



The Ice Cloud Characterisation Campaign HALO-02

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It has been demonstrated in several measurement campaigns that the aerosol and cloud chamber AIDA is an excellent facility to study homogeneous and heterogeneous ice nucleation processes under realistic atmospheric conditions. Due to permanent improvements of the diagnostic instrumentation and the control of the thermodynamic conditions during the expansion cooling experiments, detailed studies of the microphysical and optical properties of ice crystals grown under different temperature and humidity conditions are now feasible. Moreover, the chamber has now become a valuable test bed for instrument development, testing, and characterisation. This is of particular interest for in situ ice particle and water vapour instruments that are currently under development for, or adapted to the new German research aircraft HALO which will become operational in 2009.

The ice cloud characterisation campaign HALO-02 was conducted in December 2008 at AIDA in the temperature range from -5°C to -70°C. Two types of experiments have been performed: particle growth experiments of externally generated micrometer-sized ice crystals in the -5°C to -28°C temperature range, and in situ particle nucleation and growth experiments in the -28°C to -70°C range. In the latter experiments the ice particles nucleated either homogeneously or heterogeneously on sulphuric acid and soot aerosols. The emerging and disappearing ice clouds have been probed by a set of single particle probes, like the Cloud Aerosol and Precipitation Spectrometer CAPS, the Small Ice Detectors SID-2H and SID-3, and the Video Ice Particle Sampler VIPS. In addition to these aircraft-proven instruments two recently developed cloud particle imaging instruments have been deployed, namely the Holographic Instrument for Microscopic Objects HOLIMO, and the Particle Imaging and Polar Scattering probe PHIPS.

The presentation will give an overview of the HALO-02 campaign, describe briefly the individual instruments, and will highlight some preliminary results.