



NATIONAL OCEAN SERVICE

The National Ocean Service (NOS) is responsible for the preservation of coastal resources by providing science-based solutions through collaborative partnerships to address evolving economic, environmental, and social pressures on our oceans and coasts. Over half of the U.S. Gross Domestic Product (GDP) is generated in coastal counties.¹ Today, coastal communities comprise only one-fifth of the Nation's land, but they house over one-half of the U.S. population and generate nearly 60 percent of the U.S. economy.² Marine transportation is a key component of this economic engine. More than 78 percent of U.S. overseas trade (by volume) and 43.5 percent (by value), including nine million barrels of



Jim Gilpatrick, John McCombs, and Dean Dale working at the Houma, Louisiana facility Deepwater Horizon war room on May 30, 2010

imported oil daily, transits through our seaports.¹ Port activities alone are responsible for 8.4 million American jobs and nearly \$2 trillion in economic output.² Through a diversity of programs, NOS supports healthy, resilient coastal communities; promotes sustainable, robust coastal economies; and protects the productivity and diversity of coastal and marine places. NOS activities also serve to support sound decision making for human, ecological, and economic health. This is important because over half of the Nation's population already live in coastal areas—comprising only 17 percent of U.S. land area—and it is expected that by 2020 the U.S. coastal county population will grow by 13.6 million people, representing an 8 percent increase.³ This rising density, coupled with the important economies of coastal areas and marine transportation, makes the task of managing coastal resources a critical challenge for the Nation. Coastal communities are also vulnerable to hazards such as sea level rise or storms, habitat loss, and other threats which can negatively impact our economy and our quality of life, further emphasizing the need for access to data and sound science to inform decision making and hazard preparedness.

As a national leader for coastal and ocean stewardship, NOS promotes a wide range of research and operational activities aimed at developing a better understanding of ocean, coastal and Great Lakes ecosystems and

¹ *An Ocean Blueprint for the 21st Century, USCOP 2004*

² *State of the US Ocean and Coastal Economies, NOEP 2009*

³ *Pocket Guide to Transportation Table 5-5, U.S. Department of Transportation*

⁴ <http://www.economics.noaa.gov/>

⁵ *NOAA - State of the Coast website*



communities. This research provides the strong scientific foundation required to effectively manage and advance the sustainable use of our coastal and ocean systems, improve ecosystem and human health, increase the resiliency of coastal communities, and support coastal economic vitality. NOS also promotes advancements in the quality, quantity, geographic distribution, and timeliness of ocean and coastal observations through innovative research and technology development. Observations by NOS assets and partners are critical components of the Nation's Integrated Ocean Observing System (IOOS[®]) as well as fundamental contributors to the Global Earth Observation System of Systems (GEOSS). NOS mapping, charting, geodetic, and oceanographic activities build on marine and coastal observations collected to increase the efficiency and safety of maritime commerce, support coastal resource management and coastal and marine spatial planning, and address coastal flooding and water quality concerns. These services have real impact. Mariners can use NOS navigation tools to maximize port throughput and economic gain with less risk to the environment by knowing the exact water depth. For every additional inch of water draft available to a tanker, it can carry 70,000 gallons more of heating oil and just one extra inch of draft to a container ship can mean 9,600 more laptop computers, at a value of \$8.5 million.

In addition, NOS protects and restores coastal resources damaged by releases of oil and other hazardous materials. As the nation's leading scientific resource for oil spills in the marine environment, NOAA was on the scene of the Deepwater Horizon incident from the start, providing coordinated scientific services and support to federal, state, and local organizations. NOS also protects and manages the special marine areas of the Nation's thirteen National Marine Sanctuaries (NMS) and the Papahānaumokuākea Marine National Monument. Sanctuaries contribute to the multiplier effect of consumer spending in local economies. For example, in 2008, visitor spending for recreation in Monroe County (of which the Florida Keys NMS occupies a major area) was estimated to be \$1.99 billion, including \$970 million in income to Monroe County residents and 32,000 jobs. Likewise, in counties surrounding Thunder Bay NMS in Michigan, total visitor spending on recreation in Alpena, Alcona, and Presque Isle Counties in 2006 was estimated to be \$110 million, including \$36 million in income to residents and 1,700 jobs. Through partnerships with coastal states, NOS manages and protects the Nation's valuable coastal zones and nationally significant estuarine reserves. NOS helps federal, state, local, and international managers build the suite of skills and capacity needed to protect, restore, and use coastal ecosystems by providing financial and technical assistance, process and technical skill training, and other applied research and capacity-building resources. Specifically, NOS is partnering with the states and other federal agencies to help prepare the maps and information needed to make sound, environmental-based decisions about future alternative energy sources such as wind, wave, tidal and thermal energy in the nation's coastal zones.

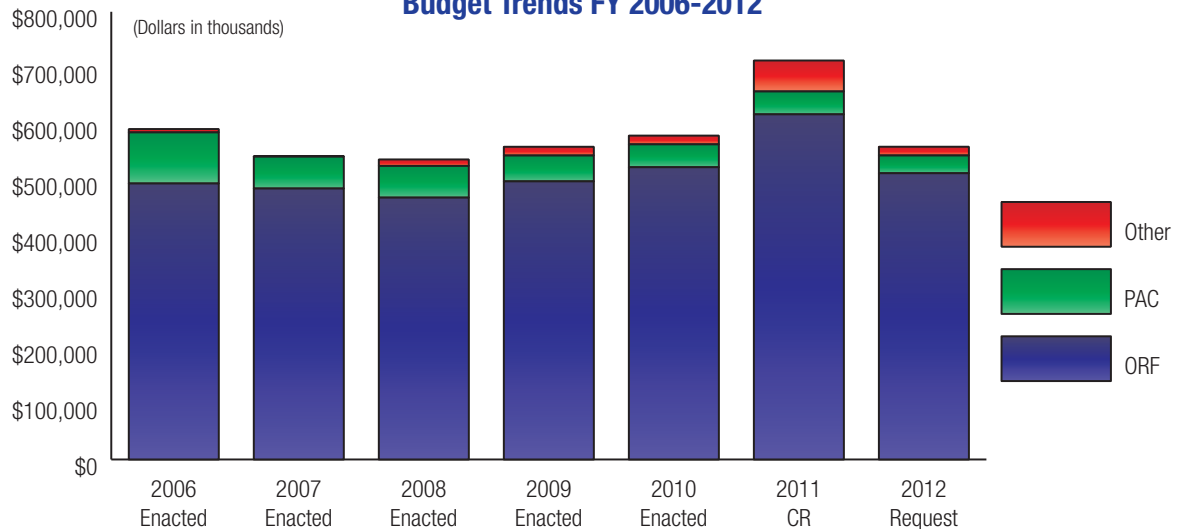
NOS delivers a range of nationwide coastal and Great Lakes scientific, technical, and resource management services in support of safe, healthy, resilient coastal communities; sustainable, robust coastal economies; and productive oceans and coasts. In carrying out its diverse programs and services, NOS forges partnerships to integrate the expertise and efficiency of effort across all levels of government and with nongovernmental organizations. NOS's expertise and partnership ethic will be particularly important as NOAA supports Administration-wide priorities related to renewable energy and coastal and marine spatial planning. NOS integration and expertise will be particularly important as NOAA implements Administration priorities such as coastal and marine spatial planning. The Deepwater Horizon incident is already demonstrating how NOS programs strategically coordinate internally, across NOAA, and with other federal, state, local and other partners. This coordinated approach is an essential component of NOS' national effort to protect, maintain, and sustain the viability of coastal communities, economies, and ecosystems.



NATIONAL OCEAN SERVICE

(DOLLARS IN THOUSANDS)	FY 2010 ENACTED	FY 2011 CR	FY 2012 REQUEST	INCREASE (DECREASE)
NOS — ORF				
Navigation Services	\$168,172	\$162,438	\$157,362	(\$10,810)
Ocean Resources Conservation & Assessment	195,932	186,394	188,528	(7,404)
Ocean and Coastal Management	158,116	152,418	174,201	16,085
Congressionally Directed Projects	0	15,455	0	0
Administrative Efficiency Initiative	0	0	(8,872)	(8,872)
Total, NOS - ORF	522,220	516,705	511,219	(11,001)
Total, NOS - PAC	40,890	40,890	31,734	(9,156)
Total, NOS - Other	15,600	55,326	16,600	1,000
GRAND TOTAL NOS (Direct Obligations)	\$578,710	\$612,921	\$559,553	(\$19,157)
Total FTE	1,246	1,246	1,259	13

NATIONAL OCEAN SERVICE Budget Trends FY 2006-2012



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction

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



The FY 2012 President’s Budget supports funding and program requirements that enable NOS to deliver a dynamic range of nationwide coastal and Great Lakes scientific, technical and resource management services. This funding enables NOS to address established NOAA strategic goals and to continue along the path to meet the NOS vision: A nation with safe, healthy, resilient, and productive oceans and coasts.

FY 2012 ORF BUDGET SUMMARY

NOAA requests a total of \$511,219,000 and 1,242 FTEs to support the continued and enhanced operations of the National Ocean Service. This total includes an increase of \$7,385,000 and 1 FTE for Adjustments to Base (ATB), a net decrease of \$18,386,000 in program changes and an increase of 12 FTEs for a total decrease of \$11,001,000 and an increase of 13 FTEs from the FY 2010 Enacted.

ADJUSTMENTS TO BASE:

The ATB request includes an increase of \$7,385,000 and 1 FTE, which is comprised of a restoration of the FY 2011 and FY 2012 ATBs. The increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration.

NOS — ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2012:

Select program changes are summarized at the sub-activity level below. A summary of funding by line item is located in Chapter 8, *Special Exhibits*. Detailed descriptions of all program changes by line item are located in the NOAA FY 2012 Technical Budget.

NAVIGATION SERVICES

\$157,362,000

NOAA requests program changes that net to a decrease of \$10,050,000 and 0 FTEs and a total of \$157,362,000 and 550 FTEs under the Navigation Services sub-activity.

Mapping and Charting Base: NOAA requests an increase of \$250,000 and 0 FTEs. This increase is comprised of one new initiative and termination of FY 2010 congressionally specified spending of \$750,000 for activities not proposed to be continued in FY 2012:

Integrated Ocean and Coastal Mapping: NOAA requests an increase of \$1,000,000 and 0 FTEs to fund Integrated Ocean and Coastal Mapping (IOCM) Data Processing to maximize mapping data collection efficiencies and products provided to the public. Many Federal, state and private-sector customers rely on seafloor and water column mapping data, and demand for these data is growing exponentially. Ocean and coastal mapping is essential, but expensive. Improving capabilities for integration and data sharing provides an opportunity to meet multiple needs more efficiently. With this increase, NOAA will invest in an Integrated Ocean and Coastal Mapping (IOCM) data processing capability to greatly enhance NOAA’s existing, overextended hydrographic data processing capacity. This will enable NOAA to use its seafloor and ocean mapping assets more efficiently in support of ocean and coastal mission requirements. This includes conserving and managing living marine resources and habitats, sustaining economic uses such as navigation, commercial/recreational fisheries and tourism, coastal hazard resilience, promoting climate change mitigation and adaptation strategies, and conducting scientific research. The increase will also support implementation of the Ocean and Coastal



Autonomous Underwater Vehicles (AUV), also known as unmanned underwater vehicles, can be used to perform underwater survey missions such as detecting and mapping submerged wrecks, rocks, and obstructions that pose a hazard to navigation for commercial and recreational vessels. AUV and NOAA's Bay Hydrographer in Chesapeake Bay shown here.

Mapping Integration Act (OCMIA) of 2009, which codifies collaborative approaches for Federal mapping agencies, and the Administration's National Ocean Policy, which calls for implementation of a coastal and marine spatial planning framework and other essential ocean and coastal economic and management activities. This enhanced effort will enable NOAA to accept mapping data from a variety of sources, manage these data with advanced systems, and produce and deliver quality-assured products to support both navigation and non-navigation (e.g. recreational, commercial) requirements. Data will be archived at the National Geophysical Data Center so that NOAA can provide universal access that would otherwise be unavailable to the broader research and resource management community and the public.

Geodesy: This consists of one termination of FY 2010 congressionally specified spending of \$5,500,000 for activities not proposed to be continued in FY 2012.

Tides and Currents: NOAA requests a decrease of \$4,800,000 and 0 FTEs. This is comprised of one decrease and one termination of FY 2010 congressionally specified spending of \$3,800,000 for activities not proposed to be continued in FY 2012:

Tides and Currents Data Base: NOAA requests a decrease in the Tides and Currents Base of \$1,000,000 and 0 FTEs. This decrease includes \$600,000 to reflect the completion of the installation of meteorological sensors (wind speed/direction, air temperature and barometric pressure) at National Water Level Observation Network (NWLON) stations and a decrease of \$400,000 in funding for the "hardening" (e.g. installation of hurricane protection measures) of NWLON stations damaged by recent hurricanes.

OCEAN RESOURCES CONSERVATION AND ASSESSMENT **\$188,528,000**

NOAA requests program changes that net to a decrease of \$2,547,000 and an increase of 11 FTEs and a total of \$188,528,000 and 439 FTEs under the Ocean Resources Conservation and Assessment sub-activity.

Ocean Assessment Program: NOAA requests an increase of \$876,000 and 11 FTEs. This increase is comprised of six new initiatives, one decrease and one termination of FY 2010 congressionally specified spending of \$20,718,000 for activities not proposed to be continued in FY 2012:



The Multipurpose Marine Cadastre (MMC) data viewer is an integrated marine information system that provides legal, physical, ecological, and cultural information in a common geographic information system (GIS) framework. In particular, the MMC is beneficial to those involved in coastal and marine spatial planning efforts that involve finding the best location for renewable energy projects.

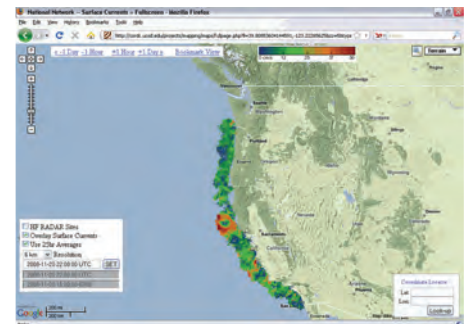
Coastal and Marine Spatial Planning: NOAA requests an increase of \$6,770,000 and 9 FTEs to develop an agency-wide capability to conduct and support comprehensive Coastal and Marine Spatial Planning (CMSP) in U.S. waters. Human uses of ocean resources are accelerating faster than our current ability to manage them. Increasing conflicts are unavoidable as demands increase for ocean-based energy (oil and gas, wind, wave), marine aquaculture, commercial and recreational fishery products, shipping and navigation services, and other activities. The health of ocean ecosystems is at risk, as are the benefits they provide to coastal communities and the national economy. The Nation's current approach to managing the use of ocean resources is ad hoc and fragmented, with no systematic way of evaluating competing ocean uses as well as informing and navigating the often difficult trade-offs they require. In July 2010, President Obama signed Executive Order #13547, adopting the Final Recommendations of the Interagency Ocean



Policy Task Force as the National Policy for the Stewardship of the Oceans, Our Coasts and the Great Lakes. This Policy includes a Framework for implementing CMSP across the United States. CMSP is intended to facilitate sustainable economic growth in coastal communities by providing transparency and predictability for economic investments in coastal, marine and great Lakes industries, transportation, public infrastructure and related businesses. Through the CMSP process, agency and partner data would be integrated into a useable format dramatically improving the access of industry, users and resource managers to this information. Through the development of a user interface and decision-support tools, industry, stakeholders and Regional Planning Bodies would be able to visualize different options, benefits and challenges of various use scenarios in defined areas to help prevent use conflicts before siting and permitting decisions have to be made—saving time and money. CMSP can make managing competing uses of coastal and marine resources more efficient and economically beneficial because it provides transparency and predictability to both sides of the equation—both developers and the coastal communities and environments potentially impacted by industry, transportation, infrastructure and other investment areas. Building upon NOAA's broad science, technical and policy strengths, this increase will fund activities that address NOAA's diverse place-based stewardship and marine transportation mandates and provide the foundation necessary for effective data integration and regional capacity building. These activities will fulfill a critical role in implementing the National Ocean Policy and NOAA's Next Generation Strategic Plan (NGSP), and will enable balanced use of our oceans and coasts so that valuable ecosystem services can be sustained for this and future generations. In addition to promoting sustainable ecosystem services, CMSP provides efficiencies and cost savings to coastal and marine industries. Mapping projects connected with CMSP can save time by dramatically improving the ability to visualize different constraints and benefits of various uses of an area.

U.S. IOOS® Surface Current Mapping plan using High Frequency Radar: NOAA requests an increase of \$5,000,000 and 0 FTEs to implement the U.S. IOOS® Surface Current Mapping plan to monitor near-shore currents using High Frequency (HF) Radar.

HF Radar surface current measurements provide oceanographic data in support of national defense and homeland security, U.S. Coast Guard search and rescue (SAR) operations, marine transportation, water quality pollutant tracking, and harmful algal bloom (HAB) forecasting. The 2010 Deepwater Horizon oil spill highlighted the utility of HF Radar. NOAA's Office of Response and Restoration relied on real-time data collected from the national HF Radar surface current monitoring network to inform trajectory forecasts that were used by Federal responders to deploy spill response assets and identify fishery closures and to verify models used to assess the likelihood of the oil moving into the Loop Current. Additionally, the National HF Radar surface current monitoring network has recently attracted the attention of offshore energy projects. In New Jersey, for example, the state could expand the HF Radar network in the Mid-Atlantic to support assessments of offshore wind projects worth \$7 billion. The state can realize these assessments due to the existing NOAA-supported national HF Radar management infrastructure. SAR operations also demonstrate the benefits of improved surface current monitoring. The Coast Guard currently ingests surface current data from HF Radar into its SAR operations center for the mid-Atlantic coast and estimates that access to HF Radar data in all U.S. coastal waters would save 26-45 additional lives annually and reduce costs spent on



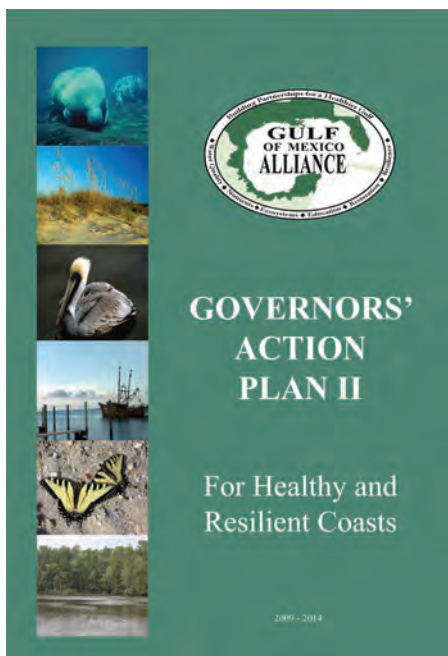
Real-time display from existing west coast High Frequency Radar network



rescue flights. This increase will sustain and maintain the Regional IOOS® HF Radar stations currently operating and delivering data to the national network with a priority on HF radar systems located in regions of offshore oil production and in the vicinity of major ports and harbors. The U.S. IOOS® program will award funding via an established merit-based competitive process with the Regional Coastal Ocean Observing System and through contracts with Federal partners.

