

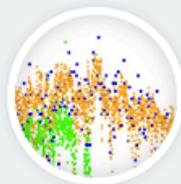
Welcome to NASA Applied Remote Sensing Training (ARSET) Webinar Series

Introduction to NASA Earth Science Data Products, Portals, and Tools

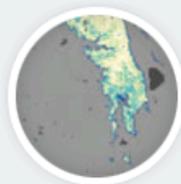
Course Dates: 16, 23, 30 September and 7, 14 October 2014



ATMOSPHERE



CALIBRATED RADIANCE AND
SOLAR RADIANCE



CRYOSPHERE



HUMAN DIMENSIONS



LAND



OCEAN

ARSET

Applied Remote SEnsing Training
A project of NASA Applied Sciences



Important Information

Presentations URL:

<http://arset.gsfc.nasa.gov/>

Contact for Requesting Recorded Link for the Webinars:

Marines Martins : marines.martins@ssaihq.com

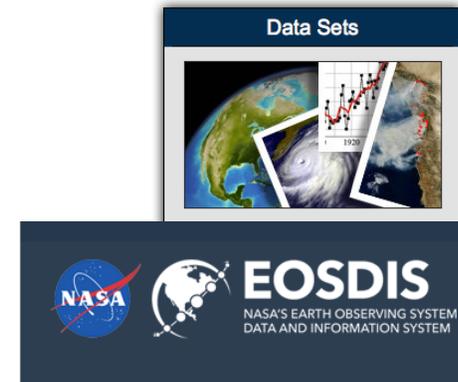
Course Outline

Week 1



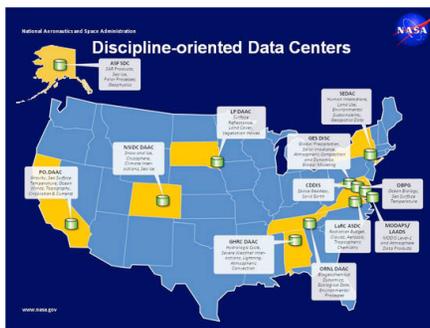
NASA Earth Science

Week 2



NASA Data Products

Week 3



NASA Data Centers

Weeks 4 & 5

Application & Capacity Building: Application Areas

Water Resources



NASA's Landsat satellites shows the Yellow River delta at five-year intervals from 1989 to 2014.

Disasters



NASA supports California wildfire control efforts with an unmanned plane [read more...](#)

NASA Data Applications with GIS



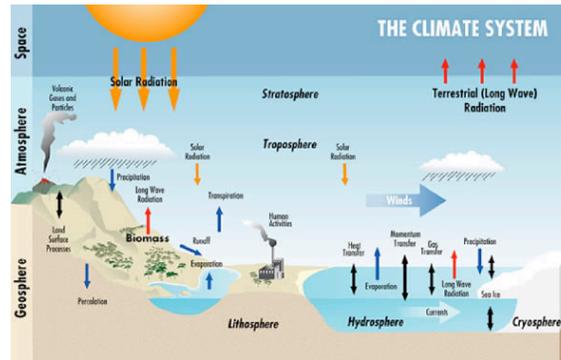
NASA Earth Science



Climate System
Research Questions

Observational Needs

- Missions and Sensors Design and Development,
- Validation Strategy,
- Information Technology Development



- Data Analysis
- Data Assimilation in Models,
- Model Validation



- Data Distribution** for Research and Applications, for Environmental Decision Support,
- Capacity Building

- Mission Launch,
- Sensor Measurements to Climate Data Parameters,
- Data Validation

**Week-1
Summary**

Data Attributes (Remote Sensing and Models)

Spatial Resolution
Spatial Coverage
Temporal Resolution
Temporal Coverage
Data Format
Data Latency
Data Accuracy
Data Strengths/Limitations

Data Access
Data Analysis/Visualization

Week-2 Review

Satellites/Sensors for Air Quality Parameters

Satellite	Sensors	Quantities
Terra and Aqua	MODerate Resolution Imaging Spectroradiometer (MODIS)	Aerosol Optical Depth (AOD)
Terra	Multi-angle Imaging SepctroRadiometer (MISR)	(AOD) Particle Type
Aqua	Atmospheric Infrared Sounder (AIRS)	Trace Gases
Aura	Ozone Monitoring Instrument (OMI)	Ozone, Sulphur Dioxide, Nitrogen Dioxide AOD
Suomi-NPP*	Visible Infrared Imaging Radiometer Suite (VIIRS)	Aerosol Optical Depth (AOD) Particle Type
CALIPSO	LIDAR	Aerosol Profile

*National Polar-orbiting Partnership

Week-2 Review

Satellites/Sensors for Disasters, Land and Water Resources Parameters

Satellite	Sensors	Quantities
TRMM	Precipitation Radar (PR) TRMM Microwave Imager (TMI) Visible Infrared Scanner (VIRS)	Rain Rate, Vertical Rain Rate Profile, Accumulated Rain, Soil Moisture
Terra and Aqua	MODerate Resolution Imaging Spectroradiometer (MODIS)	Snow Cover, Vegetation Index, Leaf Area Index, Land Cover , Clouds
Aqua	Atmospheric Infrared Sounder (AIRS) Advanced Microwave Scanning Radiometer for EOS (AMSR-E)	3-dimensional Atmospheric Temperature and Humidity, clouds Snow Water Equivalent, Sea Ice, Soil Moisture, Rain Rate
Landsat	(Enhanced) Thematic Mapper (ETM)	Vegetation Index, Leaf Area Index, Land Cover
Grace	K-Band Ranging Assembly	Terrestrial Water

Week-2 Review

NASA Models Data

For Water Resources and land Management

Models	Quantities
MERRA	3-dimensional Winds, Temperature, Humidity, Clouds, Rain Rate ,Snow Mass, Snow Cover, Snow Depth, Surface Snowfall Rate, Evapotranspiration
GLDAS/NLDAS	Evapotranspiration, Multi-layer Soil Moisture, Rainfall, Snowfall Rate, Snow Melt, Snow-Water Equivalent, Surface and Sub-surface Runoff

Week-2 Review

How to Search for Data?

Global Change Master Directory

<http://gcmd.gsfc.nasa.gov/index.html>

The screenshot shows the Global Change Master Directory website. At the top left is the NASA logo and the text "Global Change Master Directory Discover Earth science data and services". Below this is a navigation bar with buttons for "Search", "Learn about GCMD", "Portals", and "Collaborate". The main content area features three large boxes: "Data Sets" (with a globe and data chart), "Services / Tools" (with a map and software icons), and "Ancillary Descriptions" (with satellite and aircraft images). Each box has a brief description and a "Search" button. Below these is a "Search by Free Text" section with a search input field, a "Go" button, and radio buttons for "Data Sets" (selected) and "Services / Tools". To the right is a "Highlights" section with a link to "GCMD/IDN Version 9.9.3 Software Release Announcement" and a "More:" link followed by a numbered list 1-6.

Week-2 Review

Week 3: Outline

➤ Where and How to get Data?

NASA Data Centers

*Data Access, analysis, and visualization
Tools*

NASA's Earth Observing System Data and Information System (EOSDIS)

<https://earthdata.nasa.gov/>

https://earthdata.nasa.gov

ARHDATA Data Discovery Data Centers Community Science Disciplines

Login with URS!

