Component Particle Properties - Summary Table

Part 1: Physical properties

Component particle number	Minimum radius (micro-meters)	Maximum radius (micro-meters)	Log normal character-istic radius (micro-meters)	Log normal character-istic width (micro-meters)	Density (g/cm^3) **see note	Bottom (km)	Top (km)	Scale height (km)	Shape (see shape types below)	Component particle name (*see note)
(1)	0.00100	0.400	0.0300	1.65	1.70	0.00	10.0	2.00	<1>	spherical_nonabsorbing_0.06 (sulfate, sea salt, organic)
(2)	0.00100	0.750	0.0600	1.70	1.77	0.00	10.0	2.00	<1>	spherical_nonabsorbing_0.12 (sulfate, sea salt, organic)
(3)	0.0100	1.50	0.120	1.75	1.84	0.00	10.0	2.00	<1>	spherical_nonabsorbing_0.26 (sulfate, sea salt, organic)
(4)	0.0100	4.00	0.240	1.80	1.91	0.00	10.0	2.00	<1>	spherical_nonabsorbing_0.57 (sulfate, sea salt, organic)
(5)	0.0100	8.00	0.500	1.85	1.99	0.00	10.0	2.00	<1>	spherical_nonabsorbing_1.28 (sea salt, organic)
(6)	0.100	50.0	1.00	1.90	2.13	0.00	10.0	2.00	<1>	spherical_nonabsorbing_2.80 (sea salt, organic)
(8)	0.00100	0.750	0.0600	1.70	1.77	0.00	10.0	2.00	<1>	spherical_absorbing_0.12_ssa_green_0.9 (sulfate, sea salt, organic)
(14)	0.00100	0.750	0.0600	1.70	1.77	0.00	10.0	2.00	<1>	spherical_absorbing_0.12_ssa_green_0.8 (sulfate, sea salt, organic)
(19)	0.100	1.00	0.500	1.50	2.60	3.00	6.00	10.0	<2>	grains_mode1_h1 (dust)
(21)	0.100	6.00	1.00	2.00	2.60	3.00	6.00	10.0	<3>	spheroidal_mode2_h1 (dust)
(22)	0.00100	0.400	0.0300	1.65	1.70	0.00	10.0	2.00	<1>	spherical_absorbing_0.06_ssa_green_0.94 (sulfate, sea salt, organic)
(23)	0.00100	0.400	0.0300	1.65	1.70	0.00	10.0	2.00	<1>	spherical_absorbing_0.06_ssa_green_0.84 (sulfate, sea salt, organic)
(24)	0.00100	0.750	0.0600	1.70	1.77	0.00	10.0	2.00	<1>	spherical_absorbing_0.12_ssa_green_0.94 (sulfate, sea salt, organic)
(25)	0.00100	0.750	0.0600	1.70	1.77	0.00	10.0	2.00	<1>	spherical_absorbing_0.12_ssa_green_0.84 (sulfate, sea salt, organic)
(26)	0.00100	0.750	0.0600	1.70	1.77	0.00	10.0	2.00	<1>	spherical_absorbing_0.12_ssa_green_0.74 (sulfate, sea salt, organic)
(27)	0.0100	1.50	0.120	1.75	1.84	0.00	10.0	2.00	<1>	spherical_absorbing_0.26_ssa_green_0.94 (sulfate, sea salt, organic)
(28)	0.0100	4.00	0.240	1.80	1.91	0.00	10.0	2.00	<1>	spherical_absorbing_0.57_ssa_green_0.94 (sulfate, sea salt, organic)
(29)	0.00100	0.750	0.0600	1.70	1.77	0.00	10.0	2.00	<1>	spherical_absorbing_0.12_ssa_0.9_flat (sulfate, sea salt, organic)
(30)	0.00100	0.750	0.0600	1.70	1.77	0.00	10.0	2.00	<1>	spherical_absorbing_0.12_ssa_0.8_flat (sulfate, sea salt, organic)
(31)	0.00100	0.750	0.0600	1.70	1.77	0.00	10.0	2.00	<1>	spherical_absorbing_0.12_ssa_green_0.9_rising (sulfate, sea salt, or
(32)	0.00100	0.750	0.0600	1.70	1.77	0.00	10.0	2.00	<1>	spherical_absorbing_0.12_ssa_green_0.8_rising (sulfate, sea salt, or

