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CORDEX Africa Group: Evaluation of the CORDEX RCMs over West Africa, preliminary results

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The CORDEX-Africa analysis initiative was developed to investigate the multi-model ensemble of regionally downscaled data for the African continent produced through the CORDEX project. In the continuing quest to improve climate model predictions to meet the increasing demand for knowledge on the regional effects of global climate change, it is pertinent to increase our understanding of how the underlying processes of climate are represented in the models we use to make these predictions. Under the CORDEX initiative, long-term global model driven climatologies will be used to downscale regional climate change scenarios for vulnerable regions such as West Africa and it becomes necessary to investigate how the participating regional models downscale the present climate over such regions. This is essential given that most regional models, when applied over the tropics, often display systematic differences with a land-sea contrast. This study evaluates the performance of a suite of 10 regional climate models (RCMs) in reproducing rainfall characteristics over West Africa at the diurnal and seasonal time scales. The ability of models to resolve these cycles correctly is a diagnostic metric of their predictive capabilities. This assessment uses high temporal resolution (3-hrly) simulations from each model, all forced on the lateral boundaries by the ERA-INTERIM reanalysis and covering the period 1989-2008. Rainfall is a key feature of the West African Monsoon (WAM) which reaches a peak between the months of July and September (JAS), thus the diurnal and seasonal cycles of rainfall as reproduced by the models are examined for this period. Individual model biases are assessed with respect to two satellite derived (TRMM, CMORPH) and two gauge based (GPCC, CRU) precipitation products. The ensemble of all the participating models is also assessed and the results discussed. Keywords: CORDEX, Regional climate Models, West Africa, Cluster Poster