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Contributions of vehicular carbonaceous aerosols to $PM_{2.5}$ in a roadside environment in Hong Kong

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Supplementary material for

Contributions of vehicular carbonaceous aerosols to $PM_{2.5}$ in a roadside environment in Hong Kong

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This supplementary document contains one appendix, three tables and five figures.

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Appendix 1. Equations to calculate $\%\overline{RB}$ and $\%\overline{RSD}$

$$\overline{C_i} = \frac{X_i + Y_i}{2} \quad (1)$$

$$\%RB_i = \frac{(Y_i - X_i) \times 100\%}{\overline{C_i}} \quad (2)$$

$$\%\overline{RB} = \frac{1}{n}\sum_{i=1}^{n} \frac{(Y_i - X_i) \times 100\%}{\overline{C_i}} \quad (3)$$

$$\%RSD_i = \frac{|\%RB_i|}{\sqrt{2}} \quad (4)$$

$$\%\overline{RSD} = \sqrt{\frac{1}{n}\sum_{i=1}^{n} \%RSD_i^2} \quad (5)$$

where the *x* and *y* are the comparative concentration values from different datasets and *n* is the total number of samples.

Table S1. Temperature program used for RT-OCEC analysis.

Gas	Temperature, °C	Hold Time, s
He	room temp.	10
He	600	95
He	840	90
He	no heat	30
He/O_2	550	35
He/O_2	650	45
He/O_2	870	110
CalGas	no heat	120

Table S2. Sampling duration, data capture rates and valid rates for individual month during May 2011–April 2012 at MK AQMS.

Month	No. of hours	No. of samples collected	Data capture rate, %	Data valid rate, %
May 2011	744	735	98.8	90.5
Jun. 2011	720	461	64.0	97.0
Jul. 2011	744	265	35.6	86.8
Aug. 2011	744	518	69.6	91.7
Sep. 2011	720	713	99.0	98.9
Oct. 2011	744	738	99.2	98.1
Nov. 2011	720	713	99.0	99.3
Dec. 2011	744	727	97.7	97.2
Jan. 2012	744	738	99.2	99.2
Feb. 2012	696	688	98.9	99.3
Mar. 2012	744	735	98.8	90.1
Apr. 2012	720	706	98.1	98.0

Table S3. The 1-hr average OC and EC concentrations in individual sampling months and the monthly average OC and EC contributions to the $PM_{2.5}$ mass at MK AQMS during the study period from May 2011 to April 2012.

Month	OC, μgC/m^3	EC, μgC/m^3	OC/$PM_{2.5}$	EC/$PM_{2.5}$
May 2011	7.1 (2.2–24.8)	4.9 (0.5–15.3)	20.8%	14.2%
Jun. 2011	3.8 (0.7–13.2)	3.8 (0.3–13.8)	17.7%	17.7%
Jul. 2011	3.5 (0.6–10.0)	4.0 (0.3–9.8)	15.5%	17.6%
Aug. 2011	4.3 (0.6–14.3)	4.1 (0.2–12.0)	15.8%	15.3%
Sep. 2011	6.2 (1.2–15.2)	4.4 (0.3–11.7)	16.8%	11.8%
Oct. 2011	7.8 (1.7–16.2)	4.4 (0.5–12.8)	19.8%	11.3%
Nov. 2011	8.0 (0.9–35.2)	4.6 (0.2–14.1)	23.2%	13.5%
Dec. 2011	13.6 (4.3–30.5)	4.5 (0.2–16.6)	27.5%	9.2%
Jan. 2012	10.8 (3.2–23.6)	4.2 (0.2–10.2)	29.3%	11.3%
Feb. 2012	9.0 (2.0–23.9)	4.1 (0.2–20.4)	29.3%	13.3%
Mar. 2012	7.3 (1.9–16.1)	4.3 (0.2–12.7)	21.2%	12.4%
Apr. 2012	6.7 (1.5–24.3)	4.6 (0.4–16.2)	19.4%	13.3%

