

Name of research institute or organization:

Institut für Umweltphysik, Universität Heidelberg

Title of project:

Long-term observations of $^{14}\text{CO}_2$ and $^{222}\text{Radon}$ at Jungfraujoch

Project leader and team:

Ingeborg Levin, project leader
Bernd Kromer
Felix Vogel

Project description:

Atmospheric $^{14}\text{CO}_2$ observations at Jungfraujoch are used as background for other observational sites in Central Europe to estimate the regional fossil fuel CO_2 component. The measurements have been started in 1986 and were continued without interruption until today. In recent years, the Jungfraujoch background $^{14}\text{CO}_2$ level was used to calculate the fossil fuel CO_2 component at Schauinsland station as well as in Heidelberg from respective $^{14}\text{CO}_2$ observations. These results are described in detail by Gamnitzer et al. [2006] and Levin et al. [2007].

Atmospheric $^{222}\text{Radon}$ daughter observations started at Jungfraujoch in April 2006 in the frame of the EU-funded CarboEurope-IP and EuroHydros Projects. $^{222}\text{Radon}$ observations will be used to identify (polluted) air masses that have recently been in contact with continental surfaces as well as for flux estimates of other continent-borne trace gases using the Radon-Tracer-Method.

References:

Gamnitzer, U., U. Karstens, B. Kromer, R. E. M. Neubert, H. A. J. Meijer, H. Schroeder, and I. Levin, 2006. Carbon monoxide: A quantitative tracer for fossil fuel CO_2 ? *J. Geophys. Res.*, *111*, D22302, doi:10.1029/2005JD006966.

Levin, I., S. Hammer, B. Kromer and F. Meinhardt, 2007. Radiocarbon observations in atmospheric CO_2 : Determining fossil fuel CO_2 over Europe using Jungfraujoch observations as background. *Submitted to Science of the Total Environment*.

Key words:

carbon dioxide, Radiocarbon, fossil fuel CO_2 , climate, Kyoto Protocol
 $^{222}\text{Radon}$, atmospheric tracer

Internet data bases:

<http://www.iup.uni-heidelberg.de/institut/forschung/groups/kk/>
<http://www.iup.uni-heidelberg.de/institut/forschung/groups/fa/radiokohlenstoff/radiometrie-web-html>

Collaborating partners/networks:

CarboEurope-IP (<http://www.carboeurope.org/>)
EuroHydros (<http://www.meteor.uni-frankfurt.de/eurohydros/>)

Scientific publications and public outreach 2006:

Refereed journal article:

Gamnitzer, U., U. Karstens, B. Kromer, R. E. M. Neubert, H. A. J. Meijer, H. Schroeder, and I. Levin, 2006. Carbon monoxide: A quantitative tracer for fossil fuel CO₂? *J. Geophys. Res.*, *111*, D22302, doi:10.1029/2005JD006966.

Address:

Institut für Umweltphysik
Universität Heidelberg
Im Neuenheimer Feld 229
D-69120 Heidelberg

Contacts:

Ingeborg Levin
Tel.: +49 6221 546330
Fax: +49 6221 546405
e-mail: Ingeborg.Levin@iup.uni-heidelberg.de
URL: <http://www.iup.uni-heidelberg.de/institut/forschung/groups/kk/>