SUPPORTING INFORMATION

Indoor exposure to ambient particles and its estimation using fixed site monitors

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DESCRIPTION OF TABLES AND FIGURES

Description of selected schools and FSMs is listed in Table S1. A summary for measurement at selected schools are given in Table S2. Hourly average $PM_{2.5}$concentrations at schools and fixed site monitors (FSMs) are listed in Table S3. Spearman Correlation Coefficients (SCC) between indoor and outdoor $PM_{2.5}$ concentrations and between school outdoor measurements and FSMs are listed in Table S4 and S5, respectively. Infiltration factors estimated with and without autocorrelation are listed in Table S6. Proximity factors estimated between selected schools and FSMs are listed in Table S7. The instrument package and results of instrument calibration are shown in Figure S1 and S2, respectively. Examples of time series of measured $PM_{2.5}$ concentrations at selected schools during winter and summer are shown in Figure S3. Wind rose maps from a background meteorological station in Hong Kong during winter and summer sampling periods are shown in Figure S4.

SCHOOL MEASUREMENT

For each school, indoor $PM_{2.5}$ concentrations were measured in classrooms and non-classrooms. The classrooms selected for both schools were on the 1st, 3rd, and 6th floors, each with class size of around 30 students. Blackboards and chalk were used in the classrooms at both schools. The non-classrooms include a ground floor conference room and a 7th floor mentor room at School A, and a ground floor meeting room and 7th floor multimedia room at school B. Each room was sampled for two days in each school and season. Simultaneous outdoor $PM_{2.5}$ concentrations were measured on pedestrians with horizontal distance of less than 0.5 km from the school.

AUTOCORRELATION

Continuous measurements have been reported to be autocorrelated, indicating serial dependence with previous observations.[1] The impact of autocorrelation on the estimation of IF is examined by adding a lag1 auto-aggressive correction on the error term of the linear regression model:[2]

$$C_{idr,s,p,t} = IF_{s,p} C_{odr,s,p\ t} + C_{NA,s,p,t} + \varepsilon_t \qquad \text{(S-1)}$$

$$\varepsilon_{s,p,t} = \rho_{s,p} \varepsilon_{s,p,t-1} + \omega_t \quad \text{(S-2)}$$

Where,

$C_{idr,s,p,t}$ = Indoor $PM_{2.5}$ concentrations at school *s* in season *p* at time *t* (µg/m^3);
$C_{odr,s,p,t}$ = Outdoor $PM_{2.5}$ concentrations at school *s* in season *p* at time *t* (µg/m^3);
$C_{NA,s,p,t}$ = Non-ambient component of indoor concentration at school *s* in season *p* at time *t* (µg/m^3);
$IF_{s,p}$ = Infiltration factor derived for school *s* in season *p*, unitless;
ε_t = random error (µg/m^3);
idr = Indoor location (e.g. classroom);
s = School index (e.g. School A, School B);
p = Season (e.g. winter, summer);
t = Time step (hour);
odr = Outdoor location in close proximity to the school, which is the nearest transect in this study;
NA = Non-ambient sources.
$\varepsilon_{s,p,t}$ = auto-correlated error term at school *s* in season *p* at time step *t*;
$\rho_{s,p}$ = autocorrelation parameter at school *s* in season *p*, unitless;
$\varepsilon_{s,p,t-1}$= error term in the time serial with lag time of 1 hour;
ω_t = independent error term.

The IF values were calculated for each school and season with and without autocorrelation correction, as listed in Table S6. For 1-hour time interval, there is no significant difference in IF estimates between with and without autocorrelation correction. The autocorrelation parameter was positive for both schools in winter and summer, indicating positive autocorrelations in the time series, which was consistent with the positive correlations found in continuous $PM_{2.5}$ observations in previous studies.[3,4] In winter, the outdoor variations in $PM_{2.5}$ concentration explained 98% to 99% of the variations observed in the indoor $PM_{2.5}$ concentrations at both schools. The autocorrelation did not add additional explanation power. In summer, the outdoor variations in $PM_{2.5}$ concentration explained 7% and 13% of the variations observed in the indoor $PM_{2.5}$ concentrations at school A and B, respectively. The autocorrelation explained another 58% and 36% of the indoor variations in summer. Low air exchange rates due to closed doors and windows in summer increased the autocorrelation in the indoor PM concentrations. However, the indoor concentrations in summer were much lower than those in winter; therefore, the added explanation power by accounting for autocorrelation in summer did not add much in terms of explaining long term exposure concentrations over both seasons.

