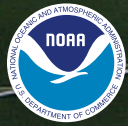# Océano Profundo 2018: Exploring Deep-Sea Habitats off Puerto Rico and the U.S. Virgin Islands
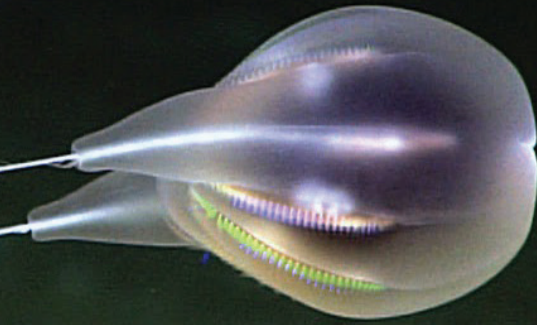
NOAA Ship *Okeanos Explorer*
October 30 - November 20, 2018

Ocean Exploration and Research

ASPIRE

From October 30 through November 20, 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 surrounding Puerto Rico and the U.S. Virgin Islands. During the **Océano Profundo 2018: Exploring Deep-Sea Habitats off Puerto Rico and the U.S. Virgin Islands** expedition, our at-sea and shore-based science teams will work together to explore deepwater areas of this region.

Objectives

The **Océano Profundo 2018: Exploring Deep-Sea Habitats off Puerto Rico and the U.S. Virgin Islands** expedition will address science and management priorities put forward by NOAA, resource managers and scientists from the region. NOAA priorities for the expedition include a combination of science, education, outreach, and open data objectives that will support management decisions at multiple levels:

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 mapping data on the seafloor and the water column. NOAA Ship *Okeanos Explorer* takes every opportunity to explore the ocean, identify new species, habitats and resources, and thereby contribute critical information to enhance our understanding of the deep ocean, which represents the largest portion of our Planet. *Image courtesy of Art Howard.*

- Acquire data on deepwater habitats to support science and management needs in Caribbean waters off Puerto Rico and the U.S. Virgin Islands

- Explore deepwater areas relevant to resource managers, such as essential fish habitat (EFH), habitat areas of particular concern (HAPC), marine protected areas (MPAs), and other priority management areas

- Map, survey and characterize the diversity and distribution of deep-sea seafloor communities, particularly those found within deep-sea coral and fish habitats, as well as other vulnerable marine habitats

- Investigate biogeographic patterns and connectivity of deep-sea organisms in the Caribbean Region for use in broader comparisons of deepwater habitats across the Atlantic Basin

- Map, survey, and sample geologic features to better understand the geological context of the region, and improve knowledge of past and future geohazards

- Collect high-resolution bathymetry and backscatter data in areas with no (or low quality) sonar data, as well as to support ROV operations and identify potential maritime heritage sites

- Acquire a foundation of ROV, sonar, and oceanographic data to better understand the characteristics of the water column and the fauna that live there

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

Why This Area?

This expedition will be one of several expeditions in 2018-2020 that will contribute directly to the Atlantic Seafloor Partnership for Integrated Research and Exploration (ASPIRE) campaign, a major multi-year, multi-national collaborative field program focused on raising our collective knowledge of the North Atlantic Ocean.

The North Atlantic, including the Caribbean Sea, plays a pivotal role to humankind, providing a myriad of ecosystem services, such as food security, protection from hazards, trade, tourism and recreation, which collectively provide employment and livelihood opportunities for millions of people. Despite its critical importance, we have only begun to understand the region's deep-sea resources, oceanography, bathymetry, geology, ecosystems and trans-Atlantic biological connectivity. The deep waters surrounding Puerto Rico and the U.S. Virgin Islands are some of the least explored in the entire U.S. exclusive economic zone (EEZ) of the Atlantic Ocean, and information collected during the expedition will help fill important knowledge gaps. The deep waters of Puerto Rico and the U.S. Virgin Islands contain a wide diversity of deepwater habitats and geological features, including seamounts, submarine canyons, valleys, troughs and trenches, the vast majority of which have never been explored.

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 October 31 through November 19, 2018. The same telepresence technology that allows scientists from 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.
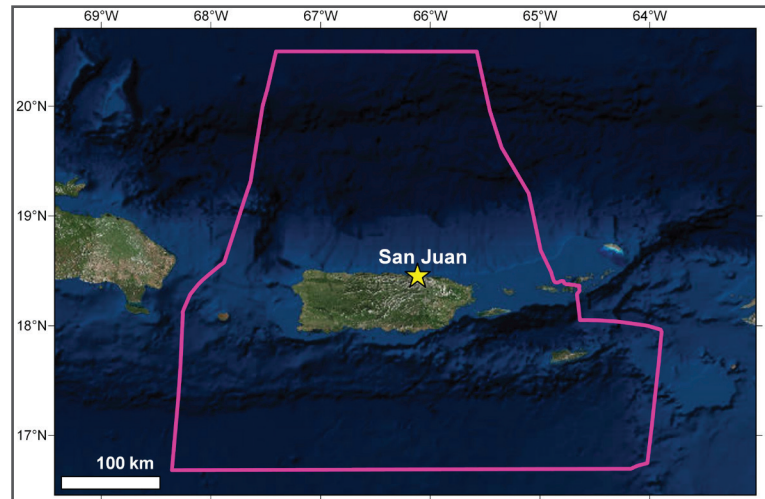
Map showing the operating area of the 2018 NOAA Ship *Okeanos Explorer* expedition to Puerto Rico and the U.S. Virgin Islands. This expedition will start and end in San Juan, Puerto Rico, and conduct mapping and remotely operated vehicle (ROV) operations to support science and management priorities of the Caribbean Region. *Map courtesy of NOAA Office of Ocean Exploration and Research.*

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.