



Statistical toy models of the tropical Atlantic and Indian Ocean-atmosphere interaction and their interactions with ENSO

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Simple low-order dynamical toy models, fitted to observational data, are used to address the question whether a mechanism analogue to ENSO also exists in the Atlantic or Indian Ocean. The observed dynamics of the equatorial Atlantic turns out to be described well by the recharge oscillator model, whereas it seems to be surprisingly independent of the Pacific ENSO forcing. The opposite holds for the Indian Ocean, which is well described by a red noise process strongly forced by ENSO.

Further, a possible feedback of the tropical Indian and Atlantic Oceans on ENSO is investigated. It is found that the Indian Ocean tends to damp the ENSO oscillation and is responsible for a frequency shift to shorter periods. However, predictions can hardly be improved by explicitly including the Indian Ocean SST. The interactions between the Atlantic Ocean and ENSO are generally weak, but some feedback from the Atlantic on ENSO seem to exist.