1. I agree with the authors that the study of regional background sites is important to put e.g. urban measurements into perspective. One may indicate that this is important to do even at more sites and covering all seasons. In Europe, a comprehensive study was done mostly at regional background sites in different seasons using aerosol mass spectrometric measurements (Crippa et al., 2014). In the future, long-term measurements using aerosol chemical speciation monitors would be very helpful to cover all seasons at multiple sites. I suggest you cite the study of Crippa et al., 2014 and the need of more extended measurements at these and additional background sites in China.

REPLY:

We added the relevant descriptions in Section 3.6 as below,

"In summary, it is seen that the potential pollution source areas of the two background sites in China are on a regional scale rather than on a local scale, consistent with their nature as background sites. This highlights the need of long-term AMS measurements for all seasons at multiple sites in East Asia in order to have a comprehensive understanding of aerosol sources and transport in this region. Crippa et al. (2014) have recently well shown the advantages of multiple-site AMS measurements in acquiring insights of organic aerosol sources in Europe. "

2. The detection limit to measure more refractory elements by the open-closed difference is not very good. So I would not say that interferences of metal nitrates can be excluded. One may however say that one assumes and expects low contributions of metal nitrate in the submicron range (which would provide similar responses as organic nitrate) in contrast to the coarse mode where e.g. NaNO3 can be very abundant (you may find a reference for this).

REPLY:

We modify some descriptions in section 2.4 as below:

"In contrast to the abundant existence of metal nitrates in coarse mode particles (Huang et al., 2006), e.g., NaNO3, one may assume low contributions of metal nitrates in AMS detection in the submicron range."

Kouyoumdjian, H., and Saliba , N. A.: Mass concentration and ion composition of coarse and fine particles in an urban area in Beirut: effect of calcium carbonate on the absorption of nitric and sulfuric acids and the depletion of chloride, Atmos. Chem. Phys., 6, 1865-1877, doi:10.5194/acp-6-1865-2006, 2006.

3. Also in Hayes et al. (2013), they describe different results in the Los Angeles Basin that are due to mixing of some primary and secondary components. So I would tone it down even a bit more by saying .. "while the Van Krevelen diagram may still be useful for constraining..." above I would mention explicitly the mixing of different air masses and components/sources as possible reasons for variations in the slope.

REPLY:

We rephrased the sentences in section 3.4:

"Although many other factors, such as the mixing of different air masses and components/sources, may also lead to a variety of slopes in the Van Krevelen diagram in the case of ambient field measurements, the Van Krevelen diagram may still be useful for constraining reactions that are responsible for the aging of OA (Hayes et al., 2013)."

4. Change summarization to summary throughout the text.

REPLY:

We have corrected in the revised manuscript.

5. Page1: space between PM1 and components

REPLY:

Corrected

6. Page 2: before the year of the citations, sometimes spaces are missing. Please check throughout the manuscript.

REPLY:

Corrected.

7. Figure 3: make sure that size of Figures a, b are exactly the same including the text. add more space for the x and y-axes text. dM/dlogd .. nomenclature different in a, b versus c-h please make it the same. ug/m-3 is very hard to read on my printout.

REPLY:

Corrected.

8. Figure 4: check y-axis and x-axis text .. do them the same for all figures with the right distance to the axes numbers.

REPLY:

Corrected.

9. Figures 6c, 6d: add the x-axes at zero to the upper graphs (ticks and axes text not necessary)

REPLY:

Corrected.