

Name of research institute or organization:

ETH Institute of Atmospheric and Climate Science

Title of project:

Measurements at the High Alpine Station Jungfraujoch to study the long range
Transport and in-situ Photochemistry

Project leader and team:

Prof. Johannes Stählerlin
Jacob Balzani, Geir Legreid

Project description:

The high Alpine station at Jungfraujoch located at 3580 m a.s.l. in the Swiss Alps is a very suitable site to study intercontinental transport events of air masses polluted by primary emissions of the planetary boundary layer of North America and to study in-situ photochemistry of the lower free troposphere over the European continent as documented by earlier studies. In the 2005, 4 different campaigns, one for every season, took place at the research station. During those campaigns Formaldehyde and Oxygenated Volatile Organic Compounds (OVOCs), referring to Geir Legreid, have been measured. Peroxyacetylnitrate (PAN) has been measured thorough all the year and it is still currently measured.

Those field measurements extend and complement the continuous measurements performed in the Global Atmosphere Watch (GAW) project of the World Meteorological Station (WMO) performed by EMPA (NO, NO₂, NO_x, CO, O₃ and selected volatile hydrocarbons) and the particular aerosol measurements performed during the CLACE-4 campaign, during February-March 2005.

The collected data (see fig. 1 and fig. 2) are currently under process and will be soon presented, including meteorological and trajectories analysis of different conditions.

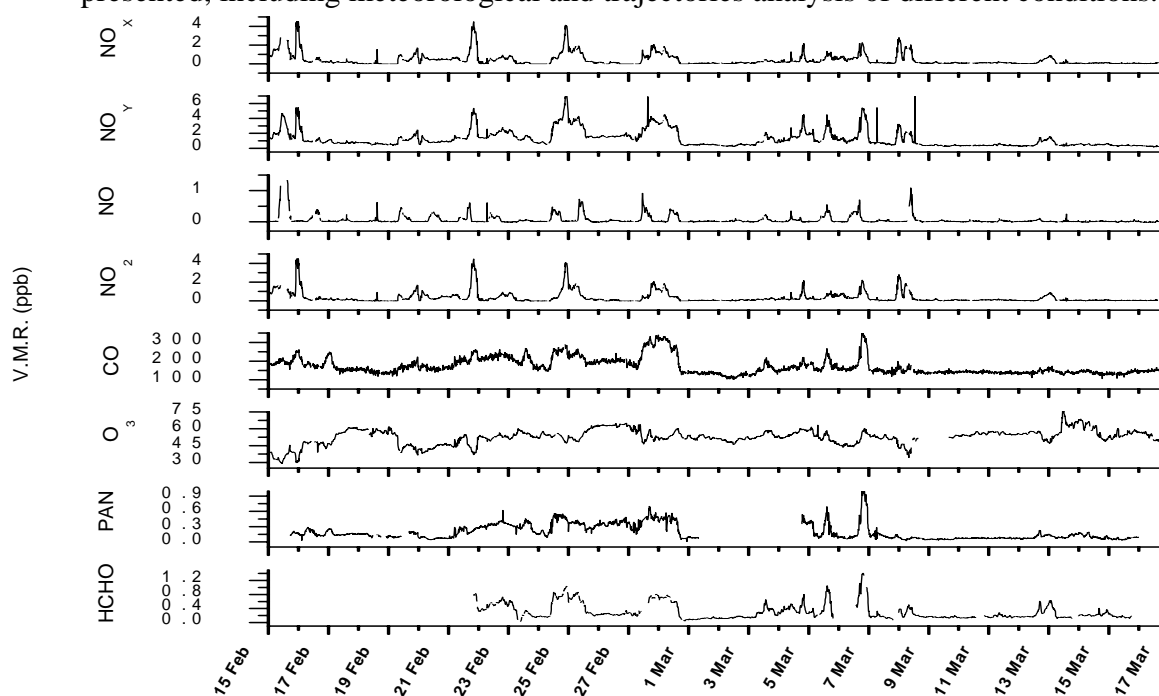


Fig. 1. Winter measurements of HCHO and PAN at Jungfraujoch, the other measurements are courtesy provided by EMPA.

The data will be then use as input for box-chemical models to study:

- In situ photochemistry using, also peroxyradical measurements performed by the group of Paul Monks (University of Leeds, UK) at Jungfraujoch during summer.
- Short range transport, from Swiss Plateau, for this purpose similar formaldehyde measurements have been performed in Zürich for summer and winter.
- Long range transport.

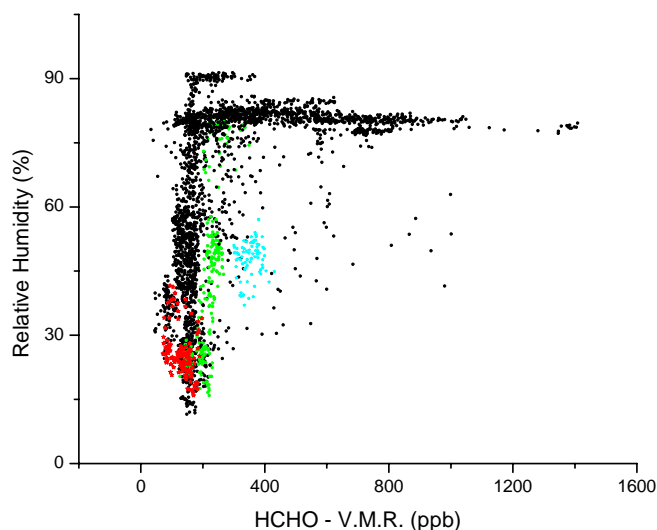


Fig. 2. Relation between Relative Humidity and Formaldehyde concentration during winter 2005 indicating the transport form the PBL

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