

Interactive comment on “Distinct diurnal variation of organic aerosol hygroscopicity and its relationship with oxygenated organic aerosol” by Ye Kuang et al.

Anonymous Referee #2

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Measurements with a humidified nephelometer system and an ACSM were made during the winter on the North China Plain and were used to investigate the hygroscopicity of organic aerosol. The use of $f(\text{RH})$ and bulk chemical composition to calculate κ for organics is novel. It was found that variability in κ_{org} was significantly correlated with the degree of oxidation of the organics. The paper should be published after the concerns below have been addressed. In addition, there is a need for grammatical corrections.

I found the discussion in Section 3.3 to be a little confusing given all of the definitions of κ . Perhaps a table that lists the different κ s and measurements they are

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based on would be helpful.

Line 105: Explain why this diameter range (200 to 800 nm) is represented by the dependence of light scattering on RH.

Figure 1: The text says that the ACSM measured PM_{2.5} but the figure indicates an upstream cut-off diameter for PM₁. Please clarify.

Line 182: Please provide a brief description of the CV and how it allows for the collection of particles as large as 2.5 μm .

Lines 185 – 187: Is the CE for the capture vaporizer dependent on chemical composition? Has a unit CE been observed for the composition of the aerosol sampled here?

Figure 4 caption: "...distributions shown in Fig. 4". Should this be Fig. S4?

Lines 449 – 450: Why is the reported maximum PM_{2.5} concentration less than the PM₁ concentration? Same for the PM₁₀ and PM₁ light scattering coefficients.

Lines 475 – 478: Does this statement (hygroscopicity of aerosol particles larger than 800 nm is typically lower than for accumulation mode particles) assume uniform composition with size?

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2019-633>, 2019.

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