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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Insights into aerosol chemistry during the 2015 China victory day parade: results from simultaneous measurements at ground level and 260 m in Beijing" *by* Jian Zhao et al.

Anonymous Referee #1

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The work of Zhao et al. presents PM1 measurement results during and after the 2015 China Victory parade event at ground level and 260m level using a HR-AMS and an ACSM. The paper was generally well written and results are valuable to the academia and goverment regarding air pollution control in megacities, such as Beijing. The reviewer finds a few issues, hopefully they can be well addressed before publication, as follows

(1)As the authors have published a couple of paper regarding the HR-AMS measurement at ground site, ACSM at 260 level, and one combining results at these two heights

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during APEC event, and also another paper simply compared the measurement results at two heights in 2014, it might be better to put a bit more info to compare results in this work and these previous works, focusing on the differences rather than similiarities, to let readers know clearly the new findings of this work. (2)Section 3.1, NR-PM1 occupied ∼81% of PM2.5 mass, this value is relatively higher than ones reported in Lanzhou (cite: Atmos. Chem. Phys., 14, 12593-12611), Nanjing(cite: Atmos. Chem. Phys., 16, 9109-9127,) and previous values in Beijing. It is likely that addition of BC increase the ratio, but the reviewer feels more discussion are needed. For example, does this ratio increase or decrease with the total PM2.5 mass loading?ãĂĂProbably, at high PM2.5 loadings, the mass fractions of supermicron meter particles increased, while at relatively clean periods, more secondarily formed species reside in submicronmeter range? It might be interesting to check. (3)I believe the measurement uncertainties from HR-AMS and ACSM were constrained before their deployments, correct? it is not clear in the manuscript. For example, if the same air mass is loaded into these two instruments simutaneously, these two instruments should give the same concentrations for different species? correct? (4)Did the authors try to do PMF analyses individually on control period and non-control period?Although I understand the amount of data may be not enough in particular for the control period to conduct a robust PMF analyses, but it may be worth a try.

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