Frequently Asked Questions (FAQs)

ACCOUNTS

What are advantages of having an account?

- **Personal history** — remember searches, save plots, create annotations.
- **Prolonged storage** — logged in users searches persist for 14 days after the search completes. Searches run by anonymous users (i.e. users who are not logged in) only persist for 3 days.
- **Access across different computers** — you can start a data request on one computer and download it later to a different computer. Searches by anonymous users are tied to their browser via a cookie (clear your browser's data and you'll lose your searches).
- **Support** — being logged in with an account with a valid email address allows ONC support to contact you if anything goes wrong with your search requests or with the data itself. It also allows us to respond to help requests. We aim to respond to support requests and problems within the business day.

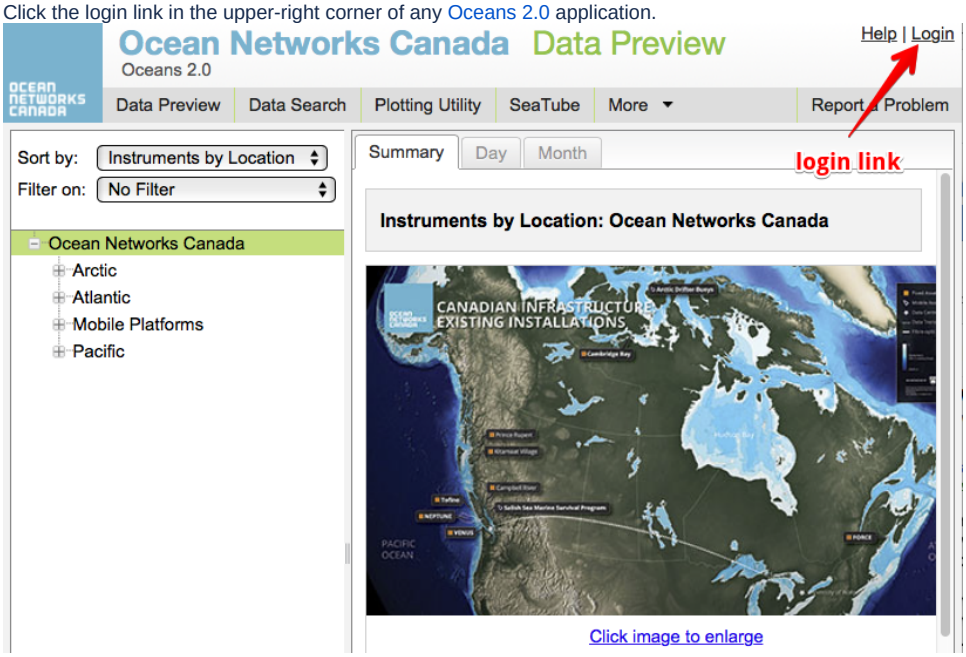
- **Share** — send plots to colleagues and friends.

How to I open an account?

- To open an account, simply register via this page.
- There is a checkbox that says *Yes, I agree to the Terms of Use and Privacy Policy.* The words *Terms of Use* and *Privacy Policy* are links. You can click them to view details about each of these.

How do I log in?

- Click the login link in the upper-right corner of any Oceans 2.0 application.



VIDEO

How can I watch **live** video from the seafloor?

- Several live video streams are available on our Live Video page.
- Our video camera pages let you watch live video from our seafloor cameras. If you are a registered camera operator, you can also control video cameras. Learn more.

How can I watch **recorded** video from the seafloor?

- Most recent videos from several locations can be found on our Community Observatory Pages.
- The complete video archive can be accessed via SeaTube, which lets you watch, search and comment on observatory cameras both above and below water, as well as Remotely-Operated Vehicles (ROVs). Learn more.
- Video highlights are also available on the Oceannetworks.ca site as well as our YouTube Channel.

DATA & METADATA

How can I find out about available data products?

Visit the Data Products catalog for detailed information about all of ONC's data products.

How to access seismic (earthquake) data?

For links and step-by-step instructions, see this page: IRIS Instructions. You can also see the latest earthquakes on the interactive Earthquake Data Dashboard.

