



Supplement of

Retrieval and validation of diurnal properties of aerosol and surface from geostationary satellite Himawari-8 using multi-pixel approach

Chong Li et al.

Correspondence to: Chong Li (chong.li@grasp-earth.com), Oleg Dubovik (oleg.dubovik@univ-lille.fr), and Jing Li (jing-li@pku.edu.cn)

The copyright of individual parts of the supplement might differ from the article licence.

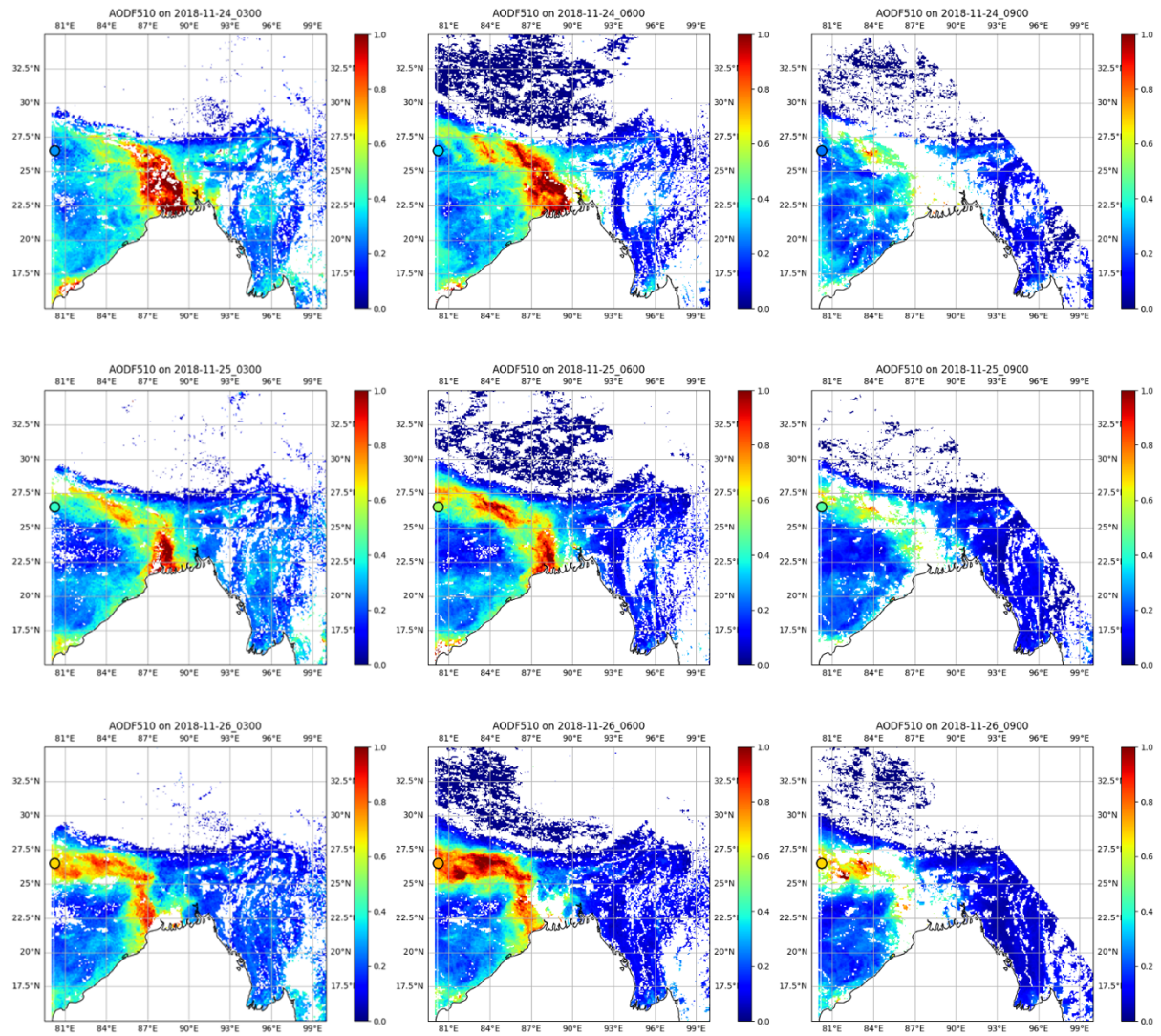


Figure S1: AHI/GRASP AOD510 nm distribution for the pollution event during 24th – 26th November, 2018. The AERONET site Kanpur (India) is marked with a black circle (on the left edge of the map).

