

# Modeling local urban climate in arid climates to assess urban heat island mitigation and adaptation solutions

Record number : OPR-1028

## Overview

### RESEARCH DIRECTION

Dominique Derome, Professeure -  
Department of Civil and Building  
Engineering

### INFORMATION

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### ADMINISTRATIVE UNIT(S)

Faculté de génie  
Département de génie civil et de génie du  
bâtiment

### LEVEL(S)

2e cycle  
3e cycle  
Stage postdoctoral

### LOCATION(S)

Campus de Sherbrooke

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## Project Description

Cities are warmer than the surrounding rural areas, a phenomenon known as the urban heat island (UHI) effect. In addition, climate change is leading to a pronounced increase in the incidence of heat waves. The project aims to investigate the potential of vegetation and shading as components of cooling strategies for the local urban environment. The local urban climate is studied explicitly in its geometry and taking into account physical phenomena through a combination of models for wind (CFD), radiative exchange and heat and mass transport in materials and, crucially, vegetation. Solutions for mitigating the urban heat island effect and heat waves are evaluated in terms of comfort of pedestrians, dwelling balconies occupants or schoolyard children for realistic situations. Measurement campaigns will be carried out in Oujda, Morocco, for validation purposes.

This project is in collaboration with the Université Mohammed 1er in Morocco.

Applicants should have a background in building, civil or mechanical engineering, or applied physics. Candidates should be curious, creative, rigorous and highly motivated. Given the international nature of the project, fluency in English is essential. Candidates will acquire knowledge in building and urban physics, CFD, advanced modeling, urban heat islands and the impacts of climate change on cities and their inhabitants.

This project can accommodate one or more students in the following programs :

- Postdoctoral fellowship
- Doctoral thesis
- Research-type master's thesis

## Discipline(s) by

## Funding offered

Yes

# sector

## Sciences naturelles et génie

Génie civil

The last update was on 8 April 2024. The University reserves the right to modify its projects without notice.