

**NATIONAL OCEANIC AND ATMOSPHERIC  
ADMINISTRATION (NOAA) FISCAL YEAR 2007  
BUDGET REQUEST**

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**HEARING**

BEFORE THE

**COMMITTEE ON COMMERCE,  
SCIENCE, AND TRANSPORTATION  
UNITED STATES SENATE**

**ONE HUNDRED NINTH CONGRESS**

SECOND SESSION

FEBRUARY 16, 2006

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED NINTH CONGRESS

SECOND SESSION

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**NATIONAL OCEANIC AND ATMOSPHERIC  
ADMINISTRATION (NOAA) FISCAL YEAR 2007  
BUDGET REQUEST**

**THURSDAY, FEBRUARY 16, 2006**

U.S. SENATE,  
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,  
*Washington, DC.*

The Committee met, pursuant to notice, at 2:32 p.m. in room SD-562, Dirksen Senate Office Building, Hon. Ted Stevens, Chairman of the Committee, presiding.

**OPENING STATEMENT OF HON. TED STEVENS,  
U.S. SENATOR FROM ALASKA**

The CHAIRMAN. Good afternoon, Mr. Secretary—

Admiral LAUTENBACHER. Good afternoon, Mr. Chairman.

The CHAIRMAN.—Vice Admiral Lautenbacher. We're pleased to see you here.

This should be a full-Committee hearing on the National Oceanic and Atmospheric Administration for Fiscal Year 2007 budget request. We appreciate your being willing to testify here. This Committee is very interested in all of your missions.

The numerous missions of NOAA are important to the Nation, and are particularly critical to my state, and, I'm sure, to several other members' states here. We benefit from the work done by your agency in fishery research, ocean mapping, Tsunami Warning Program, and even a few volcanoes.

There is concern over the management of NOAA and how it will be better—can better perform all of its missions, and that's why we're having this hearing, to provide a useful discussion on the future of your agency and to try to understand the reasons for some of the changes in the budget presentation we've had.

Mr. Co-Chairman do you have any comments opening the hearing?

**STATEMENT OF HON. DANIEL K. INOUE,  
U.S. SENATOR FROM HAWAII**

Senator INOUE. Thank you very much. I'd like to have my full statement made part of the record.

But I would like to publicly commend your organization, NOAA, for the exceptional work you did prior to Katrina. Your forecasting was marvelous, as was your response after the storm. And, along with the Coast Guard, I think NOAA was one of the very few agencies that performed admirably prior to, during, and after the catas-

trophe. I just wanted to thank you very much, with the hope that, if the other agencies had responded the same way—

The CHAIRMAN. Well, thank you—

Senator INOUE.—we'd have had a better—

The CHAIRMAN.—Senator.

[The prepared statement of Senator Inouye follows:]

PREPARED STATEMENT OF HON. DANIEL K. INOUE, U.S. SENATOR FROM HAWAII

First and foremost, I want to publicly commend NOAA for its exceptional forecasting prior to Hurricane Katrina, and its effective response work after the storm passed. Along with the Coast Guard, NOAA was one of the few agencies that performed admirably prior to, during, and after the catastrophe. I just wish that its dire warnings had been taken more seriously.

As representatives of the two states most affected by ocean and atmospheric issues, the Chairman and I are longtime supporters of NOAA and have spent our careers working to improve its capabilities and advance its service to the Nation. NOAA has steadily become a remarkable, national resource, and that is, in part, why I find its 2007 budget proposal so disappointing.

The U.S. Commission on Ocean Policy provided the country with an exhaustive list of well-researched recommendations for the future of the Nation's ocean policies, and I am proud that this Committee has pursued those recommendations aggressively.

The Ocean Commission recommended substantial increases in spending on oceans, yet NOAA's pending budget essentially disregards this advice.

It grossly underfunds a variety of key functions, and in some cases, completely eliminates programs that were considered critical in both the Commission's recommendations and the Administration's own "Ocean Action Plan," such as our marine debris removal efforts and the oceans and human health initiative.

The President's budget also disregards NOAA's scientific and technological capabilities, which makes little sense in light of the President's recent interest in science and competitiveness. Ocean research and technology were at the forefront of the Ocean Commission's recommendations—from marine pharmaceuticals to satellite and observing technologies.

NOAA is the agency where these kinds of advances will materialize, yet it is not even considered in the President's new initiative. There is a frustrating disconnect between what this Administration says is a priority and what it is actually willing to fund.

Finally, I must mention my strong concerns about recent reports of political interference in Federal science agencies, particularly with regard to climate change. We have long relied upon NOAA as an unbiased source of scientific information and, based upon our confidence, have supported NOAA leading the government-wide Climate Change Science Program.

Respectfully, it is not enough for the Admiral to simply say that scientists are not being pressured. We need him to investigate these charges fully and take strong measures to ensure that our scientists are protected. If he does not, we may need to ask the Commerce Department's Inspector General to look into this matter.

I think, Senator Nelson, you were here next.

**STATEMENT OF HON. E. BENJAMIN NELSON,  
U.S. SENATOR FROM NEBRASKA**

Senator BEN NELSON. Thank you, Mr. Chairman. And thank you for holding the hearing today. I'm going to keep my comments brief, because I know we're all interested in hearing Vice Admiral Lautenbacher's testimony.

I did want to bring up one issue of great importance to Nebraska. We may not be quite as concerned about our volcanoes in Nebraska as perhaps some of my colleagues in other states might be, but we are concerned about what's happening at NOAA in the area of climate research, especially as it relates to drought forecasting.

Over the past several years, the drought conditions have been plaguing a great part of our country, and particularly in the State of Nebraska. And, of course, the impacts of drought are devastating, in their own way. And my understanding is that the Disaster Prevention and Prediction Subcommittee, of which I am the Ranking Member and our Chairman is here today, we're going to be holding a hearing on drought in April, where we're going to explore the issue in more depth. But I'd like to touch on the issue today as it relates to budgeting within NOAA.

I'm especially interested in hearing what efforts NOAA is making to improve prediction and monitoring of drought, and what the status is of NOAA's implementation of the National Integrated Drought Information System.

I can't emphasize enough the dramatic effect that drought has had on the economy of Nebraska and many of our neighboring states, so I look forward to hearing what NOAA is doing in this area.

And thank you very much, Mr. Chairman.

The CHAIRMAN. Thank you very much, Senator.  
Senator DeMint?

**STATEMENT OF HON. JIM DEMINT,  
U.S. SENATOR FROM SOUTH CAROLINA**

Senator DEMINT. Thank you, Mr. Chairman.

And thank you, Admiral, for being here today. As you know, after the Katrina disaster, I was one of a number of folks who commended NOAA for how precisely you were able to predict the storm and what would happen afterwards, and, I think, in doing that, saved countless lives. We appreciate that very much.

We know you're here today to talk about NOAA and the management of NOAA, maybe things that we can do better. As part of that, in putting the monkey on our back a little bit, I hope, after your testimony, to talk to you a little bit about what Congress does that maybe makes it more difficult for NOAA to set its own priorities and to carry out its mission.

As you know, there were about 227 Members of Congress who had some designated projects, and—not a bill, but in the Committee reports that spends roughly a half-billion dollars of your budget, and tells you how to spend it. And we can talk a little bit about that later. And I—but instead of taking your time, I will yield back, Mr. Chairman, and ask my questions later.

The CHAIRMAN. Surely.  
Senator Smith?

**STATEMENT OF HON. GORDON H. SMITH,  
U.S. SENATOR FROM OREGON**

Senator SMITH. Thank you, Mr. Chairman.

I want to thank the Admiral for being here, and for all the work that NOAA does. We, like the Chairman, occupy a good deal of the Pacific Coast, and about every few hundred years we have tsunamis the magnitude of what happened in Indonesia, and there is some concern whether we're doing enough to prepare for those. And so, I look forward to hearing what you're doing on tsunami preparation, and I'll put my statement in the record.

[The prepared statement of Senator Smith follows:]

PREPARED STATEMENT OF HON. GORDON H. SMITH, U.S. SENATOR FROM OREGON

Mr. Chairman, I want to thank you for holding this hearing. I also want to thank our witness, Admiral Lautenbacher, for being here today.

This past November, I held a town hall meeting in Newport, Oregon, a town located on the Oregon coast. I heard a number of concerns about funding to support the regional council process and improve stock assessments. I also heard a great deal of fear from folks who were concerned that we have not done enough to prepare our coastal communities for a potential tsunami.

The Cascadia Subduction Zone lies approximately 70 miles offshore of the Pacific Northwest. Research has shown that the Cascadia Zone has unleashed massive earthquakes off the coast of Pacific Northwest every few hundred years. The last such quake occurred in January 1700. This event was similar in magnitude to the Sumatra earthquake and sent huge tidal waves barreling into the shores of the Pacific Northwest.

Given the proximity of the subduction zone to the coast, scientists estimate that from the time the fault line ruptures, people on the southern Oregon coast will have about 5 to 10 minutes to evacuate. Warning and detection systems are important, but if and when an earthquake occurs along the Cascadia Subduction Zone, detection systems will be of little use to our coastal residents. People in our coastal towns must know where to go and what to do when the ground begins to shake.

To protect the safety of our coastal residents, we must continue to work with our state and local partners to accelerate tsunami inundation zone mapping and ensure contingency plans are in place for rapid evacuation of vulnerable low-lying communities.

I look forward to your testimony today, and again, I want to thank you for being here.

The CHAIRMAN. Thank you very much, Senator.

Admiral, we have your written statement. We're not going to put any time limitations on you at all. We want you to tell us in full what you think we should know about this budget and your plans for the future years. And then we'll ask our questions.

Thank you very much.

**STATEMENT OF VICE ADMIRAL CONRAD C. LAUTENBACHER,  
JR., U.S. NAVY (RETIRED), UNDER SECRETARY OF COMMERCE  
FOR OCEANS AND ATMOSPHERE; ADMINISTRATOR, NATIONAL  
OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA),  
DEPARTMENT OF COMMERCE**

Admiral LAUTENBACHER. Thank you, Mr. Chairman, Mr. Co-Chairman, distinguished members of the Committee, and distinguished staff members. It's, indeed, a great honor and a privilege to testify before you today on behalf of NOAA's 2007 budget request.

And, again, let me emphasize that we—on behalf of all NOAA employees and our constituents, we thank you for your involvement and your interest and your support of our programs over the years. It means a great deal to the folks who work hard to serve the American public. Thank you very much.

At NOAA—and I, again, appreciate the statement, I would like to make a short oral statement to set the stage for this year's deliberation—we work hard at NOAA to protect lives and livelihoods. We provide products and services that benefit the economy, the environment, and the public safety of the Nation. I think everybody will agree that last year we witnessed natural disasters on an unprecedented scale, including a tsunami in South Asia right before the beginning of the year. We had earthquakes in Pakistan. We



had hurricanes. We've had volcanic activity. We've had drought and wildfires here in the United States. And, of course, in 2005, we experienced the most active Atlantic hurricane season in history, resulting in devastation unlike anything the Nation had witnessed before. And, even as we speak here today, we are battling drought and wildfires in the Midwest and sporadic eruptions of St. Augustine in Alaska. Never in our Nation's history has the need to understand our weather and our environment been so great. And never before, I think, has our organization been eager to take on these challenges. We have a very committed group of people who work hard for the country.

Our budget request this year is \$3.684 billion, which supports NOAA's priority to advance the mission-critical services that support the country. This request includes the level of resources necessary to carry out our mission, which is to understand and predict changes in the Earth's environment and to conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs.

Before I discuss the details of the 2007 budget request, I want to highlight, I think, one accomplishment that's worthy of noting for the record that—and you have mentioned it, as well—and that is the performance of the one NOAA organization that we've worked hard to build over the last 4 years in regards to Hurricane Katrina and the response thereafter. Our forecasts and warnings for Katrina and Rita pushed the limits of hurricane prediction. The forecasts were more accurate than ever for storm track, size, intensity, surge, and warning lead-time. We did not end that work with the forecast, we responded immediately by providing aerial images and analyzing satellite images to help the emergency responders, as well as individual citizens, assess the situation, determine impacts, and begin immediate recovery.

We sent our scientific support coordinators to address nearly 400 hazardous-material spills and provide their expertise in cleaning them up as soon as possible. We sent our navigation response teams to survey for obstructions to navigation in the critical ports and waterways. We diverted NOAA ships *Thomas Jefferson* and *Nancy Foster* from planned missions to areas impacted by the hurricanes and helped collect data needed to reopen the critical Gulf Coast ports and to assess impacts on Gulf Coast ports and fisheries. We partnered with State and Federal agencies to study the effects of the storms on the abundance, the distribution, and the safety of seafood in the northern Gulf. To date, those surveys have resulted in the fact that seafood samples indicated no toxic contamination above FDA guidelines. The fish in the Gulf are safe to eat. I want everyone to know that the seafood is safe and that, with our partners, we will continue monitoring activities to ensure that safe seafood products are available to our customers and to consumers across the Nation.

Our budget in 2007 aligns with the agency's mission goals, ecosystem management, approaches to management, climate, weather, and water, commerce and transportation. Additionally, we have an overarching mission-support goal which ensures that we have the people, the equipment, and the facilities needed to serve the Nation. As such, adjustments, as I have stated in years past, for infla-

tionary costs are the highest-priority budget increase for us in 2007. These adjustments focus on maintaining and investing on a highly trained, educated, and dedicated workforce.

Other high-priority mission-support activities include increases of \$124 million for satellite continuity and funding to build the next generation of weather satellites, which are vital to our ability to forecast these severe weather events that we have just gone through.

The 2007 request includes \$7.5 million to include support for our marine operations for NOAA ships, and \$13.8 million to modernize our fleet, assets that were absolutely essential during our hurricane response.

The 2007 budget request also includes significant resources for NOAA's ocean and coastal programs, fisheries, and protected species activities in support of the Ocean Action Plan. Highlights of our net increase of \$108 million include initiatives to advance our approaches to managing our coastal and ocean resources, to improve collaboration and planning with coastal state managers, and expansion of NOAA's Habitat Restoration Program to the Great Lakes. Specifically, large items include the request for \$19.7 million for fisheries activities in the Gulf of Mexico, which has been drastically affected by the severe weather from last year, and a \$22.5 million increase for protected species.

In the area of climate services, our requests include additions to help predict current and future impacts of climate events such as droughts and floods and trends in extreme climate events. We're requesting \$6 million to continue building the ocean component of the Global Observing System, including floats, buoys, and tide gauges.

Another key investment is the request for \$4 million for research to increase our understanding of droughts, connected and through the National Integrated Drought Information System, or NIDIS. This effort will aid decisionmakers across the country who are faced with difficult drought and water resource management decisions.

Our budget request includes a \$13.5 million increase for the President's Climate Change Science Program. This program is responsible for coordinating and integrating federally funded research, observations, and decision-support activities related to climate variability and climate change. The CCSP climate research priorities of near-term focus for 2007 include improving our climate models and better understanding of levels of carbon in North America.

In the area of weather and water, our services make a tremendous contribution to the Nation's health and economic viability. Weather warnings protect the public from extreme environmental events, while forecasts are essential to weather- and climate-sensitive industries, which account for one-third of the Nation's GDP.

Our budget request includes \$46.1 million to sustain and improve weather forecasts and warnings. Specifically, they're at \$21.4 million to operate and maintain the enhanced U.S. Tsunami Warning Network and System. Funds will be used to operate and maintain the newly expanded DART buoy systems, new sea-level monitoring stations, upgraded local seismic networks supporting the

West Coast, Alaska, and Pacific Tsunami Warning Centers, and to operate both centers as 24/7 hands-on operational centers.

The request also includes \$17 million for improvements to hurricane track and intensity forecasting. We are focusing our efforts on increased observations, improved modeling, and the acceleration of getting that research into operational forecasts.

We appreciate very much the funding that Congress provided to NOAA in the hurricane supplemental, and we are putting it to good use. We are requesting, in this year's budget, an increase of \$1.4 million to operate and maintain the seven new hurricane data buoys deployed in the Caribbean, Gulf of Mexico, and the Atlantic. These buoys will help provide more information that's critical to improving hurricane forecast models.

In the transportation area, remember that the value of U.S. international trade has increased from \$889 billion in 1990, now to about \$2 trillion in 2003. The U.S. marine transportation system carries as much as 95 percent of this trade, more than any other transportation mode. NOAA's products and services help maintain the efficient flow of transportation and commerce. These products include weather and ice forecasts, real-time and forecast water-level conditions, and obstruction surveys, navigational charts, hazardous-material response, and satellite search and rescue. The 2007 budget includes a requested increase of \$19.5 million for our commerce and transportation programs, including \$10.5 million to address the nautical survey backlog and \$5 million for critical mapping, charting, and data improvements.

I do, indeed, understand very well the difficult budgetary times under which we must operate. Now, our budget provides modest new investments in priority areas, while maintaining critical services.

I am, indeed, proud of the work and the people of NOAA. It's an honor to be serving with them. We will build on our successes from last year, and we stand ready to meet future challenges.

As I close, again, let me thank you for the support and interest and concerned involvement of the Members of this Committee and staff. Without your assistance, we would not be the agency that we are today.

Thank you very much, Mr. Chairman. I'm happy to respond to any questions that the Committee may have.

[The prepared statement of Vice Admiral Lautenbacher follows:]

PREPARED STATEMENT OF VICE ADMIRAL CONRAD C. LAUTENBACHER, JR., U.S. NAVY (RETIRED), UNDER SECRETARY OF COMMERCE FOR OCEANS AND ATMOSPHERE; ADMINISTRATOR, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA), DEPARTMENT OF COMMERCE

Mr. Chairman, and members of the Committee, before I begin my testimony I would like to thank you for your leadership and the generous support you have shown the National Oceanic and Atmospheric Administration (NOAA). Your continued support for our programs is appreciated as we work to improve our products and services for the American people. Thank you for the opportunity to testify on the President's Fiscal Year (FY) 2007 Budget Request for NOAA.

In the last year we have witnessed natural disasters on an unprecedented scale, including a tsunami in south Asia, earthquakes in Pakistan, and hurricanes, volcanic activity, drought and wildfires here in the United States. As a Nation, we labored to rebuild the nations and lives destroyed by the December 26, 2004 tsunami in south Asia, and this catastrophic event focused the spotlight on the threat tsunamis pose to all coastal communities. In 2005, we experienced the most active

hurricane season in history with Hurricanes Katrina, Rita, and Wilma battering the Gulf Coast and Florida, resulting in devastation unlike anything the Nation had witnessed before. Even now we are battling drought and wildfires in our Midwest and plain states, and sporadic eruptions of St. Augustine in Alaska. Never in our Nation's history has the need to understand the weather and our environmental resources been so great, and never before has NOAA stood more ready to face the challenges ahead.

The FY 2007 President's Budget supports NOAA's priority to advance mission-critical services. The FY 2007 request is \$3.684B, which represents a \$345M or 10.3 percent increase over the FY 2007 base. This request includes the level of resources necessary to carry out NOAA's mission, which is to understand and predict changes in the Earth's environment, and conserve and manage coastal and marine resources to meet our Nation's economic, social and environmental needs. At NOAA we work to protect the lives and livelihoods of Americans, and provide products and services that benefit the economy, environment, and public safety of the Nation. Before I discuss the details of our FY 2007 budget request, I would like to briefly highlight some of NOAA's notable successes from the past Fiscal Year (2005).

#### FY 2005 ACCOMPLISHMENTS

##### **NOAA Provided Critical Information and Support Before and After Hurricane Katrina**

NOAA's National Weather Service is the primary source of weather data, forecasts and warnings for the United States and its territories. NOAA's forecasts and warnings for Hurricane Katrina and Hurricane Rita pushed the limits of state-of-the-art hurricane prediction. The National Weather Service operates the most advanced weather and flood warning and forecast system in the world, helping to protect lives and property and enhance the national economy. In partnership with DOD, NASA, NSF, and other Federal agencies, the long-term continuous research efforts, including observations, modeling, and expanded computational resources have led to NOAA's current predictive capabilities and improved ways of describing uncertainty in prediction. Reconnaissance data from NOAA and Air Force Reserve aircraft provided critical data required for accurate hurricane prediction. Hurricane forecasts for Katrina and Rita were more accurate than ever for storm track, size, intensity, surge, and warning lead time, allowing for evacuation of 80 percent of New Orleans, and 90+ percent of Galveston.

NOAA's work did not end with the forecast. NOAA responded immediately to the destructive 2005 hurricanes by providing over 9,500 aerial images of the impacted coastline to help emergency responders assess the situation, analyzing satellite imagery to determine the coastal impacts, sending Scientific Support Coordinators to address nearly 400 hazardous material spills, and Navigation Response Teams to survey for obstructions to navigation in critical ports and waterways to allow relief supplies to be delivered and maritime commerce to resume. NOAA ships THOMAS JEFFERSON and NANCY FOSTER were diverted from planned missions to areas impacted by the hurricanes and helped collect data needed to reopen critical Gulf Coast ports and to assess impacts on Gulf Coast ports and fisheries. Readings from NOAA's National Water Level Observation Network (NWLON) tide stations in the region provided emergency responders with real-time storm tides, and are now invaluable data that can be used in planning the rebuilding of the coast.

NOAA capabilities continue to support the impacted areas with response to spills and maritime incidents. NOAA has invested more than \$3.7M in 2005 grant funding to Gulf States to build, and in some cases re-build, their infrastructure and capacity to determine and deliver consistent and timely geodetic height information. Accurate land and water level heights are critical to determining effective highway evacuation routes, levee heights, storm surge modeling, flood plain mapping, sea level rise calculations, vessel under-keel and bridge clearance, subsidence monitoring, and restoration of coastal habitats.

##### **NOAA Continues to Lead the Advancement of the Integrated Earth Observing System**

NOAA led the development and is now leading the implementation of the *Strategic Plan for the U.S. Integrated Earth Observing System*, through the U.S. Group on Earth Observations (USGEO). At the third Global Earth Observation Summit held in February 2005 in Brussels, the 10-year implementation plan for a Global Earth Observation System of Systems (GEOSS) was endorsed. By endorsing the plan, the nations have accomplished the first phase of realizing the goal of a comprehensive, integrated, and sustained Earth observation system.

One of the Nation's highest technical priorities is to build integrated, global Earth observations. We need to build, on a global basis, the capability to observe the Earth in many dimensions and time scales, and improve the scientific basis for using those observations to predict weather conditions, understand climate trends, and reveal the complicated physical and biological relationships that shape the health and productivity of our ecosystems. GEOSS is an excellent example of science serving society. Over time, GEOSS will provide an important scientific basis for sound policy and decisionmaking in every sector of our society including energy, public health, agriculture, transportation and numerous other areas that shape the quality of everyday life. In addition, it will enhance our capability to address natural disasters in the United States and throughout the world.

#### **NOAA's Successful Satellite Launch Ensures Continuity and Improved Collection of Data**

A major component of GEOSS is NOAA's satellite program. NOAA-N was successfully launched from Vandenberg Air Force Base, California on May 20, 2005. Upon achieving orbit NOAA-N became NOAA-18 and was declared operational on August 30, 2005, as the primary afternoon satellite in the Polar Operational Environmental Satellite (POES) constellation. NOAA-18 marks the beginning of the NOAA and the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) Initial Joint Polar System (IJPS) agreement. The IJPS project comprises two NOAA polar satellites (NOAA-18 and NOAA-N Prime) and two EUMETSAT satellites (Metop A and Metop B). The IJPS agreement gives NOAA and EUMETSAT the ability to share satellite instrument data and products. Coordination among nations with different global observing systems is a cornerstone to the success of the GEOSS mission.

#### **Recovering Threatened and Endangered Salmonids**

Efforts to conserve and recover the Nation's protected marine resources have made steady progress, as reported in the National Marine Fisheries Service (NMFS) 2004 Biennial Report to Congress on the recovery program for threatened and endangered species, published in August 2005. In recent years, the abundance of both hatchery-reared and naturally spawning populations of listed salmon and steelhead has generally increased. Improvements are seen in many salmon populations—16 of 26 species or evolutionarily significant units (ESU) of Pacific salmon are stable or increasing, six more than had been anticipated at this time.

#### **NOAA Begins Expansion of U.S. Tsunami Warning Program; Prevents Costly and Unnecessary Evacuations on West Coast**

In response to the December 26, 2004 Indian Ocean tsunami, the Administration committed to expand the U.S. Tsunami Warning Program. A multi-year implementation plan, developed with supplemental funding in FY 2005, will improve the Tsunami Warning and Mitigation System and Tsunami Forecast System. Improvements in FY 2005 included: providing 24 hours a day, 7 days a week (24/7) operations at NOAA Tsunami Warning Centers, seismic monitoring, and improved community preparedness through NOAA's TsunamiReady program. NOAA also utilized the experimental Tsunami Forecast System to accurately predict a tsunami off the coast of Oregon, following an approximately 7.2 magnitude earthquake off of the northern California coast in June 2005. Within 5 minutes of the June 14 earthquake, NOAA's West Coast/Alaska Tsunami Warning Center issued a tsunami warning for areas within a 2-hour wave travel time, which included coastal areas from the California-Mexico border to the northern tip of Vancouver Island, B.C. The warning was canceled about an hour later, after NOAA tide gauge and Deep-ocean Assessment and Reporting of Tsunamis (DART) buoy station data indicated the 10–15 cm wave would be non-destructive. Cancellation of the tsunami warning prevented unnecessary, and potentially costly, evacuations of people from the Oregon coast. For example, the accurate forecasting of a non-destructive tsunami in November 2003 saved Hawaii an estimated \$68M in projected evacuation costs.

The expanded U.S. Tsunami Warning System will be one of the systems contributing to a global tsunami/all-hazards warning system, joining the emerging Indian Ocean system and a planned Mediterranean/North Atlantic system.

#### **NOAA and EPA Urge Americans to "Be Air Aware"**

Air quality forecasts produced by NOAA and the Environmental Protection Agency (EPA) were enhanced and expanded to better serve more regions of the United States. Forecast information for ground-level ozone has been available for the north-eastern United States, and will now include areas from just east of the Rocky Mountains to the Atlantic and Gulf Coasts. Hour-by-hour forecasts, which look out to midnight the following day, are available online at: <http://www.weather.gov/airquality>.

