

Name of research institute or organization:

Max Planck Institut für Biogeochemie, Jena

Title of project:

Flask comparison on Jungfrauoch

Part of this programme:

ICOS

Project leader and team:

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Project description:

The flask sampling for the intercomparison between MPI Jena, CIO Groningen (RUG) and the University of Bern (UBern) was ongoing during the reporting period. For UBE, flasks were taken every week, however, not all the flasks taken in 2016 have been analysed yet. The MPI Jena samples were taken on a biweekly basis. In late summer of the years 2014 and 2015, we measured very anomalously high oxygen concentrations for the Bern samplings as reported last year. This was much less seen in the MPI flasks which would point to a difficulty with the Bern-Groningen sampling system or the measurements at Bern. Since CO₂ values do not show significant deviations, we searched for inconsistencies in the oxygen measurements at the Bern laboratory. Yet, there were no obvious problems detectable from corresponding cylinder measurements over these two periods. However, flask measurements showed despite good reproducibility within a day large jumps between different day measurements. We noticed that the samples showed rather large water vapor values which are measured prior to each flask determination on the mass spectrometer.

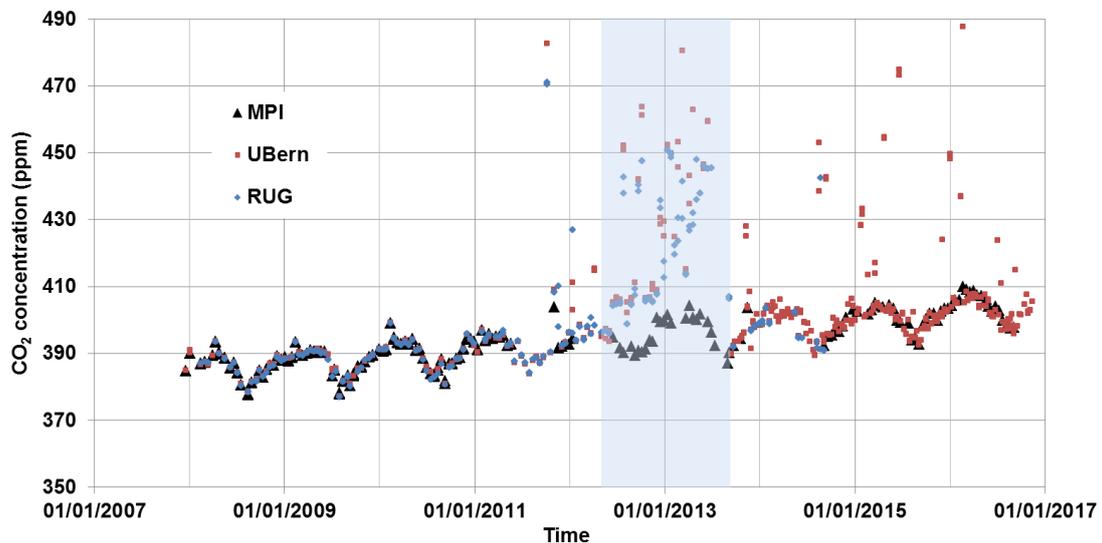


Figure 1. CO₂ concentration as measured by each laboratory. The period from June 12 to August 2013 shaded in light blue corresponds to continuously leaky conditions for the combined UBern and RUG sampling device that progressively increased.

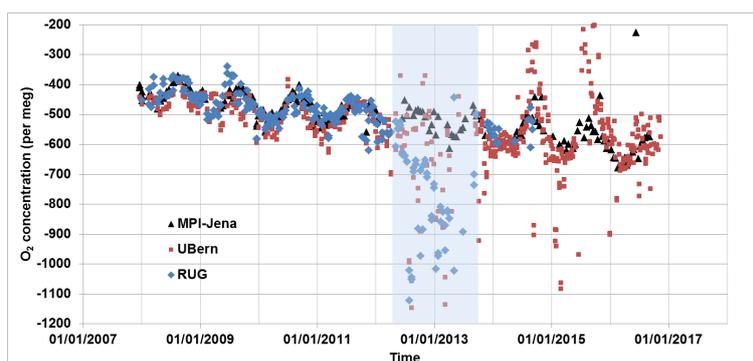


Figure 2. O_2 concentration as measured by each laboratory. The period from June 12 to August 2013 shaded in light blue corresponds to continuously leaky conditions for the combined UBE and RUG sampling device that progressively increased. UBern data unfiltered from 2012 onwards. The unexpectedly high oxygen values for the UBern flasks are not yet completely resolved but there are arguments of uncomplete drying during the sampling.

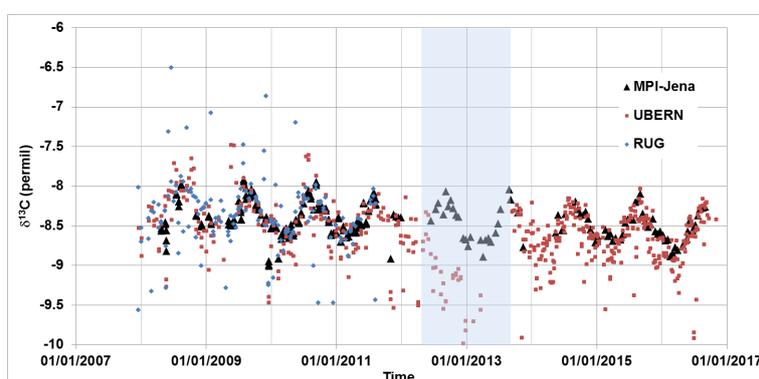


Figure 3. Carbon isotope series of Centre for Isotope Research of the Reichsuniversität Groningen (RUG), the Max Planck Institute for Biogeochemistry in Jena and the University of Bern sampled at the Jungfraujoch Research Station. The period from June 12 to August 2013 shaded in light blue corresponds to continuously leaky conditions for the combined UBern and RUG sampling device that progressively increased. UBern data corresponds to flask means that are unfiltered from 2012 onwards.

Key words:

Flask measurements, inter-comparison, oxygen and carbon dioxide measurements, greenhouse gas

Collaborating partners/networks:

University of Groningen, HFSJG, University of Bern, ICOS partners

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