

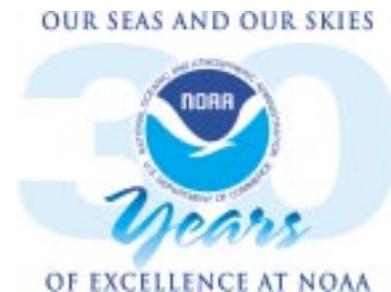
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Summary of the President's Budget

Fiscal Year 2001

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To the Reader:

I am pleased to provide the Budget Summary for the Department of Commerce's National Oceanic and Atmospheric Administration for Fiscal Year 2001. It contains information on NOAA's activities and strategic planning goals for members of Congress, congressional staff, media, NOAA constituents and individuals with an interest in NOAA programs and how they enhance the goals of the Department of Commerce

This year NOAA celebrates its 30th anniversary, although it can trace its roots back to the Administration of President Thomas Jefferson, who first established the predecessor of the present National Ocean Service. Today, as the descriptive narratives of this document show, NOAA – through its five line offices – has established itself as one of the world's preeminent scientific and environmental agencies, as well as a major contributor to the economic well-being of our Nation and the prosperity, safety and health of our people.

NOAA is committed to significantly advancing environmental assessment and prediction and stewardship of coastal and ocean resources. NOAA's commitment to a strong research effort underpins all of our services—from informed decision making to our operational responsibilities. In partnership with other Federal agencies, universities and the private sector, NOAA will address, facilitate, and lead operational implementation, research, and development for our science, technology, education, and human services in these areas. This echoes and exemplifies our 30th year theme: "Our seas and our skies—Thirty years of excellence at NOAA."



D. James Baker

**Administrator
National Oceanic and Atmospheric Administration
U.S. Department of Commerce**



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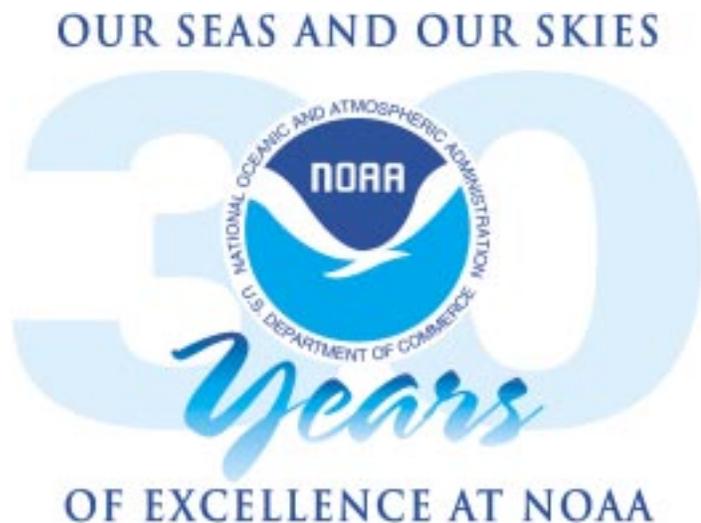
EXECUTIVE SUMMARY

NOAA, a key component of the Department of Commerce, plays a vital role in the everyday lives of our citizens through our numerous contributions to the Nation's economic and environmental health. In a period of strongly competing government priorities, the President's FY 2001 Budget Request of \$2.9 billion in total budget authority provides essential new resources for NOAA, underscoring the agency's important contributions to the Nation (see Section 4 for a detailed breakout of the Budget Request). The proposed budget provides the resources necessary to maintain indispensable services, ensures continuing progress in critical investment areas, and addresses statutory obligations.

This year marks the 30th anniversary of our Agency, and our slogan for this event, "Our Seas and Our Skies—30 Years of Excellence at NOAA," captures the essence of who we are and what we do. By tackling challenges from the deep ocean to the surface of the sun, NOAA is helping to make America and the world a healthier place to live. Although NOAA is young, the responsibilities and mission that NOAA retains date back much earlier, beginning with maritime charting in 1807 when President Thomas Jefferson established the Survey of the Coast, which later evolved into our National Ocean Service. As depicted in the graph below, NOAA has grown from a \$277 million agency in 1971, to a \$2.9 billion request with 12,600 people today.

Since then, NOAA has had much to be proud of—but there is still much to be done. NOAA has the challenge of mapping the future of our oceans and coasts, and of deepening our understanding of the atmosphere, which are no less than the economic and environmental lifelines of America and the world. This Budget Request, then, is one in a series of steps toward these goals.

NOAA's responsibilities, from issuing weather and climate forecasts, to managing our Nation's ocean and marine resources, are much in the public view. In 1999, we experienced a range of powerful weather and climate events, including a La Niña, for which NOAA provided a long range forecast, searing heat that scorched southern



states, floods that swallowed parts of America's heartland, and a devastating hurricane season. The 1997-'98 El Niño provided scientists around the world their first opportunity to observe a major climate event from beginning to end, and issue valuable forecasts to help mitigate the potential impacts. In 1999, NOAA built on its ability to provide long range forecasts and develop new climate products, including hurricane and drought outlooks that allowed emergency managers, businesses, communities and individuals to make advance preparations for the inclement weather. Also in 1999, NOAA completed the deployment of the Advanced Weather Interactive Processing System (AWIPS). This system, along with the NOAA Weather Radio and the Warning Decision Support System, was credited for the outstanding service and long lead time for warnings issued during a violent outbreak of tornadoes in May in Oklahoma and Kansas.

To fulfill its environmental stewardship mission, NOAA has initiated and continued strong cooperative efforts to protect our living marine resources. These efforts include innovative partnerships with the states of Washington, Oregon, and California to protect and recover at-risk Pacific salmon and steelhead species. These partnerships were based upon the significant flexibility of the Endangered Species Act (ESA) and provided a mechanism to reduce human-caused threats to the at-risk species before they are listed under the ESA. Thus, the partnerships promote the economic strength of the Nation and enhance recovery of at-risk species.

Take reduction strategies also have decreased incidental mortality in commercial fisheries. Strong fishery management programs have helped ensure the long term sustainable harvest of valuable stocks of marine fish. Management actions to rebuild haddock stocks in New England have resulted in recent assessments indicating that the stock is recovering, and harvest limits have been safely increased.

NOAA also has led an effort to bring increased visibility to the challenges threatening our living marine resources. NOAA co-hosted the National Ocean Conference in 1998 with the Department of Navy—the first national conference to draw attention to key ocean resources and issues, including coastal and ocean navigation and transportation, coastal habitats, fishing resources, and the interaction of ocean processes on weather and climate. Over 800 national leaders, members of Congress, researchers, and other interested stakeholders attended. Over 1,000 additional stakeholders participated in the Conference via satellite downlinks to facilities around the country. Several initiatives were introduced during the Conference which were included in the FY 2000 budget submission and are included in the FY 2001 Budget Request. A

further discussion of these crosscutting initiatives is provided later in this section.

NOAA's mission is to describe and predict changes in the Earth's environment, and to conserve and manage the Nation's coastal and marine resources to ensure sustainable economic opportunities. NOAA implements its mission through the activities of its five line offices: the National Ocean Service (NOS); the National Marine Fisheries Service (NMFS); the Office of Oceanic and Atmospheric Research (OAR); the National Weather Service (NWS); and the National Environmental, Satellite, Data and Information Service (NESDIS). The chart below illustrates the distribution of NOAA's Budget Request among the line offices.

Today, the Nation and the world look to NOAA's five line offices to provide timely and precise weather forecasts that protect lives and property; to manage fisheries and protected species; to build healthy coastlines; to make America more competitive through safe navigation; to examine changes in the oceans; and to inspire and create approaches that will protect and keep our precious natural resources alive for the generations to come.

NOAA conducts research to develop new technologies, improve operations, and supply the scientific basis for managing natural resources and solving environmental problems. NOAA's comprehensive system for acquiring observations—from satellites and radars to ships and submersibles—provides critical data and quality information needed for the safe conduct of daily life and the basic functioning of a modern society. NOAA's products and services include short term weather forecasts, seasonal climate predictions, long term global change prognoses, environmental technologies, nautical charts, marine fisheries statistics and regulations, assessments of environmental changes, hazardous materials response information, and stewardship of the Nation's ocean, coastal, and living marine resources.

These products and services provide vital support to the domestic security and global competitiveness of the United States, and positively impact the lives of our citizens, directly or indirectly, every single day.

The President's Budget Request also allows NOAA to perform an essential role in a number of Departmental, interagency and Presidential initiatives, including: the Natural Disaster Reduction Initiative; the Lands Legacy Initiative; the Climate Services and Observations Initiative; building the capacity of the Nation's Minority Serving Institutions

(MSIs); the South Florida Ecosystem Restoration Initiative; the Clean Water Initiative, and the America's Ocean Future Initiative. Critical budget initiatives and programs are described below:

Natural Disaster Reduction Initiative: \$110.0 million

Critical to meeting our 21st Century mission and the reduction of natural disasters is the ongoing health of NOAA's weather and satellite programs. In order to ensure our success, the President's Budget Request includes a total of \$110.0 million in increases for sustaining the modernization of the National Weather Service, research and new funding for satellites and data efforts. The table below summarizes the programs that comprise the Natural Disaster Reduction Initiative (NDRI). (See initiative funding chart, next page.)

National Weather Service: \$53.9 million

The President's Budget includes \$14.7 million in adjustments-to-base (ATBs) essential to sustaining a modernized National Weather Service (NWS). The ATBs will include funding for the mandatory federal pay raise and projected inflationary increases in non-labor categories such as maintenance and service contracts. Since 70 percent of the NWS base operations is committed to labor costs this funding is vital.

Also included in the FY 2001 request is \$8.4 million to sustain base operations, \$2.3 million to modernize and update the co-operative observer (COOP) network, \$2.0 million for Weather Forecast Office (WFO) Maintenance, \$6.6 million for Advanced Weather Interactive Processing System (AWIPS) Operations and Maintenance (O&M), \$0.1 million for NEXRAD O&M, \$0.1 million for ASOS O&M, an additional \$1.0 million for U.S. Weather Research Program (USWRP), and another program that contributes to NDRI is the Advanced Hydrologic Prediction System (AHPS).

In the Procurement, Acquisition and Construction (PAC) Account, NWS systems acquisition funding is to continue the acquisition and improvement of major systems associated with advancing short term warnings and forecasts. For FY 2001, new increases are requested for the Next Generation Radar (NEXRAD) Program (\$1.3 million); Automated Surface Observing System (ASOS) (\$1.3 million); AWIPS/NOAA Port (\$1.4 million); Computer Facilities upgrades (\$4.0 million); NOAA weather radio expansion and enhancements (\$6.2 million); Evansville Doppler Radar (\$5.5 million); and in addition the Radiosonde Replacement Network supports NDRI.

Satellite Coverage and Data Programs: \$49.6 million

In order to ensure the sustainability of NOAA's satellite coverage and data programs, the President's Budget provides \$49.6 million in new funding for these programs. Included in this request is funding for the next series of NOAA's Geostationary Operational Environmental Satellites (GOES) (\$25.2 million) and new funding for NOAA's polar orbiting satellites (\$6.5 million). Additional funding in the amount of \$1.0 million is provided for Environmental Observing Services. The FY 2001 Budget Request for polar satellites will support the NOAA M satellite launch planned for FY 2001 and NOAA N and N' to be launched in a future year.

For NOAA's National Polar Orbiting Environmental Satellite System (NPOESS) Program, the FY 2001 Budget Request provides \$16.9 million in new funding. The convergence of the NOAA Polar program and the Department of Defense's Defense Meteorological Satellite Program into a converged NOAA/DoD/NASA Program will save the United States Government millions of dollars over the life of the program by developing a satellite system that meets the needs of each of these agencies.

Global Disaster Information Network: \$5.5 million

The FY 2001 President's Budget Request also includes \$5.5 million to create an integrated Global Disaster Information Network (GDIN). The GDIN is an interagency effort to improve all phases of disaster management and response by building a collaborative, public/private partnership to develop an information system to aid emergency managers and those affected by disasters. Funds will be used to improve coordination of and access to disaster information; to assure the reliability of Federal internet and other communication channels during disasters; and to standardize data sets, data access and data analysis tools.

Lands Legacy Initiative [\$265.8 million]

In the FY 2001 Budget, NOAA requests an increase of \$265.8 million to continue the many critical environmental programs of the Administration's historic Lands Legacy Initiative, which addresses some of the most serious challenges facing U.S. coasts and oceans. In FY 2000, NOAA received approximately \$26.7 million in new increases for this initiative. The FY 2001 budget builds on the progress made to preserve our Nation's coastal and ocean resources. The FY 2001 Budget includes resources to significantly enhance the stewardship capabilities at the twelve National Marine Sanctuaries and 25 National Estuarine Research Reserves as well as the 33 coastal zone management

states. Also included are additional resources to maintain and protect our critical estuaries, as well as mapping and monitoring of fragile coral reefs. With additional funds in FY 2001, NOAA will address the effects of polluted run-off in coastal areas, implement priority recommendations of the U.S. Coral Reef Task Force, enhance the recovery of threatened and endangered coastal salmon, and provide grants to coastal states with existing offshore oil and gas production for sound coastal zone management. These specific increases are described in detail below. (See initiative funding chart, next page.)

Coastal Zone Management Act

CZM Grants: \$92.7 million

An increase of \$92.7 million for the Coastal Zone Management (CZM) Program will provide grants and technical assistance to coastal states to enable state managers and local communities to better address the significant and costly impacts of rapidly increasing coastal populations, polluted runoff, deteriorating waterfront areas, and loss of coastal habitats. Coastal states, which have been constrained from fully implementing their coastal zone management programs due to lack of funding, will be able to address the impacts of coastal storms and flooding, declining water quality, shortage of public access to the shoreline, loss of wetlands, deteriorating waterfronts and harbors, and the challenge of balancing economic and environmental demands in increasingly competitive ports. The results will be improved habitat protection and restoration, increased public access to the coast, urban waterfront and coastal community revitalization, and better management of special areas that are of concern at the local, State, and National levels – for the benefit of the Nation’s economy and environment. From the requested amount, NOAA recommends that \$25.0 million in grants be used by states to reduce polluted runoff, the leading cause of degradation in coastal waters. As a result, state coastal waters will be cleaner and economic losses from polluted runoff will be reduced. NOAA also requests that \$30.0 million of the total amount for CZM state grants be directed to implement community-based, environmentally protective solutions to combat the effects on coastal resources resulting from increased development and sprawl.

CZM Program Administration: \$2.1 million

In order to fulfill the expanded responsibilities of the Coastal Zone Management Program, an increase is requested to support NOAA’s responsibilities under the Coastal Zone Management Act (CZMA) which continue to grow with the addition of new state coastal management programs and National Estuarine Research Reserves. This increase is critical if NOAA is to provide adequate levels of support to its state part-

ners. For example, NOAA will mediate disputes between States, Federal agencies, and others; enable better dissemination of information from the National Estuarine Research Reserve System; and construct research, monitoring and education, and support facilities construction at the Reserves and Sanctuaries. Adequate technical and administrative support to manage and protect vital coastal habitat through the National estuarine and coastal management programs is essential to NOAA's ability to fulfill its responsibilities as a coastal steward and manage efforts under this initiative.

Polluted Runoff Grants: \$2.0 million

NOAA requests an increase of \$2.0 million, to accelerate completion of State Coastal Nonpoint Pollution Control programs that address the impact of polluted runoff on coastal waters (Nonpoint Pollution Control Program, Section 6217). In addition to supporting the Lands Legacy Initiative, this increase supports the Administration's Clean Water Initiative and furthers the recommendations of the Clean Water Action Plan. It also supports the recommendation included the 1999 interagency report, *Turning to the Sea: America's Ocean Future* to effectively address polluted runoff into coastal waters.

Coral Reef Conservation and Protection: \$9.0 million

In FY 2000, NOAA began to strengthen its capabilities to address the Nation's coral reef crisis. Working with State, territorial, and local partners, this new funding will support research, monitoring, and local-level projects to reduce human impacts and increase sustainable use of America's valuable coral reefs. Of these additional funds, \$4.0 million will allow NOS to improve understanding of reef health and focus on preventing reef-damage from vessel grounding, pollution, fishing, and other human impacts. \$5.0 million of the increase amount will enable NMFS to develop, establish, monitor, and enforce coral reef fishery reserves critical to restoring valuable commercial and recreational species and protecting the habitats they depend upon. This request will directly support increased monitoring, protection, and sustainable use of coral reefs which are priorities of the U.S. Coral Reef Task Force and recommendations included in the America's Ocean Future report.

National Marine Sanctuaries: \$10.0 million

NOAA requests an increase of \$10.0 million for the Marine Sanctuary Program to improve and enhance the operating and technical capacity of the 12 existing National Marine Sanctuaries (Channel Islands, Cordell Bank, Gulf of the Farallones, Monterey Bay, Monitor, Olympic Coast, Stellwagen Bank, Gray's Reef, Florida Keys, Fagatele Bay, Flower Garden Banks, and Hawaiian Islands Humpback Whale.)

Resulting from this increase will be improved protection of these

special places that include coral reefs, endangered marine mammals, sensitive habitats and cultural resources. The request will also support exploration of deep ocean areas within the Sanctuaries and explore the important socioeconomic contributions to the Nation from ocean resources. Lands Legacy funds in FY 2000 were instrumental in beginning this process, by allowing some sanctuaries to reach baseline operational levels. These new funds will allow for continuing improvements to baseline operations and upgraded management capabilities. Education, community outreach, research and monitoring, cultural resource management, enforcement, and response to resource damage will all be enhanced by additional resources. Continued funding of \$3.0 million is provided in the PAC account for Sanctuaries to complete a comprehensive facilities plan that prioritizes needs and opportunities at individual sites for constructing sanctuary exhibits and possible visitor centers and conducting collaborative education projects.

National Estuarine Research Reserves: \$8.0 million

An increase of \$6.0 million is requested for the National Estuarine Research Reserve System (NERRS) to improve the ability of NOAA to protect, conserve, and restore coastal habitats and biodiversity at the Nation's 25 existing National Estuarine Research Reserves. NOAA, with its state partners, will provide national leadership in demonstrating how estuaries can be managed for the benefit of future generations. The increase will help make all reserves fully functional in accordance with program guidelines and a 1997 Inspector General report. Funds will help state partners hire full-time core staff and allow Reserve staff to plan and complete state land acquisition and construction activities. The increase also will complete assessment of biological resources at each site and implement the System-wide monitoring program critical to tracking the health of each reserve. This effort will address a key recommendation of the 1999 interagency report, "Turning to the Sea: America's Ocean Future," to improve monitoring of the Nation's estuaries. Funding of \$2.0 million in the PAC Account is associated with the Lands Legacy Initiative, and is requested for state land acquisition and construction of research and visitor facilities.

Pacific Coastal Salmon Recovery Fund: \$42.0 million

As part of the Lands Legacy Initiative, NOAA requests new funding to increase support for the Pacific Coastal Salmon Recovery Fund. These funds will build on the FY 2000 Appropriation and will be used to enhance the recovery of threatened and endangered coastal salmon by providing Federal funds to help share the costs of conservation actions by tribes, States and local communities. The increase will provide assistance in the conservation of Pacific salmon runs at risk of extinction in the western states of California, Oregon, Washington, and

Alaska. Of these funds, those provided to coastal tribes do not require matching funds, while those provided to States have a 25 percent matching fund requirement. These new Federal resources will bolster lasting partnerships with tribal, State, and local governments in their effort toward Pacific salmon recovery and habitats restoration.

Coastal Impact Assistance Fund: \$100.0 million

This Coastal Impact Assistance Fund will provide resources to coastal states with existing offshore oil and gas production. Offshore oil and gas development places a variety of additional social, economic and environmental demands on ports, communities, and natural resources of coastal states. Funds from the account will provide grants to existing oil and gas producing coastal states to implement activities consistent with Coastal Zone Management Plans and increase protection and sustainable management of coastal resources such as habitat protection, community revitalization, improved coastal access, and public education on coastal issues. States eligible to receive grants under the Coastal Impact Assistance Fund are: Alabama, Alaska, California, Louisiana, Mississippi, and Texas. These funds will help develop the tools to minimize risks to coastal environments from coastal development including oil and gas activities.

Climate Observation and Services Initiative: \$28.0 million

During recent years, there has been a growing demand from emergency managers, the private sector, the research community, decision-makers in the U.S. and international governmental agencies and the general public to provide timely data and information about climate variability, climate change and trends in extreme weather events. The economic and social need for continuous, reliable climate data and longer-range climate forecasts has been clearly demonstrated. Climate observations and services will be as important to the 21st century economies and societies as weather forecasting is today. To respond to these needs, as several recent National Research Council reports have pointed out, NOAA must take immediate steps to repair its deteriorating data and observational systems as well as support new observations and develop more efficient and timely data infrastructure capabilities. The Climate Observations and Services Initiative will provide resources critical to these needs and to extend our ability to produce forecasts on a longer-time scale. This initiative will support transitioning our current research efforts and knowledge into operational systems and products. To do this, NOAA will focus its efforts to address key deficiencies in its observation and data management systems, implement new ocean observations, and develop a broad spectrum of new forecast products. The following efforts will be sup-

ported by this initiative (see initiative funding chart, next page.)

Climate Reference Network: \$6.0 million

To ensure NOAA's capability to monitor decadal to centennial changes of temperature and precipitation, a climate reference network consisting of several hundred stations must be developed by making use of the historical data from the best sites in the network of 11,000 cooperative observing sites. This climate reference network will build on data from stations identified as those with the longest environmentally stable records, most dedicated observers, and most reliable data with few interruptions. These records have been used to identify past trends, variations, and changes in climate but are now degrading at an intolerable rate. A climate reference network of about 250 stations will be identified with adequate spatial coverage to monitor temperature and precipitation trends across the USA. This will ensure long-term and bias-free global monitoring, including validation of NOAA's satellite monitoring capabilities. In FY 2001, NOAA will select the first 100 sites; place instrument types for temperature, precipitation, and soil moisture at a subset of the reference network; implement a means to electronically communicate all data collected in the reference network; develop a quality control package for observed data that includes checks for both random and systematic errors; and evaluate periods of concurrent data using old and new instruments to ensure a seamless transition to the new reference stations.

**Improving the Availability of Climate Data and Information:
\$10.0 million**

As observational capabilities increase and observing networks expand, it is essential that data management and dissemination systems are in place to make the resulting data and information widely and easily accessible to public and private sector decision makers. Many communities have an unfilled demand for data and information related to past, present, and expected changes in weather and climate. NOAA must develop the required infrastructure to assemble, develop, and communicate the data, information, and knowledge about the trends and future expectations of climate and weather events. Elements of this infrastructure will consist of:

- \$1.0 million for NWS Climate Prediction Center to translate an enhanced capability to monitor global climate variability and the insights about climate fluctuations gained from better observing systems into operational practice. This will be done through improvements to climate forecast models and better assimilation of observational data and development of a broad spectrum of new forecast products which emphasize risks of high-impact weather

events in the context of climate variability. Proposed new and improved products are biweekly to multi-year probabilities of rainfall events and droughts; probabilities of above- and below-normal hurricane seasons in the Atlantic and Pacific; probabilities of biweekly to multi-year temperature extremes; and probabilities for increased risk of fires.

- \$4.0 million requested in the PAC account for the National Environmental Data Archive and Access System (NEDAAS) to improve access by the public, private industry, decision makers, and scientists to the large volume of space-based and ground-based data, such as Doppler radar, polar and geostationary satellites. These new resources will improve the efficiency of NOAA's data management activities, for both *in situ* and satellite data; drive down NOAA's costs of data management per data set; and improve user services by providing access to data that is presently too costly to access for most users. The system will include the development of optimized storage technologies such as data compression and decompression, media migration to new generation storage devices, and improved Internet access to near online data.
- \$1.0 million to develop and implement real-time operational updates to NOAA's premier research quality long-term ocean and atmospheric reference data sets. The Nation's highest quality long term, peer reviewed data sets are being used in a research mode, but are now ready for exploitation by private industry, decision-makers, and the general public. These funds will be used to develop the infrastructure necessary to update routinely these data sets in real-time and ensure access to the data.
- \$2.5 million to improve observation network performance by ensuring that key *in situ* and satellite observing networks systems adhere to the principles and guidelines for long term climate monitoring as articulated by the National Academy of Sciences. The funding will be used to monitor the performance of these networks using performance indicators to identify problems early enough to prevent serious degradation; provide for overlapping coverage when new instruments are introduced; ensure the data are used in national and international assessments to help evaluate the data quality; and provide for adequate metadata (information about the operation the network and related algorithms used for processing the data). Improving the overall performance of these networks will allow NOAA to avoid reconstructing entire historical data sets because of problems uncovered long after initial observations.

