3-Hourly Averaged Synoptic Radiative Fluxes and Clouds (SYN1deg-3Hour)

The SYN1deg product contains the 3-hourly regional means of the CERES geostationary (GEO) enhanced temporally interpolated TOA fluxes, MODIS and 3-hourly GEO cloud properties, MODIS aerosols, and computed TOA, surface and in-atmospheric (profile) fluxes consistent with the observed TOA fluxes, clouds and aerosols. The Edition3A SYN1deg product has combined the Terra and Aqua CERES observed fluxes and cloud retrievals. The SYN1deg-3Hour product is distributed in daily HDF-EOS files.

The constrained (tuned) to the observed CERES TOA fluxes and the initial (untuned) profile (TOA, 70mb, 200mb, 500mb, and surface) longwave, shortwave, and window channel fluxes retrieved from the Langley Fu-Liou radiative transfer model are based on inputs from MODIS and GEO cloud properties stratified by 4 vertical layers, GEOS atmosphere and skin temperature, MATCH aerosol constituents, and MODIS spectral aerosol optical depths. The fluxes are given for pristine (clear-sky no-aerosol), clear-sky, total-sky-no-aerosol, and total-sky conditions. The initial and adjusted cloud, aerosols, GEOS precipitable water, humidity and skin temperatures are also given.

The SYN1deg product contains direct and diffuse shortwave surface fluxes. The product also contains direct and diffuse surface UVA, UVB, and photosynthetically active radiation (PAR) fluxes and surface UV Index for pristine, clear-sky and total-sky conditions. Some of these surface fluxes are also given for total-sky-no-aerosol conditions.

More information about the CERES products can be obtained on the CERES subsetter ordering web page (http://ceres.larc.nasa.gov/order_data.php)

A complete listing of metadata and science parameters for this data product can be found in Table 1 and Table 2.

Level: 3
Frequency: Every 3 Hours
Portion of Atmosphere Covered: Surface, In-Atmosphere, and TOA

Time Interval Covered:
File: 1 Day
Record: 3 Hours

Portion of Globe Covered:
File: Entire Globe
Record: 1.0-Degree Regions

Product Version:
TRMM: N/A
Terra+Aqua: Edition3A

3Hour Metadata

The types of 3Hour metadata are summarized in Table 1 and contain information which need only be recorded once per product. The CERES metadata are listed in Appendix B. The Vgroups are listed in Table 2.

Table 1. SYN Metadata Summary

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

Table 2. List of the Vgroups contained in the 3 Hourly Averages

Vgroup Number	Vgroup Name	Daily 3-Hourly Averages
1	Time and Position	See Table 4
2	Observed TOA Fluxes	See Table 5
3	Cloud Layer - High	See Table 6(a) & Table 6(b)
4	Cloud Layer - UpperMid	See Table 6(a) & Table 6(b)
5	Cloud Layer - LowerMid	See Table 6(a) & Table 6(b)
6	Cloud Layer - Low	See Table 6(a) & Table 6(b)
7	Stowe-Ignatov Aerosol Optical Depth	See Table 7
8	MODIS Aerosol Optical Depth	See Table 8
9	Tuned Pristine Fluxes	See Table 9
10	Tuned ClearSky Flux Profiles	See Table 10
11	Tuned TotalSky-NoAerosol Fluxes	See Table 11
12	Tuned TotalSky Flux Profiles	See Table 12
13	Untuned Pristine Fluxes	See Table 13
14	Untuned ClearSky Fluxes	See Table 14
15	Untuned TotalSky-NoAerosol Fluxes	See Table 15
16	Untuned TotalSky Fluxes	See Table 16
17	Satellite Emulated WN TOA Fluxes	See Table 17
18	TOA Flux Error	See Table 18
19	Number of Hourboxes	See Table 19
20	Constrainment Adjustments	See Table 20
21	Surface SW Direct/Diffuse Fluxes	See Table 21
22	UVA - UVB Fluxes	See Table 22
23	PAR Fluxes	See Table 23
24	Pristine-Sky SW MultiStream Correction	See Table 24

