

The effect of Mexico City emission on regional ozone production regimes

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During the MILAGRO-MEX campaign in March 2006 the University of Iowa supported flight planning by providing the results of a regional air quality forecast with full chemistry at a 12km resolution using boundary conditions from a global chemical transport model (RAQMS). The comparison of measurements and modeled values along the flight tracks of the C-130 aircraft showed large overprediction of CO, NO_y, and ozone (mean bias of 65ppb, 2 ppb, and 12 ppb, respectively), suggesting that the emissions are overestimated in Mexico City. The ozone production efficiency (OPE) calculated from observed and modeled concentrations were 2.8 and 2.5, respectively (12% overprediction) suggesting VOC limited conditions, and adequate model chemistry. In measurements carried out in the city loop the ozone production efficiency shows greater agreement (2.5 modeled, and 2.4 observed). Some flights sampling the same rural region on different days present substantially different observed OPE (Flight 7, with 12. and Flight 9 with -0.3), suggesting ozone production regimes for vary from NO_x limited to VOC limited conditions depending on wind direction of the source region. The poster will evaluate the impact of Mexico City in regional air quality, and suggest scenarios that would hinder and benefit ozone pollution in the interface between urban and suburban Mexico City and surrounding rural areas.