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Improved algorithm baseline for the generation of total ozone climate data records: application to OMI

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The direct-fitting total ozone retrieval algorithm GODFIT developed at BIRA-IASB has been applied in the past years on nadir observations from the instruments GOME, SCIAMACHY, GOME-2A/B and OMI to generate climate data records characterized by a high level of accuracy, temporal stability and inter-sensor consistency (Lerot et al., 2014). As part of the on-going activities within the ESA Ozone_cci project, new developments in the algorithm baseline have been carried out. A new total column-classified ozone profile climatology recently released by Labow et al. (2015) is now used in the GODFIT forward model. We have constructed covariance matrices associated with this climatology, and used them to estimate smoothing errors on a pixel-basis. Also, a better treatment of the instrumental slit functions and their time variation and an optimized correction for the I_0-effect have been implemented in the algorithm. This improved baseline has been used to reprocess the full OMI mission and we present here the new version of the OMI GODFIT total ozone data set. The product quality is evaluated by comparisons with other total ozone products, such as OMI-TOMS and SBUV v8.6. The product has also been validated using ground-based Brewer and Dobson measurements, and the main findings are highlighted here. This improved algorithmic baseline will also be used in the coming months to generate a new version of multi-sensor L2 and L3 total ozone data records.

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