Multi-angle aerosol optical depth retrieval method based on improved surface reflectance

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Table S1-S3

Figure S1-S3

Table S1. MISR sensor observation angles for 9 cameras

Camera	Observation angle
Da	-70.5°
Ca	-60.0°
Ba	-45.6°
Aa	-26.1°
An	0.0°
Af	26.1°
Bf	45.6°
Cf	60.0°
Df	70.5°

Table S2. Details of the MISR dataset used

Number	Date	cloud cover	Path	MISR observation angle								
1	20160107	cloudy	121				Aa	An				Df
2	20160114	Few clouds	122		Ca	Ba	Aa	An	Af	Bf	Cf	Df
3	20160123	cloudy	121		Ca					Bf	Cf	Df
4	20160125	Few clouds	119	Da	Ca		Aa	An	Af	Bf	Cf	Df
5	20160203	Few clouds	118		Ca	Ba	Aa	An	Af	Bf	Cf	Df
6	20160208	Few clouds	121		Ca	Ba	Aa	An	Af	Bf	Cf	Df
7	20160210	Few clouds	119	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
8	20160215	Few clouds	122	Da	Ca		Aa	An	Af	Bf	Cf	Df
9	20160302	Few clouds	122		Ca	Ba	Aa	An	Af	Bf	Cf	Df
10	20160311	Few clouds	121		Ca	Ba	Aa	An	Af	Bf	Cf	Df
11	20160318	Few clouds	122			Ba	Aa	An	Af	Bf	Cf	
12	20160430	Few clouds	119	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
13	20160505	Few clouds	122	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
14	20160516	Few clouds	119	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
15	20160530	Few clouds	121	Da				An		Bf	Cf	Df
16	20160719	Few clouds	119	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
17	20160724	Few clouds	122	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
18	20160726	Few clouds	120	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
19	20160728	Few clouds	118	Da	Ca	Ba	Aa		Af	Bf	Cf	Df
20	20160809	cloudy	122					An	Af	Bf	Cf	
21	20160811	Few clouds	120	Da		Ba	Aa	An	Af	Bf	Cf	
22	20160825	Few clouds	122	Da		Ba	Aa	An	Af	Bf	Cf	Df
23	20160903	cloudy	121	Da		Ba						
24	20160910	cloudy	122		Ca	Ba	Aa	An	Af	Bf	Cf	

25	20160919	cloudy	121			Ba	Aa	An	Af	Bf	Cf	Df
26	20161005	cloudy	121				Aa	An	Af	Bf	Cf	Df
27	20161208	Few clouds	121		Ca	Ba	Aa	An	Af	Bf	Cf	Df
28	20161215	Few clouds	122			Ba	Aa	An	Af	Bf	Cf	Df
29	20161231	Few clouds	122			Ba	Aa	An	Af	Bf	Cf	Df
30	20170125	Few clouds	121					An				
31	20170226	Few clouds	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
32	20170314	Few clouds	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
33	20170422	Clear Sky	122	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
34	20170517	Clear Sky	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
35	20170602	Few clouds	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
36	20170609	cloudy	122	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
37	20170715	cloudy	118	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
38	20170720	Few clouds	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
39	20170722	Few clouds	119	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
40	20171024	Few clouds	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
41	20171102	Few clouds	120	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
42	20171109	Clear Sky	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
43	20171111	Few clouds	119	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
44	20171125	Few clouds	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
45	20171127	Few clouds	119	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
46	20171211	Few clouds	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
47	20180112	cloudy	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
48	20180204	cloudy	122	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
49	20180213	Clear Sky	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
50	20180310	Few clouds	120	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
51	20180328	cloudy	118	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
52	20180402	Few clouds	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
53	20180409	Clear Sky	122	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df

54	20180418	Few clouds	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
55	20180425	cloudy	122	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
56	20180504	Few clouds	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
57	20180605	cloudy	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
58	20180612	Few clouds	122	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
59	20180614	Few clouds	120	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
60	20180718	Few clouds	118	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
61	20180810	Few clouds	119	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
62	20180824	Few clouds	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
63	20180904	Few clouds	118	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
64	20180909	Few clouds	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
65	20181006	cloudy	118	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
66	20181011	Clear Sky	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
67	20181029	Clear Sky	119	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df
68	20181214	cloudy	121	Da	Ca	Ba	Aa	An	Af	Bf	Cf	Df

Note: The Taihu site is located on path 118 and 119, and Xuzhou-CUMT site is located on path 120, 121 and 122.

Table S3. Values of MISR AOD at 9 angles in previous study (Chen et al., 2021)

Site	Camera angle	MISR AOD	AERONET AOD	Difference in AOD
Taihu	Da	0.7431	0.3795	0.3635
	Ca	0.7067	0.3795	0.3272
	Ba	0.5991	0.3795	0.2195
	Aa	0.6327	0.3795	0.2532
	An	0.8138	0.3795	0.4342
	Af	0.5959	0.3795	0.2164
	Bf	0.5491	0.3795	0.1696
	Cf	0.5467	0.3795	0.1672
	Df	0.5341	0.3795	0.1546
Xuzhou-CUMT	Da	0.8766	0.4787	0.3979
	Ca	0.8556	0.4787	0.3769
	Ba	0.8269	0.4787	0.3482
	Aa	0.8853	0.4787	0.4066
	An	0.8895	0.4787	0.4108
	Af	0.6703	0.4787	0.1916
	Bf	0.6703	0.4787	0.1916
	Cf	0.6416	0.4787	0.1629
	Df	0.6013	0.4787	0.1227

