Size–Segregated Particulate Mass and Carbonaceous Components in Roadside and Riverside Environments

Supplementary Figure

Figure S1. Sampling site in roadside, riverside, and peatland area in Jambi city, Indonesia.

Figure S2. Maps of hotspot and air mass trajectories during sampling time in Jambi city, Indonesia (**a**) roadside (August 2nd–9th) and (**b**) riverside (August 7th–13th).

Supplementary Table

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Figure S1. Sampling site in roadside, riverside, and peatland area in Jambi city, Indonesia.
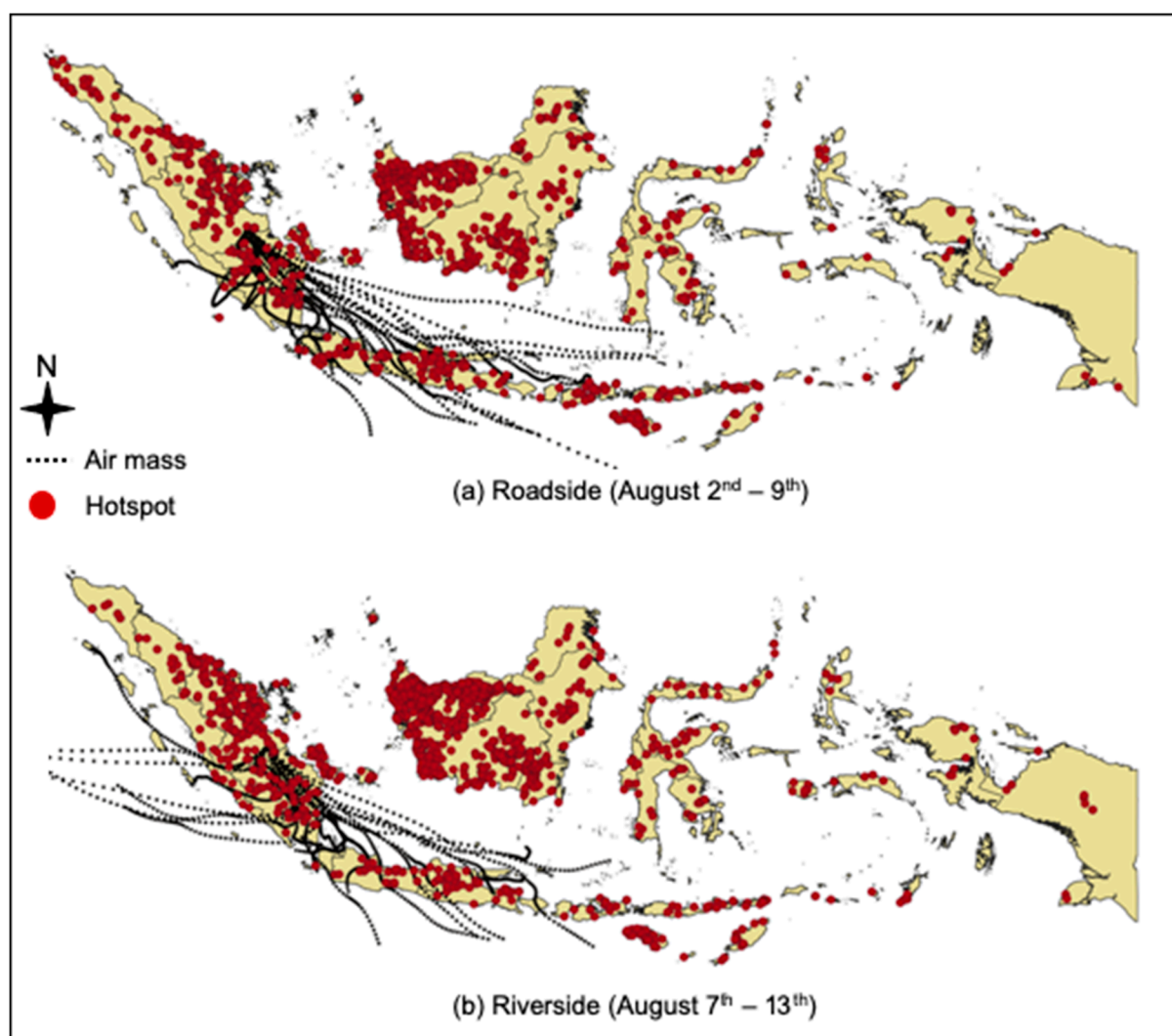
Figure S2. Maps of hotspot and air mass trajectories during sampling time in Jambi city, Indonesia (**a**) roadside (August 2nd–9th) and (**b**) riverside (August 7th–13th).

Table S1. Sampling site, time, and its meteorological condition in Jambi city.

