

## Curriculum Vitae - Joseph M. Shea

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Post-Doctoral Fellow

Department of Geography  
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### Education

Ph.D., Department of Geography, University of British Columbia, April 2010

M.Sc., Department of Geography, University of Calgary, November 2004

B.Sc., Physical Geography (Hons.), Minor in Geology, McMaster University, May 2001

### Research Experience

University of British Columbia and Prince George, BC  
University of Northern British Columbia  
Departments of Geography January 2010 - January 2011  
Position: Post-Doctoral Researcher  
Research Focus: Remote sensing of glacier snow cover, glacier mass balance, and stream-flow in glacierized catchments

University of British Columbia Vancouver, BC  
Department of Geography January 2005–April 2010  
Advisor: Dr. R. Dan Moore  
Thesis Committee: Dr. T. Oke, Dr. G.K.C. Clarke, Dr. I. McKendry  
Dissertation: Regional-scale distributed modelling of glacier meteorology and melt, southern Coast Mountains, Canada

University of Calgary Calgary, AB  
Department of Geography 2003–2004  
Advisor: Dr. Shawn J. Marshall  
Master's Thesis: Synoptic circulation and glacier mass balance in the Canadian Rockies

McMaster University Hamilton, ON  
Department of Geography 2001–2002  
Advisors: Dr. Shawn J. Marshall and Dr. J. Drake  
Honours Thesis: Glacier distributions and climate in the Canadian Rockies

### Publications

Tennant, C., Menounos, B., Ainslie, B., **Shea, J.M.**, and Jackson, P. (2011) Comparison of modeled and geodetically-derived glacier mass balance for Tiedemann and Klinaklini glaciers, southern Coast Mountains, British Columbia, Canada. *Global and Planetary Change*, 82-83:74-85, [doi:/10.1016/j.gloplacha.2011.11.004](https://doi.org/10.1016/j.gloplacha.2011.11.004)

Marshall, S.J., White, E.C., Demuth, M.N., Bolch, T., Wheate, R., Menounos, B., Beedle, M.J., and **Shea, J.M.** (2011) Glacier water resources and forecasts of glacier decline on the eastern slopes of the Canadian Rockies. *Canadian Water Resources Journal* 36:109-134. [doi:/10.4296/cwrj3602823](https://doi.org/10.4296/cwrj3602823)

**Shea, J.M.**, and Moore, R.D. (2010) Prediction of spatially distributed regional-scale fields of air temperature and vapour pressure over mountain glaciers. *Journal of Geophysical Research - Atmospheres* (115):D23107. [doi:10.1029/2010JD014351](https://doi.org/10.1029/2010JD014351)

**Shea, J.M.**, Moore, R.D., and Stahl, K. (2009) Derivation of melt factors from glacier mass balance records in western Canada. *Journal of Glaciology* 55 (189): 123-130. [doi:10.3189/002214309788608886](https://doi.org/10.3189/002214309788608886)

**Shea, J.M.**, Moore, R.D., and Anslow, F.S. (2008) Estimating meteorological variables within glacier boundary layers, Southern Coast Mountains, British Columbia, Canada, 17th Conference on Applied Climatology, 11-14 August 2008, Whistler, BC. ([extended abstract](#))

Stahl, K., Moore, R.D., **Shea, J.M.**, Hutchinson, D., and Cannon, A.J. (2008) Coupled modelling of glacier and streamflow response to future climate scenarios. *Water Resources Research* 44, W02422. [doi:10.1029/2007WR005956](https://doi.org/10.1029/2007WR005956).

**Shea, J.M.** and Marshall, S.J. (2007) Atmospheric flow indices, regional climate, and glacier mass balance in the Canadian Rockies. *International Journal of Climatology* 27, 233-247. [doi:10.1002/joc.1398](https://doi.org/10.1002/joc.1398)

**Shea, J.M.**, Marshall, S.J., and Anslow, F.S. (2005). Hydrometeorological relationships on Haig Glacier, Alberta, Canada. *Annals of Glaciology* 40, 52-60. [doi:10.3189/172756405781813465](https://doi.org/10.3189/172756405781813465)

**Shea, J.M.**, Marshall, S.J., and Livingston, S.J. (2004). Glacier distributions and climate in the Canadian Rockies. *Arctic, Antarctic, and Alpine Research* 26(2), 272-279. [doi:10.1657/1523-0430\(2004\)036\[0272:GDACIT\]2.0.CO;2](https://doi.org/10.1657/1523-0430(2004)036[0272:GDACIT]2.0.CO;2)

## Submitted Manuscripts

**Shea, J.M.**, and Moore, R.D. Prediction of near-surface wind speeds on mid-latitude glaciers and implications for energy balance melt modelling. Submitted to *Advances in Water Resources*, October 2011.

