

## **Partnering to Expand Ocean Networks' Reach from Sea to Sky**

Submitted by Max Kasprzik Mon, 2016-07-04 11:39

Ocean Networks Canada (ONC) is partnering with researchers and organizations to add critical ocean sensors from sea to sky.

### **Using light to understand our ocean**

ONC and [Dr. Maycira Costa](#) of the University of Victoria (UVic) are working together to install a ferry-based sensor system focused on the calibration of satellite data for ocean health monitoring.



Dr. Maycira Costa, UVic geographer and FOCOS (ferry ocean colour observation system) project lead onboard BC Ferries. June 2016 Credit: UVic Photo Services.

Earlier this year, sensors were installed on the BC Ferries? *Queen of Oak Bay*, that plies the waters of Georgia Strait between Horseshoe Bay and Departure Bay. The first sensor, a radiometer oriented to look upward and mounted on the tallest part of the vessel, measures the amount of sunlight.

The second instrument - a hyperspectral sensor - factors in the position of the ferry and the sun to find the ideal orientation to point at the ocean and measure the colour of the water. This relates to the presence of suspended material and plankton, which provides a crucial food source for many aquatic animals. Information collected from these sensors will be accessible through ONC's powerful data management system, Oceans 2.0. FOCOS (ferry ocean colour observation system) will help Maycira ground truth and calibrate satellite data in real-time, providing information on the health of the Salish Sea.



(L-R) UVic geographer and FOCOS project lead Dr. Maycira Costa, UVic grad student Ziwei Wang, and UVic research assistant Stephan Phillips onboard BC Ferries, with hyperspectral sensor in the background, June 2016. Credit: UVic Photo Services.

Beginning July 1, passengers on select sailings of the *Queen of Oak Bay* on the Nanaimo ? Horseshoe Bay route can participate in the [onboard coastal naturalist program](#) and use a tablet and app to collect images of the sea and sky.

?ONC's expertise in installation and operation of sensors and the Ocean 2.0 data portal were fundamental to the success of this research?, comments Maycira, whose expertise is in

remote sensing. Her [remote sensing lab](#), the first of its kind in western Canada, enables her to investigate spectral characteristics of the Earth's surface by focusing on the interaction of light energy with organic and inorganic material in the sea.

### **New mooring to monitor ocean acidification**

A new mooring was installed in Baynes Sound to monitor ocean acidification. Baynes Sound, located along the eastern shores of central Vancouver Island hosts over 50% of British Columbia's shellfish aquaculture production. Monitoring changes in sea water pH and dissolved carbon dioxide concentrations will assist the local aquaculture operators in managing their shellfish stocks.



Location of the new mooring at Baynes Sound.

Ocean acidification occurs when atmospheric carbon dioxide dissolves in the ocean, decreasing the pH, making the ocean water more acidic. An acidic ocean has a detrimental impact on marine life that form calcium carbonate shells, like juvenile oysters, clams and mussels. In a low pH ocean, shell growth is stunted and survival rates decrease.

Later this summer, instruments will be added to the mooring. By mid-2017, the data will be available in real-time through Oceans 2.0, ONC's data management system. This enables the aquaculture industry to login and download data to easily monitor the water properties in this important coastal region. The new mooring is the result of ONC's partnership with MEOPAR and Fisheries and Oceans Canada, and will quantify water properties, including pH and dissolved carbon dioxide near the surface, at mid-depth, and near the bottom.

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