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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 #1

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In this manuscript, the authors report chemical characteristics of PM2.5 under the impact of biomass burning (BB) in the North China Plain. A unique episode with extreme biomass burning impact, with daily concentrations of levoglucosan as high as 4.37 μg m-3 was captured. The formation process and chemical characteristics of this severe biomass burning pollution episode were also reported. This field measurement was interesting and the data in this study was valuable. This study matches the definition of Measurement Report quite well, presenting substantial new results from field measurements of atmospheric properties and processes. The manuscript is well organized and concisely written, and minor revisions indicated below are needed before publication.

Major comments: (1) LOD (limit of detection) of the water-soluble inorganic ion analysis also suggested described in the experimental section. (2) Experimental section should include more detailed information regarding statistical analysis conducted. (3) "Concentration" in table 1 should be changed to "Average concentration". (4) The meteorological factors (temperature (T), relative humidity (RH), wind speed (WS) and rainfall) in Figure 1 were together expressed in one figure, difficult to distinguish. It is suggested to separate these meteorological factors to two figures and add the time-series variation of PBL as well. (5) The English grammar and usage should be polished by some English native speakers. (6) The abbreviation such as LG and MN is not generally used in literatures. These abbreviations are not easy to be remembered and make the manuscript difficult to understand. I suggest that the authors using the origin names or abbreviations more easily to be remembered. (7) discussion of the possible degradation of levoglucosan should be included in the Day and night distributions. (8) more time series of diagnostic ratio such as levoglucosan to OC ratios should be presented to illustrate the impact of BB

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