Electronic Supplementary Information

High-resolution maps of carbon dioxide and moisture fluxes over an urban neighborhood

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Table 1. Statistical metrics for CO_2 and H_2O fluxes obtained by the aerodynamic resistance approach, and the necessary parameters for its application. The average fluxes measured by the eddy covariance flux tower during the duration of each measurement round are also included, as well as the reasons why the approach failed in some cases. Fluxes of measurements that turned out to be suspicious are written in red font.

Date (period)	Trial No.	Eddy covariance flux tower					Aerodynamic resistance approach						Reasons for errors
		CO_2 flux (Mg km^{-2} h^{-1})	H_2O flux (mg m^{-2} s^{-1})	Q_H (W m^{-2})	Q_E (W m^{-2})	T_{tower} (°C)	T_0 (°C)	r_H (s m^{-1})	CO_2 flux Mean ± 1 Std. Dev. (median) (Mg km^{-2} h^{-1})	CO_2 flux Max (Min) PCTL (25th-75th) PCTL (5th-95th) (Mg km^{-2} h^{-1})	H_2O flux Mean ± 1 Std. Dev. (median) (mg m^{-2} s^{-1})	H_2O flux Max (Min) PCTL (25th-75th) PCTL (5th-95th) (mg m^{-2} s^{-1})	
Morning rush hour													
18 Oct 2016 (7:08-8:24)	1	2.83	1.5	5.00	1.5	27.86	28.15	68.08	15.46 ± 3.48 (14.34)	71.03 (11.87) 13.70 – 16.32 12.62 – 21.14	---	---	Sampling affected by light rain
21 Oct 2016 (6:46-8:16)	5	0.56	12.64	8.49	31.01	27.4	28.03	87.27	1.76 ± 2.94 (1.25)	23.18 (-2.92) -0.17 – 3.02 -1.85 – 7.16	---	---	Sampling affected by light rain during the last 15 min
26 Oct 2016 (6:52-8:15)	8	0.48	4.35	3.77	10.63	25.57	26.24	209.65	1.25 ± 1.22 (0.97)	8.63 (-0.89) 0.36 – 1.86 -0.12 – 3.55	6.12 ± 0.81 (6.02)	8.81 (3.91) 5.50 – 6.60 4.99 – 7.58	
7 Nov 2016 (6:57-8:20)	12	0.98	2.30	5.70	5.63	27.05	27.38	29.53	4.89 ± 3.86 (4.44)	23.35 (-3.37) 2.24 – 7.14 -0.89 – 11.91	5.47 ± 1.47 (5.50)	10.08 (0.35) 4.58 – 6.52 2.85 -7.76	Flux tower: nonstationary conditions for CO_2 during half of sampling period
8 Nov 2016 (6:59-8:15) 313	13	---	---	9.06		25.05	26.24	153.09	1.64 ± 1.71 (1.39)	19.83 (-1.53) 0.49 – 2.40 -0.49 – 4.68	3.27 ± 1.11 (3.16)	7.96 (0.04) 2.76 – 3.81 1.39 – 5.04	Sampling affected by light rain
23 Nov 2016 (6:47-8:22)	18	1.03	7.26	5.62	17.80	25.84	27.15	275.16	1.67 ± 0.83 (1.62)	11.75 (-0.04) 1.13 – 2.13 0.32 – 3.08	5.47 ± 0.95 (5.35)	7.93 (3.32) 4.77 – 6.20 4.08 – 7.11	

Table S1. Continuation.

