



National Association of Marine Laboratories

**Official Statement for the Record
Before the Subcommittee on Commerce, Justice and Science
Committee on Appropriations
United States Senate
Washington, DC**

**Submitted by Dr. Anthony Michaels
President, National Association of Marine Laboratories
April 13, 2007**

Madam Chair and Members of the Subcommittee, on behalf of the National Association of Marine Laboratories (NAML) I am pleased to submit this statement in strong support of the research and education programs under the subcommittee's jurisdiction that are vitally important for a vibrant oceans, coastal, and Great Lakes research and education enterprise. I will focus my remarks on four key areas: federal extramural research funding, innovation and competitiveness, implementation of ocean commission recommendations and other federal ocean research reports, and ocean education, literacy and workforce development.

NAML (www.naml.org) is a nonprofit organization of over 120 institutions employing more than 10,000 scientists, engineers, and professionals and representing ocean, coastal and Great Lakes laboratories stretching from Maine to the Gulf of Mexico, Guam to Bermuda, and from Alaska to Puerto Rico. NAML labs support the conduct of high quality ocean, coastal and Great Lakes research and education in the natural and social sciences and the effective use of that science for decision-making on the important issues that face our country.

Federal Support for Extramural Ocean, Coastal and Great Lakes Research and Infrastructure

NAML strongly urges federal commitment to enhance support for cutting-edge ocean, coastal, and Great Lakes research and infrastructure across federal funding agencies.

The marine sciences have much to offer the Nation as it seeks to strengthen its ability to innovate and compete in today's global economy. They are inherently interdisciplinary, address science, technology, engineering, and mathematics (STEM) disciplines, push the envelope in terms of technology development, test the boundaries of our data collection and analysis systems, and offer an effective training ground for future scientists and engineers. NAML asks that the value of extramural research funding at all relevant federal agencies not be overlooked, but recognized as essential to the overall progress of coastal, ocean and Great Lakes science and education. Further, in order to support this research and ensure that this country is achieving the best possible results, all types of infrastructure—marine laboratories, observatories, ships, underwater vehicles, and satellites—must be supported across the board.

- **National Science Foundation:** NAML supports increased federal funding for the National Science Foundation (NSF) consistent with the President's budget request of \$6.5 billion for Fiscal Years 2008. Basic research and the transfer and use of the knowledge developed

through research are vital for the long-term economic competitiveness and national security of this Nation. NSF provides vital support for basic research and education which enhances public understanding of the Nation's oceans, coastal areas, and the Great Lakes. NSF also provides important support for basic laboratory facilities, instrumentation, support systems, computing and related cyberinfrastructure, and ship access. The final report of the U.S. Commission on Ocean Policy makes several recommendations on the need to develop and enhance ocean, coastal and Great Lakes research infrastructure. To that end, NAML strongly supports the development of the Ocean Observatories Initiative at NSF. Further, NAML urges the Subcommittee to significantly enhance the NSF Major Research Instrumentation (MRI) program and its Field Stations and Marine Laboratories (FSML) program. FSML is of particular interest to marine labs as it provides researchers with access to state of the art instrumentation for research and education and necessary cyberinfrastructure and data management systems that compliment the Ocean Observatories Initiative. We urge the Subcommittee to double the modest FSML budget from \$2.5 million to \$5 million for FY 2008 and further request that the program ultimately be increased to \$10 million annually.

- **National Oceanic and Atmospheric Administration:** NAML requests a top-line appropriation of \$4.5 billion for NOAA for Fiscal Year 2008. This is consistent with the position take by the Friends of NOAA (www.friendsofnoaa.org) coalition which represents a diverse group of NOAA stakeholders.

A Congressionally requested study of NOAA's research programs, entitled, *Review of the Organization and Management of Research in NOAA* completed August 2004, concluded that extramural research is critical to accomplishing NOAA's mission. The access to such enhanced research capacities provides NOAA with world-class expertise not found in NOAA laboratories; connectivity with planning and conduct of global science; means to leverage external funding sources; facilitation of multi-institution cooperation; access to vast and unique research facilities; and access to graduate and undergraduate students. Academic scientists also benefit from working with NOAA, in part, by learning to make their research more directly relevant to management and policy. It is an important two-way interaction and exchange of information.

