

SCIAMACHY SOLAR OCCULTATION: OZONE AND NO₂ PROFILES 2002-2006

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The spectrometer SCIAMACHY (SCanning Imaging Absorption spectroMeter for Atmospheric CHartographY) is measuring solar irradiances and Earthshine radiances from the UV to the NIR spectral region in nadir, limb and lunar as well as solar occultation geometry. SCIAMACHY on-board ENVISAT has been launched in March 2002 to a sun synchronous orbit.

Solar occultation measurement are performed during sunset at northern latitudes (49N to 69N, depending on season). SCIAMACHY is scanning over the solar disk starting at an altitude of 17km up to 250km. From the scans above the atmosphere, a precise knowledge about tangent heights using the sun as well known target in space is derived.

The radiative transfer and retrieval code SCIATRAN 2.1 is used to derive vertical profiles of ozone and NO₂ from the SCIAMACHY solar occultation measurements. The retrieval scheme is an optimal estimation approach with Twomey-Tikhonov regularisation. Ozone and NO₂ are simultaneously retrieved in the fit windows 424 - 590 nm and 425 - 453 nm, respectively. Here we present an almost complete dataset from August 2002 to December 2006, including validation results with independent measurements from other satellite instruments.