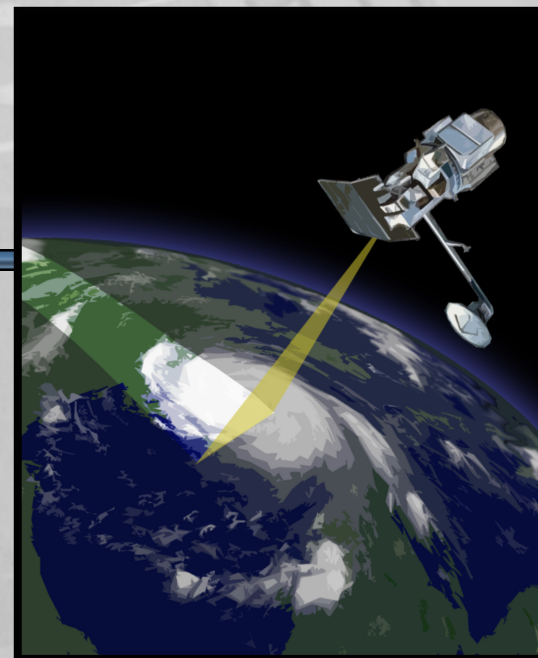


Data Access and Availability

Presented at the IV CEOS WGEdu Workshop
“Geotechnologies for Natural Disaster Monitoring in Latin America”
INPE, Santa Maria, RS, Brazil
March 29-31, 2010

Eric C. Wood, PhD
EROS
U.S. Geological Survey



Department of the Interior
U.S. Geological Survey

Data Issues in Disaster Monitoring

- **Attributes of remotely sensed imagery**
 - Resolution
 - Cost
- **Existence of baseline data**
 - Recent pre-disaster imagery
 - Vector data (GIS) , especially infrastructure in disaster area
- **Data accessibility and availability**

Selecting Remotely Sensed Data

The data you select depend mostly on *your* information requirements and on the characteristics of the remote sensing systems and data available.

- spatial resolution
- spectral coverage and resolution
- geographic coverage
- temporal characteristics
- data availability
- data accessibility
- cost

Definition of Terms

- **Data Availability** – refers to data that have been acquired over an area and are able to be ordered by users.
- **Data Accessibility** – is different from availability in that it relates primarily to the mechanics of actually locating, selecting, and retrieving the data you wish to use in your study.

Data search and order tools (a.k.a., user interfaces) are used to access remotely sensed data. ***Data policy, including pricing policy, also effects data accessibility.***

...or.....

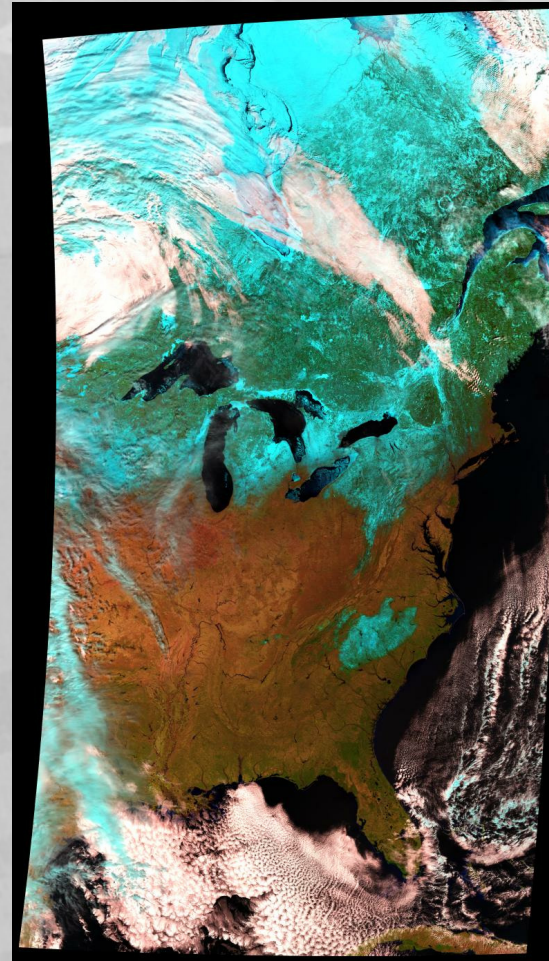
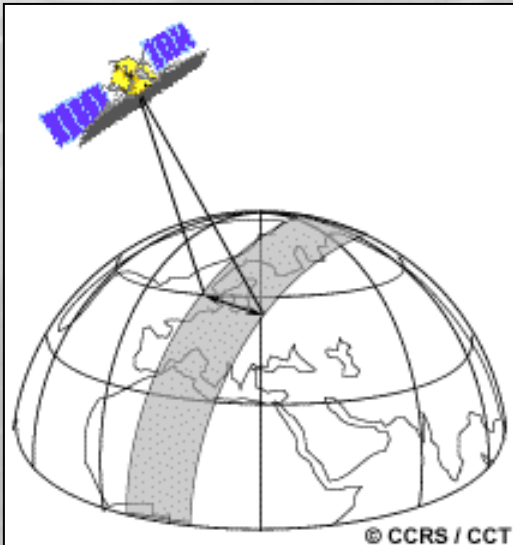
“Do the data exist, and if yes, how do I get them?”

Spatial Resolution Examples (cont.)

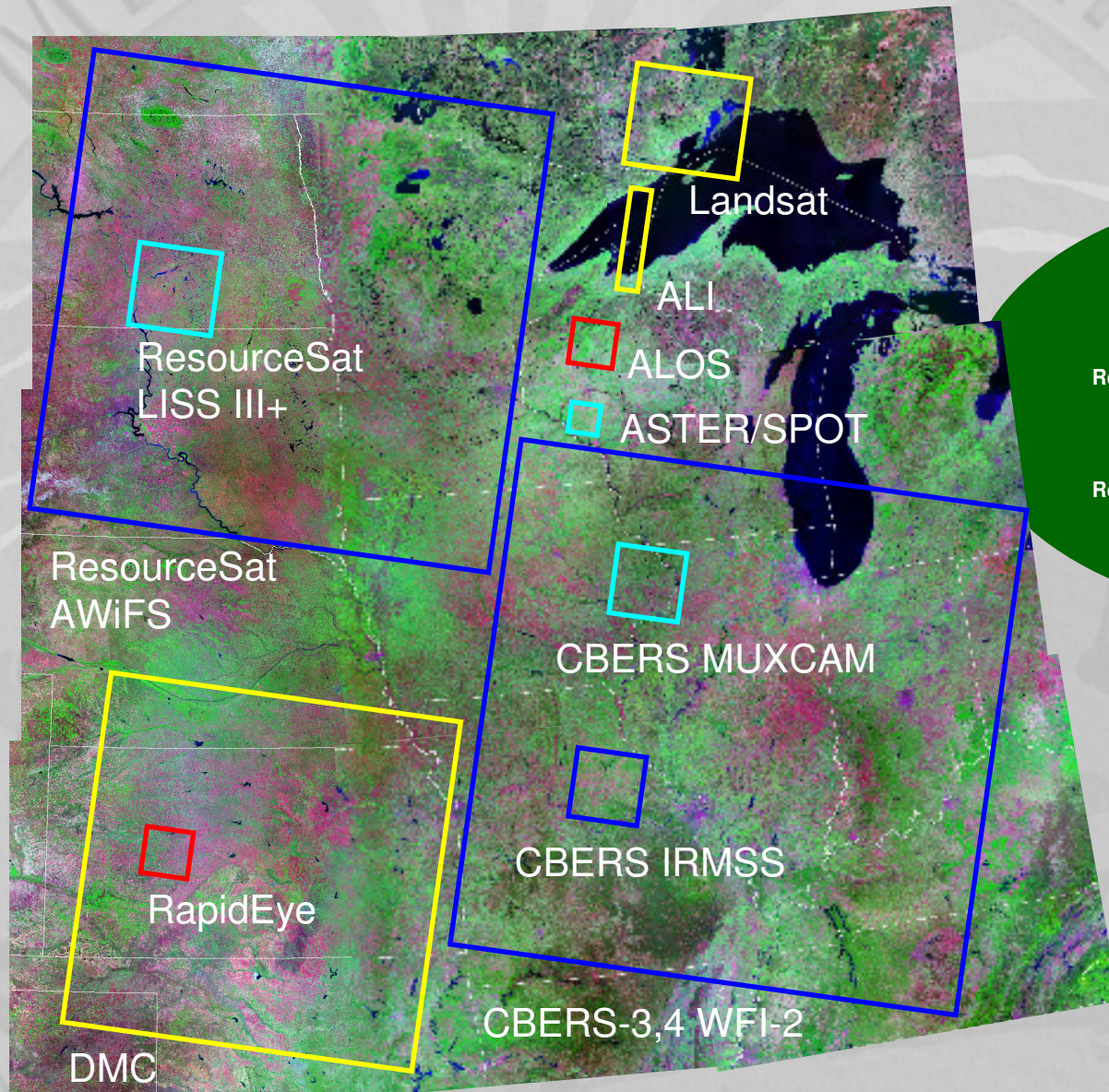
USGS
Air Photo
1foot



Role of Swath Width in Geographic Coverage



Variation in Mid-resolution Imagery



Satellite	Sensor	Ground Sample Distance (m)
RapidEye	REIS	6.5
ALOS	AVNIR	10
CBERS-3,4	MUXCAM	20
SPOT 5	HRG	10/20
Terra	ASTER	15/30/90
ResourceSat-1	LISS III+	23.5
Landsat 7	ETM+	15/30/60
EO-1	ALI	30
DMC	MSDMC	32
ResourceSat-1	AWiFS*	56
CBERS-3,4	WFI-2	73
CBERS-3,4	IRMSS	48/80

Note: For purposes of scene size comparison only. Locations do not represent actual orbital paths or operational acquisitions.



Temporal Resolution

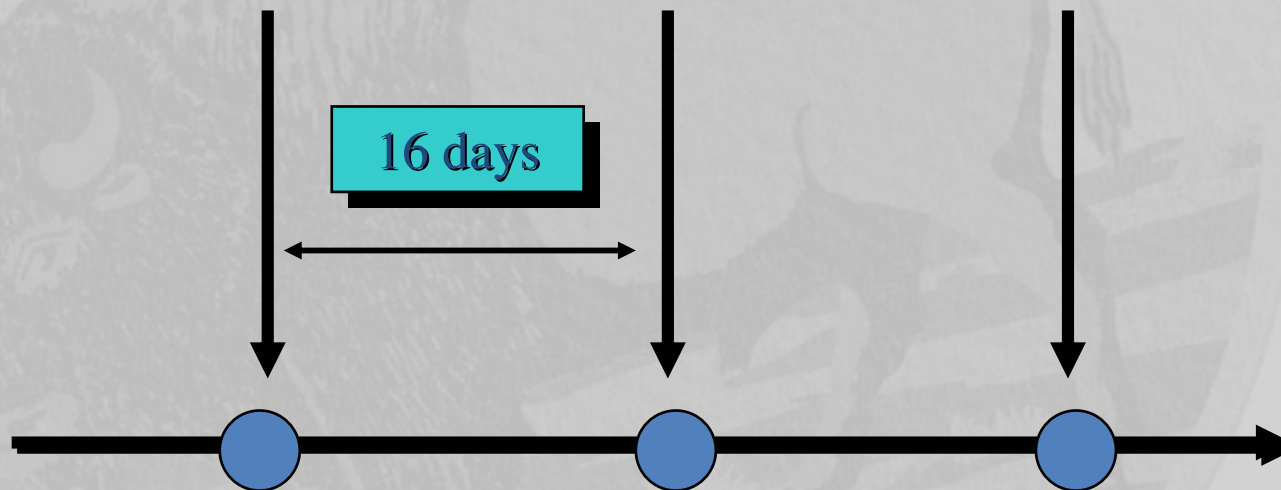
Remote Sensor Data Acquisition

June 1, 2001

June 17, 2002

July 3, 2003

16 days



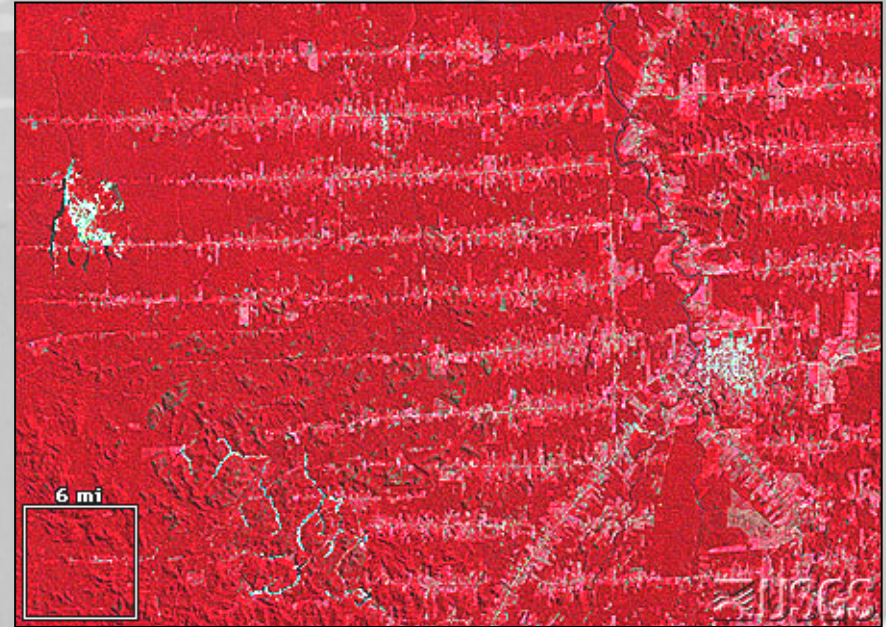
What about trade-offs?

Jenson, 2000

Importance of Historical Coverage



Brazilian Rain Forest - 1975



Brazilian Rain Forest - 1992

Trade-Offs with Selected Satellite Systems

AVHRR/ MODIS

- spatial resolution, 250m, 500m, 1000m

2048 km swath

- global coverage, 2 days

MISR

- spatial resolution, 275m, 550m, 1100m

360 km

- global coverage, 9 days

Landsat

- spatial resolution, 15m, 30m

183 km

- 16 day orbital repeat
- seasonal global coverage

ASTER

- spatial resolution 15m, 30m, 90m

60 km

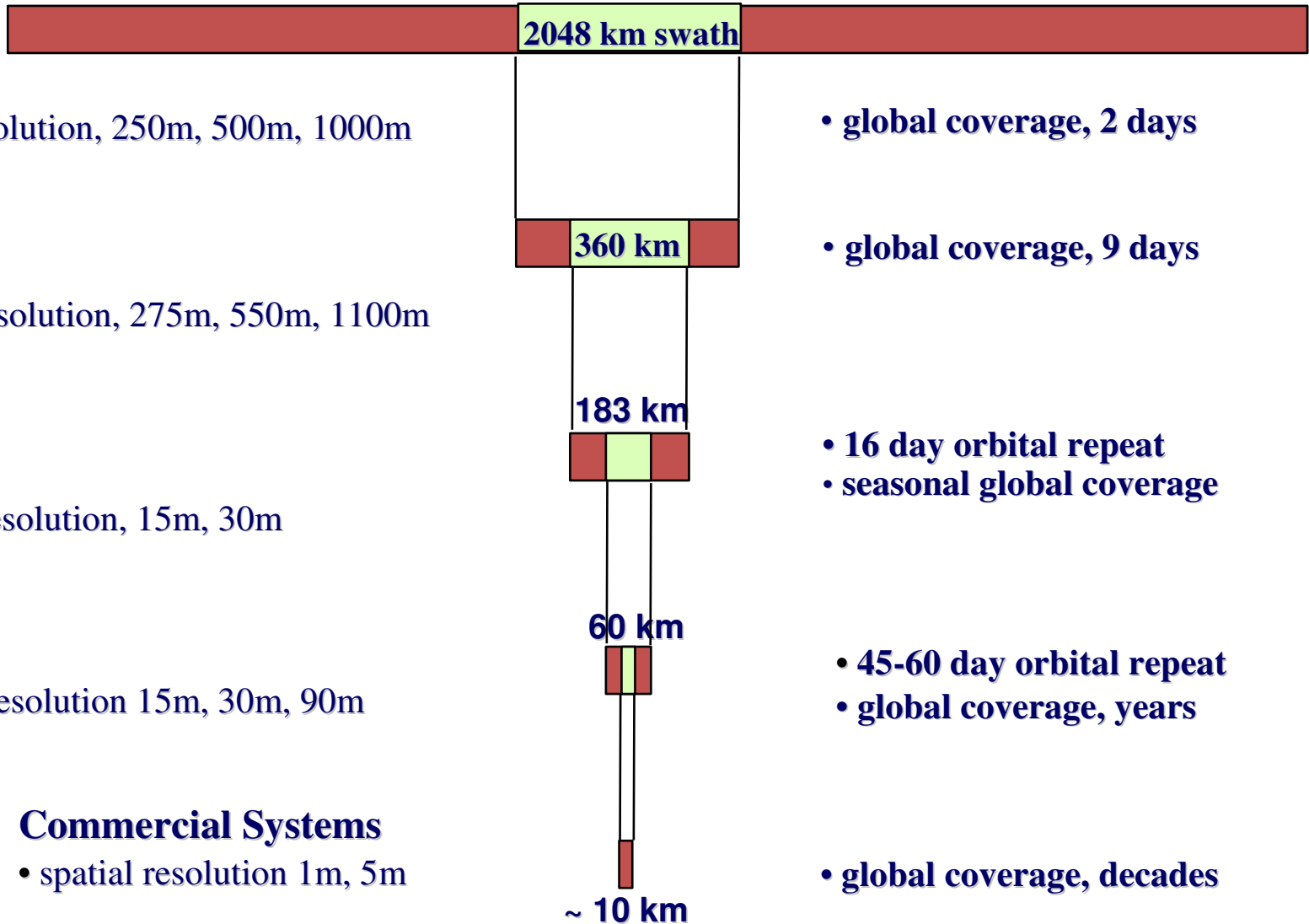
- 45-60 day orbital repeat
- global coverage, years

Commercial Systems

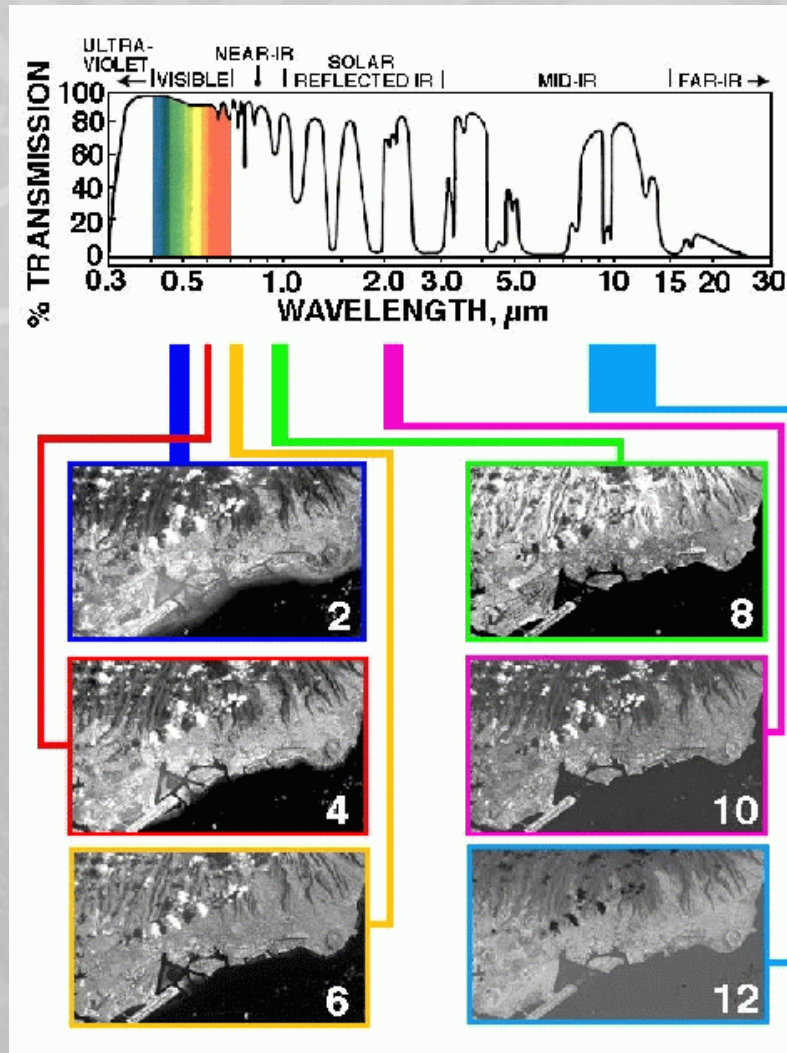
- spatial resolution 1m, 5m

~ 10 km

- global coverage, decades

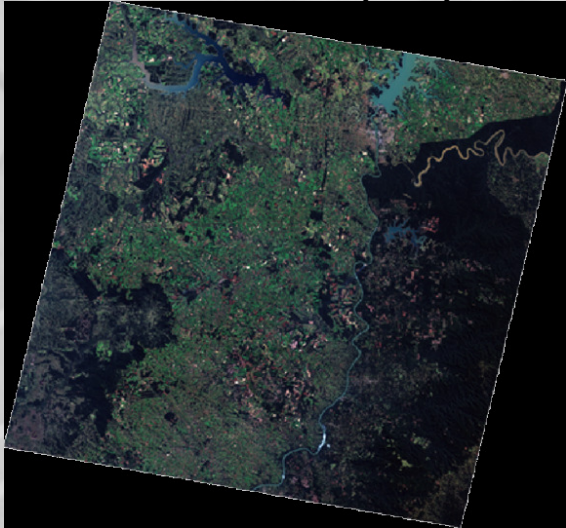


Spectral Coverage & Resolution

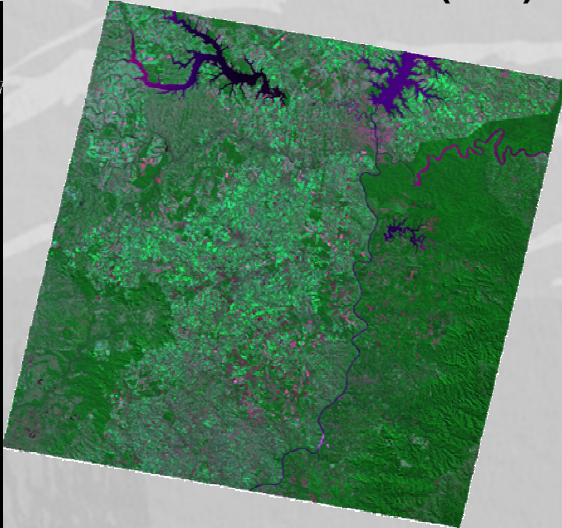


Landsat ETM+ Band Combinations

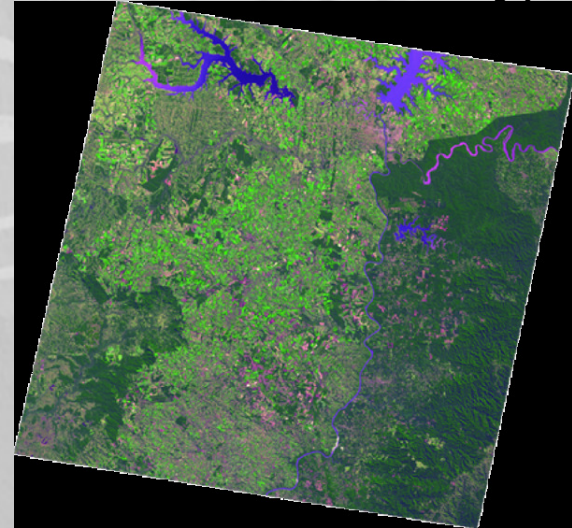
True Color (321)



