MIPAS L2 Changes

Bruno Carli
IFAC - CNR

On behalf of MIPAS L2 QWG

OUTLINE

- Review of L2 upgrades
- New auxiliary information
- Other relevant issues

L2 upgrades

Version	Date of delivery	List of files upgraded by IFAC	Main modifications	PDS ADF upgrade and list of files upgraded by ESRIN
ADF V3.0	**14.05.2003**	MIP_CS2_AX_V3.0 MIP_MW2_AX_V3.0_CD MIP_MW2_AX_V3.0_noCD MIP_OM2_AX_V3.0 MIP_PS2_AX_V3.0 MIP_SP2_AX_V3.0	Update of spectroscopic db: hitran_mipas_pf3.1, improved OM for the nominal altitude range, update of cloud filter implementation,	**23.07.2003** MIP_CS2_AX_V3.0 MIP_MW2_AX_V3.1_CD MIP_OM2_AX_V3.1 MIP_PS2_AX_V3.0 MIP_SP2_AX_V3.0
ADF V3.1	**19.06.2003**	MIP_MW2_AX_V3.1_CD MIP_MW2_AX_V3.1_noCD MIP_OM2_AX_V3.1	In reply to SPR MIPAS_OM2_AX_3.0: no gaps between altitude validity range and improved validity mask range in MW db.	

Version	Date of delivery	List of files upgraded by IFAC	Main modifications	PDS ADF upgrade and list of files upgraded by ESRIN
ADF V3.2	**31.07.2003**	MIP_OM2_AX_V3.2 MIP_PS2_AX_V3.2 MIP_CS2_AX_V3.2	OMs for retrieval range 9-68 km, PS2 for improved convergence criteria, modification in the name of some cross-section files	**04.11.2003** NRT: MIP_CS2_AX_V3.2 MIP_OM2_AX_V3.1 MIP_MW2_AX_V3.1 MIP_PS2_AX_V3.6_NRT MIP_SP2_AX_V3.0 OFL: MIP_CS2_AX_V3.2 MIP_OM2_AX_V3.5_OFL MIP_MW2_AX_V3.1 MIP_PS2_AX_V3.6_OFL MIP_SP2_AX_V3.0
ADF V3.3	**08.08.2003**	MIP_PS2_AX_V3.3	Short-term bug fix for ILS in PS2 file	
ADF V3.4	**29.08.2003**	NRT: MIP_MW2_AX_V3.4 OFL: MIP_MW2_AX_V3.4 MIP_OM2_AX_V3.4_OFL	Two set of aux ADF: NRT: old conv. criteria, nom. altitude range, ILS bug correction ; Off-line : new conv. criteria, altitude range 6-68 km, ILS bug correction.	
ADF V3.5	**26.09.2003**	OFL: MIP_OM2_AX_V3.5	Introduced PT error propagation matrices different from 0 in MIP_OM2_AX_Off-line	
ADF V3.6	**20.10.2003**	NRT: MIP_PS2_AX_V3.6_NRT OFL: MIP_PS2_AX_V3.6_OFL	Increased dimension of some vectors in MIP_PS2_AX files	

L2 upgrades

Version	Date of delivery	List of files upgraded by IFAC	Main modifications	Date of PDS ADF upgrade and list of files upgraded by ESRIN
ADF V3.7	**13.02.2004**	NRT: MIP_OM2_AX_NRT_V3.7 MIP_PS2_AX_NRT_V3.7 OFL: MIP_OM2_AX_OFL_V3.7 MIP_PS2_AX_OFL_V3.7	Increased NESR threshold in PS2 files to face the increase of NESR after the switch-on of the heater (since the middle of January 2004). OMs with fewer than 3 sweeps eliminated from the OM database.	**11.03.2004** NRT: MIP_OM2_AX_NRT_V3.7 MIP_PS2_AX_NRT_V3.7 MIP_CS2_AX_V3.6 MIP_MW2_AX_V3.6 MIP_SP2_AX_V3.6 OFL: MIP_OM2_AX_OFL_V3.7 MIP_PS2_AX_OFL_V3.7 MIP_CS2_AX_V3.6 MIP_MW2_AX_V3.6 MIP_SP2_AX_V3.6

