

2.9 Synoptic Radiative Fluxes and Clouds (SYN)

EOSDIS Product Code: CER07

The Synoptic Radiative Fluxes and Clouds (SYN) product contains a day of space and time averaged Clouds and the Earth's Radiant Energy System (CERES) data for a single scanner instrument. The 1-degree regional flux at the hour of observation from the CERES FSW product and concurrent diurnal data from geostationary satellites are used to estimate the regional flux at 3-hour GMT based intervals. Also at 3-hour intervals are estimates of the adjusted (tuned) fluxes at the five atmospheric levels as defined by the CERES CRS product for both clear-sky and total-sky scenes, estimates of the average cloud parameters in four cloud height categories, and averaged cloud parameters.

The SYN contains the following apriori and observed input:

- Regional data
- Cloud category properties for four (low, lower middle, upper middle and high) cloud layers
- Observed CERES TOA clear-sky and all-sky fluxes
- MODIS based spectral aerosol optical depths

The SYN contains the following constrained (tuned) vertical flux profiles for both clear-sky and total-sky conditions evaluated at the TOA, 70mb, 200mb, 500mb, and surface:

- Longwave, Shortwave, and Window channels upward and downward.

The constrained (tuned) and initial (untuned) profiles for the following are included for pristine (clear-sky no-aerosol), clear-sky, total-sky-no-aerosol, and total-sky conditions:

- Longwave upward at the surface and TOA.
- Longwave downward at the surface.
- Shortwave upward at the surface and TOA.
- Shortwave downward at the surface.
- Window channel upward at the surface and TOA.
- Window channel downward at the surface.

The adjustments to the radiative transfer model input parameters between the initial and the constrained (adjusted) passes are also contained on the SYN. These parameters include:

- Surface albedo and skin temperature
- Total column precipitable water, upper tropospheric relative humidity, and column ozone
- Aerosol optical depth
- Cloud optical depth, fractional area, and effective temperature

The SYN contains the direct and diffuse shortwave surface fluxes for total-sky, clear-sky, pristine and actinic conditions. The SYN also contains surface UVA and UVB downwelling and direct diffuse ratios for total-sky, clear-sky, pristine, and total-sky-no-aerosol conditions.

Level: 3

Frequency: Every 3 Hours

Portion of Atmosphere Covered: Surface, Internal and TOA

Time Interval Covered:

File: 3 Hours

Record: 3 Hours

Portion of Globe Covered:

File: Entire Global

Record: 1 CERES region

Product Version:

TRMM: N/A

Terra: Beta3

Aqua: N/A

SYN Metadata

The types of SYN metadata are summarized in [Table 2.9-1](#) and contain information which need only be recorded once per hour. The CERES metadata are listed in [Appendix B](#). The SYN product-specific metadata parameters are listed in [Table 2.9-1](#) and the CRS_Header_Vdata parameters are listed in [Table 2.9-2](#).

Table 2.9-1. SYN Metadata Summary

HDF Name	Description Table	Records	Number of Fields
CERES Baseline Header Metadata	Table B-1	1	36
CERES_metadata Vdata	Table B-2	1	14
SYN_Header Vdata	Table 2.9-2	1	25

Table 2.9-2. SYN_Header_Vdata

Item	Description	Units	Range	Elements	Bytes/Elem
SYN-H1	SYN ID	N/A	112 .. 200	1	4
SYN-H2	Julian Day	N/A	ASCII string	1	28
SYN-H3	MOA production date and time	N/A	ASCII string	1	24
SYN-H4	Synoptic SARB Version number	N/A	1 .. 26	1	2
SYN-H5	SYN production date and time	N/A	ASCII string	1	19

[Table 2.9-3](#) List of the Vgroups contained in the Monthly Hourly Averages and Monthly Averages Vgroups in AVG.