Table S1. Description of selected schools and fixed site monitors

School	Location	Built Year	Elev.[a] (m)	Season	Period	Indoor Location		Ventilation type and practice				
						Class-room [b]	*Non-class-room* [b]	*A/C* [c]	*Ceiling fan*	*Inlet/ Exhaust fan*	*Window*	*Door*
A	Hill	2002	82	Winter	5/1/2015-16/1/2015	√	√	Off	Off	Off	Open	Open
				Summer	1/6/2015-12/6/2015	√	√	On	On	On	Closed	Closed
B	Valley	1990	6	Winter	19/1/2015-30/1/2015	√	√	Off	Off	Off	Slightly Open	Open
				Summer	15/6/2015-26/6/2015	√	√	On	On	On	Open	Closed

School outdoor measurement and fixed site monitors

Site	*Site Name*	Site type	*Land use*	Elev.[a] (m)	S.H.[d] (m)	*Distance (km)*		*Relative position*		*Area characteristics* [e]		
						to school A	*to school B*	*to school A*	*to school B*	*Resi-dential*	*Com-mercial*	*Indus-trial*
Transect_A	School A transect	Roadside	Urban	82	1.5	<0.5	-	N	-	√		
Transect_B	School B transect	Roadside	Urban	6	1.5	-	<0.5	-	SE	√	√	√
R1	Causeway Bay	Roadside	Urban	5	3	12.2	12.5	SE	S		√	
R2	Central	Roadside	Urban	5	4.5	10.2	13.1	SE	SW		√	
R3	Mong Kok	Roadside	Urban	7	3	8.1	8.6	SE	SW	√	√	
G1	Central/Western	General	Urban	67	16	9.1	13.4	SE	SW	√	√	
G2	Eastern	General	Urban	14	15	14.8	12	SE	S	√		
G3	Kwai Chung	General	Urban	7	13	3.2	8.9	E	SW	√	√	√
G4	Kwun Tong	General	Urban	10	25	13.9	8.8	SE	S	√	√	√
G5	Sha Tin	General	Urban	7	25	9.2	2.9	NE	SW	√		
G6	Sham Shui Po	General	Urban	5	17	6.9	8.4	SE	SW	√	√	
G7	Tai Po	General	Urban	7	25	12.7	8.1	NE	NW	√		
G8	Tsuen Wan	General	Urban	5	17	2.5	9.8	NE	SW	√	√	√
G9	Tung Chung	General	Urban	8	27.5	17.5	29.5	SW	SW	√		
G10	Yuen Long	General	Urban	7	25	12.7	20	NW	NW	√		
BG	Tap Mun	Background	Rural	16	11	29.9	18.1	NE	NE			

Note: [a] The elevation (Elev.) refers to the height above mean sea level.
[b] The selected classrooms were located on the 1st, 3rd, and 6th floors; the selected non-classrooms were located on the ground floor and the 7th floor.
[c] The air conditioner type at school A and school B are both standalone A/C unit.
[d] The sampling height (S.H.) refers to the height above ground.
[e] The area characteristics describe the land use property of site surroundings .

Table S2. Mean and standard deviation (std) of 1-hour average indoor and outdoor (transect) $PM_{2.5}$ concentrations, CO_2 concentration, temperature and humidity by school and season.

School	Season [a]	Location	$PM_{2.5}$ (μg/m^3)		CO_2 (ppm)		Temperature (∘C)		Relative humidity (%)		Humidity (g/m^3) [b]	
			Mean	std	Mean	std	Mean	std	Mean	std	Mean	std
A	Winter	Indoor	42	19	430	80	19.3	1.6	57	11	9.5	2.5
		Outdoor	43	20	380	30	19.9	3.6	61	15	10.4	2.8
	Summer	Indoor	6	2	920	500	27.7	2.9	61	9	16.9	5.2
		Outdoor	7	2	400	20	32.8	2.0	70	9	24.3	1.2
B	Winter	Indoor	60	38	400	50	20.5	1.3	51	12	9.1	2.5
		Outdoor	63	38	410	50	21.6	2.7	49	14	9.3	2.6
	Winter *	Indoor	49	15	390	50	20.5	1.3	51	13	9.1	2.6
		Outdoor	52	15	410	50	21.6	2.6	50	15	9.3	2.8
	Summer	Indoor	5	2	720	380	29.6	3.5	56	9	17.1	4.4
		Outdoor	7	2	490	140	31.8	4.2	66	15	21.9	3.4

Note:

[a] Values in "Winter*" exclude data on Jan 21th 2015, on which an episode of unusually high $PM_{2.5}$ concentrations was observed.

[b] Humidity is not directly measured but is calculated from temperature (T) and relative humidity (RH) which were measured using Q-Trak.

Table S3. Average of hourly $PM_{2.5}$ concentration measured at indoor classroom and non-classroom, and selected outdoor locations by school and season

			Indoor			Outdoor [b]														
Season	***School***	***Stats*** [a]	*Class-room*	*non-class-room*	*All*	*Tran sect*	*R1*	*R2*	*R3*	*G1*	*G2*	*G3*	*G4*	*G5*	*G6*	*G7*	*G8*	*G9*	*G10*	*BG*
A	*Winter*	N [c]	32	28	60	63	64	62	60	29	70	65	68	67	66	70	69	68	67	69
		Mean (μg/m³)	40	45	42	43	45	35	40	25	30	33	34	30	28	29	29	36	47	42
		Std (μg/m³)	22	14	19	20	14	14	13	13	15	12	16	14	11	13	13	19	17	17
	Summer	N [c]	40	23	63	69	66	68	54	66	68	70	68	41	59	66	70	66	68	65
		Mean (μg/m³)	6	4	6	7	22	11	15	11	7	15	14	9	12	9	8	7	12	8
		Std (μg/m³)	1	2	2	2	5	4	5	3	3	4	5	4	3	3	5	2	4	3
B	*Winter*	N [c]	37	28	65	65	64	70	64	70	66	67	70	63	61	65	67	70	70	67
		Mean (μg/m³)	63	56	60	63	67	51	53	56	45	48	55	48	39	47	43	45	60	59
		Std (μg/m³)	48	13	38	37	33	32	14	30	20	25	26	34	12	33	21	32	31	34
	Summer	N [c]	38	28	66	63	70	58	58	65	67	67	68	67	53	68	66	70	60	66
		Mean (μg/m³)	5	4	5	7	20	13	16	10	7	14	11	9	12	8	9	6	11	7
		Std (μg/m³)	2	1	2	2	7	5	5	3	4	4	5	5	3	3	5	3	4	4