NAML strongly supports robust NOAA extramural research activities expressed though such programs as the National Sea Grant College Program, the National Undersea Research Program (NURP), Ocean Exploration, research related to aquaculture, invasive species, and the various joint and cooperative institutes supported by NOAA. The Bush Administration has proposed to maintain the Sea Grant program at \$55 million for the third straight year. Sea Grant is already feeling the pinch of a flat-funding environment and the President's request will only further hinder the programs' ability to address local, regional and national ocean research and education needs. A budget of \$72 million for Sea Grant will allow the program to mend past cuts and address emerging needs facing our coasts. In addition, the Bush Administration has proposed to the merge NURP with the Ocean Exploration program. NAML hopes that if or when this merger comes to fruition the new program will still provide an extramural research component that is so valued by the research community. While the merger of the two programs is still under development, we support funding NURP at \$20 million and Ocean Exploration at \$28 million for FY 2008. These noted partnership

programs are not only consistent with the findings of the August 2004 review of NOAA research, but are also consistent with NOAA's missions. As such they should be strongly supported and made accessible to the ocean, coastal, and Great Lakes research community on a competitive basis.

NAML is encouraged that the Administration has included in its budget request for Fiscal Year 2008 a line for the development of an Integrated Ocean Observing System (IOOS) within NOAA with \$16 million set aside for initial funding. However, the amount needed to sustain and enhance current observing system efforts by the research community is closer to \$100 million annually. Integrated observations offer critical information on coastal processes necessary for addressing issues, such as the health of humans and marine life, weather and climate nowcasts and forecasts, homeland security, and resource management. Much work is still needed to shape the federal government's involvement in IOOS and larger global observing efforts. NAML urges the Subcommittee to provide adequate funding for IOOS in FY 2008 consistent with the needs of the community.

- **National Aeronautics and Space Administration:** NASA's support for earth and space sciences is vital in helping us better understand our planet. NASA's Earth Science Applications theme benchmarks practical uses of NASA-sponsored observations from Earth observation systems and predictions from Earth science models. The National Academy of Sciences released a report¹ this year which calls on NASA to "renew its investment in Earth observing systems and restore its leadership in Earth science and applications." NAML is one of many groups that believe we need a balanced investment in NASA that will maintain a strong and vibrant earth and space science enterprise. If we are concerned about the fate of the planet, NASA's support for science is absolutely crucial to understanding and ultimately deciding how to address the concerns we are facing. NAML urges the Subcommittee to renew its investment in the NASA Earth Science budget for Fiscal Year 2008.

Innovation and Competitiveness

NAML strongly supports efforts by the Administration and Congress to strengthen the nation's position as a world leader in scientific innovation and competitiveness.

As the Nation seeks to expand its investment in the physical sciences to increase its international competitiveness, NAML calls on the Subcommittee to recognize the integrated and strategic relationship between all scientific and engineering disciplines and to support an enhanced investment in science and technology across the board as part of any long-term economic competitiveness policy. NAML is encouraged that the federal government has begun focusing on the physical sciences for targeted funding increases, particularly through efforts to double the budget of the National Science Foundation (NSF) over the next 10 years. However, we must ensure that the entire breadth of the physical sciences, which include the earth and ecosystem sciences as well, is supported so we do not hinder this nation's true innovative potential. Other federal agencies involved in the "physical sciences" need to be supported within the context of

¹ *Earth Science and Applications from Space: National Imperatives for the Next Decade and Beyond*, Committee on Earth Science and Applications from Space: A Community Assessment and Strategy for the Future, National Research Council, January 2007

innovation, namely the extramural research programs within the National Oceanic and Atmospheric Administration (NOAA) and the National Aeronautics and Space Administration (NASA). Improvements in the quality of education provided to our students with a strong foundation in math and science as well as support for universities and laboratories that provide world-class education and research opportunities will only benefit the nation and its science enterprise. As the Subcommittee sets its funding priorities for the year we hope it will consider the relevance of NOAA and NASA to U.S. innovation and competitiveness.

Implementation of Ocean Commission Recommendations and other Federal Ocean Research Reports

NAML continues to strongly support implementation of the recommendations made by the U.S. Commission on Ocean Policy (2004)². In addition, NAML looks forward to the implementation of the interagency Ocean Research Priorities Plan (2007)³.

