

Remote Sensing Requirements Gathering

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USGS Land Remote Sensing Program

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Near-Term “Requirements”

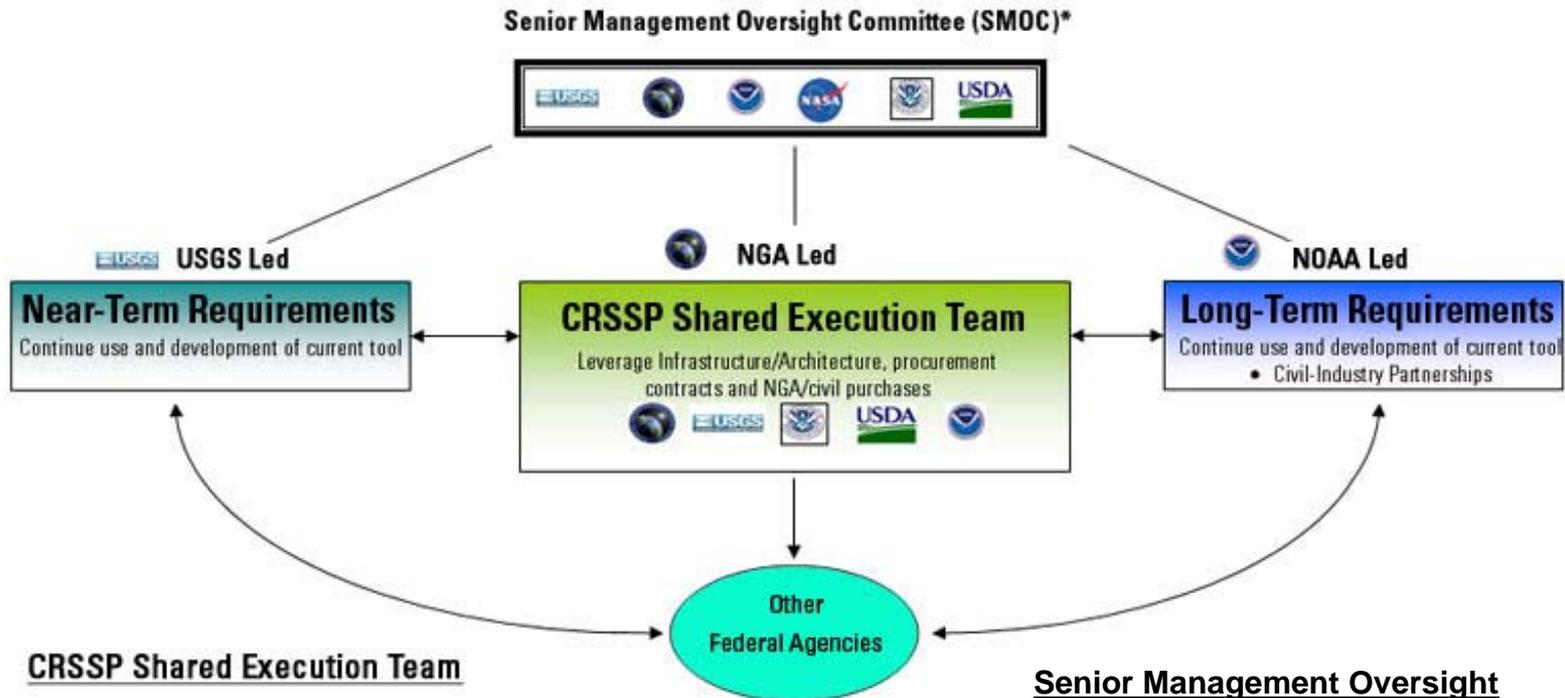


Supporting the Commercial Remote Sensing Space Policy (CRSSP)

“The fundamental goal of this policy is to advance and protect U.S. national security and foreign policy interests by maintaining the nation’s leadership in remote sensing space activities, by sustaining and enhancing the U.S. remote sensing industry.”



CRSSP Civil/NGA Shared Execution Construct



CRSSP Shared Execution Team

- **Infrastructure/Architecture [I/A] (NGA/USGS)**
 - NGA provides for leveraging of its I/A and technology
 - USGS provides for leveraging of its I/A and technology
- **Contracts (NGA/USGS)**
 - Coordinate procurement vehicles
 - Ensure broad distribution options for civil needs
 - Bonus off NGA contracts
- **Purchase (NGA/civil agencies)****
 - Leverage NGA/civil purchases in areas of common interest
 - Upgrade licenses when additional needs can be met

Senior Management Oversight

- NGA
- USGS
- NOAA
- NASA
- DHS
- USDA

* The SMOC will report status and plans at the NGA-hosted CEO Sessions

** Budget – Each agency responsible for seeking its own resources

CRSSP Participants



Department of Commerce

Census Bureau



National Oceanic and Atmospheric Administration



Department of Defense

National Geospatial Intelligence Agency



US Army Corps of Engineers



Department of Energy



Department of Interior

Bureau of Land Management



US Fish and Wildlife Service



National Park Service



US Geological Survey



Office of Surface Mining



Department of Homeland Security

Federal Emergency Management Service



Transportation Safety Administration



US Coast Guard



US Customs and Border Protection



Department of Transportation



Federal Geographic Data Committee



National Aeronautics and Space Administration



National Capital Planning Commission



US Department of Agriculture

Natural Resources Conservation Service



US Forest Service



Foreign Agricultural Service



Farm Service Agency



National Agricultural Statistics Service



US Environmental Protection Agency



Department of State

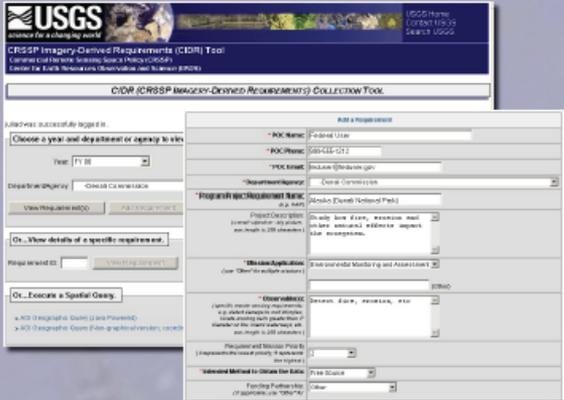


Department of Justice



Implementing the Commercial Remote Sensing Space Policy (CRSSP)

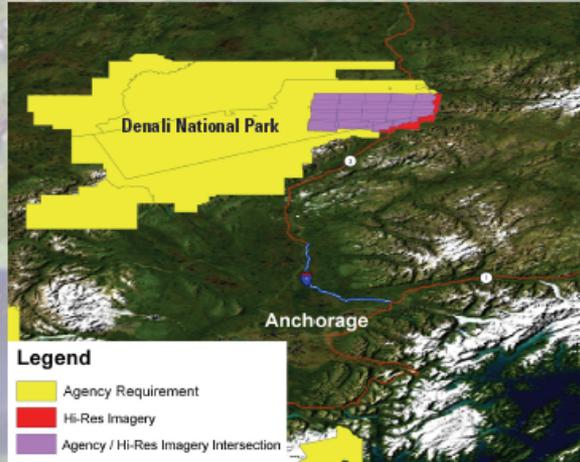
Helping Federal Users Get the Imagery They Need



The screenshot shows the 'CIDR (CRSSP Imagery-Derived Requirements) COLLECTION TOOL' web interface. It includes a search bar, a 'View this tool help' link, and a 'View details of a specific requirement' link. The main form is titled 'ADD A REQUIREMENT' and contains several sections: 'Choose a year and department or agency to view', 'Department Agency' (with a dropdown menu), 'Program and Requirement Name', 'Project Objectives', 'Data Application', 'Observation', and 'Funding Method to Obtain the Data'. Each section contains various input fields and checkboxes for specifying requirements.

Federal users are informed of how to obtain existing data and/or potential partnerships.

If imagery does not exist, users can procure the data from commercial vendors through contracts such as the USGS Commercial Remote Sensing Data Contracts.



© 2005 Space Imaging, LLC (All Rights Reserved)

Federal users needing aerial or satellite imagery enter their requirements into the web-accessed CRSSP Imagery Derived Requirements (CIDR) tool. (<http://cidr.cr.usgs.gov>)

The requirements are then analyzed by USGS staff. The CIDR database is used to find potential agency/interagency partnerships. USGS and NGA commercial imagery holdings (as well as commercial vendors) are searched for existing imagery that may meet the users' requirements.

If new imagery is acquired, users are encouraged to share the imagery with other federal agencies by providing a copy to the USGS. (The USGS acts as a clearinghouse for commercial imagery.)

