Geophysical Research Abstracts
Vol. 14, EGU2012-9068, 2012
EGU General Assembly 2012

Comparison of FISH total water measurements with other hygrometers

T. Klostermann (1), C. Schiller (1), M. Krämer (1), N. Spelten (1), D. Fahey (2), J. Smith (3), R. Herman (4), D. Hurst (5), and H. Vömel (6)

(1) Forschungszentrum Juelich GmbH, Juelich, Germany (t.klostermann@fz-juelich.de), (2) NOAA Earth System Research Laboratory, Boulder, USA, (3) Harvard University, Cambridge, USA, (4) Jet Propulsion Laboratory, Pasadena, USA, (5) NOAA Earth System Research Laboratory, Boulder, USA, (6) Deutscher Wetterdienst, Lindenberg, Germany

FISH, a Lyman Alpha Fluorescence Hygrometer used on aircraft and balloons since 1990, participated in recent field and laboratory comparison experiments including the airborne campaign MACPEX out of Houston, USA, with the high altitude aircraft WB-57 and the extensive laboratory intercomparison campaign AQUAVIT at the AIDA chamber. The aim was to investigate the reasons for discrepancies of water measurements between different hygrometers in recent field experiments, which exceeded the stated uncertainties of these advanced hygrometers. Recent studies have shown that even 0.5 ppmv of uncertainty in those measurements matter in terms of radiative forcing and microphysics. However, the absolute discrepancies during campaigns in the 2010ies was up to 1 ppmv. During AquaVIT the discrepancies below 10 ppmv have shown the same tendency with lower magnitude. The relative discrepancies between the different hygrometers during MACPEX was the same as for previous experiments. Nevertheless, the absolute discrepancies may vary between individual instruments for different campaigns. In total they were in the range of 0.8 ppmv.