

Interactive comment on “Primary emissions versus secondary formation of fine particulate matter in the top polluted city, Shijiazhuang, in North China” by Ru-Jin Huang et al.

Anonymous Referee #2

Received and published: 14 November 2018

The authors present a valuable dataset from aerosol mass spectrometry measurements in Shijiazhuang, Hebei, China during the winter of 2014. They have applied the ME-2 approach for more accurate identification of sources. In my assessment the article will be suitable for publication in ACP after a few minor points are addressed:

- This article is closely related to Zhu et al. AMT 2018, which also presents ME-2 analysis of organic aerosol mass spectrometry data from China. The two articles share some of the same authors, and Zhu et al. was available online in final form prior to this article appearing in ACPD. That article should be cited and discussed as appropriate in this manuscript.

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- Low FSO₄ does not necessarily indicate low oxidative power in the atmosphere. SO₂ oxidation may occur through a number of multiphase pathways, and other parameters such as aerosol or cloudwater pH are more likely to influence FSO₄. Please amend the statements regarding the implications of low FSO₄ throughout the manuscript in light of this caveat.

- The 1.36e6 premature deaths figure is out of date at this point - please refer to a more recent study such as Cohen et al. Lancet 2017 or Burnett et al. PNAS 2018.

- Can anything be inferred from these results regarding the impacts of regional pollution on PM in Beijing?

- page 5 line 8: 15 March of the next year

- page 5 line 9: 2013-2014

- page 14 line 10: thermally labile

- the Conclusion section is too repetitive, please revise to be more distinct from the Abstract and other sections of the paper

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2018-760>, 2018.

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