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Data Set Description:

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Co-I Omaira García, Izaña Observatory, AEMet (Agencia Estatal de Meteorologia)
Thomas Blumenstock, IMK-ASF
Instrument: Fourier Transform Infrared Spectrometer (FTIR)
Site(s): Izaña Observatory
Agencia Estatal de Meteorologia (AEMet)
Sta. Cruz de Tenerife, Tenerife Island, Spain,
NDACC sub-tropical site
28.3 °N, 16.5°W, 2360 m a.s.l.
Measurement Quantities:
Total Vertical Column Abundances and Profiles above Izaña (in number molecules per cm2)

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For full list of references please see:
http://www.imk-asf.kit.edu/english/709.php

Online References:
http://www.imk-asf.kit.edu/english/717.php
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Instrument Description:
Since February 1999 a Bruker IFS 120M Fourier Transform Infrared (FTIR) spectrometer is in operation at the Izaña Observatory. Since January 2005 a Bruker IFS 125 HR is used. The FTIR is operated in solar absorption geometry. The maximum optical path difference achievable is 250 cm corresponding to a spectral resolution of 0.0035 cm-1. Normally a resolution of 0.005 cm-1 (opd = 180 cm) is chosen. The spectrometer is equipped with two detctors, an InSb and a photovoltaic MCT. The spectral range covered is 650 to 5000 cm-1. The NDACC optical filter set is used.

The Instrumental Line Shape (ILS) is monitored routinely with N2O or HBr gas cell measurements. Cell spectra are analyzed with the LINEFIT software (F. Hase, 1999). The resulting ILS is used in the retrieval of atmospheric spectra.

In May 2007 an InGaAs detector was added to extend the spectral range to the NIR domain. The instrument has been accepted as TCCON (Total Carbon Column Observing Network) network.

Algorithm Description:
PROFFIT 9.6 (Hase, 2003) is used for the inversion of the spectra. PROFFIT is able to retrieve profiles and vertical column abundances of several species in several microwindows simultaneously. For the profile retrieval the Phillipps-Tikhonov approach is used. For some species the inversion is performed on a logarithmic scale to avoid negative vmr values.

PROFFIT also includes a forward model. The synthetic spectra are calculated using daily pressure and temperature data of the National Center for Environmental Prediction (NCEP). Spectroscopic data are taken from HITRAN 2008 data base.

Expected Precision/Accuracy of Instrument:
The error estimate is given for each data point in the data files.

Instrument History:

Feb. 1999	Start-up of the instrument (IFS 120M) at Izaña Observatory
Dec. 1999	Comparison with FTIR on-board Polarstern (ship) from J. Notholt, AWI
End of 2004	Problems with 120M spectrometer
Jan. 2005	Set-up of a new container with Bruker IFS 125 HR
Early 2005	Intercomparison of IFS 120M and IFS 125HR
May 2007	An InGaAs detector was added to cover also the NIR domain
May 2007	Instrument is part of the TCCON network
2011	Camera based camtracker implemented
2012	Remote control implemented
2016	100 years anniversary of Izaña Atmospheric Research Centre

About 100 days of observation per year.