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Atmospheric Chemistry and Physics Discussions

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.

Anonymous Referee #2

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This paper successfully analyses recent trends of mobile emissions in Mexico City. It also provides useful comparisons with other studies and data of latest Emission Inventories. Based on these facts it should be accepted in the ACP journal.

The authors seem to be experienced and well versed in different aspects of atmospheric chemistry, emissions measurements and car emissions, thus providing insightful conclusions. Nevertheless the following general comments should be considered:

1. - I think that the decrease in percentage of vehicles without emission controls thanks

to the introduction of newer cars is as relevant as the rate of removal of older cars. It should be a two thronged policy. I disagree with the conclusion that the introduction of new cars with better emissions controls is not as relevant.

2. - Although the increase of Diesel sales relative to gasoline is a hard number, other reasons could add to the explanation on the increase of NOx levels such as:

o Proliferation of air conditioning availability in private cars in Mexico City. This adds to the burden (about 2KW) of internal combustion engines increasing NO emissions.

o NO removal efficiency of catalytic converters tend to decrease faster than for HC's and CO. Related to this is the contents of sulfur in the gasoline of Mexico that may change the behavior and reduce the overall efficiency of catalytic converters.

These issues are not commented in the text.

3. - The geographical distribution of brand and age of cars in Mexico City (as in many cities) tends to be inhomogeneous: affluent neighborhoods will have newer less polluting cars, with different CO/NOx , CO/HC's and other ratios than in poor neighborhoods. This fact adds to the uncertainty of conclusions based on-road and cross-road measurements and in general to all efforts of obtaining EI′s. In the text it should be mentioned if the authors considered this aspect in their field experiments and if so how.

Some specific comments are:

In the abstract paragraph 15 p.6364 ovepredictions are expressed as a percentage and underpredictions as a factor. Same in paragraph 15 p.6381. Authors should be consistent.

In paragraph 10 p.6365, and paragraph 5 p.6367 the authors should give numeric data when referring to contribution of pollutants in Mexico City by mobile sources.

In paragraph 5 or 10 p. 6366 the following reference on the topic of motor stress and

emissions should be included:

A Vehicle Emissions System Using a Car Simulator and a Geographical Information System: Part 1âĂŤSystem Description and Testing Aron D. Jazcilevich, Alejandro García-Fragoso, Agustín García Reynoso, Michel Grutter, Ulises Diego-Ayala, Jim Lents and Nicole Davis Journal of the Air & Waste Management Association, Volume 57, October 2007

Also a reference on this topic is the International Vehicle Emission Model of ISSRC, http://www.issrc.org/, currently being used to obtain vehicle emissions in Mexico City taking into account motor stress.

In paragraph 5 p. 6371 are there or are there not sufficient data to compare emissions between 2003 and 2006? At some points the authors say there are and here they hesitate.

In paragraph 10 p.6372 it is stated that VOC′s increased 4.6% a year in Mexico City. This contradicts previous statements in the paper.

In paragraph 15 p. 6375 it should be revised: The sentence does not give a context of the aircraft measurements.

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