## Manuscripts in Preparation

**Shea, J.M.**, Menounos, B., and Moore, R.D. Regional estimates of glacier mass balance from MODIS snowline detection. In preparation for submission to *Geophysical Research Letters*.

**Shea, J.M.**, Moore, R.D., Menounos, B., and Anslow, F.S. Solar radiation in mountain environments: observations, empirical models, reanalyses, and dynamical downscaling. In preparation for submission to *Hydrological Processes*.

**Shea, J.M.** and Moore, R.D. Parameterizing snow densification. In preparation for submission to *Geophysical Research Letters*.

## Presentations

**Shea, J.M.**, Menounos, B., and Moore, R.D. Estimates of regional equilibrium line altitudes and net mass balance from MODIS imagery (poster), American Geophysical Union Annual Meeting, San Francisco, CA, 05 - 09 December 2011.

**Invited: Shea, J.M.**, and Moore, R.D. Katabatic boundary layer effects on regional-scale prediction of turbulent energy exchange over melting glaciers, IUGG XXV General Assembly, 27 June - 8 July 2011, Melbourne, Aus.

**Shea, J.M.**, Moore, R.D., and Menounos, B. Snowcover depletion characteristics and streamflow in a glacierized basin (oral), Canadian Geophysical Union Annual Meeting, 15-18 May 2011, Banff, AB

**Shea, J.M.**, Moore, R.D., and B. Menounos. Winter snow accumulation reconstruction with MODIS imagery, southern Coast Mountains, British Columbia, Canada (poster), American Geophysical Union Annual Meeting, 13-17 December 2010, San Francisco, CA.

**Shea, J.M.** and Moore, R.D. A benchmark evaluation of glacier melt models (oral), Canadian Geophysical Union Annual Meeting, 01 - 04 June 2010, Ottawa, ON.

Tennant, C., **Shea, J.M.**, Ainslie, B., Menounos, B. and Jackson, P. Fifty years of area and volume change of Tiedemann and Klinaklini glaciers, southern Coast Mountains, British Columbia, Canada (oral), Canadian Geophysical Union Annual Meeting, 01 - 04 June 2010, Ottawa, ON.

**Shea, J.M.**, and Moore, R.D. Glaciological applications of submersible temperature loggers (oral), Northwest Glaciologists Meeting, 17-18 October 2008, Seattle, WA.

**Shea, J.M.**, Moore, R.D., and Anslow, F.S. Estimating meteorological variables within glacier boundary layers, Southern Coast Mountains, British Columbia, Canada (poster), 17th Conference on Applied Climatology, 11-14 August 2008, Whistler, BC.

**Shea, J.M.**, Moore, R.D., and Bolch, T. Snowline retreat estimation from surface temperature loggers (oral), Canadian Geophysical Union Annual Meeting, 11-14 May 2008, Banff, AB.

**Shea, J.M.**, and Moore, R.D. Estimation of meteorological inputs for regional modeling of glacier melt (poster), American Geophysical Union Annual Meeting, 10-14 December 2007, San Francisco, CA.

**Shea, J.M.**, and Moore, R.D. Specifying meteorological variables within the glacier boundary layer: case studies from the southern Coast Mountains of British Columbia (oral), Northwest Glaciology Meeting, 26-27 October 2007, Portland, OR.

Stahl, K., Moore, R.D., Shea, J.M., Hutchinson, D.G., and Cannon, A.J. Coupled modelling of glacier and streamflow response to future climate scenarios in British Columbia, Canada, *Glaciers in Watershed and Global Hydrology*, International Commission for Snow and Ice Sciences, 27-31 August 2007, Obergurgl, Austria.

**Shea, J.M.** and Moore, R.D. Glacier boundary layer meteorology and implications for regional mass balance modeling (oral), Canadian Geophysical Union Annual Meeting, 28 May - 1 June 2007, St. Johns, Nfld.

**Shea, J.M.** and Moore, R.D. Glacier melt modeling in the south Coast Mountains, BC. Presentation to BC Hydro, 17 October 2006, Burnaby, BC.

**Shea, J.M.** and Moore, R.D. Degree day factors from mass balance data (oral). Northwest Glaciology Meeting, 21 October 2005, University of British Columbia, Vancouver, BC.

**Shea, J.M.**, and Marshall, S.J. Atmospheric circulation, regional climate, and glacier mass balance in the Canadian Rockies (oral). Canadian Geophysical Union Annual Meeting, May 2005, Banff, AB.