3 Hour Science Data

The Scientific Data Sets (SDS) are divided into tables which map to Vgroups of the same name. All of the 3Hour science data are organized into the HDF-EOS Grid data type, which is shown in Table 3(a) and Table 3(b) below. All parameter tables contain a list of the gridded parameters, which includes the SDS index, field number, the field name, the data type, the units, the range, and the number of elements within each field. The 3 dimensions are based on the 1° CERES regional data of 8 3-hourly means of hourly computations for the given daily file. The first 2 dimensions Nlat and Nlon correspond to the CERES region index; the next dimension is Ngmt and refers to the time index. On a few parameters, the last dimension is Nlev and defines the atmospheric profile levels. Only the means are given, unlike the Month and M3Hour files which include the standard deviation. This ordering is used by the C programming language and most HDF viewers, such as IDL. In FORTRAN, the dimensions are reversed such that the number of regions becomes the last dimension and the first dimension is the number of parameters in the SDS.

Table 3(a). Nlat, Nlon dimensions that define the CERES equal-angle 1° latitude by 1° longitude grid

Dimension	No of indices	Definition
Nlat	180	Index #1 is defined at 89.5°N and #180 is at 89.5°S
Nlon	360	Index #1 is defined at 179.5°W and #360 is at 179.5°E

Table 3(b). Ngmt dimension that defines the 8 3-hourly GMT time increments. For the Monthly, Ngmt only has one index

Ngmt index	3-hourly daily 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 MT

Table 3(c). Nlev dimension that defines the atmospheric profile levels

Nlev	Atmospheric level
1	TOA (30 km)
2	70mb
3	200mb
4	500mb
5	Surface

Table 3(d). IGBP Surface types used in Table 4. For a geographical distribution of the scene types, see http://snowdog.larc.nasa.gov/surf/pages/sce_type.html

Nsfc	Surface Type
1	Evergreen Needle Forest
2	Evergreen Broadleaf Forest
3	Deciduous Needle Forest
4	Deciduous Broadleaf Forest
5	Mixed Forest
6	Closed Shrubs
7	Open Shrubs
8	Woody Savannas
9	Savannas
10	Grassland
11	Wetlands
12	Crops
13	Urban
14	Crop/Mosaic
15	Permanent Snow/Ice
16	Barren Desert
17	Water
18	Tundra
19	Land Snow
20	Sea Ice

Table 4. Table of Time and Position. Nsfc dimension is defined in Table 3(d)

SDS Index	SDS Name	DataType	Units	Range	No of Elements
0	Region number	32-bit real	N/A	1 .. 64800	Nlon*Nlat
1	Colatitude	32-bit real	Degree	0 .. 180	Nlon*Nlat
2	Longitude	32-bit real	Degree	0 .. 360	Nlon*Nlat
3	Surface altitude above sea level	32-bit real	m	-1000 .. 10000	Nlon*Nlat *Ngmt
4	Surface type percent coverage	32-bit real	Percent	0 .. 100	Nlon*Nlat Ngmt*Nsfc

Table 5. Observed TOA Fluxes

SDS Index	SDS Name	DataType	Units	Range	No of Elements
5	SW TOA Total-Sky	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
6	LW TOA Total-Sky	32-bit real	W m^{-2}	0 .. 500	Nlon*Nlat*Ngmt
7	WN TOA Total-Sky	32-bit real	W m^{-2}	0 .. 200	Nlon*Nlat*Ngmt
8	SW TOA Clear-Sky	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
9	LW TOA Clear-Sky	32-bit real	W m^{-2}	0 .. 500	Nlon*Nlat*Ngmt
10	WN TOA Clear-Sky	32-bit real	W m^{-2}	0 .. 200	Nlon*Nlat*Ngmt

