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Coherent uncertainty analysis of aerosol measurements from multiple satellite sensors

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Description

This digital supplement to the paper 'Coherent uncertainty analysis of aerosol measurements from multiple satellite sensors' presents additional statistics and figures that were not included in the main paper to avoid overcrowding. While the main paper focuses on the analysis of the **mean** AOD values of the spatial subsets of the satellite data within 55-km diameter circles centered over the ground-based AERONET sites and coincident 1-hour AERONET data segments centered at each satellite overpass time (i.e., the spatially-averaged spaceborne aerosol observations were compared to the time-averaged ground-based observations from AERONET), this supplement replicates the analysis of Sect. 6 and Sect. 7 by using the central (**cval**) AOD values instead of the mean. For the spaceborne data, the central value is the value of a pixel in the subset that has the smallest distance to the ground station. For the ground-based data, this is the value of a measurement in the subset that is the closest in time to the satellite overpass. To facilitate cross-referencing between the main paper and this supplement, the **cval**-based figures and tables in the supplement are numbered similarly to the corresponding **mean**-based figures in the main document, e.g., Fig. 6b. in the supplement corresponds to Fig. 6 in the main document.

In addition to replicating the analysis of the main paper based on cval AOD values as explained above, the second part of the supplement also provides a breakdown of the statistics in Table 3 based on the nominal ranges of AOD loading, including **low** (AOD<0.2), **moderate** (0.2≤AOD<0.6), **high** (0.6≤AOD<1.4), and **extreme** (1.4≤AOD). Similarly, the supplement also lists a breakdown of the statistics in Tables 5, 6, and 7 based on the nominal boreal seasons, namely, **spring** (March-May), **summer** (June-August), **autumn** or **fall** (September-November), and **winter** (December to February). Please note that all additional tables are provided for both the mean-based and cval-based analyses as outlined in the index on the next page.

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Table 3b. Statistics of the studied aerosol data sets based on all AERONET stations during the period of 2006-06-07 and 2010-12-11. 'Ntot' indicates the total number of the collocated Spaceborne AOD - AERONET AOD data points, while 'Nfilt' indicates the number of data points after filtering (screening) the spaceborne data by QA as described in Section 4 and Table 2. 'Nout' is the total number of the possible data outliers determined as explained in Section 5. The last 8 columns present the statistics on the collocated data based on regression fits also plotted in Fig. 6b.

Dataset	Nfilt	Nfilt /Ntot (%)	Nout	Nfilt/ Nout (%)	Complete data				Outliers removed			
					R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
All seasons												
TMODIS DT	49700	49.1	526	2.2	0.82	0.12	1.01	0.00	0.83	0.09	0.97	0.00
TMODIS DB	8960	15.1	76	5.6	0.73	0.21	0.76	0.09	0.78	0.16	0.88	0.04
TMODIS O	1631	99.5	84	5.2	0.88	0.10	1.14	0.00	0.92	0.06	1.03	0.02
AMODIS DT	46019	45.3	548	2.6	0.81	0.11	1.00	0.01	0.81	0.10	0.97	0.01
AMODIS DB	25330	14.5	157	4.3	0.76	0.20	0.87	0.04	0.81	0.16	0.93	0.01
AMODIS O	1823	99.5	92	5.1	0.81	0.10	1.07	0.00	0.91	0.05	0.97	0.02
MISR	8247	84.4	307	4.4	0.78	0.12	0.66	0.06	0.83	0.08	0.77	0.04
OMI	42588	93.9	1470	3.7	0.39	0.24	0.70	0.14	0.45	0.21	0.73	0.12
CALIOP	1711	86.2	98	6.6	0.30	0.23	0.52	0.06	0.50	0.15	0.69	0.01
POLDER3 L	17287	90.8	840	5.4	0.23	0.20	0.17	0.02	0.29	0.16	0.21	0.01
POLDER3 O	9568	92.6	380	4.3	0.44	0.15	0.30	0.03	0.50	0.12	0.37	0.02
SeaWiFS L	33239	31.1	310	3.0	0.80	0.12	0.81	0.03	0.83	0.09	0.89	0.02
SeaWiFS O	5061	66.0	217	6.5	0.69	0.12	1.05	0.02	0.79	0.07	0.95	0.02
Fall												
TMODIS DT	14897	48.3	134	1.9	0.87	0.12	1.09	-0.02	0.88	0.09	1.05	-0.02
TMODIS DB	2934	13.5	15	3.8	0.54	0.17	0.92	0.03	0.64	0.13	0.92	0.03
TMODIS O	463	99.6	23	5.0	0.89	0.06	0.97	0.02	0.92	0.04	0.93	0.02
AMODIS DT	12337	43.2	153	2.9	0.86	0.10	1.06	-0.01	0.87	0.08	1.02	-0.01
AMODIS DB	7333	14.1	34	3.3	0.76	0.16	1.00	-0.01	0.81	0.14	1.01	-0.01
AMODIS O	494	99.6	27	5.5	0.85	0.06	0.81	0.03	0.91	0.04	0.88	0.02
MISR	2381	82.6	77	3.9	0.79	0.11	0.62	0.05	0.84	0.08	0.70	0.04
OMI	11084	92.3	325	3.2	0.34	0.21	0.72	0.11	0.35	0.20	0.70	0.11
CALIOP	487	85.8	26	6.2	0.27	0.23	0.53	0.06	0.35	0.18	0.51	0.05
POLDER3 L	5603	90.0	267	5.3	0.41	0.14	0.39	0.00	0.51	0.12	0.47	-0.01
POLDER3 O	2606	90.9	102	4.3	0.53	0.12	0.36	0.01	0.63	0.09	0.48	0.00
SeaWiFS L	9885	33.9	92	2.7	0.80	0.09	0.85	0.02	0.83	0.08	0.91	0.01
SeaWiFS O	1391	65.3	68	7.5	0.67	0.12	1.10	0.02	0.73	0.07	0.94	0.03

Table 3b (continued)

Dataset	Nfilt	Nfilt /Ntot (%)	Nout	Nfilt/ Nout (%)	Complete data				Outliers removed			
					R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
Winter												
TMODIS DT	5956	40.3	45	1.9	0.81	0.13	0.77	0.04	0.83	0.13	0.78	0.03
TMODIS DB	1580	16.4	13	5.0	0.73	0.20	0.79	0.08	0.73	0.19	0.78	0.08
TMODIS O	220	100.	17	7.7	0.90	0.05	1.07	0.01	0.93	0.04	0.98	0.02
AMODIS DT	4913	36.6	43	2.4	0.79	0.15	0.76	0.04	0.79	0.15	0.77	0.04
AMODIS DB	5262	15.7	43	5.2	0.78	0.17	0.83	0.03	0.82	0.14	0.87	0.02
AMODIS O	228	99.6	11	4.8	0.87	0.06	0.85	0.03	0.91	0.04	1.01	0.01
MISR	1331	83.5	72	6.5	0.82	0.10	0.62	0.05	0.85	0.09	0.65	0.05
OMI	6879	92.1	186	2.9	0.45	0.23	0.64	0.13	0.46	0.21	0.64	0.13
CALIOP	283	85.5	9	3.7	0.29	0.28	0.37	0.11	0.36	0.22	0.52	0.08
POLDER3 L	2106	91.5	97	5.0	0.26	0.25	0.12	0.03	0.30	0.20	0.15	0.02
POLDER3 O	1544	91.6	55	3.9	0.61	0.11	0.40	0.01	0.61	0.10	0.44	0.01
SeaWiFS L	5471	33.0	59	3.3	0.75	0.14	0.81	0.04	0.80	0.11	0.85	0.04
SeaWiFS O	610	60.3	22	6.0	0.69	0.11	1.03	0.02	0.78	0.08	0.99	0.02
Spring												
TMODIS DT	10031	49.6	92	1.8	0.82	0.11	0.93	0.03	0.84	0.10	0.95	0.02
TMODIS DB	1514	16.1	11	4.5	0.80	0.27	0.70	0.14	0.81	0.24	0.74	0.11
TMODIS O	311	99.4	12	3.9	0.90	0.12	1.23	-0.01	0.92	0.08	1.11	0.01
AMODIS DT	10772	46.2	109	2.2	0.81	0.12	0.98	0.03	0.83	0.11	0.98	0.02
AMODIS DB	5923	15.1	21	2.4	0.75	0.24	0.80	0.08	0.76	0.22	0.85	0.06
AMODIS O	368	99.7	19	5.2	0.82	0.16	1.30	-0.03	0.93	0.06	1.06	0.01
MISR	1839	85.2	85	5.4	0.77	0.14	0.65	0.07	0.83	0.10	0.74	0.05
OMI	10080	94.9	339	3.5	0.42	0.27	0.68	0.16	0.48	0.24	0.71	0.14
CALIOP	400	87.2	21	6.0	0.38	0.24	0.61	0.04	0.43	0.21	0.75	0.00
POLDER3 L	3766	92.2	189	5.4	0.19	0.28	0.10	0.03	0.23	0.21	0.14	0.02
POLDER3 O	2422	93.8	103	4.5	0.40	0.19	0.26	0.03	0.43	0.16	0.30	0.03
SeaWiFS L	7501	32.8	77	3.1	0.83	0.14	0.78	0.05	0.85	0.12	0.85	0.03
SeaWiFS O	1148	64.6	52	7.0	0.68	0.16	1.06	0.03	0.80	0.08	1.03	0.02
Summer												
TMODIS DT	18816	52.2	186	1.9	0.79	0.11	1.10	-0.02	0.80	0.09	1.07	-0.01
TMODIS DB	2932	15.6	21	4.6	0.73	0.22	0.77	0.08	0.79	0.17	0.90	0.05
TMODIS O	637	99.4	23	3.6	0.87	0.11	1.17	0.00	0.91	0.07	1.03	0.02
AMODIS DT	17997	48.5	220	2.5	0.80	0.10	1.12	-0.01	0.78	0.09	1.09	-0.01
AMODIS DB	6812	13.4	37	4.1	0.73	0.20	0.89	0.03	0.77	0.17	0.92	0.02
AMODIS O	733	99.2	21	2.9	0.84	0.09	1.07	0.01	0.89	0.07	1.04	0.01
MISR	2696	85.9	112	4.8	0.77	0.11	0.71	0.06	0.80	0.08	0.80	0.04
OMI	14545	95.3	537	3.9	0.33	0.24	0.73	0.14	0.39	0.21	0.76	0.12
CALIOP	541	86.1	26	5.6	0.28	0.19	0.58	0.04	0.43	0.15	0.63	0.02
POLDER3 L	5812	90.2	294	5.6	0.22	0.18	0.15	0.02	0.23	0.16	0.15	0.01
POLDER3 O	2996	93.7	122	4.3	0.36	0.16	0.26	0.04	0.39	0.14	0.30	0.03
SeaWiFS L	10382	26.1	91	3.4	0.75	0.11	0.81	0.02	0.78	0.09	0.89	0.01
SeaWiFS O	1912	69.1	80	6.1	0.70	0.10	1.03	0.02	0.78	0.07	0.93	0.03

Table 4b. Linear fit correlation coefficient (R2) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.87			0.88	0.76	0.51	0.52		0.56		0.71
Evergreen needleleaf forest	0.80			0.81	0.87		0.82	0.39	0.60	0.54		0.59	
Evergreen broadleaf forest	0.74			0.84			0.59	0.56	0.24	0.99			
Deciduous broadleaf forest	0.85			0.89			0.83	0.57	0.35	0.73		0.74	
Mixed forests	0.77			0.82			0.72	0.37	0.62	0.57		0.62	
Closed shrubland	0.75	1.00		0.78	0.77		0.70	0.48	0.64	0.47		0.75	
Open shrublands	0.54	0.61		0.64	0.77		0.66	0.28	0.60	0.37		0.54	
Woody savannas	0.72	0.90		0.81	0.87		0.66	0.37	0.60	0.39		0.86	
Savannas	0.79	0.65		0.87	0.61		0.83	0.57	0.52	0.71		0.77	
Grasslands	0.62	0.82		0.68	0.75		0.73	0.42	0.48	0.44		0.59	
Permanent wetlands	0.80			0.90			0.83	0.34	0.68	0.42			
Croplands	0.78	0.70		0.80	0.61		0.77	0.50	0.55	0.48		0.67	
Urban and built-up	0.76	0.70		0.74	0.72		0.77	0.44	0.47	0.40		0.69	
Cropland / natural veget. mosaic	0.75			0.81	0.53		0.66	0.56	0.57	0.60		0.72	
Snow and ice							0.69		1.00	0.15			
Barren or sparsely vegetated	0.64	0.74		0.72	0.48		0.73	0.22	0.54	0.28		0.53	

Table 5b. Root mean square error (RMSE) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 14b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.06			0.04	0.08	0.14	0.11		0.08		0.07
Evergreen needleleaf forest	0.06			0.06	0.34		0.05	0.14	0.11	0.06		0.05	
Evergreen broadleaf forest	0.10			0.05			0.08	0.30	0.57	0.08			
Deciduous broadleaf forest	0.06			0.06			0.04	0.10	0.13	0.06		0.05	
Mixed forests	0.05			0.05			0.04	0.12	0.09	0.06		0.05	
Closed shrubland	0.09	0.02		0.09	0.05		0.05	0.18	0.06	0.11		0.04	
Open shrublands	0.07	0.10		0.07	0.14		0.07	0.23	0.08	0.14		0.10	
Woody savannas	0.09	0.44		0.10	0.23		0.10	0.19	0.23	0.24		0.11	
Savannas	0.10	0.19		0.10	0.15		0.08	0.17	0.11	0.13		0.09	
Grasslands	0.08	0.26		0.08	0.13		0.05	0.18	0.11	0.13		0.07	
Permanent wetlands	0.06			0.06			0.08	0.14	0.11	0.07			
Croplands	0.09	0.10		0.09	0.11		0.08	0.15	0.13	0.11		0.08	
Urban and built-up	0.10	0.12		0.10	0.14		0.07	0.19	0.14	0.10		0.09	
Cropland / natural veget. mosaic	0.07			0.09	0.17		0.05	0.13	0.22	0.08		0.07	
Snow and ice							0.03		0.04	0.01			
Barren or sparsely vegetated	0.12	0.06		0.10	0.11		0.08	0.37	0.12	0.14		0.15	

Table 6b. Bias between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 14b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.00			0.00	-0.03	0.04	-0.08		-0.06		0.03
Evergreen needleleaf forest	0.00			0.01	0.19		-0.01	0.04	-0.05	-0.05		-0.02	
Evergreen broadleaf forest	-0.01			0.01			-0.05	0.16	-0.46	-0.04			
Deciduous broadleaf forest	-0.04			-0.03			-0.01	0.00	0.00	-0.05		-0.02	
Mixed forests	-0.02			-0.01			0.01	0.04	-0.01	-0.05		-0.02	
Closed shrubland	0.05	0.00		0.04	0.04		0.01	0.08	-0.04	-0.09		-0.03	
Open shrublands	0.03	0.03		0.04	0.06		0.02	0.13	-0.02	-0.12		0.00	
Woody savannas	-0.04	-0.35		-0.06	-0.19		-0.07	-0.06	-0.20	-0.21		-0.05	
Savannas	-0.05	-0.14		-0.05	-0.08		-0.03	0.03	-0.04	-0.11		-0.03	
Grasslands	0.01	-0.08		0.01	-0.05		0.01	0.09	-0.07	-0.11		-0.01	
Permanent wetlands	0.00			0.05			-0.07	0.04	-0.09	-0.06			
Croplands	0.01	0.04		0.02	0.00		-0.03	-0.02	-0.06	-0.10		-0.03	
Urban and built-up	0.03	0.03		0.04	-0.02		-0.03	0.02	-0.05	-0.08		-0.01	
Cropland / natural veget. mosaic	-0.02			-0.03	-0.08		-0.02	-0.02	0.02	-0.07		-0.04	
Snow and ice							0.02		-0.04	0.00			
Barren or sparsely vegetated	0.05	0.00		0.06	-0.02		0.03	0.27	-0.02	-0.12		0.08	

Table 7b. Variance between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 14b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.004			0.002	0.003	0.018	0.006		0.004		0.004
Evergreen needleleaf forest	0.002			0.002	0.078		0.001	0.018	0.009	0.001		0.002	
Evergreen broadleaf forest	0.006			0.002			0.004	0.047	0.112	0.002			
Deciduous broadleaf forest	0.003			0.002			0.002	0.010	0.019	0.001		0.003	
Mixed forests	0.002			0.002			0.002	0.011	0.004	0.002		0.002	
Closed shrubland	0.004	0.000		0.002	0.001		0.002	0.025	0.003	0.005		0.002	
Open shrublands	0.003	0.008		0.002	0.010		0.004	0.031	0.005	0.015		0.010	
Woody savannas	0.004	0.072		0.004	0.019		0.005	0.032	0.014	0.028		0.014	
Savannas	0.008	0.021		0.007	0.019		0.009	0.027	0.013	0.014		0.008	
Grasslands	0.003	0.046		0.003	0.020		0.002	0.022	0.009	0.009		0.005	
Permanent wetlands	0.004			0.002			0.003	0.020	0.003	0.001			
Croplands	0.005	0.015		0.006	0.019		0.005	0.019	0.013	0.005		0.006	
Urban and built-up	0.005	0.015		0.006	0.015		0.004	0.029	0.014	0.003		0.007	
Cropland / natural veget. mosaic	0.004			0.004	0.024		0.002	0.017	0.040	0.003		0.004	
Snow and ice							0.000		0.000	0.000			
Barren or sparsely vegetated	0.005	0.004		0.003	0.011		0.004	0.053	0.010	0.012		0.016	

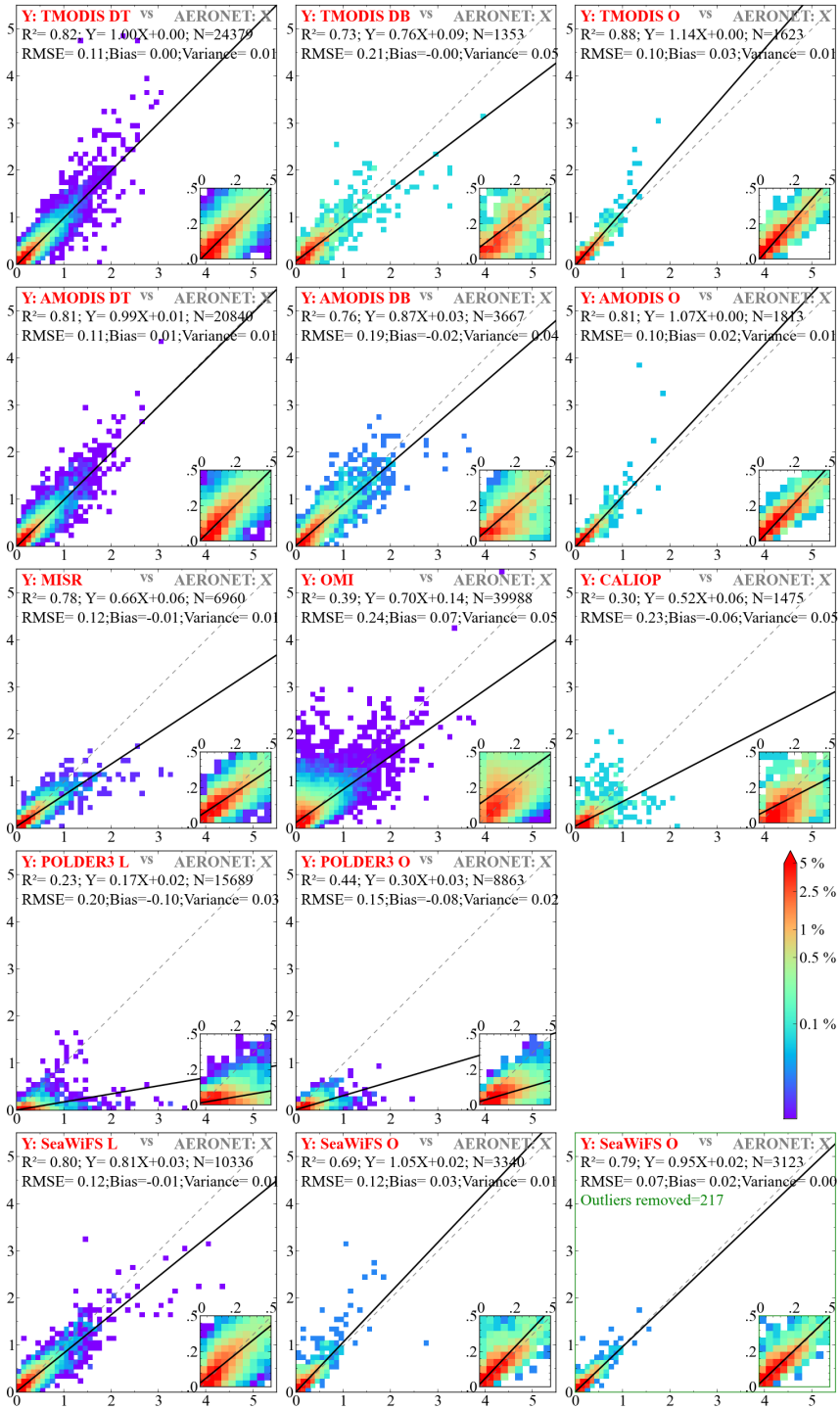

Figure 6b. Regression fits of AERONET AOD (x-axes) to AOD measured by spaceborne sensors (y-axes). Satellite data were pre-screened by QA as explained in Section 4. Density plots bin data into 0.1 AOD (0.05 AOD in magnified insets) intervals, where the color of each bin indicates the percentage of all data points that fall into this bin. Density plot in the green frame demonstrates the results of the possible data outlier detection and removal procedure described in Section 5.

