



OCEAN
NETWORKS
CANADA

CELEBRATING 20 YEARS

OF OCEAN OBSERVING & TECHNOLOGY INNOVATION

ANNUAL REPORT 1 APRIL 2025 - 31 MARCH 2026

From the Canadian Arctic, Pacific, and Atlantic to the Southern Ocean

Proudly Canadian. Built for the World.

February 8, 2026, marked the 20th anniversary since Ocean Networks Canada (ONC) launched the world's first large-scale interactive portal for real-time ocean monitoring. This bold experiment, to use a cabled observatory to bring live data from the depths of the Salish Sea, has expanded to become one of Canada's Major Research Facilities, and a Decade Implementing Partner for the United Nations (UN) Decade of Ocean Science for Sustainable Development (2021–2030).

Today, ONC, an initiative of the University of Victoria (UVic), operates world-leading observatories in the deep ocean and coastal waters of the Pacific, Atlantic, and Arctic coasts of Canada, as well as in the Southern Ocean. ONC also operates mobile and land-based assets, including coastal radar.

Data from ONC observatories are enabling critical action on climate change, marine and coastal safety, scientific discovery, national security, and economic development. With gratitude, ONC acknowledges the funding and support from the Canada Foundation for Innovation and the Government of Canada, the University of Victoria, and the Government of British Columbia.

ONC is transforming how we #KnowTheOcean through data and technology innovation, in partnership with Indigenous and coastal communities, industry, researchers, and governments.

Vision

Ocean Networks Canada enhances life on Earth by providing ocean intelligence that delivers solutions for science, society, and industry.

Goals

- 1

Advance ocean observing.
- 2

Develop and deliver world-leading data and ocean intelligence products and services.
- 3

Enable ocean-based solutions for climate change mitigation and coastal resilience.



ONC is delivering on its commitments. Look for the numbers 1, 2, and 3 throughout the report to see how our work advances each goal.

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Scan this QR code to explore 20 years of ONC—from its world-leading ocean observatories and science-at-sea, to revealing the wonders of our blue planet, and the power of ocean data.



Ocean Networks Canada subsea data from the Canadian Arctic contribute to scientific understanding of the rapidly changing wider Arctic region, including Norway's Svalbard archipelago, shown on the cover.

Celebrating 20 years of ocean observing & technology innovation



In this landmark year marking Ocean Networks Canada's 20th anniversary of delivering real-time ocean intelligence, I could not be prouder of what ONC has accomplished. As the centre-fold timeline in this report illustrates, ONC evolved from a one-of-a-kind regional experiment in the Salish Sea into a world-leading operator of complex, integrated ocean observatories spanning Canada's three coasts and extending into the polar regions.

As a Major Research Facility of Canada, primarily funded by the Canada Foundation for Innovation and the Government of Canada, ONC transformed its bold early vision into a reality that enables unique scientific research while supporting Canada's sovereignty, security, public safety, and Indigenous coastal stewardship.

The scientific results from ONC data span diverse disciplines, from coastal and deep-sea ecosystems

and climate change to tectonic plate motion, earthquakes and tsunamis, extreme environments, ocean noise, and even the origins of the universe. ONC data also support maritime domain awareness across the Atlantic, Pacific, and Arctic, provide real-time information on natural hazards, and contribute to Canada's sovereignty in the Arctic. With our scientific reach to Antarctica and the Southern Ocean, ONC's presence strengthens Canada's Antarctic Treaty commitments, supporting research on a continent dedicated to peaceful scientific cooperation.

Our partnerships with coastal Indigenous communities are strong and continue to grow. We work with each community based on the priorities they set. These partnerships also help ONC staff learn from Indigenous knowledge and improve how we do our work.

As a high-tech ocean enterprise, ONC is an innovative engine that advances the next generation of marine technology to support Canada as a leader in ocean instrumentation and maritime intelligence and security. With this three-ocean presence and a bright future ahead, ONC is an exemplar of Canada as a strong ocean nation.

The next 20 years will see ONC expand to fill gaps in scientific ocean knowledge, install and operate infrastructure in remote areas of the world's longest coastline, expand sensors to global ocean areas with limited data, and build new partners, including coastal Indigenous communities. As my time in leadership at ONC draws to a close, I will watch with great pride as ONC's vision continues to be realized and its contribution to Canada and the world grows.

Kate Moran
President & CEO

Land and Sea Acknowledgement

We acknowledge and respect the Lək wəŋən (Songhees and Xw̓sepsəm/Esquimalt) Peoples on whose territory the university stands, and the Lək wəŋən and W̓SÁNEĆ Peoples whose historical relationships with the land and sea continue to this day.

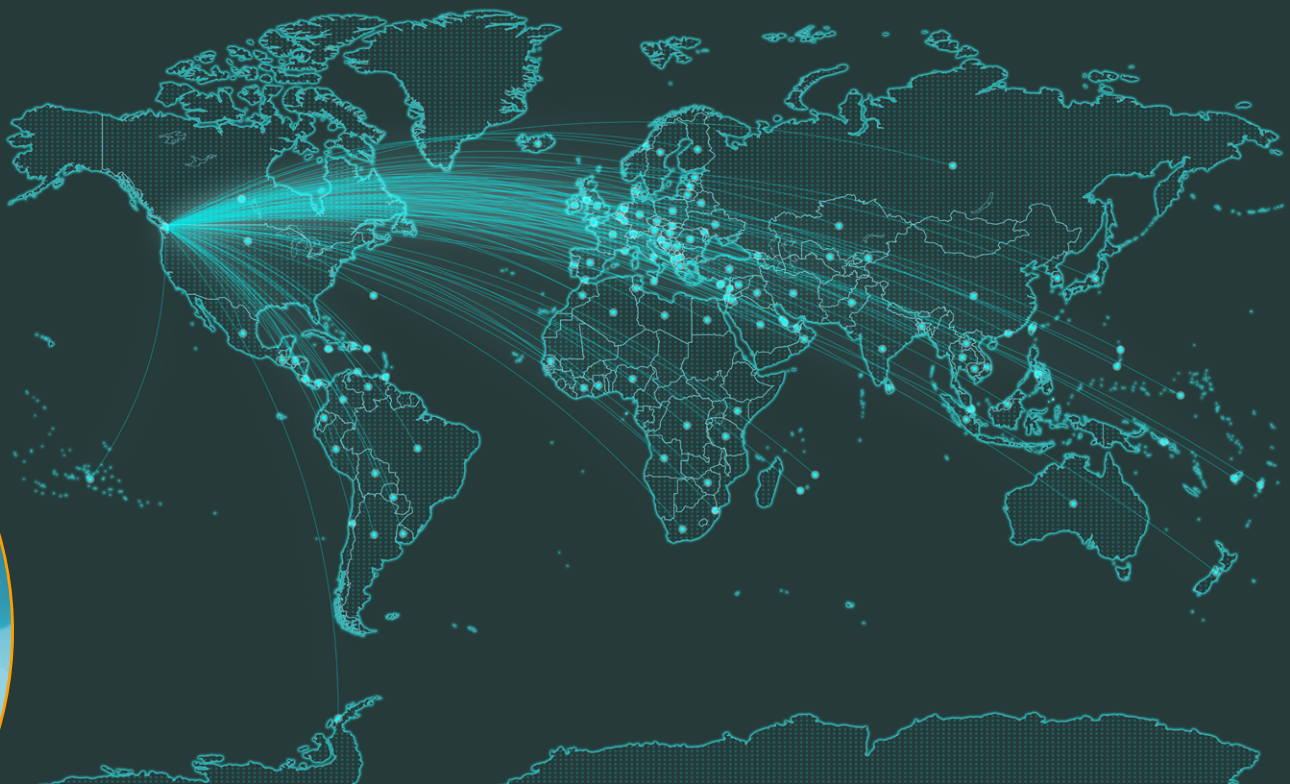
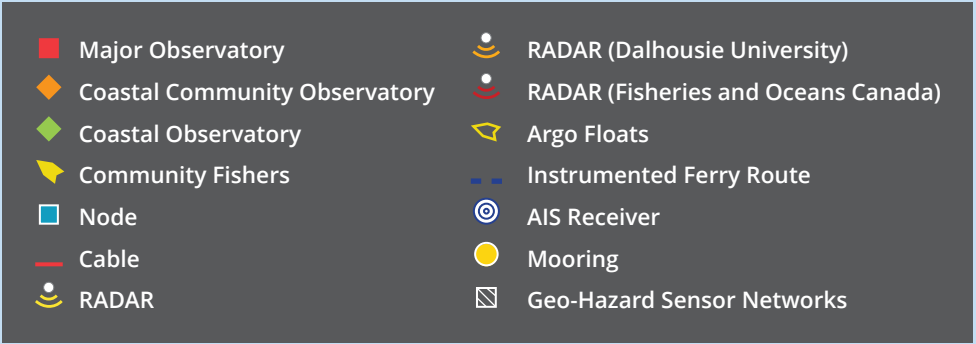
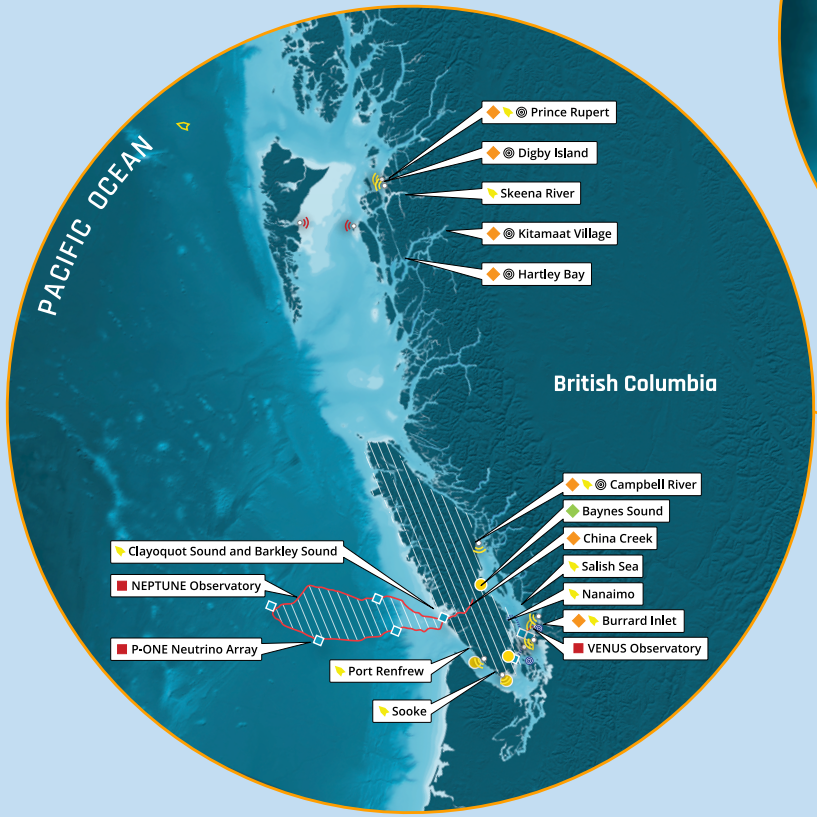
We also acknowledge the Indigenous communities with whom we have the honour to partner on coastal monitoring and data management solutions.

Ocean Intelligence on Demand

From the deep-sea to rich coastal waters, ONC's observatory network captures vital continuous ocean data from the Pacific, Atlantic, and polar regions. Cabled observatories provide power and Internet connection to more than 12,000 ocean sensors and scientific instruments, along with mobile and land-based assets, including coastal radar.

In FY25/26, ONC doubled its observing capacity in the Southern Ocean, deployed new instrumentation in the Pacific, and expanded community ocean monitoring on the east and Arctic coasts of Canada.

Discover how the ocean is changing through [Oceans 3.0](#), ONC's real-time and long time-series data management portal.



ONC data users

ONC's observatories generate "big data" in the form of high-resolution sensor measurements, video, and underwater sound recordings used by more than 45,000 researchers, communities, and decision-makers around the world. In FY25/26, Canada accounted for 47% of ONC data users. This map shows the global distribution of ONC data users.

NB. FY25/26 Oceans 3.0 users—registered users, visitors, data dashboards, and direct data requests—are conservatively estimated at 45,000, and does not include users routed through the Canadian Integrated Ocean Observing System (CIOOS) and ERDDAP.

Polar Seas Monitoring

From Arctic to Antarctic waters, ONC's polar monitoring delivers critical data from some of the planet's fastest-changing environments. ONC has been monitoring Arctic waters with Inuit communities since 2012. Southern Ocean monitoring began in 2024, in partnership with Spain.

ONC is building on its northern partnerships, ensuring Inuit priorities are reflected in Arctic research and monitoring activities, while supporting Canada's strategic priorities including sovereignty, environmental preparedness, and dual-use capabilities.

Floe Edge Narwhal, Nunavut. Credit: Paul Nicklen (photographer and UVic Alumni).

1,3

Arctic noise: using ocean data to protect polar marine ecosystems

Using a decade of hydrophone data (2015–2024) from ONC's Cambridge Bay Coastal Community Observatory in Nunavut, researchers have shown how human activity is reshaping Arctic subsea soundscapes. Published in *NPJ Acoustics in 2026* and led by Philippe Blondel of the University of Bath, the study provides one of the longest continuous acoustic records from the Canadian Arctic and establishes a critical baseline for tracking climate change impacts and increasing marine traffic.

The researchers found a marked rise in loud, human-generated underwater noise during the ice-free season, reaching as high as tens of kHz compared to quieter full-ice periods. Much of the underwater noise came from small vessels without automatic identification system (AIS) transponders, as well as snowmobiles (in winter), coastal machinery, and aircraft—sources often overlooked in current monitoring and regulation.

"[ONC'S] [Ocean data management](#) portal is a dream come true for scientists: 64,000 sound measurements per second, for years on end, complemented in season with local ice profiling," said Blondel.

As demand for Arctic shipping, tourism, and resource development expands, the study highlights the need to monitor underwater noise frequencies to better protect sound-sensitive marine life—from whales to tiny crab larvae.

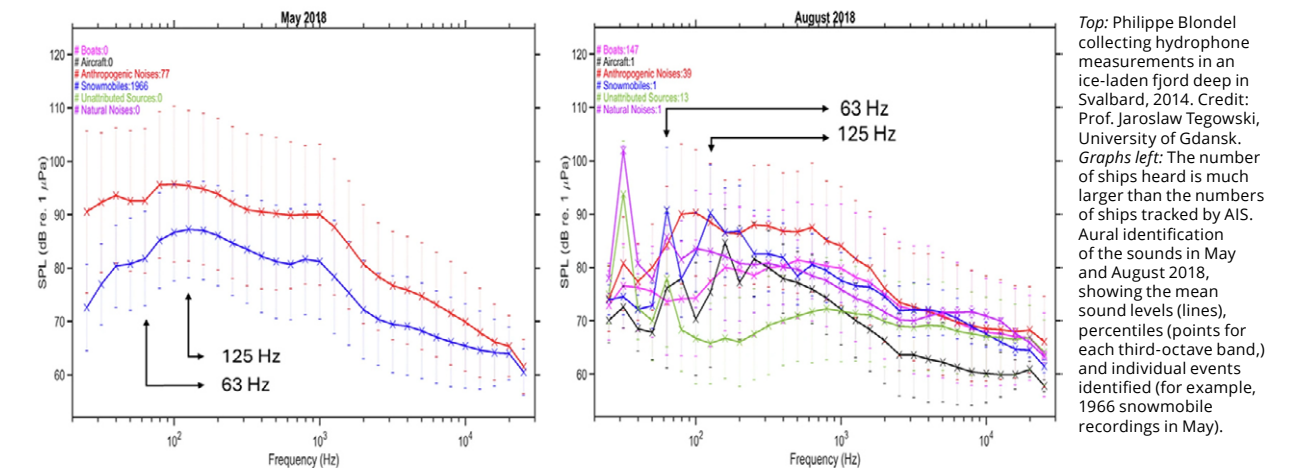
ONC continues to support the Victoria Island Waterways Safety Committee and the Ekaluktutiak Hunters and Trappers Organization as they co-develop recommendations to manage the impacts of underwater noise from vessel traffic in sensitive areas of the Cambridge Bay region.

