

**NOAA**  
NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION



# FY 2014 BUDGET SUMMARY





## DEAR FRIENDS OF NOAA

Dear Friends of NOAA,

While the economy has shown signs of recovery over the past year, continued fiscal uncertainty and tight budgets mean that government agencies, like so many families and businesses across the country, still face tough choices. At NOAA, we're working to fulfill our core mission of science, service and stewardship and balance investments in current and future programs and services.

Americans in all 50 states and territories have come to rely on NOAA's products and services on a daily basis. Across all of NOAA, our employees and partners work day in and day out to foster scientific discovery, support economic vitality, and protect our planet's resources for future generations.

NOAA provides the environmental intelligence that helps citizens, businesses, and governments make smart choices. Just as every citizen depends on NOAA for weather information, so, too, do businesses rely on NOAA's services. The fishing and shipping industries count on NOAA's nautical charts and information about tides and currents before heading to sea. Farmers depend on our long-range forecasts and information about the drought to inform decisions. The entire country relies on NOAA's observations and products to keep goods moving safely and efficiently through our ports.

While we still face significant challenges and an uncertain budget environment, the fiscal year 2014 budget request shows that we have listened to our stakeholders, exercised the necessary strong fiscal discipline and worked hard to make the right investments for the whole of NOAA. This year's budget request of approximately \$5.4 billion aims to: 1) ensure the readiness, responsiveness, and resiliency of communities from coast to coast; 2) help protect lives and property; and, 3) support vibrant coastal communities and economies.

### [Ready, Responsive, and Resilient Communities](#)

Last year's onslaught of severe weather events caused widespread damage and devastated families and businesses. These losses highlighted the need for communities across the nation to become more ready, more resilient, and more responsive.

One recent example is Hurricane/Post-Tropical Cyclone Sandy (Hurricane Sandy). Hurricane Sandy demonstrated the value NOAA brings to society, as the whole agency mobilized to help the public prepare for, respond to, and initiate recovery from the storm. In the weeks prior to Hurricane Sandy, NOAA satellites and observing platforms provided the vital data needed for our forecast enterprise to predict the path and intensity of the storm and all its impacts. Once Hurricane Sandy passed through the Northeast, NOAA worked side-by-side with Federal, State, and local agencies to aid the area's recovery. Our ships surveyed ports and harbors so that maritime commerce could resume. Our aircraft re-mapped the coastal zones, speeding the flow of aid to damaged communities and homeowners. Our environmental response teams responded to oil and hazmat spills and assessed environ-

mental damages and debris. Our recovery work continues: NOAA's coastal expertise, technical tools and information - such as coastal inundation products, maps, and storm surge modeling capabilities - are helping communities rebuild in a manner that is smarter and safer.

NOAA is the only federal agency with operational responsibility to provide critical and accurate weather, climate, and ecosystem forecasts that support national safety and commerce, and to protect and preserve ocean, coastal, and Great Lakes resources.

This budget allows NOAA to deliver forecasts and warnings that can be trusted, provide services in a cost-effective manner, continue to promote preparedness and resilience to weather-related impacts, and improve the economic value of weather, water, drought, and climate information.

### Environmental Intelligence

Americans rely on satellite observations every day. NOAA's environmental observations are the backbone of our global earth observing system and provide the information needed to provide a holistic picture of our planet from the depths of the oceans to the surface of the sun. The data supplied by NOAA satellites are critical to the full breadth of NOAA services and drive our ability to increase community and ecological resilience from the local to national level, now and into the future.

NOAA missions, from issuing accurate weather forecasts to researching climate change, depend on this integrated suite of observing systems. NOAA's satellites provide critical data for forecasts and warnings that are vital to every citizen and to our economy as a whole. They provide warnings for severe weather, enable safe air, land, and marine transportation, and even contribute directly to life-saving rescue missions. In addition to their key role in weather prediction, NOAA's satellite observation suite also provides other benefits such as monitoring coastal ecosystem health to tracking migratory movements of endangered species and monitoring solar eruptions.

### Vibrant Coastal Communities and Economies

A healthy marine environment provides significant economic benefits to our nation. NOAA is the primary federal agency responsible for enabling and promoting the sustainable, safe, and efficient use of coastal resources and coastal places. NOAA plays a critical role in fostering the vitality of the growing coastal population and a productive economy by supporting sustainable resources that benefit industries, jobs, and provide services that make businesses more efficient and safe. Our investments in the management of vital marine resources ensure these resources will contribute to thriving communities and their economies well into the future. Whether it's supporting science-based stewardship of living marine resources or supporting sound decision-making for human, ecological, and economic health, NOAA's science enhances our understanding of our planet's marine and coastal ecosystems. This budget provides key investments to support sustainable fisheries, protected resources, habitat conservation and restoration, coastal science, and research and development opportunities to protect and preserve our environment for future generations.

NOAA touches each and every community across the United States. Our employees are your colleagues, neighbors and friends. NOAA and its employees work each day to maximize U.S. competitiveness, enable economic growth, foster science and technological leadership, and promote environmental stewardship. This budget makes the right investments for NOAA while maintaining our commitment to delivering the services, stewardship and science America needs.

A handwritten signature in blue ink that reads "Kathy". The signature is stylized with a large, sweeping initial "K" and a long, horizontal flourish extending to the right.

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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 2012 Enacted**

Fiscal Year (FY) 2012 Appropriations (P.L. 112-55).

**FY 2013 Annualized CR**

An annualized version of P.L. 112-55, this represents NOAA's estimated funding levels throughout FY 2013.

**Adjustments-to-Base**

Includes the estimated FY 2014 federal civilian pay raise of 1 percent (and the estimated FY 2014 federal military pay raise of 1 percent as appropriate). 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 2014 Base**

FY 2013 annualized CR plus Adjustments-To-Base

**Program Change**

Requested increase or decrease over the FY 2014 base

**FY 2014 Request**

FY 2014 base plus Program Changes



# INTRODUCTION

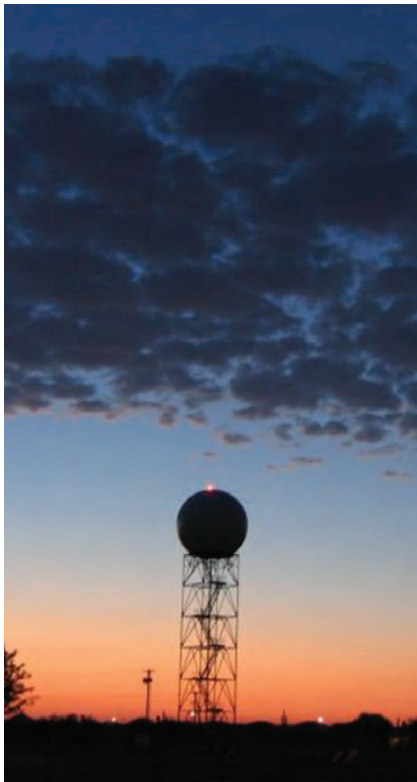
NOAA diver cut a Hawaiian green sea turtle free from a derelict fishing net during a recent mission to collect marine debris in the Northwestern Hawaiian Islands.





# NOAA: A HEALTHY ENVIRONMENT FOR A HEALTHY ECONOMY

NOAA provides environmental intelligence to advance our ability to understand and anticipate changes in the Earth's environment, improve society's ability to make scientifically informed decisions, deliver services vital to the economy and public safety, and conserve and manage ocean and coastal ecosystems and resources. NOAA's mission is best described as a triad of science, service, and stewardship.



*A Next Generation Weather Radar (NEXRAD). All NEXRAD systems are undergoing an upgrade to Dual Polarization capability to improve measurements, which are vital to increased accuracy and timeliness of warnings that protect life and property.*

We operate from the surface of the sun to the bottom of the ocean. NOAA's science, services, and stewardship missions require a synthesis of space, ground, and ocean-based observations from satellites, ships, aircraft, buoys, weather stations, and radiosondes just to name a few. This synthesis, coupled with sound scientific understanding of Earth systems and processes and advance modeling capabilities, is absolutely essential to NOAA's ability to provide critical environmental intelligence to keep the nation informed of the changing environment.

NOAA provides weather, water, and climate forecasts and warnings for the private and public sectors. NOAA provides environmental intelligence that decision-makers depend upon to guide decisions they must make every day. To meet that end NOAA must understand and predict changes in the climate, weather, oceans, and coasts. In 2009, the public obtained 301 billion forecasts. Based on an average annual household value of \$286 placed on weather information, the American public collectively receives 31.5 billion in benefits from forecasts each year.<sup>1</sup> When it comes to severe weather preparedness, calculated near-term investments build capacity for drastic savings – of life, property, and habitat – in the future. Last year alone, the U.S. experienced 11 weather-related disasters.<sup>2</sup> These included Hurricane Sandy, Hurricane Isaac, tornado outbreaks across the Great Plains, Texas, and Southeast/Ohio Valley, the most extensive drought

<sup>1</sup> Lazo, J.K., Morss, R.E., and J.L. Demuth. (2009, June). 300 Billion Served: Sources Perceptions, Uses, and Values of Weather Forecasts. *Bulletin of the American Meteorological Society*, 90(6). <http://journals.ametsoc.org/doi/pdf/10.1175/2008BAMS2604.1>

<sup>2</sup> <http://www.ncdc.gov/billions/events.pdf>



since the 1930's, and wildfires that burned over 9.2 million acres. NOAA's "Weather-Ready Nation" initiative envisions a society that is prepared for, and responds to, weather –related events.

NOAA protects and preserves the Nation's living marine resources through scientific research, fisheries management, enforcement and habitat conservation. Commercial and recreational fishing industries depend on healthy and abundant fish stocks. NOAA must work to conserve and manage coastal and marine ecosystems and resources. In 2011, the U.S. seafood industry supported approximately 1.2 million full- and part-time jobs and generated \$129 billion in sales impacts, \$37 billion in income impacts, and \$48 billion in value added impacts.<sup>3</sup> NOAA will sustain efforts to rebuild American fisheries and maintain them at sustainable levels to optimize fishing opportunities, jobs and environmental benefits. By investing in the management of vital marine resources now, NOAA works to ensure these resources will contribute to thriving communities and their economies now and in the future.

NOAA provides products, services and information that promote safe navigation, support coastal communities, sustain marine ecosystems, and mitigate coastal hazards. NOAA delivers nautical charts, real time tides and currents, accurate positioning infrastructure, and emergency response support to benefit safe, efficient, and secure transportation on U.S. waterways. America's seaports support the employment of 13.3 million U.S. workers.<sup>4</sup> Coastal shoreline counties contributed \$6.6 trillion to the Gross Domestic Product (GDP) in 2011, which is just under half of the U.S. GDP<sup>5</sup> and a total of 51 million jobs in 2011.<sup>6</sup> NOAA partners with states to implement a range of programs that help keep America's coasts healthy and resilient. As such, our vision for the future centers on resilience- resilient ecosystems, resilient communities and resilient economies.

NOAA's world-class science underpins NOAA's ability to provide accurate weather forecasts, to protect and manage the Nation's coastal and ocean resources, and to enable society to plan for and respond to climate change. Research at NOAA is conducted in Federal laboratories and science centers, through partnerships with the university community, and through competitively awarded grants to both external and internal partners. NOAA's research provides solid science and policy-relevant findings to leaders in government and industry worldwide on topics such as ocean exploration, climate, and ecosystem protection.

<sup>3</sup> *Fisheries Economics of the United States, 2011.*

<sup>4</sup> John Martin, Ph.D., "The Local and Regional Economic Impacts of the U.S. Deepwater Port System, 2007", prepared for the American Association of Port Authorities, June 2008, p. 5.

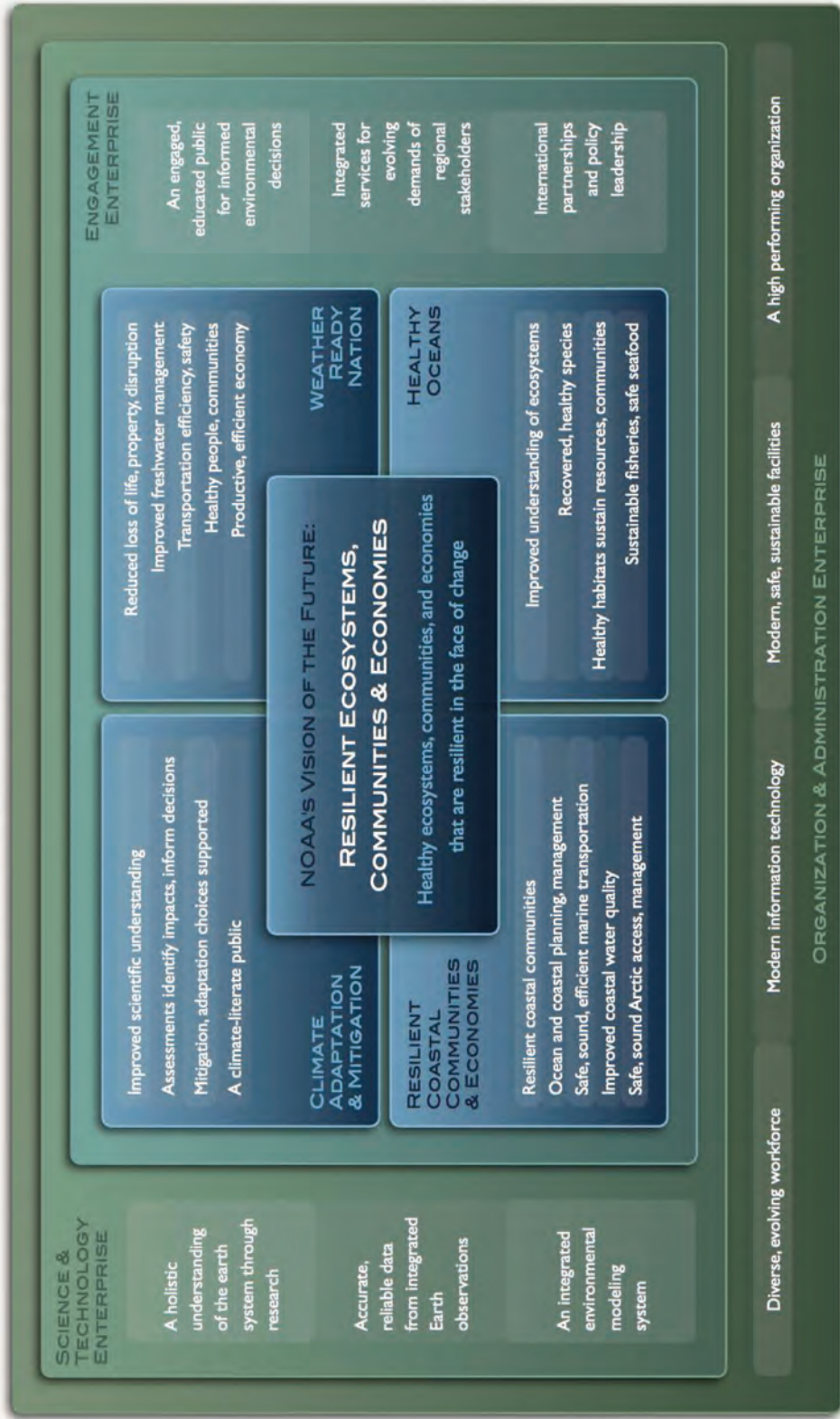
<sup>5</sup> Bureau of Economic Analysis. 2012. *Gross Domestic Product (GDP) for the U.S. Territories.* [http://www.bea.gov/national/gdp\\_territory.htm](http://www.bea.gov/national/gdp_territory.htm)

<sup>6</sup> Bureau of Labor Statistics. 2012. *2010 Census of Employment and Wages.* Available from: <http://www.bls.gov/cew>



**NOAA'S MISSION:  
SCIENCE, SERVICE & STEWARDSHIP**

To understand and predict changes in climate, weather, oceans, and coasts,  
To share that knowledge and information with others, and  
To conserve and manage coastal and marine ecosystems and resources





NOAA is an essential component of the Department of Commerce, helping to maximize United States (U.S.) competitiveness, enable economic growth and resiliency, foster science and technological leadership, and promote environmental stewardship. This past October, Hurricane/Post-Tropical Cyclone Sandy (Hurricane Sandy) demonstrated the value NOAA brings to society as the whole agency mobilized to help the public prepare for, respond to, and initiate recovery from the storm. In the weeks prior to Hurricane Sandy, NOAA used models fed by satellite and other weather observations to predict the path of the storm. NOAA gave emergency personnel and the public an accurate track forecast a full four days before the October 29, 2013 landfall. We also provided forecasts of total rainfall, storm surge, wave height, and other phenomena that would affect the mid-Atlantic and northeastern states. Our accurate predictions helped save lives and resources by enabling emergency managers to more precisely evacuate coastal areas in Hurricane Sandy's path.

### FY 2014 BUDGET HIGHLIGHTS

For Fiscal Year (FY) 2014, the National Oceanic and Atmospheric Administration (NOAA) proposes a budget of \$5,447.7 million, an increase of \$541 million, or 11 percent above the FY 2012 Spend Plan. This request reflects NOAA's continuing effort to better serve the American people through advancing critical missions, while focusing on six priorities including credible science, healthy oceans, sustainable seafood and jobs, resilient coastal communities and economies, weather ready nation, and climate information and decision support. This request demonstrates the Administration's commitment to NOAA's multiple mission areas.

The President's FY 2014 budget request makes targeted investments that leverage against one another to bring better balance within NOAA's portfolio and strengthen our capacity to support communities across America. The President's budget rejects separating "wet side" habitat programs, from "dry side" satellites, and instead embraces both together—because coastal habitat to support healthy and vibrant communities depends on science fueled by the environmental data from satellites.

#### **NATIONAL OCEAN SERVICE**

NOS delivers a range of nationwide coastal and Great Lakes scientific, technical, and resource management services in support of safe, healthy, resilient coastal communities; sustainable, robust coastal economies; 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's national effort to protect, maintain, and sustain the viability of healthy, resilient and productive coastal communities, economies, and ecosystems. NOS also manages the Papahānaumokuākea Marine National Monument, marine sanctuaries, and,



*HABs occur when colonies of algae—simple ocean plants that live in the sea—grow out of control while producing toxic or harmful effects on people, fish, shellfish, marine animals, and birds. HABs have caused an estimated \$1 billion in losses over the last several decades to coastal economies that rely on recreation, tourism, and seafood harvesting. Photo credit: Texas Parks and Wildlife Department.*



*NOAA's Restoration Center is the only office within NOAA solely devoted to restoring the nation's coastal, marine, and migratory fish habitat. These efforts are instrumental for supporting species recovery and fisheries management.*



*A snapshot from the Geophysical Fluid Dynamics Laboratory (GFDL) CM2.6 Arctic sea surface salinity animation..*



*As part of a Weather-Ready Nation Pilot Project, the staff from the National Weather Service Weather Forecast Office in Tampa, Florida provide decision support services to NOAA partners at an emergency operations center.*

through partnerships with coastal states, the nationally significant estuarine research reserves. The President's FY 2014 Budget requests \$529.2 million for NOS.

### **NATIONAL MARINE FISHERIES SERVICE**

NMFS is responsible for the management and conservation of living marine resources within the 200-mile U.S. Exclusive Economic Zone (EEZ). NMFS is dedicated to the stewardship of living marine resources through science-based conservation and management. NMFS conserves, protects, and manages living marine resources in a way that ensures their continuation as functioning components of marine ecosystems, affords economic opportunities, and enhances the quality of life for the American public. NMFS also provides critical support and 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. The President's FY 2014 Budget requests \$929.3 million for NMFS (including the Pacific Coastal Salmon Recovery Fund).

### **OFFICE OF OCEANIC & ATMOSPHERIC RESEARCH**

OAR is NOAA's central research line office and it is the engine of innovation that strengthens the scientific underpinnings necessary to improve NOAA climate, weather, coastal and ocean services. Through its network of over fifty Federal laboratories and university-based research programs, OAR supplies the scientific information to advise national policy decisions in areas such as climate change, mitigation of severe weather impacts, coastal and ocean resource management, and stratospheric ozone depletion. OAR promotes economic growth through the development of environmental observation technologies; extreme weather preparedness; the sustainable use of coastal, marine, and Great Lakes resources; and the application of innovative techniques, such as in marine biotechnology. The President's FY 2014 Budget requests \$472.4 million for OAR.

### **NATIONAL WEATHER SERVICE**

NWS provides weather, water, and climate forecasts and warnings for the United States, its territories, adjacent waters, and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other government agencies, the private sector, the public, and the global community. The President's FY 2014 Budget requests \$1,050.1 million for NWS.

### **NATIONAL ENVIRONMENTAL SATELLITE, DATA, & INFORMATION SERVICE**

NESDIS is responsible for the procurement, launch, and operation of the Nation's civil operational environmental satellites. 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 the National Weather Service and other national and international users 24 hours per day, 7 days per week and are used to accurately track the location, extent, and duration of severe weather; 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 search and rescue activities. Through its Data Centers, NESDIS also provides users with a long-term archive of and access to past, present, and future environmental observations, products, and services from data recorded. The President's FY 2014 Budget requests \$2,186.0 million for NESDIS..

### PROGRAM SUPPORT/OFFICE OF MARINE AND AVIATION OPERATIONS

Program Support includes Corporate Services, the NOAA Education Program, Facilities, and the Office of Marine and Aviation Operations (OMAO). Through Corporate Services, NOAA provides overall management, planning and administrative support for NOAA, including acquisition and grants, budget, accounting, and human resources. The Education Program focuses on NOAA's strategic cross-cutting priorities of promoting environmental literacy and developing, valuing, and sustaining a world-class workforce. The Facilities program provides for repair, restoration and other construction efforts, along with NOAA-wide environmental compliance and safety issues. OMAO operates and maintains NOAA's ships and aircraft and uses them to collect data to support NOAA's mission. OMAO also provides technical and management support through the NOAA Commissioned Corps, assists with outsourcing for ship and aircraft support, plans and implements the modernization of the NOAA fleet, and provides centralized guidance for NOAA's small-boat safety program. OMAO also operates the NOAA Dive program. The President's FY 2014 Budget requests \$503.5 million for PS (including estimates for the Medicare-Eligible Retiree Healthcare Fund and NOAA Corps Retirement Pay).



*The advanced spacecraft and instrument technology used on the GOES-R series will result in more timely and accurate weather forecasts*



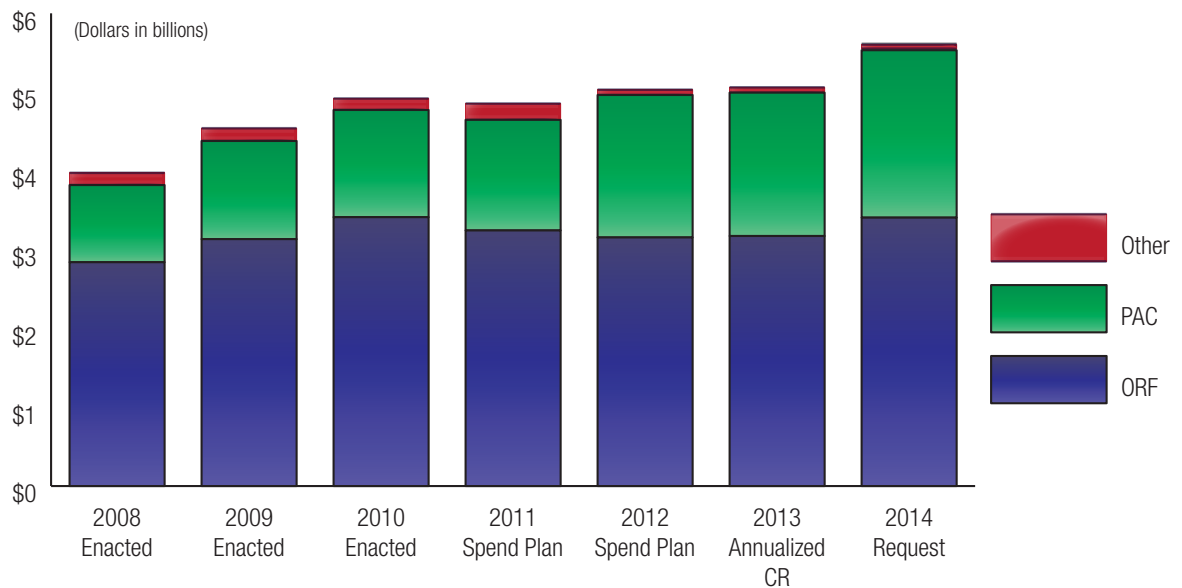
*Thomas Jefferson under way to survey the oceans and harbors along the Gulf of Mexico and East Coast of the United States. Accurate charts are critical for the safe shipping of goods and services to and from our shores.. Credit: NOAA*



## INTRODUCTION

(DOLLARS IN THOUSANDS)	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	FY 2014 REQUEST	INCREASE (DECREASE)
ORF	\$3,155,398	\$3,173,894	\$3,406,997	\$233,103
PAC	1,808,025	1,819,146	2,124,555	305,409
Other Funds	67,486	67,698	52,286	(15,412)
Financing (Transfers and Deobligations)	(125,648)	(125,098)	(136,164)	(261,262)
<b>Total Discretionary Budget Authority</b>	<b>\$4,905,261</b>	<b>\$4,935,640</b>	<b>\$5,447,674</b>	<b>\$512,034</b>
<b>FTE</b>	<b>12,372</b>	<b>12,372</b>	<b>12,248</b>	<b>(124)</b>

### Budget Trends FY 2008-2014



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction

Other: Other Accounts







# 1

## NATIONAL OCEAN SERVICE

Immediately upon arriving on-scene overnight on November 1, 2012, NOAA Ship *Thomas Jefferson* began surveying the area to search for sunken containers, debris, and shoaling that pose dangers to ships and lives. Using high tech side scan sonar equipment, *Thomas Jefferson* conducted the hydrographic survey of critical barge pathways in the Hudson River. Using information from this survey, the U.S. Coast Guard Captain of the Port was able to open the port to fuel barge traffic later the same day.





## NATIONAL OCEAN SERVICE

Coastal watershed counties were home to 163.8 million people in 2010, which is 52 percent of the United States population. This number is expected to increase by more than 15 million by 2020.<sup>1</sup> Through the National Ocean Service (NOS), NOAA is positioning America for the future as the lead Federal agency responsible for promoting the sustainable, safe, and efficient use of coastal resources and coastal places. NOS observes, measures, assesses, and manages the Nation's coastal, ocean and Great Lakes areas, provides place-based protection of special places, provides critical navigation products and services, and prepares for and responds to natural disasters and emergencies.



*Early morning photo from the NOAA Ship Thomas Jefferson as it launches one of its high tech survey boats to check the waterways in the Port of New York/ New Jersey. The TJ arrived in New York harbor early Thursday morning, Nov. 1, 2012, and joined two of NOAA's Navigation Response Teams.*

In addition, Federal agencies, states, local governments, and coastal industries rely on NOS products and services to make informed decisions.

NOS also works across NOAA Line Offices to achieve broader NOAA goals. For example, data from NOS's network of oceanographic and meteorological stations along U.S. coastlines and in the Great Lakes are integrated directly into NOAA's National Hurricane Center storm surge forecasts. Throughout the response to Hurricane Sandy, real time data was made available to emergency responders when they needed it the most, saving lives and mitigating property damage. NOS works with the National Marine Fisheries Service and NOAA's General Counsel for Natural Resources to form NOAA's Damage Assessment, Remediation, and Restoration Program (DARRP). Consistent with NOAA's role as a natural resource trustee, DARRP responds to pollution incidents, assesses risks and injuries, and restores damaged resources.

### FY 2012 ACCOMPLISHMENTS

NOS is working on many fronts to respond to increasing activity in the Arctic. The NOAA Ship Fairweather conducted a survey mission in August of 2012 to map a 1,500-nautical-mile coastal corridor from Dutch Harbor, Alaska, to the Canadian border. NOS and its partners are conducting seafloor mapping missions of the Arctic extended continental shelf, mapping more than 600,000 square nautical miles of the seafloor to document natural resources on and under the seafloor within U.S. borders estimated to be worth \$1.2 trillion. In support of oil spill response, NOS and its partners have developed an Environmental Response Management Application (ERMA®) for the Arctic

<sup>1</sup> National Coastal Population Report (March 2013), <http://stateofthecoast.noaa.gov>



region which responders most recently used during a Chukchi Sea oil spill drill. The exercise tested spill response and preparedness in advance of Chukchi and Beaufort Seas oil exploration activities planned for 2013 and beyond.

NOS advanced the Harmful Algal Bloom (HAB) Operational Forecast System, which helps managers make critical safety and economic decisions regarding beach closures and shellfish restrictions. In July 2012, NOAA and partners announced a new seasonal harmful algal bloom (HAB) forecast for Lake Erie. The forecast, developed by the National Centers for Coastal Ocean Science (NCCOS) at the request of regional managers and stakeholders, predicted only a mild bloom for the 2012 season, a welcome change for water utilities, recreational anglers, and others living and working on the lake who have endured increasingly severe algae blooms since 2008. The algae problem is caused by the blue-green alga *Microcystis*, which can produce toxins and overgrowths that harm fish, people, and the environment. Throughout Florida and Texas, where NOAA has had operational HAB forecasts for several years, NOAA's Center for Operational Oceanographic Products and Services (CO-OPS) provides weekly or biweekly HAB conditions reports that provide potential impacts for the next 3-4 days. From 2010-2012, a total of 367 operational HAB forecasts were issued for the Gulf of Mexico, including Texas and Florida.



*Harmful algae on the shore of Lake Erie*

**FY 2014 REQUEST**

**\$ 529,209,000**

NOAA requests a total of \$529,209,000 and 1,248 FTEs to support the continued and enhanced operations of the National Ocean Service. This total includes Operations, Research, and Facilities (ORF), Procurement, Acquisition and Construction (PAC), and other accounts and is comprised of a net increase of \$29,871,000 and 7 FTEs in program changes from the FY 2014 base. Included in the FY 2014 base are \$4,350,000 for inflationary adjustments, a decrease of \$714,000 in technical adjustments to base, \$1,326,000 in IT savings for reinvestment in DOC Working Capital Fund IT Initiatives, and a technical transfer of \$501,000 and 1 FTE to the National Marine Fisheries Service. The request is an increase of \$39,237,000 and 6 FTE from the FY 2012 Enacted.

The 2014 President's Budget request for NOS represents a critical step toward making the right investments in NOAA's Science, Service and Stewardship missions. By emphasizing earth observations, the proposed budget recognizes the important and expanding uses of oceanographic data for navigation safety, emergency preparedness, and stewardship of ecological resources. These increases include \$10 million to develop improved marine sensors and an additional \$7 million for research and development, including \$5.9 million for applied ocean and coastal research, and \$1 million for marine debris research. Large scale events such as the March 2011 tsunami and Hurricane Sandy, as well as persistent threats from smaller scale events such as harmful algal blooms, have highlighted the need for research efforts that improve the effectiveness of NOAA's planning, management, response and recovery actions. A \$2 million investment will improve NOAA's capacity to conduct natural resource damage assessment (NRDA) activities and expedite the restoration process after oil spills and other releases of hazardous materials.

NOAA is proposing to restructure National Ocean Service budget line items in FY 2014 as part of a broader effort to refocus NOS and improve coordination and collaboration among activities that serve its interlocking missions and mandates. The new budget structure presents more functional groupings of budgetary resources while retaining separate line items for major extramural activities. NOAA believes that this approach balances transparency with enhanced accountability for achieving ocean and coastal goals and objectives at the Line Office level. See the chart below for a detailed crosswalk of the budget line restructure.



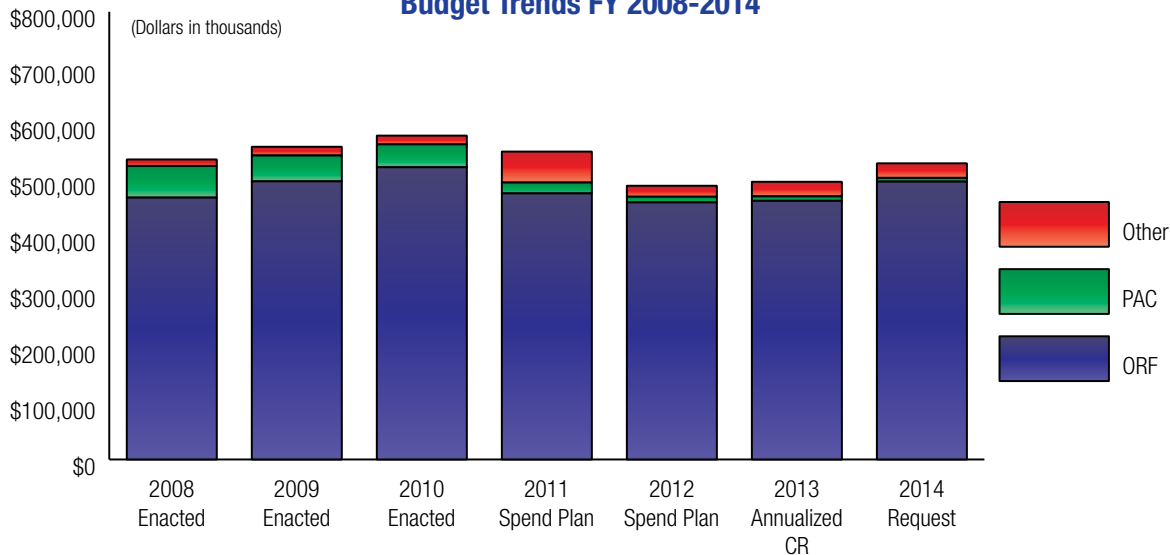
CURRENT SUB-PROGRAM	CURRENT PPA	PROPOSED SUB-PROGRAM	PROPOSED PPA
Navigation Services	Mapping & Charting Base	Navigation, Obs & Positioning	Navigation, Observations & Positioning
Navigation Services	Hydrographic Research & Technology Development	Navigation, Obs & Positioning	Navigation, Observations & Positioning
Navigation Services	Electronic Navigational Charts	Navigation, Obs & Positioning	Navigation, Observations & Positioning
Navigation Services	Shoreline Mapping	Navigation, Obs & Positioning	Navigation, Observations & Positioning
Navigation Services	Address Survey Backlog / Contracts	Navigation, Obs & Positioning	Hydrographic Survey Priorities / Contracts
Navigation Services	Geodesy Base	Navigation, Obs & Positioning	Navigation, Observations & Positioning
Navigation Services	National Height Modernization	Navigation, Obs & Positioning	Navigation, Observations & Positioning
Navigation Services	Tide & Current Data Base	Navigation, Obs & Positioning	Navigation, Observations & Positioning
Ocean Resources, Conservation, & Assessment (ORCA)	IOOS Regional Observations	Navigation, Obs & Positioning	IOOS Regional Observations
ORCA	NOAA IOOS	Navigation, Obs & Positioning	Navigation, Observations & Positioning
ORCA	Coastal Storms	Ocean & Coastal Mgmt & Services	Coastal Zone Management & Services
ORCA	Coastal Services Center	Ocean & Coastal Mgmt & Services	Coastal Zone Management & Services
ORCA	Coral Reef Program	Ocean & Coastal Mgmt & Services	Coral Reef Program
ORCA	Response and Restoration Base	Coastal Science & Assessment	Coastal Science, Assessment, Response, and Restoration
ORCA	Estuary Restoration Program	Coastal Science & Assessment	Coastal Science, Assessment, Response & Restoration
ORCA	Marine Debris	Coastal Science & Assessment	Coastal Science, Assessment, Response, & Restoration
ORCA	National Centers for Coastal Ocean Science	Coastal Science & Assessment	Coastal Science, Assessment, Response, & Restoration
ORCA	Competitive Research	Coastal Science & Assessment	Competitive Research
Ocean & Coastal Management	CZM Grants	Ocean & Coastal Mgmt & Services	Coastal Management Grants
Ocean & Coastal Management	CZM and Stewardship	Ocean & Coastal Mgmt & Services	Coastal Zone Management & Services
Ocean & Coastal Management	Regional Ocean Partnership Grants	Ocean & Coastal Mgmt & Services	Coastal Management Grants
Ocean & Coastal Management	National Estuarine Research Reserve System	Ocean & Coastal Mgmt & Services	National Estuarine Research Reserve System - NERRS
Ocean & Coastal Management	Marine Protected Areas	Ocean & Coastal Mgmt & Services	Sanctuaries & Marine Protected Areas
Ocean & Coastal Management	Marine Sanctuary Program Base	Ocean & Coastal Mgmt & Services	Sanctuaries & Marine Protected Areas



## NATIONAL OCEAN SERVICE

(DOLLARS IN THOUSANDS)	FY 2012 SPEND PLAN	FY 2013 ANNUALIZED CR	FY 2014 REQUEST	INCREASE (DECREASE)
<b>NOS — ORF</b>				
Navigation, Observations & Positioning	\$177,346	\$ 178,423	\$ 207,318	\$28,895
Coastal Science & Assessment	71,497	71,931	81,685	9,754
Ocean & Coastal Management and Services	210,529	211,807	207,506	(4,301)
<b>Total, NOS - ORF</b>	<b>459,372</b>	<b>462,161</b>	<b>496,509</b>	<b>34,348</b>
Total, NOS - PAC	8,000	8,042	6,700	(1,342)
Total, NOS - Other	22,600	26,000	26,000	0
<b>GRAND TOTAL NOS (Direct Obligations)</b>	<b>\$489,972</b>	<b>\$496,203</b>	<b>\$529,209</b>	<b>\$33,006</b>
<b>Total FTE</b>	<b>1,242</b>	<b>1,242</b>	<b>1,248</b>	<b>6</b>

**NATIONAL OCEAN SERVICE  
Budget Trends FY 2008-2014**



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction

Other: Sanctuaries Enforcement Asset Forfeiture Fund; Coastal Zone Management Fund; Damage Assessment and Restoration Revolving Fund



## FY 2014 ORF BUDGET SUMMARY

NOAA requests a total of \$496,509,000 and 1,231 FTEs to support the Operations, Research and Facilities (ORF) of the National Ocean Service. This includes an increase of \$31,213,000 and 7 FTEs in program changes from the FY 2014 base. Included in the base are \$4,350,000 for inflationary adjustments, a decrease of \$714,000 in technical ATBs and \$1,346,000 in IT savings for reinvestment in DOC Working Capital Fund IT Initiatives. Also included is a technical transfer of the NOS Estuary Restoration Program of \$501,000 and 1 FTE to the National Marine Fisheries Service's Habitat Management & Restoration Program. The request is an increase of \$37,137,000 and 6 FTEs from the FY 2012 Enacted

### NOS — ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2014:

Select program changes (generally above \$500,000) are highlighted below at the sub-program level. A summary of funding by Program, Project and Activity (PPA) is located in Chapter 8, *Appendices*. Detailed descriptions of all program changes by PPA are located in the NOAA FY 2014 Congressional Justification.

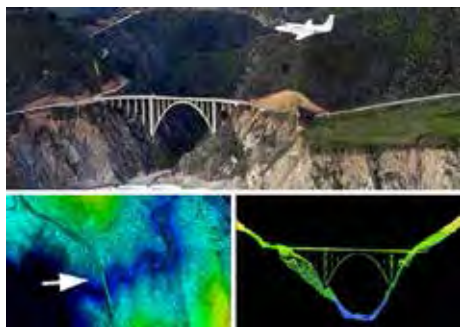
#### NAVIGATION, OBSERVATIONS & POSITIONING

**\$ 207,318,000**

NOAA requests an increase of \$27,180,000 and 2 FTEs for a total of \$207,318,000 and 577 FTEs under the Navigation Services sub-program.

**Navigation, Observations & Positioning:** NOAA requests an increase of \$15,853,000 and 2 FTEs. Highlights include:

**Navigation, Observations & Positioning: Accelerate Processing of Hydrographic Survey Data.** NOAA requests an increase of \$1,710,000 and 0 FTE for mapping and charting activities that will improve the accuracy of nautical charts for safe navigation and deliver mapping data for coastal hazards and resilience decision-support. NOAA's mapping and charting activities enable safe navigation in U.S. territorial waters and the U.S. Exclusive Economic Zone, a combined area of 3.4 million square nautical miles extending 200 nautical miles offshore from the Nation's coastline. This increase will support both navigation and non-navigation requirements (such as living marine resource, habitat conservation, and post-storm event marine debris identification), and will enable NOAA to increase the number of surveys evaluated, validated and applied to nautical charts by 20 percent over existing production levels.



LIDAR data is often collected by air, such as with this NOAA survey aircraft (top) over Bixby Bridge in Big Sur, California. Here, LIDAR data reveals a top-down (bottom left) and profile view of Bixby Bridge. LIDAR data supports activities such as inundation and storm surge modeling, hydrodynamic modeling, shoreline mapping, emergency response, hydrographic surveying, and coastal vulnerability analysis.

**Navigation, Observations & Positioning: Coastal LIDAR Data Collection and Coordination.** NOAA requests an increase of \$7,993,000 and 2 FTEs to participate in an integrated, government-wide LIDAR (light detection and ranging) data collection effort in high priority coastal regions. With this increase, NOAA will work with the U.S. Army Corps of Engineers and U.S. Geological Survey through the 3D Elevation Program, the Interagency Committee on Ocean and Coastal Mapping and the Interagency National Digital Elevation Program, to streamline Federal LIDAR data acquisition activities, improve LIDAR data collection methods, ensure that all data meet shared standards reflecting application and integration requirements, support cooperative development of data collection, processing, and delivery capabilities across the community of practice, and substantially increase the quantity and quality of data collected and processed to meet a broad range of integrated ocean and



coastal mapping applications. NOAA currently uses shoreline data primarily for nautical charting and aids to navigation. Resources provided would focus on addressing priority data gaps and newly arising needs as identified through stakeholder engagement with regional ocean alliances and coastal zone resource and emergency management agencies at the State, Tribal, and Federal levels. In addition, this increase will allow for broader LIDAR data collection concurrent with aerial imagery and vastly improve coordination across agencies through shared products, standards and protocols.

**Navigation, Observations & Positioning: GRAV-D.** NOAA requests an increase of \$3,159,000 and 0 FTE for improving elevations and height information as part of the Gravity for the Redefinition of the American Vertical Datum (GRAV-D) initiative. With the requested increase, NOAA will accelerate a multi-year effort to collect airborne gravity data to produce a new national vertical datum. Within NOS, NOAA's National Geodetic Survey (NGS) has a Federal mandate to provide accurate positioning, including heights, to all Federal non-military mapping activities in the USA. In 2007, NGS embarked on the GRAV-D project to model and monitor Earth's geoid (a surface of the gravity field, very closely related to global mean sea level) to serve as a zero reference surface for all heights in the nation. This plan laid out an efficient process to acquire gravity measurements across the Nation and redefine the geoid model based on areas of most critical need. However, interest and demand have significantly increased among national, state, and local stakeholders to accelerate data collection and realize the socio-economic benefits earlier. Accurate heights are critical to many scientific endeavors, including the understanding and protection of low-lying coastal ecosystems. Updating the Nation's gravity-based geoid model will allow the Global Navigation Satellite System (GNSS), the global satellite positioning system, to establish more accurate elevations that will contribute to improved commerce, promote economic efficiencies, and better protect against inundation from storms, flooding, and sea level change. The requested funding will enable NOAA to increase the rate of data collection over the entire U.S. and its territories in order to accelerate its GRAV-D geoid model release from 2022 to 2020.

**Navigation, Observations & Positioning: Tide and Current Data Program (TCDP).** NOAA requests an increase of \$3,963,000 and 0 FTE to ensure the availability of accurate and reliable current and water level products. The Tides and Currents Data Program provides the physical oceanographic geospatial foundation to support safe and efficient maritime navigation and support other NOAA mission areas such as hazards (storm surge and tsunami warnings), climate (long-term local sea level trends), ecosystems (habitat restoration and coastal resource management) and weather forecasting. This increase will also enable NOAA to significantly strengthen its ability to support multiple NOAA missions related to safety of life and property with accurate, reliable and timely water level and current data by: 1) ensuring the National Water Level Observation Network (NWLON) is adequately maintained to provide at least 95 percent data availability; 2) filling 30 key gaps in coastal areas identified by the 2008 NWLON Gap Analysis Report over 5 years; 3) deploying new technology to replace aging water level sensors and to enable observations in remote arctic waters; and 4) conducting additional observations needed to maintain the accuracy of tidal current tables.





