

Interactive comment on “Determining the spatial and seasonal variability in OM/OC ratios across the US using multiple regression” by H. Simon et al.

Anonymous Referee #1

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Comment on the paper entitled Determining the spatial and seasonal variability in OM/OC ratios across the US using multiple regression, by Simon H. et al.,

In my opinion this is an interesting paper dealing with the calculation of OM/OC ratios from PM_{2.5} speciation IMPROVE data treatment. The authors apply modified existing tools to re-evaluate data sets that allow to obtain partially different results when compared with previous data treatment.

In my opinion the papers merits publication but I recommend the following modifications:

Major issues a.1. Page 4 line 24: Why Al was emanated from eq for soil dust? Al₂O₃ is C10059

a major constituent from clay minerals. As far as I know the ratio Si/Al decreases from PM₁₀ to PM_{2.5}, indicating that proportionally Al is higher in PM_{2.5} when compared with Si. Clay minerals may reach <2.5 microns. a.2. Page 5 line 12: Clarify use of nylon filters. Are these used in filter pack sets to correct artifacts? As far as I know nylon filters may trap gaseous HNO₃. a.3. Page 9 line 4: CO₃= in PM_{2.5} should be nearly negligible. a.4. Same part of the text: In many papers EC is multiplied also by 1.1 for mass balance. In any case if you state that OM/OC may be 1, does this means that you are including EC here??? By definition? a.5. Page 24: IMPORTANT: In my opinion you need to add a section comparing your Boc results with those obtained with other tools (AMS fro example) from prior studies. a.6. Page 24, lines 6-7: I do not fully understand, SOA is present everywhere!! a.7. Page 24: Although you obtain statistically a majority of sites with a given Boc, and only 12 with another trend, this does not mean that the more statistically significant coeff should be applied to everywhere. Clarify this issue. Locally obtained Boc should be applied to local data. a.8. Page 28: Summary and future work: Why you do not suggest analyzing NH₄⁺, in my opinion it is important for mass closure, eutrophization and for acidity!

Minor changes b.1. Abstract line 8: 1.80 and 1.95 b.2. Intro, page 2 line 31: add references for 'some earlier literature' b.3. Page 4. line 7: quartz microfiber and Teflon filters? b.4. Page 26 Once and onwards: Boc is defined, try to use only Boc and not Oc coefficients, the use of different ways to point a coefficient is confuse.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 24651, 2010.