Table 6(a). Cloud Properties for Four Cloud Layers

SDS Name	DataType	Units	Range	No of Elements
Area Fraction Percentage	32-bit real	Percent	0 .. 100	Nlon*Nlat*Ngmt
Vis. Opt. Depth (linear)	32-bit real	N/A	0 .. 400	Nlon*Nlat*Ngmt
Vis. Opt. Depth (log)	32-bit real	N/A	-6 .. 6	Nlon*Nlat*Ngmt
Infrared Emissivity	32-bit real	N/A	0 .. 1*	Nlon*Nlat*Ngmt
Liquid Water Path	32-bit real	g m^{-2}	0 .. 10000	Nlon*Nlat*Ngmt
Ice Water Path	32-bit real	g m^{-2}	0 .. 10000	Nlon*Nlat*Ngmt
Top Pressure	32-bit real	hPa	0 .. 1100	Nlon*Nlat*Ngmt
Effective Pressure	32-bit real	hPa	0 .. 1100	Nlon*Nlat*Ngmt
Effective Temperature	32-bit real	K	100 .. 350	Nlon*Nlat*Ngmt
Effective Height	32-bit real	km	0 .. 20	Nlon*Nlat*Ngmt
Bottom Pressure	32-bit real	hPa	0 .. 1100	Nlon*Nlat*Ngmt
Liquid Particle Radius	32-bit real	μm	0 .. 40	Nlon*Nlat*Ngmt
Ice Particle Diameter	32-bit real	μm	0 .. 300	Nlon*Nlat*Ngmt
Particle Phase	32-bit real	N/A	1 .. 2	Nlon*Nlat*Ngmt
Vertical Aspect Ratio	32-bit real	N/A	0 .. 20	Nlon*Nlat*Ngmt

* Range check from 0 to 2 to compensate for roundoff error

Table 6(b). SDS Index of Cloud Properties for Four Cloud Layers
Table 6(c) defines the 4 cloud layers.

SDS Name	Regional Daily 3- Hourly			
Area Fraction Percentage	11	26	41	56
Vis. Opt. Depth (linear)	12	27	42	57
Vis. Opt. Depth (log)	13	28	43	58
Infrared Emissivity	14	29	44	59
Liquid Water Path	15	30	45	60
Ice Water Path	16	31	46	61
Top Pressure	17	32	47	62
Effective Pressure	18	33	48	63
Effective Temperature	19	34	49	64
Effective Height	20	35	50	65
Bottom Pressure	21	36	51	66
Liquid Particle Radius	22	37	52	67
Ice Particle Diameter	23	38	53	68
Particle Phase	24	39	54	69
Vertical Aspect Ratio	25	40	55	70

Color Red - High Cloud
Color Green - Uppermid Cloud
Color Blue - Lowermid Cloud
Color Black - Low Cloud

Table 6(c). Table of Cloud Layers

Cloud Layer Index	Cloud Layer	Pressure level (mb)
1	High	50-300
2	Upper Mid	300-500
3	Lower Mid	500-700
4	Low	700-Surface

Table 7. Stowe-Ignatov Aerosol Optical Depth

SDS Index	SDS Name	DataType	Units	Range	No of Elements
71	Aerosol visible optical depth - 0.63 μm	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt
72	Aerosol visible optical depth - 1.6 μm	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt

Table 8. MODIS Aerosol Optical Depth

SDS Index	SDS Name	DataType	Units	Range	No of Elements
73	Initial Aerosol Optical Depth	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt
74	Aerosol Opt. Depth at 0.47 μm in Land	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt
75	Aerosol Opt. Depth at 0.55 μm in Land	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt
76	Aerosol Opt. Depth at 0.66 μm in Land	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt
77	Aerosol Opt. Depth at 0.47 μm in Ocean	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt
78	Aerosol Opt. Depth at 0.55 μm in Ocean	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt
79	Aerosol Opt. Depth at 0.66 μm in Ocean	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt
80	Aerosol Opt. Depth at 0.87 μm in Ocean	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt
81	Aerosol Opt. Depth at 1.24 μm in Ocean	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt
82	Aerosol Opt. Depth at 1.64 μm in Ocean	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt
83	Aerosol Opt. Depth at 2.13 μm in Ocean	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt

Table 9. Tuned Pristine Fluxes

SDS Index	SDS Name	DataType	Units	Range	No of Elements
84	Tuned Pristine SW Surface Up	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
85	Tuned Pristine SW Surface Down	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
86	Tuned Pristine SW TOA Up	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
87	Tuned Pristine LW Surface Up	32-bit real	W m^{-2}	0 .. 850	Nlon*Nlat*Ngmt
88	Tuned Pristine LW Surface Down	32-bit real	W m^{-2}	0 .. 700	Nlon*Nlat*Ngmt
89	Tuned Pristine LW TOA Up	32-bit real	W m^{-2}	0 .. 850	Nlon*Nlat*Ngmt
90	Tuned Pristine WN Surface Up	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt
91	Tuned Pristine WN Surface Down	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt
92	Tuned Pristine WN TOA Up	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt

Table 10. Tuned ClearSky Flux Profiles, Table 3(c) defines Nlev

SDS Index	SDS Name	DataType	Units	Range	No of Elements
93	Tuned Clear-Sky SW Up	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt*Nlev
94	Tuned Clear-Sky SW Down	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt*Nlev
95	Tuned Clear-Sky LW Up	32-bit real	W m^{-2}	0 .. 850	Nlon*Nlat*Ngmt*Nlev
96	Tuned Clear-Sky LW Down	32-bit real	W m^{-2}	0 .. 700	Nlon*Nlat*Ngmt*Nlev
97	Tuned Clear-Sky WN Up	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt*Nlev
98	Tuned Clear-Sky WN Down	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt*Nlev

Table 11. Tuned TotalSky-NoAerosol Fluxes

SDS Index	SDS Name	DataType	Units	Range	No of Elements
99	Tuned Total-Sky-NoAerosol SW Surface Up	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
100	Tuned Total-Sky-NoAerosol SW Surface Down	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
101	Tuned Total-Sky-NoAerosol SW TOA Up	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
102	Tuned Total-Sky-NoAerosol LW Surface Up	32-bit real	W m^{-2}	0 .. 850	Nlon*Nlat*Ngmt
103	Tuned Total-Sky-NoAerosol LW Surface Down	32-bit real	W m^{-2}	0 .. 700	Nlon*Nlat*Ngmt
104	Tuned Total-Sky-NoAerosol LW TOA Up	32-bit real	W m^{-2}	0 .. 850	Nlon*Nlat*Ngmt
105	Tuned Total-Sky-NoAerosol WN Surface Up	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt
106	Tuned Total-Sky-NoAerosol WN Surface Down	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt
107	Tuned Total-Sky-NoAerosol WN TOA Up	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt

Table 12. Tuned TotalSky Flux Profiles, Table 3(c) defines Nlev

SDS Index	SDS Name	DataType	Units	Range	No of Elements
108	Tuned Total-Sky SW Up	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt*Nlev
109	Tuned Total-Sky SW Down	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt*Nlev
110	Tuned Total-Sky LW Up	32-bit real	W m^{-2}	0 .. 850	Nlon*Nlat*Ngmt*Nlev
111	Tuned Total-Sky LW Down	32-bit real	W m^{-2}	0 .. 700	Nlon*Nlat*Ngmt*Nlev
112	Tuned Total-Sky WN Up	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt*Nlev
113	Tuned Total-Sky WN Down	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt*Nlev