**IOOS Regional Observations:** NOAA requests an increase of \$11,425,000 and 0 FTE. Highlights include:



*U.S. IOOS® is an operational system and a network of partners responsible for regional observations, data management, modeling and analysis, education and outreach, and research and development. The IOOS Regional Associations guide the development of regional observing activities and also provide stakeholder input.*

**IOOS Regional Observations: Marine Sensor Innovation: NOS requests an increase of \$10,000,000 and 0 FTE to establish a research and development program to develop and improve marine sensors to monitor changing conditions in the oceans, coasts, and Great Lakes.** Through coastal development and other economic activity, human populations are coming into increasing contact with our oceans and coastal waters. Our ability to rapidly and accurately monitor and assess ocean conditions, biodiversity and other indicators of marine ecosystem health, have lagged far behind our capacity to detect physical changes in the oceans and atmosphere. With these funds, NOAA will make competitive, extramural awards to teams of IOOS Regions, industry, academia, and Federal partners for the development, testing, and evaluation of marine sensor technologies. Of the total amount, NOS will allocate \$1 million to sensor evaluation and verification activities that support this initiative.

**IOOS Regional Observations: Regional IOOS Observations Base Funding.**

NOAA requests an increase of \$2,425,000 and 0 FTE to support ocean and coastal observing efforts. NOAA will use these additional funds to increase Federal support to the eleven IOOS Regional Associations. U.S. IOOS® is an operational system that provides continuous data on open oceans, coastal waters, and the Great Lakes to inform decision-making. The IOOS Regional Associations (RAs) guide development of and stakeholder input to regional observing activities. The RAs serve the nation's coastal communities, including the Great Lakes, the Caribbean and the Pacific Islands and territories. IOOS regional observations and models deliver both real-time and long-term ocean observations that support operational oceanography, responses to environmental challenges, and climate research. The RAs are also effective at leveraging additional investments across state, local and private sector partners. NOAA will award these funds through cooperative agreements selected through its established merit-based competitive process conducted through the National Oceanographic Partnership Program.

**IOOS Regional Observations: Sensor Verification and Validation.** NOAA requests a decrease of \$1,000,000 and 0 FTE to transition existing marine sensor technology and instrument evaluations and validation activities to a broader sensor research and development program. As part of NOAA's FY 2012 spend plan, Congress directed NOAA to provide \$1,000,000 for verification and validation activities. This work has been completed and NOAA will support future sensor evaluation and validation activities as part of its Marine Sensor Innovation proposal to develop and improve new marine sensor technologies.

**COASTAL SCIENCE & ASSESSMENT**

**\$ 81,685,000**

NOAA requests an increase of \$9,403,000 and 5 FT Es for a total of \$81,685,000 and 317 FTEs under the Coastal Science & Assessment sub-program.

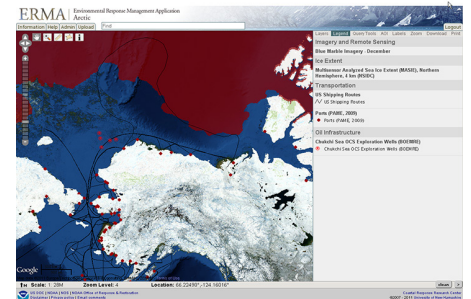


**Coastal Science, Assessment, Response and Restoration:** NOAA requests an increase of \$3,490,000 and 5 FTE. Highlights include:

**Coastal Science, Assessment, Response and Restoration: Natural Resource Damage Assessment.** NOAA requests an increase of \$2,000,000 and 4 FTE to improve NOAA's capacity to carry-out natural resource damage assessments and to expedite the restoration process. The Oil Pollution Act (OPA) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) authorize the United States, States, and Indian Tribes to act on behalf of the public as Natural Resource Trustees for natural resources under their respective trusteeship. As a trustee NOAA is charged, along with state and Federal co-trustees, with conducting Natural Resource Damage Assessments (NRDA), pursuing settlements, and carrying out restoration planning. In addition to the Deepwater Horizon case, NOAA is currently engaged as a trustee in more than 200 cases. With the requested funding, NOAA will increase its capacity to achieve settlements by two cases per year, enhance the level of technical, strategic, and legal support available to cases under OPA and CERCLA, and increase staffing of natural resource injury specialists, restoration specialists, and attorneys.

**Coastal Science, Assessment, Response and Restoration: Enhanced Emergency Scientific Support.** NOAA requests an increase of \$634,000 and 0 FTE to improve NOAA's capacity to prepare for and respond to coastal environmental hazards, including two simultaneous large environmental hazard events in different regions. As the U.S., Canada, Russia, Norway, and Iceland all proceed with plans for Arctic oil and gas exploration, requests for an improved pollution response capability are on the rise.<sup>2</sup> Engagement between NOAA responders and other Federal, state, local agencies and native tribes will be critical to ensuring that the Federal government is prepared to respond to the increased risk of spill events. This funding will increase NOAA's engagement in review of plans and proposals; ensure that the Environmental Response Management Application (ERMA) modules are accessible to coastal managers, emergency responders, and others through a new cloud-based infrastructure; and provide tools to Federal, state, and local coastal decision makers.

**Coastal Science, Assessment, Response and Restoration: Marine Debris Research and Development.** NOAA requests an increase of \$1,000,000 and 1 FTE to carry out research and development mandates of the recently reauthorized Marine Debris Act. With this increase, NOAA will engage in approximately four additional research projects per year. Priority research topics for these additional resources will include economic impacts of marine debris, baseline levels of marine debris and the effectiveness of efforts to reduce the amount of land-based and ocean-based sources, alternatives to fishing gear posing threats to the marine environment, and enhanced tracking, recovery, and identification of lost and discarded fishing gear. NOAA will competitively distribute grants to research institutions with demonstrated expertise. NOAA will also hire a Chief Scientist for the Marine Debris Program to lead the implementation and coordination of these research activities.



*The Environmental Response Management Application (ERMA) for the Arctic enables emergency planners and responders to present spatial environment depictions of sea ice concentrations from the National Snow and Ice Data Center together with aerial observations of changing ice flows. This flexibility and adaptability provides stakeholders in the Arctic with crucial information about where sea ice is thinning in an easy-to-understand way.*



*The NOAA Marine Debris Program (MDP) supports national and international efforts to research, prevent, and reduce the impacts of marine debris.*

<sup>2</sup>-US Arctic Research Commission, 2010



Improved knowledge of marine debris causes and effects is necessary to ensure that investments in prevention, monitoring, and removal are effective in mitigating the harmful effects of marine debris on habitat, living marine resources, human health and navigation safety.

**Competitive Research:** NOAA requests an increase of \$5,193,000 and 0 FTE. Highlights include:

**Competitive Research: Competitive Research.** NOAA requests an increase of \$5,913,000 and 0 FTE to support competitive, peer-reviewed, interdisciplinary research investigations of 3-5 year periods that address coastal ocean issues across NOAA's mission responsibilities. Research topics will include harmful algal blooms (HABs), hypoxia, and diverse changes to coastal ecosystems, which negatively impact human health and impair coastal ecosystems. This competitive funding is managed by the National Centers for Coastal Ocean Science (NCCOS) and combines research and applied science to provide the information and tools, such as ecological forecasts, that coastal managers need to combat and mitigate the accelerating decline of the ecosystems and living resources under their purview. The importance of these applications cannot be overstated—harmful algal blooms alone cost the Nation over \$80 million annually in losses to coastal economies that rely on recreation, tourism, and seafood harvesting.<sup>3</sup> This increase will allow NOAA to increase funding for this type of essential research with an emphasis on areas of national and economic significance.

#### OCEAN & COASTAL MANAGEMENT AND SERVICES

**\$ 207,506,000**

NOAA requests a decrease of \$5,370,000 and 0 FTEs for a total of \$207,506,000 and 337 FTEs under the Ocean & Coastal Management and Services sub-program.

**Coastal Zone Management & Services:** NOAA requests a decrease of \$3,392,000 and 0 FTE. Highlights include:



*NOAA scientists draw up a water sample for chemical analysis. The sample is being drawn from a simulated salt-marsh ecosystem that has been exposed to an herbicide to study its fate and effects in a coastal environment.*

#### **Coastal Zone Management & Services: Coastal Climate Adaptation Strategies.**

NOAA is requesting an increase of \$833,000 and 0 FTE to develop coastal climate adaptation strategies that will be used to help communities effectively manage the devastating human, economic, and environmental impacts of sea level rise and storm surge caused by hurricanes, tsunamis, and other extreme weather events. More than 160 million people live in the coastal watershed counties of the United States and the five U.S. territories, representing just over half the U.S population in 2010. Coastal population is expected to continue increasing, further intensifying the pressures on these ecologically sensitive and economically important areas. Building on the success of NOAA's Sea Level Rise and Coastal Flooding Impacts Viewer and other visualization tools in use by coastal planners and emergency managers, NOAA will develop a visualization tool that incorporates socio-economic data overlaid with coastal inundation scenarios. This tool will allow city, county and state planners to understand how their critical infrastructure (e.g., ports, roads, water treatment facilities), community infrastructure (e.g., schools, hospitals, businesses), and population (e.g. elderly, economically disadvantaged) could be at risk from coastal inundation

<sup>3</sup>-Hoagland and Scatassa (2006)



exacerbated by climate change impacts. Working with partners, NOAA will provide grants and technical assistance support development of statewide adaptation plans to help state and local communities evaluate and incorporate this type of information into coastal planning and development decisions.

**Coastal Zone Management & Services: Consolidate Coastal Zone Programs and Services.** NOAA requests a decrease of \$1,199,000 and 0 FTE to Coastal Zone Management & Services. This reduction is the result of a consolidation of NOAA's activities under the Coastal Zone Management Act, particularly those associated with the Coastal Services Center and the Office of Ocean and Coastal Resource Management (OCRM). The consolidation will result in a streamlined program which more closely integrates the coastal management and technical assistance functions of NOAA's coastal portfolio.

**Coastal Zone Management & Services: Regional Geospatial Modeling Grants.** NOAA requests a decrease of \$2,861,000 and 0 FTE for the Regional Geospatial Grant program which supported development of models and geographic information systems by researchers and regional resource managers. In the Consolidated and Further Continuing Appropriations Act of 2012, Congress provided funds to support Regional Geospatial Modeling Grants administered by NOAA's Coastal Services Center and National Geodetic Survey. Base funding from the Coastal Services Center and Geodesy Program will continue to support a range of regional geospatial requirements, including Continuously Operating Reference Stations (CORS) support, Height Modernization, data access, capacity building, and development of tools and models. NOAA will continue to work with states and across Federal agencies to provide geospatial data and tools, training, social science information, and partnership-building services.

**Coastal Management Grants:** NOAA requests an increase of \$1,300,000 and 0 FTE. Highlights include:

**Coastal Management Grants: Regional Ocean Partnership Grants.** NOAA requests an increase of \$1,490,000 and 0 FTE to expand a targeted competitive grant program to advance regional ocean partnerships. Regional Ocean Partnership grant funding provides opportunities for states and partners to address a wide range of regional priorities, including improving community and state coastal hazards resilience, and undertaking habitat-related projects. Regional coordination increases efficiency, reduces duplication of effort and enhances NOAA's ability to provide technical assistance. This program continues to support priority actions identified in the plans of existing regional ocean partnerships (e.g., Gulf of Mexico Alliance, Northeast Regional Ocean Council, Mid- Atlantic Regional Council on the Ocean, the Governors' South Atlantic Alliance, and the West Coast Governors' Alliance on Ocean Health, Council of the Great Lakes Governors, Caribbean Regional Ocean Partnership, Pacific Regional Ocean Partnership, Hawaiian Resources Management Plan), and is available to support the development and implementation of coordinated approaches in other regions (e.g. Alaska). Eligible grant recipients include state, local and tribal governments, institutions of higher learning, and non-profit organizations working with these regional ocean partnerships or member states.



**Sanctuaries and Marine Protected Areas Program Base:** NOAA requests a decrease of \$3,498,000 and 0 FTE. Highlights include:

**Sanctuaries and Marine Protected Areas: Marine Sanctuary System and Marine Protected Areas.** NOAA requests a decrease of \$2,736,000 and 0 FTE to consolidate the National Marine Protected Areas Center with the Office of National Marine Sanctuaries (ONMS) to create a single more efficient and effective program. At this level, NOAA will fund the highest priorities of the Marine Protected Areas (MPA) Program within the ONMS. This program will continue support for the 13 Sanctuaries in the National Marine Sanctuary System, the Papahnaumokukea Marine National Monument, and National Marine Protected Areas Center as required by Executive Order 13158. The proposed consolidation will allow NOAA to fully leverage ONMS capacities and regional networks for MPA management and foster more effective information sharing among national and regional ocean management interests. At the requested funding level NOAA will support the highest priorities of all its mandates, maintain its unique capabilities, and continue engaging coastal communities and stakeholders to promote science-based stewardship of designated areas.

**Sanctuaries and Marine Protected Areas: Dr. Nancy Foster Scholarship Program.** The Administration is proposing a comprehensive reorganization of STEM education investments. The 2014 Budget would enhance the impact of the Federal investment, by reorganizing 114 STEM education programs in 11 agencies, and redirecting funding in support of a cohesive national STEM strategy focused on four priority areas: K-12 instruction; undergraduate education; graduate fellowships; and informal education activities. This would reduce the number of STEM education programs from 226 to less than 120, in order to enhance impact by strategically leveraging Federal resources and assets. Nearly \$180 million will be redirected from consolidated programs to the Department of Education, the National Science Foundation (NSF), and the Smithsonian Institution to implement initiatives in the four core reform areas. The Administration will ensure that all science mission agencies have input into the development and implementation of these initiatives so that they align with agency goals while improving STEM education at all levels in a streamlined way. NOAA currently provides awards through the Dr. Nancy Foster Scholarship Program to graduate students in oceanography, marine biology or maritime archeology. FY 2014 funding for the Dr. Nancy Foster Scholarship Program is estimated at \$510,000 (1% of Marine Sanctuaries funding in ORF and PAC). The remaining \$91,000 decrease will reduce support for the Office of National Marine Sanctuaries.



## FY 2014 PAC BUDGET SUMMARY

NOAA requests a total of \$6,700,000 and 1 FTE to support Procurement, Acquisition, and Construction (PAC) activities of the National Ocean Service. The request includes a reduction of \$1,342,000 and 0 FTEs in program changes from the FY 2014 base, and \$0 and 0 FTEs for adjustments to base (ATB). The request is a decrease of \$1,300,000 and 0 FTE from the FY 2012 Enacted.

### **NOS — PAC PROGRAM CHANGE HIGHLIGHTS FOR FY 2014:**

Select program changes (generally above \$500,000) are highlighted below at the sub-program level. A summary of funding by Program, Project and Activity (PPA) is located in Chapter 8, *Appendices*. Detailed descriptions of all program changes by PPA are located in the NOAA FY 2014 Congressional Justification.

<b>ACQUISITION</b>	<b>\$3,000,000</b>
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NOAA requests a decrease of \$16,000 and 0 FTE for a total of \$3,000,000 and 0 FTE.

<b>CONSTRUCTION</b>	<b>\$ 3,700,000</b>
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NOAA requests a decrease of \$1,326,000 and 0 FTE for a total of \$3,700,000 and 1 FTE. Highlights include:

**National Estuarine Research Reserve Construction: National Estuarine Research Reserve Construction.** NOAA requests an increase of \$695,000 and 0 FTE to support both the construction of new, sustainably designed visitor-serving and public access facilities and upgrades to critical existing infrastructure through a 70/30 cost share with states. By providing new or upgraded visitor facilities, trails and water access ways, visitors and ecotour operators can have a meaningful experience and reserves will be equipped to handle additional visitors in a sustainable way. Upgrading critical research, monitoring and educational infrastructure will make these assets more resilient in response to changing coastal conditions (e.g., sea level rise and storm surge). Funds are awarded through an annual competition.

**Marine Sanctuaries Construction: Marine Sanctuaries Construction.** NOAA requests a decrease of \$2,021,000 and 0 FTE to Sanctuaries capital expenditures for facilities and vessels. The Office of National Marine Sanctuaries manages and operates the Nation's system of 13 Marine Sanctuaries and the Papahānaumokuākea Marine National Monument. The program has developed a comprehensive facilities plan that prioritizes needs and opportunities at individual sites for constructing exhibits, collaborative education and visibility projects, and operational needs. With the funds available in FY 2014, NOAA will address capital maintenance needs of vessels and facilities, as well as one of three on-going high priority renovation projects: the renovation of three buildings that are part of the Gulf of Farallones National Marine Sanctuary at Crissy Field in San Francisco, CA; the restoration of the first floor of the National Marine Fisheries Service Laboratory occupied by staff from the Flower Garden Banks National Marine Sanctuary in Galveston, TX; and the renovation of a boathouse into a Marine Operations Center for the Stellwagen Bank National Marine Sanctuary in Scituate, MA.



## MANDATORY FUNDS

### **DAMAGE ASSESSMENT & RESTORATION REVOLVING FUND**

The Damage Assessment and Restoration Revolving Fund (DARRF) was established in 1990 under Section 1012(a) of the Oil Pollution Act 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 assessments 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.

### **SANCTUARIES ENFORCEMENT ASSET FORFEITURE FUND**

The Sanctuaries Enforcement Asset Forfeiture Fund receives proceeds from civil penalties and forfeiture claims against responsible parties, as determined through court settlements or agreements, for violations of NOAA sanctuary regulations. Penalties received are held in sanctuary site-specific accounts from year to year (technically reimbursables), as the funds are spent on resource protection within the sanctuary site where the penalty or forfeiture occurred. Funds are expended for resource protection purposes which may include all aspects of law enforcement (from equipment to labor), community oriented policing programs, and other resource protection and management measures such as the installation of mooring buoys or restoration of injured resources.







# 2

## NATIONAL MARINE FISHERIES SERVICE

At the 2013 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) meeting in Bangkok, countries agreed to increase protection for five commercially-exploited species of sharks and manta rays. CITES member nations, referred to as "Parties", voted in support of listing the oceanic whitetip shark, three species of hammerhead sharks (scalped, smooth, and great), the porbeagle shark and manta rays in CITES Appendix II – an action that means increased protection, but still allows legal and sustainable trade.





# NATIONAL MARINE FISHERIES SERVICE

The National Marine Fisheries Service (NMFS) serves the Nation through stewardship of living marine resources. This stewardship is accomplished with a science-based approach to conservation and management and the promotion of healthy coastal and marine ecosystems. NMFS is responsible for the management and conservation of fisheries within the U.S. Exclusive Economic Zone (EEZ), as well as marine mammals and endangered and threatened species within NMFS' jurisdiction.



NMFS's mandate includes the management of 446 federally-managed fish stocks along with invertebrates, sea turtles, marine mammals, and other marine and coastal species, and their habitats for commercial, recreational, and subsistence purposes. NMFS also supports international scientific research and policy development.

*Winter flounder in eelgrass. Scientists completed new assessments for three separate stocks of winter flounder and provided updated information in NMFS Status of the Stocks 2011, Annual Report to Congress on the Status of U.S. Fisheries.*



## FY 2012 ACCOMPLISHMENTS

In FY12, NMFS released the Status of Stocks Report for 2011 and reported a record number of stocks rebuilt, improving our Nation’s fisheries. By the close of 2011, we had declared six more fish stocks rebuilt—the most in a single year—and overall results showed a decrease in the number of both overfished stocks and stocks experiencing overfishing. Between December 31, 2010, and December 31, 2011, the number of overfished stocks dropped from 48 to 45, and the number of stocks experiencing overfishing dropped from 40 to 36. These results underscore the strength of NMFS’s science-based management process and clearly demonstrate that we are actively turning the corner on ending overfishing and rebuilding our Nation’s fisheries.

NMFS worked with partners to open rivers and streams for fish and other species by removing barriers to fish passage while supporting infrastructure and energy projects that promote smart economic growth. Mitigating the impacts of dams and other obstacles, such as water supply and diversion structures, allows migratory fish populations to return to their spawning grounds. NMFS contributions opened more than 1,400 stream miles. Important examples include:

- The removal of the Great Works dam on the Penobscot River in Maine.
- Mitigation for the relicensing of the Toledo Bend Hydro Project on the Sabine River in the Gulf of Mexico river basin
- Fish passage facilities at the Goose Creek Dam above Charleston, South Carolina.
- Large-scale dam removal projects on Elwha and White Salmon rivers in Washington State.

### **FY 2014 REQUEST**

**\$ 929,342,000**

NOAA requests a total of \$929,342,000 and 2,836 FTEs to support the continued and enhanced operations of the National Marine Fisheries Service. This total includes the Operations, Research, and Facilities (ORF) and other Mandatory and Discretionary accounts, including the Pacific Coastal Salmon Recovery Fund. It includes a net increase of \$9,524,000 in program changes and a net decrease of 30 FTE from the FY 2014 Base. Included in the FY 2014 Base are \$12,968,000 in inflationary adjustments, a net decrease of \$29,148,000 and a net increase of 1 FTE in technical adjustments, and \$837,000 in IT savings for reinvestment in DOC Working Capital Fund IT initiatives. The following are technical transfers: \$501,000 and 1 FTE from NOS to NMFS for the Estuary Restoration Program in order to consolidate restoration programs within NOAA and \$20,891,000 and 54 FTEs from Fisheries Habitat Restoration to the renamed line: Habitat Management and Restoration. This is a net increase of \$34,338,000 and a decrease of 29 FTEs from the FY 2012 Enacted.

This funding will allow NMFS to continue to develop advanced technologies, increase the sustainability and economic value of our fisheries, improve the economic conditions for our fishing communities, protect and recover threatened and endangered species, and maintain and restore healthy coastal habitats for living marine resources. In FY 2014, NMFS will continue to rebuild our Nation’s fisheries through targeted investments in fisheries science to inform management. Our Nation’s fisheries are a valuable component of the U.S. economy; commercial and recreational saltwater fishing generated more than \$199 billion in sales and supported nearly 1.7 million jobs in 2011<sup>1</sup>. Proposed funding increases include: \$4.9 million to strengthen data collection capabilities for fisheries stock assessments through advanced sampling

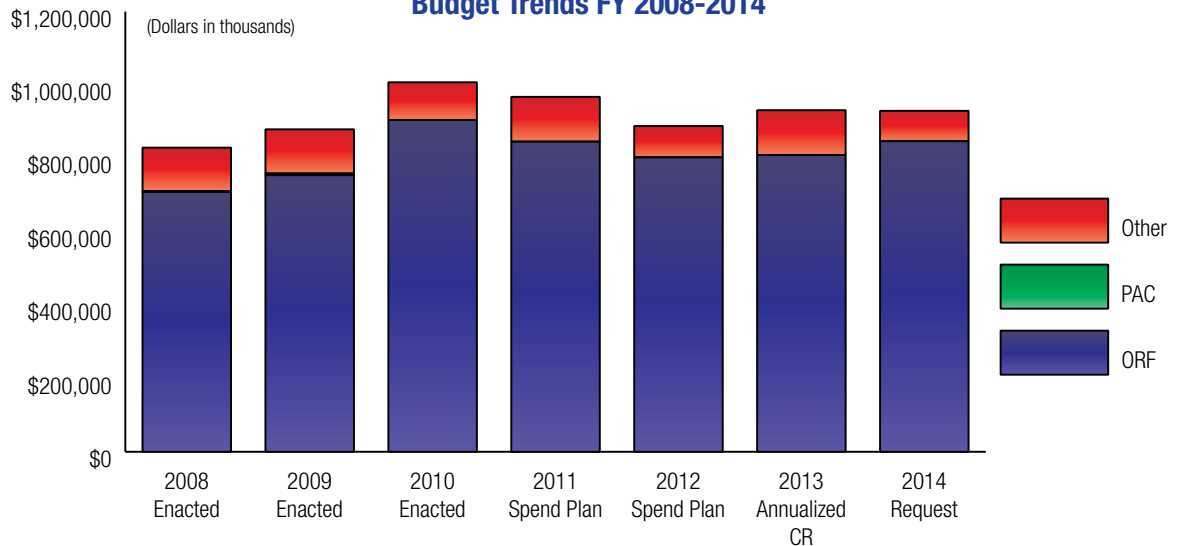
<sup>1</sup> *Fisheries Economics of the United States 2011*: [www.st.nmfs.noaa.gov/economics/publications/feus/fisheries\\_economics\\_2011](http://www.st.nmfs.noaa.gov/economics/publications/feus/fisheries_economics_2011)



## NATIONAL MARINE FISHERIES SERVICE

(DOLLARS IN THOUSANDS)	FY 2012 SPEND PLAN	FY 2013 ANNUALIZED CR	FY 2014 REQUEST	INCREASE (DECREASE)
<b>NMFS — ORF</b>				
Protected Species Research and Management	\$174,159	\$175,216	\$185,969	\$10,753
Fisheries Research and Management	426,075	428,067	437,701	9,634
Enforcement and Observers	105,361	106,000	111,335	5,335
Habitat Conservation and Restoration	41,657	41,910	47,031	5,121
Other Activities Supporting Fisheries	57,466	57,749	64,462	6,713
<b>Total, NMFS - ORF</b>	<b>804,718</b>	<b>808,942</b>	<b>846,498</b>	<b>37,556</b>
Total, NMFS - PAC	0	0	0	0
Total, NMFS - Other	90,286	122,256	82,844	(39,412)
<b>GRAND TOTAL NMFS (Direct Obligations)</b>	<b>\$895,004</b>	<b>\$931,198</b>	<b>\$929,342</b>	<b>(\$1,856)</b>
<b>Total FTE</b>	<b>2,865</b>	<b>2,864</b>	<b>2,836</b>	<b>(28)</b>

### NATIONAL MARINE FISHERIES SERVICE Budget Trends FY 2008-2014



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction

Other: Environmental Improvement and Restoration Fund, Federal Ship Financing Fund, Fisheries Finance Program Account, Limited Access System Administration Fund, Promote and Develop American Fishery Products & Research Pertaining to American Fisheries Fund, Western Pacific Sustainable Fisheries Fund, Pacific Coastal Salmon Recovery Fund, Fishermen's Contingency Fund, North Pacific Observer Fund, Foreign Fishing Observer Fund



technologies; \$2.6 million to expand our ability to complete fishery-independent survey and monitoring projects; and \$2.5 million to restore Interjurisdictional Fisheries Grants to promote research and management of fisheries that cross state boundaries. In addition, NMFS proposes an increased investment of \$4.1 million for Fisheries Habitat Restoration to implement larger-scale habitat restoration in targeted areas that help recover protected species and rebuild fisheries. Additional support for state efforts to recover threatened and endangered species will be provided through increased investment in the Species Recovery Grants Program, \$15.0 million.



## FY 2014 ORF BUDGET SUMMARY

NOAA requests a total of \$846,498,000 and 2,835 FTEs to support the Operations, Facilities, and Research (ORF) of the National Marine Fisheries Service. This increase includes a net increase of \$24,924,000 in program changes and a net decrease of 30 FTEs from the FY 2014 Base. Included in the FY 2014 Base is an increase of \$12,632,000 and 1 FTEs for Adjustments to Base (ATB) and includes a net decrease of \$336,000 and a net increase of 1 FTE for technical adjustments, including the following transfers:

- \$501,000 and 1 FTE from NOS to NMFS for the Estuary Restoration Program.
- \$20,891,000 and 54 FTEs from Fisheries Habitat Restoration to the renamed line: Habitat Management and Restoration.

This is an increase of \$41,780,000 and a decrease of 29 FTEs from the FY 2012 Enacted budget.

### **NMFS – ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2014:**

Select program changes (generally above \$500,000) are highlighted below at the sub-program level. A summary of funding by Program, Project and Activity (PPA) is located in Chapter 8, *Appendices*. Detailed descriptions of all program changes by PPA are located in the NOAA FY 2014 Congressional Justification.

**Multiple Sub-Activities: NOAA requests a decrease of \$5,000,000 and 27 FTEs as part of NOAA's West Coast proposal.** NOAA requests this decrease as part of the President's efforts to find efficiencies and savings. These efficiencies will be achieved by reducing program activities and reconfiguring the NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office, closing the Pacific Grove Laboratory in California, eliminating support for the Puget Sound ecosystem surveys, as well as the Newport Seawater Research program at the Newport Laboratory in Oregon. The geographic distribution of the staff will be driven by programmatic needs. These changes reflect NOAA's efforts to focus its resources on its highest priority mission functions and reduce administrative costs to the greatest possible extent. The reconfiguration of the West Coast regional offices will result in a leaner management structure and the elimination of other positions, while the proposed facilities changes will reduce NMFS's physical footprint and associated costs over time. See below for reductions associated with this initiative by budget line.

#### **PROTECTED RESOURCES RESEARCH AND MANAGEMENT      (\$2,591,000)**

Will eliminate duplicative staff functions as part of reconfiguring NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office and closure of the Pacific Grove Lab.

#### **MARINE MAMMALS      (\$7,000)**

Terminate small marine mammal research activity located at the Pacific Grove Laboratory which is proposed for closure.



**PACIFIC SALMON (\$484,000)**

Eliminates salmon research funding for the Newport Seawater Research program at the Newport Laboratory in Oregon.

**FISHERIES RESEARCH AND MANAGEMENT (\$1,460,000)**

Will support reconfiguring of NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office, and the closure of the Pacific Grove Laboratory in California, eliminating the Puget Sound ecosystem survey; ending the Northwest Region's support for the Newport Seawater Research program at the Newport Laboratory in Oregon.

**EXPAND ANNUAL STOCK ASSESSMENTS (\$8,000)**

Reflects the administrative savings as a result of the closure of the Pacific Grove Laboratory (PGL). Work that was previously done at the PGL to explicitly incorporate marine environmental data in fisheries assessments and ecosystem models will continue at other labs.

**INFORMATION, ANALYSIS, AND DISSEMINATION (\$450,000)**

Supports the closure of the Pacific Grove Laboratory. Critical work will continue in the Santa Cruz and La Jolla labs.

**TOTAL (\$5,000,000)**

**PROTECTED SPECIES RESEARCH AND MANAGEMENT \$ 185,969,000**

NOAA requests an increase of \$7,442,000 and a decrease of 21 FTEs for a total of \$185,969,000 and 791 FTEs under the Protected Species Research and Management sub-program. Highlights include:

**Protected Resources Research and Management Programs: NOAA requests an increase of \$1,904,000 and 0 FTEs for activities that conserve and recover threatened and endangered species.** With these additional resources, NOAA will conduct ESA Section 7 consultations and provide authorizations of proposed Federal actions affecting protected species. NOAA will meet emerging requirements for ESA interagency technical assistance and authorizations under the MMPA and ESA for all proposed actions for energy exploration and development, national defense-related activities, and fishery operations.

**Species Recovery Grants: NOAA requests an increase of \$15,003,000 and 0 FTEs for the Species Recovery Grants Program.** NMFS currently has jurisdiction over 94 threatened and endangered species, 66 species that have been proposed for listing, and 20 candidates for listing under the ESA. An additional 58 species are the subject of listing petitions currently under review by NMFS. This is an increase from February 2012 when NMFS had jurisdiction over 87 threatened or endangered species, 7 species proposed





for listing, and 94 candidates for listing. Recovery and conservation efforts for ESA-listed species under NMFS's jurisdiction are largely implemented through Species Recovery Grants, which are awarded under the authority of section 6 of the ESA. This increase will provide grants to states to conduct priority recovery actions for listed species. This can include restoring habitat necessary for the recovery of listed species, reducing or removing significant sources of mortality and injury such as, assessing and monitoring species status and trends, partnering with governments and non-governmental organizations to conduct cross-jurisdictional conservation actions, developing conservation plans to mitigate incidental take of listed species, and educating the public about the conservation of ESA-listed species. Species Recovery Grants will be administered in close coordination with the Community Based Restoration Program (CBRP) and the Pacific Coastal Salmon Recovery Fund (PCSRF) to realize efficiencies, identify strategic opportunities, and achieve significant conservation benefits on a national scale.

**Marine Mammals: NOAA requests a decrease of \$3,999,000 and 2 FTEs to terminate the John H. Prescott Marine Mammal Rescue Assistance Grant program.** NOAA will continue to provide coordination support and guidance to the stranding network.

**Other Protected Species: NOAA requests an increase of \$568,000 and 0 FTEs for the conservation and recovery of other protected species such as marine fish, plants, and invertebrates.** The funds will be used to complete listing determinations for newly petitioned species; conduct post-listing activities (recovery plans, critical habitat designations, Section 4(d) rules); and monitor ongoing and completed recovery actions to better assess the effectiveness of its recovery program. These activities enable the effective conservation and protection of marine fish, plants, and invertebrates by NOAA.

#### FISHERIES RESEARCH AND MANAGEMENT

**\$ 437,701,000**

NOAA requests an increase of \$3,387,000 and a decrease of 5 FTEs for a total of \$437,701,000 and 1,379 FTEs under the Fisheries Research and Management sub-program. Highlights include:

**Fisheries Research and Management Programs: NOAA requests a decrease of \$663,000 and 0 FTEs for Fisheries Management activities.** NOAA has annual catch limits in place for all fisheries and NOAA anticipates that the regulatory workload at the Regional Fishery Management Councils will be reduced. Therefore, NMFS proposes to reduce funding to its fishery regulation and monitoring activities in all of the NMFS Regional Offices and Science Centers. NMFS staff and Councils will work closely together to minimize any impacts to putting adaptive fishery management actions in place in a timely manner and that the effectiveness of catch monitoring efforts will be maintained.

**Expand Annual Stock Assessments: NOAA requests an increase of \$4,911,000 and 0 FTEs to increase stock assessments.** The requested level will increase the number of stocks with adequate assessments and improve fishery independent surveys through state of the art technologies, including acoustic and optical data collection



methods and multibeam sonar. These technologies allow NMFS to sample in previously unreachable habitats and maximize the number of species sampled in a survey. This increase in data will also improve NMFS's assessment capability. Improved assessment capacity, as required by the MSA, prevents overly restrictive catch limits.

**Salmon Management Activities: NOAA requests a decrease of \$6,641,000 and 0 FTEs for Salmon Management Activities.** This program funds activities associated with salmon not listed under ESA. At this funding level, NMFS will continue to meet its obligations under the Mitchell Act, including operations and maintenance of Columbia River hatcheries to mitigate the loss of fish production due to hydroelectric dams. NMFS will also conduct a broad range of salmon stock assessment and fishery monitoring programs in the Snake and Columbia Rivers. This request is sufficient to meet the Nation's obligations under the Pacific Salmon Treaty, by providing personnel support to the Pacific Salmon Commission's technical committees and conducting a broad range of salmon stock assessment and fishery monitoring programs to produce information required to implement Pacific Salmon Treaty provisions.



*Created in 1991, the Restoration Center is the only office within NOAA solely devoted to restoring the Nation's coastal, marine, and migratory fish habitat. These efforts are instrumental for supporting species recovery and fisheries management.*

**Regional Councils and Commission: NOAA requests a decrease of \$731,000 and 0 FTEs for staff of the Regional Councils and Commissions.** With Annual Catch Limits (ACLs) in place for all Fishery Management Plans (FMPs), NOAA proposes to reduce funding for the Regional Fishery Management Councils (Councils) and the Atlantic States Marine Fishery Commission. Fewer resources are required to update adaptive measures or pass new management measures. At the requested funding level, NMFS will apply a prorated reduction of approximately 2 percent to the Councils and Atlantic States Marine Fishery Commission. This Council reduction will be applied using the formula approved by the Councils to appropriately divide their funding. NMFS will also reduce funding for the Atlantic Cooperative Coastal Act by approximately 2 percent. This reduction is not expected to have significant impact that would prohibit the prevention and ending of overfishing.

**Survey and Monitoring Projects: NOAA requests an increase of \$2,580,000 and 0 FTEs to support fishery independent surveys.** The requested increase will enable NOAA to maintain the integrity of scientific data collections for fishery stock assessments that support the scientific basis for managing regional fisheries to prevent overfishing and achieve optimum yield. Specifically, this funding will support fishery independent surveys, including red snapper monitoring and at-sea data collection; Alaska Groundfish monitoring, including snow and tanner crab, rockfish, and walleye Pollock; and at-sea data collection for the West Coast Groundfish fishery.

**American Fisheries Act: NOAA requests an increase of \$1,739,000 and 0 FTEs for research and management in Alaska Bering Sea and Aleutian Islands (BSAI) groundfish fishery.** With this funding NMFS will restore the agency's ability to provide real-time, in-season management of the largest volume fishery in US waters. These funds provide core support for research and management in the Alaska Bering Sea and Aleutian



Islands (BSAI) groundfish fishery. NOAA will also increase its ability to maintain and monitor IT systems essential for the management of this fishery, to make modifications to the fishery regime, and to monitor and update necessary recordkeeping which supports backbone monitoring and enforcement.

**Interjurisdictional Fisheries Grants: NOAA requests an increase of \$2,500,000 and 0 FTE to reinstate funding for Interjurisdictional Fisheries Grants.** The Interjurisdictional Fisheries Act of 1986 (IFA) authorizes a non-competitive, formula-based grant program to support State/Federal management of United States fisheries in 38 States and Territories, which: (1) promotes and encourages State activities in support of the management of interjurisdictional resources, (2) promotes management of interjurisdictional fisheries resources throughout their range of habitat, and (3) promotes and encourages research used to inform ecosystem and interspecies approaches to conservation and management of interjurisdictional fishery resources. Funds under IFA are apportioned to the states based on a formula that uses data on the volume and value of fish landed in each state by domestic commercial fishermen.

**Reducing Bycatch: NOAA requests an increase of \$1,053,000 and 0 FTE for activities related to reducing bycatch.** NOAA proposes to provide: \$1.0M to support days at sea for observers used for targeted bycatch reduction efforts, including the collection of data on gear specifically designed to reduce bycatch; \$1.1M for coordination of the research and development of new fishing techniques and gear modifications designed to minimize bycatch, bycatch mortality, seabird interactions, and post-release mortality in federally managed fisheries; and \$2.4M to support the competitive Bycatch Reduction Engineering Program (BREP) grants, mandated by the Magnuson-Stevens Act. Grants support research to create innovative gear designs and fishing techniques to minimize bycatch. Preference will be given to proposals that include collaboration with U.S. fishermen.

#### ENFORCEMENT AND OBSERVERS

**\$ 111,335,000**

NOAA requests an increase of \$4,143,000 and 0 FTEs for a total of \$111,335,000 and 385 FTEs under the Enforcement and Observers sub-program. Highlights include:

**Enforcement: NOAA requests an increase of \$1,048,000 and 0 FTE to expand the compliance assistance program.** The requested increase will provide funding to expand the Office of Law Enforcement's (OLE) compliance assistance program. OLE's compliance liaisons and enforcement officers will work directly with fishermen, businesses, and industry organizations to increase knowledge of and voluntary compliance with regulations, thereby diminishing the number of violations due to lack of knowledge about new regulations or changes to existing regulations. OLE will work to educate affected parties where: (a) observed compliance appears to be low due to a lack of knowledge of the regulations, (b) there is lack of buy-in from affected parties as to the importance of complying with regulations, or (c) some other factor that may benefit from additional assistance. The program will pursue enforcement actions when intentional violations of laws and regulations occur and for violations that continue in spite of attempts to obtain voluntary compliance.



**Observers and Training: NOAA requests an increase of \$3,095,000 and 0 FTEs for NOAA's Observer Programs.** FY 2014 funds will support observing and monitoring for approximately 48 fisheries nationwide, with a goal of expanding observer coverage in existing fisheries to meet management and regulatory requirements and implementing new observer programs in fisheries with bycatch concerns. In addition, the increase will also support observing and monitoring costs for programs expected to transition to catch share management in FY 2014.

**HABITAT CONSERVATION AND RESTORATION \$ 47,031,000**

NOAA requests an increase of \$4,121,000 and 0 FTEs for a total of \$47,031,000 and 150 FTEs under the Habitat Conservation and Restoration sub-program. Highlight includes:

**Habitat Management and Restoration: NOAA requests an increase of \$4,121,000 and 0 FTE to implement larger-scale habitat restoration in more targeted areas.** This request will increase support for large-scale restoration through competitively selected projects that will: 1) help recover protected species and rebuild fisheries, and 2) leverage substantial investments from local partners. Project selection will be guided by The NOAA Habitat Blueprint, which establishes habitat focus areas, along with priority areas identified in recovery plans for threatened and endangered species, and areas identified in fishery management plans for rebuilding commercially and recreationally important fisheries. Targeting actions in priority areas will help NOAA leverage expertise and resources most effectively to advance Administration priorities and benefit local coastal economies.



*This is an example of an off-bottom oyster culture technique used today in New England.*

**OTHER ACTIVITIES SUPPORTING FISHERIES \$ 64,462,000**

NOAA requests an increase of \$5,831,000 and a decrease of 4 FTEs for a total of \$64,462,000 and 130 FTEs under the Other Activities Supporting Fisheries sub-program. Highlights include:

**Antarctic Research: NOAA requests an increase of \$1,423,000 and 0 FTEs to support activities to meet mandates established by the U.S. Antarctic Marine Living Resources Conservation Act (AMLR).** Under the AMLR Convention Act (Public Law 98-623), NOAA must conduct a program of "directed scientific research" to provide the scientific basis for fisheries management in the Southern Ocean. The requested increase supports 20 plus years of ecosystem observations in the Antarctic, which otherwise would be at risk of being insufficient to support the development of U.S. Antarctic policy. Funds will: 1) allow NOAA to meet the mandates of the AMLR Convention Act; 2) support research cruises and acoustic surveys of Antarctic krill to estimate the biomass of this critical species; 3) ensure research cruises are appropriately staffed; and 4) provide for additional days at sea and logistics support, allowing for comprehensive surveys of Antarctic krill, fishes, and krill-dependent predators. Krill is the largest fishery in Antarctica and the main source of food for most of the Southern Ocean's fishes, birds, and mammals. Given growing demand for Omega-3 oil and the expanding commercial interest in the krill fishery, managing this resource will have even greater relevance in the future.



**Aquaculture: NOAA requests an increase of \$1,061,000 and 0 FTE for aquaculture research and development to support the goals of the NOAA and DOC Aquaculture Policies to create jobs and increase the supply of sustainable domestic seafood.**

NMFS will use approximately \$531,000 of the requested increase to expand research to support the National Shellfish Initiative. This initiative aims to increase domestic shellfish farming and associated jobs and restore native shellfish populations in U.S. waters. NMFS will use the remaining \$530,000 to develop tools for siting and management of finfish aquaculture operations.

**Climate Regimes & Ecosystem Productivity: NOAA requests an increase of \$2,052,000 and 0 FTE for research and development work in the Arctic marine ecosystem.** In FY 2014, NOAA will support critical advances in three areas: (1) increase the existing network of in situ (buoys) and remote observing systems to improve tracking and assessment of climate-related changes in the marine ecosystem; (2) expand stock surveys into un-surveyed areas to assess how the loss of sea ice and changing ocean conditions are affecting the distribution and abundance of economically important fish (i.e. pollock), shellfish, and ice-dependent marine mammals; and (3) provide fisheries managers with information and early-warnings of possible future climate impacts on fisheries recruitment in the region.

**Cooperative Research: NOAA requests an increase of \$1,029,000 and 0 FTEs for Cooperative Research.** NOAA requests additional resources to implement the science priorities identified in the 2010-2014 Northeast Cooperative Research Strategic Plan. These additional funds will support new cooperative research projects to complement long-term monitoring programs in the Northeast/Mid-Atlantic by leveraging the capacity of a widely distributed network of commercial fishermen to collect unique biological and physical observations that would be unavailable through NOAA-NMFS resources (i.e., Industry-Based Surveys (IBS)). A key example of IBS, and where partial funding support for this increase would be applied is the ME-NH inshore trawl survey which provides critical data for stock assessments on Atlantic herring, haddock, American lobster, and monkfish.

**Information Analysis and Dissemination: NOAA requests an increase of \$1,097,000 and 0 FTEs to increase support for information management systems and information dissemination activities.** NMFS requests additional resources to augment the number of critical contracts, supplies and equipment purchases to support the development and expansion of NMFS data systems that jointly analyze a wide range of fishery data sets, as well as improve the ability to enhance the quality, utility and availability of fisheries decision-support tools. This enhancement will accelerate improvements in the quality and timeliness of data delivered to Living Marine Resources (LMR) managers and the information users. In addition, NMFS will analyze new and existing data sets and model fisheries oceanography interactions. This will help to improve, streamline and better integrate data and information the Agency has already collected and continues to collect. Priorities will be given to (1) building efficient data management tools to support management decision making and improve accessibility of data from activities such as environmental surveys through the development of enterprise-level data management



tools; (2) developing comprehensive data analysis, dissemination and reporting capabilities such as Fisheries One Stop Shop (FOSS); (3) increasing the amount of scientific information made available to the public, resource managers and research partners; and (4) continuing high quality and timely publications of scientific research papers, articles, and journals for an informed public.

