Atmospheric
Chemistry
and Physics
Discussions

Open Access

EGU

Interactive comment on "Real-Time Aerosol Optical Properties, Morphology and Mixing States under Clear, Haze and Fog Episodes in the Summer of Urban Beijing" *by* Rui Li et al.

Anonymous Referee #3

Received and published: 18 February 2017

This paper has discussed the characteristics of aerosol optical properties, morphologies and their relationship in urban Beijing during the clear, haze and fog episodes, based on the analysis on the samples from 24th May to 22nd Jun, 2012. The state-of-the-art instrument has been used including Transmission Electron Microscope (TEM), in combination of a Cavity Ring Down Spectrometer (CRDS), a nephelometer, and an aethalometer. Five episodes were categorized according to the meteorological conditions, composition and optical variation. Results are interesting and should be published in the ACP journal.

I have checked the whole text of the manuscript and have made the following suggestions:

1. Line 259-260: The time range mentioned here is from 28th May to 29th May, but in Figure 1, it is from 24th May to 29th May. Pleas check and keep in consistency. 2. Line 284: How do you obtain the value R=0.603. 3. Line 385-389: There might be a misunderstanding of the definition of the internal and external mixing stages. The adjacent particles belong to the category of "inhomogeneous" internal mixing. Please refer to the relative papers for the definition. 4. Line 390: the title of this section may be changed into "Optical properties related to morphological types of aerosols". 5. Line 700: The meaning of "No." in Table 1 is not clear. 6. Line 710-713: It seems this is not Figure 3, instead, it may be Figure 6. Similarly, Figure 5 in Line 717-720 might be Figure 3, and Figure 6 in Line 721-722 might be Figure 5. Please check this section. 7. Line 726 Figure 1: The keys for this diagram are not very clear. The upper one: in addition to rain, fog, and haze days, the clear days should be expressed in white color key. The middle one: what are the meanings of the grey color and orange color? 8. Line 738 Figure 2: Keys for this diagram should be added. What are represented by those different colors of lines? 9. Line 748 Figure 3: Keys in figure 3c are erroneously used. The figure is not consistent with the description in text of Line 187-188. 10. Line 761 Figure 5: The values in the vertical axis should be 20, 40, 60, 80, and 100 percentages. Besides, are the percentages in this diagram based on statistics of the area or number? What about the values of the rainy days? 11. Line 766 Figure 6: The types in the classification shown in this figure are not consistent with those in Figure 4. The mineral particle type is missing in Figure 6, and still in this figure, the values of the rainy days are missing as well. 12. The keys in Figure 1, 3, and 7 should include those od the clear days (for those white areas). Also, the data for the clear days should be added.