

Northwestern Canada is one of the most rapidly warming regions on Earth. The scale and rapidity of recently observed warming-induced changes indicate that this region is particularly sensitive to climate warming. Unprecedented changes in snow cover and rates of permafrost thaw are transforming ecosystems (e.g., conversion of forests to wetlands; lakes to thaw lake basins; tundra to shrub vegetation), and changing the distribution and routing of water over the landscape, which confounds predictions of ecohydrological responses to warming and changes in precipitation. Altered water flows and sediment regimes have affected the structure and function of streams, rivers, and lakes, including key waterways used for hydropower, water supply, and transportation. These changes directly affect the health, wellbeing, safety and livelihoods of northern communities. As a consequence, government decision makers, Indigenous communities, and co-management boards urgently require science-based predictive tools and user-driven mitigation and adaptation strategies to ensure that "the waters of the Northwest Territories will remain clean, abundant and productive for all time" as envisioned in the NWT Water Stewardship Strategy.

We are seeking a quantitative ecologist/modeler to participate in a large, collaborative project on northern ecosystem dynamics under changing climate. In partnership with academics and several government agencies, the goal of this multi-year research program is to forecast the dynamics of below- and aboveground processes under the anticipated changes coming with climate, natural disturbance, and positive and negative feedbacks. This specific project involves developing forecasting models that couple simulation and statistical models of thermokarst vulnerability, landcover change, above- and below-ground carbon dynamics, and fire dynamics under changing climate. The models will become part of a rich network of models that are compatible with the open R/SpaDES framework ([spades.predictiveecology.org](http://spades.predictiveecology.org)). This will enable us to answer multi-faceted questions related to ecosystem change and land management by Indigenous groups, territorial and federal governments, as well as evaluation of other connected issues such as protected areas and species at risk. The new contributions made here will contribute to a general and flexible suite of independent forecasting models that will be configured to meet the emerging needs of our research team, the scientific community and land management pressures in the North.

The successful candidate will work with a team of landscape scientists, northern scientists, R programmers and quantitative ecologists to forecast the direct and indirect consequences of climate change on thermokarst, above- and below-ground carbon, natural disturbances, and vegetation dynamics.

Qualifications:

- Ph.D. in ecology, natural resource sciences, applied mathematics, computer science, statistics, or a related field;
- Evidence of publishing in peer reviewed literature;
- Experience with modeling of vegetation, soils, hydrology, or permafrost;
- High-level programming skills (e.g., R or Python);
- Experience with statistical modelling;
- Experience with spatial simulation modelling an asset;
- Experience with Geographic Information Systems and remotely sensed data an asset;
- Able to confidently interact with people of varying backgrounds;
- Experience with climate change projections an asset.

The direct supervisor will be Eliot McIntire (Pacific Forestry Centre, expertise in applied ecology, conservation and forecasting ecosystems and species) with Jenn Baltzer and Steve Cumming as remote co-supervisors. Additional collaborators on this Northern Water Futures and GNWT Cumulative Impacts Monitoring Project-funded project will include Merritt Turetsky and Kathe Todd-Brown and other post-doctoral fellows and graduate students. The successful candidate will also become part of the Predictive Ecology lab, providing and benefitting from technical support within the group.

Location of tenure: The postdoctoral fellow will be administered as a postdoctoral fellow at the University of British Columbia, Vancouver, BC. The position will be physically located in Victoria, British Columbia, Canada, at the Pacific Forestry Centre. There will be opportunities for one or more extended visits to the other labs in the larger project (Baltzer Lab at Wilfrid Laurier University, Waterloo, Ontario and/or Cumming Lab at Laval University, Quebec City) to work with collaborators. Field work is not a principle objective of this position, however, there will be opportunities if desired. Given the current reality of COVID-19, alternative physical locations can be discussed.

Start date, duration, & compensation: The 2-year position will ideally start in Sept 2020 or as soon after that as possible. The annual salary is \$53,000 (Cdn) plus benefits. There will be \$5000 (Cdn) for travel, publications, and conferences per year.

To Apply: Please provide a letter of interest, your CV, and an example of your writing skills in the form of a peer-reviewed manuscript. Your letter should indicate how you meet each of the criteria, and state when you are able to start and when you can relocate to British Columbia. We will accept applications until a suitable candidate is found. Send

application packages to:  
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