Geophysical Research Abstracts,
Vol. 10, EGU2008-A-03327, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-03327
EGU General Assembly 2008

VOC Emissions from Tree Stumps

S. Haapanala (1), H. Hakola (2), M. Vestenius (2) and J. Rinne (1)

(1) Department of Physics, University of Helsinki, Finland , (2) Finnish Meteorological Institute, Finland

Although the emissions of BVOCs in boreal areas have been studied quite intensively, there are still large gaps remaining. Major part of forestry work is conducted during winter and spring when natural biogenic emissions are low. The cut tree stumps could provide an important source of BVOCs into the air during these biologically inactive periods. The aim of the present study is to measure the VOC emission rates from tree stumps and evaluate the share from stumps in comparison to living trees.

The emission rates were measured from a clear cutting area in the southern Finland. The trees were cut during winter 2007 and the sampling started in May 2007. The same spruce stump was measured in May, June and August. Samples were also taken from a birch and a pine stump on one day in June.

A Teflon bag was placed on a tree stump and air was pumped through it with a constant flow rate. The samples were taken from the inlet and the outlet port to Tenax-TA/Carbopack-B adsorbent tubes. The samples were later analyzed for mono- and sesquiterpenes using GC/MS.

A spruce stump emitted large amounts of monoterpenes and only little sesquiterpenes in May. The monoterpene emission rates remained quite constant for the whole summer. The sesquiterpene emission rates increased in August compared to the measurements earlier in summer. In August the sesquiterpene contribution was about 4 % of the monoterpene emission. Earlier, in May and in June it was less than 1 %. The monoterpene emission rates from pine stump were about 10 times higher than emissions from spruce stump. The contribution of sesquiterpenes was less than 1 % of the monoterpene contribution. The birch stump emitted much less monoterpenes than

coniferous tree stumps and it did not emit sesquiterpenes at all.