

Electronic Supplementary Material to Vertical Profiles of Volatile Organic Compounds in Suburban Shanghai*

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During the study period, online VOCs measurement was conducted at Xinlian site (XL) using a GC955-615 (SYN-SPEC, Groningen, Netherlands). Full details of the method can be found in [Qiu et al. \(2019\)](#). Briefly, the air was sampled into the pre-concentration trap by a sampling piston. Once sufficient air had been sampled, the trap was heated and VOCs compounds with different boiling points desorbed and separated via the analytical column in the gas chromatographer. The photo ionization detector was specifically sensitive to aromatic hydrocarbons, unsaturated compounds, and heterogeneous hydrocarbons; hence the combination of this technique, in addition to a flame ionization detector allowed for the satisfactory monitoring of complex mixtures.

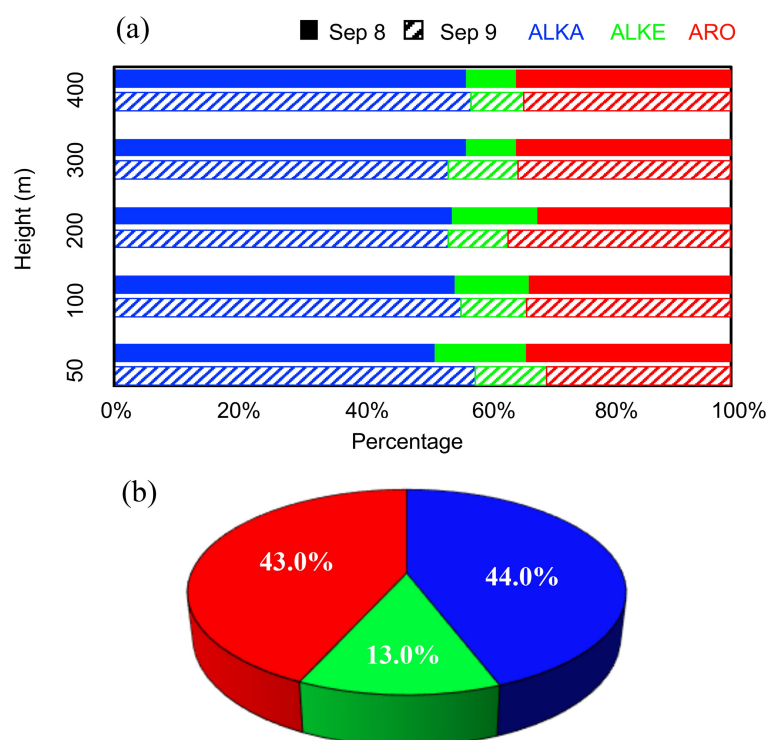


Fig. S1. (a) Proportion of alkane, alkene and aromatic at LX between 8 and 9 September 2016. (b) Proportion of alkanes, alkenes and aromatic at Xinlian (XL) between 8 and 9 September 2016.

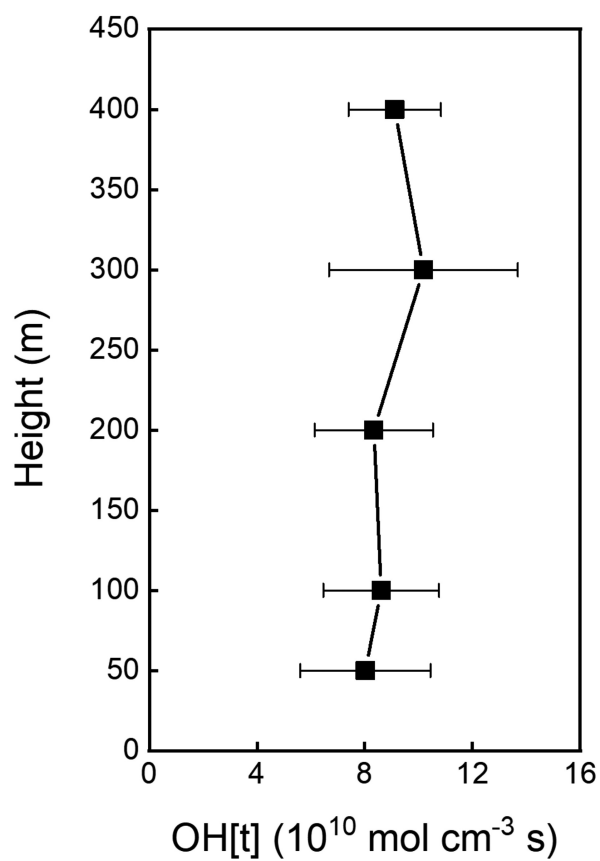


Fig. S2. OH exposure at different heights (50–400 m) at Langxia (LX).

