

Interactive
Comment

***Interactive comment on* “Evaluation of mobile emissions contributions to Mexico City’s emissions inventory using on-road and cross-road emission measurements and ambient data” by M. Zavala et al.**

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Received and published: 14 July 2009

Due to a typing error in LaTeX, some text was missing from our response to point 2 of Reviewer 1. Here is the complete response:

Point 2: A discussion on the effect of ambient conditions might be useful to include in the paper for two reasons. First, as Mexico City is situated at high altitude, the authors should discuss whether effects of the altitude on emissions are expected. In particular

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when comparing results with US cities (e.g. p.6372, l.15-20). In addition, information on the period and weather conditions between the 2003 and 2006 studies should be given, in particular following the discussion in Table 2.

[Response] The reviewer correctly points out that in this study the effects of altitude would only be relevant for the comparison of our measurements with results obtained at different ambient pressures in other cities. Unfortunately, there is very little information reported in the literature on the effects of altitude on the emissions from gasoline fueled vehicles to make a quantitative statement. At high altitude, the air-fuel ratio supplied to the engine may be reduced because air density is reduced. With richer fuel-air mixtures the combustible unburnt components of exhaust gases increase. Although gasoline emissions in Mexico City could, in principle, tend to be higher than in U.S. cities because of the higher altitude, vehicles are generally provided with a mechanism for compensating for the effect of altitude on air density, minimizing this effect. Manufacturers conduct certification testing in the laboratory (for example by restricting the flow of air to the engine intake and equalizing intake and exhaust pressures) to comply with on-road standards for regulated emissions. For this reason, the observed (significant) differences between the Mexico City and the U.S. fleets are more likely to result from differences in fleet age and to the fraction of vehicles with emission control technologies. We have also included information on the prevailing ambient conditions in Mexico City during the measurement periods. On average, temperature and relative humidity during the monthly measurements campaigns in March 2006 and April 2003 did not differ significantly (19C, 45% in 2003 and 17.8C and 39% in 2006) and wouldn't explain the observed differences.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 6363, 2009.

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