Testimony of
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Hearing on H.R. 1489, the Coastal Ocean Observation System
Integration and Implementation Act of 2005

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Introduction

Good afternoon Chairman Gilchrest, Ranking Member Pallone, and Distinguished Members of the Subcommittee. I would like to thank you for the opportunity to testify regarding H.R. 1489, the Coastal Ocean Observation System Integration and Implementation Act of 2005. I am Dr. William Reay, Director of the Chesapeake Bay Virginia National Estuarine Research Reserve. My testimony today is on behalf of the National Estuarine Research Reserve Association (NERRA) on which I serve as a board member. Mr. Chairman, we want to applaud you for your interest in coastal and ocean observing, and fully endorse implementing a coastal ocean observing system.

Since 1987, NERRA has been dedicated to science-based management of our nation's estuaries and coastal systems, and serves as the primary advocate for the National Estuarine Research Reserve System (NERRS), a network of 26 (soon to be 27) regionally-based programs representing diverse estuarine and coastal ecosystems throughout the United States and its territories. Through a state-federal partnership codified in the Coastal Zone Management Act, reserves play a critical role in national efforts to sustain healthy estuaries and coastal communities. National Estuarine Research Reserves support science-based coastal management through long-term research, monitoring, education, and stewardship.

NERRS System-wide Monitoring Program

In 1995, the NERRS established its estuarine monitoring program called the System-wide Monitoring Program. Through this program, the NERRS measures short-term variability and long-term changes in coastal ecosystems, including locations that span the range of coastal environments from estuaries and coastal waters to watersheds. The System-wide Monitoring Program provides valuable long-term data on water quality and weather at frequent time intervals. Coastal managers use this monitoring data to make informed decisions on local and regional issues, such as “no-discharge” zones for boats and measuring the success of restoration projects. In addition to serving regional research and coastal management needs, the System-wide Monitoring Program is designed to enhance the value and vision of the 26 reserves as a system of national references sites.

Future efforts will focus on the expansion of biological monitoring at all reserves and tracking habitat and land use changes through remote sensing techniques. When fully implemented, the System-wide Monitoring Program will provide valuable long-term, integrated data on water quality, weather, biota, land use, and habitat change within the National Estuarine Research Reserves.

The effectiveness of these programs is dependent not only on the data collection, but also on the implementation and maintenance of procedures to ensure access to high quality data, data documentation, and derived products. Advances in information technology are improving the way resource managers and researchers can assimilate, manage, disseminate, and share environmental data and information.

All numerical data sets collected by the System-wide Monitoring Program are compiled, subjected to a rigorous quality assurance protocol, and the database and associated metadata are submitted to the NERRS Centralized Data Management Office at the University of South Carolina Belle W. Baruch Institute of Marine and Coastal Sciences. Following final quality assurance, the Centralized Data Management Office disseminates all system-wide data and summary statistics over the World Wide Web (http://inlet.geol.sc.edu/nerrscdmo.html) where researchers, coastal managers, and educators readily access the information.

NERRS Education Programs

In addition to an established System-wide Monitoring Program and Centralized Data Management Office that ensures data quality and accessibility, reserves also conduct training and education programs. The combination of first-hand data and training and education expertise make the NERRS ideally suited to deliver coastal and ocean observing information.

Through the NERRS Coastal Training Program, science-based information is shared with coastal decision-making audiences. Reserves have experience targeting specific user groups, and in ensuring that those groups know how to access and apply the information and data products. They also have experience in creating productive forums for information exchange between scientists and a range of coastal decision makers. The NERRS can play a particularly strong role in providing an interface between applied estuarine science and the local coastal management community. The NERRS is well-suited to deliver information and data products generated by coastal ocean observations to user audiences.

The NERRS also has a suite of diverse education programs that are focused on the coastal environment, and they can contribute to, and further, the educational goals of a coastal ocean observing system. Through its nationally distributed network of educators and its System-wide Monitoring Program, the NERRS can play an important role in linking coastal and ocean observing data streams to meet the needs of K–12 audiences, which includes both students and teachers.

Integration of the NERRS and the Coastal Ocean Observing System

As an established network of special status sites that operate functional programs for estuarine monitoring, data management, and coastal education, the NERRS is poised to play an integral role in the success of a coastal ocean observing system. The water quality and meteorological monitoring components of the System-wide Monitoring Program have been recognized as a fundamental backbone element in the national Integrated Ocean Observing System (IOOS) framework, and the reserve system is currently developing and testing near real time data delivery systems that include real time data quality control.

