

# FRIENDS OF NOAA COALITION

<http://www.friendsofnoaa.org/>

Statement of Dr. Len Pietrafesa  
Professor, Ocean & Atmospheric Sciences  
Associate Dean  
North Carolina State University  
on behalf of  
The Friends of NOAA Coalition  
before the  
Subcommittee on Energy and Environment  
Committee on Science and Technology  
House of Representatives  
Washington, D.C.  
March 22, 2007

Mr. Chairman and Members of the Subcommittee – thank you for this opportunity to participate in this hearing regarding the National Oceanic and Atmospheric Administration (NOAA) and its budget proposal for fiscal year 2008.

My name is Len Pietrafesa. I am a Professor of Ocean and Atmospheric Sciences and an Associate Dean at North Carolina State University. I am the immediate past chair of the NOAA Science Advisory Board, a member of the Board of Trustees of the University Corporation for Atmospheric Research and have been a Governor on the Board of the Consortium for Oceanographic Research and Education, Chair of the National Council on Ocean Affairs and Chair of the National Association of State Universities and Land Grant College Board on Oceans and Atmosphere.

Today, I am appearing on behalf of the Friends of NOAA Coalition. The Coalition consists of over 40 different organizations, institutions, and groups from the academic community, the environmental community and the private sector, including such organizations as the Shipbuilders Council of America, the Consortium for Oceanographic Research and Education, the Reinsurance Association of America, the National Marine Sanctuary Foundation, the Joint Ocean Commission Initiative, the Alliance for Earth Observations, the University Corporation for Atmospheric Research, the National Association of Marine Laboratories, the Red Cross and The Weather Channel – just to name a few. Diverse though they are, each one of these organizations believes strongly in the effectiveness of NOAA and benefits from the products and services provided by the agency. I have attached to my testimony a copy of a recent letter sent by the Friends of NOAA Coalition to this and other Committees in support of an adequate budget for NOAA for FY 2008 (Attachment I).

The Coalition was formed last year to educate and inform policymakers and the public about the important role NOAA plays as a supplier of environmental data and information products, as the world's greatest environmental data archiving agency, as a

provider of environmental stewardship services, and as a leader in facilitating the conduct and integration of scientific research in support of the agency's critical missions. These missions are: to operationally, routinely forecast atmospheric, marine, space, aviation and road weather and climate, to understand and predict changes in the Earth's environment and to conserve and manage hydrologic, coastal and marine resources to meet our nation's economic, social and environmental needs.

The services, products and research results provided by NOAA -- from forecasting the weather to predicting coastal hazards to monitoring and anticipating solar disruptions of communications on Earth, to recognizing climate variability and forecasting climate, and from managing drought and wildfires and fisheries, to ensuring safe and healthy seafood, providing access to navigational information and vital community assistance and by facilitating scientific research that improves operations and applications -- touch the lives of every American and every facet of our economy. If funded at the \$4.5 billion level (\$15 per person annually) as recommended by the House Oceans Caucus and this Coalition, NOAA would be able to continue serving the extensive and varied interests and needs of our Nation. The American people need and deserve the most comprehensive and timely environmental information possible. The value of objective, timely, and accurate environmental information (save for D-Day) has never been greater.

Significant events in recent years -- the devastating tsunami following the Southeast Asian earthquake in 2004, the extent and ferocity of the 2004 and 2005 hurricane seasons, and the persistence and impact of the prolonged drought in the western United States -- all underscore the importance of NOAA's mission to the nation and the world. NOAA's National Weather Service and National Hurricane Center issued its forecast for Hurricane Katrina in a very timely manner-- a forecast that probably saved many tens of thousands of lives. Moreover, it is the integration of NOAA's wide range of activities that allowed the agency to deliver such valuable life-saving services and information to our citizens. This integrated system includes satellites in space, buoys at sea, coastal and ocean observatories, weather stations found in every state of the Nation with a national radar network that is the envy of the world, and the people who provide life saving information to those with responsibility for the public's safety at state and local levels.

A wide variety of government agencies, professional and community organizations, and private industry have a vested interest in NOAA's ability to meet its mission. Each has its respective role in being responsive and effective in serving the Nation's needs for economic strength, environmental vitality, and human health and thus relies on services from NOAA. As an agency, NOAA has responsibilities for maintaining and improving the viability of marine and coastal ecosystems, for delivering valuable weather, climate, and water information and services, for understanding the science and consequences of climate change, and for supporting and enhancing the global commerce and transportation upon which we all depend. To do so successfully in today's ever changing world, it must have strong Presidential and Congressional support and work in concert with its partners and stakeholders in federal, state, and local governments and private organizations.

