

## ***Interactive comment on “Chemodiversity in terpene emissions at a boreal Scots pine stand” by J. Bäck et al.***

**J. Bäck et al.**

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Received and published: 12 January 2012

We are very grateful to the referee for encouraging comments and suggestions. Below are our responses to suggested additions.

1) The authors may want to examine Fig. 6 of Ebben et al. ACP, 11, 10317–10329 (2011), which shows a distribution histogram of  $\alpha$ -pinene contrasted with the remaining terpenes during HUMPPA-COPEC, which may be relevant here as well.

Response: We are grateful for the referee for pointing out this reference, and have added a sentence to the end of section 4.2. regarding Ebben et al results on the SOA chemical composition at SMEAR II site: ‘Ebben et al (2011) show that the organic fraction of submicron aerosol particles collected from SMEAR II site closely resembles the

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molecular signature of  $\alpha$ -pinene, thus confirming the importance of  $\alpha$ -pinene emissions in the secondary organic aerosol formation processes at this site.’

Also the reference list was complemented with Ebben et al 2011.

2) Section 4.2 was most interesting to this reviewer, who would suggest the authors quantify their important statements in the first paragraph of that section by possibly providing an order of magnitude estimate of the potential impacts of chemotype on air chemistry.

Response: The influence of the chemotypic heterogeneity on the atmospheric chemistry will be discussed in more detail with quantitative estimates of the OH and NO<sub>3</sub> radicals in a manuscript currently under preparation. We have added the following sentence to point the reader to this manuscript at the end of this paragraph: ‘A detailed study on the quantitative influence of chemotypic heterogeneity on the OH- and NO<sub>3</sub>-radical budget will be presented by Smolander et al (manuscript in preparation).’

3) Finally, this reviewer would be interested in hearing whether anthropogenic influences during the campaign were controlled for in this present work.

Response: We believe that the anthropogenic effects were not important for this study for two reasons. First, the sampling of volatiles was done in laboratory conditions so the incident air concentrations as well as other conditions were similar for all sampled branches; and second, all branches were collected from the field during three days between 3 and 5 August, and at that time e.g. the ozone and NO<sub>x</sub> concentrations at the site were stable and rather low. This was clarified in the materials and methods: ‘The ambient ozone concentrations during branch sampling ranged from 15 to 35 ppb and those of NO<sub>x</sub> from 0.1 to 1.5 ppb.’

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Interactive comment on Biogeosciences Discuss., 8, 10577, 2011.

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