

Monthly 3-Hourly Averaged Synoptic Radiative Fluxes and Clouds (SYN1deg-M3Hour)

The SYN1deg product contains the monthly 3-hourly regional, zonal and global 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-M3Hour product is distributed in monthly 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](#), [Table 2](#), and [Table 3](#).

Level: 3

Frequency: Monthly

Portion of Atmosphere Covered: Surface, In-Atmosphere, and TOA

Time Interval Covered:

File: 1 Month

Record: Monthly 3-Hour

Portion of Globe Covered:

File: Entire Globe

Record: 1.0-Deg Regional, Zonal or Global

Product Version:

TRMM: N/A

Terra+Aqua: Edition3A

SYN1deg-M3Hour-1



Distributed by the Atmospheric Science Data Center
<http://eosweb.larc.nasa.gov>



M3Hour Metadata

The types of M3Hour 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](#) and [Table 3](#).

Table 1. M3Hour 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

Table 2. List of the Vgroups for different Gridded Categories

Vgroup Number	Vgroup Name	Description	Number of Records
1	1.0 Degree Regional	See Table 3	360,180
2	1.0 Degree Zonal	See Table 3	180
3	Global	See Table 3	1

Table 3. List of the Vgroups contained in the Regional, Zonal, and Global Monthly 3-Hourly Averages

Regional Vgroup Number	Zonal & Global Vgroup Number	Vgroup Name	Monthly 3-Hourly Averages for Regional, Zonal and Global
1*		Time and Position*	See Table 5(a) & Table 5(b)
2	1	Observed TOA Fluxes	See Table 6(a) & Table 6(b)
3	2	Cloud Layer - High	See Table 7(a) & Table 7(b)
4	3	Cloud Layer - UpperMid	See Table 7(a) & Table 7(b)
5	4	Cloud Layer - LowerMid	See Table 7(a) & Table 7(b)
6	5	Cloud Layer - Low	See Table 7(a) & Table 7(b)
7	6	Stowe-Ignatov Aerosol Optical Depth	See Table 8(a) & Table 8(b)
8	7	MODIS Aerosol Optical Depth	See Table 9(a) & Table 9(b)
9	8	Tuned Pristine Fluxes	See Table 10(a) & Table 10(b)
10	9	Tuned ClearSky Flux Profiles	See Table 11(a) & Table 11(b)
11	10	Tuned TotalSky-NoAerosol Fluxes	See Table 12(a) & Table 12(b)
12	11	Tuned TotalSky Flux Profiles	See Table 13(a) & Table 13(b)
13	12	Untuned Pristine Fluxes	See Table 14(a) & Table 14(b)
14	13	Untuned ClearSky Fluxes	See Table 15(a) & Table 15(b)
15	14	Untuned TotalSky-NoAerosol Fluxes	See Table 16(a) & Table 16(b)



Table 3. List of the Vgroups contained in the Regional, Zonal, and Global Monthly 3-Hourly Averages

Regional Vgroup Number	Zonal & Global Vgroup Number	Vgroup Name	Monthly 3-Hourly Averages for Regional, Zonal and Global
16	15	Untuned TotalSky Fluxes	See Table 17(a) & Table 17(b)
17	16	Satellite Emulated WN TOA Fluxes	See Table 18(a) & Table 18(b)
18	17	TOA Flux Error	See Table 19(a) & Table 19(b)
19*		Number of Hourboxes*	See Table 20(a) & Table 20(b)
20	18	Constraint Adjustments	See Table 21(a) & Table 21(b)
21	19	Surface SW Direct/Diffuse Fluxes	See Table 22(a) & Table 22(b)
22	20	UVA - UVB Fluxes	See Table 23(a) & Table 23(b)
23	21	PAR Fluxes	See Table 24(a) & Table 24(b)
24	22	Pristine-Sky SW MultiStream Correction	See Table 25(a) & Table 25(b)

* Applicable to Regional data only

M3Hour Regional, Zonal and Global Science Data

The Scientific Data Sets (SDS) are divided into tables which map to Vgroups of the same name. All of the M3Hour science data are organized into the HDF-EOS Grid data type, which is shown in [Table 4\(a\)](#) and [Table 4\(b\)](#) below. All parameter (a) tables contain a list of the gridded parameters, which includes the field name, the data type, the units, the range, and the number of elements within each field for Regional data with notes provided under the table for Zonal and Global. The No. of Elements or Dimensions are defined in the first set of tables. All parameter (b) tables contain the list of SDS indices, which are grouped into monthly 3-hourly regional, zonal and global means. The first 2 dimensions Nlat and Nlon corresponds to the CERES region index, the next dimension is Ngmt and refers to the time index, and the last dimension is Ns and contains the mean and the standard deviation (temporal). On a few parameters, the last dimension is Nlev and defines the atmospheric profile levels. 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 4(a). Nlat, Nlon dimensions that define the CERES equal-angle 1° latitude by 1° longitude grid. Nlon is always 1 for zonal and global parameters. Nlat is 1 for global parameters.