## **The Importance of NOAA to the Nation**

Let me paint a picture of the economic importance of NOAA to the nation, garnering high returns and greatly reducing losses relative to the overall investment in the agency. According to statistics published by the Department of Commerce last spring, weather and climate sensitive industries, both directly and indirectly, account for about one-third of the Nation's GDP ranging from finance, insurance, and real estate to services, retail and wholesale trade and manufacturing. Industries directly impacted by atmospheric, space and marine weather such as agriculture, construction, air, highway and sea travel, energy distribution, and outdoor recreation account for nearly 10% of the Nation's GDP. Six billion dollars is lost annually in economic efficiencies as a result of air traffic delays, of which 70% is attributed to weather; such as the 3600 flights cancelled this past Saturday due to the ice and snow storm that pummeled the Northeast. Approximately seven thousand five hundred deaths and 1.5 million highway accidents occur annually across the Nation that are weather related. Total annual Federal spending for weather information is about \$25 per household (including aviation and defense, in addition to NOAA), which produces an annual benefit-cost ratio of 4.4 to 1 for U.S. households alone or net national benefits of \$8.8 billion a year. This does not include benefits in agriculture, transportation, construction or benefits to households in other countries that rely on weather information from the United States.

A report about to be issued (by the Centric Consulting Group of Savoy, IL) documents an assessment on the value of NOAA to various sectors of our society. Using temperature information from the National Climatic Data Center, the Homebuilders Association was able to adjust its building foundation depth code, resulting in an industry savings of \$250 M/year. The value of data from GOES R satellite sensors to the U.S. economy includes such sectors as aviation weather, the power industry, crop irrigation, recreational boating, tropical cyclone forecasting and thus emergency and health and risk management sectors.

NOAA's role as the primary management agency for our oceans and coasts also helps support the significant economic activity in these regions. Seventy-five percent of the nation's Gross State Product came from the coastal states in 2003. Almost half of the national economy came from the coastal watershed counties, and more than one-third came from those counties in which states operate their Coastal Zone Management programs. The near shore area, which is 4% of the nation's land, produces more than 11% of the nation's economic output. The portion of the U.S. economy that depends directly on the ocean is also large, with 2.2 million people employed and \$197 billion in output (gross state product) in 2003. Aquaculture represents a \$1 billion per year industry for fish farmers and produces \$6 billion per year in retail food; yet the Nation is presently importing 80% of the fish it consumes. Overall, U.S. citizens consume about 16 pounds of seafood per capita per year (half the global average) and, as the population continues to grow, the U.S. will need to find another 2 million metric tons of high quality seafood each year at a value of about \$2-8 billion per year. To address this need, by way of examples, research and outreach supported by the National Sea Grant College Program on Manila clams and blue mussels have resulted in new industries worth \$19 million annually and a \$25 M annual hybrid striped bass aquaculture industry..

Estimates of the economic impacts of harmful algal blooms in the United States average \$75 million annually. These impacts are the sum of different kinds of direct output impacts across four categories of effects: public health (divided between fish ciguatera and shellfish poisonings); commercial fishing; recreation and tourism; and monitoring and management costs. However, individual outbreaks can cause economic damage that exceeds the annual average. For example, outbreaks in the Chesapeake Bay in 1997 cost the Maryland seafood and recreational fishing industries almost \$50 million in just a few months. Lost sales of shellfish in Maine and Massachusetts due to closures imposed as a consequence of 2005 harmful algal bloom were estimated to be \$11 million for the months of May through September. Invasive algal blooms along Maui's Kihei coast cause over \$20 million in potential revenue lost each year to the State of Hawaii -- including reductions in property value and rental income, and increased clean up costs. NOAA can help mitigate these losses by funding the research necessary to uncover the conditions responsible for the blooms and then advise on how to eliminate them or how to anticipate them and take the necessary actions to reduce their impacts.

