

1 **Table S1** Geolocation of 36 Monitoring Sites in Urban Agglomeration of Chengdu Plain

Site ID ¹	Longitude (degree)	Latitude (degree)
1	104.7283	31.5072
2	104.7778	31.4747
3	104.6717	31.4656
4	104.7536	31.4539
5	104.3883	31.1333
6	104.4219	31.1208
7	104.4053	31.1167
8	104.3539	31.1108
9	103.613	31.0283
10	103.9728	30.72358
11	104.074	30.685
12	104.176	30.6872
13	104.054	30.6578
14	104.0216	30.6544
15	104.1114	30.63
16	105.68	30.6133
17	105.7519	30.5797
18	104.079	30.5706
19	105.5956	30.475
20	104.6356	30.1506
21	104.6617	30.1366
22	104.6289	30.1377
23	104.6294	30.1259
24	104.6469	30.1142
25	103.8416	30.0874
26	103.8495	30.0691
27	103.8341	30.062
28	103.8986	30.0506
29	103.009	30.0125
30	103.0013	29.9899
31	103.0109	29.9834
32	103.0001	29.9816
33	103.7506	29.6007
34	103.7627	29.5844
35	103.757	29.5634
36	103.7705	29.5467

2 ¹ 'Site ID' denotes the ground-based PM2.5 monitoring site.

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4**Table S2** Statistical Summary of Daily PM_{2.5} 24-hour Average for Each Site in Urban Agglomeration of Chengdu Plain

Site ID ¹	N ²	Min ³	Mean ⁴	Max ⁵	Sd ⁶
1	56	18.46	59.70	152.92	34.97
2	53	13.04	49.43	142.25	28.21
3	53	17.48	56.57	171.21	33.85
4	56	11.04	51.29	158.33	30.72
5	51	21.48	75.77	224.83	50.02
6	48	14.62	54.76	175.09	37.34
7	46	18.23	62.30	179.71	39.12
8	56	20.09	75.85	200.67	42.70
9	29	9.36	43.69	113.25	25.14
10	49	23.57	75.56	186.88	42.26
11	50	19.41	73.20	194.04	40.92
12	48	20.64	75.84	176.75	40.46
13	42	21.55	82.87	209.91	48.28
14	26	19.55	73.52	147.00	36.63
15	46	14.46	64.46	145.25	35.63
16	39	14.33	52.20	125.17	30.18
17	37	12.32	62.28	151.08	35.21
18	50	13.36	67.18	165.13	40.10
19	43	10.09	57.30	136.21	32.71
20	48	14.38	48.91	113.61	26.71
21	50	6.5	37.11	91.13	22.3
22	45	14.58	48.49	135.09	31.43
23	47	6.13	49.59	149.32	34.73
24	50	10.78	58.30	159.52	33.19
25	51	15.42	75.86	145.52	28.55
26	54	13.46	72.73	140.83	29.44
27	53	15	72.42	142.00	28.98
28	45	9.33	61.09	122.83	30.87
29	33	8.42	34.03	76.35	19.47
30	32	8.43	38.78	79.42	18.41
31	30	8.58	29.88	64.24	15.60
32	30	12.32	34.79	67.76	17.63
33	51	16.7	56.62	130.57	29.35
34	49	15.52	54.24	113.14	24.77
35	45	16.43	58.58	118.87	28.99
36	44	12.25	51.84	112.65	25.91

5 ¹ 'Site ID' denotes the ground-based PM_{2.5} monitoring site.6 ² 'N' denotes the number of data available at a given site during study period.7 ³ 'Min' denotes the minimum of data available at a given site during study period.

8 ⁴ ‘Mean’ denotes the mean of data available at a given site during study period.

9 ⁵ ‘Max’ denotes the maximum of data available at a given site during study period.

10 ⁶ ‘Sd’ denotes the standard deviation of data available at a given site during study period.

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12 **Table S3** Statistical Summary of Daily PM_{2.5} Time Average of 10 a.m. and 2 p.m. for Each Site in
13 Urban Agglomeration of Chengdu Plain

