QGIS & Panoply

Objective:

Test QGIS and Panoply software installation and learn to display GeoTIFF, NetCDF, and HDF data. We will be using these software programs and procedures throughout this workshop.

Note: Data files in GeoTIFF and NetCDF format can easily be imported as raster layers in QGIS. But HDF data files need coordinate transformation to be imported into QGIS. Panoply can display NetCDF and HDF files with the same procedure.

Check QGIS and Panoply

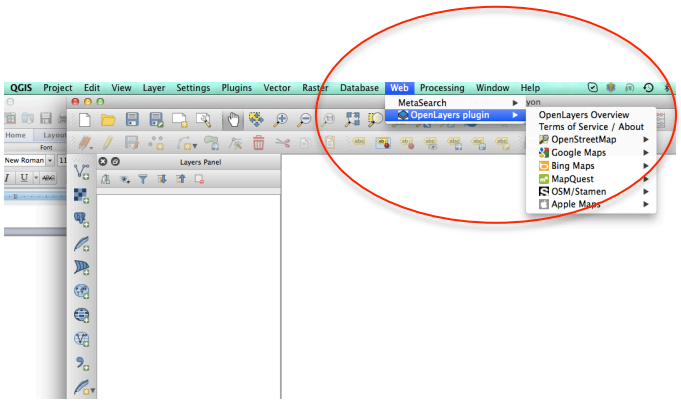
- If you have not installed QGIS on your computer, please go to the following document and follow the procedure to download and install QGIS: http://bit.ly/ARSET-QGIS-Disasters
- If you have not installed Panoply on your computer, please go to the following link, download, and install Panoply:
  - http://www.giss.nasa.gov/tools/panoply/download.html
- Further information on Panoply is available from:
  - https://earthdata.nasa.gov/files/05PanoplyOrientation.pdf
  - http://earthdata.nasa.gov/files/05c_Panoply_Menu_Options.pdf
  - http://earthdata.nasa.gov/files/05b_How_to_Open_a_netcdf_file_in_Panoply.pdf

There are two parts to this exercise:

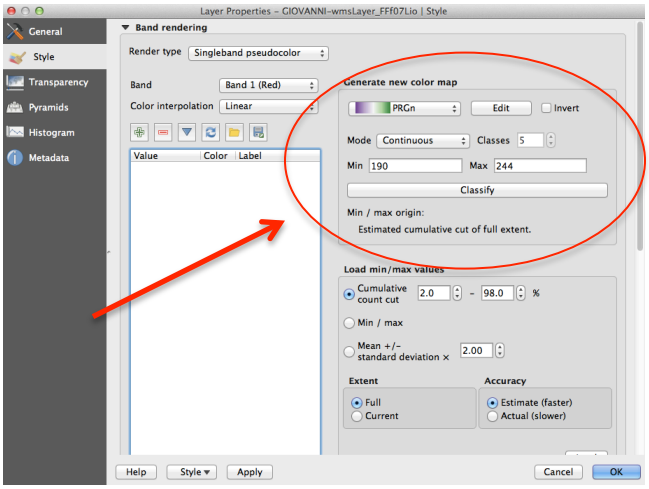
1. Practice Importing a GeoTIFF Data File into QGIS
2.
   a. Practice Displaying NetCDF Files Using Panoply
   b. Practice Displaying HDF Files Using Panoply

Part 1: Practice Importing a GeoTIFF Data File in QGIS

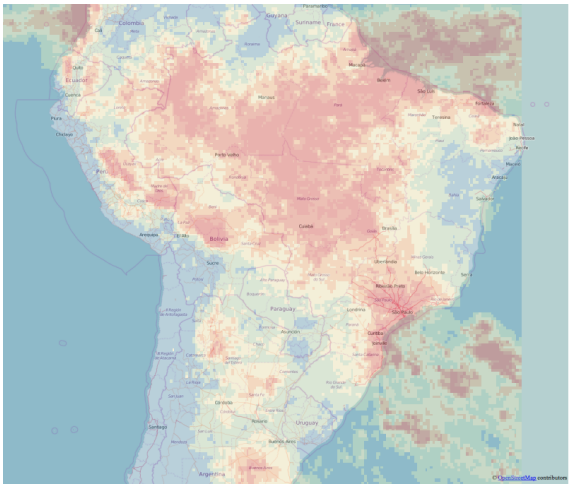
- Open QGIS on your computer
- From the top bar click on **Web**, then select **OpenLayers plugin** and select a background map (this exercise uses **OpenStreetMap**)



- Use the **Add Raster Layer** button  and select the GeoTIFF file you saved in the previous exercise for January 2011 TRMM monthly precipitation data
- You will see the raster layer displayed on the map
- 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 the **Render Type** select **Singleband pseudocolor**
- Choose a color table from **Generate new color map**
- Choose **Mode** as **Equal Interval**
- Set **Classes** to 12 (the default is 15)

