Supplementary material for Practical field calibration of electrochemical NO2 sensors for urban air quality applications, by Mijling et al.

Supplement: NO_2 regression model coefficients

Units c_0 (Intercept): $\mu g\ m^{-3}$

Units c_1 (S_{WE}): $\mu g\ m^{-3}$/count

Units c_2 (S_{AE}): $\mu g\ m^{-3}$/count

Units c_3 (T): $\mu g\ m^{-3}$/°C

Units c_4 (RH): $\mu g\ m^{-3}$/%

Units c_5 (O_3): $\mu g\ m^{-3}/\mu g \cdot m^{-3}$

Table S1 Regression results for sensor 1184527

		Intercept	S_{WE}	S_{AE}	T	RH	O_3	R^2
Model A	1st period	-155.10	0.8368	-0.6841				0.478
	2nd period	475.82	0.9137	-1.2719				0.602
Model B	1st period	-1056.05	1.0371	-0.1946	2.3488			0.732
	2nd period	-983.97	0.9821	-0.2015	2.3771			0.774
Model C	1st period	-1953.53	1.1485	0.5047		-0.9840		0.680
	2nd period	-805.01	1.0611	-0.3549		-0.6526		0.677
Model D	1st period	-1623.07	1.1235	0.2088	1.7161	-0.4430		0.754
	2nd period	-1162.98	1.0114	-0.0756	2.1686	-0.1564		0.777
Model E	1st period	-1079.04	0.7104	0.2328	0.5648	-0.8305	-0.4053	0.886
	2nd period	-1067.82	0.8927	-0.0218	2.4442	-0.4412	-0.2397	0.863

Table S2 Regression results for sensor 1184739

		Intercept	S_{WE}	S_{AE}	T	RH	O_3	R^2
Model A	1st period	-141.88	0.6136	-0.5241				0.440
	2nd period	437.30	0.8025	-1.2130				0.493
Model B	1st period	-639.87	1.0652	-0.6367	2.3781			0.790
	2nd period	-581.47	0.9636	-0.5853	2.6484			0.768
Model C	1st period	-931.37	1.2158	-0.4780		-0.7288		0.740

	2nd period	-300.44	0.9395	-0.7145		-0.4714		0.592
Model D	1st period	-824.79	1.1850	-0.5839	1.6737	-0.3069		0.812
	2nd period	-666.44	0.9811	-0.5242	2.4866	-0.0941		0.771
Model E	1st period	-463.82	0.8150	-0.4419	0.8318	-0.5519	-0.3402	0.923
	2nd period	-592.51	0.8732	-0.4531	2.6967	-0.2927	-0.2249	0.853

Table S3 Regression results for sensor 1183931

		Intercept	S_{WE}	S_{AE}	**T**	**RH** [a]	O_3	R^2
Model A	1st period	-576.41	0.9615	-0.4811				0.573
	2nd period	-239.15	0.8866	-0.6834				0.645
Model B	1st period	-1217.57	1.1305	-0.1642	1.9435			0.788
	2nd period	-977.93	0.8717	-0.0987	1.6673			0.769
Model C	1st period	-576.41	0.9615	-0.4811		0.0000		0.573
	2nd period	-239.15	0.8866	-0.6834		0.0000		0.645
Model D	1st period	-1217.57	1.1305	-0.1642	1.9435	0.0000		0.788
	2nd period	-977.93	0.8717	-0.0987	1.6673	0.0000		0.769
Model E	1st period	-578.07	0.7891	-0.3243	1.7254	0.0000	-0.2656	0.858
	2nd period	-495.36	0.7724	-0.3963	2.3365	0.0000	-0.2254	0.863

[a] RH sensor not working.