L2 upgrades

Important dates

- **23.07.2003 updated spectroscopic database** (hitran_mipas_pf3.1)
- **04.11.2003 extension of retrieval range and reduction of retrieval error with off-line operation**

NEW AUXILIARY INFORMATION

Averaging Kernels and systematic errors for off-line retrievals

- The averaging kernels and the systematic errors for MIPAS off-line level 2 retrievals are downloadable from the IFAC website:

  http://www.ifac.cnr.it/retrieval/auxiliary.html

- A technical note describing the AKs for MIPAS off-line retrievals is also available at the above website.

NEW AUXILIARY INFORMATION

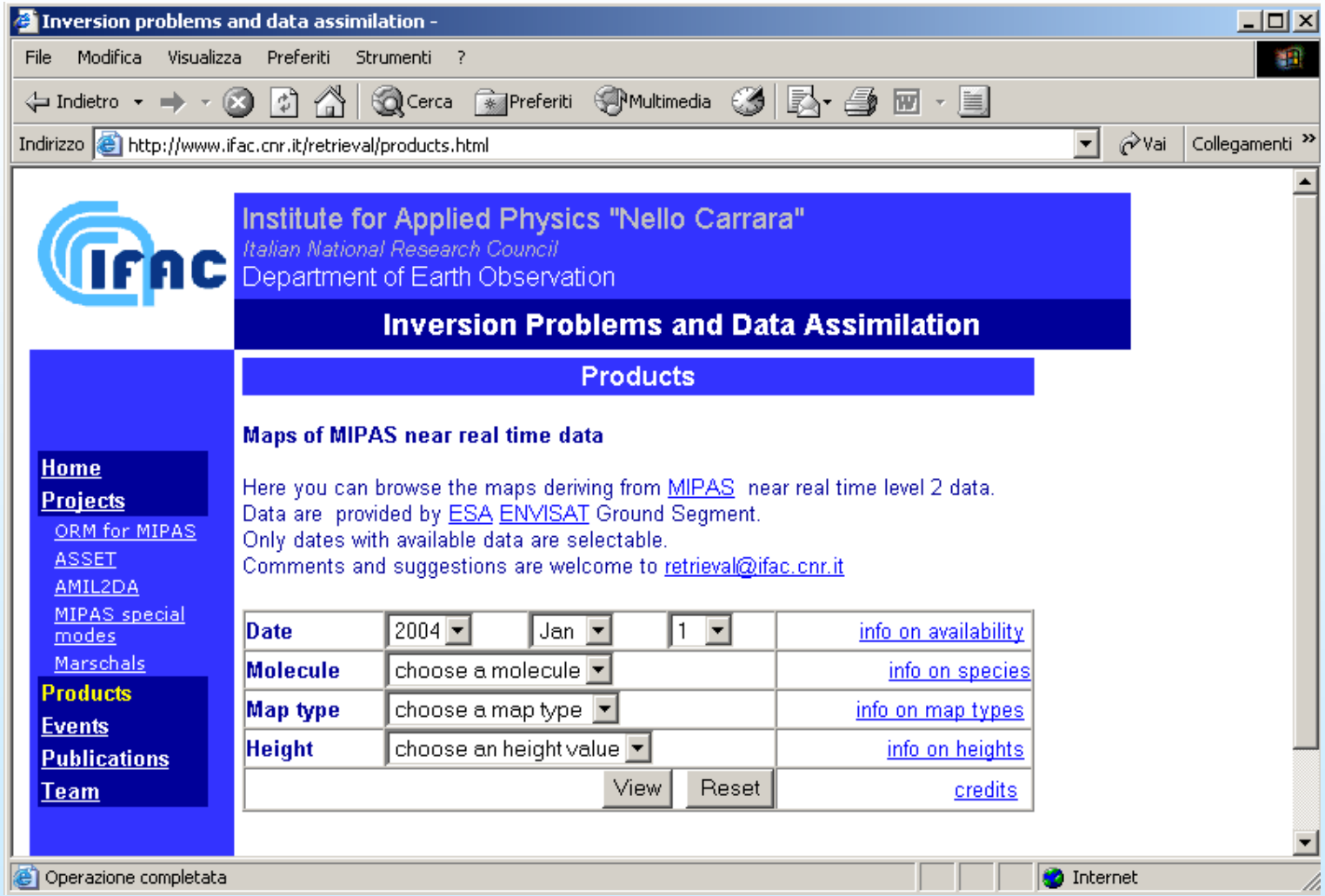
Global maps

- Global maps of the target species H2O, O3, HNO3, CH4 and N2O as a function of altitude for previous 3 months of MIPAS measurements are available at website:

  http://www.ifac.cnr.it/retrieval/products.html.

