Northern Ellesmere Ice Shelves, Epishelf Lakes and Climate Impacts

Annual Report 2016; Licence # 02 010 16R-Amended

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In July 2016, we carried out oceanographic, hydrological and glaciological measurements on the Milne Ice Shelf and Milne Glacier, northern Ellesmere Island. The field team included Dr. Derek Mueller, MSc student Jill Rajewicz, PhD student Adrienne White, MSc student Dorota Medrzycka, research assistant Adam Garbo and Adjunct Professor Greg Crocker.

On the Milne Glacier we remeasured and reinstalled a series of stakes drilled into the ice, allowing us to track surface melt over the year. We explored the grounding line area and lower section of the glacier using ice-penetrating radar, profiled the temperature and salinity of the ocean through cracks in the ice and measured ocean currents different depths. These data will help us understand the impact of meltwater input on the fiord.

On the Milne Ice Shelf we recovered instruments that recorded temperature, salinity and water currents in a channel under the ice over the past winter. In Milne Fiord we maintained our ocean mooring that has been in place for 5 years. Most of these instruments were re-deployed to continue monitoring changes in the region for another year. We serviced and downloaded a weather station established in 2009, which provides the only source of near real-time weather information for northern Ellesmere Island (http://tinyurl.com/milnewx). A total of 5 timelapse cameras were downloaded and serviced. These cameras allow us to monitor changes that occur while we're not there.

In addition, fieldwork in May and July 2016 at White Glacier, Axel Heiberg Island, continued the long-term mass balance measurements there. Three weather stations on the glacier and 3 off the glacier were serviced, and total of 8 timelapse cameras were downloaded. On nearby Good Friday Glacier we downloaded 3 GPS systems to measure the motion of the ice automatically over the winter, to see if it is changing over time.