Location	Term	Date (August 2019)	Time (hours)	Total (n)	Temp (°C)	Humidity (%)	Pressure (kPa)	Wind Speed (m/s)
Roadside	Diurnal	2nd–8th	11–12	7	32.4 ±0.7	48.2 ±3.3	100.9 ±0.2	1 ± 0.2
	Nocturnal	2nd–9th	11–12	7	26.9 ±0.3	61.4 ±11.4	100.9 ±0.2	1 ± 0.2
Riverside	Diurnal	7th–12th	11–12	6	31.9 ±0.6	48.2 ±3.5	100.9 ±0.2	1 ± 0.5
	Nocturnal	7th–13th	11–12	6	25.4 ±0.3	61.4 ±10.6	100.9 ±0.2	1 ± 0.4

Table S2. Daily total number of vehicles in roadside during day and nighttime and its ratio in Jambi city.

RS	Diurnal (D)			Nocturnal (N)			D/N		
	Motor Cycle	Light Vehicle (LV)	Heavy Vehicle (HV)	Motor Cycle	Light Vehicle (LV)	Heavy Vehicle (HV)	Motor Cycle	Light Vehicle (LV)	Heavy Vehicle (HV)
n1	30602	15022	625	13108	6151	591	2.33	2.44	1.06
n2	24398	16533	741	17195	7079	378	1.42	2.34	1.96
n3	24034	14678	258	11036	5907	418	2.18	2.48	0.62
n4	29592	15081	758	11432	5402	620	2.59	2.79	1.22
n5	30857	14047	653	13734	5797	397	2.25	2.42	1.64
n6	28810	13818	626	14163	5414	511	2.03	2.55	1.23
n7	23520	13621	501	14358	6056	440	1.64	2.25	1.14
Ave	27402	14686	595	13575	5972	479	2.06	2.47	1.27

Table S3. The comparison of $PM_{0.1}$ in Jambi city and other cities in Indonesia and South East Asian (SEA) countries.

Location	Site Description	Concentration (μg/m³)	Reference
North Sumatera, Indonesia	Urban traffic–day	15.6 ± 6.1	Putri et al., 2021
	Urban traffic–night	10.7 ± 2.0	
	Industry area	16.8 ± 4.0	
	School environment	15.9 ± 1.6	
	Rural–volcano	7.10 ± 2.5	
Bangkok, Thailand	Urban–traffic	7.7	Zhao et al., 2016
Hat Yai, Thailand	Mixed	10.9	
Hanoi, Vietnam	Urban–traffic	6.06–11.9	Thuy et al., 2018
Jambi, Indonesia	Urban traffic–day	14.0 ± 1.6	This study
	Urban traffic–night	24.7 ± 2.9	
	Mixed, riverside–day	10.6 ± 3.1	
	Mixed, riverside–night	15.6 ± 3.8	

Table S4. Pearson correlation between the number of each type of vehicles and particle mass concentration (PMC) of each size range and PM category.

Vehicles/PMC	Durnal				Nocturnal			
	MC	LV	HV	TV	MC	LV	HV	TV
<0.1	−0.31	0.35	−0.42	−0.21	0.10	0.34	−−0.09	0.16
0.1–0.5	−0.14	0.59	−0.36	0.02	−0.05	0.34	0.33	0.05
0.5−1	0.09	0.28	0.45	0.19	−0.53	−0.28	0.04	−0.51
1–2.5	−0.17	**0.89**	0.25	0.11	0.14	0.48	−0.48	0.21
2.5–10	0.19	0.45	0.28	0.33	−0.09	0.21	0.29	−0.01
>10	0.48	−0.41	0.03	0.34	0.65	0.37	−0.67	0.61
$PM_{0.5}$	−0.24	**0.50**	−0.42	−0.11	0.02	0.36	0.14	0.11
PM_1	−0.14	**0.65**	−0.03	0.05	−0.19	0.15	0.12	−0.12
$PM_{2.5}$	−0.16	**0.80**	0.09	0.08	−0.05	0.31	−0.14	0.02
PM_{10}	0.00	**0.70**	0.19	0.21	−0.07	0.35	−0.08	0.02
TSP	0.07	**0.62**	0.19	0.26	0.07	0.41	−0.22	0.14

Description:
MC   : motorcycles
LV   : light vehicles
HV   : heavy vehicles
TV   : total vehicles (MC+LV+HV)

Table S5. Pearson correlation between types of vehicles, mass of PMs, and their carbonaceous component at diurnal and nocturnal.