New releases

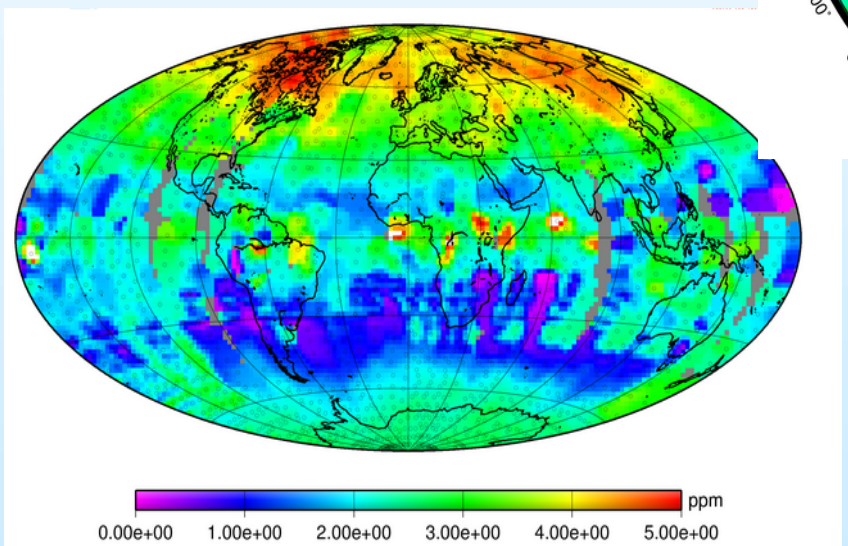
Global maps available at IFAC website

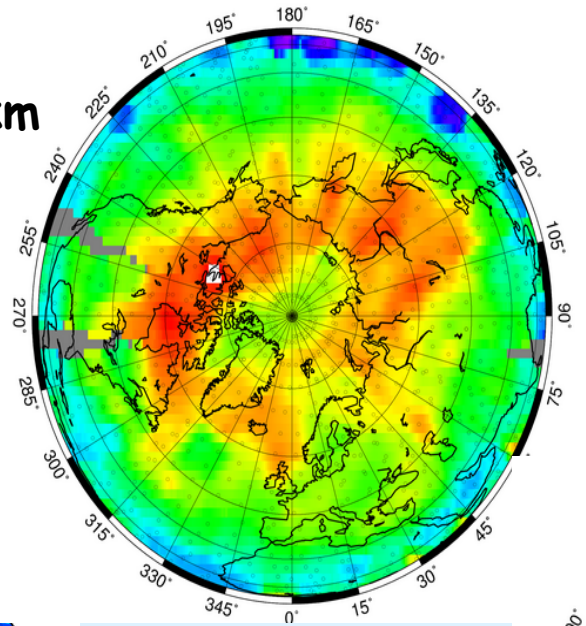


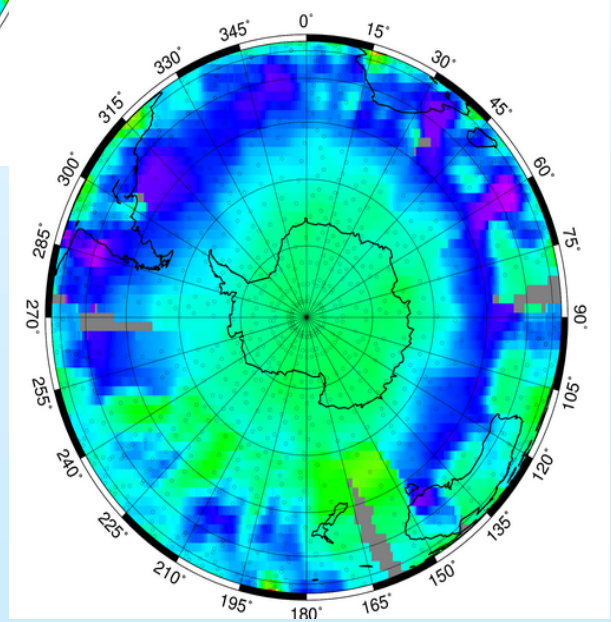
New releases

Global maps available at IFAC website

O_3 on 18th March 2004 at 21 km







NEW AUXILIARY INFORMATION

Global maps

