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Expanding the spatial coverage of a ground-based station to validate satellite total ozone data; The case of TROPOMI and Athens Dobson

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In this work we present the validation results of the daily observations of the Total Ozone Column (TOC) obtained by the TROpospheric Monitoring Instrument (TROPOMI), and the Dobson spectrophotometer No. 118 located in Athens, Greece, (WOUDC Station ID: 293) during the period November 2017 to February 2021. Simultaneous observations of both instruments are used for this validation.

The increased spatial resolution of TROPOMI observations in relation to the push-broom configuration (non-scanning) of the instrument (swath width of ~2600 km) offers the opportunity to study the spatial analysis of the observed differences in a large area around the ground-based station. By using the ground-based station in Athens we attempt to analyze spatial and temporal behavior of the TOC differences between Dobson and TROPOMI data in an area enclosed by a 500 km radius during the period from August 2019 to February 2021.