NASA EOSDIS
NASA'S EARTH OBSERVING SYSTEM
DATA AND INFORMATION SYSTEM

Search

About EOSDIS Data Our Community User Resources Labs Wiki Register

Home About EOSDIS **Data** Our Community User Resources Labs Wiki Register

Data Tools Data Centers Near Real-Time Data Standards and References

Search & Order Tools

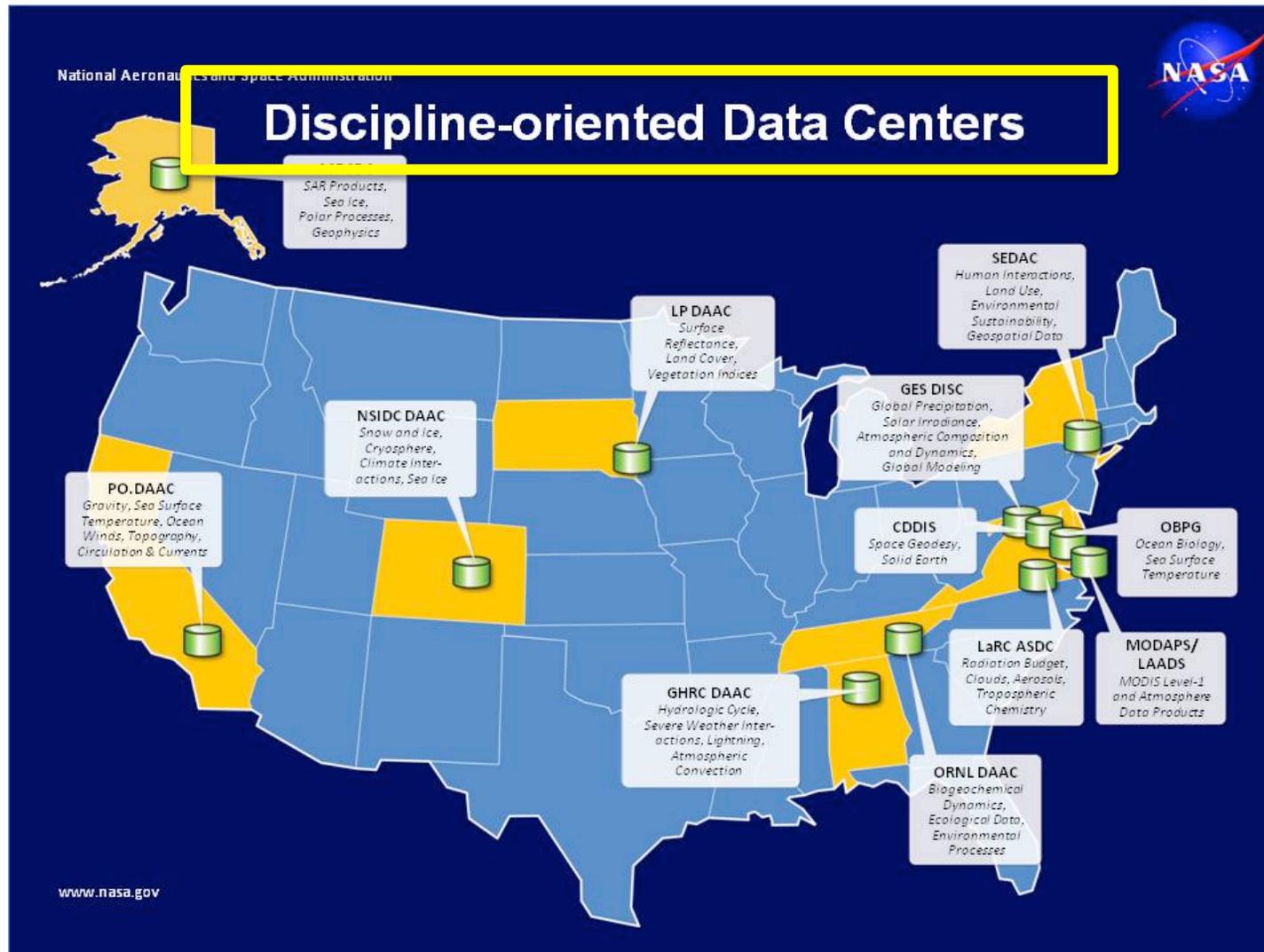
EOSDIS Data Service Directory

King Fire, Northern California
Pictured on September 20, 2014, from the MODIS instrument on the Terra satellite. The King Fire is currently burning in steep terrain in the South Fork of the American River Canyon, Silver Creek Canyon and the Rubicon Canyon, north of the community of Pollock Pines. As of midnight, September 22, the fire size is 82,018 acres with 17% contained. The suspected cause is arson. California has been battling a large number of fires this year due to high temperatures, high winds and drought conditions. Visit Worldview to visualize near real-time data from EOSDIS.

ATMOSPHERE CALIBRATED RADIANCE AND SOLAR RADIANCE CRYOSPHERE HUMAN DIMENSIONS LAND OCEAN

NASA Data Centers

There are **12** Data Centers



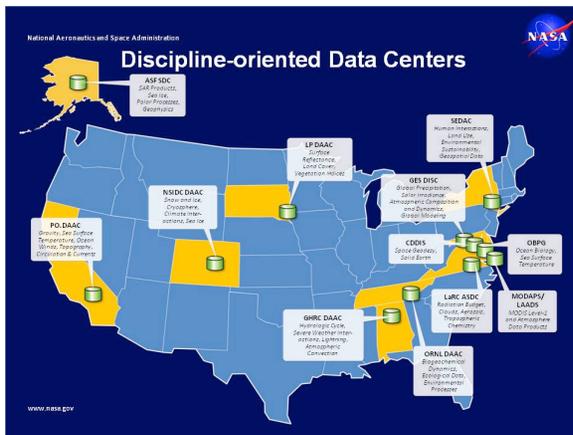
Distributed Active Archive Centers (DAACs)

NASA Data Centers

<https://earthdata.nasa.gov/about-eosdis/science-system-description/eosdis-components/eosdis-data-centers>



Links and descriptions for each Center are available from the EOSIDS



Clicking on the DAAC name will take you to a page with more information about the DAAC.

Clicking on a topic will take you to the webpage at the DAAC with more information or links on how to get the data.

	<ul style="list-style-type: none"> Alaska Satellite Facility SSM DAAC (ASF SDC) <ul style="list-style-type: none"> Synthetic Aperture Radar (SAR) Products Sea Ice Polar Processes Ocean Physics 	
	<ul style="list-style-type: none"> Coastal Dynamics Data Information System (CDIS) <ul style="list-style-type: none"> Space Geodesy Satellite Earth 	
	<ul style="list-style-type: none"> Global Hydrology Resource Center (GHRC) <ul style="list-style-type: none"> Hydrologic Cycle Severe Weather Interactions Lightning Atmospheric Connections 	
	<ul style="list-style-type: none"> Global Earth Science Data and Information Services Center (GES DISC) <ul style="list-style-type: none"> Atmospheric Composition and Dynamics Global Precipitation Water and Energy Cycle Solar Irradiance Global Modeling 	
	<ul style="list-style-type: none"> Land Processes Distributed Active Archive Center (LP DAAC) <ul style="list-style-type: none"> Surface Reflectance, Radiance, & Temperature Topography Radiation Budget Ecosystem Variables Land Cover Vegetation Indices 	
	<ul style="list-style-type: none"> Langley Research Center Atmospheric Science Data Center (LARC ASDC) <ul style="list-style-type: none"> Radiation Budget Clouds Aerosols Trace Gases/Chemistry 	
	<ul style="list-style-type: none"> MODIS Level 1 and Atmosphere Archive and Distribution System (MODAPS LAADS) <ul style="list-style-type: none"> MODIS Radiance Atmosphere 	
	<ul style="list-style-type: none"> National Snow and Ice Data Center (NSIDC) DAAC <ul style="list-style-type: none"> Snow Sea Ice Glaciers Ice Sheets Frozen Ground Soil Moisture Cryosphere 	
	<ul style="list-style-type: none"> Oak Ridge National Laboratory (ORNL) DAAC <ul style="list-style-type: none"> Biogeochemical Dynamics Ecological Data Environmental Processes 	
	<ul style="list-style-type: none"> Ocean Biology Processing Group (OBPG) <ul style="list-style-type: none"> Ocean Biology Sea Surface Temperature 	
	<ul style="list-style-type: none"> Physical Oceanography (PO) DAAC <ul style="list-style-type: none"> Salinity Sea Surface Temperature Sea Surface Salinity Ocean Winds Ocean Surface Topography Ocean Currents and Circulation 	
	<ul style="list-style-type: none"> Socioeconomic Data and Applications Data Center (SEDAC) <ul style="list-style-type: none"> Human Interactions Land Use Environmental Sustainability Demographic Data 	

Brief Overview of the Data Centers



Earth Observing System Data and Information System (EOSDIS)

Distributed Active Archive Centers (DAACs)

<http://earthdata.nasa.gov>

The following 12 slides about the Data Centers are obtained from EOSDIS
Courtesy: Jennifer Brennan and Carol Boquist

Note: The following set of slides show examples of data
holdings and imagery from each of the 12 EOSDIS DAACs

Atmospheric Science Data Center (ASDC) DAAC

Radiation Budget, Clouds, Aerosols, Tropospheric Chemistry

Air Quality

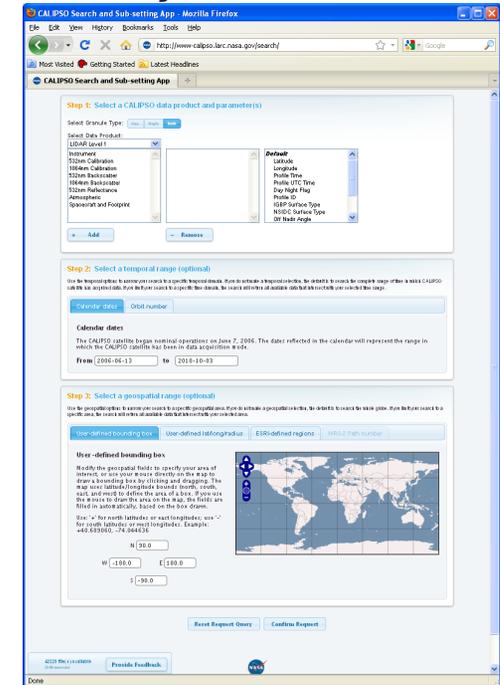
Satellite Data:

- CERES, **MISR**, **CALIPSO**, ISCCP, SAGE III, MOPITT, TES

Field Campaigns:

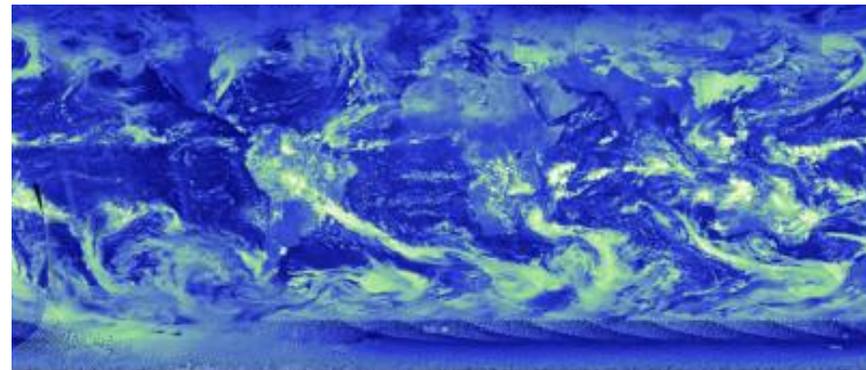
- DISCOVER/AQ, AirMISR, INTEX-A&B

The Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations (CALIPSO) Search and Subsetting Web Application



First Light incoming solar radiation from CERES on NPP Suomi

Langley Research Center
2 South Wright Street
Building 1268C, Mail Stop 157D
Hampton, VA, 23681-2199
757-864-8656
<https://eosweb.larc.nasa.gov>



Alaska Satellite Facility Synthetic Aperture Radar (ASF SAR) DAAC

SAR Products, Sea Ice, Polar processes, Geophysics

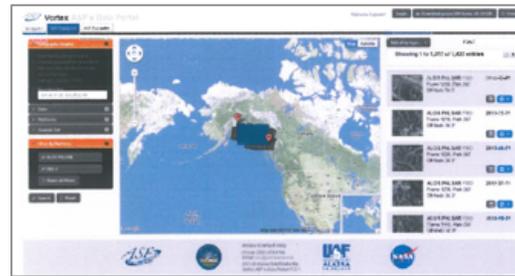
Satellite data:

- Seasat
- RADARSAT-1
- Advanced Land Observing Satellite (ALOS) PALSAR
- European Remote Sensing Satellite-1, -2 (ERS-1 and -2)
- Japanese Earth Resources Satellite-1 (JERS-1)

Airborne mission data:

- AirborneSAR (AIRSAR)
- Jet Propulsion Laboratory Uninhabited Aerial Vehicle SAR (UAVSAR)

Alaska Satellite Facility
Geophysical Institute
903 Koyukuk Drive
Fairbanks, AK 99775-7320
907-474-6166
<https://www.asf.alaska.edu>



Vertex provides access to the ASF Datapool and the ASF Subsetter.



