Satellite Products and Dissemination: Visualization and Data Access

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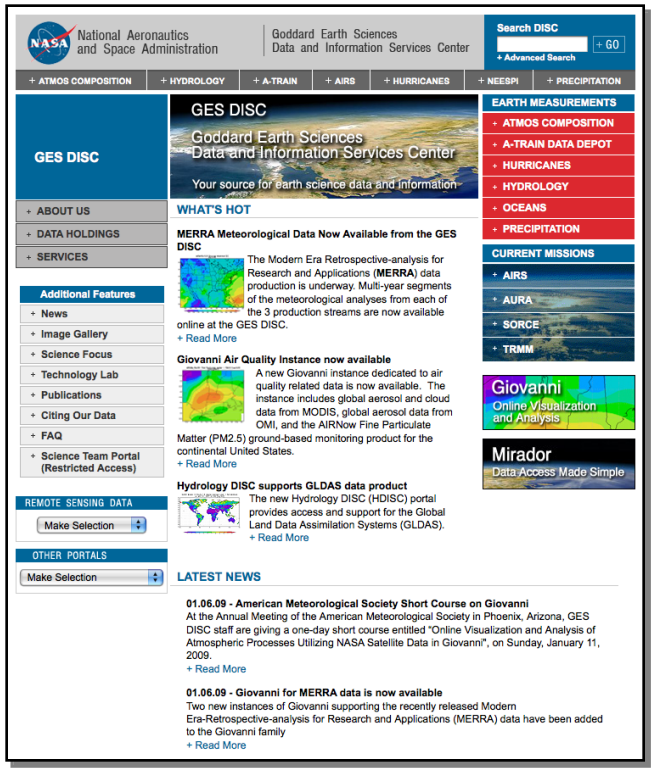
Introduction



The Goddard Earth Sciences Data and Information Services Center (GES DISC) supports archive and distribution of hundreds of datasets for multiple satellite sensors, ground measurements, and models. These include Aqua AIRS, Aura HIRDLS/MLS/OMI, SORCE, TOMS, TOVS, TRMM, UARS, GLDAS and MERRA.

Services include Mirador search and order, Giovanni online data analysis and visualization, subsetting, and support for multiple interoperabilitystandards (OPeNDAP, GDS, OGC WMS, netCDF, Google Earth).

Through these services, the GES DISC provides users multi-sensor and model visual comparisons and data access via a number of projects crossing multiple disciplines.

Goal – Dissemination of YOTC Satellite Products

Our goal is to facilitate data usage as much as possible by providing a way the community can easily visualize and access the data. This means we want to provide:

- A user friendly, interactive interface to visualize the data to an efficient manner.

- Multiple output data formats to the user can use desired post-analysis software.

- Easy to use efficient data download methods.

Goal – Dissemination of YOTC Satellite Products

Satellite Products:

- TRMM precipitation, SST and related products, including latent heating profiles.
- ISCCP cloud product data set.
- AIRS profiles of temperature and water vapor, and associated cloud products.
- CloudSat profiles of liquid and ice water, cloud classification, cloud optical depth, surface precipitation flags/estimates, and profiles of radiative fluxes and heating rates.
- CALIPSO profiles of cloud presence, emissivity, and particle size, and associated radiative and geophysical properties (height, optical depth, extinction).
- AMSR-E and/or SSM/I surface wind speed, precipitable and cloud-liquid water, and rain rate.
- PEHRRP – high resolution precipitation products.
- GPS soundings of temperature and water vapor.
- CERES cloud properties, TOA and surface fluxes.
- MODIS cloud and aerosol products.
- MLS upper tropospheric profiles of water vapor, temperature and cloud ice.
- Scatterometer (QuikScat) ocean surface winds.

*TRMM, AIRS, CloudSat, Calipso, MODIS, MLS and QuikScat are currently at the GES DISC as either the primary or secondary archive

What is Giovanni?

Giovanni is a Web-based application developed by the GES DISC that provides a simple and easy way to visualize, analyze, and access vast amounts of Earth science remote sensing and model data.

Only a Web browser is needed. There is no need to learn data formats, programming, or download large amounts of data.

Visualizations for data include latitude-longitude maps, time series diagrams, latitude-time and longitude-time Hovmöller diagrams, and animations. New visualizations will be introduced over time.

What is currently in Giovanni?

Giovanni is comprised of a number of interfaces, called instances, each tailored to meet the needs of different Earth science research communities.

24 instances grouped under the following four disciplines:

- Atmospheric Instances
- Environmental Instances
- Ocean Instances
- Hydrology Instances

