Supplementary information

Figure S1: Left: Comparison of PM2.5 levels measured with one of the optical counters (DustTrak in this case) and high volume samplers (gravimetry). Right: Comparison of measurements of PM2.5 levels performed on a minute resolution by means of the two types of optical counters after correction against high volume data.

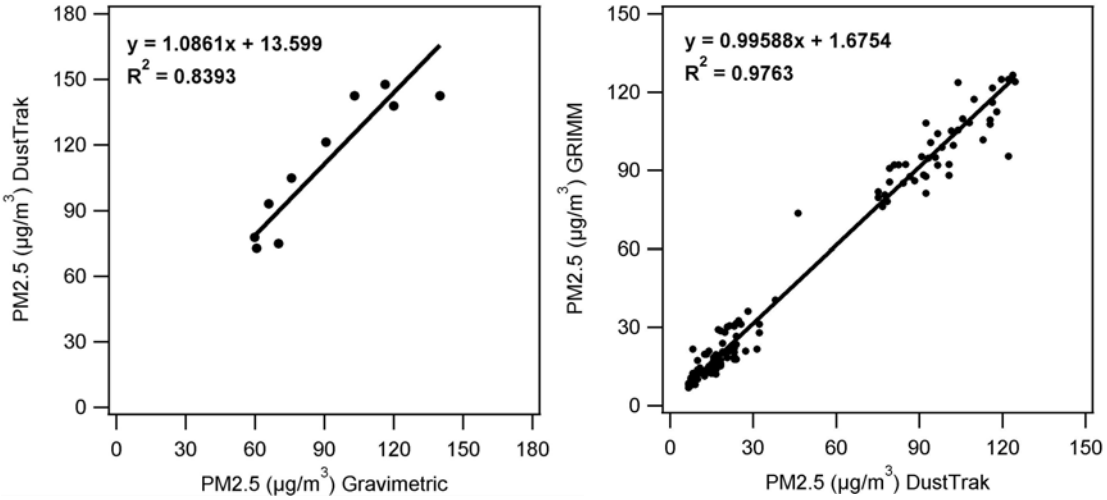

Figure S2: Levels of PM10, PM2.5 and PM1 measured across the platforms at the Sagrera (S-L9) and Fontana (F-L3) stations using 30 seconds time resolution. Data clearly show that the arrival of the train (black dots) causes a decrease on PM levels on the platform at both stations. Horizontal axe: distance to end of platform.

