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## Boundary layer concentrations and landscape scale emissions of volatile organic compounds in early spring

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**Abstract.** Boundary layer concentrations of several volatile organic compounds (VOC) were measured during two campaigns in springs of 2003 and 2006. The measurements were conducted over boreal landscapes near SMEAR II measurement station in Hyytiälä, Southern Finland. In 2003 the measurements were performed using a light aircraft and in 2006 using a hot air balloon. Isoprene concentrations were low, usually below detection limit. This can be explained by low biogenic production due to cold weather, phenological stage of the isoprene emitting plants, and snow cover. Monoterpenes were observed frequently. The average total monoterpene concentration in the boundary layer was 33 ppt<sub>v</sub>. Many anthropogenic compounds such as benzene, xylene and toluene, were observed in high amounts. Ecosystem scale surface emissions were estimated using a simple mixed box budget methodology. Total monoterpene emissions varied up to 80 μg m<sup>-2</sup> h<sup>-1</sup>, α-pinene contributing typically more than two thirds of that. These emissions were somewhat higher than those calculated using emission algorithm. The highest emissions of anthropogenic compounds were those of p/m xylene.

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