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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Investigations of Temporal and Spatial Distribution of Precursors SO_2 and NO_2 Vertical Columns in North China Plain by Mobile DOAS" *by* Fengcheng Wu et al.

Anonymous Referee #3

Received and published: 21 November 2017

This paper gives an overview on mobile DOAS measurements of precursors SO2 and NO2 vertical columns in NCP in summer of 2013. The different temporal and spatial distributions of SO2 and NO2 vertical column density (VCD) over this area are characterized by combining them with wind and in-situ data. The transport route and emission sources are identified using the interrelated analysis between in situ and mobile DOAS observations. And also a specific hot spot is characterized in more detail. Finally, a reasonable agreement exists between OMI and mobile DOAS observations with correlation coefficient (R2) of 0.65 for NO2 VCDs. I think this paper presents a useful data set, and a good insightful analysis. The present data of this work are reasonable published in ACP. However, following suggestions need to be considered before final

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Discussion paper

publication.

1. Some expression should be consistent throughout the paper, like point instrument data and in-situ data, JiNan and Ji'nan... 2. Maybe there are some mistakes of titles in Figure 11 and Figure 12. Please correct them. 3. Section 2.4, I suggest to list all the fit settings in a table for NO2 and SO2. 4. Section 3.1.1: I agree that the wind direction has the main influence on air mass variations. However, you could also give other parameters: humidity and pressure, as discussion in section 2.1 about temperature comment. 5. The quality of figure 4 should be improved, like dates, color bar. I think it is best to give all results in Figure 4 for all cycles. You can present them in supplement material. 6. Figure 9: the dates in the left corners of the subplots are really hard to read. Please correct them. 7. Figure 13 e and f: I suggest to give and another number of figure 13 e and f together. And I think if you make a correlation analysis using all data regarding to wind direction, it is more robust. 8. Figure 15: could you tell us which error is exactly represented by the error bars, standard deviations? Please clarify it.

Please also note the supplement to this comment:
https://www.atmos-chem-phys-discuss.net/acp-2017-719/acp-2017-719-RC2-supplement.pdf

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