Table 2.9-3. Temporal Vgroups of SYN (1 of 2)

Vgroup Number	Vgroup Name	Monthly Hourly Averages / Monthly (Hour) Averages
1	Time and Position	See Table 2.9-4
2	Observed TOA Fluxes	See Table 2.9-5
3	Cloud Layer - High	See Table 2.9-6
4	Cloud Layer - UpperMid	See Table 2.9-6
5	Cloud Layer - LowerMid	See Table 2.9-6
6	Cloud Layer - Low	See Table 2.9-6
7	Stowe-Ignatov Aerosol Optical Depth	See Table 2.9-7
8	MODIS Aerosol Optical Depth	See Table 2.9-8
9	Tuned Pristine Fluxes	See Table 2.9-9
10	Tuned ClearSky Flux Profiles	See Table 2.9-10

Table 2.9-3. Temporal Vgroups of SYN (2 of 2)

Vgroup Number	Vgroup Name	Monthly Hourly Averages / Monthly (Hour) Averages
11	Tuned TotalSky-NoAerosol Fluxes	See Table 2.9-11
12	Tuned TotalSky Flux Profiles	See Table 2.9-12
13	Untuned Pristine Fluxes	See Table 2.9-13
14	Untuned ClearSky Fluxes	See Table 2.9-14
15	Untuned TotalSky-NoAerosol Fluxes	See Table 2.9-15
16	Untuned TotalSky Fluxes	See Table 2.9-16
17	Satellite Emulated WN TOA Fluxes	See Table 2.9-16
18	TOA Flux Error	See Table 2.9-17
19	Number of Hourboxes	See Table 2.9-17
20	Constraintment Adjustments	See Table 2.9-18
21	Surface SW Direct/Diffuse Fluxes	See Table 2.9-19
22	UVA - UVB Fluxes	See Table 2.9-20
23	PAR Fluxes	See Table 2.9-21
24	Pristine-Sky SW MultiStream Correction	See Table 2.9-22

SYN Scientific Data Sets

The SYN contains 223 Scientific Data Sets (SDS) which are parameter collections of one-degree regional data where the first dimension corresponds to the number of global regions, the last dimension corresponds to the number of parameters; and the middle dimension, if rank 3, corresponds to the number of elements in each parameter array. This ordering is used by the C programming language and most HDF viewers. 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. The SDSs are divided into tables which map to Vgroups of the same name. [Tables 2.9-4](#) to [Table 2.9-24](#) summarize the contents of each Vgroup and SDS contained within the SYN file. Product sizing information for the number of CERES regions, 64800, is given in [Table 2.9-25](#). Under the Dimensions column in the following tables the 8 refers to the 8 3-hourly GMT time increment in the daily file. Although the 3-hourly mean is an average of hourly computations only the mean is given (no standard deviation).

Table 2.9-4. Time and Position (1 of 2)

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-0	Region number	N/A	1 .. 64800	8	32-bit integer
SYN-1	Colatitude	Degree	0 .. 180	8	32-bit real
SYN-2	Longitude	Degree	0 .. 360	8	32-bit real

Table 2.9-4. Time and Position (2 of 2)

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-3	Surface altitude above sea level	m	-1000 .. 10000	8	32-bit real
SYN-4	Surface type percent coverage	Percent	0 .. 100	8 x 20	32-bit real

Table 2.9-5. Observed TOA Fluxes

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-5	SW TOA Total-Sky	W m ⁻²	0 .. 1400	8	32-bit real
SYN-6	LW TOA Total-Sky	W m ⁻²	0 .. 500	8	32-bit real
SYN-7	WN TOA Total-Sky	W m ⁻² μm ⁻¹	2 .. 50	8	32-bit real
SYN-8	SW TOA Clear-Sky	W m ⁻²	0 .. 1400	8	32-bit real
SYN-9	LW TOA Clear-Sky	W m ⁻²	0 .. 500	8	32-bit real
SYN-10	WN TOA Clear-Sky	W m ⁻² μm ⁻¹	2 .. 50	8	32-bit real

Table 2.9-6. Cloud Properties for Four Cloud Layers (1 of 2)

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-11	Area Fraction Percentage	Percent	0 .. 100	8 x 4	32-bit real
SYN-12	Vis. Opt. Depth (linear)	N/A	0 .. 400	8 x 4	32-bit real
SYN-13	Vis. Opt. Depth (log)	N/A	-6 .. 6	8 x 4	32-bit real
SYN-14	Infrared Emissivity	N/A	0 .. 1	8 x 4	32-bit real
SYN-15	Liquid Water Path	g m ⁻²	0 .. 10000	8 x 4	32-bit real
SYN-16	Ice Water Path	g m ⁻²	0 .. 10000	8 x 4	32-bit real
SYN-17	Top Pressure	hPa	0 .. 1100	8 x 4	32-bit real
SYN-18	Effective Pressure	hPa	0 .. 1100	8 x 4	32-bit real
SYN-19	Effective Temperature	K	100 .. 350	8 x 4	32-bit real

