

Atmos. Chem. Phys. Discuss., referee comment RC3
<https://doi.org/10.5194/acp-2021-704-RC3>, 2021
© Author(s) 2021. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on acp-2021-704

Anonymous Referee #2

Referee comment on "Offline analysis of the chemical composition and hygroscopicity of submicrometer aerosol at an Asian outflow receptor site and comparison with online measurements" by Yange Deng et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-704-RC3>, 2021

The manuscript by Deng et al. entitled reports the detailed comparison of online and offline analysis for submicron particles collected at Okinawa island, Japan. By comparing the online and offline analysis data, they demonstrated that the offline analysis of aerosol samples by the AMS can quantitatively be conducted. It is a good demonstration about the usefulness of offline AMS analysis. The research was carefully conducted. The manuscript is well organized. I suggest publication of the manuscript after addressing the following comments.

Chemical characteristics of OA

The manuscript compares mass concentrations of chemical species, especially focusing on compounds that are measurable by the AMS. I wonder if the mass spectra of the organic material for online and offline agree each other. The authors compare O:C ratios in Figure 3. It will also be useful if H:C ratios are provided.

Predictions hygroscopic properties

The authors employed E-AIM for predicting hygroscopic properties of particles, including

phase transition phenomenon. Influence of organic compounds on hygroscopic growth is discussed in the main text. It will be good if the potential influence of organic compounds on deliquescence/efflorescence phenomena were also to be discussed.

Interpretation of hygroscopicity

In Figure 8, the authors compare the values of kappa with the mass fractions of w_{som} and ammonium-sulfate ratio. However, the data are scattered, especially at higher RH, suggesting that some other factors might also be influencing hygroscopicity. It would be better if the authors can provide some ideas on it.