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Urban Heat Island of Prague and it's effect on day to day temperature variation

Michal Zak, Vit Kveton, and Pavel Zahradnicek
Czech Hydrometeorological Institute, Prague & Brno, Czech Republic (xamicus@gmail.com)

Urban heat island (UHI) of Prague has been studied for several times, usually using the comparison of urban–rural station pairs (for Prague, there are long-term time series for the urban as well as rural positions available). These results provide us information about intensity of UHI of Prague, its annual course and long-term changes under the era of climate change. The city itself underwent large changes in the industrialization level, transportation intensity as well as spread of built-up areas as well as the density of the buidlings.
But the effect of the UHI on the day-to-day temperature variability has never been studied, at our best knowledge. In this paper we answer the question „How the Urban Heat Island influences day-to-day temperature variation in the conditions of central Europe?“ on long term scale, mirroring the increasing extension of urbanization in the area of Prague. For this purpose, we use both, the difference between the day-to-day variation of daytime maximum temperatures, as well as night-time minimum temperatures. The effect of different weather situations (anticyclonic, cyclonic type, direction of wind etc.) on these differences is analysed, too. This analysis is provided not only for the urban stations, but for the rural ones, too. These results could help in deciding which stations from the rural ones can be suitable for UHI analysis in order to eliminate urban signal in the rural stations. Our results are supposed to get more deep knowledge of the Prague city's climate. And the comparison with selected similar analysis for cities in other parts of the world is provided, as well.