Note:

[a] *N* = number of valid observations; Mean = hourly mean $PM_{2.5}$ concentrations (μg/m³); std = standard deviation in hourly $PM_{2.5}$ concentration (μg/m³).

[b] The full name and detail information for outdoor sites are given in Table S1.

[c] Some of the hourly $PM_{2.5}$ observations were missing due to the maintenance or malfunction of equipment.

Table S4. Spearman Correlation Coefficients for 1-hour average $PM_{2.5}$ concentrations between school indoor and selected outdoor locations

School	*Season*	*Statistic* [a]	***Outdoor*** [b]														
			Tran-sect	*R1*	*R2*	*R3*	*G1*	*G2*	*G3*	*G4*	*G5*	*G6*	*G7*	*G8*	*G9*	*G10*	*BG*
A	*Distance (km)*		<0.5	12.2	10.2	8.1	9.1	14.8	3.2	13.9	9.2	6.9	12.7	2.5	17.5	12.7	29.9
	Winter	***r***	**0.98**	**0.73**	**0.75**	**0.84**	**0.82**	**0.78**	**0.84**	**0.83**	**0.83**	**0.87**	**0.84**	**0.85**	**0.76**	**0.76**	**0.86**
		p-value	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*
		N	60	54	52	50	19	60	55	58	57	58	60	59	58	58	60
	Summer	***r***	**0.27**	-0.16	-0.12	0.16	-0.12	0.09	0.15	-0.15	-0.18	-0.23	-0.05	0.17	-0.20	**0.27**	0.25
		p-value	*0.0344*	*0.2291*	*0.3532*	*0.2855*	*0.3589*	*0.4666*	*0.2258*	*0.2437*	*0.2545*	*0.1009*	*0.7183*	*0.1945*	*0.1348*	*0.0354*	*0.0570*
		N	62	59	61	47	62	61	63	63	41	53	59	63	59	61	59
B	*Distance (km)*		<0.5	12.5	13.1	8.6	13.4	12	8.9	8.8	2.9	8.4	8.1	9.8	29.5	20	18.1
	Winter	***r***	**0.99**	**0.80**	**0.81**	**0.78**	**0.80**	**0.87**	**0.90**	**0.87**	**0.89**	**0.71**	**0.90**	**0.75**	**0.70**	**0.67**	**0.83**
		p-value	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*
		N	60	60	65	60	65	61	62	65	58	57	61	62	65	65	62
	Summer	***r***	**0.35**	-0.14	0.23	-0.17	**0.25**	**0.26**	**0.49**	**0.41**	**0.55**	0.02	**0.53**	**0.45**	**0.45**	**0.31**	**0.38**
		p-value	*0.0058*	*0.2596*	*0.1012*	*0.2078*	*0.0458*	*0.0380*	*<.0001*	*0.0008*	*<.0001*	*0.8811*	*<.0001*	*0.0002*	*0.0001*	*0.0186*	*0.0019*
		N	59	66	54	56	62	64	63	64	63	49	64	62	66	56	63

Note: **Bold** figures are correlation coefficients with *p-value* < 0.05.

[a] *r* = Spearman Correlation Coefficients; *p-value* = Probability > |r| under H0: Rho=0; *N* = Number of Observations.

[b] The full name and detail information for outdoor sites are given in Table S1.

Table S5. Spearman Correlation Coefficients for 1-hour average $PM_{2.5}$ concentrations among outdoor locations by season.