Acquired by NASA's airborne UAVSAR instrument, this shows hurricane damage done to the mangrove forest structure on Florida's coast. Image: courtesy of Don Atwood, Alaska Satellite Facility.

Crustal Dynamics Data Information System (CDDIS)

Space Geodesy, Solid Earth

NASA's data archive for space geodesy providing data and derived products from a global network of observing stations equipped with one or more of the following measurement techniques:

- Satellite Laser Ranging (SLR) and Lunar Laser Ranging (LLR)
- Very Long Baseline Interferometry (VLBI)
- Global Navigation Satellite System (GNSS)
- Doppler Orbitography and Radiopositioning Integrated by Satellite (DORIS)



Global networks of Space Geodetic Sites

- GNSS Site
- ▲ SLR Site
- ▼ DORIS Site
- VLBI Site

Code 690.1
NASA Goddard Space Flight Center
Greenbelt, Maryland 20771
301-614-6542
<http://cddis.gsfc.nasa.gov>

Goddard Earth Sciences Data and Information Service Center (GES DISC)

*Atmospheric Composition and Dynamics, Global Precipitation,
Water and Energy Cycle, Solar Irradiance, Global Modeling*

Air Quality, Flooding, Water and Land Resources

Satellite/Sensors Data:

- **Aqua/AIRS**, **Terra&Aqua/MODIS**, **MLS**, **OMI**, **HIRDLS**, **SORCE**, **TRMM**, **UARS**, **TOMS**, **TOVS**, **ACOS**, **GPM**

Model Data:

- **MERRA**, **GLDAS** and **NLDAS**, **GOCART**

Near real-time data:

- **AIRS** and **MLS**

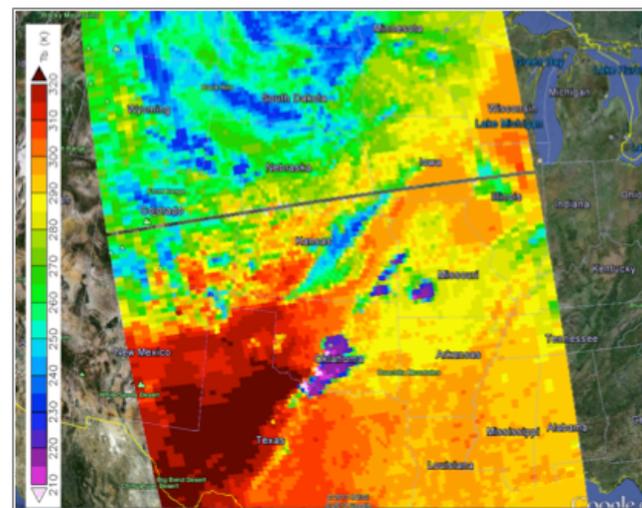


Giovanni (Geospatial Interactive Online Visualization ANd aNalysis Infrastructure) is a Web-based access, visualization, and analysis tool

Goddard Earth Sciences Data and Information Services Center
NASA Goddard Space Flight Center
Greenbelt, Maryland
301-614-5224

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

*Oklahoma tornado,
May 20, 2013
AIRS infrared brightness
temperatures show very cold
cloud tops in the storm*



Global Hydrology Resource Center (GHRC) DAAC

Hydrologic Cycle, Severe Weather Interactions, Lightning, Atmospheric Convection

Satellite Data

- Lightning data from nine instruments: 7 DMSP Operational Linescan System (OLS) instruments, the Optical Transient Detector (OTD) on Microlab-1, and [TRMM Lightning Imaging Sensor \(LIS\)](#)

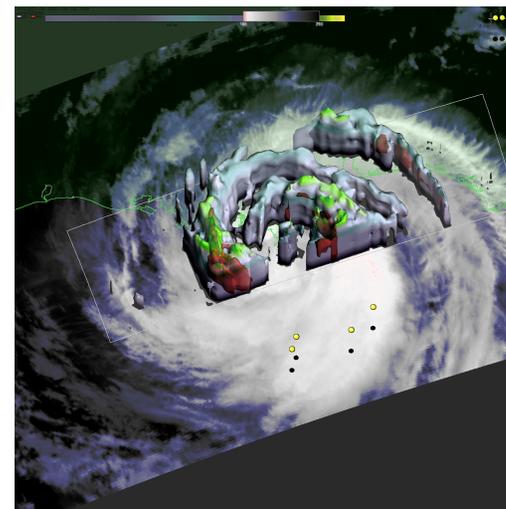
Ancillary data from ground-based lightning sensors

Airborne data:

- EV-1 , CAMEX, HS3

Other data:

- GPM Ground Validation Program data and the Hurricane Science Research Program field campaign data

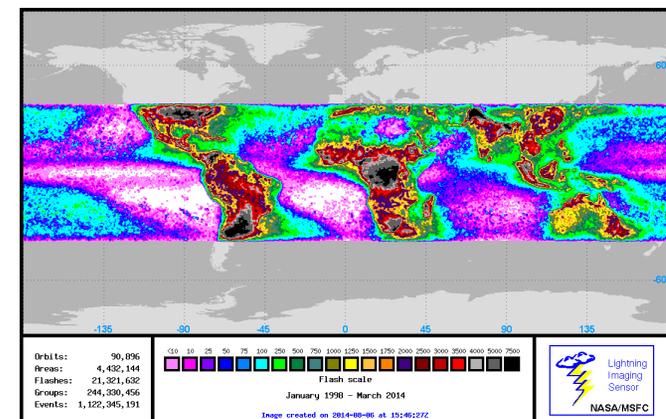


Internal structure of Hurricane Isaac depicting precipitation intensity and lightning from LIS. Photo courtesy: Owen Kelley

Global Hydrology Resource Center (GHRC)
National Space Science and Technology Center
320 Sparkman Drive, Huntsville, AL 35805
256-961-7932

<http://ghrc.nsstc.nasa.gov>

*Lightning Distribution
Jan 1998 - March 2014*



Orbits: 90,896
Areas: 4,432,144
Flashes: 21,321,632
Groups: 244,330,456
Events: 1,122,345,131

Flash scale
January 1998 - March 2014
Image created on 2014-08-06 at 15:46:27Z

Lightning Imaging Sensor
NASA/MSFC

Land Processes (LP DAAC)

*Surface Reflectance, Radiance, & Temperature; Topography; Radiation Budget;
Ecosystem Variables; Land Cover; Vegetation Indices*

Satellite data:

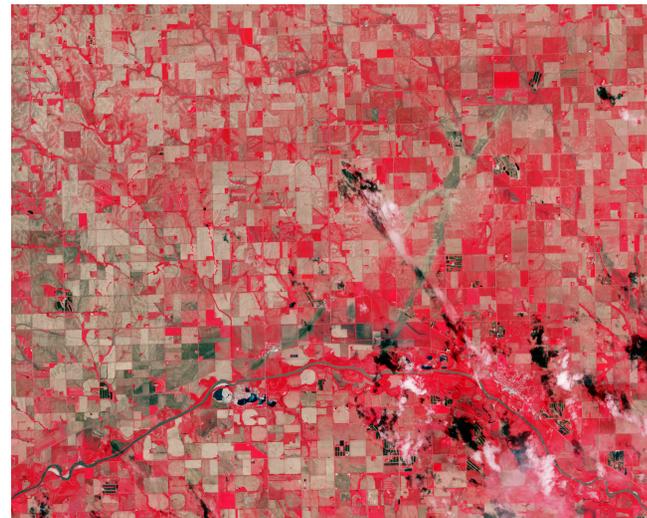
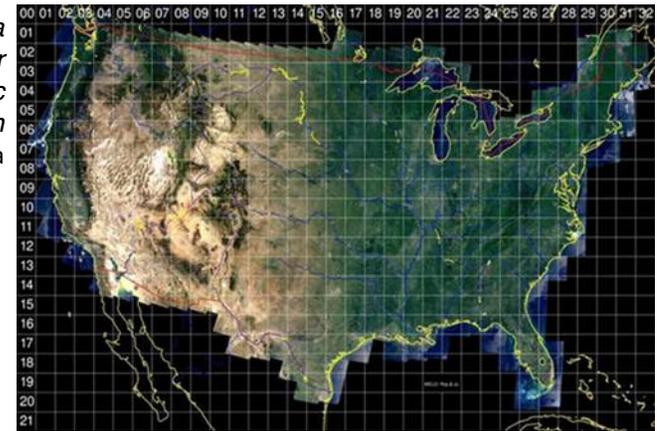
- Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) from Terra
- Moderate-resolution Imaging Spectroradiometer (MODIS) from Terra & Aqua

MEaSURES – Satellite-based data

- Global Forest Cover Change (GFCC)
- Web-Enabled Landsat Data (WELD)
- Shuttle Radar Topography Mission (SRTM)
- Vegetation Index & Phenology (VIP)

Water and Land Resources

*WELD large area
30-meter
composited mosaic
from Landsat terrain
corrected data*



*ASTER image of
rare twin
tornadoes
crossing near
Pilger, NE*

Land Processes Distributed Active Archive Center (LP DAAC)

US Geological Survey

Earth Resources Observation and Science (EROS)
Center

47914 252nd Street

Sioux Falls, SD 57198-0001

605-594-6116, 1-866-573-3222 (toll-free)

<https://lpdaac.usgs.gov>

MODIS Level 1 and Atmosphere Archive and Distribution System (LAADS) DAAC

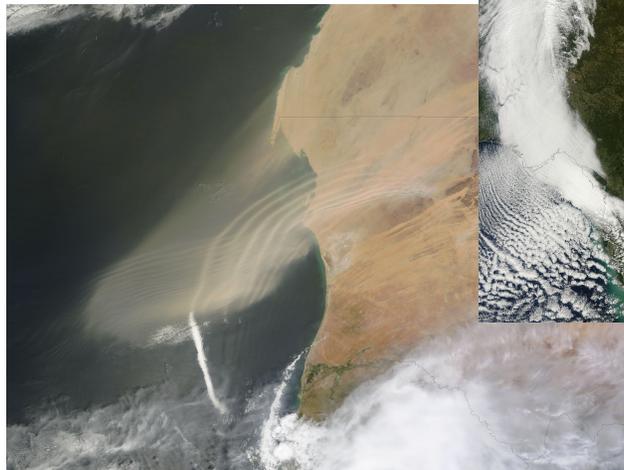
MODIS Radiance and Atmosphere

Air Quality, Land Resources

Satellite Data:

- Level 1 products (calibrated radiances and geolocation)
- Level 2 and 3 Atmosphere and Land products
- Near real-time MODIS data

Terra MODIS image of Hurricane Sandy off the southeastern United States.



