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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Measurements of volatile organic compounds using proton transfer reaction – mass spectrometry during the MILAGRO 2006 Campaign" *by* E. C. Fortner et al.

E. C. Fortner et al.

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We are very grateful for the suggestions by this referee. The specific comments are responded below.

(1) As the referee suggested, a fixed ground site cannot provide the VOCs spacial distribution pattern. In the manuscript, we only suggest our measurements could contribute to better understanding of the spacial pattern within the MCMA in conjunction with other measurements. In addition, we have included inter-comparison with the VOC measurements conducted by long path DOAS, which provides some spatial information of VOCs around the IMP site.

(2) The emission inventory referred in the manuscript is reported in CAM (Comisión

Ambiental Metropolitana), 2001. The related reference has been added into the manuscript.

(3) We have clarified now that one PTR-MS manufactured by Ionicon Analytik was used at T0 during the MCMA 2006 campaign. There were two other PTR-MS instruments at the flux tower and the Aerodyne mobile van.

(4) We agree that isoprene diurnal profile does show influence from automobile emissions. Vegetation is scarce within the city, especially in the northern sector. Thus we believe that biogenic components are negligible in the city. This point has been clarified in the paper.

(5) Ethyl acetate has been identified in the previous MCMA 2003 campaign (Rogers et al., 2006; Velasco et al., 2007). We also contribute mass 89 to ethyl acetate from its fragmentation at mass 61, which is verified by laboratory studies with ethyl acetate standards. However, no direct confirmation from other VOC measurement technique is available during the campaign. Those points have been provided in the paper. We did not find ethyl acetate in the Mexican emission inventory. Also, we are not aware of any publications regarding ethyl acetate measurements during the TexAQS 2000/2006 field studies.

(6) We have included VOC intercomparison of our PTR-MS measurements with those from DOAS co-located at the T0 site and from another PTR-MS instrument on the Aerodyne mobile van available to us. The results show good agreement in the VOC measurements between ours and the others.

(7) We agree with the referee that PBL dynamics does affect VOC observations. We have now pointed out in the manuscript that most high concentration VOC plumes observed at nighttime are likely due to a stable nocturnal PBL.

(8) We agree with the referee that Fig 6a (now 7a) likely indicate the combination of both industrial and traffic sources. From 2 am to 8 am on March 7, the toluene/benzene

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ratio (t/b) shows a decreasing trend meanwhile toluene presents an increasing trend. Most likely the origin of this toluene plume was first dominated by industrial sources but gradually changed to a rush hour traffic plume (68 am LT) with some residue industrial plume keeping the t/b higher than 5. This point has been reflected in the revision.

(9) We have taken these technical comments into account and revised the manuscript accordingly.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 11821, 2008.