integrated from a funding and organizational perspective, in order to maximize support for the Departmental performance goal: observe, protect, and manage the Earth's resources to promote environmental stewardship. NOAA currently has 31 Government Performance & Results Act (GPRA) measure targets. In FY 2009, NOAA achieved or exceeded targets on 26 of 31 measures, or 84 percent of the targets. The funding requested in this budget is essential for employing new and modified measures to better represent and assess NOAA's performance in achieving our mission.

In February 2009, NOAA received \$830 million from the American Recovery and Reinvestment Act (ARRA) to assist key sectors of the U.S. economy, such as: (1) reducing the hydrographic survey backlog to facilitate shipping transportation; (2) habitat restoration projects that benefit marine fisheries and endangered species; (3) supporting critical development activities of the Joint Polar Satellite System, to provide essential data for weather prediction and climate monitoring; and (4) completing construction work on various facilities and vessels to meet mission needs and provide jobs.

Per 2009 GPRA measures, NOAA continued to improve the fish stock sustainability index (FSSI), its comprehensive measure for sustainability of 230 U.S. fish stocks selected for their importance to commercial and recreational fisheries. In FY 2009, four stocks—Atlantic bluefish, Gulf of Mexico king mackerel, and two stocks of monkfish in the Atlantic were declared rebuilt, the largest number in a single year since NOAA first declared a stock successfully rebuilt in 2001. NOAA continues to work with the eight Fishery Management Councils to implement statutory annual catch limits. NOAA's Navigation Services programs awarded \$40 million in ARRA funds for critical hydrographic survey projects for over 1,800 square miles of additional survey area. The program exceeded their GPRA measure of 3,000 miles in FY2009, by 219 miles for a total of 3,219 miles. Without the surveys, ocean bottom conditions that are hazardous to navigation will not be located, identified, and placed on nautical charts to help mariners navigate safely and avoid accidents, spills, loss of life, and cargo, and damage to the environment. NOAA's hydrographic data supports planning, management, and science applications in the coastal zone. NOAA satellites provided key support in the



rescues of 184 persons throughout and near the United States during FY 2009, providing their locations to first responders.

NOAA's GPRA goals are focused on the results of key programs and services, support decision-making and congressional oversight, and are designed to measure and improve the performance of NOAA in meeting its mission. GPRA is unique in its requirement that agency "results" be integrated into the budgetary decision-making process. NOAA is continuously striving to improve its measures to better the service it provides to the American public. For more information on NOAA's FY 2009 performance, please refer to the Department of Commerce FY 2009 Performance and Accountability Report (PAR), located at: http://www.osec.doc.gov/bmi/budget/09PAR/DOCFY2009PAR_111609.pdf. Some of the actuals reported here are slightly different from what was reported in the FY 2009 PAR, as only estimates were available at the time.

NOAA PERFORMANCE SUMMARY FOR FY2009				
GOAL	MEASURE	FY2009 TARGET	FY2009 ACTUAL	STATUS
ECOSYSTEMS	Fish Stock Sustainability Index (FSSI)	548.5	565.5	Exceeded Target
	Percentage of Living Marine Resources (LMR) with adequate population assessments and forecasts	42.1%	43.9%	Met Target
	Number of protected species designated as threatened, endangered, or depleted with stable or increasing population levels	22	25	Met Target
	Number of habitat acres restored (annual/cummulative)	9,000/58,742	9,232/58,974	Met Target
	Annual number of coastal, marine, and Great Lakes ecological characterizations that meet management needs	50	50	Met Target
	Cummulative number of coastal, marine, and Great Lakes issue-based forecasting capabilities developed and used for management	41	41	Met Target
	Percentage of tools, technologies, and information services that are used by NOAA partners/customers to improve ecosystem based management	86%	86%	Met Target
	Annual number of coastal, marine, and Great Lakes habitat acres acquired or designated for long-term protection (annual)	2,000	2,246	Met Target

Key To Color Coding: ■ Exceeded Target ■ Met Target ■ Slightly Below Target ■ Did Not Meet Target



NOAA PERFORMANCE SUMMARY FOR FY2009				
GOAL	MEASURE	FY2009 TARGET	FY2009 ACTUAL	STATUS
CLIMATE	U.S. Temperature Forecasts (Cumulative Skill Score computed over the regions where predictions are made)	20	27.5	Exceeded Target
	Reduce the Uncertainty in the Magnitude of the North American Carbon Uptake	0.40 GtC/yr	0.40 GtC/yr	Met Target
	Reduce the Uncertainty in Model Simulations of the Influence of Aerosols on Climate	20% Improvement	20% Improvement	Met Target
	Determine the National Explained Variance (%) for Temperature and Precipitation for the Contiguous United States Using U.S. Climate Network (USCRN) Stations	Temp - 98.0% Precip - 95%	Temp - 98.3% Precip - 95.1%	Met Target
	Reduce the Error in Global Measurement of Sea Surface Temperature	0.50°C	0.50°C	Met Target
	Regionally focused climate impacts and adaptation studies communicated to decision makers	37 risk assessments / evaluations	37 risk assessments / evaluations	Met Target
WEATHER & WATER	Cummulative percentage of U.S. shoreline and inland areas that have improved ability to reduce coastal hazard impacts	32%	32%	Met Target
	Lead time (min) for severe weather warnings for tornadoes (storm based)	12	12	Met Target
	Accuracy (%) for severe weather warnings for tornadoes (storm based)	69	66	Slightly Below Target
	False Alarm Rate (FAR) (%) for severe weather warnings for tornadoes (storm based))	72%	77%	Did Not Meet Target
	Lead time (min) for severe weather warnings for flash floods	49	73	Exceeded Target
	Accuracy (%) for severe weather warnings for flash floods	90%	91%	Met Target
	Hurricane forecast track error (48 hour) (nautical miles)	108	86	Met Target
	Hurricane forecast track error (48 hour) (difference in knots)	13	14	Slightly Below Target
	Accuracy (%) (threat score) of day 1 precipitation forecasts	29%	30%	Met Target
	Winter storm warnings -Lead time (hours)	16	18	Met Target
Winter storm warnings- Accuracy (%)	91%	90%	Slightly Below Target	

Key To Color Coding: ■ Exceeded Target ■ Met Target ■ Slightly Below Target ■ Did Not Meet Target



NOAA PERFORMANCE SUMMARY FOR FY2009				
GOAL	MEASURE	FY2009 TARGET	FY2009 ACTUAL	STATUS
COMMERCE & TRANSPORTATION	Reduce the hydrographic survey backlog within navigationally significant areas (square nautical miles surveyed per year)	3,000	3,219	Met Target
	Percentage of U.S. counties rated as fully enabled or substantially enabled with accurate positioning capacity	69%	72%	Met Target
	Marine wind speed accuracy (%)	69%	73%	Met Target
	Marine wave height accuracy (%)	74%	77%	Met Target
	Aviation forecast accuracy of ceiling/visibility (3 mile/1,000 feet or less) (%)	64%	63%	Slightly Below Target
	Aviation forecast False Alarm Rate (FAR) (3 mile/1,000 feet or less) (%)	43%	38%	Met Target

Key To Color Coding: Exceeded Target Met Target Slightly Below Target Did Not Meet Target



CHAPTER 2

NOAA Operations, Research, & Facilities By Line Office



NATIONAL OCEAN SERVICE

The National Ocean Service (NOS) is responsible for the preservation of coastal resources by providing science-based solutions through collaborative partnerships to address evolving economic, environmental, and social pressures on our oceans and coasts. All NOS activities serve to support sound decision making for human, ecological, and economic health. An estimated 154 million people, over 50 percent of the Nation's population, lived in coastal counties in 2004. These coastal counties make up only 17 percent of the Nation's land area.



GPS observations are collected at Elkhorn Slough National Estuarine Research Reserve

Although coastal population growth has generally reflected the same rate of growth as the entire Nation, the limited land area of coastal counties is increasingly strained by the increased density of people. This increasing density, coupled with the important economies of coastal areas, makes the task of managing coastal resources increasingly difficult. It is expected that the Nation's coastal population will grow to more than 11 million by 2015. In addition, over half of the U.S. Gross Domestic Product is generated in coastal counties, highlighting their critical importance to the nation's economy and further emphasizing the need for access to data and sound science to inform decision making.

As a national leader for coastal and ocean stewardship, NOS promotes a wide range of research and operational activities aimed at developing a better understanding of ocean, coastal and Great Lakes ecosystems. This research provides the strong science foundation required to effectively manage and advance the sustainable use of our coastal and ocean systems, improve ecosystem and human health, and support economic vitality. NOS provides improvements in the quality, quantity, geographic distribution, and timeliness of ocean and coastal observations. Observations by NOS assets and partners are critical components of the Nation's Integrated Ocean Observing System (IOOS[®]) as well as fundamental contributors to the Global Earth Observation System of Systems (GEOSS). NOS mapping, charting, geodetic, and oceanographic activities build on marine and coastal observations collected to increase the efficiency and safety of maritime commerce, support coastal resource management and marine spatial planning, and address coastal flooding and water quality concerns. NOS protects and



restores coastal resources damaged by releases of oil and other hazardous materials. NOS also protects and manages the special marine areas of the Nation's marine sanctuaries and the Papahānaumokuākea Marine National Monument. Through partnerships with coastal states, NOS manages and protects the Nation's valuable coastal zones and nationally significant estuarine reserves. NOS helps federal, state, local, and international managers build the suite of skills and capacity needed to protect, restore, and use coastal ecosystems by providing financial and technical assistance, process and technical skill training, and other applied research and capacity-building resources.

NOS delivers a range of nationwide coastal and Great Lakes scientific, technical, and resource management services in support of safe, healthy, and productive oceans and coasts. In carrying out its diverse programs and services, NOS forges partnerships to integrate expertise and efforts across all levels of government and with other nongovernmental organizations. This coordinated approach is an essential component of NOS' national effort to protect, maintain, and sustain the viability of coastal communities, economies, and ecosystems.

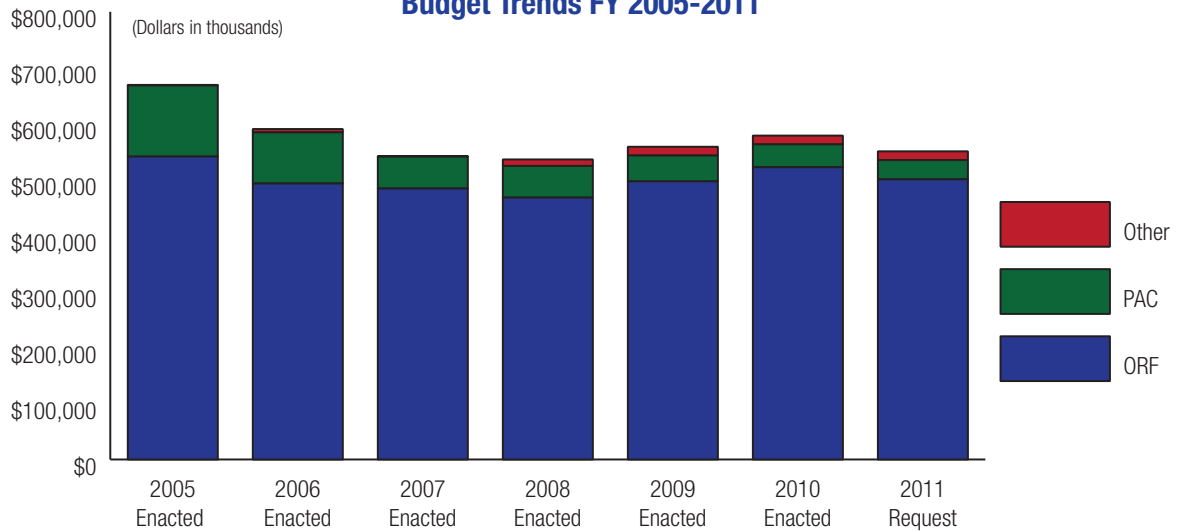
The FY 2011 President's Budget supports funding and program requirements that enable NOS to deliver a dynamic range of nationwide coastal and Great Lakes scientific, technical and resource management services. This funding enables NOS to address established NOAA strategic goals and to continue along the path to meet the NOS vision: A nation with safe, healthy, and productive oceans and coasts.



NATIONAL OCEAN SERVICE

(DOLLARS IN THOUSANDS)	FY 2009 ENACTED	FY 2010 ENACTED	FY 2011 REQUEST	INCREASE (DECREASE)
NOS — ORF				
Navigation Services	\$166,373	\$168,172	\$156,150	(\$12,022)
Ocean Resources Conservation & Assessment	175,494	195,932	178,670	(17,262)
Ocean and Coastal Management	155,100	158,116	165,788	7,672
Total, NOS - ORF	496,967	522,220	500,608	(21,612)
Total, NOS - PAC	46,188	40,890	34,385	(6,505)
Total, NOS - Other	16,875	15,600	15,600	0
GRAND TOTAL NOS (Direct Obligations)	\$560,030	\$578,710	\$550,593	(\$28,117)
Total FTE	1,240	1,246	1,259	13

NATIONAL OCEAN SERVICE Budget Trends FY 2005-2011



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction

Other: Environmental Improvement and Restoration Fund; Coastal Impact Assistance Fund; Coastal Zone Management Fund; Damage Assessment and Restoration Revolving Fund



FY 2011 ORF BUDGET SUMMARY

NOAA requests a total of \$500,608,000 and 1,242 FTEs to support the continued and enhanced operations of the National Ocean Service. This total includes \$4,752,000 and 1 FTE for Adjustments to Base (ATB) and a net program change of \$36,444,000 and 12 FTEs over the FY 2011 Base.

ADJUSTMENTS TO BASE:

The above ATB request includes an increase of \$4,752,000 and 1 FTE to fund the estimated FY 2011 federal pay raise of 1.4 percent and annualize the FY 2010 pay raise of 2.4 percent. Program totals will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Services Administration.

NOS — ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2011:

Program changes are summarized at the sub-activity level below. Detailed numeric breakouts are located in Chapter 7, *Special Exhibits*. Descriptions of each request by line item are located in the NOAA FY 2011 Technical Budget.

OCEAN RESOURCES CONSERVATION AND ASSESSMENT

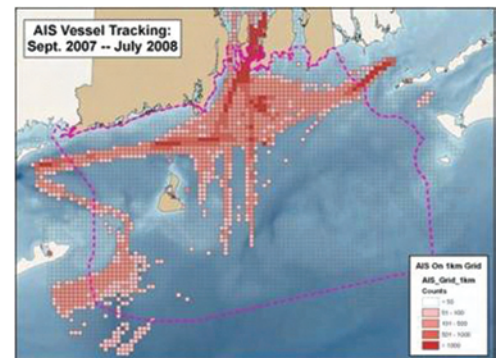
\$178,670,000

NOAA requests an increase of \$17,594,000 and 11 FTEs under the Ocean Resources Conservation and Assessment sub-activity for a total of \$178,670,000 and 439 FTEs.

Ocean Assessment Program: NOAA requests an increase of \$8,094,000 and 11 FTEs. This increase is comprised of three new initiatives and one decrease:

Coastal and Marine Spatial Planning: NOAA requests an increase of \$6,770,000 and 9 FTEs to develop an agency-wide capability to conduct and support comprehensive Coastal and Marine Spatial Planning (CMSP) in U.S. waters.

Human uses of ocean resources are accelerating faster than our ability to manage them. Increasing conflicts are unavoidable as demands increase for ocean-based energy (oil and gas, wind, wave), marine aquaculture, commercial and recreational fishery products, shipping and navigation services, and other activities. The health of ocean ecosystems are at risk as well as the benefits they provide to coastal communities and the national economy. The Nation's current approach to managing the use of ocean resources is ad hoc and fragmented, with no systematic way of evaluating competing ocean uses as well as informing and navigating the often difficult trade-offs they require. President Obama recently released a policy directive calling on federal departments and agencies to develop an integrated and comprehensive CMSP framework by December 2009. To support CMSP, this increase will allow NOAA to provide decision support tools that enable ocean managers and stakeholders to enhance and improve the siting of ocean and coastal uses, provide support to other federal and state agencies to facilitate the integration of existing data and information into NOAA-developed decision support tools, convene regular interagency coordination discussions on integrated approaches to CMSP, create regional maps (three regions per year) of important and vulnerable areas to inform ecosystem-based



Coastal and Marine Spatial Planning's (CMSP) Automated Identification System (AIS)



CMSP and identify and map prevailing area-based management authorities and their potential impacts on the allocation of uses in U.S. waters. These activities will enable NOAA to support integrated and comprehensive coastal and marine spatial plans, which will enhance existing efforts for sustainable fisheries, safe navigation, improved water quality, living marine resources and critical habitat protection. Societal benefits include reduced impacts of ocean uses on marine ecosystems, reduced user conflicts over ocean areas, increased economic certainty and stability for ocean-dependent industries, accelerated siting for offshore renewable energy, enhanced security, and enhanced support for marine protected areas.

Coastal Services Center – Climate Hazards: NOAA requests an increase of \$4,000,000 and 2 FTEs to prepare coastal communities for climate hazards. As

coastal populations continue to grow, coastal habitats are becoming increasingly vulnerable to climate hazards (from winds, waves, and flooding generated by hurricanes and other major storms, as well as physical impacts caused by sea-level rise, coastal erosion, and long-term shoreline changes). To reduce the vulnerability of coastal communities to the hardship and costs associated with climate-related natural hazards, NOAA will apply its scientific and technical expertise towards the development of improved environmental tools. NOAA will work with communities on applying these tools in an effort to mitigate or effectively manage the devastating human, economic and environmental impacts of events such as sea level change and other forms of coastal inundation. With an initial focus on the Gulf of Mexico and Pacific Islands, this request will allow NOAA to develop planning guidelines, provide training and information on understanding coastal risk and vulnerability assessments, and develop decision support resources that integrate social, economic, and climate data. NOAA will also provide accurate and timely prediction of changing sea level at global, regional, and local scales to improve resiliency and response to climate hazards. This funding increase represents a joint effort across NOAA to address climate hazards by leveraging strengths and collaboratively addressing needs identified via regional and national coastal management assessments.



Surveying damage caused by storm surge from Hurricane Katrina

Coastal Services Center – Gulf of Mexico Coastal and Marine Elevation Pilot: NOAA requests an increase of \$2,000,000 and 0 FTEs to develop a Gulf of Mexico Coastal and Marine Elevation Pilot. Coastal wetland loss and rapid erosion in the Gulf

of Mexico has led to the loss of key ecosystem services (such as critical storm protection), causing economic and environmental consequences for both the region and the Nation. To address these issues, NOAA will develop a national integrated high-resolution topographic and bathymetric dataset that will improve the accuracy of storm surge, models, optimize ecosystem restoration, inform coastal and marine spatial planning (CMSP) and enhance ecosystem assessments. This effort will be pursued jointly with the Department of Interior (USGS and MMS). Initial pilot efforts will focus on Mississippi and Louisiana, in support of the Gulf Coast Ecosystem Restoration Working Group and the Interagency Working Group on Long Term Disaster Recovery; however, the intent is to develop a robust framework that can be extended to other regions and applications over time. Ultimately, this increase will provide the foundational data and geospatial framework needed to measure changes in coastal elevation and nearshore bathymetry, delivering critical data to monitor and mitigate for the impacts of coastal erosion, habitat loss, and coastal inundation (including sea level



rise). This effort will allow for more effective science based decisions at state and local levels regarding habitat restoration and will enable more comprehensive coastal and marine spatial planning to analyze current and anticipated ocean uses related to energy, fisheries, and navigation.

Gulf of Mexico Regional Collaboration: NOAA requests a decrease of \$4,750,000 and 0 FTEs. Regional Ocean Partnerships, a new \$20 million dollar competitive grant program, will provide funding to implement activities in the action plans of all regional ocean partnerships. As such, entities that had competed for funds under the Gulf of Mexico grant program in the past will be eligible to compete for funds under Regional Ocean Partnerships.

National Centers for Coastal Ocean Science (NCCOS): NOAA requests an increase of \$9,500,000 and 0 FTEs. This increase is comprised of one new initiative:

Competitive Research: NOAA requests an increase of \$9,500,000 and 0 FTEs to develop and improve sensors for ocean chemical, biological, and physical parameters at multiple spatial and temporal scales. Continued coastal development, changes in land use, a varying climate, and altered ecosystem diversity add a complexity of environmental and human stresses; the consequences of which we do not yet fully understand and are ill prepared to manage. With this increase, NOAA will develop and apply a variety of biological sensing technologies, genomic tools and other technologies that will allow rapid, accurate, and cost effective detection, identification, characterization, and quantification of disease-causing microbes, toxins, and contaminants in marine waters, seafood, and sentinel marine organisms which may indicate health risks to humans. The goal will be to incorporate the successful technologies into monitoring and prediction programs. Funds will be used to target sensor development, which will support ocean and coastal related Health Early Warning Systems, identify risks and promote public health. Bio-sensing capability coupled to traditional oceanographic data will enhance efforts in research, modeling, and forecasting. Priority consideration will be given to efforts that have applicability to ocean acidification, harmful algal blooms (HABs) and their contributing factors, and issues pertaining to oceans and human health. This effort will allow NOAA and its external partners to significantly improve the Nation's ability to support ecosystem-based management of critical marine and coastal systems and protected species, and provide crucial information to safeguard public health.

OCEAN AND COASTAL MANAGEMENT

\$165,788,000

NOAA requests an increase of \$18,850,000 and 1 FTE under the Ocean and Coastal Management sub-activity for a total of \$165,788,000 and 253 FTEs.



Coastal Management: NOAA requests an increase of \$18,850,000 and 1 FTEs. This increase is comprised of one new initiative and one decrease:

Regional Ocean Partnership Grants: NOAA requests an increase of \$20,000,000 and 1 FTE to establish a competitive grants program to support regional ocean partnerships.

The interim report of the Ocean Policy Task Force, the Pew Oceans Commission, the U.S. Commission on Ocean Policy and the Joint Ocean Commission Initiative all call for regional ocean governance mechanisms to address fragmented planning and management of societal use of coastal lands and waters. The value of regional approaches in this regard is reflected in the rapid engagement by most coastal states in new regional ocean governance partnerships. Regional ocean governance mechanisms facilitate the effective management of ocean and coastal resources across jurisdictional boundaries by improving communications, aligning priorities, and enhancing resource sharing between local, state, and federal agencies. With this increase, NOAA will establish a competitive grants program to advance effective ocean management through regional ocean governance. To this end, the program will help support priority actions identified in plans of the existing regional ocean partnerships (e.g., Gulf of Mexico Alliance, Northeast Regional Ocean Council, Great Lakes Regional Collaboration, and the West Coast Governors' Agreement on Ocean Health), as well as support the development and implementation of ocean management plans in other regions (e.g. the Mid-Atlantic Regional Council on the Ocean, the South Atlantic Alliance, Hawaii, and other regions) and address regional activities in other parts of the country (e.g. the Pacific and Caribbean territories, and Alaska). Support for these partnerships will also include the development of comprehensive coastal and marine spatial plans (CMSP) consistent with the U.S. National Framework for CMSP. Eligible grant recipients will include state, local and tribal governments, institutions of higher learning and non-profit organizations working with these regional ocean partnerships or member states. Each year, NOAA will work with the regional ocean partnerships to identify priority areas to focus the funding opportunity. This grant program will be closely coordinated with other NOAA programs and the activities supported through the coastal and marine spatial planning increase also requested in FY 2011.



Coastal areas are important to a variety of users

Energy Licensing and Appeals: NOAA requests a decrease of \$1,150,000 and 0 FTEs for Energy Licensing and Appeals.

NOAA will work to meet its statutory responsibilities related to energy under the Coastal Zone Management Act (CZMA) and the Ocean Thermal Energy Conversion Act (OTECA) with the remaining \$750,000 and by utilizing current agency resources.





NATIONAL MARINE FISHERIES SERVICE

The National Marine Fisheries Service (NMFS) is responsible for the management and conservation of living marine resources within the U.S. Exclusive Economic Zone (EEZ), the area extending from 3 to 200 nautical miles offshore. NMFS provides critical scientific and policy leadership in the international arena and plays a key role in the management of living marine resources in coastal areas under state jurisdiction. NMFS implements science-based conservation and management measures and actions aimed at sustaining long-term use and promoting the health of coastal and marine ecosystems.



NWFSC scientists Dave Misitano and John Ferguson are beach seining for juvenile salmon in a reference area for a study examining contaminant exposure and health of juvenile salmon in Puget Sound

NMFS' mission is to maximize benefits to the Nation from the protection and use (commercial, recreational, and aesthetic) of living marine resources. To achieve its mandates, NMFS works to ensure the long-term health, productivity, and diversity of our Nation's oceans and coastal living marine resources—including fish, invertebrates, sea turtles, marine mammals, and other marine and coastal species—and their habitats. NMFS is charged with balancing these protection mandates with multiple uses and interests in living marine resources, including commercial, recreational, and subsistence fishing; aquaculture; and marine and coastal observation and research. Successful management relies upon NMFS' strong scientific and research competency to support the challenging public decision-making processes associated with NMFS' stewardship responsibilities.

NMFS continues to develop and track key performance measures that demonstrate meaningful results to the American public. In FY 2011, NMFS will continue to focus its resources on building and maintaining fish stocks at productive levels; improving the status of overfished fisheries and of endangered and threatened species and ensuring those species have adequate population assessments and forecasts; implementing plans to rebuild, recover, and conserve major fish stocks and protected species; and restoring habitat for NOAA trust resources.

In FY 2011, NMFS will continue its efforts to end overfishing, promote market-based management approaches, improve recreational fisheries data collection, reduce bycatch of living marine resources, and address illegal, unregulated, and unreported (IUU) fishing. NMFS will also conduct Endangered



Species Act (ESA) section 7 consultations with a wide range of federal land, mineral, and natural resource management and national defense agencies to assess and minimize effects of their proposed actions on listed species and critical habitat. NMFS will also collaborate with other agencies and organizations on an ecosystem-based approach to develop indicators of ecosystem status and trends, and on joint strategies to address priority regional ecosystem issues.

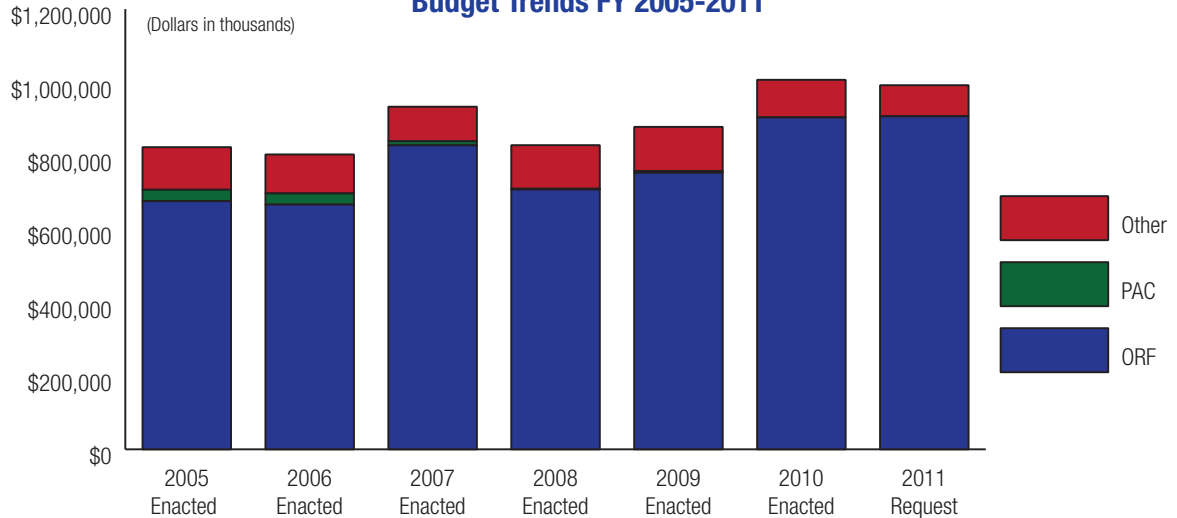
The FY 2011 President's Budget Request supports funding and program requirements to enable NMFS to be effective stewards of living marine resources for the benefit of the Nation through science-based conservation and management and the promotion of ecosystem health.



NATIONAL MARINE FISHERIES SERVICE

(DOLLARS IN THOUSANDS)	FY 2009 ENACTED	FY 2010 ENACTED	FY 2011 REQUEST	INCREASE (DECREASE)
NMFS — ORF				
Protected Species Research and Management	\$173,945	\$203,952	\$210,251	\$6,299
Fisheries Research and Management	360,826	432,917	463,576	30,659
Enforcement and Observers	90,085	106,747	105,345	(1,402)
Habitat Conservation and Restoration	53,655	58,193	54,918	(3,275)
Other Activities Supporting Fisheries	75,494	102,730	73,687	(29,043)
Total, NMFS - ORF	754,005	904,539	907,777	3,238
Total, NMFS - PAC	4,600	0	0	0
Total, NMFS - Other	120,841	103,642	84,604	(19,038)
GRAND TOTAL NMFS (Direct Obligations)	\$879,446	\$1,008,181	\$992,381	(\$15,800)
Total FTE	2,656	2,823	2,882	64

**NATIONAL MARINE FISHERIES SERVICE
Budget Trends FY 2005-2011**



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction

Other: Fishermen's Contingency Fund; Foreign Fishing Observer Fund; Fisheries Finance Program Account; Promote and Develop; Pacific Coastal Salmon Recovery Fund; Marine Mammal Unusual Mortality Event Fund; Federal Ship Financing Fund; Environmental Improvement and Restoration Fund; Limited Access System Administration Fund



FY 2011 ORF BUDGET SUMMARY

NOAA requests a total of \$907,777,000 and 2,877 FTEs to support the continued and enhanced operations of the National Marine Fisheries Service. This total includes an increase of \$13,429,000 and 42 FTEs for Adjustments to Base (ATB) and a net program change of \$64,555,000 and 17 FTEs over the FY 2011 Base.

ADJUSTMENTS TO BASE:

The above ATB request includes an increase of \$13,429,000 and 42 FTEs to fund the estimated FY 2011 federal pay raise of 1.4 percent and annualize the FY 2010 pay raise of 2.4 percent including service contracts, utilities, field office lease payments, and rent charges from the General Services Administration. Program totals will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Services Administration.

NMFS – ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2011:

Program changes are summarized at the sub-activity level below. Detailed numeric breakouts are provided in Chapter 7, *Special Exhibits*. Descriptions of each request by line item are provided in the NOAA FY 2011 Technical Budget.

PROTECTED SPECIES RESEARCH AND MANAGEMENT

\$210,251,000

NOAA requests an increase of \$15,804,000 and 10 FTEs in the Protected Species Research and Management sub-activity for a total of \$210,251,000 and 827 FTEs. This increase is comprised of four new initiatives, and one decrease:

Protected Species Research and Management Programs Base: NOAA requests an increase of \$3,000,000 and 7 FTEs to increase its capacity to meet interagency consultations and authorizations under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). Consultations are necessary in order to authorize lawful activities potentially affecting protected species and to ensure that economic development and national defense actions are compatible with species conservation and recovery. Through the consultation process, NMFS helps agencies tailor their actions, so as to avoid additional peril to the impacted species and assist in conservation efforts. The number of these consultations is expected to increase in FY 2011 and beyond because of new species listings, (currently averaging two per year), the new Pacific Marine National Monuments, increased vessel traffic in the Arctic environment, development of conventional and alternative energy projects, and national security. This increase will support consultations and authorizations for regional energy development, national defense related activities, pelagic longline fishery operations, and operations of the Pacific Marine National Monuments. Funding will also support NMFS' efforts to improve its FY 2009 on-time completion rate of approximately 30 percent and reduce the backlog of consultation that have received no action.



Ribbon seal pup with a satellite tracking tag with the NOAA Ship Oscar Dyson in the background. The tracking tag provides information on the behavior of ribbon seals during the pupping, breeding, and molting season when they are often found within the marginal sea-ice zone



Species Recovery Grants: NOAA requests an increase of \$9,636,000 and 0 FTEs for the conservation and recovery of marine and anadromous species under NMFS jurisdiction and listed under the Endangered Species Act (ESA) through the Species Recovery Grants Program.

NMFS currently has jurisdiction over 68 threatened or endangered species, five of which have been proposed for listing, and six candidates for listing under the ESA. Although highly variable, species continue to be added to these lists at a rate of about two per year. Addition of species to these lists without corresponding investments in, and implementation of recovery and conservation actions result in increasing pressure on all ESA programs within NMFS and an increasing regulatory burden on the public. With increased funding for the Species Recovery Grants Program, NMFS will conduct cooperative conservation and recovery implementation with states and tribes assisting protected species recovery. Recovery of listed species is dependent on collaboration and cooperation with partners, states and tribes; however, most partners do not have adequate resources to address necessary recovery actions and Federal assistance is necessary to ensure their ability to engage in effective partnership. By leveraging the financial, technical, and educational resources from states and tribes, NMFS can achieve a greater level of conservation of listed species. Specifically, matching funds offer additional financial resources that NMFS would not need to spend on recovery, thus allowing for larger or more complex conservation and habitat restoration projects. Fostering relationships with other states and tribes through cooperative conservation effectively incorporates local expertise and is therefore, a more effective approach to protect and recover listed species. The requested funds will be used by NMFS' partners to implement priority recovery actions for listed species including restoring habitat necessary to recover listed species; monitoring population trends of listed species; partnering with other states and tribes to conduct cross-jurisdictional conservation actions; developing conservation plans to address incidental take of listed species; and educating the public about conservation of ESA listed species. This investment will provide for implementation of recovery and conservation actions, ultimately leading to decreasing the regulatory burden on the public.



North Atlantic right whales

Pacific Salmon: NOAA requests an increase of \$2,668,000 and 0 FTEs to monitor Pacific salmon reintroductions, evaluate the effectiveness of restoration efforts, and expand NMFS genetic stock identification capability.

