

## Fully-funded M.Sc. research project

# Phase of winter precipitation and impact on the snow cover over the province of New Brunswick, Canada

**Location:** [Centre ESCER](#) and the [Département des sciences de la Terre et de l'atmosphère](#), Université du Québec à Montréal, Montréal, Canada

**Starting date:** The position will start between January 1, 2021 and September 1, 2021

**Duration:** 2 years

### **Background:**

This research project aims to study how the phase of precipitation during successive winter storms drive accumulation and ablation of snow on the ground. This is particularly critical in New Brunswick where winter storms can bring large amount of precipitation with temperatures near 0°C. As a result, precipitation can swing between snow, rain and freezing rain, strongly influencing the evolution of snow on the ground. This needs to be properly capture in hydrological models used in support of flood forecasting. This project will rely on detailed snowpack simulations to assess the impact of different phase partitioning methods on snow evolution. It will benefit from a unique dataset of precipitation phase measured in the field in New Brunswick and estimated by atmospheric models. This work is part of the Global Water Futures - SaJESS project (Saint John river Experiment on cold Season Storm; <https://gwf-sajess.weebly.com/>) and will be co-supervised by Professor Julie Thériault (UQAM) Vincent Vionnet (Environment and Climate Change Canada).

### **Required Skills**

- An undergraduate degree, or equivalent, in natural science or applied science
- Ability to speak and understand French and to follow courses in French
- Knowledge in mathematics, physics and/or atmospheric science
- Basic knowledge of the Linux environment and in Python, Matlab, Fortan or R programming.
- Ability to work in a team.

### **Working environment**

The selected candidate will join the research team of Professor Julie Theriault at UQAM at the ESCER Center. We will work in collaboration with research staff from the ESCER Centre, and researchers from Environment and Climate Change Canada (ECCC). Dr. Vincent Vionnet at ECCC will co-supervise the master thesis. We encourage all qualified applicants to apply, including those who identify themselves

as a minority group. We support working arrangements that consider the specific situation of candidates, including working remotely when needed and flexible hours.

### **How to apply**

Please send your application to Professor Julie Thériault ([theriault.julie@uqam.ca](mailto:theriault.julie@uqam.ca)) and Dr. Vincent Vionnet ([vincent.vionnet@canada.ca](mailto:vincent.vionnet@canada.ca)) including:

- 1) A complete CV.
- 2) A cover letter indicating which project you are interested on.

For more information, do not hesitate to get in touch with Professor Thériault or Dr. Vionnet.