

SPARC Water Vapor Assessment: Comparison of FISH total water measurements with that of other hygrometers

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The Fast In-situ Stratospheric Hygrometer (FISH), based on the Lyman-alpha photofragment fluorescence technique has been used for total water measurements in the UTS on almost 300 flights from various aircraft and balloons. Here, we present the calibration procedure which we perform using a calibration bench with a MBW frostpoint hygrometer as reference. We also review various comparison with other hygrometers during various field deployments (e.g. MACPEX 2011 and Geophysica missions during the last decade) and the AquaVIT laboratory experiment 2007. The comparison is done versus the CAO and Harvard Lyman-alpha hygrometers, NOAA balloon-borne frost point hygrometers, the NOAA CIMS frost point hygrometers and the AIDA diode laser spectrometer. There is a clear tendency of the discrepancy observed between the individual hygrometers, however the quantitative differences of the measurements varies between the different experiments.