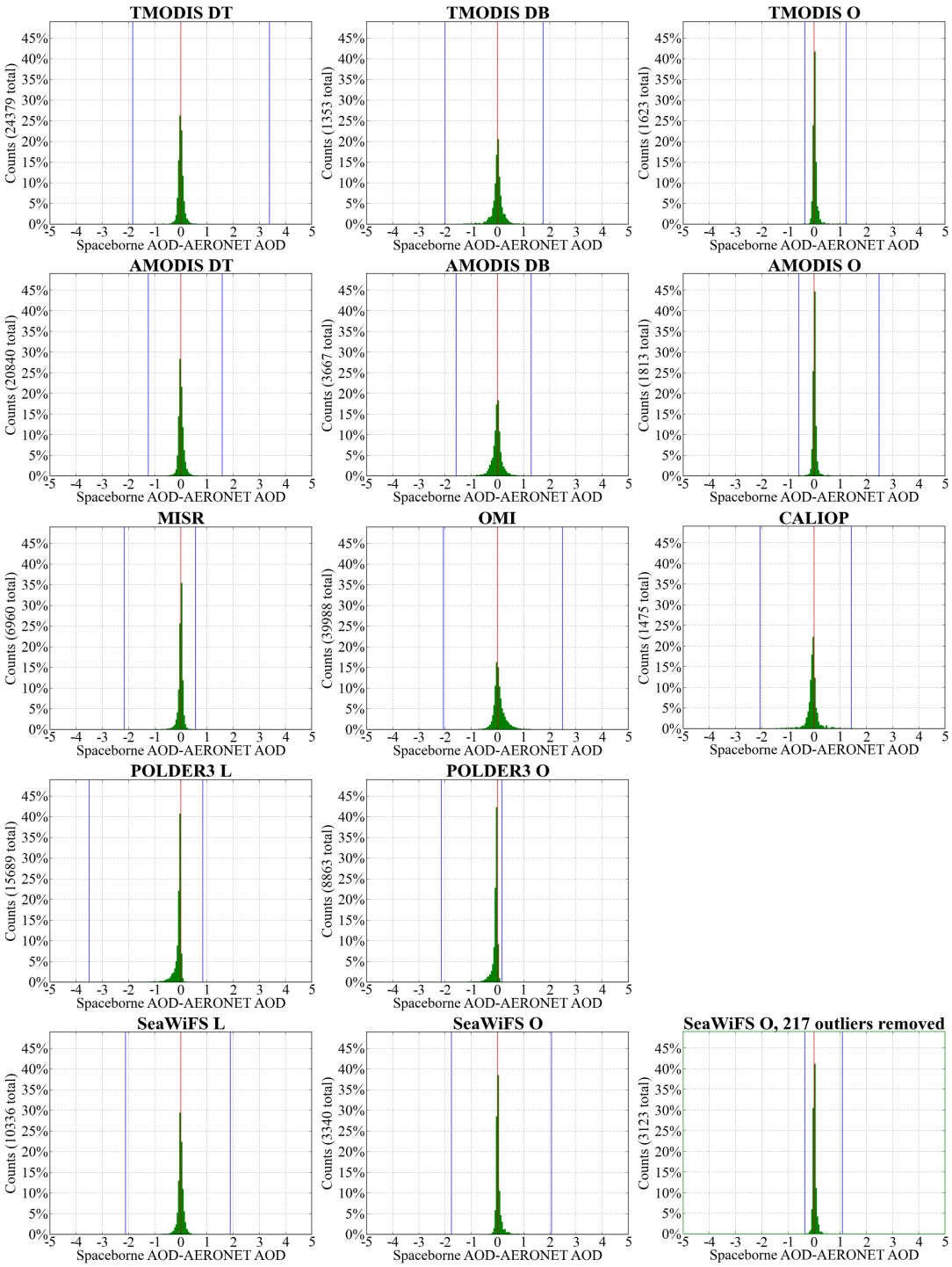

Figure 7b. Distribution of the difference (residuals) between Spaceborne AOD and AERONET AOD. Satellite data were pre-screened by QA as explained in Section 4. In each histogram, the data are split into equal-length bins of 0.05 AOD. The red vertical line indicates the residual of 0 AOD, while the blue lines mark minimum and maximum residuals of each distribution. Histogram in the green frame demonstrates the results of the possible data outlier detection and removal procedure described in Section 5.

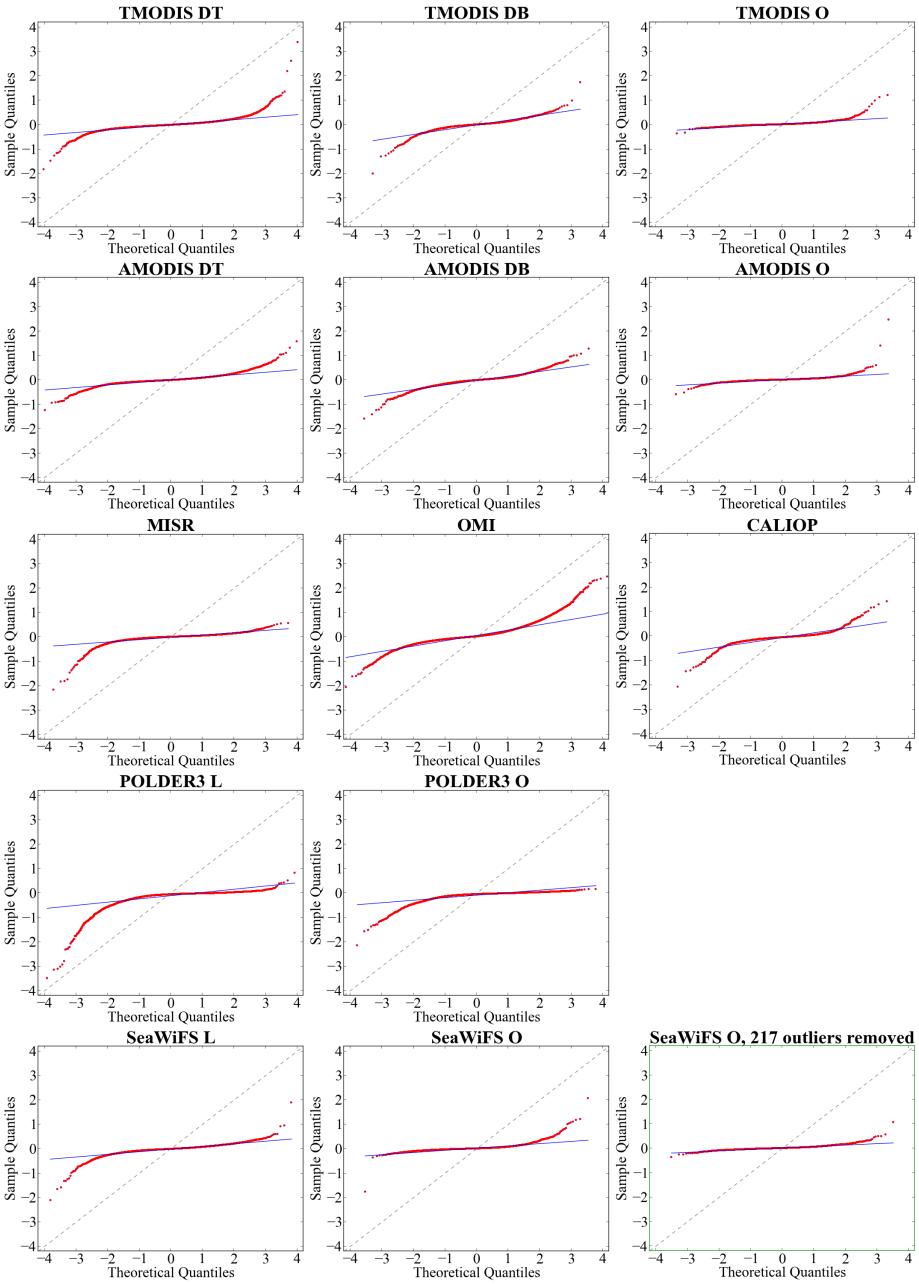

Figure 8b. Normality of the difference between Spaceborne AOD and AERONET AOD. In each plot, points closely following the blue fitted line indicate the data that are approximately normally distributed. Curvatures around the center of the straight line represent the departure from the normality and indicate a presence of possible outliers, particularly at the tails of the distributions. The difference in the slope and offset of the fitted blue line from the gray 1:1 line indicates a deviation from the standard location (i.e., mean=0) and scale (i.e., standard deviation=1) of the normal distribution. Satellite data were pre-screened by QA as explained in Section 4. Plot in the green frame demonstrates the results of the possible data outlier detection and removal procedure described in Section 5.

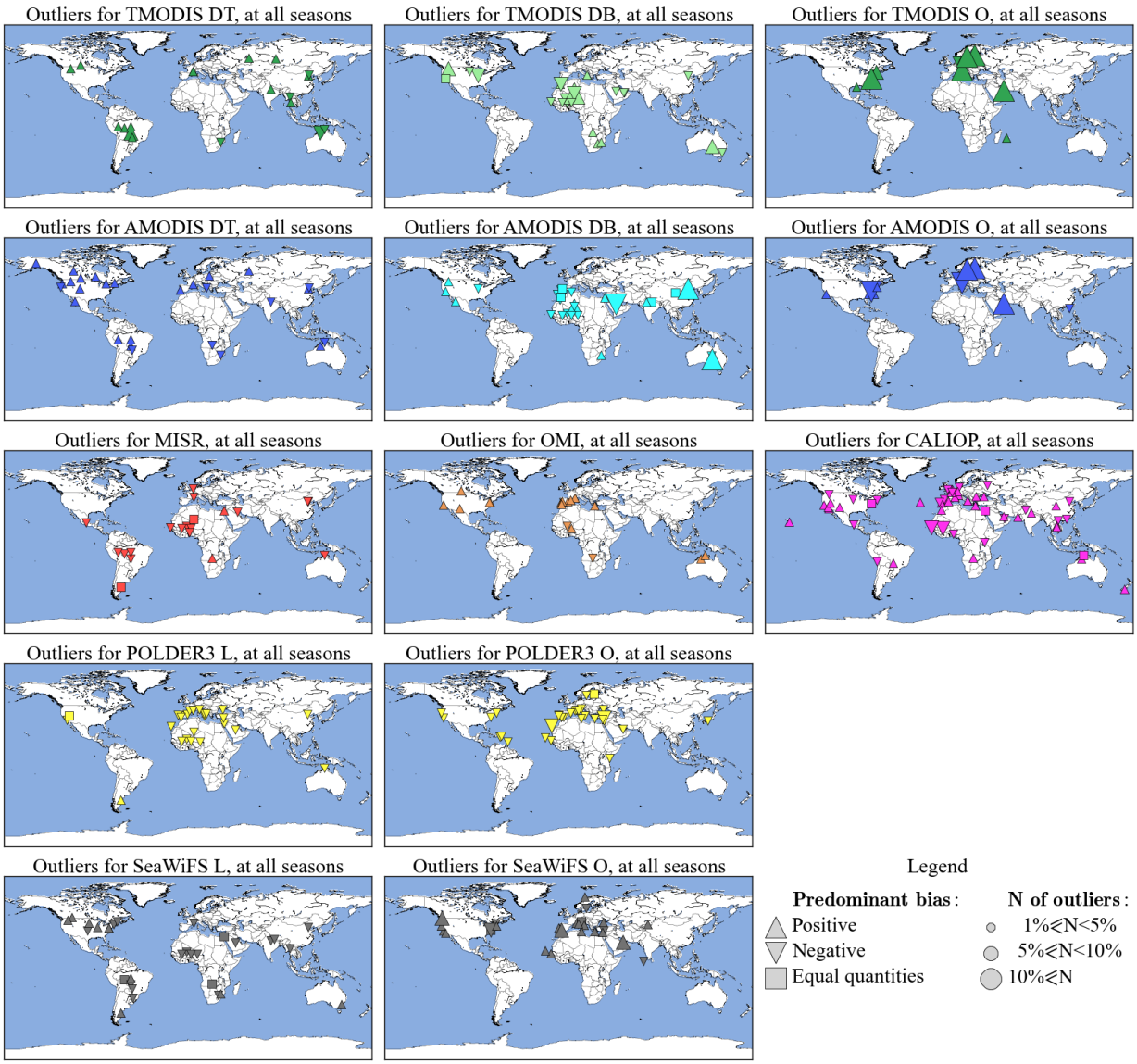

Figure 9b. Distribution of the possible data outliers for the studied spaceborne aerosol data sets. Displayed values are percentages from all outliers detected for each of the data sets as listed in the 4th column of Table 3. Stations with less than 1% from the total number of outliers are not shown. The statistical technique for detection and removal of the possible data outliers is described in Section 5.

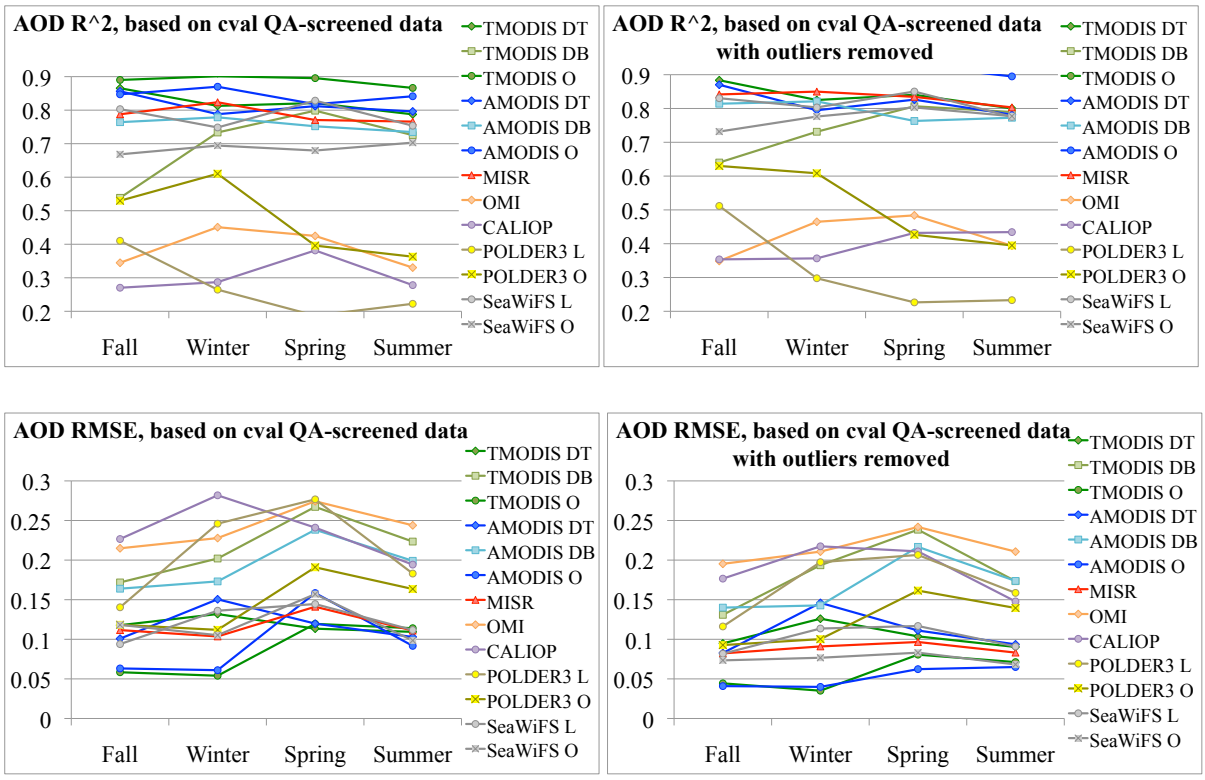

Figure 10b. Seasonal dependence of squared linear fit correlation coefficient (R^2) and root mean square error (RMSE) statistics between the collocated spaceborne and ground-based (AERONET) observations of AOD, based on the data in Table 3b.

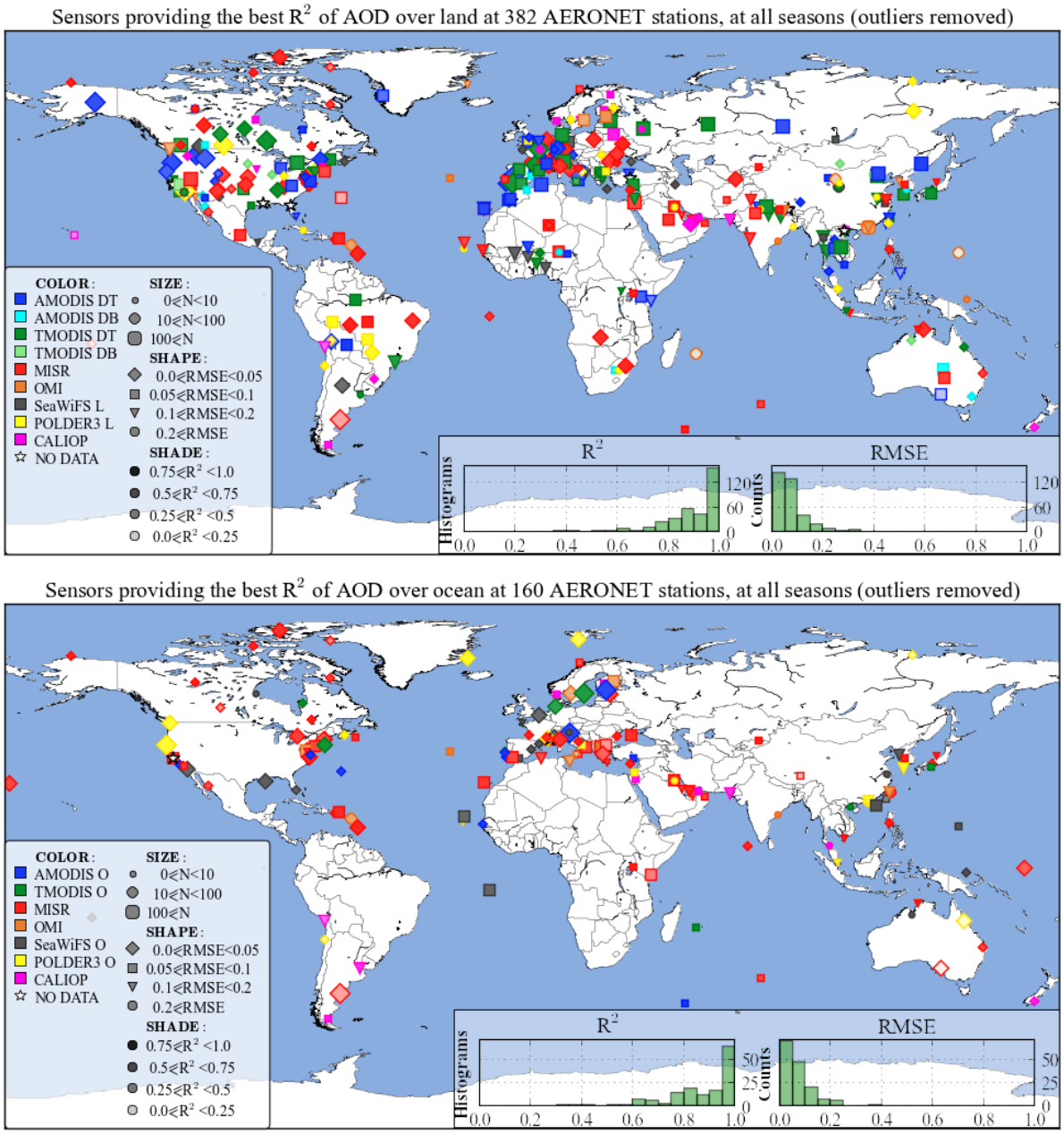

Figure 11. Spaceborne datasets with the best correlation (R^2) of the retrieved AOD to the AOD measured by inland (top) and coastal or island-based (bottom) AERONET sites. The intensity of marker shading indicates the degree of correlation. Marker shape indicates the range of root mean square error (RMSE) associated with the displayed best R^2. Finally, marker size corresponds to the number of collocated data points used to compute the displayed statistics. Histograms in the bottom insets highlight the distribution of these statistics over all sites based on bins of 0.05 AOD. The statistics were calculated based on the data that were pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5.

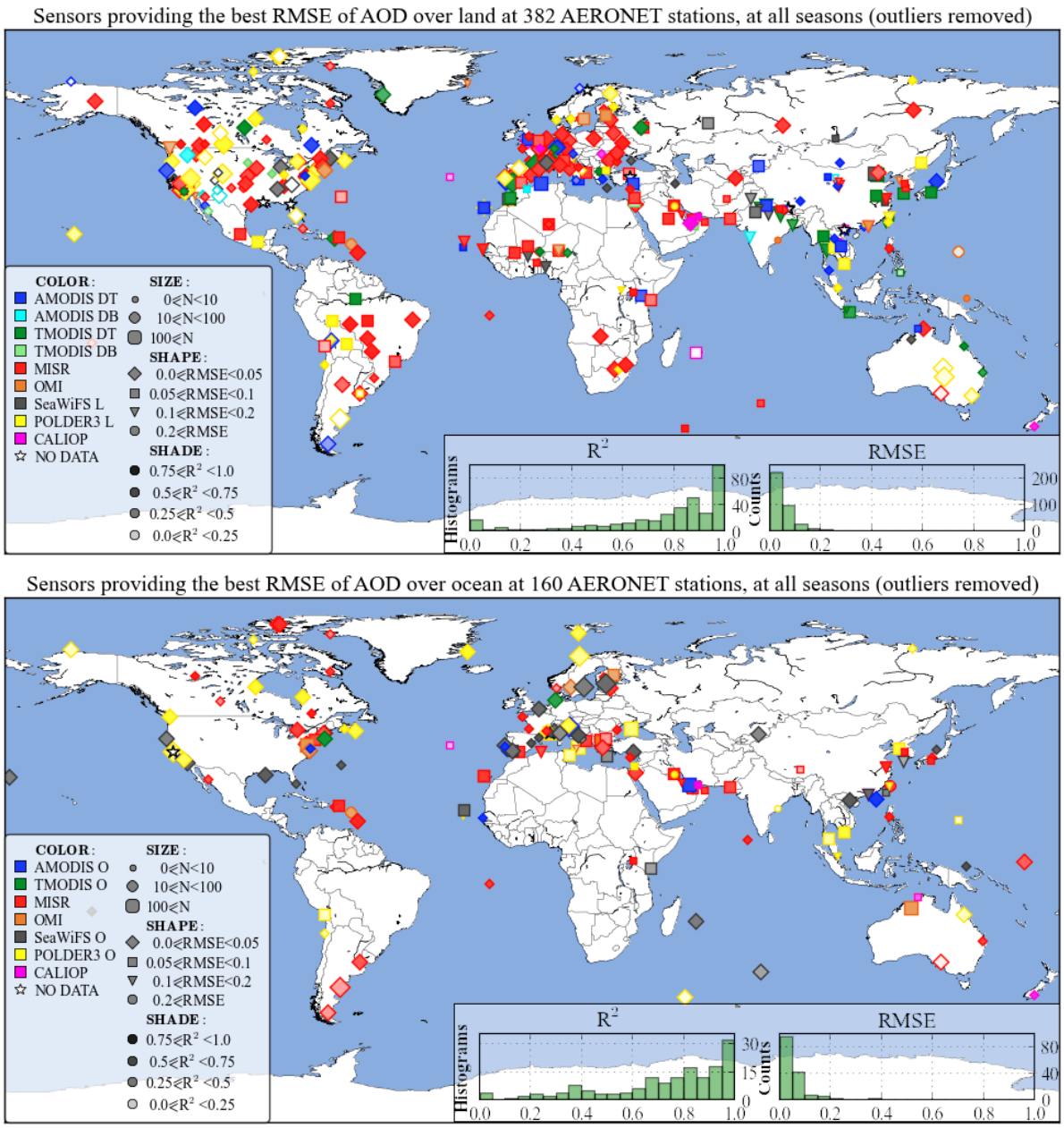

Figure 12b. Spaceborne datasets with the best root mean square error (RMSE) of the retrieved AOD to the AOD measured by inland (top) and coastal or island-based (bottom) AERONET sites. The symbols used are the same as the symbols in Figure 11b. The statistics were calculated based on the data that were pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5.

