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Atmospheric Chemistry and Physics Discussions



# *Interactive comment on* "Chemical and stable carbon isotopic composition of $PM_{2.5}$ from on-road vehicle emissions in the PRD region and implication for vehicle emission control policy" *by* S. Dai et al.

**Anonymous Referee #1**

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General comments:

Air pollution and haze episodes in recent years are drawing more and more concerns all around the world, and vehicle emissions are believed to be responsible for the worsen of air quality. Representative emission factor of vehicles considering the fleet composition is thus very important for the reasonable estimation of contributions to ambient fine particles from on-road traffic. Detailed information on the characteristics of fine particles was obtained in this study by means of tunnel sampling. The data set is

useful and important for the air quality study in China, especially for the source apportionment of PM2.5. Generally speaking, the manuscript is well organized and clearly presented.

Specific comments and suggestions:

p28889, the authors have described the sampling and the tunnel in quite detail. But more information should be included if possible. One is that if the Zhujiang Tunnel is equipped with or without ventilation devices? Second, is the fleet composition in the Zhujiang Tunnel similar to the vehicle composition in Guangzhou as a total?

P28892, line 10, I think the uncertainties in the weighing process should be an important cause of the uncertainty in mass closure. Elements such as Si and S (not in form of sulfate) should not have contributions large enough to account for the discrepancy observed.

p28897, the authors discussed the difference in alkane distribution between results of this study and the study in 2004 in the same tunnel. Actually, the difference is quite small (shift of Cmax from C23 to C24), and this difference could be explained by the shift of gas-particle partitioning as alkanes of <C26 are semi-volatile. I would suggest the authors to provide more information such as ambient temperature to confirm that the observed difference is meaningful, and to avoid the over explanation.

p28898, the part of implication should be shortened and focus more on the application/implication of the current results. Repeat of the figures in Tables should be avoided.

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Interactive comment on Atmos. Chem. Phys. Discuss., 14, 28885, 2014.