

Co-located Halocarbon Measurements by GC-ECDs and Medusa-GC/MS at the Shangdianzi GAW Regional Background Station, China

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In October 2006, an *in-situ* Gas Chromatography-Electron Capture Detector (GC-ECD) system was installed at the Shangdianzi Global Atmosphere Watch (GAW) regional station in China. The system can measure SF₆, CFC-11, CFC-12, CFC-113, HCFC-22, HCFC-142b, H-1211, H-1311, CH₃Br, CHCl₃, CH₂Cl₂, CCl₄, PCE and TCE with a 40 minute time resolution. In May 2010, an *in-situ* Medusa-Gas Chromatograph/Mass Spectrometer (GC/MS) system was installed to allow co-located measurement of many compounds and to add capabilities of HFC and PFC measurements with a 60 minute time resolution. The two systems share a common sampling line and the inlet was attached to the top of a sampling tower. The measurements are closely tied to the Advanced Global Atmospheric Gases Experiment (AGAGE), on the calibration scales developed at the Scripps Institution of Oceanography (SIO), and the University of Bristol (UB). The common species measured by both systems from May 2010 to May 2011 were carefully compared. Taking SF₆ for example, we set a time window for 4 hours for the two systems with different time resolutions. The differences between average mixing ratios of the two systems in the same time windows were statistically analyzed. The differences between the SIO-05 scale and the NOAA-2006 scale of SF₆ was also compared and discussed.

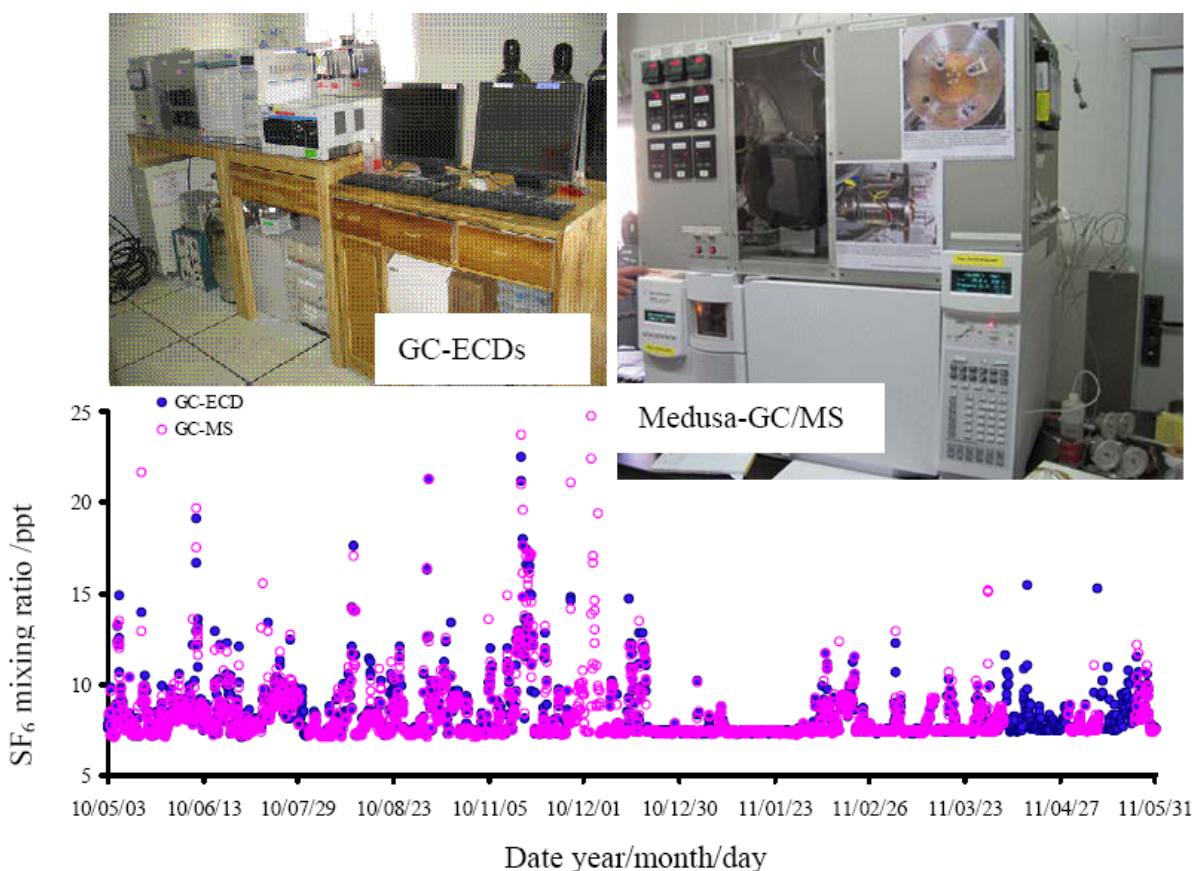


Figure 1. Time series of SF₆ measured by GC-ECDs and Medusa-GC/MS systems.