2012 NSERC CREATE
Summer School in Arctic Atmospheric Science
Poster Awards
Undergraduate Poster Award Winners
The 2009-10 surge of Lowell Glacier, Yukon, and its historical context

Alexandre Bevington and Copland, L.

Introduction

Lowell Glacier

There is evidence that a surge of Lowell Glacier took place during the 2009-10 surge. The surge had a significant impact on the glacier's morphology and caused the formation of a lake in front of the glacier. The lake levels were monitored using satellite imagery and aerial photography.

Lake Level

Objectives

The objectives of this project were to identify and study the characteristics of the surge of Lowell Glacier from 2009-10 and compare the results with previous surges. The project also aimed to improve the understanding of the role of surges in the glacier's dynamics.

Data and Methods

Aerial photography and satellite imagery

High-resolution satellite imagery and aerial photography were used to monitor the changes in the glacier's surface and the lake levels. The imagery was analyzed using specialized software to determine the lake's extent and volume.

Digital elevation models and GPS measurements

Digital elevation models were created using GPS measurements taken along the glacier's margin. These models were used to estimate the glacier's volume change during the surge.

Results

The surge of Lowell Glacier was the most significant event observed during the study period. The lake levels showed a significant rise during the surge, indicating a rapid increase in ice flow. The surge was associated with a decrease in the glacier's thickness and a significant advance of the glacier's terminus.

Discussion

The results of this study highlight the importance of monitoring surges in glaciers and the role they play in the glacier's dynamics. The findings also suggest that surges can have significant impacts on the local environment and the surrounding ecosystems.
Making SPEIR move as freely as air

Boris Pavlovic, Niall J. Ryan, and Katelyn A. Walker

Background

What is SPEIR? A roadrunner-like miniature robot
White species: Speir gong, T. C. L. U. Minerals
devlopment status: Currently in hardware and software development. Motion design

Technical aspects: Single body cooling with use of an air-cooled heat exchanger, and a state of the art superconducting magnetic superconducting (OOG) event.

Acknowledgments

References

Boris Pavlovic
Graduate/PDF Poster Award Winners
Dan Weaver
Honourable Mentions
Transport of carbon aerosols from boreal fire during BORTAS 2011

1. Introduction
- The objective of this study is to track the transport of aerosols from boreal fires to the Atlantic using remote sensing instruments. The main goals are:
  1. Sample the boreal fire plume.
  2. Study the chemistry and composition of the plume.
  3. Describe the transport of non-African boreal fires.
  4. Analyze the impact on ocean Chemistry.
  5. Understand the impact of boreal fires on the global atmosphere.[1]

2. Measurements
- Measurement sites:
  - Halifax (NS): 44.64N, 63.55W
  - Paris, France (FR): 48.92N, 2.27E
  - Toronto (ON): 43.90N, 79.45W
  - Edmonton (AB): 53.51N, 113.48W
  - Pickle Lake (ON): 61.49N, 90.22W, 18.08G

- Measurement of boreal fire plumes:
  - Enhancement of total column of CO2 and fire smoke aerosol concentrations (GEOC) in Halifax between 20 and 23 July 2011. BGC CD and fire smoke aerosol signature detected in July 2011 (O'Dell et al., 2013).
  - No significantly enhanced CO (could be detected in Toronto by TDL-DAI).

3. Model simulations vs. measurements
- Back trajectory analysis
  - Fig 5.show an example of back trajectories for 2011, starting in Halifax at 12h.
  - The fire plume at a height of 1000 m, 3000 m, and 5000 m was observed at the fire on July 22, 2011.
  - Provides confidence in the selected CO measurement for fires in Northwestern Ontario.

4. Conclusions
- The fire plume was transported to Halifax between 20 and 23 July 2011. The plume was observed at a height of 1000 m, 3000 m, and 5000 m. The plume was observed at a height of 1000 m, 3000 m, and 5000 m. The plume was observed at a height of 1000 m, 3000 m, and 5000 m.
Arctic Clouds at Polar Sunrise: CANDAC RMR Lidar depolarization measurements at Eureka, Nunavut

Emily McCullough
Recent volume and mass balance changes of Penny Ice Cap (Baffin Island, Nunavut) determined from repeat airborne laser altimetry

Nicole Schaffer
Identifying the mesoscale horizontal and vertical distribution of reactive halogen oxides in polar regions

Zielcke¹, Ude Friess¹, Denis Pöhler¹, Ulrich Platt¹

¹University of Heidelberg, Im Neuenheimer Feld 229, 69120 Heidelberg, Germany
Tel: +49 6221 546527

Objective

Chemistry

Measurements

Johannes Zielcke