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Retrieval of total ozone with Phaethon DOAS system

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Phaethon is a CCD-based spectrograph system that is capable in monitoring the spectrum of direct solar irradiance at high spectral and temporal resolution. Using the Differential Optical Absorption Spectroscopy (DOAS) technique, direct-sun spectral measurements in the range 315-337 nm are compared with a reference spectrum and analyzed to derive the total ozone column. In this study we present the methodology applied to Phaethon data and assess the accuracy of this system by comparison to total ozone retrieved by a collocated Brewer spectrophotometer. Measurements started at Thessaloniki, Greece in November 2013. Since then the system has undergone various modifications both in hardware and in the retrieval methodology. After the last hardware modification in November 2015, a retrieval error of less than 3 DU has been achieved for the total ozone and average difference of $0.76 \pm 1.5\%$ from the data of Brewer 005 during a 3 month period. These first results will be further investigated and updated as the data set will extend into the spring summer season of 2016.