Giovanni Instance List

###	Instance	Title: Subtitle
1	aerosol_daily	Daily Aerosol Optical Thickness Measurement and Model Comparison:Beta Version
2	aerosol_monthly	Monthly MODIS-GOCART Aerosol Optical Thickness Intercomparison:Beta Version
3	Air_Quality	Giovanni Air Quality :EPA AIRNOW PM2.5
4	AIRS_Level3Daily	AIRS Online Visualization and Analysis:AIRS Global 1.0° x 1.0° Daily Level-3 Products
5	AIRS_Level3Month	AIRS Online Visualization and Analysis:AIRS Global 1.0° x 1.0° Monthly Level-3 Products
6	atrain	A-Train Along CloudSat Track Instance:CloudSat
7	hirdls	HIRDLS/Aura Online Visualization and Analysis System:Level 2 Vertical Profiles
8	MERRA_MONTH_2D	MERRA Monthly 2D Data Collections:
9	MERRA_MONTH_3D	MERRA Monthly 3D Data Collections:
10	MISR_Daily_L3	MISR Daily Level-3 Data:Daily Global 0.5 x 0.5 Degree Aerosol Product
11	MISR_Monthly_L3	MISR Monthly Level-3 Data:Monthly Global 0.5 x 0.5 Degree Aerosol Product
12	mls	MLS/Aura Online Visualization and Analysis System:Version 2.2 Vertical Profiles
13	MODIS_DAILY_L3	MODIS Terra and Aqua Daily Level-3 Data:Atmosphere Daily Global 1X1 Degree Products
14	MODIS_MONTHLY_L3	MODIS Terra and Aqua Monthly Level-3 Data:Atmosphere Monthly Global 1X1 Degree Products
15	neespi	NEESPI Experimental Instance:Northern Eurasia Earth Science Partnership Initiative Monthly Products
16	neespi_daily	NEESPI Experimental Instance:Northern Eurasia Earth Science Partnership Initiative Daily Products
17	ocean_model	Ocean Color Radiometry Online Visualization and Analysis:NOBM Assimilated Monthly Global Products
18	ocean_model_day	Ocean Color Radiometry Online Visualization and Analysis:NOBM Assimilated Daily Global Products
19	ocean_month	Ocean Color Radiometry Online Visualization and Analysis:Global Monthly Products
20	omi	OMI/Aura L3 Online Visualization and Analysis:Daily Level 3 Global Gridded Products
21	omil2g	OMI/Aura L2G Online Visualization and Analysis:«BETA» Daily Level 2G Global Binned Products «BETA»
22	toms	TOMS Online Visualization and Analysis:Daily Level 3 Global Gridded Products
23	TRMM_3-Hourly	TRMM Online Visualization and Analysis System (TOVAS):3-hourly TRMM and Other Rainfall Estimate (3B42 V6)
24	TRMM_Monthly	TRMM Online Visualization and Analysis System (TOVAS):TRMM Level-3 Monthly Products.

