

**U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE AND TECHNOLOGY**

HEARING CHARTER

*Fiscal Year 2011 Research and Development Budget Proposals at the
Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric
Administration (NOAA)*

Wednesday, March 10, 2010

2:00 p.m. to 4:00 p.m.

2318 Rayburn House Office Building

PURPOSE

On Wednesday, March 10, 2010 at 2:00 p.m. the House Committee on Science and Technology will hold a hearing to examine the Administration's Fiscal Year 2011 budget requests for the Environmental Protection Agency's (EPA) Science and Technology (S&T) Programs and the National Oceanic and Atmospheric Administration (NOAA).

WITNESSES

Panel I

Dr. Paul Anastas, Assistant Administrator, Office of Research and Development (ORD), U.S. Environmental Protection Agency

Panel II

Dr. Jane Lubchenco, Administrator, National Atmospheric and Oceanic Administration

BACKGROUND

Overall FY 2011 Budget Request for EPA

The President's FY 2011 budget request for the Environmental Protection Agency (EPA) is \$10 billion, a reduction of 2.7 percent compared to the FY 2010 enacted levels. The table below shows the eight primary accounts of the Agency's budget. The Environmental Programs and Management (EPM) account funds the agency's air, water, waste, toxics and pesticides programs. The Superfund account supports clean up of hazardous waste sites. The Superfund account also includes funds for Superfund enforcement to develop and test new methods for clean up and set clean-up standards, and funds for the Inspector General's office to address Superfund issues. The State and Tribal Assistance Grants (STAG) account provides grants to States and local communities to support water and sewage treatment infrastructure construction and improvements. The largest reduction in the Agency's request is in the STAG account.

Table 1: EPA FY 2011 Budget Request (Budget Authority in Millions of dollars)

Account	FY 2010 Enacted Budget	FY 2011 Request	FY 2011 Request vs. FY 2010 Enacted	% Change
Science & Technology¹	846	847	+ 1	+ 0.1%
Environmental Programs & Management	2994	2891	- 103	- 3.4 %
Inspector General	45	46	+ 1	+ 2.2 %
Buildings & Facilities	37	40	+ 3	+ 8.1 %
Oil Spill Response	18	18	0	0 %
Superfund Programs	1270	1258	+ 12	+0.9 %
Insp. General Transfer	10	10	0	0 %
S&T Transfer	27	25	- 2	- 7.4 %
Total SUPERFUND	1307	1293	- 14	- 1.1 %
LUST	113	113	0	0 %
State & Tribal Asst. Grants	4978	4782	- 196	-3.9 %
Rescission	-40	-10	+ 30	-
TOTAL	10,298	10,020	- 278	-2.7 %

¹ Does not include Superfund Transfers.

* Totals do not include the \$7.22 billion from the American Recovery and Reinvestment Act (ARRA) of 2009.

FY 2011 Science & Technology Account: Office of Research and Development

The Administration's budget request for S&T is \$847 million. This includes \$605 million for the Office of Research and Development (ORD), S&T activities conducted by other program offices (e.g. Office of Air, Office of Water), as well as \$25 million requested for S&T activities associated with the Superfund program. In the past, the Superfund S&T funds were drawn primarily from the Superfund trust that was funded by the dedicated Superfund tax. Since the expiration of the tax, this fund no longer exists and all funds must be appropriated from the general treasury.

Approximately 68 percent of S&T funding is for EPA's ORD, which is the primary research arm of the agency. Typically, most of the remaining S&T funds go to the Office of Air and Radiation, and a smaller amount to the Office of Water and to the other program offices.

ORD conducts and sponsors both fundamental research in environmental science and more targeted research to inform EPA’s regulatory programs. For example, ORD provides scientific information to support and implement the Clean Water Act. ORD also develops the scientific risk information for the agency’s Integrated Risk Information System (IRIS), a database of human health effects of certain chemicals. This program is used by EPA, individual states, and other government agencies to determine hazardous waste site clean up, drinking water, and other health-based standards. ORD develops the scientific underpinning for EPA’s air quality standards in areas such as particulate matter and ozone. ORD also investigates the environmental implications of emerging areas such as nanotechnology and endocrine disruptors.

