

Near-Equatorial Convective Regimes over the Indian Ocean as Revealed by Synergistic Analysis of Satellite Observations

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We examine the organization and temporal evolution of deep convection in relation to the low level flow over the western Indian Ocean by a synergistic analysis of several satellite datasets for wind, rainfall, freshwater flux, Outgoing Longwave Radiation (OLR) and cloud liquid water. We show that during the active Indian monsoon season, symmetric instability is present and is directly linked to organized convection and the off-equatorial location of the ITCZ. The inertial regime interacts with and is controlled by monsoon and cross-equatorial flow. We characterize the dominant regimes of deep convective organization and the possible ocean-atmosphere mechanism that control them at different phases of the Indian Monsoon. Ongoing work on development algorithms for automated identification of convective regimes in climate data and their application and testing on 30 years of OLR data are discussed.