

Name of research institute or organization:

**Climate and Environmental Division, Physics Institute, University
Bern**

Title of project:

High precision carbon dioxide and oxygen measurements

Project leader and team:

Prof. Markus Leuenberger, project leader
Chiara Uglietti, Peter Nyfeler and Hanspeter Moret

Project description:

During 2008 we monitored the CO₂ and O₂ concentration at Jungfraujoch (Figure 1). Since eight years we have observed an increasing trend for CO₂ and a corresponding expected decrease in O₂. However, the decrease in oxygen was stronger than expected between 2003 and 2005 pointing to an uptake by the ocean since it is not compatible either with the consumption by fossil fuel burning nor with terrestrial exchange. However, the decreasing trend has now significantly slowed down as documented in Figure 2. This lowered decrease rate is more compatible with decrease rates from other stations such as Mace Head and Lutjewad as documented by [Sirignano *et al.*, 2008]. The flask measurements are in excellent agreement for CO₂ and to a lesser extent also for O₂ [Uglietti *et al.*, 2008].

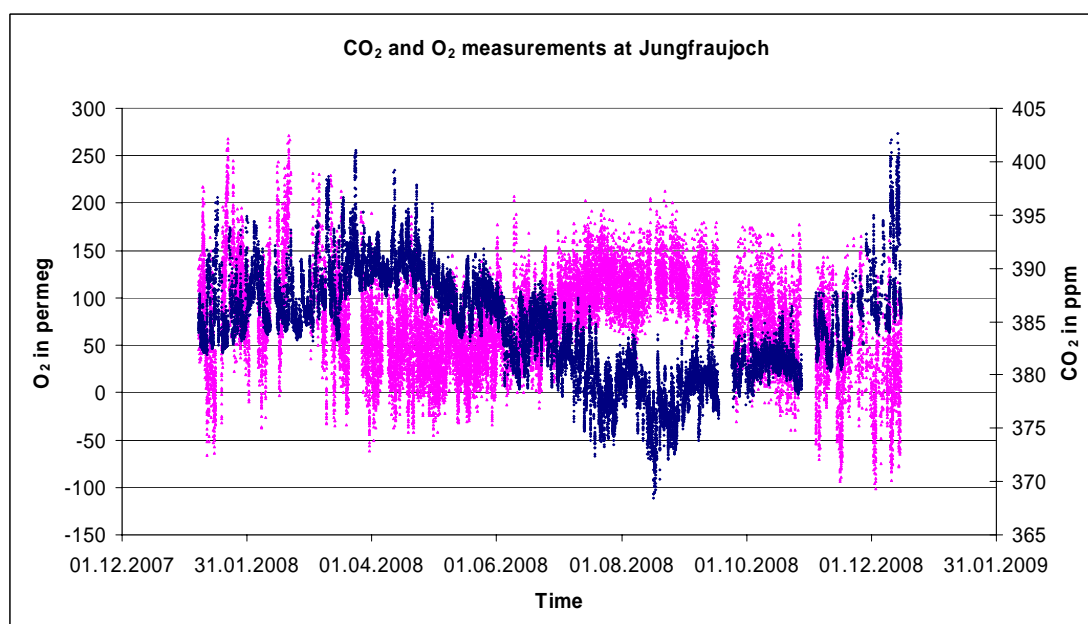
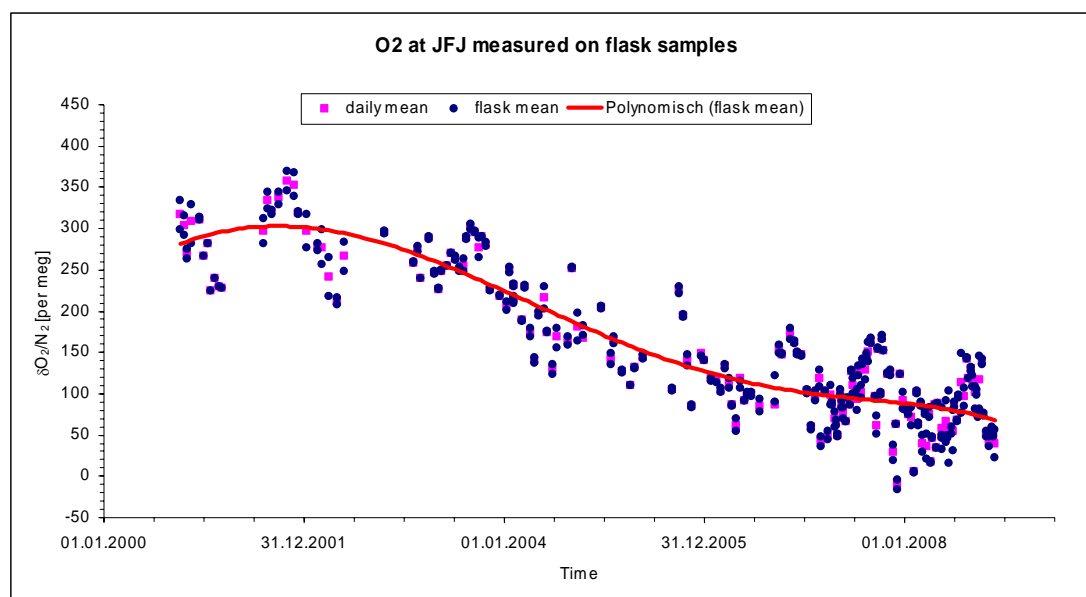


Figure 1: CO₂ and O₂ online measurements at Jungfraujoch for 2008.



Key words:

Greenhouse gas, climate change, oxidation ratio, CO₂ emissions

Internet data bases:

http://ce-atmosphere.lsce.ipsl.fr/database/index_database.html

Collaborating partners/networks:

CarbonEurope IP partners

Scientific publications and public outreach 2008:

Conference papers

Uglietti, C., M. Leuenberger, P. Nyfeler, and H.P. Moret, Atmospheric O₂ and CO₂ at the High Alpine Station Jungfrauoch, Switzerland. A comparison between online and flask measurements, in *CarboEurope IP conference*, Jena, 2008

Magazine and Newspapers articles

“Klimaforschung in grosser Höhe”, Bund, November 28, 2008.

Address:

Physikalisches Institut
Universität Bern
Sidlerstrasse 5
CH-3012 Bern

Contacts:

Markus Leuenberger
Tel.: +41 31 631 44 70
Fax: +41 31 631 87 42
e-mail: leuenberger@climate.unibe.ch
URL: <http://www.climate.unibe.ch/>

References:

Sirignano, C., R.E.M. Neubert, C. Rödenbeck, and H.A.J. Meijer, Atmospheric oxygen and carbon dioxide observations from two European coastal stations 2000-2005: continental influence, trend changes and APO climatology, *ACPD*, 8, 20113–20154, 2008, 2008.

Uglietti, C., M. Leuenberger, P. Nyfeler, and H.P. Moret, Atmospheric O₂ and CO₂ at the High Alpine Station Jungfraujoch, Switzerland, A comparison between online and flask measurements, in *CarboEurope IP conference*, Jena, 2008.

