

Alkyl nitrates in the boreal forest: Formation via the NO₃, OH and O₃ induced oxidation of BVOCs and ambient lifetimes

Jonathan Liebmann¹, Nicolas Sobanski¹, Jan Schuladen¹, Einar Karu¹, Heidi Hellén², Hannele Hakola², Qiaozhi Zha³, Mikael Ehn³, Matthieu Riva⁴, Jonathan Williams¹, Horst Fischer¹, Jos Lelieveld¹ and John N. Crowley¹

¹Division of Atmospheric Chemistry, Max Planck Institut für Chemie, 55128, Mainz, Germany

²Finnish Meteorological Institute, 00560, Helsinki, Finland

³Institute for Atmospheric and Earth System Research / Physics, University of Helsinki, 00014, Helsinki, Finland

⁴University of Lyon, Université Claude Bernard Lyon1, CNRS, IRCELYON, F-69626, Villeurbanne, France

Correspondence to: John Crowley (john.crowley@mpic.de)

Supporting Information

Table S1: Rate coefficients and branching ratios used for the calculations of $P_{\Sigma AN}$

VOC	$k(\text{NO}_3)$ at 298 K (molecules cm ⁻³ s ⁻¹)	α^{NO_3}	$k(\text{OH})$ at 298 K (molecules cm ⁻³ s ⁻¹)	α^{RO_2}	$k(\text{O}_3)$ at 298 K (molecules cm ⁻³ s ⁻¹)	α^{O_3}
α -Pinene	6.2×10^{-12} ¹	0.15 ^{2,5}	5.3×10^{-11} ¹	0.18 ⁶	9.6×10^{-17} ¹	0.80 ¹
β -Pinene	2.5×10^{-12} ¹	0.40 ^{2,3}	7.6×10^{-11} ¹	0.24 ²	1.9×10^{-17} ¹	0.30 ¹
Δ -Carene	9.1×10^{-12} ¹	0.77 ³	8.8×10^{-11} ²	0.23 ²	4.9×10^{-17} ¹	0.86 ¹
<i>d</i> -Limonene	1.2×10^{-11} ¹	0.67 ^{2,5}	1.7×10^{-10} ¹	0.23 ²	2.2×10^{-16} ¹	0.75 ¹
Isoprene	6.5×10^{-12} ¹	0.70 ¹	1.0×10^{-10} ¹	0.07 ⁴	1.28×10^{-17} ¹	1.00 ¹
Unattributed	-	0.70	-	-	-	-

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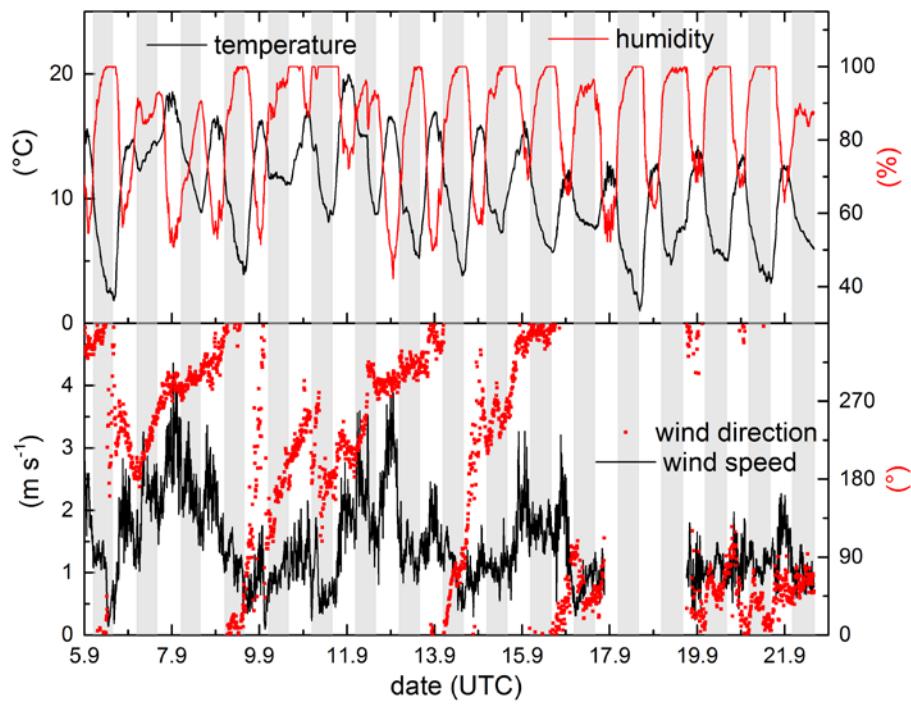


Figure S1: Overview of meteorological measurements during IBAIRN. The grey shaded regions represent night-time.

