



Properties of Ice Cloud and Melting Layer from GPM Validation Projects

Andrew Heymsfield (1), Aaron Bansemer (2), Mike Poellot (3), and Larry Oolman (4)

(1) NCAR, MMM Division, NCAR, Boulder CO United States (heyms1@ucar.edu), (2) NCAR, MMM Division, NCAR, Boulder CO United States, (3) Department of Atmospheric Sciences, University of North Dakota, Fargo ND United States, (4) Department of Atmospheric Sciences, University of Wyoming, Laramie WYO United States

This study characterizes the properties of ice clouds and through the melting layer from observations during three field programs: LPVEX (Finland, 2010), MC3E (Oklahoma, 2011) and GCPEX (Canada, 2012). A combination of level-flight passes and Lagrangian spiral descents by aircraft, together with co-located radar observations, are used in the analysis. Excellent detail of the microphysics from 10 microns to more than 1 cm and direct measurements of the condensed water content were obtained in stratiform through convectively-generated clouds. We report on the ice cloud properties, fine details of the melting processes through the melting layer, and the development of multi-wavelength radar reflectivity-snowfall(rainfall) rate relationships that express these properties with this complete set of observations in a range of cloud types and geographical locations.