

Monthly Cloud Averages (ISCCP-D2like-Mrg)

The Monthly Gridded Cloud Averages (ISCCP-D2like-Mrg) archival data product contains monthly and monthly 3-hourly (GMT-based) $1^{\circ} \times 1^{\circ}$ gridded regional daytime mean cloud properties as a function of 18 cloud types, similar to the [ISCCP D2](#) product, where the cloud properties are stratified by pressure, optical depth, and phase. The Mrg product combines daytime cloud properties from Terra-MODIS (10:30 AM local equator crossing time LECT), Aqua-MODIS (1:30 PM LECT), and geostationary satellites (GEO) to provide the most diurnally complete daytime ISCCP-D2like product. The GEO cloud properties have been normalized with MODIS for diurnal consistency. The CERES MODIS-derived cloud properties are not the official NASA MODIS cloud retrievals, but are based on the CERES cloud working group retrievals that are also available in other CERES products. The CERES MODIS-derived cloud properties provide coverage from pole to pole. The 3-hourly GMT-based GEO cloud properties come from five satellites at 8km nominal resolution with coverage limited to 60°N to 60°S . The GEO daytime cloud retrievals incorporate only a visible and IR channel common to all geostationary satellites for spatial consistency. The geostationary calibration is normalized to Terra-MODIS. The GEO cloud properties are from the same source as for those in the SYN1deg product; however they are not temporally interpolated. The Single Scanner Footprint TOA/Surface Fluxes and Clouds (SSF) archival data product and the Gridded GEO Narrowband Radiances (GGEO) archival data product are the inputs to this product. Each ISCCP-D2like-Mrg file covers a single month using the SSFs from the CERES instrument that is in cross-track scan mode. The science data are Scientific Data Sets (SDSs) with multiple records. Each record contains spatially averaged data for an individual region.

The major category of data output on the ISCCP-D2like-Mrg HDF file is:

- D2like-Mrg 18 Cloud Types for Monthly 3-Hourly/Monthly

A complete listing of metadata and gridded science parameters for this data product can be found in [Table 1](#) through [Table 8](#).

Level: 3

Frequency: 1/Month

Portion of Atmosphere Covered: Clouds

Time Interval Covered:

File: 1 Month

Record: 1 Month or Monthly 3-Hour

Portion of Globe Covered:

File: Entire Globe

Record: 1-Deg Regions

Product Version:

TRMM: N/A

Terra/Aqua/GEO Merged: Edition2A, Edition3A

ISCCP-D2like-GEO-1



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ISCCP-D2like-Mrg Metadata

The ISCCP-D2like-Mrg metadata are summarized in [Table 1](#). These metadata contain information that 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 1. ISCCP-D2like 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

ISCCP-D2like-Mrg Scientific Data Sets

The ISCCP-D2like Mrg product contains Scientific Data Sets (SDS) of gridded cloud parameters. The SDSs are divided into tables that map to Vgroups in the HDF file. [Table 2](#) and [Table 3](#) list the Vgroups following the HDF file structure. The SDSs are 2-, 3-, or 4-dimensional arrays where the last two dimensions refer to the latitude and longitude of the regions; the latitude/longitude grid is defined in [Table 5](#). In 3- and 4-dimensional arrays, the first and second dimensions may refer to the temporal averaging time index in [Table 4](#) or to the 18 cloud types in [Table 6](#).

[Table 7](#) and [Table 8](#) list the cloud parameters by Vgroup and in order of SDS index number. Each table contains a list of the parameters for one Vgroup, including SDS index, SDS name, data type, units, range, and dimensions within each SDS.

Table 2. Temporal Vgroups

Number	Vgroup Name	Monthly 3-Hourly Averages/ Monthly Averages
1	Monthly 3-Hourly Averages	See Table 3
2	Monthly Averages	See Table 3

Table 3. Vgroups within each temporal averaging Vgroup

Number	Vgroup Name	Monthly 3-Hourly Averages/ Monthly Averages
1	Regional Identification Parameters	See Table 7
2	D2-like-GEO Cloud Types	See Table 8



Table 4. The 8 GMT-based monthly 3-hourly mean indices used in this document.

Time Index	Time Increment
1	00-03 GMT
2	03-06 GMT
3	06-09 GMT
4	09-12 GMT
5	12-15 GMT
6	15-18 GMT
7	18-21 GMT
8	21-24 GMT

Table 5. Definition of the CERES equal-angle 1° latitude by 1° longitude grid.

