

VIRS Cloud Imager Data (VIRS CID)

The VIRS Cloud Imager Data (CID_VIRS) are Level-1B data from the five VIRS channels on the TRMM spacecraft. The data coverage is one orbit; however, the orbit files will be processed on an hourly basis. The sizes listed in the following data description reflect the estimated number of scan line records in 1 hour (11,817). The product is written in Hierarchical Data Format (HDF). It contains Vdata and Scientific Data Sets (SDS), which hold data for all of the scan line records. The VIRS HDF Structure Summary [Table 1](#) lists the type of HDF structure along with the name of the structure. A complete listing of parameters for this data product can be found in [Table 2](#) and [Table 3](#). The VIRS Level-1B product is described in more detail in the Level 1 File Specifications - Volume 3 ([Reference 5](#)). The five VIRS channels are

Channels	Micron	Resolution
Channel 1	0.63	2-km
Channel 2	1.60	2-km
Channel 3	3.75	2-km
Channel 4	10.80	2-km
Channel 5	12.00	2-km

Level: 1B
Type: Ancillary
Frequency: 1/Hour

Portion of Globe Covered
File: Satellite Swath
Record: 2-km by 2-km

Time Interval Covered
File: 1 Hour
Record: Instantaneous

Portion of Atmosphere Covered
File: Satellite Altitude



Table 1. VIRS HDF Structure Summary

HDFName	HDF Structure Type	Num Records	Table Number	Size (bits)
VIRS Core Metadata	HDF Annotations	1	Reference 5	80 000
VIRS Product Specific Metadata	HDF Annotations	1	Reference 5	80 000
VIRS Swath Data for product decoding	HDF Vgroup	1	None	40 000
Scan Time	Vdata Structures	1 .. 11, 817	Table 2	756 288
Scan Status	Vdata Structures	1 .. 11, 817	Table 3	1 796 184
Navigation	Vdata Structures	1 .. 11, 817	Table 4	8 319 168
Geolocation	SDS Data Structures	1 .. 11, 817	Table 5	197 391 168
Calibration Counts	SDS Data Structures	1 .. 11, 817	Table 5	5 672 160
Local Direction	SDS Data Structures	1 .. 11, 817	Table 5	20 419 776
Channels	SDS Data Structures	1 .. 11, 817	Table 5	246 738 960
Total VIRS Megabytes/File:				57.37

Table 2. Scan Time VData

Field Name	Description	Field Num	Num Records	Data Type	Units	Range
scanTime	Time of the scan	1	1 .. 11, 817	64-bit float	sec	0 .. 86400

Table 3. Scan Status VData

Field Name	Description	Field Num	Num Records	Data Type	Units	Range
missing	Missing Information Flag	1	1 .. 11, 817	8-bit integer	N/A	0 .. 2
validity	Status Mode Flag	2	1 .. 11, 817	8-bit integer	N/A	N/A
qac	Quality and Accounting Capsule	3	1 .. 11, 817	8-bit integer	N/A	N/A
geoQuality	Geolocation Quality	4	1 .. 11, 817	8-bit integer	N/A	N/A
ch1Quality	Quality of Channel Data	5	1 .. 11, 817	8-bit integer	N/A	N/A
ch2Quality	Quality of Channel Data	6	1 .. 11, 817	8-bit integer	N/A	N/A
ch3Quality	Quality of Channel Data	7	1 .. 11, 817	8-bit integer	N/A	N/A
ch4Quality	Quality of Channel Data	8	1 .. 11, 817	8-bit integer	N/A	N/A
ch5Quality	Quality of Channel Data	9	1 .. 11, 817	8-bit integer	N/A	N/A
scOrient	Current Spacecraft Orientation	10	1 .. 11, 817	8-bit integer	N/A	0 .. 4
acsMode	Current ACS Mode	11	1 .. 11, 817	8-bit integer	N/A	0 .. 8
yawUpdateS	Yaw Update Status	12	1 .. 11, 817	8-bit integer	N/A	0 .. 2
virInstS	VIRS Instrument Status	13	1 .. 11, 817	8-bit integer	N/A	0 .. 3
virMode	VIRS Mode	14	1 .. 11, 817	8-bit integer	N/A	0 .. 3