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- \$1.5 million for observations and analysis in linking climate and extreme weather events critical to the general public and decision makers. Of particular importance is how climate variations such as El Niño, the North Atlantic Oscillation or long term trends influence the probability of occurrence of extreme weather events. An observational and analysis effort is proposed to better forecast high-impact weather on both short and long time scales; localize the predicted area of impact with high-resolution nested modeling and field programs; develop new tools for risk evaluation and prediction of extreme or significant weather types; and understand better the underlying physical processes that govern the unique weather of topographically complex regions.

Baseline Observatories: \$3.0 million

These funds will upgrade and expand operations at NOAA's remote manned Global Atmospheric Baseline Observatories at Barrow, Alaska; Mauna Loa, Hawaii; American Samoa; and the South Pole, Antarctica. These observatories measure up to 250 different atmospheric parameters relevant to the study of climate change and are critical to the collection and continuity of the world's longest atmospheric time series, supplying the scientific community with information on the state and recovery of the ozone layer, global carbon dioxide, and other trace gases impacting the global climate. Funds are needed to rehabilitate the aging Barrow and Samoa observatories by upgrading the equipment and facilities; upgrading the Dobson ozone spectrometer equipment; and upgrading 11 continuous surface radiation sites. Routine aircraft flask profile measurements of trace gases and aerosols also will be expanded to cover the continental U.S. and the Pacific basin, and enhanced sampling from ships and buoys will be undertaken. Finally, funds are requested to expand the gas and aerosol baseline measurements of effluents flowing from the Asian mainland to Hawaii, Alaska, and North America.

Ocean Observations: \$9.0 million

Improved understanding of ocean circulation and physics is fundamental to our ability to predict climate variability. Finer measurements of ocean data are needed to track climate shifts, understand the interaction of oceans and atmosphere and predict severe weather and the regional impacts of climate variability. This initiative will provide funds for NOAA to complete the U.S. portion of the global array of profiling floats (ARGO) for temperature and salinity. NOAA, with its international partners, will use these resources to construct, deploy and operate an array of profiling floats for data collection in the Pacific and Atlantic Oceans. It will also deploy additional surface drifting buoys in the Southern Hemisphere and other under-sampled regions to com-

plete the Global Drifter Array and improve and increase sampling from Voluntary Observing Ships (VOS). NOAA will make use of the U.S. (NASA) and French (CNES) satellite altimetry data (sea surface heights) by developing a methodology for effectively assimilating altimetry into ocean models and improving assimilation systems for the higher latitudes. In conjunction with this, NOAA will upgrade global sea-level stations for satellite altimeter drift calibration and for monitoring of long-term trends. Most of these funds (up to \$7.5 million) will be managed through the National Oceanographic Partnership Program (NOPP).

Minority Serving Institutions: \$17.0 million

As part of a Commerce-wide capacity building effort, NOAA requests \$17.0 million to continue educational training relationships through a joint partnership with a consortium of Minority Serving Institutions (MSIs). These efforts will result in the education of new marine, atmospheric and environmental scientists. In addition, the initiative will help to develop capacity at the consortium of MSIs and allow these institutions to train a greater number of resource scientists and managers. This effort will provide the Department with a broader and more diverse pool of potential employees. Having additional trained natural resource managers will expand the overall scientific community and provide NOAA with additional sources of scientific data that would allow the agency to more effectively carry out its mission.

South Florida Ecosystem Restoration Initiative: \$1.6 million

NOAA's FY 2001 Budget Request includes an increase of \$1.6 million to address issues related to the South Florida Ecosystem Restoration Initiative. The South Florida Initiative is an integrated effort among Federal, tribal, State and non-governmental partners to halt the degradation and restore the function of the South Florida ecosystem. As the U.S. Army Corps of Engineers begins to implement major construction and re-routing of water flow through the South Florida ecosystem, downstream coastal resources will be affected. NOAA supports the portion of the South Florida Initiative exclusively devoted to restoring and protecting the coastal and marine portions of the South Florida ecosystem such as the fisheries habitat and coral reefs. Continued investment is necessary to restore and maintain the marine ecosystem and the associated economies of South Florida and the Florida Keys. The table below summarizes the programs included in this initiative. (See initiative funding chart, next page.)

Clean Water Initiative: \$6.9 million

NOAA's FY 2001 Budget requests an increase of \$6.9 million over the FY 2000 enacted budget, to support the Administration's Clean Water Initiative. This Initiative will help protect coastal communities from toxics and reduce the flow of pollution into coastal waters from nonpoint sources (e.g., runoff from agricultural fields, city streets, and other areas). Polluted runoff is now a major source of coastal water pollution and one of the primary factors associated with outbreaks of harmful algal blooms (e.g., pfiesteria) and the spread of hypoxic zones in U.S. coastal waters.

The increasing frequency and magnitude of these problems suggests that significant action is required now to reduce the costs and symptoms of polluted runoff, and improve the quality of U.S. coastal waters. NOAA's FY 2001 request will strengthen and enhance critical research, monitoring, resource trustee, and coastal management capabilities of the National Ocean Service required to address the sources of polluted runoff and symptoms of degraded coastal waters, including harmful algal blooms, hypoxia, and beach closings. The table on the next page summarizes the programs included in the Clean Water Initiative.

Harmful Algal Blooms: \$2.4 million

Harmful Algal Blooms (HABs) are an expanding problem in all of our Nation's coastal areas. Over the past two decades, an estimated \$1.0 billion in economic losses have occurred in coastal communities due to HABs such as red and brown tides, and Pfiesteria, that are associated with polluted waters. A requested increase of \$2.4 million will be used to work with States, universities, and communities to conduct rapid monitoring and assessment response activities in response to HAB outbreaks. Development of HAB action plans, undertaking necessary actions such as targeted research, monitoring and assessment during an episode, and providing fiscal and technical support to those affected by HABs will improve management measures aimed at recovery, prevention and control. In addition, these funds will improve overall understanding of HABs by improving the support provided to the inter-agency program, the Ecology and Oceanography of Harmful Algal Blooms (ECOHAB).

Coastal Nonpoint Source Pollution Control Programs: \$2.0 million

Presently, 29 coastal states have approved Coastal Nonpoint Source Pollution Control Programs that require funds for implementation. Working with other Federal, State and local agencies, NOAA will use \$6.0 million of the Coastal Zone Management (CZM) Act Grants to

fund these programs for implementing on-the-ground management measures to control polluted runoff in coastal areas. This increase of \$2.0 million also supports the Lands Legacy Initiative.

Polluted Runoff Grants: \$2.0 million

Communities, businesses and human health are increasingly threatened by polluted runoff and the symptoms of polluted coastal waters. For example, every year degraded water quality causes warnings or closures of thousands of beaches resulting in losses to tourism and recreation industries. An increase of \$2.0 million will support the development of nonpoint control programs in the new CZM states through Polluted Runoff (Nonpoint Pollution Control Program, Section 6217) Grants. These grants, which are also counted as part of the Lands Legacy Initiative, will be used to assist new coastal zone management states to develop their nonpoint programs. The grants will also aid other coastal states that need to meet conditional requirements in order to gain full approval of their programs. The funding will also further strengthen the management and implementation of the states' ongoing programs. Three states (Texas, Georgia, and Ohio) recently submitted their coastal nonpoint programs for approval and Minnesota's plan is in its initial stage of program development.

Coastal Protection and Restoration Program: \$0.5 million

NOAA's FY 2001 Budget Request includes an increase of \$0.5 million which will enhance NOAA's capabilities to address the impacts of hazardous waste sites on coastal water quality and NOAA trust resources. These funds will allow NOAA's Coastal Protection and Restoration Program to address these serious environmental threats more quickly and effectively. NOAA will be able to expedite restoration and cleanup of coastal natural resources without costly litigation, share NOAA's technical expertise, and create cost effective approaches for remediating waste site contamination as part of the Clean Water Initiative.

America's Ocean Future Initiative: \$51.6 million

NOAA's FY 2001 Budget Request continues to focus on necessary actions designed to explore, protect and restore America's vital ocean resources. Highlighting the important role the ocean plays in the daily lives of all Americans, the Administration's 1999 interagency report, "Turning to the Sea: America's Ocean Future," introduced measures to promote new scientific insight into the oceans, sustain use of fisheries and other marine resources, provide new opportunities for economic growth, and protect fragile coastal communities and ecosystems, such as coral reefs, from damage and environmental degradation.

The report and this initiative are a result of the recommendations made at the National Ocean Conference in order to develop a coordinated, disciplined, long-term Federal ocean policy. The specific programs included in this initiative are summarized in the table on the next page.

Safe Navigation: \$6.2 million

NOAA requests an increase of \$6.2 million to promote safe and efficient navigation. These resources will improve the competitiveness of U.S. ports and exports while lowering the risk of marine accidents and resulting pollution. In partnership with the private sector and local authorities, NOAA will focus on the quality assurance necessary to fully implement the Physical Oceanographic Real-time Systems (PORTS). NOAA will continue to modernize the National Spatial Reference System and continue progress on NOAA's electronic chart database, including reduction of the shoreline data backlog.

A complete suite of electronic charts with timely updates of hydrographic, shoreline and navigation data is a key recommendation of the *Turning to the Sea: America's Ocean Future* report. Modernized, accurate positioning supports the PORTS program, electronic charts, other navigation-related programs and many economic sectors that depend of accurate location data.

Aquaculture: \$2.6 million

Wild fish stocks in the U.S. and around the world are dwindling. At the same time world demand for protein continues to rise. The budget proposes \$2.6 million to promote the development of an environmentally friendly and commercially viable domestic aquaculture industry. Of the \$2.6 million, OAR will use \$1.6 million for research and development of environmentally and economically sound aquaculture technologies with a focus on peer reviewed competition to find projects that will lead to business use. NMFS will direct much of the remaining increase of \$1.0 million towards developing aquaculture standards that protect the environment, which promote ecologically-sound farming technologies, and address site selection criteria to assist those who plan to invest in aquaculture within Federal waters. These funds will further the Administration's ocean stewardship mission by protecting the environment while developing sustainable aquaculture.

Fisheries Stock Assessments and Conservation, and Management: \$11.9 million

NOAA requests a total increase of \$11.9 million. The increase is comprised of a \$3.6 million increase request for establishment of the National Observer Program and more observer coverage to carry out

mandates in the Magnuson Stevens Act. In addition, a requested \$3.0 million will support work on fisheries oceanography. This increase supports programs to improve stock predictions by identifying and assessing critical environmental processes controlling long-term trends in the Nation's fishery production. These funds also support a network of bio-physical moorings in the North Pacific Ocean will provide data on key oceanographic indicators and give greater insight into environmentally-induced shifts in the productivity of commercially important fish stocks.

Within the \$11.9 million increase, an increase of \$1.8 million supports field studies to refine essential fish habitat and reduce the impacts of commercial and recreational fishing gear, anchoring, commercial at-sea processing and related fish waste discharges, and vessel operations on essential fish habitat. In addition, an increase of \$1.0 million is requested to collect fisheries statistics and perform economic analyses required by the National Standard 8 of the Sustainable Fisheries Act (SFA). The analysis will include socioeconomic characteristics of commercial and recreational fishermen, economic values within fisheries, and vessel data within fisheries, all of which will improve the analytical capability to predict and monitor the economic and social consequences of management decisions. Also requested is an increase of \$2.5 million to develop a core economic data collection capacity within NMFS to determine economic consequences of various activities on participants in a fishery, including improved regulatory flexibility analyses.

Seafloor Observatories: \$3.1 million

In order to implement the 1999 interagency report, *Turning to the Sea: America's Ocean Future*, NOAA is requesting an increase of \$3.1 million to unravel deep-sea mysteries, discover new opportunities in the ocean, and better understand how to protect marine resources. These funds will launch a program to map and explore U.S. ocean waters with advanced underwater technology. It will expand activities at two existing shallow-water observatories, the LEO-15 (off of the coast of New Jersey), and the Aquarius in the Florida Keys. The increase will fund two new deep-sea observatories: the new millennium observatory which recently has begun its first phase in the Pacific Juan deFuca Ridge and also an observatory in the Gulf of Mexico. Finally, to better understand the contribution that ocean resources provide to the Nation's economy, funds will also be used to assess the economic value of the domestic ocean and coastal resources.

Fleet Replacement: \$8.0 million

The FY 2001 requests increase of \$8.0 million is requested to

reactivate, convert, and upgrade the NOAA vessel *Adventurous* to support fisheries research activities. The *Adventurous* is a modern T-AGOS class vessel acquired from the Navy and is currently inactive. The *Adventurous* can be converted to meet the marine mammal survey and some high priority fisheries data collection requirements. In addition, \$8.3 million is funded to continue the construction of a new acoustically quiet Fisheries Research Vessel (FRV) that is essential for conducting the stock assessment surveys necessary to monitor species' abundance, recruitment, age composition, and responses to ecological changes and fisheries pressure to build sustainable fisheries. The collection of fisheries and marine mammal information at-sea is essential to the mission and to the development of sensible regulation governing commercial and recreational fishing activities.

Acquisition of Data: \$1.8 million

NOAA requests an increase of \$1.8 million over the FY 2000 enacted. This request supports the collection of hydrographic and coastal assessment data through days-at-sea for programs of significant national interest.

These increases will support an additional 140 days-at-sea of University-National Oceanographic Laboratory System (UNOLS) ship time needed to support ongoing and new ECOHAB program and Global Ocean Ecosystem Dynamics (GLOBEC) projects. This request implements a key recommendation of the Ocean Future report to increase research to understand the ongoing changes in ocean chemistry.

Resource Protection: \$13.5 million

To continue resource protection NOAA requests an increase of \$13.5 million which includes \$12.3 million in Endangered Species Act Recovery Planning and \$1.2 million for Protected Species Management. NOAA requests an increase of \$12.3 million to implement programs to respond to the extinction crisis facing several highly endangered marine species and to expand efforts for Pacific and Atlantic Salmon. Included in this increase is \$2.3 million to stem the decline of Pacific leatherback turtle and the northern Atlantic loggerhead turtle, Hawaiian monk seals, northern Atlantic and North Pacific right whales, Steller sea lions, and Cook Inlet Beluga Whales, all of which are on the brink of extinction. This will be done through a combination of research, monitoring and management actions to determine the causes for the decline and to implement recovery measures. This initiative also includes \$9.0 million to continue the Administration's support for the recovery of endangered Pacific salmon by investing in the scientific underpinnings of this recovery program and monitoring its effective-

ness, and \$1.0 million to provide a solid foundation for conserving Atlantic salmon in Maine through a strong investment in research. Protected Species Management also includes \$0.2 million to monitor marine biodiversity to maintain healthier marine species and ecosystems through evaluating the threats and their impacts on habitats and biodiversity and \$1.0 million for coral reef assessments and reduction of fishery impacts not included in the Lands Legacy Initiative.

Fisheries and Marine Resource Enforcement: \$4.5 million

Enforcement is a key element of a credible management effort designed to support the growth and stability of the domestic fishing industry and protect our nation's living marine resources. NOAA requests an increase of \$4.5 million for enforcement activities. This increase includes \$1.3 million needed to expand current vessel monitoring programs, \$0.2 million needed to provide additional enforcement activities associated with salmon recovery efforts, and \$2.5 million to establish cooperative enforcement programs between NMFS and the coastal states.

Other NOAA Programs of Note

Global Learning and Observation to Benefit the Environment: \$2.0 million

Also important in meeting NOAA's immediate programmatic needs and longer-term strategic goals are several key programs. Among these key programs is the Global Learning and Observation to Benefit the Environment (GLOBE) Program aimed at improving the quality of science education for the next generation of American scientists. The GLOBE Program is a worldwide network of students, teachers, and scientists working together to study and understand the global environment. Students and teachers from over 7,000 schools in more than 80 countries are working with research scientists to learn more about our planet. The FY 2001 President's Budget Request includes an increase of \$2.0 million, for a total of \$5.0 million, for the GLOBE Program.

Commerce Administrative Management System: \$15.8 million

Also essential in making NOAA's programs successful is the Commerce Administrative Management System (CAMS). NOAA requests \$15.8 million for CAMS in the PAC Account in order allow for continued production support. These funds will support the Accounts Payable, Small Purchases, and the Travel Modules. The full funding of CAMS is essential for NOAA to maintain a sound financial accounting system and to meet its statutory obligations under the Federal Managers' Financial Integrity Act (FMFIA) and the Chief Financial Officer

Act (CFO Act).

Pacific Salmon Treaty: \$60.0 million

NOAA requests an increase of \$60.0 million to implement the Pacific Salmon Treaty. This increase will provide \$20 million to capitalize the Southern Boundary Restoration and Enhancement Fund, \$20 million to the Northern Boundary and Transboundary Rivers Restoration fund and \$20 million to the State of Washington to complete the Vessel License Buyback Program and the State of Alaska to mitigate lost fishing opportunity arising from the agreement. The two endowment funds will be administered by the Pacific Salmon Commission for habitat, stock enhancement, science and salmon management initiatives in both countries.

Detailed information on these programs and regarding adjustments to base, program reductions, and terminations are shown in Section 4: Supplemental Information.

Conclusion

The challenge of investing strategically in the Nation's future is accompanied by the requirement to be more effective, to identify and realize opportunities for savings, and to focus the efforts of all levels of Government on what matters most to the American people. Our citizens are increasingly demanding proof of performance—documentation of the “bang for the buck”—and NOAA's FY 2001 Budget Request includes measures which track results to the level of public investment. Success in the complexities of the 21st Century, will depend more and more on partnerships and cooperative ventures that link business, industry, and universities with Federal, State and local governments and international parties. NOAA will continue to develop those associations that most efficiently and economically leverage resources and talent, and that most effectively provide the means for successfully meeting mission requirements. ☺

■ OPERATIONS, RESEARCH & FACILITIES

National Ocean Service

Total Request: \$516,936,000

ORF: \$405,936,000

PAC: \$11,000,000

Coastal Impact Assistance Fund: \$100,000,000

Coastal Zone Management Fund: [\$3,200,000]

Damage Assessment and Restoration Revolving Fund: [\$1,500,000]

The National Ocean Service (NOS) is the primary Federal agency working for the coast through the observation, measurement, assessment, and management of the Nation's coastal and ocean areas, as well as conducting response and restoration activities to protect vital coastal resources. More than 139 million people—over 50 percent of the national total—currently reside along the narrow coastal fringes. The population in these coastal areas is expected to increase to about 165 million by the year 2015. This population growth and development places many of the Nation's coastal areas under increasing pressure. Growth in coastal areas creates jobs, generates economic prosperity, adds new industries, enhances educational opportunities, and increases tax revenues. However, it also burdens local environments, threatening the very resources that draw people to the coast. For example, population pressures can degrade wildlife habitat, recreation areas, and water quality through increased solid waste, polluted runoff, and demands of industrial and residential uses of the coast.

As a national leader for coastal stewardship, NOS promotes a wide range of research activities to create the strong science foundation required to advance the sustainable use of our precious coastal systems. NOS contributes significantly to achieving three of NOAA's seven Strategic Plan Goals: Sustain Healthy Coasts, Promote Safe Navigation, and Build Sustainable Fisheries. NOS provides improvements in the quality, quantity, geographic distribution, and timeliness of ocean and coastal observations. Mapping, charting, geodetic, and oceanographic activities produce marine and coastal data to increase the efficiency and safety of marine commerce and support engineering and scientific efforts. NOS protects and restores coastal resources injured by releases of oil and other hazardous materials. NOS also manages marine sanctuaries and, in partnership with the coastal states, helps manage the Nation's valuable coastal zones and nationally significant estuarine

reserves. Understanding of the coastal environment is enhanced through coastal ocean activities which support science and resource management programs.

NOS continues to make organizational changes to strengthen coastal stewardship, enhance research support for NOAA coastal management, and build better linkages among NOAA's coastal programs. In FY 2000, the JASON Project was added to the NOS budget to strengthen coastal outreach and education. In FY 2001, the proposed transfer of the Great Lakes Environmental Research Laboratory (GLERL) from the Office of Oceanic and Atmospheric Research (OAR) into NOS will enable NOS to conduct important coastal research and form strong partnerships with governmental and non-governmental stewards to better link science with coastal management.

NOS's role as a leader in coastal stewardship supports many of the recommendations contained in the recently released report: "Turning to the Sea: America's Ocean Future" (America's Ocean Future). These recommendations help provide the framework for a comprehensive ocean agenda which will guide Federal efforts into the 21st Century. To meet the challenges posed in the report, NOS seeks increases under the Lands Legacy, America's Ocean Future, South Florida, and Clean Water Initiatives. These increases will help strengthen the understanding and protection of our valuable ocean resources and foster our Nation's economic competitiveness.

New increases are proposed as part of a new Lands Legacy discretionary spending category to provide dedicated and protected funding for the President's Lands Legacy Initiative. Under this initiative, an increase is requested to provide Coastal Zone Management grants to states to enable coastal states to better address polluted runoff and other serious and costly threats to coastal areas from rapidly increasing coastal populations. In addition, the establishment of a Coastal Impact Assistance Fund for states with existing oil and gas production will promote community-based, environmentally protective solutions to address impacts on coastal resources. Increases are also requested to enhance our ability to effectively manage the National Marine Sanctuaries, enhance habitat protection through the National Estuarine Research Reserve System, better protect and sustainably use critical coral reefs, and work with our State, tribal, local and private sector partners to improve protection of our oceans and coasts.

As part of the Clean Water Initiative, increases are proposed for Coastal Zone Management grants to support state and local efforts to address polluted runoff, harmful algal blooms, and other symptoms of a

degraded coastal ecosystem. Increases are also proposed for the Coastal Protection and Restoration Program (formerly the Coastal Resource Coordination Program) to conduct natural resource protection and restoration activities through remediation at hazardous waste sites that affect NOAA trust resources and for research on the ecology and oceanography of harmful algal blooms (HABs).

For FY 2001, NOAA requests a total of \$516.9 million for NOS. Within this amount is a total of \$11.0 million in the Procurement, Acquisition and Construction (PAC) account to support the National Marine Sanctuaries and National Estuarine Research Reserves. In the ORF account, NOS requests a total of \$405.9 million, an increase of \$133.1 million over the FY 2000 enacted level. The total for NOS also includes \$100.0 million for grants to existing oil and gas producing coastal states to be derived from a new account, the Coastal Impact Assistance Fund.

Detailed Program Increases by Sub-Activity

Operations, Research and Facilities (ORF)

Navigation Services: \$5.6 million

This subactivity funds a suite of navigation products and services that

help ensure the safety of marine transportation, while improving the economic efficiency and competitiveness of U.S. commerce. This suite includes traditional products and services, such as paper charts and tide predictions, as well as powerful new electronic navigation charts and real-time oceanographic systems. This subactivity also supports the National Spatial Reference System (NSRS), a highly accurate and accessible geographic positioning framework which underpins a wide array of defense, transportation, public works, earth science, mapping and charting, and other activities critical to the Nation's economic infrastructure. Included in this subactivity is funding for the NOAA/University of New Hampshire Joint Center for Hydrographic Excellence at the FY 2000 enacted level of \$2.6 million and \$18.0 million to reduce the hydrographic survey backlog. NOAA requests \$91.8 million in this subactivity for FY 2001, a net increase of \$5.6 million over the FY 2000 enacted amount, in support of the America's Ocean Future Initiative.

Mapping and Charting: \$3.5 million

Of the \$3.5 million increase under the Mapping and Charting line item, \$1.3 million is for data compilation and management activities,

conducted primarily through contracts, that are required to keep pace with the increased rate of hydrographic data collection. Newly acquired data is currently accumulating at a faster rate than can be quickly turned into new chart editions. The increase will continue work on NOAA's electronic chart database allowing the production of 30 additional highly accurate Electronic Navigation Charts (ENCs) for areas of the coastal United States and inland navigable rivers. This will bring the total number of ENCs created and maintained to 120 of the approximately 190 charts needed to cover the Nation's critical port areas. A complete suite of electronic charts with timely updates is a key recommendation in the America's Ocean Future report, as well as in the report to Congress, *An Assessment of the U.S. Marine Transportation System*.

Also included is an increase of \$1.5 million and one FTE under the Mapping and Charting line item is requested in order to provide a more accurate National shoreline. Presently, a full one-quarter of the National shoreline was mapped prior to 1970. Changes from development and coastal erosion constantly alter the coastline, yet at the present rate of progress, the entire U.S. shoreline will be surveyed on a 50-year cycle. The increase will enable NOAA to implement a five-year cycle, primarily through private sector contracts, for the most critical areas and improve the mapping cycle for the remaining areas. Increased emphasis on shoreline mapping is required to improve the accuracy of electronic charts and keep pace with an accelerated chart publication cycle. Resurvey cycles of 5 years for critical port areas and 10 years for other areas were identified as required to adequately maintain the National shoreline in the May 1999 Report to Congress on Shoreline Mapping Activities.

