

## The interaction between the Madden-Julian Oscillation and ENSO in the tropical Pacific

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The Madden-Julian oscillation (MJO) is the dominant intraseasonal mode in the tropics and sometimes causes synoptic-scale disturbances accompanied by strong equatorial westerly winds, termed westerly wind bursts (WWBs). WWBs over the Pacific have been known to accelerate El Nino through exciting oceanic Kelvin waves. In this study, MJO behaviors and oceanic responses under the different El Nino-Southern Oscillation (ENSO) phases are examined. During the El Nino developing phases, strong westerly wind forcing and downwelling oceanic Kelvin waves are found in association with MJO convection in the western and central Pacific. On the other hand, the equatorial wind forcing and oceanic responses are weak during the other ENSO phases even though MJO convection has almost the same amplitude. Thus, favorable background states for the WWB generation from MJO and in turn strong impacts on the ocean are associated with ENSO phases.

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