

## An investigation of the impacts of large-scale atmospheric forcing on urban moist convection via WRF-LES

Xiaoliang Zhu

Tsinghua University, Department of Hydraulic Engineering, China (zhuxl13@mails.tsinghua.edu.cn)

Investigating moist convection in urban areas is essential for understanding the influence of urbanization on the regional climate. One of major challenges limiting our understanding of urban modification of convection is the difficulty in separating the urban signature from those of topography, land-sea or land-lake boundaries, and the large-scale atmospheric forcing in field experiments or in real-case modeling studies. The present study investigates the influence of synoptic forcing on urban moist convection in an idealized large-eddy simulations framework. The influences of large-scale atmospheric forcing will be included by relaxing the vertical profile of variables in the atmosphere towards a prescribed profile. Numerical simulations under different synoptic conditions are performed with Large Eddy Simulations (LES) module in the Weather Research and Forecast (WRF) model. Preliminary results show when the potential temperature relaxed to the stable, neutral and unstable profiles, the changes of the domain averaged surface precipitation rates had different trends.