

Supplement 1. The correlation coefficient of cloud parameters (CDR, LWP, COT) and cloud types (low-, Mid-low-, Mid-high-, High-) with aerosol variation (K is best-fit slope). The high AODs of sub-region B and D range from 0.6 to 0.8. The low AOD in sub-region C is less than 0.76.

		Low (surface-2.8km)				Mid-Low (2.8-4.6km)				Mid-High(4.6-6.4km)				High (6.4-8.5km)			
		Low (AOD<0.6)		High (0.6<AOD<1)		Low (AOD<0.6)		High (0.6<AOD<1)		Low (AOD<0.6)		High (0.6<AOD<1)		Low (AOD<0.6)		High (0.6<AOD<1)	
		k	R ²	k	R ²	k	R ²	k	R ²	k	R ²	k	R ²	k	R ²	k	R ²
A	CDR	0.0213	0.0745	0.0346	0.0268	0.0014	3E-05	0.087	0.1128	0.3798	0.319	0.0951	0.0398	0.0345	0.0124	-0.006	0.0002
	LWP	0.8631	0.4974	0.2478	0.0299	0.7005	0.3599	0.0243	0.0004	1.2285	0.2698	-0.044	0.0003	0.1262	0.0078	0.1841	0.0037
	COT	1.03	0.5782	0.2926	0.0435	0.8264	0.4842	0.0632	0.0013	0.3493	0.0757	0.0386	0.0002	-0.62	0.0647	0.11	0.0004
B	CDR	-0.02	0.0761	-0.065	0.0603	0.061	0.0735	0.0418	0.0094	0.1701	0.0804	-0.559	0.1354	-0.129	0.068	-0.184	0.0279
	LWP	1.2531	0.4128	-3.228	0.4584	1.5082	0.3818	-2.943	0.602	1.6107	0.181	-2.449	0.1126	0.7215	0.1433	-1.465	0.1467
	COT	1.2065	0.4256	-2.464	0.2909	1.6115	0.3283	-1.773	0.2636	1.8486	0.3035	-4.634	0.3429	2.9966	0.4705	-1.898	0.0226
C	CDR	-0.017	0.054	-0.034	0.0024	0.0655	0.0498	0.9955	0.1874	0.0037	5E-05	-0.173	0.0107	0.4966	0.0895	0.4348	0.0911
	LWP	2.0248	0.6753	-1.821	0.0522	1.5758	0.4225	-2.235	0.04	1.6383	0.336	-4.092	0.1487	1.4263	0.171	-1.367	0.0301
	COT	2.0675	0.6697	-0.655	0.0061	1.6103	0.5042	-4.969	0.1898	1.8467	0.4853	-4.257	0.2469	0.7788	0.0437	-0.653	0.005
D	CDR	-0.006	0.0145	-0.095	0.0955	0.0439	0.0985	-0.187	0.0526	-0.023	0.0077	0.3512	0.0243	0.4419	0.3193	0.4728	0.1859
	LWP	0.6723	0.4143	-0.383	0.0149	0.3292	0.2058	-1.748	0.2379	0.0257	0.001	-1.462	0.0849	2.5348	0.3228	-3.46	0.0723
	COT	0.6429	0.4136	-0.054	0.0004	0.4413	0.2706	-0.95	0.0554	0.3812	0.1757	-2.207	0.0764	3.5826	0.5395	1.0938	0.0083