How can I find out about ONC's data quality?

Visit the Quality Assurance (QA) Quality Control (QC) page for detailed references. Additional information is provide on this Data Quality page.

See the QAQC Test Finder that lists the details for all the automatic QAQC tests.

What Metadata formats does ONC use?

Visit the Metadata information page for details.

Does ONC offer prepackaged datasets?

Visit the Prepackaged Datasets page to access curated datasets published by ONC and the research community.

Where can I find related data sources?

Check the related data sources page for information about other co-located and related data sources that may be useful for your studies and/or research.

GETTING INVOLVED

How can I volunteer?

Ocean Networks Canada does not have any formal volunteer programs, although volunteers do work with us from time to time. These volunteers generally have a suggested project or skill to offer. If you are interested in volunteering, we would need to know what special skills or areas of expertise you are able to offer as a volunteer. Unfortunately, we are not able to offer assistance obtaining visas for volunteers wishing to support our work.

One thing anyone can do from anywhere is participate in our Citizen Science project, Digital Fishers. Using Digital Fishers and a smart phone, you can help scientists study deep-sea marine life and features.

How can I join an expedition?

Interested scientists and graduate students may request to join one of Ocean Networks Canada's installation & maintenance expeditions, please - contact ONC with your interest.

Learn more about expeditions.

How can I propose an experiment?

Ocean Network Canada's seafloor observatories are built for researchers. A wide variety of instruments are installed already and this data is available for free. The observatory's modular design allows for new experiments and equipment to be plugged into our existing networks. If you are preparing a proposl to a funding agency for funds to develop an observatory experiment, we can assist. To get assistance and information on accessing installed instruments or deploying a new system to support your research, contact the Associate Director, Science Services who will connect you with the appropriate staff scientist focused in your specific research area. ONC secures funds to maintain and operate the observatory infrastructure. ONC does not have funds to support the development and installation of new systems, but we are keen to assist in your efforts to form new collaborations with existing observatory researchers and to obtain external funding.

How can I join a research working group?

Visit the Research Working Groups page.

How can I contact a Staff Scientist?

Staff scientists are listed on the Science Home page.

INFRASTRUCTURE

What is a node?

The network consists of a large submarine cable which provides electrical power to the observatory systems, including the oceanographic instruments, and thin fibre optic threads for Ethernet communications. In order to distribute the power and communications, Ocean Networks Canada and OceanWorks have designed and built network hubs called Nodes, much like a USB hub attached to a computer, into which we can plug many oceanographic instruments.

How many instruments can be connected to a Node?

The system is designed to be highly flexible in the total number of instruments that can be connected at any one time. However, the nodes physically have places for multiple wet-mateable connectors, or ports. Each port can in itself support many individual instruments. To optimally utilize the rather expensive wet mateable connectors, Ocean Networks Canada has designed special Science Instrument Interface Modules (SIIMs) and Junction Boxes (JBs) to multiplex many instruments into one data stream.

Why don’t the connectors short circuit under water?

The instrument systems plug into the nodes using specialized under-water, wet-mateable connectors. They have advanced receptacles for the electrical pins that are hidden behind several water-tight, oil-filled o-rings. It takes about 85 lb of force to mate the 12 pin connectors on the side of the node. Once connected, 400 Volts DC and 100 Base T communications are available for running instruments.

What is the shore station?

Each submarine cable comes ashore and leads directly into an Ocean Networks Canada shore station. The shore station houses the necessary electronics and computers to manage the network power and communications, to and from the sub-sea components, the Data Centre, and Oceans 2.0. The shore stations consist of small, secure trailers at the shore-landing sites. Here power is converted into the high voltage DC current necessary to power the network. The Ethernet communications to and from the arrays, and to and from Oceans 2.0 are also managed by network servers and switches.

Where is Endeavour and how did it get its name?