MODIS - Dust plumes off the west coast of Africa September 2011

Code 619

NASA Goddard Space Flight Center
Greenbelt, Maryland, 20771
301-731-2917, 1 866-506-6347 (Toll Free)

<http://ladsweb.nascom.nasa.gov>

National Snow and Ice Data Center (NSIDC) DAAC

*Snow, Sea Ice, Glaciers, Ice Sheets,
Frozen Ground, Soil Moisture, and Cryosphere*

Water Resources: Snow, Soil Moisture

Satellite Data:

- AMSR-E, AVHRR, ICESat/GLAS, MODIS, Nimbus, TOVS, SSMI,

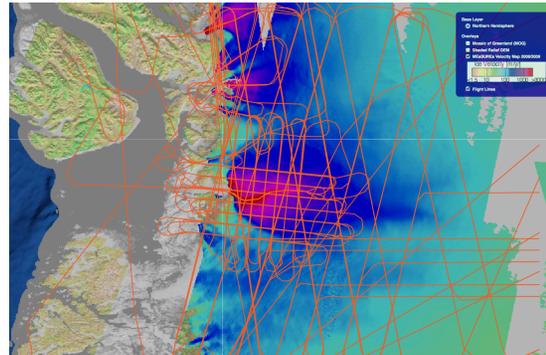
Airborne Data:

- Operation IceBridge, MEaSUREs

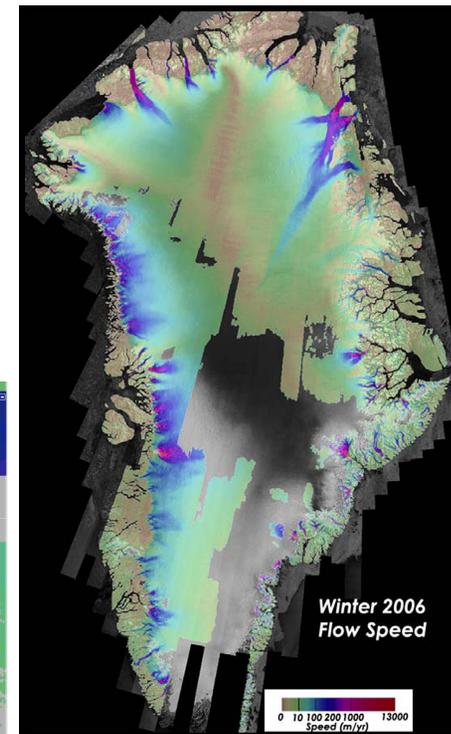
Other Data:

- Permafrost maps, CLPX field experiment

National Snow and Ice Data Center
University of Colorado Boulder
Boulder, Colorado 303-492-6199
<http://nsidc.org/daac>



Operation Icebridge flight paths are concentrated over the calving area of the Jakobshavn Glacier in Greenland. Red indicates the area of greatest ice velocity.



Ice Velocity derived from IceBridge and other data (MEaSUREs Program, I. Joughin)

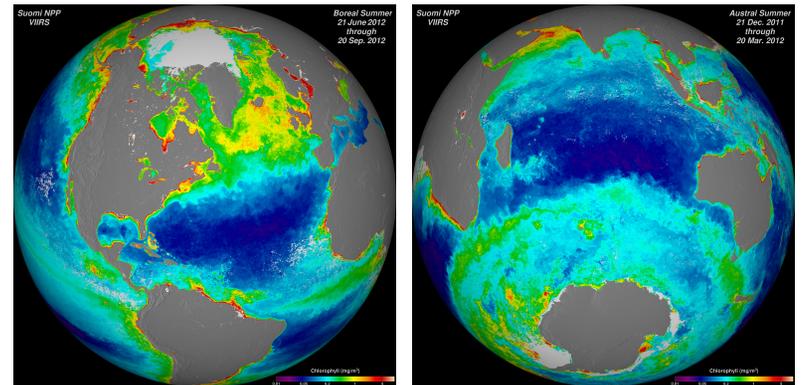
Ocean Biology Processing Group (OBPG) DAAC

Ocean Biology and Sea Surface Temperature

Water Quality

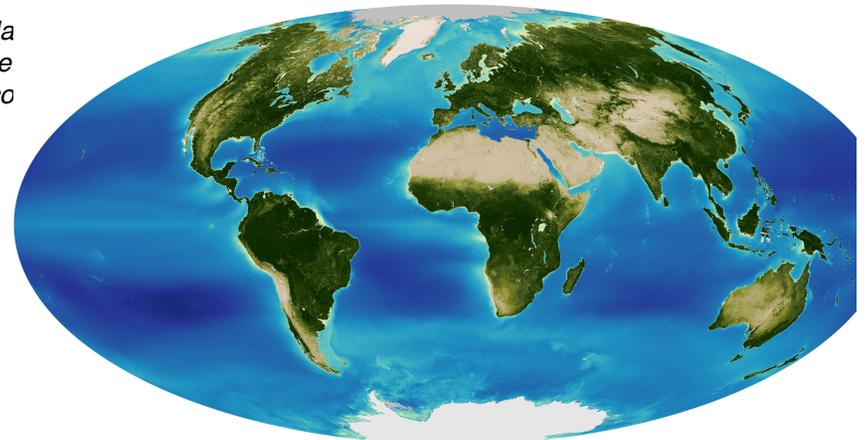
Satellite data:

- VIIRS/SNPP
- MODIS (Terra and Aqua)
- SeaWiFS
- CZCS
- Aquarius



VIIRS instrument on Suomi NPP shows season-long composites of ocean chlorophyll concentrations

*SeaWiFS da
average ove
13-year reco*



Ocean Biology Processing Group
GSFC Code 614.8
NASA Goddard Space Flight Center
Greenbelt, Maryland, 20771
<http://oceancolor.gsfc.nasa.gov>

Oak Ridge National Laboratory (ORNL) DAAC

*Biogeochemical Dynamics, Ecological Data,
Environmental Processes*

Land Resources

Regional and global data:

Collections of data for Climate, Vegetation, Soil
and other environmental variables

Land validation data

Field campaigns:

SAFARI, FLUX NET, BOREAS, LBA

Model Archive

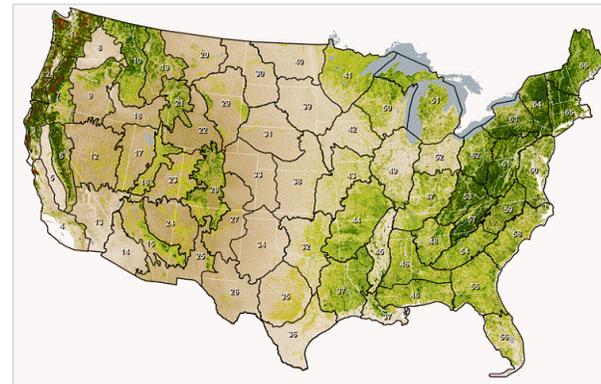
Oak Ridge National Laboratory DAAC
(ORNL DAAC)

PO Box 6301

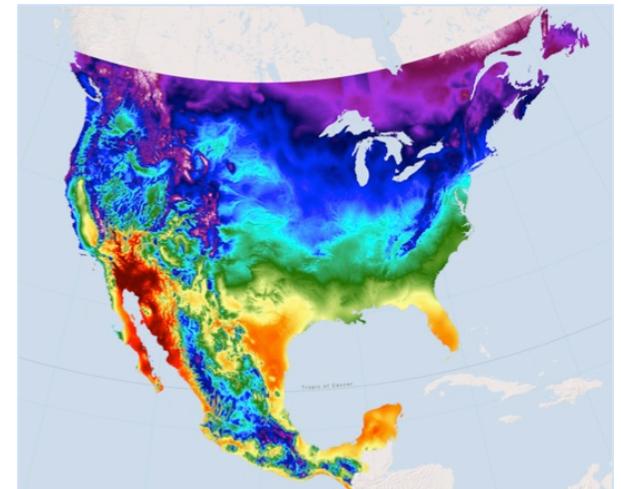
Oak Ridge, TN 37831

865-241-3952

<http://daac.ornl.gov>



*Mosaic image of
biomass for
conterminous United
States. North American
Carbon Program
(NACP) Aboveground
Biomass and Carbon
Baseline Data*



*The Daymet data set,
archived and distributed
through the ORNL DAAC,
provides gridded estimates
of daily weather parameters
for North America*

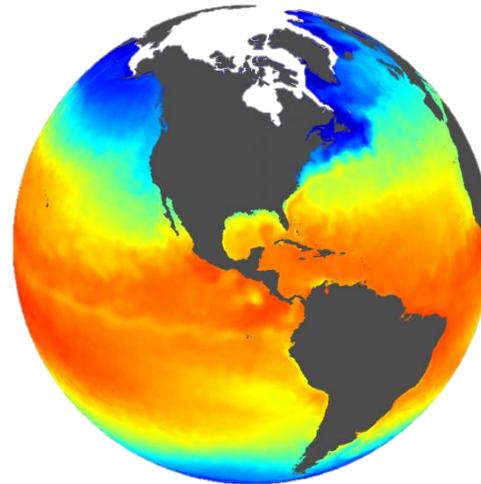
Physical Oceanography (PO.DAAC)

Gravity, Sea Surface Temperature, Sea Surface Salinity, Ocean Winds, Ocean Surface Topography, and Ocean Currents and Circulation

Water Resources

Satellite data:

- Aquarius
- GRACE
- NSCAT
- QuikSCAT
- Jason-1, Jason-2
- TOPEX/POSEIDON
- GHRSSST

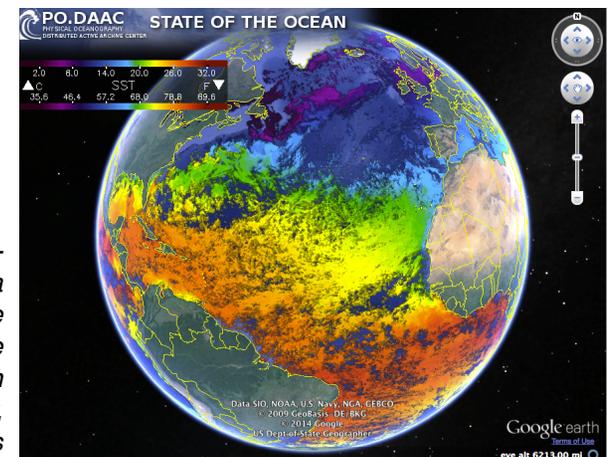


The Group for High Resolution Sea Surface Temperature (GHRSSST) Global Data Assembly Center at PO.DAAC integrates the data products produced from several regional data assembly centers around the world for distribution.