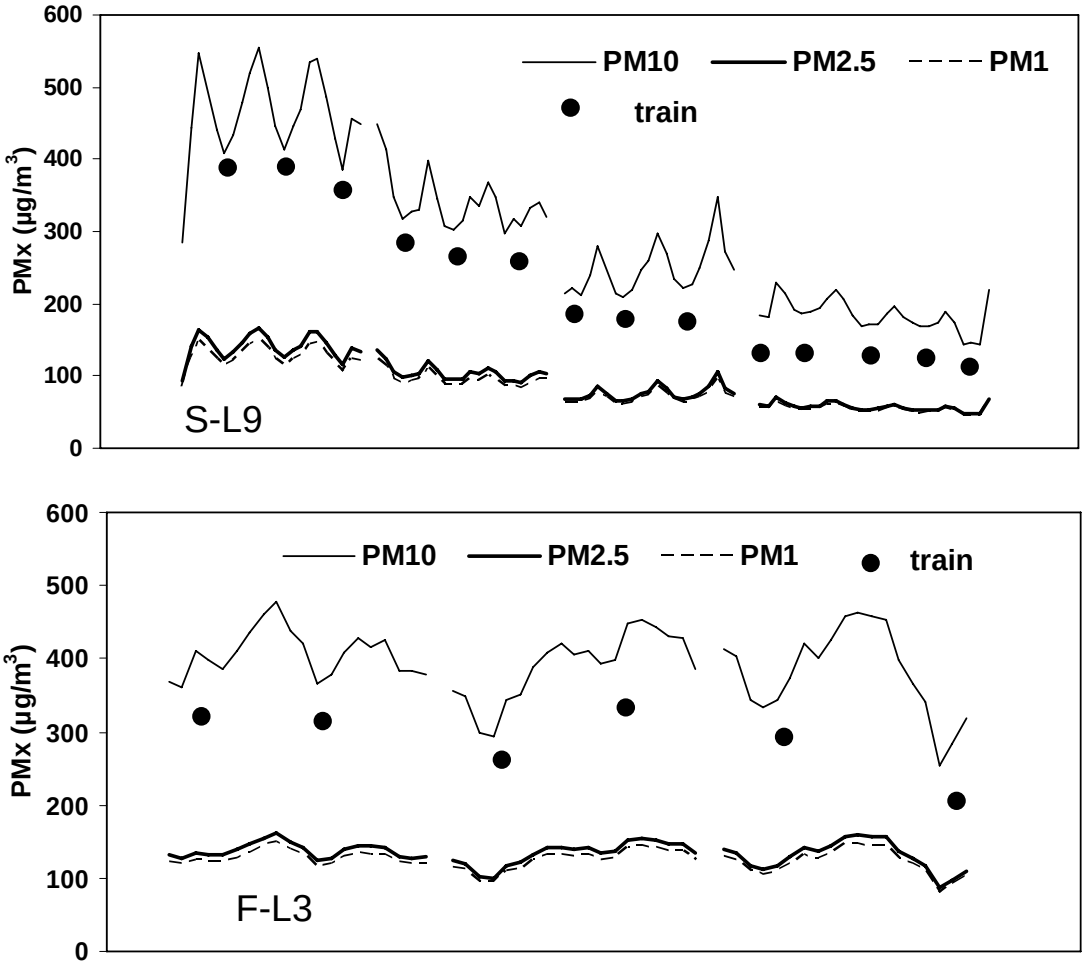

Figure S3. Mean hourly frequency of trains at the S-L9 and F-L3 stations.

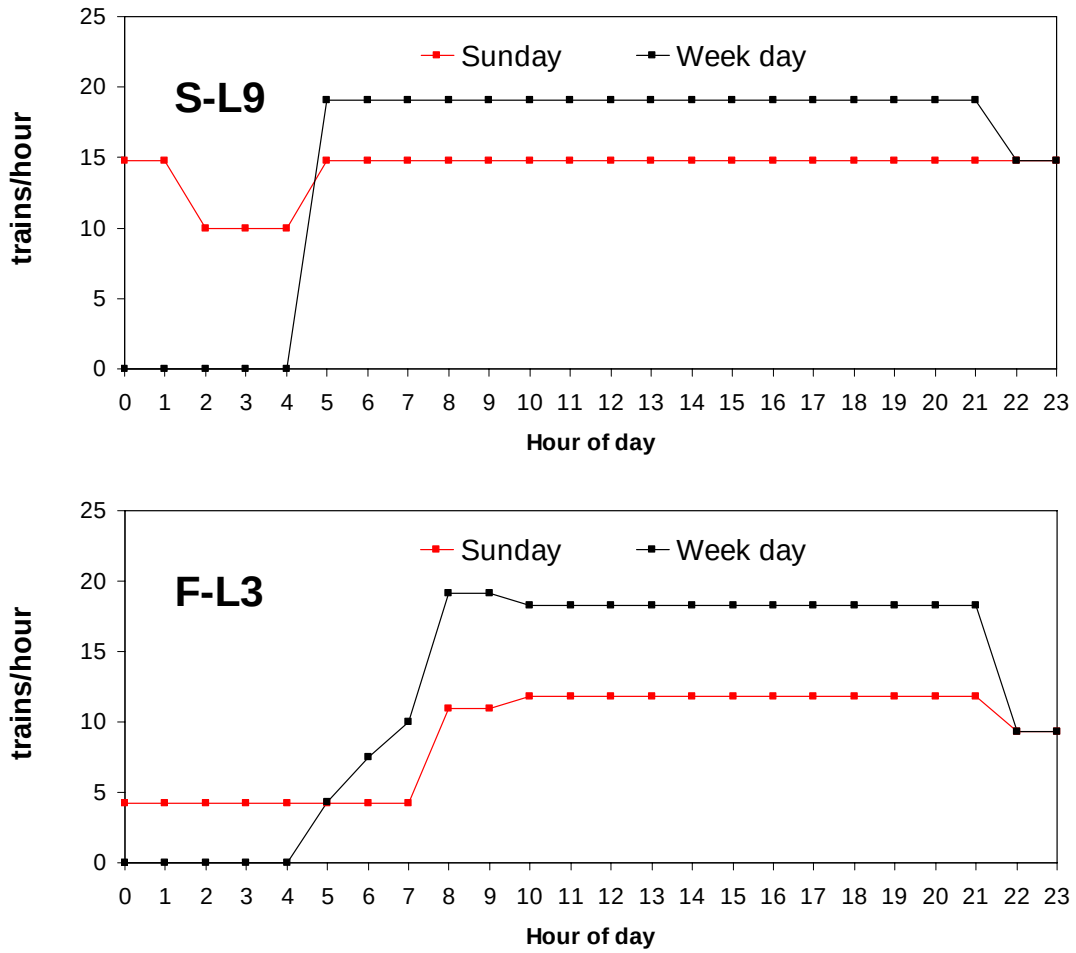

Table S1. Mean levels and standard deviation of daily means of PMx from real time 24 h/day measurements at the Sagrera (L9) and Fontana (L3) platforms. The underlined data in the right hand of the table are the levels corrected by factors of 1.42 and 1.06 to represent the exposure across the whole S-L9 and F-L3 platforms, respectively, as explained in the methodology section. PS, summer platform ventilation, T1 and T2, usual and double tunnel ventilation power.

