

Name of research institute or organization:

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**Institute for Atmospheric and Environmental Sciences,  
Goethe University Frankfurt**

Title of project:

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Collection of large volume air sample

Project leader and team:

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PD Dr. Andreas Engel, project leader  
Johannes Laube

Project description:

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We have visited the Jungfraujoch Research station in order to collect a large volume whole air sample. This samples was analysed for CO and H<sub>2</sub>, as well as halocarbons which can destroy ozone if transported into the stratosphere. The analysis included three Chlorofluorocarbons which were first observed in the atmosphere. The results have been published in the peer-reviewed literature. The sample is now being used as a long term reference gas for the measurements of these gases in our analytical laboratory. We have collected the sample cryogenically on December 12, 2007 on the terrace of the Sphinx observatory.

Key words:

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Halocarbons, ozone depletion, hydrogen

Collaborating partners/networks:

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EMPA Dübendorf

Scientific publications and public outreach 2008:

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**Refereed journal articles and their internet access**

Laube, J. C. and Engel, A., First atmospheric observations of three chlorofluorocarbons, *Atmos. Chem. Phys.*, 8, 5143–5149, 2008, [www.atmos-chem-phys.net/8/5143/2008/](http://www.atmos-chem-phys.net/8/5143/2008/)

**Theses**

Laube, J., Determination of the distribution of halocarbons in the tropical upper troposphere and stratosphere, PhD Thesis, Universität Frankfurt, 2008.

Address:

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Institut für Atmosphäre und Umwelt  
Goethe Universität Frankfurt  
Altenhöferallee 1  
D 60438 Frankfurt

Contacts:

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Andreas Engel  
Tel.: + 49 / 69 / 798 40259  
Fax: + 49 / 69 / 798 40262  
e-mail: [an.engel@iau.uni-frankfurt.de](mailto:an.engel@iau.uni-frankfurt.de)  
URL: <http://www.geo.uni-frankfurt.de/iau>