Dimension	No on indices			Definition
	Regional	Zonal	Global	
Nlat*	180	180	0	Index #1 is defined at 89.5°N and #180 is at 89.5°S
Nlon*	360	0	0	Index #1 is defined at 179.5°W and #360 is at 179.5°E

* The Zonal and Global parameters no longer support placeholders for Nlon and Nlon and Nlat, respectively.

Table 4(b). Ngmt dimension that defines the 8 Monthly 3-hourly GMT time increments

Ngmt Index	Monthly 3-hourly
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 4(c). Ns dimension that defines the parameter statistics for individual grid cell

Ns	Statistic
1	Mean
2	Standard deviation

Table 4(d). Nlev dimension that defines the atmospheric profile levels

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



Table 4(e). IGBP Surface types used in Table 5(a). 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 5(a). Table of Time and Position. Nsfc dimension is defined in Table 4(e)

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



Table 5(b). SDS Index of Time and Position

SDS Name	Regional Monthly
Region Number	0
Colatitude	1
Longitude	2
Surface altitude above sea level	3
Surface type percent coverage	4

Table 6(a). Observed TOA Fluxes

SDS Name	Data Type	Units	Range	No of Elements Regional
SW TOA Total-Sky	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
LW TOA Total-Sky	32-bit real	W m ⁻²	0 .. 500	Nlon*Nlat*Ngmt*Ns
WN TOA Total-Sky	32-bit real	W m ⁻²	0 .. 200	Nlon*Nlat*Ngmt*Ns
SW TOA Clear-Sky	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
LW TOA Clear-Sky	32-bit real	W m ⁻²	0 .. 500	Nlon*Nlat*Ngmt*Ns
WN TOA Clear-Sky	32-bit real	W m ⁻²	0 .. 200	Nlon*Nlat*Ngmt*Ns

* No. of Elements for Zonal: Nlat*Ngmt*Ns

* No. of Elements for Global: Ngmt*Ns

Table 6(b). SDS Index of Observed TOA Fluxes

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
SW TOA Total-Sky	5	223	435
LW TOA Total-Sky	6	224	436
WN TOA Total-Sky	7	225	437
SW TOA Clear-Sky	8	226	438
LW TOA Clear-Sky	9	227	439
WN TOA Clear-Sky	10	228	440

Table 7(a). Cloud Properties for Four Cloud Layers

SDS Name	Data Type	Units	Range	No of Elements Regional
Area Fraction Percentage	32-bit real	Percent	0 .. 100	Nlon*Nlat*Ngmt*Ns
Vis. Opt. Depth (linear)	32-bit real	N/A	0 .. 400	Nlon*Nlat*Ngmt*Ns



Table 7(a). Cloud Properties for Four Cloud Layers

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

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

* No. of Elements for Zonal: Nlat*Ngmt*Ns

* No. of Elements for Global: Ngmt*Ns

Table 7(b). SDS Index of Cloud Properties for Four Cloud Layers
 Table 7(c) defines the 4 cloud layers.

SDS Name	Regional Monthly 3-Hourly				Zonal Monthly 3-Hourly				Global Monthly 3-Hourly			
Area Fraction Percentage	11	26	41	56	229	244	259	274	441	456	471	486
Vis. Opt. Depth (linear)	12	27	42	57	230	245	260	275	442	457	472	487
Vis. Opt. Depth (log)	13	28	43	58	231	246	261	276	443	458	473	488
Infrared Emissivity	14	29	44	59	232	247	262	277	444	459	474	489
Liquid Water Path	15	30	45	60	233	248	263	278	445	460	475	490
Ice Water Path	16	31	46	61	234	249	264	279	446	461	476	491
Top Pressure	17	32	47	62	235	250	265	280	447	462	477	492
Effective Pressure	18	33	48	63	236	251	266	281	448	463	478	493
Effective Temperature	19	34	49	64	237	252	267	282	449	464	479	494
Effective Height	20	35	50	65	238	253	268	283	450	465	480	495
Bottom Pressure	21	36	51	66	239	254	269	284	451	466	481	496
Liquid Particle Radius	22	37	52	67	240	255	270	285	452	467	482	497
Ice Particle Diameter	23	38	53	68	241	256	271	286	453	468	483	498

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Table 7(b). SDS Index of Cloud Properties for Four Cloud Layers
 Table 7(c) defines the 4 cloud layers.

