

Christopher Marsh

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chrismarsh.ca

Interests

Cryosphere-hydrology, numerical modelling, field work, programming, high-performance computing, the outdoors

Education

- 2012–present **Ph.D.** candidate in Physical Geography
University of Saskatchewan, Saskatoon, SK
Supervisors: Dr. John Pomeroy, Dr. Howard Wheeler
Emergent Phenomena And Model Complexity In Simulating Cold Regions Hydrology
- 2009–2012 **M.Sc.** Physical Geography
University of Saskatchewan, Saskatoon, SK
Supervisors: Dr. John Pomeroy, Dr. Raymond Spiteri
Implication Of Mountain Shading And Topographic Scaling On Energy For Snowmelt
- 2005–2009 **B.Sc. Honours** Physical Geography, Minors: Math and Comp. Sci.
University of Saskatchewan, Saskatoon, SK
High Resolution Radiation Modelling In Complex Terrain

Awards & Grants

- 2014–2016 **NSERC Alexander Graham Bell**
Natural Sciences and Engineering Research Council of Canada (NSERC)
- 2014 **CGU Stan Patterson award in Glaciology**
Canadian Geophysical Union
- 2014 **Saskatchewan Innovation and Opportunity**
University of Saskatchewan and Gov. Saskatchewan research in a signature area
- 2013 **J.H. Richards Graduate Award**
University of Saskatchewan, highest average
- 2012 **AGU Outstanding Student Paper Award in Cryosphere**
American Geophysical Union, student presentation
- 2011 **D.M. Gray Hydrology Award**
CGU-HS, top student paper and presentation
- 2009–2012 **Graduate Student Scholarship**
University of Saskatchewan, academic performance
- 2009 **Canadian Association of Geographers**
Most distinguished geography undergraduate
- 2008 **Honours scholarship**
University of Saskatchewan, academic performance

Research Experience

- 2012–present **Research assistant**
Coordinated purchases, configuration, and on-going support of the shared workstations used for numerical simulations
Center for Hydrology, University of Saskatchewan
- 2012–present **Field work for PhD.**
Canmore, AB; Whitehorse, YK
Snow surveys, meteorological site maintenance, ground control of historical sites
- 2012 **CRHM Tools developer**
Supervisor: John Pomeroy
Lead developer on the Cold Regions Hydrological Model (CRHM) Tools project at the University of Saskatchewan
- 2009–2012 **Field work for M.Sc.**
Canmore, AB
Installing radiometers and time lapse cameras, snow surveys, and meteorological site maintenance
- 2009 **MITACS summer employment with Environment Canada**
Supervisor: Bruce Davison and Raymond Spiteri
Improved MESH efficiency via parallelization and code optimization
- 2008 **Modelling with the Cold Regions Hydrological Model (CRHM) for work in ungauged basins**
Supervisor: John Pomeroy
- Spring 2008 **International Polar Year**
Inuvik, NWT
Field assistant for instrument installation (water level recorders, snow surveys, vegetation surveys, and surveying (Total Station))
- Spring 2006 **NHRC, Environment Canada**
Inuvik, NWT
Field assistant for instrument installation of water level recorders and surveying

Teaching experience

- 2016 **Lecturer**
Geography 290, University of Saskatchewan
Delivered lectures for two weeks on remote sensing and GIS. Prepared material and taught the associated labs, as well as providing 1-on-1 teaching
- 2016 **Teaching assistant**
Geography 225, University of Saskatchewan
2nd year general hydrological course. Lead labs and provided 1-on-1 teaching
- 2016 **Teaching assistant**
Geography 290, University of Saskatchewan
2nd year introduction to field methods. Assisted in the field with students
- 2014 **Teaching assistant**
Geography 225, University of Saskatchewan
2nd year general hydrological course. Lead labs and provided 1-on-1 teaching

Other Experience

- 2006–2009 **Salesperson and customer service**
Saskatoon, SK
Boomtown Outfitters

Scientific service

- 2016–present **Young Hydrologic Society (YHS) Canada branch**
Chair and founding member
- 2010–present **CRYOLIST.org**
Co-manager of the listserv
- 2012–present **Global Institute for Water Security (GIWS) student group**
Founding member and committee member
University of Saskatchewan
- 2012 **Canadian Geophysical Union Hydrology Section (CGU-HS) student conference**
Principal organizer
Saskatoon, SK

Skills

Languages

- Native English
- French immersion (Grade 12)

