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High-resolution climate model data over EURO-CORDEX with a focus on cities

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To investigate the effect of climate change on cities and climate adaptation strategies in cities, high-resolution climate model data is needed to resolve urban-rural and intra-urban processes. Due to computational limits, it is currently impossible to create long-term (sub-)kilometric simulations over extended regional domains, such as the EURO-CORDEX domain (Jacob et al., 2020). However, short-term climate simulations at 2.5 km horizontal resolution were performed over Europe with the atmospheric model ALARO which was coupled to the land surface model SURFEX. The model output has been validated against conventional datasets and non-traditional measurements such as those of urban meteorological networks (Caluwaerts et al., 2021). Including non-traditional meteorological measurements is important to verify whether the model captures the urban signature well. Further, a methodology will be presented to obtain climate projections with a more detailed spatial resolution over several European cities. The added value of this new avenue using machine learning to emulate the climatological characteristics from a limited set of cities and generalise this to other cities in the EURO-CORDEX domain will be investigated.

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