



Impact of urban parameterization on high resolution meteorological and air quality simulations with the GEM/LAM-AQ model

Joanna Struzewska (1), Jacek W. Kaminski (2), and Pawel Regulski (1)

(1) Warsaw University of Technology, Department of Environmental Engineering, Warsaw, Poland
(joanna.struzewska@is.pw.edu.pl), (2) WxPrime Corporation, Toronto, Canada

In meso-gamma scale simulations of atmospheric processes the differences between rural and urban areas indicate the need for using urban parameterizations. In order to assess the impact of urban cover on modelled meteorological and air quality parameters the TEB (Town Energy Balance) parameterization implemented in the GEM/LAM model (Lemonsu et al., 2007) was used.

As a base model setup the configuration of high-resolution semi-operational forecast with GEM/LAM-AQ was used (www.EcoForecast.eu). Three one-day cases representing different meteorological condition were selected. In the urban scenario the structure of the towns was described in a simplified way. Among twelve urban cover categories treated in the TEB parameterization only three were selected: mid-high buildings, sparse buildings and mix built and nature. The urban cover layers were constructed based on a fraction of towns in a grid cell.

We will show the impact of urban parameterization on modelled meteorological parameters at the surface and on the vertical structure of the temperature field. Preliminary analysis of the differences in modelled pollutants concentration fields between urban and non-urban scenarios will be also presented.

In the future, high resolution (i.e. 200m) experiments are planned. This will allow for better representation of urban structure in the model. Also, the default anthropogenic heat flux prescribed for each category will be examined and revised.