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Modulation of Indonesian rainfall variability by the Madden-Julian Oscillation

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Modulation of Indonesian rainfall variability by the Madden-Julian Oscillation (MJO) has been investigated by using daily rainfall data obtained during 12 years at 31 rain gauge stations over the country. By calculating mean rainfall anomalies for each phase of the MJO we found that most stations show positive anomalies during wet phase and negative anomalies in dry phase of the MJO. To provide further confidence for this result, we examined the difference of rainfall anomalies between the wet phase and dry phase of the MJO. Interestingly, the impact of MJO phase on rainfall variation tends to influence the eastern and western part of Indonesia by 1 pentad lagged. It is revealed that in terms of the MJO phase, there is east-west difference in amplitude of rainfall variation. However, in Sumatera island seems to be different in rainfall anomaly associated with the passage of an MJO. Overall results clearly suggest that the east-west difference on rainfall variability over Indonesian region is significantly controlled by the activity of the Madden-Julian Oscillation.