ORD carries out these responsibilities by conducting intramural research at EPA’s laboratories, awarding contracts, and supporting fellowships and research at colleges and universities through the Science to Achieve Results (STAR) grant program. The tables below provide breakouts of ORD funds among the various research programs at ORD, as well as further detail on STAR grants and fellowships program.

**Table 2: EPA ORD Budget Changes: Research Programs
2010 Enacted versus Presidents FY 2011 Request (in millions)¹**

Program	FY 2010 Enacted	FY 2011 Request	Change in Millions	% Change
Clean Air (now include Air Toxics Program/Projects and NAAQS)	82	85	+ 3	+ 3.7 %
Drinking Water	49	52	+ 3	+ 6.1 %
Water Quality	62	69	+ 7	+ 11.3 %
Land	36	34	- 2	- 5.6 %
SITE	0	0	0	0 %
Homeland Security	35	31	- 4	- 11.4 %
Human Health Risk Assessment	48	49	+ 1	+ 2.1 %
Computational Toxicology	20	22	+ 2	+ 10.0 %
Endocrine Disruptors	11	17	+ 6	+ 54.5 %
Global Change	21	22	+ 1	+ 4.8 %
Human Health and Ecosystems	160	154	- 6	- 3.8 %
Pesticides and Toxics	27	28	+ 1	+ 3.7 %

¹ Information for Table 2 provided by EPA’s Office of Research and Development briefing on February 18, 2010 to the House Science and Technology Committee

HCC Fellowships	11	17	+ 6	+ 54.5 %
Environmental Technology Verification	0	0	0	0 %
Sustainability (now includes Pollution Prevention)	27	25	- 2	- 7.4 %
Congressional Earmarks	4.7	0.0	- 4.7	- 100 %
Total	594	605	+ 11	+ 1.9 %

**Table 3: STAR Grants and Fellowships Program
2010 Enacted versus Presidents FY 2011 Request (in millions)**

STAR Program Research	FY 2010 Enacted	FY 2011 Request	Change	% Change
Computational Toxicology	3	3	0	0 %
Drinking Water	5	7	+ 2	+ 40.0 %
Endocrine Disruptors	0	7	+ 7	+ 100 %
Global Change	6	7	+ 1	+ 16.7 %
Human Health and Ecosystems	23	25	+ 2	+ 8.7 %
Clean Air	16	19	+ 3	+ 18.8 %
Pesticides and Toxics	1	0	- 1	- 100 %
Sustainability	0	1	+ 1	+ 100 %
Water Quality	0	5	+ 5	+ 100 %
STAR Fellowships	8	14	+ 6	+ 75.0 %
STAR Grants and Fellowships Program Total	62	88	+ 26	+ 42.0 %

Within the context of a decrease in funding for EPA as a whole, the FY 2011 budget proposes increases for a range of intramural and extramural research and development activities.

- \$88 million for the STAR Program, an increase of \$26 million over the FY 2010 enacted levels, to invest in the next generation of environmental scientists and to leverage wider scientific community expertise on key issues.
- \$20 million for research to support the safe development of nanomaterials.

- \$10.3 million, an increase of \$6 million, for green water infrastructure research to address storm water management.
- \$1 million in extramural contracts for Electronic Waste and Electronic Design.
- \$4.4 million to study the impact of hydraulic fracturing technology on ground water quality and implications for public health and the environment.
- \$85 million, an increase of \$3.4 million, for the Next Generation Monitoring Network for ambient air pollutants.
- \$17 million for endocrine disrupting chemicals research and \$22 million for computational toxicology. Both are important for human health and ecological risk assessment. The budget proposals are an increase of \$6 million and \$2 million, respectively.
- As with the FY 2010 budget, the FY 2011 budget again proposes the elimination of the Superfund Innovative Technology Evaluation (SITE) Program and the Environmental Technology Verification (ETV) program. Both programs support the development and testing of innovative environmental technologies for cleanup of hazardous substances. The SITE program was created in the Superfund statute.
- The FY 2011 President's Budget reflects the merging of the Air Toxics and NAAQS programs into a Clean Air program which will focus on multi-pollutant sources and effects rather than sources and effects of individual pollutants.

