



GRADUATE STUDENT RESEARCH OPPORTUNITY:

Past Atmospheric Deposition of Trace Metals

As part of the research project **Peat Bog Archives of Atmospheric Deposition of Trace Elements** (PEAATE) funded by NSERC, we are seeking a highly motivated student with excellent communication skills. The goal of the study will be to determine the natural abundance of trace elements in the crustal aerosol, their variation with climate change during the Holocene, and their predominant natural sources. Well characterized, age-dated peat cores from North America and Europe will be used for the study. At this time, one PhD position is available.

The ideal candidates will have undergraduate training and graduate-level research experience in environmental chemistry, geochemistry, or soil chemistry, with a strong background in analytical chemistry and an interest in atmospheric chemistry. Experience with sequential extraction, particle size characterization, ICP-MS and SEM are assets.

The SWAMP laboratory is a metal-free, ultraclean research facility for the study of trace elements in **Soil, Water, Air, Manure, and Plants**. Part of the Department of Renewable Resources at the University of Alberta, it was designed and constructed to routinely conduct measurements at trace and ultra-trace concentrations (<https://swamp.ualberta.ca/>). The SWAMP lab is equipped with both quadrupole (Thermo Fisher ICAP) and sector-field ICP-MS (Element XR) instruments. Size-based separation of dissolved trace elements associated with colloidal species (1 to 1000 nm) is accomplished using asymmetrical flow field-flow fractionation (AF4) coupled to ICP-MS. A G-SPLITT fractionation system is also available to isolate and characterize the size distribution of particles > 2 μm . Other key laboratory equipment includes a high-pressure microwave for digesting solid samples and a sub-boiling acid still. Benefits of undertaking PhD research in the SWAMP lab include supervision and training by experts in the areas of ultraclean sampling and analysis methods, geochemistry, micro- and nanoscale size characterization, and ICP-MS.

To apply for the position, please send a letter of application, CV, and the names of two references to Ms. Tracy Gartner (tgartner@ualberta.ca).

For more information about the goals of the study, please contact Prof. William Shotyk (shotyk@ualberta.ca)

Renewable Resources