Windows to the Deep 2018: Exploration of the Southeast U.S. Continental Margin

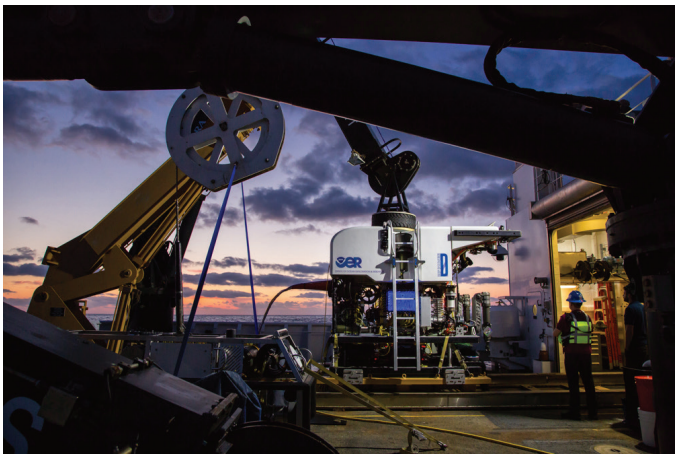
From June 11 through July 2, 2018, NOAA and partners will conduct a telepresence-enabled ocean exploration expedition on NOAA Ship *Okeanos Explorer* to collect critical baseline information about unknown and poorly understood deepwater areas off the coast of the southeastern United States. During the **Windows to the Deep 2018: Exploration of the Southeast U.S. Continental Margin** expedition, our at-sea and shore-based science teams will work together to explore the deepwater areas of this region.

NOAA Ship *Okeanos Explorer* is the only U.S. federal vessel dedicated to exploring our largely unknown ocean for the purpose of discovery and the advancement of knowledge. The ship is equipped with a state-of-the-art, dual-body remotely operated vehicle (ROV) capable of diving to 6,000-meter depths, as well as four different types of mapping sonars that collect high-resolution data about the seafloor and the water column. *Okeanos Explorer* takes every opportunity to survey the ocean; identify new habitats, species, and resources; and contribute critical information to enhance our understanding of the ocean.

Objectives

The **Windows to the Deep 2018: Exploration of the Southeast U.S. Continental Margin** expedition will address science themes and priority areas put forward by scientists and managers from NOAA, management agencies in the region, and the ocean science community. NOAA priorities for the expedition include a combination of science, education, outreach, and open data objectives that will support management decisions at multiple levels:

- Acquire data on deepwater habitats in the southeast U.S. continental margin to support priority science and management needs
- Identify, map, and explore the diversity and distribution of benthic habitats—including fish habitats, deep-sea coral and sponge communities, chemosynthetic communities, and biological communities that colonize or aggregate around shipwrecks
- Investigate biogeographic patterns of deep-sea ecosystems and connectivity across the southeast U.S. continental margin for use in broader comparisons of deepwater habitats throughout the Atlantic Basin
- Map, survey, and sample geologic features within the southeast U.S. continental margin to better understand the geological context of the region, and improve knowledge of past and potential future geohazards
- Explore U.S. maritime heritage by identifying and investigating sonar anomalies as well as characterizing shipwrecks
- Collect high-resolution bathymetry in areas with no (or low quality) sonar data
- Acquire a foundation of ROV, sonar, and oceanographic data to better understand the characteristics of the water column and the fauna that live there



During the expedition, NOAA's ROV *Deep Discoverer* will be used to acquire high-definition visual data and collect limited samples in poorly explored deepwater areas of the Gulf of Mexico. *Image courtesy of the NOAA Office of Ocean Exploration and Research.*

- Engage a broad spectrum of the scientific community and public in telepresence-based exploration, and provide a foundation of publicly accessible data and information products to spur further exploration, research, and management activities

Why This Area?

This is the first NOAA Ship *Okeanos Explorer* expedition that will contribute to NOAA's Atlantic Seafloor Partnership for Integrated Research and Exploration (ASPIRE), a major multi-year, multi-national collaborative field program focused on raising collective knowledge and understanding of the North Atlantic Ocean.