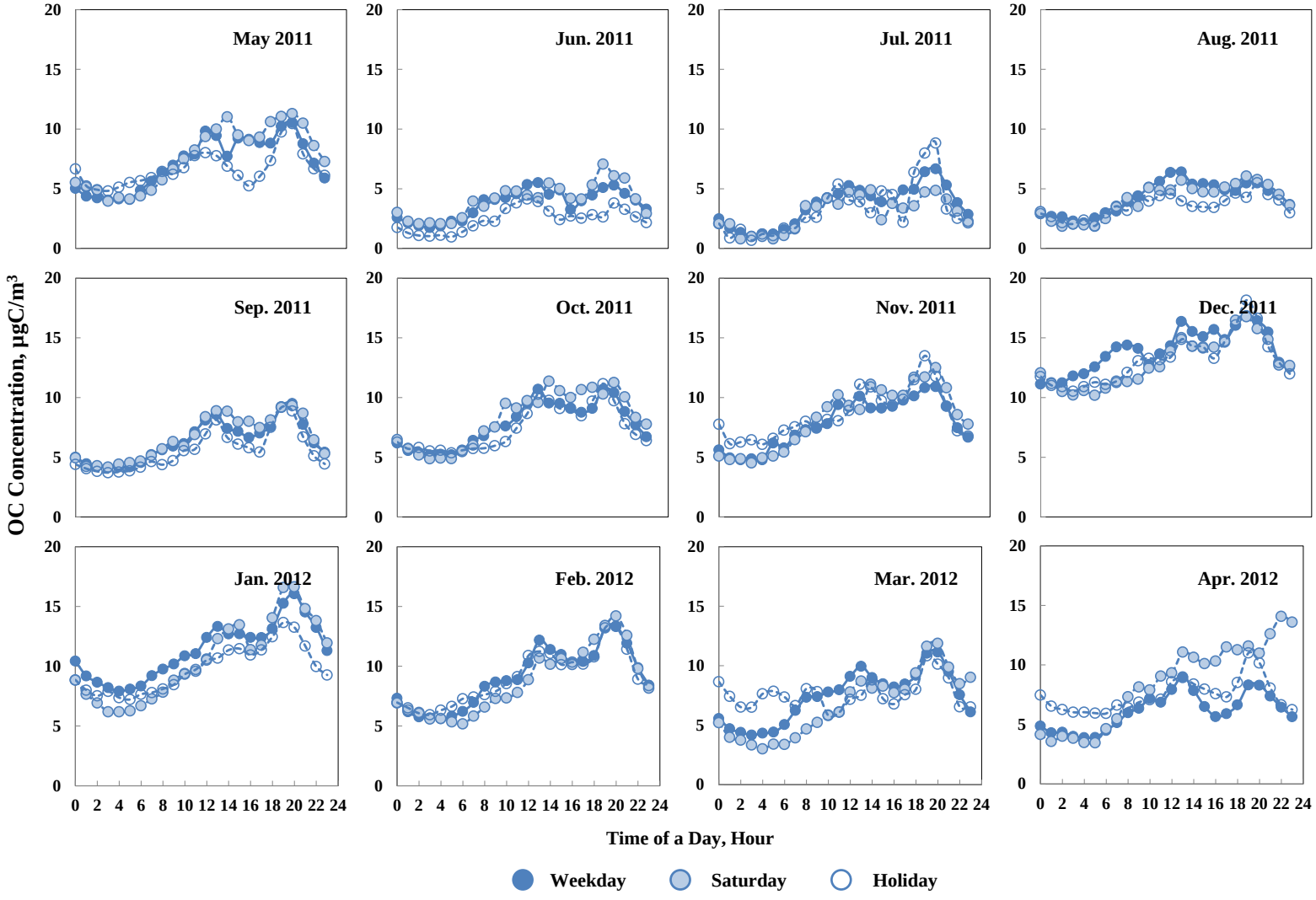

Figure S1. Diurnal variations of OC (µgC/m^3) for weekdays, Saturdays and holidays at MK AQMS during the study period.

