EMS Annual Meeting Abstracts
Vol. 12, EMS2015-620, 2015
15th EMS / 12th ECAM

On the assessment of urban land-surface impacts on climate in regional climate model simulations over Central Europe

Peter Huszar, Michal Belda, and Tomas Halenka
Charles University in Prague, Fac. of Mathematics and Physics, Prague, Czech Republic (tomas.halenka@mff.cuni.cz)

When aiming higher resolution in dynamical downscaling the effects of land use and land use changes are playing increasing role. For the purpose of qualifying and quantifying the impact of cities and in general the urban surfaces on climate, the surface parameterization in regional climate model RegCM4 has been extended with the Single Layer Urban Canopy Model (SLUCM), which can be used both in dynamic scale within BATS scheme and in a more detailed SUBBATS scale to treat the surface on a higher resolution subgrid. A set of experiments was performed over the period of 2005-2009 over central Europe, either without considering urban surfaces and with the SLUCM treatment. Results show a statistically significant impact of urbanized surfaces on temperature (up to 1.5 K increase in summer), on the boundary layer height (ZPBL, increases up to 50 m). Additionally, new version of land-surface scheme using CLM is tested and effect of the urban environment, which is included in the CLM scheme, will be assessed. Both versions will be compared and validated using EOBS data.