SDS Name	Regional Monthly 3-Hourly				Zonal Monthly 3-Hourly				Global Monthly 3-Hourly			
Particle Phase	24	39	54	69	242	257	272	287	454	469	484	499
Vertical Aspect Ratio	25	40	55	70	243	258	273	288	455	470	485	500

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

Table 7(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 8(a). Stowe-Ignatov Aerosol Optical Depth

SDS Name	Data Type	Units	Range	No of Elements Regional
Aerosol visible optical depth - 0.63 μm	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt*Ns
Aerosol visible optical depth - 1.6 μm	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt*Ns

* No. of Elements for Zonal: Nlat*Ngmt*Ns

* No. of Elements for Global: Ngmt*Ns

Table 8(b). SDS Index of Stowe-Ignatov Aerosol Optical Depth

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
Aerosol visible optical depth - 0.63 μm	71	289	501
Aerosol visible optical depth - 1.6 μm	72	290	502



Table 9(a). MODIS Aerosol Optical Depth

SDS Name	Data Type	Units	Range	No of Elements Regional
Initial Aerosol Optical Depth	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt*Ns
Aerosol Opt. Depth at 0.47 μm in Land	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt*Ns
Aerosol Opt. Depth at 0.55 μm in Land	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt*Ns
Aerosol Opt. Depth at 0.66 μm in Land	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt*Ns
Aerosol Opt. Depth at 0.47 μm in Ocean	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt*Ns
Aerosol Opt. Depth at 0.55 μm in Ocean	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt*Ns
Aerosol Opt. Depth at 0.66 μm in Ocean	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt*Ns
Aerosol Opt. Depth at 0.87 μm in Ocean	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt*Ns
Aerosol Opt. Depth at 1.24 μm in Ocean	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt*Ns
Aerosol Opt. Depth at 1.64 μm in Ocean	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt*Ns
Aerosol Opt. Depth at 2.13 μm in Ocean	32-bit real	N/A	0 .. 5	Nlon*Nlat*Ngmt*Ns

* No. of Elements for Zonal: Nlat*Ngmt*Ns

* No. of Elements for Global: Ngmt*Ns

Table 9(b). SDS Index of MODIS Aerosol Optical Depth

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
Initial Aerosol Optical Depth	73	291	503
Aerosol Opt. Depth at 0.47 μm in Land	74	292	504
Aerosol Opt. Depth at 0.55 μm in Land	75	293	505
Aerosol Opt. Depth at 0.66 μm in Land	76	294	506
Aerosol Opt. Depth at 0.47 μm in Ocean	77	295	507
Aerosol Opt. Depth at 0.55 μm in Ocean	78	296	508
Aerosol Opt. Depth at 0.66 μm in Ocean	79	297	509
Aerosol Opt. Depth at 0.87 μm in Ocean	80	298	510
Aerosol Opt. Depth at 1.24 μm in Ocean	81	299	511
Aerosol Opt. Depth at 1.64 μm in Ocean	82	300	512
Aerosol Opt. Depth at 2.13 μm in Ocean	83	301	513



Table 10(a). Tuned Pristine Fluxes

SDS Name	Data Type	Units	Range	No of Elements Regional
Tuned Pristine SW Surface Up	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Tuned Pristine SW Surface Down	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Tuned Pristine SW TOA Up	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Tuned Pristine LW Surface Up	32-bit real	W m ⁻²	0 .. 850	Nlon*Nlat*Ngmt*Ns
Tuned Pristine LW Surface Down	32-bit real	W m ⁻²	0 .. 700	Nlon*Nlat*Ngmt*Ns
Tuned Pristine LW TOA Up	32-bit real	W m ⁻²	0 .. 850	Nlon*Nlat*Ngmt*Ns
Tuned Pristine WN Surface Up	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns
Tuned Pristine WN Surface Down	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns
Tuned Pristine WN TOA Up	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns

* No. of Elements for Zonal: Nlat*Ngmt*Ns

* No. of Elements for Global: Ngmt*Ns

Table 10(b). SDS Index of Tuned Pristine Fluxes

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
Tuned Pristine SW Surface Up	84	302	514
Tuned Pristine SW Surface Down	85	303	515
Tuned Pristine SW TOA Up	86	304	516
Tuned Pristine LW Surface Up	87	305	517
Tuned Pristine LW Surface Down	88	306	518
Tuned Pristine LW TOA Up	89	307	519
Tuned Pristine WN Surface Up	90	308	520
Tuned Pristine WN Surface Down	91	309	521
Tuned Pristine WN TOA Up	92	310	522



Table 11(a). Tuned ClearSky Flux Profiles, [Table 4\(d\)](#) defines Nlev

SDS Name	DataType	Units	Range	No of Elements Regional
Tuned Clear-Sky SW Up	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns*Nlev
Tuned Clear-Sky SW Down	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns*Nlev
Tuned Clear-Sky LW Up	32-bit real	W m ⁻²	0 .. 850	Nlon*Nlat*Ngmt*Ns*Nlev
Tuned Clear-Sky LW Down	32-bit real	W m ⁻²	0 .. 700	Nlon*Nlat*Ngmt*Ns*Nlev
Tuned Clear-Sky WN Up	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns*Nlev
Tuned Clear-Sky WN Down	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns*Nlev

* No. of Elements for Zonal: Nlat*Ngmt*Ns

* No. of Elements for Global: Ngmt*Ns

Table 11(b). SDS Index of Tuned ClearSky Flux Profiles

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
Tuned Clear-Sky SW Up	93	311	523
Tuned Clear-Sky SW Down	94	312	524
Tuned Clear-Sky LW Up	95	313	525
Tuned Clear-Sky LW Down	96	314	526
Tuned Clear-Sky WN Up	97	315	527
Tuned Clear-Sky WN Down	98	316	528



