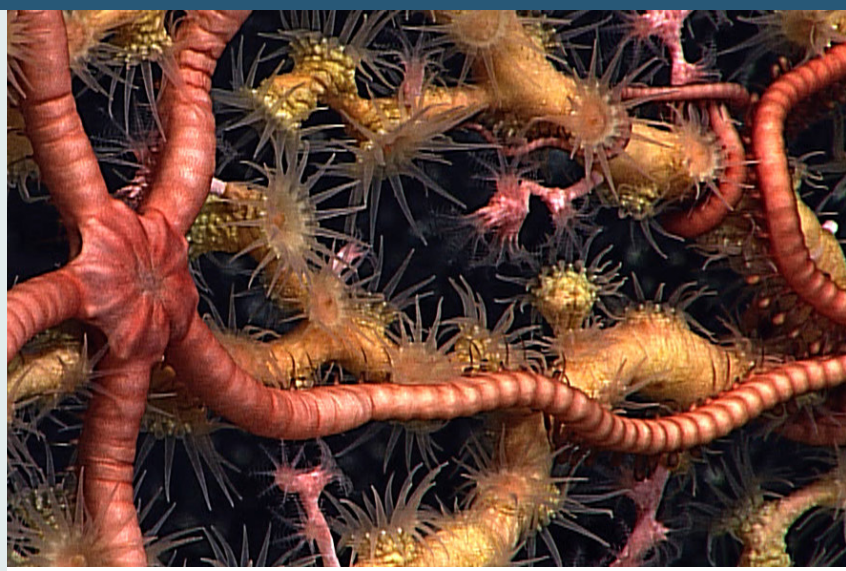
2016 Deepwater Exploration of the Marianas

Chamorro: 2016 I Mat'tingan i Mariånas yan i Guinahåña Siha

Carolinian: 2016 Abwááritá Ówtol Lómwol Matawal Pasifiko



NOAA Ship *Okeanos Explorer,* operated through a partnership between the NOAA Office of Ocean Exploration and Research and the Office of Marine and Aviation Operations, is the nation's only government vessel dedicated to ocean exploration. *Okeanos Explorer* systematically explores the ocean every day while at sea to maximize public benefit from the ship's unique capabilities, which include 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.

From April 20 to July 10, 2016, *Okeanos Explorer* will investigate and document deep-water environments in and around the Commonwealth of the Northern Mariana Islands (CNMI) and the Marianas Trench Marine National Monument (MTMNM). During the **2016 Deepwater Exploration of the Marianas** expedition, our at-sea and shore-based science teams will work together to make some of the first deepwater scientific observations at unknown and poorly known sites. The expedition will commence and conclude in Guam and will include a port call in Saipan, CNMI. Planned expedition dates are as follows:

April 20 – May 11: ROV dives and mapping focused on the southern part of the CNMI and the MTMNM

May 12 – May 19: Port call in Saipan

May 20 – June 11: Mapping focused on the northern part of the CNMI and the MTMNM

June 12 – June 16: Port call in Guam

June 17 – July 10: ROV dives and mapping focused on the northern part of the CNMI and the MTMNM

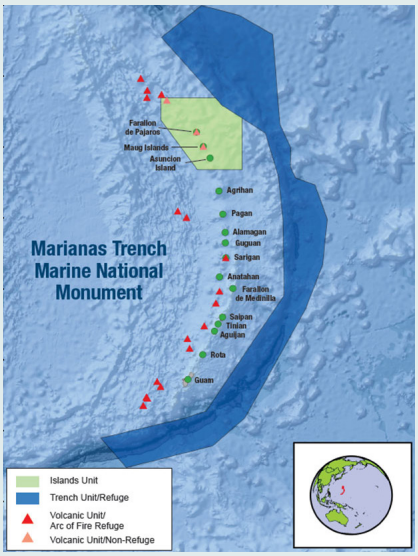
Objectives

The expedition will address science themes, priority areas, and exploration targets put forward by scientists and managers from NOAA, local CNMI management agencies, and across the broad ocean science community. Expedition priorities include a combination of science, education, outreach, and open data objectives that will support management decisions at multiple levels:

- Acquire data to support priority MTMNM science and management needs
- Explore the diversity of benthic habitats and features, including hydrothermal vents, mud volcanoes, seamounts, trench/subduction zone areas, deep-sea coral habitats, and bottomfish habitats
- Characterize seamounts in and around the Prime Crust Zone – the area of the Pacific with the highest concentration of commercially valuable deep-sea minerals
- Investigate the geologic history of Pacific seamounts, including potential relevance to plate tectonics and subduction zone geology and biology
- Engage a broad spectrum of the scientific community and public in telepresence-based exploration
- Provide a foundation of publicly accessible data and information products to spur further exploration, research, and management activities

The expedition will include 24-hour operations consisting of ROV dives and mapping operations. Daytime ROV operations will focus on depths between 250 and 6,000 meters and will include high-resolution visual surveys and limited biological and geological sample collection. Mapping operations will be conducted overnight and when the ROV is on deck.

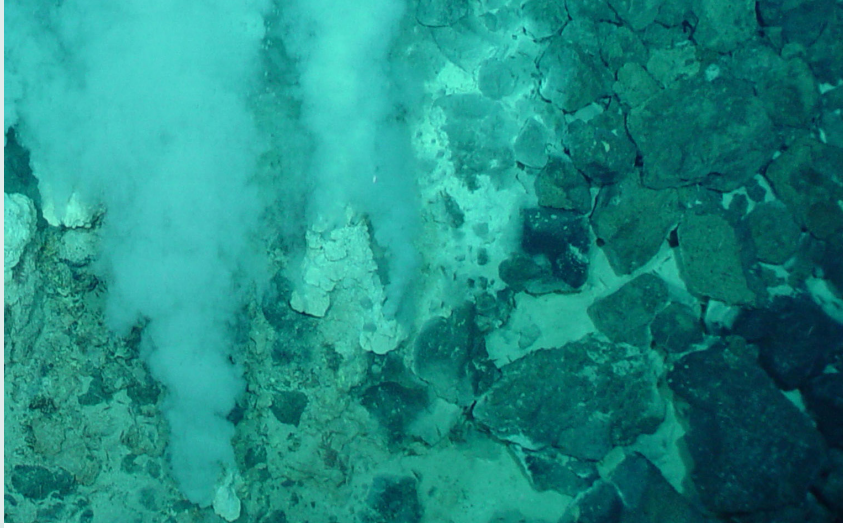
Marianas Trench Marine National Monument



Located in the Mariana Archipelago east of the Philippines, the Marianas Trench Marine National Monument includes approximately 250,000 square kilometers of submerged lands and waters. This unique place is made up of three units: the Islands, Trench, and Volcanic units.

- The Islands Unit is home to unique reef habitats that support marine biological communities. These reefs and waters are among the most biologically diverse in the Western Pacific and include some of the greatest diversity of seamount and hydrothermal vent life yet discovered.
- The Trench Unit/Refuge includes some of the deepest known areas on Earth. The region is geologically very complex, and includes a subduction zone, back arc basins, and active simmering island and submarine volcanoes.
- The Volcanic Unit/Arc of Fire Refuge includes a series of undersea mud volcanoes and hydrothermal vents that support unusual life forms in some of the harshest conditions on Earth. Species are able to survive here despite hydrothermal vents that produce highly acidic and boiling water.

President George W. Bush established the Monument under the authority of the Antiquities Act of 1906, which protects places of historic or scientific significance. Only recently have scientists visited the realm of the Monument, where they observed previously unknown biological, chemical, and geological wonders of nature. These deep areas likely include many secrets yet to be discovered during this expedition.



Why It Matters

Despite the role that the world's ocean plays in supporting our well-being, we have only explored five percent of it using advanced technologies. Increasing the baseline knowledge of these little-known or unexplored areas is critical to the conservation and management of these remarkable habitats and ecosystems. The results of this exploration are critical for ocean resource management and will assist citizens, businesses, and governments with making informed decisions that will ultimately protect lives, property, and economic well-being. This expedition is part of the three-year Campaign to Address the Pacific monument Science, Technology, and Ocean NEeds (CAPSTONE). It will provide a foundation of baseline information to support science and management needs in and around this western Pacific marine national monument.

Follow Along Live!

Anyone with an Internet connection can follow along with the expedition as high-definition video is streamed live to shore from ROV *Deep Discoverer*. 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.

Website
oceanexplorer.noaa.gov/okeanos/explorations/ex1605/

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