This increase will improve the scientific information for Pacific salmon recovery, allowing managers to effectively focus efforts on the most critical actions threatening salmon. Managers will be better able to predict ocean abundance and develop improved conservation strategies, improve success of restoration projects, and understand the risks of hatchery supplementation. In turn, better management of the salmon fishery should provide greater fishing opportunities. Funding of \$668,000 will support fish tagging and tracking technology to monitor and evaluate watershed level salmon reintroduction and habitat restoration actions. This effort will focus restoration efforts to those habitat elements that can best increase survival. Genetic tools and stock indicators will be funded at \$2,000,000 to provide stock specific ocean distribution and catch information providing new opportunities to manage fisheries and target strong stocks while limiting the impact on ESA-listed salmon populations.



Seining for juvenile Chinook salmon for mark-recapture study at Russian Island



Pacific Salmon - CALFED Bay-Delta Program: NOAA requests an increase of \$1,000,000 and 3 FTEs to support the Water Operations Oversight and Coordination activities under CALFED Bay- Delta Program. The CALFED Bay-Delta Program is a cooperative effort of 18 State and Federal agencies with regulatory and management responsibilities in the San Francisco Bay/Sacramento/San Joaquin River Bay-Delta to develop a long-term plan to restore ecosystem health and improve water management for beneficial uses of the Bay-Delta system. Funding will support NOAA's actions required under the new Operations Criteria and Plan (OCAP) Biological Opinion (issued June 4, 2009) on Endangered Species Act (ESA) listed Chinook salmon, steelhead and green sturgeon. Specifically, funding will support coordination of permitting with the Bureau of Reclamation and the California Department of Water Resources. These funds will also enable NMFS to participate in reviewing water operations forecasts, participate on technical teams, and assist in adaptive management decisions regarding operations of the state and Federal Central Valley water projects.

Atlantic Salmon: NOAA requests a decrease of \$500,000 and 0 FTEs for Atlantic Salmon. Remaining funds will be used to continue implementing projects to address fish passage barriers, restore habitat, study the major threats to Atlantic Salmon, and conduct ESA consultations on Federal projects that might impact Atlantic Salmon survival.

FISHERIES RESEARCH AND MANAGEMENT

\$463,576,000

NOAA requests an increase of \$36,600,000 and 15 FTEs in the Fisheries Research and Management sub-activity for a total of \$463,576,000 and 1,381 FTEs. This increase is comprised of two new initiatives and one decrease:

National Catch Share Program: NOAA requests an increase of \$36,600,000 and 10 FTEs to accelerate and enhance the implementation of a National Catch Share Program. Rebuilding our Nation's fisheries is essential to preserving the livelihood of fishermen, the vibrancy of our coastal communities, the sustainability of a healthy seafood supply, and restoring ocean ecosystems to a healthy state. Catch share programs give fishermen a stake in the benefits of a well-managed fishery, and therefore, greater incentive to ensure effective management. This funding will support the development, implementation, and operation of catch share programs in fisheries across the nation. Fourteen catch share programs are currently in place, with a total of 16 scheduled to be operational by 2010. This increase continues the transition of the Northeast groundfish fishery to sector management and provides for implementation of catch share programs in fisheries in the Mid-Atlantic, Gulf of Mexico, and Pacific Coast regions. It supports analysis and evaluation of new programs, the development of fishery management plans and regulations to support catch shares, observing and monitoring at sea and on shore for specific fisheries, and enforcement activities. It also provides for the continued implementation of electronic log books as well as dockside data collection and management, including quota accounting and lien registry. The funding also increases NMFS' analytical capacity to evaluate and report performance of catch share monitoring programs with respect to economic performance, fleet behavior, annual catch limits, and bycatch reduction.



Removing halibut in Sitka, Alaska. The halibut catch share program has been in place more than a decade



Fisheries Oceanography: NOAA requests an increase of \$5,400,000 and 5 FTEs to support the expedited creation of Integrated Ecosystem Assessments (IEAs) for three of NOAA's eight Regional Ecosystems. To better manage the Nation's highly complex and evolving marine ecosystem resources and services, IEAs provide a comprehensive, science-based decision-making framework and holistic approach to ecosystem-based management (EBM). IEAs bring scientific and technological rigor to resource management decisions by incorporating diverse sources of data into ecosystem models, including socio-economic data, that evaluate trade-offs between ecosystem and societal goals. In 2011, this effort will focus primarily on the California Current Ecosystem and will include work on the Gulf of Mexico and Northeast Shelf IEAs. IEAs will allow managers to make informed management decisions through the management strategy evaluation tools. Such tools will provide managers with sectoral uses (e.g., fishing, aquaculture, offshore alternative energy development, recreation, and other ecosystem goods and services sectors) as well as socioeconomic implications of management actions. In turn, this will promote job retention and economic growth by supporting sustainable resource use within various sectors.

Salmon Management Activities: NOAA requests a decrease of \$5,400,000 and 0 FTEs for Salmon Management Activities. This reduction is a planned component of the renegotiated Pacific Salmon Treaty from \$16,500,000 to \$11,100,000. The remaining funds will support the following activities: Coded Wire tag (CWT) Program Improvements-\$1.5 million, Puget Sound Critical Stocks Augmentation-\$2.1 million, and Alaska Fishery Adjustment Mitigation-\$7.5 million.

HABITAT CONSERVATION AND RESTORATION

\$54,918,000

NOAA requests an increase of \$10,364,000 and 0 FTEs in the Habitat Conservation and Restoration sub-activity for a total of \$54,918,000 and 149 FTEs. This increase is comprised of one new initiative:

Fisheries Habitat Restoration: NOAA requests an increase of \$10,364,000 and 0 FTEs for the Community-based Restoration Program to implement larger-scale ecological restoration. Habitat destruction, degradation, and modification are a threat to endangered and threatened species populations and serve as major limiting factors in the recovery of such populations. In order to effectively implement recovery efforts for listed species, improving habitat condition and ecosystem function through larger-scale habitat restoration in targeted areas, are required. With this increase NOAA will implement larger-scale ecological restoration to increase habitat to support such recovery of threatened and endangered species. Specific activities include restoring wetlands and fish passage to provide spawning and rearing habitat for fish. Other benefits include the provision of storm protection from flooding and storm surge in the most vulnerable coastal communities. Activities would also address habitat degradation which is caused by human impacts and has been further exacerbated by climate change. The requested funding will advance national priorities for larger-scale habitat restoration and strengthen NOAA's leadership role in science-based conservation. With this increase NOAA can capitalize on previous experience gained from implementing larger-scale habitat restoration projects through the American Recovery and Reinvestment Act (ARRA), and further strengthens its leadership role in science-based habitat conservation.



Recovery Act funds are being used to re-flood and restore salt marshes. The Magnolia Marsh component, Huntington Beach, CA, is the final phase of this restoration project which restores significant habitat for birds, shellfish and coastal marine fish, such as anchovy, mullet, corvina, and halibut



OTHER ACTIVITIES SUPPORTING FISHERIES

\$73,687,000

NOAA requests an increase of \$1,787,000 and a decrease of 13 FTEs in the Other Activities Supporting Fisheries sub-activity for a total of \$73,687,000 and 135 FTEs. This increase is comprised of two new initiatives and two decreases:

Aquaculture: NOAA requests an increase of \$2,352,000 and 1 FTE to support the NOAA/USDA Alternative Feeds initiative. As U.S. citizens continue to eat more aquaculture seafood, complementary studies are also needed to understand the human health benefits of eating such seafood. Additionally, many forage fish stocks are at risk of overexploitation from the growing demand for finfish aquaculture feeds. In these aquaculture operations, feed is the highest single cost and fish meal and fish oil prices have doubled in the past 15 years. Reducing the amount required in fish feeds will therefore, have dramatic economic benefits to the aquaculture industry. Current research has made progress in reducing the amount of fish meal and fish oil required in commercial aquaculture feed diets. NOAA and other federal agencies play a vital role in that research and the transfer of such technology to industry. To that effect, these funds will support NOAA's partnership with USDA in the Alternative Feeds Initiative. Staff will lead NOAA's internal and external research on alternative feeds and expand research at the NOAA Fisheries Science Centers, support a competitive grants initiative on priority alternative feed research topics, and work with NOAA Fisheries' Fishery Finance Program and other DOC and Federal agencies to transfer technology and enable expanded alternative aquaculture feeds production in the United States.



Aquaculture Program — Open fish farming in Hawaii

Regional Studies: NOAA requests an increase of \$5,000,000 and 4 FTEs to improve the quality of NOAA's research in the Chesapeake Bay through the acquisition of new technology and infrastructure improvement projects, which support the Chesapeake Bay Executive Order (EO). The population of the 64,000 square-mile Chesapeake Bay watershed has increased by about 8 percent in the past decade and the amount of impervious surface has increased by over 40 percent. These trends have drastically altered the hydrology and natural filtering systems of the Bay, overtaking restoration and protection efforts to date with large infusions of sediment and nutrients. As a result, many of the Bay's living resources and key habitats; such as, wetlands, submerged grasses, oysters, crabs, and finfish have suffered. The Bay has tremendous cultural significance and economic potential for the region. To improve the Bay, this increase will provide enhanced understanding of the relationships between the Chesapeake Bay's living resources and habitat, coordinate protection and restoration of key species and habitats across jurisdictional lines, and support a coordinated system of monitoring platforms distributed across the Bay. FY 2011 funds will be targeted to improve the quality of NOAA's research through the acquisition of new technology and infrastructure. The funding will ensure NOAA has state of the art field and laboratory equipment in place in FY 2011, and the base funding required for addressing the mandates of the EO in FY 2012 and beyond. NOAA proposes to obtain field equipment to enhance field restoration efforts, support enforcement for oyster sanctuaries, and for staff support to



Jesse Mechling, NOAA Seagrant Fellow, carries a tray of native Chesapeake Bay marsh grasses for shoreline planting



plan and implement habitat assessments and characterizations. NOAA will also enhance scientific and laboratory applications as well as geospatial modeling capacity to support the proposed restoration of native oysters in 20 tributaries by 2020. Funds will be used to enhance operations and maintain the Chesapeake Bay Interpretive Buoy System (CBIBS) and incorporate data into the Integrated Ocean Observing System.

Cooperative Research: NOAA requests a decrease of \$4,565,000 and 13 FTEs for Cooperative Research. This decrease is offset by increases in other fisheries research. At this level of funding, NOAA's cooperative research program will continue to support high-level projects nationwide through competitive grant and contract procurements, as well as cooperative agreements.

Southwest Fisheries Science Center: NOAA requests a decrease of \$1,000,000 and 0 FTEs for the Southwest Fisheries Science Center. This is a planned decrease for the leasing of temporary office and laboratory space in La Jolla, California.





OFFICE OF OCEANIC & ATMOSPHERIC RESEARCH

The Office of Oceanic & Atmospheric Research (OAR) serves as NOAA's source for research and development (R&D), often referred to as NOAA Research. OAR conducts the scientific research, environmental studies, and technology development needed to improve NOAA's operations and to broaden our understanding of the Earth's atmospheric and marine environmental systems. OAR currently consists of 7 intramural research laboratories and manages or facilitates extramural research at 32 National Sea Grant colleges, universities, and research programs; several undersea research centers; a research grants program through the Climate Program Office; and many cooperative institutes with academia.



DART II Tsunami Buoy

OAR's activities are organized along four themes: (1) Climate Research; (2) Weather and Air Quality Research; (3) Ocean, Coastal, and Great Lakes Research; and (4) Information Technology (IT) R&D. The goals of these four theme areas are to: (1) understand complex climate systems to improve predictions; (2) understand atmospheric events to assist in saving lives and property worldwide; (3) explore, investigate, and understand the complexities of our ocean, coastal, and Great Lakes habitats and resources; and (4) accelerate adoption of advanced computing, communications, and IT throughout NOAA. The research is carried out through a national network of more than fifty Federal and university-based laboratories and research programs. With this diverse research "tool kit," OAR: (1) provides national and international leadership on critical environmental issues and (2) addresses the environmental R&D needs of internal NOAA customers as well as of states, industry, the Department of Commerce, and other Federal agencies. OAR researchers represent the cutting edge in sustained, long-term environmental observations and modeling. Their contributions enhance the health and economic well-being of society.

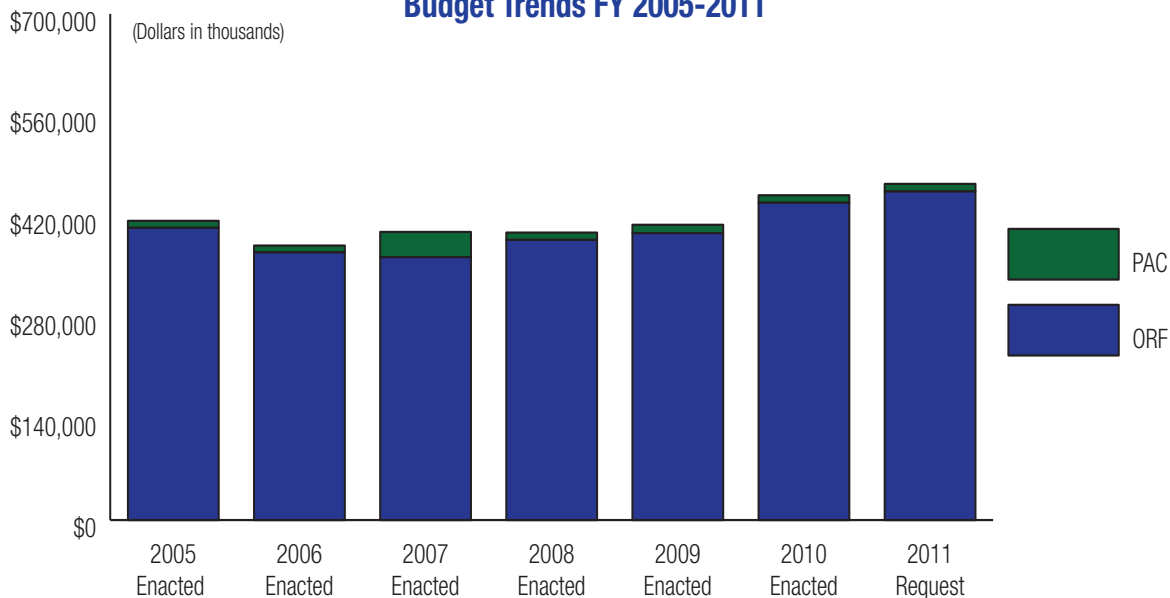
OAR's FY 2011 request seeks funding to: (1) sustain critical research activities in support of NOAA climate, weather, and ocean missions; (2) initiate new activities that address currently unmet gaps in the NOAA service missions; and (3) meet the information needs of our Nation's environmental decision-makers. The request also responds to recent considerations regarding: (1) strengthening collaboration between OAR & NWS; (3) supporting a "warn-on-forecast" capability, improved lead time for forecasts, and new observational tools, e.g., MPAR (Multi-Function Phased-Array Radar) and (3) preparing for the establishment of a climate service.



OFFICE OF OCEANIC & ATMOSPHERIC RESEARCH

(DOLLARS IN THOUSANDS)	FY 2009 ENACTED	FY 2010 ENACTED	FY 2011 REQUEST	INCREASE (DECREASE)
OAR — ORF				
Climate Research	\$196,536	\$225,135	\$241,509	\$16,374
Weather and Air Quality Research	63,411	69,997	75,552	5,555
Ocean, Coastal, and Great Lakes Research	122,759	130,606	124,290	(6,136)
Information Technology, R&D & Science Education	14,028	13,028	13,130	102
Total, OAR - ORF	396,734	438,766	454,481	15,715
Total, OAR - PAC	11,579	10,379	10,379	0
GRAND TOTAL OAR (Direct Obligations)	\$408,313	449,145	\$464,860	15,715
Total FTE	735	744	773	29

OFFICE OF OCEANIC & ATMOSPHERIC RESEARCH Budget Trends FY 2005-2011



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction



FY 2011 ORF BUDGET SUMMARY:

NOAA requests a total of \$454,481,000 and 773 FTEs to support the continued and enhanced operations for the Office of Oceanic & Atmospheric Research. This total includes \$4,504,000 and 3 FTEs for Adjustments to Base (ATB) and a net program change increase of \$55,850,000 and 26 FTEs over the FY 2011 Base.

ADJUSTMENTS TO BASE:

The above ATB request includes an increase of \$4,504,000 and 3 FTEs to fund the estimated FY 2011 Federal pay raise of 1.4 percent and annualize the FY 2010 pay raise of 2.4 percent. Program totals will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Services Administration.

OAR – ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2011:

Program changes are summarized at the sub-activity level below. Detailed numeric breakouts are located in Chapter 7, *Special Exhibits*. Descriptions of each request by line item are located in the NOAA FY 2011 Technical Budget.

CLIMATE RESEARCH

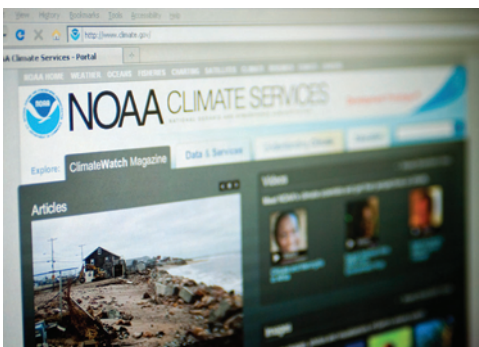
\$241,509,000

NOAA requests an increase of \$34,300,000 and 23 FTEs in the Climate Research sub-activity for a total of \$241,509,000 and 384 FTEs.

Climate Data & Information: NOAA requests an increase of \$1,500,000 and 2 FTEs. This increase is comprised of one new initiative:

NOAA Climate Services Portal: NOAA requests an increase of \$1,500,000 and 2 FTEs to support the development of a new NOAA Climate Services Portal Program, which will provide the public with readily accessible climate data, information, and services.

Societal concern about the impacts of climate change is continuing to grow. Citizens in public and private sectors are requiring, more than ever, access to credible climate science information in order to help them make informed decisions affecting their businesses and their livelihoods. Climate influences almost every sector of society and affects nearly 40 percent of the United States' \$10 trillion annual economy. As the leading provider of climate, weather, and water information to the Nation and the world, NOAA serves as the public's logical source for easily available climate information. NOAA must expand and improve the way it communicates, educates, reaches out to, and engages with public stakeholders to better meet the Nation's needs for timely, authoritative climate information. The requested funding will be used to build a comprehensive new NOAA Climate Services Portal (NCS Portal). The NCS Portal will be a central component of NOAA's commitment to the integration and delivery of climate services by providing readily accessible climate data and information to the public. The NCS Portal will have audience-focused sections designed to serve four key segments of society: (1) climate science decision makers and policy leaders; (2) scientists and applications-oriented data users (e.g., resource managers and business leaders); (3)



Climate Services Portal (in development)

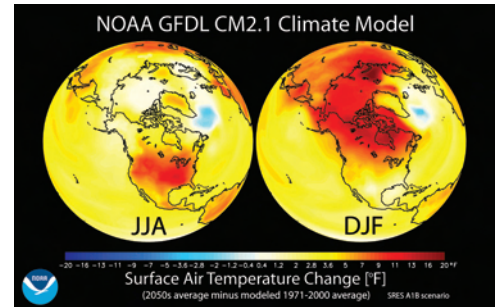


educators; and (4) climate interested members of the public. In addition to data and products, the NCS Portal will offer a broad array of climate communications, outreach, and educational materials that demonstrate NOAA's leadership in climate science research, observations, modeling, and service to society.

Competitive Research Program: NOAA requests an increase of \$32,800,000 and 21 FTEs. This increase is comprised of five new initiatives:

Earth System Modeling - Urgent Climate Issues: NOAA requests an increase of \$6,980,000 and 10 FTEs to enable continued development and use of state-of-the-art Earth System Models to address urgent climate issues, including sea level rise, feedbacks in the global carbon cycle, Arctic climate change and decadal predictability of extreme events.

The increased demand for projections of climate change at regional scales and understanding of potential climate impacts requires increased modeling resolution and realism, as well as improved scientific understanding on the reliability of models and downscaling techniques for various regional climate applications. The requested increase will specifically focus on (1) reducing uncertainties in sea level rise projections, (2) reducing uncertainties in the terrestrial carbon cycle and future biogeochemical feedbacks on climate through more realistic model treatment of the terrestrial biosphere, (3) addressing gaps in the understanding of the Arctic climate system including rapid changes and future projections, and (4) augmenting decadal climate predictions and abrupt changes in order to complete decadal prediction model evaluations and assess the predictability of high impact climate extremes. Developing decadal climate predictions of sea surface temperature will lead to skillful decadal predictions of several phenomena of great economic importance, including hurricanes, drought, heat waves, and ecosystems.



Climate Services Portal (in development)

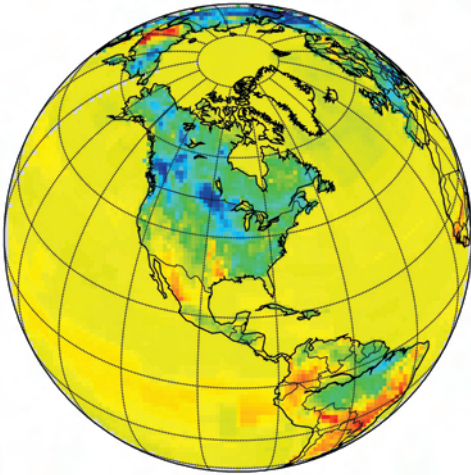
Assessment Services: NOAA requests an increase of \$10,000,000 and 3 FTEs to provide a permanent capability to produce climate assessments and support the National Climate Assessment. The National Climate Assessment is mandated by the Global Change Research Act of 1990 and due in 2013. The National Climate Assessment, led by the U.S. Global Change Research Program, will synthesize, evaluate and report on climate change research findings, evaluate the effects of climate variability and change for different regions, and identify climate vulnerabilities and uncertainties as part of an ongoing effort to understand what climate change means for the United States. Understanding and characterizing the nation's vulnerability to climate change and its adaptive capacity to reduce that vulnerability is not only essential for informed, near-term decisions regarding government actions to promote adaptation to committed warming (i.e., unavoidable warming that will occur due to historic emissions of greenhouse gases), but it is also essential for making decisions on how to reduce greenhouse emissions. The increase will provide technical support for the National Climate Assessment and augment existing regional and sectoral focal points across the agency and with our federal and non-federal partners (states academia, user communities, etc). In addition, NOAA will develop a framework for consistent approaches and application of downscaling efforts to support regional decision making, including facilitating better connectivity of high resolution data with decision processes and models. Climate assessment services will involve both operational and



research elements of NOAA, and will build upon many existing NOAA resources and functions including research in the physical, biological, and social sciences, observing, data management, modeling and forecasting, education and outreach. This assessment services capability will serve as a cornerstone of NOAA's climate services.

Carbon Observing and Analysis System: NOAA requests an increase of \$8,000,000 and 7 FTEs to complete and sustain an observation and analysis system to determine uptake and emissions of carbon dioxide and greenhouse gases across North America.

Addressing climate change and its impacts have become both a national and an international priority. Climate change is driven by Green House Gases (GHGs), mainly anthropogenic release of CO₂, and is posing a major threat to agriculture, human health, the economy, and national security. The rapid increase of CO₂ is essentially the sole cause of global ocean acidification, which is threatening our marine ecosystem and fisheries. Regulating CO₂, evaluating mitigation strategies and understanding and predicting future climate change and ocean acidification will require an accurate, reliable and independent system for tracking sources and sinks of CO₂ and other GHGs.



CarbonTracker — A system to keep track of carbon dioxide uptake and release at the Earth's surface over time. Warm colors show high atmospheric CO₂ concentrations, and cool colors show low concentrations.

With this increase, NOAA will continue to implement the Carbon Tracker Observing and Analysis System, completing NOAA's obligation under the United States Global Change Research Program (USGCRP). The Carbon Tracker Observing and Analysis System will serve as the backbone for verifying GHG emission reduction and mitigation efforts in North America. The network collects continuous measurements from tall towers, air sampled in flasks, aircraft profiling, and satellite remote sensing to provide the accuracy and precision to quantify the exchange of GHGs between the atmosphere and terrestrial ecosystem and to characterize the regional distribution of GHG emissions and uptake. The funding will increase the sampling capacity and finalize the greenhouse gas monitoring network, with a total of 14 tall towers and 24 aircraft sites. This effort builds on NOAA's strong observation, modeling, and analysis capabilities; involves coordination with national and international partners; and serves as a structural, operational, and research backbone in a global effort to understand the carbon cycle and verify reduction and offsets of CO₂ and other GHG emissions.

Arctic Watch: NOAA requests an increase of \$3,000,000 and 1 FTE to continue and sustain Arctic observations as part of the U.S. contribution to the International Arctic Observing Network.

The Arctic region is currently undergoing profound atmospheric, terrestrial and oceanic changes related to climate variation and change. In many cases, observed changes far exceed the current model projections. These changes impact human health, infrastructure, fisheries, ecosystems, coastal communities, international maritime activity, and regional to mid-latitude climate shifts. Diminishing sea ice cover contributes to significant changes in weather patterns both within and surrounding the Arctic, modifies ecosystems, opens new shipping channels, and provides access to previously unobtainable natural resources. An expanded, more robust, integrated and coordinated NOAA Arctic program is necessary for addressing immediate and near-term impacts of climate change and supporting NOAA's response capabilities to stakeholders, particularly those in Alaska and the Pan-Arctic region, but also throughout the Nation. This increase will (1) improve and amplify representation of Arctic climate processes in global climate models, (2) strengthen a network that integrates observations from atmospheric, coastal, and oceanographic



observatories; ocean moorings; ice buoys and stations; and ship transects, (3) and provide user-focused research assessments and projection tools for the Arctic and Alaska region. The NOAA Climate Program Office will lead this effort and will utilize the capabilities of the NOAA Joint and Cooperative Institutes, such as The Cooperative Institute for Research in Environmental Sciences (CIRES) and the Cooperative Institute for Alaska Research (CIFAR). This increase will expand NOAA's Arctic observing capacity and produce data that will allow existing NOAA programs to improve modeling, analysis, and assessment products.

Global Ocean Observing System: NOAA requests an increase of \$4,820,000 and 0 FTEs to continue implementation of the Global Ocean Observing System (GOOS) with an emphasis on improving sea level rise monitoring and understanding.

Episodes of devastating coastal inundation over the last decade have emphasized the critical importance of fielding an ocean observing system that can continuously monitor approaching marine hazards and provide early warnings to the coasts for hazard mitigation. Storm surge, El Niño, tsunamis, as well as gradual sea level rise, all originate in the deep ocean well beyond the coastal zone, where much of the observing capacity currently exists. A sustained global observing system is the foundation of all climate research and services. With this requested increase, NOAA will invest in emerging technologies across ocean networks; such as, GPS receivers for tide gage stations to measure sea level rise and monitor storm surge events, tsunamis, etc., real-time deep ocean monitoring systems, and deep argo profilers for measuring changes in ocean heat. These investments will contribute to national preparedness, resilience, and early warning for coastal inundation due to sea level rise coupled with extreme events. This initiative also addresses opportunities identified in NOAA's report to the House of Representatives in 2009, *Implementing the Sustained Global Ocean Observing System for Climate*.

WEATHER & AIR QUALITY RESEARCH

\$75,552,000

NOAA requests an increase of \$10,697,000 and 0 FTEs in the Weather & Air Quality Research sub-activity for a total of \$75,552,000 and 210 FTEs.

Laboratories & Cooperative Institutes: NOAA requests an increase of \$4,697,000 and 0 FTEs. This increase is comprised of one new initiative and one decrease:

Water Resources Research to Operations: NOAA requests an increase of \$7,672,000 and 0 FTEs to perform research, development and implementation for Integrated Water Resource Services, a NOAA Regional Collaboration Priority.

Water resource and precipitation monitoring and forecasting have become a particular challenge with increases in population, drought, and frequent changes in commercial shipping needs. The majority of federally declared disasters on an annual basis are due in large part to flooding. Additionally, quantitative precipitation forecasts, particularly for significant rain events (>1 inch of rain) on a national average can have an error of 0.5 inch or more. Such errors can severely compromise the accuracy of river forecasts and degree of flooding. With such a demand and need for improved accuracy, NOAA must enhance its ability to quantitatively monitor and predict extreme precipitation events, river and stream flow, flooding and flash flooding, and storm-driven storm surges. With this request, NOAA will research, develop and deliver water forecasting services for new river, estuary and coastal flood-forecast capabilities areas not receiving such information. The goal will be



to develop a forecasting infrastructure to demonstrate the risks and benefits associated with regional (coordination) implementation and integration. This research to operations activity is organized around three programs: 1) Hydrometeorology Testbed, which focuses on research and on accelerating the infusion of new observing technologies and strategies, precipitation forecast model improvements, and new science of precipitation from the research community into forecasting operations of the National Weather Service (NWS) 2) THORPEX, which is an international program, under the World Meteorological Organization, designed to improve global forecasts of high impact weather out to fourteen days with improved precipitation forecast being the key objective, and 3) CERIS (Coast, Estuary, River Information Services), which will develop and transition to operations: new river, estuary and coastal forecasting capabilities and ecosystem management services by using the Tar River Basin and Pamlico Sound in North Carolina for operational prototyping.

Unmanned Aircraft Systems (UAS): NOAA requests a decrease of \$3,000,000 and 0 FTEs to reflect the planned completion of the High Altitude Long Endurance

(HALE) UAS testing and demonstration program. The results of the test observing missions over the Atlantic Ocean, Central Pacific, and the Arctic will be evaluated over the next year with respect to a possible future expansion of NOAA's suite of observing capabilities to include this new technology, which may be capable of expanding NOAA's observational reach with greater efficiency and less risk to human life than current methods.



NOAA/NASA research UAS, Altair

Weather & Air Quality Research Programs: NOAA requests an increase of \$6,000,000 and 0 FTEs. This increase is comprised of one new initiative:

Multi-Function Phased Array Radar (MPAR): NOAA requests an increase of \$6,000,000 and 0 FTEs to further demonstrate through scientific research that MPAR technology can cost effectively replace aging operational weather and aircraft tracking radars. MPAR has the potential to measure phenomena such as tornadoes on the time scale that they occur (minutes) and to initialize high resolution cloud models with high resolution radar data to move current operational warnings from “warn on detection” to “warn on forecast”. By 2020-2025 more than 350 FAA radars and nearly 150 weather radars will need to be replaced or have their service life extended. The MPAR program is currently jointly funded by NOAA and the FAA (50-50 match), with both agencies coordinating their budget requests. This investment in MPAR provides the resources needed for the next step of the project, which will engage industry to add polarization to the radar by FY 2013. Polarization is not currently available on phased array radars, but is a requirement for the National Weather Service (NWS). Matching funding will be provided by the FAA to fulfill its requirement for airport terminal weather and aircraft tracking. In FY 2010, a contract vehicle will be put in place to acquire a dual-polarized MPAR antenna. With this increase, NOAA will continue research to demonstrate that MPAR technology can be a cost-effective replacement for aging weather and aircraft tracking radars, while also offering significant service improvements such as longer tornado warning lead times. Funding will provide for six separate design studies that will focus on risk reduction for determining whether dual polarization is feasible and affordable.



OCEAN, COASTAL, & GREAT LAKES RESEARCH

\$124,290,000

NOAA requests an increase of \$10,800,000 and 3 FTEs in the Ocean, Coastal, & Great Lakes sub-activity for a total of \$124,290,000 and 166 FTEs over the FY 2011 Base.

National Sea Grant College Program: NOAA requests an increase of \$4,700,000 and 0 FTEs. This increase is comprised of two new initiatives:

Sea Grant National Marine Aquaculture Initiative: NOAA requests an increase of \$2,700,000 and 0 FTEs to implement a two-pronged approach to address marine aquaculture via extramural research and transfer of research by Sea Grant Extension and other outreach activities. Many fishing communities are facing severe economic hardships as declining fish stocks and the need to end overfishing have necessitated reduced fish harvests levels. New approaches are therefore, required to end overfishing and supply safe and sustainable seafood, while maintaining economically vibrant coastal communities. The increase will specifically support (1) aquaculture extension enhancement, emphasizing regional outreach (2) a competitive research initiative which will include smart design approaches to sustainable aquaculture, development of planning tools to aid in the selection of aquaculture facilities, and research on the social and economic issues associated with current and new marine aquaculture. With such efforts, NOAA will be able to provide working waterfront alternatives for fishing communities, increase and stabilize flow of seafood products to markets and promote locally grown and sustainable seafood. The requested increase will complement, accelerate, and enhance current aquaculture activities in NOAA Fisheries and address a variety of research gaps with adaptive management strategies to improve NOAA's ability to manage fisheries, end overfishing, and ensure the viability of the multibillion-dollar U.S. seafood industry. NOAA will increase capacity to address issues identified by the GAO's report on "Offshore Marine Aquaculture: Multiple Administrative and Environmental Issues Need to be Addressed in Establishing a U.S. Regulatory Framework (GAO-08-594, May 9, 2008)". This FY 2011 coordinated effort will enable the NOAA Aquaculture Program, a matrix program containing offices in OAR, NMFS, NOS, and NESDIS, to advance sustainable, domestic aquaculture.

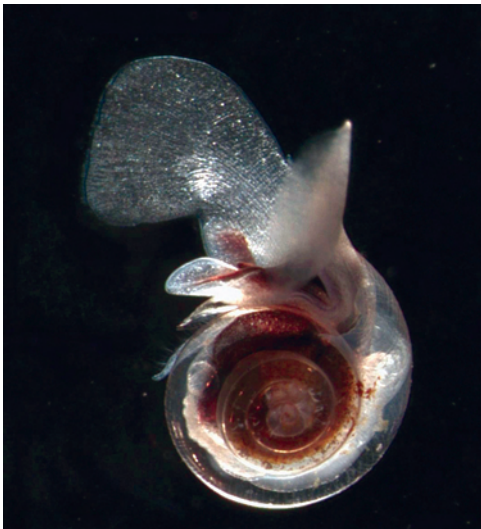
NOAA Sea Grant-Helping Coastal Communities Prepare for and Respond to Natural Hazards and Extreme Events: NOAA requests an increase of \$2,000,000 and 0 FTEs to support regional research, training, and technology transfer to enhance the resiliency of coastal communities to ongoing natural hazards such as, sea-level rise and coastal storms. The increasing number and intensity of coastal storms, the ongoing threat of oil spills, and other natural and human hazards are putting more people and property at risk along the nation's coasts, with major implications for human safety and the economic and environmental health of coastal areas. It is essential that residents of coastal communities understand these risks, so they might reduce their vulnerability to certain events, and respond quickly and effectively when events do occur. With this increase, NOAA Sea Grant will conduct the research needed to assess hazard-related risks and increase the availability and usefulness of hazard-related information and forecasting for citizens, industries, and decision-makers in coastal communities. Funding will specifically be directed to (1) conduct risk assessment research in the context of hurricanes, other coastal storms, and climate-related changes, (2) assist public and private decision-makers in creating and adopting policies, plans, and ordinances to reduce risks, manage cata-



strophic events, and speed recovery, (3) conduct research and communicate information on how the use of natural features and new technologies can help communities prepare for and mitigate the impacts of hazardous events and climate change, (4) make Sea Grant's local knowledge and contacts available to work with federal, state, regional, and local agencies, non-governmental organizations, and international partners that have hazardous event responsibilities to facilitate the speed and quality of response to these crises, (5) identify viable strategies and formulate plans to prepare for, mitigate and adapt to climate expected impacts and, (6) consolidate best research-based practices in risk analysis, assessment, mitigation, adaptation and communications, and disseminate risk information to citizens, industries and decision makers in coastal communities. NOAA Sea Grant will bring together the regional institutional infrastructure represented by the network of state Sea Grant programs, NOAA's Coastal Services Center, and other coastal programs to create a powerful regional science and outreach capability.

