

## **Curriculum Vitae for Faron S. Anslow**

Pacific Climate Impacts Consortium  
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### **1. Education**

Ph.D. Geology, Atmospheric Science minor, Oregon State University 2008

M.Sc. Geography, University of Calgary 2004

B.Sc. Chemistry, Oregon State University 2000

### **2. Current Research**

- Developing methods for distribution of climate variables and anomalies across complex topographic landscapes.
- Implementing homogenization procedures on large climate data sets with data of varying quality temporal coverage.
- Analysis of temperature and precipitation extremes from British Columbia weather observations.
- Understanding the links between models of multiannual and decadal climate variability and British Columbia climate.
- Coupling glacier mass balance and dynamic models with hydrologic models.
- Using GCMs and proxy data to model the paleo response of alpine glaciers and continental ice sheets to natural climate variability on millennial time-scales.

### **3. Research Activities**

2011-Present Climatologist, Climate Analysis and Monitoring, Pacific Climate Impacts Consortium

Developing and maintaining a data base of weather and climate observations from British Columbia. Applying quality control techniques and homogenization techniques to make this resource scientifically useful and available to the public. Development of a high spatial resolution daily and monthly climatology of British Columbia using OSU's PRISM climate mapping tools. Monitoring the evolution of climate anomalies and extreme weather events and issuing graphical and text reports at regular intervals.

2011-2016 Collaboration with Joseph Licciardi, University of New Hampshire

Collaborative work modeling the evolution of glaciers through the Holocene in the Cordillera Vilcabamba, Peru. Glacier simulations will help constrain climatic controls on glacier growth and retreat whose timing will be constrained by cosmogenic surface exposure dating.

2008-2014      Collaboration with Anders Carlson, University of Wisconsin

Applying surface energy balance to the Laurentide ice sheet to compute the surface mass balance during the last deglaciation. Current work investigates the surface mass balance at 9 ka. Ongoing work will look at time slices from the LGM to complete deglaciation ca. 6 ka. Reference: Anders Carlson (608) 262-1921.

2008-2011      Post Doctoral Fellow, University of British Columbia

Specializing on the surface mass balance of alpine glaciers of large ( $1 \times 10^6$  km<sup>2</sup>) glaciated regions and high (200 m) spatial resolution. Working to model the dynamics of these glaciers, with a view toward Late Holocene ice cover to future ice cover under IPCC scenarios from GCMs. Work involves substantial handling of large data sets, expertise in surface mass balance processes including energy balance, parameterized melt models, and accumulation. Developed a methodology for downscaling temperature from coarse GCMs over high resolution topography. Reference: Garry Clarke, (604) 822-3602.

2004-2008      Doctoral Research, Oregon State University

Developed a surface mass balance model applicable to glaciers worldwide. Coupled this model with an ice flow model for reconstructing former glaciers and modeling glacial response to future climate change. Constructed a deglacial chronology for Mauna Kea using cosmogenic surface exposure ages. Aim to establish history of extent and timing of Mauna Kea glacial advances using models and field data. Researched the connection between South Cascade Glacier mass balance and climate fluctuations over the past 100 years. References: Peter Clark, (541) 737-1247 and Steve Hostetler, (541) 737-8928.

2004-2006      South Cascade Glacier Fieldwork, USGS Volunteer

Implemented an Automatic Weather Station and surface temperature measuring network on South Cascade Glacier, WA. Maintained already-established weather station on hut at South Cascade. Assisted Bill Bidlake of USGS in monthly ablation measurements, surveying, and accumulation measurements. Reference: William Bidlake, (253) 552-1641.

2001-2003      Masters Research, University of Calgary

Assessment of surface temperature lapse rates over glaciated and nonglaciated alpine valleys. Snow and ice melt modelling using a semi-empirical parameterized model. Application of melt model to Laurentide ice sheet simulations. Development of a local albedo parameterization. Development of a synoptic classification scheme and application in lapse rate analysis. Reference: Shawn Marshall, (403) 220-4884.

1999-2000      Undergraduate Research, Oregon State University

Analysis of accumulation area ratios for tropical glaciers at the last glacial maximum. Application of an energy balance model to last glacial maximum glaciers throughout the western United States.