IOOS® Regional Observations and Technology Innovation: NOAA requests an increase of \$8,500,000 and 0 FTEs for U.S. IOOS Regional Observations to develop and improve sensors for ocean chemical, biological, and physical parameters at multiple spatial and temporal scales to monitor changing conditions in the oceans, coasts, and Great Lakes. Approximately 100 million Americans go to the beach or swim in the ocean each year, many of them multiple times, where they can be exposed to a dangerous array of ocean health threats from impaired water quality due to industrial, urban, and agricultural activities. In 2004, there were nearly 20,000 days of closings and advisories at ocean, bay, and Great Lakes beaches, of which 73 percent were attributed to unknown sources and cost millions to local economies. This funding will enable rapid and cost-effective identification of ocean-borne health threats, thereby enabling actions to protect public and animal health, and advance our understanding of how multiple stressors—including climate change—affect the health of coastal ecosystems. The Integrated Ocean Observing System (IOOS) is a coordinated network of people and technology that work together to generate and disseminate continuous data on the Nation's coastal waters, Great Lakes, and oceans. IOOS effectively delivers this data to decision makers to meet user needs at local, regional, and national scales within the framework of national IOOS goals. These funds will be competitively awarded through the National Ocean Partnership Program for the development, demonstration, and transition to operations of marine sensor technologies. These activities have the potential to result in significant improvements to meet National Ocean Policy priorities related to informing decisions and improving understanding, water quality, observations, mapping, and infrastructure. This sustained investment in technology innovation will propel marine sector businesses, job growth, and scientific discovery while supporting science, technology, engineering, and mathematics (STEM).

Gulf of Mexico Regional Collaboration: NOAA requests a decrease of \$4,750,000 and 0 FTEs, ending the NOAA grant program targeted at advancing regional coastal resource priorities defined by the five Gulf States in *The Governors' Action Plan II for Healthy and Resilient Coasts*. Regional Ocean Partnerships, a new \$20 million dollar competitive grant program, will provide funding to implement the action plans of existing regional ocean partnerships or begin planning activities in all of the nine coastal regions. As such, entities that had competed for funds under the Gulf of Mexico grant program in the past will be eligible to compete for funds under Regional Ocean Partnerships. In addition, the FY 2012 President's Budget includes a \$4M request for preparing coastal communities for climate hazards (see below). This activity will have an initial focus on the Gulf of Mexico and the Pacific Islands and would support the *Governors' Action Plan II*





priority to employ “mitigation methods such as accurate mapping, tide level predictions, resilient land use plans, and habitat conservation” that can increase a community’s ability to recover after experiencing destructive coastal storms to due climate change and sea level rise.

Coastal Services Center - Climate Hazards: NOAA requests an increase of \$4,000,000 and 2 FTEs to prepare coastal communities for climate hazards. As coastal populations continue to grow, coastal communities are becoming increasingly vulnerable to climate hazards (from winds, waves, and flooding generated by hurricanes and other major storms, as well as physical impacts caused by sea-level rise, coastal erosion, and long-term shoreline changes). Today, coastal communities comprise only one-fifth of the Nation’s land, but they house over one-half of the U.S population, generate nearly 60 percent of the U.S. economy and account for the most repetitive flood loss claims with the National Flood Insurance Program (NFIP) and the private casualty loss insurance industry at a cost of \$200 million per year for the NFIP alone⁶. This increasing flood damage is increased significantly by wetland loss, costing states such as Florida and Texas millions of dollars per year. To reduce the vulnerability of coastal communities to the hardship and costs associated with climate-related natural hazards, NOAA will apply its scientific and technical expertise towards the development of improved environmental tools. NOAA will work with communities on applying these tools in an effort to mitigate or effectively manage the devastating human, economic and environmental impacts of events such as sea level change and other forms of coastal inundation. With an initial focus on the Gulf of Mexico and Pacific Islands, this request will allow NOAA to develop planning guidelines, provide training and information on understanding coastal risk and vulnerability assessments, and develop decision support resources that integrate social, economic, and climate data. NOAA will also provide accurate and timely prediction of changing sea level at global, regional, and local scales to improve resiliency and response to climate hazards. This funding increase represents a joint effort across NOAA to address climate hazards by leveraging strengths and collaboratively addressing needs identified via regional and national coastal management assessments. NOAA offices involved in this project include the Coastal Services Center (including the Pacific Services Center), the National Climate Data Center, the Office of Ocean and Coastal Resource Management, Climate Program Office, the Office of Coast Survey, the National Weather Service and the Coastal Storms Program.

Coastal Service Center—Gulf of Mexico Coastal and Marine Elevation Pilot: NOAA requests an increase of \$2,000,000 and 0 FTEs to develop a Gulf of Mexico Coastal and Marine Elevation Pilot. Coastal wetland loss and rapid erosion in the Gulf of Mexico has led to the loss of key ecosystem services (such as critical storm protection), causing economic and environmental consequences for both the region and the Nation. To address these issues, NOAA will develop a national integrated high-resolution topographic and bathymetric dataset that will improve the accuracy of storm surge models, optimize ecosystem restoration, inform coastal and marine spatial planning (CMSP), and enhance ecosystem assessments. This effort will be pursued jointly with the Department of Interior (USGS and BOEMRE). Initial pilot efforts will focus on Mississippi and Louisiana, in support of the Gulf Coast Ecosystem Restoration Working Group and

⁶ 24th Annual Workshop on Hazards Research and Applications, Howard 1999



the Interagency Working Group on Long Term Disaster Recovery; however, the intent is to develop a robust framework that can be extended to other regions and applications over time. Ultimately, this increase will provide the foundational data and geospatial framework needed to measure changes in coastal elevation and nearshore bathymetry, delivering critical data to monitor and mitigate for the impacts of coastal erosion, habitat loss, and coastal inundation (including sea level rise). This effort will allow for more effective science-based decisions at state and local levels regarding habitat restoration and can inform coastal planning activities.

Response and Restoration: NOAA requests an increase of \$88,000 and 0 FTEs. This is comprised of one new initiative and one termination of FY2010 congressionally specified spending of \$2,812,000 for activities not proposed to be continued in FY 2012:



Example of the oil from Deepwater Horizon incident stranded on the North Chandeleur Islands. There were four areas with this kind of oiling. The areas were in the range of 100 to 300 meters long and 0.5 to 2 meters wide, with 25 up to 90 percent distribution of oil less than 1 centimeters thick (cover). Three of the four areas were on the north sides of the inlets between the islands.

Strengthening Oil Spill Response and Restoration Research and Development: NOAA requests an increase of \$2,900,000 and 0 FTEs to develop an oil spill research and development program: NOAA's Office of Response and Restoration (OR&R) is the lead trustee for the public's coastal natural resources and an international scientific leader for oil spill response, assessment, and restoration. The Deepwater Horizon oil spill is a stark reminder that spills of national significance can occur despite the many safeguards and improvements that have been put into place since the passage of Oil Pollution Act of 1990. The risk of oil spills remains a concern given increases in marine transportation, pressures to develop domestic areas for drilling offshore, aging infrastructure susceptible to sea level rise and more frequent and violent storms in U.S. coastal areas, and opening the Arctic to both shipping and oil development. The public deserves and expects prompt and effective cleanup following an oil spill, and responders must be equipped with the appropriate tools and information to help meet those expectations. Existing research has resulted in advancing some response technologies; however, much more can be done to strengthen our Nation's response capabilities, especially in deep water and Arctic environments. With this increase, NOAA will support external grants for essential research to provide useful information, methods and tools for planners, oil spill responders, and assessment practitioners. In addition, NOAA will implement additional focused peer reviewed research, and communicate research results and recommendations to key decision makers throughout the Nation. Research will focus on oil fate and behavior from deepwater releases, long-term effects on species and habitats, tools for assessment and restoration, oil in arctic environments, and human dimensions of oil spills. Applying the latest science and continuing research and development will improve NOAA's response decisions, thereby reducing the severity of oil spill injuries and impacts to our Nation's economy, communities, and environment.

National Centers for Coastal Ocean Science (NCCOS): NOAA requests a decrease of \$3,511,000 and 0 FTEs. This is comprised of two new initiatives and one termination of FY2010 congressionally specified spending of \$5,511,000 for activities not proposed to be continued in FY 2012.



Coastal Ecosystem Science: NOAA requests an increase of \$1,000,000 and 0 FTEs for inter-disciplinary science, information and decision support tools to improve coastal management and stewardship. Human activity along our coasts such as coastal development, industrial run-off, agricultural waste as well as changes in land use and a changing climate, are adding a complexity of environmental and human stresses, the consequences which we do not yet fully understand and are currently ill-prepared to manage. Coastal communities are home to more than half of the U.S. population and generate nearly 60 percent of the US economy. Land-based discharges of trace metals, pesticides, pharmaceutical agents and pathogens from industrial, urban and agricultural sources negatively impact human health, impair coastal ecosystems, close beaches, and devastate coastal communities that rely on tourism and recreation as sources of income to achieve economic and environmental sustainability. The increase will allow NOAA to maintain and enhance NOAA's Mussel Watch Program, the Nation's longest-standing baseline data collection effort, and to conduct essential NOAA laboratory equipment maintenance and refresh to maintain NOAA's scientific leadership in coastal and ocean ecosystem science. Approximately 12 percent of coastal waters are considered unfit for designated uses, over 50 percent of the Nation's estuaries experience hypoxia and beach advisory days due to biological contamination (pathogens) have more than tripled. With this increase, NOAA also seeks to substantially strengthen existing partnerships within the Department of Commerce, including the National Institute of Standards and Technology (NIST) and Commerce Connect, the broader Federal community, including the U.S. Geological Service (USGS), Environmental Protection Agency (EPA), Food and Drug Administration (FDA), and Center for Disease Control (CDC), states, and academic institutions to jointly address critical research and applied science.

Oceans and Human Health: NOAA requests an increase of \$1,000,000 and 0 FTEs for the Oceans and Human Health Program. The combined pressures of coastal development, changes in watersheds and climate change on our ocean and coastal systems pose both immediate and long term human health threats from disease-causing pathogens, contaminants and biotoxins. Funds for the Oceans and Human Health Program will implement the Oceans and Human Health Act (OHHA) through the cross-NOAA Oceans and Human Health Initiative. This increase will advance NOAA research, tools, and technology through NOAA's Centers of Excellence in Oceans and Human Health and increase external partnerships and graduate and postdoctoral traineeships to provide NOAA with premier research community expertise and build a cadre of future scientists who will help solve complex, interdisciplinary problems associated with oceans and human health in the future.



OCEAN AND COASTAL MANAGEMENT

\$174,201,000

NOAA requests program changes that net to an increase of \$18,703,000 and 1 FTE and a total of \$174,201,000 and 253 FTEs under the Ocean and Coastal Management sub-activity.

Coastal Management: NOAA requests an increase of \$22,754,000 and 1 FTE. This is comprised of three new initiatives, one decrease and one termination of FY 2010 congressionally specified spending of \$4,046,000 for activities not proposed to be continued in FY 2012.



Working waterfront

Working Waterfronts: NOAA requests an increase of \$8,000,000 and 0 FTEs to create a working waterfronts grant program.

An active fishing industry contributes to the economic base of many coastal communities. Commercial and recreational fisheries result in \$162.9 billion in sales impacts in the U.S. economy each year. However, a number of U.S. fisheries are under-performing biologically and economically. The present productivity of U.S. fishery resources is 24 percent below the long term sustainable yield of 12.4 million tons. NOAA proposes to create an \$8,000,000 National Working Waterfronts grant program for FY 2012 to assist fishing-dependent coastal communities adversely affected by changes in the fishing industry on which they depend. Numerous communities that traditionally relied on robust fishing fleets are finding it necessary to diversify their economies and workforces in order to support more economically and biologically sustainable conditions. This program will assist distressed fishing communities by providing resources for communities to engage in planning, capacity building, and other activities to support economic diversity, resource conservation, and economic growth. These funds will be used for competitive external funding opportunities to support socio-economic studies, community-based planning/capacity building, economic development and transition implementation projects, and management support for fishing-dependent coastal communities.

Regional Ocean Partnership Grants: NOAA requests an increase of \$20,000,000 and 1 FTE to establish a competitive grants program to support regional ocean partnerships. The National Ocean Policy, the Pew Oceans Commission, the U.S. Commission on Ocean Policy, and the Joint Ocean Commission Initiative all call for regional ocean governance mechanisms to address the growing crises facing our oceans. The value of regional approaches in this regard is reflected in the rapid engagement by most coastal states in new regional ocean governance partnerships. Regional ocean governance mechanisms facilitate the effective management of ocean and coastal resources across jurisdictional boundaries by improving communications, aligning priorities, and enhancing resource sharing between local, state, and federal agencies. With this increase, NOAA will establish a competitive grants program to advance effective ocean management through regional ocean governance. To this end, the program will help support priority actions identified in plans of the existing regional ocean partnerships (e.g., Gulf of Mexico Alliance, Northeast Regional Ocean Council, Great Lakes Regional Collaboration, and the West Coast Governors' Agreement on Ocean Health), as well as support the development and implementation of ocean management plans in other regions (e.g. the Mid-Atlantic Regional Council on the Ocean, the South Atlantic Alliance, Hawaii, and elsewhere) and address regional activities in other parts of the country (e.g. the Pacific and Caribbean territories, and Alaska). Support for these partnerships will also include the development of comprehensive coastal and marine spatial plans (CMSP) consistent



with the U.S. National Framework for CMSP. Eligible grant recipients will include state, local and tribal governments, institutions of higher learning and non-profit organizations working with these regional ocean partnerships or member states. Each year, NOAA will work with the regional ocean partnerships to identify priority areas to focus the funding opportunity. This grant program will be closely coordinated with other NOAA programs and the activities supported through the coastal and marine spatial planning increase also requested in FY 2012.

Energy Licensing and Appeals: NOAA requests a decrease of \$1,200,000 and 0 FTEs for Energy Licensing and Appeals. Developing a successful offshore energy sector is important to the U.S for energy security, military readiness, and global competitiveness. Renewable coastal and ocean energy efforts are growing exponentially—to exploit the enormous power available from wind, tides, currents, and thermal differences, as well as to avoid the issues associated with terrestrial energy development. NOAA will work to meet its statutory responsibilities related to energy under the Federal Consistency provisions of the Coastal Zone Management Act (CZMA) and the Ocean Thermal Energy Conversion Act (OTECA) by utilizing current agency resources. Resources will allow NOAA to augment policy, management and legal capabilities and to support critically needed technical and scientific expertise. Specifically, NOAA will provide technical and management support to states, industry, and other stakeholders on siting and Federal Consistency issues relating to offshore energy development, coordinate with other federal agencies that have responsibilities for offshore energy, and for the initiation of a commercial permitting process for Ocean Thermal Energy Conversion (OTEC) facilities.



NATIONAL MARINE FISHERIES SERVICE

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



Commercial fishing

To achieve its mandates, NMFS works to ensure the long-term health, productivity, and diversity of our Nation's oceans and coastal living marine resources—including fish, invertebrates, sea turtles, marine mammals, and other marine and coastal species—and their habitats. NMFS is charged with balancing these protection mandates with multiple uses and interests in living marine resources, including commercial, recreational, and subsistence fishing; aquaculture; and marine and coastal observation and research. NOAA is committed to supporting the fishing industry and ensuring the long-term economic sustainability of coastal communities, which can be achieved through sound management. Based on estimates, rebuilding U.S. fisheries would increase the current dockside value by an estimated \$2.2 billion (54 percent annually from \$4.1 billion to \$6.3 billion annually.) Successful management relies upon NMFS' strong scientific and research competency to support the challenging public decision-making processes associated with NMFS' stewardship responsibilities.

NMFS continues to develop and track key performance measures that demonstrate meaningful results to the American public. In FY 2012, NMFS will continue to focus its resources on building and maintaining fish stocks at productive levels; improving the status of overfished fisheries and of endangered and threatened species and ensuring those species have adequate population assessments and forecasts; implementing plans to rebuild, recover, and conserve major fish stocks and protected species; and restoring habitat for NOAA trust resources.



NMFS will also continue its efforts to end overfishing, support market-based management approaches such as catch shares, improve recreational fisheries data collection, reduce bycatch of living marine resources, and address illegal, unregulated, and unreported (IUU) fishing. NMFS will conduct Endangered Species Act (ESA) listing activities such as status reviews, development of protective regulations, and critical habitat designations for species that have been petitioned for listing. NMFS will collaborate with other agencies and organizations on Administration priorities, such as renewable energy and the National Ocean Policy's objective for an ecosystem-based approach, to develop indicators of ecosystem status and trends, as well as joint strategies to address priority regional ecosystem issues.

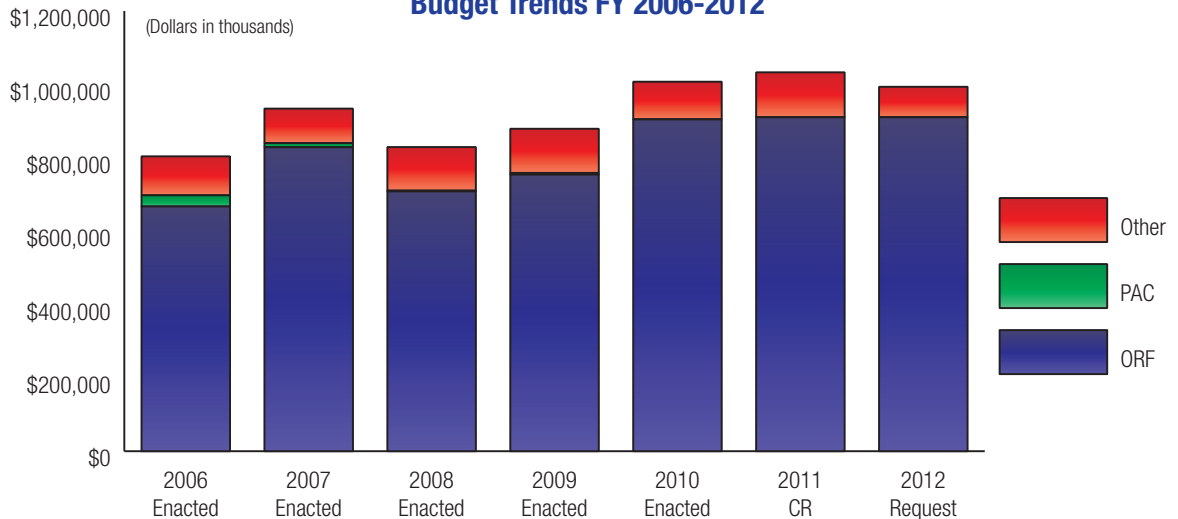
The FY 2012 President's Budget Request supports funding and program requirements to enable NMFS to be effective stewards of living marine resources for the benefit of the Nation through science-based conservation and management and the promotion of ecosystem health.