VIRS CID-2



Table 3. Scan Status VData

Field Name	Description	Field Num	Num Records	Data Type	Units	Range
virAbnCon	VIRS Abnormal Conditions	15	1 .. 11, 817	8-bit integer	N/A	N/A
fractOrbitN	Fractional Orbit Number	16	1 .. 11, 817	32-bit float	N/A	N/A

Table 4. VIRS Navigation VData

Field Name	Description	Field Num	Num Records	Data Type	Units	Range
scPosX	Spacecraft Geocentric Position	1	1 .. 11, 817	32-bit float	m	TBD
scPosY	Spacecraft Geocentric Position	2	1 .. 11, 817	32-bit float	m	TBD
scPosZ	Spacecraft Geocentric Position	3	1 .. 11, 817	32-bit float	m	TBD
scVelX	Spacecraft Geocentric Velocity	4	1 .. 11, 817	32-bit float	m sec ⁻¹	TBD
scVelY	Spacecraft Geocentric Velocity	5	1 .. 11, 817	32-bit float	m sec ⁻¹	TBD
scVelZ	Spacecraft Geocentric Velocity	6	1 .. 11, 817	32-bit float	m sec ⁻¹	TBD
scLat	Spacecraft Geodetic Position	7	1 .. 11, 817	32-bit float	deg	TBD
scLon	Spacecraft Geodetic Position	8	1 .. 11, 817	32-bit float	deg	TBD
scAlt	Spacecraft Geodetic Position	9	1 .. 11, 817	32-bit float	m	TBD
scAttRoll	Spacecraft Geocentric Attitude	10	1 .. 11, 817	32-bit float	deg	TBD
scAttPitch	Spacecraft Geocentric Attitude	11	1 .. 11, 817	32-bit float	deg	TBD
scAttYaw	Spacecraft Geocentric Attitude	12	1 .. 11, 817	32-bit float	deg	TBD
att1	Sensor Orientation Matrix	13	1 .. 11, 817	32-bit float	N/A	N/A
att2	Sensor Orientation Matrix	14	1 .. 11, 817	32-bit float	N/A	N/A
att3	Sensor Orientation Matrix	15	1 .. 11, 817	32-bit float	N/A	N/A
att4	Sensor Orientation Matrix	16	1 .. 11, 817	32-bit float	N/A	N/A
att5	Sensor Orientation Matrix	17	1 .. 11, 817	32-bit float	N/A	N/A
att6	Sensor Orientation Matrix	18	1 .. 11, 817	32-bit float	N/A	N/A
att7	Sensor Orientation Matrix	19	1 .. 11, 817	32-bit float	N/A	N/A
att8	Sensor Orientation Matrix	20	1 .. 11, 817	32-bit float	N/A	N/A
att9	Sensor Orientation Matrix	21	1 .. 11, 817	32-bit float	N/A	N/A
green HourAng	Greenwich Hour Angle	22	1 .. 11, 817	32-bit float	deg	TBD



Table 5. VIRS Science Data Sets

SDS Name	Description	Rank	Dimensions	Data Type	Units	Range
geolocation	Earth location of the center of the field-of-view	3	(11817, 261, 2) scan line x pixel x (latitude, longitude)	32-bit float	deg	-90 .. 90 -180 .. 180
calCounts	Raw calibration counts	4	(11817, 3, 2, 5) scan line x {blackbody, space view, solar diffuser} x data word x channel	16-bit integer	count	N/A
local Direction	Angles to the satellite and sun from the center of the field of view	4	(11817, 27, 2, 2)scan line x pixel x {satellite, sun} x {zenith angle, azimuth angle}.	16-bit integer	deg	TBD
channels	Radiances	3	(11817, 261, 5) scan line x pixel x channel	16-bit integer	mW cm ⁻² sr ⁻¹ μm ⁻¹	TBD



VIRS CID 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.

VIRS CID 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. • The EOSDIS Product Code line was removed from the document. (6/17/2008) • Some links were not working. They have now been modified. (12/10/2010) • The ASDC footer was added to the bottom of the document. (06/07/2013) • Eliminated section numbers from the Data Products Catalog. Specifically, in this document, section number 4.1 was removed. (12/18/2013) • Updated some links to refer to the .pdf file instead of the .doc file. (06/20/2014) • Updated document to change “mm” to “μm.” (09/12/2019) 	<p>All</p> <p>Sec. 4.1</p> <p>All</p> <p>All</p> <p>All</p> <p>All</p> <p>Table 5</p>