EPA-Science Advisory Board (SAB) FY 2011 budget analysis

The EPA's Science Advisory Board (SAB) supports the investment in research reflected in the President's budget request. However, the SAB argues that the marginal increases in clean air and global change research will not allow EPA to develop research to support regulatory strategies resulting from the Agency's greenhouse gas Endangerment Finding. The SAB is also concerned that the decrease of 14 full-time employees and \$2 million for the Ecological Services Research Program threatens the future of the program and the research needed to understand the causal links between stressors and changes in ecosystem processes. The SAB argues that repeated cuts in funding for ecological research have drastically reduced the agency's ability to monitor and protect the nation's ecosystems. The President's budget request also proposes a near \$1 million decrease for susceptible population and cumulative risk (\$2.5 million) research; some believe this reduction undermines the environmental justice initiatives and announcements made by the Administrator of EPA, Lisa Jackson. The EPA budget request includes little to no proposed investment in the social, behavioral, and decision sciences which many believe are important to continued climate change, ecosystem, and environmental justice research.

OVERALL FY 2011 BUDGET REQUEST FOR NOAA

The President's FY 2011 budget request for the National Oceanic and Atmospheric Administration (NOAA) is \$5.5 billion for discretionary appropriations, a 17 percent increase above the FY 2010 enacted levels, and \$5.7 billion in direct obligations. NOAA's mission includes weather forecasting, climate prediction, and the management of fisheries, coastal and ocean resources. In addition, NOAA is responsible for mapping and charting coastal areas and providing other navigation support services through the National Ocean Service (NOS). NOAA conducts research in support of these missions including atmospheric, coastal, and oceanic sciences, climate and air quality research, ecosystem research, and fisheries and marine mammal research. NOAA also operates a constellation of satellites that monitor and transmit data for weather forecasting, climate prediction, space weather forecasting, and earth and ocean science research through the National Environmental Satellite Data and Information Service (NESDIS).

Table 1 shows the six primary accounts or line offices of the agency's budget. The National Weather Service (NWS), the Office of Oceanic and Atmospheric Research (OAR), the National Environmental Satellite, Data, and Information Service (NESDIS), and Program Support received increases in the FY 2011 request. The Administration's budget proposes to decrease funding for the National Ocean Service (NOS) and the National Marine Fisheries Service (NMFS).

Table 1: NOAA FY 2011 Budget Request (millions of dollars)

Program	FY 2010 Enacted	FY 2011 Request	Change	% Change
National Weather Service	999.8	1,003.2	+ 3.4	+ 0.34%
Oceanic & Atmospheric Research	449.1	464.9	+ 15.8	+ 3.5 %
National Environmental Satellite, Data, and Information Service	1,398.5	2,209.0	+ 810.5	+ 58.0%
Program Support	485.9	515.1	+29.2	+ 6.0 %
National Ocean Service*	578.7	550.6	- 28.1	- 4.9 %
National Marine Fisheries Service**	1,008.2	992.4	- 15.8	- 1.6 %
TOTAL Direct Obligations***	4920.2	5735.2	+ 815.0	+ 16.6%
TOTAL Discretionary Appropriations (Net of Financing & Transfers)	4,748.4	5,554.5	+ 806.1	+ 16.9%

*NOS programs are shared jurisdiction with the Resources Committee or not within the jurisdiction of the Committee on Science and Technology.

**NMFS is solely within the jurisdiction of the Resources Committee.

***This table includes appropriated funds plus transfers from fisheries funds.

National Weather Service (NWS)

NWS provides weather, hydrologic, and climate forecasts and warnings for the United States, adjacent waters, and ocean areas. NWS provides a national infrastructure to gather and process data worldwide from the land, sea, and air.

