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The offline total ozone product from TROPOMI/S5p

Christophe Lerot (1), Nicolas Theys (1), Isabelle De Smedt (1), Jeroen van Gent (1), Michel Van Roozendael (1), Fabian Romahn (2), Klaus-Peter Heue (2), Walter Zimmer (2), Diego Loyola (2), Katerina Garane (3), MariLiza Koukouli (3), Dimitris Balis (3), Tijl Verhoelst (1), and Jean-Christopher Lambert (1)

(1) Royal Belgian Institute for Space Aeronomy (BIRA-IASB), Brussels, Belgium (christophe.lerot@aeronomie.be), (2) Institut für Methodik der Fernerkundung (IMF), Deutsches Zentrum für Luft und Raumfahrt (DLR), Oberpfaffenhofen, Germany, (3) Laboratory of Atmospheric Physics, Aristotle University of Thessaloniki (AUTH), Thessaloniki, Greece

The TROPOspheric Monitoring Instrument (TROPOMI) has been launched on October 13, 2017, aboard the polar orbiting platform Sentinel-5 Precursor (S5p). TROPOMI measures the Earth's radiance in the ultraviolet, visible, near and short-wave infrared spectral ranges with an unprecedented spatial resolution of 7x3.5km^2. While the near real time operational production of the total ozone column data relies on a classical fast DOAS approach, the offline operational product is based on the GOME-type Direct Fitting retrieval algorithm (GODFIT). The ozone vertical column is derived through a non-linear least squares adjustment of reflectances simulated with the radiative transfer code LIDORT to the measured spectra in the Huggins bands (325-335 nm). The direct fitting approach yields a higher level of accuracy compared to the near real time product, especially for extreme geophysical conditions, but at larger computational cost. This approach is also used within the European Copernicus Climate Change Service (C3S) to produce the total ozone Essential Climate Variable (ECV) data records from the instruments GOME, SCIAMACHY, GOME-2A/B and OMI.

We present here the first TROPOMI total O_3 column data. The near real time and offline data flows are intercompared. The consistency with current operational total ozone records from other sensors is assessed, and in particular with OMI which is the current long-term reference for generating the C3S total ozone ECV owing to its excellent time stability. Preliminary validation results are also shown.