**Shea, J.M.**, Marshall, S.J., and Anslow, F.S. Hydrometeorological relationships on the Haig Glacier, Alberta, Canada (poster). International Symposium on Ice and Water Interactions, July 2004, Portland, OR.

**Shea, J.M.**, Marshall, S.J. Glacier mass balance and atmospheric circulation in the Canadian Rockies (oral). Canadian Geophysical Union Annual Meeting, May 2004, Montreal, PQ.

**Shea, J.M.**, Anslow, F.S., and Marshall, S.J. Variability in Accumulation and Ablation in the Canadian Rockies, 1953-2003 (poster). American Geophysical Union Annual Meeting, December 2003, San Francisco, CA.

## Teaching Experience

- Instructor, GEOG 310, UNBC: Introduction to Hydrology, Jan - Apr 2012
- Instructor, NREM 100, UNBC: Introduction to Field Methods, Sep - Dec 2011
- Guest Lecture, GEOG 657, UNBC: MODIS Applications, Snow and Ice, 10 March 2011
- Guest Lecture, ENSC 454, UNBC: Antarctica and Greenland, 02 March 2011
- Guest Lecture, ENSC 454, UNBC: Mountain Glaciers, 25 February 2011
- Guest Lecture, GEOG 100, UNBC: Climate Change, 24 November 2010
- Guest Lecture, GEOG 100, UNBC: Avalanches, 15 October 2010
- Guest Lecture, GEOG 205, UBC: Snow Hydrology, 15 March 2008
- TA, Geog 200, UBC: Atmospheric Environments, 2007
- TA, Geog 300, UBC: Microscale Weather and Climate, 2007
- Guest Lecture, GEOG 408, UBC: Glacier Mass Balance: Methods, Trends, and Applications, 14 November 2007

- TA, GEOG 305, UBC: Physical Geography Field School, 2006
- TA, GEOG 305, UBC: Physical Geography Field School, 2005
- TA, GEOG 304, UBC: Synoptic Meteorology, 2005
- Guest Lecture, Kananaskis Young Scientists Program: Glaciers and Climate Change, 2003
- Guest Lecture, Geog 503, UC: External Climate Forcings, 2003
- TA, GEOG 339, UC: Analytical Methods in Physical Geography, 2003
- TA, GEOG 201, UC: The Physical Environment, 2002
- TA, GEO 1G03, McMaster University: Geosphere, 2001

## Awards

- Outstanding Student Poster Presentation, American Meteorological Society 17th Conference on Applied Climatology, Whistler, BC, 11 August 2008
- University Graduate Fellowship, University of British Columbia, September - December 2008
- Best Student Presentation, Canadian Geophysical Union Annual Meeting, 11-14 May 2008, Banff, AB
- NSERC Post-graduate Scholarship (D), May 2005-April 2007
- Graduate Entrance Scholarship, University of British Columbia, January 2005
- Karthaus Glacier Field School, University of Utrecht and Innsbruck University, Karthaus, Italy, 2005
- NSERC Post-graduate Scholarship (A), May 2003-April 2005
- Dean's Research Excellence Award, University of Calgary, May 2003
- Graduate Research Excellence Scholarship, University of Calgary, September 2002
- NSERC Undergraduate Student Research Award, May 2001-August 2001
- C.D. Allen Book Prize, McMaster University, May 2001
- Lloyd Reed Prize, McMaster University, May 2001
- Dean's Honour List, McMaster University, May 2001
- Dean's Honour List, University of Calgary, May 2000

## Professional Activities

- Session Chair and Organizer, Canadian Geophysical Union Annual Meeting, Banff, AB, 2012
- Grant writing webinar, Association of Polar Early Career Scientists (APECS), 2011
- NSERC grant writing workshop, Canadian Geophysical Union Annual Meeting, May 2011
- Reviewer:
  - Journal of Geophysical Research (Atmospheres)
  - Climate Dynamics
  - The Cryosphere Discussions
  - Annals of Glaciology

- Arctic, Antarctic, and Alpine Research
- Hydrological Processes
- Grant Writing Workshop, University of British Columbia, 2008
- Latex Workshop Organizer and Presenter, Department of Geography, University of British Columbia, 2007-2008
- Physical Geography Home Seminar Organizer, University of British Columbia, 2006-2008
- Teaching Assistant Workshop, University of British Columbia, 2005
- Graduate Teaching Certificate, University of Calgary, 2002-2003

### **Professional Memberships**

- American Meteorological Society
- Canadian Geophysical Union
- Canadian Meteorological and Oceanographic Society
- International Glaciological Society
- American Geophysical Union