### **Integrated Earth Observation Capabilities and Leadership**

Integrated earth observation capabilities are vital to American competitiveness. The recently released National Research Council (NRC) report, the Decadal Survey, helps us realize that the U.S. Earth observation capability is not keeping up with expectations and needs and puts our Nation's global competitiveness at risk. For example, preliminary estimates of the potential economic benefits from new investments in an Integrated Ocean Observing System (IOOS) in U.S. waters range from \$500 million to \$1 billion per year, estimated largely in terms of increased economic activity and social surplus realized as a result of improved information about coastal marine conditions.

It is likely that this is a gross underestimate of the potential value of IOOS as the NOAA Science Advisory Board has issued the report Ocean Modeling which claims that interactively coupled atmospheric – ocean models with more real time air –sea data available to be assimilated into the models will greatly improve NOAA's ability to forecast the size, intensity and precipitation content of winter storms; such as dreaded Nor'easters which frequently impact the Nation's Capitol. The cost of an IOOS that builds out the essential federal monitoring backbone in the nation's coastal waters, including the Great Lakes, could well be \$250M/year in equipment, maintenance, ship and personnel costs. But what is the value to the Northeast from Charleston to Nova Scotia of greatly improved forecasts of the timing, amount and type of precipitation or of impending catastrophic storms in Barrow or the Great Lakes? It must be in the tens of billions per annum. Risk management requires investments in national infrastructure.

In a January 12, 2007, speech to the World Affairs Council, Lord Levene, Chairman of Lloyd's, provided a global insurer's perspective on catastrophe trends and climate change. He stated, "We cannot risk being in denial on catastrophe trends. We can expect to see US mega-catastrophes with 100 billion dollars insured losses soon. We urgently need a radical rethink of public policy, and to build the facts into our future planning." He

added, "The insurance industry will continue to play a vital role as enabler and rebuilders of the U.S. economy." U.S. environmental observing assets and the products provided are critical to ensuring that insurance and other sectors have accurate and timely information.

Currently, the annual economic return to the U.S. economy associated with NOAA's El Niño Ocean observing and forecast system is between 13 and 26%, which is significantly higher than the Office of Management and Budget's 5.8% minimum rate of return specified for Federal projects. To wit, we must have the global information infrastructure that is critical to our interconnected society. Comprehensive science information ensures that decisions will be made based on evidence rather than anecdotes. Long-term, sustained data is needed to document climate and identify trends. Without U.S. long-term climate data, the IPCC assessment would not have been possible.

Environmental sensors and remote observations improve our understanding and response to climate change and can help build enabling capacity to sustain U.S. competitiveness. Here again, in today's global, flat-Earth economy, innovation is the key to America's ability to prosper. The U.S. must stay at the forefront of Earth observation and geospatial technologies to better forecast and mitigate the impact of climate change, natural disasters and not only lead the competition but leave a more sustainable world for our children and their children. The motivations and aspirations of the next-generation workforce are being shaped today. We should be setting a long-range vision in place to encourage today's youth to pursue science, math, technology and engineering professions to assure future innovation and competitiveness. NOAA can aid and abet that process.

While satellites have been viewed as the panacea they are limited in their applications. As stated in the NRC report "Satellite observations have spatial and temporal resolution limitations and hence do not alone provide a picture of the Earth system that is sufficient for understanding all of the key physical, chemical, and biological processes." Thus, we need a system of space, ground (in-situ), airborne and ocean-based (in-situ) sensors, both public and private, that can gather complementary information and can be integrated with a minimum of duplication. Our commitment today to technology and greater knowledge of the Earth would allow us to better protect life and property and create unprecedented opportunities to promote economic vitality. The right instruments and information systems enable our ability to make forecasts that help anticipate outbreaks of infectious disease, ensure adequate water availability and quality, or increase agricultural productivity. NOAA can aid and abet the build out of the required infrastructure.

The recommendations by the NRC Decadal Report would enable a global view of issues and activities. But a global view alone is not sufficient to make policy or decisions. We need researchers, geospatial modeling and analysis that integrate NOAA data. We should promote the use of established standards and protocols to assimilate data from multiple sensors and sources—including commercial providers, state and local governments, academia and international partners—and provide the data through user-friendly web portals. The NOAA NESDIS National Climatic Data Center is the Nation's archive of weather, climate, satellite, sea level, radar, precipitation, etc. data that are so critical to

planning for all federal agencies, including the Department of Homeland Security and its Federal Emergency Management Agency, and private industry and academia. High quality, scrubbed, reliable data are available and can be used to conduct retrospectives and to develop disaster risk management based on physical, ecological and social sciences diagnostic assessments and prognostications. NOAA data is vital to this process.

