

**Project Title:** Glacier and Climate Evolution of Baffin Island, Arctic Canada

**Researcher's Name and Affiliation:** Jason Briner (University at Buffalo), Gifford Miller (University of Colorado) and Kurt Refsnider (University of Colorado).

**Project Locations:** 1. Northern interior Baffin Island (a) east of Mary River, and (b) northern Barnes Ice Cap region; 2. Clyde River region; 3. Broughton Island region

**Timeframe:** May 1, 2009 to August 31, 2011

**Project Description:** The purpose of this project is to determine the glacier and climate evolution of Baffin Island on long, pre-historic time scales. Our time periods of focus are both: 1) the present, warm interglacial period that has lasted since the end of the last ice age, about 10,000 years ago, and 2) the longer period of the Ice Age that spans the last 2 million years. We have many specific goals that have evolved from our long history of research in the three study regions. We are using geological techniques to reconstruct the history of ice caps, like the Barnes Ice Cap, during the past few thousand years. We are also collecting cores of lake sediments that we use to make inferences about past climate change and glacier extent, also spanning the last few thousand years. And, we are using chemical and isotopic tracers to reconstruct the ice sheet and landscape evolution of Baffin Island since the beginning of the Ice Age.

**Methodology:** Our team has been collecting rock and lake sediment samples from these Clyde River region in recent years for a variety of research projects relating to climate change. We have special coring devices that we manufacture in our university's machine shop that allow us to collect tubes of mud that accumulates in the bottom of lakes. Other sample collection or rock samples is much more simple, and involves rock hammers and chisels. We employ a variety of techniques back home in the laboratory, ranging from acid digestion of rock samples, to a wide range of measurements on our lake sediments, to very precise isotopic measurements of rock samples.

**Data:** The data that we gather from this project will firstly be used by our team members in our compilation of datasets on the climate change of Baffin Island. The data that we gather are required to test models that project climate change into the future. Eventually, our data will be published in journal articles.

**Reporting:** In addition to reporting our findings to our funding agency (the US National Science Foundation) and in our classrooms and public museum's in New York and Colorado, our findings will be presented in Nunavut as reports to the NRI, and in presentations and outreach in Clyde River. In the past we have made posters for both the NRI and the public school in Clyde River, have conducted classroom presentations at the public school in Clyde River, and have taken school children and interested community members (advertised by radio and at the school) on a weekend field trip to see what collecting lake sediments is all about.