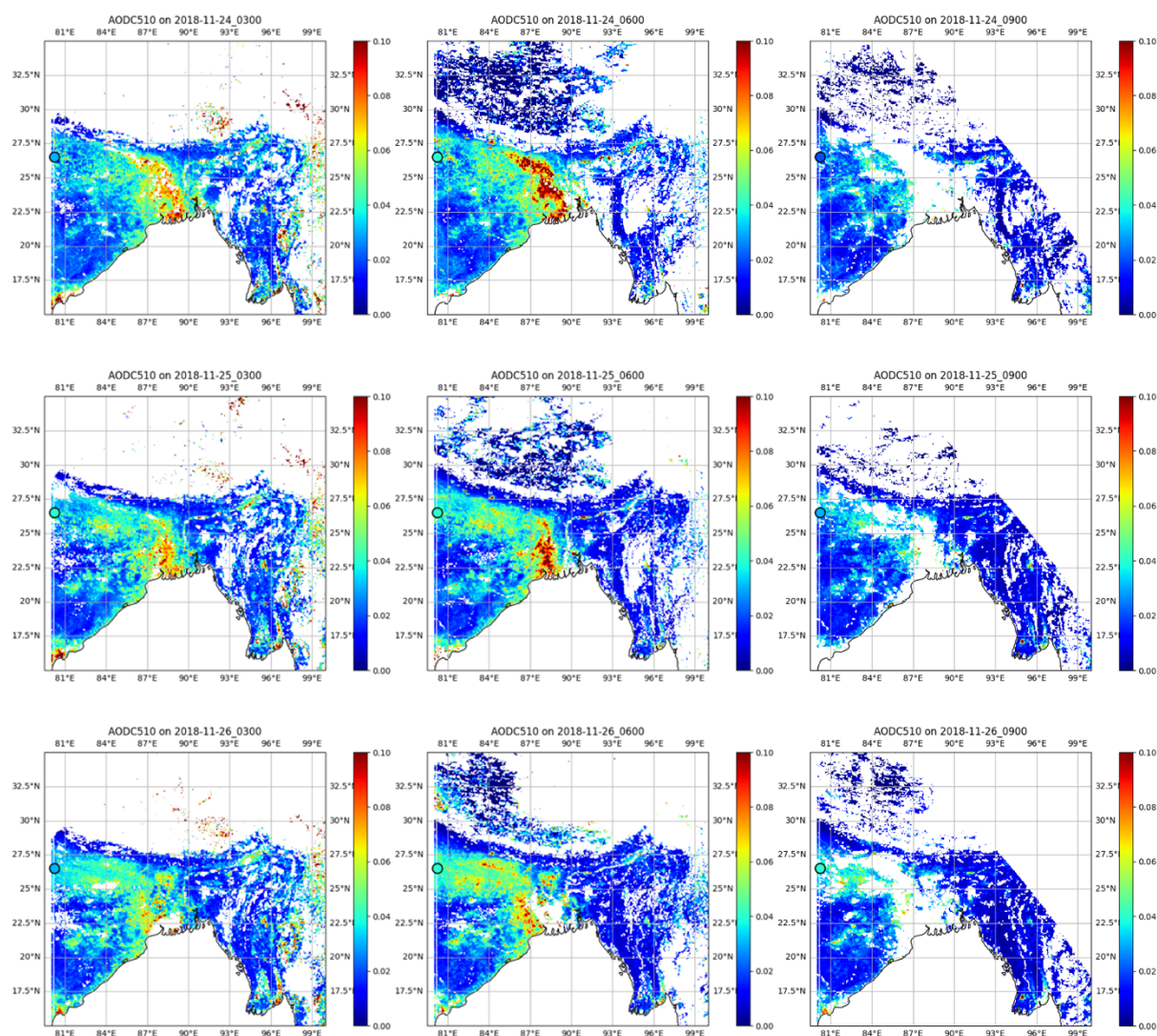


Figure S2: AHI/GRASP AODC510 nm distribution for the pollution event during 24th – 26th November, 2018. The AERONET site Kanpur (India) is marked with a black circle (on the left edge of the map).

