Modelling Indoor Radical Chemistry during the HOMEChem Campaign Supplementary Information

Freja F. Østerstrøm,[‡a,b,c] Toby J. Carter,[‡a] David R. Shaw,[a] Jonathan P. D. Abbatt,[d] Andrew Abeleira,[e] Caleb Arata,[f,g] Brandon P. Bottorff,[h] Felipe J. Cardoso-Saldaña,[i] Peter F. DeCarlo,[j] Delphine K. Farmer,[e] Allen H. Goldstein,[g,k] Lea Hildebrandt Ruiz,[i] Tara F. Kahan,[l,m] James M. Mattila,[e] Atila Novoselac,[n] Philip S. Stevens,[h,o] Emily Reidy,[h] Colleen Marciel F. Rosales,[o] Chen Wang,[d] Shan Zhou[l,p] and Nicola Carslaw[a*]

[*] Corresponding email: nicola.carslaw@york.ac.uk

‡ These authors contributed equally to this work

[a] *Department of Environment and Geography, University of York, York, United Kingdom*

[b] *Harvard John A. Paulson School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, USA*

[c] *Department of Chemistry, University of Copenhagen, Copenhagen, Denmark*

[d] *Department of Chemistry, University of Toronto, Toronto, Canada*

[e] *Department of Chemistry, Colorado State University, Fort Collins, CO, USA*

[f] *Department of Chemistry, University of California Berkeley, Berkeley, CA, USA*

[g] *Department of Environmental Science, Policy and Management, University of California Berkeley, Berkeley, CA, USA*

[h] *Department of Chemistry, Indiana University Bloomington, Bloomington, IN, USA*

[i] *McKetta Department of Chemical Engineering, University of Texas at Austin, Austin, TX, USA*

[j] *Department of Environmental Health and Engineering, Johns Hopkins University, Baltimore, MD, USA*

[k] *Department of Civil and Environmental Engineering, University of California Berkeley, Berkeley, CA, USA*

[l] *Department of Chemistry, Syracuse University, Syracuse, NY, USA*

[m] *Department of Chemistry, University of Saskatchewan, Saskatoon, Canada*

[n] *Department of Civil, Architectural, and Environmental Engineering, University of Texas at Austin, Austin, TX, USA*

[o] *O'Neill School of Public and Environmental Affairs, Indiana University Bloomington, Bloomington, IN, USA*

[p] *Department of Civil and Environmental Engineering, Rice University, Houston, TX, USA*

Table S1: Species and rates input into the model as per measured values.

Inorganic compounds and physical parameters (9)	Nitric oxide (NO), Nitrogen dioxide (NO_2), Ozone (O_3), Outdoor NO (NO_{out}), Outdoor NO_2 ($NO_{2,out}$), Outdoor O_3 ($O_{3,out}$), Water (H_2O), Temperature, Humans
VOCs (45)	Carbon monoxide (CO), Methane (CH_4), Ethane (C_2H_6), Propane (C_3H_8), n-butane (n-C_4H_{10}), i-Butane (C_4H_{10}), n-Pentane (C_5H_{12}), n-Hexane (C_6H_{14}), n-Heptane (n-C_7H_{16}), n-Octane (C_8H_{18}), n-Nonane (C_9H_{20}), n-Decane ($C_{10}H_{22}$), Ethene (C_2H_4), Propene (C_3H_6), 1-Butene (C_4H_8), cis-2-Butene (C_4H_8), trans-2-Butene (C_4H_8), 2-Methyl-1-propene (C_4H_8), 2-Methyl-1-butene (C_5H_{10}), cis-2-Pentene (C_5H_{10}), i-Pentene (C_5H_{12}), Ethyne (C_2H_2), Isoprene (C_5H_8), Benzene (C_6H_6), Toluene (C_7H_8), Styrene (C_8H_8), m-Xylene (C_8H_{10}), o-Xylene (C_8H_{10}), p-Xylene (C_8H_{10}), Ethylbenzene (C_8H_{10}), 1,2,3-Trimethylbenzene (C_9H_{12}), 1,3,5-Trimethylbenzene (C_9H_{12}), o-Ethyltoluene (C_9H_{12}), m-Ethyltoluene (C_9H_{12}), p-Ethyltoluene (C_9H_{12}), Limonene ($C_{10}H_{16}$), α-pinene ($C_{10}H_{16}$), β-pinene ($C_{10}H_{16}$), Acetaldehyde (CH_3CHO), Acetone (CH_3COCH_3), Methyl ethyl ketone (MEK, C_4H_8O), Methyl nitrate (CH_3NO_3), Ethyl nitrate ($C_2H_5NO_3$), n-Propyl nitrate ($C_3H_7NO_3$), 2-Butyl nitrate ($C_4H_9NO_3$)
Cl-containing compounds (6)	Molecular chlorine (Cl_2), Hypochlorous acid (HOCl), Trichloromethane ($CHCl_3$), 1,1,2,2-tetrachloroethane ($C_2H_2Cl_4$), Chloroformic acid ($ClCO_2H$), Chlorine nitrite ($ClNO_2$),
Photolysis rates (11)	J_{NO_2} (J4), J_{O_3} (J1), $J_{NO_3\rightarrow NO_2}$ (J5), $J_{NO_3\rightarrow NO}$ (J6), J_{HONO} (J7), $J_{H_2O_2}$ (J3), J_{Cl_2} (J70), J_{HOCl} (J74), J_{ClNO_2} (J71), J_{ClOOCl} (J77), J_{OClO} (J75)