Poster.1: . What added value of CNRM-AROME convection-permitting regional climate model compared to CNRM-ALADIN regional climate model for urban climate studies ? Evaluation over Paris area (France)

[1]**Aude LEMONSU**, [1]**Cécile Caillaud**, [1]**Antoinette Alias**, [1]**Yann SEITY**, [1]**Sébastien RIETTE**, [1]**Benjamin LE ROY**, [1]**Yohanna MICHAU** and [1]**Philippe LUCAS-PICHER**

[1]*CNRM, Université de Toulouse, Météo-France/CNRS, 42 avenue Gaspard Coriolis, 31057 Toulouse, CEDEX, France*

contact: aude.lemonsu@meteo.fr

Abstract

Convection-permitting regional climate models (CP-RCM) are promising tools for urban studies, due to fine horizontal resolution, more accurate land use mapping and better resolved local-scale processes. Especially, some CP-RCMs run urban-canopy models (UCM) inline to deal with surface-atmosphere exchanges in cities and to explicit interactions between urban and regional climate.

The focus here is on the French CP-RCM CNRM-AROME which is running with a 2.5-km horizontal resolution and coupled to the TEB UCM. CNRM-AROME was applied on a domain restricted to the northern half of France for analyzing its performances in simulating urban climate of Paris region. This choice was motivated both by the urban context, since the Paris metropolitan area is the largest and most populated in France, and by the availability of gridded long-term observations to conduct a climatological-scale evaluation of the simulation and of urban effects. In this study, attention was also paid to the possible added-value of CNRM-AROME compared to the CNRM-ALADIN RCM, which has a coarser resolution of 12.5 km and describes the urban areas as rocky surfaces with high roughness.

Some systematic biases were noted, especially for precipitation, that currently motivate investigations for improving physical and dynamic parameterisations. Nonetheless, the results showed that the CP-RCM better captures intensity and spatial variability of urban heat islands, and maps of heatwave warnings over the region.