



Analysis of the Quasi-Biweekly Oscillation in the Indian Ocean using Satellite Observations and Coupled Model Simulations

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Intraseasonal oscillations (ISOs) significantly contribute to the variability and strength of heavy rainfall associated with the Indian Summer Monsoon. The westward-propagating quasi-biweekly ISO (10-20-day mode) increases the momentum and moisture flux from the Western Pacific Ocean and South China Sea to the Bay of Bengal and Indian subcontinent that intensifies monsoonal rainfall rates. The quasi-biweekly ISO has a double cell structure positioned over 15-20°N and 0-5°N. The atmospheric systems associated with this ISO, particularly the northernmost cell, induce shifts in circulation that directly impact the strength and timing of active and break monsoon periods, which are respectively characterized by wet and dry conditions. Though the overall dynamical processes associated with this mode of variability are reasonably well understood, the quality of the signal in oceanic variables and processes has yet to be fully explored. Here we conduct a multivariate analysis of the quasi-biweekly ISO to both assess the overall characteristics of the ISO in multiple oceanic variables (salinity, temperature, ocean heat content, and mixed layer depth) and to analyze how deep the biweekly signal penetrates into the oceans. This novel research utilizes a combination of satellite, in situ observations, and NOAA's Climate Forecast System version 2 (CFSv2) to examine the characteristics of this mode for the 2015-2018 Indian Summer Monsoon seasons.