

## ***Interactive comment on “C<sub>2</sub>-C<sub>10</sub> hydrocarbon emissions from a boreal wetland and forest floor” by H. Hellén et al.***

### **Anonymous Referee #2**

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The study described the emission of selected none-methane hydrocarbons and volatile organohalogens from wetlands and forest floors using a flux chamber technique. As these investigations have already been accomplished in several earlier studies, which also mentioned in the manuscript, this study raised some questions, which should be address in the manuscript before considering a publication:

1. It is not really clear why the authors accomplished another study on these compounds. The intention/aim of the authors for this study is very weak and inconvenient in its present form and must be highlighted much more clearer. Why is it important to measure the emission of these compounds and/or to do additional investigations on these areas? For example, to obtain data on the natural contribution/on the identification of natural sources? Contribution of these compounds to environmental problems, such as green house warming and ozone destruction?

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2. Why have the compounds investigated in this study been selected? Why investigated the authors halogenated and none-halogenated organic compounds of volatile nature? Especially, the selection of volatile organohalogens is quite astonishing. While the selection of volatile organochlorines is still understandable, makes the selection of CFCs not really sense. These compounds are not considered to be emitted by natural sources and have so far been detected in volcanic gases only (see Jordan et al. Environ Sci Technol 34 (2000) 1122-1124). The authors need to add some convincing arguments for their selection.

3. The structure of the manuscript is in parts confusing and needs to be improved. First, the authors used the abbreviation VOC for none-halogenated compounds (although this abbreviation stands for all volatile organic hydrocarbons, halogenated and none-halogenated) and the term halogenated hydrocarbons (although they measured only volatile organohalogens. Furthermore, in the manuscript a clear separation between the two compound groups is missing, which makes it difficult to identify when the authors reported on halogenated compounds and when on none-halogenated. I suggest using the abbreviation VOC for volatile none-halogenated organic compounds and the abbreviation VHOC for volatile halogenated organic compounds. The authors should clearly state and describe these abbreviations at the beginning of the manuscript and then should used only these abbreviations throughout the hole text. Furthermore, the authors should structure the manuscript in a way that clearly separates between VOCs and VHOCs. It would be much easier for the readers to follow the results of the study.

4. The discussion too is very weak and a clear identification where the results stopped and the discussion starts is missing in my copy of the manuscript (no headline "discussion" is added). The authors mainly described their results and try to compare them with literature data. However, when reading the manuscript it felt as the authors stop half the way in their discussion. They investigated the emissions at different seasons, but failed to compared their results with literature data on possible seasonal variations (see for example Haselmann et al. Water Air Soil Pollut 139 (2002) 35-41). They

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suggest that chloroform and VOCs have different sources, but failed to discuss, which could be the sources for VOCs and which for VHOCS. Futhermore, I suggest to add a discussion on the possible formation mechanisms for the both substance groups. The literature already provides several studies and suggestions.

5. It would be helpfull if the authors added more details on the environmental conditions occurring during the sampling (e.g. a table listing weather contitions, temperature air/soil, precipitation). Why were samples taken at Hyytiälä between April and October 2004 and April and June 2005, and at Siikaneva between June and October 2004 and at only one day in 2005? Why was not the same sampling period used for both places and both years? This needs to be clarified too.

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Interactive comment on Biogeosciences Discussions, 2, 1795, 2005.

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