



Monitor GPM-IMERG Precipitation For Flood Monitoring

25 July 2018

Exercise Objective

- Learn to use Giovanni to monitor GPM-IMERG precipitation
- Learn to monitor near-real time precipitation using <https://pmm.nasa.gov/gpm/imerg-global-image>



Recent Torrential Rain in Japan

- For more information see:

<https://www.theguardian.com/world/2018/jul/08/death-toll-increases-as-record-rains-devastate-parts-of-japan>

<http://gdacs.org/report.aspx?eventid=1000208&episodeid=1&eventtype=FL>



Subset Data and Animate Daily Maps

1. Go to Giovanni: <http://giovanni.gsfc.nasa.gov/giovanni>
2. On the Giovanni page you will see the following options:
 - **Select Plot:** allows selection of analysis options
 - **Select Data Range:** allows selection of a time period
 - **Select Region (Bounding Box or Shapefile):** allows selection of a geographic region by latitude-longitude, map, or shapefile
 - **Keyword:** allows search of data parameters by keyword
 - **Plot Data:** (located on the bottom right of the page) begins the action to make a desired plot

Subset Data and Animate Daily Maps

3. Enter the following options:

– Next to **Keyword**

- Enter IMERG Early. Click **Search**
- Select **Daily Accumulated Precipitation**



Subset Data and Animate Daily Maps

4. Under Select Plot

- Select **Maps: Animation**

- Under Select Region (Bounding Box or Shape)

- Enter the longitude-latitude around Parana:
125.0, 30.0, 150.0, 50.0

- Note: east longitudes and north latitudes are positive whereas west longitudes and south latitudes would be negative

- Click on the map icon to see the region

- Under Select Date Range (UTC)

- In the YYYY-MM-DD windows, enter 2018-07-05 for start and 2018-07-09 for the end date

- Click on **Plot Data** (on the bottom right of the screen)

- You will see a work flow starting and then will get the animation window

Discussion Questions

1. Which day had the maximum rainfall? Note the location in approximate latitude and longitude
2. What was the highest magnitude of rainfall?

Download and View Daily IMERG Map in Google Earth

5. At the bottom right of the screen, click on **Back to Data Selection**

Enter the following options:

- Under **Select Plot**, change to **Maps: Time Averaged Map**
- Under **Select Date Range (UTC)** enter the date when the rainfall was maximum both for the start and the end dates
- Click on **Plot Data** (on the bottom right)
- You will get a map of daily rainfall
- Zoom in and see how the rainfall is distributed
- Click on the **Downloads** link on the left, and you will see multiple file options.
- You can save the .nc file on computer for further analysis in GIS (optional)
- You can view the .kmz file with Google Earth (optional) and view the data <https://www.google.com/earth/>



Subset Data and Animate Half Hourly Maps

6. At the bottom right of the screen, click on **Back to Data Selection**

Enter the following options:

Select **Half hourly Precipitation**



Under Select Plot

- Select **Maps: Animation**

- Under **Select Date Range (UTC)** enter the date when the rainfall was maximum both for the start and the end dates
- Click on **Plot Data** (on the bottom right of the screen)
- You will see a work flow starting and then will get the animation window
- View the animation: If you follow half-hourly rain in near real time, could you anticipate or assess possibility of flooding over certain area?



Monitor Near-Real Time Rainfall

7. Go to <https://pmm.nasa.gov/>
 - You will see a map of LATEST HALF-HOURLY PRECIPITATION
 - Click on the map and you will be taken to <https://pmm.nasa.gov/gpm/imerg-global-image>
 - In the middle of the page you will see **View an Animation of the 7 Days of IMERG Precipitation**
 - Click on the animation link and view half-hourly rainfall during the last 7 days
 - Not where you see heavy precipitation
 - Would you be able to see where flooding is likely to occur?

