GPM Webinar-3
June 14, 2016

Objective: Subset and download GPM IMERG (Level-3 gridded) near-real time precipitation data and import into QGIS

QGIS, Quantum Geographic Information System, is an open software and can be freely downloaded and installed on Windows, Mac, or Linux operating systems (http://www.qgis.org).

For installation of QGIS: Please see the following link with step-by-step instruction from Applied Remote Sensing Training web page:
http://arset.gsfc.nasa.gov/sites/default/files/disasters/Advanced2016/QGIS_Download%20and%20Install.pdf

Part 1: Download IMERG Precipitation

IMERG Early Precipitation Data over the US can be downloaded by using Giovanni, Mirador, or PPS STORM. Demonstration of how to download GPM precipitation data using these tools can be found at: https://gsfc610.adobeconnect.com/p5kol0w935g/

This exercise uses Giovanni to first download IMERG Early data

Go to http://giovanni.gsfc.nasa.gov/giovanni/

On the Giovanni page you will see the following options:

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Select Plot: Allows selection of analysis options
Select Date Range: Allows selection of time period
**Select Region (Bounding Box or Shapefile):**   Allows section of a geographic region

	(By latitude-longitude, by map, or by shapefiles)
Keyword:	Search data parameter by keyword
Plot data (bottom right):	Make desired plot

Example: Download IMERG Early Precipitation Data

Go to (http://giovanni.gsfc.nasa.gov/giovanni/)
Enter the following options

- **Select Plot:**
  Maps: Accumulated
- **Select Region (Bounding Box or Shapefile)**
  Click on **'Show Shapes'** and select **'Countries'** **'United States'**
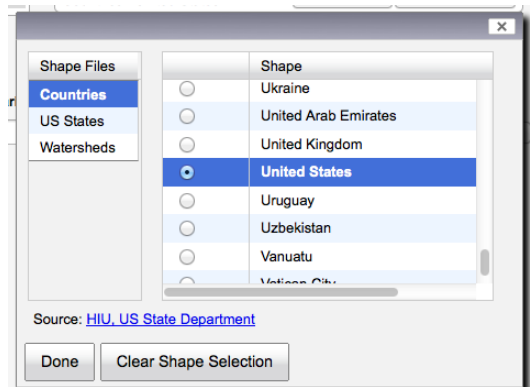
- Scroll down **Keyword (center of page)**
  Type 'IMERG Early' (or for more data options type 'GPM' or 'IMERG'
  and then click Search

- Under **Variable Name**, select the box for **'Multi-satellite precipitation with climatological gauge calibrated Early Run'** Data

- **Select Date Range (UTC)**
  Using the calendar select the most current day or any time of your interest:

- Click on **Plot Data**   (at the bottom right)
     You will get a plot of accumulated rain for the selected day/period
- Explore **Options** (top right of the map) to change colors and **Re-plot** if you wish
- Choose **'Downloads'** from 'History' on the right most side of the window
- You will see IMERG data file in for the region and time you selected in
               1) NetCDF format (.nc), 2) Geotiff, and 3) png image
- These files can be downloaded/saved by clicking on them
- Click and save GeoTIFF and NetCDF files on your computer to import in QGIS

Part 2: Import IMERG Precipitation in QGIS

- Open QGIS on your computer
- From the top bar click on **'Web'**, select **'Open Layer Plugin'** and select a background map (this exercise uses **'OpenStreet Map'**)
-
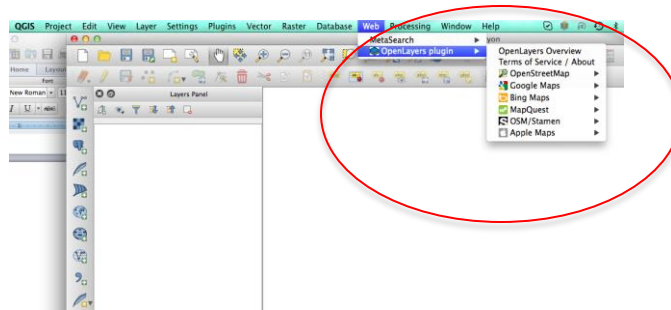
Zoon on to the US
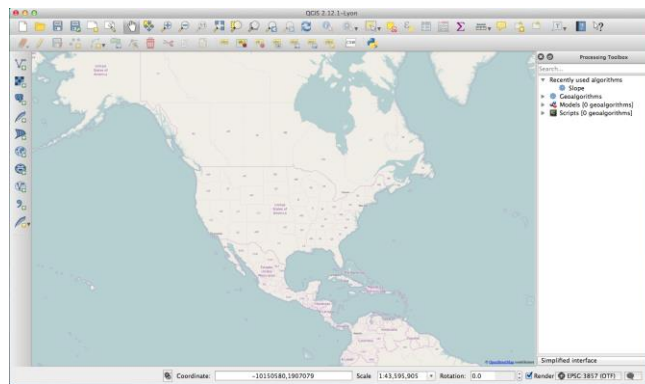
- Import the IMERG data using the 'Add Raster Layer' button
- Select the 'nc' file you saved on your computer in Part-1
       You will see the rater layer displayed on the map in single color
- Click on **'Layer'** in the top bar and select **'properties'** to edit the map visualization and analysis

