

ABI File Naming Conventions

The filenames for GOES-R product and data files follow a set of conventions to achieve standardization. GOES-R series product and data filenames are case-sensitive and no greater than 255 characters. Alphanumeric characters, underscores, hyphens, and periods are used, and blanks are not used. GOES-R series filenames indicate the source, content, file type, and creation date and time of the product or data. In the case of observation data, the period of time when the observation occurred is included. The syntax for capturing this information is structured. String fields are used to identify each of these characteristics. String fields are concatenated together in a prescribed order and delimited by underscores to create a filename string. A period is used to delimit the final string field from the file extension, which indicates the file format.

Filename Syntax

The syntax of both L1b and L2 ABI data filenames makes use of underscores (“_”) to separate filename fields.

An ABI filename will look like this:

<SE>_<DSN>_<PID>_<Obs Start Date & Time>_<Obs End Date & Time>_<Creation Date & Time>.<FE>

where:

- SE = System Environment
- DSN = Data Short Name
- PID = Platform Identifier
- Obs Start Date & Time = Observation Period Start Date & Time
- Obs End Date & Time = Observation Period End Date & Time
- Creation Date & Time = File Creation Date & Time
- FE = File Extension

These filename fields are explained in more detail in Appendix A, specifically Table A-1, of the Product Definition and User’s Guide (PUG) Volume 5: Level 2+ Products” and repeated here. The Data Short Name (DSN) is explained in section 8.0 of the “PUG Volume 1: Main” and the “PUG Volume 5: Level2+ Products” Appendix A, also repeated here with some adaptations as **Table 1**.

Table 1 Common Filename String Fields (Table A-1 in PUG Volume 5)

Common String Field	Description	Values and Meanings
System Environment	Defines whether the file is created by the operational system, a test system, or another system. Also defines whether the data in the file is real-time, test, playback, or simulated data.	"OR" = operational system real-time data "OT" = operational system test data "IR" = test system real-time data "IT" = test system test data "IP" = test system playback data "IS" = test system simulated data
Platform Identifier	Identifies the applicable GOES-R series Satellites	"G16" = GOES-16 "G17" = GOES-17 "G18" = GOES-18 "G19" = GOES-19
Observation Period Date & Time	The Start and End times of when the data in the file were observed.	"sYYYYYDDDHHMMSSs" = Start Day & Time "eYYYYYDDDHHMMSSs" = End Day & Time YYYY = 4-digit year (e.g. 2021) DDD = 3-digit day of the year (001-366) HH = 2-digit hour UTC (00-23) MM = 2-digit minute (00-59) SSs = 3-digit seconds (00.0-60.9), 60 indicates leap second and the third "s" is tenths of a second (0-9)
Creation Date & Time	The date & time the file was created.	"cYYYYYDDDHHMMSSs" = Creation date and time
File Extension	Indicates the type of file format	".nc" = netCDF-4 file

Note: Real-time data created by the operational system (i.e., "OR") support the operational mission. This is the most common type of ABI data file that users will encounter whether ingesting data via direct broadcast, from NOAA CLASS, or other types of internet-based distribution systems such as PDA or

The Data Short Name (DSN) is a GOES-R standard term for a string field identifying the content of a GOES-R product or data file. DSN strings for ABI L1b and L2 product files are composed of multiple concatenated sub-fields.

For ABI Level 1b product files, the DSN is a concatenation of:

- Instrument
- Processing Level
- Product Acronym
- ABI Sector Type
- ABI Scan Mode
- ABI Channel Number

Just as the other filename fields are separated by an underscore, so is the DSN from the other fields. The sub-fields within the DSN, however, are separated by a hyphen “-” with two exceptions. The Product Acronym and the ABI Sector Type are not separated. The ABI Mode and the ABI Channel are separated by a capital letter “C” where the two digits after the C are the channel number. “Table A.1 of the PUG Volume 5: Level 2+ Products” has more details and is adapted to appear here as **Table 2**.