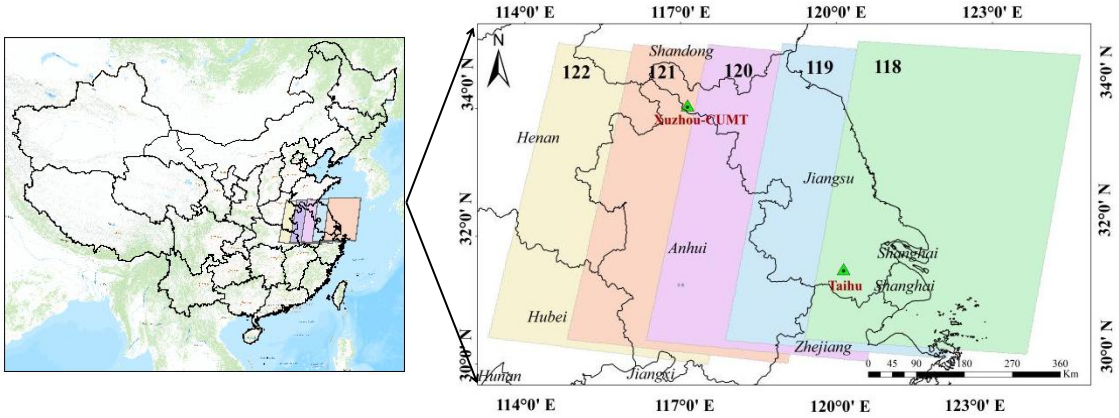

Figure S1. Overview map of the research area

Figure S2. MISR image radiation data on June 12, 2018

（The white dots present in the Aa angle image are flash points generated by the sensor）

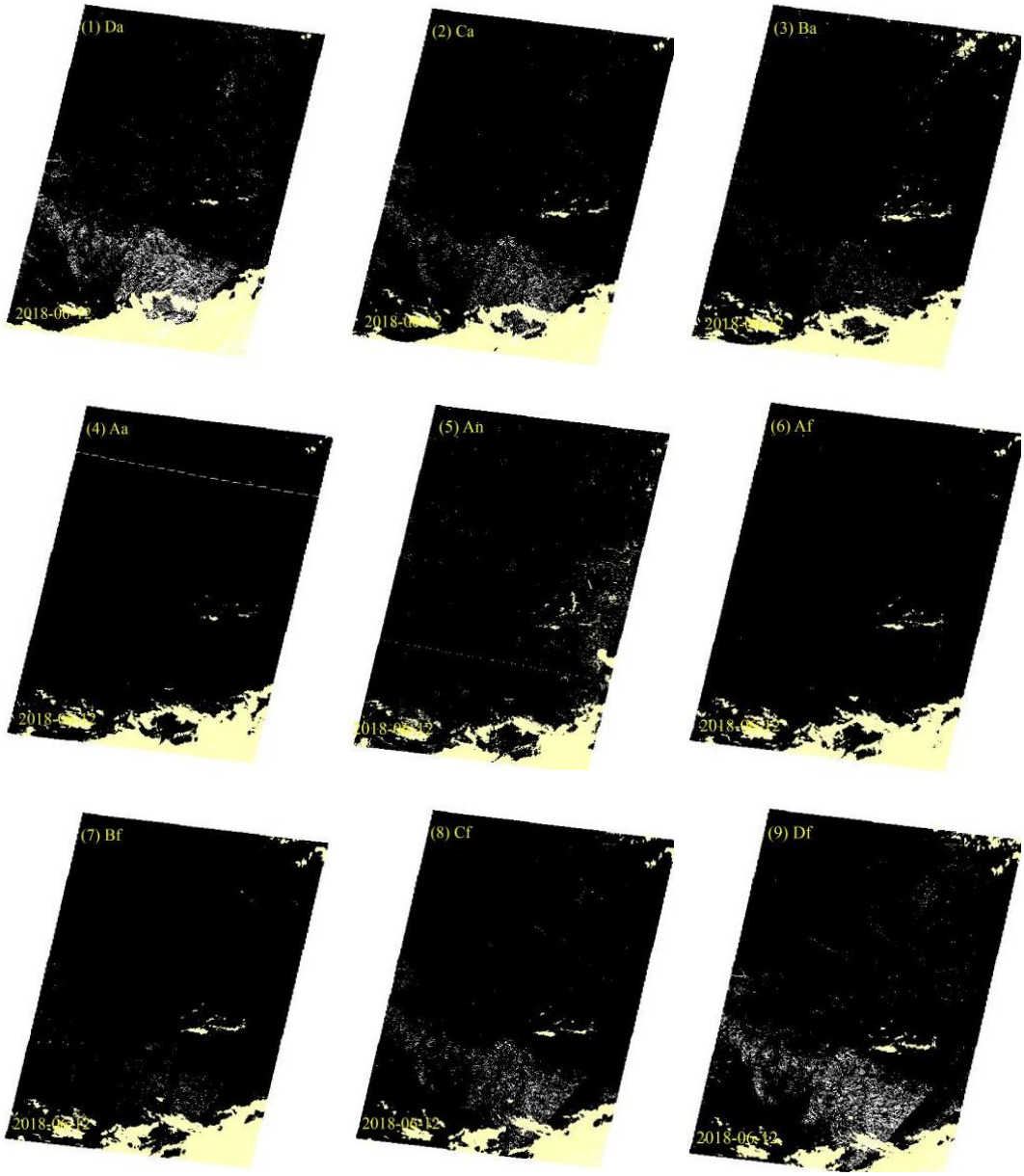

Figure S3. MISR Image Cloud Mask Results on June 12, 2018

(The white spots present in the Aa angle image are caused by flashing points caused by the sensor. Yellow represents the recognized cloud pixels)