Newsletter Nr. 1

Information from the German SCIAMACHY Validation Team

Klaus Töpfer to open the UB/UNEP ground based station in Nairobi during the DLR Falcon SCIA-Value campaign.

On the 27th of February, 2003 the ground-based research station in the building of UNEP (United Nations Environment Programme) in Nairobi will be officially opened by the Executive Director of UNEP, Prof. Klaus Töpfer and his staff. The station, which was brought into operation in August 2002 by the Institute of Environmental Physics of the University of Bremen, uses DOAS (Differential Optical Absorption Spectroscopy) to yield measurements of trace gases in the troposphere and stratosphere for the validation of SCIAMACHY and research into stratospheric ozone and tropospheric pollution.

The European Environmental Satellite ENVISAT (Source: ESA)

SCIAMACHY is an advanced passive remote sensing instrument. It has been developed in a collaboration between Germany, the Netherlands and Belgium during the 1990s as a national contribution to the European Space Agency (ESA) environmental satellite EnviSat, which was successfully launched at the beginning of March 2002. SCIAMACHY scans the atmosphere from the surface to ~100 km observing scattered light. Inversion of these data provides global information about the health of the stratospheric ozone layer and tropospheric pollution.

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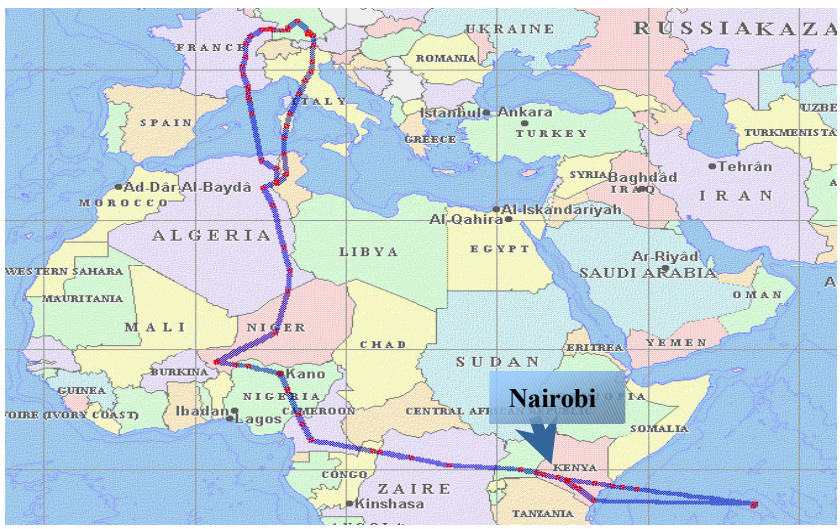
The German station in Nairobi is part of a global DOAS network, used for the measurement of tropospheric and stratospheric trace gases, which are important in controlling the stratospheric ozone layer and air pollution. In addition to Nairobi, there are stations in Antarctica, Surinam, Greenland, Spitzbergen, Sweden and Germany.

DOAS-Instrument at the Station in Nairobi

Within the SCIA-VALUE project, the research aircraft of the German Aerospace Center (DLR), the FALCON 20, is making measurements with its scientific payload from the North Pole to the equator to validate SCIAMACHY. During the second leg of the current, the Falcon is traveling from Germany over Mallorca, Algeria, Niger, Cameroon, Kenya to the Seychelles and back. In early March, the Falcon and its payload will be measuring at high latitudes from Spitzbergen and Canada.



Southern FALCON flight route with station Nairobi

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The scientific payload of the Falcon comprises passive remote sensing instrumentation operating in the UV visible (AMAXDOAS), and the microwave (ASUR) spectral regions, as well as an advanced LIDAR system (OLEX). During the visit of the Falcon to Nairobi, simultaneous measurements will be made from SCIAMACHY, the Falcon payload and the ground-based station, providing a unique set of data for the validation of SCIAMACHY data products and unique insight into the tropical tropospheric and stratospheric chemistry.