In addition, NERRA has a pending proposal to the National Oceanic and Atmospheric Administration (NOAA) to integrate the System-wide Monitoring Program more fully into the IOOS and into the emerging regional associations. This proposal seeks support for two pilot projects carried out at eight reserves in two different regions (the Pacific Northwest and the Mid-Atlantic). The project will utilize System-wide Monitoring Program water depth and water quality data to focus on natural and anthropogenic forcings, and on coastal ecosystem health. Following a regional needs assessment, the NERRS would develop data products to meet the specific needs of coastal managers to address these two fundamental issues.

In commenting on H.R. 1489, I will focus on the following components that are essential to any coastal ocean observing system legislation:

• Providing funding to adequately achieve the scope and purposes of this bill.
• Providing appropriate decision-making authority, accountability, and oversight.
• Building on the existing observation infrastructure.
• Ensuring coastal ocean observing system information and products are useful to coastal managers, researchers, educators, and other users.

The Importance of Coastal and Ocean Observing to our Nation

Information generated by coastal and ocean observing is vital to our nation, and will remain critical into the next century, particularly as we develop the ways to convey data streams and other information to fishermen, beachgoers, school children, coastal managers, public health officials, and others. A sustained, national coastal ocean observing system will help our nation protect human lives and property from coastal hazards, enhance national security, improve ocean health, provide for the sustainable use of ocean resources, and educate the public about the role and importance of oceans in our daily lives.

Recognizing the importance of establishing a coastal ocean observing system, we appreciate the attention that Congress is giving to this issue, especially in light of other pressing national and international concerns. Because coastal and ocean ecosystem health is critical to our nation, it is imperative that we, as a nation, make a significant investment in the establishment of a coastal ocean observing system. The authorization level in H.R. 1489, though a good first step, will not be sufficient to fully support an integrated, functional coastal ocean observing system. Carrying out the purposes of this Act —which will have enormous economic, environmental and security benefits for our nation—will require a higher investment. We would urge the Subcommittee to consider full funding for a coastal ocean observing system at the level of $138 million, which was recommended by the U.S. Commission on Ocean Policy. In addition to a higher authorization level, the mechanism that should be put into place to sustain the required level of funding should be more clearly defined to ensure

the established system delivers the products required by all of the end users.

While this bill establishes some important relationships among the Secretary of Commerce, the National Ocean Research Leadership Council, and the Ocean and Research Advisory Panel, other important groups, such as Ocean.US and the National Federation of Regional Associations are not referenced and some of the authorities are not clearly defined or are lacking. The National Ocean Research Leadership Council and the Ocean and Research Advisory Panel should be given more decision-making authority, accountability, and oversight in coastal ocean observing system legislation. In addition, Ocean.US should be formally established as the office responsible for program planning and coordination of the observing system since they have the technical expertise and knowledge to carry out the purposes of this Act.

Building on the Existing Observation Infrastructure

Much work has gone into creating plans for a coastal ocean observing system, but its success is dependent upon support from Congress, the Administration, and a myriad of stakeholders. Legislation should take advantage of, and build upon, the existing observation infrastructure, and particularly support implementation of regional associations and the emerging regional structure. In the U.S. Commission on Ocean Policy's report, the Commission strongly recommends regional approaches to ecosystem-based management. The Commission proposes "strengthening of regional approaches that allow decision makers to address pressing ocean and coastal issues on an ecosystem-based scale." It will be important for the establishment of a coastal ocean observing system to include, as a key element, a network of regional associations to manage the regional ocean and coastal observing and information programs that collect, measure, and disseminate data and information products to meet regional needs. In addition to building on the emerging regional structure, recognition that the coastal ocean observing system will become part of the Global Earth Observing System of Systems will also be important.

Currently, there are more than forty coastal ocean observing systems collecting a variety of data. Disparate data from many observing systems will ultimately need to be better managed to effectively store, access, and integrate the data and to produce timely data products. H.R. 1489 recognizes the need to establish management, quality control, and assessment systems for data collection, availability, and distribution. This effort to better manage coastal and ocean observing data should build upon the existing work that has been done to develop data management requirements and methods, particularly through Ocean.US. Several documents are available detailing the basic data collection, quality assurance, storage, and delivery protocols through Ocean.US (e.g., Data Management and Communications Plan, Integrated Ocean Observing System Plan, and U.S. Global Ocean Observing System National Report).