	PM10		PM2.5		PM1		PM2.5/10
	mean	std	mean	std	mean	std	
Sagrera L9							
07-12/07/2011 PS-T2	117	20	37	6	30	13	0.32
13-25/07/2011 PS-T1	241	76	69	20	58	17	0.29
07-25/07/2011	201	58	59	16	49	13	0.29
07-12/07/2011 PS-T2	82	14	26	5	21	9	0.32
13-25/07/2011 PS-T1	169	53	48	14	41	12	0.29
07-25/07/2011	142	41	41	11	35	9	0.29
Fontana L3							
07-12/07/2011	258	28	90	13	84	15	0.35
13-25/07/2011	229	46	87	22	83	24	0.38
07-25/07/2011	239	43	88	19	83	21	0.37
07-12/07/2011	244	26	85	12	79	14	0.35
13-25/07/2011	216	44	82	20	78	22	0.38
07-25/07/2011	225	41	83	18	79	20	0.37

Table S2. Results of the principal component analysis performed for the chemical database of PM10 and PM2.5 obtained at both F-L3 and S-L9 platforms. Bold numbers highlight loading factors >[0.6].

	Factor 1	Factor 2	Factor 3
PM	**0.7**	0.0	**0.6**
NO_3^-	-0.2	**0.9**	0.1
NH_4^+	0.0	**0.8**	-0.3
OC+EC	**0.8**	0.0	0.2
Al	**0.7**	0.2	**0.6**
Ca	0.5	0.3	**0.8**
Fe	0.5	0.0	**0.8**
K	0.4	**0.7**	0.4
Mg	**0.9**	0.1	0.3
Mn	**0.7**	0.0	**0.6**
Na	0.1	**0.9**	0.0
SO_4^{2-}	**0.6**	**0.7**	0.2
Ti	**0.8**	0.3	0.5
Ba	**0.9**	0.0	0.3
Cr	**0.6**	0.0	**0.8**
Cu	**0.9**	0.0	0.4
Zn	**0.8**	0.0	0.5
Li	**0.7**	0.2	0.4
V	**0.6**	**0.6**	0.2
Co	**0.8**	0.0	0.5
Ni	**0.8**	0.0	0.5
As	**0.8**	0.0	0.2
Se	0.0	**0.7**	0.1
Rb	0.5	0.4	**0.6**
Sr	**0.9**	0.0	0.3
Mo	**0.9**	-0.1	0.3
Cd	**0.8**	0.2	0.4
Sn	**0.9**	0.0	0.4
Sb	0.3	-0.4	**0.6**
La	**0.7**	0.2	0.4
W	**0.8**	-0.1	0.3
Pb	**0.9**	0.2	0.3
Th	0.5	-0.2	**0.7**
U	0.2	**-0.7**	0.3

Table S3. Calculation of PM exposure levels for a metro commuting travel of 30 minutes in the train and 5 minutes on the platform.

Mean Platforms	**PM10**	**std**	**PM2.5**	**std**	
µg/m^3	346	62	125	28	Fontana L3
	142	29	44	14	Palau Reial L3
	87	24	21	6	Bon Pastor L9
	145	98	46	28	Sagrera L9
	180	53	59	19	Mean
Mean in trains	**PM10**	**std**	**PM2.5**	**std**	
	79	14	25	5	L3-L5
	45	18	14	5	L9
	65	16	20	5	Mean
µg/m^3 supplied to daily exposure					
Platform	**PM10**	**std**	**PM2.5**	**std**	
5min	1.20	0.22	0.43	0.10	Fontana L3
	0.49	0.10	0.15	0.05	Palau Reial L3
	0.30	0.08	0.07	0.02	Bon Pastor L9
	0.50	0.34	0.16	0.10	Sagrera L9
	0.63	0.18	0.20	0.07	Mean
Train	**PM10**	**std**	**PM2.5**	**std**	
30 min	1.65	0.30	0.52	0.10	L3-L5
	0.94	0.37	0.30	0.10	L9
	1.35	0.33	0.43	0.10	Mean
µg/m^3 total contribution Platform and train x 2 (return) to daily exposure					
35 min	**PM10**	**std**	**PM2.5**	**std**	
	2.69	1.16	0.83	0.33	L9
	4.99	0.91	1.63	0.34	L3-L5
	3.94	1.02	1.26	0.33	Mean Barcelona Metro
PM exposure (µg/m^3) during metro commuting 35 min (5 min in platform and 30 min in train)					
	PM10	**std**	**PM2.5**	**std**	
	55	24	17	7	L9
	103	19	34	7	L3-L5
	81	21	26	7	Mean Barcelona Metro