Table 13. Untuned Pristine Fluxes

SDS Index	SDS Name	DataType	Units	Range	No of Elements
114	Untuned Pristine SW Surface Up	32-bit real	W m^{-2}	0 .. 1500	Nlon*Nlat*Ngmt
115	Untuned Pristine SW Surface Down	32-bit real	W m^{-2}	0 .. 1500	Nlon*Nlat*Ngmt
116	Untuned Pristine SW TOA Up	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
117	Untuned Pristine LW Surface Up	32-bit real	W m^{-2}	0 .. 850	Nlon*Nlat*Ngmt
118	Untuned Pristine LW Surface Down	32-bit real	W m^{-2}	0 .. 700	Nlon*Nlat*Ngmt
119	Untuned Pristine LW TOA Up	32-bit real	W m^{-2}	0 .. 850	Nlon*Nlat*Ngmt
120	Untuned Pristine WN Surface Up	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt
121	Untuned Pristine WN Surface Down	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt
122	Untuned Pristine WN TOA Up	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt

Table 14. Untuned ClearSky Fluxes

SDS Index	SDS Name	DataType	Units	Range	No of Elements
123	Untuned Clear-Sky SW Surface Up	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
124	Untuned Clear-Sky SW Surface Down	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
125	Untuned Clear-Sky SW TOA Up	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
126	Untuned Clear-Sky LW Surface Up	32-bit real	W m^{-2}	0 .. 850	Nlon*Nlat*Ngmt
127	Untuned Clear-Sky LW Surface Down	32-bit real	W m^{-2}	0 .. 700	Nlon*Nlat*Ngmt
128	Untuned Clear-Sky LW TOA Up	32-bit real	W m^{-2}	0 .. 850	Nlon*Nlat*Ngmt
129	Untuned Clear-Sky WN Surface Up	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt
130	Untuned Clear-Sky WN Surface Down	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt
131	Untuned Clear-Sky WN TOA Up	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt

Table 15. Untuned TotalSky-NoAerosol Fluxes

The names in this table are NOT those used in the actual HDF files at this time. The parameter names in the HDF files do not include “NoAerosol”, making them identical to those in Table 16. Please use the SDS index numbers noted here for data retrieval. The names will be corrected in a future edition.

SDS Index	SDS Name	DataType	Units	Range	No of Elements
132	Untuned Total-Sky-NoAerosol SW Surface Up	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
133	Untuned Total-Sky-NoAerosol SW Surface Down	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
134	Untuned Total-Sky-NoAerosol SW TOA Up	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
135	Untuned Total-Sky-NoAerosol LW Surface Up	32-bit real	W m^{-2}	0 .. 850	Nlon*Nlat*Ngmt
136	Untuned Total-Sky-NoAerosol LW Surface Down	32-bit real	W m^{-2}	0 .. 700	Nlon*Nlat*Ngmt
137	Untuned Total-Sky-NoAerosol LW TOA Up	32-bit real	W m^{-2}	0 .. 850	Nlon*Nlat*Ngmt
138	Untuned Total-Sky-NoAerosol WN Surface Up	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt
139	Untuned Total-Sky-NoAerosol WN Surface Down	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt
140	Untuned Total-Sky-NoAerosol WN TOA Up	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt

Table 16. Untuned TotalSky Fluxes

SDS Index	SDS Name	DataType	Units	Range	No of Elements
141	Untuned Total-Sky SW Surface Up	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
142	Untuned Total-Sky SW Surface Down	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
143	Untuned Total-Sky SW TOA Up	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
144	Untuned Total-Sky LW Surface Up	32-bit real	W m^{-2}	0 .. 850	Nlon*Nlat*Ngmt
145	Untuned Total-Sky LW Surface Down	32-bit real	W m^{-2}	0 .. 700	Nlon*Nlat*Ngmt
146	Untuned Total-Sky LW TOA Up	32-bit real	W m^{-2}	0 .. 850	Nlon*Nlat*Ngmt
147	Untuned Total-Sky WN Surface Up	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt
148	Untuned Total-Sky WN Surface Down	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt
149	Untuned Total-Sky WN TOA Up	32-bit real	W m^{-2}	0 .. 370	Nlon*Nlat*Ngmt