These forecasts provide information to more than 180 million people on the onset, severity, and duration of poor air quality. State and local air quality forecasters use this information as a tool in issuing next-day alerts for poor air quality to more than 300 communities.

#### **New NOAA Physical Oceanographic Real-Time System (PORTS®)**

The Columbia River is now the 13th major waterway in the United States to install a NOAA Physical Oceanographic Real-Time System (PORTS®). PORTS® support safe, cost-efficient marine transportation by providing accurate real-time oceanographic and meteorological data. Managed by NOAA, the system is operational and serving the Columbia River maritime community. Nearly 48 million tons of cargo transits through the Columbia River annually; vessel operators must know the depth of the water in order to maximize ship efficiency and minimize groundings and accidents. In port areas, water levels and currents frequently differ from predictions, as a result of changes in winds and water run-off. PORTS® provides accurate real-time information needed to make marine transportation both safe and efficient. The Tampa Bay economy receives more than \$7M a year in savings and direct income from the operation of PORTS®. Users of PORTS® information include port authorities, vessel pilots, shipping companies, U.S. Coast Guard, U.S. Navy, recreational boaters, fishermen, coastal managers, environmental organizations, academia and surfers. PORTS® information is available online at [http://tidesandcurrents.noaa.gov/d\\_ports.html](http://tidesandcurrents.noaa.gov/d_ports.html).

#### **Significant Progress in Modernizing NOAA's Fleet of Ships**

NOAA's newest world class fisheries survey vessel (FSV), OSCAR DYSON, was delivered, commissioned and began operations collecting data to manage fishery stocks and protect marine mammals from its home port of Kodiak, Alaska. NOAA launched the second FSV, HENRY B. BIGELOW, which will be delivered in May. Construction began on FSV #3, and NOAA exercised the option to build FSV #4. In addition, a contract was awarded and conversion begun in 2005 on the former Navy T-AGOS vessel CAPABLE, which will be NOAA's first ship devoted to ocean exploration. Through a national ship-naming contest, CAPABLE will be re-commissioned OKEANOS EXPLORER.

### FY 2007 BUDGET REQUEST HIGHLIGHTS

#### **Support People and Infrastructure**

As always, I support NOAA's employees by requesting adequate funding for our people, infrastructure, and facilities. NOAA's core values are people, integrity, excellence, teamwork, and ingenuity. Our ability to serve the Nation is determined by the quality of our people and the tools they employ. Adjustments for inflationary costs are the highest priority budget increase in FY 2007. These adjustments have been concentrated in the National Weather Service, which has labor-intensive 24/7 forecasting operations. These adjustments focus on maintaining and investing in our workforce and supporting NOAA's most important resource—our people.

This year, we focus our infrastructure improvements on our core mission to observe and monitor the Earth. Central to this mission is the operations and maintenance of NOAA vessels and critical enhancements to marine safety, facility repair and modernization. Out of nearly \$150M in Mission Support program increases, \$7.5M will support Marine operations for NOAA ships; \$13.8M will be used to modernize our fleet; \$4M will go toward education and training. Only upon a strong foundation can we fulfill our mission.

The backbone of the NOAA infrastructure is our integrated observation effort, including building state-of-the-art satellite programs. NOAA serves with NASA and OSTP as lead for the Federal Government in developing our U.S. integrated observing strategy. In addition, I serve as one of four intergovernmental Co-Chairs of the effort to develop the Global Earth Observation System of Systems. The FY 2007 NOAA budget request includes significant increases to support requirements for NOAA's leading role in building an integrated earth observing system. NOAA integrated observation efforts include state-of-the-art satellite programs, including a requested increase of \$20.3M for the tri-agency National Polar-orbiting Operational Environmental Satellite System (NPOESS), which will replace the Polar Operational Environmental Satellite (POES) program after completion of the current K-N series of satellites. As you are aware, the NPOESS program has encountered significant cost and schedule overruns, which are not included in the FY 2007 request. NPOESS is currently undergoing a recertification review in accordance with Nunn-McCurdy requirements. This review will shape the way forward and future budget

requirements. The Department of Defense request for NPOESS matches the NOAA request, as part of the shared funding arrangement.

The Geostationary Operational Environmental Satellite (GOES) program requested increase for FY 2007 of \$104M supports continuity of essential weather satellite coverage with advanced capabilities for supporting the Nation's severe weather events, such as hurricanes. The 2005 hurricane season illustrated a need for continued support in this area. FY 2007 funds will be used to continue the operation and acquisition of our current GOES series and move the development of the next-generation GOES series, GOES-R, into the system acquisition phase of its procurement. GOES-R is scheduled for launch in 2012.

The FY 2007 President's Budget builds on funding provided in the past two fiscal years (\$14.5M in the FY 2005 supplemental appropriation and \$9.5M in the FY 2006 appropriation) by requesting an additional \$12.4M to operate and maintain the strengthened U.S. Tsunami Warning Network. Funds will be used to operate and maintain the newly expanded DART buoy systems, new sea-level monitoring stations, the upgraded local seismic networks supporting the West Coast/Alaska and Pacific Tsunami Warning Centers, and to operate both centers as 24/7 Operation Centers. An increase of \$1.4M is needed to operate and maintain the seven new data buoys deployed in 2005, which enhance real-time hurricane data and observations and storm monitoring in the Caribbean, Gulf of Mexico, and the Atlantic.

The President's FY 2007 request also includes \$13.7M in increases for core administrative functions. This request includes increases for information technology and for administrative support services to the individual line offices. These increases are necessary to implement, operate, and maintain the NOAA enterprise IT security architecture and to maintain the levels of direct administrative, technical, human resources, financial and security services which are crucial in achieving NOAA's mission.

#### **Invest in Ecosystems Management and Research**

In FY 2007, NOAA proposes increases of \$19.7M for fisheries activities in the Gulf of Mexico. The additional support will help a variety of fisheries in this region, which has been greatly impacted by hurricanes Katrina, Rita, and Wilma. NOAA has also identified the Gulf of Mexico as a priority large marine ecosystem for new funding due in part to the region's readiness to implement a Regional Ecosystem Plan and in part to the socioeconomic value of its fisheries. This increase will enhance data collection, improve estimates of socioeconomic benefits and costs associated with our management regimes, and enhance research to reduce bycatch and reduce harm to protected resources during commercial and recreational fishing. Expected benefits are increased knowledge of fish species through stock assessment studies; increased knowledge of impacts to fishing communities through socio-cultural surveys; and increased knowledge of the impacts of hurricanes on the commercial and recreational fisheries in the Gulf of Mexico ecosystem. As the Gulf region rebuilds, these programs will ensure that adequate science and management resources are available to promote and support sustainable and robust fisheries. Some of the individual components of the initiative are discussed below.

The FY 2007 budget request includes significant resources for NOAA's ocean and coastal programs, and fisheries and protected species activities in support of the President's U.S. Ocean Action Plan. Highlights of our net increase of \$107.6M include initiatives to advance ecosystem-based approaches to managing our coastal and ocean resources. Among these requests are \$11.2M for Habitat Conservation, \$22.5M in Protected Species, and \$31.9M for Ecosystems and Fisheries and Research and Management. With this funding, NOAA will extend our Habitat Restoration Program to the Great Lakes, expand dedicated fishery access privilege programs, improve regional collaboration and planning of coastal state managers to improve management of coastal watersheds and marine resource areas, and enhance observing and information delivery systems to inform the public. NOAA requests an increase of \$7.6M to increase and improve assessments of fish stocks, which includes support to assist the Southeast and Gulf regions in recovering from hurricane damage. Also included in the request is a \$22.5M increase for protected species to investigate ocean noise and its effects on the recovery of protected species, expand and modernize stock assessments, complete Endangered Species Act (ESA) mandated activities, and pilot proactive conservation efforts for species nearing the need for ESA listing, preventing additional listings.

NOAA is requesting \$6M in funding to support the Open Rivers Initiative, a major project that is a result of the Administration's Executive Order on Cooperative Conservation. This new Initiative will contribute to the repair of vital riverine ecosystems, benefit communities, and enhance populations of key species—all using a grassroots, consensus-based approach. To date, NOAA has received over 60 very

deserving applications responding to its call for proposals, highlighting the nationwide attention that this Initiative has already attracted.

By applying innovative strategies to improve internal and external coordination and integration based on ecosystem principles, and by establishing baselines and integrated observations of ecosystem indicators, NOAA will increase the effectiveness of its many program activities intended to produce healthy and productive ecosystems that benefit society. Initiating ecosystem approaches to management requires better monitoring and characterization, and more effective integration and collaboration among NOAA programs and its external partners. The requested budget increases allow NOAA to meet its responsibilities as stewards of living marine resources for the benefit of the Nation, through science-based conservation and management and the protection of ecosystem health.

#### **Expand Climate Services and Observations**

The FY 2007 Request contains investments in several programs aimed at increasing our predictive capability, enabling NOAA to provide our customers (farmers, utilities, land managers, weather risk industry, fisheries resource managers, decisionmakers) with assessments of current and future impacts of climate events such as droughts, floods, and trends in extreme climate events. One such investment is the request of \$6.0M to enable NOAA to continue building the ocean component of the global observing system which contributes to GEOSS, including floats, buoys, tide gauge stations and other ocean reference stations, per our international commitment. Advancing ocean systems toward global coverage will allow NOAA to better understand the state of the climate system and improve climate predictions.

NOAA's budget requests an increase of \$14.5M as part of the President's Climate Change Science Program (CCSP). The CCSP is responsible for coordinating and integrating federally funded research, observations, and decision-support activities related to climate variability and change. CCSP program plans for FY 2007 incorporate the relevant budgets from the CCSP departments and agencies and include the direct alignment of agency climate change science programs with the goals and sub-goals in the CCSP Strategic Plan. In FY 2007, CCSP near-term climate research priorities include integrating new remote-sensing observations, research and modeling; an integrated North American Carbon Program; understanding the impacts of climate variability and change on ecosystem productivity and biodiversity; and coping with drought through research and partnerships.

Another key investment is the request for \$4.0M to go toward drought impact research for the National Integrated Drought Information System (NIDIS), which will aid decisionmakers faced with drought and water resource management issues, and which has been identified as a near-term opportunity for implementation of the U.S. Integrated Earth Observation System. The request also includes \$2M to establish the capacity to produce consistent and continually-updated climate analysis data, deliver regular and systematic explanations of the state of the climate system, and advance understanding and predictions of climate extremes.

NOAA's FY 2007 Budget Request includes an increase of \$6.5M for high performance computing and communication, which restores NOAA's ability to use advanced computing power to forecast the Nation's weather and climate, model ecosystems and the ocean, and disseminate environmental information. Within this request is funding for NOAA's Data Centers and Information Services, which archive and provide access to the world's largest collection of data, including climate data, to more than 50,000 users per year.

#### **Sustain and Improve Weather Forecasts and Warnings**

The FY 2007 budget includes increases of \$46.1M to sustain and improve weather forecasts and warnings. NOAA's weather and water services make a tremendous contribution to the Nation's health and economic vitality. For instance, weather warnings protect the public from extreme environmental events while forecasts are essential to weather- and climate-sensitive industries, which account for one-third of the Nation's GDP. As an example of the benefits, during a typical hurricane season NOAA's efforts save the Nation \$3 billion. Drought costs the Nation \$6-8 billion annually, and floods cost \$5 billion and cause more than 80 deaths per year. Estimates suggest the U.S. can reap a twelve-to-one return annually for every dollar invested in better water resource forecasting.

In addition to the \$12.4M in requested increases discussed above for the U.S. Tsunami Warning System and the \$1.4M for operations and maintenance for the new hurricane data buoys, the FY 2007 budget request includes funding to sustain and enhance other critical services. This includes \$2.5M for the National Weather Service Telecommunications Gateway (NWSTG) Critical Infrastructure Protection. Funds will be used to implement a telecommunications network solution that re-



solves an existing single-point-of-failure issue associated with the commercial service provider for the NWSTG CIP. This network solution will ensure uninterrupted delivery of critical meteorological data necessary for the protection of life and property.

The budget request includes a \$3.5M increase to support the Wind Profiler Network. NOAA operates and maintains a network of 33 profiler stations which provide high-frequency wind data to benefit several important missions, including severe weather warnings (for tornadoes, flash floods, and winter storms), watches, and short-term forecasts. These products are important for public safety, aviation, and wildfire managers. The increase will fund engineering design and award a development contract for new frequency compliant transmitters that will enable the Profiler network to operate without interference from search and rescue beacon-equipped satellites being deployed by the European Space Agency; \$1.2M is requested for Aviation Weather, which will fund procurement and fielding of 75 additional water vapor sensors as part of an Integrated Upper Air Observing System. Water vapor sensors are critical to describing weather hazards and increasing forecast accuracy to continue to improve U.S. aviation safety and economic efficiencies.

#### **Facilitate Transportation**

The U.S. economy relies upon a transportation network of ship, rail, highway, and air transport to move people, cargo and commerce to, from and across the Nation. This movement is heavily dependent upon the information and services that NOAA provides—weather and ice forecasts, real-time and forecast water level conditions and obstruction surveys, navigational charts, hazardous materials response, and satellite search and rescue. From 1990 to 2003, the value of U.S. international merchandise trade increased an average 6 percent annually, from \$889 billion to about \$2 trillion (in current dollars). The U.S. Marine Transportation System (MTS) carried as much as 95 percent of this trade by volume and 41 percent by value in 2003, more than any other transportation mode. The Nation also loses at least \$4 billion annually due to economic inefficiencies resulting from weather-related air-traffic delays, and the injuries, loss of life, and property damage from surface weather-related crashes cost an average of \$42 billion annually. NOAA's products and services help maintain the efficient flow of transportation and commerce.

Among our Commerce and Transportation programs, we are requesting \$2.0M to continue implementation of the National Vertical Datum Transformation Tool data base, or VDATUM. VDATUM allows Federal, state, and local government agencies to share geospatial data more effectively and benefits NOAA's modernization efforts. The FY 2007 budget request also includes \$1.9M to continue NOAA's efforts to provide Electronic Navigational Charts (ENCs). Sustained funding at this level will enable NOAA to cover all U.S. waters by 2010. In addition, \$2.7M is requested for tide and current data; \$2.0M of these funds will be used to rebuild and strengthen the National Water Level Observation Network's (NWLON) ability to provide navigation and storm tide information throughout extreme weather and water events such as hurricanes. Several stations were damaged or destroyed during the 2005 hurricane season.

#### **Support Facilities Maintenance and Construction**

The FY 2007 President's budget request also includes important increases for facilities, necessary to provide a safe and effective working environment for NOAA's employees. An increase in funds for facilities management and modernization of \$9.4M will be used to provide crucial funding for new and planned facility repair and maintenance projects which address facility conditions affecting either employee safety or mission-operational readiness. Funding will also support the development and implementation of an annual integrated facility inspection program to assess conditions at NOAA-owned facilities, coordinated capital investment planning and execution for construction projects, and program direction and oversight for NOAA's major construction program.

An increase of \$11.0M will complete the construction of the NOAA Center for Weather and Climate Prediction (NCWCP) at the University of Maryland's M2 complex, fund the outfitting and relocation costs, and support the overlapping system functionality needed to transition from the World Weather Building to the NCWCP. Building occupancy is scheduled for February 2008.

#### **Conclusion**

NOAA's FY 2007 budget request provides modest new investments in our priority areas while maintaining critical services, reflecting NOAA's vision, mission, and core values.

The work NOAA accomplished in 2005 impacted every U.S. citizen. We will build on our successes from last year, and stand ready to meet the challenges that will

surface in FY 2007 and beyond. NOAA is dedicated to enhancing economic security and national safety through research and accurate prediction of weather and climate-related events, and to providing environmental stewardship of our Nation's coastal and marine resources. That concludes my statement, Mr. Chairman. Thank you for the opportunity to present NOAA's FY 2007 budget request. I am happy to respond to any questions the Committee may have.

The CHAIRMAN. Well, thank you very much.

In view of the attendance, I think we'll set the clock at about seven-and-a-half minutes each. Is that sufficient, Senator?

Admiral I note that the monies we put up for the Arctic Research Center that could tie into the really challenging changes in the Arctic was deleted. We had \$6 million in that, to reestablish that center. We also had a reduction in the monies available for marine mammal and Alaska fisheries research. The coastal vulnerability to climate change monies were zeroed out. The Tsunami Warning and Environmental Observation System in Alaska was zeroed out, as well as absolutely no money for the ocean bottom claims and the OCS, the Alaska surveys, the Alaska Ocean Observing System, the Cook Inlet Coastal Monitoring, the Marine Debris Removal Program in Alaska. And the Pacific Coastal Salmon Recovery Fund was reduced by \$254,000. It looked like someone had sort of a heavy pencil on Alaska. Can you tell me why all of those were reduced? I can understand that we have to have some reductions, but that—

Admiral LAUTENBACHER. I'm sure you—

The CHAIRMAN.—there is not one single Alaska item that was increased, except for the National Undersea Research Program, which is on the edge of the continental shelf.

Admiral LAUTENBACHER. Yes, sir. I assure you, there was no attempt to go heavy-handed on Alaska or any other state. We were operating under very severe budget restrictions on what we could put into the program. Many of the increases that were there were considered as 1-year increases, and we have put into our budget a large item that covers a broad range of Alaska activities, and we want to work with you, in terms of trying to provide for the most—highest priority items and build—

The CHAIRMAN. Well, what—

Admiral LAUTENBACHER.—build a budget that is supportive of everyone's needs.

The CHAIRMAN. What account is that?

Admiral LAUTENBACHER. We have—

The CHAIRMAN. What account—

Admiral LAUTENBACHER. We have a program called Alaska Research Activities, and it's a large—it's a large segment. And what we want to do is try to build the appropriate mix in there and determine if that's the right level.

The CHAIRMAN. Well, I got a call earlier this year from Barrow, and they said that they woke up in the morning and they looked—they were looking at a 30-foot wall of ice.

Admiral LAUTENBACHER. Yes, sir.

The CHAIRMAN. A semi-tsunami came across those very shallow waters, about an 8-mile tideland not having a depth of more than 2 feet all the way out there, hit that and literally picked up a shelf of ice and dropped it right in front of the city. They also tell me

that last fall we had a typhoon within about 60 miles of the Arctic Coast. And now they tell me that the Tsunami Warning and Environmental Observation Post in Alaska is entirely eliminated. That sort of worries me.

You know, we have half the coastline of the United States. We're one-fifth the size of the United States, and we have two-thirds of the outer continental shelf. And I think that we—we know your budget has decreased by 5.8 percent, but the decrease in my state is nearly 50 percent.

Admiral LAUTENBACHER. We need to work with you to ensure the balance is correct, sir.

The CHAIRMAN. Well, I'm worried about it, because we've got this climate of no earmarks, which means, if there's no money in the budget, if I put up—try to sustain a program, we're going to be faced with some sort of a point of order.

I want you to know I've been in this Committee for a long time, I really have been very disturbed about this when I first saw this analysis of the projects in Alaska from NOAA. I know of no real reason for it. The Invasive Species Act, the moneys that we put in, were deleted. There was one increase, and that increase was \$200,000 for the Pribilof Island clean-up. I don't know what that was, but—do you know that program, by any chance, why it was increased?

Admiral LAUTENBACHER. Yes, sir. We are trying to complete the clean-up in the next 2 years, and this was a position that we had been talking about with the Alaska delegation to ensure that we allow for both development and clean-up. And we think there's enough money there to do that with this small addition.

The CHAIRMAN. Well, respectfully—and I love the Pribilofs, but we've got some people facing real challenges on a day-by-day basis up there. That stuff that you're cleaning up has been there for 20 years.

Admiral LAUTENBACHER. Yes, sir.

The CHAIRMAN. And it has a higher priority than the data buoys and the tsunami warning? I'm really quite disturbed with that. We have—as far as weather systems are concerned, we have the largest area from any—of responsibility—of the 122 NOAA weather offices. As I said, we have this enormous space. Alaska has—well, I'll just show you. You know it, but that is—

Admiral LAUTENBACHER. Yes, sir.

The CHAIRMAN. The area of responsibility for your stations. I'll pass that. That means that there's one person for those areas. One of them goes from the edge of Mississippi to California and north to the top of Nebraska and across to the Mississippi. And I don't know how we can use—we have one manned station for every 25,000 square miles. And there's just no way for us to have any capability.

In Pedro Bay, Alaska, the National Weather Service did not know the Iliamna River was flooding until the community was totally submerged. They were so far away, they had no idea what was going on, and no one even—in the old days, we at least had someone in the area that would contact them. This is the Iliamna River at Pedro Bay. The first information you got that it was flooded was, someone called in and said, "The bridge is going out."

Now, I agree with what Senator DeMint said, you've done a wonderful job down along the coast, in prediction, but—and the Senate's getting tired of me asking this, but are we still a state, as far as you're concerned?

Admiral LAUTENBACHER. Yes, sir. We are working hard to try to meet everyone's needs, and it's been very—been a challenge this year.

The CHAIRMAN. Well, last, let me talk about the tsunami warning. We have one of the Tsunami Warning Stations that ties into the whole Pacific, I thought; and yet, as I have indicated, that has been now zeroed out. In other words, the contribution we make to sending information to the rest of the Pacific about what's starting in the North Pacific is totally eliminated. What are you going to use to make up for that? We—our Tsunami Warning Center had the responsibility for monitoring all coastal states and Canada, 23 states and three territories. And it was totally eliminated from budgeting.

Admiral LAUTENBACHER. I will have to check on that. I'm not aware that we eliminated any of the Tsunami Warning System in Alaska. As a matter of fact, we have a \$20 million increase for the Tsunami Warning System, which supports Alaska and supports the warning center there. We will check on it and get back to you.

The CHAIRMAN. Well, my notes showed zero for Tsunami Warning and Environmental Observation System, so minus \$2 million from last year.

Senator Inouye?

Senator INOUE. In today's *Wall Street Journal* article, there is an article which suggests that NOAA or the White House is either stifling or censoring reports issued by your climate scientists. Is there any truth to that?

Admiral LAUTENBACHER. Certainly no truth in it with regards to every—all the matters that I know about. We have an open policy that supports peer-reviewed science. I have a scientific background. I have been completely open. I love open debate. I encourage it. I've told my team to continue to do that. We have a wide variety of scientists within NOAA, and they are encouraged. They're—NOAA scientists, dozens of them every day, are talking to the press and providing information. Our press office works to get them hooked up with people who want to answer questions. Even the comments in the *Wall Street Journal* are proof to the fact that it's open for people to talk and do as they wish.

Most of the feedback that I've gotten indicates that they're not happy with the press policy. But a press policy is something that every organization has. Even the Senate has it, and your office has press policies. You like to know when people are talking to the press, if they get calls, and that is the same—we have the same sort of press policy. But the issue of supporting peer-reviewed science—absolutely clear, peer-reviewed science speaks for itself. We don't change peer-reviewed science. We don't interfere with the ability of our scientists to discuss their peer-reviewed science in any legitimate forum that they wish.

Senator INOUE. Is there any truth to the suggestion that the White House may be censoring scientists from your shop?

Admiral LAUTENBACHER. I am not aware that there is any truth to that at all. We are—again, I work for the—you know, I’m—I work in a chain of command. I work for the Department of Commerce. Department of Commerce works for the White House. And there are policies that ask for people to report when they have been contacted by the press; and that’s the system. The fact is that our scientists are out there right now saying whatever they want to say. I’ve never seen anybody be able to muzzle a scientist. Let’s put it that way. And they talk, and we’re not—that’s just not our policy. We don’t do that.

Senator INOUE. I have a few items, like the Chairman.

Admiral LAUTENBACHER. Yes, sir.

Senator INOUE. In the Pacific, I find that some of the cuts are just staggering. For example, in FY 2005 we provided \$81 million for marine mammals, and for FY 2007 the cut is 72 percent. Is there any reason for that?

Admiral LAUTENBACHER. We have left in our budget a relatively robust baseline program in our budget. And, of course, the basic reason, you all know. The fact is that we develop our budget based on last year’s submission, and then I work hard to try to get increases to meet what I believe the needs are. So, as—the fact is—a matter of—just as a matter of the way the process works, I’m doing the FY 2008 budget right now on the basis of what came in, in 2007. We are in a process which supports a sort of Catch-22 cycle. So, we are continually in a catch-up mode. At the time that we built the budget, this money appeared to be the right level for marine mammal protection and science and work. As we do every year, I want to work with you to ensure that we have the best balance that we can get in all of our programs.

Senator INOUE. So, you believe that, even with this 72 percent cut, you’d be able to carry out your mission to help these marine mammals and—

Admiral LAUTENBACHER. We have over \$20-some million—

Senator INOUE. Twenty-three.

Admiral LAUTENBACHER.—left in the program that—to provide for those services. And at—with the amount of money that we had at the time that we built the budget, that was the priority that was decided upon, internal—in NOAA’s internal deliberations. Can we meet all of our requirements? Of course not. There’s no agency that can meet all of its requirements. I don’t think you would find anyone who would come in and testify to the ability to be able to do that.

Senator INOUE. I won’t go through the litany of those projects and missions that have been cut out completely, but I’d just like to speak of one. You’re going to have consolidated NOAA facilities. This was set up, at your request, because it would save money instead of having them all over creation. And now you’re cutting off so much that the whole process will have to come to a stop. It’s a termination.

Admiral LAUTENBACHER. Well, I would hope this is not a termination. These are lean times for infrastructure budget. Our infrastructure budget is not as healthy as it has been in years past because of the need for deficit reduction, both here and in the Administration. We are continuing with the contracts on the system. The

contract was let last year to start building the warehouse. We are going to let another contract this year. So, we are going to continue ahead with this program, and it still has my priority and solid backing.

Senator INOUE. I will be submitting a list of those items that have been terminated in my questions for the record. And, if I can, I'd like to have some explanation why it's been done, because—

Admiral LAUTENBACHER. Yes, sir.

Senator INOUE. For example, on the pelagic fisheries, you know, it is an economic benefit to our Nation of about \$2 billion, and, well, we're going to cut out the moneys for that. I find it rather difficult to understand this. And so, I don't want to burden you, at this moment, with all these little items, but I think it would be most helpful to the Chairman, and to me, because we are the ocean states, and we have to respond to our constituents and those involved in the industry as to why these things are necessary, the cuts.

