

# Supplemental Information for “An Improved, Automated Whole-Air Sampler and Gas Chromatography Mass Spectrometry Analysis System for Volatile Organic Compounds in the Atmosphere”

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**Table S1.** Individual results for comparison of simultaneously filled canister samples of ambient air. The canister samples were aged 1, 2 or 4 days before analysis. Bolded values are significantly different (at 95% confidence) than at least one other test result for that compound.

Compound	Channel	2 day v 1 day		4 day v 1 day		4 day v 2 day	
		Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Ethane	1	0.94	0.09	1.14	0.10	1.06	0.01
Propane	1	0.99	0.22	1.30	0.30	1.08	0.01
i-Butane	1	n/a	n/a	n/a	n/a	n/a	n/a
n-Butane	1	1.19	0.13	1.21	0.10	1.04	0.02
i-Pentane	1	0.92	0.06	1.00	0.04	0.97	0.03
n-Pentane	1	0.91	0.06	0.96	0.05	1.03	0.02
n-Hexane	1	0.93	0.08	0.94	0.07	0.93	0.05
n-Hexane	2	0.84	0.09	0.90	0.11	1.08	0.03
n-Heptane	2	0.89	0.11	0.90	0.14	1.04	0.10
n-Octane	2	0.80	0.09	0.75	0.12	0.92	0.08
n-Nonane	2	0.73	0.08	0.60	0.15	0.93	0.06
Ethene	1	0.98	0.09	1.09	0.10	1.06	0.06
Isoprene	1	0.82	0.14	0.77	0.09	0.92	0.05
$\alpha$ -Pinene	2	0.74	0.06	0.72	0.07	0.91	0.06
$\beta$ -Pinene	2	0.72	0.13	0.78	0.20	0.93	0.10
Ethyne	1	1.07	0.11	1.12	0.07	0.98	0.02
Methylcyclopentane	2	0.82	0.12	0.87	0.11	1.11	0.07
Cyclohexane	2	0.85	0.05	0.93	0.07	<b>1.09</b>	<b>0.06</b>
Methylcyclohexane	2	0.86	0.09	0.88	0.08	1.04	0.09
Benzene	2	0.89	0.03	0.88	0.03	0.99	0.03
Toluene	2	0.80	0.06	0.82	0.07	0.94	0.03
Ethylbenzene	2	0.69	0.09	0.59	0.12	<b>0.92</b>	<b>0.03</b>
m,p-Xylenes	2	0.70	0.06	0.63	0.10	0.89	0.04
o-Xylene	2	0.65	0.10	0.66	0.11	0.89	0.05
Nitrate, ethyl	2	1.4	2.1	-0.3	1.6	1.03	0.38
Nitrate, i-propyl	2	1.1	1.2	0.2	1.3	1.01	0.09
Nitrate, n-propyl	2	0.65	0.92	0.3	1.2	1.14	0.42
Methanol	2	-1.0	1.8	16	482	0.98	0.31
Ethanol	2	2.7	5.9	1.4	2.0	1.02	0.06
Acetone	2	1.3	1.7	1.1	1.1	0.84	0.82
Methyl ethyl ketone	2	2.3	3.6	1.4	2.6	1.29	0.49
Methyl vinyl ketone	2	1.4	1.8	1.1	1.6	0.54	0.50
Acetaldehyde	2	0.73	0.74	2.1	2.8	2.5	2.0
Propanal	2	2.7	4.3	1.5	3.1	0.56	0.64
Methacrolein	2	1.30	0.85	1.00	0.72	0.79	0.26

**Table S2.** Individual results for comparison of canister samples vs. co-sampled ambient air. The canister samples were aged 1, 2 or 4 days before analysis. Bolded values are significantly different (at 95% confidence) than at least one other test result for that compound.

Compound	Channel	1 day v amb.		2 day v amb.		4 day v amb.	
		Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Ethane	1	1.08	0.16	1.08	0.05	1.12	0.05
Propane	1	1.09	0.20	1.04	0.05	1.09	0.05
i-Butane	1	n/a	n/a	n/a	n/a	n/a	n/a
n-Butane	1	<b>0.77</b>	<b>0.04</b>	1.12	0.02	1.13	0.02
i-Pentane	1	1.02	0.06	0.94	0.06	0.87	0.05
n-Pentane	1	0.97	0.05	1.02	0.03	1.04	0.03
n-Hexane	1	0.96	0.07	0.99	0.05	0.86	0.06
n-Hexane	2	0.97	0.14	0.88	0.08	0.95	0.09
n-Heptane	2	1.19	0.57	1.03	0.38	1.00	0.39
n-Octane	2	1.7	1.8	1.00	0.47	0.92	0.43
n-Nonane	2	1.2	2.3	1.1	1.4	0.9	1.1
Ethene	1	1.22	0.60	1.06	0.31	1.14	0.34
Isoprene	1	1.12	0.33	1.01	0.23	0.85	0.19
$\alpha$ -Pinene	2	1.5	2.5	0.88	0.83	0.78	0.75
$\beta$ -Pinene	2	1.5	10.6	0.9	4.6	0.8	4.1
Ethyne	1	1.11	0.40	0.93	0.18	1.05	0.21
Methylcyclopentane	2	1.15	0.40	1.01	0.27	1.10	0.29
Cyclohexane	2	1.15	0.66	1.07	0.52	1.16	0.57
Methylcyclohexane	2	1.17	0.72	0.98	0.54	0.95	0.49
Benzene	2	1.10	0.09	0.94	0.07	0.91	0.07
Toluene	2	0.89	0.03	0.91	0.02	<b>0.81</b>	<b>0.02</b>
Ethylbenzene	2	1.20	0.38	0.84	0.13	0.73	0.11
m,p-Xylenes	2	<b>0.91</b>	<b>0.08</b>	0.76	0.05	0.61	0.04
o-Xylene	2	1.02	0.24	0.69	0.12	0.62	0.10
Nitrate, ethyl	2	2	106	0.5	2.0	0.6	2.0
Nitrate, i-propyl	2	2	26	0.86	0.83	0.86	0.84
Nitrate, n-propyl	2	2	140	0.9	7.4	0.9	6.7
Methanol	2	1.37	0.44	1.83	0.52	1.55	0.65
Ethanol	2	1.85	0.29	1.19	0.07	1.26	0.09
Acetone	2	-0.9	1.4	0.6	2.1	-0.7	2.1
Methyl ethyl ketone	2	1.8	2.1	0.91	0.31	1.19	0.38
Methyl vinyl ketone	2	5	24	4	11	-10	43
Acetaldehyde	2	3.0	4.0	22	81	20	52
Propanal	2	10	40	-58	580	19	83
Methacrolein	2	2	11	1.3	2.3	1.2	2.7

