



## **Impact of the Land-Use Data on the Simulation of the Bucharest Urban Heat Island Using the WRF Modelling System**

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The continuous modification of land-surfaces can cause the phenomenon of Urban Heat Island (UHI) which is the tendency of an urban area to remain significantly warmer than the surrounding environment. The aim of this study is to investigate the impact of different land-use data sets on the simulation of the Bucharest Urban Heat Island using the WRF modelling system. For this purpose, simulations with the WRF (Weather Research and Forecasting) numerical weather prediction model integrated at three high resolutions (4.5km, 1.5km and 500m) were performed for 6 cases in March 2014. The model was integrated using initial and lateral boundary conditions from the COSMO (COntortium for Small-scale Modeling) limited area model and two sets of land-use data: USGS (United States Geological Survey) and MODIS (Moderate-Resolution Imaging Spectroradiometer). The results from the numerical simulations were compared against observations from two synoptic stations (urban and periurban) in the Bucharest Urban Area. The study of 2 meter temperature differences in individual hours was performed using the frequencies of urban-periurban differences in one degree temperature intervals for each hour. The temperature differences were also used to analyze the mean daily course of the Bucharest UHI intensity. Evaluation of the numerical results showed a better performance of the WRF model in capturing the phenomenon when MODIS data are employed, as well as differences in the intensity and expansion of the predicted Bucharest UHI depending on the horizontal resolution of the model.