Site ID ¹	N ²	Min ³	Mean ⁴	Max ⁵	Sd ⁶
1	56	9.8	56.67	153	36.05
2	53	8.4	49.31	135.2	29.60
3	53	5.8	54.67	161	36.16
4	56	9.6	50.60	147.2	32.19
5	51	12.8	84.51	246.4	61.41
6	48	6	62.88	203.6	46.38
7	46	12.5	70.38	180.8	47.20
8	56	9.2	84.96	224.4	54.54
9	29	7.5	39.33	96.6	20.58
10	49	13.4	80.02	221.8	52.77
11	50	18	80.75	273.2	52.41
12	48	15.6	84.68	227	53.19
13	42	19.4	88.35	222.8	57.30
14	26	13.6	78.70	189	47.55
15	46	11	73.90	217.2	49.71
16	39	12.5	54.07	147.2	35.28
17	37	11	59.77	155.8	37.07
18	50	6	71.22	182.8	46.60
19	43	9.6	56.81	142	34.64
20	48	13.8	55.31	132	34.15
21	50	5.4	42.90	118.4	28.23
22	45	13.4	54.23	148.8	37.94
23	47	3.5	55.70	173.4	41.83
24	50	14.8	62.71	183.4	38.73
25	51	9.8	80.28	146.2	31.34
26	54	2	76.28	156.8	32.76
27	53	11	75.59	154.6	30.79
28	45	6.33	63.38	139.2	35.44
29	33	9.6	34.62	81.6	18.70
30	32	2	28.75	68.8	16.92
31	30	5.6	23.86	58.33	13.24
32	30	4.25	29.57	64.6	17.15
33	51	14	57.11	136	32.57
34	49	13	52.42	119	27.26

35	45	13.4	58.73	135.6	32.78
36	44	9.2	52.08	124	30.94

14 ¹ 'Site ID' denotes the ground-based PM2.5 monitoring site.

15 ² 'N' denotes the number of data available at a given site during study period.

16 ³ 'Min' denotes the minimum of data available at a given site during study period.

17 ⁴ 'Mean' denotes the mean of data available at a given site during study period.

18 ⁵ 'Max' denotes the maximum of data available at a given site during study period.

19 ⁶ 'Sd' denotes the standard deviation of data available at a given site during study period.

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21 **Table S4** Statistical Summary of Daily AOT Average for Each Site in Urban Agglomeration of Chengdu Plain

Site ID ¹	N ²	Min ³	Mean ⁴	Max ⁵	Sd ⁶
1	56	0.1	0.55	1.39	0.30
2	53	0.12	0.59	1.5	0.30
3	53	0.14	0.63	1.5	0.34
4	56	0.08	0.53	1.35	0.31
5	51	0.06	0.64	1.61	0.38
6	48	0.13	0.64	1.81	0.39
7	46	0.11	0.61	1.65	0.38
8	56	0.16	0.74	1.88	0.37
9	29	0.16	0.49	1.02	0.24
10	49	0.1	0.69	1.7	0.38
11	50	0.13	0.74	1.83	0.37
12	48	0.21	0.71	1.56	0.38
13	42	0.11	0.68	1.7	0.40
14	26	0.09	0.76	1.41	0.37
15	46	0.13	0.64	1.45	0.36
16	39	0.15	0.54	1.2	0.25
17	37	0.14	0.51	1.29	0.26
18	50	0.19	0.71	1.4	0.36
19	43	0.24	0.69	1.3	0.31
20	48	0.2	0.69	1.33	0.34
21	50	0.2	0.72	1.3	0.32
22	45	0.19	0.66	1.26	0.33
23	47	0.18	0.67	1.25	0.34
24	50	0.22	0.74	1.35	0.33
25	51	0.16	0.79	1.72	0.38
26	54	0.19	0.74	1.71	0.38
27	53	0.18	0.74	1.68	0.37
28	45	0.14	0.76	1.65	0.36
29	33	0.12	0.46	1.14	0.22

30	32	0.11	0.39	1.05	0.20
31	30	0.1	0.40	1.05	0.20
32	30	0.1	0.40	1.05	0.20
33	51	0.13	0.68	1.88	0.36
34	49	0.12	0.68	1.92	0.36
35	45	0.14	0.67	1.66	0.33
36	44	0.15	0.68	1.60	0.32

22 ¹ ‘Site ID’ denotes the ground-based PM2.5 monitoring site.

23 ² ‘N’ denotes the number of data available at a given site during study period.

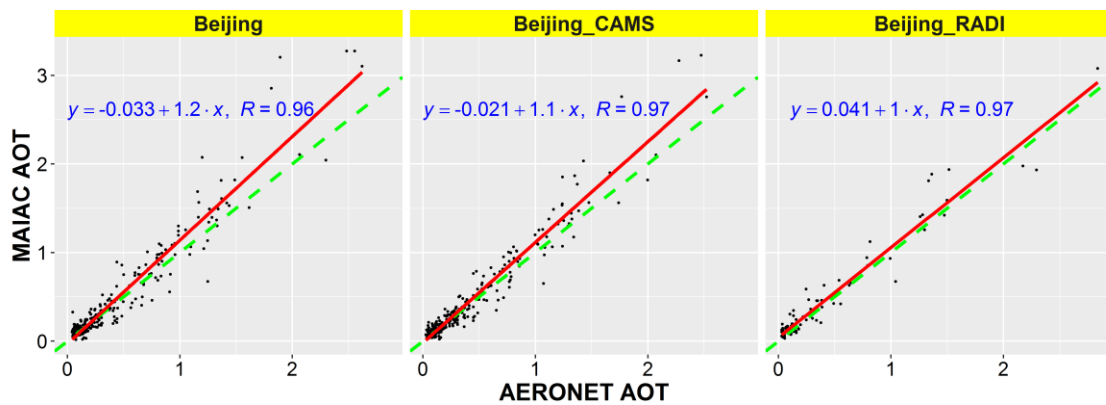
24 ³ ‘Min’ denotes the minimum of data available at a given site during study period.

