FULLY FUNDED PHD POSITION IN URBAN MICROCLIMATE REGULATION

TRANSFORMING BUILT AND URBAN MICROCLIMATES: ADVANCING RESILIENCE SCIENCE FOR VULNERABLE POPULATIONS IN A DECARBONIZED AND ELECTRIFIED CANADA

Urban Ecology, Urban Landscape Ecology, Urban Climate Resilience, Urban Microclimates, Nature-Based Solutions, Social-Ecological-Technological Systems, Urban Heat Island Mitigation, Environmental Justice, Urban Forestry, Urban Green Infrastructure, Urban Biodiversity, Environmental Policy, Spatial Analysis, GIS in Ecology, Urban Sustainability, Climate Adaptation

Supervisor: **Carly Ziter**
Department: **Biology**
University: **Concordia University, Montreal, Canada**
Start Date: **Fall 2026**
PhD Fellowship: 35K CAD per year for 4 years

PROJECT OVERVIEW

This project addresses rising urban heat and climate risks. It uses sensors, AI, and climate modeling to predict health impacts and improve city planning. The goal is to develop energy-efficient upgrades and green infrastructure in areas most affected by extreme heat—especially for seniors and Indigenous communities. The research helps guide real-life projects like Net-Zero neighborhoods and supports fair, science-based climate policies.

ROLE DESCRIPTION

- Collaboratively design a PhD research program on the role of urban trees and vegetation in mitigating urban heat impacts across Canadian cities, with a focus on vulnerable populations.
- Collect and analyze data on vegetation cover, structure, and diversity, and integrate these findings with urban-scale microclimate measurements (e.g., wind flow, air quality, solar radiation).
- Develop and contribute to Nature-based Solutions (NbS) datasets to understand the relationships between urban greening, urban form, and cooling effects.
- Work within an interdisciplinary team to connect ecological data with social vulnerability metrics and support policy-relevant research on urban climate adaptation.
- Engage in scenario evaluations for urban greening strategies, contributing to landscape planning and public outreach on climate resilience.

Applicants are encouraged to read this **recent review** on urban trees and cooling for an overview of potential approaches and key knowledge gaps within this field. This position is ideal for students interested in urban ecology, nature-based solutions, social-ecological-technological systems, spatial analysis, climate science, and environmental justice, and presents substantial opportunities to contribute to local urban policy and landscape planning. The ideal candidate will have an interest in drawing from both ecological and engineering/built environment approaches, and working collaboratively across disciplines.

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REQUIREMENTS

- MSc in a relevant field (e.g., biology, ecology, forestry, geography, environmental sciences, engineering, or urban planning), with interest in plant ecology, urban biodiversity, and green infrastructure.
- Experience with GIS and spatial analysis, strong data management and analytical skills.
- Excellent written and oral communication abilities and a collaborative mindset.
- Proactive in learning new ecological methods and integrating engineering/built environment approaches.
- Field experience with urban vegetation and familiarity with urban microclimate modeling tools (e.g., iTree, Envi-MET) are considered assets.
- Sufficient knowledge of climate modeling and demonstrated experience or potential to be trained in the use of climate modeling tools (e.g., WRF, GEM).
- Ability to communicate in French is an advantage but not required.

WHAT WE OFFER

- Fully funded PhD position with a guaranteed stipend of $35,000/year for four years, plus support for conferences, fieldwork, and collaborative projects.
- Opportunity to contribute to real-world climate adaptation strategies through Concordia's Volt-Age program, advancing urban resilience and equity in Canadian cities.
- Hands-on experience in urban field ecology, microclimate data collection, spatial analysis, and the development of Nature-based Solutions (NbS) datasets.
- Collaboration within an interdisciplinary research team, including ecologists, engineers, urban planners, and public policy experts, addressing the challenges of urban heat and environmental justice.
- Access to advanced research tools, including GIS platforms, environmental sensors, and urban microclimate modeling software (e.g., iTree, Envi-MET).
- Structured mentorship and professional development, with opportunities to publish in top ecology and urban sustainability journals and present at leading conferences.
- A dynamic research environment at Concordia University's Loyola Campus in Montreal, within a vibrant community of scholars dedicated to sustainability, biodiversity, and urban innovation.

HOW TO APPLY

Please send the following documents in a single PDF file to **carly.ziter@concordia.ca :**

- Cover letter expressing your interest in working in this position
- Academic CV
- Transcripts
- Names and contact information of 2 referees
- One writing sample
- Publications if any
- Any other documents that might benefit your file

Subject of the email: **Urban microclimate_Your name**

Deadline: September 1, 2025
For all questions, please contact Alisa Makusheva at alisa.makusheva@concordia.ca