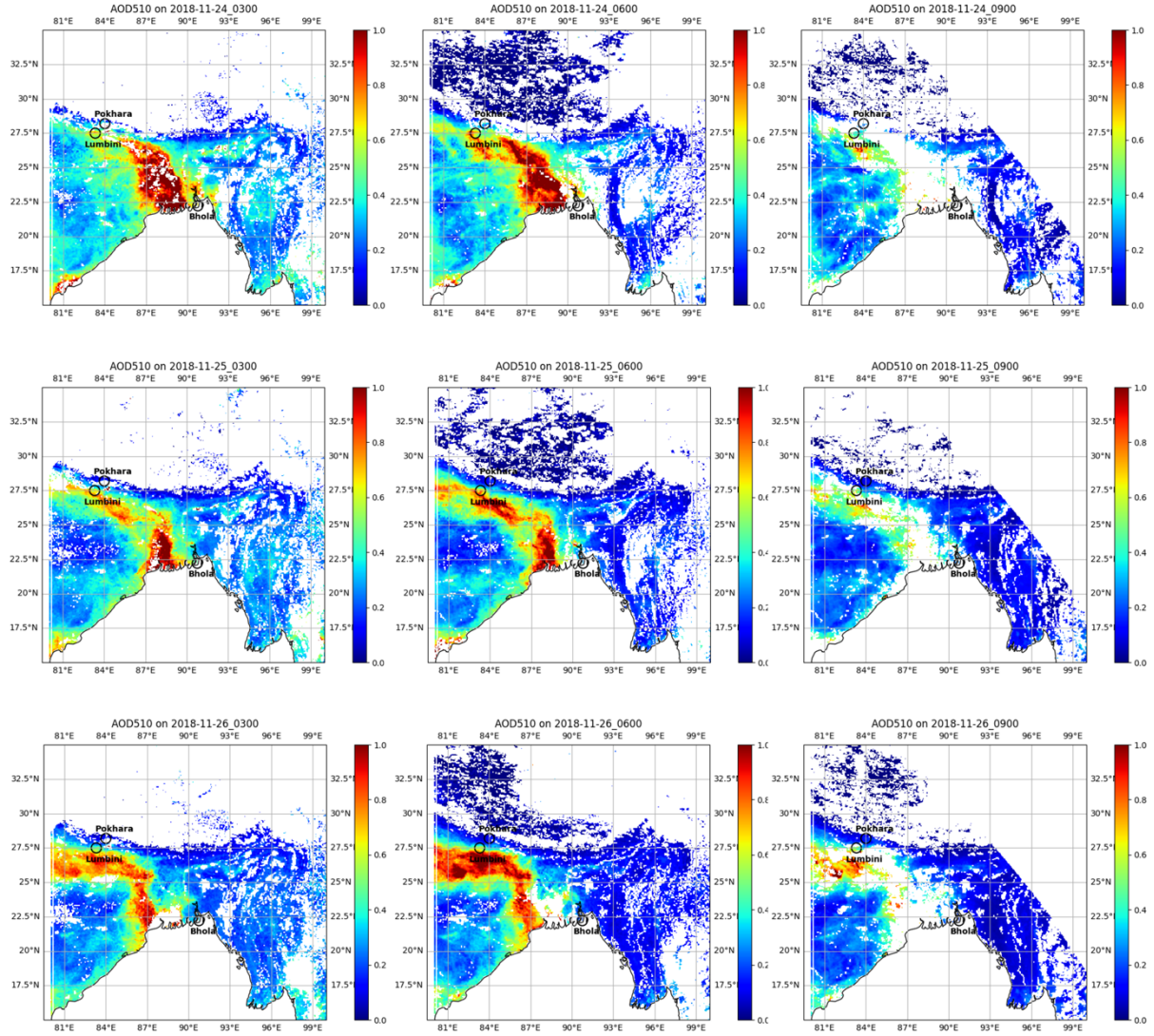


Figure S3: AHI/GRASP AOD510 nm distribution for the pollution event during 24th – 26th November, 2018. The AERONET sites Bhola (Bangladesh), Lumbini (Nepal) and Pokhara (Nepal) are marked with black circles on the map.