Ecosystem Programs: NOAA requests an increase of \$6,100,000 and 3 FTEs. This increase is comprised of one new initiative:

Integrated Ocean Acidification: NOAA requests an increase of \$6,100,000 and 3 FTEs to implement a NOAA Integrated Ocean Acidification (OA) initiative. Increased atmospheric carbon dioxide concentrations result in increased carbon levels in our oceans, causing changes in seawater chemistry, otherwise known as ocean acidification. OA generates a unique suite of environmental changes that increasingly affect ocean ecosystems, fisheries, and other marine resources in such profound ways as reducing the ability of many organisms to build their shells and impacting both the carbon and nitrogen cycles that help sustain life on Earth. This increase will support new technologies and ecosystem monitoring systems, better models, and dedicated research programs, as outlined in the NOAA Ocean Acidification Implementation Plan. Efforts in FY 2011 will be directed to (1) assess physiological and ecosystem-level effects of OA on commercial and recreational marine fish stocks and key species critical to NOAA-managed resources, (2) develop advanced OA technologies and sensors, (3) create an ecosystem OA monitoring Network, and (4) build carbonate analytical capabilities. The increase will complement, accelerate, and enhance current NOAA OA activities within OAR, NMFS, and NOS.



Limacina helicina, a swimming pteropod and an important food source to many fish, has a calcium carbonate shell that is highly susceptible to oceanic pH changes and as dissolved CO_2 in sea water rises, the skeletal growth rate of calcium-secreting organisms are reduced
Photo by Russ Hopcroft, UAF/NOAA





NATIONAL WEATHER SERVICE

The National Weather Service (NWS) serves as the Nation's first line of defense against severe weather. The NWS provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters, and ocean areas for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure used by government agencies, the private sector, the public, and the global community.



*A Rescue Boat searches for stranded people in downtown Kingfisher, OK
Photo by Marvin Nauman/FEMA*

The United States is one of the most severe weather prone countries in the world. Each year, Americans cope with, on average, 10,000 thunderstorms, 5,000 floods, 1,000 tornadoes, and 6 hurricanes. Some ninety percent of all Presidentially-declared disasters are weather-related. There are approximately 7,900 weather-related deaths per year and \$14 billion in damage due to weather incidents. According to the American Meteorological Society, weather is directly linked to public safety, and about one-third of the U.S. economy (about \$4 trillion) is weather-sensitive. Vulnerability from severe weather is increasing as the Nation's population continues to grow and shift to coastal areas.

More and more sectors of the U.S. economy are recognizing the impacts of weather, water, and climate on their businesses and are becoming more sophisticated at using weather-related information to make better decisions. To meet this growing demand for information and to improve the timeliness and accuracy of warnings for all weather-related hazards, the NWS will continue to enhance observing capabilities; improve data assimilation from both the NWS and external partners; improve collaboration with the research community; provide the NWS information in a quick, efficient, and useful form (e.g., the National Digital Forecast Database); and include information on forecast uncertainty to help customers make fully informed decisions. A key focus for the NWS is to improve decision support for high impact weather events.

With approximately 4,800 employees spread throughout 122 weather forecast offices, 13 river forecast centers, 9 national centers, and other support offices around the country, the NWS provides a national infrastructure to



gather and process data worldwide from the land, sea, and air. This infrastructure enables data collection using technologies such as Doppler weather radars; satellites operated by NOAA's National Environmental Satellite, Data, and Information Service (NESDIS); data buoys for marine observations; surface observing systems; and instruments for monitoring space weather and air quality. These data feed sophisticated environmental prediction models running on high-speed supercomputers. Our highly trained and skilled workforce use powerful workstations to analyze all of these data to issue climate, aviation, marine, fire weather, air quality, space weather, river and flood forecasts and warnings around-the-clock. A high-speed communications hub allows for the efficient exchange of these data and products between NWS components, partners and customers. NWS forecasts and warnings are rapidly distributed via a diverse dissemination infrastructure including NOAA Weather Radio. Finally, customer outreach, education, and feedback are critical elements to effective public response and improvements to NWS services.

The FY 2011 President's Budget request supports the funding and program requirements necessary to address NOAA's strategic goals and allows the NWS to achieve its mission of: using cutting-edge technologies to produce and deliver trusted forecasts, providing services in a cost-effective manner, striving to reduce weather-related fatalities, and improving the economic value of weather, water, and climate information.

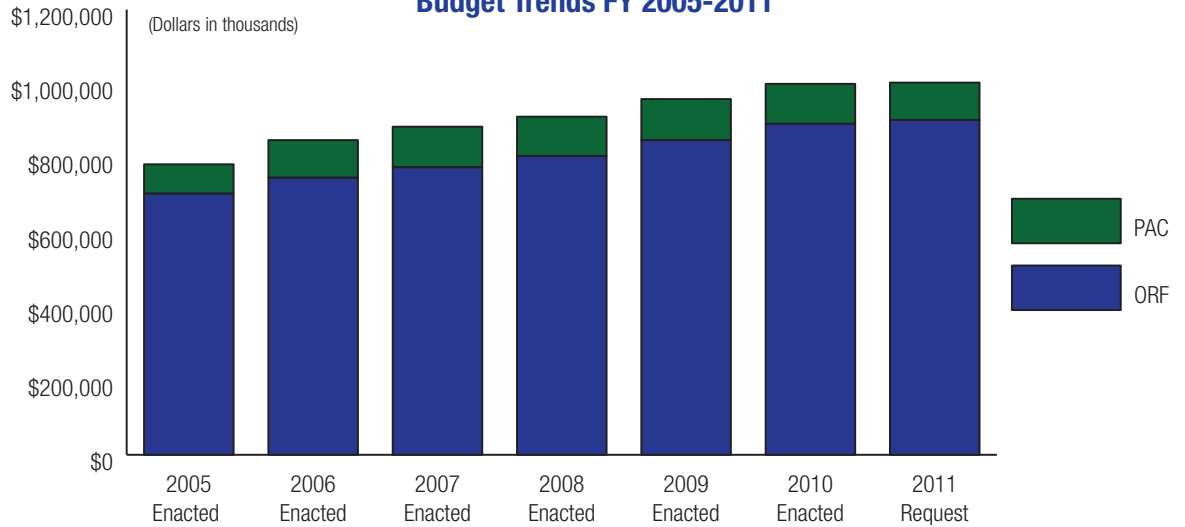


NATIONAL WEATHER SERVICE

(DOLLARS IN THOUSANDS)	FY 2009 ENACTED	FY 2010 ENACTED	FY 2011 REQUEST	INCREASE (DECREASE)
NWS — ORF				
Operations and Research	\$749,583	\$790,139	\$799,907	\$9,768
Systems Operation & Maintenance (O&M)	98,355	101,979	102,555	576
Total, NWS - ORF	847,938	892,118	902,462	10,344
Total, NWS - PAC	110,951	107,727	100,731	(6,996)
GRAND TOTAL NWS (Direct Obligations)	\$958,889	\$999,845	\$1,003,193	\$3,348
Total FTE	4,640	4,644	4,649	5



NATIONAL WEATHER SERVICE Budget Trends FY 2005-2011





FY 2011 ORF BUDGET SUMMARY

NOAA requests a total of \$902,462,000 and 4,618 FTEs to support the continued and enhanced operations of the National Weather Service. This total includes \$18,104,000 and 1 FTEs for Adjustments to Base (ATB) and a net program change of \$17,465,000, and 4 FTEs over the FY 2011 Base.

ADJUSTMENTS TO BASE:

The above ATB request includes an increase of \$18,104,000 and 1 FTEs to fund the requested FY 2011 Federal pay raise of 1.4 percent and annualize the FY 2010 pay raise of 2.4 percent. The increase will also provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Services Administration.

NWS – ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2011:

Program changes are summarized at the sub-activity level below. Detailed numeric breakouts are located in Chapter 7, *Special Exhibits*. Descriptions of each request by line item are located in the NOAA FY 2011 Technical Budget.

OPERATIONS AND RESEARCH

\$799,907,000

NOAA requests an increase of \$17,136,000 and 4 FTEs in the Operations and Research sub-activity for a total of \$799,907,000 and 4,430 FTEs.

Local Warnings and Forecasts: NOAA requests an increase of \$17,136,000 and 4 FTEs for local warnings and forecasts. This increase is comprised of two new initiatives:

Local Warnings and Forecasts Base: NOAA requests an increase of \$2,000,000 and 0 FTEs to complete required IT security improvements to the National Critical Space Weather System in order to prevent the loss of authority to operate, which would result in the shutdown of NOAA's space weather predictions and forecast program.

Space weather has the potential to disrupt virtually every major public infrastructure system, including transportation systems, power grids, telecommunications, and global positioning systems (GPS). Aircraft flying through polar routes now rely on space weather information to provide a necessary view of the flight environment, which includes potential impacts to critical communication and navigation systems, and the potential for hazardous solar radiation exposure. Strong storms with the potential to impact critical elements of our Nation's infrastructure can occur over 100 times during a solar cycle. NOAA's Space Weather Program depends on the National Critical Space Weather System to: monitor the space environment and provide timely and accurate operational space weather forecasts, warnings, and alerts. The Program is the sole civilian entity that (1) operates and maintains the US National Critical Space Weather System, (2) ingests and processes data from NOAA, NASA and other sources, (3) supports research to understand the processes that cause severe space weather, (4) transitions research into operations to



NOAA's Space Weather Prediction Center



improve services, and (4) archives data from NOAA and the Department of Defense (DoD) and makes it accessible to customers. Without the Authorization to Operate, all of the above activities will cease and the space weather products and services critical to our Nation's infrastructure and defense will be lost.

Aviation Weather: NOAA requests an increase of \$15,136,000 and 4 FTEs to fund the Next Generation Air Transportation System (NextGen) development activities as a multi-year effort to improve aviation weather services and meet the aviation weather requirements of the multi-agency NextGen initiative.

The demand for air transportation is expected to more than double by 2025. The current National Airspace System (NAS) cannot accommodate the increased demand and will be saturated by 2015. In May 2008, the Congressional Joint Economic Committee quantified the cost of flight delays at \$41 billion in 2007 to passengers, the airline industry and the economy. Federal Aviation Administration (FAA) records indicate that on average, weather is a factor in 70% of these delays, costing roughly \$29 billion. The FAA estimates that two-thirds of these delays can be avoided with enhanced weather information fully integrated into the operational decision making process, which could save approximately \$19 billion annually.



Significant weather events attribute to 70% of air traffic delays

The Joint Planning and Development Office (JPDO) have developed a plan for accommodating this expected growth in demand. A critical component of the NextGen plan is a weather forecast process, with meteorologist intervention, that generates rapidly-updated, high-resolution probabilistic weather information, consistent across space and time. This 4-Dimensional Weather Single Authoritative Source (4-D Weather SAS) will be stored in a Weather Information Database (WIDB) where it can be accessed by all National Airspace System (NAS) users. This funding increase supports the NOAA-led effort to develop a WIDB, which will provide the aviation community with an authoritative and timely source of weather information for decision support. The WIDB will integrate observed and forecast weather information and enable its use within an automated, multi-agency coordinated, air traffic management system. This capability does not presently exist within the federal government, and the JPDO partner agencies are depending on NOAA, as the federal weather information experts, to deliver it. Specific actions are 1) Improve aviation weather observations, analyses and forecasts (\$9,670,000). NextGen requires high resolution digital observational, analysis and forecast (temporal and spatial) information that is rapidly updated and consistent; 2) Improve access to information (\$3,386,000). NOAA is working closely with FAA to develop interagency data standards and an architecture enabling the rapid transfer of weather information between users; 3) Assist in the integration of weather information into FAA and user decision support systems (\$780,000). NOAA will play a key role in ensuring weather information is appropriately integrated into NAS decisions by providing expert advice to FAA in the translation of weather information and its impact on air traffic management decisions; and 4) Develop and field advanced operationally relevant verification capabilities (\$1,300,000). Enhanced verification techniques and concepts must be developed and deployed so that assessments of forecast quality and accuracy reflect the impact to the operational decisions of air traffic managers and airspace users.





NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE

The National Environmental Satellite, Data, and Information Service (NESDIS) manages the Nation's operational environmental satellite systems by acquiring global environmental data as well as processing and distributing satellite-derived products and services; and archiving and providing global environmental meteorological, oceanographic, solid earth geophysics and solar-terrestrial data. These environmental satellites not only monitor storms, but also support NOAA's National Weather Service, Federal and state agencies, and local emergency management agencies, enabling them to provide advance warnings of emerging severe weather such as hurricanes, tornadoes, flash floods, winter storms and wild land fires.



*Loading GOES-O into the rocket's nose cone.
Photo by Dimitri Gerondidakis/NASA*

The satellites and the products and services NESDIS provides are essential to the protection of human life, property, critical infrastructure, and the Nation's economy.

NESDIS' satellite command and control program acquires data from on-orbit satellites 24 hours per day, 365 days per year. This includes monitoring satellite operations, which occur at the NOAA Satellite Operations Control Center in Suitland, Maryland; Wallops, Virginia; and Fairbanks, Alaska. From these ground stations, NESDIS operates and acquires data from Polar-orbiting Operational Environmental Satellites (POES), Geostationary Operational Environmental Satellites (GOES), Department of Defense (DoD) Defense Meteorological Satellite Program (DMSP), and Jason-2.

NESDIS provides the Nation with specialized expertise and computing systems that process, analyze, and distribute satellite-derived products and services using data from NOAA, DoD, and NASA environmental satellites, as well as foreign and commercial spacecraft. These products and services are provided to national and international users 24 hours per day, 7 days per week. This enables NOAA's Programs and Line Offices and international users 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 such as coral bleaching; identify and monitor maritime hazards from sea ice; and assist the U.S. Coast Guard in satellite-assisted search and rescue activities.



As an important part of this support, NESDIS works to transition research satellite capabilities to operational products and services. NESDIS also provides the Nation with a long-term archive of past, present, and future environmental observations and associated data recorded across the United States and globally. NOAA's three National Data Centers, environmental data, information, products, and services provide support to climate, atmospheric, oceanographic, and the solid earth and solar-terrestrial geophysical sciences and promote sustained economic growth, scientifically sound environmental management, and public safety.

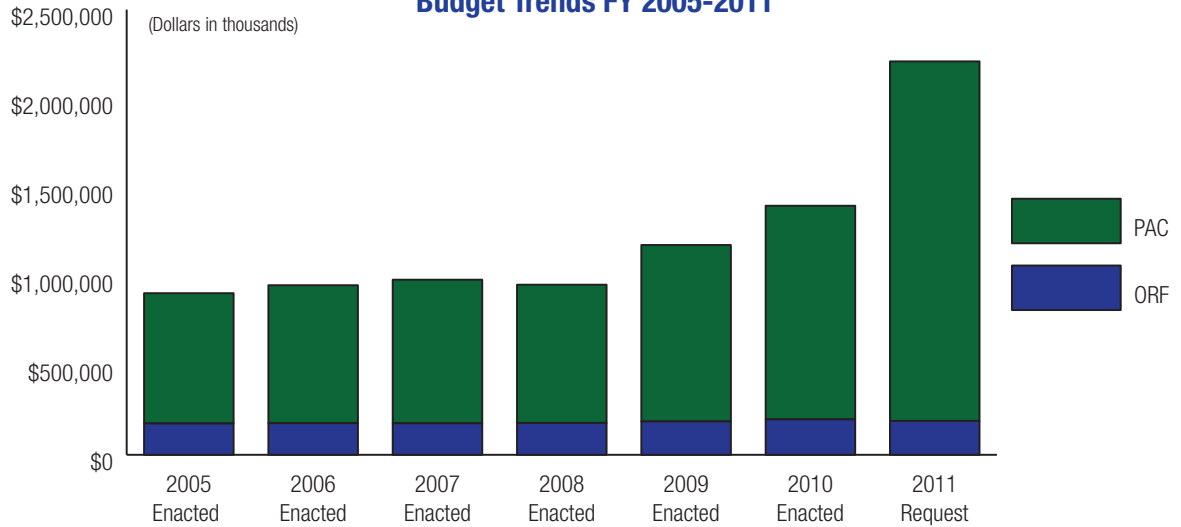
NESDIS also supports the President's priorities in space, climate sciences, ocean and coastal management, integrated earth observations, energy, and forest resources protection through the development of various products.



NATIONAL ENVIRONMENTAL SATELLITE, DATA, & INFORMATION SERVICE

(DOLLARS IN THOUSANDS)	FY 2009 ENACTED	FY 2010 ENACTED	FY 2011 REQUEST	INCREASE (DECREASE)
NESDIS — ORF				
Environmental Satellite Observing Systems	\$107,896	\$110,490	\$115,274	\$4,784
NOAA's Data Centers & Information Services	79,526	88,675	74,949	(13,726)
Total, NESDIS - ORF	187,422	199,165	190,223	(8,942)
Total, NESDIS - PAC	990,579	1,199,357	2,018,796	819,439
GRAND TOTAL NESDIS (Direct Obligations)	\$1,178,001	\$1,398,522	\$2,209,019	\$810,497
Total FTE	831	831	835	4

NATIONAL ENVIRONMENTAL SATELLITE, DATA, & INFORMATION SERVICE Budget Trends FY 2005-2011



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction



FY 2011 ORF BUDGET SUMMARY

NOAA requests a total of \$190,223,000 and 682 FTEs to support the continued and enhanced operations of the National Environmental Satellite, Data, and Information Service. This total includes \$2,378,000 and 0 FTEs for Adjustments to Base (ATB) and a net program change of \$16,146,000 and 4 FTEs over the FY 2011 Base.

ADJUSTMENTS TO BASE:

The above ATB request includes an increase of \$2,378,000 and 0 FTEs to fund the estimated FY 2011 Federal pay raise of 1.4 percent and annualize the FY 2010 pay raise of 2.4 percent. Program totals will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Services Administration.

NESDIS – ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2011:

Program changes are summarized at the sub-activity level below. Detailed numeric breakouts are located in Chapter 7, *Special Exhibits*. Descriptions of each request by line item are located in the NOAA FY 2011 Technical Budget.

ENVIRONMENTAL SATELLITE OBSERVING SYSTEMS

\$115,274,000

NOAA requests an increase of \$3,108,000 and 0 FTEs under the Environmental Satellite Observing Systems sub-activity for a total of \$115,274,000 and 409 FTEs.

Product Processing and Distribution: NOAA requests an increase of \$3,108,000 and 0 FTEs. This increase is comprised of one new initiative:

Information Technology (IT) Satellite Security: NOAA requests an increase of \$3,108,000 and 0 FTEs to provide critical IT security to compute satellite data products and services for daily weather forecasts, hurricane tracking, and the Nation’s public weather warnings. NOAA must protect its computing systems from unauthorized access since these environmental data are critical to mitigating loss of life, injury, and damage to the Nation’s economy. The requested funds are for the implementation of the National Institute of Standards and Technology (NIST) and Federal Information Processing Standard (FIPS) 200 minimum required security controls. These security controls are mandated and cannot be waived, making the implementation a required action. NESDIS has worked hard to improve its IT security program, and this request ensures that NOAA can meet its core mission with adequate security of NESDIS information, assets and services.

DATA CENTERS AND INFORMATION SERVICES

\$74,949,000

NOAA requests an increase of \$13,038,000 and 4 FTEs under the Data Center and Information Services sub-activity for a total of \$74,949,000 and 273 FTEs.



Archive, Access, & Assessment: NOAA requests an increase of \$13,000,000 and 4 FTEs. This increase is comprised of two new initiatives:

Data Center Operations: NOAA requests an increase of \$2,000,000 and 2 FTEs to close the gap in long-term safe storage of and access to the Nation's environmental data and information. This operational component will address the anticipated increase in data volume of greater than 3,000% over the next several years and ensure environmental observations remain useful and accessible to the widest range of current and future users. This request will provide NOAA the operational capability to allow users to search for and acquire the increased amount of archived data. It will ensure that environmental observations collected at great expense remain useful and understandable to the widest range of current and future generations. Users will be able to search for and acquire archived data by seamlessly connecting NOAA's Comprehensive Large Array Stewardship System (CLASS) ingest, storage, and access capabilities with the NOAA Data Center archive management system. This increase also meets emerging requirements associated with implementing NOAA's Climate Services that include the long-term preservation of the Nation's climate record.

Climate Data Records (CDRs): NOAA requests an increase of \$11,000,000 and 2 FTEs to transform raw satellite data into unified and coherent long-term environmental observations and products which are critical to advancing climate change understanding, prediction, mitigation and adaptation. NOAA's CDR efforts are initially focused on critical CDRs that address key societal issues including: water, drought, and floods; energy and renewable energy; and hurricanes and coastal hazards. Improved knowledge in these areas translates into lives and property protected or saved, as well as economic resiliency and national security. CDRs are distinct from operational weather/hazard satellite products since they remove or minimize time dependent biases in satellite data and provide long term "seamless" records characterizing climate change and variation (50+ years). The Intergovernmental Panel on Climate Change (IPCC) 4th Assessment Report (2007) underscores the urgent need for CDRs. Key NOAA constituents, including major private sector industries, such as insurance, energy, and transportation, have increasingly called for authoritative climate reference data upon which to base investments and strategic plans. In FY 11, NOAA will transition 10 CDRs to operations and continue the development of 6 additional CDRs.



NOAA's National Climatic Data Center, Asheville, NC





PROGRAM SUPPORT

Program Support consists of Corporate Services, NOAA's Office of Education, Facilities, and the Office of Marine and Aviation Operations (OMAO).



Commissioning of Okeanos Explorer

CORPORATE SERVICES

NOAA Program Support provides the planning, administrative, financial, and infrastructure services that are essential to the successful performance of NOAA's mission. In addition to NOAA-wide corporate services and agency management, Program Support activities specifically support the people and programs of NOAA, ensuring that they have the proper work environment, the necessary tools and equipment, and the vital personnel and finance services which, in turn, allow them to provide the finest possible service to the American people, our economy and our environment. Through OMAO, Program Support provides data collection at sea and in the air to support NOAA program requirements.

EDUCATION

NOAA's Office of Education provides advice and counsel to the Under Secretary of Commerce for Oceans and Atmosphere in matters pertaining to education. The Office, in conjunction with the Education Council, coordinates educational activities across NOAA and develops NOAA's Education Strategic Plan and policy. These efforts help to ensure that NOAA's education programs and activities are based on NOAA science and support the agency's cross-cutting priority of promoting environmental literacy. The Office of Education directly implements and manages scholarship programs aimed at fostering competitiveness in science, technology, engineering and math by providing quality educational opportunities for the next generation. The Office of Education also offers competitive grant programs at the national and regional level to promote environmental literacy efforts through collaboration with external partners.

In FY 2011 the Office of Education will continue to work with the NOAA education community to advance the priorities outlined in NOAA's 2009-2029 Education Strategic plan (<http://www.education.noaa.gov/plan/>), and will continue its scholarship, fellowship and education grants programs. NOAA will work with OSTP, NASA and NSF to implement the recommendations from the 2010 OSTP review of the GLOBE Program.



FACILITIES

The NOAA Chief Administrative Officer (CAO), through the Facilities Management and Modernization Program, provides program direction and oversight to NOAA's major construction program and has been the focal point for facility master planning, project planning formulation and development, and project management oversight to support critical NOAA mission requirements. This program supports an integrated capital investment planning process, integrated facility condition inspection program, systems and technology tools to enable maximum efficiency in project and facility management planning, and investments required to support repair and modernization of NOAA' facilities.

NOAA owns more than 400 buildings, in addition to piers and other structures, which are valued at approximately over \$2.5 billion. These facilities are aging, with more than 30 facilities over 60 years old. NOAA's facilities are often subject to the extremes of weather and climate conditions, and are, therefore, more prone to unplanned repairs. This program provides funding to conduct facility condition inspections and supports investments in necessary facility repairs and modernization needed to ensure that the facilities remain safe, effective, and efficient in support of NOAA's programs. It also supports operations at NOAA's state-of-the-art laboratory building in Boulder, Colorado. This facility houses staff and programs from three NOAA line organizations (OAR, NESDIS, and NWS) as well as NOAA's program support units for the region, and supports NOAA's climate and weather research. The CAO organization is responsible for managing the total project life cycle for facility construction and modernization projects, including environmental and safety projects.

OFFICE OF MARINE AND AVIATION OPERATIONS (OMAO)

MARINE OPERATIONS

OMAO operates NOAA's fleet of vessels and provides ship support to NOAA programs through outsourcing, operational readiness, and maximum platform utilization in support of NOAA's at-sea data collection requirements. OMAO provides centralized management for operations, fleet planning, and maintenance support and is responsible for NOAA's fleet safety and diving programs. Other mission responsibilities include training and certifying NOAA Corps Officers, crews, and scientists for at-sea duty. OMAO also contributes funding and platform operation support to NOAA's Teacher-at-Sea program.

NOAA's vessels support nautical charting, fisheries research, marine environmental assessments, coastal-ocean circulation studies, and oceanographic and atmospheric research, and operate on both the East and West Coasts. The 19 active ships will perform approximately 3,390 operating days in FY 2011 in support of NOAA programs. The fourth of four newly constructed Fisheries Survey Vessels (FSVs), the Bell M. Shimada, will be operational in FY 2010 and will be homeported on the West Coast.

OMAO's Marine Operations Center (MOC) has Atlantic and Pacific regional offices located in Norfolk, Virginia, and Seattle, Washington, respectively, and the vessels are assisted by a small support staff at the home port of most ships. The centers provide maintenance, stores, supplies, and repair facilities for the vessels.

The NOAA Commissioned Corps is the nation's seventh and smallest uniformed service. NOAA Corps officers support the fleet and NOAA Line Offices. The majority of the NOAA Corps payroll is funded through the Marine Services line. The officers of the NOAA Corps command NOAA's research and survey vessels,



fly NOAA's "hurricane hunter" and environmental monitoring aircraft, support field operations, and serve in a variety of technical and management positions throughout the agency.

AVIATION OPERATIONS

OMAO's Aircraft Operations Center (AOC), located at MacDill Air Force Base in Tampa, Florida, ensures the availability and readiness of NOAA's uniquely configured aircraft. AOC operates a fleet of 12 aircraft used as observation platforms equipped with comprehensive data-collection systems in support of missions related to the Earth's environment, coastal and marine resources, and severe weather.

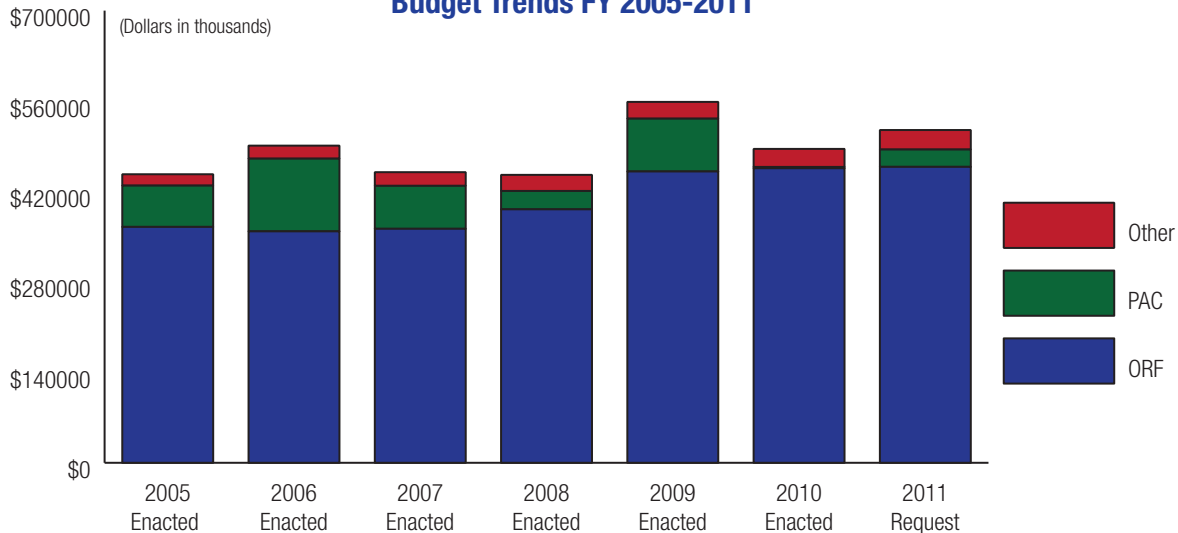
In FY 2011, Aircraft Services will provide approximately 2,845 flight hours in support of NOAA missions. NOAA aircraft are fitted with specialized instrumentation for airborne research, airborne data collection, and observation. Two of NOAA's three WP-3D aircraft (the "Hurricane Hunters") and the G-IV high-altitude jet will be mission-ready with instruments and personnel for hurricane surveillance, reconnaissance, and research during the hurricane season from June 1 to December 1. NOAA's third P-3 has a mission that includes air chemistry and air quality research, remote sensing, oceanographic research, and other missions not involving flights in severe weather. The G-IV will also be mission-ready with instruments and personnel to collect data for West Coast winter storm predictions from January 15 to April 1. NOAA's Jet Prop Commander and Shrikes will be mission-ready with equipment and personnel for snow radiation surveys, flood forecasts, water management, and other background surveys throughout the year in Alaska and Northern United States. The Twin Otters will continue to operate throughout the coastal Atlantic, Pacific, and Gulf of Mexico, surveying living marine resources and conducting remote sensing missions. NOAA's premier remote sensing aircraft, the King Air, will fly throughout the coastal United States responding and collecting damage assessment imagery, testing new remote sensing technologies, and performing coastal mapping missions.



PROGRAM SUPPORT

(DOLLARS IN THOUSANDS)	FY 2009 ENACTED	FY 2010 ENACTED	FY 2011 REQUEST	INCREASE (DECREASE)
PS — ORF				
Corporate Services	\$205,809	\$205,203	\$223,024	\$17,821
NOAA Education Program	46,114	53,753	20,758	(32,995)
Facilities	21,000	30,346	36,406	6,060
Office of Marine & Aviation Operations	178,055	166,668	177,942	11,274
Total Program Support - ORF	450,978	455,970	458,130	2,160
Total, PS - PAC	81,750	2,000	26,800	24,800
Total, PS - Other	25,946	27,938	30,205	2,267
GRAND TOTAL PS (Direct Obligations)	\$558,674	\$485,908	\$515,135	\$29,227
Total FTE	2,019	2,053	2,077	24

PROGRAM SUPPORT
Budget Trends FY 2005-2011



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction

Other: NOAA Corps Commissioned Officers Retirement (Mandatory) and Medicare Eligible Retiree Healthcare (Discretionary)



FY 2011 ORF BUDGET SUMMARY:

NOAA requests a total of \$458,130,000 and 2,072 FTEs to support the continued and enhanced operations of Program Support. This total includes \$15,114,000 and 7 FTEs for Adjustments to Base, and a net program change of \$29,646,000 and 17 FTEs over the FY 2011 Base.

ADJUSTMENTS TO BASE:

The above ATB request includes an increase of \$15,114,000 and 7 FTEs to fund the estimated FY 2011 Federal pay raise of 1.4 percent and annualize the FY 2010 pay raise of 2.4 percent. Program totals will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, fuel, and rent charges from the General Services Administration.

PS - ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2011:

Program changes are summarized at the sub-activity level below. Detailed numeric breakouts are located in Chapter 7, *Special Exhibits*. Descriptions of each request by line item are located in the NOAA FY 2011 Technical Budget.

PROGRAM SUPPORT

CORPORATE SERVICES

\$223,024,000

NOAA requests an increase of \$16,898,000 and 11 FTEs in the Corporate Services sub-activity for a total of \$223,024,000 and 1,021 FTEs.

Under Secretary and Associate Offices: NOAA requests an increase of \$1,000,000 and 0 FTEs. This increase is comprised of one new initiative:

Under Secretary and Associate Offices Base - NOAA General Counsel (GC): NOAA requests an increase of \$1,000,000 and 0 FTEs to enable NOAA GC to provide necessary legal support to NOAA programs. Recent legislation and ongoing emergent issues have created additional requirements for legal support. One of the administration's priorities is the establishment of catch share programs in U.S. fisheries. Establishment and implementation of such a program will require intensive legal support in structuring the program. Without additional legal support, efforts to meet these new requirements will be delayed and vulnerable to legal challenge. With this requested increase, NOAA's Office of General Counsel will support the following NOAA activities: (1) limited access permit programs/catch shares under the Magnuson Stevens Fishery Conservation and Management Act, (2) Increased responsibilities to reduce illegal, unreported and unregulated fishing by foreign vessels on the high seas, including implementation and enforcement of the recently concluded FAO Port State Measures Agreement to Combat Illegal, (3) Unreported and Unregulated Fishing, Implementation of Western and Central Pacific Fishery Commission and Western Pacific Marine National Monuments, (4) Increased international responsibilities resulting from U.S. accession to the Law of the Sea Convention, which the U.S. is expected to join in 2010, (5) including delimitation of the outer boundary of the U.S. extended continental shelf, and (6) Consultations under the Endangered Species Act on alternative energy and other high priority projects.



