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Atmospheric volatile organic compounds (VOC) over a central Siberian forest in Russia.

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Biogenic non-methane volatile organic compounds (NMVOC) such as isoprene and terpenes, alkanes, alkens, alcohols, esters, carbonyls and acids play an important role in the oxidative capacity of the atmosphere. Our knowledge about VOC emission from Siberian forests is still insufficient. As a part of Terrestrial Carbon Observation System project (TCOS) we performed a measurement campaign during summer 2004. The aim of our research was to understand the biogenic fluxes, vertical exchange and atmospheric transport of VOC over the Siberian forest.

We measured the atmospheric mixing ratio of different VOC species above the forest canopy at a tower near to Zotino (central Siberia, 60˚45'N, 89˚23'E). These measurements were supported by intensive airborne measurements of VOC and flask sampling for other trace gases (CO_2, CO, N_20, H_2, CH_4, SF_6). Cartridge sampling of VOC was performed with graphitic carbon (Carbograph 1 and 5). The samples were analysed by GC/FID or GC/MS detection.

The most dominant VOC species were monoterpenes (especially α-pinene and β-pinene) and isoprene, each up to several ppb. The data obtained will make a contribution to modelling and knowledge about the atmospheric distribution of VOC species over the rarely investigated Siberian forest.