

1.48 POLARIMETRIC DOPPLER OBSERVATIONS OF ICE PARTICLES WITH SCANNING 94 GHZ CLOUD RADAR

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Cloud radars are one of the main tools for remote-sensing of the atmosphere, and ice particles in particular. These radars operate at millimeter wavelengths and have a great potential for investigations of cloud particle formation and development. (1) Having high sensitivity and dynamic range up to 80 dB, cloud radars can observe a wide spectrum of particle sizes. (2) Cloud particles have distinct sizes, shapes, and orientations, and, therefore have different terminal velocities. Therefore, radar Doppler spectra measured with the resolution down to few cm/s allow for characterization of different particle populations in the same resolution volume. (3) Cloud radars often have polarimetric capabilities used for a classification of cloud scatterers and efficient clutter removing.

In this study we show the first observations of ice particles with a newly developed polarimetric scanning 94 GHz cloud radar. The radar allows for measurements of a set of spectrally resolved polarimetric parameters, including differential reflectivity, correlation coefficient, depolarization ratio, and differential phase. Results of preliminary analysis of the polarimetric parameters and their relation to ice microphysical properties are shown.