NOAA Wide Corporate Services & Agency Management: NOAA requests an increase of \$11,198,414 and 7 FTEs. This increase is comprised of three new initiatives:

Information Technology Infrastructure: NOAA requests an increase of \$4,000,000 and 2 FTEs to acquire, install, operate, and maintain the NOAA Single Enterprise Wide Area Network (WAN). NOAA's current operating network is inefficient, with each Line Office (LO) and sub-LO operating under its own independent WAN. This creates numerous points of failure and duplicative efforts across LO's. Network management is uncoordinated with duplicate network operations staff and duplicative circuits, with multiple separate acquisitions. With this request, NOAA will implement a single, transitional backbone wide area network that will enable secure communications among NOAA locations, while providing economies of scale and more complete network management. NOAA will ensure timely delivery of NOAA data and information products (e.g., tornado warnings, hurricane forecasts, climate models, tide data) and allow secure, efficient, and highly-reliable transport of NOAA's exponentially-growing environmental data, while providing the foundation for the Department to implement its plan to meet the Office of Management and Budget (OMB) Trusted Internet Connections Initiative. NOAA's environmental information products and resource management services are essential public goods used in households across the nation. NOAA will continue to ensure that NOAA's observing and modeling systems provide high-quality information and data products for public use 24 hours a day, 7 days a week. NOAA strives to meet the needs of its constituents and partners by providing a suite of products and services that continues to improve in scientific and technical quality, economic value, and social relevance. This investment in IT infrastructure is essential for moving NOAA forward in achieving mission goals and serving society in the best way possible.

Acquisitions and Grants Management: NOAA requests an increase of \$4,345,000 and 0 FTEs to support acquisition and grant services for NOAA. The number of acquisitions awarded by the NOAA Acquisition workforce has increased by almost 300% in just 5 years. The Acquisition and Grants Office (AGO) currently performs approximately 16,000 acquisition actions and nearly 2,000 grants annually. As the NOAA acquisition workload has increased, the complexity of the acquisitions conducted and the level of contract administration oversight required have similarly increased. NOAA's AGO provides annual acquisition and grants support to DOC and NOAA valued at approximately \$2 billion (\$1 billion in grants awards, and \$1 billion in contract awards). These services equate to roughly a third of DOC's annual appropriation. The success of DOC and NOAA in accomplishment of missions and goals is largely dependent on the ability of the NOAA AGO to successfully obligate these funds in accordance with statutory and regulatory requirements. This requested increase will enhance NOAA's ability to provide dedicated personnel assets to increase the capacity of the acquisition and grants workforce sufficient to ensure successful obligation of the increasing volume of contractual and financial assistance actions. Additionally, requested funding will provide dedicated personnel and funding sufficient to implement an effective procurement oversight program. These resources will afford NOAA an opportunity to establish a Policy and Oversight Division (POD). The POD will implement recommendations made by the Government Accountability Office (GAO) in their June 2006 report to Congress (GAO-06-594, NOAA Acquisition Function).



Department of Commerce Acquisitions Initiative: NOAA requests an increase of \$1,112,951 and 1 FTE to support implementation of a DOC wide acquisition intern program. DOC's Acquisition workforce supports a diverse portfolio of acquisition instruments from construction of buildings, ships, plans, and satellites. To support the diversity of acquisition needs, the workforce must be agile, flexible and highly trained in the planning, solicitation, award, administration and close-out of acquisitions and financial assistance funding mechanisms. With this requested funding, DOC would establish a DOC Acquisition Intern (which is a three year, career ladder developmental program). As DOC's largest acquisition office, NOAA's robust acquisition community and expertise will serve the entire Department. All DOC Acquisition Interns would receive training and developmental assignments in multiple bureaus. This model would promote interoperability between bureaus, provide increased opportunities for employee growth and development, and foster a sense of organizational unity. The intern program will be tailored to the agency's needs and development and oversees the quality of the intern's training and development activities thereby producing greater results and effectiveness for agency specific acquisition mission needs.

Acquisitions Staffing: NOAA requests an increase of \$795,463 and 4 FTEs to support an acquisition and grants services initiative to build acquisition capacity within the Department to handle the increasing workload of grants and contracts. NOAA Acquisition and Grants Office provides support to lines of business and staff offices, and a number of other DOC bureaus, with the planning, solicitation, award, administration and close-out of acquisitions and financial assistance funding mechanisms. Through its services, DOC Acquisition and Grants helps execute its day-to-day responsibilities and assists the agency in providing critical services to the Nation. With this increase, each of the acquisition offices will fill critical vacancies to address the following: increased focus on strategic acquisition planning, increased focus on proactive contract administration, and increased focus on closing-out completed contracts. The additional capacity also would allow for more one-on-one time to develop junior-level acquisition personnel and to focus on strategic sourcing initiatives across the Department to leverage the buying power of the Department both across DOC and in partnership with other Federal agencies.

NOAA Wide Corporate Services and Agency Management-HPSD-12: NOAA requests an increase of \$945,000 and 0 FTEs to support compliance with Homeland Security Presidential Directive-12 (HSPD-12), Personal Identity Verification-II (PIV-II) access requirements. HSPD-12, PIV-II requires Agencies to comply with Federal Information Processing Standards (FIPS) 201 standards for secure and reliable identity credentials supporting both physical and logical (systems) access. NOAA has chosen to use the DoD CAC as NOAA's HSPD-12 solution. NOAA must ensure re-badging of over 16,400 employees and contractors and aims to complete 100% of that task in FY 2010. In FY 2011, NOAA will continue to badge new employees and replace expired PIV-II cards for existing employees. Funding from this requested increase will support: (1) Annual DoD infrastructure, technical, and database support for issuance of Common Access Cards (CAC) to NOAA employees/contractors--including database and systems maintenance, and help desk support, (2) Public Key Infrastructure PKI certificate licenses and DoD PKI support, (3) Planning and development of physical access control systems integration with CAC, (4) NOAA administrative costs for contractor support for NOAA-operated badging stations and (5) Replacing physical access control systems at the Silver Spring Metro Campus and Western Regional Center.



Office of the Chief Information Officer: NOAA requests an increase of \$4,700,000 and 4 FTEs. This increase is comprised of one new initiative:

Enterprise IT Security: NOAA requests an increase of \$4,700,000 and 4 FTEs to improve Enterprise Information Technology (IT) Security by enhancing nationwide security monitoring and incident response and providing an incremental implementation of the NOAA Cyber Security Center (NCSC). The frequency, sophistication, and maliciousness of cyber attacks in NOAA are rapidly increasing. Intrusion detection alerts are doubling every year. NOAA is at risk to data integrity losses, network failures, and website compromises that have a significant probability of compromising the collection, processing, and dissemination of forecast and warning information to the public and other government institutions, leading to the possible loss of life and property. With this requested increase, NOAA will reduce high vulnerability to cyber threats by: (1) providing needed cutting edge IT security technologies to support NOAA's infrastructure (maintaining state of the art monitoring equipment and near real-time IT security event correlation), (2) continuing reduction in the backlog and duration of incident investigations, (3) providing highly skilled IT security engineers, (4) improving Federal Information Security Management Act of 2002 (FISMA) mandated incident reporting capabilities, (5) improving research and development for testing and evaluation of applications and technologies prior to procurement and deployment, and (6) improving the identification and remediation of security weaknesses. Funding will also enable a new 5 x 12 security monitoring capability for the NCSC and enhance the existing 5 x12 incident response capability to cover moderate and high priority incidents. This increase will fortify critical IT support for accomplishing NOAA's mission, enable enterprise IT resource management, and ensure the confidentiality, integrity, and availability of NOAA environmental data collection, processing, and distribution systems.

FACILITIES

\$36,406,000

NOAA requests an increase of \$5,758,000 and 1 FTE in the Facilities sub-activity for a total of \$36,406,000 and 6 FTEs.

NOAA Facilities Management, Construction, & Safety: NOAA requests an increase of \$5,758,000 and 1 FTE. This increase is comprised of two new initiatives:

NOAA Facilities Construction: NOAA requests an increase of \$5,000,000 and 0 FTEs to support major restoration and modernization projects to address critical facility condition deficiencies, and improve safety and operating conditions in support of NOAA's mission. NOAA owns over 400 buildings valued at over \$2.5 billion. These buildings support NOAA's scientific and operational mission and programs, and are designed to provide a safe working environment for NOAA's employees and contractors—in laboratory and research space, offices, and operational buildings. NOAA's facilities are geographically dispersed and aging. As facilities age, repair and restoration of deteriorated or damaged building conditions or systems, replacement of building systems (roofs, HVAC, etc.), abatement of asbestos and other safety/environmental conditions, and installation of new systems to meet current fire safety code requirements is necessary to sustain operational capabilities and provide a safe working environment. With this re-



The Marine Operations Center, Atlantic, is the National Oceanic and Atmospheric Administration's Atlantic Fleet Vessel Operations and Support facility located in Norfolk, VA



requested increase, NOAA will support the completion of major restoration projects at NOAA's facilities, in order to address deteriorated building systems, and safety/environmental conditions. This funding will support the most critical major restoration and modernization projects (i.e., projects with estimated costs greater than \$2 million, but less than \$10 million), such as the replacement of the deteriorated bulkhead at the OMAO Marine Operations Center – Atlantic (MOC-A) facility in Norfolk, Virginia. The MOC-A facility is a federally-owned waterfront facility and is an important asset that serves as a centralized operations and administration center providing administration, engineering, logistics, operational support and maintenance for NOAA ships in the Atlantic and Gulf. The condition of the MOC-A bulkhead, which is forty-eight years old, has deteriorated severely increasing the safety risks at the Center and restricting and disrupting operations.

Pribilof Islands Environmental Monitoring: NOAA requests an increase of \$758,000 and 1 FTE to restore funding for the long-term property transfer and environmental monitoring activities on Pribilof Islands. The funding requested will provide the Office of the Chief Administrative Officer (OCAO) with the resources to manage the long-term responsibility for performance of property transfer activities, post environmental remediation monitoring and supporting well and landfill cap maintenance on the Pribilof Islands (St. Paul and St. George). Pribilof Islands remediation and long-term monitoring are mandated by a 1996 Two Party Agreement (TPA) between NOAA and the State of Alaska. Property transfers from DOC/NOAA to local island entities are mandated by a 1984 Transfer of Property Agreement (TOPA).

OMAO

MARINE OPERATIONS & MAINTENANCE

\$147,655,000

NOAA requests an increase of \$6,990,000 and 5 FTEs in the Marine Operations and Maintenance sub-activity for a total of \$147,655,000 and 931 FTEs. This increase is comprised of two new initiatives:

Marine Services: NOAA requests an increase of \$790,000 and 5 FTEs for the Dive Center Improvement Plan.

This request will address the findings released in the NOAA Florida Keys National Marine Sanctuary Dive Fatality Incident Report. To date, 21 of 33 recommendations have been completed and additional funding is required to address five of the remaining 12 recommendations to increase safety & reduce the number of dive-related incidents. With the additional funding NOAA will implement an on-site inspection program for all NOAA diving units, develop a diving standards and safety manual in conjunction with the Occupational Safety and Health Administration (OSHA), develop a web-based refresher training module in Oxygen Administration and Dive Procedures and Regulations, issue additional safety equipment, and develop a formalized science diver training and certification program specifically geared toward NOAA divers.



NOAA diver examining sea grass

Fleet Planning and Maintenance: NOAA requests \$6,200,000 and 0 FTEs for Preventive, Corrective, and Deferred Ship Maintenance. There has been an 89% increase in the number of significant mechanical/electronic failures as indicated in NOAA Ship Casualty Reports (CASREPS) – from 95 in FY 2005 to 180 in FY 2008 – and a 62% increase in Lost Days at Sea (DAS) for NOAA programs – from 184 DAS in FY 2005 to



299 DAS in FY 2008. With this request, NOAA will address deferred maintenance items and decrease the number of CASREPS that impact accomplished days at sea and scientific data collection for NOAA programs. Specifically this increase will eliminate the deferred maintenance backlog for electronics and marine engineering within five years and increase the preventative maintenance accomplishment rate. This increase supports NOAA's Ship Recapitalization Plan to ensure its oldest ships can operate until replacements are delivered and to bridge the operational period until a Major Repair Period can be funded. It also builds on major vessel maintenance and repair investments that were made during FY 2010 using American Recovery and Reinvestment Act of 2009 (ARRA) funding. The proposed increase also accelerates the accomplishment rate of OMAO's shipboard maintenance management program to enhance at-sea safety and ship productivity and to meet emerging regulatory requirements.



CHAPTER 3

NOAA Procurement, Acquisition, & Construction

The latest NOAA Geostationary Operational Environmental Satellite (GOES-0) rotating on a stand for blanket inspection



PROCUREMENT, ACQUISITION & CONSTRUCTION (PAC)

NOAA's Procurement, Acquisition, and Construction (PAC) account captures the cost of acquiring and improving capital assets, which are mission-critical to all agency programs and contribute significantly to achieving each of NOAA's Strategic Goals. This account is grouped by line office into three common activities: (1) "Systems Acquisition," which includes projects that will have a major impact on NOAA's ability to monitor and to forecast weather and climate change on a global basis; (2) "Construction," which includes projects involving new construction or major modification of existing facilities; and (3) "Fleet and Aircraft Replacement," which includes funding to support modernization of NOAA's fleet of ships and aircraft either through new construction, major modification to existing assets, or long-term acquisition of capacity from third parties.



Rendering of NOAA's new Gulf of Mexico Disaster Response Center expected to open Spring 2011

ADJUSTMENTS TO BASE:

The NOAA Procurement, Acquisition, and Construction (PAC) requests no adjustments to FY 2011 Base.

PAC PROGRAM CHANGE HIGHLIGHTS FOR FY 2011:

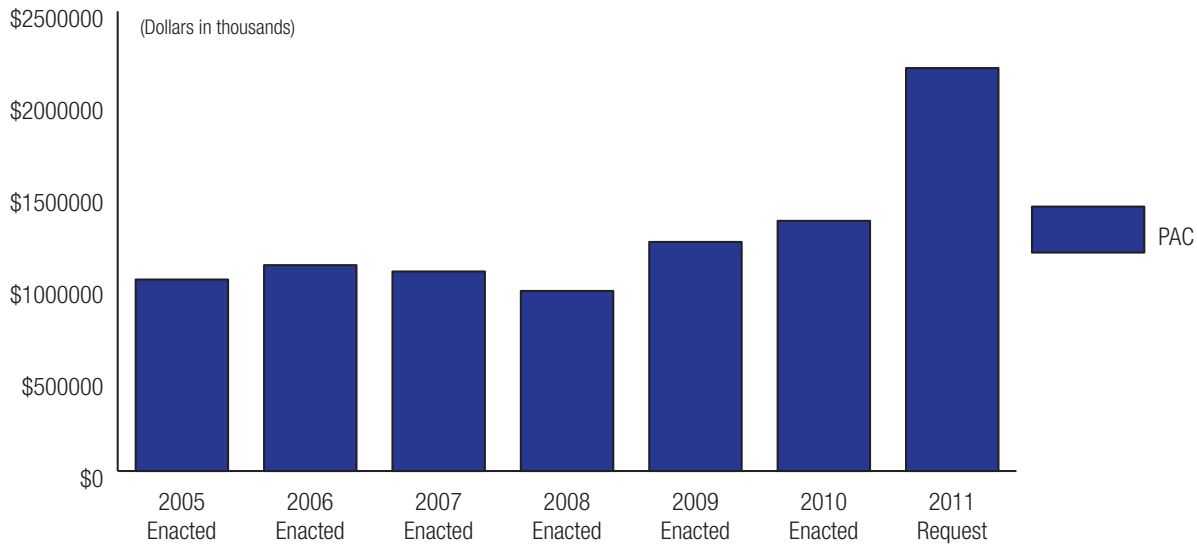
NOAA requests a net increase of \$876,747,000 and 0 FTEs over the FY 2011 Base for a total of \$2,191,091,000 and 190 FTEs for the PAC programs. Detailed numeric breakouts are located in Chapter 7, *Special Exhibits*. Descriptions of each request by line item are located in the NOAA FY 2011 Technical Budget.



PROCUREMENT, ACQUISITION, AND CONSTRUCTION (PAC)

(DOLLARS IN THOUSANDS)	FY 2009 ENACTED	FY 2010 ENACTED	FY 2011 REQUEST	INCREASE (DECREASE)
National Ocean Service	46,188	40,890	34,385	(6,505)
National Marine Fisheries Service	4,600	0	0	0
Ocean and Atmospheric Research	11,579	10,379	10,379	0
National Weather Service	110,951	102,727	100,731	(1,996)
National Environmental Satellite, Data and Information Service	990,579	1,199,357	2,018,796	819,439
Program Support	81,750	2,000	26,800	24,800
GRAND TOTAL PAC	1,245,647	1,360,353	2,191,091	830,738
Total FTE	190	190	190	0
Systems Acquisition	1,098,727	1,317,731	2,149,528	831,797
Construction	135,420	40,622	28,763	(11,859)
Fleet Replacement	11,500	2,000	12,800	10,800
TOTAL	1,245,647	1,360,353	2,191,091	830,738

Budget Trends FY 2005-2011



PAC: Procurement, Acquisition, & Construction



NATIONAL OCEAN SERVICE

\$34,385,000

Construction: NOAA requests an increase of \$10,000,000 and 0 FTEs. This increase is comprised of one initiative:

(BA IN THOUSANDS)	FY 2011 REQUEST	FY 2012	FY 2013	FY 2014	FY 2015
CELCP	25,000	25,000	25,000	25,000	25,000

Coastal and Estuarine Land Conservation Program: NOAA requests an increase of \$10,000,000 and 0 FTE for the Coastal and Estuarine Land Conservation Program (CELCP). Coastal counties are home to almost 153 million people, about 53 percent of the total U.S. population, and by 2015 the coastal population is estimated to reach 165 million. As the coastal population continues to increase, there are many competing demands for limited coastal areas and growing pressure to develop the remaining lands. Coastal lands and estuaries are ecologically productive and economically important. Through the competitive CELCP program, NOAA provides grants to state and local governments to protect important coastal and estuarine areas that have significant conservation, recreational, ecological, historic or aesthetic value that are threatened by development, such as tidal or freshwater wetlands, stream buffers, and floodplains. This increase of \$10,000,000 will support land conservation grants, approximately 2-3 conservation projects per year. This funding will also enable NOAA to ensure that conservation projects satisfy the requirements of NEPA and meet federal appraisal standards. The federal grants require matching funds, which leverage additional state, local or private contributions. The program gives priority to lands that can be effectively managed and protected and have significant ecological value.

NATIONAL WEATHER SERVICE

\$100,731,000

Systems Acquisition: NOAA requests an increase of \$7,358,000 and 0 FTEs. This increase is composed of four new initiatives:

(BA IN THOUSANDS)	FY 2011 REQUEST	FY 2012	FY 2013	FY 2014	FY 2015
NEXRAD	11,126	5,819	0	0	0

Next Generation Weather Radar (NEXRAD) Product Improvement (PI): NOAA requests an increase of \$3,150,000 and 0 FTEs to fund projected costs for the acquisition and deployment of Dual Polarization technology to NWS operational and support site NEXRAD locations. Doppler weather radar is the primary tool for issuing local storm warnings for flash floods, tornados, and severe thunderstorms. Currently, NEXRAD only transmits and receives a horizontal signal. Dual Polarization will add a vertical component. The addition of a vertical component greatly improves accuracy in estimation (quantity) and differentiation (rain, hail, snow, freezing rain, etc.) of precipitation. The outcome will be improved flash flood warnings; improved identification of and warnings for tornados, severe hail, dangerous freezing rain, snow; and enhanced water management capability.



NEXRAD Radar located at the WSR-88D Radar Operations Center in Norman, Oklahoma



(BA IN THOUSANDS)	FY 2011 REQUEST	FY 2012	FY 2013	FY 2014	FY 2015
Complete & Sustain NWR	12,614	5,594	5,594	5,590	5,590

Complete and Sustain NOAA Weather Radio (NWR): NOAA requests an increase of \$1,614,000 and 0 FTEs to continue the modernization of the NOAA Weather Radio system via the Weather Radio Improvement Project (WRIP).

The NWS is required to provide weather watches and warnings and other non-weather emergency messages to the public and emergency managers through the NOAA Weather Radio and the NWS. The most critical component of WRIP is the replacement of the obsolete and unsupported broadcast recoding equipment, the Console Replacement System (CRS), at each of the Weather Forecast Offices (WFOs). NWS will deploy the NWR Broadcast Management System (BMS) as a replacement for the CRS. The CRS is a main component of NOAA Weather Radio that converts text warning messages into digital voice, which gives the NWS the ability to quickly disseminate Severe and High Impact Weather Warnings, Watches and forecasts and Non-Weather Emergency Messages to the public. This increase is required to keep the project on schedule for completion of the CRS replacement in FY 2012. Funding for FY 2013-2015 is required to sustain a steady state operation of the NWR.



NOAA Weather Radios

(BA IN THOUSANDS)	FY 2011 REQUEST	FY 2012	FY2013	FY 2014	FY 2015
NOAA Profiler Network	9,730	9,730	11,960	0	0

NOAA Profiler Conversion: NOAA requests a restoration of \$2,230,000 and 0 FTEs to increase the base level funding for the NOAA Profiler Network (NPN) to continue the planned technology refresh and operating frequency conversion of the 20-year old NPN to that recommended in the President’s FY 2010 Budget but not provided for in the Consolidated Appropriations Act, 2010.

The Wind Profilers, vertical looking radars installed in 1988, are used as input for numerical (computer) weather models that predict clouds, precipitation, and temperature. The data also provides important indicators of where severe weather such as tornadoes and winter storms will form and is used for issuing aviation advisories, volcanic ash plumes and wildfire predictions. NPN winds improve probability of detection (+27%), decrease false alarm rate (-20%), and improve lead time (+14%) for tornado warnings, as well as severe thunderstorms, flash floods, and winter storms. They also improve warnings related to aviation and fire weather. The NPN has been installed for over 20 years without any technology refresh during its life cycle. The proposed increase will (1) convert thirty-two of the profilers currently operating at 404MHz to 449MHz and to provide technology refresh to each (20-year old system) and (2) provide technology refresh to the five profilers which are currently operating at the 449 Mhz frequency. Without this funding, all radars operating on the old frequency will be shut down due to interference with the European Galileo satellites.

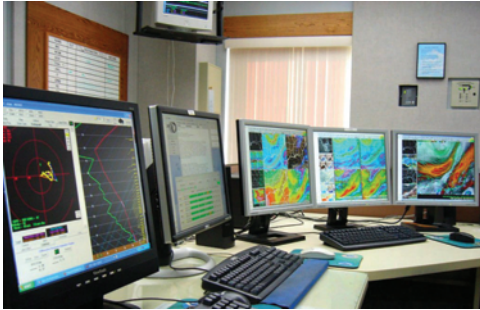


NOAA Profiler in McCook, NE



(BA IN THOUSANDS)	FY 2011 REQUEST	FY 2012	FY 2013	FY 2014	FY 2015
AWIPS Tech Infusion	24,364	24,364	24,364	24,364	24,364

AWIPS Technology Infusion: NOAA requests an increase of \$364,000 and 0 FTEs to increase the base level of funding to that recommended in the FY 2010 President’s Budget, but not provided for in the Consolidated Appropriations Act, 2010.



AWIPS Workstations in Tallahassee, FL

AWIPS is the cornerstone of the modernized NWS. This system integrates and displays all hydrometeorological data at NWS field offices. This system integrates satellite, NEXRAD Doppler weather radar data, and Numerical Weather Prediction (NWP) data, enabling field forecasters to visualize environmental processes to create timely and accurate forecasts and warnings. An upgrade from AWIPS I to AWIPS II will provide improved hardware and software for this system. AWIPS II will optimize data access and use by allowing regional queries, enabling forecasters to create timely and accurate forecasts and warnings. AWIPS II Extended is a multi-phase program to add significant improvements to AWIPS II to provide improved functionalities and capabilities to the NWS field forecasters, NOAA partners and the public.

Construction: NOAA requests an increase of \$3,150,000 and 0 FTEs for NWS Construction. This increase is composed of one new initiative:

(BA IN THOUSANDS)	FY 2011 REQUEST	FY 2012	FY 2013	FY 2014	FY 2015
WFO Construction	3,150	3,150	3,150	3,150	3,150

Weather Forecast Office (WFO) Construction: NOAA requests an increase of \$3,150,000 and 0 FTEs for modernization projects in the Alaska and Pacific Regions as well as the replacement of end of life heating, ventilating, and air conditioning (HVAC) systems at six (6) WFOs with modern, high efficiency (green) units.



Construction of the Weather Service Office in Annette, Alaska

Specifically, increased funding completes Barrow, Alaska employee housing and the upper air inflatable shelter, Weather Service Office Koror renovations, and six HVAC replacements at WFOs with newer energy efficient models.



NATIONAL ENVIRONMENTAL SATELLITE, DATA, & INFORMATION SERVICE \$2,018,796,000

Systems Acquisition: NOAA requests a net increase of \$831,439,000 and 0 FTEs. This increase is comprised of six new initiatives and one planned decrease:

(BA IN THOUSANDS)	FY 2011 REQUEST	FY 2012	FY 2013	FY 2014	FY 2015
GOES-R	730,000	773,700	777,800	779,500	780,300

Geostationary Operational Environmental Satellites (GOES): NOAA requests a planned increase of \$62,500,000 and 0 FTEs for the GOES-R Series to provide continued satellite engineering development and production activities. GOES-R is a cooperative venture between NOAA and the National Aeronautics and Space Administration (NASA). NOAA defines requirements, implements system integration, procures ground segments, manages, funds, and operates the 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.



Artist's rendering of GOES-R

The GOES system provides an uninterrupted, continuous flow of environmental and weather data and information that meets customers' spatial, temporal and accuracy requirements, providing significant customer benefit within an established Life Cycle Cost (LCC). The GOES-R series provides for two satellites with a LCC of \$7.67 billion through 2028. The series includes the following instruments that are under development: the Advanced Baseline Imager (ABI), Space Environment In-Situ Suite (SEISS), Extreme Ultraviolet Sensor/X-Ray Sensor Irradiance Sensors (EXIS), Solar Ultraviolet Imager (SUVI), Geostationary Lightning Mapper (GLM), and Magnetometer. The GOES-R series satellites will not only provide critical weather observations for severe weather events such as hurricanes, but will also provide key enhancements in observational capabilities for climate, oceans and coasts, and the space environment. In FY 2011, the program will continue development of the instruments, spacecraft, and ground system. Funds will also be used to conduct Critical Design Reviews (CDR) for the spacecraft and ground system for a planned launch in 2015, as well as the continuation of the ground system antenna contract.

(BA IN THOUSANDS)	FY 2011 REQUEST	FY2012	FY2013	FY2014	FY2015
POES	40,874	40,874	40,874	40,874	40,874

Polar-orbiting Operational Environmental Satellite (POES): NOAA requests a planned decrease of \$2,261,000 and 0 FTEs for the continuation of the POES program and continued support for the MetOp (European Weather Satellite) program. POES launched the last satellite in the POES Series (N-Prime) in February 2009. Funds will be used to provide satellite and instrument anomaly support to the on-orbit POES satellites, maintain the ground system for their operation, and support the maintenance and testing of U.S. instruments on the MetOp satellites.



(BA IN THOUSANDS)	FY 2011 REQUEST	FY 2012	FY 2013	FY 2014	FY 2015
Jason-3	50,000	53,000	29,000	2,000	2,000

Jason-3: NOAA requests an increase of \$30,000,000 and 0 FTEs to continue the development of the Jason-3 satellite altimetry mission in partnership with the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT), which started in FY 2010. Jason-3 will provide continuity of precise measurement of sea surface height, which is an important measurement to assess climate change, for applications in ocean climatology (global sea-level rise, decadal variability in the ocean, seasonal/inter-annual variability, and coastal variability and its impact on ecosystems); and ocean weather (operational oceanography, surface wave forecasting, and hurricane intensity forecasting). Jason-3 will continue the nearly 20-year climate data record created by the altimetry missions of TOPEX/POSEIDON and Jasons-1 and -2. NOAA will provide the launch vehicle and services and the microwave radiometer. EUMETSAT will provide the spacecraft and the altimeter. Both agencies will provide precision orbit and ground system components as required for respective operations of the satellite. The satellite will be commanded from either of the two NOAA Command and Data Acquisitions (CDA) stations or the third EUMETSAT station in Europe depending on which ground station is visible to the satellite. The data collected from each ground station is shared between the partners so that each will have a complete data set. This request allows NOAA and EUMETSAT to launch Jason-3 in 2013, providing an overlap with the Jason-2 mission of six months. This overlap period is necessary to conduct calibration and validation with Jason-2, complete on-orbit check-out operations, and maintain consistent observations of sea surface height between successive altimeter missions. In FY 2011, funds will continue to be used to procure the microwave radiometer and precision orbit determination components, and start launch vehicle building and testing.

(BA IN THOUSANDS)	FY 2011 REQUEST	FY 2012	FY 2013	FY 2014	FY 2015
Joint Polar Satellite System	1,060,800	1,160,000	960,000	740,000	610,000

Joint Polar Satellite System (formerly-National Polar-orbiting Operational Environmental Satellite System (NPOESS)): NOAA requests an increase of \$678,600,000 and 0 FTEs to continue development of the instruments and spacecraft under the restructured next generation polar orbiting satellite program. The program will continue to address NOAA's requirements to provide global environmental data used in numerical weather prediction models for near-term (1-3 day) and mid-term (3-5 day) forecasts, as well as provide space weather observation, search and rescue detection capabilities, and direct read-out and data collection products and services to customers. The new Joint Polar Satellite System continues a number of management and acquisition reforms that will be initiated in FY 2010 to deliver polar observations necessary to meet both the civil and military needs for weather and climate information. NASA, on behalf of NOAA, will provide the acquisition management for those segments that support the afternoon mission requirement, as well as those segments common to both the civil and military mission (e.g., ground systems). The Department of Defense will continue the acquisition of its early morning orbit assets. FY 2011 funds will continue to transition afternoon orbit instrument



asset acquisitions from DoD to NASA and will continue the procurement of an NPP-like spacecraft for the afternoon orbit. In addition, funds will support the launch readiness of NPP. A successful system 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. It will improve forecasts, climate monitoring, and warning lead times for severe storms. Data and imagery obtained from the Joint Polar Satellite System 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.

(BA IN THOUSANDS)	FY 2011 REQUEST	FY 2012	FY 2013	FY 2014	FY 2015
Climate Sensors	49,400	55,400	51,100	50,600	35,500

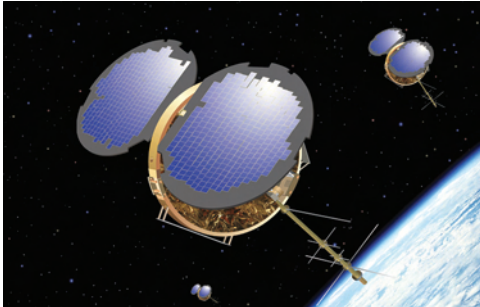
Restoration of Climate Sensors: NOAA requests an increase of \$49,400,000 and 0 FTEs to continue with the re-manifest of NPOESS climate sensors that were demanifested from the NPOESS program as a result of the Nunn-McCurdy Certification Process in FY 2006. The re-manifestation plan that is being implemented is based on a prioritized list of measurements that was developed by NOAA, NASA, and the Office of Science and Technology Policy in consultation with the National Academy of Sciences. The continuation of the data sets from these instruments is critical to climate change research and understanding the impacts of climate change. The prospect of climate change has profound implications for global society and the environment, underscoring the need for information derived from these instruments to aid decision makers in developing and evaluating options for mitigating the impacts of climate change as well as alternatives for adapting to a changing climate. These climate sensors 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. The modernization of sensors will improve forecasts and climate monitoring which will benefit agriculture, transportation, and energy production. Funding provided in FY 2011 will continue to build the Cloud and Earth Radiant System (CERES) Flight Model 6 (FM-6) and Total Solar Irradiance Sensor (TSIS) #1 for the first satellite of the Joint Polar Satellite System, as well as begin instrument development work for CERES FM-7 (for Earth Radiation Budget) and the Ozone Mapping and Profiler Suite (OMPS) (for ozone).

(BA IN THOUSANDS)	FY 2011 REQUEST	FY 2012	FY 2013	FY 2014	FY 2015
COSMIC-2	3,700	8,300	10,300	9,500	16,500

Constellation Observing System for Meteorology, Ionosphere, and Climate (COSMIC-2): NOAA requests an increase of \$3,700,000 and 0 FTEs to collaborate with the Taiwan National Space Organization (NSPO) for the launch of 12 satellites to provide replenishment and operational upgrade for the current COSMIC constellation. COSMIC is a 6 satellite constellation that was launched in 2006 in collaboration between Taiwan, National Science Foundation, NASA, U.S. Air Force and the University Corporation for Atmospheric Research (UCAR). This constellation was a proof-of-concept effort for a new and inexpensive atmospheric sounding technique using the U.S. Air Force GPS system as a sounding source, called GPS Radio Occultation (GPSRO). The new tech-



nique proved so accurate and beneficial that NOAA began using the data operationally for weather forecasting within a year of the COSMIC launch. COSMIC provides extremely accurate, bias free, daily worldwide measurements of atmospheric temperature and moisture profiles over the oceans and land that greatly improve NOAA's operational weather forecasting accuracy. COSMIC also helps to eliminate bias for artificial offsets in other observing systems, which advances the overall impact on operational model systems and makes it a backbone for the total observing system. COSMIC provides over 2500 atmospheric soundings every 24 hours around the globe, an improvement of about twice the number of daily weather balloon observations which are concentrated mostly over land. The success of the mission has inaugurated an age of operational GPS sounding for weather forecasting, climate analysis and research, ionospheric monitoring, and a suite of related Earth science pursuits. In this partnership, NOAA will procure radio occultation (RO) sensors, launch services, ground station support and sensor processing support. Taiwan will provide the spacecraft and integrate the sensors onto them. The funding in FY 2011 will start the development efforts for the sensors for COSMIC 2, as well as systems engineering, which is necessary to meet the FY 2014 launch date.