Season	Location	Outdoor fixed site monitor (FSM) [a]													
		R1	*R2*	*R3*	*G1*	*G2*	*G3*	*G4*	*G5*	*G6*	*G7*	*G8*	*G9*	*G10*	*BG*
Winter	*Transect_ A*	**0.72**	**0.75**	**0.84**	**0.78**	**0.79**	**0.82**	**0.80**	**0.82**	**0.87**	**0.83**	**0.80**	**0.73**	**0.69**	**0.85**
	Transect_ B	**0.77**	**0.75**	**0.73**	**0.74**	**0.84**	**0.89**	**0.83**	**0.87**	**0.67**	**0.89**	**0.69**	**0.64**	**0.66**	**0.83**
	R1	**1.00**	**0.93**	**0.89**	**0.94**	**0.87**	**0.87**	**0.91**	**0.86**	**0.77**	**0.82**	**0.73**	**0.61**	**0.57**	**0.70**
	R2		**1.00**	**0.89**	**0.95**	**0.87**	**0.87**	**0.89**	**0.87**	**0.79**	**0.85**	**0.74**	**0.71**	**0.68**	**0.78**
	R3			**1.00**	**0.93**	**0.88**	**0.85**	**0.93**	**0.85**	**0.89**	**0.85**	**0.81**	**0.64**	**0.62**	**0.77**
	G1				**1.00**	**0.91**	**0.91**	**0.95**	**0.95**	**0.91**	**0.92**	**0.88**	**0.71**	**0.71**	**0.84**
	G2					**1.00**	**0.88**	**0.93**	**0.88**	**0.78**	**0.89**	**0.69**	**0.64**	**0.65**	**0.81**
	G3						**1.00**	**0.89**	**0.85**	**0.77**	**0.87**	**0.75**	**0.71**	**0.68**	**0.81**
	G4							**1.00**	**0.91**	**0.84**	**0.89**	**0.78**	**0.66**	**0.68**	**0.81**
	G5								**1.00**	**0.86**	**0.94**	**0.80**	**0.70**	**0.74**	**0.85**
	G6									**1.00**	**0.83**	**0.86**	**0.60**	**0.62**	**0.75**
	G7										**1.00**	**0.77**	**0.74**	**0.79**	**0.90**
	G8											**1.00**	**0.75**	**0.71**	**0.78**
	G9												**1.00**	**0.84**	**0.85**
	G10													**1.00**	**0.88**
	BG														**1.00**
Summer	*Transect_ A*	1.00	.	**0.35**	0.20	**0.29**	0.21	**0.33**	**0.51**	0.18	**0.43**	0.05	**0.43**	0.11	**0.26**
	Transect_ B		1.00	0.06	**0.38**	0.02	**0.35**	0.21	0.18	0.04	**0.30**	0.22	**0.28**	-0.01	0.11
	R1			1.00	**0.27**	**0.22**	**0.30**	**0.32**	-0.01	0.11	0.09	0.07	**0.20**	0.01	0.14
	R2				1.00	0.00	**0.46**	**0.24**	0.03	**0.19**	**0.25**	0.10	**0.28**	0.13	0.17
	R3					1.00	**0.22**	-0.07	0.06	-0.08	0.07	-0.13	-0.05	-0.07	-0.17
	G1						1.00	0.17	**0.23**	**0.32**	**0.35**	0.03	**0.36**	0.02	0.17
	G2							1.00	0.06	**0.19**	0.11	0.04	**0.35**	0.09	**0.17**
	G3								1.00	0.13	**0.25**	0.10	**0.33**	0.14	0.15
	G4									1.00	0.18	-0.15	**0.38**	0.12	**0.25**
	G5										1.00	0.12	**0.26**	**0.26**	0.17
	G6											1.00	0.11	0.14	0.16
	G7												1.00	**0.22**	**0.26**
	G8													1.00	0.07
	G9														1.00
	G10														
	BG														

Note: **Bold** figures are correlation coefficients with *p-value* < 0.05.

[a] The full name and detail information for outdoor sites are given in Table S1.

Table S6 Infiltration factors estimated from LRMs with and without autocorrelation correction

Season	School	N	Without autocorrelation correction			With autocorrelation correction			
			IF [a] (Mean±SE[e])	C_{NA} [b] (Mean±SE)	R^2 [d]	IF [a] (Mean±SE)	C_{NA} [b] (Mean±SE)	ρ [c] (Mean±SE)	R^2 [d]
Winter	A	60	0.91±0.02	2.5±0.9	0.98	0.88±0.03	3.4±1.4	0.7±0.1	0.98
	B	60	1.00±0.02	-2.7±1.2	0.99	1.00±0.02	-2.8±1.4	0.2±0.1	0.99
	B[f]	60	0.97±0.02	0	0.99				
Summer	A	62	0.27±0.13	3.7±0.9	0.07	0.35±0.09	3.3±0.8	0.8±0.1	0.65
	B	59	0.25±0.09	2.9±0.7	0.13	0.22±0.06	2.9±0.6	0.6±0.2	0.49

Notes:

[a] IF is infiltration factor of $PM_{2.5}$ concentrations from outdoor transect to school indoor, derived based on Eq. (1).

[b] C_{NA} is non-ambient $PM_{2.5}$ concentrations at school indoor, derived from Eq. (1), the negative values for school B in winter are not statistically significant than zero after autocorrelation correction.

[c] ρ is autocorrelation parameter derived based on Eq. (2).

[d] R^2 is coefficient of determination of linear regression models (LRMs) with and without autocorrelation.