Geodesy: \$0.2 million

NOAA requests an increase of \$0.2 million for the Geodesy line item. Included in this request is an enhancement of \$0.6 million for activities required to improve and maintain the National Spatial Reference System (NSRS) focusing primarily on providing better access to accurate, consistent height data and support of differential Global Positioning System (DGPS) activities. Improved access to accurate NSRS information will provide many economic benefits with significant safety and economic benefits. This increase will improve the Nation's access to Continuously Operating Reference Stations (CORS) and improve the accuracy of the geoid model used for surveying.

Tide and Current Data: \$2.7 million

NOAA requests an increase of \$2.7 million under the Tide and Current Data line item. Included in this request is an enhancement of

\$2.8 million to fully develop and implement the comprehensive quality assurance capabilities and modernization efforts necessary to support the design, establishment and quality assurance of additional Physical Oceanographic Real-Time Systems (PORTS) through local cost shared partnerships. PORTS provide real-time oceanographic data critical to safe and efficient navigation, hazardous material spill response, coastal flood warnings, and other applications. New PORTS will be established through cost sharing partnerships requiring that installation and on-going local operation and maintenance costs be paid for by local partners or other sources. The funds will enable NOAA to maintain and modernize the underlying National Water Level Observation Network stations to ensure real-time capabilities; rigorously quality control PORTS data; and develop and test quality assurance processes for new sensors, information systems and communications. The deployment of real time systems such as PORTS, is a key recommendation in the America's Ocean Future report, as well as in the report to Congress, *An Assessment of the U.S. Marine Transportation System*.

Ocean Resources Conservation and Assessment: \$9.8 million

This subactivity supports ocean and coastal monitoring and assessment, responses to oil and hazardous materials spills, and directed research programs to provide comprehensive scientific information for decisions about the protection and sustainable use of coastal and ocean resources. These activities also help minimize damages to natural resources in the Nation's coastal areas, estuaries, and oceans, including the Great Lakes. Included in this subactivity is continued support for the Cooperative Institute for Coastal and Estuarine Environmental Technology, a joint NOAA-University of New Hampshire Institute, at \$3.0 million and the Coastal Services Center at \$13.8 million. NOAA requests a total of \$94.4 million, an increase of \$9.8 million from the FY 2000 enacted level, for this subactivity for FY 2000. Also included in the request is the transfer of 60 FTE and funding of \$6.1 million associated with the Great Lakes Environmental Research Laboratory (GLERL).

Ocean Assessment Program

The \$41.5 million requested for the Ocean Assessment Program (OAP) line supports an additional \$1.8 million to address increasing outbreaks of harmful algal blooms (HABs) that are causing environmental and economic damage to coastal resources around the country. HABs are common and increasingly frequent natural hazards in our coastal environments, causing severe impacts to water quality, coastal living resources, public safety, and coastal industries including fisheries, shellfisheries, and tourism related businesses. The estimated direct and indirect costs attributable to HABs exceed \$1 billion over the last few

decades. These funds will support states, universities, and communities to improve rapid monitoring, assessment and response to HAB outbreaks. Development of HAB action plans, and basic, vital actions such as targeted research, monitoring and assessment during an episode, fiscal and technical support to those affected by HABs are activities that will be part of this increase. These actions will be linked to the longer term Ecology and Oceanography of Harmful Algal Blooms (ECOHAB) efforts to improve understanding of these episodic HAB events to better manage emergency outbreaks and to prevent or control them in the future. This funding supports water quality recommendations in the report “Turning to the Sea: America’s Ocean Future” to implement the Administration’s Clean Water Action Plan and NOAA responsibilities under the Harmful Algal Bloom and Hypoxia Research and Control Act of 1998.

The request for the Ocean Assessment Program line item also supports an additional \$1.0 million to fund NOS’s portion of the Inter-agency South Florida Ecosystem Restoration Initiative. As the U.S. Army Corps of Engineers begins to implement major construction in the overall Everglades restoration effort, downstream coastal resources will be affected. These funds will allow NOS to continue implementing an integrated ecosystem monitoring program in South Florida, particularly in the important coastal marine areas encompassing Florida Bay and the Florida Keys National Marine Sanctuary. Working with state and local agencies and academic institutions, NOAA will build on its monitoring and research activities to determine the design of ecosystem restoration efforts and impacts on sensitive coastal resources such as the Florida Keys coral reefs. An enhanced South Florida ecosystem monitoring program directly supports collaborative efforts within the National Marine Fisheries Service to improve assessments, understanding, and predictions of changes to the South Florida Ecosystem associated with the Everglades restoration activities.

Response and Restoration: \$4.9 million

Within the Response and Restoration line item is \$0.5 million requested for the Coastal Protection and Restoration Program (formerly the Coastal Resource Coordination Program) to conduct natural resource protection and restoration activities through remediation at hazardous waste sites that affect NOAA trust resources throughout the Nation. Funds will allow serious environmental threats to be addressed more quickly and effectively, expand the number of sites being worked on, expedite restoration and cleanup of coastal natural resources without costly litigation, share NOAA’s technical expertise, and create cost effective approaches for remediating waste sites as part of the Administration’s Clean Water Action Plan.

Also within the Response and Restoration line item is an increase of two FTE and \$4.0 million in FY 2001 to reverse the decline of coral reefs as part of the Lands Legacy Initiative. Also included in the Response and Restoration line item are two additional FTE related to the full year impact of funding received in FY 2000. In FY 2000, NOAA began to strengthen the Nation's ability to conserve coral reefs through enhanced mapping, monitoring and management efforts. Coral reefs are complex ecosystems, however, and more actions must be taken to advance our understanding and protection of these threatened resources. With additional funds in FY 2001, NOAA will strengthen its capabilities and provide additional assistance to local communities to address reef decline. The FY 2001 increase will directly support NOAA's role in fulfilling the Coral Reef Action Plan of the U.S. Coral Reef Task Force. NOAA will support research and monitoring to improve understanding of coral reef health, diseases and recovery. NOAA will also focus on preventing reef-damage from marine transportation and marine debris, a critical step to protect U.S. coral reefs. Without this additional funding, protection of the Nation's valuable coral reefs will be stalled and local governments will not have the resources they need to adequately protect and sustainably use their reef resources. Increased monitoring, protection and sustainable use of coral reefs through implementation of priority actions of the U.S. Coral Reef Task Force is a key recommendation in "Turning to the Sea: America's Ocean Future."

Coastal Ocean Program: \$1.1 million

NOAA requests an increase of \$1.1 million for programs in the Coastal Ocean Program. The FY 2001 increases will help implement the recommendations made in the report "Turning to the Sea: America's Ocean Future" for improving water quality by implementing the Administration's Clean Water Action Plan. These funds will also enable NOAA to continue its hypoxia and harmful algal bloom research, monitoring, and assessment responsibilities as established by the Harmful Algal Bloom and Hypoxia Research and Control Act of 1988.

- *Hypoxia (\$0.4 million)*—An increase of \$0.4 million will be used to support ecological research, monitoring, and assessment of hypoxic conditions in the northern Gulf of Mexico, providing the framework for an integrated decision system and serving as the basis for development and delivery of science-based tools to better manage the problems.
- *ECOHAB (\$0.6 million)*—An increase of \$0.6 million is requested to support research on the ecology and oceanography of harmful algal blooms (HABs), and to develop models to predict their development, persistence, and impacts in U.S. coastal waters as part of the

interagency ECOHAB program. The results will serve as the foundation for developing control, prevention, and mitigation strategies for dealing with HAB impacts on coastal resources.

Ocean and Coastal Management: \$115.9 million

This subactivity supports the coastal states and territories in implementing Federal partnership programs that promote sustainable use of the Nation's coastal zone, and designating and managing unique and nationally significant marine and estuarine areas. NOS requests a total of \$202.5 million, an increase of \$115.9 million over the FY 2000 enacted amount.

CZM Administration: \$6.1 million

Included in the Ocean and Coastal Management subactivity is an increase of 11 FTE and \$6.1 million. The \$6.1 million is comprised of \$4.0 million obligated in the CZM Fund in FY 2000 and an additional \$2.1 million in FY 2001. The FY 2001 President's Request includes the transfer of funding and FTE associated with the CZM Fund. These funds are requested to support NOAA's National program administration responsibilities under the Coastal Zone Management Act (CZMA) which continue to grow with the addition of new state coastal management programs and National Estuarine Research Reserves (NERRs). By the end of FY 2001, NOAA expects to approve the 34th state coastal zone program and two new NERRS sites (for a total of 27). NOAA will also assist state coastal management programs as they accelerate their efforts to effectively reduce the impact of runoff pollution on coastal waters. This increase is vital if NOAA is to provide adequate levels of support to its state partners. NOAA's ability to provide basic on-site support to states and technical assistance to states and communities to reduce threats to coastal habitats, vulnerability from coastal hazards, and revitalization of waterfronts for industry and recreation will be restored. NOAA will mediate disputes between states, Federal agencies, and others, enable better dissemination of information from NERRS research, monitoring and education, and support facilities construction at Reserves and Sanctuaries. Adequate technical support to manage and protect vital coastal habitat through the National estuarine and coastal management programs is essential to NOAA's ability to fulfill its responsibilities as a coastal steward and manage efforts under the Lands Legacy Initiative.

CZM Grants: \$92.7 million

In addition, an increase of \$92.7 million is requested to expand direct support to coastal states through coastal zone management grants for implementing and improving their approved coastal management programs, as part of the Lands Legacy Initiative. Coastal states, which

have been constrained from fully implementing their coastal zone management programs due to lack of funding, will be able to better address the impacts of coastal storms and flooding, declining water quality, shortage of public access to the shoreline, loss of wetlands, deteriorating waterfronts and harbors, and the challenge of balancing economic and environmental demands in increasingly competitive ports. The results will be improved habitat protection and restoration, more public access to the coast, urban waterfront and coastal community revitalization, and better management of special areas that are of concern at the local, state, and National levels for the benefit of the Nation's economy and environment.

Of this amount for CZM grants, NOAA recommends that \$25.0 million be used to support state and local entities to reduce polluted runoff, the leading cause of degradation in coastal waters. Coastal waters continue to be heavily impacted by the polluted runoff with the consequences of the pollution causing both environmental and economic losses to tourism, fisheries and others who depend on coastal resources for their livelihood. Many coastal states have CZM-approved plans in place to reduce polluted runoff and its impacts but need the resources to begin the necessary actions. Coastal waters will be cleaner and the economic losses from polluted runoff impacts, such as hypoxia, harmful algal blooms, contaminated shellfish beds, and closed beaches will be reduced.

NOAA also requests that \$30.0 million of the CZM grant increase be focused on providing Federal and State support for community-based, environmentally protective solutions to the effects and pressures on coastal resources resulting from increased development and sprawl. Coastal populations and development continue to grow at a faster rate than inland areas and the very resources that draw people to the coast are becoming degraded as a result of this pressure. Funds for communities will be provided through the state CZM programs to: revitalize previously developed areas, direct new development away from environmentally sensitive areas, reduce the impacts of hazards, emphasize water dependent uses, and work with ports and urban areas to improve urban waterfronts. Communities and coastal states can look forward having the resources needed to revitalize coastal communities, develop and implement sustainable growth strategies, reduce the damage from coastal storms, and restore and protect important coastal resources.

National Estuarine Research Reserves: \$6.0 million

An increase of \$6.0 million is requested for the National Estuarine Research Reserve System (NERRS) to adequately fund all 27 reserves (25 designated in FY 2000 and two to be designated in FY 2001) and

help make them fully functional in accordance with program guidelines and a 1997 Inspector General report. NOAA, with its State partners, will provide National leadership in demonstrating how estuaries can be managed for the benefit of future generations. This includes having core staff at every site, updating the ecological profiles of each reserve, and implementing critical phases of the National System-wide monitoring program. These base capabilities will provide the foundation for improving the management and understanding of key estuarine areas. This knowledge can be applied in other estuaries that sustain valuable habitat for fish and other marine species, serve to improve water quality and provide protection from storm damage.

In addition, the funding increase will be used to enhance the transfer of the improved knowledge and understanding of estuaries gained through the Reserve system by: supporting Graduate Fellowships, conducting professional technical training for coastal decisionmakers, and demonstrating innovative management techniques—at all 27 Reserves. Improved techniques, monitoring, and research for the long-term success of restoration will be undertaken in these fragile estuaries. The activities proposed by NERRS in FY 2001 support many of the recommendations in the America's Ocean Future report concerning estuaries, particularly improving estuarine monitoring to facilitate adaptive management and increasing public understanding of estuarine health through improved education and outreach. Funding of \$8.0 million is requested in the PAC account to complement these activities by providing resources for research, education, and visitor facilities at the various reserve sites.

Nonpoint Pollution Control: \$2.0 million

NOAA requests an increase of \$2.0 million in the Nonpoint Pollution Control line item to accelerate completion and support implementation of State Coastal Nonpoint Pollution Control programs (CNPCP) that address the impact of polluted runoff on coastal waters (through the Nonpoint Pollution Control Program, Section 6217). Since polluted runoff is the leading cause of degradation in coastal waters, coastal states must be able to develop plans to effectively deal with the pollution and its consequences. This is the only National polluted runoff program that deals exclusively with coastal waters. Of the 33 coastal state and territories that are required to develop programs, one state has received full approval of its CNPCP and 28 others are making progress in addressing conditions in their approved programs. Three states that recently joined the coastal management program (Texas, Georgia and Ohio) have submitted a plan for Federal approval and the newest CZM state, Minnesota, is in initial program development. This increase supports the Administration's Clean Water Initiative and

would implement recommendations of the Clean Water Action Plan. It also supports the recommendation included in the America's Ocean Future report to effectively address polluted runoff into coastal waters.

Marine Sanctuary Program: \$9.1 million

NOAA requests an increase of 12 FTE and \$9.1 million under the Marine Sanctuary line item to continue to build upon the baseline operational improvements made at the 12 National Marine Sanctuaries in FY 2000. Also included in the Marine Sanctuary line item are five additional FTE related to the full year impact of resources received in FY 2000. Funding increases in FY 2000 were instrumental in reaching baseline operational levels at some sanctuaries as well as improving enforcement; however, increased resources are needed to continue this effort at all 12 sites. This increase will continue improvements to baseline operations and also provide for upgraded management capability. Education, community outreach, research and monitoring, cultural resource management, and response to resource damage will all be enhanced by additional resources. Enhancing the operating and technical capacity of the 12 National Marine Sanctuaries within the National Marine Sanctuary Program (NMSP) as part of the Lands Legacy Initiative will result in better protection of these special places that include coral reefs, endangered marine mammals, sensitive habitats and cultural resources.

Increased funding will allow core staff to be hired, including education and research coordinators, and will provide the resources needed to initiate revision of out-of-date management plans, which is vital to respond to needed changes in regulations, boundaries, and zoning. System-wide monitoring will be expanded – allowing the sanctuaries to better understand changes in the health of the sanctuary ecosystems. Similarly, initiating comprehensive site characterizations of the Sanctuary resources will help managers preserve these valuable resources. Part of the National Marine Sanctuaries increase will be used to support efforts to explore the last frontier—previously unexplored deep ocean areas—through continued work with the Sustainable Seas Expeditions. Funds will also be used for a Nationwide study to explore and better understand the socioeconomic importance of marine sanctuaries and other ocean resources to the Nation.

In addition, a comprehensive education and outreach plan will be developed and implemented and will include the creation of visitor center exhibits and improved outreach so that the American public can more fully appreciate and understand these valuable resources. Ex-

panded enforcement will improve compliance with regulations and response to threats and damages to sanctuary resources, including protected species found within sanctuary boundaries.

Acquisition of Data: \$1.8 million

This subactivity supports the collection of hydrographic and coastal assessment data through days-at-sea for programs of significant National interest. NOAA requests \$17.2 million, an increase of \$1.8 million over the FY 2000 enacted.

This increase will support an additional 140 days-at-sea of University-National Oceanographic Laboratory System (UNOLS) ship time needed to support ongoing and new ECOHAB program and Global Ocean Ecosystem Dynamics (GLOBEC) projects. Through ECOHAB, NOAA seeks to better understand and predict the impacts of multiple stressors, such as hypoxia and harmful algal blooms (including pfiesteria) on coastal estuarine habitats. GLOBEC projects seek to improve knowledge through large, multi-disciplinary, multi-year oceanographic research studies in the Northwest Atlantic and Northeast Pacific looking at how changes in fish populations are affected by changing ocean conditions. This request implements a key recommendation of the interagency report, "Turning to the Sea: America's Ocean Future," to increase research to understand the ongoing changes in ocean chemistry. Base operations in this account fund days at sea on five NOAA vessels to support hydrographic survey and coastal science efforts.

Procurement, Acquisition and Construction (PAC)

As part of the Lands Legacy Initiative to protect and restore marine resources, NOAA requests a total of \$11.0 million in the PAC account for the National Estuarine Research Reserve System and the National Marine Sanctuaries. The \$8.0 million total requested for the NERRS will provide additional protection of key estuarine habitats (i.e., wetlands and other habitat slated for development; threatened and endangered species habitat; areas for habitat restoration; etc.) through state land acquisition and construction of facilities for existing and new reserves. Improved or expanded NERRS facilities will provide needed visitor, research and education centers and interpretive exhibits for visitor access and resource protection. Continued funding of \$3.0

million will allow the National Marine Sanctuary Program to complete a comprehensive facilities plan to prioritize needs and opportunities at individual sites in order to construct visitor centers and conduct collaborative education projects.

Other Accounts

Coastal Impact Assistance Fund (CIAF): \$100.0 million

NOAA requests a new account, the Coastal Impact Assistance Fund, that will provide \$100.0 million to enable existing oil and gas producing states to better address the impacts of coastal development and resource use. States eligible to receive grants under the Coastal Impact Assistance Fund are Alabama, Alaska, California, Florida, Louisiana, Mississippi, and Texas. Offshore oil and gas development places additional demands on coastal ports and communities for direct infrastructure support as well as additional community development from the subsequent economic growth. The new fund will provide grants to coastal states and territories to implement activities consistent with Coastal Zone Management Plans and that increase protection and sustainable management of coastal resources. Funding increases will be used by states to help support multiple uses of our Nation's coastal regions, including tourism and recreation, fisheries, vessel traffic, and marine protected areas. The states will also be able to use the funding for coastal environmental mitigation, including the onshore impacts from offshore mineral development and public service improvements. States will be able to develop and implement better methods and technology to minimize risks to coastal and ocean environments from coastal development, including the development associated with oil and gas activities. This addresses one of the strategic goals from the 1995 National Energy Policy Plan—Sustainable Energy Strategy—which calls for ways to reduce the adverse environmental impacts associated with energy production delivery and use, as well as the recommendations found in the report “Turning to the Sea: America’s Ocean Future.” Benefits will include a healthier coastal environment and economically sustainable use of the coastal zone for current energy production activities as well as the other multiple uses which make the coast important ecologically and economically.

Coastal Zone Management Fund (CZMF) [Offset to ORF]

Coastal Zone Management Fund was established by the Coastal Zone Reauthorization Amendments of 1990. The fund consists of loan repayments from the former Coastal Energy Impact Program. The proceeds are to be used to offset the ORF account for the costs implementing the Coastal Zone Management Act of 1972, as amended. As part of this transfer, 49 FTE will be moved to the CZM Administration

line in ORF. Due to declining loan repayments into the fund, this amount is \$0.8 million less than in FY 2000.

Damage Assessment and Restoration Revolving Fund (DARRF)

The Damage Assessment and Restoration Revolving Fund was established under Section 1012(a) of the Oil Pollution Act of 1990, to facilitate oil and hazardous material release response, damage assessment, and natural resource restoration activities of NOAA. The DARRF provides for the deposit of sums transferred by any party or governmental entity and, to retain for future use, funds that are recovered through settlement or awarded by court or recovered by NOAA through negotiated settlement or reimbursement. In FY 2000, receipts from settlements are expected to be \$1.5 million.

Detailed information regarding adjustments-to-base, program reductions and terminations are shown in Section 4: Supplemental Information.

National Marine Fisheries Service

Total Request: \$656,961,000

ORF: \$455,370,000

PAC: \$ 21,900,000

FCF: \$951,000

FFOF: \$191,000

Fisheries Finance Program: \$6,628,000

Promote & Develop: \$1,921,000

Pacific Coastal Salmon: \$100,000,000

Pacific Salmon Treaty: \$60,000,000

Fisheries Assistance Fund: \$10,000,000

The National Marine Fisheries Service (NMFS) is responsible for the management, conservation, and protection of living marine resources within the United States' Exclusive Economic Zone. The Agency also plays a support and advisory role in the management of living marine resources in coastal areas under state jurisdiction, provides scientific and policy leadership in the international arena and implements internationally agreed-upon conservation and management measures. Through science-based conservation and management and promotion of the health of coastal and marine ecosystems, benefits to the Nation from the sustainable use of living marine resources are maximized. Authorities are derived primarily from the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), the Sustainable Fisheries Act (SFA), the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), and various other statutes that confer a mandate to reduce and mitigate degradation and loss of living marine resources habitat. Other legislative acts provide authorities for enforcement, seafood safety, habitat restoration and cooperative efforts with states, interstate commissions, and other countries.

The FY 2001 Budget Request includes increases required to achieve NOAA's strategic plan goals to Build Sustainable Fisheries, Recover Protected Species, and Sustain Healthy Coasts. Consistent with the SFA, NOAA will focus on managing and rebuilding our Nation's fishery resources by improving and expanding stock assessment and prediction, reducing bycatch, conserving essential fisheries habitat, and reducing fishing pressure and overcapitalization. Improved and expanded economic data collection is needed to support fisheries management decisions and the SFA's national standard 8. In total, fully implementing the SFA's mandates will entail a significant investment in

additional resources for new management programs and additional data and analyses.

NOAA will work under the ESA and MMPA to prevent the extinction of endangered and threatened marine species. The workload associated with the management of West Coast salmon to meet the objectives of the ESA continues to escalate. NOAA will continue using the flexibility provided by the ESA to further develop innovative partnerships with the states of Washington, Oregon, California, and Maine to promote the recovery of listed and at-risk salmon and steel-head species.

For FY 2001, the National Marine Fisheries Service requests a total of \$657.0 million, \$455.4 in the ORF account, \$21.9 million in the PAC account, and \$179.7 million in other fisheries related accounts. The ORF total reflects an increase of 57 FTE and \$38.8 million from the FY 2000 enacted appropriation. Within the requested funding, NOAA will work to eliminate and prevent overfishing and overcapitalization; attain economic sustainability in fishing communities; and develop environmentally and economically sound marine aquaculture. The FY 2001 request will also support initiatives to apply ecosystem approaches to species conservation and reduce the need to list species as threatened or endangered; implement marine mammal take reduction plans; and respond to the extinction crisis faced by several highly endangered marine species.

Detailed Program Increases by Sub-Activity

Operations, Research, and Facilities (ORF)

Information Collection and Analysis

The goal of this budget subactivity is to provide accurate and timely analyses of the biological, ecological, economic, and social aspects of the Nation's use of its living marine resources in support of the Administration strategic planning goal to Build Sustainable Fisheries, Recover Protected Species, and Sustain Healthy Coasts. Also included are activities to determine the impacts of the incidental taking of marine mammals and endangered species; to develop forecast models for marine resource populations, ecosystems, and fishery systems; to improve the quality and timeliness of information on living marine resources, their habitats and their use.

Resource Information

The NOAA budget includes a request for a total of \$102.0 million for the Resource Information base line item. This level will support

increases including \$1.0 million for West Coast groundfish research bringing the total funding requested to \$3.3 million, \$2.5 million for the Fisheries Oceanography program to better enable NMFS to predict long-term environmental factors that affect fish stocks to improve stock predictions; four FTE and \$2.7 million to expand annual stock assessment and provide for additional data collections to improve NMFS ability to make accurate, timely stock predictions; \$1.0 million to promote environmentally sound aquaculture activities by supporting the development and implementation of a code of conduct for responsible aquaculture in the Exclusive Economic Zone, and \$0.6 million to expand activities under the Administration's South Florida Ecosystem Initiative providing funds for research on contaminant inflow's impact on fisheries. As the U.S. Army Corps of Engineers begins to implement major construction in the overall Everglades restoration effort, downstream coastal financial resources will be affected.

- **Pacific Salmon Treaty Program—\$10.6 million:** This request includes a \$3.2 million increase for base programs to implement the provisions of the revised Pacific Salmon Treaty. Funding for the chinook salmon agreement is continued in FY 2001. Additional Pacific Salmon Treaty funding is requested in the Pacific Coastal Salmon Recovery account.

Fishery Industry Information

NOAA requests an increase of \$5.9 million within the fish statistics line item. This request includes: \$1.0 million for implementation of National Standard 8 of the Magnuson-Stevens Act to provide the social and economic data needed to determine the potential effects of management actions on fishing communities; \$2.5 million to develop a core economic data collection capacity within NMFS to determine economic consequences of various activities on participants in a fishery, including improved regulatory flexibility analyses; and \$2.0 million to begin the implementation of a National Fisheries Information System in cooperation with the fishing industry, states, and Interstate Fisheries Commissions as outlined under section 401 of the Magnuson-Stevens Act.

