

Atmos. Chem. Phys. Discuss., referee comment RC2  
<https://doi.org/10.5194/acp-2022-477-RC2>, 2022  
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## Comment on acp-2022-477

Anonymous Referee #2

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Referee comment on "Measurement report: Intensive biomass burning emissions and rapid nitrate formation drive severe haze formation in the Sichuan Basin, China – insights from aerosol mass spectrometry" by Zhier Bao et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2022-477-RC2>, 2022

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The authors reported measurement results of PM<sub>2.5</sub> components at a site in Sichuan basin, China, using a time-of-flight aerosol chemical speciation monitor (ToF-ACSM). General results of the one-month campaign in winter 2021/2022 were presented with routine but rigorous data analysis tools. Three haze events, each accompanied with a foggy period, were selected for case studies to identify the reasons behind haze formation. The authors concluded that intensive biomass burning and rapid nitrate formation might be the reason behind the formation of those haze events. The study is in general well designed and properly conducted, and the manuscript is fairly well written. I therefore recommend Minor Revision before publication.

Main:

- The authors tried to make a point in the title that "intensive" biomass burning and "rapid" formation "drive" severe haze formation in their campaign. Yet, I do not see clear evidence supporting such a statement. First, for biomass burning, BBOA contributed 20-30% to OA, and maybe 10-15% of NR-PM<sub>2.5</sub> during haze events (Figure 10a). Yes, it is non-negligible, but I would not say that it drives the haze formation. In addition, I do not see evidence for "intensive" biomass burning during haze events. Maybe showing some fire spot data from satellite archive will help. Second, for nitrate, the contribution of around 30% to NR-PM<sub>2.5</sub> during haze events is