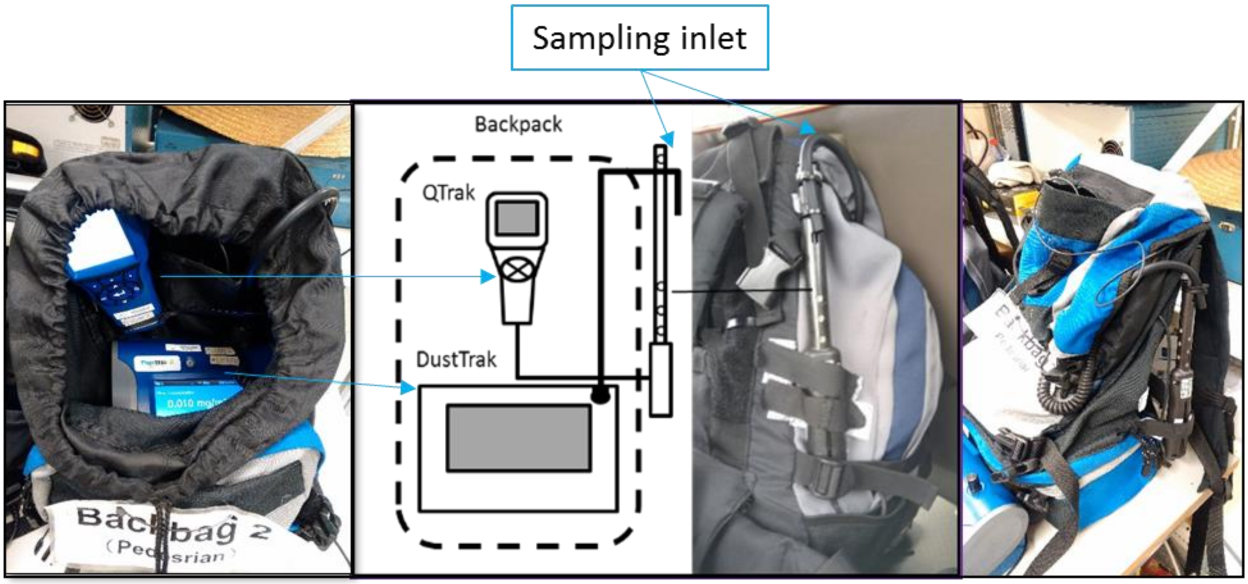
[e] SE refers to standard error.

[f] This serves as a sensitivity case for school B in winter by setting C_{NA} to be zero, which was originally estimated to be negative. The IF was recalibrated based on zero intercept (C_{NA} = 0).

Table S7 Proximity factors estimated from LRM between selected schools and FSMs by season

School	FSM	Winter				Summer			
		N	PF [a] (Mean±SE[d])	C_{UE} [b] (Mean±SE)	R^2 [c]	N	PF [a] (Mean±SE)	C_{UE} [b] (Mean±SE)	R^2 [c]
A	R1	54	0.89±0.17	1.6±8.3	0.32	59	0.07±0.04	5.3±0.8	0.05
	R2	52	0.94±0.17	8.0±6.6	0.36	61	0.09±0.05	5.7±0.5	0.05
	R3	51	1.11±0.15	-1.8±6.8	0.50	47	0.10±0.05	5.4±0.8	0.08
	G1	18	1.31±0.14	-8.0±4.0	0.83	63	0.10±0.08	5.5±0.9	0.02
	G2	58	0.86±0.15	15.3±5.2	0.36	61	0.22±0.08	5.1±0.6	0.11
	G3	56	1.03±0.15	8.5±5.6	0.45	63	0.13±0.06	4.8±0.9	0.07
	G4	59	0.84±0.13	10.7±5.2	0.42	63	0.11±0.04	5.3±0.6	0.10
	G5	57	1.15±0.12	3.8±4.4	0.60	42	0.17±0.06	5.4±0.6	0.18
	G6	59	1.65±0.13	-6.3±4.2	0.72	53	0.01±0.07	6.8±0.8	0.00
	G7	60	1.18±0.13	4.6±4.5	0.57	60	0.21±0.08	4.8±0.7	0.11
	G8	59	1.36±0.09	-0.2±3.1	0.79	63	0.02±0.04	6.9±0.4	0.00
	G9	58	0.94±0.09	7.1±3.6	0.66	59	0.16±0.08	5.8±0.6	0.05
	G10	58	0.83±0.13	0.5±6.7	0.42	61	0.21±0.06	4.3±0.7	0.18
	BG	60	0.97±0.09	-2.6±4.2	0.68	59	0.26±0.07	4.6±0.6	0.20
B	R1	60	1.20±0.07	-15.9±5.3	0.83	66	0.03±0.04	6.7±0.8	0.01
	R2	65	1.19±0.06	1.1±3.4	0.87	54	0.21±0.05	4.5±0.8	0.24
	R3	60	0.94±0.10	1.8±5.6	0.61	59	0.01±0.06	7.4±1.0	0.00
	G1	65	1.27±0.06	-9.2±3.9	0.87	62	0.14±0.09	5.9±1.0	0.04
	G2	61	1.86±0.12	-23.0±6.2	0.79	64	0.12±0.07	6.5±0.6	0.04
	G3	62	1.48±0.07	-8.0±3.7	0.89	64	0.06±0.06	6.7±0.9	0.01
	G4	65	1.47±0.07	-19.7±4.0	0.89	63	0.05±0.06	7.0±0.6	0.01
	G5	58	1.20±0.05	1.8±2.9	0.91	63	0.17±0.06	6.0±0.6	0.13
	G6	57	1.22±0.11	3.7±4.6	0.69	51	0.06±0.09	6.5±1.1	0.01
	G7	61	1.17±0.04	5.1±2.4	0.93	64	0.29±0.08	5.2±0.7	0.18
	G8	62	1.57±0.08	-7.5±3.9	0.85	62	0.09±0.06	6.6±0.6	0.04
	G9	65	1.08±0.10	15.4±5.4	0.63	66	0.06±0.10	7.0±0.7	0.01
	G10	65	1.10±0.08	-4.0±5.7	0.73	56	0.19±0.06	5.2±0.8	0.15
	BG	62	1.21±0.08	-8.2±4.9	0.81	63	0.24±0.07	5.8±0.5	0.15