Table 2.9-6. Cloud Properties for Four Cloud Layers (2 of 2)

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-20	Effective Height	km	0 .. 20	8 x 4	32-bit real
SYN-21	Bottom Pressure	hPa	0 .. 1100	8 x 4	32-bit real
SYN-22	Liquid Particle Radius	μm	0 .. 40	8 x 4	32-bit real
SYN-23	Ice Particle Diameter	μm	0 .. 300	8 x 4	32-bit real
SYN-24	Particle Phase	N/A	1 .. 2	8 x 4	32-bit real
SYN-25	Vertical Aspect Ratio	N/A	0 .. 20	8 x 4	32-bit real

Table 2.9-7. Stowe-Ignatov Aerosol Optical Depth

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-71	Aerosol visible optical depth - 0.63 μm	N/A	0 .. 5	8	32-bit real
SYN-72	Aerosol visible optical depth - 1.6 μm	N/A	0 .. 5	8	32-bit real

Table 2.9-8. MODIS Aerosol Optical Depth (1 of 2)

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-73	Initial Aerosol Optical Depth	N/A	0 .. 5	8	32-bit real
SYN-74	Aerosol Opt. Depth at 0.47 μm in Land	N/A	0 .. 5	8	32-bit real
SYN-75	Aerosol Opt. Depth at 0.55 μm in Land	N/A	0 .. 5	8	32-bit real
SYN-76	Aerosol Opt. Depth at 0.66 μm in Land	N/A	0 .. 5	8	32-bit real
SYN-77	Aerosol Opt. Depth at 0.47 μm in Ocean	N/A	0 .. 5	8	32-bit real
SYN-78	Aerosol Opt. Depth at 0.55 μm in Ocean	N/A	0 .. 5	8	32-bit real
SYN-79	Aerosol Opt. Depth at 0.66 μm in Ocean	N/A	0 .. 5	8	32-bit real
SYN-80	Aerosol Opt. Depth at 0.87 μm in Ocean	N/A	0 .. 5	8	32-bit real
SYN-81	Aerosol Opt. Depth at 1.24 μm in Ocean	N/A	0 .. 5	8	32-bit real
SYN-82	Aerosol Opt. Depth at 1.64 μm in Ocean	N/A	0 .. 5	8	32-bit real

Table 2.9-8. MODIS Aerosol Optical Depth (2 of 2)

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-83	Aerosol Opt. Depth at 2.13 μm in Ocean	N/A	0 .. 5	8	32-bit real

Table 2.9-9. Tuned Pristine Fluxes

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-84	Tuned Pristine SW Surface Up	W m^{-2}	0 .. 1400	8	32-bit real
SYN-85	Tuned Pristine SW Surface Down	W m^{-2}	0 .. 1400	8	32-bit real
SYN-86	Tuned Pristine SW TOA Up	W m^{-2}	0 .. 1400	8	32-bit real
SYN-87	Tuned Pristine LW Surface Up	W m^{-2}	0 .. 850	8	32-bit real
SYN-88	Tuned Pristine LW Surface Down	W m^{-2}	0 .. 700	8	32-bit real
SYN-89	Tuned Pristine LW TOA Up	W m^{-2}	0 .. 850	8	32-bit real
SYN-90	Tuned Pristine WN Surface Up	W m^{-2}	0 .. 370	8	32-bit real
SYN-91	Tuned Pristine WN Surface Down	W m^{-2}	0 .. 370	8	32-bit real
SYN-92	Tuned Pristine WN TOA Up	W m^{-2}	0 .. 370	8	32-bit real

