

# Convective activities associated with intraseasonal variation over Sumatera, Indonesia during June 2002

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The influence of intraseasonal variation (ISV) on convective activities over Sumatera (or Sumatra) is studied by using data derived from the Equatorial Atmosphere Radar (EAR), the Boundary Layer Radar (BLR), the surface weather station, the Geostationary Meteorological Satellite (GMS), and NCEP/NCAR reanalysis. In June 2002, convective activities over the Indian Ocean, the maritime continent, and the western Pacific were significantly modulated by the ISV. Blackbody brightness temperature observed by GMS (TBB) showed that two super cloud clusters (SCCs) developed over the Indian Ocean (70-90E) in the first half of June 2002, and propagated eastward from the Indian Ocean to the western Pacific. Convective activities were enhanced over the western Pacific (130-160E) in the latter half of June 2002. Convergence at 1000hPa, which prevailed over the Indian Ocean in the first half of June 2002, propagated eastward to the western Pacific in the latter half of June 2002. Zonal wind observed by EAR and surface pressure observed at the observation site suggested the existence of a Kelvin-wave-like structure of ISV. From temporal variations of TBB, zonal wind at 850hPa, and vertical shear of horizontal wind between 700 and 150hPa, we classified the observation periods into the inactive phase (1-9 June), active phase (10-19 June), and postwesterly wind burst phase of ISV (20-26 June). During the inactive phase of ISV, convective activities caused by local circulation were prominent over Sumatera. Results of radar observations indicated the dominance of convective rainfall events over the mountainous area of Sumatera during the inactive phase of ISV. During the active phase of the ISV, cloud clusters (CCs), which developed in the convective envelope of SCC with a period of 1-2 days, mainly induced the formation of convective activities over Sumatera. Results of radar observations indicated that both convective and stratiform rainfall events occurred over the mountainous area of Sumatera during the active phase of ISV. In the postwesterly wind burst phase of ISV, convective activities were suppressed over Sumatera. Features of convective activities found over Sumatera generally agreed well with those found in Tropical Ocean and Global Atmosphere/Coupled Ocean-Atmosphere Response Experiment (TOGA COARE). However, local circulation played an important role in the formation of convective activities over Sumatera in the inactive phase of ISV.