

Interactive comment on “Measurements and receptor modeling of volatile organic compounds in south-eastern Mexico City, 2000–2007” by H. Wöhrnschimmel et al.

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General comments

The authors sincerely acknowledge the referee's comments. We recognize that the request for a more detailed description of the methods is justified, and revised the manuscript correspondingly, along with other corrections.

Specific comments

The manuscript is reasonably well written but there are some shortcomings and oversights that should be addressed by the authors. These generally revolve around pro-
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viding more detail in the sampling, laboratory analysis including a discussion error analysis and uncertainties, emission profile details including uncertainties and then assessing with more confidence the input to and subsequent results from the CMB

More detail is provided in the corrected manuscript on sampling, lab analysis, as well as uncertainty analysis. The way how these uncertainties affect the model results is also discussed.

Intro: Sentence inconsistency – “Along with the number of inhabitants the air pollution problem has also increased” followed by “Although control measures over the last decade have lead to decreasing trends in some pollutants: : :.” This should be reworded simply stating that new technology is apparently improving air pollution in MC but air pollution is still a major problem and further reduction is necessary.

The respective sentence has been rephrased

Eliminate the sentence on SO₂ – not accurate

Authors believe that the information on SO₂ is accurate, supported by scientific references and personal experience of the authors with respect to the political agenda in Mexico City. However, for clarity, we reworded the sentence.

P3321 line 5: “Ozone is thought to cause restricted activity days: : :” – what does this mean? Needs to be reworded

Done.

line 8: State here the levels of benzene in MC – this has been measured in this and previous studies – and use this as the context for this point of discussion. OK I see that it is addressed on page 3323. However, there are lots of more recent and more comprehensive reports of benzene concentrations in MC and referencing these would be more appropriate than the Bravo reference

More recent references have been included.

P3321 Line 18: Reword sentence beginning with “However, the degree of VOC limitation: : :” Sounds like the VOC/NOx ratio was reduced just for this study

Done.

P3323 Line 14: Karl et al., 2009 find that the emissions inventory underestimates toluene (and likely) benzene emissions – this should be mentioned.

Reference is now included.

Methods: Collection: I agree with Reviewer 2 in that the methods section is unnecessarily brief. More detail is needed on the sampling protocol – time duration for sample collection, numbers of samples taken, etc.

More detail is provided

Analysis: Some additional explanation should be given on why the data set was limited to 13 compounds. It would also be important to go into more detail here on the analysis of the samples because it is important in the CMB analysis to understand uncertainties in the data.

Comment on the limitation to 13 species is now inserted in Section 2.1. Also more information on sample analysis is provided.

It concerns me, as it did Reviewer 1 that propane and butane account for more than 60% of the sum of the 13 compounds. If more VOC species were involved in this analysis the relative percentage contribution from propane and butane would be quite a bit lower. As it is, in the analysis presented LPG may well be overestimated in the overall contribution to the VOC burden. The authors need to address this.

We are explicitly reporting only the VOC contribution to these 13 compounds, not to the total VOC. We are aware of the limitations which are imposed by analyzing only 13 species, and provide in the corrected manuscript a corresponding discussion.

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Interactive comment on Atmos. Chem. Phys. Discuss., 10, 3319, 2010.

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