



Influence of El Niño Modoki on Spring Rainfall

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Using observed datasets from 1979 to 2006, the relationship between El Niño Modoki and spring rainfall over south China (SC) is investigated. Of particular interest is the difference in the influence on spring rainfall of typical El Niño events, and the recently recognized El Niño Modoki events, which are characterized by distinct warm sea surface temperature anomalies (SSTA) in the central Pacific and weaker cold anomalies in the western and eastern parts of the basin. Associated with the SSTA, anomalous ascent occurs over the central Pacific and downward flow is observed over the eastern and western Pacific. The anomalous flow is associated with anomalous convergence in the upper troposphere over the western Pacific. SC is influenced by an anomalous anticyclonic circulation with prevailing northeasterly anomalies. The convective activity in SC becomes weaker, resulting in reduced rainfall. However, the situation is different in the case of El Niño, in terms of the influence on rainfall over SC. While El Niño Modoki events are accompanied by a significant reduction in rainfall over SC, there is enhanced rainfall associated with El Niño events. Moreover, there exists a strong asymmetry in the relationship between SC spring rainfall, typical ENSO and ENSO Modoki events. It appears that these relationships are only statistically significant for positive events. The asymmetric influence of positive and negative in two ENSO phenomena may explain the difference in their respective relationships with spring rainfall over SC.