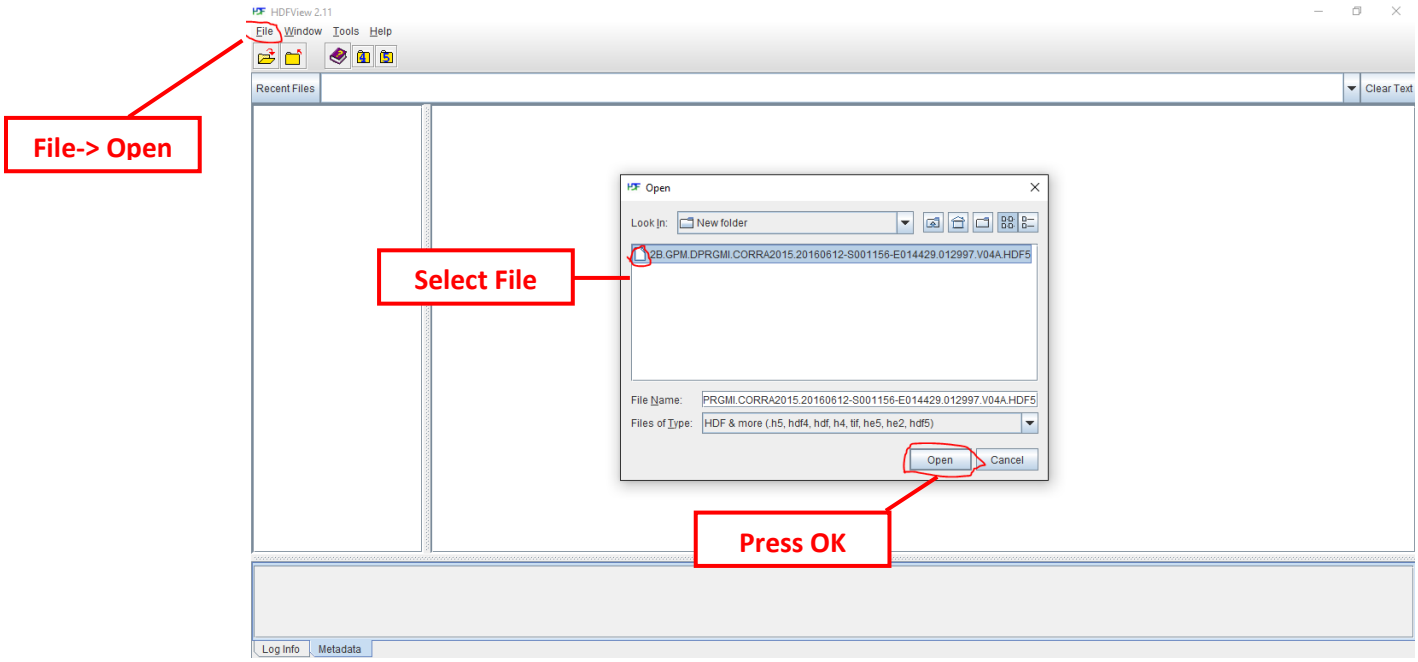
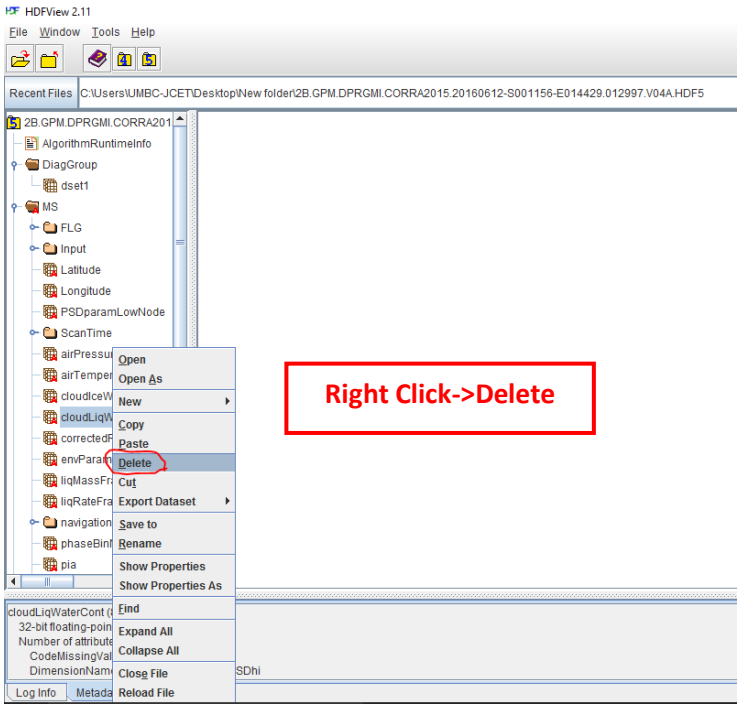
# GPM Visualization