- Global maps of the target species H2O, O3, HNO3, CH4 and N2O as a function of altitude for previous 3 months of MIPAS measurements are available at website:

  http://www.ifac.cnr.it/retrieval/products.html.

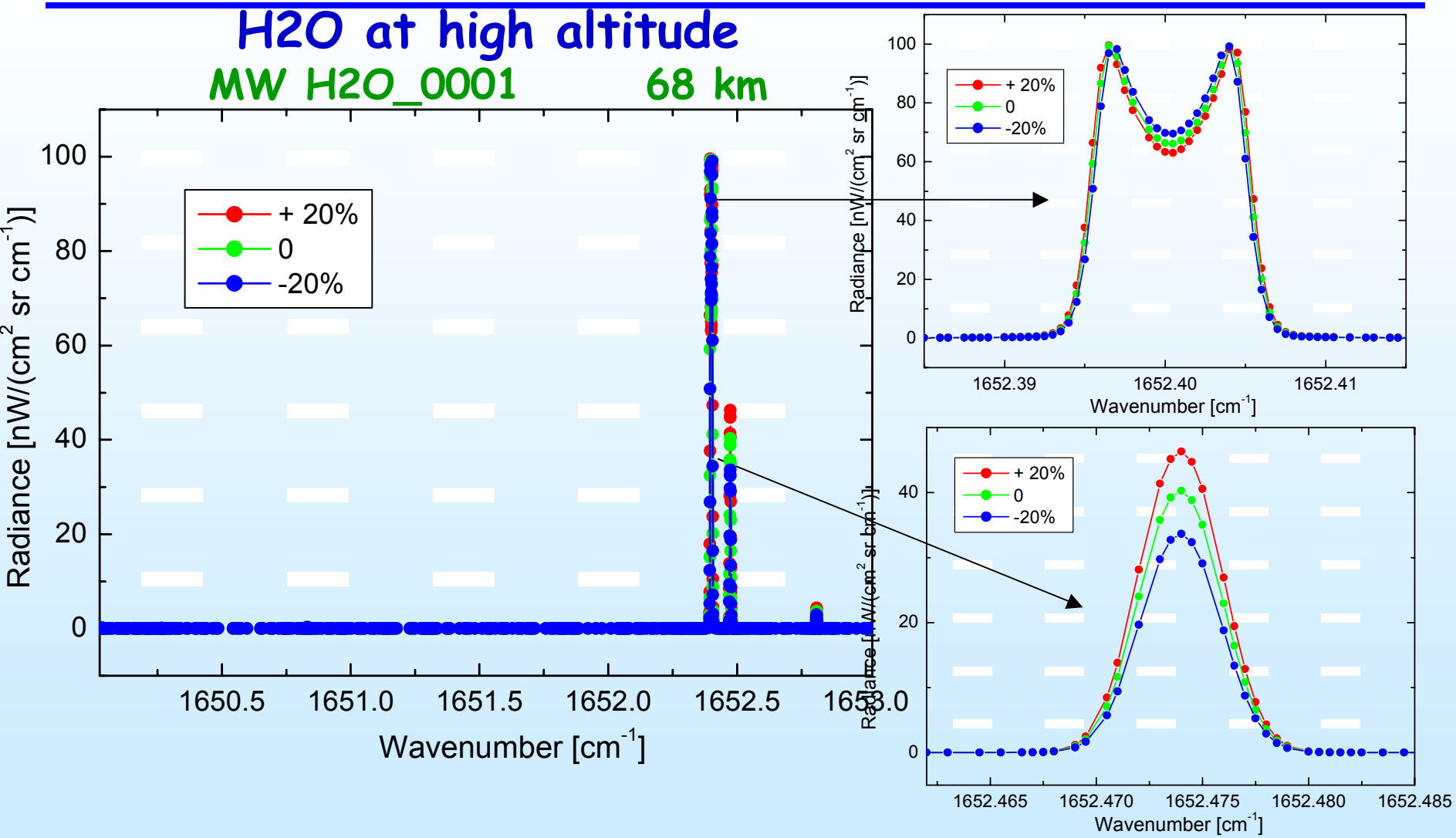
- NO2 missing because of diurnal variation
- Ony NRT products

