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TRACE ATMOSPHERIC GASES, RETRIEVED FROM THE MEASUREMENTS OF GOME,
SCIAMACHY AND GOME-2 AND FOLLOW ON S.

Abstract

SCIAMACHY (SCanning Imaging Absorption spectrometer for Atmospheric CHartographY) was proposed in 1988. It was selected as a national contribution to the European Space Agency earth observation flagship, Envisat, launched on the 28th February 2002, see figure 1. Envisat flew in a sun synchronous polar orbit in descending node, having an equator crossing time of 10:00 am local time. SCIAMACHY, a passive remote sensing double monochromator, measures the upwelling radiation from the top of the atmosphere in 8 spectral channels, contiguously between 214 and 1750 nm and between 1940 and 2040 nm and also 2265 and 2380 nm. SCIAMACHY, which is shown in figure 2, made measurements in alternate limb and nadir viewing as well as solar occultation in the northern hemisphere and lunar occultation in the southern hemisphere. ESA lost contact with Envisat on the 8th April 2012. GOME is a smaller version of SCIAMACHY, which flew on ESA ERS-2 from 1995 to 2002. GOME-2 is a somewhat improved version of GOME, which is one of the operational meteorological sensors, aboard the ESA/EUMESAT series of platforms called Metop. SCIAMACHY, GOME, and GOME-2 are best known for their retrievals of trace gases in the troposphere and the stratosphere, where measurements of the total and tropospheric columns of the trace gases O₃, NO₂, HCHO, CHO, BrO, IO, H₂O, as well as ocean colour, cloud and aerosol optical properties. In addition SCIAMACHY observations yield dry column mixing ratios of CO, CH₄ and CO₂. In this presentation the focus is on the decade of measurements retrieved from GOME, SCIAMACHY, GOME-2 and follow on their changes and trends.