

Relationships among Vertical Structure of Precipitation, Lightning and Hydrometeor Characteristics along the Equatorial Indonesia

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In a previous study [1], we have investigated the regional variability of raindrop size distribution (DSD) along the equator through a network of Parsivel disdrometers in Indonesia. Fourth disdrometers were respectively installed at Kototabang (KT; 100.32 E, 0.20 S), Pontianak (PT; 109.37 E, 0.00 S), Manado (MN; 124.92 E, 1.55 N) and Biak (BK; 136.10 E, 1.18 S). We have found that the DSD at PT has more large drops than at the other three sites. The DSDs at the four sites are influenced by both oceanic and continental systems, and majority of the data matched the maritime-like DSD that was reported in a previous study. Continental-like DSDs were somewhat dominant at PT and KT. The differences in the DSD for the four sites may indicate the difference in characteristics of microphysical process accompanying the formation and evolution of DSD at each location which may be related to the variability of topography, mesoscale convective system propagation and horizontal scale of landmass. However, a detailed investigation regarding this hypothesis has not been yet conducted. Therefore, this work tries to overcome such issue by studying the relationship among the vertical structure of precipitation, lightning and the DSD at the fourth locations. The 17 years of latest Tropical Rainfall Measuring Mission's Precipitation Radar (TRMM PR) (version 7) products are statistically analysed to investigate the characteristics of vertical structure of precipitation at each location. The World Wide Lightning Location Network (WWLLN) data are used to study the lightning characteristics at each location. Detailed information about the result will be presented during the meeting.

[1] Marzuki, M., Hashiguchi, H., Yamamoto, M. K., Mori, S., and Yamanaka, M. D.: Regional variability of raindrop size distribution over Indonesia, *Ann. Geophys.*, 31, 1941-1948, doi:10.5194/angeo-31-1941-2013, 2013.

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