The request for NWS is a less than one percent net increase of \$3.4 million over the FY 2010 enacted budget. The Administration is requesting a \$10.4 million increase for the NWS Operations, Research and Facilities (ORF) accounts and \$7 million decrease for the NWS Procurement, Acquisitions and Construction (PAC) accounts. Although the Administration is requesting an overall marginal increase for NWS, there are a number of reductions for specific line items in the PAC account.

The Administration requested increase in the ORF accounts is within the Local Warning and Forecasts Program for: (1) the completion of the required IT security improvements to the National Critical Space Weather System and Aviation Weather, (2) Next Generation Air Transportation System (NextGen) development activities, and (3) improvement aviation weather services.

The requested increases in the ORF accounts are partially offset by decreases in funding. There are several programs proposed for elimination that are designated by Congress for funding and are routinely eliminated by the Administration as “Congressional earmarks.” A number of these programs have been funded for many years and support on-going forecasting services (e.g., Susquehanna River Basin Flood System). A project that was eliminated is the U.S. Weather Research Program’s Hemispheric Observing System Research and Predictability Experiment (THORPEX), a multi-year international field experiment to improve two to ten-day forecasts done in cooperation with international partners and numerous U.S.-based research organizations (\$1.5 million).

The President’s FY 2011 request proposes to continue support in the following areas: strengthening the U.S. Tsunami Warning Network (\$23 million); completing and sustaining a growing network of NOAA weather radios (\$12.6 million); and operation and maintenance of the Advanced Weather Interactive Processing System (AWIPS) (\$39 million), the Automated Surface Observing System (ASOS) (\$11 million), and the Next Generation Weather Radar (NEXRAD) (\$46 million). AWIPS is specialized software that enables forecasters to prepare accurate, timely weather forecasts and warnings. ASOS is composed of the sensors needed to measure and record significant weather conditions. NEXRAD is the radar system that shows patterns and movement of weather conditions.

There are longstanding concerns that the incremental funding increases that NWS receives may not be sufficient to cover all operational and maintenance requirements for current weather forecasting equipment. This may be especially problematic if the United States experiences a year of severe weather events and frequent or intense hurricanes, resulting in damage or loss to weather monitoring and forecasting equipment.

National Environmental Satellite Data and Information Service (NESDIS)

The President's budget request for the National Environmental Satellite Data and Information Service (NESDIS) is \$810.5 million, a nearly 60 percent increase over the FY 2010 enacted levels. Overall, the Administration request would reduce the NESDIS Operations, Research and Facilities (ORF) account by \$9 million (4.5 percent) relative to the FY 2010 enacted budget, and increase the NESDIS Procurement, Acquisition and Construction (PAC) account by \$819 million (68 percent) over the FY 2010 enacted budget.

NESDIS ORF

The ORF budget for NESDIS is divided into two accounts: Environmental Satellite Observing Systems, and NOAA's Data Centers & Information Services.

The Environmental Satellite Observing System account contains the programmatic funding for management, processing, analyzing, and archiving the data received from all of NOAA's weather monitoring equipment – both ground-based and space-based. The requested increases of \$4.8 million over the FY2010 appropriation would support the routine replacement and upgrading of ground based equipment and software and to maintain the continuity of data on sea ice used to forecast sea ice changes to support navigation. However, the budget request does not seem to demonstrate an investment in ocean vector wind studies. With the recent demise of the QuikSCAT satellite, the Tropical Prediction Center lost an important data source for its marine wind forecast products. The Center also employed QuikSCAT data in the early stages of predicting hurricane tracks. NOAA has not yet made a decision whether to proceed with the Extended Ocean Vector Wind Mission recommended by the National Research Council's Earth Sciences Decadal Survey.

The Data Centers and Information Services account funds data processing and analyses at the agency's major data centers: the National Climatic Data Center (Asheville, North Carolina); the National Oceanographic Data Center (Suitland, Maryland) and the National Geophysical Data Center (Boulder, Colorado). This account also supports a number of regional climate centers that provide data and information services. The centers must also prepare to support the increase in delivery rates and quantities of information as NOAA's new satellite systems enter operation. The Administration's budget proposes to reduce this data centers and services account by \$13.7 million below the FY 2010 enacted budget.

