

Interactive comment on “Measurements of volatile organic compounds at a suburban ground site (T1) in Mexico City during the MILAGRO 2006 campaign: measurement comparison, emission ratios, and source attribution” by D. M. Bon et al.

Anonymous Referee #2

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General comments:

This paper describes measurements of VOCs at the T1 suburban ground site in Mexico City during MILAGRO 2006 campaign and an analysis of the data by positive matrix factorization (PMF) method. The VOCs data measured by GC-FID and PIT-MS, which has been reported elsewhere (de Gouw et al., 2009), are compared with canister samples and two mobile PTR-MS. The PMF analysis was performed on the combined data

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from the two instruments, which distinguished three PMF factors: traffic, LPG, and secondary + long lived factors. The PMF results were also used to estimate emission ratios that were compared with those derived from the VOC measurements. I think that the authors analyzed the enormous VOC data of GC-FID and PIT-MS by the PMF methods and discussed the results thoroughly, including the limitations of the PMF analysis. Although I think that some parts of the paper have to be clarified or revised, the paper is very useful for the community of atmospheric chemistry. I recommend this paper to be published in Atmospheric Chemistry and Physics after the authors' consideration of my specific and technical comments detailed below.

Specific comments:

(1)Abstract: In the latter part of Abstract, I think that it is not well organized. For examples, the two sentences starting from “Positive matrix factorization analysis...” and “Three PMF factors...” are better to put before the sentence starting from “VOC diurnal cycles...”. Please recheck the abstract.

(2)Page 23241, Lines 16-18: As the authors mentioned, the PIT-MS measurements for Σ C8 and Σ C9 aromatics were significantly higher than the UCI canister measurements. How did the authors determine concentrations of Σ C8 and Σ C9 aromatics by PIT-MS? Did they determine detection sensitivities for all isomers? In addition, did the authors compare UCI canister with NOAA GC-FID for Σ C8 and Σ C9 aromatics?

(3)Page 23242, Lines 9-10: If the difference was not caused by the calibration standards for aromatics, do the authors think what possible reasons of the difference are?

(4)Page 23255, Lines 2-6: I think that the comments here are also necessary in Sec. 4.2.1 and 4.2.2, where Figures 7f and 8 are shown but there is no discussion about 1-4 pm data.

(5)Table 2: Is an annotation “d” necessary in Table 2?

(6)Figure 6: How did the authors derive the mixing ratio from unidentified signal? Did

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they derive it from the calculation?

(7)Figure 9 bottom panel: In the mass spectrum at right column, it seems that m76 is largely contributed to PMF Factor Attribution compared with m75. Am I right? If so, what species is contributed to m76?

Technical corrections:

(1)Page 23238, Line 14: Brown et al., 2007 is missing in References.

(2)Page 23246, Line 12: Marr et al., 2006 is missing in References.

(3)Page 23248, Line 18: Baker et al., 2004 → Baker et al., 2008. Is this correction right? If correct, the authors should remove Baker et al., 2004 from References.

(4)Page 23250, Line 5: A period is missing after “US”.

(5)Page 23250, Line 19: “ong” → “long”

(6)Page 23257, Line 17: “130” → “131”. Is this correction right?

(7)Page 23259, Lines 9-10: Atkinson and Arey, 2003 may not be referred in text.

(8)Page 23261, Line 26: allquist → Hallquist. But this paper may not be referred in text.

(9)Tables 2-4: The titles of Tables 2-4 seem be too long.

(10)Table 3: An annotation “d” is missing in the table.

Reference:

de Gouw, J. A., Welsh-Bon, D., Warneke, C., Kuster, W. C., Alexander, L., Baker, A. K., Beyersdorf, A. J., Blake, D. R., Canagaratna, M., Celada, A. T., Huey, L. G., Junkermann, W., 15 Onasch, T. B., Salcido, A., Sjostedt, S. J., Sullivan, A. P., Tanner, D. J., Vargas, O., Weber, R. J., Worsnop, D. R., Yu, X. Y., and Zaveri, R.: Emission and chemistry of organic carbon in the gas and aerosol phase at a sub-urban site

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near Mexico City in March 2006 during the MILAGRO study, *Atmos. Chem. Phys.*, 9, 3425–3442, doi:10.5194/acp-9-3425-2009, 2009.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, 10, 23229, 2010.

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