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The Phase I CORDEX REgCM4 hyper-MAtrix (CREMA) experiment: the African domain

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The Phase I CREMA experiment is the first contribution of the RegCM regional modelling community to the Coordinated Regional Downscaling Experiment (CORDEX). It consists of a series of scenario simulations over five CORDEX domains completed with the RegCM4 RCM driven by different CMIP5 GCMs.
For the African domain three simulations have been completed from 1970 up to 2099, two have been driven by HADGEM2ES for RCP4.5 and RCP8.5 with one RegCM configuration and one driven by MPI-ESMMR for RCP8.5 with a different RegCM configuration.
While the temperature changes are strongly driven by the global model, the precipitation change patterns of the regional model are different compared to the global models.
According to Mariotti et al. 2011, it is confirmed that the local processes and internal model physics are key elements in determining the precipitation change signal simulated by the nested regional model in this large domain experiment, especially over equatorial and tropical regions. In particular over Western Africa, the Sahel region and Southern Africa, there is a reduction of the precipitation in the early season of the monsoon and an increase in the late part of the season for the future scenario (Seth et al. 2010).