Six microsatellites are entering low-Earth orbit to form COSMIC, the Constellation Observing System for Meteorology, Ionosphere, and Climate
Illustration courtesy Orbital Sciences Corporation

(BA IN THOUSANDS)	FY 2011 REQUEST	FY 2012	FY 2013	FY 2014	FY 2015
DSCOVR	9,500	38,300	25,400	3,800	2,400

Deep Space Climate Observatory (DSCOVR): NOAA requests an increase of \$9,500,000 and 0 FTEs to acquire solar wind and Coronal Mass Ejection (CME) data. This acquisition will fund the refurbishment of an existing NASA satellite DSCOVR, as well as purchase and add a CME imager to the mission to provide solar wind data for geomagnetic storm forecasting. Under a reimbursable agreement between NESDIS and NASA, NASA/Goddard Space Flight Center (GSFC) will perform the refurbishment of the DSCOVR satellite currently housed at GSFC. It is anticipated that NOAA will lose two of its most critical observational data sources for geomagnetic storm warnings when the NASA ACE and the NASA/ESA SOHO satellites (which have already exceeded their operational life) fail. Low reliability of the satellites and sensors and the high risk of unavailability of the data pose one of the most serious gaps for NOAA's space weather services. This comes at a time when a large increase in geomagnetic storm frequency and severity is expected during the next solar maximum beginning in 2013 lasting for several years. According to a recent report by the National Academies, geomagnetic storm-disabled electric power grids and collateral impacts could result in projected economic and societal costs of ~\$1-\$2 trillion, and full recovery could take 4 –10 years. Space weather has demonstrated the potential to disrupt virtually every major public infrastructure system, including commercial airlines and other transportation systems, telecommunications, electric power grids, and global positioning systems (GPS). With this increase, NOAA will continue to provide timely and accurate alerts and warnings of geomagnetic storms to support these key industries and minimize disruptions to service.

PROGRAM SUPPORT

\$26,800,000

Construction: NOAA requests an increase of \$14,000,000 and 0 FTEs in the Program Support Construction sub-activity. This increase is comprised of one new initiative:



(BA IN THOUSANDS)	FY 2011 REQUEST	FY 2012	FY 2013	FY 2014	FY 2015
Pacific Regional Center	14,000	1,000	1,000	0	0

Pacific Regional Center: NOAA requests an increase of \$14,000,000 and 0 FTEs to support acquisition and installation of the IT infrastructure for the main facility at the new Pacific Regional Center (PRC) on Ford Island, in Honolulu, HI. NOAA received funding in the American Recovery and Reinvestment Act of 2009 (P.L. 111-5) and the Omnibus Budget Act of 2009 (P.L. 111-8) to complete the building construction phase of the PRC project and achieve full consolidation of its operations on the island of Oahu, Hawaii, with construction of the Main Facility. The FY2011 request will enable NOAA to complete acquisition and installation of the information technology infrastructure for the Main Facility and NOAA project management costs associated with the project. The Pacific Regional Center is a multi-phase, multi-year construction project to consolidate NOAA programs and operations on the island of Oahu into a single facility on federally-owned property at Ford Island. By bringing the programs together into one facility, NOAA expects to realize benefits in improved operations and mission performance, longer-term operational savings, and opportunities for greater program collaboration and synergy-both within NOAA and with external partners.

OMAO Fleet Replacement: NOAA requests an increase of \$10,800,000 and 0 FTEs in the Program Support OMAO Fleet Replacement sub-activity. This increase is comprised of four new initiatives:

(BA IN THOUSANDS)	FY 2011 REQUEST	FY 2012	FY 2013	FY 2014	FY 2015
Fleet Capital Improvements & Technology Refresh	8,400	1,000	1,000	1,000	1,000

Fleet Capital Improvements and Technology Infusion: NOAA requests an increase of \$7,400,000 and 0 FTE to accelerate a planned FY 2013 Major Repair Period (MRP) for *Miller Freeman*. *Miller Freeman* was delivered to NOAA in 1967 and is one of the oldest ships in the fleet. Recent dry dock work and associated material assessments in FY 2009 confirm the ship's continuing and rapidly deteriorating condition from its advanced age. In FY 2009 NOAA Fisheries experienced higher loss of *Miller Freeman* operating times due to mechanical breakdown and shipyard delays, negatively affecting their ability to conduct critical science and stock assessments. To extend ship service life and ensure safe operations, this increase will address the most critical structural, mechanical, and electrical maintenance and repair needs in order to safely operate *Miller Freeman* through 2017. If the MRP is not completed, OMAO risks continued unplanned mechanical or infrastructure failures due to poor structural integrity resulting from hull and structural metal loss that will result in lost days at sea. Also, the ship's condition may jeopardize compliance with the ship certification requirements of the American Bureau of Shipping (ABS) and result in increased lost days at sea.



Miller Freeman underway



(BA IN THOUSANDS)	FY 2011 REQUEST	FY 2012	FY 2013	FY 2014	FY 2015
New Vessel Construction (FSV5)	3,000	0	0	0	0

New Vessel Construction FSV5: NOAA requests an increase of \$3,000,000 and 0 FTEs to design a new shallow-draft Fisheries Survey Vessel (FSV 5). NOAA plans to modernize its fleet, consistent with NOAA's Ship Recapitalization Plan (SRP), and addresses the oldest vessels and those at-sea requirements most at risk first. A shallow-draft FSV will be needed to replace *Oregon II* which is among the oldest ships in the NOAA Fleet at 44 years of service life by FY 2011. *Oregon II* is an *Oscar Dyson* class vessel (FSV1-FSV4) which has a draft of 19 feet and 29 feet with the scientific center-board extended. The draft limits the ability to conduct living-resource and coral-habitat surveys in waters shallower than 42 feet, making it unsuitable to operate in the Gulf of Mexico. The shallow-draft FSV will operate in near-shore coastal waters as shallow as 30 feet and is intended to be the primary ship supporting Gulf of Mexico living-marine resource, habitat, and integrated-ecosystem surveys. The funding for additional design work would leverage existing designs while developing a shallow draft vessel to meet these requirements. Data from these cruises are critical to assessments of the snapper-grouper complex, billfish, tunas, swordfish and sharks, and status of protected species, habitat, and ecosystem health. From FY 2000 to FY 2006, *Oregon II* lost an average of 19 days of operation each year due to engineering related problems. If a suitable replacement ship is not acquired, *Oregon II* will reach the end of its useful service life and will be removed from service in FY 2016.

(BA IN THOUSANDS)	FY 2011 REQUEST	FY 2012	FY 2013	FY 2014	FY 2015
Fisheries Survey Vessel (FSV 6)	1,400	1,400	2,900	0	0

New Vessel Construction FSV6: NOAA requests an increase of \$1,400,000 and 0 FTE to provide project management and change margin funds for Fisheries Survey Vessel (FSV6). FSV6 will replace *David Starr Jordan* and perform acoustic surveys for fish and zooplankton and launch and recover a work boat in open seas. NOAA requires data collected at sea to achieve outcomes mandated by Congress and the economic impact is significant. The Magnuson-Stevens Fisheries Conservation and Management Reauthorization Act require sufficient data to establish annual catch limits for fisheries. If sufficient data is not available, catch limits must be reduced from current levels with an estimated negative impact on the commercial fishing industry of up to \$7 billion annually. With this increase OMAO will procure continuity in the civilian expertise required to monitor and evaluate the contractor's progress during construction. The requested funding is necessary to complete construction and bring FSV6 into operations.



(BA IN THOUSANDS)	FY 2011 REQUEST	FY 2012	FY 2013	FY 2014	FY 2015
Temporary Berthing	0	0	0	0	0

Temporary Berthing: NOAA requests a decrease of \$1,000,000 and 0 FTE for temporary berthing. Actual costs to berth Bigelow are substantially lower and will be accommodated within the Marine Operations and Maintenance-Marine Services activity in the ORF account.



CHAPTER 4

Mandatory & Discretionary Funds



DISCRETIONARY FUNDS

COASTAL ZONE MANAGEMENT FUND

The Coastal Zone Management Fund (CZMF), created in 1990, consists of loan repayments from the former Coastal Energy Impact Program. Loans under this program were made prior to 1992, but balances were not transferred to the General Fund in accordance with the Federal Credit Reform Act of 1990 (FCRA), even though the account effectively serves as a liquidating account. To resolve this inconsistency, the Budget proposes to cancel all balances in the Coastal Zone Management Fund, make future payments to the Fund subject to FCRA, and eliminate the annual transfer from this account to the Operations, Research, and Facilities account.

In FY 2011, NOAA proposes the following new legislative language: *All balances in the Coastal Zone Management Fund, whether unobligated or unavailable, are hereby permanently cancelled, and notwithstanding Section 308(b) of the Coastal Zone Management Act of 1972, as amended (16 U.S.C. 1456a), any future payments to the Fund made pursuant to sections 307 (16 U.S.C. 1456) and 308 (16 U.S.C. 1456a) of the Coastal Zone Management Act of 1972, as amended, shall, in this fiscal year and any future fiscal years, be treated in accordance with the Federal Credit Reform Act of 1990, as amended.*

COASTAL IMPACT ASSISTANCE FUND

Congress authorized the Coastal Impact Assistance Program (CIAP) in 2001 to assist states in mitigating the impacts from Outer Continental Shelf (OCS) oil and gas production. Congress appropriated \$150,000,000 in FY 2001 to seven coastal states: Alaska, California, Texas, Louisiana, Mississippi, Alabama, and Florida, to implement this program. Funds were expended according to Coastal Impact Assistance Plans developed by the states. NOAA was charged with implementing this program at the federal level. FY 2001 was the only year NOAA received an appropriation for these activities; however, NOAA continues to receive deobligations from this grant program, which are deposited in this account.

FISHERMEN'S CONTINGENCY FUND

The Fishermen's Contingency Fund (FCF) program minimizes financial losses of the fishing industry caused by competing uses of the Outer Continental Shelf (OCS) and provides for timely resolution of claims by vessel owners. The Fishermen's Contingency Fund is authorized under Section 402 of Title IV of the Outer Continental Shelf Lands Act Amendments of 1978. NOAA compensates U.S. commercial fishermen for damage or loss of fishing gear, vessels, and resulting economic loss caused by obstructions related to oil



and gas exploration, development, and production in any area of the Outer Continental Shelf. The funds used to provide this compensation are derived from fees collected by the Secretary of the Interior from the holders of leases, exploration permits, easements, or rights-of-way in areas of the Outer Continental Shelf. The FCF account is funded solely through user fees. Disbursements can be made only to the extent authorized in appropriation acts. In FY 2011 NMFS requests budget authority of \$350,000 for the payment of claims filed by fisherman. These funds should be sufficient to cover the estimated amount of claims for FY 2011.

FOREIGN FISHING OBSERVER FUND

The Foreign Fishing Observer Fund (FFOF) is financed through fees collected from owners and operators of foreign fishing vessels fishing within the Exclusive Economic Zone (EEZ) of the United States (fishing in the EEZ requires a permit issued under the Magnuson-Stevens Fishery Conservation and Management Act). The FFOF reimburses NOAA for costs incurred from placing observers aboard foreign fishing vessels. The observer program is conducted primarily through contracts with the private sector. NOAA/NMFS places these observers aboard foreign fishing vessels to monitor compliance with U.S. fishery laws and to collect fishery management data. Amounts available in the Fund can be disbursed only to the extent and in amounts provided in appropriation acts. In FY 1985, Congress approved the establishment of a supplemental observer program. The program provided that foreign vessels without federally-funded observers are required to obtain the services of private contractors certified by the Secretary of Commerce. In FY 2011 NOAA is requesting cancellation of \$350,000 from unobligated balances, as it does not anticipate foreign fishing in the U.S. EEZ requiring funds from this account.

FISHERIES FINANCE PROGRAM ACCOUNT

The Fisheries Finance Program (FFP) Account is a national loan program that makes long-term fixed-rate financing available to U.S. citizens who otherwise qualify for financing or refinancing of the construction, reconstruction, reconditioning, and, in some cases, the purchasing of fishing vessels, shoreside processing, aquaculture, and mariculture facilities. The FFP operates under the authority of Title XI of the Merchant Marine Act of 1936, as amended; Section 303(a) of the Sustainable Fisheries Act amendments to the Magnuson-Stevens Act; and, from time to time FFP-specific legislation. NMFS requests no increase for the FFP because these loans have a negative subsidy rate and no appropriated funds are required. However specific loan ceilings for each type of loan authority within the FFP must be included in appropriation language or other bill language regardless of the need for cash appropriations. The FY 2011 budget proposal requests loan authority of \$12 million for Individual Fishing Quota Loans and \$59 million for FFP traditional loans as authorized by the Merchant Marine Act. Three major benefits will result from this action. First, the IFQ loan program is part of the Northwest Halibut and Sablefish and the Bering Sea and Aleutian Islands Crab limited entry fisheries management program that continues to stabilize these fisheries. The increase from \$8 million to \$12 million will support the implementation of the crab IFQ loan required by the management plan approved by the North Pacific Fisheries Management Council. Second, FFP traditional lending is harvesting-capacity-neutral and supports qualified established U.S. seafood companies operating in a sustainable fisheries environment. Last, FFP lending to marine aquaculture facilities contributes to the development of a promising avenue of seafood production and greater economic sustainability from U.S. ocean resources.



PROMOTE AND DEVELOP AMERICAN FISHERY PRODUCTS & RESEARCH PERTAINING TO AMERICAN FISHERIES FUND

The American Fisheries Promotion Act of 1980 authorized a grants program for fisheries research and development projects funded by Department of Agriculture duties on fishery-related products. Thirty percent of these duties support the Promote and Develop American Fishery Products & Research Pertaining to American Fisheries Fund. The FY 2011 budget estimate is \$113.4 million. Of this amount, \$8.8 million will be used for the grants program to promote industry development through competitively awarded external grants (Saltonstall-Kennedy) for innovative research and development of projects in the fishing industry and for NOAA research efforts that complement the external program. NOAA will transfer the remaining \$104.6 million to offset marine fishery resource programs in the Operations, Research, and Facilities account in FY 2011.

PACIFIC COASTAL SALMON RECOVERY FUND

The Pacific Coastal Salmon Recovery Fund (PCSRF) was established by NMFS in FY 2000 to address the listings of Pacific salmon and steelhead populations under the ESA and the impacts of the Pacific Salmon Treaty Agreement between the United States and Canada. Under the PCSRF, NMFS manages a program to provide funding to states and tribes of the Pacific Coast region (Washington, Oregon, California, Idaho, Nevada, and Alaska) to implement projects that restore and protect salmonid populations and their habitats. Through FY 2009, over \$800 million has been provided to thousands of projects throughout the region that have made important contributions to improve the status of ESA-listed species, preventing extinctions and helping to protect currently healthy populations. In addition to the PCSRF federal funds, states provide significant matching funds through their grant allocation processes. Furthermore, the federal and state matching funds are supplemented by private and local contributions at the project level, including additional funding, volunteer time, and other in-kind donations. The FY 2011 President's Request includes \$65,000,000 for this account.

In FY 2011, NOAA proposes a change in appropriations language to ensure Federally-recognized tribes in the state of Alaska can apply directly to the PCSRF for funds. NOAA also requests an increase of \$15,000,000 and 0 FTEs. The additional FY11 funds will continue to supplement state and federal programs and promote the development of federal-state-tribal-local partnerships in salmon conservation efforts.

MEDICARE ELIGIBLE RETIREE HEALTH CARE FUND

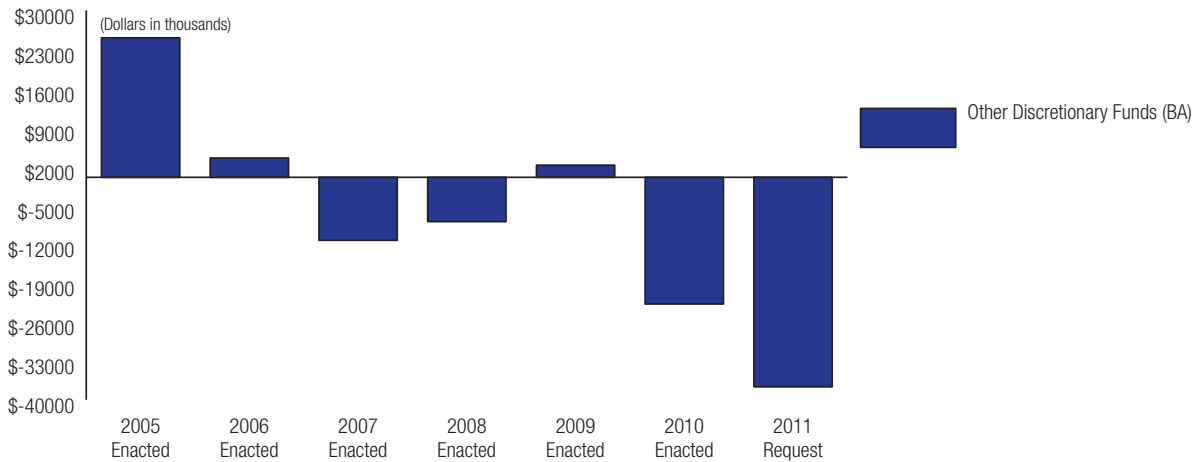
The FY 2003 Department of Defense Authorization Act requires all uniformed services, including NOAA, to participate in an accrual fund for Medicare-eligible retirees. Payments into this accrual fund will cover the future health care benefits of present, active-duty NOAA officers and their dependents and annuitants. NOAA requests an increase of 0 FTE and \$2,000 for a total of \$1,936,000 for accrual contributions for future health care benefits for current NOAA Commissioned Corps officers. The accrual fund pays for healthcare benefits for Medicare-eligible retired officers, dependents, and annuitants. Accrual fund contributions were first mandated in FY 2003 Department of Defense legislation.



OTHER DISCRETIONARY FUNDS

(DOLLARS IN THOUSANDS)	FY 2009 ENACTED	FY 2010 ENACTED	FY 2011 REQUEST	INCREASE (DECREASE)
Other Discretionary Funds				
Fisheries Finance Program Account	495	0	0	0
Promote and Develop American Fisheries	(79,000)	(104,600)	(104,600)	0
Pacific Coastal Salmon Recovery Fund	80,000	80,000	65,000	(15,000)
Medicare Eligible Retiree Health Care Fund	1,674	1,822	1,936	114
Total Other Discretionary Funds (Budget Authority - BA)	\$3,169	(\$22,778)	(\$37,664)	(\$14,886)
Total FTE	1	1	1	0

Budget Trends FY 2005-2011





MANDATORY FUNDS

COASTAL ZONE MANAGEMENT FUND

The Coastal Zone Management Fund (CZMF) was established under the Omnibus Budget Reconciliation Act of 1990 (P.L. 101-508) to receive loan repayments from the Coastal Energy Impact Program.

In FY 2011, NOAA proposes the following new legislative language: *All balances in the Coastal Zone Management Fund, whether unobligated or unavailable, are hereby permanently cancelled, and notwithstanding Section 308(b) of the Coastal Zone Management Act of 1972, as amended (16 U.S.C. 1456a), any future payments to the Fund made pursuant to sections 307 (16 U.S.C. 1456) and 308 (16 U.S.C. 1456a) of the Coastal Zone Management Act of 1972, as amended, shall, in this fiscal year and any future fiscal years, be treated in accordance with the Federal Credit Reform Act of 1990, as amended.*

DAMAGE ASSESSMENT & RESTORATION REVOLVING FUND

The Damage Assessment and Restoration Revolving Fund (DARRF) was established in 1990 to facilitate oil and hazardous material spill response, damage assessment, and restoration activities for damages to natural resources for which NOAA serves as trustee. The Fund receives proceeds from claims against responsible parties, as determined through court settlements or agreements. In FY 1999 and prior years, funds were transferred to the ORF account for the purposes of damage assessment and restoration. Beginning in FY 2000, funds were expended in DARRF and treated as mandatory budget authority.

DARRF facilitates and sustains: (1) natural resource damage assessment while the Departments of Commerce and Justice seek full reimbursement from potentially responsible parties, and (2) restoration, replacement, or acquisition of the equivalent of injured or lost natural resources, including resources of National Marine Sanctuaries and National Estuarine Research Reserves, tidal wetlands, and other habitats for which NOAA is trustee. These program functions are conducted jointly within NOAA by the Office of General Counsel, the National Ocean Service, and the National Marine Fisheries Service.

PROMOTE AND DEVELOP AMERICAN FISHERY PRODUCTS & RESEARCH PERTAINING TO AMERICAN FISHERIES FUND

The American Fisheries Promotion Act of 1980 authorized a grants program for fisheries research and development projects funded by Department of Agriculture duties on fishery-related products. Thirty percent of these duties



support the Promote and Develop American Fishery Products & Research Pertaining to American Fisheries Fund. The FY 2011 budget estimate is \$113.4 million. Of this amount, \$8.8 million will be used for the grants program to promote industry development through competitively awarded external grants (Saltonstall-Kennedy) for innovative research and development of projects in the fishing industry and for NOAA research efforts that complement the external program. NOAA will transfer the remaining \$104.6 million to offset marine fishery resource programs in the Operations, Research, and Facilities account in FY 2011.

FISHERIES FINANCE PROGRAM ACCOUNT

All Fisheries Finance Program Account (FFP) Account authority is subject to the Federal Credit Reform Act of 1990 (FCRA) (2 U.S.C. 661). The FCRA requires estimated loan costs (FCRA cost) be appropriated in cash at the time Congress authorizes annual credit ceilings. FFP Account loan activity demonstrates that the FCRA subsidy is negative. Statutory authority is found in 46 U.S.C. 1274 and 16 U.S.C. 1801 et seq. FFP Account lending guidelines are found at Title 50, Code of Federal Regulations (CFR), Part 253, subpart B; and tempered by NOAA's sustainable fisheries policy and by the practical considerations of a program that has been self-sustaining throughout its credit history.

ENVIRONMENTAL IMPROVEMENT & RESTORATION FUND

The Environmental Improvement and Restoration Fund (EIRF) was established by Title IV of P.L. 105-83, the Department of the Interior and Related Agencies Appropriations Act, 1998, to fund marine research activities in the North Pacific. Twenty percent of the interest earned from this fund is made available to the Department of Commerce. The Fund issues grants to Federal, State, and private or foreign organizations or individuals to conduct research activities on or relating to fisheries or marine ecosystems in the North Pacific Ocean, Bering Sea, and Arctic Ocean. Research priorities and grant requests are reviewed and approved by the North Pacific Research Board, with emphasis placed on cooperative research efforts designed to address pressing fishery management or marine ecosystem information needs. This program supports the NOAA strategic plan goal to sustain healthy coasts.

LIMITED ACCESS SYSTEM ADMINISTRATION FUND

Under the authority of the Magnuson-Stevens Fishery Conservation and Management Act, Section 304(d) (2)(A), NMFS must collect a fee to recover the incremental costs of managing and enforcing a Limited Access Privilege Program (LAPP). Fees shall not exceed 3 percent of the ex-vessel value of fish harvested under any such program, and shall be collected at either the time of the landing, filing of a landing report, or sale of such fish during a fishing season or in the last quarter of the calendar year in which the fish is harvested. Of the funds collected for the Halibut and Sablefish Individual Fishing Quota, 75 percent of fees collected are to be made available for management and enforcement and 25 percent for appropriation to support the North Pacific Individual Fishing Quota loan program. Also, in establishing a LAPP, a Regional Council can consider, and may provide, if appropriate, an auction system or other program to collect royalties for the initial or any subsequent distribution of allocations. If an auction system is developed, revenues from these royalties are deposited in the Limited Access System Administration Fund.

MARINE MAMMAL UNUSUAL MORTALITY EVENT FUND

Marine Mammal Protection Act Section 405 (16 USC 1421d) establishes the Marine Mammal Unusual Mortality Event Fund. The fund: "shall be available only for use by the Secretary of Commerce, in consultation with the Secretary of the Interior to compensate persons for special costs incurred in acting in accordance with the contingency plan issued under section 1421c(b) of this title or under the direction of



an Onsite Coordinator for an unusual mortality event; for reimbursing any stranding network participant for costs incurred in preparing and transporting tissues collected with respect to an unusual mortality event for the Tissue Bank; and for care and maintenance of marine mammal seized under section 1374(c)(2)(D).” According to the MMPA, deposits can be made into Fund by the following: “amounts appropriated to the Fund; other amounts appropriated to the Secretary with respect to unusual mortality events; and amounts received by the United States in the form of gifts, devises, and bequests under subsection (d) of this section.”

WESTERN PACIFIC SUSTAINABLE FISHERIES FUND

Section 204(e) of the 2006 amendments to the Magnuson-Stevens Fishery Conservation and Management Act authorizes the establishment of the Western Pacific Sustainable Fisheries Fund. A Pacific Insular Area Fishery Agreement must be established in order to allow foreign fishing within the U.S. Exclusive Economic Zone (EEZ) in the Western Pacific. Before entering into such an Agreement, the Western Pacific Fishery Management Council must develop a Marine Conservation Plan that provides details on uses for any funds collected by the Secretary of Commerce. Marine Conservation Plans must also be developed by the Governors of the Territories of Guam and American Samoa and of the Commonwealth of the Northern Mariana Islands. Funds collected from any permit payments received for foreign fishing within the U.S. EEZ around Johnston Atoll, Kingman Reef, Palmyra Atoll, and Jarvis, Howland, Baker and Wake Islands, sometimes known as the Pacific remote island areas (PRIA), are to be deposited into the Western Pacific Sustainable Fisheries Fund.

NOAA CORPS COMMISSIONED OFFICERS RETIREMENT

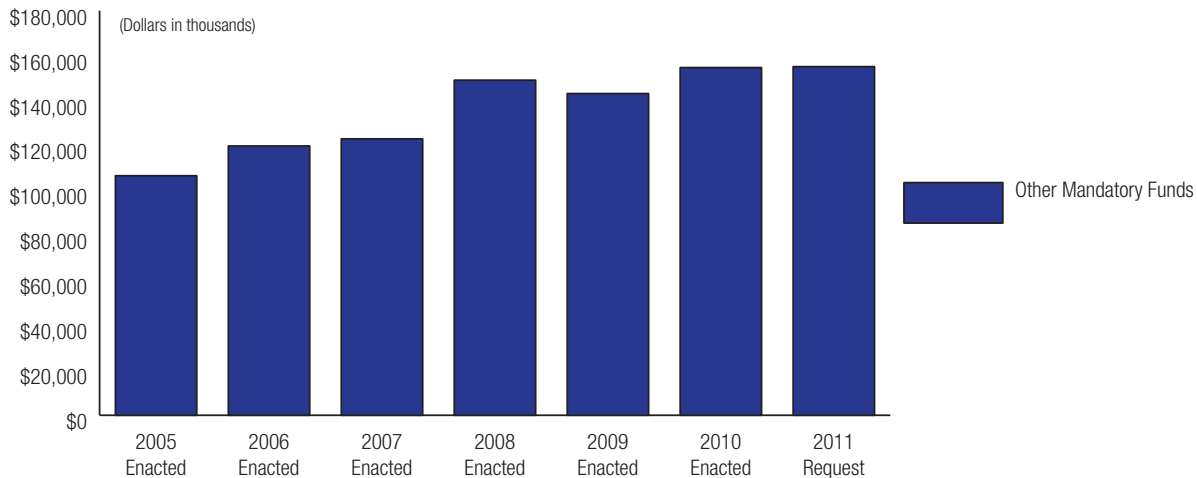
The retirement system for the uniformed services provides a measure of financial security after release from active duty for service members and their survivors. It is an important factor in the choice of a career in the uniformed services and is mandated by Federal statutes under Title 10, United States Code. NOAA transfers retirement pay funds to the Coast Guard, which handles the payment function for retirees and annuitants. Health care funds for non-Medicare-eligible retirees, dependents, and annuitants are transferred to the U.S. Public Health Service, which administers the health care program.



OTHER MANDATORY FUNDS

(DOLLARS IN THOUSANDS)	FY 2009 ENACTED	FY 2010 ENACTED	FY 2011 REQUEST	INCREASE (DECREASE)
Other Mandatory Funds				
Coastal Zone Management Fund	(\$1,500)	(\$1,500)	(\$1,500)	\$0
Damage Assessment & Restoration Revolving Fund	2,000	3,000	3,000	0
Promote and Develop American Fisheries Products	108,510	113,371	113,371	0
Fisheries Finance Program Account	1,996	5,777	0	(5,777)
Federal Ship Financing Fund	(773)	740	0	0
Environmental Improvement & Restoration Fund	1,198	506	3,039	2,533
Limited Access System Administration Fund	7,444	7,444	7,444	0
Western Pacific Sustainable Fisheries	650	0	0	0
NOAA Corp Commissioned Officers Retirement	24,272	26,116	28,269	2,153
Total Other Mandatory Funds (Budget Authority - BA)	\$143,798	\$153,974	\$153,623	\$351
Total FTE	20	20	20	0

Budget Trends FY 2005-2011



ORF: Operations, Research, and Facilities



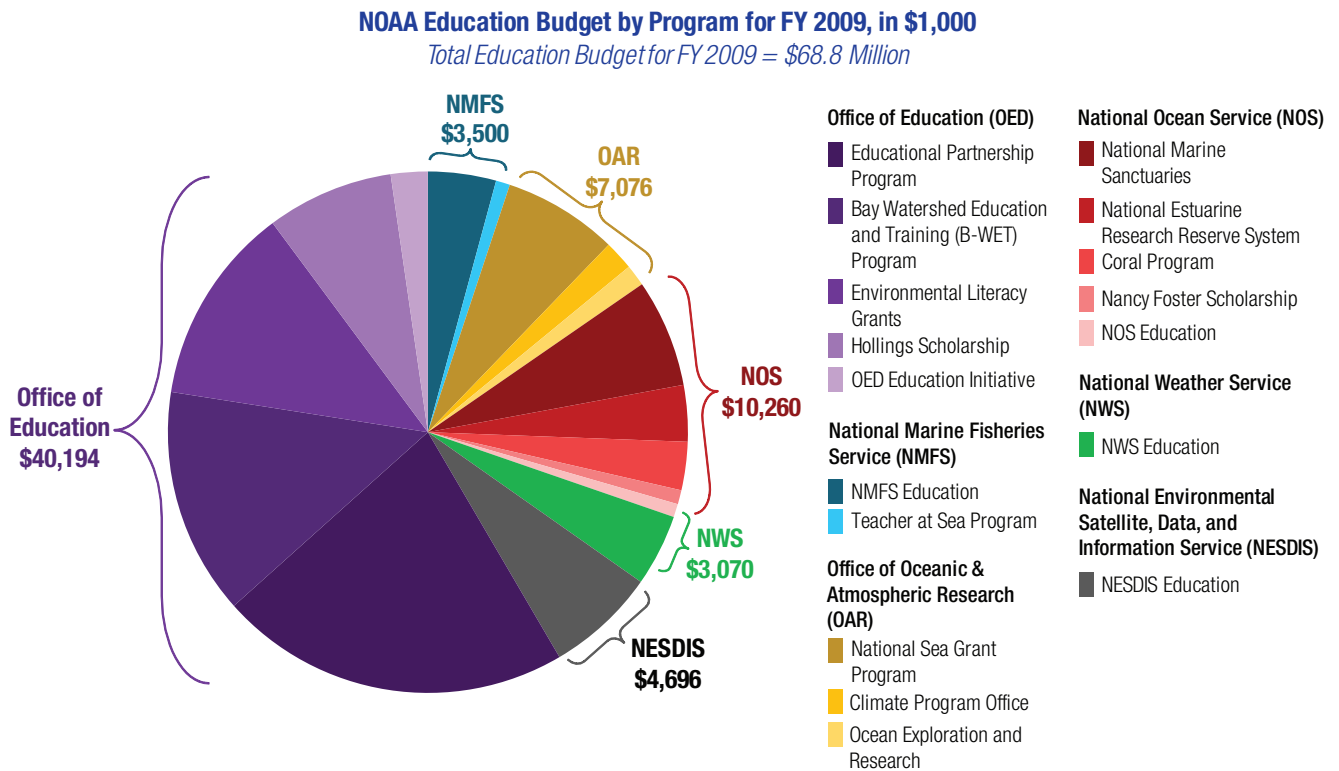
CHAPTER 5

NOAA Education



NOAA'S EDUCATION MISSION

The America COMPETES Act (P.L. 110-69) gives NOAA broad authority for educational activities. Stemming from this statute and other program-specific education mandates, the NOAA education community works collaboratively to advance the priorities outlined in NOAA's Education Strategic Plan and meet NOAA's Education Mission: "To advance environmental literacy and promote a diverse workforce in ocean, coastal, Great Lakes, weather, and climate sciences, encouraging stewardship and increasing informed decision making for the nation." The following are just a few of NOAA's FY 2009 Education accomplishments.





