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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Variability of organic and elemental carbon, water soluble organic carbon,and isotopes in Hong Kong" *by* K. F. Ho et al.

Anonymous Referee #1

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This paper covers the determination of organic, elemental and water soluble organic carbon fractions of aerosol samples from three measurement stations in Hong Kong. With a roadside, an urban and a regional scale sampling site and samples from winter and summer being considered the authors collected a big enough data set to evaluate seasonal changes in the relative importance of different aerosol sources. They do so by comparing OC, EC and WSOC content at the sampling sites as a function of seasonality. In addition they explore the potential of d13C to further support their conclusions. A thorough understanding of organic aerosol sources and transformation processes during atmospheric transport is one of the major issues in aerosol research. The paper thus covers a subject very relevant for ACP.

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Specific Comments:

In the experimental section 2.4 Stable carbon isotope analyses, one would like to see some numbers on the overall precession and reproducibility of the set up used.

In section 4.2 Variability of WSOC the authors discuss the seasonal variations of WSOC at the three measurements sites with a particular emphasis on the HT station, representing the regional scale situation. It seems to me that the difference of WSOC from summer (1 μg m-3) to winter (2.8 μg m-3) is not particularly surprising when taking into account that this station features a roughly 4 times higher total OC concentration in winter (5.5 μg m-3) than in summer (1.5 μg m-3). The numbers in table 3 also clearly show a higher WSOC fraction in summer in the HT station than winter. This should be more clearly stated in the discussion of this section. The sentence: "The WSOC/OC ratios are higher in winter than in summer at the urban sites" is not supported by the numbers given in table 3 (WSOC/OC of 51.3% in HT winter samples and 69% in HT summer samples).

In section 4.3 the authors show data on the d13C measured in the OC and EC fractions of the samples. While I do agree that the difference in the observed d13C in OC for the HT station from the two urban stations is striking, I would not necessarily expect SOA of biogenic origin to have the same d13C as bulk plant materials. The authors could discuss in more detail what the effect of a high biogenic SOA fraction on the WSOC fraction in their samples would be.

In the summary the authors conclude that their analysis provides a "rapid and cost effective technique for conducting source determinations". While I do agree with the general usefulness of the approach, I would disagree with filter sampling and analysis being rapid.

Technical corrections:

The insert in figure 3 explains the full black circles as "HKW" instead of "HTW".

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