

PRECIPITATION PROCESSING SYSTEM
TROPICAL RAINFALL MEASURING MISSION

Metadata for TRMM Products

Version 7.00

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1 Introduction

This document describes metadata, organized by group. There are two types of metadata groups: a group with elements and a "Long Metadata Group" which has no elements.

The first type of group has elements, which are shown in a table. If the name of the metadata element is wider than the table column, it will be hyphenated in the table. There is no dash or hyphen in the element name. For example,

SolarBetaAngleAtMiddleOfGranule

would appear in the table as

SolarBetaAngleAt-
MiddleOfGranule

The second type of group, a "Long Metadata Group", has no elements and no table is shown.

2 FileHeader

FileHeader contains general metadata. This group appears in all data products.

Table 1 shows each metadata element in this group.

3 InputRecord

InputRecord contains a record of input files for this granule. This group appears in Level 1, Level 2, and Level 3 orbital data products. Level 3 time averaged products have the same information separated into 3 groups since they have many inputs.

Table 2 shows each metadata element in this group.

4 InputFileNames

InputFileNames contains a list of input file names for this granule. Since some algorithms may have 2000 input files, this group is a "Long Metadata Group", which has no elements. This group appears in Level 3 time averaged products.

5 InputAlgorithmVersions

InputAlgorithmVersions contains a list of input algorithm versions for this granule. Since some algorithms may have 2000 input files, this group is a "Long Metadata Group", which has no elements. This group appears in Level 3 time averaged products.

6 InputGenerationDateTimes

InputGenerationDateTimes contains a list of input generation datetimes for this granule. Since some algorithms may have 2000 input files, this group is a "Long Metadata Group", which has no elements. This group appears in Level 3 time averaged products.

7 NavigationRecord

NavigationRecord contains navigation metadata for this granule. This group appears in Level 1, Level 2, and Level 3 orbital data products.

Table 3 shows each metadata element in this group.

8 FileInfo

FileInfo contains metadata used by the PPS I/O Toolkit. This group appears in all data products.

Table 4 shows each metadata element in this group.

9 JAXAInfo

JAXAInfo contains metadata requested by JAXA. Used by PR algorithms only.

Table 5 through 7 show each metadata element in this group.

10 GprofInfo

GprofInfo contains metadata required by Gprof. Used by 2A12 only.

Table 8 shows each metadata element in this group.

11 SwathHeader

SwathHeader contains metadata for swaths. This group appears in Level 1 and Level 2 data products.

Table 9 shows each metadata element in this group.

12 GridHeader

GridHeader contains metadata defining the grids in the grid structure. This group appears in Level 3 products.

Table 10 shows each metadata element in this group.

Table 1: FileHeader Group

Metadata Element	Estimated Size (bytes)	Description
AlgorithmID	50	The name of the algorithm that generated this product. For example, 2A12.
AlgorithmVersion	50	The version of the algorithm that generated this product.
FileName	50	The file name of this granule.
GenerationDateTime	50	The date and time this granule was generated. The format is YYYY-MM-DDTHH:MM:SS.sssZ, where YYYY is 4-digit year, MM is month number, DD is day of month, T is "T", HH is hour, MM is minute, SS is second, sss is millisecond, and Z is "Z". All fields are zero-filled.
StartGranuleDateTime	50	The start time of the data in this granule. There may be overlap scans in the file before the start time as described in NumberScansBefore Granule. The format is the same as GenerationDate Time.
StopGranuleDateTime	50	The stop time of the data in this granule. There may be overlap scans in the file before the start time as described in NumberScansBefore Granule. The format is the same as GenerationDate Time.
GranuleNumber	50	The number of this granule, which starts as defined in GranuleStart. If the GranuleStart is identical to the orbit start, then the GranuleNumber will be the same as the orbit number.
NumberOfSwaths	50	The number of swaths in this granule.
NumberOfGrids	50	The number of grid structures in this granule.
GranuleStart	50	The starting place in the orbit of this granule. Currently defined values are "SOUTHERNMOST_LATITUDE" and "NORTHBOUND_EQUATOR_CROSSING".
TimeInterval	50	The time interval covered by this granule. Values are "ORBIT", "HALFORBIT", "HOUR", "3_HOUR", "DAY", "MONTH", "CONTACT".
ProcessingSystem	50	The name of the processing system, e.g., "PPS".
ProductVersion	50	The data version assigned by the processing system.
MissingData	50	The number of missing scans.

Table 2: InputRecord Group

Metadata Element	Estimated Size (bytes)	Description
InputFileNames	1000	A list of input file names for this granule.
InputAlgorithmVersions	1000	A list of algorithm versions of the input files for this granule.
InputGenerationDateTimes	1000	A list of generation date times of the input files for this granule. The format is the same as GenerationDateTime.

Table 3: NavigationRecord Group

Metadata Element	Estimated Size (bytes)	Description
LongitudeOfMaximumLatitude	50	The longitude of the maximum latitude of the orbit track of this granule.
SolarBetaAngleAtBeginningOfGranule	50	The solar beta angle at the start of this granule.
SolarBetaAngleAtEndOfGranule	50	The solar beta angle at the end of this granule.

