Urban heat islands in the major Bulgarian cities

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This study investigated the impact of the urbanization and the urban heat islands on the surface air temperatures of the major Bulgarian cities using the Weather Research and Forecasting (WRF) model with 1-km horizontal resolution. We simulated three separated months of July between 2011 and 2013. First, we verified the results of control simulation against observations. The results show that the WRF model reproduced reasonably the diurnal temperature distributions for both of urban and rural areas. The model mean biases ranged from −0.76 to 0.19 °C. Second, the impacts of the urbanization on the surface air temperatures are evaluated. The results showed significant nocturnal temperatures increase by 2.2 - 3.0 °C in the urban areas compared to those in the rural areas.