Table 2.9-10. Tuned ClearSky Flux Profiles

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-93	Tuned Clear-Sky SW Up	W m^{-2}	0 .. 1400	8 x 5	32-bit real
SYN-94	Tuned Clear-Sky SW Down	W m^{-2}	0 .. 1400	8 x 5	32-bit real
SYN-95	Tuned Clear-Sky LW Up	W m^{-2}	0 .. 850	8 x 5	32-bit real
SYN-96	Tuned Clear-Sky LW Down	W m^{-2}	0 .. 700	8 x 5	32-bit real
SYN-97	Tuned Clear-Sky WN Up	W m^{-2}	0 .. 370	8 x 5	32-bit real
SYN-98	Tuned Clear-Sky WN Down	W m^{-2}	0 .. 370	8 x 5	32-bit real

Table 2.9-11. Tuned TotalSky-NoAerosol Fluxes

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-99	Tuned Total-Sky-NoAerosol SW Surface Up	W m ⁻²	0 .. 1400	8	32-bit real
SYN-100	Tuned Total-Sky-NoAerosol SW Surface Down	W m ⁻²	0 .. 1400	8	32-bit real
SYN-101	Tuned Total-Sky-NoAerosol SW TOA Up	W m ⁻²	0 .. 1400	8	32-bit real
SYN-102	Tuned Total-Sky-NoAerosol LW Surface Up	W m ⁻²	0 .. 850	8	32-bit real
SYN-103	Tuned Total-Sky-NoAerosol LW Surface Down	W m ⁻²	0 .. 700	8	32-bit real
SYN-104	Tuned Total-Sky-NoAerosol LW TOA Up	W m ⁻²	0 .. 850	8	32-bit real
SYN-105	Tuned Total-Sky-NoAerosol WN Surface Up	W m ⁻²	0 .. 370	8	32-bit real
SYN-106	Tuned Total-Sky-NoAerosol WN Surface Down	W m ⁻²	0 .. 370	8	32-bit real
SYN-107	Tuned Total-Sky-NoAerosol WN TOA Up	W m ⁻²	0 .. 370	8	32-bit real

Table 2.9-12. Tuned TotalSky Flux Profiles

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-108	Tuned Total-Sky SW Up	W m ⁻²	0 .. 1400	8 x 5	32-bit real
SYN-109	Tuned Total-Sky SW Down	W m ⁻²	0 .. 1400	8 x 5	32-bit real
SYN-110	Tuned Total-Sky LW Up	W m ⁻²	0 .. 850	8 x 5	32-bit real
SYN-111	Tuned Total-Sky LW Down	W m ⁻²	0 .. 700	8 x 5	32-bit real
SYN-112	Tuned Total-Sky WN Up	W m ⁻²	0 .. 370	8 x 5	32-bit real
SYN-113	Tuned Total-Sky WN Down	W m ⁻²	0 .. 370	8 x 5	32-bit real

Table 2.9-13. Untuned Pristine Fluxes

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-114	Untuned Pristine SW Surface Up	W m ⁻²	0 .. 1500	8	32-bit real
SYN-115	Untuned Pristine SW Surface Down	W m ⁻²	0 .. 1500	8	32-bit real
SYN-116	Untuned Pristine SW TOA Up	W m ⁻²	0 .. 1400	8	32-bit real
SYN-117	Untuned Pristine LW Surface Up	W m ⁻²	0 .. 850	8	32-bit real
SYN-118	Untuned Pristine LW Surface Down	W m ⁻²	0 .. 700	8	32-bit real
SYN-119	Untuned Pristine LW TOA Up	W m ⁻²	0 .. 850	8	32-bit real
SYN-120	Untuned Pristine WN Surface Up	W m ⁻²	0 .. 370	8	32-bit real
SYN-121	Untuned Pristine WN Surface Down	W m ⁻²	0 .. 370	8	32-bit real
SYN-122	Untuned Pristine WN TOA Up	W m ⁻²	0 .. 370	8	32-bit real