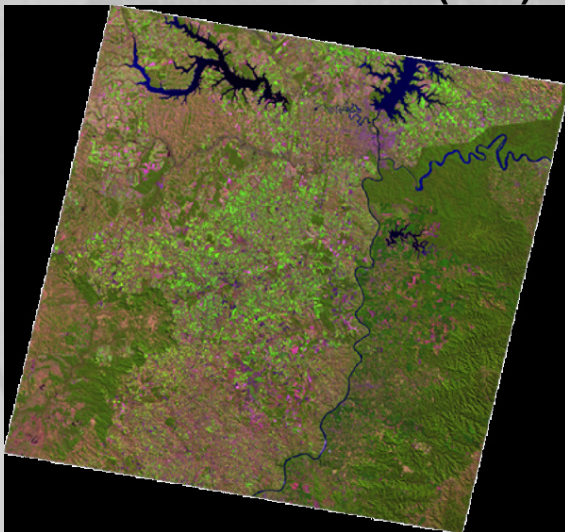
Red-Near IR-Green (342)



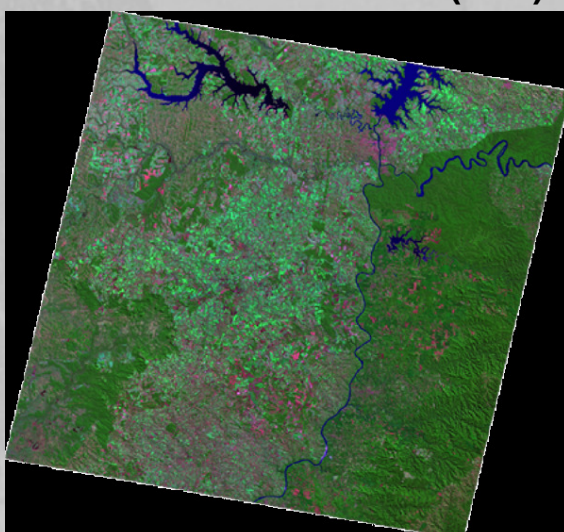
Simulated natural color $f(432)$



Mid IR-Near IR-Red (543)



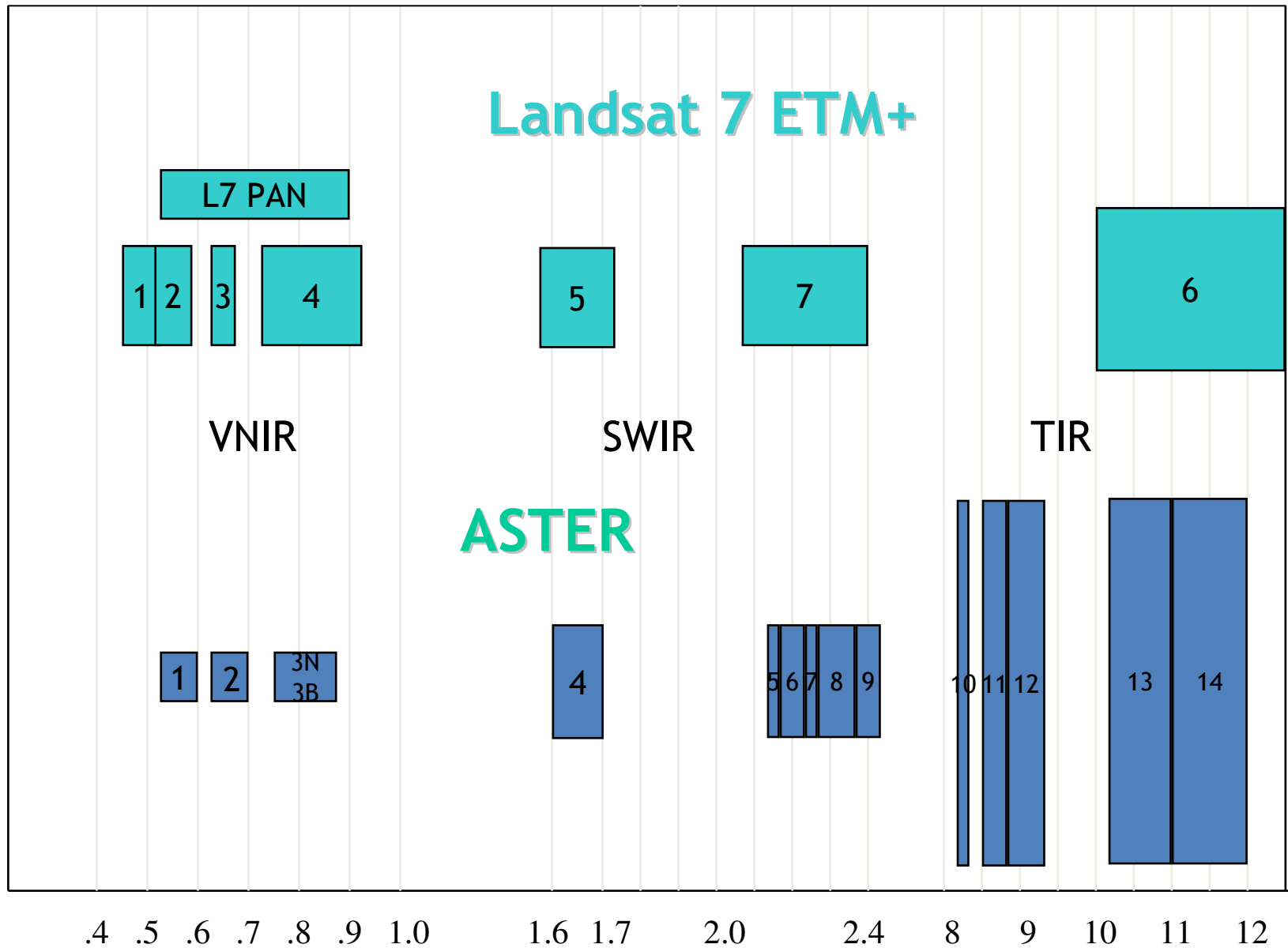
Mid IR-Near IR-Green (742)



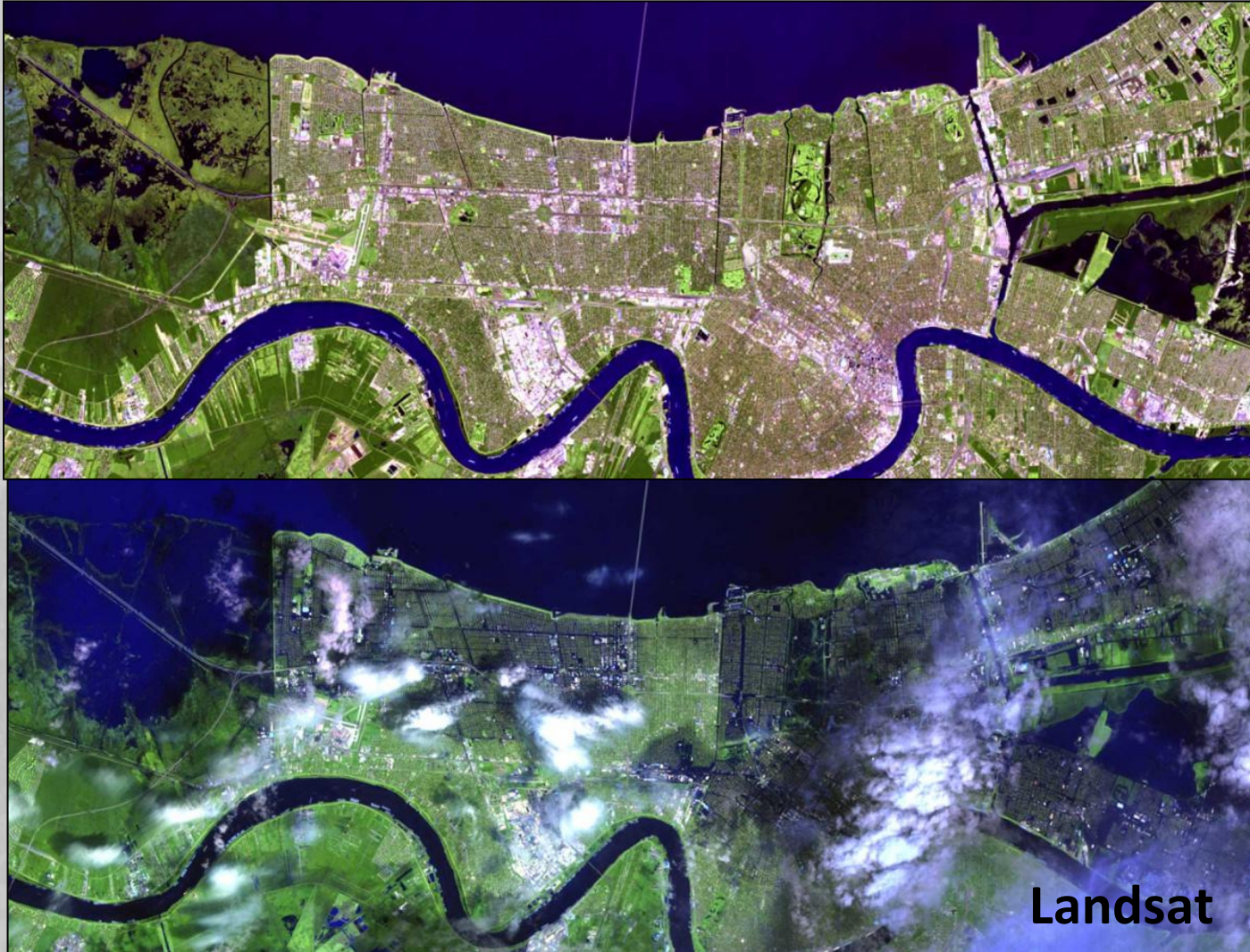
Mid IR-Mid IR-Red (753)

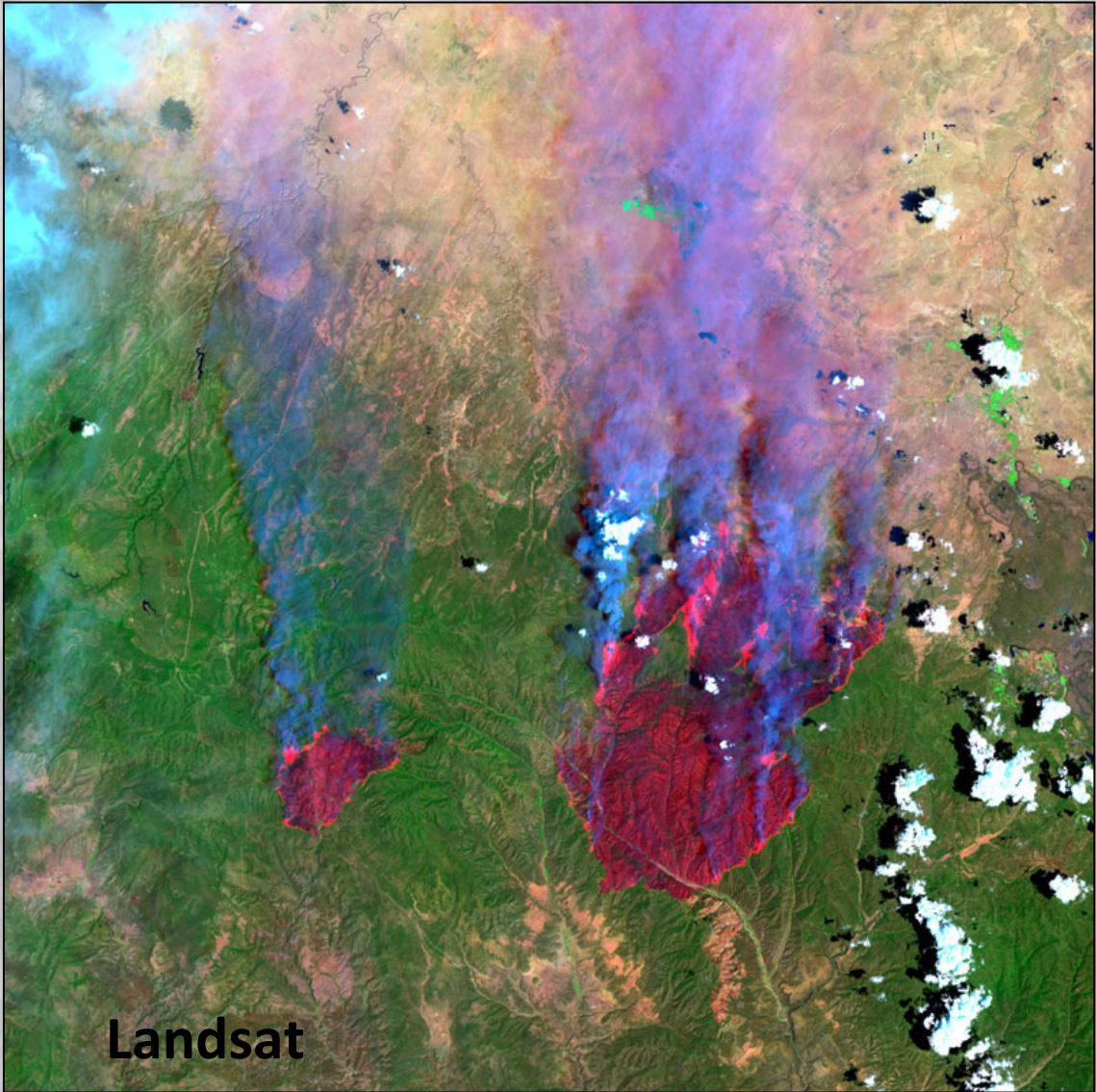


ETM+ & ASTER Spectral Bands and Resolution



Hurricane Katrina





Monitoring Wildfires

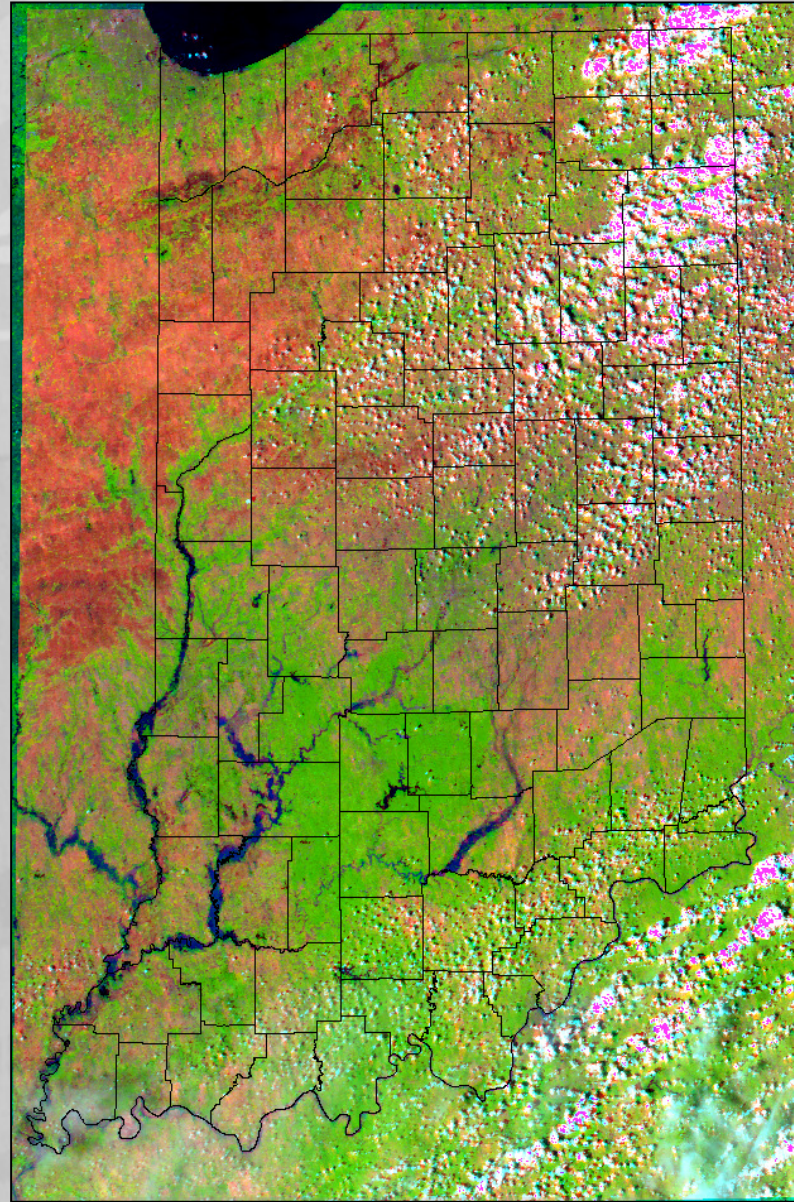
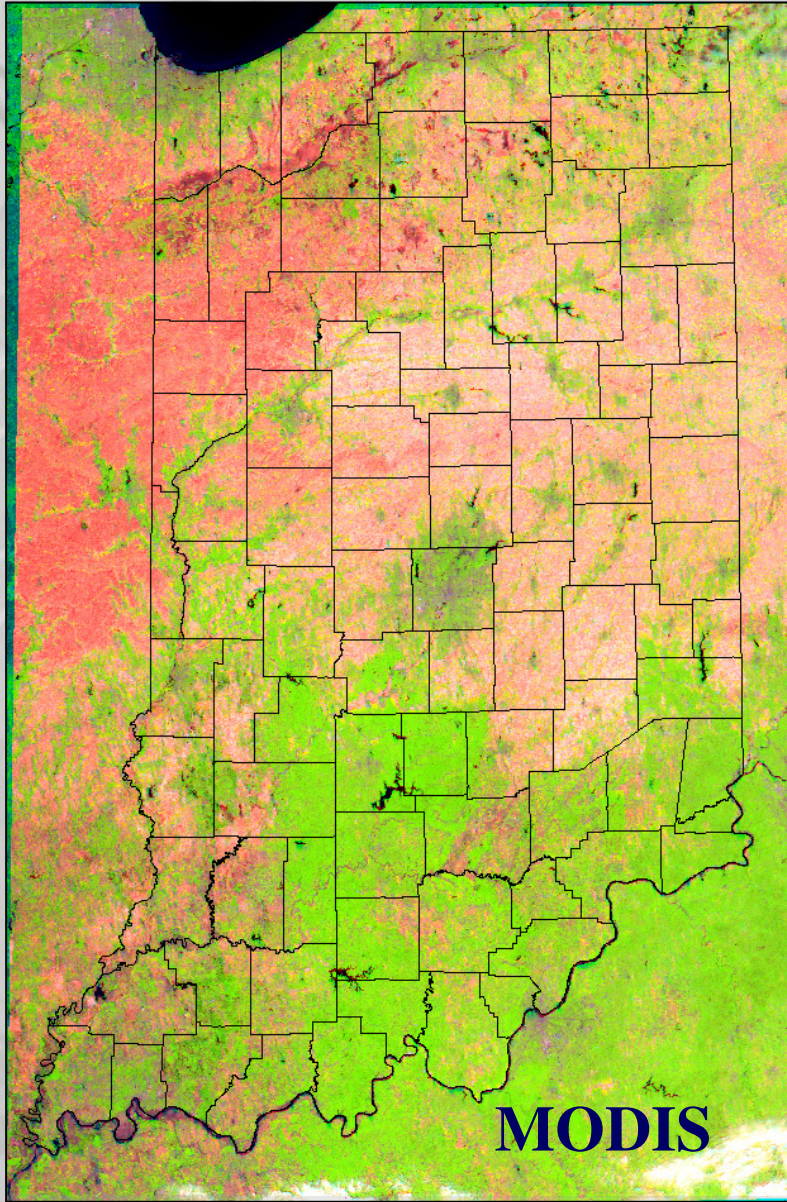


Haiti



Haiti





MODIS 8/31/2009

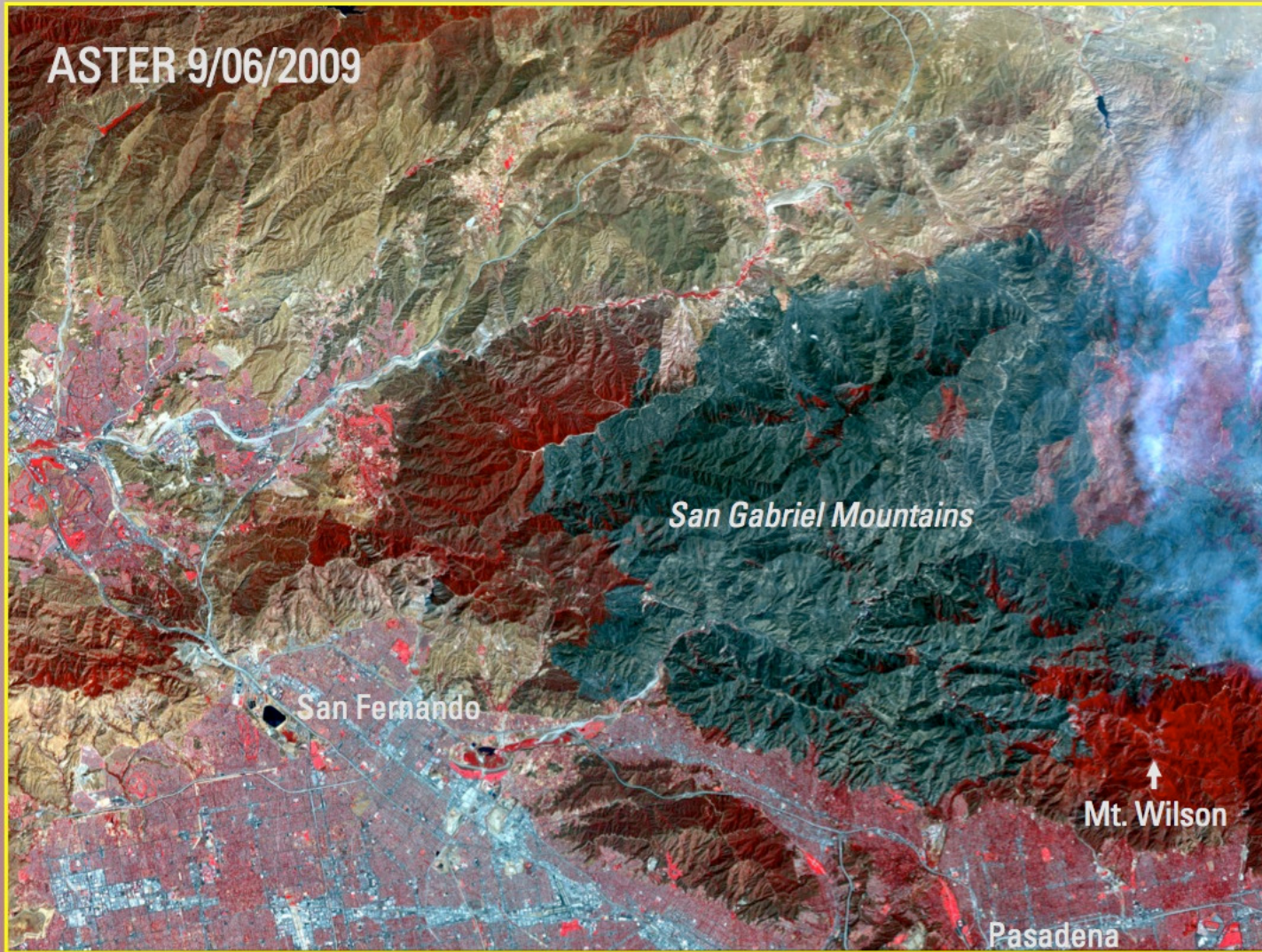


Fires in Los Angeles

v) and ERSDAC (http://www.gds.aster.ersdac.or.jp/gds_www2002/index_e.html). MODIS data courtesy of the MODIS Rapid Response System. LP DAAC also distributes



