

2.10 Monthly Regional Radiative Fluxes and Clouds (AVG)

EOSDIS Product Code: CER08

The monthly Regional Radiative and Clouds (AVG) product contains monthly and monthly hourly (3-hour) averages of the Synoptic Radiative Fluxes and Clouds (SYN) product. This product is the CERES equivalent of the monthly regional averages in the ERBE ES-4 product of the CERES untuned and tuned radiative transfer modeled fluxes. This product is written in HDF_EOS and contains meta data as well as gridded science data.

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

A complete listing of metadata and science parameters for this data product can be found in [Tables 2.10-1](#) and [Table 2.10-2](#).

Level: 3

Frequency: 1/Month

Portion of Atmosphere Covered: Surface to TOA

Time Interval Covered:

File: 1 Month

Record: 1 Month

Portion of Globe Covered:

File: Entire Global

Record: 1.0-Deg Regions

Product Version:

TRMM: N/A

Terra: Beta3

Aqua: N/A

AVG Metadata

The types of AVG metadata are summarized in [Table 2.10-1](#) and contain information which need only be recorded once per product. The CERES metadata are listed in [Appendix B](#).

Table 2.10-1. AVG 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 2.10-2](#) List of the Vgroups contained in 1.0 Degree Regional Vgroups.

Table 2.10-2. Temporal Vgroups of AVG

Vgroup Number	Vgroup Name	Monthly Hourly Averages / Monthly (Hour) Averages
1	Monthly Hourly Averages	See Table 2.10-3
2	Monthly Averages	See Table 2.10-3

[Table 2.10-3](#) List of the Vgroups contained in the Monthly Hourly Averages and Monthly Averages Vgroups in AVG.

Table 2.10-3. Temporal Vgroups of AVG (1 of 2)

Vgroup Number	Vgroup Name	Monthly Hourly Averages / Monthly (Hour) Averages
1	Time and Position	See Table 2.10-4
2	Observed TOA Fluxes	See Table 2.10-5
3	Cloud Layer - High	See Table 2.10-6
4	Cloud Layer - UpperMid	See Table 2.10-6
5	Cloud Layer - LowerMid	See Table 2.10-6
6	Cloud Layer - Low	See Table 2.10-6
7	Stowe-Ignatov Aerosol Optical Depth	See Table 2.10-7
8	MODIS Aerosol Optical Depth	See Table 2.10-8
9	Tuned Pristine Fluxes	See Table 2.10-9
10	Tuned ClearSky Flux Profiles	See Table 2.10-10
11	Tuned TotalSky-NoAerosol Fluxes	See Table 2.10-11
12	Tuned TotalSky Flux Profiles	See Table 2.10-12
13	Untuned Pristine Fluxes	See Table 2.10-13
14	Untuned ClearSky Fluxes	See Table 2.10-14
15	Untuned TotalSky-NoAerosol Fluxes	See Table 2.10-15

Table 2.10-3. Temporal Vgroups of AVG (2 of 2)

Vgroup Number	Vgroup Name	Monthly Hourly Averages / Monthly (Hour) Averages
16	Untuned TotalSky Fluxes	See Table 2.10-16
17	Satellite Emulated WN TOA Fluxes	See Table 2.10-17
18	TOA Flux Error	See Table 2.10-18
19	Number of Hourboxes	See Table 2.10-19
20	Constraintment Adjustments	See Table 2.10-20
21	Surface SW Direct/Diffuse Fluxes	See Table 2.10-21
22	UVA - UVB Fluxes	See Table 2.10-22
23	PAR Fluxes	See Table 2.10-23
24	Pristine-Sky SW MultiStream Correction	See Table 2.10-24

AVG Science Data

All of the AVG science data are organized into the HDF-EOS Grid data type, which is shown in [Table](#) below. This table contains a list of the parameters within each grid, including the field number, the field name, the data type, the units, the range, and the number of elements within each field. The 18 under the Dimensions column in the following tables the 18 refers to 9 = 8 monthly hourly (3-hour GMT based) + 1 monthly regional x 2 mean and standard deviation.

Table 2.10-4. Time and Position

SDS Name	Units	Range	Dimensions	Data Type
Region number	N/A	1 .. 64800	1	32-bit integer
Colatitude	Degree	0 .. 180	1	32-bit real
Longitude	Degree	0 .. 360	1	32-bit real
Surface altitude above sea level	m	-1000 .. 10000	1	32-bit real
Surface type percent coverage	Percent	0 .. 100	1 x 20	32-bit real

Table 2.10-4(b). SDS Index of Time and Position (1 of 2)

SDS Name	Regional Monthly Hourly	Regional Monthly
Region Number	0	220
Colatitude	1	221
Longitude	2	222

Table 2.10-4(b). SDS Index of Time and Position (2 of 2)

SDS Name	Regional Monthly Hourly	Regional Monthly
Surface altitude above sea level	3	223
Surface type percent coverage	4	224

