

## 1.125 NO<sub>2</sub> vertical columns retrieved over Mexico City from ground and space..

Early Career Scientist

Presenting Author:

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Abstract:

The Mexico City Metropolitan Area has a population density of almost 6000 inhab/km<sup>2</sup> amounting to well over 20 million people. This region concentrates the most important economic and industrial activities of the country (25% of the total) and has the highest vehicular fleet (around 9.5 million), resulting in the emissions of a huge amount of anthropogenic pollutants that participate in important photochemical episodes. We emphasize here in NO, that comes directly from combustion processes as a primary gas and NO<sub>2</sub>, that mainly comes from its oxidation and gives the yellow color to the smog. NO<sub>2</sub>, besides being toxic to humans when exposed during prolonged periods, is a precursor in the production of tropospheric ozone.

We present NO<sub>2</sub> data from a monitoring network formed of six Multi Axis Differential Optical Absorption Spectrometers (MAX-DOAS), built at our university, that measure backscattered radiation in the UV/Vis range. The spectra are processed using QDOAS and the Mexican Maxdoas Fit (MMF) retrieval code, which is based on least square fitting and uses optimal estimation and Tikhonov regularization for trace gas and aerosol retrievals, respectively.

The time series of NO<sub>2</sub> vertical columns densities and the methodology used for the statistical calculation of the errors are presented and compared to in situ observations from the city's network of atmospheric monitoring (RAMA) and the tropospheric vertical columns from the Ozone Monitoring Instrument (OMI).