ASTER 9/06/2009



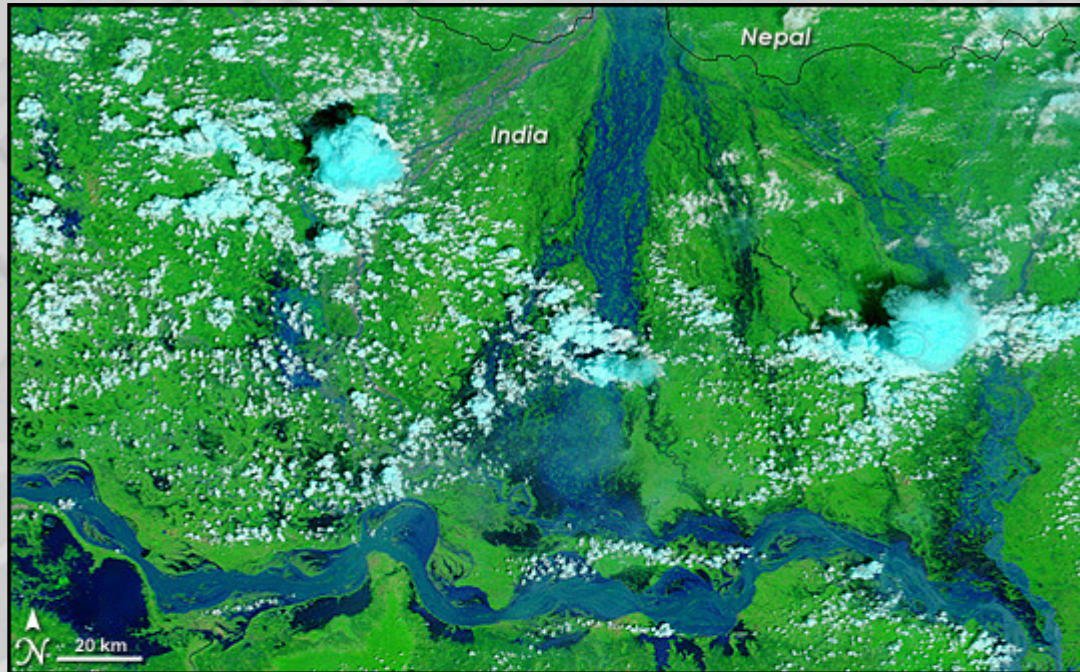
San Gabriel Mountains

San Fernando

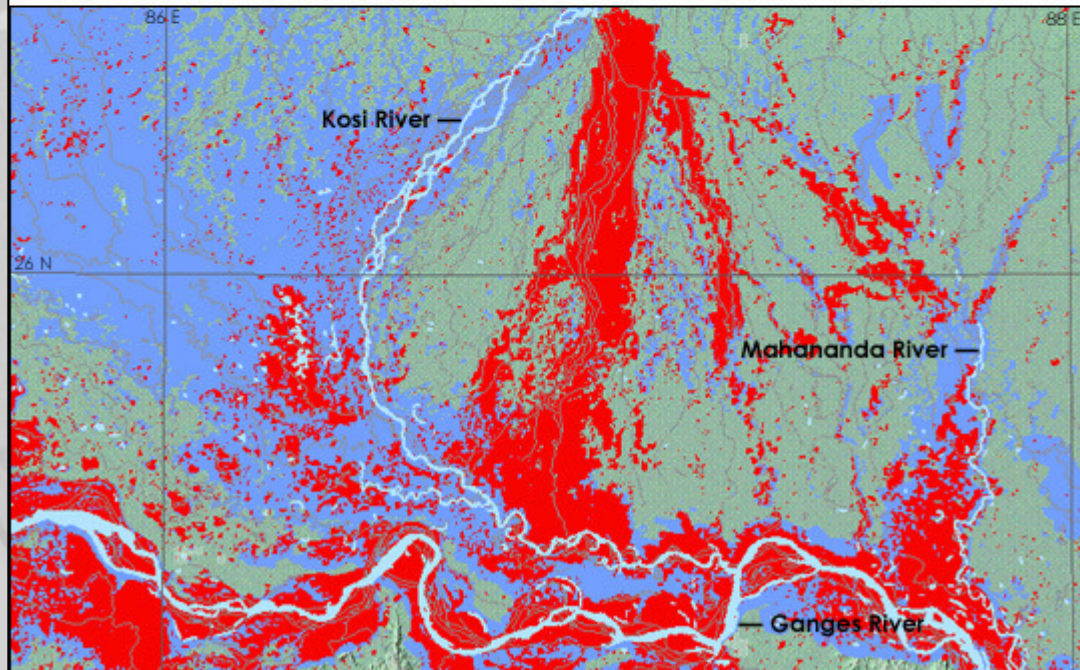
Mt. Wilson

Pasadena

Asian Flood Mapping



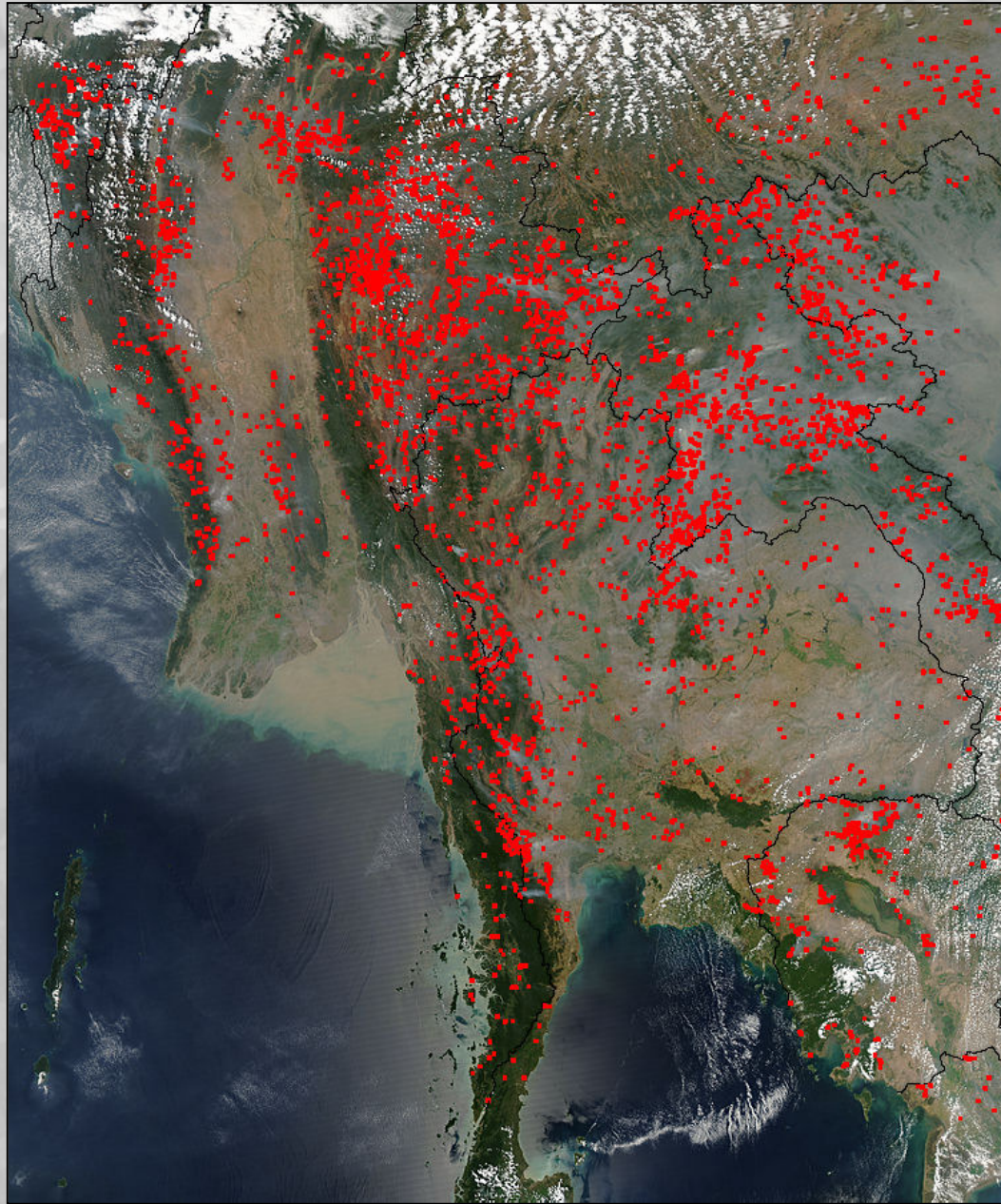
Terra MODIS, September 2, 2008



Dartmouth Flood Observatory Map, September 2, 2008

MODIS

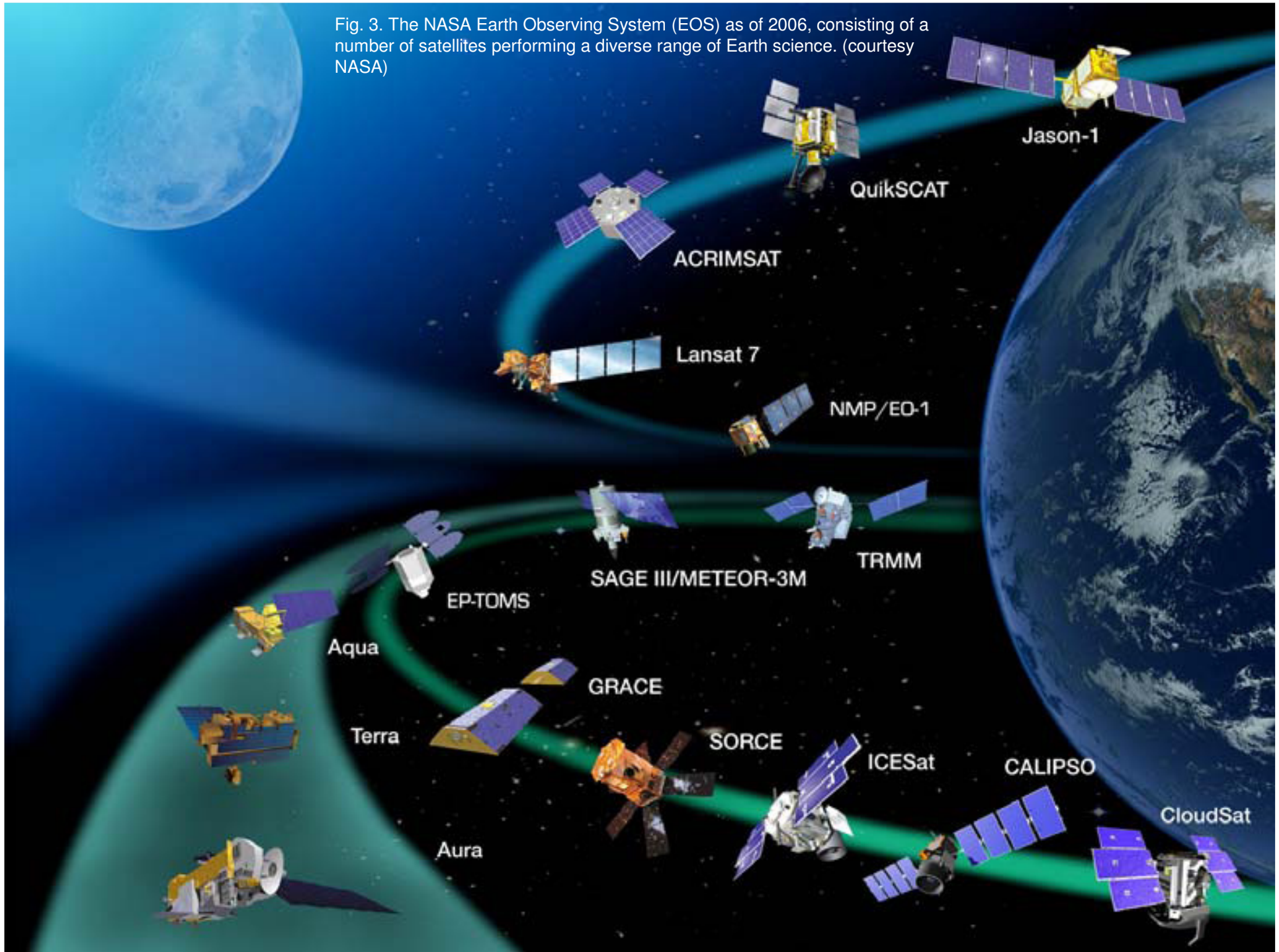
Fires in Indonesia



MODIS



Fig. 3. The NASA Earth Observing System (EOS) as of 2006, consisting of a number of satellites performing a diverse range of Earth science. (courtesy NASA)



Data Availability and Access for Selected Systems

- High-Resolution Optical Systems (< 10m)
 - Primarily commercial (private sector) sources
 - Aerial (flown by airplane, not satellite)
 - IKONOS, Worldview, Formosat, Quickbird, GeoEye, etc.)
- Mid-Resolution Optical Systems (~5- 1000m)
 - Landsat Satellites
 - ASTER
 - SPOT
 - ALOS AVNIR
 - CBERS
- Coarse-Resolution Optical Systems (~> 100m)
 - AVHRR
 - MODIS



CEOS Land Surface Imaging (LSI) Constellation Portal



The screenshot shows a web browser window with the address bar displaying <http://wgiss.ceos.org/lisp/>. The page content includes the following text:

CEOS Land Surface Imaging Constellation Portal
for
Mid-Resolution Optical LSI Satellite System Information and Enhanced Data Access

Home About Portal About LSIC GEO FCT

Satellites and Sensors
Direct Access to Data

<http://wgiss.ceos.org>

CEOS

The page features a central graphic of a globe surrounded by a ring of colored segments (red, green, blue, yellow) and a satellite in the bottom right corner.





CEOS Land Surface Imaging Constellation Portal

for

Mid-Resolution Optical LSI Satellite System Information and Enhanced Data Access

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CEOS Member Agency Operated

Mid-Resolution Optical Land Surface Imaging Satellite Systems

Mid-resolution optical LSI satellite systems are spaceborne land remote sensing systems that image the Earth's land surface in visible, near-infrared, shortwave infrared, and thermal infrared wavelengths with spatial resolutions between 10 meters and 100 meters. Currently, nine CEOS member space agencies operate such systems: **NASA, USGS, CNES, ISRO, JAXA, INPE, CAST, CONAE, and GISTDA**. Since 1972, the land remote sensing systems launched by these agencies have collected an enormous volume of image data that has great potential value to the global society because of the good that can be accomplished from the application of these data to a broad range of scientific, social, and practical problems and issues. The data have been utilized in a variety of government, public, private, and national security applications. Examples include land and water management, global change research, disaster management, oil and mineral exploration, agricultural yield forecasting, pollution monitoring, land surface change detection, cartographic mapping, and countless others.

Landsat:USA	SPOT:France	Earth Obs.:Japan	THEOS:Thailand
EO-1:USA	IRS:India	CBERS:China & Brazil	SAC-C:Argentina





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CEOS Agency Current and Former Mid-Resolution Optical Satellites & Sensors

Satellite	Sensors	Agencies
ADEOS-1	AVNIR-1	JAXA
ALOS	AVNIR-2	JAXA
CBERS-1	HRCC, IRMSS	CAST, INPE
CBERS-2	HRCC, IRMSS	CAST, INPE
CBERS-2B	HRCC	CAST, INPE
EO-1	ALI, Hyperion	NASA, USGS
IMS-1	MX-T	ISRO
IRS-1A	LISS-I, LISS-II	ISRO
IRS-1B	LISS-I, LISS-II	ISRO
IRS-1C	LISS-III A	ISRO
IRS-1D	LISS-III A	ISRO
IRS-P2	LISS-III A	ISRO
IRS-P6	LISS-IIIB, AWiFS	ISRO
JERS-1	OPS	JAXA
Landsat 1	MSS	NASA, USGS
Landsat 2	MSS	NASA, USGS
Landsat 3	MSS-B	NASA, USGS
Landsat 4	MSS, TM	NASA, USGS
Landsat 5	MSS, TM	NASA, USGS
Landsat 7	ETM+	NASA, USGS
SAC-C	HRTC	CONAE
SPOT-1	HRV	CNES
SPOT-2	HRV	CNES
SPOT-3	HRV	CNES
SPOT-4	HRVIR	CNES
SPOT-5	HRG	CNES
Terra	ASTER	METI, NASA
THEOS	MS	GISTDA



Platform: LANDSAT-7

[Click to view more](#)

Platform-based Instruments:

[Click to view more](#)

Orbit

Orbit Altitude: 705km

Orbit Inclination: 98.2 degree

Equator Crossing: nominally 10 AM

Period: 99 minutes

Repeat Cycle: 16 days

Orbit Type: LEO > Low Earth Orbit > Polar Sun-Synchronous

Related Data Sets

[View all records related to this platform](#)

Description

Landsat 7 systematically provides well-calibrated, multispectral, moderate resolution, substantially cloud-free, sun-lit digital images of the Earth's continental and coastal areas with global coverage on a seasonal basis. It covers the United States every 16 days. Operations were transferred to USGS on Fall 2000.

The Landsat Project is a joint initiative of the U.S. Geological Survey (USGS) and the NASA to gather Earth resource data using a series of satellites. NASA

[Click to view more](#)

Online Resource:

<http://nasascience.nasa.gov/missions/landsat-7>

http://landsathandbook.gsfc.nasa.gov/handbook/handbook_htmls/chapter2/chapter2.html

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

Platform Logistics:

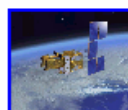
Design Life: 5 Years

Launch Date: 1999-03-15

Primary Sponsors:

USA/USGS

USA/NASA



Platform: SPOT-5 > Systeme Probatoire Pour l'Observation de la Terre-5

[Click to view more](#)

Synonymous Platform Names:

[Click to view more](#)

Platform-based Instruments:

[Click to view more](#)

Orbit

Orbit Altitude: 822 km

Orbit Inclination: 98.8°

Equator Crossing: 10:30 AM (descending node)

Period: 101.4 minutes

Repeat Cycle: 2-3 days, depending on latitude

Perigee: 825.0 km

Apogee: 826.0 km

Orbit Type: LEO > Low Earth Orbit > Polar Sun-Synchronous

Related Data Sets

[View all records related to this platform](#)

Description

[Text Source: NASA/NSSDC,

<http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=2002-021A>]

Spot 5 is a French (CNES), Earth-imaging, three tonne satellite that was launched by an Ariane 42P rocket from Kourou at 00:31:00 UT on 4 May 2002. Its planar and stereoscopic relief images at about three meter resolution will be marketed for civilian and military uses, for cartographic and vegetation analyses. Panchromatic (at 2.5 m resolution) as well as multispectral images (at 10 m resolution) could be obtained. The position of the satellite, and hence the location of the images could be determined at 15 m accuracy by means of the DORIS position determination instrument. Extensive information on the instruments and data products is available via <http://www.spotimage.com/>

Online Resource:

<http://smc.cnes.fr/SPOT/index.htm>

<http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=2002-021A>

<http://www.spot.com/>

<http://www.satimagingcorp.com/satellite-sensors/spot-5.html>

Launch Date: 2002-05-04

Launch Site: Kourou, French Guiana

Primary Sponsors:

France/CNES



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Data Access



Satellite	Sensors	Data Center	Policy	Search Tool	Sample Data
ADEOS-1	AVNIR-1	RESTEC	cost	Search Service	sample images
ALOS	AVNIR-2	RESTEC	cost	AUIG, CROSS	yes
CBERS-1	CCD, IRMSS	CBERS Page	some free	CDSR	open archive
CBERS-2	CCD, IRMSS	CBERS Page	most free	CDSR	open archive
CBERS-2B	CCD	CBERS Page	most free	CDSR	open archive
EO-1	ALI, Hyperion	EROS	cost	GloVis	yes
IMS-1	MX-T	NRSC	n.a.	n.a.	n.a.
IRS-1A	LISS-I, LISS-II	NRSC	cost	Int Resellers	no
IRS-1B	LISS-I, LISS-II	NRSC	cost	Int Resellers	no
IRS-1C	LISS-III A	NRSC	cost	Int Resellers	yes
IRS-1D	LISS-III A	NRSC	cost	Int Resellers	yes
IRS-P2	LISS-III A	NRSC	cost	Int Resellers	yes
IRS-P6	LISS-III B, AWiFS	NRSC	cost	Int Resellers	yes
JERS-1	OPS	RESTEC	cost	Search Service	sample images
Landsat 1	MSS	EROS, other	free	GloVis, EE	open archive
Landsat 2	MSS	EROS, other	free	GloVis, EE	open archive
Landsat 3	MSS-B	EROS, other	free	GloVis, EE	open archive

Landsat Data Access - GloVis

The screenshot shows the USGS Global Visualization Viewer (GloVis) web application. The browser window title is "USGS Global Visualization Viewer - Windows Internet Explorer". The address bar shows the URL "http://glovis.usgs.gov/". The page features the USGS logo and the text "science for a changing world" and "Center for Earth Resources Observation & Science (EROS)". Below the header, there is a navigation bar with the text "USGS Global Visualization Viewer" and a blue banner that reads "Select a collection, then click on the Global Locator Map to view satellite browse images in that area." The main content area contains a form with the following elements: "Select Collection" (a dropdown menu set to "Landsat Decadal"), "TM (1987-1997)" (a dropdown menu), and a "View Images" button. Below the form are input fields for "Latitude" (set to "-33.7") and "Longitude" (set to "19.8"). The central part of the page is a large satellite image of the Earth, showing the Americas, Europe, and Africa. At the bottom of the page, there are four navigation buttons: "What's New!", "Browser Requirements", "Help", and "Download Source Code". The browser's status bar shows "javascript:submitForm()", "Internet", and "100%". The Windows taskbar at the bottom displays the Start button, several open applications including "D:\CEOS WGEdu\M...", "3 Microsoft Office...", "USGS Global Visu...", "Login Successful - ...", and "G. Bryan Bailey - In...", and the system tray showing the time as "5:55 AM".



ASTER Data Access – Japan GDS

Today's Image
[\(Previous day\)](#) [\(Next day\)](#)

No data found

▶ JAPANESE

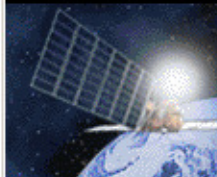
▶ Guide

▶ Search

▶ Site Map

▶ Mail

[About Our Privacy Practi](#)



Simple Search
for Foreign
countries

Welcome to

ASTER GDS Web Site

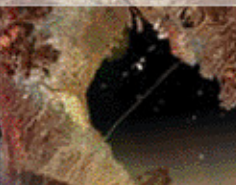
Earth Remote Sensing Data Analysis Center

INFORMATION

- [ASTER GDS is operating normally.](#)



Link to Present
position
of TERRA



ASTER GDS-IMS
HOMEPAGE

The product
can be ordered
here !

NEWS FLASH !

Please read the person who is using "Windows XP (SP2)".



