

Gridded GEO Narrowband Radiances (GGEO)

The GGEO product is a single file containing metadata, a header record, and multiple data records. The metadata are the CERES Baseline Header Metadata listed in [Table B-1](#) of [Appendix B](#). The header record contains the year/month data date, the actual data starting and ending dates, and the first and the last zones found on the file.

Each data record, called an hourbox, contains data particular to a single grid region and hour. The number of hourboxes on the file is determined by the number of data hours per day, the maximum number of days per month (plus one day for overlap hours), and the number of regions in the nested grid for the zones contained on the file (8 hours per day x 32 days per month x 38520 regions on globe = 9861120 hourboxes maximum). Hourboxes for which there are no International Satellite Cloud Climatology Project (ISCCP) data are filled with default values.

A listing of the parameters contained within each data record can be found in [Table 1](#). Following is a brief explanation of the parameters.

- The Satellite Number identifies the satellite which collected the hourbox radiance data.
- The Time parameter gives the Greenwich mean time (GMT) time for the “key” pixel in the hourbox (the pixel which lies closest to the region centroid).
- The three angle measurements are derived from the centroid of the region at the time indicated in the Time parameter.
- The visible and infrared radiance statistics give the mean, variance, and number for the pixels within the hourbox.
- The clear sky visible and infrared radiance statistics give mean for the pixels within the hourbox.
- The cloud parameter statistics give mean for the pixels within the hourbox.

Level: 3

Frequency: Monthly

Configuration Code: 007002 and greater

Portion of Globe Covered

File: Global

Record: 1-Deg Equal-angle Regions

Time Interval Covered

File: Monthly

Record: Every Third Hour

Portion of Atmosphere Covered

File: TOA

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Table 1. Gridded GEO Narrowband Radiances (GGEO) Summary Table

Name	Description Table	Records	Number of Fields	Nominal Size (Bytes)
CERES Baseline Header Metadata	Table B-1	1	36	~25907
CERES_Metadata Vdata	Table B-2	1	14	~1024
GGEO Header Record	Table 2	1	8	40
GGEO Data Record	Table 3	9861120	49	196

Table 2. GGEO Header Record

Description	Element Number	Units	Range	Elements/Record	Bits/Elem	Bits/Rec
Year/Month Data Date (yyyymm)		N/A	N/A	1	32	32
Data Starting Date (yyyddd)		N/A	N/A	1	32	32
Data Ending Date (yyyddd)		N/A	N/A	1	32	32
First Zone on File		N/A	N/A	1	32	32
Last Zone on File		N/A	N/A	1	32	32
Record Size		N/A	N/A	1	32	32
Code Version		N/A	N/A	1	32	32
File Version		N/A	N/A	1	32	32

Table 3. GGEO Data Record

Description	Element Number	Units	Range	Elements/Record	Bits/Elem	Elem Num	Bits/Rec
Satellite Number	1	N/A	N/A	1	32	1	32
Time	2	hhmmss	0 .. 235959	1	32	2	32
Cos of Satellite Zenith Angle	3	N/A	-1.0 .. 1.0	1	32	3	32
Cos of Solar Zenith Angle	4	N/A	-1.0 .. 1.0	1	32	4	32
Relative Azimuth Angle	5	deg	0.0 .. 180.0	1	32	5	32
visible radiance: mean, var, num obs	6	W m ⁻² sr ⁻¹	0.0 .. 20.0	3	32	6	96
infrared radiance: mean, var, num obs	7	W m ⁻² sr ⁻¹ μm ⁻¹	0.0 .. 600.0	3	32	9	96
clear sky visible radiance: mean	8	W m ⁻² sr ⁻¹	0.0 .. 20.0	1	32	12	96
clear sky infrared radiance: mean	9	W m ⁻² sr ⁻¹ μm ⁻¹	0.0 .. 600.0	1	32	13	96
Lower cloud: Area fraction	10	percent	0.0 .. 100.0	1	32	14	32
Lower cloud: Effective temperature	11	K	100.0 .. 350.0	1	32	15	32