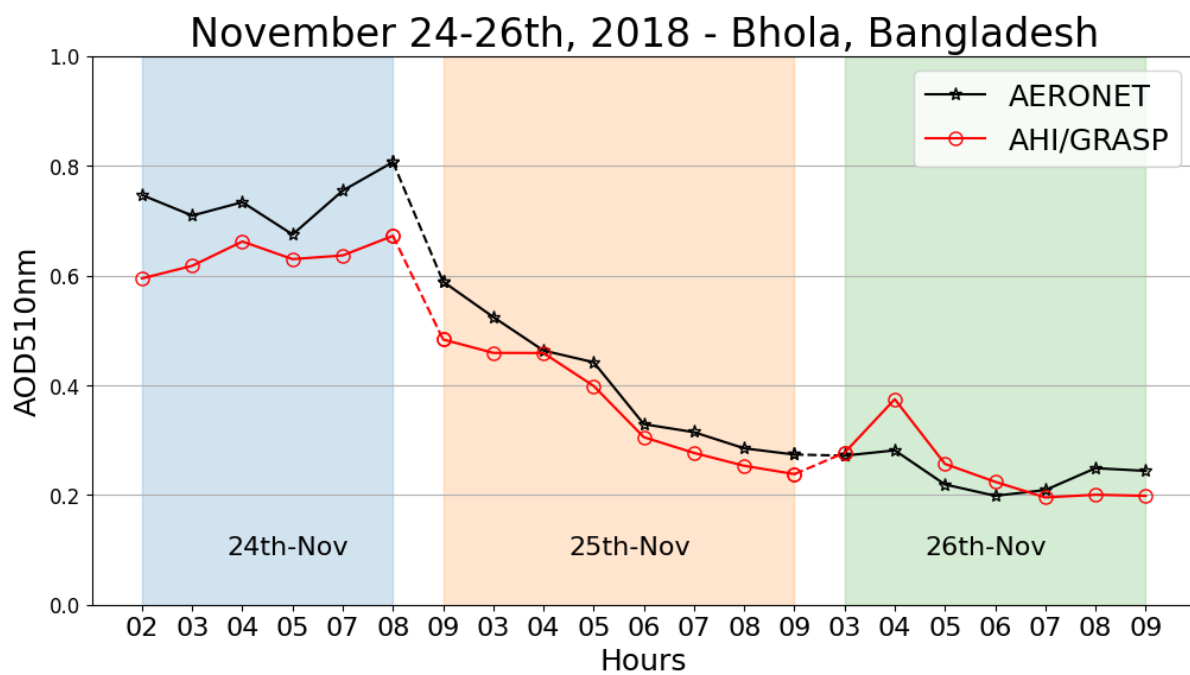


Figure S4: Diurnal cycles of AHI/GRASP (Red solid line) and AERONET AOD (Black solid line) at 510nm for the AERONET site Bhola (Bangladesh) for the pollution event during 24th -26th November, 2018.

