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Forecasting the weather
- ensemble techniques
in probabilistic weather prediction

Application of an urban climate model to cities in complex terrain

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The dynamical urban climate model MUKLIMO_3 has recently been applied to the city of Vienna to simulate urban heat stress under climate change conditions. The model simulates the local scale atmospheric conditions based on a high resolution topography and appropriate land use data for potential weather situations where the heat excess in the urban area is likely to occur. The cuboid method is used to perform climatological analysis based on observational time series in order to derive climate indices. Data from 15 meteorological stations in and surrounding the city of Vienna were used for model validation and show good agreements regarding the thermal distribution corresponding to the urban heat effect.
The same model set up will now be applied to other cities in Austria, namely Linz, Salzburg, Innsbruck, Klagenfurt and Graz, in order to evaluate the model performance and climatological analysis of the heat island effect under various boundary conditions. The main challenges emerge from the complex terrain surrounding e.g. the cities Klagenfurt and Innsbruck and the impact of the topography on the circulation pattern. Further, an analysis of the impact of the regional climate on the evolution of the urban heat effect will be performed. The study is planned to be performed in cooperation with city administrations and results are intended to help with future city planning.