Physical Oceanography DAAC
(PO.DAAC)

Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, CA 91109

<http://podaac.jpl.nasa.gov>



SOTO provides near real-time data including data layers for sea surface temperature, sea surface height, ocean color, ocean winds, sea surface salinity, and ocean currents

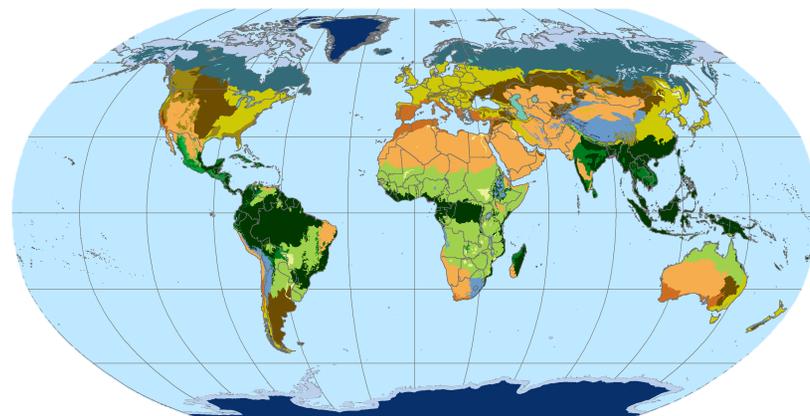
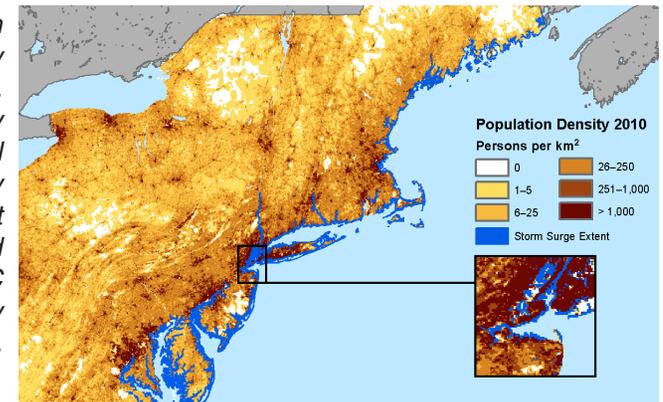
Socioeconomic Data and Applications Center (SEDAC)

Human Interactions, Land Use, Environmental Sustainability, Geospatial Data

Air-Water-Land Disasters Management

- Human population distribution on a latitude-longitude grid (U.S. and global)
- Human settlements and infrastructure, including roads, reservoirs, and dams
- Ecosystem, agriculture, and wetlands data
- Intergovernmental Panel on Climate Change (IPCC) socioeconomic scenarios
- Environmental treaty status and texts
- Environmental sustainability indicators
- Global data on natural hazards, poverty, and air and water pollution

Storm surge from Hurricane Sandy in October 2012, as estimated by the Federal Emergency Management Agency, coupled with SEDAC population density data for 2010.



*Population, Landscape, And Climate Estimates,
Version 3 (PLACE III) data set*

Socioeconomic Data and Applications Center (SEDAC)
CIESIN, Columbia University
PO Box 1000, 61 Route 9W
Palisades, NY 10964
Phone: +1 845-365-8988
<http://sedac.ciesin.columbia.edu>

Data Access Tools

Multiple Ways to Search Data and Tools

<https://earthdata.nasa.gov/data>

There are several ways to search for data of interest:

- Near real-time data products from the MODIS, OMI, AIRS, and MLS instruments in less than 3 hours from the [Land Atmosphere Near real-time Capability for EOS \(LANCE\)](#)
- Interactively browse satellite imagery and data in near real-time with [Worldview](#)
- Directory level information from the [Global Change Master Directory \(GCMD\)](#)
- Cross-DAAC searches through [Reverb](#), "inventory level interoperability" – uses [EOS Clearing House \(ECHO\)](#) metadata repository
- Tailored client software using [ECHO](#) metadata repository
- [DAAC-specific search tools](#)

Multiple Data Tools from EOSDIS and the Data Centers

<https://earthdata.nasa.gov/data/data-tools>

The screenshot shows the EOSDIS Data Tools page. The header includes the NASA logo, the EOSDIS logo (NASA'S EARTH OBSERVING SYSTEM DATA AND INFORMATION SYSTEM), a search bar, and a 'Login with URSI' button. The navigation menu includes 'About EOSDIS', 'Data', 'Our Community', 'User Resources', 'Labs', 'Wiki', and 'Register'. The 'Data' sub-menu is expanded, showing 'Data Tools', 'Data Centers', 'Near Real-Time Data', and 'Standards and References'. The main content area has a breadcrumb 'Home » Data', a 'Data Tools' heading, and a paragraph explaining that EOSDIS Distributed Active Archive Centers (DAACs) provide center-unique tools for functions such as searching and subsetting data. Below this, a list of tool categories is shown, with a red box highlighting the list and a yellow callout box pointing to it. The callout box contains a bulleted list of tool categories: Search and Order, Data Format Handling, Geolocation, Reprojection, Mapping, and Analysis and Visualization. A 'Show All' link is visible to the right of the callout box.

Home » Data

Data Tools

The EOSDIS Distributed Active Archive Centers (DAACs) provide center-unique tools for functions such as searching and subsetting data. The links provided in the category tables below list and describe some of these available data-handling and service tools. The tools are grouped loosely into broad categories that indicate the primary function of each tool, for example, data handling, visualization and analysis, search and order, etc. Since many tools have multiple functions, a summary table is included indicating the various uses of each tool.

Click one of the categories below to expand the category table and view the tools.

- Search and Order Tools
- Data Handling (Read/Ingest, Format Conversion, Data Manipulation)
- Subsetting and Filtering Tools (Temporal, Spatial, Parameter, Channel)
- Geolocation, Reprojection, and Mapping Tools
- Data Visualization & Analysis Tools

- Search and Order
- Data Format Handling
- Geolocation, Reprojection, Mapping
- Analysis and Visualization

Show All

Live Demonstration of Data Tool Search

<https://earthdata.nasa.gov/data/data-tools/search-and-order-tools>

**Selected Data Tools for Data Access,
Spatial/Temporal Selections,
Visualization, and Analysis**

Search for All Data

Cross-Data Centers Search

Global Change Master Directory

<http://gcmd.gsfc.nasa.gov/index.html>

The screenshot shows the NASA Global Change Master Directory website. At the top is a navigation bar with the NASA logo and the text "Global Change Master Directory Discover Earth science data and services". Below this are four buttons: "Search", "Learn about GCMD", "Portals", and "Collaborate". The main content area is divided into three columns:

- Data Sets:** Features a graphic of Earth with a data plot. Text: "Discover and access data descriptions, relevant to global change and Earth science research." Button: "Search Data Sets".
- Services / Tools:** Features a graphic of a color-coded map and a software interface. Text: "Discover and access software, models, and other services that can be used to analyze, process, and model Earth science data." Button: "Search Services/Tools".
- Ancillary Descriptions:** Features a graphic of a satellite and an airplane. Text: "Learn about instruments, platforms, projects, and data centers collecting Earth science data worldwide." Button: "Search Ancillary Descriptions".

At the bottom left is a "Search by Free Text" section with a text input field, a "Go" button, and radio buttons for "Data Sets" (selected) and "Services / Tools". At the bottom right is a "Highlights" section with a link for "GCMD/IDN Version 9.9.3 Software Release Announcement" and a "More:" link followed by a numbered list of 6 items.

See Week-2 Presentation

Reverb - Earth Observing System (EOS) Clearing House (ECHO)

http://reverb.echo.nasa.gov/reverb/#utf8=%E2%9C%93&spatial_map=satellite&spatial_type=rectangle

The screenshot displays the Reverb | ECHO web interface. At the top, the NASA logo and "National Aeronautics and Space Administration" are visible. Below this, the "EOSDIS" logo and "NASA's Earth Observing System Data and Information System" are present. The "Reverb | ECHO" logo and "The Next Generation Earth Science Discovery Tool" are also displayed. A navigation bar includes links for "EOSDIS Home", "Reverb Home", "About", and "Tutorial" (highlighted in yellow). On the right side of the navigation bar, there are links for "Shopping Cart (0)", "Order Status", "Service Request Status", and "Sign In".

The main content area is titled "Step 1: Select Search Criteria" and is divided into three sections:

- Search Options:** A sidebar on the left containing a list of search criteria: Spatial, Search Terms, Temporal, Platforms & Instruments, Campaigns, Processing Levels, and Science Keywords. It also includes "Save Query" and "Clear Criteria" buttons, a "Feedback?" section, and a "Notices" section with a "URS Single Sign On" notice.
- Spatial Search:** A central map area with a "Bounding Box" input field containing the example coordinates "e.g. -50.736, 163.477, -11.144, 105.680 (S,E,N,W)". It features a "Satellite" map view, a "Click and drag to set a bounding rectangle" instruction, and a "Search by ESRI shape file" link.
- Search Terms and Temporal Search:** A right-hand sidebar containing a "Search Terms" input field with the example "e.g. MODIS Fire AST_L1A" and a "Temporal Search" section with "START" and "END" date pickers. A note states "* all times must be specified in GMT" and there are buttons for "Date Range" and "Annual Repeating Dates".