Date (period)	Trial No.	Eddy covariance flux tower					Aerodynamic resistance approach					Reasons for errors
		CO$_2$ flux (Mg km^{-2} h^{-1})	H$_2$O flux (mg m^{-2} s^{-1})	Q_H (W m^{-2})	Q_E (W m^{-2})	T_{tower} (°C)	T_0 (°C)	r_H (s m^{-1})	CO$_2$ flux Mean ± 1 Std. Dev. (median) (Mg km^{-2} h^{-1})	CO$_2$ flux Max (Min) PCTL (25th-75th) PCTL (5th-95th) (Mg km^{-2} h^{-1})	H$_2$O flux Mean ± 1 Std. Dev. (median) (mg m^{-2} s^{-1})	H$_2$O flux Max (Min) PCTL (25th-75th) PCTL (5th-95th) (mg m^{-2} s^{-1})	
Midday													
18 Oct 2016 (11:20-12:36)	2	0.76	37.98	271.24	93.12	30.11	33.06	12.58	0.56 ± 10.94 (-3.24)	97.62 (-17.56) -7.23 - 4.99 -8.69 – 21.88	---	---	
20 Oct 2016 (11:20-12:42)	4	---	27.43	202.61	67.2	29.96	36.34	36.39	-0.20 ± 4.84 (-1.66)	42.59 (-6.10) -3.77 – 2.11 -4.83 – 8.69	---	---	Flux tower: nonstationary conditions for CO$_2$
24 Oct 2016 (11:30-12:50)	6	0.82	21.37	4.11	52.4	26.88	31.72	138.30	0.01 ± 0.18 (-0.01)	2.07 (-0.33) -0.10 – 0.10 -0.23 – 46.00	---	---	Very cloudy conditions and some previous rain
26 Oct 2016 (11:16-12:42)	9	0.34	21.07	66.6	53.3	28.22	30.14	33.63	1.42 ± 5.53 (0.07)	111.58 (-7.49) -2.23 – 3.91 -4.34 – 11.05	51.55 ± 18.74 (57.77)	87.60 – -4.28 38.83 – 66.03 9.94 – 73.09	Affected by light rain
28 Oct 2016 (11:31-12:52)	10	0.35	32.55	175.02	65.3	28.68	31.84	21.12	-0.86 ± 8.57 (-2.67)	97.89 (-16.32) -7.90 – 3.78 -9.79 – 14.73	69.14 ± 12.39 (67.17)	104.91 (43.20) 59.53 – 77.64 52.18 – 90.74	Flux tower: nonstationary conditions for H$_2$O during half of sampling period
22 Nov 2016 (11:21-12:47)	17	0.60	13.77	78.21	33.73	27.14	30.87	55.81	-0.74 ± 3.37 (-1.18)	34.14 (-6.46) -3.28 – 1.01 -4.91 – 5.14	27.63 ± 3.39 (27.99)	36.77 (17.16) 25.80 - 29.94 20.74 -32.39	
Evening rush hour													
19 Oct 2016 (18:22-19:32)	3	1.36	---	3.72	---	28.75	29.59	260.39	0.83 ± 0.78 (0.59)	6.27 (-0.13) 0.32 – 1.06 0.09 – 2.45	---	---	Flux tower: nonstationary conditions for H$_2$O
24 Oct 2016 (18:20-19:30)	7	---	---	---	---	---	---	---	---	---	---	---	Rainy conditions
31 Oct 2016 (18:29-19:47)	11	1.47	5.10	10.84	12.50	27.85	28.72	94.08	0.46 ± 2.60 (0.24)	28.01 (-3.09) -1.28 – 1.75 -3.09 – 4.72	5.35 ± 2.32 (5.33)	14.18 (-3.21) 3.98 – 6.85 1.45 – 8.94	
10 Nov 2016 18:23-19:47	14	1.20	12.92	5.23	31.73	25.88	27.80	429.65	1.79 ± 0.62 (1.71)	10.42 (0.79) 1.35 – 2.11 0.96 -2.85	3.78 ± 0.94 (3.74)	6.31 (1.45) 1.35 -3.05 2.34 – 5.27	
16 Nov 2016 (18:21-19:49)	15	0.92	6.23	6.48	8.27	26.36	26.90	97.31	4.29 ± 2.41 (4.07)	26.00 (0.16) 2.56 – 5.63 1.07 – 8.30	13.22 ± 1.62 (13.18)	18.56 (9.64) 11.87-14.31 10.76-15.94	Difference between T_a and T_0 is < 0.1 K
17 Nov 2016 (18:20-19:48)	16	0.77	6.17	5.69	15.15	26.07	27.92	379.79	1.20 ± 0.64 (1.09)	9.18 (-0.40) 0.77 – 1.51 0.39 – 2.35	4.27 ± 0.51 (4.27)	5.88 (2.56) 3.96 – 4.62 3.35 – 5.05	