Table 17. Satellite Emulated WN TOA Fluxes

SDS Index	SDS Name	DataType	Units	Range	No of Elements
150	Untuned Satellite Emulated WN TOA	32-bit real	W m^{-2}	0 .. 200	Nlon*Nlat*Ngmt
151	Tuned Satellite Emulated WN TOA	32-bit real	W m^{-2}	0 .. 200	Nlon*Nlat*Ngmt

Table 18. TOA Flux Error

SDS Index	SDS Name	DataType	Units	Range	No of Elements
152	Tuned Minus Observed SW TOA	32-bit real	W m^{-2}	-1400 .. 1400	Nlon*Nlat*Ngmt
153	Untuned Minus Observed SW TOA	32-bit real	W m^{-2}	-1400 .. 1400	Nlon*Nlat*Ngmt
154	Tuned Minus Observed LW TOA	32-bit real	W m^{-2}	-600 .. 600	Nlon*Nlat*Ngmt
155	Untuned Minus Observed LW TOA	32-bit real	W m^{-2}	-600 .. 600	Nlon*Nlat*Ngmt

Table 19. Number of Hourboxes

SDS Index	SDS Name	DataType	Units	Range	No of Elements
156	Number of Observed SW	32-bit real	N/A	0 .. 744	Nlon*Nlat*Ngmt
157	Number of Untuned SW	32-bit real	N/A	0 .. 744	Nlon*Nlat*Ngmt
158	Number of Tuned SW	32-bit real	N/A	0 .. 744	Nlon*Nlat*Ngmt
159	Number of Observed LW	32-bit real	N/A	0 .. 744	Nlon*Nlat*Ngmt
160	Number of Untuned LW	32-bit real	N/A	0 .. 744	Nlon*Nlat*Ngmt
161	Number of Tuned LW	32-bit real	N/A	0 .. 744	Nlon*Nlat*Ngmt

Table 20. Constrainment Adjustments, Table 3(c) defines Nlev

SDS Index	SDS Name	DataType	Units	Range	No of Elements
162	Total column precipitable water - initial	32-bit real	cm	0 .. 10	Nlon*Nlat*Ngmt
163	Total column precipitable water - adjusted	32-bit real	cm	0 .. 10	Nlon*Nlat*Ngmt
164	Upper tropospheric precipitable water - initial	32-bit real	cm	0 .. 10	Nlon*Nlat*Ngmt
165	Upper tropospheric precipitable water - adjusted	32-bit real	cm	0 .. 10	Nlon*Nlat*Ngmt
166	Upper tropospheric humidity - initial	32-bit real	N/A	0.0 .. 100.0	Nlon*Nlat*Ngmt
167	Upper tropospheric humidity - adjusted	32-bit real	N/A	0.0 .. 100.0	Nlon*Nlat*Ngmt
168	Corrected initial broadband surface albedo	32-bit real	N/A	0.0 .. 1.0	Nlon*Nlat*Ngmt
169	Surface albedo - adjusted	32-bit real	N/A	0 .. 1	Nlon*Nlat*Ngmt
170	Aerosol optical depth - initial	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt
171	Aerosol optical depth - adjusted	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt
172	Skin temperature - initial	32-bit real	K	175 .. 375	Nlon*Nlat*Ngmt
173	Skin temperature - adjusted	32-bit real	K	175 .. 375	Nlon*Nlat*Ngmt
174	Surface pressure	32-bit real	hPa	0 .. 1100	Nlon*Nlat*Ngmt
175	Column ozone - initial	32-bit real	DU	0 .. 1000	Nlon*Nlat*Ngmt
176	Column ozone - Flag source	32-bit integer	N/A	0 .. 3	Nlon*Nlat*Ngmt
177	Mean visible optical depth- adjusted	32-bit real	N/A	-400 .. 400	Nlon*Nlat*Ngmt*Nlev
178	Mean cloud fractional area - adjusted	32-bit real	Percent	0 .. 100	Nlon*Nlat*Ngmt*Nlev
179	Mean cloud effective temperature - adjusted	32-bit real	K	100 .. 350	Nlon*Nlat*Ngmt*Nlev