At the bottom of the interface, "Step 2: Select Datasets" is visible, along with a status bar indicating "Found 3520 datasets. Total Query Time: 0.36s".

Spatial/Temporal/Coverage/Keyword Search

Near Real Time Data Access Tools

Land Atmosphere Near Real-Time Capturing of Data LANCE

<https://earthdata.nasa.gov/data/near-real-time-data/data>

Near Real-Time Data

Land Atmosphere Near Real-time Capability for EOS

26 September 2014: Rapid Response servers are temporarily down. Backup servers are providing the last 10 days of imagery. [Read more...](#)

Near Real-Time Data

- ☐ Data
 - ☐ Instrument
 - ☐ Platform
 - ☐ Hazards and Disasters
 - Fire Email Alerts
 - Active Fire Data
 - Science Quality Products
 - ▼ Datacasting
 - External Data
- ☐ Visualization
- ☐ FIRMS
- ☐ Rapid Response
 - Learn
- ☐ About LANCE
- ☐ FAQ
 - Support

GET DATA

Home » Data » Near Real-Time Data

Data

Access near real-time products from the MODIS, OMI, AIRS, and MLS instruments in less than 3 hours from observation from LANCE.

LANCE provided NRT data from AMSR-E until the instrument stopped spinning on 4th October 2011. AMSR-E is currently not producing any data. ([AMSR2 information](#))

[Register](#) to start downloading data.

Please read the [disclaimer](#) for more information about using the data.

Use the table below to determine if available products meet latency (time between observation and availability to users) requirements in general or select the instrument for more on the products, latencies and associated information.

If data latency is not a primary concern, please consider using [science quality products](#). Science products are created using the best available ancillary, calibration and ephemeris information. Science quality products are an internally consistent, well-calibrated record of the Earth's geophysical properties to support science.

Instrument	Product Categories	Average Latency
AIRS	Radiances, Temperature and Moisture Profiles, Precipitation, Dust, Clouds and Trace Gases	75 – 140 minutes
MLS	Ozone, Temperature, Carbon Monoxide, Water Vapor, Nitric Acid, Nitrous Oxide, Sulfur Dioxide	75 – 140 minutes
MODIS	Radiances, Cloud/Aerosols, Water Vapor, Fire, Snow Cover, Sea Ice, Land Surface Reflectance, Land Surface Temperature	60 – 125 minutes (Latency excludes daily LSR)
OMI	Ozone, Sulfur Dioxide, Aerosols, Cloud Top Pressure	100 – 165 minutes (Latency excludes L3)

Near Real-Time
Data

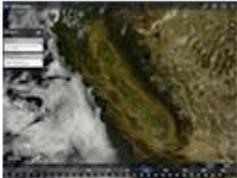
For Air Quality and Land Resources Data

LANCE Data Visualization

<https://earthdata.nasa.gov/data/near-real-time-data/visualization>

[Home](#) » [Data](#) » [Near Real-Time Data](#)

Visualization



Worldview

Interactively browse and download full-resolution, global, near real-time satellite imagery from 100+ NRT data products from LANCE and other NASA data providers. Showing the entire Earth as it looks "right now" - or at least as it has looked within the past few hours, Worldview supports time-critical application areas such as wildfire management, air quality measurements, and weather forecasting. Worldview is supported by the [Global Imagery Browse Services \(GIBS\)](#) - a set of standard services that delivers imagery in a highly responsive manner.



Global Imagery Browse Services (GIBS)

Access global, full-resolution MODIS, AIRS and MLS imagery via a variety of standard services, such as Web Map Tile Services (WMTS), Tiled Web Map Service (TWMS) and KML.



AIRS WMS

Visualize AIRS data and build customized maps with data coming from different networks.



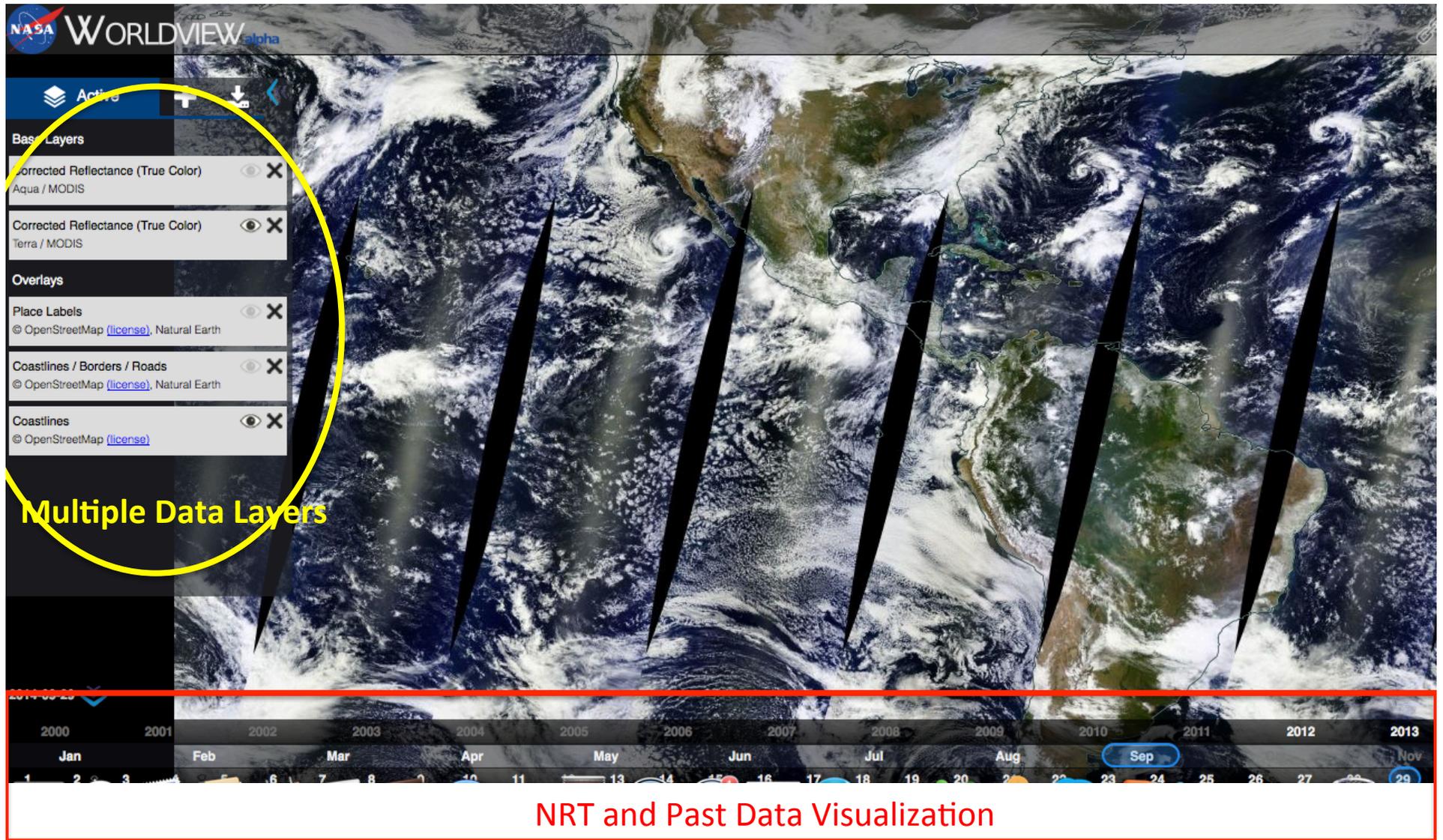
Rapid Response

View and download imagery for approximately 40 products from the MODIS, AIRS, and OMI instruments. All imagery can be viewed through [Worldview](#). To help users, the imagery have been organized into 10 application categories to assist users in monitoring and analyzing a variety of natural and man-made [hazards and disasters](#) (e.g. ash plumes and fires). [MODIS Subsets](#) and [MODIS Near Real-Time \(Orbit Swath\) Images](#) are also available.

For Air Quality and Land Resources Data

Worldview Near Real-Time Visualization

<https://earthdata.nasa.gov/labs/worldview/>



Remote Sensing and Modeling Data Archive and Access

Mirador GES-DISC

Data Search and Large-volume Data Access via ftp, wget, UNIX curl,
<http://mirador.gsfc.nasa.gov>

EARTHDATA Data Discovery Data Centers Community Science Disciplines

NASA **GES DISC** Goddard Earth Sciences Data and Information Services Center

Search GES DISC Search

Advanced Search

GES DISC Home Data Services Science Portals Mission Portals

Analyze Data with Giovanni Search for Data with Mirador Simple Subset Wizard More...

Mirador
Data Access Made Simple

You are here: [Keyword Search](#)

Keyword Projects Science Areas

Keyword: Required Time Span: To: Location: Update Map Search GES-DISC

Map Satellite

Google

Imagery ©2014 NASA | Terms of Use | Report a map error

Advanced Search

+ OVERVIEW
+ HELP CENTER
+ DATA HOLDINGS
+ VIEW CART

Additional Features

+ News
+ Restricted Data
+ Feedback
+ FAQ

Data Search by Keyword

Spatial and Temporal Sub-setting

For Air Quality, Water & Land Resources Data (Remote Sensing and Modeling Data)

Giovanni

GES DISC: Goddard Earth Sciences, Data and Information Services Center

<http://disc.sci.gsfc.nasa.gov/giovanni>

The screenshot shows the top navigation bar of the GES DISC website. It includes the NASA logo, the text 'GES DISC Goddard Earth Sciences Data and Information Services Center', and a search box labeled 'Search GES DISC' with a 'Search' button and a link to 'Advanced Search'. Below the navigation bar is a banner with the text 'Giovanni - The Bridge Between Data and Science' and several small thumbnail images of satellite data visualizations.

- » OVERVIEW
 - What is Giovanni?
 - Who Uses Giovanni?
 - Giovanni Parameters
 - Giovanni Plot Types
 - How to Use Giovanni
 - How to Acknowledge Giovanni
 - Acknowledgements

- Additional Features
 - News
 - Users Manual
 - Publications
 - Newsletters
 - Feedback
 - FAQ

You are here: [GES DISC Home](#) » [Giovanni - Interactive Visualization and Analysis](#)

Giovanni - Interactive Visualization and Analysis

Contributors: [tonyr](#), [rchowdhury](#)

Giovanni - Interactive Visualization and Analysis - GES DISC: Goddard Earth Sciences, Data and Information Services Center

Giovanni-4 Now Available
New! Please try out [Giovanni 4](#), the next generation of Giovanni, with dramatically improved performance and interactive plotting and mapping. (Currently, only select Aerosols, Hydrology and Turbulent Flux data are available in Giovanni 4, with more on the way.)

