Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2018-295-RC2, 2018

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Fossil and Non-fossil Sources of Organic and Elemental Carbon Aerosols in Beijing, Shanghai and Guangzhou: Seasonal Variation of Carbon Source" *by* Di Liu et al.

Anonymous Referee #2

Received and published: 5 June 2018

This study compares the sources and determines the seasonal variation of carbonaceous aerosols among the three cities. The results can help to identify the carbon sources of aerosols in China. This paper is well-written and presents some the interesting data. However, more detailed explanations about the methodologies should be provide to ensure the data quality. Finally there are some technical questions that need the authors to clarify (see additional comments).

Additional comments:

Line 89-91: A brief introduction about the sampling instrument should be provided, e.g. brand name and model number of the hi-vol samplers; the sampling flow of the sampler etc.

Line 106-108: Only two samples were selected in each season in each city for 14C analysis, are they good enough to represent the city? However, most of the source explanations are based on the carbon isotope data, it might lead to the bias results.

Line 109: The basic parameters for back trajectories analysis should be provided.

Line 125-190: How many samples (OCEC data) were used in this data description?

Line 137: If biomass burning, coal combustion and SOA formation are the major components of PM in China, I don't think 1.6 is an appropriate factor to change OC to OM.

Line 160-161: Any evidences can be provided that large secondary formation is one of the reasons for high concentrations of PM2.5, OC and EC in winter?

Line 174-177; 216-247: According to the correlation results of OC and EC and OC/EC ratios in different season in Beijing and Shanghai, authors explained that the sources of carbonaceous aerosols in these two cities did not have drastic change. However, according to the results of 14C, discrete seasonal patterns were found in the three cities, e.g. "During winter, the carbon source composition of different cities were different". How the authors interpret the conclusions from the results?

Line 265-266: How the authors define haze and non-haze in this study? Which dates are hazy days in this study? Please clarify clearly.

Line 277-281: Why WSOC has significant correlation with PM2.5 can indicate the importance of SOC in megacities? As WSOC is a proxy for secondary organic carbon (SOC) and biomass burning OC, biomass burning can be the dominant sources in megacities also.

Minor comments: The manuscript should be edited by a native English speaker.

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2018-295, 2018.