Developing Data Products to Support Coastal Management

In addition to data collection, management, and analysis, it is critical that the data sets generated by the observing system are useful to guide the management of our coasts and oceans, and that the science-based data will be used to inform effective decision making. For an observing system to be useful to coastal decision makers, it must include data collection and products for the near-shore and estuarine areas.

H.R. 1489 emphasizes using data collected by the coastal ocean observing system to develop forecast models to support and improve coastal and fishery management. We appreciate that coastal management activities are included, but we also believe that this focus on data utility should be strengthened and broadened. We believe that other types of data products (e.g., hindcast and nowcast models), in addition to forecast models, are also needed to address coastal management decisions. For example, real-time measurements of water level and currents within estuaries can add an additional level of confidence to the commercial maritime community as the vessels navigate within the confines of narrow shipping channels and shallow embayments.

Additionally, while the focus of H.R. 1489 is on sensors that can provide rapid measurement and transmission with high temporal resolution, other variables critical to a coastal ocean observing system (e.g., spatial extent and condition of coral reefs, submerged aquatic vegetation, and emergent wetland vegetation) can be measured at less frequent intervals and through a variety of biological monitoring methods.

Education and Outreach

The coastal ocean observing system presents an opportunity to inspire, captivate, and motivate school children as well as the public about the nation's coasts and oceans. NERRA believes that there is a great potential to educate our nation about the role and importance of oceans in our daily lives through ocean observations. Observing system information is also needed to educate coastal managers and other state and local officials to help inform their decision making. H.R. 1489 should capitalize on this opportunity to ensure coastal and ocean observing data and information are used to improve public education and awareness of the nation's oceans, to inform coastal management decision making, and to build a future

workforce with technical expertise to operate and improve the observing system. Recognizing the importance of building an educated future workforce, the NERRS has developed a technician training program to provide instruction on all aspects of the System-wide Monitoring Program, including equipment maintenance and data management protocols.

In order for a coastal ocean observing system to be successful, a thoughtful education program must be developed and reach several audiences including K–12 formal education, professional adult training, and informal general education. The success of the program should not be measured on the volume of data collected, but rather on the level of public and professional use of the informational products developed as a result of the system. A coordinated effort to build public education and awareness of ocean and coastal issues that integrates ongoing activities—such as NERRS education programs—will be critical to advancing public understanding of the oceans and building an ocean literate nation.

The Value of Diverse Partnerships

H.R. 1489 places emphasis on carrying out pilot projects to test the integration of data among multiple entities that are collecting coastal and ocean observations. This will be important because often diverse partnerships are required to implement a component of the observing system and to develop useful products for a broad audience. To highlight this, I would like to make note of the Chesapeake Bay Observing System Cooperative Expansion and Integration Demonstration (CCEID) project that involves the participation of two National Estuarine Research Reserves.

CCEID is a subregional pilot project spearheaded by a deliberately diverse consortium that includes: NOAA's National Weather Service; NOAA's National Ocean Service Center for Operational Oceanographic Products and Services in Chesapeake, VA.; the Chesapeake Bay National Estuarine Research Reserves; Maryland Department of Natural Resources; Virginia Institute of Marine Science, College of William and Mary; University of Maryland, Center for Environmental Science; and Old Dominion University.

The group was brought together and funded by the NOAA Chesapeake Bay Office, whose mission includes coordinating NOAA activities in the Chesapeake Bay region. The CCEID partnership is also fortunate to contain education and outreach opportunities through the Virginia and Maryland Chesapeake Bay National Estuarine Research Reserves and Sea Grant Programs, and the National Science Foundation sponsored Coastal Ocean Science Excellence in Education Mid-Atlantic Program. This project will utilize ongoing observing efforts and establish new wave measurement stations to deliver real-time wind, waves and dissolved oxygen data from multiple, disparate sources, provide quality assurance and quality control editing, visualization, archiving and delivery to the web and to a NOAA data portal.

It is our hope that this cooperative partnership will provide the catalytic core upon which a larger observation system, with broader participation from government and private sector groups can be built. It is also our hope that the authoritative structure to designate units of a coastal ocean observing system, addresses the varying needs at the regional scale as to not exclude potentially important partners at the pilot project level, pre-operational, and at operational stages.

Conclusion

We greatly appreciate the interest you have shown in this issue, Mr. Chairman, and for authoring this important piece of legislation. Thank you for the opportunity to present testimony on the Coastal Ocean Observation System Integration and Implementation Act of 2005. This bill represents a first step in implementing a coastal ocean observing system. I will be pleased to answer any questions the Subcommittee may have.