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How do the large-scale models represent the West African intra-seasonal variability and its relationship with remote or local forcing.

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West Africa is characterized by well defined strong meridian surface gradients coupled to specific atmospheric circulations, such as the African Easterly jet (AEJ) which is present during the monsoon season. The location of the AEJ itself is strongly constrained by meridian surface temperature and moisture gradients. Synoptic variability in turn is dominated by African easterly waves (AEW) which are dynamically linked to the AEJ.
The structure and variability of these basic large-scale features involve complex interactions with soil, surface, turbulent and convective processes occurring on different scales. Finally, the intra-seasonal variability is influenced by large-scale forcing, i.e. remote oceans (Pacific, Indian ocean) force the mean tropical circulation which in turn determines the intra-seasonal variability over West Africa, and/or they force the intra-seasonal processes travelling into the West African region.
The extent to which large-scale models for climate projection or for seasonal forecast are able to properly reproduce this part of the climate variability remains unclear, and likely sensitive to changes in the physical parametrizations.
Here, we present the analysis of AR4 simulations (present climate) in order to detangle local from remote forcing and to provide an alternative regional metric for West Africa.