Admiral LAUTENBACHER. Yes, sir. We will provide all the answers that you require.

Senator INOUE. I appreciate that very much.

May I submit the questions for the record?

The CHAIRMAN. Yes. If you will, please respond to the questions that'll come in writing, to save time here.

Admiral LAUTENBACHER. Yes, sir. We'd be happy to do that.

The CHAIRMAN. Senator Nelson?

Senator BEN NELSON. Again, thank you, Mr. Chairman.

I pretty well previewed my—what my concerns are, because, given the continuing drought conditions and related impacts, particularly over the last 5 to 7 years, I need to know whether, and how, NOAA has reprogrammed resources to improve both predictions of drought and the monitoring of drought conditions.

Admiral LAUTENBACHER. Yes, sir. We have answered the call of the Western Governors Association that had a partnership to build a program to help set up a National Integrated Drought Information System. Very critical. And this is a partnership. It's not something that NOAA can do by itself, but we can provide the backbone and a lot of the expertise. But it's a partnership with the universities and the states and counties and local management experts for water and agriculture. We are asking for a 4,000—or a \$4 million increase in the NIDIS concept itself that'll help us move forward with it. This is the first year that there is a—what I would call a significant budgetary line item for it. It will be extremely—we lose \$6- to \$8 billion a year just from the Federal Government support of—from bad decisions made for droughts. This is a small investment to help us create a system which will provide information to farmers, the state directors, as well as county managers. And we also have money in for a climate reference system, a Hydromet test bed, and some modernization of our volunteer observers, who are—provide a great service for the country for very minimal cost to help flesh out a larger and more robust reporting network with real-time information that will help us predict droughts and provide information.

Senator BEN NELSON. Well, I think obtaining the reporting information is obviously very important. If I ask you the question—on

a scale of one to ten today, how well are we able to predict or forecast drought?

Admiral LAUTENBACHER. The major product that we have today is called the National Drought Monitor. It's been a product of a collaboration of the Department of Agriculture, as well as the Drought Center of Nebraska. And other agencies contribute to it. It is a broad brush of drought conditions, so—you're looking at a map of the United States, similar to what the Chairman showed us earlier for Alaska—so, we're able to give you advance notice for large areas of the country, probably 2- to 3-week type of notice. And that's my judgment that I'm offering. That's not—you might ask and somebody else would say it's better or worse than that. But over the last 3 years, just given the resources we've had today, we've been able to provide some large measure of predictability of conditions. That—it's helpful to know something 3 or 4 weeks in advance and to plan on—you know, planting conditions, livestock—but it is limited to that. It's limited to very large areas. So, we can't provide the kind of detailed information that you need in the counties, that the farmers need, that people who are managing specific resource issues that are localized. And that's what this system will help do, provide more fidelity for local data to get real predictions in.

Senator BEN NELSON. Well, how quickly would we be able to do that if we provided the resources?

Admiral LAUTENBACHER. That's—this is a multi-year issue. I think that the networks probably can be built in 5 to 6 years that are needed, given that it has support, has enough support for resources.

Senator BEN NELSON. Perhaps in time to predict the next cycle?

Admiral LAUTENBACHER. I would hope so.

Senator BEN NELSON. In working with the Western Governors' Association and, of course, the—with the University of Nebraska National Drought Mitigation Center, how far away—you're saying—just a few years from having a real implementation of that drought information system? Are we close? Or—

Admiral LAUTENBACHER. It's something that needs gradual improvement. I mean, we don't—it's hard to predict what we don't know and what we're going to find out. Right now, we—there is a lot of information that we don't get real-time, so there are reporting stations out there that are reporting temperature and precipitation and soil moisture, but we don't get them til weeks later. And so, if we could just get real-time reporting of what's out there—and I think that could be done relatively quickly—that could be done, then, within a couple of years—if we could get the agreement and technology, you could have much more accurate reports right away.

Now, the setting up of this denser mesh is going to take a number of years—I think 5 or 6 years—to be able to really fill in, in all the places where we need to collect the data that we don't have today. So, that—and that, again, is an estimate of what it would take. This is a start to it. It is not the full answer to providing a system that will answer everyone's needs.

Senator BEN NELSON. Do you have enough money in your budget right now to be able to accelerate realtime data collection?

Admiral LAUTENBACHER. Yes, sir. For this year, I think we have enough to get started and find the test points and make sure that—you know, I think this money will be well spent in that regard.

Senator BEN NELSON. Is there—is it possible to collaborate with other Federal agencies, and are you doing that, in the process now of putting this mitigation effort together?

Admiral LAUTENBACHER. Yes, sir. It is not only possible, it's necessary. We don't have enough resources, ourself, nor do we have all of the talents and skills that are needed. The Department of Agriculture and the—what—the talents that they apply, the university you mentioned, those skills are necessary. This is a large, collaborative effort.

Senator BEN NELSON. Are they—are the other agencies responding back with the—their own collaborative effort to work with you?

Admiral LAUTENBACHER. Yes, sir. We are getting cooperation from the other agencies.

Senator BEN NELSON. Well, thank you very much.

Thank you, Mr. Chairman.

The CHAIRMAN. Yes, sir.

Senator DeMint?

Senator DEMINT. Thank you, Mr. Chairman.

Admiral, as I mentioned before, I'm interested in the earmarks specified by 227 Members of Congress. And I want to make clear at the outset, since the Chairman and Ranking Member's projects are high priority, I'm only talking about 225 Members today. But behind me are just a list of some of the earmarks which came from us last year. Do you have any idea, Admiral, what the total amount of money we're talking about is, as far as your budget?

Admiral LAUTENBACHER. Yes, sir, I do. We know, in detail, our budget. We have lots and—we have 2,600 line items in our budget. It's a very detailed budget, perhaps more detailed than at any other agency. So, we are aware of the projects, and their cost, and—

Senator DEMINT. It's almost \$500 million—

Admiral LAUTENBACHER. It's—

Senator DEMINT.—half a billion dollars, and we've got—

Admiral LAUTENBACHER. Yes, sir.

Senator DEMINT.—seven boards here, but we couldn't find enough easel stands to put them up.

And certainly some of these projects are high priority. And my concern is, if we have high-priority projects—some were just mentioned in Alaska—we may not be able to fund them if we're directing you in so many different places. I mean, one of the projects was a half-million dollars for marine wildlife noise impacts at the University of Rhode Island, or \$400,000 for the Consortium for Fisheries and Wildlife Conflict Resolution at the New England Aquarium. Now, I'm sure that these projects have some level of importance, but I would just ask you, would you have funded these projects if they were not directed in our appropriation bill?

Admiral LAUTENBACHER. The answer depends on the level of resources that I'm given to—from which to build a budget. So, we have limited resources, and we tried to, first of all, use them to maintain the basic services and requirements of our mission. And



that's how we prioritize. And I'm—I've been, you know, working in Washington for a long time, and I understand that there are different ideas of what priorities look like. And so, we obviously want to make sure do as—the best we can to provide for Congressional priorities, as well. But, obviously, what I come here today to present to you are the priorities to keep our basic services and missions going, and I'm asking for the support for that part of our budget.

Senator DEMINT. Well, the Congressional Research Service points out that just about all of these earmarks are not even in the bill; they're in Committee report language. And they say, "Committee reports and manager's statement do not have statutory force. Departments and agencies are not legally bound by their declarations." Is that your understanding of the law?

Admiral LAUTENBACHER. Yes, sir, that's my understanding of the law.

Senator DEMINT. But you did include these projects in your budget for last year.

Admiral LAUTENBACHER. These projects are part of the agreement, if you want to put it that way, between Congress and the President. It was passed by both Houses of Congress. I take that very seriously. I've defended and supported the Constitution for 40 years in the United States Navy and 4 years here, and I—you know, I think it's important to go with the will of Congress and the President. The President signed it, Congress had passed it, and I'm here to execute the will of elected leaders—

Senator DEMINT. So, you—

Admiral LAUTENBACHER.—of the country.

Senator DEMINT.—you consider Committee language, whether it's in the bill or—you consider that a direct order.

Admiral LAUTENBACHER. I consider it as the—as expressing the will of Congress in building the budget that you all passed. And that has been the way it has worked for many, many years. And I have been respectful of those traditions and the ability to maintain that agreement to move forward. So, that's—you know, I—

Senator DEMINT. Would there be—

Admiral LAUTENBACHER.—I agree that, you know, it's not—it's not legally required, but it is, in fact, a practice and—that has been in place many, many years.

Senator DEMINT. So, the Administration has not suggested that you not comply with Committee reports or—

Admiral LAUTENBACHER. The Administration has not suggested I not comply with Committee reports, that is true.

Senator DEMINT. Did you think there would be any benefit to competitively awarding some of these projects and—some of them are specifically directed to not only what has to be done, but where it has to be done. And we're not necessarily talking about correcting a problem, which was just mentioned in Alaska, but, like, where the—which university the research needs to be done. Would we not be better off if you had the latitude to competitively assign projects that needed to be done like that?

Admiral LAUTENBACHER. Yes, sir. I am a strong supporter of competitive bidding on projects. I think that serves the public the best. And I—the same way I have served peer-reviewed science, the

comments I made in regard to the Co-Chairman's remarks, I think—and I am a supporter of having some more flexibility in our budget. It's a very hard budget to execute, because of the 2,600 line items, and when there are issues, of which a number of we're trying to work on this year are locked into these line items, it makes it very hard to really—to keep current services going at the levels that I know you all expect.

Senator DEMINT. Well, my interest is that we allow you to do your job. And I know we've got you here to question you about your budget. My concern is, if you have hundreds of micromanagers in Congress directing those budget dollars, that it's difficult for those who are paid to make the decisions to reflect the priorities of the agency. And my hope is—the President has asked for the line-item veto. The ultimate line-item veto, I think, is for him to give you the directive, and you have the legal authority to strike those items that are not consistent with your priorities. And as you—and then, hopefully, those things that we do need to focus on, with the input of Congress, certainly, and particularly the—those who lead the Committees, who focus on these things all the time—that you would have the funds you need to do these projects better. But I just want to express to you, as—I certainly don't want to scrutinize your budget and priorities.

At the same time, I think we need to be very concerned in directing a half-billion dollars of your resources according to individual Members of Congress. And I want to make that one of my priorities, to try to sort through that. At the same time—and I will try to encourage the Administration to use their line-item veto authority by taking those things that aren't in statute, that we didn't approve as part of the bill, and making some good judgments about how they're awarded.

So, thank you, Mr. Chairman. I yield back.

The CHAIRMAN. Yes, sir.

Senator Smith?

Senator SMITH. Thank you, Mr. Chairman.

Admiral, I began by asking about tsunamis. And I'll get to that. But the Pacific Fisheries Management Council plays, obviously, a key role in successful marine fisheries on the West Coast, and needs adequate funding to maintain that important role. In your opinion, is the \$18 million request for the Regional Council sufficient to allow the councils to execute fully their responsibilities under Magnuson-Stevens?

Admiral LAUTENBACHER. I would have to say, I think it's a minimum necessary for them to do their work. The requirements for our Fishery Management Councils have been increasing, and the work is becoming more detailed as we look to build sustainable fisheries. I have tried each year to, you know, support increases for the Fishery Management Councils to do their work, and I will continue to try to do that, because I—

Senator SMITH. All right, I—

Admiral LAUTENBACHER.—do believe that it has to be adequate.

Senator SMITH. I mean, it really is a critical component in developing not just data, but also politically supportable data with the public. I see the President's budget includes approximately \$13.8 million for fisheries survey vessel construction. I'm told that fishery

survey vessel number 4, which will be ported on the West Coast, will be delivered sometime in 2008. I've also heard that the *Miller Freeman*, which is currently doing surveys off the West Coast and Alaska, will be retired in 2008, potentially leaving us without a backup and no way to calibrate the new equipment. What are you doing at NOAA to ensure that the equipment will be properly calibrated so that we don't have throw out all the old data?

Admiral LAUTENBACHER. Yes, sir. Our plans are to keep the *Miller Freeman* around long enough to do the calibration. But it is a 40-year-old ship. Its technology is outdated. Its maintenance is hard. And one of my highest priorities is to modernize our fisheries survey fleet. This is—this Nation deserves, with the largest EEZ and the largest potential for sustainable fisheries, to have the right kind of equipment to monitor and protect and—

Senator SMITH. So, you don't—

Admiral LAUTENBACHER.—sustain it.

Senator SMITH.—see a gap occurring, then?

Admiral LAUTENBACHER. I will tell you that my policy is not to have a gap.

Senator SMITH. OK.

Admiral LAUTENBACHER. But I do not want to keep the *Miller Freeman* online any longer than we have to. We should take those resources and modernize and bring newest technology to our fisheries survey means.

Senator SMITH. NOAA Fisheries has recently completed a review of the role of hatcheries in ESA listing decisions. When this study is completed, will these reviews result in internally consistent Federal policies with respect to the role of hatcheries in the Pacific Northwest?

Admiral LAUTENBACHER. Obviously, that's our intention. There is some money in here to help us do that this year, a little over a million dollars. Hatchery—the hatchery policy is a complicated item, because it involves the tribes, it involves the states, it involves Fish and Wildlife, and it involves NOAA. We are continually working with them, and there will be no exception in the hatcheries review. Our intention is to build a consistent—internally and externally consistent policy that can be supported across the wide variety of needs and requirements.

Senator SMITH. I am concerned about the Pacific Coastal Salmon Recovery Fund. Last budget, there was \$90 million; this year, there's \$67 million, for 2007. Is that going to cut it?

Admiral LAUTENBACHER. That's one of these items where we need to continue to work with you. We had proposed a level, as you mentioned, but the bill that we got back from Congress was reduced to \$67 million. The Administration felt if that was the level that Congress thought was reasonable, then we would provide the same. So, what we have done this year is continue the Congressional level that was—that you all passed at the end of last year, and that we're living with this year. We will obviously be working hard to figure out how to deal with that level, and we'll have to see whether it's adequate for the future.

Senator SMITH. If it's not, I hope you'll speak up.

Admiral LAUTENBACHER. Yes, sir.

Senator SMITH. Are you familiar with Judge Redden's 1-year time-line for rewriting the biological opinion on Columbia River operations?

Admiral LAUTENBACHER. Yes, sir.

Senator SMITH. And do you have funds and staff sufficient to comply with his order?

Admiral LAUTENBACHER. Yes, sir, we believe we do.

Senator SMITH. OK. Can you speak a little bit more—I know you did in your testimony—about the tsunami issue? Obviously, the Cascadia Subduction Zone lies approximately 70 miles offshore from the Pacific Northwest. It was in January 1700 that we had a Sumatra-like quake. We're coming up to a point on timeline where one has historically occurred. And I guess, you know, bottom line, you've got 5–10 minutes to get people away from these areas. Warning and detection systems will be of little use if and when an earthquake occurs along the Cascadia Zone. I just don't know whether people are sufficiently warned where to go and what to do when the ground begins to shake. Do you have anything in your budgets to accelerate inundation mapping and warning systems that will be critical to saving low-lying communities?

Admiral LAUTENBACHER. Part of the increase that we're asking for is to accelerate inundation mapping and providing the kinds of information that communities along the coast need to construct reasonable emergency plans. That is a critical piece of this program for the additional \$12 million or \$13 million that we're asking for here.

I would be remiss if I didn't mention that we have spent a lot of work trying to deal with reaching the public. We have a TsunamiReady Program now, and we're advertising that. We've had a StormReady Program, which has been used in the Gulf, which obviously many of the tornado-prone areas and hurricane-prone areas have taken on as standard operating procedure. We want to publicize and emphasize, in no uncertain terms, that communities that are along the coast need to be tsunami ready, as well. As you've pointed out, there may only be 10 or 15 minutes, 5 to 10 minutes, for people to leave. And that's an end-to-end process that requires education within each community. We have check-sheets. Every one of our Weather Forecast Offices has trained people who will work with the community, the mayors, the emergency response people to ensure that that warning gets out to the people who need it. That is part of this program, and it's part of what our folks are dedicated to around the country.

Senator SMITH. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much.

Admiral, I note that your agency does not post your budget justification online. The Energy Department posted over 3,400 pages of their justification. You've posted 182.

Let me tell you what one of my problems is. Last year—and my grandmother used to tell me, "The road to hell is paved with good intentions"—I asked the Congress to consolidate the research and development funds for NOAA in Alaska. We created the Alaska Composite Research and Development Fund, last year. That was not an increase in funds. Funds were just consolidated. And it was \$15,298,000. The base program for this year is estimated at

\$29,724. When we look at your budget justification, that says “termination—the following portion—program has been terminated—portion has been terminated, Alaska Composite Research Development, \$18,969,” but it doesn’t say what you’ve terminated, what you’ve eliminated. We consolidated a whole series of accounts, for management purposes. I’d like to have you just tell us, for the record, what you propose to terminate, in terms of that \$19,000—\$18,969.

Admiral LAUTENBACHER. The plan—

The CHAIRMAN. \$18 million—

Admiral LAUTENBACHER. Yes, sir, \$18 million.

The CHAIRMAN.—969,000.

Admiral LAUTENBACHER. The plan—

The CHAIRMAN. Now, Admiral, I obviously have considerable difficulty with this proposal. Your employment level for FTEs for Fiscal Year 2006, 1,987 people. This year, you have 1,996 people, an increase, although you’ve decreased a substantial number of functions in my state. So, while you’re eliminating a whole series of jobs from my state, you have a net increase of nine. There’s nothing in the budget justification to show us what’s been eliminated and what’s been added.

I’m also on the Appropriations Committee, so is my brother from Hawaii, and you can look forward to our demanding that justification. So, I hope you’ll prepare it.

Admiral LAUTENBACHER. Yes, sir.

The CHAIRMAN. But the Alaska Fisheries Science Center—is now in that Alaska Composite Research and Development Program. As we know, that’s located in Seattle—230 employees in Seattle, eight in Newport, Oregon—my friend from Oregon is leaving—34 in Alaska. So, it’s apparent that the fisheries activities of NOAA are going to be centered in Seattle, notwithstanding the fact, as I said, we have half the coastline of the United States, more than half the fishery products of the United States are caught off my state. And we’ve got this severe reduction in this money.

I hope you’ll go back and tell your people that I’m seriously considering consolidating the Department of Commerce and the Department of Transportation. Both have increased in employees and decreased in functions that deal with the American people. You’ve eliminated a whole series of items that deal with isolated Eskimo and Native villages throughout Alaska, just eliminated them—and consolidated them in the fund that I thought we were trying to do to save administrative costs.

I can’t really—I can’t get any more specific, because you haven’t given us the specifics.

Admiral LAUTENBACHER. Yes, sir. We’re—

The CHAIRMAN. I see your man back there shaking his head. Have you got more than 182 pages of justification to give to us today? You. You’re shaking your head at me. Behind you.

Mr. GALLAGHER. Yes, sir, we can provide you—

Admiral LAUTENBACHER. We will provide the justification and give you the plan that was there—

The CHAIRMAN. Well, why haven’t you provided it to us, to the Congress?

Admiral LAUTENBACHER. We have been looking for opportunities to work with you and your staff in determining how we should deal with the amount of resources that we have. And, obviously, we want to make sure that the priorities are set and are agreeable to—in all respects, to you, sir, as well as to the people who have to execute the budget. We will provide all of our back-up and justification to you and your staff.

The CHAIRMAN. I find, just in closing, just a decrease in emphasis on fisheries in the United States, in general. We had 9.6 billion pounds of fish and shellfish landed in 2004. We consumed 4.8 billion. We have generated an enormous amount of income for the United States. The largest fishery, of course, is our pollock, 3.4 billion pounds. I see nothing to indicate any real emphasis on that. And we are—I'm not only concerned about our area, but the states of Maine, Louisiana, Mississippi, Washington, and Massachusetts all depend on fishery research, and that seems to be going down. Many of my friends say we've earmarked it. We've tried to get away from earmarking by saying, "Here's a composite fund. Tell us where you're going to use it." Instead, what you did was, you consolidated other functions with it and eliminated \$19 million.

Admiral, you can take me off the side of being a supporter of your agency and put me down as one who's really critical for the balance of this year. We hope you'll go back and tell people they should re-examine what they've done. And I hope you'll go to the Office of Management and Budget and tell them, under the current policy of not having the ability to earmark, we're just going to have to have the ability to change line items. And we will do so.

Admiral LAUTENBACHER. Yes, sir. I will—I understand.

The CHAIRMAN. Senator Inouye?

Senator INOUE. I think you've said enough.

The CHAIRMAN. Thank you very much, Admiral.

[Whereupon, at 3:32 p.m., the hearing was adjourned.]

## A P P E N D I X

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. GORDON H. SMITH TO  
VICE ADMIRAL CONRAD C. LAUTENBACHER, JR.

*Question 1.* I understand that NOAA is reorganizing the National Tsunami Hazard Mitigation Program (NTHMP) to accommodate all coastal states and territories. How do you plan to do this without negatively impacting the ongoing tsunami hazard mitigation programs in the five Pacific states that are at the highest risk of tsunami hazards? Given that the five Pacific states have by far the largest risk from tsunamis, will they be given priority in the reorganized national program?

Answer. In December 2005, the Office of Science Technology and Policy (OSTP) issued the report *Tsunami Risk Reduction for the United States: A Framework for Action*, in which OSTP identified the National Tsunami Hazard Mitigation Program (NTHMP) as the organizational framework to implement the program. While NOAA provides leadership and funding for the NTHMP, which began in 1996, the program is a partnership between NOAA, the U.S. Geological Survey (USGS), the Federal Emergency Management Agency (FEMA), the National Science Foundation, and the five high-risk Pacific states. Prior to FY 2006, the NTHMP funded tsunami hazard mitigation grants to the five Western states, in addition to funding NOAA's initial DART (Deep-ocean Assessment and Reporting of Tsunamis) station development and deployment, and the U.S. Geological Survey's (USGS's) West Coast seismic network upgrades.

In February 2006, the NTHMP steering committee met and agreed to reorganize into three regional elements, Pacific, Southern, and Eastern, which includes representatives from the 23 states on the Pacific, Atlantic, and Gulf Coasts, as well as the three commonwealths and two U.S. territories in the Pacific Ocean and Caribbean Sea. The Pacific region would be the continuation of the original five Pacific states. The steering committee further agreed that funding for the five Pacific States in FY 2006 would be the same as FY 2005, but beginning in FY 2007, a new process for distributing funds would need to be developed. Once a national assessment of tsunami risk has been completed, scheduled for December 2006, the NTHMP will use these data to formulate a funding distribution process for FY 2007. NOAA expects this process will distribute funding relative to the threat potential for each state.

Also at the February 2006 meeting, the NTHMP steering committee agreed that the NTHMP future funds should be used exclusively by the states. Prior to FY 2006, the NTHMP was the funding source for NOAA's initial DART station development and deployment, and the USGS's West Coast seismic network upgrades. Beginning in FY 2006, the strengthened U.S. Tsunami Warning Program budget line fully funded NOAA's expanded DART program, and the corresponding increases in the DOI/USGS budget fully funded their West Coast seismic improvements. Therefore, beginning in FY 2006, all of the NTHMP funding is now targeted to support state tsunami hazard mitigation programs. The FY 2007 budget request for NOAA includes \$2.291M for the NTHMP.

*Question 2.* We know that the Pacific Northwest faces the eventuality of a "Sumatra-level" tsunami and magnitude 9 earthquake along the Cascadia Subduction Zone. Tens of thousands of U.S. residents and visitors are in the potential flooding zone, most of them in the 19 communities of the Oregon coast. Local and state government must instill in this population an instinctive response to evacuate when the ground shakes. What priority is NOAA placing on this Cascadia region when allocating resources for tsunami hazard mitigation?

Answer. NOAA's efforts in this area focus on tsunami awareness and improved warning services. Additional funds are being expended to aggressively expand the TsunamiReady Program for all communities at-risk from a Cascadia Subduction Zone event. NOAA has also made the Pacific Northwest a key priority in its accelerated tsunami inundation mapping, modeling and forecast efforts, including the deployment of 4 DART tsunami warning buoy stations. NOAA is committed to work-

ing with each state's emergency managers and coastal community leaders to make sure these at-risk communities are TsunamiReady, and to provide these communities with the incentive to move toward tsunami resiliency. NOAA can and will facilitate this effort, but TsunamiReady is truly a volunteer community-based effort.

As of April 19, 2006, 28 communities nationwide have been certified as TsunamiReady. Of those, eight are in Oregon: Cannon Beach, Lincoln City, Coos County, Manzanita, Hehalem, Rockaway Beach, Tillamook, and Wheeler.

*Question 3.* In Oregon, an investigative report in the local media documented the low standard needed for a community to gain the TsunamiReady certification. The report concluded that most TsunamiReady communities were not really ready at all. What is NOAA doing to raise the TsunamiReady standards? How is NOAA empowering state and local governments to do the hard work of getting communities truly tsunami ready?

*Answer.* As a result of the February 2006 NTHMP meeting, NOAA is working closely with the states to raise standards for the TsunamiReady program, and to encourage local governments to participate. It takes proactive community participation and financial support from the state or county. NOAA can and will facilitate the effort, but TsunamiReady is truly a volunteer community-based effort.

At the February 2006 NTHMP meeting, state emergency managers from the five Pacific states and Puerto Rico, in coordination with NOAA and other Federal partners, took the first step to re-evaluate and improve the concept and criteria for a new TsunamiReady or "TsunamiSmart" program with a tiered recognition program that moves from awareness and readiness toward resilience. A working group, open to all existing and new NTHMP members, is advancing the effort for national consideration later this summer.

*Question 4.* Given that the national warning system will be of limited if any use for saving lives from this "Sumatra tsunami" in the Pacific Northwest, why is expansion of the NOAA tsunami mitigation effort aimed mainly at the warning system rather than at education and hazard assessment?

