Poster.8: . **Using a high-resolution regional climate model for studying urban climate evolution in cities of northwestern Europe**

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Abstract

Nowadays, cities account for nearly half of the world's population. Given the major environmental, economic, and health issues there identified, it is essential to better understand and evaluate precisely the expected impacts of climate change on urban areas and populations.

The latest advances in regional climate modeling allow simulations to be performed over longer time periods with finer horizontal resolutions of up to few kilometers. The scientific community emphasizes the considerable improvements linked to the use of these Convection-Permitting Models (CPMs), especially for the representation of small-scale phenomena, as well as for extreme weather events such as heat waves. Also, CPMs offer a very interesting modeling framework for urban studies, in particular through the explicit coupling with devoted urban parameterization.

In this study, the French weather forecasting model AROME adapted to climate simulations (CPM CNRM-AROME) and coupled to the Town Energy Balance model is used at 2.5 km resolution. Simulations were carried out over a large northwestern European domain as part of the EUropean Climate Prediction system (EUCP) project over an historical period (1996-2005) and mid- and longterm future periods (2041-2050 and 2090-2099) using the RCP8.5 scenario. This study aims to investigate the urban climate evolution in northwestern Europe cities (including urban heat island) in interaction with regional climate change, and to assess the impacts on populations.