

Interactive
Comment

***Interactive comment on* “Direct observation of aerosol particles in aged agricultural biomass burning plumes impacting urban atmospheres” by W. Y. Li and L. Y. Shao**

Anonymous Referee #2

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Summary: The particle components of the agricultural biomass burning (ABB) have been studied. The sample was taken from a severe air pollution episode in China in June 2007. The particles collected during the given episode were classified to two categories according to the K/S element mass ratio: type-1 haze and type-2 haze. Overall, the revised manuscript includes sufficient observation data and improves the flow of the manuscript. The significance of the study and the interpretation of the data have been also improved. There are, however, still problems in grammars and technical interpretations of data. Please find the detailed comments below.

Reviewer's comments: 1 P 10591, Line 13-14, “Agricultural biomass burning (ABB)

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activities in Asia are . . . ever increasing agricultural activity”. The sentence is awkward. This article is not for the news paper. The use of too much decorative words and over emphasized sentences should be avoid in the technical paper. 2 P 10592, Line 16-17, “necessitating that more flexible. . .” Consider using a separate sentence for this part. 3 “3.2.5 Organic aerosols”, This section is very difficult to understand and needs to be rewritten. The authors did not clearly show the feasibility of TEM for organic analysis. TEM requires high vacuum due to the nature of instrumental operation. The atmospheric organic compounds will be easily evaporated from aerosol in the high vacuum system. The authors did not clarify what the impact of the high vacuum on the analysis of organic constitution is in the aerosol particle sample. What the authors observed in the TEM image is not the organics but the skeleton of aerosol. If the TEM is not a strong method to observe the majority of the organic compounds in aerosols, it would better for authors to mainly focus on the inorganic components of the ABB aerosols. 4 “3.3 Identification of the regional hazes affected by agricultural biomass burning”. In this section, the samples in the study were categorized into two types of haze (type-1 and type-2) depending on the K/S ratio. This is quite arbitrary. It is likely that same source of ABB can lead to different chemical composition in the downwind area in different days due to the complex atmospheric processes. More evidence should be shown to prove that the “two types” of haze are really from different sources. 5 P 10600, Line 9-10. Relative humidity was compared between the two types of haze, which seems to be unnecessary. It may be true that high RH can increase AOD when the aerosol components are same. However, the two types of haze are obviously different in chemical make-up, so it is meaningless to compare the RH effect here. 6 P 10605, Line 9-11. “As the most populous and fastest . . .”. This sentence is not informative in the conclusion section and should be deleted.

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