

Name of research institute or organization:

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**Institut für Umweltwissenschaften, Universität Basel**

Title of project:

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Measurement of  $^{222}\text{Rn}$  for atmospheric tracer applications

Project leader and team:

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Dr. Franz Conen, project leader  
Dr. Wlodek Zahorowski, international collaborator  
Yu Xia, PhD student  
Lukas Zimmermann, technician  
Dr. Johannes Fritsche, technical support

Project description:

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Continuous measurements of  $^{222}\text{Rn}$  in the atmosphere provide insight into the recent history of air masses arriving at a remote station. They serve, together with other observations, to estimate trace gas emissions on a regional scale and to identify long-range pollution events. In the context of SNF projects 117622 “Improving the verification of non- $\text{CO}_2$  greenhouse gas emissions in Europe by the  $^{222}\text{Rn}$  tracer method” and SNF project 117753 “Assessment of European emissions of non- $\text{CO}_2$  greenhouse gases by a combination of continuous measurements, transport models and  $\text{Rn-222}$  emission maps”, a two-filter-type detector for  $^{222}\text{Rn}$  was installed in the cave next to the station in May 2008. To that purpose, an inlet tube had been fitted by Seiler AG and two data transmission cables were laid from the cave to the laboratory (washing room) in the station. A PC sends data daily via e-mail and gives remote access to control calibration and background measurements, and for diagnostic purposes. The instrument was commissioned in June by Dr. Wlodek Zahorowski from the Australian Nuclear Science and Technology Organisation (ANSTO). It since provides half-hourly activity concentrations of  $^{222}\text{Rn}$ . Raw data (including flags for calibration and instrumental background measurement events) are made freely accessible through <http://radon.unibas.ch/>. Calibrated activity concentrations will become accessible within a few weeks from submission of this report.

From spring to autumn 2009, the instrument will be taken to a rural site in Hungary (K-Puszt), in the context of above mentioned SNF projects. Probably in October 2009, we would like to bring it back to Jungfrauoch Station, to the same place where it is at the moment. Then we would like it to stay there at least until the end of our projects in spring 2011.

Key words:

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Radon, atmospheric transport, greenhouse gases, long-range pollution events

Internet data bases:

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<http://radon.unibas.ch/>

Collaborating partners/networks:

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Dr. Stefan Reimann, Empa  
Dr. Wlodek Zahorowski, ANSTO

Scientific publications and public outreach 2008:

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**Conference papers**

Xia, Y. and Conen, F., Improved non-CO<sub>2</sub>-greenhouse gas emission estimates by <sup>222</sup>Rn tracer method, IGAC 10th International Conference, Bridging the scales in Atmospheric Chemistry : Local to Global, 7 to 12 September 2008 in Annecy, France. (poster presentation).

Address:

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Institut für Umweltgeowissenschaften  
Universität Basel  
Bernoullistr. 30  
4056 Basel

Contacts:

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Franz Conen  
Tel.: +41 61 267 0481  
Fax: +41 61 267 0479  
e-mail: [franz.conen@unibas.ch](mailto:franz.conen@unibas.ch)  
URL: <http://pages.unibas.ch/environment/>