Table 12(a). Tuned TotalSky-NoAerosol Fluxes

SDS Name	Data Type	Units	Range	No of Elements Regional
Tuned Total-Sky-NoAerosol SW Surface Up	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Tuned Total-Sky-NoAerosol SW Surface Down	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Tuned Total-Sky-NoAerosol SW TOA Up	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Tuned Total-Sky-NoAerosol LW Surface Up	32-bit real	W m ⁻²	0 .. 850	Nlon*Nlat*Ngmt*Ns
Tuned Total-Sky-NoAerosol LW Surface Down	32-bit real	W m ⁻²	0 .. 700	Nlon*Nlat*Ngmt*Ns
Tuned Total-Sky-NoAerosol LW TOA Up	32-bit real	W m ⁻²	0 .. 850	Nlon*Nlat*Ngmt*Ns
Tuned Total-Sky-NoAerosol WN Surface Up	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns
Tuned Total-Sky-NoAerosol WN Surface Down	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns
Tuned Total-Sky-NoAerosol WN TOA Up	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns

* No. of Elements for Zonal: Nlat*Ngmt*Ns

* No. of Elements for Global: Ngmt*Ns

Table 12(b). SDS Index of Tuned TotalSky-NoAerosol Fluxes

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
Tuned Total-Sky-NoAerosol SW Surface Up	99	317	529
Tuned Total-Sky-NoAerosol SW Surface Down	100	318	530
Tuned Total-Sky-NoAerosol SW TOA Up	101	319	531
Tuned Total-Sky-NoAerosol LW Surface Up	102	320	532
Tuned Total-Sky-NoAerosol LW Surface Down	103	321	533
Tuned Total-Sky-NoAerosol LW TOA Up	104	322	534
Tuned Total-Sky-NoAerosol WN Surface Up	105	323	535
Tuned Total-Sky-NoAerosol WN Surface Down	106	324	536
Tuned Total-Sky-NoAerosol WN TOA Up	107	325	537



Table 13(a). Tuned TotalSky Flux Profiles, [Table 4\(d\)](#) defines Nlev

SDS Name	Data Type	Units	Range	No of Elements Regional
Tuned Total-Sky SW Up	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns*Nlev
Tuned Total-Sky SW Down	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns*Nlev
Tuned Total-Sky LW Up	32-bit real	W m ⁻²	0 .. 850	Nlon*Nlat*Ngmt*Ns*Nlev
Tuned Total-Sky LW Down	32-bit real	W m ⁻²	0 .. 700	Nlon*Nlat*Ngmt*Ns*Nlev
Tuned Total-Sky WN Up	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns*Nlev
Tuned Total-Sky WN Down	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns*Nlev

* No. of Elements for Zonal: Nlat*Ngmt*Ns*Nlev

* No. of Elements for Global: Ngmt*Ns*Nlev

Table 13(b). SDS Index of Tuned TotalSky Flux Profiles

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
Tuned Total-Sky SW Up	108	326	538
Tuned Total-Sky SW Down	109	327	539
Tuned Total-Sky LW Up	110	328	540
Tuned Total-Sky LW Down	111	329	541
Tuned Total-Sky WN Up	112	330	542
Tuned Total-Sky WN Down	113	331	543



Table 14(a). Untuned Pristine Fluxes

SDS Name	Data Type	Units	Range	No of Elements Regional
Untuned Pristine SW Surface Up	32-bit real	W m ⁻²	0 .. 1500	Nlon*Nlat*Ngmt*Ns
Untuned Pristine SW Surface Down	32-bit real	W m ⁻²	0 .. 1500	Nlon*Nlat*Ngmt*Ns
Untuned Pristine SW TOA Up	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Untuned Pristine LW Surface Up	32-bit real	W m ⁻²	0 .. 850	Nlon*Nlat*Ngmt*Ns
Untuned Pristine LW Surface Down	32-bit real	W m ⁻²	0 .. 700	Nlon*Nlat*Ngmt*Ns
Untuned Pristine LW TOA Up	32-bit real	W m ⁻²	0 .. 850	Nlon*Nlat*Ngmt*Ns
Untuned Pristine WN Surface Up	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns
Untuned Pristine WN Surface Down	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns
Untuned Pristine WN TOA Up	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns

* No. of Elements for Zonal: Nlat*Ngmt*Ns

* No. of Elements for Global: Ngmt*Ns

Table 14(b). SDS Index of Untuned Pristine Fluxes

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
Untuned Pristine SW Surface Up	114	332	544
Untuned Pristine SW Surface Down	115	333	545
Untuned Pristine SW TOA Up	116	334	546
Untuned Pristine LW Surface Up	117	335	547
Untuned Pristine LW Surface Down	118	336	548
Untuned Pristine LW TOA Up	119	337	549
Untuned Pristine WN Surface Up	120	338	550
Untuned Pristine WN Surface Down	121	339	551
Untuned Pristine WN TOA Up	122	340	552



