



Urbanization in regional climate modelling

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To assess the impact of cities and urban structures on weather, climate and air-quality, modelling approach is commonly used and the inclusion of urban parameterization in land-surface interactions is of primary importance to capture the urban effects properly. This is especially important when going to higher resolution, which is common trend in operational weather forecast, air-quality prediction as well as regional climate modeling. Moreover, it is necessary for proper assessment of impacts within the cities and of the effectiveness of adaptation and mitigation options applied in cities. It is valid especially for extreme heat waves impact evaluation, which are expected to appear more frequently under climate change scenarios. These issues are a part of the project within Operational Program Prague - The Pole of Growth, "Urbanization of weather forecast, air-quality prediction and climate scenarios for City of Prague", shortly URBI PRAGENSI.

Analysis of the effects in convection permitting resolution of 3 km is presented and compared to previous results in 10 km resolution. Different parameterization schemes are tested. Detailed description of the city parameters enables to see more details in urban heat island development. Selected episodes of heat waves are analyzed as well as the effects of anthropogenic heat in winter. The effects are well captured in the simulations, under heat wave conditions the temperature differences in the city center with respect to the remote areas can be achieved in the midsize city like Prague more than 5°C. The effects for other parameters like mixing layer height and wind are dependent on the parameterization method.