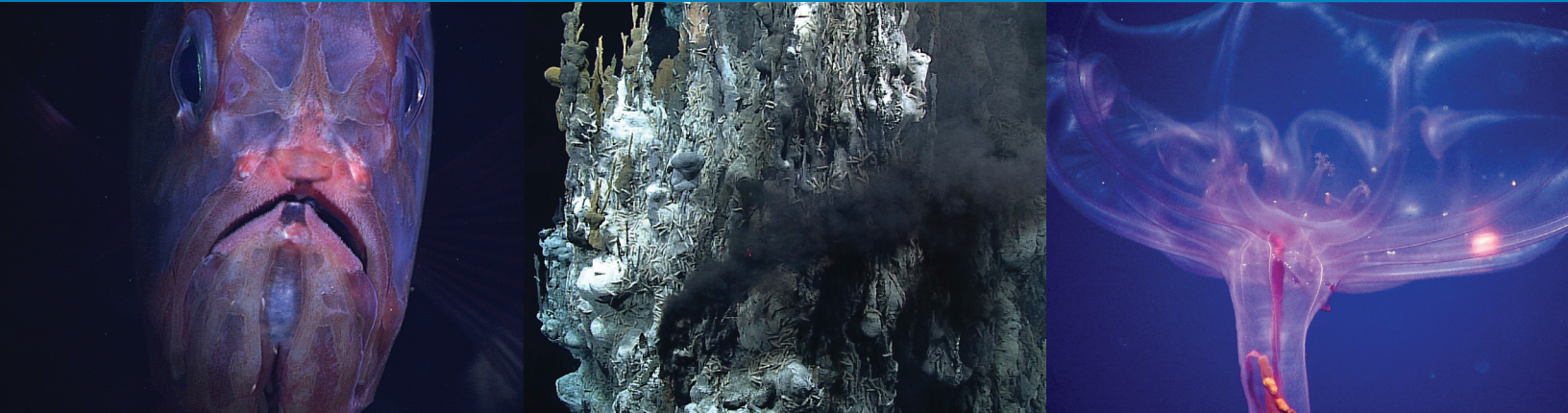


NOAA's Campaign to Address Pacific monument Science, Technology, and Ocean NEEDs (CAPSTONE)



CAPSTONE was a major multi-year foundational science initiative to collect deepwater baseline information to support science and management decisions in and around U.S. marine protected areas in the central and western Pacific. These areas contain some of the last relatively pristine marine ecosystems on the planet and harbor numerous protected species, undiscovered shipwrecks, and cultural landscapes. Their designation is unprecedented in terms of geographic scope, ecological value, and national symbolism for ocean conservation. However, their remoteness creates substantial challenges. Most deepwater areas remain poorly known and are of high interest to federal and state agencies with research and management responsibilities. To address this challenge, NOAA conducted a series of expeditions aboard NOAA Ship *Okeanos Explorer*. Extensive levels of cross-NOAA support and collaboration, as well as interagency and academic partnerships, were crucial to both setting priorities and conducting exploration activities.