Data from ONC's network of acoustic monitoring stations on the three coasts of Canada, accessible through the Oceans 3.0 data management portal, provide a foundation for maritime awareness, evidence-based policy, and environmental stewardship. Blondel's study also used ice, weather, and traffic data from the Canadian Ice Service, Nav Canada, and the Arctic Council.



"Canada and other Arctic countries are ideally placed to collect the evidence that can define an Arctic marine strategy framework directive. This becomes more urgent as the climate changes, the Arctic opens to human activities, and pressures on Arctic resources grow."

- Philippe Blondel, University of Bath, UK



Top: Philippe Blondel collecting hydrophone measurements in an ice-laden fjord deep in Svalbard, 2014. Credit: Prof. Jaroslaw Tegowski, University of Gdansk. Graphs left: The number of ships heard is much larger than the numbers of ships tracked by AIS. Aural identification of the sounds in May and August 2018, showing the mean sound levels (lines), percentiles (points for each third-octave band), and individual events identified (for example, 1966 snowmobile recordings in May).

"ONC's long-term hydrophone data provides a baseline for noise levels and a rare opportunity to be proactive in protecting Arctic marine life before human activity reaches levels seen in other ocean regions."

- Lynn Rannankari, ONC staff scientist and bioacoustic specialist

DID YOU KNOW

Canada has the longest coastline of any country in the world, with more than 70% of it in the Arctic. ONC has been monitoring Arctic waters in partnership with Inuit communities since 2012.

Inuit community partnerships FY25/26

ONC partners with Inuit communities to monitor Arctic waters, generating observations and data management solutions that advance scientific understanding while supporting northern priorities. Built on trusted, in-person relationships, this work brings together ocean technology and Indigenous knowledge that has guided stewardship since time immemorial.

As Canada looks to strengthen its northern commitments, these enduring partnerships provide a strong foundation for collaborative expansion of scientific monitoring across the Arctic.

Partnership spotlights

Cambridge Bay community

ONC's longest-running Arctic partnership with **Cambridge Bay** is expanding beyond ocean science to include the arts. ONC staff collaborated with youth artists (*pictured*) from **Red Fish Art Studio**, sharing underwater footage from Cambridge Bay to inspire recycled metal artwork that captures the spirit of the Arctic Ocean. The planned artwork will showcase local talent, strengthen community connections, and increase the visibility of ONC's Cambridge Bay shore station.

Sapuijiit Guardians Foxe Basin Kivalliq North

ONC staff spent time with the Sapuijiit Guardians of the Foxe Basin in **Chesterfield Inlet** to learn about community ocean monitoring priorities and concerns. ONC also provided introductory training on the use of a conductivity, temperature, and depth (CTD) instrument to support community-based ocean monitoring.

Image: Community members Simeoni Kadjuk and Simon Aggark receive CTD training and share knowledge with ONC staff Keegan Wright and Kiyomi Holman.
Credit: Chelsi McNeil-Jewer

Nunavut Arctic College

Since 2018, ONC has supported students in the Environmental Technology Program (ETP) at Nunavut Arctic College in **Iqaluit** through marine science and technology courses. ONC provided ongoing, in-person training with oceanographic equipment and data collection during the program's annual fall field camp (*pictured here in 2021*). Many graduates become leaders in Inuit environmental governance. ONC continues to collaborate with alumni in a range of roles across Inuit Nunangat.

Nunatsiavut Government

FY25/26 marks the seventh year of partnership between ONC and the **Nunatsiavut Government Research Centre** to support ocean monitoring in the proposed Inuit Protected Area/national marine conservation area in the **Torngat Area of Interest**. This community-led collaboration has also created employment and training opportunities through **ONC's Youth Science Ambassador (YSA)** Program supported by Polar Knowledge Canada.

Image: Leo Angnatok and Edward John Flowers collect Community Fishers CTD data in the Torngat Mountains National Park, NL. Data are available in Oceans 3.0.
Credit: Michelle Saunders.

"The Environmental Technology program is always a great opportunity for new, upcoming environmental technologists specializing in Arctic science. Ocean Networks Canada has always been a good partner in delivering the Marine science aspect of the training."

- **Sean Qappik**, Manager of Scientific Support Services, Nunavut Research Institute



1, 2, 3

Arctic off-grid coastal radar

ONC adapted a mobile coastal observatory and shore station, originally designed by APRS World, for operation in rugged Arctic environments. The off-grid system provides a self-contained power and communications hub for Coastal Ocean Dynamics Applications Radar (CODAR) technology to measure ocean surface currents. These near real-time measurements support scientific research, situational awareness, and maritime safety, including search and rescue, community ocean activities, and oil spill response. The platform can be expanded to include other ocean sensors.

Deploying oceanographic instrumentation in remote Arctic locations presents significant logistical and environmental challenges. Conventional monitoring stations often depend on reliable power supplies, communications infrastructure, and year-round site access—resources that are limited or unavailable across much of Canada’s vast Arctic coastline. To address these constraints, ONC is working with northern partners to identify a suitable pilot location to evaluate the off-grid system’s performance as a practical, scalable, and polar bear-resistant solution for long-term coastal monitoring in remote Arctic regions.

ONC is adapting its off-grid CODAR system (inset, Jordan River, BC) for remote Arctic monitoring, testing its ability to withstand extreme conditions—including curious polar bears!

Credit: JP McCarthy, Churchill, MB.



1, 2, 3

Doubling Antarctic Ocean monitoring capacity

ONC and the Spanish National Research Council (CSIC) doubled their ocean monitoring capacity in the Southern Ocean in January 2026 with the deployment of two new subsea observatories near Spain’s Juan Carlos I Antarctic Station.

These ONC-designed observatories help address a critical shortage of Antarctic environmental data, delivering year-round measurements—including temperature, salinity, pressure, and dissolved oxygen— even when the station is unstaffed for more than half the year. Located in a bay near Johnson’s Glacier, the station collects data to inform how climate-induced glacial melt waters impact coastal ecosystems. Data are openly available through ONC’s Oceans 3.0 platform.

Drawing on lessons from the 2024 installation, ONC engineers enhanced the system’s resilience for extreme polar conditions with reinforced ice protection and a radio-frequency backup link to complement the existing Iridium satellite communications.

This Canada–Spain collaboration strengthens global ocean observing efforts and advances understanding of climate change, ocean health, and biodiversity in the Southern Ocean. Supported by CF’s Major Science Initiatives Fund and other partners, the project contributes to the Global Ocean Observing System and the UN Sustainable Development Goal 14: Life Below Water.

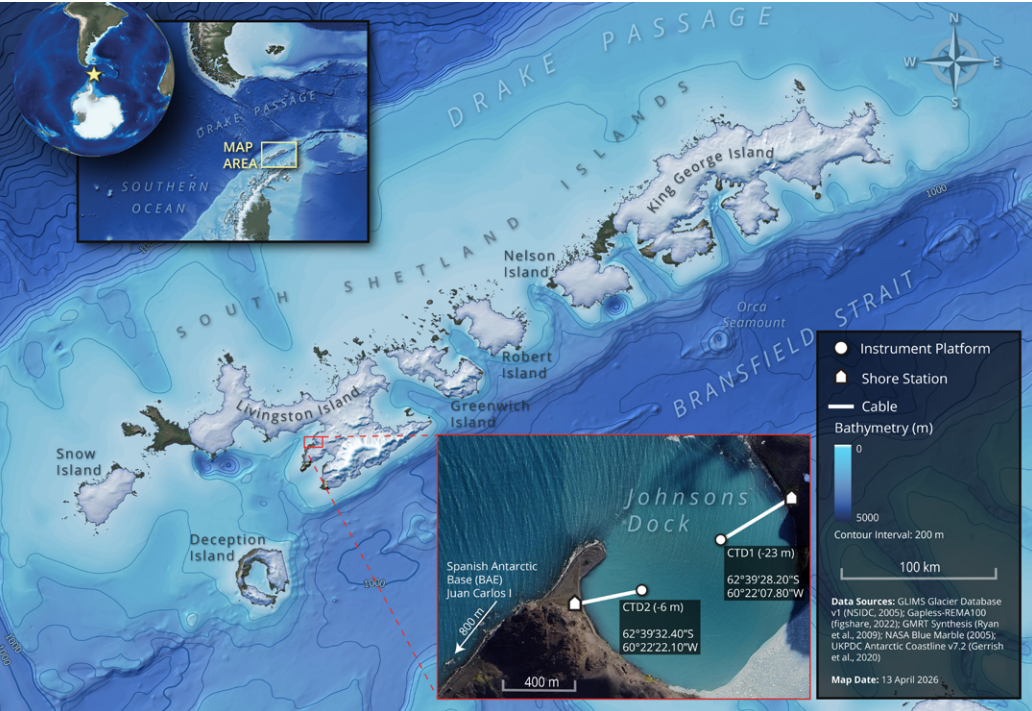
“Understanding the Southern Ocean is essential for regulating Earth’s climate. The new underwater observatories located at two sites monitor some essential ocean variables (EOVs) and transmit real-time data year-round, providing invaluable information on glacial melt and the health of marine ecosystems.”

- **Juanjo Dañobeitia**, professor of marine geology at CSIC



DID YOU KNOW

ONC’s subsea observatories with Spain provide a distinct Canadian presence in Antarctica and enable Canada to provide scientific contributions towards the Antarctic Treaty; specifically: supporting the mandate that Antarctica shall be used for peaceful purposes only (Art. I); the continuation of freedom for scientific investigation in Antarctica and cooperation towards that end (Art. II); and making the scientific observations and results from Antarctica freely available (Art. III).



Top of page: The locations of the two new observatories in Johnsons Dock, where glacier melt meets ocean waters. *Bottom left:* Ruchie Custan, ONC marine equipment specialist checking signal strength for satellite and radio frequency connections for the new observatory location, using a ONC-built scouter unit. *Middle right:* ONC project engineer (EIT) Bradley Wells (left) and Ruchie Custan (right) with Spanish Antarctic Research Base staff (middle) during the deployment of the second ONC-CSIC observatory. *Bottom right:* Antarctica local, a chinstrap penguin, poses beside the newly installed ONC-CSIC observatory shore station, shortly before the cable and split pipe were also updated.



Pacific Ocean Monitoring

The productive waters of the Northeast Pacific are home to ONC's flagship major seafloor observatories, VENUS and NEPTUNE, and a network of smaller community-led observatories and mobile instruments. Thousands of sensors and coastal radar, deliver real-time and long time-series data that support scientific discovery, maritime awareness, and Canada's blue economy, while strengthening resilience to natural hazards, including earthquakes and tsunamis along British Columbia's west coast.



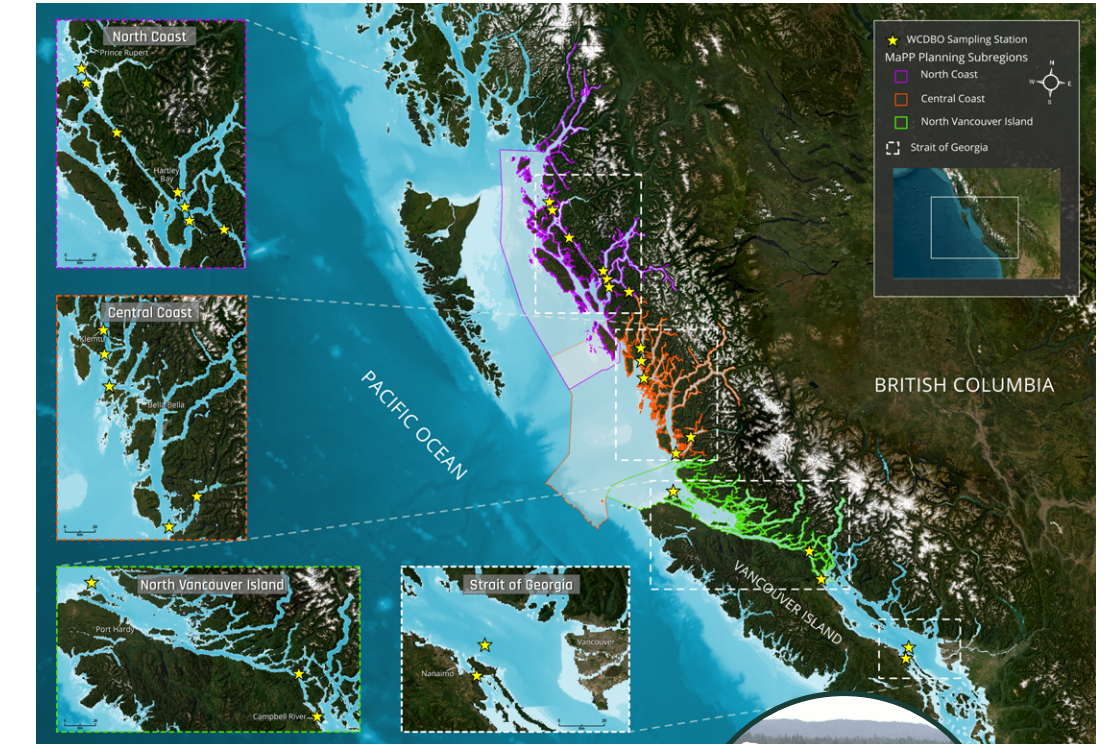
Building the West Coast Distributed Biological Observatory 1,2

ONC is working with a range of partners to establish a new West Coast Distributed Biological Observatory (WCDBO) in BC to monitor marine conditions from southern Vancouver Island through the inside passage to Prince Rupert.

The project brings together governments and academic researchers, First Nations, non-profits, ports, and coastal communities to collect and share data and knowledge that informs decision-making for marine stewardship of these biologically diverse and culturally important coastal ecosystems.

In its first phase (Sept. 2024–Nov. 2025), the distributed biological observatory program completed five successful pilot cruises aboard the Arctic Research Foundation operated research vessel (R/V) *Tiriarnaq*. The program also engaged with 12 of the First Nations on the BC coast. These missions gathered multidisciplinary baseline data, and were conducted in partnership with DFO staff whose scientific and logistical support were essential throughout.