IKONOS EXAMPLE

Grand Canyon, AZ



Pixel Resolution
(at nadir)

1m – Pan

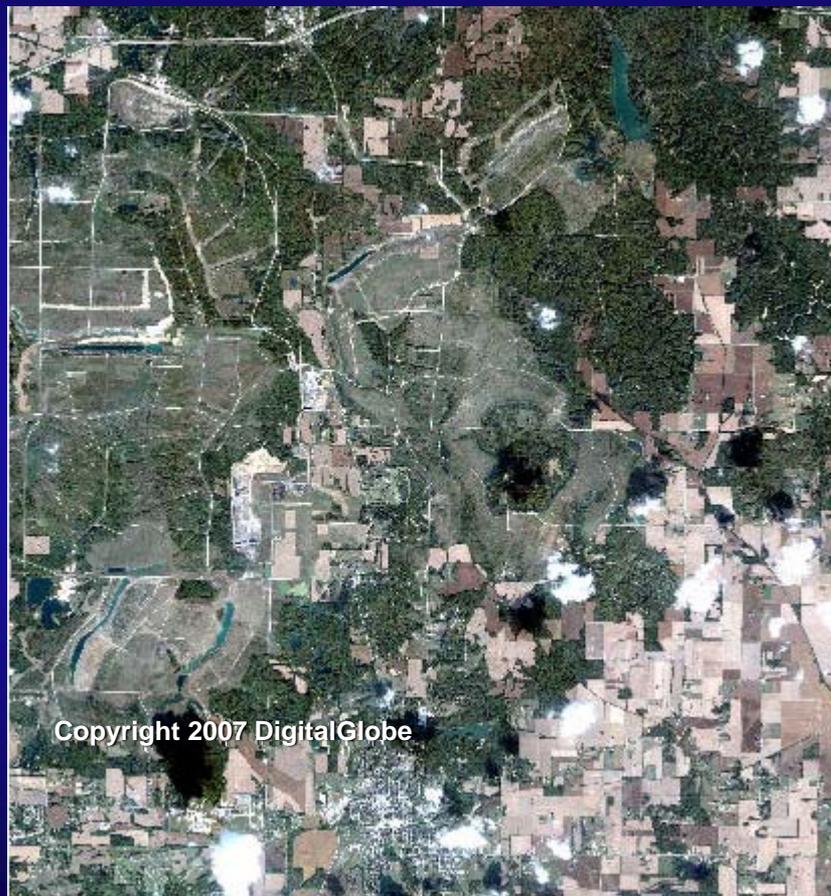
4m -- B,G,R,NIR

Scene Size

11km x 11km

Department of the Interior - Office of Surface Mining, Reclamation & Enforcement

Reforestation Assessment on Indiana Coal Mines in – SW Indiana



*Pixel Resolution
(at nadir)*

.61m – Pan

2.44m -- B,G,R,NIR

Scene Size

16.5km x 16.5km

Department of the Interior, USGS
Volcano Disaster Assistance Program

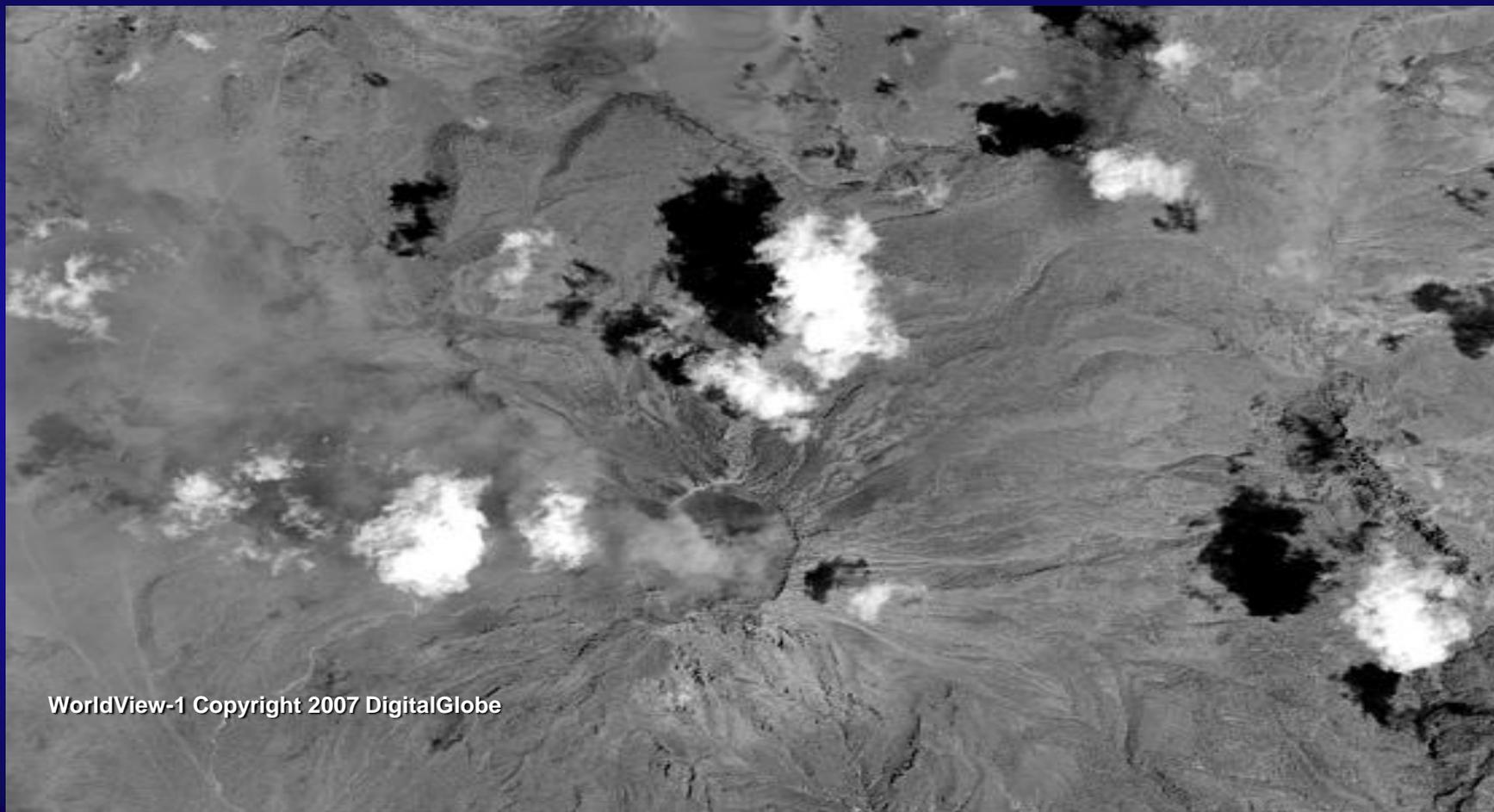
CIDR Requirement 1567 – Ubinas Peru

Pixel Resolution
(at nadir)

Swath Width
17.6km at nadir

.5 m – Pan

Scene Length - 14km



WorldView-1 Copyright 2007 DigitalGlobe





WorldView-1
Invesco Field
December 4, 2007
© 2007 Digital Globe



GEOEYE-1 EXAMPLE

View of Old and New Yankee Stadiums

February 21, 2009

Pixel Resolution

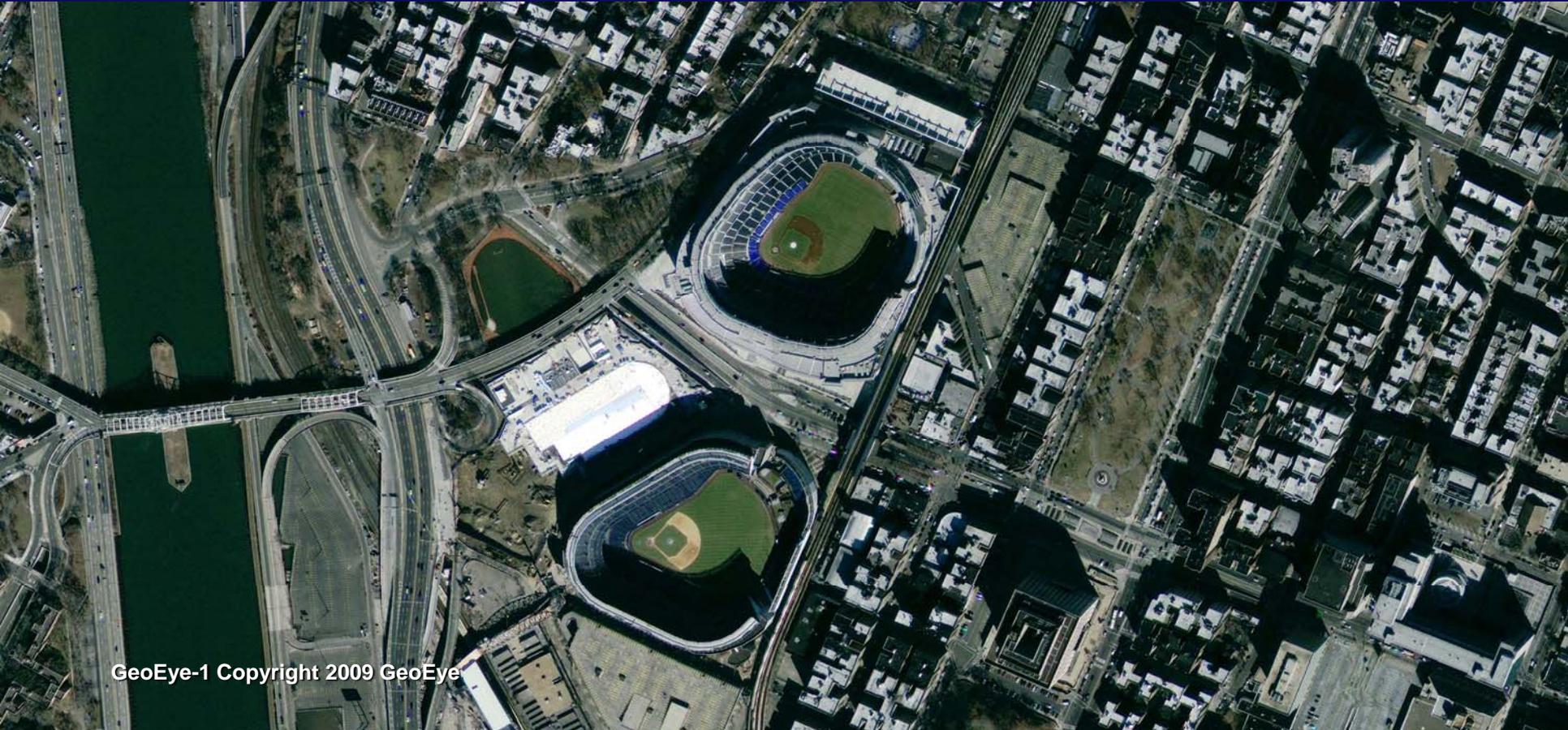
(at nadir)

*.41 m – Pan**

1.65 m - MS

Swath Width

15.2km at nadir



Context

- At an April '07 meeting, NGA offered some commercial satellite capacity to meet civil needs at no cost
- >5000 scenes have been ordered through CRSSP NTR efforts for FedCiv users by NGA to date
- **USGS and other agencies still have own contract vehicles to obtain commercial RS data**
- Collection opportunities continue to increase
 - WorldView-1 and GeoEye-1 have added considerable capacity
 - Includes new collects, NGA archive, vendor archive, reprocessed scenes
 - Data comes with NextView licenses

USGS CRS Data Contract Info

- The Commercial Remote Sensing Data Contracts (CRSDC) includes contracts with five satellite vendors. The contracts are for one base year with four option years for a total of five years. The award dates were:
 - EADS North America: June 1, 2008
 - DMCII: June 1, 2008
 - Digital Globe: May 1, 2008
 - SPOT: March 1, 2008
 - GeoEye: March 1, 2008
- The DPA is for \$25 million for all contracts over the full five years.