YOTC Prototype

*U*sers simply make selection critera**:**

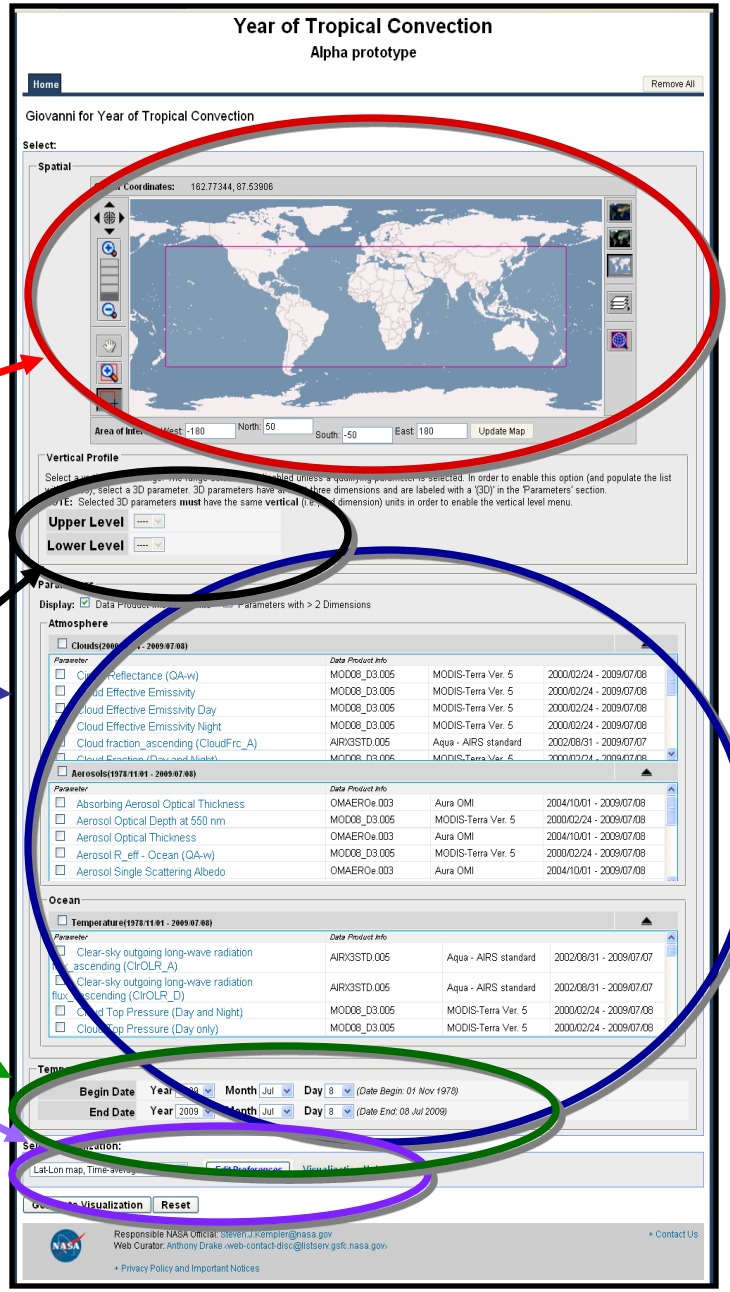
Spatial Area

Parameters

Time Range

Visualization

Vertical Levels for 3D

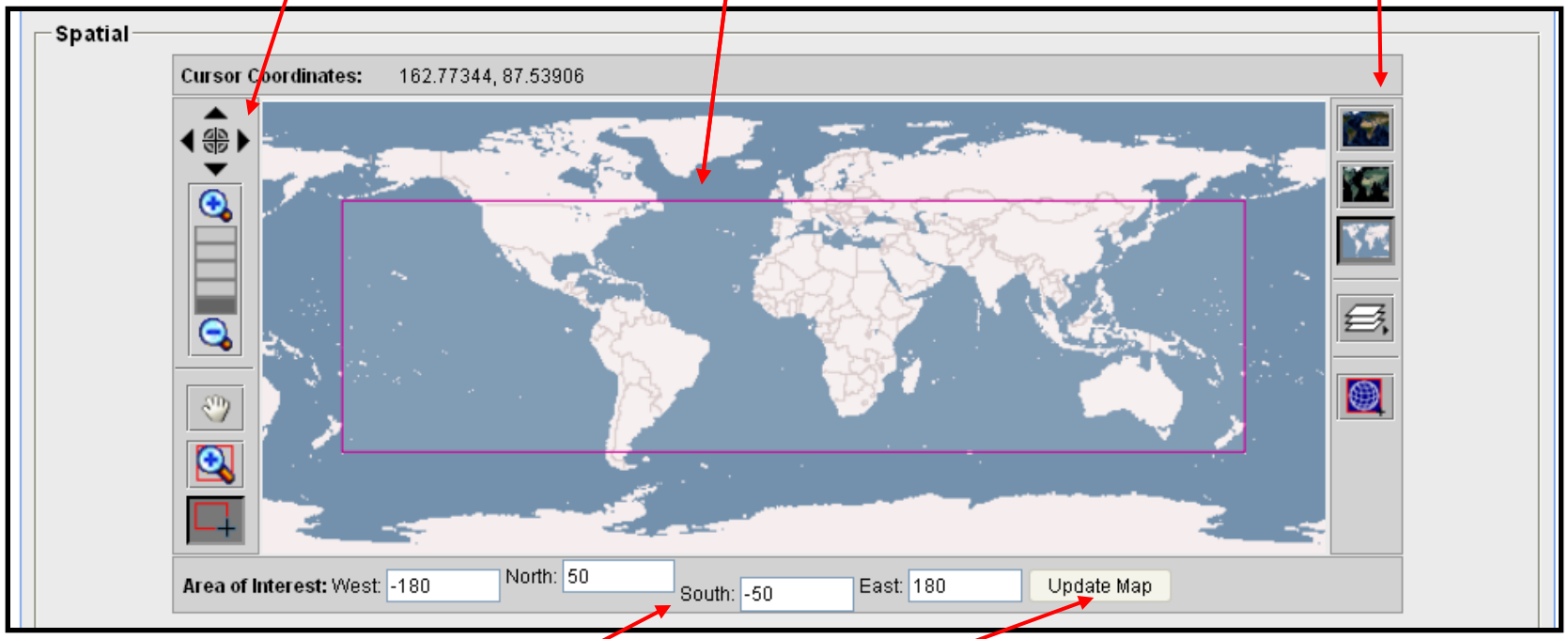


Spatial Selection

Panning and Zoom

Click and drag

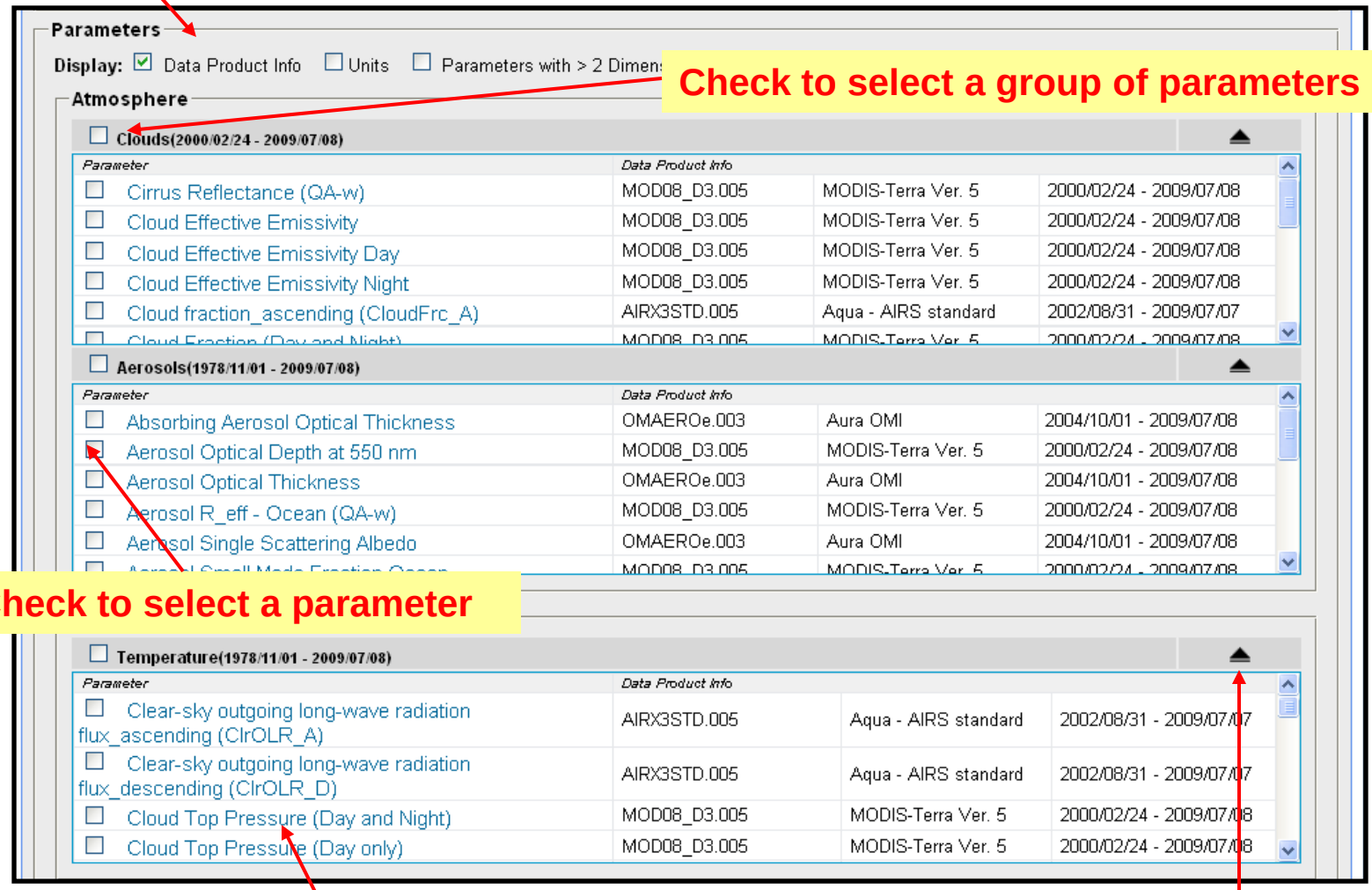
