

Empa is the interdisciplinary research and services institution for material sciences and technology development of the ETH Domain.

The Laboratory for Air Pollution & Environmental Technology has an opening for a PhD student in the field of the analysis of halogenated greenhouse gases and the validation of their European emissions. We offer a

PhD Position

Atmospheric Science/Inverse Modelling of Halogenated Greenhouse Gas Emissions

Halogenated greenhouse gases such as chlorofluorocarbons (CFCs) and their substitutes (hydrofluorocarbons, HFCs) are among the most potent greenhouse gases. Their concentrations are monitored at the Jungfraujoch site (3580 m above sea level) by Empa since the year 2000. This dataset builds the basis for the real-world quantification of greenhouse gas emissions, which has been successfully developed at Empa within the last 10 years. Estimated emissions are then compared to figures which European countries report within the framework of the Kyoto Protocol.

The PhD project will include a thorough analysis of the available measurement data, and its combination with state-of-the-art atmospheric transport models to estimate the European emissions of a wide range of halocarbons down to the country level. Furthermore, campaigns will be performed in Southern Europe (Spain and Crete). The PhD candidate will use a specifically designed gas chromatograph-mass spectrometer (GCMS) to perform measurements of halogenated greenhouse gases in these still under sampled regions of Europe. These campaigns will contribute significantly to filling gaps in the European observation network, and is an important step towards a Pan-European system for the inverse modelling of greenhouse gas emissions.

Also, the candidate will be part of a team effort to improve the capacity of the existing measurement system (GCMS) to lower the sensitivity of the measurements. This will allow the search for newly produced halogenated greenhouse gases in order to create a global early-warning monitoring for these compounds. The measurements at Jungfraujoch are integrated in the global AGAGE network, which will allow the PhD candidate to contribute to this important global network for greenhouse gases and ozone depleting substances. For more information also visit our website: www.empa.ch/climate_gases.

We are looking for a highly motivated candidate with a Master degree in Environmental/Earth Sciences, Chemistry, Meteorology or Physics. The candidate should be interested in a challenging position between analytical chemistry (including field work) and modelling of atmospheric processes for detection of greenhouse gas emissions. Results of the study will be published in the peer-reviewed literature and will be presented at international work shops and at the bi-annual AGAGE meetings.

This 3-year PhD project is a joint initiative of the Laboratory for Air Pollution/Environmental Technology (Empa) and IACETH (Prof. Thomas Peter, ETH Zuerich).

For further information contact Dr. Stefan Reimann, phone +41 58 765 46 38, e-mail: stefan.reimann@empa.ch.

Please submit your application online and upload all documents through this webpage. <http://internet1.refline.ch/673276/0239/++publications++/2/index.html> and accompanied by a CV, a list of publications, a letter of motivation and addresses of two referees.