

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

Anonymous Referee #3

Received and published: 8 April 2010

This paper reports on an 8 year study at the CENICA site in southeastern MC. The objective of the study was to analyze trends in VOCs over this period of time and to determine the relative importance of different sources over this time period using a CMB model. The paper contains significant new material and an approach which can be beneficial in understanding VOC sources in the MCMA. The manuscript is reasonably well written but there are some shortcomings and oversights that should be addressed by the authors. These generally revolve around providing 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.

C1358

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.

Eliminate the sentence on SO₂ – not accurate

P3321

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

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

P3321

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

P3323

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

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.

C1359

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.

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.

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