

**Northern Ellesmere Ice Shelves, Ecosystems and Climate Impacts
Annual Report 2013; License # 02 006 13R-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

Fieldwork in 2013 was based out of Purple Valley, at the rear of the Milne Ice Shelf. Two trips were made, in May and July. The May trip comprised Dr. Derek Mueller, MSc students Adrienne White and Miriam Richer McCallum, and a field assistant. PhD student Andrew Hamilton and a field assistant returned for the July trip. During these trips the following measurements were made:

- Ground-penetrating radar surveys were completed across the Milne Ice Shelf to map spatial variability in snow accumulation patterns. This information was supplemented with snow depth data downloaded from 3 automatic stations first installed across the ice shelf in summer 2012.
- Shallow ice cores were drilled in lake ice, glacier ice, sea ice and ice shelf areas to provide validation of satellite imagery, and to provide information on how the ice cover in this area has changed recently.
- A total of 4 time-lapse cameras were downloaded and serviced to provide monitoring of snow melt and accumulation patterns across the study site, and to monitor ice shelf breakups when we weren't there.
- We recovered instruments that recorded temperature and salinity in Milne Fiord over winter and measured the currents in the fiord in an effort to understand how the ice shelf might be influenced by the ocean.
- The weather station located in Purple Valley (established in 2009) was serviced and downloaded. 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>.

In addition to fieldwork, we monitored the Ellesmere ice shelves using satellite imagery. These showed that the ice shelves were generally stable in summer 2013, likely due to the unusually cold conditions which resulted in small surface melt and the preservation of sea ice in front of the ice shelves for the majority of the summer.