



Establishing Regular Measurements of Halocarbons at Taunus Observatory

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In late 2013 an ongoing whole air flask collection program has been started at the Taunus Observatory (TO) in central Germany. Being a rural site in close vicinity to the densely populated Rhein-Main area with the city of Frankfurt, Taunus Observatory allows to assess local and regional emissions but owed to its altitude of 825m also regularly experiences background conditions. With its large capture area halocarbon measurements at the site have the potential to improve the data base for estimation of regional and total European halogenated greenhouse gas emissions.

At current, flask samples are collected weekly for analysis using a GC-MS system at Frankfurt University employing a quadrupole as well as a time-of-flight (TOF) mass spectrometer. The TOF instrument yields full scan mass information and allows for retrospective analysis of so far undetected non-target species. For quality assurance additional samples are collected approximately bi-weekly at the Mace Head Atmospheric Research Station (MHD) analyzed in Frankfurt following the same measurement procedure. Thus the TO time series can be linked to both, the in-situ AGAGE measurements and the NOAA flask sampling program at MHD. In 2017 it is planned to supplement the current flask sampling by employing an in-situ GC-MS system at the site, thus increasing the measurement frequency.

We will present the timeseries of selected halocarbons recorded at Taunus Observatory. While there is good agreement of baseline mixing ratios between TO and MHD, measurements at TO are regularly influenced by elevated halocarbon mixing ratios. An analysis of HYSPLIT trajectories for the existing time series revealed significant differences in halocarbon mixing ratios depending on air mass origin.