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VOC emissions from a boreal forest – direct ecosystem scale measurements by PTR-MS in 2006–2008

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To quantify emissions of oxygenated volatile organic compounds (OVOCs) in the ecosystem scale and to assess their importance in comparison with monoterpene emissions, we carried out micrometeorological flux measurements above a Scots pine forest in southern Finland in June–September 2006, March–September 2007, and May–August 2008. These direct measurements were conducted using the disjunct eddy covariance method and proton transfer reaction mass spectrometry (PTR-MS) was used for the associated VOC mixing ratio measurements. OVOC emissions consisted of methanol, acetaldehyde, and acetone. They were of the same order of magnitude as monoterpene emissions. The compatibility of the measured monoterpene emissions with the traditional temperature dependent emission algorithm was reasonable. The measurement data will be used to study the seasonal and interannual variability of emissions.