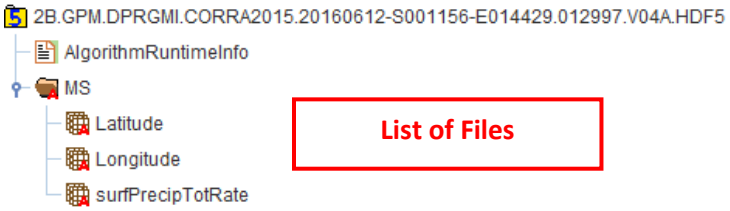
## *Preprocessing HDF Files:*

Some HDF files can consist of many internal variable files, which can severely slow down image availability in ArcMap. In most cases, this can cause the software to crash. To avoid this, it is best to use HDFview software to get rid of any unnecessary variables. HDFView download instructions and materials are located at https://www.hdfgroup.org/products/java/release/download.html .Once HDFView is installed and opened, navigate to file->open to select the HDF file you would like to examine. When the appropriate file is selected, click open.



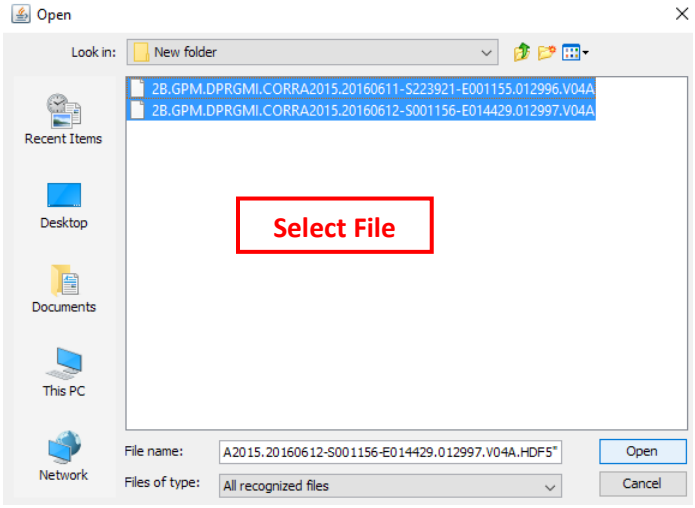

After opening the file, the internal variable files will be displayed on the left in the table of contents. Go through the files and right click on any layers that are not needed for the analysis and delete them. For the purpose of this tutorial, we are only interested in the "Surface Precipitation To Rate" layer, but never delete the latitude and longitude layers. Lastly, go to file->save to save the new file.



