

Interactive comment on “Evidence for a significant proportion of Secondary Organic Aerosol from isoprene above a maritime tropical forest” by N. H. Robinson et al.

Anonymous Referee #1

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This paper reports the first identification of a new isoprene SOA marker found above a tropical forest. The marker was observed with aerosol mass spectrometry (AMS) and offline two dimensional chromatography and was identified as methylfuran (MF). The authors note that the vapor pressure of MF is too high for it to be in the particle phase as MF and propose that the measured MF is a product formed in the heated inlets of the instruments. They propose possible starting compounds but note that future chamber studies are needed to determine the identity of MF's parent compound. By looking back over previously published AMS data, the authors have found this new marker for isoprene SOA in multiple forest research sites around the globe. This is an excellent and well written paper that communicates a breakthrough in the study of SOA

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and should be published after addressing the following comments. Specific Comments

1. In Figure 2b the $C_xH_zN_z$, $C_xH_yON_z$, or $C_wH_xO_yN$ are not legible. It would be less confusing to either omit them from that figure or show them separately in a blown up region.
2. The inset of Figure 2b is very difficult to read, the resolution is too low for that size of figure. I recommend removing the background grey color, the vertical grey lines, the black circles overlying the data, the red and pink boxes and lines, and enlarging the figure.
3. In Figure 3 the left hand axis is unreadable. If this is too difficult to change in the figure a note could be placed in the caption below identifying the axis.
4. In Figure 5 the text indicates that the points are for one flight. Is that one flight for each point? The paper indicates that there were 8 individual flights on line 151. Also in Figure 6 the points are averaged over 14 flights. Why were the other 6 flights not included in Figure 5?
5. Lines 137-138 state that the pure 3MF mass spectrum showed only $C_5H_6O^+$ ions and that it comprised 13% of the total organic mass. What is the other 87% if the sample is pure 3MF in deionized water?
6. Lines 242-3 state that “these time series have a ratio of mean values of 80%”. Please clarify the significance of this statement and what the ratio refers to.
7. Lines 251-2 state that “The mean ambient $C_5H_6O^+$ signal measured at the ground site during OP3 was 1.0% of the mean total organic aerosol loading”, is the total organic loading referring to the ambient or the laboratory measurements? This is confusing when compared with the following statement that the mean ambient loading is 8% of the organic aerosol. If not referring to the laboratory measurements please clarify the difference between these two statements.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 25545, 2010.

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