**Regional Studies: NOAA requests a decrease of \$918,000 and 1 FTEs for Chesapeake Bay Studies and Restoration.** NCBO will continue to lead in fisheries research, oyster restoration, and science communication as authorized by Executive Order 13508 and the Chesapeake Bay Program Agreement. Environmental observations will be fully supported through the Chesapeake Bay Interpretive Buoy System (CBIBS). With this request, NOAA proposes to reduce administrative costs, including staff and contractor reductions, consolidation of office space, and restrictions on travel, vehicles, supplies, and equipment; elimination of environmental education grants; and a reduction in multi-species fisheries research.

## DISCRETIONARY FUNDS

### **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 FCF 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 2014 NMFS requests budget authority of \$350,000 for the payment of claims filed by fishermen. These funds should be sufficient to cover the anticipated amount of claims for FY 2014

### **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 (such fishing requires a permit issued under the MSA). This includes longline vessels fishing in the Atlantic billfish and shark fishery and other foreign vessels fishing in the EEZ. The fund is used by NOAA to pay salaries, administrative costs, data editing and entry costs, and other costs incurred in 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. NOAA 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, and the purchase of individual fishing quota (IFQ). The FFP operates under the authority of Title XI of the Merchant Marine Act of 1936, as amended (46 USC 53701); Section 303(a) of the Sustainable Fisheries Act amendments to the MSA; 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 2014 budget proposal requests loan authority of \$24 million for IFQ loans and \$59 million for FFP traditional loans as authorized by the Merchant Marine Act. Three 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. This will also support 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.

## **PACIFIC COASTAL SALMON RECOVERY FUND**

The Pacific Coastal Salmon Recovery Fund (PCSRF) remains an essential tool for achieving habitat protection and restoration in support of recovering Pacific salmon populations listed under the Endangered Species Act, as well as maintaining non-listed populations necessary for the exercise of tribal treaty rights. PCSRF-funded efforts will be coordinated with programs such as Mitchell Act, Pacific Salmon Treaty, NOAA Restoration Center's Community Based Restoration Program (CBRP), and Species Recovery Grants to realize efficiencies, identify strategic opportunities, ensure complementary implementation in the furtherance of the programs' respective goals, as well as to achieve significant conservation benefits on a national scale. PCSRF activities along the Pacific coast are part of our federal commitment to salmon and steelhead recovery and treaty Indian fishing rights, and represent a conservation effort that enables tens of billions of dollars of economic activity in these western states. Seventeen Evolutionary Significant Units of Pacific salmon and 11 Distinct Population Segments of Steelhead are listed under the Endangered Species Act. PCSRF funds are awarded to eligible states and tribes through a competitive grants process and are used to protect and recover habitat, assist in the planning and design of restoration projects, support research and monitoring efforts, encourage outreach and education with local communities and land owners, implement hatchery reform efforts, implement management strategies that allow for tribal harvest while being protective of at-risk populations, and maintain salmon populations necessary for the exercise of Native American treaty rights and to meet federal tribal trust obligations. The FY 2014 President's Request includes \$50,000,000 for this account.

## **MARINE MAMMAL UNUSUAL MORTALITY EVENT FUND**

An unusual mortality event (UME) is defined under the MMPA as "a stranding that is unexpected; involves a significant die-off of any marine mammal population; and demands immediate response." In recent years, increased efforts to examine carcasses and live stranded animals have improved the knowledge of mortality rates and causes, allowing for a better understanding of population threats and stressors and the



ability to determine when a situation is “unusual.” Understanding and investigating marine mammal UMEs is important because they can serve as indicators of ocean health, giving insight into larger environmental issues which may also have implications for human health and welfare. MMPA 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 1421(c)(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 the 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.”

### **FISHERIES ENFORCEMENT ASSET FORFEITURE FUND**

Section 311(e)(1) of the MSA authorizes the Secretary of Commerce (Secretary) to pay certain enforcement-related expenses from fines, penalties and forfeiture proceeds received for violations of the MSA, or of any other marine resource law enforced by the Secretary. Pursuant to this authority, NOAA has established a Civil Monetary Penalty/Asset Forfeiture Fund (AFF). Certain fines, penalties and forfeiture proceeds received by NOAA are deposited into this fund, and are subsequently used to pay for certain enforcement-related expenses. When Congress established the AFF, it was deemed appropriate to use these proceeds to offset in part the costs of administering the enforcement program, including: costs directly related to the storage, maintenance, and care of seized fish, vessels, or other property during a civil or criminal proceeding; reimbursement to other federal or state agencies for enforcement related services provided pursuant to an agreement entered into with the Secretary; and other limited uses as outlined in NOAA’s Asset Forfeiture Fund policy. NMFS Office of Law Enforcement (OLE) manages the AFF, which is used by OLE and NOAA General Counsel Enforcement Section to pay for enforcement activities.

## **MANDATORY FUNDS**

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

The American Fisheries Promotion Act (AFPA) of 1980 amended the Saltonstall-Kennedy (S-K) Act to authorize a grants program for fisheries research and development projects to be carried out with S-K funds. S-K funds are derived from a mandatory transfer from the Department of Agriculture to NOAA from duties on imported fisheries products. An amount equal to 30% of these duties is made available to NOAA and, subject to appropriation, is available to carry out the purposes of the AFPA. Each year a Federal Register notice is published announcing the program. The annual notice outlines priority areas, such as research on reduction/elimination of bycatch and aquaculture. The remainder of the S-K funds, which are transferred as discretionary funds, are used to offset the appropriation requirements of the Operations, Research, and Facilities account.

### **FISHERIES FINANCE PROGRAM ACCOUNT**

The American Fisheries Promotion Act (AFPA) of 1980 amended the Saltonstall-Kennedy (S-K) Act to authorize a grants program for fisheries research and development projects to be carried out with S-K funds. S-K funds are derived from a mandatory transfer from the Department of Agriculture to NOAA from duties





on imported fisheries products. An amount equal to 30% of these duties is made available to NOAA and, subject to appropriation, is available to carry out the purposes of the AFPA. The S-K grants program has provided substantial assistance to address impediments to the management, development, and utilization of the Nation's living marine resources. A Federal Register notice announces the program and outlines priority areas, such as research on reduction/elimination of bycatch and aquaculture. The remainder of the S-K funds, which are transferred as discretionary funds, are used to offset the appropriation requirements of the NMFS Operations, Research, and Facilities account.

### **FISHERIES FINANCE PROGRAM ACCOUNT**

The mandatory component of the 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.

### **FEDERAL SHIP FINANCING FUND**

This account manages the loan guarantee portfolio that existed prior to the enactment of the Federal Credit Reform Act of 1990.

### **ENVIRONMENTAL IMPROVEMENT & RESTORATION FUND**

The Environmental Improvement & Restoration Fund (EIRF) was created by the Department of Interior and Related Agencies Appropriations Act of 1998 for the purpose of carrying out marine research activities in the North Pacific. These funds will provide grants to Federal, State, private or foreign organizations or individuals to conduct research activities on or relating to the fisheries or marine ecosystems in the North Pacific Ocean, Bering Sea, and Arctic Ocean.

### **LIMITED ACCESS SYSTEM ADMINISTRATION FUND**

Under the authority of the MSA Section 304(d)(2)(A), NMFS must collect a fee to recover the incremental costs of management, data collection, and enforcement of Limited Access Privilege (LAP) programs. Funds collected under this authority are deposited into the "Limited Access System Administrative Fund" (LASAF). Fees shall not exceed three 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. The LASAF shall be available, without appropriation or fiscal year limitation, only for the purposes of administering the central registry system; and administering and implementing the MSA in the fishery in which the fees were collected. Sums in the fund that are not currently needed for these purposes shall be kept on deposit or invested in obligations of, or guaranteed by the U.S. Also, in establishing a LAP program, 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 LASAF.




## WESTERN PACIFIC SUSTAINABLE FISHERIES FUND

Section 204(e) of the 2006 amendments to the MSA authorizes the establishment of the Western Pacific Sustainable Fisheries Fund. This fund serves as a repository for any permit payments received by the Secretary of Commerce 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). Also, in the case of violations by foreign vessels occurring in these areas, amounts received by the Secretary attributable to fines and penalties shall be deposited into the fund. Foreign fishing is only allowed through a Pacific Insular Area Fishery agreement. 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. 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 and approved by the Secretary of Commerce or designee. Additionally, any funds or contributions received in support of conservation and management objectives under a marine conservation plan for any Pacific Insular Area other than American Samoa, Guam, or the Northern Mariana Islands shall be deposited in this fund.

## NORTH PACIFIC OBSERVER FUND

On January 1, 2013, the restructured North Pacific Groundfish Observer Program (NPGOP) went into effect and made important changes to how observers are deployed, how observer coverage is funded, and the vessels and processors that must have some or all of their operations observed. Coverage levels are no longer based on vessel length and processing volume; rather, NMFS now has the flexibility to decide when and where to deploy observers based on a scientifically defensible deployment plan. The new observer program places all vessels and processors in the groundfish and halibut fisheries off Alaska into one of two observer coverage categories: (1) a full coverage category, and (2) a partial coverage category.

Vessels and processors in the full coverage category ( $\geq 100\%$  observer coverage) are required to have at least one observer at all times and will obtain observers by contracting directly with observer providers. This will represent no change from the status quo for participants in the full coverage category. Vessels and processors in the partial coverage category ( $< 100\%$  observer coverage) will no longer contract independently with an observer provider, and will be required to carry an observer when they are selected through the Observer Declare and Deploy System (ODDS). Additionally, landings from all vessels in the partial coverage category will be assessed a 1.25% fee on standard ex-vessel prices of the landed catch weight of groundfish and halibut. The fee percentage is set in regulation and will be reviewed periodically by the Council after the second year of the program. The money generated by this fee will be used to pay for observer coverage on the vessels and processors in the partial coverage category in the following year. NMFS expects approximately \$4.8M to be collected in fees from the FY 2013 season, to be used in FY 2014 for observer coverage.



In order to better understand Lake Huron environmental trends, the NOAA Great Lakes Environmental Research Laboratory (GLERL) joined an international effort to study invasive species, water quality, fisheries and climate change.

Here, researchers with the NOAA Great Lakes Environmental Research Laboratory collect samples of microbes, including bacteria and viruses, from Lake Huron, April 17, 2012.

CREDIT NOAA

3

OCEANIC &  
ATMOSPHERIC  
RESEARCH

NOAA  
GREAT LAKES





# OFFICE OF OCEANIC AND ATMOSPHERIC RESEARCH

The Office of Oceanic and Atmospheric Research (OAR) is NOAA's central research line office. It provides the Nation with critical environmental information through climate, weather, oceanic, and Great Lakes research, technology development, and related services that support informed decision-making and promote healthy, productive, and resilient ecosystems, communities, and economies. With concern about the increasingly frequent and intense droughts, floods, hurricanes, and other extreme weather events, OAR's role as a global leader in improving understanding of our changing climate and its impacts on society is more important than ever.



*Fred Binkowski, the University of Wisconsin Sea Grant Institute's aquaculture specialist, and a senior scientist at the University of Wisconsin-Milwaukee School of Freshwater Sciences discovered a way to get yellow perch to spawn year round. Here he removes the eggs from a female yellow perch in his laboratory tanks. Credit: UW-Milwaukee School of Freshwater Science*

OAR supports seven laboratories and four programs across the United States and promotes collaborations with external partners, such as NOAA - funded Cooperative Institutes and thirty-two National Sea Grant Institutions. This budget request reinforces NOAA's commitment to balance and leverage funding for both internal and external programs. By working closely with its partners, OAR leverages their expertise and capabilities to more effectively and efficiently serve the Nation, create jobs, maintain our country's competitiveness, and support innovation. Additionally, NOAA looks to OAR to meet key NOAA science challenges; to lead advances in Earth system research using observations, analysis, and modeling; and to integrate science and technology across NOAA.

OAR is also charged with the task of integrating research across NOAA, collaborating agency-wide through the NOAA Research Council as well as directly with other NOAA Line Offices to bring together the agency's existing science and research assets. OAR's role as a dedicated research line office enables the agency to effectively balance its around-the-clock operational mission while maintaining a cutting-edge scientific portfolio. One example of this role is the valuable partnership between OAR and the National Weather Service (NWS). OAR's research continually improves NOAA's warning systems and predictive capacity, leading to improved weather forecasts which help the public and prevent loss of life and property – a critical skill in the face of recent devastating storms such as Hurricane Sandy.

OAR provides scientific leadership in coordinating multiple agencies and external partners. In 2012, OAR led the seafloor mapping "blitz" called "Atlantic



Canyons Undersea Mapping Expeditions” (ACUMEN). ACUMEN focused on mapping deepwater canyons off the northeastern United States, leveraging support from several NOAA line offices, three NOAA ships, other Federal agencies, and many additional external partners. The baseline information gathered supports a diversity of habitats including more than 70 canyons believed to provide a refuge for a variety of fauna including species of corals, fish, and other animals of high interest to Federal and State agencies with research and management responsibilities.

### FY 2012 ACCOMPLISHMENTS

OAR is developing a new generation of weather models to improve the reliability and accuracy of NOAA forecasts for high-impact weather events. The experimental High Resolution Rapid Refresh (HRRR) model provides real-time, ultra-high resolution (3km), cloud-resolving (i.e., able to simulate individual clouds and entire cloud systems) atmospheric predictions that are updated hourly. The HRRR captured the June 29, 2012 derecho wind storm in Washington, D.C. in excellent detail, predicting the storm and its high winds 10 hours before its arrival.

In addition to model development, NOAA made key scientific contributions in FY 2012, including a NOAA-led study on Arctic sea ice published in Geophysical Research Letters. The study found that changes in summer Arctic wind patterns contribute to loss of Arctic sea ice, along with possible shifts in North American and European weather. Researchers examined early summer wind patterns in the subarctic between 2007 and 2012 as compared to the average for 1981 to 2010. Their research revealed a change in the summer Arctic wind pattern over the past six years. This shift demonstrated a connection between reduced Arctic sea ice in the summer, loss of Greenland ice and, potentially, weather in North America and Europe. The shift provides additional evidence that changes in the Arctic are the result of complex processes, known as “Arctic amplification” through which multiple Arctic-specific physical processes interact to accelerate temperature change, ice variability, and ecological impacts.



The image on the left shows the actual radar images of the Derecho upon arrival in Washington, DC. The image on the right shows the HRRR model prediction 9 hours in advance. Credit: NOAA



Arctic Ocean ice flows. Credit: NOAA

#### FY 2014 REQUEST

**\$ 472,435,000**

NOAA requests a total of \$472,435,000 and 769 FTE to support the continued and enhanced operations of the Office of Oceanic and Atmospheric Research (OAR). This total includes Operations, Research, and Facilities (ORF) and the Procurement, Acquisition, and Construction (PAC), and other accounts and is composed of a net increase of \$82,474,000 and 14 FTE from the FY 2014 base. Included in the FY 2014 base are an increase of \$3,537,000 for inflationary adjustments, an increase of \$1,934,000 to restore programs affected by the reprogramming of the FY 2012 spend plan, and \$610,000 in IT savings for reinvestment in DOC Working Capital Fund IT initiatives. This is an increase of \$89,651,000 and 14 FTE from the FY 2012 Enacted.

The FY 2014 budget proposal requests targeted investments in research and development to ensure NOAA's ability to maintain a scientific portfolio that informs policy decisions, and develops next generation technologies, products, and services to fulfill NOAA's operational mission. NOAA requests an increase of \$24 million for Laboratories and Cooperative Institutes to enhance OAR's ability to work with external academic partners, infuse innovation through Cooperative Institutes, and ensure that research continues to propel the next generation of technology and operations forward. This investment will optimize NOAA's research portfolio by investing in partnerships, promoting scientific exchange and technology transfer,



and supplementing existing NOAA research with the expertise and cutting-edge technical abilities of our partners.

NOAA requests increases for regional climate data and information (\$8.3 million increase), research of climate impacts on fisheries with a focus on the Northeast groundfish region (\$10 million increase), and ocean acidification research (\$2.1 million increase) to provide the public and decision makers with relevant and useful climate information. Additionally, NOAA's FY 2014 request will improve weather forecasts through enhanced observing platforms. An increase of \$4.9 million is requested to accelerate the next-generation weather observing platforms, including Multifunction Phased Array Radar (MPAR) and Unmanned Aircraft Systems, which will lead to increased accuracy of severe weather predictions, as well as operational forecast improvements of tropical cyclone track and intensity. An additional \$2.9 million is requested for wind boundary layer research to improve weather forecasts and enable more accurate predictions for the wind energy industry. NOAA requests \$10 million for a Grand Challenge to increase the rate of ocean discovery, by providing incentive based prizes to foster scientific and technological innovation in ocean mapping and observations. This new model for external funding explores different avenues to find smart, efficient ways of engaging external partners to meet the Nation's pressing needs for research and development. Finally, to further research and development in the National Sea Grant College Program, NOAA requests an increase of \$4.5 million to fund high-priority ocean, coastal, and climate research. Taken together, these FY14 Budget Requests show how important external research partners, in concert with in-house research expertise, are to NOAA's science enterprise.

NOAA is proposing to restructure some of OAR's projects, programs, and activities in FY 2014 to better reflect the balance achieved by OAR's climate, weather, ocean, coastal, and Great Lakes research portfolio. The new structure will group similar OAR activities into groups that better describe the work being carried out, while not impacting the activities themselves. NOAA believes that this change will improve the ability of OAR to describe its work as part of an integrated program with a balanced research portfolio. Please see page OAR-2 and exhibits 18 and 19 in the Congressional Justification for additional detail on the budget line restructure.

### FY 2014 ORF BUDGET SUMMARY

NOAA requests a total of \$462,056,000 and 769 FTE to support the Operations, Facilities, and Research (ORF) of the Office of Oceanic and Atmospheric Research (OAR) composed of a net increase of \$87,306,000 and 14 FTE from the FY 2014 base. Included in the FY 2014 base are an increase of \$3,537,000 for inflationary adjustments, an increase of \$1,934,000 to restore programs affected by the reprogramming of the FY 2012 spend plan, and \$610,000 in IT savings for reinvestment in DOC Working Capital Fund IT initiatives. This is an increase of \$89,568,000 and 14 FTE from the FY 2012 Enacted level.

Adjustments include the following transfers:

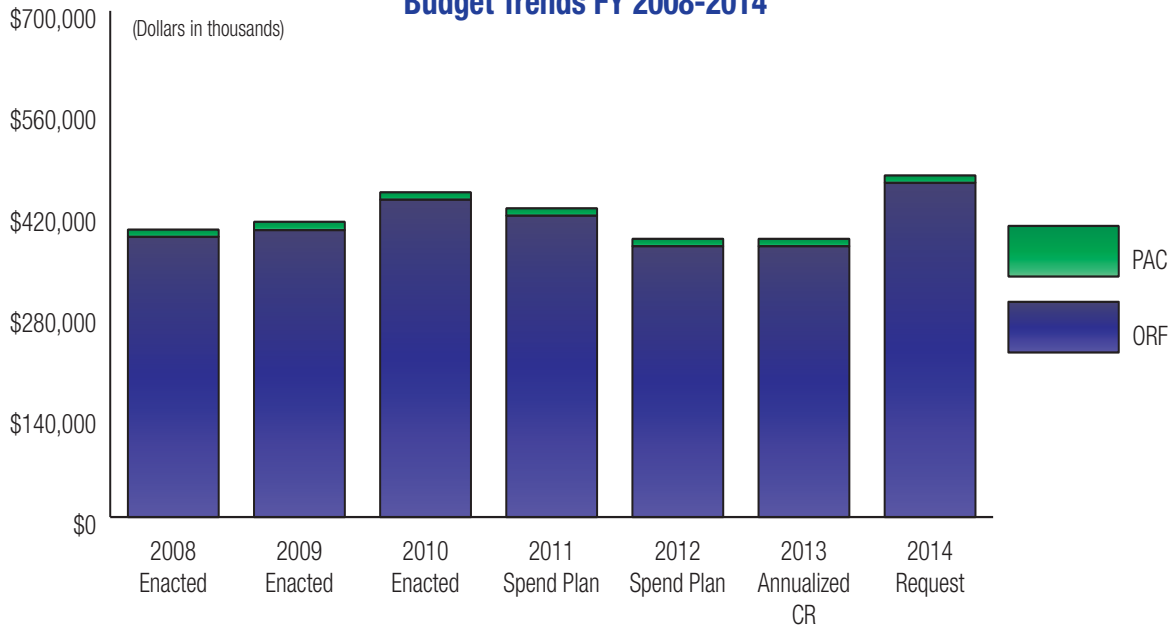
- A transfer of \$0 and 12 FTE from U.S. Weather Research Program (USWRP) to the Weather and Air Chemistry Research Laboratories and Cooperative Institutes PPA to clarify the funding source for the FTE working on the USWRP program.
- A transfer of \$914,000 and 0 FTE from the Climate Operations PPA to the Regional Climate Data and Information PPA to transfer the funding and functions of the climate operations program.



## OFFICE OF OCEANIC & ATMOSPHERIC RESEARCH

(DOLLARS IN THOUSANDS)	FY 2012 SPEND PLAN	FY 2013 ANNUALIZED CR	FY 2014 REQUEST	INCREASE (DECREASE)
OAR — ORF				
Climate Research	\$181,044	\$141,394	\$188,840	\$47,446
Weather and Air Chemistry Research	67,779	68,191	81,624	13,433
Ocean, Coastal, and Great Lakes Research	114,719	156,165	179,806	23,641
Information Technology, R&D & Science Education	8,946	9,000	11,786	2,786
<b>Total, OAR - ORF</b>	<b>372,488</b>	<b>374,750</b>	<b>462,056</b>	<b>87,306</b>
Total, OAR - PAC	10,296	10,350	10,379	29
<b>GRAND TOTAL OAR (Direct Obligations)</b>	<b>\$382,784</b>	<b>\$385,100</b>	<b>\$472,435</b>	<b>\$87,335</b>
<b>Total FTE</b>	<b>755</b>	<b>755</b>	<b>769</b>	<b>14</b>

### OFFICE OF OCEANIC & ATMOSPHERIC RESEARCH Budget Trends FY 2008-2014



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction





- A transfer of \$1,098,000 and 7 FTE from Climate Research - Laboratories and Cooperative Institutes to Weather and Air Chemistry – Laboratories and Cooperative Institutes for Atmospheric Dispersion Measurement and Modeling.
- A transfer of \$204,000 from Climate Research- Laboratories and Cooperative Institutes, \$203,000 from Weather and Air Chemistry- Laboratories and Cooperative Institutes, and \$203,000 from Ocean, Coastal, and Great Lakes- Laboratories and Cooperative Institutes for a total of \$610,000 and 0 FTE to the Program Support Payment to the DOC Working Capital Fund reflecting a reinvestment of IT savings to support Department level IT initiatives.

#### OAR – ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2014:

Select program changes (generally above \$500,000) are highlighted below at the sub-program level. A summary of funding by Program, Project and Activity (PPA) is located in Chapter 8, Appendices. Detailed descriptions of all program changes by PPA are located in the NOAA FY 2014 Congressional Justification.

#### CLIMATE RESEARCH

**\$ 188,840,000**

NOAA requests an increase of \$45,337,000 and 16 FTE in the Climate Research sub-program for a total of \$188,840,000 and 333 FTE.

**Laboratories and Cooperative Institutes:** NOAA requests an increase of \$13,529,000 and 2 FTE. This increase includes savings of \$756,000 in IT efficiencies. Highlights include:

**Laboratories and Cooperative Institutes Base Funding: NOAA requests an increase of \$5,285,000 and 0 FTE to fund external (grant- and contract-based) climate research with its Cooperative Institute partners.** This requested funding will increase Deep Argo observations, improve Carbon Tracker, and develop hydroclimate models for drought prediction. Deep Argo observations are needed to resolve the pattern and rates of multi-decadal warming signals in the ocean's deep basins. This funding will support the deployment of additional deep water floats, which will help meet the U.S. Argo Program's objective of sustained and regular monitoring of the physical state of the global ocean. Increased funds will also enable NOAA's Carbon Tracker to improve weather forecasts by increasing transport resolution using carbon dioxide and methane in its state-of-the-art weather model. This is the first step toward a next generation assimilation system that includes carbon dioxide and methane to significantly improve weather and transport modeling. In addition, NOAA will work with its Cooperative Institutes to develop and evaluate a drought prediction and assessment system. This system will complement existing efforts and allow more time for drought planning and risk reduction at the Federal, State, and local levels.



Deep Argo 2 credit: NOAA

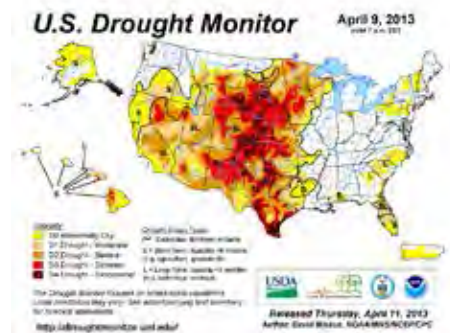
**U.S. Global Change Research: NOAA requests an increase of \$9,000,000 and 2 FTE to improve our understanding of Earth Systems and extremes, thresholds, and marine ecosystem tipping points.** Improved observations, understanding, and anticipation of the risks to human and natural systems from emissions, extremes, and tipping points are critical for the U.S. to improve its capacity for environmental and community resilience in a changing climate. Policy and decision makers have a need to understand background conditions and processes leading to extreme climate and weather events to make informed choices concerning how society should invest in critical infrastructure in risk-prone areas.



This increase will enhance the Carbon Observation and Analysis System (CAOS) within the North American Carbon Program, which focuses on quantifying, understanding, and assessing the dynamics of carbon sources and sinks in North America. In addition, funding will improve the detection, understanding, explanation, prediction, and trends of climate and weather extreme events, providing new information products to help society anticipate and respond to these events. This investment will also support Earth System Models and other tools necessary to improve understanding of marine ecosystem “tipping points” or abrupt changes in structure, function, and services. The potential for “tipping points” presents a threat to sustainable management of marine resources and the millions of jobs, billions of dollars, and thousands of communities dependent on the seafood industry, coastal tourism and recreation, and other ocean-related industries.

**Regional Climate Data and Information:** NOAA requests an increase of \$8,287,000 and 3 FTE. Highlights include:

**National Integrated Drought Information System’s (NIDIS) Regional Drought Early Warning Information Systems: NOAA requests an increase of \$1,500,000 and 0 FTE to develop Regional Drought Early Warning Information Systems (RDEWS) by providing drought impact research and applications development to underserved regions of the country.** In accordance with the 2006 NIDIS Act, NOAA integrates drought research, monitoring, forecasting, and early warning information and tools to improve drought risk management across the U.S. Extending these services beyond the NIDIS Pilot areas is the final stage of implementing a national early warning information system for drought. NOAA requests this increase for additional competitive research grants and contracts to develop and expand RDEWS to the Pacific Northwest and the Midwest agricultural belt. In collaboration with NOAA’s Coastal Services Center, additional resources will be applied to the Carolinas on early warning of low flow conditions from major streams. This funding will provide relevant research and products to stakeholders and decision-makers, and create coordinated and authoritative early warning systems for water resources, agriculture, and ecosystem management in key drought-sensitive regions.



NOAA's U.S. Drought Monitor for April 11, 2013.

**Assessment Services: NOAA requests an increase of \$2,354,000 and 0 FTE to support a permanent capability to produce climate assessments at national and regional scales.** Regular climate assessments are essential to ongoing efforts to understand what climate change means for the United States and what services are necessary to allow for informed decision-making. In FY 2014, this increase will help support a permanent capability to produce relevant and authoritative regional climate assessments targeted to regional stakeholder needs, providing an objective basis for adaptation and mitigation strategies on a variety of temporal and spatial scales. Regional climate assessments will also contribute to the legislatively mandated National Climate Assessment and future international assessments, including those of the Intergovernmental Panel on Climate Change. These assessments will leverage existing NOAA capabilities such as: physical, biological, and social science research; observations; data management; modeling and forecasting; and education and outreach. NOAA will also enhance its capabilities and tailor its products through partnerships with other federal agencies, academia, and public and private sectors.



**Climate Model Data Archive: NOAA requests an increase of \$1,586,000 and 0 FTE to generate and safely store model-based data records and support an operational archive and access capability for the next generation high-resolution weather and climate reanalysis datasets.** This project will further develop and implement a Climate Model Data Archive capability for the next generation climate analyses currently running on supercomputers across NOAA and its collaborators (i.e., the National Science Foundation, the Department of Energy, and others). The archive will provide an operational data stewardship and user access capability for the next generation of weather and climate reanalysis products. Reanalysis products improve understanding of various climate phenomena such as drought severity and location or forecasts of El Niño. The Climate Model Data Archive will be designed to provide critical data to the scientific community while also conveying key aspects of complex scientific data in a manner accessible to non-specialists and NOAA's climate information user communities. Information will be provided on time scales from days (weather), to months (El Niño), to years and decades (climate variability and change).



Climate Portal: Climate.gov

**NOAA Climate Portal: NOAA requests an increase of \$542,000 and 2 FTE to continue supporting development of the NOAA Climate Portal that will facilitate public online access to NOAA's climate data, information, and services.** There are a growing number of individuals and organizations seeking easy access to credible climate science information from NOAA at finer geographic and time scales to help them manage climate-related risks and opportunities in their lives, businesses, and communities. The Climate Portal will serve as the public's primary online source for NOAA's climate science and services. The Portal will have unique audience-focused sections designed specifically to serve the needs of decision makers and policy leaders, scientists, educators, and interested members of the public. With the requested funds, NOAA will: improve the Portal's interface; add a new "Climate Conditions" section, to present a data-driven digest of recent and near-future climate trends of interest and relevance to society; and hire full-time administrative personnel to manage the system. Additionally, the agency will create an overarching Portal home page that integrates timely and topical content from each of the Portal's sections. NOAA has robust policies in place to govern information provided through the Climate Portal and will clearly cite the information published so that users can easily trace the information back to its original scientific sources.



NOAA currently supports 11 Regional Integrated Science and Assessments (RISA) teams through five-year, cooperative agreement awards.

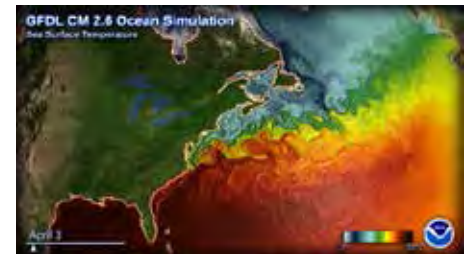
**Regional Integrated Sciences and Assessments (RISA): NOAA requests an increase of \$3,000,000 and 1 FTE to expand capability for regional research and information services.** With this funding, NOAA will conduct a competitive funding process to establish a RISA team in a new region of the country for a total of 12 RISA teams. Additionally, funds will be used to increase collaborative partnering with NOAA's regional information system components (e.g., NIDIS, NESDIS Regional Climate Service Directors, NOS Coastal Services Centers, NWS Regional offices, NMFS regional offices) as well as other federal, state, and private providers. RISA scientists provide information that decision makers can use to cope with drought, understand climatic influences on wildfire, and assess climate impacts on the transportation sector, coastal communities and human health. Stakeholders can use such information to evaluate potential climate change impacts on water supplies and hydroelectric power, and support disaster management planning.



**Climate Operations: NOAA requests a decrease of \$695,000 and 0 FTE to maintain support for the transition of regional information applications to operational production and dissemination capabilities.** With the remaining funding, NOAA will maintain support for the transition of regional information applications to operational production and dissemination capabilities. As part of that effort, NOAA will focus on development of new seasonal ice prediction products. NOAA will no longer develop the Local Climate Analysis Tool, which allows NWS and other NOAA users to operationally identify local climate variability and change impacts, and catalogs local climate studies. NOAA will also cease associated training for staff and technical users for these products.

**Climate Competitive Research:** NOAA requests an increase of \$23,521,000 and 11 FTE. Highlights include:

**Climate Science on the Global Carbon Cycle, Aerosols, and Atmospheric Chemistry to Improve Climate Models and Predictions: NOAA requests an increase of \$6,521,000 and 0 FTE to provide a process-level understanding of the climate system through observation, modeling, analysis, and field studies to support the development of improved climate models for use in climate assessments.** NOAA, in collaboration with Cooperative Institutes and other academic partners, will advance the understanding of the global carbon cycle and the role of aerosols and chemically active greenhouse gases in the global climate system. This research is critical to efforts to monitor, report, and verify regional emissions, including those from fossil fuel use. The research will be done in collaboration with members of the NOAA Earth System Research Laboratory's Carbon Tracker team and the Geophysical Fluid Dynamics Laboratory's Climate and Ecosystems group to incorporate new models into Carbon Tracker and to improve the ocean component of Earth System Models. The products of this research will improve society's ability to understand and anticipate the global and regional impacts of climate variability and change.



*A snapshot from the Geophysical Fluid Dynamics Laboratory (GFDL) CM2.6 Arctic sea surface salinity animation. Credit: NOAA*

**Earth System Modeling for Urgent Climate Issues: NOAA requests an increase of \$7,000,000 and 10 FTE to enable continued development and use of state-of-the-art Earth System Models to address urgent climate issues, including sea level rise and Arctic climate change.** In FY 2014, NOAA will use this funding to continue development of Earth System Models that will reduce uncertainties in sea-level rise projections and employ more realistic model treatment of the terrestrial biosphere. In addition, this funding will be used to create a new modeling framework for Arctic climate change, support evaluation of decadal climate prediction models and to assess the predictability of high-impact climate extremes such as heat waves and flooding. Funding will support these developments through a combination of 10 FTE, post-doctoral researchers, contracts, and grants. These will be managed by NOAA's Climate Program Office, Geophysical Fluid Dynamics Laboratory, and Earth System Research Laboratory, in partnership with Cooperative Institutes and the broader U.S. academic community. This effort will be supported by NOAA's recent investments in high performance computing resources for climate modeling.

**Impacts of Climate on Fish Stocks: NOAA requests an increase of \$10,000,000 and 1 FTE to fund research on the impacts of climate on fish stocks and prey availability, with a focus on the Northeast groundfish region.** Sustainable fisheries create and sustain jobs, stabilize economies in coastal working waterfronts, provide opportunities



for commerce, and help to meet the growing demand for seafood across the United States and the world. Fisheries managers in the Northeast and other U.S. regions have expressed concern about the impacts of climate variability and change on fish stocks. Climate-related impacts (e.g., rising ocean temperatures, changes in productivity, and related changes in marine food webs) can have significant effects on the abundance, distribution, and productivity of fish stocks and their prey. Funding will support external research to improve understanding of the impacts of climate on fish stocks, prey availability, and habitat, with a focus on the Northeast groundfish region. The results of this research may be relevant to other mid- and higher-latitude marine ecosystems, such as the Gulf of Alaska, the Bering Sea, and Arctic regions, which potentially face similar climate impacts on their fish stocks. This research investment will provide critical advances in understanding and projecting climate-related impacts to the Nation's fisheries, which will help minimize economic disruption for the many communities, citizens, and livelihoods that depend on healthy fisheries.

### WEATHER & AIR CHEMISTRY RESEARCH

**\$81,624,000**

NOAA requests an increase of \$11,899,000 and 0 FTE in the Weather & Air Chemistry Research sub-program for a total of \$81,624,000 and 217 FTE.

**Laboratories and Cooperative Institutes:** NOAA requests an increase of \$9,042,000 and 0 FTE. This increase includes savings of \$189,000 in IT efficiencies. Highlights include:

**Laboratories and Cooperative Institutes Base Funding: NOAA requests an increase of \$4,376,000 and 0 FTE to fund grant opportunities for Cooperative Institutes to pursue technological advancements in weather modeling and observing.** Research is needed to provide the Nation with more accurate and timely warnings and forecasts of high-impact weather events and their broader impacts on society. NOAA will fund additional grant opportunities for Cooperative Institutes to support research in the following subject areas: hurricanes, severe storms, air chemistry, weather models, and advanced observing technologies. This research will also provide the scientific basis for informed management decisions about weather, water, and air quality. Specifically, NOAA will use this funding increase to: support quantitative observing system assessments; extend numerical weather prediction forecast periods to one-year time scales through the Earth System Prediction Capability multi-agency partnership; and sustain and enhance the Meteorological Assimilation Data Ingest System (MADIS), including achieving final MADIS operative capability at NWS. In addition, the funding will be used to test an Unmanned Aircraft System observing strategy for regional river flood monitoring and fund additional grant opportunities for Cooperative Institutes to conduct dual polarization radar optimization research.

**Wind Boundary Layer Research to Support Improved Forecasts: NOAA requests an increase of \$2,855,000 and 0 FTE for wind boundary layer research to advance weather forecast quality and accuracy, and to provide essential information to the clean energy industry.** Much of what we know now about wind is very low to the ground and at higher altitudes where aircraft fly and storms occur. Very little is known about the wind at mid-altitudes, the height at which we deploy wind turbines. A better understanding of those mid-level altitudes will allow us to advance the quality and accuracy of weather forecasts allowing for more accurate predictions of wind power production. In FY 2014, funding will be used to deploy wind testbeds in regions across the Nation to help determine



the optimal mix of instrumentation needed for wind resource characterization and mid-altitude wind forecast improvements. In addition, the requested funds will support use of NOAA's High-Resolution Rapid Refresh (HRRR) weather model to produce a more accurate forecast of wind speeds and direction that the private sector can leverage to determine optimal long-term sites for harnessing wind resources.

**Unmanned Aircraft Systems: NOAA requests an increase of \$2,000,000 and 0 FTE to accelerate development of the next-generation of weather observing platforms.**

The requested increase will support a Memorandum of Understanding with NASA to fly 10 NOAA-dedicated Global Hawk missions using NASA's Hurricane Severe Storm Sentinel (HS3) payload sensors, facilities, science team, and aviation personnel. In addition, the UAS Program will use base funding to support NOAA science and aviation personnel participation in the HS3 field phase to evaluate the feasibility and benefit of real-time HS3 data to NOAA operational forecast improvements of tropical cyclone track and intensity. NASA and NOAA are both interested in developing UAS observing capabilities for weather research and operations and have successfully demonstrated the feasibility of the high altitude Global Hawk UAS to deliver real-time meteorological information to weather researchers and operational communities. The Office of Naval Research results show a 10-30% improvement of hurricane track and intensity in the 3 – 5 day forecast of a hurricane research model using Global Hawk HS3 dropsondes along with other traditional data sources. These early results cannot confirm operational forecast improvements but they suggest value to exploring the Global Hawk capabilities.

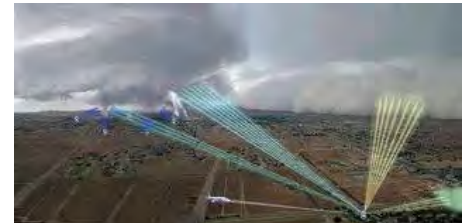


NOAA/NASA Global Hawk Credit: NASA

**Weather and Air Chemistry Research Programs:** NOAA requests an increase of \$2,857,000 and 0 FTE. Highlights include:

**Tornado and Severe Storm Research/Multi-Function Phased Array Radar (MPAR): NOAA requests an increase of \$2,920,000 and 0 FTE to develop and operate a demonstrator phased array radar capable of simultaneously performing weather surveillance and aircraft tracking.**

The MPAR is jointly funded by NOAA and the Federal Aviation Administration (FAA), and both agencies are coordinating their budget requests. By 2020, more than 350 FAA radars and by 2025 nearly 150 NEXRAD weather radars will either need to be replaced or have their service life extended. If MPAR is successful and implemented as replacement radar, estimated multi-agency savings could total \$4.8 billion in acquisition costs and life cycle costs over 30 years as documented in the Federal Research and Development Needs and Priorities for Phased Array Radar (FCM-R25-2006). This requested increase will enable NOAA to build a larger antenna array, demonstrating the weather surveillance mission and the development of software to control the scanning strategies and signal processing for the multi-mission function. The demonstrator phased array radar will enable the program to bring all of the MPAR components together into an operating radar structure to demonstrate the full capabilities of the system.



Multi-Function Phased Array Radar (MPAR)

**OCEAN, COASTAL, & GREAT LAKES RESEARCH \$179,806,000**

NOAA requests an increase of \$22,515,000 and a decrease of 2 FTE in the Ocean, Coastal, & Great Lakes sub-program for a total of \$179,806,000 and 206 FTE. .



**Laboratories and Cooperative Institutes:** NOAA requests an increase of \$1,516,000 and 0 FTE. This increase includes savings of \$189,000 in IT efficiencies. Highlights include:



*Minnows schooling around a reef. Credit:NOAA*

**Ocean Coastal and Great Lakes Research Laboratories and Cooperative Institutes: NOAA requests an increase of \$1,505,000 and 0 FTE to fund grant opportunities for Cooperative Institutes to identify new methods of addressing scientific questions that define NOAA's mission goals in ocean, coasts, weather, and climate.**

Ocean research and observation systems are the basis for predictions of: economically important global climate phenomena such as El Niño and La Niña; measurements of the health of ocean, coastal, and Great Lakes ecosystems and fisheries; understanding the oceanic components of weather; and detecting and understanding other coastal hazards such as tsunamis. The economic benefit of the research and forecasts from ocean systems is well founded, but the current methods of maintaining these systems and observations (which are critical input for the forecasts) are becoming more costly due to growing fuel and port fees, and increasing maintenance expenses of the aging NOAA fleet. These factors are contributing to a decline in NOAA's ability to support the Agency's ocean-related mandates. The amount of information collected per ship day could be increased significantly through the development of a more economical operational model that uses a portfolio of observational platforms. This funding will provide grant opportunities to NOAA Cooperative Institutes to help NOAA integrate sensor suites, optimize configuration of ocean observing platforms, and identify candidate technologies to enhance the cost-effectiveness of the NOAA fleet. Projects will focus on the development and use of these technologies to help replace capabilities that are currently only considered for shipboard operations.

**National Sea Grant College Program:** NOAA requests an increase of \$9,711,000 and a decrease of 2 FTE. Highlights include:

**National Sea Grant College Program: NOAA requests an increase of \$4,495,000 and an increase of 0 FTE to support competitive research focused on developing more resilient coastal communities and sustaining diverse and vibrant economies.**

Coastal communities in the United States provide vital economic, social, and recreational opportunities for millions of Americans. At the same time, coastal communities are more vulnerable than ever to natural and technological hazards. This funding increase will support coastal resilience research projects at state, regional, and national levels through a competitively-awarded grants process to sea grant colleges and universities. Specific areas of competitive research will include: marine-related energy sources and efficiency; wise use of water resources; climate change adaptation; coastal processes studies; resilience from natural hazards; technology development; and resilient coastal businesses and industries, including fisheries and tourism. In addition to helping our coastal communities and economies become more resilient, this funding will also help create and retain private sector jobs

**National Sea Grant College Program: Grand Challenge: NOAA requests an increase of \$10,000,000 and 1 FTE to sponsor a Grand Challenge in the field of ocean mapping and observing.** NOAA requests funding for an ocean "Grand Challenge" as part of President Obama's Strategy for American Innovation. NOAA is launching this challenge as a way to focus innovative thinkers on exploration, mapping, and observing needs that would further NOAA's missions. The challenge model enables NOAA to leverage funds in order to spur even greater investments from the academic community and industry. New



technologies in these fields that modernize our at-sea research, monitoring, and application methods will help NOAA accomplish its mission more cost effectively in the future. The Grand Challenge initiative will also foster science and technological innovation that will increase the rate of discovering and mapping new energy sources, seafloor features, species, ecosystems, artifacts, and resources that may lead to new types of pharmaceuticals. Increasing the rate at which NOAA can collect these ocean observations will also improve understanding of the role oceans play in our weather and climate.