Other relevant issues

- Update of climatological CO2 profile
- More accurate calculation of pointing VCM
- Problem in H2O retrieval at high altitudes

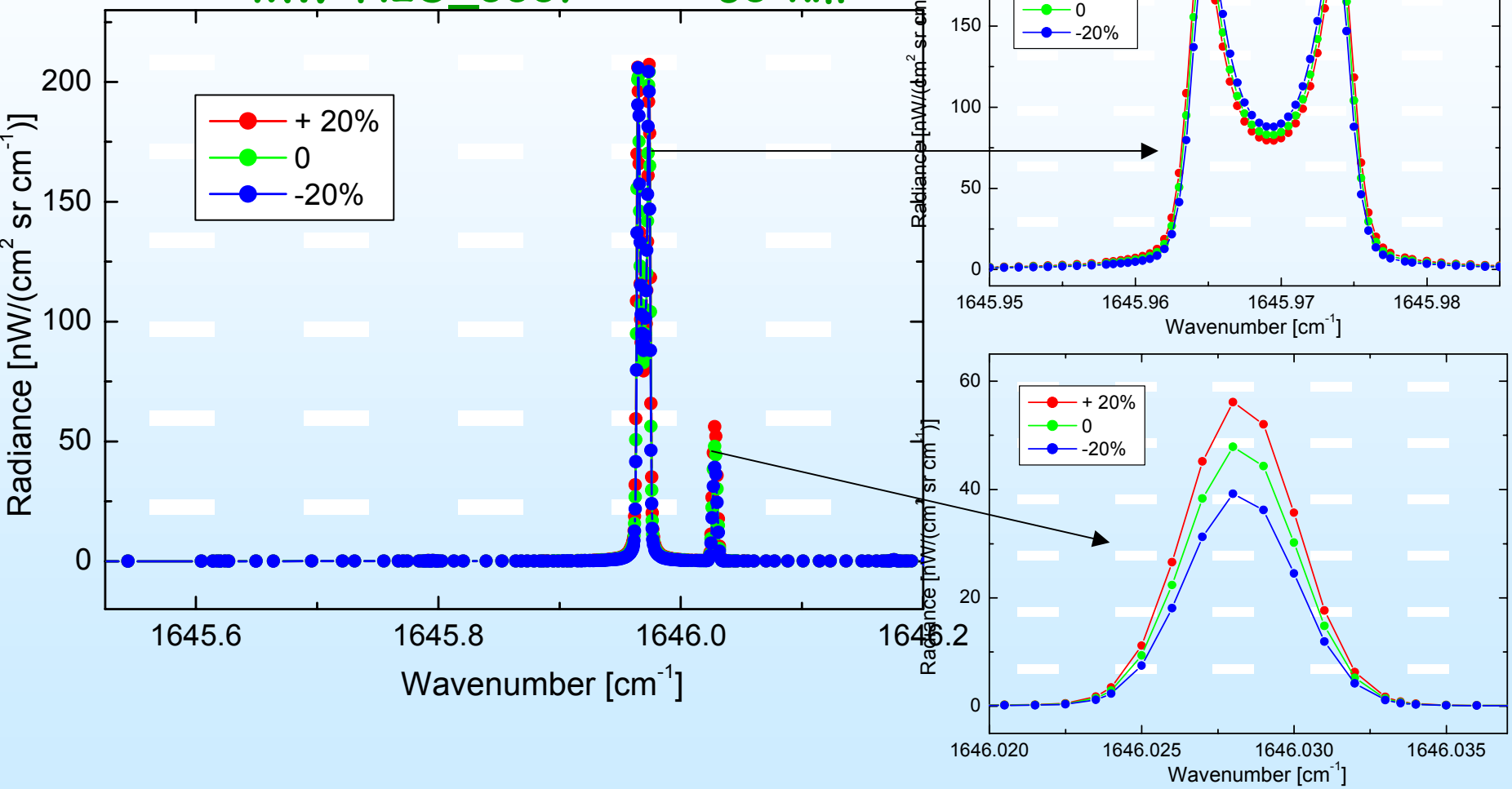
H2O at high altitude

MW H2O_0001 68 km



H2O at high altitude

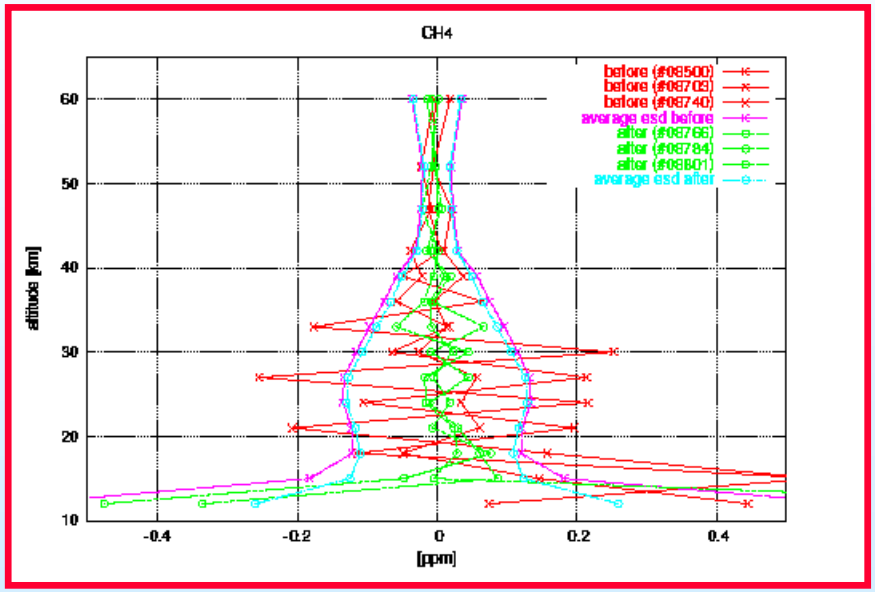