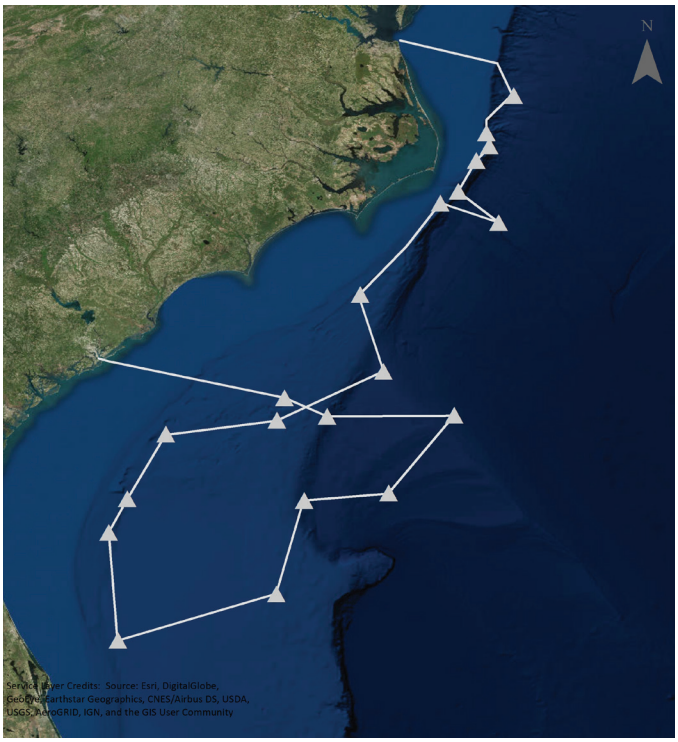
The deepwater areas offshore Florida, Georgia, South Carolina, and North Carolina, are some of the least explored areas along the U.S. East Coast. Though this region is home to millions of Americans and is experiencing some of the highest population growth rates in the U.S., the southeast U.S. continental margin has some of the largest gaps in high-resolution ocean mapping data on the East Coast and limited previous observations via ROVs. Exploratory missions, such as those conducted via NOAA Ship *Okeanos Explorer*, are necessary to expand our knowledge of unknown and poorly known deepwater areas and to provide data for decision-makers.

Why it Matters

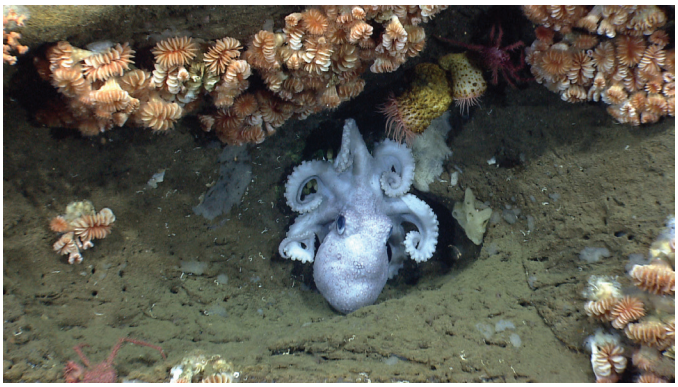
America's future depends on understanding the ocean. We explore the ocean to make valuable scientific, economic, and cultural discoveries; we explore because ocean health and resilience are vital to our economy and to our lives. Exploration supports NOAA's mission priorities and national objectives by providing high-quality scientific information about the deep ocean to anyone who needs it.

Follow Along Live!

Anyone with an Internet connection can follow along with the expedition as high-definition video of dives is streamed live to shore from ROV *Deep Discoverer* from June 12 through July 1, 2018. The same technology that allows scientists around the world to participate in the expedition from land also enables interested members of the public to experience deep-sea exploration, the wonder of discovery, and the fascination of science in real time. Additionally, mission logs, daily updates, educational materials, and multimedia elements will be added to the Ocean Explorer website throughout the expedition.



During the Windows to the Deep 2018 expedition, NOAA and partners will explore the largely unknown deepwater habitats offshore of the southeastern U.S. continental margin. The general cruise track is shown here in white with remotely operated vehicle (ROV) dives represented as white triangles. ROV dives and mapping operations will help improve the understanding of this complex and diverse region.



An octopus guards her eggs under an overhang in Hydrographer Canyon. *Image courtesy of the NOAA Office of Ocean Exploration and Reseach, 2013 Northeast U.S. Canyons Expedition.*

oceanexplorer.noaa.gov/okeanos/explorations/ex1806/

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