Endeavour is one of the important study sites on the NEPTUNE Observatory. It is located on the Endeavour segment of the Juan de Fuca mid-ocean ridge. This ridge segment was likely named after the Canadian Navy Auxiliary Vessel (CNAV) Endeavour, after its identification by Sandra Barr and Richard Chase in 1974. This vessel, in turn, was named after British explorer Captain James Cook's ship the HMS Endeavour, which was the first British ship to reach the east coast of Australia. During Cook's third voyage of exploration, on 29 March 1778, his ships landed at Friendly Cove on Nootka Island, along the west coast of Vancouver Island. They also visited Bligh Island and Resolution Cove, where Cook had the HMS Resolution repaired. Maps showing the ship's track from Cook's 3rd expedition indicate that he likely sailed over the Endeavour Ridge segment nearly 200 years before it was identified by the Barr and Chase aboard the CNAV Endeavour.

Why is NEPTUNE called NEPTUNE?

NEPTUNE is an acronym that stands for North-East Pacific Time-Series Underwater Networked Experiments.

How did the VENUS array get its name?

VENUS stands for Victoria Experimental Network Under the Sea. This initiative was put forward by a group of marine and ocean scientists at the University of Victoria. The concept is an advancement of preliminary research facilities such as Martha’s Vineyardat WHOI and LEO15 at Rutgers that allow scientists to connect instruments to a submarine cable, provide continuous power and receiving continuous data. Marine scientists from Victoria and Vancouver met in 2001 and discussed various scientific objectives that might be addressed using a permanent cabled ocean observatory. From these meetings, the project of VENUS was born. VENUS is also a Goddess born of the Sea.

Where is the VENUS array?

The VENUS array consists of two main ocean cable arrays near Victoria and Vancouver, BC, Canada. One is in Saanich Inlet, west from the Institute of Ocean Sciences at the mouth of Patricia Bay. The second cable extends from the Iona Causeway near the Vancouver Airport into the southern portion of the Strait of Georgia. Both arrays are equipped with a variety of oceanographic sensors for measuring a variety of properties, including seawater temperature, salinity, dissolved gases, zooplankton distributions, ambient sound, currents, and tides.

The node in Saanich Inlet is located at the 95m isobath, that’s over 310 feet below the surface. In the Strait of Georgia, there are two nodes, one at 300m in the central Strait, and the second at 175m towards the Fraser River Delta. At these depths, there is no light, and the pressures are very high (one atmosphere for every 10m of depth). Far too high for divers. In order to maintain the facilities, the project uses Remotely Operated Vehicles (ROVs).

INSTRUMENTS

Where can I find instrument documentation?

Documentation for most instruments (such as calibration sheets, manuals, brochures and specifications) are available upon request from the Data Stewardship Team at Ocean Networks Canada. If you require specific information regarding devices/instruments please contact ONC.