**National Sea Grant College Program: NOAA requests a decrease of \$4,000,000 and 0 FTE to terminate STEM education efforts in the National Sea Grant College Program.** The Administration is proposing a comprehensive reorganization of STEM education investments. The 2014 Budget would enhance the impact of the Federal investment, by reorganizing 114 STEM education programs in 11 agencies, and redirecting funding in support of a cohesive national STEM strategy focused on four priority areas: K-12 instruction; undergraduate education; graduate fellowships; and informal education activities. This would reduce the number of STEM education programs from 226 to less than 120, in order to enhance impact by strategically leveraging Federal resources and assets. Nearly \$180 million will be redirected from consolidated programs to the Department of Education, the National Science Foundation (NSF), and the Smithsonian Institution to implement initiatives in the four core reform areas. The Administration will ensure that all science mission agencies have input into the development and implementation of these initiatives so that they align with agency goals while improving STEM education at all levels in a streamlined way. In accordance with this initiative, NOAA proposes to terminate the Sea Grant John A. Knauss Marine Policy Fellowship Program and the Sea Grant/National Marine Fisheries Service (NMFS) Graduate Fellowship Program. NOAA also proposes to terminate all state Sea Grant Program STEM activities, such as K-12 teacher training, curricula development, and education.

**Aquatic Invasive Species: NOAA requests a decrease of \$1,005,000 and 3 FTE to terminate the Aquatic Invasive Species (AIS) Program.** The Sea Grant AIS Program conducts research, education, and outreach activities to create tools to help states, communities, fishery commissions, industries, and individuals prevent and control invasive species. In FY 2014, NOAA requests the termination of Sea Grant's national AIS research and outreach competitions. Aquatic invasive species research will continue through the efforts of NOAA's state Sea Grant partners. Additionally, NOAA's will maintain current tools, technologies, and information services to control invasive species.

**Ocean Exploration and Research:** NOAA requests an increase of \$5,185,000 and a decrease of 2 FTE. Highlights include:

**Ocean Exploration Program: NOAA requests an increase of \$10,070,000 and 4 FTE to continue NOAA's mission to map and explore the extended continental shelf.** Ocean Exploration provides a critical baseline of knowledge which serves to catalyze new lines of research and scientific inquiry, support ocean resource management decisions, and improve ocean literacy and stewardship. Areas beyond 200 nautical miles of U.S. coastlines have been the focus of high-resolution bathymetric mapping and seismic reflection profiling over the past several years, in ongoing efforts to define the limits of the U.S. extended continental shelf (ECS) in accordance with international law. These efforts have already





led to scientific discoveries, such as the existence of previously unknown seamounts in the Arctic Ocean, and never before seen mega-plumes of gas from major vent fields off the U.S. West Coast. This funding increase will provide grants and other extramural funding for ocean exploration including assessing unknown and poorly known ocean areas, locating important submerged cultural resources such as shipwrecks, developing advanced undersea technologies, and conducting exploration to support U.S. claims to our ECS. This funding will enable NOAA to perform ECS mapping expeditions and expand Ocean Exploration's telepresence-enabled program conducted with partners using the NOAA ship Okeanos Explorer and Exploration Vessel Nautilus.

**National Undersea Research Program (NURP): NOAA requests a decrease of \$3,985,000 and 6 FTE to reflect the termination of the NURP program within Ocean Exploration and Research.** NOAA determined that NURP was a lower-priority function within its portfolio of research activities, particularly given that other avenues of federal funding for such activities might be pursued. Specifically, this proposed decrease will end NOAA funding to the three NURP Centers and the operations of NOAA-owned assets such as the Aquarius Undersea Habitat, Pisces V submersible, and Autonomous Undersea Vehicles. NOAA will continue to support the Ocean Exploration program, which delineates the Extended Continental Shelf and produces significant discoveries in deep sea research. Competitive grants for related activities will continue to be offered through NOAA and other federal programs.

**Office of Ocean Exploration STEM Education: NOAA requests a decrease of \$900,000 and 0 FTE as part of the Administration's STEM education reorganization plan, which will consolidate most STEM funds into the Department of Education and the National Science Foundation.** The Administration is proposing a comprehensive reorganization of STEM education investments. The 2014 Budget would enhance the impact of the Federal investment, by reorganizing 114 STEM education programs in 11 agencies, and redirecting funding in support of a cohesive national STEM strategy focused on four priority areas: K-12 instruction; undergraduate education; graduate fellowships; and informal education activities. This would reduce the number of STEM education programs from 226 to less than 120, in order to enhance impact by strategically leveraging Federal resources and assets. Nearly \$180 million will be redirected from consolidated programs to the Department of Education, the National Science Foundation (NSF), and the Smithsonian Institution to implement initiatives in the four core reform areas. The Administration will ensure that all science mission agencies have input into the development and implementation of these initiatives so that they align with agency goals while improving STEM education at all levels in a streamlined way. In accordance with this initiative, NOAA proposes to terminate STEM education programs within the Office of Ocean Exploration, including outreach and education programs that improve public understanding of ocean and coastal resources.



*NOAA's Ocean Acidification Program fosters and maintains relationships with scientists, resource managers, stakeholders, policy makers, and the public in order to effectively research and monitor the effects of changing ocean chemistry on economically and ecologically important ecosystems and species. Credit:NOAA*



**Other Ecosystem Programs:** NOAA requests an increase of \$2,101,000 and 1 FTE. Highlights include:

**Integrated Ocean Acidification: NOAA requests an increase of \$2,101,000 and 1 FTE to advance research improving our understanding of enhanced coastal acidification and the impacts to coastal marine resources; and to develop tools and adaptive strategies for affected industries and stakeholders.** Ocean acidification has been associated with changes in a broad range of marine biological processes including shell formation, recruitment, and behavior. Coastal factors such as upwelling, riverine discharge, nutrient loading, and hypoxia can enhance ocean acidification at regional and local scales. In order to more effectively adapt to and mitigate impacts from ocean acidification, we must improve our understanding of how it impacts valuable marine resources. This funding increase will enable NOAA to better inform regional stakeholders and state agencies about the consequences of enhanced coastal ocean acidification on water quality and ecosystem resilience, allowing coastal resource managers to better discern attribution of local chemistry changes necessary to inform policy and adaptive strategies. An increase to Ocean Acidification Program resources will provide investment into the following critical activities: 1) competitive extramural awards to generate regionally targeted ocean acidification observing studies; 2) scientific capacity building for impacted industries (partnering with Integrated Ocean Observing System Marine Sensor Innovation Program); 3) development of regional coastal ocean acidification models; and 4) development of regional ocean acidification outreach synthesis products.

**Sustained Ocean Observations and Monitoring:** NOAA requests an increase of \$4,002,000 and 1 FTE. Highlights include:

**Global Ocean Observing System (GOOS): NOAA requests an increase of \$4,002,000 and 1 FTE to make progress in critical ocean observations and analyses, Arctic monitoring, and more comprehensive deep ocean monitoring.** Ocean observations serve as the foundation for understanding and forecasting Earth's climate system, enabling real-time monitoring of ever-changing ocean conditions and seasonal-to-decadal climate forecasts and analyses for a broad spectrum of societal applications. In FY 2014, NOAA requests an increase in support for three components of the Global Ocean Observing System: 1) critical ocean observations and analysis; 2) additional research on immediate and near-term changes in the rapidly changing Arctic; and 3) technology development to improve our understanding of the deep ocean via deployment of Deep Argo Floats that would provide valuable information on sea level rise and the global energy balance.

#### INNOVATIVE RESEARCH AND TECHNOLOGY

**\$ 11,786,000**

NOAA requests an increase of \$2,694,000 and 0 FTE in the Innovative Research and Technology sub-program for a total of \$11,786,000 and 13 FTE.



**High Performance Computing and Communication:** NOAA requests an increase of \$2,694,000 and 0 FTE. This increase includes savings of \$600,000 in IT efficiencies. Highlights include::

**High-Performance Computing and Communication (HPCC): NOAA requests an increase of \$3,294,000 and 0 FTE to fund advanced networking research and development (R&D) projects and increase the number of software development projects.** NOAA requests an increase in funds to advance networking and software research and development (R&D) projects. OAR estimates that the requested funding will enable the program to double the number of software development projects completed. Increased funding will also allow the program to make investments in the research and development of High Performance Computing System computational infrastructure, facility, and network resources. Improvements in the accuracy and timeliness of NOAA's short-term weather warnings, seasonal forecasts, hurricane forecasts, as well as regional and global climate predictions are heavily dependent on major advances in high-end computing power and advanced information technology. NOAA's HPCC program supports IT and computing research to make improvements in the Nation's ability to forecast weather and climate, and to disseminate environmental information.

### FY 2014 PAC BUDGET SUMMARY

NOAA requests a total of \$10,379,000 and 0 FTE to support Procurement, Acquisition, and Construction (PAC) activities of the Office of Oceanic and Atmospheric Research composed of a net increase of \$29,000 and 0 FTE from the FY 2014 base. The FY 2014 base includes \$0 and 0 FTE for adjustments to base (ATB). This is an increase of \$83,000 and 0 FTE from the FY 2012 Enacted level.





# 4

## NATIONAL WEATHER SERVICE

Hurricane Sandy, with winds of 90 mph and heavy rains, is creating dangerous flooding conditions all along the Northeast U.S. from NC to New England. This NOAA GOES-13 satellite image taken on October 29, 2012 shows the storm as it is centered off of Maryland and Virginia. The storm is heading in a northwestern direction towards the Delaware and southern New Jersey coast.

CREDIT **NOAA**





## NATIONAL WEATHER SERVICE

The National Weather Service (NWS) is the Nation's first line of defense against severe weather. The NWS mission is to provide weather, water, and climate data, forecasts and warnings for the protection of life and property and enhancement of the national economy.

With approximately 4,600 employees, NWS provides the critical national infrastructure to gather and process data worldwide from the land, sea, and air through 122 Weather Forecast Offices (WFO), 13 River Forecast Centers, 9 national prediction centers, and other support offices around the country.



*Weather-Ready Nation emergency response vehicle unveiled at the National Weather Service's New Orleans/Baton Rouge office. Credit: NOAA*

This infrastructure enables data collection using technologies such as radars, satellites, data buoys, and surface observing systems. These data feed sophisticated environmental prediction models running on supercomputers. A highly trained and skilled workforce uses powerful workstations to analyze the information. The communications hub allows for the exchange of current data and products between NOAA and its public and private partners and is used to rapidly distribute forecasts and warnings via a diverse dissemination infrastructure including NOAA All-Hazards Weather Radio.

NWS has made tremendous strides in forecast and warning services over the past decades due to research advances from other parts of NOAA. For example, the development of dual-polarization radar technology with the Office of Ocean and Atmospheric Research (OAR) and the tide gauge network operated by the National Ocean Service (NOS) that contributes to the tsunami warning system are part of a NOAA-wide operational system. Platforms for observations, such as National Environmental Satellite, Data, and Information Service (NESDIS) satellites and Office of Marine and Aviation Operations (OMAO) aircraft, routinely demonstrate how NOAA science and service work together and rely upon each other to save lives and for the stewardship of coastal and marine ecosystems and resources. Investments in research balance accurate and timely observations to ensure the needs are met for NOAA's weather enterprise.

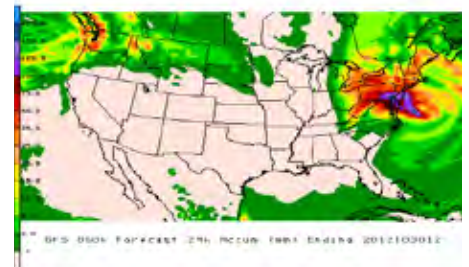


Weather directly and indirectly affects every person, property, and economic decision in the United States.<sup>1</sup> NOAA's National Climatic Data Center found that the United States sustained 133 weather climate disasters from 1980-2011 where overall associated costs were at least \$1 billion (all values in 2012 dollars)<sup>2</sup>. The total standardized losses for the 133 events exceed \$875 billion. New research and technology, and improved data gathering and processing are required as the management of weather risk expands from protection of life and property to reduction of economic losses in weather-sensitive industries.<sup>3</sup>

To meet these needs, NWS launched a nationwide initiative called Weather-Ready Nation (WRN) to build community resilience in the face of increasing vulnerability to extreme weather and water events. Record-breaking snowfall, cold temperatures, extended drought, high heat, severe flooding, violent tornadoes, and massive hurricanes have all combined to reach the greatest number of multi-billion dollar weather disasters in the Nation's history. The devastating impacts of extreme events can be reduced through improved readiness. In 2012, NWS initiated six pilot projects as part of the WRN campaign to improve demand-driven support services, provide innovative technology, and offer specialized training of our workforce.

## FY 2012 ACCOMPLISHMENTS

In March 2012, NOAA implemented major improvements to its Global Forecast System (GFS), which is run four times per day and produces forecasts up to 16 days in advance. The GFS is the backbone of the NWS's global weather and climate forecasting capability. The upgrade provided a new method for assimilating the billions of pieces of data collected daily from Earth observations and satellites. This improvement was developed in collaboration with OAR, NASA, the University of Oklahoma, and the Hurricane Forecast Improvement Project team. The new forecast system is anticipated to produce more accurate forecasts out to 16 days and to improve hurricane track forecast accuracy, general global weather predictions, and forecasts of stratospheric ozone, which affects the amount of skin-damaging radiation and climate. Decision makers depend on these weather forecasts to inform their planning and hazard preparedness.



Example of the Global Forecast System 24 hour accumulated precipitation prediction, made the evening of Oct. 27, 2012 for Hurricane Sandy which made landfall in New Jersey on the evening of October 29, 2012.

NOAA provided extensive decision support services enabling the Western United States to actively manage the 2012 active fire season. This season was the most active season since 2008 because of a drier than average winter across much of the West. Starting in January, NOAA and Fire Agency partners delivered a seasonal outlook focusing on the potential for significant wildfires and began coordinating with stakeholders including Federal, tribal, state, and local fire service providers. NOAA has provided over 20,400 spot forecasts for wildfire management year to date, including 12,000 for prescribed burns. NOAA deployed Incident Meteorologists (IMET) as front line support, with 172 on-site dispatches through November providing approximately 23,500 hours of direct support of these devastating fire outbreaks. IMETs also served on Hurricane Sandy recovery efforts. These actions ensure safety of operations and allow responders to take into account one of the most changeable aspects of an incident, the weather.



Setting up an Incident Remote Automated Weather Station (IRAWS) during a fire near Hiawatha, Utah. Credit: Alan Hester

<sup>1</sup> J.K. Lazo, M. Lawson, P.H. Larsen, D.M. Waldman, U.S. economic sensitivity to weather variability. *Bulletin of the American Meteorological Society* (June 2011, <http://journals.ametsoc.org/doi/pdf/10.1175/2011BAMS2928.1>).

<sup>2</sup> NOAA National Climatic Data Center (2012; <http://www.ncdc.noaa.gov/billions/>).

<sup>3</sup> J.A. Dutton, Opportunities and priorities in a new era for weather and climate services. *Bulletin of the American Meteorological Society*, (September 2002; <http://journals.ametsoc.org/doi/pdf/10.1175/1520-0477%282002%29083%3C1303%3A0APIAN%3E2.3.CO%3B2>).





## FY 2014 REQUEST

**\$1,050,101,000**

NOAA requests a total of \$1,050,101,000 and 4,546 FTEs to support the continued and enhanced operations of the National Weather Service. This total includes Operations, Research, and Facilities (ORF) and Procurement, Acquisition, and Construction (PAC) accounts and is comprised of a net increase of \$42,190,000 and a decrease of 103 FTEs in program changes from the FY 2014 Base. Included in the FY 2014 base are an increase of \$11,241,000 for inflationary adjustments, a decrease of \$4,141,000 in adjustments for restorations from the reprogramming of the FY 2012 Spend Plan, and a decrease of \$1,183,000 in IT savings for reinvestment in DOC Working Capital Fund IT Initiatives. This is an increase of \$54,086,000 and a decrease of 103 FTEs from the FY 2012 Spend Plan.

In FY 2014, NWS base funds will provide up-to-date and accurate weather information and warnings to the Nation through the support of the 122 WFOs. Base funds include the operation and maintenance of systems, such as Next Generation Radar (NEXRAD), the Automated Surface Observing System (ASOS) and others that collect the observations necessary to provide weather forecasts, warnings, and outlooks. In addition, core funding will cover systems acquisition, including the replacement of the NWS Telecommunication Gateway system with up-to-date technology to increase collection and dissemination of data; and NWS' High Performance Computing (HPC) capability, which is used to run all of NOAA's operational weather models and some experimental hurricane models. Also, funding for construction includes upgrades and improvements to NOAA's Weather Forecast Offices.

## FY 2014 ORF BUDGET SUMMARY

NOAA requests a total of \$932,786,000 and 4,522 FTEs to support the Operations, Research, and Facilities (ORF) of the National Weather Service. This includes an increase of \$16,467,000 and a decrease of 101 FTEs in program changes from the FY 2014 base. Included in the FY 2014 base are an increase of \$11,241,000 for inflationary adjustments, a decrease of \$4,559,000 in adjustments for restorations from the reprogramming of the FY 2012 Spend Plan, and a decrease of \$1,183,000 in IT savings for reinvestment in DOC Working Capital Fund IT Initiatives. This is an increase of \$27,463,000 and a decrease of 96 FTEs from the FY 2012 Spend Plan. Adjustments include the following transfers:

- NOAA requests technical adjustments to transfer a total of \$1,183,000 and 0 FTE from several NWS PPAs, including \$644,000 from the Local Warnings and Forecasts Base, \$532,000 from the Strengthen U.S. Tsunami Network, and \$7,000 from the Central Forecast Guidance, to the Program Support Payment to the DOC Working Capital Fund in order to support three new Department level initiatives: the Enterprise Security Operations Center (ESOC), the new Financial System (BAS) and the Personal Identity Verification (PIV) program.
- NOAA requests a technical adjustment to move 5 FTEs from the NEXRAD Product Improvement program in PAC to the Local Warnings & Forecasts program in ORF. This adjustment refocuses the FTE working on the NEXRAD Product Improvement (PI) program to other LWF activities, following the planned termination of that program.

### **NWS – ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2014:**

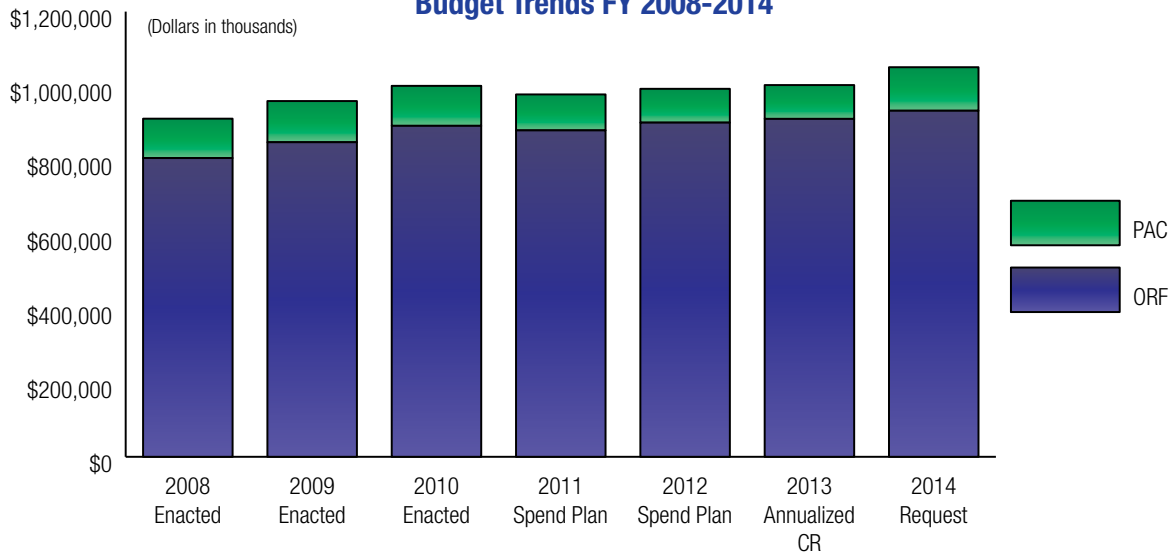
Select program changes (generally above \$500,000) are highlighted below at the sub-activity level. A summary of funding by Program, Project and Activity (PPA) is located in Chapter 8, Appendices. Detailed descriptions of all program changes by PPA are located in the NOAA FY 2014 Congressional Justification.



## NATIONAL WEATHER SERVICE

(DOLLARS IN THOUSANDS)	FY 2012 SPEND PLAN	FY 2013 ANNUALIZED CR	FY 2014 REQUEST	INCREASE (DECREASE)
<b>NWS — ORF</b>				
Operations and Research	\$807,654	\$812,559	\$831,029	\$18,470
Systems Operation & Maintenance (O&M)	97,669	98,261	101,757	3,496
<b>Total, NWS - ORF</b>	<b>905,323</b>	<b>910,820</b>	<b>932,786</b>	<b>21,966</b>
Total, NWS - PAC	90,692	91,174	117,315	26,141
<b>GRAND TOTAL NWS (Direct Obligations)</b>	<b>\$996,015</b>	<b>\$1,001,994</b>	<b>\$1,050,101</b>	<b>\$48,107</b>
<b>Total FTE</b>	<b>4,649</b>	<b>4,649</b>	<b>4,546</b>	<b>(103)</b>

### NATIONAL WEATHER SERVICE Budget Trends FY 2008-2014



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction



## OPERATIONS AND RESEARCH

**\$831,029,000**

NOAA requests an increase of \$17,187,000 and a decrease of 101 FTEs for a total of \$831,029,000 and 4,334 FTEs under the Operations and Research sub-program.

Local Warnings and Forecasts: NOAA requests an increase of \$2,380,000 and a decrease of 101 FTEs. Highlights include:

**Local Warnings & Forecasts Base, NWS Labor and Operations: NOAA requests an increase of \$22,868,000 and 0 FTE to provide the National Weather Service (NWS) additional resources to meet its labor and related costs.** NWS requires this funding to maintain current level of services and ongoing operations necessary to issue warnings and forecasts to protect life and property. This increase provides funding to cover Weather Forecast Office (WFO) staffing and other critical field office labor and related costs. These positions directly provide meteorological and hydrological services to the American public. This funding request of \$22.9 million will enable NWS to fund operational positions within the appropriate line, while maintaining funding levels for other operational needs. Investment in NWS' labor and operations funds the day-to-day operations that allow NOAA to issue timely and accurate weather warnings and forecasts. Without this funding, NOAA's ability to deliver public, aviation, marine, fire weather, climate, space weather, river and flood forecasts and warnings that are used by the general public, businesses, governments, academia, and our international partners would be significantly hampered.

NOAA understands NWS' current business model may need to be reexamined as it is based largely on the modernization that occurred in the 1990s. NWS is analyzing the recent National Academies of Science (NAS) report, "Weather Services for the Nation: Becoming Second to None" (2012). In addition, NWS has contracted, as directed in the FY 2012 Appropriations, for a follow-on study to evaluate efficiencies to NWS operations. Once these actions are completed, NWS will be in a better position to propose changes.

**Local Warnings & Forecasts Base, Establishment of Regional Enterprise Application Development and Integration teams: NOAA requests a decrease of \$9,781,000 and 98 FTEs to reflect the significant efficiencies that can be achieved by transition to a new information technology (IT) service delivery model for the National Weather Service (NWS) forecast offices.** The NWS has identified efficiencies which have been realized in the delivery of IT support services to field offices through investments in open source software and implementation of IT best practices. NWS proposes to consolidate 122 Information Technology Officer (ITO) full-time equivalents (FTE) (one from each Weather Forecast Office (WFO)) to a regional approach consisting of 24 ITO FTEs allocated at the six NWS Regional Headquarters and the National Headquarters through the establishment of Regional Enterprise Application Development and Integration (READI) teams. The current IT setup has redundancies and through regionalization of these IT support functions, significant efficiencies can be realized in services. These savings can be accomplished by leveraging upgrades and improvements to existing systems and new technologies, such as the ongoing Advanced Weather Interactive Processing System II (AWIPS), deployment and adopting a more efficient service model. Through investments in IT, NWS has gained



*The Central Region Weather Forecast Office in Topeka, Kansas.*



the ability to fulfill much of the ITO responsibilities remotely, including systems analysis and software modifications and updates. These technology efficiencies enable NWS to reduce its workforce without impact to its mission to protect lives and property and enable the agency to provide a higher degree of consistency of service delivery.

The READI teams will have responsibility in these two primary areas which the ITOs currently manage: (1) Enterprise compatible application development and integration, and (2) IT management and systems analysis. These READI teams will ensure the working order of all computer applications and software including regular maintenance and installation of new software. The IT teams will be available to each Weather Forecast Office (WFO) as a source of software and information technology expertise.

**Local Warnings & Forecasts Base, Tropical Atmosphere Ocean Array: NOAA requests an increase of \$2,400,000 and 0 FTE to increase the operations and maintenance of Tropical Atmosphere Ocean (TAO) buoys, to achieve an 80-percent data availability standard.**

Data provided via the TAO network directly contributes to the prediction of El Niño and La Niña impacts. Accurate prediction of the onset of El Niño and La Niña allows mitigation actions to be taken in agriculture, fishing, and human health. Lessening the economic and health impacts of these events and anticipating increases in other weather-related disasters associated with them, such as landslides, flooding, brush and forest fires, tornados, and hurricanes, can have consequences in terms of dollars and lives and are of vital concern to constituents. NOAA proposes to increase ongoing operations and maintenance (O&M) of the TAO array to meet full O&M needs. With this increase, NOAA will be able to maintain a data return rate of 80 percent. The current budget profile does not support the full O&M cost of the 55 NWS TAO buoys, including parts, labor, and services for replacement and spare equipment, sensor calibration, equipment preparation, data analysis and distribution, field service, and logistics. Without this increase, at the TAO network will drop to 45 percent data availability in FY 2014. The inability to maintain the array and provide optimal observations will affect NOAA's ability to produce accurate forecasts and predictions related to El Niño and La Niña phenomena.



*The TAO buoy windward*

**Local Warnings & Forecasts Base, National Data Buoy Center (NDBC) Sustainment: NOAA requests a decrease of \$2,000,000 and 0 FTE to reduce operations and maintenance for the Coastal Data Buoy sustainment program within NDBC.**

NDBC provides critical observations from a network of 101 moored weather observation buoys and 48 Coastal-Marine Automated Network (C-MAN) stations to help meet the needs of forecasters for frequent, high-quality marine observations. NWS proposes to reduce funding for buoy sustainment to a level that will sustain 73 percent data availability. At this level, NDBC will continue to provide marine meteorological, oceanographic and geophysical observations accurately and in real-time to assist warning centers, marine forecasters, the U.S. Coast Guard, ocean platform operators and the public in making sound decisions to safely operate in the marine environment.

**Air Quality Forecasting: NOAA requests a decrease of \$3,132,000 and 0 FTE to discontinue the National Air Quality Forecasting Capability (NAQFC).** Remaining funding will sustain on-demand dispersion forecasts of volcanic ash, transport of smoke, and forecast of emergency releases, supporting aviation affected by volcanic activity.



NOAA proposes to terminate the NAQFC, which provides air quality forecasts of ozone and particulate matter, and redirect funding to other priorities in the National Weather Service (NWS) that are more aligned to NOAA's core mission. Funding will support operational maintenance of a radiological and volcanic ash plume pollution dispersion model.

**Sustain Cooperative Observer Network: NOAA requests a decrease of \$873,000 and 0 FTE to slow the modernization of the system.** NWS will delay by one year the purchase of wireless thermometer systems and air and water temperature sensors required to complete the network modernization. In addition, NWS will delay the conversion of Network data into a digital format for archiving at the National Climatic Data Center. However, all data will continue to be preserved. The requested funding continues to support sustainment and modernization activities, as recommended by the National Research Council in 1998.

**NOAA Profiler Network (NPN): NOAA requests a decrease of \$2,443,000 and 3 FTEs to continue operations and maintenance support of three profilers located in Alaska.** Given current plans to turn off wind profilers that will experience operating frequency interruptions once the European Galileo satellites are launched mid-decade, less funding is needed for NPN Operations and Maintenance (O&M). NOAA proposes to significantly decrease its NPN O&M and apply remaining funds to support the three remaining profilers located in Alaska that have been converted to new frequencies to avoid interference with the Galileo satellites. These profilers will allow NOAA to continue to support the production of aviation warnings of volcanic ash, as ash can cause catastrophic engine failure for aircraft in flight.

**Strengthen U.S. Tsunami Warning Program: NOAA requests an increase of \$3,804,000 and 0 FTE to expand NOAA's partner funding for education and awareness programs to the National Tsunami Hazard Mitigation Program (NTHMP) within the Strengthen U.S. Tsunami Warning Program (SUSTWP) and additionally provide funding for sustainment of the Deep-ocean Assessment and Reporting of Tsunamis (DART) buoy network.** The recent Japanese earthquake and Pacific tsunami highlighted the importance of advancing tsunami preparedness and forecasting. NOAA proposes increased grant funding to support local education, awareness, and inundation and evacuation map development within the NTHMP. Expanding NTHMP grants will allow NOAA to better engage state and local community partners to ensure alignment of emergency response plans and mitigation programs in at-risk areas, thereby providing the opportunity to increase the recognition rate of TsunamiReady communities, particularly within the most at-risk coastal areas. The requested funds will also reduce time between scheduled maintenance intervals for the DART buoy network, and will increase target network data availability to 82 percent. In addition, the increased funding also will provide for sufficient levels of sensors and other equipment.



*Tsunami warning sign on Santa Monica beach, California*



**National Mesonet Program: NOAA requests a decrease of \$11,032,000 and 0 FTE for the congressionally directed use of funds for the National Mesonet Network.**

NWS is using congressionally directed FY 2012 funding as indicated in the Commerce, Justice, Science, and Related Agencies Appropriations Act, 2012 to further develop the Meteorological Assimilation Data Ingest System (MADIS) for validation and quality control of mesonet data, and to continue to ingest data from mesonets. NWS proposes to create a national mesonet program within NOAA with the following request for appropriated funds.

**National Mesonet Program: NOAA requests an increase of \$5,500,000 and 0 FTE to establish the National Mesonet Program.**

With this request, NOAA proposes to leverage previous Congressionally-directed investments in mesoscale weather observation to formally establish the National Mesonet Program in the President's Budget. With FY 2014 funds, NWS will support the transition of Meteorological Analysis and Data Ingest System (MADIS) to operations and continue procurement of non-Federal surface and near-surface mesonet observational data. Investment in the National Mesonet Program mitigates the risk of less accurate and timely forecasts and warnings of small-scale, high impact weather events that can quickly threaten lives and property. This program will support the procurement, organization, and dissemination of localized weather data that can quickly be utilized by forecasters to issue warnings for emergency management, public officials, media sources, businesses, and the general public.

**Advanced Hydrologic Prediction Service, Flood Forecasts: NOAA requests a decrease of \$2,014,000 and 0 FTE for the congressionally directed use of funds for the Advanced Hydrologic Prediction Service (AHPS) program.**

NWS used FY 2012 funding to support increased flood forecasts as indicated in the Commerce, Justice, Science, and Related Agencies Appropriations Act, 2012. However, the dual polarization advancements to the NEXRAD radar will dramatically improve quantitative precipitation forecasts, which inform flood prediction. NOAA will continue to collaborate with river commissions to ensure that critical data is coordinated and incorporated in accurate and timely flood forecasts.

**Weather Forecast Office Maintenance: NOAA requests a decrease of \$867,000 and 0 FTE to the National Weather Service (NWS) Weather Forecast Office (WFO) Maintenance program.**

The WFO Maintenance program allows NWS to protect the capital investment in its previously modernized facilities in accordance with NWS operational standards along with GSA and private industry standards. As WFOs continue to age, the facilities require continued routine maintenance. NWS will continue to prioritize routine maintenance and will extend the time between preventative maintenance actions. NOAA will reduce its effort to address backlogged repairs.

**Central Forecast Guidance:** NOAA requests an increase of \$14,807,000 and 0 FTEs. Highlights include:

**Central Forecast Guidance, Expanding & Accelerating Weather Forecasting Research to Operations: NOAA requests an increase of \$14,807,000 and 0 FTE to expand and accelerate critical weather research to operations (R20) to address growing service demands and increase the accuracy of weather forecasts.** This will be achieved through, (1) accelerated development and implementation of improved global weather prediction models; (2) improved data assimilation techniques; and (3) improved



software architecture and system engineering. The requested funding will support the expansion and acceleration of R2O activities associated with improving weather forecasts through improvements to NOAA's operational environmental prediction suite. To ensure continuity and synchronization, this proposal was developed in tandem with the planning of the Disaster Relief Appropriations Act, 2013 funding provided to improve weather forecasting and hurricane intensity forecasting capabilities. Additionally, NWS, working with OAR, plans for complementary investments in research and operational high performance computing to enable next-generation weather modeling and the transition from research to operations of proven models. NOAA will use targeted grants to academia and visiting scientists programs to establish strong extramural R&D collaborations. Without this investment, the gap between NOAA's forecast skill and that of other major world weather forecast centers will continue to grow.

### SYSTEMS OPERATIONS & MAINTENANCE

**\$ 101,757,000**

NOAA requests a decrease of \$720,000 and 0 FTEs for a total of \$101,757,000 and 188 FTEs under the Systems Operation & Maintenance sub-program. Highlights include:



*AWIPS Linux workstation consisting of single-screen text workstation and a triple-screen graphical workstation*

**Advanced Weather Interactive Processing System (AWIPS): NOAA requests a decrease of \$848,000 and 0 FTE to re-direct funding to the AWIPS Future Forecast Office Initiative, which will lead to improved data management and processing capabilities.** NOAA proposes a reduction to AWIPS operations and maintenance (O&M) in order to invest in the Future Forecast Office, which will lead to service delivery efficiencies. To achieve these efficiencies, NOAA will extend cyclical replacement of AWIPS Information Technology hardware, including servers, workstations, monitors, and printers from the current cyclical replacement period of three to five years to four to six years. This reduction introduces a level of risk to AWIPS and NWS forecast and warning operations by deferring cyclical replacement of computer equipment used in every day operations.

## FY 2014 PAC BUDGET SUMMARY

NOAA requests a total of \$117,315,000 and 24 FTEs to support the Procurement, Acquisition, and Construction of the NWS. This includes an increase of \$25,723,000 and a decrease of 2 FTEs in program changes from the FY 2014 base, an increase of \$418,000 in adjustments for restorations from the reprogramming of the FY 2012 Spend Plan, and \$0 and 0 FTEs for adjustments to base (ATBs). This is an increase of \$26,623,000 and a decrease of 7 FTEs from the FY 2012 Spend Plan. Adjustments include the following transfers:

- NOAA requests a technical adjustment to move 5 FTEs from the NEXRAD Product Improvement program in PAC to the Local Warnings & Forecasts program in ORF. This adjustment refocuses the FTE working on the NEXRAD Product Improvement (PI) program to other LWF activities, following the planned termination of that program.

### NWS — PAC PROGRAM CHANGE HIGHLIGHTS FOR FY 2014:

Select program changes (generally above \$500,000) are highlighted below at the sub-activity level. A summary of funding by Program, Project and Activity (PPA) is located in Chapter 8, Appendices. Detailed descriptions of all program changes by PPA are located in the NOAA FY 2014 Congressional Justification.



**SYSTEMS ACQUISITIONS**

**\$108,665,000**

NOAA requests an increase of \$20,232,000 and a decrease of 2 FTEs for a total of \$108,665,000 and 24 FTEs under the Systems Acquisition sub-program. Highlights include:

(BUDGET AUTHORITY [BA] IN THOUSANDS)	FY 2014 REQUEST	FY 2015	FY 2016	FY 2017	FY 2018
Advanced Weather Interactive Processing System	\$21,592	\$21,592	\$21,592	\$21,592	\$21,592

**Advanced Weather Interactive Processing System, Future Forecast Office: NOAA requests a decrease of \$2,639,000 and 0 FTE for Advanced Weather Interactive Processing System (AWIPS) Technology Infusion.** Also within the AWIPS Program, NOAA proposes to re-prioritize resources to fund the AWIPS Future Forecast Office initiative, which will lead to improved data management and processing capabilities. With this reduction, NOAA will slow the implementation of new tools and capabilities. NOAA proposes a strategic re-investment of \$5,000,000 in the AWIPS Future Forecast Office Initiative to improve situational awareness during weather events. The AWIPS Future Forecast Office initiative will be funded through a redirection of \$1,000,000 in AWIPS operations and maintenance (ORF) and the redirection of \$4,000,000 from existing AWIPS PAC. These proposed capabilities are intended to reduce the time forecasters spend on the production of forecast products and information in order to spend more time supporting Impact-Based Decision Support Services (IDSS). All new tools and applications will leverage existing AWIPS II functionality and be developed within the AWIPS Development Environment (ADE). Investment in the AWIPS Future Forecast Office mitigates operational risks by increasing the resources of the forecaster and giving them more flexibility in supporting IDSS. By relieving the forecaster of the burden of shifting through volumes of data, the forecaster can issue more timely and efficient forecasts, warnings, and outlooks to the Nation, which allows NWS to better meet its mission to protect life and property and enhance the national economy.

(BA IN THOUSANDS)	FY 2014 REQUEST	FY 2015	FY 2016	FY 2017	FY 2018
NEXRAD Product Improvement	\$0	\$0	\$0	\$0	\$0

**Next Generation Weather Radar, NEXRAD Product Improvement: NOAA requests a planned decrease of \$5,900,000 and 0 FTE for the planned completion of the NEXRAD Product Improvement Program (NPI).** NOAA proposes to close out this program. Dual Polarization was determined to be the last major science upgrade to the NEXRAD array. Prior funding will complete the NEXRAD systems upgrade with the Dual Polarization capability. NWS anticipates full deployment of Dual Polarization to the NEXRAD array by the end of 2013.





(BA IN THOUSANDS)	FY 2014 REQUEST	FY 2015	FY 2016	FY 2017	FY 2018
Telecommunications Gateway Legacy Replacement	\$16,215	\$21,215	\$10,245	\$3,195	\$3,195

**NWS Telecommunications Gateway Legacy Replacement: NOAA requests an increase of \$15,014,000 and 0 FTE to design and implement a re-architected Telecommunications Gateway (NWSTG) and its backup to ensure a modern, scalable, extensible, and reliable system using current best practices.** The NWSTG is the NWS communications hub for collecting and distributing weather data and products and provides national and global collection and distribution of environmental data and forecast products to its field units and external users. This proposed increase will allow high availability through a fully redundant backup system, eliminating NWSTG functions as a single point of failure for the collection and dissemination of time-perishable products to and from thousands of customers worldwide due to current limited backup capabilities of the current infrastructure. A re-architected NWSTG will be poised to accommodate future data volumes driven by increased satellite, numerical model data and climate observations and other requirements, and to maintain system integrity and reliability.

(BA IN THOUSANDS)	FY 2014 REQUEST	FY 2015	FY 2016	FY 2017	FY 2018
Weather & Climate Supercomputing	\$44,169	\$44,169	\$44,169	\$44,169	\$44,169

**Weather and Climate Supercomputing, Enhancement of Operational High Performance Computing System: NOAA requests an increase of \$3,787,000 and 0 FTE to enable the NOAA operational weather supercomputer located at the National Centers for Environmental Prediction (NCEP) to become a competitive, world class system leading to enhanced accuracy of NOAA's operational environmental prediction suite.** Acquisition of additional Weather and Climate Operational Supercomputing System (WCOSS) capacity will accommodate the growing demand for critical forecast products and will result in improved skill, uncertainty information, and specificity in NOAA's operational numerical prediction guidance. This additional HPC capacity will enable NOAA to begin mitigating the gap between the U.S. Global Forecast System (GFS) and other international prediction systems by running higher resolution models and ensemble modeling systems. Without this investment, the gap between NOAA's forecast skill and that of other major world weather forecast centers will continue to grow. This increase will enhance NOAA's forecast suite accuracy and uncertainty information, which in turn will allow for more targeted emergency preparation and response, such as the designation of evacuation areas for storms such as hurricanes. This proposal was developed in tandem with the planning of the Disaster Relief Appropriations Act, 2013 funding.



BA (IN THOUSANDS)	FY 14 REQUEST	FY 2015	FY 2016	FY 2017	FY 2018
Cooperative Observer Network-Modernization	\$0	\$0	\$0	\$0	\$0

**Cooperative Observer Network-Modernization: NOAA requests a decrease of \$3,708,000 and 2 FTEs to terminate the U.S. Historical Climatology Network—Modernization (USHCN-M) (also known as the Regional Climate Reference Network (USRCRN); and formerly referred to as the Cooperative Observer Network-Modernization (COOP/Mod) and NOAA’s Environmental Real-time Observation Network (NERON)).** NOAA proposes to terminate the USHCN-M in FY 2014, but will continue to pursue improvements to hydrologic and climate observations through other programs. Due to cost of maintaining existing and newly deployed sites, full deployment of USRCRN is not feasible. Instead, NOAA will continue to use existing observing systems, such as the Cooperative Observer Network, to observe snow fall for liquid water equivalence, snow depth, and precipitation type used in flood outlooks, flood forecast guidance modeling, monitoring of droughts, issuing local weather forecasts, and declaration of disasters by government officials. The COOP network, including the modernized sites that are already deployed, will be used by NOAA to prepare national, regional, and local climate forecasts and is critical in the development of climatological normals and averages.

(BA IN THOUSANDS)	FY 2014 REQUEST	FY 2015	FY 2016	FY 2017	FY 2018
NOAA Profiler Conversion	\$0	\$0	\$0	\$0	\$0

**NOAA Profiler Conversion: NOAA requests a decrease of \$1,709,000 and 0 FTE to terminate the NOAA Profiler Conversion.** NOAA proposes to terminate the conversion and tech refresh of 32 profiler sites from 404 to 449 MHz. Thirty-two of the existing 37 wind profilers use a transmitter frequency of 404 MHz issued by the National Telecommunications and Information Administration (NTIA) upon the profilers’ deployment. These 32 profilers using the 404Mhz frequency will be required to cease transmitting on this frequency to avoid interference with the new European Union’s Search and Rescue Satellite Tracking (SARSAT) transponders aboard the (Galileo) GPS satellite constellation. NOAA proposes to terminate the conversion and tech refresh program in FY 2014 and will continue to pursue improvements in detecting tornadoes and other severe weather through other programs. NOAA will continue to use existing observing systems, such as Dual Polarized radar, radiosondes and aircraft observations to the fullest extent to mitigate the loss of profiler data. Three (3) profiler sites in Alaska already operating on the 449 MHz frequency will continue to operate. These profilers will allow NOAA to continue to provide volcanic forecast products to preserve a safe Alaska airspace.



(BA IN THOUSANDS)	FY 2014 REQUEST	FY 2015	FY 2016	FY 2017	FY 2018
Ground Readiness Project	\$15,446	\$18,707	\$15,399	\$15,399	\$15,399

**Ground Readiness Project: NOAA requests an increase of \$15,446,000 and 0 FTE to ensure utilization of the substantial increase in environmental satellite, radar, and model data that will improve weather warnings and forecasts.** This NWS Ground Readiness Project (GRP) investment will continue to prepare NOAA for the three-fold increase in data volume expected from new environmental satellites, which far exceeds the capacity of the organization's current information technology (IT) infrastructure. To fully exploit and benefit from these new observations and products, NWS's IT infrastructure must be enhanced. Investment in GRP mitigates the risk that NOAA would be limited to current processing capacities and likewise would ensure a return on satellite investments. NOAA has invested billions of dollars in new satellite sensing systems and data sets within NOAA's National Environmental Satellite, Data, and Information Service (NESDIS) that will come online over the course of FY 2014-2017 to improve the fidelity and accuracy of weather warnings and forecasts. This activity continues the efforts started with funding from the Disaster Relief Appropriations Act, 2013.