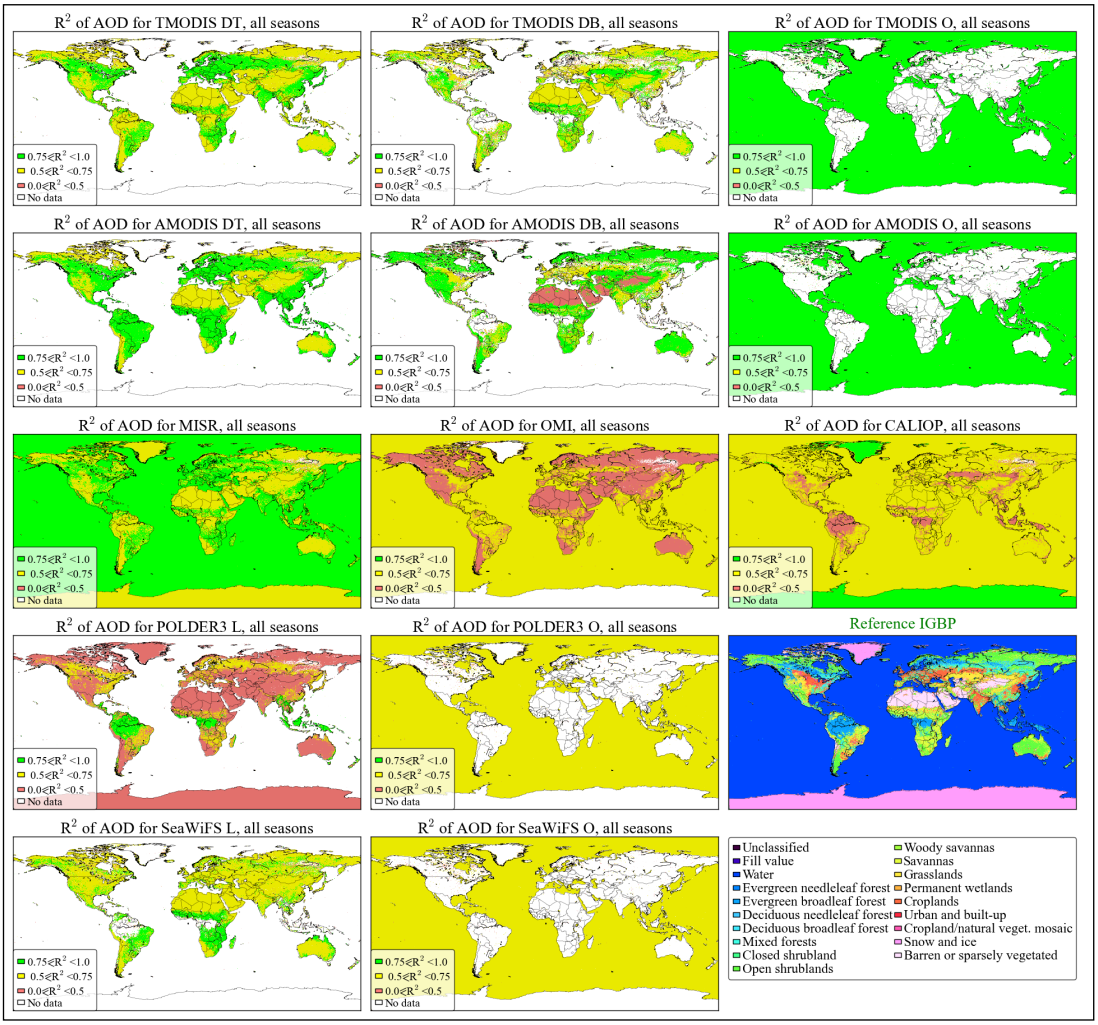

Figure 13b. Land cover type dependence of squared linear fit correlation coefficient (R2) between the collocated spaceborne and ground-based (AERONET) observations of AOD. Areas corresponding to each IGBP land cover type (bottom right inset) are colored based on the average of the data from those AERONET sites that reside in these areas. The statistics were calculated based on data that were pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5.

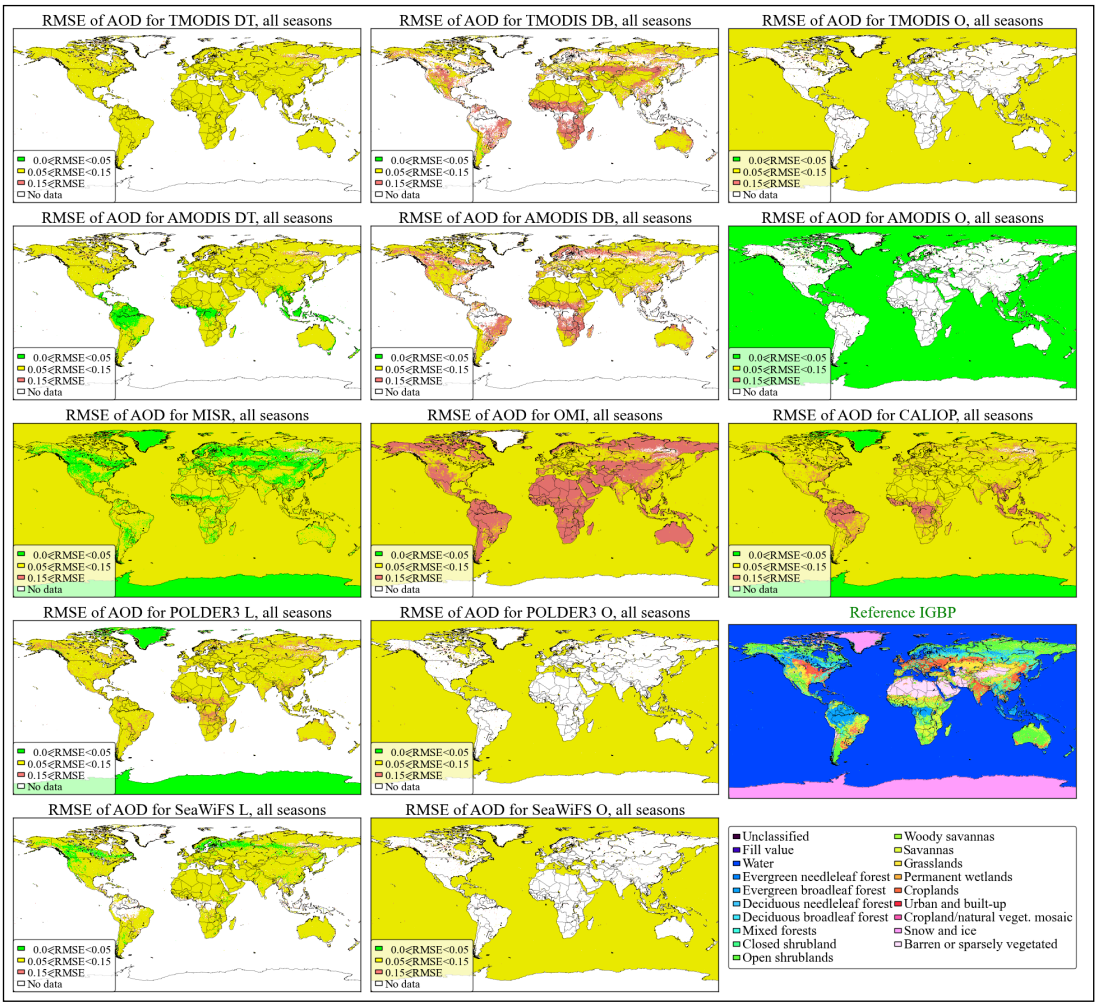

Figure 14b. Land cover type dependence of root mean square error (RMSE) between the collocated spaceborne and ground-based (AERONET) observations of AOD. Areas corresponding to each IGBP land cover type (bottom right inset) are colored based on the average of the data from those AERONET sites that reside in these areas. The statistics were calculated based on the data that were pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5.

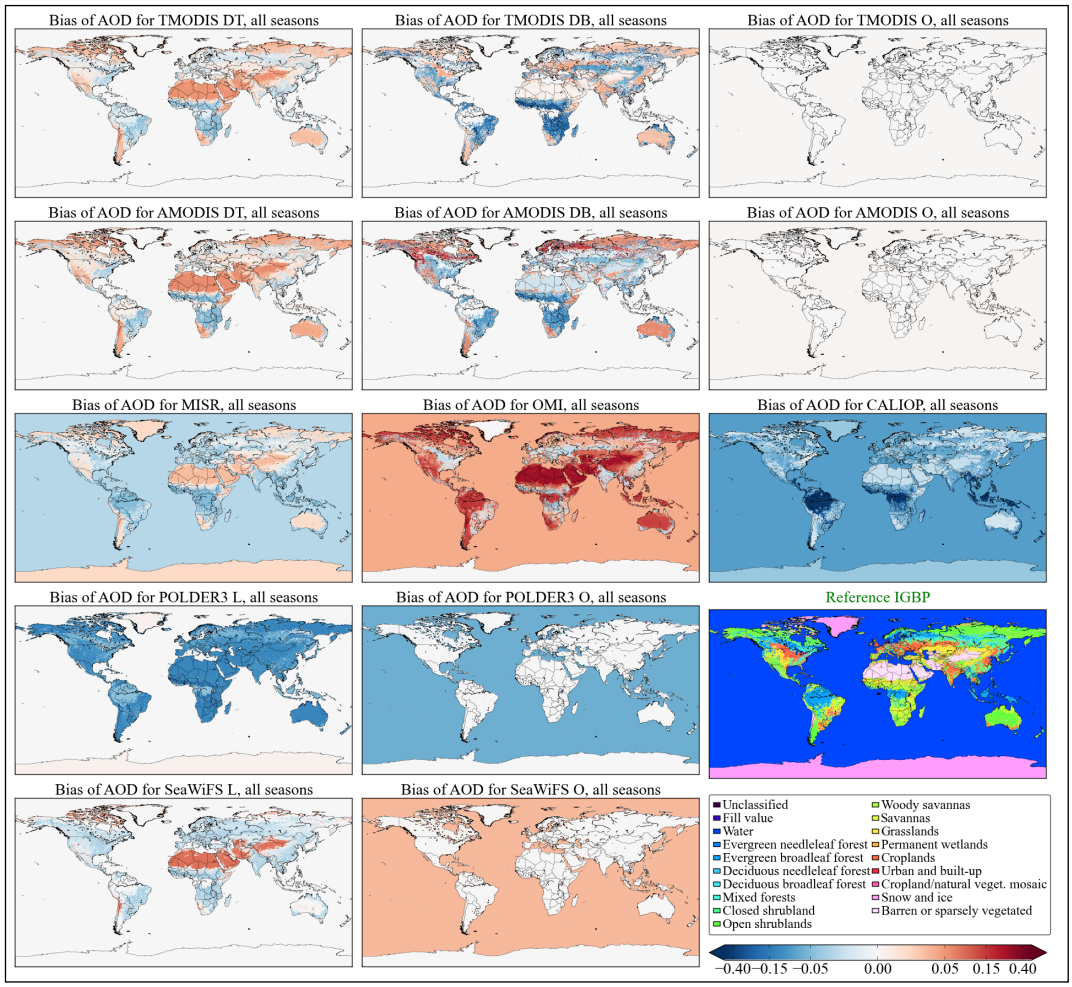

Figure 15b. Land cover type dependence of bias between the collocated spaceborne and ground-based (AERONET) observations of AOD. Areas corresponding to each IGBP land cover type (bottom right inset) are colored based on the average of the data from those AERONET sites that reside in these areas. The statistics were calculated based on the data that were pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5.

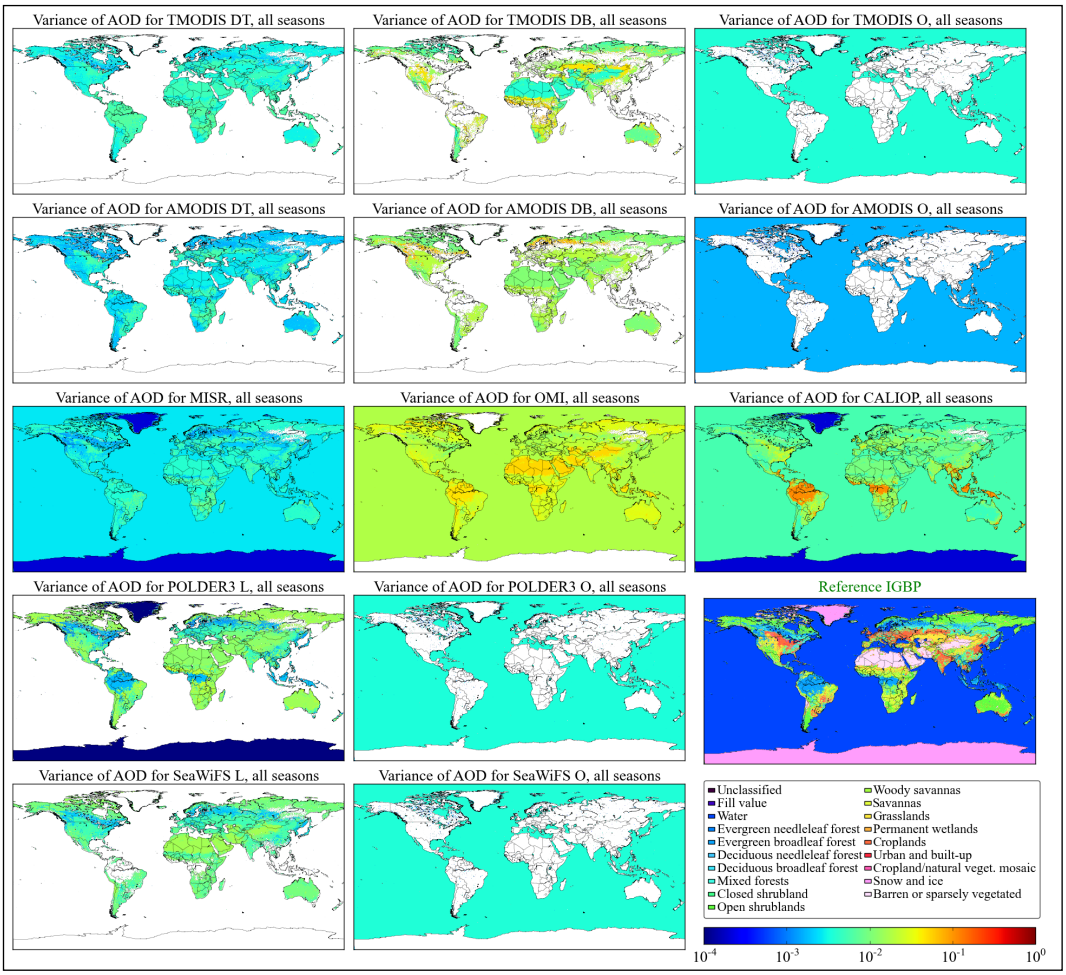

Figure 16b. Land cover type dependence of variance between the collocated spaceborne and ground-based (AERONET) observations of AOD. Areas corresponding to each IGBP land cover type (bottom right inset) are colored based on the average of the data from those AERONET sites that reside in these areas. The statistics were calculated based on the data that were pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5.

Table 3.1. Statistics of the studied aerosol data sets based on the analysis of **mean subset values of low-AOD events (AOD<0.2)** and all AERONET stations during the period of 2006-06-07 and 2010-12-11. 'Ntot' indicates the total number of the collocated Spaceborne AOD - AERONET AOD data points, while 'Nfilt' indicates the number of data points after filtering (screening) the spaceborne data by QA as described in Section 4 and Table 2. 'Nout' is the total number of the possible data outliers determined as explained in Section 5. The last 8 columns present the statistics on the collocated data based on regression fits also plotted in Fig. 6b.

Dataset	Nfilt	Nfilt/ Ntot (%)	Complete data				Outliers removed			
			R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
					All seasons					
TMODIS DT	55085	69.0	0.20	0.08	0.77	0.03	0.21	0.07	0.76	0.03
TMODIS DB	9229	23.6	0.06	0.15	0.64	0.08	0.09	0.13	0.68	0.07
TMODIS O	12379	99.5	0.42	0.06	0.92	0.04	0.48	0.05	0.91	0.03
AMODIS DT	53836	65.0	0.22	0.08	0.88	0.02	0.24	0.08	0.86	0.02
AMODIS DB	27170	25.7	0.06	0.15	0.63	0.08	0.07	0.12	0.57	0.07
AMODIS O	13368	99.4	0.39	0.06	0.86	0.04	0.46	0.05	0.86	0.03
MISR	9661	99.9	0.36	0.06	0.75	0.05	0.43	0.05	0.74	0.04
OMI	31869	97.0	0.01	0.23	0.38	0.19	0.01	0.21	0.34	0.18
CALIOP	1233	90.1	0.02	0.12	0.36	0.06	0.08	0.08	0.43	0.04
POLDER3 L	13919	94.9	0.22	0.06	0.27	0.01	0.26	0.06	0.29	0.00
POLDER3 O	7358	94.8	0.39	0.05	0.55	0.00	0.40	0.05	0.55	0.00
SeaWiFS L	32057	38.8	0.25	0.08	0.87	0.02	0.30	0.07	0.86	0.02
SeaWiFS O	11845	79.2	0.24	0.07	0.81	0.04	0.38	0.05	0.81	0.03
					Fall					
TMODIS DT	17082	68.7	0.22	0.07	0.72	0.02	0.23	0.07	0.72	0.02
TMODIS DB	3337	22.6	0.03	0.13	0.40	0.10	0.04	0.12	0.43	0.09
TMODIS O	4124	99.3	0.43	0.05	0.89	0.04	0.49	0.05	0.90	0.03
AMODIS DT	15142	63.0	0.28	0.07	0.85	0.01	0.28	0.07	0.84	0.01
AMODIS DB	8801	25.3	0.02	0.13	0.34	0.09	0.03	0.12	0.36	0.09
AMODIS O	4058	99.4	0.40	0.05	0.83	0.04	0.48	0.04	0.84	0.03
MISR	2946	99.9	0.40	0.05	0.78	0.04	0.49	0.04	0.78	0.04
OMI	9407	96.3	0.01	0.20	0.43	0.16	0.02	0.19	0.42	0.15
CALIOP	372	89.8	0.03	0.14	0.48	0.06	0.03	0.13	0.45	0.06
POLDER3 L	4690	94.9	0.20	0.06	0.26	0.01	0.26	0.06	0.28	0.01
POLDER3 O	2114	93.7	0.44	0.05	0.54	0.00	0.47	0.05	0.55	0.00
SeaWiFS L	9524	43.4	0.33	0.06	0.88	0.01	0.36	0.06	0.89	0.01
SeaWiFS O	3382	79.5	0.24	0.07	0.81	0.03	0.37	0.05	0.82	0.03

Table 3.1 (continued)