Information Analysis and Dissemination: \$0.6 million

The Information Analysis and Dissemination line item includes a increase of \$0.6 million to bolster the base program. These funds are necessary to analyze data through computer models used to forecast changes in resource abundance required for long-range management.

Conservation and Management Operations: \$60.2 million

This budget subactivity provides for the development and imple-

mentation of Fishery Management Plans (FMPs) under the Magnuson-Stevens Fishery Conservation and Management Act and the Sustainable Fisheries Act, and for the management of protected species under the Endangered Species Act and Marine Mammal Protection Act. It also provides for the enforcement of laws and regulations under these and other statutes as well as for the protection of habitats. Funding for the eight Regional Fishery Management Councils is included in this subactivity, as is funding for Mitchell Act hatcheries along the Columbia River in the Pacific Northwest.

Fisheries Management Programs: \$37.3 million

NOAA requests a increase of 3 FTE and \$1.9 million for the Fisheries Management Programs base line item. This request includes \$0.8 million for improving and refining Essential Fish Habitat designations and 3 FTE and \$1.0 million for efforts to identify and reduce the impacts of fishing on Essential Fish Habitat. The Fisheries Management Program enhancements also includes \$1.3 million to support establishment of the National Observer Program and \$2.5 million to continue the implementation of management and monitoring activities associated with the American Fisheries Act. The request includes \$4.3 million to support NMFS facilities and operations, including, \$0.8 million for the new Santa Cruz, California Laboratory, \$1.5 million for the Kodiak, Alaska Laboratory, and \$2.1 million for the Sandy Hook, New Jersey Laboratory.

- **Coral Reef** (\$5.0 million): NOAA requests a increase of 10 FTE and \$5.0 million in new funds within the Fisheries Management Programs to implement priority recommendations of the U.S. Coral Reef Task Force to address the impacts of fishing on coral reefs. The \$5.0 million increase is proposed as part of a new Lands Legacy discretionary spending category to provide dedicated and protected funding for the President's Lands Legacy Initiative. Coral reefs are also supported with a \$1.0 million increase requested in the Protected Species Management Program line item. The coral reef request includes \$2.0 million to develop, establish, monitor, and enforce coral reef fishery reserves. This new funding will allow NMFS and the Regional Fishery Management Councils to begin using fishery reserves to create replenishment zones by protecting spawning areas and other essential fish habitats in coral reefs. The coral request also includes \$1.5 million to assess the impacts of fishing, by-catch and fishing gear on coral reefs, and implement actions to reduce these effects through Regional Fishery Management Councils. The remaining \$2.5 million, including \$1.0 million in the Protected Species Management line, will be used to support the assessment and reduction of fishery impacts on coral reefs in the

U.S. Pacific. In FY 2001 this effort will include removal of nets, gear and other marine debris from reefs in the Northwest Hawaiian Islands (NWHI). This project will be an important part of the National Coral Reef Monitoring Program for the State of Hawaii and NWHI.

- **Fishery Habitat Restoration** (\$2.0 million): An increase of \$2.0 million for Fishery Habitat Restoration to total program funding of \$4.0 million will enable NOAA to increase the geographic scope and the rate at which restoration efforts are undertaken with communities in partnership with public and private interests. These funds will allow NOAA to address the full range of habitats vital to NOAA's trust resources including wetlands, salt marshes, seagrass beds, mangroves, anadromous fish spawning areas, and coral reefs. In many cases these funds will be combined with non-Government funding to dramatically increase the amount of area restored.
- **Northeast Fisheries Management** (\$6.1 million): NOAA requests a total of \$12.0 million for Northeast fisheries management, an increase of \$6.1 million over the FY 2000 enacted appropriation. This request will enable NMFS to continue rebuilding overfished and overcapitalized Northeast fisheries including groundfish and scallops. Funds will be used to implement rebuilding plans developed for such fisheries as required by the Magnuson-Stevens Act and carry out programs to address the social and economic effects of these plans on fishing communities, and allow for additional cooperative research and observer programs.
- **Norton Sound Disaster and Cooperative Research and Management in the Northeast** (\$20.0 million): The NOAA budget request includes \$20.0 million to be transferred from the U.S. Department of Agriculture for disaster assistance in response to fisheries failures in the Northeast multispecies fisheries and the Norton Sound region of Alaska.

Protected Species Management: \$16.6 million

NOAA requests a increase of 1 FTE and \$2.9 million for Protected Species Management base line item. This includes 1 FTE and \$1.0 million for coral reefs discussed above. The NOAA request also includes an \$0.2 million to monitor marine biodiversity to maintain healthier marine species and ecosystems through evaluating the threats and their impacts on habitats and biodiversity.

- **Endangered Species Act Recovery Planning** (\$12.3 million): Under Endangered Species Act Recovery Planning line, NOAA

requests an increase of 49 FTE and \$12.3 million. This level of funding continues current base programs and includes \$0.9 million for Steller Sea Lion Research and \$4.1 million base programs for Atlantic Right Whale Recovery programs as directed in the FY 2000 appropriation. An increase of 2 FTE and \$0.5 million is requested for marine turtle activities to expand research and conservation measures for the Pacific Leatherback Turtles and Northern Atlantic Loggerhead Turtles. Pro-active efforts are needed to reverse these observed decline to ensure these populations ultimately recover. An increase of \$0.1 million is requested for Marine Mammal Recovery programs addressing new research and management initiatives to reduce the take of the Cook Inlet Beluga Whales. Other species conservation and recovery activities includes an increase of \$1.6 million for the following: 3 FTE and \$0.6 million for Endangered Species Act candidates conservation, 1 FTE and \$0.1 million to protect marine species through the Convention on International Trade in Endangered Species (CITIES), \$0.2 million for Hawaiian monk seal recovery, \$0.3 for noise impacts research, \$0.2 to address emerging threats to marine animal health, and \$0.3 million to reduce marine mammal and fishery interactions. Also included in the Endangered Species Act Recovery Planning line is an increase of 41 FTE and \$9.0 million for west coast salmon recovery actions. This funding will be used for habitat assessment, population dynamics, risk assessment, and risk management. An increase of 2 FTE and \$1.0 million is needed to aid the recovery of Atlantic Salmon Stocks and to further establish and maintain an active research and management presence in Maine.

- **Observers/Training** (\$2.1 million): An net increase of \$2.1 million is requested within the observers/training line. This request includes a \$2.3 million enhancement for the West Coast Observer Program. This program will allow substantial additional observer days, and will allow additional training of existing observers to better address critical areas, such as bycatch and total mortality.

Habitat Conservation: \$1.9 million

NOAA requests an increase of 9 FTE and \$1.9 million for the Habitat Conservation line item to provide the NOAA Restoration Center with the resources necessary to restore fish habitat and other living and nonliving natural resources injured by human activities. The Restoration Center is an essential component of NOAA's Damage Assessment and Restoration Program (DARP) fulfilling the Secretary of Commerce's responsibilities as a natural resource trustee under the Oil Pollution Act, the National Marine Sanctuary Act and the Comprehensive Environmental Response, Compensation and Liability Act

(Superfund). With these additional funds, the NOAA Restoration Center will be able to support the increasing demand by state, industry and Federal partners, for restoration planning for coastal resources, injured by hazardous material releases and rapid implementation of restoration recoveries from responsible parties. While Natural Resource Damage Assessment settlements cover many case-specific procedural and project restoration costs, however, many administrative, developmental and logistical costs cannot be recovered and require additional funding.

Enforcement and Surveillance: \$4.5 million

A increase of 5 FTE and \$4.5 million is requested for Enforcement and Surveillance activities. This increase includes the following: 5 FTE and \$1.3 million needed to expand current vessel monitoring programs, \$0.2 million needed to provide additional enforcement activities associated with salmon recovery efforts, and \$2.5 million to establish cooperative enforcement programs between NMFS and the coastal states.

State and Industry Assistance Programs

This budget subactivity provides for product quality and safety research, grants to states under the Anadromous and Interjurisdictional Fisheries Acts, and funding for the three Interstate Fisheries Commissions and the Atlantic Coastal Fisheries Act. NMFS requests a reduction of \$4.9 million for this subactivity, reflecting the transfer of Product Quality and Safety to the Fisheries Finance Program Account. NOAA also requests a \$0.6 million increase to administer the Capital Construction Fund, a tax-deferred program for fishermen to accumulate capital for fishing vessel projects.

Acquisition of Data

This subactivity provides vessel support to conduct sustained fisheries and marine mammal scientific and survey operations in various marine environments. NOAA is requesting continued support for this subactivity.

Mandatory Pay and Inflationary Costs

NOAA requests an increase of \$7.2 million to fund adjustments to base for NMFS base programs. This increase will fund the FY 2001 federal pay raise of 3.7 percent and annualize the FY 2000 pay raise of 4.8 percent. The increase will also provide inflationary increases for certain non-labor activities including service contracts and facility rent charges.

Procurement Acquisition and Construction Account (PAC)

Construction: \$4.9 million

An increase \$0.3 million is requested over the \$0.7 million provided in FY 2000 to continue the planning and design of the Juneau Laboratory at Lena Point. The FY 2001 President's request includes \$20.0 million in FY 2002 and \$15.0 million in FY 2003 for construction of the Juneau Laboratory. The remaining \$4.6 million is requested to begin the La Jolla project. The La Jolla project includes construction of a retaining wall, horizontal drains, and a pioneer access road along the face of the bluff, and the installation of rock revetment at the base of the bluff. This project will prevent a potential catastrophic loss of the facility from either natural coastal erosion or an earthquake. The La Jolla project was initiated in response to failures to the adjacent bluffs in February 1997 and more recently to a neighboring bluff in February 1999.

Fleet Replacement: \$16.3 million

This activity provides funding for the construction or refurbishment of Fisheries vessels. The FY 2001 request is \$8.3 million in base funding to continue construction of a new acoustically quiet Fisheries Research Vessel that is essential for conducting the stock assessment surveys necessary to monitor species' abundance, recruitment, age composition, and responses to ecological changes and fisheries pressure to build sustainable fisheries. The collection of fisheries and marine mammal information at-sea is essential to the mission and to the development of sensible regulation governing commercial and recreational fishing activities. The FY 2001 President's request includes \$53.3 million each year for FY 2002, FY 2003, and FY 2004 for the construction of the remaining three fisheries research vessels.

An increase of \$8.0 million is also requested to reactivate, convert, and upgrade the NOAA vessel *Adventurous* to support fisheries research activities. The *Adventurous* is a modern T-AGOS class vessel acquired from the Navy and is currently inactive. The *Adventurous* can be converted to meet the marine mammal survey and some high priority fisheries data collection requirements. Dependable platforms are essential for conducting the stock assessment surveys necessary to monitor species abundance, recruitment, age composition and their responses to ecological changes and fisheries pressure. The collection of fisheries and marine mammal information at-sea is essential to this

mission and to the development of sensible regulations governing commercial and recreational fishing activities. The *Adventurous* will replace the *Townsend Cromwell* which is 35 years old, been maintained beyond its service life, and is in urgent need of replacement.

Fishermen's Contingency Fund (FCF)

Title IV of the Outer Continental Shelf Lands Act Amendments of September 18, 1978, (P.L. 95-372, Section 402) as amended, established the Fisherman's Contingency Fund. This Fund provides compensation to domestic fishermen for the damage or loss of fishing gear, and resulting economic loss due to obstructions related to oil and gas exploration, development, or production in areas of the Outer Continental Shelf.

The Fund is supported by assessments on holders of leases, explorations, permits, easements, and rights of way in areas of the Outer Continental Shelf. For FY 2001, an appropriation of \$0.95 million is requested for claims and administrative expenses. This amount is equal to the FY 2000 appropriation.

Foreign Fishing Observer Fund (FFOF)

The Foreign Fishing Observer Fund provides observer coverage of foreign fishing activities within the 200-mile Exclusive Economic Zone (EEZ). The Fund is supported by fees charged to foreign fishermen for the cost of placing an observer aboard their vessel while operating within the EEZ. Beginning in FY 1985, foreign fishermen were also permitted to contract directly with NMFS approved observer contractors to obtain observers (the Supplemental Observer Program). The FY 2001 budget requests \$0.19 million, equal to the FY 2000 level. Appropriated funds plus direct contracting under the Supplemental Observer Program will provide 100 percent observer coverage.

Fisheries Finance, Program Account

Under the authority of the Merchant Marine Act of 1936 and the provisions of the Federal Credit Reform Act of 1990, the Federal Ship Financing Fund became a liquidating account for loan guarantees made prior to FY 1992. Loan guarantees made on or after October 1, 1991, were made under the Fishing Vessel Obligation Guarantee (FVOG) appropriation. The re-authorization of the Magnuson-Stevens Fishery Conservation and Management Act in September 1996 changed the program to direct loans, versus loan. The loans awarded under the base Fisheries Finance Program can be used to provide long-term fisheries loans for vessels and shoreside facilities (including aquaculture facilities) and for industry-funded capacity reduction programs.

The FY 2001 President's Budget requests a net increase of \$6.3 million for the Fisheries Finance Program account. Included in this amount is a \$1.9 million and 24 FTE increase to cover the administrative expenses of the Federal Ship Financing Fund. An increase of \$0.5 million over the FY 2000 enacted appropriation is requested for the traditional direct loans for vessels, shoreside facilities, and aquaculture. At a 1% FCRA subsidy rate this request provides a loan authority of \$75.0 million for traditional direct loans. The request also includes new loan programs to support sustainable fisheries. NOAA proposes \$2.0 million in subsidy costs for industry funded buyback loans. With a Federal Credit Reform Act (FCRA) subsidy rate of 1%, this request would provide \$200 million in loan authority to help reduce fishing capacity. The budget request includes \$1.0 million in subsidy costs for offshore mariculture and land based closed system aquaculture facility loans. The loans would have a five percent FCRA subsidy rate providing approximately \$20.0 million in loan authority to encourage alternatives to traditional capture fishing and to remove pressure on wildstocks. NOAA's budget request also includes \$1.0 million in subsidy costs for Individual Fishery Quota loans. At a 5% FCRA subsidy rate, this request would provide approximately \$19.0 million in loan authority.

Promote and Develop Fishery Products & Research Pertaining to American Fisheries (P&D)

The American Fisheries Promotion Act (AFPA) of 1980 authorized a grants program for fisheries research and development projects and a National Fisheries Research and Development Program to be carried out with Saltonstall-Kennedy (S-K) funds. S-K funds are derived from duties on imported fisheries products. An amount equal to 30 percent of these duties is being transferred to the Department of Commerce from the Department of Agriculture. The FY 2001 request estimates this transfer at \$69.9 million. Of this amount, \$1.9 million will be used for the S-K grants program to develop a healthy fishery based industry (including costs of program administration). The remainder of the transfer (\$68.0 million) will be used to offset the Operations, Research, and Facilities (ORF) account. The duties transferred to this account are calculated on a calendar year basis and, if necessary, will be revised after the submission of the President's request.

Fisheries Assistance Fund (FAF)

This account proposes \$10.0 million to fund the Fisheries Assistance Fund to address disasters occurring in a sustainable fishery, or overfishing or overcapitalization in fisheries that are not sustainable. The funds could be used by the Secretary of Commerce to address needs for assistance as they occur. These funds could be administered

by NOAA through Section 312 of the Magnuson-Steven Act, or transferred via the Economy Act to other Commerce Department bureaus with appropriate assistance authorities. This account would allow NOAA to provide more flexible, uniform, and timely assistance. The existence of a dedicated to disaster assistance would encourage inter-agency coordination to provide the most appropriate assistance for a given situation. It would also enable NOAA to work more effectively with the requesting state or community to determine what specific activities were most needed or most feasible, and their associated costs. Types of assistance carried out under the fund may include vessel or permit buyouts, cooperative research and management programs and job retraining programs.

Pacific Coastal Salmon Recovery Program

This account includes an increase of \$42.0 million is to enhance Pacific Coastal Salmon Recovery, as part of the Lands Legacy Initiative, for the purpose of helping share the costs of state, tribal and local conservation initiatives. Total funding of \$100 million for this program will bolsters existing State capabilities to assist in the conservation of Pacific salmon runs, some of which are at risk of extinction in the states of California, Oregon, Washington, and Alaska. Funds provided to these states will have a 25 percent match. Funds provided to coastal tribes do not require matching dollars. Up to ten percent of the Fund will be reserved for tribes. This proposal responds to current and proposed listings of coastal salmon and steelhead runs under the Endangered Species Act by forming lasting partnerships with states, local and tribal governments and the public for saving Pacific salmon and their important habitats.

Pacific Salmon Agreement

NOAA requests an increase of \$60.0 million to implement the Pacific Salmon Agreement. This increase will provide \$20 million to capitalize the Southern Boundary Restoration and Enhancement Fund, \$20 million to the Northern Boundary and Transboundary Rivers Restoration fund and \$20 million to the State of Washington to complete the License Buyback Program. The two endowment funds will be administered by the Pacific Salmon Commission for habitat, stock enhancement, science and salmon management initiatives in both countries.

Detailed information regarding adjustments-to-base, program reductions and terminations are shown in Section 4: Supplementary Information.

Office of Oceanic and Atmospheric Research

Total Request: \$318,860,000

ORF: \$307,860,000

PAC: \$11,000,000

The Office of Oceanic and Atmospheric Research (OAR), frequently called “NOAA Research,” conducts the scientific research, environmental studies, and technology development needed to improve NOAA’s operations and broaden our understanding of Earth’s environmental systems. NOAA Research contributes directly to the attainment of the seven goals of NOAA’s strategic plan, which articulates NOAA’s mission to support the Nation’s economic growth in an environmentally sound manner.

The OAR budget activity supports NOAA’s participation in several joint programs with other Federal agencies, including the U.S. Weather Research Program (USWRP), U.S. Global Change Research Program (USGCRP), Natural Disaster Reduction Initiative (NDRI), and Health of the Atmosphere (HOA). OAR is also active in High Performance Computing and Communications (HPCC) and supports the Global Learning to Benefit the Environment (GLOBE) science education program and the Climate and Global Change Program.

A coordinated national network of Federal scientists and laboratories, university partnerships, and private-sector researchers carries out the OAR mission. Located in OAR Research Laboratories, Undersea Research Centers, Sea Grant Colleges, and university-based Joint and Cooperative Institutes, NOAA Research personnel are internationally recognized for their contributions to such fields of science as oceanography, climatology, and meteorology. These dedicated scientists translate new discoveries and technological developments into improvements to NOAA’s operations in weather, climate, and solar-terrestrial forecasting; coastal resource conservation; fisheries enhancement; and other areas. NOAA Research provides the sound science upon which decision makers can frame effective regulations to solve such environmental problems as the rehabilitation of the ozone layer. NOAA Research promotes economic growth by developing new products and techniques in marine biotechnology and aquaculture and economic resilience by improving the lead-time, accuracy, and specificity of climate and weather predictions. Ultimately, OAR is dedicated to promoting

the environmental sustainability of our Nation's economic competitiveness and well-being.

For FY 2001, NOAA requests \$307,860,000 for the OAR Budget Activity, an increase of \$6,408,000 over the FY 2000 appropriation. This request consists of program increases of \$29,381,000 and program decreases of \$22,973,000.

Detailed Program Increases by Subactivity

Operations, Research and Facilities (ORF)

Climate and Air Quality Research \$154.4 million

NOAA requests \$154,356,000 for this subactivity, an increase of \$25,474,000 over the FY 2000 enacted. Climate and Air Quality Research focuses on learning the physical processes of the ocean and atmosphere to increase modeling accuracy, thus furthering NOAA's predictive capabilities.

Of the total \$154.4 million, the following increases are included:

Climate and Global Change: \$493,000

The increase will be used to implement a combination of observations, modeling, and process research to improve the regional specificity and detail of climate forecasts. This will include work on quantifying the variability of source and sink regions for carbon dioxide on land and in the ocean in the northern Hemisphere and examining in detail the role of natural modes of climate variability (including the American Monsoon, North Atlantic Oscillation, and the Pacific Decadal Oscillation) and their influence on the climate regime over North America.

Global Learning and Observations to Benefit the Environment (GLOBE): \$2,000,000

NOAA requests an increase in its funding for the GLOBE Program to support continued growth in the number of participating U.S. schools and in the breadth of the science data being collected for the international science community.

Climate Observations and Services: 4 FTE, \$28,000,000 (with \$4,000,000 in PAC)

The NOAA Climate Observations and Services initiative is requested in a new line item under the OAR Climate and Air Quality subactivity so that it can be managed as an integrated program. The program will effect a transition of research observing and data systems and knowledge into operational systems and products. Since needs will

change over the next five years, NOAA will require the flexibility to shift its resources to meet those needs. The funds will be jointly managed by OAR, NESDIS, and NWS, with the initial distribution as described below.

Climate Reference Network: \$6.0 million

In order to ensure NOAA's capability to monitor decadal to centennial changes of temperature and precipitation, a climate reference network consisting of several hundred stations must be developed by making use of the historical data from the best sites in the network of 11,000 cooperative observing sites. The Climate Reference Network will begin operation with the commissioning of the first sites in the network. This network will be able to monitor long-term climate change and variability for such fundamental variables as precipitation, temperature, wind speed, and soil moisture. This will be the first *in situ* network that will adhere to all of the guidelines and principles for long-term climate monitoring articulated by the National Research Council and the Fourth Conference of the Parties from their last meeting in Bonn, Germany.

Improving the Availability of Climate Data and Information: 4 FTE, \$10.0 million

As observational capabilities increase and observing networks expand, it is essential that data management and dissemination systems be in place to make the resulting data and information widely and easily accessible to public- and private-sector decision makers. During recent years, NOAA has struggled to respond adequately to questions from industry, the general public, and the Government regarding potential changes in weather and climate events. NOAA must develop the required infrastructure to assemble, develop, and communicate the data, information, and knowledge about the trends, likelihoods, and future expectations of climate and weather events. Elements of this infrastructure will consist of the following:

- **The NWS/NCEP Climate Prediction Center** [\$1.0 million] will translate an enhanced capability to monitor global climate variability (especially for the oceans) and the insights about climate fluctuations gained from better observing systems into operational practice. This will be done through improvements to climate forecast models, better assimilation of observational data which feed into the models, and development of a broad spectrum of new forecast products which emphasize risks of high-impact weather events in the context of climate variability.

-
- **Improve Access to Large Volume Space-Based and Ground-Based Data Holdings**, e.g., Doppler radar and polar and geostationary satellites (over 700 terabytes). Improved access to these data sets will be available to the public, private industry, decision makers, and scientists. The system will include the development of optimized storage technologies, such as data compression and decompression, media migration to new-generation storage devices, and improved Internet access to near on line data. The \$4,000,000 for this activity are located in the Procurement, Acquisition, and Construction (PAC) Account.
 - **Development and Implementation of Real-Time Operational Updates to NOAA's Premier Research Quality Long-Term Ocean and Atmospheric Reference Data Sets** [\$1.0 million]: The Nation's highest quality long term, peer reviewed data sets are being used in a research mode but are now ready for exploitation by private industry, decision makers, and the general public. Existing reference data sets include global surface data (land and oceans) as well as such atmospheric data as winds, moisture, clouds, and circulation indices. These funds will be used to develop the infrastructure necessary to update routinely these data sets in real-time and insure access to the data.
 - **Improved Observation Network Performance** [\$2.5 million] of key *in situ* and satellite observing networks by ensuring that these systems adhere to the principles and guidelines for Long Term Climate Monitoring as articulated by the U.S. National Academy of Sciences and the 4th Conference of the Parties. The funding will be used to monitor the performance of these networks to identify problems early enough to prevent serious degradation.
 - **Observations and Analysis in Linking Climate and Extreme Weather Events**: Establishing the link between weather and climate variations is critical for increasing the value and usefulness of NOAA's climate information for the public and decision makers. Of particular importance is how climate variations, such as El Niño, the North Atlantic Oscillation or long term trends, influence the probability of occurrence or risk of extreme weather events (e.g., hurricanes, major floods, droughts). The funding will be used to an observational and analysis effort to better forecast high-impact weather on short and long time scales and develop new tools for risk evaluation and prediction of extreme weather types.

Baseline Observatories: \$3.0 million

These funds will expand operations at NOAA's remote manned Global Atmospheric Baseline Observatories, measuring up to 250 different atmospheric parameters relevant to the study of climate change at: Barrow, Alaska; Mauna Loa, Hawaii (since 1957); American Samoa; and the South Pole, Antarctica (also since 1957). These observations are critical to the collection and continuity of the world's longest atmospheric time series, supplying the scientific community with information on the state and recovery of the ozone layer, global carbon dioxide, and other trace gases impacting the global climate. Funds are needed to: rehabilitate the aging Barrow and Samoa observatories by upgrading the equipment and facilities; upgrade the Dobson ozone spectrometer equipment; support ozonesonde stations in Arcata, California; and Huntsville, Alabama; and upgrade 11 continuous surface radiation sites.