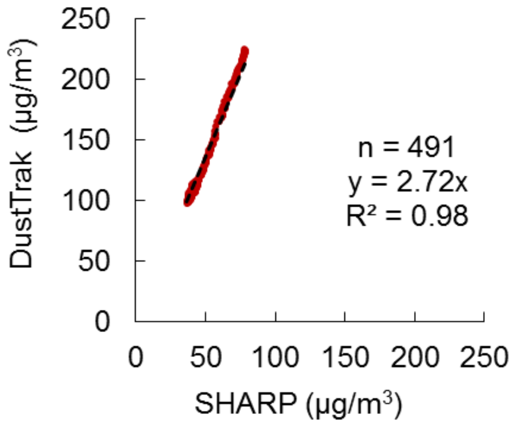
Note:
[a] PF refers to proximity factor derived based on linear regression of $PM_{2.5}$ concentrations between transects in close proximity to the selected school and the FSMs.
[b] C_{UE} refers to unexplained concentrations at a school that is not explained by the variability in the concentration at the selected FSM; negative values suggest that a portion of the concentration measured at FSM is not useful in interpreting the variations in school concentrations.
[c] R^2 is coefficient of determination of linear regression models (LRMs).
[d] SE refers to standard error.



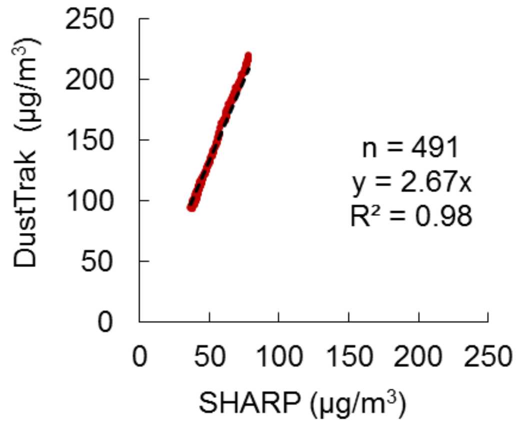
(a) Design of sampling backpack

(b) Cross-calibration (d) Indoor sampling (e) Outdoor sampling

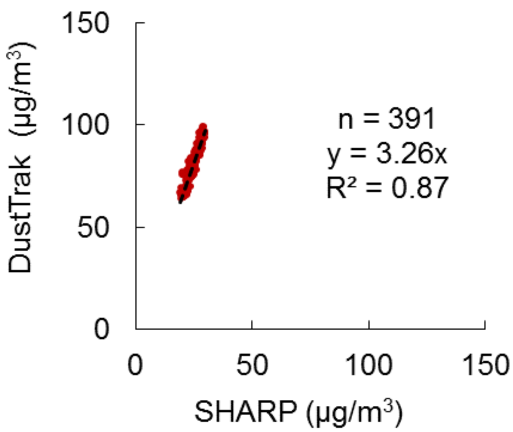
Figure S1. The (a) design of sampling backpack, (b) cross-calibration during trip to school, (c) sampling set up at school indoor and (d) outdoor transect