Table 2.9-14. Untuned ClearSky Fluxes

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-123	Untuned Clear-Sky SW Surface Up	W m ⁻²	0 .. 1400	8	32-bit real
SYN-124	Untuned Clear-Sky SW Surface Down	W m ⁻²	0 .. 1400	8	32-bit real
SYN-125	Untuned Clear-Sky SW TOA Up	W m ⁻²	0 .. 1400	8	32-bit real
SYN-126	Untuned Clear-Sky LW Surface Up	W m ⁻²	0 .. 850	8	32-bit real
SYN-127	Untuned Clear-Sky LW Surface Down	W m ⁻²	0 .. 700	8	32-bit real
SYN-128	Untuned Clear-Sky LW TOA Up	W m ⁻²	0 .. 850	8	32-bit real
SYN-129	Untuned Clear-Sky WN Surface Up	W m ⁻²	0 .. 370	8	32-bit real
SYN-130	Untuned Clear-Sky WN Surface Down	W m ⁻²	0 .. 370	8	32-bit real
SYN-131	Untuned Clear-Sky WN TOA Up	W m ⁻²	0 .. 370	8	32-bit real

Table 2.9-15. Untuned TotalSky-NoAerosol Fluxes

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-132	Untuned Total-Sky SW Surface Up	W m ⁻²	0 .. 1400	8	32-bit real
SYN-133	Untuned Total-Sky SW Surface Down	W m ⁻²	0 .. 1400	8	32-bit real
SYN-134	Untuned Total-Sky SW TOA Up	W m ⁻²	0 .. 1400	8	32-bit real
SYN-135	Untuned Total-Sky LW Surface Up	W m ⁻²	0 .. 850	8	32-bit real
SYN-136	Untuned Total-Sky LW Surface Down	W m ⁻²	0 .. 700	8	32-bit real
SYN-137	Untuned Total-Sky LW TOA Up	W m ⁻²	0 .. 850	8	32-bit real
SYN-138	Untuned Total-Sky WN Surface Up	W m ⁻²	0 .. 370	8	32-bit real
SYN-139	Untuned Total-Sky WN Surface Down	W m ⁻²	0 .. 370	8	32-bit real
SYN-140	Untuned Total-Sky WN TOA Up	W m ⁻²	0 .. 370	8	32-bit real

Table 2.9-16. Untuned TotalSky Fluxes (1 of 2)

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-141	Untuned Total-Sky SW Surface Up	W m ⁻²	0 .. 1400	8	32-bit real
SYN-142	Untuned Total-Sky SW Surface Down	W m ⁻²	0 .. 1400	8	32-bit real
SYN-143	Untuned Total-Sky SW TOA Up	W m ⁻²	0 .. 1400	8	32-bit real
SYN-144	Untuned Total-Sky LW Surface Up	W m ⁻²	0 .. 850	8	32-bit real
SYN-145	Untuned Total-Sky LW Surface Down	W m ⁻²	0 .. 700	8	32-bit real
SYN-146	Untuned Total-Sky LW TOA Up	W m ⁻²	0 .. 850	8	32-bit real
SYN-147	Untuned Total-Sky WN Surface Up	W m ⁻²	0 .. 370	8	32-bit real
SYN-148	Untuned Total-Sky WN Surface Down	W m ⁻²	0 .. 370	8	32-bit real

Table 2.9-16. Untuned TotalSky Fluxes (2 of 2)

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-149	Untuned Total-Sky WN TOA Up	W m ⁻²	0 .. 370	8	32-bit real

Table 2.9-17. Satellite Emulated WN TOA Fluxes

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-150	Untuned Satellite Emulated WN TOA	W m ⁻²	50 .. 400	8	32-bit real
SYN-151	Tuned Satellite Emulated WN TOA	W m ⁻²	50 .. 400	8	32-bit real

Table 2.9-18. TOA Flux Error

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-152	Tuned Minus Observed SW TOA	W m ⁻²	-1400 .. 1400	8	32-bit real
SYN-153	Untuned Minus Observed SW TOA	W m ⁻²	-1400 .. 1400	8	32-bit real
SYN-154	Tuned Minus Observed LW TOA	W m ⁻²	-600 .. 600	8	32-bit real
SYN-155	Untuned Minus Observed LW TOA	W m ⁻²	-600 .. 600	8	32-bit real