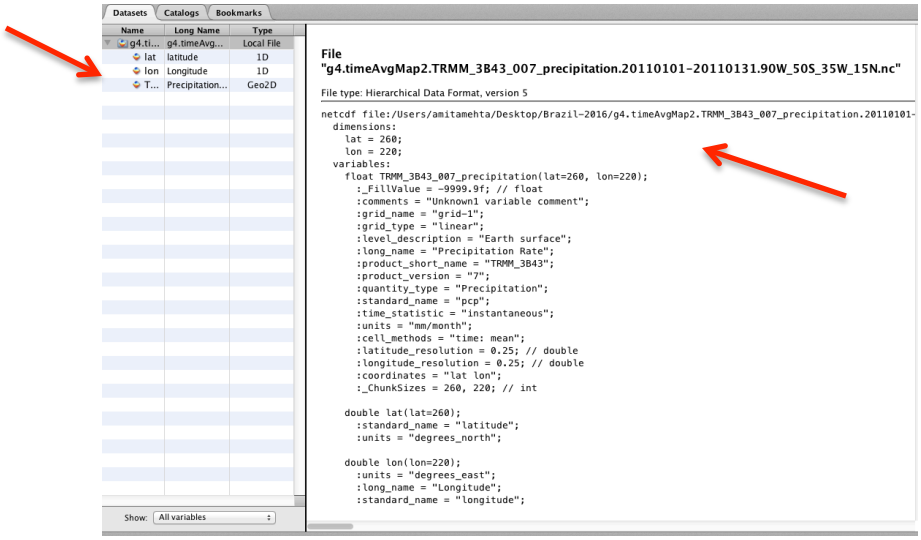


- Click on **Classify**
- Click on **Apply** (left window) and **OK** (right window)
- Click on **Layer** and reopen **Properties**
- From the left side menu, select **Transparency**
- Choose the approximate % value of transparency to see the OpenStreetMap under the precipitation layer
- Using the zoom in/out buttons on the top bar  , zoom in on the region of your interest
- Use  to move the map to center the area of interest
- You will get the precipitation .tiff map as shown below

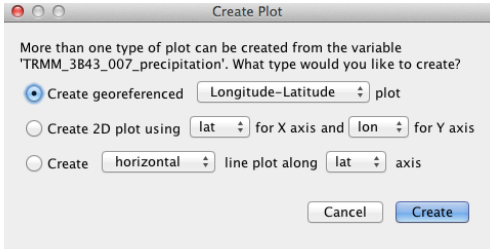


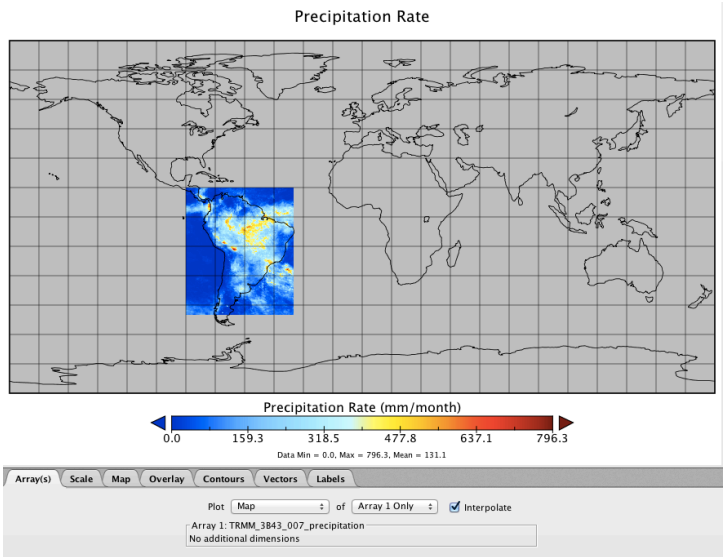
Part 2a: Practice Displaying NetCDF Files Using Panoply

- Open Panoply on your computer
- From the top bar go to **File**, then select **Open**
- This will open a file list on your computer. Select the TRMM monthly precipitation .nc file for January 2011 that you saved in the previous exercise.
- You will get a two-column window:
  - The left column will have the filename, data variable, and type information
  - The right column will have file metadata information



- Click on **Precipitation** in the left window
- You will get a **Create Plot** window
- Select **Create georeferenced Longitude-Latitude plot**
- Click on **Create** at the bottom right
- You will get the precipitation image as shown below





- Explore the **Scale** option below the image to change the color-scale range (you will see **Min** and **Max** value of the data)
- You can also change the **Color Table**

- Explore the **Map** option below the image to change the color-scale range

- You can change the projection, grid-spacing, center of the map, etc.
- From the top bar in the Panoply window, go to **File** to see the options for saving the image
- You can save this image as a .png, .jpg, .gif, or .tiff image
- You can also save the image as KMZ and view in Google Earth

Part 2b: Practice Displaying HDF Files Using Panoply

- Repeat Part 2a, but use the MODIS NDVI HDF file you saved in the previous exercise
- Choose the variable **NDVI** when you see the file information and metadata window open in Panoply. Continue with the rest of the steps in Part 2a.
- You will get the following image: