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Overview of SCIAMACHY level 2 data quality

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SCIAMACHY onboard Envisat observes the Earth reflectance in a wide spectral range (240-2380 nm), allowing the retrieval of a variety of species. Currently available products are: vertical columns of O3, NO2, BrO, SO2, H2O, HCHO, CO, CH4, CO2, slant columns of OClO, tropospheric columns of NO2, vertical profiles of O3, NO2, OClO, and BrO, absorbing aerosol index (AAI), cloud fraction, cloud top height, and other cloud properties, PSC, UV index and UV dose.

These products are generated at different scientific institutes (IFE/IUP Bremen, IUP Heidelberg, KNMI, SAO, BIRA-IASB, SRON, Dalhousie), in some cases as joint products. The matureness, availability, validation status, and quality vary considerably among these products. In order to facilitate the use of these products for research applications the involved institutes have agreed on common quality criteria regarding documentation, availability, and validation of their products. The quality assessment is performed by the SCIAMACHY validation product coordinators, under the responsibility of the SCIAMACHY VALidation and Interpretation Group, subgroup of the SCIAMACHY Science Advisory Group. All these products, their documentation, and their quality status are presented on a central web site, from where they can also be ordered.

Most of the UV-visible data products - O3, NO2, SO2, H2O, BrO total columns; OClO slant columns; O3, NO2, BrO profiles - already have acceptable, if not excellent, quality. Provisional near-infrared column products - CO, CH4, and CO2 - have already demonstrated their potential for a variety of applications. Cloud and aerosol parameters are retrieved, suffering from known calibration errors with the exception of cloud cover.

The operational SCIAMACHY processors established by DLR on behalf of ESA are currently undergoing a major upgrade which is expected to affect the quality of the

operationally available total columns of O3 and NO2, slant columns of BrO, SO2, OClO, and HCHO, cloud cover and height, AAI, and profiles of O3 and NO2. The first operational data from the upgraded processors are expected to become available in the second quarter of 2006. The quality of some of the currently (January 2006) operational level 2 data products - total columns of O3 and NO2, slant columns of BrO and cloud cover - is acceptable for limited periods and geographical domains.