

Impact of Intraseasonal Waves on Angolan Warm and Cold Events

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The intraseasonal variability of the tropical eastern boundary upwelling region in the Atlantic Ocean is investigated using multiyear mooring and satellite data. Pronounced oscillations of alongshore velocity and sea level off Angola at periods of about 90 and 120 days are observed. Similar spectral peaks are detected along the equator suggesting an equatorial forcing via equatorial and coastally trapped waves. Equatorial variability at 90 days is enhanced only in the eastern Atlantic likely forced by local zonal wind fluctuations. Variability at 120 days is generally stronger and linked to a second equatorial basin mode covering the whole equatorial basin. Besides forcing of the 120-day variability by equatorial zonal winds, additional forcing of the resonant basin mode likely originates in the central and western tropical North Atlantic. The coastally trapped waves generated at the eastern boundary by the impinging equatorial Kelvin waves that are detected through their variations in sea level anomaly are associated with corresponding sea surface temperature anomalies delayed by about 14 days. Off Angola, those intraseasonal waves interfere with major coastal warm and cold events that occur every few years by either enhancing them as for the Benguela Niño in 1995 or damping them as for the warm event in 2001.

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