

SEBASTIÁN A. KROGH

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EDUCATION

Ph.D. in Geography	2018
Centre for Hydrology, Department of Geography and Planning University of Saskatchewan	
M.Sc. in Water Resources and Environment	2013
Department of Civil Engineering University of Chile	
Civil Engineer	2013
Department of Civil Engineering University of Chile	

PROFESSIONAL APPOINTMENTS

Project Engineer, Golder Associates S.A.	2012 – 2013
Santiago, Chile.	

RESEARCH EXPERIENCE

Postdoctoral Fellow, University of Nevada, Reno, USA	2018 – Present
"Impact of forest thinning on the snowpack in the Sierra Nevada, CA"	
Graduate Research Assistant, University of Saskatchewan, Canada	Jan – Oct 2018
Manager of the Coldwater laboratory, Centre for Hydrology.	
Graduate Research Assistant, University of Saskatchewan, Canada	2014 – 2018
"Past and Future Hydrology Near the Arctic Treeline"	
PI: John Pomeroy, University of Saskatchewan.	
Graduate Research Assistant, University of Saskatchewan, Canada	2014 – 2016
"Sensitivity of the Dempster Highway Hydrological Response to Climate Warming"	
PI: Richard Janowicz, Yukon Water Resources Branch.	
Visiting Research Intern, University of Saskatchewan, Canada	Sep – Dec 2011
Training on the Cold Regions Hydrological Modelling platform (CRHM)	
PI: John Pomeroy, University of Saskatchewan.	
Undergraduate Research Assistant, University of Chile, Chile	2010 – 2013
"Avances en la modelación hidrológica de gran escala en cuencas Patagónicas mediante la incorporación de reanálisis climatológicos: aplicación a la cuenca del Río Baker, Región de Aysén". PI: James McPhee, University of Chile.	
Undergraduate Research Assistant, University of Chile and Austral University of Chile, Chile	2010 – 2012
"Climate and streamflow variability in the sub-Antarctic region of South America during the last 500 years". FONDECYT N° 1090479. PI: Antonio Lara, UACH.	

PEER-REVIEWED PUBLICATIONS

- Krogh, S. A.**, P. Broxton, P. Manley, and A. Harpold, **2020**: Using Process Based Snow Modelling to Predict the Effect of Forest Thinning on the Sierra Nevada Snowpack, *Frontiers in Forest and Global Change*. DOI: 10.3389/ffgc.2020.00021.
- Harpold, A., **S. A. Krogh**, M. Kohler, D. Eckberg, J. Greenberg, G. Sterle, and P. Broxton, **2020**: Increasing the Efficacy of Forest Thinning for Snow Using High-Resolution Modeling: A Proof of Concept in the Lake Tahoe Basin, *Ecohydrology*. DOI: 10.1002/eco.2203.
- Highlighted by the BAMS Bulletin, June 2020, Issue 6, page 479.
- Aygun, O., C. Kinnard, S. Campeau, and **S. A. Krogh**, **2020**: Shifting hydrological processes in a Canadian agroforested catchment due to a warmer and wetter climate, *Water*, 12(3), 739.
DOI: <https://doi.org/10.3390/w12030739>.
- Krogh, S. A.**, A. Harpold, and P. Broxton, **2020**: Towards a decision support tool for understanding the effect of forest thinning on the Sierra Nevada snowpack, *Proceedings of the 87th Annual Western Snow Conference*, Reno, NV, USA
- Krogh, S. A.** and J. Pomeroy, **2019**: Impact of future climate and vegetation on the hydrology of an Arctic headwater basin at the tundra-taiga transition, *Journal of Hydrometeorology*, 20, 197-215, DOI: 10.1175/D-18-0187.1.
- Krogh, S. A.** and J. Pomeroy, **2018**: Recent changes to the hydrological cycle of an Arctic basin at the tundra-taiga transition, *Hydrology and Earth System Science*, 22, 3993-4014, DOI: 10.5194/hess-22-3993-2018.
- Krogh, S. A.**, J. Pomeroy, and P. Marsh, **2017**: Diagnosis of the hydrology of a small Arctic basin at the tundra-taiga transition using a physically based hydrological model, *Journal of Hydrology*, **550**, 685-703, DOI: 10.1016/j.jhydrol.2017.05.042.
- Krogh, S. A.**, J. Pomeroy, and J. McPhee, **2015**: Physically based mountain hydrological modelling using reanalysis data in Patagonia, *Journal of Hydrometeorology*, 16, 172-193, DOI: 10.1175/JHM-D-13-0178.1.