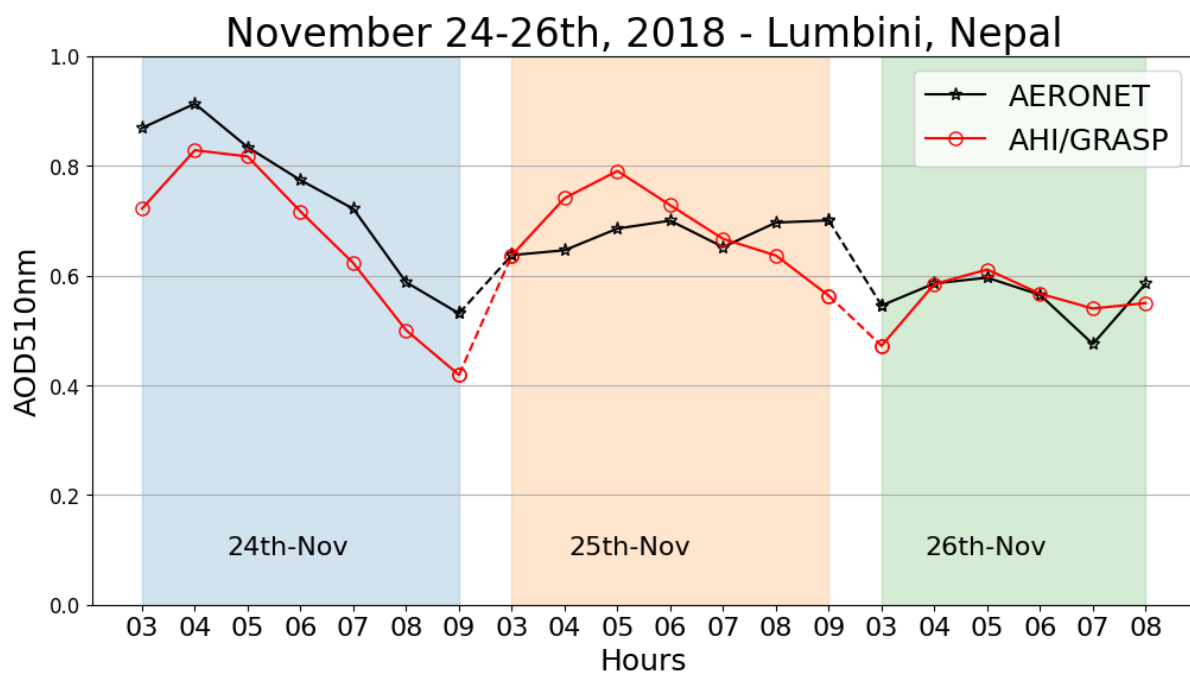


Figure S5: Diurnal cycles of AHI/GRASP (Red solid line) and AERONET AOD (Black solid line) at 510nm for the AERONET site Lumbini (Nepal) for the pollution event during 24th -26th November, 2018.

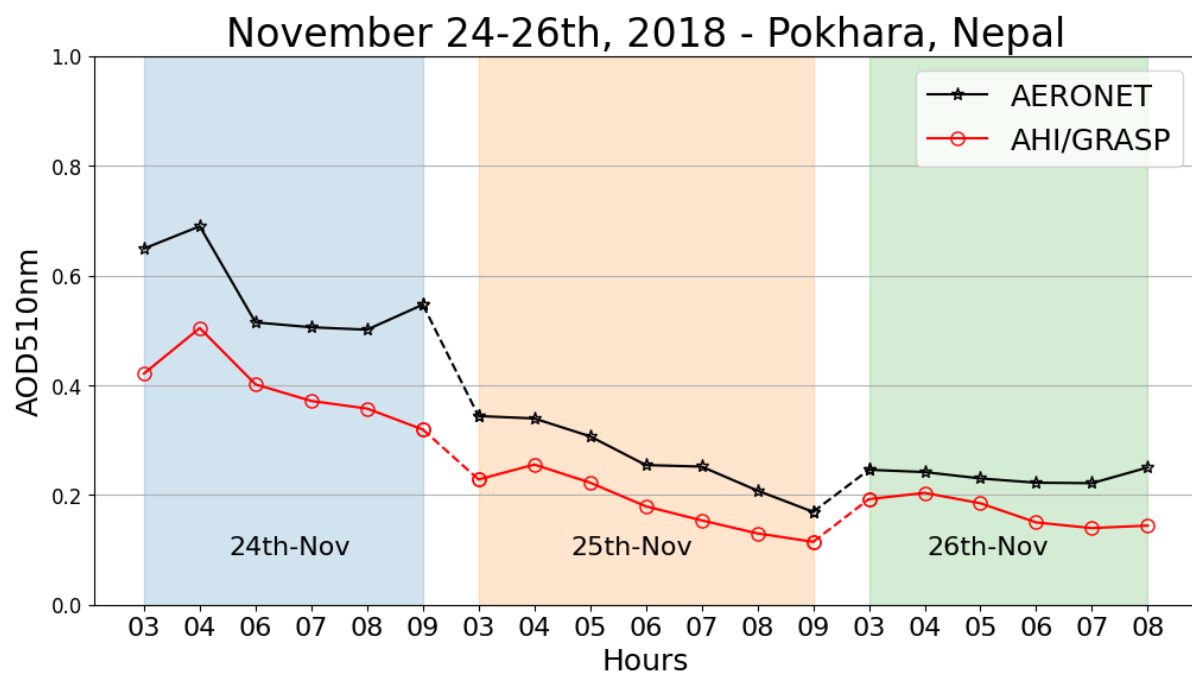


Figure S6: Diurnal cycles of AHI/GRASP (Red solid line) and AERONET AOD (Black solid line) at 510nm for the AERONET site Pokhara (Nepal) for the pollution event during 24th -26th November, 2018.

