

Interactive comment on “Chemical characteristics of submicron particles at the central Tibet Plateau: influence of long-range transport” by Jianzhong Xu et al.

Anonymous Referee #1

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In this study, a field study was performed during June 2015 at a site in the central of Tibet Plateau using a HR-AMS and a MAAP with the target to characterize the chemical composition, sources, and transport mechanism of polluted air mass in this pristine area. The aerosol in the free troposphere is very important, but hard to be studied. The data set provided by this work is thus valuable. The authors confirmed a general low PM concentration with the highly oxidized organic aerosol as the dominated composition. The data set provided by this work is thus valuable. The manuscript is overall well written and documented. The topic fits well in the scope of ACP. I recommend this manuscript can be published after some revisions.

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1) Page 7, Line 233-237: this classification need to be re-considered. Firstly, the standards of these classification are different that the pre-monsoon and monsoon periods are distinguished mainly by the meteorological parameters, but P1 and P2 is based on the differences of aerosol composition concentrations. Secondly, the differences of aerosol chemical compositions between P1 and P2 are small. Are these differences statistically significant?

2) Page 8, Line 265-266, air masses from west was confirmed to be favorable to transport polluted air masses. Is there some information to show where these air masses originally come from? Could it be influenced by the local sources, e.g. some small villages and tourists (Page 4, Line 119-121). Is there any signal to show if polluted air mass from east China can influence the site?

3) Page 8, the 2nd paragraph: the discussion the formation/sources of aerosol chemical compositions is a bit of an oversimplification. I recommended more discussions on how these chemical compositions are formed or transported.

4) Fig. 9b: it's interesting that the O/C ratio increased accompanied with the increased of OA mass concentration. But more discussion is needed to interpret the reasons. In general, a higher O/C ratio would correlated to a more aged air masses/aerosols, but should be independent to the mass concentrations.

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