



Investigation of detailed spatial structure of the Moscow urban heat island with application of the newest meteorological observations and regional climate modelling

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During the last years, the network of meteorological observation in Moscow megacity and its neighborhoods, forming the biggest urban agglomeration in Europe, was significantly extended. Several new weather stations and completely new dense network of air-quality monitoring appears during the last decade. In addition, several microwave meteorological profilers MTP 5, which are available to measure temperature at the heights from 0 to 1000 meters with 50-m resolution, were installed in the city and its surrounding. All these measurements allow revealing undiscovered features of Moscow urban climate and urban heat island (UHI). In our research, based on this data, we covered several topics related to urban climatology:

- Investigation of detailed spatial structure of Moscow UHI and its relationships with building features, such as land use and morphology of the street canyons, obtained by GIS-algorithms according (Samsonov et. al, 2015);
- Investigation of three-dimensional structure of the UHI, including its vertical extend and influence on the stratification of the atmosphere, and three-dimensional structure of the urban heat island advection and urban heat plumes;
- Application of the newest data for validation of the regional climate model COSMO-CLM, coupled with TEB urban scheme (Masson, 2000; Trusilova et. al., 2013), launched for Moscow region with 1-km spatial resolution.

References:

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