Table 2.10-5. Observed TOA Fluxes

SDS Name	Units	Range	Dimensions	Data Type
SW TOA Total-Sky	W m ⁻²	0 .. 1400	18	32-bit real
LW TOA Total-Sky	W m ⁻²	0 .. 500	18	32-bit real
WN TOA Total-Sky	W m ⁻² μm ⁻¹	2 .. 50	18	32-bit real
SW TOA Clear-Sky	W m ⁻²	0 .. 1400	18	32-bit real
LW TOA Clear-Sky	W m ⁻²	0 .. 500	18	32-bit real
WN TOA Clear-Sky	W m ⁻² μm ⁻¹	2 .. 50	18	32-bit real

Table 2.10-5(b). SDS Index of Observed TOA Fluxes

SDS Name	Regional Monthly Hourly	Regional Monthly
SW TOA Total-Sky	5	225
LW TOA Total-Sky	6	226
WN TOA Total-Sky	7	227
SW TOA Clear-Sky	8	228
LW TOA Clear-Sky	9	229
WN TOA Clear-Sky	10	230

Table 2.10-6. Cloud Properties for Four Cloud Layers

SDS Name	Units	Range	Dimensions	Data Type
Area Fraction Percentage	Percent	0 .. 100	18 x 4	32-bit real
Vis. Opt. Depth (linear)	N/A	0 .. 400	18 x 4	32-bit real
Vis. Opt. Depth (log)	N/A	-6 .. 6	18 x 4	32-bit real
Infrared Emissivity	N/A	0 .. 1	18 x 4	32-bit real
Liquid Water Path	g m ⁻²	0 .. 10000	18 x 4	32-bit real
Ice Water Path	g m ⁻²	0 .. 10000	18 x 4	32-bit real
Top Pressure	hPa	0 .. 1100	18 x 4	32-bit real
Effective Pressure	hPa	0 .. 1100	18 x 4	32-bit real
Effective Temperature	K	100 .. 350	18 x 4	32-bit real
Effective Height	km	0 .. 20	18 x 4	32-bit real
Bottom Pressure	hPa	0 .. 1100	18 x 4	32-bit real
Liquid Particle Radius	μm	0 .. 40	18 x 4	32-bit real
Ice Particle Diameter	μm	0 .. 300	18 x 4	32-bit real
Particle Phase	N/A	1 .. 2	18 x 4	32-bit real
Vertical Aspect Ratio	N/A	0 .. 20	18 x 4	32-bit real

Table 2.10-6(b). SDS Index of High, Uppermid, Lowermid, Low (mean, stdev, num obs) in Cloud Properties (1 of 2)

SDS Name	Regional Monthly Hourly	Regional Monthly
Area Fraction Percentage	11 26 41 56	231 246 261 276
Vis. Opt. Depth (linear)	12 27 42 57	232 247 262 277
Vis. Opt. Depth (log)	13 28 43 58	233 248 263 278
Infrared Emissivity	14 29 44 59	234 249 264 279
Liquid Water Path	15 30 45 60	235 250 265 280
Ice Water Path	16 31 46 61	236 251 266 281
Top Pressure	17 32 47 62	237 252 267 282
Effective Pressure	18 33 48 63	238 253 268 283
Effective Temperature	19 34 49 64	239 254 269 284

Table 2.10-6(b). SDS Index of High, Uppermid, Lowermid, Low (mean, stdev, num obs) in Cloud Properties (2 of 2)

SDS Name	Regional Monthly Hourly	Regional Monthly
Effective Height	20 35 50 65	240 255 270 285
Bottom Pressure	21 36 51 66	241 256 271 286
Liquid Particle Radius	22 37 52 67	242 257 272 287
Ice Particle Diameter	23 38 53 68	243 258 273 288
Particle Phase	24 39 54 69	244 259 274 289
Vertical Aspect Ratio	25 40 55 70	245 260 275 290

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

Table 2.10-7. Stowe-Ignatov Aerosol Optical Depth

SDS Name	Units	Range	Dimensions	Data Type
Aerosol visible optical depth - 0.63 μm	N/A	0 .. 5	18	32-bit real
Aerosol visible optical depth - 1.6 μm	N/A	0 .. 5	18	32-bit real

Table 2.10-7(b). SDS Index of Stowe-Ignatov Aerosol Optical Depth

SDS Name	Regional Monthly Hourly	Regional Monthly
Aerosol visible optical depth - 0.63 μm	71	291
Aerosol visible optical depth - 1.6 μm	72	292

Table 2.10-8. MODIS Aerosol Optical Depth (1 of 2)

SDS Name	Units	Range	Dimensions	Data Type
Initial Aerosol Optical Depth	N/A	0 .. 5	18	32-bit real
Aerosol Opt. Depth at 0.47 μm in Land	N/A	0 .. 5	18	32-bit real
Aerosol Opt. Depth at 0.55 μm in Land	N/A	0 .. 5	18	32-bit real

Table 2.10-8. MODIS Aerosol Optical Depth (2 of 2)