Dataset	Nfilt	Nfilt/ Ntot (%)	Complete data				Outliers removed			
			R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
					Winter					
TMODIS DT	7622	60.1	0.10	0.07	0.48	0.05	0.11	0.07	0.48	0.05
TMODIS DB	1568	30.4	0.04	0.15	0.61	0.09	0.06	0.15	0.70	0.08
TMODIS O	2701	99.8	0.43	0.05	0.88	0.03	0.50	0.05	0.89	0.03
AMODIS DT	6512	52.7	0.10	0.08	0.55	0.05	0.11	0.08	0.54	0.05
AMODIS DB	5491	32.3	0.06	0.14	0.64	0.07	0.07	0.14	0.67	0.07
AMODIS O	2707	99.2	0.38	0.05	0.83	0.03	0.46	0.05	0.85	0.03
MISR	1829	99.8	0.37	0.05	0.68	0.05	0.43	0.05	0.72	0.04
OMI	5934	96.0	0.01	0.22	0.34	0.18	0.01	0.21	0.36	0.18
CALIOP	222	90.5	0.04	0.10	0.40	0.06	0.04	0.10	0.43	0.06
POLDER3 L	1657	94.8	0.19	0.06	0.23	0.01	0.23	0.06	0.25	0.01
POLDER3 O	1243	93.8	0.36	0.05	0.46	0.00	0.38	0.05	0.48	0.00
SeaWiFS L	5072	38.2	0.26	0.08	0.92	0.03	0.30	0.07	0.96	0.02
SeaWiFS O	1869	78.0	0.22	0.07	0.78	0.03	0.35	0.05	0.82	0.03
					Spring					
TMODIS DT	10122	70.4	0.16	0.09	0.78	0.04	0.17	0.08	0.78	0.04
TMODIS DB	1243	23.5	0.13	0.17	1.08	0.07	0.13	0.16	1.06	0.07
TMODIS O	2043	99.8	0.37	0.07	0.97	0.04	0.43	0.06	0.93	0.04
AMODIS DT	11271	67.5	0.16	0.09	0.83	0.04	0.17	0.09	0.82	0.04
AMODIS DB	5130	23.6	0.09	0.16	0.90	0.08	0.11	0.15	0.89	0.07
AMODIS O	2538	99.7	0.37	0.06	0.86	0.05	0.41	0.06	0.86	0.05
MISR	1934	99.8	0.27	0.06	0.68	0.06	0.34	0.05	0.68	0.06
OMI	6611	97.6	0.00	0.27	0.08	0.25	0.00	0.24	0.08	0.24
CALIOP	266	90.2	0.00	0.15	0.10	0.10	0.00	0.13	0.08	0.09
POLDER3 L	2716	96.0	0.25	0.07	0.28	0.00	0.28	0.07	0.30	0.00
POLDER3 O	1705	95.7	0.30	0.06	0.51	0.01	0.31	0.06	0.51	0.01
SeaWiFS L	6711	39.4	0.22	0.09	0.96	0.03	0.23	0.09	0.95	0.03
SeaWiFS O	2572	79.4	0.25	0.07	0.80	0.04	0.30	0.06	0.80	0.04
					Summer					
TMODIS DT	20259	71.8	0.22	0.08	0.86	0.02	0.22	0.08	0.85	0.02
TMODIS DB	3081	21.4	0.10	0.15	0.79	0.06	0.11	0.14	0.77	0.06
TMODIS O	3511	99.4	0.39	0.06	0.90	0.04	0.49	0.05	0.90	0.04
AMODIS DT	20911	69.0	0.24	0.08	0.95	0.02	0.26	0.08	0.94	0.02
AMODIS DB	7748	22.9	0.08	0.17	0.83	0.08	0.08	0.17	0.80	0.08
AMODIS O	4065	99.2	0.36	0.06	0.84	0.04	0.47	0.05	0.85	0.04
MISR	2952	99.9	0.33	0.06	0.74	0.05	0.39	0.05	0.74	0.05
OMI	9917	97.9	0.01	0.24	0.38	0.20	0.01	0.22	0.36	0.19
CALIOP	373	90.1	0.07	0.08	0.44	0.05	0.10	0.07	0.45	0.04
POLDER3 L	4856	94.3	0.25	0.06	0.30	0.00	0.30	0.06	0.31	0.00
POLDER3 O	2296	95.6	0.42	0.05	0.61	0.00	0.43	0.05	0.61	0.00
SeaWiFS L	10750	34.6	0.20	0.08	0.76	0.02	0.23	0.07	0.74	0.02
SeaWiFS O	4022	79.4	0.22	0.07	0.79	0.04	0.38	0.05	0.80	0.03

Table 3.2 Statistics of the studied aerosol data sets based on the analysis of **mean subset values of moderate-AOD events (0.2≤AOD<0.6)** and all AERONET stations during the period of 2006-06-07 and 2010-12-11. 'Ntot' indicates the total number of the collocated Spaceborne AOD - AERONET AOD data points, while 'Nfilt' indicates the number of data points after filtering (screening) the spaceborne data by QA as described in Section 4 and Table 2. 'Nout' is the total number of the possible data outliers determined as explained in Section 5. The last 8 columns present the statistics on the collocated data based on regression fits also plotted in Fig. 6b.

Dataset	Nfilt	Nfilt/ Ntot (%)	Complete data				Outliers removed			
			R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
All seasons										
TMODIS DT	18300	70.8	0.43	0.11	0.96	0.00	0.47	0.10	0.96	0.00
TMODIS DB	4915	33.9	0.21	0.19	0.91	0.02	0.22	0.18	0.90	0.02
TMODIS O	3605	100.	0.50	0.10	1.00	0.02	0.65	0.07	0.99	0.02
AMODIS DT	18465	64.8	0.43	0.12	0.99	0.01	0.47	0.11	0.99	0.01
AMODIS DB	13386	35.9	0.22	0.22	1.07	-0.03	0.24	0.21	1.07	-0.03
AMODIS O	4073	100.	0.50	0.09	0.91	0.02	0.62	0.07	0.95	0.01
MISR	3377	99.8	0.40	0.11	0.78	0.04	0.51	0.09	0.82	0.03
OMI	19214	94.8	0.12	0.22	0.77	0.12	0.15	0.20	0.78	0.10
CALIOP	681	93.0	0.17	0.19	0.78	-0.01	0.32	0.15	0.86	-0.04
POLDER3 L	2837	98.0	0.05	0.28	0.17	0.02	0.04	0.28	0.15	0.03
POLDER3 O	1970	94.1	0.08	0.21	0.21	0.07	0.07	0.21	0.21	0.08
SeaWiFS L	11929	41.2	0.32	0.13	0.83	0.04	0.36	0.13	0.86	0.03
SeaWiFS O	4277	79.6	0.45	0.11	1.01	-0.01	0.54	0.09	1.01	-0.02
Fall										
TMODIS DT	4999	69.6	0.46	0.11	0.97	-0.03	0.50	0.11	0.98	-0.04
TMODIS DB	1681	34.7	0.17	0.17	0.77	0.05	0.18	0.16	0.76	0.04
TMODIS O	1005	100.	0.53	0.08	0.92	0.04	0.62	0.07	0.95	0.03
AMODIS DT	4691	60.8	0.46	0.11	0.98	-0.02	0.51	0.10	0.99	-0.02
AMODIS DB	3822	36.8	0.17	0.20	0.87	0.00	0.20	0.19	0.90	-0.01
AMODIS O	1059	100.	0.41	0.09	0.75	0.05	0.55	0.07	0.81	0.04
MISR	916	99.6	0.38	0.10	0.67	0.07	0.47	0.09	0.71	0.06
OMI	4765	92.0	0.11	0.21	0.74	0.12	0.13	0.20	0.75	0.11
CALIOP	183	93.4	0.16	0.21	0.83	0.00	0.18	0.17	0.67	0.03
POLDER3 L	818	98.2	0.14	0.25	0.36	-0.03	0.18	0.24	0.40	-0.04
POLDER3 O	463	91.4	0.10	0.20	0.25	0.06	0.13	0.18	0.29	0.06
SeaWiFS L	3260	45.6	0.36	0.12	0.84	0.03	0.40	0.11	0.88	0.02
SeaWiFS O	1118	77.4	0.40	0.11	0.96	-0.01	0.53	0.09	0.97	-0.01

Table 3.2 (continued)

Dataset	Nfilt	Nfilt/ Ntot (%)	Complete data				Outliers removed			
			R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
					Winter					
TMODIS DT	2086	61.1	0.43	0.13	0.88	-0.01	0.48	0.12	0.92	-0.02
TMODIS DB	685	34.7	0.23	0.21	0.99	0.05	0.21	0.20	0.89	0.07
TMODIS O	571	100.	0.22	0.14	0.76	0.09	0.54	0.08	0.83	0.06
AMODIS DT	2014	56.0	0.40	0.13	0.93	-0.01	0.45	0.12	0.95	-0.02
AMODIS DB	2259	41.0	0.17	0.22	0.94	0.02	0.18	0.20	0.88	0.03
AMODIS O	583	100.	0.44	0.09	0.84	0.04	0.61	0.07	0.87	0.03
MISR	449	100.	0.34	0.12	0.62	0.06	0.51	0.09	0.73	0.04
OMI	2499	90.6	0.10	0.18	0.56	0.15	0.11	0.18	0.57	0.14
CALIOP	91	91.2	0.32	0.16	0.90	-0.04	0.34	0.14	0.85	-0.01
POLDER3 L	348	98.3	0.07	0.26	0.17	0.03	0.05	0.26	0.14	0.04
POLDER3 O	284	94.4	0.23	0.20	0.38	0.02	0.24	0.19	0.42	0.01
SeaWiFS L	1753	51.2	0.27	0.14	0.76	0.06	0.27	0.14	0.75	0.06
SeaWiFS O	491	78.6	0.42	0.11	0.93	0.00	0.42	0.10	0.84	0.02
					Spring					
TMODIS DT	3946	71.2	0.48	0.11	0.99	0.01	0.51	0.11	1.01	0.01
TMODIS DB	878	31.8	0.13	0.23	0.82	0.07	0.14	0.22	0.83	0.06
TMODIS O	716	100.	0.62	0.10	1.13	-0.01	0.68	0.09	1.11	-0.01
AMODIS DT	4604	67.3	0.47	0.12	1.05	0.01	0.49	0.12	1.05	0.00
AMODIS DB	3221	37.8	0.22	0.23	1.12	-0.02	0.24	0.23	1.14	-0.03
AMODIS O	953	100.	0.57	0.09	0.99	0.01	0.64	0.07	0.97	0.01
MISR	768	99.9	0.45	0.11	0.86	0.02	0.50	0.10	0.84	0.03
OMI	4561	96.6	0.13	0.24	0.85	0.10	0.16	0.22	0.86	0.09
CALIOP	156	95.5	0.29	0.18	0.87	-0.06	0.34	0.16	0.87	-0.06
POLDER3 L	862	97.7	0.02	0.29	0.10	0.04	0.01	0.29	0.08	0.05
POLDER3 O	611	94.9	0.06	0.23	0.18	0.08	0.06	0.23	0.19	0.08
SeaWiFS L	2978	45.3	0.31	0.13	0.80	0.06	0.33	0.13	0.82	0.06
SeaWiFS O	1043	78.3	0.43	0.12	1.00	0.00	0.51	0.10	1.03	-0.02
					Summer					
TMODIS DT	7269	74.2	0.41	0.11	0.97	0.01	0.43	0.10	0.95	0.01
TMODIS DB	1671	33.9	0.25	0.19	0.98	-0.01	0.26	0.19	0.99	-0.01
TMODIS O	1313	100.	0.58	0.10	1.05	0.01	0.65	0.08	1.06	0.01
AMODIS DT	7156	68.3	0.41	0.11	0.97	0.03	0.45	0.10	0.97	0.02
AMODIS DB	4084	30.7	0.25	0.23	1.18	-0.05	0.26	0.22	1.17	-0.05
AMODIS O	1478	99.9	0.55	0.09	0.98	0.01	0.64	0.07	1.02	0.00
MISR	1244	99.8	0.41	0.10	0.87	0.02	0.50	0.09	0.90	0.01
OMI	7389	97.0	0.13	0.22	0.79	0.13	0.15	0.20	0.81	0.11
CALIOP	251	91.6	0.10	0.20	0.62	0.03	0.23	0.17	0.84	-0.04
POLDER3 L	809	98.0	0.02	0.29	0.11	0.03	0.00	0.30	0.04	0.06
POLDER3 O	612	95.1	0.04	0.21	0.17	0.09	0.04	0.20	0.16	0.10
SeaWiFS L	3938	29.9	0.30	0.14	0.88	0.01	0.37	0.13	0.94	-0.01
SeaWiFS O	1625	82.2	0.49	0.11	1.07	-0.02	0.58	0.09	1.06	-0.03

Table 3.3. Statistics of the studied aerosol data sets based on the analysis of **mean subset values of high-AOD events (0.6≤AOD<1.4)** and all AERONET stations during the period of 2006-06-07 and 2010-12-11. 'Ntot' indicates the total number of the collocated Spaceborne AOD - AERONET AOD data points, while 'Nfilt' indicates the number of data points after filtering (screening) the spaceborne data by QA as described in Section 4 and Table 2. 'Nout' is the total number of the possible data outliers determined as explained in Section 5. The last 8 columns present the statistics on the collocated data based on regression fits also plotted in Fig. 6b.

Dataset	Nfilt	Nfilt/ Ntot (%)	Complete data				Outliers removed			
			R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
All seasons										
TMODIS DT	3052	70.3	0.40	0.24	0.99	-0.02	0.49	0.19	0.91	0.03
TMODIS DB	1053	47.9	0.23	0.41	1.10	-0.05	0.27	0.36	1.10	-0.05
TMODIS O	393	100.	0.41	0.25	1.15	-0.08	0.62	0.13	0.99	0.02
AMODIS DT	3027	64.7	0.34	0.26	0.94	0.03	0.41	0.20	0.87	0.08
AMODIS DB	3059	49.7	0.18	0.39	0.90	0.09	0.22	0.31	0.83	0.12
AMODIS O	435	100.	0.37	0.25	1.10	-0.11	0.48	0.17	0.97	-0.02
MISR	561	100.	0.28	0.28	0.53	0.20	0.39	0.22	0.69	0.09
OMI	4298	80.8	0.14	0.32	0.60	0.22	0.17	0.29	0.63	0.20
CALIOP	128	93.8	0.00	0.50	0.09	0.51	0.05	0.40	0.35	0.29
POLDER3 L	475	97.3	0.04	0.71	0.22	-0.01	0.09	0.65	0.36	-0.13
POLDER3 O	228	98.2	0.01	0.60	0.09	0.16	0.04	0.51	0.31	0.01
SeaWiFS L	2249	42.4	0.35	0.27	0.82	0.02	0.48	0.21	0.89	-0.02
SeaWiFS O	413	81.1	0.33	0.32	1.41	-0.28	0.32	0.20	1.02	-0.02
Fall										
TMODIS DT	771	71.5	0.53	0.23	1.16	-0.17	0.62	0.17	1.06	-0.09
TMODIS DB	192	41.1	0.09	0.44	0.95	0.01	0.22	0.32	1.25	-0.21
TMODIS O	67	100.	0.29	0.26	0.94	-0.05	0.59	0.14	1.03	-0.07
AMODIS DT	741	60.3	0.50	0.25	1.16	-0.15	0.63	0.17	1.11	-0.11
AMODIS DB	568	49.3	0.25	0.43	1.25	-0.16	0.31	0.33	1.14	-0.10
AMODIS O	72	100.	0.28	0.28	0.89	-0.08	0.25	0.25	0.66	0.11
MISR	104	100.	0.20	0.31	0.55	0.16	0.57	0.22	0.73	0.04
OMI	798	69.3	0.15	0.30	0.56	0.19	0.18	0.27	0.60	0.17
CALIOP	23	95.7	0.02	0.50	0.36	0.40	0.33	0.32	0.91	-0.15
POLDER3 L	90	97.8	0.34	0.53	1.20	-0.59	0.62	0.43	1.61	-0.83
POLDER3 O	27	100.	0.03	0.57	-0.13	0.38	0.23	0.38	1.09	-0.43
SeaWiFS L	500	43.0	0.50	0.21	0.90	0.00	0.61	0.18	1.01	-0.08
SeaWiFS O	80	80.0	0.35	0.28	1.44	-0.38	0.29	0.17	0.79	0.11

Table 3.3 (continued)

Dataset	Nfilt	Nfilt/ Ntot (%)	Complete data				Outliers removed			
			R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
					Winter					
TMODIS DT	571	73.0	0.33	0.25	0.60	0.17	0.35	0.23	0.60	0.19
TMODIS DB	188	55.3	0.24	0.40	1.04	0.02	0.20	0.35	0.87	0.14
TMODIS O	46	100.	0.33	0.33	1.35	-0.26	0.50	0.13	0.80	0.12
AMODIS DT	501	70.9	0.24	0.28	0.57	0.20	0.27	0.27	0.61	0.17
AMODIS DB	521	59.1	0.19	0.37	0.86	0.06	0.22	0.31	0.82	0.09
AMODIS O	48	100.	0.27	0.38	1.39	-0.44	0.28	0.22	0.76	0.02
MISR	91	100.	0.24	0.33	0.32	0.28	0.30	0.27	0.41	0.22
OMI	737	78.8	0.22	0.33	0.57	0.14	0.27	0.31	0.62	0.10
CALIOP	25	92.0	0.17	0.49	0.33	0.17	0.21	0.47	0.39	0.14
POLDER3 L	94	100.	0.00	0.78	0.02	0.11	0.01	0.77	0.03	0.08
POLDER3 O	17	94.1	0.28	0.53	0.43	-0.08	0.41	0.44	1.23	-0.58
SeaWiFS L	451	50.6	0.27	0.27	0.70	0.11	0.41	0.21	0.82	0.04
SeaWiFS O	49	87.8	0.33	0.24	0.93	-0.07	0.55	0.20	1.21	-0.26
					Spring					
TMODIS DT	956	70.5	0.36	0.22	0.85	0.10	0.41	0.20	0.87	0.08
TMODIS DB	297	47.1	0.22	0.39	1.03	0.02	0.22	0.39	1.00	0.05
TMODIS O	113	100.	0.53	0.22	1.13	-0.05	0.65	0.14	0.98	0.02
AMODIS DT	1028	65.9	0.32	0.23	0.78	0.19	0.39	0.20	0.83	0.15
AMODIS DB	1102	49.4	0.16	0.40	0.85	0.13	0.19	0.37	0.88	0.10
AMODIS O	129	100.	0.40	0.23	1.10	-0.07	0.51	0.17	1.12	-0.10
MISR	186	100.	0.29	0.27	0.53	0.19	0.34	0.24	0.63	0.13
OMI	1441	88.1	0.12	0.32	0.56	0.28	0.14	0.31	0.58	0.26
CALIOP	48	95.8	0.00	0.51	0.01	0.63	0.01	0.49	0.17	0.51
POLDER3 L	155	96.1	0.00	0.77	-0.02	0.13	0.00	0.75	-0.02	0.12
POLDER3 O	101	99.0	0.01	0.61	0.08	0.16	0.00	0.59	0.01	0.22
SeaWiFS L	729	45.5	0.31	0.30	0.82	0.01	0.42	0.25	0.81	0.02
SeaWiFS O	126	86.5	0.33	0.39	1.56	-0.33	0.26	0.24	1.08	-0.02
					Summer					
TMODIS DT	754	66.7	0.47	0.28	1.24	-0.16	0.55	0.20	1.12	-0.06
TMODIS DB	376	48.1	0.25	0.41	1.16	-0.10	0.30	0.40	1.28	-0.19
TMODIS O	167	100.	0.43	0.24	1.16	-0.05	0.44	0.17	0.95	0.10
AMODIS DT	757	63.1	0.44	0.31	1.30	-0.17	0.48	0.23	1.16	-0.07
AMODIS DB	868	44.6	0.18	0.34	0.79	0.17	0.22	0.33	0.91	0.09
AMODIS O	186	100.	0.48	0.21	1.08	-0.03	0.59	0.17	1.12	-0.06
MISR	180	100.	0.36	0.25	0.56	0.22	0.39	0.21	0.65	0.17
OMI	1322	80.7	0.16	0.31	0.77	0.14	0.18	0.29	0.76	0.14
CALIOP	32	90.6	0.01	0.50	-0.10	0.60	0.07	0.39	0.35	0.27
POLDER3 L	136	96.3	0.04	0.71	0.16	-0.01	0.05	0.68	0.19	-0.04
POLDER3 O	83	97.6	0.02	0.61	0.10	0.13	0.00	0.59	0.06	0.16
SeaWiFS L	569	31.5	0.39	0.25	0.90	-0.04	0.41	0.22	0.79	0.06
SeaWiFS O	158	75.3	0.38	0.30	1.41	-0.23	0.59	0.25	1.75	-0.47

Table 3.4. Statistics of the studied aerosol data sets based on the analysis of **mean subset values of extreme-AOD events (1.4≤AOD)** and all AERONET stations during the period of 2006-06-07 and 2010-12-11. 'Ntot' indicates the total number of the collocated Spaceborne AOD - AERONET AOD data points, while 'Nfilt' indicates the number of data points after filtering (screening) the spaceborne data by QA as described in Section 4 and Table 2. 'Nout' is the total number of the possible data outliers determined as explained in Section 5. The last 8 columns present the statistics on the collocated data based on regression fits also plotted in Fig. 6b.