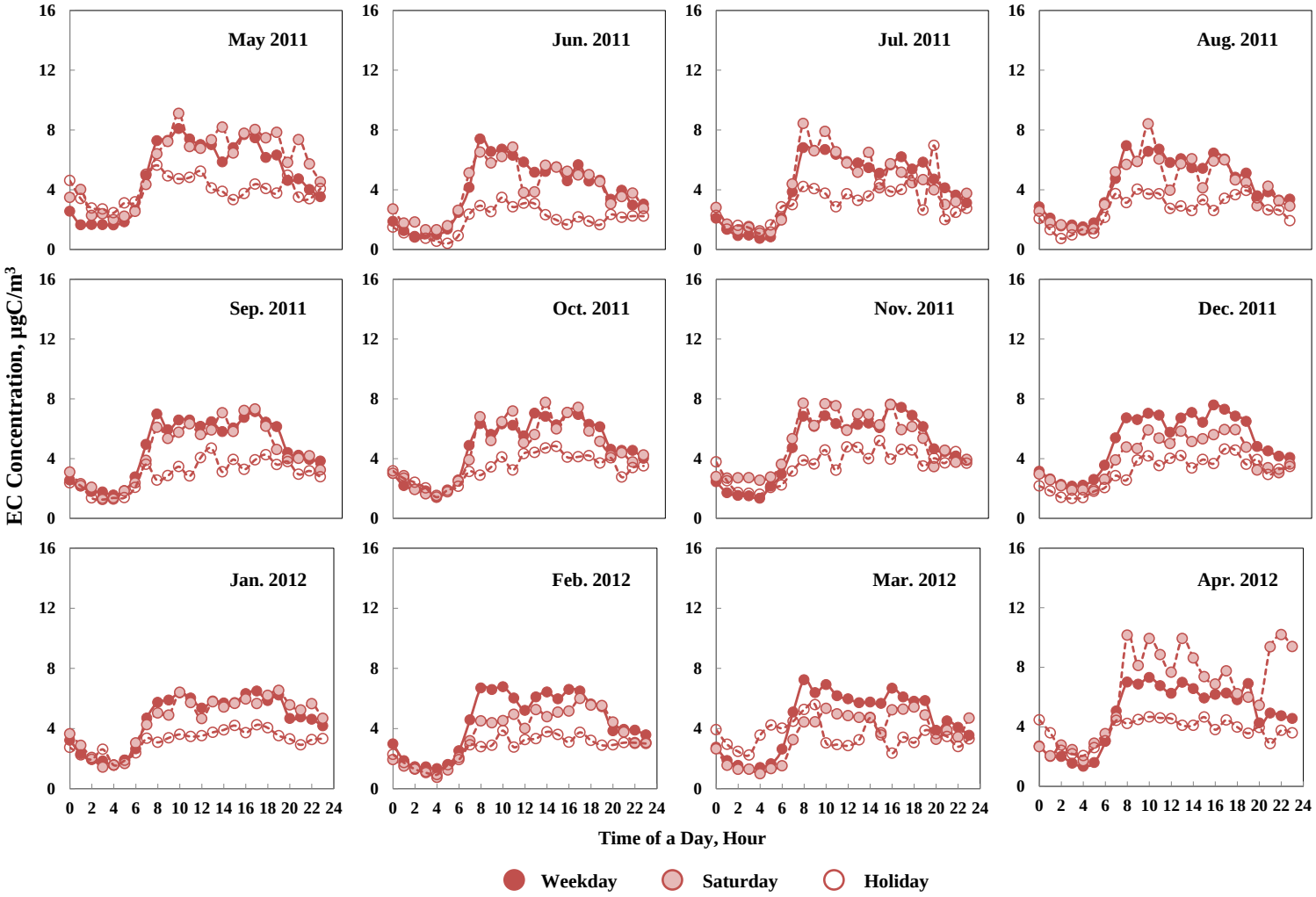

Figure S2. Diurnal variations of EC (μgC/m^3) for weekdays, Saturdays and holidays at MK AQMS during the study period.

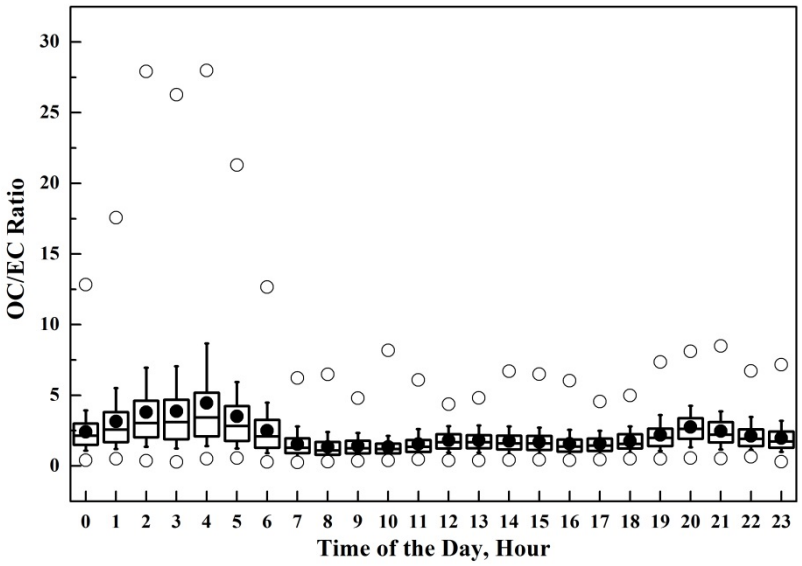

Figure S3. The diurnal variation of averaged OC/EC ratios. (The box length: the 25th and the 75th percentiles; the whiskers: the 10th and the 90th percentiles; the dot in the box: the average; the line in the box: the median; the circles: the minimum and maximum values).

