

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

**Anonymous Referee #2**

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The manuscript studied the vertical distribution of particle-phase dicarboxylic acids, oxoacids, and  $\alpha$ -dicarbonyls in urban Beijing during the 2015 Victory Parade period based on the 325-meter tower by using GC/MS, Ion Chromatography, and OC/EC analyzer. This study showed that concentrations of oxalic acid at 120 m and 260 m were more abundant than that at 8 m during the sampling period because of higher oxidation at high altitude. Vehicular exhausts were demonstrated as the main contributor for phthalic acid. Although this study did many correlation analyses in section 3, simple correlation analyses didn't effectively evidence the sources and formation of species

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such as oxalic acid. In addition, many results and conclusions in section 3 were concluded with indefinite words such as may, causing that the conclusions were too speculative. Therefore, the authors should provide some stronger evidences in this section. This study further indicated the sources of organic acids based on meteorological parameters and FLEXPART-WRF model analyses. However, the source analysis at each sampling altitude was not showed. Is there any difference in the source of organic acids at each altitude? Because the study conducted on the vertical measurement, the data is valuable compared to the ground base. I might ask the author to make significant improvement on this paper before they can be accepted in the ACP.

P13 L21: How to exclude the contribution of accumulation of local emissions? Other evidences of aqueous-phase oxidation also should be provided. P4 L21: why were the blank samples only collected for half a minute? I saw that PM2.5 samples were collected for 23 h. P5 L6: Grammatically something wrong. P8 L4: How to exclude other sources (e.g., long-range transport, aqueous or heterogeneous reactions) for SOC? P8 L10: other sources should be discussed. Please see the above comment. P12 L16: C3/C4 should be C2/C3? P13 L9: What is the definition criteria of polluted episodes? P14 L15-16: Definition of pollution level should be provided. P17 L8: Was the coal combustion included in the anthropogenic emissions? Maybe need related literature? P17 L22: Same question as above.

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