

MJO-induced precipitation change in East Asia and its modulation by QBO

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The amount of wintertime precipitation in East Asia tends to increase (decrease) as the MJO convection thrives (stagnates) in the eastern Indian Ocean. By using in-situ precipitation data, we reaffirmed that the East Asian precipitation response to MJO is stronger in MJO phases 2-3 and 6-8 (with an opposite sign) than in other phases. Regarding the fact that MJO convection is typically stronger during the easterly QBO phase than during the westerly phase, the MJO teleconnection and the associated precipitation change in East Asia are further explored for the two QBO phases. It turns out that atmospheric circulation change in response to MJO is indeed stronger during the easterly QBO winters, causing a larger precipitation response. Essentially the same result is also found when gauge-based precipitation reanalysis is used. This result is not sensitive to the exclusion of ENSO winters, indicating that the modulation of MJO teleconnection by QBO is not influenced by the ENSO.

Key words: MJO, QBO, Teleconnection, East Asian precipitation