#### CONSTRUCTION

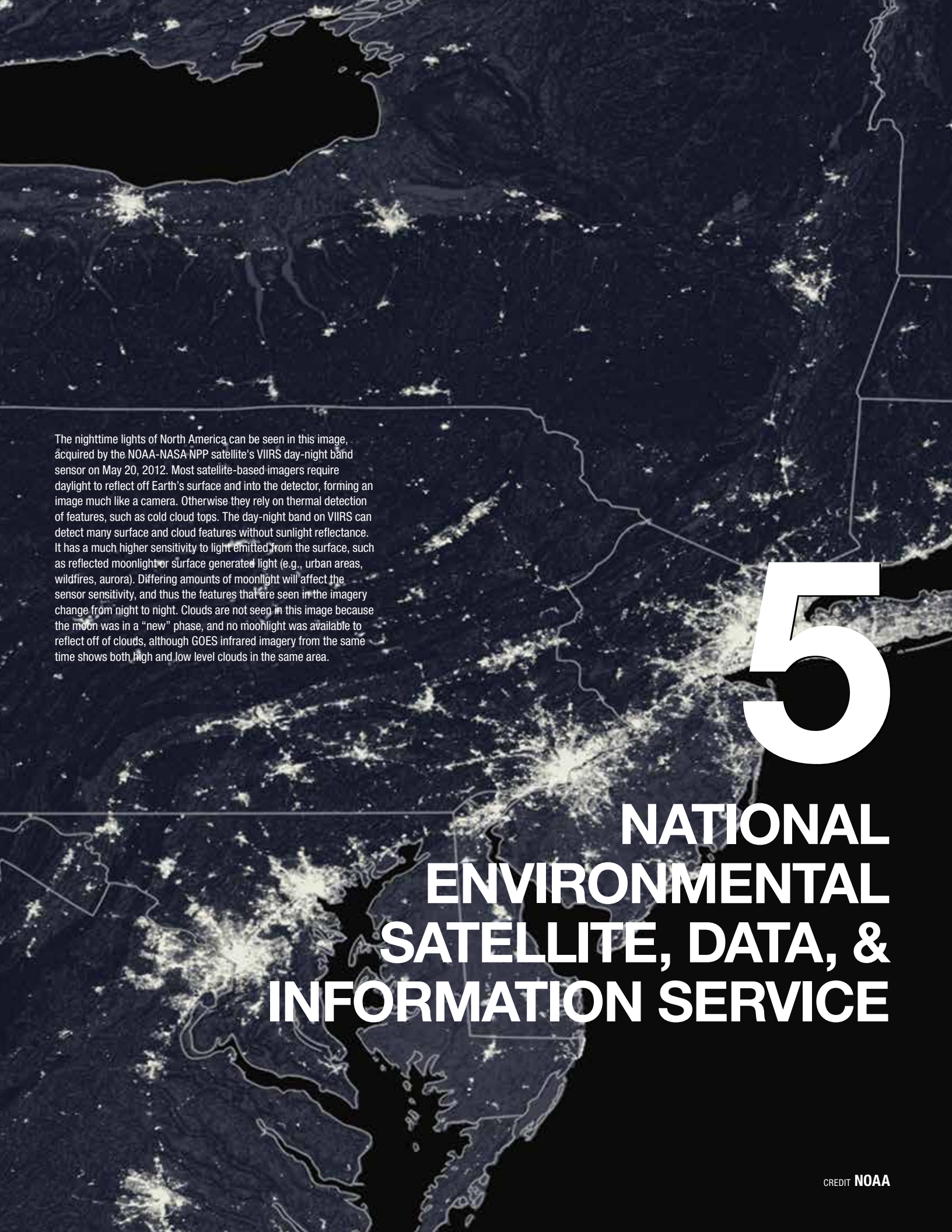
**\$8,650,000**

NOAA requests an increase of \$5,491,000 and 0 FTEs for a total of \$8,650,000 and 0 FTEs. Highlights include:

(BA IN THOUSANDS)	FY 2014 REQUEST	FY 2015	FY 2016	FY 2017	FY 2018
WFO Construction	\$8,650	\$3,159	\$3,159	\$3,159	\$3,159

**WFO Construction, Weather Forecast Office and River Forecast Center Relocations: NOAA requests a one-year increase of \$5,491,000 and 0 FTE to provide tenant improvements (TI) and move costs associated with Weather Forecast Office (WFO) and River Forecast Center (RFC) relocations due to unacceptable conditions at leased facilities that will impact operations.** In FY 2014, NWS will relocate four WFO/ RFCs. This funding supports Tenant Improvements (TI) and associated move costs for these four FOs. Investment in the WFO and RFC relocations mitigates operational risks as these improvements are needed for the continuity of weather forecast and warning operations and compliance with weather office standards. Standards of structural integrity, maintenance, security, temperature control, and adequate utilities ensure that forecasters, and the computing and system resources they rely on, meet requirements for issuing weather forecasts and warnings. Further, these FOs are located in severe weather areas, such as tornados and hurricanes, where citizens, emergency managers, and local officials count on the timely and accurate delivery of weather warnings.





The nighttime lights of North America can be seen in this image, acquired by the NOAA-NASA NPP satellite's VIIRS day-night band sensor on May 20, 2012. Most satellite-based imagers require daylight to reflect off Earth's surface and into the detector, forming an image much like a camera. Otherwise they rely on thermal detection of features, such as cold cloud tops. The day-night band on VIIRS can detect many surface and cloud features without sunlight reflectance. It has a much higher sensitivity to light emitted from the surface, such as reflected moonlight or surface generated light (e.g., urban areas, wildfires, aurora). Differing amounts of moonlight will affect the sensor sensitivity, and thus the features that are seen in the imagery change from night to night. Clouds are not seen in this image because the moon was in a "new" phase, and no moonlight was available to reflect off of clouds, although GOES infrared imagery from the same time shows both high and low level clouds in the same area.

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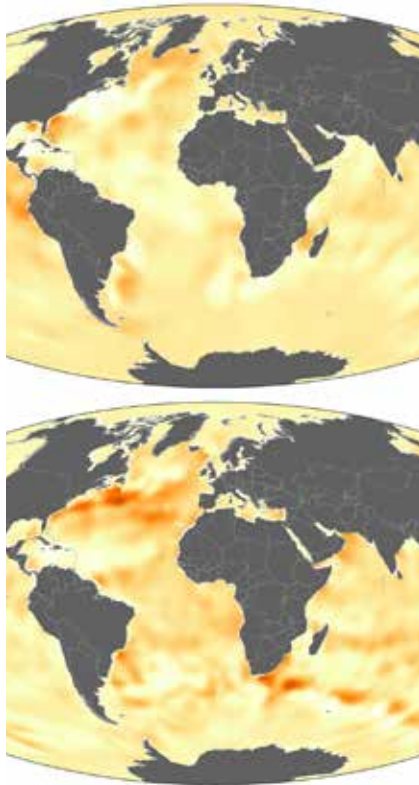
## NATIONAL ENVIRONMENTAL SATELLITE, DATA, & INFORMATION SERVICE





# NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE

The National Environmental Satellite, Data, and Information Service's (NESDIS) vision is to be the world's most comprehensive source and recognized authority for satellite products, environmental information, and official assessments of the environment in support of sound decision-making and science and research. NESDIS is dedicated to providing timely access to global environmental data to enhance the Nation's economy, security, and quality of life.



*The National Oceanographic Data Center has updated their ocean heat and salinity data products to include data from 2011. Shown here are comparison images from 1970 and 2011 for global ocean heat content (OHC) between the surface and 700 meters (2,296 ft) depth. Credit: NOAA*

In collaboration with the National Aeronautics and Space Administration (NASA), international partners, and the U.S. Air Force, NESDIS operates environmental monitoring satellites and manages their data. NESDIS acquires the Nation's operational environmental satellites, manages the NOAA National Data Centers, provides data and information services, including Earth system monitoring, performs official assessments of the environment, and conducts related research. The NESDIS satellite command and control program acquires data from on-orbit U.S. and international satellites 24 hours per day, 365 days per year. This includes monitoring satellite operations, which occur at the NOAA Satellite Operations Facility (NSOF) in Suitland, Maryland and satellite command and data acquisition stations in 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), the Department of Defense (DoD) Defense Meteorological Satellite Program (DMSP), and Jason-2 altimetry mission. NESDIS also leverages data from a number of satellites operated by its international partners including: the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), the Japan Aerospace Exploration Agency (JAXA), the French Space Agency (CNES), the Canadian Space Agency (CSA), and others.

One of the greatest challenges facing NOAA today is ensuring continuity of satellite operations. NOAA's satellites provide the data and information for forecasts and warnings that are vital to every citizen. From safe air, land, and marine transportation to emergency rescue missions, Americans rely on satellite observations daily. Timely and accurate information supports



the National Weather Service (NWS), federal and state agencies, and local emergency management agencies, enabling advance warnings of emerging severe weather such as hurricanes, flash floods, tsunamis, winter storms, and wild fires. Along with the skill of NOAA meteorologists, NOAA's satellites are vital to the success of our weather enterprise, are the backbone of the global earth observing system, and provide a myriad of other benefits to the Nation. Satellite observations assist the NOS in monitoring coastal ecosystem health, such as the identification and monitoring of coral bleaching, harmful algal blooms, and potential maritime hazards from sea ice. The National Marine Fisheries Service (NMFS) utilizes satellite tag-derived location data to designate critical habitat for endangered species by tracking migratory movements and locating critical feeding and breeding areas. Partner agencies such as the U.S. Geological Survey use NOAA satellites to relay vital information from thousands of river flood gauges and seismic monitoring stations in remote, inaccessible areas. NOAA's Space Weather Prediction Center uses data from NOAA's satellites to warn of solar eruptions that send charged particles toward the earth, enabling us to protect critical infrastructure such as power transformers, pipelines, and communication networks.

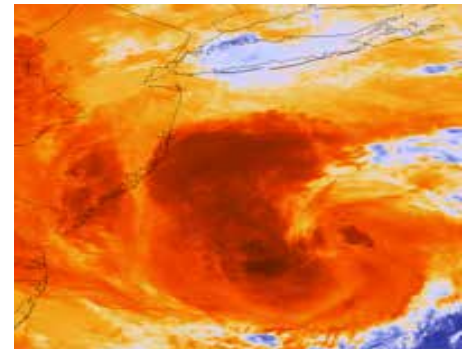
### FY 2012 ACCOMPLISHMENTS

On October 28, 2011, NASA, in collaboration with NOAA, successfully launched the Suomi-National Polar-orbiting Partnership (SNPP) satellite from Vandenberg Air Force Base. It was commissioned on March 6, 2012, and shortly thereafter, NWS started using some of the data in their numerical weather prediction models and weather monitoring activities. This successful launch of SNPP and data collection from weather and climate monitoring sensors represents many years of effort by NOAA, NASA, DoD and contractors.

In 2012, NOAA satellites were key factors in the rescues of 263 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. These satellites are part of an international system, along with Russia's COSPAS spacecraft, called COSPAS-SARSAT. Now in its 30th year, COSPAS-SARSAT has been credited with supporting more than 33,000 rescues worldwide, including 7,019 in the United States and surrounding waters. This system uses a network of satellites to quickly detect and locate distress signals from emergency beacons. When a satellite finds the location of a signal within the United States or its surrounding waters, the information is relayed to the SARSAT Mission Control Center at NSOF in Suitland, Maryland. From there, the information is relayed 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.



On October 28, 2011, NASA launched the Suomi NPP satellite from Vandenberg Air Force Base. Suomi NPP satellite is the bridge between NOAA's current polar-orbiting satellites and NASA's current Earth Observing System satellites and JPSS. The JPSS-1 satellite is set to launch in early 2017.



This image taken from NOAA and NASA's weather satellite, Suomi NPP, at 1:35 pm ET on October 29, 2012, shows Hurricane Sandy as it approached the U.S. coastline. The VIIRS sensor allows weather forecasters to access highly detailed 370 meter per pixel imagery in the infrared bands, providing much more information about the storm's cloud structure and potential for intensification.

### FY 2014 REQUEST

**\$ 2,186,010,000**

NOAA requests a total of \$2,186,010,000 and 825 FTE to support the continued and enhanced operations of the National Environmental Satellite, Data, and Information Service. This total includes Operations, Research, and Facilities (ORF) and Procurement, Acquisition, and Construction (PAC) accounts and is comprised of a net increase of \$296,757,000 in program changes and a decrease of 2 FTE from the FY 2014 Base. Included in the FY 2014 Base are \$1,690,000 and 0 FTE in inflationary adjustments, \$1,657,000





in adjustments for restorations from the reprogramming of the FY 2012 Spend Plan, and \$405,000 in IT savings for reinvestment in DOC Working Capital Fund IT initiatives. This is a net increase of \$309,822,000 and a decrease of 2 FTE from the FY 2012 Spend Plan.

The FY 2014 President's Budget Request for NESDIS reflects an agency-wide movement to balance NOAA's programs and missions to support the highest priority and most essential services for developing, acquiring, and managing satellite and satellite data operations. From sharpening the focus of satellite programs on the weather mission to improving management and efficiency for the acquisition and construction of GOES-R and JPSS, NESDIS has made progress in managing the Nation's operational satellite systems and supporting NOAA's mission.

Continued development of the Joint Polar Satellite System (JPSS) and the Geostationary Operational Environmental Satellite-R Series (GOES-R) programs are two of NOAA's and the Department of Commerce's highest priorities. The FY 2014 request reflects the funds necessary to maintain the development of these crucial programs. This includes a total of \$954.8 million for the GOES-R Series program, providing the support needed to meet the expected launch date of Q1 FY 2016 to become fully operational by 2017. These resources are needed to continue satellite engineering development and production activities, complete delivery of five GOES-R instruments for the first satellite of its series, and continue the ramp-up of the ground system integration and test activities required prior to launch. The GOES-R Series will include upgraded technology, such as an Advanced Baseline Imager (ABI), which will provide faster and higher-resolution image scans, covering a larger geographic area. Enhanced ABI capabilities will help decrease forecast error and expand the list of geostationary products NOAA offers. Improved tropical forecasts from GOES-R products are expected to prevent annual losses to the recreational boating industry valued at a minimum of \$31 million within the first year of operations. The new ABI technology will also enhance volcanic ash plume tracking that will protect aviation interests from volcanic ash hazards. The annual net economic benefits to the airline industry from these enhancements are estimated to be a minimum of \$58 million within the first year of operations.<sup>1</sup> The FY 2014 President's Budget also includes investments for data processing and distribution for the polar-orbiting Suomi-National Polar-orbiting Partnership (Suomi NPP) mission. The FY 2014 President's Budget provides \$37 million for NOAA's portion of the joint US-EUMETSAT-CNES satellite altimetry mission, Jason-3. It also contains \$23.7 million for the continued refurbishment of DSCOVR, a NOAA space weather mission with assistance from NASA and in collaboration with the U.S. Air Force.

The FY 2014 budget request maintains support for these critical national assets. NESDIS is committed to maintaining the weather satellite programs to provide life- and property-saving forecasts to the Nation. Reflecting feedback from a July 2012 Independent Review Team (IRT) and Congressional direction, the FY 2014 budget request reflects a sharper focus on the weather mission, continuation of more aggressive strategies to address the risk of gaps in satellite data, increased efficiencies, and strategic decisions to reduce the cost of the JPSS program. In addition, proposed funding from the Hurricane Sandy Supplemental is allowing NOAA to invest in mitigating the effects of a data gap in the event it occurs.

The FY 2014 President's Budget includes a request for a rescoped JPSS program that is more focused on the weather mission, strengthens the program's risk posture, and reduces life cycle cost. The program has a life cycle cost of \$11.3 billion or less through 2025, which is a reduction of approximately \$1.6 billion from the current life cycle cost of \$12.9 billion. The major program changes include moving non-weather

<sup>1</sup> Centrec Consulting Group, LLC. *An Investigation of the Economic and Social Value of Selected NOAA Data and Products for Geostationary Operational Environmental Satellites (GOES)*. Report to NOAA's National Climatic Data Center. Savoy, IL. (February 27, 2007; <http://www.centrec.com/resources/reports/GOES%20Economic%20Value%20Report.pdf>)



instruments such as data collections and search and rescue instruments outside the program, accelerating the launch of JPSS-2 by two years to increase the robustness of the constellation, and transferring select climate sensors originally planned for JPSS-2 and Free Flyer-2 to NASA.

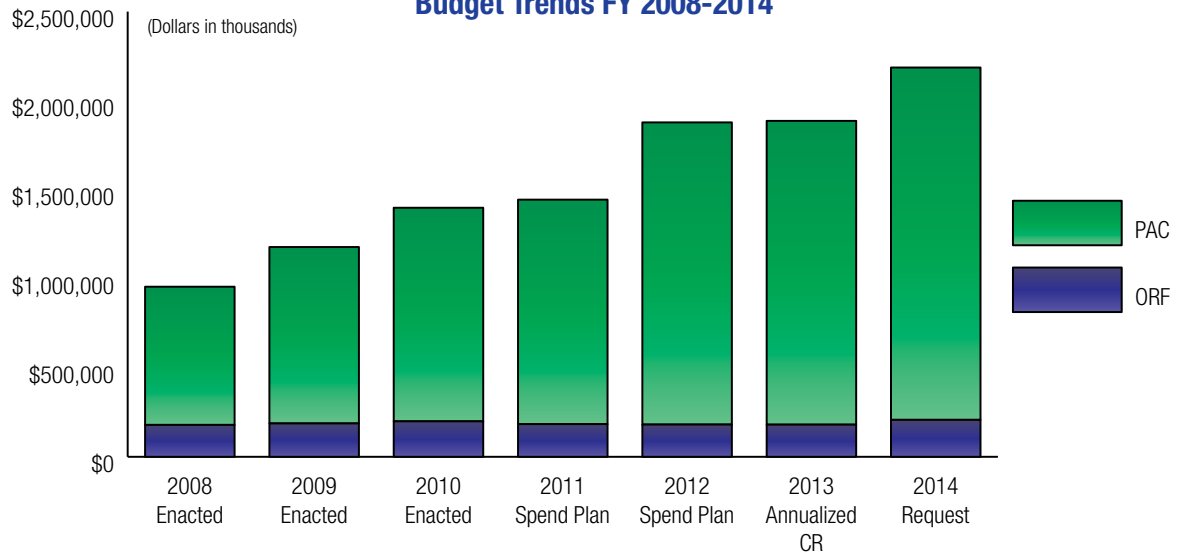
NESDIS will continue to pursue collaborative opportunities with other national and international agencies and organizations and partner with industry, academia, and other research and development agencies. These partnerships bring robust information and service delivery to our customers and invest in effective relationships with stakeholders. In particular, NESDIS will continue participating in global partnerships, such as with EUMETSAT, to help the United States and Europe provide increased capability to monitor global weather and climate.



## NATIONAL ENVIRONMENTAL SATELLITE, DATA, & INFORMATION SERVICE

(DOLLARS IN THOUSANDS)	FY 2012 SPEND PLAN	FY 2013 ANNUALIZED CR	FY 2014 REQUEST	INCREASE (DECREASE)
<b>NESDIS — ORF</b>				
Environmental Satellite Observing Systems	\$111,978	\$112,658	\$121,577	\$8,919
NOAA's Data Centers & Information Services	67,565	67,975	85,984	18,009
<b>Total, NESDIS - ORF</b>	<b>179,543</b>	<b>180,633</b>	<b>207,561</b>	<b>26,928</b>
<b>Total, NESDIS - PAC</b>	<b>1,696,645</b>	<b>1,705,678</b>	<b>1,978,449</b>	<b>272,771</b>
<b>GRAND TOTAL NESDIS (Direct Obligations)</b>	<b>\$1,876,188</b>	<b>\$1,886,311</b>	<b>\$2,186,010</b>	<b>\$299,699</b>
<b>Total FTE</b>	<b>827</b>	<b>827</b>	<b>825</b>	<b>(2)</b>

**NATIONAL ENVIRONMENTAL SATELLITE, DATA, & INFORMATION SERVICE  
Budget Trends FY 2008-2014**



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction



## FY 2014 ORF BUDGET SUMMARY

NOAA requests a total of \$207,561,000 and 676 FTE within the Operations, Research, and Facilities (ORF) appropriation to support NESDIS activities. This includes a net increase of \$23,986,000 and a decrease of 2 FTE in program changes from the FY 2014 base, including \$1,690,000 and 0 FTE in inflationary adjustments, \$1,657,000 in adjustments for restorations from the reprogramming of the FY 2012 Spend Plan, and \$405,000 in IT savings. This is an increase of \$28,018,000 and a decrease of 2 FTE from the FY 2012 Spend Plan. Adjustments include the following technical transfers:

- NOAA requests technical adjustments of \$405,000 and 0 FTE to reflect IT savings from three NESDIS PPAs, including \$159,000 from Product, Processing and Distribution, \$210,000 from Product Development, Readiness, and Application, and \$36,000 from Archive, Access, and Assessment. These funds will be reinvested into the DOC Working Capital Fund in order to support three new Department level initiatives: the Enterprise Security Operations Center (ESOC), the new Financial System (BAS) and the Personal Identity Verification (PIV) program.
- NOAA requests a technical adjustment to transfer the NESDIS Satellite Command and Control and Product Processing and Distribution line items to the new NESDIS line item, Office of Satellite and Product Operations (OSPO). No adjustments have been made to the two PPAs, except in the alignment under this OSPO line item.
- NOAA requests a technical adjustment to rename the Regional Climate Centers PPA to become the Regional Climate Services PPA. No funding or FTE changes are associated with this request.

### **NESDIS – ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2014**

Select program changes (generally above \$500,000) are highlighted below at the sub-program level. A summary of funding by Program, Project and Activity (PPA) is located in Chapter 8, Appendices. Detailed descriptions of all program changes by PPA are located in the NOAA FY 2014 Congressional Justification.

<b>ENVIRONMENTAL SATELLITE OBSERVING SYSTEMS</b>	<b>\$ 121,577,000</b>
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NOAA requests a net increase of \$7,755,000 and 0 FTE from the FY 2014 base for a total of \$121,577,000 and 409 FTE under the Environmental Satellite Observing Systems sub-program.

**Product Processing and Distribution:** NOAA requests a net increase of \$8,343,000 and 0 FTE from the FY 2014 base, including a decrease of \$1,227,000 for IT reductions to be reinvested in the Enterprise Ground System. Highlights include:

**Suomi National Polar-orbiting Partnership (Suomi-NPP) and Polar Continuity Data Processing and Distribution: NOAA requests an increase of \$9,570,000 and 0 FTEs to implement 24 x 7 operational processing and distribution of environmental data from the Suomi NPP mission.** The Suomi NPP satellite was successfully launched in October 2011. The development and testing of the Suomi NPP data processing system will be completed by the end of FY 2013. In February 2013, NASA transitioned Suomi NPP satellite operations to NOAA. The Suomi NPP satellite has started to provide essential continuity of polar environmental observations, some of which are being used by the National Weather Service in its numerical weather prediction models. The Suomi NPP Production Environment system provides the only national link to get near real-time Suomi NPP data to NOAA operational centers and other NOAA partners in the civilian user community. In FY



2014, funding will be used to procure a robust IT capability needed to generate operational products on 24 x 7 basis from Suomi NPP that will lead to improved daily weather forecasts and warnings, hurricane landfall warnings, and harmful algal bloom assessments. The requested funding will provide contractual support for the Suomi NPP Production Environment within the Environmental Satellite Processing Center (ESPC) that will process and distribute NOAA-unique Suomi NPP products to the NWS, NOAA, and other user communities.

### NOAA'S DATA CENTERS & INFORMATION SERVICES

**\$ 85,984,000**

NOAA requests a net increase of \$16,231,000 and a net decrease of 2 FTE from the FY 2014 base and a total of \$85,984,000 and 267 FTEs under the Data Centers & Information Services sub-program.

**Archive, Access, & Assessment:** NOAA requests a net increase of \$17,103,000 and a net decrease of 2 FTE from the FY 2014 base, including a net decrease of \$1,500,000 for IT reductions to be reinvested in the Enterprise Ground System. Highlights include:

**Data Center Operations: NOAA requests an increase of \$4,289,000 and 0 FTE for Data Center Operations to maintain NOAA's ability to provide long-term preservation (safe storage) and access to the Nation's environmental data and information.**

NOAA's National Data Centers will continue to transition from their legacy archive storage systems to CLASS, NOAA's Enterprise Archive system. Data Centers are being equipped to handle ever-expanding volumes of data from weather radars, high resolution weather, ocean, and climate models, other large volume data sets, and satellites such as Suomi-NPP, JPSS, and GOES-R. Data Center Operations will accommodate the storage and retrieval of these data sets. In FY 2014, funds will be used to provide operations and maintenance of NOAA's new Enterprise Archive and Access system and communications bandwidth to deliver large data volumes. In addition, funds will support facility infrastructure and Federal IT security requirements, including training of systems operators and administrators.

**Climate Data Records: NOAA requests an increase of \$10,000,000 and 3 FTE in support of the Climate Data Records (CDR) program.**

In FY 2014, funds will be used to develop CDRs for catastrophe risk assessment, develop NOAA's capability to generate and sustain operational CDRs, develop new CDRs that satisfy U.S. state and regional needs, and process new Joint Polar Satellite System (JPSS) data for use by the research and climate science community. Operational climate records are needed by Government and the private sector for decision-making, risk management, and climate research and modeling. It is virtually impossible to understand, predict and adapt to large-scale patterns or changes in the ocean, atmosphere and terrestrial surfaces without these fundamental records. The private sector (e.g., Energy, Water, Agriculture, and Insurance businesses) increasingly need these records for their research and climate-related applications. Improved decision-making will enhance U.S. economic resilience, and the security and well-being of the public. Global products best inform decadal and longer period climate variability understanding. However, better prediction of long-term weather variability (e.g., seasonal and interannual) requires finer scale data products. The CDR Program's emphasis on such products, together with new records from Total and Spectral Solar Irradiance Sensor (TSIS) and Clouds and Earth's Radiant Energy System (CERES) instruments, will enable improved understanding and prediction of medium-term weather and climate variability.



**Big Earth Data Initiative: NOAA requests an increase of \$9,000,000 and 0 FTE to improve the accessibility and interoperability of NOAA's high-value environmental observations in concert with other federal agencies.** The Federal government invests several billion dollars annually across numerous Federal agencies to collect information about the Earth from satellite, airborne, terrestrial, and ocean-based systems. NOAA produces a tremendous diversity of Earth observations that constitute a national asset with potential economic benefit. These data are often only accessible to specific end users. This project is intended to maximize the discoverability and accessibility of selected high-value environmental observations by providing open, machine-readable data formats, metadata, and online services, and to adopt uniform data management practices in concert with other agencies. Managed by NOAA's Technology Planning and Integration for Observations (TPIO) program, NOAA will provide resources and guidance to data providers for improving metadata, converting or offering data in standard formats, establishing or sharing online services for data access, and ensuring that data are registered in an appropriate catalog. NOAA's participation in the Big Earth Data Initiative will focus on four specific objectives including: Data discoverability, by providing interoperable catalog services or searchable inventories of datasets; Data access, by providing interoperable, open-standard online services to retrieve data and derived products; Data compatibility, by providing data in a small set of well-known formats appropriate to the various data types and using common vocabularies; and Data documentation, by augmenting metadata content and adopting international standards for metadata format.

**National Oceanographic Data Center: NOAA requests a decrease of \$2,108,000 and 2 FTE to consolidate operations at the National Oceanographic Data Center (NODC).** The National Oceanographic Data Center (NODC), located in Silver Spring, MD, with offices in Stennis, MS; Honolulu, HI; San Diego, CA; and Charleston, SC, is the Nation's permanent archive for oceanographic data, ensuring public access to and the scientific stewardship (quality control, analysis and management) of long-term observational records of the global ocean, and U.S. coastal waters and their ecosystems. In FY 2014, NODC will begin to consolidate its operations by centralizing Information Technology (IT) functions in Mississippi and administrative functions in Maryland. The consolidation will reduce requirements for contractor support for IT operations. During the consolidation there will be a temporary decrease in the number of data sets being produced until the NODC archive is migrated to the Comprehensive Large Array-data Stewardship System. NODC will continue to provide a permanent archive for ocean and coastal data.

**National Geophysical Data Center: NOAA requests a decrease of \$578,000 and 3 FTE to terminate specific sea-ice products developed for the National Snow and Ice Data Center and to reduce staffing at NGDC.** NOAA proposes to discontinue support for specific sea-ice products that are developed for the National Snow and Ice Data Center. Two FTE will be reduced from the NGDC division responsible for providing scientific data stewardship for the nation's operational space environmental data and information; however, with remaining staff NGDC will maintain the ability to provide mission critical space weather data sets to support NOAA's forecasting and monitoring abilities. An additional one FTE will be reduced from the NGDC division responsible for archiving and assimilating natural hazard information, since funding provided by sources outside of NGDC was already scheduled to decrease.



**Climate Database Modernization Program: NOAA requests a decrease of \$2,000,000 and 0 FTE to terminate the Climate Database Modernization Program (CDMP).** NOAA proposes to terminate the CDMP program. The CDMP program is a partnership with four private sector contractors, currently supporting approximately 35 contractor personnel. CDMP's goal is to preserve and make available climate data going back several hundred years. To date, over 57 million images have been digitized for on-line access. Over 14 terabytes of data have been keyed and converted to digital format, extending the historical climate record back to the early 1800s, and in some cases, the 1700s. Environmental publications and historical documents are now available in electronic form and can be downloaded to a computer. NWS is in the process of digitally converting its remaining stations that still record and report via paper, which will reduce the immediate operational need for CDMP supported service.

**Coastal Data Development: NOAA requests a decrease of \$529,000 and 0 FTE to reduce regional product development at the National Oceanographic Data Center/ National Coastal Data Development Center (NODC/NCDDC).** NCDDC is located in Stennis, MS, and is a division of NODC. NCDDC supports marine environmental and ecosystems stewardship by providing access to the Nation's coastal data resources. The FY 2014 budget will reduce NCDDC regional project development and science contractor support. With increased collaboration with existing partnerships in other agencies, NODC will continue to identify and obtain coastal data sets for ingest into the national ocean and coastal archive.

**Regional Climate Services: NOAA requests a decrease of \$1,089,000 and 0 FTE for Regional Climate Services (RCS), which includes the six Regional Climate Centers (RCCs) and the six Regional Climate Services Directors (RCSDs).** Regional Climate Services (RCS) activities will include the reduction of planned contract support, which will result in: diminished build-out of regional services, especially in the area of on-line web services and support to constituents; some tailored products will be updated less often; travel will be reduced for all Regions; and the migration of the Climate Information System to NCDC will be delayed.

**Environmental Data Systems Modernization (EDSM): NOAA requests an increase of \$746,000 and 0 FTE to continue funding for web-based digital access to satellite data.** The NOAA EDSM mission provides robust and safe archive storage and stewardship, and open access to data sets and derived climate model products for present and future generations of users. This request proposes a next generation archival and access capability that enables NOAA and the Nation to maintain and improve its science programs in support of economic growth and improved environmental stewardship. Business, research, and government leaders have critical needs for quality long time-series of historical and recent national and global data to evaluate the current status of the environment, to assess long-term environmental trends, and to assist in predicting future environmental conditions and events. FY 2014 funds will be used for the communications circuits specific to connecting the Comprehensive Large Array-data Stewardship System (CLASS) archive system at the National Climatic Data Center, Asheville, NC, and National Geophysical Data Center, Boulder, CO, to NSOF in Suitland, MD.



## FY 2014 PAC BUDGET SUMMARY

NOAA requests a total of \$1,978,449,000 and 149 FTE within the Procurement, Acquisitions, and Construction (PAC) appropriation to support NESDIS activities. This includes a net increase of \$272,771,000 and 0 FTE in program changes above the FY 2014 base and does not include inflationary adjustments. This is an increase of \$281,804,000 and 0 FTE from the FY 2012 Spend Plan. Adjustments include the following technical transfers:

- NOAA requests a technical adjustment to move \$26,018,000 and 0 FTE from the Restoration of Climate Sensors PPA to the NESDIS Joint Polar Satellite System PPA, in order to more accurately reflect the actual costs of the JPSS program.
- NOAA requests a technical adjustment to move \$62,000,000 and 0 FTE from the Joint Polar Satellite System (JPSS) PPA, after the Restoration of Climate Sensors technical transfer, to the new Polar Free Flyer PPA, in order to focus the JPSS program on the core weather mission. The following instruments and accommodations will be transferred to the Polar Free Flyer PPA: the Total Solar Irradiance Sensor-1 (TSIS-1), Advanced Data Collection System-1 (ADCS-1), and SARSAT-1 on Free Flyer-1; and, the Advanced Data Collection System-2 (ADCS-2) on a to-be-determined spacecraft.

### NESDIS — PAC PROGRAM CHANGE HIGHLIGHTS FOR FY 2014:

Select program changes (generally above \$500,000) are highlighted below at the sub-program level. A summary of funding by Program, Project and Activity (PPA) is located in Chapter 8, Appendices. Detailed descriptions of all program changes by PPA are located in the NOAA FY 2014 Congressional Justification.

<b>SYSTEMS ACQUISITION</b>	<b>\$ 1,976,221,000</b>
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NOAA requests an increase of \$272,783,000 and 0 FTE from the FY 2014 base for a total of \$1,976,221,000 and 149 FTE. Highlights include:

(BA IN THOUSANDS)	FY 2014 REQUEST	FY 2015	FY 2016	FY 2017	FY 2018
GOES-N	\$26,948	\$29,900	\$29,900	\$25,000	\$25,000

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

**GOES-N: NOAA requests a decrease of \$5,692,000 and 0 FTE to delay IT upgrades to the GOES-N ground system.** This one-time decrease will result in a one-year delay to the planned upgrade of the real-time satellite control and telemetry processing system. Due to the age of the current hardware, there is a moderate risk that in FY 2014 cascading hardware failures would drop performance to as low as 96 percent of data delivered within the specified time. This would impact the ability of users, such as the NWS, to reliably access GOES-N data within 15 minutes.





(BA IN THOUSANDS)	FY 2014 REQUEST	FY 2015	FY 2016	FY 2017	FY 2018
GOES-R	\$954,761	\$844,744	\$781,653	\$706,251	\$578,711

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



The Geostationary Operational Environmental Satellite – R Series (GOES-R) program is a key element to meeting the National Oceanic and Atmospheric Administration (NOAA) mission. The advanced spacecraft and instrument technology used on the GOES-R series will result in more timely and accurate weather forecasts.

**GOES-R: NOAA requests an increase of \$335,862,000 and 0 FTE to continue satellite engineering development and production activities for the GOES-R Series Program that are necessary to meet a launch readiness date (LRD) of Q1 FY 2016 for the first GOES-R satellite.** The GOES-R Series will provide continuity of geostationary data coverage after the GOES-N series. It will provide critical weather observations for severe weather events such as hurricanes, as well as key enhancements in observational capabilities for climate, oceans and coasts, and the space environment through 2036. The procurement of GOES-R satellites and ground systems is a cooperative venture between NOAA and NASA. While NOAA defines program requirements, provides funding, and operates the GOES satellites, NASA procures and launches the satellites on NOAA's behalf. The request will continue spacecraft and ground system development, support integration, testing, and delivery of initial Flight Units for five instruments, and support ground system integration and test activities for this four-satellite program. These activities are critical to meeting a first quarter FY 2016 launch of the first satellite in the series, GOES-R. Currently, NOAA's geostationary satellites include two operational satellites, GOES-East and GOES-West, and one spare satellite on orbit. With the funding profile requested, GOES-East will be replaced by the spare on-orbit satellite, GOES-14, in FY 2015 and GOES-West would be replaced by GOES-R in the second quarter of FY 2017, when its calibration and validation would be complete. Without the requested increase, GOES-West would not be replaced by a fully operational GOES-R until the second quarter of FY 2019, and an observation gap of up to two years could be realized. NOAA is still assessing the impact of its full-year 2013 appropriations on program schedule and milestones. The schedule and milestones may change based on the results of that assessment.

(BA IN THOUSANDS)	FY 2014 REQUEST	FY 2015	FY 2016	FY 2017	FY 2018
POES	\$29,415	\$32,044	\$28,070	\$5,704	\$0

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

**POES: NOAA requests a decrease of \$2,998,000 and 0 FTE to delay IT upgrades to the POES ground system.** This one-time decrease will result in a one-year delay to POES IT hardware upgrades for the real-time satellite control and telemetry processing system (Polar Acquisition Control System). Due to the age of the current hardware, NOAA's ability to meet security and operational requirements may be affected in FY 2014. In particular, the upgrade of the antenna tracking components (both electronic and mechanical) at the NOAA Fairbanks Satellite Operations Facility will be impacted, and could result in multiple days of downtime, should the antenna fail in FY 2014. There is a moderate risk that in the event of a major failure, availability of data within 60 minutes would be reduced to 92 percent.



(BA IN THOUSANDS)	FY 2014 REQUEST	FY 2015	FY 2016	FY 2017	FY 2018
Jason-3	\$37,000	\$25,656	\$7,458	\$7,288	\$7,265

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

**Jason-3: NOAA requests an increase of \$17,195,000 and 0 FTE to continue the development of the Jason-3 satellite in partnership with EUMETSAT and CNES, NOAA's European and French partners.** Jason-3 will provide continuity of precise measurement of sea surface heights for applications in ocean climatology and ocean weather. It is critical to our understanding of global and regional climate variability that we continue to collect, analyze and maintain a continuous record of sea surface height data. Jason-2 continues the systematic collection of sea level observations initiated by TOPEX/Poseidon in 1992. The Jason-3 satellite will be functionally equivalent to the Jason-2 satellite. The increase will allow NOAA to complete development and integration activities of the U.S. instruments, including a microwave radiometer, and the precision orbit determination components (e.g., GPS). Funds will also continue to support launch services, launch vehicle procurement, and associated engineering services for Jason-3. EUMETSAT and CNES are providing the spacecraft, altimeter, precision orbit components, ground system, and operations. NOAA, with NASA acquisition assistance, is in the process of completing the mission instruments and is on target to deliver the completed instrument to CNES for satellite integration in May 2013. Additionally, NOAA has directed NASA to start the development of the launch vehicle. This budget request will continue the acquisition of the Jason-3 launch vehicle and launch services. The requested funds will be used for the U.S. space segment components' integration and testing on the spacecraft, performed by our European partners. Continued funding will enable NOAA to meet a second quarter FY 2015 launch date. The FY 2014 requested funding is necessary for NOAA to meet its international obligation for this mission and reduce the strain on the international partnership.



JASON-3 artist rendering

(BA IN THOUSANDS)	FY 2014 REQUEST	FY 2015	FY 2016	FY 2017	FY 2018
Joint Polar Satellite System (JPSS)	\$824,000	TBD	TBD	TBD	TBD

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

Note: Due to the timing of the Consolidated and Further Continuing Appropriations Act, 2013 that was signed into law on March 26, 2013 and further reductions from sequestration, we are incorporating the effects of the lower FY 2013 funding level into the phasing of JPSS. Further, the Department is in the final steps of incorporating the results of the latest Independent Cost Estimate (ICE) that has recently been completed. Therefore, in consideration of these recent events, outyear funding estimates are marked as to be determined. Once the reconciliation is complete, the Department will provide the Appropriations Committees the phasing of JPSS outyear funding.



*The Joint Polar Satellite System (JPSS) is our Nation's next generation polar-orbiting operational environmental satellite system. JPSS is a collaborative program between the National Oceanic and Atmospheric Administration (NOAA) and its acquisition agent—National Aeronautics and Space Administration (NASA).*

**Joint Polar Satellite System (JPSS): NOAA requests a decrease of \$68,951,000 and 0 FTEs.** This reduction will comprise efficiency savings in FY 2014 and narrow JPSS' focus to the core weather-based satellite mission. The request reflects a number of changes to the JPSS program, including the technical transfer of \$62 million to the Polar Free Flyer program and budget line, a transfer of select climate sensors to NASA, a renewed focus on NOAA's weather mission, and program management and operational efficiencies.

The 2013 President's Budget proposed a life cycle cost estimate of \$12.9 billion through 2028, and with this request, NOAA proposes a new lifecycle cost (LCC) of \$11.3 billion or less through 2025. NOAA will continue to support the Suomi National Polar-orbiting Partnership (Suomi NPP), and, in order to maintain the JPSS-1 launch readiness date, the JPSS-1 scope and schedule are maintained. The JPSS-2 development and launch is accelerated to increase robustness of the constellation. Finally, the ground systems for JPSS-1, JPSS-2, and the Polar Free Flyer are all funded through the JPSS program.

With the FY 2014 request NOAA will continue to support JPSS-1 and its instruments, proposes to support the build of JPSS-2 instruments and the spacecraft, and proposes to transfer the Free Flyer-1 (FF-1) mission, including its instruments, and the accommodation for the Advanced Data Collection System (ADCS)-2 to the Polar Free Flyer PPA. In an effort to simplify NOAA's mission, the request proposes to transfer to NASA responsibility for climate sensors originally planned for the follow-on missions to JPSS-1 and Free Flyer-1. Therefore, this request does not fund the FF-2 satellite mission, and does not fund CERES-C and OMPS-L on JPSS-2. Also, NOAA proposes to forgo the build and accommodation of SARSAT-2 in anticipation of U.S. Air Force GPS satellites that are expected to serve the same purpose.

The Administration recognizes the need to find cost savings and efficiencies within NOAA satellite programs, while strengthening satellite management and likelihood of success. Additionally, in July 2012, the Independent Review Team concluded that NOAA should refocus the JPSS program on the weather mission. The 2014 Budget refocuses the JPSS program on NOAA's core weather mission to strengthen the likelihood of mission success and to ensure the National Weather Service receives polar weather satellite observations in a timely manner.

**For additional details on the proposed program changes please reference the Congressional Justification.**



(BA IN THOUSANDS)	FY 2014 REQUEST	FY 2015	FY 2016	FY 2017	FY 2018
Deep Space Climate Observatory (DSCOVR)	\$23,675	\$7,800	\$3,200	\$2,400	\$2,342

*\*Outyears are estimates only. Future requests will be determined through the annual budget process. Amounts in this table do not include NASA and Air Force funding.*

**Deep Space Climate Observatory (DSCOVR): NOAA requests a decrease of \$6,284,000 and 0 FTE to complete the refurbishment of the DSCOVR satellite and sensors for solar wind observations, and to deliver the spacecraft for a United States Air Force (USAF) launch.** Space weather has demonstrated the potential to disrupt significant portions of the U.S. infrastructure, including transportation systems, power grids, telecommunications, and GPS. The NWS Space Weather Prediction Center forecasters use information derived from NASA's Advanced Composition Explorer (ACE) satellite to issue forecasts and warnings for geomagnetic storms. NOAA provides these warnings to allow key industries such as the commercial airline, electric power, and GPS industries to prepare for and avoid the harmful effects of space weather. DSCOVR will provide the same kinds of measurements that ACE currently provides. The U.S. Air Force (USAF) is a partner and will provide the launch vehicle and services. This proposal provides an increase within the lifecycle of the DSCOVR satellite due to a delay in the launch vehicle contract award for SpaceX, managed by the U.S. Air Force on behalf of NOAA's DSCOVR program. This resulted in a delay of the Launch Readiness Date delay of two quarters, from the third quarter of FY 2014 to the first quarter of FY 2015. FY 2014 funds are necessary to complete the development of the data processing and archive systems, ship the satellite to its launch site, process its payload, and begin satellite operations and data processing operations after the U.S. Air Force launch. DSCOVR solar wind sensors will be checked out during transit to its final orbit. Operations and data processing will continue after the satellite reaches its duty station, the LaGrangian Point (L1), the neutral gravity point between the Sun and the Earth, about 932,000 miles from Earth.

**Multiple NESDIS PPAs for Legacy Satellite Information Technology (IT) Systems: NOAA requests a decrease of \$5,983,000 and 0 FTE to reduce satellite legacy ground system maintenance and upgrades.** These funds will be reinvested into an integrated ground system for command and control and satellite product generation called the Enterprise Ground System. Reductions are realized from six ORF funding sources and three PAC funding sources. IT reductions to ORF PPAs are not one-time reductions, whereas reductions to PAC PPAs are considered one-time reductions. The Enterprise Ground System Program Change Summary below provides information on the reinvestment.