The German Research Aircraft FALCON 20.

The ground based measurements and the Falcon SCIA-Value campaign are German contributions to the validation of SCIAMACHY and EnviSat. In total this research programme comprises 23 projects with more than 60 scientist. More information about SCIAMACHY Validation, EnviSat, SCIAMACHY, IUP/IFE-UB, DLR, IUP-UH and UNEP is available at the following web-pages:

http://www.iup.physik.uni-bremen.de/gcvos/
http://envisat.esa.int/
http://www.sciamachy.de/
http://www.iup.physik.uni-bremen.de/
http://www.dlr.de/ipa/
http://www.iup.uni-heidelberg.de/
http://www.unep.org/

SCIAMACHY

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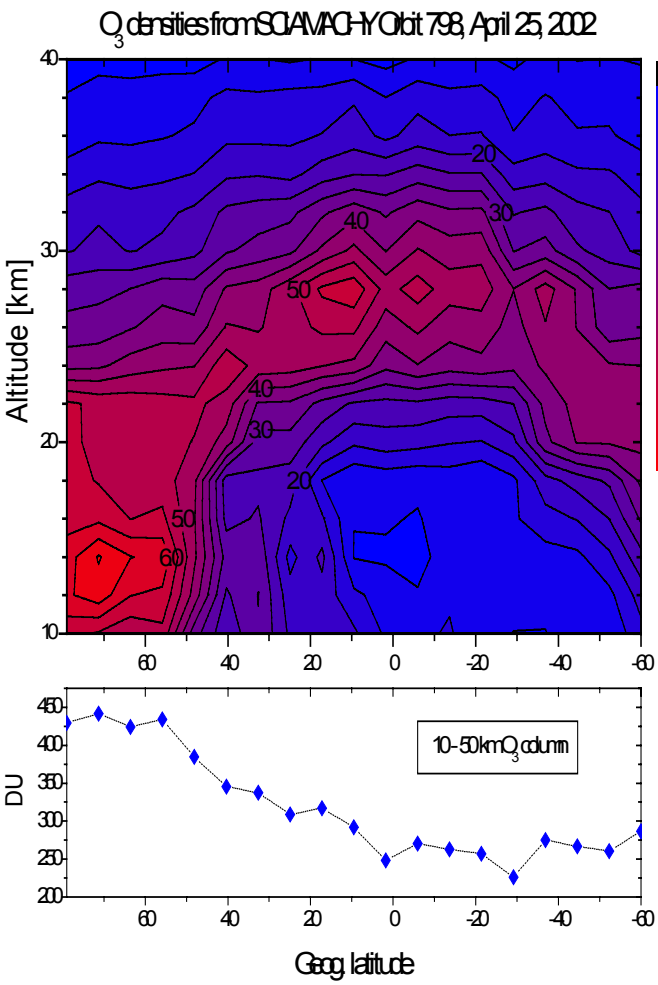
SCIAMACHY and CTM Assimilation of GOME Data

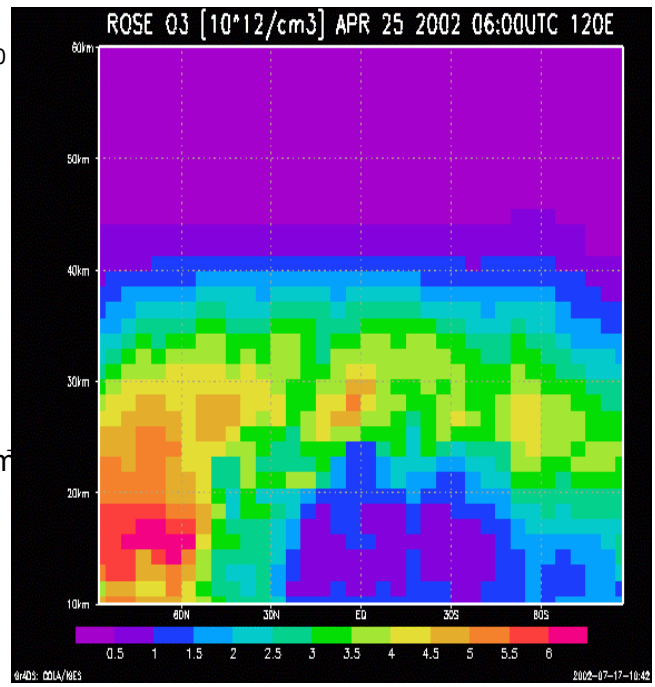
O_3 measured with SCIAMACHY:



Savigny et al. 07/2002

Preliminary results!

Assimilated GOME O_3 Data:



CTM assimilation (NCAR-ROSE)

Courtesy of Michael Bittner (DLR-DFD)

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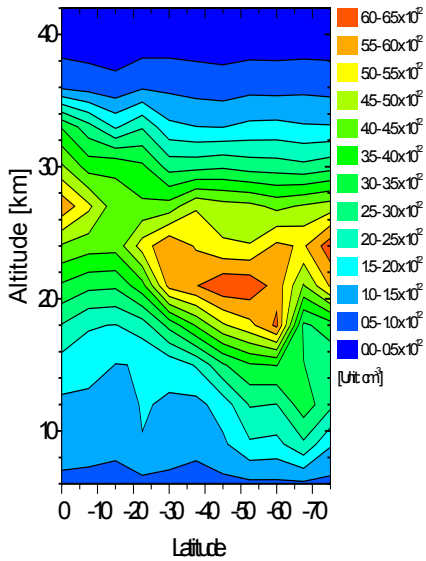
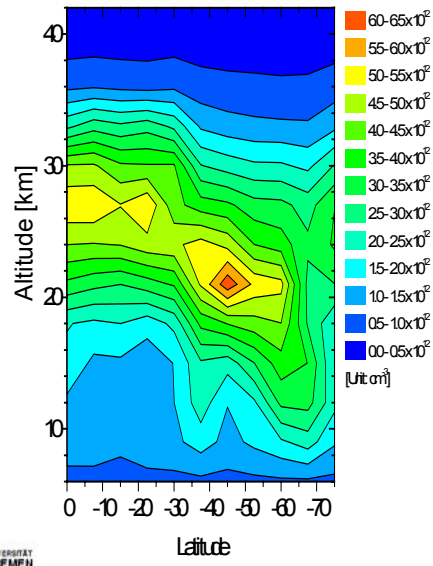
Savigny et al.

