

IPRC Seminar

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“On the predictability of the equatorial Atlantic”

The tropical Atlantic is characterized by pronounced variability on interannual to decadal time scales that has been shown to affect rainfall over the Sahel region and South America, and to influence El-Niño-Southern Oscillation and global temperature trends. Thus prediction of tropical Atlantic variability is of great importance but current state-of-the-art dynamical prediction systems continue to be matched or even outperformed by persistence and statistical forecasts. This is particularly obvious in the equatorial Atlantic. The present study examines the role of internal atmospheric variability and remote forcing in equatorial Atlantic variability using the SINTEX-F GCM. In the control experiment, SST are strongly restored to observed SST for the period 1982-2014, while in the sensitivity experiments the SST are restored to observed annual climatology in three selected regions: the tropical Pacific, the tropical Atlantic, and the global oceans. Results suggest that a substantial portion of tropical Atlantic wind variability is due to internal atmospheric processes and therefore not predictable. The remaining surface wind variability, in both the equatorial and northern tropical Atlantic, appears to be remotely influenced. This suggests a diminished role for local coupled feedbacks like the Bjerknes feedback. On the other hand, it leaves open the possibility of more skillful tropical Atlantic prediction if remote SSTs and their influence on the Atlantic can be predicted more accurately.

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