

Interactive comment on “Oxygenated organic functional groups and their sources in single and submicron organic particles in MILAGRO 2006 campaign” by S. Liu et al.

S. Liu et al.

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Reply to comments of Referee #1

We thank the referee for the thoughtful general and specific comments. We have reprinted the specific comments below in italics, and our responses are not italicized.

Specific comments

1. *Scatter plots shown in the Figures 1a - 1c can not be analyzed, owing to the size of the figure. The figures must be magnified by at least a factor 2. Same problem for the Figures 3a-c. The label (i)-(iv) in the caption of figure 3 must be changed to (a)-(d)*

Figures 1a-1c have been regenerated using correlation maps for SIMAT and Altzomoni samples, and they are condensed into one page. C130 samples did not show significant correlations among organic functional groups and elements and are not shown.

PMF results have been reanalyzed, and three major factors have been identified. Figures 3a-3c have been regenerated, showing the time series of the three major factors for each platform.

2. Figures 3a-c show both the results of cluster analysis and PMF factors of FTIR spectra. No direct comparison between the information provided by these 2 techniques is discussed in the text. Information about cluster does not seem necessary and could be removed from the figure to increase its readability.

Information about the clusters in Figure 3 is removed.

3. Caption of figure 6 is misleading. I understand figure 6b to be the fraction of each "type" shown in figure 6a. The "secondary type" does not appear in the 0.1-0.2 and 5-10 micrometer range in figure 6a but a significant fraction is attributed to the "processed type" in figure 6b for the same size ranges.

Each NEXAFS-STXM spectrum is assigned one cluster type (i.e., "secondary" type, "soot" type, and so on, according to Takahama et al. (2007)) using cluster analysis, and each spectrum is broken into several components or factors (i.e., "secondary" factor, "soot" factor, and "biomass burning" factor, which make up the spectrum and their contributions to total OM add up to 1) using factor analysis. For example, spectrum "001" is consist of 20% "secondary" factor, 50% "soot" factor, and 30% "biomass burning" factor, but overall it is assigned a "soot" type spectrum.

Figure 6 (a) shows the results of the cluster analysis and (b) shows the results of the factor analysis. Although the "secondary type" does not appear in the 0.1-0.2 and 5-

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10 micrometer range in Figure 6 (a), particles in 0.1-0.2 μm and 5-10 μm size range can have "secondary" components (factors).

The caption of Figure 6 has also been clarified.

References

Takahama, S., et al. (2007). Classification of multiple types of organic carbon composition in atmospheric particles by scanning transmission X-ray microscopy analysis, *Atmospheric Environment*, 41 (40), 9435-9451.

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