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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Source characteristics of volatile organic compounds during high ozone episodes in Hong Kong, Southern China" *by* J. Zhang et al.

J. Zhang et al.

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Thanks Referee #1 for the comments and suggestions. Below are our changes to the manuscript and responses.

Specific comments:

1.
Comment:
On the limitations of the used approach: I think it is important to discuss on the limitations and uncertainties of the approach used in the manuscript.

Response:
Followed this comment, we added a paragraph in Sect. 3.3.3 stating the limitations to use of VOC ratios as a tool to explore the sources and to preliminary assess the accuracy of emission inventories.

2.
Comment:
It would be nice if some kind of review table(s) be given on the ratio values used in this study.

Response:
Table 4 is added in the manuscript showing the ratios in references.

3.
Comment:
In section 3.1: I think it is probably inevitable to use USEPA database. Still it needs some kind of sensitivity analysis on the degree of possible errors. The authors did compare their result with the TRACE-P inventory for some ratio values in section 3.3. However, it would be better to compare their result with different speciation data. For example, the source profile for Seoul, Korea (Na et al., Chemosphere, 55, 585-594, 2004) can be used.

Response:
Comparison of our result with different speciation data (Na et al., 2004) is added in the manuscript.

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4.

Comment:

The approach using dCO/dNOy sounds interesting but I think the result from this analysis needs further evidences. I recommend the authors state on the limitation of the approach.

Response:

Previous studies (Kok et al., 1997; Wang et al., 2001, 2003, Zhang et al., 2007) show that dCO/dNOy can be used as a chemical tracer of influence of pollution from South Mainland China. Zhang et al. (2007) discussed the application of the ratio during the intensive campaign. To avoid repetition, this method is not described in this paper. Because the emission ratio of CO-to-NOx from Guangdong and Hong Kong are so different; i.e., $\sim$15 in Guangdong and $\sim$1 in Hong Kong (Streets et al, 2003), high ratios are generally indicative of air masses from Mainland China and low ratios of air masses impacted by local Hong Kong emissions. The limitation of the ratio of different species is stated in Sect. 3.3.3.

We thank Referee #1 again. The comments and suggestions will no doubt improve our paper.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 8847, 2008.

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