

Ph.D. position available in climate modelling and analysis at the University of Waterloo

Background

It is now considered very likely that human activities are responsible for recent observed global warming, and that the Earth's climate will continue to undergo significant changes in the coming century. Yet, future climate projections remain highly uncertain at continental and regional scales; for example, it is not known whether summertime precipitation over the Midwestern United States will increase or decrease by 2100, or whether extremely cold winters in Europe will become more or less frequent. One of the primary reasons for this uncertainty, particularly in the extratropics, is that regional patterns of temperature and precipitation are linked to large-scale circulation patterns. The problem is that the fundamental physical processes driving such patterns remain only partially understood, and the effect that climate change will have on circulation is even more uncertain.

Project description

This project will use controlled numerical experiments with climate models to examine fundamental aspects of how circulation patterns will change as the mean temperature of the planet warms. The anticipated outcomes of the project are a greater understanding of circulation changes in a warming world and, consequently, reduced uncertainty in projections of regional temperature and precipitation patterns for extratropical areas.

Applicant details

There is some flexibility in the precise direction of the research depending on the applicant's own research background and interests. Therefore, all students interested in using a hierarchy of numerical models to investigate many aspects of climate variability and change, land/ocean-atmosphere interactions on seasonal-to-decadal-to-centennial timescales, are encouraged to apply. A strong quantitative background is essential, and previous computer programming and/or data analysis experience would be desirable. Funding is available in the form of Research Assistantships, and a limited number of Teaching Assistantships. The position is open to all applicants, although preference will be given to applicants who are either citizens or permanent residents of Canada.

Work environment

The work will be conducted at the University of Waterloo, Ontario, Canada (<http://www.uwaterloo.ca>) in the Department of Geography and Environmental Management, which is located within the Faculty of Environment. The student will be a member of the Interdisciplinary Centre for Climate Change (IC³), which is a network of research faculty and students across campus concerned with climate change science, impacts and adaptation (<http://www.ic3.uwaterloo.ca>). The Ph.D. programme is administered through the Joint Programme in Geography between the University of Waterloo and Wilfrid Laurier University (<http://geograd.uwaterloo.ca>).

Apply online

A formal application must be made through the University of Waterloo's online application form, available at <<http://www.grad.uwaterloo.ca>>.

For further information and informal enquiries, please contact:

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<<http://www.env.uwaterloo.ca/u/c5fletch>>