Dataset	Nfilt	Nfilt/ Ntot (%)	Complete data				Outliers removed			
			R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
All seasons										
TMODIS DT	344	73.0	0.36	0.65	1.07	-0.08	0.67	0.27	1.15	-0.29
TMODIS DB	122	58.2	0.09	0.84	0.35	1.03	0.07	0.53	0.51	0.78
TMODIS O	22	81.8	0.64	0.71	1.60	-0.70	0.68	0.19	0.74	0.48
AMODIS DT	320	63.8	0.39	0.62	1.26	-0.43	0.56	0.29	1.10	-0.27
AMODIS DB	381	59.3	0.10	0.70	0.45	0.81	0.30	0.45	0.95	-0.03
AMODIS O	27	85.2	0.50	0.75	0.89	0.47	0.62	0.13	0.93	0.10
MISR	74	100.	0.03	1.25	0.06	0.90	0.05	0.53	0.54	0.26
OMI	691	52.5	0.29	0.65	0.80	-0.03	0.52	0.47	1.12	-0.46
CALIOP	14	100.	0.00	1.20	-0.02	0.57	0.26	1.03	-0.73	1.78
POLDER3 L	57	89.5	0.00	1.87	0.00	0.17	0.90	1.51	0.18	-0.19
POLDER3 O	12	100.	0.02	1.36	0.09	0.16				
SeaWiFS L	311	39.9	0.40	0.64	0.56	0.46	0.68	0.29	1.04	-0.23
SeaWiFS O	16	87.5	0.12	0.78	-0.51	2.84	0.88	0.19	0.92	0.29
Fall										
TMODIS DT	134	82.1	0.41	0.75	1.26	-0.19	0.74	0.32	1.26	-0.32
TMODIS DB	19	15.8	0.12	1.40	-6.65	13.13				
TMODIS O	2	100.	1.00	0.27	3.35	-3.33				
AMODIS DT	102	65.7	0.46	0.78	1.33	-0.24	0.86	0.22	1.16	-0.18
AMODIS DB	47	55.3	0.10	0.76	0.83	0.39	0.16	0.62	0.78	0.50
AMODIS O	2	100.	1.00	0.06	1.67	-1.03	1.00	0.06	1.67	-1.03
MISR	22	100.	0.00	1.45	0.00	1.03	0.46	0.77	0.24	0.68
OMI	170	27.1	0.63	0.59	1.21	-0.76	0.83	0.46	1.36	-0.93
CALIOP	4	100.	0.08	1.05	0.25	0.26	1.00	1.19	1.00	-1.20
POLDER3 L	5	100.	0.46	1.44	-0.88	1.89				
POLDER3 O	2	100.	1.00	1.28	0.20	-0.02				
SeaWiFS L	73	21.9	0.57	0.70	0.53	0.45	0.52	0.32	0.29	1.00
SeaWiFS O	3	100.	1.00	0.65	3.08	-2.49				

Table 3.4 (continued)

Dataset	Nfilt	Nfilt/ Ntot (%)	Complete data				Outliers removed			
			R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
					Winter					
TMODIS DT	45	64.4	0.13	0.53	0.74	0.10	0.17	0.47	0.64	0.25
TMODIS DB	17	52.9	0.04	0.63	0.33	0.68	0.10	0.54	0.65	0.19
TMODIS O	4	50.0	1.00	0.65	-12.86	23.35				
AMODIS DT	54	77.8	0.54	0.47	1.03	-0.39	0.36	0.44	1.09	-0.49
AMODIS DB	56	71.4	0.02	0.55	0.28	0.91	0.21	0.27	0.76	0.26
AMODIS O	3	100.	0.98	0.48	1.17	-0.79				
MISR	4	100.	0.40	0.95	0.33	0.24	1.00	0.73	-1.97	3.91
OMI	151	55.6	0.41	0.61	1.21	-0.72	0.48	0.48	1.25	-0.75
CALIOP	6	100.	0.03	1.31	-0.14	0.68	1.00	1.51	-0.79	2.00
POLDER3 L	7	100.	0.31	2.22	0.05	0.02	1.00	1.57	0.19	-0.20
POLDER3 O	0									
SeaWiFS L	51	49.0	0.34	0.51	1.04	-0.24	0.75	0.26	1.06	-0.25
SeaWiFS O	0									
					Spring					
TMODIS DT	70	62.9	0.47	0.49	0.76	0.18	0.52	0.34	1.10	-0.34
TMODIS DB	47	70.2	0.05	0.82	0.18	1.31	0.00	0.65	0.08	1.51
TMODIS O	10	80.0	0.73	0.70	1.56	-0.71	0.75	0.72	1.59	-0.82
AMODIS DT	75	57.3	0.22	0.49	1.04	-0.25	0.23	0.29	0.60	0.58
AMODIS DB	180	58.3	0.14	0.66	0.43	0.77	0.20	0.51	0.74	0.25
AMODIS O	12	83.3	0.05	0.86	-0.96	3.64	0.05	0.29	0.22	1.39
MISR	28	100.	0.00	0.96	-0.02	1.04	0.00	0.56	-0.05	1.24
OMI	245	65.7	0.28	0.66	0.64	0.22	0.41	0.53	0.81	-0.02
CALIOP	4	100.	0.59	1.17	-0.48	1.34	1.00	1.25	-1.12	2.44
POLDER3 L	33	81.8	0.10	1.95	0.06	0.03	0.03	1.49	0.03	0.04
POLDER3 O	5	100.	0.18	1.24	0.41	-0.34				
SeaWiFS L	94	64.9	0.53	0.55	0.70	0.27	0.69	0.35	0.96	-0.09
SeaWiFS O	8	87.5	0.24	0.94	-0.74	3.25	1.00	0.26	7.89	-10.74
					Summer					
TMODIS DT	95	71.6	0.28	0.60	0.78	0.42	0.71	0.29	1.02	0.11
TMODIS DB	39	66.7	0.22	0.84	0.54	0.76	0.45	0.46	0.65	0.64
TMODIS O	6	100.	0.51	0.83	1.94	-1.31	0.66	0.22	0.96	0.25
AMODIS DT	89	58.4	0.23	0.57	0.81	0.38	0.68	0.25	1.08	-0.09
AMODIS DB	98	56.1	0.08	0.83	0.41	1.05	0.21	0.74	0.78	0.59
AMODIS O	10	80.0	0.71	0.78	0.90	0.62	0.97	0.24	0.89	0.26
MISR	20	100.	0.08	1.41	0.12	0.85	0.10	0.62	0.16	0.98
OMI	125	57.6	0.08	0.69	0.55	0.50	0.53	0.42	1.50	-1.00
CALIOP	0									
POLDER3 L	12	100.	0.06	1.61	0.13	-0.04	1.00	1.43	-0.10	0.23
POLDER3 O	5	100.	0.00	1.50	0.04	0.27				
SeaWiFS L	93	23.7	0.38	0.91	0.34	0.66	0.21	0.43	1.12	-0.48
SeaWiFS O	5	80.0	0.00	0.53	0.09	1.76	1.00	0.08	1.02	0.04

Table 3.1.b. Statistics of the studied aerosol data sets based on the analysis of **cval subset values of low-AOD events (AOD<0.2)** and all AERONET stations during the period of 2006-06-07 and 2010-12-11. 'Ntot' indicates the total number of the collocated Spaceborne AOD - AERONET AOD data points, while 'Nfilt' indicates the number of data points after filtering (screening) the spaceborne data by QA as described in Section 4 and Table 2. 'Nout' is the total number of the possible data outliers determined as explained in Section 5. The last 8 columns present the statistics on the collocated data based on regression fits also plotted in Fig. 6b.

Dataset	Nfilt	Nfilt/ Ntot (%)	Complete data				Outliers removed			
			R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
All seasons										
TMODIS DT	34614	47.3	0.28	0.07	0.94	0.01	0.29	0.07	0.93	0.00
TMODIS DB	4925	10.6	0.16	0.11	0.82	0.06	0.26	0.08	0.83	0.04
TMODIS O	1109	99.3	0.48	0.05	0.93	0.03	0.60	0.04	0.93	0.03
AMODIS DT	32077	44.6	0.30	0.08	1.03	0.00	0.31	0.07	1.02	0.00
AMODIS DB	14000	9.8	0.18	0.08	0.70	0.04	0.25	0.07	0.72	0.04
AMODIS O	1264	99.2	0.56	0.04	0.91	0.03	0.63	0.04	0.91	0.02
MISR	5605	83.8	0.38	0.05	0.74	0.04	0.42	0.05	0.72	0.04
OMI	23833	97.5	0.01	0.23	0.34	0.18	0.01	0.20	0.27	0.17
CALIOP	948	85.0	0.03	0.11	0.42	0.06	0.06	0.09	0.46	0.04
POLDER3 L	13918	89.7	0.20	0.06	0.28	0.01	0.23	0.06	0.30	0.01
POLDER3 O	7355	92.6	0.37	0.05	0.55	0.00	0.39	0.05	0.55	0.00
SeaWiFS L	22690	29.8	0.29	0.07	0.93	0.01	0.32	0.07	0.93	0.01
SeaWiFS O	3790	66.1	0.19	0.09	0.85	0.05	0.34	0.06	0.85	0.04
Fall										
TMODIS DT	10785	46.2	0.29	0.07	0.87	0.01	0.30	0.07	0.88	0.01
TMODIS DB	1716	9.6	0.17	0.09	0.80	0.04	0.18	0.08	0.79	0.04
TMODIS O	352	99.4	0.52	0.04	0.88	0.03	0.68	0.03	0.92	0.02
AMODIS DT	8916	43.4	0.33	0.07	0.96	0.00	0.35	0.06	0.96	0.00
AMODIS DB	4394	10.2	0.16	0.08	0.62	0.05	0.19	0.07	0.66	0.04
AMODIS O	370	99.5	0.52	0.04	0.78	0.03	0.66	0.03	0.82	0.03
MISR	1712	81.5	0.44	0.04	0.77	0.03	0.49	0.04	0.76	0.03
OMI	6797	96.8	0.01	0.20	0.40	0.15	0.01	0.19	0.39	0.14
CALIOP	294	83.7	0.03	0.13	0.47	0.05	0.01	0.11	0.28	0.06
POLDER3 L	4690	89.0	0.19	0.06	0.28	0.01	0.23	0.06	0.30	0.01
POLDER3 O	2113	91.2	0.42	0.05	0.54	0.00	0.45	0.05	0.55	0.00
SeaWiFS L	7056	32.5	0.38	0.06	0.97	0.01	0.40	0.06	0.96	0.00
SeaWiFS O	1094	65.6	0.16	0.10	0.93	0.04	0.29	0.07	0.93	0.03

Table 3.1.b (continued)

Dataset	Nfilt	Nfilt/ Ntot (%)	Complete data				Outliers removed			
			R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
					Winter					
TMODIS DT	4140	34.5	0.20	0.07	0.71	0.03	0.21	0.07	0.72	0.03
TMODIS DB	922	16.8	0.14	0.11	0.87	0.06	0.25	0.09	1.04	0.04
TMODIS O	172	100.	0.68	0.04	0.95	0.02	0.80	0.03	1.01	0.01
AMODIS DT	3344	29.7	0.19	0.07	0.71	0.03	0.20	0.07	0.71	0.03
AMODIS DB	3190	12.8	0.13	0.08	0.62	0.05	0.20	0.07	0.65	0.05
AMODIS O	172	99.4	0.72	0.03	1.00	0.01	0.76	0.03	1.03	0.01
MISR	973	82.8	0.40	0.04	0.62	0.04	0.45	0.04	0.65	0.04
OMI	4252	96.8	0.01	0.22	0.30	0.17	0.01	0.20	0.33	0.16
CALIOP	169	84.0	0.00	0.14	0.16	0.09	0.00	0.14	0.18	0.09
POLDER3 L	1664	90.0	0.20	0.06	0.27	0.01	0.24	0.06	0.29	0.01
POLDER3 O	1236	91.4	0.38	0.05	0.48	0.00	0.40	0.05	0.50	0.00
SeaWiFS L	3675	28.0	0.30	0.09	1.08	0.02	0.31	0.08	1.08	0.02
SeaWiFS O	471	60.3	0.17	0.08	0.75	0.05	0.30	0.06	0.84	0.04
					Spring					
TMODIS DT	6541	48.0	0.28	0.08	1.01	0.01	0.29	0.07	0.99	0.01
TMODIS DB	664	10.5	0.14	0.13	0.82	0.08	0.21	0.09	0.80	0.06
TMODIS O	188	98.9	0.43	0.06	0.96	0.03	0.48	0.05	0.98	0.03
AMODIS DT	6988	44.6	0.26	0.08	1.03	0.01	0.28	0.08	1.02	0.01
AMODIS DB	2657	7.3	0.18	0.08	0.68	0.05	0.19	0.08	0.66	0.05
AMODIS O	222	99.5	0.55	0.05	0.98	0.03	0.64	0.04	0.99	0.02
MISR	1176	84.4	0.35	0.05	0.73	0.05	0.38	0.05	0.68	0.05
OMI	5121	98.0	0.00	0.26	0.02	0.24	0.00	0.23	-0.04	0.23
CALIOP	204	87.3	0.06	0.09	0.53	0.04	0.08	0.09	0.58	0.03
POLDER3 L	2712	91.6	0.21	0.07	0.29	0.00	0.23	0.07	0.31	0.00
POLDER3 O	1698	93.9	0.28	0.06	0.51	0.01	0.28	0.06	0.50	0.01
SeaWiFS L	4707	31.0	0.28	0.08	0.98	0.02	0.30	0.07	0.97	0.02
SeaWiFS O	825	63.4	0.26	0.08	0.98	0.04	0.39	0.06	0.99	0.03
					Summer					
TMODIS DT	13148	51.9	0.28	0.08	0.99	-0.01	0.29	0.07	0.99	-0.01
TMODIS DB	1623	8.2	0.23	0.10	0.95	0.03	0.26	0.10	0.95	0.03
TMODIS O	397	99.0	0.38	0.06	0.92	0.04	0.48	0.05	0.92	0.03
AMODIS DT	12829	49.3	0.30	0.08	1.09	-0.01	0.31	0.08	1.08	-0.01
AMODIS DB	3759	8.7	0.28	0.08	0.92	0.02	0.30	0.08	0.94	0.02
AMODIS O	500	98.8	0.52	0.05	0.92	0.03	0.57	0.04	0.93	0.03
MISR	1744	86.2	0.31	0.06	0.71	0.05	0.35	0.05	0.69	0.05
OMI	7663	98.2	0.01	0.24	0.37	0.19	0.01	0.21	0.33	0.18
CALIOP	281	85.4	0.07	0.09	0.54	0.04	0.06	0.09	0.48	0.04
POLDER3 L	4852	89.3	0.21	0.06	0.30	0.00	0.26	0.06	0.31	0.00
POLDER3 O	2308	93.7	0.38	0.05	0.59	0.00	0.40	0.05	0.60	0.00
SeaWiFS L	7252	27.4	0.23	0.07	0.76	0.02	0.26	0.06	0.74	0.02
SeaWiFS O	1400	70.1	0.18	0.08	0.75	0.05	0.28	0.06	0.71	0.05

Table 3.2.b Statistics of the studied aerosol data sets based on the analysis of **cval subset values of moderate-AOD events (0.2≤AOD<0.6)** and all AERONET stations during the period of 2006-06-07 and 2010-12-11. 'Ntot' indicates the total number of the collocated Spaceborne AOD - AERONET AOD data points, while 'Nfilt' indicates the number of data points after filtering (screening) the spaceborne data by QA as described in Section 4 and Table 2. 'Nout' is the total number of the possible data outliers determined as explained in Section 5. The last 8 columns present the statistics on the collocated data based on regression fits also plotted in Fig. 6b.

Dataset	Nfilt	Nfilt/ Ntot (%)	Complete data				Outliers removed			
			R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
All seasons										
TMODIS DT	12690	51.7	0.45	0.12	1.01	0.00	0.47	0.11	0.99	0.00
TMODIS DB	3177	18.4	0.30	0.16	0.93	0.03	0.32	0.15	0.94	0.03
TMODIS O	442	100.	0.71	0.09	1.16	-0.03	0.75	0.08	1.11	-0.02
AMODIS DT	11751	45.7	0.40	0.13	1.00	0.02	0.43	0.12	0.97	0.03
AMODIS DB	8771	17.7	0.34	0.17	1.07	-0.05	0.36	0.16	1.09	-0.06
AMODIS O	478	100.	0.63	0.08	1.01	0.00	0.70	0.07	1.03	-0.01
MISR	2227	85.1	0.44	0.11	0.83	0.02	0.52	0.10	0.85	0.01
OMI	14662	94.0	0.12	0.23	0.80	0.10	0.16	0.20	0.81	0.08
CALIOP	639	87.6	0.15	0.22	0.86	-0.03	0.22	0.18	0.81	-0.03
POLDER3 L	2822	95.2	0.04	0.27	0.17	0.03	0.04	0.27	0.16	0.03
POLDER3 O	1976	92.2	0.07	0.22	0.21	0.07	0.07	0.21	0.21	0.08
SeaWiFS L	8600	33.9	0.35	0.12	0.83	0.04	0.39	0.12	0.84	0.04
SeaWiFS O	1153	65.9	0.47	0.12	1.16	-0.03	0.60	0.08	1.05	-0.01
Fall										
TMODIS DT	3474	51.9	0.46	0.12	1.00	-0.02	0.48	0.11	1.01	-0.03
TMODIS DB	1094	18.1	0.25	0.14	0.81	0.06	0.29	0.13	0.90	0.04
TMODIS O	99	100.	0.70	0.07	0.94	0.02	0.75	0.06	0.98	0.01
AMODIS DT	2890	41.9	0.41	0.12	0.98	0.00	0.43	0.11	0.91	0.02
AMODIS DB	2507	17.8	0.30	0.16	0.94	-0.01	0.38	0.14	1.00	-0.04
AMODIS O	109	100.	0.72	0.07	0.81	0.03	0.77	0.06	0.87	0.01
MISR	588	84.9	0.38	0.11	0.68	0.06	0.44	0.10	0.71	0.05
OMI	3543	91.0	0.11	0.22	0.79	0.09	0.13	0.20	0.78	0.09
CALIOP	171	88.9	0.19	0.23	1.04	-0.07	0.25	0.17	0.82	-0.03
POLDER3 L	812	95.3	0.15	0.25	0.37	-0.03	0.18	0.24	0.40	-0.03
POLDER3 O	463	89.0	0.10	0.20	0.25	0.06	0.14	0.18	0.32	0.05
SeaWiFS L	2369	39.4	0.38	0.11	0.84	0.03	0.40	0.11	0.84	0.03
SeaWiFS O	278	63.3	0.54	0.13	1.43	-0.12	0.68	0.07	1.12	-0.04

Table 3.2.b (continued)

Dataset	Nfilt	Nfilt/ Ntot (%)	Complete data				Outliers removed			
			R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
					Winter					
TMODIS DT	1352	49.9	0.42	0.12	0.87	0.02	0.43	0.12	0.88	0.02
TMODIS DB	499	13.4	0.46	0.17	1.26	-0.06	0.46	0.16	1.20	-0.05
TMODIS O	45	100.	0.68	0.07	1.04	0.00	0.78	0.05	1.09	-0.02
AMODIS DT	1195	47.3	0.36	0.13	0.89	0.03	0.37	0.13	0.89	0.03
AMODIS DB	1634	17.1	0.25	0.17	0.84	0.01	0.28	0.16	0.87	-0.01
AMODIS O	52	100.	0.51	0.09	1.00	0.01	0.73	0.06	1.14	-0.03
MISR	287	85.4	0.38	0.11	0.61	0.07	0.49	0.10	0.70	0.04
OMI	1899	89.9	0.09	0.20	0.57	0.14	0.11	0.18	0.59	0.13
CALIOP	87	88.5	0.16	0.21	0.84	0.02	0.16	0.21	0.84	0.02
POLDER3 L	341	96.8	0.08	0.25	0.20	0.03	0.06	0.25	0.18	0.04
POLDER3 O	291	92.8	0.22	0.20	0.38	0.02	0.25	0.19	0.43	0.01
SeaWiFS L	1390	43.9	0.28	0.13	0.72	0.07	0.29	0.13	0.72	0.08
SeaWiFS O	129	60.5	0.33	0.14	0.95	0.03	0.48	0.10	0.93	0.02
					Spring					
TMODIS DT	2768	51.4	0.49	0.13	1.07	0.01	0.51	0.12	1.07	0.01
TMODIS DB	573	15.9	0.24	0.17	0.90	0.04	0.26	0.17	0.94	0.02
TMODIS O	100	100.	0.75	0.12	1.36	-0.07	0.76	0.11	1.28	-0.05
AMODIS DT	3030	48.1	0.46	0.13	1.07	0.01	0.47	0.13	1.07	0.01
AMODIS DB	2260	18.2	0.33	0.19	1.16	-0.06	0.33	0.19	1.16	-0.06
AMODIS O	120	100.	0.72	0.09	1.19	-0.03	0.75	0.08	1.19	-0.03
MISR	525	85.7	0.52	0.11	0.95	-0.01	0.59	0.09	0.93	-0.01
OMI	3529	96.2	0.13	0.25	0.88	0.08	0.17	0.22	0.89	0.06
CALIOP	148	87.8	0.25	0.19	0.90	-0.08	0.26	0.18	0.84	-0.06
POLDER3 L	864	94.7	0.02	0.29	0.10	0.05	0.01	0.29	0.08	0.06
POLDER3 O	620	92.9	0.05	0.24	0.17	0.08	0.06	0.23	0.18	0.08
SeaWiFS L	2167	35.1	0.35	0.12	0.78	0.07	0.39	0.12	0.79	0.06
SeaWiFS O	286	67.5	0.46	0.14	1.20	-0.03	0.52	0.11	1.08	-0.01
					Summer					
TMODIS DT	5096	52.3	0.43	0.11	1.04	0.00	0.44	0.11	1.02	0.00
TMODIS DB	1011	22.7	0.26	0.17	0.89	0.05	0.25	0.16	0.81	0.08
TMODIS O	198	100.	0.72	0.09	1.14	-0.03	0.75	0.08	1.11	-0.02
AMODIS DT	4636	46.2	0.38	0.13	1.00	0.03	0.39	0.12	0.95	0.04
AMODIS DB	2370	17.7	0.37	0.17	1.15	-0.07	0.38	0.16	1.16	-0.07
AMODIS O	197	100.	0.62	0.08	1.04	-0.01	0.68	0.07	1.05	-0.01
MISR	827	84.8	0.46	0.10	0.93	0.00	0.49	0.10	0.95	-0.01
OMI	5691	95.8	0.13	0.23	0.82	0.10	0.16	0.20	0.84	0.08
CALIOP	233	86.3	0.08	0.23	0.69	0.03	0.16	0.17	0.68	0.00
POLDER3 L	805	95.0	0.01	0.29	0.10	0.04	0.01	0.29	0.09	0.05
POLDER3 O	602	93.7	0.04	0.22	0.16	0.09	0.04	0.21	0.16	0.10
SeaWiFS L	2674	23.0	0.37	0.13	0.98	-0.02	0.41	0.12	1.00	-0.02
SeaWiFS O	460	68.0	0.49	0.10	1.02	0.00	0.61	0.08	1.09	-0.02

Table 3.3.b. Statistics of the studied aerosol data sets based on the analysis of **cval subset values of high-AOD events (0.6≤AOD<1.4)** and all AERONET stations during the period of 2006-06-07 and 2010-12-11. 'Ntot' indicates the total number of the collocated Spaceborne AOD - AERONET AOD data points, while 'Nfilt' indicates the number of data points after filtering (screening) the spaceborne data by QA as described in Section 4 and Table 2. 'Nout' is the total number of the possible data outliers determined as explained in Section 5. The last 8 columns present the statistics on the collocated data based on regression fits also plotted in Fig. 6b.