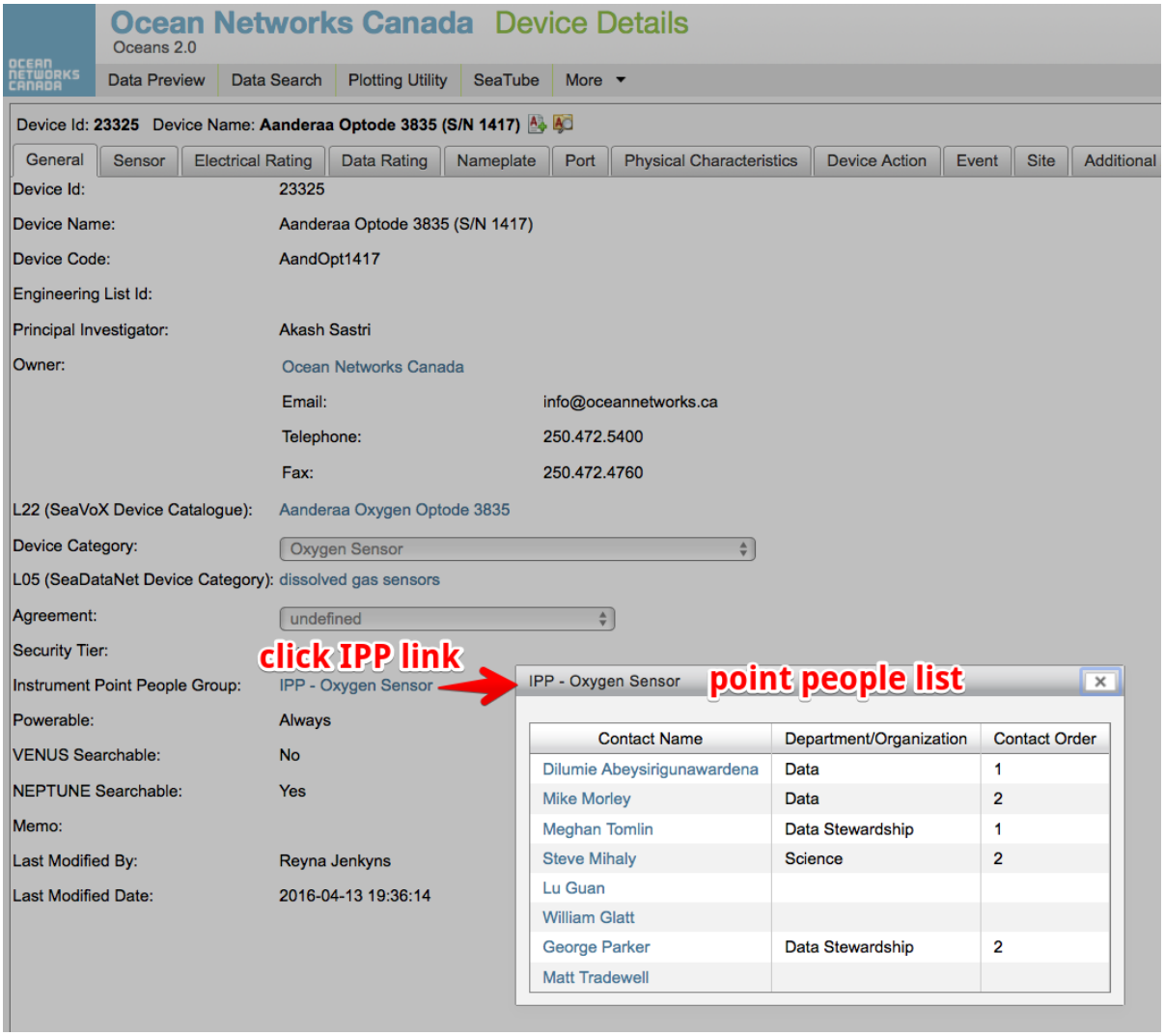
Where can I find calibration information for an instrument?

Calibration sheets and formula are available upon request from the Data Stewardship Team at Ocean Networks Canada. If you require specific information regarding devices/instruments please contact ONC.

Who are the go-to people for each type of instrument?

Designated point people are now captured in the Device Details of a given device under the General Tab. For example, see members of the Instrument Point People group for this instrument:

http://data.oceannetworks.ca/DeviceListing?DeviceId=23325



What is an ADCP?

ADCP stands for Acoustic Doppler Current Profiler. It is an active sonar system for measuring ocean currents, much like the weather Doppler systems used to map atmospheric winds and rain. It consists of multiple acoustic transducers projecting upwards into the water column. It can measure the currents at many depths, thus providing a profile of the ocean currents.

What is a CTD?

CTD stands for Conductivity, Temperature, and Depth. In order to measure the salinity of seawater, it is necessary to measure the temperature, the electrical conductivity, and the in situ pressure (depth). These three sensors also allow us to calculate the actual seawater density at the instrument. The ocean is highly stratified, with dense water nearer the bottom, and lighter, less dense water near the surface. Fresher (less salty) water is lighter (less dense) than more salty seawater, while warmer water is lighter than cold water.

What is a ZAP?

ZAP stands for Zooplankton Acoustic Profiler. It is an active sonar system, and is effectively an inverted echo-sounder, much like those used to find fish. The VENUS ZAPs use a high frequency acoustic pulse of 200 kHz. This is far above the audible range of all marine mammals. It resides near the bottom on the VENUS Instrument Platform (VIP), and records acoustic back-scatter from suspended particulate, plankton, and fish in the water column. By imaging consecutive echo-returns, an image of the back-scatter time series can be constructed.