NAML believes that public policy with respect to the nation's oceans, coasts and Great Lakes should always be based on sound science and the most up-to-date information. The U.S. Commission on Ocean Policy's analysis of existing policies and future needs has resulted in a collection of bold and broad-reaching recommendations for reform. The Congress has taken these recommendations to heart in recent years and has begun addressing the nation's ocean needs. Federal implementation of these recommendations will enable the U.S. to maintain and strengthen its role as a world leader in protecting and sustaining the planet's oceans and coasts. NAML is particularly supportive of the Commission's recommendation to re-align NOAA's functions to support ecosystem-based management approaches. In addition, we fully endorse the Commission's recommendations to double the federal investment in ocean, coastal, and Great Lakes research as well as its recommendation to promote a strong federal investment in ocean, coastal, and Great Lakes education, outreach, and stewardship.

As the Bush Administration states in its decade-focused Ocean Research Priorities Plan, "Scientific discovery driven by competitive peer-reviewed investigations is the foundation of the nation's research enterprise." This plan identifies the nation's most urgent short- and longer-term ocean research needs. NAML is encouraged that the Administration proposed new funding for ocean issues in its budget request for Fiscal Year 2008. However, we urge the Administration and Congress to not overlook the importance of the extramural research community to the implementation of the plan's goals. The external research community stands equipped and ready to assist the federal government in implementing its identified priorities. NAML hopes that the dedication to ocean, coastal and Great Lakes issues expressed by the federal government in recent years will continue and be further enhanced to ensure that the external research community is being utilized to the fullest extent possible as the valuable resource that it is. In order to be successful, the federal government will need to look to the extramural research community to tap into existing capabilities to ensure that they are taking the most practical approach to ocean governance.

² *An Ocean Blueprint for the 21st Century*, U.S. Commission on Ocean Policy, April 20, 2004

³ *Charting the Course for Ocean Science in the United States for the Next Decade: An Ocean Research Priorities Plan and Implementation Strategy*, NSTC Joint Subcommittee on Ocean Science and Technology, January, 2007

Ocean Education, Literacy, Outreach and Workforce Development

NAML believes that an ocean literate populace will lead to a well-informed and safe nation. NAML encourages the federal government to strengthen its commitment to enhancing ocean, coastal and Great Lakes education, literacy and outreach as well as workforce development.

A strong national ocean policy can only be sustained with the most up-to-date and reliable scientific information. To ensure that the nation will continue to have the ability to address emerging ocean issues in the future, investments are needed today in coastal, ocean, and Great Lakes education programs that support learning at all age levels, by all disciplines, and for all Americans. NAML strongly supports the NSF Centers for Ocean Science Education Excellence (COSEE) program, NSF education and human resources generally, and NOAA's Office of Education. Such programs provide a rich environment for which collaborations and partnerships flourish. A greater understanding of the oceans and coastal ecosystems will instill in the American population a sense of stewardship for these important environments. These programs also yield a diverse workforce that includes a significant percentage from underrepresented groups. Preparing these cultural bridges would allow us to capitalize upon diverse national strengths, ensuring the flow of intellectual talent into ocean, coastal, and Great Lakes-related fields.

NAML member laboratories contribute to maintaining a competitive and first-rate marine research and education workforce by providing a unique training ground that is conducive to on-the-job learning and mentoring. Marine labs, because of their flexibility and interdisciplinary nature, are leaders in addressing science, technology, engineering, and mathematics (STEM) education disciplines and hope to see support for these disciplines enhanced. Marine labs are also committed to enhancing diversity within the field of ocean, coastal and Great Lakes research and education by fostering relationships with community colleges and minority-serving institutions (MSIs) to provide distinctive learning opportunities for individuals who may not otherwise have an opportunity to participate in ocean, coastal and Great Lakes research. NAML hopes to be seen as a model to the nation for this type of collaboration.

The 2006 Conference on Ocean Literacy (CoOL), which convened in Washington, D.C. and at satellite sites throughout the country, provided an unprecedented national platform for discussion on the essential principles of ocean literacy and the current challenges and opportunities for both formal and informal education efforts in educating the public to make informed, responsible decisions about the ocean and its resources. NAML hopes that the topics addressed during this conference will continue to reach policymakers and the general public and will shape future ocean, coastal and Great Lakes education policy.

Thank you for the opportunity to express these views on behalf of the National Association of Marine Laboratories. We hope the Subcommittee will take these points into consideration as you move forward in the FY 2008 appropriations process.

Anthony F. Michaels, NAML President
Director, Wrigley Institute for Environmental Studies, University of Southern California
(213) 740-6780, tony@usc.edu