

## ONC completes its most complex operation in 10 years

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That's a wrap! Ocean Networks Canada's Expedition 2015, Wiring the Abyss, was an ambitious operation with three ships involved in 24/7 operations and maintenance work at all eight sites on the observatories. With telepresence capability from two of the ships over 24 days, people anywhere in the world watched the expedition live on their computers and submit questions in realtime while vessels dived to the depths of the Pacific Ocean. In addition, 14 live televised telepresence sessions were conducted with schools, colleges, and community groups from as far away as Hawaii.



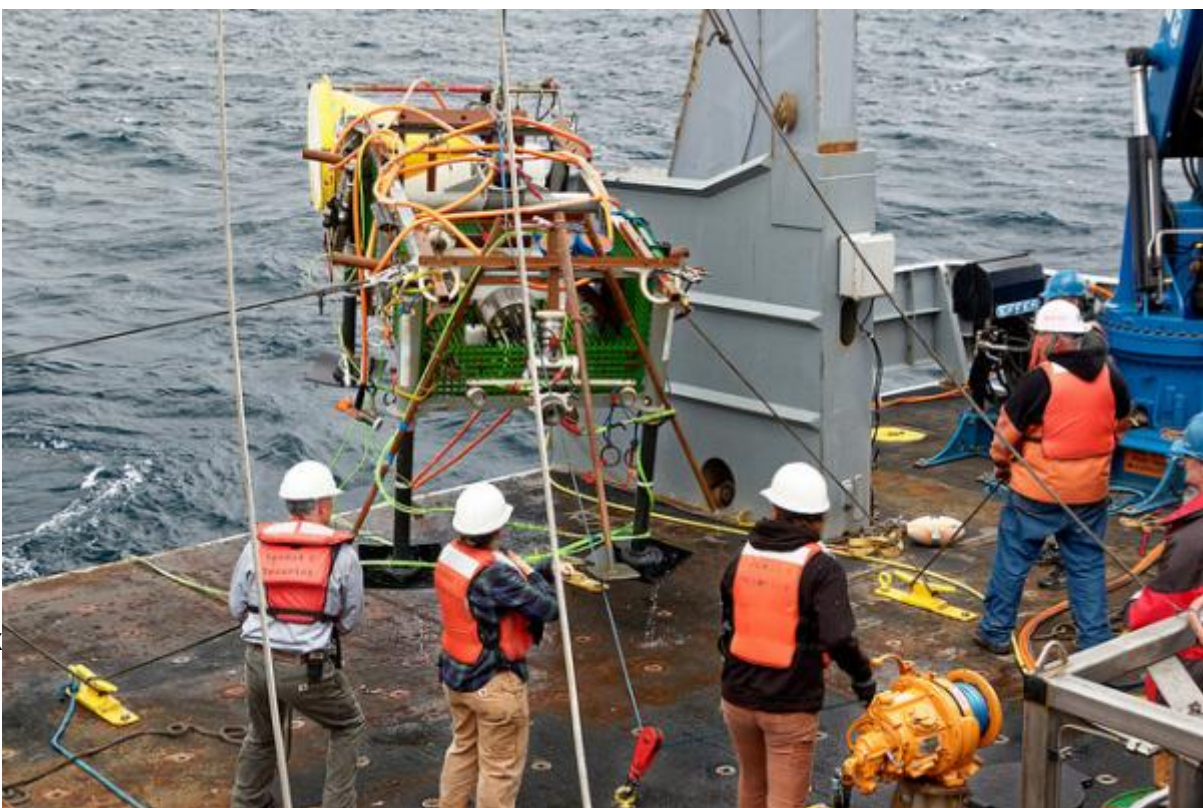
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?It was an extraordinary opportunity to see rare glimpses of the undersea world off

the west coast of Canada. says ONC President, Kate Moran. This expedition reflected our ongoing mission to support 21st century ocean discovery through cabled ocean observatory technology. But it's also important to share our undersea operations as they unfold, with the rest of the world, so everyone can learn more about the world beneath the surface of the sea.