Ocean Observations: \$9.0 million

NOAA will establish and maintain the sustained global observing and data stewardship system necessary for climate research and forecasting as well as the long-term monitoring system necessary for climate change detection and attribution. Most of these funds will be managed through the National Ocean Partnership Program (NOPP). The observation network is based on a set of "core" observations (e.g., temperature, surface wind stress, salinity, sea level, CO₂), consisting of both in-situ and remotely sensed measurements, that have been identified in NOAA and other national and international reports as needed to satisfy research and operational climate requirements.

To that end, NOAA will complete its portion of the global array of profiling floats (ARGO) for temperature and salinity, deploy additional surface drifting buoys in under-sampled regions to complete the Global Drifter Array, and improve/increase sampling from Voluntary Observing Ships (VOS). NOAA will develop and implement data assimilation methods to optimally combine *in situ* and remotely sensed data, including satellite altimetry data of sea-surface heights, into ocean models. NOAA will build on the current US (NASA) and French satellite altimetry programs, TOPEX and JASON, to ensure their continuity through the next decade. Studies of satellite systems and ground systems architecture, including orbits, will be performed that will ensure effective assimilation of altimetry into ocean models. Additionally, NOAA will upgrade global sea-level stations for satellite altimeter drift calibration and for monitoring of long-term trends and will assess how our ability to document and forecast climate variability is impacted by the different data sources.

Atmospheric Programs: \$47.6 million

NOAA requests \$47,607,000 for this subactivity, which supports improvements in weather, solar-terrestrial, and air quality monitoring and prediction. Severe weather and geomagnetic storms cause hundreds of deaths and billions of dollars of damage annually. Increased lead-times and forecast accuracy will enable those about to be affected to take precautionary measures, thus reducing or eliminating losses. NOAA Research focuses on: developing observational tools, understanding the conditions and processes which generate violent weather events, and applying that knowledge to improve warnings and forecasts. Building the scientific knowledge base enables continuous improvements in the ability of vulnerable communities and economic sectors to reduce the costs of disruptive weather. Of the \$47.6 million, supported programs include:

- **U.S. Weather Research Program (+2 FTE / +\$1.0 million):** This program is in the second year of a multi-year, multi-agency effort directed toward extending hurricane track predictions out to 120 hours and improving the accuracy of hurricane landfall predictions with respect to both location and intensity. Decreased error and uncertainty in hurricane forecasts will help reduce the length of coastline recommended for evacuation during these powerful storms, avoiding millions of dollars worth of unnecessary preparations.
- **Information Dissemination System (+\$100,000):** NOAA will to commission and maintain the Information Dissemination System at the Space Environment Center (SEC). In order to better ingest, manipulate, and export massive amounts of data on a daily basis in the process of producing operational space-weather products and services, SEC has initiated a modernization of its data distribution system, which will replace late-1970's technology that no longer can be maintained and that limits SEC's ability to transfer data to customers.

Oceans and Great Lakes Programs: \$87.6 million

NOAA requests \$87,595,000 for this budget subactivity. This subactivity enhances our knowledge of ocean and Great Lakes environments so that they may be managed in a sustainable manner, promoting economic growth in marine industries while conserving the underlying environments upon which these industries depend. Within this total subactivity, because of its record in generating critically needed research, educational, and advisory services in a successful partnership between the Administration, Congress, and academia, the National Sea Grant College Program, is supported at a total of \$59.2 million. The

National Undersea Research Program (NURP) is supported at a level of \$5.8 million which will ensure that NURP will be able to play a leading role in the Ocean-Floor Observatories Initiative requested under Marine Environmental Research. Future plans include strengthening the partnership with the Congress in shaping NURP, and continuing important undersea research in fisheries habitats, coral-reef ecosystems, and fisheries management issues. Finally, the program expects in future years to encourage new research related to understanding deep-ocean environments and obtaining new products from the sea. This new direction, "bio-prospecting," will catalyze new partnerships to pursue aggressively an integrated program of basic and applied research into the biotechnological benefits that are found beneath the ocean's surface. The funding level includes the transfer of \$6.7 million for the Great Lakes Environmental Research Laboratory (GLERL) to NOS. Programs included in this subactivity include:

Aquatic Nuisance Species: \$0.2 million

This program distributes funding through a competitive grants process to combat the spread of invasive species in five marine regions (Chesapeake Bay, Gulf of Mexico, Pacific Coast, Atlantic Coast, and San Francisco Bay-Delta Estuary) as well as to develop new technologies for ballast water exchange and supporting the work of the Aquatic Nuisance Species Task Force in developing species-specific control programs and coordinating national efforts.

Marine Aquaculture: \$1.6 million

The U.S. lags behind many of our trading partners in the extent and sophistication of our domestic aquaculture industry, which is partly responsible for our current \$4.0 billion trade deficit in seafood products. The requested funds will be used to fund a competitive process to award funds to projects that will lead to commercial-scale, environmentally sustainable marine aquaculture, and begin the process of increasing domestic competitiveness in this lucrative industry.

Fisheries Oceanography: \$0.5 million

OAR plans to develop a North Pacific Ocean Monitoring System. Shifts in the ocean climate in this region are demonstrably linked to dramatic and unexpected changes in ocean productivity. Establishing a means of monitoring these changes using moored buoys will allow fishery managers to anticipate environmentally induced increases or decreases in fishery yields and respond with appropriate management measures.

Seafloor Observatories: \$3.1 million

In order to progress from our present state of knowledge about the ocean, NOAA proposes a sustained scientific investment in estab-

lishing or improving existing sea-floor observatories and laboratories in the waters off the coasts of Florida, New Jersey, the Pacific Northwest, and the Gulf of Mexico and, developing new technologies to explore previously unknown or inaccessible marine environments, which represent a vast underutilized resource.

Acquisition of Data: \$49,000

NOAA requests an increase of \$49,000 to maintain days-at-sea for oceanographic and atmospheric data collection at a level that will accommodate budget goals and still meet the highest priority data collection needs.

Boulder Rent Shortfall: \$1.5 million

NOAA requests \$1,515,000 as an adjustment to base (under Program Support/Facilities) to cover the funding shortfall resulting from the occupancy of the new David Skaggs Research Center. The requested funds will eliminate the necessity to curtail or terminate programs in each of the 11 tenant organizations. While negotiations on total costs are still underway with GSA, this request is needed for ongoing rent and facilities operations costs and assumes NOAA's estimates for a reasonable rate for rent.

Procurement, Acquisitions, and Construction (PAC) Account

PAC: \$6.0 million

NOAA requests a total increase of \$6,019,000. Of this total, \$2,019,000 is to support the full year lease and to provide software support for a supercomputer to be located at the Geophysical Fluid Dynamics Laboratory in Princeton, N.J. This will be the second year of the procurement. The computer will be used full-time to attack some of the most difficult, but critical obstacles to developing and testing new and more realistic models for predicting climate variability, climate change, and forecasting hurricanes. An increase of \$4,000,000 is to improve access to large volume space-based and ground-based data holdings, an initiative described above as part of the Climate Observations and Services initiative. These funds will expand current archiving capabilities into a National Environmental Data Archive and Access System (NEDAAS) that is fully operational and managed at the enterprise level. This system will afford efficient management of high volumes (petabytes) of data that is critical to the USGCRP and the scientific community. The target data originates from the National Polar Orbiting Environmental Satellite System (NPOESS), the Defense

Meteorological Satellite Program (DMSP), the Department of Commerce Next Generation Weather Radar (NEXRAD) and Polar-orbiting Operational Environmental Satellite (POES). NEDAAS will link NOAA's archives with databases at NOAA's laboratories, regional climate centers, state climate centers, ongoing process studies, and other information systems of NOAA's line offices. It builds on work conducted under NVDS and other information system modernization efforts in NOAA. The goal is to make all data available on-line or near on-line through the Internet.

Detailed information regarding adjustments to base, program reductions and terminations are shown in Section 4:Supplementary Information.

National Weather Service

Total Request: \$ 710,232,000

ORF: \$634,872,000

PAC: \$ 75,360,000

Mission

The National Weather Service [NWS] provides weather, water, and climate forecasts and warnings for the United States, its territories, adjacent waters, and ocean areas for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community.

Introduction

America's vulnerability to weather related hazards is rising as more of the population moves into weather harm's way and national and global economies become more complex. Approximately 40 percent of all Americans, some 100 million people, currently reside in areas of high risk to natural disasters, with the number climbing yearly. Today, 90 percent of all Presidentially declared disasters are weather and flood related. Moreover, water resources are the lifeblood of the economy and our standard of living. During the next century, weather will continue to impact our lives and significantly impact the U.S economy. In recognition of this fact, the NWS was recognized by National Partnership for Reinventing Government [NPR] as one of thirty two high impact federal agencies. By working with our partners, especially the private sector and emergency management community, NWS is striving to ensure our products and services are responsive to the needs of the American public.

The FY 2001 President's Budget Request supports the funding and program requirements to enable the NWS to better use science to serve our citizens and fulfill its vision of becoming America's "no surprise" weather service. This vision states that the NWS will produce and deliver forecasts you can trust when you need them most, use cutting-edge technologies, provide services in a cost-effective manner, strive to eliminate weather related fatalities, and improve the economic value of weather information. In FY 2001, the NWS will continue its mission of providing weather and flood warnings and forecasts to the public and

improve the overall warning lead times for tornadoes, severe thunderstorms, and flash floods, as well as improve the accuracy of hurricane landfall predictions.

The NWS contributes to three of NOAA's Strategic Plan goals; Advance Short-Term Warning and Forecast Services, Implement Seasonal to Interannual Climate Forecasts, and Predict and Assess Decadal to Centennial Change. The NWS request also supports investments in the Natural Disaster Reduction Initiative [NDRI] as well as the NOAA Climate Observations and Services Initiative.

Budget Overview

Overall, the NOAA requests a total of \$710.2 million for the National Weather Service, a net increase of \$53.3 million above the FY 2000 enacted. The request includes a total of \$634.9 million for Operations, Research, and Facilities [ORF] and \$75.4 million for Procurement and Acquisition and Construction [PAC]. In FY 2001, the budget priorities for NWS include sustaining current services, replacing obsolete observing systems, infusing new technology and enhancing service to the public.

Operations, Research, and Facilities

The FY 2001 President's Budget includes a request of \$634.9 million, an increase of \$33.5 million over the FY 2000 enacted. The increase allows NWS to maintain current services in FY 2001 as well as modernize the current Cooperative Observer Network. Specifically, the increase of \$33.5 million includes \$14.7 million for Mandatory Pay Raises and Inflationary Costs, \$8.4 million to Sustain Base Operations, \$2.0 million for Weather Forecast Office [WFO] Maintenance, \$2.3 million to Sustain the Co-Operative Observer [COOP] Network, \$6.6 million for Advanced Weather Interactive Processing System [AWIPS] Operations and Maintenance [O&M], \$0.1 million for NEXRAD Operations and Maintenance, \$0.1 million for Automated Surface Observing System, and a reduction of \$0.7 million for one-time program terminations. The specific details are outlined below:

Mandatory Pay and Inflationary Costs: \$14.7 million

NOAA requests an increase of \$14.7 million to fund Adjustments to Base [ATBs] for NWS. The increase will fund the FY 2001 federal pay raise of 3.7 percent and annualize the FY 2000 pay raise of 4.8 percent as well as provide inflationary increases for certain non-labor activities, including service contracts, field office lease payments, and rent charges from the General Services Administration [GSA].

Sustain NWS Base Operations: \$8.4 million

NOAA requests an increase of \$8.4 million to support NWS field office operations and maintain current services in FY 2001. The \$8.4 million increase includes the following critical base activities:

Continue Weather Service Office Operations: \$0.9 million

Funding is required to sustain operations at certain Weather Services Offices previously slated for closure. These offices include Ft. Smith, Arkansas; Huntsville, Alabama; Williston, North Dakota; and Erie, Pennsylvania. The offices will remain open until all necessary follow-on studies are completed and the Secretary of Commerce makes a final decision on each closure action.

Provide FAA/ASOS Augmentation: \$1.8 million

To comply with the FAA Observation and Aviation Service Standards, NWS is required to perform manual weather observations to augment and backup ASOS observations at certain airports across the Nation. Due to staff reductions achieved under the NWS Modernization, the workload associated with ASOS augmentation cannot be absorbed by the current NWS field office staff. The \$1.8 million will provide the necessary contract support to perform the function at 17 sites.

Sustain NOAA Weather Radio Network: NWR: \$3.0 million

NWS requires funding to operate and maintain 110 NWR transmitters which will be added to the network in FY 2000 and FY 2001. Current partnership agreements require the NWS to operate and maintain transmitters purchased by states and localities, the private sector, and the federal government. The NWR network is a critical for transmitting NWS warning and forecast messages to the public, providing advance notice for severe weather events.

Provide Network Security: \$0.8 million

NWS requires funding to procure and install emergency network security hardware at the National Centers for Environmental Prediction: NCEP. The security system will prevent service interruptions from cyber and hacker attacks. NCEP receives over 25 hacker attacks per week and the number is doubling every three months.

Ensure Workplace Safety: \$0.7 million

NWS requires funding to replace replacing unsafe hydrogen generators which are used to inflate weather balloons at field offices in Alaska. Currently, the generators present a significant safety risk to NWS employees.

Sustain Field Observations: \$1.2 million

NWS requires funding in FY 2001 to sustain its current suite of surface observation equipment. To avoid catastrophic loss of data, NWS is planning to replace a number of critical stream gages, river gages, and remote weather observation stations, which are critical for local weather and flood forecasting.

Weather Forecast Office Maintenance & Repair: \$2.0 million

NWS requests an increase of \$2.0 million for Weather Forecast Office WFO Maintenance & Repair. This will allow NWS to fund recurring maintenance contracts and address a backlog of over \$7.0 million in deferred maintenance actions. WFOs require a significant investment in recurring and cyclic maintenance, including replacement of major facility support systems such as power backup and heating, ventilation, and air conditioning: HVAC. The request will allow NWS to protect the \$250 million capital investment in modernized facilities in accordance with GSA and private industry standards. In FY 2001, NWS will complete high priority repair actions at 20 field offices.

Cooperative Observer Network: \$2.3 million

NOAA requests an increase of \$2.3 million to sustain the Nation's cooperative observer network. The cooperative observer network is a nationwide network of over 11,000 volunteer operated weather observing sites used by NOAA to maintain the Nation's climate record and to provide data to local NWS field offices. In a recent report, the National Research Council recommended that NOAA take immediate steps to sustain and modernize this critical network. The instruments used to detect daily minimum and maximum temperatures as well as rain gage recording devices for measuring precipitation are virtually obsolete and increasing costly to maintain. In FY 2001, NWS plans to begin a five-year program to modernize the entire current network. The \$2.3 million will allow NWS to replace 900 rain gages and 200 temperature sensors in FY 2001.

Advanced Hydrologic Prediction System: AHPS

In FY 2001, NOAA will also continue implementation of AHPS in the Mississippi and Ohio River Basin, focusing on high priority flood prone areas. The OR&F request includes a total of \$1 million for this critical service improvement program. Once deployed, AHPS will significantly improve flood forecasting and water resource management by extending river stage forecasts from days to months in the future. AHPS will also provide new river forecast information which can be used by water resource and emergency managers for risk based decision making. AHPS will save lives and provide over \$600 million in annual savings to the U.S. economy.

Next Generation Weather Radar Operations & Maintenance: \$0.1 million

NOAA requests an increase of \$0.1 million for provide recurring operations and maintenance for the current NWS network of 123 Next Generation Weather Radar: NEXRAD units. The NEXRAD network provides nationwide Doppler radar coverage, improving detection of severe weather and floods and increasing the warning lead time for tornadoes. This level of funding will provide for logistics, utilities, and system maintenance to ensure the operational availability of the NEXRAD network.

Advanced Weather Interactive Processing System Operations & Maintenance: \$6.6 million

NOAA requests an increase of \$6.6 million to provide recurring operations and maintenance for the fully deployed network of 152 Advanced Weather Interactive Processing System: AWIPS systems. FY 2001, funding is required to address recurring communications, systems obsolescence, and hardware maintenance support costs associated with build 4.2 operations.

Automated Surface Observing System: \$0.1 million

NOAA requests an increase of \$0.1 million to operate and maintain the NWS network of 314 Automated Surface Observing System: ASOS units. ASOS provides the weather forecaster with critical surface observations to improve weather warning and forecast services. ASOS also provides critical data to support the aviation community and climate information users.

Procurement, Acquisition and Construction: PAC

As indicated above, the NOAA request includes a total of \$75.4 million for NWS PAC programs, an increase of \$19.8 million over the FY 2000 appropriation. The specific requests are listed below.

NEXRAD: \$1.3 million

NOAA requests increase of \$1.3 million over the FY 2000 appropriation. In FY 2001, NWS will continue product improvement efforts by infusing new technology into the current NEXRAD radar network. The current system processor utilizes obsolete technology developed in the late 1980s. As a result, a number of new detection techniques, that are ready for operational use, cannot run on the present system. Combined with AWIPS build 5.0 technology, the NPI will allow NWS forecasters to improve the tornado warning lead time by 5 minutes: 11 minutes to 16 minutes and improve the accuracy of severe storm forecasts by over 20 percent. In FY 2001, the NWS will complete hardware retrofits on a total of 50 NEXRAD radars.

ASOS: \$1.3 million

NOAA requests an increase of \$1.3 million over the FY 2000. In FY 2001, NWS will continue product improvement efforts, testing and deploying new sensor capabilities. Specifically, NWS will replace obsolete processors on 250 ASOS systems and continue replacement of the all weather rain gage and ice free wind sensor which are critical to Aviation users.

AWIPS: \$1.4 million

NOAA increase of \$1.4 million over the FY 2000 appropriation. In FY 2001, NWS will complete the second of a three year effort to develop and deploy AWIPS build 5.0 software. Combined with NEXRAD Product Improvement technology, AWIPS build 5.0 software will allow NWS forecasters to improve the tornado warning lead time by five minutes: 11 minutes to 16 minutes and improve the accuracy of severe storm forecasts by over 20 percent. The NOAA request also includes funding to provide a backup Network Control Facility: NCF.

Central Computer Facility: \$4.0 million

NOAA requests an increase of \$4.0 million over the FY 2000 appropriation. The increase includes \$2.0 million to operate and maintain the Class VIII supercomputer which is currently located on the Census Facility in Bowie, Maryland. The increase is necessary to provide required operations and maintenance as well as provide the necessary communications infrastructure to support the Class VIII. The increase also includes \$2.0 million to improve and expand operational climate forecasts. In FY 2001, NWS is proposing to expand the current Climate Threats: Drought, Fire, Flooding Assessment and Extreme Heat Index from 14 days to three months. In addition, NWS utilize additional computing capacity to improve forecasts for El Niño, La Niña Events, and other climate oscillations.

Evansville, Indiana Mitigation: \$5.5 million

NOAA requests an increase of \$5.5 million to acquire, deploy, and install an Doppler weather radar for Evansville, Indiana. In FY 1999, the Modernization Transition Committee: MTC recognized a gap in radar coverage for southern Indiana and Illinois. The MTC requested the NWS develop an action plan to address this issue before the closure certification could be finalized for the Evansville Weather Service Office.

Radiosonde Replacement Network

NOAA will continue the replacement and modernization of the upper air radiosonde network. The PAC request includes a total of \$7.0

million for this activity in FY 2001. The radiosonde network provides critical upper air observations which are the principal data source for all weather forecasts. These funds will enable NWS to exercise the first option year of the replacement systems contract to begin full deployment of the ground receiving stations, replace the remaining IBM XT microcomputers with modern PCs, continue software development, and procure surface instruments that will provide ground based measurements at the point of balloon release.

NOAA Weather Radio—NWR: \$6.2 million

NOAA requests \$6.2 million to upgrade and expand the NWR network to meet the Vice President's goal of 95 percent coverage for the U.S. population. The NWR network is the sole government owned and operated radio network for the direct broadcast of weather warnings and forecasts, and other hazard information to the public. In FY 2001, NWS proposes to install 30 new transmitters at high priority sites across the Country. In addition, NWS proposes a one time investment of \$1.7 million to improve the current NWR voice transmissions.

NWS Weather Forecast Office Construction

Within the overall PAC request, NOAA requests a total amount of \$9.5 million to continue this critical facilities modernization program. In FY 2001, NWS will finalize construction activities for the new weather office in Caribou, Maine and Key West Florida. In addition, NWS will continue efforts to modernize the current Alaska Tsunami Warning Center as well as replace employee housing in St. Paul, Alaska.

Detailed information regarding adjustments to base, program reductions, and terminations are shown in Section 4: Supplementary Information.

National Environmental Satellite, Data, and Information Service

Total Request: \$612,644,000

ORF: \$108,201,000

PAC: \$504,443,000

The following narrative describes the activities of the National Environmental Satellite, Data, and Information Service (NESDIS) and describes its Operations, Research and Facilities (ORF) and Procurement, Acquisition and Construction (PAC) accounts requests.

NESDIS provides for procurement, launch, operation, and product development and distribution for the polar orbiting and geostationary environmental satellites, and management of NOAA's environmental data collections. NESDIS also acquires operational data from non-NOAA environmental satellites that include Department of Defense (DOD) and foreign satellite missions. The satellites provide meteorological data to the National Weather Service and other environmental data users. Environmental data and information are collected from NOAA and other sources, disseminated in real time, and archived for future use to meet the needs of users in commerce, industry, agriculture, science and engineering, and in Federal, State and local agencies.

NESDIS contributes to the achievement of five of NOAA's Strategic Plan goals: Advance Short Term Warning and Forecast Services, Implement Seasonal to Interannual Climate Forecasts, Predict and Assess Decadal to Centennial Change, Recover Protected Species and Sustain Healthy Coasts.

For FY 2001, the National Environmental Satellite, Data, and Information Service requests a total of \$612.6 million, of which \$108.2 million is requested in the ORF account and \$504.4 million is requested in the PAC account.

Detailed Program Increase by Sub-Activity

Operations, Research and Facilities (ORF)

Satellite Observing Systems

These activities are funded in the Operations, Research and Facilities Account. NOAA requests a total of \$63.4 million in this

subactivity, which is an increase of \$6.5 million. This subactivity provides for the operation of current polar-orbiting and geostationary satellites; and production and distribution of satellite products. Also included in this subactivity is the planning for the GOES N-Q follow-on satellite systems and the development of new and improved applications and products for current and future satellites for a wide range of Federal agencies, State and Local governments, and private users. As part of this subactivity funding will be provided for continuation of Ocean Remote Sensing and Environmental Observing Services.

Increases in This Subactivity

- **Global Disaster Information Network** [\$5.5 million]: Included in the Satellite Observing Systems line item is an increase of \$5.5 million requested to establish an integrated inter-agency Global Disaster Information Network (GDIN) to improve all phases of disaster management. This will be a public/private partnership to develop an information system for those emergency managers and those who are affected by disasters. Funds will be used to improve coordination of and access to disaster information; to assume the reliability of Federal intranets and other communication channels during disasters; and to standardize data sets, data access and data analysis tools.

Environmental Data Management Systems

NOAA requests a total of \$44.8 million in this subactivity for environmental data and information products; services and assessments in the atmospheric, marine, solid earth, and solar-terrestrial sciences. The FY 2001 request continues to provide global data and information to commerce, industry, agriculture, science and engineering, the general public and Federal, State and Local governments. Also included in this subactivity is \$5.2 million for NOAA's continuation of the Climate Database Modernization and Utilization program. The FY 2001 Budget Request continues to reflect savings anticipated from the implementation of the NOAA Virtual Data System (NVDS) that has modernized existing data and storage systems and vastly increased, streamlined, and simplified customer access to environmental data. For customers and data users, NVDS permits ease of access through a single gateway to data stored at the three Data Centers located at different geographical locations.

Mandatory Pay and Inflationary Costs: \$1.6 million

NOAA requests an increase of \$1.6 million to fund Adjustments to Base (ATBs) for NESDIS base operations and system accounts. The increase will fund the FY 2001 Federal pay raise of 3.7 percent and

annualize the FY 2000 pay raise of 4.8%. The increase will also provide inflationary increases for certain non-labor activities, including service contracts, field office lease payments, and rent charges from the General Services Administration (GSA).

Procurement Acquisition and Construction Account (PAC)

Satellite Observing Systems

There is a total Budget Request of \$504.4 million for FY 2001. These items are funded in the Procurement Acquisition and Construction Account. This subactivity provides funding for the multi-year procurement of spacecraft, launches and associated ground system changes for the current series NOAA K-N' of polar-orbiting operational satellites, the National Polar Orbiting Operational Environmental Satellite System (NPOESS), and the Geostationary Operational Environmental Satellite (GOES).

