Classification of precipitating clouds in equatorial Indonesia based on boundary layer radar observations

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L   6km

The equatorial atmosphere over Indonesia seems to play an important role upon global change of the earth's atmosphere. In order to observe the phenomena in the lower troposphere of those region, we installed two L-band boundary layer radars,which have height and time resolutions of 100 m and 1 minute, respectively, in Indonesia. One is in Serpong (6.4S, 106.7E) operated since November 1992, and the other is in Kototabang (0.2S, 103.2E) operated since August 1998. In this study, we used the data from those radars to classify the precipitating clouds.

Thirty-minute averaged reflectivity, Doppler velocity, and spectral width derived from vertical-pointing beam were calculated to determine the precipitating cloud type. All data are chosen based on the surface raingauge data.

From continuous observations of the boundary layer radar in Serpong since November 1992, we classified each profiles into 4 types of clouds using the method proposed by Williams et al.[1995], and analyzed it statistically. We have found that the mixed stratiform-convective clouds are generally dominant. The deep convective cloud is seem to be more frequent in the end of the dry season (around October) rather than stratiform cloud, but during the rainy season the existence of those clouds are various. We also did the same method to analyze the boundary layer radar data from Kototabang. The result from those two sites of radar observation can also be used to study the precipitating cloud systems over the monsoon region, as we believed that the winter monsoon circulation is centered over Indonesia.