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Biogeosciences Discussions

Interactive comment on "Emission of monoterpenes from European beech (*Fagus sylvatica* L.) as a function of light and temperature" *by* T. Dindorf et al.

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Dear T. Dindorf

Thanks for your long (6 page) response to the reviews. I still think that it is not sufficient to write a response, but that a major revision of the manuscript is needed for further assessment for following reasons:

1. You measured 1 branch on 1 tree on very few days. All 3 referees mark this as a major shortcoming. 2. Your cuvette was not temperature controlled, and leaves were self shading and probably in different ways positioned in the 2 years, which further complicates any comparison (critique of all 3 referees). Looking at the manuscript, I think that the very high temperatures should result in acute heat stress, activating chaperones,

and changes in metabolism (see chapter 1.4 by Beck in Pflanzenökologie, Spektrum Verlag). You not even consider the dramatic interaction of high temperatures with the basic metabolism. You are looking at an interaction between light and temperature and not just a light response, even though shading had an effect, the emission in the light, contain also a temperature component. 3. The few days of measurement under un-natural conditions does not allow the calculation of “emission factors”. You did not say, how you calculate such factor, but to my knowledge, the emission factor is the average emission measured over a full year per leaf weight or leaf area. You just do not have the data to do this, and the variability of your so-called emission factors indicates that this is an ad hoc description of your measuring days, which were a non-natural treatment. 4. The extrapolation to whole of Europe is not justified.

What to do? The paper, as it stands, cannot be accepted.

If you consider to re-write the results as a short communication, presenting the chemistry of VOC under conditions of extreme temperatures and high light (2-3 pages). It is un-tolerable, that this is 1 slice out of several papers, which deal with the same experiment. The Methods are “In press” somewhere else. There is another paper in preparation (Holzke et al) that deals with emission factors. Thus, you may also consider to join you colleagues and write one solid paper, and not 3 slices. Nevertheless, your data contain the additional problem, that you are dealing with heat stress, which prohibits any calculation of emission factors (which are not defined for a 3 day measuring period).

EDSchulze

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