Table 15(a). Untuned ClearSky Fluxes

SDS Name	Data Type	Units	Range	No of Elements Regional
Untuned Clear-Sky SW Surface Up	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Untuned Clear-Sky SW Surface Down	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Untuned Clear-Sky SW TOA Up	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Untuned Clear-Sky LW Surface Up	32-bit real	W m ⁻²	0 .. 850	Nlon*Nlat*Ngmt*Ns
Untuned Clear-Sky LW Surface Down	32-bit real	W m ⁻²	0 .. 700	Nlon*Nlat*Ngmt*Ns
Untuned Clear-Sky LW TOA Up	32-bit real	W m ⁻²	0 .. 850	Nlon*Nlat*Ngmt*Ns
Untuned Clear-Sky WN Surface Up	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns
Untuned Clear-Sky WN Surface Down	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns
Untuned Clear-Sky WN TOA Up	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns

* No. of Elements for Zonal : Nlat*Ngmt*Ns

* No. of Elements for Global : Ngmt*Ns

Table 15(b). SDS Index of Untuned ClearSky Fluxes

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
Untuned Clear-Sky SW Surface Up	123	341	553
Untuned Clear-Sky SW Surface Down	124	342	554
Untuned Clear-Sky SW TOA Up	125	343	555
Untuned Clear-Sky LW Surface Up	126	344	556
Untuned Clear-Sky LW Surface Down	127	345	557
Untuned Clear-Sky LW TOA Up	128	346	558
Untuned Clear-Sky WN Surface Up	129	347	559
Untuned Clear-Sky WN Surface Down	130	348	560
Untuned Clear-Sky WN TOA Up	131	349	561



Table 16(a). Untuned TotalSky-NoAerosol Fluxes

SDS Name	Data Type	Units	Range	No of Elements Regional
Untuned Total-Sky-NoAerosol SW Surface Up	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Untuned Total-Sky-NoAerosol SW Surface Down	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Untuned Total-Sky-NoAerosol SW TOA Up	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Untuned Total-Sky-NoAerosol LW Surface Up	32-bit real	W m ⁻²	0 .. 850	Nlon*Nlat*Ngmt*Ns
Untuned Total-Sky-NoAerosol LW Surface Down	32-bit real	W m ⁻²	0 .. 700	Nlon*Nlat*Ngmt*Ns
Untuned Total-Sky-NoAerosol LW TOA Up	32-bit real	W m ⁻²	0 .. 850	Nlon*Nlat*Ngmt*Ns
Untuned Total-Sky-NoAerosol WN Surface Up	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns
Untuned Total-Sky-NoAerosol WN Surface Down	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns
Untuned Total-Sky-NoAerosol WN TOA Up	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns

* No. of Elements for Zonal: Nlat*Ngmt*Ns

* No. of Elements for Global: Ngmt*Ns

Table 16(b). SDS Index of Untuned TotalSky-NoAerosol Fluxes

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
Untuned Total-Sky-NoAerosol SW Surface Up	132	350	562
Untuned Total-Sky-NoAerosol SW Surface Down	133	351	563
Untuned Total-Sky-NoAerosol SW TOA Up	134	352	564
Untuned Total-Sky-NoAerosol LW Surface Up	135	353	565
Untuned Total-Sky-NoAerosol LW Surface Down	136	354	566
Untuned Total-Sky-NoAerosol LW TOA Up	137	355	567
Untuned Total-Sky-NoAerosol WN Surface Up	138	356	568
Untuned Total-Sky-NoAerosol WN Surface Down	139	357	569
Untuned Total-Sky-NoAerosol WN TOA Up	140	358	570



Table 17(a). Untuned TotalSky Fluxes

SDS Name	Data Type	Units	Range	No of Elements Regional
Untuned Total-Sky SW Surface Up	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Untuned Total-Sky SW Surface Down	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Untuned Total-Sky SW TOA Up	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Untuned Total-Sky LW Surface Up	32-bit real	W m ⁻²	0 .. 850	Nlon*Nlat*Ngmt*Ns
Untuned Total-Sky LW Surface Down	32-bit real	W m ⁻²	0 .. 700	Nlon*Nlat*Ngmt*Ns
Untuned Total-Sky LW TOA Up	32-bit real	W m ⁻²	0 .. 850	Nlon*Nlat*Ngmt*Ns
Untuned Total-Sky WN Surface Up	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns
Untuned Total-Sky WN Surface Down	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns
Untuned Total-Sky WN TOA Up	32-bit real	W m ⁻²	0 .. 370	Nlon*Nlat*Ngmt*Ns