Table S4 Regression results for sensor 53788

		Intercept	S_{WE}	S_{AE}	**T**	**RH**	O_3	R^2
Model A	1st period	231.44	1.0802	-1.2514				0.677
	2nd period	428.20	1.0221	-1.3582				0.600
Model B	1st period	-798.25	1.1319	-0.5061	2.4721			0.840
	2nd period	-941.92	0.9603	-0.2244	2.5145			0.731
Model C	1st period	-521.55	1.1806	-0.7141		-0.4831		0.730
	2nd period	141.16	1.0604	-1.1578		-0.0651		0.609
Model D	1st period	-1129.69	1.1835	-0.2705	2.2559	-0.2704		0.855
	2nd period	-983.10	0.9685	-0.1975	2.4876	-0.0127		0.731

Model E	1st period	-725.55	0.8481	-0.2249	1.2801	-0.4709	-0.2966	0.918
	2nd period	-685.96	0.8376	-0.2914	2.5194	-0.1211	-0.2898	0.874

Table S5 Regression results for sensor 26296

		Intercept	S_{WE}	S_{AE}	**T**	**RH**	O_3	R^2
Model A	1st period	100.52	0.8669	-0.8952				0.556
	2nd period	407.81	0.9154	-1.1897				0.675
Model B	1st period	-332.23	1.1460	-0.8613	2.4841			0.895
	2nd period	-504.18	1.0011	-0.5837	2.0206			0.834
Model C	1st period	-1138.92	1.1781	-0.1707		-0.8205		0.810
	2nd period	-132.85	1.0685	-0.8851		-0.2933		0.729
Model D	1st period	-586.25	1.1794	-0.6738	2.0415	-0.2192		0.903
	2nd period	-688.42	1.0694	-0.4885	1.8326	-0.1460		0.846
Model E	1st period	-383.42	0.8973	-0.5253	1.1754	-0.4695	-0.2518	0.939
	2nd period	-498.89	0.9728	-0.5403	2.1983	-0.2250	-0.1837	0.897

Table S6 Regression results for sensor 1184206 [a]

		Intercept	S_{WE}	S_{AE}	**T**	**RH** [b]	O_3	R^2
Model A	1st period	455.38	0.6977	-1.0835				0.471
	2nd period [c]	-6.04	0.2475	-0.2343				0.199
Model B	1st period	827.92	0.8688	-1.5498	-1.6344			0.556
	2nd period [c]	-173.77	0.3000	-0.1698	1.5927			0.265
Model C	1st period	715.45	0.8394	-1.4811		0.5326		0.612
	2nd period [c]	2.24	0.2469	-0.2431		0.0280		0.200
Model D	1st period	790.88	0.8707	-1.5645	-0.5051	0.4513		0.617
	2nd period [c]	-178.93	0.3133	-0.2007	2.1055	0.1650		0.292
Model E	1st period	274.85	0.3186	-0.4805	-0.5447	-0.4744	-0.5349	0.788
	2nd period [c]	56.69	0.2864	-0.3343	1.4917	-0.1120	-0.3883	0.611

[a] Alphasense NO2-B42F sensor, used in previous experiments for more than one year

[b] RH sensor overestimates and often saturated at 100%

[c] Only 42% uptime in 2nd calibration period.

Table S7 Regression results for sensor 1185325

		Intercept	S_{WE}	S_{AE}	T	RH	O_3	R^2
Model A	1st period	342.04	0.8221	-1.1629				0.503
	2nd period	417.68	0.8047	-1.2119				0.520
Model B	1st period	-847.45	1.1001	-0.5102	2.9678			0.712
	2nd period	-784.93	0.8745	-0.3272	3.2652			0.706
Model C	1st period	-89.45	0.9168	-0.8859		-0.2824		0.524
	2nd period	103.71	0.8641	-0.9951		-0.2487		0.547
Model D	1st period	-1152.70	1.1668	-0.3120	2.9112	-0.2147		0.725
	2nd period	-862.03	0.8947	-0.2759	3.1490	-0.0950		0.710
Model E	1st period	-825.25	0.7707	-0.1058	1.8251	-0.4975	-0.3808	0.886
	2nd period	-622.53	0.8094	-0.3689	3.2492	-0.2528	-0.2555	0.830

Table S8 Regression results for sensor 54200

		Intercept	S_{WE}	S_{AE}	T	RH	O_3	R^2
Model A	1st period	-968.20	0.9138	-0.1237				0.689
	2nd period	-371.22	0.9786	-0.6833				0.668
Model B	1st period	-1044.89	1.0490	-0.2245	1.4562			0.823
	2nd period	-864.22	0.9909	-0.3182	1.5499			0.811
Model C	1st period	-1729.95	1.1641	0.2736		-0.5386		0.848
	2nd period	-1190.28	1.0625	-0.0659		-0.4225		0.783
Model D	1st period	-1613.28	1.1499	0.1818	0.3200	-0.4442		0.850
	2nd period	-1055.65	1.0203	-0.1723	1.1527	-0.1639		0.819
Model E	1st period	-1129.35	0.8046	0.1830	-0.3285	-0.7627	-0.3671	0.926
	2nd period	-848.14	0.8909	-0.1992	1.5326	-0.3227	-0.2241	0.904