The U.S. Commission on Ocean Policy, the Pew Commission, and the NRC Decadal report all call for increased funding to improve our current national earth monitoring capability. While funding is important, what is also needed is clear federal leadership to address key questions such as: What is our national vision for Earth observations? How are requirements from the Federal operational sector such as NOAA, USGS, USDA and EPA reflected in our research and development programs within NASA and NSF? Are requirements from the private sector being addressed? Leadership is essential to: protect these critical assets; develop a national Earth observation strategy to appropriately address climate change and other environmental challenges based on evidence over anecdote; assure economy and efficiency in agency plans and budgets; allow a smooth transition from research to operations to applications; improve U.S. land, atmospheric and oceanic -observing capabilities in equal priorities; improve capability and cooperation among government, private sector, academia, and non-governmental organizations; assure the much needed integration of our national and international Earth observation systems; and develop the products needed to make the best decisions for our country and future generations.

The NRC Decadal report recommends that the Office of Science and Technology Policy, in collaboration with the relevant agencies, and in consultation with the scientific community, should develop and implement a plan for achieving and sustaining global Earth observations. Then a single point of contact or lead agency – such as NOAA -- should be designated to assure complementary rather than duplicative or fragmented effort for all operational aspects of earth observation and analysis.

### **Climate Change Science**

Through their capacity to absorb and transport heat and carbon dioxide, oceans are key drivers of climate change processes. In addition, they are also undergoing significant short and long-term change over both large and small areas as evidenced by the increasing acidification of the oceans, climatic shifts associated with El Niño, dramatic changes in the amount of sea ice in the Arctic Ocean, rising sea level rise, and concern about possible abrupt climatic and ecological changes, particularly associated with shifts in ocean circulation.

Unfortunately, chronic under-funding of ocean and atmospheric science has prevented us from capitalizing on new technology and innovative ideas that would help address huge information gaps and significantly advance our understanding of atmospheric and ocean processes. Improved understanding of these processes will greatly enhance our ability to predict the economic and ecological ramifications associated with climate change. This information will be essential as Congress balances competing demands in the

development of new national policies to minimize and adapt to climate changes in the coming years and decades.

NOAA can provide critical value to the deliberations concerning climate change by highlighting the importance of significantly improving our knowledge of ocean and atmospheric processes (physical, biological, chemical, geological) to provide decision makers with the information they need to make intelligent, economic and ecologically sound decisions --as well as the capacity to monitor these system to evaluate the effectiveness of any new policy mandates. The need to reduce our carbon emissions/footprint is important but so is the need to improve climate science and to pursue new management approaches to adapt to the inevitable environmental changes that will occur in the coming years and decades.

A recent example of the advances that have been made but of a lack of resources to continue the exceptional research results that have been developed derives from a NOAA sponsored university cooperative partnership called Climate and Weather Impacts on Society and the Environment (CWISE). One of the many new advances made is the ability to predict in April, the number of hurricanes that will make land fall for an upcoming hurricane season on the U.S. eastern seaboard and the Gulf of Mexico (as was done in 2006), allowing for advanced planning. Unfortunately the program will not be continued, apparently because of a lack of NOAA resources to support the next phase of research which, within the next year, would have resulted in bi-state level forecasts, from Texas to Maine. How much value would this new information be to federal and state agencies, to offshore and coastal industries, to insurance and risk management companies and to society? This Committee has been out front in leading the fight for meeting the Nation's future scientific and technical workforce needs. But here, the funding for graduate students, who would be skilled in helping NOAA and society deal with future impacts of natural hazards, will be terminated and the students will not be allowed to finish their degrees.

### **Stewardship and Environmental Stability**

Beyond the economic benefits that NOAA provides to the nation, many of its activities and duties help to maintain environmental stability, help to support human health, and help to enhance national security. The conservation and stewardship aspects of NOAA are vital to these many benefits provided by the agency. Some examples include:

- NOAA works to preserve the nation's living marine resources by managing our fisheries and essential fish habitats for safe and sustainable harvesting and consumption, by protecting marine mammals under its jurisdiction, and by helping to implement the Endangered Species Act;
- NOAA protects our underwater treasures through the National Marine Sanctuary System, which maintain, monitor, and enhance the natural biodiversity, historical and cultural heritage, and other unique qualities of these areas, while enhancing

public awareness, understanding, and stewardship towards the marine environment; and

- NOAA helps manage the nation's coastal zones to balance competing demands, maintains a national network of monitoring programs that detect, quantify and forecast changes in coastal environmental quality, and works to protect coastal communities from the occurrence of disastrous oil and hazardous material spills and limiting the effects of spills on coastal resources that are vital to local economies.