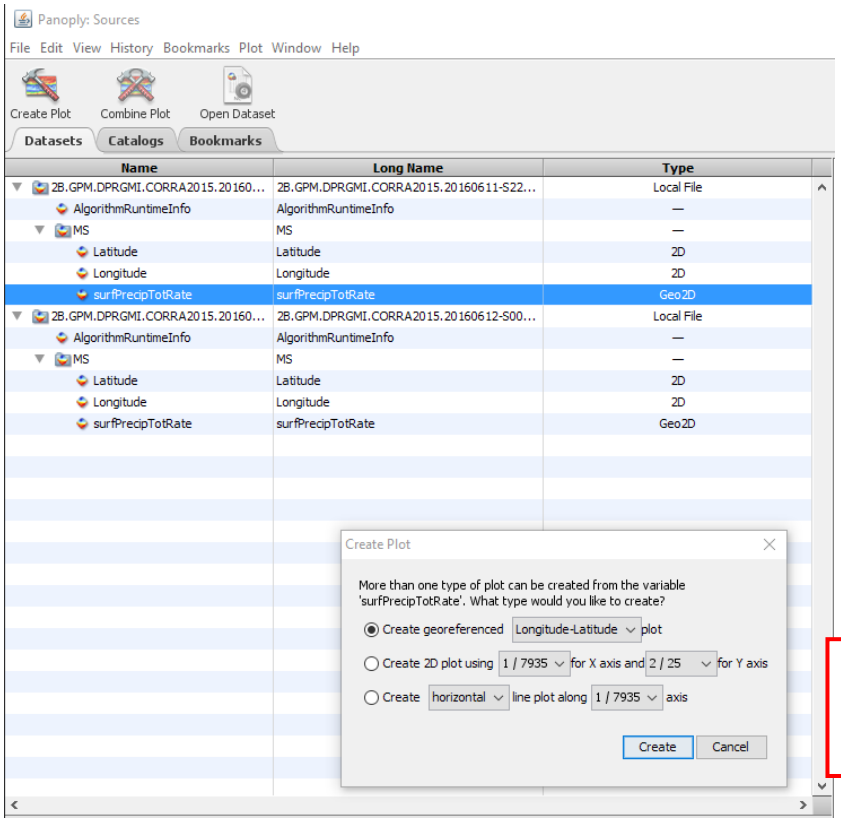




## *Visualizing HDF Files using Panoply:*

Panoply is a free graphical interface that is used to plot geospatial data. Download instructions and material are found at the following link http://www.giss.nasa.gov/tools/panoply/download.html. Once downloaded, open the app, select the files you wish to view, and press ok. The files of interest will then appear in the table of contents. Select the “SurfacePrecipToRate” layer in the table of contents and click on create plot. A GUI specifying chart type will pop up. Select “Georeferenced Longitude-Latitude Plot”. This will return the precipitation data projected on a map.