ASTER SCIENCE
PROJECT

You can see
the example
of using
the product

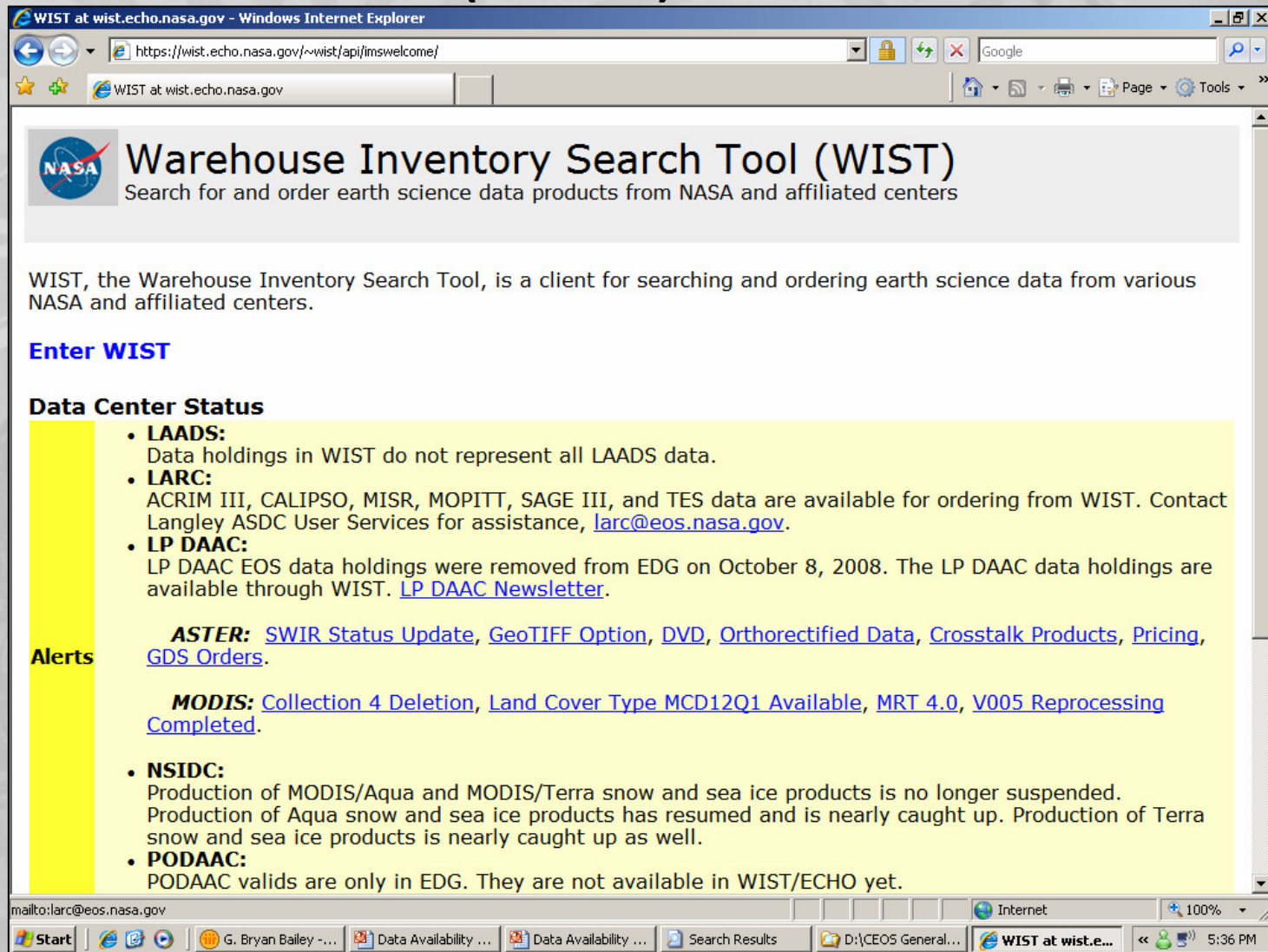


- [Notice for ASTER SWIR Detectors Failure \(2010/3/12\)](#)

- [Release Note updated \(2010/3/12\)](#)

Entrance	Exhibition Room	Image Gallery	Seminar Room	Service Center	Products Search
GDS News	ASTER Project	New Images	Remote Sensing	Summary of	Service
ASTER GDS	EOS Project	Isahaya-Bay	Earth Observation	Services	Products
History	TERRA	Toyama-Bay	Satellite	ASTER Products	Processing
Keyword	ASTER Instruments	Miyake Island	Global	Guide	and Distributi
Renewal	ASTER GDS	USU Volcano	Environmental Issues	Release Note	Service

ASTER – Warehouse Inventory Search Tool (WIST)



The screenshot shows a web browser window titled "WIST at wist.echo.nasa.gov - Windows Internet Explorer". The address bar contains the URL "https://wist.echo.nasa.gov/~wist/api/ims/welcome/". The page content includes the NASA logo and the title "Warehouse Inventory Search Tool (WIST)" with the subtitle "Search for and order earth science data products from NASA and affiliated centers". Below this, a paragraph explains that WIST is a client for searching and ordering earth science data. A blue link "Enter WIST" is provided. The "Data Center Status" section is highlighted in yellow and contains several bullet points: LAADS (data holdings do not represent all data), LARC (ACRIM III, CALIPSO, MISR, MOPITT, SAGE III, and TES data are available; contact larc@eos.nasa.gov), LP DAAC (data holdings removed from EDG on October 8, 2008; available through WIST; [LP DAAC Newsletter](#)), ASTER (links for [SWIR Status Update](#), [GeoTIFF Option](#), [DVD](#), [Orthorectified Data](#), [Crosstalk Products](#), [Pricing](#), and [GDS Orders](#)), MODIS (links for [Collection 4 Deletion](#), [Land Cover Type MCD12Q1 Available](#), [MRT 4.0](#), and [V005 Reprocessing Completed](#)), and NSIDC (production of MODIS/Aqua and MODIS/Terra snow and sea ice products is no longer suspended). The "Alerts" section contains a bullet point for PODAAC, stating that valids are only in EDG and not available in WIST/ECHO yet. The browser's taskbar at the bottom shows the Start button, several open applications, and the system clock at 5:36 PM.

Warehouse Inventory Search Tool (WIST)
Search for and order earth science data products from NASA and affiliated centers

WIST, the Warehouse Inventory Search Tool, is a client for searching and ordering earth science data from various NASA and affiliated centers.

[Enter WIST](#)

Data Center Status

- LAADS:**
Data holdings in WIST do not represent all LAADS data.
- LARC:**
ACRIM III, CALIPSO, MISR, MOPITT, SAGE III, and TES data are available for ordering from WIST. Contact Langley ASDC User Services for assistance, larc@eos.nasa.gov.
- LP DAAC:**
LP DAAC EOS data holdings were removed from EDG on October 8, 2008. The LP DAAC data holdings are available through WIST. [LP DAAC Newsletter](#).

Alerts

- ASTER:** [SWIR Status Update](#), [GeoTIFF Option](#), [DVD](#), [Orthorectified Data](#), [Crosstalk Products](#), [Pricing](#), [GDS Orders](#).
- MODIS:** [Collection 4 Deletion](#), [Land Cover Type MCD12Q1 Available](#), [MRT 4.0](#), [V005 Reprocessing Completed](#).
- NSIDC:**
Production of MODIS/Aqua and MODIS/Terra snow and sea ice products is no longer suspended. Production of Aqua snow and sea ice products has resumed and is nearly caught up. Production of Terra snow and sea ice products is nearly caught up as well.
- PODAAC:**
PODAAC valids are only in EDG. They are not available in WIST/ECHO yet.



SPOT Data Access – Sirius Online

The screenshot displays the SPOTCatalog website interface. At the top, the browser address bar shows "SPOTCatalog: Location & Criteria". The page header includes the SPOTCatalog logo, a globe icon, and the text "Welcome to SPOTCatalog The Spot Image product catalogue". Navigation options include "My account", "My searches", and "English".

The main content area features a search criteria panel on the right with the following settings:

- 1. My search
- 2. My results
- 3. My cart
- AREA OF INTEREST »
- PRODUCT »
- ACQUISITION DATE » Define
- CLOUD COVER » 20%
- ANGLE OF INCIDENCE "Any (-

Below the search criteria is a "Create an alert" button and a "Search" button. The left side of the interface shows a world map with a search area highlighted in the Atlantic Ocean. The map includes a scale bar for 6000 km and coordinates: "Lat / Long: 52.85, 84.11".

At the bottom of the page, there is a footer with the following text: "Contact us | General Information | Legal information | Credits | FAQ | Help? | Quick Start | © Spot Image S.A., 2007. All rights reserved"

Catálogo de Imagens - Windows Internet Explorer
 http://www.dgi.inpe.br/CDSR/

File Edit View Favorites Tools Help Links Bookmark Clip Customize Links EDC Home Free Hotmail USGS Windows

Catálogo de Imagens

English

INPE Image Catalog

Register Log In Log Out Cart History Help

Basic Parameters

Satellite:

Instrument:

Time Interval: Seasonal

From: 29 / 05 / 1973

To: 25 / 03 / 2010

Maximum Cloud Cover

Q1: 50% Q2: 50%

Q3: 50% Q4: 50%

Quick Look: Small Big

Passage Mosaic

Date: / / or Path:

Execute

Country: City:

Execute

Path: Row:

From: To: From: To:

Execute

By Region

North: 10.

West: -90. East: -30.


South: -40.

Execute

Map Interface

Lat: -17. Lon: -48.

Navigate



Dear User,

"On March 11th, 2010, CBERS-2B had a problem in the subsystem of orbit attitude control. Procedures of emergency operation was performed jointly by Brazil and China in the same date. Currently, specialists in orbit attitude control are analyzing the problem, seeking a final solution. Until we reach a conclusive result, the imaging operations are canceled until further notice."

We are, since Feb 22/2010, providing INPE's Image Catalog users with images from AWiFS and LISS3 sensors on-board IRS P6 indian natural resources satellite, on a costless ordering basis. These images cover South America region in the range of INPE's reception antenna in Cuiaba - MT (Brazil) and have daily been received since September 15/2009.

See information in [Satellite IRS P6](#).

Read [Information on recent CBERS-2B satellite imaging disturbance](#).

See below (item 4) how to proceed for downloading MARLIN - a tool oriented for displaying and handling digital images.

Welcome to the DGI/INPE's Image Database page.

DGI/INPE's Image Database presently contains images cast by [Landsat-1](#), [Landsat-2](#), [Landsat-3](#), [Landsat-5](#), [Landsat-7](#), [CBERS2](#) and [CBERS-2B](#) (China-Brazil Environment Resources Satellite) satellites.

All images are fully cost free when requested (via Internet). These images are (by default) sent via FTP to the users for downloading. It can rather be recorded on a CD media and mailed to the user, what implies costs (media plus mailing) driving the user to register at the Users Assistance Service (ATUS) for tax payment and shipment procedures.



Catálogo de Productos
Sistema simplificado de distribución de imágenes
Satélite SAC-C



Español

[Descargar el Visualizador de Imágenes SAC-C](#)

Los derechos de autor de las imágenes SAC C pertenecen a la Comisión Nacional de Actividades Espaciales (CONAE).

Los interesados podrán acceder a las imágenes que se ponen a disposición via Internet en forma gratuita. Otras imágenes o servicios (de archivo, en CDROM, diferentes niveles de procesamiento, etc.) deberán ser solicitadas a la Unidad DISPA (Paseo Colon 751 Capital Federal, CONAE).

Las imágenes SAC C estarán destinadas para el uso propio. No está permitida la comercialización de las mismas sin autorización expresa previa de CONAE.

Los usuarios podrán producir imágenes derivadas e imágenes clasificadas a partir de las imágenes SAC C para uso propio o

Lanzamiento del satélite SAC C.
Vandenberg, California (21 de noviembre de 2000).

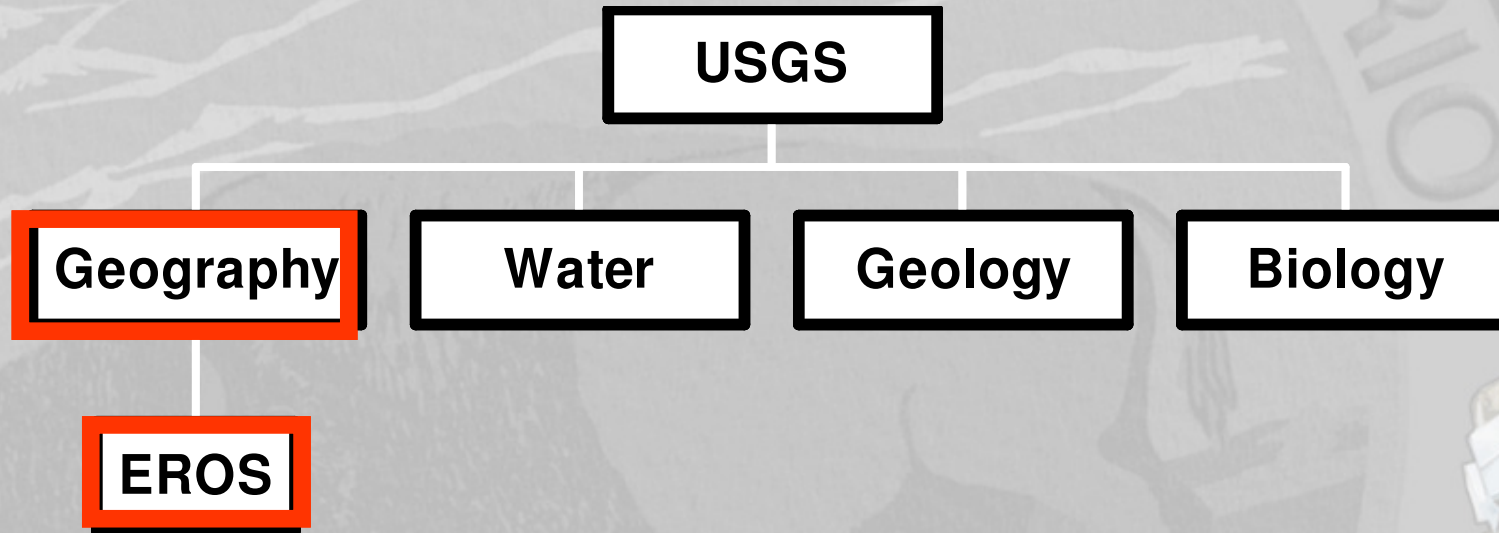


Productos Disponibles: SAC-C SAC-C Integrados (PIMH)

[Acepto las Condiciones](#)

[<< Volver a Catálogos](#)

USGS Organizational Alignment



Land Remote Sensing Program

- The USGS LRS Program is the Nation's archive for the world's largest collection of civilian remotely sensed data covering the Earth's land masses.
- The USGS maintains millions of satellite images and aerial photographs that are used by researchers, in both the public and private sectors, to understand natural resources, hazards, and long-term changes.
- The remote sensing products not produced by the USGS are acquired from multiple Federal, State, and private sector partners.
- The data and information are searchable and accessible online with real-time browse capability



Geographic Analysis and Monitoring

GAM researchers use earth observation data supplied by land remote sensing coupled with data from many natural science sources and relevant socio-economic data to quantify the rates, identify key driving forces, and forecast future trends of landscape change.

GAM studies are conducted within a geographic context and at a range of spatial and temporal scales in order to provide a comprehensive, interdisciplinary perspective.

GAM scientists also conduct related studies about environmental and human health, wildfire, urban ecology, and natural hazards.

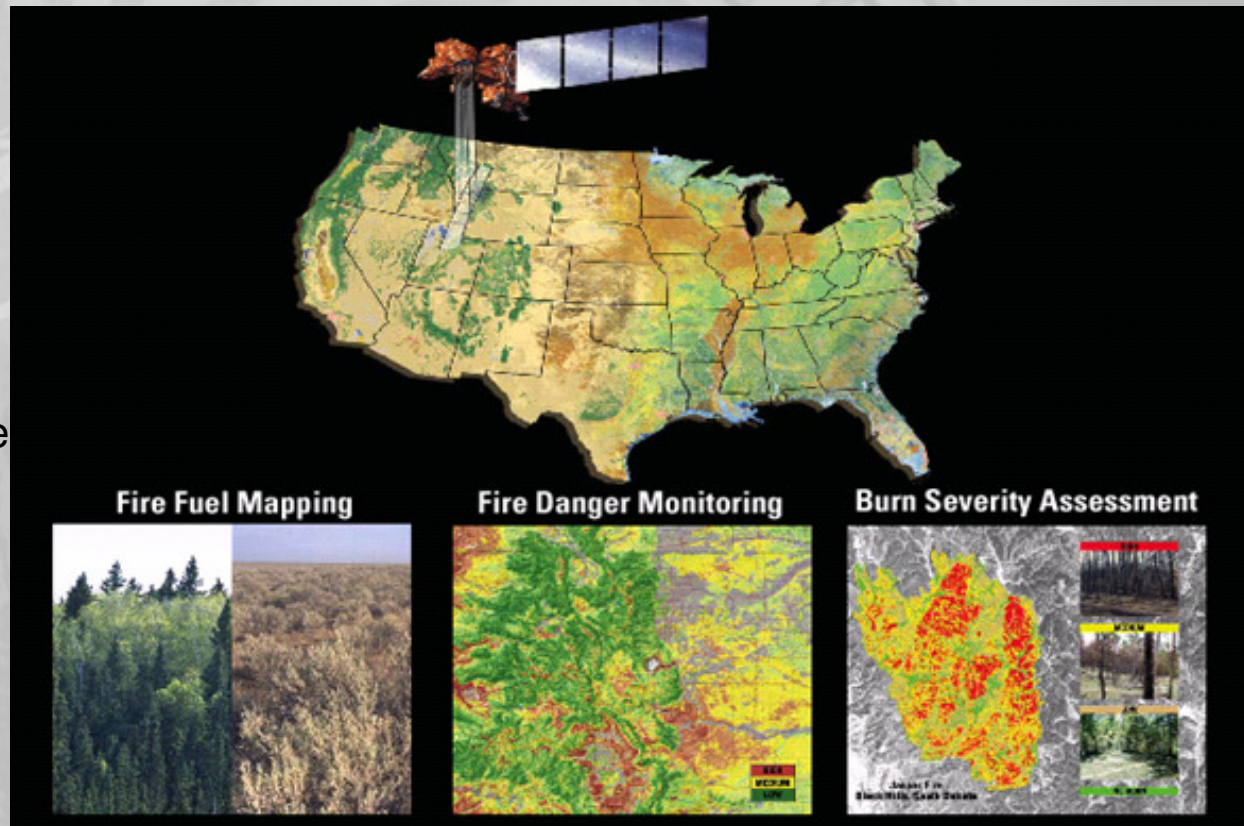


Responding to Natural Hazards

LANDFIRE: a multiyear effort to map fire fuels for the nation for fire risk assessment.

Fire Danger Monitoring: vegetation condition information for forecasting fire danger in support of the National Interagency Fire Center.

Monitoring Trends In Burn Severity: A multiyear effort to map over 10,000 major fires since 1984 and assess trends in burn severity.



These activities are conducted in cooperation with DOI agencies and the U.S. Forest Service

Earth Resources Observations and Science

EROS



Data Acquisition/Access:

To ensure that scientists, researchers, businesses, decision makers, and the public have ready access to land information

Data Archives:

To safeguard and expand the national archive of remotely sensed land data

Science:

To promote applications, users, and knowledge of land information to better understand our planet

File Edit View Favorites Tools Help Links Bookmark Clip Customize Links EDC Home Free Hotmail USGS Windows

USGS/EROS Find Data/Products and Data Available

USGS
science for a changing world

USGS Home
Contact USGS
Search USGS

Earth Resources Observation and Science (EROS) Center

Home Find Data Science Remote Sensing About Us

Find Data/Products and Data Available

Products & Data Available

Data Discovery Tools

Products & Data Available

Explore the world's largest civilian collection of images of the Earth's surface. Find satellite images and data, aerial photography, elevation and land cover datasets, digitized maps, and our Image Gallery collections.

Our Archive spans from 1937 aerial photographs to millions of satellite images of the Earth's surface, starting with the original Earth orbits in the 1960's and first Landsat satellite in 1972, to our current hourly additions of satellite images. Click on any product category to review detailed information on the products, plus how to order or download selected images at no charge.

Products and Data Available:

- [Aerial Photography](#): Explore over 13 million images in our film Archive. Find historical film photographs dating back to the 1930's or current high resolution orthoimagery.
- [Satellite Images](#): Review millions of satellite Images and data including over three and a half decades of Landsat imagery.
- [Elevation](#): Digital elevation data derived either from radar or the USGS topographic map series.
- [Land Cover](#): Products that help monitor, measure, map, analyze, and predict land cover changes.
- [Digitized Maps](#): Topographic and hydrologic maps, maps showing transportation routes, national parks, and even a series of maps on Antarctica.
- [Image Gallery Collections](#): From capturing the beauty and dramatic features of Earth, to following the Lewis and Clark Trail, or view our out-of-this-world collection of States.





[USGS Home](#)
[Contact USGS](#)
[Search USGS](#)

Earth Resources Observation and Science (EROS) Center

[Home](#) [Find Data](#) [Science](#) [Remote Sensing](#) [About Us](#)

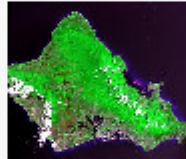
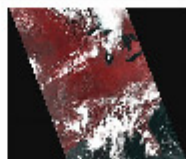

Find Data/Products and Data Available/Satellite Products

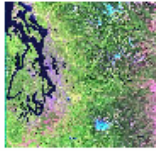
Products & Data Available

- [Aerial Photography](#)
- [Satellite Imagery](#)
- [Elevation](#)
- [Land Cover](#)
- [Digitized Maps](#)
- [Image Gallery Collections](#)
- [FAQs](#)

Data Discovery Tools

Satellite Products

Example	Description	Availability
	ASTER (Advanced Spaceborne Thermal Emission and Reflection Radiometer) High-resolution (15- to 90-meter) multispectral data from the Terra satellite (2000 to present). (2000 - present)	WIST Data Pool GloVis
	AVHRR (Advanced Very High Resolution Radiometer) 1-km multispectral data from the NOAA satellite series. (1979 to present)	NOAA Archive
	Commercial Data Purchases (CDP) Imagery	EarthExplorer



Landsat ETM+ (Enhanced Thematic Mapper Plus)

[EarthExplorer](#)
[GloVis](#)

High-resolution (15- to 60-meter) multispectral data from Landsat 7.
(1999 to present)



Landsat MSS (Multispectral Scanner)

[EarthExplorer](#)
[GloVis](#)

80-meter multispectral data from Landsats 1 to 5.
(1972 to 1992)




Landsat TM (Thematic Mapper)

[EarthExplorer](#)
[GloVis](#)

30- to 120-meter multispectral data from Landsat 4 and 5.
(1982 to present)



LDCM (Landsat Data Continuity Mission)

 not available yet

Multispectral data from the proposed Landsat Data Continuity Mission.



