

Name of research institute or organization:

Centre for Isotope Research (CIO), Groningen

Title of project:

Flask comparison on Jungfrauoch

Project leader and team:

Prof. Harro Meijer, project leader, Groningen, Rolf Neubert and Bert Kers
Prof. M. Leuenberger, Ingrid and Sander Van der Laan, Peter Nyfeler (all UBern),
Martin and Joan Fischer, Felix and Susanne Seiler, Urs and Maria Otz (HFSJG)

Project description:

The European project IMECC (Infrastructure for Measurements of the European Carbon Cycle) includes an activity called Transnational Access activities (TA). It is designed to broaden and improve access to European Carbon Cycle measurement facilities. One of those facilities is the Research Station at Jungfrauoch. CIO Groningen has submitted a proposal to get access to this research station which was approved in 2009. The goal behind this TA activity is to compare combined flask takings in regard to CO₂ and O₂ concentrations at Jungfrauoch. Parallel flask samples are taken for CIO Groningen (Netherlands) and MPI-BGC Jena (Germany), in order to check the consistency of CO₂ and O₂ measurements.

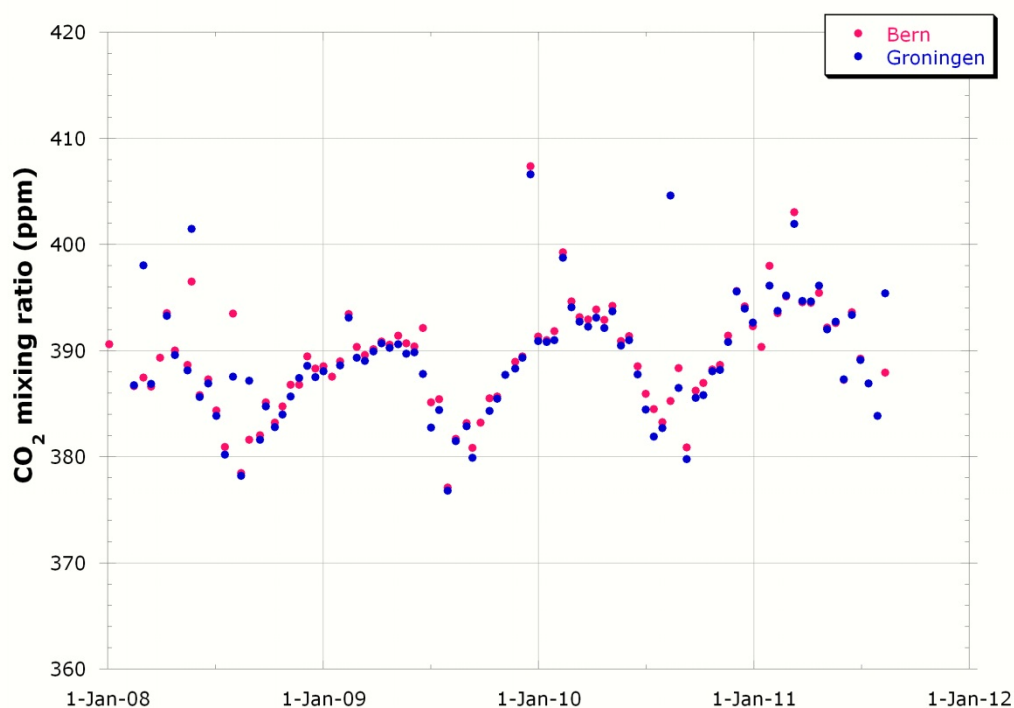


Figure 1. Comparison of CO₂ concentrations between CIO Groningen and CEP University of Bern.

