

Name of research institute or organization:

Institut für Umweltphysik, Universität Heidelberg

Title of project:

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

Project leader and team:

Ingeborg Levin, project leader
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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. Combined with earlier observations from the Vermunt site located at 1800m a.s.l. in the Austrian Alps, we have now a 50 year long record of $^{14}\text{CO}_2$ background observations available from the European Alps. This globally unique data set has been used in various applications for dating of recent organic material.

The Jungfraujoch measurements are part of a global $^{14}\text{CO}_2$ monitoring network extending from Antarctica (German Neumayer station) up to the Canadian Arctic (Alert). Results from this global network have been published recently in *Tellus B* by Levin et al. (2009) together with global carbon cycle model simulations.

Key words:

carbon dioxide, carbon cycle modelling, Radiocarbon, fossil fuel CO_2 , climate, Kyoto Protocol

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/>)
ICOS (<http://www.icos-infrastructure.eu>)

Scientific publications and public outreach 2009:

Refereed journal article:

Levin, I., Naegler, T., Kromer, B., Cuevas, E., Diehl, M., Francey, R., Gomez-Pelaez, A.J., Schäfer, A., Steele, L.P., Wagenbach, D., Weller, R., and Worthy, D.E. 2009. Observations and modelling of the global distribution and long-term trend of atmospheric $^{14}\text{CO}_2$. *Tellus B*, in press, doi: 10.1111/j.1600-0889.2009.00446.x.

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