PUBLICATIONS IN REVIEW

- Safa, H., **S. A. Krogh**, J. Greenberg, T. Kostadinov, and A. Harpold: Unraveling the controls on snow disappearance in montane forests using multi-site lidar observations <minor revisions at *Water Resources Research*>
- Scaff, L., A. Prein, Y. Li, A. J. Clark, **S. A. Krogh**, N. Taylor, C. Liu, R. Rasmussen, K. Ikeda, Z. Li: Dryline characteristics in North America's historical and future climates <submitted to *Climate Dynamics*>

PUBLICATIONS IN PREPARATION

- Krogh, S.A.**, L. Scaff, G. Sterle, J. Kirchner, B. Gordon, A. Harpold. Diel observations suggest earlier snowmelt-driven streamflow than land surface modeling <in preparation for the *Proceedings of the National Academy of Sciences*>
- Krogh, S.A.**, and J. Pomeroy. Simulating permafrost hydrology in poorly gauged environments: model validation, falsification, parameter sensitivity and climate warming. <in preparation for the *Journal of Hydrology*>
- Scaff, L., **S. A. Krogh**, Y. Li, R. Rasmussen, K. Ikeda, C. Liu. Impacts of changing winter warm spells on snow ablation in the mountains of western North America <in preparation for *Water Resources Research*>

Safa H., K. Musselman, **S. A. Krogh**, A. A. Harpold: How well do we melt snow? A multi-model intercomparison project (MuMIP) illustrates the challenges of hydrological prediction <*in preparation for Nature Communication*>

CONFERENCES (*Oral Presentations*)

- Krogh, S.**, A. Harpold, P. Broxton, and P. Manley, **2020**: Developing snowpack/forest management support tools for montane forests in the Sierra Nevada, *Natural Areas Association Conference (online)*, session title “Modeling Social-Ecological Systems as Part of the Lake Tahoe West Restoration Project”, October 1 - November 3.
- Krogh, S.**, and A. Harpold, **2020**: Using diel observations to diagnose snowmelt and predict changes in streamflow timing, Yosemite Hydroclimate Meeting (online), 15-16 October.
- Harpold, A., **S. Krogh**, P. Manley, H. Safa, and P. Broxton, **2020**: State-of-the-art in modeling effects of forest thinning on snow and streamflow, Natural Areas Virtual Conference, Sierra to Sagebrush: integrating management stewardship across landscapes, October 1 - November 3.
- Katz, L., A. Harpold, and **S. Krogh**, **2020**: Modeling rain-on-snow melt responses in the Sierra Nevada snowpack: When do you need a more sophisticated model? California Extreme Precipitation Symposium (online), June 30.
- Krogh, S.**, A. Harpold, and P. Broxton, **2019**: The Effect of Forest Thinning on the Sierra Nevada Snowpack Using Lidar and Process Based Snow Modelling, *American Geophysical Union (AGU)*, 9-13 December, San Francisco, California, USA.
- Krogh, S.**, A. Harpold, and P. Broxton, **2019**: Simulating Snowpack Changes Under Two Virtual Thinning Scenarios at the West Shore of Lake Tahoe, *19th Annual Yosemite Hydroclimate Meeting*, 10-11 October, Yosemite National Park, California, USA.
- Pomeroy, J., **S. Krogh**, R. Essery, K. Shook, M. Elshamy, D. Richard, Z. Tesemma, Y. Loukili and A. Pietroniro, **2019**: The Importance of Cold Regions Hydrological Processes for Representing the Arctic Hydrological Cycle, *International Union of Geodesy and Geophysics (IUGG)*, 8-18 July, Montreal, Canada.
- Harpold, A., **S. Krogh** and H. Safa, **2019**: Managing Sierra Nevada forest for less snow: Improving hydrological predictions by fusing high-resolution observations and models, *Western Snow Conference*, 15-17 April, Reno, Nevada, USA.
- Krogh S.** and J. Pomeroy, **2017**: Determining hydrological changes in a small Arctic treeline basin using cold regions hydrological modelling and a pseudo global warming approach, *American Geophysical Union (AGU)*, 11-15 December, New Orleans, USA.
- Krogh S.**, H. Annand, C. Aubry-Wake, D. Pradhananga, K. Shook, X. Fang, T. Brown and J. Pomeroy, **2017**: CRHM Development and Long Term Applications to Diagnose Future Headwater Basin Hydrology, *Changing Cold Regions Network (CCRN) Modelling Workshop*, 2 – 3 November, Canmore, Alberta, Canada.
- Krogh S.** and J. Pomeroy, **2017**: Diagnosing hydrological functions and trends of a small Arctic treeline basin using science developed at WCRB, *25th Anniversary of Wolf Creek Research Basin Science Summit*, 28 – 29 September, Whitehorse, Yukon Territory, Canada.
- Rasouli, K., **S. Krogh**, Pavlovskii, M. Hayashi, and J. Pomeroy, **2017**: The role of soil freezing and thawing in hydrological processes: Canadian case studies, *Asian Conference on Permafrost (ACOP)*, 2 – 6 July, Sapporo, Japan.

