

Ocean - Atmosphere Variability in the Indian Ocean: ENSO, Monsoon, Coupled Internal Dynamics

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Numerical simulations with a global coupled ocean-atmosphere model and a regional (Indian ocean only) coupled model are examined to investigate the nature of variability in the Indian Ocean produced by the internal dynamics of the in-situ coupled system, and forced by the remaining global circulation.

From an analysis of past observations of upper ocean heat content, precipitation and atmosphere circulation, it is shown that a major part of the fluctuations El Nino, monsoons, and the Indian Ocean are an integral part of a single very large scale coupled process which manifests itself through the east-west displacements of precipitation over the maritime continent, and the associated changes in the Walker Circulation. Multi-decadal simulations demonstrate that the ENSO-monsoon variability is indeed a manifestation of coupled processes in the global tropics.

Variability and Predictability of regional climate anomalies (India rainfall, Indian ocean zonal mode etc) will also be discussed in the lecture.

Monday III (Keynote talk)