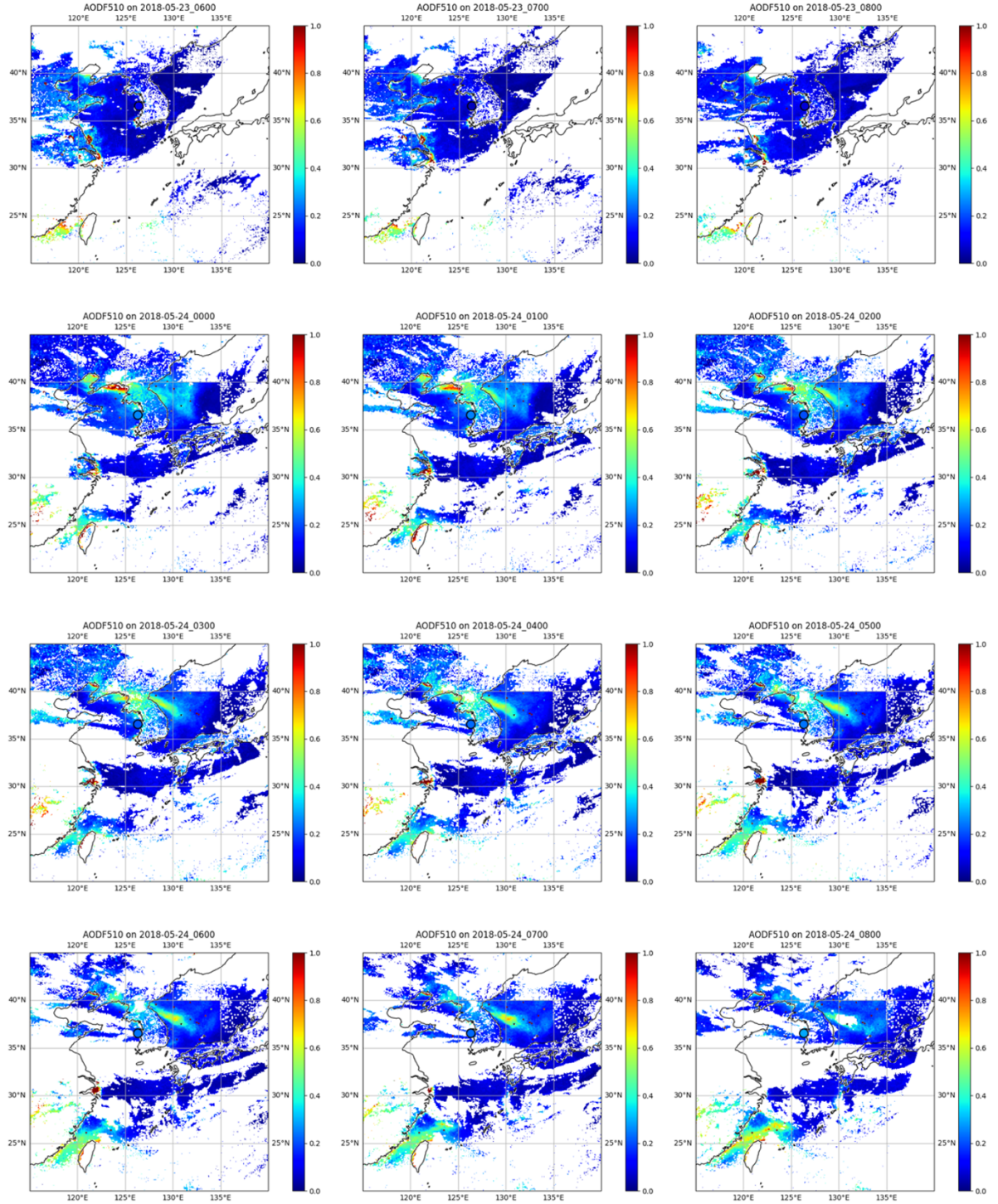


Figure S7: AHI/GRASP AOD510 nm distribution for the pollution event during 23rd-24th May, 2018. The AERONET site Anmyon (South Korea) is marked with a black circle (in the upper middle of the map).