Top left: Jane Wilson, (left) chief mate of the R/V *Tiriarnaq* and Miranda Herle, ONC junior project engineer (EIT) preparing the CTD rosette for deployment. *Inset:* A humpback whale in the Great Bear Sea, during a WCDBO cruise in July 2025. *Credit:* Jane Wilson. *Top right:* WCDBO sites, which were sampled across five different cruises in 2024 & 2025. Stations can develop and evolve based on partner input and feedback. *Inset:* Verena Tunnicliffe, former director of VENUS, pictured with the original node prior to deployment.



1,2 ONCabyss recovery of original node

A historic subsea instrument that launched ONC's deep-sea cabled observatory network 20 years ago and ushered in a new era of live ocean monitoring was replaced, (far left) during the #ONCabyss Spring 2026 expedition.

The large telecommunications “power box”, called a node—known internally as device ID 0001 at ONC—was first deployed in Saanich Inlet in 2006. As the foundation of the VENUS observatory network, it provided Internet connectivity and power to instruments and sensors, enabling a long-term data record that now serves as an important baseline for monitoring ocean health.

Its replacement node was designed and built in-house with steel and fiberglass components, making it lighter and easier to deploy and recover while carrying out the same functions.



Learn more about the history of VENUS, and highlights from the ONCabyss Spring 2026 expedition.



ONCabyss Expeditions



1, 2 Explore highlights from two ONC-led expeditions in FY25/26 to maintain ONC's Pacific Ocean major cabled seafloor observatories. The 850-km long NEPTUNE observatory cable loop extends up to 300 kms off the BC coast at depths from 100 to 2,660 metres. VENUS monitors Saanich Inlet and the Strait of Georgia at depths up to 300 metres. Both cabled observatories provide continuous, real-time ocean data.

Operations to maintain these observatories were conducted from a ship using a remotely operated vehicle (ROV) equipped with robotic manipulators, sensors, lights, and cameras. Maintaining scientific equipment on the seafloor presents unique challenges, as instruments must withstand immense pressure and corrosive seawater. Regular maintenance, cleaning, and replacement of sensors ensures the reliability and quality of ONC's ocean observations.

ONC partnered with Canpac Marine Services and the Canadian Coast Guard (CCGS) during the ONCabyss Summer 2025 expedition. Leg 1 was a dual-ship operation aboard the M/V Canpac Valour from May 25–28 alongside the CCGS John P. Tully from May 25–June 1. Leg 2 was aboard the M/V Canpac Valour from August 26–September 3, 2025.

The second expedition of the fiscal year focused on servicing the VENUS observatory. From March 10–19, 2026, ONC returned to the M/V Canpac Valour for a 10-day maintenance trip in the Salish Sea.



Go beneath the surface to explore summer 2025 expedition footage and highlights!

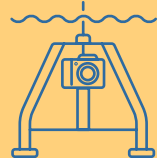
Top left: Research sites within ONC's NEPTUNE and VENUS observatories. Top right: (Left to right) ONC staff Forrest Trenaman, Jeb Dexter, Meghan Paulson, Albert Ruskey, Matt Tradewell, and Benjamin Morgan in front of ROV Mantis onboard M/V Canpac Valour, Leg 2.



ONCabyss highlights



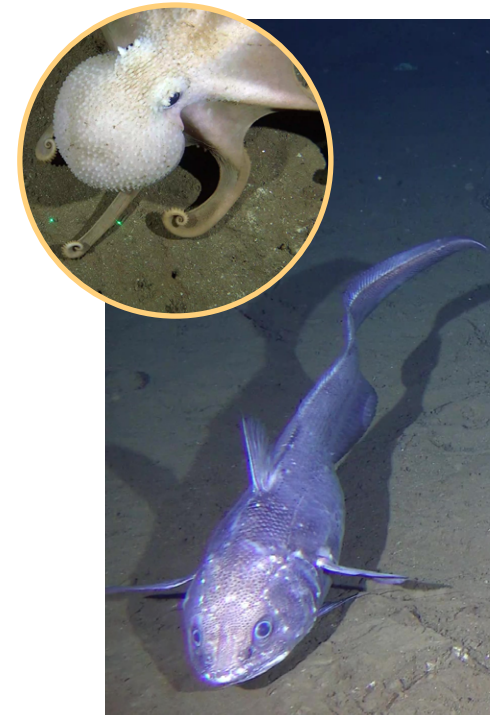
Recovery of the original Saanich Inlet node, marking the retirement of a historic component from ONC's first cabled observatory, VENUS.



Deployment of a new subsea camera at the Cascadia Basin site that provides video time series observing within the Tang.gwan – ɥačxwíqak – Tsígis (ThT) Marine Protected Area.



Completed 22 ROV dives, with over 100 hours of underwater operations by ROV Mantis.



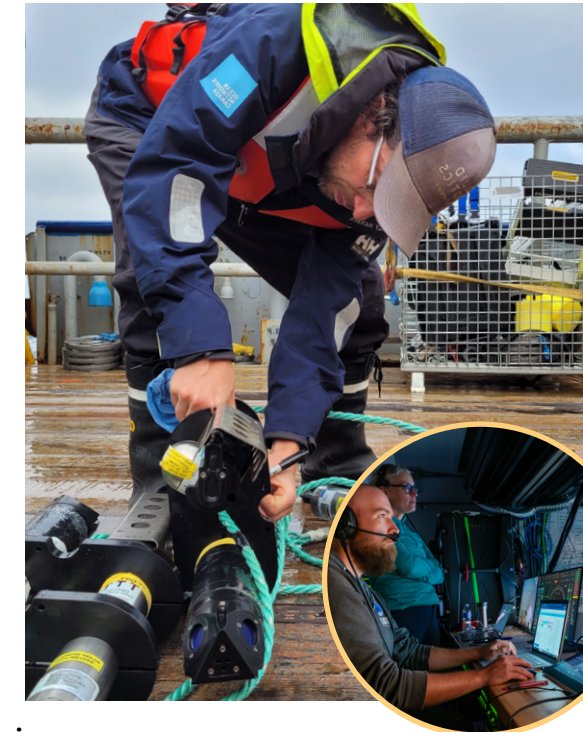
1 ONCabyss peeks into the abyssal plain

Positioned on the abyssal plain at a depth of 2,664 metres, a new subsea camera deployed at NEPTUNE's Cascadia Basin site within the ThT Marine Protected Area offers a rare opportunity to observe deep-sea life and ecosystem processes in this midnight zone of the ocean.

The system integrates an off-the-shelf camera into an ONC-designed pressure housing, allowing it to withstand the extreme conditions of the deep ocean while remaining remotely controllable from ONC headquarters in Victoria.

Deployed in summer 2025, it is one of only three abyssal observatories in the world. The other two are the Porcupine Abyssal Plain Sustained Observatory sites in the North Atlantic and Station M in the Northeast Pacific. This new camera will provide long-term time-series video data to help scientists better understand life on the deep-ocean floor and how energy, nutrients, and other materials move between the ocean surface and seafloor.

Left: A russet grenadier fish (*Coryphaenoides armatus*) and (inset) a deep sea octopus (*Graneledone* sp.) spotted by the Cascadia Basin camera 2,589 metres below sea surface. Middle: ONC senior project engineer Jeb Dexter inspecting instruments on an autonomous mooring ahead of deployment at Endeavour. Inset: ONC executive director of observatory operations, Meghan McCarthy Paulson, and GIS specialist Ben Morgan in the control van during ROV operations aboard the M/V Canpac Valour. Right: Recovery of ROV Mantis after a successful NEPDEP dive collecting data, imagery, and samples from the deep. Credit: Julian Smith, DFO. Inset: A scientist examines a larval fish collected from the water column during a NEPDEP dive. Credit: Toby Hall, DFO.



1, 2, 3 ONC supports research partners

ONC supports the research of industry and scientific partners during at-sea operations. During #ONCabyss in FY25/26, ONC supported a variety of partners' research including:

- The collection of sediment cores from Barkley Canyon for Natural Resources Canada (NRCan) research on underwater landslides and sedimentation rates
- Seawater sampling for trace metals at hydrothermal vent sites for Fisheries and Oceans Canada (DFO)

For the eighth year, as part of the UN Ocean Decade-endorsed NorthEast Pacific Deep-sea Exploration Project (NEPDEP), ONC partnered on two offshore expeditions to explore and monitor deep-sea ecosystems:

- Seeps and Heat from July 7 to 18th, 2026
- Seamounts and Mapping from September 4th to 18th, 2026

Video recordings of NEPDEP dives are archived and made accessible on Oceans 3.0. NEPDEP is a partnership with the Council of the Haida Nation, Fisheries and Oceans Canada, Nuuchah-Nulth Tribal Council, UVic, Royal British Columbia Museum, and ONC.



KnowTheOcean—
a science spotlight
on the NE Pacific

ONC's network of high-resolution underwater sensors, video, and acoustic monitoring delivers continuous, real-time insights into how marine environments are changing across hours, days, seasons, and decades. Such sustained observations enhance our ability to understand and respond to critical ocean changes, including emerging threats such as ocean acidification and hypoxia (low oxygen conditions). As dissolved oxygen levels decline across much of the world's subsurface ocean, significant impacts are emerging across Canada's NE Pacific shelf and inland waters.

1, 2, 3 Baynes Sound upgrade strengthens BC's shellfish industry

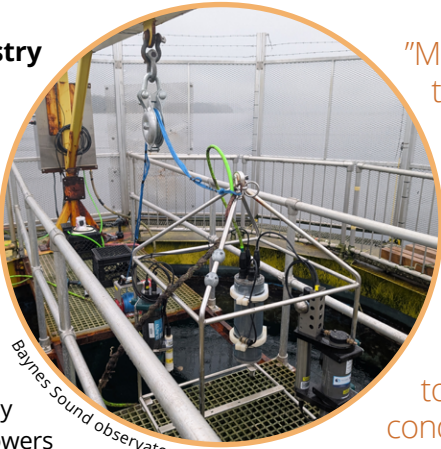
As climate change reshapes coastal waters, ONC is helping the shellfish industry in BC build resilience to changing ocean conditions.

With support from the Climate Ready BC Seafood Program, ONC upgraded its Baynes Sound observatory from a static platform to a profiling system that monitors the entire water column. The upgrade enhances the collection of high-quality, real-time data on key environmental conditions affecting shellfish survival, including ocean acidification, warming waters, and hypoxia.

Located in BC's largest shellfish aquaculture region, the observatory provides early warning of changing conditions. These data help growers make informed decisions and meet regulatory requirements, such as shellfish sanitation standards that rely on real-time water temperature monitoring before harvest. The upgrade also advances the BC Ocean Acidification and Hypoxia Action Plan, helping build a more resilient seafood sector.



Learn more about projects supported by the Climate Ready BC Seafood Program, including Baynes Sound, in this documentary led by the Tula Foundation and Province of British Columbia.



Baynes Sound observatory.

"Monitoring programs that result from the collection of data from the Baynes Sound Observatory can provide valuable information to help growers adapt to changing growing conditions, but the true value of these investments

will be realized when the data informs practical management decisions, strengthens industry resilience, and supports long-term seafood production in coastal communities."

- Nico Prins, Executive Director, BC Shellfish Growers Association

1, 3 Where are the Zombie Worms?

Sometimes, the most important scientific discoveries come from what isn't there.

A decade-long study of humpback whale bones placed one kilometre deep in the Pacific Ocean uncovered a surprising absence—Osedax, or "zombie worms", which play a vital role in bone decomposition and sustaining seafloor ecosystems. Using NEPTUNE observatory's continuously powered cameras and sensors, scientists from ONC and the University of Hawaii found no evidence that these "bone devourers" had colonized whale bones at the Barkley Canyon site, a naturally occurring low-oxygen zone. Furthermore, another ecosystem engineer, wood-boring *Xylophaga* bivalves, also appeared affected by low-oxygen stress at the same location, colonizing at much lower rates than more oxygenated ocean areas.

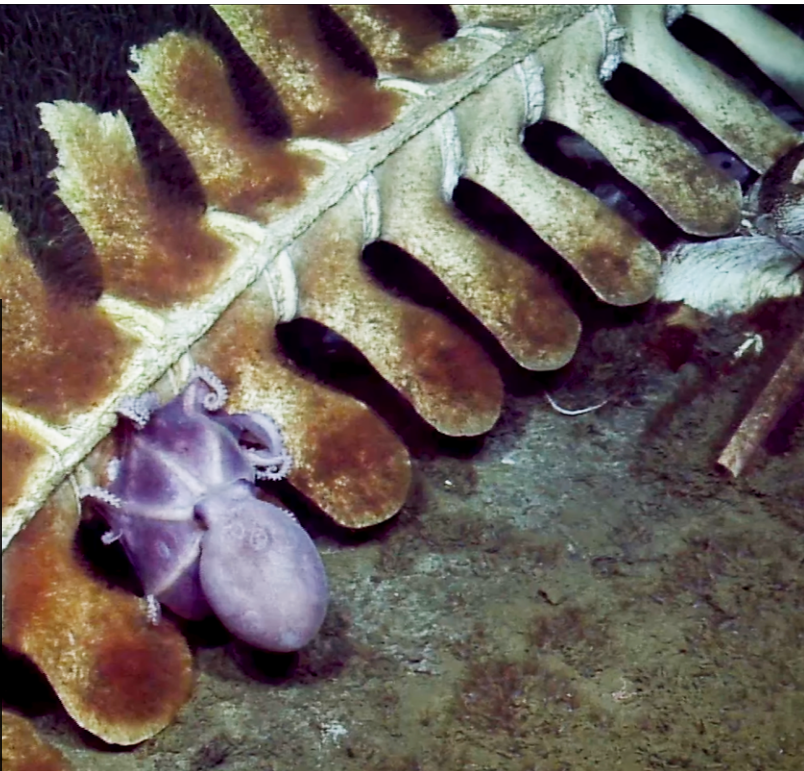
The findings point to a troubling possibility. Expanding oxygen minimum zones (OMZs) linked to climate change may be disrupting critical deep-sea ecosystems, threatening the biodiversity that depends on whale falls and altering natural carbon cycling in the ocean.

"It looks like the OMZ expansion, which is a consequence of ocean warming, will be bad news for these amazing whale-fall and wood-fall ecosystems along the northeast Pacific margin."

- Craig Smith, professor emeritus, University of Hawaii, study co-led with Fabio De Leo, senior scientist, ONC.



Watch this video to learn more about this Frontiers in Marine Science study.



Safer communities and coastal resilience

ONC is transforming ocean observations into actionable knowledge that helps build safer coastal communities and supports climate solutions. Data and tools are enabling evidence-based decisions on climate change mitigation, ocean health and sustainability, technology innovation, and resilience to coastal hazards on the Pacific coast, including earthquakes and tsunamis.