MARINE LIFE

How healthy are orcas in the Strait of Georgia?

Historically the Strait of Georgia has supported both resident and transient orca whale pods. In the last few years, the resident whales have periodically migrated as far way as northern California. Why? When? For how long? Ocean Networks Canada's hydrophones monitor whale movement, record and allow us to better learn their vocabulary, and allow us to monitor their use of the southern Strait. Learn more.

Do different groups or pods of orcas have different vocal "accents"?

Orcas are one of few species that are known to exhibit culture, and one of fewer still with different cultural groups inhabiting the same geographic area without interacting with one another. Cultural groups of orcas differ in vocal dialect, social organization, behaviour, prey and hunting tactics. Some groups have not interbred with others for hundreds of thousands of years, and may actually be different species. Northern Resident orcas associate in 3 different acoustic clans, while Southern Resident orcas have a single acoustic clan. More about orcas and killer whales.

What is the ecology of the seafloor in the deeper regions of the Strait of Georgia?

Most scientists study seafloor animals by dredging or occasional visits from submersibles. We know little about how the bottom habitat of Strait of Georgia is controlled by the swift, reversing tidal currents, sediment dumps from the Fraser, or overlying plankton blooms. Ocean Networks Canada provides a unique opportunity to examine the adaptations of organisms to high flows. The facility may also give us those rare glimpses of large deep water animals. Scientists also plan studies of bottom community responses to large food falls such as carcasses.

Are migratory (e.g. salmon) and resident (e.g. ling cod) fish populations sustainable?

Recent technology advances allow us to tag juvenile fish with acoustic beacons that allow for remote detection and identification. How long do young salmon stay in the Strait? Do they leave via Juan de Fuca or Johnstone Strait? We have started to protect certain rock-fish habitats, but over what range do rock-fish forage? Ocean Networks Canada supports a network of fish tag receivers to monitor tagged fish movement.

What kinds of sharks live in the Salish Sea and coastal Vancouver Island?

We have observed 2 species, the six-gill shark Hexanchus griseus and the so-called dog-fish, Squalus achantias. Those are commonly seen in the waters of Saanich inlet (100 m) all the way to 1000 m in Barkley Canyon, Hexanchus griseus being more common at those deeper depths. However, spotting them from our cameras is not easy. We only record about and hour of footage every day from most of our cameras (from 5-min in 2-hour intervals). This is because we do not want to pollute the seafloor with an excessive (and unnatural) amount of light. Most of our footage of sharks comes from the cameras that were monitoring pig carcasses deployed in the seafloor for the purpose of forensic experiments, since particularly Hexanchus griseus is known to show a scavenger behaviour.

How and why do crabs moult?

Moulting happens periodically, as a crab's (all crustaceans actually) body tissues grows. Since the hard exo-skeleton does not grow (it is a rigid structure), the crab has to abandon its hard shell and grow a new larger one, that will fit its new larger body. During that molting process, the crabs become more vulnerable to predators because the new hard shell that serves as protection takes a little while to solidify and become completely calcified. For that reason, during moulting, crabs tend to hide in places where they are less likely to be preyed upon by larger animals.

OCEAN CHANGE

Is the ocean changing?

Can we see changes in the physical properties and the chemical composition? Ocean Networks Canada (ONC) provides a monitored, consistent extension to the periodic ship observations that show the seasonal and longer variations of our local waters. The long-term records produced by ONC's instruments measure longterm changes in temperature, salinity, seawater density, tides, and dissolved gasses. To see current conditions compared with historical records, see the Ocean Report Card. To view measurements over time in various locations, see the State of the Ocean plots.

Is the ocean getting louder?

