Hydroxyl and Hydroperoxy Radical Measurements by Laser-Induced Fluorescence at T0 during the MCMA-2006 Field Campaign

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Atmospheric oxidation processes are driven by a complex chemistry involving the hydroxyl (OH) and hydroperoxy (HO_2) radicals. Comparisons between atmospheric measurements and model predictions can lead to a better understanding of the fast photochemistry in various areas (rural, urban and forested). However, discrepancies are still observed between measured and modeled concentrations of HO_x (OH + HO_2) and suggest that there are still gaps in our understanding of HO_x chemistry. The MCMA-2006 campaign was a unique opportunity to collect data in a polluted urban environment where high levels of NO_x and VOCs control the HO_x budget.

Our laser-induced fluorescence instrument was deployed at the Instituto Mexicano del Petroleo and data was collected between 14 and 31 March. An overview of the measurements will be shown. The median OH mixing ratio was similar to that observed during MCMA-2003, but the median HO_2 mixing ratio was about a factor of two lower than that measured in 2003. Measurements of the HO_2/OH ratio as a function of NO, which provide an insight into the propagation of radicals, are smaller than that measured in 2003 although the slope appears to be similar. Further analysis will provide more details about HO_x production and loss, radical cycling, and instantaneous photochemical O_3 production rates.