Table 2.9-19. Number of Hourboxes

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-156	Number of Observed SW	N/A	1 .. 744	8	32-bit real
SYN-157	Number of Untuned SW	N/A	1 .. 744	8	32-bit real
SYN-158	Number of Tuned SW	N/A	1 .. 744	8	32-bit real
SYN-159	Number of Observed LW	N/A	1 .. 744	8	32-bit real
SYN-160	Number of Untuned LW	N/A	1 .. 744	8	32-bit real
SYN-161	Number of Tuned LW	N/A	1 .. 744	8	32-bit real

Table 2.9-20. Constraint Adjustments

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-162	Total column precipitable water - initial	cm	0 .. 10	8	32-bit real
SYN-163	Total column precipitable water - adjusted	cm	-10 .. 10	8	32-bit real
SYN-164	Upper tropospheric precipitable water - initial	cm	0 .. 10	8	32-bit real
SYN-165	Upper tropospheric precipitable water - adjusted	cm	0 .. 10	8	32-bit real
SYN-166	Upper tropospheric humidity - initial	N/A	0.0 .. 100.0	8	32-bit real
SYN-167	Upper tropospheric humidity - adjusted	N/A	0.0 .. 100.0	8	32-bit real
SYN-168	Corrected initial broadband surface albedo	N/A	0.0 .. 1.0	8	32-bit real
SYN-169	Surface albedo - adjusted	N/A	0 .. 1	8	32-bit real
SYN-170	Aerosol optical depth - initial	N/A	0 .. 5	8	32-bit real
SYN-171	Aerosol optical depth - adjusted	N/A	0 .. 5	8	32-bit real
SYN-172	Skin temperature - initial	K	175 .. 375	8	32-bit real
SYN-173	Skin temperature - adjusted	K	175 .. 375	8	32-bit real
SYN-174	Surface pressure	hPa	0 .. 800	8	32-bit real
SYN-175	Column ozone - initial	du	0 .. 800	8	32-bit real
SYN-176	Column ozone - Flag source	N/A	0 .. 3	8	32-bit integer
SYN-177	Mean visible optical depth- adjusted	N/A	0 .. 400	8	32-bit real
SYN-178	Mean cloud fractional area - adjusted	%	0 .. 1	8	32-bit real
SYN-179	Mean cloud effective temperature - adjusted	K	175 .. 375	8	32-bit real

Table 2.9-21. Surface SW Direct/Diffuse Fluxes

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-180	Total-Sky SW flux - Diffuse	W m ⁻²	0 .. 1400	8	32-bit real
SYN-181	Clear-Sky SW flux - Diffuse	W m ⁻²	0 .. 1400	8	32-bit real
SYN-182	Pristine-Sky SW flux - Diffuse	W m ⁻²	0 .. 1400	8	32-bit real
SYN-183	Actinic-Sky SW flux - Diffuse	W m ⁻²	0 .. 1400	8	32-bit real
SYN-184	Total-Sky SW flux - Direct	W m ⁻²	0 .. 1400	8	32-bit real
SYN-185	Clear-Sky SW flux - Direct	W m ⁻²	0 .. 1400	8	32-bit real
SYN-186	Pristine-Sky SW flux - Direct	W m ⁻²	0 .. 1400	8	32-bit real
SYN-187	Actinic-Sky SW flux - Direct	W m ⁻²	0 .. 1400	8	32-bit real

Table 2.9-22. UVA - UVB Fluxes (1 of 2)

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-188	TOA Downwelling UVB Flux	W m ⁻²	0 .. 1400	8	32-bit real
SYN-189	TOA Downwelling UVA Flux	W m ⁻²	0 .. 1400	8	32-bit real
SYN-190	Pristine UVB Surface flux - Direct	W m ⁻²	0 .. 1400	8	32-bit real
SYN-191	Pristine UVB Surface flux - Diffuse	W m ⁻²	0 .. 1400	8	32-bit real
SYN-192	Pristine UVA Surface flux - Direct	W m ⁻²	0 .. 1400	8	32-bit real
SYN-193	Pristine UVA Surface flux - Diffuse	W m ⁻²	0 .. 1400	8	32-bit real
SYN-194	Clear-Sky UVB Surface flux - Direct	W m ⁻²	0 .. 1400	8	32-bit real
SYN-195	Clear-Sky UVB Surface flux - Diffuse	W m ⁻²	0 .. 1400	8	32-bit real
SYN-196	Clear-Sky UVA Surface flux - Direct	W m ⁻²	0 .. 1400	8	32-bit real
SYN-197	Clear-Sky UVA Surface flux - Diffuse	W m ⁻²	0 .. 1400	8	32-bit real