- Krogh, S.** and J. Pomeroy, **2017**: Trends in the hydrology of a small Arctic basin at the tundra-taiga transition region, *Canadian Geophysical Union (CGU)*, 29 – 31 May, Vancouver, British Columbia, Canada.
- Krogh, S.**, J. Pomeroy, and P. Marsh, **2016**: Physically Based Modelling of a Tundra-Taiga Basin in the Continuous Permafrost Region for Hydrological Change Diagnosis, *Joint Scientific Congress of the Canadian Meteorological and Oceanographic Society (CMOS) and the Canadian Geophysical Union (CGU)*, 29 May – 2 June, Fredericton, New Brunswick, Canada.
- Krogh, S.**, J. Pomeroy, and J. Janowicz, **2016**: Hydrological Modelling of a Small Tundra-Taiga Basin in the Continuous Permafrost Region, *Changing Cold Regions Network (CCRN) Modelling Workshop*, 6 – 7 June, Saskatoon, Canada.
- Krogh, S.**, J. Pomeroy, and J. Janowicz, **2015**: Diagnosing the Hydrological Impacts of Climate Change in an Arctic Basin, *Changing Cold Regions Network (CCRN) Modelling Workshop*, 28 – 30 September, Saskatoon, Canada.
- Krogh, S.**, J. Pomeroy, and J. McPhee, **2013**: Physically Based Mountain Hydrological Modelling using Reanalysis Data in Patagonia, *American Geophysical Union (AGU), Meeting of the America*, 14 – 17 May, Cancun, Mexico.

CONFERENCES (*Poster Presentations*)

