

Investigation of the microphysics in NICAM using the vertical pointing 94 GHz Doppler radar

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It is important to evaluate and improve the cloud properties in global non-hydrostatic models like a Nonhydrostatic ICosahedral Atmospheric Model (NICAM, Satoh et al. 2014) using observation data. There are intensive observation stations over the Kanto region in Japan. The ULTra site for Measuring Atmosphere of Tokyo metropolitan Environment (ULTIMATE, Satoh et al. 2022) is proposed to verify and improve high-resolution numerical simulations based on these observation data.

There are some instruments to observe the vertical motion of clouds and precipitation like Doppler Cloud Profiling Radar (CPR, 94 GHz) and wind profilers over the Tokyo metropolitan area. In this study, we used the Joint simulator, which is developed for The EarthCARE satellite, which has CPR. The EarthCARE Active Sensor Simulator (EASE, Okamoto et al. 2007, 2008; Nishizawa et al. 2008) in the Joint simulator can simulate signals of CPR on the ground.

Last year, we evaluated the performances of NICAM using CPR and the Joint simulator. This year, we introduce an evaluation method for microphysics in NICAM using CPR on the ground. And we discuss how to apply these studies to use CPR on the EarthCARE satellite.

Keywords: Cloud Profiling Radar, NICAM, ULTIMATE project