Over 100 scientists, technicians, engineers, mariners, educators, communicators and onshore support teams were involved. This year was the first for concurrent operations on two ships with a third ship joining to support cable recovery.

It was a complicated dance at sea to make sure that the planned work was completed in the correct order and that the vessels did not interfere with each other, says Adrian Round, director of observatory operations.



268 instruments were serviced, recovered, and installed during a total of 43 dives using the exploration vessel Nautilus and research vessel Thompson. Fifteen kilometres of cable were recovered and recycled from the marine protected area at the Endeavour site in preparation for extensive cable installations scheduled for 2016, which will support a wide-range of science at this extreme environment. Cable recovery and installation was supported by Global Marine's cable ship Wave Venture, which handles cable like spaghetti, says Round, and makes operations safer and more efficient.



### Some expedition highlights:

- Deployed the 11th set of pigs in the Strait of Georgia for forensic scientists at Simon Fraser University who are estimating time-death information vital in any homicide investigation.
- Provided the University of British Columbia with the Nautilus and crew to conduct sediment surveys to better understand the low dissolved oxygen boundary in the deep water of Saanich Inlet.
- Collected 3D photography of three major vent fields at Endeavour for Tom Kwasnitschka, ONC's visiting scholar from GEOMAR in Kiel, Germany.
- Sampled ocean environments at Endeavour in support of future planned expansions and ONC's continuing partnership with Fisheries and Oceans Canada (DFO), which manages the Endeavour marine protected area.
- Deployed a test tiltmeter built by the Geological Survey of Canada in preparation for Woods Hole Oceanographic Institution's tiltmeter installation at Cascadia Basin scheduled for 2016. The tiltmeter will measure tectonic strain building up along the Cascadia fault line, a location capable of producing a magnitude 9 earthquake.
- Tested a microbial fuel cell for the Naval Research Lab that uses the power of microbes in the ocean floor sediment to generate electricity with a vision to powering low power autonomous instrumentation in the future.
- Downloaded data from the autonomous tsunami meter bottom pressure recorders at Cascadia Basin, including data from the Haida Gwaii tsunami.
- Deployed five larval colonization experiments for the International network for scientific investigation of deep-sea ecosystems (INDEEP).
- Gathered deep sea sediment samples as part of the "Global Freezer Survey", a global initiative led by Oregon State University to collect samples around the globe to map the genetic diversity of deep sea microbes on a worldwide scale.
- Serviced moorings in the Juan de Fuca Strait that support data collection for the Capital

Region District of Victoria.

- Adapted to bad weather by swiftly pulling together a plan to conduct a multibeam survey of the Nootka Fault slump for Natural Resources Canada.
- Deployed eight hydrophones for Vancouver Fraser Port Authority's (VFPA) underwater listening station project to study the impact of ship noise on marine mammals.
- Installed autonomous instruments at Barkley Canyon to continue long-term monitoring while this site awaits its reboot next summer.
- Virtually explored and captured the beautiful Fraser Ridge Glass Sponge Reef with scientists from the University of Alberta.



Sample collections were made at all eight sites on ONC's west coast observatories and are a vital component of ocean study—essential for the qualification and validation of observatory data, but also key to publishing discoveries.

“ONC's success in completing the most complex operation in its almost 10 year history reflects highly on the skilled and dedicated teams onboard and onshore,” says Adrian Round. “It was an exceptional experience working with the Ocean Exploration team onboard the Nautilus who provided an exceptional level of support across science, communications and outreach activities.”

## **Related Stories:**

To kick off this year's expedition, ocean explorers Dr. Kate Moran and Dr. Robert Ballard shared their stories from the sea and their vision for ocean exploration and discovery. [Watch the video](#) courtesy expedition media sponsor CTV.

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