SDS Name	Units	Range	Dimensions	Data Type
Aerosol Opt. Depth at 0.66 μm in Land	N/A	0 .. 5	18	32-bit real
Aerosol Opt. Depth at 0.47 μm in Ocean	N/A	0 .. 5	18	32-bit real
Aerosol Opt. Depth at 0.55 μm in Ocean	N/A	0 .. 5	18	32-bit real
Aerosol Opt. Depth at 0.66 μm in Ocean	N/A	0 .. 5	18	32-bit real
Aerosol Opt. Depth at 0.87 μm in Ocean	N/A	0 .. 5	18	32-bit real
Aerosol Opt. Depth at 1.24 μm in Ocean	N/A	0 .. 5	18	32-bit real
Aerosol Opt. Depth at 1.64 μm in Ocean	N/A	0 .. 5	18	32-bit real
Aerosol Opt. Depth at 2.13 μm in Ocean	N/A	0 .. 5	18	32-bit real

Table 2.10-8(b). SDS Index of MODIS Aerosol Optical Depth

SDS Name	Regional Monthly Hourly	Regional Monthly
Initial Aerosol Optical Depth	73	293
Aerosol Opt. Depth at 0.47 μm in Land	74	294
Aerosol Opt. Depth at 0.55 μm in Land	75	295
Aerosol Opt. Depth at 0.66 μm in Land	76	296
Aerosol Opt. Depth at 0.47 μm in Ocean	77	297
Aerosol Opt. Depth at 0.55 μm in Ocean	78	298
Aerosol Opt. Depth at 0.66 μm in Ocean	79	299
Aerosol Opt. Depth at 0.87 μm in Ocean	80	300
Aerosol Opt. Depth at 1.24 μm in Ocean	81	301
Aerosol Opt. Depth at 1.64 μm in Ocean	82	302
Aerosol Opt. Depth at 2.13 μm in Ocean	83	303

Table 2.10-9. Tuned Pristine Fluxes (1 of 2)

SDS Name	Units	Range	Dimensions	Data Type
Tuned Pristine SW Surface Up	W m^{-2}	0 .. 1400	18	32-bit real
Tuned Pristine SW Surface Down	W m^{-2}	0 .. 1400	18	32-bit real

Table 2.10-9. Tuned Pristine Fluxes (2 of 2)

SDS Name	Units	Range	Dimensions	Data Type
Tuned Pristine SW TOA Up	W m ⁻²	0 .. 1400	18	32-bit real
Tuned Pristine LW Surface Up	W m ⁻²	0 .. 850	18	32-bit real
Tuned Pristine LW Surface Down	W m ⁻²	0 .. 700	18	32-bit real
Tuned Pristine LW TOA Up	W m ⁻²	0 .. 850	18	32-bit real
Tuned Pristine WN Surface Up	W m ⁻²	0 .. 370	18	32-bit real
Tuned Pristine WN Surface Down	W m ⁻²	0 .. 370	18	32-bit real
Tuned Pristine WN TOA Up	W m ⁻²	0 .. 370	18	32-bit real

Table 2.10-9(b). SDS Index of Tuned Pristine Fluxes

SDS Name	Regional Monthly Hourly	Regional Monthly
Tuned Pristine SW Surface Up	84	304
Tuned Pristine SW Surface Down	85	305
Tuned Pristine SW TOA Up	86	306
Tuned Pristine LW Surface Up	87	307
Tuned Pristine LW Surface Down	88	308
Tuned Pristine LW TOA Up	89	309
Tuned Pristine WN Surface Up	90	310
Tuned Pristine WN Surface Down	91	311
Tuned Pristine WN TOA Up	92	312

Table 2.10-10. Tuned ClearSky Flux Profiles (1 of 2)

SDS Name	Units	Range	Dimensions	Data Type
Tuned Clear-Sky SW Up	W m ⁻²	0 .. 1400	18 x 5	32-bit real
Tuned Clear-Sky SW Down	W m ⁻²	0 .. 1400	18 x 5	32-bit real
Tuned Clear-Sky LW Up	W m ⁻²	0 .. 850	18 x 5	32-bit real

Table 2.10-10. Tuned ClearSky Flux Profiles (2 of 2)

SDS Name	Units	Range	Dimensions	Data Type
Tuned Clear-Sky LW Down	W m ⁻²	0 .. 700	18 x 5	32-bit real
Tuned Clear-Sky WN Up	W m ⁻²	0 .. 370	18 x 5	32-bit real
Tuned Clear-Sky WN Down	W m ⁻²	0 .. 370	18 x 5	32-bit real

Table 2.10-10(b). SDS Index of Tuned ClearSky Flux Profiles

SDS Name	Regional Monthly Hourly	Regional Monthly
Tuned Clear-Sky SW Up	93	313
Tuned Clear-Sky SW Down	94	314
Tuned Clear-Sky LW Up	95	315
Tuned Clear-Sky LW Down	96	316
Tuned Clear-Sky WN Up	97	317
Tuned Clear-Sky WN Down	98	318