NOAA K-N': \$6.5 million

The FY 2001 Budget Request for the NOAA K-N' includes an increase of \$6.5 million to fund the continuation of the production and launch of this series of satellites. NOAA M is planned for launch in CY 2001 and NOAA N and N' will be launched in a future year. In FY 2001, procurement will begin for the new Delta launch vehicle that will be used to launch NOAA-N and N'. The request also includes funds necessary to complete the instruments for the European METOP satellite that will replace NOAA's morning polar orbiting satellite no earlier than December 2003. Funding is requested for upgrading and replacing aging and deteriorating ground systems to allow for continuation of operations and product generation and distribution systems for the remainder of the polar K-N' series through the end of its lifetime.

NPOESS: \$16.9 million

The FY 2001 Budget Request for the Polar Orbiting Systems includes an increase of \$16.9 million for NOAA's share of the converged NOAA/DOD/NASA polar-orbiting program. In FY 2001, the NPOESS program will complete Phase I design and development of several key sensors and initiate Phase II production of these sensors. In addition to the continuation of these development contracts, FY 2001 will support risk reduction demonstration efforts in the command, control and communications segment and in the interface data processor segment. FY 2001 funding will be used for an additional sensor, the Space Environmental Sensing Suite, which will be in its first full year of program definition and risk reduction. This program is jointly and equally funded by NOAA and DOD.

GOES: \$25.2 million

The FY 2001 Budget Request for the Geostationary System includes an increase of \$25.2 million which will be used to fund the firm fixed price contract for the GOES N-Q spacecraft and launch services program, development funds for advanced instruments to be ready for the GOES-Q satellite, and the upgrading and replacements of aging ground systems that must remain operational through the life of GOES-Q.

The outyear funding provided for satellite systems are included for planning only. Future budget requests will be modified to reflect updated satellite launch cost and schedule requirements.

Suitland / Infrastructure

An advance appropriation of \$15.2 million is requested to be available October 2001 to construct a new satellite operation facility needed to address severe environmental deficiencies in the NESDIS Suitland facility. During FY 2001 NOAA will continue working with GSA in preparing the design work for this new NESDIS Suitland facility. The space NOAA occupied at the Suitland Federal Center, Federal Building No. 4 (FB4), has significant asbestos problems. In addition to the asbestos concerns, water-testing results confirmed the presence of a harmful substance in the water (coliforms), thereby warranting the use of bottled water for human consumption. Also, due to the age of the facility, numerous roof leaks and other building system failures constitute threats to NOAA's critical infrastructure activities housed in the building.

In addition to the FY 2000 enacted appropriation of \$2.7 million for initial design and preparation, the Administration is requesting advanced appropriation of \$15.2 million in the FY 2002 Budget to begin construction. In order to accommodate NESDIS' long term space requirement, GSA (on behalf of NOAA) initiated a Prospectus Development Study and has finalized NOAA's requirements for the Suitland Federal Center. GSA has designated this building as a high priority with a target completion date of FY 2004.

The FY 2000 final appropriation amount is \$2.7 million. This earmark is critical to the completion of a new facility in FY 2004. It will provide the necessary funds to initiate the facility planning and design process in FY 2000.

During the design phase, GSA is committed to abate the asbestos within NESDIS's computer areas to allow the installation of GOES N-Q, and satellite ground systems that have already been procured.

Program reductions and terminations are shown in Section 4: Supplementary Information.

Program Support

Total Request: \$86,569,000

ORF: \$70,746,000

PAC: \$15,823,000

The following narrative describes the total activities of Program Support and provides a detailed narrative to show the increases in the Operations, Research and Facilities (ORF) and Procurement, Acquisition and Construction (PAC) account.

The purpose of NOAA's Program Support activities is to provide to the programs and people within NOAA the administrative and infrastructure support necessary for the programs to meet their missions and for the agency to meet its broader goals. These functions include management of personnel, procurement and systems acquisition, facilities and administrative services, ADP services, and aircraft support. NOAA's Program Support activities contribute directly to the attainment of the seven goals of NOAA's strategic plan, which articulates NOAA's mission to support the Nation's economic growth in an environmentally sound manner.

For FY 2001, Program Support is requesting a total of \$86.6 million, a net increase of \$35.0 million over the FY 2000 enacted level. This includes a total of \$70.7 million for Operations, Research and Facilities (ORF) and \$15.8 million for Procurement, Acquisition and Construction (PAC). The amount also includes funds for Executive Direction and Administration, the Systems Acquisition Office, Central Administrative Support, and Minority Serving Institutions program which is located in ORF. Within this request is an increase of \$1.0 million in Adjustments-to-Base (ATBs) which includes:

Mandatory Pay and Inflationary Costs

NOAA requests an increase of \$1.0 million to fund ATBs for Program Support base activities. The increase will fund the FY 2001 federal pay raise of 3.7 percent, the annualized FY 2000 pay raise of 4.8 percent, and other expected pay-related changes. The increase will also provide inflationary increases for certain non-labor activities, including service contracts, and rent charges from the General Services Administration (GSA).

Detailed Program Increases by Sub-Activity

Operations, Research, and Facilities (ORF)

Executive Direction and Administration: \$0.6 million

NOAA requests an increase of \$0.6 million to continue to provide centralized executive management and decisions concerning policy and planning objectives; development and acquisition of major NOAA systems; statutory and other legal requirements; congressional relations; public and educational affairs; and strategic planning.

Central Administrative Support: \$1.4 million

NOAA requests an increase of \$1.4 million to continue supporting the offices that provide for NOAA's overall management of personnel, acquisition and grants, finance, facilities and logistics, and information technology systems as well as the four field Administrative Support Centers (ASCs) and the headquarters administrative support operations. These offices have had to take temporary "belt-tightening" measures such as stretching equipment replacement schedules, reducing training, and lapsing replacement personnel, or maintaining vacancies. Continuation of these restrictive measures will result in disruptions in the provision of administrative support to all of NOAA and to the Department of Commerce programs in the field. In addition, NOAA requests Congress reconsider the \$0.73 million in pay-related adjustments-to-base denied in the FY 2000 Appropriation.

Minority Serving Institutions: \$17.0 million

NOAA requests an increase of \$17.0 million to build capacity at minority serving institutions (MSIs) in the Atmospheric, Environmental, and Oceanic Sciences (AEOS). NOAA's MSI initiative is one part of a larger Department of Commerce Center of Excellence Initiative. Minorities are under represented among the nation's professional scientists, and among NOAA's scientific personnel. This program will increase the number of minorities that graduate and receive training in the natural and physical sciences by establishing a Cooperative Science Center for each field of study at three MSIs, centered around distinguished faculties with expertise in these scientific disciplines. The funds will provide financial support for graduate study, an Environmental Entrepreneurship Program, and a student fellowship program targeted for third-year undergraduates. NOAA will also provide internship opportunities for these students. The number of minorities graduating with science and engineering degrees continues to be disturbingly low. By targeting students at MSIs this initiative will provide NOAA and the MSIs with the means of strengthening their educational reach to minor-

ity communities and populations, thus helping to correct this professional and educational imbalance.

Procurement, Acquisition, and Construction (PAC)

Commerce Administrative Management System (CAMS) \$15.8 million

NOAA is requesting a total of \$15.8 million in PAC to support CAMS. All previous funding for this program was requested in the ORF account. The FY 2001 request in PAC is partially offset by a transfer from the ORF account of \$4.5 million from Central Administrative Support and \$4.8 million of funding that is assessed from all NOAA Line Offices in support of this program. The transfer is based on the recognition that CAMS represents the acquisition of a capital asset. With this transfer and the additional new funds, the production support for the existing CAMS operational modules will continue. This includes portions of the Accounts Payable, Small Purchases, and the full Travel module. Additionally, NOAA will be able to roll out the Small Purchases module to the Delegated Procurement Authority end user level, and will fully complete its rollout of the Travel and Bankcard modules to all NOAA end users. Some limited technology upgrades will also be implemented at this funding level. Ensuring the funding of CAMS is critical to NOAA's ability to have a satisfactory financial accounts system and will allow NOAA to meet its statutory obligations under the Federal Managers' Financial Integrity Act (FMFIA) and the Chief Financial Officer Act (CFO Act).

Detailed information regarding adjustments-to-base, program reductions and terminations are shown in Section 4: Supplementary Information.

Facilities

Total Request: \$9,102,000

ORF: \$6,102,000

PAC: \$3,000,000

NOAA's strategic mission and activities require state-of-the-art facilities and high-technology capabilities located nationwide. NOAA's numerous installations and facilities range from mountaintop antenna towers and saltwater docks to state of the art research laboratories. From Washington, D.C. to Seattle, Washington, from Barrow, Alaska to Corpus Christi, Texas and Tampa, Florida, NOAA maintains and operates 2,054 facilities and installations distributed throughout the 50 States. The facilities office contributes directly to the attainment of the seven goals of NOAA's strategic plan, which articulates NOAA's mission to support the Nation's economic growth in an environmentally sound manner.

The goals of the newly reorganized Facilities Office are to plan, acquire, maintain and support NOAA's facilities to continue to successfully fulfill NOAA's missions. The Facilities Office is involved in: repairs to current facilities, environmental compliance, facilities maintenance, preventive actions, modifications and additions to existing facilities, and ensuring a high standard of employee health and safety. The Facilities Office FY 2001 request reflects the transfer of the Columbia River Facilities to National Marine Fisheries Service.

Detailed Program Increases by Sub-Activity

Operations, Research, and Facilities (ORF)

NOAA Facilities Maintenance: \$0.1 million

NOAA is requesting a total of \$1.9 million in FY 2001 for Facilities Maintenance activities. The increase of \$0.1 million supports the infrastructure that is needed to support its programs. The average age of NOAA-owned facility is more than 30 years. The chart above shows the age of NOAA-owned facilities with an acquisition value over \$500,000 excluding the National Weather Service Modernization efforts. As NOAA's facilities increase in age, the need for preventive maintenance, major repairs and upgrades becomes critical to the success of its missions. Many systems are in imminent danger of failure due to their continued operation well past their design life. These systems are in immediate need of maintenance, repair, and in some cases, replacement.

Environmental Compliance: \$1.9 million

For FY 2001 NOAA is requesting a total of \$3.9 million for recurring environmental compliance operations and environmental cleanup activities. The increase of \$1.9 million for the Environmental Compliance program ensures that NOAA will be able to provide a safe working environment for its employees and engage in remediation activities to clean up areas which do not meet existing environmental regulations. The program provides for the following activities:

- compliance with existing laws and regulations;
- identification of environmental problems and cleaning up contaminated sites;
- providing guidance to NOAA program managers responsible for the receipt, handling, use and disposal for hazardous materials; and
- managing energy conservation projects.

Federal regulations also require that NOAA establish the environmental status of NOAA facilities and correct deficiencies that are found prior to their transfer to any other Federal agency or to the private sector.

NARA Records Management: \$0.3 million

NOAA is requesting an increase of \$0.3 million for National Archives and Records Administration Records Management to meet increasing record storage costs.

Procurement, Acquisition, and Construction (PAC)

Norman Consolidation Project \$3.0 million

NOAA requests an increase of \$3.0 million to begin detailed planning and project development associated with the construction of a new facility and renovation of existing facilities to house NWS and OAR operational research centers at the University of Oklahoma. Taking advantage of the University's academic expertise in meteorology, this facility will bring together NOAA's critical weather warning and forecast operations and research components to form a national weather center. The construction is scheduled to be completed in April 2004. Following last year's severe tornado outbreaks in Oklahoma and Nebraska, the Administration publicly stated its support for the project.

Detailed information regarding adjustments-to-base, program reductions and terminations are shown in Section 4: Supplementary Information.

Office of Marine and Aviation Operations

Total Request: \$20,503,000

ORF: \$20,303,000

PAC: \$200,000

The Office of Marine and Aviation Operations (OMAO), using ships and aircraft, collects data required to meet NOAA's mission and provides operational, technical, and managing support to NOAA programs with the NOAA Commissioned Corps. OMAO operates and maintains NOAA's fleet of 15 research and survey ships and 14 aircraft and assists with outsourcing for ship and aircraft support. The platforms support the missions of NOAA's five major line offices and support all of the seven strategic plans. OMAO manages the NOAA Diving Program which provides support to the largest complement of divers of any civilian Federal agency.

NOAA's diverse fleet of ships conduct research and gather data relating to the oceans and the atmosphere. The ships have varied scientific capabilities and range from small coastal craft used for research in estuaries and near-shore areas to deepwater oceanographic ships that provide scientists access to the waters of the world. The ships conduct hydrographic surveys to support nautical charting requirements, oceanic and atmospheric research to determine both short and long-term global climate changes, fisheries stock and marine mammal assessments, and monitoring of coastal habitats and pollution trends. NOAA ships also provide immediate response capabilities for unpredictable events, such as the search and location of wreckage from EgyptAir Flight 990, John F. Kennedy Jr.'s aircraft and TWA Flight 800.

NOAA's fleet of aircraft conduct research and collect data on the atmosphere, environment, and geography. The aircraft collect data throughout the United States and around the world, over open ocean, mountains, coastal wetlands, and Arctic pack ice. NOAA aircraft conduct varied missions such as flying into hurricanes and winter storms to determine their intensity and path, air-quality research, aerial photography for shoreline surveys, marine mammal and fish surveys, and snow surveys to determine water measurements for predicting spring floods from snow melt.

The NOAA Commissioned Corps is the Nation's seventh and smallest uniformed service. The officers of the NOAA Corps command

NOAA's research and survey vessels, fly NOAA's "hurricane hunter" and environmental monitoring aircraft, work on mobile field survey parties, and serve in a variety of technical and management positions throughout the agency.

NOAA also meets ship and aircraft support needs with ships and aircraft from other sources, including the private sector and the university fleet. These platform charters help meet NOAA's needs for oceanographic and fisheries research data. NOAA also contracts directly for collection of approximately 50 percent of its hydrographic data collection needs.

The ORF funds shown above include funds for operation and maintenance of aircraft and maintenance of ships. The ORF funds for ship operations and outsourcing are included in the data acquisition lines in the Line Office requiring ship support. The PAC funds shown above are to begin the process of relocating OMAO personnel and light industrial operations at the Pacific Marine Center to NOAA's Western Regional Center in Seattle, Washington. Relocation of the ships will also be required but no decisions have been made regarding future home ports. The PAC funds for ship construction or conversion are included with the request of the Line Office requiring ship support.

For FY 2001, NOAA requests a total of \$20.3 million in ORF for OMAO. Within the PAC account, OMAO requests an increase of \$0.2 million.

Detailed Program Increases by Sub-Activity

Operations, Research, and Facilities (ORF)

Aircraft Services: \$0.3 million

NOAA requests \$11,009,000 for Aircraft Services which is an increase of \$290,000 over FY 2000 enacted. This increase is requested to pay for increased costs in pay and benefits, contractual services, fuel, supplies and materials.

Fleet Maintenance and Planning

NOAA requests a total of \$9,294,000 for Fleet Maintenance and Planning to continue to support maintenance and repairs for the NOAA fleet.

Procurement, Acquisition, and Construction (PAC)

Western Region Consolidation: \$0.2 million

NOAA requests an increase of \$200,000 for the design work in connection with the relocation of OMAO personnel and light industrial operations at the Marine Operations Center (MOC), Seattle, to NOAA's Regional Center (WRC) in Seattle, Washington. Completing the design work to ultimately move MOC to WRC will eliminate the need for a leased facility and avoid a large increase in lease costs expected in 2003. Funding will be used to complete scoping activities and for the design contract and design review. NOAA has occupied the present MOC facility since 1963 under two consecutive 20 year leases. The present lease will expire in 2003. Relocation of the ships will be required but no decisions have been made regarding future home ports.

Detailed information regarding adjustments-to-base, program reductions and terminations are shown in Section 4: Supplementary Information.

NOAA's STRATEGIC PLAN

An FY 2001 Overview

For the year 2005, NOAA envisions a world in which societal and economic decisions are coupled strongly with a comprehensive understanding of the environment. Environmental stewardship, assessment and prediction will serve as keystones to enhancing economic prosperity and the quality of life, better protecting lives and property, and strengthening the U.S. balance of trade. This vision depends on actions now that:

- Create and disseminate reliable assessments and predictions of weather, climate, space environment, ocean and living marine resources, nautical, and geodetic phenomena and systems.
- Implement integrated approaches to environmental management and ocean and coastal resources development for economic and social health, protection of essential fish habitat, and recovery of endangered and threatened species of fish and marine mammals.
- Ensure access to continuous operations observing capabilities—from satellites to ships to radars and submersibles.
- Build and use new information networks.
- Develop public-private and international partnerships for the expansion and transfer of environmental knowledge and technologies.
- Invest in scientific research and the development of new technologies to improve current operations and prepare for the future.
- Improve NOAA's abilities to serve its customers and forge stronger ties with its partners and stakeholders.

Achieving NOAA's Vision for 2005

NOAA's Strategic Plan describes the goals and objectives that have been established to fulfill its vision. The strategy consists of seven interrelated goals that are grouped within the two missions of Environmental Assessment and Prediction, and Environmental Stewardship. The execution of NOAA's goal-based strategy depends strongly on a stable and robust infrastructure and administrative and human resources, as well as on the underlying capabilities of the agency as a national resource for research, observing systems, and environmental data and information services.



Advance Short-Term Warning and Forecast Services

Total Request: \$1,364,520,000

ORF: \$781,629,000

PAC: \$582,891,000

Vision

NOAA's vision for 2005 is to provide significantly improved short-term warning and forecast products and services that enhance public safety and economic productivity to the Nation. NOAA will enhance its ability to observe, understand, and model the environment, and effectively disseminate products and services to users.

Challenge

Our environment has profound effects on human welfare and economic well being. Each year, hundreds of lives and billions of dollars are lost due to severe storms, floods and other natural events that can be predicted minutes to months in advance. NOAA's current ability to predict short-term change is restricted by observations that are incomplete in time and space. This limits the ability to improve basic understanding, and predictive modeling of weather and other natural phenomena. NOAA is committed to improving its observing systems, developing a better understanding of natural processes, and enhancing its predictive models and dissemination systems.

Implementation Strategy

The objectives of this goal are to:

- Sustain modernized weather service operations
- Maintain continuous operational satellite coverage critical for warnings and forecasts
- Strengthen observing and prediction systems
- Improve customer service to the public, emergency managers, the media, and private forecasters.

Benefits

Increasing our understanding of the environment through research and investing in new technologies will provide more accurate and

timely weather warnings and forecasts required by the Nation. Improved geomagnetic forecasts will increase efficiencies for satellite operations and communications and electronic power distribution networks. Advanced modeling techniques and more complete observations will reduce uncertainties in hurricane track prediction, saving millions of dollars, and will improve inland flood prediction, saving lives and property. Accurate outlooks of future conditions will provide better information for planning weather sensitive activities over land and ocean. Critical contributions for the Administration's Natural Disaster Reduction Initiative will be provided from the research, monitoring and operational program in this NOAA goal.

Improvements associated with the modernized weather services have allowed for huge dividends. A cost-benefit analysis by the National Institute of Standards and Technology estimated economic benefits to the Nation to be about eight times greater than the costs involved. The Nation should realize annual benefits approaching \$7 billion from the modernization. It is now time to take full advantage of the modernization.

FY 1999 Accomplishments

First Official Hurricane Outlook Verifies

In May 1999, a team of NOAA scientists accurately issued their first-ever hurricane season forecast, which called for an "above average" season of more than 10 tropical storms, six hurricanes, and at least three "major" hurricanes (Category 3 or higher on the Saffir-Simpson Hurricane Scale with winds 111 mph or higher). Indeed, 1999 was busier than normal in all respects, with 12 tropical storms (average is 10), eight which became hurricanes (average is six), and five major hurricanes (average is two).

Hurricane Floyd

Hurricane Floyd paralleled the east coast from Florida to South Carolina before making landfall near Cape Fear, N.C. on September 16, 1999. Triggering the largest civilian evacuation in U. S. history, Hurricane Floyd produced massive inland flooding where there were over 50 deaths (making Floyd the deadliest U.S. hurricane since Agnes in 1972). NWS forecasters successfully forecasted the northerly turn of the Category 4 storm 100 miles from the Florida coastline and the new "Threats Assessment" Outlook identified areas of heavy rain and flooding potential more than a week in advance. NOAA probed the storm with new airborne radiometers, measuring water vapor, precipitation, and surface winds. Their observations were coordinated with

surface measurements for verification.

May Central Plains Tornado Outbreak

Violent F-4 and F-5 tornadoes occurred in Oklahoma and Kansas during May 1999. Although 47 people died, countless lives were saved as a direct result of early warnings and new technology installed during the NWS modernization. NWS offices issued over 100 warnings with an average lead time of 21 minutes (compared to the national average of 11 minutes). The Advanced Weather Interactive Processing System (AWIPS) NOAA Weather Radio (NWR), the Warning Decisions Support System (WDSS), and wind profiler radar were critical to the success of the warning process. During the event, a shift supervisor at a plastics company in Wichita, KS heard the tornado warning over an on-site NWR. 100 workers went to the basement of the building as the company activated its tornado plan. The plant was destroyed, yet there were no injuries. The NWS received a Humanitarian Award from Oklahoma Governor Frank Keating for the outstanding services provided to the citizens of Oklahoma.

Record-Breaking January Tornadoes

A record-breaking 169 tornadoes, more than three times as many as the previous monthly record for January of 52 tornadoes set in 1975, occurred in January 1999. A new tornado detection algorithm, installed in all local offices in November 1998, enabled forecasters to issue timely and accurate tornado warnings with lead times varying from 16 to 43 minutes. As a result, people were able to get out of harm's way.

Completed Advanced Weather Interactive Processing System Deployment

The last Advanced Weather Interactive Processing System (AWIPS) baseline system, an interactive weather computer and communications system that will help provide better weather and flood-related services to the country, was installed during June 1999. The installation of AWIPS completes a decade-long effort to revamp weather services and significantly improve weather forecasting. AWIPS has already demonstrated improvements in NOAA's ability to perform its mission by providing the forecasters with advanced capabilities to deliver enhanced warnings and forecasts to the public in severe weather situations.

Received Top Award from Computerworld and Smithsonian Institution for AWIPS

The AWIPS earned a top award in the Computerworld Smithsonian Awards program for using technology in an innovative way to create positive and economic change to benefit society. Winner

in the Environment, Energy and Agriculture category, AWIPS was the only federal award winner, with other categories won by some of the Nation's premier corporations.

Completed Delivery of All NOAA Weather Radio Console Replacement Systems

The final NOAA Weather Radio (NWR) Console Replacement System was delivered in November 1998. The consoles provide automated generation of NWR broadcasts of weather forecasts and warnings.

Conducted Hurricane Awareness Tours

NOAA hurricane experts conducted hurricane awareness tours in Central America, the Caribbean, and East and Gulf Coast of the U.S. to promote outreach, public education and teamwork for the 1999 hurricane season. Tours in Nicaragua, Honduras, the Dominican Republic, Puerto Rico, and Cuba played an important role in the exchange of information on the international capabilities, procedures and technologies used to forecast hurricanes.

Successfully Completed Winter Storm Reconnaissance Program

During January and February 1999, NOAA successfully conducted a winter reconnaissance dropsonde mission over the northeast Pacific. Critical atmospheric data, collected by NOAA's Gulfstream IV aircraft and the Air Force C-130's, was used in numerical weather prediction models and resulted in improved forecasts and warnings for the West Coast.

Observed 80th Anniversary of First Aviation Forecast

During FY 1999, the NOAA celebrated its 80th anniversary of the first aviation forecast. NOAA's NWS issues thousands of aviation forecasts, advisories and warnings to make flying safe and efficient.

Began Issuing Alerts and Warnings of Geomagnetic Storms based on the Advanced Composition Explorer Data

Since the Advanced Composition Explorer (ACE) became operational in December 1998, NOAA's Space Environment Center issued more than 29 geomagnetic storm warnings. Real time solar wind data from the ACE satellite has enable forecasters to make predictions, with lead times up to one hour. This information is critical to electric utility companies, communication companies, and other space weather service agencies.

