Latest Revision: December 10 2023.
MetaData File provided: September 2015.

Data Set Description:

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Instrument: Fourier Transform Infrared Spectrometer (FTIR)
Site(s): Anhui Institute of Optics and Fine Mechanics
Hefei, NDACC Primary Station, China
31.90 N, 117.17 E, 29m above sea level

Measurement Quantities:
Profile and Total Vertical Column Abundances above Hefei
(profile: volume mixing ratio. total column: number of molecules per sq. cm)

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Instrument Description:
Bruker 125HR: 2014-present

A commercial Bruker IFS 125 HR was installed in January 2014. This instrument has both MIR (MCT and InSb) and NIR (InGaAs) channels and an OPD of 900 cm. The Bruker FTIR uses a Bruker solar tracker A547. The instrument line shape (ILS) function of the FTIR instrument is monitored by low-pressure HCl and HBr cell measurements.

Algorithm Description:
Vertical profiles of trace gases are derived using SFIT4 (SFIT4_V 0.9.4.4). SFIT4 implements Optimal Estimation and Tikhonov-Phillips approaches. Vertical profiles of volume mixing ratios are weighted by the airmasses in each retrieval layer and integrated to give the total or partial

columns in molecules/cm^2. We report total columns and profiles in HDF4 format. The species to be reported to the NDACC archive include O3, CO, HCN, C2H6, HCl, HNO3, HF, CH4, N2O, ClONO2.

The microwindows and interfering species follow the NDACC IRWG recommendations. The a priori profile used for all gases is based on WACCM version 6, except for H2O which uses the reported humidity from NCEP met data.

Ancillary data:

- Line compilation: HITRAN 2008 forms the basis. ClONO2, CFC-11, CFC-12, CFC-22, CCl4, CF4, F-113, and F-142b are from the pseudoline compilation of Geoffrey Toon (JPL).
- Physical models: PT profiles are derived from daily NMC data (NDACC data base).

Expected Precision/Accuracy of Instrument:

Uncertainty analysis is performed per retrieval and reported as systematic and random components. The error calculations are carried out using the IDL tool errcalc_s4v0_v3.pro, written by D Smale (NIWA, 2017), based on earlier code by a number of authors (B Connor, S Wood, N Jones, J Hannigan, R bachelor). HDF-files contain corresponding error estimates (for each target gas, for every spectrum).

Instrument History:

Bruker IFS 125HR was installed in January and started operating at Hefei in September 2015.
A meteorological station (Zeno, coastal environmental systems, USA) was installed in September 2015 to record surface pressure, temperature, relative humidity, wind speed, and other meteorological information.

Reference Articles:

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