

## 4.054 Dust induced changes on the West African summer monsoon features.

Early Career Scientist

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Abstract:

Dust generation and transportation from North Africa are thought to modulate the West African Monsoon (WAM) features. In this study, we investigated the relationship between the Saharan Air Layer located above Atlantic Ocean (OSAL) and WAM features, including Monsoon flow, African Easterly Jet (AEJ) and Tropical Easterly Jet (TEJ) over West Africa using the RegCM4 regional model at 30 km grid resolution. Two sets of experiments with and without dust load were performed between 2007 and 2013 over the simulation domain, encompassing the whole of West Africa and a large part of the adjacent Atlantic Ocean. An intercomparison of the two simulations shows that dust load into the atmosphere greatly influences both the wind and temperature structure at different levels, resulting in the observed changes in the main features of the WAM system during summer. These changes lead to a westward shift with a slight strengthening of AEJ core over tropical Atlantic and weakening of both TEJ and monsoon flux penetration over land. In addition, despite running the RegCM4 with prescribed sea surface temperature, a correlation has been found between Aerosol Optical Depths in OSAL and WAM dynamics suggesting a mechanistic link between dust and WAM well reproduced by RegCM4.