

Expanding the Cambridge Bay observatory (2015)

Submitted by Anonymous (not verified) Wed, 2015-09-30 14:48

Ocean Networks Canada (ONC) is in its third year of delivering ocean data from the Arctic Ocean with a new observatory platform and expanded suite of instruments and sensors that monitor the health of the northern ocean.

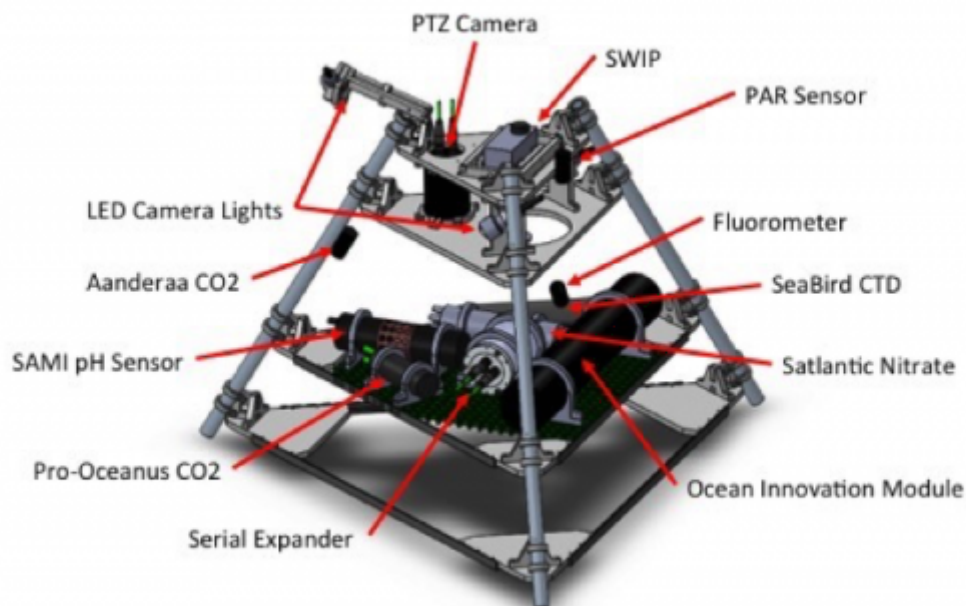
From 15 to 31 August, an ONC operations and user services team visited the hamlet of Cambridge Bay, Nunavut, to service and upgrade both the underwater platforms and the above ground weather station located steps from the busy community dock. The platform now hosts three times as many sensors as the original version.



ONC's operations and user services team pose with the crew of the Arctic Research Foundation's R/V Martin Bergman on a sunny day on the Arctic Ocean (August 2015)

A unique way to monitor the health of the ocean

The cabled observatory at Cambridge Bay provides continuous 24/7 monitoring, 365 days a year. Data and information from the sensors and devices are collected and streamed from Nunavut to the west coast for archiving at the University of Victoria where the data are made freely available to scientists, local residents and the global community through [Oceans 2.0](#), ONC's sophisticated data management system.



12 sensors on the new platform monitor key water properties.

The seafloor array at Cambridge Bay includes sensors that monitor oxygen, temperature and salinity as well as a shallow water ice profiler, or SWIP, which measures the depth of the ice underwater, and a new high definition video camera that records activities of undersea plants and animals. For the first time, sensors that measure CO₂, pH and nitrate will also be tested. The data will be watched closely to see how the sensors perform in the cold arctic environment.

Close by on the seafloor, a hydrophone platform monitors underwater noise, and an Ocean Tracking Network acoustic fish tag receiver tracks fish behaviour. Above ground, a dockside weather station includes a reflected sunlight sensor and video camera that provides a daily time-lapse sequence. Canadian companies such as Ocean Sonics and ASL Environmental Sciences manufacture a number of the instruments housed on the observatory.

Dock Camera

The major goals of this year's Arctic expedition included:

- retrieving last year's platform, instruments and cable;
- deploying an improved and newly designed platform with additional sensors;
- upgrading the shore station;
- replacing the entire cable with a new cable that is over 200 m long (three times longer than the previous cable);
- recording detailed information about the sea life in the area surrounding the platform;
- replacing all of the underwater support electronics with a new design; and
- replacing last year's underwater camera along with an improved lighting array to provide higher quality underwater video.



A diver records local fauna for scientific study as last year's platform awaits retrieval.

Boosting the capabilities of Canadian Arctic monitoring

While the Canadian North is seeing expanded interest in resource extraction and an increase in marine traffic, the Arctic is also experiencing more rapid and noticeable impacts from global environmental change than any other region on Earth. Knowledge gained through Cambridge Bay and future Arctic observatories will strengthen Canada's capacity to protect the Arctic environment.

The importance of collaborations in ocean exploration cannot be understated. ONC appreciates the support of the Kitikmeot regional government, the Arctic Research Foundation and the Arctic research vessel *Martin Bergman*, the Canadian Coast Guard icebreaker, *Sir Wilfred Laurier*, and residents of Cambridge Bay.

What's next for ONC in the Arctic?

Based on the success of the first cabled Arctic platform at Cambridge Bay, ONC's goal is to grow a network of similar coastal observing systems that would serve a growing need for continuous environmental monitoring in Arctic waters—from the Bering Sea to Baffin Island.

"The Arctic Ocean is the fastest changing place on the planet," says ONC President Kate Moran, "so monitoring this region in more locations is crucial to making any kind of decision—from community level, to national security."

Today, ONC is moving ahead with plans to install an environmental monitoring system on the seafloor where the Churchill River enters Hudson Bay as part of the new Churchill Marine Observatory (announced in July 2015).

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