

Reexamination of topographic influence on precipitation associated with the Madden-Julian Oscillation over the Maritime Continent

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The Madden-Julian Oscillation (MJO), a large-scale tropical convection-circulation phenomenon oscillating in the intraseasonal time scale, is well known for its eastward propagation from the Indian Ocean through the Maritime Continent to the western Pacific. In the study of precipitation associated with the MJO, TRMM (Tropical Rainfall Measuring Mission) 3B42 has been mainly used. Previous studies using 3B42 have shown that precipitation anomaly over the ocean is positive when the MJO is convectively active, while precipitation anomaly over land is much smaller or may in fact be reversed. However, 3B42 has some difficulties in observing precipitation over areas where land and sea complicatedly exist. Analysis using TRMM PR (Precipitation Radar) 2A25 data showed similar results to the previous study in the ocean, but different precipitation anomalies and temporal changes were observed over the islands of Kalimantan and Sumatra. The difference was more apparent when only using the microwave (“high quality”) part of 3B42. Furthermore, when we examined the precipitation cloud types during the MJO phase, we found that the distribution of probability of widespread stratiform clouds changed remarkably during the phase when there was a difference between 3B42 and 2A25. Further analysis using IMERG will be done.