

ROLE OF THE INDIAN OCEAN SALINITY IN MONSOON AND ENSO VARIABILITY  
AS SIMULATED BY A COUPLED OCEAN-ATMOSPHERE SYSTEM

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Our results are based on observations and simulations of the Indian and tropical Pacific oceans/atmosphere over the period 1980-2000. First, we demonstrate with a thermodynamic reduced-gravity model of the Indian Ocean that salinity changes induced by wind and rainfall interannual anomalies improve the simulations of SST anomalies.

Second, we demonstrate with a quasi-equilibrium tropical atmosphere model that the SST anomalies of the Indian Ocean improve the simulations of the wind and rainfall in the Indian ocean and in the western tropical Pacific.

Third, we demonstrate with a thermodynamic reduced-gravity model of the tropical Pacific coupled to the tropical atmosphere that El Nino forecasts can be strongly influenced by the Indian ocean SSTs.

Finally, experiments are performed where the tropical atmosphere is coupled to the Indian Ocean model and forced by conditions observed over 1980-2000 elsewhere. Results demonstrate that in addition of being sensitive to the Pacific events, the Monsoon winds and rainfall are significantly sensitive to the halo-thermo-dynamics processes of the Indian Ocean.