



NO₂ tropospheric profiles with spatially scanning DOAS spectrometer

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A simple algorithm, developed at ISAC Institute, to retrieve gas concentration's profiles by means of Tropospheric Gas Analyser Spectrometer (TropoGAS), adopting Off-Axis DOAS methodology is presented. Combining previously selected measurements obtained at different line of sight, we calculate the concentration along the first 2 km of troposphere. The first step is aimed to evaluate in the same spectral region (from 430nm to 495nm) by means of our DOAS processor the slant columns of NO₂ and O₄, and to separate the tropospheric part from the total one. Measurements are performed in the subsequent angles of sight: $\alpha=1,2,4,8,16,32^\circ$ above the horizon and one measurement is taken along the sun direction. The second step consists of the use of measured O₄ slant column to evaluate the correct optical path needed to calculate NO₂ concentration from measured NO₂ tropospheric slant column. Profiles of NO₂ and other gases absorbing in this spectral range (such as CHOCHO) are shown and compared with the ground value obtained from ARPA in-situ analyser network. Finally we discuss the applicability of this technique in urban air quality monitoring and future possible improvements of the method.