*Answer.* NOAA disagrees that the "national warning system will be of limited, if any, use for saving lives from a 'Sumatra tsunami' in the Pacific Northwest." The national program includes not only NOAA, but the U.S. Geological Survey (USGS), the National Science Foundation, and the Federal Emergency Management Agency. If/when a Cascadia Subduction Zone seismic event occurs, the USGS's upgraded, real-time network of seismometers will record the event and automatically provide this critical real-time seismic data to the USGS National Earthquake Information Center (NEIC) and to NOAA's two Tsunami Warning Centers (TWC). NOAA projects that if a magnitude 9 seismic event occurred along the Cascadia Subduction Zone, a tsunami warning would be issued by the West Coast/Alaska Tsunami Warning Center within 2–3 minutes. NOAA also projects that the DART buoys deployed along the Pacific Coast would, in near real-time, detect and measure the resulting tsunami and transmit the data to the Tsunami Warning Centers. The DART buoys will accurately measure the energy associated with the tsunami and feed tsunami models that accurately predict tsunami inundation levels and wave frequency. In the fully deployed U.S. Tsunami Warning System, NOAA will be able to quickly issue a tsunami warning and accurately predict the resulting wave energy, size, frequency, duration, and location(s). These data will be critical to saving lives during a Sumatra-type tsunami along the Northwest U.S. coast.

NOAA is working with FEMA, through the National Tsunami Hazard Mitigation Program, to jointly fund the final stages of a multi-year project working to provide for vertical evacuation tsunami shelter guidelines and related education materials. This project, which is managed by FEMA, has been identified as a priority by the states. The NOAA tsunami program also encourages leveraging of related science activities, such as those conducted by USGS and NSF, for the advancement of tsunami models, improved identification of sources, and development of new observational capacities. These activities also leverage NOAA's projects in ocean exploration, coastal survey, marine ecosystem research, and Sea Grant to further raise tsunami awareness and enhance tsunami modeling and mitigation efforts.

NOAA's plan stresses local tsunami awareness and community preparedness activities, but our role is limited when it comes to impacting the actions of state and local governments. TsunamiReady is NOAA's contribution to educate the public on tsunami preparedness and to instill in the public the immediate need to move to higher ground if you are in a coastal area and an earthquake occurs. As stated above, NOAA's modeling and mapping efforts are essential to determining which areas must be evacuated and which areas would provide a safe haven for evacuees. In the instance of a Sumatra-like event, the U.S. Tsunami Warning System will



play a vital role in determining when a tsunami will impact the coast and when the tsunami danger has passed.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. OLYMPIA J. SNOWE TO  
VICE ADMIRAL CONRAD C. LAUTENBACHER, JR.

*Question 1.* In NOAA's budget narratives for FY 2007, NOAA claims to be requesting a total of \$15.8 million for research grants to support implementation of my Harmful Algal Bloom and Hypoxia Research and Control Act of 2004. Consistent with the Act, the requested funds would maintain NOAA's grant programs, accelerate forecast tools for predicting and mitigating algal bloom outbreaks, and facilitate assessment and response to these events. However, NOAA's somewhat cryptic presentation of specific line item requests makes it difficult for us to verify this number.

How would NOAA allocate the requested funding among the different harmful algal bloom and hypoxia programs, including grants, forecasting, and assessment and response activities?

Answer. NOAA is not requesting a total of \$15.8 million for research grants to exclusively support implementation of the Harmful Algal Bloom and Hypoxia Research and Control Act of 2004 (HABHRCA). The language used in NOAA's Blue Book budget summary document to describe this request should have been clearer. The language which appears in NOAA's full budget justification is accurate:

"NOAA requests an increase of \$5,960,000 for a total of \$15,801,000 for extramural coastal and ocean research grants."

The Extramural Research line in the President's FY 2007 budget request funds several long-term, high-priority research programs which help NOAA fulfill its coastal legislative mandates, including HABHRCA. These programs are conducted through NOAA's Coastal Ocean Program (COP) which was authorized by Congress to improve NOAA's prediction capabilities in the coastal ocean, and further recognized by HABHRCA as being a major focus for HAB and hypoxia research.

The total \$15.8M budget request includes at least \$8.9M to provide support for competitively-funded extramural HAB and hypoxia research programs associated with HABHRCA, including: Ecology and Oceanography of Harmful Algal Blooms (ECO HAB); Monitoring and Event Response for Harmful Algal Blooms (MERHAB); Northern Gulf of Mexico Ecosystems and Hypoxia Assessment Program (NGOMEX); and Coastal Hypoxia Research Program (CHRP). In FY 2007, specific funding will be dependent upon the results of the completion of merit reviews and selections from HABHRCA-focused competitive funding announcements. Because extramural research is funded through the competitive *Federal Register* process, it is too early to determine specific funding amounts among HABHRCA programs and associated forecasting, assessment and response activities. However, NOAA expects competitively awarded HABHRCA research funding to be distributed fairly evenly (approximately  $\frac{1}{3}$  each) across funding categories 2, 4, and 5 identified in the Harmful Algal Bloom and Hypoxia Research and Control Act of 2004:

- (2) . . . the Ecology and Oceanography of Harmful Algal Blooms (ECO HAB) project under the Coastal Ocean Program established under section 201c of Public Law 102-567;
- (4) . . . Federal and State annual monitoring and analysis activities for harmful algal blooms administered by the National Ocean Service of the National Oceanic and Atmospheric Administration;
- (5) . . . activities related to research and monitoring on hypoxia by the National Ocean Service and the Office of Oceanic and Atmospheric Research of the National Oceanic and Atmospheric Administration; and . . . to carry out section 603(e).

*Question 1a.* How much of the requested funding and research effort would go specifically toward helping the New England region deal with the recent and potentially future red tide outbreaks?

Answer. There are planned extramural research announcements in FY 2007 for ECO HAB (Ecology and Oceanography of Harmful Algal Blooms) and MERHAB (Monitoring and Event Response to Harmful Algal Blooms), which could provide funding to projects aimed at helping the New England region deal with recent and future red tide outbreaks. Because extramural research is funded through the competitive *Federal Register* process, it is too early to determine specific funding amounts among HABHRCA programs and associated forecasting, assessment and

response activities. Past performance, however, indicates that research institutions in New England are very successful in peer-reviewed competitions.

*Question 2.* The Secretary of Commerce declared a “fisheries failure” for the Gulf of Maine shellfish fishery due to last summer’s red tide outbreak. The primary economic impacts on fishermen range from \$10 to \$15 million, and the indirect impacts could reach four times that amount. However, I am puzzled to see that this budget does not appear to request funds to actually help provide relief, mitigation, and prevention to the affected shellfishermen.

Does the budget contain a request to address the fisheries failure in the Gulf of Maine due to the 2006 red tide event? If not, why not? Clearly the Administration agrees that a fisheries failure has occurred, so why is there such a disconnect between funding needs and funding requests?

Answer. The budget does not contain a request to address the fisheries failure in the Gulf of Maine due to the 2006 red tide event. In accordance with provisions under Section 312(a) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the Secretary of Commerce made a determination of a commercial fishery failure due to a fishery resource disaster in the summer of 2005. The determination, however, did not include an estimated value of the loss.

To date, no funds have been appropriated for the specific purpose of providing relief to fishermen. Funds were not requested in the President’s FY 2007 budget due to the timing of budget formulation, general fiscal constraints, and the need to meet the Nation’s highest priorities. The Department recognizes the social and economic impacts of the closure on many shellfish fishermen, and has taken several actions to address impacts caused by red tides, as described below.

*Question 2a.* Since the red tide may very well return in the summer of 2007, what is NOAA doing to help prepare for preventing, mitigating, and providing assistance to the shellfishermen?

Answer. Over the past decade NOAA has made advances in monitoring harmful algal blooms. NOAA’s ECOHAB and MERHAB research on *Alexandrium*, the red tide organism in the Gulf of Maine, has greatly enhanced response capabilities in the region. New molecular methods for rapidly detecting and mapping *Alexandrium* were used to track the 2005 bloom event in near real-time. These efforts were widely relied upon as critical information by affected states in New England during the outbreak. These data, combined with oceanographic and meteorological data from ships and moorings, were used in recently developed, coupled biological and physical models to forecast the spread of the red tide and to understand the factors leading to this unusual event. Although our understanding of red tides in the Gulf of Maine caused by *Alexandrium* is not yet sufficient to minimize impacts if the bloom recurs in 2006 or 2007, we are engaged in efforts to mitigate the impacts by monitoring the extent of the bloom and improving predictions as to where and when a bloom may occur. For example:

- In the event of another outbreak, NOAA stands ready to provide immediate assistance through several, coordinated Event Response Programs that quickly (hours to days) provide state managers with sampling capabilities and toxin analysis. These programs have been particularly effective for protecting human health, as was illustrated during the 2005 New England event, when NOAA helped provide managers with early warnings of shellfish toxicity to protect public health in the region, and also allowed managers to focus toxin sampling in areas where shellfish openings and closings were most likely to occur. NOAA also awarded funds last year to support post-bloom monitoring and research to help scientists predict where and when outbreaks are most likely to be seen in 2006. The information gained from this predictive research will help state managers to make even more effective monitoring and regulatory decisions.
- NOAA’s National Weather Service is developing models for predicting the relationship between the amount of freshwater carrying nutrients into the coastal areas and the extent and intensity of an HAB.
- NOAA’s National Marine Fisheries Service (NMFS) is assisting the U.S. Food and Drug Administration (FDA) by facilitating the collection of shellfish samples to measure toxicity. NMFS is also working with the FDA to refine and implement a “dockside sampling protocol” that may allow shellfish fishermen to continue to harvest in Federal waters even if a HAB event is in progress (provided they can locate areas not affected by the toxin and provided FDA can confirm the harvested product does not pose a health risk if eaten).
- NOAA’s National Ocean Service (NOS) has undertaken a long-term, multi-faceted research effort on HABs in the Gulf of Maine. During the 2005 bloom, emergency funding from NOAA of more than \$42,000 expanded monitoring, as-

assessment, and prediction of bloom extent and movement. These data directly enhanced mitigation efficiency by allowing managers to focus toxin sampling in newly exposed areas and in areas that could be reopened for shellfish harvesting.

- The high abundance and broad extent of *Alexandrium* during the 2005 event may have deposited seed-like cysts in new areas, leading to bloom recurrence and southward expansion of blooms. To support enhanced prediction and response for 2006 and future years, NOS provided an additional \$540,000 to sustain monitoring throughout the 2005 bloom, monitor potential blooms in 2006, and map the southward expansion of cyst beds. These data will be incorporated into integrative, predictive models developed through NOAA-supported research over the past decade.
- NOAA is continuing its development of a national HAB forecasting system. The HAB Bulletin for the Florida shelf is now operational within NOAA, and NOAA is developing similar programs in other U.S. coastal regions. Although the organisms and physical environment differ between regions, the core data and analysis requirements (satellite, meteorological measurements, buoys, field samples, models, and analyses) are similar. With the necessary coordination and analytical constructs in place, NOAA is poised to expand the operational forecasting capability beyond the Gulf of Mexico to other coastal regions, such as the Gulf of Maine.

The HAB outbreak that occurred in the summer of 2005 was an extreme event. Fishermen, especially in Massachusetts, were unprepared for the extensive closures that were necessary to protect human health. In 2006 and 2007, the Department and fishermen will have advance notice of the possibility of an HAB event and will be better able to plan accordingly.

*Question 3.* Programs throughout NOAA—and environmental and atmospheric scientists around the world—need basic oceanic data to improve management and forecasting models. In recent years we have seen NOAA increase its requests for ocean observing funding as part of an overall climate research approach, going from \$4 million in FY 2003 to \$17 million for FY 2005. For FY 2007, NOAA says it is requesting an additional \$6 million for global ocean observations, but the request does not specify what funding level this is “in addition” to. More troubling, the request appears to “zero out” requests for NOAA’s Integrated Coastal Ocean Observing System and support for regional observing networks.

*Answer.* While the President’s FY 2007 NOAA budget request does not include specific budget lines for the Integrated Coastal Ocean Observing System or regional networks, there is \$700.7M in the NOAA FY 2007 request for observing systems and related activities that contribute to the Integrated Ocean Observing System (IOOS). The FY 2007 NOAA budget has a number of increases proposed for IOOS-related activities including funding to improve NOAA’s ocean observing networks, strengthen the U.S. Tsunami Warning Program, expand fisheries stock assessments, and improve the National Water Level Observation Network.

*Question 3a.* Exactly what is the top number NOAA is requesting for ocean observations next year? Why is NOAA not requesting funds for coastal observing systems, including the regional networks, which form the backbone of our emerging National Coastal Observation System?

*Answer.* The President’s FY 2007 NOAA budget request includes \$700.7M for ocean observations in support of IOOS. This includes contributions to the three IOOS components: (1) global, (2) coastal, and (3) data management and communications.

While there are not funds in the FY 2007 budget proposal for regional networks, there is \$569.4M (out of \$700.7M) for ocean observing within the coastal component of IOOS.

*Question 3b.* How is NOAA working with the Gulf of Maine Ocean Observing System in its observation efforts? How are their data incorporated into NOAA’s earth and ocean-oriented observation system and made available to the public?

*Answer.* The Gulf of Maine Observing System (GoMOOS) is supported by NOAA. In addition, the data from those observing systems are flowing through the National Ocean Service and National Weather Service data QA/QC processes in order for NOAA forecasters to utilize the data for ocean-related forecasts. Those data are processed through NOAA’s National Data Buoy Center and are available to the public through its websites (see <http://www.ndbc.noaa.gov/>).

*Question 3c.* According to the U.S. Ocean Commission, an ocean observing system will require \$652 million a year when it is up and running—does NOAA agree with

this figure? If not, what does NOAA think is an appropriate figure, and exactly what program elements would this cover?

Answer. The U.S. Commission on Ocean Policy estimates that an annual observing system will cost an additional \$753M a year above current budget levels when it is up and running, including transferring the ongoing operation of Earth Observing Satellites to NOAA (\$150M) (Appendix G: page G10). Without the satellite operations transfer, the estimate is \$603M per year in addition to currently funded Federal programs. The Commission's estimate is based on four program elements described in the U.S. Commission on Policy report, including: accelerate the implementation of the U.S. commitment to the Global Ocean Observing System; develop data communications and data management systems for the national IOOS; enhance and expand existing Federal observing programs; and develop regional observing systems. NOAA is taking the Commission's recommendations into consideration as we work with our agency partners to move forward with the development of IOOS as outlined in the President's Ocean Action Plan.

*Question 4.* For FY 2007, NOAA is requesting \$10.5 million for fisheries economics and social science research to improve estimates of harvest, bycatch, and fishing capacity; determine economic impacts of proposed regulations on fishermen, shoreside industries, and fishing communities; and develop integrated ecosystem models. I am pleased to note that this continues a trend of increasing fisheries social science funding requests since FY 2004, but I am concerned to see that Congress has not kept pace with NOAA's funding requests, as only about \$4 million has been enacted each year.

The New England groundfish fishery is in great need of improved socioeconomic research, and it troubles me that NMFS has not conducted a follow-up assessment of the groundfishery to determine what impacts have occurred . . . would the New England groundfishery be analyzed under NOAA's proposal? If so, how would NOAA design this program and its studies to ensure that the impacts of Amendment 13 are appropriately addressed?

Answer. Under NOAA's proposal, NMFS would significantly expand economic and sociocultural data collection activities in all regions, including the Northeast Region. In particular, these funds would provide 100 percent of commercial harvester, for-hire, and recreational angler data collection needs; 100 percent of community profiling data collection needs; and a series of baseline surveys, each conducted on a 5-year cycle and including seafood consumption, commercial fisheries employment, and ecosystem use.

For the Northeast Region, this proposal would quadruple spending on economic and sociocultural data collection and increase the number of economists in the region by 25 percent. Taken together, these investments would provide for New England groundfish economic data collections and assessments to be routinely conducted, thereby ensuring that the impacts of Amendment 13 are thoroughly and accurately assessed and this information made available to decisionmakers in a timely manner.

*Question 4a.* What is the impact to NOAA's social science programs of only receiving \$4 million each year in enacted funds? In other words, what critical work is not getting done?

Answer. NOAA requested an increase for Economic and Social Science Research for a total request of \$10.5 million in FY 2007, up from a total request of \$9.6 million in FY 2006. This line has been level-funded at approximately \$4 million since FY 2004, which has meant that core economic and sociocultural data collections are not being conducted, jeopardizing NMFS' ability to meet Executive and Legislative mandates under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), National Environmental Policy Act (NEPA), Regulatory Flexibility Act, E.O. 12866, and other mandates that require cost-benefit analyses, cumulative impact assessments, social impact assessments, and determinations as to whether small businesses are unduly impacted by fishery regulations. NMFS has complete economic data on commercial harvest operations for only 45 percent of the federally-managed fisheries. In addition, although National Standard 8 of the MSA requires NMFS to ensure that management decisions minimize economic impacts on fishing communities, NMFS lacks sufficient economic and social data in 70 percent of the coastal states. Similarly, NMFS lacks sufficient data and staff to assess the short- and long-term economic impacts on recreational and commercial fishermen for 70 percent of the Federal year-long marine managed areas.

*Question 4b.* What resources or other changes are needed to make NMFS' social science program as strong as possible?

Answer. NMFS will need to continue the phased growth of its social science staff, from 68 FTEs in FY 2006. With the proposed funding increase, NMFS plans to in-

crease its staff by 7 FTEs in FY 2007. FTE needs in the out-years will be evaluated within the context of NOAA's plans for its social science programs and within the constraints of the President's budget. In addition, a stronger NMFS social science program would need to expand its economic data collections on shoreside firm operations and infrastructure in coastal communities to more accurately assess the impacts of management decisions on stakeholders.

*Question 5.* The FY 2007 budget requests \$26.7 million overall for observer coverage. However, the budget request does not clarify how much of that would go toward observer coverage in different fisheries. Those concerned with the herring fishery in the Gulf of Maine have been working to identify and evaluate the amount of bycatch in this fishery, so it is vital that we know how much NMFS is putting toward observers in this particular fishery.

What New England fisheries will the requested observer program address? Will the herring fishery be included? If so, at what levels of funding and coverage?

Answer. The funding request for observer programs in New England will provide observer coverage for the New England herring fishery, large and small mesh trawl fisheries, large and small mesh gillnet fisheries, and partial coverage of closed area scallop fisheries at Nantucket Lightship. Other fisheries in the mid-Atlantic region to be observed include the mid-Atlantic gillnet and mid-Atlantic trawl fisheries. Approximately 70 sea days are allocated to the New England herring fishery in FY 2006, or a target coverage level of 3 percent and a total cost of \$84,000.

*Question 6.* One way to potentially improve the overall effectiveness of stock assessments—and to build trust with fishermen at the same time—is to involve fishermen in these processes. This can be done through cooperative research, and one program that is supposed to facilitate this cooperative approach is the Saltonstall-Kennedy (S-K) program. I'm pleased to see that, after years of deep cuts to this program, NOAA is requesting more than \$2 million for S-K grants for FY 2007. Yet I remain concerned about this level and the future of the program, since even this \$2 million is a far cry from amounts enacted in previous years and the total potential amounts authorized in law. What is NOAA doing to reinstate higher program funding requests for the S-K cooperative research grant program? Does Congress need to change the S-K Act to ensure that more of the funds authorized for cooperative research under the Act go toward these competitive grants in the NOAA request? If so, what changes does NOAA recommend?

Answer. The FY 2007 request proposes \$2.3 million be available for Saltonstall-Kennedy (S-K) grants. This is a \$2 million increase over the FY 2006 enacted level. Within the context of the overall FY 2007 President's Budget, there are adequate funds for the S-K grant program. The Administration is not proposing amendments at this time to the S-K Act.

*Question 6a.* One important cooperative research program, while not part of the S-K program, is the Gulf of Maine Aquarium's herring acoustic surveys. How much funding has NOAA provided to the Aquarium's program out of the \$198,000 that Congress enacted for FY 2006? How is NOAA working with this group to ensure proper use of these funds?

Answer. NOAA has used the entire \$198,000 enacted by Congress in FY 2006 to directly support the NMFS offshore Gulf of Maine herring acoustic survey, conducted by the Northeast Fisheries Science Center (NEFSC). This survey is the foundation for the herring stock assessment that will be conducted later this spring in conjunction with Canadian scientists.

The Gulf of Maine Research Institute (GMRI), formerly Gulf of Maine Aquarium, conducts a complementary inshore Gulf of Maine herring acoustic survey. Scientists from the NEFSC work closely with GMRI in the design and execution of this survey. Each year since 2000, GMRI's inshore survey has been funded via an open grant competition through the Northeast Consortium (composed of four research institutions—University of New Hampshire, University of Maine, Massachusetts Institute of Technology, and Woods Hole Oceanographic Institution—working together to foster cooperative research projects on a broad range of topics). The Northeast Consortium receives nearly \$5 million annually from NOAA to carry out this open competition.

In addition, the Northeast Consortium conducted an independent peer review of GMRI's inshore Gulf of Maine herring acoustic survey in March 2005, and the panel's recommendations are being incorporated into the 2006 survey.

*Question 7.* While many fishermen are doing their part to minimize right whale entanglements, many are troubled by the fact that there seems to be little progress in reducing right whale deaths due to ship strikes. Understandably, they think it is unfair that they continue to shoulder the burden of right whale protection, when ships appear to be killing as many—if not more—right whales as fishing gear. I un-

derstand that NMFS has been working on an interagency “ship strike strategy” for several years, but it is not yet clear what this strategy contains and when it will be completed. Due to the national economic importance of the shipping industry, the Administration has to overcome many controversies on these matters.

What has NOAA done to work with other agencies on this strategy? What hurdles have impeded NOAA’s progress, and what can we do to help remove these hurdles?

Answer. NOAA is working with other Federal agencies—notably the U.S. Navy (USN), U.S. Coast Guard (USCG), and U.S. Army Corps of Engineers (ACOE)—on a regular basis in efforts to reduce ship collisions with North Atlantic right whales. These agencies have provided input at various times into the development of a draft Ship Strike Reduction Strategy (Strategy). In November 2004, NOAA held its first interagency working group meeting to discuss the draft Strategy, and convened a follow-up meeting 2 weeks later. In December 2005, Office of Protected Resources leadership and staff met individually with USN, USCG, and Department of State (DOS) leadership to discuss the Strategy. In January 2006, NOAA convened another interagency working group meeting, chaired by Assistant Administrator for Fisheries William Hogarth, which was attended by USN, USCG, DOS, ACOE, U.S. Fish and Wildlife Service, and the Marine Mammal Commission. In addition, NOAA has worked with the USN and USCG to issue advisories to their fleets about the vulnerability of right whales to ship strikes. USCG and NOAA jointly operate the Right Whale Mandatory Ship Reporting systems.

During the December 2005 face-to-face meetings and the January 2006 interagency meeting, NOAA received endorsement of all components of a draft Strategy from each of the Federal agencies. At the January 2006 interagency meeting, the USCG raised a concern about the need to develop a program to enforce the proposed regulations, the only significant concern raised thus far. Immediately following the meeting, several working groups were formed to address enforcement. These groups are meeting regularly, are making good progress, and have an enforcement strategy developed prior to publication of a final rule.

*Question 7a.* What is the status of this strategy, and when can we expect to receive it? What types of measures can we expect it to contain?

Answer. The proposed regulations—a major portion of the draft Strategy—are currently being reviewed by the Administration. NOAA expects to publish the proposed regulations in mid-summer. NOAA’s Advanced Notice of Proposed Rule-making (69 Fed. Reg. 30857 (2004)) provides an indication of which measures are likely to be included in the proposed rule.

In the meantime, NOAA is pursuing other elements of the draft Strategy such as developing and implementing programs to raise mariner awareness and developing a conservation agreement with Canada to protect right whales. Additional information on the draft Strategy and efforts to reduce the threat of ship strikes is available online at [www.nmfs.noaa.gov/pr/shipstrike/](http://www.nmfs.noaa.gov/pr/shipstrike/) and at [www.nero.noaa.gov/shipstrike/](http://www.nero.noaa.gov/shipstrike/)

*Question 8.* As for funding current right whale recovery activities, NOAA is requesting roughly \$5.8 million for FY 2007, which is a step down from the FY 2006 enacted level of \$7.7 million and the FY 2005 enacted level of nearly \$12 million. What is NOAA’s justification for asking for less funding for right whale recovery than Congress has enacted in recent years? Does this indicate that right whale recovery is less of a priority for NOAA at this time?

Answer. NOAA has maintained the request for Endangered Species Act (ESA) right whale activities at a stable level of \$5.8 million since 2001. This funding level will allow NOAA to carry out a program for right whale conservation while also addressing other high-priority ESA and MMPA mandates.

*Question 9.* Again for FY 2007, NOAA requests \$5.85 million for Atlantic salmon recovery activities, indicating basically level-funding for salmon recovery. Salmon restoration professionals in Maine believe that much more money is needed, for both state and Federal research as well as Endangered Species Act compliance, and the National Academy of Sciences report and Atlantic Salmon Recovery Plan called for a range of new and expanded efforts. Based on my discussions with salmon managers in Maine, there appears to be a chronic state of confusion about how much of NOAA’s salmon budget is supposed to go to the State of Maine for their recovery plan and efforts. This is even more unclear for FY 2007 because NOAA is requesting the full amount in one account, not in separate line items for recovery plan, research, and the State of Maine as previous budget requests have included. Specifically, how much funding for Atlantic salmon would go to Maine, and what activities would NOAA fund in each area, for FY 2007? How much has NOAA forwarded to Maine from the FY 2006 enacted funding, and for what programs?

Answer. The FY 2007 request of \$5.85 million includes \$1.5 million for the State of Maine and \$4.35 million for NMFS ESA research, management, and recovery im-

plementation activities. Of the \$4.375 million enacted in FY 2006, \$967,000 has been disbursed to the State of Maine for freshwater assessment of Atlantic salmon stocks.

*Question 9a.* Ideally, considering the current status of Atlantic salmon and the range of restoration, research, and compliance activities that need to occur, what would be a reasonable estimate of the true Atlantic salmon funding needs? How do funding limitations relate to recovery success?

