

Interactive comment on “Distribution and Sources of Air pollutants in the North China Plain Based on On-Road Mobile Measurements” by Yi Zhu et al.

Anonymous Referee #1

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This manuscript reports measurements of SO₂, NO_x, CO and black carbon made in a mobile van traveling on five expressways in the North China Plain in summer 2013. The authors offered some general discussions on sources and long-range transport of these pollutants. On-road measurements are normally used to understand emission characterises of road traffic, but this appears not the case for this study which attempts to study the spatial distributions of the air pollutants in the NCP region. I doubt this objective can be achieved due to potentially large impact from vehicle emissions on the data. Another concern is that the reported data may have major flaws. The extremely high NO_x values are not consistent with moderate values of the other three pollutants. If the NO_x data are correct, they (mean value=452 ppbv) clearly show huge impact of on-road vehicles on the measurements. However, the mean CO value is only ~ 1 ppm, which seems too low. Is this due to the dominance of diesel vehicles on the

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highways? If so, the measured black carbon would be significantly affected too by the diesel vehicles. How were the instruments calibrated? Did you make measurements off road to compare with the on-road data to check the impact of road vehicle emissions? In summary, the authors are advised to clarify these two important issues (the intended use of the on-road measurements and the data quality). In addition, the analysis and discussion of the data set should be more in-depth.

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