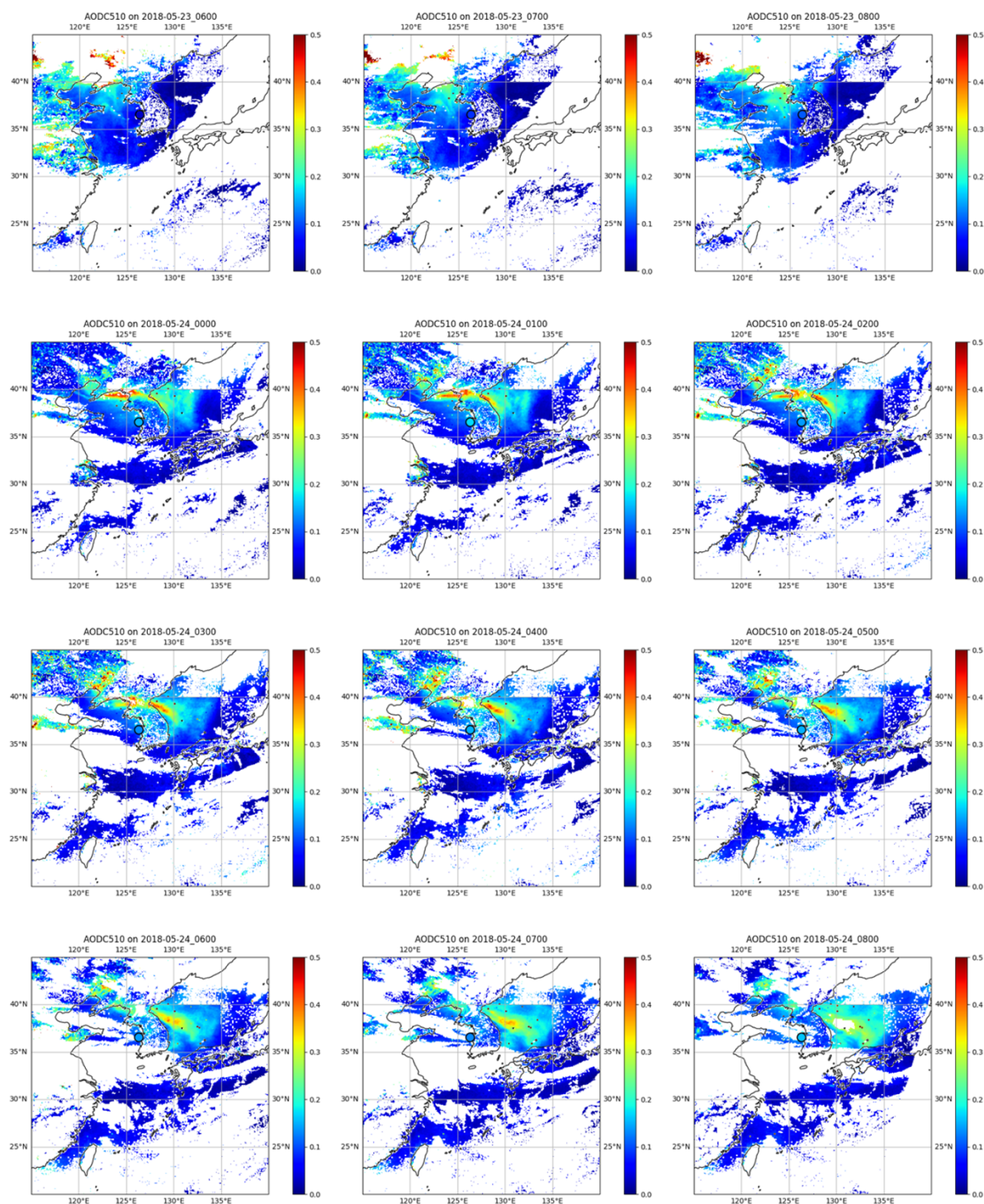


Figure S8: AHI/GRASP AODC510 nm distribution for the pollution event during 23rd-24th May, 2018. The AERONET site Anmyon (South Korea) is marked with a black circle (in the upper middle of the map).

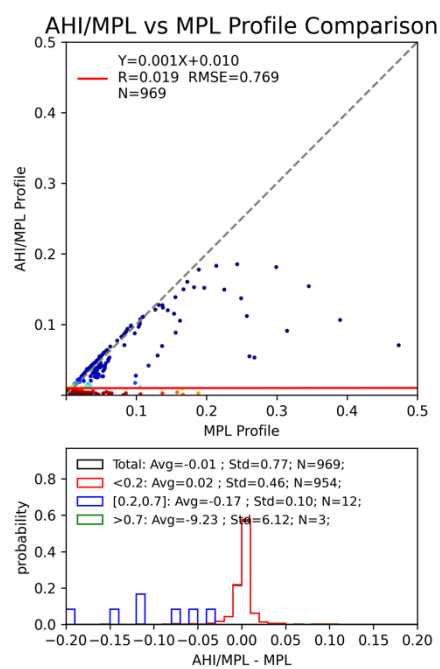


Figure S9: Layer-to-layer comparison between AHI/MPL synergistic retrieved and MPL-Fernald retrieved aerosol vertical profiles for analyzed cases combined. The dashes line represents the 1:1 reference.