Dataset	Nfilt	Nfilt/ Ntot (%)	Complete data				Outliers removed			
			R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
All seasons										
TMODIS DT	2171	59.7	0.40	0.26	1.02	-0.03	0.45	0.20	0.87	0.07
TMODIS DB	773	25.9	0.23	0.31	0.78	0.14	0.36	0.24	0.87	0.07
TMODIS O	79	100.	0.64	0.29	1.66	-0.41	0.59	0.14	1.04	0.01
AMODIS DT	2003	51.9	0.35	0.25	0.91	0.06	0.35	0.22	0.81	0.13
AMODIS DB	2266	27.4	0.25	0.29	0.80	0.13	0.35	0.24	0.86	0.08
AMODIS O	78	100.	0.46	0.36	1.71	-0.48	0.70	0.10	1.08	-0.04
MISR	372	88.2	0.26	0.27	0.54	0.20	0.42	0.21	0.75	0.05
OMI	3485	76.7	0.15	0.32	0.65	0.19	0.21	0.29	0.71	0.13
CALIOP	111	86.5	0.00	0.48	0.05	0.54	0.04	0.36	0.40	0.26
POLDER3 L	491	94.3	0.04	0.70	0.24	-0.02	0.13	0.64	0.46	-0.19
POLDER3 O	225	96.0	0.01	0.61	0.08	0.17	0.12	0.51	0.54	-0.14
SeaWiFS L	1701	33.2	0.40	0.25	0.82	0.03	0.57	0.19	0.97	-0.06
SeaWiFS O	111	61.3	0.52	0.39	2.08	-0.69	0.61	0.18	1.34	-0.25
Fall										
TMODIS DT	544	61.6	0.55	0.24	1.21	-0.16	0.60	0.18	1.05	-0.05
TMODIS DB	118	28.0	0.03	0.45	0.53	0.37	0.22	0.27	1.10	-0.12
TMODIS O	12	100.	0.37	0.20	1.06	-0.01	0.34	0.14	0.56	0.29
AMODIS DT	473	45.9	0.48	0.23	1.02	-0.01	0.64	0.16	1.07	-0.06
AMODIS DB	397	33.0	0.24	0.30	0.87	0.16	0.36	0.24	0.93	0.10
AMODIS O	15	100.	0.16	0.24	0.83	0.03	0.49	0.10	0.59	0.37
MISR	67	89.6	0.31	0.27	0.56	0.16	0.48	0.21	0.69	0.08
OMI	604	64.9	0.19	0.31	0.75	0.05	0.20	0.28	0.69	0.09
CALIOP	18	88.9	0.04	0.43	0.55	0.20	0.07	0.34	0.46	0.24
POLDER3 L	96	96.9	0.40	0.53	1.41	-0.74	0.72	0.43	1.87	-1.02
POLDER3 O	29	96.6	0.02	0.59	-0.10	0.37	0.31	0.37	0.93	-0.31
SeaWiFS L	392	29.6	0.60	0.17	0.91	0.02	0.65	0.15	0.94	0.01
SeaWiFS O	18	72.2	0.55	0.26	1.91	-0.61	0.83	0.12	1.61	-0.49

Table 3.3.b (continued)

Dataset	Nfilt	Nfilt/ Ntot (%)	Complete data				Outliers removed			
			R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
					Winter					
TMODIS DT	434	64.5	0.21	0.26	0.48	0.28	0.23	0.25	0.47	0.29
TMODIS DB	145	20.7	0.17	0.31	0.55	0.39	0.21	0.31	0.60	0.33
TMODIS O	3	100.	0.49	0.25	1.57	-0.28				
AMODIS DT	338	63.6	0.22	0.30	0.55	0.19	0.21	0.30	0.54	0.21
AMODIS DB	393	30.5	0.36	0.28	0.92	-0.02	0.42	0.24	0.92	-0.01
AMODIS O	3	100.	1.00	0.04	1.11	-0.11	1.00	0.04	1.11	-0.11
MISR	68	85.3	0.15	0.29	0.36	0.28	0.25	0.25	0.53	0.16
OMI	588	74.1	0.26	0.33	0.66	0.08	0.32	0.31	0.72	0.02
CALIOP	21	81.0	0.05	0.45	0.31	0.23	0.06	0.43	0.40	0.16
POLDER3 L	93	97.8	0.00	0.77	0.02	0.11	0.00	0.75	0.02	0.11
POLDER3 O	17	88.2	0.38	0.49	0.45	-0.06	0.49	0.41	1.38	-0.66
SeaWiFS L	368	39.7	0.35	0.24	0.68	0.13	0.53	0.18	0.87	0.02
SeaWiFS O	10	60.0	0.69	0.31	1.58	-0.37	0.93	0.24	1.72	-0.58
					Spring					
TMODIS DT	676	56.8	0.38	0.20	0.77	0.16	0.43	0.19	0.78	0.15
TMODIS DB	242	25.6	0.49	0.22	1.02	-0.03	0.49	0.22	1.00	-0.01
TMODIS O	23	100.	0.79	0.32	1.76	-0.46	0.91	0.14	1.42	-0.27
AMODIS DT	704	52.0	0.35	0.23	0.86	0.14	0.37	0.21	0.82	0.17
AMODIS DB	859	26.9	0.23	0.28	0.72	0.17	0.26	0.27	0.75	0.15
AMODIS O	25	100.	0.60	0.55	2.46	-0.98	0.73	0.12	1.11	-0.03
MISR	120	89.2	0.27	0.28	0.58	0.17	0.37	0.25	0.64	0.11
OMI	1207	84.4	0.12	0.33	0.57	0.28	0.15	0.31	0.63	0.23
CALIOP	45	84.4	0.00	0.52	-0.17	0.79	0.00	0.51	0.01	0.65
POLDER3 L	159	91.8	0.00	0.76	-0.02	0.14	0.00	0.72	-0.03	0.14
POLDER3 O	99	98.0	0.00	0.62	0.07	0.17	0.01	0.58	0.09	0.18
SeaWiFS L	550	37.5	0.38	0.29	0.83	-0.01	0.47	0.25	0.89	-0.04
SeaWiFS O	32	68.8	0.46	0.55	2.24	-0.72	0.13	0.24	0.44	0.57
					Summer					
TMODIS DT	517	57.4	0.54	0.33	1.47	-0.30	0.63	0.21	1.23	-0.13
TMODIS DB	268	28.0	0.23	0.29	0.71	0.14	0.39	0.23	0.92	0.03
TMODIS O	41	100.	0.59	0.30	1.67	-0.42	0.46	0.17	0.91	0.14
AMODIS DT	488	49.4	0.57	0.25	1.34	-0.19	0.58	0.21	1.25	-0.12
AMODIS DB	617	22.4	0.24	0.31	0.81	0.13	0.37	0.25	0.91	0.05
AMODIS O	35	100.	0.38	0.23	0.98	0.04	0.67	0.20	1.50	-0.29
MISR	117	88.0	0.26	0.25	0.51	0.29	0.37	0.21	0.65	0.17
OMI	1086	76.2	0.17	0.31	0.78	0.12	0.20	0.29	0.81	0.10
CALIOP	27	92.6	0.00	0.45	0.00	0.50	0.37	0.33	1.15	-0.38
POLDER3 L	143	93.0	0.03	0.70	0.17	0.00	0.02	0.67	0.09	0.04
POLDER3 O	80	95.0	0.02	0.62	0.12	0.12	0.02	0.58	0.16	0.09
SeaWiFS L	391	24.8	0.39	0.26	0.93	-0.05	0.34	0.23	0.86	0.01
SeaWiFS O	51	52.9	0.58	0.29	2.15	-0.79	0.33	0.17	1.16	-0.14

Table 3.4.b. Statistics of the studied aerosol data sets based on the analysis of **cval subset values of extreme-AOD events (1.4≤AOD)** and all AERONET stations during the period of 2006-06-07 and 2010-12-11. 'Ntot' indicates the total number of the collocated Spaceborne AOD - AERONET AOD data points, while 'Nfilt' indicates the number of data points after filtering (screening) the spaceborne data by QA as described in Section 4 and Table 2. 'Nout' is the total number of the possible data outliers determined as explained in Section 5. The last 8 columns present the statistics on the collocated data based on regression fits also plotted in Fig. 6b.

Dataset	Nfilt	Nfilt/ Ntot (%)	Complete data				Outliers removed			
			R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
					All seasons					
TMODIS DT	225	64.9	0.40	0.62	1.39	-0.67	0.58	0.25	1.06	-0.15
TMODIS DB	85	52.9	0.23	0.71	0.36	0.80	0.01	0.46	-0.20	1.81
TMODIS O	1	100.								
AMODIS DT	188	59.0	0.46	0.44	1.32	-0.58	0.47	0.32	1.08	-0.26
AMODIS DB	293	39.2	0.18	0.53	0.46	0.70	0.35	0.33	0.93	-0.02
AMODIS O	3	100.	0.02	0.94	1.73	-0.78				
MISR	43	93.0	0.09	0.98	0.16	0.75	0.04	0.70	-0.22	1.52
OMI	608	47.9	0.34	0.63	0.85	-0.10	0.48	0.42	1.04	-0.32
CALIOP	13	100.	0.07	1.23	-0.25	0.90				
POLDER3 L	56	89.3	0.00	1.89	-0.01	0.20	0.07	1.50	0.07	-0.01
POLDER3 O	12	100.	0.01	1.36	0.08	0.20				
SeaWiFS L	248	33.9	0.40	0.64	0.52	0.57	0.65	0.28	1.00	-0.14
SeaWiFS O	7	85.7	0.42	1.03	-0.94	3.81				
					Fall					
TMODIS DT	94	76.6	0.55	0.67	1.52	-0.67	0.76	0.41	1.29	-0.28
TMODIS DB	6	0.0								
TMODIS O	0									
AMODIS DT	58	53.4	0.70	0.50	1.35	-0.32	0.86	0.24	1.14	-0.08
AMODIS DB	35	28.6	0.10	0.42	0.49	0.83	0.17	0.40	0.64	0.62
AMODIS O	0									
MISR	14	85.7	0.18	0.99	0.12	0.77	0.28	0.74	0.17	0.75
OMI	140	23.6	0.65	0.62	1.34	-0.89	0.45	0.47	1.35	-0.82
CALIOP	4	100.	0.32	1.25	0.45	-0.33	1.00	1.43	1.08	-1.57
POLDER3 L	5	100.	0.46	1.43	-0.89	1.94				
POLDER3 O	1	100.								
SeaWiFS L	68	16.2	0.25	0.73	0.22	1.02	0.17	0.41	0.31	0.94
SeaWiFS O	1	100.								

Table 3.4.b (continued)

Dataset	Nfilt	Nfilt/ Ntot (%)	Complete data				Outliers removed			
			R^2	RMSE	Slope	Intercept	R^2	RMSE	Slope	Intercept
					Winter					
TMODIS DT	30	63.3	0.12	0.55	0.56	0.31	0.12	0.52	0.51	0.44
TMODIS DB	14	50.0	0.13	0.73	-0.63	2.46	0.36	0.78	-1.09	3.17
TMODIS O	0									
AMODIS DT	36	77.8	0.18	0.50	0.74	0.03	0.33	0.45	1.03	-0.39
AMODIS DB	45	46.7	0.11	0.46	0.46	0.61	0.20	0.27	1.08	-0.29
AMODIS O	1	100.								
MISR	3	100.	0.99	0.91	0.39	0.20	0.99	0.91	0.39	0.20
OMI	140	53.6	0.56	0.51	1.43	-1.03	0.66	0.38	1.29	-0.76
CALIOP	6	100.	0.69	1.27	-0.81	1.89	1.00	1.01	-0.49	1.48
POLDER3 L	8	100.	0.09	2.12	0.02	0.08	0.00	1.46	0.00	0.12
POLDER3 O	0									
SeaWiFS L	38	50.0	0.04	0.58	0.60	0.50	0.36	0.29	0.87	0.04
SeaWiFS O	0									
					Spring					
TMODIS DT	46	60.9	0.16	0.53	0.55	0.54	0.54	0.37	1.09	-0.39
TMODIS DB	35	57.1	0.43	0.72	0.35	0.78	0.37	0.63	0.38	0.74
TMODIS O	0									
AMODIS DT	50	64.0	0.21	0.41	0.68	0.32	0.41	0.32	0.81	0.12
AMODIS DB	147	38.1	0.26	0.55	0.42	0.79	0.22	0.43	0.50	0.67
AMODIS O	1	100.								
MISR	18	94.4	0.01	0.94	0.05	0.96	0.18	0.57	-0.99	2.73
OMI	223	61.4	0.32	0.66	0.64	0.21	0.36	0.55	0.76	0.06
CALIOP	3	100.	0.04	1.10	-0.10	0.70				
POLDER3 L	31	80.6	0.08	2.02	0.06	0.02	0.84	1.54	0.14	-0.14
POLDER3 O	5	100.	0.05	1.22	0.20	0.00				
SeaWiFS L	77	51.9	0.60	0.61	0.65	0.33	0.76	0.34	1.00	-0.20
SeaWiFS O	5	80.0	0.34	1.08	-0.83	3.51				
					Summer					
TMODIS DT	55	49.1	0.21	0.62	1.23	-0.39	0.76	0.12	0.87	0.24
TMODIS DB	30	60.0	0.28	0.70	0.43	0.78	0.51	0.45	0.61	0.62
TMODIS O	1	100.								
AMODIS DT	44	45.5	0.62	0.30	1.32	-0.36	0.59	0.24	1.20	-0.27
AMODIS DB	66	42.4	0.07	0.56	0.56	0.51	0.11	0.48	0.71	0.30
AMODIS O	1	100.								
MISR	8	100.	0.13	1.08	0.21	0.76	0.54	0.72	0.30	0.71
OMI	105	43.8	0.04	0.73	0.44	0.65	0.48	0.42	1.31	-0.70
CALIOP	0									
POLDER3 L	12	100.	0.01	1.60	0.05	0.13	0.29	1.40	-0.92	1.66
POLDER3 O	6	100.	0.01	1.47	0.06	0.24	1.00	1.32	-0.54	1.21
SeaWiFS L	65	21.5	0.43	0.72	0.35	0.80	0.24	0.33	1.00	-0.15
SeaWiFS O	1	100.								

Table 4.1. Linear fit correlation coefficient (R2) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **mean subset values at Fall seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.75			0.74	0.74	0.44	0.69		0.64		0.67
Evergreen needleleaf forest	0.68			0.82			0.75	0.43	0.57	0.60		0.66	
Evergreen broadleaf forest	0.67			0.59			0.85	0.52					
Deciduous broadleaf forest	0.87			0.87			0.86	0.57	0.41	0.79		0.78	
Mixed forests	0.69			0.79			0.83	0.41	0.92	0.54		0.50	
Closed shrubland	0.76	0.54		0.64	0.66		0.85	0.43	0.00	0.50		0.47	
Open shrublands	0.61	0.45		0.64	0.54		0.67	0.36	0.88	0.38		0.43	
Woody savannas	0.78	1.00		0.79	0.96		0.76	0.43	0.85	0.56		0.89	
Savannas	0.82	0.72		0.84	0.61		0.81	0.57	0.75	0.73		0.71	
Grasslands	0.56	0.47		0.62	0.46		0.68	0.44	0.54	0.54		0.48	
Permanent wetlands	0.74			0.71			0.74	0.40	0.81	0.31		0.09	
Croplands	0.74	0.66		0.75	0.65		0.79	0.40	0.75	0.55		0.68	
Urban and built-up	0.65	0.62		0.68	0.66		0.79	0.43	0.61	0.49		0.61	
Cropland / natural veget. mosaic	0.72			0.77	0.89		0.83	0.60	0.95	0.54		0.79	
Snow and ice													
Barren or sparsely vegetated	0.60	0.41		0.49	0.39		0.73	0.29	0.58	0.33		0.54	

Table 4.2. Linear fit correlation coefficient (R2) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **mean subset values at Winter seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.73			0.80	0.70	0.36	0.42		0.61		0.61
Evergreen needleleaf forest	0.62			0.61	0.87		0.71	0.24	0.98	0.60		1.00	
Evergreen broadleaf forest	0.84	1.00		0.78			1.00	0.75		0.82			
Deciduous broadleaf forest	0.84			0.72			0.90	0.41	1.00	0.62		0.36	
Mixed forests	0.48			0.68			0.74	0.33	0.31	0.67		0.58	
Closed shrubland	0.32	0.55		0.53	0.58		0.26	0.36	1.00	0.79		0.41	
Open shrublands	0.37	0.55		0.38	0.43		0.72	0.38	0.95	0.27		0.43	
Woody savannas	0.80	0.84		0.80	0.81		0.67	0.39	0.96	0.36		0.70	
Savannas	0.66	0.57		0.65	0.97		0.68	0.37	0.73	0.63		0.84	
Grasslands	0.42	0.53		0.47	0.39		0.59	0.28	0.69	0.37		0.36	
Permanent wetlands	0.89			0.83			0.85	0.23	0.57	0.26			
Croplands	0.76	0.46		0.77	0.58		0.71	0.52	0.82	0.57		0.65	
Urban and built-up	0.63	0.38		0.61	0.41		0.69	0.36	0.75	0.49		0.62	
Cropland / natural veget. mosaic	0.63			0.83	0.65		0.66	0.44	0.72	0.22		0.38	
Snow and ice													
Barren or sparsely vegetated	0.50	0.43		0.49	0.64		0.65	0.21	0.60	0.18		0.59	

Table 4.3. Linear fit correlation coefficient (R2) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **mean subset values at Spring seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.78			0.78	0.78	0.39	0.75		0.58		0.73
Evergreen needleleaf forest	0.75			0.78	0.29		0.71	0.31	0.47	0.62		0.70	
Evergreen broadleaf forest	0.86			0.70			0.51	0.30	1.00	1.00			
Deciduous broadleaf forest	0.73			0.75			0.69	0.43	0.73	0.67		0.67	
Mixed forests	0.74			0.76			0.76	0.35		0.51		0.82	
Closed shrubland	0.65	0.00		0.68	0.03		0.68	0.34	0.77	0.26		0.52	
Open shrublands	0.61	0.28		0.61	0.49		0.74	0.31	0.54	0.41		0.53	
Woody savannas	0.61	0.99		0.72	0.97		0.76	0.40	0.80	0.52		0.90	
Savannas	0.59			0.69			0.71	0.35	0.46	0.44		0.69	
Grasslands	0.47	0.60		0.50	0.46		0.71	0.37	0.36	0.37		0.56	
Permanent wetlands	0.75			0.63			0.85	0.13	0.50	0.13			
Croplands	0.76	0.61		0.74	0.54		0.73	0.48	0.60	0.43		0.64	
Urban and built-up	0.68	0.61		0.64	0.51		0.75	0.38	0.66	0.49		0.59	
Cropland / natural veget. mosaic	0.76			0.75	0.89		0.70	0.63	1.00	0.47		0.71	
Snow and ice									0.28				
Barren or sparsely vegetated	0.60	0.33		0.59	0.46		0.84	0.48	0.51	0.20		0.55	

Table 4.4. Linear fit correlation coefficient (R2) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **mean subset values at Summer seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.73			0.80	0.77	0.40	0.79		0.64		0.74
Evergreen needleleaf forest	0.71			0.78			0.79	0.25	0.65	0.65		0.76	
Evergreen broadleaf forest	0.62			0.62			0.69	0.66					
Deciduous broadleaf forest	0.83			0.86			0.92	0.41	0.92	0.75		0.87	
Mixed forests	0.78			0.74			0.58	0.33	0.51	0.72		0.72	
Closed shrubland	0.58	0.21		0.85	0.57		0.82	0.35	1.00	0.48		0.39	
Open shrublands	0.62	0.53		0.53	0.50		0.64	0.31	0.57	0.30		0.58	
Woody savannas	0.84			0.92			0.96	0.74	0.82	0.88		0.94	
Savannas	0.68	0.60		0.85	0.70		0.78	0.48	0.59	0.71		0.83	
Grasslands	0.67	0.62		0.70	0.26		0.68	0.39	0.53	0.50		0.56	
Permanent wetlands	0.70			0.78			0.77	0.32	0.48	0.58		1.00	
Croplands	0.79	0.64		0.79	0.53		0.77	0.46	0.60	0.62		0.66	
Urban and built-up	0.70	0.46		0.71	0.55		0.80	0.41	0.66	0.48		0.61	
Cropland / natural veget. mosaic	0.71			0.71	0.60		0.81	0.44	0.64	0.45		0.62	
Snow and ice	0.26			0.27			0.78		1.00	0.22			
Barren or sparsely vegetated	0.59	0.63		0.64	0.49		0.83	0.31	0.57	0.30		0.46	

Table 4.1.b. Linear fit correlation coefficient (R2) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **cval subset values at Fall seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.90			0.88	0.80	0.47	0.84		0.59		0.67
Evergreen needleleaf forest	0.77			0.79			0.83	0.49	0.80	0.58		0.62	
Evergreen broadleaf forest	0.41			0.23				0.44					
Deciduous broadleaf forest	0.85			0.88			0.78	0.54	0.76	0.81		0.75	
Mixed forests	0.66			0.77			0.55	0.43	0.96	0.51		0.59	
Closed shrubland	0.78	1.00		0.72	1.00		0.85	0.56	0.02	0.49		0.17	
Open shrublands	0.67	0.77		0.61	0.66		0.67	0.33	0.83	0.38		0.52	
Woody savannas	0.91			0.90	0.96		0.94	0.41		0.64		0.88	
Savannas	0.79	0.75		0.80	0.55		0.81	0.63	0.70	0.69		0.69	
Grasslands	0.58	0.73		0.67	0.82		0.79	0.43	0.78	0.45		0.47	
Permanent wetlands	0.36			0.74			0.99	0.40	1.00	0.27			
Croplands	0.74	0.69		0.77	0.55		0.78	0.51	0.70	0.56		0.66	
Urban and built-up	0.74	0.73		0.73	0.80		0.76	0.43	0.66	0.44		0.65	
Cropland / natural veget. mosaic	0.72			0.81	0.58		0.70	0.54	0.93	0.65		0.44	
Snow and ice													
Barren or sparsely vegetated	0.75	0.52		0.99	0.55		0.75	0.33	0.44	0.32		0.23	

