

Interactive comment on “Chemical composition and mass size distribution of PM_{1.0} at an elevated site in central east China” by Y. M. Zhang et al.

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We appreciate your thorough review of the manuscript and valuable comments which helped us to improve the paper. We have revised the paper carefully and our point-by-point responses are detailed below.

Q: "1) Page 15193, line 9, what does it mean “cloud-nucleating ability”?"

A: We have changed “cloud-nucleating ability” to “aerosol-nucleating ability”

Q: "2) Page 15193, line 14, “S. Asia” what’s this?"

A: it is South Asia, and it has been written in full name.

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Q: "3) Page 15193, the second paragraph, it does not read well and needs to be re-organized."

A: It has been re-organized.

Q: "4) Page 15196, section 2.2, the maximum size for SMPS is about 520 nm, the authors should explain how to calculate PM1.0 mass from SMPS measurements."

A: Accepted. The method of calculate PM1.0 mass from SMPS measurement has been explained in the new version on P3, L49-52.

Q: "5) Page 15196, section 2.3, the authors try to interpret how to differentiate the air mass from the PBL vs. from the FT, but it is hard to follow."

A: the definitions of PBL, FT, NPF, in cloud and aged have been re-interpreted in the revised paper on P4, L11-20.

Q: "6) Page 15197, section 3.1, what are those criteria and objectives for the comparison? More interpretations are needed."

A: Also according to another reviewer’s comment, a new table and some new comparison of chemistry from different elevated sites were summarized and discussed in the revised paper on section 3.1

Q: "7) Page 15199, the top paragraph, it is difficult to follow because of the language."

A: it has been modified.

Q: "8) Page 15199, Section 3.3., the technical terms such as “fresh aerosols” and “aged aerosols” are usually used for those from primary sources. New particle formation events are of course subject to secondary origins of aerosols. The authors should consider revising the part."

A: it has been revised accordingly

Q: "9) Page 15200, the second paragraph, no conclusion? For the third and fourth

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paragraph, the reviewer has difficult to link those piece-by-piece analyses with the conclusion. ”

A: Accepted. This part has been modified completely, the former version only focused on the comparison between aged and fresh air, the new version expended the contents to five different kinds of episodes, and the discussions were also changed accordingly.

Q: “10) Page 15201, Section 3.4, short distance is not defined?”

A: Accepted. It has been modified accordingly.

Q: “11) Section 3.5, what are new findings?”

A: we employed PMF to categorize organics in four seasons. At this stage, we re-analyze the AMS dataset with both PMF and ME-2 to double check the final results of resolved organics. BBOA was resolved in fall in the new version, and the values in table 3 have been updated accordingly. The final results show that the oxygenic organics aerosols occupied half of organics matters. Intensive influence from the field burning of agriculture residue in summer and coal combustion in winter can be concluded in this paper. These two sources should be concerned by policy makers to improve air quality in China.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, 14, 15191, 2014.

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