

Influence of the Madden-Julian Oscillation on Indonesian rainfall variability in austral summer

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Abstract

The impact of the Madden-Julian Oscillation (MJO) on Indonesian rainfall variability in austral summer is analysed by using the daily station rain gauge data and Tropical Rainfall Measuring Mission precipitation data for the periods of 1979 through 1990 and 1998 through 2006, respectively. Composite analysis of 21 and 16 MJO events identified in former respective periods shows that the rainfall variability over Indonesia is significantly affected by the phase of eastward-propagating MJO. Excess rainfall is brought during 'wet' phase, when the convective activity reaches its maximum with enhanced low-level wind convergence over the region. In addition, the impact of MJO tends to be more profound over the surrounding seas than over the large islands of this region. The positive rainfall anomaly over the eastern Indian Ocean and Java Sea during the wet phase is up to 5 mm/day (60% of the long-term mean) as a pentad mean, while it is about 1-3 mm/day (10-30%) over Borneo and Java. Copyright © 2009 Royal Meteorological Society.

Keywords

MJO • TRMM • Indonesian rainfall

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