

Postdoctoral Associates in Hydroclimatic Extremes and Environmental Modelling

The Hydroclimate Extremes and Climate Change Laboratory (HydroClimEX Lab) at Western University invites applications for up to two Postdoctoral Associates in Hydroclimatic Extremes and Environmental Modelling. The successful candidates will join a growing interdisciplinary research program advancing the science of hydroclimatic extremes, climate risk, and environmental modelling to support climate adaptation and resilient infrastructure. The positions are supported through a growing portfolio of collaborative research projects funded by Environment and Climate Change Canada (ECCC), the Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery and Alliance programs, and other government, industry, and academic partners. Our research integrates climate science, hydrology, atmospheric science, statistics, Earth system science, and civil/environmental engineering to better understand how hydroclimatic extremes evolve under climate change, improve prediction of compound and cascading hazards, and develop decision-relevant information for infrastructure planning and climate adaptation.

Research Areas

Successful candidates will contribute to one or more interconnected research areas including:

Hydroclimatic Extremes under Climate Change

- Compound inland and coastal flooding
- Weather whiplash and drought-flood transitions
- Concurrent and cascading extremes
- Environmental and atmospheric drivers
- Large climate ensembles, Earth system models, and future climate projections
- Multivariate characterization of hydroclimatic extremes

Environmental Modelling and Climate Risk

- Hydrologic, land-surface, and hydrodynamic modelling
- Flood hazard, impact, and risk assessment
- Climate impacts on water systems and infrastructure
- Forecasting and decision-support systems
- Climate adaptation and infrastructure resilience
- Hydroinformatics and digital environmental modelling

Research draws upon observational datasets, reanalysis products, remote sensing, regional and global climate models, large climate ensembles, high-performance computing, and process-based environmental models.

Qualifications

Applicants should have:



- A PhD (completed or nearing completion) in Hydrology, Climate Science, Atmospheric Science, Civil or Environmental Engineering, Earth System Science, Statistics, Geography, Applied Mathematics, Environmental Modelling, or a related discipline.
- A strong publication record relative to career stage.
- Excellent quantitative, analytical, and scientific programming skills.
- Strong written and verbal communication skills.
- Ability to conduct both independent and collaborative research.

Desired Expertise

We are particularly interested in candidates with experience in several of the following areas:

- Analysis of large climate and environmental datasets
- Statistical analysis of hydroclimatic extremes and climate variability
- Multivariate statistics, dependence modelling, copulas, or extreme value analysis
- Climate model analysis, large ensembles, and future climate projections
- Bias correction, statistical downscaling, and uncertainty quantification
- Hydrologic, land-surface, or hydrodynamic modelling
- Flood modelling and climate impact assessment
- Scientific programming (Python, R, MATLAB, Julia, or similar)
- High-performance computing and reproducible scientific workflows

Experience with machine learning or artificial intelligence for environmental applications is considered an asset but is not required.

Responsibilities

The successful candidates will

- Conduct innovative, high-quality research
- Publish in leading international journals
- Present research at major scientific conferences
- Collaborate with academic, government, and industry partners
- Mentor graduate and undergraduate students
- Contribute to proposal development and knowledge mobilization

What We Offer

The HydroClimEX Lab provides a collaborative and intellectually stimulating research environment with opportunities to

- Work on high-impact research supported by multiple funded projects with strong government and industry partnerships
- Collaborate with leading researchers and government scientists
- Access advanced high-performance computing and large climate datasets
- Develop an independent research profile while contributing to interdisciplinary research

- Build a competitive publication record and pursue future academic or research careers

Appointment

- Number of positions: Up to two
- Preferred start date: September 2026 or January 2027 (flexible)
- Initial appointment is for one year, with the possibility of renewal subject to performance and funding availability.

Application Materials

Please submit

- Cover letter
- Curriculum Vitae
- One- to two-page research statement
- Up to three representative publications
- Contact information for three references

Review of applications will begin on July 27, 2026, and continue until the positions are filled.

Applications and inquiries should be sent to:

M. Reza Najafi, PhD, PEng

Professor

Hydroclimate Extremes and Climate Change Lab (HydroClimEX Lab)

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Equity, Diversity and Inclusion

Western University is committed to fostering an equitable, diverse, and inclusive research environment and welcomes applications from all qualified individuals. Accommodation is available throughout the recruitment process upon request.