Key FY 2001 Activities

- Sustain NWS base operations
- Provide an adequate preventative and cyclical facilities maintenance program
- Provide operation and maintenance support for 152 fielded AWIPS
- Continue AWIPS Build 5.0 development activities (2nd year of 3 year effort)
- Continue NEXRAD and ASOS product improvement initiatives
- Acquire, deploy, and install Doppler weather radar for the Evansville, Indiana area as recommended by the Modernization Transition Committee (MTC)
- Continue lease payments on the Class VIII supercomputer
- Continue the radiosonde replacement program to ensure critical upper air data
- Continue the procurement, launching, and operation of polar orbiting satellites and the follow-on series of geostationary weather satellites
- Improve geomagnetic and ionospheric storm predictions through acquisition of additional advanced satellite and surface observations
- Continue the national implementation of the Advanced Hydrologic Prediction Service (AHPS) in the Upper Midwest and tributaries within the upper Ohio River Basin
- Upgrade and expand the NOAA Weather Radio network with the acquisition of 30 new transmitters and an improved voicing capability
- Perform research to improve the forecast accuracy and lead-time for hurricane tracking and landfall prediction through assessments, analysis of enhanced data sets, and simulations.
- Complete enhancement of a research-grade WSR-88D radar to include dual-polarization capabilities and evaluate the ability of quantitatively estimate precipitation amounts
- Continue simulations under the North America Observing System Council to evaluate potential forecast improvements through selected GOES imager and sounder data.
- Complete development of advanced observing systems such as an Advanced Microwave Sounding Radiometer and a buoy-based wind profiler system

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- Implement warning decision support system technology into AWIPS/System for Convective Analysis and Nowcasting
 - Improve public awareness/preparedness of hazardous weather, and develop new techniques for detecting and tracking volcanic ash, and expand the framework of the Global Disaster Information Network.
 - Begin detailed planning and project development associated with the construction of a new facility and renovation of existing facilities to house NOAA operational and research centers at the University of Oklahoma
 - Support for the Administration's Natural Disaster Reduction Initiative (NDRI).

Key Performance Measures—Advance Short-Term Warning and Forecast Services

	1996 act.	1997 act.	1998 act.	1999 prelim	2000 est.	2001 est.
Tornado Warnings						
Lead Time (minutes)	10	10	11	12	12	13
Accuracy (percent)	59	59	66	70	70	70
* False Alarm Rate (percent)				72	65	59
Flash Flood Warnings						
Lead Time (minutes)	39	45	52	41	55	57
Accuracy (percent)	79	82	85	83	86	86
Winter Storm Warnings						
* Lead Time (hours)				11	12	13
* Accuracy (percent)				85	85	86
Hurricane Warnings						
* Lead Time (hours)				19	20	21
Aviation Forecasts (Ceiling/Visibility)						
* Accuracy (percent)				19	20	21
* False Alarm Rate (percent)				52	50	46
Marine Forecasts (Wind/Wave)						
* Accuracy (percent)				50	51	53
Precipitation Forecasts						
* Accuracy of 3-day Forecast (percent)					20	22

*New measures

Implement Seasonal to Interannual Climate Forecast

Total Request: \$129,489,000

ORF: \$129,487,000

PAC: \$2,000

Vision

NOAA, working together with academic and multinational partners, will provide up to one year and longer lead-time forecasts of known skill of global climate variability, especially El Niño and its associated precipitation, temperature, and storm patterns. These forecasts will increase society's ability to mitigate economic losses and social disruption.

Challenge

The largest interannual climate variability that has a degree of predictability is caused by the El Niño-Southern Oscillation (ENSO) phenomenon in the Pacific Ocean. Temperature and precipitation patterns, changes in ocean circulation, and changes in storm frequency caused by ENSO have global effects on economies and planning. Based on the application of ENSO-related research, NOAA issues monthly and seasonal probability outlooks for temperature and rainfall, and successfully forecasted the 1997-1998 El Niño six months in advance. ENSO-related effects range from severe drought to strong storms, with some regions experiencing floods and landslides while others suffer from fire and smoke. However, the ability to improve the accuracy and reliability of multi-season forecasts requires enhanced modeling and incorporation of the impacts of other modes of climate variability, like those from trends associated with decade-to-decade swings such as the North Atlantic Oscillation and the Pacific Decadal Oscillation, or long-term trends. The impact of global change on short-term climate variability like ENSO or the North Atlantic Oscillation must also be understood, requiring enhanced process understanding and an expanded observing system. In addition, NOAA must work towards an expanded operational suite of new products which integrate

regionally-focused, climate-related impacts spanning short (one week) to long (multiseason) time scales.

Implementation Strategy

The objectives of this goal are to:

- implement climate prediction systems to deliver useful seasonal to interannual climate forecasts for the U.S. and collaborate in a multinational effort to generate and use similar forecasts;
- enhance global observing and data systems required to provide data for the initialization and validation of model predictions of seasonal to interannual climate variations;
- invest in process and modeling research that leads to improved predictability of temperature and rainfall distributions; and
- assess the impacts of climate variability on human activity and economic potential, and improve public education so that climate forecasts are understood and acted upon.

Benefits

We can now predict El Niño events with a level of skill and enough lead time that hundreds of millions of dollars a year can be saved in the Nation's economy and abroad. Climate services will be as important to 21st Century economies and societies as weather forecasting is today. Better climate forecasting can result in benefits to the Nation's agriculture, and ultimately consumers, of more than \$300 million annually from improved agricultural decisions. For example, the ability to perfectly forecast ENSO events one year in advance would permit the Nation's corn inventories to decline eight percent, with annual savings of nearly \$240 million. A cost-benefit analysis of one NOAA program to understand and model ENSO, the Tropical Ocean Global Atmosphere (TOGA) program, shows a real economic return on investment of at least 13% - 26% for U.S. agriculture alone. A global ENSO forecast would have much greater benefits. ENSO forecasts will also improve fisheries management, as warm ENSO events have been associated with reduced marine catches. Global forecasts of climate variability will enhance agricultural, water resources, and other economic and social response planning.

FY 1999 Accomplishments

The 1997-1998 El Niño was the best monitored and most successfully predicted El Niño on record. NOAA provided more than six

months advance forecast of its impacts, including temperature and rainfall variations in the United States, predicting that California and the Southeast U.S. would receive unusually heavy rainfall and that the U.S. winter overall would be milder than normal. In a recent survey of 87 managers in the agribusiness, water resources, utility, and emergency sectors, 47 percent used the 1997/1998 El Niño forecasts to make planning and operational decisions, with 66 percent of users reporting beneficial outcomes. Utility companies in Michigan and Iowa alone reported savings of \$250 million because of their use of these forecasts.

In addition, the 1998-1999 La Niña was forecasted at least six months in advance by correctly predicting cooler-than-normal sea surface temperature in the eastern Pacific Ocean. NOAA predicted that La Niña will continue and re-strengthen during the winter of 1999-2000, and this prediction was correct. NOAA correctly forecasted temperature and rainfall variations for December 1998 through March 1999, including a wetter-than-normal Northwest and a drier-than-normal Southeast and Southwest.

Other accomplishments included:

- Correctly predicted in August 1998 that the peak of the 1998 Atlantic hurricane season would be more active than normal. In May 1999 and August 1999, correctly predicted that the 1999 Atlantic hurricane season would again be more active than normal.
- Operationalized two new, significant forecast products: U.S. Threats Assessment, a weekly outlook for droughts, heat waves, heavy precipitation, wild fires, and other extremes on time scales ranging from three to 10 days and beyond; and U.S. Drought Monitor, which classifies drought severity.
- Implemented quarterly forecasts of global scale seasonal anomalies of temperature and precipitation at the International Research Institute.
- Deployed and maintained the initial 10 of 12 moorings planned for the Pilot Research Moored Array in the Tropical Atlantic (PIRATA).
- Established clear linkages between the 1997-'98 El Niño and major weather events in the United States.
- Implemented Global Continental Scale International Project (GCIP) regional studies in north central, eastern and northwestern United States.
- Extended Pacific Northwest integrated impact assessment of climate

variability to agriculture and human health.

- Increased data accessibility by making more NOAA data sets available on-line via the Satellite Active Archive, including NOAA-15 data and atmospheric Pathfinder products from polar satellites, with annual distribution of over seven terabytes of polar orbiting satellite data to the environmental research community.
- Developed method to improve the accuracy of salinity in the ocean component of the ENSO prediction system using satellite altimetry.
- Developed an improved ocean data assimilation system of real time or near time observations to improve the accuracy of Pacific Ocean analyses and predictions.
- Deployed the initial 40 of 140 drifting buoys planned for mixed layer heat transport in the tropical Atlantic.
- Issued an ENSO Experiment Report on the preliminary research results and recommendations of the ENSO experiment.
- Developed climate hydrologic scenarios for the Great Lakes-St. Lawrence River Basin.
- Increased data accessibility by completing an interoperable system linking NOAA National Data Centers and other sources of NOAA data.
- Extended and updated climate data sets such as the Global Precipitation Climatology Project's monthly mean precipitation analyses, as well as the Special Sensor Microwave Imager's (SSM/I) monthly analyses of mean rain, snow, sea ice, cloud liquid water and total column water vapor.

Key FY 2001 Activities

- Continue to translate an enhanced climate monitoring capability and insights about climate variability from better observing systems into operational practice at the National Centers for Environmental Prediction (NCEP). This will be done through improvements to climate forecast models and better assimilation of observational data which feed into them, a broad spectrum of new forecast products to better serve the public and decision makers which emphasize risks of high impact weather events in the context of climate variability, and the computing capability to develop the improvements and deliver the products. Proposed new and improved products are biweekly to multi-year forecasts of risks of high-impact rainfall events and droughts, high levels of hurricane activity in the Atlantic and Pacific, temperature extremes, and forest and grassland

fires. The successful Threats Assessment product will be extended from out to 14 days to three months for heavy precipitation, fire danger, and newly implemented heat wave alerts, and improvements will be made to forecasts of El Niño and La Niña and other climate oscillations.

- Maintain and improve its data delivery systems. In particular, NOAA will increase support to its data center operations in order to meet the growing needs to manage incoming data and to serve the rapidly increasing demands for new climate services.
- Operationalize climate reference data sets, in order to maintain and distribute satellite data sets that were experimental but are now widely used by the operational and research climate community.
- Establish and maintain the sustained global observing system necessary for climate research and forecasting as well as the long-term monitoring system necessary for climate change detection and attribution. To that end, NOAA will complete its portion of the global array of profiling floats (ARGO) for temperature and salinity, deploy additional surface drifting buoys in undersampled regions to complete the Global Drifter Array, and improve and increase sampling from Voluntary Observing Ships (VOS). Additionally, NOAA will assess how our ability to document and forecast climate variability is impacted by the different data sources.
- Build on current U.S. (NASA) and French satellite altimetry programs, TOPEX and JASON, to ensure their continuity through the next decade. Studies of satellite systems and ground systems architecture, including orbits, will be performed that will ensure effective assimilation of altimetry into ocean models.
- Conduct El Niño-Southern Oscillation (ENSO) research to determine atmospheric predictability induced by tropical Pacific sea surface temperature changes, model the global response to changes in the ENSO cycle, and examine the changes in probabilities of extreme weather events induced by ENSO.
- Improve access to its data holdings by the public and decision makers, and will provide very high volume of data from new remote sensing observing systems. The new system will reduce NOAA's costs of data management and will improve user services.

Key Performance Measures-Implement Seasonal to Interannual Climate Forecast

	1996 act.	1997 act.	1998 act.	1999 act.	2000 est.	2001 est.
ENSO Forecasts accuracy (correlation) 1/	.85	.81	.85	.85	.85	.85
U.S. Temperature skill score 2/	15	22	23	24	20	20
ENSO observing system operational (%)	0	0	50	75	90	90
New and improved data sets developed and produced (#)	7	7	6	6	6	6
Global Continental Scale International Project experiments implemented (%)	20	40	40	60	80	80
GOALS experiments implemented (%)	5	15	15	20	25	25

1/ Accuracy is the correlation of the forecast with actual conditions.

2/ For those areas of the United States where a temperature forecast (i.e., warmer than normal, cooler than normal, normal) is made, this score measures how much better the prediction is than the random chance of being correct. Skill score is based on a scale of 50 to +100. If forecasters match what would be predicted by random chance, the skill score is 0. Anything above 0 shows positive skill in forecasting. Given the difficulty of making advance temperature and precipitation forecasts for specific locations, a skill score of 20 is considered quite good and means the forecast was correct in almost 50 percent of the locations forecasted. Forecasts will likely be better in El Nino years than in non-El Nino years.

Predict & Assess Decadal to Centennial Climate Change

Total Request: \$114,151,000

ORF: \$103,149,000

PAC: \$11,002,000

Vision

NOAA and its research partners will provide science-based information for improving the predictive understanding of decadal to centennial changes in the global environment, specifically for: long-term climate change and greenhouse warming, ozone layer depletion, and air quality improvement.

Challenge

Our planet is a place of natural and human induced change. Human activities are now recognized as impacting the global heat balance and climate system, thinning of the stratospheric ozone layer, and atmospheric pollution. While these changes increasingly promise to impact our societal systems and natural environments, they challenge the world scientific community to improve its prediction and assessment capabilities. Explanatory environmental models must be strengthened through better understanding of the atmospheric and oceanic processes so that we may meet the challenges of understanding and foreseeing climate variability and long-term change in approaching decades. Sound economic and social decisions depend upon assessed scientific information as a touchstone.

Implementation Strategy

The objectives of this goal are:

- to characterize the agents and processes that force decadal to centennial climate change;
- understand the role of the ocean as a reservoir of both heat and carbon dioxide to address a major source of uncertainty in climate models;
- ensure a long term climate record by enhancing domestic and international weather networks, observing procedures, and information management systems. Document present and past changes and

variations in the climate system, including extreme events, and rapid climate changes, exploiting national and international observing networks, satellites, and paleoclimatic data;

- guide the rehabilitation of the ozone layer by providing the scientific basis for policy choices associated with ozone-depleting compounds and their replacements;
- provide the scientific basis for improved air quality by improving the understanding of high surface ozone episodes in rural areas and by strengthening the monitoring network to detect cleaner air quality and improving the characterization of airborne fine particles; and
- develop models for the prediction of long-term climate change (including extreme events and rapid climate changes), carry out scientific assessments, and provide human impacts information.

Benefits

Nations have committed to eliminating production of compounds that deplete the ozone layer (Montreal Protocol). Research is not only helping define ozone friendly replacement compounds and monitoring the atmospheric decline in ozone-depleting substances, but also documenting that the recovery of the ozone layer is as expected. Anticipatory research on global climate change supports sustainable development by providing timely information to society to make sound decisions about the role of human activities in global climate change and variability. NOAA research has identified areas of air quality changes, such as high surface ozone in rural areas, that require the development of a fundamental understanding of their causes. New research is pointing to more effective ways to meet those goals, thereby avoiding costly over regulation. Providing research results that address key scientific uncertainties, presenting the improvements in understanding in up to date assessments, and summarizing this knowledge in policy relevant terms to government and industrial leaders are the cornerstones of environmental stewardship.

FY 1999 Accomplishments

NOAA had some key accomplishments across the objectives supporting this strategic goal in FY 1999. NOAA continued to make progress in understanding and documenting decadal to centennial climate changes. NOAA provided major scientific input and leadership

to the Intergovernmental Panel on Climate Change (IPCC), the World Meteorological Organization (WMO), United Nations Environment Programme (UNEP), the public-private partnership, and the North American Research Strategy for Tropospheric Ozone (NARSTO).

Others include:

- NOAA's research documented trends in atmospheric trace gases related to climate, air quality, and ozone layer
- The properties of atmospheric aerosols were studied over ocean and land surfaces
- Released a report on the ozone layer, *Scientific Assessment of Ozone Depletion: 1998*

Key FY 2001 Activities

- Continue to advance understanding of the natural and human-influenced processes affecting the earth's radiation balance with an emphasis on observations of the coupled ocean-atmosphere system, especially as it relates to the cycle of carbon dioxide, utilization of observations, and assessments of the current understanding that serve as input to public policy formulation.
- Publish and disseminate the 2001 assessment report of the Intergovernmental Panel on Climate Change (IPCC). This assessment includes observations of the current changes and trends in the climate system, a reconstruction of past changes and trends, an understanding of the processes involved in those changes, and the incorporation of this knowledge into models of the system that can provide simulation of natural or human-induced future changes in the climate system. This third in the series (1990 and 1996) will provide decisionmakers in governments, industry, and other non-governmental organizations on the complex issue of global climate change.
- Report the findings from a major field study that will focus on a better understanding of the processes that control the formation and distribution of ozone and particulate matter in the Houston/East Texas region. The study will provide a new level of fundamental atmospheric information that can provide the scientific basis for air quality management of the growing issues of that region.
- Publish and disseminate the U.S. National Assessment of Potential Consequences of Climate Variability and Change. This assessment reports on our understanding of US vulnerabilities to possible

climate change impacts. This is the first attempt to address the potential impacts of climate change in the USA for the 21st Century across various regions and sectors. The National Assessment of the Potential Consequences of Climate Variability and Change was mandated by a 1990 law and has taken place under the auspices of the U.S. Global Change Research Program (USGCRP).

- Building on efforts begun in FY 2000 to develop a climate reference network, NOAA will select 100 sites; place instrument types for temperature, precipitation and soil moisture at a number of reference network sites and implement a means to electronically communicate all data collected in the reference network.
- Improve the observation network performance by developing and using performance indicators to identify problems early enough to prevent serious degradation.
- Upgrade and expand operations at NOAA's remote manned baseline observatories. NOAA will rehabilitate aging Barrows and Samoa observatories; upgrade the Dobson ozone spectrometer equipment; and upgrade 11 continuous surface radiation sites.

Key Performance Measures—Predict and Assess Decadal to Centennial Climate Change

Performance Measure	1999	2000	2001	2002	2003
Results of 90% of the research activities cited in the 2001 IPCC third Assessment of Climate Change	NA	NA	90% cited	NA	NA
Results of 90% of the research activities cited in the 2002 UNEP/ WMO Assessments of ozone depletion	NA	NA	NA	90% cited	NA
NARSTO assessment of the scientific understanding of atmospheric fine particles	90% cited	NA	NA	NA	80% cited
Results of 90% of the climate trends research cited in the U.S. National Climate Assessment	NA	90% cited	NA	NA	NA

The scientific community has in place a regular process for evaluating, on a several-year time scale, the major scientific advances in climate science. This process is the periodic assessment of the state of scientific understanding of the climate system. NOAA's measure of performance is that 90% of the research in relevant areas of endeavor be incorporated into these

assessments, namely, the vast majority of NOAA's results are deemed by our scientific peers to be major advances in understanding. Three to five years is the period generally used to expect substantial overall advancements in a field such that a new state-of-understanding assessment could be justified. Those products take 2½ to three years to produce.

Promote Safe Navigation

Total Request: \$109,542,000

ORF: \$109,542,000

PAC: None

Vision

By 2005, merchant ships, fishing vessels and recreational boats will safely ply our coastal waters, electronically guided by space-based navigation and advanced information technologies. NOAA will revolutionize U.S. marine navigation, mapping and surveying and assist commercial shipping in moving increased cargoes safely and efficiently into and out of the Nation's ports and harbors. NOAA will provide a precise satellite derived reference system as the basis for the Nation's nautical data and geographical positioning needs.

Challenge

Ships have doubled in length, width and draft in the last 50 years and seagoing commerce has tripled, leading to increased risk in the Nation's ports. Between 1993 and 1996, tankers alone were involved in 174 groundings, 14 collisions and 12 deaths. Navigation tools must be modernized. Up-to-date nautical charts are essential for the safety of life and property, and for safe and efficient navigation. More than 50 percent of NOAA's nautical charting data were obtained before 1940. Although considered to be the best available at that time, dramatic improvements in efficiency and accuracy have been realized in the technology used to collect data. Two-thirds of the data used for tidal predictions are more than 40 years old. The existing coordinate reference system must be modernized to provide the higher accuracy and accessibility available from the Global Positioning System (GPS).

Implementation Strategy

The objectives of the Promote Safe Navigation goal are to:

- build, maintain, and deliver a digital nautical charting database to underpin new electronic navigation systems which integrate satellite positioning, tidal heights and currents, radar and sonar, and navigational aids;
- update nautical surveys of the Nation's coastal areas using full-bottom coverage technologies;
- define the national shoreline in an accurate and consistent manner using state of the art technology to serve the Nation's navigational and coastal needs;

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- provide mariners with real-time observations and forecasts of water levels, tides and currents, and weather conditions in ports; and
 - continue to evolve the National Spatial Reference System to anticipate and fulfill the growing demands for more accurate and timely positioning services critical to digital mapping, charting, and surveying.

Benefits

New technology including full-bottom nautical surveys, digital charting, satellite positioning (GPS) and real-time observations of tides and currents promise to reduce maritime transportation risks, enhance environmental protections and heighten the competitiveness of the U.S. shipping industry. With today's deep-draft container ships, each additional inch of clearance translates into as much as tens of thousands of dollars in additional cargo trade in or out of the United States. Newer technologies will result in more complete and accurate surveys of the ocean floor, and will enable the mariner to know the ship's precise position relative to charted obstacles as well as its depth and underkeel clearance. These technologies also will support the needs of coastal zone planners, regulatory officials and researchers as they work to ensure the safe, sustainable and efficient development of our coastal and ocean resources.

FY 1999 Accomplishments

During FY 1999, NOAA:

- Updated 250 nautical charts, of which 146 paper nautical chart editions were printed, and updated 37 electronic navigational charts (ENC) of major harbor areas
- Acquired and processed data from 68 hydrographic surveys
- Reduced the data-to-chart production time from 8 months to 8 weeks by streamlining the delivery system for applying new hydrographic data to nautical chart editions
- Demonstrated the benefits of GPS technology by using GPS satellites and sophisticated surveying equipment to accurately measure the height of the Washington Monument. This provided a real-world, test-case environment challenging to GPS observations, to assess techniques applicable for a variety of structural measuring and monitoring situations. The survey of the famous landmark also helped raise public awareness of GPS and the National Spatial Reference System.

Key FY 2001 Activities

- Produce 200 new editions of nautical charts and an additional 30 electronic navigational charts for a total of 120 ENCs.
- Map another 20 percent of the shoreline depiction backlog in the 38 critical high priority ports.
- Reduce the critical hydrographic survey backlog by an additional 3.5 percent.
- Integrate NOAA's navigation-related tools through the National Spatial Reference System to deliver more accurate and timely 3-dimensional positioning capability.
- Modernize all 175 National Water Level Observation Network stations to 100 percent operational capacity to ensure real time capabilities in support of Physical Oceanographic Real-Time Systems (PORTS) and coastal resource management.
- Implement the comprehensive quality assurance capabilities and modernization necessary to support additional PORTS.

Key Performance Measures

	1996 act.	1997 act.	1998 act.	1999 act.	2000 est.	2001 est.
Nautical chart editions (suite of 1000) Lithographic /Alternative Methods ^A	235	338	360	250	200	200
Thruput (in weeks) ^B	N/A	N/A	104	8	4	2
Electronic Navigational Charts (ENC) ^C	N/A	N/A	N/A	37	90	120
Reduce critical area survey backlog (43,000 SNM backlog) Cumulative reduction (%) ^D	9	12	15.5	20.7	24.3	27.8
National Water Level Observation Network (NWLON) Cumulative % operational and modernized ^E	70	78	75	91	81	100
National Spatial Reference System (NSRS) Cumulative % complete ^F	53	60	69	59	64	72

1. This Performance Measure replaced the Percentage of Chart Suite Printed. The FY2001 target for 200 charts is to have these charts ready for printing if and when requested.
2. Thruput is defined as the time from when data is received to when it appears on product.
3. This performance measure replaces the "Cumulative % of Vector Charts Collected" with "ENC Vector Charts Collected, Maintained and Released (cumulative)."
4. A one-time change in accounting caused cumulative reduction in backlog to be adjusted in FY1999 estimates. To improve estimates for contracting, contract miles are now counted when awarded and not when accomplished.
5. 175 stations total. Lack of maintenance will cause some stations to fail in FY2000, reducing the number of operational stations.
6. The vertical component of the NSRS performance measure was expanded in FY1999 to include additional networks not previously tracked that serve to measure height modernization performance. The target base reference for Continuously Operating Reference Stations increased from 200 to 300 in FY 1999.

Build Sustainable Fisheries

Total Request: \$435,422,000

ORF: \$401,743,000

PAC: \$13,988,000

Other: \$19,691,000

Vision

NOAA's vision for the next decade is to greatly increase the Nation's wealth and quality of life through sustainable fisheries that support fishing industry jobs, provide safe and wholesome seafood, and ensure recreational fishing opportunities.

Challenge

Billions of dollars in economic growth, thousands of jobs and countless recreational fishing opportunities are not realized as a result of overfishing and overcapitalization in commercial and recreational fisheries. While many fisheries are well managed and are producing positive benefits, others are severely depleted, and must be restored to realize their long-term potential. For example, the historically important New England groundfish fishery was severely curtailed in 1994 due to the collapse of stocks. Transboundary resources can be especially vulnerable as they require international cooperation to achieve effective conservation and management. Bycatch of non-target species, including juveniles and protected marine species, the controversial allocation decisions among elements of fishing industries, and the degradation and loss of essential fish habitat are serious problems effecting U.S. fisheries. The lack of sufficient scientific information makes it necessary, at times, to make conservative management decisions. There is an increasing domestic and global demand for seafood. In order to meet this growing demand, and in light of the growing number of wild stocks that are overfished or fully utilized, it is important for the Nation to develop marine aquaculture, and to do so in an environmentally sound manner.