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Table 3. GGEO Data Record

Description	Element Number	Units	Range	Elements/Record	Bits/Elem	Elem Num	Bits/Rec
Lower cloud: Effective pressure	12	hPa	0.0 .. 1100.0	1	32	16	32
Lower cloud: Bottom pressure	13	hPa	0.0 .. 1100.0	1	32	17	32
Lower cloud: Top pressure	14	hPa	0.0 .. 1100.0	1	32	18	32
Lower cloud: Vis. optical depth (linear)	15	N/A	0.0 .. 400.0	1	32	19	32
Lower cloud: Vis. optical depth (log)	16	N/A	-6.0 .. 6.0	1	32	20	32
Lower cloud: Infrared emissivity	17	N/A	0.0 .. 2.0	1	32	21	32
Lower cloud: Particle phase	18	N/A	1.0 .. 2.0	1	32	22	32
LowMid cloud: Area fraction	19	percent	0.0 .. 100.0	1	32	23	32
LowMid cloud: Effective temperature	20	K	100.0 .. 350.0	1	32	24	32
LowMid cloud: Effective pressure	21	hPa	0.0 .. 1100.0	1	32	25	32
LowMid cloud: Bottom pressure	22	hPa	0.0 .. 1100.0	1	32	26	32
LowMid cloud: Top pressure	23	hPa	0.0 .. 1100.0	1	32	27	32
LowMid cloud: Vis. optical depth (linear)	24	N/A	0.0 .. 400.0	1	32	28	32
LowMid cloud: Vis. optical depth (log)	25	N/A	-6.0 .. 6.0	1	32	29	32
LowMid cloud: Infrared emissivity	26	N/A	0.0 .. 2.0	1	32	30	32
LowMid cloud: Particle phase	27	N/A	1.0 .. 2.0	1	32	31	32
UpperMid cloud: Area fraction	28	percent	0.0 .. 100.0	1	32	32	32
UpperMid cloud: Effective temperature	29	K	100.0 .. 350.0	1	32	33	32
UpperMid cloud: Effective pressure	30	hPa	0.0 .. 1100.0	1	32	34	32
UpperMid cloud: Bottom pressure	31	hPa	0.0 .. 1100.0	1	32	35	32
UpperMid cloud: Top pressure	32	hPa	0.0 .. 1100.0	1	32	36	32
UpperMid cloud: Vis. optical depth (linear)	33	N/A	0.0 .. 400.0	1	32	37	32
UpperMid cloud: Vis. optical depth (log)	34	N/A	-6.0 .. 6.0	1	32	38	32
UpperMid cloud: Infrared emissivity	35	N/A	0.0 .. 2.0	1	32	39	32

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Table 3. GGEO Data Record

Description	Element Number	Units	Range	Elements/Record	Bits/Elem	Elem Num	Bits/Rec
UpperMid cloud: Particle phase	36	N/A	1.0 .. 2.0	1	32	40	32
High cloud: Area fraction	37	percent	0.0 .. 100.0	1	32	41	32
High cloud: Effective temperature	38	K	100.0 .. 350.0	1	32	42	32
High cloud: Effective pressure	39	hPa	0.0 .. 1100.0	1	32	43	32
High cloud: Bottom pressure	40	hPa	0.0 .. 1100.0	1	32	44	32
High cloud: Top pressure	41	hPa	0.0 .. 1100.0	1	32	45	32
High cloud: Vis. optical depth (linear)	42	N/A	0.0 .. 400.0	1	32	46	32
High cloud: Vis. optical depth (log)	43	N/A	-6.0 .. 6.0	1	32	47	32
High cloud: Infrared emissivity	44	N/A	0.0 .. 2.0	1	32	48	32
High cloud: Particle phase	45	N/A	1.0 .. 2.0	1	32	49	32

Total Meta Bits/File: 70 752
Total Data Bits/Record: 1 568
Total Meta data Records: 200
Total Header Records: 1
Total Records/File: 9 861 321
Total Data Bits/File: 61 850 205 312
Total Bits/File: 61 850 205 312
Total Bytes/File: 1 932 818 916
Total MBytes/File: 1932.8



GGEO 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.

GGEO Revision Record

SCCR Approval Date	Release/Version Number	SCCR Number	Description of Revision	Section(s) Affected
N/A	R3V1	N/A	<ul style="list-style-type: none"> • Updated format to comply with standards. 	All
N/A	R3V2	N/A	<ul style="list-style-type: none"> • Updated Data record information in summary table. 	3.7-1
			<ul style="list-style-type: none"> • Added new parameters to Header record. • Added clear sky radiances and cloud parameters. • Updated format to comply with standards. • The EOSDIS Product Code line was removed from the document. (6/17/2008) • Section numbering was changed because of the SYNI and TSI Data Product Catalog additions. (6/23/2008) • Some links were not working. They have now been modified. (12/09/2010) • The ASDC footer was added to the bottom of the document. (06/06/2013) • Eliminated section numbers from the Data Products Catalog. Specifically, in this document, section number 3.7 was removed. (12/18/2013) • Updated some links to refer to the .pdf file instead of the .doc file. (06/20/2014) • Updated document to change “mm” to “μm.” (09/12/2019) 	3.7-2 3.7-3 All Sec. 3.7 All All All All All Table 3

