



Radiation balance model and roughness length parameter for the Prague region

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The main differences between effects of urban surface and surrounding landscape on the atmosphere are: 1) modified heat and radiation balance and 2) generally increased roughness length of the city. Together these are factors that influence the temperature and wind field over the area and consequently they also affect air quality.

One of objectives of the project is to simulate the radiation balance data and roughness length parameter in Prague. Both surface characteristics represent necessary inputs to the models simulating the urban wind fields and air pollution dispersion. Fortunately, the most important source for such computations – 3-dimensional model of buildings – was available for the studied area in sufficient quality. Based on the city geometry and other spatial data, the radiation characteristics were determined such as sky-view factor or effective albedo. The model of buildings combined with land-cover data served as an input to the surface roughness model.

All spatial computation was carried out in ArcGIS environment, as it allows comfortable and quick scripting of more advanced tasks.