

5.061 ICOS atmospheric network Germany for long term monitoring of greenhouse gases.

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Abstract:

Due to its central location within Europe, the German atmospheric network forms an important constituent of the recently established European research infrastructure ICOS (Integrated Carbon Observing System) for long term monitoring of greenhouse gases. Routine measurements of CO₂, CH₄, N₂O as well as CO are going to be continuously performed at three heights on eight tall towers and one marine station, with ancillary measurements of meteorological parameters, combined with flask samples, radiocarbon sampling and ²²²Rn. The network was designed to account for the typical European environment and will be utilised for inverse models to derive high spatial and temporal resolutions of the greenhouse gas fluxes in Germany. Started in 2015 with the Global Atmosphere Watch (GAW) station Hohenpeissenberg, the towers have become subsequently operational with a planned completion at the end of 2018. Here we present the design of the network together with its first observations. Data are shown for stations located from east to west of Germany, including rural stations as well as stations in proximity of a city. Vertical gradients are analysed depending on environmental conditions and seasons.