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## ***Interactive comment on “Characteristics and sources of submicron aerosols above the urban canopy (260 m) in Beijing, China during 2014 APEC summit” by C. Chen et al.***

### **Anonymous Referee #1**

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This paper reports real-time aerosol mass spectrometer measurement results at a high altitude level (260m) in Beijing. The aerosol composition, variation, sources, as well as the influence of meteorology were detailedly discussed. As the authors stated, although the ground aerosol measurements were performed a lot before, those at a higher altitude have been rare, and need to be explored to help reveal the formation mechanisms of air pollution in Beijing. Generally, I think this paper provides an interesting dataset and some valuable results for the severe air pollution in China, and could be accepted by ACP after carefully considering the following revisions.

1. The title. Since 260m is still in the range of near ground boundary layer, it is not

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strict to state that the measurements in this study were " above the urban canopy ". 2. Abstract. The description of the vertical differences, which should be the most important feature of this paper, were too vague. 3. Two different types of aerosol instruments were used simultaneously at two altitudes, including an ACSM and an AMS. Although the two instruments are both based on mass spectrometry, their structures are significantly different. Some comparisons between them ever found that they may have larger difference for high particle concentrations. Were the two instruments systematically compared on the ground before this campaign? This is important to state how much difference between the ground and the 260 m level was from the instruments. 4. Page 22904, Line 17. " Considering that the peak time corresponds to lunch time, we concluded that it was attributed mainly to local cooking sources. " This conclusion is too arbitrary. Have the mass spectra at noon been checked for features of cooking emissions? 5. Fig. 13. This figure may be very misleading if without the comparison between the two instruments, as mentioned above. 6. Page22913, Line 1. A typo of double "cause".

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