

Interactive comment on “Vertical distribution of particle-phase dicarboxylic acids, oxoacids and α -dicarbonyls in the urban boundary layer based on the 325-meter tower in Beijing” by Wanyu Zhao et al.

Anonymous Referee #1

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This paper investigates the vertical distribution of organic acids with altitude in Beijing based on measurements from a tower. The results show slightly higher concentrations of oxidized species aloft, not too surprising if the source are mainly from surface emissions which would mean less aged and less oxygenated. The data analysis is very detailed, but overall the results are only mildly interesting despite the measurements being very unique. This is because really no definite results are presented. The analysis is largely based on looking at ratios of species to infer processes or sources, and the interpretation of the results are always highly qualified with words such as, might,

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and especially may. I wonder why there are not plots of altitude vs concentration in this paper, since that is fundamentally what the measurements were all about. It is not clear what the main contribution of the PMF source apportionment analyses is to the overall results of this paper on species vertical distributions; why was source apportionment not done at each altitude, was it because of insufficient data? The paper needs to be edited to improve the grammar. Overall, the data in this paper are interesting, but the analysis is very weak.

Pg 3 lines 12-13. Needs to be edited.

Please make clear that the high volume samplers were located at the elevation stated. That is, long sampling lines were not used in this study.

What type of filter was used, quartz, Teflon? Were the samples gas denuded (apparently not). There should be a discussion on possible artifacts associated with this sampling system, such as loss of the small acids due to evaporation, etc. Maybe this is why no light organic acids (eg, formate, acetate) are reported?

Page 7 lines 13 to 14. Stating that there is no direct analytical route to measure SOC may be strictly true, but there are ways that get pretty close, such as AMS measurements with PMF analysis. The statements and method to determine SOC in this paper are like reading a paper about 10 to 15 years old. Note the dates for the references for the method are 1995 and 1999. The reason this method is rarely used is that it is highly inaccurate. Limitations with the method need to be discussed.

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