1, 3 The Solid Carbon climate solution

ONC convened a Solid Carbon workshop in August 2025, advancing plans for one of the world's most ambitious ocean-based carbon dioxide (CO₂) removal initiatives. Partners developed a roadmap to demonstrate the permanent sequestration of CO₂ into sub-seafloor basalt using ONC's NEPTUNE observatory, which will provide continuous and publicly accessible real-time monitoring data. Using Solid Carbon technology, it is estimated that accessible ocean basalt regions around the world have a carbon

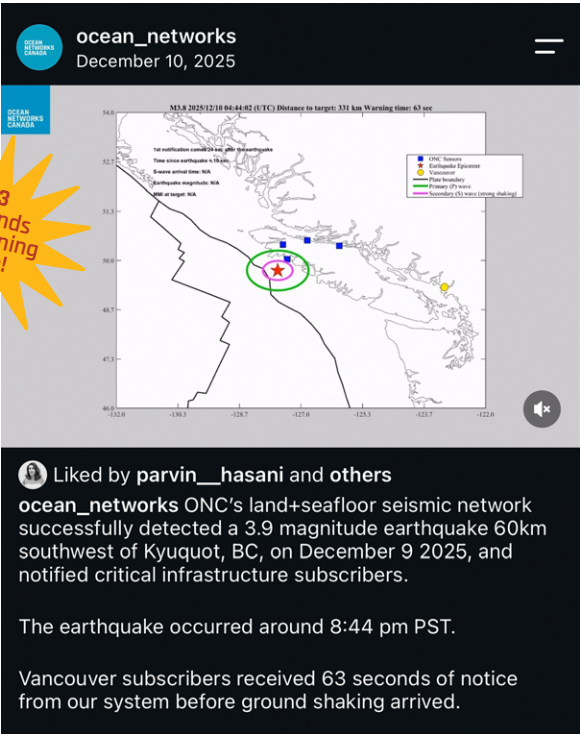
storage potential upwards of tens of thousands of Gt of CO₂.

The ONC-led project is supported by a \$24 million, six-year award from the Government of Canada's New Frontiers in Research Fund to the University of Victoria, recognizing its potential to deliver transformative solutions to climate change. ONC continues to work closely with DFO and First Nations partners to follow regulatory processes when planning and conducting scientific activities within the ThT Marine Protected Area.

Above: The transdisciplinary, Canada-led international Solid Carbon team with representatives from organizations including UVic, ONC, University of British Columbia, University of Calgary, Columbia University, McMaster University, University of Oregon, Queen's University, Solaris Management Consultants, CarbFix, and Federal and Provincial governments. Virtual attendees included representatives from University Bremen, GEOMAR Helmholtz Centre for Ocean Research Kiel, Pacific Northwest National Laboratory, and Carbon Management Canada.

Earthquake data gives operators more time to act

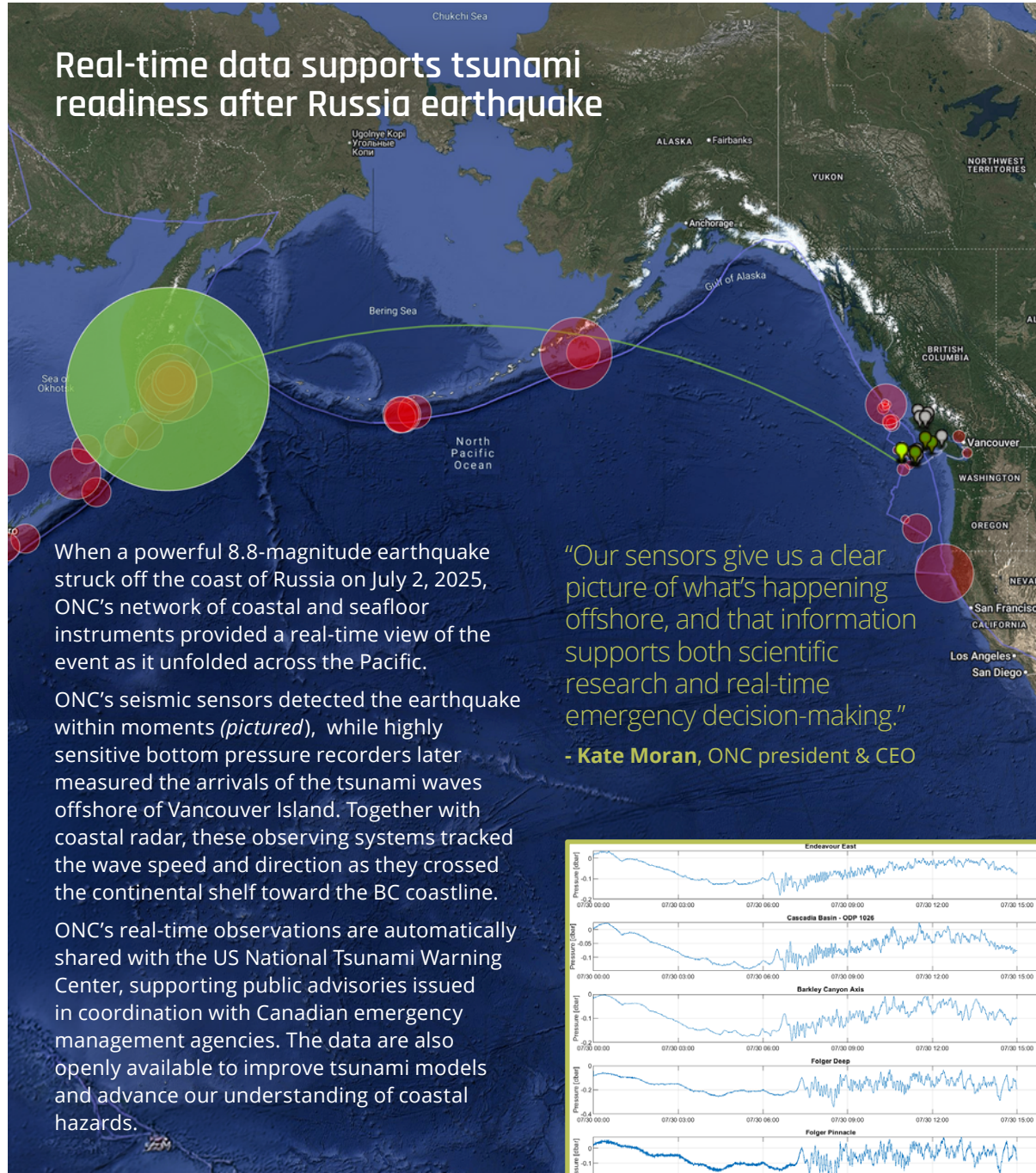
ONC's Earthquake Information Messaging System (EIMS) supports critical infrastructure operators in BC. In FY25/26, ONC's earthquake early warning system detected 15 earthquake events and delivered 163 real-time notifications to help inform operational decisions.



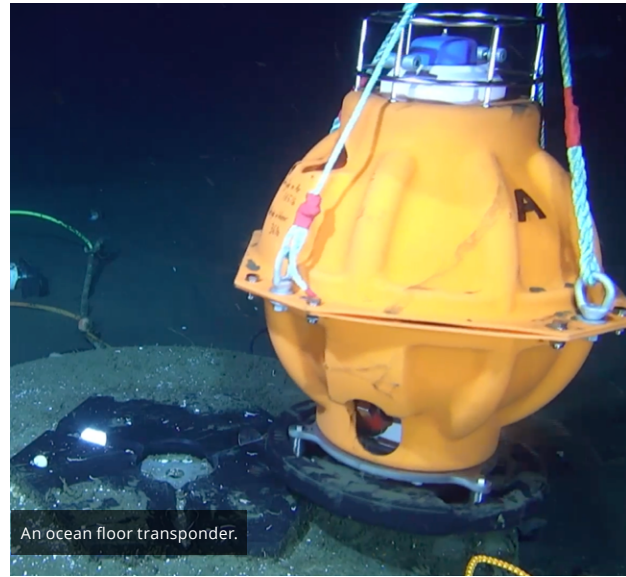
EIMS provides subscribers with rapid information on estimated earthquake location, magnitude, and, more importantly, ground shaking arrival time and intensity at the specific location of the subscriber. This information can be used to support actions to protect lives and infrastructure before ground shaking starts.

ONC's real-time seismic data, captured by onshore and offshore sensors, can be integrated with government organizations that issue public alerts in Canada and the United States.

BC, Taiwan, and Japan are the only locations in the world that offer "land+seafloor" seismic sensor networks. ONC seafloor sensors are located near the Cascadia Subduction Zone—an area capable of producing megathrust earthquakes—while its land-based sensors are located along BC's coast, maximizing the warning time for major NE Pacific events.



Right: Tsunami waves are visible in the plotted data from ONC sensors located up to 300 km offshore of Vancouver Island, available on Oceans 3.0.



Measuring tectonic change beneath the ocean 1, 2

ONC's pioneering seafloor geodesy program advances scientists' understanding of the most powerful earthquakes on Earth: subduction earthquakes. Operating across the Northern Cascadia subduction zone, ONC's seafloor geodesy system tracks sub-centimetre plate movements near the fault line where the Juan de Fuca plate subducts beneath the North American plate. Because satellite GPS signals cannot penetrate seawater, the system pairs 22 permanent acoustic transponders on the seafloor with an autonomous, GPS-equipped Liquid Robotics wave glider on the sea surface that uses acoustic signals to calculate seafloor positions and track movement.

In 2025, the wave glider visited seven key offshore sites to collect data on the ongoing tectonic plate movements. Monitoring whether these plates are locked or experiencing "slow slip"—a gradual movement that can serve as a precursor to massive subduction earthquakes—provides insight into the Pacific Northwest's true tectonic risk, equipping coastal planners and emergency managers with the data needed to prepare for future hazards.

1, 2, 3 Understanding tsunami generation and Pacific NE low-oxygen zones: Roy Hyndman awardees

Two recipients of the 2025 Roy Hyndman Ocean Observing Award are using ONC data to advance understanding of ocean change and natural hazards. The annual awards, each valued at \$20,000, support collaborative research that leverages ONC data and expertise to advance ocean observing.



Adam Stoer, a PhD student at Dalhousie University, is investigating oxygen distributions in the Northeast Pacific using data from ONC's fleet of 14 Deep Argo floats, which profile to depths of 4,000 metres—twice that of most operational floats. Using this data, Stoer is developing a model to describe the interaction between oxygen minimum zones and respiration in the dark ocean, a relationship with significant implications for climate change.

Left: Adam Stoer during a Biogeochemical Argo float deployment in the Labrador Sea, in May 2024.



Alexander Dolcimascolo, a PhD student at the University of Victoria, is studying "tele-tsunamis", which are generated by large, distant earthquakes. Using seafloor pressure data from ONC's NEPTUNE observatory—recorded during the 2021 magnitude-8.2 **Alaska earthquake** and the 2025 magnitude-8.8 **Kamchatka earthquake**, together with coastal tide gauge records—he is modelling how tsunamis are generated, propagate across the Pacific, and impact coastlines. His research will improve understanding of why some distant earthquakes generate damaging tsunamis while others do not, and how earthquake rupture depth and ocean depth influence tsunami behaviour.

Right: Alexander Dolcimascolo looking at paleotsunami deposits and field work coring along a riverbank.

DID YOU KNOW

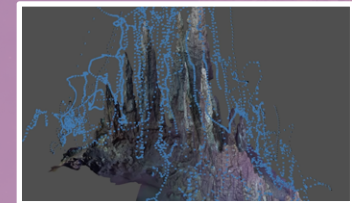
In partnership with DFO, ONC is expanding Canada's Pacific Ocean monitoring network—especially with deep Argo floats—to gather critical data to track climate change impacts and better understand the ocean's role in the Earth system.

1 ArtScience Fellow—currents of remembering

Now in its seventh year, the ONC ArtScience Fellowship connects artists and scientists, creating new ways to explore ocean science and our relationship with the ocean.

Iranian interdisciplinary artist and UVic Visual Arts Master's student Parvin Hasani collaborated with scientists studying hydrothermal vents at ONC's Endeavour site.

Her research inspired *Tides of Memory: Mapping the Invisible Currents of the Body and Ocean*, an exhibition of textured works representing traces of time and environment on the ocean floor and human body. The fellowship program is a partnership among UVic's Faculties of Fine Arts and Science, UVic Office of Research Services, and ONC.



Explore Parvin Hasani's exhibition and artistic journey in this ONC-produced video.



The Tide She Turned

A tribute to Dr. Kate Moran, President & CEO of Ocean Networks Canada

Some leaders manage organizations. Others build legacies that outlast them by generations. Dr. Kate Moran did both—from the deep sea to the cosmos.

With immense gratitude, ONC celebrates Dr. Kate Moran as she concludes 14 remarkable years as President and CEO. Kate leaves ONC stronger, more ambitious, and more globally connected, having transformed pioneering regional observatories into a Major Research Facility and a world leader in ocean observing, with Canadian-led technology and partnerships now spanning the globe from Pole to Pole.

Kate's contribution to Canada was formally recognized in 2023 when she was appointed Officer of the Order of Canada for her innovative leadership in ocean engineering and climate action. In subsequent media interviews, she cited her ability to build exceptional teams as her greatest strength. Kate brings together people with diverse expertise, creates a shared sense of purpose, and gives them the confidence and opportunity to accomplish what once seemed impossible. Her leadership is marked by an extraordinary ability to break down complex problems, evaluate possibilities, and turn bold ideas into tangible solutions.

That determination has deep roots. A devastating hurricane that destroyed her Pennsylvania home and community as a child sparked Kate's lifelong questioning of Earth's systems and humanity's ability to prepare for environmental change. Her career subsequently took her from scientific expeditions in the Arctic and Pacific to the White House, from investigating the 2004 Indian Ocean tsunami and the Deepwater Horizon disaster to helping advance offshore wind and, ultimately, leading ONC.

Under Kate's leadership, ONC's reach has expanded dramatically. Bringing together VENUS and NEPTUNE observatory operations under the newly created Ocean Networks Canada Society was just the first step. From there, ONC has been giving scientists a real-time, long-term window into our blue planet through new installations, mobile platforms, and ocean monitoring partnerships spanning the Arctic, Pacific, Atlantic, and Southern oceans.

Multi-use infrastructure is another hallmark of Kate's legacy. ONC's sensor networks and underwater acoustics have become an indispensable source of continuous ocean intelligence for science, society, and industry, while also creating new connections between ocean science and the arts. Today, ONC data support climate research, marine safety, resilience to coastal hazards affecting millions of British Columbians, a sustainable ocean economy, Indigenous ocean stewardship, neutrino research, and Canada's Arctic priorities.

As Principal Investigator of Solid Carbon, Kate will continue to spearhead pioneering work on the potential of ocean-based carbon dioxide removal. The initiative's \$24-million federal investment, announced in 2025, is enabling a landmark demonstration of carbon storage in subsea basalt—work that could contribute to global climate solutions. Kate is also a trusted voice for science nationally and internationally, and a passionate advocate for scientific collaboration and diplomacy at a time when global research partnerships are under increasing pressure.

Kate's legacy is not simply the infrastructure, data, partnerships, or programs she helped create; it is the people she inspired, the teams she built, and the belief she instilled that seemingly insurmountable challenges can become opportunities when people work together with courage and purpose.

We thank Kate for her extraordinary service to ONC, the University of Victoria, Canada, and the global ocean community. Her next chapter begins at UVic's School of Earth and Ocean Sciences where she will continue her work as a professor and PI of Solid Carbon.

The 160+ strong team you have built at ONC is honoured to build on the strong foundation you created, to serve all Canadians and help ensure a bright, sustainable future for our planet. Kate, thank you for showing us how far ocean science can reach—and for always having the tenacity and vision to reach farther.