#### 4. **Publications**

- Williamson, S.N., D.S. Hik, J.A. Gamon, A.H. Jarosch, F.S. Anslow, G.K.C. Clarke and T.S. Rupp, 2017: MODIS LST is inherently biased compared to air temperature in snow covered sub-Arctic mountains. *Remote Sensing of Environment*, **189**, 14-24, doi: 10.1016/j.rse.2016.11.009.
- Clarke, G.K.C., A.H. Jarosch, F.S. Anslow, V. Radić and B. Menounos, 2015: Projected deglaciation of western Canada in the twenty-first century. *Nature Geoscience*, **8**, 372-377, doi:10.1038/ngeo2407.
- Ullman, D.J., A.E. Carlson, F.S. Anslow, A.N. LeGrande and J.M. Licciardi, 2015: Laurentide ice-sheet instability during the last deglaciation. *Nature Geoscience*, **8**, 534-537, doi:10.1038/ngeo2463.
- Ullman, D.J., A.E. Carlson, A.N. LeGrande, F.S. Anslow, A.K. Moore, M. Caffee, K.M. Syverson and J.M. Licciardi, 2015: Southern Laurentide ice-sheet retreat synchronous with rising boreal summer insolation. *Geology*, **43**, 23-26, doi:10.1130/G36179.1.
- Ullman, D.J., A.N. LeGrande, A.E. Carlson, F.S. Anslow, and J.M. Licciardi, 2014: Assessing the impact of Laurentide Ice-Sheet topography on glacial climate: *Climates of the Past*, **10**, 487-507, doi:10.5194/cp-10-487-2014.
- Jarosch, A.J., C. Schoof, and F.S. Anslow, 2013: Restoring mass conservation to shallow ice flow models over complex terrain. *The Cryosphere*, **7**, 229-240, doi: 10.5194/tc-7-229-2013
- Clarke, G.K.C., F.S. Anslow, A.H. Jarosch, V. Radic, B. Menounos, T. Bolch, and E. Berthier, 2012: Ice volume and subglacial topography for western Canadian glaciers from mass balance fields, thinning rates, and a bed stress model: *Journal of Climate*, doi: 10.1175/JCLI-D-12-00513.1.
- Murray, D.S., A.E. Carlson, B.S. Singer, F.S. Anslow, F. He, M. Caffee, S.A. Marcott, Z. Liu, and B.L. Otto-Bliesner, 2012: Northern Hemisphere forcing of the last deglaciation in southern Patagonia: *Geology*, doi: 10.1130/G32836.1.
- Carlson, A.E., D.J. Ullman, F.S. Anslow, F. He, P.U. Clark, Z. Liu, and B.L. Otto-Bliesner, 2012: Modeling the Surface Mass Balance Response of the Laurentide Ice Sheet to Bølling warming and Its Contribution to Meltwater Pulse 1A: *Earth and Planetary Science Letters*, **315-316**, 24-29.

Jarosch, A.J., F.S. Anslow, and G.K.C. Clarke, 2010: High-resolution precipitation and temperature downscaling for glacier models. *Climate Dynamics*, doi: 10.1007/s00382-010-0949-1.

Anslow, F.S., P.U. Clark, M.D. Kurz, and S.W. Hostetler, 2010: Geochronology and paleoclimatic implications of the last deglaciation of the Mauna Kea Ice Cap, Hawaii. *Earth and Planetary Science Letters*, doi:10.1016/j.epsl.2010.06.025.

Carlson, A.E., F.S. Anslow, E.A. Obbink, A.N. LeGrande, D.J. Ullman, and J.M. Licciardi, 2009: Surface-melt driven Laurentide Ice Sheet retreat during the early Holocene. *Geophysical Research Letters*, **36**, doi: 10.1029/GL040948.

Ersek, V., S.W. Hostetler, H. Cheng, P.U. Clark, F.S. Anslow, A.C. Mix, and R.L. Edwards, 2009: Environmental influences on speleothem growth in southwestern Oregon during the last 380000 years. *Earth and Planetary Science Letters*, doi:10.1016/j.epsl.2009.01.008.

Anslow, F.S., S. Hostetler, W.R. Bidlake, and P.U. Clark, 2008: Distributed energy balance modeling of South Cascade Glacier, Washington and assessment of model uncertainty, *Journal of Geophysical Research*, **113**, F02019, doi:10.1029/2007JF000850.

Carlson, A.E., A.N. LeGrande, D.W. Oppo, R.E. Came, G.A. Schmidt, F.S. Anslow, J.M. Licciardi, and E.A. Obbink, 2008: Rapid early Holocene deglaciation of the Laurentide ice sheet, *Nature Geoscience*, **1**, 620-624.

Marshall, S., M. Sharp, D.O. Burgess, and F. Anslow, 2007: Surface temperature lapse rate variability on the Prince of Wales Icefield, Ellesmere Island, Canada: Implications for regional-scale downscaling of temperature. *International Journal of Climatology*, **27**, 385-398.

Shea, J.M., F.S. Anslow, and S.J. Marshall, 2005: Hydrometeorological relationships on Haig Glacier, Alberta, Canada. *Annals of Glaciology*, **40**, 40-60.

## **5. Thesis**

Anslow, F. Modeling and dating glacier fluctuations and their relation to Pacific Ocean Climate. PhD. 159 pp.

Anslow, F. Development and Testing of A Temperature and Radiation Based Melt Model for Glaciers in the Canadian Rockies. MSc. 202 pp.

## **6. Teaching Experience**

Sessional Lecturer for Geology 101, The Solid Earth, Summer, 2007

Guest Lecturer for Geo 581, Glacial Geology 2006

Graduate Teaching Assistant for Geog 305, Weather and Climate 2001

Graduate Teaching Assistant for Geog 305, Weather and Climate 2002

**7. Awards**

Geological Society of America student research grant, 2005, \$1600.

Institute for Arctic and Alpine Research (INSTAAR) Student Presenter conference support 2002, \$500.

University of Calgary Graduate Research Scholarship 2001-2002, \$4000.

**8. Additional Relevant Training**

Programming: R, Python, Bash, Fortran, Matlab, Unix and Linux OS, Geographic Information Systems, programming for shared memory parallel processing.

Field: Multi-week field campaign logistics, trained in manual weather observation, sampling for surface exposure dating of moraines, setting-up and maintaining Campbell Scientific and other meteorological stations, installation of GPS for glacier dynamics monitoring, Wilderness First Aid (40 hour course), Avalanche rescue 1.