Implementation Strategy

The objectives of this strategic planning goal are to:

- eliminate and prevent overfishing and overcapitalization—by assessing the status of fishery resources, advancing fishery predictions, managing for economic growth in the fishing industry and ensuring

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- adequate and voluntary compliance with fishery regulations;
- attain economic sustainability in fishing communities—by providing research and services for fishery-dependent industries and maximizing benefits from marine resources; and
 - develop environmentally and economically sound marine aquaculture—by supporting aquaculture research and development and ensuring responsible industry practices.

Benefits

Rebuilding overexploited fish stocks by eliminating overfishing, protecting and improving fish habitat, and improving the economics of fisheries by reducing overcapitalization, are the key elements in a transition to sustainable fisheries. These activities will result in a more viable and competitive U.S. fishing industry, which in turn will lead to economic and social improvement in fisheries-dependent communities. Along with economic gains and the rebuilding of living marine resources, improved fisheries management and conservation will enhance recreational opportunities and save lives by eliminating the dangerous and wasteful race for the fish. By developing environmentally sound aquaculture, the increasing demand for seafood can be met with high quality and reliable products without contributing to overfishing of wild populations or other negative impacts on coastal ecosystems.

FY 1999 Accomplishments

During FY 1999, NOAA continued to provide national leadership to maintain and improve the health of the Nation's fisheries. The following are the year's highlights:

- NOAA/NMFS has implemented 59 amendments to fishery management plans to address the requirements of the Sustainable Fisheries Act.
- Many overfished stocks are beginning to show signs of recovery. In New England for example, the 1998 year class for haddock is the largest in 20 years; the Georges Bank cod stock biomass has increased 43% above the record low level of 1995; and additional scallop harvests in once closed areas has added \$40 million to southeast New England fishing communities. In other areas species such as king mackerel and red snapper are increasing. We must expand our efforts to ensure similar results elsewhere, and work even harder to maintain the gains made.

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- NOAA/NMFS has succeeded in including most of the Nation's important fisheries under limited programs. Limiting the participation in a fishery is the first step in ensuring the stock is rebuilt, or for healthy stocks, not overfished.

Key FY 2001 Activities

- Improve and expand stock assessment and prediction through increased stock surveys, fisheries oceanographic projects, and a West Coast Observers program.
- Continue to implement the Sustainable Fisheries Act, refine essential fish habitat designations in the fishery management plans, and to reduce fishing impacts on essential fish habitat.
- Implementation of a national fishing vessel registration and fisheries information system, quality standards for regional programs, and integrate the results into a unified system. This system will also fill critical gaps through initiation of new data collection programs that will subsequently reduce the risk and uncertainty of living marine resource policy decisions.
- Implement priority recommendations of the Task Force on coral reefs by identifying, developing, monitoring and enforcing fishery reserves in U.S. waters. This program will provide the management tools for NOAA Fisheries and the Regional Fishery Management Councils to effectively utilize "no-take" fishery replenishment areas as fishery management tools. It will work with fishing communities and other to provide baseline assessments and long-term monitoring of both coral reef fishes and the associated ecosystem in identified coral reef "no-take" zones; and provide enforcement support for such zones.
- Continue to attain economic sustainability in fishing communities by establishing a Fisheries Assistance Fund to provide flexible, uniform, and timely assistance through buybacks to address disasters, overfishing, or overcapitalization. Collect fisheries statistics and perform economic and social analyses required by the new Standard 8 of the Sustainable Fisheries Act. The importance of such economic data has increased in recent years as additional management measures have been implemented to end overfishing and rebuild stocks.
- Promote public and private sector aquaculture which includes funding for research and an extension program to develop environmentally sound marine aquaculture.
- Support programmatic costs required to complete construction of the first of four new Fisheries Research Vessels (FRVs).

Key Performance Measures—Build Sustainable Fisheries

	1996 act.	1997 act.	1998 act.	1999 est.	2000 est.	2001*
% of SFA requirements met	N/A	N/A	N/A	20	40	N/A
% of stocks assessed (of 201 identified)	78	79	79	79	80	N/A
% completion of information technology procurement/operations	74	85	90	95	100	N/A
# Fishery Management Plans with access controls implemented (of 39 FMPs)	24	25	23	27	30	N/A
# of fleets using vessel monitoring systems for spatial/temporal regulations	3	3	3	5	6	N/A

* To be replaced by new measures.

Key Performance Measures (New)–Build Sustainable Fisheries

	1996	1997	1998	1999	2000	2001
By 2005, 25% (86 of 279) fewer overfished fisheries (stocks subject to overfishing)	N/A	N/A	N/A	-4%	-8%	1%
By 2005, 20% fewer overcapitalized fisheries (economic and social aspect)	N/A	N/A	N/A	0	1%	3%
By 2005, 60% of stocks have sufficient “essential fish habitat”	N/A	N/A	N/A	N/A	10%	40%
By 2005, 9% increase in employment in non-capture fishing and/or other sectors	N/A	N/A	N/A	0	1%	2%
By 2005, 20% of communities impacted by limited/closed fisheries are economically improved	N/A	N/A	N/A	0	1%	3%
By 2005, 17% increase in economic contribution of aquaculture to Gross Domestic Product (GDP)	N/A	N/A	N/A	0	2%	4%
By 2005, 100% of aquaculture operations are in compliance with code of responsible aquaculture practice	N/A	N/A	N/A	0	2%	15%

Recover Protected Species

Total Request: \$278,254,000

ORF: \$110,236,000

PAC: \$8,018,000

Other: \$160,000,000

Vision

NOAA's vision is to conserve marine species and to recover those in danger of extinction. By 2005, NOAA will be on the road to recovering every marine species at risk and maintaining the healthy marine ecosystems upon which they depend.

Challenge

Marine resources contribute billions of dollars to the Nation's economy. However, many commercial and recreational activities contribute to stress on marine species. Many populations of marine organisms are depleted or declining due to human activity in marine ecosystems and unknown causes. For example, West Coast salmon populations are at-risk due to a combination of factors including habitat loss and commercial overexploitation. Despite protective measures, fishing-related mortality continues to threaten marine turtles in the Nation's waters. Several seal and sea lion populations in Alaska are declining rapidly and the causes are uncertain. Recovery plans have been developed for the most endangered species, but implementation for others, especially for stocks of marine mammals and sea turtles, is needed. The desired outcome is to recover protected species in danger of extinction and to maintain healthy species and ecosystems, in a manner compatible with the sustainable use of marine resources.

Implementation Strategy

The objectives of this goal are to:

- reduce the probability of extinction for protected species; and
- maintain healthy species and ecosystems.

Benefits

Through conservation of the Nation's living marine resources, NOAA will enhance economic and cultural opportunities for future

generations. The existence of the Marine Mammal Protection Act, the Endangered Species Act and other legislation provides a clear indication of public support for strong efforts to conserve living marine resources. This effort will enable the preservation of marine biodiversity by balancing the utilization of natural resources with the management of protected species. Recovering species, and avoiding the further decline of others, will contribute to the overall health and understanding of marine ecosystems. Improved science will lead to better long-term management and conservation strategies.

FY 1999 Accomplishments

During FY 1999, NOAA:

- NMFS has completed status reviews and has listed 26 west coast salmon populations under the Endangered Species Act. Endangered Species Act listing considerations are pending/underway for an additional eight populations that are proposed or candidate species.
- NOAA is continuing to make strides in developing conservation regulations. One Section 4d protective regulation has been completed to date. In addition, three more draft rules are in review by the President's Council on Environmental Quality. These draft rules would protect an additional 14 ESUs as well as define take for treaty tribes. NOAA will complete 4d rules for remaining stocks.
- NOAA has devoted extensive resources to Endangered Species Act Section 7 consultations to keep pace with the multitude of Federal activities that may affect listed salmon populations. Almost 500 consultations were completed in FY 1999 and the number is expected to double by FY 2001.
- NMFS continues to engage with State, local, and private entities in the ever-expanding arena of salmon conservation planning and development of Habitat Conservation Plans (HCP). Five HCPs have been approved. With the recent additional listings of 9 salmon populations in urban metropolitan areas in March 1999, NOAA will again be struggling to keep pace unless new resources are provided. NOAA anticipates the need to complete an additional 40-45 HCPs.
- Continued to develop and implement recovery plans and take reduction plans for protected species. NOAA published a take reduction plan for marine mammals in the mid-Atlantic Ocean. A take reduction plan for the Gulf of Maine harbor porpoise was published in early FY 1999. In the eastern North Pacific, NOAA

monitored the delisted gray whale population to ensure its continued population recovery.

- Made strides in protecting at risk turtle species by promoting the use of turtle excluder devices (TEDs) in the U.S. and internationally. The endangered Kemp's ridley turtle population experienced an increased survival rate through the use of TEDs in the U.S. and Mexico. Threatened Atlantic loggerhead turtles also experienced an increase in survival through TED use in the U.S. and abroad. The Recover Protected Species goal will continue to focus on the protection and recovery of at risk turtle populations in FY 2000.

FY 2001 Key Activities

Through the Prevent Extinction Crisis Initiative, NOAA will implement programs to respond to the extinction crisis facing several highly endangered marine species and to expand efforts for Pacific and Atlantic Salmon. It will stem the decline of Pacific leatherback turtle and the northern Atlantic loggerhead turtle, Hawaiian monk seals, northern Atlantic and North Pacific right whales, Steller sea lions, and Cook Inlet Beluga Whales, all of which are on the brink of extinction. This will be done through a combination of research, monitoring and management actions to determine the causes for the decline and to implement recovery measures. This initiative continues the Administration's support for the recovery of endangered Pacific salmon by investing in the scientific underpinnings of this recovery program and monitoring its effectiveness, and provides a solid foundation for conserving Atlantic salmon in Maine through a strong investment in research. These activities include:

- Increasing NOAA participation with the Interior Columbia Basin Ecosystem Management Program by providing consultation and advisory services specifically regarding projects to improve habitat and increase populations of listed steelhead and chinook salmon.
- Continue implementation of the ESA Section 7 Biological Opinion regarding the impact of Federal dams in the Columbia River basin. The opinion will dramatically affect the allocation of water resources in the Pacific Northwest. The opinion addresses the operation of Federal hydro projects and will enable NMFS to effectively respond to the accelerated schedule for dam relicensing in the Pacific Northwest.
- Support State and tribal implementation of management and conservation of listed and candidate salmon populations. Under the Salmon Recovery Initiative, NOAA will continue to work with

participating States and tribal organizations to implement cooperative agreements under Section 6 of the ESA.

- Improve scientific knowledge of wild Atlantic salmon to understand impacts and risks affecting production. To address the severe decline of this species, the Maine conservation Plan for Atlantic Salmon will be implemented. The Plan focuses on watershed and river enhancement, minimizing interactions between wild and aquaculture-salmon, and river stocking strategies.
- Increase the collapsing population of the Pacific leatherback populations, NOAA will eliminate incidental take in commercial driftnet and longline fisheries; support international efforts to protect nesting turtles and their eggs and nesting habitat; and determine migratory patterns, habitat requirements and primary foraging areas for the species throughout the leatherback range.
- For loggerhead turtles, NOAA will develop gear technology to eliminate incidental take in non-shrimp commercial fisheries; determine population size and status in U.S. waters; determine the population range and level of mortality; and develop cooperative international efforts to protect the loggerhead population.
- For monk seals NOAA will conduct ecology studies to protect and conserve foraging habitat and conduct health assessments to mitigate the impact of disease, of particular importance with translocation efforts.
- NOAA will complete a large-scale population assessment of the north Atlantic right whale, providing an accurate measure of the species status. Data from the assessment will be used in developing and implementing efforts to reduce species mortality due to human activity. A population status study of the North Pacific right whale will be initiated, monitoring trends in abundance and identifying and protecting critical habitat.
- Efforts for Steller sea lions will focus on reducing known threats from fishery interactions and assessing and monitoring the status of this endangered stock.

Under the Maintain Healthy Species and Ecosystems objective, NOAA will assist in maintaining healthy species within the coral Reef Conservation Initiative to meet the goals of the President's Executive Order on Coral Reef Protection (E.O. 13089). In addition, this request

will support the co-management of a sustainable marine mammal subsistence harvest by Native Americans. These include:

- Addressing coral reef protection through identifying and prioritizing Pacific coral reefs for protection, areas of important biodiversity, essential fish habitat and ecosystem function.
- Supporting sustainable communities that conserve and recover protected species through Native American co-management of marine mammals by Alaska natives and Makah tribe.

Key Performance Measures—Recover Protected Species

	1996 act.	1997 act.	1998 act.	1999 est.	2000 est.	2001 est.
# recovery plans developed (cum)	13	10	20	25	27	na
# recovery plan priority activities implemented (annual)	8	8	8	15	20	na
# species with population status improved (annual)	11	12	23	15	16	na
# status reviews used to establish and evaluate conservation programs (annual)	3	11	18	11	13	na
# investigation on mortality of protected species (annual)	11	7	10	10	15	na
# cooperative conservation programs implemented (cum)	4	4	10	10	10	na

Key Performance Measures (New)—Recover Protected Species

New performance measures	1996	1997	1998	1999	2000 est.	2001 est.
By FY 2005, reduce the probability of extinction of 8 endangered species ¹ /ESUs out of 33 endangered species/ESUs:	na	na	na	na	na	0
By FY 2005, reduce the probability of extinction of 5 threatened species ¹ /ESUs out of 23 threatened species/ESUs:	na	na	na	na	na	0
By FY 2005, reduce the probability of extinction of 7 candidate species ¹ /ESUs out of 23 candidate species/ESUs:	na	na	na	na	na	0
By FY2005 mortality of strategic marine mammal stocks incidental to commercial fishing operations in six fisheries will be at insignificant levels	na	6	6	6	6	6
By FY 2005 protect or restore priority biodiversity areas:	na	na	na	na	30	50
% ESA species critical habitat mapped	na	na	na	na	0	50
% MMPA species critical habitat mapped	na	na	na	na	3	4
% increase in number of new sites protected	na	na	na	na	na	0
% baseline in-situ assessments of US Pacific Island coral ecosystems	na	na	na	na	na	75
% reef area with marine debris removed	na	na	na	na	na	35

¹Quantitative measures of the probability of extinction for protected species will be developed in FY 2000 to establish the baseline from which program performance (reduction in the probability of extinction) is measured. NMFS recognizes the need for objective procedures to determine the status of protected species based on population analyses that take into account species biology and threats to existence that are both human-caused and natural. The RPS budget proposal is based in part on measuring our ability to reduce the probability of extinction for at risk-species. RPS performance will be measured by the results of our attempts to reduce the risk of extinction for protected species from detrimental human activities, e.g., reducing incidental and direct takes, increasing species habitat, decreasing negative interactions, and mitigating natural phenomena.

Sustain Healthy Coasts

Total Request: \$486,768,000

ORF: \$373,604,000

PAC: \$11,002,000

Other: \$102,162,000

Vision

By 2005, the Nation's coasts will have more productive and diverse habitats for fish and wildlife, and cleaner coastal waters for recreation and the production of seafood. Coastal communities will have thriving, sustainable economies based on well-planned development and healthy coastal ecosystems.

Challenge

Despite progress in developing technology, information and management tools to protect and sustainably use coastal resources, rapid population growth and increasing demands continue to degrade coastal resources and threaten the economic productivity and environmental services of coastal areas. Although these areas comprise only 10 % of U.S. land area, over half of the U.S. population lives on or near the coast, and coastal populations are growing faster than most inland areas. There are many signs that additional efforts are needed to protect the economic and environmental values of U.S. oceans and coasts. In 1998, for example, about one third of 1,062 beaches reporting had at least one advisory or closing, up from 26 percent in 1997. Polluted runoff and degraded water quality continues to close or restrict the use of nearly 31 percent of U.S. shellfish growing waters, and declines in environmental quality continue to threaten coastal communities, businesses, and human health.

Healthy coastal environments support tourism, recreation, fishing and other industries that generate more than \$100 billion annually in coastal communities across the Nation. Coastal wetlands, estuaries, coral reefs and other areas provide essential feeding and nursery habitats for approximately 70 percent of all U.S. commercial and recreational fisheries species. Maintaining the health, productivity and biodiversity of coastal ecosystems is challenging but essential to sustainable development of coastal economies and the future welfare of the Nation.

Implementation Strategy

The goal of Sustain Healthy Coasts encompasses the following objectives:

- Protect, conserve and restore coastal habitats and their biodiversity.
- Promote clean coastal waters to sustain living marine resources and ensure safe recreation, healthy seafood, and economic vitality.
- Foster well-planned and revitalized coastal communities that sustain coastal economies, are compatible with the natural environment, minimize the risks from nature's hazards, and provide access to coastal resources for the public's use and enjoyment.

Benefits

The pursuit of this goal provides information, technology, solutions, and other valuable tools to coastal resource managers at local, state, tribal and Federal levels. NOAA's coastal activities form an integrated suite of monitoring, research, assessment, restoration, information dissemination and resource management programs that enable sound decision making and sustainable development of coastal areas. Federal-state partnerships such as the Coastal Zone Management Program, National Estuarine Research Reserve System, and National Sea Grant College Program are essential components of the Sustain Healthy Coasts goal. Research provides improved understanding of the way in which coastal ecosystems function, and increases the ability to predict how ecosystems and society respond to change, whether natural or caused by humans. The ability to predict change and determine its causes empowers managers and stakeholders to work together to promote sustainable use of coastal resources and mitigate costly damages. NOAA's coastal programs effectively ensure that the Nation's coastal ecosystems are managed for the long-term benefit of the public.

FY 1999 Accomplishments

NOAA helped restore the natural circulation and drainage patterns in over 20,000 acres of coastal wetlands in partnership with the State of Louisiana and other agencies.

NOAA helped re-opened 3.5 miles of river to salmon as part of community-based habitat restoration projects with private landowners and other partners in Oregon.

NOAA's National Undersea Research Program (NURP) supported

a number of important research and monitoring efforts on marine habitats. For example, the NURP center at the University of Connecticut, in partnership with NMFS and USGS, performed habitat census and habitat/species relationships to monitor the recovery of fish and other species on Georges Bank.

NOAA Sea Grant in Hawaii worked with the Northwestern Hawaiian Islands Marine Reef Cleanup Team to remove six tons of debris and reduce the impacts of marine debris on Hawaii's coral reefs and wildlife including the endangered Monk Seal. The partnership is now central to continuing efforts to protect Hawaii's fragile coral reef ecosystem.

NOAA installed navigation beacons to protect fragile coral reefs from ship strikes. As part of the successful settlement for natural resource damages associated with the grounding of the container vessel, Contship Houston, the responsible party purchased eight primary and six backup radio navigation units to enhance navigational safety and help prevent vessel groundings within the boundaries of the Florida Keys National Marine Sanctuary. The beacons should help prevent future groundings and accidents by large vessels in the delicate habitats of the Florida Keys.

NOAA HAZMAT, Disaster Response Team, and NOAA Corps responded to calls for scientific assistance on more than 120 incidents, including spills of toxics into the Nation's coastal waters (60 percent oil-related, 28 percent chemical-related, and 12 percent other) and the crash of John F. Kennedy Jr.'s plane.

NOAA's Workshop to Standardize Pfiesteria Monitoring Protocols brought science program managers from state and Federal agencies and scientific experts from academic institutions together to seek consensus on recommendations for standardizing protocols for monitoring Pfiesteria-complex events. This workshop has had substantial and lasting benefits to the Nation's understanding of harmful algal blooms and to the availability of credible information to guide natural resource managers in their actions and forecast Pfiesteria-complex events.

Minnesota became the 33rd of 35 eligible states and territories to join the national Coastal Zone Management program. This Federal-state partnership strives to create better planning for resource protection and economic development along the Nation's coasts.

Three National Estuarine Research Reserves (NERRs) were added at Guana-Tolomato-Matanzas, Florida; Grand Bay, Mississippi; and

Kachemak Bay, Alaska. These additions bring the number of sites in this Federal-state partnership to 25 and double the acreage of land set aside for protection, research, monitoring and education to more than 1 million acres.

NOAA, in partnership with National Geographic, launched a first-of-its kind exploration of the Nation's 12 marine sanctuaries. The Sustainable Seas Expeditions (SSE) utilize sophisticated new submersible technology to explore the ocean and learn how best to protect it. SSE will travel to ocean depths between 100 and 2,000 feet. The goals of this project include undersea exploration, scientific research, and public education and outreach.

South Carolina Sea Grant researchers, in partnership with the Federal Emergency Management Agency (FEMA), have discovered inexpensive methods of retrofitting houses to withstand high winds during hurricanes and other large storms. The engineers have tested caulk-like adhesives that can increase by a factor of four or five a roof's capacity to withstand hurricane-wind pressures at a cost of about \$1,000.

Key FY 2001 Activities:

As part of the Lands Legacy Initiative, new funding for the Coastal Zone Management Program will provide grants and technical assistance to coastal states to enable state managers and local communities to better address serious threats to the economic health and livability of coastal areas. This increase will allow coastal states with coastal zone management plans to address the significant and costly impacts of rapidly increasing coastal populations, polluted runoff, deteriorating waterfront areas, and loss of coastal habitats.

As part of the Lands Legacy Initiative, NOAA will establish a Coastal Impact Assistance account will provide coastal states with existing offshore oil and gas production additional resources needed to protect and sustainably use ocean and coastal resources. Funds from the account will provide grants to implement activities that increase protection and sustainable management of coastal resources such as habitat protection, community revitalization, improved coastal access, and public education on coastal issues.

As part of the Lands Legacy Initiative, NOAA will enhance protection, public education, and monitoring capabilities within the Nation's National Marine Sanctuaries and National Estuarine Research Reserves. Funding for these programs will ensure that each Sanctuary and Reserve has the resources needed to protect these valuable, Na-

tional treasures and provide the access and educational opportunities requested by visitors and local community partners.

As part of the Lands Legacy Initiative, NOAA's National Ocean Service will take significant new steps to address the Nation's coral reef crisis and reverse the degradation of these "rainforests of the sea." Working with state, territorial, and local partners, the new funding will support research, monitoring and local-level projects with states, territories and other partners to reduce human impacts and increase sustainable use of America's valuable coral reefs and will help implement key recommendations of the U.S. Coral Reef Task Force.

In FY 2001, NOAA will support the Administration's Clean Water Action Plan by strengthening and enhancing its programs that address polluted runoff into coastal watersheds and the impacts of coastal pollution. Activities in support of this plan will include research on hypoxia in the Gulf of Mexico, research on the ecology and oceanography of harmful algal blooms (HABs), and implementation of state Coastal Nonpoint Pollution Control programs that address the impact of polluted runoff.

As part of the South Florida Ecosystem Restoration Initiative, NOAA will provide key monitoring, research, and management activities in support of a Federal-tribal-state effort to restore and sustain the natural resources of this unique region. For example, the restoration effort depends on NOAA's coastal monitoring and research efforts to track and implement inland restoration efforts that alter water flows to coastal bays and estuaries.

NOAA will address aquatic nuisance species issues in marine and coastal areas, a priority item under the National Invasive Species Act, through new funding for both the National Sea Grant College Program and the Great Lakes Environmental Laboratory.

NOAA's Office of Oceanic and Atmospheric Research will expand shallow water observatories, develop new deep-sea observatories, and enhance undersea research vehicles through the use of advanced technologies to explore exotic sea life.

Key Performance Measures—Sustain Healthy Coasts

	1996 act.	1997 act.	1998 act.	1999 act.	2000 est.	2001 est.
Protection/Restoration of coastal habitats (cum):						
# Acres restored	7,000	12,000	26,000	43,000	55,000	70,000
# Damage cases settled	23	26	30	37	41	45
# Interagency restoration projects	9	16	20	25	30	55
# Coastal regions with adequate measures to prevent and control aquatic invasive species (total 6 U.S. regions)	-	-	0	0	1	2
Completion of Coastal protection systems:						
% State Coastal Nonpoint Pollution Programs approved (% of 35 states)	0	74	83	83	86	89
% Coastal watersheds with coastal zone management measures to reduce polluted runoff (% of 1920 total watersheds)	-	-	0	0.3	0.6	2.2
% State Coastal Zone Management Programs completed (% of 35 states)	83	89	91	94	94	97
% National Estuarine Research Reserves with upgraded capabilities	0	8	17	25	33	50
% National Marine Sanctuaries at baseline operational level						
% of 40 Key U.S. Coastal Ecosystems With:						
Reduced risks from hazardous chemicals	10	15	20	32	37	42
Assessments of Water quality and natural resources	20	23	25	28	30	33
Assessments of levels and effects of toxic contaminants	15	20	25	28	30	32