

2 postdoctoral fellowships in very high-resolution regional climate modelling at the ESCER-UQAM centre

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

Starting date: from March 1st, 2021

Duration: 1 year with the possibility to be extended for 2 more years

Background: these 2 postdoctoral fellowships are part of the “High Resolution Climate Simulation and Analysis” (SACHR) project recently funded by the Quebec’s Ministry of Sustainable Development, the Environment and the Fight against Climate Change (MELCC in French). SACHR aims to develop the new version of the Canadian Regional Climate Model (CRCM6 / GEM5), based on the weather forecasting model from the Canadian Weather Service. To this end, a comprehensive assessment of the performance of the model will be conducted by focusing on various aspects of the regional water cycle. We are now looking to fill two positions to work on the following projects:

- 1. Fine-scale processes and microphysics:** this project aims to improve cloud and precipitation formation in the CRCM6 / GEM model. Once the microphysics are updated, a study will be conducted to determine the added value of high resolution on the occurrence of winter precipitation types, including freezing rain, as well as rain-snow transitions over Quebec and Eastern Canada. The first step will be to carry out case studies and then carry out simulations over several years.
- 2. Added value of highest resolution / highest complexity:** this project aims to better quantify and understand the improvements introduced by the new version of the model. Studies will be carried out to quantify the added value of i) the higher horizontal / temporal resolution and ii) the greater complexity of the physics parameterizations or the land-surface model. The assessment of the added value will be based on specific high-impact weather phenomena (e.g., extreme extratropical cyclones) and will use innovative ways to evaluate climate models that go beyond standard approaches.

Required Skills

- A PhD in atmospheric science or related field
- Experience in the area of expertise and a publication record in peer-reviewed, international journals.
- Excellent knowledge of the Linux environment and in Python, Matlab, or R programming. Experience with Fortran programming language and with high-performance computing systems are also desirable.

- Ability to handle large databases, preferably from numerical weather forecasts or climate models.
- Ability to work in a team.

Working environment

The selected candidates will join the research team on regional climate modelling led by Professors René Laprise, Julie Thériault and Alejandro Di Luca. They will work in collaboration with research staff from the ESCER Centre, and researchers from Environment and Climate Change Canada (ECCC), Ouranos and the MELCC. 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 professors Julie Thériault (theriault.julie@uqam.ca) and Alejandro Di Luca (di_luca.alejandro@uqam.ca) including:

- 1) A complete CV.
- 2) A cover letter indicating which project you are interested on.
- 3) Names and contact information of at least two references.

For more information, do not hesitate to contact Professors Thériault or Di Luca.