GeoEye

- **USGS special discount on all invoices for AOI's in North America**
- **Available image products (Ikonos and GeoEye-1) include:**
 - 0.5 and 1 meter resolution panchromatic
 - 2 and 4 meter resolution multispectral
 - .5 and 1 meter resolution color
 - Stereo products
 - Georectified and orthorectified processing
 - 1.13 kilometer resolution multispectral
 - Other commercial catalog offerings

GeoEye

- **Available licenses include:**
 - Single Organization
 - Federal Civil
 - Federal Civil & State/Local Governments
 - Federal Civil & International Partners
 - Federal Civil Premier
 - U.S. Governments, International Partners, & non-government organizations
 - Unrestricted
 - Public Domain
 - DoD

Digital Globe

- **USGS special discount on all invoices for AOI's in North America**
- **Available image products (Quickbird and WorldView-1 +) include:**
 - **.50 .60 and .70 meter resolution panchromatic**
 - **2.4 and 2.8 meter resolution multispectral**
 - **.60 and .70 meter resolution color**
 - **Stereo products**
 - **Georectified and orthorectified processing**
 - **Other commercial catalog offerings**

Digital Globe

- Digital Globe's Enterprise License covers up to 25 user groups within the following categories:
 - Federal Civil
 - Federal Civil & State/Local Governments
 - Federal Civil & International Partners
 - Non-government organizations
 - DoD

<http://www.digitalglobe.com/index.php/6>



Basic Satellite Imagery

Our least processed image product – corrected only for radiometric distortions and adjusted for internal sensor geometry, optical and sensor distortions. For the advanced user, we provide the imagery with all of the necessary camera model information to perform your own sophisticated photogrammetric processing.

[...More on Basic Satellite Imagery >](#)



Standard Satellite Imagery

For the experienced user, we provide our most flexible product. Standard imagery is well suited for visual analysis image classification, as a backdrop for GIS and mapping applications that require a modest level of accuracy and as the basis for doing your own orthorectification.

[...More on Standard Satellite Imagery >](#)



Orthorectified Satellite Imagery

When you need the highest possible accuracy in a ready to use product, our Orthorectified Imagery product is the solution.

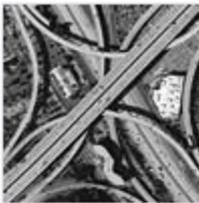
[...More on Orthorectified Satellite Imagery >](#)



CitySphere

Our CitySphere product line features 60 cm (2ft) or better orthorectified color imagery of 300 of the largest cities worldwide. These GIS ready cities are available as off the shelf products and ready for immediate delivery.

[...More on CitySphere >](#)



Basic Stereo Pair Imagery

This product is ideal for Digital Elevation Model (DEM) generation, 3-D visualization and feature extraction applications.

[...More on Basic Stereo Pair Imagery >](#)



SPOT

- USGS discount based on annual aggregate total of orders
- Available image products (SPOT 2, 4 & 5) include:
 - 2.5, 5, and 10 meter resolution panchromatic
 - 10 and 20 meter resolution multispectral
 - 2.5, 5, 10, and 20 meter resolution color
 - Georecified and ortho-rectified processing
 - 20-meter posting Digital Elevation Models
 - Formosat-2 imagery
 - Vegetation Instrument 1 kilometer resolution multispectral
 - Other commercial catalog offerings
- **Note: USGS has purchased the entire SPOT lower 48 archive through 1998 which will be made freely available (web-enabled) in the near future.**

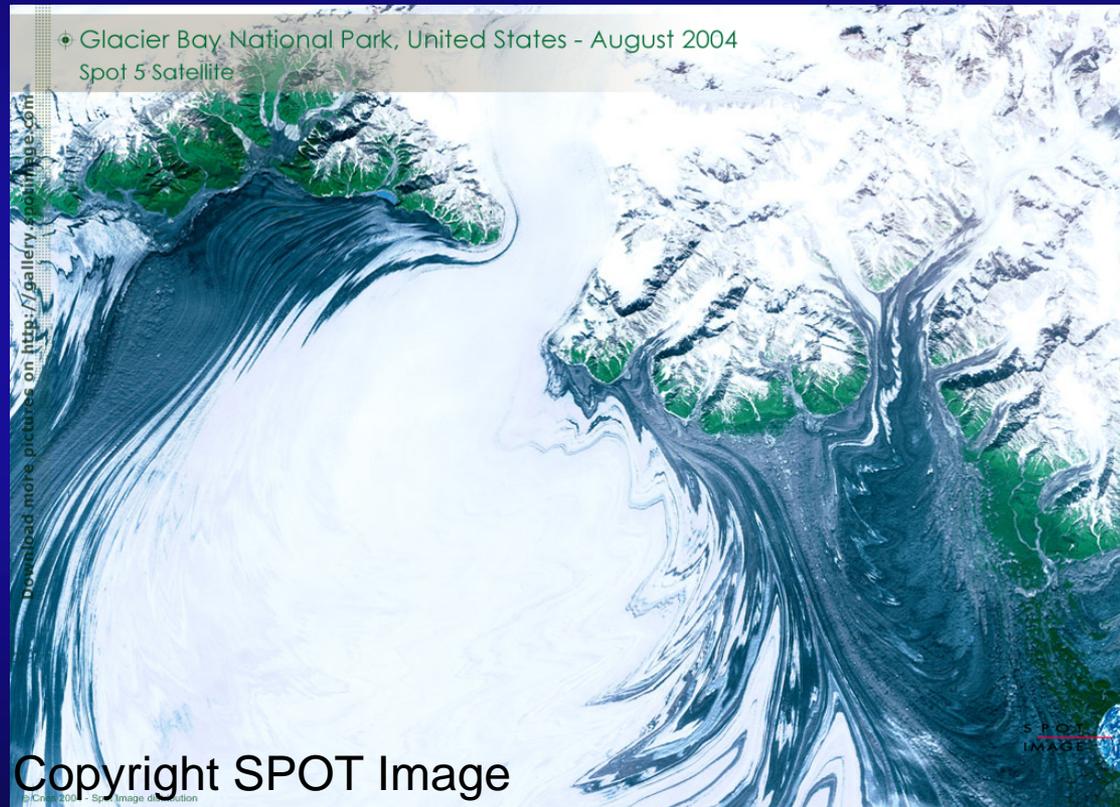


SPOT

- **Available licenses include:**
 - Single Organization
 - Federal Civil
 - Federal Civil & State/Local Governments
 - Federal Civil & International Partners
 - Federal Civil Premier
 - U.S. Governments, International Partners, & non-government organizations
 - DoD

