

Interactive comment on “Highly time-resolved chemical characterization of atmospheric fine particles during 2010 Shanghai World Expo” by X.-F. Huang et al.

Anonymous Referee #1

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This paper reports an online mass spectrometry study of aerosols in Shanghai during 2010 World Expo. Typical AMS data were obtained including highly time-resolved mass concentration of major non-refractory aerosol components, OM/OC ratio and oxidation levels of organic mass etc. SP2 was used to measure mass loading and mixing state of BC. This is the first AMS and SP2 measurement in Shanghai region and deserves to be presented to the society. However the manuscript needs to be revised before the following issues being addressed.

My two major concerns are:

1. As the authors mentioned that a series of air pollution control measures were imple-

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mented during the World Expo, so the air quality in Shanghai was much better at that time. In other words, observations made in this sampling period might not be representative ones for the region. The authors should explain more about the importance of the study other than the first AMS measurement in the region.

2. The authors should take full advantage of the highly time- and particle-resolved information offered by AMS and SP2 and give more sophisticated data analysis. The results and discussion in the current manuscript are kind of simple compared with the previous papers (about the studies in Beijing and PRD region) from the same group. Besides, a lot of studies (only three of them were cited) have been carried out on the aerosols in Shanghai. More discussion and comparison regarding to the previous works are expected here.

Some specific comments more or less related to the above major concerns:

1. Page 1099, line 3: More technique details should be given for the calculation of PM1 mass concentration. Does the value include other refractory materials such as mineral dust?
2. Page 1099, line5: Is this the first reported PM1 measurement in Shanghai? If not, please compare the data with previous work.
3. Page 1100, line 10: Comparison with previously reported OM/OC values by filtration studies in Shanghai are expected here.
4. Page 1100, line 14-19: How about the correlation between the time series of O/C ratio and sulfate or nitrate concentrations? Can any OC fragments be identified to give more specific explanation of the lower O/C ratio in China?
5. Page 1100, line 20: Different mixing states of BC are not fully discussed (as in Huang, 2010, JGR) here.
6. Page 1101, line 13: The averaged diurnal pattern of sulfate could have buried the real variations as shown in Fig. 1.

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7. Page 1101, line 17-19: Does this mean all the inorganic acids were neutralized by ammonia all the time? Is there any particle acidity variation?

8. Page 1103, line 21-29: Is there any chemical kinetic explanation for the time scales here (3h delay between HOA and SV-OOA peaks and 2h delay between SV-OOA and LV-OOA peaks)? Are the time delays same with the measurements in different sites?

9. Fig.3: SO₄, NO₃ and NH₄ should be SO₄²⁻, NO₃⁻ and NH₄⁺ respectively.

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 1093, 2012.