

Habit-specific angular light scattering functions of ice crystal ensembles measured by PHIPS-HALO in the outflow regions of tropical convective systems

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In this contribution, habit-specific angular light scattering functions are presented and discussed. The functions were measured with the novel cloud probe Particle Habit Imaging and Polar Scattering (PHIPS-HALO) in the anvil outflows of tropical convective systems during the ACRIDICON-CHUVA campaign. PHIPS-HALO simultaneously measures the habit and the polar light scattering function of individual particles by combining a stereo-microscopic imager with a polar nephelometer. The stereo-micrographs of individual ice particles allows for categorizing the crystals into a variety of habit classes like columns, plates, bullet rosettes, and plate aggregates. The corresponding light scattering functions in the 18° to 170° angular range were averaged over a sufficient number of particles in each habit class to get the habit-specific angular light scattering function for randomly oriented ice particle ensembles. The results have implications for the shortwave radiative effect of tropical cirrus.