Click to select a map layer



Type latitude and longitude coordinates and click Update button

Parameter Selection

Select to display more product information



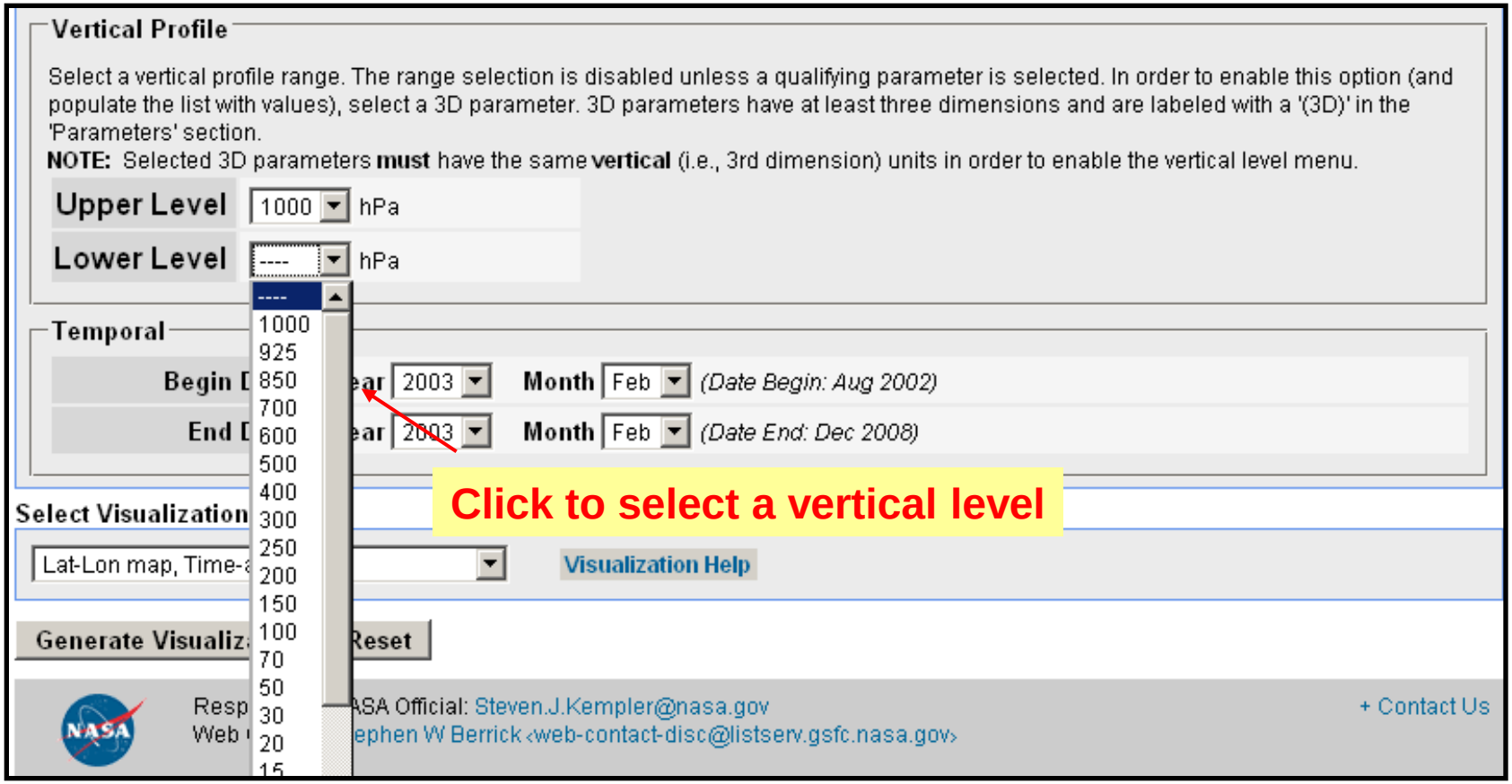
Check to select a group of parameters

Check to select a parameter

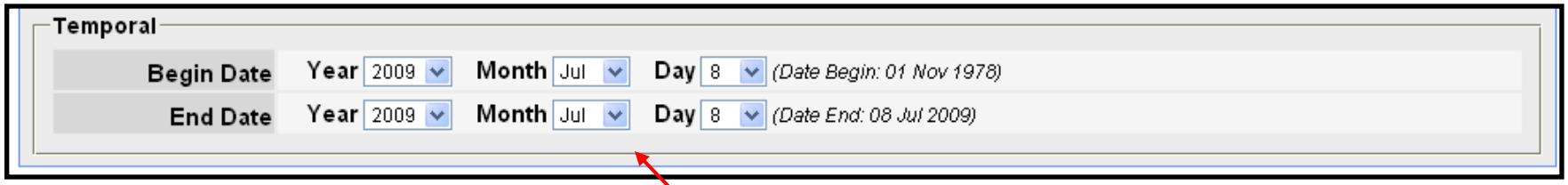
Click to show parameter description