SPOT Product Example

- SPOT 5 image of Glacier Bay National Park



EADS North America

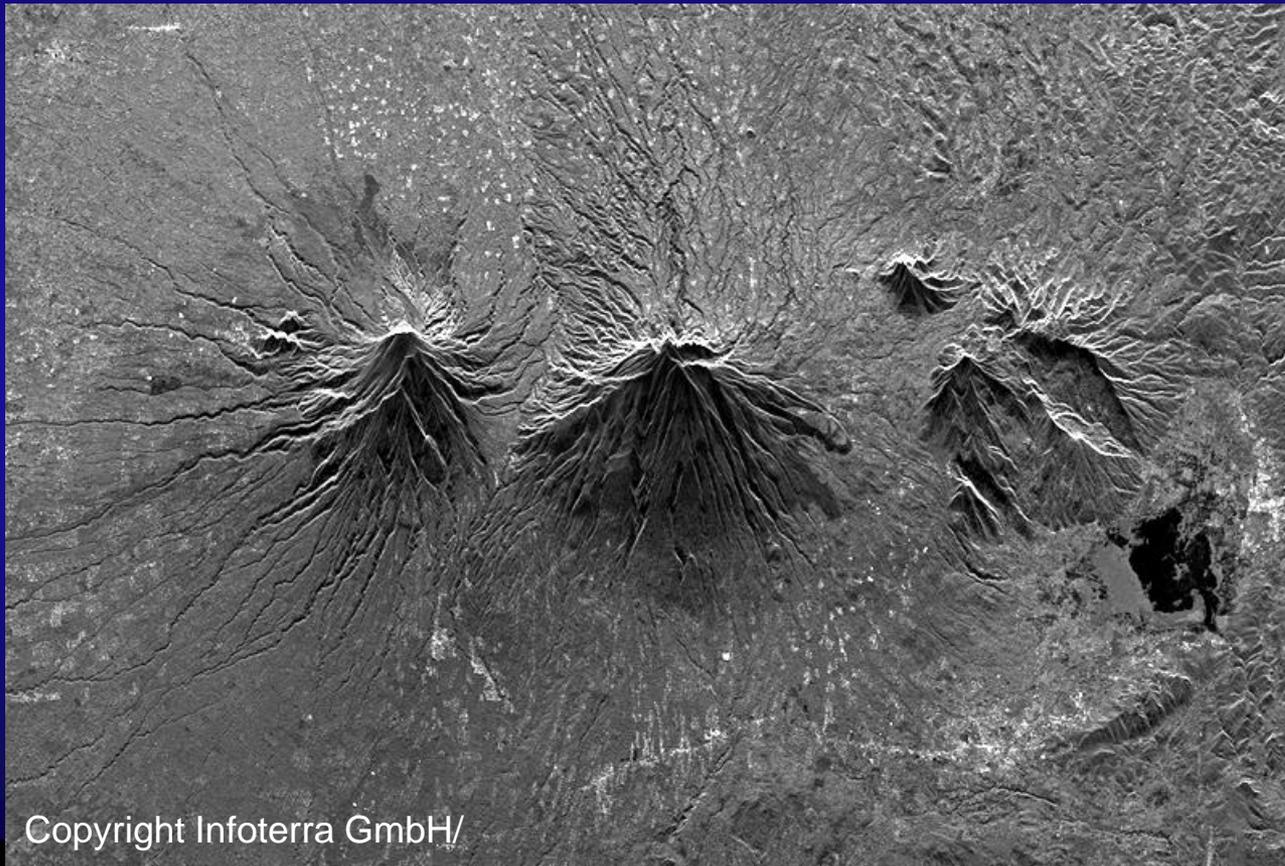
- **USGS special discount on all invoices**
- **Available TerraSAR-X radar imagery products include:**
 - **SpotLight Mode**
 - 10km x 5km scene size
 - 1-meter resolution
 - **StripMap Mode**
 - 30km x 50 km scene size
 - 3-meter resolution
 - **ScanSAR Mode**
 - 100km x 150km
 - 16-meter resolution

EADS North America

- **Available licenses include:**
 - Single Organization
 - Federal Civil
 - Federal Civil & State/Local Governments
 - Federal Civil & International Partners
 - Federal Civil Premier
 - U.S. Governments, International Partners, & non-government organizations
 - DoD

EADS North America Product Example

- TerraSAR-X image of Merapi Volcano, Indonesia



Copyright Infoterra GmbH/



DMC International Imaging

- **USGS special discount on all invoices for AOI's in North America**
- **Available image products include:**
 - 2.8 and 4.0 meter resolution panchromatic
 - 5.6, 22, and 32 meter resolution multispectral
 - 2.8 meter resolution color
 - Georectified and orthorectified processing
 - Other commercial catalog offerings



DMC International Imaging

- **Available licenses include:**
 - Single Organization
 - Federal Civil
 - Federal Civil & State/Local Governments
 - Federal Civil & International Partners
 - Federal Civil Premier
 - U.S. Governments, International Partners, & non-government organizations
 - Unrestricted
 - DoD

DMC Product Example

- DMC image of Kangerdlugssuaq, Greenland



dmc
International Imaging

image source : UK-DMC © Surrey Satellite Technology Ltd



CRSDC Contact Information

Mike Duncan

Contracting Officer's Representative

573-308-3799

jduncan@usgs.gov

Customer Support: CRSDC@usgs.gov



FedCiv Community and products

- “Customers” include DOI (USGS, FWS, NPS, OSM, BLM) USDA (FS, NASS, FSA, NRCS), NOAA and other agencies
- USGS is the focal point interfacing with NGA for many civil requirements
- NGA and USGS partner on user outreach
- Turn around time – depends on product, weather, area demand, tasking window
 - Archive very quick to immediate from UNIL via WARP
 - New collects sometimes within days of order

What is the CRSSP Imagery Derived Requirements (CIDR) tool?

- Designed to collect federal agency near-term land remote sensing data requirements
- Provides query and report capabilities on data requirements



The screenshot shows the homepage of the CIDR tool. At the top left is the USGS logo with the tagline "science for a changing world". To the right of the logo is a satellite image of a landscape. In the top right corner, there are links for "USGS Home", "Contact USGS", and "Search USGS". Below the header, the main title reads "CRSSP Imagery-Derived Requirements (CIDR) Tool" followed by "Commercial Remote Sensing Space Policy (CRSSP)" and "Center for Earth Resources Observation and Science (EROS)". A secondary title below that says "CIDR (CRSSP IMAGERY-DERIVED REQUIREMENTS) COLLECTION TOOL, VERSION 3.1". A "Login to CIDR 3.1" button is centered on the page. Below the button is a welcome message: "Welcome to the CRSSP Imagery-Derived Requirements (CIDR) entry tool, designed to collect and provide query and report capabilities on near-term land remote sensing data requirements of U.S. Federal civil agencies. This priority effort is part of the Commercial Remote Sensing Space Policy (CRSSP) implementation and will assist agencies in leveraging resources in areas of common interest. The requirements information gathered and provided will be used to:" followed by a bulleted list of three points: "Generate a civil agency requirements database to facilitate partnerships among and within agencies.", "Serve as documented evidence for potential funding initiatives.", and "Satisfy user requirements with existing data sources where possible." Below the list, another bullet point states: "Provide the commercial satellite and aerial industries with a snapshot of civil agency needs; allow industry to respond with accurate and specific data and services." Further down, a paragraph explains: "The CIDR tool allows Federal agencies to enter their remote sensing data requirements for upcoming years. This information will be analyzed to find intersections in data requirements and assist users with similar requirements in collaborating on potential purchases. Commercial satellite and aerial vendors may also use the CIDR tool and its information to assist in their data acquisition scheduling for known geographic areas of interest." At the bottom, a note says: "Staff is available to help with the data entry process. If you would like this assistance, please contact 1-800-252-4547 or crssp@usgs.gov (M-F, 8-4 central time)."

<http://cidr.cr.usgs.gov>

FY09 Requirements in CIDR by Agency

DOI

USGS – 351

FWS - 2

BLM - 4

NPS - 1 (exit glacier hi-res)

Non-DOI - 108



What is a CRSSP data requirement?

There are basically two types of data requirements:

- **Data Request**

- Interested in obtaining imagery over a specific area, but funding is uncertain

- **Planned Data Acquisition**

- Currently planning to acquire (fund) new or archived imagery over a specific area



Data requirements lifecycle

- Entry
 - CIDR

| Add a Requirement for Department of the Interior (DOI)/Geological Survey (USGS) | |
|---|--|
| * Fiscal Year : | FY 07 |
| * Point of Contact (POC) : | Federal User (Name) 999-555-1212 (Phone) (Extension) feduser@usgs.gov (Email) |
| * Affiliation/Department/Agency : | US Federal Government - Executive Branch Department of the Interior (DOI) Geological Survey (USGS) |
| * Program/Project/Requirement Name : | Boston Airport & Vicinity |
| Project Description : | Focus on Boston area in relation to Logan International Airport |
| * Primary Mission/Application : | Choose One (Other) |
| * Observable(s) : | airport, roads into and out of Boston area, building structures, etc. |
| Requirement Mission Priority : | Mission Critical |
| * Intended Method to Obtain the Data : | Partnership |

<http://cidr.cr.usgs.gov>



| | |
|---|--|
| * Processing : | (Other) <input type="button" value="v"/> |
| | Would like level 1B processing with satellite RPC info (Other) |
| Value-Added Processing : | Other <input type="button" value="v"/> |
| | Pan-sharpening and orthorectification to be done in-house. (Other) |
| * Permit Requirement Publication to GOS | Yes <input type="button" value="v"/> |
| Notes : | Project may carry over into 2007. Lion Habitat is main focus. |

Functions:

Edit | Copy | Forward | Record Actuals | Validate | Delete

| Details of selected requirement for Department of the Interior (DOI)/Geological Survey (USGS) in FY 07 | |
|--|---|
| Requirement ID: | 1300 |
| Fiscal Year: | FY 07 |
| Point of Contact (POC): | Thomas Cecere 703-648-5551 tcecere@usgs.gov |
| Department/Agency: | Department of the Interior (DOI)/Geological Survey (USGS) |
| Program/Project/Requirement Name: | UNESCO World Heritage Base Imagery |
| Project Description: | In process of compiling an image atlas of World Heritage Sites in danger around the world, utilizing hi-res imagery in select regions to establish a baseline |
| Primary Mission/Application: | environmental monitoring and assessment |
| Observable(s): | Identify vegetative health, urban sprawl, structures greater than 1m in width |
| Requirement Mission Priority: | mission required |
| Intended Method to Obtain the Data: | free source |
| Funding Partnership: | |
| Funding/Potential Funding: | \$0 |
| Funding Confidence: | 50% |
| Estimated Umbrella Requirement Funding: | |
| Contract Funding POC: | |
| Area of Interest: | aoi.shp aoi.shx aoi.dbf aoi.prj |
| Area of Interest Description: | Comoe National Park -- Cote d'Ivoire Africa |
| QC Area of Interest: | 1300_aoi.shp 1300_aoi.shx 1300_aoi.dbf 1300_aoi.prj |
| QC Area of Interest Bounding Box: <i>(lat/long degrees)</i> | North: 8.9670000 South: 8.6468000 West: -3.9034000 East: -3.2316000 |
| Square Kilometers of AOI: | 2617.00000 |
| Desired Spatial Resolution: | = 1m |
| Spectrum: | satellite pan and multi-spectral bundle |
| Platform Preference: | |
| Other Platform Acceptable: | Yes |
| Target Imagery Dates: | 01/01/2000 to 12/31/2010 (Linear) Would prefer non-peak vegetation so as not to obscure all structures. |
| Latest Data Delivery Date: | |
| Max Days Delay (Acquisition to Delivery): | |
| Acceptable License Restriction: | all federal civil agencies |
| Cloud Cover Max: | 20% |