MODIS (Moderate Resolution Imaging Spectroradiometer)

[WIST](#)
[GloVis](#)
[Data Pool](#)

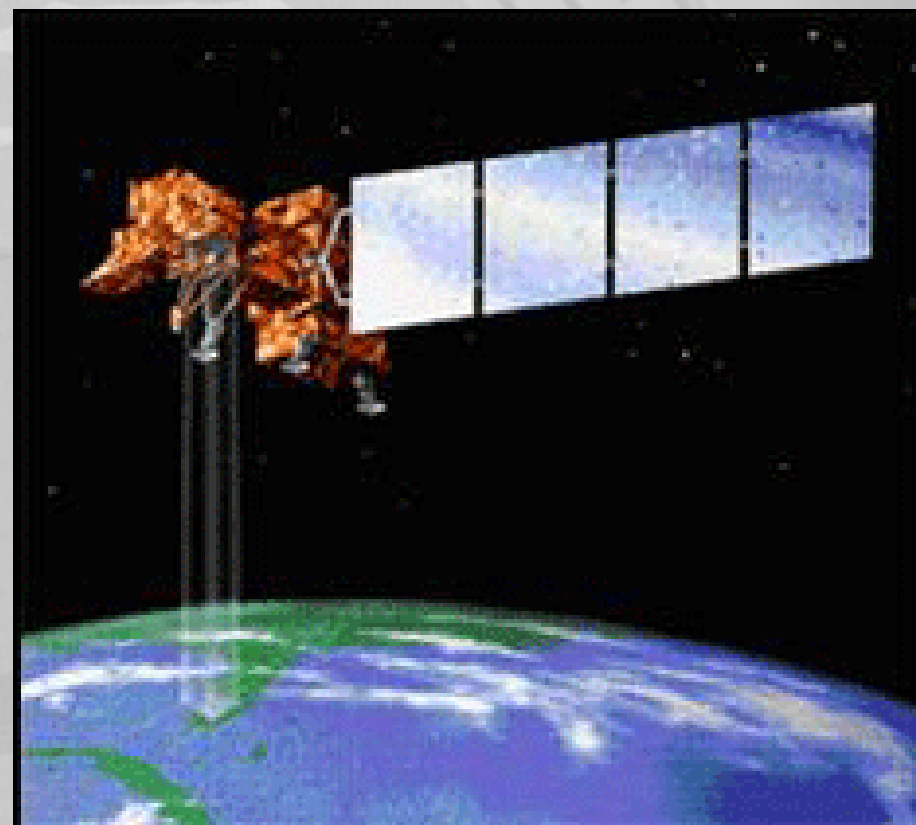
Moderate-resolution (250- to 1000-meter) multispectral data from the [Terra](#) Satellite (2000 to present) and [Aqua](#) Satellite (2002 to

Landsat at USGS EROS



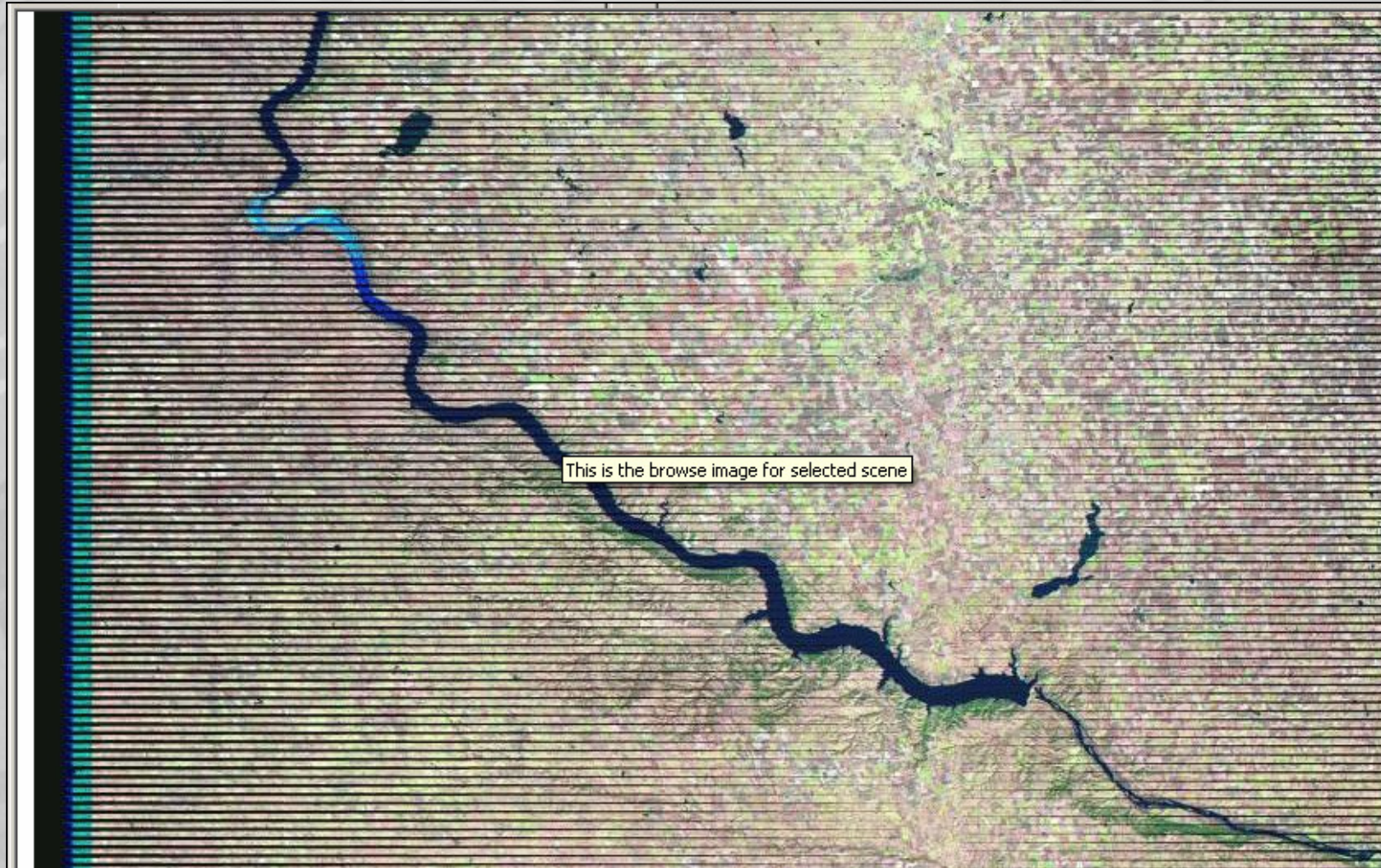


Landsat 5,
launched March 1, 1984



Landsat 7,
launched April 15, 1999

Landsat 7 Scan –line Correction Problem (since 2003)



U.S. Landsat Archive Overview

(Available scenes through November 30, 2009)

- **ETM+: Landsat 7**
 - 990,735 scenes
 - 920TB RCC and L0Ra Data
 - Archive grows by 260 GB Daily
- **TM: Landsat 4 & Landsat 5**
 - 843,787 scenes
 - 211TB of L0Ra Data
 - Archive Grows by 40 GB Daily
- **MSS: Landsat 1 through 5**
 - 652,088 scenes
 - 19 TB of Data



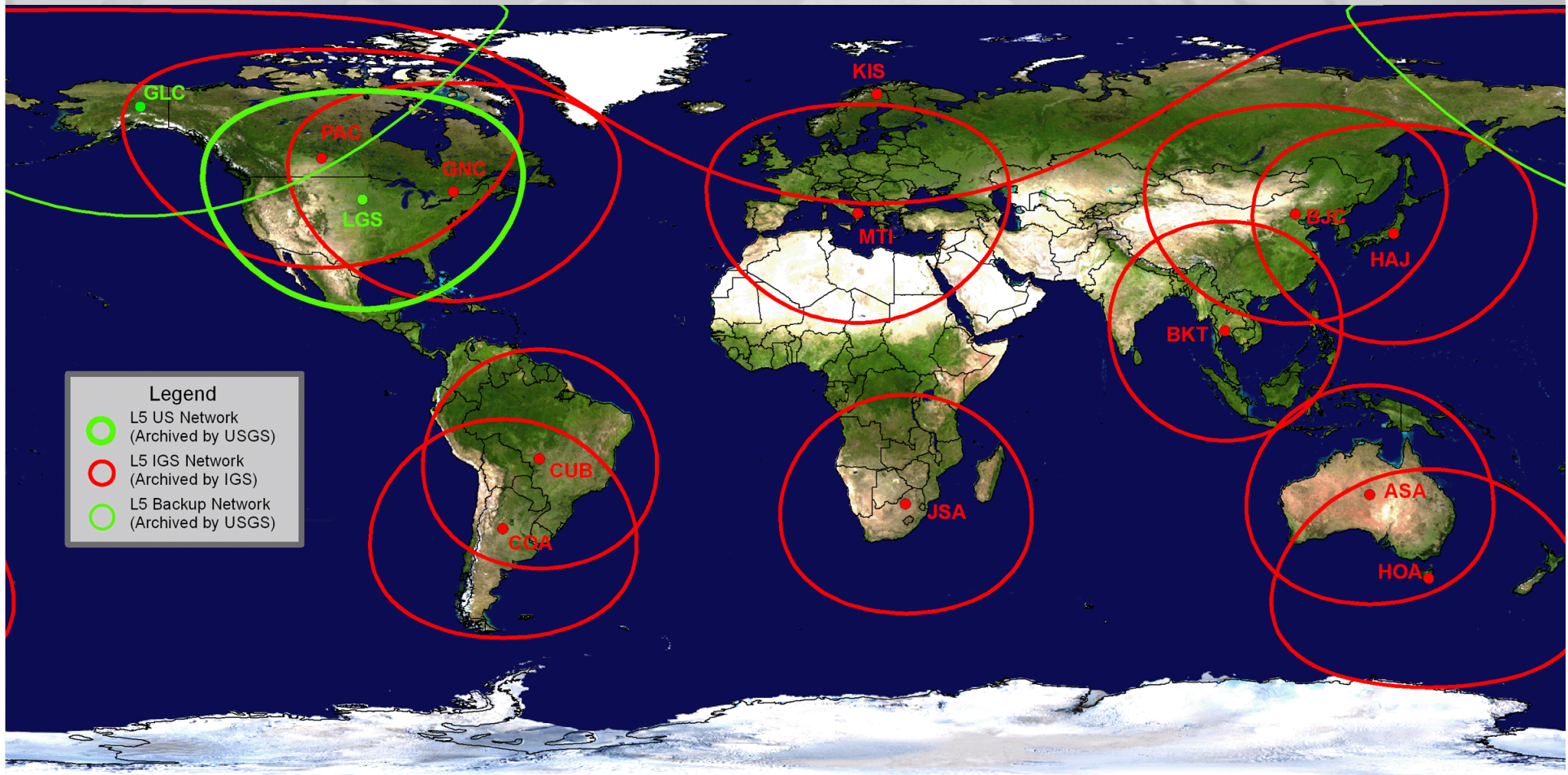
Landsat Standard Products

- **Pixel size: 15m/30m/30m**
- **Media type: Download (web-enabled)**
- **Product type: L1T (terrain-corrected)***
- **Output format: GeoTIFF**
- **Map projection: UTM (Polar Stereographic for Antarctica)**
- **Orientation: North up**
- **Resampling: Cubic convolution**
- **DEM: GLS DEM (SRTM, NED, CDAD, DTED, GTOPO 30)**

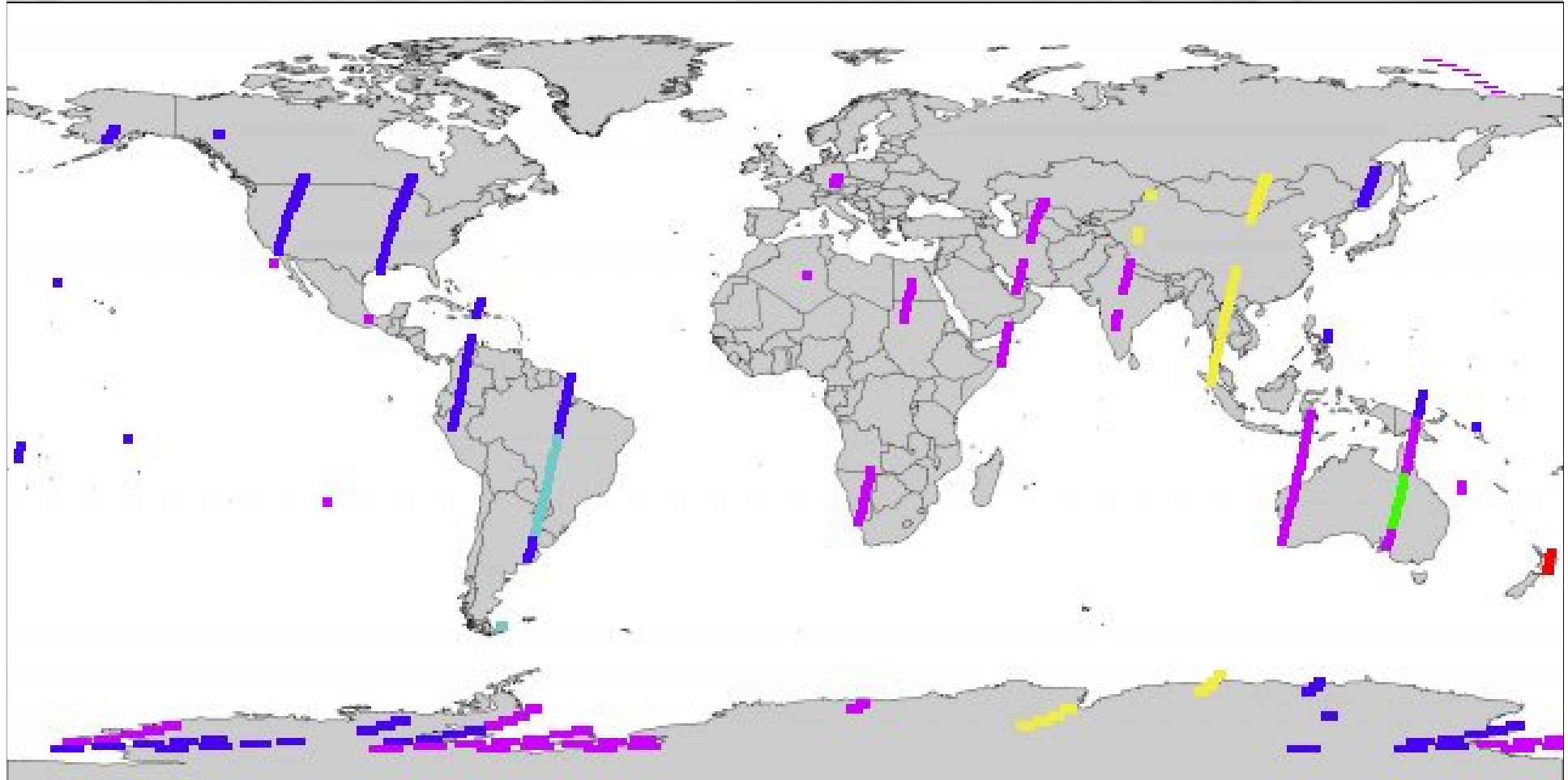
*Systematic correction (L1Gs) are also produced when terrain or precision ground control is not available.



Landsat Int'l Ground Stations



Landsat 7 Acquisitions: 15 Feb 2010



Landsat Data Access - EarthExplorer

The screenshot shows the EarthExplorer website in a Windows Internet Explorer browser. The address bar displays <http://edc.sns17.cr.usgs.gov/EarthExplorer/>. The page features the USGS logo and navigation links such as "Home", "Login", "Register", "Shopping Basket", and "Help". A message banner indicates "There are 3 messages. (Updated: 3/24/2010)".

The main content area is divided into three sections:

- 1. Select your dataset(s)**: This section provides instructions to click on a category name to show a list of datasets. It includes a list of categories with expandable icons: Aerial Photography, AVHRR, Cal/Val Reference Sites, Commercial, Declassified Data, Digital Elevation (with a [Related Links](#) link), Digital Line Graphs (with a [Related Links](#) link), Digital Maps (with a [Related Links](#) link), EO-1, Forest Carbon Sites, Global Land Survey, and Landsat Archive (with a [Related Links](#) link). Under the Landsat Archive category, there are several options with expandable icons: L7 SLC-off (2003-present), L7 SLC-on (1999-2003), L4-5 TM, L1-5 MSS, and L7 Intl Ground Stations (Search Only). Other categories include Landsat Legacy, Landsat MRLC, and Radar.
- 2. Enter your search criteria**: This section contains search input fields. The "Address/Place Name/ Zip Code Search:" field has a "Search" button and a "Reset" button. Below it, the "From (mm/dd/yyyy):" field is set to "01/01/1920" and the "To (mm/dd/yyyy):" field is set to "12/31/2020". There is a checkbox for "Search these months only." which is currently unchecked.
- 3. Search >>>**: This section displays a satellite map of the United States. The map includes a scale bar (0 to 1000 miles and 0 to 1000 kilometers), a "Map" button, "Satellite" and "Terrain" map style buttons, and a "Show Labels" checkbox which is checked. The map shows state abbreviations and major geographical features like the North Pacific Ocean, Gulf of Mexico, and North Atlantic Ocean. A small inset map of the United States is visible in the bottom right corner of the map area.

At the bottom of the page, there is a disclaimer: "The up to date Google map is not for purchase or for download; it is to be used as a guide for reference and search purposes only."



Landsat Data Access - GloVis

The screenshot shows the USGS Global Visualization Viewer (GloVis) web application. The browser window title is "USGS Global Visualization Viewer - Windows Internet Explorer". The address bar shows the URL "http://glovis.usgs.gov/". The page features the USGS logo and the text "science for a changing world" and "Center for Earth Resources Observation & Science (EROS)". Below the header, there is a navigation bar with the text "USGS Global Visualization Viewer". A blue banner contains the instruction: "Select a collection, then click on the Global Locator Map to view satellite browse images in that area." Below this, there are two dropdown menus: "Select Collection" set to "Landsat Decadal" and "TM (1987-1997)", and a "View Images" button. There are also input fields for "Latitude" (set to "-33.7") and "Longitude" (set to "19.8"). The main content area displays a world map with a grid overlay. At the bottom of the page, there are four tabs: "What's New!", "Browser Requirements", "Help", and "Download Source Code". The browser's status bar shows "javascript:submitForm()", "Internet", and "100%". The Windows taskbar at the bottom includes the Start button, several open applications (D:\CEOS WGEdu\M..., 3 Microsoft Office..., USGS Global Visu..., Login Successful - ..., G. Bryan Bailey - In...), and the system clock showing "5:55 AM".



Landsat Data Access - GloVis

The screenshot displays the USGS Global Visualization Viewer (GloVis) interface. The main window shows a satellite image of a coastal region, with a yellow bounding box highlighting a specific area. A red circle highlights the 'Downloadable' button in the top menu bar. The interface includes a navigation pane on the left with a map of the United States, a control panel with various settings, and a status bar at the bottom.

USGS Global Visualization Viewer

Collection Resolution Map Layers **Downloadable** Tools Help

WRS-2 Path /Row: 16 51 Go
Lat/Long: 13.0 -85.0 Go

Max Cloud: 100% [Up] [Down] [Left] [Right]

Scene Information:
ID: LE70160512005024EDC00
Cloud Cover: 1% Qlty: 9
Date: 2005/1/24

Jan 2005 Go

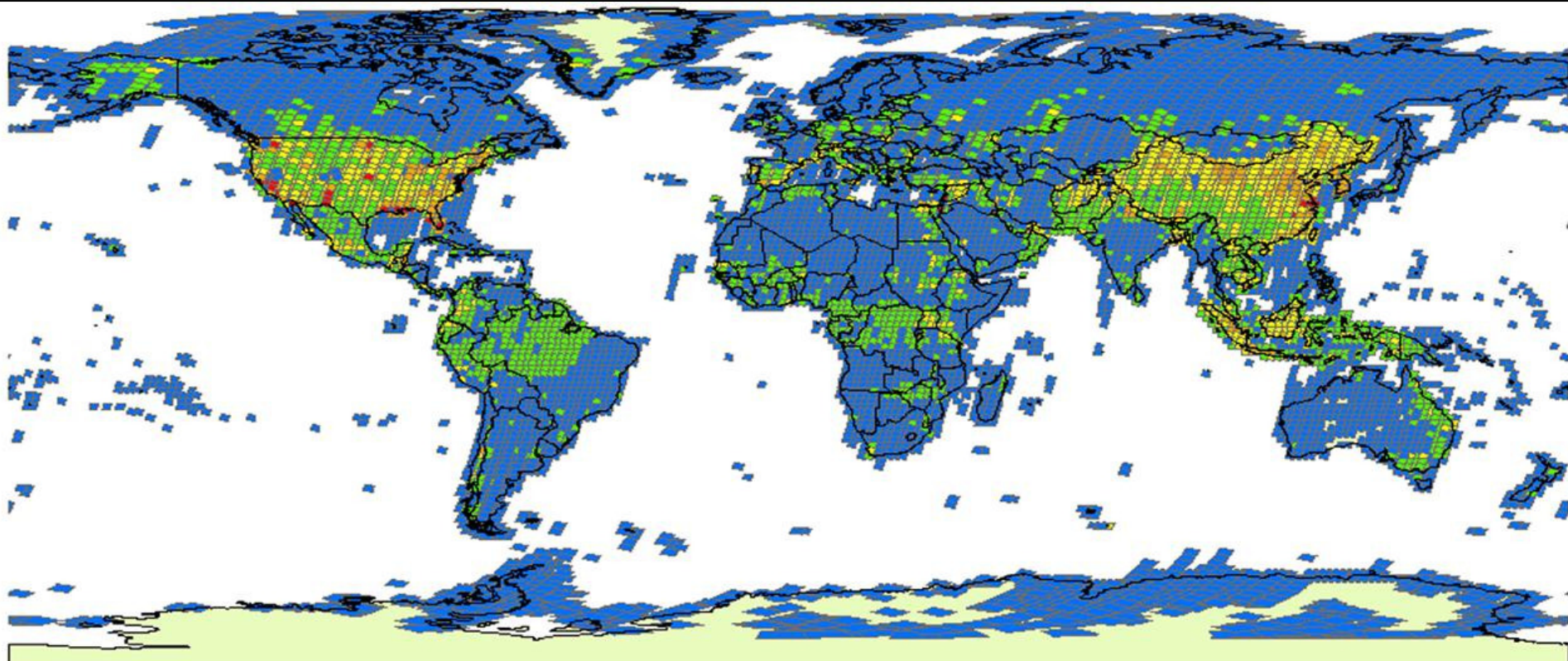
Prev Scene Next Scene

L7 SLC-off (2003->) List

Add Del Submit Download

1000m No Limits Set Lat/Long: 15.150190, -82.728508 degrees





WRS2 Standard L1T Downloads

via User Interface

October 1, 2008 through September 30, 2009

1,037,842 Total Cumulative Scenes Delivered

995,020 Total WRS2 Scenes Delivered

10,502 Unique WRS2 Locations

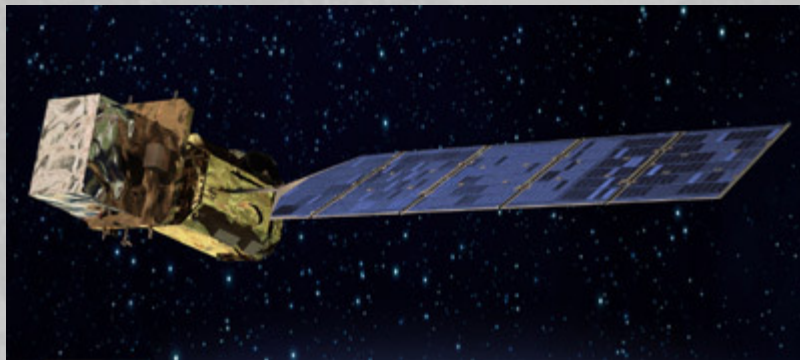
1 - 102 103 - 308 309 - 648 649 - 1315 1316 - 3080



What's Next?

Landsat Data Continuity Mission: AKA Landsat 8

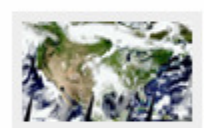
- Different technology (pushbroom vs. whiskbroom)
- Maintains spatial and temporal resolution
- Additional spectral resolution (deep blue band, cirrus band)
- Scheduled for launch in 2012 (?) on Atlas V





ATTENTION: Welcome!

Welcome



Products
Lists the satellite images available from the two sensors, MODIS and ASTER.



Get Data
Guides you through the steps needed to acquire the satellite images.



Tools
Some tools to help you work with the data.



User Community
A place to share knowledge with others.



Customer Service
Need assistance? Our staff is happy to help.