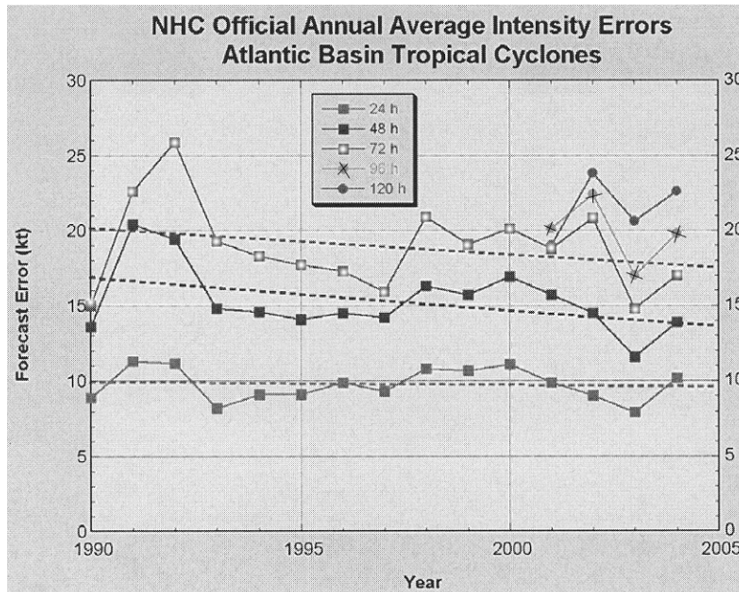
Answer. The recently adopted Atlantic salmon recovery plan outlines an investment of over \$30 million over a 3-year period for Atlantic salmon recovery. This is the current best estimate of requirements. The FY 2007 request is \$1.475 million more than the FY 2006 enacted amount to begin to address these requirements.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JIM DEMINT TO  
VICE ADMIRAL CONRAD C. LAUTENBACHER, JR.

*Question 1.* Please provide your annual assessment for the last 10 years of your ability to predict hurricane intensity. Please include both your goals and the actual results. Please explain how you would include hurricane intensity as a GPRA metric in the FY 2008 budget submission.

Answer. The chart below depicts hurricane intensity forecast errors from 1990 through 2004. There has been very little improvement (1 percent/year for the 48-hour forecast) in the forecast accuracy for intensity. The current error is about 14 knots, while in 1990 it was just under 17 knots. The new Hurricane Weather and Research Forecast (HWRF) model, planned to be introduced in 2007, is expected to significantly improve forecast accuracy for intensity. Once the HWRF becomes operational, the goal is to reduce forecast errors at a rate of 3 percent per year, which corresponds to the long-term rate of improvements for track forecasts. Our target is a 30 percent improvement in intensity forecasts by 2015.

As shown in the chart, there is annual variability in the annual average accuracy of intensity predictions. Within any given year, there can also be a large variability from one storm to another. That is why it is important to analyze improvements on a multi-year trend, rather than any individual year. For the FY 2008 budget submission, NOAA is working to establish the hurricane intensity forecast GPRA metric with associated out-year goals.



*Question 2.* Please provide the FY 2006 and FY 2007 Federal budgets for the Integrated Ocean Observing System. Please distinguish the funding by agency and within NOAA by line office.

Answer. NOAA's contributions for components of the Integrated Ocean Observing System as described in *The First Integrated Ocean Observing System (IOOS) Development Plan* are \$770.5M in FY 2006 and \$700.7M in the FY 2007 President's budget. The attached spreadsheet lists these contributions by Line Office and budget line.

NOAA does not have detailed Federal budgets for our partner agencies' contributions to IOOS. We have provided the NOAA breakdown of contributions. The next step is to "integrate" each agency's observation systems contribution into the Integrated Ocean Observing System. NOAA is working with our partners to move forward with the implementation phase. The Administration supports the intent of legislation such as H.R. 1489 and S. 361, which would codify NOAA as the lead for implementation and administration of IOOS. Establishing a Federal agency coordination mechanism would be helpful in advancing progress toward integration of Federal ocean observing systems.

NOAA—Integrated Ocean Observing Systems Estimates  
(\$ in thousands)

Global—IOOS	FY 2005 Enacted ('06 Blue Book)	FY 2006 President's Budget	FY 2006 Enacted	FY06 Delta Enacted vs. Pres. Bud.	FY 2007 President's Budget	FY 2007 Requested Increases
NOS	125	125	0	0	0	0
NMFS						
OAR	40,499	44,627	36,594	(8,033)	46,176	9,582
NWS	4,238	13,288	12,072	(1,216)	21,445	5,428
NESDIS						
Program Support	0	0	3,432	3,432	0	0
OMAO						
<i>TOTAL, Global—IOOS</i>	<i>44,862</i>	<i>58,040</i>	<i>52,098</i>	<i>(5,817)</i>	<i>67,621</i>	<i>15,010</i>
Coastal—IOOS						
NOS	184,402	147,442	173,615	26,173	152,084	27,515
NMFS	283,281	258,537	288,325	29,788	287,577	52,311
OAR	7,277	5,191	8,632	3,441	4,474	(4,158)
NWS	18,660	22,187	23,596	1,409	22,163	1,400
NESDIS	690	737	0	(737)	737	737
Program Support	0	0	14,298	14,298	0	0
OMAO	154,274	115,772	149,349	33,577	102,456	(7,059)
<i>TOTAL, Coastal—IOOS</i>	<i>648,584</i>	<i>549,866</i>	<i>657,815</i>	<i>107,949</i>	<i>569,491</i>	<i>70,746</i>
DMAC—IOOS						
NOS						
NMFS	21,021	25,711	23,378	(2,333)	25,699	2,009
OAR						
NWS	4,340	4,487	4,401	(86)	4,429	0
NESDIS	31,771	32,333	32,763	430	33,474	1,296
Program Support						
OMAO						
<i>TOTAL, DMAC—IOOS</i>	<i>57,132</i>	<i>62,531</i>	<i>60,542</i>	<i>(1,989)</i>	<i>63,602</i>	<i>3,305</i>
<i>TOTAL, NOAA—IOOS</i>	<i>\$750,578</i>	<i>\$670,437</i>	<i>\$770,455</i>	<i>\$100,143</i>	<i>\$700,714</i>	<i>\$89,061</i>



Global—Integrated Ocean Observing Systems Estimates  
(\$ in thousands)

Global—IOOS	FY 2005 Enacted (06 Blue Book)	FY 2006 President's Budget	FY 2006 Enacted	FY06 Delta Enacted vs. Pres. Bud.	FY 2007 President's Budget	FY 2007 Requested Increases
<i>NOS</i>						
Climate & Global Change (OAR's budget)	125	125	0	0		
<i>NOS Sub-total</i>	<i>125</i>	<i>125</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>OAR</i>						
Climate Research Labs & CI's+A21	8,531	8,850	8,499	(351)	8,950	451
Climate & Global Change + COSP BASE	14,242	14,506	13,181	(1,325)	17,248	4,067
Climate Change Research Initiative + Arctic CCRI/TAO—PIRATA	13,944	14,294	11,171	(3,123)	13,156	1,985
Pacific Marine Environmental Laboratory (WA)/FOCI	0	3,200	0	(3,200)	3,000	3,000
Earth Systems Research Laboratory (CO)	2,600	2,576	2,540	(36)	2,591	51
	1,182	1,201	1,203	2	1,231	28
<i>OAR Sub-total</i>	<i>40,499</i>	<i>44,627</i>	<i>36,594</i>	<i>(8,033)</i>	<i>46,176</i>	<i>9,582</i>
<i>NWS</i>						
NWS Coastal Global Ocean Observing System	0	1,497	0	(1,497)	0	(1,492)
National Tsunami Hazard Mitigation Program	4,238	2,291	2,260	(31)		
Strengthen US Tsunami Warning Network	0	9,500	9,812	312	21,445	9,920
CCRI/TAO—PIRATA					0	(3,000)
<i>NWS Sub-total</i>	<i>4,238</i>	<i>13,288</i>	<i>12,072</i>	<i>(1,216)</i>	<i>21,445</i>	<i>5,428</i>
<i>Program Support</i>						
Strengthen U.S. Tsunami Warning Network (NWS)			3,432	3,432	0	
<i>PS Sub-total</i>	<i>0</i>	<i>0</i>	<i>3,432</i>	<i>3,432</i>	<i>0</i>	<i>0</i>
<i>TOTAL, NOAA Global—IOOS</i>	<i>\$44,862</i>	<i>\$58,040</i>	<i>\$52,098</i>	<i>(\$5,817)</i>	<i>\$67,621</i>	<i>\$15,010</i>

Coastal—Integrated Ocean Observing Systems Estimates  
(\$ in thousands)

Coastal—IOOS	FY 2005 Enacted (06 Blue Book)	FY 2006 President's Budget	FY 2006 Enacted	FY06 Delta Enacted vs. Pres. Bud.	FY 2007 President's Budget	FY 2007 Requested Increases
<i>NOS</i>						
Mapping and Charting Base	6,066	43,695	38,350	(5,345)	43,418	4,810
Nautical Charting	6,406					
Mapping and Charting Base (Naut. Chart)	18,054					
Hydrographic Surveys	1,282					
Navigation Services	1,858					
Joint Hydrographic Center	7,492	7,499	7,397	(102)	7,424	
Electronic Navigational Charts	4,239	6,190	4,241	(1,949)	6,128	1,890
Address Survey Backlog	18,727	31,487	20,711	(10,776)	31,173	10,487
Time Charter	1,971		11,687	11,687		
Coastal Mapping	493		0	0		
Shoreline Mapping	2,413	2,448	2,415	(33)	2,424	
PORTS	2,938		1,479	1,479		
Tides and Currents—Base	18,401	23,130	18,161	(4,969)	24,970	2,715
National Water Level Observation Network	2,463		2,466	2,466		

Coastal—Integrated Ocean Observing Systems Estimates—Continued  
(\$ in thousands)

Coastal—IOOS	FY 2005 Enacted (06 Blue Book)	FY 2006 President's Budget	FY 2006 Enacted	FY06 Delta Enacted vs. Pres. Bud.	FY 2007 President's Budget	FY 2007 Requested Increases
Great Lakes NWLON	1,971		1,972	1,972		
Alaska Current and Tide Data	1,479		0	0		
Geodesy Base	16,120	9,801	9,666	(135)	9,800	
Cntr for Coastal Monitoring and Assessment	823		1,009	1,009		
National Centers for Coastal Ocean Science (NS&T)		1,023	0	(1,023)	1,013	
Extramural Research			0	0	5,960	5,960
Coral Reef	5,838	10,420	10,275	(145)	10,300	
National Estuarine Research Reserve System (NERRS)	3,120	3,240	3,196	(44)	3,200	
Coastal Change Analysis	493	0	493	493		
Ocean Assessment Program Base	254	0	0	0		
Coop Institute for Coastal and Estuarine Enviro Tech (CICEET)	1,350	1,350	1,332	(18)	1,350	
Coastal Storms	2,463	2,903	1,233	(1,670)	2,874	1,653
ICOOS (ORF)	7,392	0	7,397	7,397		
ICOOS (PAC)	8,871	0	0	0		
Coastal Observation Technology System	2,146	0	0	0		
Alliance for Coastal Technologies	2,463	0	2,959	2,959		
CI-CORE	2,463	0	2,466	2,466		
Coastal Ocean Research & Monitoring Program	2,438	0	493	493		
Alaska Ocean Observing System (replaces previous "Gulf of Alaska Ecosystem Monitoring")	1,971	0	1,676	1,676		
Gulf of Maine Observing System	1,873	0	493	493		
Long Island Sound Observing System	986	0	986	986		
SoCal Coastal Ocean Obs System (Scripps)	1,479	0	1,480	1,480		
Coastal Ocean Monitoring Network for West Florida	739	0	0	0		
Central Gulf of Mexico Observing System (USM)	1,971	0	1,972	1,972		
Center for Coastal Ocean Observation and Analysis	2,463	0	2,466	2,466		
Oregon Ocean Observing Center for Integrated Marine Technology	0	0	493	493		
Carolina Coastal Ocean Observing & Prediction System	0	0	2,022	2,022		
SURA Ocean Observing & Prediction System	2,463	0	2,022	2,022		
NOAA/UNH Joint Ocean Observing Technology Center	0	0	2,466	2,466		
Wallops Ocean Observation Project	3,942	0	1,972	1,972		
Coastal Services Center	1,971	0	1,972	1,972		
Convert Weather Buoys— NDBC PAC	2,100	2,184	2,154	(30)		
National Marine Sanctuary Program	7,886	0	0	0		
	2,071	2,072	2,043	(29)	2,050	
<i>NOS Sub-total</i>	<i>184,402</i>	<i>147,442</i>	<i>173,615</i>	<i>26,173</i>	<i>152,084</i>	<i>27,515</i>
<i>NMFS</i>						
Protected Species Research and Management Base	5,420	7,971	5,694	(2,277)	9,401	5,825
Marine Mammals	25,472	15,703	14,265	(1,438)	14,369	1,759
Atlantic Salmon	1,912	1,974	1,881	(93)	2,516	1,445

Coastal—Integrated Ocean Observing Systems Estimates—Continued  
(\$ in thousands)

Coastal—IOOS	FY 2005 Enacted (06 Blue Book)	FY 2006 President's Budget	FY 2006 Enacted	FY06 Delta Enacted vs. Pres. Bud.	FY 2007 President's Budget	FY 2007 Requested Increases
Fisheries Research and Management	72,861	74,807	72,775	(2,032)	77,656	6,829
Expand Annual Stock Assessments	20,501	25,397	24,457	(940)	32,100	7,550
Economic and Social Sciences research	4,041	9,618	4,043	(5,575)	10,529	6,518
Salmon Management Activities	296	300	296	(4)	301	0
Fisheries Statistics	12,587	12,771	12,596	(175)	12,801	0
Fish Information Networks	21,970	21,399	21,249	(150)	22,184	2,109
Survey and Monitoring Projects	20,641	20,606	10,987	(9,619)	14,285	1,168
Fisheries Oceanography	0	1,000	493	(507)	990	500
American Fisheries Act	3,474	3,525	0	(3,525)	0	0
National Standard 8	984	998	986	(12)	996	0
Reduce Fishing Impacts on Essential Fish Habitat (EFH)	493	500	493	(7)	499	0
Reducing Bycatch	3,745	2,800	2,761	(39)	2,782	0
Product quality and safety	4,774	4,343	4,310	(33)	4,399	0
Other fisheries related projects	10,793	0	12,228	12,228	0	0
Fisheries Habitat Restoration	100	100	105	5	105	0
Enforcement	2,259	1,692	1,669	(23)	1,686	3,979
Observers	24,523	25,992	23,175	(2,817)	26,796	3,494
Antarctic Research	1,446	1,468	1,448	(20)	1,467	0
Chesapeake Bay Studies	3,449	1,907	3,452	1,545	1,906	0
Cooperative Research	19,173	9,494	19,232	9,738	10,417	994
Magnuson-Stevens Implementation of AK Marine Resources Monitorng, Assessment & Prediction Program	4,240	4,301	0	(4,301)	0	0
Southeast Area Monitoring & Assessment Program (SEAMAP)	1,232	850	839	(11)	842	0
Other projects	1,366	0	1,365	(20)	5,090	3,753
Environmental Improve and Restoration Fund	10,101	0	5,425	5,425	0	0
Climate Regimes and Ecosystem Productivity	4,689	6,636	15,117	8,481	8,720	0
Alaska Composite Research and Development	739	1,000	739	(261)	992	501
	0	0	26,245	26,245	23,748	6,724
<i>NMFS Sub-total</i>	<i>283,281</i>	<i>258,537</i>	<i>288,325</i>	<i>29,788</i>	<i>287,577</i>	<i>53,148</i>
<i>OAR</i>						
Aquatic Ecosystems—Canaan Valley Institute	4,239	0	5,917	5,917	0	(5,917)
Lake Champlain Research Consortium	345	0	346	346	0	(346)
National Undersea Research Program	2,200	2,200	900	(1,300)	1,500	600
Aquatic Invasive Species Program	0	2,502	986	(1,516)	2,477	1,506
Atlantic Oceanographic & Meteorological Lab (FL)/ Corals	493	489	483	(6)	497	14
<i>OAR Sub-total</i>	<i>7,277</i>	<i>5,191</i>	<i>8,632</i>	<i>3,441</i>	<i>4,474</i>	<i>(4,143)</i>
<i>NWS</i>						
Local Warnings & Forecasts	17,180	20,487	676	(19,811)	20,480	1,400
National Data Buoy Center			22,920	22,920		
Alaska Data Buoy	1,480	1,700	0	(1,700)	1,683	
<i>NWS Sub-total</i>	<i>18,660</i>	<i>22,187</i>	<i>23,596</i>	<i>1,409</i>	<i>22,163</i>	<i>1,400</i>
<i>NESDIS</i>						

Coastal—Integrated Ocean Observing Systems Estimates—Continued  
(\$ in thousands)

Coastal—IOOS	FY 2005 Enacted (06 Blue Book)	FY 2006 President's Budget	FY 2006 Enacted	FY06 Delta Enacted vs. Pres. Bud.	FY 2007 President's Budget	FY 2007 Requested Increases
Coral Reef Monitoring	690	737	0	(737)	737	737
<i>NESDIS Sub-total</i>	<i>690</i>	<i>737</i>	<i>0</i>	<i>(737)</i>	<i>737</i>	<i>737</i>
<i>Program Support</i>						
NOAA ICOSS Observing Systems (NOS)			8,876	8,876	0	
Convert NOAA Weather Bouys with NDBC (NOS)			3,945	3,945	0	
Coastal Global Ocean Observing System (NWS)			1,477	1,477	0	
<i>TOTAL, PS</i>	<i>\$0</i>	<i>\$0</i>	<i>\$14,298</i>	<i>\$14,298</i>	<i>\$0</i>	<i>\$0</i>
<i>OMAO</i>						
Marine Operations & Maintenance—Marine Services	96,317	80,042	87,753	7,711	81,765	7,792
Fleet Replacment	57,957	35,730	61,596	25,866	20,691	(14,851)
<i>OMAO Sub-total</i>	<i>154,274</i>	<i>115,772</i>	<i>149,349</i>	<i>33,577</i>	<i>102,456</i>	<i>(7,059)</i>
<i>TOTAL, NOAA Coastal—IOOS</i>	<i>\$648,584</i>	<i>\$549,866</i>	<i>\$657,815</i>	<i>\$107,949</i>	<i>\$569,491</i>	<i>\$71,598</i>

DMAC—Integrated Ocean Observing Systems Estimates  
(\$ in thousands)

DMAC—IOOS	FY 2005 Enacted (06 Blue Book)	FY 2006 President's Budget	FY 2006 Enacted	FY06 Delta Enacted vs. Pres. Bud.	FY 2007 President's Budget	FY 2007 Requested Increases
<i>NMFS</i>						
Computer Hardware and Software	3,335	3,383	1,972	(1,411)	3,355	1,383
Information Analyses & Dissemination	17,686	18,328	17,461	(867)	18,384	626
NMFS Facilities Maintenance	0	4,000	3,945	(55)	3,960	0
<i>NMFS Sub-total</i>	<i>21,021</i>	<i>25,711</i>	<i>23,378</i>	<i>(2,333)</i>	<i>25,699</i>	<i>2,009</i>
<i>NWS</i>						
Central Forecast Guidance	4,340	4,487	4,401	(86)	4,429	0
<i>NWS Sub-total</i>	<i>4,340</i>	<i>4,487</i>	<i>4,401</i>	<i>(86)</i>	<i>4,429</i>	<i>0</i>
<i>NESDIS</i>						
Ice Services	890	890	878	(12)	881	0
Archive, Access, and Assessment	3,959	3,575	3,524	(51)	3,967	384
Product Development, Readiness & Application	7,342	7,580	7,475	(105)	7,425	0
<i>Observational research and pilot</i>	<i>1,300</i>	<i>1,300</i>	<i>1,282</i>	<i>(18)</i>	<i>1,287</i>	<i>0</i>
<i>Pre-operational/operational products</i>	<i>1,000</i>	<i>1,000</i>	<i>986</i>	<i>(14)</i>	<i>990</i>	<i>0</i>
<i>Other Ocean remote Sensing</i>	<i>1,700</i>	<i>1,540</i>	<i>1,519</i>	<i>(21)</i>	<i>1,525</i>	<i>0</i>
Product Processing and Distribution	3,540	3,540	3,501	(39)	3,505	0
Satellite Command & Control	0	800	789	(11)	792	0
Archive, Access & Assessment	7,530	7,532	7,429	(103)	8,556	912
Coastal Data Development	4,510	4,576	5,380	804	4,546	0
<i>NESDIS Sub-total</i>	<i>31,771</i>	<i>32,333</i>	<i>32,763</i>	<i>430</i>	<i>33,474</i>	<i>1,296</i>
<i>TOTAL, NOAA DMAC—IOOS</i>	<i>57,132</i>	<i>62,531</i>	<i>60,542</i>	<i>(1,989)</i>	<i>63,602</i>	<i>3,305</i>

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DANIEL K. INOUE TO  
VICE ADMIRAL CONRAD C. LAUTENBACHER, JR.

### **Marine Mammals**

*Question 1.* The FY 2007 budget request proposes only \$23.1 million for marine mammal protection activities—which is a cut of \$17.1 million from the FY 2006 enacted level of \$40.2 million and \$58.4 million less than the FY 2005 enacted level of \$81.5 million. Thus, in 2 years funding for this research and management activity was cut 72 percent at a time when marine mammal mortality is rising, whether through ship strikes, bycatch, or strandings.

The cuts to the marine mammal budget in the past 2 years are staggering. In FY 2005 we provided \$81.5 million, and now in FY 2007 you are requesting only \$23.1 million. This is a 72 percent cut to marine mammal protection funding. How can NOAA possibly meet its mandates under the Marine Mammal Protection Act and the Endangered Species Act at a funding level that has been reduced by 72 percent in 2 years?

Answer. The FY 2007 President's budget request for the marine mammal line is reduced from the FY 2005 and FY 2006 enacted levels for a couple of reasons. Principally, funding has not been requested for \$18.9 million in Congressionally-directed items. Also, in accordance with our FY 2006 appropriation, funding for activities in Alaska are now being requested under the Alaska Composite Research and Development line. In FY 2005, the enacted total for marine mammal items in the Alaska composite was \$30.7 million; the President's FY 2006 request was for \$15.8 million, and the FY 2006 enacted total was \$21.2 million. The FY 2007 request for these items is \$13.6 million.

We have requested an increase for base marine mammal activities, which is included in the protected species research and management programs line (part of the \$5.825 million increase). Although the overall net request is lower than the FY 2006 enacted level, NOAA believes it will be able to address its mandates within the context of other competing agency priorities.

*Question 2.* Even at FY 2005 funding levels, NOAA failed to meet its own performance goals related to marine mammals. How will NOAA possibly improve its performance with substantially less money?

Answer. These measures were not met for reasons not directly related to funding. Of the two unmet performance measures, one is specifically for marine mammals and the other is for all endangered species (including marine mammals). The FY 2007 request includes an increase for the other protected species line to help recover endangered species that do not have a separate funding line.

In addition, the two performance measures in question were revised beginning in FY 2006 due to the complexity of estimating the "risk of extinction," which is done only as part of a full status review about once every 5 years. The new performance measures—whether we have protected species at stable or increasing levels and whether we have adequate assessments of our species—provide more realistic assessments of our annual actions.

*Question 3.* Given the funding reductions in the President's proposed budget, I believe it is fair to assume that you will continue to miss your performance goals for marine mammals and endangered species management programs in the year to come.

Since you are unable to achieve your stated goals with the resources you have now, please provide detailed information on what impact the further cuts will have on current services.

Answer. The protected species management program has revised all performance measures for the program to better reflect actual performance of the program as well as to allow better tracking and reporting of performance measures. The revised performance measures reflect a focus on protected species, and the conservation and recovery of protected species through assessments, planning, and actions. The new measures: (1) track progress at achieving partial recovery of endangered, threatened, or depleted protected species under the jurisdiction of NMFS, and (2) gauge efforts to improve the quality and quantity of information used in assessing the status of individual stocks of protected species.

Performance toward the FY 2006 and FY 2007 targets is based upon actions that have been taken over the last 5–10 years for protected species. Efforts include completion of recovery plans for Pacific salmon in the NMFS Northwest Region, continued implementation of recovery actions for Pacific salmon through both ESA Pacific salmon recovery funds and grants provided through the Pacific Coastal Salmon Recovery Fund, and improved information gained through updated stock assessments and implementation of monitoring programs.

In FY 2007, NOAA will continue to make specific investments to improve the status of all protected species in order to meet out-year performance targets. These specific actions include: implementing ESA recovery plans, reducing bycatch of marine mammals and sea turtles in fisheries by completing take reduction planning efforts, and implementing ship strike reduction strategies for right whales. Improved protected species stock assessments and improved understanding of the effects of ocean noise will help us to make informed management decisions, leading to increased protection for species, while allowing human activities to continue.

Performance reporting for protected species in FY 2007 will be focused on increasing the abundance of threatened, endangered, or depleted protected species. NOAA does expect to achieve improved performance through improved abundance trends in non-marine mammal species. However, it is unrealistic to expect that all marine mammal species will achieve stable or increasing trends over the next 5 years.

#### **Western Pacific Region Cuts**

*Question 4.* The FY 2007 budget proposes cuts to a number of ocean and coastal programs important to coastal members, including those endorsed by the Report of the U.S. Commission on Ocean Policy. In addition, the budget proposes a number of significant cuts to programs in Hawaii and the Western Pacific.

Admiral, I am alarmed at the depth of the cuts that you have proposed for the Western Pacific Region. As you know, this region covers 13 million square miles, an area three times larger than the continental United States, and contains important resources both for the U.S. economy and for healthy ecosystems.

Given that economic benefits to the Nation from our pelagic fisheries approach \$2 billion annually, why did you cut \$5 million to effectively de-fund the Pacific Islands fishery management region, which provides essential oversight and management of this fishery?

Answer. When the Pacific Islands Regional Office and Pacific Islands Fisheries Science Center were established in 2002, the effect on NMFS' budget was expected to be neutral when considered along with other possible consolidations. Since FY 2004, Congress has provided \$5.0 million for the Pacific Islands Region/Center along with discouraging other consolidations. This Congressionally-directed funding was not included in the President's FY 2007 request. NOAA will continue to examine its future operational needs in the context of available resources.