### **NOAA Organic Act**

Many members of the Friends of NOAA Coalition believe that an organic act would be very useful to guide the continued development of the policies, priorities, and programs of NOAA. I would like to offer some suggestions on the issues to be addressed in the hope that Congress will move to enact an organic act for NOAA.

Both the U.S. Commission on Ocean Policy and the Pew Commission argued strongly for an organic statute for NOAA. I believe such a bill would significantly strengthen the agency by providing a clear mandate from Congress to the nation's lead civilian agency for oceans and atmosphere. The Joint Ocean Commission Initiative's recent report, *From Sea to Shining Sea*, also calls on Congress to codify and strengthen NOAA and thereby enhance its missions.

A comprehensive NOAA organic act should address the following key issues --

- Management – including the management of ocean and coastal areas and living and nonliving marine resources, including fisheries, ocean and coastal areas, vulnerable species and habitats, and protection from pollution and invasive species;
- Assessment, prediction, and operations for atmospheric, ocean, and coastal atmospheric environments, including mapping and charting, satellite-based and *in situ* data collection, implementation of the Integrated Ocean Observing System, broadly based data information systems, and climate and weather services and products; and
- Research and education on all aspects of oceanic and atmospheric resources, including a focus on the importance of research and development, the use of scientifically valid technical data throughout the agency and with external partners, and promotion of educational activities at all levels across the agency and with the public.

Within any NOAA organic act, beginning with a strengthened science program and a more service-oriented approach, NOAA should promote inclusiveness and a commitment to meaningful partnerships with other agencies, states, the private sector, and the



academic community. Where partnerships are strong, each institution benefits from the strengths of the others and the tendency to duplicate similar expertise and functions are minimized.

Extramural partnerships were stressed in the recommendations from the NOAA Research Review Team's *Review of the Organization and Management of Research in NOAA* which said, among other things, "NOAA cannot accomplish its goals without the extramural community, specifically the universities and institutions that represent the broad range of expertise and resources across the physical, biological, and social sciences. Moreover, there is the important issue of maintaining a scientific and technologically competent workforce in NOAA and that workforce is another 'product' of the external research community." We urge Congress to provide explicit authority and guidance via a NOAA Organic Act that will emphasize the development of meaningful partnerships with NOAA's stakeholders and partners.

### **NOAA , NASA, NSF and the Earth Sciences**

No discussion about the role of NOAA is complete without recognizing the inextricable linkage that exists between NOAA, NASA and NSF. The importance of NOAA research and the unique niche that it fills vis-a-vis both NASA and NSF research is very important and is one of the areas that is always seemingly misunderstood when it comes to the vitally important issue of earth observing systems, and of the need for end-to end scientific research in support of operations, applications, and services needed by multiple sectors of society including private industry and society in general.

This Committee has already heard from the co-chairs of the National Academy of Sciences panel that prepared the decadal survey entitled, *Earth Science and Applications from Space: Urgent Needs and Opportunities to Serve the Nation*. The panel's interim report made the following observations:

"The current U.S. civilian Earth observing system centers on the environmental satellites operated by NOAA; the atmosphere-, biosphere-, ocean-, ice-, and land-observation satellites of NASA's Earth Observing System (EOS); and the Landsat satellites, which are operated by a cooperative arrangement involving NASA, NOAA, and the U.S. Geological Survey (USGS). Today, this system of environmental satellites is at risk of collapse. Although NOAA plans to modernize and refresh its weather satellites, NASA has no plan to replace its EOS platforms after their nominal 6-year lifetimes end (beginning with the Terra satellite in 2005), and it has cancelled, descoped, or delayed at least six planned missions, including the Landsat Data Continuity Mission.

"...a substantial reduction in Earth observation programs today will result in a loss of U.S. scientific and technical capacity, which will decrease the competitiveness of the United States internationally for years to come. U.S. leadership in science, technology development, and societal applications depends

on sustaining competence across a broad range of disciplines that include the Earth sciences.”

