

2.14 SSF1deg-Day-lite

The SSF1deg-Day-lite product provides CERES-observed temporally interpolated top-of-atmosphere (TOA) radiative fluxes and coincident MODIS-derived cloud and aerosol properties. Each parameter is available at daily 1°-regional, zonal and global time-space scales. TOA fluxes are provided for clear and all-sky conditions in the longwave (LW), shortwave (SW), and window (WN) regions. The regional means are determined for 1° equal-angle grid boxes calculated by first interpolating each parameter between the times of the CERES observations in order to produce a complete 1-hourly time series for the month. After interpolation, the time series is used to produce mean parameters. Daily means are calculated using the combination of observed and interpolated parameters from all days containing at least one CERES observation.

CERES SSF1deg TOA fluxes are interpolated using the assumption of constant meteorological conditions (termed non-GEO) similar to the process used to average CERES ERBE-like data.

CERES Edition2.6 uses Edition2 algorithms with Edition3 CERES instrument calibration and is a limited parameter precursor product for the full parameter products available after Edition3 has been processed.

SSF1deg-Day contains daily parameters on a regional, zonal and global basis:

- All and clear-sky radiative SW, LW, and Net fluxes at TOA
- Total cloud properties (not 4-layered) for day and day/night (24-hour)
- Auxiliary parameters, for example aerosol, skin temperature, wind speed used as input to process the CERES fluxes

Level: 4

Frequency: 1 Daily File

Portion of Atmosphere Covered: TOA

Time Interval Covered:

File: All Months and Climatology

Record: 1 Month

Portion of Globe Covered:

File: Zonal, Global, Regional

Record: 1-Deg Regions

Product Version:

Terra: Edition2.6

Aqua : Edition2.6



SSF1deg Metadata

The types of SSF1deg metadata are summarized in [Table 2.14-1](#) and contain information which need only be recorded once per product. The CERES metadata are listed in [Appendix B](#). [Table B-1](#) lists the CERES Baseline Header Metadata and [Table B-2](#) lists the CERES_metadata Vdata.

Table 2.14-1. SSF1deg-Day Metadata Summary

HDF Name	Description Table	Records	Number of Fields
CERES Baseline Header Metadata	Table B-1	1	36
CERES_metadata Science Data	Table B-2	1	14

All of the SSF1deg science data are organized into the HDF Grid data type and are contained in: SSF1deg-Day, which are shown in [Table 2.14-2](#) below. Each table contains a list of the parameters within each grid, including the field number, the field name, the data type, the units, the range, and the number of elements within each field.

SSF1deg Scientific Data Sets

[Table 2.14-2](#). List of the Vgroups for different Gridded Categories.

Table 2.14-2. Daily Gridded Categories of SSF1deg-Day

Number	Name	Description	No. of Records
1	1.0 Degree Regional	See Table 2.14-3	64800xDays in month
2	1.0 Degree Zonal	See Table 2.14-3	180xDays in month
3	Global	See Table 2.14-3	1xDays in month

Table 2.14-3. List of the Vgroups contained in 1.0 Degree Regional, 1.0 Degree Zonal and Global Vgroups for SSF1deg-Day

Number	Name	Description
1	Region parameters	See Table 2.14-4
2	TOA Fluxes	See Table 2.14-5
3	CERES Cloud Properties	See Table 2.14-10

[Table 2.14-4\(a\)](#) and [Table 2.14-4\(b\)](#). List of the SDSs contained in the Regional Parameters Vgroup of SSF1deg-Day.

Table 2.14-4(a). Region Parameters in SSF1deg-Day

SDS Name	Data Type	Units	Range	No. of Elements
Snow/Ice Percent Coverage	32-Bit Float	percent	0.0 .. 100.0	28 .. 31
Ocean Fraction Coverage	32-Bit Float	percent	0.0 .. 100.0	28 .. 31
Total Aerosol Visible Optical Depth @ 0.55 microns	32-Bit Float	μm	-1.0 .. 5.0	28 .. 31
Total Aerosol Visible Optical Depth – Fine Mode @ 0.55 microns	32-Bit Float	μm	-1.0 .. 5.0	28 .. 31
Total Aerosol Visible Optical Depth Percent	32-Bit Float	percent	0.0 .. 100.0	28 .. 31
Wind Speed	32-Bit Float	m	-100.0 .. 100.0	28 .. 31
Skin Temperature	32-Bit Float	K	175 .. 375	28 .. 31
Precipitable Water	32-Bit Float	cm	0.001 .. 10.0	28 .. 31