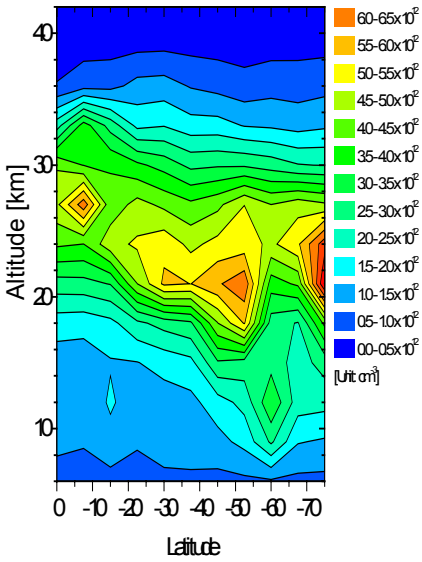
Orbit 3010

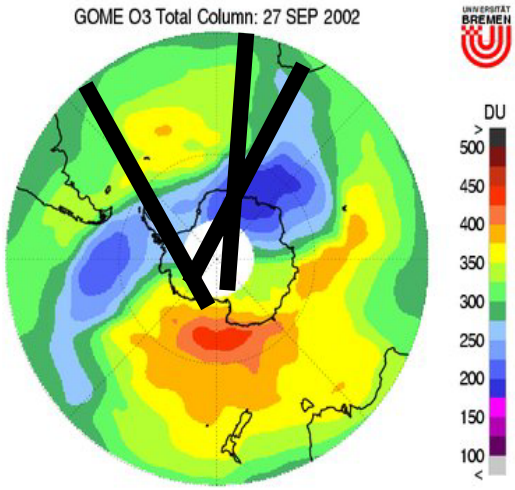


Orbit 3009



Orbit 3012





- preliminary IUP retrieval results
- tangent height improvement in progress

SCIAMACHY Ozone observation SH autumn 2002

SCIAMACHY

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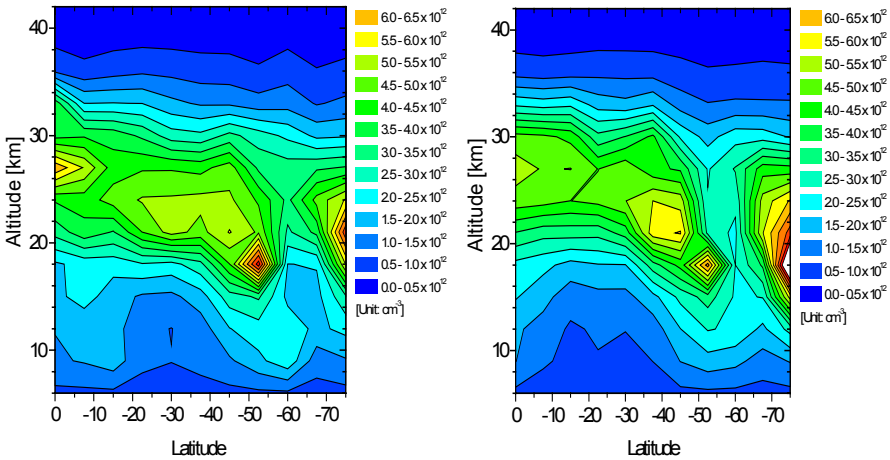
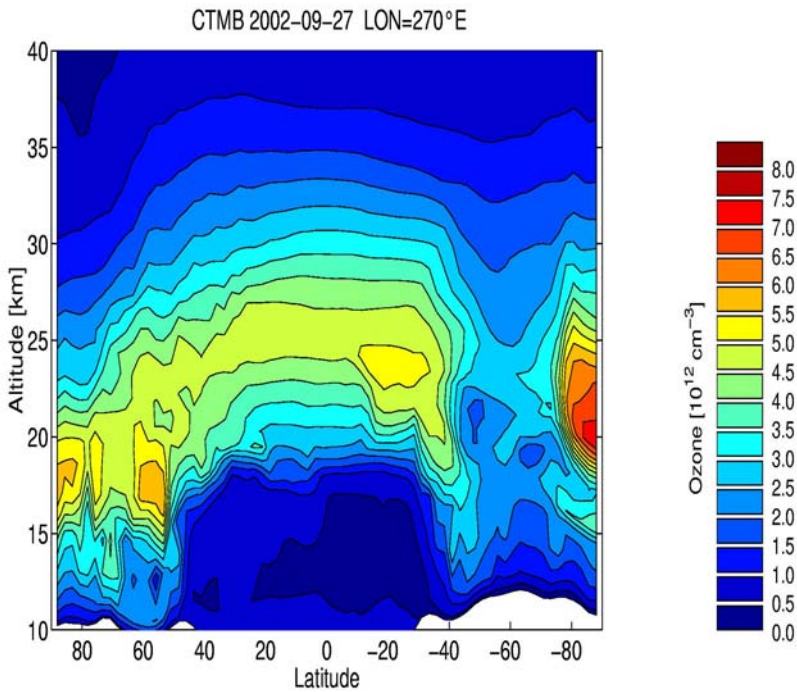
Orbit 3013 Orbit 3014



Vortex Splitting in the Southern hemisphere

Preliminary SCIAMACHY ozone profiles (Savigny et. Al)



3D-CTM modell (Sinnhuber et.al)