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Poster.8: . **Convection-Permitting Model Simulation based on Local Climate Zones (LCZs) for winter in Istanbul**

[1]**Kwok Pan Chun**, [2]**Pingyu Fan**, [2]**Qing He**, [3]**Omer Yetemen**, [3]**Emir Toker**, [3]**Yasemin Ezber** and [3]**Omer Lutfi Sen**

[1] *University of the West of England*
[2] *Hong Kong Baptist University*
[3] *Istanbul Technical University*

contact: kwok.chun@uwe.ac.uk

Abstract

High resolution simulations at kilometre scales from convection-permitting models (CPMs) provide new avenues for studying the dynamics of urban regions that do not use deep convection parameterisation schemes. As a pilot investigation, a sensitive study was performed to explore the relationships between the thermal conditions and urban surface representation based on 11 types of Local Climate Zones (LCZs) in Istanbul during a winter week. Three surface schemes were considered. They are the single-layer Urban Canopy Model (UCM), the Building Environment Parameterization (BEP), and the Building Energy Model (BEM). Compared to the IMERG data, the performance of three surface schemes is comparable, although the overall BEM model performance is slightly better than the other two schemes based on correlations and root mean square errors.
The outputs of three different schemes all show that the relative positions of default land use classes are not different when the LCZ classes are introduced into simulations. Therefore, additional land use definitions based on LCZs only provide refined spatial details by redistributing energy within the area. Based on the relative positions between LCZ types, compact midrise zones (LCZ 2) have a higher temperature than open midrise zones (LCZ 5). From these pilot results, new experiments for different seasons are designed to explore how to use different regional configurations of LCZ types to promote thermal comfort and climate change resilience.