

The West African monsoon as simulated by an ensemble of 10 RCMs

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We present a first evaluation of an ensemble of 10 RCM simulations over Africa, all run at ~50km resolution and forced by ERA-Interim reanalysis (1989-2008). These runs constitute the first set of CORDEX-Africa simulations. In this presentation we concentrate on the ability of the RCMs to simulate the West African Monsoon (WAM), by evaluating the climatological WAM in terms of: onset date, monsoon duration, seasonal mean intensity, latitudinal propagation and intra-seasonal variability, in particular the representation of higher-order (daily) precipitation and break cycles within the monsoon season. Similar analysis is made to assess the WAM interannual variability when the RCMs are driven by reanalysed boundary conditions. Our evaluation concentrates primarily on precipitation due to its high importance to societal activities in the region. Each of the individual RCMs simulates the mean WAM with differing levels of accuracy. Most capture the WAM rainfall maxima, one over the Gulf of Guinea in late May - early June and another in the Sahel region in August, although the positioning, intensity and duration of these maxima differ across the models. A number of the RCMs accurately capture the onset date of the WAM and its rapid northward progression into the Sahel region in early July. Several models exhibit a second rainfall maximum over the Gulf of Guinea in November that is not supported by observations. The multi-model ensemble mean generally outperforms all the individual RCMs, providing a significant improvement over the ERA-interim WAM precipitation.