

Ocean Sciences in the Fiscal Year 2004 Budget

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HIGHLIGHTS

- **National Oceanic and Atmospheric Administration (NOAA)** – Overall NOAA funding would increase by \$171.6 million (up 5.2 percent) in the FY 2004 budget request. However, the portion of NOAA funding identified as R&D would actually decline 12.2 percent to total \$724 million.
- **National Science Foundation (NSF)** – While funding for the Geosciences Directorate (GEO) would minimally increase in the FY 2004 budget (up 0.5 percent) to \$687.9 million, the Ocean Sciences Division would see a decrease of \$2.4 million from the FY 2003 level for a total of \$313.7 million in FY 2004.
- **Department of the Navy** – Navy basic research (“6.1”) would see an increase of \$43 million (10.7 percent) over the FY 2003 funding level. This increase is due to DOD reprogramming which has shifted some University Research Initiatives previously funded through Defense-wide RDT&E accounts to Navy and other services.
- **U.S. Geological Survey (USGS)** – The budget for USGS proposes a \$29.1 million cut for the agency. The Geologic Hazards, Resources, and Processes account which funds coastal and resource studies, would decrease by \$12.9 million (down 5.5 percent) for a total of \$221.6 million.

INTRODUCTION AND POLITICAL ENVIRONMENT

Oceans cover nearly three-quarters of our Earth’s surface, and are the primary driver of weather and climate on Earth. The oceans are a vital

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part of U.S. national and homeland security, providing critical information for Navy operations, and are a significant element in international trade and economic development. In addition, over half of the U.S. population lives where the ocean meets the land, an area that comprises less than a fifth of U.S. land area. These fertile coastal zones provide food, jobs, recreational opportunities, and natural resources.

Today, federal deficits are reaching record levels, national security issues are placing new demands on federal science and technology budgets, and environmental and population pressures on our oceans and coasts continue to grow. While basic research in the ocean sciences feels the squeeze, policymakers and resource managers continue to call for answers to important questions. How do we protect our shores and coastal communities from the threat of terrorism? How can we implement management regimes that meet conservation goals, sustain coastal economies and ensure adequate food supplies around the world? How do we maintain the health and well-being of the American public and minimize coastal hazards? In order to address these emerging issues, protect our ocean resources, and better understand important climate phenomena such as El Niño, more information is needed about the oceans and processes within.

U.S. research programs at more than a dozen Federal agencies, including NOAA, NSF, the National Aeronautics and Space Administration (NASA), and the Navy, contribute to our understanding of marine environmental systems along the coasts and in the deep ocean. These agencies increasingly turn towards crosscutting interagency initiatives such as the National Oceanographic Partnership Program (NOPP) to better coordinate ocean science research. For example, NOPP is the vehicle for development of implementation plans for an integrated ocean and coastal observing system which will be used to collect the biological, chemical, physical, and geological oceanographic data necessary to ensure national security, facilitate safe and efficient marine operations, manage living resources, detect and predict climate variability, preserve and restore healthy marine ecosystems, mitigate natural hazards, and ensure public health.

NATIONAL SCIENCE FOUNDATION (NSF)

NSF is the largest supporter of basic ocean science in the United States, funding major programs as well as individual investigator-initiated

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projects. In recent years there has been a strong push from Congress to double NSF funding. While budget requests from the Administration have fallen well short of that goal, Congressional supporters continue to supplement the President's request. For FY 2003, appropriators provided a 9.7 percent increase for NSF as opposed to a 5.1 percent increase recommended by the Administration. For FY 2004, the Administration has again requested only minimal increases for NSF, 3.1 percent (\$171.3 million). Of that total, funding for Research and Related Activities would increase 1.2 percent to \$4.1 billion (see Table II-7).

Under the President's request, geosciences funding in FY 2004 would total \$688 million, an increase of \$4 million (0.5 percent) over the FY 2003 funded level. This proposed increase is directed entirely towards atmospheric programs. Funding for the ocean sciences division (OCE) would actually decrease under this proposal by \$2 million (down 0.7 percent).

Within the OCE division, the budget requests \$115.8 million for Ocean Section research, a decrease of 3.5 percent from the FY 2003 funding request. This funding would support implementation of an initiative studying the linkages between the oceans and human health, as well as individual investigator research in areas such as marine biocomplexity, carbon cycling, quantitative oceanography, and sustained observations of deep-ocean and coastal systems.

The Integrative Programs Section of OCE would receive \$104.1 million (up 0.1 percent). Increases in this area include: Centers for Ocean Science Education Excellence (up \$800,000), a network of coordinated centers to facilitate collaborations and communications between ocean science researchers and educators; academic research fleet operations (up \$3 million) to support science at sea; and development of a new deep submergence capability (up \$12 million). This section also includes funding for development of concept plans for new regional-class vessels as part of the Federal Oceanographic Facilities Committee plan for renewal of the academic fleet, enhancement of technical and shared use instrumentation for seagoing projects, participation in NOPP and the OCEANS.US office, and maintenance and ship improvement programs.