Many processes can generate sound in the ocean. Atmospheric disturbances such as rain, hail, and wind all produce unique audible signatures. Human activities, most notably boat and ship engine noise, can produce persistent back-ground noise underwater. Ocean Networks Canada hydrophone arrays monitor the sounds in the Salish Sea, northeast Pacific, and allow researchers to identify natural and anthropogenic sound sources. For a daily vessel noise index in the Salish Sea, see the Ocean Report Card.

OCEAN DYNAMICS

How do tides and the Fraser River influence the marine ecosystem?

The physical and chemical marine habitat, as defined by the seawater temperature and salinity, and dissolved constituents such as oxygen and biologically important nutrients, under-goes significant variations over the annual seasons. What is the role of the tides in mixing oxygen rich, but nutrient poor surface water with the deep salty nutrient rich water? How does the Fraser River, which each spring drains the snow pack from southern BC, impact the health of the Strait? Ocean Networks Canada sensors near and above the ocean floor monitor and allow studies into the Strait as a marine habitat.

What are the dynamics of the Fraser River Plume?

Near the Fraser River mouth, the surface water is brackish, a diluted mixture of fresh water and seawater. How deep is this layer? How far and what causes it to spread? When does it drift towards the south? North? In the summer, this brackish plume is also warm and nutrient rich. How important is it to local and remote ecosystems along our coast? Ocean Networks Canada monitors the local dynamics and the temporal variations in the temperature and salinity near and within the Fraser River plume.

When and what causes deep water renewal in the Strait?

While the surface water is warm and fresh, the deep waters within the Strait are cold and salty. How deep do the tidal currents go? With the Fraser River putting out so much fresh water, why doesn't the Strait become progressively more fresh? Where and when does salty water enter the Strait? Ocean Networks Canada sensors monitor and explain the movement of both warm/fresh surface waters, as well as the cool/salty deep waters.

Where does all the sediment suspended in the Fraser River go once it enters the Strait?

The settling of river sediment slowly builds up the Delta, extending the mud-flats out into the Strait. Along the edge of the delta, the delta slope, the unconsolidated sediments form a steep cliff. Periodically the slope fails, and an underwater land slide ensues. What are the conditions before, during, and after such a dramatic event? What triggers a slide? What are the impacts of a slope failure on the local habitat? Ocean Networks Canada has a dedicated suite of sensors and experiments monitoring and measuring the delta slope stability. Learn more about the Fraser Delta.

OCEAN HAZARDS

Did radioactivity from Japan's Fukushima nuclear disaster reach North America?

By 2014-2016, the slow spreading and dispersion of the contaminated seawater originating from the Fukushima Dai-ichi Nuclear Power Plant reached radioactivity concentrations that are similar to the pre-existing oceanic concentrations, making them difficult or impossible to detect/identify. Naturally occurring oceanic radionuclides dominate the radioactive signal from seawater, not only across the entire Pacific, but even in the near-field regions along the east coast of Japan as measured in early 2012. Additional background information.

When was the last megathrust subduction earthquake in the northeast Pacific?

The last megathrust subduction earthquake to occur along the Cascadia subduction zone happened on 26 January 1700. he earthquake magnitude was estimated as 9.0 and it resulted in a tsunami that was recorded in Japan. Evidence of this earthquake can be confirmed by geological evidence (land level changes, tsunami traces, turbidite deposits), biological evidence (tree rings), and human records (Native American stories and Japanese records). Megathrust earthquakes tend to occur in this region approximately every 300-500 years. More about the Cascadia subduction zone.

How high will a tsunami reach above the shoreline?

Without site-specific modelling (which has not been done for many places), it is very difficult to estimate how large tsunami waves could be at specific locations. However, any shoreline could be vulnerable, depending on the type of tsunami. Earthquakes are one of the primary causes of tsunamis, but they can also be caused by near-shore and underwater landslides, near-shore and underwater volcanoes, man-made explosions on or underwater, and even by space objects impacting water bodies.

Where can I find out more about tsunamis?

Emergency Management BC has provided a number of excellent resources for learning more about tsunamis, including their Tsunami Overview, Tsunami Preparedness info page, Tsunami Safe Website, and Tsunami 101 presentation.