*Question 5.* How do you plan to operate effectively without a regional office? Have you ever eliminated funding for any other NMFS region?

Answer. The Pacific Islands Regional Office and Pacific Islands Fisheries Science Center were established to carry out responsibilities assigned to NMFS in the central and western Pacific. These offices were specifically established to better serve this area. NMFS plans to continue the operation of the Pacific Islands Regional Office and Pacific Islands Fisheries Science Center; there are no plans to operate without these offices. In addition, program funding for other regions is also reduced in the President's FY 2007 budget request.

*Question 6.* Given the importance of protecting sea turtles, which are particularly at risk from expanding Pacific foreign fleets, why was the Hawaiian Sea Turtle program cut from \$7.8 to \$3.2 million?

Answer. The FY 2007 President's Budget request is stable at the FY 2006 requested level. This level will ensure continued improvement in management of sea turtles. At the requested level, funding for Hawaiian Sea Turtles is in line with other ESA sea turtle funding.

*Question 7.* Please provide a breakdown of funding proposed in the FY 2007 budget for Hawaii and the Western Pacific region in each of the line offices, as compared to FY 2006 enacted levels, focusing on fisheries research and management, protected resources, coastal science and programs (including marine debris, NWHI, and sanctuaries programs), and weather forecasting and climate research and services.

Answer. The tables below provide the information as requested, for each line office. However, it is important to note that NOAA conducts many activities at the national level. These centralized activities benefit the entire Nation, including Hawaii and the Western Pacific region. Some activities not included in the tables below are satellite observations (all NESDIS programs are national in scope), centralized weather modeling activities (including the National Centers for Environmental Prediction and other NWS headquarters programs), and NOAA's oceanic and atmospheric observations and research that benefit the entire Nation by improving weather, air quality, and climate forecasts. Additionally, NMFS and NOS headquarters programs are also not included in these tables; some examples include the Essential Fish Habitat Program, the National Observer Program, the marine mammal health

and Stranding Response Program, the National Marine Sanctuary Program, and the NOAA Coral Conservation Program.

NWS (value in \$M)	FY 2006 Request	FY 2006 Enacted	FY 2007 Request
Total for Region	22.79	22.79	22.79
Fisheries Research and Management	—	—	—
Protected Resources	—	—	—
Coastal Science and Programs	—	—	—
Weather Forecasting	22.79	22.79	22.79
Climate Research and Services	—	—	—

NMFS (value in \$M)	FY 2006 Request	FY 2006 Enacted	FY 2007 Request
Total for Region*	20	25	20
Fisheries Research and Management	11	13	11**
Protected Resources	9	12	9**
Coastal Science and Programs	—	—	—
Weather Forecasting	—	—	—
Climate Research and Services	—	—	—

\*Note: The NMFS Total for Region includes only Fisheries Research and Management and Protected Resources, and does not include all NMFS spending in Hawaii (for example, does not include habitat conservation, enforcement, observers, etc.).

\*\*ATBs have not been spread for these lines.

NOS (value in \$M)	FY 2006 Request	FY 2006 Enacted	FY 2007 Request
Total for Region	23.822	33.153	23.707
Fisheries Research and Management	—	—	—
Protected Resources	—	—	—
Coastal Science and Programs	23.822	33.153	23.707
Weather Forecasting	—	—	—
Climate Research and Services	—	—	—

NESDIS (value in \$M)	FY 2006 Request	FY 2006 enacted	FY 2007 Request
Total for Region	—	4.931	—
Fisheries Research and Management	—	—	—
Protected Resources	—	—	—
Coastal Science and Programs	—	—	—
Weather Forecasting	—	—	—
Climate Research and Services	—	4.931	—

OAR* (value in \$M)	FY 2006 Request	FY 2006 Enacted	FY 2007 Request
Total for Region	8.1	8.3	6.4
Fisheries Research and Management	1.3	1.6	1.0
Protected Resources	1.3	1.6	1.0
Coastal Science and Programs	3.5	3.3	2.6
Weather Forecasting	—	—	—
Climate Research and Services	2.0	1.8	1.8

\*Note: OAR totals for FY 2007 include estimated amounts for competitively awarded programs.

NOAA Regional Totals (value in \$M)	FY 2006 Request	FY 2006 Enacted	FY 2007 Request
Total for Region	74.712	94.174	72.897
Fisheries Research and Management	12.3	14.6	12.0
Protected Resources	10.3	13.6	10.0
Coastal Science and Programs	27.322	36.453	26.307
Weather Forecasting	22.79	22.79	22.79
Climate Research and Services	2.0	6.731	1.8

*Question 8.* Please provide a comparison of these proposed budget amounts with those proposed in the FY 2007 budget for other regions, and list also the size of each region, as compared with the Western Pacific.

*Answer.* The table below provides a comparison of proposed FY 2007 funding by region, for each line office. However, as noted above, NOAA conducts many activities at the national level and these centralized activities benefit the entire Nation, including Hawaii and the Western Pacific region.

Value in \$M	Western Pacific	Alaska	North-west	South-west	North-east	South-east	Central	Other
NOS	23.707	38.1	16.188	14.4	59.811	76.145	—	—
NMFS	30	125	145	64	93	99	—	—
OAR*	6.4	4.2	28.7	14.8	111.6	33.8	66.9	—
NWS**	22.79	32.12	23.57	17.88	84.59	106.77	112.28	42.25
NESDIS***	—	—	—	—	—	—	—	1,033

\*Note: OAR totals for FY 2007 include estimated amounts for competitively awarded programs.

\*\*Note: NWS "Other" includes AZ, MT, NV, UT. NWS National Centers for Environmental Prediction, and other NWS Headquarters programs not included.

\*\*\*Note: NESDIS does not operate on a regional basis; all NESDIS programs are national in scope.

### **Tsunami Program Funding**

*Question 9.* The NOAA tsunami warning system includes: (1) detection mechanisms (e.g., water level monitoring and Deep-ocean Assessment and Reporting of Tsunami (DART) buoys); (2) forecasting and warning systems; and (3) research programs. In response to the concern over the adequacy of U.S. tsunami warnings and preparedness after the Indian Ocean tsunami, and the failure of a number of DART buoys, Congress and the Administration began increasing funds to tsunami programs, from a total of \$11 million in FY 2004 to \$17 million in FY 2006, including funds for the purchase and deployment of 13 new DART buoys and expansion of the system to the Gulf and Atlantic.

While the Administration's FY 2007 budget proposes a \$7.6 million increase for the expanding program, it level funds or cuts very important preparedness programs that states depend on, including the Tsunami Hazard Mitigation Program and the "TsunamiReady" program. In addition, the Administration proposes level funding for the Alaska and Hawaii warning centers and research programs even as the system needs to expand. A full \$7.4 million increase is specified for "operations and maintenance of deployed buoys," yet only last month another 3 DART buoys failed because they broke from their moorings. This raises concern that important on-the-ground programs may be starved while increasing funding to contractors who are not providing good service.

Admiral, while I am gratified that tsunami funding has increased, I am concerned that the budget increase leaves behind the very states and localities most at risk from tsunami and other coastal hazards. If we go down this path, we are inviting catastrophe. In addition, 3 Pacific DART buoys recently failed, increasing local risks. How do you intend to increase state preparedness if you level fund or cut key components of the tsunami warning and mitigation system—including the Tsunami Hazard Mitigation Program, the TsunamiReady program, and the Tsunami Warning Centers?

*Answer.* Overall funding for the Federal tsunami effort has increased and the efforts in the National Tsunami Hazard Mitigation Program (NTHMP) and preparedness and mitigation will increase. NOAA Tsunami Warning Centers have implemented 24/7 operations. The funds requested in the FY 2007 budget request for the NTHMP will provide the same level of funding to the Pacific states as has been available in the past. NOAA's program to upgrade the Nation's tsunami warning program will now fund all tsunami detection (DART station research and development and DART station operations and maintenance) and tsunami inundation mapping, modeling and forecast efforts that in previous years were funded by the NTHMP. The NTHMP is in the process of expanding from five Pacific states to a national program. The NTHMP steering committee is formulating a funding distribution process based on tsunami hazard assessment. The methodology should be developed by December 2006, to guide FY 2007 distribution of funds. In the near-term, the NTHMP will focus funding in the areas believed to face the largest threat of tsunamis, while conducting more comprehensive hazard assessments of all coastal areas to determine national program requirements. At the February 2006, NTHMP meeting, additional funding was provided to support Puerto Rico, and the U.S. Virgin Islands. Mayaguez, Puerto Rico is finalizing evacuation plans and scheduled to become TsunamiReady this year. St. Thomas, in the U.S. Virgin Islands, is anticipated to be the next TsunamiReady community recognized in the region.



*Question 10.* You propose a healthy \$7.4 million increase for buoy operations and maintenance, but given the recent buoy failures, I question the quality of buoy service. Please explain:

(1) The cause of the mooring failures and identity of the contractor and NOAA facility charged with deployment.

Answer. The bottom pressure recorders that identify the tsunami and the buoy communication system have not recently failed. However both stations off the Pacific Northwest frequently are set adrift when their mooring lines are severed. An alternate mooring design with metal cladding is being used in an attempt to discourage deliberate cuts by fishing vessels or other sources. This geographic area is a high traffic area for fishermen and commercial traffic. One of the four Aleutian buoys is also adrift. This buoy has not yet been recovered so cause is undetermined at this time; however, the mooring on this Aleutian buoy was at or beyond its expected life and it is possible that the mooring failure was the result of severe winter weather in the North Pacific. NOAA will be strengthening the mooring lines of the Alaskan DART buoys, to help secure these lines in preparation for the severe winter weather season. In addition, NOAA will be deploying a minimum of three "in-the-water" DART spares for Alaska to ensure tsunami warning coverage throughout the prolonged and severe winter in the North Pacific.

NOAA's National Data Buoy Center (NDBC) procures the mooring components and uses a support services contractor, the Science Applications International Corporation (SAIC), to fabricate the mooring. NDBC is responsible for integration and deployment of the DART buoys and provides the contract oversight.

(2) Specific uses of the \$7.4 million increase.

Answer. The \$7.4M increase provides \$4.1M to provide operations and maintenance (O&M) support for the 26 DART stations planned for deployment through FY 2006 and \$3.3M in ship time costs to support planned DART station O&M. The DART stations consist of a bottom pressure recorder and a communications buoy. Along with seismic and sea level sensors, these stations provide critical improvements to the Tsunami Forecast System. The \$4.1M for DART station O&M (\$180K average O&M cost per buoy) includes: (1) buoy refurbishment costs for batteries, cables, moorings, communications, and electronics; and (2) direct costs for labor, IT services (monitoring, processing, and quality control of DART signal), and engineering support.

The \$3.3M is to provide ship support for the planned 26 buoys located in the Pacific off Hawaii and the U.S. West Coast (7), Gulf of Alaska/Aleutians (7), western Pacific off Kamchatka and Japan (5), Gulf of Mexico (1), Caribbean (3), and Atlantic (3). Our ship time cost is based on an estimated \$25K average daily rate for ship time support.

(3) NOAA's contract oversight process for buoy deployment and maintenance, including contractor quality control and procedures followed in the event of contractor failure.

Answer. NOAA's National Data Buoy Center (NDBC) procures the DART components from many vendors. To the maximum extent possible those components are tested prior to integration by SAIC. NDBC has world class test facilities. Additionally, major components are tested after being assembled to assure they can operate in the extreme cold and pressure of the ocean bottom, or communicate with the Tsunami Warning Centers. Testing is also done aboard ship prior to deployment and all communication channels are tested before the ship leaves the deployed DART station. There are contractual penalties for instances where contractor error is to blame for mission failures. The contractor is not penalized when a DART buoy mooring is deliberately cut by an outside source (a fishing or commercial vessel, for example).

#### **Censorship of NOAA Climate Scientists**

*Question 11.* Over the last few months the lead climate scientist at NASA, Dr. James Hansen, has asserted that the Administration is keeping scientific information on climate change from reaching the public, which has resulted pledges from NASA Administrator Griffin to block any such actions. This month Dr. Hansen reported that scientists at NOAA climate laboratories are being similarly stifled, a claim now repeated in a February 16, 2006 *Wall Street Journal* article.

Admiral, these new claims today that NOAA climate scientists have been silenced by either NOAA public affairs personnel or the White House are extremely serious and appear to contradict your statement yesterday that NOAA scientists are encouraged to speak freely. NOAA policies are supposed to ensure that scientists can speak publicly, without interference, about their research. Are the practices reported in the *Wall Street Journal* (Statement Acknowledges Some Government Scientists

See Link to Global Warming, February 16, 2006; Page A4) consistent with NOAA's official policies?

Answer. Since June of 2004, we have had an official Media Policy (NOAA Administrative Order #219-6; available at [http://www.corporateservices.noaa.gov/%7Eames/NAOs/Chap\\_219/naos\\_219\\_6.html](http://www.corporateservices.noaa.gov/%7Eames/NAOs/Chap_219/naos_219_6.html)), which provides the guidance and framework for our interactions with the media here at NOAA. From my perspective, there is no conflict between that policy and what I stated in the hearing; they are complementary. It is important that NOAA scientists and managers continue to discuss their research and expertise with the media because it helps us explain to the public what NOAA is doing for them. To help facilitate this process, NOAA's Office of Public, Constituent and Intergovernmental Affairs (OPCIA) officers have always played a support role in the facilitation of interviews.

Public Affairs professionals are here to get the NOAA story out as effectively as possible. They do this by helping journalists get to the most appropriate subject matter expert within NOAA, and to ensure that the expert is available, willing, and prepared for the interview. Public Affairs officers routinely follow up with the journalist on requests for additional facts, and inform me when to expect the news. That's the general procedure I usually follow and have found that public affairs support is helpful in my dealings with the media. Working with public affairs before, during, and after an interview is a best practice and is part of the Media Policy.

*Question 12.* How can you be sure all personnel, including political appointees, comply with your promise, as well as the policies? After these press reports, what are you doing to promote openness and ensure that the Administration is not censoring or limiting public access to NOAA scientists?

Answer. I expect my employees to follow my guidance. I have made my expectations clear in a number of meetings with my career and political senior executives and in an e-mail to every employee within NOAA. I have stated that I want our researchers to promote their science and that I expect transparency between NOAA, the media, and the public.

*Question 12a.* What in your policies would protect NOAA scientists from interference or involvement of Administration appointees *outside your Agency*?

Answer. Leadership within both NOAA and the Department of Commerce are committed to maintaining the integrity of our scientific operations, and recognize scientific integrity is important to the ongoing success of the agency's programs. Our Media Policy requests that a scientist work with a NOAA Public Affairs representative on news releases and media interviews. As you know, NOAA is an agency within the Department of Commerce, which has the ultimate responsibility for the release of news, clearance of publications and media coverage as outlined in Department Administrative Order (DAO) 219-2. The Department is also looking at revising their current policies.

*Question 13.* What role does the White House Council on Environmental Quality (CEQ) and the White House's Climate Change Science Program (CCSP)—which is led by your Deputy Administrator, Dr. James Mahoney—play in the review and public release of scientific findings or statements of NOAA scientists?

Answer. NOAA scientific documents (i.e., scientific/technical papers and publications developed by NOAA scientists as a part of their normal work) are reviewed for technical merit in accordance with the NOAA Information Quality Act Guidelines and internal scientific review processes.

Official NOAA positions or policies (including those of scientific nature) are reviewed and cleared by NOAA management. As good management practice, we do notify the Department of Commerce, of which NOAA is a part, and relevant White House entities, including CEQ, of newsworthy scientific findings from NOAA scientists. We value the work of our scientists and want those that manage NOAA to be aware of scientific advancements and be able to promote or speak to the good work in our agency.

If NOAA scientists have the lead on a written product developed under the sponsorship of CCSP, then NOAA, the CCSP Interagency Committee, and the National Science and Technology Council will review and approve the document for release. In this situation, the process is posted on the CCSP website ([www.climate-science.gov](http://www.climate-science.gov)). Otherwise, the typical NOAA scientific publication is not reviewed by CCSP as a matter of practice.

#### **NOAA Left Out of Competitiveness Initiative**

*Question 14.* At his State of the Union address, the President announced an "American Competitiveness Initiative" to increase national scientific advancement and innovation. The \$5.9 billion FY 2007 Initiative proposes funding to: (1) increase investments in research and development; (2) strengthen education in math, science,

engineering, and technology; and (3) encourage entrepreneurship. Over 10 years, the Initiative commits \$50 billion to increase funding for research and \$86 billion for research and development tax incentives. Agencies proposed for inclusion are the National Science Foundation (NSF), the Department of Energy's Office of Science, and the Department of Commerce's National Institute of Standards and Technology (NIST).

Despite the important contributions that NOAA's research and development could make to advancing U.S. competitiveness, the President did not include NOAA.

As the U.S. Ocean Commission noted, an increased investment in ocean and atmospheric science and technology is needed to understand more about our planet, of which most is covered by ocean. NOAA and its partners are developing exciting new technologies to aid in this effort, and these technologies, in turn, have applications that could increase our competitiveness, such as in the areas of tsunami and hazards prediction, biomedical advances, education, and defense.

Can you explain why NOAA was not included in the President's American Competitiveness Initiative?

Answer. The Competitiveness Initiative, and the new investments in physical sciences and engineering, will ensure our continued economic and technological leadership around the world. That is important to NOAA, and is a key element in the cross-cutting way we are conducting our Federal research and development enterprise.

The American Competitiveness Initiative (ACI) focuses on Federal research and development (R&D) agencies that fund or contribute R&D assets to the mathematical and physical science base that directly supports innovation in private industry. The three agencies named in the American Competitiveness Initiative were chosen because they support the largest proportion of basic research in physical sciences and engineering—two areas that need additional support. These fields are high-leverage fields and produce both the fundamental research results and new research tools that support all of the sciences.

*Question 15.* What NOAA research or programs would be valuable assets in promoting U.S. technical and scientific competitiveness?

Answer. With continued support from Congress, NOAA is in a strong position to improve the science base for environmental decisionmaking and generate broad benefits for the economy and society. NOAA's highest technical priority is to build integrated, global Earth observations. We need to build, on a global basis, the capability to observe the Earth in many dimensions and time scales, and improve the scientific basis for using those observations to predict weather conditions, understand climate trends, and reveal the complicated physical and biological interrelationships that shape the health and productivity of our ecosystems.

To address the growing requirements for environmental data on national and global scales, NOAA, NASA, and the Office of Science and Technology Policy (OSTP) are leading the implementation of the *Strategic Plan for the U.S. Integrated Earth Observing System*, through the U.S. Group on Earth Observations (USGEO). The U.S. Integrated Earth Observation System is an essential component of the Global Earth Observation System of Systems, or GEOSS, which is a global Earth data collection and dissemination initiative to benefit worldwide stakeholders and decision-makers. GEOSS will allow users to share, compare and analyze a diverse array of datasets, providing the information necessary to mitigate the impacts of natural hazards. GEOSS will provide the global information required to understand the interactions between Earth processes and, thereby, improve the forecasting skills of a wide range of natural phenomena, such as a hurricane in the Atlantic, a typhoon in the western Pacific, and the impact of El Niño throughout the globe. GEOSS will also promote improved decisionmaking in various sectors, including natural resource management, public health, agriculture and transportation. NOAA's environmental satellite systems and NASA's integrated global Earth system science satellite constellation are among the critical components of the GEOSS initiative.

A related priority centers on climate science. Our economy functions within a highly variable climate system. Conditions change over the span of seasons, years, decades, and longer. Our inability to understand and predict climate patterns has a huge impact on business uncertainty, particularly in energy-sensitive sectors. We must improve our ability to observe and understand the carbon cycle and further research the role of aerosols on global climate. The Alaska Climate Reference Network is particularly crucial. Further, we will investigate how society can cope with drought conditions resulting from changes in climate.

NOAA's capabilities in ecosystem science can also contribute to the health of our Nation's economy. We must strengthen our research base and technical contributions to the development of aquaculture and ecological forecast modeling, and build local capacity to protect coral reefs. The economic value of our ecosystems is nearly

incalculable—they provide irreplaceable services such as important habitat for commercial fisheries, a foundation for tourist-based industries, and serve as a buffer for sensitive coastal areas. For example, coral reef ecosystems provide resources and services worth billions of dollars each year to the United States economy and economies worldwide. Coral reefs support more species per unit area than any other marine environment, including about 4,000 species of fish, 800 species of hard coral and thousands of other species. Approximately half of all federally-managed fisheries depend on coral reefs and related habitats for a portion of their life cycles. The National Marine Fisheries Service estimates the annual commercial value of U.S. fisheries from coral reefs is over \$100 million. Local economies also receive billions of dollars from visitors to reefs through diving tours, recreational fishing trips, hotels, restaurants, and other businesses based near reef ecosystems. In the Florida Keys, for example, coral reefs attract more than \$1.2 billion annually from tourism. In addition, coral reef structures buffer shorelines against waves, storms and floods, helping to prevent loss of life, property damage and erosion. NOAA's ecosystem approach to resource management will enhance our ability to improve management of watersheds and marine resource areas, and will improve the science base for maritime-based industries such as aquaculture.

NOAA continues to develop and deploy leading-edge scientific and technical capabilities in sensor technologies and other advanced instrumentation for environmental observations; technologies for managing and efficiently using extraordinarily large volumes of data; technologies for efficiently assimilating data into models; and computationally-intensive modeling techniques and related scientific computing technologies. Each of these areas is broadly important to the Nation's scientific and technical competitiveness.

*Question 16.* In what areas could such programs or research contribute to U.S. competitiveness?

*Answer.* Long-term competitive advantage will accrue to countries that create innovative, sustainable solutions to economic and societal growth. NOAA's environmental observations, research and information services, and resource management activities provide infrastructure assets that support efficient commerce, reduce business uncertainty and business costs, and directly benefit the economy and society. The competitive impacts of NOAA's work are particularly pronounced in weather and climate sensitive industries, the energy sector and energy-intensive industries, maritime-based industries, and the transportation sector.

For example, weather and climate sensitive industries account (directly or indirectly) for about one-third of the Nation's GDP, or \$3 trillion, ranging from finance, insurance, and real estate to services, retail and wholesale trade and manufacturing. Throughout the economy, businesses constantly grapple with the high uncertainty and variability of environmental conditions over time. To reduce uncertainty and improve the environment for stable economic and societal growth, NOAA must improve the Nation's ability to measure, model, and predict climate and ecosystem conditions with high economic impacts—particularly impacts associated with drought, human health, agriculture, energy, and ocean and coastal resources.

Environmental events also have large economic and societal consequences. Total losses for the 2005 hurricane season in Louisiana, Mississippi, and Alabama, have been estimated at \$140 billion, of which \$40 to \$67 billion were insured. NOAA must continue to strengthen and expand its ability to observe, model, forecast, and warn of environmental events. We are working to continue to strengthen our ability to warn against tsunamis, hurricanes, and other weather events by initiatives in the FY 2007 budget such as collecting more data with buoy systems, new aircraft instrumentation, and the NOAA Profiler Network. The National Weather Service Telecommunications Gateway ensures that NOAA obtains and distributes valuable hydrometeorological information.

The competitiveness implications for NOAA's technical infrastructure assets also are evident in the transportation sector. More than 78 percent of U.S. overseas trade by volume and 38 percent by value comes and goes by ship, including nine million barrels of imported oil daily. Waterborne cargo alone contributes more than \$742 billion to the U.S. GDP and creates employment for more than 13 million citizens. NOAA's technical information services are essential to the safe and efficient transport of people and goods at sea, in the air, and on land and waterways. NOAA is working to further improve competitiveness by expanding our ability to collect water vapor and oceanographic observations, which will improve aviation and marine navigation safety and efficiency. We also can achieve greater transportation efficiencies through expanded deployment of electronic navigational charts and other innovative navigation tools.

These and related technologies are key steps toward addressing the long-term challenge of transportation capacity constraints: the constantly rising volume of

trade requires new technologies that can increase the density of transportation systems. Individual technologies can have large economic consequences: for example, NOAA's real time navigation information system, after being deployed in just one medium size Florida port, increased productivity by over \$5 million per year through better ship loading, improved traffic flow, and reduced groundings. Similarly, improvements in NOAA's ocean condition information systems have generated savings of approximately \$95 million through improved ship transit planning and routing. Collectively, NOAA's navigation and transportation-related technologies directly affect the efficiency and cost-effectiveness of entire distribution systems and supply chains, both central to the competitiveness of U.S.-based industries.

*Question 17.* Why has the Administration failed to restore or increase funding for NOAA programs that facilitate innovative research? These programs result in improved technology and have direct management implications. For example, the Oceans and Human Health Initiative, created by our legislation in 2005, was zeroed-out of the request, despite its potential contribution to U.S. leadership in the highly competitive fields of marine product development and biomedical engineering.

Answer. The interaction between oceans and human health is recognized as an important area of research within NOAA. While NOAA has not requested a specific budget item for Oceans and Human Health, we have requested funding for a number of programs related to this activity. For example, the National Centers for Coastal Ocean Science (NCCOS) has a long history of work in this area, such as harmful algal blooms, marine toxins and pathogens, chemical contaminants, seafood safety, beach and shellfish bed closings, and other coastal public health issues. With a 2007 request of at least \$8.9M, NOAA will continue to make harmful algal bloom and hypoxia research a priority in 2007. In addition, NOAA is actively participating in the Joint Subcommittee on Ocean Science and Technology (JSOST), Interagency Working Group on Harmful Algal Blooms, Hypoxia, and Human Health to address ocean and human health issues.

#### **Climate Science Funding Changes**

*Question 18.* Admiral, last year, the Government Accountability Office (GAO) issued a report that suggested that the Administration is not providing sufficient clarity and transparency in their climate change science budgets, and that funding for climate science appears to be declining or shifting. Given these findings, I am particularly interested in understanding how funds are distributed among the programs within the NOAA climate research budget. I would also like to understand, given the recent concern over political interference in science, who sets the science funding priorities for NOAA.

Can you explain how climate research funds are allocated between the different NOAA programs, and what types of research, both at NOAA and by external scientists, is conducted under each line item?

