

File Revision Date:

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Data Set Description:

PI:

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until March 2008, also:

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Instrument:

Fourier Transform Infrared Spectrometer (FTIR)

Site:

Harestua solar observatory
Piperveien 490, 2716 Harestua
Norway
60.20 N, 10.80 E, 596 masl

Measurement Quantities:

FTIR vmr vertical profile data at Harestua, Norway
Column Density [molec/cm²] C₂H₆, CFC₁₂, CH₄, ClONO₂,
CO, CO₂, COF₂, HCFC-22, HCl, HF, HNO₃, N₂O, NO₂, O₃

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Reference Articles:

Mellqvist, J. (2002). Ground-based FTIR observations of chlorine activation and ozone depletion inside the Arctic vortex during the winter of 1999/2000. *Journal of Geophysical Research - Atmospheres*. D20 (107) s. 2156-2202. [Nr. 214688]

Angelbratt, J., Mellqvist, J. et al , A new method to detect long term trends of methane (CH₄) and nitrous oxide (N₂O) total columns measured within the NDACC ground-based high resolution solar FTIR network. *Atmos. Chem. Phys. Discuss.*, 11, 8207–8247, 2011a

de Laat A. T. J.; Gloudemans A. M. S.; Schrijver H....Mellqvist, J., et al., ; et al.Validation of five years (2003-2007) of SCIAMACHY CO total column measurements using ground-based spectrometer observations, *ATMOSPHERIC MEASUREMENT TECHNIQUES* 3(5), 1457-1471, 2010

Angelbratt J.; Mellqvist J.; Simpson D.; et al., Carbon monoxide (CO) and ethane (C₂H₆) trends from groundbased solar FTIR measurements at six European stations, comparison and sensitivity analysis with the EMEP model, *ATMOSPHERIC CHEMISTRY AND PHYSICS* Volume: 11 Issue: 17 Pages: 9253-9269 DOI: 10.5194/acp-11-9253- 2011 , 2011b

Instrument Description:

A Bruker instrument IFS 120 was installed in May 1994 at Harestua which is a solar observatory situated about 50km north of Oslo. Since the first measurements in Sept. 1994, the solar coeliostat of the solar observatory was used. A home made solar tracker has been in operation from 2006, and the instrument was upgraded in the summer of 2008. From August 2008 we use the IFS 125M (Brault aquisition)

Instrument IDs:

CTH001 - IFS 120

CTH002 - IFS 125M

Algorithm Description:

Our data has been evaluated with sfit2 and saved in Ames format up to 2019. Geoms-HDF files have been produced using sfit4 for O₃, CH₄ and HCl, and we expect that all species will be saved in Geoms-HDF at NDACC the next following years.

Expected Precision/Accuracy of Instrument:

Line shape measurements with HBr cell are performed monthly. We use linefit v9 for ILS.

Instrument History:

July 2008 Upgrade of instrument to IFS 125M

Sep. 2008 New KBr beamsplitter

Oct. 2009 Compressor connected to instrument

Apr. 2010 New aperturewheel installed in instrument

May 2013 Tracker controller problem again. 4 weeks downtime

Sep. 2013 Laser encoder failure. Sent to Bruker. 7 weeks downtime

Oct. 2013 Sun tracker failure. 8 weeks downtime
Nov. 2015 Laser-freq. stability problem. 9 weeks downtime.
Dec. 2015 A new laser was installed
Aug. 2016 Installation of new control PC running Windows 10
Dec. 2016 Laser encoder problems. Encoder/motor sent to Bruker.
July 2017 Tracking problems due to defect photo diode.
Sep. 2019 No measurements during the next four months due to a broken laser
Jan. 2020 The new laser has straylights. No measurements until May.

Days of observations with the IFS 125M instrument:

2008	46
2009	54
2010	56
2011	55
2012	49
2013	29
2014	53
2015	43
2016	49
2017	47
2018	57
2019	39
2020	35