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Title: The Indian Ocean Dipole: Variability and teleconnections

Abstract:

The IOD is largely an independent phenomenon evolving because of intra-basin coupled dynamics. Many IOD events are shown to occur independently of the El Niño. Our circulation analysis shows that the circulation during the pure IOD events over the Indian/Pacific Ocean distinctly different from that during the El Niño events. Our power spectral and wavelet power spectrum analyses bring out the disparate periods of El Niño and IOD events, and the wavelet coherence analysis demonstrates the coupled nature of the IOD events. Using an AGCM along with observational datasets, we examine the tropical atmospheric response to IOD particularly during boreal summer, and discuss the energetics. As examples of the IOD teleconnections, we demonstrate how the positive IOD events reduce the rainfall over South-Western and southern Australia regions. IOD events reduce the impact of the ENSO events on Indian summer monsoon. The impact of the IOD events on the ENSO-Indian monsoon relationship is also discussed. Using outputs from long coupled model integration, we present the possibility of the existence of decadal and centennial modes of the IOD.

Presentation Mode:

Keywords: Indian Ocean Dipole, ENSO, Coupled process, teleconnections, GCM, monsoon, Australian winter rainfall, climate variability, interannual, decadal, centennial

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