Atmospheric
Chemistry
and Physics
Discussions

Interactive comment on "Measurement report: Chemical characteristics of PM$_{2.5}$ during typical biomass burning season at an agricultural site of the North China Plain" *by* Linlin Liang et al.

Anonymous Referee #3

Received and published: 9 December 2020

This is a well-written and structured manuscript to discuss the biomass burning pollution status in rural atmosphere of North China by presenting the biomass burning tracers and secondary inorganic ions in PM2.5 during a transition heating season. It is interesting that an episode with extreme biomass burning tracer levels was identified to present the severity of biomass burning pollutions. Biomass burning tracer ratios were also introduced to discuss the biomass source types and burning process. I agree with the data discussion and to publish on ACP. There are some minor errors are necessary to be revised before publishing.

Specific comments:

Line 103: Are the "6 whole-day samples" are used in the data analysis? Please make a note for the "Whole period, N=37" in table 1 to explain sample categories in the data analysis.

Line 153: Why PM2.5measured (measured with High volume sampler) data was not used instead of PM2.5-cal?

Line 163: Organic matter (OM) appears first time in the paper to show the OM contribution to PM2.5-cal. I suggest to explain that how OM was calculated.

Line 170: Please show the data range in these references during summer and winter seasons to give a better understanding how high levels the anhydrosugars were.

Line 199: The contribution of LG to PM2.5-cal during daytime in Figure 3 was 0.45%. Please check the data.

Line 202: Please insert references for the photochemical formation of secondary inorganic species.

Line 234: In Table 2, the OC contribution during intensive BB period II was 96.3, but not 59.9. Please check the data.

Line 276: Please insert the increasing range of OC fraction.

Line 286: Check the data in Figure 6, the SO42- and NO3- contributions during the intense BB episode were 1.93 and 7.67%.

Line 295: The range of LG/MN ratios from crop residue burning in source emission studies is helpful to understand the biomass types.

Line 304: The LG/K+ ratio during III in Table 2 was 0.51, please check the data.

Please also note the supplement to this comment:
https://acp.copernicus.org/preprints/acp-2020-1006/acp-2020-1006-RC3-supplement.pdf

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