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NO_2 DOAS measurements from ground and space: comparison of ground based measurements and OMI data in Mexico City

C. Rivera, W. Stremme, and M. Grutter

Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México, México,D.F., MEXICO
(claudia.rivera@atmosfera.unam.mx)

The combination of satellite data and ground based measurements can provide valuable information about atmospheric chemistry and air quality. In this work we present a comparison between measured ground based NO_2 differential columns at the Universidad Nacional Autónoma de México (UNAM) in Mexico City, using the Differential Optical Absorption Spectroscopy (DOAS) technique and NO_2 total columns measured by the Ozone Monitoring Instrument (OMI) onboard the Aura satellite using the same measurement technique. From these data, distribution maps of average NO_2 above the Mexico basin were constructed and hot spots inside the city could be identified. In addition, a clear footprint was detected from the Tula industrial area, $\sim$50 km northwest of Mexico City, where a refinery, a power plant and other industries are located. A less defined footprint was identified in the Cuernavaca basin, South of Mexico City, and the nearby cities of Toluca and Puebla do not present strong enhancements in the NO_2 total columns. With this study we expect to cross-validate space and ground measurements and provide useful information for future studies.