

Atmos. Chem. Phys. Discuss., referee comment RC2
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Comment on acp-2021-672

Anonymous Referee #2

Referee comment on "Field observational constraints on the controllers in glyoxal (CHOCHO) reactive uptake to aerosol" by Dongwook Kim et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-672-RC2>, 2021

This study is important since it provides field based constraints on glyoxal SOA formation from KORUS-AQ. The results are very informative. I support publication in ACP after following suggested clarifications/analyses:

1. Line 45: What is meant by the phrase "track parent VOC with formaldehyde"?
2. Lines 330 and 385: Why does increase in inorganic content (CAN) increase viscosity? I would expect increase of inorganic aerosol to increase aerosol water and thus reduce viscosity
3. Glyoxal SOA is 20% of OA. What is the rest?
4. If glyoxal peaks in anthropogenic regions, does it imply glyoxal SOA is mostly associated with polluted regions compared to natural biogenic regions?
5. What is the role of cloud chemistry in glyoxal SOA? One can expect glyoxal SOA formation in clouds, and then as the cloud evaporates it can be part of interstitial aerosols. It seems a modeling of glyoxal SOA in clouds followed by its evaporation to aerosols needs to be considered.
6. If there is a larger source of glyoxal at high altitudes where aerosol surface area is lower, could this be due to direct emissions of glyoxal?