Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2017-828-RC3, 2017

Atmospheric Chemistry and Physics Discussions

Interactive comment on "One year monitoring of volatile organic compounds (VOCs) from an oil-gas station in northwest China" *by* Huang Zheng et al.

Anonymous Referee #4

Received and published: 8 December 2017

This paper entitled "One year monitoring of volatile organic compounds (VOCs) from an oil-gas station in northwest China" utilized a unique dataset to analyze the differences between the VOC concentrations, compositions, source contributions in an oil-gas station and other urban areas and industrials. The results seem to be interesting with unique characteristics of VOC compositions and sources in this kind of areas. Based on one-year online monitoring of VOC concentrations, the PMF model was successfully employed to source apportionment and the different timescale variations of different source contributions were discussed. The PSCF and CWT method were also employed to investigate the potential geographic origins of VOCs. A new method based on CWT was proposed to attempt to distinguish the local and regional contributions. I

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Discussion paper

suggest this paper can be accepted after minor revision and addressing my questions. The specific comments are listed as follows:

1. P1 Line 15 the sentence "the ambient VOCs from fifty-six Photochemical Assessment Monitoring Stations (PAMS) VOCs were continuously measured for an entire year (September 2014-August 2015) by a set of on-line monitor system from an oil-gas station in northwest China." confused me. Pls make it clear. 2. P1 Line 31: How about replace the keywords "source region and local-regional contribution" to local-regional contribution? 3. P2 Line 6: Insert references after "air quality". 4. P2 Line 25 Insert references or link. 5. P4 Line 2∼5: Please check and make sure the analysis method is correct. 6. P4 Line 8. Technic errors. The PAMS standard gases contain 57 VOC species, including alkane (30), alkene (9), alkene (acetylene), and aromatic (17). 7. P6 Line 7: The author mentioned that the trajectories were mainly originated from the northwest during the whole sampling period. However, the wind rose (Fig. 1c) indicated the northeasterly winds prevailed in P5 Line 2. How to explain the difference? 8. P7 Line 15: You mean 33 ± 33ppbv? 9. P9 Line 12: The concentrations of O3 precursors decreased and O3 increased? 10. P9 Line 16∼23: When discuss the effects of BLH and photochemical reactions on VOC concentrations in summer and winter. I suggest more statistical method such as ANOVA analysis can be used to test the differences were significant or not. 11. P11 Line 18-19 & P12 Line 8∼10: The author compared the source contributions in different seasons using the percentage contributions (%) and volume contributions (ppbv) and it's paradoxical using both methods. For instance, in P12 Line 8∼10, the percentage contribution in spring was the highest, however, the volume contribution was the lowest among the four seasons. How to explain or avoid? 12. P15 Line 18: Highest CPF values of oil refinery was found in the east direction (Fig. 14a, 14b, and 14d). This sentence confused me. 13. P25 Table 1: There are some mistakes such as an extra line under n-decane. 14. P28 Table 3: I am wondering why the average value of four different seasons does not equal to annual value? 15. P35 Figure 7 and P41 Figure 13: Due to the time resolution of meteorological parameters, BLH are three hours, while the time resolution of trace gases is one hour as the author

mentioned. I suggest that the Pearson correlation can be conducted to give a more statistical reliable relation between VOC concentrations, different source contributions and trace gases.

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