

Name of research institute or organization:

Finnish Meteorological Institute

Title of project:

System and performance audit for the Jungfraujoch ICOS atmospheric station

Part of this programme:

ICOS

Project leader and team:

Dr. Hermann Aaltonen, project leader

Dr. Karri Saarnio

Dr. Martin Steinbacher

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Project description:

The Finnish Meteorological Institute runs a mobile laboratory (MobileLab) under the ICOS Atmospheric Thematic Center (ATC). The MobileLab performs system and performance audits for ICOS atmospheric stations, like the one operated by EMPA at Jungfraujoch (JFJ). During the JFJ audit, the MobileLab ensured that the station set-up from inlet to analysers met the requirements defined by the ICOS ATC. The audit included also a control of the station's calibration gases and 6-weeks-lasting intercomparison measurements with the MobileLab instruments.

After the audit, the MobileLab personnel, in collaboration with the JFJ station's personnel, will write a report (Fig. 1) including possible comments and suggestions. The report will be published for the ICOS community and for the station's use, and it is expected to be finalised during winter 2016.

Keywords:

Greenhouse gases, atmosphere, audit

Internet data bases:

Data from the JFJ ICOS station will be available via <https://www.icos-cp.eu/>. MobileLab data is not available for the public.

Collaborating partners/networks:

Swiss Federal Laboratories for Materials Science and Technology EMPA, Switzerland

Laboratoire des Sciences du Climat et de l'Environnement LSCE, France

Scientific publications and public outreach 2015:

Conference papers

Saarnio, K., H. Aaltonen, J. Hatakka, T. Mäkelä, J. Rainne, O. Laurent, O. Peltola, M. Steinbacher, and T. Laurila, Mobile laboratory as a part of internal quality control of ICOS atmospheric station network, Carbon Dioxide, Other Greenhouse Gases, and Related Measurement Techniques (GGMT), Abstract B6, La Jolla, CA, USA, September 13-17, 2015.

Data books and reports

MobileLab audit report: System and performance audit of carbon dioxide, methane and carbon monoxide at the ICOS class 1 Atmospheric station Jungfraujoch, Switzerland, January–March 2015 (not published yet).

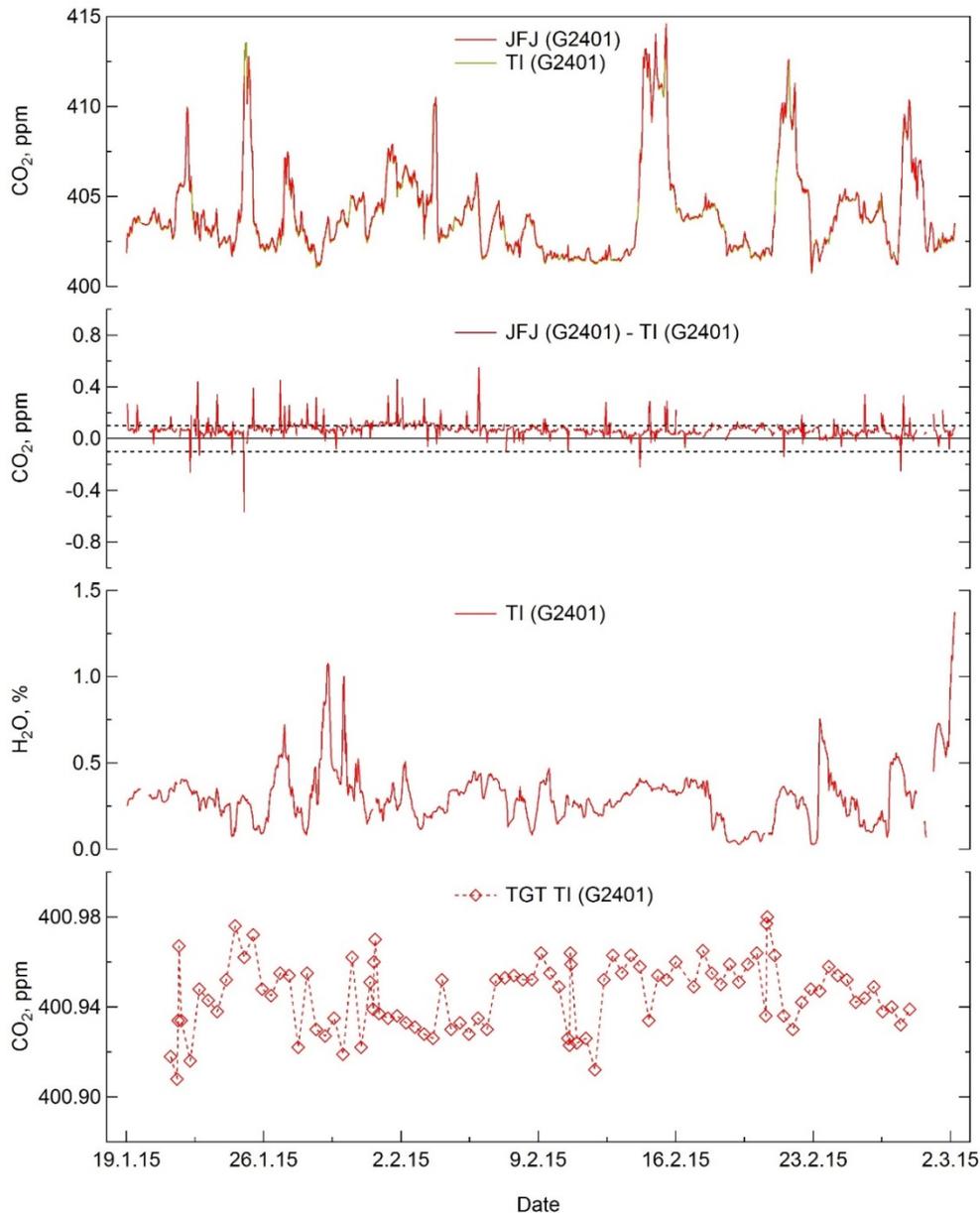


Figure 1. An example figure from the audit report. Hourly mean ambient CO₂ mole fraction measured with a local instrument (JFJ-G2401) and a MobileLab instrument (TI-G2401) (uppermost graph); the deviation of JFJ-G2401 compared to TI-G2401 on hourly mean CO₂ mole fractions (dashed lines refer to the WMO/GAW component compatibility goal (± 0.1 ppm)) (second graph); the mole fraction of water vapour measured with TI-G2401 (third graph); and the mole fraction of CO₂ in the target gas cylinder measured with TI-G2401 (lowest graph).

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