

PhD opportunity: Winter Soil Processes in Transition
New Project Funded by Global Water Futures
Two PhD Positions at University of Waterloo

We invite applications for two PhD positions to participate in a research project to advance the process-based understanding of the function of soil biogeochemical processes in cold region environments during the fall-winter and winter-spring transitions and during the non-growing season using a combination of data synthesis, laboratory, and computational approaches. The main tasks of the PhD students will be conducting laboratory experiments and modeling analyses. We are looking for 2 PhD students for this project.

PhD 1 will focus on understanding the rates and mechanisms of soil biogeochemical processes under variable freeze-thaw cycles and soil moisture conditions, and will determine the effects on carbon and nutrient cycling under variable snow cover and winter conditions. This PhD student will also be involved in developing a reactive transport model that simulates the biogeochemical transformations of carbon and nutrients in cold region soils under winter conditions.

PhD 2 will focus on establishing the temperature-dependencies of carbon and nutrient mineralization rates and the associated effects on winter microbial soil communities. This PhD student will also be involved in developing a bioenergetics-based framework to model microbial dynamics under variable snow cover and winter conditions.

The students will be guided by a team of researchers including: Drs. Fereidoun Rezanezhad (PhD 1 lead supervisor), Laura Hug (PhD 2 lead supervisor), Philippe Van Cappellen, David Rudolph, Christina Smeaton, Chris Parsons and Colin McCarter from the University of Waterloo; Dr. Scott Smith from Wilfrid Laurier University; and collaborators from multiple universities involved in this project.

Applicants must have specialization in biogeochemistry, hydrology, soil science or a related field. Preference will be given to candidates with demonstrated skills and experience in experimental work and numerical mathematical modeling in biogeochemistry, and environmental sciences, or a related field. MSc student positions can be created in lieu of a PhD position for exceptional candidates who prefer to undertake a Master's degree.

For further information regarding these positions, or to submit an application, please contact Dr. Fereidoun Rezanezhad (frezanez@uwaterloo.ca) for PhD position 1 and Dr. Laura Hug (laura.hug@uwaterloo.ca) for PhD position 2. In your application email, please include "GWF-WSP-PhD#_yourname" in the subject line and attach a single PDF file that contains:

- Your motivation for applying to the position and your research interests
- Curriculum vitae
- Copy of transcript(s)
- Contact information for up to 3 references

Closing date: Applications will be reviewed as they are received. The positions will remain open until filled. **We thank all applicants for their interest, however, only those individuals selected for an interview will be contacted.**