Table S1. Concentration of 52 VOCs at different heights measured at Langxia (LX) site.

VOCs	50 m (ppbv)			100 m (ppbv)			200 m (ppbv)			300 m (ppbv)			400 m (ppbv)		
	min	max	average	min	max	average	min	max	average	min	max	average	min	max	average
ethene	0.01	0.59	0.22	0.02	0.07	0.04	0.03	0.17	0.06	0.02	0.07	0.04	0.03	0.09	0.05
ethane	0.26	1.88	1.47	1.35	3.77	2.02	1.33	3.43	1.97	0.00	3.13	1.32	0.21	2.96	1.54
propene	0.16	2.04	0.66	0.12	2.51	0.62	0.11	1.90	0.53	0.08	1.49	0.42	0.10	0.83	0.29
propane	1.52	4.12	2.94	0.82	4.69	2.60	1.06	3.85	2.67	1.04	3.51	2.84	0.54	3.84	2.34
<i>I</i> -butane	0.80	1.70	1.33	0.57	2.56	1.25	0.58	2.33	1.36	0.42	2.03	1.22	0.54	1.62	1.12
1-butene	0.70	0.96	0.76	0.65	1.18	0.77	0.62	1.12	0.77	0.60	0.91	0.71	0.62	0.84	0.70
butane	0.94	1.81	1.36	0.72	2.76	1.35	0.71	1.83	1.31	0.52	1.70	1.22	0.58	1.63	1.16
trans-2-butene	0.64	0.65	0.64	0.65	0.73	0.69	0.64	0.73	0.67	0.64	0.65	0.64	–	–	–
cis-2-butene	0.74	0.74	0.74	0.74	0.79	0.76	0.74	0.81	0.76	0.74	0.74	0.74	–	–	–
<i>i</i> -pentane	1.17	2.21	1.58	0.97	2.73	1.47	1.06	1.47	1.27	0.73	1.94	1.23	0.79	1.94	1.33
1-pentene	0.75	0.82	0.78	0.76	0.85	0.79	0.74	0.80	0.76	0.72	0.84	0.76	0.73	0.81	0.78
<i>n</i> -pentane	0.57	1.04	0.76	0.39	1.50	0.79	0.38	1.07	0.72	0.30	0.97	0.65	0.36	0.85	0.60
trans-2-pentene	0.23	0.23	0.23	0.23	0.26	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
cis-2-pentene	0.27	0.28	0.28	0.27	0.30	0.28	0.27	0.28	0.28	0.27	0.28	0.27	0.27	0.28	0.28
2,2-dimethylbutane	0.30	0.38	0.33	0.29	0.36	0.32	0.30	0.32	0.31	0.29	0.33	0.31	0.29	0.33	0.32
cyclopentane	0.42	0.46	0.44	0.39	0.51	0.43	0.40	0.46	0.43	0.39	0.45	0.42	0.39	0.46	0.43
2,3-dimethylbutane	0.01	0.04	0.03	0.15	0.15	0.15	0.04	0.04	0.04	0.02	0.03	0.03	–	–	–
2-methylpentane	0.33	0.64	0.47	0.30	0.76	0.46	0.27	0.76	0.44	0.21	0.73	0.42	0.22	0.63	0.38
3-methylpentane	0.48	0.83	0.62	0.40	1.12	0.64	0.39	0.90	0.60	0.37	0.86	0.57	0.37	0.72	0.54
1-Hexene	0.36	0.38	0.36	0.36	0.37	0.37	0.36	0.38	0.36	0.36	0.36	0.36	0.36	0.37	0.36
hexane	0.33	1.19	0.58	0.27	1.21	0.57	0.28	1.09	0.51	0.25	0.85	0.46	0.26	0.78	0.44
methylcyclopentane	0.44	0.63	0.51	0.44	0.66	0.51	0.43	0.61	0.51	0.43	0.58	0.48	0.43	0.54	0.47
2,4-dimethylpentane	0.25	0.26	0.25	0.25	0.27	0.26	0.25	0.25	0.25	0.25	0.26	0.25	0.25	0.25	0.25
benzene	0.51	1.89	0.87	0.38	1.95	0.80	0.38	2.06	0.82	0.22	1.77	0.70	0.28	1.50	0.65
cyclohexane	0.42	0.88	0.54	0.40	0.96	0.54	0.42	0.84	0.56	0.40	0.74	0.50	0.41	0.58	0.46
2-methylhexane	0.15	0.25	0.19	0.12	0.27	0.19	0.09	0.31	0.17	0.08	0.19	0.15	0.09	0.18	0.14