NATIONAL MARINE FISHERIES SERVICE

(DOLLARS IN THOUSANDS)	FY 2010 ENACTED	FY 2011 CR	FY 2012 REQUEST	INCREASE (DECREASE)
NMFS — ORF				
Protected Species Research and Management	\$203,952	\$199,447	\$216,581	\$12,629
Fisheries Research and Management	432,917	420,228	476,024	43,107
Enforcement and Observers	106,747	105,619	106,207	(540)
Habitat Conservation and Restoration	58,193	49,812	53,600	(4,593)
Other Activities Supporting Fisheries	102,730	86,456	74,271	(28,459)
Congressionally Directed Projects	0	33,418	0	0
Administrative Efficiency Initiative	0	0	(16,271)	(16,271)
Total, NMFS - ORF	904,539	894,980	910,412	5,873
Total, NMFS - PAC	0	0	0	0
Total, NMFS - Other	103,642	122,420	90,692	(12,950)
GRAND TOTAL NMFS (Direct Obligations)	\$1,008,181	\$1,017,400	\$1,001,104	(\$7,077)
Total FTE	2,823	2,823	2,897	74

NATIONAL MARINE FISHERIES SERVICE Budget Trends FY 2006-2012



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction

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



FY 2012 ORF BUDGET SUMMARY

NOAA requests a total of \$910,412,000 and 2,892 FTEs to support the continued and enhanced operations of the NMFS. This total includes an increase of \$18,435,000 and an increase of 42 FTEs for Adjustments to Base (ATBs) and a net decrease of \$12,562,000 in program changes and an increase of 32 FTEs for a total increase of \$5,873,000 and 74 FTEs from the FY 2010 Enacted.

ADJUSTMENTS TO BASE:

The ATB request includes an inflationary increase of \$19,935,000 and 42 FTEs which is comprised of a restoration of the FY 2011 and FY 2012 ATBs. This increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Services Administration.

Adjustments also include the following:

- FY 2012 Technical ATBs: a decrease of \$1,500,000 and 0 FTEs to transfer \$6,002,000 from Cooperative Research and \$11,400,000 from Fisheries Research and Management Programs to National Catch Share Program to consolidate resources for the operations of the National Catch Share Program. NOAA also requests a technical adjustment to move \$1,500,000 from NMFS to Oceanic and Atmospheric Research (OAR).

NMFS—ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2011:

Select program changes are summarized at the sub-activity level below. A summary of funding by line item is located in Chapter 8, *Special Exhibits*. Detailed descriptions of all program changes by line item are located in the NOAA FY 2012 Technical Budget.

PROTECTED SPECIES RESEARCH AND MANAGEMENT	\$216,581,000
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NOAA requests program changes that net to an increase of \$10,018,000 and 12 FTEs and a total of \$216,581,000 and 829 FTEs under the Protected Species Research and Management sub-activity. This increase is comprised of five new initiatives, one decrease, and one termination of FY 2010 congressionally specified spending of \$6,650,000 for activities not proposed to be continued in FY 2012:

Protected Resources Stock Assessments: NOAA requests an increase of \$2,500,000 and 2 FTEs to conduct protected species stock assessments at a frequency required to adequately support effective conservation decision making. Stock assessments of marine mammals and turtles provide a wide range of information for use by managers to conserve these species and accurately assess the effects of proposed activities on them. This is the basis of Endangered Species Act (ESA) biological opinions and NEPA environmental impact analyses that inform NOAA's decisions whether to authorize the "taking" of marine mammals or turtles incidental to human activities. Such take may be prohibited, or mitigated with the design and conduct of specific conservation measures. NOAA also uses its stock assessment and monitoring information to evaluate the effectiveness of fisheries efforts to reduce incidental mortality and serious injury to biologically insignificant levels. Adequate stock assessments will enable NOAA to develop more specific and less restrictive consultation responses to fishery management plans allowing for increased number of fishing days, incidental takes and the



geographical area in which fishing can occur. This funding will support ship and aircraft time (NOAA or charter) for assessments of 15 stocks in the Arctic (harbor porpoise, and minke, beaked, and northern Pacific right whales) and the Western Pacific (marine turtles, sperm, blue, false killer, and sei whales) to help determine the impact of human activities. Planned human activities that will increase protected species harassment, injury, and mortality include: 1) expansion of areas allowed for oil and gas exploration in the Arctic; 2) defense readiness training and operations in the Arctic and Western Pacific; and 3) commercial fishing activities in Alaska and Western Pacific.



Bearded seal

Protected Species Research and Management Programs Base: NOAA requests an increase of \$3,000,000 and 7 FTEs to increase its capacity to meet interagency consultations and authorizations under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA).

Consultations are necessary to authorize lawful activities potentially affecting protected species and to ensure that economic development and national defense actions are compatible with species conservation and recovery. Through the consultation process, NMFS helps agencies tailor their actions, so as to avoid additional peril to the impacted species and assist in conservation efforts. Over the past five years, NMFS has experienced a 16 percent decline in on-time processing of MMPA and ESA permits. In FY 2010, approximately 70 percent of formal ESA consultations received no action within

statutory deadlines due to the increased number of listed species and complex consultations. The number of consultations is expected to increase in FY 2012 and beyond because of new species listings. In 2010 four species were added to the endangered species list, and many more might be added in 2011 due to the large number of species that have been petitioned and are now proposed and candidates for listing. The anticipated increase in consultation is also being driven by the new Pacific Marine National Monuments, increased vessel traffic in the Arctic environment, development of conventional and alternative energy projects, and national security. This increase will support consultations and authorizations for regional energy development, national defense related activities, pelagic longline fishery operations, and operations of the Pacific Marine National Monuments. Funding will also support NMFS' efforts to improve its on-time completion rate and reduce the backlog of consultation that have received no action.

Species Recovery Grants: NOAA requests an increase of \$8,000,000 and 0 FTEs for the conservation and recovery of marine and anadromous species under NMFS jurisdiction and listed under the Endangered Species Act (ESA) through the Species Recovery Grants Program.

NMFS currently has jurisdiction over 72 threatened or endangered species, seventeen species that have been proposed for listing, and 88 candidates for listing under the ESA. In 2010 four species were added to the endangered species list, and more might be added in 2011. The addition of species to these lists without corresponding investments in, and implementation of, recovery and conservation actions results in increasing pressure on all ESA programs within NMFS, and an increasing regulatory burden on the public. With increased funding for the Species Recovery Grants Program, NMFS will conduct cooperative conservation and recovery implementation by providing additional grants to states and tribes. Most partners do not have adequate resources to address necessary recovery actions and Federal assistance is necessary to ensure their ability to engage in effective partnership. By leveraging the financial, technical, and educational resources from states and tribes, NMFS can achieve



a greater level of conservation of listed species. Matching funds allow for larger and more complex conservation and habitat restoration projects. Fostering relationships with other states and tribes effectively incorporates local expertise to protect and recover listed species. Priority recovery actions funded can include restoring habitat necessary for the recovery of listed species, assessing and monitoring species status and trends, partnering with others 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. Grants may also support needed monitoring of candidate and recently de-listed species. NMFS will track ongoing and completed recovery actions by incorporating NMFS information into the U.S. Fish and Wildlife Service's "Recovery Online Activity Reporting System" or an equivalent tracking system. NMFS will also develop a database to track and evaluate the effectiveness of funded projects and provide searchable information for the public.

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

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



Coho salmon

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



Atlantic Salmon: NOAA requests a decrease of \$500,000 and 0 FTE for Atlantic Salmon. Remaining funds will be used to continue implementing projects to address fish passage barriers, restore habitat, study the major threats to Atlantic Salmon, and conduct ESA consultations on Federal projects that might impact Atlantic Salmon survival. Funding will also be used to conduct estuarine and early marine survival assessments using telemetry; undertake hatchery evaluation studies; study diseases; and research the development of hydroacoustic techniques to monitor smolts and estimate abundance. These activities, in turn, will enable the effective conservation and protection of Atlantic salmon by NOAA.

FISHERIES RESEARCH AND MANAGEMENT

\$476,024,000

NOAA requests program changes that net to an increase of \$35,750,000 and 28 FTEs and a total of \$476,024,000 and 1,394 FTEs under the Fisheries Research and Management sub-activity. This increase is comprised of four new initiatives, one decrease, and one termination of FY 2010 congressionally specified spending of \$10,750,000 for activities not proposed to be continued in FY 2012.



Halibut catch share

National Catch Share Program: NOAA requests an increase of \$36,600,000 and 10 FTEs to accelerate and enhance the implementation of a National Catch Share Program. Rebuilding our Nation's fisheries is essential to preserving the livelihood of fishermen, the vibrancy of our coastal communities, the sustainability of a healthy seafood supply, and restoring ocean ecosystems to a healthy state. Catch share programs give fishermen a stake in the benefits of a well-managed fishery, and therefore, greater incentive to ensure effective management. This funding will support the development, implementation, and operation of catch share programs in fisheries across the nation. Specifically the analysis and evaluation of new programs, the development of fishery management plans and regulations to support catch shares, observing and monitoring at sea and on shore for specific fisheries, and enforcement activities. It also provides for the continued implementation of electronic log books as well as dockside data collection and management, including quota accounting and lien registry. The funding also increases NMFS' analytical capacity to evaluate and report performance of catch share monitoring programs with respect to economic performance, fleet behavior, annual catch limits, and bycatch reduction. There are currently 15 catch shares in place and NOAA estimates that two additional catch shares will be implemented in FY 2012 for a total of 17. This increase continues support for key catch share programs such as the Northeast groundfish fishery sector management, the West Coast Trawl Individual Quota Program, and the Gulf of Mexico Grouper and Tilefish program. In addition, the following programs will be supported in the North Pacific: Gulf of Alaska Trawl Rockfish Cooperative and Alaska Halibut Guided Sportfish Individual Fishing Quota.

Expand Annual Stock Assessments: NOAA requests an increase of \$15,000,000 and 10 FTEs to increase the number of stocks with adequate assessments to help verify that overfishing is no longer occurring and allow optimum catch levels to be set to support the sustainability and economic viability of fish stocks. The Magnuson-Stevens Act (MSA), which mandates establishment by 2011 of annual catch limits (ACLs) in all fisheries to prevent overfishing, requires improved assessment capacity. For many fish stocks, the incomplete scientific information resulting from lack of adequate



stock assessments forces fishery managers to resort to setting annual catch limits in an overly conservative manner, thus limiting fishing opportunity in order to prevent overfishing. Adequate stock assessments increase economic opportunities for fishing communities whose livelihood depends on the scientifically sound management of fisheries. The requested increase will allow for a significant increase in NMFS capacity to conduct stock assessments, therefore allowing optimum fishing opportunity in more fisheries without risking overfishing and harm to the marine ecosystem. NMFS will conduct improved fishery independent surveys using advanced technologies to estimate fish abundance in additional habitats and conduct workshops to improve standardization and public understanding of assessment methods. NMFS will prioritize assessments for stocks using the following criteria: 1) Economically valuable stocks and associated fishery-limiting stocks with high uncertainty influencing ACLs; 2) Intensity of fishing, including stocks that have an overfishing status or increased pressure; 3) Stock abundance, such as those on the brink of overfished; 4) Increase the updating of assessments that are more than five years old, have lapsed into "inadequate" status, or have never been assessed; 5) Importance of the stock economically and ecologically; and 6) Synergistic factors such as the benefit to other stocks and future assessments.

Salmon Management Activities: NOAA requests a decrease of \$13,500,000 and 0 FTEs due to the completed implementation of the revised 2008 Pacific Salmon Treaty.

The remaining \$8.7 million in overall Pacific Salmon Treaty funding includes the base funding level of \$5.7 million for treaty implementation, as well as \$3.0 million to implement the 2008 Chinook salmon agreement which includes the Coded Wire Tag (CWT) Program Improvements (\$1.5 million) and for Puget Sound Critical Stocks Augmentation (\$1.5 million). The reduction also includes a planned decrease for the Alaska fishery adjustment mitigation of \$7.5 million. These funds were provided to partially mitigate the economic consequences of Alaska reducing its harvest of Chinook in Southeast Alaska by 500,000 fish in fulfillment of the Pacific Salmon Treaty obligations. In addition, a planned reduction of \$6.0 million from \$7.5 million to \$1.5 million is requested for the Puget Sound Critical Stocks Augmentation. The Puget Sound Critical Stocks Augmentation supports projects to assist in recovery of critical Puget Sound Chinook salmon stocks in a manner that complements the benefits of harvest reductions provided by the Treaty revisions, including hatchery actions, such as captive brood and supplementation programs and habitat projects (e.g., barrier removals, stream stabilization, and estuary rehabilitation).

Fisheries Statistics: NOAA requests an increase of \$3,000,000 and 3 FTEs to provide an improved recreational fisheries monitoring program that meets fisheries management requirements.

The MSA mandates that NMFS establish annual catch limits (ACLs) that prevent overfishing. However, without proper catch monitoring, fishery managers are limited in their ability to prevent the recreational fishing sector from exceeding these catch targets. In the past, fishery managers have been obliged to set catch limits at lower levels to account for poor catch monitoring and help mitigate the chance of ACLs being exceeded. Consequences of such actions include less catch, shorter fishing seasons, and underutilization of the resource. The proper and timely tracking proposed through this request will support the successful management of recreational fisheries using ACLs and reduce the chance that targets are exceeded. In FY 2012, NOAA will provide more timely data for management through the execution of telephone and shore



side sampling surveys. NMFS will implement monthly, rather than bimonthly surveys, of shore and private boat catches in two NMFS regions by 2016. The Marine Recreational Information Program (MRIP) is currently designing and testing improved sampling and estimation designs which will allow for shorter survey time frames and greater spatial resolution of statistical results. In addition, funds will provide for the phased implementation of mandatory electronic logbook reporting programs for charter boats and headboats in two NMFS regions by FY 2016. The use of electronic technologies will provide more timely transmission of logbook reports and support faster, more efficient processing of data.

Fisheries Oceanography: NOAA requests an increase of \$5,400,000 and 5 FTEs to support the expedited creation of Integrated Ecosystem Assessments (IEAs) for three of NOAA's eight Regional Ecosystems.

To better manage the Nation's highly complex and evolving marine ecosystem resources and services, IEAs provide a comprehensive, science-based decision-making framework and holistic approach to ecosystem-based management (EBM). IEAs bring scientific and technological rigor to resource management decisions by incorporating diverse sources of data into ecosystem models, including socio-economic data, that evaluate trade-offs between societal goals of resource protection and use. In 2012, this effort will focus primarily on the California Current Ecosystem and will include work on the Gulf of Mexico and Northeast Shelf IEAs. IEAs will allow managers to make informed management decisions through the management strategy evaluation tools. Such tools will provide managers with sectoral uses (e.g., fishing, aquaculture, offshore alternative energy development, recreation, and other ecosystem goods and services sectors) as well as socioeconomic implications of management actions. In turn, this will promote job retention and economic growth by supporting sustainable resource use within various sectors.

ENFORCEMENT AND OBSERVERS

\$106,207,000

NOAA requests program changes that net to a decrease of \$3,615,000 and 0 FTEs and a total of \$106,207,000 and 385 FTEs under the Enforcement and Observers sub-activity. This decrease is comprised of one termination of congressionally specified spending of \$3,615,000 for activities not proposed to be continued in FY 2012.

HABITAT CONSERVATION AND RESTORATION

\$53,600,000

NOAA requests program changes that net to an increase of \$2,544,000 and 0 FTEs and a total of \$53,600,000 and 149 FTEs under the Habitat Conservation and Restoration sub-activity. This increase is comprised of one new initiative, one decrease, and one termination of FY 2010 congressionally specified spending of \$1,000,000 for activities not proposed to be continued in FY 2012:

Fisheries Habitat Restoration (CBRP & Open Rivers): NOAA requests an increase of \$5,044,000 and 0 FTEs for the Community-based Restoration Program to implement larger-scale ecological restoration. Habitat destruction, degradation, and modification are a threat to endangered and threatened species populations and serve as major limiting factors in the recovery of such populations. In order to effectively implement recovery efforts for listed species, improving habitat condition and ecosystem function through larger-scale habitat restoration in targeted areas is required. With this



increase NOAA will implement larger-scale ecological restoration to increase habitat to support recovery of threatened and endangered species. Specific activities include restoring wetlands and rivers and removing barriers to fish passage to provide spawning and rearing habitat for fish. Secondary benefits include the protection of communities and infrastructure to improve coastal resiliency to storms and flooding, increased habitat connectivity and migratory corridors for fish and wildlife, and provision of critical green space for public recreation and enjoyment within the most rapidly developing areas of the United States. Activities would also address habitat degradation which is caused by human impacts and has been further exacerbated by climate change. The requested funding will advance national priorities for larger-scale habitat restoration, strengthen NOAA's leadership role in science-based conservation, and allow NOAA to capitalize on previous experience gained from implementing larger-scale habitat restoration projects through the American Recovery and Reinvestment Act (ARRA).



NOAA's habitat restoration projects are focused on returning damaged shoreline areas, such as this one in Massachusetts, to productive fisheries habitat.

Fisheries Habitat Restoration: NOAA requests a decrease of \$1,500,000 for the NOAA Great Lakes Habitat Restoration Program (GLHRP). NOAA continues to receive funding from Environmental Protection Agency to assist the implementation of the President's Great Lakes Restoration Initiative (GLRI). The GLRI was developed to restore and protect this national treasure. The GLRI invests in the region's environmental and public health through a coordinated interagency process and build's upon NOAA's programs in the Great Lakes region. The other principal agencies involved in the GLRI are USDA, HHS, DHS, HUD, DOS, Army (Civil Works), DOI, and DOT.

