Graduate Opportunities in Boreal Watershed Biogeochemistry

Ph.D. and M.Sc. graduate assistantships are available at Memorial University in St. John’s, Newfoundland, Canada to study the effects of environmental change on the biogeochemistry in boreal watersheds. The impact of environmental change on dissolved organic matter (DOM) cycling within the continuum from streams to coastal marine ecosystems is the focus of a Canada Research Chair funded program.

Microorganisms drive aquatic biogeochemical processes, therefore their function and how they are altered by environmental perturbation is paramount to our understanding of the interactions between the physical, chemical and biological parameters that affect aquatic ecosystem function. Dissolved organic matter is a critical component of the global carbon cycle and represents the largest active reservoir of organic matter in the aquatic environment. Integrating energy from both terrestrial and aquatic ecosystems, DOM fuels the microbial activity central to ecosystem function. A major goal of our research group is to understand the impact of nutrient enrichment, elevated temperatures, and changes in land use activities on watershed dissolved organic carbon and nitrogen cycling. The research group is focused on two main questions: (1) How is DOM cycling impacted by environmental change in boreal watersheds?; and (2) How can changes in DOM cycling within boreal watersheds impact coastal biogeochemistry? Students joining the group will have the opportunity to use stable isotope tracers and the analysis of the isotopic composition of biomarkers to study the flow of carbon, nitrogen and sulfur in aquatic ecosystems. The precise research undertaken by individual students will depend upon their strengths and interests and may include, but are not limited to investigations of: (1) sulfur isotope composition of DOM in boreal watersheds, (2) DOM bioreactivity and photoreactivity along a continuum from boreal streams to coastal ecosystems, and (3) The impact of environmental change on microbial biofilm structure and function in boreal streams.

Those interested are strongly encouraged to contact Susan Ziegler directly to discuss possible opportunities.

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Depending upon strengths and interests students may pursue a graduate degree in Earth Sciences or Environmental Sciences. Links to these programs are: www.mun.ca/sgs/prog_study/easc.php and www.mun.ca/sgs/prog_study/environmental.php

Memorial University is the largest university in Atlantic Canada. As the province’s only university, Memorial plays an integral role in the educational life of Newfoundland and Labrador. Offering a diverse set of undergraduate and graduate programs to almost 18,000 students, Memorial provides a distinctive and stimulating environment for learning in St. John’s (http://www.stjohns.ca/index.jsp), a very safe, friendly city with great historical charm, a vibrant cultural life, and easy access to a wide range of outdoor activities.