

# Committee on Resources

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## **Testimony of Dr. J. Frederick Grassle Director Institute of Marine and Coastal Sciences Rutgers – The State University of New Jersey**

Subcommittee on Fisheries Conservation, Wildlife and Oceans House Committee on Resources  
Oversight Hearing on the Status of Ocean Observing Systems in the United States  
July 13, 2004

Chairman Gilchrest and members of the Subcommittee, thank you for inviting me to testify before this committee on Ocean Observing Systems in the United States. I have testified before you on this subject in 1989 and 2001 and it is a special privilege to speak again today. Since I last spoke, the urgent need for better coastal observing systems has become even more apparent. Coastal ocean observation and prediction systems are relevant to the business plans of most coastal business enterprises and are essential for improving safety and efficiency of marine operations. Information from ocean observing systems improves coastal weather forecasts and economic studies show that better coastal forecasts enable the power industry to reduce emissions and costs. Better ocean prediction is required to mitigate the effects of flooding and erosion from hurricanes and other severe storms. The ability to sense all aspects of our ocean surroundings is important for recreational mariners and the U.S. Coast Guard, Navy, and Merchant Marine. New technologies for surface current mapping were recently demonstrated to improve the Coast Guard's search and rescue capabilities. These radar technologies are also being adapted to routinely track and identify ships for national security. The sources, fates, and effects of pollutants cannot be understood without better means for tracking sediment in the ocean. Better methods for assessment of fish stocks, ocean habitats, and other natural resources will be available through new ocean observing system technologies.

Regional coastal ocean observing systems are taking shape with organizations forming in most U.S. coastal regions. Observing system development has occurred primarily through line-item congressional support for selected organizations in specific regions. Legislation is urgently needed to fund a coordinated approach that will allow all regions to work together and grow in concert. An integrated system of well-established and advanced technologies will monitor biological, chemical, geological, and physical properties of the ocean for the benefit of our Nation's economy and well-being.

There are many documents describing the U.S. Integrated Ocean Observing System (IOOS). The most notable is the Preliminary Report of the U.S. Commission on Ocean Policy (Governor's Draft, April 2004). I served on the Ocean Commission Science Advisory Panel and I strongly support the Commission's recommendations including the establishment of a National Ocean Council (Rec. 4-1) and a strengthened and enhanced National Ocean Research Leadership Council to be called the Committee on Ocean Science, Education, Technology, and Operations (Rec. 4-7). Commission Recommendation 5.2 asks Congress to immediately "establish regional ocean information programs to improve coordination and set priorities for research data collection, science-based information products, and outreach activities in support of improved ocean and coastal management. Program priorities should be carried out primarily through a grants process." The interagency ocean observation office, Ocean.US, should be established with a budget appropriate to its mission (Rec. 26-3). The Integrated Ocean Observing System (IOOS) should be a line item in the National Oceanic and Atmospheric Administration (NOAA) budget without fiscal year limitation, and a streamlined process for distributing funds to other federal and non-federal partners should be included (Rec. 26-9). A fund for modernization of critical ocean infrastructure and technology needs should be established based on an ocean and coastal infrastructure plan (Rec. 27-4). Congress should amend the National Ocean Partnership Act to establish a federal planning organization for ocean and coastal data and information management to be called Ocean.IT (Rec. 28-1).

The most recent complete description of the U.S. Ocean Observing System is the Ocean.US Implementation Plan of IOOS (4 June Draft) available at <http://ocean.us>. Its recommendations are consistent

with those of the Commission and legislation is urgently needed to authorize funding for Ocean and Coastal Observation Systems in the NOAA budget. Within this NOAA authorization, at least half of these funds should be made available for regional associations to design, implement, operate, and improve regional ocean and coastal observing and information systems, building on the existing assets in coastal U.S. waters. Allocation of funds would be based on guidelines formulated by a newly authorized interagency program office (presently Ocean.US under the National Ocean Research Leadership Council of the National Ocean Partnership Program).

Regional associations such as the Mid Atlantic Regional Association (MARA), of which Rutgers University is a member, are working to integrate existing regional and state-based federally-supported coastal programs. Perhaps the best example of the possibilities for application of ocean observing system technologies comes from the evolving observatories spanning the continental shelf off New Jersey. LEO-15, built with support from the National Science Foundation and NOAA's National Undersea Research Program (NURP), is the nation's first cabled observatory and is a pioneer in developing the technologies that have led to the NSF's Ocean Observatory Initiative. LEO-15 has been delivering information about the ocean from a broad suite of sensors since 1996. Support from the Office of Naval Research and the National Ocean Partnership Program enabled LEO-15 to evolve into the New Jersey Shelf Observing System (NJSOS) which provided spatial data from satellites, high-frequency radars, and buoys that can be assimilated into predictive numerical models. This coupled observing system was demonstrated during experiments in 1998-2001. The Mid-Atlantic Bight NOAA NURP program continues to support development of new observing system technologies such as a system to measure turbulence at all depths and an underwater flow cytometer to continuously measure phytoplankton species abundance and composition. Although much has been accomplished with research funds, a sustained source of funding is needed to operate the system on a continuous basis and to provide products to meet user demands.

The observing system off the coast of New Jersey is also working to establish an education community that uses observing system information, and builds an observing system workforce. Rutgers and other universities are developing Masters Programs in Operational Oceanography that will train the operators of future ocean observing systems. An NSF-sponsored COSEE program brings scientists and educators together to improve public knowledge and understanding of how the ocean affects the daily lives of diverse audiences. I support the Commission on Ocean Policy recommendation to expand this program (Rec. 8-5). The Mid-Atlantic COSEE program features a thematic focus on coastal ocean observing systems. Public interest in ocean observations is used to develop strategies for improving science instruction among pre-service educators and to create a community of lifelong learners familiar with the practice of science. The NOAA National Estuarine Research Reserve System (NERRS) network has a well-established System-wide Monitoring Program for estuarine waters and a strong education program which will be integrated into MARA. In New Jersey, the NERRS Coastal Training Program uses science-based information from the regional ocean observing system to teach school children through highly successful teacher training. This program also informs environmental decision-makers through education and training programs.

Advanced data systems are the best means for integrating all components of the ocean observing system and a prerequisite for making data useful to all sectors of the economy, government, and the general public. The U.S. Commission on Ocean Policy devoted an entire chapter to the importance of a national ocean data and information system. In response to the critical need for an integrated data management and communications system, the Ocean.US Data Management and Communications Steering Committee (DMAC) was formed and an action plan for establishing a data and information system has been completed. I served on this Committee. Federal agencies, state agencies, academia, and regional groups will implement this plan. Funding for the DMAC plan is an essential first step toward developing this system.

The establishment of Regional Coastal Ocean Observing Systems is central to the implementation of a more effective ocean policy. The coastal economy will run more efficiently with information from these systems. The majority of Americans living and/or vacationing on the coast want to be informed in order to better protect our coastal resources and quality of life.