

Interactive comment on “Molecular distributions and stable carbon isotope compositions of oxalic acid and related SOA in Beijing before, during and after the 2014 APEC” by Jiayuan Wang et al.

Anonymous Referee #1

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Wang et al.,

The study compared the PM before, during and after APEC in 2014. The study focused on organic compounds in fine particles and they understand how these organic compounds change during the emission control. Recently, many previous studies prove the organics in fine particles were dominant in North China plain which could be important policy to control VOCs in the future. However, details about organic compounds is scarce. Obviously, the study is important to provide more details about organics. Moreover, during the APEC period, the Chinese central government made strict emission control in North China Plain in winter. After the APEC period, one severe haze-fog event occurred. The phenomenon provides one change to understand what kind of chem-

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ical mechanisms to promote the haze formation following the source emission change. I think the study provides some insights to improve the air quality in Beijing and we understand details about organics. After the reading, the current manuscript needs to be revised after one publication.

(1) Abstract: The abstract is so long and two paragraphs. I may suggest to take some details away and make major findings in the abstract.

(2) Title: "Molecular distributions" what does this mean? I think the authors only provide the concentration changes of oxalic acid and related SOA. Seemingly, the word is not correct here.

(3) L253-254, the statement is unexpected. Could you show the result anywhere? Also, the data only containing NH_4^+ as the basic ion is biased. What about Na^+ , K^+ , and Ca^{2+} ? I think the bisulfate depends on the particle size. More smaller particle size is more acidic. Therefore, the conclusion should be revised. Also, I noticed several previous papers in ACP. They found the Beijing air is NH_3 -rich not NH_3 -limited. Please find them and carefully make the conclusion.

(4) Section 3.3.2 Figure 6 shows three classes of air masses. I am confused the name of the type. I think the regional type is same to long-range transport type. Also, Local type is not local from the Figure 6. Obviously, the name should be modified. I suggest that long-range transport type should be clean air mass. Regional type should be polluted air mass. Local type should be mixed type of clean and polluted.

(5) L269-271 and L339-341 the result is not stable for temperature. The $\text{PM}_{2.5}$ decrease is associated with air masses or wind direction. If the air mass was from northwest, the $\text{PM}_{2.5}$ concentration decreased because it brings the clean air into Beijing. Also the temperature decreases. As it is, you can make conclusion about the $\text{PM}_{2.5}$ concentration and oxalic formation? If the authors want to make such conclusion, you need to compare the $\text{PM}_{2.5}$ and oxalic concentration at similar air masses such both from south.

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In the context, the authors miss comma before and. Such L50 before-, during-, and after-APEC..

L216

L319, SO₄²⁻, NO₃⁻, NH₄⁺.

L293 North

L294 is – was

L341 not only, but also changed to by both the emission controls and the lower tem.;

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