Simulation of thermal conditions in Augsburg, Southern Germany, using PALM-4U [Abstract]

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Within the scope of the research project “Strategies for Reduction of Critical Urban Climate Load Situations in Augsburg” (MIKA), which is part of the research programme "Urban Climate Under Change” [UC^2], the LES model PALM-4U is applied in the medium-sized city of Augsburg, Southern Germany. As a first aim of the project, simulations with focus on air temperature have been performed. The simulations cover a large part of the city and its surroundings (approx. 8x6 km), and two areas of special interest are resolved in more detail. Meteorological boundary conditions are provided by the COSMO-D2 model. Two different summer days have been selected for the simulations. One day has anticyclonic conditions, is part of a heat wave and, thus, thermal stress is expected in the city. The other day, which serves as a reference day, has moderate temperatures and more mixed conditions than the day with heat stress. Furthermore, it is part of an intense observation period (IOP), which means that vertical profiles of air temperature and humidity have been measured at different sites in the city each hour with unmanned aerial vehicles (UAV) accompanied by mobile measurements with a bicycle. This is favourable for evaluating the model results.

This contribution presents some first results of the evaluation and comparison of these two PALM-4U simulations.

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