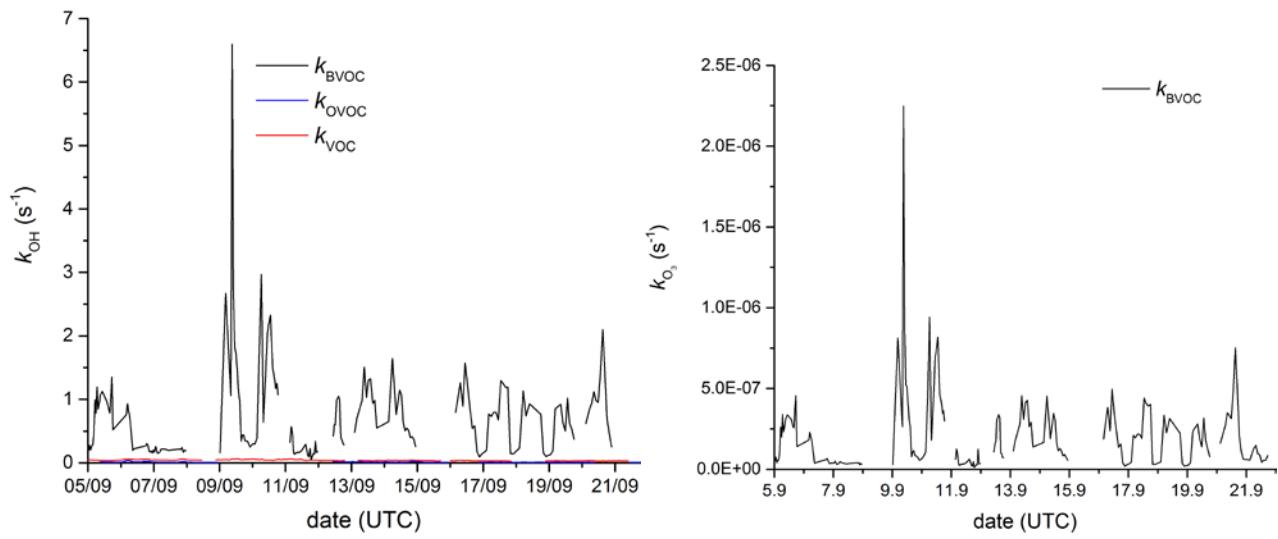


Figure S2: Calculated OH reactivity (k_{OH}) and O_3 reactivity (k_{O_3}) from VOC measurements.

k_{BVOC} (biogenic VOCs) consists of α -pinene, β -pinene, Δ -carene, *d*-Limonene, isoprene, and camphene.

k_{OVOC} (oxidised VOCs) consists of propanoic acid, butanoic acid, isopentanoic acid, pentanoic acid, hexanoic acid, 1-butanol, 1-pentanol, 1-penten-3-ol, cis-3-hexen-1-ol, 1-hexanol.

k_{VOC} (remaining VOCs) consists of benzene, toluene, p/m-xylene, styrene, o-xylene, 1,2,4-trimethylbenzene, 1,2,3-trimethylbenzene, hexane, pentanal, hexanal, methacrolein, 4-acetyl-1-methylcyclohexene, nopinone, heptanal, octanal, nonanal, decanal, ethane and propane.

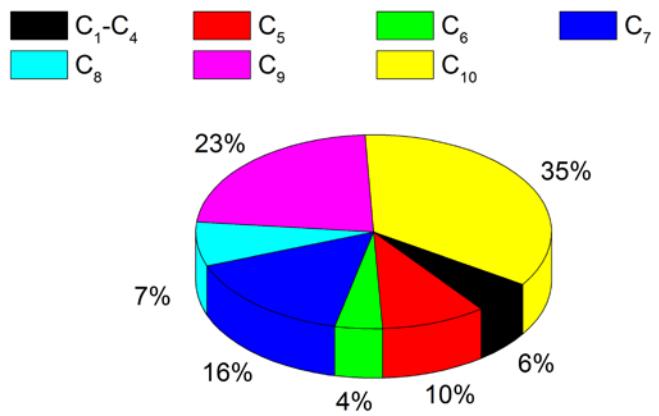


Figure S3: Campaign averaged relative contribution of the measured organic nitrates as measured by the I-CIMS (assuming equal sensitivity across the mass-range).