Assessment for Single layer urban canopy model in WRF by the WISE observation data in Seoul metropolitan area, South Korea

Hankyung Lee, Jae-sik Min, Joon-Bum Jee, Jung-Hoon Lee, and Jeong-Gyun Park
WISE, Hankuk University of Foreign Studies, Korea, Republic Of (lhkwnwn@naver.com)

The atmospheric flow and other meteorological elements within urban is quite influenced artificial factors such as buildings or asphalt pavement, and so on. In order to understand these urban effects, the Urban Canopy Model (UCM) in Weather Research Forecast (WRF) is employed to investigate complex physical characteristics in the urban area. The performance of single layer UCM in WRF is assessed by observation data of flux towers operated by the WISE during the year of 2016 in Seoul metropolitan area. WISE has installed flux towers in Seoul metropolitan area and generate observation data. In addition, the radiosonde data was generated to vertical observation by floating during 2016 WISE urban summer observation campaign. The comparison between numerical model results and observation of flux tower show that applying UCM is possible to simulate the change for latent heat flux similarly with observations on urban area. Also, the simulated temperature near the surface by UCM is good agreement with radiosonde observations. UCM employed in WRF shows realistic results in terms of temperature and surface heat flux, indicating thermodynamic treatment of UCM can enhance the skills of high resolution forecast model in urban area.