RETRIEVAL OF WATER VAPOR IN THE TROPICAL TROPOPAUSE REGION FROM MIPAS/ENVISAT

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The European research satellite Envisat has been launched successfully on 1 March 2002. One of the instruments on board is the Michelson Interferometer for Passive Atmospheric Sounding (MIPAS), a limb viewing mid-infrared high-resolution spectrometer. At IMK a non-operational MIPAS level 2 processor is used to derive geophysical data from the MIPAS observations, complementing the operational analysis by ESA. Among numerous atmospheric parameters, water vapor and temperature profiles are retrieved from spectral data in an altitude range from 5 km up to the mesosphere. In this paper we will present retrievals of water vapor in the tropical UT/LS-Region and ways to improve their use for certain problems.

The retrieval of water vapor strongly depends on the assumptions made for the retrieval approach, such as the selection of microwindows and the appropriate regularization. A retrieval approach will be presented to achieve optimized results in the tropical UT/LS-region.

Furthermore the results will be analyzed according to the water vapor distribution in tropical regions. A distinct, dry hygropause can be observed in the measured data. The tropical stratosphere shows lower water vapor values than the subtropical stratosphere indicating upwelling of freeze dried air in the tropics.