Table S9 Regression results for sensor 1184453

		Intercept	S_{WE}	S_{AE}	T	RH	O_3	R^2
Model A	1st period	338.42	0.9823	-1.2246				0.608
	2nd period	748.59	0.9642	-1.5368				0.622
Model B	1st period	-962.71	1.0735	-0.3309	3.4356			0.799
	2nd period	30.62	1.0385	-1.0668	1.8190			0.674
Model C	1st period	0.26	1.0444	-0.9995		-0.2995		0.633
	2nd period	752.43	0.9629	-1.5387		0.0038		0.622
Model D	1st period	-1109.75	1.1055	-0.2339	3.3191	-0.1693		0.807
	2nd period	33.02	0.9974	-1.0453	2.2205	0.1582		0.686
Model E	1st period	-480.10	0.7539	-0.3363	1.6813	-0.3806	-0.3277	0.895
	2nd period	99.69	0.9454	-1.0242	2.4400	-0.0973	-0.2625	0.816

Table S10 Regression results for sensor 717780

		Intercept	S_{WE}	S_{AE}	T	RH	O_3	R^2
Model A	1st period	-375.21	0.7775	-0.4837				0.545
	2nd period	-406.98	0.8879	-0.5767				0.652
Model B	1st period	-819.17	1.0416	-0.4203	2.0988			0.824
	2nd period	-800.71	0.9405	-0.3286	1.6465			0.804
Model C	1st period	-1332.74	1.1032	0.0257		-0.6993		0.783
	2nd period	-1248.39	0.9608	0.0870		-0.4312		0.770
Model D	1st period	-1074.88	1.0961	-0.2346	1.4954	-0.2799		0.840
	2nd period	-1012.78	0.9545	-0.1466	1.2583	-0.1562		0.811
Model E	1st period	-595.45	0.7813	-0.2757	0.8578	-0.4865	-0.2965	0.912
	2nd period	-701.86	0.8586	-0.3051	1.6906	-0.2922	-0.2300	0.903

Table S11 Regression results for sensor 55303

		Intercept	S_{WE}	S_{AE}	T	RH	O_3	R^2
Model A	1st period	-228.65	1.0877	-0.8029				0.720
	2nd period	-470.06	0.8521	-0.4193				0.709
Model B	1st period	-972.80	1.1445	-0.3343	1.7279			0.862
	2nd period	-913.18	0.8192	-0.0765	0.8840			0.738

Model C	1st period	-1335.96	1.2551	-0.1132		-0.6560		0.832
	2nd period	-991.61	0.8898	-0.0591		-0.1618		0.730
Model D	1st period	-1272.13	1.2045	-0.1492	1.2690	-0.2944		0.874
	2nd period	-1050.59	0.8448	0.0095	0.6707	-0.0758		0.741
Model E	1st period	-818.09	0.8961	-0.1706	0.5898	-0.5387	-0.2749	0.920
	2nd period	-728.05	0.8202	-0.1908	1.0731	-0.2465	-0.3029	0.885

Table S12 Regression results for sensor 55300

		Intercept	S_{WE}	S_{AE}	**T**	**RH**	O_3	R^2
Model A	1st period	-1703.40	0.8218	0.5544				0.605
	2nd period	-1008.31	0.8631	-0.0632				0.642
Model B	1st period	-872.76	1.1012	-0.4577	2.3418			0.829
	2nd period	-968.33	0.8761	-0.1315	1.1078			0.722
Model C	1st period	-1826.17	1.1334	0.3588		-0.5732		0.788
	2nd period	-1161.34	0.8856	0.0550		-0.1936		0.660
Model D	1st period	-1074.57	1.1294	-0.3058	1.8671	-0.1561		0.834
	2nd period	-999.93	0.8800	-0.1057	1.0664	-0.0381		0.723
Model E	1st period	-594.35	0.7795	-0.2874	1.0126	-0.4704	-0.3327	0.916
	2nd period	-505.72	0.8246	-0.4485	2.1700	-0.2329	-0.3003	0.901

