

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 #2

Received and published: 12 September 2012

General comments

This manuscript by Fares et al. reports measurements of biogenic VOC fluxes and mixing ratios from an orange tree orchard in California. The dataset, taken for almost a year, provides very good information about the seasonal differences in VOC emissions from the plantation, and combines a broad range of different measurements (fluxes, mixing ratio gradients, GC-MS speciation, leaf VOC content and cuticle wax composition) to characterize the orchard's VOC physiology and emission.

This paper fits into the scope of ACP and I recommend its publication after addressing the following minor points, which complement those already raised by referee #1.

C6880

Specific comments

P18000, L9-10: The gradient you refer to is in summer/morning? Can you be more concise?

Fig. 2: Have the authors observed a compensation point (i.e. an ambient concentration above which these OVOCs are deposited/absorbed by the Citrus trees) for methanol, acetaldehyde, or acetone? For example at night, or when urban polluted air was advected to the orchard. There is no mention to this in the text, however OVOCs have been found to be taken up or emitted depending on the inside/outside leaf concentration gradient (e.g. Karl et al. 2005; Seco et al. 2007; Jardine et al. 2008).

Table 1: Should “69 Isoprene” be bold?

Figs. 1 and 4: As indicated by Referee #1, showing the periods (flowering, summer, winter) in these figures will help the reader.

Fig. 4: Please indicate in the caption whether bars denote standard error, deviation...

References for this comment

Jardine K., Harley P., Karl T., Guenther A., Lerdau M., Mak J.E., 2008. Plant physiological and environmental controls over the exchange of acetaldehyde between forest canopies and the atmosphere. *Biogeosciences* 5, 1559-1572.

Karl T., Harley P., Guenther A., Rasmussen R., Baker B., Jardine K., Nemitz E., 2005. The bi-directional exchange of oxygenated VOCs between a loblolly pine (*Pinus taeda*) plantation and the atmosphere. *Atmospheric Chemistry and Physics* 5, 3015-3031

Seco R., Peñuelas J., Filella I., 2007. Short-chain oxygenated VOCs: Emission and uptake by plants and atmospheric sources, sinks, and concentrations. *Atmospheric Environment* 41, 2477-2499.