



The impact of basic state on the central Pacific ENSO during the last decade

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El Niño/Southern Oscillation (ENSO) phenomenon lately appears to have a much fast pace with four warming events in the past decade (2002–2012). Three out of four events have their warming centers confined in the equatorial central Pacific, thereby making the central Pacific El Niño/ENSO as the dominant ENSO pattern. It is argued in this study that the anomalous zonal sea currents are responsible for the fast transition of the central Pacific warming, while the thermocline feedback accelerates the growth of SSTA. A stability analysis is performed using a simple stripped-down coupled model with two different basic state settings derived from the periods over 1982–2001 and 2002–2012, respectively. The mode under the basic state in the earlier period resembles the eastern Pacific ENSO and behaves like a slow recharge mode with a period about 5 years, whereas under the basic state in the recent decade, the ENSO mode becomes more like the observed central Pacific ENSO with a period about 2 years. The slow eastern Pacific ENSO mode is dominated by the thermocline feedback, whereas the zonal advective feedback plays a significant role in the fast-paced central Pacific ENSO mode. These results are roughly consistent with the broad features of two types of ENSO. In a word, the recent fast-paced ENSO activities in the central Pacific is suggested due to the dominance of zonal advective feedback favored by the tropical Pacific basic state conditions in the past decade.