Table 4.2.b. Linear fit correlation coefficient (R2) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **cval subset values at Winter seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.72			0.86	0.78	0.37	0.54		0.54		0.65
Evergreen needleleaf forest	0.71			0.70	0.86		0.80	0.39	1.00	0.40			
Evergreen broadleaf forest	0.87			0.08				0.45		0.88			
Deciduous broadleaf forest	0.78			0.76			0.90	0.37		0.64		0.18	
Mixed forests	0.63			0.38			0.75	0.38	1.00	0.64		0.67	
Closed shrubland	0.46			0.68			0.72	0.44	0.85	0.83		0.28	
Open shrublands	0.35	0.73		0.71	0.48		0.81	0.31	0.94	0.16		0.35	
Woody savannas	0.95	0.90		0.63	0.97		0.77	0.32	1.00	0.37		0.82	
Savannas	0.72	0.45		0.81	0.97		0.71	0.50	0.72	0.61		0.80	
Grasslands	0.44	0.74		0.48	0.65		0.71	0.38	0.71	0.32		0.55	
Permanent wetlands	0.97			1.00				0.11	1.00	0.81			
Croplands	0.73	0.68		0.75	0.52		0.88	0.52	0.62	0.51		0.68	
Urban and built-up	0.76	0.68		0.74	0.63		0.73	0.37	0.76	0.44		0.57	
Cropland / natural veget. mosaic	0.77			0.76			0.46	0.36	1.00	0.37		0.46	
Snow and ice													
Barren or sparsely vegetated	0.86	0.71		0.94	0.47		0.50	0.16	0.74	0.07		0.41	

Table 4.3.b. Linear fit correlation coefficient (R2) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **cval subset values at Spring seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.77			0.82	0.91	0.48	0.66		0.51		0.73
Evergreen needleleaf forest	0.75			0.86			0.94	0.34	0.40	0.53		0.90	
Evergreen broadleaf forest	0.82			0.70			0.14	0.43	1.00	1.00			
Deciduous broadleaf forest	0.74			0.79			0.83	0.41	0.68	0.64		0.67	
Mixed forests	0.80			0.85			0.63	0.39		0.57		0.82	
Closed shrubland	0.62			0.56			0.81	0.30	0.67	0.21		0.82	
Open shrublands	0.76	0.63		0.81	0.68		0.73	0.37	0.96	0.31		0.55	
Woody savannas	0.85	0.97		0.73	0.95		1.00	0.40	0.85	0.49		0.96	
Savannas	0.56			0.67			0.88	0.54	0.65	0.41		0.67	
Grasslands	0.59	0.92		0.67	0.73		0.70	0.34	0.37	0.49		0.65	
Permanent wetlands	0.84			0.84			1.00	0.19	0.51	0.11			
Croplands	0.77	0.54		0.78	0.42		0.70	0.50	0.66	0.41		0.63	
Urban and built-up	0.71	0.90		0.71	0.50		0.72	0.37	0.70	0.41		0.55	
Cropland / natural veget. mosaic	0.75			0.78			0.75	0.60	1.00	0.43		0.67	
Snow and ice													
Barren or sparsely vegetated	0.65	0.86		0.52	0.76		0.78	0.44	0.78	0.15		0.60	

Table 4.4.b. Linear fit correlation coefficient (R2) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **cval subset values at Summer seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.74			0.80	0.84	0.53	0.77		0.63		0.72
Evergreen needleleaf forest	0.81			0.83			0.79	0.30	0.62	0.71		0.56	
Evergreen broadleaf forest	0.77						1.00	0.50					
Deciduous broadleaf forest	0.84			0.89			0.82	0.40	0.75	0.78		0.84	
Mixed forests	0.80			0.76			0.84	0.38	0.62	0.74		0.67	
Closed shrubland	0.63			0.73	1.00		0.89	0.35	1.00	0.52		0.83	
Open shrublands	0.60	0.57		0.67	0.64		0.62	0.33	0.71	0.33		0.68	
Woody savannas	0.73			0.97			0.82	0.51	1.00	0.91		1.00	
Savannas	0.79	0.52		0.90	0.71		0.91	0.55	0.48	0.66		0.78	
Grasslands	0.73	0.86		0.67	0.79		0.69	0.36	0.72	0.48		0.69	
Permanent wetlands	0.63			0.86			0.47	0.32	0.74	0.49			
Croplands	0.78	0.73		0.83	0.58		0.81	0.54	0.72	0.60		0.64	
Urban and built-up	0.74	0.81		0.72	0.76		0.83	0.42	0.64	0.43		0.64	
Cropland / natural veget. mosaic	0.74			0.75	0.01		0.67	0.42	0.75	0.42		0.59	
Snow and ice							0.69			0.15			
Barren or sparsely vegetated	0.80	0.38		0.82	0.62		0.67	0.20	0.40	0.37		0.26	

Table 5.1. Root mean square error (RMSE) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **mean subset values at Fall seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.05			0.05	0.05	0.12	0.12		0.06		0.05
Evergreen needleleaf forest	0.06			0.06			0.04	0.14	0.05	0.04		0.04	
Evergreen broadleaf forest	0.07			0.04			0.04	0.23					
Deciduous broadleaf forest	0.06			0.06			0.03	0.07	0.12	0.05		0.04	
Mixed forests	0.05			0.04			0.03	0.09	0.09	0.04		0.04	
Closed shrubland	0.07	0.08		0.09	0.08		0.06	0.20	0.17	0.07		0.08	
Open shrublands	0.08	0.12		0.08	0.11		0.06	0.20	0.05	0.08		0.07	
Woody savannas	0.10	0.12		0.10	0.14		0.08	0.16	0.22	0.15		0.07	
Savannas	0.12	0.15		0.10	0.13		0.12	0.19	0.09	0.11		0.10	
Grasslands	0.08	0.13		0.07	0.11		0.04	0.16	0.09	0.10		0.07	
Permanent wetlands	0.07			0.05			0.05	0.15	0.13	0.05		0.10	
Croplands	0.07	0.08		0.08	0.11		0.06	0.14	0.12	0.09		0.07	
Urban and built-up	0.08	0.14		0.07	0.13		0.06	0.15	0.12	0.08		0.07	
Cropland / natural veget. mosaic	0.06			0.06	0.15		0.04	0.11	0.06	0.06		0.08	
Snow and ice													
Barren or sparsely vegetated	0.12	0.07		0.11	0.08		0.06	0.26	0.37	0.07		0.09	

Table 5.2. Root mean square error (RMSE) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **mean subset values at Winter seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.05			0.04	0.05	0.13	0.12		0.06		0.08
Evergreen needleleaf forest	0.07			0.07	0.27		0.04	0.16	0.03	0.03		0.17	
Evergreen broadleaf forest	0.09	0.80		0.06			0.13	0.24		0.06			
Deciduous broadleaf forest	0.03			0.04			0.03	0.14	0.08	0.03		0.04	
Mixed forests	0.05			0.05			0.03	0.15	0.03	0.04		0.03	
Closed shrubland	0.09	0.19		0.07	0.07		0.06	0.21	0.05	0.13		0.10	
Open shrublands	0.09	0.11		0.09	0.13		0.07	0.20	0.06	0.11		0.08	
Woody savannas	0.11	0.24		0.12	0.26		0.13	0.17	0.16	0.24		0.14	
Savannas	0.09	0.47		0.11	0.19		0.09	0.24	0.16	0.18		0.10	
Grasslands	0.09	0.15		0.09	0.12		0.04	0.18	0.14	0.15		0.07	
Permanent wetlands	0.03			0.05			0.04	0.14	0.05	0.08			
Croplands	0.06	0.11		0.06	0.11		0.06	0.14	0.10	0.07		0.07	
Urban and built-up	0.07	0.13		0.07	0.18		0.05	0.19	0.13	0.06		0.09	
Cropland / natural veget. mosaic	0.05			0.07	0.11		0.05	0.12	0.21	0.04		0.06	
Snow and ice													
Barren or sparsely vegetated	0.12	0.05		0.11	0.05		0.06	0.37	0.04	0.05		0.11	

Table 5.3. Root mean square error (RMSE) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **mean subset values at Spring seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.06			0.05	0.07	0.16	0.22		0.09		0.07
Evergreen needleleaf forest	0.08			0.07	0.33		0.05	0.22	0.14	0.08		0.05	
Evergreen broadleaf forest	0.11			0.11			0.06	0.32	0.71	0.07			
Deciduous broadleaf forest	0.06			0.06			0.04	0.13	0.10	0.06		0.06	
Mixed forests	0.06			0.07			0.04	0.17		0.06		0.06	
Closed shrubland	0.09	0.03		0.07	0.02		0.05	0.30	0.05	0.04		0.05	
Open shrublands	0.12	0.12		0.14	0.18		0.10	0.30	0.04	0.18		0.13	
Woody savannas	0.11	0.22		0.11	0.16		0.16	0.20	0.19	0.33		0.12	
Savannas	0.08			0.08			0.07	0.21	0.17	0.14		0.07	
Grasslands	0.11	0.28		0.11	0.21		0.07	0.21	0.21	0.18		0.10	
Permanent wetlands	0.05			0.06			0.05	0.15	0.12	0.09			
Croplands	0.09	0.24		0.10	0.20		0.07	0.17	0.17	0.13		0.11	
Urban and built-up	0.08	0.18		0.09	0.15		0.07	0.21	0.16	0.11		0.09	
Cropland / natural veget. mosaic	0.06			0.08	0.08		0.07	0.14	0.22	0.12		0.13	
Snow and ice									0.12				
Barren or sparsely vegetated	0.17	0.12		0.17	0.17		0.08	0.43	0.09	0.15		0.17	

Table 5.4. Root mean square error (RMSE) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **mean subset values at Summer seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.06			0.05	0.06	0.17	0.11		0.09		0.06
Evergreen needleleaf forest	0.06			0.06			0.05	0.19	0.09	0.05		0.04	
Evergreen broadleaf forest	0.10			0.14			0.13	0.43					
Deciduous broadleaf forest	0.07			0.06			0.06	0.16	0.13	0.07		0.06	
Mixed forests	0.05			0.05			0.04	0.15	0.06	0.06		0.06	
Closed shrubland	0.09	0.03		0.08	0.03		0.08	0.25	0.02	0.11		0.06	
Open shrublands	0.11	0.10		0.11	0.19		0.08	0.22	0.09	0.14		0.11	
Woody savannas	0.08			0.08			0.04	0.21	0.12	0.30		0.13	
Savannas	0.08	0.13		0.08	0.11		0.05	0.19	0.08	0.13		0.09	
Grasslands	0.10	0.28		0.10	0.26		0.08	0.22	0.14	0.14		0.10	
Permanent wetlands	0.07			0.07			0.08	0.12	0.12	0.06		0.14	
Croplands	0.10	0.25		0.11	0.22		0.08	0.17	0.13	0.13		0.10	
Urban and built-up	0.09	0.15		0.10	0.15		0.07	0.19	0.13	0.09		0.09	
Cropland / natural veget. mosaic	0.07			0.07	0.24		0.06	0.16	0.17	0.10		0.08	
Snow and ice	0.11			0.14			0.02		0.06	0.01			
Barren or sparsely vegetated	0.13	0.13		0.13	0.16		0.09	0.39	0.09	0.16		0.13	

Table 5.1.b. Root mean square error (RMSE) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **cval subset values at Fall seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.05			0.04	0.06	0.12	0.13		0.06		0.05
Evergreen needleleaf forest	0.04			0.04			0.04	0.11	0.06	0.04		0.04	
Evergreen broadleaf forest	0.06			0.04				0.26					
Deciduous broadleaf forest	0.06			0.06			0.04	0.07	0.17	0.04		0.04	
Mixed forests	0.05			0.04			0.02	0.09	0.09	0.05		0.04	
Closed shrubland	0.09	0.02		0.09	0.07		0.04	0.21	0.18	0.08		0.06	
Open shrublands	0.07	0.13		0.06	0.10		0.06	0.22	0.05	0.08		0.08	
Woody savannas	0.09			0.10	0.13		0.16	0.17		0.15		0.06	
Savannas	0.12	0.15		0.11	0.17		0.14	0.18	0.08	0.13		0.12	
Grasslands	0.07	0.12		0.06	0.11		0.05	0.15	0.10	0.10		0.06	
Permanent wetlands	0.07			0.08			0.07	0.15	0.22	0.05			
Croplands	0.08	0.12		0.08	0.11		0.06	0.12	0.12	0.10		0.07	
Urban and built-up	0.09	0.11		0.07	0.14		0.05	0.16	0.14	0.08		0.07	
Cropland / natural veget. mosaic	0.07			0.07	0.19		0.05	0.11	0.06	0.06		0.09	
Snow and ice													
Barren or sparsely vegetated	0.05	0.07		0.04	0.08		0.08	0.22	0.08	0.07		0.11	

Table 5.2.b. Root mean square error (RMSE) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **cval subset values at Winter seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.03			0.03	0.07	0.13	0.12		0.07		0.06
Evergreen needleleaf forest	0.12			0.08	0.34		0.05	0.12	0.11	0.03			
Evergreen broadleaf forest	0.10			0.03				0.25		0.07			
Deciduous broadleaf forest	0.04			0.02			0.03	0.14		0.04		0.03	
Mixed forests	0.05			0.05			0.03	0.13	0.13	0.04		0.03	
Closed shrubland	0.06			0.07			0.03	0.18	0.05	0.14		0.05	
Open shrublands	0.09	0.13		0.07	0.11		0.05	0.20	0.05	0.11		0.10	
Woody savannas	0.10	0.44		0.18	0.32		0.24	0.19	0.20	0.24		0.14	
Savannas	0.09	0.56		0.11	0.31		0.10	0.23	0.21	0.19		0.07	
Grasslands	0.08	0.18		0.07	0.12		0.03	0.18	0.18	0.15		0.07	
Permanent wetlands	0.05			0.01				0.15	0.05	0.08			
Croplands	0.07	0.14		0.08	0.10		0.07	0.13	0.13	0.07		0.06	
Urban and built-up	0.07	0.07		0.07	0.16		0.05	0.20	0.16	0.06		0.08	
Cropland / natural veget. mosaic	0.06			0.07			0.05	0.13	0.36	0.03		0.07	
Snow and ice													
Barren or sparsely vegetated	0.12	0.06		0.04	0.06		0.06	0.34	0.06	0.06		0.13	

Table 5.3.b. Root mean square error (RMSE) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **cval subset values at Spring seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.06			0.04	0.09	0.16	0.14		0.09		0.05
Evergreen needleleaf forest	0.06			0.06			0.03	0.17	0.10	0.08		0.04	
Evergreen broadleaf forest	0.06			0.06			0.09	0.35	0.69	0.07			
Deciduous broadleaf forest	0.06			0.05			0.04	0.12	0.19	0.05		0.07	
Mixed forests	0.06			0.05			0.04	0.15		0.06		0.06	
Closed shrubland	0.10			0.11			0.05	0.36	0.05	0.05		0.11	
Open shrublands	0.07	0.13		0.07	0.16		0.07	0.27	0.05	0.19		0.14	
Woody savannas	0.12	0.48		0.11	0.14		0.02	0.24	0.25	0.30		0.13	
Savannas	0.08			0.08			0.07	0.18	0.19	0.14		0.06	
Grasslands	0.09	0.31		0.09	0.25		0.05	0.20	0.19	0.17		0.10	
Permanent wetlands	0.04			0.07			0.05	0.12	0.12	0.09			
Croplands	0.09	0.16		0.10	0.14		0.09	0.16	0.18	0.13		0.11	
Urban and built-up	0.09	0.18		0.11	0.17		0.07	0.20	0.15	0.11		0.09	
Cropland / natural veget. mosaic	0.07			0.09			0.08	0.13	0.32	0.12		0.06	
Snow and ice													
Barren or sparsely vegetated	0.15	0.06		0.13	0.13		0.08	0.41	0.11	0.15		0.13	

Table 5.4.b. Root mean square error (RMSE) between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **cval subset values at Summer seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.06			0.06	0.09	0.17	0.13		0.10		0.07
Evergreen needleleaf forest	0.06			0.04			0.06	0.17	0.12	0.05		0.05	
Evergreen broadleaf forest	0.08						0.09	0.27					
Deciduous broadleaf forest	0.07			0.06			0.08	0.14	0.08	0.07		0.06	
Mixed forests	0.06			0.05			0.03	0.11	0.07	0.06		0.05	
Closed shrubland	0.11			0.10	0.04		0.08	0.21	0.02	0.11		0.07	
Open shrublands	0.07	0.09		0.07	0.16		0.08	0.21	0.11	0.15		0.12	
Woody savannas	0.08			0.09			0.15	0.18	0.23	0.32		0.05	
Savannas	0.10	0.16		0.08	0.11		0.05	0.18	0.16	0.10		0.08	
Grasslands	0.09	0.26		0.10	0.22		0.06	0.22	0.14	0.14		0.10	
Permanent wetlands	0.07			0.13			0.13	0.13	0.12	0.07			
Croplands	0.10	0.15		0.11	0.17		0.06	0.16	0.11	0.14		0.08	
Urban and built-up	0.10	0.14		0.10	0.15		0.07	0.18	0.11	0.10		0.09	
Cropland / natural veget. mosaic	0.06			0.07	0.14		0.04	0.14	0.15	0.10		0.06	
Snow and ice							0.03			0.01			
Barren or sparsely vegetated	0.10	0.09		0.06	0.12		0.13	0.46	0.24	0.18		0.19	

Table 6.1. Bias between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **mean subset values at Fall seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.02			0.00	0.01	0.04	-0.01		-0.05		0.00
Evergreen needleleaf forest	0.00			0.01			0.01	0.06	-0.01	-0.03		-0.03	
Evergreen broadleaf forest	-0.03			0.02			0.02	0.18					
Deciduous broadleaf forest	-0.04			-0.05			-0.01	-0.01	-0.04	-0.04		-0.03	
Mixed forests	-0.02			-0.03			0.00	0.02	-0.03	-0.03		-0.01	
Closed shrubland	0.03	-0.01		0.04	0.03		0.03	0.12	0.00	-0.06		-0.05	
Open shrublands	0.02	0.04		0.02	0.03		0.03	0.13	-0.02	-0.07		-0.01	
Woody savannas	-0.07	-0.12		-0.08	-0.13		-0.05	-0.03	-0.22	-0.13		0.01	
Savannas	-0.05	-0.05		-0.03	-0.05		-0.05	0.05	-0.02	-0.09		0.00	
Grasslands	-0.01	0.00		0.00	0.00		0.01	0.08	-0.06	-0.08		-0.01	
Permanent wetlands	-0.04			-0.01			0.01	0.07	-0.12	-0.04		-0.03	
Croplands	-0.01	0.01		0.00	-0.03		-0.03	-0.01	0.01	-0.08		-0.03	
Urban and built-up	-0.02	-0.05		-0.01	-0.03		-0.02	0.03	-0.05	-0.07		-0.01	
Cropland / natural veget. mosaic	-0.03			-0.03	0.00		-0.01	-0.01	0.01	-0.05		-0.06	
Snow and ice													
Barren or sparsely vegetated	0.07	-0.01		0.06	0.01		0.04	0.18	0.23	-0.06		-0.01	

Table 6.2. Bias between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **mean subset values at Winter seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.01			0.00	0.02	0.04	-0.04		-0.05		0.03
Evergreen needleleaf forest	0.03			0.04	0.10		0.01	0.04	-0.02	-0.01		-0.17	
Evergreen broadleaf forest	-0.01	0.73		0.01			-0.12	0.07		-0.04			
Deciduous broadleaf forest	0.00			-0.03			0.01	0.09	-0.08	-0.02		0.00	
Mixed forests	0.02			0.00			0.01	0.11	0.01	-0.03		-0.01	
Closed shrubland	-0.02	0.00		0.01	-0.02		0.03	0.13	0.05	-0.12		-0.07	
Open shrublands	0.03	0.02		0.04	0.01		0.02	0.15	0.04	-0.09		0.01	
Woody savannas	-0.09	-0.21		-0.09	-0.23		-0.08	-0.09	-0.06	-0.21		-0.08	
Savannas	-0.05	-0.33		-0.04	-0.12		-0.03	0.11	-0.10	-0.16		0.00	
Grasslands	0.02	0.02		0.02	0.02		0.02	0.12	-0.04	-0.13		-0.01	
Permanent wetlands	-0.01			0.00			0.02	0.07	-0.03	-0.07			
Croplands	0.00	0.07		0.00	0.00		-0.03	-0.04	-0.04	-0.06		-0.04	
Urban and built-up	-0.01	0.00		-0.01	-0.02		-0.01	0.04	-0.02	-0.05		-0.03	
Cropland / natural veget. mosaic	0.00			-0.02	0.05		-0.03	0.03	0.15	-0.03		-0.04	
Snow and ice													
Barren or sparsely vegetated	0.09	0.01		0.05	0.01		0.05	0.31	0.00	-0.04		0.08	

Table 6.3. Bias between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **mean subset values at Spring seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.03			0.02	0.01	0.06	0.00		-0.07		0.03
Evergreen needleleaf forest	0.00			0.02	-0.08		0.02	0.10	-0.10	-0.07		-0.03	
Evergreen broadleaf forest	0.05			0.05			-0.01	0.09	-0.65	0.07			
Deciduous broadleaf forest	-0.02			-0.02			0.00	0.02	-0.06	-0.05		-0.01	
Mixed forests	0.00			0.02			0.02	0.08		-0.05		-0.02	
Closed shrubland	0.04	-0.02		0.03	0.00		0.04	0.20	-0.05	-0.04		-0.04	
Open shrublands	0.09	0.00		0.11	-0.05		0.03	0.20	-0.02	-0.16		-0.02	
Woody savannas	-0.07	-0.20		-0.07	-0.13		-0.08	-0.06	-0.15	-0.28		-0.02	
Savannas	-0.04			-0.03			-0.01	0.12	-0.01	-0.12		0.00	
Grasslands	0.05	-0.03		0.06	0.03		0.02	0.12	-0.13	-0.16		0.00	
Permanent wetlands	0.00			0.02			0.02	0.07	-0.12	-0.08			
Croplands	0.00	0.15		0.02	0.03		-0.02	-0.01	-0.09	-0.11		-0.03	
Urban and built-up	0.01	0.01		0.01	-0.01		-0.02	0.04	-0.09	-0.09		-0.01	
Cropland / natural veget. mosaic	0.00			-0.02	-0.04		-0.03	-0.02	0.00	-0.11		-0.08	
Snow and ice									-0.08				
Barren or sparsely vegetated	0.11	-0.04		0.12	0.02		0.06	0.36	-0.04	-0.13		0.04	