* No. of Elements for Zonal: Nlat*Ngmt*Ns

* No. of Elements for Global: Ngmt*Ns

Table 17(b). SDS Index of Untuned TotalSky Fluxes

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
Untuned Total-Sky SW Surface Up	141	359	571
Untuned Total-Sky SW Surface Down	142	360	572
Untuned Total-Sky SW TOA Up	143	361	573
Untuned Total-Sky LW Surface Up	144	362	574
Untuned Total-Sky LW Surface Down	145	363	575
Untuned Total-Sky LW TOA Up	146	364	576
Untuned Total-Sky WN Surface Up	147	365	577
Untuned Total-Sky WN Surface Down	148	366	578
Untuned Total-Sky WN TOA Up	149	367	579



Table 18(a). Satellite Emulated WN TOA Fluxes

SDS Name	Data Type	Units	Range	No of Elements Regional
Untuned Satellite Emulated WN TOA	32-bit real	W m ⁻²	0 .. 200	Nlon*Nlat*Ngmt*Ns
Tuned Satellite Emulated WN TOA	32-bit real	W m ⁻²	0 .. 200	Nlon*Nlat*Ngmt*Ns

* No. of Elements for Zonal: Nlat*Ngmt*Ns

* No. of Elements for Global: Ngmt*Ns

Table 18(b). SDS Index of Satellite Emulated WN TOA Fluxes

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
Untuned Satellite Emulated WN TOA	150	368	580
Tuned Satellite Emulated WN TOA	151	369	581

Table 19(a). TOA Flux Error

SDS Name	Data Type	Units	Range	No of Elements Regional
Tuned Minus Observed SW TOA	32-bit real	W m ⁻²	-1400 .. 1400	Nlon*Nlat*Ngmt*Ns
Untuned Minus Observed SW TOA	32-bit real	W m ⁻²	-1400 .. 1400	Nlon*Nlat*Ngmt*Ns
Tuned Minus Observed LW TOA	32-bit real	W m ⁻²	-600 .. 600	Nlon*Nlat*Ngmt*Ns
Untuned Minus Observed LW TOA	32-bit real	W m ⁻²	-600 .. 600	Nlon*Nlat*Ngmt*Ns

* No. of Elements for Zonal: Nlat*Ngmt*Ns

* No. of Elements for Global: Ngmt*Ns

Table 19(b). SDS Index of TOA Fluxes Error

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
Tuned Minus Observed SW TOA	152	370	582
Untuned Minus Observed SW TOA	153	371	583
Tuned Minus Observed LW TOA	154	372	584
Untuned Minus Observed LW TOA	155	373	585



Table 20(a). Number of Hourboxes

SDS Name	Data Type	Units	Range	No. Of Elements Regional
Number of Observed SW	32-bit real	N/A	0 .. 744	$N_{lon} * N_{lat} * N_{gmt}$
Number of Untuned SW	32-bit real	N/A	0 .. 744	$N_{lon} * N_{lat} * N_{gmt}$
Number of Tuned SW	32-bit real	N/A	0 .. 744	$N_{lon} * N_{lat} * N_{gmt}$
Number of Observed LW	32-bit real	N/A	0 .. 744	$N_{lon} * N_{lat} * N_{gmt}$
Number of Untuned LW	32-bit real	N/A	0 .. 744	$N_{lon} * N_{lat} * N_{gmt}$
Number of Tuned LW	32-bit real	N/A	0 .. 744	$N_{lon} * N_{lat} * N_{gmt}$

Table 20(b). SDS Index of Number of Hourboxes

SDS Name	Regional Monthly
Number of Observed SW	156
Number of Untuned SW	157
Number of Tuned SW	158
Number of Observed LW	159
Number of Untuned LW	160
Number of Tuned LW	161



Table 21(a). Constraintment Adjustments, Table 4(d) defines Nlev

SDS Name	Data Type	Units	Range	No of Elements Regional
Total column precipitable water - initial	32-bit real	cm	0 ... 10	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Total column precipitable water - adjusted	32-bit real	cm	0 ... 10	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Upper tropospheric precipitable water - initial	32-bit real	cm	0 ... 10	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Upper tropospheric precipitable water - adjusted	32-bit real	cm	0 ... 10	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Upper tropospheric humidity - initial	32-bit real	N/A	0.0 ... 100.0	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Upper tropospheric humidity - adjusted	32-bit real	N/A	0.0 ... 100.0	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Aerosol optical depth - initial	32-bit real	N/A	0 ... 5	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Aerosol optical depth - adjusted	32-bit real	N/A	0 ... 5	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Skin temperature - initial	32-bit real	K	175 ... 375	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Skin temperature - adjusted	32-bit real	K	175 ... 375	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Surface pressure	32-bit real	hPa	0 ... 1100	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Column ozone - initial	32-bit real	DU	0 ... 1000	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Mean visible optical depth- adjusted	32-bit real	N/A	-400 ... 400	$N_{lon} * N_{lat} * N_{gmt} * N_s * N_{lev}$
Mean cloud fractional area - adjusted	32-bit real	Percent	0 ... 100	$N_{lon} * N_{lat} * N_{gmt} * N_s * N_{lev}$
Mean cloud effective temperature - adjusted	32-bit real	K	100 ... 350	$N_{lon} * N_{lat} * N_{gmt} * N_s * N_{lev}$

