# Current Research Opportunities for Prospective Graduate Students 2024-2025

#### Physical Geography, GIS and Remote Sensing

Dongmei Chen (chendm@queensu.ca)

Looking for two students, M.Sc., or Ph.D.

Machine learning and Al-based methods for change detection from time series remotely sensed data.

Analysis social/economic/demographic inequality and modeling of human mobility and its impact on COVID-19 spread

### Ryan Danby (ryan.danby@queensu.ca)

Looking for one or two students, M.Sc. or Ph.D.

Reconstructing forest history from tree rings (well-suited for MSc). The student would conduct sampling and analysis of remnant trees and cross-reference their results with historical records to reconstruct forest history in eastern Ontario.

Caribou habitat analysis (well-suited for PhD). The student would analyze GPS collar data and remote sensing data to model changing habitat use of the declining Bathurst caribou herd in Nunavut and Northwest Territories.

### Melissa Lafrenière (Melissa.Lafreniere@queensu.ca)

The relationship between landscape features and hydrological and biogeochemical processes involving carbon, nitrogen, contaminants, and metals in High Arctic watersheds.

Investigating how climate warming, impacts groundwater contributions to runoff and catchment biogeochemical processes across different geomorphic features in permafrost watersheds.

How size, abundance, and lability of organic carbon (POC and DOC) varies with permafrost and hydrological changes in High Arctic Watersheds.

Ideally suited for a PhD students, starting September 2024, with possibility of field work in summer 2024.

Christopher Omelon (c.omelon@queensu.ca

To understand the extent of talik environments in continuous and discontinuous permafrost, their thermal, hydrogeochemical, and microbial characteristics, and the potential biogeochemical impacts due to permafrost thaw and subsequent hydrologic connectivity with surface and subsurface environments.

Studies will use field- and laboratory-based hydrological, geophysical, geochemical, and molecular approaches to characterize and understand complex processes.

Opportunities for fieldwork in the Canadian Arctic and advanced training in analytical and imaging techniques including isotope ratio mass spectrometry, optical emission spectroscopy, ion chromatography, x-ray diffraction and electron microscopy.

Neal Scott (neal.scott@queensu.ca)

# Mark Stoller (mark.stoller@queensu.ca)

Looking for one or more MA or PhD student(s).

I am looking for students with research interests in Arctic/circumpolar human geography, geographies of settler-Indigenous relations, participatory research methods/methodologies, and youth-oriented research.

I am also interested in working with students with interdisciplinary interests across human and physical geography.