Atmospheric
Chemistry
and Physics
Discussions

Interactive comment on "Characterization of organic aerosols from a Chinese Mega-City during winter: predominance of fossil fuel combustion" *by* Md. Mozammel Haque et al.

Anonymous Referee #1

Received and published: 15 January 2019

The comments on "Characterization of organic aerosols from a Chinese Mega-City during winter: predominance of fossil fuel combustion" submitted by Haque et al.

In this study, PM2.5 samples were collected from an urban site in Nanjing, a big city in East China. A comprehensive laboratory analysis was conducted for various organic compounds. Based on the characteristics of different organic compounds, and also the PMF receptor model, the sources of organic aerosols were identified. General speaking, this work has value for the mitigation of the serious air pollution in China. However, this paper suffers some major problems, regarding the writing and organization.

Specific comments: 1. Line 55-60, I do agree that organic aerosols are important

in the climate system, as CCN. However, I can not understand why the authors use another whole paragraph (Line 78-95) to describe this issue repeatedly and in such detailed way. Actually, for the urban sites, the aerosol is more closely related to the pollution (environmental) issue, rather than climate issue. Obviously, the role of organic aerosols in the climate is not the focus of this study. 2. Line 100-101, the references cited here seem too old. In the recent years, many research was conducted in terms of inorganic aerosols like sulfate and nitrate from anthropogenic emissions, rather than desert dust. 3. Line 105-108, what is the current status of air quality in Nanjing? What is the concentration level of PM2.5 during the sampling time? Updated information and reference should be presented here. Also, the China national standard of air quality or WHO standard should be used here. 4. Line 111, Why winter season was selected for the sampling? What is the special characteristics of winter compared to other seasons? 5. In the Experimental section, major ions should be included. Because ions data were used in this study, especially in the PMF analysis, soil dust (indicated by Ca^{2+}) was identified as the Factor 2. 6. Line 245, it was written as "The OC/EC ratio in this study was on average 2.40, suggesting the significant contribution of SOA in Nanjing aerosols". Actually, there are other possible causes. First, as the OC/EC ratio of coal combustion is 2.7, which was proposed by Watson 2001(Line 236), so only coal combustion rather than secondary formation could produce the ratio of 2.4 here. I do not think the ratio is high. Maybe sometime the ratio for vehicular emission is low, but when it was mixed by biomass-burning emission (as discussed latter), the ratio also could increase somewhat. 7. Line 277-278, some sentence seem missing here. What is the situation found in this study? 8. Line 346-350. The amount of galactosan was found to be 0.65-7.47 ng m-3 (ave. 2.26 ng m-3) during daytime and 0.48–7.75 ng m-3 (3.13 ng m-3) during nighttime, whereas those of mannosan were 0.36-4.30 ng m-3 (1.62 -349 Åãng m-3) in daytime and 0.27-5.73 ng m-3 (2.06 ng m-3) in nighttime. Galactosan and mannosan were also detected in the aerosol samples. Please check the logic among these sentences. 9. Line 422, why the coal combustion should be higher in nighttime? Any references or supporting information? 10. Line 428-430, I

suggest to delete these sentence here. Because the sources of PAHs were discussed more detailed in the below (Line 442-453) using the PAHs ratios. 11. Does the dataset (data amount) meet the requirement of PMF? 12. Sometime, the authors attribute the source of pollutants to long-range transport (e.g. Line 650). Actually, most of emission information provided in the text is the local emission pattern, like local truck.

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