MW H2O_0007 60 km

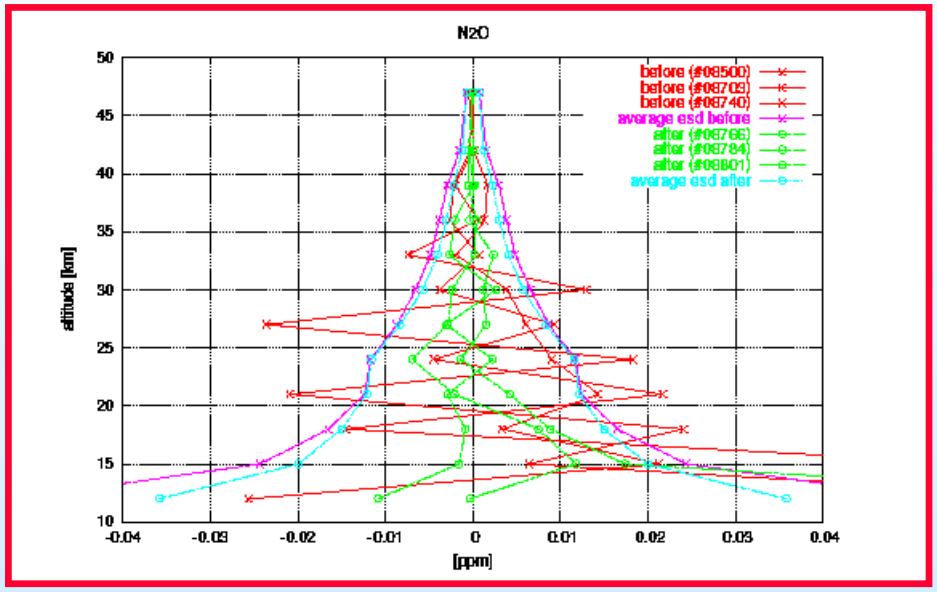


Other relevant issues

- Update of climatological CO2 profile
- More accurate calculation of pointing VCM
- Problem in H2O retrieval at high altitudes
- Oscillations in N2O and CH4 profiles

Oscillations before and after orbit 8762 (3/11/2003)



