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Long-term impact of urban areas on meteorological conditions on Prague urban climate

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Urban environments are hotspots of anthropogenic emissions, impact the warming rate over cities, and induce changes in several relevant meteorological variables such as wind speed, humidity and temperature, which in turn affect air quality and human health. Therefore, it is important to identify how urban parameterizations impact the regional-to-local scale processes in regional climate model simulations. To evaluate these impacts, we use the Weather Research and Forecasting (WRF) model with different urban schemes. The simulated period covers a timespan of 10 year and has an especial focus on the city of Prague (Czech Republic). To evaluate the results obtained, data from observations from the Czech Hydrometeorological Institute were used. Changes in temperature and specific humidity are mostly sensitive to the urban scheme selected, while changes in precipitation and cloud cover are less sensitive to the urban parameterization but more sensitive to the parameterization of convection and microphysics.