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Retrieval of total and tropospheric NO2 columns from the GOME-2 instrument

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The Global Ozone Monitoring Experiment-2 (GOME-2) is one of the new-generation European instruments carried on MetOp, which has been jointly established by ESA and EUMETSAT. Like its predecessor, GOME-2 aims at the global measurement of key atmospheric species needed to assess atmospheric changes and their links with climate.

This contribution focuses on the operational GOME-2 total and tropospheric NO2 products, developed in the framework of EUMETSAT's Satellite Application Facility on Ozone and Atmospheric Chemistry Monitoring (O3M-SAF). Total NO2 columns are routinely retrieved with the GOME Data Processor (GDP) version 4.2 using the Differential Optical Absorption Spectroscopy (DOAS) method. An additional algorithm is applied to retrieve the tropospheric NO2 column for polluted conditions. After subtracting the estimated stratospheric component from the total column, the tropospheric NO2 column is determined using an air mass factor based on monthly climatological NO2 profiles from the MOZART-2 model. The cloud parameters needed for an accurate retrieval of the tropospheric NO2 column are derived with the OCRA/ROCINN algorithms.

About one year of total and tropospheric NO2 measurements are now available from GOME-2. We present initial validation results, as well as comparisons with other NO2 satellite products, such as those from SCIAMACHY and OMI. Furthermore, examples of the use of GOME-2 NO2 columns for air quality applications will be shown