Table 2 Product Filename DSN Sub-Fields

Level 2+ Product DSN Sub-Field	Values and Meanings
Instrument	“ABI” = Advanced Baseline Imager
Processing Level	“-L1b” = Level 1b “-L2” = Level 2
Product Acronym	For L1b this is always “-Rad” for Radiances For L2 see Table 3
ABI Sector Type	“F” = Full Disk “C” = CONUS “M1” = Mesoscale Region 1 “M2” = Mesoscale Region 2
ABI Mode	“-M3” = ABI Scan Mode 3* “-M4” = ABI Scan Mode 4 “-M6” = ABI Scan Mode 6
ABI Channel	“C##” = Channel number where ## can be between 01 and 16.**

* GOES-17 has a special mode called Mode 3 Cooling Timeline which will be denoted in the filename as M3, but it is not exactly the same as regular Mode 3 as there are no CONUS scans during that timeline and half as many Mesoscale sectors scanned as regular Mode 3.

** Only L1bRad, single band Cloud and Moisture Imagery Product (CMIP), and Derived Motion Winds (DMW) files have channel numbers.

For example, the DSN for an ABI Level 1b Radiances full disk channel 7 product sensed in mode 6 is “ABI-L1b-RadF-M6C07

There are many L2 products with short acronyms that can appear in the DSN. **Table 3** is adapted from Table A.1 in the “PUG Volume 5: Level 2+ Products.”

Table 3 Product Acronym List for L2+ Processing Level Files

Product Acronym	Meaning
ACHA	Cloud Top Height
ACHT	Cloud Top Temperature
ACM	Clear Sky Masks
ACTP	Cloud Top Phase
ADP	Aerosol Optical Depth
CMIP	Cloud and Moisture Imagery
MCMIP	Multiband Cloud and Moisture Imagery
COD	Cloud Optical Depth
CPS	Cloud Particle Size Distribution
CTP	Cloud Top Pressure
DMW	Derived Motion Winds
DMWV	Derived Motion Winds for ABI Band 8
DSI	Derived Stability Indices
DSR	Downward Shortwave Radiation: Surface
FDC	Fire / Hot Spot Characterization
FSC	Snow Cover
LST	Land Surface (Skin) Temperature
LVMP	Legacy Vertical Moisture Profile
LVTP	Legacy Vertical Temperature Profile
RRQPE	Rainfall Rate/QPE
RSR	Reflected Shortwave Radiation: TOA
SST	Sea Surface (Skin) Temperature
TPW	Total Precipitable Water

Example Filename

OR_ABI-L1b-RadF-M6C13_G17_s20210481330321_e20210481339399_c20210481339454.nc

This is the operational system real-time (“OR”), Advanced Baseline Imager (“_ABI”), Level 1b (“_L1b”) Radiances (“_Rad”), Full Disk (“F”), Mode 6 (“-M6”), Channel 13 (“C13”), GOES-17 (“_G17”) file with a starting scan time of February 17, 2021 at 13:30:32.1 UTC (“_s20210481330321”), ending scan time of February 17, 2021 at 13:39:39.9 UTC (“_e20210481339399”), which was created on February 17, 2021 at 13:39:45.4 UTC (“_c20210481339454”), and stored as a netCDF-4 file (“.nc”).

Following the syntax described in the section on Filename Syntax:

<SE>_<DSN>_<PID>_<Obs Start Date & Time>_<Obs End Date & Time>_<Creation Date & Time>.<FE>

Where:

- SE = System Environment (“OR”)
- DSN = Data Short Name (“_ABI-L1b-RadF=M6C13”)
- PID = Platform Identifier (“_G17”)

- Obs Start Date & Time = Observation Period Start Date & Time (“_s20210481330321”)
- Obs End Date & Time = Observation Period End Date & Time (“_e20210481339399”)
- Creation Date & Time = File Creation Date & Time (“_c20210481339454”)
- FE = File Extension (“.nc”)

References

The Product Definition and User’s Guide (PUG) Volume 1: Main <https://www.goes-r.gov/users/docs/PUG-main-vol1.pdf>

The Product Definition and User’s Guide (PUG) Volume 5: L2+ Products <https://www.goes-r.gov/products/docs/PUG-L2+-vol5.pdf>

Other GOES-R related links, including links to file access:
<http://cimss.ssec.wisc.edu/goes/goesdata.html#data>

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Thanks to all the authors of the Product Definition and Users’ Guides (PUG). (<https://www.goes-r.gov/resources/docs.html>)