● From the left side menu select **'Style'**
● In '**Render type'** select '**Singleband pseudocolor'**
● Choose color table from **'Generate new color map'**
  Choose '**mode'** as continuous or **'Equal Interval'**
● Click on **'Apply'** and '**OK'**
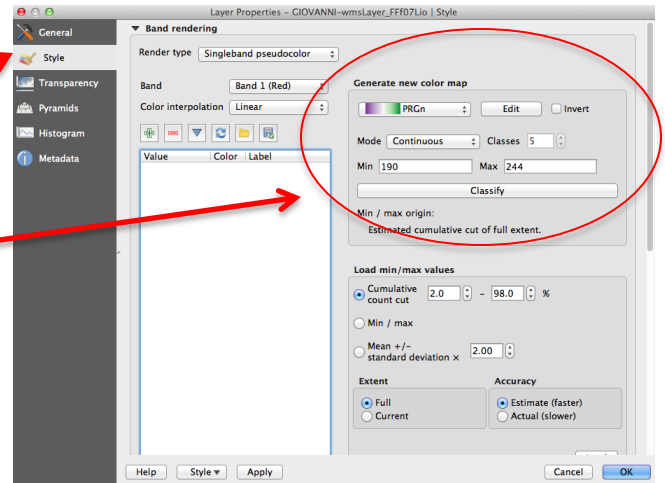
● Finally from the left side menu select **'Transparancy'** and choose appropriate % value of transparency to see the OpenStreet Map under the precipitation layer
● You will get the precipitation map as shown below

Accumulated Precipitation values in mm
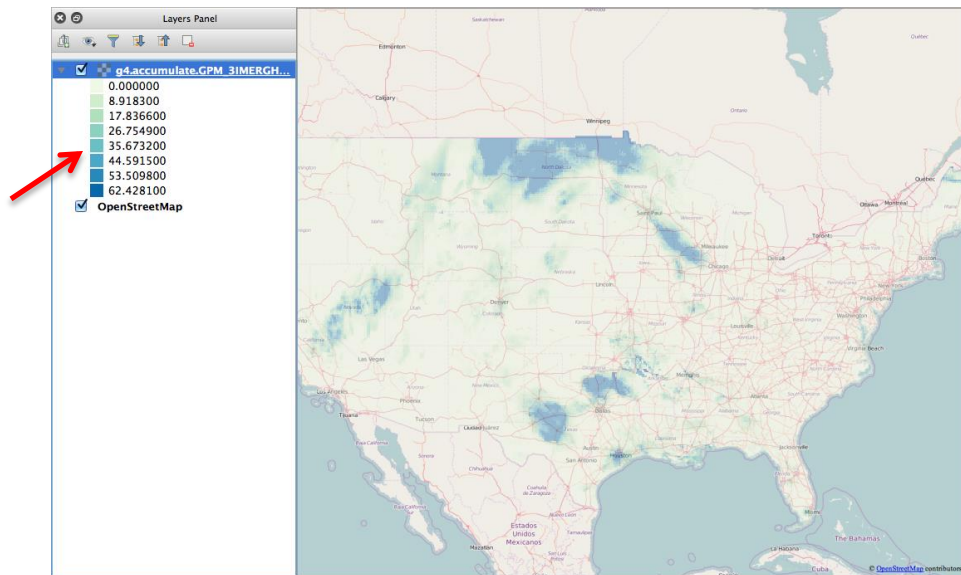
Repeat the same steps to display Geotif image file you saved in Part-1.