Dimension	Number of Indices	Definition
	Regional	
Latitude	180	Index #1 is defined at 89.5°N and #180 is at 89.5°S
Longitude	360	Index #1 is defined at 179.5°W and #360 is at 179.5°E



Table 6. List of the 18 Cloud Types used in Table 8.

Cloud Type	Name	Phase	(Pressure Level, Optical Depth Level)
1	Cumulus	Liquid	(Low, Thin)
2	Stratocumulus	Liquid	(Low, Mid-thick)
3	Stratus	Liquid	(Low, Thick)
4	Cumulus	Ice	(Low, Thin)
5	Stratocumulus	Ice	(Low, Mid-thick)
6	Stratus	Ice	(Low, Thick)
7	Alto cumulus	Liquid	(Mid, Thin)
8	Altostratus	Liquid	(Mid, Mid-thick)
9	Nimbostratus	Liquid	(Mid, Thick)
10	Alto cumulus	Ice	(Mid, Thin)
11	Altostratus	Ice	(Mid, Mid-thick)
12	Nimbostratus	Ice	(Mid, Thick)
13	Cirrus	Liquid	(High, Thin)
14	Cirrostratus	Liquid	(High, Mid-thick)
15	Deep Convection	Liquid	(High, Thick)
16	Cirrus	Ice	(High, Thin)
17	Cirrostratus	Ice	(High, Mid-thick)
18	Deep Convection	Ice	(High, Thick)

Table 7. Regional Identification Parameters

SDS Index		SDS Name					Dimensions	
MH	M	Monthly 3-Hourly Mean (MH)	Monthly Mean (M)	Data Type	Units	Range	MH	M
0	9	Colatitude - MH	Colatitude - M	32-Bit Float	Degree	0.0 .. 180.0	180 *360	180 *360
1	10	Longitude - MH	Longitude - M	32-Bit Float	Degree	0.0 .. 360.0	180 *360	180 *360



Table 8. D2-like-GEO Cloud Types

SDS Index		SDS Name					Dimensions	
MH	M	Monthly 3-Hourly Mean (MH)	Monthly Mean (M)	Data Type	Units	Range	MH	M
2	11	Number Of Observations - MH	Monthly Total Number Of Observations - M	32-Bit Float	N/A	N/A	8*180 *360	180* 360
3	12	Total Cloud Area Fraction - MH	Total Cloud Area Fraction - M	32-Bit Float	Percent	0.0 .. 100.0	8*180 *360	180 *360
4	13	Cloud Area Fraction - MH	Cloud Area Fraction - M	32-Bit Float	Percent	0.0 .. 100.0	8*18 *180 *360	18 *180 *360
5	14	Effective Pressure - MH	Effective Pressure - MH	32-Bit Float	hPa	0 .. 1100	8*18 *180 *360	18 *180 *360
6	15	Effective Temperature - MH	Effective Temperature - MH	32-Bit Float	K	100 .. 350	8*18 *180 *360	18 *180 *360
7	16	Log (Visible) Optical Depth - MH	Log (Visible) Optical Depth - MH	32-Bit Float	N/A	-6 .. 6	8*18 *180 *360	18 *180 *360
8	17	Liquid/Ice Water Path - MH	Liquid/Ice Water Path - M	32-Bit Float	g m ^{-2a}	0 .. 10000	8*18 *180 *360	18 *180 *360

a. HDF file incorrectly states that this variable is “unitless.”

Estimated File Size (1 month file):

52 MB



ISCCP-D2like-Mrg Revision Record

The product Revision Record contains information pertaining to approved document 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 document authors are listed on the cover.

ISCCP-D2like-Mrg Revision Record

SCCR Approval Date	Release/Version Number	SCCR Number	Description of Revision	Section(s) Affected
03/04/2012	R5V1	763	<ul style="list-style-type: none"> • Initial version. • The ASDC footer was added to the bottom of the document. (06/05/2013) 	All All
03/21/2013	R5V2	961	<ul style="list-style-type: none"> • Updated Product version. • Added table to define latitude/longitude dimension indices. • Corrected Vgroup name. • Corrected number of elements information. • Eliminated section numbers from the Data Products Catalog. Specifically, in this document, section number 2.18 was removed. 	Page 1 Table 5 Table 3 Table 8 All