Table 2.14-4(b). SDS Index of Region Parameters in SSF1deg-Day

SDS Name	Regional Monthly	Zonal Monthly	Global Monthly
Snow/Ice Percent Coverage	0	42	85
Ocean Fraction Coverage	1	43	86
Total Aerosol Visible optical Depth @ 0.55 microns	2	44	87
Total Aerosol Visible Optical Depth – Fine Mode @ 0.55 microns	3	45	88
Total Aerosol Visible Optical Depth Percent	4	46	89
Wind Speed	5	47	90
Skin Temperature	6	48	91
Precipitable Water	7	49	92

Table 2.14-5. List of the Vgroups contained in the TOA Fluxes Vgroup in SSF1deg-Day

Vgroup Number	Vgroup Name	Daily Averages
1	Clear-Sky non-GEO Method	See Tables 2.14-6(a) and (b)
2	Total-Sky non-GEO Method	See Tables 2.14-7(a) and (b)
3	Number of Observations	See Tables 2.14-8(a) and (b)
4	Incoming Solar Flux	See Tables 2.14-9(a) and (b)

[Table 2.14-6\(a\)](#) and [Table 2.14-6\(b\)](#). List of the SDSs contained in the Clear-Sky TOA Flux Average Vgroup.

Table 2.14-6(a). Clear-sky TOA Flux Average in SSF1deg-Day

SDS Name	Data Type	Units	Range	No. of Elements Monthly
Clear-sky TOA SW Flux - non-GEO Interpolation	32-Bit Float	Wm ⁻²	0.0 .. 800.0	28 .. 31
Clear-sky TOA LW Flux - non-GEO Interpolation	32-Bit Float	Wm ⁻²	0.0 .. 400.0	28 .. 31
Clear-sky TOA WN Flux - non-GEO Interpolation	32-Bit Float	Wm ⁻²	0.0 .. 400.0	28 .. 31
Clear-sky TOA Albedo - non-GEO Interpolation	32-Bit Float	N/A	0.0 .. 1.0	28 .. 31
Clear-sky TOA Net Flux - non-GEO Interpolation	32-Bit Float	Wm ⁻²	-300.0 .. 400.0	28 .. 31

Table 2.14-6(b). SDS Index of Clear-Sky TOA Flux Data Average in SSF1deg-Day

Parameter Name	Regional Daily	Zonal Daily	Global Daily
Clear-sky TOA SW Flux - non-GEO Interpolation	8	50	93
Clear-sky TOA LW Flux - non-GEO Interpolation	9	51	94
Clear-sky TOA WN Flux - non-GEO Interpolation	10	52	95
Clear-sky TOA Albedo - non-GEO Interpolation	11	53	96
Clear-sky TOA Net Flux - non-GEO Interpolation	12	54	97

Table 2.14-7(a) and Table 2.14-7(b). List of the SDSs contained in the Total-Sky TOA Flux Average Vgroup.

Table 2.14-7(a). Total-sky TOA Flux Average in SSF1deg-Day

SDS Name	Data Type	Units	Range	No. of Elements Monthly
Total-sky TOA SW Flux - non-GEO Interpolation	32-Bit Float	Wm ⁻²	0.0 .. 800.0	28 .. 31
Total-sky TOA LW Flux - non-GEO Interpolation	32-Bit Float	Wm ⁻²	0 .. 400	28 .. 31
Total-sky TOA WN Flux - non-GEO Interpolation	32-Bit Float	Wm ⁻²	0 .. 400	28 .. 31
Total-sky TOA Albedo - non-GEO Interpolation	32-Bit Float	N/A	0 .. 1	28 .. 31
Total-sky TOA Net Flux - non-GEO Interpolation	32-Bit Float	Wm ⁻²	-300 .. 400	28 .. 31

Table 2.14-7(b). SDS Index of Total-Sky TOA Flux Data Average in SSF1deg-Day

Parameter Name	Regional Daily	Zonal Daily	Global Daily
Total-sky TOA SW Flux - non-GEO Interpolation	13	55	98
Total-sky TOA LW Flux - non-GEO Interpolation	14	56	99
Total-sky TOA WN Flux - non-GEO Interpolation	15	57	100
Total-sky TOA Albedo - non-GEO Interpolation	16	58	101
Total-sky TOA Net Flux - non-GEO Interpolation	17	59	102

Table 2.14-8(a) and Table 2.14-8(b). List of the SDSs contained in the Number of Observations Vgroup.