Table 2.9-22. UVA - UVB Fluxes (2 of 2)

SDS Index	SDS Name	Units	Range	Dimen- sions	Data Type
SYN-198	Total-Sky-NoAerosol UVB Surface flux - Direct	W m ⁻²	0 .. 1400	8	32-bit real
SYN-199	Total-Sky-NoAerosol UVB Surface flux - Diffuse	W m ⁻²	0 .. 1400	8	32-bit real
SYN-200	Total-Sky-NoAerosol UVA Surface flux - Direct	W m ⁻²	0 .. 1400	8	32-bit real
SYN-201	Total-Sky-NoAerosol UVA Surface flux - Diffuse	W m ⁻²	0 .. 1400	8	32-bit real
SYN-202	Total-Sky UVB Surface flux - Direct	W m ⁻²	0 .. 1400	8	32-bit real
SYN-203	Total-Sky UVB Surface flux - Diffuse	W m ⁻²	0 .. 1400	8	32-bit real
SYN-204	Total-Sky UVA Surface flux - Direct	W m ⁻²	0 .. 1400	8	32-bit real
SYN-205	Total-Sky UVA Surface flux - Diffuse	W m ⁻²	0 .. 1400	8	32-bit real
SYN-206	Total-Sky Surface UV Index	N/A	0 .. 30	8	32-bit real
SYN-207	Clear-Sky Surface UV Index	N/A	0 .. 30	8	32-bit real
SYN-208	Pristine Surface UV Index	N/A	0 .. 30	8	32-bit real
SYN-209	Total-Sky-NoAerosol Surface UV Index	N/A	0 .. 30	8	32-bit real

Table 2.9-23. PAR Fluxes (1 of 2)

SDS Index	SDS Name	Units	Range	Dimen- sions	Data Type
SYN-210	TOA Downwelling PAR Flux	W m ⁻²	0 .. 1400	8	32-bit real
SYN-211	Total-Sky PAR Surface flux - Direct	W m ⁻²	0 .. 1400	8	32-bit real
SYN-212	Total-Sky PAR Surface flux - Diffuse	W m ⁻²	0 .. 1400	8	32-bit real
SYN-213	Total-Sky PAR PURV Surface flux - Direct	W m ⁻²	0 .. 1400	8	32-bit real

Table 2.9-23. PAR Fluxes (2 of 2)

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-214	Total-Sky PAR PURV Surface flux - Diffuse	W m ⁻²	0 .. 1400	8	32-bit real
SYN-215	Total-Sky PAR ChlorA Surface flux - Direct	W m ⁻²	0 .. 1400	8	32-bit real
SYN-216	Total-Sky PAR ChlorA Surface flux - Diffuse	W m ⁻²	0 .. 1400	8	32-bit real
SYN-217	Clear-Sky PAR Surface flux - Direct	W m ⁻²	0 .. 1400	8	32-bit real
SYN-218	Clear-Sky PAR Surface flux - Diffuse	W m ⁻²	0 .. 1400	8	32-bit real
SYN-219	Pristine PAR Surface flux - Direct	W m ⁻²	0 .. 1400	8	32-bit real
SYN-220	Pristine PAR Surface flux - Diffuse	W m ⁻²	0 .. 1400	8	32-bit real

Table 2.9-24. Pristine-Sky SW MultiStream Correction

SDS Index	SDS Name	Units	Range	Dimensions	Data Type
SYN-221	SW TOA Flux - Up - Pristine-Sky - Corrected	W m ⁻²	0 .. 1000	8	32-bit real
SYN-222	SW Surface Flux - Down - Pristine-Sky - Corrected	W m ⁻²	0 .. 1000	8	32-bit real

Table 2.9-25. Sizing Information

Data Quantity	Size (MB)
Daily TOTAL SYN Size	596
Monthly TOTAL SYN Size	18476

SYN 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.

SYN 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	639	<ul style="list-style-type: none"> • Updated to change all tables and added the SDS Index tables. 	All