News

02/23/2010
[Changes to WIST Order Size and LP DAAC Order Download Time](#)

01/12/2010
[ASTER Cloud Cover Accuracy Improved](#)

01/11/2010
[ASTER DEM Software Upgrade](#)

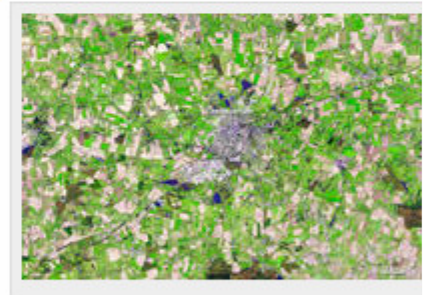
10/07/2009
[LP DAAC GDEM Distribution Milestone / Re-distribution Update](#)

[Read more news.](#)

NASA and USGS Partnership

Data in Action

Chateaubriant, France
03/10/2010

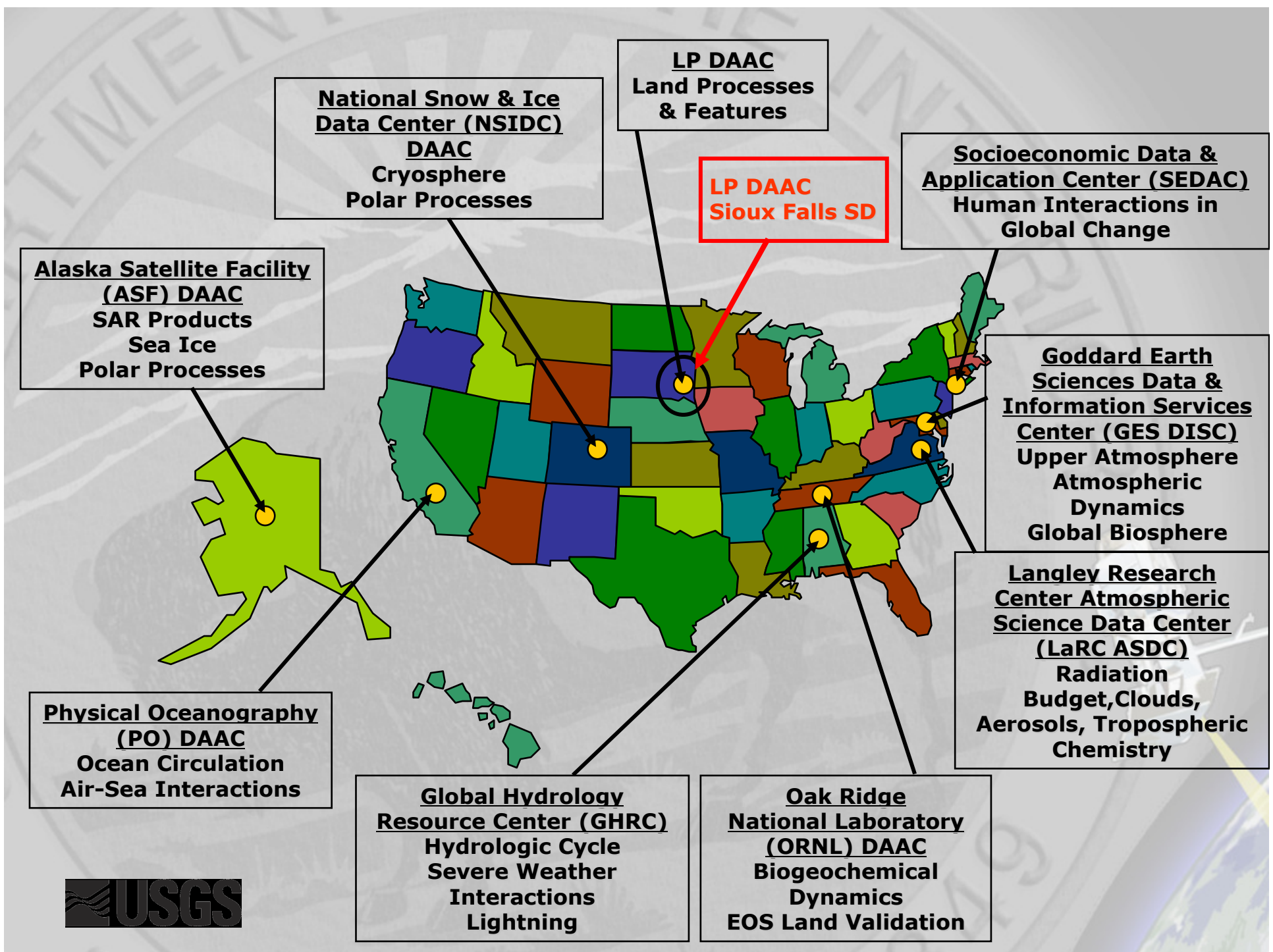


Vestiges of Medieval Brittany mingle with signs of modern civilization in this

simulated natural color satellite image of Chateaubriant, France. The small city is silver, colored by light bouncing off the reflective surfaces of modern times. The surrounding country is an irregular patchwork of small fields, reflecting land use in the Middle Ages.

[Read original article.](#)

[Read more articles](#)





- ▶ [MODIS Overview](#)
- ▶ [ASTER Policies](#)
- ▶ [MODIS Products Table](#)
- ▶ [MODIS Policies](#)
- ▶ [ASTER Overview](#)
- ▶ [ASTER Products Table](#)
- ▶ [Other Data Links](#)

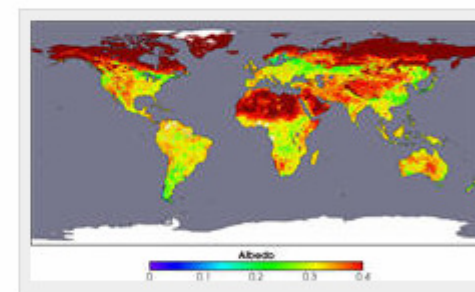
Products

LP DAAC MODIS Data

[MODIS Overview](#) - Details about naming conventions, temporal, and spatial resolutions and metadata.

[MODIS Products](#) - Sortable table of LP DAAC MODIS products with links to product-specific information.

[MODIS Policies](#) - MODIS pricing and distribution policies.



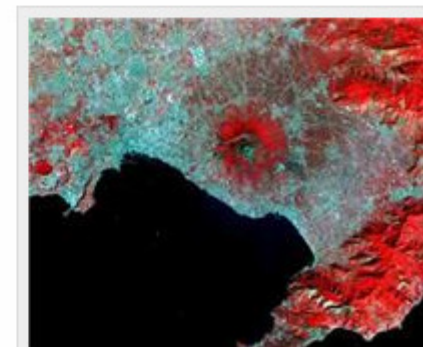
LP DAAC ASTER Data

[ASTER Overview](#) - What Makes ASTER Unique? Details about baseline, performance requirements and metadata.

[ASTER Products](#) - Sortable table of LP DAAC ASTER products with links to product-specific information.

[ASTER Policies](#) - ASTER data availability and redistribution policies.

[ASTER Tasking](#) - Request data acquisition.

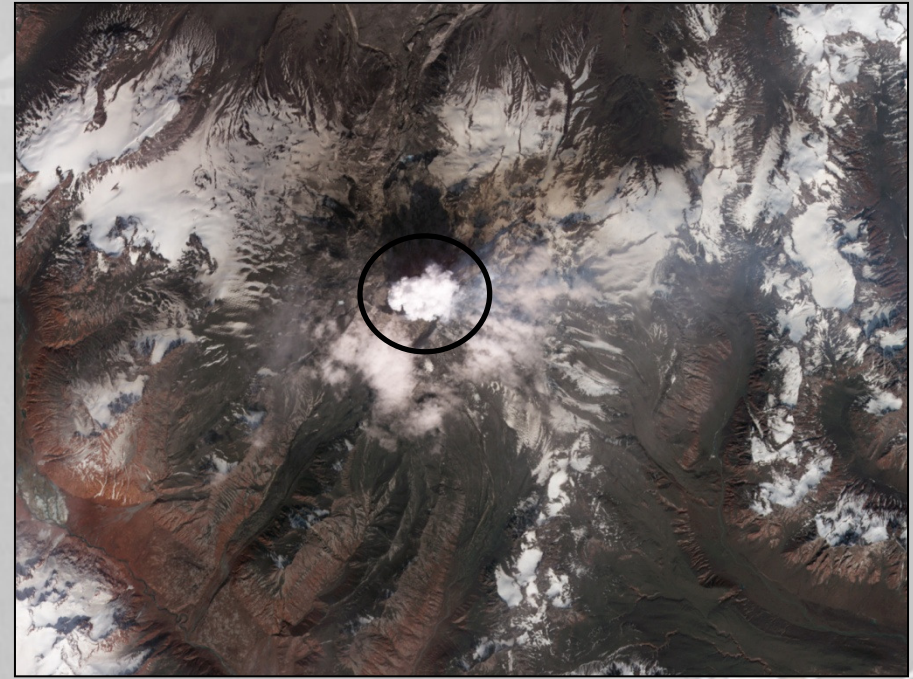


ASTER and MODIS Data



MODIS image of fires near Athens, Greece

- Acquired August 22, 2009
- Smoke from wildfires can be seen in image center



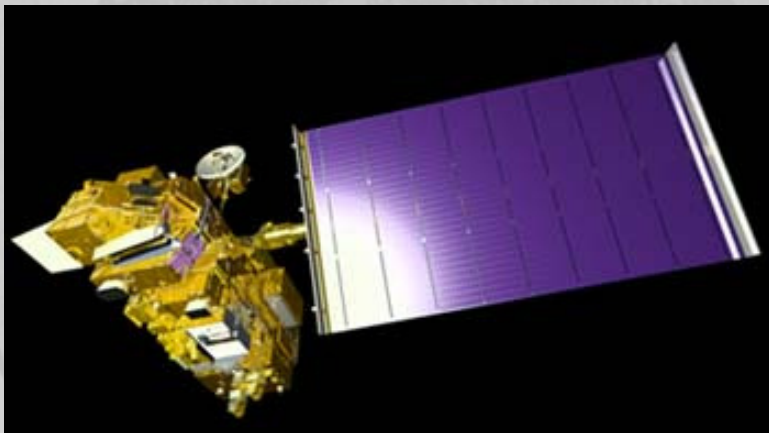
ASTER image of Mount Redoubt, Alaska

- Acquired May 5, 2009
- A steam plume can be seen in image center

Terra Satellite

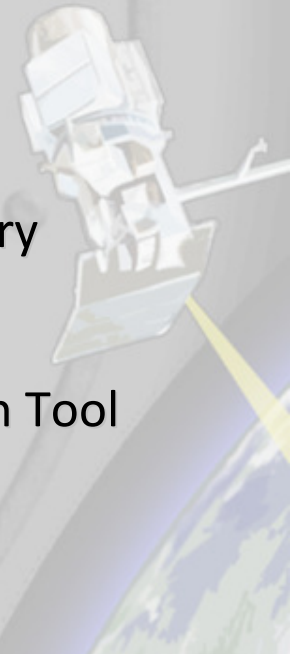


- LAUNCH: December 18, 1999 from Vandenberg AFB
- Morning overpass
- Land Instruments:
 - MODIS - daily observations globally at 250-, 500- & 1000-meter resolution.
 - ASTER – intermittent images (60km by 60 km) at 15-, 30 & 60-meter resolution



How to order ASTER or MODIS data from the LP DAAC?

- **Visit the “Get Data” area of the LP DAAC Web site.**
- **Warehouse Inventory Search Tool (WIST)**
 - Delivers all EOS data sets and meets all user needs
 - User Logins to allow saved searches and preferences
- **Global Visualization Viewer (GloVis)**
 - Browse-based tool for ASTER L1A and selected MODIS data sets
 - Point and click client
- **Data Pool**
 - ASTER L1B over U.S. and selected MODIS data sets
 - Data cached (58 TB) for immediate download
 - Search capabilities exist, along with simple folder-based directory structure
- **MRTWeb**
 - Combines the capabilities of GloVis and the MODIS Reprojection Tool
 - Access to selected MODIS data sets



https://lpdaac.usgs.gov

The screenshot shows the LP DAAC website homepage. At the top left is the USGS logo with the tagline "science for a changing world". To the right is the NASA logo and "LP DAAC LAND PROCESSES DISTRIBUTED ACTIVE ARCHIVE CENTER". A navigation menu includes "HOME", "ABOUT", "PRODUCTS", "GET DATA" (circled in red with an arrow pointing to it), "TOOLS", "USER COMMUNITY", and "CUSTOMER SERVICE". A search bar is on the right. Below the navigation is a "Welcome" section with icons for Products, Get Data, Tools, User Community, and Customer Service. A "News" section is highlighted with a red box containing the text "GET DATA!". The news items include: "07/30/2009 LP DAAC SREM Distribution Milestone / Re-distribution Update", "07/29/2009 The LP DAAC to discontinue ASTER Billable Process", and "07/01/2009 Change in Status Alert for the ASTER SWIR detector". A "Data in Action" section features an article titled "Ash Eruptions from Sarychev Peak, Kuril Islands" with a date of 08/18/2009 and a small image of an eruption. At the bottom, contact information for the LP DAAC is provided, including the address, phone numbers, and email. A footer contains links for Accessibility, FOIA, Privacy, and Policies and Notices.

USGS Home
Contact USGS
Search USGS

USGS
science for a changing world

NASA LP DAAC
LAND PROCESSES DISTRIBUTED ACTIVE ARCHIVE CENTER

HOME ABOUT PRODUCTS **GET DATA** TOOLS USER COMMUNITY CUSTOMER SERVICE

Search

ATTENTION: Welcome to the LP DAAC Website!

WELCOME

Products
Use the satellite images available from the live servers (USGS and NASA).

Get Data
Follow us through the steps needed to acquire the satellite images.

Tools
Some tools to help you work with the data.

User Community
A place to share and collaborate with others.

Customer Service
Need assistance? Our staff is happy to help.

News
GET DATA!

07/30/2009
[LP DAAC SREM Distribution Milestone / Re-distribution Update](#)

07/29/2009
[The LP DAAC to discontinue ASTER Billable Process](#)

07/01/2009
[Change in Status Alert for the ASTER SWIR detector](#)

[Read more news.](#)

Data in Action

Ash Eruptions from Sarychev Peak, Kuril Islands
08/18/2009

At the northwestern end of Ostrov Matua (Matua Island), Sarychev Peak ranks among the most active volcanoes in the Kuril (or Kurile) Islands, which stretch between Hokkaido, Japan, and Russia's Kamchatka Peninsula. On June 12, 2009, Sarychev Peak began a series of eruptions that spread ash far and wide across the northwestern Pacific.

[Read original article.](#)
[Read more articles.](#)

LAND PROCESSES DISTRIBUTED ACTIVE ARCHIVE CENTER

47914 252nd Street • Sioux Falls, SD 57198-0001 • Voice: 605-594-6116 • Toll Free: 866-573-3222 • Fax: 605-594-6963 • LPDAAC@eos.nasa.gov

Accessibility FOIA Privacy Policies and Notices



WIST – NASA

By Discipline not responding? Use the [non-javascript version](#)


By Discipline By Categories/Attributes

Choose a Data Search Type

Primary Data Search Data Granule ID Search Local Granule ID Search

Choose Search Area

Click & hold, then drag on the map to select a search region - or - enter **upper left & lower right** corners and then click on **Update Lat/Lon Corners on Map**.



Clear

Grid size:
20°

Features:
 Places
 Roads
 Rail
 Rivers
 Political

Zoom:
1x

(Single click on map to pan)

Lats and Lons must be in decimal degrees.
You must click on "Update Lat/Lon Corners on Map" if you type in coordinates.

upper left		upper right
<input type="text"/>	° Lat	<input type="text"/>
<input type="text"/>	° Lon	<input type="text"/>
center		
<input type="text"/>		<input type="text"/>
<input type="text"/>	° Lat	<input type="text"/>
<input type="text"/>	° Lon	<input type="text"/>
lower left		lower right
<input type="button" value="Update Lat/Lon Corners on Map"/>		


Global Search Stereographic N-pole Type in Lat/Lon Point
 Equatorial Stereographic S-pole X/Y Coordinate Range
 Orthographic Global granules only Orbit Search

Choose a Date/Time Range (not required)

Date format: YYYY-MM-DD (1967-05-25) or MM/DD/YYYY (05/25/1967)
Time format: HH:MM (14:30) or HH:MM:SS (14:30:01)



GloVis (Global Visualization)



USGS
science for a changing world

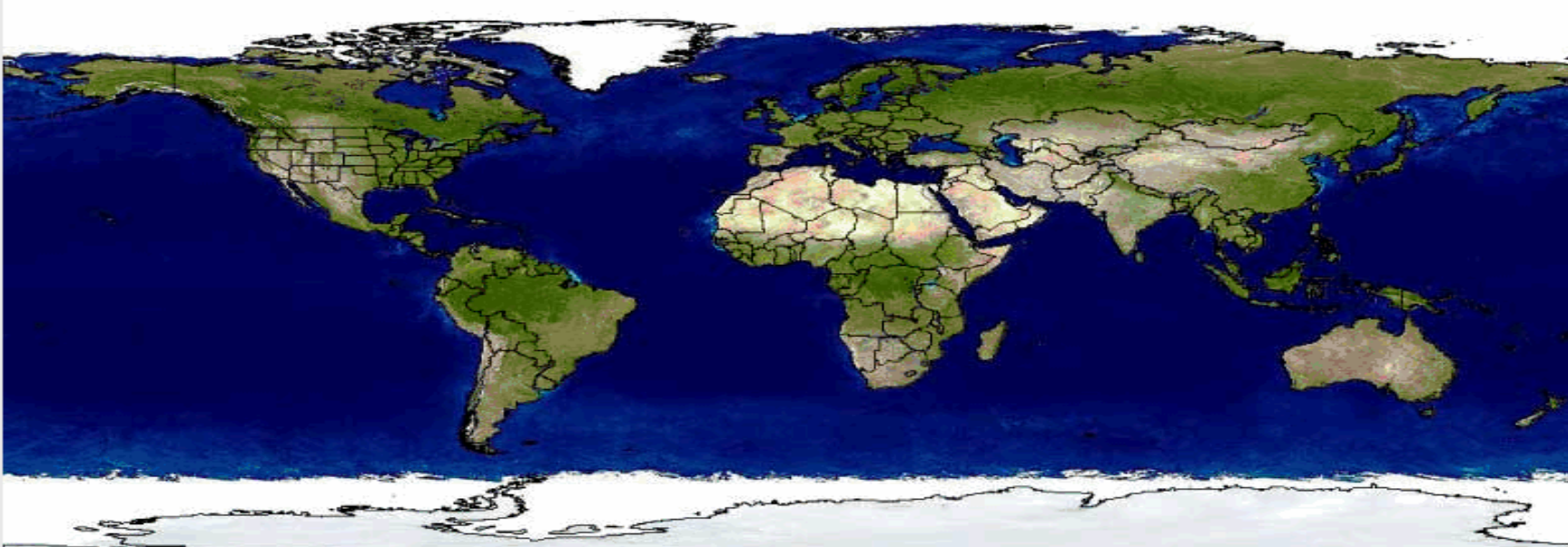
Earth Resources Observation and Science Center (EROS)

USGS Global Visualization Viewer

Select a collection, then click on the Global Locator Map to view satellite browse images in that area.

Select Collection

Latitude Longitude



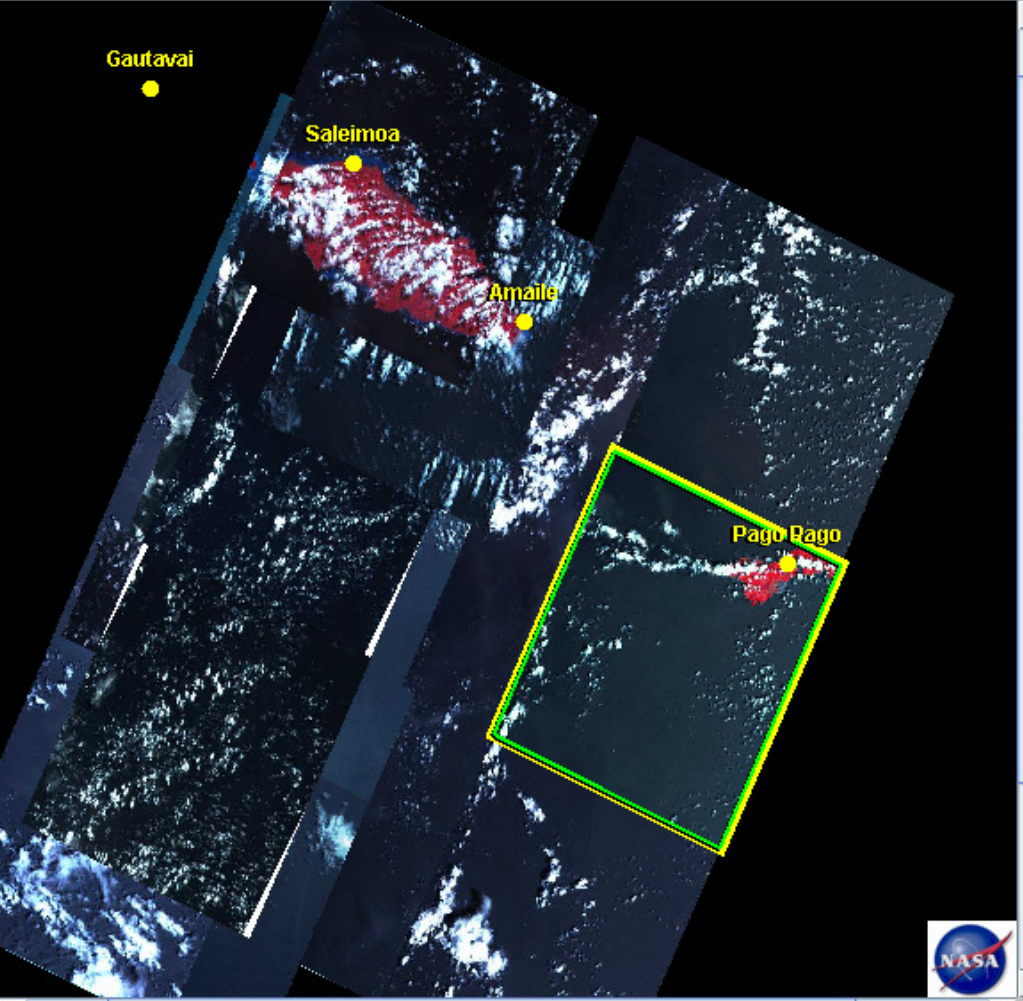
What's New!	Browser Requirements	Help	Download Source Code
Quick Start Guide	About Browse Images		



GloVis

USGS Global Visualization Viewer

Collection Resolution Map Layers Tools File Help



WRS-2 Path /Row: 68 70 Go

Lat/Long: -14.5 -170.9 Go

Max Cloud: 100%

Scene Information:
ID: AST_L1A.003:2005913469
Cloud Cover: 0%
Date: 2002/1/28

Jan 2002 Go

Prev Scene Next Scene

ASTER VNIR Scene List

AST_L1A.003:2005913469

Add Delete Order

400m No Limits Set Lat/Long: -6.62, -152.12 degrees, WRS-2 Path/Row 57, 65

ID: AST_L1A.003:2045391102
0% Cloud, 2007/7/25

- Show Metadata
- Show Browse
- Add To Scene List
- Remove From Scene List
- Hide Scene
- Bring To Front
- Send To Back
- Set Point Of Interest
- Select Scene



Datapool – soon to be on-line!

