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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Semi-continuous measurements of gas/particle partitioning of organic acids in a ponderosa pine forest using a MOVI-HRToF-CIMS" *by* R. L. N. Yatavelli et al.

Anonymous Referee #1

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The authors present a valuable dataset for gas-particle partitioning of organic acids (<C18) measured using MOVI-HRToF-CIMS at BEAChON-RoMBAS. In my assessment, the manuscript is publishable in ACP after minor revisions discussed below:

p.17340, line 14: I think you mean Fig. 3

p.17341: The authors spend two long paragraphs here discussing the difference between measured and modeled Fp for alkanoic acids at low carbon numbers, and they provide some interesting insights, but from Fig. 3 it looks like this measurement-model discrepancy is not particularly significant and could almost be within the measure-

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ment noise. I think this lengthy discussion gives too much importance to the small discrepancy and disrupts the balance of the manuscript, considering that, later in the manuscript, some more severe measurement-model discrepancies are discussed much more briefly.

p.17344: More information is needed for the reader regarding the decrease in oxygen-containing functional groups at C12 and C15, as this is hard to understand, and the local minima in Fig. 4 look like they could just be outliers or noise in the measurement (esp. in the case of C15). Are there some especially abundant naturally occurring, low-oxidation-state acids with those carbon numbers?

p. 17344 line 21: I think some words are missing from this sentence.

p. 17344 line 25: I suggest showing on one or more of your figures the model curve for aqueous partitioning, rather than just discussing it verbally

Section 3: There are far too many figures in this section. I think that just one figure can get the point of Section 3.3.1 across. Similar reductions in the other subsections may be possible. Also, is the 'excess oxygen' model used in these bulk acid figures? If not, why not, and what errors might this introduce?

p. 17346 line 16: ". . .factors other than ambient temperatures. . ." This statement needs some followup discussion. This is an example of the lack of balance in the discussion that I mentioned above.

p. 17346 line 23: ". . .there should be very little. . ." Since you're talking about your measurements, don't you mean there *is*?

p. 17347 line 4: Why does more OA matter?

p.17349 line 14 (and throughout): "Data" is plural, please check the verb agreement.

Fig. 3: It's not really possible to distinguish the lines, even when the image is in color

Fig 6-14: it's not immediately clear that the black lines correspond to temperature. I

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suggest including the black line with the other curves in a legend for each figure.

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 17327, 2013.