

# ***Interactive comment on “Impacts of Regional-transported Biomass Burning Emissions on Chemical and Optical Properties of Carbonaceous Aerosols in Nanjing, East China” by Xiaoyan Liu et al.***

**Anonymous Referee #1**

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This study investigates the chemical and optical properties of carbonaceous aerosols in Nanjing and finds that the transport of biomass burning emissions is a major source of carbonaceous aerosols. The paper is clear on describing the results they found, and the conclusion is solid. My largest concern is the way how the authors present the paper. From my understanding, the biomass burning emissions are transported to atmosphere in Nanjing and they showed different properties than other episodes, it is not the case that the transported emission changed the properties of aerosols emitted in Nanjing. Thus, I would avoid saying that the “Impacts of Regional-transported Biomass

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Burning Emissions on”, which is misleading. Detailed comments are below.

Comments:

1. Page 1: Abstract: “Biomass burning can significantly impact the chemical and optical properties of carbonaceous aerosol”, this sentence is repeating with the next one.
2. Page 2, Lines 5-6, please avoid repeating such blurry information.
3. Page 2, Lines 21: long-range transport of aerosols; “simulation modeling”?
4. Page 2, Lines 26: methods for biomass burning calculation
5. Page 3, Line 20, POM?
6. Page 3, Line 21, This is no turning here to use “However”
7. Page 4, Line 2, why WSOC contribute to EC?
8. Page 4, Line 4, what are MAC365 and AAE
9. Page 10, the equations to estimate the contributions of biomass burning to carbonaceous components are based on the emissions of biomass burning. It should be discussed about the uncertainties as the ambient concentrations measured in Nanjing are mixture of biomass burning transported to here and local emissions from other sources.
10. Page 11, the levoglucosan contraction could be as high as 673 ngm<sup>-3</sup> from non-biomass burning regions, you cannot put all 796 ngm<sup>-3</sup> from southeast China to biomass burning.
11. Figure 10: from the relationship of OC, EC, and WSOC with lev, man, gal and nss-K in Figure 4, WSOC is correlated with biomass burning. Then, it is not clear why babs is not correlated with BB-WSOC at all (Figure 10), and it can not be explained by biomass burning is not the only source of BrC.
12. Contributions of biomass burning to carbonadoes aerosols are a key factor for an-

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alyzing their radiative effects. The authors should add these key information in abstract or conclusion.

13. Figure 8 is not in high quality, where is Nanjing? I can't agree with the authors that it shows "the air masses were mainly coming from the south and southeast regions".

14. Table 2: I can understand that the authors want to compare with other studies, but I don't believe there are only four previous studies have reported lev concentration in the whole literature.

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