Table 2.10-11. Tuned TotalSky-NoAerosol Fluxes (1 of 2)

SDS Name	Units	Range	Dimensions	Data Type
Tuned Total-Sky-NoAerosol SW Surface Up	W m ⁻²	0 .. 1400	18	32-bit real
Tuned Total-Sky-NoAerosol SW Surface Down	W m ⁻²	0 .. 1400	18	32-bit real
Tuned Total-Sky-NoAerosol SW TOA Up	W m ⁻²	0 .. 1400	18	32-bit real
Tuned Total-Sky-NoAerosol LW Surface Up	W m ⁻²	0 .. 850	18	32-bit real
Tuned Total-Sky-NoAerosol LW Surface Down	W m ⁻²	0 .. 700	18	32-bit real
Tuned Total-Sky-NoAerosol LW TOA Up	W m ⁻²	0 .. 850	18	32-bit real

Table 2.10-11. Tuned TotalSky-NoAerosol Fluxes (2 of 2)

SDS Name	Units	Range	Dimensions	Data Type
Tuned Total-Sky-NoAerosol WN Surface Up	W m ⁻²	0 .. 370	18	32-bit real
Tuned Total-Sky-NoAerosol WN Surface Down	W m ⁻²	0 .. 370	18	32-bit real
Tuned Total-Sky-NoAerosol WN TOA Up	W m ⁻²	0 .. 370	18	32-bit real

Table 2.10-11(b). SDS Index of Tuned TotalSky-NoAerosol Fluxes

SDS Name	Regional Monthly Hourly	Regional Monthly
Tuned Total-Sky-NoAerosol SW Surface Up	99	319
Tuned Total-Sky-NoAerosol SW Surface Down	100	320
Tuned Total-Sky-NoAerosol SW TOA Up	101	321
Tuned Total-Sky-NoAerosol LW Surface Up	102	322
Tuned Total-Sky-NoAerosol LW Surface Down	103	323
Tuned Total-Sky-NoAerosol LW TOA Up	104	324
Tuned Total-Sky-NoAerosol WN Surface Up	105	325
Tuned Total-Sky-NoAerosol WN Surface Down	106	326
Tuned Total-Sky-NoAerosol WN TOA Up	107	327

Table 2.10-12. Tuned TotalSky Flux Profiles

SDS Name	Units	Range	Dimensions	Data Type
Tuned Total-Sky SW Up	W m ⁻²	0 .. 1400	18 x 5	32-bit real
Tuned Total-Sky SW Down	W m ⁻²	0 .. 1400	18 x 5	32-bit real
Tuned Total-Sky LW Up	W m ⁻²	0 .. 850	18 x 5	32-bit real
Tuned Total-Sky LW Down	W m ⁻²	0 .. 700	18 x 5	32-bit real
Tuned Total-Sky WN Up	W m ⁻²	0 .. 370	18 x 5	32-bit real
Tuned Total-Sky WN Down	W m ⁻²	0 .. 370	18 x 5	32-bit real

Table 2.10-12(b). SDS Index of Tuned TotalSky Flux Profiles

SDS Name	Regional Monthly Hourly	Regional Monthly
Tuned Total-Sky SW Up	108	328
Tuned Total-Sky SW Down	109	329
Tuned Total-Sky LW Up	110	330
Tuned Total-Sky LW Down	111	331
Tuned Total-Sky WN Up	112	332
Tuned Total-Sky WN Down	113	333

Table 2.10-13. Untuned Pristine Fluxes

SDS Name	Units	Range	Dimensions	Data Type
Untuned Pristine SW Surface Up	W m ⁻²	0 .. 1500	18	32-bit real
Untuned Pristine SW Surface Down	W m ⁻²	0 .. 1500	18	32-bit real
Untuned Pristine SW TOA Up	W m ⁻²	0 .. 1400	18	32-bit real
Untuned Pristine LW Surface Up	W m ⁻²	0 .. 850	18	32-bit real
Untuned Pristine LW Surface Down	W m ⁻²	0 .. 700	18	32-bit real
Untuned Pristine LW TOA Up	W m ⁻²	0 .. 850	18	32-bit real
Untuned Pristine WN Surface Up	W m ⁻²	0 .. 370	18	32-bit real
Untuned Pristine WN Surface Down	W m ⁻²	0 .. 370	18	32-bit real
Untuned Pristine WN TOA Up	W m ⁻²	0 .. 370	18	32-bit real

Table 2.10-13(b). SDS Index of Untuned Pristine Fluxes (1 of 2)

SDS Name	Regional Monthly Hourly	Regional Monthly
Untuned Pristine SW Surface Up	114	334
Untuned Pristine SW Surface Down	115	335
Untuned Pristine SW TOA Up	116	336
Untuned Pristine LW Surface Up	117	337

Table 2.10-13(b). SDS Index of Untuned Pristine Fluxes (2 of 2)

