

Lake Ice in the Canadian High Arctic

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Project Location

Resolute Bay, Cornwallis Island and Polar Bear Pass (PBP), Bathurst Island, NU

Timeframe

This project is planned for a long-term study of High Arctic lake Ice. The current timeframe is to begin in spring 2016 until 2018, to be extended annually as funding permits. This year's research plan is one week of sampling during the second week of May.

Project Description

The purpose of this project is to monitor lake ice in Canada, as it is an important part of the cryosphere and recent projections suggest thinner and shorter duration of ice cover in the future. The objectives of this research are to better understand the links between lake ice and climate, particularly in response to a changing cryosphere. We need to fully understand the implications and response of the changing ice cover as these not only affect the climate interactions, but the species and habitats within the lakes.

We will use snowmobiles to travel to the lakes around Resolute, and have requested helicopter support to travel to PBP for two days. No structures will be erected as we will be working from PCSP in Resolute for five days, and use the cabin at Polar Bear Pass for one night. This work will not disrupt any natural habitats or require any restoration efforts when complete.

Methodology

We will be drilling small holes in the lake ice to measure the thickness and examine the ice structure. We will drill a larger hole in the ice at PBP to lower an ice sensor to the bottom of Hunting Camp Lake, where it will remain and monitor the ice growth over the year (until summer 2017, when we will extract, service, and redeploy the sensor). We also plan to download the data from the automatic weather station at PBP.

Resolute was selected as the ideal community to work from for ease of access to the local lakes; logistical support through PCSP; and existing community relations from previous work. It is hoped that in future years of this project we can involve community members in local sampling. PBP was selected due to proximity to Resolute, and for its research potential on the lakes. The area has extensive research on wetland hydrology and snow, which will now be expanded to include the lakes.

Data and Reporting

The short-term use of the data will be towards validating satellite imagery and modelling results. The long-term use of this data is towards documenting ongoing changes to the ice cover timing and thickness. Data we collect will be available on my research website as we aim to contribute our measurements to the Ice Watch Database (public repository for Canadian Lake Ice data). We will create an annual report of the research findings and activities to share with all interested parties (community members and groups from Resolute and any regional/Territorial organizations). We anticipate numerous publications from this data over the span of the project.