

Interactive comment on “Seasonal cycles of biogenic volatile organic compound fluxes and concentrations in a California citrus orchard” by S. Fares et al.

Anonymous Referee #1

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General comments

This paper by Fares et al. presents results from a year-long measurement campaign in a California citrus orchard. Fluxes of several atmospherically relevant BVOCs were measured using the combination of DEC and PTR-MS. These flux measurements were accompanied by vertical concentration profile measurements with PTR-MS and single-height concentration measurements with GC-MS. Also GC analyses of BVOC concentrations in leaves and cuticle waxes were performed. The methods are state-of-the-art, the statistical analysis seems adequate, and the presentation quality is good. Overall, the paper clearly improves the understanding of BVOC emissions from areas with

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Mediterranean climates and is thus well suited to ACP. I recommend publication after the minor revisions listed below.

Specific comments

P17993, L23–25: What kind of method was used for determining the transmission curve for such a wide mass range? Could you maybe give a reference?

P17995, L17: What was the response time of the PTR-MS instrument?

P17997, L12–24: Does the reasoning in this paragraph apply to all compounds and all measurement periods? See e.g. Fig. 2.

P17999, L26–28: How do the authors know that this statement is true for acetaldehyde, a qualitative interpretation based on Fig. 2?

P18001, L9: Does the mean wind data support this hypothesis?

P18004, Sect. 3.3: Is there confusion about the C-6 compounds detected at m/z 83 and 99 in this section and in the caption of Fig. 8? The legends in the figure itself seem right. Please refer to Davison et al. (2009) or de Gouw and Warneke (Mass Spectrometry Reviews, 26, 223–257, 2007). Only the results based on m/z 83 are discussed in the text. Please add information on m/z 99 and the dates for the harvesting period.

P18007, L15–18: Was the intensity of turbulence so low (even during the day) that the turbulent mixing time scale was longer than 360 s?

Technical corrections

P17988, L15: “characterize” or “characterized”

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P17991, L28: Please check the unit of LAI.

P17993, L19–21: Please check the units of "measured sensitivity" and "normalized sensitivity" (see Table 1).

P17995, L1: Please add a reference which explains "the principle of the maximum covariance".

P17995, L5: "horizontal" or "vertical"

P17996, L6–8: The time series in Figs. 1 and 4 seem to be from around 40 to 290 in the DOY scale. Are there some data missing from these figures or were there gaps in the measurements? Would it be good to use the same notation in Figs. 1 and 4 as in Fig. 7?

P17997, L2–11: There are more compounds in Table 1 than in the figures. Please modify the text. The dates for the different periods (flowering, summer, etc.) might help the reader.

P17999, L18: Is this a correlation between acetaldehyde and acetone concentrations?

P18000, L8: "Fig. 8" or "Fig. 5"

P18001, L27: "directed" or "directly"

Captions of Figs. 2, 3, 8, and 9: "1. m" or "1 m"

Captions of Figs. 3, 4, and 5: Please remove the extra (line?) numbers (816, 817, etc.).

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 17987, 2012.