Table S1. AHI/GRASP validation statistical metrics R, RMSE, Bias and GCOS at AERONET over land stations for the year 2018 for AOD at 510nm.

Site	R	RMSE	Bias	GCOS
Chiba_University	0.71	0.149	0.12	16.0%
Chen-Kung_Univ	-0.46	0.220	0.20	25.0%
Chiayi	0.90	0.074	0.00	57.7%
EPA-NCU	0.92	0.127	0.12	28.9%
Gangneung_WNU	0.91	0.126	0.12	25.8%
Learmonth	0.09	0.162	0.16	16.5%
Lulin	0.92	0.205	0.21	0.0%
Osaka	0.86	0.192	0.17	16.4%
Pontianak	0.97	0.173	0.09	10.0%
Hankuk_UFS	0.91	0.112	0.08	34.5%
Nong_Khai	0.96	0.106	-0.03	37.2%
Yonsei_University	0.94	0.069	0.02	43.9%
Ubon_Ratchathani	0.96	0.077	0.01	50.7%
Chiang_Mai_Met_Sta	0.96	0.090	-0.02	43.2%
Dhaka_University	0.84	0.093	-0.01	56.4%
Seoul_SNU	0.93	0.068	0.02	46.3%
Beijing	0.96	0.109	0.01	36.8%
Beijing-CAMS	0.96	0.097	0.00	38.1%
XiangHe	0.95	0.103	0.01	38.7%
AOE_Baotou	0.89	0.096	0.06	28.7%
Beijing_RADI	0.96	0.101	-0.01	36.3%
Beijing_PKU	0.96	0.110	0.01	34.8%
Lake_Argyle	-0.45	0.390	0.39	25.0%
Pokhara	0.96	0.095	-0.09	20.6%
Fukuoka	0.84	0.141	0.14	18.4%
Cape_Fuguei_Station	1.00	0.036	0.04	50.0%
Taipei_CWB	0.85	0.091	0.05	44.8%
Hong_Kong_Sheung	-0.63	0.068	0.07	33.3%
Bhola	0.96	0.083	-0.05	52.3%
Lumbini	0.87	0.161	-0.12	25.5%
Fowlers_Gap	0.19	0.091	0.06	37.4%
Omkoï	0.93	0.138	0.14	11.9%
Mandalay_MTU	0.94	0.078	-0.01	53.0%
Manila_Observatory	0.83	0.131	0.11	30.0%
XuZhou-CUMT	0.90	0.112	0.01	30.5%
Birdsville	0.50	0.050	-0.05	42.6%
Songkhla_Met_Sta	0.76	0.066	0.02	46.7%

Kanpur	0.86	0.133	-0.09	29.9%
NhaTrang	0.77	0.207	0.21	0.0%
Silpakorn_Univ	0.83	0.097	0.04	28.9%
Bandung	0.77	0.240	0.24	5.3%
Luang_Namtha	0.96	0.075	0.01	42.9%
Douliu	0.56	0.079	0.08	16.7%
Dibrugarh_Univ	0.94	0.090	-0.03	49.3%
Dalanzadgad	0.89	0.094	0.09	34.3%
Bukit_Kototabang	0.98	0.155	0.15	0.0%
NGHIA_DO	0.85	0.210	0.10	25.0%
Kaohsiung	0.69	0.179	0.14	24.1%
Makassar	1.00	0.183	0.18	0.0%
Shirahama	0.89	0.131	0.13	14.0%
Xitun	0.85	0.188	0.19	18.4%
Ussuriysk	0.94	0.060	0.06	46.3%
Aspendale_Mel_AU	0.43	0.219	0.16	16.7%
Noto	0.90	0.088	0.09	28.4%
Niigata	0.57	0.179	0.18	16.9%
Irkutsk	0.59	0.049	0.02	53.0%
Hokkaido_University	0.81	0.131	0.12	20.6%
Gwangju_GIST	0.88	0.120	0.10	30.0%
Bac_Lieu	-0.89	0.150	0.15	25.0%
Gandhi_College	0.79	0.149	-0.05	38.3%
Kuching	1.00	0.170	0.17	0.0%
Tomsk	0.56	0.076	-0.08	0.0%
Tomsk_22	0.95	0.027	-0.01	76.0%
Palangkaraya	-0.60	0.185	0.19	16.7%
Lopburi	0.80	0.096	0.08	23.3%