Table 2.14-8(a). Number of Observations in SSF1deg-Day

SDS Name	Data Type	Units	Range	No. of Elements Monthly
Clear-sky TOA SW Number of Obs. – non-GEO Daily	32-Bit Float	N/A	0 .. 24	28 .. 31
Clear-sky TOA LW Number of Obs. – non-GEO Daily	32-Bit Float	N/A	0 .. 24	28 .. 31
Total-sky TOA SW Number of Obs. – non-GEO Daily	32-Bit Float	N/A	0 .. 24	28 .. 31
Total-sky TOA LW Number of Obs. – non-GEO Daily	32-Bit Float	N/A	0 .. 24	28 .. 31

Table 2.14-8(b). SDS Index of Number of Observations in SSF1deg-Day

Parameter Name	Regional Daily	Zonal Daily	Global Daily
Clear-sky TOA SW Number of Obs. – non-GEO Daily	18	60	103
Clear-sky TOA LW Number of Obs. – non-GEO Daily	19	61	104
Total-sky TOA SW Number of Obs. – non-GEO Daily	20	62	105
Total-sky TOA LW Number of Obs. – non-GEO Daily	21	63	106

Table 2.14-9(a) and Table 2.14-9(b). List of the SDSs contained in the Incoming Solar Vgroup.

Table 2.14-9(a). Incoming Solar in SSF1deg-Day

SDS Name	Data Type	Units	Range	No. of Elements Monthly
Incoming Solar Flux	32-Bit Float	Wm ⁻²	0 .. 400	28 .. 31

Table 2.14-9(b). SDS Index of Incoming Solar in SSF1deg-Day

Parameter Name	Zonal Daily	Global Daily
Incoming Solar Flux	64	107

Table 2.14-10. List of the Vgroups contained in the CERES Day Time and Day and Night Time Cloud Daily Vgroup in SSF1deg-Day

Vgroup Number	Vgroup Name	Monthly Averages
1	Day Time Clouds	See Table 2.14-11(a) and (b)
2	Day and Night Time Clouds	See Table 2.14-11(a) and (b)

[Table 2.14-11\(a\)](#) and [Table 2.14-11\(b\)](#). CERES Day Time and Day and Night Time Cloud Properties in SSF1deg-Day.

Table 2.14-11(a). Day Time and Day and Night Time CERES Cloud Averages in SSF1deg-Day

SDS Name	Data Type	Units	Range	No. of Elements
Cloud Area Fraction	32-Bit Float	percent	0.0 .. 100.0	28 .. 31
Cloud Effective Pressure	32-Bit Float	hPa	0.0 .. 1100.0	28 .. 31
Cloud Effective Temperature	32-Bit Float	K	180.0 .. 350.0	28 .. 31
Cloud Effective Height	32-Bit Float	m	-1000 .. 10000	28 .. 31
Cloud Particle Phase	32-Bit Float	fraction	1.0 .. 2.0	28 .. 31
Liquid Water Path	32-Bit Float	gm ⁻²	0.0 .. 10000.0	28 .. 31
Ice Water Path	32-Bit Float	gm ⁻²	0.0 .. 10000.0	28 .. 31
Water Particle Radius	32-Bit Float	micron	0.0 .. 40.0	28 .. 31
Ice Particle Effective Diam	32-Bit Float	micron	0.0 .. 300.0	28 .. 31
Cloud Visible Optical Depth	32-Bit Float	N/A	0.0 .. 100.0	28 .. 31

Table 2.14-11(b). SDS Index of day Time and Day and Night Time CERES Cloud
 Averages in SSF1deg-Day

SDS Name	Day time Regional Monthly	Day time Zonal Monthly	Day time Global Monthly	Day & Night Regional Monthly	Day & Night Zonal Monthly	Day & Night Global Monthly
Cloud Area Fraction	22	65	108	32	75	118
Cloud Effective Pressure	23	66	109	33	76	119
Cloud Effective Temperature	24	67	110	34	77	120
Cloud Effective Height	25	68	111	35	78	121
Cloud Particle Phase	26	69	112	36	79	122
Liquid Water Path	27	70	113	37	80	123
Ice Water Path	28	71	114	38	81	124
Water Particle Radius	29	72	115	39	82	125
Ice Particle Effective Diam	30	73	116	40	83	126
Cloud Visible Optical Depth	31	74	117	41	84	127

SSF1deg Day

Total Record/File: 64,981
Total Bits/Record: 4098
Total Bytes/Record: 512
Total Bits/File: 266,162,176
Total Bytes/File: 33,270,272

SSF1deg-Day-lite Revision Record

The product Revision Record contains information pertaining to approved section changes. The table lists the date the Software Configuration Change Request (SCCR) was approved, the Release and Version Number, the SCCR number, a short description of the revision, and the revised sections. The authors are listed on the document cover.

SSF1deg-Day-lite Revision Record

SCCR Approval Date	Release/Version Number	SCCR Number	Description of Revision	Section(s) Affected
07/26/11	R5V1	860	<ul style="list-style-type: none">• New document.	All

