

Interactive comment on “Interactions between aerosol organic components and liquid water content during haze episodes in Beijing” by Xiaoxiao Li et al.

Anonymous Referee #2

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This study reported the aerosol liquid water content contributed by organic components and its promotion on aerosol uptake. The results are very interesting. The manuscript is well-written and very clear. There are several questions should be addressed in the revised version.

(1) The ALW contributed by organics is calculated based on the relationship between oxidation state and k_{org} . This means O:C values have very strong effect on the results and conclusions. The O:C values obtained from f44 using the parameterization method for Q-ACSM may highly variable (Crenn et al., 2015). In addition, as given in Figure S2, different equations produced different k_{org} . The relationship between O:C and k_{org}

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may vary with sampling locations. Therefore, the uncertainties on O:C calculation and the selection of equation for calculating k_{org} should be discussed in the manuscript.

(2) Line 211-212, the authors did give explanations why the partitioning of semi volatile species from particle phase to gas phase lead to an increase in O:C. (3) Line 141-145, the calculation of VGF assume the total volume equals to the addition of volumes of all components. If the irregular particles lead to a bias? What is the difference between VGF and mass-based growth factor? Why mass-based growth factor is not used here?

Crenn, V.; Sciare, J.; Croteau, P. L.; Verlhac, S.; Fröhlich, R.; Belis, C. A.; Aas, W.; Äijälä, M.; Alastuey, A.; Artiñano, B.; Baisnée, D.; Bonnaire, N.; Bressi, M.; Canagaratna, M.; Canonaco, F.; Carbone, C.; Cavalli, F.; Coz, E.; Cubison, M. J.; Esser-Gietl, J. K.; Green, D. C.; Gros, V.; Heikkinen, L.; Herrmann, H.; Lunder, C.; Minguillón, M. C.; Močnik, G.; O'Dowd, C. D.; Ovadnevaite, J.; Petit, J. E.; Petralia, E.; Poulain, L.; Priestman, M.; Riffault, V.; Ripoll, A.; Sarda-Estève, R.; Slowik, J. G.; Setyan, A.; Wiedensohler, A.; Baltensperger, U.; Prévôt, A. S. H.; Jayne, J. T.; Favez, O. ACTRIS ACSM intercomparison – Part 1: Reproducibility of concentration and fragment results from 13 individual Quadrupole Aerosol Chemical Speciation Monitors (Q-ACSM) and consistency with co-located instruments. Atmos. Meas. Tech. 2015, 8 (12), 5063-5087; DOI 10.5194/amt-8-5063-2015

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