Applications

Wide range of domestic and international science, environmental, hazards, resource, and other applications for example:

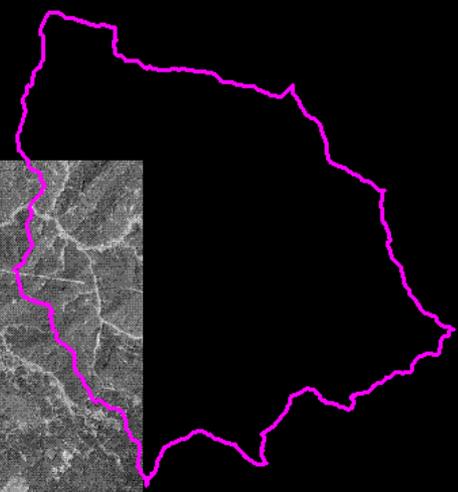
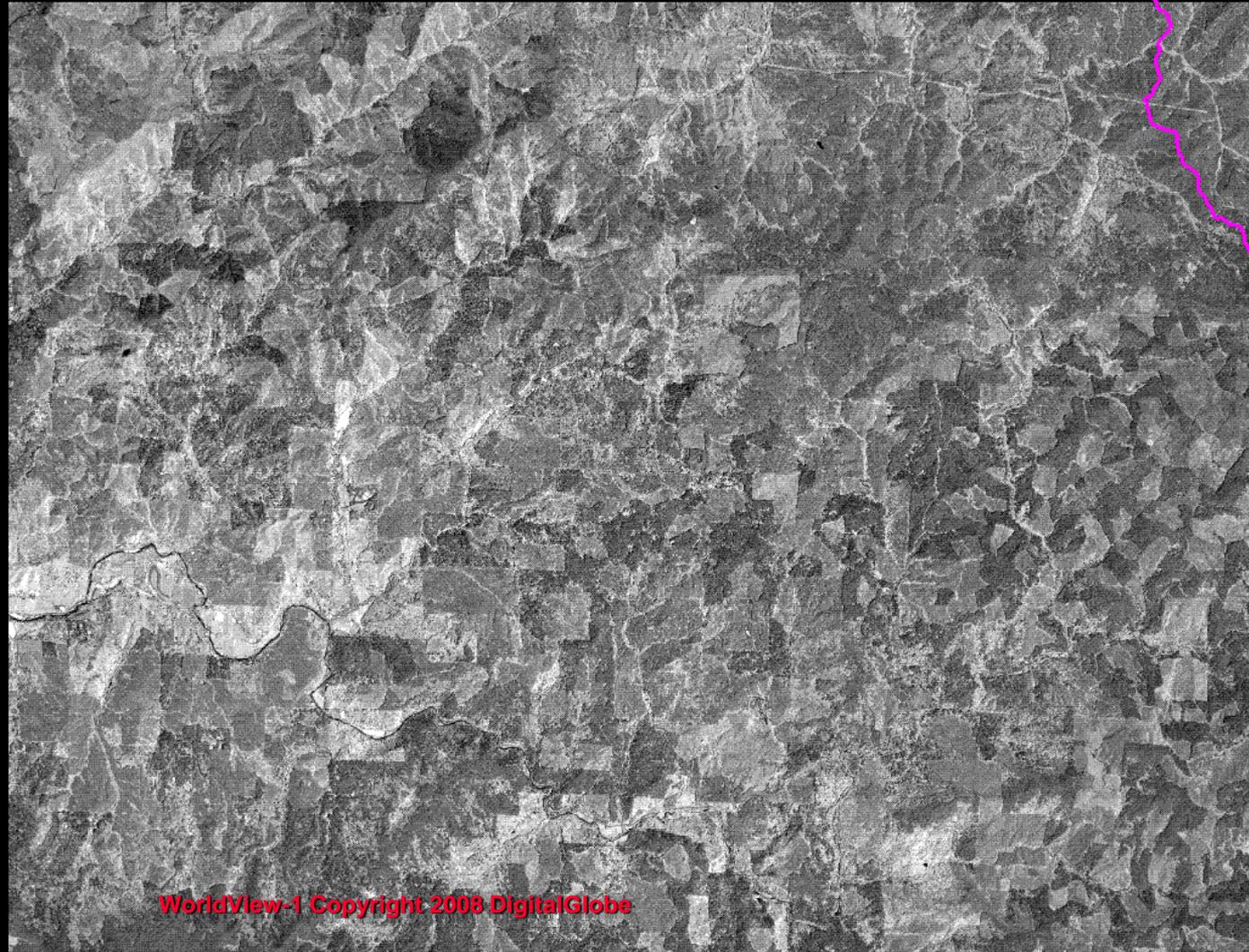
- World heritage site monitoring
- Glacier studies
- Volcano monitoring
- Improving land management practices, Reservation planning, environmental monitoring
- Identify vegetative health, urban sprawl
- Climate change study
- Energy and energy infrastructure
- Alaska energy infrastructure, resource surveys and inventories

... to name just a few



Vicinity Trask Watershed, OR

Georeferenced WV-1 Scene

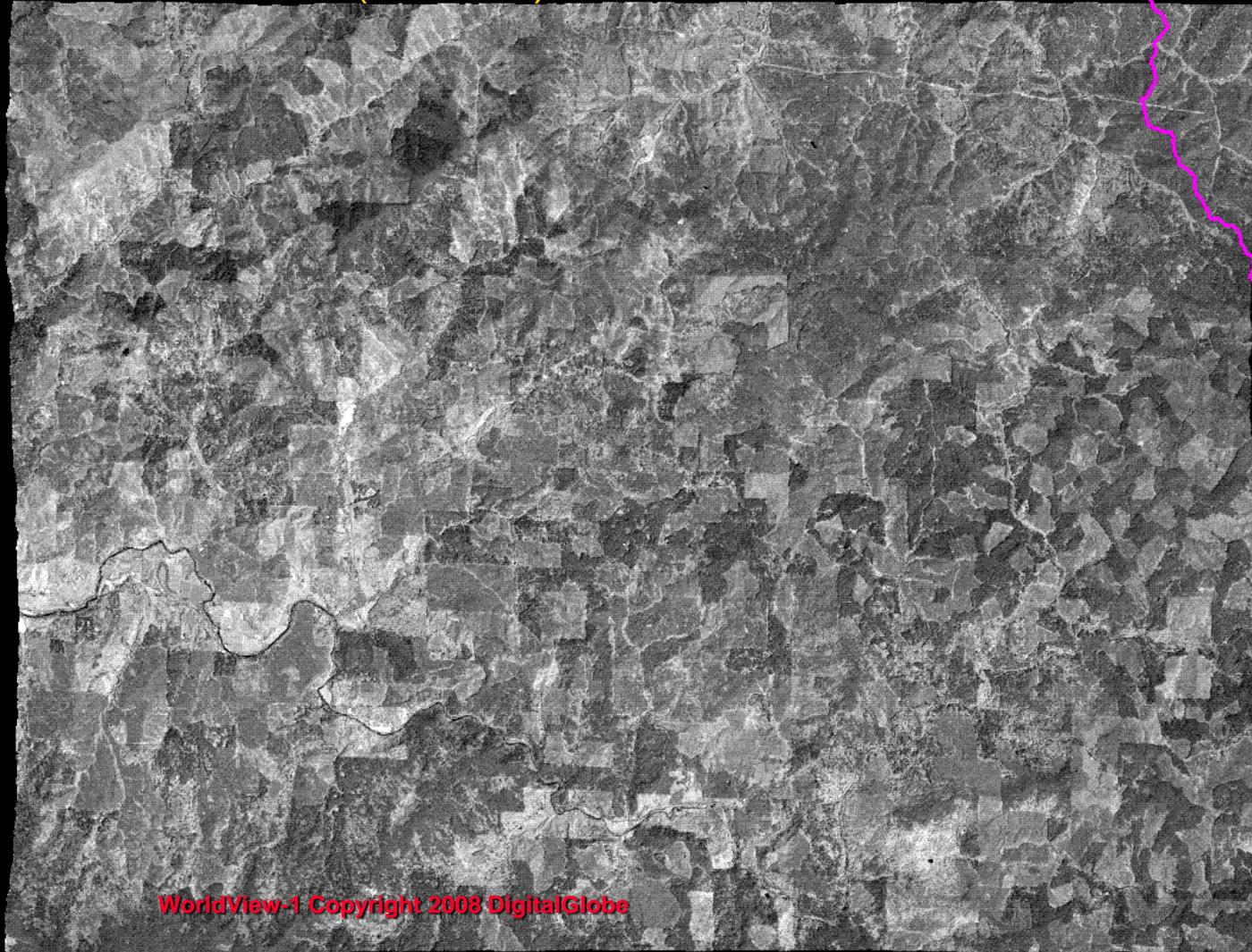


WorldView-1 Copyright 2008 DigitalGlobe



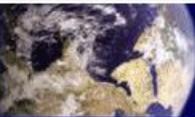
Vicinity Trask Watershed, OR

Orthorectified (to NAIP) WV-1 Scene



WorldView-1 Copyright 2008 DigitalGlobe





CRSSP Imagery-Derived Requirements (CIDR) Tool

Commercial Remote Sensing Space Policy (CRSSP)
Center for Earth Resources Observation and Science (EROS)

CIDR (CRSSP IMAGERY-DERIVED REQUIREMENTS) COLLECTION TOOL V3.1

Select a new Year and Agency

Create or view requirements by year and department or agency.