**For additional details on the reductions to the legacy satellite system and their associated impacts please reference the Congressional Justification.**



(BA IN THOUSANDS)	FY 2014 REQUEST	FY 2015	FY 2016	FY 2017	FY 2018
Enterprise Ground System	\$5,983*	TBD	TBD	TBD	TBD

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

**Enterprise Ground System: NOAA requests an increase of \$5,983,000 and 0 FTE to establish a NESDIS Enterprise Ground System program.** NOAA has the responsibility to provide forecasts and warnings for the protection of life and property and the enhancement of the national economy. This mission requires an enduring capability to acquire data from satellites across the globe, and the capability to process and disseminate environmental data on an extensive spatial range (global, regional and local) within a variety of time scales (minutes to days) to central processing centers and distributed direct users. These data include, but are not limited to global imagery; cloud and precipitation parameters; atmospheric profiles of temperature, moisture, wind, aerosols and ozone; surface conditions concerning ice, snow and vegetation; ocean parameters of sea temperature, color and state; and solar and in-situ space environment conditions. In FY 2014, this increase will begin the conceptual stage that will lay the ground work for establishing an Enterprise Ground System capability within NESDIS. This initiative directly links to key findings and recommendations of the 2012 Satellite Enterprise Independent Review Team, namely: establishing a core competency of system engineering, implementing engineering standards and configuration control, and establishing integrated management of the ground enterprise. NESDIS expects to realize efficiencies in systems development, satellite operations and systems operations and maintenance (O&M) and will merge or replace current disparate systems and, via common architectures and shared resources, procure common ground services such as command and control, product generation, distribution and security solutions.

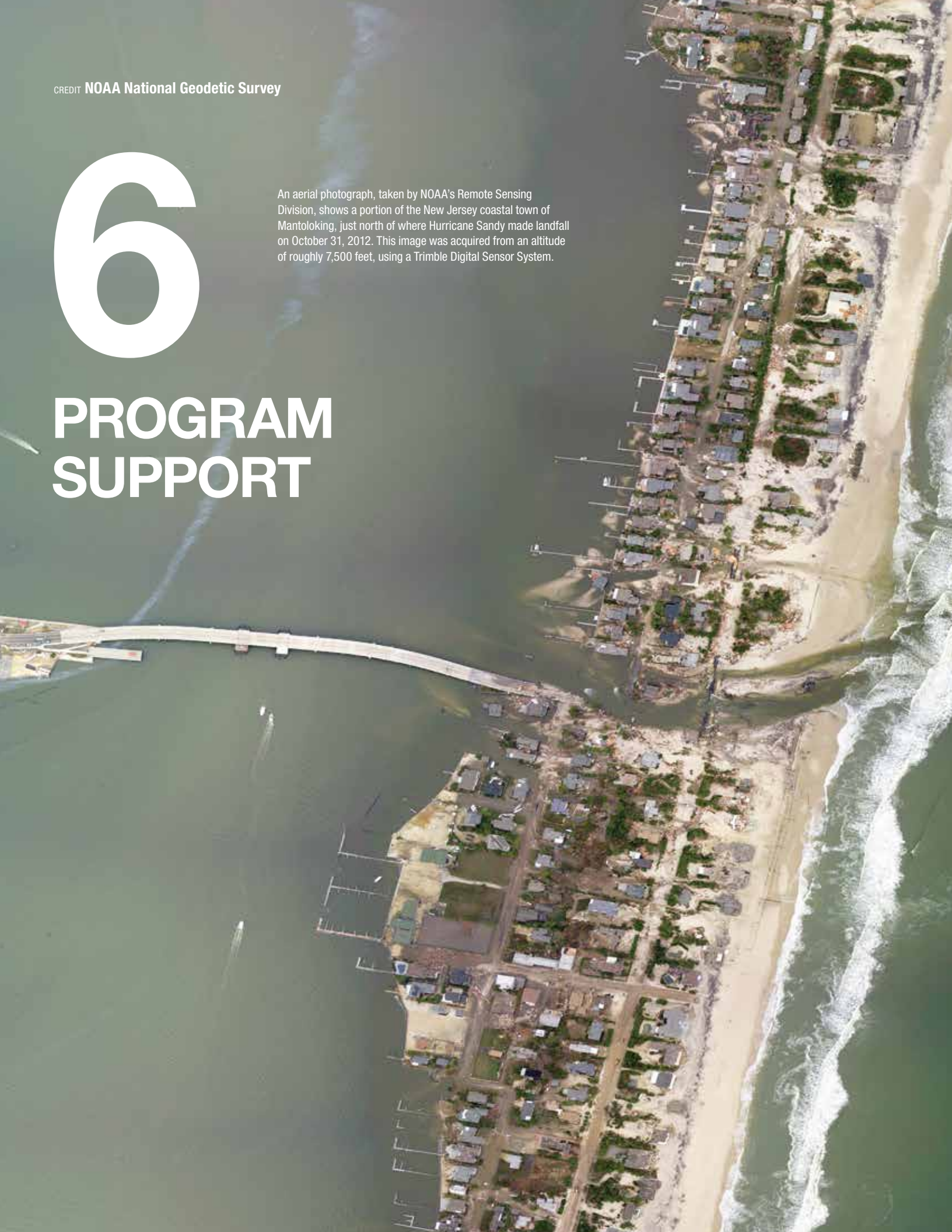


CREDIT NOAA National Geodetic Survey

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## PROGRAM SUPPORT

An aerial photograph, taken by NOAA's Remote Sensing Division, shows a portion of the New Jersey coastal town of Mantoloking, just north of where Hurricane Sandy made landfall on October 31, 2012. This image was acquired from an altitude of roughly 7,500 feet, using a Trimble Digital Sensor System.









# PROGRAM SUPPORT

NOAA's Program Support provides the planning, administrative, financial, procurement, information technology, human resources, and infrastructure services that are essential to the safe and successful performance of NOAA's mission. Program Support consists of Corporate Services, NOAA's Office of Education, Facilities, and the Office of Marine and Aviation Operations (OMAO). Activities conducted support the people and the programs of NOAA, allowing them to provide the finest possible services to the American people, our economy and our environment.



*NOAA Ship Thomas Jefferson underway. Credit: NOAA*

NOAA's Program Support services are the foundations for NOAA missions. For example, NOAA's Office of the Chief Information Officer provides mission-essential enterprise-wide IT services; specialized ships and aircraft in NOAA's fleet conduct critical monitoring of fisheries stocks and protected marine mammals and sea turtles; and NOAA Corp officers and civilians provide a skilled workforce present in all Line Offices.

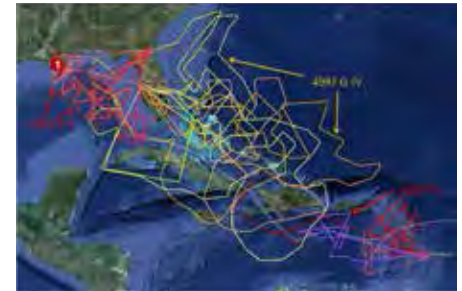
Below are Program Support highlighted accomplishments from FY 2012, followed by a more detailed description of the component offices of Program Support and their FY 2014 core priorities and base budget.



## FY 2012 ACCOMPLISHMENTS

In keeping with the Obama Administration's "Cloud First" policy to find cloud-based email and collaboration solutions that would best serve the agency's needs, NOAA selected Google Apps for Government as the agency-wide e-mail and collaboration platform for its 25,000 employees, contractors and associates working across the country and around the world. Cloud-based Google Apps for Government is essentially a more secure and managed version of Google's Gmail suite. It includes services such as collaborative document editing through Google Docs, shared calendar functions and the ability to create small-scale internal websites through Google Sites. Because the system is based in the cloud, employees can access those services from any computer, smartphone or tablet that's connected to the Web. The NOAA workforce now has cutting-edge email and collaboration tools to keep pace with fast-accelerating environmental change. NOAA is taking a leading role in bringing up-to-the-minute workplace technologies to the Federal government.

OMAO responded to Hurricane Issac with two NOAA aircraft, one Hurricane Hunter, WP-3D Orion (P-3), and the Gulfstream IV-SP (G-IV), providing around-the-clock hurricane research, surveillance and forecast improvement support to the National Hurricane Center. Data collected by the aircraft helped forecasters predict the storm intensity and path. The P-3 flew ten flights over seven days and the G-IV flew seven flights over five days for a total of 132 hours.



*Round-the-clock hurricane research, surveillance and forecast improvement support for Hurricane Issac*

### CORPORATE SERVICES

NOAA Corporate Services provides centralized executive management, as well as policy formulation and direction, to all of NOAA's Staff and Line Offices. Corporate Services is comprised of various staff offices, such as the Under Secretary and Associate Offices, Acquisitions and Grants Office, Office of the Chief Information Officer, Chief Administrative Officer, Chief Financial Officer, Office of Education, Workforce Management Office, and Policy Planning and Integration. In this regard, Corporate Services provides activities such as planning, administrative, financial reporting, budgeting, information technology, acquisitions and grants, and human resource services.

In FY 2014, NOAA-wide corporate services will continue to ensure that NOAA has the proper leadership, work environment, IT support, necessary tools and equipment, and the vital personnel and finance services that will allow the agency to carry out its mission of science, service and stewardship.

### OFFICE OF EDUCATION

NOAA's Office of Education (OEd) provides advice and counsel to the Under Secretary of Commerce for Oceans and Atmosphere in matters pertaining to education. The Office, in conjunction with NOAA's Education Council, coordinates educational activities across NOAA and develops NOAA's Education Strategic Plan and policies. These efforts help to ensure that NOAA's education programs and activities are based on NOAA science and are directly tied to the agency's mission. In addition, OEd partners with minority serving institutions to increase the number of students from underrepresented communities who are trained and graduate with degrees in NOAA mission fields. OEd also directly implements and



manages scholarship programs aimed at fostering competitiveness in Science, Technology, Engineering, and Mathematics (STEM) by providing quality educational opportunities for the next generation.

The Administration is proposing a comprehensive reorganization of STEM education investments. The 2014 Budget would enhance the impact of the Federal investment, by reorganizing 114 STEM education programs in 11 agencies, and redirecting funding in support of a cohesive national STEM strategy focused on four priority areas: K-12 instruction; undergraduate education; graduate fellowships; and informal education activities. This would reduce the number of STEM education programs from 226 to less than 120, in order to enhance impact by strategically leveraging Federal resources and assets. Nearly \$180 million will be redirected from consolidated programs to the Department of Education, the National Science Foundation (NSF), and the Smithsonian Institution to implement initiatives in the four core reform areas. The Administration will ensure that all science mission agencies have input into the development and implementation of these initiatives so that they align with agency goals while improving STEM education at all levels in a streamlined way.

In FY 2014, the Office of Education will continue to work through the Education Council to coordinate education activities and policy across the agency. The NOAA Education community will continue to ensure that programs investing resources in education activities meet top-tier performance measures and evidence standards. NOAA will also continue to increase the number of students from underrepresented communities who are educated, trained and graduated in fields that directly support NOAA's mission through the Educational Partnership Program.

## **FACILITIES**

The NOAA Facility Program is the focal point for facility planning, project planning formulation and development, and project management oversight to support critical NOAA mission requirements. NOAA's facility portfolio is diverse and dispersed. NOAA owns more than 400 buildings, in addition to piers and other structures. These facilities range from state-of-the-art science and research facilities supporting climate, weather, ocean, and fisheries research and services to operational facilities supporting multi-billion dollar satellite programs and NOAA's ship and aircraft operations.

In FY 2014, NOAA will continue planning for facility optimization and inform NOAA leadership of NOAA-wide efforts and opportunities to optimize facilities to meet space and cost reduction goals while supporting NOAA's mission. NOAA's analysis seeks to consolidate space, collocate programs, mitigate exposure to facility risks, maximize facility performance and cost savings, and/or reduce NOAA's real property inventory.

## **OFFICE OF MARINE AND AVIATION OPERATIONS**

NOAA's Office of Marine and Aviation Operations (OMAO) operates an array of specialized aircraft and ships throughout the world in support of NOAA's environmental and scientific missions. These include fisheries research, nautical charting, hurricane reconnaissance and research, water resource surveys, and specialized atmospheric and ocean research. Ships range from large oceanographic research vessels capable of exploring the world's deepest ocean to smaller ships responsible for charting the shallow bays and inlets of the United States. Aircraft range from the four engine P-3 capable of penetrating a hurricane to the small twin engine Twin Otters suited to marine mammal surveys where slower airspeeds and higher endurance are essential. After natural and environmental disasters OMAO ships and aircraft provide immediate response capabilities. NOAA ships and aircraft conduct emergency navigation hazard surveys



that help ports reopen quickly. Aircraft obtain aerial images of disaster-torn areas that enable residents and emergency workers to verify the condition of houses, bridges and roads.

### **MARINE OPERATIONS AND MAINTENANCE**

Marine Operations and Maintenance (MOM) provides centralized management for NOAA's 16 active ships, which range in length from 124 to 274 feet and are capable of conducting operations that support NOAA's programs in nautical charting, bathymetric mapping, fisheries research, ecosystem assessments, marine environmental baseline assessments, coastal-ocean circulation, and oceanographic and atmospheric research. In FY 2014, funding will provide approximately 1,890 Base Funded Days at Sea to support NOAA's highest priority programs.

This funding also supports OMAO's Marine Operations Center (MOC), the NOAA Commissioned Officer Corps, and OMAO Headquarters which provide regional fleet management, maintenance, stores, supplies, repair facilities, data-processing facilities, operational support, and administrative support for NOAA's vessels. Atlantic and Pacific regional offices are located in Norfolk, Virginia, and Newport, Oregon, respectively. NOAA's Commissioned Officer Corps is the Nation's seventh uniformed service. Three-hundred and twenty-one NOAA Corps officers are authorized to support the fleet and NOAA Line Offices. The officers of the NOAA Corps command NOAA's research and survey vessels, fly NOAA's hurricane hunters and environmental monitoring aircraft, support field operations and serve in a variety of technical and management positions throughout the agency.

OMAO Headquarters is located in Silver Spring, Maryland, and is responsible for OMAO-wide executive direction and oversight of policies and procedures, development of plans and budgets, and management of NOAA Commissioned Personnel. Headquarters also manages the NOAA Dive Program, Small Boat Program, and Teacher at Sea Program. The Dive Program provides diver training, safety standards, certification, technical advice, a standardized equipment program, and publishes the NOAA Diving Manual. NOAA's 400 divers perform approximately over 15,000 dives annually in support of NOAA's programs. The Small Boat Program is designed to reduce risk, promote standardization, and enhance the safety of NOAA's small boats. NOAA maintains over 400 small boats, which are operated and funded within the Line Office programs. The Teacher at Sea Program supports teachers at the kindergarten through college level on NOAA vessels working with NOAA scientists. The Budget proposes to consolidate the Teacher at Sea Program as part of the Administration's STEM reorganization proposal.

### **AVIATION OPERATIONS**

OMAO's Aircraft Operations Center (AOC), located at MacDill Air Force Base in Tampa, Florida, operates NOAA's Aircraft Fleet in support of NOAA's mission of science, service, and stewardship. The aircraft operate throughout the United States and around the world; over open oceans, mountains, coastal wetlands, and the Arctic. AOC provides capable, mission-ready aircraft and professional crews to study global climate change and air quality, assess marine mammal populations, survey coastal erosion, investigate oil spills, conduct coastal mapping, survey snowpack levels for flood prediction, and improve hurricane prediction models. AOC flight crews operate in some of the world's most demanding flight regimes including flying into the eye of a hurricane.

The Fleet is 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 2014, AOC will provide approximately 2,165 Base Funded Flight Hours in support of NOAA's mission.

**FY 2014 REQUEST****\$503,504,000**

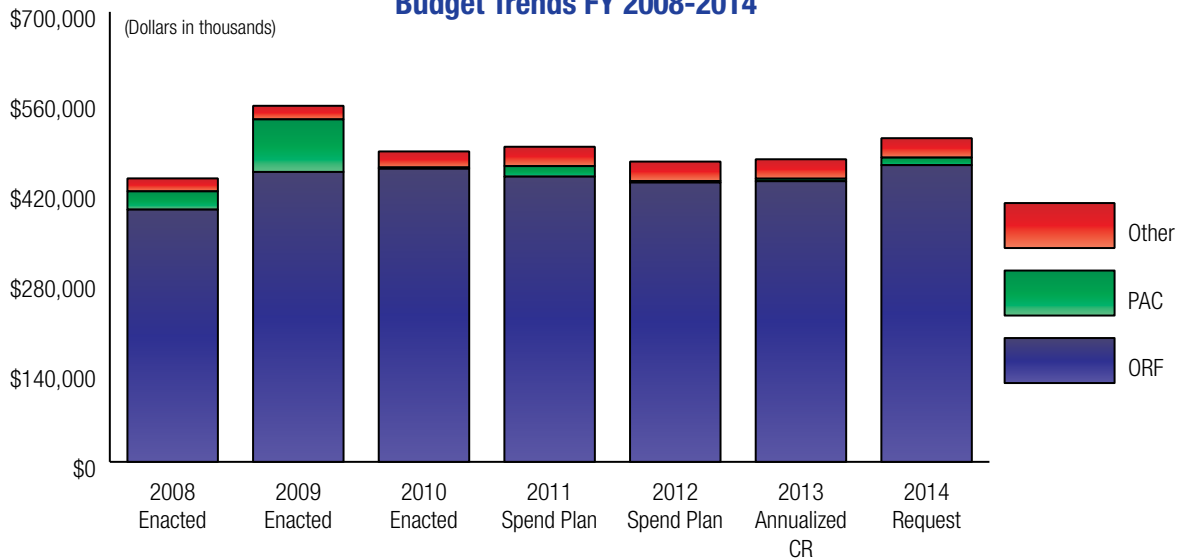
NOAA requests a total of \$503,504,000 and 1,985 FTEs to support the continued and enhanced operations of Program Support. This includes the Operations, Research, and Facilities (ORF), Procurement, Acquisition, and Construction (PAC), and Mandatory accounts and is comprised of a net increase of \$18,511,000 and a decrease of 10 FTEs from the FY 2014 base. Included in the FY 2014 base are an increase of \$14,487,000 for inflationary adjustments, an increase of \$550,000 and 0 FTE to restore programs affected by the reprogramming of the FY 2012 spend plan, a decrease of \$751,000 in IT savings for reinvestment in DOC Working Capital Fund IT Initiatives, and a technical transfer of \$0 and 55 FTEs to the NOAA Working Capital Fund. This is an increase of \$36,953,000 and a decrease of 65 FTEs from the FY 2012 Enacted.



## PROGRAM SUPPORT

(DOLLARS IN THOUSANDS)	FY 2012 SPEND PLAN	FY 2013 ANNUALIZED CR	FY 2014 REQUEST	INCREASE (DECREASE)
PS — ORF				
Corporate Services	\$202,032	\$203,258	\$212,449	\$9,191
NOAA Education Program	25,090	25,242	16,271	(8,971)
Facilities	24,422	24,570	24,847	277
Office of Marine & Aviation Operations	182,410	183,518	208,020	24,502
<b>Total Program Support - ORF</b>	<b>433,954</b>	<b>436,588</b>	<b>461,587</b>	<b>24,999</b>
Total, PS - PAC	2,392	3,902	11,712	7,810
Total, PS - Other	30,205	30,217	30,205	(12)
<b>GRAND TOTAL PS (Direct Obligations)</b>	<b>\$466,551</b>	<b>\$470,707</b>	<b>\$503,504</b>	<b>\$32,797</b>
<b>Total FTE</b>	<b>2,050</b>	<b>2,050</b>	<b>1,985</b>	<b>(65)</b>

**PROGRAM SUPPORT**  
**Budget Trends FY 2008-2014**



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction

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



## FY 2014 ORF BUDGET SUMMARY

NOAA requests a total of \$461,587,000 and 1,985 FTEs to support the continued and enhanced operations of Program Support comprised of a net increase of \$10,713,000 and a decrease of 5 FTEs from the FY 2014 base. Included in the FY 2014 base are an increase of \$14,487,000 for inflationary adjustments, an increase of \$550,000 and 0 FTE to restore programs affected by the reprogramming of the FY 2012 spend plan, a technical transfer of \$0 and 55 FTEs to the NOAA Working Capital Fund and a decrease of \$751,000 and 55 FTEs in IT savings for reinvestment in DOC Working Capital Fund IT Initiatives. This is an increase of \$36,953,000 and a decrease of 60 FTEs from the FY 2012 Enacted.

Adjustments include the following transfers:

- A technical transfer of \$12,637,000 and 0 FTE from the Educational Partnership Program with Minority Serving Institutions (EPP/MSI) PPA to the Office of Education PPA (renamed from the NOAA Education Program Base) for a net change of \$0 and 0 FTE to improve the ability of the Office of Education to manage EPP/MSI.
- A technical transfer of \$27,113,000 and 3 FTE from the Fleet Planning and Maintenance PPA to the Marine Services PPA, which it renames the Marine Operations and Maintenance PPA to reflect a consolidation of the two PPAs. This transfer is a net change of \$0 and 0 FTE to enable OMAO to better facilitate the management of the fleet.
- A technical transfer of \$0 and 55 FTEs from the NOAA Wide Corporate Services and Agency Management Base PPA to the NOAA Working Capital Fund.

### **PS — ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2014:**

Select program changes (generally above \$500,000) are highlighted below at the sub-program level. A summary of funding by Program, Project and Activity (PPA) is located in Chapter 8, Appendices. Detailed descriptions of all program changes by PPA are located in the NOAA FY 2014 Congressional Justification.

#### **CORPORATE SERVICES**

**\$212,449,000**

NOAA requests a decrease of \$4,306,000 and 2 FTEs for a total of \$212,449,000 and 892 FTEs under the Corporate Services sub-program

NOAA Wide Corporate Services and Agency Management Base: NOAA requests a decrease of \$2,896,000 and 0 FTE. Highlights include:

**NOAA Wide Corporate Services and Agency Management Base, Acquisitions and Grants Management: NOAA requests an increase of \$646,000 and 0 FTE to support acquisition and grants services for NOAA.** NOAA's acquisition and grants office provides acquisition and financial assistance services throughout NOAA. With this increase, NOAA's Acquisitions and Grants office will be able to increase the timeliness of contract and grant actions by five percent and augment and retain the Federal AGO workforce with contractor staff to ensure successful obligation of the annual volume of contractual and financial assistance actions.



**NOAA Wide Corporate Services and Agency Management Base, NOAA Information Technology (IT) Infrastructure: NOAA requests a decrease of \$772,000 and 0 FTE to support a NOAA-Wide IT Efficiency Initiative.** This initiative has helped NOAA to save costs in NOAA IT Infrastructure. This initiative has been applied NOAA wide and this cost savings is a direct result of transferring certain IT operations to the Cloud, participating in blanket purchase agreements, a simpler infrastructure for IT service desk functions, better quality control for security assurance and accreditation contracts and the consolidation of databases.

**NOAA Wide Corporate Services and Agency Management Base, Eliminate Warehouse Support in the National Capital Area: NOAA requests a decrease of \$1,300,000 and 0 FTE to eliminate warehouse support for the NOAA warehouse in Brandywine, MD.** NOAA will close this warehouse space, eliminating the need for contractor support, utilities and rent costs. Currently, NOAA Chief Administrative Officer sponsors the warehouse space for NOAA Line Offices and other DOC bureaus. The space is used for storage of various supplies, exhibits, Heritage Assets, publications, equipment and excess property waiting on disposition instructions from GSA. NOAA line offices and other DOC bureaus are exploring alternative storage arrangements and reevaluating their storage needs.

**NOAA Wide Corporate Services and Agency Management Base, Decrease in Core Services.** NOAA requests a decrease of \$1,980,000 and 0 FTE to reduce core services to NOAA internal customers. With this reduction, NOAA will terminate and/or reduce contracts associated with purchasing of services, supplies and other expenses. NOAA will reduce overall core services to NOAA internal customers resulting in impacts such as cancelled and delayed hires and delayed refresh to IT software. This reduction reflects on-going efforts to control overhead costs.

**DOC Accounting System, Commerce Business System (CBS) Operations.** NOAA requests an increase of \$510,000 and 0 FTE to meet maintenance and upgrade milestones according to the CBS Capital Asset plan. The FY 2014 funding is required to effectively operate the system and mitigate the risks of inadequate systems maintenance and support, and delayed generation of financial data and reports. Without additional funding these risks may threaten NOAA's Clean Audit Opinion.

**IT Security:** NOAA requests a decrease of \$990,000 and 0 FTE. Highlights include:

**IT Security, Enterprise IT Security: NOAA requests a decrease of \$990,000 and 0 FTE to support cost reduction and the NOAA-wide IT Efficiency initiative.** This decrease includes a \$110,000 reduction as a result of the NOAA IT Efficiency from consolidated buys of contract labor and hardware through NOAALink and reduced communications costs through various data center and network consolidation efforts. The remainder of the decrease, \$880,000, will be accomplished through delaying the purchase of components used to enhance security with near "real-time" monitoring of security events.





## NOAA EDUCATION PROGRAM

**\$16,271,000**

**Office of Education:** NOAA requests a decrease of \$9,131,000 and 3 FTEs. Highlights include:



*Class of 2012 Undergraduate Scholarship Program scholar on NOAA Orientation Tour at Jug Bay Wetlands Sanctuary. The Jug Bay Wetlands Sanctuary is located along the tidal Patuxent River in southern Maryland*

**Office of Education: NOAA requests a net decrease of \$1,586,000 and 3 FTE for NOAA's Office of Education funding.** This request includes a \$3,100,000 decrease to terminate the competitive education grants program in accordance with the Administration's plan to reorganize Federal agency STEM programs. NOAA's competitive education grants portfolio is designed to increase environmental stewardship and informed decision-making through strategic investments in teacher development, and formal and informal education at the national, regional, and local levels. The STEM reorganization facilitates a cohesive national strategy that will increase the impact of Federal investments in K-12 instruction. The Administration will ensure that all science mission agencies have input into the development and implementation of these initiatives so that they align with agency goals while improving STEM education at all levels in a streamlined way. This program change also includes a \$1,682,000 increase for the Educational Partnership Program for Minority Serving Institutions, for a total of \$14,400,000, increasing the Agency's ability to recruit, train, graduate, and employ highly qualified students in NOAA mission-related STEM fields. Finally, a decrease of \$168,000, for a total of \$1,871,000, will be applied to the Education Initiative, reducing administrative costs for the Office of Education.

**B-WET Regional Programs, NOAA Bay-Watershed Education and Training (B-WET) Regional Program: NOAA requests a decrease of \$5,533,000 and 0 FTE as part of the Administration's plan to reorganize Federal agency STEM programs.** B-WET regional programs promote place-based, experiential learning in K-12 STEM education. The reorganization facilitates a cohesive national strategy that will increase the impact of Federal investments in four areas including education activities that typically take place outside the classroom. The Administration will ensure that all science mission agencies have input into the development and implementation of these initiatives so that they align with agency goals while improving STEM education at all levels in a streamlined way.

**NOAA Education Program Base, Ocean Education Partnerships: NOAA requests a decrease of \$1,006,000 and 0 FTE.** With these funds NOAA provided competitive grants to aquariums and their partners to build capacity within communities for effectively communicating ocean literacy and related topics that are relevant to NOAA's mission. NOAA is not requesting funds for Ocean Education Partnerships in the FY 2014 President's Budget.

**NOAA Education Program Base, Geographic Literacy: NOAA requests a decrease of \$1,006,000 and 0 FTE.** With these funds NOAA provided competitive grants to support the integration of NOAA assets into geography education. NOAA is not requesting funds for Geographic Literacy in the FY 2014 President's Budget.



**FACILITIES \$ 24,847,000**

**MARINE AND OPERATIONS MAINTENANCE \$ 176,558,000**

NOAA requests an increase of \$21,314,000 and 0 FTEs for a total of \$176,558,000 and 926 FTEs under the Marine Operations and Maintenance sub-program. Highlights include:

**Marine Operations and Maintenance: NOAA requests an increase of \$21,000,000 and 0 FTE to support additional days at sea (DAS) for fishery, hydrographic, and marine ecosystems surveys.** At this funding level, OMAO will conduct approximately 3,517 base DAS with a utilization rate of 94 percent, assuming a fuel rate of \$3.80 per gallon. OMAO will continue to conduct NOAA's highest priority missions while utilizing NOAA's fleet in support of science, service and stewardship. Internal stakeholders, including the National Marine Fisheries Services (NMFS), the Office of Oceanic and Atmospheric Research (OAR), the National Ocean Service (NOS), and the National Weather Service (NWS), rely on OMAO for ship time. Programs related to nautical charting, fish and mammal surveys, climate studies, and ocean health will receive additional ship time with this increase in funding. The final allocation of ship time will be determined by NOAA's Fleet Council using the Prioritization, Allocation and Scheduling (PAS) process. This ensures NOAA's highest priority programs are supported.



NOAA Ship Fairweather. Credit: Grant Froelich

**Marine Operations and Maintenance: NOAA requests an increase of \$1,017,000 and 0 FTE to comply with Environmental compliance regulations.** A number of maritime environmental regulations have gone into effect, including stricter emissions requirements from the Environmental Protection Agency (EPA) and stricter discharge requirements from the United States Coast Guard (USCG). Proactively ensuring compliance with these new environmental regulations will allow NOAA to maintain its position as a leader in environmental stewardship and in executing the Administration's energy priorities. Funding will support the purchase and installation of engine upgrade kits, replacement of hydraulic lines, and upgrades to oily water separators, and overall improvements to vessel energy efficiency.

**AVIATION OPERATIONS \$31,462,000**

NOAA requests an increase of \$2,868,000 and 0 FTEs for a total of \$31,462,000 and 104 FTEs under the Aircraft Operations sub-program. Highlights include:

**Aircraft Operations: NOAA requests an increase of \$1,000,000 and 0 FTE to conduct a study of alternatives to the WP-3 as a platform for NOAA research.** NOAA seeks one-time funding to support a third-party study to investigate potential replacement of the WP-3 observing and research platform. The study will include a review of, but will not be limited to, the C130J (an aircraft currently used by the Air Force 53rd Airborne for hurricane reconnaissance) with phased array radar as an alternative to the WP-3 equipped with a Tail Doppler Radar (TDR) and lower fuselage radars. These funds will allow NOAA to explore a wide range of supplemental and replacement data sources, technology and platforms. The study will consider multiple platforms and radar technologies, including



development of airborne phased-array technology, to continue its support of OAR Hurricane, Air Chemistry and Climate research, as well as NWS and NESDIS research. NOAA will also investigate potential areas of administrative and program cost savings to be gained through working with Federal partners.

**Aircraft Operations: NOAA requests an increase of \$1,868,000 to resume operations in conducting hurricane, ocean winds, and winter storms reconnaissance and surveillance.** Aircraft Operations Center (AOC) will provide an additional 595 Flight Hours of critical in-situ observations supporting NOAA’s mission to promote global environmental assessment, prediction and stewardship of the Earth’s environment. The flight hours will support hurricane reconnaissance and research missions aimed at improving hurricane intensity forecasts including the only three tail mounted Doppler radars in the world on the WP-3 and G-IV. Additional hours will provide observations necessary for accurate and reliable winter storm warnings, support water resource surveys that allow water managers and forecasters to more accurately forecast spring melts to meet industrial, agricultural, and human needs. International partners rely on this data to conduct satellite ocean wind sensor calibration and validations. In return, our partners provide ocean wind data that is used to improve hurricane forecasts.

**FY 2014 PAC BUDGET SUMMARY**

NOAA requests a total of \$11,712,000 and 0 FTE to support Procurement, Acquisition, and Construction (PAC) activities of Program Support comprised of a net increase of \$7,810 and a decrease of 5 FTE from the FY 2014 base. FY 2014 base includes \$0 and 0 FTE for adjustments to base (ATB). This is an increase of \$9,320 and a decrease of 5 FTE from the FY 2012 Enacted.

**PS – PAC PROGRAM CHANGE HIGHLIGHTS FOR FY 2014:**

Select program changes (generally above \$500,00) are highlighted below at the sub-program level. A summary of funding by Program, Project and Activity (PPA) is located in Chapter 8, Appendices. Detailed descriptions of all program changes by PPA are located in the NOAA FY 2014 Congressional Justification.

**OMAO FLEET REPLACEMENT \$ 11,712,000**

NOAA requests a net increase of \$7,810,000 and a decrease of 5 FTEs for a total of \$11,712,000 and 0 FTE. This is comprised of one new initiative and the completion of the construction of FSV6.

PROGRESSIVE LIFECYCLE MAINTENANCE	FY 2013 & PRIOR	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	TOTAL
Change from FY 14 Base		\$10,707	0	0	0	0		
Total Request	\$1,005	\$11,712	\$11,712	\$11,712	\$11,712	\$11,712		Recurring

**Fleet Capital Improvements and Technology Infusion: NOAA requests an increase of \$10,707,000 for a total of \$11,712,000 to support a Progressive Lifecycle Maintenance Program.** Funds will improve the material condition of the NOAA ship fleet by stabilizing capital investment. OMAO will perform cyclic depot-level capital investments on an annual basis, initially focus on the aging T-AGOS ships, but will stabilize and improve the material condition of the Fisheries Survey Vessels (FSVs) and hydrographic survey ships.



Essentially, former Major Repair Periods (MRPs) will be broken into smaller components. During the maintenance cycle, each ship in the NOAA fleet would receive regular upgrades and replacements of mission support equipment and technology infusions such as data processing capacity. This approach eliminates the accumulation of capital repairs that would typically occur prior to a major repair period. The result is a fleet maintained at a higher state of readiness, extension of service life, and avoidance of mechanical, structural, and mission equipment obsolescence.

(BA IN THOUSANDS)	FY 2014 REQUEST	FY 2014	FY 2015	FY 2016	FY 2017
New Vessel Construction FSV6	(\$2,897)	\$0	\$0	\$0	\$0

**New Vessel Construction: NOAA requests a decrease of \$2,897,000 and 5 FTE upon completion of the Fisheries Survey Vessel 6 Acquisition: NOAA will take delivery of the Reuben Lasker in FY 2013 and will complete final post shipyard ship availability tests, program management activities, and acquisition closeout functions.** The funding associated with these activities will therefore not be required after FY 2013. The operations and maintenance costs associated with this ship are factored into the FY 2014 base estimates for total fleet output. The request is consistent with the acquisition funding profile approved prior to contract award.

### MANDATORY FUNDS

#### **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.

#### **MEDICARE-ELIGIBLE RETIREE HEALTHCARE FUND CONTRIBUTION**

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.



# 7

## RESEARCH & DEVELOPMENT

Two of the nation's largest producers of wind-generated electric power will share privately-collected weather data with NOAA, providing agency scientists with additional observations from wind farms across the nation for research and operations.

NOAA will use these weather observations in operational model forecasts produced by NOAA's National Weather Service. Wind data at these heights are not routinely observed and are of great interest to many industries and researchers involved in renewable energy, aviation, and air quality.

Wind turbine on a wind farm





# NOAA RESEARCH & DEVELOPMENT

NOAA is the single federal agency with operational responsibility to protect and conserve ocean, coastal, and Great Lakes resources and to provide critical and accurate weather, climate, and ecosystem forecasts that support national safety and commerce. The foundation and forward planning for this mission of science, service, and stewardship is supported by NOAA research and development. NOAA provides research-to-application capabilities that can recognize and apply significant new understanding to questions, develop research products and methods, and apply emerging science and technology to the needs of constituents such as local governments, businesses, and the general public.

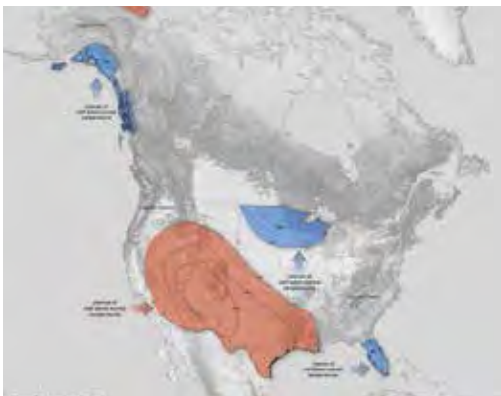
The NOAA Research Council, an internal body composed of senior scientific personnel from every Line Office in the agency, provides corporate oversight to ensure that NOAA's research activities are of the highest quality, meet long-range societal needs, take advantage of emerging scientific and technological opportunities, and shape a forward-looking research agenda. The research and development portfolio underlies and supports NOAA's Next Generation Strategic Plan's four long-term goals that are central determinants of resilient ecosystems, communities, and economies:

- (1) Climate Adaptation and Mitigation
- (2) Weather-Ready Nation
- (3) Healthy Oceans
- (4) Resilient Coastal Communities and Economies

Highlighted in this chapter are NOAA's selected research and development accomplishments for FY 2012.

## ADVANCED ANALYSIS OF MODELS TO IMPROVE NORTH AMERICAN CLIMATE OUTLOOKS

NOAA organized a Task Force to analyze modeling results produced by the international Coupled Model Intercomparison Project (CMIP5). This coordinated effort has advanced knowledge of long-term climate outlooks for North America. The Task Force evaluated the CMIP5 models to understand their strengths and weaknesses and to analyze projections of 21st century climate change. Over 25 papers were submitted for a special collection in *Journal of Climate* entitled "North American Climate in CMIP5." The special collection will inform the Fifth Assessment Report of the Intergovernmental Panel on Climate Change as well as the U.S. National Climate Assessment. The CMIP5 Task Force, composed of approximately 30 scientists from NOAA, academia, and other federal agencies and laboratories and funded by the Climate Program Office's Modeling, Analysis, Predictions, and Projections program,



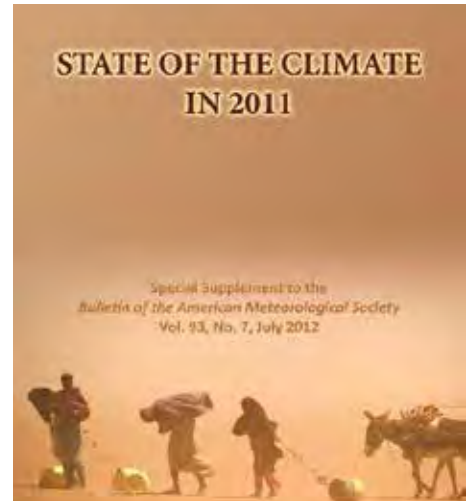
*The 2012-2013 Winter Outlook was potentially bad news for many residents of the drought-stricken Great Plains, Midwestern and Southern Central regions of the United States. Red and blue areas show the percent chances that temperatures will be in the upper or lower third of average winter conditions observed in those regions during the period from 1981-2010, respectively. Credit: NOAA Climate.gov*



exemplifies how NOAA's grant programs strategically extend NOAA's research capability.

**NOAA REACHES BROAD AUDIENCE WITH RELEASE OF THE REPORT STATE OF THE CLIMATE IN 2011**

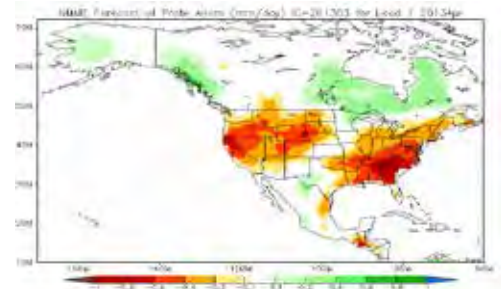
NOAA released the report State of the Climate in 2011, which is a peer-reviewed report compiled by scientists from countries around the world. Each year the report reaches a broad audience, with an increasing number of businesses, groups, and individuals showing ever-growing interest in the climate. Educators also use this report as a tool to teach students about various aspects of climate and climate change. The report provides a detailed update on global climate indicators, notable weather events, and other data collected by environmental monitoring stations and instruments on land, sea, ice, and in the sky. According to the report, 2011 was the coolest year on record since 2008 even though temperatures remained above the 1981–2010 average. The State of the Climate report is published annually as a special supplement to the Bulletin of the American Meteorological Society. The report is part of a suite of climate services NOAA provides to government, business, and community leaders so they can make informed decisions. The NOAA National Climatic Data Center has led the annual effort to assemble the State of the Climate report for the last 12 years. In that time, the number of contributing authors has grown from 13 in 2001 to 378 authors from every continent in 2012.



Each year, following months of number crunching and fact checking, several hundred climate and earth scientists contribute to a global-scale evaluation of climate and environmental conditions over the previous year. This analysis—our planet's annual check-up—is known as the State of the Climate report. Credit: NOAA

**NOAA LEADS NEW APPROACH TO IMPROVE PREDICTIONS OF ATMOSPHERIC CONDITIONS**

NOAA is leading an experimental modeling approach called the National Multi-Model Ensemble (NMME) that has the potential to improve climate and drought prediction skill. Initial results from this experimental system, the first of its kind in the United States, suggest it can consistently rival the best individual model in simulating and predicting atmospheric conditions (e.g., temperature and precipitation) and phenomena (e.g., the El Niño Southern Oscillation), which may lead to improved weather and climate forecasts and predictions. Predictions from this approach are already informing climate forecasts released by NOAA's National Centers for Environmental Prediction (NCEP) / Climate Prediction Center. The predictions and about 20 years of hindcast data are publicly available to the scientific community and have rapidly become a major resource for prediction and predictability research. This work was supported by the Climate Program Office's Modeling, Analysis, Predictions, and Projections (MAPP) program in partnership with NASA, NSF, DOE and the external community in the framework of MAPP-NCEP Climate Test Bed activities.



The NOAA Climate Prediction Center releases forecasts from the experimental National Multi-Model Ensemble (NMME) system. The map above shows the temperature anomaly forecast for February 2013. Credit: NOAA.





## IMPROVEMENTS GAINED IN FLOOD AND SEVERE WEATHER FORECASTS



*Dual-Polarized Radar greatly improves weather forecasters' ability to predict the type and intensity of precipitation, and where and when it will fall. This new technology is the result of 30 years of research and development by NOAA's National Severe Storms Laboratory. Credit: NOAA..*

NOAA, working with the Department of Transportation and Department of Defense, developed new operational weather radar technologies that are anticipated to make significant improvements in detection capabilities for precipitation type and intensity, leading to improved flood and severe weather forecasts. These new dual polarization (Dual Pol) technologies allow for improvements in heavy rainfall estimation, positive identification of tornadoes and hail, discrimination between rain and snow, and identification of data contaminants. During transition to operations, National Severe Storms Laboratory (NSSL) solved a major engineering challenge of collecting substantially more information than previous Single Pol datasets without degrading timeliness of weather radar updates. This was made possible with an innovative design that allows simultaneous transmission of dual-polarized radar signals. Once operational deployment is complete in FY 2013, these advances will enable weather forecasters to make effective use of Dual Pol information in flash flood and other severe weather warnings.

## NOAA DEVELOPS OPERATIONAL CAPABILITY TO PREDICT DUST STORMS

NOAA implemented operational predictions for the United States of wind-blown dust from dust storms. Dust particles degrade the quality of the air we breathe, reduce visibility, and endanger aircraft and ground transportation. Airborne dust particles can also impact weather patterns by changing which parts of the atmosphere heat more from the sun's rays. Dust particles can travel long distances, carrying other chemicals, nutrients and microorganisms over continental scales, with a wide range of environmental impacts. This new prediction capability will help to mitigate the negative effects of dust storms and help people to avoid exposure to conditions that can cause harmful respiratory and cardiovascular impacts. The dust prediction capability was developed by a team of scientists from across NOAA.<sup>1</sup> The team created a map from satellite data of areas where dust is often lifted into the air, as input for a NOAA-developed computer prediction model. This model, together with NOAA predictions of strong winds and dry soil conditions, predicts where dust particles will be lifted into the air and how far they are transported before re-settling on the Earth's surface. The capability was successfully demonstrated in real-time testing, for predicting outbreaks of dust-storms a day in advance.

## STATE-OF-THE ART TECHNOLOGIES IMPLEMENTED TO IMPROVE FISHERIES SURVEYS

NOAA began developing and transitioning advanced sampling technologies (AST) into improved survey capabilities on new fisheries survey vessels (FSVs). NOAA's investment in AST is providing more accurate, reliable and timely scientific information to improve decision-making for fish and pro-



*The NOAA Southeast Fisheries Science Center utilizes an array of four stereo video cameras to estimate the abundance of reef fish. Advances in optical technologies have improved the assessments for commercial and recreational stocks in many regions, particularly for stocks that occur in habitats which are inaccessible or vulnerable to conventional sampling gear such as trawls..*

<sup>1</sup> I. Stajner, P. Davidson, D. Byun, J. McQueen, R. Draxler, P. Dickerson, J. Meagher, U.S. National Air Quality Forecast Capability: Expanding Coverage to Include Particulate Matter, in *Air Pollution Modeling and its Application XXI*, D.G. Steyn and S.T. Castelli, eds., Springer Netherlands, pp. 379-384 (2012)



tected resources management and conservation. NOAA funded a number of projects that provide improvements in sampling technologies, such as remote sensing, alternative platforms, passive acoustics, and signal processing technologies. Many of these technologies improve the ability to sample the number of fish living in previously unreachable habitats and to reduce uncertainties in stock assessments. The Northeast Fisheries Science Center implemented a new optical scallop survey that improves information for this valuable fishery. All NOAA Fisheries Science Centers are using advanced sampling technologies to enhance survey capabilities for improving stock assessments.