OTHER ACTIVITIES SUPPORTING FISHERIES \$74,271,000

NOAA requests program changes that net to a decrease of \$7,213,000 and a decrease of 8 FTEs for a total of \$74,271,000 and 135 FTEs under the Other Activities Supporting Fisheries sub-activity. This increase is comprised of two new initiatives, two decreases, and one termination of FY 2010 congressionally specified spending of \$9,000,000 for activities not proposed to be continued in FY 2012:

Aquaculture: NOAA requests an increase of \$2,352,000 and 1 FTE to support the NOAA/USDA Alternative Feeds initiative. Fish meal and fish oil are important components in the feeds for many farm-raised species, from pigs and poultry to farmed fish. However, as recognized in the 2008 GAO Report "Offshore Aquaculture: Multiple Administrative and Environmental Issues in Establishing a U.S. Regulatory Framework, the growing pressure on the wild fisheries that supply the fish meal and fish oil and their relatively high cost make alternative feeds one of the top issues facing the aquaculture industry. Reducing the amount of fish meal and fish oil required in fish feeds will therefore, have economic benefits to seafood processors and the aquaculture industry. Current research has made progress in this effort and NOAA and other federal agencies play a vital role in that research and the transfer of such technology to industry. These funds will support NOAA's partnership with USDA in the Alternative Feeds Initiative. Staff will lead NOAA's internal and external research on alternative feeds by expanding research at the NOAA Fisheries Science Centers, supporting a competitive grants initiative on priority alternative feed research topics, and work with NOAA Fisheries' Fishery Finance Program and other DOC and Federal agencies to transfer technology and enable expanded alternative



The new draft NOAA Aquaculture Policy provides guidance for agency actions regarding all forms of marine aquaculture, from shellfish farming and habitat restoration to the culture of marine fish and algae on land and offshore. Pictured here, a researcher shows visitors microalgae tanks which supplies a steady supply of nutrients for young oysters.



aquaculture feeds production in the United States. Areas of alternative feed research that show particular promise and will be key focus areas are: (1) plant-based proteins and oils (e.g., from marine algae, soy, and other plants) to replace fish meal and fish oil and (2) recaptured fish trimmings (e.g., heads and tails) from seafood processing plants to use in fish feeds.

Regional Studies: NOAA requests an increase of \$5,000,000 and 4 FTEs to improve the quality of NOAA's research in the Chesapeake Bay through the acquisition of new technology and infrastructure improvement projects, which support the Chesapeake Bay Executive Order (EO). The population of the 64,000 square-mile Chesapeake Bay watershed has increased by about eight percent in the past decade and the amount of impervious surface has increased by over 40 percent. These trends have drastically altered the hydrology and natural filtering systems of the Bay, overtaking restoration and protection efforts to date with large infusions of sediment and nutrients. As a result, many of the Bay's living resources and key habitats, such as wetlands, submerged grasses, oysters, crabs, and finfish, have suffered. The Bay has tremendous cultural significance and economic potential for the region. This increase will provide enhanced understanding of the relationships between the Chesapeake Bay's living resources and habitat, coordinate protection and restoration of key species and habitats across jurisdictional lines, and support a coordinated system of monitoring platforms distributed across the Bay. FY 2012 funds will be targeted to improve the quality of NOAA's research through the acquisition of new technology and infrastructure. The funding will ensure NOAA has state of the art field and laboratory equipment in place in FY 2012 and the base resources required for addressing the mandates of the EO in FY 2013 and beyond. NOAA proposes to obtain field equipment to enhance field restoration efforts, support enforcement for oyster sanctuaries, and for staff support to plan and implement habitat assessments and characterizations. NOAA will also enhance scientific and laboratory applications as well as geospatial modeling capacity to support the proposed restoration of native oysters in 20 tributaries by 2020. Funds will be used to enhance operations and maintain the Chesapeake Bay Interpretive Buoy System (CBIBS) and incorporate data into the Integrated Ocean Observing System.

Cooperative Research: NOAA requests a decrease of \$4,565,000 and 13 FTEs for Cooperative Research. This decrease is offset by increases in other fisheries research. At this level of funding, NOAA's cooperative research program will continue to support high-level projects nationwide through competitive grant and contract procurements, as well as cooperative agreements. Identifying research priorities to be addressed by cooperative research will be done in consultation with the Regional Fishery Management Councils, Interstate Fishery Commissions, and stakeholders. Of the total funding amount, \$3,000,000 will be directed toward developing environmentally friendly fishing gear.

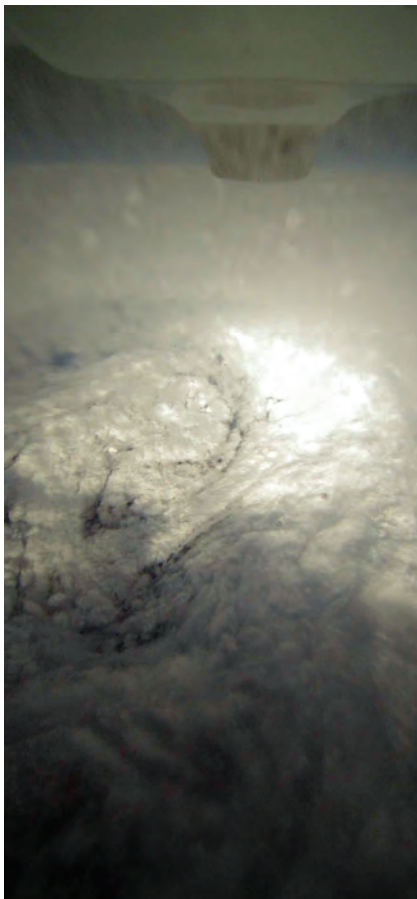
Southwest Fisheries Science Center: NOAA requests a decrease of \$1,000,000 and 0 FTEs for the Southwest Fisheries Science Center. This is a planned decrease for the leasing of temporary office and laboratory space in La Jolla, California.





OFFICE OF OCEANIC & ATMOSPHERIC RESEARCH

The Office of Oceanic & Atmospheric Research (OAR) is NOAA's centralized research and development (R&D) line office and its engine of innovation. OAR plays a major role in strengthening the state of science within the Agency, supports NOAA's mission, and creates advances in new scientific knowledge, new technologies, and improved services for the Nation. OAR also serves such NOAA-wide functions as managing NOAA's Cooperative Institutes and Small Business Innovation Research Program. Finally, OAR helps NOAA meet its grand scientific challenge of developing and applying holistic, integrated Earth-system approaches to understand the processes that connect physical changes in the atmosphere, ocean,



Hurricane Earl (2010) viewed by Unmanned Aerial System (UAS) Global Hawk

space, and land and ice surfaces with ecosystems, organisms, and humans over different spatial and temporal scales. OAR does this by:

- (1) Innovating—making the discoveries that reveal new scientific challenges
- (2) Incubating—conducting long-term research and developing the technology needed for NOAA missions
- (3) Integrating—building bridges to link research activities across NOAA LOs with our external partners

OAR's intramural component consists of six research laboratories. In addition, OAR manages an extensive extramural component that includes 32 National Sea Grant colleges, several undersea research centers, multiple cooperative institutes with academia, and many other university and research institutions. By working with its partners, OAR leverages their expertise and capabilities to expand the breadth and depth of our knowledge and skills to more efficiently and effectively serve the Nation.

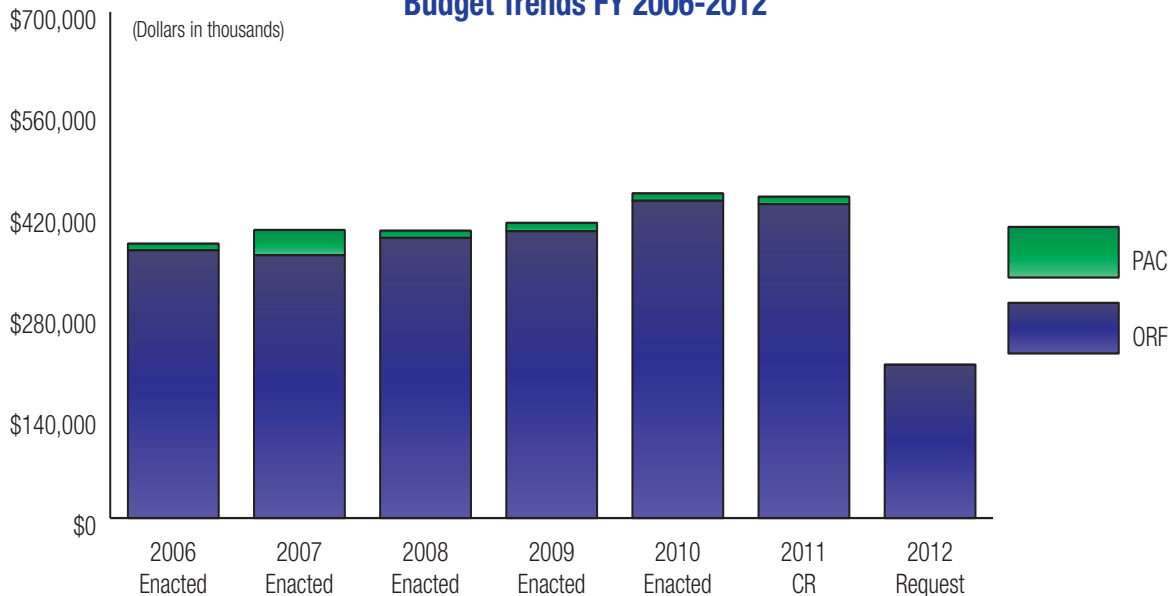
OAR's activities are organized along four themes: (1) Climate Research; (2) Weather and Air Quality Research; (3) Ocean, Coastal, and Great Lakes Research; and (4) Information Technology (IT) R&D. The goals of these four theme areas are to: (1) understand complex climate systems to improve predictions; (2) understand atmospheric events to assist in saving lives and property worldwide; (3) explore, investigate, and understand the complexities of our ocean, coastal, and Great Lakes ecosystems and resources; and (4) accelerate adoption of advanced computing, communications, and IT



OFFICE OF OCEANIC & ATMOSPHERIC RESEARCH

(DOLLARS IN THOUSANDS)	FY 2010 ENACTED	FY 2011 CR	FY 2012 REQUEST	INCREASE (DECREASE)
OAR — ORF				
Climate Research	\$225,135	\$218,705	\$22,182	(\$202,953)
Weather and Air Quality Research	69,997	63,865	53,722	(16,275)
Ocean, Coastal, and Great Lakes Research	130,606	114,334	126,078	(4,528)
Information Technology, R&D & Science Education	13,028	12,890	13,266	238
Congressionally Directed Projects	0	24,335	0	0
Administrative Efficiency Initiative	0	0	(3,235)	(3,235)
Total, OAR - ORF	438,766	434,129	212,013	(226,753)
Total, OAR - PAC	10,379	10,379	0	(10,379)
GRAND TOTAL OAR (Direct Obligations)	\$449,145	\$444,508	\$212,013	(\$237,132)
Total FTE	744	744	472	272

OFFICE OF OCEANIC & ATMOSPHERIC RESEARCH Budget Trends FY 2006-2012



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction



throughout NOAA. The research is carried out through a national network of more than fifty Federal and university-based laboratories and research programs. With this diverse research “tool kit,” OAR provides national and international leadership on critical environmental issues and addresses the environmental R&D needs of internal NOAA customers as well as of states, industry, the Department of Commerce, and other Federal agencies. OAR researchers represent the cutting edge in sustained, long-term environmental observations and modeling. Their contributions enhance the health and economic well-being of society.

OAR’s FY 2012 request seeks funding to: (1) sustain critical base research activities in support of NOAA climate, weather, ocean, and coastal missions; (2) initiate new activities that address currently unmet gaps in the NOAA service missions; and (3) meet the information needs of our Nation’s environmental decision-makers. The request also responds to recent considerations on: (1) strengthening collaboration between OAR & NWS; (2) supporting a “warn-on-forecast” capability, improved lead time for forecasts, and new observational tools (e.g., MPAR (Multi-Function Phased-Array Radar)); and (3) establishing a climate service. Also looking ahead, OAR will place greater focus on transformative, innovative, and technological research, such as advancement of weather forecast quality in support of renewable energy, advancements in the quality and usefulness of both weather and climate models, and development of advanced observational techniques using Unmanned Aircraft Systems (UAS). OAR will also pursue such near-term opportunities as ocean acidification, resilient coastal communities, and long-term ecosystem research in the Gulf of Mexico.

FY 2012 ORF BUDGET SUMMARY:

NOAA requests a total of \$212,013,000 and 472 FTEs to support the continued and enhanced operations of the Office of Oceanic and Atmospheric Research. This total includes an increase of \$4,268,000 and an increase of 1 FTE for Adjustments to Base (ATBs), a decrease of \$215,520,000 and a decrease of 276 FTEs to reflect the transfer of base programs to establish a new climate office, and a net decrease of \$15,501,000 and an increase 3 FTEs in program changes for a total decrease of \$226,753,000 and 272 FTEs from the FY 2010 Enacted.

ADJUSTMENTS TO BASE:

The above ATB request includes an inflationary increase of \$2,768,000 and 1 FTE, which is comprised of a restoration of the FY 2011 and FY 2012 ATBs. This increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Services Administration.

Adjustments also include the following:

- Climate Reorganization: decrease of \$215,520,000 and a decrease of 276 FTEs
- FY 2012 Technical ATBs. An increase of \$1,500,000 and 0 FTEs to transfer the NMFS Climate Regimes and Ecosystem Productivity line to the OAR Integrated Ocean Acidification line.

OAR—ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2012:

Select program changes are summarized at the sub-activity level below. A summary of funding by line item is located in Chapter 8, *Special Exhibits*. Detailed descriptions of all program changes are located in the NOAA FY 2012 Technical Budget.

**WEATHER & AIR QUALITY RESEARCH****\$53,722,000**

NOAA requests program changes that net to an increase of \$3,075,000 and 0 FTEs and a total of \$53,722,000 and 183 FTEs under the Weather and Air Quality Research.

Laboratories and Cooperative Institutes: NOAA requests a decrease of \$1,625,000 and 0 FTEs. This decrease is comprised of one new initiative, one decrease, and one termination of FY 2010 congressionally specified funding of \$650,000 for activities not proposed to be continued in FY 2012:

Unmanned Aircraft Systems (UAS): NOAA requests a decrease of \$3,000,000 and 0 FTEs to reflect the planned completion of the High-Altitude Long-Endurance (HALE) UAS testing and demonstration program. The UAS Program has identified and demonstrated several UAS technologies using various platforms and payloads. In particular, NOAA and NASA have successfully demonstrated the long-range and endurance potential of high altitude UAS. During FY 2010 the Global Hawk was flown from the NASA Dryden Flight Research Center in California to observe dust plumes from the Gobi Desert traversing the Pacific Ocean; polar vortex and ice conditions of the Arctic; and tropical cyclones in the Eastern Pacific, Atlantic, and Caribbean undergoing various stages of genesis, intensification, and dissipation. The results of the test observing missions over the Atlantic Ocean, Central Pacific, and the Arctic will be fully evaluated and considered in FY 2011 with respect to a possible future expansion of NOAA's suite of observing capabilities to include this new technology, which may be capable of expanding NOAA's observational reach with greater efficiency and less risk to human life than current methods. Development of a UAS strategic plan and business case for UAS acquisition and partnerships is underway. As a result, NOAA leadership will be able to make an informed decision about the desired level of access to and use of UAS technologies for achieving its science, service, and stewardship missions.



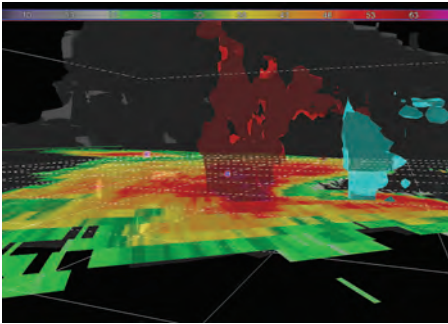
Global Hawk

Wind Boundary Layer Research to Support Clean Energy Generation: NOAA requests an increase of \$2,000,000 and 0 FTEs for wind boundary layer research to support clean energy generation by advancing weather forecast quality and accuracy to allow for faster and more efficient implementation of wind power usage in the United States. Improved weather and climate information and predictions will allow the Nation to obtain larger amounts of energy from renewable resources, use current energy sources more efficiently, reduce the cost of renewable energy, and provide improved grid stability. With this requested increase, NOAA proposes to conduct the following: (1) Deploy wind test beds in regions that have distinct boundary layer meteorology, such as the Pacific Northwest, offshore along the Atlantic Coast, the Appalachian region, the inter-mountain west, and California. These test beds will help determine the optimal mix of instrumentation needed for wind resource characterization and forecast improvement. (2) Leverage high performance computing investments to facilitate improved Numerical Weather Prediction forecasts that the private sector could leverage to develop tailored products allowing for more efficient operation of the Nation's electric grid. (3) Conduct climate studies on the spatial and temporal climatological relationships of wind, solar, and water resources as compared to energy demand; the dependency of renewable energy resources on climate drivers such as El Niño and La Niña; and the predictability of



renewable energy resources at intra-seasonal (a few weeks) and annual timescales. Providing weather observations and predictions is a core NOAA mission, and OAR is well positioned to perform this research, develop improved operational forecasts, and conduct the climate studies that will benefit the renewable energy industry.

Weather & Air Quality Research Programs: NOAA requests an increase of \$4,700,000 and 0 FTEs. This increase is comprised of one new initiative and one decrease:



Phased array radar isosurface image. 3-D contour surface with red indicating the hail core of the storm, blue showing the area of rotation, and grey/black showing the entire thunderstorm structure

Multi-Function Phased Array Radar: NOAA requests an increase of \$6,000,000 and 0 FTEs to continue research demonstrating MPAR technology's potential for replacing aging operational weather and aircraft tracking radars. The MPAR program is jointly funded by NOAA and the FAA, and both agencies are coordinating their budget requests. By 2020, more than 350 FAA radars and by 2025 nearly 150 weather radars will need to be either replaced or have their service life extended. This investment in MPAR provides the resources needed for the next step of the project, which engages industry to add polarization to their radars by FY 2014. The improved and expanded hazardous weather detection, weather forecasting and aircraft surveillance capabilities of an MPAR network could potentially benefit security, safety, and air traffic control efficiency beyond that provided by the systems replaced. Matching funding will be provided by the FAA to fulfill its requirement for airport terminal weather and aircraft tracking.