Answer. The following outlines the programs involved and types of climate research conducted under each line item in the NOAA FY 2007 budget request:

*NESDIS/ORF Archive, Access, and Assessment; FY 2007 Request \$38,017K:* The goal of Archive, Access, and Assessment is to provide long-term archive, access (customer service), stewardship, and assessments of observation data to a wide range of worldwide users. NOAA's National Climatic Data Center (NCDC), located in Asheville, North Carolina, is the largest climate data center in the world, and is the Nation's designated Federal records center for climate data. Over the past 3 years, the NCDC, in cooperation with scientists and other NOAA activities and Federal agencies, has designed and is deploying the Nation's first climate quality observing network, the U.S. Climate Reference Network.

*NESDIS/ORF Environmental Data Systems Modernization; FY 2007 Request \$9,346K:* The goal of Environmental Data Systems Modernization is to provide increased access and utility to environmental data, information, products, and services through the use of innovative technologies and techniques.

*NESDIS/PAC Comprehensive Large Array data Stewardship System; FY 2007 Request \$6,476K:* NOAA is responsible for the stewardship of over one petabyte of environmental data and information, and the volume of data is expected to grow significantly in the future as NOAA's next-generation satellites come online. Comprehensive Large Array data Stewardship System (CLASS) is a data archiving and access system that will improve the quality and stewardship of NOAA's environmental data and information. By providing efficient, secure, cost-effective access to NOAA's environmental data via CLASS, NOAA is supporting key research challenges identified by the U.S. Global Change Research Program, such as natural climate patterns, global monsoon, and land-atmosphere and ocean-atmosphere exchanges.

*NMFS Climate Regimes & Ecosystem Productivity; FY 2007 Request \$1,984K:* This program aims to improve the understanding and prediction of climate variability and change on major U.S. marine ecosystems in the Bering Sea and Gulf of Alaska. NOAA intends to predict the probable consequences of climate change on marine systems by effectively integrating recent advances in climate science with non-climatic knowledge (e.g., ecosystem and living marine resource management information). NOAA conducts this project on a regional scale (i.e., within the fisheries-rich ecosystems of the Gulf of Alaska and southeast Bering Sea).

*NWS Central Forecast Guidance; FY 2007 Request \$51,063K:* The Climate Prediction Center (CPC), located in Camp Springs, Maryland, produces climate services consisting of operational prediction of climate variability; monitoring of the climate system and development of databases for determining current climate anomalies and trends; and analysis and assessment of their origins and linkages to the rest of the climate system. These services cover climate time scales ranging from weeks to seasons, extending into the future as far as technically feasible, and cover the domain of land, ocean and atmosphere, extending into the stratosphere. Weather Forecast Offices, as well as the public, private industry, and the international research community use CPC climate services.

*NWS Climate Services Division; FY 2007 Request \$1.04M:* The Climate Services Division at National Weather Service (NWS) headquarters provides the strategic vision for climate services at NWS and oversees the NWS climate services program. The NWS Climate Services Division develops policy and requirements for climate prediction products and other services related to the period of week two out to 1 year, including seasonal forecasts and threat assessments. The Division also sets NWS field policies and procedures for climate prediction products, defines service and mission needs, solicits user feedback to evaluate new products and services, and approves final product design.

*OAR Climate Budget; FY 2007 Request \$181,151K:* OAR supports climate research and the development and delivery of services and products across NOAA. The components of OAR's Climate Program are as follows:

*OAR Laboratories and Cooperative Institutes; FY 2007 Request \$48,287K:* The research conducted at OAR's laboratories and cooperative institutes aims to improve NOAA's ability to assess climate variability on a variety of time scales, from seasonal to interannual timescales, as well as interdecadal to centennial timescales and beyond. This research will lead to better understanding and prediction of climate variability and change and will help the Nation respond to the risks and opportunities associated with such change. Research activities include consistent and uninterrupted monitoring of the Earth's atmosphere and ocean, which can give us clues about long-term changes in the global climate, and the development and improvement of global climate models of physical and chemical processes governing the behavior of the atmosphere and oceans.

*OAR Competitive Research Program; FY 2007 Request \$125,712K:* NOAA's Competitive Climate Research Program within OAR is an integral part of the inter-agency U.S. Climate Change Science Program, which incorporates the U.S. Global Change Research Program and the Administration's Climate Change Research Initiative. The Climate Competitive Research Program includes the following former line items: Climate and Global Change, Climate Observations and Services, Climate Change Research Initiative, and Arctic Research. The program addresses an important aspect of global change—understanding the global climate system—and advances research and assessment activities designed to address the interface between scientific information and society's various decisionmaking needs. Current research activities are organized across the following elements within two main components, Research and Major Observing Systems. Topic areas include: improved understanding and modeling of ocean, atmosphere and land-surface processes to advance NOAA's operational climate forecasts, monitoring, and analysis systems; development of climate-based hydrological forecasting capabilities; decision support tools for water resource applications, and improving understanding of climate forcing processes (e.g., carbon cycle, aerosol-climate interactions). A key component of the Climate Research Program is the large focus on extramural and competitive research.

*OAR Climate Operations; FY 2007 Request \$886K:* Climate Operations activities support the development and delivery of improved forecasts at NOAA's National Weather Service on subseasonal through interannual timescales and beyond. This is achieved by improving model performance, developing new forecast designs, and upgrading existing datasets. Climate Operations activities also provide NOAA customers—farmers, utilities, land managers, business owners, energy, re-insurance, weather risk industry, and decisionmakers—with the ability to assess climate variability and make informed decisions to mitigate impacts of extreme climate events, such as droughts and El Niño.

*OAR Climate Data & Information; FY 2007 Request \$6,266K:* Climate Data & Information funding supports the management of the Nation's resource of global climatological *in situ* and remotely sensed data and information. The data and information collected are used: (1) to promote global environmental stewardship, (2) to describe, monitor and assess the climate, and (3) to support efforts to predict changes in the Earth's environment. This effort requires the cooperation of national and international meteorological services for the acquisition, quality control, processing, summarization, dissemination, and preservation of a vast array of climatological data.

*Question 19.* How are priorities for NOAA climate research funding set?

Answer. NOAA decides on climate research priorities through its planning, programming, budgeting, and execution (PPBES) process. This process begins with the formulation of a strategic plan and annual guidance memorandum which includes discussion with stakeholders and review by the external Science Advisory Board Climate Group. NOAA also receives input in the form of:

- (1) *Strategic Plan for the Climate Change Science Program*, which calls for accelerated research in carbon and aerosols, integrated global observations and modeling, and a focus on decision support activities;
- (2) The new strategic plan for the *U.S. Integrated Earth Observation System (IEOS)*, which provides a blueprint for integrated observations, data management, and modeling to address key societal benefits;
- (3) The *U.S. Ocean Action Plan* which recommends integrated ocean observations and data management, and science-based information for decision management; and
- (4) Input provided by stakeholders through topical workshops and assessments that are held periodically.

The results of these decisions are subject to the budget and appropriations process.

*Question 20.* How is the Climate Change Science Program (CCSP), which is headed by a political appointee, involved in setting these research funding priorities? Is this process fully transparent to the public and research community? What is the CCSP's involvement in the budget request process?

Answer. CCSP is comprised of 13 departments and agencies (U.S. Agency for International Development, Department of Agriculture, Department of Commerce (including the National Oceanic and Atmospheric Administration and the National Institute of Standards and Technology), Department of Defense, Department of Energy, Department of Health and Human Services (including the National Institutes of Health), Department of State, Department of Transportation, Department of the Interior, U.S. Geological Survey, Environmental Protection Agency, National Aeronautics and Space Administration, National Science Foundation, and the Smithsonian Institution), each having their own budget prioritization process. CCSP agencies and CCSP Interagency Working Groups collectively determine a set of broad research priorities for the program for each fiscal year in coordination with the Executive Office of the President.

CCSP budget requests are coordinated through the CCSP interagency working groups and other mechanisms with the approved priorities in mind, but ultimate budget accountability resides with the participating departments and agencies. As a result of this interagency composition, activities of the CCSP participating agencies are funded by Congress through nine of the 12 annual Appropriations bills.

*Question 21.* What is the role of the Congressionally-established career-level Global Change Research Program in setting these research funding priorities? Who heads up that program now, and is it under the control of CCSP?

Answer. As discussed in the CCSP Strategic Plan, the announcement of the Climate Change Science Program subsumed the activities and legislatively-mandated requirements of the U.S. Global Change Research Program (USGCRP) and the commitments of the Administration's Climate Change Research Initiative. CCSP, as shown the climate management structure in the Strategic Plan, is led by the Assistant Secretary of Commerce for Oceans and Atmosphere—a Senate-confirmed political appointee.

The annual research priorities for CCSP (and USGCRP) are set through discussions with the CCSP Interagency Committee (composed of senior career representatives of each of the 13 CCSP agencies and departments), the scientific CCSP Interagency Working Groups (composed of senior scientists at their respective agencies), and liaisons from the Executive Office of the President.

CCSP budget requests are coordinated through the CCSP Interagency Working Groups, but ultimate budget accountability resides with the participating departments and agencies. As a result of this interagency composition, activities of the CCSP participating agencies are funded by Congress through nine of the 13 annual Appropriations bills.

#### **Pacific Climate Change Research**

*Question 22.* The 2005 launch of the Asia-Pacific Partnership on Clean Development and Climate highlights the important role of international collaboration plays in climate change policy and research in the Asia-Pacific region and worldwide. The State of Hawaii is home to a number of scientific institutions and programs that will be important assets in this collaboration.

One of these Hawaii-based institutions is the International Pacific Research Center (IPRC) at the University of Hawaii, which was established in 1997 to provide an international, state-of-the-art research environment to improve understanding of the nature and predictability of climate variability and of regional aspects of global environmental change in the Asia-Pacific area. The research done at the IPRC has been funded through a partnership with Japan's Frontier Research System for Global Change, the National Aeronautic and Space Administration (NASA), and NOAA, though NOAA's contributions have become more important as funding from Japan has dipped in recent years. No NOAA funding is provided in FY 2007.

Admiral, the FY 2007 proposed NOAA budget cuts funding for the International Pacific Research Center. As one of the only institutions conducting systematic and reliable climate research over the entire Pacific region, the data produced and managed by the IPRC will be indispensable to understanding climate change. If the Administration proposes eliminating NOAA funding for this Pacific basin-wide program, I would interpret that as signifying a lack of support for international collaboration on climate science in the Pacific.

Please describe NOAA's plan for international climate science in the region, including support for the Asia-Pacific Partnership and other regional climate agreements, such as the U.S.-Australia Climate Change Science bilateral and the long-standing science bilateral with Japan. Please also specify the amount of funding in the budget for this research activity, compared with FY 2006 enacted levels.

Answer. The initial activities identified under the Asia-Pacific Partnership are focused on the development and diffusion of technologies that will reduce greenhouse gas emissions and do not include collaboration on climate science research. NOAA stands ready to participate on climate science when this element is addressed by the partnership. In the meantime, NOAA maintains a number of strong climate science partnerships in the Asia-Pacific region that continue to yield significant results.

- NOAA requests \$125.7 million for the Competitive Research Program, an increase of \$15.1 million over the FY 2006 enacted level. This funding includes the following activities that support partnerships in the Asia-Pacific region:
  - An increase of \$6.1 million for the Global Ocean Observing System (GOOS). NOAA's Pacific environmental strategy includes critical climate and ocean observations through support for Pacific regional contributions to GOOS and, more recently, the development of a Pacific Islands Integrated Ocean Observing System.
  - \$3.4 million will support NOAA's Tropical Atmospheric Ocean (TAO) buoy array. (\$0.8 million is included in the GOOS budget request mentioned above; \$2.6 million is through the National Weather Service's Local Warnings and Forecasts).
  - \$6.5 million will be used to operate the NOAA Research Vessels *Kaimimoana* and *Ron Brown*, which provide ship time for maintenance of the TAO array. This amount is consistent with FY 2006.
  - \$1 million will be used for Indian Ocean moored buoy operations, consistent with FY 2006.
  - \$10.2 million will be used for the Argo Program, consistent with FY 2006. NOAA and the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) are the top two providers of profiling floats to the International Argo Program. The United States, through NOAA, has committed to providing half of the ultimate 3,000 float array when it achieves full capacity in 2007. Currently NOAA provides 1,253 and JAMSTEC provides 347 Argo floats.
  - Each year there are a number of ongoing and new proposals funded in the Pacific region through competitive grants. The funding for these vary from



year to year but information on recent projects is available on the Climate Program Office website at [www.climate.noaa.gov](http://www.climate.noaa.gov).

- NOAA requests \$6.3 million for Climate Data and Information. This request includes an increase of almost \$3 million above the FY 2006 enacted level for the U.S. Global Climate Observing System (GCOS) program, which provides critical climate and ocean observations in the Pacific.
- NOAA requests \$0.9 million for Climate Operations, an increase of \$0.5 million over the FY 2006 enacted level. This request includes \$200,000 for the Pacific El Niño Southern Oscillation Applications Center (PEAC).

*Project highlights in the Pacific region:*

- NOAA's twenty-year partnership with the Japan Marine-Earth Science and Technology Center (JAMSTEC) remains strong and fruitful, and includes both research and ocean observations to detect and monitor changes in the equatorial Pacific due to climate variability and change such as El Niño. Scientifically, NOAA and JAMSTEC continue to jointly develop collaborative research projects that utilize TAO (NOAA) and TRITON (JAMSTEC) moored buoy data in the Pacific and Indian Oceans. Observationally, the TAO-TRITON array of 72 moored buoys spans the entire Pacific Ocean along the equator with Japan being responsible for 12 moorings that are West of 165 °E longitude and NOAA responsible for the 60 moorings located in the central and eastern equatorial Pacific. JAMSTEC and NOAA's Pacific Marine Environmental Laboratory have worked together to assure that the TAO-TRITON buoy data provide free, open, and timely data exchange for the global community.
- NOAA and its extramural partners at the East-West Center, the University of Hawaii, the University of Guam, and other agency partners in the Pacific Risk Management Ohana continue their substantial collaboration toward the development of an integrated, regional climate information system for the Pacific. This system will integrate climate observations, research, operational forecasting, assessment and information management activities supported by NOAA into a single, integrated program. This coordinated effort will provide a strong U.S. contribution to the emergence of a multi-national Pacific Regional Climate Centre under the auspices of the World Meteorological Organization.
- In FY 2006, NOAA, the National Aeronautics and Space Administration and Japan jointly fund the International Pacific Research Center's Asia-Pacific Data Research Center (APDRC). The vision of the APDRC is to link data management and preparation activities to research activities within a single center, and to provide one-stop shopping of climate data and products to local researchers and collaborators, the national climate research community, and the general public. Data management tools from the APDRC support regional and international climate research programs such as Global Ocean Data Assimilation Experiment and Climate Variability program.
- In September 2005, a data integration activity entitled the NOAA Integrated Data and Environmental Applications (IDEA) Center was begun under the auspices of NOAA's National Climatic Data Center. The NOAA IDEA Center concept originated in FY 2005 as a means for better supporting Pacific environmental information activities. A significant part of the NOAA IDEA Center's work in FY 2005 was centered on the Pacific Region Integrated Data Enterprise (PRIDE) proposal process, in which 14 PRIDE proposals were funded in FY 2005 across four NOAA line offices by partnering joint resources with the International Pacific Research Center. Proposals were funded in the following three thematic areas: (1) Coastal and Climate Communities; (2) Marine and Coastal Ecosystems; and (3) Risk Management. For FY 2006, 39 PRIDE proposals have been submitted for consideration for funding; final decisions for selecting proposals for funding will be made mid-April 2006.
- Since 2003, the U.S. (led by the State Department) has entered into a number of important bilateral climate agreements. Specifically, the U.S. Global Climate Observing System (GCOS) Program Office is involved in funding projects with Australia and New Zealand that directly relate to furthering the progress of GCOS and the Global Ocean Observing System in the region. The bi-lateral agreements cover a wide range of projects dealing with climate prediction, ocean observing, stratospheric detection, water vapor measurements, capacity building and training, and communication of information, and will focus the attention and resources of all these countries toward developing a more sustainable and robust GCOS program.

For example, NOAA is implementing two new projects in conjunction with the National Institutes of Water and Atmosphere (NIWA) in New Zealand. The first one involves the implementation of a global stratospheric water vapor measurement station in Lauder, New Zealand. Water vapor is a key climate forcing agent, and this new monitoring site will complement an existing site in Boulder, Colorado, which has been taking similar high quality upper air water vapor measurements since 1980. A second significant project involves the implementation of a new ship track for trace gas measurements that has been installed on a car carrier ship on a route between Nelson, New Zealand, and Nagoya, Japan. This is a brand new route and is unique in that it crosses both the Inter-Tropical and South Pacific convergence zones which are key areas of study from a global climate standpoint. The Japanese have also been a great partner in this as they provide the laboratory space on the ship at no charge to the project.

*Question 23.* Why does the NOAA budget zero out funding for continuing international research on climate throughout the Pacific basin through the International Pacific Research Center?

Answer. While we recognize that climate research is extremely important, budgetary constraints prevent NOAA from requesting support for the International Pacific Research Center. The Administration's FY 2007 budget request reflects the priorities of the President and the Department of Commerce. Given the current fiscal climate, NOAA's request is focused on meeting core mission responsibilities, and only requests those increases which are required to support NOAA's programs.

*Question 24.* Is any funding provided for IPRC in the President's budget, including outside of NOAA, such as in NASA? If so, where and how much funding is proposed?

Answer. NASA has supported data analysis, research, and modeling at the International Pacific Research Center (IPRC) for the last 5 years with a total grant of \$5M. NASA Headquarters is now waiting to receive a follow-on proposal from IPRC for another 5 years of funding starting in early FY 2007.

NASA is planning for a total funding level for IPRC over the next 5 year period. Historically, annual increments have varied over time depending on the spending rate and requirements at IPRC. Planned funding levels will be evaluated in light of the budgets provided for the Science Mission Directorate and the total Research & Analysis budget available, with the very modest growth expected in NASA's Science Mission Directorate funding during this period.

The proposal from IPRC to obtain NASA funds will undergo scientific peer review and funding is contingent upon success of this process. If successful, a nominal start date of the funding is planned for 1/1/07. It is expected that IPRC investigators will submit competitive proposals to NASA Research Announcements and we expect that this can supplant funding through an unsolicited institutional grant by 2012.

#### **Aviation/Weather Forecasting and Public Safety**

*Question 25.* Air Traffic Controllers in Honolulu have informed me that the staff which have been leaving are not being replaced . . . this has led to a shortfall of up to a dozen controllers in their ranks. Is it true that NOAA is planning to remove meteorological support from half or more of the Nation's Air Traffic Control Centers at the request of the FAA? What is the basis for such a decision, as well as the proposed schedule?

Answer. NOAA does not plan to remove meteorological support from half or more of the Nation's Air Route Traffic Control Centers. However, the FAA has requested the National Weather Service (NWS) work with them to review, upgrade, and make the Center Weather Service Unit (CWSU) forecast process for the Air Route Traffic Control Centers (ARTCC) more efficient. Specifically, the FAA requested a 20 percent savings in manpower, which would save the FAA approximately \$2M each year, with concurrent improvements in services. Later this summer (2006) the NWS is planning to conduct field tests to address the FAA request.

*Question 26.* Have you or FAA calculated the risks to the flying public of taking this step? How will this affect capacity of the National Air Space?

Answer. The demonstration project outlined in response to question 25 (above) will provide information for the FAA to make that determination. However NWS believes the prototype demonstration project will show a strengthening of the forecast process and an overall improvement in the consistency, relevancy and accuracy of the weather information provided, therefore, enhancing the safety and capacity of the National Air Space.

*Question 27.* Please provide copies of any correspondence to or from the FAA on this issue.

Answer. Please see attached correspondence.

## ATTACHMENT

U.S. DEPARTMENT OF COMMERCE, NATIONAL OCEANIC AND ATMOSPHERIC  
ADMINISTRATION, NATIONAL WEATHER SERVICE  
*Silver Spring, Maryland, November 10, 2005*

Mr. MICHAEL J. SAMMARTINO,  
Director of System Operations,  
System Operations Services (AJR-1),  
Federal Aviation Administration,  
Washington, DC.

Dear Mr. Sammartino:

Thank you for your letter of September 23, 2005, outlining FAA's requirements for restructuring the Center Weather Service Units (CWSU).

This past August, I charged three teams to: Develop an Organization-wide Concept of Operations, Consolidate Data-level IT Management, and Secure the NWS Role in the Provision of Aviation Products and Services. As you know, Kevin Johnston is leading the Aviation Team. This team will deliver their final proposal to me and the NWS Corporate Board in mid-December 2005. The requirements you provided are being addressed in this plan.

Together, we will need to work hand-in-hand to ensure we implement our recommended plan. To that end, let's plan to meet before the end of the year to discuss the plan and the path forward. I will have Kevin arrange the meeting.

Sincerely,

DAVID L. JOHNSON,  
*Assistant Administrator for Weather Services and Director.*

FEDERAL AVIATION ADMINISTRATION  
*Washington, DC, September 23, 2005*

Gen. D.L. JOHNSON,  
Assistant Administrator for Weather Services,  
National Weather Service/NOAA,  
Silver Spring, MD.

RE: (1) E-MAIL FROM J. KIES/AAT TO DL JOHNSON/NWS (8/25/04)

Dear Gen. Johnson:

The delivery of weather services is vitally important for air traffic strategic planning and tactical decisions that maintain safe and efficient operations of the National Airspace System (NAS). These services are needed at the national, regional, and local level.

The Center Weather Service Units (CWSUs) that are collocated at FAA field sites are the primary point of delivery for aviation weather services. They have the potential to be an essential linkage between weather services and the operators and managers of the NAS. After 25 years of operations, and in response to many forces for change, the time has come to modernize the organization and functions of the CWSUs. Ref. (1).

The goal is to substantially improve the capabilities for delivery of aviation weather information and to transform the current collection of isolated units into a national program for weather support to FAA field sites. The needs that are stated here are intended to transform and restructure weather services into a national program with a new mission, national standards, new forecast products, and substantially improved services. Implicit in this restructuring the need for consolidation of the existing CWSUs.

Our user needs are listed in Section 4 of the report, *Statement of User Needs*. The changes that are required may be summarized, as follows:

Location: Consolidate the current 20 CONUS units into a smaller number of sites; at this time Alaska may continue to operate a CWSU at Anchorage Air Route Traffic Control Center (ZAN).

Mission: Maintain continuous surveillance of adverse weather that has potential to affect any phase of flight within the NAS; provide timely forecasts and warnings of hazardous weather to air traffic management throughout the transition between strategic decisions and tactical adjustments; deliver forecast products and services 24 hours per day, 7 days per week.

Standards: Establish a new concept of operations that addresses the new mission and incorporates uniform national standards, but allows flexibility to adjust to local needs.

**Products:**

1. Hub forecasts out to 8 hours in advance, updated hourly for select terminals (approximately 35) including estimates of capacity.
2. Hub advisories for hazardous weather, 1 hour in advance.
3. TRACON forecasts, including estimates of capacity.
4. TRACON advisories for hazardous weather, 1 hour in advance.
5. Route forecasts including estimates of capacity.
6. Contributions to the Collaborative Convective Forecast Product (CCFP) as a priority during the summer convective season.

**Services:** Due to consolidation and not being collocated with all FAA field sites, there is a need to develop and deploy remotely a capability for an interactive weather briefing.

**Collaboration and Dissemination:** Forecasts and Advisories need to be delivered to TMUs in Centers and TRACONs (and some ATCTs) within each area of responsibility. Collaboration with other centers and national centers is expected.

**Resources:** Investment analysis conducted by the FAA has demonstrated that re-structured CWSU products and services can be provided while reducing personnel costs by 20 percent with a cost savings of approximately \$2M/year in personnel costs alone.

**Training:** Coursework is needed on traffic flow management (TFM); likewise on-the-job training at ARTCCs and the Air Traffic Control System Command Center (ATCSCC), and training presentations at ARTCCs and TRACONs are needed.

This summary of FAA needs for weather services is an opportunity to propose solutions. We encourage the National Weather Service (NWS), as our current provider of weather products and services, to propose a response to these needs that would substantially improve the level of aviation weather services provided by the CWSU to FAA operational facilities.

Sincerely,

MICHAEL J. SAMMARTINO,

*Director of System Operations, System Operations Services (AJR-1)*

**Question 28.** Advances in cloud ceiling measurement technology may provide a new way of making aviation safer and more efficient. You have already made a significant investment in this approach, but have not adopted its use—why not? What are the estimated benefits of such a technology to aviation safety and efficiency? What are the other potential returns on investment?

**Answer.** While the National Weather Service (NWS) continues to look at advances in technology, operational requirements for observations are driven by the Federal Aviation Administration (FAA). Newer technologies can be brought into operation as older equipment is replaced, but NWS will focus on meeting FAA requirements for observations.

### **Ballast Water Management**

**Question 29.** From the zebra mussel fouling the facilities and shores of the Great Lakes, to the noxious algae that choke the coral reefs of Hawaii, aquatic invasive species pose a serious threat to delicate marine ecosystems and human health. The economic costs are also staggering—the direct and indirect costs of aquatic invasive species to the economy of the United States amount to billions of dollars each year.

Managing invasive species in ballast water is a top priority nationwide. Aquatic invasive species are costing states millions of dollars annually. The U.S. Ocean Commission recommended specific action on this problem, and cited the need to require treatment of ballast water. Yet the President's budget request would zero out NOAA's ballast water demonstration project, which provides grants for developing promising new treatment technologies. Why?

**Answer.** Ballast water is the most significant pathway for introduction of aquatic invasive species into coastal waters, and NOAA recognizes its specific statutory responsibilities to develop new ballast water management technologies. Instead of including a specific request for the NISA/Ballast Water Demonstration Project, the FY 2007 President's budget requests \$2.5M for the Aquatic Invasive Species Program. This Program focuses on a broad range of invasive species prevention and control activities, which will include oversight of ballast water treatment technology development in FY 2007.

The President's FY 2007 budget requests a total of \$5.7M to continue NOAA's valuable work to combat invasive species, through the Aquatic Invasive Species Program, Great Lakes Environmental Research Laboratory, and National Sea Grant

College Program. This funding will support research relating to the prevention and control of ballast water invasive species introductions.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARIA CANTWELL TO  
VICE ADMIRAL CONRAD C. LAUTENBACHER, JR.

