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MIPAS IMK/IAA Data Version 8: An Overview of Results - A Valuable Dataset for Future Limb Sounders

The Michelson Interferometer for Passive Atmospheric Sounding (MIPAS), onboard the ENVISAT satellite, was launched in 2002 and operated until 2012, recording infrared limb emission spectra from the middle and upper atmosphere. As a pioneering instrument, MIPAS serves as a precursor to the proposed ESA Earth Explorer 11 mission CAIRT (Changing-Atmosphere Infra-Red Tomography Explorer), which is currently under selection.

The MIPAS data retrieval software, KOPRA/RCP, developed at IMK/IAA, has demonstrated exceptional performance in deriving atmospheric vertical profiles. This advanced retrieval framework is very conducive for being adopted and used in future limb sounding missions.

To date, retrievals for 29 trace gases, upgraded to Version 8, are available: these include temperature, C_2H_2, C_2H_4, C_2H_6, CCl_4, COF_2, CH_3Cl, CH_4, $COCl_2$, ClO, $ClONO_2$, CO, CFC-11, CFC-12, HCFC-22, H_2O, H_2SO_4, HCN, HCOOH, HNO_3, HNO_4, N_2O_5, N_2O, NO, NO_2, O_3, OCS, PAN, and SF_6.
These datasets and previous versions have undergone extensive validation and have been widely used in scientific research addressing atmospheric composition, dynamics, chemistry, long-term trends, and climate change.

In this contribution, we present a collection of vertical along-track temperature and mixing ratio distributions, along with their corresponding coarse grid retrieval (CGR) results. CGR is a relatively new data product designed to facilitate comparisons between our retrievals and modelled atmospheric data, without requiring the application of averaging kernels.

We sincerely dedicate this contribution, with deep gratitude, to the memory of our late colleagues Thomas von Clarmann and Andrea Linden.

Topic

Current and past limb and occultation instruments: algorithms, products, validation

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