

# Ice Microphysical Properties in Stratiform Region of a Baiu Frontal Convective System Observed by Hydrometeor Videosonde

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Mesoscale convective systems (MCSs) developed in the Baiu frontal zone frequently form clusters of upper-level clouds with low brightness temperature. The deep clouds extending from convective regions form stratiform precipitation. The upper-level clouds cool cloud-top layers through radiation, which can intensify or develop convections. A numerical model which incorporates detailed cloud microphysical processes is a powerful tool to understand the processes such as precipitation formations and dynamics of MCSs in the Baiu frontal zone. Although simulation results should be validated by observations, observations of microphysical properties of upper-level ice clouds, which are related with precipitation formation and dynamical processes, are insufficient for MCSs in the Baiu frontal zone. To examine microphysical properties of ice clouds of the Baiu frontal MCSs, we performed an observation at the Okinawa Island in Japan during a Baiu season using hydrometeor vide sondes (HYVIS).

A MCS developed at 12 June 2008 in the Baiu frontal zone. A HYVIS was launched in the stratiform region of the MCS which was at a mature to decaying stage. The layer above a melting layer was examined. Orders of number concentration and mixing ratio of ice particles are  $10^5$ - $10^6$   $\text{m}^{-3}$  and  $10^{-2}$ - $10^{-1}$   $\text{g kg}^{-1}$ , respectively, except for the cloud top. Particle size distributions (PSDs) are approximated by the modified gamma distributions rather than the exponential distributions. Its shape parameter showed positive values, which indicate the PSDs are convex upward. The dominant habit was plate through the ice clouds with low ice saturation. These facts provide references for future numerical simulations