



Improved retrieval of total and tropospheric NO₂ column for GOME-2

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This contribution focuses on the algorithm refinement for the retrieval of total and tropospheric nitrogen dioxide (NO₂) columns for the GOME-2 satellite instrument. The improved algorithm will be implemented in the upcoming version of the operational GOME Data Processor (GDP) at the German Aerospace Center (DLR). A larger 425-497 nm wavelength fitting window is used in the differential optical absorption spectroscopy (DOAS) retrieval of the NO₂ slant column density. The reference spectra are updated, and the GOME-2 slit function variations over time and along orbit is taken into account. In addition, the effect of the new level 1b data version 6.1 on the retrieved NO₂ slant column is analyzed. The STRatospheric Estimation Algorithm from Mainz (STREAM) is applied to determine the stratospheric column density of NO₂. For the calculation of the tropospheric AMF, a new surface albedo climatology based on GOME-2 observations for 2007-2013 and a priori NO₂ profile obtained from the chemical transport model IMAGESv2 are used.

We present the improvements in the NO₂ retrieval algorithm and show comparisons with OMI NO₂ data. Furthermore, we show examples of air quality applications with GOME-2 NO₂ data.