



Diurnal pattern of rainfall in the Greater Jakarta area during wet season period associated with Madden-Julian Oscillation (MJO)

Danang Eko Nuryanto, Ardhasena Sopaheluwakan, and Ratna Satyaningsih

Research and Development Center BMKG, Climate and Air Quality Division, Jakarta Pusat, Indonesia
(denyanto@yahoo.com)

Characteristics of diurnal pattern of rainfall distribution in the Greater Jakarta (GJ) area affected by the Madden-Julian oscillation (MJO) are investigated using a database of hourly rainfall observed by the Indonesian Agency for Meteorology Climatology and Geophysics (BMKG). In this study, we analyze hourly rainfall data obtained during wet season period between 1975 – 2018. Diurnal pattern detected by the hourly rainfall is composited in a framework of MJO events. The events are composited and categorized based on phases of MJO. We found different responses of the diurnal pattern of rainfall to MJO. For weak MJO events the diurnal pattern of rainfall is not much affected by the MJO. The early morning peak rainfall becomes a notable feature over the GJ area when the MJO phase is active over the eastern Africa, and western Pacific. During the MJO active phase in the Maritime Continent, the diurnal pattern is affected during morning and afternoon with enhanced rainfall. The additional effect of the MJO to the diurnal rainfall pattern is a remarkable feature that shows the interaction of multiscale processes influencing the weather in the GJ area.

Keywords: Madden Julian Oscillation, diurnal pattern, rainfall, wet season, Greater Jakarta