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Total ozone measurements at Italian Brewer stations (Rome and Aosta)

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Regular total ozone and UV irradiance (290 -325 nm) measurements using Brewer spectrophotometry have started at Rome station (latitude,4 1.9°N;longitude,12.5 °E; altitude, 75m a.s.l) in 1992 and at Aosta (45.7°N, 7.4°E, 569 m a.s.l) in 2007. The availability of long-term records of total ozone column amount (TOC) and UV data represent a valuable source of information in studies on the assessment of the short and long-term changes and their impact on terrestrial ecosystem. In addition ground-based observations provide the ground truth for satellite-derived products, mainly in polluted areas such as the Rome city centre and in mountain area where large uncertainties in spaceborne estimates may be detected.
As a result high quality of data as well as accurate reprocessing procedures are required to obtain the most reliable data sets. To our knowledge details about the processing software applied to Brewer TOC measurements are usually not specified in studies on satellite vs ground-based comparisons and on long term TOC variability.
This study examines the difference, if any, between two reprocessed TOC datasets and a comparison with OMI satellite data is also provided. Ozone direct sun measurements were reprocessed with two different processing software: the Brewer Processing Software (by Fioletov and Ogyu of Environment Canada) and O_3Brewer (by Stanek of Solar and Ozone Observatory of CHMI/International Ozone Service).