In January 2007, the National Academies released the final report of the Decadal Survey panel. In the final report, the panel reiterated the concerns about the nation’s system of environmental satellites being “at risk of collapse.” The final report states: “In the short period since the publication of the Interim Report, budgetary constraints and programmatic difficulties at NASA and NOAA have greatly exacerbated this concern. At a time of unprecedented need, the nation’s Earth observation satellite programs, once the envy of the world, are in disarray.”

At a time when policymakers worldwide are grappling with the important issue of climate change and global warming, allowing such disarray to develop in our earth observing systems makes no sense to me. The Coalition supports the continued vigilance of this Committee on this matter and urge the Administration and the Congress to provide the necessary support to move our earth observing systems forward rather than backward.

### **An Independent NOAA**

As this Committee knows well, the idea of making NOAA into an independent agency is not new and remains a controversial proposal. At the very least, however, the Office of Management and Budget (OMB) could consider reviewing NOAA’s budget within its natural resource programs directorate, rather than the general government programs directorate. This change would make it easier to reconcile NOAA’s budget with those of the other major resource-oriented departments and agencies, all of which are reviewed as natural resource programs at OMB. Enactment of a NOAA Organic Act provides a useful forum for the consideration of such a proposal.

### **Conclusion**

The members of the Friends of NOAA Coalition appreciate the severe budgetary constraints under which the Congress is working. However, we also believe that NOAA and its partners directly contribute to the health, safety, and continued economic competitiveness of our country. Therefore, the Coalition urges the Congress to recognize the importance of NOAA – and the information it produces and services it provides – by fully supporting an appropriation of at least \$4.5 billion (again, only about \$15/American annually) and legislation to codify and strengthen the agency as the legislative and congressional budget processes go forward over the coming months.

On behalf of the dozens of organizations, companies, and universities that make up the Friends of NOAA Coalition, we are grateful for the opportunity to participate in this hearing. I would be happy to try to answer any questions you and the Members of the Committee might have.

Thank you.

Attachment I

# FRIENDS OF NOAA COALITION

<http://www.friendsofnoaa.org/>

March 16, 2007

Honorable Bart Gordon  
Chairman  
Committee on Science and Technology  
Technology  
Washington, D.C. 20515

Honorable Ralph Hall  
Ranking Minority Member  
Committee on Science and  
Technology  
Washington, D.C. 20515

Dear Chairman Gordon and Ranking Member Hall:

The undersigned organizations are supporters, stakeholders, unionized employees and partners of the National Oceanic and Atmospheric Administration (NOAA). Collectively we make up the Friends of NOAA Coalition and we are writing to strongly encourage you to provide the agency with a budget of \$4.5 billion in fiscal year 2008 – the same level as recommended by the Senate for fiscal years 2006 and 2007 and the same amount currently being recommended by the House Oceans Caucus.

NOAA is critical to protecting our ocean, coastal and Great Lakes resources, coastal communities, and the economy. In fact, weather and climate sensitive industries account for about one-third of the Nation's GDP. An investment of \$4.5 billion averages out to \$15 per person annually. For that small amount, each American receives weather forecasting, hurricane tracking, tsunami warnings, navigational information, fisheries management, hazard mitigation, scientific research, and local community assistance. NOAA affects and provides important services to all Americans and it is time for Congress to demonstrate its commitment to the NOAA programs that are vital to our economy and to the health and well being of every resident.

NOAA is also one of the premier science agencies in the Federal Government, providing decision makers with critically important data, products and services that promote and enhance the nation's economy, security, environment, and quality of life. For example, it was NOAA -- and its underlying science enterprise -- that enabled the delivery of accurate and timely information regarding the impending landfall of Hurricane Katrina in 2005, a forecast that saved tens of thousands of lives. A better understanding of the oceans and improvements in forecasting not only benefits coastal communities – it benefits us all. For example, economists have estimated that altering planting decisions based on improved El Niño and La Niña forecasts would save U.S. farmers \$265-\$300 million.

The \$4.5 billion we are recommending for NOAA would fully fund the President's fiscal year 2008 budget request, including the priorities and initiatives contained in the interagency ocean research priorities plan and implementation strategy; restore funding for core programs, rebuild vital observation programs, and enable NOAA to address other issues germane to their mission that have traditionally been supported by Congress. It would allow enhancements in the development of an integrated ocean and atmospheric observing system; increased research and education activities, expand ocean conservation and management programs; and provide critical improvements in infrastructure (satellites, ships, high performance computers, facilities), and data management. Such an increase would represent significant progress toward addressing recommendations contained in

the reports of the U.S. Commission on Ocean Policy and the Pew Oceans Commission, the recent report card issued by the Joint Ocean Commission Initiative and the interagency Ocean Research Priorities Plan and Implementation Strategy.