Climate Literacy: The Essential Principles of Climate Science

The Climate Program Office’s Communication and Education Program seeks to improve public climate science literacy and to raise public awareness and understanding of, and engagement with, NOAA’s climate science and services programs. Climate Education produces and distributes a range of products, conducts programs, and collaborates in partnerships designed to help NOAA fulfill its climate goal. Major accomplishments for FY 2009 include publishing the “Climate Literacy: The Essential Principles of Climate Science” (www.globalchange.gov/resources/educators/climate-literacy), a product of the U.S. Global Change Research Program. This document was compiled by an interagency process led by NOAA to help individuals of all ages understand how climate influences them and how they influence climate. <http://www.climate.noaa.gov/education/>

CLIMATE COMMUNICATIONS AND EDUCATION PROGRAM



NOAA diver conducts a bleaching survey of boulder star coral in the Caribbean

CORAL REEF CONSERVATION PROGRAM

The Coral Reef Conservation Program works closely with states and U.S. territories to address climate change, adverse impacts of fishing, and land-based sources of pollution that damage reef ecosystems. The Program has a congressional mandate to conduct education and outreach activities to enhance public understanding and appreciation of coral reefs and associated ecosystems. In FY 2009, the Program funded two-year fellowships in six U.S. jurisdictions, partnered with the National Science Teacher Association to conduct multiple symposiums and presentations, training and providing resources to hundreds of educators nationwide. The program also played a leading role in the International Year of the Reef. <http://coralreef.noaa.gov/education/>



EPP Ph.D graduate in Atmospheric Sciences at a Hurricane Hunter console

The Educational Partnership Program (EPP) provides financial assistance, through competitive processes, to students and Minority Serving Institutions that train students and conduct research in NOAA mission sciences. The program's goal is to increase the number of students, particularly from under-represented communities, who are trained and graduate in sciences directly related to NOAA's mission. FY 2009 accomplishments included a rigorous evaluation by an external team of NOAA's 5 Cooperative Science Centers; the recruitment of 9 students to the Graduate Scholarship Program - it's largest to date; 7 Graduate Science Program (GSP) trainees became NOAA employees; and 113 EPP funded students graduated with STEM degrees. http://www.epp.noaa.gov/epp_about_us_page.html

EDUCATIONAL PARTNERSHIP PROGRAM



Students launch a weather balloon at a student workshop

ENVIRONMENTAL LITERACY GRANTS PROGRAM

The Environmental Literacy Grants (ELG) program promotes public environmental literacy. ELG funds a broad range of informal and formal education projects implemented on state to national scales. ELG competitions align with NOAA's mission goals and Education Strategic Plan; require robust project evaluation; promote best practices; complement other federal granting programs; emphasize partnerships; and promote ocean and climate literacy. For FY 2009, 191 applications were reviewed and 18 new awards were made totaling \$7.3 million. Among these were eleven awards to aquariums that combined reach over eleven million visitors annually. http://www.oesd.noaa.gov/elg/elg_projects.html



Students planting submerged aquatic vegetation at Weeks Bay NERRS

The National Estuarine Research Reserves System (NERRS) protects more than 1.3 million coastal and estuarine acres in 27 reserves located in 21 states and Puerto Rico for purposes of long-term research, education and stewardship. Reserves serve as “living classrooms” that provide, on an annual basis, meaningful experiences for 90,000 K-12 students; 2,000 K-12 programs; community-based programs; public events, and reach 3,500 teachers through professional development programs. In FY 2009, Reserves celebrated the completion of 3 Education Centers; 11,500 students and teachers participated in a live webcast - EstuaryLive; and launched classroom curricula to advance students’ deep understanding of real time data. <http://nerrs.noaa.gov/Education.aspx> & <http://estuaries.gov>

NATIONAL ESTUARINE RESEARCH RESERVE SYSTEM



NOAA employee teaches children about various species of sea turtles

NATIONAL MARINE FISHERIES SERVICE

The Fisheries' Service Education Program translates marine science and management information into learning tools and opportunities for families, educators, and students of all ages. In FY 2009, NOAA Fisheries' Service educators reached thousands of teachers and students throughout all of its regions across the nation via summer science camps, career counseling, lectures, educator workshops and professional develop opportunities, podcasts, internships, and resource materials. By working directly with field educators, teachers, and local communities, the NOAA Fisheries Service Education program supported and contributed to NOAA's overall education mission. <http://www.nmfs.noaa.gov>



NOS Education launched a new website along with the estuary game, WaterLife: Where Rivers Meet the Sea

The National Ocean Service (NOS) Education team serves educators and students through websites and programs that promote environmental literacy using ocean, coastal, and climate science. Tools for teachers and resources for students are posted at <http://oceanservice.noaa.gov/education>. The team produced the 2009 Year of Science, NOAA Education Sampler DVD highlighting education resources from across the agency and supported the development of the interagency Climate Change Wildlife and Wildlands Toolkit (<http://www.globalchange.gov/resources/educators/toolkit>). In FY 2009, NOS created and launched <http://games.NOAA.gov>, a portal to environmental games and developed “WaterLife: Where Rivers Meet the Sea,” an interactive online game about estuaries. (<http://games.noaa.gov/oscar>),

NATIONAL OCEAN SERVICE EDUCATION



Teachers involved in hands-on, professional development hosted by the Alaska Sea Grant Program

NATIONAL SEA GRANT PROGRAM

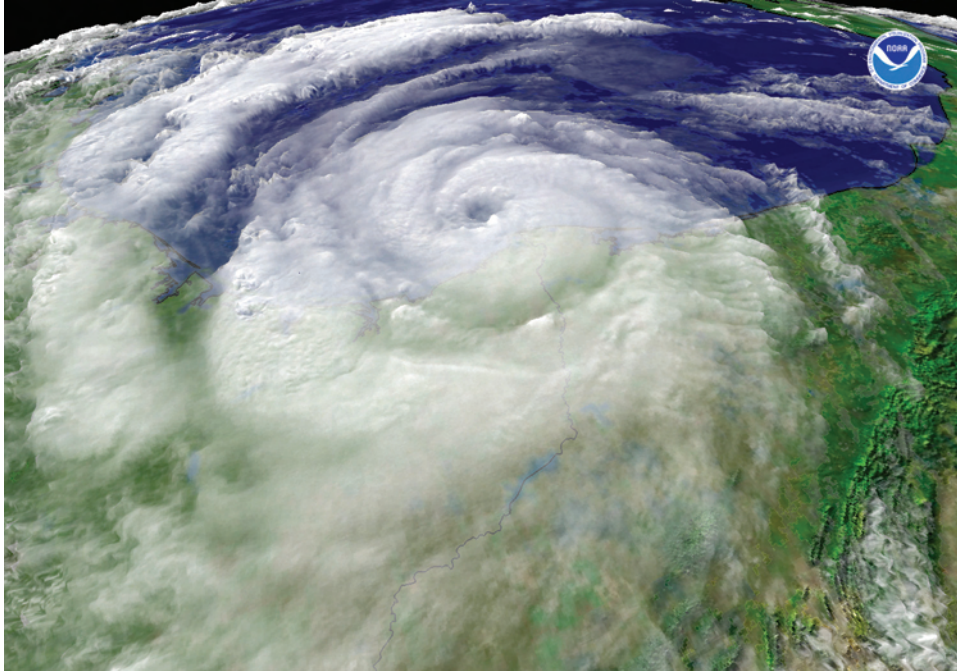
The well-established Sea Grant Education Network (SGEN) is located at universities across the Nation and is committed to NOAA's education goals of advancing environmental stewardship and workforce development. Educators tailor informal and K-20 efforts to meet regional needs. During FY 2009, outcomes included inquiry-based instruction for 11,558 teachers and 242,792 students, the development of 269 curricular activities and the award of 1001 educational scholarships. Increased knowledge is provided primarily in climate change, fisheries science, aquatic nuisance species, coastal processes, organisms and habitats, watersheds, technology, and ocean/Great Lakes literacy. In addition, SGEN provides web products, precollege teachers' multiplier effects, regional/national leveraging and collaborations. <http://www.seagranted.net>



Girl Scouts participate in a weather instrument demonstration at WeatherFest 2009

NWS increases public awareness and preparedness of severe weather to local communities. In FY 2009 the National Weather Service (NWS) conducted 2,500 school visits, providing weather, climate, and water information to teachers and students, grades K-12. In partnership with the American Meteorological Society (AMS), the NWS trained 25 new science teachers in weather forecasting, hydrology, climate, and NWS operations. The AMS, partnered with NWS, awarded a fellowship grant to a first-time graduate student in the atmospheric, oceanic, and hydrologic sciences. WeatherFest 2009 was held in Phoenix, Arizona, with an attendance of 3,000 individuals. The Girl Scouts of the USA participated in a hands-on weather activity accompanied by an NWS meteorologist. <http://www.weather.gov/>

NATIONAL WEATHER SERVICE



GOES-12 imagery of Hurricane Dolly

NOAA'S SATELLITES AND INFORMATION SERVICE

NOAA's Satellite and Information Service (NESDIS) provides timely access to global environmental data to promote, protect, and enhance the Nation's economy, environment, and quality of life. In FY 2009, NESDIS conducted 125 presentations reaching 7,000 students and 1,800 teachers via tours, camps, fairs, conferences, and developmental workshops. Volunteering NESDIS scientists created data visualizations at national museums, hosted 24 interns, and advised at NOAA Cooperative Institutes and Science Centers. Partnerships resulted in six educational hands-on tools (K-12), including NOAA's first resource in American Sign Language; three informative one-pagers; 45 audience-targeted exhibits at national and international conferences, and over 25,000 STEM materials distributed to constituents. <http://www.nesdis.noaa.gov>



Educators on board a NOAA-sponsored ocean exploration expedition examine a deep-sea coral

The Office of Ocean Exploration and Research is committed to engaging educators in near-real time ocean exploration to raise America's environmental literacy. Efforts include opportunities for educators to learn about ocean exploration and how they can use science, technology, engineering, and mathematics (STEM) content associated with exploring the ocean in classrooms. Educational offerings introduce educators to ocean scientists/explorers and their research and explorations, and at the same time, equip educators with exemplary tools and resources that intrigue students of all ages. Approximately 600 teachers received intensive onsite professional development in 2009, reaching approximately 73,000 students. <http://oceanexplorer.noaa.gov/edu/welcome.html>

OCEAN EXPLORATION AND RESEARCH PROGRAM



Multicultural students get immersed in the marine environment through the Ocean for Life program

OFFICE OF NATIONAL MARINE SANCTUARIES

Since 1972, the Office of National Marine Sanctuaries (ONMS) has been federally mandated to promote environmental education through thirteen national marine sanctuaries and one marine national monument. Through hands-on activities, workshops, classroom curricula, and innovative technology ONMS reaches over 33 million people a year with messages about the ocean and its resources. Highlights for 2009 include the Ocean for Life program, which brought together students of diverse cultures and backgrounds (14 countries and 11 United States) to enhance cultural understanding through ocean science; and MERITO, a multi-cultural program which provides under-served students with hands-on, inquiry-based in-class and field activities. <http://sanctuaries.noaa.gov/education>



Teacher at Sea alum, participating in 2009 Teacher in the Lab pilot program, identifies juvenile fish

Since 1990, NOAA's Teacher at Sea Program has provided hands-on research experiences for teachers aboard NOAA ships. In FY 2009, 34 teachers completed research cruises and now make up a portion of over 550 alumni from around the country using NOAA science in the classroom, reaching thousands of students every year. NOAA's Teacher at Sea Program also published its fourth children's book: "Mr. Tanenbaum Explores Atlantic Fisheries on the NOAA Ship Henry B. Bigelow", which includes 40 pages of educational illustrations and text that focus on North Atlantic fisheries research. Thousands of copies have been distributed to teachers and students across the nation. <http://teacheratsea.noaa.gov>

TEACHER AT SEA PROGRAM



Hollings Scholars at the Smithsonian Environmental Research Center

ERNEST F. HOLLINGS UNDERGRADUATE SCHOLARSHIP PROGRAM

The Ernest F. Hollings Scholarship Program provides successful undergraduate applicants with academic assistance, and a 10-week NOAA internship that provides “hands-on” experiences in NOAA-related science, research, technology, policy, management, and education activities. The Program’s goals are: to increase undergraduate training in oceanic and atmospheric science, research, technology, and education; foster multidisciplinary training; recruit and prepare students for careers with NOAA and natural resource and science agencies; recruit and prepare students for careers as educators in oceanic and atmospheric science; and improve scientific and environmental education in the U.S. FY 2009 accomplishments included the selection of 122 students from 45 states and territories. http://www.oesd.noaa.gov/Hollings_info.html



2009 Class of Dr. Nancy Foster
Scholarship Recipients

The Dr. Nancy Foster Scholarship Program recognizes outstanding scholars in marine biology, oceanography, or maritime archaeology, particularly by women and minorities, and encourages independent graduate-level research by providing financial support, through competitive processes, of graduate studies in those fields. In FY 2009, 7 new scholarships were awarded. Of the 40 total Dr. Nancy Foster Scholarships, 35 have been awarded to women; one recipient is now a Federal Employee, and three recipients are contractors to NOAA. <http://fosterscholars.noaa.gov/aboutscholarship.html>

DR. NANCY FOSTER SCHOLARSHIP PROGRAM



Chesapeake B-WET students in the field, Fall 2009

BAY WATERSHED EDUCATION AND TRAINING PROGRAM

NOAA's education program has also received additional funds provided by Congress to increase environmental and ocean literacy. Bay Watershed Education and Training (B-WET) is an example of one of NOAA's congressionally-directed projects in 2009.

The Bay Watershed Education and Training (B-WET) Program offers competitive grants to promote locally relevant environmental education opportunities to students in grades K through 12, as well as related professional development for educators. All B-WET projects emphasize sustained, hands-on, experiential activities that are aligned with academic learning standards and respond to regional education and environmental priorities. In FY 2009, B-WET made over 85 new competitive awards in six regions around the country: New England, Chesapeake Bay, the Gulf of Mexico, California, the Pacific Northwest, and Hawai'i. B-WET reached 58,000 students and over 2000 teachers nationally. <http://www.oesd.noaa.gov/BWET/>



Education Strategic Plan,
2009-2029

Looking ahead, in FY 2011 NOAA will continue to support its education programs and work to implement the 2009-2029 Education Strategic Plan.

NOAA Education Website: <http://www.education.noaa.gov/>

Education Strategic Plan: <http://www.education.noaa.gov/plan/>

EDUCATION STRATEGIC PLAN



CHAPTER 6

NOAA Research & Development

NOAA research scientist Randy Johnson inspecting an autonomous weather balloon



NOAA RESEARCH & DEVELOPMENT

NOAA is the single federal agency with operational responsibility to protect and preserve ocean, coastal, and Great Lakes resources and to provide critical and accurate weather, climate, and ecosystem forecasts that support national safety and commerce. NOAA seeks to accomplish this mission by addressing the grand environmental challenges facing our nation today and in the decades to come. We have captured the most pressing of these challenges in our most recent *5-Year Research Plan* as a set of six overarching questions. Answers to these questions will provide the public and policy makers with the understanding needed to make well-informed decisions now and in the future.

Following are a small selection of the research and development accomplishments from the past fiscal year for each of these grand research challenges.



Sponge and fish under Navy Tower, Offshore Georgia

What factors, human and otherwise, influence ecosystem processes and impact our ability to manage marine ecosystems and forecast their future state?

NOAA SCIENTISTS DEVELOP SIMPLE MODEL TO PREDICT GLOBAL PATTERNS IN MARINE ENERGY TRANSFERS

In 2009, NOAA federal scientists published a key study - *Controls on the Ratio of Mesozooplankton Production to Primary Production in Marine Ecosystems* - on global patterns in the transfer of energy from phytoplankton to mesozooplankton, which supports nearly all ocean life. Understanding and modeling global energy transfers in the marine ecosystem is critical for informed management of fisheries and coastal resources. In this case, mesozooplankton are an important food source for larger fish and form the base of the marine food web. The model developed in this study is presently being integrated into NOAA's Earth System Model. The Earth System Model is an example of the world-class science at NOAA's Federal research facilities.

POLYBROMINATED DIPHENYL ETHERS (PBDE) - AN EMERGING CONTAMINANT OF CONCERN IN U.S. COASTAL ZONES

NOAA's National Status and Trends program released results from the first national assessment of polybrominated diphenyl ethers (PBDE). PBDEs are a fire retardant and are used in multiple industries. The NOAA assessment showed PBDEs are widely distributed throughout the U.S. coastal zone and concentrations were correlated with human population density, with the highest concentrations found in urban areas. This is significant, because, con-



centrations of PBDEs in breast milk are ten times higher in the United States when compared to Europe. The proliferation of PBDEs has greatly increased the need for an early warning network that will provide relevant information to resource managers, legislators and regulators who are charged with protecting human health and our resources. To address this threat, NOAA has refocused its resources to monitor for contaminants of emerging concern and to develop an early warning network that would trigger responses from other agencies and forecast chemical threats into the future. Partners in this endeavor include the US EPA, USGS, various state organizations such as the Southern California Coastal Water Resources Project and other elements of the Department of Commerce.

BREAKTHROUGH DISCOVERY DEEPENS UNDERSTANDING OF WHY ALGAE FORM BLOOMS

A new discovery provides new insight into why marine algae form blooms. NOAA researchers from the National Centers for Coastal Ocean Science, working alongside funded counterparts in California and Scotland, found that certain bacteria occurring in red tide blooms convert iron, a critical nutrient, into a form particular algae can absorb. Scientists have long understood that certain species of bacteria are closely associated with the microalgae that form these blooms, but did not understand why they formed or what role the bacteria play. The researchers noticed that these bacteria release a chemical which helps the bloom-forming algae absorb iron, a nutrient essential for photosynthesis. The algae, in turn, release organic compounds to support the growth of the bacteria. This relationship between the bacteria and the algae is known as symbiosis. The new insight will help scientists and environmental managers develop more realistic bloom formation models, which will improve prediction and mitigation strategies. These microscopic plants support world fisheries and help regulate climate, but toxic species can cause harm. Robust models that predict the formation of both types of blooms require a fundamental knowledge how these complex interactions work.



Microcystis bloom in Hamilton Harbor, Lake Ontario

What is the current state of biodiversity in the oceans, and what impacts will external forces have on this diversity and how we use our oceans and coasts?

AUTONOMOUS REEF MONITORING STRUCTURES (ARMS): A NEW TOOL TO SYSTEMATICALLY MONITOR OCEAN FLOOR BIODIVERSITY

Marine biodiversity is seriously threatened by climate change and ocean acidification resulting from the absorption of increasing amounts of CO2 from the atmosphere. As part of the Census of Marine Life's Census of Coral Reef Ecosystems (CReefs) project, the NOAA Pacific Islands Fisheries Science Center's Coral Reef Ecosystem Division (CRED) has led a successful inter-



An Autonomous Reef Monitoring Structure (ARMS), like the one shown, is designed to mimic the reef environment and attract colonizing coral reef organisms.



national effort to develop Autonomous Reef Monitoring Structures (ARMS) as a standardized tool to obtain indices of the biodiversity of poorly-known bottom dwelling, or benthic, organisms, that comprise the vast majority of the diversity of coral reefs.

ARMS are small, simple structures which mimic the complexity of reef habitats and allow a multitude of organisms to settle on their various surfaces. Upon collection, organisms are removed, identified, preserved, and then subjected to molecular analyses. Advanced molecular techniques such as DNA barcode analysis and mass-parallel community genomics enable rapid development of indices organism biodiversity in the reef scientists an unprecedented ability to establish a global baseline of the spatial patterns and temporal changes of biodiversity. The biodiversity and other metrics provided by ARMS will both improve marine spatial planning needed to effectively implement ecosystem-based management and enhance our ability to predict the ecological impacts of climate change and ocean acidification.

INVESTIGATING MARINE ORGANISM DISTRIBUTION AS WATER TEMPERATURES VARY

Changes in the distribution of marine organisms have been observed in many regions, including the Bering Sea and the Northeast U.S. continental shelf. NOAA scientists made important advances in understanding these observed distribution shifts in 2009. A significant finding for the Bering Sea was that during periods of warmer, increased water temperatures, production of large prey items for larval and juvenile walleye pollock decreased, but when colder conditions return, large prey populations rebound. This understanding is critical to explain how climate change may impact Alaska's walleye pollock fishery, the largest fishery in the U.S.

Similarly, a study published in 2009 by NOAA scientists examined causes for changes in the spatial distribution of marine fish in the Northeast U.S. continental shelf ecosystem. Many stocks exhibited a poleward shift in their center of biomass, most with a concurrent increase in depth. Stocks from the southern extent of the survey region exhibited greater poleward shifts. Large-scale temperature increases and changes in ocean circulation were found to be the most important factors associated with the shifts in mean distributions.



A Polar Bear roaming the icy waters of Svalbard

What are the causes and consequences of climate variability and change?

NEW STUDY SHOWS CLIMATE CHANGE LARGELY IRREVERSIBLE

A new scientific study led by the National Oceanic and Atmospheric Administration reaches a powerful conclusion about the climate change caused by future increases of carbon dioxide: to a large extent, there's no going back.



The pioneering study, led by NOAA senior scientist Susan Solomon, shows how changes in surface temperature, rainfall, and sea level are largely irreversible for more than 1,000 years after carbon dioxide (CO₂) emissions are completely stopped. The study examines the consequences of allowing CO₂ to build up to several different peak levels beyond present-day concentrations of 385 parts per million and then completely halting the emissions after the peak. The authors found that the scientific evidence is strong enough to quantify some irreversible climate impacts, including rainfall changes in certain key regions, and global sea level rise.

WHITE HOUSE RELEASES LANDMARK CLIMATE CHANGE REPORT

Climate change is already having visible impacts in the United States, and the choices we make now will determine the severity of its impacts in the future, according to a new and authoritative federal study assessing the current and anticipated domestic impacts of climate change.

The report, “Global Climate Change Impacts in the United States,” compiles years of scientific research and takes into account new data not available during the preparation of previous large national and global assessments. It was produced by a consortium of experts from 13 U.S. government science agencies, including NOAA, and from several major universities and research institutes.

Among the main findings are:

- Heat waves will become more frequent and intense, increasing threats to human health and quality of life. Extreme heat will also affect transportation and energy systems, and crop and livestock production.
- Increased heavy downpours will lead to more flooding, waterborne diseases, negative effects on agriculture, and disruptions to energy, water, and transportation systems.
- Reduced summer runoff and increasing water demands will create greater competition for water supplies in some regions, especially in the West.
- Rising water temperatures and ocean acidification threaten coral reefs and the rich ecosystems they support. These and other climate-related impacts on coastal and marine ecosystems will have major implications for tourism and fisheries.
- Insect infestations and wildfires are already increasing and are projected to increase further in a warming climate.
- Local sea-level rise of over three feet on top of storm surges will increasingly threaten homes and other coastal infrastructure. Coastal flooding will become more frequent and



Global Climate Change Impacts in the United States

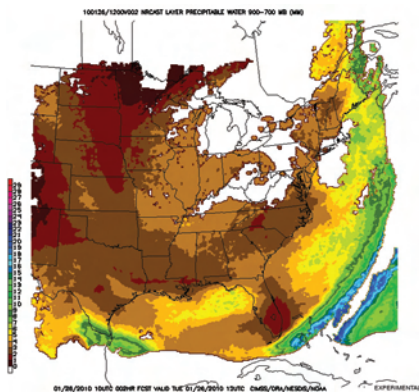


severe, and coastal land will increasingly be lost to the rising seas.

What improvements to observing systems, analysis approaches, and models will allow us to better analyze and predict the atmosphere, ocean, and hydrological land processes?

“NEARCASTING” EARLY WARNINGS FOR SEVERE WEATHER

Forecasters have had very few tools available to provide early warnings of severe weather. A new model developed by scientists from NOAA’s Center for Satellite Applications and Research could bridge that gap in knowledge. The new model could predict the likelihood of severe weather formation up to six hours in advance by using multi-layer water vapor information from the NOAA Geostationary Satellite (GOES-12 sounder) to track regions where upper level drying is occurring over low-level moistening. Rapid change in the vertical lapse rate of moisture is often a precursor to severe weather development. NOAA scientists worked with scientists at the University of Wisconsin / Cooperative Institute for Meteorological Satellite Studies to develop and test the near-cast model, and the National Weather Service Forecast Office in Milwaukee, Wisconsin coordinated evaluation of the severe weather “near-casting” product.



Experimental Eastern United States Near-Cast Model of Precipitable Water (Two-Layer Difference)

How can the accuracy and warning times for severe weather and other high-impact environmental events be increased significantly?

EXTENDING WARNING LEAD TIMES FOR SEVERE WEATHER EVENTS

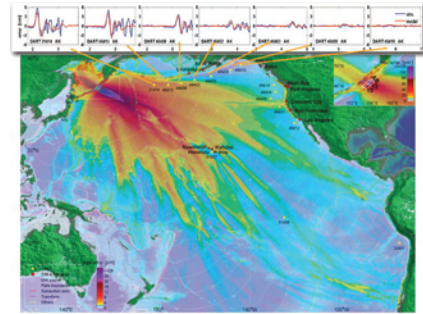
A move from “warn on detection” to “warn on forecast” paradigm will extend warning lead times. NOAA’s National Severe Storms Laboratory is conducting study ensembles for very short-range (0 to 1 h) forecasts of severe weather events. These ensembles assimilate Doppler radar data into cloud-scale numerical models to provide improved predictions of thunderstorms and their associated severe weather. While still in a research mode, initial results suggest that it may be possible to use these forecasts in warning operations, leading to a shift from the present “warn on detection” strategy to a “warn on forecast” strategy that would provide longer lead times for severe weather events. NOAA’s National Weather Service warnings today are largely based upon detection of severe weather phenomena or precursors that imply imminent occurrence of the phenomena. The National Severe Storms Laboratory



is leading a multi-organizational effort to use high resolution models to help predict such phenomena with much greater warning lead times. A warn-on-forecast system is envisioned as a probabilistic convective-scale ensemble analysis and forecast system that assimilates in-storm observations into a high resolution convection-resolving model ensemble. While a number of scientific and cultural challenges still need to be overcome, the potential benefits are significant.

Tsunami Data for Coastline Communities

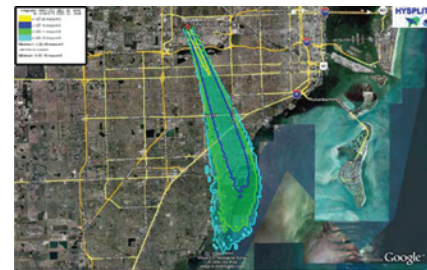
NOAA's Pacific Marine Environmental Laboratory installed the latest version of the Short-term Inundation Forecasting for Tsunamis (SIFT) system at NOAA's two U.S. Tsunami Warning centers operated by the National Weather Service. Installation of SIFT V3.0 was completed at both the West Coast and Alaska Tsunami Warning Center in Palmer, Alaska and the Pacific Tsunami Warning Center in Ewa Beach, Hawaii during the week of June 15, 2009. For the first time, SIFT V3.0 incorporates deep ocean real-time tsunami data into real-time inundation models for 32 at-risk coastal communities. The first test of the system was the September 30, 2009, Samoan tsunami which killed over 100 people. During this tsunami warning, the SIFT system corrected assimilated deep ocean tsunami data into models that forecast Hawaii and the U.S. west coast would not be flooded. This accurate forecast meant Hawaii could avoid about \$70M in unnecessary evacuation costs. These community models will eventually be used to provide real-time wave height and current forecasts for a particular community during a tsunami event. Once operationally accepted, SIFT V3.0 will add a critical component to each tsunami warning center's capability to accurately predict how a tsunami wave will impact a particular coastline community.



Propagation database forecast comparison with data from DART® tsunami buoys for the 15 November 2006 Kuril tsunami (red line = model, blue line = buoy data)

Dispersion of Toxic Releases

NOAA's Air Resources Laboratory is enhancing their Hybrid Single Particle Lagrangian Integrated Trajectory (HySPLIT) dispersion model to enable it to accurately model over 500 different types of hazardous substances. HySPLIT also uses very high-resolution Weather Research and Forecast (WRF) model data from NOAA's Earth System Research Laboratory to more accurately model the trajectory and dispersion of the toxic release. The WRF model, HySPLIT dispersion forecasts, and detailed weather data are provided to emergency managers and local forecasters using a net-enabled collaborative workstation that provides tools enabling emergency managers and forecasters to quickly assess and provide more accurate response and mitigation plans to the public.



HySPLIT model example displayed with Google Earth

HySPLIT is designed to support a wide range of simulations related to the atmospheric transport and dispersion of pollutants and hazardous materials, as well as the deposition of these materials (such as mercury) to the Earth's surface. Some of the applications include tracking and forecasting the release of radioactive material, volcanic ash, wildfire smoke, and pollutants from



various stationary and mobile emission sources. Operationally, the model is used by NOAA's National Weather Service through the National Centers for Environmental Prediction and at local Weather Forecast Offices.

How are uncertainties in our analyses and predictions best estimated and communicated?

NOAA'S NATIONAL WEATHER SERVICE DELIVERS IMPROVEMENTS IN PROBABILISTIC HYDROLOGIC FORECASTING

The Office of Hydrologic Development, in NOAA's National Weather Service, completed the initial version of its new Hydrologic Ensemble Forecast System (HEFS). After several years of research, and prototyping at River Forecast Centers across the country, HEFS is now being delivered for use in operations. HEFS will improve NOAA's probabilistic hydrologic forecasts by:

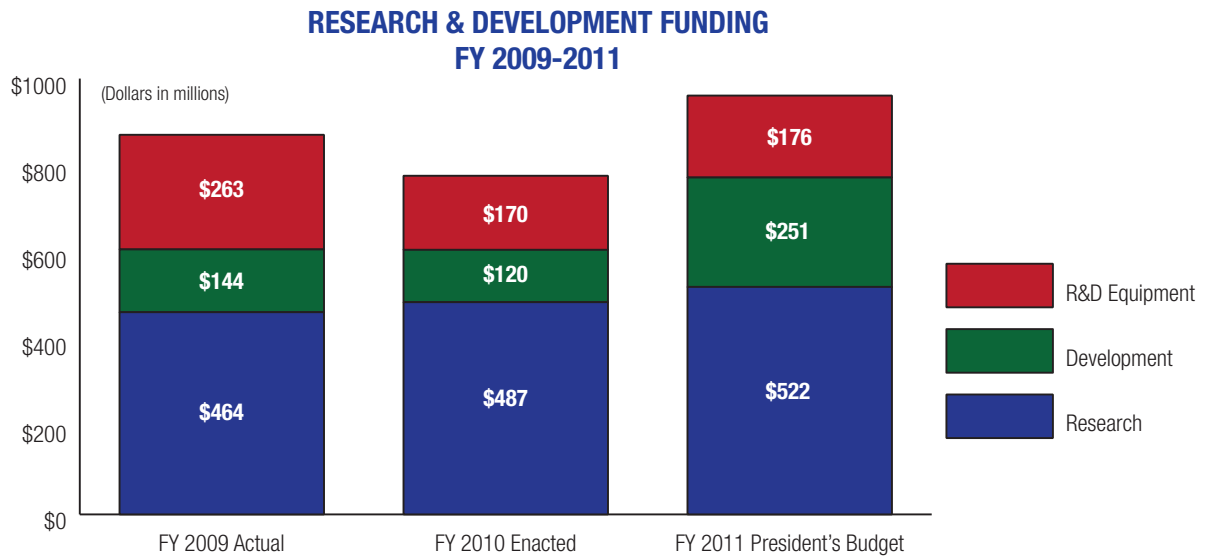
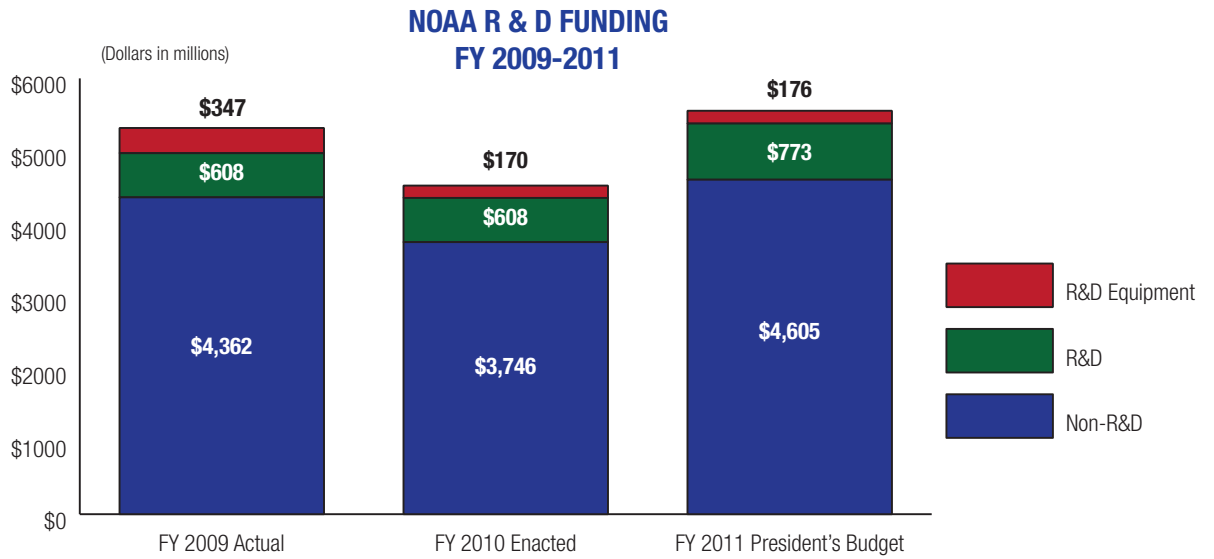
- (1) incorporating temperature and precipitation forecasts from numerical weather prediction models;
- (2) allowing hydrologic forecasts with lead times from hours to seasons to be created without discontinuities between forecasts of different lead times; and,
- (3) providing probability and quality information that represents probabilities without the bias usually inherent in these types of forecasts.

HEFS also includes tools to allow not only generation of post-event verification measures but also measures of quality forecasters can use prior to issuing the forecasts. Hydrologic forecasts are a critical product produced by the NWS. Hydrologic models, using input from atmospheric models, are the cornerstone of the products disseminated by NWS River Forecast Centers and Weather Forecast Offices to emergency managers, the public, and state and federal agencies. Decisions by these entities affect many lives and dollars.



