



Seasonal and diurnal variation of Nitrogen Dioxide and Ozone over the south of Portugal

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The SPATRAM (Spectrometer for Atmospheric TRacers and Aerosol Monitoring) is installed at the Observatory of the Geophysics Centre of the University of Evora (38.56°N, 7.92°W; Portugal), since April 2004. The application of Differential Optical Absorption Spectroscopy (DOAS) methodology to the measured raw data, allows for the retrieval of the total column content of several traces gases. The spectral series of diffused solar radiation, obtained with the SPATRAM equipment, are analyzed for the period 1st of April - 20th of December 2004. In order to obtain the slant column density (SCD) of the investigated species, the DOAS algorithms are applied in the 425-455 nm spectral window where the strongest absorber is NO₂; the spectral window 320-360 nm is used for the retrieval of the Ozone SCD. The absorbers vertical column density (VCD) are obtained applying to the SCD the air-mass factor (AMF) calculated with the AMEFCO RT model. In order to avoid bias due to the seasonal dependency of the vertical profile and hence in the AMF, different boundary conditions are applied to the model with the aim to distinguish summertime and wintertime air masses. The value at 90° of Solar Zenith Angle (SZA) is calculated with a cubic interpolation of the data, because the SPATRAM is not able to take measurements at a fixed angle. The errors associated to the presented results are in the range of 5-8% for the VCD at 90°. Values with larger errors, due to very low signal intensity, are rejected. The results show the expected seasonal behavior and the analysis of the diurnal variation of the SCD allows for the identification of some episode of desert dust contamination. ACKNOWLEDGMENTS: DB was financially supported by the Subprograma Ciência e Tecnologia do 3° Quadro Comunitário de Apoio.