



Teleconnections between rainfall in West Africa and Tropical Ocean SST

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The main forcing of the West African Monsoon (WAM) variability is the global SST, with the interannual variability related to the Tropical Atlantic, and the long-term trends related to the interhemispheric SST gradient. The ENSO also plays a role, but the its weight is still debated.

Using ERSST and CRU rainfall data, we analyze the relation between the WAM rainfall in JAS and the Tropical Ocean SST in JAS and in the seasons preceding the WAM, separating the high-frequency and the low-frequency components. Aiming to robust predictors capable to forecast the interannual variability and the decadal trends of the WAM cumulated precipitation, different statistical methods are used in the search of the predictors (linear SST-rain correlation, PCA, CCA) and the predictive skills are compared. We work using a cross-validation approach and the dynamical features of the teleconnections are explored using composite analysis.

Results confirm the importance of the Tropical Atlantic and of the ENSO for the interannual variability, and the importance of the global meridional SST gradient for the decadal variability. The predictive skills of the used methods are not very different and show the possibility to forecast the WAM precipitation with 3-6 months lead time.