ONC by the numbers



Major offshore observatory (NEPTUNE), 850+ kilometres



Major inshore observatory (VENUS)



10 coastal observatories (Pacific, Arctic, Atlantic, Southern Ocean)



22 mobile platforms (4 ferries, one wave glider, 17 Argo floats)



12 community-led ocean monitoring partners



12,400+ sensors



2 PB archived open data



305+ data products



45,000+ data users

CELEBRATING 20 YEARS

OF OCEAN EXPLORATION & TECHNOLOGY INNOVATION



It all started with an idea—sketched on a napkin in the late 1990s by University of Victoria scientists and their Washington collaborators: repurposing submarine cables to enable real-time ocean observing.

2005

Data Management Portal (now Oceans 3.0)—creation of open-access platform for continuous ocean data



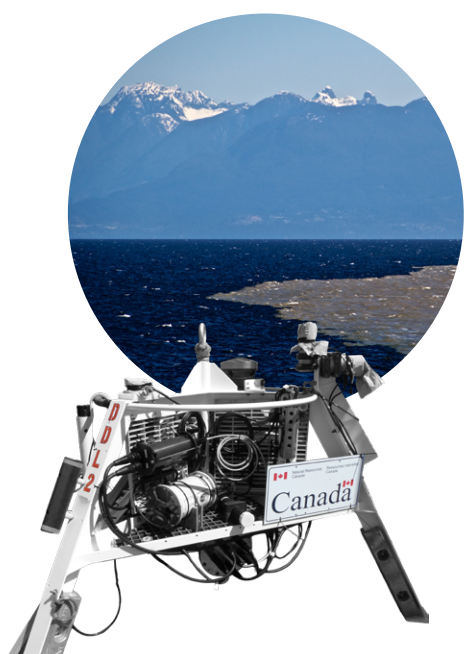
2006

VENUS, Salish Sea cabled major observatory—real time ocean monitoring begins



2009

NEPTUNE, 800 km Pacific Ocean cabled major observatory



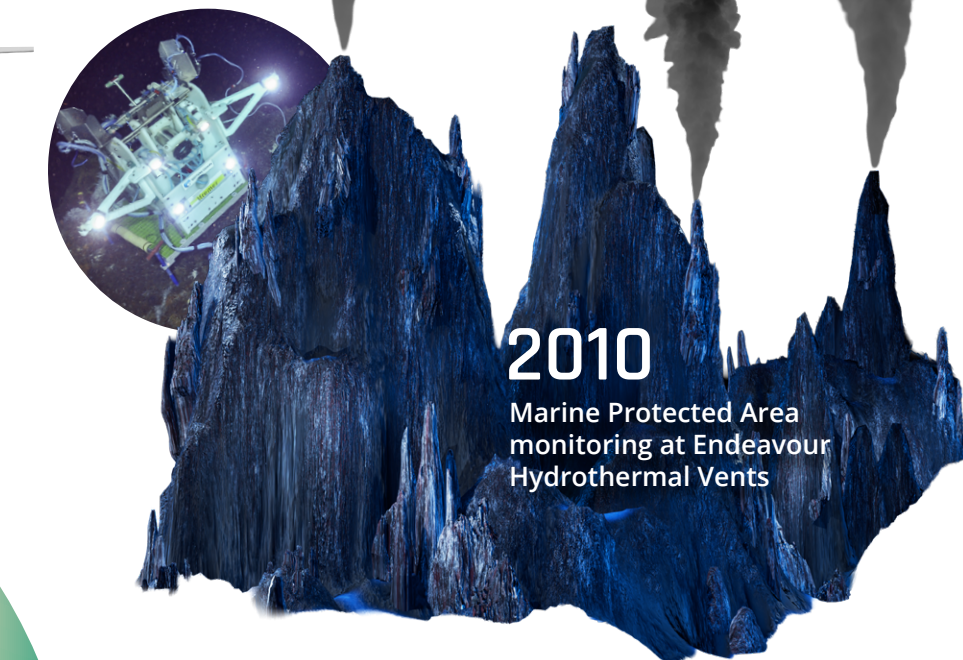
2008

Delta Dynamics Lab with Natural Resources Canada: underwater landslides data



2009

ONC's first deep sea Mars crawler, Wally

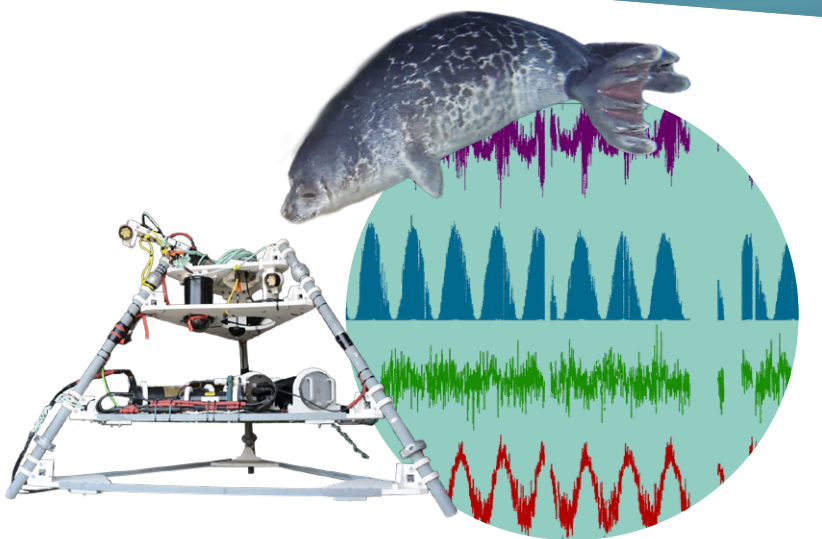


2010

Marine Protected Area monitoring at Endeavour Hydrothermal Vents

2011

BC Ferries vessels equipped to capture ocean data



2012

Cambridge Bay, Nunavut: inaugural Indigenous coastal community observatory. Today, community-led ONC observatories span all three coasts.

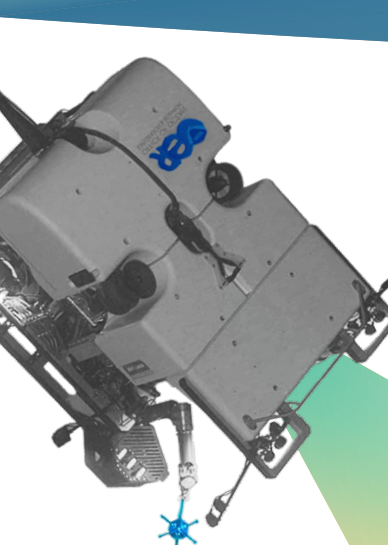
2014

Atlantic Ocean data hosting partnership with Fundy Ocean Research Centre for Energy (FORCE)



2015

Community Fishers program: ocean monitoring partnerships



2016

SeaTube video annotation tool in use by NOAA



2018

Launch of ONC earthquake notification "land+sea" seismic sensor network



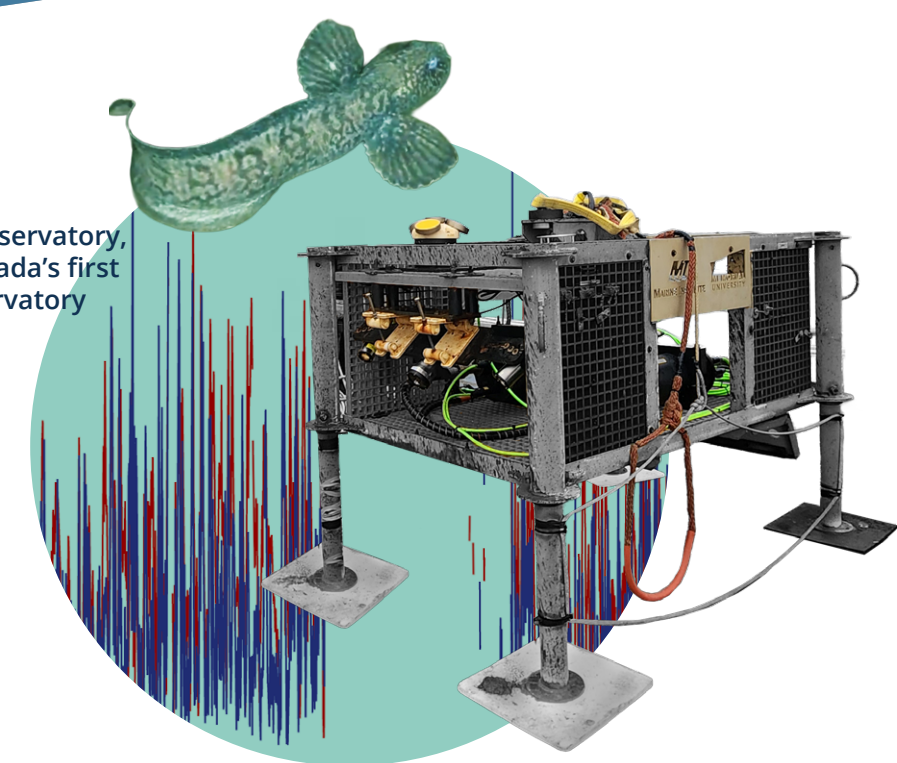
2016

Youth Science Ambassador program begins



2021

Holyrood observatory, Atlantic Canada's first cabled observatory



2019

Pacific Ocean Neutrino Experiment (P-ONE) observatory test moorings



2022

Geodesy glider, monitoring tectonic movement



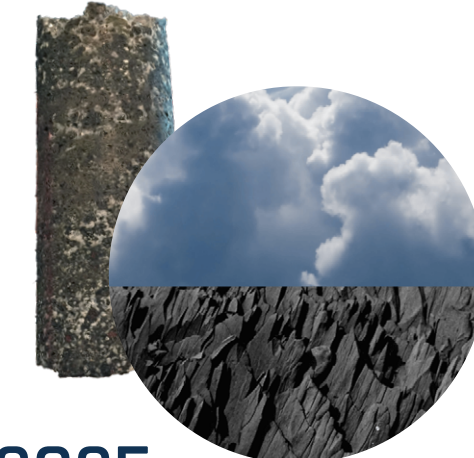
2023

Argo floats deployed, NE Pacific and Drake Passage



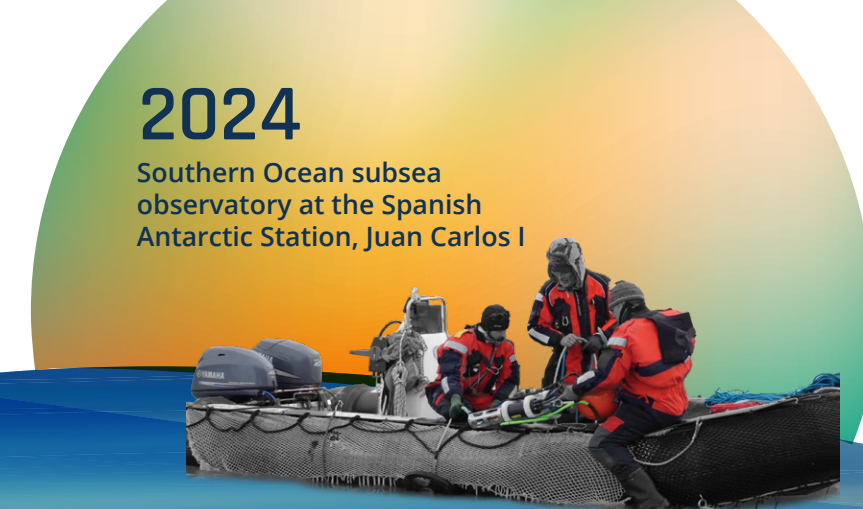
2025

Solid Carbon ONC-led ocean-based climate mitigation project secures federal funding



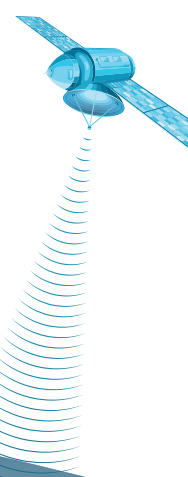
2024

Southern Ocean subsea observatory at the Spanish Antarctic Station, Juan Carlos I



2026

ONC doubled Antarctic Ocean data capture and will test a custom off-grid kiosk for remote Arctic monitoring



Atlantic Ocean Monitoring

Canada's Atlantic coast spans 42,000 kilometres across the Nova Scotia, New Brunswick, Prince Edward Island, and Newfoundland and Labrador coastlines. Since 2014, ONC has been partnering with East Coast universities, scientific organizations, and First Nations, Inuit, and Innu communities to better understand the Canadian eastern seaboard. Today, collaboratively operated buoys, radar, the Holyrood coastal observatory, and community-led monitoring provide real-time ocean data that supports local priorities and advances research.

ONC returns for the 2025 Polar Prince ocean expedition ¹

ONC partnered for a second consecutive year in the Miawpukek Nation-led youth and science expedition aboard the *Oqwatrukewey Eleke'wi'ji'it* (*Polar Prince*) to support Indigenous youth through hands-on ocean research and training.

ONC education coordinator Monika Pelz sailed with Mi'kmaq and Inuit youth through Nunavut, Northern Quebec, and Newfoundland and Labrador, fostering a learning environment that empowered participants to deepen their ocean literacy. Over the 20-day voyage, the youth gained experience in ocean monitoring, data collection, and marine science careers.

The expedition is part of ONC's commitment to support Indigenous leadership in ocean science by creating pathways for youth to develop technical skills, strengthen ocean literacy, and contribute to community-driven marine research and conservation in collaboration with partners.



Above: Oqwatrukewey Eleke'wi'ji'it (*Polar Prince*). Credit: Fred Cattroll
Left: This SmartAtlantic buoy, pictured ready for deployment in Holyrood Bay, is part of a growing marine observation network delivering critical information about conditions along Canada's Atlantic coast. Through collaboration among Memorial University's Fisheries and Marine Institute, ONC, and the SmartAtlantic Alliance, these systems collect and share data on atmospheric conditions, waves, and ocean currents—supporting safer marine operations, scientific research, environmental monitoring, and informed decision-making. Credit: Danielle Percy with the Marine Institute.

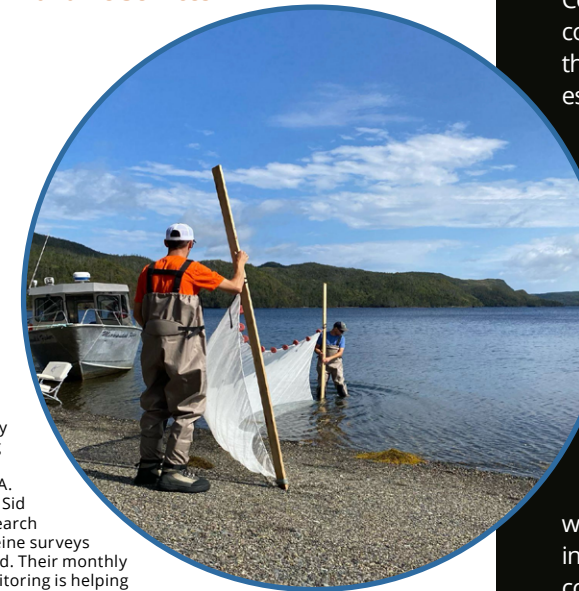


"ONC is a superb collaborator on this important Indigenous led initiative. Their impact on the youth has been truly inspirational and shows the magnificent opportunities our

oceans can provide. The project 100% has opened up doors for the Indigenous participants while bringing the wonderful world of research and academia to them in a practical manner."

