

Interactive comment on “Determination of gaseous and particulate carbonyls (glycolaldehyde, hydroxyacetone, glyoxal, methylglyoxal, nonanal and decanal) in the atmosphere at Mt. Tai” by K. Kawamura et al.

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Authors' Responses to Ref. #2

Thank you for the careful reading and valuable comments on our paper.

Anonymous Referee #2

This study presents results of six carbonyls determined in both gas and particle phases at the summit of Mount Tai during the open biomass-burning season in 2006. The measurements of gaseous and particulate carbonyls were conducted using a two-step
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filter cartridge in a series. Among the measured carbonyls, filter-based glyoxal concentrations were further compared with those from MAXDOAS measurements. The correlations between glyoxal and some other carbonyls with levoglucosan, a specific tracer for biomass burning, suggest that the field burning of wheat-straws after harvest is a significant source of carbonyls in the North China Plain. Glyoxal is a well-known precursor for secondary organic aerosols. The high abundances of carbonyls observed in the studied region may highlight the importance of the biomass-burning-derived carbonyls as one of the main sources of SOA over East China. In general, the paper is written and organized in a clear and concise way, and is of interest to the readers of ACP. I recommend publication after some minor revisions shown below.

1. Page 2730, Lines 10-17: “HB oximes” should be “BH oximes”.

Response: corrected.

2. Page 2732, Line 24: The concentration ranges in Table 3 are missing.

Response: We added Table 3 in the revised MS.

3. Page 2733, Line 2: “hydroxyacetone” should be “hydroxyacetone”.

Response: corrected.

4. Page 2735, Lines 1-5: The authors discussed the relationships between levoglucosan and the gaseous glyoxal, methylglyoxal and glycolaldehyde. How about the correlations between levoglucosan and the particle-phase carbonyls in the Mt. Tai aerosols?

Response: the correlation coefficients for levoglucosan and the particle-phase carbonyls are added with the following sentence; “However, weaker correlations ($r=0.55$ for glyoxal, $r=0.42$ for methylglyoxal) were obtained between levoglucosan and particulate α -dicarbonyls (Kawamura et al., 2013)”. Please see lines 237-238 in the revised MS.

5. Page 2737, Line 1: ...we did not find...

Response: corrected.

6. Page 2737, Line 17: ...during gas/particle partitioning...

Response: corrected.

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