

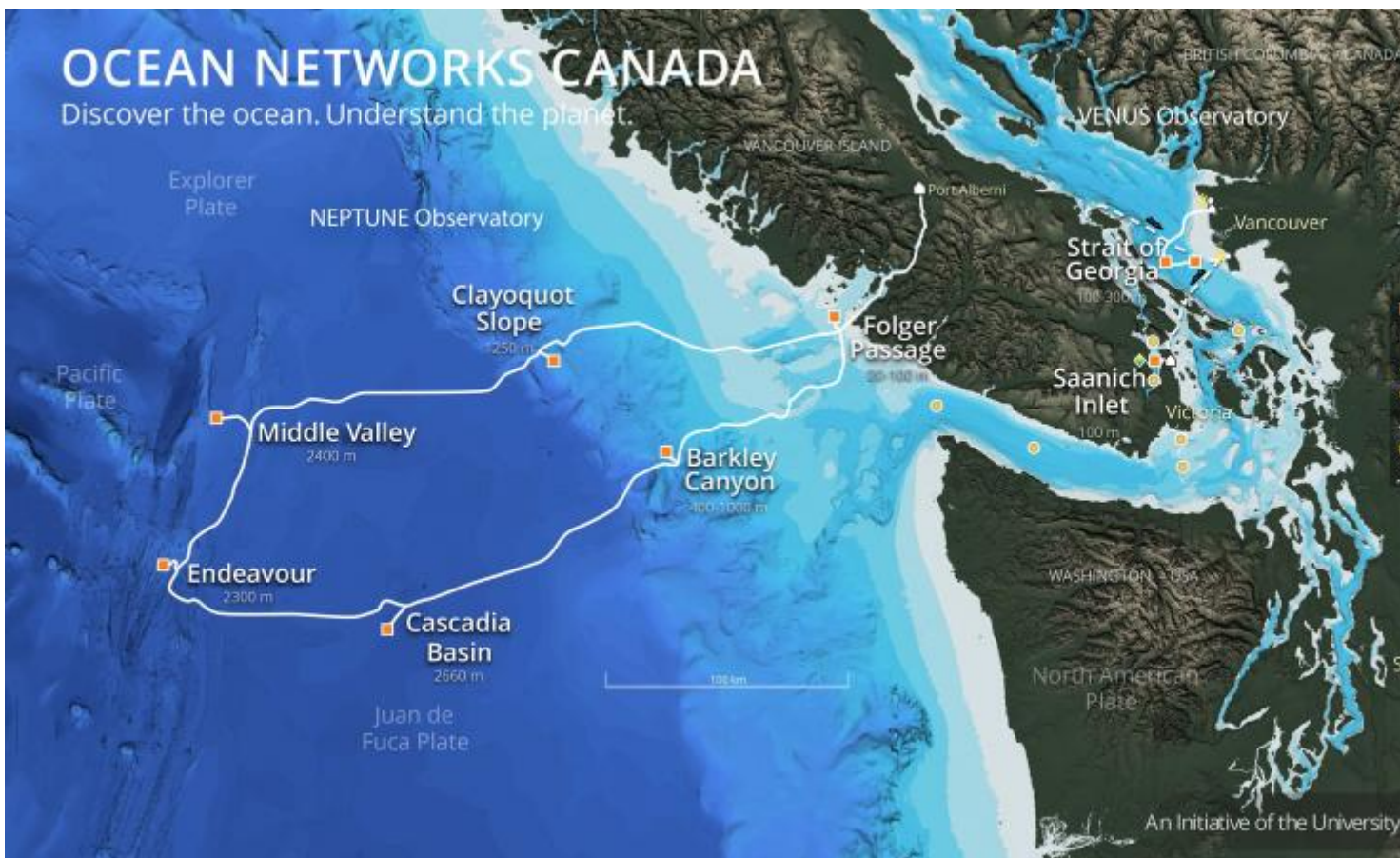
EXPEDITION 2016: Wiring the Abyss

Submitted by Max Kasprzik Mon, 2016-05-09 15:53

Leg One: 10-30 May & Leg Two 12-26 June, 2016

Live Dive with Ocean Networks Canada

Ocean Networks Canada (ONC) is about to embark on what's expected to be the most challenging expedition in its 10-year history of collecting ocean data. This year's two-month expedition off the west coast of Canada involves three ships, three remotely operated vehicles, and around-the-clock operations. The team of scientists, engineers and educators on board will be interacting via live-stream video during dives and engaging scientists and ocean lovers from around the world via Twitter using #ONCabyss.



Map of NEPTUNE and VENUS observatories

During Leg One, ONC will use a novel engineering solution and two ships to lay and connect 18 kilometres of steel-armoured fibre-optic cable at two of the deepest and most volatile sites on the NEPTUNE observatory. These cable installations will bring online long anticipated instrumentation at the Endeavour hot vents and will lay the groundwork for additional research across a wide range of ocean environments.

