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Precipitation Microphysics of Tropical Cyclones Over the Western North Pacific Based on GPM DPR Observations: A Preliminary Analysis

Abstract

Tropical cyclone can cause severe casualties and economic losses. Therefore it's essential to understand the microphysics structure of the TC to better forecast the intensity of the TC accurately. By using the observation data from the Dual-frequency Precipitation Radar (DPR) onboard the Global Precipitation Measurement (GPM) mission. We get to better understand the vertical structure of TC over the ocean where conventional observation methods were inconsistent.

By classify the precipitation type into convective and stratiform and calculate the value of Precipitation Efficiency Indices (PEI), the case analysis of TC Malakas shows that the appearance of high D_m and high N_w , represent high concentration of large raindrop can, correspond to high value of PEI. For the statistical result, by analyze the vertical structure over different rain type and PEI. Statistic shows that in low PEI area, the value of D_m and Z_e tend to decrease toward ground below melting layer, which indicate the potential breakup process. However, in high PEI area, the value of D_m and Z_e tend to increase toward ground corresponded to potential collision-coalescence process.

Keywords

Mass-weighted mean diameter (D_m)

Generalized intercept parameter(N_w)

Reference

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