

Interactive comment on “Summertime and wintertime atmospheric processes of secondary aerosol in Beijing” by Jing Duan et al.

Anonymous Referee #1

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The manuscript by Duan et al. reported atmospheric processes of secondary aerosols, including secondary inorganic and secondary organic aerosols in Beijing during summertime and wintertime. Although similar studies have been conducted in Beijing, there are some valuable information presented here. I agree with the reviewer 2 that the authors need to further highlight the novelty of this study in the revised manuscript.

Comments:

1. The authors resolved an isoprene-oxidized OA (ISOOA) in summer by using the constrained profile that was identified in southeastern US. I suggest the authors adding some discussions on the uncertainties in the text. ISOOA was generally formed in environment with low NO_x and high biogenic emissions. Because the authors used ME2 for the source apportionment, any input spectral profile can force to separate an OA

factor. 2. The authors claimed that aqueous-phase processed had significant impacts on the formation of sulfate in winter. According to the Figure 3b, the diurnal variations of SO_4/CO was remarkably similar to that of NO_3/CO . It seems that photochemical production was very important in winter, could the author give more explanations? 3. The color of OA factors in summer is difficult to read (e.g., Figure 1), suggesting the authors to change it.

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