Click to hide the parameter group

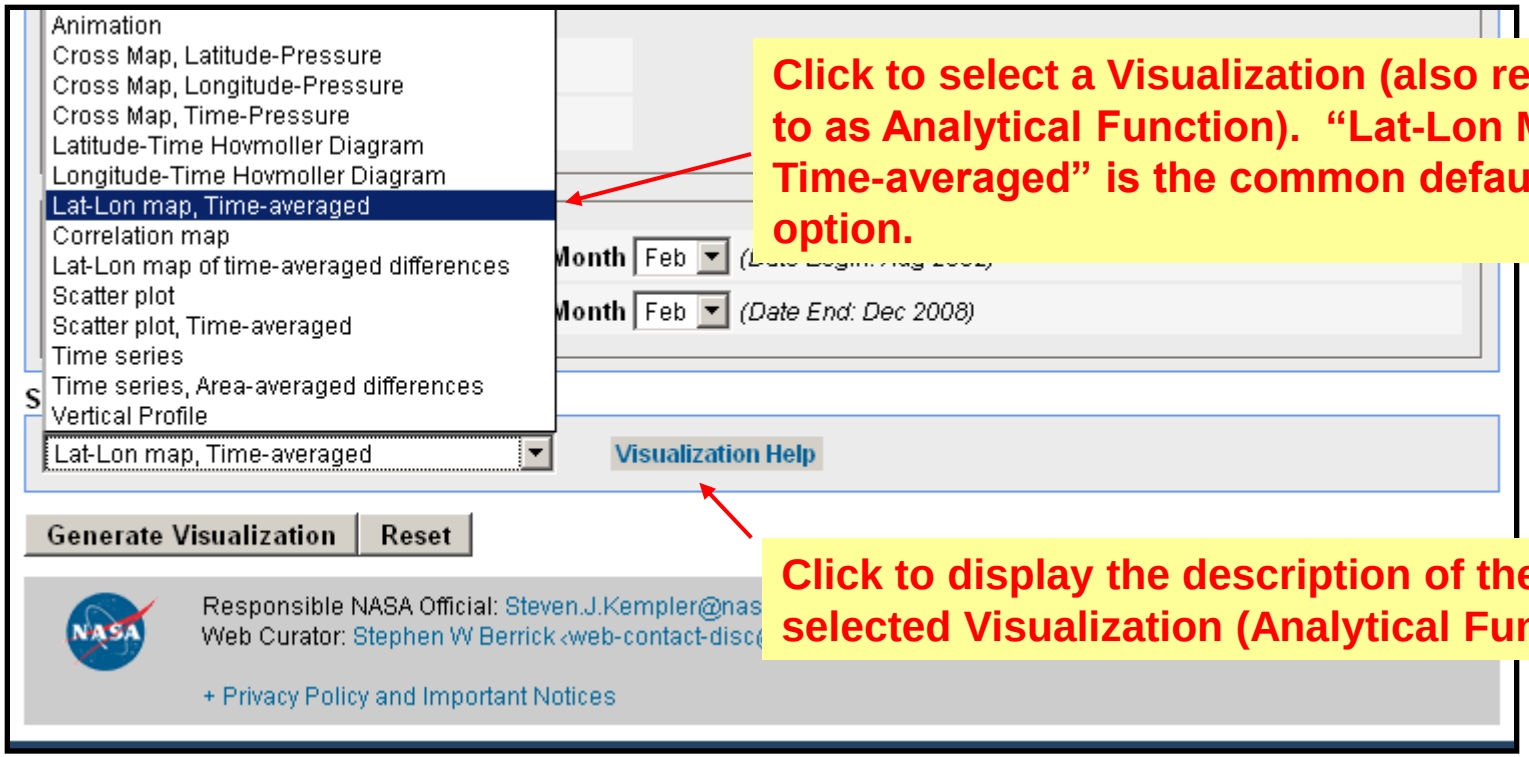
Vertical Selection



Temporal and Visualization Selection



Dropdown menus for Date and Time selections.



Click to select a Visualization (also referred to as Analytical Function). "Lat-Lon Map, Time-averaged" is the common default option.

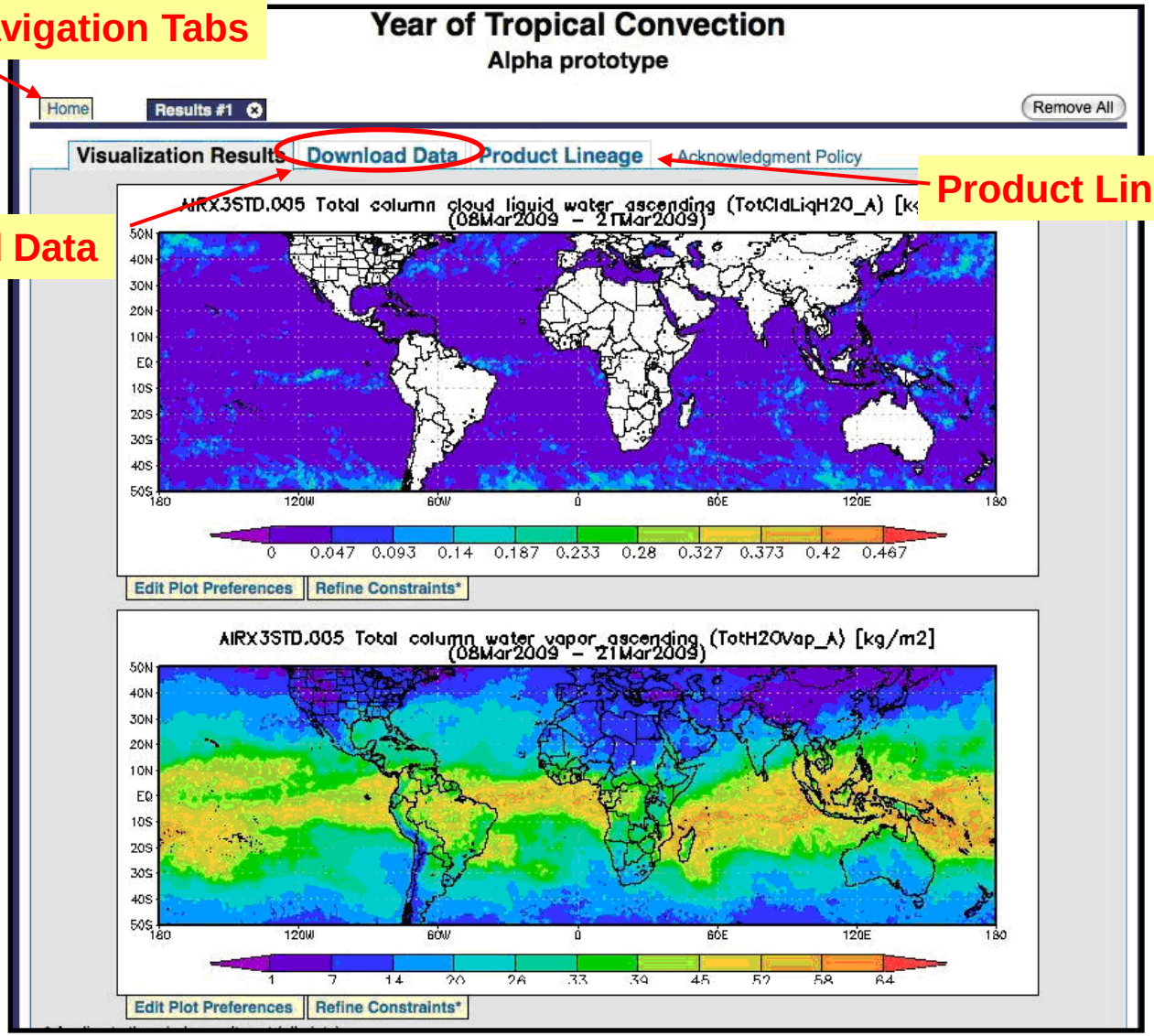
Click to display the description of the selected Visualization (Analytical Function).

Results Page – Visualization Result (example total column Cloud liquid water and total column water vapor)

