Atmospheric Chemistry and Physics Discussions

Interactive Comment

Interactive comment on "Modeled and observed ozone sensitivity to mobile-source emissions in Mexico City" *by* M. Zavala et al.
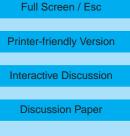
Anonymous Referee #1

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The authors have studied trends in ozone and ozone precursors in Mexico City over the last 20 years. They analyze trends in vehicle emission and ambient pollutant concentration measurements, as well as sensitivity analysis results using a 3-D photochemical model applied to the region. Their main finding is that peak ozone levels have declined due to reductions in ozone precursor emissions from gasoline-powered motor vehicles.

The paper should be published after a number of corrections and clarifications have been made.

[14995.13] Please check that Napelenok et al used CMAQ not CAMx

[14998.6] It is not plausible that motor vehicles account for 99% of total CO emissions in Mexico City. What about LPG combustion for cooking and water heating, trash burning,

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wood burning, house fires, charcoal, etc?

[15002.26] "an" should be "and"

[15003.1] sensibility should be sensitivity

[15003.20] a word (perhaps average?) is missing: for the peak and ___ ozone concentrations...

[15005.5] C in eq (1) should not be subscripted

[15005.17-18] difference between E and E' is not explained clearly enough

[15005.20] creaction should be reaction

[15010.19] correct spelling of anthropogenic and meteorological

[15011.22] omit "not equal to" symbols in numerator of eq (5)

[15018.3] Precceding should be Proceedings

[15019] Excessive precision in reporting throughout Table 1. The uncertainties in emission inventories are large, it is inappropriate to report % source contributions to three significant figures such as 55.7% for CO from gasoline fleet. Even stating many of these values to the nearest percent would be optimistic in terms of level of uncertainty for the emission inventory.

[15023] Replot Figure 4b) in SI units instead of barrels/yr

[15028] Several corrections to Figure 9 caption are needed. ALK3 is mostly n-butane and isobutane, not isobutene. ALK5 cannot include pentanes as all the important ones were already listed as being part of ALK4. Correct spelling of glycolaldehyde. Also clarify whether sensitivities are semi-normalized (as implied by units of ppb in Figure 9a), or unnormalized which should be ppb per ton/day or something similar. The SAPRC99 lumped species would sort in a more obvious way (i.e. in order of atmospheric reactivity) if sensitivities were reported per unit mass of VOC emitted in each category rather

than semi-normalized.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 14991, 2008.

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