

Cluster Hiring Advertisement

Postdoctoral Researchers and PhD Students Wanted for a New Satellite Project

We cordially invite applications for four (4) postdoctoral and three (3) PhD student positions to work in the areas of weather forecasting, climate modeling, satellite data analysis and comparison, to aid the science development of a new Earth-observing satellite.

Research description

Joining the leadership in the space observations of climate change, Canada will contribute three instruments, TICFIRE (Thin Ice Cloud and Far InfraRed Emissions), ALI (Aerosol Limb Imager) and SHOW (Spatial Heterodyne Observations of Water), jointly known as HAWC (High-altitude, Aerosol, Water Vapour and Clouds), to co-fly with the other instruments in the NASA-led satellite mission: the Atmosphere Observing System (AOS).

The successful candidates will join the Canadian HAWC Science Development Team (SDT) funded by the Canadian Space Agency and steered by the HAWC Canadian University Consortium, to undertake a suite of science development activities that are crucial to developing the sciences and applications of the AOS/HAWC measurements. A total of seven positions are open in this initial round of SDT recruitment, including four postdoctoral researchers and three PhD students. Each hire will be appointed at McGill University, University of Toronto, or University of Waterloo, to focus on one of the research subprojects outlined below.

1. Thermodynamic and radiative anomalies of weather extremes

Subproject lead: Professor Yi Huang (yi.huang@mcgill.ca)

Positions open: one postdoc and one PhD student

Location: McGill University, Montreal, Canada

Objective: this research will assess thermodynamic and radiation anomalies in extreme events such as overshooting convections and cold air formation/outbreaks, using climate and radiative transfer modelling.

2. Trajectory hunting investigations for comparing HAWC data

Subproject lead: Professor Kaley Walker (kaley.walker@utoronto.ca)

Positions open: one postdoc

Location: University of Toronto, Toronto, Canada

Objective: this research will investigate methodologies for satellite data comparisons by using trajectory hunting techniques and explore how these can be used for HAWC measurements.

3. Satellite detection of snowfall and snow accumulation across Canada's North

Subproject lead: Professor Christopher Fletcher (chris.fletcher@uwaterloo.ca)

Positions open: one postdoc and one PhD student

Location: University of Waterloo, Waterloo, Canada

Objective: this research will develop new optimal retrieval algorithms for satellite detection of snowfall and snow accumulation across Canada's North by using instrument simulators and machine learning.

4. Cloud feedback and its far-infrared signatures in GCMs

Subproject lead: Professor Ivy Tan (ivy.tan@mcgill.ca)

Positions open: one postdoc and one PhD student

Location: McGill University, Montreal, Canada

Objective: this research will evaluate the Arctic cloud feedback in the Canadian climate model in connection with the representation of black carbon in particular.

Postdoctoral Researchers

Salary (including benefits): \$60,000CAD/year

Expected start date: ASAP

Term: One year, renewable up to 2.5 years

PhD Students

To apply for the PhD positions, interested applicants are encouraged to first contact the leads of the subprojects of their respective interests. Please send a recent academic transcript, an updated resume, and a half-page statement of research experience and interests. The successful candidates need to meet the admission requirements of the respective universities. More information can be found at the following websites:

- McGill University/Department of Atmospheric and Oceanic Sciences:
<https://www.mcgill.ca/meteo/programs-0/graduate-studies/graduate-programs>
- University of Waterloo/Department of Geography and Environmental Management:
<https://uwaterloo.ca/graduate-studies-postdoctoral-affairs/future-students/programs/geography-phd-waterloo>

Salary and benefits: set by each institution

Expected start date: January 1, 2025 (Note: application deadlines for PhD programs vary by institution and should be discussed with the lead from the appropriate institution).

How to apply

To be considered for the postdoc positions, an applicant must have a Ph.D. degree in atmospheric sciences, meteorology, physics, or a related discipline, received within the past 4 years (after January 1, 2020). The candidate shall have the ability to conduct original and independent scientific research and is expected to have experience in one or multiple of these skills:

- global or regional weather and climate modelling,
- radiative transfer modelling,
- trajectory modelling,
- satellite measurement simulation,
- analysis of model and/or satellite datasets,
- programming in Fortran, Matlab or Python on Linux systems.

Interested applicants are encouraged to directly contact the leads of the four subprojects of their interest by email, enclosing:

- a cover letter,
- a curriculum vitae,
- transcripts and academic records (B.Sc. and at the graduate-level), and
- names and contact information for at least two references.

An applicant can apply for one or multiple of these four subprojects simultaneously but is strongly recommended to clearly identify a primary subproject at the top of their application. The applications will be evaluated independently for each subproject. Evaluation of the applications will start once received and continue until all the positions are filled.

Yi Huang, McGill University
Kaley Walker, University of Toronto
Christopher Fletcher, University of Waterloo
Ivy Tan, McGill University
on behalf the HAWC SDT