* No. of Elements for Zonal: $N_{lat} * N_{gmt} * N_s$ or $N_{lat} * N_{gmt} * N_s * N_{lev}$ accordingly

* No. of Elements for Global: $N_{gmt} * N_s$ or $N_{gmt} * N_s * N_{lev}$ accordingly

Table 21(b). SDS Index of Constraintment Adjustments

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
Total column precipitable water - initial	162	374	586
Total column precipitable water - adjusted	163	375	587
Upper tropospheric precipitable water - initial	164	376	588
Upper tropospheric precipitable water - adjusted	165	377	589
Upper tropospheric humidity - initial	166	378	590
Upper tropospheric humidity - adjusted	167	379	591
Aerosol optical depth - initial	168	380	592
Aerosol optical depth - adjusted	169	381	593
Skin temperature - initial	170	382	594
Skin temperature - adjusted	171	383	595
Surface pressure	172	384	596
Column ozone - initial	173	385	597
Mean visible optical depth- adjusted	174	386	598
Mean cloud fractional area - adjusted	175	387	599
Mean cloud effective temperature - adjusted	176	388	600



Table 22(a). Surface SW Direct/Diffuse Fluxes

SDS Name	Data Type	Units	Range	No of Elements Regional
Total-Sky SW flux - Diffuse	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Clear-sky SW flux - Diffuse	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Pristine-Sky SW flux - Diffuse	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Actinic-Sky SW flux - Diffuse	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Total-Sky SW flux - Direct	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Clear-sky SW flux - Direct	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Pristine-Sky SW flux - Direct	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Actinic-Sky SW flux - Direct	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns

* No. of Elements for Zonal: Nlat*Ngmt*Ns

* No. of Elements for Global: Ngmt*Ns

Table 22(b). SDS Index of Surface SW Direct/Diffuse Fluxes

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
Total-Sky SW flux - Diffuse	177	389	601
Clear-sky SW flux - Diffuse	178	390	602
Pristine-Sky SW flux - Diffuse	179	391	603
Actinic-Sky SW flux - Diffuse	180	392	604
Total-Sky SW flux - Direct	181	393	605
Clear-sky SW flux - Direct	182	394	606
Pristine-Sky SW flux - Direct	183	395	607
Actinic-Sky SW flux - Direct	184	396	608

Table 23(a). UVA - UVB Fluxes

SDS Name	Data Type	Units	Range	No of Elements Regional
TOA Downwelling UVB Flux	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
TOA Downwelling UVA Flux	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Pristine UVB Surface flux - Direct	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Pristine UVB Surface flux - Diffuse	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Pristine UVA Surface flux - Direct	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Pristine UVA Surface flux - Diffuse	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Clear-Sky UVB Surface flux - Direct	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Clear-Sky UVB Surface flux - Diffuse	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns

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Table 23(a). UVA - UVB Fluxes

SDS Name	Data Type	Units	Range	No of Elements Regional
Clear-Sky UVA Surface flux - Direct	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Clear-Sky UVA Surface flux - Diffuse	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Total-Sky-NoAerosol UVB Surface flux - Direct	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Total-Sky-NoAerosol UVB Surface flux - Diffuse	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Total-Sky-NoAerosol UVA Surface flux - Direct	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Total-Sky-NoAerosol UVA Surface flux - Diffuse	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Total-Sky UVB Surface flux - Direct	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Total-Sky UVB Surface flux - Diffuse	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Total-Sky UVA Surface flux - Direct	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Total-Sky UVA Surface flux - Diffuse	32-bit real	W m ⁻²	0 .. 1400	Nlon*Nlat*Ngmt*Ns
Total-Sky Surface UV Index	32-bit real	N/A	0 .. 30	Nlon*Nlat*Ngmt*Ns
Clear-Sky Surface UV Index	32-bit real	N/A	0 .. 30	Nlon*Nlat*Ngmt*Ns
Pristine Surface UV Index	32-bit real	N/A	0 .. 30	Nlon*Nlat*Ngmt*Ns
Total-Sky-NoAerosol Surface UV- Index	32-bit real	N/A	0 .. 30	Nlon*Nlat*Ngmt*Ns
Total-Sky UVB Surface Up	32-bit real	W m ⁻²	0 .. 5	Nlon*Nlat*Ngmt*Ns
Snow Grain Size	32-bit real	μm	50 .. 2000	Nlon*Nlat*Ngmt*Ns
Match Total Aerosol Optical Depth at 0.55 μm	32-bit real	N/A	0 .. 10	Nlon*Nlat*Ngmt*Ns