SDS Name	Regional Monthly Hourly	Regional Monthly
Untuned Pristine LW Surface Down	118	338
Untuned Pristine LW TOA Up	119	339
Untuned Pristine WN Surface Up	120	340
Untuned Pristine WN Surface Down	121	341
Untuned Pristine WN TOA Up	122	342

Table 2.10-14. Untuned ClearSky Fluxes

SDS Name	Units	Range	Dimensions	Data Type
Untuned Clear-Sky SW Surface Up	W m ⁻²	0 .. 1400	18	32-bit real
Untuned Clear-Sky SW Surface Down	W m ⁻²	0 .. 1400	18	32-bit real
Untuned Clear-Sky SW TOA Up	W m ⁻²	0 .. 1400	18	32-bit real
Untuned Clear-Sky LW Surface Up	W m ⁻²	0 .. 850	18	32-bit real
Untuned Clear-Sky LW Surface Down	W m ⁻²	0 .. 700	18	32-bit real
Untuned Clear-Sky LW TOA Up	W m ⁻²	0 .. 850	18	32-bit real
Untuned Clear-Sky WN Surface Up	W m ⁻²	0 .. 370	18	32-bit real
Untuned Clear-Sky WN Surface Down	W m ⁻²	0 .. 370	18	32-bit real
Untuned Clear-Sky WN TOA Up	W m ⁻²	0 .. 370	18	32-bit real

Table 2.10-14(b). SDS Index of Untuned ClearSky Fluxes (1 of 2)

SDS Name	Regional Monthly Hourly	Regional Monthly
Untuned Clear-Sky SW Surface Up	123	343
Untuned Clear-Sky SW Surface Down	124	344
Untuned Clear-Sky SW TOA Up	125	345
Untuned Clear-Sky LW Surface Up	126	346
Untuned Clear-Sky LW Surface Down	127	347
Untuned Clear-Sky LW TOA Up	128	348
Untuned Clear-Sky WN Surface Up	129	349

Table 2.10-14(b). SDS Index of Untuned ClearSky Fluxes (2 of 2)

SDS Name	Regional Monthly Hourly	Regional Monthly
Untuned Clear-Sky WN Surface Down	130	350
Untuned Clear-Sky WN TOA Up	131	351

Table 2.10-15. Untuned TotalSky-NoAerosol Fluxes

SDS Name	Units	Range	Dimensions	Data Type
Untuned Total-Sky-NoAerosol SW Surface Up	W m ⁻²	0 .. 1400	18	32-bit real
Untuned Total-Sky-NoAerosol SW Surface Down	W m ⁻²	0 .. 1400	18	32-bit real
Untuned Total-Sky-NoAerosol SW TOA Up	W m ⁻²	0 .. 1400	18	32-bit real
Untuned Total-Sky-NoAerosol LW Surface Up	W m ⁻²	0 .. 850	18	32-bit real
Untuned Total-Sky-NoAerosol LW Surface Down	W m ⁻²	0 .. 700	18	32-bit real
Untuned Total-Sky-NoAerosol LW TOA Up	W m ⁻²	0 .. 850	18	32-bit real
Untuned Total-Sky-NoAerosol WN Surface Up	W m ⁻²	0 .. 370	18	32-bit real
Untuned Total-Sky-NoAerosol WN Surface Down	W m ⁻²	0 .. 370	18	32-bit real
Untuned Total-Sky-NoAerosol WN TOA Up	W m ⁻²	0 .. 370	18	32-bit real

Table 2.10-15(b). SDS Index of Untuned TotalSky-NoAerosol Fluxes (1 of 2)

SDS Name	Regional Monthly Hourly	Regional Monthly
Untuned Total-Sky-NoAerosol SW Surface Up	132	352
Untuned Total-Sky-NoAerosol SW Surface Down	133	353
Untuned Total-Sky-NoAerosol SW TOA Up	134	354
Untuned Total-Sky-NoAerosol LW Surface Up	135	355
Untuned Total-Sky-NoAerosol LW Surface Down	136	356

Table 2.10-15(b). SDS Index of Untuned TotalSky-NoAerosol Fluxes (2 of 2)

SDS Name	Regional Monthly Hourly	Regional Monthly
Untuned Total-Sky-NoAerosol LW TOA Up	137	357
Untuned Total-Sky-NoAerosol WN Surface Up	138	358
Untuned Total-Sky-NoAerosol WN Surface Down	139	359
Untuned Total-Sky-NoAerosol WN TOA Up	140	360

Table 2.10-16. Untuned TotalSky Fluxes

SDS Name	Units	Range	Dimensions	Data Type
Untuned Total-Sky SW Surface Up	W m ⁻²	0 .. 1400	18	32-bit real
Untuned Total-Sky SW Surface Down	W m ⁻²	0 .. 1400	18	32-bit real
Untuned Total-Sky SW TOA Up	W m ⁻²	0 .. 1400	18	32-bit real
Untuned Total-Sky LW Surface Up	W m ⁻²	0 .. 850	18	32-bit real
Untuned Total-Sky LW Surface Down	W m ⁻²	0 .. 700	18	32-bit real
Untuned Total-Sky LW TOA Up	W m ⁻²	0 .. 850	18	32-bit real
Untuned Total-Sky WN Surface Up	W m ⁻²	0 .. 370	18	32-bit real
Untuned Total-Sky WN Surface Down	W m ⁻²	0 .. 370	18	32-bit real
Untuned Total-Sky WN TOA Up	W m ⁻²	0 .. 370	18	32-bit real

