

Poster.4: . **Convection-permitting climate simulations for South America: a land-surface perspective (with insights from Europe and Africa)**

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Abstract

Convection-permitting models have been shown to improve the precipitation intensity distribution compared with observations by decreasing the amount of light precipitation and increasing the amount of heavy precipitation. As convection-permitting models are increasingly applied at climate timescales, it is becoming more important to understand the behaviour of the land surface within these models. The Met Office now has CPM climate simulations of at least 10 years in length for several regions including South America in which the effect of the shift in the precipitation intensity distribution on land surface interactions and in particular hydrology, can be explored. We introduce the South American CPM simulations, indicating the areas of added value. We also highlight the common themes that emerge from these and related experiments for Africa, and report on sensitivity tests for Europe, in which different land surface setups are compared. We find consistent differences in the relative contribution of soil evaporation and canopy evaporation to total evaporation in CPM simulations compared to those with parametrised convection, which we attribute to the shift in precipitation intensity distribution. This has implications for the amount of rainfall partitioned into runoff and feedbacks from soil moisture to the surface energy budget and precipitation. Furthermore, our results have implications for the land surface scheme in future CPM climate simulations.