

## Sea Ice Research and its Benefits

Submitted by Max Kasprzik Tue, 2016-04-26 10:10

### **Understanding Sea Ice: Ocean Networks Canada Coordinates POLAR Safe Passage Project.**

Imagine an area of the size of Ontario ? gone. That?s roughly the amount of Arctic sea-ice that has melted in the last 30 years: over 1 million square km. And that?s just the tip of the iceberg: some climate change forecasts are predicting an ice-free summer Arctic Ocean by as early as 2030.

Understanding sea-ice change is critical to life in the high north, particularly when it comes to getting around. Local transportation and commercial shipping are defined by the Arctic?s shifting seasonal extremes, which is becoming harder to predict. Not only is the thickness and extent of the frozen ocean shrinking, but the dates of freeze-up, break-up and the duration of solid ice and clear water are shifting dramatically. This warming cocktail of unpredictable conditions is increasing the cost and risk of local transportation, commercial shipping and marine operations, making safe-passage precarious.



Icy shore by Cambridge Bay.



Ice Berg in the waters near remote Devon Island.

Ocean Networks Canada (ONC) is leading a timely collaborative project to improve our understanding of sea ice processes, especially those critical to Arctic transportation. Funded by Polar Knowledge Canada (POLAR), Safe Passage: Sea-Ice Research for Arctic Resource Development and Northern Communities will leverage existing coast observation, modelling programs and community relationships to document the variability of ice cover in Cambridge Bay, Dease Strait and Deception Bay in Hudson Strait.



Locations of northern research areas.

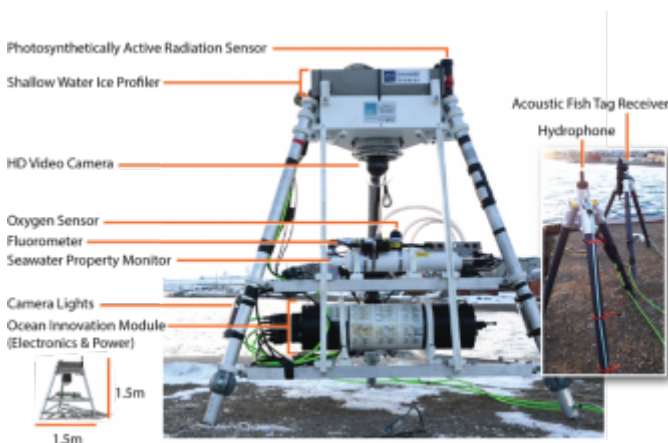
?ONC took the leadership when POLAR asked a few organizations to pull together a single sea-ice study proposal.? Project lead Richard Dewey, ONC?s Associate Director of Science Services will work with ONC?s Associate Director, User Services Maia Hoeberechts, who will coordinate community outreach.

Over the next 3 years, ONC will enhance its Cambridge Bay observatory, which has been continuously gathering data since 2012. The Safe Passage network includes Dr. Monique Bernier, INRS, who are currently working in Deception Bay in Hudson Strait; Dr. Paul Myers, University of Alberta, specializes in numerical modelling in Northern Canada; Derek Mueller, Carleton University, involved with big ice satellite tracking; and the Canadian Ice Service, which currently relies solely on satellite data.



Carlton University student Anna Crawford studies the deterioration and spatial distribution patterns of ice islands.

ONC?s Cambridge Bay observatory will provide real-time data and ground-truth confirmation of satellite data on sea-ice conditions. ?To study seasonal sea-ice, we need both atmosphere and in-water measurements, so ONC?s Cambridge Bay Observatory is an ideal laboratory for researching sea-ice thermodynamics,? says Dewey.



The Community Observatory prior to installation in Cambridge Bay.

This project will integrate with existing and historical monitoring programs, including local and traditional knowledge of sea ice processes. There will also be opportunities for youth education, training for northern scientists, direct community involvement in research, use of local resources for equipment installation as well as presentations, live data displays, reports and online materials.



Calm evening waters of Cambridge Bay.

Since 2012, ONC has been building community relationships in the Cambridge Bay, Dease Strait region. Community involvement in the Deception Bay in Hudson Strait region will leverage programs developed by the Kativik Regional Government, the Kativik School Board and the INRS team.

We're excited by the potential to use the observatory data and computer modelling, in collaboration with other arctic sea-ice projects and local community. This will improve our skill in predicting freeze-up and break-up dates for safe ice travel and shipping.

Polar Knowledge Canada (POLAR) is on the cutting edge of Arctic issues and strengthens Canada's position internationally as a leader in polar science and technology. It will provide a world-class hub for science and technology research in Cambridge Bay, Nunavut called the Canadian High Arctic Research Station (CHARS). POLAR improves economic opportunities,

environmental stewardship and quality of life for Northerners and other Canadians.

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