Table 6.4. Bias between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **mean subset values at Summer seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.03			0.01	0.02	0.07	-0.08		-0.07		0.01
Evergreen needleleaf forest	-0.01			0.00			0.01	0.12	-0.04	-0.04		-0.02	
Evergreen broadleaf forest	0.05			0.09			-0.09	0.26					
Deciduous broadleaf forest	-0.04			-0.03			-0.04	0.06	-0.08	-0.06		0.00	
Mixed forests	-0.03			-0.01			0.00	0.08	-0.01	-0.06		-0.03	
Closed shrubland	0.03	0.02		0.04	0.02		0.01	0.17	-0.02	-0.09		-0.05	
Open shrublands	0.05	0.00		0.06	0.09		0.04	0.13	-0.04	-0.13		0.00	
Woody savannas	-0.03			0.02			-0.01	0.09	-0.04	-0.30		-0.08	
Savannas	-0.04	-0.10		-0.03	-0.07		-0.01	0.08	-0.02	-0.11		-0.04	
Grasslands	0.01	0.03		0.02	0.08		0.01	0.13	-0.07	-0.13		-0.03	
Permanent wetlands	-0.01			0.03			-0.02	0.01	-0.11	-0.06		-0.06	
Croplands	0.02	0.10		0.04	0.09		-0.01	0.04	-0.09	-0.11		-0.05	
Urban and built-up	0.01	0.00		0.03	0.00		-0.02	0.07	-0.05	-0.08		-0.02	
Cropland / natural veget. mosaic	-0.01			-0.01	0.17		-0.02	0.06	-0.02	-0.09		-0.01	
Snow and ice	0.10			0.13			0.02		-0.05	0.00			
Barren or sparsely vegetated	0.08	0.04		0.10	0.03		0.03	0.27	-0.05	-0.15		0.02	

Table 6.1.b. Bias between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **cval subset values at Fall seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.00			0.00	-0.01	0.04	0.02		-0.05		0.02
Evergreen needleleaf forest	-0.03			-0.01			0.01	0.04	-0.02	-0.03		-0.03	
Evergreen broadleaf forest	-0.02			0.01				0.19					
Deciduous broadleaf forest	-0.04			-0.05			-0.02	-0.02	0.01	-0.04		-0.02	
Mixed forests	-0.03			-0.03			0.00	0.02	-0.04	-0.04		-0.01	
Closed shrubland	0.04	0.00		0.05	0.07		0.00	0.11	-0.01	-0.06		-0.03	
Open shrublands	0.02	0.08		0.02	0.05		0.03	0.13	0.00	-0.07		-0.01	
Woody savannas	-0.07			-0.09	-0.11		-0.12	-0.06		-0.13		0.00	
Savannas	-0.03	-0.05		-0.03	-0.07		-0.09	0.03	-0.04	-0.09		-0.02	
Grasslands	0.00	0.04		0.00	-0.02		0.00	0.06	-0.08	-0.08		-0.02	
Permanent wetlands	-0.04			0.07			-0.06	0.06	-0.21	-0.04			
Croplands	0.01	0.04		0.01	0.02		-0.02	-0.03	-0.02	-0.08		-0.01	
Urban and built-up	0.01	-0.06		0.02	-0.07		-0.02	0.03	-0.07	-0.07		0.00	
Cropland / natural veget. mosaic	-0.03			-0.02	-0.08		-0.02	-0.02	0.00	-0.05		-0.06	
Snow and ice													
Barren or sparsely vegetated	-0.01	0.02		0.00	0.01		0.04	0.12	-0.04	-0.06		0.04	

Table 6.2.b. Bias between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **cval subset values at Winter seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.01			0.01	0.00	0.02	-0.06		-0.06		0.01
Evergreen needleleaf forest	0.08			0.06	0.15		-0.01	0.01	0.01	-0.01			
Evergreen broadleaf forest	-0.06			-0.02				0.05		-0.05			
Deciduous broadleaf forest	-0.02			-0.01			0.02	0.07		-0.03		-0.02	
Mixed forests	-0.01			0.01			0.03	0.09	0.09	-0.03		-0.02	
Closed shrubland	0.04			0.03			-0.02	0.09	-0.01	-0.12		-0.02	
Open shrublands	0.04	0.06		0.04	-0.01		0.02	0.13	0.03	-0.08		0.03	
Woody savannas	-0.09	-0.33		-0.14	-0.29		-0.19	-0.09	-0.17	-0.22		-0.13	
Savannas	-0.04	-0.43		-0.06	-0.30		-0.04	0.10	-0.11	-0.17		-0.02	
Grasslands	0.02	-0.07		0.03	-0.02		0.01	0.11	-0.01	-0.13		-0.02	
Permanent wetlands	-0.05			0.01				0.06	-0.04	-0.08			
Croplands	0.02	0.11		0.02	0.01		-0.04	-0.03	-0.04	-0.06		-0.03	
Urban and built-up	0.02	0.00		0.01	-0.02		-0.02	0.03	-0.03	-0.04		0.00	
Cropland / natural veget. mosaic	-0.01			-0.03			-0.02	0.04	0.30	-0.03		-0.05	
Snow and ice													
Barren or sparsely vegetated	-0.07	0.04		-0.04	0.00		0.03	0.26	-0.01	-0.05		0.09	

Table 6.3.b. Bias between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **cval subset values at Spring seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.02			0.02	-0.03	0.05	-0.12		-0.07		0.01
Evergreen needleleaf forest	-0.01			0.01			0.01	0.04	-0.07	-0.07		-0.03	
Evergreen broadleaf forest	0.04			0.04			-0.06	0.10	-0.65	0.06			
Deciduous broadleaf forest	-0.03			-0.02			-0.02	0.00	0.02	-0.05		0.00	
Mixed forests	-0.01			0.00			0.01	0.04		-0.05		-0.02	
Closed shrubland	0.05			0.05			0.05	0.22	-0.05	-0.04		-0.10	
Open shrublands	0.04	-0.04		0.04	-0.05		0.01	0.17	-0.04	-0.17		-0.02	
Woody savannas	-0.06	-0.44		-0.08	-0.11		0.00	-0.06	-0.19	-0.26		-0.02	
Savannas	-0.03			-0.03			-0.04	0.08	0.04	-0.12		-0.01	
Grasslands	0.03	-0.20		0.05	-0.16		0.02	0.10	-0.09	-0.15		0.01	
Permanent wetlands	0.02			0.06			-0.05	0.04	-0.11	-0.07			
Croplands	0.01	0.07		0.03	-0.02		-0.03	-0.03	-0.10	-0.11		-0.03	
Urban and built-up	0.03	0.07		0.06	0.00		-0.03	0.03	-0.02	-0.09		-0.01	
Cropland / natural veget. mosaic	-0.01			-0.03			-0.05	-0.04	0.08	-0.11		0.00	
Snow and ice													
Barren or sparsely vegetated	0.14	0.02		0.08	-0.06		0.06	0.32	-0.05	-0.14		0.00	

Table 6.4.b. Bias between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **cval subset values at Summer seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.02			0.02	-0.04	0.07	-0.11		-0.08		0.02
Evergreen needleleaf forest	-0.01			-0.01			-0.01	0.09	-0.07	-0.04		-0.01	
Evergreen broadleaf forest	0.02						-0.08	0.02					
Deciduous broadleaf forest	-0.03			-0.03			-0.05	0.03	-0.05	-0.06		-0.01	
Mixed forests	-0.03			-0.02			-0.02	0.04	-0.03	-0.06		0.01	
Closed shrubland	0.03			0.03	0.02		-0.02	0.13	-0.02	-0.10		-0.06	
Open shrublands	0.03	0.04		0.05	0.09		0.03	0.11	-0.04	-0.13		0.00	
Woody savannas	-0.04			0.02			-0.13	-0.02	-0.23	-0.31		0.00	
Savannas	-0.04	-0.13		-0.04	-0.06		-0.02	0.05	-0.06	-0.09		-0.05	
Grasslands	0.00	-0.12		0.00	-0.11		0.01	0.11	-0.05	-0.13		-0.05	
Permanent wetlands	0.00			0.12			-0.10	0.01	-0.11	-0.06			
Croplands	0.02	0.05		0.05	0.03		-0.02	0.01	-0.08	-0.12		-0.02	
Urban and built-up	0.04	0.05		0.05	0.08		-0.03	0.06	-0.04	-0.08		-0.01	
Cropland / natural veget. mosaic	-0.02			0.00	-0.09		0.00	0.03	-0.03	-0.09		-0.02	
Snow and ice							0.02			0.00			
Barren or sparsely vegetated	-0.05	0.00		0.02	-0.02		0.04	0.32	0.03	-0.16		0.11	

Table 7.1. Variance between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on

the analysis of **mean subset values at Fall seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.002			0.002	0.001	0.011	0.013		0.001		0.002
Evergreen needleleaf forest	0.002			0.002			0.001	0.012	0.002	0.000		0.001	
Evergreen broadleaf forest	0.001			0.000			0.000	0.008					
Deciduous broadleaf forest	0.002			0.001			0.001	0.005	0.006	0.001		0.001	
Mixed forests	0.002			0.001			0.000	0.006	0.002	0.001		0.001	
Closed shrubland	0.003	0.007		0.004	0.005		0.002	0.022	0.030	0.002		0.004	
Open shrublands	0.001	0.008		0.002	0.011		0.003	0.021	0.001	0.003		0.005	
Woody savannas	0.005	0.000		0.003	0.001		0.004	0.018	0.004	0.010		0.005	
Savannas	0.012	0.019		0.009	0.019		0.018	0.037	0.007	0.007		0.014	
Grasslands	0.004	0.015		0.003	0.014		0.002	0.015	0.005	0.004		0.003	
Permanent wetlands	0.003			0.002			0.002	0.020	0.002	0.001		0.009	
Croplands	0.004	0.014		0.004	0.019		0.003	0.016	0.019	0.002		0.006	
Urban and built-up	0.004	0.012		0.004	0.007		0.003	0.016	0.012	0.002		0.004	
Cropland / natural veget. mosaic	0.003			0.003	0.023		0.001	0.009	0.004	0.001		0.003	
Snow and ice													
Barren or sparsely vegetated	0.003	0.005		0.003	0.006		0.002	0.031	0.118	0.002		0.004	

Table 7.2. Variance between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **mean subset values at Winter seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.002			0.001	0.002	0.011	0.007		0.002		0.003
Evergreen needleleaf forest	0.002			0.003	0.061		0.001	0.015	0.001	0.000		0.000	
Evergreen broadleaf forest	0.004	0.112		0.002			0.003	0.028		0.001			
Deciduous broadleaf forest	0.000			0.001			0.000	0.010	0.000	0.000		0.000	
Mixed forests	0.002			0.002			0.001	0.009	0.001	0.000		0.001	
Closed shrubland	0.005	0.036		0.004	0.004		0.001	0.022	0.000	0.006		0.007	
Open shrublands	0.004	0.011		0.002	0.016		0.003	0.016	0.002	0.014		0.006	
Woody savannas	0.004	0.014		0.006	0.016		0.017	0.015	0.023	0.017		0.014	
Savannas	0.006	0.115		0.007	0.021		0.007	0.030	0.047	0.017		0.011	
Grasslands	0.003	0.022		0.003	0.014		0.001	0.015	0.009	0.016		0.004	
Permanent wetlands	0.001			0.002			0.001	0.017	0.001	0.001			
Croplands	0.003	0.009		0.004	0.019		0.002	0.012	0.010	0.002		0.003	
Urban and built-up	0.004	0.008		0.003	0.020		0.002	0.021	0.005	0.002		0.003	
Cropland / natural veget. mosaic	0.001			0.003	0.019		0.001	0.007	0.010	0.001		0.002	
Snow and ice													
Barren or sparsely vegetated	0.002	0.002		0.003	0.001		0.001	0.057	0.001	0.002		0.005	

Table 7.3. Variance between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **mean subset values at Spring seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.003			0.002	0.003	0.020	0.060		0.006		0.004
Evergreen needleleaf forest	0.003			0.002	0.100		0.001	0.039	0.012	0.002		0.002	
Evergreen broadleaf forest	0.004			0.007			0.005	0.052	0.090	0.000			
Deciduous broadleaf forest	0.003			0.004			0.002	0.016	0.006	0.001		0.004	
Mixed forests	0.003			0.004			0.001	0.020		0.001		0.002	
Closed shrubland	0.004	0.001		0.003	0.001		0.001	0.047	0.000	0.001		0.001	
Open shrublands	0.003	0.007		0.005	0.037		0.008	0.049	0.001	0.010		0.020	
Woody savannas	0.006	0.008		0.006	0.008		0.034	0.035	0.013	0.067		0.018	
Savannas	0.006			0.005			0.006	0.029	0.041	0.017		0.005	
Grasslands	0.003	0.043		0.004	0.035		0.007	0.023	0.047	0.020		0.010	
Permanent wetlands	0.002			0.003			0.001	0.016	0.001	0.003			
Croplands	0.005	0.037		0.007	0.036		0.004	0.022	0.021	0.006		0.008	
Urban and built-up	0.006	0.025		0.007	0.019		0.004	0.030	0.028	0.003		0.008	
Cropland / natural veget. mosaic	0.002			0.005	0.007		0.004	0.016	0.051	0.003		0.006	
Snow and ice									0.007				
Barren or sparsely vegetated	0.004	0.014		0.006	0.023		0.002	0.051	0.005	0.005		0.025	

Table 7.4. Variance between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **mean subset values at Summer seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.003			0.003	0.002	0.023	0.005		0.005		0.005
Evergreen needleleaf forest	0.00			0.003			0.001	0.026	0.005	0.001		0.001	
Evergreen broadleaf forest	0.01			0.015			0.007	0.040					
Deciduous broadleaf forest	0.00			0.003			0.002	0.020	0.015	0.001		0.003	
Mixed forests	0.00			0.002			0.001	0.018	0.005	0.001		0.001	
Closed shrubland	0.00	0.001		0.002	0.000		0.003	0.040	0.000	0.004		0.002	
Open shrublands	0.00	0.004		0.005	0.031		0.003	0.029	0.005	0.006		0.008	
Woody savannas	0.00			0.004			0.001	0.037	0.013	0.001		0.008	
Savannas	0.00	0.010		0.003	0.008		0.002	0.025	0.004	0.015		0.006	
Grasslands	0.00	0.040		0.005	0.039		0.007	0.027	0.019	0.010		0.008	
Permanent wetlands	0.00			0.004			0.004	0.015	0.004	0.001		0.016	
Croplands	0.01	0.025		0.009	0.050		0.008	0.024	0.012	0.004		0.005	
Urban and built-up	0.01	0.027		0.007	0.024		0.004	0.026	0.023	0.004		0.007	
Cropland / natural veget. mosaic	0.00			0.005	0.005		0.004	0.023	0.006	0.002		0.007	
Snow and ice	0.00			0.003			0.000		0.001	0.000			
Barren or sparsely vegetated	0.01	0.007		0.003	0.021		0.007	0.082	0.004	0.008		0.017	

Table 7.1.b. Variance between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **cval subset values at Fall seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.003			0.001	0.002	0.011	0.017		0.002		0.003
Evergreen needleleaf forest	0.001			0.001			0.001	0.009	0.002	0.001		0.001	
Evergreen broadleaf forest	0.001			0.001				0.024					
Deciduous broadleaf forest	0.002			0.001			0.001	0.005	0.009	0.000		0.001	
Mixed forests	0.001			0.001			0.000	0.006	0.002	0.001		0.001	
Closed shrubland	0.004	0.000		0.003	0.000		0.002	0.028	0.032	0.002		0.003	
Open shrublands	0.001	0.004		0.001	0.005		0.002	0.025	0.002	0.002		0.004	
Woody savannas	0.002			0.002	0.003		0.015	0.016		0.012		0.003	
Savannas	0.016	0.024		0.012	0.035		0.022	0.032	0.006	0.011		0.016	
Grasslands	0.004	0.011		0.002	0.009		0.002	0.018	0.006	0.005		0.003	
Permanent wetlands	0.004			0.002			0.001	0.022	0.001	0.001			
Croplands	0.004	0.019		0.004	0.017		0.004	0.012	0.012	0.003		0.004	
Urban and built-up	0.004	0.006		0.003	0.009		0.003	0.018	0.017	0.002		0.004	
Cropland / natural veget. mosaic	0.003			0.002	0.031		0.002	0.010	0.004	0.002		0.004	
Snow and ice													
Barren or sparsely vegetated	0.001	0.003		0.000	0.006		0.003	0.029	0.003	0.002		0.007	

Table 7.2.b. Variance between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **cval subset values at Winter seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.001			0.001	0.001	0.013	0.006		0.002		0.003
Evergreen needleleaf forest	0.003			0.004	0.090		0.001	0.009	0.012	0.001			
Evergreen broadleaf forest	0.006			0.001				0.058		0.001			
Deciduous broadleaf forest	0.001			0.000			0.000	0.010		0.001		0.000	
Mixed forests	0.002			0.002			0.000	0.010	0.010	0.000		0.001	
Closed shrubland	0.002			0.003			0.000	0.020	0.002	0.006		0.002	
Open shrublands	0.002	0.008		0.001	0.014		0.002	0.020	0.001	0.015		0.007	
Woody savannas	0.005	0.079		0.012	0.020		0.029	0.023	0.011	0.017		0.003	
Savannas	0.006	0.129		0.008	0.006		0.013	0.026	0.072	0.018		0.008	
Grasslands	0.001	0.019		0.001	0.009		0.001	0.019	0.021	0.016		0.004	
Permanent wetlands	0.001			0.000				0.023	0.001	0.001			
Croplands	0.003	0.007		0.004	0.017		0.002	0.012	0.021	0.002		0.003	
Urban and built-up	0.003	0.004		0.003	0.012		0.002	0.021	0.008	0.001		0.005	
Cropland / natural veget. mosaic	0.001			0.002			0.001	0.011	0.012	0.000		0.002	
Snow and ice													
Barren or sparsely vegetated	0.010	0.002		0.000	0.001		0.001	0.060	0.003	0.002		0.007	

Table 7.3.b. Variance between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **cval subset values at Spring seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.003			0.002	0.003	0.024	0.004		0.005		0.003
Evergreen needleleaf forest	0.002			0.002			0.001	0.026	0.008	0.002		0.001	
Evergreen broadleaf forest	0.002			0.002			0.005	0.077	0.057	0.001			
Deciduous broadleaf forest	0.003			0.002			0.002	0.012	0.039	0.001		0.005	
Mixed forests	0.003			0.002			0.002	0.017		0.001		0.002	
Closed shrubland	0.005			0.006			0.001	0.094	0.000	0.001		0.003	
Open shrublands	0.001	0.007		0.001	0.024		0.004	0.035	0.002	0.013		0.024	
Woody savannas	0.011	0.033		0.005	0.006		0.000	0.054	0.024	0.046		0.022	
Savannas	0.006			0.005			0.007	0.026	0.033	0.020		0.003	
Grasslands	0.002	0.062		0.002	0.043		0.002	0.024	0.025	0.016		0.011	
Permanent wetlands	0.002			0.002			0.000	0.014	0.002	0.003			
Croplands	0.005	0.023		0.006	0.024		0.006	0.023	0.022	0.006		0.009	
Urban and built-up	0.006	0.037		0.007	0.030		0.005	0.032	0.009	0.004		0.006	
Cropland / natural veget. mosaic	0.003			0.005			0.006	0.014	0.093	0.003		0.002	
Snow and ice													
Barren or sparsely vegetated	0.004	0.003		0.004	0.015		0.002	0.058	0.008	0.005		0.017	

Table 7.4.b. Variance between the collocated spaceborne and ground-based observations of AOD estimated at the stations that coincide with different IGBP land cover types, based on the analysis of **cval subset values at Summer seasons**. Empty cells indicate no collocated data available from a specific sensor over a specific land cover type. No AERONET stations are available at the areas occupied by Deciduous needleleaf forest. The statistics were calculated based on the data that was pre-filtered by QA and screened of outliers as described in Sections 4 and Section 5. A graphical representation of this table is in Figure 13b.

	TMODIS DT	TMODIS DB	TMODIS O	AMODIS DT	AMODIS DB	AMODIS O	MISR	OMI	CALIOP	POLDER3 L	POLDER3 O	SeaWiFS L	SeaWiFS O
Water			0.004			0.004	0.001	0.029	0.007		0.006		0.004
Evergreen needleleaf forest	0.002			0.001			0.002	0.028	0.008	0.000		0.002	
Evergreen broadleaf forest	0.004						0.002	0.101					
Deciduous broadleaf forest	0.003			0.003			0.004	0.018	0.007	0.002		0.002	
Mixed forests	0.002			0.002			0.000	0.012	0.006	0.001		0.002	
Closed shrubland	0.006			0.004	0.001		0.004	0.034	0.000	0.003		0.002	
Open shrublands	0.002	0.009		0.002	0.016		0.005	0.027	0.009	0.007		0.008	
Woody savannas	0.002			0.010			0.006	0.039	0.000	0.001		0.002	
Savannas	0.004	0.009		0.003	0.010		0.001	0.026	0.023	0.012		0.005	
Grasslands	0.004	0.056		0.006	0.034		0.005	0.028	0.015	0.010		0.005	
Permanent wetlands	0.005			0.003			0.008	0.017	0.003	0.001			
Croplands	0.006	0.011		0.007	0.019		0.003	0.019	0.010	0.008		0.005	
Urban and built-up	0.005	0.029		0.005	0.015		0.006	0.025	0.013	0.005		0.007	
Cropland / natural veget. mosaic	0.003			0.005	0.013		0.002	0.023	0.003	0.003		0.003	
Snow and ice							0.000			0.000			
Barren or sparsely vegetated	0.003	0.008		0.003	0.014		0.017	0.115	0.053	0.007		0.019	