**Cuts in Marine Mammal Research Funding and Southern Resident Orcas**

*Question 1.* After a 17 percent decline in less than a decade, the Puget Sound Southern Resident orca was placed on the Federal endangered species list in November of 2005. As a keystone species, orcas are an indicator of ecological health and a critical component of the Puget Sound ecosystem. Therefore, understanding the reasons for the continued decline of orcas in Puget Sound is not only a prerequisite for effective protection, but will also provide scientists with information about the overall health of the Puget Sound ecosystem.

In NOAA's FY 2007 budget, \$18.883 million in funding for Marine Mammals is terminated from the National Marine Fishery Service's Protected Species Research and Management Program, continuing a recent downward trend in the budget since 2005 (FY 2005: \$81.504 million enacted, FY 2006: \$40.212 million enacted, FY 2007: \$23.110 million requested).

Will NOAA's FY 2007 budget request provide adequate funds for NOAA Fisheries to meet its statutory obligations to protect the Puget Sound Southern Resident orca under the Marine Mammal Protection Act and the Endangered Species Act?

Answer. The FY 2007 President's budget request includes \$400,000 for conservation and recovery of the Puget Sound orca population. Given the need to prioritize, we will likely focus on those activities having a statutory mandate and for which hard deadlines are imposed, such as completing section 7 consultations and critical habitat designation. We look forward to working with Congress, other Federal agencies, and the interested public as we decide how to allocate limited resources.

*Question 1a.* Over the last 4 years, Congress at my request has appropriated \$5.25 million for research to understand the reasons behind a decade-long decline in Puget Sound's Southern Resident orca population. Now that the Southern Resident orca has been listed as "endangered" under the ESA, how will the information gained from these funds be used to inform further recovery efforts and the development of a required conservation plan?

Answer. The \$5.25 million enacted over the past 4 years for Southern Resident killer whales has enabled us to develop a conservation plan and immediately implement several conservation actions. This funding was used to engage resource managers, industry, researchers, orca advocacy groups, and concerned citizens to develop a Proposed Conservation Plan under the MMPA, identifying actions necessary to restore the population. The Conservation Plan is being updated with new research results and incorporating public comments and it will be revised to become an ESA Recovery Plan now that Southern Resident orca population is listed under the ESA.

With the funding provided for the past several years, various long-term research projects have been initiated to help us understand the threats that may be responsible for the Southern Residents' decline. Research results have already provided guidance for our immediate conservation actions. This funding has also allowed us to increase on-water enforcement and raise awareness about responsible whale watching.

In addition, high levels of newly emerging contaminants, such as flame retardants, have been documented in killer whales and their prey species. These findings have increased awareness about impacts from pollution on declining species and our environment, provided information pertinent to human health issues, and are included in initiatives by the Washington Governor's Office to clean up and protect Puget Sound.

*Question 1b.* In the FY 2007 President's budget, \$18.883 million in funding for marine mammals is terminated from the National Marine Fishery Service's Protected Species Research and Management Program. Please describe the impact that this reduction would have on existing NOAA programs?

Answer. The FY 2007 President's request terminates \$18.9 million in Congressionally-directed funds. Funding that will be terminated as part of the request under marine mammal activities includes the following lines: the Mississippi Center for Marine Education and Research (\$4.931M), Mississippi Institute for Marine Mammal Studies (\$2.466M), Shedd Center for the Great Lakes (\$247K), North Pacific Fixed Gear Research (\$148K), Marine Mammal Initiative (\$4.931M), Right Whale Activities (\$1.913M; NMFS FY 2007 request for this line is below the enacted

level), and Bottlenose Dolphins (\$1.972M). The FY 2007 President's budget request sufficiently funds our base programs.

We have requested an increase for some of the base marine mammal activities, which is included in the Protected Species Research and Management Programs line (part of the \$5.825 million increase). Although the overall net request is lower than the FY 2006 enacted level, NOAA will be able to address its mandates within the context of other competing agency priorities.

*Question 1c.* Is the current level of funding for marine mammals in NOAA's FY 2007 budget adequate to meet the obligations for protection of newly-listed Southern Resident Orcas under the ESA?

Answer. The FY 2007 President's Budget request includes \$400,000 for conservation and recovery of the Puget Sound orca population. Given the need to prioritize, we will likely focus on those activities having a statutory mandate and for which hard deadlines are imposed, such as completing section 7 consultations and critical habitat designation. We look forward to working with Congress, other Federal agencies, and the interested public as we decide how to allocate limited resources.

*Question 1d.* With such a drastic cut of funding, what other programs will likely be terminated with this funding request level?

Answer. Activities using funding from these lines that will be no longer be continued include some North Pacific Southern Resident orca research, a portion of the ESA right whale activities focused on ship strike and entanglement reductions, and marine mammal health and stranding response activities funded under the Marine Mammal Initiative. Some activities currently funded with the Congressionally-directed Marine Mammal Initiative are requested as part of the increase in the Protected Species Research and Management line for stock assessments, marine mammal permitting, take reduction planning, and recovery planning and implementation.

#### **ESA Orca Recovery Planning**

*Question 2.* The \$1.5 million Congress appropriated in FY 2006 for Puget Sound orca research was cut along with many other important programs. However, because of the recent listing of the Southern Resident orca population as "endangered" under the ESA, NOAA did request money to pay for the recovery planning process. A total of \$2.8 million was requested for a general fund in the Protected Species Research and Management Program to address recovery planning for several different species, orca being one of them.

Can you tell me how much of that \$2.8 million will go to orca recovery planning? What exactly will be accomplished with this money?

Answer. The FY 2007 President's budget request includes \$400,000 for conservation and recovery of the Puget Sound orca population. Given the need to prioritize, we will likely focus on those activities having a statutory mandate and for which hard deadlines are imposed, such as completing section 7 consultations and critical habitat designation. We look forward to working with Congress, other Federal agencies, and the interested public as we decide how to allocate limited resources.

*Question 2a.* While recovery planning is certainly an important element of meeting ESA obligations, what comes next for restoring Southern Resident orcas? Where will the money come for this? What actions will NOAA take in response to this ESA listing?

Answer. Both our general authorities and the Endangered Species Act provide a number of tools for NOAA to recover killer whales. Even before the listing, the agency mounted an intensive and extensive outreach program called "Be Whale Wise" to educate boaters in Puget Sound about the importance of avoiding killer whales. We coordinated this education campaign with Canada, whose inland waters are also home to the whales, and with Washington State, which enforces a number of laws and regulations in inland waters. In the future we may wish to adopt mandatory regulations to keep vessels a safe distance from the whales.

With listing under the ESA, we have additional tools to aid recovery. Federal agencies taking actions that may affect the whales are required to consult with NMFS to ensure those actions are not likely to jeopardize the whales. Once we complete critical habitat designations (we anticipate proposing designation shortly), those consultations will also help ensure Federal actions are not adversely modifying the whale's critical habitat. Also with listing, Southern Resident killer whales are afforded ESA protections on top of the MMPA protections. NOAA enforcement officials are working closely with Washington State, which has a major enforcement presence in inland waters, to enforce the take prohibition.

*Question 2b.* Do NOAA offices in Seattle have sufficient funding and staffing resources to handle any additional responsibilities associated with what is likely to be an increased workload due to this listing?

Answer. The ESA listing just took effect and consultation requests are just beginning to arrive. We will be looking at these consultation requests in conjunction with other requirements and will prioritize them within our current resources.

### **Pacific Salmon Recovery**

*Question 3.* In 2000, NOAA established The Pacific Coastal Salmon Recovery Fund (PCSRF) to augment state, tribal and local programs to conserve and restore sustainable Pacific salmon populations and their habitats. Money from the PCSRF goes toward salmon restoration in Alaska, Washington, Idaho, Oregon and California. From 2000–2005, Congress appropriated on average \$87.4 million per Fiscal Year to the PCSRF. Of this, Washington State received on average \$26.8 million per Fiscal Year to fund critical salmon recovery projects. Since 2001, funding of the PCSRF had never dipped below \$88 million.

However, FY 2006 appropriations marked a dramatic reduction in program funding. Despite an initial request of \$90 million and support in the Senate for full appropriations of this figure, debate in the House slashed funding to \$67.5 million—nearly a 30 percent cut. The President's FY 2007 request of \$66,825,000 is the lowest in 6 years and risks continued reductions to this program.

Given the listing of the Southern Resident orca population, erosion of salmon funding could not have come at a worse time. Salmon are the dietary foundation of Southern Resident orcas. Dwindling salmon runs, especially Chinook salmon, it is speculated, could be a factor leading to declining orca populations.

Please explain the logic behind NOAA's budget request of \$68.825 million for the Pacific Coastal Salmon Recovery Fund. What specific programs will be decreased or eliminated by these cuts? If this budget level is appropriated, how will it affect NOAA's salmon recovery performance metrics? What about its PART score?

Answer. In 2000, Congress established the Pacific Coastal Salmon Recovery Fund (PCSRF). The FY 2006 President's request for the Pacific Coastal Salmon Recovery Fund (PCSRF) was \$90 million—Congress enacted \$66.571 million. The FY 2007 President's request is in line with the Congressional conclusion that the FY 2006 enacted level is sufficient to continue the program. This FY 2007 requested level would be sufficient only to address ESA-listed stocks. Funding would not be available for non-ESA listed stocks. This request level will not have a negative impact on NOAA's salmon recovery performance metrics or its PART score.

*Question 3a.* Does it make sense to cut Salmon restoration funding just as we need to be thinking about new ways to protect Southern Resident orcas? A 2005 report from Fisheries and Oceans Canada<sup>1</sup> strongly correlates periods of decline in Chinook salmon population numbers with Southern Resident orca mortality. Can you please comment on this report in light of cuts to the PCSRF and the recent listing of the Southern Resident orca population to the ESA?

Answer. Although reduced salmon as prey for orcas is an area of concern, more research is needed to determine direct relationships between the abundance of certain salmon populations and the status of resident killer whales. The PCSRF is maintaining its goal to increase salmon and steelhead, and this will benefit the whales.

*Question 3b.* How will these cuts affect recent changes to Federal salmon recovery priorities?

Answer. We will be working with the states to prioritize projects and recovery needs within the funding provided.

*Question 3c.* How will these cuts affect our Nation's treaty obligations to federally-recognized tribes?

Answer. The proposed reductions would not adversely affect our Nation's treaty obligations to federally-recognized tribes.

*Question 3d.* How will these cuts impact commercial fishing in the Pacific Ocean?

Answer. The cuts will not impact commercial fishing in the Pacific Ocean, as commercial fisheries are not directly impacted by the PCSRF funds. But over time, as salmon habitat is improved, we expect to see increased productivity of habitat resulting in more salmon for harvest in the ocean, which will aid commercial fishing.

<sup>1</sup>Ford, John K.B.; Ellis, Graeme M.; and Olesiuk, Peter F. 2005. *Linking prey and population dynamics: Did food limitation cause recent declines of "resident" killer whales (Orcinus orca) in British Columbia?* Report published by Fisheries and Oceans Canada. Available online at <http://www.dfo-mpo.gc.ca/csas/>.

### Tsunamis

*Question 4.* In response to the 2004 Indian Ocean tsunami, the Bush Administration pledged \$37.5 million toward expanding the U.S. Tsunami Warning Program to protect lives and property along all U.S. coasts. The FY 2007 budget request includes a \$14.399 million increase in funds, from \$6.016 million enacted in FY 2006 to \$20.415 million requested in FY 2007, for the National Weather Service to strengthen the U.S. Tsunami Warning Network. While tsunamis continue to threaten our coasts, warning networks provide the critical time needed to evacuate vulnerable areas and protect human life.

I'm pleased to see the Administration follow through on their \$37.5 million pledge to get the Nation moving in the right direction with respect to tsunami preparedness. In the aftermath of the Indian Ocean tsunami, it became abundantly clear that a similar tsunami could devastate our own shores. What has the last 2 years of funding bought us in terms of preparedness? I'm wondering if you can give specific examples of how these funds have been spent to reduce the risk to human life from tsunamis. Have the number of "TsunamiReady" coastal towns increased? Has response time to a warning decreased?

Answer. NOAA, working in partnership with the U.S. Geological Survey (USGS), has made significant progress in implementing the Administration's commitment to strengthen the Nation's Tsunami Warning Program. NOAA implemented 24/7 operations at its Tsunami Warning Centers to provide quicker warnings. Expansion of the DART tsunami warning buoy network down the Pacific Coast has also added to each Center's ability to quickly assess tsunami potential. Increased emphasis on community participation has increased the number of TsunamiReady locations to 28, which is an 80 percent increase since December 2004. NOAA has accelerated mapping and forecast modeling efforts, and expanded the collection of bathymetric data in vulnerable coastlines. The additional funding has allowed the number of completed models to be increased from 3 to 9. By the end of FY 2006, we are scheduled to complete 8 additional models, for a total of 17. The 2007 budget requests funding for an additional 9 models to be added, and the forecast operating system software will be transferred to the Tsunami Warning Centers.

The corresponding funding increase for USGS is being used to improve seismic monitoring and information delivery from the Advances National Seismic System (ANSS) and the Global Seismographic Network (GSN), which is jointly funded and operated by USGS, the National Science Foundation, and the IRIS Consortium. Funds are also used to improve understanding of historical tsunamis and their effects. The USGS has implemented 24/7 operations at the National Earthquake Information Center; made telemetry improvements to the GSN and expanded that network in the Caribbean; provided enhanced delivery of data to NOAA's Tsunami Warning Centers through new hardware and software investments; and has begun work to enhance tsunami inundation mapping in the Caribbean, Atlantic, and Gulf of Mexico.

*Question 4a.* What gaps remain and what will they cost?

Answer. The FY 2007 budget request continues the Administration's commitment to strengthen the U.S. Tsunami Warning Program. NOAA has expanded and accelerated its tsunami inundation, mapping, modeling and forecast efforts as well as its TsunamiReady (tsunami mitigation) programs thanks in part to supplemental emergency funding requested by the Administration and provided by Congress in FY 2006. These funds are being used to leverage a larger coastal survey effort at NOAA and targeting coastlines where to improve data on hazard assessment, including the coastlines of Puerto Rico and Alaska. NOAA is continuing to accelerate and expand the coverage and quality of modeling and mapping efforts by NOAA and its Federal and state partners through the National Tsunami Hazard Mitigation Program. While the overarching focus of this modeling and mapping effort embraces the three integrated components of the National Tsunami Hazard Mitigation Program: (1) Improving Tsunami Warning Guidance; (2) Improving Tsunami Hazard Assessment; and (3) Improving Tsunami Mitigation, financially NOAA's initial efforts to strengthen the U.S. Tsunami Warning System have been on improving tsunami warning guidance. This has included expanding NOAA's DART station network, expanding/upgrading NOAA's sea-level reporting network, expanding/upgrading NOAA's seismic networks and upgrading the operations of NOAA's two Tsunami Warning Centers to 24/7 operations. Funds provided to USGS have lead to improved global earthquake detection and faster reporting of earthquake data for tsunami warning.

*Question 4b.* How will ongoing efforts at the Pacific Marine Environmental Laboratory be enhanced by increased funding?



Answer. NOAA's Pacific Marine Environmental Laboratory (PMEL) is an integral component in NOAA's program to strengthen the U.S. Tsunami Warning Program. The President's FY 2007 budget request includes an increase of \$0.3M (and 3 FTEs) for PMEL to manage the program's expanded tsunami inundation, mapping and forecast efforts for all U.S. communities at risk and accelerate the development of the fundamental scientific and technical products and detection systems essential to improve tsunami forecast coverage and data needed for rapid and reliable tsunami warnings.

PMEL will also receive \$2M to continue implementation of NOAA's tsunami inundation mapping, modeling and forecast efforts and will continue to receive research and development funding to improve DART buoy reliability, cost-effectiveness and capabilities (\$0.5M). These activities are funded at the same level as FY 2006.

*Question 4c.* What is the current timeline for development of more deep water detection buoys off the Pacific Coast? Have all existing buoys been fully functional this past Fiscal Year?

Answer. There are four DART stations off the United States West Coast. This is the final number planned for this area. The two northernmost buoys (off Washington and Oregon) had their mooring lines severed (most likely by long line fishermen) in November and February, respectively. Both were restored to operational status in mid-April.

There are currently 14 operational DART stations and one non-operational station. The non-operational DART station is in the far western Aleutian; its surface buoy is adrift. This station is scheduled for a July/August 2006 service visit; during this Alaska cruise, four new DART stations will be deployed in the North Pacific.

NOAA will continue to deploy DART stations until early 2008, at which time there will be a total of 39 DART stations in the United States: 32 in the Pacific and 7 in the Atlantic/Caribbean Sea.

#### **Climate Change and Hurricane Controversy**

*Question 5.* The FY 2007 NOAA budget proposal has aggregated all climate research funding into one line with no detail on science funding in the documents submitted to Congress, but the budget indicates it has eliminated funding for research on abrupt climate change. Recent allegations of political manipulation of climate and other science, as well as the Administration's refusal to comply with the 1990 Act's requirement to conduct a national climate assessment, have generated concern not only over fiscal support for the programs at NOAA but also over the focus of such research and the role the White House plays in setting scientific priorities.

NOAA has recently come under fire in the press and the scientific community for taking a strong position denying that climate change impacts the intensity and frequency of hurricanes in the Atlantic and Gulf of Mexico. Two recent studies published in the journals *Nature* and *Science* by well-respected climate scientists have suggested that there may indeed be a link between global warming and an upward trend in the destructive potential, or intensity, of tropical cyclones.

While I'm pleased to see increases in FY 2007 program funding for Climate Research Labs, Climate Data and Information, the Competitive Climate Research Program, and Climate Operations, I am concerned about some of the cuts related to climate change.

Given the debate over whether or not climate change is contributing to the intensity and frequency of hurricanes, it seems clear to me that more research is needed on the links between abrupt climate change, hurricane intensity, and the impacts to our coastal communities. The billions of dollars spent in the aftermath of hurricanes Katrina and Rita show just how expensive ignoring coastal vulnerability to natural disaster, climate change-driven or not, can be. Could you please explain to me the logic behind cutting funding for Abrupt Climate Change Research and Coastal Vulnerability to Climate Change?

Answer. Instead of including funding for the "Abrupt Climate Change Research" and "Coastal Vulnerability to Climate Change" programs, the President's FY 2007 budget requests \$5.0 million within five base programs for research. For example, the Climate and Global Change Program, Ocean Observations, and Carbon Cycle Observations, are three of these are programs through which NOAA describes and assesses the likelihood of environmental changes to cause the climate system to abruptly switch to a drastically different state. The President's request for these programs is included in the budget for the Office of Oceanic and Atmospheric Research/Climate Research/Competitive Research and the National Environmental Satellite, Data and Information Service World Data Center for Paleoclimatology. NOAA's research on abrupt climate change generates paleo-climate data sets such as ice cores, corals, tree rings, and ocean and lake sediments, interprets them and evaluates what additional observations are needed to detect early warnings of a pos-

sible abrupt climate change. The Global Ocean Observing System contributes to NOAA's abrupt climate change work by providing critical information on the role of the ocean in climate and the rate of climate change through changes in heat storage. The ocean data will be used to monitor key locations in the ocean for signs of possible abrupt climate change. NOAA also performs climate reconstruction in partnership with a NOAA Joint Institute at Columbia University Lamont-Doherty Earth Observatory to model climate over the past 2,000 years and identify abrupt changes.

*Question 5a.* Admiral, do you believe recent record average temperatures are linked in any way to human activity? Please describe these linkages.

Answer. In 2001, the National Research Council (NRC) released a climate change report which stated that, "Greenhouse gases are accumulating in Earth's atmosphere as a result of human activities, causing surface air temperatures and subsurface ocean temperatures to rise. [Global Average] Temperatures are, in fact, rising. The changes observed over the last several decades are likely mostly due to human activities, but we cannot rule out that some significant part of these changes is also a reflection of natural variability." I believe the NRC statement holds true today. Human activities are playing a role in recent increases observed in the temperature record, but the questions we have not answered include: How much of this observed warming is due to human activities? How fast and how large will future changes be? What are the most effective strategies for mitigating this effect? Is this observed change reversible?

The 2003 Climate Change Science Program Strategic Plan cites the results of the 2001 NRC report, acknowledges the fact that human activities influence climate change, and seeks to answer the tough questions that include understanding the impacts of human activities (*e.g.*, greenhouse gas emissions, methane, urban pollution, aerosols, etc.) on the entire climate system.

I believe it is clear that humans are influencing the climate system (including observed temperature increases), and NOAA and the CCSP as a whole are aiming to parse out the level of human impacts versus natural variability. Significantly more important research is yet to be done.

*Question 5b.* What is NOAA's official position on the link between global warming and the frequency and intensity of Gulf Coast hurricanes?

Answer. NOAA does not have an official position on the link between global warming and the frequency and intensity of Gulf Coast hurricanes. In comparison to the two previous decades, the 2005 Atlantic hurricane season was more active, *e.g.*, we experienced more hurricanes and more intense hurricanes. Data from before 1970 indicate earlier decades (1940s–1960s) that were as active as the recent one. The strong natural decadal variations, as well as changes in data quality, density, sources, and methodologies for estimating hurricane strengths, lie at the heart of arguments whether or not a global warming contribution to a trend in tropical cyclone intensities can be detected. The lack of understanding of natural decadal variability precludes definitive statements about how long the current active period will last. Hurricanes respond to a variety of environmental factors besides local ocean temperatures and atmospheric conditions. Climate impacts from outside the Atlantic basin can also dominate the forcing, *e.g.*, El Niño and La Niña. NOAA recognizes that only improvements to data sets, diagnostic studies for improved understanding, and systematic numerical experimentation studies will reveal the underlying causes for the recent active period and for how long this period will last.

NOAA has several research, modeling, and operational activities ongoing to increase our understanding of this possible linkage:

- *National Weather Service (NWS)/National Centers for Environmental Prediction (NCEP)/Climate Prediction Center*—intraseasonal to multi-season climate forecasts; seasonal hurricane forecasts; diagnostic studies of major climate anomalies; real-time monitoring of climate.
- *NWS/NCEP/Tropical Prediction Center/National Hurricane Center*—operational hurricane forecasts.
- *National Environmental Satellite, Data and Information Service/National Climatic Data Center*—official archive for climate data sets; analyses of climate trends.
- *Office of Oceanic and Atmospheric Research (OAR)/Atlantic Oceanographic and Meteorological Laboratory/Hurricane Research Division & Physical Oceanography Division*—physical understanding of hurricane dynamics through use of research aircraft and field studies; improvements to hurricane track and intensity forecasts; monitoring of Atlantic Ocean circulations; studies of Atlantic climate.

- *OAR/Geophysical Fluid Dynamics Laboratory*—studies of climate variability and change; development and use of the required climate models; development of models used for operational hurricane forecasts by NOAA and the Navy; numerical studies of climate impacts on hurricanes and their decadal variability.
- *OAR/Climate Program Office*—intramural and extramural support for development of a predictive understanding of the climate system, the required observational capabilities, delivery of climate services.

*Question 5c.* Have any NOAA, or NOAA-funded, scientists written peer-reviewed articles that may in any way be interpreted as making a link between global warming and the frequency and intensity of Gulf Coast hurricanes? Please list those articles and relevant passages.

Answer. (1) Knutson and Tuleya, 2004; “Impact of CO<sub>2</sub>-induced warming on simulated hurricane intensity precipitation: Sensitivity to the choice of climate model and convective parameterization” (<http://www.gfdl.noaa.gov/reference/bibliography/2004/tk0401.pdf>) NOTE: This article does not address the Gulf specifically, but it does show the simulation results showing a slight increase in intensity and precipitation.

*Abstract:* “Previous studies have found that idealized hurricanes, simulated under warmer, high-CO<sub>2</sub> conditions, are more intense and have higher precipitation rates than under present-day conditions. The present study explores the sensitivity of this result to the choice of climate model used to define the CO<sub>2</sub>-warmed environment and to the choice of convective parameterization used in the nested regional model that simulates the hurricanes. Approximately 1,300 five-day idealized simulations are performed using a higher-resolution version of the GFDL hurricane prediction system (grid spacing as fine as 9 km, with 42 levels). All storms were embedded in a uniform 5 m s<sup>-1</sup> easterly background flow. The large-scale thermodynamic boundary conditions for the experiments—atmospheric temperature and moisture profiles and SSTs—are derived from nine different Coupled Model Intercomparison Project (CMIP21) climate models. The CO<sub>2</sub>-induced SST changes from the global climate models, based on 80-yr linear trends from 11 percent yr<sup>-1</sup> CO<sub>2</sub> increase experiments, range from about 10.88 to 12.48C in the three tropical storm basins studied. Four different moist convection parameterizations are tested in the hurricane model, including the use of no convective parameterization in the highest resolution inner grid. Nearly all combinations of climate model boundary conditions and hurricane model convection schemes show a CO<sub>2</sub>-induced increase in both storm intensity and near-storm precipitation rates. The aggregate results, averaged across all experiments, indicate a 14 percent increase in central pressure fall, a 6 percent increase in maximum surface wind speed, and an 18 percent increase in average precipitation rate within 100 km of the storm center. The fractional change in precipitation is more sensitive to the choice of convective parameterization than is the fractional change of intensity. Current hurricane potential intensity theories, applied to the climate model environments, yield an average increase of intensity (pressure fall) of 8 percent (Emanuel) to 16 percent (Holland) for the high-CO<sub>2</sub> environments. Convective available potential energy (CAPE) is 21 percent higher on average in the high-CO<sub>2</sub> environments. One implication of the results is that if the frequency of tropical cyclones remains the same over the coming century, a greenhouse gas-induced warming may lead to a gradually increasing risk in the occurrence of highly destructive Category 5 storms.”

(2) The Geophysical Fluid Dynamics Laboratory Climate Change and Hurricanes Web Site lists additional relevant references: [http://www.gfdl.noaa.gov/~tk/glob\\_warm\\_hurr.html](http://www.gfdl.noaa.gov/~tk/glob_warm_hurr.html).