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Postdoctoral Position

PCIC is seeking to hire a postdoctoral scientist.

Pacific Climate Impacts Consortium (PCIC)

The Pacific Climate Impacts Consortium (PCIC) was created to assess climate impacts in the Pacific and Yukon Region of Canada. The goals of the Consortium are to foster collaborative research, to strengthen the capacity to address regional climate change and variability, and to provide the scientific basis for policy development. PCIC is a regional climate service centre at the University of Victoria that provides practical information on the physical impacts of climate variability and change. Through collaboration with climate researchers and regional stakeholders, PCIC produces knowledge and tools in support of long-term planning. http://www.PacificClimate.org

Challenge

The Postdoctoral Scientist works as part of a multi-disciplinary team to study scaling relationships for extreme precipitation in mid-latitude climates, including areas with complex topography, such as the Canadian western cordillera. This postdoctoral position is part of the pan-Canadian Global Water Futures (GWF) research program (https://gwf.usask.ca), led by the University of Saskatchewan, which aims to place Canada as a global leader in water science for the world's cold regions and to address the strategic needs of the Canadian economy in adapting to change and managing risks of uncertain water futures. The position will contribute to the recently funded GWF Pillar 1 project entitled "Short-duration precipitation extremes in future climate" (Yanping Li, PI), which seeks to improve the understanding of the physical processes affecting the precipitation extremes for short (sub-daily) accumulation periods and their possible changes – information that is critical for many GWF users. The work also feeds into the GWF Pillar 3 "Climate Related Precipitation Extremes" project (Stewart and Zwiers, Co-PIs), which is strongly user focused.

The Postdoctoral Scientist will undertake basic and applied research to improve our understanding of extreme precipitation scaling relationships. The scientific objectives for this position will be attained using observational data from multiple sources and regional and global climate model output at spatial resolutions ranging from convection permitting (1-4 km resolution), to regional (10-50 km), to global (>25 km). One objective for the position will be to evaluate the physical realism of model simulated sub-daily precipitation extremes at different spatial scales and to determine whether there are robust relationships between precipitation extremes at different spatial scales. This question is motivated by the need to robustly project changes in precipitation extremes at convection permitting scales and the possibility that one approach for meeting this need may be to combine information from relatively short convection permitting simulations with that from much longer and more widely available simulations at lower resolution. A second objective for the position will be to clarify the relationship between intra-annual temperature scaling for sub-daily precipitation extremes (so-called binning scaling) and inter-annual temperature scaling (trend scaling), and to identify the impacts of dynamical changes and variability on both types of scaling. This is motivated by the fact that locations where high-frequency precipitation observations are available (e.g., hourly or higher) allow the relatively robust quantification of binning scaling relationships, and the question of whether these relationships provide useful constraints on projected changes in precipitation extremes. To answer this question, more needs to be known about the relationship between binning scaling, the long term temperature scaling that links anthropogenic warming to the intensification of precipitation extremes, and circulation change on both intra-annual and interannual time scales.

An Improved understanding of these linkages will increase confidence in projected changes in sub-daily precipitation extremes. Particularly in areas with the dominant mechanism for intensification is thermodynamic.

Knowledge, Skills & Abilities

Knowledge and Experience
- PhD in the atmospheric sciences or a related area
- An understanding of and formal training in statistics, including exposure to extreme value theory
- Experience in the statistical analysis of large climate datasets including climate model output
- Experience working on interdisciplinary projects and with interdisciplinary teams
- A high level of productivity for peer-reviewed publications is expected.

Skill
- Excellent data analysis and data visualization skills
- Excellent statistical analysis skills
- Excellent communications skills
- Excellent programming skills in several languages (R, C++ and python being particularly useful)
- The applicant must have excellent multi-tasking skills

Ability
- Work in a self-directed manner and within a team environment
- Re-evaluate and adjust priorities and objectives in light of research findings and evolving requirements
- Ability to acquire, manipulate and analyze large spatiotemporal data sets.
- Ability to find creative solutions to complex, open-ended problems.
- Operate with a professional demeanor while representing PCIC and GWF at professional meetings and other venues.

Employment period

2-year term commitment.

Weekly working hours
Full time (37.5 hours per week)

Pay rate
Commensurate with education and experience.

Additional information: Address enquiries to Francis Zwiers at climate@uvic.ca.

Application: Please send your application including a cover letter, CV, and three professional references to Francis Zwiers, climate@uvic.ca, with "**ATTN: Postdoctoral Scientist**" in the subject line. Please indicate whether you are legally able to work in Canada.

Review of applicants will start **immediately** and continue until a suitable candidate is found.