AMIL2DA

Advanced MIPAS level 2 data analysis

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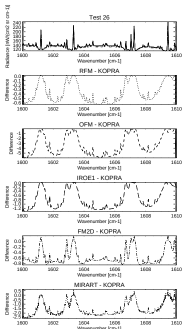
INTRODUCTION

Many scientifically interesting atmospheric species are measured by MIPAS but are not part of the operational data product. This gap is filled by scientific groups who use their own algorithms to analyze the spectra for, e.g., CFCs, chlorine reservoirs, further nitrogen reservoirs etc. Moreover, these groups reanalyze species of the operational data product with algorithms of higher sophistication. The main purpose of AMIL2DA is to cross-validate these different data analysis approaches in order to avoid however inconsistencies in resulting data sets.

FORWARD MODELING

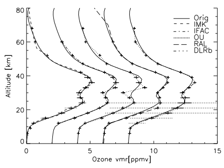
Forward modeling of radiative transfer is crucial for accurate analysis of remotely sensed data. Therefore, the forward models used by the participants have been cross-validated.



Water vapour continuum test case. The uppermost panel are radiance spectra (KOPRA (IMK): solid; RFM (Oxford University): dotted; OFM (IFAC): dashed; IROE1 (IFAC): long dash; FM2D (RAL): dashed–dotted (overlaid with RFM); MIRART (DLR): dashed doubledotted). The other panels show difference spectra with respect to KOPRA.

BLIND TEST RETRIEVAL

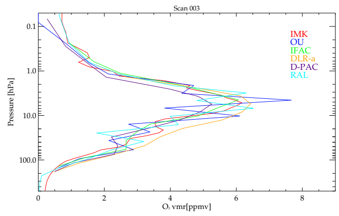
Retrieval algorithms have been tested on the basis of synthetic noise-superimposed measurements generated for atmospheric state parameters unknown to the participants.



Retrieved ozone profiles. Error bars for random error (solid line) and systematic errors, systematic errors (dotted line) are included.

RETRIEVAL CROSS VALIDATION

Some selected MIPAS limb scans have been analyzed by the participants for cross-validation purposes. In general, the results of the different groups show good agreement.



Retrieved ozone profiles for scan 3 (northern polar summer). Differences in the results are mainly due to different regularization.

FURTHER ACTIVITIES

- Assessment of spectroscopic data;
- Assessment of spectral microwindows;
- Assessment of systematic residuals;
- Assessment of the operational processor;
- Assessment of non-LTE effects;
- MIPAS instrument characterization

CONCLUSION

The AMIL2DA team is ready to analyze MIPAS spectra for many species of scientific interest. Some MIPAS instrument characterization tasks are still going on. Differences in processor characteristics are understood.

FURTHER INFORMATION

Please check our web-site:
http://www.fzk.de/imk/asf/ame/amil2da

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