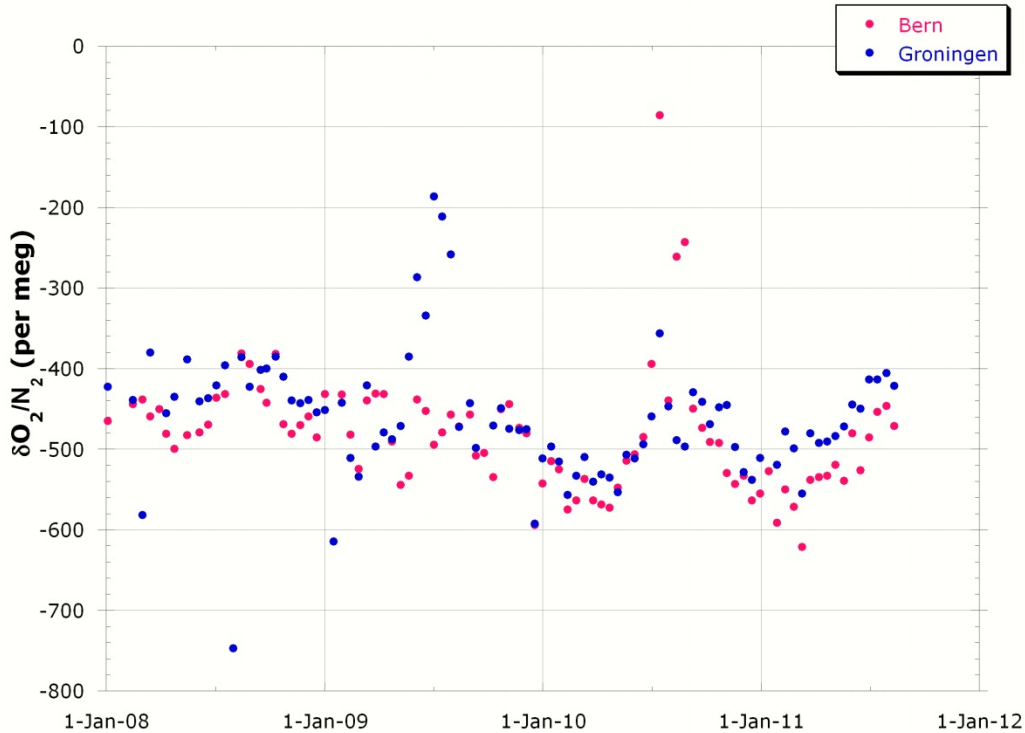


Figure 2. Comparison of O_2/N_2 ratios between CIO Groningen and CEP University of Bern.

It is obvious from Figure 1, that the agreement for the CO_2 concentration is fairly good with a mean offset between the laboratories of around 0.5 ppm, Bern values being higher. Even high values (regional or local contamination) deviating significantly from the background values are in rather good agreement. It is by far worse for O_2/N_2 ratios (Figure 2). The mean difference is rather small with about 20 permeg, Bern values being lower. However, the variation of the difference between the two labs are high of around 40 permeg. This is by far larger as the internal precision (despite the fact the Groningen values are not yet finalized regarding calibration) of both laboratories and points to inhomogenities during the sampling process, flask storage or measuring protocol of flasks. The IMECC project has finished meanwhile but the comparison is still ongoing to learn more about the difficulties of flask takings.

Key words:

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

Collaborating partners/networks:

IMECC partners

Scientific publications and public outreach 2011:

Conference papers

I.T. van der Laan-Luijkx, S. van der Laan, C. Uglietti, M.F. Schibig and M. Leuenberger, Overview of 10 years of CO_2 and O_2 observations at Jungfraujoch, Switzerland, The 16th WMO/IAEA Meeting on Carbon Dioxide, Other Greenhouse

Gases, and Related Measurement Techniques (GGMT) 2011, 26 October 2011,
Wellington, New Zealand, Abstract book.

Address:

Isotope Research — Energy and Sustainability Research Institute Groningen
Nijenborgh 4
9747 AG Groningen
The Netherlands

Contacts:

Prof. Dr. Harro Meijer
Tel.: +31 50 363 4760 (Secretary)
Fax: +31 50 363 4738
email: h.a.j.meijer@rug.nl