

Atmospheric water vapour from the PFS/Mars Express observations

M. Tschimmel (1), N.I. Ignatiev (2,4), D.V. Titov (1,2), E. Lellouch (3), T. Fouchet (3), L. Maltagliati (1), V. Formisano (4), M.Giuranna (4), A. Maturilli (4) and the PFS TEAM

(1) Max-Planck-Institute for Solar System Research, Katlenburg-Lindau, Germany, (2) Space Research Institute of Russian Academy of Sciences (IKI RAN), Moscow, Russia, (3) LESIA, Observatoire de Paris, Meudon, France, (4) Istituto di Fisica dello Spazio Interplanetario (INAF-IFSI), Rome, Italy

(tschimmel@mps.mpg.de / Fax +49-5556-979-141)

Since the time of Mars Express' orbit insertion the Planetary Fourier Spectrometer (PFS) has delivered thousands of infrared spectra of Mars observing its atmospheric evolution in the course of the seasons. Due to wide spectral range and high spectral resolution the instrument is a powerful tool to study atmospheric trace gases and in particular water vapour. Several H₂O bands at 30–50, 2.56, and 1.38 micron are used for routine retrieval of atmospheric H₂O column density.

During the Northern winter the average amount of water vapour in the atmosphere was about 12 precipitable microns. In the following spring and summer the well-known strong rise of atmospheric H₂O in the Northern hemisphere is clearly detected.

The entire dataset is expected to be processed by the time of the presentation so the seasonal cycle and the spatial distribution of water vapour will be reconstructed. Further possible effects like interaction of H₂O with the soil and non-uniform vertical distribution remain to be investigated. In addition, comparisons with the OMEGA and SPICAM observations of atmospheric water will be presented.