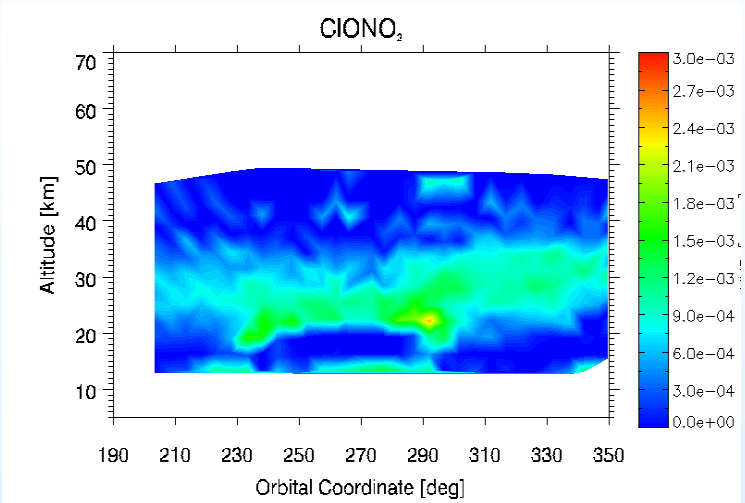


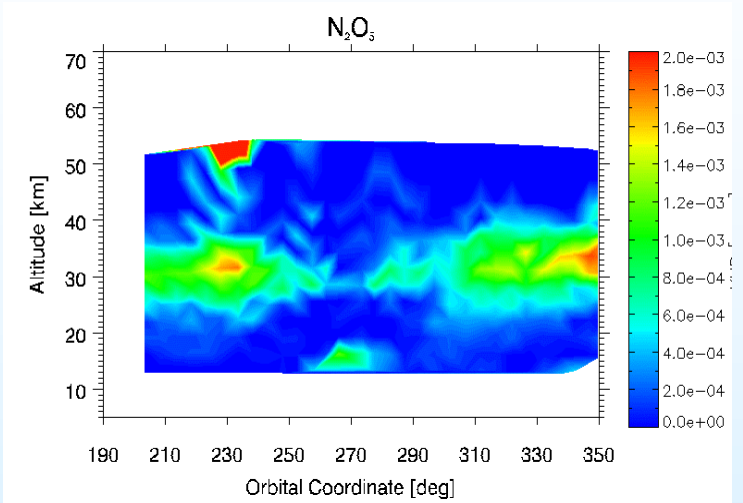
CH_4 N_2O

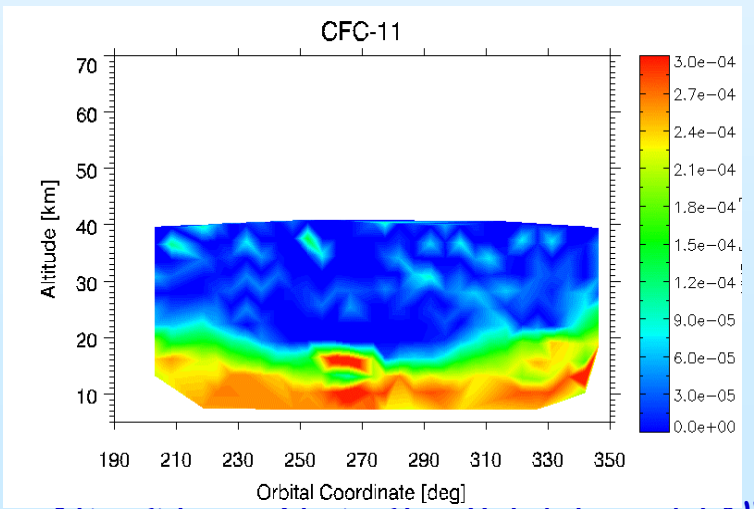
Other relevant issues

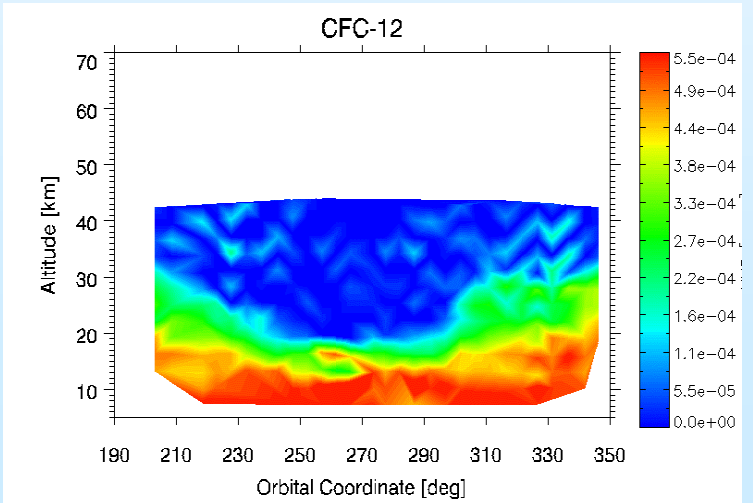
- Update of climatological CO2 profile
- More accurate calculation of pointing VCM
- Problem in H2O retrieval at high altitudes
- Oscillations in N2O and CH4 profiles
- Retrieval of additional species in NRT

MIPAS non-target species









Other relevant issues

- Update of climatological CO2 profile
- More accurate calculation of pointing VCM
- Problem in H2O retrieval at high altitudes
- Oscillations in N2O and CH4 profiles
- Retrieval of additional species in NRT
- Processing of special modes in NRT

Other relevant issues

- Update of climatological CO2 profile
- More accurate calculation of pointing VCM
- Problem in H2O retrieval at high altitudes
- Oscillations in N2O and CH4 profiles
- Retrieval of additional species in NRT
- Processing of special modes in NRT
- Operation at reduced spectral resolution.

Conclusions

- Major changes :
  - 23.07.2003 spectroscopic database
  - 04.11.2003 off-line operation and new calibration (e.g. N2O and CH4)
- Problems expected with H2O at high altitudes
- Improvement possible for temperature retrieval (CO2 climatology and pointing VCM)
- Possible extension to additional species and special modes
- Possible future operation at reduced spectral resolution.