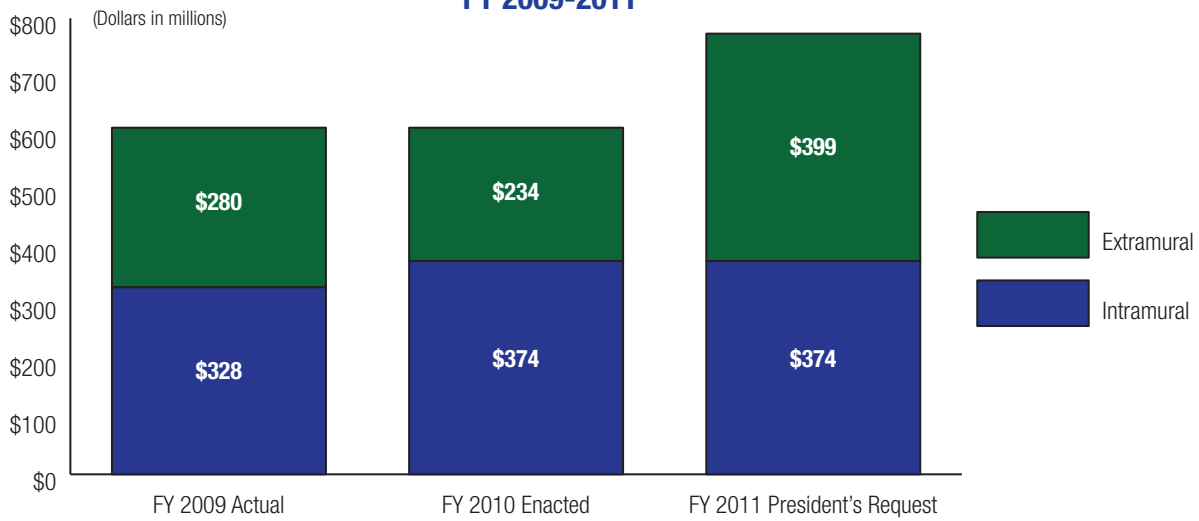
The following charts display the scope and nature of R&D at NOAA:

- R&D represents 13.9 percent of total NOAA funding for FY 2011. R&D equipment also accounts for 3.2 percent of NOAA's total FY 2011 request.
- NOAA has included some of the Joint Polar Satellite System sensors in R&D. This change accounts for the increase in NESDIS's share of NOAA's R&D and the increase in extramural R&D.
- 48 percent of NOAA's R&D is intramural and 52 percent is extramural.
- NOAA's R&D budget is 68 percent research and 32 percent development.
- NOAA's Office of Oceanic & Atmospheric Research (OAR) manages 46 percent of NOAA's R&D. The remainder is distributed among the operational Line Offices.
- Through NOAA's Office of Marine and Aviation Operations and through OAR's High Performance Computing capabilities, NOAA's FY 2011 request includes \$176 million for Research and Development Equipment.

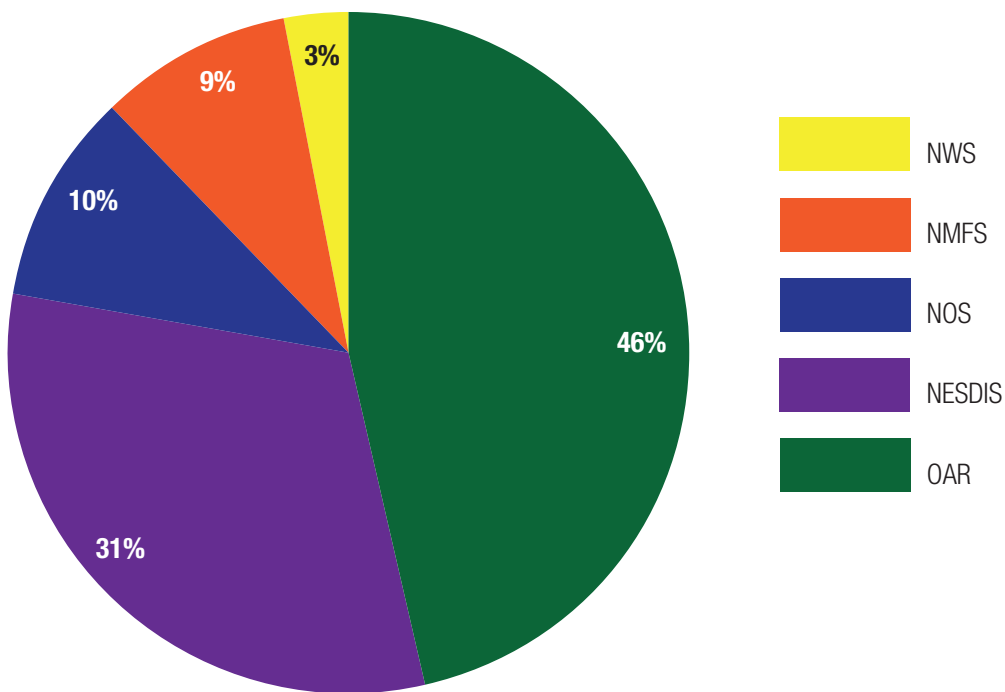




EXTRAMURAL & INTRAMURAL FUNDING FY 2009-2011

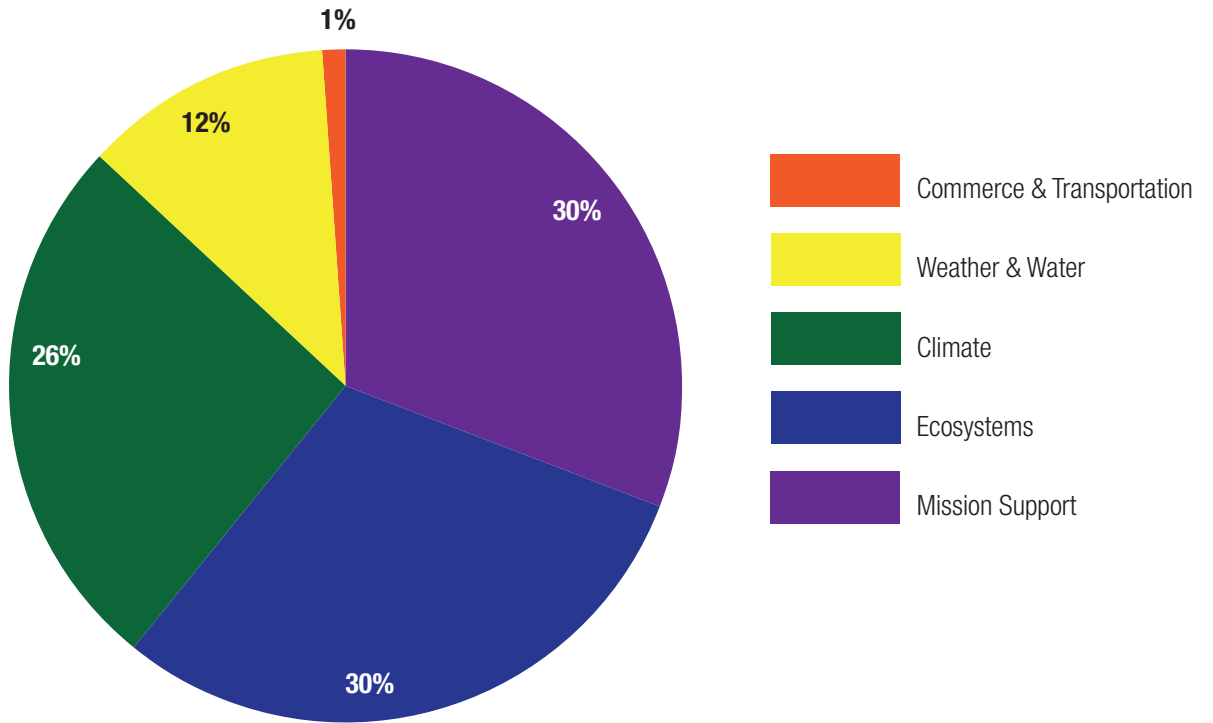


FY 2011 R & D BUDGET BY LINE OFFICE

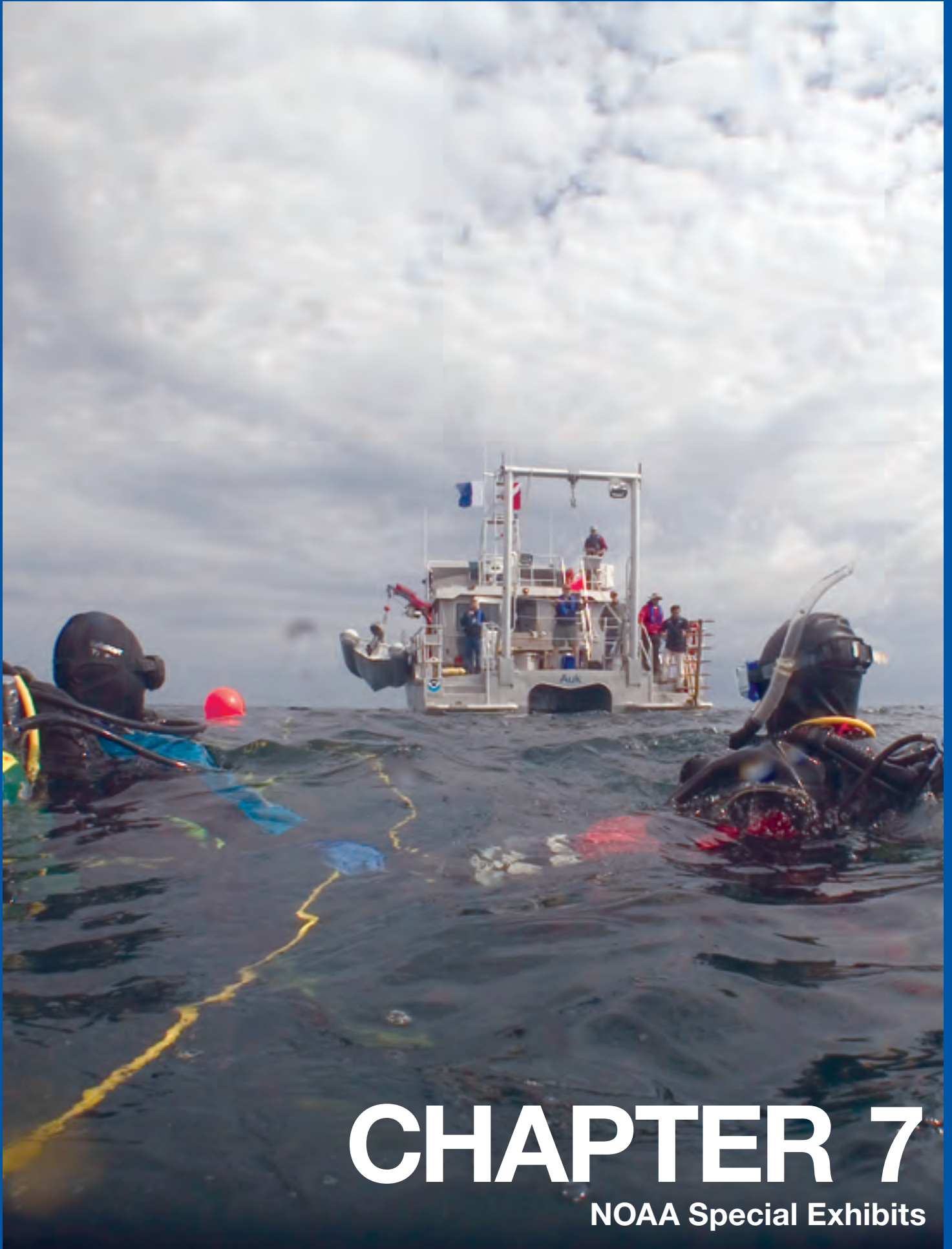




FY 2011 R & D BUDGET BY GOAL







CHAPTER 7

NOAA Special Exhibits

Divers Benjamin Cowie-Haskell and Deborah Marx diving to the coal schooner shipwreck *Paul Palmer*, Stellwagen Bank National Marine Sanctuary Massachusetts



TERMINOLOGY

The reader should be aware of the specific meaning of several terms as they are used throughout this budget summary:

“FY 2009 Enacted”

Fiscal Year (FY) 2009 Appropriations (P.L. 111-8), not including American Recovery & Reinvestment Act (ARRA) Supplemental Funds (P.L. 111-5)

“FY 2010 Enacted”

Fiscal Year (FY) 2010 Appropriations (P.L. 111-117)

“Terminations”

Reductions to the enacted level for Congressionally directed projects and/or additional funding provided over the requested amount

“Adjustments-to-Base”

The estimated FY 2011 Federal Pay raise of 1.4% and the annualized FY2010 pay raise of 2.4%. Program totals will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from GSA. In addition, ATBs include unique/technical adjustments to the base program, for example transfers of base resources between budget lines

“FY 2011 Base”

Fiscal year (FY) 2010 Enacted, less Terminations, plus Adjustments-To-Base

“Program Change”

The increase/decrease over the FY 2011 base, which is the FY 2010 Enacted minus Terminations, plus Adjustments-to-Base

“FY 2011 Request”

Fiscal Year (FY) 2010 Enacted, less Terminations, plus Adjustments-to-Base, and Program Changes



SUMMARY BY APPROPRIATION

Dollars in thousands

APPROPRIATION	2009 ACTUAL	2010 ESTIMATE	2011 ESTIMATE	INCREASE (DECREASE)
Operations, Research & Facilities (ORF)	\$3,045,549	\$3,305,178	\$3,303,081	(\$2,097)
ORF Recovery Act	230,000	0	0	0
Procurement, Acquisition & Construction (PAC)	1,243,647	1,358,353	2,184,091	825,738
PAC Recovery Act	600,000	0	0	0
Coastal Zone Management Fund	3,000	3,000	0	(3,000)
Fishermen's Contingency Fund	0	0	350	350
Fisheries Finance Program Account	0	0	0	0
Pacific Coastal Salmon Recovery	80,000	80,000	65,000	(15,000)
Medicare-Eligible Retiree Healthcare Fund	1,674	1,822	1,936	114
TOTAL APPROPRIATION	5,203,870	4,748,353	5,554,458	806,105
Transfers:				
Operations, Research & Facilities				
FROM: Promote & Develop Fishery Products	79,000	104,600	104,600	0
Coastal Zone Management Fund	3,000	3,000	0	(3,000)
Pacific Coastal Salmon Recovery	80	0	0	0
Procurement, Acquisition & Construction	1,844	0	0	0
Fisheries Finance Program Account	495	0	0	0
Department of Agriculture	0	0	0	0
TO: Fisheries Finance Program Account	0	0	0	0
Subtotal, ORF	84,419	107,600	104,600	(3,000)
Coastal Zone Management Fund				
TO: ORF	(3,000)	(3,000)	0	3,000
Pacific Coastal Salmon Recovery				
TO: Fisheries Finance Program Account	(80)	0	0	0
Procurement, Acquisition & Construction (PAC)				
TO: ORF	(1,844)	0	0	0
Fisheries Finance Program Account (FFPA)				
FROM: ORF	0	0	0	0
TO: ORF	(495)	0	0	0
Promote & Develop American Fishery Products (P&D)				
TO: ORF	(79,000)	(104,600)	(104,600)	0
FROM: Department of Agriculture (mandatory funds)	108,511	113,371	113,371	0
Subtotal, P&D	29,511	8,771	8,771	0
TOTAL TRANSFERS	108,511	113,371	113,371	0



SUMMARY BY APPROPRIATION

Dollars in thousands

APPROPRIATION	2009 ACTUAL	2010 ESTIMATE	2011 ESTIMATE	INCREASE (DECREASE)
Unobligated balances, rescission				
Operations, Research & Facilities (ORF)	0	0	(350)	(350)
Procurement, Acquisition & Construction (PAC)	0	0	0	0
TOTAL UNOBLIGATED BALANCES, RESCISSION	0	0	(350)	(350)

MANDATORY ACCOUNTS	2009 ACTUAL	2010 ESTIMATE	2011 ESTIMATE	INCREASE (DECREASE)
Damage Assessment & Restoration Revolving Fund	\$2,585	\$3,000	\$3,000	\$0
Fisheries Finance Program Account	1,996	5,777	0	(5,777)
Environmental Improvement & Restoration Fund	9,641	506	3,039	2,533
CZMF mandatory offsetting collections	(887)	(1,500)	(1,500)	0
Federal Ship Financing Fund	(144)	(740)	0	740
NOAA Corps Retirement Pay	24,272	26,116	28,269	2,153
Western Pacific Sustainable Fisheries	650	0	0	0
Limited Access System Administration Fund	6,271	7,444	7,444	0
TOTAL BUDGET AUTHORITY	5,356,765	4,902,327	5,707,731	805,404
Mandatory Funds	152,895	153,974	153,623	(351)

DISCRETIONARY BUDGET AUTHORITY	2008 ACTUAL	2009 OMNIBUS	2010 REQUEST	INCREASE (DECREASE)
Operations, Research & Facilities (ORF)	3,359,968	3,412,778	3,407,681	(5,097)
P&D Transfer	(79,000)	(104,600)	(104,600)	0
Procurement, Acquisition & Construction (PAC)	1,841,803	1,358,353	2,184,091	825,738
Medicare-Eligible Retiree Healthcare Fund	1,674	1,822	1,936	114
Fishermen's Contingency Fund	0	0	350	350
Foreign Fishing Observer Fund	0	0	(350)	(350)
Fisheries Finance Program Account	(495)	0	0	0
Coastal Zone Management	0	0	0	0
Pacific Coastal Salmon Recovery	79,920	80,000	65,000	(15,000)
TOTAL DISCRETIONARY BUDGET AUTHORITY	4,157,914	5,203,870	4,483,750	(720,120)

DISCRETIONARY BUDGET AUTHORITY	2008 ACTUAL	2009 OMNIBUS	2010 REQUEST	INCREASE (DECREASE)
Fisheries Finance Negative Subsidy Receipt Account	(1,626)	(6,929)	(8,001)	(1,072)
Adjustment to reflect reestimates				0
TOTAL, NEGATIVE SUBSIDY	(1,626)	(6,929)	(8,001)	(1,072)



**ADJUSTMENTS TO CURRENT PROGRAMS
(ADJUSTMENTS TO BASE) – REQUESTED \$54,777,000**

Adjustments to Base (ATBs) are defined as increases or decreases to specific object classes that: represent the same level of effort as the current budget year, are outside of the agency management’s control, are supported by specific documentation, & are a known cost (or fixed cost of doing business).

NOAA has requested the following increases for labor-related & non-labor ATBs:

ORF & PAC	SALARY & BENEFITS	OTHER OBJECT CLASSES	TOTAL
NOS	3.6	1.2	4.8
NMFS	11.7	1.7	13.4
OAR	2.3	2.2	4.5
NWS	12.9	1.7	15.0
NESDIS	1.7	663	2.4
PS	3.7	4.7	8.3
OMAO	1.9	5.0	6.8
Total Discretionary- ATBs (Budget Authority)	38.0	17.0	55.0
Other Accounts (Mandatory Accounts)			
NOAA Corp Retirement	2.3	N/A	2.3
Environmental Improvement & Restoration Fund	N/A	2.5	2.5
Total Appropriated ATBs	40.0	20.0	60.0

These increases for ATBs will help fund the agency’s overall anticipated adjustments to the current programs. Program totals will fund the FY2011 Federal pay raise of 1.4 percent & annualize the FY2010 pay raise of 2.4 percent. In addition, program totals will also fund inflationary increase for non-labor activities, including service contracts, utilities, field office lease payments, & rent charges from the General Services Administration.



NATIONAL OCEAN SERVICE (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Navigation Services					
Mapping & Charting					
Mapping & Charting Base	49,487	1,113	0	49,850	363
Hydrographic Research & Technology Development	7,424	0	0	7,424	0
Electronic Navigational Charts	6,128	0	0	6,128	0
Shoreline Mapping	2,424	0	0	2,424	0
Address Survey Backlog/Contracts	31,173	0	0	31,173	0
California Seafloor Mapping, CA	300	0	0	0	(300)
Extended Continental Shelf Mapping, AK	300	0	0	0	(300)
Subtotal, Mapping & Charting	97,236	1,113	0	96,999	(237)
Geodesy					
Geodesy Base	26,417	478	0	26,895	478
National Height Modernization	2,541	0	0	2,541	0
Geodesy/Height Modernization - IL	800	0	0	0	(800)
Regional Geospatial Modeling Grants	5,500	0	0	0	(5,500)
Louisiana Geodetic Spatial Reference Center, LA	700	0	0	0	(700)
Wisconsin Height Modernization Program, WI	1,000	0	0	0	(1,000)
Texas Height Modernization	300	0	0	0	(300)
Subtotal, Geodesy	37,258	478	0	29,436	(7,822)
Tide & Current Data					
Tide & Current Data Base	33,078	437	0	29,715	(3,363)
Coastal Tidal Gauges	600	0	0	0	(600)
Subtotal, Tide & Current Data	33,678	437	0	29,715	(3,963)
Total, Navigation Services	168,172	2,028	0	156,150	(12,022)



NATIONAL OCEAN SERVICE (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Ocean Resources Conservation & Assessment					
Ocean Assessment Program (OAP)					
Coastal & Marine Spatial Planning	0	0	6,770	6,770	6,770
Ocean Research Priorities Plan Implementation	6,000	(6,000)	0	0	(6,000)
IOOS Regional Observations	27,000	0	0	14,555	(12,445)
NOAA IOOS	6,555	75	0	6,630	75
Gulf of Mexico Regional Collaboration	4,750	0	(4,750)	0	(4,750)
Alliance for Coastal Technologies	500	0	0	0	(500)
Coastal Storms	2,800	0	74	2,874	74
Coastal Services Center (CSC)	26,643	3,352	6,000	29,995	3,352
Hawaii Coral Reef Initiative	1,000	0	0	0	(1,000)
Florida Coral Reef	200	0	0	0	(200)
Coral Reef - Puerto Rico	100	0	0	0	(100)
Coral Reef Program	29,000	132	0	26,859	(2,141)
Ocean Health Initiative	4,000	0	0	1,000	(3,000)
The Resilient Coastal Urban Community & Ecosystem (RESCUE) Initiative	250	0	0	0	(250)
Northeast Coastal Monitoring Collaborative	550	0	0	0	(550)
Aquarius Reef Base Program	150	0	0	0	(150)
West Coast Governor's Agreement on Ocean Health	500	0	0	0	(500)
International Pacific Research Center	1,500	0	0	0	(1,500)
Engineering Feasibility Study, Dauphin Island, AL	1,500	0	0	0	(1,500)
Subtotal, Ocean Assessment Program (OAP)	112,998	(2,441)	8,094	88,683	(24,315)
Response & Restoration					
Response & Restoration Base	10,834	384	0	19,518	8,684
Damage Assessment Program	9,300	0	0	0	(9,300)
Estuary Restoration Program	3,000	0	0	1,188	(1,812)
Marine Debris	4,000	0	0	4,000	0
Eastern Kentucky PRIDE, Inc	1,000	0	0	0	(1,000)
Subtotal, Response & Restoration	28,134	384	0	24,706	(3,428)



NATIONAL OCEAN SERVICE (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
National Centers for Coastal Ocean Science (NCCOS)					
National Centers for Coastal Ocean Science (NCCOS)		36,980		36,980	36,980
Competitive Research	16,000	3,000	9,500	28,301	12,301
Center for Coastal Environ Health & Bimolecular Research	11,300	(10,558)	0	0	(11,300)
Oxford, MD	4,500	(3,835)	0	0	(4,500)
Center for Coastal Fisheries Habitat Research	5,000	(4,537)	0	0	(5,000)
Center for Coastal Monitoring & Assessment	7,000	(7,473)	0	0	(7,000)
Center for Sponsored Coastal Ocean Research	2,700	(2,732)	0	0	(2,700)
NCCOS Headquarters	4,000	(3,387)	0	0	(4,000)
Center for Human Health Risk (Marine Env Health Research Lab - MEHRL)	4,000	(3,666)	0	0	(4,000)
Western Pacific Coral Reef Ecosystems Studies Program (CSCOR-NCCOS), Guam	300	0	0	0	(300)
Subtotal, NCCOS	54,800	3,792	9,500	65,281	10,481
Total, Ocean Resources Conservation. & Assessment	195,932	1,735	17,594	178,670	(17,262)

Ocean & Coastal Management

Coastal Management

CZM Grants	68,146	0	0	66,146	(2,000)
CZM & Stewardship	8,500	285	0	8,785	285
Regional Ocean Partnership Grants	0	0	20,000	20,000	20,000
National Estuarine Research Reserve System - NERRS	23,500	0	0	22,326	(1,174)
Marine Protected Areas	3,000	0	0	2,128	(872)
Energy Licensing & Appeals	1,900	0	(1,150)	750	(1,150)
Subtotal, Coastal Management	105,046	285	18,850	120,135	15,089



NATIONAL OCEAN SERVICE (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Ocean Management					
Marine Sanctuary Program					
Marine Sanctuary Program Base (Nancy Foster Scholarship 1% of base)	49,000	704	0	45,653	(3,347)
Northwest Straits Citizens Advisory Commission	1,600	0	0	0	(1,600)
Hawaii Inst. Of Marine Biology Coral Research, HI	2,250	0	0	0	(2,250)
Mariana Islands Sanctuary Scoping & Outreach	220	0	0	0	(220)
Subtotal, Ocean Management	53,070	704	0	45,653	(7,417)
Total, Ocean & Coastal Management	158,116	989	18,850	165,788	7,672
Total, National Ocean Service - ORF	522,220	4,752	36,444	500,608	(21,612)
Other National Ocean Service Accounts					
Total, National Ocean Service - PAC	40,890	0	10,000	34,385	(6,505)
Total, National Ocean Service - Other	15,600	0	0	15,600	0
GRAND TOTAL NOS	578,710	4,752	46,444	550,593	(28,117)



NATIONAL MARINE FISHERIES SERVICE (\$ IN THOUSANDS)						
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED	
Protected Species Research & Management						
Protected Species Research & Management	39,850	965	3,000	43,815	3,965	
Species Recovery Grants	15,623	170	9,636	20,793	5,170	
Marine Mammals	49,653	876	0	48,227	(1,426)	
Marine Turtles	14,576	224	0	10,452	(4,124)	
Other Protected Species (Marine Fish, Plants, & Invertebrates)	8,375	112	0	8,487	112	
Atlantic Salmon	8,500	60	(500)	8,060	(440)	
Pacific Salmon (for Salmon Mgt Activities, see Fisheries Research & Mgt)	65,000	1,749	3,668	70,417	5,417	
Alaska Sea Otter & Steller Sea Lion Commission, AK	300	0	0	0	(300)	
Hawaiian Monk Seals, HI	275	0	0	0	(275)	
Emergency Response & Health Investigations for Endangered/Threatened Pinniped in Pacific	300	0	0	0	(300)	
Center for Marine Education & Research Ocean Expo-Learning Center	1,000	0	0	0	(1,000)	
Marine Mammal Research, AK	500	0	0	0	(500)	
Subtotal, Protected Species Research & Management	203,952	4,156	15,804	210,251	6,299	
Fisheries Research & Management						
Fisheries Research & Management Programs	190,883	(6,910)	0	183,223	(7,660)	
National Catch Share Program	0	17,402	36,600	54,002	54,002	
Expand Annual Stock Assessments - Improve Data Collection	50,995	730	0	51,725	730	
Economics & Social Sciences Research	10,744	218	0	10,962	218	
Salmon Management Activities	50,942	76	(5,400)	35,618	(15,324)	
Regional Councils & Fisheries Commissions	31,855	249	0	32,104	249	
Fisheries Statistics	21,068	337	0	21,405	337	
Fish Information Networks	22,066	81	0	22,147	81	
Survey & Monitoring Projects	23,759	393	0	24,152	393	
Fisheries Oceanography	1,999	79	5,400	7,478	5,479	
American Fisheries Act	5,503	99	0	5,602	99	
Interjurisdictional Fisheries Grants	2,574	2	0	2,576	2	



NATIONAL MARINE FISHERIES SERVICE (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
National Standard 8	1,060	19	0	1,079	19
Reduce Fishing Impacts on Essential Fish Habitat (EFH)	529	9	0	538	9
Reducing Bycatch	3,398	44	0	3,442	44
Product Quality & Safety	7,342	181	0	7,523	181
Oyster Hatchery Economic Pilot Program, Morgan State University, MD	200	0	0	0	(200)
Hawaii Seafood Safety & Inspections, HI	1,500	0	0	0	(1,500)
Scallop Fishery Assessment, MA	1,000	0	0	0	(1,000)
Maine Groundfish Industry Emergency Economic Assistance, ME	1,000	0	0	0	(1,000)
Disease Reduction in Klamath River Salmon, OR	600	0	0	0	(600)
Shrimp Industry Fishing Effort Research Continuation, MD	700	0	0	0	(700)
Virginia Trawl Survey, VA	300	0	0	0	(300)
Ecosystem Based Fisheries Management, AL	750	0	0	0	(750)
Hawaii Fisheries Development, HI	400	0	0	0	(400)
NH Commercial Fisherman Sustainability Initiative	825	0	0	0	(825)
Institute for Seafood Studies	325	0	0	0	(325)
Gulf of Mexico Recreational Fishery Electronic Logbook Pilot	50	0	0	0	(50)
Herring Monitoring Research	300	0	0	0	(300)
Turtle Protection Funding/Gulf of Mexico Grouper Fishery	250	0	0	0	(250)
Subtotal, Fisheries Research & Management	432,917	13,009	36,600	463,576	30,659



NATIONAL MARINE FISHERIES SERVICE (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Enforcement & Observers/Training					
Enforcement	65,673	1,454	0	66,527	854
Observers/Training	41,074	759	0	38,818	(2,256)
Subtotal, Enforcement & Observers/Training	106,747	2,213	0	105,345	(1,402)
Habitat Conservation & Restoration					
Sustainable Habitat Management	22,376	350	0	22,726	350
Fisheries Habitat Restoration (Community Based Restoration Program & Open Rivers)	27,967	181	10,364	32,192	4,225
Bronx River Restoration, NY	1,000	0	0	0	(1,000)
Chesapeake Bay Oyster Restoration, MD	3,000	0	0	0	(3,000)
Merrimack River Fish Habitat, NH	300	0	0	0	(300)
Natural Stream Restoration Program, WV	1,500	0	0	0	(1,500)
Pontchartrain Basin Restoration	250	0	0	0	(250)
Narragansett Bay Shellfish Restoration	500	0	0	0	(500)
Protected Species Habitat at Kure Atoll (HI)	100	0	0	0	(100)
Hawaii Marine Fund	1,000	0	0	0	(1,000)
Ecosystem Vitality Through Habitat Restoration	200	0	0	0	(200)
Subtotal, Habitat Conservation & Restoration	58,193	531	10,364	54,918	(3,275)
Other Activities Supporting Fisheries					
Antarctic Research	2,718	39	0	2,757	39
Aquaculture	6,000	64	2,352	8,416	2,416
Climate Regimes & Ecosystem Productivity	4,811	(1,406)	0	3,405	(1,406)
Computer Hardware & Software	3,460	30	0	3,490	30
Cooperative Research	17,567	(5,901)	(4,565)	7,101	(10,466)
Information Analyses & Dissemination	19,905	451	0	20,356	451
Marine Resources Monitoring, Assessment & Prediction Program (MarMap)	842	0	0	842	0
National Environmental Policy Act (NEPA)	8,336	120	0	8,456	120
NMFS Facilities Maintenance	6,535	54	0	6,589	54
Southwest Fisheries Science Center	1,000	0	(1,000)	0	(1,000)
Regional Studies	7,206	69	5,000	12,275	5,069
Yukon River Drainage Association	100	0	0	0	(100)



NATIONAL MARINE FISHERIES SERVICE (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
New England Multi-Species Survey	3,000	0	0	0	(3,000)
Science Consortium for Ocean Replenishment at Mote Marine Lab	1,500	0	0	0	(1,500)
Maine Lobster Research	200	0	0	0	(200)
New England Fisheries Assistance	9,000	0	0	0	(9,000)
Consortium for Wildlife Bycatch Reduction MA & NH	1,250	0	0	0	(1,250)
Joint Institute for Marine & Atmospheric Research, HI	1,250	0	0	0	(1,250)
Continuation of Protected Species Bycatch Reduction Maine Groundline Exchange Program	550	0	0	0	(550)
Western & Central Pacific Fisheries Commission (WCPFC) Big Eye Tuna Quotas	3,000	0	0	0	(3,000)
Cooperative Research & Technical Assistance, RI	600	0	0	0	(600)
Emergency Plan to Save Oyster Production on the West Coast	500	0	0	0	(500)
US/Canada Yukon River Salmon Agreement Studies	500	0	0	0	(500)
Western Pacific Integrated Ecosystem Assessments	500	0	0	0	(500)
Partnership for Mid-Atlantic Fisheries Science (PMAFS) Fish Stock Improvement Initiative	1,000	0	0	0	(1,000)
Bering Sea Crab Management & Research	300	0	0	0	(300)
Metagenomic Analysis of Chesapeake Bay	100	0	0	0	(100)
Magnuson-Stevens: Marine Education & Training	1,000	0	0	0	(1,000)
Subtotal, Other Activities Supporting Fisheries	102,730	(6,480)	1,787	73,687	(29,043)
Total, National Marine Fisheries Service - ORF	904,539	13,429	64,555	907,777	3,238

Other National Marine Fisheries Service Accounts

Total, National Marine Fisheries Service - PAC	0	0	0	0	0
Total, National Marine Fisheries Service - Other	103,642	2,533	15,350	84,604	(19,038)
GRAND TOTAL NMFS	1,008,181	15,962	79,905	992,381	(15,800)



OFFICE OF OCEANIC & ATMOSPHERIC RESEARCH (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Climate Research					
Laboratories & Cooperative Institutes					
Laboratories & Cooperative Institutes	54,848	1,198	0	53,846	(1,002)
Subtotal, Laboratories & Cooperative Institutions	54,848	1,198	0	53,846	(1,002)
Climate Data & Information					
Climate Data & Information	12,080	11	1,500	13,591	1,511
Subtotal, Climate Data & Information	12,080	11	1,500	13,591	1,511
Competitive Research Program					
Competitive Research Program (incl. NIDIS)	144,199	(3,840)	32,800	173,159	28,960
Regional Climate Assessments	9,000	0	0	0	(9,000)
Subtotal, Competitive Research Program	153,199	(3,840)	32,800	173,159	19,960
Climate Operations					
Climate Operations	913	0	0	913	0
Subtotal, Climate Operations	913	0	0	913	0
Other Partnership Programs					
Climate System Research Center	495	0	0	0	(495)
Climate Change & Air Pollutant Impacts to New England's Rare Alpine Zone, NH	350	0	0	0	(350)
Integrating Climate Change into the Restoration of the Chesapeake Bay Watershed, MD	3,000	0	0	0	(3,000)
Development of Earth System Information, MD	150	0	0	0	(150)
Carbon Sequestration & Climate Change Models for NY State Forests	100	0	0	0	(100)
Subtotal, Other Partnership Programs	4,095	0	0	0	(4,095)
Total, Climate Research	225,135	(2,631)	34,300	241,509	16,374



