



## **The diurnal variation of NO<sub>2</sub> column in the planetary boundary layer of a polluted area**

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Nitrogen dioxide is one of the key compounds of atmospheric chemistry and in the troposphere, in particular, is an oxidant involved in many reactions with other chemical species such as ozone and VOCs. Its role in the absorption of UV-Vis solar radiation is important for energetic balance considerations and effects on local climate of regions with high levels of concentration. In this work we present measurements of NO<sub>2</sub> column in a polluted PBL such that of the Bologna area (Po valley, Italy) obtained by simultaneous observations of NO<sub>2</sub> slant columns carried out by two zenith sky looking GASCOD type UV-Vis spectrometers installed in Bologna (44.53 N, 11.30 E, 42 m asl) and in the Mt. Cimone research station (44.18 N, 10.70 E, 2165 m asl). The daily behavior from March 2003 to September 2003 is analyzed also through comparison with in situ observations. A multiple scattering RTM, PROMSAR, is used to retrieve the vertical column and to estimate the NO<sub>2</sub> vertical mixing layer found to be not higher than 500m during the selected days. Some considerations on the radiative forcing of PBL NO<sub>2</sub> are also discussed based on the simulations carried out with radiative transfer codes.