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Evaluation of thermal comfort conditions in Moscow region for 1981-2014 period with high spatial and temporal resolution.

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The main goal of this investigation is deep analysis of spatial and temporal characteristics of PET (physiological equivalent temperature) for different parts of Moscow region (Russia) as megacity and its suburbs where was recorded the strongest heat wave (2010) in Eastern Europe.

This study is based on “urban reanalysis strategy” – created in 2015-2017 database of meteorological and radiation fields under Moscow megalopolis for period 1981-2014 with high spatial resolution. Main meteorological fields for Moscow region were reproduced with COSMO_CLM regional model (including urban parameters) with horizontal resolution 1x1 km. Time resolution of output fields is 1 hour.

Also SVF (Sky View Factor) was calculated for obtaining losses of UV radiation in complex urban conditions. Usually, the raster-based SVF analysis the shadow-casting algorithm proposed by Richens (1997) is popular (see Ratti and Richens 2004, Gal et al. 2008, for example). Output radiation field includes UV-radiation with horizontal resolution 1x1 km.

PET index is calculated using RayMan model (Matzarakis et al, 2007). This model calculates the radiation temperature, average radiation fluxes and biometeorological indices (PET, PMV, SET) at a particular point at a particular time.

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