

## ***Interactive comment on “ Summer and winter***

## **variations of dicarboxylic acids, fatty acids and benzoic acid in PM<sub>2.5</sub> in Pearl Delta River Region, China” by K. F. Ho et al.**

### **Anonymous Referee #1**

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#### General:

This manuscript investigates the spatial and temporal variability and sources of dicarboxylic acids, ketoacids, alpha-dicarbonyls, benzoic acid and fatty acids in a highly-polluted environment. The paper is well-written and scientifically sound, with no apparent errors. The originality of the paper is, however, quite limited, since the applied scientific approach is very similar to many earlier papers related to this research topic. Besides the criticisms on originality, I have only a couple of comments that should be considered before accepting the paper for publications.

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#### Specific comments:

The number of collected samples from each site and season is relatively low. As a result, there may be problems with the statistical significance of the correlation analysis presented in section 3.4. The authors should evaluate the statistical significance of the obtained results (correlations) and document it in section 3.4.

The summer to winter differences in concentrations of various organic compounds seems to be affected by both photochemistry and air mass transport patterns (especially the location of each site with respect to major source areas). There are a few issues that should be clarified a bit here. First, how typical the observed air mass transport patterns are for this region? Are air flows in summer and winter always like those presented in Figure 2, or was this major difference between the two seasons just a coincidence? Second, the summer to winter ratio in the concentrations of the individual compounds seem to be affected by mainly by the location of the site, whereas their abundances in OC (percent contribution) seem to be affected largely by photochemistry. This is brought up in the abstract but not so well in summary and conclusions. Third, for these reasons mentioned above, I am not sure whether one should average TQWOC over all the sites when comparing summer and winter concentrations to each other (abstract and beginning of section 3.3).

Page 26686, line 18: indicate that

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