We fully appreciate the very tight fiscal constraints facing the nation and the difficult decisions associated with allocating limited financial resources. Given NOAA's role as the lead federal agency for our oceans and atmosphere, and our increasing appreciation and understanding of the human health, national security, and economic impacts associated with the oceanic and atmospheric physical and biological processes, we firmly believe that an increased investment in NOAA is needed now. We appreciate your consideration of our collective views and recommendations for NOAA as you and your colleagues continue the development of the fiscal year 2008 budget.

Sincerely,

University Corporation for Atmospheric Research  
Consortium for Oceanographic Research & Education  
Reinsurance Association of America  
American Red Cross  
Commercial Weather Services Association  
Shipbuilders Council of America  
The Weather Channel, Inc.  
WeatherBank, Inc.  
United Fishermen's Marketing Association, Inc.  
Fugro Pelagos, Inc.  
Raytheon Company  
National Weather Service Employees Organization  
The Weather Coalition  
National Association of State Universities and Land Grant Colleges  
University of Oklahoma  
National Association of Marine Laboratories  
Sea Grant Association  
Campaign for Environmental Literacy  
Connecticut Sea Grant  
American Society of Limnology and Oceanography  
National Marine Sanctuary Foundation  
Marine Technology Society  
Council of Environmental Deans and Directors  
National Council for Science and the Environment  
Joint Ocean Commission Initiative  
Coastal States Organization  
West Marine, Inc.  
National Estuarine Research Reserve Association  
The Ocean Foundation  
North Carolina Sea Grant  
Maine Sea Grant  
Maryland Sea Grant  
Skidaway Institute of Oceanography  
Rhode Island Sea Grant  
Annis Water Resources Institute, Grand Valley State University  
Minnesota Sea Grant  
Moss Landing Marine Laboratories  
Scripps Institution of Oceanography

Association of Zoos and Aquariums  
National Marine Manufacturers Association  
Woods Hole Oceanographic Institution  
New York Sea Grant  
University of New Hampshire  
Hatfield Marine Science Center  
University of Texas Marine Science Institute  
The Ohio State University  
Ohio Sea Grant College Program  
F.T. Stone Laboratory  
Center for Lake Erie Area Research  
Great Lakes Aquatic Ecosystem Research Consortium  
North Carolina State University  
University of Illinois Department of Atmospheric Sciences  
University of North Carolina Wilmington  
Purdue University  
Vaisala Inc.  
Michigan Sea Grant  
New Hampshire Sea Grant  
Institute for Exploration  
Delaware Sea Grant  
Columbia University  
University of North Carolina Chapel Hill  
National Fisheries Institute  
Natural Resources Defense Council  
Humboldt State University Marine Laboratory  
Center of Marine Biotechnology, University of Maryland Biotechnology Institute  
Shoals Marine Laboratory, Cornell University  
Wrigley Institute for Environmental Studies, University of Southern California  
UCLA Institute of the Environment  
Old Dominion University  
Cooperative Institute for Limnology and Ecosystems Research  
Cooperative Institute for Research in Environmental Sciences  
University of Maryland Center for Environmental Science  
American Rivers  
Fish for the Future Foundation  
Stony Brook University  
Rutgers Institute of Marine and Coastal Sciences  
Great Lakes WATER Institute, University of Wisconsin – Milwaukee  
Oceanic Institute  
Texas A&M University - Galveston  
Center for Coastal Studies, Texas A&M University – Corpus Christi  
Harte Institute for Gulf of Mexico Studies  
University of Miami - Rosenstiel School of Marine & Atmospheric Science  
University of Rhode Island  
Florida Sea Grant  
Environmental Defense  
Bigelow Laboratory for Ocean Sciences  
Florida State University Coastal and Marine Laboratory  
Alliance for Earth Observations  
Pennsylvania Sea Grant  
The University of Texas Marine Science Institute

Management Association for Private Photogrammetric Surveyors  
Oregon State University  
Regional Science Consortium at the Tom Ridge Environmental Center  
Oceana  
South Carolina Sea Grant Consortium