Tula industrial complex (Mexico) emissions of SO2 and NO2 during the MCMA 2006 field campaign using a Mini-DOAS system

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The Mexico City Metropolitan Area (MCMA) has presented severe pollution problems for many years. There are several point and mobile emission sources inside and outside the MCMA which are known to affect air quality in the area. In particular, speculation has risen as to whether the Tula industrial complex, located 60 km northwest of the MCMA has any influence on high SO2 levels occurring on the northern part of the city, in the winter season mainly. As part of the MILAGRO Field Campaign, from 24 March to 17 April 2006, the total columns of sulfur dioxide (SO2) and nitrogen dioxide (NO2) were measured during plume transects in the neighborhood of the Tula industrial complex using mini-DOAS instruments. Vertical profiles of wind speed and direction obtained from pilot balloons and radiosondes were used to calculate SO2 and NO2 fluxes in the plume. According to our measurements, calculated average flux emission for SO2 and NO2 were 155 ± 120 and 9 ± 8 ktons per year, respectively. The standard deviation of these estimations is due to actual variations in the observed emissions from the refinery and power plant, as well as to the uncertainty in the wind fields at the exact time of the measurements. These values are in good agreement with available datasets and with simulated plumes.