NOAA Office of Ocean Exploration and Research
Ocean Exploration Program

Overview – February 2012

BACKGROUND: The NOAA Ocean Exploration (OE) program was established in 2001 in response to the report of the President's Panel on Ocean Exploration. Recognizing the ocean covers more than 70 percent of the planet, and the intricate role it plays in global ecology, the panel recommended a national ocean exploration program focused on: (1) mapping and characterizing the 95 percent of the ocean that is currently unexplored; (2) investigating poorly known ocean processes at multiple scales; (3) developing new sensors and systems; and (4) engaging stakeholders in new and innovative ways. The panel advocated a program concentrated on investigating unknown ocean areas and phenomena, and employing an interdisciplinary scientific approach to ensure broad and comprehensive results.

OE embraced the recommendations in the President's Panel report, and created a program to:

- Explore the unknown ocean, developing data-rich products that describe new areas and phenomena
- Catalyze research to further pursue important discoveries
- Increase the pace, efficiency, and scope of ocean exploration through technological innovation
- Promote and advance ocean literacy through formal and informal education

These continue to be the cornerstones of the OE program.

AREAS OF INVESTMENT: Over the past 10-years OE evolved from a program that focused solely on awarding grants to teams of scientists through an annual competition, to a program that now includes investments in: (1) extramural grants; (2) telepresence-enabled expeditions (3) interagency partnership expeditions; and (4) participation in major national and international initiatives. Other key areas of investment include data and information management and product development, and education and outreach, which ensure the information derived from each expedition and project is well-organized and widely distributed. The following provides a thumbnail sketch of each:

Extramural Grants – Modeled after the National Science Foundation approach, OE runs an annual peer-reviewed competition to award grants to conduct interdisciplinary expeditions and projects in support of the OE mission. Awards support a diversity of investigations including efforts to locate and characterize new undersea habitats, discover new submerged cultural resources and determine their importance, and to develop and evaluate new sensors and systems. The results have supported NOAA and National priorities such as the establishment of marine protected areas surrounding deep-water coral and sponge habitat in the South Atlantic Bight, as well as the creation of the Marine National Monuments in the Pacific Ocean.

Telepresence-enabled Expeditions – With the support of Congress and in partnership with the Institute for Exploration, the University of Rhode Island, and other academic and oceanographic institutions, OE conducts systematic ocean exploration using the NOAA Ship Okeanos Explorer and the Ocean Exploration Trust Ship Nautilus. Using sophisticated satellite communications technology, OE and partners are changing the paradigm of ocean exploration and research by providing high-definition video feeds from remotely operated vehicles, multibeam sonar data, and other oceanographic data sets to 'communities' of scientists working at shore-based Exploration Command Centers at several locations around the globe. This enables the scientists to guide the investigations from academic institutions and other facilities, and to engage others as needed at a moments notice. This new program also enables educators, students, and other interested stakeholders to participate in the expeditions in real-time, significantly advancing the objective of promoting ocean literacy.

Interagency Partnership Expeditions – In 2006, with encouragement from the National Ocean Partnership Program (NOPP), OE partnered with the Minerals Management Service (now the Bureau of Ocean Energy Management (BOEM)) to begin a series of systematic expeditions to locate and characterize deep-water habitats such as coral and seep communities in the Gulf of Mexico. The primary objective was to provide information on the biodiversity and ecology of these systems to enable informed decisions of future oil and gas development activities. Through this partnership BOEM funded teams of scientists to collect the information and develop products, while OE provided the ships and submersible systems. These investigations proved valuable during the response to the Deepwater Horizon spill, representing the best information available to study the potential effects of the spill on deep-water habitats. OE and BOEM have now expanded these investigations to cover the system of shelf-edge and slope canyons in the Mid-Atlantic Bight, and are engaged in informal discussions about applying this approach in the Arctic Ocean.

National and International Initiatives – In 2008 OE began a major interagency effort to define the U.S. extended continental shelf using the criteria in Article 76, United Nations Convention on the Law of the Sea (UNCLOS). Termed the Extended Continental Shelf (ECS) Mapping Initiative, OE has invested in and coordinated national and international expeditions to collect bathymetric, seismic, and other data-sets in accordance with Article 76. Key areas include the U.S. west coast, Hawaii, Marianas Islands, and the Arctic. In essence this is the largest systematic maritime mapping effort ever undertaken by the U.S., and the information obtained provides a rich foundation for both defining the potential extension, as well as initiating follow-up efforts to identify and characterize critical resources and habitats.

Data and Information Management – Since its inception, OE has invested in the development of tools, technologies, and procedures to properly organize and archive the data and information obtained from expeditions and projects, as well as to develop valuable summary products and Web-based tools to ensure wide distribution of the results. These include, but are not limited to the NOAA Ocean Explorer Web-site (oceanexplorer.noaa.gov), which chronicles major expeditions, and the Ocean Exploration digital atlas (http://www.ncddc.noaa.gov/website/google_maps/OE/mapsOE.htm), which provides direct access to a wealth of data and information in an interactive GIS environment.

Education and Outreach – Through partnerships with the Centers for Ocean Sciences Education Excellence (COSEE), and museums and aquaria around the Nation, the OE education program has been breaking new ground in applying the data and results from OE expeditions and projects to formal education activities, including the development of ocean science curricula that meet national education standards. Furthermore, the program has developed unique interactive Web-based products for conveying ocean science information in an education environment. For example, the Ocean Exploration 'Expedition Education Modules' provide lesson plans directly linked to major expeditions, while the Teacher Professional Development offerings 'teach-the-teachers,' providing them training with tools and resources to enhance classroom teaching.

ON THE HORIZON: In 2001, the President's Panel envisioned a National Ocean Exploration Program involving many federal agencies, academic and oceanographic institutions, non-profit organizations, and industry partners. The NOAA OE program has made progress toward this vision, but much work remains. Given the recent authorization in Public Law 111-11, OE is in the process of: (1) establishing a NOAA Ocean Exploration Advisory Board – a complement to the NOAA Science Advisory Board; and (2) establishing an Ocean Exploration and Undersea Research Technology and Infrastructure Task Force, which will bring together leaders in the field of undersea exploration and research to facilitate and accelerate the development and application of new technologies to increase the pace and efficiency of efforts to explore and understand the global ocean. OE is preparing for the future and will engage partners in establishing a national ocean exploration vision, and to pursue tangible and measurable outcomes.