Simulation of Critical Urban Climate Load Situations in Augsburg, Southern Germany, using PALM-4U

Annette Straub, Christoph Beck, and Andreas Philipp
Institute of Geography, University of Augsburg, Augsburg, Germany (annette.straub@geo.uni-augsburg.de)

As part of the research programme "Urban Climate Under Change" [UC²] the project “Strategies for Reduction of Critical Urban Climate Load Situations in Augsburg” (MIKA) focuses on the application of the LES model PALM-4U to the medium-sized city of Augsburg, Southern Germany. The main objectives of the project include the model evaluation with special emphasis on three-dimensional observations of the urban boundary layer with unmanned aircraft systems but also utilizing ground-based long-term observations of multiple meteorological and air-quality variables. Furthermore, factors and mechanisms influencing the spatio-temporal evolution of situations with critical thermal load as well as high particulate matter concentrations within the city are investigated. Finally, the development, simulation and evaluation of short- and long-term strategies for minimization of these critical situations is another aim, carried out in cooperation with the city administration of Augsburg. Possible side-effects of these measures, e.g. remote effects in the surroundings of the city, are studied.

First model runs with PALM-4U for a test domain within the city of Augsburg have been carried out and are presented and discussed.