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West African rainfall response to SST anomalies in the equatorial Atlantic

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It is well known that the two leading modes of West African summer rainfall variability are the Sahelian and Guinean Gulf precipitation patterns; the latter of which is highly linked to SST anomalies in the Equatorial Atlantic Ocean. In addition, a strong link has been found during the last decades, between summer precipitation anomalies in West Africa and SST variations in the tropical Atlantic. In the framework of the AMMA-EU project, the role played by the different tropical ocean basins on the interannual variability of the West African Monsoon (WAM) is being examined. The method used is based on a coordinated set of atmospheric general circulation model (AGCM) sensitivity experiments with idealized SST boundary conditions. These are obtained by applying a Multi-dimensional Extended Maximum Covariance Analyses to extract the main coupled modes of variability between West African rainfall and SST in the different ocean basins. In most AGCMs, the Equatorial Atlantic SST mode is the one most related to the precipitation anomalies in the Gulf of Guinea. The present work presents the main findings of the sensitivity experiment done for the Atlantic canonical mode with the UCLA AGCM. An analysis of different atmospheric thermo-dynamical and dynamical variables is performed to study the influence of the Equatorial Atlantic SST Mode on the WAM.