Vertical Variation of Drop Size Distribution (DSD) Parameters at a Tropical Coastal Station Thumba

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The gamma parameters have been derived on the ground with the disdrometer and aloft with Micro Rain Radar (MRR) measurements at a coastal station Thumba. Two distinctly different case studies, one stratiform and transition (intermediate stage) precipitation systems, have been considered to study the vertical variability of Drop Size Distribution (DSD) parameters in different seasons during 2006-2008. The analysis clearly reveals a significant variation in DSD parameters from one rain regime to another. Contour Frequency by Altitude Diagram (CFAD) of DSD parameters is carried out to examine salient microphysical characteristics of DSD in different precipitation regimes. Results show that distribution in general, wider in transition rain regime than in Stratiform. The observed variability of gamma parameters and median volume diameter is attributed to microphysical processes like evaporation, break-up and collision-coalescence. The significance of the present results demonstrates the capability of Ka band radar in understanding the microphysics of rain during light to moderate rain regimes.