

SCIAMACHY LUNAR OCCULTATION WATER VAPOR MEASUREMENTS: RETRIEVAL AND VALIDATIONS

F. Azam*(1)

(1) Institute of Environmental Physics, University Of Bremen, Bremen, Germany

SCIAMACHY (Scanning Imaging Absorption spectroMeter for Atmospheric Chartography) onboard the European Space Agency's ENVironmental SATellite (ENVISAT) observes the earth's atmosphere in nadir, limb and solar/lunar occultation geometry covering the UV to NIR (240 nm to 2380 nm) spectral range. The instrument provides total columns as well as vertical profiles of the atmospheric trace gases relevant to the ozone chemistry, air pollution and global climate change issues, from the troposphere upto the mesosphere. From the lunar transmission spectra measured by SCIAMACHY from 2003 to present, for the first time, the stratospheric number density profiles of water vapor have been retrieved over the high southern latitudes ($\approx 50^{\circ}\text{S}$ to 90°S). The profiles are retrieved in the altitude range 17–50 km from the calibrated level-1 data using the spectral window 1350–1420 nm. To access the quality and accuracy of this product, the validation has been carried out using the correlative solar occultation spectra measured by other instruments such as the satellite instrument ACE-FTS (Atmospheric Chemistry Experiment Fourier Transform Spectrometer) and HALOE (HALogen Occultation Experiment) and other satellite instruments as MLS (Microwave Limb Sounder). The retrieval procedure and the results of the comparisons/validations are presented here. A validated dataset of water vapor vertical distribution retrieved from SCIAMACHY lunar occultation measurements is expected to facilitate the understanding of the physical and chemical processes in the southern hemisphere.