US Weather Research Program (USWRP) / THORPEX: NOAA requests a decrease of \$1,300,000 and 0 FTEs to end base funding for The Observing System Research and Predictability Experiment (THORPEX), as projects will be completed sooner than originally planned. When created, THORPEX was designed to be an international, multi-agency project ending in 2015. Although this successful project was scheduled to end in 2015, NOAA is eliminating its base contribution to this international effort several years earlier, as projects will be completed sooner than originally planned while still accomplishing much of proposed research. Recent research funded under THORPEX has focused on ensemble forecast systems and in improving the predictability of and reducing uncertainty associated with weather forecasts. Although THORPEX projects will no longer receive USWRP funding starting in 2012, other NOAA programs will continue to support research to improve the accuracy of numerical weather and ocean predictions.

**OCEAN, COASTAL & GREAT LAKES RESEARCH****\$126,078,000**

NOAA requests program changes that net to an increase of \$4,106,000 and 3 FTEs and a total of \$126,078,000 and 166 FTEs under the Ocean, Coastal, and Great Lakes sub-activity.

National Sea Grant College Program: NOAA requests a decrease of \$594,000 and 0 FTEs. This decrease is comprised of one new initiative, one decrease, and one termination of FY 2010 congressionally specified funding of \$1,001,000 for activities not proposed to be continued in FY 2012:

Helping Coastal Communities Prepare for and Respond to Natural Hazards and Extreme Events: NOAA requests an increase of \$885,000 and 0 FTEs to expand the level of support for regional research, training, and technology transfer. Sea level rise, the increased number and intensity of coastal storms, the ongoing threat of oil spills, and other natural and human hazards are putting more people and property at risk along the nation's coasts, with major implications for human safety and the economic and environmental health of coastal areas. It is essential that residents of coastal communities understand these risks, adapt and learn what they can do to reduce their vulnerability, and respond quickly and effectively when events occur. With this request, NOAA will (1) conduct risk assessment research in the context of hurricanes, other coastal storms, and climate-related changes; (2) assist public and private decision-makers in creating and adopting policies, plans, and ordinances to reduce risks, manage catastrophic events, and speed recovery; (3) conduct research and communicate information on how the use of natural features and new technologies can help communities prepare for and mitigate the impacts of hazardous events and climate change; (4) make Sea Grant's local knowledge and contacts available to work with Federal, state, regional, and local agencies, non-governmental organizations, and international partners that have hazardous event responsibilities; (5) identify viable strategies and formulate plans to prepare for, mitigate, and adapt to climate expected impacts; and (6) consolidate best research-based practices in risk analysis, assessment, mitigation, adaptation and communications, and disseminate risk information to citizens, industries and decision makers in coastal communities.

Sea Grant National Marine Aquaculture Initiative: NOAA requests a decrease of \$478,000 and 0 FTEs for the Sea Grant National Marine Aquaculture Initiative. This national strategic investment will implement a two-pronged approach to address marine aquaculture: competitive extramural research and transfer of research by Sea Grant Extension. These efforts will complement, accelerate, and enhance current aquaculture activities in the National Marine Fisheries Service (NMFS) and address research gaps identified in the 2008 Governmental Accountability Office (GAO) report "Offshore Marine Aquaculture: Multiple Administrative and Environmental Issues Need to be Addressed in Establishing a U.S. Regulatory Framework" (GAO-08-594, May 9, 2008), with the goal of adaptive strategies that improve NOAA's ability to manage fisheries, end overfishing, and ensure the viability of the multibillion-dollar U.S. seafood industry. Together with the NMFS Aquaculture Program Office, NOAA will address all four aquaculture research areas identified in the 2008 GAO report.



Ocean and Exploration Research: NOAA requests a decrease of \$1,400,000 and 0 FTEs. This decrease is comprised of one new initiative and one termination of FY 2010 congressionally specified funding of \$2,900,000 for activities not proposed to be continued in FY 2012:



Okeanos Explorer's Control Room

Okeanos Explorer: ROV and Telepresence: NOAA requests an increase of \$1,500,000 and 0 FTEs to provide the scientific and technical support to operate the dedicated mission equipment that is permanently installed on the NOAA Ship *Okeanos Explorer* and support telepresence technology. NOAA has acquired and outfitted a former Navy ship, the *Okeanos Explorer*, to explore unknown areas of our ocean ecosystems. No other Federal agency has the ability to explore the oceans in the manner that NOAA can with this dedicated vessel, unique technologies, and experienced personnel. With this request, NOAA will support (1) the operation of telepresence technology which enables scientists, educators, and others to participate in and even lead ocean exploration missions from remote shore-based Exploration Command Centers (a focus for the new funding, coupled with additional days-at-sea) and (2) the operation and upgrade of the ship's dedicated science platforms (autonomous and remotely-operated vehicles or ROV's). Systematic exploration products will complement the growing Integrated Ecosystem Approach (IEA) initiative, improve understanding of existing data and information, and identify gaps for further exploration and research.

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

Integrated Ocean Acidification: NOAA requests an increase of \$6,100,000 and 3 FTEs to complement, accelerate, and enhance current NOAA Ocean Acidification (OA) activities and provide comprehensive research, dedicated monitoring, and enhanced forecasting capabilities leading to adaptive strategies toward the improved management of living marine resources impacted by OA. Increased atmospheric carbon dioxide concentrations result in increased carbon levels in our oceans, causing changes in seawater chemistry that have been labeled ocean acidification. OA generates a unique suite of environmental changes that increasingly affect ocean ecosystems, fisheries, and other marine resources in such profound ways as reducing the ability of many organisms to build their shells and impacting both the carbon and nitrogen cycles that help sustain life on Earth. Our present understanding of the processes associated with OA and its impacts on large marine ecosystems is not sufficient to derive adaptive management strategies, especially those targeting the management of living marine resources—a mainstay of the economy. This increase will support new technologies and ecosystem monitoring systems, better models, and dedicated research programs as prescribed in the draft NOAA OA Implementation Plan: (1) OA Monitoring; (2) Ecosystem Impacts of OA; (3) Biogeochemistry & Ecosystem Models; (4) Human Dimensions; (5) Data Synthesis & Information Products; and (6) Engagement. This coordinated effort throughout NOAA will build upon current funding.

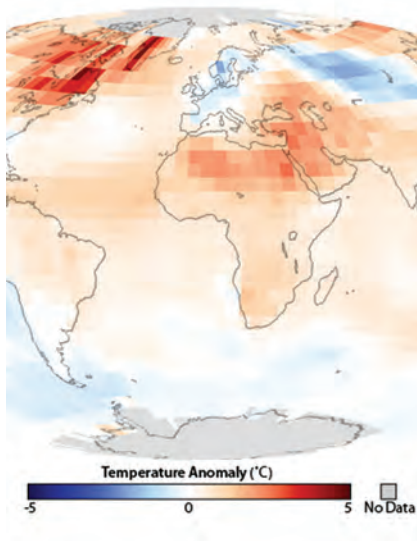




CLIMATE SERVICE

Business, industry, government, and public concerns about the potential impacts of climate variability and change are fueling an exponential growth in the demand for scientific information and for climate projections and predictions at different geographic and time scales. Until now, individuals, communities, governments and industry have relied on what we know about the climate in the past to make important decisions about our future systems and infrastructure—from agriculture to energy to transportation. But to be successful and competitive in a changing climate, people need information and data about expected future conditions to spur innovation and to support smart choices for businesses and communities.

The increased demand clearly demonstrates the need for coordinated, more accessible, user-driven climate information and services.



Capping off the warmest decade on record, the average global temperature in 2010 tied 2005 as the warmest year since reliable records began in 1880. This global map shows where average temperatures in 2010 were warmer (red), cooler (blue), or near (white) the 1971-2000 average. Despite chillier-than-usual temperatures in January and February, most of the United States was warmer than normal for the year as a whole

For decades, NOAA and its partners have been providing climate observations, monitoring, modeling, and predictions—underpinned by the best available science. Through its existing laboratories, data centers, programs, and operational assets distributed throughout the agency, NOAA currently responds to millions of annual requests for climate information. While NOAA has continued to build a suite of climate services within its existing framework, science and services are currently distributed across the agency, challenging NOAA's ability to respond to the rapidly increasing user demand and outpacing NOAA's capacity to effectively deliver requested products and information.

The proposed Climate Service organizes NOAA's longstanding agency programs, activities, and services to more efficiently and effectively respond to the rapidly increasing demand for climate services—easily accessible and timely scientific data and information about climate that helps people make informed decisions in their lives, businesses, and communities. The Climate Service will provide a reliable and authoritative source for climate data, information, and decision-support services and to more effectively coordinate with other agencies and partners.

The Climate Service will operate through a network of laboratories, programs, and university-based research partnership programs and the Climate Service budget will be managed through three core programs: (1) Climate Research



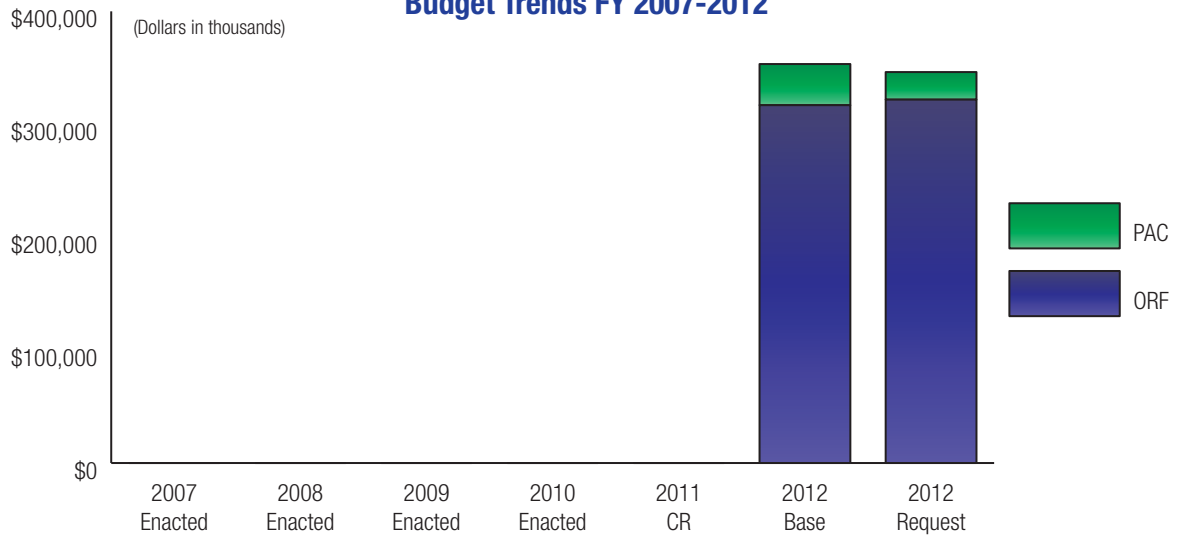
Program; (2) Integrated Climate Services; and (3) Observations and Monitoring. The reorganization to create a Climate Service will allow NOAA to integrate its existing climate research, observations, monitoring, modeling, information product development and delivery, and decision support functions to meet the demand for climate information for an informed society capable of anticipating and responding to climate change and its impacts.



CLIMATE SERVICE

(DOLLARS IN THOUSANDS)	FY 2012 BASE	FY 2012 REQUEST	INCREASE (DECREASE)
CS — ORF			
Climate Research	\$137,497	\$156,589	\$19,092
Integrated Climate Services	29,017	31,056	\$2,039
Observations and Monitoring	141,440	138,746	(2,694)
Congressionally Directed Projects	8,945	0	(8,945)
Administrative Efficiency Initiative	0	(4,564)	(4,564)
Total, CS - ORF	316,899	321,827	4,928
Total, CS - PAC	36,425	24,391	(12,034)
Total, CS - Other	0	0	0
GRAND TOTAL CS (Direct Obligations)	\$353,324	\$346,218	(\$7,106)
Total FTE	583	610	29

**CLIMATE SERVICE
Budget Trends FY 2007-2012**



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction



FY 2012 ORF BUDGET SUMMARY

NOAA requests a total of \$321,827,000 and 610 FTEs to support the operations of the Climate Service. This includes \$312,803,000 and 581 FTEs transferred from other NOAA line offices, an increase of \$4,096,000 and 2 FTEs for Adjustments to Base (ATBs), and a program increase of \$4,928,000 and an increase of 27 FTEs from the FY 2012 Base.

ADJUSTMENTS TO BASE:

The ATB request includes an increase of \$4,096,000 and 2 FTEs, which is comprised of a restoration of the FY 2011 and FY 2012 ATBs. This increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Services Administration.

Adjustments also include the following:

- Climate Reorganization: an increase of \$312,803,000 and 581 FTEs to reflect the resources transferred from other NOAA line offices to establish the base operating level for the Climate Service line office.

CLIMATE SERVICE - ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2012:

Select program changes are summarized at the sub-activity level below. A summary of funding by line item is located in Chapter 8, *Special Exhibits*. Detailed descriptions of all program changes by line item are located in the NOAA FY 2012 Technical Budget.

CLIMATE RESEARCH

\$156,589,000

NOAA requests program changes that net to an increase of \$19,092,000 and 17 FTEs total and a total of \$156,589,000 and 269 FTEs under the Climate Research sub-activity. This increase is comprised of four new initiatives and one decrease, and one termination of FY 2010 congressionally specified funding of \$2,200,000 for activities not proposed to be continued in FY 2012:

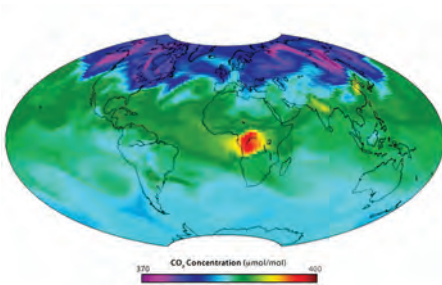
Earth System Modeling—Urgent Climate Issues: NOAA requests an increase of \$6,980,000 and 10 FTEs to enable continued development and use of state-of-the-art Earth System Models to address urgent climate issues, including sea level rise and Arctic climate change. Numerical models that simulate the Earth System are the Nation's principal tool for understanding past climate and predicting future changes. The increased demand for projections of climate change at regional scales and understanding the range of potential climate impacts requires increased modeling resolution and realism, as well as improved scientific understanding of the reliability of models and downscaling techniques for various regional climate applications. The requested increase will allow NOAA to reduce uncertainties in sea level rise projections, address gaps in the understanding of the Arctic climate system, reduce uncertainties in the terrestrial carbon cycle and future biogeochemical feedbacks on climate, and augment decadal climate predictions and abrupt climate change. This effort to address urgent climate issues by improving Earth System Models, developing decadal prediction



systems, and integrating earth system model development with regional ecosystem and coastal process models will be further supported directly by recent investments in high performance computing resources for climate modeling in the American Recovery and Reinvestment Act of 2009.

Water Resources Research to Operations: NOAA requests an increase of \$7,672,000 and 0 FTEs to research, develop and implement Integrated Water Resource Services. NOAA is the only Federal agency with the legislative mandate to provide water forecasts; however, such forecasts are currently not available along our Nation's coasts. To forecast these areas, NOAA must research, develop, and deliver water forecasting services for coastal areas. The OAR laboratories and NWS river and weather forecast centers will partner to develop and transition to operations new precipitation, river, estuary and coastal flood-forecast capabilities. With the proposed funding, NOAA seeks to support two projects designed to improve our Nation's water forecasts: (1) The Hydrometeorological Testbed (HMT), which is focused on reducing regional precipitation observation and forecasts errors by 50 percent for three-day forecasts and (2) the Coastal Estuary River Information System (CERIS), which is intended to increase the number of communities for which detailed stream and river forecasts are available.

¹⁴CO₂ Measurements to Capture the Distribution of Fossil Fuel Emissions: NOAA requests \$4,700,000 and 0 FTEs to increase the number of atmospheric ¹⁴CO₂ measurements, which will be critical for capturing the general distribution of fossil fuel emissions across the United States and for separating human from natural emissions. For decades, NOAA has played a leading role in monitoring atmospheric greenhouse gases. As the need for more information about greenhouse gas emissions increases, NOAA's monitoring, modeling, and analysis capabilities must include the ability to separate human from natural influences. NOAA will work with universities and DOE's Lawrence Livermore National Laboratory to increase ¹⁴CO₂ measurements at NOAA sampling sites and process them for analysis by accelerator mass spectrometry. NOAA will use funds to increase the capacity of university and agency partnerships with a total goal of processing over 5,000 measurements per year by 2014. This request supports the Administration's science and technology priority to fund research for measuring, reporting and verifying greenhouse gas emissions. Without the ability to separate human from natural emissions, it will be extremely difficult, if not impossible, to attribute changes in atmospheric CO₂ to specific greenhouse gas management strategies.



NOAA's CarbonTracker is a system that calculates carbon dioxide uptake, release, and transport over time.

Carbon Observing and Analysis System: NOAA requests an increase of \$8,000,000 and 7 FTEs to complete and sustain an observation and analysis system to determine uptake and emissions of carbon dioxide and greenhouse gases across North America. Regulating carbon dioxide (CO₂), evaluating mitigation strategies and understanding and predicting future climate change and ocean acidification requires an accurate, reliable, and independent system for tracking sources and sinks of CO₂ and other greenhouse gases (GHGs). The CarbonTracker Observing and Analysis System is an observational and analysis network that measures CO₂ and other GHG, providing observational data necessary for predicting future climate change and ocean acidification and will serve as the backbone of a system for verifying GHG emission reduction and mitigation efforts in North America. The program must be expanded, however, to reduce the uncertainties in



emissions reporting and estimation that challenge our ability to make informed decisions on limiting GHGs in the atmosphere. With this funding, NOAA will: (1) install and operate 6 new tall towers (for a total of 14 tall towers) to measure CO₂ and other GHGs at several heights in the atmosphere; (2) increase frequency of flights at 14 existing sites by a factor of four and begin collecting twice-weekly vertical profiles of GHGs with aircraft up to ~8 km height at 10 additional sites across North America to achieve twice-weekly vertical profiles at a total of 24 sites; (3) improve modeling for NOAA's CarbonTracker tool by including NOAA forecast data and the latest NOAA transport models; and (4) use results from CarbonTracker observations and direct aircraft profiles to compare, verify, and validate CO₂ satellite retrievals.

International Research Institute: NOAA requests a decrease of \$6,060,000 and 0 FTEs for the International Research Institute (IRI). For fifteen years, funding for international programs has supported Columbia University's International Research Institute for Climate and Society to predict regional impacts of changing climate outside the United States and demonstrate the utility of this information in decision making, especially in developing countries. With the emergence of NOAA Climate Services, the agency has recognized the need to review its international portfolio and restructure its international engagement in order to enable NOAA to be responsive to the increasing number of requests from bilateral partners and multilateral processes within the shifting landscape of societal demands, especially domestically.

