

Interactive comment on “Contribution of garbage burning to chloride and PM_{2.5} in Mexico City” by G. Li et al.

Anonymous Referee #1

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In this paper, the authors have evaluated the contributions of garbage burning (GB) emissions to chloride and PM_{2.5} in the Mexico City Metropolitan Area (MCMA). Their results indicated that GB contributes to > 60% of particulate chloride and represents an important source of PM_{2.5} (about 3–30% simulated PM_{2.5} mass). The manuscript is generally well written on average addresses a potentially important topic on the source of PM_{2.5}. I recommend publication of this paper, provided that following issues have been adequately accounted for.

(1) In the SOA module, did the authors consider the contribution of potential heterogeneous reactions to the formation of SOA, including oligomerization of small di-carbonyls (Zhao et al., Environ. Sci. Technol. 40, 7682, 2006; Wang et al., Nature Geosci. 3, 238, 2010) and polymerization of aldehydes (Zhao et al., Geophys. Res. Lett. 32, L09802,

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2005). Negligence of those processes may result in substantial under-estimation of SOA mass concentration in their simulations. (2) Also, it is rather unclear how aerosol nucleation was accounted for in their aerosol module. In particular, was the role of organics included in the nucleation schedule (i.e., Zhang et al., Proc. Natl. Acad. Sci. USA, 106, 17650, 2009; Zhang et al., Chem. Rev. 112, 1957, 2012). (3) Their simulations indicated that GB could account for about 3–30% simulated PM_{2.5} mass, but it was unclear what categories that mass fraction belonged to. For example, other than PM chloride, that mass fraction contain mainly inorganics, organics, or soot?

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