OFFICE OF OCEANIC & ATMOSPHERIC RESEARCH (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Weather & Air Quality Research					
Laboratories & Cooperative Institutes					
Laboratories & Cooperative Institutes	54,425	893	4,697	60,015	5,590
Nutrient & Mercury Speciation Measurement Stations	650	0	0	0	(650)
Subtotal, Laboratories & Cooperative Institutes	55,075	893	4,697	60,015	4,940
Weather & Air Quality Research Programs					
U.S. Weather Research Program (USWRP) (THORPEX)	5,500	15	0	5,515	15
Tornado Severe Storm Research / Phased Array Radar	3,972	50	6,000	10,022	6,050
Subtotal, Weather & Air Quality Research Programs	9,472	65	6,000	15,537	6,065
Other Partnership Programs					
National Weather Radar Testbed Phased Array Radar, OK	2,000	0	0	0	(2,000)
Redstone UAS Development for Weather & Atmospheric Research, AL	300	0	0	0	(300)
AIRMAP at Univ. of New Hampshire, NH	500	0	0	0	(500)
Boise Center Aerospace Laboratory (BCAL) Watershed Modeling Utilizing LiDAR, ID	500	0	0	0	(500)
University of Tennessee - Atmospheric Science Research, TN	1,000	0	0	0	(1,000)
Southeastern Mercury Consortium, FL	500	0	0	0	(500)
Aviation & Hurricane Research Utilizing Unmanned Aerial Systems, FL	300	0	0	0	(300)
Observing, Modeling, & Visualizing Storm Surge Inundation, FL	100	0	0	0	(100)
New England Weather Technology & Research Initiative, NH	250	0	0	0	(250)
Subtotal, Other Partnership Programs	5,450	0	0	0	(5,450)
Total, Weather & Air Quality Research	69,997	958	10,697	75,552	5,555



OFFICE OF OCEANIC & ATMOSPHERIC RESEARCH (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Ocean, Coastal, & Great Lakes Research					
Laboratories & Cooperative Institutes					
Laboratories & Cooperative Institutes	21,840	515	0	22,355	515
Subtotal, Laboratories & Cooperative Institutes	21,840	515	4,820	27,175	515
National Sea Grant College Program					
National Sea Grant College Program Base	56,200	80	2,000	57,165	965
Aquatic Invasive Species Program	2,000	5	0	1,004	(996)
Marine Aquaculture Program	4,800	5	2,700	4,327	(473)
Subtotal, National Sea Grant College Program	63,000	90	4,700	62,496	(504)
Ocean Exploration & Research					
Ocean Exploration & Research (NURP moved in FY08)		23	0	27,839	27,839
Ocean Exploration	21,816	0	0	0	(21,816)
National Undersea Research Program (NURP)	8,900	0	0	0	(8,900)
Subtotal, Ocean Exploration & Research	30,716	23	0	27,839	(2,877)
Other Ecosystems Programs					
Integrated Ocean Acidification	0	5,500	6,100	11,600	11,600
Subtotal, Other Ecosystems Programs	0	5,500	6,100	11,600	11,600



OFFICE OF OCEANIC & ATMOSPHERIC RESEARCH (\$ IN THOUSANDS)						
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED	
Invasive Species & Partnership Programs						
National Institute of Undersea Science & Technology, MS	5,000	0	0	0	(5,000)	
National Sea Grant Law Center, MS	750	0	0	0	(750)	
NOAA Northern Gulf Institute	4,500	0	0	0	(4,500)	
Hyperspectral Remote Sensing & Science Based Management of Invasive Species ¹	500	0	0	0	(500)	
Marine Aquaculture Lab Operations, MS	3,700	0	0	0	(3,700)	
Lake Erie Hydrological & Climate Modeling, OH	100	0	0	0	(100)	
Monitoring of Lake Erie Water Quality with Remote Sensing, OH	500	0	0	0	(500)	
Subtotal, Other Partnership Programs	15,050	0	0	0	(15,050)	
Total, Ocean, Coastal, & Great Lakes Research	130,606	6,128	15,620	124,290	(6,316)	
Info Tech, R&D, & Science Education						
High Performance Computing Initiatives	13,028	49	53	13,130	102	
Total, Info Tech, R&D, & Science Education	13,028	49	53	13,130	102	
Total, Office of Oceanic & Atmospheric Research - ORF	438,766	4,504	55,850	454,481	15,715	
Other Office of Oceanic & Atmospheric Research Accounts						
Total, Office of Ocean & Atmospheric Research - PAC	10,379	0	0	10,379	0	
Total, Office of Oceanic & Atmospheric Research - Other	0	0	0	0	0	
GRAND TOTAL OAR	449,145	4,504	55,850	464,860	15,715	

¹ Detroit River International Wildlife Refuge, MI



NATIONAL WEATHER SERVICE (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Operations & Research					
Local Warnings & Forecasts Base					
Local Warnings & Forecasts Base	617,842	16,545	2,000	636,387	18,545
Air Quality Forecasting	5,445	0	0	5,445	0
Alaska Data Buoys	1,683	0	0	1,683	0
Sustain Cooperative Observer Network	1,871	0	0	1,871	0
Susquehanna River Basin Flood System	2,400	0	0	0	(2,400)
Upper Spring River Flood Warning System	125	0	0	0	(125)
NOAA Profiler Network	4,756	18	0	4,774	18
Pacific Island Compact	3,515	100	0	3,615	100
Strengthen U.S. Tsunami Warning Network	23,264	50	0	23,314	50
National Mesonet Network	19,000	0	0	0	(19,000)
Subtotal, Local Warnings & Forecasts	679,901	16,713	2,000	677,089	(2,812)
Advanced Hydrological Prediction Services	6,037	0	0	6,037	0
Aviation Weather	11,363	177	15,136	26,676	15,313
WFO Maintenance	7,316	0	0	7,316	0
Remote Infrasonic Monitoring of Natural Hazards, MS	2,000	0	0	0	(2,000)
Regional Ensembling Sys for Atmosph Dispersion, MS	1,000	0	0	0	(1,000)
Joint Center for Hurricane Research, FL	500	0	0	0	(500)
Weather Radio Transmitters					
Weather Radio Transmitters Base	2,297	0	0	2,297	0
Delaware River Enhanced Flood Warning System	200	0	0	0	(200)
Subtotal, Weather Radio Transmitters	2,497	0	0	2,297	(200)
Subtotal, Local Warnings & Forecasts	710,614	16,890	17,136	719,415	8,801
Central Forecast Guidance					
Central Forecast Guidance	79,525	967	0	80,492	967
Subtotal, Central Forecast Guidance	79,525	967	0	80,492	967
Total, Operations & Research	790,139	17,857	17,136	799,907	9,768



NATIONAL WEATHER SERVICE (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Systems Operation & Maintenance (O&M)					
NEXRAD	46,121	135	127	46,383	262
ASOS	11,000	58	202	11,260	260
AWIPS	39,346	54	0	39,400	54
NWSTG Backup - CIP	5,512	0	0	5,512	0
Total, Systems Operation & Maintenance	101,979	247	329	102,555	576
Total, National Weather Service - ORF	892,118	18,104	17,465	902,462	10,344
Other National Weather Service Accounts					
Total, National Weather Service - PAC	107,727	(3,504)	10,508	100,731	(6,996)
Total, National Weather Service - Other	0	0	0	0	0
GRAND TOTAL NWS	999,845	14,600	27,973	1,003,193	3,348



NATIONAL ENVIRONMENTAL SATELLITE, DATA & INFORMATION SERVICE (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Environmental Satellite Observing Systems					
Satellite Command & Control	39,562	677	0	40,239	677
NSOF Operations	7,810	150	0	7,960	150
Subtotal, Satellite Command & Control	47,372	827	0	48,199	827
Product Processing & Distribution					
Product Processing & Distribution	32,698	434	3,108	36,240	3,542
Subtotal, Product Processing & Distribution	32,698	434	3,108	36,240	3,542
Product Development, Readiness & Application					
Product Development, Readiness & Application	20,671	284	0	20,955	284
Prod Devel, Read & App(Ocean Remote Sensing)	3,979	53	0	4,032	53
Joint Center/Accelerate Use of Satellites	3,320	45	0	3,365	45
Subtotal, Product Development, Readiness & Application	27,970	382	0	28,352	382
Interagency Global Positioning System Executive Board Secretarial					
Commercial Remote Sensing Licensing & Enforcement	1,301	18	0	1,319	18
Office of Space Commercialization	649	9	0	658	9
Group on Earth Observations (GEO)	500	6	0	506	6
Total, Environmental Satellite Observing Systems	110,490	1,676	3,108	115,274	4,784



NATIONAL ENVIRONMENTAL SATELLITE, DATA & INFORMATION SERVICE (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Data Centers & Information Services					
Archive, Access & Assessment	67,255	600	13,000	60,739	(6,516)
Subtotal, Archive, Access & Assessment	67,255	600	13,000	60,739	(6,516)
Coastal Data Development	4,559	61	38	4,658	99
Regional Climate Centers	3,500	0	0	0	(3,500)
Environmental Data Systems Modernization	9,511	41	0	9,552	41
Integrated Environmental Applications & Information Center (IDEA)	3,000	0	0	0	(3,000)
NOAA Regional Climate Center Program	850	0	0	0	(850)
Total, Data Centers & Information Services	88,675	702	13,038	74,949	(13,726)
Total, NESDIS - ORF	199,165	2,378	16,146	190,223	(8,942)
Other NESDIS Accounts					
Total, NESDIS - PAC	1,199,357	0	831,439	2,018,796	819,439
Total, NESDIS - Other	0	0	0	0	0
GRAND TOTAL NESDIS	1,398,522	2,378	847,585	2,209,019	810,497



PROGRAM SUPPORT (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Corporate Services					
Under Secretary & Associate Offices Base					
Under Secretary & Associate Offices Base	28,438	527	1,000	29,965	1,527
Subtotal, Under Secretary & Associate Offices	28,438	527	1,000	29,965	1,527
NOAA Wide Corporate Services & Agency Management					
NOAA Wide Corporate Services & Agency Management Base	115,561	2,943	11,198	129,702	14,141
DOC Accounting System (CBS)	10,171	208	0	10,379	208
Payment to the DOC Working Capital Fund	41,944	4,205	0	46,149	4,205
Subtotal, NOAA Wide Corporate Services & Agency Management	167,676	7,356	11,198	186,230	18,554
Office of Chief Information Officer					
IT Security	9,089	40	4,700	6,829	(2,260)
Subtotal, Office of Chief Information Officer	9,089	40	4,700	6,829	(2,260)
Total, Corporate Services	205,203	7,923	16,898	223,024	17,821



PROGRAM SUPPORT (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
NOAA Education Program					
Education Program/Initiative	2,000	(1,287)	0	0	(2,000)
JASON Education & Outreach	8,300	0	0	0	(8,300)
BWET California	2,500	0	0	0	(2,500)
BWET Regional Programs	7,200	0	0	0	(7,200)
Educ Partnership Prog/Minority Serving Institutions (EPPMSI)	14,323	(14,323)	0	0	(14,323)
Chesapeake Bay Interpretive Buoys	500	0	0	0	(500)
Narragansett Bay Marine Education (Save the Bay)	1,000	0	0	0	(1,000)
Training Next Generation Weather Forecasters - San Jose State University	180	0	0	0	(180)
Competitive Educational Grants & Programs	12,000	15,715	0	20,758	8,758
GLOBE	3,000	0	0	0	(3,000)
Hawaii Education Program, HI	1,750	0	0	0	(1,750)
Coastal Environmental Education Outreach	500	0	0	0	(500)
Chesapeake Bay Environmental Center	250	0	0	0	(250)
Great Lakes Water Project	250	0	0	0	(250)
Total, NOAA Education Program	53,753	105	0	20,758	(32,995)
Facilities					
NOAA Facilities Management & Construction & Safety	30,346	302	5,758	36,406	6,060
Subtotal, NOAA Facilities Management, Construction & Maintenance	30,346	302	5,758	36,406	6,060
Total, Facilities	30,346	302	5,758	36,406	6,060
Marine Operations & Maintenance					
Marine Services					
Data Acquisition	120,125	5,840	790	124,255	4,130
Subtotal, Marine Services	120,125	5,840	790	124,255	4,130
Fleet Planning & Maintenance					
Fleet Planning & Maintenance	17,034	166	6,200	23,400	6,366
Subtotal, Fleet Planning & Maintenance	17,034	166	6,200	23,400	6,366
Total, Marine Operations & Maintenance	137,159	6,006	6,990	147,655	10,496



PROGRAM SUPPORT (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Aviation Operations					
Aircraft Services	29,509	778	0	30,287	778
Total, Aviation Operations	29,509	778	0	30,287	778
Total, Office of Marine & Aviation Operations	166,668	6,784	6,990	177,942	11,274
Total, Program Support - ORF	455,970	15,114	29,646	458,130	2,160
Other Program Support Accounts					
Total, Program Support - PAC	2,000	0	24,800	26,800	24,800
Total, Program Support - Other	27,938	2,267	0	30,205	2,267
GRAND TOTAL PS	485,908	17,381	54,446	515,135	29,227



OPERATIONS, RESEARCH, & FACILITIES SUMMARY LINE OFFICE DIRECT OBLIGATIONS (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
National Ocean Service	522,220	4,752	36,444	500,608	(21,612)
National Marine Fisheries Service	904,539	13,429	64,555	907,777	3,238
Office of Oceanic & Atmospheric Research	438,766	4,504	55,850	454,481	15,715
National Weather Service	892,118	18,104	17,465	902,462	10,344
National Environmental Satellite Data & Information Service	199,165	2,378	16,146	190,223	(8,942)
Program Support	455,970	15,114	29,646	458,130	2,160
SUBTOTAL LO DIRECT OBLIGATIONS	3,412,778	58,281	220,106	3,413,681	903

OPERATIONS, RESEARCH, & FACILITIES FINANCING ADJUSTMENTS (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OPERATIONS, RESEARCH, & FACILITIES	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
SUBTOTAL LO DIRECT OBLIGATIONS	3,412,778	58,281	220,106	3,413,681	903

FINANCING

De-Obligations		(6,000)		(6,000)	(6,000)
Total ORF Financing	0	(6,000)	0	(6,000)	(6,000)

SUBTOTAL BUDGET AUTHORITY	3,412,778	52,281	220,106	3,407,681	(5,097)
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TRANSFERS

Transfer from P&D to ORF	(104,600)			(104,600)	
Transfer from CZMF to ORF	(3,000)		3,000		3,000
Total ORF Transfers	(107,600)	0	3,000	(104,600)	3,000

SUBTOTAL APPROPRIATION	3,305,178	52,281	223,106	3,303,081	(2,097)
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PROCUREMENT, ACQUISITION, & CONSTRUCTION (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN PROCUREMENT, ACQUISITION, & CONSTRUCTION	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
NOS					
Acquisition					
Coastal & Estuarine Land Conservation Program	20,000	0	10,000	25,000	5,000
Subtotal, Acquisition	20,000	0	10,000	25,000	5,000
NERRS Construction:					
National Estuarine Research Reserve Construction & Land Acquisition (NERRS)	3,890	0	0	3,890	0
Great Bay Partnership, NH	3,000	0	0	0	(3,000)
Subtotal, NERRS Construction	6,890	0	0	3,890	(3,000)
Marine Sanctuaries Construction:					
Marine Sanctuaries Base	13,000	0	0	5,495	(7,505)
Thunder Bay NMS Exhibit	1,000	0	0	0	(1,000)
Subtotal, Marine Sanctuary Construction	14,000	0	0	5,495	(8,505)
Subtotal, Construction	20,890	0	0	9,385	(11,505)
Total, NOS - PAC	40,890	0	10,000	34,385	(6,505)
NMFS					
Total, NMFS - PAC	0	0	0	0	0
OAR					
Systems Acquisition					
Research Supercomputing/ CCRI	10,379	0	0	10,379	0
Subtotal, OAR Systems Acquisition	10,379	0	0	10,379	0
Total, OAR - PAC	10,379	0	0	10,379	0



PROCUREMENT, ACQUISITION, & CONSTRUCTION					
(\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN PROCUREMENT, ACQUISITION, & CONSTRUCTION	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
NWS					
Systems Acquisition					
ASOS	1,635	0	0	1,635	0
AWIPS	24,000	0	364	24,364	364
NEXRAD	7,976	0	3,150	11,126	3,150
NWSTG Legacy Replacement	1,195	0	0	1,195	0
Radiosonde Network Replacement	4,014	0	0	4,014	0
Weather & Climate Supercomputing	29,169	0	0	29,169	0
Cooperative Observer Network Modernization (NERON)	3,734	0	0	3,734	0
Complete & Sustain NOAA Weather Radio	11,000	0	1,614	12,614	1,614
NOAA Profiler Conversion	7,500	0	2,230	9,730	2,230
Subtotal, NWS Systems Acquisition	90,223	0	7,358	97,581	7,358
Construction					
WFO Construction	3,504	(3,504)	3,150	3,150	(354)
Cooperative Institute & Research Center for Southeast Weather, AL	14,000	0	0	0	(14,000)
Subtotal, NWS Construction	17,504	(3,504)	3,150	3,150	(14,354)
Total, NWS - PAC	107,727	(3,504)	10,508	100,731	(6,996)
NESDIS					
Systems Acquisition					
NOAA Satellite & Climate Sensors					
Geostationary Systems - N	57,601	0	0	57,601	0
Geostationary Systems - R	667,500	0	62,500	730,000	62,500
Subtotal, NESDIS - GOES	725,101	0	62,500	787,601	62,500
Polar Orbiting Systems - POES	43,135	0	(2,261)	40,874	(2,261)
JASON-3	20,000	0	30,000	50,000	30,000
Joint Polar Satellite System (formerly NPOESS)	382,200	0	678,600	1,060,800	678,600
DSCOVER	0	0	9,500	9,500	9,500
Cosmic 2	0	0	3,700	3,700	3,700



PROCUREMENT, ACQUISITION, & CONSTRUCTION (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN PROCUREMENT, ACQUISITION, & CONSTRUCTION	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
EOS & Advanced Polar Data Processing, Distribution & Archiving Systems	990	0	0	990	0
CIP - single point of failure	2,772	0	0	2,772	0
Comprehensive Large Array Data Stewardship Sys (CLASS)	18,476	0	0	6,476	(12,000)
NPOESS Preparatory Data Exploitation	4,455	0	0	4,455	0
Restoration of Climate Sensors	0	0	49,400	49,400	49,400
Subtotal, NESDIS Systems Acquisition	1,197,129	0	831,439	2,016,568	819,439
Construction					
Satellite CDA Facility	2,228	0	0	2,228	0
Subtotal, NESDIS Construction	2,228	0	0	2,228	0
Total, NESDIS - PAC	1,199,357	0	831,439	2,018,796	819,439
Program Support					
Construction					
Pacific Region Center	0	0	14,000	14,000	14,000
Subtotal, Construction	0	0	14,000	14,000	14,000
Program Support / OMAO					
OMAO - Fleet Replacement					
Temporary Berthing	1,000	0	(1,000)	0	(1,000)
Fleet Capital Improvements & Tech Infusion	1,000	0	7,400	8,400	7,400
New Vessel Construction	0	0	4,400	4,400	4,400
Subtotal, OMAO Fleet Replacement	2,000	0	10,800	12,800	10,800
Total, Program Support - PAC	2,000	0	24,800	26,800	24,800
GRAND TOTAL PAC	1,360,353	(3,504)	876,747	2,191,091	830,738



PROCUREMENT, ACQUISITION, & CONSTRUCTION FINANCING ADJUSTMENTS (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
SUBTOTAL DIRECT OBLIGATIONS	1,360,353	(3,504)	876,747	2,191,091	830,738
FINANCING					
De-Obligations	(2,000)	(5,000)	0	(7,000)	(5,000)
Total PAC Financing	(2,000)	(5,000)	0	(7,000)	(5,000)
SUBTOTAL BUDGET AUTHORITY	1,358,353	(8,504)	876,747	2,184,091	825,738
SUBTOTAL APPROPRIATION	1,358,353	(8,504)	876,747	2,184,091	825,738

GRAND TOTAL SUMMARY DISCRETIONARY APPROPRIATIONS (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN ORF, PAC, & OTHER DISCRETIONARY APPROPRIATIONS	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Operations, Research & Facilities	3,305,178	52,281	223,106	3,303,081	(2,097)
Procurement, Acquisition & Construction	1,358,353	(8,504)	876,747	2,184,091	825,738
Coastal Zone Management Fund	3,000	0	(3,000)	0	(3,000)
Fisherman's Contingency Fund	0	0	350	350	350
Pacific Coastal Salmon Fund	80,000	0	15,000	65,000	(15,000)
Medicare Eligible Retiree Health Care Fund	1,822	114	0	1,936	114
GRAND TOTAL DISCRETIONARY APPROPRIATION	4,748,353	43,891	1,112,203	5,554,458	806,105



OTHER ACCOUNTS (DISCRETIONARY)						
(\$ IN THOUSANDS)						
FY 2011 PROPOSED OPERATING PLAN DISCRETIONARY	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED	
NOS						
Coastal Zone Management Fund Obligations	0	0	0	0	0	0
Coastal Zone Management Fund Budget Authority	0	0	0	0	0	0
Coastal Zone Management Fund Appropriation	3,000	0	(3,000)	0	0	(3,000)
Subtotal, NOS Other Discretionary Direct Obligation	0	0	0	0	0	0
Subtotal, NOS Other Discretionary Budget Authority	0	0	0	0	0	0
Subtotal, NOS Other Discretionary Appropriation	3,000	0	(3,000)	0	0	(3,000)
NMFS						
Fishermen's Contingency Fund Obligations	0	0	350	350	350	350
Fishermen's Contingency Fund Budget Authority	0	0	350	350	350	350
Fishermen's Contingency Fund Appropriation	0	0	350	350	350	350
Foreign Fishing Observer Fund Obligations	0	0	0	0	0	0
Foreign Fishing Observer Fund Budget Authority	0	0	(350)	(350)	(350)	(350)
Foreign Fishing Observer Fund Appropriation	0	0	0	0	0	0
Promote & Develop Fisheries Obligations	0	0	0	0	0	0
Promote & Develop Fisheries Budget Authority	(104,600)	0	0	(104,600)	0	0
Promote & Develop Fisheries Appropriation	0	0	0	0	0	0
Pacific Coastal Salmon Fund Obligations	80,000	0	15,000	65,000	65,000	(15,000)
Pacific Coastal Salmon Fund Budget Authority	80,000	0	15,000	65,000	65,000	(15,000)
Pacific Coastal Salmon Fund Appropriation	80,000	0	15,000	65,000	65,000	(15,000)
Subtotal, NMFS Other Discretionary Direct Obligation	80,000	0	15,350	65,350	65,350	(14,650)
Subtotal, NMFS Other Discretionary Budget Authority	(24,600)	0	15,000	(39,600)	(39,600)	(15,000)
Subtotal, NMFS Other Discretionary Appropriation	80,000	0	15,350	65,350	65,350	(14,650)

OMAO



OTHER ACCOUNTS (DISCRETIONARY)					
(\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN DISCRETIONARY	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Medicare Eligible Retiree Healthcare Fund Account Obligations	1,822	114	0	1,936	114
Medicare Eligible Retiree Healthcare Fund Account Budget Authority	1,822	114	0	1,936	114
Medicare Eligible Retiree Healthcare Fund Account Appropriation	1,822	114	0	1,936	114
Subtotal, OMAO Other Discretionary Direct Obligations	1,822	114	0	1,936	114
Subtotal, OMAO Other Discretionary Budget Authority	1,822	114	0	1,936	114
Subtotal, OMAO Other Discretionary Appropriation	1,822	114	0	1,936	114
TOTAL, OTHER DISCRETIONARY DIRECT OBLIGATIONS	81,822	114	15,350	67,286	(14,536)
TOTAL, OTHER DISCRETIONARY BUDGET AUTHORITY	(22,778)	114	15,000	(37,664)	(14,886)
TOTAL, OTHER DISCRETIONARY APPROPRIATION	84,822	114	12,350	67,286	(17,536)



OTHER ACCOUNTS (MANDATORY) (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OTHER MANDATORY	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
NOS					
Coastal Zone Management Fund Obligations	0	0	0	0	0
Coastal Zone Management Fund Budget Authority	(1,500)	0	0	(1,500)	0
Coastal Zone Management Fund Appropriation	(3,000)	0	3,000	0	3,000
Damage Assessment & Restoration Revolving Fund Obligations	15,600	0	0	15,600	0
Damage Assessment & Restoration Revolving Fund Budget Authority	3,000	0	0	3,000	0
Damage Assessment & Restoration Revolving Fund Appropriation	0	0	0	0	0
Subtotal, NOS Other Mandatory Direct Obligations	15,600	0	0	15,600	0
Subtotal, NOS Other Mandatory Budget Authority	1,500	0	1,500	1,500	0
Subtotal, NOS Other Mandatory Appropriation	(3,000)	0	3,000	0	3,000
NMFS					
Promote & Develop Fisheries Obligations	8,771	0	0	8,771	0
Promote & Develop Fisheries Budget Authority	113,371	0	0	113,371	0
Promote & Develop Fisheries Appropriation	0	0	0	0	0
Fisheries Finance Program Account Obligations	5,777	0	0	0	(5,777)
Fisheries Finance Program Account Budget Authority	5,777	0	0	0	(5,777)
Fisheries Finance Program Account Appropriation	5,777	0	0	0	(5,777)
Federal Ship Financing Obligations	260	0	0	0	(260)
Federal Ship Financing Budget Authority	(740)	0	0	0	740
Federal Ship Financing Appropriation	0	0	0	0	0
Environmental Improve & Restoration Fund Obligations	506	2,533	0	3,039	2,533
Environmental Improve & Restoration Fund Budget Authority	506	2,533	0	3,039	2,533
Environmental Improve & Restoration Fund Appropriation	506	2,533	0	3,039	2,533
Limited Access System Administration Fund Obligations	7,444	0	0	7,444	0
Limited Access System Administration Fund Budget Authority	7,444	0	0	7,444	0



OTHER ACCOUNTS (MANDATORY)					
(\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN OTHER MANDATORY	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Limited Access System Administration Fund Appropriation	7,444	0	0	7,444	0
Western Pacific Sustainable Fisheries Fund Obligation	884	0	0	0	(884)
Western Pacific Sustainable Fisheries Fund Budget Authority	0	0	0	0	0
Western Pacific Sustainable Fisheries Fund Appropriation	0	0	0	0	0
Subtotal, NMFS Other Mandatory Direct Obligations	23,642	2,533	0	19,254	(4,388)
Subtotal, NMFS Other Mandatory Budget Authority	126,358	2,533	0	123,854	(2,504)
Subtotal, NMFS Other Mandatory Appropriation	13,727	2,533	0	10,483	(3,244)
OMAO					
NOAA Corp Commissioned Officers Retirement Obligations	26,116	2,153	0	28,269	2,153
NOAA Corp Commissioned Officers Retirement Budget Authority	26,116	2,153	0	28,269	2,153
NOAA Corp Commissioned Officers Retirement Budget Appropriation	26,116	2,153	0	28,269	2,153
Subtotal, OMAO Other Mandatory Direct Obligations	26,116	2,153	0	28,269	2,153
Subtotal, OMAO Other Mandatory Budget Authority	26,116	2,153	0	28,269	2,153
Subtotal, OMAO Other Mandatory Appropriation	26,116	2,153	0	28,269	2,153
TOTAL, OTHER MANDATORY DIRECT OBLIGATIONS	65,358	4,686	0	63,123	(2,235)
TOTAL, OTHER MANDATORY BUDGET AUTHORITY	153,974	4,686	1,500	153,623	(351)
TOTAL, OTHER MANDATORY APPROPRIATION	36,843	4,686	3,000	38,752	1,909



SUMMARY OF DISCRETIONARY RESOURCES (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Discretionary Direct Obligations					
ORF Direct Obligations	3,412,778	58,281	220,106	3,413,681	903
PAC Direct Obligations	1,360,353	(3,504)	876,747	2,191,091	830,738
OTHER Direct Obligations	81,822	114	15,350	67,286	(14,536)
TOTAL Discretionary Direct Obligations	4,854,953	54,891	1,112,203	5,672,058	817,105
Discretionary Budget Authority					
ORF Budget Authority	3,412,778	52,281	220,106	3,407,681	(5,097)
PAC Budget Authority	1,358,353	(8,504)	876,747	2,184,091	825,738
OTHER Budget Authority	(22,778)	114	15,000	(37,664)	(14,886)
TOTAL Discretionary Budget Authority	4,748,353	43,891	1,111,853	5,554,108	805,755
Discretionary Appropriations					
ORF Appropriations	3,305,178	52,281	223,106	3,303,081	(2,097)
PAC Appropriations	1,358,353	(8,504)	876,747	2,184,091	825,738
OTHER Appropriations	84,822	114	12,350	67,286	(17,536)
TOTAL Discretionary Appropriation	4,748,353	43,891	1,112,203	5,554,458	806,105



NOAA SUMMARY (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
TOTAL Direct Obligations (Discretionary & Mandatory)	4,920,311	59,577	1,112,203	5,735,181	816,014
TOTAL Budget Authority (Discretionary & Mandatory)	4,902,327	48,577	1,113,353	5,707,731	809,164
TOTAL Appropriation (Discretionary & Mandatory)	4,785,196	48,577	1,115,203	5,593,210	811,014
Reimbursable Financing	242,000	0	0	242,000	0
TOTAL OBLIGATIONS (Direct & Reimbursable)	5,162,311	59,577	1,112,203	5,977,181	816,014
Offsetting Receipts	(6,929)	0	0	(8,001)	(1,072)
TOTAL OBLIGATIONS (Direct, Reimbursable & Offsetting Receipts)	5,155,382	59,577	1,112,203	5,969,180	817,086



LINE OFFICE SUMMARY (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
National Ocean Service					
ORF	522,220	4,752	36,444	500,608	(21,612)
PAC	40,890	0	10,000	34,385	(6,505)
OTHER	15,600	0	0	15,600	0
TOTAL,NOS	578,710	4,752	46,444	550,593	(28,117)
National Marine Fisheries Service					
ORF	904,539	13,429	64,555	907,777	3,238
PAC	0	0	0	0	0
OTHER	103,642	2,533	15,350	84,604	(19,038)
TOTAL,NMFS	1,008,181	15,962	79,905	992,381	(15,800)
Oceanic & Atmospheric Research					
ORF	438,766	4,504	55,850	454,481	15,715
PAC	10,379	0	0	10,379	0
OTHER	0	0	0	0	0
TOTAL,OAR	449,145	4,504	55,850	464,860	15,715
National Weather Service					
ORF	892,118	18,104	17,465	902,462	10,344
PAC	107,727	(3,504)	10,508	100,731	(6,996)
OTHER	0	0	0	0	0
TOTAL,NWS	999,845	14,600	27,973	1,003,193	3,348
National Environmental Satellite, Data, & Information Service					
ORF	199,165	2,378	16,146	190,223	(8,942)
PAC	1,199,357	0	831,439	2,018,796	819,439
OTHER	0	0	0	0	0
TOTAL,NESDIS	1,398,522	2,378	847,585	2,209,019	810,497



LINE OFFICE SUMMARY (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
Program Support					
Program Support/Corporate Services					
ORF	205,203	7,923	16,898	223,024	17,821
PAC	0	0	0	0	0
OTHER	0	0	0	0	0
SUBTOTAL, PS/Corporate Services	205,203	7,923	16,898	223,024	17,821
Program Support/NOAA Education Program					
ORF	53,753	105	0	20,758	(32,995)
PAC	0	0	0	0	0
OTHER	0	0	0	0	0
SUBTOTAL, PS/NOAA Education Program	53,753	105	0	20,758	(32,995)
Program Support/Facilities					
ORF	30,346	302	5,758	36,406	6,060
PAC	0	0	14,000	14,000	14,000
OTHER	0	2	0	0	0
SUBTOTAL, PS/Facilities	30,346	304	19,758	50,406	20,060
Program Support/Corporate Services, Education, Facilities					
ORF	289,302	8,330	22,656	280,188	(9,114)
PAC	0	0	14,000	14,000	14,000
OTHER	0	0	0	0	0
TOTAL, PS/Corporate Services, Education, Facilities	289,302	8,330	36,656	294,188	4,886
Program Support/OMAO					
ORF	166,668	6,784	6,990	177,942	11,274
PAC	2,000	0	10,800	12,800	10,800
OTHER	27,938	2,267	0	30,205	2,267
TOTAL, PS/OMAO	196,606	9,051	17,790	220,947	24,341
Total Program Support					
Total PS ORF	455,970	15,114	29,646	458,130	2,160
Total PS PAC	2,000	0	24,800	26,800	24,800
Total PS OTHER	27,938	2,267	0	30,205	2,267
TOTAL, PS	485,908	17,381	54,446	515,135	29,227



LINE OFFICE SUMMARY (\$ IN THOUSANDS)					
FY 2011 PROPOSED OPERATING PLAN	FY 2010 ENACTED	FY 2011 ATBs	FY 2011 PROGRAM CHANGES	FY 2011 PRESIDENT'S BUDGET	FY 2011 PRES BUD VS. FY 2010 ENACTED
DIRECT OBLIGATIONS					
ORF	3,412,778	58,281	220,106	3,413,681	903
PAC	1,360,353	(3,504)	876,747	2,191,091	830,738
OTHER	147,180	4,800	15,350	130,409	(16,771)
TOTAL, DIRECT OBLIGATIONS	4,920,311	59,577	1,112,203	5,735,181	814,870
ORF Adjustments (Deobligations/Rescissions)	0	(6,000)	0	(6,000)	(6,000)
ORF Transfers	(107,600)	0	3,000	(104,600)	3,000
PAC Adjustments (Deobligations/Rescissions)	(2,000)	(5,000)	0	(7,000)	(5,000)
PAC Transfers	0	0	0	0	0
OTHER Discretionary Adjustments	3,000	0	(3,000)	0	(3,000)
Mandatory Accounts Excluded	(65,358)	(4,686)	0	(63,123)	2,235
TOTAL, DISCRETIONARY APPROPRIATIONS	4,748,353	43,891	1,112,203	5,554,458	806,105



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National Ocean Service
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National Marine Fisheries Service
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Office of Oceanic and Atmospheric Research
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National Weather Service
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