INTEGRATED CLIMATE SERVICES

\$31,056,000

NOAA requests program changes that net to an increase of \$2,039,000 and 5 FTEs and a total of \$31,056,000 and 12 FTEs under the Integrated Climate Services Research sub-activity. This increase is comprised of two new initiatives and one termination of FY 2010 congressionally specified funding of \$461,000 for activities not proposed to be continued in FY 2012:

Assessment Services: NOAA requests an increase of \$1,000,000 and 3 FTEs to support a permanent capability to produce climate assessments at national and regional scales. Understanding and characterizing the nation's vulnerability to climate change and its adaptive capacity to reduce that vulnerability is not only essential for informed, near-term decisions, but also for determining how aggressively to reduce greenhouse emissions. Assessment processes are a proven way to conduct effective dialogue between users and producers of climate change information, as well as to enhance integration among involved experts of diverse backgrounds spanning academia, government, and private industry; thus assessments support the constructive expert and user-provider partnerships needed for a national climate change enterprise. The requested funding will be directed towards key positions to lead the National Assessment, and provide regional and sectoral leadership and coordination. In addition, funding will support regional modeling activities and scenario development for the National Climate Assessment. Regional and national assessments will meet an increasing range of demands for climate change decision support across the Nation.



NOAA Climate Services Portal: NOAA requests an increase of \$1,500,000 and 2 FTEs to support the development of the NOAA Climate Services Portal Program, which will provide easy public access to NOAA's climate data, information, and services. As a leading provider of climate, weather, and water information to the Nation and the world, NOAA is a logical source for citizens to turn to for climate information. NOAA must expand and improve the way it communicates, educates, and engages with public stakeholders to better meet the Nation's needs for timely, authoritative climate data and information. As the public's primary online point of entry into NOAA's Climate Services, the Portal will be a central component in the agency's climate communications, education, extension, and outreach strategy. The climate services portal will have audience-focused sections designed to serve four key segments of society: (1) climate science decision makers and policy leaders; (2) scientists and applications-oriented data users (e.g., resource managers and business leaders); (3) educators; and (4) climate interested and attentive members of the public. With the funds requested, the Climate Service will work with partners across NOAA to build a comprehensive new Climate Services Portal (CS Portal).



NOAA's Climate Services Portal

Regional Climate Services: NOAA requests a decrease of \$461,000 and 0 FTEs to reduce congressionally provided funds for Regional Climate Centers (RCCs). However, due to the high priority the Administration is placing on regional climate services, NOAA retains \$3,000,000 and 6 FTEs in appropriated funds to provide regionally-tailored climate products and service delivery for a sustained, integrated regional climate services enterprise in six U.S. regions. This request maintains support for the RCCs as critical partners in NOAA's Regional Climate Services program. The RCCs will be aligned to coincide with the six NOAA Climate Service Regions and be managed by the newly hired Regional Climate Service Directors to ensure full integration as core components of NOAA's regional climate services partnership. Each center will function as trans-boundary experts working to identify stakeholder needs and match these needs with the emerging science developed through Climate Service core capabilities with its existing laboratories, centers, and grantees. The RCCs will serve as a core part of NOAA's regional climate services partnership and will continue to deliver climate services at the regional level, conduct interdisciplinary research with our academic and research partners, conduct education and outreach activities, and enhance the integration and data quality of NOAA's observing networks.

CLIMATE OBSERVATIONS AND MONITORING

\$138,746,000

NOAA requests program changes that net to a decrease of \$2,694,000 and an increase of 5 FTEs and a total of \$138,746,000 and 329 FTEs under the Climate Observations and Monitoring sub-activity. This increase is comprised of four new initiatives and one termination of FY 2010 congressionally specified funding of \$7,116,000 for activities not proposed to be continued in FY 2012:

Arctic Watch: NOAA requests an increase of \$3,000,000 and 1 FTE to make progress toward completing and sustaining Arctic observations as part of the U.S. contribution to the International Arctic Observing Network and the associated Global Ocean Observing System (GOOS). The Arctic region is currently undergoing profound atmospheric, terrestrial, and oceanic changes related to climate variation and change. In many cases, observed changes far exceed the current model



projections. These changes impact human health, infrastructure, fisheries, ecosystems, coastal communities, international maritime activity, and regional to mid-latitude climate shifts. An expanded, more robust, integrated and coordinated NOAA Arctic program is necessary for addressing immediate and near-term impacts of climate change and supporting NOAA's response capabilities to stakeholders, particularly those in Alaska and the Pan-Arctic region, but also throughout the Nation. This increase will expand NOAA's Arctic observing capacity and produce data that will allow existing NOAA programs to improve modeling, analysis, and assessment products. Specifically NOAA will establish with international partners an Arctic Observing Network that integrates observations from new and existing atmospheric, coastal, and oceanographic observatories; ocean moorings; ice buoys and stations; and ship transects; improves and increases representation of Arctic climate processes in global climate models, regional physical-ecological models, and Arctic System Reanalysis, predictive capability for Arctic sea ice; and provides Alaska/Arctic regional climate and decision-making information and services, user-focused research assessments, and projection tools for planners, including data management activities and support for the Alaska Regional Integrated Sciences Assessments (RISA).

Global Ocean Observing System: NOAA requests an increase of \$1,384,000 and 0 FTEs to continue implementation of the Global Ocean Observing System (GOOS) with an emphasis on improving sea level rise monitoring and understanding.

Episodes of devastating coastal inundation over the last decade have emphasized the critical importance of fielding an ocean observing system that can continuously monitor approaching marine hazards and provide early warnings to aid in hazard mitigation. A sustained global observing system is therefore, the foundation of all climate research and services. NOAA's global ocean observing system must deliver continuous real-time measurements that will allow the modeling community to improve data assimilation and improve the accuracy of climate model projections. It must also be capable of delivering quantitative ocean indicators at a few strategic reference locations that will alert the nation and the world if and when major changes are occurring. Specific enhancements to the global ocean observing system that will advance the FY 2012 priorities of monitoring global sea level rise and its drivers include: five reference tide gauge stations equipped with GPS receivers and real-time reporting transmitters to provide measurement of absolute sea level rise and satellite ground truth and to provide real-time monitoring for tsunamis, El Niño, and storm surge events; development and deployment of deep Argo profilers capable of descending to 3000+ meters to measure changes in ocean heat resulting in the expansion of seawater and hence sea level rise; and sixteen days of ship support to deploy deep Argo floats in remote ocean regions for measurement of the ocean's heat storage.



An illustration of the components of the Global Ocean Observing System. The national system is modeled on a similar framework.

Data Center Operations: NOAA requests an increase of \$2,000,000 and 2 FTEs to provide NOAA the operational capability to close the gap in long-term safe storage of and access to the Nation's environmental data and information. A 3,000 percent increase in data volume generated from NOAA's investment in observations, such as NPP and the Joint Polar Satellite System (formerly NPOESS), requires additional support for operational capabilities to archive and access data. This requested increase will enable users to search for and acquire archived data by seamlessly connecting the



Comprehensive Large Array-data Stewardship System (CLASS) IT infrastructure capabilities with the Data Center archive management system. This funding will also allow NOAA to meet emerging requirements associated with implementing NOAA's climate services which include the long-term preservation of the Nation's climate record.

Climate Data Records: NOAA requests an increase \$8,000,000 and 2 FTEs for Climate Data Records (CDRs) to transform raw satellite data into unified and coherent long-term environmental observations and products. Climate data records are critical to climate modelers and decision makers concerned with advancing climate change understanding, prediction, mitigation and adaptation strategies, policies, and science. Key NOAA constituents, including national defense entities and major private sector industries such as insurance, agriculture, energy and transportation have increasingly called for authoritative climate reference data upon which to base their investments. This request funds two critical activities needed to support the Nation's climate science and services: (1) POES & GOES Multi-satellite CDRs, which builds multi-decadal, historical climate information records required by scientists to detect, assess, model, and predict climate change and by decision-makers to devise effective strategies to respond, adapt, and mitigate the impacts of climate change and (2) JPSS Climate Raw Data Records (C-RDRs), which repackages raw JPSS data for climate re-use (e.g., ocean color and temperature, clouds, sea ice, aerosols, ozone) to ensure NOAA archives capture and disseminate credible information to support private and public decision-makers and scientists.





NATIONAL WEATHER SERVICE

The National Weather Service (NWS) is the Nation's first line of defense against severe weather. The NWS provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters, and ocean areas for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure that is used by other government agencies, the private sector, the public, and the global community. Within a typical year, Americans cope with an average of 10,000 violent thunderstorms, 5,000 floods, 1,270 tornadoes, and 6 hurricanes. Nationally, there are approximately 575 weather-related deaths, 5,000



Snow falling on the 1600 block of 19th Street, N.W., in the Dupont Circle neighborhood of Washington, D.C., during the North American blizzard of 2010

weather-related injuries, and \$17.7 billion in damage due to weather incidents.⁷ Some 90 percent of all Presidentially-declared disasters are weather-related. According to the American Meteorological Society, weather is directly linked to public safety, and a significant portion of the U.S. economy is weather-sensitive.

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

With about 4,600 employees in 122 weather forecast offices, 13 river forecast centers, 8 national centers, and other support offices around the country, NWS provides a national infrastructure to gather and process data worldwide from the land, sea, and air. This infrastructure enables data collection using technologies such as Doppler weather radars; satellites operated by NOAA's

⁷ <http://www.weather.gov/os/hazstats/images/70-years.pdf>
<http://www.sip.ucar.edu/sourcebook/composite.jsp>



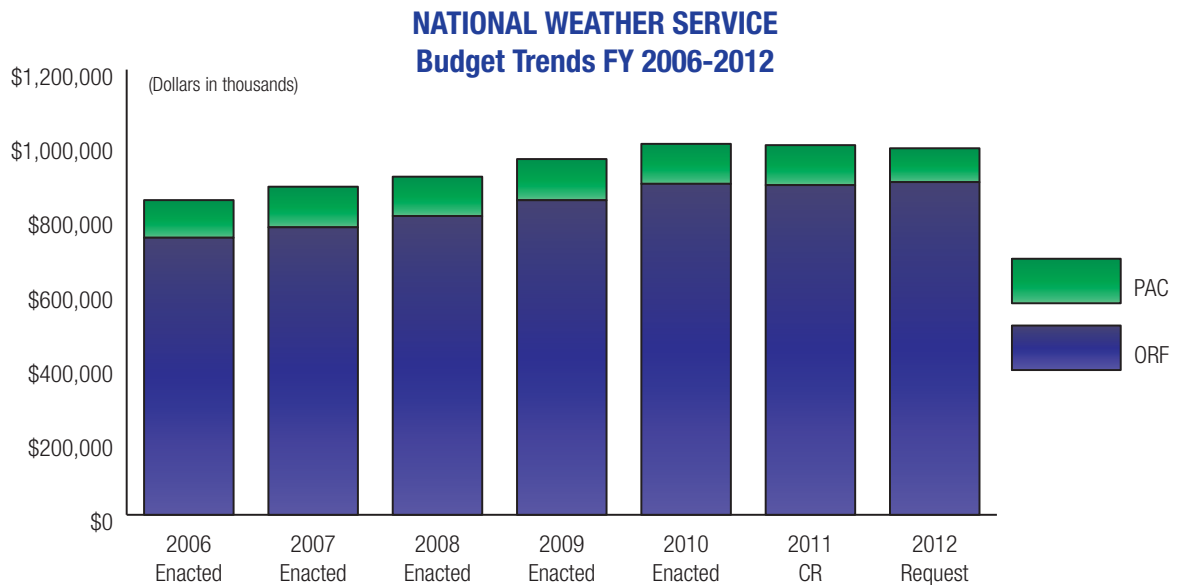
National Environmental Satellite Service (NESS); data buoys for marine observations; surface observing systems; and instruments for monitoring space weather and air quality. These data feed sophisticated environmental prediction models running on high-speed supercomputers. Our highly trained and skilled workforce uses powerful workstations to analyze all of these data to issue public, aviation, marine, fire weather, air quality, space weather, river, and flood forecasts and warnings around the clock. A high-speed communications hub allows for the efficient exchange of these data and products between NWS components, partners, and customers. NWS forecasts and warnings are rapidly distributed via a diverse dissemination infrastructure including NOAA Weather Radio. Finally, customer outreach, education, and feedback are critical elements to effective public response and improvements to NWS services.

The FY 2012 President's Budget Request supports the funding and program requirements necessary to address established NOAA strategic goals and allows the NWS to achieve its vision to: produce and deliver forecasts that can be trusted, provide services in a cost-effective manner, reduce weather-related fatalities, and improve the economic value of weather, water, and climate information.



NATIONAL WEATHER SERVICE

(DOLLARS IN THOUSANDS)	FY 2010 ENACTED	FY 2011 CR	FY 2012 REQUEST	INCREASE (DECREASE)
NWS — ORF				
Operations and Research	\$790,139	\$775,631	\$806,435	\$16,296
Systems Operation & Maintenance (O&M)	101,979	100,902	103,408	1,429
Congressionally Directed Projects	0	6,159	0	0
Administrative Efficiency Initiative	0	0	(13,055)	(13,055)
Total, NWS - ORF	892,118	882,692	896,788	4,670
Total, NWS - PAC	107,727	107,727	91,190	(16,537)
GRAND TOTAL NWS (Direct Obligations)	\$999,845	\$990,419	\$987,978	(\$11,867)
Total FTE	4,644	4,644	4,602	42





FY 2012 ORF BUDGET SUMMARY

NOAA requests a total of \$896,788,000 and 4,573 FTEs to support the continued and enhanced operations of the NWS. This total includes an increase of \$20,268,000 and an increase of 3 FTEs for Adjustments to Base (ATBs), a decrease of \$11,230,000 and 47 FTEs to reflect the transfer of base programs to establish a new Climate Service line office, and a net decrease of \$4,368,000 in program changes and an increase of 4 FTEs for a total increase of \$4,670,00, and a decrease of 40 FTEs from the FY 2010 Enacted level.

ADJUSTMENTS TO BASE:

The ATB request includes an increase of \$16,764,000 and 1 FTE, which is comprised of a restoration of the FY 2011 and FY 2012 ATBs. This increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Services Administration.

Adjustments also include the following:

- Climate Reorganization: decrease of \$11,230,000 and a decrease of 47 FTEs to reflect the proposed transfer of the Climate Prediction Center, the management of the TAO array, and the Cooperative Observer Network Modernization to assist with the formation of the new Climate Service line office.
- FY 2012 Technical ATBs: increase \$3,504,000 and an increase of 2 FTEs for consolidation of lease costs.

NWS—ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2012:

Select program changes are summarized at the sub-activity level below. A summary of funding by line item is located in Chapter 8, *Special Exhibits*. Detailed descriptions of all program changes by line item are located in the NOAA FY 2012 Technical Budget.

OPERATIONS AND RESEARCH	\$806,435,000
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NOAA requests program changes that net to an increase of \$14,583,000 and 4 FTEs and a total of \$806,435,000 and 4,385 FTEs under the Operations and Research sub-activity.

Local Warnings and Forecasts: NOAA requests an increase of \$14,583,000 and 4 FTEs for local warnings and forecasts. This increase is comprised of four initiatives, two decreases, and one termination of FY 2010 congressionally specified spending of \$19,000,000 for activities not proposed to be continued in FY 2012:

Local Warnings and Forecasts: NOAA requests an increase of \$4,000,000 and 0 FTEs to resolve sustainment gaps in the National Data Buoy Center's (NDBC) ocean observation capabilities, which include Coastal Weather Data Buoys (CWB) and Coastal-Marine Automated Network (C-MAN) stations. NWS currently operates 101 moored weather observation buoys and 49 C-MAN stations. Over the last 8 years, system performance has trended downward to the current low (as of January 2010) of 68 percent data availability. This trend will continue downward to 65 percent data availability



Coastal Weather Data Buoy

by 2011. Decreased data availability has caused large maritime data voids where no meteorological or oceanographic data is routinely sampled. This makes it difficult for NWS forecasters to make accurate and timely marine warnings and forecasts and to measure the accuracy of their forecasts. NDBC has witnessed a need for an increase in buoy and C-MAN station replacements as a result of damage from severe weather, commercial boating accidents, and vandalism. New international regulations prohibiting scuttling of plastic materials in the oceans have resulted in increased operational costs. In addition, O&M funding was not provided for the 12 operational buoy and C-MAN station replacements deployed over the past 8 years. The requested increase will provide O&M funding to support earmarked, damaged, and destroyed buoys and to comply with new international regulations. Remaining funding, if any, will be used to begin reducing the backlog of deferred maintenance and provide some funding for charter vessel contracts to supplement the diminishing availability to USCG ship time for servicing the weather buoy network.

Local Warnings and Forecasts: NOAA requests an increase of \$5,042,000 and 0 FTEs to fully fund the acquisition cost of the global positioning system (GPS) radiosondes for all 102 NOAA/NWS Upper Air (UA) observing stations utilizing GPS tracking capability and GPS radiosondes. The current NWS UA operations concept, driven by National Centers for Environmental Prediction (NCEP) modeling requirements, necessitates an annual quantity of over 78,000 radiosondes per year to be launched at 102 sites. The cost of GPS radiosondes is significantly higher (\$160 per unit) than the legacy radio-direction finding (RDF) radiosondes (\$110 per unit). RDF radiosondes transmit 1,100 observations per flight, whereas GPS radiosondes transmit 6,700. This 45 percent increase in cost provides a valuable six-fold increase in vertical profile data. The current funding profile is insufficient for full deployment of GPS radiosondes at all 102 UA observing stations and would result in a discontinuation of launches equating to 22 percent of the network's UA observations. Such a loss of observations would have a negative impact on NCEP's ability to calibrate its satellite data and would degrade its 5-day global forecast model guidance by five percent. Forecast models at the regional scale would experience significant further degradation than experienced at the global scale, especially for severe weather forecasting.

The UA profile data received from GPS radiosondes serve as one of the principal data sources for NWS weather prediction models supporting days 2, 7, and 14 severe storm, aviation, and marine forecasts and warnings. Radiosonde data are also used by the Department of Homeland Security and the Environmental Protection Agency in modeling the dispersion and mixing of hazardous materials and pollutants that are released into the atmosphere. This information is also used by policy-makers to set regulations for industrial emissions and to protect the public from hazardous levels of pollution. The Federal Aviation Administration (FAA) uses radiosonde data to analyze the effects of freezing precipitation on aircraft, potentially informing aircraft design and improved safety measures for air transportation. This increase will complete the acquisition of GPS radiosondes to launch at all 102 UA observing sites.