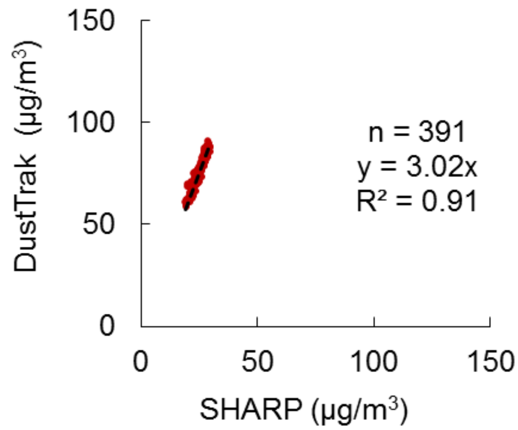
(a) DustTrak 1, winter



(b) DustTrak 2, winter

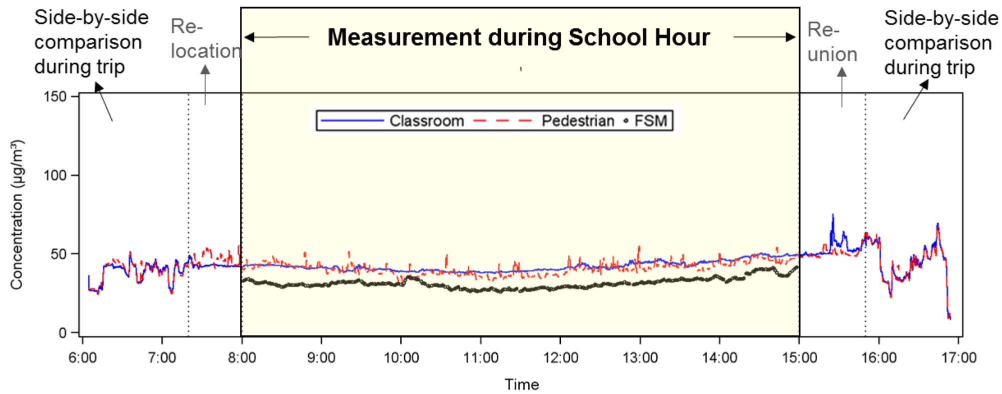


(c) DustTrak 1, summer

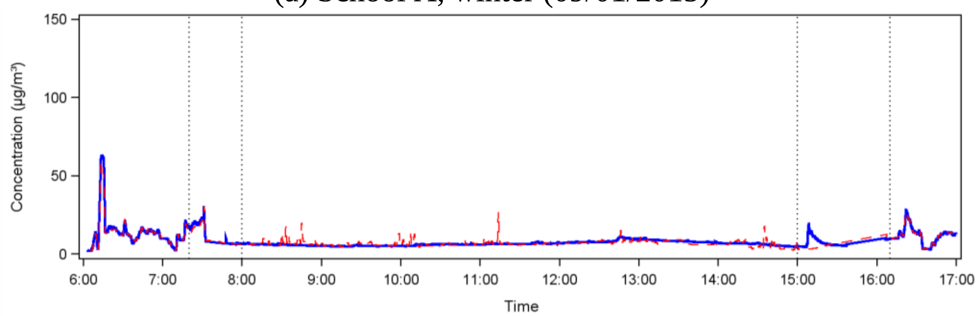


(d) DustTrak 2, summer

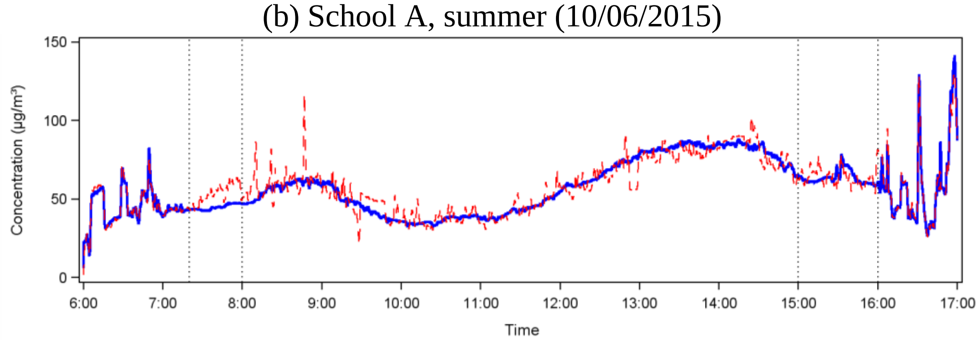
Figure S2. Calibration of 1-minute average DustTrak 1 (used for indoor) and DustTrak 2 (used for outdoor transect) against SHARP at HKUST Supersite for winter and summer season



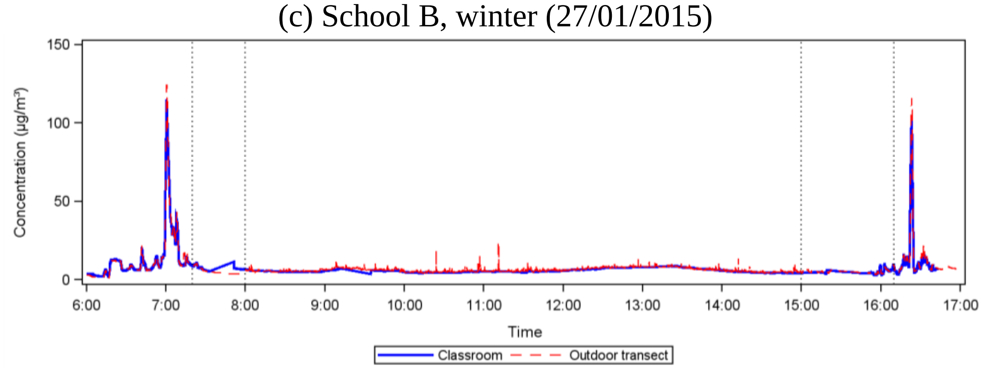
(a) School A, winter (09/01/2015)



(b) School A, summer (10/06/2015)