CAPSTONE Science Themes

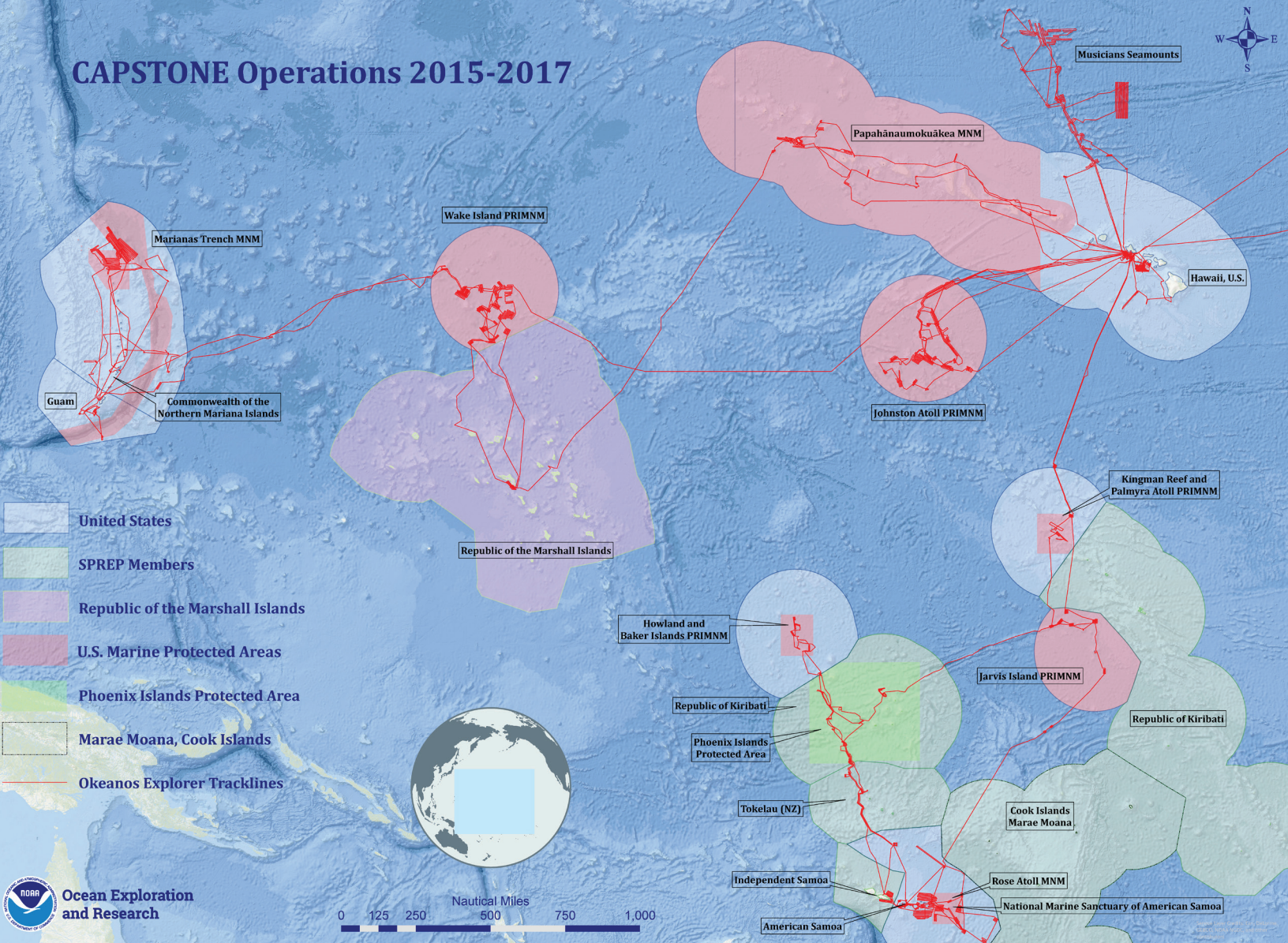
- Acquire data to support priority monument and sanctuary science and management needs
- Identify and map vulnerable marine habitats – particularly high-density deep-sea coral and sponge communities
- Characterize seamounts in and around the Prime Crust Zone - the area of the Pacific with the highest concentration of commercially valuable deep-sea minerals
- Investigate the geologic history of Pacific seamounts, including potential relevance to plate tectonics and subduction zone biology and geology
- Increase understanding of deep-sea biogeographic patterns across the central and western Pacific



Telepresence and Scientific Participation

NOAA Ship *Okeanos Explorer* is equipped with telepresence technology, which allows teams of participating scientists to collaborate with and guide expeditions from shore-based Exploration Command Centers around the world. Using telepresence technology, Internet-based collaboration tools, and a dedicated broadband satellite communications and data transmission system, data and information are quickly made widely available in near real time to scientists, educators, the media, and the general public. This allows for any number of interested scientists, marine resource managers, educators, students, and the general public to participate in expeditions, strengthening and engaging the community of ocean explorers.





CAPSTONE Operations 2015-2017



CAPSTONE Summary

NOAA and partners initiated this series of expeditions aboard NOAA Ship *Okeanos Explorer*, equipped with a dual-body remotely operated vehicle (ROV) capable of collecting biological and geological samples and diving to 6,000-meter depths, as well as four different types of mapping sonars. In the three years of CAPSTONE, NOAA conducted 24 cruises and more than 187 ROV dives and mapped over 635,000 km² of seafloor in the unknown and little known deepwater areas in and around the Pacific Remote Islands Marine National Monument, the Papahānaumokuākea Marine National Monument, the Marianas Trench Marine National Monument, National Marine Sanctuary of American Samoa, the Rose Atoll Marine National Monument, and the high seas. While the focus of CAPSTONE was within U.S. waters, NOAA was proud to partner with several Pacific Island countries and territories to expand the CAPSTONE effort internationally in support of the Pacific Oceanscape Framework and Big Ocean, the network of the world's large-scale marine managed areas. These areas include the Republic of Kiribati's Phoenix Islands Protected Area, Samoa, New Zealand's Territory of Tokelau, and the Cook Islands.

CAPSTONE at a Glance

-  over 635,000 km² of seafloor mapped
-  333 primary biological & 278 geological samples collected
-  187 ROV dives at a depth range of 250 - 6,000 meters
-  over 260 participating scientists, students, and managers
-  8.4 million live video views via YouTube and over 8 million additional live video views via other outlets such as Facebook

What's Next?

Both Schmidt Ocean Institute's R/V *Falkor* and Ocean Exploration Trust's E/V *Nautilus* will continue to explore the Pacific region, adding to this foundation of knowledge. For more information about their upcoming expeditions, please visit their websites:

- <http://schmidtocean.org>
- <http://www.oceanexplorationtrust.org>

For more information about CAPSTONE and other NOAA ocean exploration work, please visit our website:
<http://oceanexplorer.noaa.gov>