Table 21. Surface SW Direct/Diffuse Fluxes

SDS Index	SDS Name	DataType	Units	Range	No of Elements
180	Total-Sky SW flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
181	Clear-sky SW flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
182	Pristine-Sky SW flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
183	Actinic-Sky SW flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
184	Total-Sky SW flux - Direct	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
185	Clear-sky SW flux - Direct	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
186	Pristine-Sky SW flux - Direct	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
187	Actinic-Sky SW flux - Direct	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt

Table 22. UVA – UVB Fluxes

SDS Index	SDS Name	DataType	Units	Range	No of Elements
188	TOA Downwelling UVB Flux	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
189	TOA Downwelling UVA Flux	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
190	Pristine UVB Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
191	Pristine UVB Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
192	Pristine UVA Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
193	Pristine UVA Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
194	Clear-Sky UVB Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
195	Clear-Sky UVB Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
196	Clear-Sky UVA Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
197	Clear-Sky UVA Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
198	Total-Sky-NoAerosol UVB Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
199	Total-Sky-NoAerosol UVB Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
200	Total-Sky-NoAerosol UVA Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
201	Total-Sky-NoAerosol UVA Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
202	Total-Sky UVB Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
203	Total-Sky UVB Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
204	Total-Sky UVA Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
205	Total-Sky UVA Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
206	Total-Sky Surface UV Index	32-bit real	N/A	0 .. 30	Nlon*Nlat*Ngmt
207	Clear-Sky Surface UV Index	32-bit real	N/A	0 .. 30	Nlon*Nlat*Ngmt
208	Pristine Surface UV Index	32-bit real	N/A	0 .. 30	Nlon*Nlat*Ngmt
209	Total-Sky-NoAerosol Surface UV Index	32-bit real	N/A	0 .. 30	Nlon*Nlat*Ngmt
210	Total-Sky UVB Surface Up	32-bit real	W m^{-2}	0 .. 5	Nlon*Nlat*Ngmt
211	Snow Grain Size	32-bit real	μm	50 .. 2000	Nlon*Nlat*Ngmt
212	Match Total Aerosol Optical Depth at 0.55 μm	32-bit real	N/A	0 .. 10	Nlon*Nlat*Ngmt

Table 23. PAR Fluxes

SDS Index	SDS Name	DataType	Units	Range	No of Elements
213	TOA Downwelling PAR Flux	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
214	Total-Sky PAR Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
215	Total-Sky PAR Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
216	Total-Sky PAR PURV Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
217	Total-Sky PAR PURV Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
218	Total-Sky PAR ChlorA Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
219	Total-Sky PAR ChlorA Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt

Table 23. PAR Fluxes

SDS Index	SDS Name	DataType	Units	Range	No of Elements
220	Clear-Sky PAR Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
221	Clear-Sky PAR Surface Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
222	Pristine PAR Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt
223	Pristine PAR Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	Nlon*Nlat*Ngmt

Table 24. Pristine-Sky SW MultiStream Correction

SDS Index	SDS Name	DataType	Units	Range	No of Elements
224	SW TOA Flux - Up - Pristine-Sky - Corrected	32-bit real	W m^{-2}	0 .. 1000	Nlon*Nlat*Ngmt
225	SW Surface Flux - Down- Pristine-Sky - Corrected	32-bit real	W m^{-2}	0 .. 1000	Nlon*Nlat*Ngmt

File Size: SYN1deg-3Hour 252 MB
Number of Regional parameters: 225
Sets of Regional Records: 64800

SYN1deg-3Hour 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.

SYN1deg-3Hour Revision Record

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
07/19/2010	R5V1	795	• Initial version of this document. This data product was previously named SYN.	All
			• The ASDC footer was added to the bottom of the document. (12/04/2013)	All
			• Eliminated section numbers from the Data Products Catalog. Specifically, in this document, section number 2.10 was removed. (12/13/2013)	All
			• Updated some links to refer to the .pdf file instead of the .doc file. (06/20/2014)	All