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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 1 for insightful and valuable comments. We realize that we need to improve the structure of our manuscript in order to present our results in a clear and understandable way. In the revised version we will carefully pay attention on being as clear as possible and we will provide a better description of the underlying processes such as diffusion and peroxidation reactions etc.

The aim of our study was not to investigate single processes that lead to the emission of hydrocarbons or methyl chloride, but to study the overall capacity of plant litter to release these VOCs into the atmosphere. We will state this more clearly in the revised manuscript. For this reason, we find it useful to interpret the data by assuming an Arrhenius relationship beforehand. The emission rates are very small compared to size

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of the precursor reservoirs, and therefore a pseudo first order approximation seems reasonable. However, the data show that the approximation does not hold for hydrocarbons, probably due to depletion of an intermediate in the formation of hydrocarbons from lipids.

We realize that there are alternative (and possible more realistic) explanations for the low temperature behavior of ground material. We will expand the discussion on this issue accordingly and we particularly appreciate this comment by the referee.

We want to keep the global up scaling, but we will state the deficiencies more clearly. The purpose of this exercise is to show that the hydrocarbon emissions are not relevant for their atmospheric budget. For this reason it is a conservative approach to use a temperature of 30 degrees Celsius, which is too high even for the Mediterranean region. In contrast, the emissions for methyl chloride could be significant even if we use the rates measured at 20 degrees Celsius.

We will improve the material and methods section – all requested information will be given at the right place.

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

BGD

7, C450–C451, 2010

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