Year: <-- Choose a year --> ▾

Affiliation: US Federal Government - Executive Branch ▾

Department: Department of the Interior (DOI) ▾

Agency: Department of the Interior (DOI) (PROPER) ▾

View Requirement(s)

Add Requirement

Or...View details of a specific requirement.

Requirement ID:

View Requirement

Or...Search requirements.

» [AOI Geographic Query \(Java Powered\)](#)

» [AOI Geographic Query \(Non-graphical version; coordinate text entry only\)](#)

Navigation Menu(s)





CRSSP Imagery-Derived Requirements (CIDR) Tool
 Commercial Remote Sensing Space Policy (CRSSP)
 Center for Earth Resources Observation and Science (EROS)

GEOGRAPHIC QUERY OF AREAS OF INTEREST (AOI'S)

Geographic Query of Areas of Interest (AOI's)

Select Bounding Box of Area to Query for Requirements

Use coordinates from a placename.

Pick names from
this place names list:

- United States
- International

- Arkansas
- California
- Colorado
- Connecticut

Zoom to Selected Place

Or...Enter bounding coordinates.

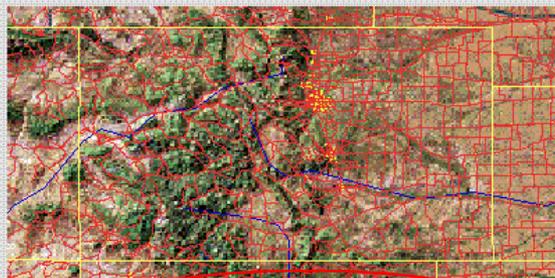
(use decimal degrees; negatives for west of prime meridian or south of equator)

| North Latitude | South Latitude | West Longitude | East Longitude |
|-------------------|-------------------|-------------------|-------------------|
| 41.36 | 36.64 | -110.27 | -100.83 |

Zoom to Box

Zoom to Globe

Or...Just click and drag to define bounding box on the map.



Search Requirements

(Note: Please be patient, creating your shapefile...)

And...Enter optional query parameters.

- Select Requirement Type:
- All
 - Data Request
 - Planned Data Acquisition

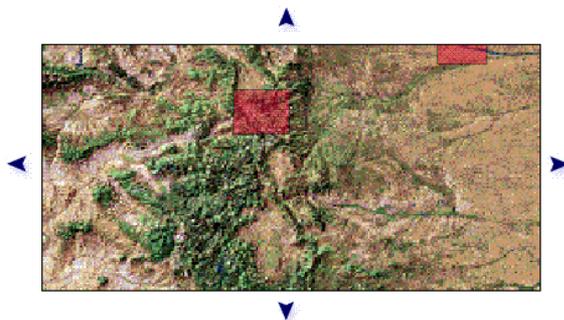
(Select the Requirement Type, or All)

- Select Fiscal Year:
- FY 04
 - FY 05
 - FY 06
 - FY 07
 - FY 08
 - FY 09

(Select the fiscal year(s) you are interested in, Hold down the CTRL or Shift key while clicking to select multiple fiscal years)



Control View with Zoom and Panning functions.



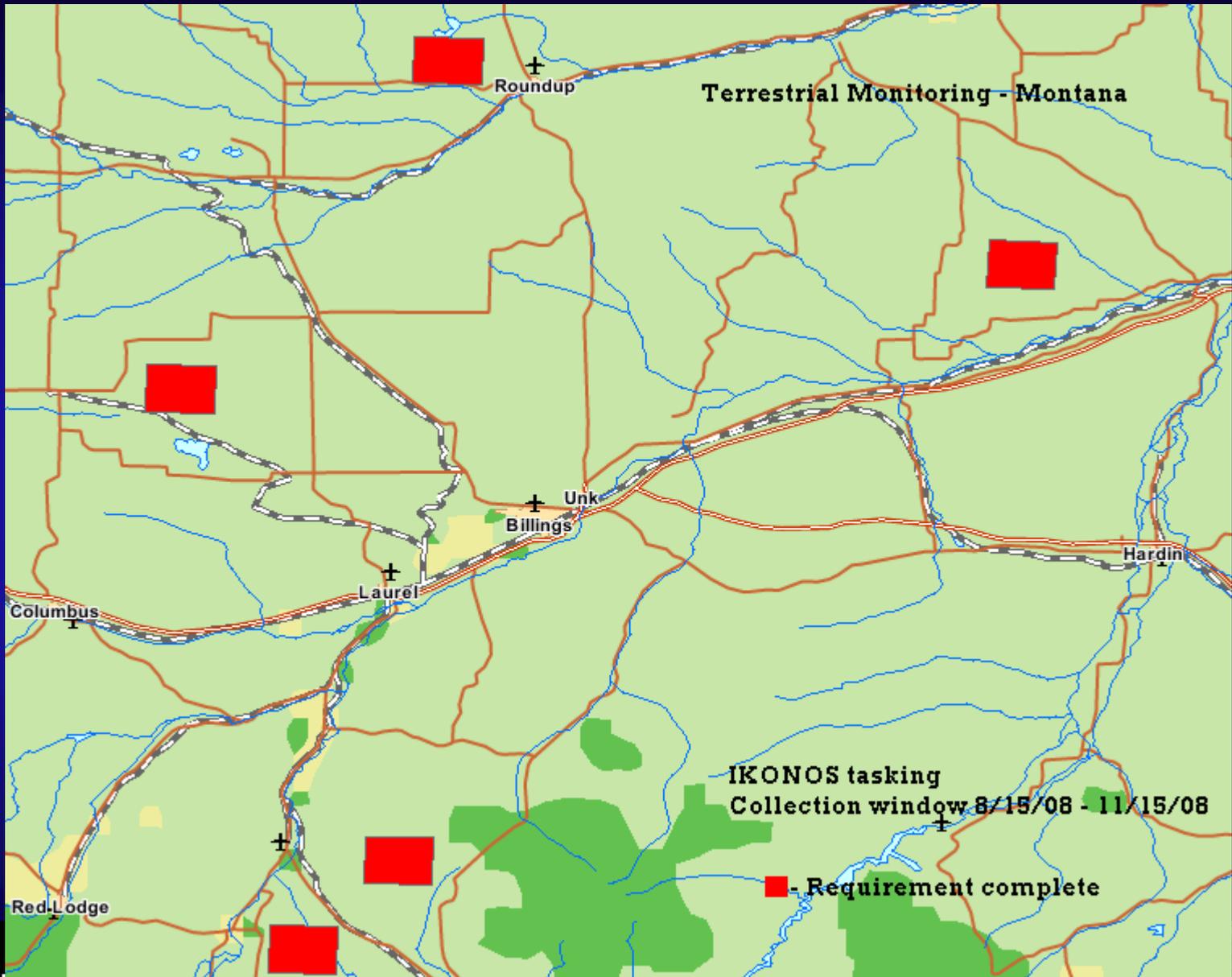
Click a requirement's ID number below to view its geographic area of interest (AOI) on the map.
The selected requirement's AOI will be highlighted in green.