- **Richard MacLellan**, managing director,
Miawpukek Horizon Maritime Services

Top left: ONC education coordinator, Monika Pelz, working with youth onboard the *Polar Prince* during the 2025 Indigenous-led science expedition. Credit: Charlene Bearhead, Canadian Geographic Enterprises. Top right: (L-R) MAMKA marine research technicians Sid Bennett and Jordan John with ONC staff scientist Stef Mellon and manager, community based monitoring, Luci Marshall, conduct refresher Community Fishers training and sampling through the Bay d'Espoir, Newfoundland. Credit MAMKA. Bottom right: Jordan John and Sid Bennett, MAMKA marine research technicians, conduct shore seine surveys in Bay d'Espoir, Newfoundland. Their monthly Community Fishers CTD monitoring is helping build a broader understanding of ecosystem dynamics to support monitoring, conservation, and Indigenous protected and conserved Area initiatives.



1.3 Community Fishers Program expands in Atlantic Canada

New Atlantic coast partnerships through ONC's nationwide Community Fishers Program are strengthening the role of local observations in understanding climate and environmental change and informing decision-making.

Community Fishers in Atlantic Canada continued collecting seasonal oceanographic data across their marine territories, building on partnerships established in 2024 with the Innu Nation communities of Natuashish and Sheshatshiu in Labrador, and the Mi'kmaq Alsumk Mowimsikik Koqoey Association (MAMKA) and its marine team in Conne River, Newfoundland. Each community retains ownership of its data.

ONC provided sampling assistance, training, and local workshops, enabling communities to explore their environmental data, interpret emerging patterns alongside their own knowledge and observations, and connect their findings with other regional research and monitoring initiatives. Together, the resulting reports turn community knowledge and ocean data into insights that can support future monitoring and decision-making.

Across Canada, Community Fishers partners are monitoring their local ocean conditions at 633 sampling stations across the Pacific, Atlantic, and Arctic coasts, with more than 18,000 casts archived from locations accessed primarily by boat or snowmobile.

"We found the data to be useful for fresh and saltwater profiles in different parts of Bay d'Espoir, as well as discovering algal blooms via chlorophyll. The temperature and salinity data will be used to assess industry discharges of fresh water from a nearby hydroelectric development and the impacts of aquaculture. The temperatures will also be used for short- and long-term climate change indicators that will accompany other data collected in our traditional waters. Dissolved oxygen will be used as we further explore fish and mammal appearances in our Bay."

- **Randy Green**, Aquatic Policy Planner, MAMKA

From Coast to Coast to Coast

Explore life below the waves through these subsea cameras installed on ONC's community-led coastal observatories, part of a growing ocean-monitoring network on the three coasts of Canada.

Through community-based monitoring and education partnerships that bring together ocean science and Indigenous knowledge, ONC is advancing ocean literacy, building monitoring capacity, and inspiring the next generation of ocean leaders.

1, 2, 3 Coastal community observatories

ONC continues to enhance the capabilities and data from 10 coastal community observatories located across all three coasts of Canada. These cabled observatories enable communities to monitor their local marine environments year-round, supporting local decision-making and climate resilience.

In FY25/26, new features were introduced on select observatory **data dashboards**. These include hydrophone players featuring near-real-time sound and spectrogram data, as well as **video highlight reels** from observatories equipped with underwater cameras in locations ranging from Kitimat on the Pacific coast, to Cambridge Bay in the Arctic, to Holyrood on the Atlantic coast. Species identification content from these observatories are also available on the science-sharing platform, **iNaturalist**.

1 Community displays: science at your fingertips

ONC hosts interactive displays at coastal observatory locations. Using StoryMaps and other digital visualizations, these displays enable community members, school children, and visitors to explore what is happening beneath the ocean surface. Retired sensors and observatory models are often included, so communities can engage tangibly with the infrastructure installed in their local waters. The displays highlight the partnerships and people that make this work possible, including local artists, Elders, and youth.

In 2025, two new displays were added, in Kitimaat Village, in partnership with the Haisla Nation, and in Hartley Bay, in partnership with the Gitga'a't First Nation.



Explore this StoryMap about the Hartley Bay coastal community observatory, a partnership between Gitga'a't First Nation and ONC.

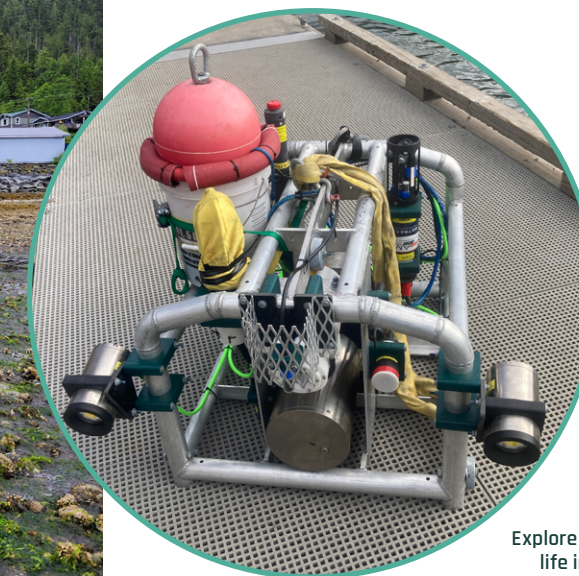


Above: Coastal community display at the Hartley Bay/Gitga'a't observatory.



DID YOU KNOW

Educators and communities can book an in-person or virtual classroom visit with ONC! We offer middle-to-high-school curriculum-aligned presentations that dive into ocean science, Indigenous knowledge, and data that helps us #KnowTheOcean. Contact learning@oceannetworks.ca for more information.



Explore the diverse marine life inhabiting Canada's coastal ecosystems.



ONC junior project engineer Miranda Herle installed subsea cable protection for the Hartley Bay cabled coastal ocean observatory. Inset: Hartley Bay observatory.



ONC K-12 team visits an elementary classroom in Victoria.

1 Inspiring tomorrow's ocean science leaders

ONC partners with Indigenous knowledge holders and other educators to deliver youth programs that spark curiosity and build capacity in ocean science. Designed for classrooms and communities, these programs empower learners through science, technology, engineering, arts, and mathematics (STEAM). This program is supported by NSERC PromoScience.

The Ocean Sense program provides curriculum-aligned learning resources for middle and high school students and educators. Co-created with Indigenous community partners, the modules explore the ocean through multiple ways of knowing, including ocean science, Indigenous knowledge, and data exploration. Complete lesson packages engage learners with culturally relevant inquiry, such as, *"How can learning about the Hw̓l̓q̓um̓iñw̓m language and ocean data help you explore the beach?"* and *"How does the Inuit story of Sedna introduce us to Arctic biodiversity?"*

ONC refreshed the Ocean Sense modules with classroom-ready videos, infographics, worksheets, manipulatives, and slide decks to improve consistency and usability. Material kits were also developed for an Educator Advisory Group to pilot during the 2026–2027 school year.

ONC gratefully acknowledges the original module contributors: W̓a p Sig atgyet Aboriginal Education School District 52 in Prince Rupert, A-Tlegay Fisheries Society, knowledge holders and community members from Snuneymuxw, Stz'uminus, Wei Wai Kum, Homalco, and Nuw-cha-h-nulth First Nations and Inuit from the Kitikmeot region, and Nanaimo Ladysmith public schools.

28 OCEAN NETWORKS CANADA



ga'adzak (sea star)
Curtis Wilson
Wei Wai Kum First Nation

"I really love that your resources incorporate Indigenous connections, as that is sometimes a difficult connection for new educators to make! Learning about concepts in the context of our local environment is so important, and Indigenous Knowledge is invaluable."

- **Tasfia Ahsan**, teacher candidate at the University of British Columbia



A classroom visit was part of ONC's contribution to the Nunatsiavut Research Centre's Science Camp in 2026. K-12 education coordinator Lauren Hudson (left), Nunatsiavut Government environmental protection analyst Elaine Obed (far right), and Memorial and Queens Universities research (L-R), Adam Templeton, Erin Rendell, Eleanor Barry, and Lili Paradi) examine an Arctic char otolith (ear bone) using a digital microscope.



1 Ship2Shore—connecting communities with science at sea

Educators, students, and the public have a front-row seat to science at sea through ONC's Ship2Shore live video conferences that connect audiences with scientists, engineers, and ship crews during ocean expeditions.

During FY25/26, the program engaged approximately 412 participants during NEPDEP expeditions. Ship2Shore events were delivered in partnership with the Shaw Centre for the Salish Sea, Broad Reach Canada, Science North, schools in Victoria and Haida Gwaii, and summer science camps hosted by the Kyuquot/Cheklesah and Mowachaht/Muchalaht Nations.

During the spring 2026 ONCabyss expedition, 170 students connected with the expedition team, asking more than 150 questions in under an hour. In total, 11 Ship2Shore events were delivered during FY25/26, helping connect communities with real-time ocean science and exploration.

Above: (L-R) Peter Bunton, ONC junior project engineer (EIT), and Jeb Dexter, ONC senior project engineer, during Ship2Shore livestreams. Top right: (L-R) Connecting with audiences on-shore, Rayne Boyko, a marine planner with the Council of the Haida Nation and Alison Wale, capacity building coordinator with Nuw-cha-h-nulth Tribal Council, co-host a summer 2025 Ship2Shore event on board the CCGS John P. Tully, supported by ONC. Credit: NEPDEP 2025 (Toby Hall).



K-12 + post-secondary, by the numbers FY25/26:

ONC and partners supporting the next generation of ocean learners and scientists (K-12)

9,726
youth

133
schools

1,060
educators

36 Indigenous
community partnerships

Interdisciplinary post-secondary (courses, workshops, guest lectures, training sessions, and summer schools)

2,477
students

16 **3** **1**
post-secondary institutions

36
courses

Beyond Borders

ONC's deep-sea and coastal observatories represent the widest range of environments of any ocean observing infrastructure on Earth, and provide a real-time window into how the ocean is changing over hours, days, seasons, and decades. These observatories support research on complex Earth processes in ways not previously possible, with data used by scientists around the world.

ONC works closely with valued partners to support Canada's biodiversity and marine conservation goals, blue economy strategy, and the goals of the High Level Panel (Ocean Panel) for a Sustainable Ocean Economy and the United Nations (UN) Decade of Ocean Science for Sustainable Development (UN Ocean Decade).

Humpback whales exist beyond blue borders, living in all oceans around the world. ONC's hydrophone recordings of their distinct sounds and calls can be heard on Oceans 3.0. *Credit: Lars von Ritter Zahony, Ocean Image Bank.*

Advancing global ocean action

There is one global ocean, and comprehensive ocean monitoring recognizes the interconnection of places, people, and perspectives. In 2025, ONC's ocean science leadership was formally recognized by the United Nations, earning the designation of Decade Implementing Partner for a three-year period in the current Ocean Decade.

By integrating Indigenous knowledge, coastal communities' observations, and scientific innovation, ONC is strengthening comprehensive ocean monitoring and contributing to a sustainable and more equitable future for our planet. ONC's leadership status in this arena also enhances Canada's position as a leader in scientific diplomacy.



**2021
2030** United Nations Decade
of Ocean Science
for Sustainable Development

Supporting the UN Ocean Decade ^{1, 2, 3}

ONC participated in the 2025 UN Ocean Conference (France) and the One Ocean Science Congress, advancing international collaboration on sustainable ocean solutions. ONC experts contributed to global discussions on policy innovation, regional data sharing, and collaborative ocean governance, while highlighting leadership in supporting Indigenous-led initiatives, Indigenous engagement, and deep-ocean research.

Through the UN Ocean Conference process, ONC provided stakeholder input that helped shape the Nice Ocean Action Plan and advanced priorities for Sustainable Development Goal 14 (Life Under Water), including:

- Expanding and modernizing ocean observing systems
- Improving data access and interoperability
- Applying FAIR, CARE, and TRUST data principles
- Strengthening community-based and Indigenous-led monitoring
- Integrating scientific, local, and Indigenous knowledge



Representing ONC at the 2025 UN Ocean Conference and the One Ocean Science Congress in Nice, France was (left to right) Pieter Romer, ONC Indigenous community liaison, Daniela Looock, director, engagement and knowledge mobilization, and Maia Hoeberechts, associate director, learning and community engagement.

As an implementing partner, ONC continues to advance the goals of the UN Ocean Decade by leading two major projects and contributing to more than 10 global programs, addressing key challenges in ocean observing, digital ocean systems, and capacity development.

Through data, partnerships, and innovation, ONC is helping build a coordinated global response to ocean challenges—turning ambition into action.

1, 2, 3 Building a skilled nation: ONC alumni

ONC is not only a leader in ocean research and observatory infrastructure, it is also developing the next generation of scientists, engineers, technologists, and community leaders.

Since 2011, more than 250 co-op students have completed over 350 work terms at ONC, gaining hands-on experience with complex ocean technologies and real-world scientific challenges. Of these, half are engineering students, a quarter are computer science students, and the remainder of the students come from mathematics, biology, education, finance, and physics and astronomy. These and other initiatives allow ONC to support the development of highly qualified professionals.

ONC alumni work in a variety of fields, including ocean science, earthquake early warning, national defence, environmental stewardship, and data science, extending the organization's impact well beyond its observatories.

ONC's work and partnerships contribute to the UN's Sustainable Development Goals 13 and 14: Climate Action and Life Under Water.



"It made me realize that I have a voice and that my voice matters in the scientific world, and so then it empowered me to help other Indigenous and Inuit youth—show them that their voice matters."

- **Mia Beattie**, environmental impact assessment officer, Nunavut Impact Review Board, and former ONC Youth Science Ambassador (right, Mia & her sisters in 2016)



"They're a world leader in instrumenting the world's oceans, and this is a really important aspect of our collective defence and the joint capability development that we all participate in together."

- **Dugald Thomson**, air liaison officer (acoustic data analysis and security), Atlantic Research Centre, Defence Research and Development Canada (DRDC), and former Uvic Masters student who worked with ONC data



Hear alumni' stories and the impact of their work with ONC in this video.

2

Advancing data accessibility through new tools and products

ONC observatories generate vast volumes of high-resolution data—from sensor measurements to video and underwater acoustic recordings—collected from the Pacific, Atlantic, and polar oceans, and available through the [Oceans 3.0](#) data management portal.

ONC is committed to delivering open, tested, and vetted long-term FAIR (findable, accessible, interoperable, reusable) datasets that have undergone rigorous quality assurance/data control (QAQC). ONC develops and provides customized tools and [data dashboards](#) to support data integration into research, classrooms, and decision-making.

