

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 #1

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General Comments

The authors present results of transmission electron microscopy, which characterized the morphology, composition, and mixing state of aerosols in urban Beijing during periods of regional brown haze. Li and Shao determined two different types of haze particles, with one type being associated with long-range transport of agricultural biomass burning emissions. The findings of this article emphasize the scientific need to better understand atmospheric processing of biomass burning emissions, as they can significantly modify the chemical and physical properties of aerosols downwind of biomass burning regions.

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Specific Comments

1. Figure 2- Do the authors have a reason as to why there was no particle collection during June 6-8, when SO₂ and PM₁₀ were at a maximum?
2. Page 10596, Lines 13-15: Could the authors briefly state what methods they used for characterizing the particles as mineral, soot, organics, K-rich, S-rich, fly ash, and metals, so that readers do not need to reference in detail (Li and Shao, 2009a)? Were these detected by TEM?
3. Page 10596, Lines 21-22: Do the authors have access to any levoglucosan data during the time of the field campaign? As a well-known tracer for biomass burning, this data could strengthen the case for ABB.
4. Page 10604, Lines 16-18: The authors should speculate on the source of the Type-2 haze. If it is not attributed to ABB, do the authors speculate it is from anthropogenic sources?

Technical Corrections

1. Page 10591, Lines 13-14: Sentence reads awkwardly, authors should consider revising. Possible correction: “Agricultural biomass burning (ABB) activities in Asia are drawing worldwide attention due to China’s rapid development and increase in agricultural activities. “
2. Page 10592, Line 7: “crop straw burning” should be “straw burning.”
3. Page 10592, Line 11: What is meant by “burning status”? Does this mean the presence of ABB or regional fires?
4. Page 10592, Line 15-16: Authors should consider revising “timing of farming activities changes from south to north in China” to “timing of farming activities change with respect to latitude throughout China”.

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