General Comments:

The authors have put many efforts into reviewing aerosol hygroscopicity measurements in China, which is helpful for researchers to get a quick grasp of what has been done so far regarding this topic and may provide guidance for future research in this area. Most comments raised by the two reviewers have been addressed adequately by the authors, and the manuscript is ready for publication after the following specific comments are addressed.

Specific Comments:

Line 208, Please be more specific, otherwise it could be misleading. Does "κt describe the overall aerosol properties" mean that κt describes the overall aerosol hygroscopicity? If this was meant, then this statement is not correct. Assuming MAF to be 1 will certainly influence the hydrophobic part of aerosol particles, however, measured CCN activities certainly can not reflect variations of aerosol hygroscopicity of particles larger than ~ 300 nm. Thus, κt might only represent overall hygroscopicity of particles that within CCN relevant diameter ranges. Overall, this is not an accurate description and should be altered.

L258 explore -> explored

Line 286, To be more precise, Wu et al., 2016 derived a linear relationship between organic aerosol hygroscopicity and O:C, which does not mean that derived κ of organics depended linearly on their O:C ratios. Also, one can see from Fig.8 in Wu et al., 2016 that κ_{OA} did not exhibit significant a linear dependence on O:C. Please rephrase this sentence.

Line 340-341: Add references to support this clarification.

Line 361: What's the difference?

Line 466: The closure results from only one site during specific periods proves nothing. Please change to "contribution of organics to aerosol hygroscopic growth was quite limited during that campaign". For example, results of Kuang et al. (2020) show that variations of organic aerosol can dominate the diurnal variations of overall aerosol hygroscopicity due to the dominant contribution of organic aerosol to aerosol mass and strong photochemical processes during daytime, which resulted in quick daytime SOA formation. Results from Jin et al. (2020) and (Li et al., 2019) also demonstrated that organic aerosol can contribute substantially to aerosol liquid water content.

Line 473: Both CCN and HTDMA measurements are not precise down to 0.001, please change 0.364 to 0.36 and also revise similar cases throughout the manuscript and the supplement materials.

Line 716: similar issue as in comment for Line 286

L916-919, The explanation for the discrepancy between ACSM calculation and CCN or HTDMA measurements needs to be improved. ACSM measures the bulk compositions of PM2.5 or PM1, so the kappa derived from ACSM measurements using volume mixing rule should be understood as the average of kappa hygroscopicity of different diameters of PM2.5 or PM1 with aerosol volume as the weight, therefore represents the overall hygroscopicity of entire aerosol population of PM1 or PM2.5. However, the HTDMA or CCN measurements only represents aerosol hygroscopicity of specified diameter or diameter range. Thus, the closure between Kappa calculated using ACSM measurements between HTDMA measurements or CCN measurements is not physically appropriate, while their variation trends may be comparable, they should not be compared against each other in closure studies. If all measurements (including aerosol chemical compositions measurements, HTDMA measurements and organic aerosol hygroscopicity) were accurate, large discrepancies can still be expected from their comparison due to their intrinsic difference in their representations of distinct aerosol populations. Volume contributions of particles with diameter < 60 nm are generally below 3% and has almost negligible impacts on Kappa calculations based on ACSM measurements, thus the inconsistency should be dominantly determined by their diameter discrepancy.

Line 1046, Give concrete values, like “larger than (range1 versus range2)……

Line 1048, Give concrete values.

Line 1127, It might be better to include most recent results on organic aerosol hygroscopicity in the North China Plain (Kuang et al., 2020) in this part.

Line 1073, Please include Liquid-Liquid phase separation

Jin, X., Wang, Y., Li, Z., Zhang, F., Xu, W., Sun, Y., Fan, X., Chen, G., Wu, H., Ren, J., Wang, Q., and Cribb, M.: Significant contribution of organics to aerosol liquid water content in winter in Beijing, China, Atmos. Chem. Phys., 20, 901-914, 10.5194/acp-20-901-2020, 2020.

Kuang, Y., He, Y., Xu, W., Zhao, P., Cheng, Y., Zhao, G., Tao, J., Ma, N., Su, H., Zhang, Y., Sun, J., Cheng, P., Yang, W., Zhang, S., Wu, C., Sun, Y., and Zhao, C.: Distinct diurnal variation in organic aerosol hygroscopicity and its

relationship with oxygenated organic aerosol, Atmos. Chem. Phys., 20, 865-880, 10.5194/acp-20-865-2020, 2020.
Li, X., Song, S., Zhou, W., Hao, J., Worsnop, D. R., and Jiang, J.: Interactions between aerosol organic components and liquid water content during haze episodes in Beijing, Atmos. Chem. Phys., 19, 12163-12174, 10.5194/acp-19-12163-2019, 2019.