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## Evaluations of microphysics in NICAM using a polarimetric radar and a 94 GHz Doppler radar in Japan

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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 Tokyo metropolitan area in Japan. The ULTIMATE (ULtra slte for Measuring Atmosphere of Tokyo metropolitan Environment) is proposed to verify and improve high-resolution numerical simulations based on these observation data.

The C-band Polarimetric radars are in Haneda and Narita airports. A polarimetric radar can observe the additional information of hydrometeors related to the shapes and retrieve the hydrometeor identification based on polarimetric variables.

In this study, we used the Joint simulator, which is developed for The EarthCARE satellite, which has Cloud Profiling Radar (CPR, 94 GHz) and High Spectral Resolution Lidar (HSRL). The EarthCARE Active Sensor Simulator (EASE, Okamoto et al. 2007, 2008; Nishizawa et al. 2008) in the Joint simulator can simulate signals of CPR and HSRL on the ground. POLArimetric Radar Retrieval and Instrument Simulator (POLARRIS, Matsui et al. 2019) were implemented in the Joint simulator for the polarimetric radar.

We introduced our evaluation method and results of our microphysics using polarimetric radars and the CPR.