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Projected changes in the West African Monsoon from an ensemble of Africa-CORDEX simulations

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We analyse the West African Monsoon (WAM) in an ensemble of regional climate simulations produced within the Africa-CORDEX activities. All simulations are performed at about 50 km spatial resolution by one regional climate model - RCA4 which is driven by several different AOGCMs for the historical period (1951-2005) and two scenarios - RCP45 and 85 (2006-2100). The WAM is characterized in terms of: onset date, monsoon duration, seasonal mean precipitation intensity, latitudinal propagation, and intra-seasonal variability, in particular the representation of higher-order (daily) precipitation and break cycles within the monsoon season. To see what added value higher resolution can provide first we document ability of the driving AOGCMs to simulate the WAM for the historical period and compare these results to the downscaled RCA4 results. Possible future changes in the WAM climatology are analysed for both AOGCM and RCA4 simulations and for three subsequent time slices: 2011-2040, 2041-2070 and 2071-2100. A special emphasis, using continuous time series of WAM characteristics, is on the projected changes in the WAM variability from intra-seasonal to multi-decadal time scales.