Northern Ellesmere Ice Shelves, Ecosystems and Climate Impacts

Annual Report 2014; Licence # 02 006 14R-M

Dr. Luke Copland, Department of Geography, University of Ottawa, Ottawa, Ontario
Email: luke.copland@uottawa.ca, Tel: 613 562 5800 x2826

Dr. Derek Mueller, Department of Geography and Environmental Studies, Carleton University, Ottawa, Ontario. Email: derek_mueller@carleton.ca, Tel: 613 520 2600 x1984

In July 2014, we carried out oceanographic, hydrological and glaciological measurements on the northern coast of Ellesmere Island. The research group for summer 2014 fieldwork was Dr. Luke Copland, Dr. Derek Mueller, PhD student Adrienne White, Masters students Jill Rajewicz and Kelly Graves as well as research assistant Sam Brenner. Based out of Purple Valley at the rear of the Milne Ice Shelf, we:

- Maintained instruments that continuously record temperature and salinity in Milne Fiord. We also measured water temperature and salinity at other locations in the fiord.
- Maintained the weather station located in Purple Valley. This station provides the only source of near real-time weather information for northern Ellesmere Island, and can be accessed by the public at http://tinyurl.com/milnewx.
- Maintained 3 small weather stations on the Milne Ice Shelf that record temperature and snow depth.
- Downloaded a total of 7 time-lapse cameras that provide monitoring of snow melt and accumulation patterns across the study site, and to monitor ice shelf changes throughout the year. Eight new time-lapse cameras were also added to this network.
- Took water samples in both the fiord and of two small streams running into the fiord from Purple Valley. Ice samples were taken from the ice shelf.
- Measured glacier melt using our network of ablation stakes on the Milne Ice Shelf and Glacier.
- Conducted IPR (ice penetrating radar) surveys of channels and cracks on the Milne Ice Shelf with the goal of understanding the shape and structure of these features.
- Conducted an IPR survey along and across the Milne Glacier to improve our understanding of the glacier morphology and grounding line.

In addition, fieldwork in May and July 2014 at White Glacier, Axel Heiberg Island, continued the long-term mass balance measurements there. A 10 m ice core was retrieved, 3 weather stations on the glacier and 3 off the glacier were downloaded, a stream gauging station was installed, and a high resolution aerial photographic survey of the glacier was undertaken.

Looking across the Milne Ice Shelf from our temporary camp.