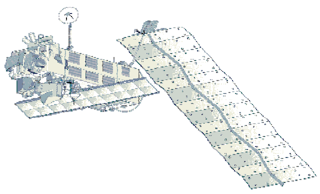
AMIL2DA

Advanced MIPAS level 2 data analysis [amil'tu:da]



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EUROPE IS READY FOR MIPAS SCIENCE DATA EXPLOITATION

The MIPAS (Michelson Interferometer for Passive Atmospheric Sounding) instrument, a Fourier transform limb emission spectrometer, is one of the instruments on Envisat, which was launched into its orbit on 1 March 2002. It measures the infrared spectral radiance of the Earth limb. From these measurements vertical abundance profiles of many species relevant to stratospheric ozone chemistry and global change are inferred. Operational MIPAS data products are vertical profiles of pressure, temperature, O_3, HNO_3, N_2O, CH_4, H_2O and NO_2, while analysis of further species of major interest for environmental research, e.g. stratospheric ozone chemistry or global change monitoring is left to scientists. Within the AMIL2DA project, European research groups have prepared themselves for this demanding task.

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UNITY IN DIVERSITY

To infer vertical abundance profiles from the measured spectral radiance data, sophisticated data analysis processors are needed. Instead of creating one single all-purpose data processor, which always has certain disadvantages with respect to the one or the other application, each project partner was supported to optimize his own data processor, according to the European motto: "Unity in diversity".

- Radiative transfer models and retrieval processors were adapted to the physical and computational requirements of the MIPAS experiment. Some of these algorithms include non-local thermodynamic equilibrium modeling.
- Radiative transfer models were intercompared; detected inconsistencies were removed.
- Using a set of simulated measurement spectra, blind-test retrievals were performed to prove the reliability of the data processors.
- Some real MIPAS data were successfully analyzed, which proves the robustness of the MIPAS data processors.
- Resulting temperature and abundance profiles were validated with GOMOS, SCIAMACHY, CHAMP and HALOE data.
- The MIPAS instrument was characterized.
- Data on vibrational temperatures as well as supplementary spectroscopic data were made available.
- New non-local thermodynamic equilibrium emissions of the atmosphere have been observed for the first time by MIPAS.

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