



## **Impact of RCM resolution and parameterisation on climate projections in Africa**

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Simulated climate conditions often differ between Regional Climate Models (RCMs) and their driving Global Climate Models (GCMs). It is usually not straightforward to isolate if differences are due to different description of physical processes and/or resolution-related aspects, especially for future climate projections. To investigate this, we conducted experiments with the RCM RCA4 downscaling two GCMs (EC-EARTH and MIROC5) under the RCP8.5 scenario over the CORDEX-Africa domain. To test the sensitivity of the scale-related effects, we ran the RCM experiments at i) the standard CORDEX 0.44° spatial resolution and ii) at the spatial resolution of the driving GCMs (about 1.1° for EC-EARTH and 1.4° for MIROC5). To test the sensitivity to the description of physical processes we ran RCA4 in two versions differing only in the treatment of boundary layer processes. We found that effects of increased resolution in RCA4 for climate change projection, including projected spatial and temporal precipitation patterns, as well as extremes, vary depending on region and season. We also note that some of these effects are common to RCA4 simulations despite of which GCM that is used. This study may give useful implication to the utility of RCMs, especially when it comes to the theme of climate services.

Keywords: RCM, added value, CORDEX-Africa, Climate Change