



## **Side-by-side Intercomparison for OVOC at Hohenpeissenberg Meteorological Observatory (DWD)**

Jennifer Englert, Anja Claude, Christian Plass-Duelmer, Dagmar Kubistin, and the ACTRIS Team  
DWD, Hohenpeissenberg, Germany (jennifer.englert@dwd.de)

Oxygenated volatile organic compounds are difficult to measure in atmospheric samples due to their low mixing ratios in the low ppt to ppb range, their polarity and associated stickiness to surfaces, and their partly high water solubility. Thus, it is not surprising that occasionally co-located instruments with “similar” measurement techniques obtain considerably different results. With focus on high-quality measurements, the need of a better characterisation of measurement techniques has been identified in GAW VOC Expert meetings. This has been addressed in the tasks of the EU infrastructure project ACTRIS and ACTRIS-2.

Seven groups with ten different state-of-the-art OVOC instruments (PTR-MS, GC/MS/FID, adsorbent tube sampler and DNPH cartridges) took part in a joint field and laboratory intercomparison campaign at the Hohenpeissenberg Meteorological Observatory in October 2013. All instruments were connected to a single manifold which was fed with synthetic air mixtures, zero air, pure and spiked ambient air at controlled ozone and humidity levels. Compared to a previous intercomparison at the SAPHIR chamber in Juelich (Apel et al., 2008), the Hohenpeissenberg OVOC intercomparison expanded the range of tested mixing ratios down to the low ppt range and included synthetic and ambient air at OVOC mixing ratios of mostly below 1 ppb, for many compounds even below 100 ppt. Thus, the instruments were tested under typical clean air conditions encountered at the stations of the monitoring networks of GAW and EMEP enabling a full characterization of the detection limits, linear ranges, and potential artefacts.

Our results show both consistent results between different instruments albeit using different techniques, and partly clear deviations of individual or groups of instruments. These deviations were further analysed with respect to reference concentrations, characteristics of the respective techniques, blank and calibration issues and uncertainties.