Table 2.10-16(b). SDS Index of Untuned TotalSky Fluxes (1 of 2)

SDS Name	Regional Monthly Hourly	Regional Monthly
Untuned Total-Sky SW Surface Up	141	361
Untuned Total-Sky SW Surface Down	142	362
Untuned Total-Sky SW TOA Up	143	363
Untuned Total-Sky LW Surface Up	144	364
Untuned Total-Sky LW Surface Down	145	365
Untuned Total-Sky LW TOA Up	146	366
Untuned Total-Sky WN Surface Up	147	367
Untuned Total-Sky WN Surface Down	148	368

Table 2.10-16(b). SDS Index of Untuned TotalSky Fluxes (2 of 2)

SDS Name	Regional Monthly Hourly	Regional Monthly
Untuned Total-Sky WN TOA Up	149	369

Table 2.10-17. Satellite Emulated WN TOA Fluxes

SDS Name	Units	Range	Dimensions	Data Type
Untuned Satellite Emulated WN TOA	W m ⁻²	-1400 .. 1400	18	32-bit real
Tuned Satellite Emulated WN TOA	W m ⁻²	-1400 .. 1400	18	32-bit real

Table 2.10-17(b). SDS Index of Satellite Emulated WN TOA Fluxes

SDS Name	Regional Monthly Hourly	Regional Monthly
Untuned Satellite Emulated WN TOA	150	370
Tuned Satellite Emulated WN TOA	151	371

Table 2.10-18. TOA Fluxes Error

SDS Name	Units	Range	Dimensions	Data Type
Tuned Minus Observed SW TOA	W m ⁻²	-1400 .. 1400	18	32-bit real
Untuned Minus Observed SW TOA	W m ⁻²	-1400 .. 1400	18	32-bit real
Tuned Minus Observed LW TOA	W m ⁻²	-600 .. 600	18	32-bit real
Untuned Minus Observed LW TOA	W m ⁻²	-600 .. 600	18	32-bit real

Table 2.10-18(b). SDS Index of TOA Fluxes Error

SDS Name	Regional Monthly Hourly	Regional Monthly
Tuned Minus Observed SW TOA	152	372
Untuned Minus Observed SW TOA	153	373
Tuned Minus Observed LW TOA	154	374
Untuned Minus Observed LW TOA	155	375

Table 2.10-19. Number of Hourboxes

SDS Name	Units	Range	Dimensions	Data Type
Number of Observed SW	N/A	0 .. 744	9	32-bit real
Number of Untuned SW	N/A	0 .. 744	9	32-bit real
Number of Tuned SW	N/A	0 .. 744	9	32-bit real
Number of Observed LW	N/A	0 .. 744	9	32-bit real
Number of Untuned LW	N/A	0 .. 744	9	32-bit real
Number of Tuned LW	N/A	0 .. 744	9	32-bit real

Table 2.10-19(b). SDS Index of Number of Hourboxes

SDS Name	Regional Monthly Hourly	Regional Monthly
Number of Observed SW	156	376
Number of Untuned SW	157	377
Number of Tuned SW	158	378
Number of Observed LW	159	379
Number of Untuned LW	160	380
Number of Tuned LW	161	381

Table 2.10-20. Constraint Adjustments

SDS Name	Units	Range	Dimensions	Data Type
Total column precipitable water - initial	cm	0 .. 10	18	32-bit real
Total column precipitable water - adjusted	cm	-10 .. 10	18	32-bit real
Upper tropospheric precipitable water - initial	cm	0 .. 10	18	32-bit real
Upper tropospheric precipitable water - adjusted	cm	0 .. 10	18	32-bit real
Upper tropospheric humidity - initial	N/A	0.0 .. 100.0	18	32-bit real
Upper tropospheric humidity - adjusted	N/A	0.0 .. 100.0	18	32-bit real
Aerosol optical depth - initial	N/A	0 .. 5	18	32-bit real
Aerosol optical depth - adjusted	N/A	0 .. 5	18	32-bit real
Skin temperature - initial	K	175 .. 375	18	32-bit real
Skin temperature - adjusted	K	175 .. 375	18	32-bit real
Surface pressure	hPa	0 .. 800	18	32-bit real
Column ozone - initial	du	0 .. 800	18	32-bit real
Mean visible optical depth- adjusted	N/A	0 .. 400	18	32-bit real
Mean cloud fractional area - adjusted	%	0 .. 100	18	32-bit real
Mean cloud effective temperature - adjusted	K	175 .. 375	18	32-bit real

