External Review of the Cooperative Institute for Ocean Exploration, Research and Technology (CIOERT)

A Presentation to the
NOAA Science Advisory Board

Jean May-Brett
Review Panel Chair

March 27, 2013

Outline

- Science Review Panel
- Overview of Cooperative Institute (CI)
- CIOERT Themes
- Overall Assessment
- Findings and Recommendations
  - Strategic Plan
  - Science Review
  - Education and Outreach
  - Science Management
- Final Comments

Science Review Panel

Jean May-Brett, Chair

Louisiana Department of Education

Michael A. Banks, Ph.D.

Cooperative Institute for Marine Resource Studies

Oregon State University

Peter R. Betzer, Ph.D.

St. Petersburg Downtown Partnership

Billy D. Causey, Ph.D.

NOAA Office of National Marine Sanctuaries

Charles Fisher, Ph.D.

The Pennsylvania State University

CIOERT

- Established in open competition in 2009
  - No cooperative institute focused on ocean exploration, research and technology had existed prior to this competition
- Consortium CI
  - Harbor Branch Oceanographic Institute at Florida Atlantic University (HBOI/FAU) (lead)
  - University of North Carolina Wilmington (co-managing partner)
  - SRI International
  - University of Miami
- Sponsored by NOAA's Office of Ocean Exploration (OER)
- No co-located NOAA laboratory or facility

CIOERT Themes

- Develop advanced underwater technologies
- Explore and research the frontier regions of the eastern U.S. Continental Shelf and Slope
- Explore and research vulnerable deep and shallow coral ecosystems
- Promote ocean literacy and next generation workforce

Overall Assessment

- Despite obstacles, CIOERT has, under the direction of its leadership, created productive partnerships between academia and government.
- Through these partnerships CIOERT has leveraged an impressive array of research support that has added value not only to NOAA but to other agencies and society at large.
- CIOERT, and therefore NOAA, is uniquely poised to be the leader in understanding the distribution, functioning and dynamics of deep-water corals.
- CIOERT's research is vital to meeting the national need for state-of-the-art assets appropriate for deep sea research and exploration.
- However, the ability of CIOERT to fully realize its potential is limited by the lack of available funding.

Findings and Recommendations: Strategic Plan

- HBOI/FAU and UNCW are strategically positioned to allow access to CIOERT's broad regional research focus.
- CIOERT's ability to forge linkages across university, industry, and agency needs in near-real-time actionable information sharing is a major asset.
- CIOERT's leadership and investigators provide NOAA with outstanding partners for planning and implementation of primary research product lines.
- CIOERT is conducting high-quality exploration and research while developing, testing, and applying new and innovative uses of advanced technologies to ocean exploration and research of ecosystems and habitats of economic, hazardous, scientific or cultural importance, primarily in the southeastern U.S. (including the Gulf of Mexico).
- With the current uncertainty of program funding CIOERT does not have the critical financial resources needed to prepare for long-term planning or meet the goals proposed when the CI was initiated.

- NOAA/OER should have a liaison to help facilitate NOAA-CI communication and exchange experiences at HBOI/FAU and UNCW to better enable planning and show-case CIOERT research.
- CIOERT and NOAA/OER should coordinate efforts to expand and improve long-term funding streams by exploring opportunities to secure and leverage additional support for the CI.

Findings and Recommendations: Science Review

- CIOERT is an asset to NOAA's efforts to meet the national need for state-of-the-art assets appropriate for deep sea research and exploration.
- A CIOERT strength was the quality of the Institute's research, its fellows, and the leadership's ability to leverage local/state/private resources in support of NOAA goals.
- CIOERT is poised to apply a new data system that could revolutionize information-sharing in oceanographic science with near-real time exchange of data.
- The lack of certainty around future funding may preclude the most innovative potential long term projects and limit the full potential of the synergism between CI's teams.

- Many discoveries are appropriate for publication in high impact scientific journals which will increase the visibility of CIOERT.
- Funding should be dedicated to establish and maintain critical deep submergence capabilities for the NOAA community and for the continued development and use of the Coral In Situ Metabolism (CISME) instrument which could potentially revolutionize rapid in situ assessment of hermatypic coral health.
- Enabling significant reciprocal visits between HBOI/FAU and UNCW drug development teams would help to fully realize the potential synergism between them.

Findings and Recommendations: Education and Outreach (E&O)

- CIOERT's website needs significant improvements and updates that include links to partnership materials and discoveries.
- CIOERT promotes ocean literacy and efforts to build NOAA's technical and scientific workforce through activities that engage students and teachers in hands-on science, technology development, and convey the value and excitement of exploration.

- CIOERT leadership, NOAA's Office of Education, and OERs Education Program Director should partner to develop an education/outreach plan to showcase the research projects of direct and immediate societal importance. Educational modules incorporated into workshops and website exercises will help with the marketing/branding of CIOERT.
- Expand the diversity of education and outreach efforts at educational facilities and schools near the partner sites (i.e. such as summer programs for teachers).
- CIOERT's website should include links to partnering sites and research materials that proactively relate the CIOERT story.

Findings and Recommendations: Science Management

- CIOERT has excellent scientific leadership, demonstrated rapid and effective responses to environmental and fiscal challenges, and established effective interactions with, and service to, a number of NOAA programs and resource managers.
- CIOERT and partners are focused on scientific questions appropriate to environmental management issues (e.g. coral systems, the shelf/slope boundary in the eastern Gulf of Mexico)
- The review panel recognizes the considerable potential for drug discovery initiatives by CIOERT partners at HBOI/FAU and UNCW.

- The drug discovery groups at HBOI/FAU and UNCW have the potential to produce several important compounds for cancer treatment. Given this situation the CIOERT partners and NOAA should develop an equitable revenue sharing financial model that not only benefits the respective universities but also CIOERT.
- Regular interaction (e.g. video conferencing) between and among CI research groups would stimulate productive exchanges and encourage further collaboration.
- CIOERT should focus research on the eastern Gulf of Mexico which is rapidly becoming a major region for deep-water oil and gas production.
- CIOERT leaders should apply innovative scientific training such as working with AnthoSOA (a data processing system) to the entire scientific team. The application of such a system at this CI represents a major technical breakthrough.

Final Comments

- Following a thorough review of the strategic planning, science, education and outreach, and science management at CIOERT, and considering the financial climate CIOERT is functioning in, the Review Panel unanimously agreed to a performance rating of **Outstanding**.
- The Review Panel's Findings/Recommendations are items presented to strengthen CIOERT.