Multisensor Studies on El Niño-Southern Oscinations and Variabilities in the Equatorial Pacific

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Abstract

The variabilities of the western Pacific warm pool, including areas of the warm pool, positions of the gravitational center, sea surface temperature anomalies, and sea surface height anomalies are studied using Florida State University wind data. ERS - 1, 2, and NSCAT scatterometer wind data. Reynolds optimum interpolation and historical reconstructed sea surface temperature data, and TOPEX/Poseidon sea surface height data. The relationship between the westerly wind forcing and corresponding sea surface height and sea surface temperature responses in the tropical Pacific Ocean during El Niño and other years are analyzed. A common characteristic for typical El Niño events is found and explained by the westerly wind pattern. Time-frequency analysis of the Topex/Poseidon sea level deviation time series along the equator using the Empirical Mode Decomposition-Hilbert Spectrum method is also performed.