

Atmos. Chem. Phys. Discuss., referee comment RC2  
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## Comment on acp-2021-431

Anonymous Referee #2

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Referee comment on "Regional heterogeneities in the emission of airborne primary sugar compounds and biogenic secondary organic aerosols in the East Asian outflow: evidence for coal combustion as a source of levoglucosan" by Md. Mozammel Haque et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-431-RC2>, 2021

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The authors present the results of the chemical composition of organic aerosol in South Korea with a focus on primary organic compounds and biogenic secondary organic aerosol tracers. Seasonal variations and sources of studied compounds were analysed.

The paper is suitable for publication in the journal Atmospheric Chemistry and Physics, however, several comments reported below should be addressed before acceptance for publication. Minor revisions of the paper are requested.

### Comments:

Lines 277-281: Glucose and other saccharides may be partly formed also during biomass burning, which explains their contribution during the winter period.

Line 283-294: Sources of inositol and other polyols are only perfunctorily characterized focusing on prevailing sources. Sources of inositol are entirely missing.

Line 306-307: Unlike other studies, the concentration of mannosan in this study is surprisingly lower than those of galactosan, do you have an explanation of this fact?

Line 400-404: Ratios levoglucosan/mannosan and levoglucosan/(mannosan + galactosan) also allow to distinguish biomass burning and lignite combustion as the source of these anhydrosugars. In addition, the empirical equation using levoglucosan and mannosan data allows you to calculate the contribution of softwood and hardwood to the total amount of

combusted wood.

Line 426: Add references to levoglucosan degradation.

Line 536: Add missing information into Table 3, such as analysed PM fraction and studied season.

Line 562: Another key factor is a higher concentration of ozone and other oxidation agents in summer.