Technical skills

- Programming: C, C++11, R, Matlab, Python, OpenMP, MPI, git
- GIS: ArcGIS, SAGA GIS, QGIS
- Office: MS Office, Photopshop, \LaTeX
- OS: Linux (Fedora, Ubuntu), Windows, MacOS

Field work

- Dataloggers
- Site maintenance
- Meteorological site installation
- Snow surveys

Instruction

- CRCA Canoe Moving Water Level 1 and 2
- CRCA Canoe Moving Water 1 Instructors
- CSIA Downhill Skiing Level 1 Instructors

Safety

- Rescue 3 International SwiftWater Rescue Technician Unit 1
- OHS Standard Level First Aid and CPR Level C
- Over 15 years of extensive remote outdoor experience such as wilderness camping and canoeing

Publications

Peer-reviewed journal

Marsh, C.B., J.W. Pomeroy, and R.J. Spiteri (2012b), Implications of mountain shading on calculating energy for snowmelt using unstructured triangular meshes, *Hydrological Processes* **26**(12), pp. 1767–1778, DOI: 10.1002/hyp.9329, URL: <http://doi.wiley.com/10.1002/hyp.9329>.

Thesis

Marsh, C.B. (2012), Implications of mountain shading on calculating energy for snowmelt using unstructured triangular meshes, M.Sc. University of Saskatchewan.

Technical report

Marsh, C.B., R.J. Spiteri, and B. Davison (2009b), Improved MESH efficiency via parallelization and code optimization, tech. rep., Department of Computer Science, The University of Saskatchewan, URL: <http://www.cs.usask.ca/content/researchinfo/techreports/2009/TR-2009-02.pdf>.

Posters

Headstrom, N., R. Granger, S. Miller, M. Marsh, and C.B. Marsh (2013), Effect of Buoy Motion on Eddy Flux Measurements over Lakes, CGU-HS May 27-30; Saskatoon, SK, Canada.

Marsh, C.B. and J.W. Pomeroy (2013), Automated Hydrological Response Unit create for use with CRHM, CGU-HS May 27-30; Saskatoon, SK, Canada.

Marsh, C.B., J.W. Pomeroy, and R.J. Spiteri (2011c), Implication of mountain shading and topographic scaling on energy for snowmelt, CGU-HS Student conference, Jan 29; Calgary, Alberta, Canada.

Marsh, P., S. Endrizzi, C. Derksen, M. Russell, C. Onclin, H. Wilson, J. Pomeroy, and C.B. Marsh (2010), Factors controlling the spatial variability in end of winter snowcover and spring melt at an arctic tundra site, AGU Dec 13-17; San Francisco, California, USA.

Marsh, C.B., R.J. Spiteri, and B. Davison (2009a), Improved MESH efficiency via parallelization and code optimization, P3/WC2N Annual conference, Oct 14-17; Lake Louise, Alberta, Canada.

Marsh, C.B., S. Pohl, and G.E. Liston (2007), Impact of increased shrub density on snow accumulation and melt in the Arctic tundra, IUGG; Perugia, Italy.

Conferences (Oral presentation)

Marsh, C.B., J.W. Pomeroy, and H. Wheeler (2016), Testing warranted model complexity using a multi-scale, variable-complexity hydrological model, CGU-HS; May 29-June 2; Fredericton, NB, Canada.

– (2015), Robustness in the spring surface energy balance in a mountain basin, CGU-HS; May 3-7; Montreal, QC, Canada.

– (2014), Impacts of spatial scaling of unstructured meshes on calculating surface irradiance, CGU-HS; May 4-8; Banf, AB, Canada.

Marsh, C.B., J.W. Pomeroy, R.J. Spiteri, D. Marks, M. Hayashi, S. Munro, M. Demuth, and H. Wheeler (2013), Impacts of spatial scaling of unstructured meshes on calculating surface irradiance, CGU-HS; May 27-30; Saskatoon, SK, Canada.

Marsh, C.B., J.W. Pomeroy, and R.J. Spiteri (2012a), Implication of mountain shading and topographic scaling on energy for snowmelt, AGU Dec 3-7; San. Francisco, Calif. , USA.

– (2011a), Implication of mountain shading and topographic scaling on energy for snowmelt, CGU-HS student conference Jan 29; Calgary, Alberta, Canada.

– (2011b), Implication of mountain shading and topographic scaling on energy for snowmelt, CGU-HS May 15-18; Banff, Alberta, Canada.