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Analysis of the Air Pollution Behavior Registered at MACAM Net Using DOAS, Associated with High Pollution Episodes

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Abstract : The combination of the geographical and meteorological conditions of the Santiago basin are unfavorable for the circulation of atmospheric pollution, especially in the autumn and winter months. The problem of environmental pollution in the Metropolitan Region has been studied since the 1960s because the city has presented high pollution levels for most of the year, levels that have even been compared with those in cities in developed countries, This implies serious consequences for the health of the population. Two of the most important gasses present in the contamination are NO2, and O3, the highest concentrations of nitrogen dioxide are measured during the winter, in addition, it is considered as a great contribution to the fine fraction of particulate matter and as a precursor of tropospheric ozone. On the other hand, tropospheric ozone is a pollutant of photochemical origin and is strongly enhanced by solar radiation, which is why its presence in the atmosphere is more significant in the spring and summer. The measurements were made at 3 different places in Santiago, and were used different equipment; a DOAS for gasses measures, SIMCA for Black Carbon Measure and the MACAM net for particulate matter and meteorological condition. The results shows an important relation between height and presence of pollution gasses, and additionally, pollution episodes are in common low temperature (< 10 °C) and high relative humidity (> 80%), which are factors that allows the air suspension of particulate matter and focus NH4+ and NO3-.

Keywords : black carbon, DOAS, episodes, high pollution, simca
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