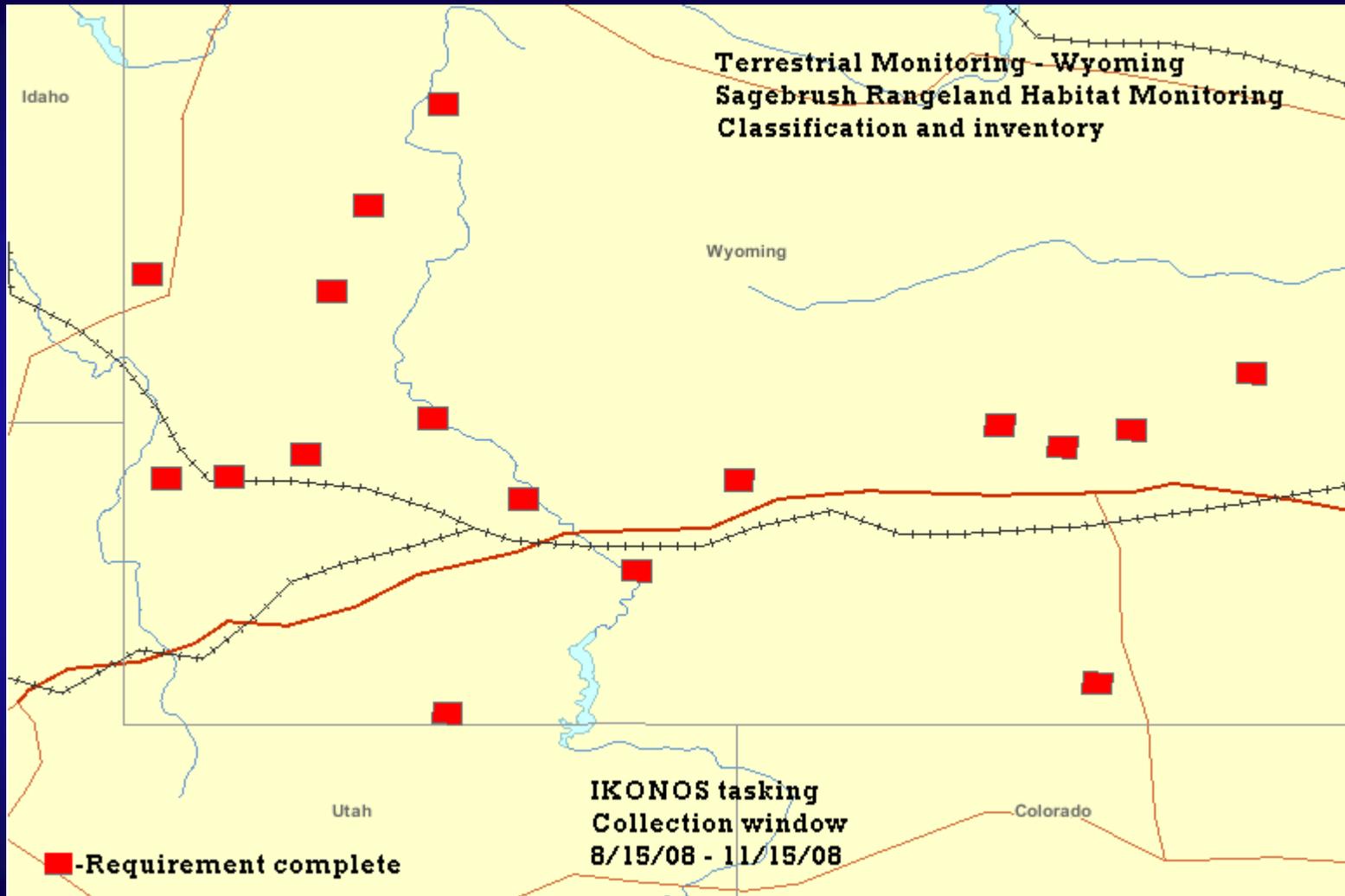
| Export SHP | Req. ID | Requirement Type | Fiscal Year | POC Name | Department or Agency | Requirement Name | Resolution | Spectrum | AOI Description | Funding | Funding Confidence | Date Last Modified | Validation QC Status | View Full Requirement |
|--------------------------|---------|------------------|-------------|-------------------------------------|--------------------------|---|------------|--|---|----------|--------------------|--------------------|----------------------|-----------------------|
| <input type="checkbox"/> | 2259 | Data Request | FY 09 | Christopher Baumann | Geological Survey (USGS) | Grand County Complete, CO Hazards Risk Research | <=4m | multi-spectral | Identify and delineate vegetation including forest health and values at risk (structures, critical infrastructure) | Unfunded | | 2008-10-06 | Validated | View |
| <input type="checkbox"/> | 2293 | Data Request | FY 09 | Mike Crane | Geological Survey (USGS) | Southwest Nebraska | <=1m | satellite pan and multi-spectral bundle | Southwest Nebraska | Unfunded | | 2008-11-20 | Validated | View |
| <input type="checkbox"/> | 2402 | Data Request | FY 09 | Lori Baer | Geological Survey (USGS) | Watershed Study | <=1m | satellite pan and multi-spectral bundle | Multispectral imagery needed to perform landcover classification | Unfunded | | 2009-02-27 | Validated | View |
| <input type="checkbox"/> | 2428 | Data Request | FY 09 | Jeff Sloan | Geological Survey (USGS) | NCAP/Colorado Statewide Tree Health | = 3m | satellite pan and multi-spectral bundle, 4-band true color and nir | Using small MSI high resolution datasets to drive spectral classification back to the smaller scale Landsat imagery being used. | Unfunded | | 2009-04-09 | Validated | View |
| <input type="checkbox"/> | 2598 | Data Request | FY 09 | Thomas Duke | Geological Survey (USGS) | South Parlin | <=1m | satellite pan and multi-spectral bundle, black and white | South Parlin, CO | Unfunded | 50% | 2009-05-04 | Validated | View |
| <input type="checkbox"/> | 2613 | Data Request | FY 09 | Thomas Duke | Geological Survey (USGS) | Rocky Mountain National Park | <=1m | satellite pan and multi-spectral bundle, black and white | Rocky Mountain National Park, CO | Unfunded | 50% | 2009-05-04 | Validated | View |
| <input type="checkbox"/> | 2615 | Data Request | FY 09 | Thomas Duke | Geological Survey (USGS) | South West Silverton | <=1m | satellite pan and multi-spectral bundle, black and white | South West Silverton, CO | Unfunded | 50% | 2009-05-04 | Validated | View |
| <input type="checkbox"/> | 2628 | Data Request | FY 09 | Thomas Duke | Geological Survey (USGS) | Slumgullion Earth Flow-Lake City | <=1m | satellite pan and multi-spectral bundle, black and white | Slumgullion Earth Flow-Lake City, CO | Unfunded | 50% | 2009-05-04 | Validated | View |

