

## **Retrieval of Rain Microphysical parameters in Korea Peninsular using the Dual-Polarimetric S-band Radar**

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Raindrop size distributions (DSDs) have useful information to understand the rain microphysics. It can also improve the accuracy of rainfall forecasting by the application of DSD parameterization into numerical model. The dual-polarimetric parameters contain information on number concentration and mean diameter reflected by dependence of axis ratio as function of sizes. Thus, the DSD parameters can be approximately retrieved using the dual-polarimetric radar parameters

The 2D-video disdrometer data are collected from March to October 2012 in Korea. The radar parameters (ZH, ZDR) are simulated with the T-matrix scattering simulation. The DSD parameters, generalized number concentration ( $N_0'$ ) and mass weighted drop diameter ( $D_m$ ), are directly calculated from observed DSDs. The relationships between dual-polarimetric parameters and DSD parameters are then derived at high reflectivity ( $ZH > 35$  dBZ,  $ZDR > 0.2$  dB) and low reflectivity ( $ZH < 35$  dBZ,  $ZDR > 0.2$  dB). The DSD parameters are retrieved with derived relationship by using Mt. Bisl dual-polarimetric radar data. The retrieved DSD parameters are compared with the DSD parameters calculated from 2D-video disdrometer located at 23 km range from radar. Furthermore, the characteristics of the rain microphysics are examined with the retrieved DSD parameters from Mt. Bisl dual-polarimetric radar according to precipitation processes.