2,3-dimethylpentane	0.06	0.09	0.07	0.04	0.11	0.07	0.04	0.11	0.07	0.04	0.07	0.05	0.04	0.06	0.05
3-methylhexane	0.23	0.40	0.30	0.17	0.36	0.27	0.20	0.42	0.29	0.16	0.29	0.24	0.17	0.25	0.22
2,2,4-trimethylpentane	0.25	0.28	0.26	0.26	0.28	0.27	0.25	0.28	0.27	0.25	0.28	0.26	0.25	0.27	0.26
heptane	0.25	0.54	0.36	0.25	0.61	0.36	0.26	0.50	0.36	0.25	0.45	0.32	0.26	0.48	0.34
methylcyclohexane	0.37	0.45	0.40	0.41	0.47	0.43	0.37	0.45	0.43	0.37	0.45	0.40	0.37	0.41	0.39
2,3,4-trimethylpentane	0.30	0.30	0.30	0.30	0.31	0.30	0.30	0.30	0.30	0.29	0.30	0.30	0.30	0.30	0.30
toluene	0.60	4.66	2.53	0.36	7.40	3.06	0.43	4.62	2.91	0.20	3.80	1.96	0.29	3.12	1.63
3-methylheptane	0.25	0.26	0.25	0.25	0.25	0.25	0.25	0.28	0.26	0.25	0.26	0.26	0.25	0.25	0.25
2-methylheptane	0.27	0.31	0.28	0.27	0.30	0.28	0.27	0.31	0.28	0.27	0.29	0.28	0.27	0.28	0.27
octane	0.40	0.45	0.43	0.39	0.43	0.41	0.39	0.44	0.41	0.39	0.43	0.41	0.40	0.41	0.40
ethylbenzene	0.52	1.61	0.85	0.49	1.77	0.92	0.53	1.48	0.96	0.41	1.14	0.74	0.47	1.14	0.73
<i>m/p</i> -Xylene	0.76	1.87	1.04	0.73	2.30	1.18	0.70	2.71	1.36	0.61	1.40	0.93	0.70	1.41	0.90
styrene	0.65	0.93	0.74	0.65	0.79	0.71	0.64	0.69	0.67	0.61	0.73	0.67	0.65	0.66	0.65
<i>o</i> -Xylene	0.46	0.77	0.55	0.44	0.95	0.61	0.42	1.16	0.67	0.38	0.66	0.52	0.42	0.66	0.50
nonane	0.35	0.36	0.35	0.35	0.36	0.35	0.35	0.36	0.35	0.34	0.36	0.35	0.35	0.36	0.35
1-methylethylbenzene	0.33	1.14	0.50	0.34	1.30	0.53	0.33	1.11	0.50	0.31	0.94	0.45	0.33	0.85	0.44
propylbenzene	0.50	0.53	0.52	0.52	0.57	0.54	0.52	0.56	0.54	0.48	0.58	0.53	0.52	0.54	0.52
1-ethyl-2-methyl-benzene	0.48	0.55	0.50	0.48	0.54	0.50	0.48	0.53	0.50	0.44	0.64	0.51	0.48	0.50	0.49
1,3,5-trimethylbenzene	0.37	0.40	0.39	0.39	0.45	0.41	0.38	0.43	0.41	0.35	0.67	0.44	0.39	0.40	0.40
1,2,4-trimethylbenzene	0.61	0.66	0.63	0.61	0.71	0.65	0.60	0.71	0.64	0.54	1.08	0.72	0.60	0.65	0.62
decane	0.33	0.38	0.36	0.33	0.39	0.37	0.35	0.40	0.36	0.33	0.39	0.36	0.36	0.41	0.39
1,2,3-trimethylbenzene	0.62	0.63	0.62	0.62	0.66	0.64	0.62	0.66	0.63	0.55	0.84	0.65	0.61	0.64	0.62
1,3-diethylbenzene	0.72	0.73	0.72	0.72	0.75	0.73	0.72	0.74	0.73	0.66	0.76	0.71	0.71	0.73	0.72
1,4-diethylbenzene	0.72	0.74	0.73	0.71	0.79	0.75	0.72	0.78	0.74	0.64	1.30	0.82	0.71	0.73	0.72
undecane	0.48	0.56	0.51	0.46	0.68	0.54	0.46	0.56	0.52	0.23	0.60	0.48	0.36	0.61	0.47
dodecane	2.50	3.60	2.95	1.97	3.90	3.04	1.96	3.34	2.75	2.41	6.22	4.02	2.02	2.63	2.37

REFERENCES

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