Part 2: Optical properties

Component particle number	Band	Spectral refractive index real	Spectral refractive index imaginary	Spectral extinction cross-section (micro-meters^2)	Spectral single scattering albedo	Spectral ansiotropy parameter (g factor) ***see note	Component particle name (*see note)
(1)	blue	1.45	0.00	0.000772	1.00	0.431	spherical_nonabsorbing_0.06 (sulfate, sea salt, organic)
	green	1.45	0.00	0.000396	1.00	0.352	
	red	1.45	0.00	0.000217	1.00	0.287	
	nir	1.45	0.00	9.09e-05	1.00	0.207	
(2)	blue	1.45	0.00	0.0207	1.00	0.654	spherical_nonabsorbing_0.12 (sulfate, sea salt, organic)
	green	1.45	0.00	0.0134	1.00	0.609	
	red	1.45	0.00	0.00885	1.00	0.563	
	nir	1.45	0.00	0.00467	1.00	0.488	
(3)	blue	1.45	0.00	0.216	1.00	0.726	spherical_nonabsorbing_0.26 (sulfate, sea salt, organic)
	green	1.45	0.00	0.182	1.00	0.717	
	red	1.45	0.00	0.150	1.00	0.703	
	nir	1.45	0.00	0.105	1.00	0.674	
(4)	blue	1.45	0.00	1.02	1.00	0.718	spherical_nonabsorbing_0.57 (sulfate, sea salt, organic)
	green	1.45	0.00	1.04	1.00	0.722	
	red	1.45	0.00	1.03	1.00	0.725	
	nir	1.45	0.00	0.952	1.00	0.726	
(5)	blue	1.45	0.00	4.02	1.00	0.741	spherical_nonabsorbing_1.28 (sea salt, organic)
	green	1.45	0.00	4.19	1.00	0.728	
	red	1.45	0.00	4.35	1.00	0.721	
	nir	1.45	0.00	4.59	1.00	0.718	
(6)	blue	1.45	0.00	15.9	1.00	0.786	spherical_nonabsorbing_2.80 (sea salt, organic)
	green	1.45	0.00	16.2	1.00	0.775	
	red	1.45	0.00	16.5	1.00	0.763	
	nir	1.45	0.00	17.0	1.00	0.747	
(8)	blue	1.45	0.0147	0.0212	0.911	0.659	spherical_absorbing_0.12_ssa_green_0.9 (sulfate, sea salt, organic)
	green	1.45	0.0147	0.0141	0.900	0.612	
	red	1.45	0.0147	0.00953	0.885	0.564	
	nir	1.45	0.0147	0.00527	0.853	0.487	
(14)	blue	1.45	0.0325	0.0219	0.821	0.664	spherical_absorbing_0.12_ssa_green_0.8 (sulfate, sea salt, organic)
	green	1.45	0.0325	0.0149	0.800	0.614	
	red	1.45	0.0325	0.0103	0.773	0.564	
	nir	1.45	0.0325	0.00599	0.720	0.486	
(19)	blue	1.50	0.00410	2.84	0.919	0.705	grains_mode1_h1 (dust)
	green	1.51	0.00210	3.17	0.977	0.711	
	red	1.51	0.000650	3.37	0.994	0.729	
	nir	1.51	0.000470	3.42	0.997	0.747	
(21)	blue	1.51	0.00411	15.3	0.810	0.791	spheroidal_mode2_h1 (dust)
	green	1.51	0.00210	15.5	0.902	0.772	
	red	1.51	0.000650	15.8	0.971	0.741	
	nir	1.51	0.000470	16.3	0.983	0.720	
(22)	blue	1.45	0.00375	0.000806	0.950	0.431	spherical_absorbing_0.06_ssa_green_0.94 (sulfate, sea salt, organic)
	green	1.45	0.00317	0.000419	0.940	0.351	
	red	1.45	0.00303	0.000235	0.920	0.287	
	nir	1.45	0.00199	9.97e-05	0.910	0.207	
(23)	blue	1.45	0.0115	0.000876	0.860	0.430	spherical_absorbing_0.06_ssa_green_0.84 (sulfate, sea salt, organic)
	green	1.45	0.00940	0.000464	0.840	0.351	
	red	1.45	0.00762	0.000263	0.820	0.286	
	nir	1.45	0.00565	0.000116	0.780	0.207	
(24)	blue	1.45	0.00795	0.0209	0.950	0.657	spherical_absorbing_0.12_ssa_green_0.94 (sulfate, sea salt, organic)
	green	1.45	0.00846	0.0138	0.940	0.611	
	red	1.45	0.00986	0.00931	0.920	0.563	
	nir	1.45	0.00848	0.00502	0.910	0.488	
(25)	blue	1.45	0.0244	0.0216	0.860	0.662	spherical_absorbing_0.12_ssa_green_0.84 (sulfate, sea salt, organic)
	green	1.45	0.0249	0.0145	0.840	0.613	
	red	1.45	0.0245	0.00998	0.820	0.564	
	nir	1.45	0.0238	0.00564	0.780	0.487	
(26)	blue	1.45	0.0420	0.0222	0.780	0.665	spherical_absorbing_0.12_ssa_green_0.74 (sulfate, sea salt, organic)
	green	1.45	0.0454	0.0154	0.740	0.614	
	red	1.45	0.0493	0.0111	0.690	0.563	
	nir	1.45	0.0528	0.00680	0.610	0.484	
(27)	blue	1.45	0.00770	0.214	0.950	0.737	spherical_absorbing_0.26_ssa_green_0.94 (sulfate, sea salt, organic)
	green	1.45	0.0102	0.181	0.940	0.727	
	red	1.45	0.0141	0.150	0.920	0.713	
	nir	1.45	0.0154	0.107	0.910	0.681	
(28)	blue	1.45	0.00385	1.02	0.950	0.732	spherical_absorbing_0.57_ssa_green_0.94 (sulfate, sea salt, organic)
	green	1.45	0.00600	1.04	0.940	0.739	

