

Ph.D. Opportunity in Northern Hydrometeorology

The northern hydrometeorology group (<http://web.unbc.ca/~sdery>) at the University of Northern British Columbia (UNBC), in Prince George, British Columbia, Canada invites applications for an opening for a fully-funded doctoral (Ph.D.) degree starting in September 2025.

MSc Project Description: The Coast Mountains, one of the wettest regions on the planet, form a generally north-south barrier to the predominant westerlies affecting this mid-latitude region. Due to the Pacific Ocean's proximity, orographic forcing, and wind channeling, the Coast Mountains exhibit extreme precipitation and runoff gradients. This study will compare and contrast atmospheric conditions accompanying heavy precipitation events in the upper Nechako Watershed. Specifically, we will establish the main synoptic patterns that induce heavy precipitation on the western and eastern slopes of the upper Nechako Watershed. A focus will be on precipitation associated with atmospheric rivers, including the orientation of moisture axes in relation to mountain valleys and gaps. Key questions are: 1) How far inland and at what levels in the atmosphere do landfalling atmospheric rivers advect moisture across the coastal mountain barrier, spreading precipitation into the upper Nechako Watershed and other leeward sites including the relatively dry Interior Plateau? 2) Are easterly (upslope) flows key in developing precipitation on the leeward side of the Coast Mountains or are they relatively inconsequential in the overall precipitation climatology? 3) Is convective precipitation important in the upper Nechako Watershed? 4) What role does local moisture recycling versus remote advection play in precipitation formation and distribution in the upper Nechako Watershed? This will yield important knowledge on the spatio-temporal patterns of precipitation and its generation mechanisms in the Coast Mountains of the upper Nechako Watershed.

Application Process: We invite applications for this Ph.D. position, with the preferred applicants having a comprehensive knowledge of cold regions hydrometeorology and climate, and excellent computational, statistical data analysis and communication skills. Extensive experience in computer programming, in the use of GIS software (e.g. ArcGIS) and in the application statistical and graphics packages (e.g. using R or Matlab) are preferred assets. Preference will also be given to applicants with prior experience with remote field work as the successful candidate will assist with in situ meteorological data collection. UNBC is fully committed to equity, diversity, and equal opportunity; we strongly encourage applications from women and non-binary individuals, Indigenous peoples including First Nations, differently-abled persons, members of visible and other minorities, the LGBTQ2S+ community, and other underrepresented and disadvantaged groups in science, technology, engineering, the arts and mathematics (STEAM).

Interested applicants should contact Dr. Stephen Déry at sdery@unbc.ca with a cover letter highlighting research interests and experience relevant to this position, a fully up-to-date curriculum vitae or résumé, unofficial transcripts, and the names and contact information of at least two potential professional references. The deadline for submitting these documents is Friday 6 December 2024 (or until the position is filled). When submitting electronically your application documents, please insert in the subject line "Application for PhD Opportunity in Northern Hydrometeorology". Applications will first be vetted by Dr. Déry and then the successful candidate will be required to submit an application for entry to UNBC's Natural Resources and Environmental Studies (NRES) graduate program. The start date for the Ph.D. position is September 2025. Applicants whose first language is not English may need to submit evidence of English language proficiency prior to admission. Applicants must also have a minimum grade point average (GPA) of 3.33 out of 4.33 (equivalent to a B+ grade) in their Master's degree to enter the NRES

graduate program. The successful candidate will receive a minimum of four years of financial support starting with the UNBC academic session in September 2025. Note also that UNBC PhD candidates receive an automatic four year tuition grant.