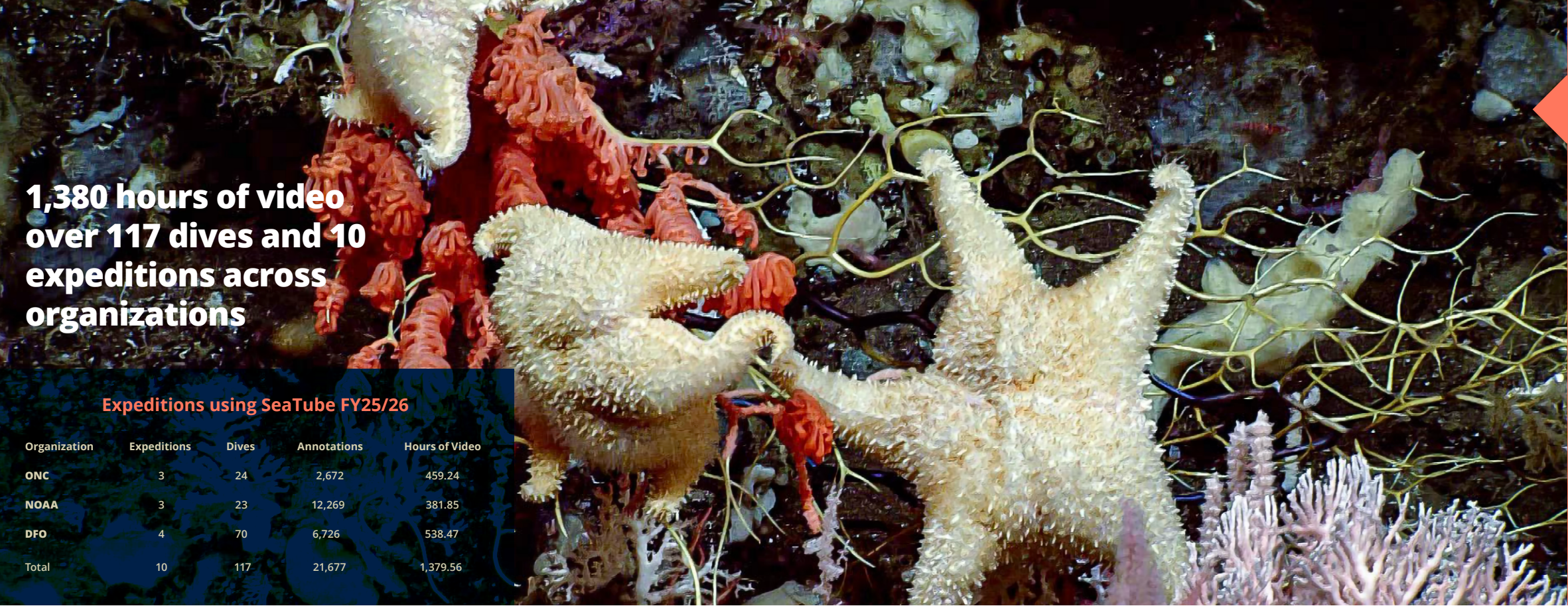
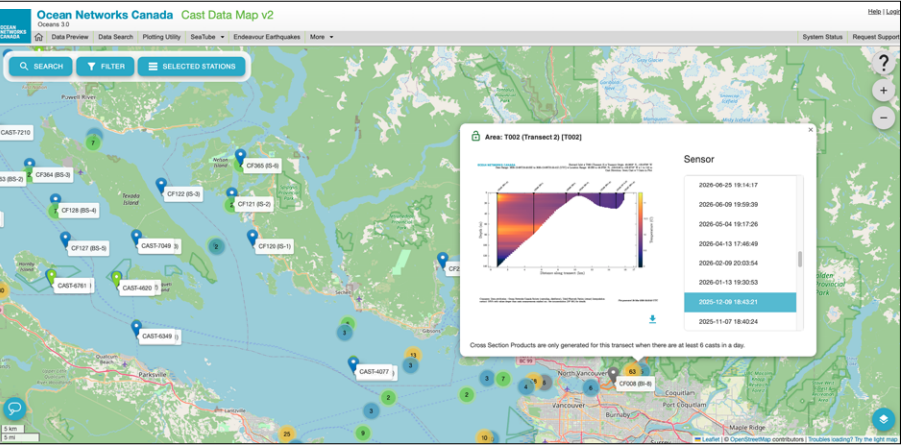
2,3

New mapping tool delivers faster environmental monitoring for communities

Ocean 3.0's new Cast Data Map improves access to quality oceanographic data from CTD casts collected by Community Fishers and during expeditions. Data are available within 48 hours of upload, providing community partners and other users with timely information from the Pacific, Arctic, and Atlantic coasts. Users can browse and filter sampling locations, download data in multiple formats, and explore ocean conditions through new visualization tools, including long-term climate, animated profile plots, and transect plots.

By combining fast data access with visualization tools, the Cast Data Map reduces the time required to manage and interpret ocean monitoring data. Consistent sampling at established stations also supports long-term baseline datasets, helping communities track environmental change and inform stewardship of their marine territories.

Below: Introducing ONC's version 2.0 of the Cast Data Map that enables quick access to cast data and visualizations. Featured is the transect plot showcasing Tsleil-Waututh Nations' temperature data, owned and collected by the community in Indian Arm of Burrard Inlet, BC in December 2025.



1

Bringing deep-sea discoveries into global databases

SeaTube, ONC's flagship web-based video archive and annotation tool, transforms underwater footage into searchable, shareable scientific data. Serving as a digital logbook, it enables scientists to annotate observations in real time from sea or shore and synchronize video with sensor data and contextual information, such as location, depth, species, and geological features.

Since 2016, ONC has been partnering with **NOAA Ocean Exploration** to integrate SeaTube into expedition workflows. In 2026, [NOAA used SeaTube](#) to annotate live and post-expedition ROV observations from three expeditions to Alaska and the US West Coast aboard the NOAA Ship *Okeanos Explorer*. For the first time, these observations were published to global biodiversity databases—the Ocean Biodiversity Information System and the Global Biodiversity Information Facility—extending the reach and scientific impact of expedition data.

SeaTube was also used during FY25/26 **NEPDEP expeditions** to document observations during dives and support subsequent research and outreach.

Scientific publications using ONC data, 2025

Published research highlights



A Public Dataset of Annotated *Orcinus orca* Acoustic Signals for Detection and Ecotype Classification



Underwater acoustic classification across diverse sea environments using adaptive regularization and knowledge encoding



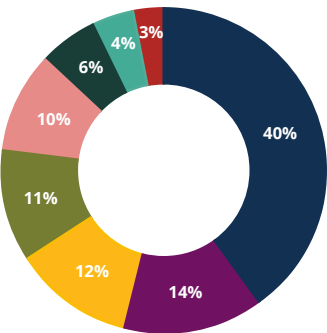
Effect of calibration data on performance of tsunami early warning model

Variability of Surface Currents over Central Juan de Fuca Strait

Ocean noise contributors in southern resident killer whale habitat



Diversity of publications



- Advancing deep ocean observing
- Others
- Ocean soundscapes
- Natural hazards
- The coastal ocean
- Data science
- Arctic observing
- Hot and cold vent dynamics

By the numbers

- 4,262 Citations in 2025 of ONC literature (2006-2025)
- 65 Peer-reviewed academic publications
- 7 Professional trade/industry publications
- 6 Monographs, books, or book chapters
- 49 Conference presentations and posters
- 14 Abstracts, references, and theses
- 52 Technical/consultancy reports
- 388 Database, code, or software



DID YOU KNOW

ONC hosts customized data dashboards on its website that show real-time surface currents, earthquake data, state of the ocean plots, and coastal community observatory data. These information management tools visually track and analyze data, display metrics, and showcase key data highlights in real time, helping users quickly identify trends and key insights.

Top image: Throughout the Seascapes Alaska 3 expedition, sea stars were observed and documented feeding on corals. The *Hippasteria phrygiana* seen here were dining on *Primnoa* sp. on a mound feature north of Uliaga Island (Dive 07).
Credit: NOAA Ocean Exploration, Seascapes Alaska.

ONC Reach

ONC is a leader in knowledge outreach, leveraging media communications and innovative storytelling platforms to broaden the impact of ocean data, research, and technology innovation.

At the heart of ONC's story are the diverse partners and collaborators who share a vision for advancing ocean observing to benefit science, society, and industry—and to support a healthy, resilient ocean future.



What does ONC mean to you?

From ocean observing with Indigenous partners to technology innovation, these special-edition 20th anniversary stickers celebrate the breadth of ONC's work—and were a popular giveaway at conferences and public events in 2026.



ONC, a newsmaker

ONC released 10 original web stories and two news releases in FY25/26, shining a spotlight on ocean data users and technology innovation. By combining immersive digital storytelling with strategic media outreach, ONC continued to connect global audiences with the changing ocean.

A highlight was the strategically timed Halloween release of research on **"missing zombie worms."** Pairing captivating underwater footage with an intriguing hook, the story generated widespread coverage, from Yahoo and television outlets to leading science publications.

Top media stories

- Missing "zombie worms"
- Scientific Sovereignty
- Rising underwater noise in the Arctic

Earned media, by the numbers

1+ billion estimated audience reach across TV, radio, print, and online media

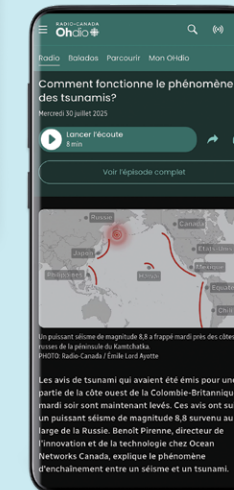
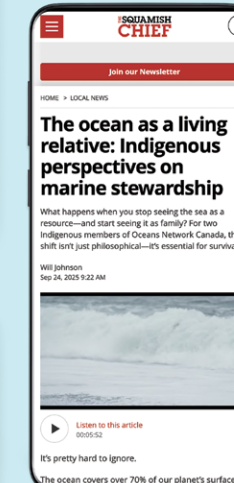
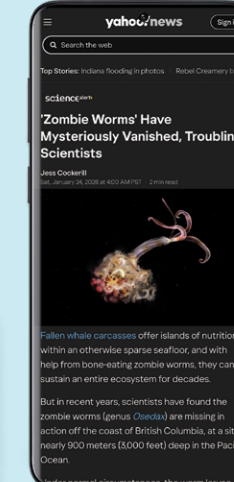
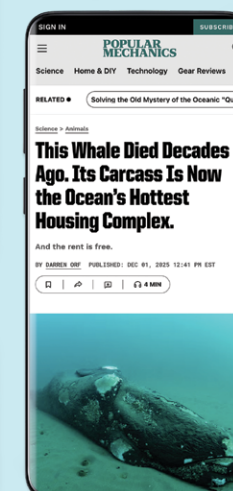
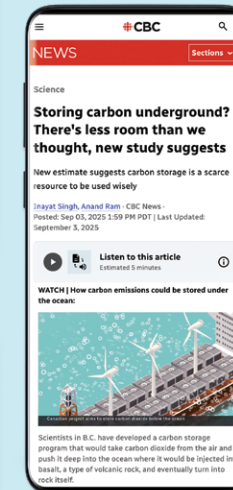
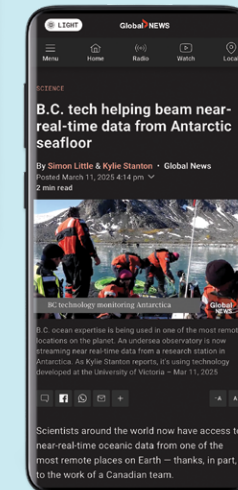
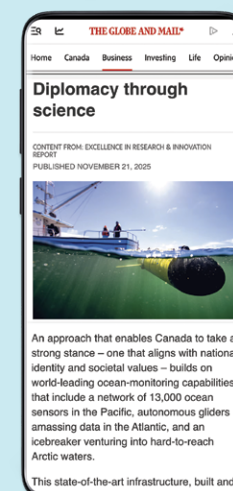
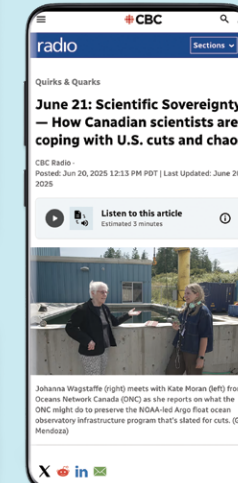
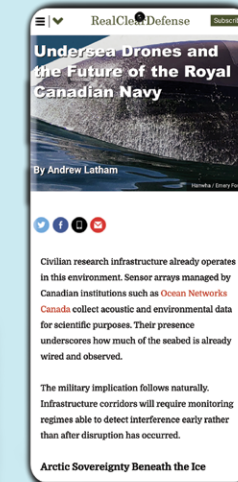
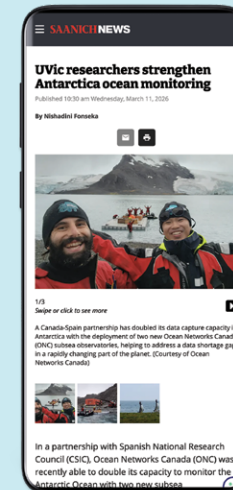
30+ interviews featuring ONC experts

760 stories across TV, radio, print, and digital outlets

\$16.8 million in advertising value equivalency (AVE)



Above: Wylee Fitz-Gerald, ONC post-secondary education co-ordinator and a Métis oceanographer, speaks with CBC Radio in August 2025 about the role of Indigenous knowledge and ocean science in comprehensive ocean monitoring. Below: Media interviews about Antarctic observing with ONC president & CEO Kate Moran (left), October 2025, and with ONC marine equipment specialist, Ruchie Custan (right).



Engaging through social media

In FY25/26, ONC social media content saw a **120% increase in impressions** (views) across Instagram, Facebook, and LinkedIn, with sustained, positive engagement. Together, these channels have more than **42,000 followers**, with over 3,600 new followers added this fiscal. ONC's Bluesky account that launched in 2025 is growing steadily, with 1,365 followers to date, many of whom are part of the scientific community.



Facebook Ocean Networks Canada
Aug 19, 14:02
The critically endangered sunflower sea star (*Pycnopodia helianthoides*) has been spotted by ONC's subsea cameras at the Hartley Bay and Campbell River coastal community observatories, along the Pacific coast. Researchers from the Hakai Institute and their partners have recently

17,649 views



LinkedIn Ocean Networks Canada
May 27, 20:17
Behind the scenes: from scientists to engineers to data specialists, preparations for #ONCabyss ocean expeditions require all hands on deck! #KnowTheOcean #ONCabyss #CDNsci #CDNtech #SciComm #OceanScience #OceanMonitoring #Ocean Observing #DeepSea

59.79% engagement rate



Instagram ocean_networks
Oct 02, 17:22
ONC is partnering to support the global delivery of research data from the first all-Canadian led scientific expedition to the Southern Ocean. The data will soon be available on ONC's data portal, Oceans 3.0 and partners' platforms. In February and March 2025, a team of 15 #Canadian

8,783 reach



YouTube Ocean Networks Canada
Oct 27
Join ONC scientists on a deep-sea investigation searching for the mysterious "zombie worms"—the bone-eating Osedax that play a vital role in deep-ocean ecosystems. Zombie worms are key ecosystem engineers, breaking down whale falls and creating biodiversity hotspots on

4,307 views

A digital-first strategy

ONC amplified its research impact through a dynamic digital strategy—using engaging videos and interactive social media, StoryMaps, and touchscreens to bring ocean science to life. Printed publications and handouts are also digital-first, with QR codes that point to online content for easy access and sharing on mobile devices.

