



Supplement of

Biomass burning aerosols and the low-visibility events in Southeast Asia

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	City	County	Population
1	Jakarta	Indonesia	10135030
2	Bangkok	Thailand	8305218
r	Ho Chi Minh	Vietness	7001411
3	City	vietnam	/981411
4	Hanoi	Vietnam	7067000
5	Singapore	Singapore	5399000
6	Yangon	Myanmar	5451439
7	Surabaya	Indonesia	2843114
8	Quezon City	Philippines	2761720
9	Bandung	Indonesia	2575478
10	Bekasi	Indonesia	2510951
11	Medan	Indonesia	2185789
12	Tangerang	Indonesia	2001925
13	Hai Phong	Vietnam	1946000
14	Depok	Indonesia	1869681
15	Manila	Philippines	1652171
16	Semarang	Indonesia	1575058
17	Palembang	Indonesia	1561959
18	Caloocan	Philippines	1489040
19	Kuala Lumpur	Malaysia	1475337
20	Davao City	Philippines	1449296
20	South Tangerang	Indonesia	1436187
21	Makassar	Indonesia	1398804
22	Phnom Penh	Cambodia	1242992
23	Can Tho	Vietnam	1237300
24	Batam	Indonesia	11/26/6
25	Pekan Baru	Indonesia	1030742
20	Bogor	Indonesia	1022022
27	Da Nang	Vietnam	1022022
20	Rien Hop	Vietnam	1104405
30	Bandar Lampung	Indonesia	023070
30	Johor Bahru	Malaysia	923970
22	Mandalay	Muonmor	910409
32	Padang	Indonesia	876880
33	Cebu City	Dhilippines	866171
35	Dennasar	Indonesia	856412
26	Malang	Indonesia	830412
30	Samarinda	Indonesia	843264
29	Zamboanga City	Dhilippipos	807120
30	Coorgo Town	Malavoia	738500
40	Inch	Malaysia	738300
40	Tequia	Dhilinninas	605702
41	Taguig	Indon	692296
42	I asikmalaya	Indonesia	083380
43	Antipolo	Philippines	6///41
44	Banjarmasin	Indonesia	6/5030
45	Shah Alam	Malaysia	671282
46	Pasig	Philippines	669773
47	Balikpapan	Indonesia	645866
48	Serang	Indonesia	643101
49	Petaling Jaya	Malaysia	638516
50	Kuching	Malaysia	617887

Table S1. Population of 50 Association of Southeast Asian Nations (ASEAN) cities







Figure S2. Hovmöller (time vs. longitude) plot of daily precipitation (mm day⁻¹) in 2006 derived from: (a) TRMM, (b) FNL FINN, and (c) ERA FINN. Latitude average is from

10°S to 10°N.



Figure S3. (a) Seasonal mean surface wind (m sec⁻¹) in NCEP-FNL reanalysis data during
February to April 2003-2014. (b) Same as (a) but during August to October. (c) Seasonal
mean surface wind in ERA-Interim reanalysis data during February to April 2003-2014.

54 (d) Same as (c) but during August to October.



59 60 Figure S4. (a) The wind difference between FNL_FINN and NCEP-FNL reanalysis data 61 during February to April 2003-2014. (b) Same as (a) but during August to October. (c) 62 The wind difference between ERA_FINN and ERA-Interim reanalysis data during 63 February to April 2003-2014. (d) Same as (c) but during August to October. Units are in 64 m sec⁻¹.



Figure S5. Comparison of daily visibility between GSOD observation (black lines),
FNL_FINN modeled result (red lines) and FNL_GFED modeled result (green lines) in:
(a) Bangkok, (b) Kuala Lumpur, (c) Singapore, (d) Kuching during the fire seasons from

- 2003 to 2014. F, M and A in the x-axis of (a) indicates February, March and April, respectively. A, S and O in the x-axis of (b) (d) represents August, September, and
- 77 October, respectively.





Figure S6. (a) Time series of daily mean $PM_{2.5}$ emissions (Tg year⁻¹) in Sumatra (s2) from FINNv1.5 (red line) and GFEDv4.1s (green line). (b) Time series of daily mean PM_{2.5} concentration (µg m⁻³) in Singapore from observation (black line), and modeled results from FNL FINN (red line) and FNL GFED (green line). (c) Monthly mean PM_{2.5} emissions (Tg year⁻¹) from FINNv1.5 in June 2013. (d) same as (c) but from GFEDv4.1s.