NESDIS PAC

The budget for NESDIS is dominated by acquisitions for NOAA's two weather satellite systems: the Polar-Orbiting Environmental Satellites (POES) which orbit the earth and provide information for medium to long-range weather forecasts; and the geostationary satellites (GOES) which gather data above a fixed position on the earth's surface and provide information for short-range warnings and current weather conditions. To maintain the continuity of weather forecasting data as older satellites retire, a new series

of satellites are under development for both systems. Increases and decreases in the PAC account reflect the different phases of the satellite acquisition.

There is a proposed increase of \$62.5 million above the FY2010 enacted budget for the current series of GOES satellites, GOES-R, to support the continued development and procurement of this new series, which is currently scheduled for launch in 2015. The GOES-R satellite series was originally scheduled for launch in 2014. Cost overruns have plagued this program, and in 2006 the GOES-R series was projected to cost \$5 billion more than the original estimate of \$6.2 billion. NOAA consequently restructured the program to achieve cost reductions, and obtained independent cost estimates for the program. The Administration now estimates the cost of the new GOES series at \$7.62 billion through 2028. Cost savings were achieved by reducing the number of satellites in the series (from four to two) as well as removing one of the major sensors, reducing the capabilities of the satellites.

The PAC account also reflects the \$678.6 million requested increase for the Joint Polar Satellite System (JPSS)². The JPSS total request of \$1.1 billion contributes to the nearly 60% increase of the NESDIS line office over the FY10 enacted level. This increase is a sizable portion of the agency's total \$806 million proposed growth in FY 2011.

Originally, NOAA was part of a tri-agency effort³ to develop the NPOESS satellite program. NPOESS data and products are considered "mission-critical" for both civilian and military weather forecasting and climatology needs; however, the program had major problems throughout. Since 2002, oversight by Congressional committees, Government Accountability Office (GAO) reports, and independent review teams have documented problems with satellite instrumentation, cooperation among the agencies involved, and the program's life-cycle cost; GAO's most recent testimony to the S&T Committee indicated that total cost estimates had grown to \$15 billion and were not yet stabilized.

Due to these serious management issues, schedule slips, and cost over-runs, the Administration's FY 2011 budget contains a major restructuring of NPOESS. This decision will dissolve the integrated program into two separate programs: a military program managed by the Department of Defense; and a civilian program managed by NOAA/NASA. The NOAA/NASA program is now known as JPSS and it will be responsible for satellites flying in the afternoon orbits while DoD satellites will be responsible for the morning orbits. The United States will rely on European satellites for operational weather observations for the remaining orbit. Satellite procurement will be separated for each program; however, both programs will deliver data to a common ground system, and NOAA will continue to operate all satellites while in orbit⁴. The United States has already invested nearly \$6 billion in the overall system, and developed five sensors to date.

² The JPSS satellite program was formerly known as the National Polar-Orbiting Operational Environmental Satellite System, NPOESS.

³ NOAA, the National Aeronautics and Space Administration (NASA), and the Department of Defense (DoD) collaborated to develop NPOESS. This tri-agency effort was abandoned in February 2010 by OSTP, and NOAA/NASA are moving forward with the "JPSS" program.

⁴ NOAA has been operating the Defense Meteorological Satellites for DoD since May 1998.

In addition to procuring these satellite systems, the Administration is requesting \$49.4 million to restore high priority climate sensors that were de-manifested from the NPOESS program in 2006 as a result of the Nunn-McCurdy mandated restructuring of the program.

NOAA oversees several satellite systems in addition to GOES and POES. The Deep Space Climate Observatory (DSCOVR), formerly known as Triana, has a request of \$9.5 million to initiate refurbishment of the satellite and to develop a Coronal Mass Imager (CME) to maintain continuity of solar wind data used for geomagnetic storm warnings. The total life cycle of DSCOVR is projected to be \$85 million.