**FIRST-EVER SINGLE NATIONAL APPROACH TO CHARACTERIZE COASTAL AND MARINE HABITATS**

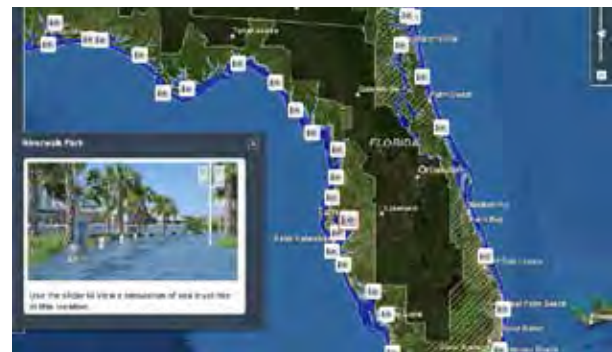
NOAA led the effort that resulted in the first-ever, comprehensive federal standard for classifying and describing coastal and marine ecosystems, the Federal Geographic Data Committee's (FGDC) approval of the Coastal and Marine Ecological Classification Standard (CMECS). CMECS provides a simple, standard framework and common terminology for describing and organizing information about coasts and oceans. This information includes the biological, geological, chemical, and physical data that are collectively used to define coastal and marine ecosystems. Broad adoption of CMECS will enhance the data available for comparative environmental analyses across regions and over time in support of management actions. For example, CMECS is being used for oyster restoration planning and implementation in the Chesapeake Bay, facilitating data exchange among federal and state agencies, academia, and non-profits engaged in restoration efforts. Prior to CMECS, no single national approach existed for characterizing coastal and marine habitats. CMECS development was a multi-year partnership with the U.S. Environmental Protection Agency, the U.S. Geological Survey, and NatureServe. NOAA is working to implement CMECS within the agency, across other elements of the federal government, and with state, regional, and local governments, NGOs, industry and academia.

**NOAA DEVELOPS TOOLS TO REDUCE VULNERABILITIES FOR COASTAL COMMUNITIES**

In FY 2012, NOAA expanded coastal inundation tools by providing the Sea-Level Rise and Coastal Flood Impacts Viewer (<http://www.csc.noaa.gov/slr/viewer/>) to 67 coastal counties. The web-based data viewer provides coastal managers and scientists with a preliminary look at potential sea level rise and coastal flooding impacts. The application is a screening level tool that can be used at varying scales to help gauge trends and prioritize actions for different scenarios. The viewer provides insight on how sea level rise will affect community vulnerability, marsh distribution, and flooding events. By overlaying social and economic data, the viewer can depict the influence of sea level rise on people and businesses and help communities understand if today's flood may become tomorrow's high tide.



CMECS classification example: Floridian Marine Nearshore Subtidal Euhaline; Thalassia Bed with co-occurring Leathery or Leafy Macroalgae on Sand in a Lagoon. Credit: SCUBA nauts International



Being able to visualize potential impacts from sea level rise is a powerful teaching and planning tool, and the Sea Level Rise Viewer brings this capability to coastal communities. A slider bar is used to show how various levels of sea level rise will impact coastal communities. Credit: NOAA Coastal Services Center



## ADVANCEMENTS IN SAFE, EFFICIENT, AND ENVIRONMENTALLY SOUND MARINE TRANSPORTATION

NOAA updated its Survey Mark Database of 53,000 positions for the State of Alaska in 2012. Similar to counties in many states, Alaska is defined by boroughs. When a user requests a list of stations positioned and published in the National Geodetic Survey database, they will now receive a list of more than 53,000 survey marks. Previously, these marks were identified as being in “Alaska,” rather than being attributed to the specific borough, making a search for published mark locations difficult and unwieldy. Classifying all the Alaska positions into their respective boroughs promotes efficiency and usefulness to surveying community users. Another 2012 accomplishment saw NOAA embedding alerts into its electronic navigational charts (NOAA ENC®) so that mariners know when they are approaching right whale seasonal management areas and can reduce speed or avoid the areas altogether to protect the whales.

## NOAA CONDUCTS SURVEY TO SUPPORT SAFE, ENVIRONMENTALLY SOUND ARCTIC ACCESS

In 2012, NOAA conducted a first-ever Arctic hydrographic survey from Dutch Harbor in the southern Bering Sea to the U.S.-Canada border in the Beaufort Sea. Along the way, NOAA conducted sampling for sediment and biota, and provided a platform for acoustic reconnaissance of the sea bottom and fish stock composition. As sea ice steadily declines, and interest in economic uses of the Arctic grows, it is important to understand the current state of Arctic ecosystems to assess ecological impacts, deliver navigation services, prepare for oil spills, and improve coastal resilience. Also in 2012, NOAA launched the Arctic ERMA (Environmental Response Management Application) tool that is designed to assist first responders and environmental resource managers during emergencies that may harm the environment.

## LINK DEMONSTRATED BETWEEN OCEAN ACIDITY AND COASTAL MARINE ORGANISMS

A NOAA scientist co-authored an article in *Limnology and Oceanography* providing the first concrete evidence in North America that carbon dioxide taken up by the oceans is killing oyster larvae.<sup>2</sup> Scientists found that when oyster larvae were exposed to deep, more corrosive waters, they did not survive to adulthood. Larvae death threatens an industry with a \$278 million annual economic value (estimated for 2009 by the Pacific Coast Shellfish Growers Association). NOAA scientists also published a study in *PLoS One* documenting that Florida Keys coral reefs downstream of seagrass beds are shielded from the impacts of ocean acidification because seagrasses remove large amounts of carbon dioxide from the water.<sup>3</sup> Reef-related expenditures



Patch coral reef co-located with the Atlantic Ocean Acidification Testbed. Credit: Derek Manzello, Cooperative Institute for Marine and Atmospheric Studies, University of Miami.

<sup>2</sup> A. Barton, B. Hales, G.G. Waldbusser, C. Langdon, R.A. Feely, *The Pacific oyster, Crassostrea gigas, shows negative correlation to naturally elevated carbon dioxide levels: Implications for near-term ocean acidification effects*, *Limnology and Oceanography*, 57(3): 698-710 (2012).

<sup>3</sup> D.P. Manzello, I.C. Enochs, N. Melo, D.K. Gledhill, E.M. Johns, *Ocean Acidification Refugia of the Florida Reef Tract*, *PLoS ONE*, 7(7): e41715 (2012).



generated \$490 million in annual sales in Monroe County, Florida alone during the 12-month period from June 2000 to May 2001.<sup>4</sup>

**PARTNERSHIP INSTALLS NEW OCEAN OBSERVATION SENSOR TO BENEFIT ABALONE INDUSTRY**

A new network of water sensors in Monterey Bay is now aiding the abalone industry by monitoring water quality for harmful algal blooms and other potential hazards, helping to keep the valuable shellfish safe to eat while increasing knowledge of the bay’s environment. The sensors monitor dissolved oxygen, pH levels, and oceanographic conditions that can lead to harmful algal blooms, among other hazards. The measurements will also create long, continuous records of the oceanographic environment in Monterey, feeding into the larger U.S. Integrated Ocean Observing System (IOOS®). This information will also benefit other nearby fisheries. The Central and Northern California Ocean Observing System (CeNCOOS), a regional member of the NOAA-led U.S. IOOS program, is partnering with Moss Landing Marine Laboratories and the Monterey Abalone Company to install, operate, and maintain the water quality sensors in Monterey Bay. The system became operational in mid-June 2012.



*In the wild and in hatcheries, oyster larvae are dying before they can attach to shells. Credit: Jessica Miller, Oregon State University.*

**RESEARCH SHOWS ENDANGERED MARINE TURTLES MAY BE THREATENED BY CLIMATE CHANGE**

Assessing the potential impacts of climate change on marine life is essential to protect ecosystems and biodiversity. Climate change can affect both the land and sea habitats of marine turtles which must lay eggs on sandy beaches. In FY 2012, NOAA scientists and their colleagues used a combination of scientific models to study the effects of climate variability on the behavior of a population of critically endangered eastern Pacific leatherback turtles nesting on the northwest coast of Costa Rica. Mature females’ success in finding food in the ocean, and the success of their nests on the beach, varies with the El Niño Southern Oscillation. The models showed an estimated 7 percent per decade decline in the nesting population at Playa Grande, Costa Rica over the 21st century, primarily due to the negative impacts of increased air temperature on hatchling survival from the nest. These projections suggest that climate change could drive eastern Pacific leatherbacks to disappear in Costa Rica, even in the absence of incidental fisheries by-catch mortality. The findings suggest that shading and irrigating leatherback nests could help sustain the population.



*Scientists are investigating the impacts of climate change on turtles nesting in various locations, including leatherback turtles in Costa Rica and green turtles in Hawaii (shown here). Credit: NOAA*

**NEW REGIONAL CLIMATE SCIENCE COLLABORATIONS ESTABLISHED**

An NOAA established three new Regional Integrated Sciences and Assessments (RISA) collaborations in Alaska, California-Nevada, and the Carolinas. One of the key questions NOAA faces is how can we improve the link between climate sciences and society. The RISA Program is helping to

<sup>4</sup> G.M. Johns, V.R. Leeworthy, F.W. Bell, M. Bonn, *Socioeconomic Study of Reefs in Southeast Florida, Final Report, 348 pp. (2001)*



realign our Nation's climate research to better serve society. Established by NOAA in the mid-1990s, RISA projects point the way toward a new paradigm of stakeholder-driven climate sciences that directly address society's needs and concerns. The three new awards include the Alaska Center for Climate Assessments and Policy (ACCAP – University of Alaska-Fairbanks), the California-Nevada Applications Program (CNAP – Scripps Institution of Oceanography), and the Carolinas Integrated Science and Assessments program (CISA – University of South Carolina). All three institutions will address issues expressed by regional decision-makers and will conduct research efforts collaboratively with other universities and research organizations. The ACCAP center will focus on coastal and living marine resources with potential topics including sea ice extent and the vulnerability of coastal infrastructure to storms. CNAP will address water supply, planning and preparedness for wildfires, and coastal management. The CISA project addresses early warning and preparedness for drought, groundwater vulnerability to saltwater intrusion, and shellfish pathogens.

#### **NOAA PARTNERS WITH JAPAN AEROSPACE EXPLORATION AGENCY**

A new satellite was launched in 2012 by the Japan Aerospace Exploration Agency (JAXA) that will help NOAA scientists forecast severe storms, monitor the decline of Arctic sea ice, and predict the onset of El Niño, La Niña and other global climate phenomena. Once deemed operational, data from this new Japanese polar-orbiting spacecraft and the United States' new Suomi NPP satellite, which was launched in 2011 and is operated by NOAA, will strengthen the environmental monitoring capabilities of both nations. Under a Memorandum of Understanding (MOU) signed in 2011 between NOAA and JAXA, NOAA will use data from an instrument onboard JAXA's Global Change Observation Mission 1 - Water (GCOM-W1) satellite. The instrument, the Advanced Microwave Scanning Radiometer 2 (AMSR-2), will provide data crucial for tracking sea-surface temperatures and support near real-time weather and ocean forecasts. Additionally, under the MOU, NOAA will provide ground support, including ground reception of AMSR-2 data, and transmit it from Norway's Svalbard Satellite Ground Station to JAXA and to NOAA. NOAA will also process, archive and distribute AMSR-2 data products to users and make data from the Suomi NPP satellite and the upcoming Joint Polar Satellite System (JPSS) satellites available to JAXA.

#### **NOAA SCIENTISTS USE NEW HIGH PERFORMANCE COMPUTER TO IMPROVE CLIMATE RESEARCH**

NOAA scientists are using a newly upgraded powerful high performance computer to improve our understanding of the Earth's climate system. Named Gaea, meaning "mother earth" in Greek mythology, it is one of the world's fastest computers dedicated to climate research and modeling. Located at the Department of Energy's Oak Ridge National Laboratory in Oak Ridge, Tenn., Gaea now has a computing capacity on the order of a petaflop – or one thousand trillion mathematical operations per second – which is

*NOAA currently supports 11 Regional Integrated Science & Assessments (RISA) teams through five-year, cooperative agreement awards. The program's new 2012 annual report (available in the RISA section of <http://www.cpo.noaa.gov/>) contains a description of the major activities and accomplishments of the RISAs last year. Credit: NOAA.*



eight to nine times more than NOAA's previous research and development computing capability. This new supercomputer allows researchers to develop and refine advanced climate models, enhances scientific understanding of climate variability and change, and improves the accuracy of global and regional climate model projections at a finer resolution and on a timeframe that is more useful for decision makers and sectors such as agriculture, energy, and transportation. For example, high resolution models running on Gaea have been used to demonstrate the remarkable predictability of Atlantic hurricanes during the past two decades, providing confidence that more accurate seasonal hurricane outlooks are within reach. In addition to research supercomputing, NOAA is enhancing its operational high performance computing capacity to ensure alignment of these two capabilities and to strengthen our ability to forecast weather.

### **NOAA OPENS NEW FACILITY FOR THE WEATHER AND CLIMATE PREDICTION CENTER**

On October 15th, 2012 NOAA opened the new facility for its Weather and Climate Prediction Center, the backbone of weather and climate prediction for the Nation. The 268,000 square-foot building is on the University of Maryland grounds and is home to more than 800 NOAA employees. The center provides the Nation with a broad range of environmental services – from predicting the hurricane season and El Niño/La Niña, to forecasting ocean currents and large-scale rain and snow storms. Billions of earth observations from around the world flow through environmental models, developed and managed in the new building.



*The NOAA Center for Weather and Climate Prediction opened in College Park, MD, in October 2012. Credit: University of Maryland*

### **NOAA ISSUES SCIENTIFIC INTEGRITY POLICY**

NOAA established a Scientific Integrity Policy designed to promote a culture of scientific excellence and integrity. It is founded upon existing NOAA and Department of Commerce policies, and it updates and extends them substantially based on President Obama's 2009 scientific integrity memorandum and further guidance from the Office of Science and Technology Policy. Developed from a deliberative and inclusive process that included employee and public input, the policy reflects NOAA's commitment to protect scientific findings from being suppressed, distorted or altered and to strengthen science and encourage a culture of transparency. The scientific integrity policy applies to all NOAA employees — career, political, and contractor — who conduct, supervise, assess or interpret scientific information on behalf of NOAA. To support a culture of openness, one of the policy's key provisions affirms that NOAA scientists may speak freely with the media and public about scientific and technical matters based on their official work without approval from the public affairs office or their supervisors. The policy also protects those who report scientific and research misconduct and protects the anonymity of those who are accused but exonerated of scientific and research misconduct.



## RESEARCH & DEVELOPMENT STATS

The Office of Management and Budget (OMB) defines the conduct of Research and Development (R&D) as “. . .creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications.” NOAA tracks the conduct of R&D as well as assets which support R&D, including equipment and facilities. Those assets include vessels that support research missions and high performance computing infrastructure.

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

- NOAA requests a total of \$733 million for R&D funding (including R&D Equipment) in FY 2014.
- R&D funding (including R&D Equipment) represents 13.5 percent of total NOAA funding for FY 2014.
- NOAA's R&D budget is comprised of 9 percent Development, 68.8 percent Research, and 22.3 percent Equipment.
- 69 percent of NOAA's R&D funding, excluding equipment, is intramural and 31 percent is extramural.
- NOAA's Office of Oceanic & Atmospheric Research (OAR) manages 65.3 percent of NOAA's R&D funding, excluding equipment. The remainder of R&D is distributed among the operational Line Offices.

### Definitions

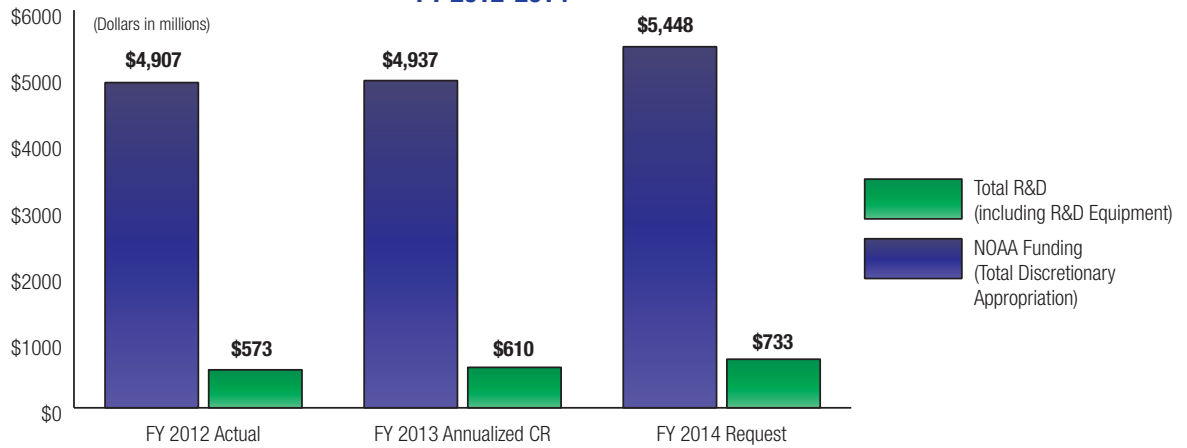
- Research and Development includes those activities aimed at broadening general knowledge about scientific topics, applied investigations on specific topics, and development of new technologies.
- Research is defined as systematic study to gain knowledge or understanding about a topic.
- Development is defined as systematic application of knowledge or understanding, directed toward the production of useful materials, devices, and systems or methods, including design, development, and improvement of prototypes and new processes to meet specific requirements.
- Equipment includes infrastructure to support Research & Development such as the Office of Marine and Aviation Operations (OMAO) research vessels, High Performance Computers, and laboratory equipment.
- Extramural research is that which is ultimately performed by non-Federal entities and may include private companies, academia, non-profits, state and local governments, etc.
- Intramural research is that which is performed by Federal Agencies.



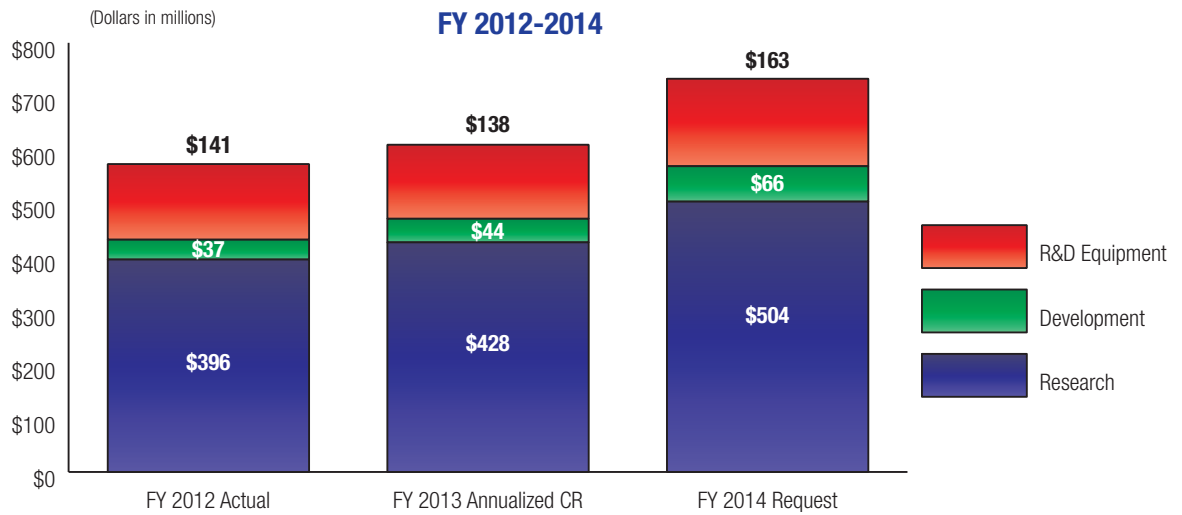




### NOAA R&D COMPARED TO TOTAL FUNDING FY 2012-2014



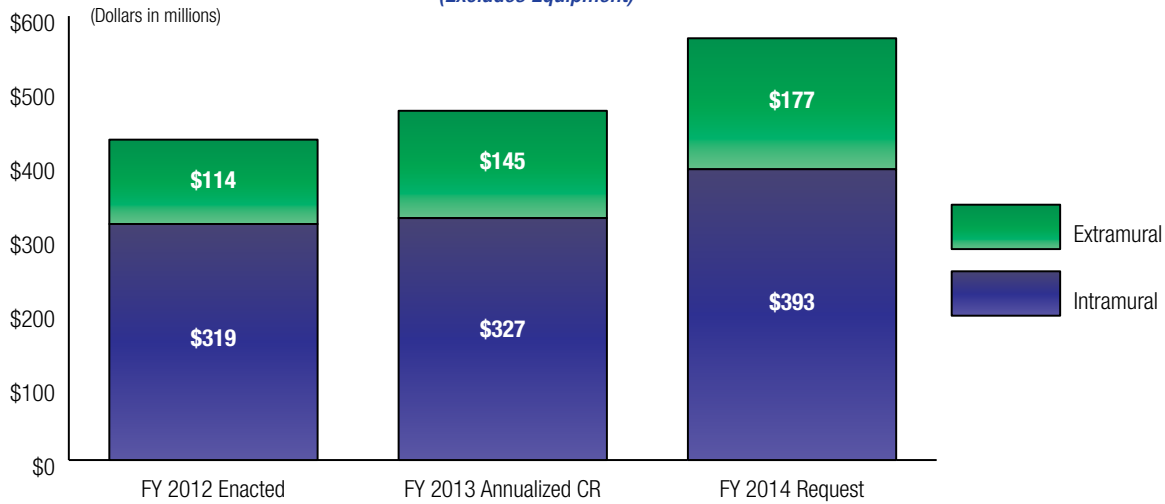
### NOAA R & D FUNDING BY TYPE FY 2012-2014



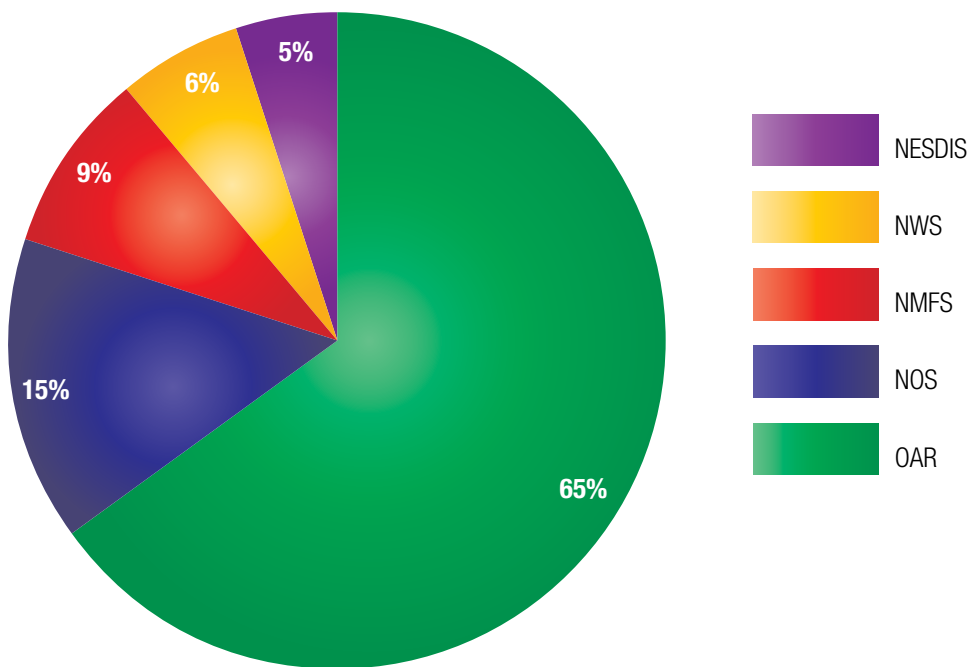


### R&D FUNDING BY EXTRAMURAL & INTRAMURAL, FY 2012-2014

*(Excludes Equipment)*



### FY 2014 R&D FUNDING BY LINE OFFICE



The 268,000 square-foot building is home to more than 800 employees of NOAA's Center for Weather and Climate Prediction who provide the nation with a broad range of environmental services – from predicting the hurricane season and El Niño/La Niña to forecasting ocean currents and large-scale rain and snow storms. Billions of earth observations from around the world flow through environmental models, developed and managed in the new building, that support the nation's weather forecasts.



NOAA CENTER FOR WEATHER AND CLIMATE PREDICTION

# 8

# APPENDICES





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

**FY 2012 Enacted**

Fiscal Year (FY) 2012 Appropriations (P.L. 112-55).

**FY 2013 Annualized CR**

An Annualized version of P.L. 112-55, this represents NOAA's estimated funding levels throughout FY 2013.

**Adjustments-to-Base**

Includes the estimated FY 2014 federal civilian pay raise of 1 percent (and the estimated FY 2014 federal military pay raise of 1 percent as appropriate). 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 2014 Base**

FY 2013 Estimate plus Adjustments-To-Base

**Program Change**

Requested increase or decrease over the FY 2014 base

**FY 2014 Request**

FY 2014 base plus Program Changes



# APPENDIX A

## ADJUSTMENTS TO CURRENT PROGRAMS (ADJUSTMENTS TO BASE) - REQUESTED \$48,273,000

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

NOAA has requested the following increases for labor-related and non-labor ATBs\* (in thousands):

ORF & PAC	ATB BY LO
National Ocean Service	4,350
National Marine Fisheries Service	12,968
Oceans and Atmospheric Research	3,537
National Weather Service	11,241
National Environmental Satellite Data and Information Service	1,690
Program Support	14,685
Office of Marine and Aviation Operations	(198)
<b>FY 2014 Total Discretionary - ATBs (Budget Authority)</b>	<b>48,273</b>

These increases for ATBs will help fund the agency’s overall anticipated adjustments to the current programs. In addition, program totals will also fund inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Services Administration.

\* This total does not include technical ATBs

# APPENDIX B

## HEADQUARTERS ADMINISTRATIVE COSTS

### IN MILLIONS

In FY2014, NOAA's Line Office Headquarters will use \$296.74 million in funds to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. Specifically, NOAA's Line Office Headquarters will use administrative funds to support the following:

Headquarters Program Support Type	NOS Amount	NOS FTEs	NMFS Amount	NMFS FTEs	OAR Amount	OAR FTEs	NWS Amount	NWS FTEs	NESDIS Amount	NESDIS FTEs	PS Amount	PS FTEs	OMAO Amount	OMAO FTEs	Line Office Total Amount	Line Office Total FTEs
General Management & Direction/ Executive Management	\$11.42	49.7	\$7.00	31	\$4.09	23.2	\$8.25	37	\$7.70	36.9	\$31.89	169	\$1.94	8.4	\$72.28	355.2
Budget & Finance	\$3.57	15.3	\$7.28	20.8	\$2.88	15.5	\$5.17	22	\$3.28	17.9	\$41.92	227	\$1.78	11	\$65.88	329.5
Facilities/ Other Administrative (CAO Functions)	\$2.07	1.7	\$3.41	5.2	\$1.49	0	\$3.98	6	\$2.65	8	\$48.25	184	\$0.91	0	\$62.77	204.9
Human Resources	\$0.86	4.7	\$2.50	13.6	\$2.07	9.5	\$1.70	14	\$1.28	7.2	\$16.30	140	\$0.14	1	\$24.86	190
Acquisitions and Grants	\$0.24	1.3	\$0.39	2.2	\$0.37	3.5	\$0.00	0	\$0.26	2	\$14.67	105	\$0	0	\$15.92	114
Information Technology	\$6.85	13	\$3.57	19.2	\$1.20	6.7	\$3.32	17	\$9.23	17	\$28.57	49	\$2.29	9.7	\$55.03	131.6
<b>Total</b>	<b>\$25.02</b>	<b>85.7</b>	<b>\$24.15</b>	<b>92.0</b>	<b>\$12.10</b>	<b>58.4</b>	<b>\$22.40</b>	<b>96.0</b>	<b>\$24.40</b>	<b>89.0</b>	<b>\$181.60</b>	<b>874.0</b>	<b>\$7.07</b>	<b>30.1</b>	<b>\$296.74</b>	<b>1,325.2</b>





## APPENDIX C

## FY 2014 CONTROL TABLE

NATIONAL OCEAN SERVICE* (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
<b>Navigation Services</b>					
Navigation, Observations and Positioning		128,304	1,695	15,853	145,852
Hydrographic Survey Priorities/Contracts		27,024	20	(98)	26,946
IOOS Regional Observations		23,095	0	11,425	34,520
<b>Total, Navigation, Observations and Positioning</b>	<b>0</b>	<b>178,423</b>	<b>1,715</b>	<b>27,180</b>	<b>207,318</b>
<b>Coastal Science and Assessment</b>					
Coastal Science, Assessment, Response and Restoration		62,844	351	3,490	66,685
Competitive Research		9,087	0	5,913	15,000
<b>Total, Coastal Science and Assessment</b>	<b>0</b>	<b>71,931</b>	<b>351</b>	<b>9,403</b>	<b>81,685</b>
<b>Ocean and Coastal Management and Services</b>					
Coastal Zone Management and Services		44,087	493	(3,392)	41,188
Coastal Management Grants		69,846	0	1,300	71,146
Coral Reef Program		26,690	0	85	26,775
National Estuarine Research Reserve System		21,844	0	135	21,979
Sanctuaries and Marine Protected Areas		49,340	576	(3,498)	46,418
<b>Total, Ocean and Coastal Management and Services</b>	<b>0</b>	<b>211,807</b>	<b>1,069</b>	<b>(5,370)</b>	<b>207,506</b>
<b>Total, National Ocean Service - ORF</b>	<b>459,372</b>	<b>462,161</b>	<b>3,135</b>	<b>31,213</b>	<b>496,509</b>

\* In 2014, NOAA is proposing to restructure NOS projects, programs and activities (PPAs) as part of a broader effort to refocus NOS and improve coordination and collaboration among activities that support its interlocking missions and mandates. This restructure is reflected in the crosswalk tables provided in Chapter 1 of the NOAA FY 14 Bluebook.





NATIONAL OCEAN SERVICE* (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
<b>Other National Ocean Service Accounts</b>					
Total, National Ocean Service - PAC	8,000	8,042	0	(1,342)	6,700
Total, National Ocean Service - Other	22,600	26,000	0	0	26,000
<b>GRAND TOTAL NOS</b>	<b>489,972</b>	<b>496,203</b>	<b>3,135</b>	<b>29,871</b>	<b>529,209</b>

\*In 2014, NOAA is proposing to restructure NOS projects, programs and activities (PPAs) as part of a broader effort to refocus NOS and improve coordination and collaboration among activities that support its interlocking missions and mandates. This restructure is reflected in the crosswalk tables provided in Chapter 1 of the NOAA FY 14 Bluebook.

NATIONAL MARINE FISHERIES SERVICE (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
<b>Protected Species Research and Management</b>					
Protected Species Research and Management Programs Base	39,350	39,589	693	(687)	39,595
Species Recovery Grants	2,788	2,805	5	15,003	17,813
Marine Mammals	49,153	49,451	736	(5,148)	45,039
Marine Turtles	12,387	12,462	191	(1,869)	10,784
Other Protected Species (Marine Fish, Plants, and Invertebrates)	6,538	6,578	118	568	7,264
Atlantic Salmon	5,563	5,597	80	406	6,083
Pacific Salmon (for Salmon Management Activities, see FRM)	58,380	58,734	1,488	(831)	59,391
<b>Total, Protected Species Research and Management</b>	<b>174,159</b>	<b>175,216</b>	<b>3,311</b>	<b>7,442</b>	<b>185,969</b>



NATIONAL MARINE FISHERIES SERVICE (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
<b>Fisheries Research and Management</b>					
Fisheries Research and Management Programs	178,432	179,418	3,078	(2,573)	179,923
National Catch Share Program	27,911	28,080	272	(106)	28,246
Expand Annual Stock Assessments - Improve Data Collection	63,562	63,581	775	4,903	69,259
Economics & Social Sciences Research	7,633	7,679	125	86	7,890
Salmon Management Activities	33,341	33,543	80	(6,641)	26,982
Regional Councils and Fisheries Commissions	31,754	31,947	792	(731)	32,008
Fisheries Statistics	23,150	23,291	363	206	23,860
Fish Information Networks	21,996	22,130	(36)	20	22,114
Survey and Monitoring Projects	21,710	21,710	464	2,580	24,754
Fisheries Oceanography	2,140	2,153	26	(19)	2,160
American Fisheries Act	3,876	3,900	103	1,739	5,742
Interjurisdictional Fisheries Grants	0	0	0	2,500	2,500
National Standard 8	997	1,003	17	11	1,031
Reduce Fishing Impacts on Essential Fish Habitat (EFH)	0	0	0	0	0
Reducing Bycatch	3,381	3,402	14	1,053	4,469
Product Quality and Safety	6,192	6,230	174	359	6,763
<b>Total, Fisheries Research and Management</b>	<b>426,075</b>	<b>428,067</b>	<b>6,247</b>	<b>3,387</b>	<b>437,701</b>
<b>Enforcement &amp; Observers/Training</b>					
Enforcement	65,617	66,015	701	1,048	67,764
Observers/Training	39,744	39,985	491	3,095	43,571
<b>Total, Enforcement &amp; Observers/Training</b>	<b>105,361</b>	<b>106,000</b>	<b>1,192</b>	<b>4,143</b>	<b>111,335</b>



NATIONAL MARINE FISHERIES SERVICE (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
<b>Habitat Conservation &amp; Restoration</b>					
Habitat Management & Restoration	20,892	21,019	21,891	4,121	47,031
*Fisheries Habitat Restoration	20,765	20,891	(20,891)	0	0
<b>Subtotal, Habitat Conservation &amp; Restoration</b>	<b>41,657</b>	<b>41,910</b>	<b>1,000</b>	<b>4,121</b>	<b>47,031</b>
<b>Other Activities Supporting Fisheries</b>					
Antarctic Research	1,640	1,650	42	1,423	3,115
Aquaculture	5,575	5,609	78	1,061	6,748
Climate Regimes & Ecosystem Productivity	1,741	1,752	44	2,052	3,848
Computer Hardware and Software	1,790	1,801	(29)	40	1,812
Cooperative Research	10,965	10,965	43	1,029	12,037
Information Analyses & Dissemination	15,328	15,421	491	647	16,559
Marine Resources Monitoring, Assessment & Prediction Program (MarMap)	502	505	0	337	842
National Environmental Policy Act (NEPA)	6,446	6,485	116	72	6,673
NMFS Facilities Maintenance	3,283	3,303	0	88	3,391
Regional Studies	10,196	10,258	97	(918)	9,437
<b>Total, Other Activities Supporting Fisheries</b>	<b>57,466</b>	<b>57,749</b>	<b>882</b>	<b>5,831</b>	<b>64,462</b>
<b>Total, National Marine Fisheries Service - ORF</b>	<b>804,718</b>	<b>808,942</b>	<b>12,632</b>	<b>24,924</b>	<b>846,498</b>
<b>Other National Marine Fisheries Service Accounts</b>					
National Marine Fisheries Service - PAC	0	0	0	0	0
Total, National Marine Fisheries Service - Other	90,286	122,256	(28,812)	(15,400)	82,844
<b>GRAND TOTAL NMFS</b>	<b>895,004</b>	<b>931,198</b>	<b>(16,180)</b>	<b>9,524</b>	<b>929,342</b>

\* In the FY 2014 Request, this PPA is transferred to Habitat Management and Restoration



OFFICE OF OCEANIC AND ATMOSPHERIC RESEARCH (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
<b>Climate Research</b>					
Laboratories & Cooperative Institutes	52,045	52,361	(792)	13,529	65,098
<b>Subtotal, Laboratories &amp; Cooperative Institutions</b>	<b>52,045</b>	<b>52,361</b>	<b>(792)</b>	<b>13,529</b>	<b>65,098</b>
<b>Regional Climate Data &amp; Information</b>					
Regional Climate Data & Information	10,406	40,415	1,305	8,287	50,007
<b>Subtotal, Regional Climate Data &amp; Information</b>	<b>10,406</b>	<b>40,415</b>	<b>1,305</b>	<b>8,287</b>	<b>50,007</b>
<b>Climate Competitive Research</b>					
Climate Competitive Research	117,685	47,704	2,510	23,521	73,735
<b>Subtotal, Climate Competitive Research, Sustained Obs and Regional Info</b>	<b>117,685</b>	<b>47,704</b>	<b>2,510</b>	<b>23,521</b>	<b>73,735</b>
<b>Climate Operations</b>					
Climate Operations	908	914	(914)	0	0
<b>Subtotal, Climate Operations</b>	<b>908</b>	<b>914</b>	<b>(914)</b>	<b>0</b>	<b>0</b>
<b>Total, Climate Research</b>	<b>181,044</b>	<b>141,394</b>	<b>2,109</b>	<b>45,337</b>	<b>188,840</b>
<b>Weather &amp; Air Chemistry Research</b>					
Laboratories & Cooperative Institutions					
Laboratories & Cooperative Institutes	53,593	53,918	1,399	9,042	64,359
<b>Subtotal, Laboratories &amp; Cooperative Institutions</b>	<b>53,593</b>	<b>53,918</b>	<b>1,399</b>	<b>9,042</b>	<b>64,359</b>



OFFICE OF OCEANIC AND ATMOSPHERIC RESEARCH (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
<b>Weather &amp; Air Chemistry Research Programs</b>					
U.S. Weather Research Program (USWRP)	4,210	4,236	68	(63)	4,241
Tornado Severe Storm Research / Phased Array Radar	9,976	10,037	67	2,920	13,024
<b>Subtotal, Weather &amp; Air Chemistry Research Programs</b>	<b>14,186</b>	<b>14,273</b>	<b>135</b>	<b>2,857</b>	<b>17,265</b>
<b>Total, Weather &amp; Air Chemistry Research</b>	<b>67,779</b>	<b>68,191</b>	<b>1,534</b>	<b>11,899</b>	<b>81,624</b>
<b>Ocean, Coastal, and Great Lakes Research</b>					
<b>Laboratories &amp; Cooperative Institutes</b>					
Laboratories & Cooperative Institutes	22,799	22,937	(11)	1,516	24,442
<b>Subtotal, Laboratories &amp; Cooperative Institutes</b>	<b>22,799</b>	<b>22,937</b>	<b>(11)</b>	<b>1,516</b>	<b>24,442</b>
<b>National Sea Grant College Program</b>					
National Sea Grant College Program Base	56,861	57,206	491	10,495	68,192
Aquatic Invasive Species Program	999	1,005	0	(1,005)	0
Marine Aquaculture Program	4,309	4,335	0	221	4,556
<b>Subtotal, National Sea Grant College Program</b>	<b>62,169</b>	<b>62,546</b>	<b>491</b>	<b>9,711</b>	<b>72,748</b>
<b>Ocean Exploration and Research</b>					
Ocean Exploration and Research (NURP moved in FY08)	23,545	23,688	227	5,185	29,100
<b>Subtotal, Ocean Exploration and Research</b>	<b>23,545</b>	<b>23,688</b>	<b>227</b>	<b>5,185</b>	<b>29,100</b>



OFFICE OF OCEANIC AND ATMOSPHERIC RESEARCH (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
<b>Other Ecosystems Programs</b>					
Integrated Ocean Acidification	6,206	6,244	66	2,101	8,411
<b>Subtotal, Other Ecosystems Programs</b>	<b>6,206</b>	<b>6,244</b>	<b>66</b>	<b>2,101</b>	<b>8,411</b>
<b>Sustained Ocean Observations and Monitoring</b>					
Sustained Ocean Observations and Monitoring		40,750	353	4,002	45,105
<b>Subtotal, Sustained Ocean Observations and Monitoring</b>	<b>0</b>	<b>40,750</b>	<b>353</b>	<b>4,002</b>	<b>45,105</b>
<b>Total, Ocean, Coastal, &amp; Great Lakes Research</b>	<b>114,719</b>	<b>156,165</b>	<b>1,126</b>	<b>22,515</b>	<b>179,806</b>
<b>Innovative Research &amp; Technology</b>					
High Performance Computing Initiatives	8,946	9,000	92	2,694	11,786
<b>Total, Innovative Research &amp; Technology</b>	<b>8,946</b>	<b>9,000</b>	<b>92</b>	<b>2,694</b>	<b>11,786</b>
<b>Total, Office of Oceanic and Atmospheric Research - ORF</b>	<b>372,488</b>	<b>374,750</b>	<b>4,861</b>	<b>82,445</b>	<b>462,056</b>
<b>Other Office of Oceanic and Atmospheric Research Accounts</b>					
Total, Office of Ocean and Atmospheric Research - PAC	10,296	10,350	0	29	10,379
Total, Office of Oceanic and Atmospheric Research - Other			0		
<b>GRAND TOTAL OAR</b>	<b>382,784</b>	<b>385,100</b>	<b>4,861</b>	<b>82,474</b>	<b>472,435</b>



NATIONAL WEATHER SERVICE (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
<b>Operations and Research</b>					
<b>Local Warnings and Forecasts</b>					
Local Warnings and Forecasts Base	655,828	659,812	(15,068)	13,487	658,231
Air Quality Forecasting	1,705	1,715	2,282	(3,132)	865
Alaska Data Buoys	1,678	1,688	0	(5)	1,683
Sustain Cooperative Observer Network	1,065	1,071	800	(873)	998
NOAA Profiler Network	4,228	4,254	0	(2,443)	1,811
Strengthen U.S. Tsunami Warning Network	23,466	23,608	(532)	3,804	26,880
Pacific Island Compact	3,703	3,725	0	50	3,775
National Mesonet Network	10,965	11,032	0	(5,532)	5,500
<b>Subtotal, Local Warnings and Forecasts</b>	<b>702,638</b>	<b>706,905</b>	<b>(12,518)</b>	<b>5,356</b>	<b>699,743</b>
Advanced Hydrological Prediction Services	8,173	8,223	0	(2,014)	6,209
Aviation Weather	11,697	11,768	9,773	(89)	21,452
WFO Maintenance	5,416	5,449	2,006	(867)	6,588
<b>Weather Radio Transmitters</b>					
Weather Radio Transmitters Base	2,190	2,203	100	(6)	2,297
<b>Subtotal, Weather Radio Transmitters</b>	<b>2,190</b>	<b>2,203</b>	<b>100</b>	<b>(6)</b>	<b>2,297</b>
<b>Subtotal, Local Warnings and Forecasts</b>	<b>730,114</b>	<b>734,548</b>	<b>(639)</b>	<b>2,380</b>	<b>736,289</b>
<b>Central Forecast Guidance</b>					
Central Forecast Guidance	77,540	78,011	1,922	14,807	94,740
<b>Subtotal, Central Forecast Guidance</b>	<b>77,540</b>	<b>78,011</b>	<b>1,922</b>	<b>14,807</b>	<b>94,740</b>



<b>NATIONAL WEATHER SERVICE (\$ IN THOUSANDS)</b>					
<b>FY 2014 PROPOSED OPERATING PLAN</b>	<b>FY 2012 SPEND PLAN</b>	<b>FY 2013 CR ANNUALIZED</b>	<b>TOTAL ATBS</b>	<b>PROGRAM CHANGES</b>	<b>FY 2014 REQUEST</b>
<b>Total, Operations and Research</b>	<b>807,654</b>	<b>812,559</b>	<b>1,283</b>	<b>17,187</b>	<b>831,029</b>
<b>Systems Operation &amp; Maintenance (O&amp;M)</b>					
NEXRAD	45,505	45,781	555	119	46,455
ASOS	10,278	10,340	1,078	24	11,442
AWIPS	36,621	36,843	2,583	(848)	38,578
NWSTG Backup - CIP	5,265	5,297	0	(15)	5,282
<b>Total, Systems Operation &amp; Maintenance (O&amp;M)</b>	<b>97,669</b>	<b>98,261</b>	<b>4,216</b>	<b>(720)</b>	<b>101,757</b>
<b>Total, National Weather Service - ORF</b>	<b>905,323</b>	<b>910,820</b>	<b>5,499</b>	<b>16,467</b>	<b>932,786</b>
<b>Other National Weather Service Accounts</b>					
Total, National Weather Service - PAC	90,692	91,174	418	25,723	117,315
Total, National Weather Service - Other			0		
<b>GRAND TOTAL NWS</b>	<b>996,015</b>	<b>1,001,994</b>	<b>5,917</b>	<b>42,190</b>	<b>1,050,101</b>





**NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE  
(\$ IN THOUSANDS)**

<b>FY 2014 PROPOSED OPERATING PLAN</b>	<b>FY 2012 SPEND PLAN</b>	<b>FY 2013 CR ANNUALIZED</b>	<b>TOTAL ATBS</b>	<b>PROGRAM CHANGES</b>	<b>FY 2014 REQUEST</b>
<b>Environmental Satellite Observing Systems</b>					
<b>Office of Satellite and Product Operations (OSPO)</b>					
Satellite Command and Control	39,707	39,949	659	(1,002)	39,606
NSOF Operations	7,919	7,967	0	42	8,009
Product, Processing and Distribution	35,427	35,642	652	8,343	44,637
<b>Subtotal, Office of Satellite and Product Operations</b>	<b>83,053</b>	<b>83,558</b>	<b>1,311</b>	<b>7,383</b>	<b>92,252</b>
<b>Product Development, Readiness &amp; Application</b>					
Product Development, Readiness & Application	19,310	19,427	(179)	331	19,579
Product Development, Readiness & Application (Ocean Remote Sensing)	4,010	4,034	0	24	4,058
Joint Center for Satellite Data Assimilation	3,347	3,367	0	17	3,384
<b>Subtotal, Product Development, Readiness &amp; Application</b>	<b>26,667</b>	<b>26,828</b>	<b>(179)</b>	<b>372</b>	<b>27,021</b>
Commercial Remote Sensing Regulatory Affairs	1,104	1,111	18	0	1,129
Office of Space Commercialization	651	655	14	0	669
Group on Earth Observations (GEO)	503	506	0	0	506
<b>Total, Environmental Satellite Observing Systems</b>	<b>111,978</b>	<b>112,658</b>	<b>1,164</b>	<b>7,755</b>	<b>121,577</b>
<b>Data Centers &amp; Information Services</b>					
Archive, Access & Assessment	47,353	47,641	1,738	17,103	66,482
<b>Subtotal, Archive, Access &amp; Assessment</b>	<b>47,353</b>	<b>47,641</b>	<b>1,738</b>	<b>17,103</b>	<b>66,482</b>



<b>NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE (\$ IN THOUSANDS)</b>					
<b>FY 2014 PROPOSED OPERATING PLAN</b>	<b>FY 2012 SPEND PLAN</b>	<b>FY 2013 CR ANNUALIZED</b>	<b>TOTAL ATBS</b>	<b>PROGRAM CHANGES</b>	<b>FY 2014 REQUEST</b>
Coastal Data Development	4,500	4,527	40	(529)	4,038
Regional Climate Services	6,800	6,841	0	(1,089)	5,752
Environmental Data Systems Modernization	8,912	8,966	0	746	9,712
<b>Total, Data Centers &amp; Information Services</b>	<b>67,565</b>	<b>67,975</b>	<b>1,778</b>	<b>16,231</b>	<b>85,984</b>
<b>Total, NESDIS - ORF</b>	<b>179,543</b>	<b>180,633</b>	<b>2,942</b>	<b>23,986</b>	<b>207,561</b>
<b>Other NESDIS Accounts</b>					
Total, NESDIS - PAC	1,696,645	1,705,678	0	272,771	1,978,449
Total, NESDIS - Other			0		
<b>GRAND TOTAL NESDIS</b>	<b>1,876,188</b>	<b>1,886,311</b>	<b>2,942</b>	<b>296,757</b>	<b>2,186,010</b>



PROGRAM SUPPORT (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
<b>Corporate Services</b>					
<b>Under Secretary and Associate Offices</b>					
Under Secretary and Associate Offices Base	27,420	27,586	0	(420)	27,166
<b>Subtotal, Under Secretary and Associate Offices</b>	<b>27,420</b>	<b>27,586</b>	<b>0</b>	<b>(420)</b>	<b>27,166</b>
<b>NOAA Wide Corporate Services &amp; Agency Management</b>					
NOAA Wide Corporate Services & Agency Management Base	114,944	115,642	1,736	(3,406)	113,972
DOC Accounting System	10,168	10,230	215	510	10,955
Payment to the DOC Working Capital Fund	40,245	40,489	11,546	0	52,035
<b>Subtotal, NOAA Wide Corporate Services &amp; Agency Mgmt</b>	<b>165,357</b>	<b>166,361</b>	<b>13,497</b>	<b>(2,896)</b>	<b>176,962</b>
<b>Office of Chief Information Officer</b>					
IT Security	9,255	9,311	0	(990)	8,321
<b>Subtotal, Office of Chief Information Officer</b>	<b>9,255</b>	<b>9,311</b>	<b>0</b>	<b>(990)</b>	<b>8,321</b>
<b>Total, Corporate Services</b>	<b>202,032</b>	<b>203,258</b>	<b>13,497</b>	<b>(4,306)</b>	<b>212,449</b>
<b>NOAA Education Program</b>					
BWET Regional Programs	5,500	5,533	0	(5,533)	0
Education Partnership Program/Minority Serving Institutions (EPP/MSI)	12,561	12,637	(12,637)	0	0
Office of Education (formerly Competitive Educational Grants)	5,029	5,060	12,797	(1,586)	16,271
Ocean Education Partnerships	1,000	1,006	0	(1,006)	0
Geographic Literacy	1,000	1,006	0	(1,006)	0
<b>Total, NOAA Education Program</b>	<b>25,090</b>	<b>25,242</b>	<b>160</b>	<b>(9,131)</b>	<b>16,271</b>



PROGRAM SUPPORT (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
<b>Facilities</b>					
NOAA Facilities Management & Construction and Safety	24,422	24,570	309	(32)	24,847
<b>Subtotal, NOAA Facilities Management, Construction &amp; Maintenance</b>	<b>24,422</b>	<b>24,570</b>	<b>309</b>	<b>(32)</b>	<b>24,847</b>
<b>Total, Facilities</b>	<b>24,422</b>	<b>24,570</b>	<b>309</b>	<b>(32)</b>	<b>24,847</b>
<b>Total, Program Support - ORF</b>	<b>251,544</b>	<b>253,070</b>	<b>13,966</b>	<b>(13,469)</b>	<b>253,567</b>
<b>Total, Program Support - PAC</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total, Program Support - ORF and PAC</b>	<b>251,544</b>	<b>253,070</b>	<b>13,966</b>	<b>(13,469)</b>	<b>253,567</b>
<b>Marine Operations &amp; Maintenance</b>					
Marine Operations & Maintenance	128,327	129,106	26,138	21,314	176,558
<b>Subtotal, Marine Operations &amp; Maintenance</b>	<b>128,327</b>	<b>129,106</b>	<b>26,138</b>	<b>21,314</b>	<b>176,558</b>
<b>Fleet Planning and Maintenance</b>					
Fleet Planning and Maintenance	26,949	27,113	(27,113)	0	0
<b>Subtotal, Fleet Planning and Maintenance</b>	<b>26,949</b>	<b>27,113</b>	<b>(27,113)</b>	<b>0</b>	<b>0</b>
<b>Total, Marine Operations &amp; Maintenance</b>	<b>155,276</b>	<b>156,219</b>	<b>(975)</b>	<b>21,314</b>	<b>176,558</b>
<b>Aviation Operations</b>					
Aircraft Services	27,134	27,299	1,295	2,868	31,462
<b>Subtotal, Aviation Operations</b>	<b>27,134</b>	<b>27,299</b>	<b>1,295</b>	<b>2,868</b>	<b>31,462</b>



PROGRAM SUPPORT (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
Total, OMAO - ORF	182,410	183,518	320	24,182	208,020
Total, OMAO - PAC	2,392	3,902	0	7,810	11,712
Total, OMAO - Other	30,205	30,217	0	(12)	30,205
Total OMAO - ORF, PAC and Other	215,007	217,637	320	31,980	249,937
Total, Program Support and OMAO - ORF	433,954	436,588	14,286	10,713	461,587
<b>Other Program Support and OMAO Accounts</b>					
Total, Program Support - PAC	2,392	3,902	0	7,810	11,712
Total, Program Support - Other	30,205	30,217	0	(12)	30,205
<b>GRAND TOTAL PS</b>	<b>466,551</b>	<b>470,707</b>	<b>14,286</b>	<b>18,511</b>	<b>503,504</b>



OPERATIONS, RESEARCH, & FACILITIES SUMMARY LINE OFFICE DIRECT OBLIGATIONS (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
National Ocean Service	459,372	462,161	3,135	31,213	496,509
National Marine Fisheries Service	804,718	808,942	12,632	24,924	846,498
Office of Oceanic and Atmospheric Research	372,488	374,750	4,861	82,445	462,056
National Weather Service	905,323	910,820	5,499	16,467	932,786
National Environmental Satellite, Data and Information Service	179,543	180,633	2,942	23,986	207,561
Program Support	433,954	436,588	14,286	10,713	461,587
<b>SUBTOTAL LO DIRECT OBLIGATIONS</b>	<b>3,155,398</b>	<b>3,173,894</b>	<b>43,355</b>	<b>189,748</b>	<b>3,406,997</b>

OPERATIONS, RESEARCH, & FACILITIES ADJUSTMENTS (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 ESTIMATE
<b>SUBTOTAL LO DIRECT OBLIGATIONS</b>	<b>3,155,398</b>	<b>3,173,894</b>	<b>43,355</b>	<b>189,748</b>	<b>3,406,997</b>

**FINANCING**

Cash Refunds/Prior Year Recoveries		0			0
De-Obligations	(8,000)	(8,000)	2,000		(6,000)
Unobligated Balance, EOY		0			0
Unobligated Balance, Expiring		0			0
Unobligated Balance Adj SOY (start of year)		0			0
Transfer of Unobligated P&D Balance		0			0
Hollings		0			0
<b>Total ORF Financing</b>	<b>(8,000)</b>	<b>(8,000)</b>	<b>2,000</b>	<b>0</b>	<b>(6,000)</b>



OPERATIONS, RESEARCH, & FACILITIES ADJUSTMENTS (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 ESTIMATE
<b>SUBTOTAL BUDGET AUTHORITY</b>	3,147,398	3,165,894	45,355	189,748	3,400,997
<b>TRANSFERS</b>					
Transfer from ORF to PAC	0	0	0		0
Transfer from PAC to ORF	(16,069)	(16,069)	16,069		0
Transfer from FFPA	0	0	0		0
Transfer from P&D to ORF	(109,098)	(109,098)	(14,066)		(123,164)
Transfer from CZMF to ORF	0	0	0		0
Transfer from PCSRF to ORF	0	0	0		0
<b>Total ORF Transfers</b>	<b>(125,167)</b>	<b>(125,167)</b>	<b>2,003</b>	<b>0</b>	<b>(123,164)</b>
<b>SUBTOTAL APPROPRIATION</b>	<b>3,022,231</b>	<b>3,040,727</b>	<b>47,358</b>	<b>189,748</b>	<b>3,277,833</b>



PROCUREMENT, ACQUISITION, & CONSTRUCTION (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
<b>NOS</b>					
<b>CELCP Acquisition</b>					
Coastal and Estuarine Land Conservation Program	3,000	3,016	0	(16)	3,000
<b>Subtotal, NOS Acquisition</b>	<b>3,000</b>	<b>3,016</b>	<b>0</b>	<b>(16)</b>	<b>3,000</b>
<b>NERRS Construction:</b>					
National Estuarine Rsrch Reserve Construction (NERRS)	1,000	1,005	0	695	1,700
<b>Subtotal, NERRS Construction</b>	<b>1,000</b>	<b>1,005</b>	<b>0</b>	<b>695</b>	<b>1,700</b>
<b>Marine Sanctuaries Construction:</b>					
Marine Sanctuaries Base (Nancy Foster Scholarship 1% of base)	4,000	4,021	0	(2,021)	2,000
<b>Subtotal, Marine Sanctuary Construction</b>	<b>4,000</b>	<b>4,021</b>	<b>0</b>	<b>(2,021)</b>	<b>2,000</b>
<b>Subtotal, NOS Construction</b>	<b>5,000</b>	<b>5,026</b>	<b>0</b>	<b>(1,326)</b>	<b>3,700</b>
<b>Total, NOS - PAC</b>	<b>8,000</b>	<b>8,042</b>	<b>0</b>	<b>(1,342)</b>	<b>6,700</b>
<b>Total, NMFS - PAC</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>





PROCUREMENT, ACQUISITION, & CONSTRUCTION (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
<b>OAR</b>					
<b>Systems Acquisition</b>					
Research Supercomputing/ CCRI	10,296	10,350	0	29	10,379
<b>Subtotal, OAR Systems Acquisition</b>	<b>10,296</b>	<b>10,350</b>	<b>0</b>	<b>29</b>	<b>10,379</b>
<b>Total, OAR - PAC</b>	<b>10,296</b>	<b>10,350</b>	<b>0</b>	<b>29</b>	<b>10,379</b>
<b>NWS</b>					
<b>Systems Acquisition</b>					
ASOS	1,635	1,644	0	(9)	1,635
AWIPS	18,190	18,287	5,944	(2,639)	21,592
NEXRAD	15,219	15,300	(9,400)	(5,900)	0
NWSTG Legacy Replacement	1,195	1,201	0	15,014	16,215
Radiosonde Network Replacement	4,014	4,035	0	(21)	4,014
Weather and Climate Supercomputing	40,069	40,282	100	3,787	44,169
Cooperative Observer Network Modernization (NERON)	1,526	1,534	2,174	(3,708)	0
Complete and Sustain NOAA Weather Radio	5,494	5,523	100	(29)	5,594
NOAA Profiler Conversion	1,700	1,709	0	(1,709)	0
Ground Readiness Project	0	0	0	15,446	15,446
<b>Subtotal, NWS Systems Acquisition</b>	<b>89,042</b>	<b>89,515</b>	<b>(1,082)</b>	<b>20,232</b>	<b>108,665</b>
<b>Construction</b>					
WFO Construction	1,650	1,659	1,500	5,491	8,650
<b>Subtotal, NWS Construction</b>	<b>1,650</b>	<b>1,659</b>	<b>1,500</b>	<b>5,491</b>	<b>8,650</b>
<b>Total, NWS - PAC</b>	<b>90,692</b>	<b>91,174</b>	<b>418</b>	<b>25,723</b>	<b>117,315</b>



PROCUREMENT, ACQUISITION, & CONSTRUCTION (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
<b>NESDIS</b>					
<b>Systems Acquisition</b>					
NOAA Satellite and Climate Sensors			0		
Geostationary Systems - N	32,467	32,640	0	(6,319)	26,321
Geostationary Systems - R	615,622	618,899	0	335,862	954,761
Polar Orbiting Systems - POES	32,241	32,413	0	(3,625)	28,788
Jason-3	19,700	19,805	0	17,195	37,000
Joint Polar Satellite System (JPSS)	924,014	928,933	(35,982)	(68,951)	824,000
Polar Free Flyer	0	0	62,000	0	62,000
DSCOVER	29,800	29,959	0	(6,284)	23,675
COSMIC 2*	0	0	0	0	0
EOS & Advanced Polar Data Processing, Distribution & Archiving Systems	990	995	0	(5)	990
CIP - single point of failure	2,772	2,787	0	(15)	2,772
Comprehensive Large Array Data Stewardship Sys (CLASS)	6,476	6,510	0	(34)	6,476
NPOESS Preparatory Data Exploitation	4,455	4,479	0	(1,024)	3,455
Restoration of Climate Sensors	25,880	26,018	(26,018)	0	0
Enterprise Ground System	0	0	0	5,983	5,983
<b>Subtotal, NESDIS Systems Acquisition</b>	<b>1,694,417</b>	<b>1,703,438</b>	<b>0</b>	<b>272,783</b>	<b>1,976,221</b>
<b>Construction</b>					
Satellite CDA Facility	2,228	2,240	0	(12)	2,228
<b>Subtotal, NESDIS Construction</b>	<b>2,228</b>	<b>2,240</b>	<b>0</b>	<b>(12)</b>	<b>2,228</b>
<b>Total, NESDIS - PAC</b>	<b>1,696,645</b>	<b>1,705,678</b>	<b>0</b>	<b>272,771</b>	<b>1,978,449</b>

\*The Administration has requested \$13.7 million as part of the FY 2013 Hurricane Sandy Supplemental to support COSMIC-2.



PROCUREMENT, ACQUISITION, & CONSTRUCTION (\$ IN THOUSANDS)						
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST	
<b>Program Support</b>						
<b>Construction</b>						
NOAA Construction	0	0	0	0	0	0
<b>Subtotal, Construction</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total, Program Support - PAC</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>OMAO</b>						
<b>OMAO - Fleet Replacement</b>						
Fleet Capital Improvements & Tech Infusion (Vessel Equip & Tech Refresh)	1,000	1,005	0	10,707	11,712	
New Vessel Construction	1,392	2,897	0	(2,897)	0	
<b>Subtotal, OMAO Fleet Replacement</b>	<b>2,392</b>	<b>3,902</b>	<b>0</b>	<b>7,810</b>	<b>11,712</b>	
<b>OMAO - Aircraft Replacement</b>						
Aircraft Capital Improvements & Tech Infusion	0	0	0	0	0	
<b>Subtotal, OMAO Aircraft Replacement</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Total, OMAO - PAC</b>	<b>2,392</b>	<b>3,902</b>	<b>0</b>	<b>7,810</b>	<b>11,712</b>	
<b>GRAND TOTAL PAC</b>	<b>1,808,025</b>	<b>1,819,146</b>	<b>418</b>	<b>304,991</b>	<b>2,124,555</b>	



<b>PROCUREMENT, ACQUISITION, &amp; CONSTRUCTION ADJUSTMENTS (\$ IN THOUSANDS)</b>					
<b>FY 2014 PROPOSED OPERATING PLAN</b>	<b>FY 2012 SPEND PLAN</b>	<b>FY 2013 CR ANNUALIZED</b>	<b>TOTAL ATBS</b>	<b>PROGRAM CHANGES</b>	<b>FY 2014 REQUEST</b>
<b>SUBTOTAL DIRECT OBLIGATIONS</b>	<b>1,808,025</b>	<b>1,819,146</b>	<b>418</b>	<b>304,991</b>	<b>2,124,555</b>
<b>FINANCING</b>					
Cash Refunds/Recoveries from Prior Year	0	0	0	0	0
De-Obligations	(8,000)	(8,000)	1,000	0	(7,000)
Unobligated balance, Expiring end of year	0	0	0	0	0
Unobligated Balance Adj. SOY (start of year)	0	0	0	0	0
Unobligated Balance End of Year	0	0	0	0	0
Transfer to ORF	0	0	0	0	0
Hollings	0	0	0	0	0
<b>Total PAC Financing</b>	<b>(8,000)</b>	<b>(8,000)</b>	<b>1,000</b>	<b>0</b>	<b>(7,000)</b>
<b>SUBTOTAL BUDGET AUTHORITY</b>	<b>1,800,025</b>	<b>1,811,146</b>	<b>1,418</b>	<b>304,991</b>	<b>2,117,555</b>
<b>TRANSFERS/RESCISSIONS</b>					
Transfer from ORF to PAC	0	0	0	0	0
Transfer from PAC to ORF	16,069	16,069	(16,069)	0	0
Transfer from PCSRF to PAC	0	0	0	0	0
Transfer from Census to PAC	0	0	0	0	0
Transfer to OIG	1,000	1,000	(1,000)	0	0
Unobligated balance, Rescission	0	0	0	0	0
<b>Total PAC Transfers/ Rescissions</b>	<b>17,069</b>	<b>17,069</b>	<b>(17,069)</b>	<b>0</b>	<b>0</b>
<b>SUBTOTAL APPROPRIATION</b>	<b>1,817,094</b>	<b>1,828,215</b>	<b>(15,651)</b>	<b>304,991</b>	<b>2,117,555</b>



<b>GRAND TOTAL SUMMARY DISCRETIONARY APPROPRIATIONS (\$ IN THOUSANDS)</b>					
<b>FY 2014 PROPOSED OPERATING PLAN</b>	<b>FY 2012 SPEND PLAN</b>	<b>FY 2013 CR ANNUALIZED</b>	<b>TOTAL ATBS</b>	<b>PROGRAM CHANGES</b>	<b>FY 2014 REQUEST</b>
Operations, Research and Facilities	3,022,231	3,040,727	47,358	189,748	3,277,833
Procurement, Acquisition and Construction	1,817,094	1,828,215	(15,651)	304,991	2,117,555
Coastal Zone Management Fund	0	0	0	0	0
Fisherman's Contingency Fund	350	352	0	(2)	350
Foreign Fishing Observer Fund	0	0	0	0	0
Fisheries Financing Program Account	0	0	0	0	0
Pacific Coastal Salmon Fund	65,000	65,398	0	(15,398)	50,000
Marine Mammal Unusual Mortality Event Fund	0	0	0	0	0
Medicare Eligible Retiree Health Care Fund	1,936	1,948	0	(12)	1,936
<b>GRAND TOTAL DISCRETIONARY APPROPRIATION</b>	<b>4,906,611</b>	<b>4,936,640</b>	<b>31,707</b>	<b>479,327</b>	<b>5,447,674</b>



<b>OTHER ACCOUNTS (DISCRETIONARY)</b>						
<b>(\$ IN THOUSANDS)</b>						
<b>FY 2014 PROPOSED OPERATING PLAN</b>	<b>FY 2012 SPEND PLAN</b>	<b>FY 2013 CR ANNUALIZED</b>	<b>TOTAL ATBS</b>	<b>PROGRAM CHANGES</b>	<b>FY 2014 REQUEST</b>	
<b>NOS</b>						
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	0	0	0	0	0	0
<b>Subtotal, NOS Other Discretionary Direct Obligation</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Subtotal, NOS Other Discretionary Budget Authority</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Subtotal, NOS Other Discretionary Appropriation</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>NMFS</b>						
Fishermen's Contingency Fund Obligations	350	352	0	(2)	350	350
Fishermen's Contingency Fund Budget Authority	350	352	0	(2)	350	350
Fishermen's Contingency Fund Appropriations	350	352	0	(2)	350	350
Foreign Fishing Observer Fund Obligations	0	0	0	0	0	0
Foreign Fishing Observer Fund Budget Authority	(350)	0	0	0	0	0
Foreign Fishing Observer Fund Appropriation	0	0	0	0	0	0



OTHER ACCOUNTS (DISCRETIONARY) (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
Fisheries Finance Program Account Obligations	0	0	0	0	0
Fisheries Finance Program Account Budget Authority	0	0	0	0	0
Fisheries Finance Program Account Appropriation	0	0	0	0	0
Promote and Develop Fisheries Obligations	0	0	0	0	0
Promote and Develop Fisheries Budget Authority	(109,098)	(109,098)	(14,066)	0	(123,164)
Promote and Develop Fisheries Appropriation	0	0	0	0	0
Pacific Coastal Salmon Fund Obligations	65,000	65,398	0	(15,398)	50,000
Pacific Coastal Salmon Fund Budget Authority	65,000	65,398	0	(15,398)	50,000
Pacific Coastal Salmon Fund Appropriation	65,000	65,398	0	(15,398)	50,000
Marine Mammal Unusual Mortality Event Fund Obligations	200	0	0	0	0
Marine Mammal Unusual Mortality Event Fund Budget Authority	0	0	0	0	0
Marine Mammal Unusual Mortality Event Fund Appropriations	0	0	0	0	0
<b>Subtotal, NMFS Other Discretionary Direct Obligation</b>	<b>65,550</b>	<b>65,750</b>	<b>0</b>	<b>(15,400)</b>	<b>50,350</b>
<b>Subtotal, NMFS Other Discretionary Budget Authority</b>	<b>(44,098)</b>	<b>(43,348)</b>	<b>(14,066)</b>	<b>(15,400)</b>	<b>(72,814)</b>
<b>Subtotal, NMFS Other Discretionary Appropriation</b>	<b>65,350</b>	<b>65,750</b>	<b>0</b>	<b>(15,400)</b>	<b>50,350</b>



<b>OTHER ACCOUNTS (DISCRETIONARY)</b>					
<b>(\$ IN THOUSANDS)</b>					
<b>FY 2014 PROPOSED OPERATING PLAN</b>	<b>FY 2012 SPEND PLAN</b>	<b>FY 2013 CR ANNUALIZED</b>	<b>TOTAL ATBS</b>	<b>PROGRAM CHANGES</b>	<b>FY 2014 REQUEST</b>
<b>OMAO</b>					
Medicare Eligible Retiree Healthcare Fund Acct Obligations	1,936	1,948	0	(12)	1,936
Medicare Eligible Retiree Healthcare Fund Acct Budget Authority	1,936	1,948	0	(12)	1,936
Medicare Eligible Retiree Healthcare Fund Acct Appropriations	1,936	1,948	0	(12)	1,936
<b>Subtotal, OMAO Other Discretionary Direct Obligations</b>	<b>1,936</b>	<b>1,948</b>	<b>0</b>	<b>(12)</b>	<b>1,936</b>
<b>Subtotal, OMAO Other Discretionary Budget Authority</b>	<b>1,936</b>	<b>1,948</b>	<b>0</b>	<b>(12)</b>	<b>1,936</b>
<b>Subtotal, OMAO Other Discretionary Appropriation</b>	<b>1,936</b>	<b>1,948</b>	<b>0</b>	<b>(12)</b>	<b>1,936</b>
<b>TOTAL, OTHER DISCRETIONARY DIRECT OBLIGATIONS</b>	<b>67,486</b>	<b>67,698</b>	<b>0</b>	<b>(15,412)</b>	<b>52,286</b>
<b>TOTAL, OTHER DISCRETIONARY BUDGET AUTHORITY</b>	<b>(42,162)</b>	<b>(41,400)</b>	<b>(14,066)</b>	<b>(15,412)</b>	<b>(70,878)</b>
<b>TOTAL, OTHER DISCRETIONARY APPROPRIATION</b>	<b>67,286</b>	<b>67,698</b>	<b>0</b>	<b>(15,412)</b>	<b>52,286</b>





<b>SUMMARY OF DISCRETIONARY RESOURCES (\$ IN THOUSANDS)</b>					
<b>FY 2014 PROPOSED OPERATING PLAN</b>	<b>FY 2012 SPEND PLAN</b>	<b>FY 2013 CR ANNUALIZED</b>	<b>TOTAL ATBS</b>	<b>PROGRAM CHANGES</b>	<b>FY 2014 REQUEST</b>
<b>Discretionary Direct Obligations</b>					
ORF Direct Obligations	3,155,398	3,173,894	43,355	189,748	3,406,997
PAC Direct Obligations	1,808,025	1,819,146	418	304,991	2,124,555
OTHER Direct Obligations	67,486	67,698	0	(15,412)	52,286
<b>TOTAL Discretionary Direct Obligations</b>	<b>5,030,909</b>	<b>5,060,738</b>	<b>43,773</b>	<b>479,327</b>	<b>5,583,838</b>
<b>Discretionary Budget Authority</b>					
ORF Budget Authority	3,147,398	3,165,894	45,355	189,748	3,400,997
PAC Budget Authority	1,800,025	1,811,146	1,418	304,991	2,117,555
OTHER Budget Authority	(42,162)	(41,400)	(14,066)	(15,412)	(70,878)
<b>TOTAL Discretionary Budget Authority</b>	<b>4,905,261</b>	<b>4,935,640</b>	<b>32,707</b>	<b>479,327</b>	<b>5,447,674</b>
<b>Discretionary Appropriations</b>					
ORF Appropriations	3,022,231	3,040,727	47,358	189,748	3,277,833
PAC Appropriations	1,817,094	1,828,215	(15,651)	304,991	2,117,555
OTHER Appropriations	67,286	67,698	0	(15,412)	52,286
<b>TOTAL Discretionary Appropriation</b>	<b>4,906,611</b>	<b>4,936,640</b>	<b>31,707</b>	<b>479,327</b>	<b>5,447,674</b>



<b>OTHER ACCOUNTS (MANDATORY)</b>					
<b>(\$ IN THOUSANDS)</b>					
<b>FY 2014 PROPOSED OPERATING PLAN</b>	<b>FY 2012 SPEND PLAN</b>	<b>FY 2013 CR ANNUALIZED</b>	<b>TOTAL ATBS</b>	<b>PROGRAM CHANGES</b>	<b>FY 2014 REQUEST</b>
<b>NOS</b>					
Coastal Zone Management Fund Obligations	0	0	0		0
Coastal Zone Management Fund Budget Authority	0	0	0		0
Coastal Zone Management Fund Appropriation	0	0	0		0
Damage Assessment & Restoration Revolving Fund Obligations	21,600	25,000	0		25,000
Damage Assessment & Restoration Revolving Fund Budget Authority	6,000	8,000	0		8,000
Damage Assessment & Restoration Revolving Fund Appropriation	0	0	0		0
Sanctuaries Enforcement Asset Forfeiture Fund Obligations	0	1,000	0		1,000
Sanctuaries Enforcement Asset Forfeiture Fund Budget Authority	0	1,000	0		1,000
Sanctuaries Enforcement Asset Forfeiture Fund Appropriations	0	1,000	0		1,000
<b>Subtotal, NOS Other Mandatory Direct Obligations</b>	<b>21,600</b>	<b>26,000</b>	<b>0</b>	<b>0</b>	<b>26,000</b>
<b>Subtotal, NOS Other Mandatory Budget Authority</b>	<b>6,000</b>	<b>9,000</b>	<b>0</b>	<b>0</b>	<b>9,000</b>
<b>Subtotal, NOS Other Mandatory Appropriation</b>	<b>0</b>	<b>1,000</b>	<b>0</b>	<b>0</b>	<b>1,000</b>



OTHER ACCOUNTS (MANDATORY) (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
<b>NMFS</b>					
Promote and Develop Fisheries Obligations	0	22,274	(14,066)		8,208
Promote and Develop Fisheries Budget Authority	109,098	131,372	0		131,372
Promote and Develop Fisheries Appropriation	0	0	0		0
Fisheries Finance Program Account Obligations	5,771	9,827	(9,827)		0
Fisheries Finance Program Account Budget Authority	5,771	9,800	(9,800)		0
Fisheries Finance Program Account Appropriation	5,771	9,800	(9,800)		0
Federal Ship Financing Obligations	0	0	0		0
Federal Ship Financing Budget Authority	0	0	0		0
Federal Ship Financing Appropriation	0	0	0		0
Environmental Improve & Restoration Fund Obligations	290	9,752	(8,338)		1,414
Environmental Improve & Restoration Fund Budget Authority	290	1,414	388		1,802
Environmental Improve & Restoration Fund Appropriation	290	1,414	388		1,802



<b>OTHER ACCOUNTS (MANDATORY)</b>					
<b>(\$ IN THOUSANDS)</b>					
<b>FY 2014 PROPOSED OPERATING PLAN</b>	<b>FY 2012 SPEND PLAN</b>	<b>FY 2013 CR ANNUALIZED</b>	<b>TOTAL ATBS</b>	<b>PROGRAM CHANGES</b>	<b>FY 2014 REQUEST</b>
Limited Access System Administration Fund Obligations	9,675	9,390	2,682		12,072
Limited Access System Administration Fund Budget Authority	9,675	14,591	(5,427)		9,164
Limited Access System Administration Fund Appropriation	9,675	14,591	(5,427)		9,164
Western Pacific Sustainable Fisheries Fund Obligations	1,000	1,000	0		1,000
Western Pacific Sustainable Fisheries Fund Budget Authority	1,000	1,000	0		1,000
Western Pacific Sustainable Fisheries Fund Appropriation	1,000	1,000	0		1,000
Fisheries Enforcement Asset Forfeiture Fund Obligations	0	4,263	737		5,000
Fisheries Enforcement Asset Forfeiture Fund Budget Authority	0	5,000	0		5,000
Fisheries Enforcement Asset Forfeiture Fund Appropriation	0	5,000	0		5,000
North Pacific Observer Fund Obligations	0	0	0	0	4,800
North Pacific Observer Fund Budget Authority	0	0	0	0	4,800
North Pacific Observer Fund Appropriation	0	0	0	0	4,800
<b>Subtotal, NMFS Other Mandatory Direct Obligations</b>	<b>16,736</b>	<b>56,506</b>	<b>(28,812)</b>	<b>0</b>	<b>32,494</b>
<b>Subtotal, NMFS Other Mandatory Budget Authority</b>	<b>125,834</b>	<b>163,177</b>	<b>(14,839)</b>	<b>0</b>	<b>153,138</b>
<b>Subtotal, NMFS Other Mandatory Appropriation</b>	<b>16,736</b>	<b>31,805</b>	<b>(14,839)</b>	<b>0</b>	<b>21,766</b>



<b>OTHER ACCOUNTS (MANDATORY)</b> <b>(\$ IN THOUSANDS)</b>					
<b>FY 2014 PROPOSED OPERATING PLAN</b>	<b>FY 2012 SPEND PLAN</b>	<b>FY 2013 CR ANNUALIZED</b>	<b>TOTAL ATBS</b>	<b>PROGRAM CHANGES</b>	<b>FY 2014 REQUEST</b>
<b>OMAO</b>					
NOAA Corp Commissioned Officers Retirement Obligations	28,269	28,269	0		28,269
NOAA Corp Commissioned Officers Retirement Budget Authority	28,269	28,269	0		28,269
NOAA Corp Commissioned Officers Retirement Budget Appropriation	28,269	28,269	0		28,269
<b>Subtotal, OMAO Other Mandatory Direct Obligations</b>	<b>28,269</b>	<b>28,269</b>	<b>0</b>	<b>0</b>	<b>28,269</b>
<b>Subtotal, OMAO Other Mandatory Budget Authority</b>	<b>28,269</b>	<b>28,269</b>	<b>0</b>	<b>0</b>	<b>28,269</b>
<b>Subtotal, OMAO Other Mandatory Appropriation</b>	<b>28,269</b>	<b>28,269</b>	<b>0</b>	<b>0</b>	<b>28,269</b>
<b>TOTAL, OTHER MANDATORY DIRECT OBLIGATIONS</b>	<b>66,605</b>	<b>110,775</b>	<b>(28,812)</b>	<b>0</b>	<b>86,763</b>
<b>TOTAL, OTHER MANDATORY BUDGET AUTHORITY</b>	<b>160,103</b>	<b>200,446</b>	<b>(14,839)</b>	<b>0</b>	<b>190,407</b>
<b>TOTAL, OTHER MANDATORY APPROPRIATION</b>	<b>45,005</b>	<b>61,074</b>	<b>(14,839)</b>	<b>0</b>	<b>51,035</b>



<b>OTHER ACCOUNTS (DISCRETIONARY REIMBURSABLE) (\$ IN THOUSANDS)</b>					
<b>FY 2014 PROPOSED OPERATING PLAN</b>	<b>FY 2012 SPEND PLAN</b>	<b>FY 2013 CR ANNUALIZED</b>	<b>TOTAL ATBS</b>	<b>PROGRAM CHANGES</b>	<b>FY 2014 REQUEST</b>
<b>NOS</b>					
Sanctuaries Enforcement Asset Forfeiture Fund Obligations	1,000	0	0		0
Sanctuaries Enforcement Asset Forfeiture Fund Budget Authority	1,000	0	0		0
Sanctuaries Enforcement Asset Forfeiture Fund Appropriations	1,000	0	0		0
<b>NMFS</b>					
Fisheries Enforcement Asset Forfeiture Fund Obligations	8,000	0	0		0
Fisheries Enforcement Asset Forfeiture Fund Budget Authority	8,000	0	0		0
Fisheries Enforcement Asset Forfeiture Fund Appropriations	5,000	0	0		0
<b>TOTAL, OTHER DISCRETIONARY REIMBURSABLE DIRECT OBLIGATIONS</b>	<b>9,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL, OTHER DISCRETIONARY REIMBURSABLE BUDGET AUTHORITY</b>	<b>9,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL, OTHER DISCRETIONARY REIMBURSABLE APPROPRIATION</b>	<b>6,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

\*Both Asset Forfeiture Funds transferred to OTHER Mandatory in FY 2013



<b>NOAA SUMMARY (\$ IN THOUSANDS)</b>					
<b>FY 2014 PROPOSED OPERATING PLAN</b>	<b>FY 2012 SPEND PLAN</b>	<b>FY 2013 CR ANNUALIZED</b>	<b>TOTAL ATBS</b>	<b>PROGRAM CHANGES</b>	<b>FY 2014 REQUEST</b>
<b>TOTAL Direct Obligations (Discretionary &amp; Mandatory)</b>	5,106,514	5,171,513	14,961	479,327	5,670,601
<b>TOTAL Budget Authority (Discretionary &amp; Mandatory)</b>	5,074,364	5,136,086	17,868	479,327	5,638,081
<b>TOTAL Appropriation (Discretionary &amp; Mandatory)</b>	4,957,616	4,997,714	16,868	479,327	5,498,709
Reimbursable Financing	239,000	242,000	0	0	242,000
<b>TOTAL OBLIGATIONS (Direct &amp; Reimbursable)</b>	<b>5,345,514</b>	<b>5,413,513</b>	<b>14,961</b>	<b>479,327</b>	<b>5,912,601</b>
Offsetting Receipts	(11,000)	(3,521)	0	0	(6,277)
<b>TOTAL OBLIGATIONS (Direct, Reimbursable &amp; Offsetting Receipts )</b>	<b>5,334,514</b>	<b>5,409,992</b>	<b>14,961</b>	<b>479,327</b>	<b>5,906,324</b>



LINE OFFICE SUMMARY (\$ IN THOUSANDS)					
FY 2014 PROPOSED OPERATING PLAN	FY 2012 SPEND PLAN	FY 2013 CR ANNUALIZED	TOTAL ATBS	PROGRAM CHANGES	FY 2014 REQUEST
<b>National Ocean Service</b>					
ORF	459,372	462,161	3,135	31,213	496,509
PAC	8,000	8,042	0	(1,342)	6,700
OTHER	22,600	26,000	0	0	26,000
<b>TOTAL, NOS</b>	<b>489,972</b>	<b>496,203</b>	<b>3,135</b>	<b>29,871</b>	<b>529,209</b>
<b>National Marine Fisheries Service</b>					
ORF	804,718	808,942	12,632	24,924	846,498
PAC	0	0	0	0	0
OTHER	90,286	122,256	(28,812)	(15,400)	82,844
<b>TOTAL, NMFS</b>	<b>895,004</b>	<b>931,198</b>	<b>(16,180)</b>	<b>9,524</b>	<b>929,342</b>
<b>Oceanic and Atmospheric Research</b>					
ORF	372,488	374,750	4,861	82,445	462,056
PAC	10,296	10,350	0	29	10,379
OTHER	0	0	0	0	0
<b>TOTAL, OAR</b>	<b>382,784</b>	<b>385,100</b>	<b>4,861</b>	<b>82,474</b>	<b>472,435</b>
<b>National Weather Service</b>					
ORF	905,323	910,820	5,499	16,467	932,786
PAC	90,692	91,174	418	25,723	117,315
OTHER	0	0	0	0	0
<b>TOTAL, NWS</b>	<b>996,015</b>	<b>1,001,994</b>	<b>5,917</b>	<b>42,190</b>	<b>1,050,101</b>
<b>National Environmental Satellite, Data and Information Service</b>					
ORF	179,543	180,633	2,942	23,986	207,561
PAC	1,696,645	1,705,678	0	272,771	1,978,449
OTHER	0	0	0	0	0
<b>TOTAL, NESDIS</b>	<b>1,876,188</b>	<b>1,886,311</b>	<b>2,942</b>	<b>296,757</b>	<b>2,186,010</b>





<b>LINE OFFICE SUMMARY (\$ IN THOUSANDS)</b>					
<b>FY 2014 PROPOSED OPERATING PLAN</b>	<b>FY 2012 SPEND PLAN</b>	<b>FY 2013 CR ANNUALIZED</b>	<b>TOTAL ATBS</b>	<b>PROGRAM CHANGES</b>	<b>FY 2014 REQUEST</b>
<b>Program Support / Corporate Services</b>					
ORF	202,032	203,258	13,497	(4,306)	212,449
PAC	0	0	0	0	0
OTHER	0	0	0	0	0
<b>SUBTOTAL, PS / Corporate Services</b>	<b>202,032</b>	<b>203,258</b>	<b>13,497</b>	<b>(4,306)</b>	<b>212,449</b>
<b>Program Support / NOAA Education Program</b>					
ORF	25,090	25,242	160	(9,131)	16,271
PAC	0	0	0	0	0
OTHER	0	0	0	0	0
<b>SUBTOTAL, PS / NOAA Education Program</b>	<b>25,090</b>	<b>25,242</b>	<b>160</b>	<b>(9,131)</b>	<b>16,271</b>
<b>Program Support / Facilities</b>					
ORF	24,422	24,570	309	(32)	24,847
PAC	0	0	0	0	0
OTHER	0	0	0	0	0
<b>SUBTOTAL, PS / Facilities</b>	<b>24,422</b>	<b>24,570</b>	<b>309</b>	<b>(32)</b>	<b>24,847</b>
<b>Program Support / Corp Srv, Edu, Fac</b>					
ORF	251,544	253,070	13,966	(13,469)	253,567
PAC	0	0	0	0	0
OTHER	0	0	0	0	0
<b>TOTAL, PS / Corp Srv, Edu, Fac</b>	<b>251,544</b>	<b>253,070</b>	<b>13,966</b>	<b>(13,469)</b>	<b>253,567</b>
<b>Program Support / Office of Marine and Aviation Operations</b>					
ORF	182,410	183,518	320	24,182	208,020
PAC	2,392	3,902	0	7,810	11,712
OTHER	30,205	30,217	0	(12)	30,205
<b>TOTAL, PS / OMAO</b>	<b>215,007</b>	<b>217,637</b>	<b>320</b>	<b>31,980</b>	<b>249,937</b>



<b>LINE OFFICE SUMMARY (\$ IN THOUSANDS)</b>					
<b>FY 2014 PROPOSED OPERATING PLAN</b>	<b>FY 2012 SPEND PLAN</b>	<b>FY 2013 CR ANNUALIZED</b>	<b>TOTAL ATBS</b>	<b>PROGRAM CHANGES</b>	<b>FY 2014 REQUEST</b>
<b>Total PS ORF</b>	<b>433,954</b>	<b>436,588</b>	<b>14,286</b>	<b>10,713</b>	<b>461,587</b>
<b>Total PS PAC</b>	<b>2,392</b>	<b>3,902</b>	<b>0</b>	<b>7,810</b>	<b>11,712</b>
<b>Total PS Other</b>	<b>30,205</b>	<b>30,217</b>	<b>0</b>	<b>(12)</b>	<b>30,205</b>
<b>TOTAL, PS</b>	<b>466,551</b>	<b>470,707</b>	<b>14,286</b>	<b>18,511</b>	<b>503,504</b>
<b>DIRECT OBLIGATIONS</b>					
ORF	3,155,398	3,173,894	43,355	189,748	3,406,997
PAC	1,808,025	1,819,146	418	304,991	2,124,555
OTHER	143,091	178,473	(28,812)	(15,412)	139,049
<b>TOTAL, DIRECT OBLIGATIONS</b>	<b>5,106,514</b>	<b>5,171,513</b>	<b>14,961</b>	<b>479,327</b>	<b>5,670,601</b>
ORF Adjustments (Deobligations / Rescissions)	(8,000)	(8,000)	2,000	0	(6,000)
ORF Transfers	(125,167)	(125,167)	2,003	0	(123,164)
PAC Adjustments (Deobligations / Rescissions)	(8,000)	(8,000)	1,000	0	(7,000)
PAC Transfers	17,069	17,069	(17,069)	0	0
OTHER Discretionary Adjustments	(200)	0	0	0	0
Mandatory Accounts Excluded	(66,605)	(110,775)	28,812	0	(86,763)
Discretionary Reimbursable Accounts Excluded	(9,000)	0	0	0	0
<b>TOTAL, DISCRETIONARY APPROPRIATIONS</b>	<b>4,906,611</b>	<b>4,936,640</b>	<b>31,707</b>	<b>479,327</b>	<b>5,447,674</b>





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National Ocean Service  
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Office of Oceanic and Atmospheric Research  
[www.oar.noaa.gov](http://www.oar.noaa.gov)

National Weather Service  
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National Satellite and Information Service  
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Office of Marine and Aviation Operations  
[www.omaop.noaa.gov](http://www.omaop.noaa.gov)