- Scaff, L., Y. Li, **S. Krogh**, and R. Rasmussen, **2020**: Impacts of changing winter warm spells on snowpack dynamics, *Global Water Futures 3rd Open Science Meeting* (webinar), 11-12 June.
- Harpold, A., J. Hammond, S. Kampf, M. Kohler, P. Brooks, G. Sterle, and **S. Krogh**, **2019**: When Does Changing Snow Lead to Changing Streamflow? A Multi-Observation Approach Investigating Snow-Dominated Western U.S. Catchments, *Gordon Research Conference on Catchment Science*, 23-28 June, Andover, New Hampshire, USA.
- Krogh, S.**, A. Harpold and P. Broxton, **2019**: Towards and efficient decision support tool to predict the effects of forest thinning on the Sierra Nevada snowpack, *Western Snow Conference*, 15-17 April, Reno, Nevada, USA.
- Krogh, S.** and J. Pomeroy, **2018**: Simulating permafrost hydrology for cold regions mountains, *International Network for Alpine Research Catchment Hydrology (INARCH)*, 24 – 26 October, Santiago-Portillo, Chile.
- Harpold, A., R. Petersky and **S. Krogh**, **2018**: Sagehen Creek Watershed, Sierra Nevada, USA: A long-term dataset for investigating groundwater-mediated streamflow response to variable maritime snowmelt and rainfall, *International Network for Alpine Research Catchment Hydrology (INARCH)*, 24 – 26 October, Santiago-Portillo, Chile.
- Krogh, S.** and J. Pomeroy, **2018**: Past, Present and Future Arctic Hydrology under Changing Climate and Vegetation, *Global Water Futures (GWF), Annual Science Meeting*, 4 – 6 June, Hamilton, Ontario, Canada.
- Krogh, S.** and J. Pomeroy, **2018**: Past, Present and Future Arctic Hydrology under Changing Climate and Vegetation, *8th Global Energy and Water Exchange Project (GEWEX) Open Science Conference*, 6 – 11 May, Canmore, Alberta, Canada.
- Krogh, S.**, J. Pomeroy, and J. McPhee, **2014**: Modelling Snow Hydrology Processes in the Mountains of Patagonia using CFRS Reanalysis Data, *Canadian Geophysical Union (CGU), Annual Meeting*, 4 – 7 May, Banff, Alberta, Canada.

McPhee, J., **S. Krogh**, and R. Garreaud, **2011**: Quantifying the Effect of Cloud Interference over the Potential of MODIS SCA Information for Streamflow Forecasting in Poorly Monitored Mountainous Regions, *American Geophysical Union (AGU)*, 4 – 9 December, San Francisco, USA.

TEACHING EXPERIENCE

University of Saskatchewan, Invited Lecture

Principles of Hydrology (GEOG 827)

Winter 2017 and Winter 2018

University of Chile, Teaching Assistant

Environmental Systems Analysis (CI5103)

Spring 2010 and Fall 2011

Environmental Engineering (CI41B)

Fall 2009, Spring 2009 and Fall 2010

Hydrology (CI41C)

Spring 2009

AWARDS, SCHOLARSHIPS AND GRANTS

Becas Chile Scholarship for Postdoctoral studies

2019-present

National Agency for Scientific and Technological Research (CONICYT)

Ministry of Education, Chile.

Becas Chile Scholarship for PhD studies

2014 – 2017

National Agency for Scientific and Technological Research (CONICYT)

Ministry of Education, Chile.

Scholarship to pursue full-time graduate studies

2014 – 2018

Centre for Hydrology

Department of Geography and Planning, University of Saskatchewan

Scholarship to pursue graduate studies

2012

Division of Water Resources and Environment, Department of Civil

Engineering, University of Chile.

Travel grant for International Research Collaborations

2011

Department of Graduate Students, University of Chile.

Outstanding student award

2010

Department of Civil Engineering, University of Chile.

SERVICE TO PROFESSION

Reviewer for the following journals: Hydrology and Earth Systems Sciences journal, Water Resources Research, Journal of Hydrology, Hydrological Processes, Nature Communications, Earth System Science Data, Canadian Water Resourced Journal, and Journal of Geophysical Research.

EXTRACURRICULAR TRAINING

Snow Science Winter School

2017

WSL Institute for Snow and Avalanche Research SLF and the Finish

Meteorological Institute (FMI).

OUTREACH AND MEDIA

News, Global Institute for Water Security: [Web Link](#)

2019

Open house with the local community at the Coldwater Lab in Canmore, AB, Canada.

2017

Spotlight on Student Research, Changing Cold Regions Network: [Web Link](#)

2017

International Research Profile, University of Saskatchewan: [Web Link](#)

2017

LANGUAGE

Spanish (mother tongue) and English (fluent).