

1.38 STUDY OF THE MONSOON VARIABILITY BY THE CLOUD RADARS ESTIMATED MICROPHYSICAL PROFILES

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To understand rapid variation of cloud microphysical process, and hence for the comprehensive cloud characterization, fine resolution cloud profiling is indispensable. Advanced cloud radar technology is capable us for making such fine resolution cloud measurements. High spatial and temporal resolution cloud measurements are allowing us in the investigation of both the cloud macro- and micro-physical aspects. Jonson's three level convective cloud inferred the importance of diverse tropical monsoon cloud systems. Temperature variation with altitude changes the phase of the cloud particles which can be indicated by CVS. Therefore CVS act as a versatile parameter for deciphering the contrasting cloud character associated with Indian Summer Monsoon (ISM) through its different phases(warm, mixed and ice). The present work mainly contains the retrieval of fine resolution cloud microphysical profiles from the quality controlled cloud radar measurements over Western Ghats region of India. The cloud radar reflectivity and retrieved Cloud Ice and Water Content (IWC and LWC) measurements are cross validated with Cloud Profiling Radar (CPR) onboard CLOUDSAT. A Good agreement has been found out between the two radar profiles. Wide coverage of CPR is explored for extending the point measurements from Western Ghats to the central India to establish a large scale CVS confining on ISM. Two cases on cloud microphysical studies associated with ice clouds clearly demonstrated that entrainment process at the cloud top boundary increases the ice growth process just lying below it. Weaker or calm turbulence activity regions at the base of cirrus clouds are found to be much favorable for the rapid growth of IWC. On the other hand, strong shear at the mid portion of cloud inducing K-H instability reduces the IWC. Such microphysical characteristics seen during ISM are distinct and those results will be discussed in the forth coming ERAD conference.