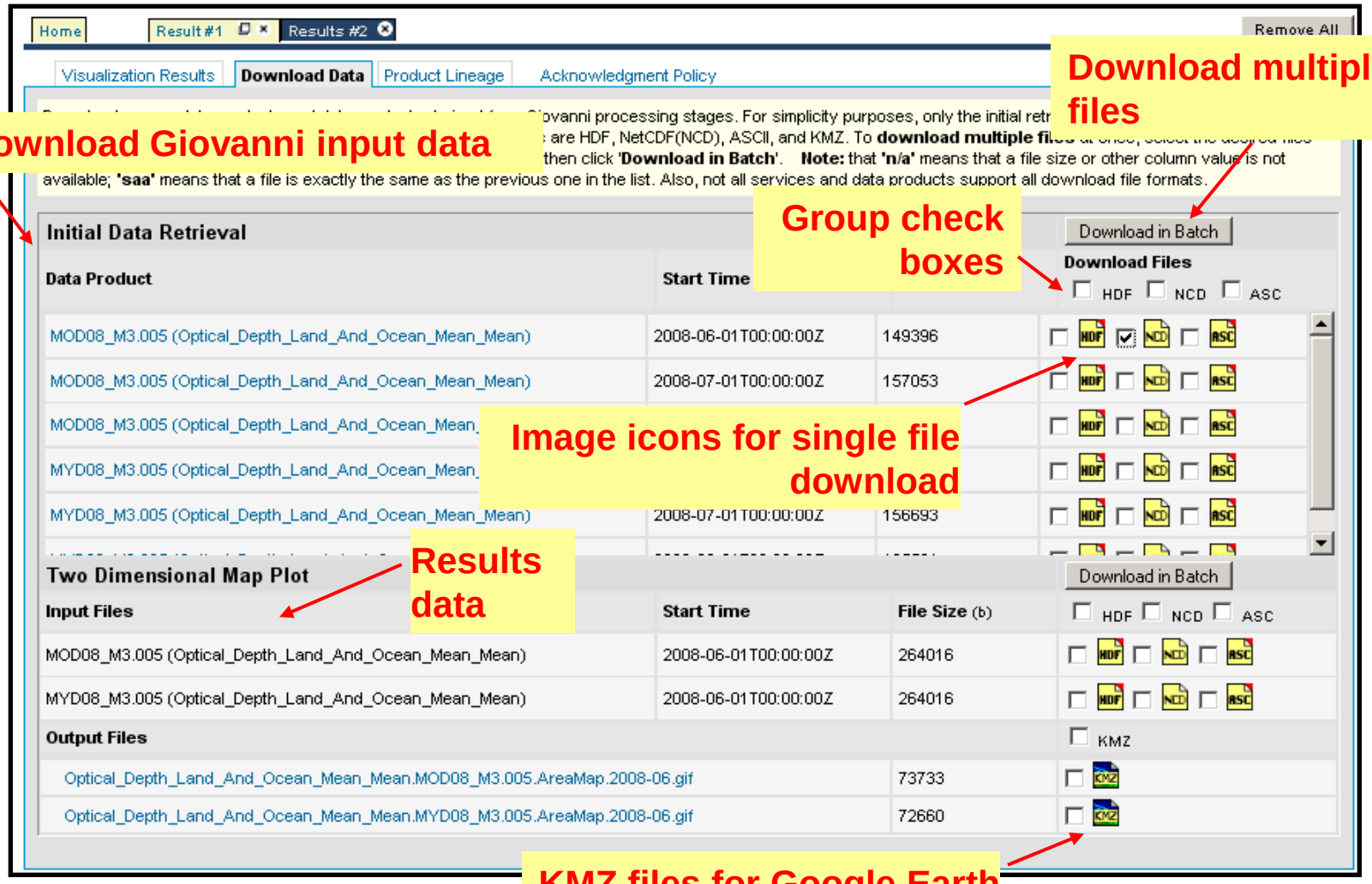
Results Navigation Tabs

Download Data

Product Lineage

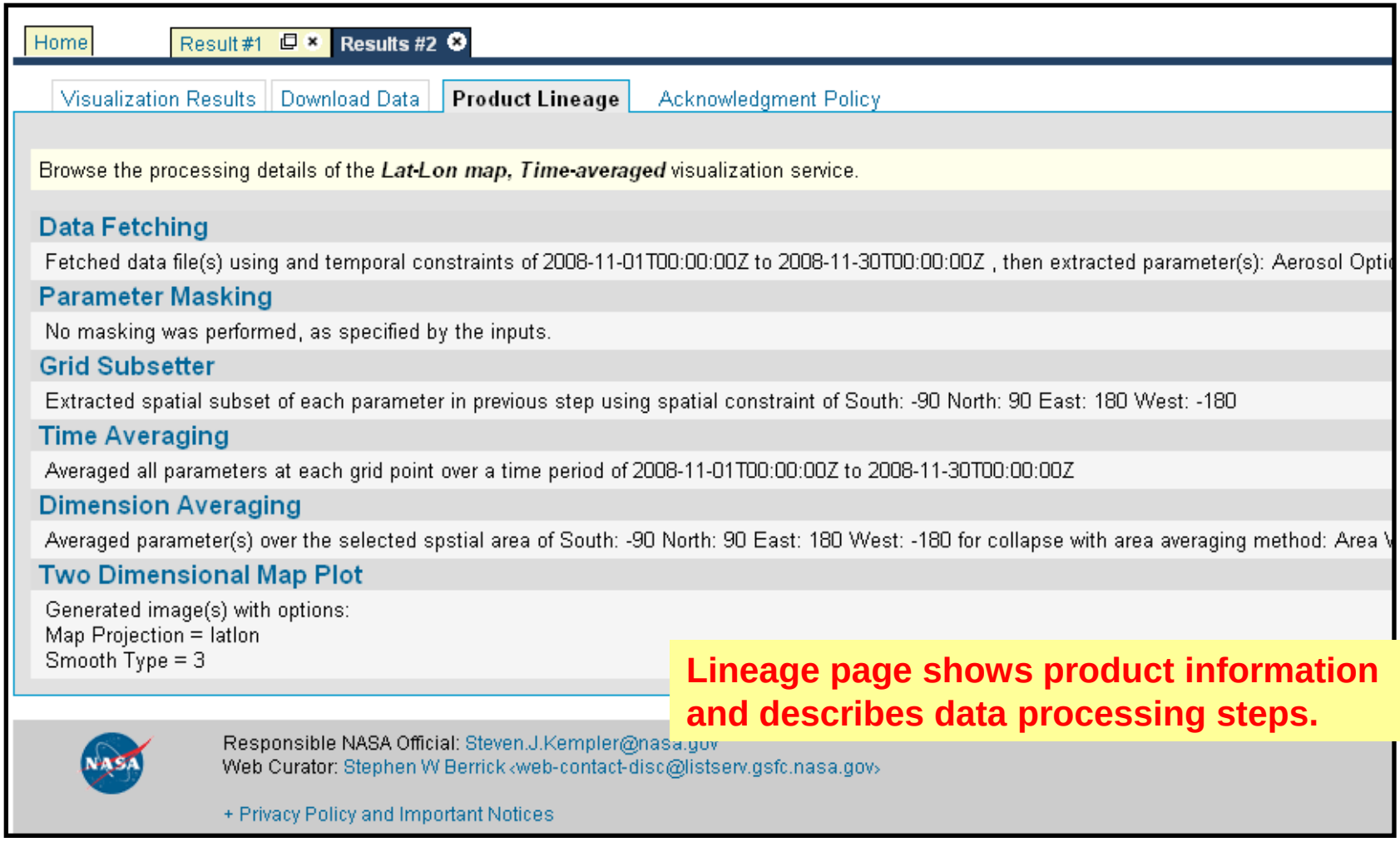


Results Page – Download Data

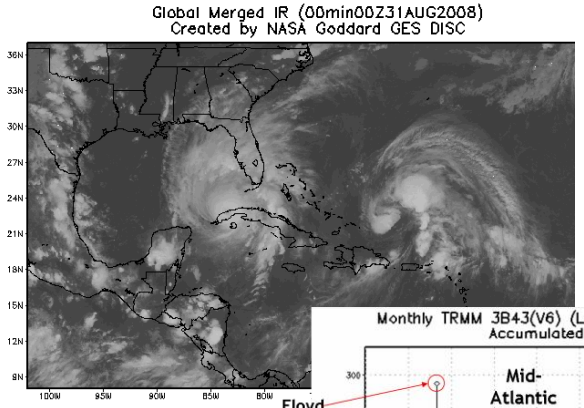


Output data format: hdf, netCDF, ascii
Output image format: gif, png, KMZ

Results Page – Product Lineage

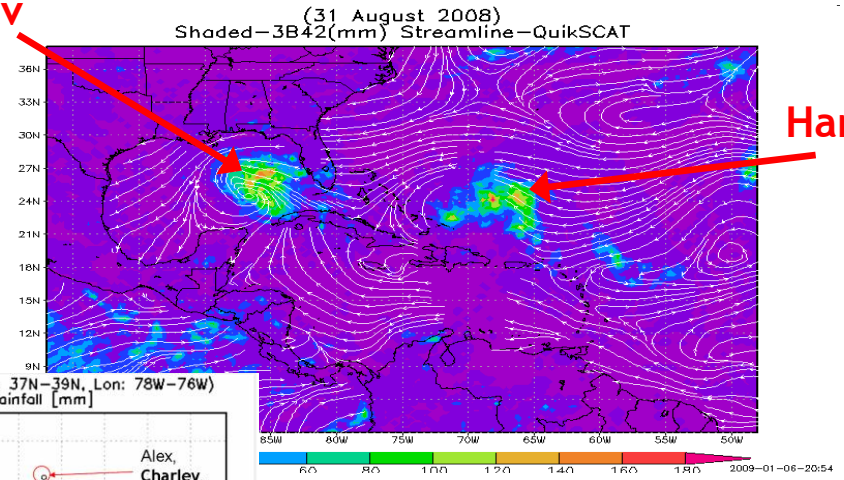


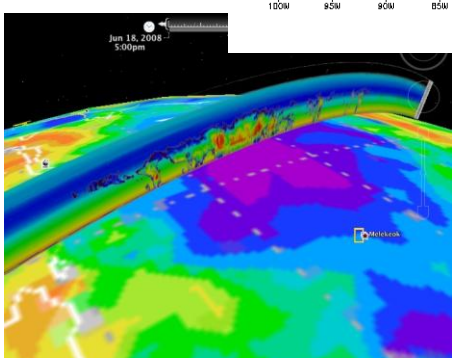
Examples

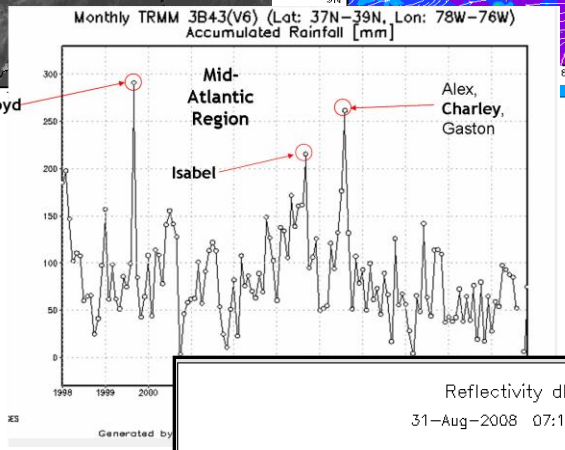


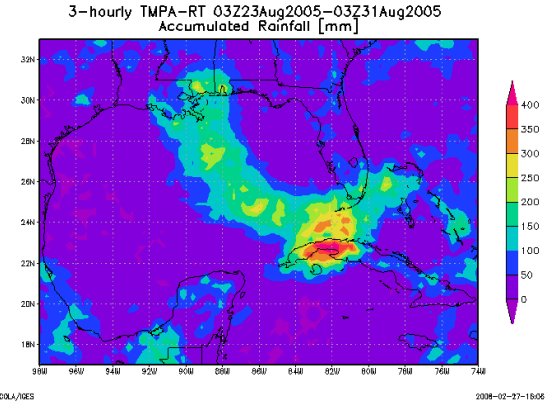
Gustav

Hanna

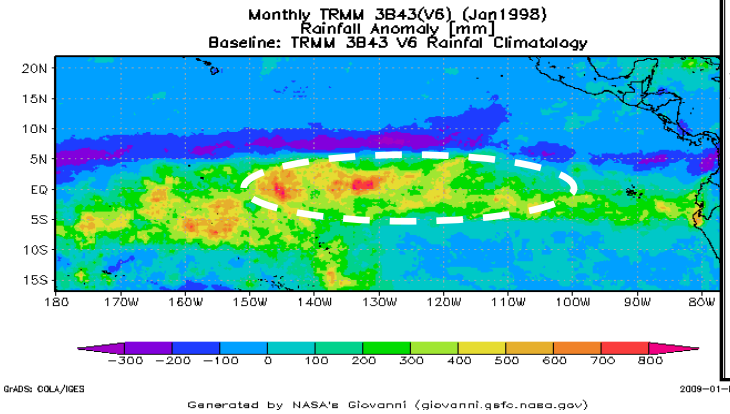