The screenshot shows the 'Giovanni Parameter List' page. It features a navigation bar with 'Giovanni Portals' and 'Giovanni Parameter List'. The main content area is titled 'Atmospheric Portals (Scroll down to view complete list)' and contains a list of data portals with expandable arrows. A yellow circle highlights the 'Atmospheric Portals' section. A green text box is overlaid on the right side of the screenshot, containing the text: 'For Air Quality, Water & Land Resources Data (Remote Sensing and Modeling Data)'. The background of the page shows a satellite image of Earth.

- Atmospheric Portals (Scroll down to view complete list)
 - Terra and Aqua MODIS: Monthly
 - Aura OMI Level 3
 - Aura OMI Level 2G
 - Aura Microwave Limb Sounder (MLS)
 - Aura High Resolution Dynamics Limb Sounder (HIRDLS)
 - Aura Tropospheric Emission Spectrometer (TES)
 - Earth Probe and Nimbus-7 TOMS
 - Upper Atmosphere Research Satellite (UARS) Halogen Occultation Experiment (HALOE)
 - SeaWiFS Deep Blue Level 3 Long-Term Aerosol Data: Daily
 - SeaWiFS Deep Blue Level 3 Long-Term Aerosol Data: Monthly
- Application and Education Portal (Scroll down to view complete list)
- Meteorological Portals
- Ocean Portals
- Hydrology Portals (Scroll down to view complete list)

Data Portals

Giovanni

GES DISC: Goddard Earth Sciences, Data and Information Services Center

<http://disc.sci.gsfc.nasa.gov/giovanni>

The screenshot shows the Giovanni web application interface. At the top, there are two tabs: "Giovanni Portals" and "Giovanni Parameter List". Below the tabs, there is a list of categories with expandable arrows: "Atmospheric Portals (Scroll down to view complete list)", "Application and Education Portals (Scroll down to view complete list)", "Meteorological Portals", "Ocean Portals", and "Hydrology Portals (Scroll down to view complete list)". Under the "Hydrology Portals" category, there is a sub-section for "GLDAS" (Global Land Data Assimilation System) with several data options: "Global Land Data Assimilation System 1° x 1° Monthly Data", "Global Land Data Assimilation System 1° x 1° 3-Hourly Data", "New! Global Land Data Assimilation System 0.25° x 0.25° Monthly Data", and "New! Global Land Data Assimilation System 0.25° x 0.25° 3-Hourly Data". Below this is a sub-section for "NLDAS" (North American Land Data Assimilation System) with options: "North American Land Data Assimilation System 0.125° x 0.125° Hourly Data", "North American Land Data Assimilation System 0.125° x 0.125° Monthly Data", and "New! North American Land Data Assimilation System 0.125° x 0.125° Monthly Climatology Data". A yellow circle highlights the "New!" labels and the "GLDAS" section. A yellow arrow points from the "New!" label in the "GLDAS" section to the "Satellite Rainfall Archives" section below.

Data Products

Satellite Rainfall Archives

[Monthly Global Precipitation \(GPCP\)](#)

[3-hourly TRMM and Other Rainfall Estimate \(3B42 V7\)](#)

[Daily TRMM and Other Rainfall Estimate \(3B42 V7 derived\)](#)

[Monthly TRMM and Other Data Sources Rainfall Estimate \(3B43, 3A12, 3A25 V7\)](#)

Data Parameters

Ground Observation Archives

Multiple Data Formats and Analysis Options

Giovanni – Data analysis without downloading data

The screenshot displays the Giovanni web interface. At the top, a world map shows a selected area of interest with coordinates: West: -180, North: 50, South: -50, East: 180. Below the map is a 'Vertical Profile' section with 'Upper Level' and 'Lower Level' dropdown menus. A yellow box labeled 'Spatial, Temporal, Analysis and Visualization Selections' has arrows pointing to the map, the vertical profile section, and a dropdown menu. The dropdown menu lists various analysis options, with 'Lat-Lon map, Time-averaged' selected. At the bottom, the 'Temporal' section shows 'Begin Date' and 'End Date' fields, both set to Year: 2014 and Month: Jan.

Cursor Coordinates:

Area of Interest: West: -180 North: 50 South: -50 East: 180 Update Map

Vertical Profile

Select a vertical profile range. The range selection is disabled unless a qualifying parameter is selected. In order to enable this option (and populate the list with values), select a 3D parameter with dimensions and are labeled with a '3D' in the 'Parameters' section.

Upper Level: [dropdown]
Lower Level: [dropdown]

NOTE: Selected 3D parameters must have the same 3rd dimension (e.g., pressure, altitude, wavelength, etc.) units in order to enable the vertical level menu.

Spatial, Temporal, Analysis and Visualization Selections

- Time series
- Vertical Profile
- Scatter plot, Time-averaged
- Longitude-Time Hovmoller Diagram
- Cross Map, Time-Pressure
- Latitude-Time Hovmoller Diagram
- Cross Map, Latitude-Pressure
- Time series, Area statistics
- Lat-Lon map, Time-accumulated
- Cross Map, Longitude-Pressure
- Overlay of Lat-Lon Maps
- Animation
- Lat-Lon map, Time-averaged**
- Lat-Lon map, Time-averaged

Temporal

Begin Date Year: 2014 Month: Jan
End Date Year: 2014 Month: Jan

CALIPSO Search and Subsetting Tool (ASDC)

<https://www-calipso.larc.nasa.gov/search/login.php>

Data
User-
guide,
Products,
Quality

NASA NATIONAL AERONAUTICS and SPACE ADMINISTRATION

SEARCH

CALIPSO Search and Subsetting Web Application User Login

Data Users Guide Data Products Catalog Data Quality Summaries Frequently Asked Questions

Introduction

The CALIPSO Search and Subsetting web application enables a more sophisticated approach to selecting and ordering CALIPSO lidar data by date, time and geolocation.

We highly encourage that you send us your feedback using the URL at the bottom of the page; every bit of feedback will allow us to address issues and add enhancements in future releases.

This web app is collaborative effort of the CALIPSO and ASDC Data Management Teams.

Minimum Requirements

- ASDC data users account
- JavaScript enabled
- CSS enabled
- HTML cookies enabled

Supported Web Browsers

This web application was developed and optimized for modern HTML4/JavaScript/CSS-enabled web browsers. The following browsers are known to work with this web application:

- Internet Explorer 8+
 - **Note:** After you login, you may receive a popup security warning message that will state "Only secure content is displayed". If you exit the popup, the map will not appear on the subsequent page and may make it difficult for you to select geographic ranges. If you select Show all content, the map will be visible. (This popup appears because the map on the following page is delivered via nonSSL while the rest of the content on the page is delivered via SSL.) Please use your own discretion when addressing the popup.
- Safari 3+
- Chrome 9+
- Firefox 3.6+
 - **Note:** Due to an issue with earlier versions, the calendar date selection may not work properly for Firefox 20 or earlier. For full functionality, please upgrade to Firefox 21.
- Opera 9.6+
- iCab 4.8+
- OmniWeb 5

Internet Explorer 8+ is supported. IE versions less than 8 do not fully support CSS and JavaScript standards. Using such versions may lead to quirky browser behavior. However, if you disable CSS in IE, you may be able to use the web site in a minimal state. Unfortunately, we cannot provide support for these browsers.

Other HTML4 browsers with JavaScript and CSS may work, but cannot be guaranteed at this time. Please check this web site for future updates on improvements and revisions.

For Air Quality

National Snow and Ice Data Center (NSIDC)

<http://nsidc.org>

The screenshot shows the NSIDC website interface. The top navigation bar includes the NSIDC logo, the text 'National Snow & Ice Data Center', a home icon, and menu items for 'DATA', 'RESEARCH', 'NEWS', and 'ABOUT'. A search bar is located on the right. A yellow arrow points to the 'DATA' menu item. Below the navigation bar, the 'DATA' menu is expanded, showing four main sections: 'Data Sets for Research', 'Scientific Data Search', 'Data for Everyone', and 'Sponsored Programs'. The 'Data Sets for Research' section is circled in yellow and lists: Brightness Temperature, Glaciers, Ice Sheets, Permafrost, Sea Ice, Soil Moisture, Snow, and a link to search for more. The 'Scientific Data Search' section features a search input field with the placeholder text 'Enter term(s)'. The 'Data for Everyone' section lists various resources like 'Arctic Sea Ice News & Analysis', 'Glacier Photograph Collection', 'Greenland Ice Sheet Today', 'MASIE (Daily sea ice extent)', 'Satellite Observations of Arctic Change', 'Sea Ice Index', and 'Virtual Globes: Google Earth'. The 'Sponsored Programs' section lists 'Antarctic Glaciological Data Center', 'Exchange for Local Observations and Knowledge of the Arctic (ELOKA)', 'NOAA at NSIDC', and 'NASA Distributed Active Archive Center at NSIDC (NSIDC DAAC)'. At the bottom of the expanded menu, there is a link: 'Looking for facts and information? See [About the Cryosphere.](#)'

For Water Resources: Snow/Ice, Soil Moisture

Oak Ridge National Laboratory (ORNL)

<http://www.ornl.gov/>

<http://daac.ornl.gov/>

The screenshot shows the ORNL DAAC website interface. The browser address bar displays daac.ornl.gov. The website header includes the ORNL DAAC logo and navigation tabs: About Us, Products, Data, Tools, and Help. A red circle highlights the 'Tools' tab, which has opened a dropdown menu containing the following options: MODIS Land Subsets, MODIS Fixed Site Subsets, MODIS Global Subsets, and MODIS Web service. The 'MODIS Global Subsets' option is highlighted in blue. Below the navigation, the page content is divided into sections: 'Welcome' with links for 'About Us', 'About Data', 'Get Data', 'Data Tools', and 'Help'; 'ORNL DAAC' with a descriptive paragraph and a diagram of biogeochemical cycles; and 'News' with several recent announcements. The diagram shows atmospheric CO₂ being influenced by combustion, combustion of fossil fuels, assimilation by plants and animals, animal respiration, plant respiration, assimilation into soil, and assimilation by phytoplankton.

