



Sea level variation in the tropical Pacific Ocean during recent El Niño Modoki and canonical El Niño events

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Sea level variations in the tropical Pacific (TP) are conducted by the altimetry sea level anomaly data from AVISO during December 1992 and March 2010, with the temperature data provided by Ishii. It is illustrated the interannual variability of sea level in TP and the relationships with the two types of El Niño phenomena. The interannual variations in TP are multi-timescale with primary period of 30 and 52 month and spatial non-uniformly which mainly located in the east of Philippines and equatorial pacific. The magnitude of interannual variation is almost equal to the seasonal variation in the east of Philippines. Using composite analysis, a sea-saw mode of sea level is dominant during canonical El Niño in comparison with a “shuttle” shape locates mainly in central pacific when El Niño Modoki. The variability of the heat content and wind affect TP sea level variation. The further discussion of wind influence in the east of Philippines shows that remote effect contributions accounting for the interannual variations of sea level anomaly occupy about 50% and 40% is larger than local effect which takes up 20% and 10% in development and mature stage of canonical El Niño. The local effect contributions are 20%, 30% and the remote values are 5%, 10% with the evolution of El Niño Modoki.