The screenshot shows the USGS LP DAAC website. At the top left is the USGS logo with the tagline "science for a changing world". To the right is a navigation menu with "USGS Home", "Contact USGS", and "Search USGS". Below this is the NASA LP DAAC logo and the text "LAND PROCESSES DISTRIBUTED ACTIVE ARCHIVE CENTER". A horizontal navigation bar contains links for "HOME", "ABOUT", "PRODUCTS", "GET DATA", "TOOLS", "USER COMMUNITY", and "CUSTOMER SERVICE", along with a search box. A left sidebar lists "Data Pool", "WIST", "GloVis", "MRTWeb", and "ASTER Tasking". The main content area is titled "Data Pool" and includes a breadcrumb "Get Data > Data Pool". It features a description of the Data Pool, sections for "MODIS Data Pool Holdings" and "ASTER Data Pool Holdings", and a right-hand panel titled "Access the Data Pool" with buttons for "DIRECT SEARCH" (ASTER, MODIS) and "DOWNLOAD VIA FTP" (ASTER, MODIS AQUA, MODIS TERRA, MODIS COMBINED). A warning icon and note at the bottom right of this panel state: "Note: Scheduled downtime occurs every Wednesday from 8 a.m. to 12 p.m. Central time." The USGS logo is also present in the bottom left corner of the slide.

USGS
science for a changing world

USGS Home
Contact USGS
Search USGS

NASA LP DAAC
LAND PROCESSES DISTRIBUTED ACTIVE ARCHIVE CENTER

HOME ABOUT PRODUCTS **GET DATA** TOOLS USER COMMUNITY CUSTOMER SERVICE

Search

▶ Data Pool
▶ WIST
▶ GloVis
▶ MRTWeb
▶ ASTER Tasking

NEWS FEED | SITE MAP

Get Data > Data Pool

Data Pool

The Data Pool is the publicly available portion of the LP DAAC online holdings. Data Pool provides a more direct way to access files by foregoing their retrieval from the nearline tape storage devices. All Data Pool holdings are available at no cost to the user.

MODIS Data Pool Holdings

MODIS Composites are mostly online and will be completely online in the near future. Many of the MODIS dailies are online and will be completely populated during the longer term.

ASTER Data Pool Holdings

The most recent two years of ASTER Level-1B products for the U.S. and territories is available for Data Pool access. Please see the [SWIR Advisory Alert](#).

Access the Data Pool

DIRECT SEARCH **ASTER MODIS**

DOWNLOAD VIA FTP **ASTER**

MODIS AQUA

MODIS TERRA

MODIS COMBINED

Note: Scheduled downtime occurs every Wednesday from 8 a.m. to 12 p.m. Central time.

USGS

MRTWeb

(MODIS Reprojection Tool web-base service)

The screenshot displays the 'MYD09A1 - USGS MODIS Reprojection Tool Web Interface (MRTWeb)'. The interface includes a menu bar with 'Product', 'Zoom', 'Map Layers', 'Tools', and 'Help'. Below the menu are three tabs: 'Selection', 'Process', and 'Download'. The 'Selection' tab is active, showing a 'Locator' map of North America with a red dot indicating the current view. The main map area shows a satellite image of North America with a yellow rectangular selection box centered over the United States. Labeled cities include Edmonton, Vancouver, Minneapolis, Denver, Washington D.C., Memphis, Houston, Havana, Port-au-Prince, Mexico City, Belmopan, and Caracas. A NASA logo is visible in the bottom right corner of the map. The 'Time Series' section on the left allows setting a 'Start' date of Jan 2002 and an 'End' date of Jan 2002, with an 'Add All' button. Below this is a 'MYD09A1 Scene List' table with columns for 'Add' and 'Delete'. The scene list contains the following items:

Add	Delete	Scene Name
<input type="checkbox"/>	<input type="checkbox"/>	MYD09A1
<input type="checkbox"/>	<input type="checkbox"/>	sur_refl_b01
<input type="checkbox"/>	<input type="checkbox"/>	sur_refl_b02
<input type="checkbox"/>	<input type="checkbox"/>	sur_refl_b03
<input type="checkbox"/>	<input type="checkbox"/>	sur_refl_b04
<input type="checkbox"/>	<input type="checkbox"/>	sur_refl_b05
<input type="checkbox"/>	<input type="checkbox"/>	sur_refl_b06
<input type="checkbox"/>	<input type="checkbox"/>	sur_refl_b07
<input type="checkbox"/>	<input type="checkbox"/>	sur_refl_gc_500m

The status bar at the bottom shows '1x', 'No Limits Set', and the file path 'MYD09A1.A2009065.h09v04.005'.



MRTWeb -Interface

1. SELECT

Use the MRTWeb Selection tab to choose MODIS Land product tiles, dates, and bands of interest. Select multiple adjacent tiles of the same date to build large area mosaics, or multiple dates of the same tile to build smaller area time series.

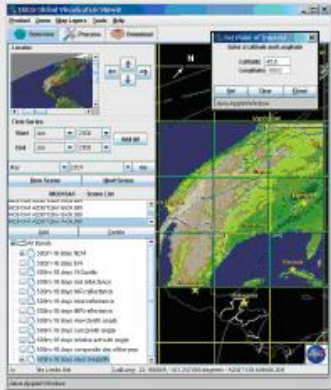


Figure 1. An example of finding, visualizing, and selecting input MODIS data for a continental U.S. mosaic. Thirteen MOD13A1 tiles from July day 129 2007 were selected and added to the scene list using the spatial and temporal navigation functions of MRTWeb. Only the NDVI and pixel reliability bands were selected for output from the twelve layers available in the original product. Zoom level, map layers, and help functions are also provided.

2. PROCESS

Continue to the MRTWeb Process tab to specify projection, spatial subsetting, resampling, and output formatting options. Then click the process button to initiate your processing job on LP DAAC servers.

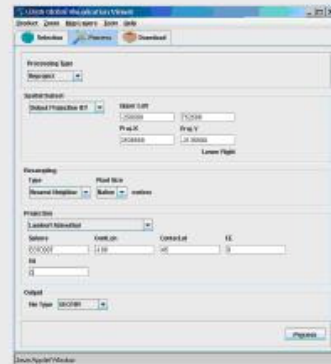


Figure 2. An example of specifying user-defined processing options for a continental U.S. mosaic. The MODIS data selected in figure 1 are mosaicked and reprojected to the Lambert Azimuthal projection using nearest neighbor interpolation at native resolution. The outputs are then clipped to the specified spatial subset, and written to Geo-TIFF format. Currently, MRTWeb supports fourteen projections and three output file formats (i.e., HDF-EOS, GeoTIFF, and binary).

3. DOWNLOAD

The MRTWeb Download tab provides status of your processing job and an FTP-link to your output product(s) when complete. The original input MODIS tiles, processing logs, and processing parameters are also available for download.

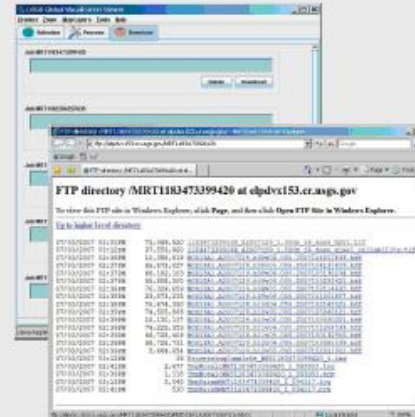


Figure 3. The MRTWeb job status and download screens for the continental U.S. mosaic example.

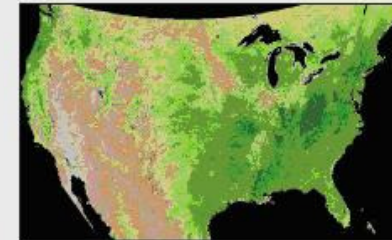


Figure 4. The custom MOD13A1 NDVI mosaic produced by MRTWeb.

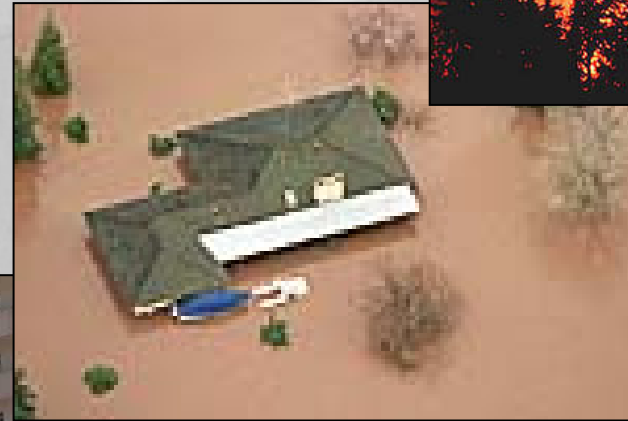


Figure 5. The MOD13A1 pixel reliability values carried along in the MRTWeb processing.

USGS EROS Emergency Operations

Minimize loss of life and property from natural disasters such as:

- Landslides
- Earthquakes
- Volcanic Activity
- Flooding
- Wildfires



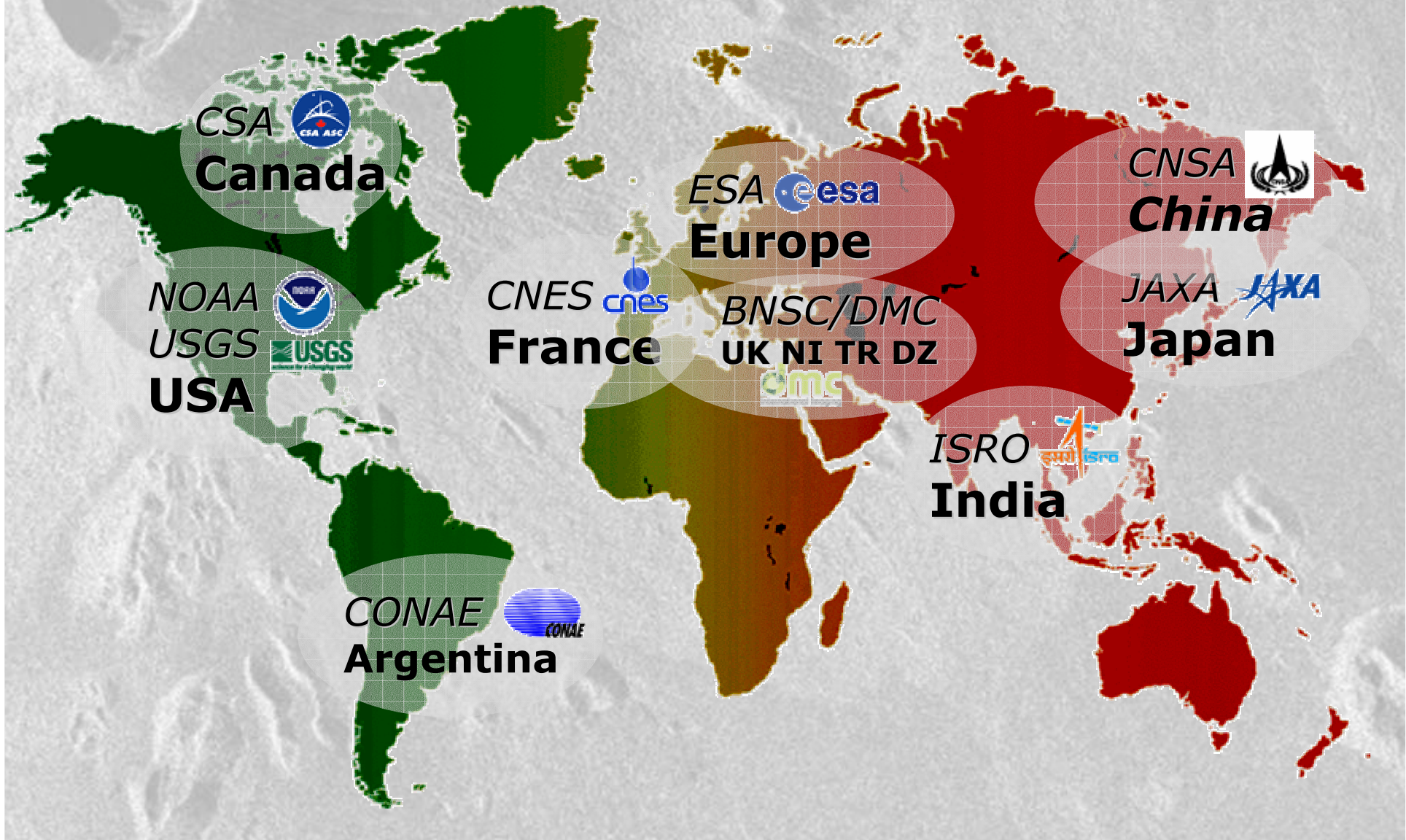
International Charter: Space and Major Disasters

An International agreement among Space Agencies to support, with space-based data and information, relief efforts in the event of emergencies caused by major disasters

- Disaster response**
- Multi-satellite data acquisition**
 - Fast data turn-around – priority acquisition**
- Archive retrievals and spacecraft tasking**
- Data processing at pre-determined level**
- Space Agency contribution in image/data**
- Space Agency initiative for value-added-data fusion**



Charter Member Agencies












Remote Sensing Assets

- NGA-Commercial Vendors
 - Digital Globe
 - World View
 - Quickbird
 - Ikonos



US DoD Unclassified Imagery

Index of /disaster_restricted/200808_8

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
 Parent Directory	03-Sep-2008 10:18	-	
 AERIAL_USAF_GlobalHawk/	03-Sep-2008 11:10	-	
 AERIAL_USAF_RC26/	09-Sep-2008 17:44	-	
 AERIAL_USAF_ScathView/	09-Sep-2008 15:57	-	
 AERIAL_USAF_U2/	03-Sep-2008 11:10	-	
 AERIAL_USN_GlobalHawk/	01-Sep-2008 09:31	-	
 AERIAL_USN_P3/	10-Sep-2008 05:33	-	
 Digital_Globe/	06-Sep-2008 00:00	-	
 NGA_Damage_Assessment/	03-Sep-2008 22:34	-	

Event search results (parked data)

Hazards Data Distribution System (HDDS)

http://localhost/~jdanieleros/hdds/results.html

Deltek SAM EROS Lotus GNATS EO Portal HDDS EarthExplorer dev Perl docs DBI SQLite jQuery New EarthExplorer

Hazards Data Distribution System... Hazards Data Distribution System...

USGS
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USGS Home
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Hazards Data Distribution System (HDDS)
Center for Earth Resources Observation and Science (EROS)

Search results

Use the checkboxes to filter by event and data type. Click in the map to view KML data for each scene.

Events

- Haiti Earthquake 2010
- Sioux Falls Blizzard 2010

Available datasets
Click to view available formats

<input checked="" type="checkbox"/> WORLDVIEW_PAN_NGA	34 scenes
<input type="checkbox"/> AERIAL_NOAA_ORTHO	2751 scenes
<input type="checkbox"/> LANDSAT_ETM+_USGS	12 scenes
<input type="checkbox"/> SPOT_USAF	4 scenes
<input type="checkbox"/> Damage Assessment	

Contents
Click to download

052297748010_01_tile_shape.txt	176 Bytes
052297748010_01_tile_shape.zip	22 MB
DLR_20100114_Haiti_Earth_....zip	427 KB
ITHACA_Port_au_prince_Dam....rar	122 KB
UNOSAT_01152010.kml	997 B
areas_afec_haiti_central_.zip	17 KB
areas_afec_haiti_central_.zip	17 KB
areas_afec_haiti_central_.zip	17 KB
areas_afec_haiti_central_.zip	17 KB
areas_afec_haiti_central_.zip	17 KB
areas_afec_haiti_central_.zip	17 KB

Map Satellite Terrain

The map displays the island of Haiti with various locations labeled. A yellow box highlights a location near Cap-Haïtien, and a red box highlights a location near Port-au-Prince. The map includes a compass rose, a scale bar, and navigation controls. The map is titled 'Map Satellite Terrain'.



Search results (single scene)

Hazards Data Distribution System (HDDS)

http://localhost/~jdanieleros/hdds/results3.html

Deltek SAM EROS Lotus GNATS EO Portal HDDS EarthExplorer dev Perl docs DBI SQLite jQuery New EarthExplorer

USGS
science for a changing world

USGS Home
Contact USGS
Search USGS

Hazards Data Distribution System (HDDS)
Center for Earth Resources Observation and Science (EROS)

Search results

Use the checkboxes to filter by event and data type. Click in the map to view KML data for each scene.

Events

Haiti Earthquake 2010 ■

Sioux Falls Blizzard 2010 ■

Available datasets
Click to view available formats

WORLDVIEW_PAN_NGA 34 scenes

AERIAL_NOAA_ORTHO 2751 scenes

LANDSAT_ETM+_USGS 12 scenes

SPOT_USAF 4 scenes

Damage Assessment

Scenes

[Open scene browser](#)

Contents
Click to download

[KML file](#)

[Shapefile](#)

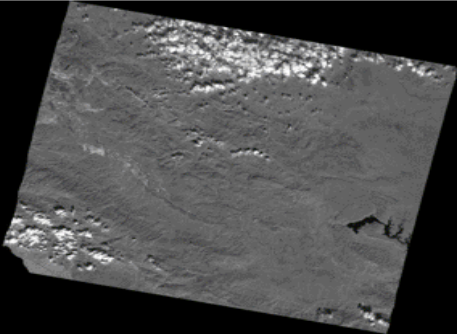
[Metadata in XML format](#)

[Metadata in CSV format](#)

Scene browser

Choose a scene to view a browse image and download data.

Entity ID	Acquisition date
SP05N18_745221W072_2878532010011400000000MS00	2010-01-14
SP05N18_517229W072_3496972010011400000000MS00	2010-01-14
SP05N18_745882W072_2901062010011400000000MS00	2010-01-14
SP05N18_460174W072_3622102010011400000000MS00	2010-01-14
SP05N18_518109W072_8572552010011400000000PN00	2010-01-14
SP05N18_019075W072_9820052010011400000000PN00	2010-01-14
SP05N19_017583W072_7320122010011400000000PN00	2010-01-14
SP05N18_174244W072_4597162010011500000000PN00	2010-01-15
SP05N19_018739W073_2623482010011500000000PN00	2010-01-15
SP05N18_018940W072_4591582010011500000000MS00	2010-01-15
SP05N18_518105W072_3469172010011500000000MS00	2010-01-15
SP05N19_017277W072_2357652010011500000000MS00	2010-01-15
SP05N19_017277W072_2357652010011500000000MS01	2010-01-15
SP05N18_518041W072_3492592010011400000000PN00	2010-01-14
SP05N18_621330W072_3218362010011400000000PN00	2010-01-14
SP05N18_518758W072_3468922010011500000000PN00	2010-01-15
SP05N19_208154W072_6751622010011900000000MS00	2010-01-19
SP05N19_016104W073_7253122010011900000000MS00	2010-01-19
SP05N18_018763W073_9945052010011900000000PN00	2010-01-19
SP05N18_517866W073_8702132010011900000000PN00	2010-01-19
SP05N19_016840W072_7251232010011900000000PN00	2010-01-19
SP05N19_081351W072_7077002010011900000000PN00	2010-01-19
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SP05N18_745479W072_2881252010011400000000MS00	2010-01-14

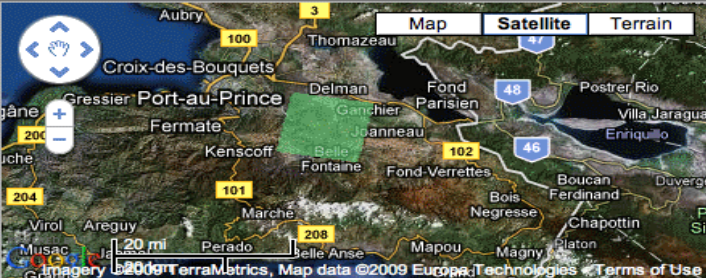


Full resolution TIFF

Medium resolution JPEG

Low resolution JPEG

FGDC Metadata



Accessibility FOIA Privacy Policies and Notices



Haiti Earthquake Support Status

2/26/2010

EROS Emergency Operations



Public Data Overview

2.52 TB Available

- **AERIAL**

- **NOAA Imagery**

- 1,993 Post-event images ingested*

- 2,283 Post-event native images parked

- **WorldBank – ImageCat – RIT**

- 8,956 Post-event images ingested*

- 18,100 Post-event native images parked

- **Microsoft**

- 413 Post-event mosaics (preliminary), parked

- **Satellite**

- **ASTER**

- 23 Post-event images (thru 213/10)

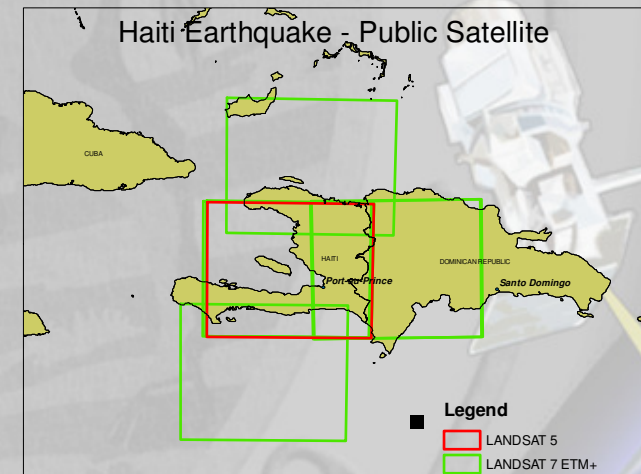
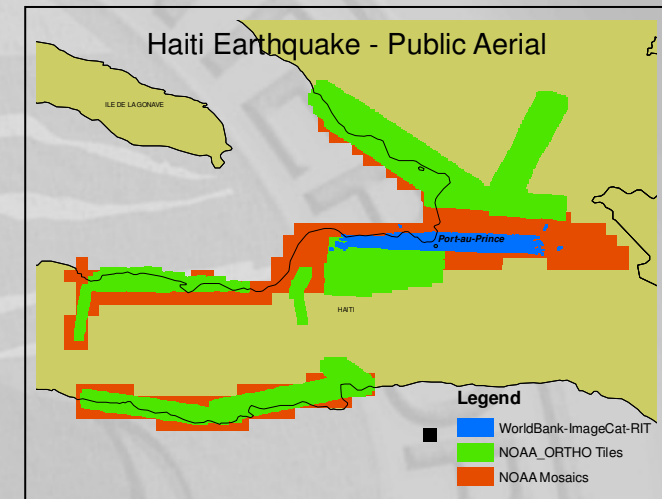
- **EO1**

- 13 Post-event images (thru 2/02/10)

- **Landsat**

- 1 L7 and 1 L5 Pre-event imagery

- 7 L7 Post-event images (thru 1/30/10)



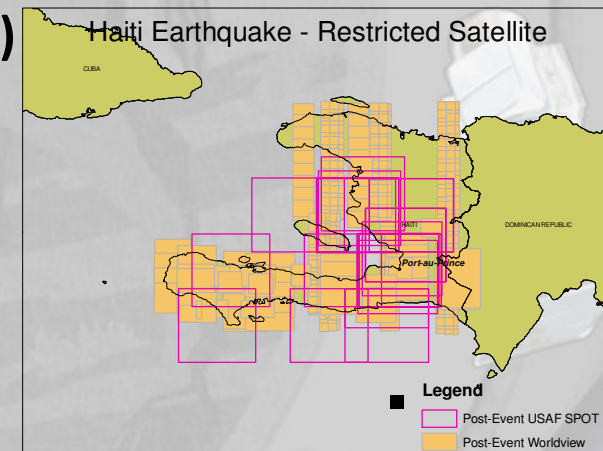
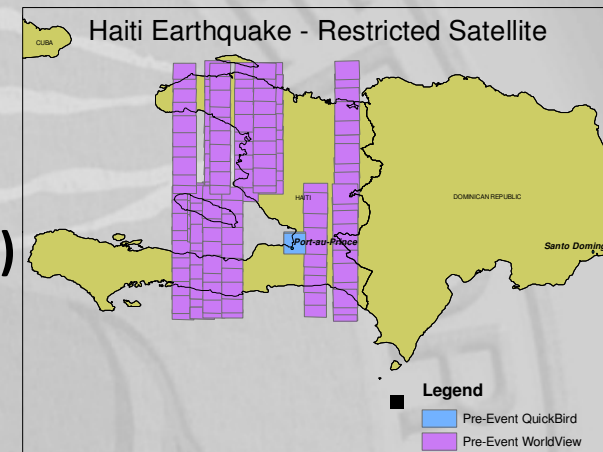
Public Data Overview (cont'd)