25 ⁴ ‘Mean’ denotes the mean of data available at a given site during study period.

26 ⁵ ‘Max’ denotes the maximum of data available at a given site during study period.

27 ⁶ ‘Sd’ denotes the standard deviation of data available at a given site during study period.

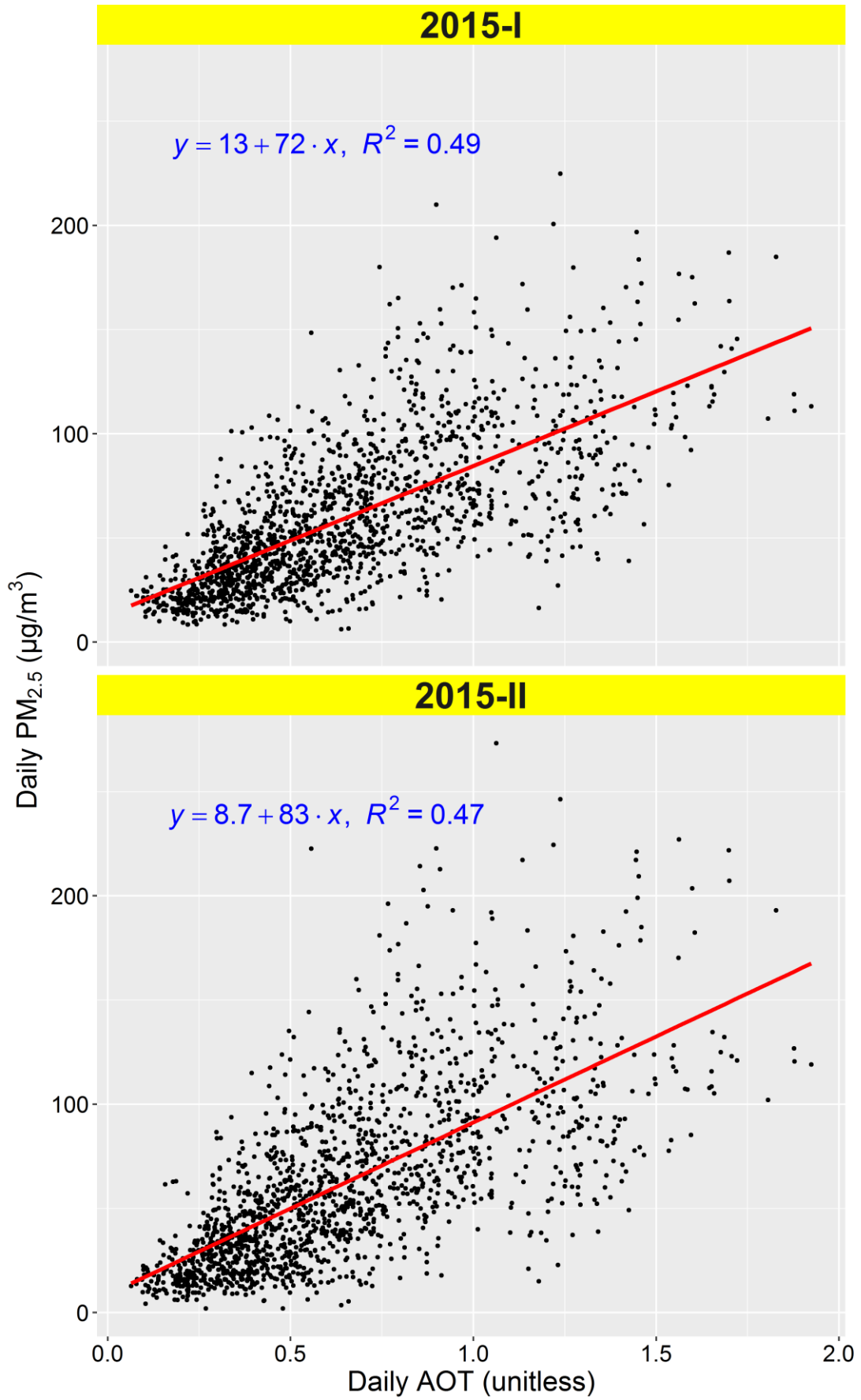
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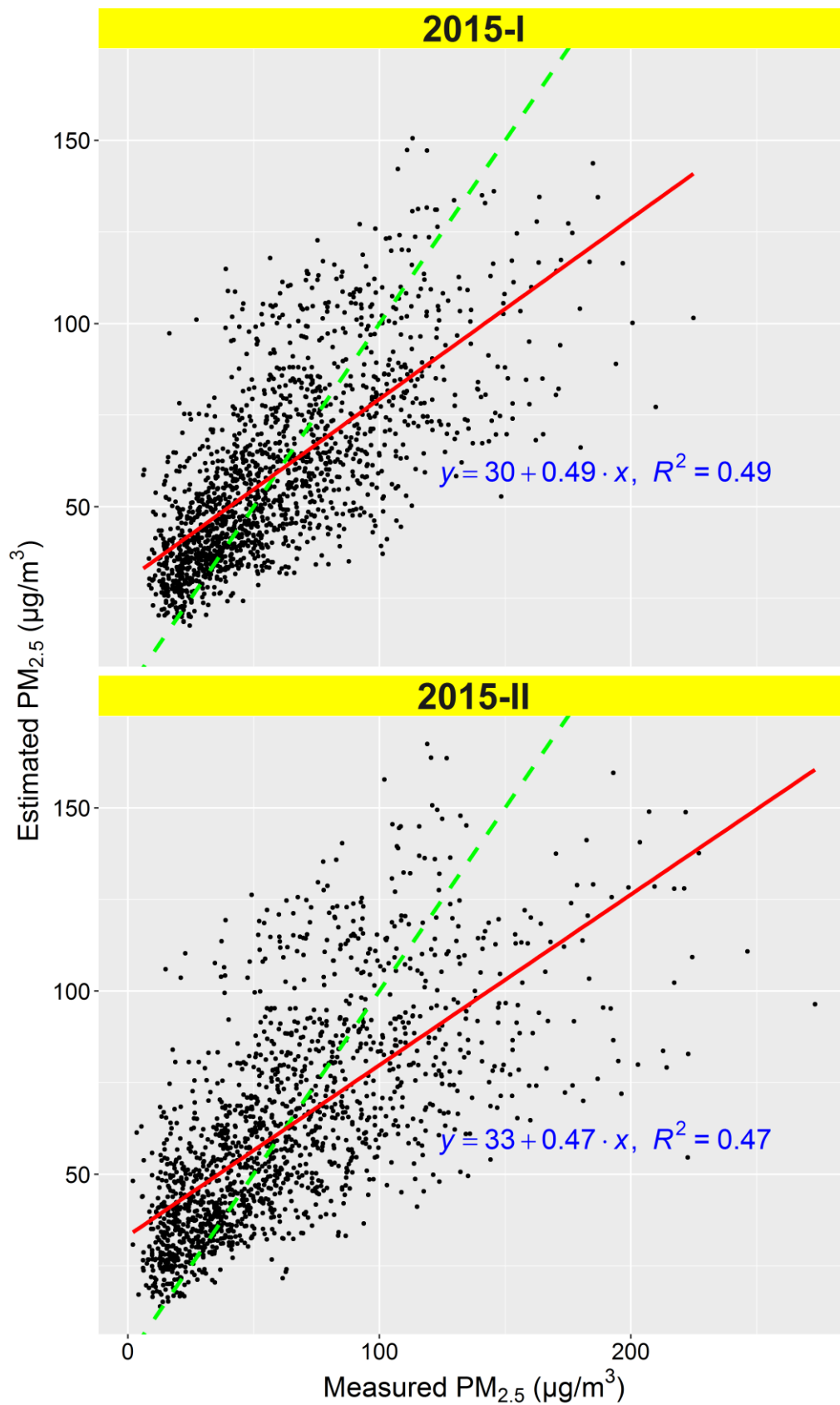
30 **Figure S1.** Scatterplots of MAIAC AOT versus AERONET AOT. The red
 31 solid line represents the regression line and the green dashed line is the 1:1
 32 line with slope of 1.0; three AERONET sites in Beijing: Beijing [116.38°E,
 33 39.97°N], Beijing_CAMS [116.31°E, 39.93°N] and Beijing_RADI [116.37°E,
 34 40.00°N]

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Figure S2. Scatterplots of daily PM_{2.5} versus daily AOT. The red solid line represents the regression line



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Figure S3. Scatterplots of Estimated PM_{2.5} versus Measured PM_{2.5}. The red solid line represents the regression line and the green dashed line is the 1:1 line with slope of 1.0; 'I' denotes linear regression model using PM_{2.5} 24-hour average, and 'II' denotes linear regression model using PM_{2.5} period average.