The JASON satellite series is managed in partnership with the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT). The JASON-3 satellite FY 2011 budget request is a \$30 million increase over the FY 2010 enacted level of \$20 million to continue the development of this altimetry satellite that will provide data for ocean climatology and hurricane intensity forecasting.

Oceanic and Atmospheric Research (OAR)

The office of Oceanic and Atmospheric Research (OAR) is the primary research arm of NOAA, representing over half of all NOAA research programs. OAR conducts the scientific research, environmental studies, and technology development necessary to improve NOAA's operations. OAR activities are carried out through seven NOAA laboratories and via extramural research activities at 30 National Sea Grant colleges and universities. The Administration proposes to increase funding for OAR by nearly \$16 million, approximately a 4 percent increase above the FY 2010 enacted funding levels. The OAR PAC account is flat funded; therefore, all requested increases in the OAR FY 2011 budget are in the ORF account.

- An increase of \$6 million in the Phased Array Radar and Tornado Severe Storm Research.
- An increase of \$5 million in Weather and Air Quality Research.
- An increase of \$29 million in competitive research programs including the National Integrated Drought Information (NIDIS).
- The Administration requests \$11.6 million in funding for the Integrated Ocean Acidification Research program. This work will enhance current knowledge to improve adaptive strategies and management of living marine resources impacted by ocean acidification.

These increases are offset by a few reductions:

- A marginal decrease of \$500,000 from the National Sea Grant Program.
- A decrease of \$3 million from Ocean Exploration and Research. The Administration continues the merger of the National Undersea Research Program (NURP) with the Ocean Exploration Program.

- A \$4 million decrease for the Partnership Programs of Climate Research.
- A \$5.5 million decrease for the Partnership Programs of the Weather & Air Quality Research.

National Ocean Service (NOS)

The National Ocean Service (NOS) protects the National Marine Sanctuaries and advocates coastal and ocean stewardship. The NOS also introduced electronic nautical charts which interface with Global Positioning Systems (GPS) to enhance the safety and efficiency of navigation of U.S. waterways. The President's FY 2011 request would reduce overall funding for NOS programs by \$28 million, or 5 percent, compared to the FY 2010 enacted budget.

The NOS ORF account is reduced by \$22 million. Navigation Services has a proposed decrease of \$12 million. The Ocean Resources, Conservation and Assessment account has a proposed net reduction as compared to the FY 2010 enacted budget of \$17 million. This includes a \$24 million reduction in the Ocean Assessment Program (OAP), and \$3 million decrease in Response and Restoration. The Ocean Assessment Program includes a decrease in funding for the Integrated Ocean Observing System (IOOS) Regional Observations of \$12 million. The FY 2011 budget request for the Ocean and Coastal Zone Management accounts would receive an increase of \$15 million along with a \$10.5 million increase for the National Centers for Coastal Ocean Science (NCCOS). The NOS-PAC accounts are also reduced by \$6.5 million. This includes a cut in the Marine Sanctuaries Construction (\$8.5 million) and an increase of \$5 million in the acquisition of the Coastal and Estuarine Land Conservation Program.

Program Support

The Program Support line office supports corporate services and agency management. This includes the Under Secretary's office, the office of the Chief Financial Officer, the Program, Planning and Integration Office, and the NOAA Education Program. Overall, the Administration requests an increase in the Program Support account of \$29.2 million (a 6 percent increase over the FY10 enacted funding level).

- Most of this increase is due to continued construction of facilities under the PAC accounts (\$24.8 million), in particular the Pacific Regional Center in Honolulu (\$14 million).
- NOAA Education Program FY 2011 budget request is reduced significantly below its FY 2010 funding level of \$53.8 million to a proposed funding level of \$20.8 million for FY2011.
 - The Competitive Education Grants request was decreased by \$7 million.
 - The Education Partnership and Minority Serving Institutes Program is flat funded.
 - Eleven education programs are proposed to be eliminated, including the JASON education and outreach program.