Aviation Weather: NOAA requests an increase of \$26,944,000 and 4 FTEs to fund planned third year Next Generation Air Transportation System (NextGen) development activities in this multi-year, multi-agency effort to improve the Nation's air transportation system. In the May 2008 report on the cost of flight delays to passengers, the airline industry and the economy, the Congressional Joint Economic Committee quantified the total cost of air traffic delays for 2007 at \$41 billion. Federal Aviation Administration (FAA) records indicate that on average, weather is a factor in 70 percent of these delays, or roughly \$29 billion. The FAA estimates that two-thirds of these delays can be avoided with enhanced weather information fully integrated into its operational decision making process, thus saving approximately \$19 billion annually. In addition, the demand for air transportation is expected to more than double by 2025. The current National Airspace System (NAS) simply cannot accommodate the increased demand and will be saturated by 2015. The multi-agency NextGen Joint Planning and Development Office (JPDO) has developed a plan to accommodate the expected growth in demand, which will allow for the reduction of air traffic delays. A critical component of the NextGen plan is the integration of weather information into air traffic operations. To enable this integration, the plan requires the creation of rapidly updated, high-resolution probabilistic weather information consistent across space and time and accessible to all NAS managers and users through a network-enabled infrastructure. Meteorologists will utilize and produce this information, using enhanced forecast processes to add value to forecast guidance and rapidly updated gridded datasets produced by automation. This capability does not presently exist, and the JPDO partner agencies are depending on NOAA, as the federal experts in the provision of weather information, to deliver it. This requested increase will support initial operational deployment of a 4-Dimensional (4-D) Weather Data Cube for aviation users and lay the foundation for the development of follow-on capabilities as required by the NextGen Integrated Work Plan. The NextGen 4-D Weather Data Cube will improve access and availability of observed and forecast weather information and enable its integration into an automated, multi-agency air traffic management system.



Weather accounts for 70% of all traffic delays within the National Airspace System. The FAA has determined that two thirds of these delays are preventable with better weather information.

Local Warnings and Forecasts: NOAA requests an increase of \$2,000,000 and 0 FTEs to complete required IT security improvements to the National Critical Space Weather System in order to prevent the loss of authority to operate, which would result in the shutdown of NOAA's space weather predictions and forecast program. Space weather has the potential to disrupt virtually every major public infrastructure system, including transportation systems, power grids, telecommunications, and GPS. Aircraft flying through polar routes now rely on space weather information to assess potential impacts to critical communication and navigation systems and the potential for hazardous solar radiation exposure. Strong storms with the potential to impact critical elements of our Nation's infrastructure can occur over 100 times during a solar cycle. NOAA's Space Weather Program depends on the National Critical Space Weather System to monitor the space environment and provide timely and accurate operational space weather forecasts, warnings, and alerts. The Program is the sole civilian entity that (1) operates and maintains the U.S. National Critical Space Weather System; (2) ingests and processes data from NOAA, NASA, and other sources; (3) supports research to understand the processes that cause severe space weather; (4) transitions research into operations to improve services; and (5) archives data from NOAA and the Department of



Defense (DoD) and makes it accessible to customers. Without the Authorization to Operate, all of the above activities will cease and the space weather products and services critical to our Nation's infrastructure and defense will be lost. In FY 2012, the additional funding of \$2,000,000, combined with a redirection of resources provided in the base to enhance Space Weather modeling for a total of \$4,700,000, will be used to address IT security deficiencies that jeopardize the Space Weather Prediction Center's authority to operate and provide the Nation with space weather forecasts and warnings.

Local Warnings and Forecasts: NOAA requests a decrease of \$1,200,000 and 0 FTEs to the NWS Cooperative Observer Program (COOP) by phasing out approximately 1,000 COOP observing sites. NWS is reviewing and prioritizing the existing 11,000 COOP sites as part of the planning for phasing out approximately 1,000 sites. Since the new Climate Service is implementing a network to replace the U.S. Historical Climate Network (USHCN), existing COOP sites that are also designated as USHCN sites will be phased out.

Local Warnings and Forecasts: NOAA requests a decrease of \$3,203,000 and 0 FTEs to achieve a target reduction in its telecommunications costs across all its programs and will take the reduction from its largest one, Local Warnings and Forecasts base. This reduction can be achieved by utilizing the new, more efficient U.S. General Services Administration (GSA) Networx contract. NWS is in the process of transitioning between GSA's FTS2001 and Networx contracts.





NATIONAL ENVIRONMENTAL SATELLITE SERVICE

The budget proposes to rename the National Environmental Satellite, Data, and Information Service to the National Environmental Satellite Service (NESS), reflecting the proposed transfer of data and information management archive activities to the Climate Service. NESS is responsible for the requirements definition, procurement, launch, and operation of the Nation's civil operational environmental satellites. NESS manages the Nation's operational environmental satellite systems by acquiring global environmental data as well as processing and distributing satellite-derived products and services. These environmental satellites support NOAA's National Weather Service, Federal and state agencies, and local emergency management



A United Launch Alliance Delta IV rocket lifts off with the NASA/NOAA GOES-P from Space Launch Complex-37 at 6:57 p.m. EST on March 4, 2010

agencies, enabling them to provide advance warnings of emerging severe weather such as hurricanes, tornadoes, flash floods, winter storms and wild land fires. The satellites, products, and services that NESS provides are essential to the protection of human life, property and critical infrastructure. This in turn supports the Nation's economy by providing accurate and timely information to those in critical decision-making positions. For example, the improved data from GOES-R satellites alone will benefit specific sectors of the economy including aviation, energy, irrigated agriculture, and recreational boating – providing a combined annual value for those sectors beginning in 2015 that exceeds \$1.2 billion. The present value of the combined estimated benefits for the 2015-2027 period approaches \$7.0 billion.⁸

NESS's 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 Control Center in Suitland, Maryland; satellite command and data acquisition stations in Wallops, Virginia; and Fairbanks, Alaska. From these ground stations, NESS operates and acquires data from Polar-orbiting Operational Environmental Satellites (POES), Geostationary Operational Environmental Satellites (GOES), Department of Defense (DoD) Defense Meteorological Satellite Program (DMSP), and Jason-2.

⁸ *Centrec Consulting Group, LLC., 2007: An Investigation of the Economic and Social Value of Selected NOAA Data and Products for Geostationary Operational Environmental Satellites (GOES). A report submitted to NOAA's National Climatic Data Center. Centrec Consulting Group, Savoy, IL*



NESS provides the Nation with specialized expertise and computing systems that process, analyze, and distribute satellite-derived products and services using data from NOAA, DoD, and NASA environmental satellites, as well as foreign and commercial spacecraft. These products and services are provided to national and international users 24 hours per day, 7 days per week. This enables NOAA's programs and line offices and international users to accurately track the location, extent, and duration of severe weather, such as hurricanes and winter storms; support forecaster decisions to issue flash flood warnings; track volcanic ash clouds and severe winds that threaten aviation safety; detect remote wild land fires; monitor coastal ecosystem health such as coral bleaching; identify and monitor maritime hazards from sea ice; and assist the U.S. Coast Guard in satellite-assisted search and rescue activities.

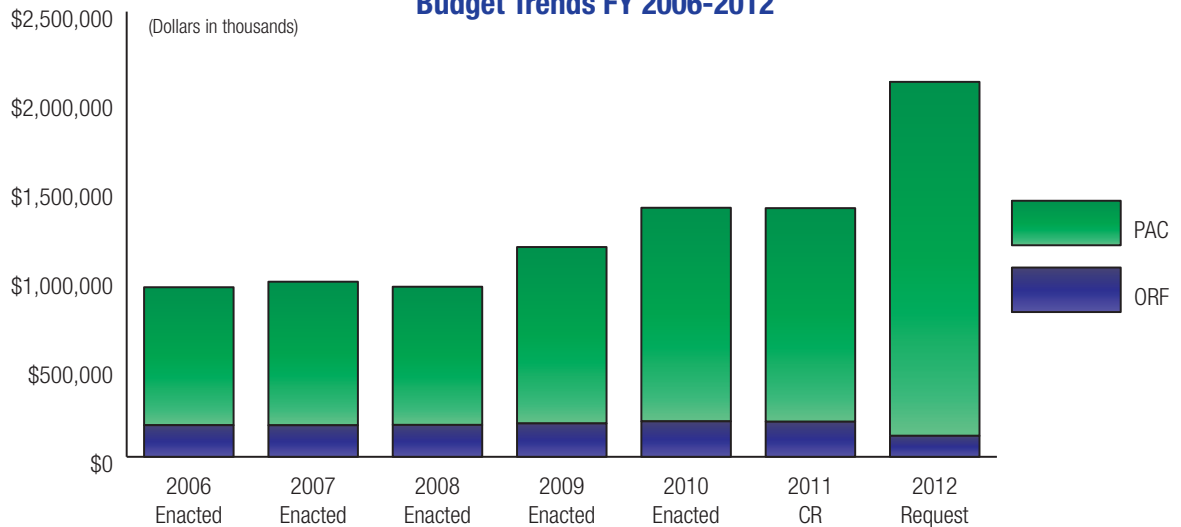
NESS supports national priorities in space, climate sciences, ocean and coastal management, integrated earth observations, energy, and forest resources protection through the development of various products. NESS also works to transition products and services from research satellite capabilities to operational platforms.



NATIONAL ENVIRONMENTAL SATELLITE SERVICE

(DOLLARS IN THOUSANDS)	FY 2010 ENACTED	FY 2011 CR	FY 2012 REQUEST	INCREASE (DECREASE)
NESS — ORF				
Environmental Satellite Observing Systems	\$110,490	\$109,323	\$119,746	\$9,256
NOAA's Data Centers & Information Services	88,675	83,929	0	(88,675)
Congressionally Directed Projects	0	3,809	0	0
Administrative Efficiency Initiative	0	0	(1,856)	(1,856)
Total, NESS - ORF	199,165	197,061	117,890	(81,275)
Total, NESS - PAC	1,199,357	1,199,357	1,897,536	698,179
GRAND TOTAL NESS (Direct Obligations)	\$1,398,522	\$1,396,418	\$2,015,426	\$616,904
Total FTE	831	831	558	(273)

NATIONAL ENVIRONMENTAL SATELLITE SERVICE Budget Trends FY 2006-2012



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction



FY 2012 ORF BUDGET SUMMARY

NOAA requests a total of \$117,890,000 and 409 FTEs to support the continued and enhanced operations of the National Environmental Satellite Service. This total includes an increase of \$2,337,000 for Adjustments to Base (ATBs), a decrease of \$88,675,000 and 269 FTEs to reflect the transfer of base programs to establish a new Climate Service line office, and a net increase of \$5,063,000 in program changes for a total decrease of \$81,275,000 and 26 FTEs from the FY 2010 Enacted level.

ADJUSTMENTS TO BASE:

The ATB request includes an increase of \$2,337,000 and 0 FTEs which is comprised of a restoration of the FY 2011 and FY 2012 ATBs. This increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration.

Adjustments also include the following:

- Climate Reorganization: decrease of \$88,675,000 and a decrease of 269 FTEs to assist with the formation of the new Climate Service line office. Included in the climate reorganization transfer is a technical adjustment of \$2,622,000 to support the functional transfer of providing library and information services from NESS to Program Support (PS), Office of the Chief Information Officer.

NESDIS—ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2012:

Select program changes are summarized at the sub-activity level below. A summary of funding by line item is located in Chapter 8, *Special Exhibits*. Detailed descriptions of all program changes by line item are located in the NOAA FY 2012 Technical Budget.

ENVIRONMENTAL SATELLITE OBSERVING SYSTEMS	\$119,746,000
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NOAA requests program changes that net to an increase of \$6,919,000 and 0 FTEs and a total of \$119,746,000 and 409 FTEs under the Environmental Satellite Observing Systems sub-activity.

Product Processing and Distribution: NOAA requests an increase of \$6,919,000 and 0 FTEs. This increase is comprised of two new initiatives:

Information Technology (IT) Satellite Security: NOAA requests an increase of \$3,108,000 and 0 FTEs to implement mandated security controls over the most critical IT assets in the NESS portfolio. NOAA’s environmental data and products are used to compute satellite data products and services for daily weather forecasts, hurricane tracking, and the Nation’s public weather warnings. NOAA must protect its computing systems from unauthorized access and cyber attacks since these systems provide environmental data that are critical to protecting lives and preventing damage to the Nation’s economy. The requested funds are required for NESS to comply with the National Institute of Standards and Technology (NIST) and Federal Information Processing Standard (FIPS) 200 minimum-required security controls. These security controls are



mandated and cannot be waived, making the implementation a required action. NESS has made significant progress to improve its IT security program, and this request ensures that NOAA can meet its core mission with adequate security of NESS information, assets, and services.



National Polar-orbiting Operational Environmental Satellite System Preparatory Project (NPP)

NPP and Polar Continuity Data Processing and Distribution: NOAA requests an increase of \$3,811,000 and 0 FTEs to process and distribute environmental data from the National Polar-orbiting Operational Environmental Satellite System Preparatory Project (NPP) mission. NASA is scheduled to launch the NPP satellite in 2011. The NPP satellite will provide essential continuity of polar environmental observations. The NPP Production Environment system provides the only link to get near real-time NPP data to NOAA operational centers and other NOAA partners in the civilian user community. Funding will be used to procure a robust IT capability needed to generate products from NPP that will lead to improved daily weather forecasts and warnings, hurricane landfall warnings, harmful algal bloom assessments, and ultimately to reduced annual economic losses. NOAA will initiate NPP data processing and distribution of environmental products on a 24x7 basis.





PROGRAM SUPPORT

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



Commissioning of Okeanos Explorer

CORPORATE SERVICES

NOAA Program Support provides the planning, administrative, financial, procurement, information technology, human resources, and infrastructure services that are essential to the safe and successful performance of NOAA's mission. In addition to NOAA-wide corporate services and agency management, Program Support activities specifically support the people and programs of NOAA, ensuring that they have the proper work environment, the necessary tools and equipment, and the vital personnel and finance services which, in turn, allow them to provide the finest possible science and service to the American people, our economy and our environment. Often, Program Support is what the public sees; NOAA's buildings, ships, and aircraft are highly-visible symbols of NOAA science.

OFFICE OF EDUCATION

NOAA's Office of Education provides advice and counsel to the Under Secretary of Commerce for Oceans and Atmosphere in matters pertaining to education. The Office, in conjunction with the Education Council, coordinates educational activities across NOAA and develops NOAA's Education Strategic Plan and policies. These efforts help to ensure that NOAA's education programs are based on NOAA science and support the agency's cross-cutting priority of promoting environmental literacy. The Office of Education directly implements and manages scholarship programs aimed at fostering competitiveness in science, technology, engineering and math by providing quality educational opportunities for the next generation. One example of this is the Educational Partnership Program, which had a total of 479 students in the pipeline and 837 graduates as of May 2010. The Office of Education also offers competitive grant programs at the national and regional level to promote environmental literacy efforts through collaboration with external partners.

In FY 2012 the Office of Education will continue to work with the NOAA education community to advance the priorities outlined in NOAA's 2009-2029 Education Strategic plan (<http://www.education.noaa.gov/plan/>), and will continue



its scholarship, fellowship, and education grants programs. NOAA will also work to address the recommendations from the recent National Research Council publication NOAA's *Education Program: Review and Critique (2010)*.

FACILITIES

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

NOAA owns more than 400 buildings, in addition to piers and other structures, which are valued at approximately \$2.5 billion. These facilities are aging, with more than 30 facilities over 60 years old. NOAA's facilities are often subject to the extremes of weather and climate conditions, and are, therefore, more prone to needing unplanned repairs while simultaneously remaining in operation. This program provides funding to conduct facility condition inspections and supports investments in necessary facility repairs and modernization needed to ensure that the facilities remain safe, effective, and efficient in support of NOAA's programs. The CAO organization is responsible for managing the total project life cycle for facility construction and modernization projects, including environmental and safety projects.

MARINE OPERATIONS

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

NOAA's vessels support nautical charting, fisheries research, marine environmental assessments, coastal-ocean circulation studies, and oceanographic and atmospheric research, and operate on all U.S. coasts. Marine operations funding provides centralized management for NOAA's 18 active ships and supports chartering vessels to meet additional requirements. NOAA vessels are strategically deployed based on size, range, laboratory space, equipment, and accommodations of each ship that are necessary to meet project requirements. The class I and II vessels have the size, capabilities, and endurance to conduct operations in the deep ocean and remote areas such as Alaska and Antarctica, while the smaller Class III, and IV operate on the continental shelf and near shore.

In FY 2012, operation of NOAA vessels will provide approximately 2,963 Days at Sea (DAS) in support of NOAA's highest priority programs.

OMAO's Marine Operations Center (MOC) has Atlantic and Pacific regional offices located in Norfolk, Virginia, and Seattle, Washington, respectively (note: the MOC in Seattle will be moving to Newport, Oregon beginning Summer 2011), and most home ports provide a small support staff to support the vessels. The centers provide maintenance, stores, supplies, and repair facilities for the vessels.



The NOAA Commissioned Corps is the Nation's seventh and smallest uniformed service. NOAA Corps officers support the fleet and NOAA Line Offices. The majority of the NOAA Corps payroll is funded through the Marine Services line. The officers of the NOAA Corps command NOAA's research and survey vessels, fly NOAA's "hurricane hunters" and environmental monitoring aircraft, support field operations, and serve in a variety of technical and management positions throughout the agency.

DIVE CENTER

The NOAA Dive Program provides diver training, safety standards, certifications, technical advice, a Standardized Equipment Program, and publishes the NOAA Diving Manual. NOAA's 500 divers perform over 15,000 dives annually in support of NOAA's programs.