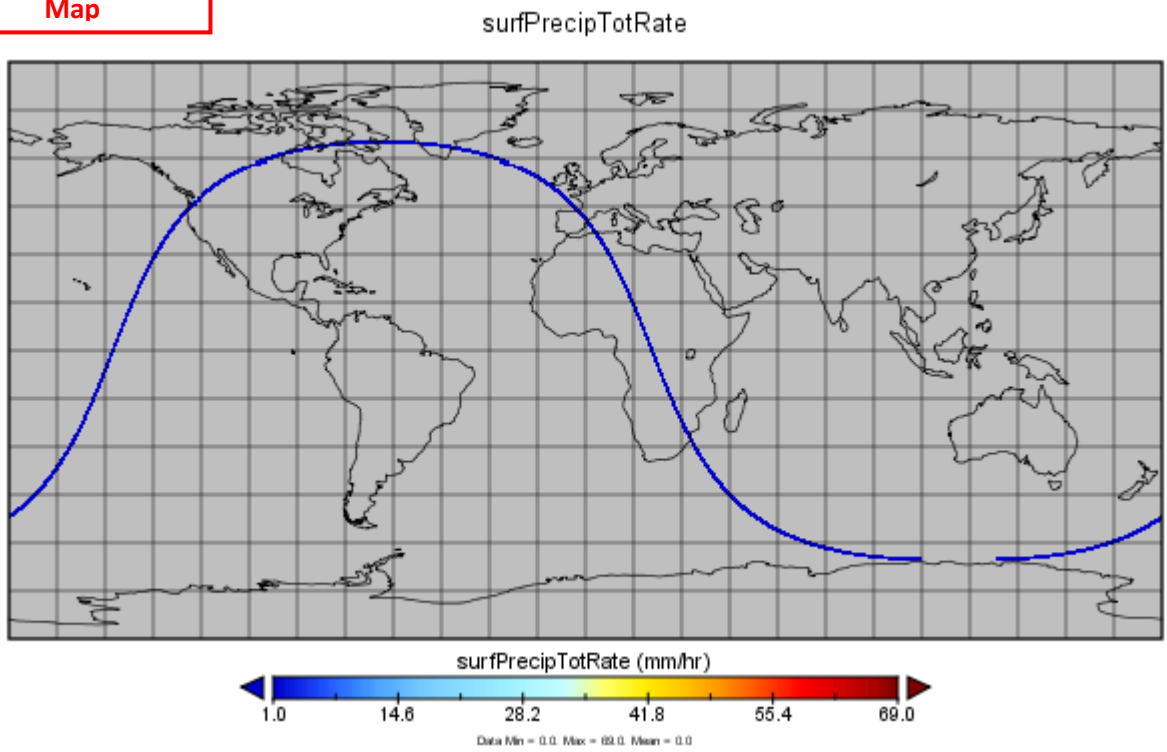



**Select File and Create Plot**



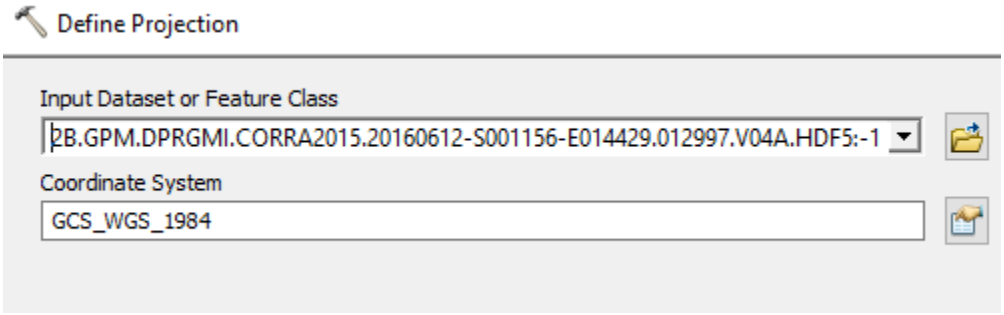

**Create Georeferenced Plot**

**Resultant Panoply Map**

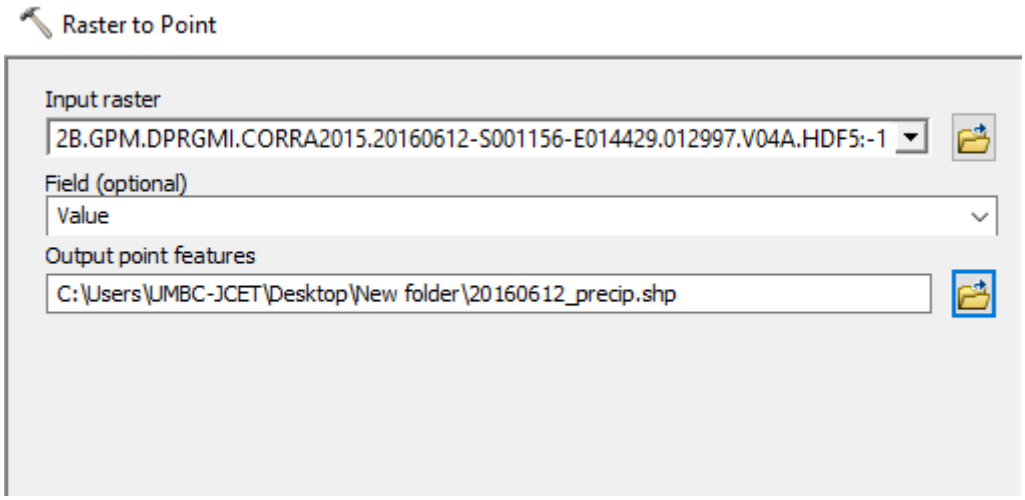


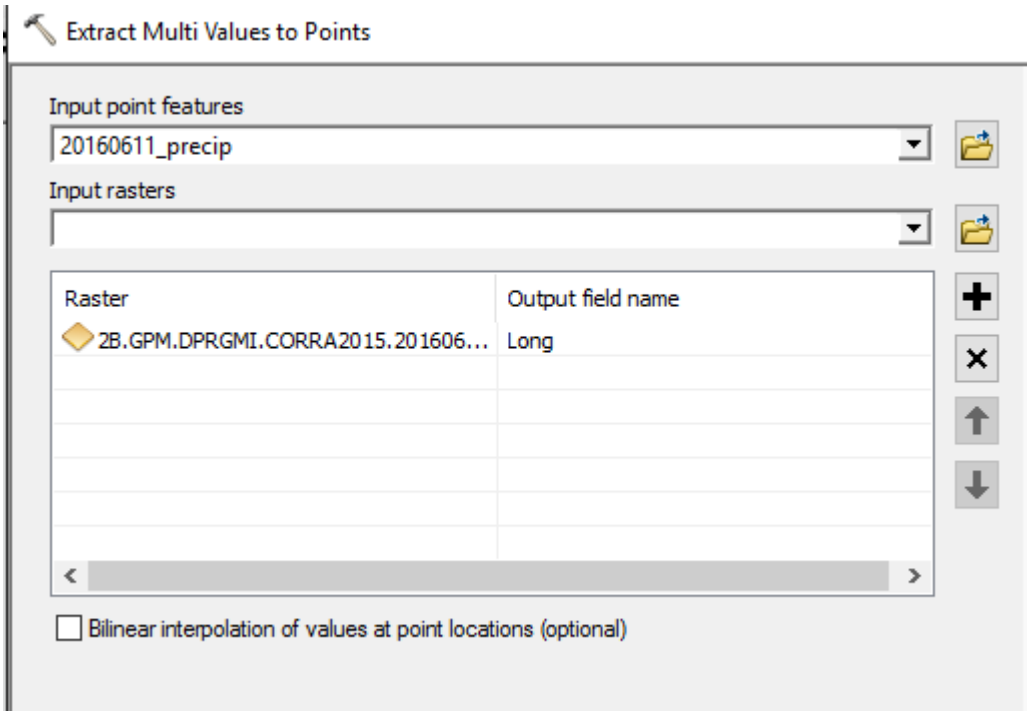

## *Visualizing HDF Files using ArcMap:*

ESRI's ArcMap software can be used to visualize GPM data. The first step is to import the HDF into ArcMap by dragging the file from its directory and into the table of contents. This will cause for a data subset GUI to pop up. Select the "SurfacePrecipToRate" layer and press ok. The "SurfacePrecipToRate" layer is imported into ArcMap with no projection, so the second step is to use the "Define Projection" tool to change the projection to Geographic/WGS 84.

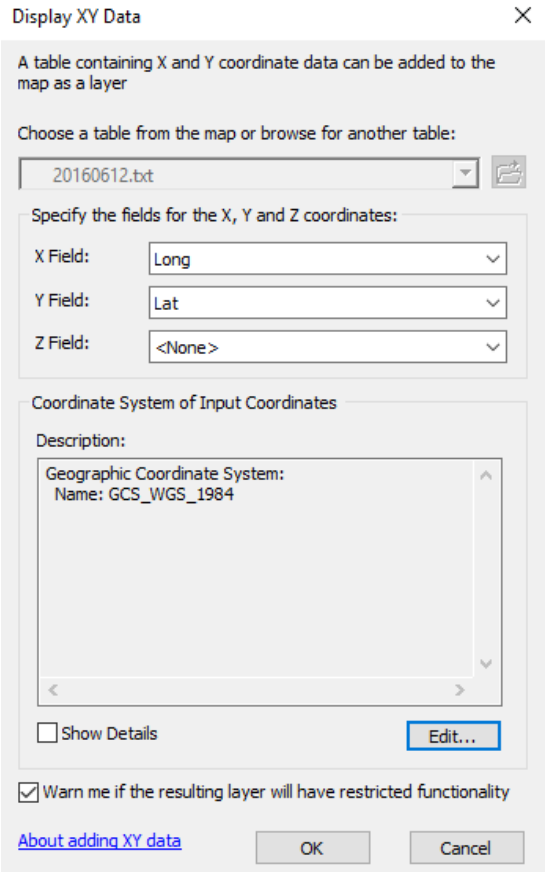


After the layer is projected, the raster cells are turned into points using the “Raster to Point” function. The “Extract Multi Values to Points” tool is next used to import and combine the latitude and longitude information that comes in the HDF files with the respective precipitation measurements.

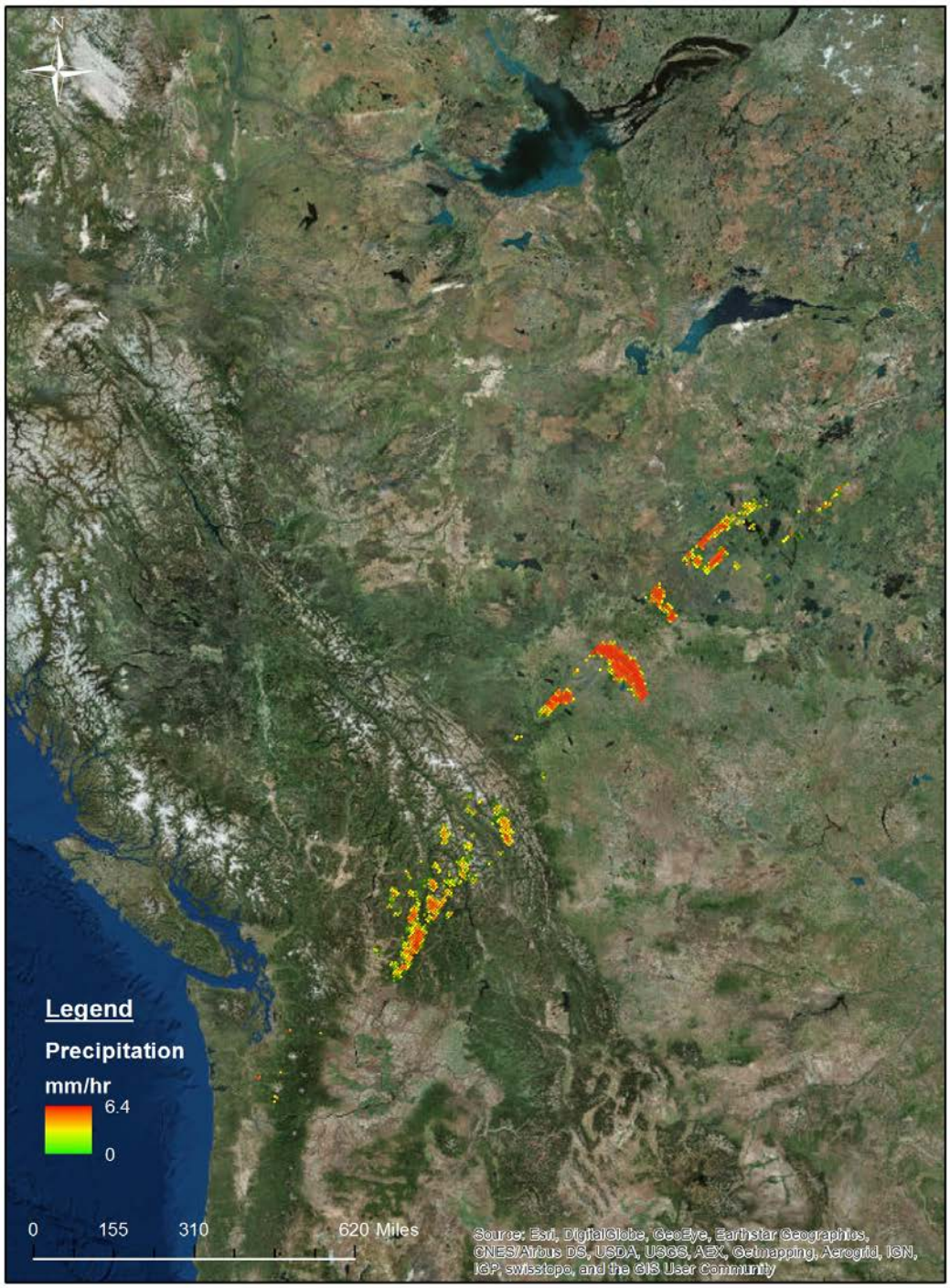


After each point has been given a latitude and longitude, they are georectified and turned back into pixels using the “point or raster” function. This results in the final precipitation map.




The  ArcMAP image on the next page is zoomed on to Washington State showing DPR and GMI combined Level-2 surface precipitation rate.


N
Legend
Precipitation
mm/hr
6.4
0
0
155
310
620 Miles
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community