National Aeronautics and Space Administration

ARSET

Applied Remote Sensing Training

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NASA Web-Based Tools for Water Resources Data Access

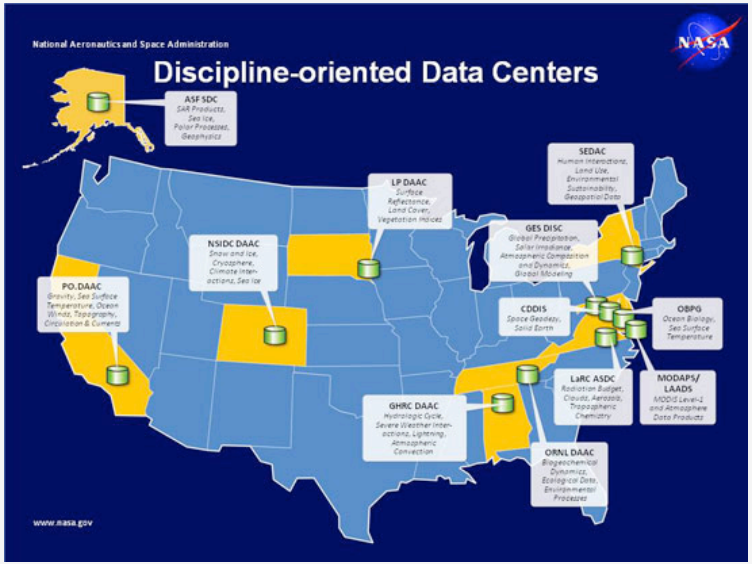
Outline

- Overview of NASA Data Access Tools
- Demonstration of Selected Tools
  (Mirador, Giovanni, NSIDC)

Overview of NASA Data Access Tools

Web-Based Tools for Data Access

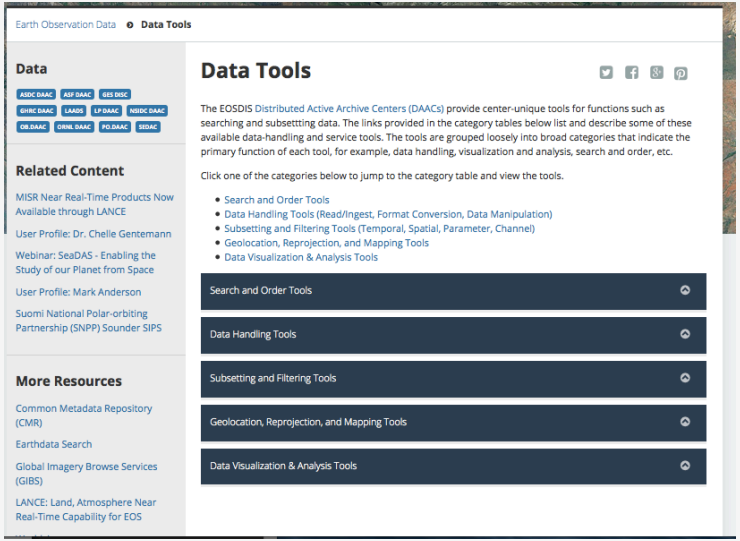
- NASA Earth Science Data Centers provide access to data products
- A number of specialized web-based tools are available for satellite and model data:
  - Search
  - Subsetting
  - Analyze
  - Visualize
  - Download
- For more info: http://arset.gsfc.nasa.gov/sites/default/files/users/ARSET_FAll2014_Week3_Final.pdf



https://earthdata.nasa.gov

Web-Based Tools for Data Access

- Links to a variety of data tools are available from NASA Earthdata:
  - http://earthdata.nasa.gov/earth-observation-data/tools
- This session will focus on selected tools relevant for water resources data access



Satellites and Models for Freshwater Components

- Rain Amount (TRMM, GPM)
- Snow Cover (Terra and Aqua MODIS)
- Soil Moisture (SMAP, GLDAS)
- Evapotranspiration (Terra and Aqua MODIS, Landsat, GLDAS)
- Runoff/Streamflow (TRMM, GPM, GLDAS)

Where can you get these data?

Data Access Tools

Level-3 Gridded Data

Tools	Data & Format	Features
Mirador: http://mirador.gsfc.nasa.gov	• Rain Rate (TRMM, GPM) • Freshwater Components (GLDAS) • Vegetation Index (Terra & Aqua MODIS) • HDF, OPenDAP (selected data can be converted to ASCII, Binary, NetCDF)	• Spatial/Temporal Subsetting • Individual Data File Download • Batch Download

Giovanni: http://giovanni.gsfc.nasa.gov/giovanni	• Rain Rate (TRMM, GPM)
	• Freshwater Components (GLDAS)
	• Vegetation Index (Terra&Aqua MODIS)
	• NetCDF, GeoTIFF, PNG, KMZ, CSV (Time series only)
		• Spatial/Temporal Subsetting
		• Analysis:
		  • Time-averaged maps, animation, time series, scatter plot, map correlations, vertical profiles, time-averaged differences
		• Visualization:
		  • Maps, time series, scatter plot, histogram
		• Near Real-Time Rain Rate Access

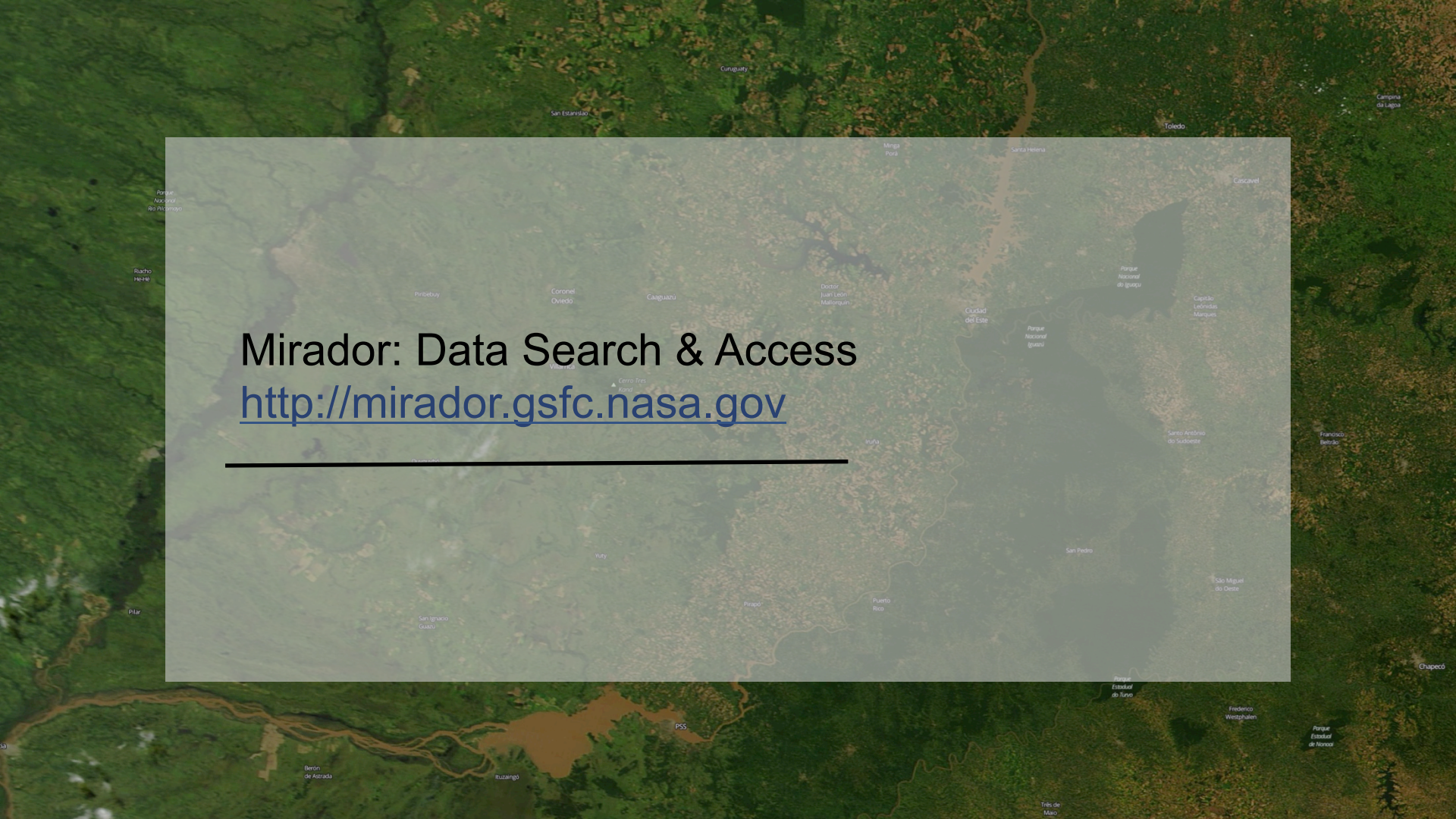
Data Access Tools

Tools	Data & Format	Features
PPS/STORM https:// storm.pps.eosdis.nasa.gov/ storm	• Rain Rate (TRMM, GPM) • HDF, PNG	• Orbital and Gridded Data Search • Spatial/Temporal Subsetting • Individual Data and FTP Batch Download • Images and Interactive Data Viewer
NSIDC http://nsidc.org/	• Soil Moisture (SMAP) • Snow Cover (MODIS) • HDF5, GeoTIFF, Binary (Data Product Dependent)	• Data Search and Subsetting • Data Viewer, Download

Data Analysis and Visualization Tools

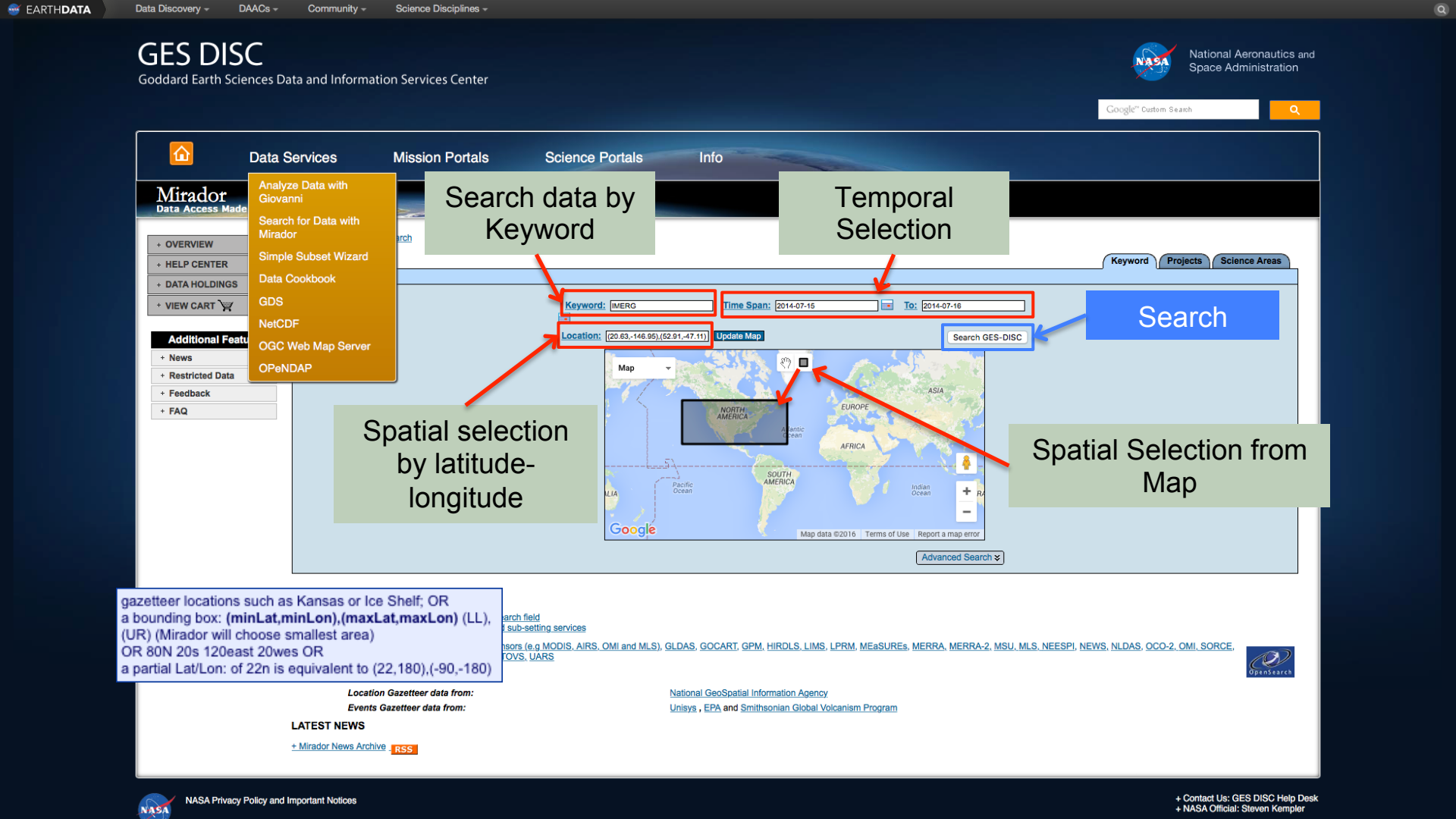
Tools	Data and Format	Features
THOR https://arthurhou.pps.eosdis.nasa.gov/THORonline/	• Rain Rate (TRMM, GPM) • HDF	• Gridded and Orbital Data Viewer for HDF Data Files • Designed specifically for TRMM and GPM Data Visualization • Save Images in PNG
Panoply http://www.giss.nasa.gov/tools/panoply/	• Any NetCDF • HDF • GRIB Data	• Access Data from OpenDAP Catalogs • Gridded and Orbital Data Viewer • Maps and Time Series • Time-Latitude & Longitude • Save Images in GIF, PNG, TIFF, JPG, KMZ, Animation

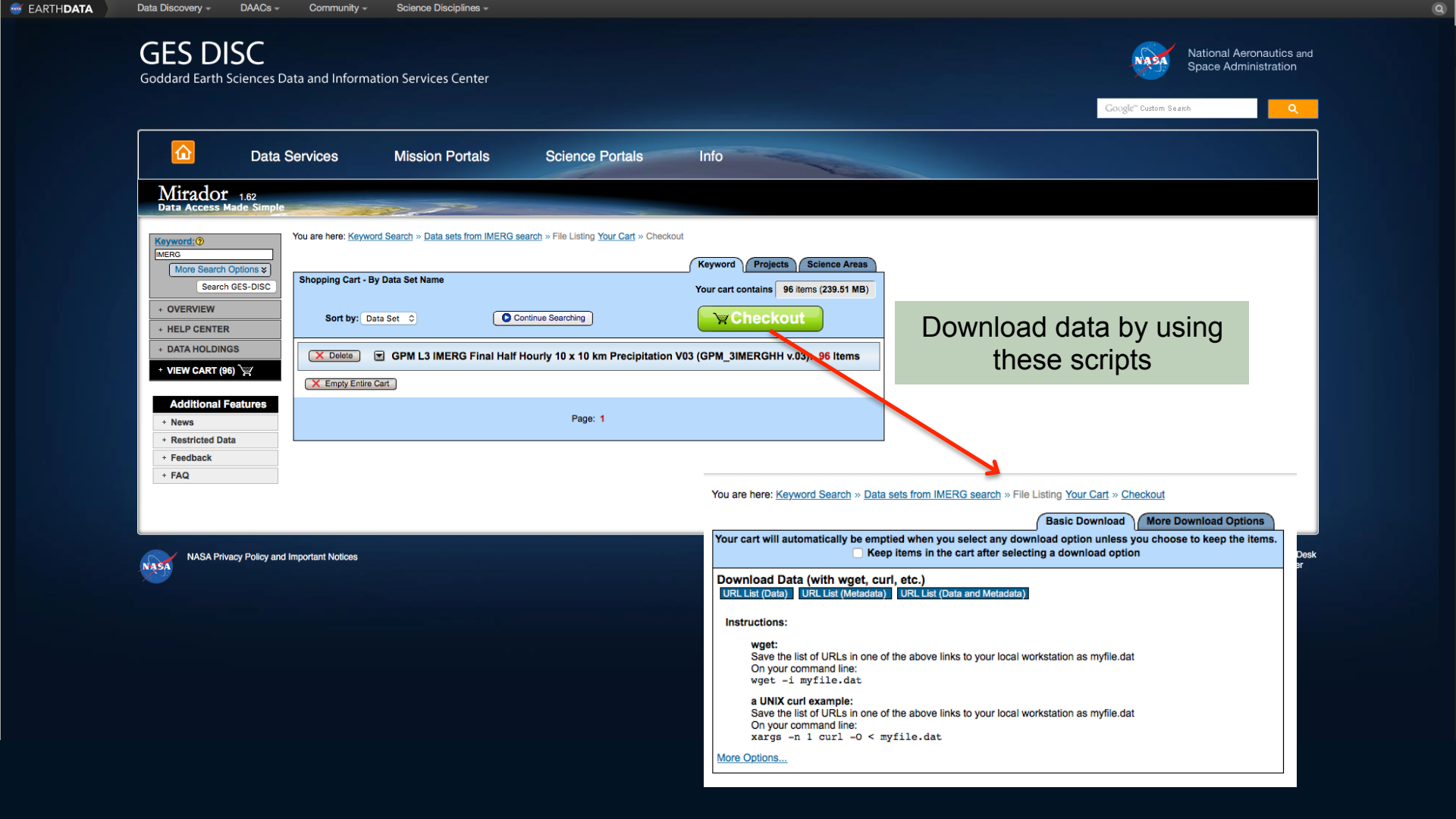
Note: Giovanni is an analysis and visualization tool, but it also allows for data search and subsetting



Mirador: Data Search & Access

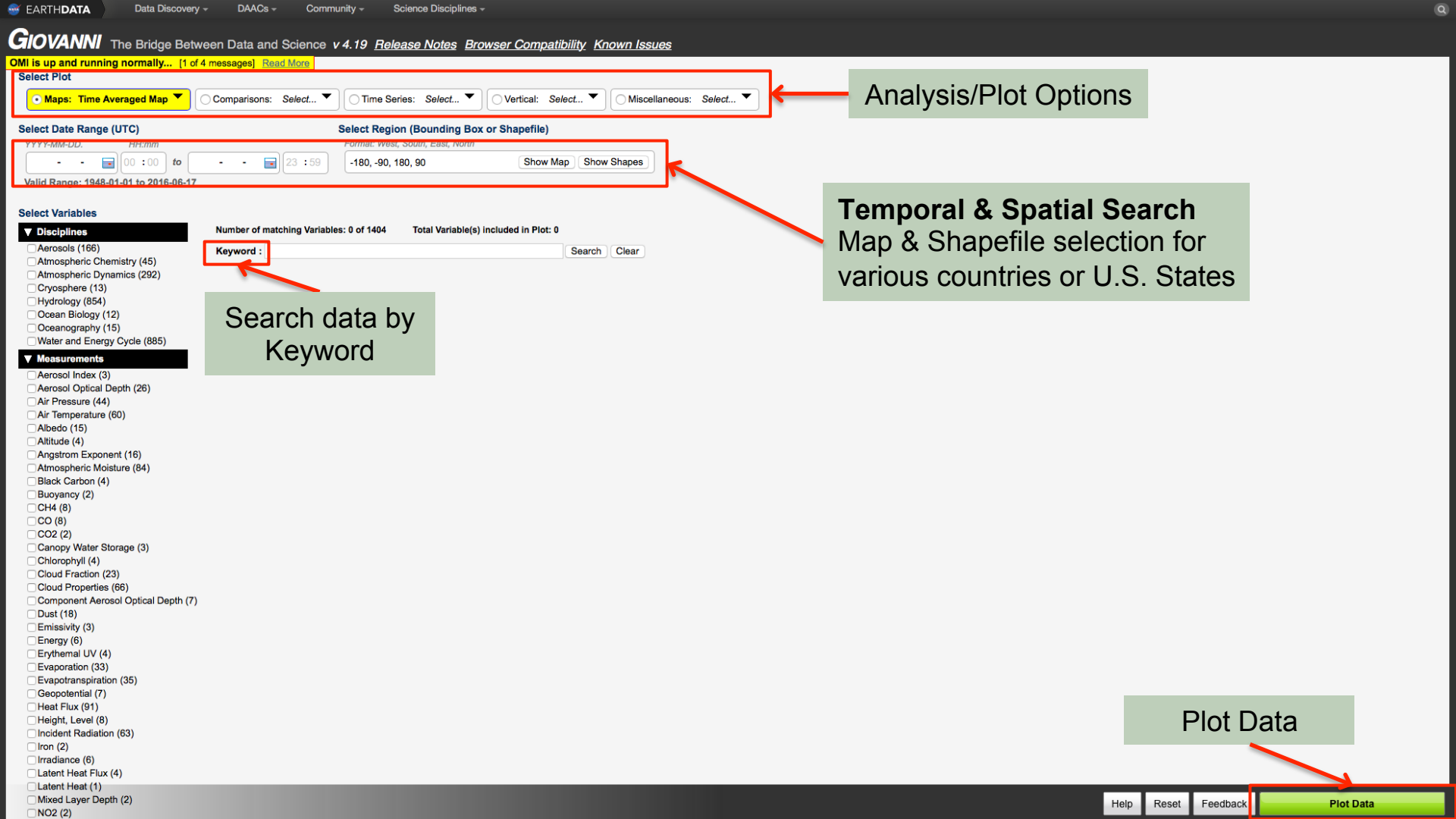
http://mirador.gsfc.nasa.gov


EARTHDATA
Data Discovery
DAACs
Community
Science Disciplines
GES DISC
Goddard Earth Sciences Data and Information Services Center
National Aeronautics and Space Administration
Google Custom Search
Data Services
Mission Portals
Science Portals
Info
Mirador
Data Access Made
Analyze Data with Giovanni
Search for Data with Mirador
Simple Subset Wizard
Data Cookbook
GDS
NetCDF
OGC Web Map Server
OPeNDAP
+ OVERVIEW
+ HELP CENTER
+ DATA HOLDINGS
+ VIEW CART
Additional Featu
+ News
+ Restricted Data
+ Feedback
+ FAQ
Search data by Keyword
Temporal Selection
Keyword
Projects
Science Areas
Keyword: IMERG
Time Span: 2014-07-15
To: 2014-07-16
Location: (20.63,-146.95),(52.91,-47.11)
Update Map
Search GES-DISC
Search
Map
NORTH AMERICA
EUROPE
ASIA
AFRICA
SOUTH AMERICA
Atlantic Ocean
Pacific Ocean
Indian Ocean
Google
Map data ©2016
Terms of Use
Report a map error
Spatial selection by latitude-longitude
Spatial Selection from Map
Advanced Search
gazetteer locations such as Kansas or Ice Shelf; OR
a bounding box: (minLat,minLon),(maxLat,maxLon) (LL),(UR) (Mirador will choose smallest area)
OR 80N 20s 120east 20wes OR
a partial Lat/Lon: of 22n is equivalent to (22,180),(-90,-180)
sub-setting services
MODIS, AIRS, OMI and MLS), GLDAS, GOCART, GPM, HIRDLS, LIMS, LPRM, MEaSUREs, MERRA, MERRA-2, MSU, MLS, NEESPI, NEWS, NLDAS, OCO-2, OMI, SORCE, TOVS, UARS
OpenSearch
Location Gazetteer data from:
National GeoSpatial Information Agency
Events Gazetteer data from:
Unisys , EPA and Smithsonian Global Volcanism Program
LATEST NEWS
+ Mirador News Archive
RSS
NASA Privacy Policy and Important Notices
+ Contact Us: GES DISC Help Desk
+ NASA Official: Steven Kempler


EARTHDATA
Data Discovery
DAACs
Community
Science Disciplines
GES DISC
Goddard Earth Sciences Data and Information Services Center
National Aeronautics and Space Administration
Google Custom Search
Data Services
Mission Portals
Science Portals
Info
Mirador 1.62
Data Access Made Simple
Keyword:
IMERG
More Search Options
Search GES-DISC
OVERVIEW
HELP CENTER
DATA HOLDINGS
VIEW CART (96)
Additional Features
News
Restricted Data
Feedback
FAQ
You are here: Keyword Search » Data sets from IMERG search » File Listing Your Cart » Checkout
Keyword
Projects
Science Areas
Shopping Cart - By Data Set Name
Your cart contains 96 items (239.51 MB)
Sort by: Data Set
Continue Searching
Checkout
Delete
GPM L3 IMERG Final Half Hourly 10 x 10 km Precipitation V03 (GPM_3IMERGHH v.03), 96 Items
Empty Entire Cart
Page: 1
Download data by using these scripts
You are here: Keyword Search » Data sets from IMERG search » File Listing Your Cart » Checkout
Basic Download
More Download Options
Your cart will automatically be emptied when you select any download option unless you choose to keep the items.
Keep items in the cart after selecting a download option
Download Data (with wget, curl, etc.)
URL List (Data)
URL List (Metadata)
URL List (Data and Metadata)
Instructions:
wget:
Save the list of URLs in one of the above links to your local workstation as myfile.dat
On your command line:
wget -i myfile.dat
a UNIX curl example:
Save the list of URLs in one of the above links to your local workstation as myfile.dat
On your command line:
xargs -n 1 curl -O < myfile.dat
More Options...
NASA Privacy Policy and Important Notices

Giovanni

http://giovanni.gsfc.nasa.gov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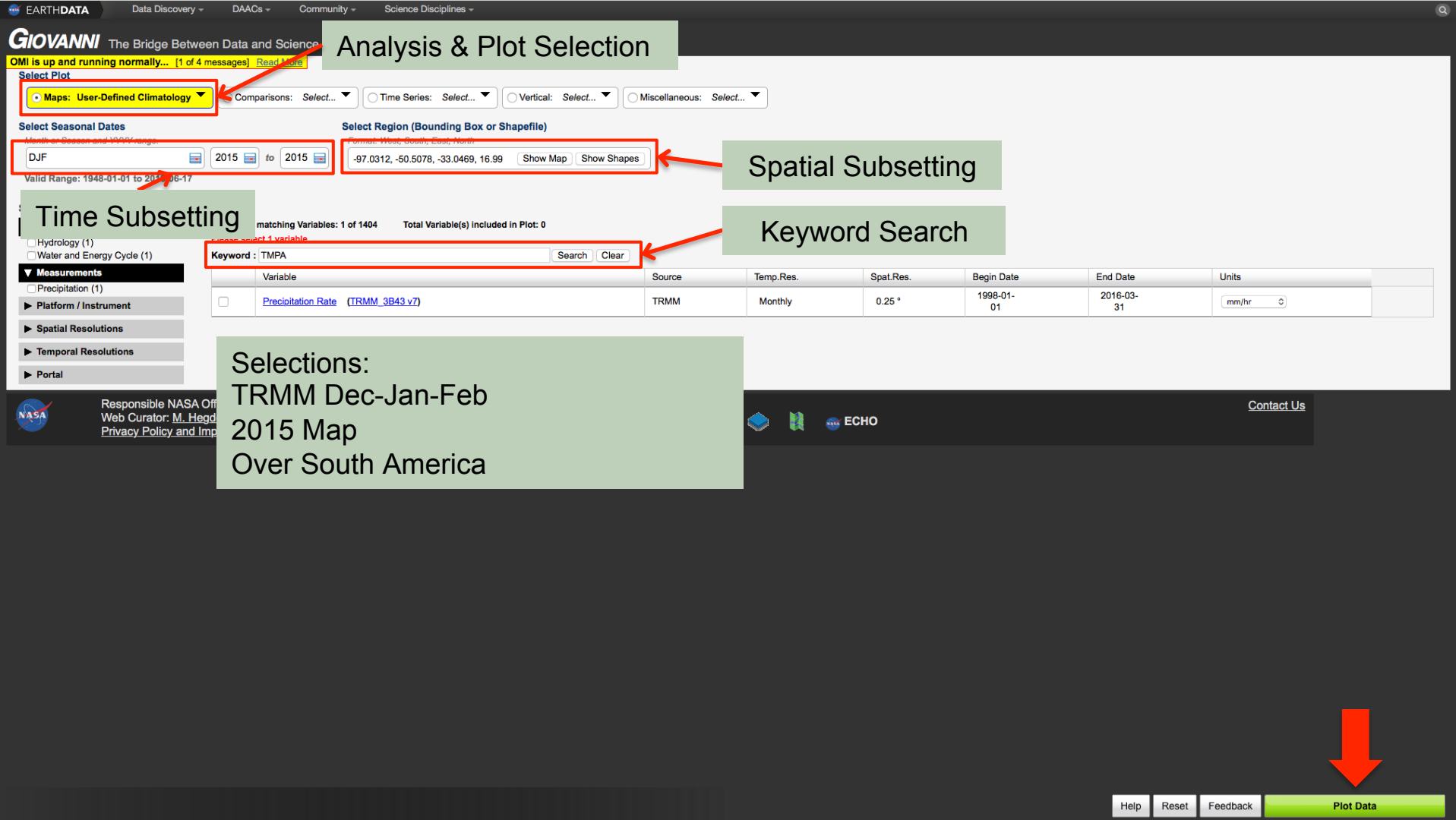
GIOVANNI The Bridge Between Data and Science v 4.19 Release Notes Browser Compatibility Known Issues
OMI is up and running normally... [1 of 4 messages] Read More
Select Plot
Maps: Time Averaged Map
Comparisons: Select...
Time Series: Select...
Vertical: Select...
Miscellaneous: Select...
Analysis/Plot Options
Select Date Range (UTC)
YYYY-MM-DD HH:mm
to
Valid Range: 1948-01-01 to 2016-06-17
Select Region (Bounding Box or Shapefile)
Format: West, South, East, North
-180, -90, 180, 90
Show Map
Show Shapes
Temporal & Spatial Search
Map & Shapefile selection for various countries or U.S. States
Select Variables
Disciplines
Aerosols (166)
Atmospheric Chemistry (45)
Atmospheric Dynamics (292)
Cryosphere (13)
Hydrology (854)
Ocean Biology (12)
Oceanography (15)
Water and Energy Cycle (885)
Measurements
Aerosol Index (3)
Aerosol Optical Depth (26)
Air Pressure (44)
Air Temperature (60)
Albedo (15)
Altitude (4)
Angstrom Exponent (16)
Atmospheric Moisture (84)
Black Carbon (4)
Buoyancy (2)
CH4 (8)
CO (8)
CO2 (2)
Canopy Water Storage (3)
Chlorophyll (4)
Cloud Fraction (23)
Cloud Properties (66)
Component Aerosol Optical Depth (7)
Dust (18)
Emissivity (3)
Energy (6)
Erythemal UV (4)
Evaporation (33)
Evapotranspiration (35)
Geopotential (7)
Heat Flux (91)
Height, Level (8)
Incident Radiation (63)
Iron (2)
Irradiance (6)
Latent Heat Flux (4)
Latent Heat (1)
Mixed Layer Depth (2)
NO2 (2)
Number of matching Variables: 0 of 1404
Total Variable(s) included in Plot: 0
Keyword :
Search
Clear
Search data by Keyword
Plot Data
Help
Reset
Feedback
Plot Data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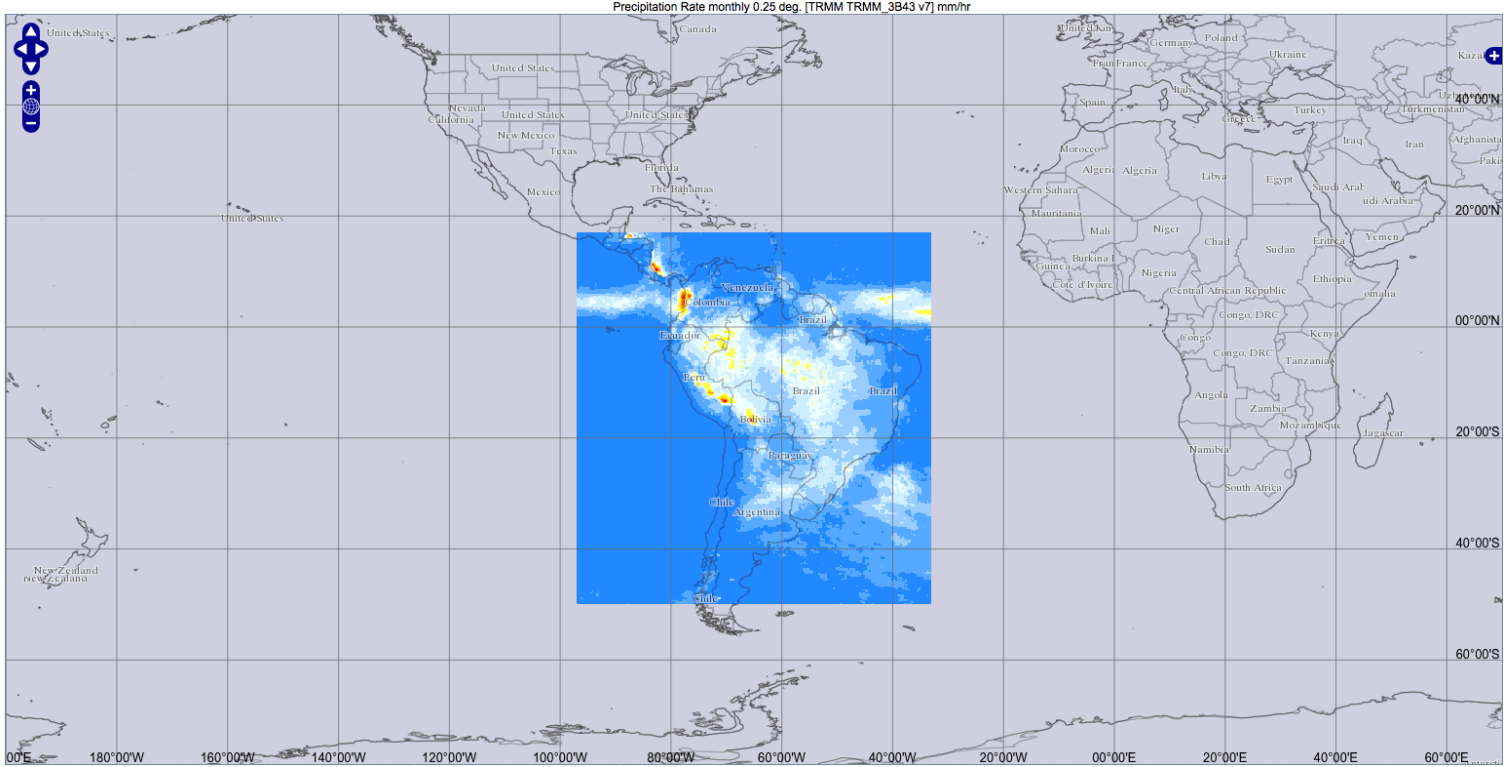
GIOVANNI The Bridge Between Data and Science
Analysis & Plot Selection
OMI is up and running normally... [1 of 4 messages] Read More
Select Plot
Maps: User-Defined Climatology
Comparisons: Select...
Time Series: Select...
Vertical: Select...
Miscellaneous: Select...
Select Seasonal Dates
DJF
2015
to
2015
Valid Range: 1948-01-01 to 2016-06-17
Select Region (Bounding Box or Shapefile)
-97.0312, -50.5078, -33.0469, 16.99
Show Map
Show Shapes
Spatial Subsetting
Time Subsetting
matching Variables: 1 of 1404
Total Variable(s) included in Plot: 0
Hydrology (1)
Water and Energy Cycle (1)
Measurements
Precipitation (1)
Platform / Instrument
Spatial Resolutions
Temporal Resolutions
Portal
Keyword : TMPA
Search
Clear
Keyword Search
Variable
Source
Temp.Res.
Spat.Res.
Begin Date
End Date
Units
Precipitation Rate (TRMM_3B43 v7)
TRMM
Monthly
0.25 °
1998-01-01
2016-03-31
mm/hr
Selections:
TRMM Dec-Jan-Feb
2015 Map
Over South America
Responsible NASA Off
Web Curator: M. Hegd
Privacy Policy and Imp
ECHO
Contact Us
Help
Reset
Feedback
Plot Data

Search & Plot Result: TRMM Rain Rate for DJF 2015

1. User-Defined Climatology

Download As... Options

DJF (2014-Dec - 2015-Feb)
Precipitation Rate monthly 0.25 deg. [TRMM TRMM_3B43 v7] mm/hr



- Selected region was 97.0312W, 50.5078S, 33.0469W, 16.99N. Precipitation Rate monthly 0.25 deg. [TRMM TRMM_3B43 v7] mm/hr has a limited data extent of 180W, 50S, 180E, 50N. The region in the title reflects the data extent of the subsetted granules that went into making this result.
- Seasons with missing months are discarded.

History
- 1. User-Defined Climatolog
  - User Input
  - Plots
  - Lineage
  - Downloads

Download Options

OMI is up and running normally... [1 of 4 messages] Read More

1. User-Defined Climatology

Click on file links to download. Files contain data portrayed in the plot images.

NetCDF:
g4.timeAvg.TRMM_3B43_007_precipitation.20150101-20151231.SEASON_DJF.97W_50S_33W_16N.nc

PNG:
g4.timeAvg.TRMM_3B43_007_precipitation.20150101-20151231.SEASON_DJF.97W_50S_33W_16N.png

GEOTIFF:
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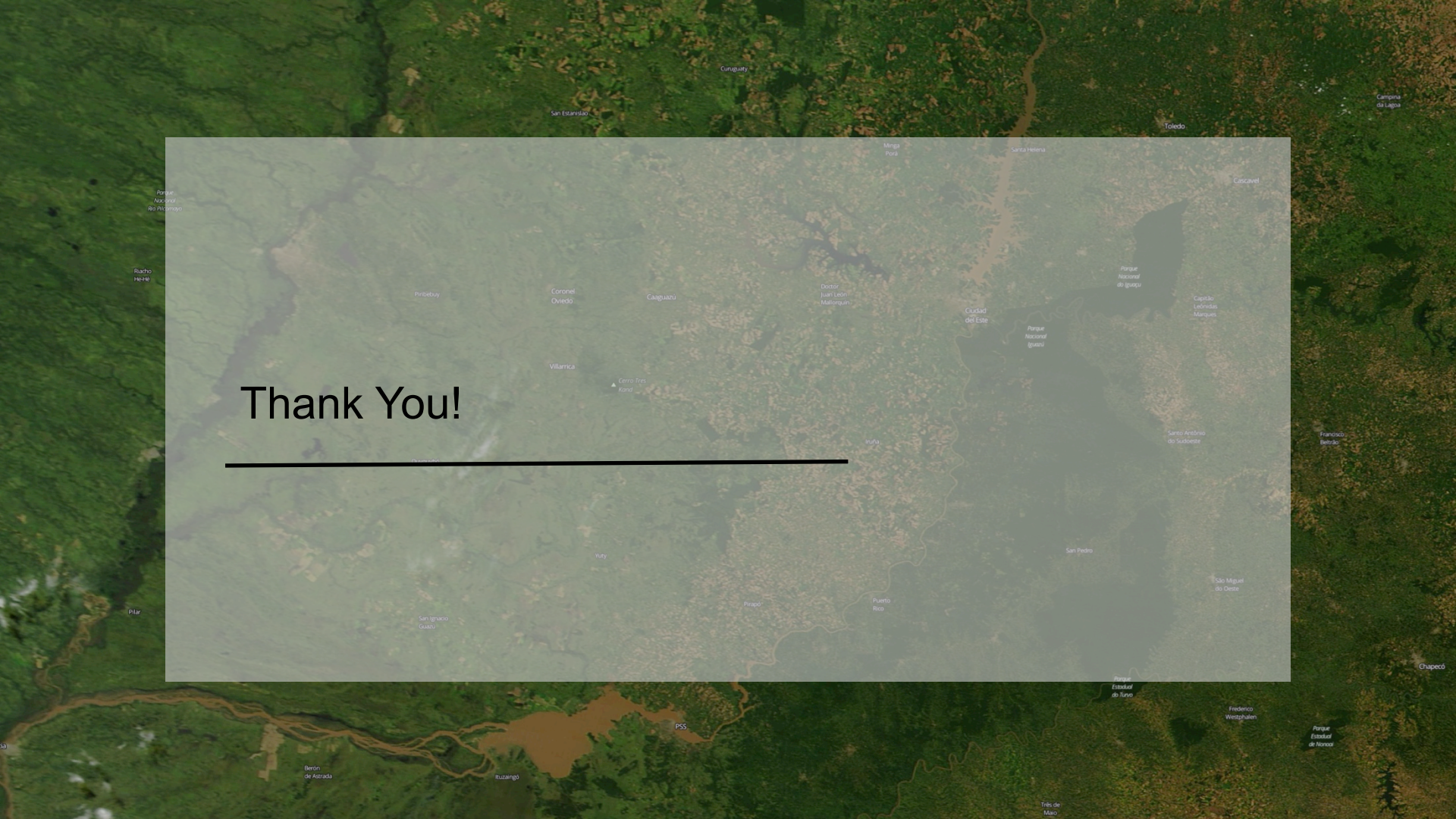
KMZ:
g4.timeAvg.TRMM_3B43_007_precipitation.20150101-20151231.SEASON_DJF.97W_50S_33W_16N.kmz

Format Options

History
- 2. User-Defined Climatology
- 1. User-Defined Climatology
  - User Input
  - Plots
  - Lineage
  - **Downloads**

Demonstration of Mirador & Giovanni


Thank You!