

Interactive comment on “VOC emissions from dry leaf litter and their dependence on temperature” by L. Derendorp et al.

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We thank reviewer 3 for the valuable comments on the manuscript and the very constructive suggestions regarding the interpretation of our data.

In the revised version we will focus on the clarity of the manuscript, and remove speculations in the interpretation of the data.

Replies to specific comments:

1) The terms ‘precursor’ and ‘reservoir’ will be clearly explained. We have indeed used the definitions stated by this reviewer, but the referee comment has led us to the conclusion that we need to describe the process in more detail. In particular, we agree with the referee that hydrocarbons are likely produced via a multistep mecha-

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nism, and that the decay of the hydrocarbon emission rates is due to depletion of an intermediate. Fatty acids of the membrane lipids are peroxydized into lipid hydroperoxides. Decomposition of these hydroperoxides due to reaction with transition metals or heating yields, among others, hydrocarbons. Our measurements probably show the depletion of the lipid hydroperoxide pool instead of the pool of membrane lipids. We will include the relevant theory regarding the formation of hydrocarbons, and explain the data accordingly.

2) We will shorten part of the introduction section on the living vegetation, but we will include relevant theory regarding the formation of hydrocarbons and methyl chloride that will be required for interpretation of the data.

3) In the revised version we will carefully re-evaluate the interpretation of our data, especially the low temperature behavior the ground leaves and remove speculations.

4) The purpose of the global estimate was to show that emissions of hydrocarbons from leaf litter are irrelevant for the global budgets. We therefore used 30 deg C as temperature, and used optimized estimates for all other variables. In the revised version we will clearly state the purpose of this method, but also the deficiencies and we will highlight the irrelevance of temperature induced hydrocarbon emissions from leaf litter.

5) For methyl chloride the situation is different and emissions are possibly relevant for the global budget. Field measurements indeed would have been useful for a better estimate of the global emissions, but were beyond the scope of this project.

6) Font sizes of labels and captions, and point sizes will be increased. Titles will be eliminated, but we would like to keep the gridlines for clarity of the figures. We will rewrite the document in past tense and carefully check the language in the revised version.

Interactive comment on Biogeosciences Discuss., 7, 823, 2010.

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