

## ***Interactive comment on “Primary and secondary organic carbon downwind of Mexico City” by X.-Y. Yu et al.***

**Anonymous Referee #2**

Received and published: 13 February 2009

This paper presents measurements of organic and elemental carbon (OC and EC) at ground sites T1 and T2 downwind of Mexico City during the MILAGRO experiment. Although the OCEC data are analyzed and presented in many ways, as the title indicates the main focus of the paper is to calculate primary and secondary OC, which is done by using the EC tracer method. The topic of primary and secondary sources of the organic aerosol are of interest, however, in my view the analysis performed in this paper is overly simplistic. First, there is no assessment of uncertainties associated with the method and if the results are realistic. A much more careful analysis might reveal unique limitations or new insights that can be gained by the application of this method to the MILAGRO data set, instead the paper does not present anything significantly novel. For example, why not explore why periods of 100% SOC are predicted; is this

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

an artifact of the method or is there a valid physical reason (eg, time of day, unique meteorology, etc). Secondly, although the authors note that other measurements were made at T1 that could be used to compare with their predicted POC and SOC, no attempt was made to undertake this comparison. Critical details are also missing, such as was the OC data blank corrected (this could lead to significant bias if not considered) and is the data reported at standard temperature and pressure or ambient? I recommend that the paper needs a much tighter focus that involves a more detailed and critical analysis before publication in ACP.

#### Other comments to Consider

Instrumentation: no details are provided on the methods used to measure many compounds, instead the institution of the investigators is provided. A discussion of the measurement technique is of more interest than who made the measurement. Furthermore, no info is given on the PM<sub>2.5</sub> mass method.

Blanks? Pg 547, what is a 0-min sampling blank (no blank?). If blanks were measured, what were the concentrations, how did they vary, how do they compare with other studies, etc?

Fig 3 showing diurnal profiles in UTC, yet the text mainly uses LST. UTC data in the figure is hard to interpret, LST is preferred.

Fig 6a; The point of this plot is not clear; why would one expect OC/EC ratio to depend on the date of the measurement during the study.

Fig 6b; I do not understand this plot. The slope of the OC vs EC graph is the OC/EC ratio, so why are the data points colored by OC/EC ratio (thus it is not surprising that data corresponding to lower slopes have colors associated with lower OC/EC ratios, or am I missing something)? Why not give statistics (mean, median, stdev, range etc) in OC/EC for each site.

Pg 552, Line 8, avoid the use of the phrase other big cities, what does big mean?

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)

Page 554 line 25, what does deferred mean here? Also, explain why the instruments that directly measure SOA provide on an approximation (line 26).

Tables 6 and 7. How do you account for the large intercept? Is this primary OC from non-combustion sources? Can you just ignore it in the POC and SOC calculation?

Page 555, how is it possible to have 100% SOC in a region dominated by anthropogenic emissions?

Page 557, Can wind directions measured at the sampling site really be used to predict influences from possible sources over 70 and 129 km away?

Figure 10. Again the use of UTC for diurnal plots makes little sense. Furthermore, when the data were delineated into weekday vs weekend, was UTC used or local time used (eg, is this weekend/weekday UTC or LST)?

Figures 11, 12, 13 I believe are all from TI &#8211; this should be stated in the figure caption.

Page 560 lines 6 and 7, regarding the correlation between EC and NO confirming EC is primary &#8211; what else would it be, is there secondary EC ?

---

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 541, 2009.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)