New in FY25/26—the Surfacing Secrets podcast

In partnership with Canadian podcast channels **How to Protect the Ocean** and **Balad'EAU**, ONC launched **Surfacing Secrets: Explore the Ocean. Know the Planet**. Hosted by marine biologists and science communicators Lyne Morissette and Andrew Lewin, the series explores ONC's ocean data, people, partners, and technology. Launched midway through the UN Ocean Decade, it celebrates the wonders of our blue planet and highlights how ocean observing supports a sustainable ocean future.



Above: (L-R) Podcast host, Andrew Lewin; Canpac Marine Services' director of ROV operations, Josh Tetaranko; ONC director of observatory operations, Meghan McCarthy Paulson; and ONC director of physical operations, Dirk Brussow.

ONC website

Promotion of stories and social media drew traffic to ONC's primary website, oceannetworks.ca, with **86,667 unique views** (visitors) in FY25/26. Top performers included the **Live Cameras** page (see below) that attracted nearly **29,000 views**; and almost **10,000 users** visited the **Earthquake Data Dashboard**, with a **534 visitor spike** recorded after a 4.1 magnitude earthquake 241 km west of Tofino.

ONCabyss expeditions also drew strong audiences to website-hosted live dives during the Summer 2025 and Spring 2026 cruises. The top ONC web stories were **20 years of ocean intelligence**; the **2025 Polar Prince ocean expedition**; **Where are the zombie worms?**; and the **first all-Canadian expedition to the Southern Ocean**.



1, 2, 3 Conferences & Events

From researchers to royalty, ONC booths attracted strong attendance at major conferences and public events across Canada and internationally. At the **Ocean Sciences Meeting** in Glasgow, ONC staff delivered 10 presentations, showcased 18 posters, and welcomed more than 1,000 booth visitors, including HRH Princess Anne. At the **Canadian Science Policy Conference (CSPC)** in Ottawa, ONC corporate innovation and technology officer Benoît Pirenne joined a panel on strengthening Arctic Ocean monitoring through partnerships with Indigenous communities.

Other outreach events included the **ArcticNet** Annual Scientific Meeting, **Geodiversity Fest**, the **International Seaweed Symposium**, **Ocean Floor Explore**, and events at **BC Ferries** terminals. In addition, ONC hosted the **VENUS Salish Sea workshop**.

ONC is a proud supporter of **Ocean Week Victoria**, **Ocean Week Campbell River**, and **Ocean Week Canada**, three community driven efforts to celebrate **World Ocean Day** with events across Canada. For the fifth year, ONC K-12 educators and scientists partnered with UVic and Camosun College to bring the STEAM festival **Science Rendezvous** to Victoria, attracting more than 1,200 attendees.



Bottom left: ONC delegates at the 2026 Ocean Sciences Meeting in Scotland. Top right: UVic delegates, Tristan Denniston, Joaquin Traperro, Bill Kilgannon, Lisa Kalynchuk, Dane Berry, with ONC delegates Benoît Pirenne, Robyn Meyer, and Jessica Stigant at CSPC 2025. Middle left: ONC director of observatory operations, Meghan McCarthy Paulson, with ONC's 20th anniversary calendar at ArcticNet 2025 in Alberta. Middle right: Robyn Meyer, ONC associate director, marketing and communications, joined a panel of experts at Ocean Floor Explore to discuss communications strategies to help researchers find funders. Bottom left: ONC was honoured to engage with The Princess Royal to ONC's exhibition booth at the 2026 Ocean Sciences Meeting.



Natural Resources Canada, Department of National Defence, Defence Research and Development Canada, Innovation, Science and Economic Development Canada, and Environment and Climate Change Canada. ONC also met with the Royal Canadian Navy, the heads of the Arctic and Pacific Canadian Coast Guard regions, and Canada's Chief Science Advisor.

Provincially, ONC engaged with multiple government ministries including Emergency Management and Climate Readiness, Jobs and Economic Growth, Post-Secondary Education and Future Skills, and Energy and Climate Solutions. Key topics included wildfire season protections, earthquake early warning, ocean acidification, and the Solid Carbon project.

Whale conservation and safe, sustainable maritime transport

With continued support from the Oceans Protection Plan, ONC enhanced its whale monitoring capabilities by transitioning from individual hydrophones to integrated hydrophone arrays. Developed with DFO, these systems provide more comprehensive and timely information on whale presence in key marine corridors, supporting efforts to reduce vessel-whale interactions, improve marine safety, inform management of Canada's coastal trade routes, and protect ecosystems. This work builds on ONC's more than 20-year archive of Pacific coast acoustic data.

Marine protected areas

ONC continues to monitor Tang.gwan – ᐃᓕᓂᓴᓴᓴᓴᓴᓴ – Tsig is (Tᐃᓴ) Marine Protected Area in support of Canada's commitment to protect 30% of its oceans by 2030. ONC's support for DFO- and partner-led NorthEast Pacific Deep-sea Exploration Project (NEPDEP) expeditions advanced understanding of seamounts. ONC expanded its Community Fishers program through partnerships with Indigenous

communities, strengthening local observing capacity and integrating Indigenous knowledge into long-term marine monitoring and coastal stewardship.

Northern partnerships

ONC strengthened its focus on northern partnerships and Arctic initiatives, leveraging its remote power infrastructure to identify new opportunities with Inuit partners and communities. ONC is exploring how its capabilities can further support federal and Inuit priorities through co-development. ONC will build on these partnerships to ensure Inuit priorities are reflected in Arctic research and monitoring.

Data partnerships

ONC serves as the administrative home and a major data contributor to the **Canadian Integrated Ocean Observing System Pacific Region (CIOOS-Pacific)**. The mission of CIOOS is to support regional data providers through software systems and services that promote effective data management, curation, and stewardship. These efforts ensure that ocean data are findable, accessible, interoperable, and reproducible for advancing the goals of the UN Ocean Decade and amplifying the impact of ocean data.

Equity, Diversity, and Inclusion

ONC is building a culture of belonging that increases our capacity to effectively address and serve the interests of our diverse communities of partners and collaborators.

Achieving a comprehensive and profound understanding of the ocean requires diversity of perspectives, and an equitable and inclusive approach. In removing barriers to participation, we collectively advance our knowledge and understanding of the world. Recognizing this, ONC has committed to advancing equity, diversity, and inclusion within ocean science and technology.

The **World Data System-International Technology Office** supports the establishment of research data management standards and advocates for best practices in data management, which is important for all research organizations and for Canada. It is hosted by UVic at ONC, and funded by the **Digital Research Alliance of Canada**.

Industry partners

In partnership with industry, ONC is developing and delivering world-leading ocean intelligence products and services.

ONC is a founding supporter of the **Association of British Columbia Defence and Marine Industries**, helping to strengthen BC's defence and marine sectors by connecting businesses, governments, educational institutions, and industry partners, while supporting skilled workforce development, innovation, and environmental responsibility.

The non-profit organization **Ocean Visions** is working with ONC to advance responsible marine carbon dioxide removal (mCDR) climate solutions, and establish monitoring, reporting, and verification protocols.

ONC supports the **Centre for Ocean Applied Sustainable Technologies (COAST)**, Pacific Canada's sustainable blue economy hub that is accelerating marine technology startups and helping them scale up. COAST's downtown



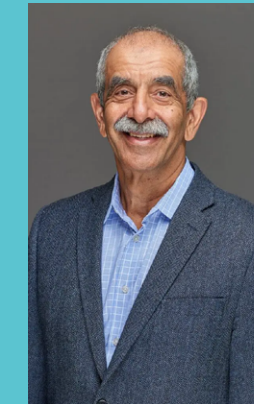
BC Ferries

ONC and BC Ferries established a partnership in 2012 to equip ferries with Canadian-designed water sampling systems that collect long-term observations of ocean temperature, salinity, oxygen, turbidity, and chlorophyll during daily transits of the Strait of Georgia.

Four ferries are operating with ONC sampling systems: *Queen of Alberni*, *Spirit of Vancouver Island*, *Island Aurora*, and *Island Kwigwis*. These sustained observations advance understanding of a changing ocean and support applications in climate change, shipping, port security, and ocean soundscape management.

Recognizing our valued advisors

ONC's **Board of Directors, International Science Advisory Board, Standing Advisory Committee**, and the **Ocean Observatory Council** provide valued insights and contributions to ONC's strategic goals and priorities.



Letter from ONC Board Chair, Jim Ghadbane

This year, Ocean Networks Canada celebrates 20 years of operations—a remarkable milestone reflecting two decades of innovation, discovery, and service to Canadians. Since 2006, ONC has built one of the world's most advanced ocean observing networks, generating datasets that are increasingly valuable for understanding our planet and informing decision-making. As one of Canada's Major

Research Facilities, ONC advances national priorities, including Arctic sovereignty, climate resilience, environmental stewardship, and northern innovation.

ONC's real-time and long-time series observations are helping researchers understand the climatic changes we face. A recent *Nature* publication, drawing on more than a decade of Oceans 3.0 Arctic subsea acoustic data, provides a critical baseline for protecting northern ecosystems amid unprecedented change. Through partnerships with Indigenous communities, ONC is demonstrating capability to operate in the Arctic. This positions ONC to expand its service to and strengthen Canada's presence in the north.

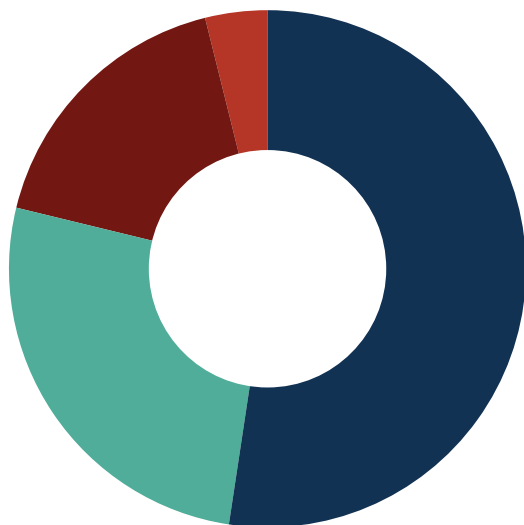
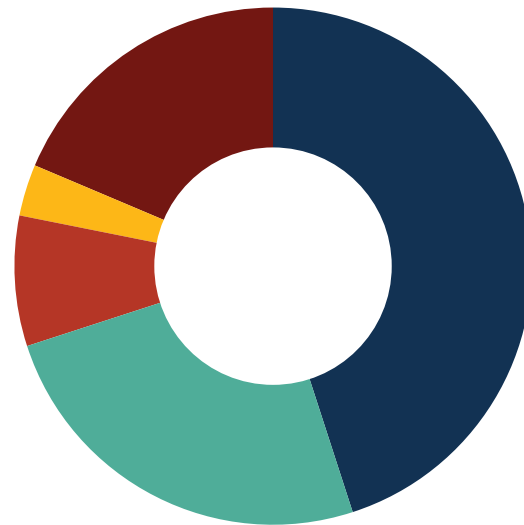
All these accomplishments are grounded in collaboration. ONC's success is built on long-standing relationships with northern communities, Indigenous partners, governments, and research organizations. Together, these partnerships are expanding scientific knowledge, strengthening regional capacity, and ensuring that innovation delivers practical benefits for those living and working in the North. As environmental change accelerates, these trusted relationships are more important than ever.

Looking ahead, the Board remains committed to supporting ONC's next chapter of innovation, discovery, and collaboration. We are proud of its impact over the past 20 years and excited about the opportunities ahead. ONC is uniquely positioned to provide the data, expertise, and partnerships needed to understand our changing oceans and contribute to a more sustainable future for generations to come.

Top: Narwhals in Nunavut. Credit: Paul Nicklen (photographer and UVic Alumni).

Inset: BC Ferry, Spirit of British Columbia. Credit: BC Ferries.

The Ocean Networks Canada Society's audited financial statements for FY25/26, posted to the website, reflect external contracts and services. The revenues and expenditures are included in the University of Victoria's audited financial statements. Totals presented are net of in-kind contributions.



\$15,608,910	Personnel
\$8,664,517	Maintenance & Repairs
\$2,824,146	Services
\$1,118,796	General Administration & Other
\$6,461,144	ONCS Operational Expenses
\$34,677,513	

	\$19,636,382	Canada Foundation for Innovation
	\$9,900,000	Federal Government
	\$6,491,059	Ocean Networks Canada Society
	\$1,456,000	University of Victoria
	\$37,483,441	

ONC leadership

In July 2026, ONC will welcome Jay Cullen, director of the University of Victoria's School of Earth and Ocean Sciences (SEOS), who will serve as Interim President and CEO. Dr. Cullen brings expertise in ocean science and a strong record of academic leadership. As director of SEOS, he led one of Canada's leading ocean and earth science units and has built major multi-partner research collaborations across universities and government agencies.

"Sustained observation is the foundation for everything that comes next: understanding, predicting, and ultimately protecting a resource as vital to Canada as the ocean."

- Jay T. Cullen

ONC will continue supporting Canada's strategic priorities in the North, including Arctic sovereignty, Indigenous partnerships, environmental preparedness, and dual-use capabilities. A key focus is SMART (Science Monitoring And Reliable Telecommunications) cables, an emerging technology that integrates environmental sensors into telecommunications infrastructure. These sensors may enable real-time seismic, tsunami, and deep-sea temperature monitoring in remote areas. ONC is working with SMART technology developers and can support long-term data storage, curation, security, and delivery.

Years of research and deep-ocean testing will culminate in the planned deployment of the first string of the Pacific Ocean Neutrino Experiment (P-ONE) observatory in late 2026. Designed to turn the deep ocean into a particle detector, the P-ONE project brings together multidisciplinary teams from across Canada, Germany, Poland, the UK, and the US. P-ONE will eventually comprise 70 one-kilometre-tall moorings spaced 80 metres apart and equipped with scientific instruments extending up from the seafloor. These moorings will connect to the NEPTUNE observatory at Cascadia Basin via a 35-km subsea extension cable, placing it outside the ThT Marine Protected Area and enabling it to unlock secrets of the universe while collecting crucial data on marine bioluminescence and deep-sea conditions.



ONC's inundation modelling helps BC coastal communities strengthen resilience to tsunamis, storm surge, and climate-driven sea-level rise. Results from an ONC/PSG Ocean Inc. tsunami study with the District of Kitimat and Haisla Nation, funded by the Union of BC Municipalities, will be released in FY26/27. Similar projects have been completed with partners throughout coastal British Columbia.

Background: A seafloor model constructed from multibeam surveys, showing a 10-km stretch of the Juan de Fuca Ridge, including ONC's NEPTUNE observatory Main Endeavour Field site. **Credit:** Jeff Samson and Caroline Lee, ONC GIS specialists. **Data:** ONC (2024); MBARI (2014).



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#KnowTheOcean

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A UNIVERSITY OF VICTORIA INITIATIVE

ONC is primarily funded by the Canada Foundation for Innovation, Government of Canada, University of Victoria, and Government of British Columbia.

We are thankful for our many partners in industry, government, research, community, and higher education.

Ocean Networks Canada is a Major Research Facility of Canada.