



Overview

This fully funded M.Sc. student opportunity is part of a Global Water Futures (GWF) transformative science project entitled “Geogenic contamination of groundwater resources in subarctic regions”. The overall project goal is to identify hydrogeological settings and geochemical conditions that can generate elevated concentrations of the potentially hazardous metal(oid)s uranium (U) and arsenic (As) in areas of the Yukon Territory, Canada. The results will contribute to our growing understanding of water security risks in subarctic regions, where thawing permafrost affects groundwater flow and composition.

Starting in May 2020, this research will focus on development and analysis of a regional groundwater geochemistry data set for the Yukon Territory, Canada. As part of their thesis, the student will (i) compile a database of existing data (e.g., water chemistry, geology, climate, permafrost distribution), (ii) conduct field sampling in partnership with the Yukon Government Water Resources Branch and GWF collaborators to expand this data set, and (iii) analyze the data set to identify factors controlling U and As concentrations in groundwater. The student will also have opportunities to communicate project results and coordinate sampling with local Yukon communities, including indigenous communities.

This research involves collaboration between Dr. Matthew Lindsay (Associate Professor, Department of Geological Sciences) and Dr. Grant Ferguson (Professor, Department of Civil, Geological and Environmental Engineering, School of Environment and Sustainability) at the University of Saskatchewan (USask; Saskatoon, SK, Canada), and Dr. Sean Carey (Professor, School of Earth, Environment and Society) at McMaster University (McMaster; Hamilton, ON, Canada). The student can choose to enroll at either institution, under the primary supervision of Dr. Ferguson at USask or Dr. Carey at McMaster.

Qualifications

Applicants must hold an undergraduate degree in geoscience, physical geography, environmental science, or a closely related science or engineering discipline by the M.Sc. project start date. Further information on education requirements for USask or McMaster is available at the links provided below.

We will also consider the following qualifications during review of applications. Prior experience gained through undergraduate course work and/or prior employment is suitable. Qualified applicants lacking experience in some categories are still encouraged to apply.

Skills/Experience:

- field measurements and sampling (e.g., water levels, water chemistry)
- geographic information systems (e.g., ArcGIS, QGIS)
- programming languages (e.g., R, Python, MATLAB)
- database development and statistical analysis

Qualities:

- strong communication and interpersonal skills
- motivated, reliable and organized
- willing contributor to a multi-disciplinary team
- interest in (or previous experience with) community engagement

Training/Certifications

- Canadian driver's license or ability to secure one (vehicle not required)
- previous safety training (e.g., First Aid, Wilderness First Aid, WHMIS)
- other certifications (e.g., Aircraft Safety, MEDA3, PAL)

Other Considerations

This position will involve extended periods of remote fieldwork (i.e., 2+ weeks) and may include an opportunity to be based in Whitehorse, Yukon from June through August 2020.

Applications

General enquiries by email should be directed to Dr. Matthew Lindsay (matt.lindsay@usask.ca), Dr. Grant Ferguson (grant.ferguson@usask.ca), and/or Dr. Sean Cary (careysk@mcmaster.ca):

- Please include "GWF MSc Opportunity" in the subject line of your email
- Please do not apply to a graduate program before receiving approval from at least one Co-investigator

Applications should include the following components:

- Cover letter (1–2 pages) including (i) academic background, (ii) other qualifications, (iii) research interests, and (iv) career goals
- Resume or Curriculum Vitae
- Transcripts: unofficial copies are acceptable
- Names and contact information for three referees

Evaluation of applications will begin immediately and continue until the position is filled. Incomplete applications will not be considered. Shortlisted applicants may be asked for additional documents (e.g., language test scores, examples of written work).

More Information

Global Water Futures Program

Global Water Futures: Solutions to Water Threats in an Era of Global Change is a University of Saskatchewan-led research program that is funded in part by a \$77.8-million grant from the Canada First Research Excellence Fund. The overarching goal of the program is to deliver risk management solutions - informed by leading-edge water science and supported by innovative decision-making tools - to manage water futures in Canada and other cold regions where global warming is changing landscapes, ecosystems, and the water environment. Global Water Futures (GWF) aims to position Canada as a global leader in water science for cold regions and will address the strategic needs of the Canadian economy in adapting to change and managing risks of uncertain water futures and extreme events. End-user needs will be our beacon and will drive strategy and shape our science.

Additional information on the GWF program is available online at: <https://gwf.usask.ca/index.php>

University of Saskatchewan

The University of Saskatchewan is a member of the prestigious U15 Canadian research university group and provides excellent facilities and analytical tools to our students. We are located in Saskatoon, Saskatchewan, Canada on Treaty 6 Territory and the Homeland of the Métis. Our historic campus is recognized as one of the most beautiful in Canada, and our warm community welcomes people from around the world including growing numbers of Aboriginal and international students. The University of Saskatchewan is strongly committed to a diverse and inclusive workplace. All members of the university community share a responsibility for developing and maintaining

an environment in which differences are valued and inclusiveness is practiced. We welcome applications from those who will contribute to the diversity of our community.

Additional information on the University of Saskatchewan (<https://www.usask.ca/about.php>) and graduate studies (<https://grad.usask.ca/>) is available online.

Information on research programs led by Dr. Ferguson (<https://usaskhydrogeology.blog/>) and Dr. Lindsay (<http://www.mbjlindsay.ca>), and on the Department of Civil, Geological and Environmental Engineering (<https://engineering.usask.ca/departments/cgee.php>), the School of Environment and Sustainability (<https://sens.usask.ca/>), and the Department of Geological sciences (<https://artsandscience.usask.ca/geology/>) is also available online.

McMaster University

McMaster University is a globally renowned institution of higher learning and a research community committed to advancing human and societal health and well-being. We are located Hamilton, Ontario, on the traditional territories of the Haudenosaunee and Mississauga Nations, and within the lands protected by the Dish with One Spoon wampum agreement. Our focus on collaboratively exchanging ideas and approaches makes us uniquely positioned to pioneer ground-breaking solutions to real-world problems leading to a Brighter World. The diversity of our workforce is at the core of our innovation and creativity and strengthens our research and teaching excellence. McMaster University strives to embody the values of respect, collaboration and diversity, and has a strong commitment to employment equity.

Additional information on McMaster University (<http://www.mcmaster.ca>) and graduate studies (<http://gs.mcmaster.ca>) are available online.

Information regarding programs led by Dr. Sean Carey (<http://www.science.mcmaster.ca/watershed>) and the School of Earth, Environment & Society (<https://www.science.mcmaster.ca/ees>) is available online.