Office of Ocean Exploration and Research Update

CDR William Mowitt, Deputy Director
Eleventh Meeting
Ocean Exploration Advisory Board
Woods Hole, MA
September 25-26, 2018
Ocean Exploration in 2018

- **GOM Tech Demo (EX1802):** First technology demonstration expedition for NOAA Ship *Okeanos Explorer*. Worked with new technology partnerships in academia and the Navy to allow for new discoveries in the future. Hope to do more technology demonstrations on future expeditions.

- **GOM 2018 (EX1803):** Found the deepest high-density communities of coral (2,600 meters) known from the Gulf of Mexico.
Ocean Exploration in 2018

• DeepCCZ (FFO): Found two confirmed new species, including this worm, and potentially more in an area targeted for deep sea mining.

• VIIRS (EX1804): Ground-truthed JPSS Visible Infrared Imaging Radiometer Suite (VIIRS) satellites ocean color radiometry and derived products - validating an important tool for the ocean exploration community.
Ocean Exploration in 2018

- **Windows to the Deep 2018 Mapping (EX1805):** First *Okeanos Explorer* expedition contributing to ASPIRE and mapping data led to the discovery of deep-sea coral and sponge habitat (EX1806 and DEEP SEARCH 2018 discoveries).

- **Windows to the Deep 2018 ROV (EX1806):** Revealed one of the largest areas of deep-sea coral habitat that has been discovered in U.S. waters to date along the numerous mounds on the Stetson Mesa offshore of Florida and Georgia.
Ocean Exploration in 2018

- **DEEP SEARCH 2018:** Discovered approximately 85 linear miles of discontinuous Lophelia coral reef approx. 160 miles off the coast of Charleston, SC.

- **SUBSEA:** Successful NASA-NOAA-OET partnership expedition.

- **Mapping Deepwater Areas Southeast of Bermuda (EX1807):** First expedition contributing to Galway and leveraged international partnerships to conduct coordinated exploration and mapping of priority high-seas areas of the North Atlantic and hosted two international visiting scientists on NOAA Ship *Okeanos Explorer*. 
WWII Marine Archaeology From FY17 FFO

- **March 25 – April 14: Storming the beaches of Peleliu**
  For the first time the amphibious landing approaches were explored to locate crafts lost in the bloodiest first day of battle of the entire WWII Pacific campaign.

- **July 11 – 30: Kiska: Alaska’s underwater battlefield**
  Discovery of WWII Allied and Japanese war casualties including the Stern of the American destroyer USS *Abner Read*. Conducted by Scripps and Project Recover using Office of Naval Research mine hunting technology.

- **July 19 – August 31: Aviators Down**
  Supporting Thunder Bay National Marine Sanctuary to discover aircrafts lost during advanced combat training over Lake Huron in WWII by pilots from the African-American Army Air Corps (Tuskegee airmen) and pilots of the Free French Air Force.

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Major Findings, Major Media Coverage

- Strong communications partnerships contributed to extensive media coverage on recent discoveries.
Major Findings, Major Media Coverage

• **Kiska: Alaska’s Underwater Battlefield**
  – On July 17, 2018: Discovered the missing 75-foot stern section of USS Abner Read off the Aleutian island of Kiska.
  – Worked with communications partners from University of Delaware, Scripps Institution of Oceanography, and Naval History and Heritage Command to coordinate a joint press release.
  – Result was media coverage by Washington Post, CNN, CBS, Business Insider, Gizmodo, Daily Mail, and more.
Major Findings, Major Media Coverage

- **DEEP SEARCH 2018**
  - August 23 and 24, 2018: Discovered approximately 85 linear miles of discontinuous Lophelia coral reef approx. 160 miles off the coast of Charleston, SC.
  - Worked with BOEM and USGS communications/media partners to respond to influx of media requests and developed web content for use by media outlets.
  - Result was media coverage by Washington Post, CNN, NBC, Huffington Post, Live Science, Forbes, Coastal Living, and more.
Technology Demonstrations aboard the EX

- **EX1802**
  - Silixa and Navy partnership: tested new temperature profiling and acoustic array acquisition methods using fiber optic sensing
  - CIOERT and Harbor Branch Oceanographic Institute, Florida Atlantic University partnership: testing of a midwater profiler system

- **EX1809** (Rescheduled)
  - National Geographic partnership: planned tests of low light drop cameras
  - URI and Harvard partnership: planned dives of low light midwater platform with unique sampling technology
  - Naval Oceanography Mine Warfare Center and Kraken partnership/CRADA: planned to conduct AUV ops with a Kraken 3 cm resolution Synthetic Aperture Sonar (SAS) on a Navy REMUS 100

- **FY19**: Signed CRADA with Open Water Power (L3) to demonstrate their aluminum fuel cell technology on a future expedition.
FY18 FFO Update: Ten FY18 Projects

• Paleolandscapes and the ca. 8,000 BP shoreline, Gulf of Mexico, outer continental shelf
  Amanda Evans - Coastal Environments, Inc.
  Budget: $596,424

• Microbial stowaways: Exploring shipwreck microbiomes in the deep Gulf of Mexico
  Leila. J. Hamdan - University of Southern Mississippi
  Budget: $637,469

• Advances in deep sea sampling with soft robotics
  Stephen Licht - University of Rhode Island
  Budget: $91,021

• Development of innovative techniques for exploring novel submarine springs on the Florida OCS
  Emily R. Hall - Mote Marine Laboratory
  Budget: $257,442

• Optical sensing of ocean gases using photothermal interferometry
  Anna Michel - Woods Hole Oceanographic Institution
  Budget: $397,948
• Exploration of the deep ocean with teams of long-endurance ocean robots  
  Michael V. Jakuba - Woods Hole Oceanographic Institution  
  Budget: $597,212

• From aggregations to individuals: Exploring migrating deep sea scattering layers through multiscale-multimode technologies in the Gulf of Mexico  
  Kevin M. Boswell - Florida International University  
  Budget: $590,110

• Combining habitat suitability and physical oceanographic models for targeted discovery of new benthic communities on the west Florida slope  
  Sandra Brooke - Florida State University  
  Budget: $426,316

• Exploration and characterization of fine-scale physical-biogeochemical environment over deep coral reefs on the west Florida slope using integrated ROV-lander-sensor systems  
  Zhaohui Aleck Wang - Woods Hole Oceanographic Institution  
  Budget: $469,003

• Advancing eDNA as a tool for exploration in deep water environments  
  Jill McDermott - Lehigh University  
  Budget: $596,424

Total amount: $4.66 million
FY19 FFO Update

- Internal review of blue economy-focused FFO pre-proposals complete
- 75 pre-proposals submitted
- The internal review of FY19 pre-proposals is complete. Decision to encourage 35 full proposals
- PIs received “encourage” notification letters on 24 September; discourage letters to be sent in early October
Other OER Updates

• Cooperative Institute on Ocean Exploration: applications due in October; expect award in 2019
• ASPIRE Priorities Workshop 15-16 November
• Executive Order 13817: OER continues to be actively involved in NOAA's response to Executive Order 13817. Expect role a for NOAA in implementing.
• Education review – implementation phase to begin following OEAB review of report