The Marine Geosciences Section would receive \$93.9 million of the OCE funding request, a decrease of 1.2 percent. Funding is requested for studies of continental rifting process, fluid flow in ocean crust and

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continental margin sediments, dynamics of the ocean mantle, and planning for the International Ocean Drilling Program.

While there are no ocean science-related projects requested for FY 2004 in the Major Research Equipment and Facilities Construction (MREFC) account, the budget does indicate that there will be two new ocean science starts in the MREFC account requested in future budgets. These new projects have all been approved by the National Science Board and are waiting in the queue for funding. They are Scientific Ocean Drilling which will be requested in FY 2005 at \$76.8 million; Ocean Observatories which will be requested in FY 2006 at \$24.7 million.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

NOAA's FY 2004 budget request totals \$3.3 billion, an increase of \$171.6 million above the FY 2003 funding levels. Within this amount the funding provided for NOAA R&D programs is \$724 million, a decrease of 12.2 percent.

Oceanic and Atmospheric Research (OAR): The budget request for OAR, which funds the bulk of NOAA research, would decrease by \$8 million (1.2 percent) to total \$366.5 million in FY 2004. Decreases to the OAR budget request include the National Sea Grant College Program (down \$3.0 million); the National Undersea Research Program (down \$3.9 million); and the Climate and Global Change Research Program (down \$1.7 million).

The OAR budget is organized into several main themes for FY 2004, which include:

- Climate Research—NOAA requests a total of \$184.8 million for Climate Research, an increase of \$13.4 million over the FY 2003 requested level. This program theme includes \$41.6 million in funding for the Administration's Climate Change Research Initiative (CCRI; see Chapter 16 for more on CCRI). Increases for this initiative include: \$6.3 million to build and sustain a global ocean observing system; \$5.0 million to implement a carbon cycle atmospheric observing system; \$1.0 million to support research on the absorption and scattering of radiation by aerosols; and \$1.1 million to support an interagency Climate Change Science Program Office.

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- Oceans, Coastal and Great Lakes Research—OAR has requested \$112.2 million for this activity. While this represents an increase of \$58.4 million over the FY 2003 requested level, this increase is due to the funding requested for the National Sea Grant College program which was deleted from the FY 2003 request.

Also included in the OAR budget is funding for a fourth year of ocean exploration activities. Last year NOAA received \$13.2 million to fund partnerships with public and private institutions to promote ocean exploration and research. This year's request is for \$14.2 million which will be used to focus on mapping the oceans, exploring ocean dynamics and interactions, developing new sensors and systems for ocean exploration, and ocean education and outreach.

National Ocean Service (NOS): The funding request for NOS totals \$391.0 million for FY 2004, a decrease of \$26.9 million from FY 2003 funded levels. While the primary mission of NOS is coastal stewardship, NOS' budget would support a variety of R&D activities.

The request includes \$18.7 million (down \$1.3 million) for the Coastal Ocean Program, which supports peer-reviewed, multi-disciplinary research to assess three national issues: coastal ecosystem oceanography, cumulative coastal impacts, and harmful algal blooms/eutrophication. The request also includes funding for Oceanic and Coastal Research, \$10.4 million, a decrease of \$3.6 million from the FY 2003 level.

The NOS budget request also provides funding for the Ocean Resources Conservation and Assessment program, which directs research programs to provide scientific information to policymakers on the protection and sustainable use of ocean and coastal areas. Included in this program is \$74.6 million for the Ocean Assessment Program, down \$20.4 million from the FY 2003 level. This reduction in funding is due primarily to the proposed termination of congressionally requested and one-time projects.

In addition, the NOS budget requests \$16.4 million for Estuarine Research Reserves, equal to the FY 2002 level, and \$35.8 million for the Marine Sanctuary Program, an increase of \$2.8 million over last year's level. An additional \$3 million has been requested to inventory and assess existing marine protected areas.

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National Marine Fisheries Service (NMFS): The total budget request for NMFS for FY 2004 is \$621.0 million, an increase of \$41.0 million above the FY 2003 funded level. Within this amount \$180.1 million is provided for science and technology within the Fisheries Research and Management Services account, and \$9.5 million is provided for cooperative research. In the Protected Resources Research and Management Services account the Administration requests totals \$105.7 for science and technology. This funding would support research on specific fishery issues, including Atlantic salmon, Pacific salmon, sea turtles, and marine mammals.

National Environmental Satellite, Data, and Information Service (NESDIS): In FY 2004 NESDIS would receive a total of \$837.5 million. Funding of \$391.1 million is included in the budget request for continuation of the Polar Orbiting Systems program which includes National Polar Orbiting Environmental Satellite System (NPOESS) and Polar Orbiting Environmental Satellites. NPOESS will provide military and civilian meteorological and environmental satellite coverage. The NESDIS request for FY 2004 does not include the \$6.0 million for the Coastal Remote Sensing project.