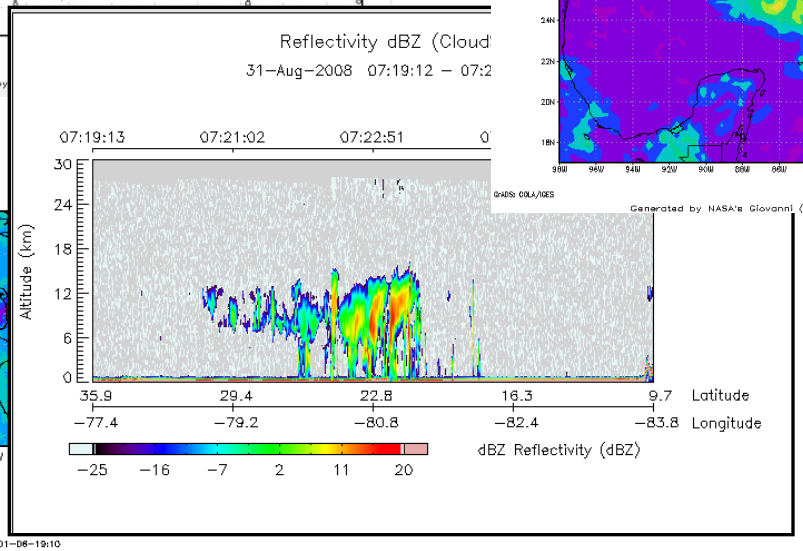






Anomaly - Jan. 1998





How to Proceed

A. Requirements to proceed:

- Identify, define, prioritize the parameters to be included
- Determine cache and server requirements
- If data is to remain extrernal, ensure data access is available through OPeNDAP (locally archived data is not an issue)
- Identify any new functionality requirements to display the data

B. Available Resources

Questions???

GES DISC

http://disc.gsfc.nasa.gov/

Giovanni

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