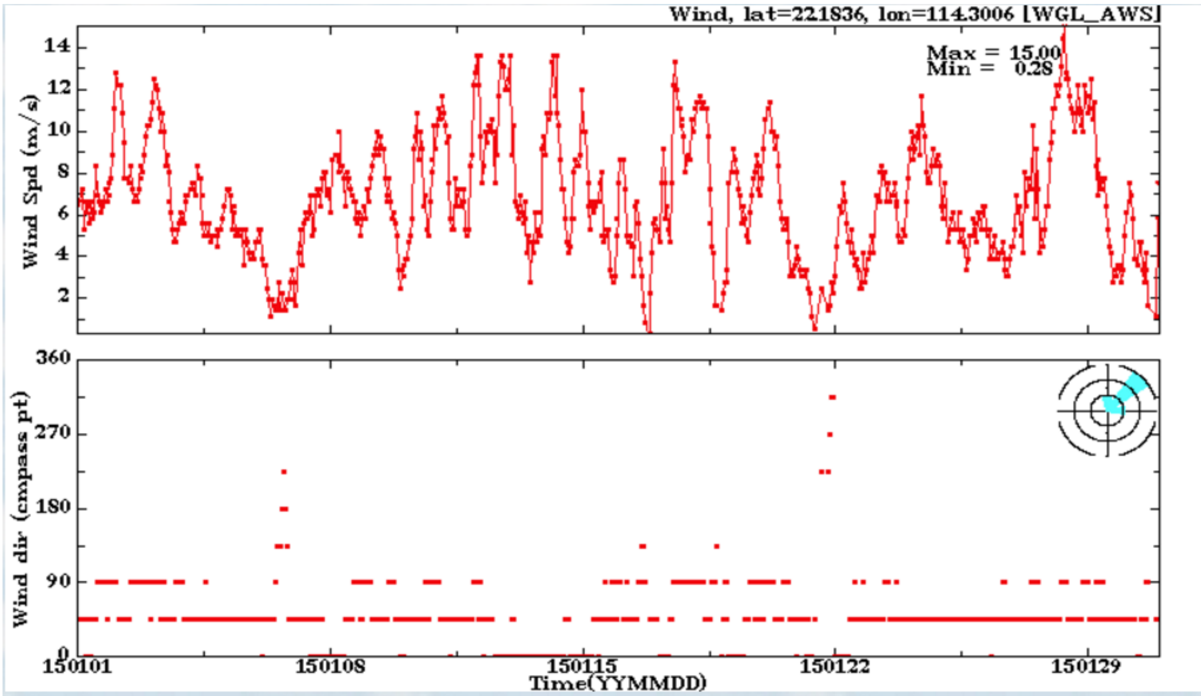
(c) School B, winter (27/01/2015)



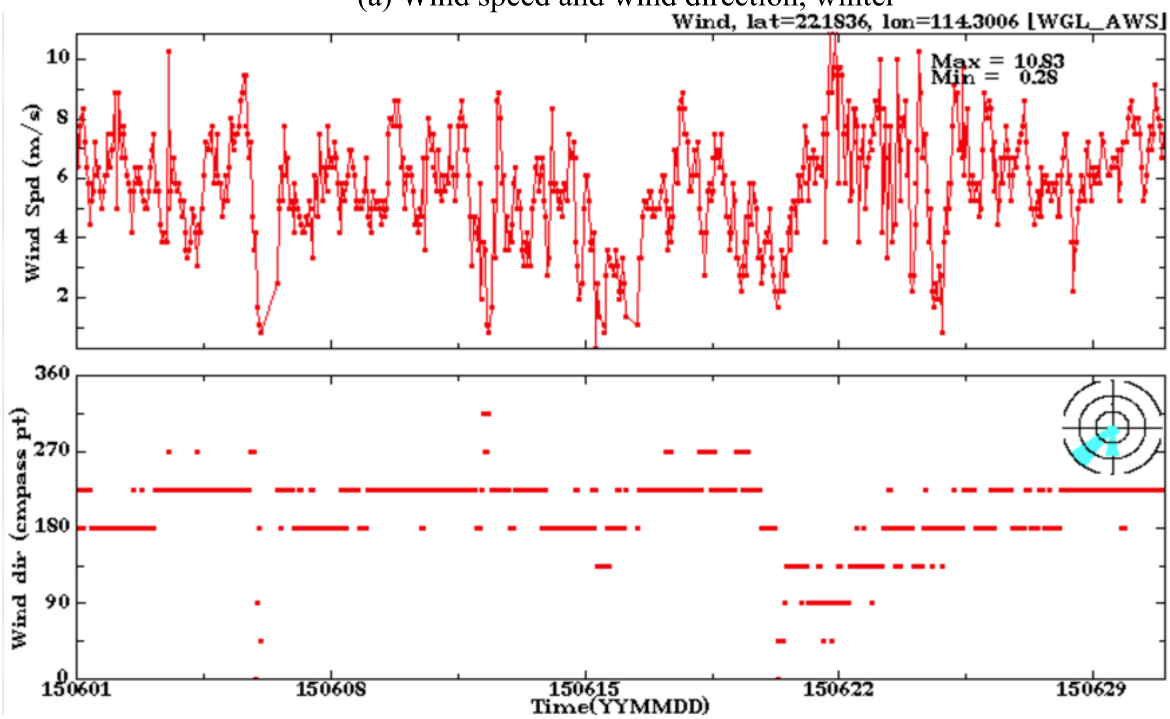
(d) School B, summer (16/06/2015)

Note: [a] the DustTraks were calibrated against the reference method (SHARP) before the whole measurement. Their performance was cross-checked twice every day during the trips between lab and measured schools.
[b] Re-location: the two sampling backpacks diverged to different sampling locations.
[c] Re-union: the two sampling backpacks met together after sampling.

Figure S3. Examples of time plots of $PM_{2.5}$ concentration measured in classroom and outdoor transect at two schools during winter and summer.



(a) Wind speed and wind direction, winter



(b) Wind speed and wind direction, summer

Figure S4. Wind rose maps from a background meteorological station (Waglan island) in Hong Kong during measurement at schools for (a) winter and (b) summer in 2015

References

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