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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Dicarboxylic acids, ketocarboxylic acids, α-dicarbonyls, fatty acids and benzoic acid in $PM_{2.5}$ aerosol collected during CAREBeijing-2007: an effect of traffic restriction on air quality" *by* K. F. Ho et al.

Anonymous Referee #3

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Comment on "Dicarboxylic acids, ketocarboxylic acids, α-dicarbonyls, fatty acids and benzoic acid in PM2.5 aerosol collected during CAREBeijing-2007: an effect of traffic restriction on air quality" by K. F. Ho et al. The manuscript describes the presence of dicarboxylic acids, carbonyls, fatty acids and benzoic acids and OC, EC, and WSOC concentrations in PM2.5 samples collected in 2007 in two sites in the metropolitan area of Beijing. One of the outcomes is that traffic restrictions decrease the impact of 'primary' organics, while secondary product are not influenced. These secondaries seem to be 'regional'. The amount of data (samples) is limited, which could bias the

results and discussion. But the sampling sites are interesting for publication in ACP. However, it is not clear whether the analytical data was already obtained in 2007 (or 2008) and is presented now, or that the chemical analyses were performed recently in stored (7 years) samples. This later issue may have affected to state of the organic compound in the samples, and the results and discussion. The manuscript is well written and logically structured. However, there are some comments that need to be taken into account in order to improve the manuscript. The main issue is the fact that the PM concentrations and chemical concentrations in the "clean air" samples are still (very) high in both sites. For example, where does one find average PM2.5 concentrations under clean air conditions between 60 and 70 μ/m3? Figure 1 is very small , but with a 'zoom' one can see it well. Often the influence of local vs. regional contamination can be observed by the 'correlations' between the same chemical in two sites. If regional influences (photochemical aging) is dominant over local (emissions) than one observes similar and correlated concentration variations in time. Is this the case in the present study? Based on figure 1 there seems not to be much correlation and there is also not much variation between days. . ..with vs without restriction. . . Page 14866 and 14867 states that in Figure 3 it is visible that there are "substantially" higher concentrations of chemical species, OC and EC under "pollution event" conditions than under "clean air" conditions. The differences are not that much and "clean air" is maybe not the best name for this event, since all levels are high compared to other urban sites. Any comparison with other "megacities" is missing and would be welcome to understand the high concentrations found in the present study. The OC/EC ratios are "slightly" different (line 26), but the authors claim that "the low OC/EC ratio during pollution epsodes..". First, the ratios are very similar and, second, the OC/EC of 2.05-2.52 are not low. Page 14866 The ratios of C16:0 and C18:0 were used t determine that cooking is "a dominant source" (line 14), however, the observed ratios between 0.6-1.2 could be other. . .such as unpaved/paved roads (line 11). Moreover, normally cooking is accompanied with high levels of C18:1 (relative to C18:0). This was not the case here. There is too much contradiction in the results to point to cooking as a dominant

(local) source. Generally, it is not clear whether the storage of the samples affected the results, if not, the authors should justify better that “traffic restrictions” do not affect the air quality much and that concentrations of chemicals and EC, OC, WSOC are high in Beijing at the time of sampling. This is a tough job when there are (only) ten samples.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 14855, 2014.