Table 2.10-20(b). SDS Index of Constraint Adjustments (1 of 2)

SDS Name	Regional Monthly Hourly	Regional Monthly
Total column precipitable water - initial	162	382
Total column precipitable water - adjusted	163	383
Upper tropospheric precipitable water - initial	164	384
Upper tropospheric precipitable water - adjusted	165	385
Upper tropospheric humidity - initial	166	386
Upper tropospheric humidity - adjusted	167	387
Aerosol optical depth - initial	168	388

Table 2.10-20(b). SDS Index of Constraint Adjustments (2 of 2)

SDS Name	Regional Monthly Hourly	Regional Monthly
Aerosol optical depth - adjusted	169	389
Skin temperature - initial	170	390
Skin temperature - adjusted	171	391
Surface pressure	172	392
Column ozone - initial	173	393
Mean visible optical depth- adjusted	174	394
Mean cloud fractional area - adjusted	175	395
Mean cloud effective temperature - adjusted	176	396

Table 2.10-21. Surface SW Direct/Diffuse Fluxes

SDS Name	Units	Range	Dimensions	Data Type
Total-Sky SW flux - Diffuse	W m ⁻²	0 .. 1400	18	32-bit real
Clear-Sky SW flux - Diffuse	W m ⁻²	0 .. 1400	18	32-bit real
Pristine-Sky SW flux - Diffuse	W m ⁻²	0 .. 1400	18	32-bit real
Actinic-Sky SW flux - Diffuse	W m ⁻²	0 .. 1400	18	32-bit real
Total-Sky SW flux - Direct	W m ⁻²	0 .. 1400	18	32-bit real
Clear-Sky SW flux - Direct	W m ⁻²	0 .. 1400	18	32-bit real
Pristine-Sky SW flux - Direct	W m ⁻²	0 .. 1400	18	32-bit real
Actinic-Sky SW flux - Direct	W m ⁻²	0 .. 1400	18	32-bit real

Table 2.10-21(b). SDS Index of Surface SW Direct/Diffuse Fluxes (1 of 2)

SDS Name	Regional Monthly Hourly	Regional Monthly
Total-Sky SW flux - Diffuse	177	397
Clear-Sky SW flux - Diffuse	178	398
Pristine-Sky SW flux - Diffuse	179	399
Actinic-Sky SW flux - Diffuse	180	400
Total-Sky SW flux - Direct	181	401
Clear-Sky SW flux - Direct	182	402

Table 2.10-21(b). SDS Index of Surface SW Direct/Diffuse Fluxes (2 of 2)

SDS Name	Regional Monthly Hourly	Regional Monthly
Pristine-Sky SW flux - Direct	183	403
Actinic-Sky SW flux - Direct	184	404

Table 2.10-22. UVA - UVB Fluxes (1 of 2)

SDS Name	Units	Range	Dimensions	Data Type
TOA Downwelling UVB Flux	W m ⁻²	0 .. 1400	18	32-bit real
TOA Downwelling UVA Flux	W m ⁻²	0 .. 1400	18	32-bit real
Pristine UVB Surface flux - Direct	W m ⁻²	0 .. 1400	18	32-bit real
Pristine UVB Surface flux - Diffuse	W m ⁻²	0 .. 1400	18	32-bit real
Pristine UVA Surface flux - Direct	W m ⁻²	0 .. 1400	18	32-bit real
Pristine UVA Surface flux - Diffuse	W m ⁻²	0 .. 1400	18	32-bit real
Clear-Sky UVB Surface flux - Direct	W m ⁻²	0 .. 1400	18	32-bit real
Clear-Sky UVB Surface flux - Diffuse	W m ⁻²	0 .. 1400	18	32-bit real
Clear-Sky UVA Surface flux - Direct	W m ⁻²	0 .. 1400	18	32-bit real
Clear-Sky UVA Surface flux - Diffuse	W m ⁻²	0 .. 1400	18	32-bit real
Total-Sky-NoAerosol UVB Surface flux - Direct	W m ⁻²	0 .. 1400	18	32-bit real
Total-Sky-NoAerosol UVB Surface flux - Diffuse	W m ⁻²	0 .. 1400	18	32-bit real
Total-Sky-NoAerosol UVA Surface flux - Direct	W m ⁻²	0 .. 1400	18	32-bit real
Total-Sky-NoAerosol UVA Surface flux - Diffuse	W m ⁻²	0 .. 1400	18	32-bit real
Total-Sky UVB Surface flux - Direct	W m ⁻²	0 .. 1400	18	32-bit real
Total-Sky UVB Surface flux - Diffuse	W m ⁻²	0 .. 1400	18	32-bit real
Total-Sky UVA Surface flux - Direct	W m ⁻²	0 .. 1400	18	32-bit real
Total-Sky UVA Surface flux - Diffuse	W m ⁻²	0 .. 1400	18	32-bit real

Table 2.10-22. UVA - UVB Fluxes (2 of 2)