Office of Marine and Aviation Operations: A total of \$89.7 million has been requested for the Marine Operations account in FY 2004, an increase of \$14.2 million over the FY 2003 funding level. Increases are proposed for the recruitment and training of 10 additional NOAA Corps officers, operation and maintenance of the FAIRWEATHER, a hydrographic survey vessel, and compliance with international safety standards on NOAA ships. This account includes \$68.8 million to meet the data acquisition needs of NOAA line offices, including days-at-sea for the research programs, and continues the FY 2003 request of \$2.5 million to outsource with UNOLS for ships in the Pacific to support NOAA programs.

DEPARTMENT OF THE NAVY

The Office of Naval Research is one of the largest supporters of oceanographic research in the Federal government, with the bulk of that support coming from the “6.1” basic research account. In FY 2004, the budget request is \$456.6 million for “6.1” basic research, an increase of \$43 million (10.7 percent) over the FY 2003 funding level (see Table II-5). While the Navy “6.1” account appears to show a significant increase

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in funding, this increase is due to DOD reprogramming which has shifted some University Research Initiatives previously funded through Defense-wide RDT&E accounts to Navy and other services. In fact, the Navy “6.1” account which funds grants to university researchers shows a decline for FY 2004 of \$27.8 million (down 7.0 percent). The “6.1” account is now made up of In-House Laboratory Independent Research, \$17.4 million (up 8.1 percent from FY 2003 appropriations); Defense Research Sciences, \$368.5 million (down 7.0 percent); and University Research Initiatives, \$70.7 million.

The Navy’s request for “6.2” applied research is \$535.9 million in FY 2004, a decrease of \$270 million. Within the applied research account \$48.8 million was requested for Ocean Warfighting Environment Applied Research (down \$22.2 million or 31.3 percent); \$62.6 million was requested for Undersea Warfare Applied Research (down \$21.9 million or 25.9 percent), and \$47.5 million was requested for Mine and Expeditionary Warfare Applied Research (down \$8.0 million or 14.5 percent).

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

For the fourth year in a row, the budget request has included an increase for NASA. In FY 2004, the request totals \$15.5 billion, an increase of \$238 million over the FY 2003 level (see Table II-120). This request includes \$337 million for new initiatives, including \$26 million for climate change research acceleration. However, the request for Earth Science has declined by \$167.1 million to total \$1.5 billion. The NASA requests states that the decrease in FY 2004 is due to major development programs that are past their peak development spending and are preparing for launches in 2004, including AURA, Cloudsat, and Calipso. The Earth Science Enterprise account includes \$96 million for the NPOESS Preparatory Project under development in partnership with NOAA and the Department of Defense (DOD); \$60 million for the Landsat data continuity mission; and \$524 million for research and modeling on climate change.

U.S. GEOLOGICAL SURVEY (USGS)

The budget request for the Interior Department’s U.S. Geological Survey in FY 2004 is \$896.3 million, a decrease of \$29.1 million from FY 2003 enacted funding. Reductions include one-time and congressionally

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requested projects. The Geologic Hazards, Resources, and Processes account, which funds coastal and resource studies, would decrease by \$12.9 million (down 5.5 percent) for a total of \$221.6 million.

Included in the FY 2004 USGS budget is an increase of \$3.0 million in to expand USGS invasive species research and begin development of a prototype model for a national early detection network for invasive species in U.S. terrestrial and aquatic ecosystems. One of the focus areas for this initiative will include aquatic invasions in wetlands and coastal estuaries.

ENVIRONMENTAL PROTECTION AGENCY (EPA)

The budget request for the EPA totals \$7.6 billion, a decrease of \$448 million from FY 2003 funding levels (see Table II-17). EPA's Strategic Goal entitled Sound Science, Improved Understanding of Environmental Risk, and Greater Innovation to Address Environmental Problems is funded at a level of \$357.1 million. Within this goal, funding of \$122.9 million is requested for Research for Ecosystem Assessment and Restoration, which funds the national coastal monitoring program. Funding within this goal will also be directed towards Invasive Species Great Lakes research, focusing on development of monitoring approaches and models to predict the spread of aquatic invasive species, and on identifying habitats and regions at risk to invasive species.

EPA's request for the Global Change Research Program totals \$130 million for FY 2004. This funding will be used for government-industry partnerships to speed deployment of efficient technologies and support climate change science and technology research.

DEPARTMENT OF ENERGY (DOE)

The DOE Office of Science request for FY 2004 includes a total of \$499.5 million for Biological and Environmental Research, a decrease of \$30.5 million from the FY 2003 funding level. Included in the total request is \$143.0 million for DOE support for the U.S. Global Change Research Program (USGCRP) to study the response of ecosystems to environmental change.