Parameters	Diurnal				Nocturnal			
	<0.1 μm							
	MC	**LV**	**HV**	**TV**	**MC**	**LV**	**HV**	**TV**
OC	−0.56	−0.41	−0.28	−0.68	−0.18	0.07	−0.55	−0.16
EC	0.47	0.24	**0.82**	**0.57**	−0.17	−0.24	−0.12	−0.21
OC/EC	−0.70	−0.38	−0.81	−0.83	−0.06	0.40	−0.74	0.01
soot−EC	−0.06	−0.21	**0.52**	−0.09	−0.46	−0.41	−0.34	−0.49
soot−EC/TC	0.35	0.03	**0.70**	0.38	−0.43	−0.78	0.47	−0.53
soot−EC/PMC	0.14	−0.34	**0.53**	0.07	−0.54	−0.60	−0.24	−0.61
Parameters	**0.5−1 μm**							
	MC	**LV**	**HV**	**TV**	**MC**	**LV**	**HV**	**TV**
OC	0.08	−0.37	0.15	−0.02	−0.24	−0.04	−0.31	−0.22
EC	0.35	−0.32	0.17	0.25	−0.52	−0.49	0.22	−0.54
OC/EC	−0.48	0.18	−0.07	−0.42	0.10	0.13	−0.35	0.10
soot−EC	0.23	−0.40	0.19	0.12	−0.30	−0.34	−0.18	−0.34
soot−EC/TC	0.13	−0.41	0.23	0.02	0.09	−0.31	0.22	0.02
soot−EC/PMC	0.21	−0.44	0.08	0.08	−0.11	−0.28	−0.19	−0.17
Parameters	**1−2.5 μm**							
	MC	**LV**	**HV**	**TV**	**MC**	**LV**	**HV**	**TV**
OC	−0.40	−0.38	−0.16	−0.51	−0.51	−0.49	0.09	−0.54
EC	−0.44	−0.58	−0.22	−0.61	−0.51	−0.23	0.83	−0.45
OC/EC	0.25	0.48	0.19	0.39	−0.05	−0.21	−0.41	−0.10
soot−EC	−0.45	−0.50	−0.16	−0.59	−0.56	−0.56	**0.60**	−0.57
soot−EC/TC	−0.23	−0.53	0.11	−0.37	0.03	−0.22	**0.61**	0.00
soot−EC/PMC	−0.43	−0.55	−0.18	−0.59	−0.50	−0.56	**0.66**	−0.52
Parameters	**2.5−10 μm**							
	MC	**LV**	**HV**	**TV**	**MC**	**LV**	**HV**	**TV**
OC	0.43	0.05	0.14	0.44	−0.66	−0.09	−0.13	−0.58
EC	0.23	0.48	0.28	0.38	−0.54	0.04	−0.11	−0.45
OC/EC	0.18	−0.25	−0.03	0.10	−0.46	−0.42	0.19	−0.47
soot−EC	0.39	−0.31	0.35	0.30	−0.66	−0.09	−0.06	−0.58
soot−EC/TC	−0.24	−0.63	−0.02	−0.42	−0.26	−0.27	0.62	−0.26
soot−EC/PMC	0.12	−0.61	0.00	−0.07	−0.65	−0.08	−0.08	−0.57
Parameters	**>10 μm**							
	MC	**LV**	**HV**	**TV**	**MC**	**LV**	**HV**	**TV**
OC	0.33	0.16	0.43	0.39	0.21	**0.74**	−0.24	0.34
EC	0.33	0.17	0.40	0.39	0.34	**0.78**	−0.54	0.45
OC/EC	0.09	−0.19	0.48	0.06	−0.47	−0.38	0.73	−0.46
soot−EC	0.31	0.15	0.40	0.36	0.30	0.76	−0.44	0.41
soot−EC/TC	0.05	−0.32	−0.02	−0.04	0.08	−0.18	−0.22	0.02
soot−EC/PMC	0.30	0.16	0.40	0.36	0.10	0.65	−0.32	0.22

Description:
MC   : motorcycles
LV   : light vehicles
HV   : heavy vehicles
TV   : total vehicles (MC+LV+HV)
PMC   : mass concentration
N/A   : not analyses

Table S6. Pearson correlation between the daily number of hotspots in southern part of Sumatera Island with daily mass of PMs, and their carbonaceous component at RS and RV sites.

Particle size	Location	
<0.1	**RS**	**RV**
PMC	0.66	−0.46
OC	−0.12	−0.28
EC	0.32	−0.11
OC/EC	−0.33	−0.23
0.1−0.5	**RS**	**RV**
PMC	**0.77**	−0.28
OC	N/A	N/A
EC	N/A	N/A
OC/EC	N/A	N/A
0.5−1	**RS**	**RV**
PMC	0.29	−0.42
OC	−0.11	−0.73
EC	0.06	−0.34
OC/EC	−0.08	−0.58
1−2.5	**RS**	**RV**
PMC	0.37	−0.28
OC	−0.11	−0.62
EC	−0.24	−0.16
OC/EC	0.40	−0.24
2.5−10	**RS**	**RV**
PMC	0.03	−0.25
OC	−0.07	−0.25
EC	0.06	0.52
OC/EC	−0.06	−0.36
>10	**RS**	**RV**
PMC	0.08	−0.46
OC	0.00	−0.37
EC	−0.10	−0.48
OC/EC	0.11	0.18