* No. of Elements for Zonal: Nlat*Ngmt*Ns

* No. of Elements for Global: Ngmt*Ns

Table 23(b). SDS Index of UVA – UVB Fluxes

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
TOA Downwelling UVB Flux	185	397	609
TOA Downwelling UVA Flux	186	398	610
Pristine UVB Surface flux - Direct	187	399	611
Pristine UVB Surface flux - Diffuse	188	400	612
Pristine UVA Surface flux - Direct	189	401	613
Pristine UVA Surface flux - Diffuse	190	402	614
Clear-Sky UVB Surface flux - Direct	191	403	615
Clear-Sky UVB Surface flux - Diffuse	192	404	616
Clear-Sky UVA Surface flux - Direct	193	405	617
Clear-Sky UVA Surface flux - Diffuse	194	406	618
Total-Sky-NoAerosol UVB Surface flux - Direct	195	407	619
Total-Sky-NoAerosol UVB Surface flux - Diffuse	196	408	620
Total-Sky-NoAerosol UVA Surface flux - Direct	197	409	621

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Table 23(b). SDS Index of UVA – UVB Fluxes

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
Total-Sky-NoAerosol UVA Surface flux - Diffuse	198	410	622
Total-Sky UVB Surface flux - Direct	199	411	623
Total-Sky UVB Surface flux - Diffuse	200	412	624
Total-Sky UVA Surface flux - Direct	201	413	625
Total-Sky UVA Surface flux - Diffuse	202	414	626
Total-Sky Surface UV Index	203	415	627
Clear-Sky Surface UV Index	204	416	628
Pristine Surface UV Index	205	417	629
Total-Sky-NoAerosol Surface UV- Index	206	418	630
Total-Sky UVB Surface Up	207	419	631
Snow Grain Size	208	420	632
Match Total Aerosol Optical Depth at 0.55 μm	209	421	633

Table 24(a). PAR Fluxes

SDS Name	Data Type	Units	Range	No of Elements Regional
TOA Downwelling PAR Flux	32-bit real	W m^{-2}	0 .. 1400	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Total-Sky PAR Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Total-Sky PAR Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Total-Sky PAR PURV Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Total-Sky PAR PURV Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Total-Sky PAR ChlorA Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Total-Sky PAR ChlorA Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Clear-Sky PAR Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Clear-Sky PAR Surface Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Pristine PAR Surface flux - Direct	32-bit real	W m^{-2}	0 .. 1400	$N_{lon} * N_{lat} * N_{gmt} * N_s$
Pristine PAR Surface flux - Diffuse	32-bit real	W m^{-2}	0 .. 1400	$N_{lon} * N_{lat} * N_{gmt} * N_s$

* No. of Elements for Zonal: $N_{lat} * N_{gmt} * N_s$

* No. of Elements for Global: $N_{gmt} * N_s$



Table 24(b). SDS Index of PAR Fluxes

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
TOA Downwelling PAR Flux	210	422	634
Total-Sky PAR Surface flux - Direct	211	423	635
Total-Sky PAR Surface flux - Diffuse	212	424	636
Total-Sky PAR PURV Surface flux - Direct	213	425	637
Total-Sky PAR PURV Surface flux - Diffuse	214	426	638
Total-Sky PAR ChlorA Surface flux - Direct	215	427	639
Total-Sky PAR ChlorA Surface flux - Diffuse	216	428	640
Clear-Sky PAR Surface flux - Direct	217	429	641
Clear-Sky PAR Surface Surface flux - Diffuse	218	430	642
Pristine PAR Surface flux - Direct	219	431	643
Pristine PAR Surface flux - Diffuse	220	432	644

Table 25(a). Pristine-Sky SW MultiStream Correction

SDS Name	Data Type	Units	Range	No of Elements Regional
SW TOA Flux - Up - Pristine-Sky - Corrected	32-bit real	W m ⁻²	0 .. 1000	Nlon*Nlat*Ngmt*Ns
SW Surface Flux - Down- Pristine-Sky - Corrected	32-bit real	W m ⁻²	0 .. 1000	Nlon*Nlat*Ngmt*Ns

* No. of Elements for Zonal: Nlat*Ngmt*Ns

* No. of Elements for Global: Ngmt*Ns

Table 25(b). SDS Index of Pristine-Sky SW MultiStream Correction

SDS Name	Regional Monthly 3-Hourly	Zonal Monthly 3-Hourly	Global Monthly 3-Hourly
SW TOA Flux - Up - Pristine-Sky - Corrected	221	433	645
SW Surface Flux - Down- Pristine-Sky - Corrected	222	434	646

File Size: SYN1deg-M3Hour 1138.5 MB
 Number of Regional parameters: 222
 Number of Zonal and Global parameters: 212
 Sets of Regional Records: 64800
 Sets of Zonal Records: 180
 Set of Global Records: 1



SYN1deg-M3Hour 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-M3Hour Revision Record

SCCR Approval Date	Release/Version Number	SCCR Number	Description of Revision	Section(s) Affected
07/19/10	R5V1	795	<ul style="list-style-type: none"> Initial version of this document. This data product was previously named AVG/ZAVG. The ASDC footer was added to the bottom of the document. (12/04/2013) Eliminated section numbers from the Data Products Catalog. Specifically, in this document, section number 2.12 was removed. (12/13/2013) Updated some links to refer to the .pdf file instead of the .doc file. (06/20/2014) 	<p>All</p> <p>All</p> <p>All</p>

