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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Highly time-resolved urban aerosol characteristics during springtime in Yangtze River Delta, China: Insights from soot particle aerosol mass spectrometry" *by* J. Wang et al.

Anonymous Referee #2

Received and published: 25 April 2016

The paper of Wang et al. describes the chemical characteristics of urban aerosol in Yangtze River Delta, China, measured by using a soot particle aerosol mass spectrometer. The results showed that most of the submicron particles consisted of organics, sulfate, nitrate, ammonium and black carbon. Authors used the results on chemical species to construct the light extinction, chemically resolved mass size distributions and the source apportionment of organics. Four factors were found for organic aerosol in Yangtze River Delta, hydrocarbon-like, cooking-related, semivolatile oxygenated and low-volatility oxygenated OA. Secondary OA dominated total organics, but when large OA concentrations were observed, the contribution of primary organics increased indi-

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Discussion paper

cating the importance of anthropogenic sources.

This paper is well-written and the data have been analyzed and discussed very thoroughly. However, as there are so many AMS papers published on urban aerosols in past 15 years, it is difficult to see what is the significance and novelty of this paper. Are there any results presented in this paper that have not been published before? I suggest authors to think carefully what is the contribution of this paper to aerosol science and emphasize that clearly in the manuscript. Maybe it could be the unique features of the SP-AMS that allows to investigate the refractory material in addition to non-refractory species. In that case I suggest to focus this paper on that topic more clearly. This paper should be published after minor revision.

Specific comments:

1. Page 2, line 34: remove (∼54% of the PM2.5 mass) unimportant detail

2. Page 5, line 124: Why springtime? Is there something specific in aerosol chemistry in springtime Yangtze River Delta? Add a reason for springtime measurements.

3. Page 6, line 148: "coated species" Specify. What are the core and what are the coating species?

4. Page 7: lines 183-186: collection efficiency, how is CE defined for the SP-AMS? Discuss with relevant citation.

5. Page 8, 206-210: no difference in OA factors between dual vaporizer and tungsten vaporizer; how about rBC? With dual vaporizer set-up you are able to separate rBC for different PMF factors. It would have been interesting to see how rBC divides between HOA and COA, or does it?

6. Page 17 and Fig 9; I suggest rather showing the correlation (time-series) of PMF factors and inorganic species than PMF factors and organic tracers in Figure 9.

7. Page 35, Figure 5a: Is it possible that the right side of the mass size distributions

is defined by the transmission of aerodynamic lens? Could you estimate how much of the accumulation mode mass is missing for organics, sulfate, nitrate, ammonium and chloride because of that?

Technical corrections:

1. Page 3, lines 67-68: parenthesis are used unclearly

2. Page 15, line 428: . . . the SV-OOA. . . remove “the” as you haven’t used it with PMF factors earlier

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