

Download & Visualize GPM Level-2 Orbital Data

Objective:

Learn to access GPM orbital data and visualize using PPS/STORM/THOR and Panoply. This procedure can also be used for GPM Level-3 data and for TRMM data products.

Complete the user registration for PPS if you have not already registered.

- Go to: <https://registration.pps.eosdis.nasa.gov/registration/>
- You will receive a confirmation link in your email to verify your email address
- **Your email will be your username and password** to access data from PPS


GPM Level-2 data can be downloaded from i) Mirador, ii) Direct FTP from a dedicated server, and iii) PPS/STORM. This exercise focuses on access via PPS/STORM and from FTP sites.



There are 4 parts to this exercise:


1. GPM Level-2 data download and visualization using PPS/STORM
2. GPM Level-2 Data from FTP Servers
3. Display GPM Level-2 file using Panoply
4. Procedure to submit request for batch download

Part 1: GPM Level-2 Data Download and Visualization Using PPS/STORM

- Go to <https://storm.pps.eosdis.nasa.gov/storm/>
- Select **PPS Data Access**
- Enter the email address you used for registration to PPS
- You will see the following window

Order Type 


Standalone Order  Yes OR/AND Subscription  Yes


Coincidence 

None or Satellite-Ground Validation Site Satellite-Satellite

Options

Note: These features are available only for certain Product Types

Specific Geographic Area (including % of precip. filter)  Yes

Parameter Subsetting (Can choose one product only)  Yes

- Review the **Options**
- Select 'Yes' for **Specific Geographic Area (including % of precip. filter)**
- You will see **Subset Geographically** as the regional selection. However, this feature may not work for Level-2 data.
- When you select 'Yes,' you will get the following window:

Options

Note: These features are available only for certain Product Types

Specific Geographic Area (including % of precip. filter) ? Yes

Subset Geographically ? Yes

Include only swath based products with % of precipitation >= ?

Parameter Subsetting (Can choose one product only) ? Yes

- Go to the **Product Type**
- In the table, under the **Data Type**, select **2A**
 - You will see available Level 2A products – these are orbital products
- From the **Instrument** select **GMI**
- From the **Algorithm** column in the table, select **2AGPROFGMI**

Product Type

Required

Left click on the header to sort rows. Right click to show/hide columns

Select	Data Type	Algorithm	Start Time	Frequency	Satellite or Ground Validation Site	Instrument	Primary Content	Format	Spatial Extent
<input type="checkbox"/>	2A					GMI			
<input type="checkbox"/>	2A-CLIM	2AGPROFGMI	2014-03-04 17:59:32	ORBIT	GPM	GMI	Precipitatic	hdf5	
<input type="checkbox"/>	2A	2AGPROFGMI	2014-03-04 17:59:32	ORBIT	GPM	GMI	Precipitatic	hdf5	
Total Product Types selected: 0 Note: Some selected Product Types might not be visible if filters are used									

- Once you select the product, you will get calendar icons to choose **Temporal Criteria**

- Choose January 4, 2016 (00:00 hour) to January 5, 2016 (23.59 hours)

25 granules are found.
Please scroll to the bottom of the page to view the Search Results.

Temporal Criteria


Date Range Orbit Numbers

Valid range is between 20140304 and 20160616

YYYYMMDD [HH:MM]
[] = optional fields

Start Date/Time:

Stop Date/Time:

- You will see a list of swaths available for the selected time range
- Click on the camera icon  to see each swath
- You can click on the green down arrow to download the file in HDF5 format
- Select a swath and click on **THOR**
- Once you make a selection, a new window will pop up. In THOR:
 - Under **File** on the left, under **S1** select 'surfacePrecipitation'
 - You will see the swath image in the THOR window. Click on the map to zoom in on any area.
 - Click on **i** and then on any location to see the pixel latitude-longitude and precipitation value

Part 2: GPM Level-2 Data from FTP Servers

- Go to <https://pmm.nasa.gov/data-access/downloads/gpm>
- You will get the following table

Data Access

- Extreme Weather News
- ▼ Data Downloads & Documentation
- TRMM
- GPM**
- Ground Validation
- Data Sources
- Data Recipes
- Data News
- Google Earth
- NASA Worldview
- Using the PPS FTP
- Training
- Data FAQ

Connect With Us

GPM Data Downloads

** Use of the PPS FTP and STORM requires you to first register your email address. [Click here to register.](#)*

Level 3
Level 2
Level 1

Derived geophysical parameters at the same resolution and location as those of the Level 1 data.

- ▶ 2B-CMB: Combined GMI + DPR single orbit rainfall estimates
- ▶ 2A-Ku: DPR Ku-only single orbit rainfall estimates
- ▶ 2A-Ka: DPR Ka-only single orbit rainfall estimates
- ▶ 2A-DPR: DPR Ka&Ku single orbit rainfall estimates
- ▼ 2A-GPROF-constellation: Single-orbit rainfall estimates from each passive-microwave instrument in the GPM constellation

- Select **Level 2**
- You will see a list of Level 2 products

- Select **2B-CMB: Combined GMI+DPR single orbit rainfall estimates**
- The following table will be displayed with links for Near Real-Time (NRT) and past data

- [GPM Combined Radar-Radiometer Precipitation Algorithm Theoretical Basis Document](#)
- [CMB Level 2 Caveats](#)

Resolution ?	Region - Dates ?	Latency ?	Format ?	Source ?	DL ?
5km	orbital, Past 2 weeks (NRT)	3 hours (RT); 40 hours (Prod)	HDF5	NRT: FTP (PPS)*	
			HDF5	Prod: FTP (PPS)*	
			HDF5	Prod: STORM	
			HDF5	Mirador	
			OPeNDAP	OPeNDAP	
			HDF5	Prod: FTP (GES DISC)	