The 6.5-tonne Barkley Canyon node, which was damaged by a trawler in January 2015, was redesigned and will be reinstalled along with Wally. The internet-operated ocean crawler has been equipped with a new 3D imaging system to study gas hydrates at one-millimetre resolution.



Loading a node onboard the cable ship Logbrog during installation of the NEPTUNE observatory in 2009.

The cable ship (C/S) *Wave Venture* will do the heavy cable and node installations. The exploration vessel (E/V) *Nautilus* and its robots, Hercules and Argus, will connect cables,

install instruments, sample critical habitats, map the seafloor, and prepare for installations during Leg Two.

During Leg Two, ONC will use the University of Alaska's new global class ice-capable research vessel (R/V) *Sikuliaq* for the first time. Woods Hole Oceanographic Institution's (WHOI) recently upgraded robot, Jason, will also be on board. With its increased lift capability and range of activities, Jason will install and maintain instruments, conduct sampling of critical habitats, and map the seafloor across four of the NEPTUNE observatory sites. New installations include ground-shaking sensors to help with earthquake early warning, seismometers on the Pacific plate to better understand earthquakes, and preparation for the installation of a WHOI tilt-meter to monitor and study slow slip plate movements, similar to those that were the precursor to the Japanese earthquake and devastating tsunami in 2011.

Expedition 2016: Wiring the Abyss will enhance and re-establish the footprint and research capacity of Canada's world-leading observatories, allowing us to better understand our global ocean. Research areas include climate change and its impact on gas hydrates; earthquakes and tsunamis; life in extreme environments; and the impacts of 350-degree hot vent fluids on ocean chemistry and circulation.

ONC, a University of Victoria initiative, manages the world's most advanced cabled ocean observatories off the west coast of Canada and in the Arctic for the advancement of science and the benefit of Canada. The observatories supply continuous power and Internet connectivity to a broad suite of subsea instruments and collect data on physical, chemical, biological, and geological aspects of the ocean over long time periods, supporting research on complex Earth processes in ways not previously possible.



The bow of C/S Wave Venture.

C/S Wave Venture is a 142-metre cable ship owned by Global Marine Systems Limited

(GMSL). It has the ability to perform multi-purpose roles including ROV support, cable installations, and offshore construction projects. It hosts a team of 28 scientists and a crew of 34. GMSL was recently awarded an extension of the cable maintenance for the North American Maintenance Zone until December 2024. As a member since 2012, ONC will benefit from this dedicated year-round service and the expanded cable storage capacity at the Greater Victoria Harbour Authority location at Ogden Point.



The 64 metre, 1249 tonne Exploration Vessel Nautilus.

E/V Nautilus is a 64-metre ship equipped with the latest in ocean technology and two robotic vehicles, Hercules and Argus, that can dive up to 6,000 metres. It hosts a team of 31 scientists and a crew of 17. The Nautilus brings with it a world-class team of experts, high tech tools to do the job, and an onboard studio to support live one-on-one interactions from ship to shore. The Nautilus is operated by Ocean Exploration Trust (OET) under the direction of its president, Dr. Robert Ballard.



The 80 metre Research Vessel Siquiak.

R/V Sikuliaq pronounced [see-Koo-lee-awk] is an Inupiaq name meaning "young sea ice" or "young sea ice that is safe to walk on." The *Sikuliaq* is an 80-metre ice-capable oceanographic research vessel operated by the University of Alaska on behalf of the US National Science Foundation. It hosts a team of 24 scientists and a crew of 22. The *Sikuliaq*, launched in 2012, is one of the most advanced university research vessels in the world. It allows researchers to collect sediment samples directly from the seafloor, host remotely operated vehicles, use a flexible suite of winches to raise and lower scientific equipment, and conduct surveys throughout the water column and sea bottom using an extensive set of research instrumentation. The vessel design strives to have the lowest possible environmental impact, including a low underwater radiated noise signature for marine mammal and fisheries work.

[Click to watch launch video](#)

Jason will be the remotely operated vehicle on board the research vessel Siquiak. Jason was designed and built by Woods Hole Oceanographic Institute and recently received a \$2.4 million upgrade, which has made it more capable than ever. The upgrade increased the lift capacity from 400 pounds to two tons of scientific sampling and instruments and platform deployment from the seafloor. Jason can dive to 6,500 metres and is equipped with sonars, video and still imaging systems, lighting, and numerous sampling systems.

[More information and time lapse of Jason upgrade](#)

MORE INFORMATION

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WATCH: [Expedition Launch Video](#)

Ocean Networks Canada: oceannetworks.ca Twitter: [@ocean_networks](https://twitter.com/ocean_networks) #ONCabyss

Nautilus: nautiluslive.org Twitter: [@EVNautilus](https://twitter.com/EVNautilus) #NautilusLive

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