Table S13 Regression results for sensor 13905017

		Intercept	S_{WE}	S_{AE}	**T**	**RH**	O_3	R^2
Model A	1st period	162.64	0.8156	-0.9075				0.459
	2nd period	-3.20	0.8580	-0.8237				0.556
Model B	1st period	19.56	1.1888	-1.1987	2.4905			0.837
	2nd period	-1147.64	0.9569	-0.0244	2.1478			0.802
Model C	1st period	369.33	1.0602	-1.2825		-0.6434		0.636
	2nd period	-1011.65	1.0253	-0.1369		-0.4382		0.695
Model D	1st period	8.09	1.1860	-1.1889	2.5401	0.0268		0.837
	2nd period	-1278.51	0.9905	0.0621	1.8680	-0.1217		0.809
Model E	1st period	114.64	0.8144	-0.8532	1.2001	-0.4387	-0.3356	0.915

	2nd period	-844.54	0.9049	-0.1972	2.2316	-0.2564	-0.2176	0.898

Table S14 Regression results for sensor 14560051 [a]

		Intercept	S_{WE}	S_{AE}	**T**	**RH**	O_3	R^2
Model A	1st period	355.92	0.8862	-1.2633				0.615
	2nd period	303.68	0.2770	-0.5599				0.133
Model B	1st period	502.09	0.9007	-1.4001	-0.5684			0.623
	2nd period	68.85	0.2973	-0.3864	0.8454			0.150
Model C	1st period	624.53	0.8686	-1.5077		0.3916		0.665
	2nd period	629.53	0.3356	-0.9477		0.3625		0.265
Model D	1st period	589.20	0.8618	-1.4742	0.2142	0.4204		0.666
	2nd period	34.28	0.4429	-0.6025	2.8976	0.5956		0.407
Model E	1st period	-87.90	0.3690	-0.2424	0.1739	-0.6170	-0.5754	0.816
	2nd period	-174.15	0.4075	-0.3524	3.8518	0.2585	-0.3428	0.577

[a] Alphasense NO2-B42F sensor, used in previous experiments for more than one year

Table S15 Regression results for sensor 1184838

		Intercept	S_{WE}	S_{AE}	**T**	**RH** [a]	O_3	R^2
Model A	1st period	1211.20	0.9008	-1.8984				0.298
	2nd period	1455.17	1.2443	-2.4648				0.554
Model B	1st period	-166.53	1.8265	-1.7541	4.8106			0.825
	2nd period	-438.20	1.4576	-1.1488	3.6043			0.830
Model C	1st period	911.69	0.9893	-1.7240		-0.2561		0.308
	2nd period	1455.17	1.2443	-2.4648		0.0000		0.554
Model D	1st period	-104.50	1.8111	-1.7939	4.8373	0.0596		0.825
	2nd period	-438.20	1.4576	-1.1488	3.6043	0.0000		0.830
Model E	1st period	-56.70	1.2676	-1.2255	3.1038	-0.3717	-0.3226	0.891
	2nd period	-217.54	1.2729	-1.1467	3.7105	0.0000	-0.1401	0.863

[a] RH sensor breaks down after July 25.

Table S16 Regression results for sensor 54911

		Intercept	S_{WE}	S_{AE}	T	RH	O_3	R^2
Model A	1st period	-594.31	0.8007	-0.3192				0.485
	2nd period [a]	-254.68	0.3469	-0.1361				0.275
Model B	1st period	-1045.41	1.2206	-0.4227	2.4971			0.829
	2nd period [a]	-1118.84	0.5547	0.3426	1.3564			0.558
Model C	1st period	-1537.42	1.1674	0.1164		-0.5503		0.696
	2nd period [a]	-1053.52	0.5320	0.3510		-0.2220		0.452
Model D	1st period	-1215.51	1.2551	-0.3038	2.1742	-0.1333		0.836
	2nd period [a]	-1156.53	0.5629	0.3693	1.2518	-0.0290		0.560
Model E	1st period	-623.06	0.8844	-0.3786	1.5146	-0.2937	-0.2883	0.894
	2nd period [a]	-553.67	0.7349	-0.2996	1.7739	-0.2115	-0.2733	0.663

[a] Only 18% uptime in 2nd calibration period.