- **Digital Elevation Products**
 - **ASTER_CONTOURS** folder
 - Derived from 30m DEM
 - **University of Texas Products**
 - Derived Aster and SRTM Products
- **Map_Products**
 - **Delta State Haiti maps**
 - Serving as a mirror site
 - **China DMC**
 - **SERTIT assessment updates**
 - **Pacific Diaster Center**
- **WorldBank LIDAR**
 - **DEM and SEM images (1/21 – 1/27)**
- **Other**
 - **GPS Ground Control Points**
 - **Damage assessment vector information**
 - **Data resource documents**

Restricted Data Overview

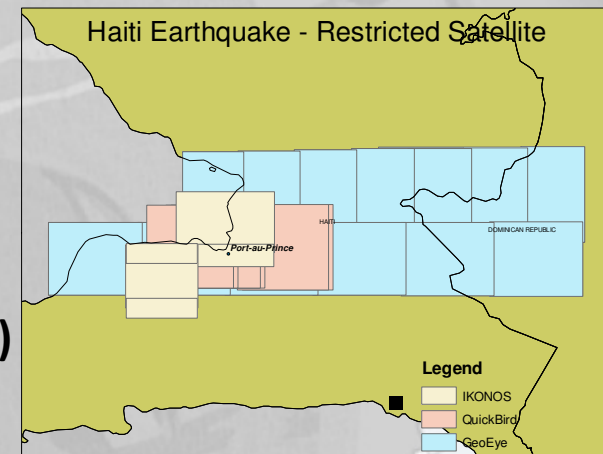
1.31 TB

- Satellite
 - GEOEYE
 - 3 Pre-event images
 - 85 Post-event images (1/13 – 1/27)
 - 8 Post-event stereo (1/16)
 - 80 Post-event orthos/mosaics (thru 1/16)
 - Includes TIF and SID
 - Dominican Republic 12 images
 - IKONOS
 - 119 Post-event images (1/14 – 2/03)
 - 60 Post-event orthos/mosaics (thru 1/17)
 - Includes TIF and SID
 - Dominican Republic 34 images
 - QUICKBIRD
 - 2 Pre-event images
 - 107 Post-event images (1/15 - 1/28)
 - 6 Post-event orthos/mosaics (1/18)
 - Includes TIF and SID
 - Dominican Republic 10 images



Restricted Data Overview (cont'd)

- **Satellite (cont'd)**
 - **ENVISAT**
 - 15 Post-event images (thru 1/22)
 - **SPOT_USAF**
 - 23 SPOT-5 Post-event images (1/15 - 1/19)
 - 37 SPOT-5 L1A images
 - **RADARSAT**
 - 1 Radarsat-1 Pre-event image (5/31/04)
 - 4 Radarsat-2 Post-event images (1/14 - 1/20)
 - **TERRASARX**
 - 8 Post-event images (1/14 - 1/19)
 - 2 Pre-event images
 - **WORLDVIEW**
 - 206 Pre-event images
 - 93 Post-event images (1/26)
 - 68 Post-event orthos/mosaics (1/22)
 - Included TIF and SID



Data Distribution

- Data Distribution Statistics for 1/13/10 – 2/25/10
 - **607,690** Files Downloaded
 - **54.1** TB of Data Distributed
 - Public
 - **382,315** Files Downloaded
 - **25.41** TB of Data Distributed
 - Restricted
 - **225,375** Files Downloaded
 - **28.69** TB of Data Distributed



SERVIR



Español

[INICIO](#)

[GEODATOS](#)

[SERVIR EN ACCIÓN](#)

[VISUALIZACIONES](#)

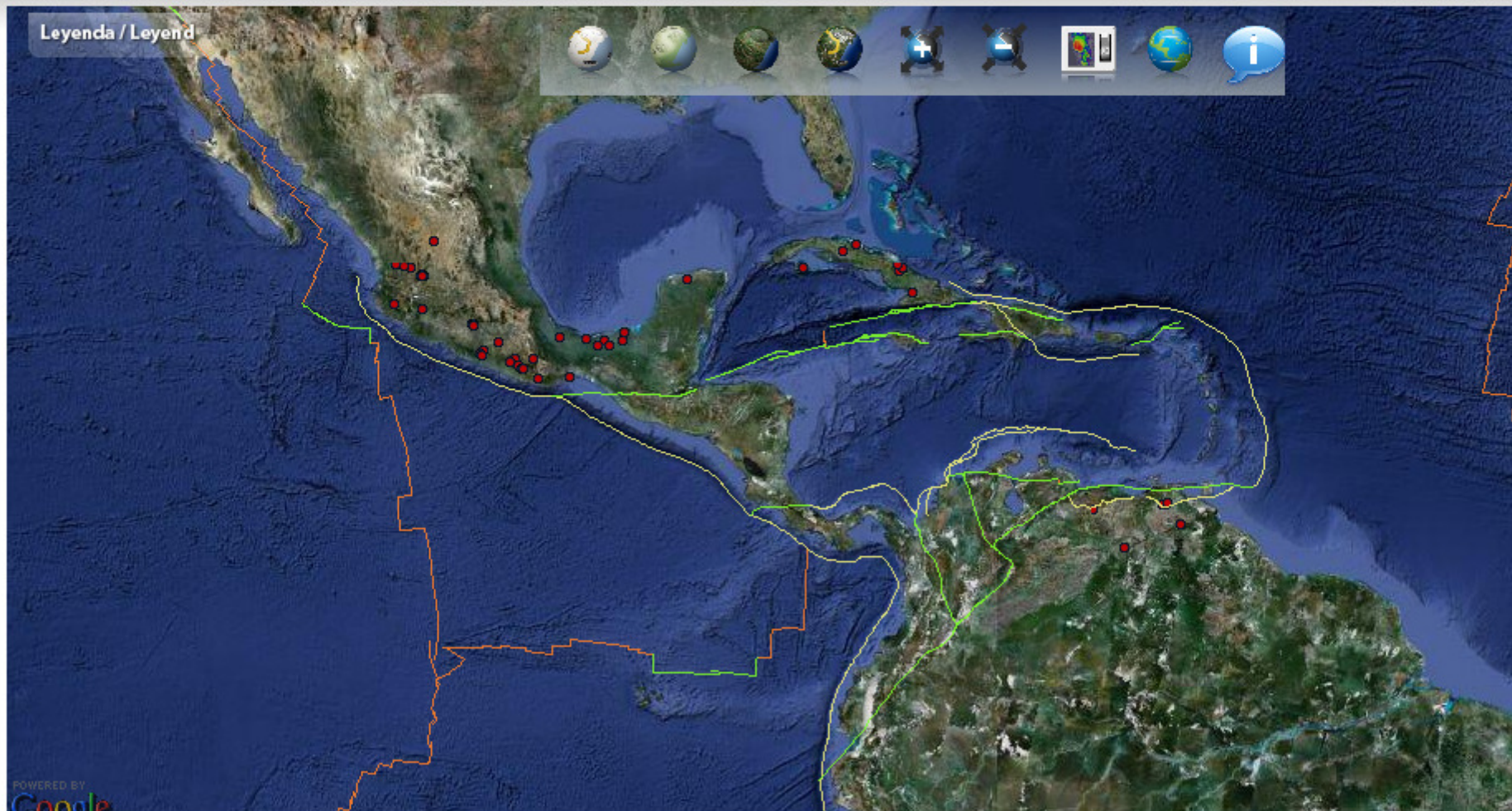
[NOTICIAS](#)

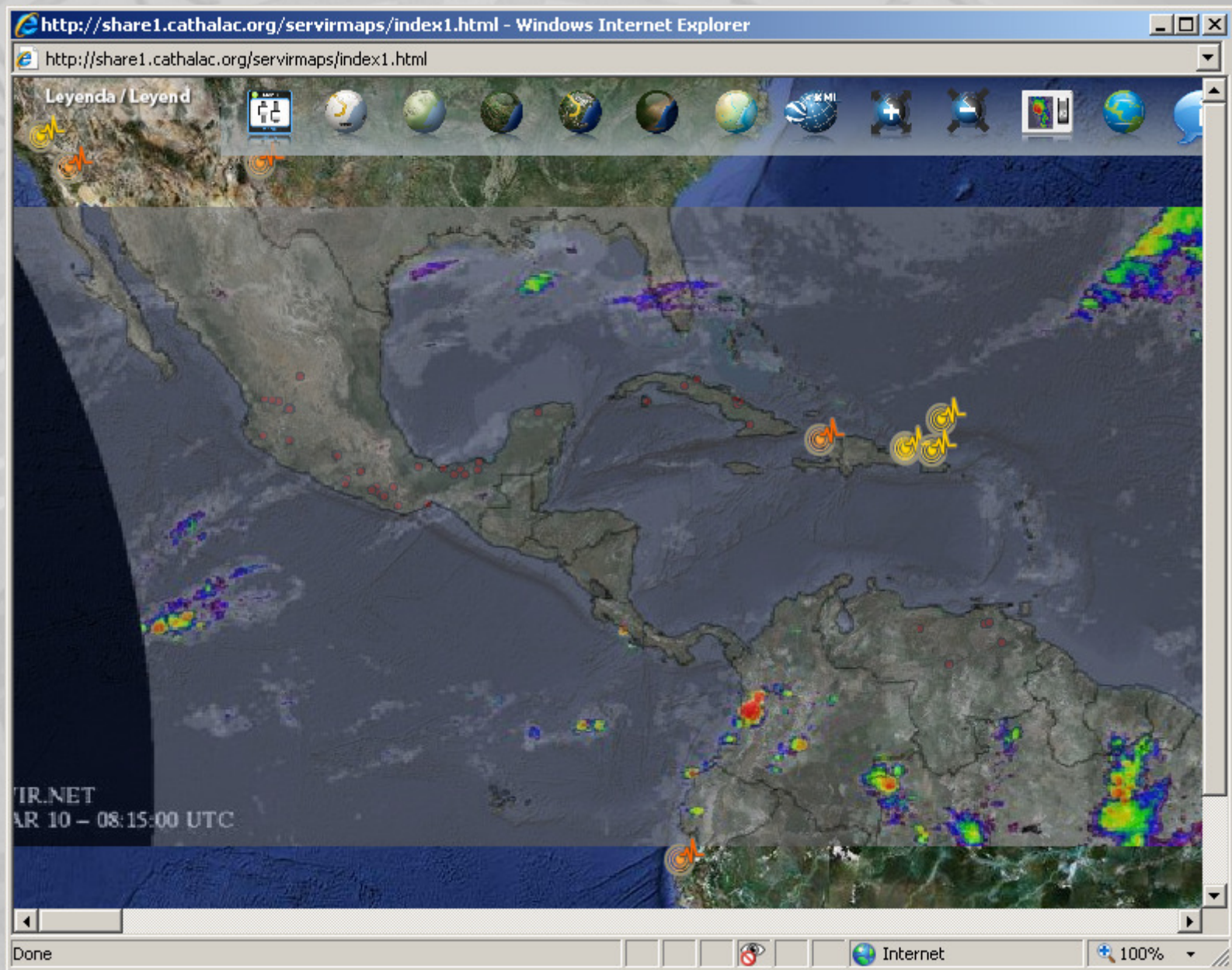
[SERVIR BLOG](#)

[GALERÍA DE IMÁGENES](#)

[ACERCA DE SERVIR](#)

Leyenda / Legend





http://www.fews.net

The screenshot shows the FEWS NET website interface. At the top, there are navigation links for 'Español', 'Français', and 'Português', and a main menu with 'Home', 'About', 'Product Catalogue', 'E-mail Updates', and 'Contact Us'. The USAID logo is prominently displayed on the left, and the FEWS NET logo is on the right. Below the logos is a navigation bar with categories: 'Region & Country Centers', 'Agro-climatic Monitoring', 'Markets & Trade', 'Livelihoods', and 'Product Catalogue'. A search bar is located to the right of these categories.

Latest Headlines:

- [NIGER: Dekadal #8: Government response begins](#)
- [BURUNDI: Rainfall deficit raises concerns](#)
- [HAITI: New Urban Price Update, March 23, 2010](#)
- [ETHIOPIA: Food security to deteriorate in 2010](#)

Implementing Team Partners:

- NASA
- USGS (science for a changing world)
- NASA
- CHEMORICS
- Linking U.S. Agriculture to the World (FAS)

Price Watch [Archive ?](#)

Most Recent: [02/26/2010](#)
Previous: [01/25/2010](#)
[More Markets and Trade products](#)

Food Assist. Outlook [Archive ?](#)

Most Recent: [03/08/2010](#)
Previous: [02/16/2010](#)

Most Recent Alerts [Archive ?](#)

Estimated food security conditions, 1st Quarter 2010 (January-March) [Enlarge](#)

The map shows food security conditions across Africa and parts of Asia. A legend indicates the following categories:

- Generally Food Secure (Green)
- Moderately Food Insecure (Yellow)
- Highly Food Insecure (Orange)
- Extremely Food Insecure (Red)
- Famine (Dark Red)
- No Data (Grey)

The FEWS NET Food Insecurity Severity Scale [Read Descriptions](#)
Geographic data are partly derived from the UN/FAO GAUL system. [Read Disclaimer](#)

http://earlywarning.cr.usgs.gov/





USGS - EROS Early Warning and Environmental Monitoring Program

[Publications](#)

[Search Ear](#)

Click on the region/topic you want to visit



Global Datasets



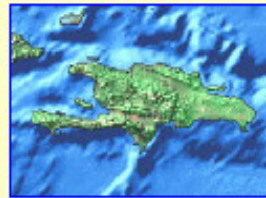
Africa FEWS NET



Afghanistan FEWS NET



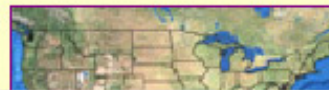
Central America MFEWS

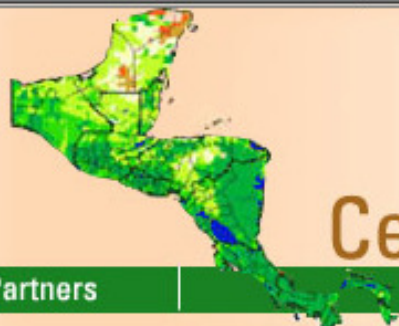


Haiti FEWS NET



South Asia Rainfall





Central America

[Home](#)

[FEWS Net Partners](#)

[Publications/Related Links](#)

[Help](#)

[Site Search](#)

The Goal of the Famine Early Warning Systems Network (FEWS NET) is to strengthen the abilities of foreign countries and regional organizations to manage risk of food insecurity through the provision of timely and analytical early warning and vulnerability information. [Read More...](#)

Choose a product type:

[NDVI \(Normalized Difference Vegetation Index\)](#)

[eMODIS NDVI \(Normalized Difference Vegetation Index\)](#) **NEW!**

[Daily RFE \(Rainfall Estimate\) and Precipitation Forecast](#)

[Daily 30-Day Rain and Dry Days](#)

[Dekadal RFE \(Rainfall Estimate\)](#)

[Seasonal NDVI & Rainfall Charts - Interactive Viewer](#)

Dekadal WRSI (Water Requirements Satisfaction Index):

[April - September](#) | [August - December](#)

Dekadal SOS - Start of Season:

[May - September](#) | [August - December](#)

Dekadal Crop Soil Water Index:

[May - September](#) | [August - December](#)

Daily WRSI (Water Requirements Satisfaction Index):

Central America

[Home](#)

[FEWS Net Partners](#)

[Publications/Related Links](#)

[Help](#)

[Site Search](#)

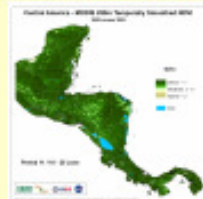
Normalized Difference Vegetation Index (NDVI) | **Explanation:** [English](#) [Spanish](#)

MODIS NDVI and Anomalies 250m (16-day)

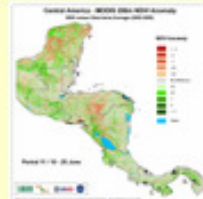
[View MODIS Calendar](#)

Mar 06 - 21, 2010

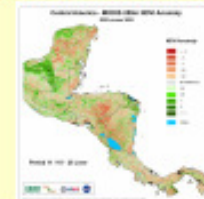
Temporally Smoothed NDVI Short-term Mean Anomaly Previous Year Difference



[PDF](#) [DATA](#)



[PDF](#) [DATA](#)



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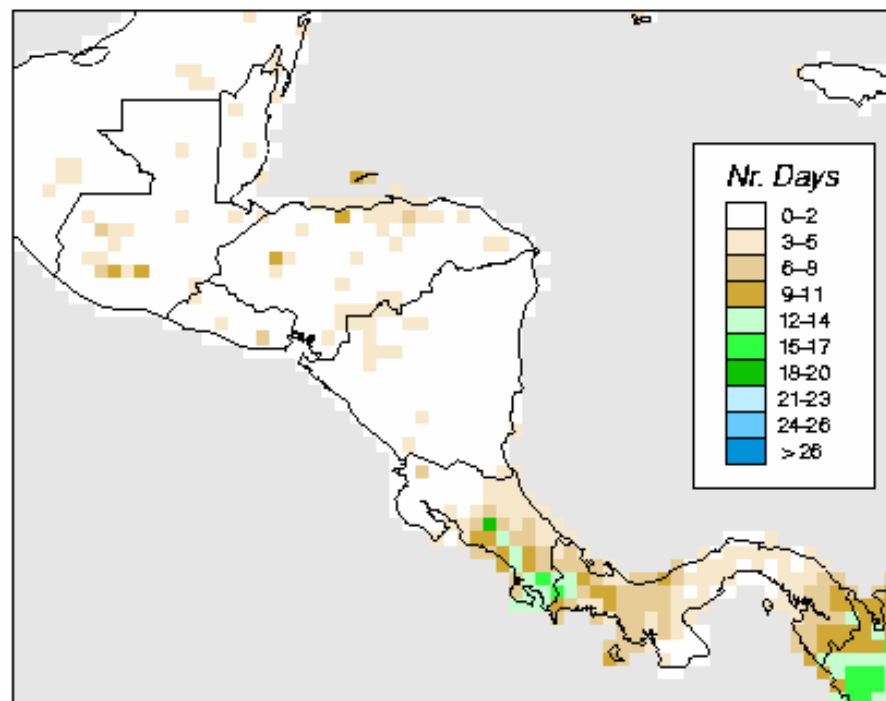
[Interactive Map](#)

Choose a previous graphic (up to 2 years):

SPOT NDVI Difference 1km (10-day): [PDF Map](#)
AVHRR NDVI Difference 8km (15-day): [PDF Map](#)

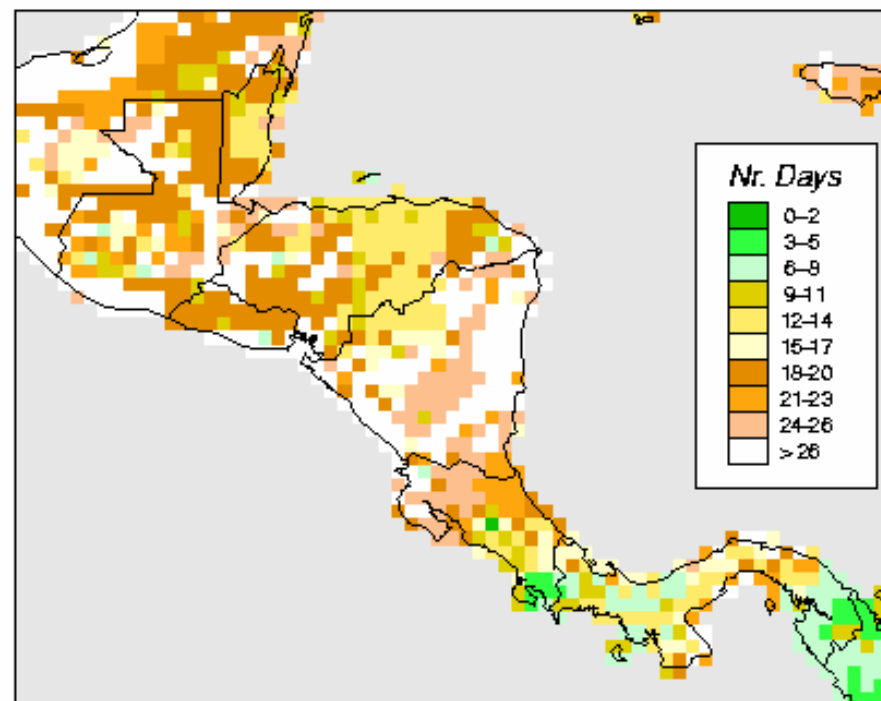
Number of Rain Days

in past 30 days, as of 27 Mar. 2010



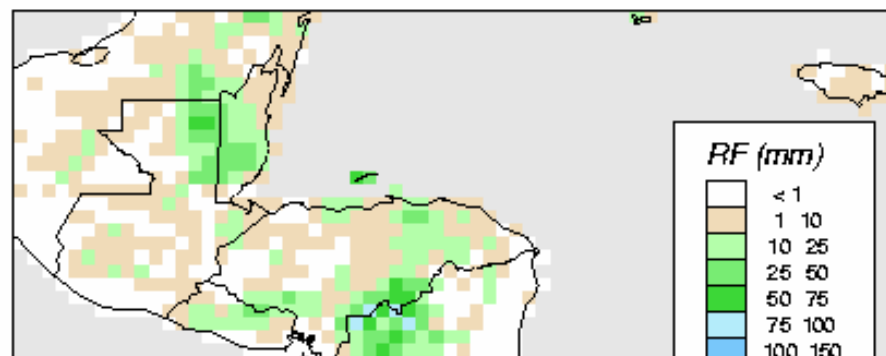
Maximum Consecutive Dry Days

in past 30 days, as of 27 Mar. 2010



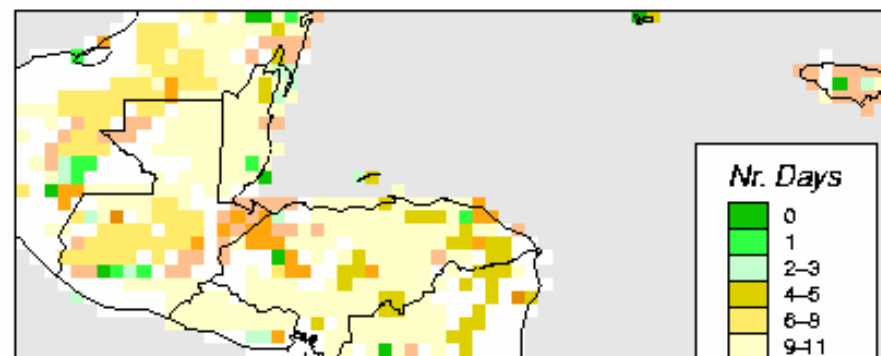
Total Accumulated Rainfall

in past 30 days, as of 27 Mar. 2010



Number of Days Since Rain

in past 30 days, as of 27 Mar. 2010





Questions ?