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Changes in BVOC emission pattern from *Fagus sylvatica* L. measured by thermal desorber GC-MS

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Considerable attention has been focused on biogenic volatile organic compound (BVOC) emissions from forest ecosystems because of their contribution to tropospheric oxidation processes and secondary aerosol formation [1, 2]. It became apparent that biogenic emissions show much more variation than previously assumed. In this poster we focus on the change in BVOC emission patterns from a four year old *Fagus sylvatica* L. during a growth chamber experiment (PAR, temperature controlled) lasting from March to November 2008.

A dynamic branch enclosure system was used in our experiments. Ozone and VOC were removed from air entering the cuvette, as ozone level was found to be a critical parameter for degradation of the compounds [3]. Samples were collected on Tenax TA-Carbotrap solid phase adsorbent tubes and analyzed by TD-GC-MS. Measurements started before budburst of the tree and finished at the end of autumn.

Over the entire period 33 samples have been analyzed, while 16 compounds were detected, including 10 monoterpenes (MT), 2 oxygenated-MTs, 2 sesquiterpenes (SQT), isoprene and methyl salicylate. Sabinene showed the highest emission, in an agreement with previous studies [4, 5].

Quantifiable emission appeared 21 days after budburst, and reached the highest level at the beginning of summer. MT emissions showed a clear trend in following each other. As an illustration the trend of sabinene and limonene emission is presented.

In the middle of autumn phytophaga infection was observed on the tree induced by Two-spotted mite (Tetranychus urticae). New compounds appeared as a result of infection (linalool, methyl salicylate, (E,E)-α-farnesene, unknown oxygenated-MT, unknown SQT) and became dominant over sabinene, explained by the low MT emissions at this time of the year.

These observations point at the importance of further investigation of BVOC emissions (especially SQTs and oxygenated-MTs) and the need for a proper quantification system of these compounds.

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