

OCEAN NETWORKS CANADA MAINTANANCE & EXPLORATION (NA151)

June 25 – July 18, 2023

Geographic Focus: Ocean Networks Canada NEPTUNE Cabled Observatory offshore British Columbia

Main Operations: ROV dives, seafloor mapping, and deployment of various instruments

Sponsor: [Ocean Networks Canada](https://www.ocean-networks.ca)

Expedition webpage: www.nautiluslive.org/cruise/NA151



OVERVIEW

From June 25-July 18, 2023, [Ocean Networks Canada \(ONC\)](https://www.ocean-networks.ca) and the [Ocean Exploration Trust](https://www.oceanexplorationtrust.org/) conducted a telepresence-enabled expedition aboard E/V *Nautilus* to provide maintenance of ONC's cabled NEPTUNE observatory. Located off the west coast of Canada, this cabled observatory consists of an 800-kilometer loop of fiber optic cable that connects numerous instruments across six sites, thereby providing high-resolution temporal observations not afforded by traditional ship-based exploration. During this 22-day expedition, E/V *Nautilus* supported seafloor mapping and ROV operations around the cabled observatory, as well as deployed and recovered various instruments as part of ONC's annual maintenance program.

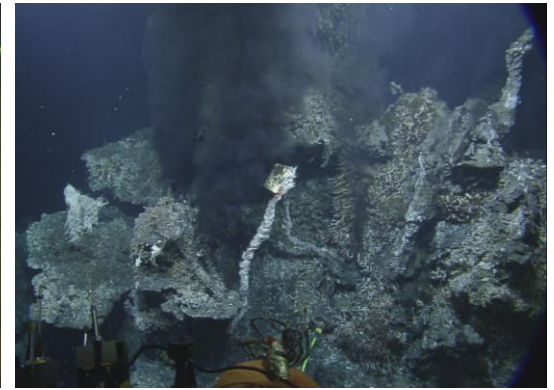
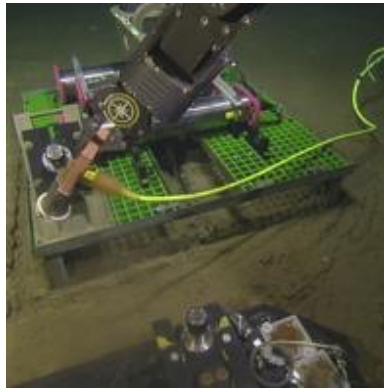
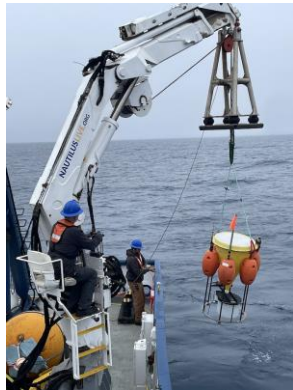
MAPPING SUMMARY

Over 3,811 km² of seafloor were mapped, all of which located within Canada's exclusive economic zone off British Columbia. Seafloor mapping focused on mapping seafloor northwest of Endeavour in priority areas identified by Fisheries and Ocean Canada, and between the Cascadia Basin and Barkley Canyon ONC sites.



ROV SUMMARY

The expedition completed 20 successful ROV dives at depths ranging from 2,672 to 372 meters, which focused on deploying and recovering various sensors and instruments as part of ONC's routine maintenance, in addition to conducting benthic and mid-water visual surveys at all five observatory sites that were visited during this expedition — Folger Deep, Barkley Canyon, Endeavour Hydrothermal Vent Field, Cascadia Basin, and Clayoquot Slope. A total of 114 primary samples and 125 subsamples were collected during ROV dives, which will support ongoing temporal studies on the biological processes across ONC's observatory sites.



EDUCATION & OUTREACH

Over the course of the expedition, live video feeds received over 231,000 views and highlight videos garnered 424,000 views. In addition to videos on [OET's YouTube Channel](#), expedition content was featured on five different social media platforms. Expedition content on OET's [TikTok](#) gained over 2.8 million views, whereas posts on [Instagram](#), [Twitter](#), [Facebook](#), and [LinkedIn](#) attracted over 580,000 impressions. ONC's social media platforms garnered another 183,400 impressions. While at sea, the team created 11 new [education and outreach products](#) and hosted 32 [ship-to-shore interactions](#) with schools and community events, reaching over 1,200 people across North and South America. Three professional educators participated in the expedition at sea via [OET's Science Communication Fellowship](#) gaining real-world experience working alongside STEM professionals. Early expedition results were featured in 58 media stories published in 14 countries and 12 different languages.

BROADER IMPACTS

By bringing data to the surface, ONC provides ocean intelligence that helps communities, governments and industry make informed decisions about our future. Using cable observatories and big data management, ONC enables evidence-based decision making on ocean management, disaster mitigation, and environmental protection. These observatories collect data on physical, chemical, biological, and geological aspects of the ocean, and allow researchers data access from all over the world. This mission also advanced priorities on education, diversity, and inclusion by providing opportunities for underrepresented minority groups to participate in expeditions at sea. Finally, the data collected on this mission is an essential precursor to future explorations throughout the region, which will likely lead to many more discoveries.

DATA ACCESS

Data and samples collected during the expedition were delivered to ONC for archiving and public-distribution via [Oceans 3.0](#). This advanced data management system provides big data in the form of high-resolution sensor measurements, video, and underwater sound recordings that are openly accessible by researchers, communities and decision-makers around the world.



ACKNOWLEDGMENTS

Thanks to Ocean Networks Canada, Fisheries and Oceans Canada, the captain and crew of E/V *Nautilus*, the Nautilus Corps of Exploration, the Ocean Explorations Trust, and all that supported the expedition from shore. Activities within the Endeavour Marine Protected Area and the Tang.e.wan — ḥáčxwiqak — Tsigis Area of Interest were authorized by Fisheries and Oceans Canada. The expedition was funded by Ocean Networks Canada.