- Click on **Prod: FTP (PPS)**
- You will see the **FTP Servers** for GPM and TRMM data downloads
 - Note that you can go directly to any of these servers once you know the links through the **FTP Servers**
- For GPM Level-2 data, select <ftp://arthurhou.pps.eosdis.nasa.gov/>
- Login with your email address for username and password
- You will see the following directories

Index of <ftp://arthurhou.pps.eosdis.nasa.gov/>

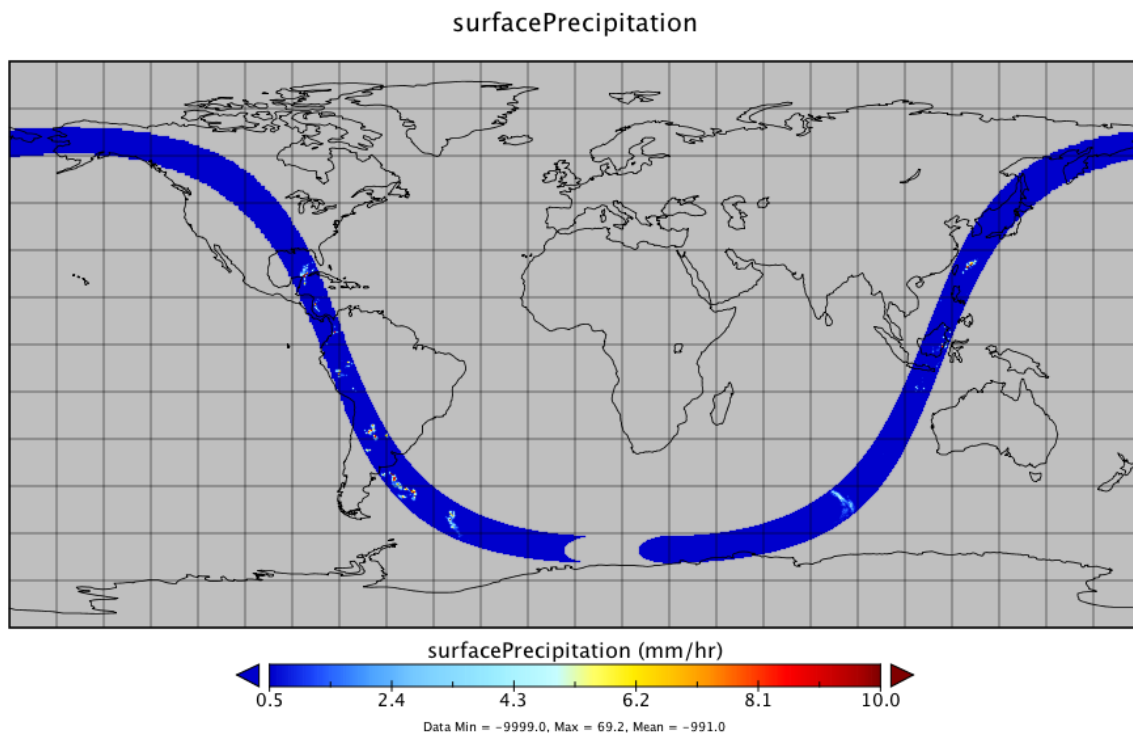
[Up to higher level directory](#)

Name	Size	Last Modified
ftpdata		10/8/14 12:00:00 AM
gpmallversions		8/2/14 12:00:00 AM
gpmdata		8/2/14 12:00:00 AM
gpmuser		8/2/14 12:00:00 AM
itedata		8/27/14 12:00:00 AM
pub		10/7/14 12:00:00 AM
robots.txt	1 KB	9/18/13 12:00:00 AM
sm		12/9/15 12:00:00 AM
trmmdata		8/2/14 12:00:00 AM

- Select **gpmallversions** and review the file **README.txt**
- Go to **2016 > 01 > 04** (for January 4, 2016)
- Click on the directory for **GPROF**
- Click and select **2A-CLIM.GPM.GMI.GPROF2014v2-0.20160104-S035451-E052722.010510.V04A.HDF5** to save on your computer

Part 3: Display GPM Level-2 Files Using Panoply

- Click on the **Panoply** icon on your computer to open a window
- On the top bar, go to **File > Open**
- Navigate to the directory and click on the Level-2 HDF5 file that you saved in Part 2
- You will see a list, **Long Name**, in the Panoply window
- Go down the list to find **Surface Precipitation** and double click
- You will get a **Create Plot** window
- Select **Create georeferenced Longitude-Latitude plot**
- Click on **Create** at the bottom right
- You will get the GPM GPROF data displayed in a swath
- Click on **Scale** from the i=options below the plot
- Set **Scale Range: Min** to 0.5 and **Max** to 10.0 and click Enter on your computer
- Select **Scale Label** as **Default** to get the units displayed on the color bar
- You will see pixels where rain rate is in this range
- You can save this file as a .png image on your computer by clicking on **File > Save Image As**



Surface precipitation plot from Panoply

Part 4: Procedure to Submit Request for Batch Download

- Go to <https://storm.pps.eosdis.nasa.gov/storm/>
- Select **PPS Data Access**
- Enter the email address you used for registration to PPS
- Under **Order Type** (right below where you enter your email), select the option **Subscription, Yes**
- From the **Product Type** select a GPM product (for example, 3IMERGM) for the time period of your choice
- You will get the data file list for the time you chose
- Select all the files you want to get
- Click on **Submit Request**
 - This will create an order of your data. You will receive an email about the data request.
- You will get another email when the data is ready to be downloaded