SDS Name	Units	Range	Dimen- sions	Data Type
Total-Sky Surface UV Index	N/A	0 .. 30	18	32-bit real
Clear-Sky Surface UV Index	N/A	0 .. 30	18	32-bit real
Pristine Surface UV Index	N/A	0 .. 30	18	32-bit real
Total-Sky-NoAerosol Surface UV- Index	N/A	0 .. 30	18	32-bit real

Table 2.10-22(b). SDS Index of UVA - UVB Fluxes

SDS Name	Regional Monthly Hourly	Regional Monthly
TOA Downwelling UVB Flux	185	405
TOA Downwelling UVA Flux	186	406
Pristine UVB Surface flux - Direct	187	407
Pristine UVB Surface flux - Diffuse	188	408
Pristine UVA Surface flux - Direct	189	409
Pristine UVA Surface flux - Diffuse	190	410
Clear-Sky UVB Surface flux - Direct	191	411
Clear-Sky UVB Surface flux - Diffuse	192	412
Clear-Sky UVA Surface flux - Direct	193	413
Clear-Sky UVA Surface flux - Diffuse	194	414
Total-Sky-NoAerosol UVB Surface flux - Direct	195	415
Total-Sky-NoAerosol UVB Surface flux - Diffuse	196	416
Total-Sky-NoAerosol UVA Surface flux - Direct	197	417
Total-Sky-NoAerosol UVA Surface flux - Diffuse	198	418
Total-Sky UVB Surface flux - Direct	199	419
Total-Sky UVB Surface flux - Diffuse	200	420
Total-Sky UVA Surface flux - Direct	201	421
Total-Sky UVA Surface flux - Diffuse	202	422
Total-Sky Surface UV Index	203	423
Clear-Sky Surface UV Index	204	424
Pristine Surface UV Index	205	425
Total-Sky-NoAerosol Surface UV- Index	206	426

Table 2.10-23. PAR Fluxes

SDS Name	Units	Range	Dimen- sions	Data Type
TOA Downwelling PAR Flux	W m ⁻²	0 .. 1400	18	32-bit real
Total-Sky PAR Surface flux - Direct	W m ⁻²	0 .. 1400	18	32-bit real
Total-Sky PAR Surface flux - Diffuse	W m ⁻²	0 .. 1400	18	32-bit real
Total-Sky PAR PURV Surface flux - Direct	W m ⁻²	0 .. 1400	18	32-bit real
Total-Sky PAR PURV Surface flux - Diffuse	W m ⁻²	0 .. 1400	18	32-bit real
Total-Sky PAR ChlorA Surface flux - Direct	W m ⁻²	0 .. 1400	18	32-bit real
Total-Sky PAR ChlorA Surface flux - Diffuse	W m ⁻²	0 .. 1400	18	32-bit real
Clear-Sky PAR Surface flux - Direct	W m ⁻²	0 .. 1400	18	32-bit real
Clear-Sky PAR Surface flux - Diffuse	W m ⁻²	0 .. 1400	18	32-bit real
Pristine PAR Surface flux - Direct	W m ⁻²	0 .. 1400	18	32-bit real
Pristine PAR Surface flux - Diffuse	W m ⁻²	0 .. 1400	18	32-bit real

Table 2.10-23(b). SDS Index of PAR Fluxes

SDS Name	Regional Monthly Hourly	Regional Monthly
TOA Downwelling PAR Flux	207	427
Total-Sky PAR Surface flux - Direct	208	428
Total-Sky PAR Surface flux - Diffuse	209	429
Total-Sky PAR PURV Surface flux - Direct	210	430
Total-Sky PAR PURV Surface flux - Diffuse	211	431
Total-Sky PAR ChlorA Surface flux - Direct	212	432
Total-Sky PAR ChlorA Surface flux - Diffuse	213	433
Clear-Sky PAR Surface flux - Direct	214	434
Clear-Sky PAR Surface flux - Diffuse	215	435
Pristine PAR Surface flux - Direct	216	436
Pristine PAR Surface flux - Diffuse	217	437

Table 2.10-24. Pristine-Sky SW MultiStream Correction

SDS Name	Units	Range	Dimensions	Data Type
SW TOA Flux - Up - Pristine-Sky - Corrected	W m ⁻²	0 .. 1000	18	32-bit real
SW Surface Flux - Down- Pristine-Sky - Corrected	W m ⁻²	0 .. 1000	18	32-bit real

Table 2.10-24(b). SDS Index of Pristine-Sky SW MultiStream Correction

SDS Name	Regional Monthly Hourly	Regional Monthly
SW TOA Flux - Up - Pristine-Sky - Corrected	218	438
SW Surface Flux - Down- Pristine-Sky - Corrected	219	439

Total Bits / Record: 151296
Total Bytes / Record: 18912
Total Records / File: 64800
Total Bytes / File: 1,225,497,560
Total MBytes/File: 1225 MB

AVG 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.

AVG 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 SDS Index tables. 	All