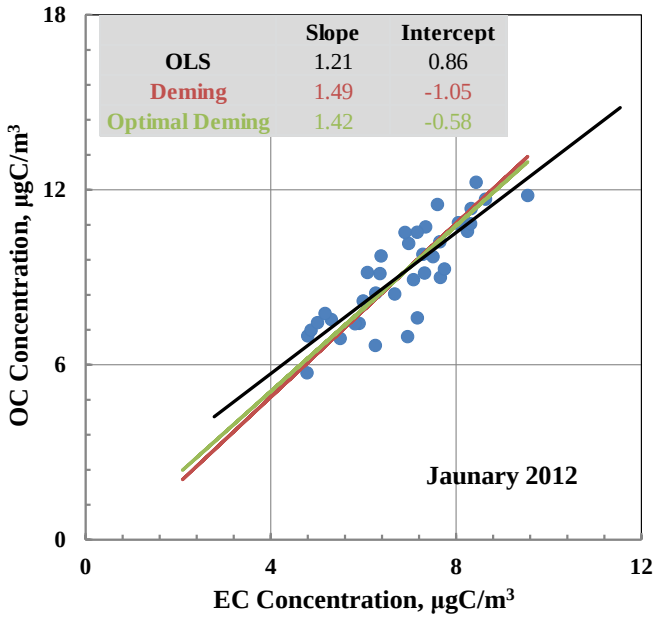

Figure S4. Regression lines of 5% lowest (OC/EC) data (n = 38) for January 2012 by ordinary least squares (OLS), default Deming, and optimal Deming regression.

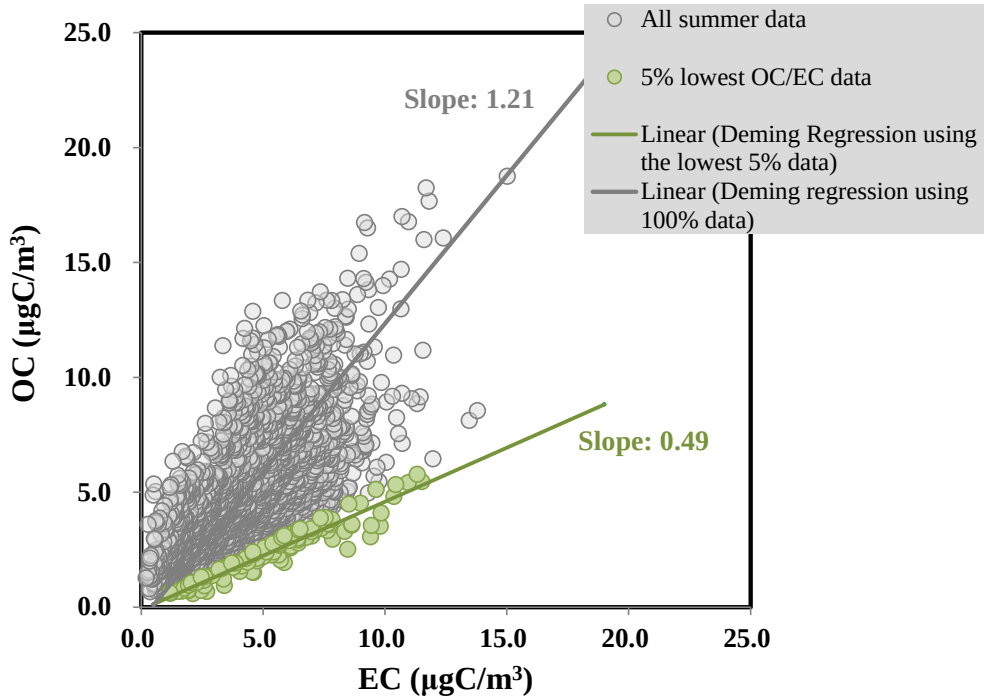

Figure S5. Deming regression results of the lowest 5% summer data by OC-to-EC ratio and all summer data.