

RETRIEVAL OF UPPER TROPOSPHERIC AMMONIA FROM MIPAS/ENVISAT

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Ammonia is a basic gas, primarily emitted through farming and other human activity. It rapidly reacts with sulphur species to form ammonium sulphate aerosols and consequently it exhibits a very sharp decrease in concentration with altitude. Its abundance and variability are very poorly known above the boundary layer.

The Michelson Interferometer for Passive Atmospheric Sounding, MIPAS, was launched on Europe's environmental monitoring satellite, Envisat in March 2002. It is a high-resolution (0.025 cm⁻¹) Fourier transform spectrometer in a rearward-looking sun-synchronous polar orbit. In a single orbit it measures 70 profiles each of 17 levels that range from the upper troposphere to the lower mesosphere. Completing 14 orbits per day gives the instrument excellent coverage.

Only pressure, temperature and six significant trace gases are operationally retrieved by ESA from MIPAS data. However, there are many interesting species that are also present in the spectra. Ammonia has a weak signal and here we apply special techniques to perform retrievals of this species in the troposphere.