



Supplement of

Evaluation of VIIRS, GOCL, and MODIS Collection 6 AOD retrievals against ground sunphotometer measurements over East Asia

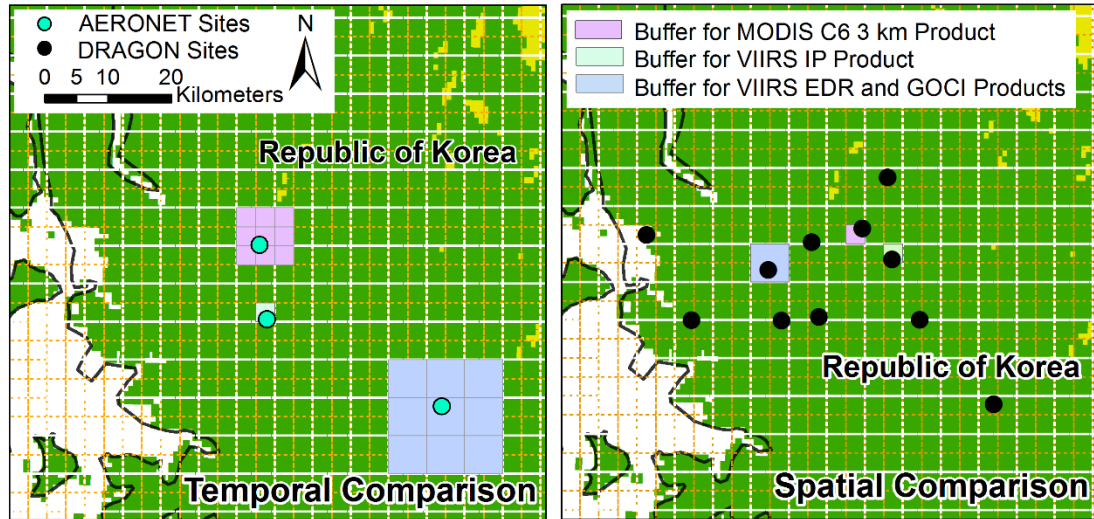
Q. Xiao et al.

Correspondence to: Y. Liu (yang.liu@emory.edu)

The copyright of individual parts of the supplement might differ from the CC-BY 3.0 licence.

1 Text S1.
2 The Microtop II handheld sunphotometer AOD measurements were compared against
3 AERONET measurements within 6 km of the handheld sunphotometer measuring
4 sites. The slope, intercept, and R^2 of the linear regression between Microtop II
5 measurements and average hourly AERONET measurements during the satellite
6 overpass time (1:00 pm-2:00 pm) were 0.95, 0.16, and 0.64, respectively (N=74).

- 1 Figure S1. Buffers used in the temporal and spatial comparisons for each satellite
- 2 aerosol product. The yellow dashed line denotes the 3 km grid and the white dashed
- 3 line denotes the 6 km grid.



4

- 1 Table S1. Percent coverage of satellite aerosol products relative to AERONET stations
2 in Beijing and over East Asia.

Product	% coverage in Beijing	% coverage over East Asia
VIIRS_EDR	41	63
VIIRS_IP	42	50
GOCI	73	74
GOCI all obs.	60	27
Aqua MODIS C6 3 km	38	24
Terra MODIS C6 3 km	40	26

3

1 Table S2. Statistics of the temporal comparison between satellite retrievals and
 2 AERONET AOD at 550 nm over East Asia, including all the matchups.

	N	R^2	Slope	Intercept	Bias	%EE
VIIRS EDR	801	0.69	0.94	0.08	0.07	61
VIIRS IP	628	0.47	1.01	0.17	0.17	35
GOCI	448	0.77	1.04	0.03	0.04	55
GOCI all obs.	3759	0.80	1.02	0.00	0.01	61
MODIS Aqua C6	309	0.71	1.04	0.07	0.08	58
MODIS Terra C6	351	0.65	1.04	0.14	0.15	41

3

1 Table S3. Statistics of comparisons between VIIRS IP retrievals with both high and
2 degraded quality against ground AOD measurements over the Japan-South Korea
3 region.

Ground Measurements	N	R ²	Slope	Intercept	Bias	%EE
AERONET	654	0.42	0.99	0.20	0.20	30
DRAGON	271	0.48	0.98	0.31	0.30	27

4

1 Table S4. Statistics of the temporal comparison between GOCI retrievals and
 2 AERONET AOD measurements over East Asia, stratified by time.

Local Time	N	R ²	Slope	Intercept	Bias	%EE
9:00 am	438	0.83	1.01	-0.01	-0.006	68
10:00 am	371	0.83	1.06	0.00	0.019	70
11:00 am	337	0.81	1.04	0.01	0.023	65
12:00 pm	315	0.79	1.00	0.02	0.022	63
1:00 pm	343	0.80	1.04	0.03	0.037	62
2:00 pm	358	0.83	1.04	0.01	0.026	65
3:00 pm	342	0.89	1.07	-0.03	-0.01	70
4:00 pm	270	0.88	0.98	-0.04	-0.046	65

3

1 Table S5. Statistics of the temporal comparison between eight GOCI hourly retrievals
 2 with various quality against AERONET AOD measurements over the Japan-South
 3 Korea region.

Quality criteria	Coverage	N	R ²	Slope	Intercept	Bias	%EE
Quality Flag=3	27%	2774	0.82	1.03	0.00	0.01	66
Quality Flag=2,3	38%	4180	0.75	1.05	0.00	0.02	59
Quality Flag=1,2,3	42%	4661	0.73	1.04	0.01	0.03	57
Quality Flag=0,1,2,3	51%	6316	0.58	1.00	0.06	0.06	47

4