Hover mouse over **Tools** tab and the **MODIS Land Subsets** drop down menu will appear. Click on **MODIS Global Subsets**.

For Land Resources Data

Land Processes Distributed Archive Center (LP DAAC)

<https://lpdaac.usgs.gov/>

LP DAAC
LAND PROCESSES DISTRIBUTED ACTIVE ARCHIVE CENTER

NASA USGS

Home About Data Products Data Access Tools User Community User Services Search LP DAAC

ASTER Policies
ASTER Products Table
Community Products Table
MEaSURES Products Table
MODIS Policies
MODIS Products Table

2010 2013

Destruction of Tacloban City, Philippines

View more

NASA and USGS Partnership

News

For Land Resources Data

USGS EarthExplore

<http://earthexplorer.usgs.gov/>

The screenshot displays the EarthExplorer search interface. At the top, there are tabs for 'Search Criteria', 'Data Sets', 'Additional Criteria', and 'Results'. The 'Search Criteria' tab is active, showing a section titled '1. Enter Search Criteria' with instructions: 'To narrow your search area: type in an address or place name, enter coordinates or click the map to define your search area (for advanced map tools, view the [help documentation](#)), and/or choose a date range.'

Below the instructions are three search method tabs: 'Address/Place', 'Path/Row', and 'Feature'. The 'Address/Place' tab is selected, showing a text input field and 'Show' and 'Clear' buttons. The 'Coordinates' tab is also visible, with sub-tabs for 'Predefined Area', 'Shapefile', and 'KML'. Under 'Coordinates', there are sub-tabs for 'Degree/Minute/Second' and 'Decimal', and a message box stating 'No coordinates selected.' with 'Use Map', 'Add Coordinate', and 'Clear Coordinates' buttons.

The 'Date Range' tab is selected, showing 'Search from: 01/01/1920 to: 09/29/2014' and 'Search months: (all)'. At the bottom of the search criteria section are buttons for 'Data Sets »', 'Additional Criteria »', and 'Results »'.

On the right side, there is a 'Data Set Search:' input field and a list of data sets with expandable arrows. The list includes: Aerial Imagery, AVHRR, CalVal Reference Sites, Commercial, Declassified Data, Digital Elevation, Digital Line Graphs, Digital Maps, EO-1, GEOGLAM, Global Fiducials, Global Forest Observations Initiative, Global Land Survey, HCMM, JECAM Sites, LIDAR, Land Cover, Landsat Archive, Landsat CDR, Landsat Legacy, Landsat MRLC, NASA LPDAAC Collections, and Orbview-3.

In the center, a map shows a satellite view of a coastal region. A small text box above the map reads 'version which may cause EarthExplorer t'. Below the map, a small text box reads 'side for reference and search purposes only.'

At the bottom left, there is a green box with the text 'd Resources'.

GloVis

<http://glovis.usgs.gov/>

The screenshot displays the USGS GloVis web interface. At the top left is the USGS logo with the tagline "science for a changing world" and the text "Earth Resources Observation and Science Center (EROS)". At the top right are links for "USGS Home", "Contact USGS", and "Search USGS". Below this is a navigation bar with "USGS Global Visualization Viewer". A menu is open under "Collection", listing various data sources: Aerial, ASTER, EO-1, Landsat Archive, Global Land Survey, Landsat MRLC Collections, Landsat Legacy Collections, MODIS Aqua, MODIS Terra, MODIS Combined, and TerraLook. A "Downloadable" label is visible above the menu. The main map area shows a satellite image of a river system with a green rectangular selection box. On the left, the "Scene Information" panel displays: ID: LE70290302014268EDC00, CC: 0% Date: 2014/9/25, Qty: 9 Product: ETM+ L1T. Below this are date selection controls for "Sep" and "2014" with a "Go" button, and "Prev Scene" and "Next Scene" buttons. At the bottom of the panel is the text "Landsat 4 - Present List".

For Land Resources Data

PO DAAC Data Set Discovery

<http://podaac.jpl.nasa.gov/GRACE>

The screenshot displays the PO DAAC Data Set Discovery interface. The page title is "Dataset Discovery" and it shows "Found 71 matching dataset(s)". A red oval highlights the search filters and the search bar. The search bar contains the text "GRACE". The filters include Processing Levels, Swath Spatial Resolution, Grid Spatial Resolution, Temporal Resolution, and Parameter. The search bar is labeled "Free Text Search" and "Temporal Search". The search bar contains the text "GRACE". The search bar is labeled "Free Text Search" and "Temporal Search". The search bar contains the text "GRACE". The search bar is labeled "Free Text Search" and "Temporal Search".

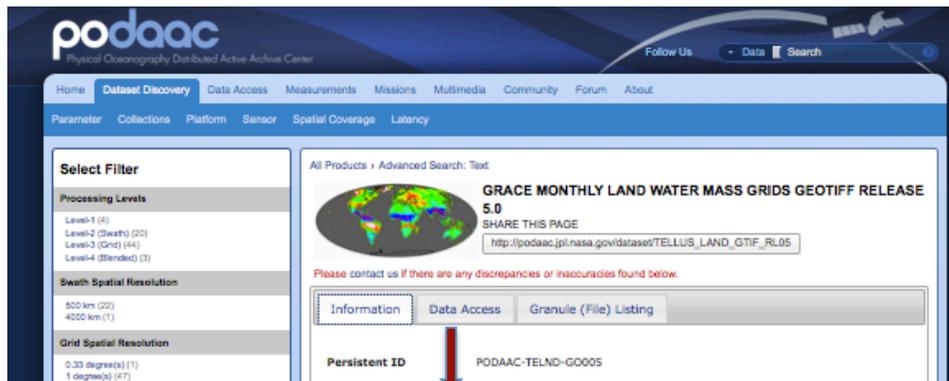
For Terrestrial Water



Next Slide

GRACE Terrestrial Water Data in Monthly Geotiff

http://podaac.jpl.nasa.gov/dataset/TELLUS_LAND_GTIF_RL05?ids=&values=&search=GRACE

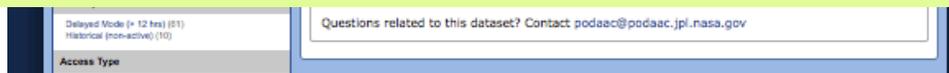


The screenshot shows the Podaac website interface. The top navigation bar includes 'Home', 'Dataset Discovery', 'Data Access', 'Measurements', 'Missions', 'Multimedia', 'Community', 'Forum', and 'About'. Below this, there are tabs for 'Parameter', 'Collections', 'Platform', 'Sensor', 'Spatial Coverage', and 'Latency'. A 'Select Filter' sidebar on the left lists 'Processing Levels' (Level-1 (4), Level-2 (Swath) (20), Level-3 (Grid) (44), Level-4 (Blended) (3)), 'Swath Spatial Resolution' (500 km (22), 4000 km (1)), and 'Grid Spatial Resolution' (0.33 degree(s) (1), 1 degree(s) (47)). The main content area displays 'All Products > Advanced Search: Text' and a search result for 'GRACE MONTHLY LAND WATER MASS GRIDS GEOTIFF RELEASE 5.0'. A red arrow points to the 'Data Access' tab.



This block provides a detailed view of the dataset page. It features a globe icon and the title 'GRACE MONTHLY LAND WATER MASS GRIDS GEOTIFF RELEASE 5.0'. Below the title is a 'SHARE THIS PAGE' button with the URL http://podaac.jpl.nasa.gov/datasets/TELLUS_LAND_GTIF_RL05. A note states: 'Please contact us if there are any discrepancies or inaccuracies found below.' Below this are three tabs: 'Information', 'Data Access', and 'Granule (File) Listing'. The 'Data Access' tab is active, showing 'Direct Access' information:

FTP	ftp://podaac-ftp.jpl.nasa.gov/allData/tellus/L3/land_mass/RL05/geotiff
Format (Compression)	GEOTIFF (GZIP)



The footer section includes a 'Delayed Mode (> 12 hrs) (51)' and 'Historical (non-active) (10)' link, an 'Access Type' section, and a contact information box: 'Questions related to this dataset? Contact podaac@podaac.jpl.nasa.gov'.

Summary of Tools for Air Quality, Land and Water Resources

Satellites/Sensors for Air Quality Parameters

Satellite	Data Tool	Quantities
Terra and Aqua	Giovanni/Mirador LANCE NRT, Reverb- ECHO	Aerosol Optical Depth (AOD)
Terra		(AOD) Particle Type
Aqua		Trace Gases
Aura		Ozone, Sulphur Dioxide, Nitrogen Dioxide AOD
Suomi-NPP*	LAADS Web	Aerosol Optical Depth (AOD) Particle Type
CALIPSO	CALIPSO Search and Subsetting	Aerosol Profile

*National Polar-orbiting Operational Environmental Satellite System

Satellites/Sensors for Disasters, Land and Water Resources Parameters

Satellite	Data Tool	Quantities
TRMM	GES-DISC Giovanni/ Mirador	Rain Rate, Vertical Rain Rate Profile, Accumulated Rain, Soil Moisture
Terra and Aqua	NSIDC, ORNL, USGS/LP DAAC, GloVis	Snow Cover, Vegetation Index, Leaf Area Index, Land Cover , Clouds
Aqua	GES-Disc Giovanni/ Mirador NSIDC	3-dimensional Atmospheric Temperature and Humidity, clouds Snow Water Equivalent, Sea Ice, Soil Moisture, Rain Rate
Landsat	USGS/EarthExplorer	Vegetation Index, Leaf Area Index, Land Cover
Grace	PO-DAAC data Discovery	Terrestrial Water

NASA Models Data For Water Resources and land Management

Models	Data Tool
MERRA	GES-DISC Giovanni/Mirador
GLDAS/NLDAS	

Coming Up Next Week --

**Live Demonstration of Case Studies
Data Access and Analysis for Air Quality and
Water Resources Applications with GIS**

Thank You!

Amita Mehta

email: amita.v.mehta@nasa.gov