Table 4: FileInfo Group

Metadata Element	Estimated Size (bytes)	Description
DataFormatVersion	50	The version of the data format used to write this file. This version is separate for each AlgorithmID. The order is: "a" "b" ... "z" "aa" "ab" ... "az" "ba" "bb" ...
TKCodeBuildVersion	50	Usually TK CodeBuildVersion is "1". If the I/O routines built by TKIO change even though the DataFormatVersion is unchanged, then TK CodeBuildVersion increments to "2", "3", ... If subsequently DataFormatVersion changes, TKCodeBuildVersion becomes "1" again.
MetadataVersion	50	The version of metadata used to write this file. This version is separate for each AlgorithmID. The order is: "a" "b" ... "z" "aa" "ab" ... "az" "ba" "bb" ...
FormatPackage	50	The underlying format of this granule. Values are "HDF4", "HDF5", "NETCDF", "TKBINARY"
BlueprintFilename	50	The filename of the primary blueprint file that defined the format used to write this file.
BlueprintVersion	50	The BlueprintVersion of the format definition
TKIOVersion	50	The version of TKIO used to create I/O routines to write this file. TKIOVersion does not define the format used to write this file.
MetadataStyle	50	The style in which the metadata was written, e.g., "PVL". "PVL" means $\langle parameter \rangle = \langle value \rangle$;
EndianType	50	The endian type of the system that wrote this file. Values are "BIG_ENDIAN" and "LITTLE_ENDIAN".

Table 5: JAXAInfo Group

Metadata Element	Estimated Size (bytes)	Description
CalibrationCoefficientVersion	50	TBD
GranuleFirstScanUTCDate	50	TBD
GranuleFirstScanUTCTime	50	TBD
GranuleFirstScanUTCMilliseconds	50	TBD
GranuleLastScanUTCDate	50	TBD
GranuleLastScanUTCTime	50	TBD
GranuleLastScanUTCMilliseconds	50	TBD
SoftwareVersion	50	TBD
DatabaseVersion	50	TBD
TotalQualityCode	50	TBD

Table 6: JAXAInfo Group

Metadata Element	Estimated Size (bytes)	Description
LongitudeOnEquator	50	TBD
UTCDateOnEquator	50	TBD
UTCTimeOnEquator	50	TBD
UTCMillisecondsOnEquator	50	TBD
CenterScanUTCDate	50	TBD
CenterScanUTCTime	50	TBD
CenterScanUTCMilliseconds	50	TBD
FirstScanLat	50	TBD
FirstScanLon	50	TBD
LastScanLat	50	TBD

Table 7: JAXAInfo Group

Metadata Element	Estimated Size (bytes)	Description
LastScanLon	50	TBD
NumberOfRainScans	50	TBD

Table 8: GprofInfo Group

Metadata Element	Estimated Size (bytes)	Description
Satellite	10	Name of satellite.
Sensor	10	Name of sensor.
OceanDatabase	100	Name of the ocean database file.
LandDatabase	100	Name of the land database file.
StructureFlag	10	Flag as to whether cluster was computed. If cluster was computed, StructureFlag = 1. If cluster was not computed, StructureFlag = -1 and clusterNumber and clusterScale are set to missing.
nSpecies	10	Number of hydrometeor species in the cluster array.
nFIndex	10	Number of freezing height indices in the cluster array.
nLayer	10	Number of layers in the cluster array.
nCluster	10	Number of clusters in the cluster array.
Comment1	100	Comment written by algorithm.
Comment2	100	Comment written by algorithm.
Dummy	500	Comment written by algorithm.

Table 9: SwathHeader Group

Metadata Element	Estimated Size (bytes)	Description
NumberScansInSet	50	The scans read by TKreadScan are a "set". For single swath data, one scan is read so NumberScansInSet=1. For multiple swath data, one TKreadScan may read more than one scan. For example, for SSM/I data one TKreadScan reads one low frequency scan and two high frequency scans. Therefore NumberScansInSet=1 for the low frequency swath and NumberScansInSet=2 for the high frequency swath.
MaximumNumberScansTotal	50	The maximum allowed number of total scans in this swath. Total scans = overlap scans before granule + scans in granule + overlap scans after granule.
NumberScansBeforeGranule	50	The number of overlap scans before the first scan of the granule in this swath.
NumberScansGranule	50	The number of scans in the granule in this swath.
NumberScansAfterGranule	50	The number of overlap scans after the last scan of the granule in this swath.
NumberPixels	50	The number of IFOV in each scan in this swath.
ScanType	50	The type of scan in this swath. Values are: "CROSSTRACK" and "CONICAL"

Table 10: GridHeader Group

Metadata Element	Estimated Size (bytes)	Description
BinMethod	50	Method used to obtain the value in each grid box. The only defined value is "ARITHMEAN".
Registration	50	Representative location within the grid box. The only defined value is "CENTER".
LatitudeResolution	50	North-south size of a bin (degrees latitude).
LongitudeResolution	50	East-west size of a bin (degrees longitude).
NorthBoundingCoordinate	50	Northern-most latitude (degrees) covered by the grid.
SouthBoundingCoordinate	50	Southern-most latitude (degrees) covered by the grid.
EastBoundingCoordinate	50	Eastern-most longitude (degrees) covered by the grid.
WestBoundingCoordinate	50	Western-most longitude (degrees) covered by the grid.
Origin	50	Origin of the grid indices, e.g., "SOUTHWEST".