

Atmos. Chem. Phys. Discuss., referee comment RC2
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Comment on acp-2022-141

Anonymous Referee #2

Referee comment on "Evolution of source attributed organic aerosols and gases in a megacity of central China" by Siyuan Li et al., Atmos. Chem. Phys. Discuss.,
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This manuscript for the first time studied the sources and evolution of aerosols and VOCs synchronously with corresponding state-of-the-art instruments in a megacity of Central China. Most uniquely, unlike other events in previous studies, as the emission control measures of 7th CISM Military World Games stressed mainly on the industrial emissions, the vehicle and cooking emission dominated the sources of organic aerosols and VOCs. Taking this opportunity, the study clearly separated the two sources and identified their emission evolution with different mechanisms in daytime and nighttime respectively under the real ambient air. It is quite valuable and of great significance. I think it is a well designed and prepared paper, and can be accepted after the following questions answered.

Line 71, are only industrial sources controlled? More detailed emission control information should be given.

Line 149, it is also due to low relative humidity as Figure 1 shown.

Line 164, the corrected name of N.L. et al. should be given.

Line 187, to a previous report

Line 192, the RH at noontime (10-15) is still high around 60%, higher than those of northern cities. Is it possible that SOA be formed through aqueous oxidation?

Line 247, there is evidence that isoprene in Beijing can be from vehicle emission, in this study, can it be attributed to vehicle emission? For example, Gu et al., AE, Investigation on the urban ambient isoprene and its oxidation processes; Cheng et al., JES, Atmospheric isoprene and monoterpenes in a typical urban area of Beijing.... The authors can give related discussions.

Line 299, is there evidence that NO₃. can be formed from cooking emission or is it an important formation pathway or source?

Line 312, the scaling of CO can be also influenced by the wind speed, temperature, etc, not only boundary layer. The sentence should be corrected.

Line 325-326, I suggest a quantitative law or conclusion should be given. For example, can the ranges of higher temperature be given through this study?

Figure 5b, I am not sure why 3% scale of RH was adopted for the data classification. Also from Figure 5b, I cannot find the correction coefficients.

Line 334, how the production rate of $0.2 \mu\text{g m}^{-3} \text{h}^{-1}$ be obtained. I can not find the calculation processes.