	red	1.45	0.00990	1.02	0.920	0.746	
	nir	1.45	0.0136	0.940	0.910	0.746	
(29)	blue	1.45	0.0167	0.0213	0.900	0.660	spherical_absorbing_0.12_ssa_0.9_flat (sulfate, sea salt, organic)
	green	1.45	0.0146	0.0141	0.900	0.612	
	red	1.45	0.0126	0.00943	0.900	0.564	
	nir	1.45	0.00950	0.00506	0.900	0.488	
(30)	blue	1.45	0.0373	0.0220	0.800	0.664	spherical_absorbing_0.12_ssa_0.8_flat (sulfate, sea salt, organic)
	green	1.45	0.0325	0.0149	0.800	0.614	
	red	1.45	0.0279	0.0101	0.800	0.564	
	nir	1.45	0.0212	0.00554	0.800	0.487	
(31)	blue	1.45	0.0188	0.0214	0.889	0.660	spherical_absorbing_0.12_ssa_green_0.9_rising (sulfate, sea salt, organic)
	green	1.45	0.0146	0.0141	0.900	0.612	
	red	1.45	0.0105	0.00934	0.915	0.563	
	nir	1.45	0.00480	0.00487	0.947	0.488	
(32)	blue	1.45	0.0422	0.0222	0.779	0.665	spherical_absorbing_0.12_ssa_green_0.8_rising (sulfate, sea salt, organic)
	green	1.45	0.0325	0.0149	0.800	0.614	
	red	1.45	0.0235	0.00993	0.826	0.564	
	nir	1.45	0.0117	0.00515	0.880	0.487	

Shape types:

<1> = Spherical
<2> = Grains Mode1 H1
<3> = spheroids Mode2 H1

See reference [1] for a description of grains and spheroids.

Notes:

- Not all particles are used in the current MISR aerosol standard retrieval algorithm. The set of particles used is controlled by the "MIXTURE" part of the MISR Aerosol Climatology Product (ACP). Beginning with MISR aerosol product version 16, the ACP MIXTURE content is copied into the MISR Level 2 Aerosol Parameters product in a Vgroup named "Mixture Information" Within that Vgroup, is a "Mixture Properties - Summary Table" attribute that includes a list of particles used.

* The decimal number immediately following the word "absorbing" or "nonabsorbing" in each spherical particle name is the effective radius of the particle in micrometers. The decimal number following "ssa_green" is single-scattering albedo in the green (558 nm) band.

** Particle density is included as a suggested value, for information only; we do not use this quantity in the retrieval process.

*** The asymmetry parameter (g) may be useful for calculating radiative fluxes from the MISR product, but to calculate radiances accurately, the full single scattering phase function is needed. The spectral phase functions are contained in the HDF structure named "Spectral Phase Functions" in the "APOP" part of the MISR Aerosol Climatology Product (ACP). Beginning with MISR aerosol product version 16, the ACP APOP content is duplicated in the MISR Level 2 Aerosol Parameters product in a Vgroup named "Component Particle Information"

References:

[1] Kalashnikova, O.V., R. Kahn, I.N. Sokolik and W.-H Li, "The ability of multi-angle remote sensing observations to identify and distinguish mineral dust types: Part 1. Optical models and retrievals of optically thick plumes.", J. Geophys. Res., 2004