AVIATION OPERATIONS

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

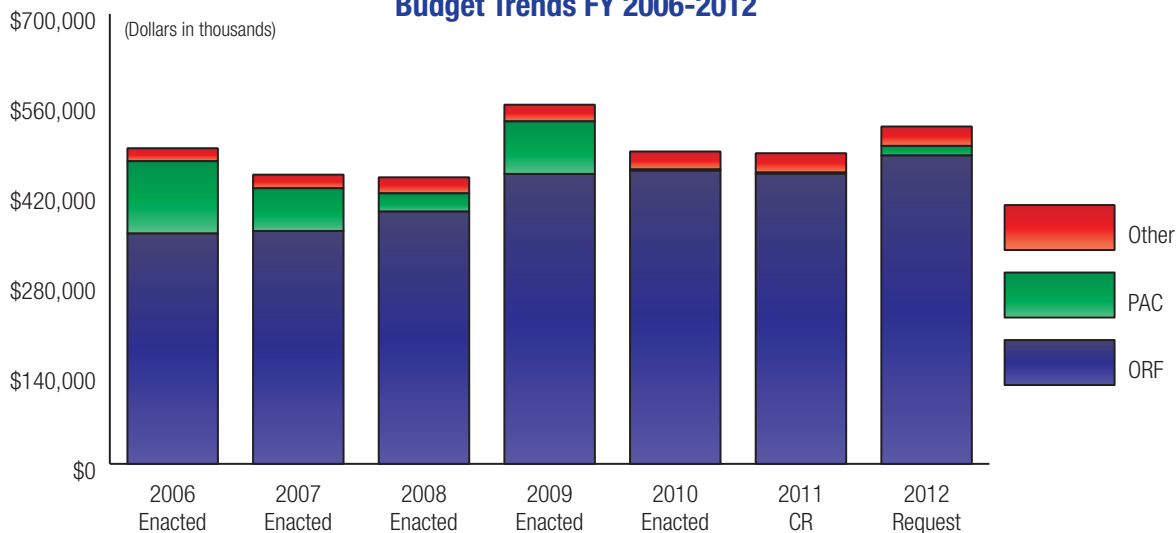
In FY 2012, Aircraft Services will provide approximately 2,845 flight hours in support of NOAA missions. NOAA aircraft are fitted with specialized instrumentation for airborne research, airborne data collection, and observation. Two of NOAA's three WP-3D aircraft (the "hurricane hunters") and the G-IV high-altitude jet will be mission-ready with instruments and personnel for hurricane surveillance, reconnaissance, and research during the hurricane season from June 1 to December 1. NOAA's third P-3 has a mission that includes air chemistry and air quality research, remote sensing, oceanographic research, and other missions not involving flights in severe weather. The G-IV will also be mission-ready with instruments and personnel to collect data for West Coast winter storm predictions from January 15 to April 1. NOAA's Jet Prop Commander and Shrike will be mission-ready with equipment and personnel for snow radiation surveys, flood forecasts, water management, and other background surveys throughout the year in Alaska and Northern United States. The four Twin Otters will continue to operate throughout the coastal Atlantic, Pacific, and Gulf of Mexico, surveying living marine resources and conducting remote sensing missions. NOAA's premier remote sensing aircraft, the King Air, will fly throughout the coastal United States responding and collecting damage assessment imagery, testing new remote sensing technologies, and performing coastal mapping missions.



PROGRAM SUPPORT

(DOLLARS IN THOUSANDS)	FY 2010 ENACTED	FY 2011 CR	FY 2012 REQUEST	INCREASE (DECREASE)
PS — ORF				
Corporate Services	\$205,203	\$203,037	\$235,301	\$30,098
NOAA Education Program	53,753	38,116	20,840	(32,913)
Facilities	30,346	30,025	41,763	11,417
Office of Marine & Aviation Operations	166,668	164,907	185,028	18,360
Congressionally Directed Projects	0	15,069	0	0
Administrative Efficiency Initiative	0	0	(6,800)	(6,800)
Total Program Support - ORF	455,970	451,154	479,658	23,688
Total, PS - PAC	2,000	2,000	14,926	12,926
Total, PS - Other	27,938	30,091	30,205	2,267
GRAND TOTAL PS (Direct Obligations)	\$485,908	\$483,245	\$524,789	\$38,881
Total FTE	2,053	2,053	2,081	28

**PROGRAM SUPPORT
Budget Trends FY 2006-2012**



ORF: Operations, Research, and Facilities

PAC: Procurement, Acquisition, & Construction

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



FY 2012 ORF BUDGET SUMMARY:

NOAA requests a total of \$479,658,000 and 2,076 FTEs to support the continued and enhanced operations of Program Support. This total includes an increase of \$22,584,000 and a decrease of 2 FTEs for inflationary Adjustments to Base (ATB) and other adjustments, an increase of \$2,622,000 and 11 FTEs as a result of the reorganization to establish a new Climate Service line office, and a net decrease of \$1,518,000 in program changes for a total increase of \$23,688,000 and 28 FTEs from the FY 2010 Enacted.

ADJUSTMENTS TO BASE:

The ATB request of \$22,584,000 and a decrease of 2 FTEs is comprised of a restoration of the FY 2011 and FY 2012 ATBs. The increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

Adjustments also include the following:

- Climate Reorganization: increase of \$2,622,000 and an increase of 11 FTEs to assist with the formation of the new Climate Service line office
- FY 2012 Technical ATBs: increase of \$810,000 and a net decrease of 9 FTEs

PS - ORF PROGRAM CHANGE HIGHLIGHTS FOR FY 2012:

Select program changes are summarized at the sub-activity level below. A summary of funding by line item is located in Chapter 8, *Special Exhibits*. Detailed descriptions of all program changes by line item are located in the NOAA FY 2012 Technical Budget.

CORPORATE SERVICES

\$235,301,000

NOAA requests program changes that net to an increase of \$19,029,000 and 13 FTEs and a total of \$235,301,000 and 973 FTEs under the Corporate Services sub-activity.

Under Secretary and Associate Offices: NOAA requests an increase of \$65,000 and 0 FTEs. This increase is comprised of one new initiative and one decrease.

Under Secretary and Associate Offices Base - NOAA General Counsel (GC): NOAA requests an increase of \$1,000,000 and 0 FTEs to enable NOAA GC to provide necessary legal support to NOAA programs. Recent legislation and ongoing emergent issues have created additional requirements for legal support. With this requested increase, NOAA's Office of General Counsel will support the following NOAA activities: (1) limited access permit programs/catch shares under the Magnuson Stevens Fishery Conservation and Management Act; (2) increased responsibilities to reduce illegal, unreported, and unregulated fishing by foreign vessels on the high seas, including implementation and enforcement of the recently concluded FAO Port State Measures Agreement to Combat Illegal; (3) unreported and unregulated fishing, implementation of Western and Central Pacific Fishery Commission and Western Pacific Marine National Monuments;



(4) increased international responsibilities resulting from U.S. accession to the Law of the Sea Convention, which the United States is expected to join in 2010; (5) delimitation of the outer boundary of the U.S. extended continental shelf; and (6) consultations under the Endangered Species Act on alternative energy and other high priority projects.

Under Secretary and Associate Offices Base: NOAA requests a decrease of \$935,000 and 0 FTEs targeting efficiencies and savings in on-going activities.

The NOAA's Under Secretary and Associate Offices (USAO) provides the top leadership and management of NOAA and represents NOAA's executive level liaison with other Federal agencies, Congress, NOAA stakeholders, and private industry. Program activities consist of formulating and executing policies for achieving NOAA objectives, responding to executive branch policy decisions, and exercises delegated authority in committing NOAA to courses of action. NOAA leadership is committed to leading by example and believes that overhead costs should be minimized. This reduction will demonstrate to the agency that no programs are exempt from efforts to identify efficiencies and provide the best value to the taxpayer.

NOAA Wide Corporate Services & Agency Management: NOAA requests an increase of \$9,864,000 and 5 FTEs. This increase is comprised of four new initiatives and one decrease:

Commerce Business Systems: NOAA requests an increase of \$5,000,000 and 0 FTEs migrate the Commerce Business System (CBS) from the existing operating system to the Department of Commerce standard operating system. The NOAA CBS system provides a scalable and robust system for handling all aspects of the financial management process, including allocating and maintaining fund balances, recording obligations and accruals, and supporting the generation of monthly, quarterly, and year-end financial reports/statements. The current CBS operating system, HP Tru64, will no longer be supported by the vendor at the end of 2012. In addition, the Department of Commerce has mandated that all agencies running a CBS instance migrate to a standard operating system over the next 3 years to drive efficiencies, as well as to provide a more scalable and viable operating system for future needs of the financial system. The FY 2012 request of \$5,000,000 will support the acquisition of Solaris as the Departmental standard operating system for CBS, allowing for procurement of initial hardware in time to configure and migrate the CBS environments in FY 2013. Migrating to the Departmental standard will allow NOAA to maintain compliance with OMB Circular A-123 and the Federal Information Security Management Act (FISMA).

Acquisitions and Grants Management: NOAA requests an increase of \$4,345,000 and 0 FTEs to support acquisition and grant services for NOAA.

The number of acquisitions awarded by the NOAA Acquisition workforce has increased by almost 300 percent in just 5 years. The Acquisition and Grants Office (AGO) currently performs approximately 16,000 acquisition actions and nearly 2,000 grants annually. As the NOAA acquisition workload has increased, the complexity of the acquisitions conducted and the level of contract administration oversight required have similarly increased. NOAA's AGO provides annual acquisition and grants support to DOC and NOAA valued at approximately \$2 billion (\$1 billion in grants awards, and \$1 billion in contract awards). The success of DOC and NOAA in accomplishing their missions and goals is largely dependent on the ability of the NOAA AGO to successfully obligate these funds in accordance with statu-



tory and regulatory requirements. This requested increase will improve the capacity of the acquisition and grants workforce regarding the workload and will provide dedicated personnel and funding sufficient to implement an effective procurement oversight program. These resources will afford NOAA an opportunity to establish a Policy and Oversight Division, which will implement recommendations made by the Government Accountability Office (GAO) in their June 2006 report to Congress (GAO-06-594, NOAA Acquisition Function).

Department of Commerce Acquisitions Initiative: NOAA requests an increase of \$1,113,000 and 1 FTE to support implementation of a DOC wide acquisition intern program. DOC's Acquisition workforce supports a diverse portfolio of acquisition areas, including construction of buildings, ships, and satellites. To support these wide-ranging needs, the workforce must be agile, flexible, and highly trained in the planning, solicitation, award, administration and close-out of acquisitions and financial assistance funding mechanisms. With this requested funding, NOAA would establish at NOAA the DOC Acquisition Intern Program, a three-year, career ladder developmental program. The additional FTE will oversee interns training and development activities and administer the program. As DOC's largest acquisition office, NOAA's robust acquisition community and expertise will serve the entire Department. All NOAA Acquisition Interns would receive training and developmental assignments in multiple bureaus. This model would promote interoperability between bureaus, provide increased opportunities for employee growth and development, and foster a sense of organizational unity. The intern program will be tailored to the agency's needs, thereby producing greater results and effectiveness for agency specific acquisition mission needs.

Acquisitions Staffing: NOAA requests an increase of \$795,000 and 4 FTEs to support an acquisition and grants services initiative to build acquisition capacity within the Department. NOAA Acquisition and Grants Office provides support to the business and staff offices, and a number of other DOC bureaus, through the planning, solicitation, award, administration and close-out of acquisition and financial assistance funding mechanisms. Through its services, NOAA Acquisition and Grants facilitates the execution of NOAA's day-to-day responsibilities and provision of critical services to the Nation. With this increase, each of the acquisition offices will fill critical vacancies to address the following: increased focus on strategic acquisition planning, increased focus on proactive contract administration, and increased focus on closing-out completed contracts. The additional capacity also would allow for more one-on-one time to develop junior-level acquisition personnel and to focus on strategic sourcing initiatives across the Department to leverage the buying power of the Department both across the bureaus and in partnership with other Federal agencies.

Payment to the DOC Working Capital Fund: NOAA requests a decrease of \$1,389,000 and 0 FTEs to reflect NOAA's share of savings that result from efficiency efforts in the Department's common services charged through the Working Capital Fund. The DOC Working Capital Fund provides centralized services to the Department's bureaus and to agencies outside the Department in the most efficient and economical manner possible. Goods and services are financed by charging operating expenses back to the customers. As part of the Administrative Efficiency Initiative, the



Department identified cost savings in these shared services which have been passed on to the agencies. With the requested decrease, NOAA will be able to reduce required payments to the Department of Commerce Working Capital Fund for services including but not limited to services for public affairs, security, operations and management.

Office of the Chief Information Officer: NOAA requests an increase of \$9,100,000 and 8 FTEs. This increase is comprised of two new initiatives.

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

Enterprise IT Security: NOAA requests an increase of \$5,100,000 and 6 FTE to improve enterprise information technology (IT) security through services provided by NOAA's Office of the Chief Information Officer (OCIO). The frequency, sophistication, and maliciousness of cyber attacks across NOAA are rapidly increasing—NOAA currently experiences thousands of attacks every month. NOAA is at risk for data integrity losses, network failures, and website compromises that have a significant probability of affecting the collection, processing, and dissemination of forecast and warning information to the public and other government institutions, leading to possible loss of life and property. The requested increase will fortify critical IT support of NOAA's mission by decreasing mission risk; enable NOAA to increase the coverage and capabilities of the NOAA Computer Incident Response Team (N-CIRT); and enhance nationwide security monitoring and incident response. This increase will enhance nationwide 24x7 security monitoring and incident response, reduce the backlog and duration of IT security investigations, control the number of affected devices, reduce IT security risk in new enterprise deployments, fortify critical IT security support to NOAA programs and missions, and improve NOAA's enterprise management of security risks, threats, and vulnerabilities



FACILITIES

\$41,763,000

NOAA Facilities Management, Construction, & Safety: NOAA requests an increase of \$10,758,000 and 1 FTE for a total of \$41,763,000 and 47 FTEs. This increase is comprised of two new initiatives:



Location of the new Pacific Regional Center (PRC), Ford Island, Honolulu, Hawaii

NOAA Facility Restoration and Modernization: NOAA requests an increase of \$10,000,000 and 0 FTEs to support major restoration and modernization projects to address critical facility condition deficiencies, and improve safety and operating conditions in support of NOAA's mission. NOAA owns over 400 buildings valued at over \$2.5 billion. These buildings support NOAA's scientific and operational mission and programs and are designed to provide a safe working environment for NOAA's employees and contractors—in laboratory and research spaces, offices, and operational buildings. As facilities age, repair and restoration is necessary to sustain operational capabilities and provide a safe working environment. NOAA is requesting an increase of \$10 million to support repair and restoration projects at NOAA's owned facilities, specifically addressing aged and deteriorated building systems and safety/environmental conditions. The FY 2012 request will address the continued deterioration of NOAA's owned facility portfolio through repair; restoration and modernization of aged and deteriorated building systems and facilities.

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

MARINE OPERATIONS & MAINTENANCE

\$159,196,000

NOAA requests program changes that net an increase of \$9,757,000 and 5 FTEs and a total of \$159,196,000 and 931 FTEs under the Marine Operations and Maintenance sub-activity.

Data Acquisition: NOAA requests an increase of \$192,000 and 5 FTEs for data acquisition. This increase is comprised of two initiatives and one termination of FY 2010 congressionally specified spending of \$2,500,000 for activities not proposed to be continued in FY 2012:

Marine Services: NOAA requests an increase of \$1,902,000 and 0 FTEs for Homeport Facility Lease Costs. NOAA homeport facilities vary in size, condition, and configuration, but all homeports serve the same purpose: to provide a safe and secure environment for NOAA ships to tie up for periods of maintenance, crew rest, training, and staging and de-staging of cruises. Homeports generally consist of pier space with adequate water depth, a port office for on-site support personnel, and equipment storage areas. A permanent homeport guarantees access to a secure facility of sufficient water depth with safe operating conditions and gives crew members a place to call home. Homeports



have dedicated personnel providing logistical support to the vessel and receive mail, supplies, and equipment. With this request, NOAA will fund lease costs for the Marine Operations Center – Pacific and Davisville, RI. Newport, OR will be the new home of the Marine Operations Center – Pacific (MOC-P) and the homeport of NOAA Ships *McArthur II*, *Rainer*, *Miller Freeman* and *Bell M. Shimada*. Davisville, RI is the new homeport of NOAA Ship *Okeanos Explorer* and has been a temporary homeport for NOAA Ship *Henry B. Bigelow*.



NOAA's *Henry B. Bigelow*

Marine Services: NOAA requests an increase of \$790,000 and 5 FTEs for the Dive Center Improvement Plan. This request will address the findings released in the NOAA Florida Keys National Marine Sanctuary Dive Fatality Incident Report. To date, 21 of 33 recommendations have been completed and a dive/small boat program database has been developed to more efficiently and effectively track critical data and measure execution of mission operations. The additional funding is required to provide the staff resources necessary to implement and oversee 3 of the remaining 12 recommendations. To meet these three outstanding recommendations, NOAA will guarantee that individual recall units meet specifications of the contract; ensure all diving conducted under NOAA's auspices is accomplished safely, efficiently, and cost-effectively; hire additional FTEs to support this recommendation; and comply with all applicable diving regulations, standards and policies. The Dive Center strives to satisfactorily meet NOAA's data collection requirements, and ensure that all diving is accomplished safely and in compliance with all regulations, standards, and policies.

Fleet Planning and Maintenance: NOAA requests an increase of \$9,565,000 and 0 FTEs. This increase is comprised of two new initiatives:

Fleet Planning and Maintenance: NOAA requests an increase of \$3,365,000 and 0 FTEs for Environmental Compliance for Vessels. New maritime environmental regulations will be enforced beginning in FY 2012, including stricter emissions requirements from the Environmental Protection Agency (EPA) and stricter discharge requirements from the United States Coast Guard (USCG). These new regulations will require significant changes to the existing vessel and small boat fleet to ensure compliance is maintained and monetary fines are avoided by NOAA. Proactively ensuring compliance with EPA and USCG environmental regulations will allow NOAA to maintain its position as a leader in environmental stewardship and in executing the Administration's energy priorities. In FY 2012, this program change increase will be applied to three categories: (1) engine and propulsion; (2) oils, hydraulics, and discharges; and (3) sustainment of ship conversions and equipment through design and training programs. These actions were selected according to their status as legal requirements with market-ready solutions.

Fleet Planning and Maintenance: NOAA requests an increase of \$6,200,000 and 0 FTEs for Preventive, Corrective, and Deferred Ship Maintenance. There has been an 89 percent increase in the number of significant mechanical/electronic failures as indicated in NOAA Ship Casualty Reports (CASREPS) – from 95 in FY 2005 to 180 in FY 2008 – and a 44 percent increase in Lost Days at Sea (DAS) for NOAA programs – from 184 DAS in FY 2005 to 264 DAS in FY 2010. With this request, NOAA will address deferred maintenance items and decrease the number of CASREPS that impact accomplished days at sea and scientific data collection for NOAA programs. Specifically



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

AVIATION OPERATIONS

\$29,358,000

NOAA requests program changes that net to a decrease of \$1,162,000 and 0 FTEs and a total of \$29,358,000 and 104 FTEs under the Aviation Operations sub-activity.

Aviation Operations: NOAA requests a decrease of \$1,162,000 and 0 FTEs for Aircraft Services. To reflect the reprioritization of research missions and the completion of data acquisition needs for the CALNEX mission, NOAA proposes cancelling the CALNEX and Ocean Winds projects in FY 2012. OMAO will continue to support NOAA research missions throughout the agency. Flight hours will be used for hurricane research, snow surveys, assessments of marine mammal populations and other living marine resources, and coastal erosion surveys.