

**Utilising multiple radar frequencies for deriving microphysical properties of liquid water clouds**

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The Atmospheric Radiation Measurement (ARM) program funded by the US DoE (Department of Energy) has deployed one of its ARM Mobile Facilities (AMF) to Hyytiälä, Finland for 8 months (February-September 2014) as part of the BAECC campaign. This provides an unprecedented opportunity for remote sensing of clouds at multiple radar frequencies (10, 35 and 95 GHz).

Multiple-frequency retrieval techniques can be used to derive liquid water content profiles through differential attenuation of radar reflectivity. The comparison of observed profiles with theoretical adiabatic liquid water contents provide a profile of the dilution factor describing the departure from adiabatic ascent due to mixing (entrainment) and precipitation processes.

Doppler spectral methods exist for diagnosing the presence and intensity of drizzle. Together with profiles of the dilution factor, we can now investigate the relative contributions of mixing and the drizzle process in modifying and redistributing water content.