

## **BROOKE MEDLEY**

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### **EDUCATION**

**Doctor of Philosophy, Earth and Space Sciences**, 4 years completed, GPA: 3.7/4.0  
University of Washington, Department of Earth and Space Sciences

**Master of Science, Physical Geography**, GPA: 4.0/4.0

Oregon State University, Department of Geosciences, Minor: Geology

**Bachelor of Arts, Geography**, GPA: 3.3/4.0

Middlebury College, Minors: Geology, Mathematics

### **RESEARCH INTERESTS**

Glaciology, glacier-climate interactions, geomorphology, remote sensing, GIS applications

### **RELEVANT SKILLS**

**Languages:** intermediate knowledge of Python and MATLAB

**Software:** ArcGIS 9.x suite, ENVI 4.2 and 4.3, Idrisi, Adobe Illustrator, CorelDraw, S-Plus 7.0, STELLA 9, Microsoft Suite

### **RESEARCH EXPERIENCE**

**Ph.D. Research, Using airborne radar to reconstruct accumulation across Western**

**Antarctica** (Autumn 2007 to present) University of Washington, Advisor: Dr. Ian Joughin  
My work involves reconstructing accumulation rates across W. Antarctica using airborne radar to map near-surface firn layers. The airborne radar images give me a cross-section of the firn column, allowing me to track in ArcGIS the thickness of these isochronous layers for several hundred kilometers. I have generated custom Python code to convert layer thickness into accumulation rates with knowledge of layer density and age. With these improved accumulation rate estimates, we will improve our understanding of the mass balance of the Amundsen sector of the ice sheet and of the impact of climate change on accumulation.

**M.S. Thesis, Local and regional climate controls on glacier mass balance in the Pacific Northwest, USA** (Winter 2006 to Winter 2008) Oregon State University, Advisor: Dr. Anne Nolin

This work involves the replication of an established mass balance model and its improvement through the addition of an albedo component using ASTER satellite imagery. Glacier sensitivity to climate will be assessed in order to understand the effect of climate change on glacier mass balance in the PNW.

**Research Assistant, Greenland albedo variations using MODIS** (June 2006 to September 2006) Oregon State University, Dr. Anne Nolin: funded by NASA

This project focuses on time-series analysis of MODIS satellite data to map changes in ice sheet albedo, comparing recent changes to climatological average values along a range of elevations. My role involves data acquisition, processing, and statistical analysis.

Ultimately, climatic controls on glacier albedo as a function of altitude will be determined.

**Research Assistant, Development of a historical GIS** (January 2005 to September 2005) Middlebury College, Dr. Anne Knowles: funded by Middlebury College, Middlebury, VT

My role in this project was to acquire and process spatio-temporal data into a Historical Geographic Information System (HGIS). My work concentrated on recreating the spatial extent and temporal characteristics of the transportation network of canals and railroads from data tables and paper maps.

### **TEACHING EXPERIENCE**

**Teaching Assistant** (September 2005 to June 2007)

Oregon State University, Department of Geosciences, Corvallis, OR

- GEO 106 – Geography of the Western World, Professor: Hannah Gosnell
- GEO 300 – Environmental Conservation, Instructor: Steve Cook
- GEO 301 – Map and Image Interpretation, Professor: A. Jon Kimerling
- GEO 465/565 – Geographic Information Systems, Professor: Dawn Wright
- GEO 444/544 – Remote Sensing of the Environment, Professor: Anne Nolin
- GEO 466/566 – Digital Image Processing, Professor: Anne Nolin

**OTHER  
RELEVANT  
EXPERIENCE**

**Geologist-Student** (September 2007 to present)

Army Corps of Engineers – Seattle, Richard Smith, Seattle, WA

Includes various tasks both in the office (e.g., data entry) and in the field (e.g., help with borehole and data logging)

**Hazard Mitigation Intern** (June 2004 to September 2004)

Berkshire Regional Planning Commission, Mark Maloy, Pittsfield, MA

Responsible for creating GIS layers of the critical facilities in Berkshire County, MA

**Surveyor's Aid** (June 2003 to September 2003)

United States Forest Service – Wasatch-Cache National Forest, Salt Lake City, UT

Surveyed and posted the boundary between forest and private land parcels using GPS

**Presentations**

Medley, B. and A. Nolin (2007, April). *Local and regional climate controls on glacier mass balance in the Pacific Northwest, USA*. Oral presentation at the annual meeting of the Association of American Geographers, San Francisco, CA.

Medley, B., A. Nolin, and W. Tangborn (2008, March). *Modeling the mass balance sensitivity to climate change of three glaciers in the Cascade Mountains, USA*. Oral presentation at the International Workshop on Mass Balance Measurements and Modeling.

Medley, B. and I. Joughin (2010, March). *Estimating accumulation rate variability across central Greenland using airborne radar*. Poster presented at the 2010 Earth and Space Science Research Gala.

Medley, B. and 7 others (2010, September). *Firn layer mapping and density variability over the Pine Island/Thwaites catchments*. Poster presented at the Seventeenth Annual West Antarctic Ice Sheet Workshop.

Medley, B. and T.J. Fudge (2011, April). *Substantial ice loss in Olympic National Park over the past two decades*. Oral presentation at the 2011 Earth and Space Science Research Gala.

Medley, B., I. Joughin, H. Conway, S. Das, and A. Criscitiello (2011, April). *Evaluating interpolation techniques applied to accumulation rate estimates from West Antarctica*. Poster presented at the 2011 Association of American Geographers Annual Meeting.

Criscitiello, A., S. Das, B. Medley, I. Joughin, M. Evans, and K. Frey (2010, September). *Physical and chemical stratigraphy of snow pits on the West Antarctic Ice Sheet: Preliminary implications for sea-ice reconstruction*. Poster presented at the Seventeenth Annual West Antarctic Ice Sheet Workshop.