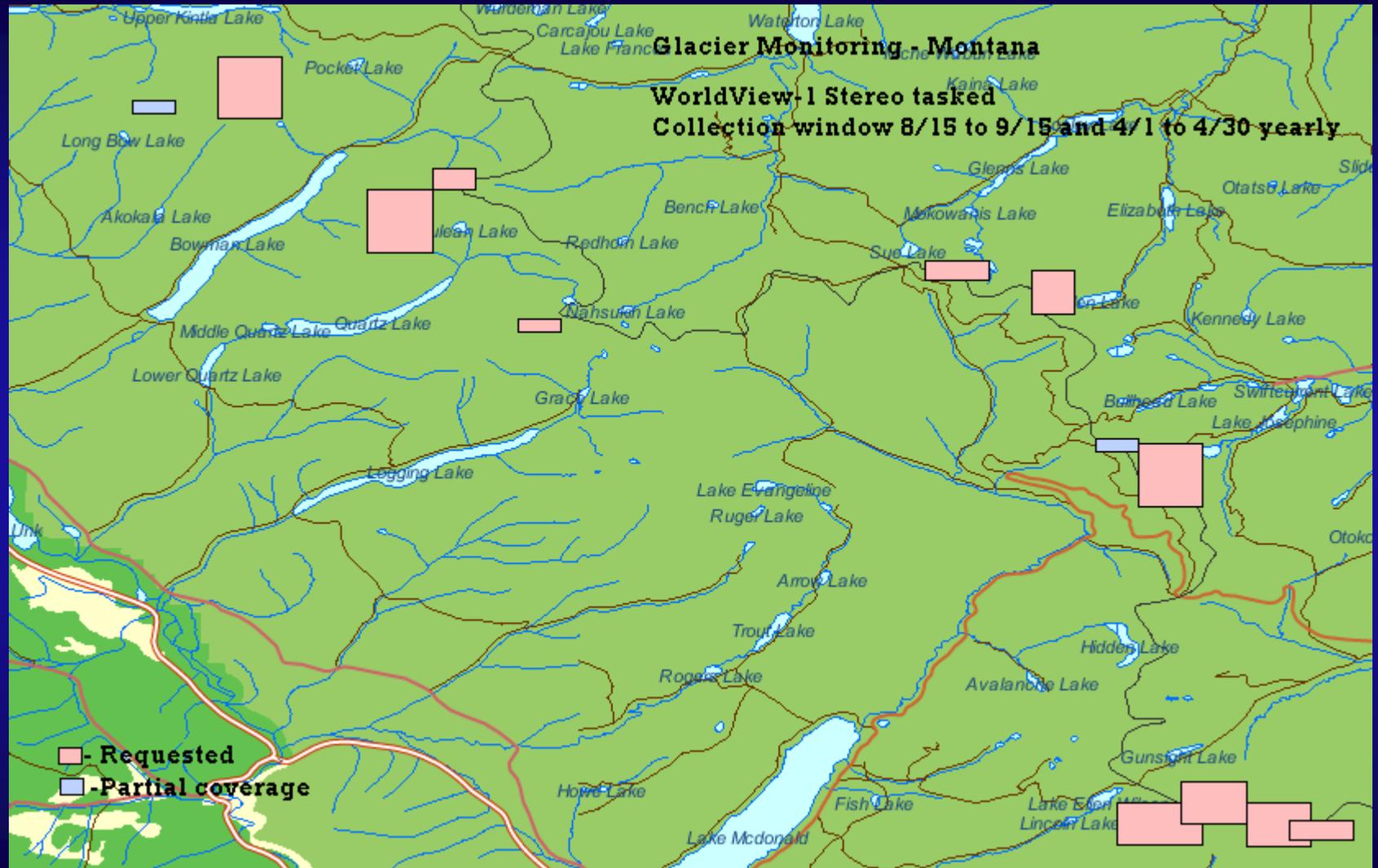


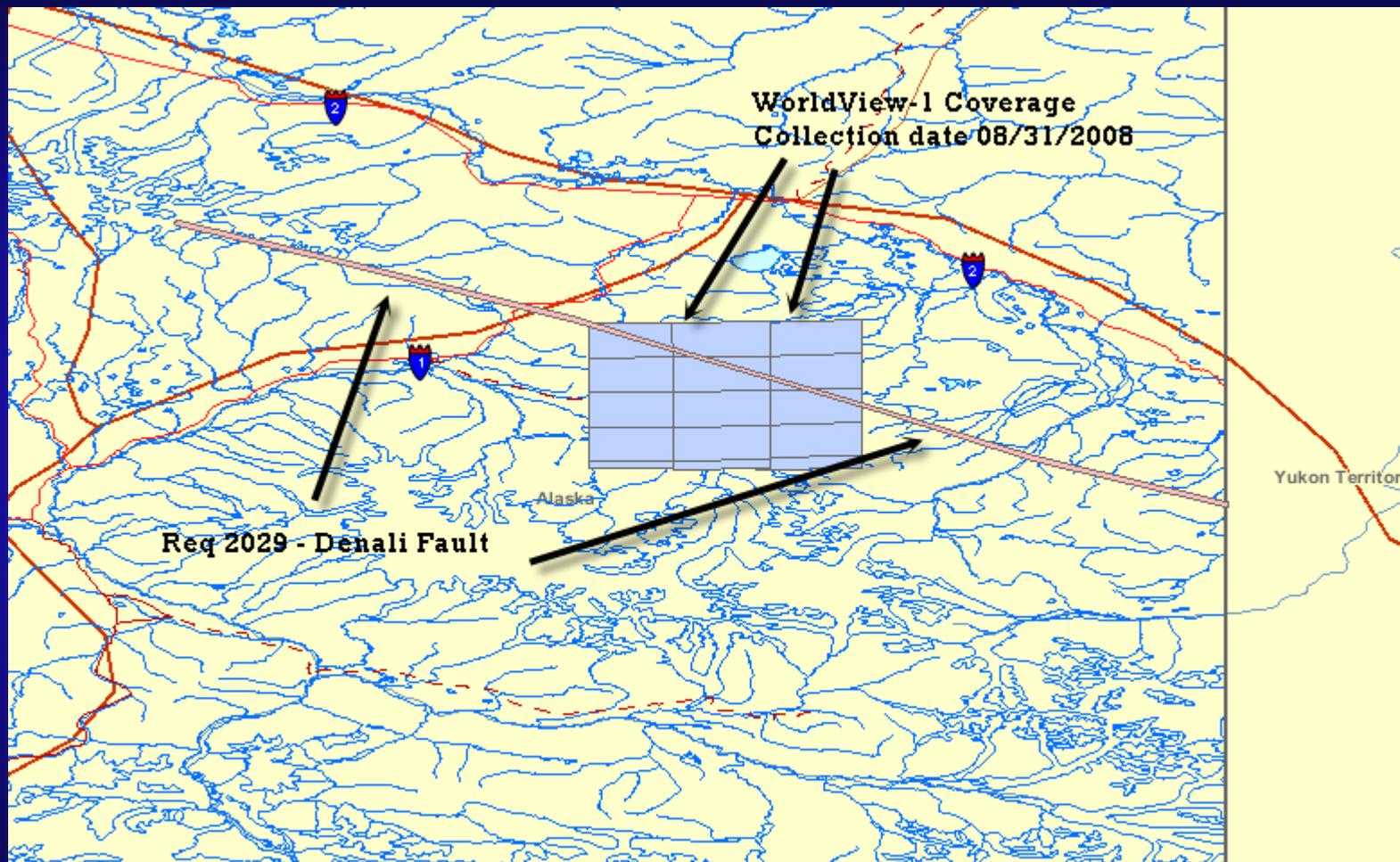
Status of Recent Fed-Civ Requirements

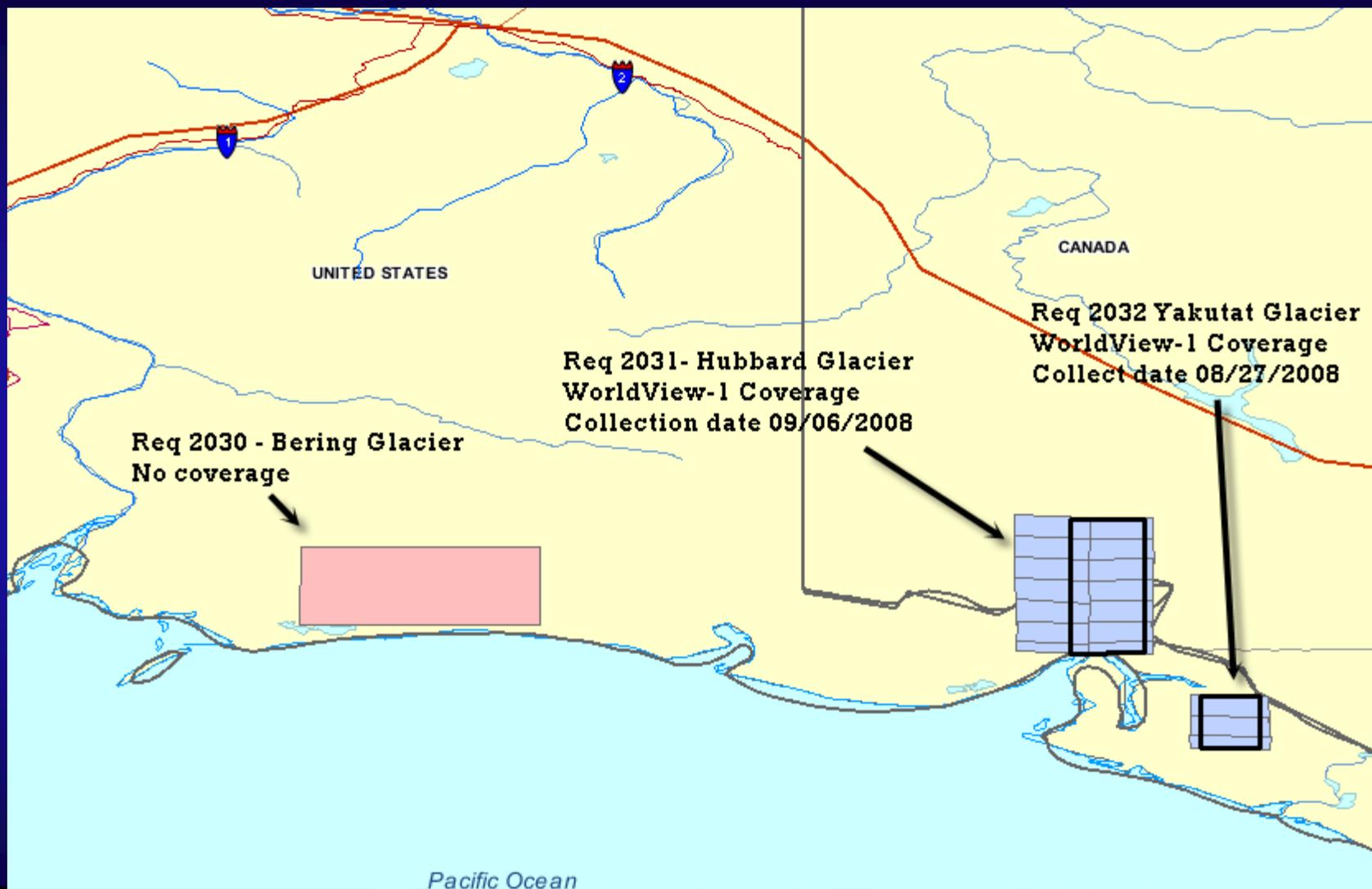


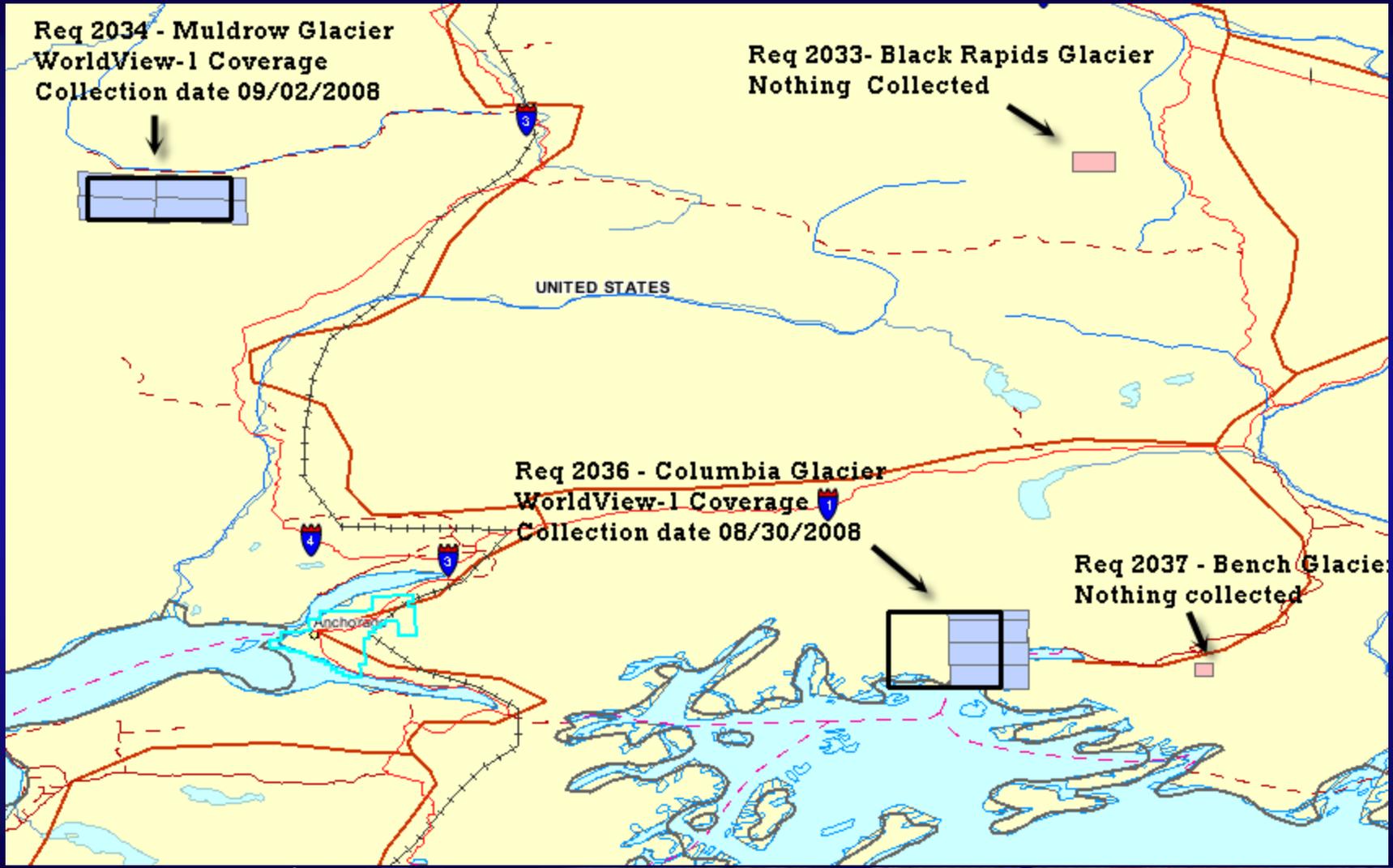


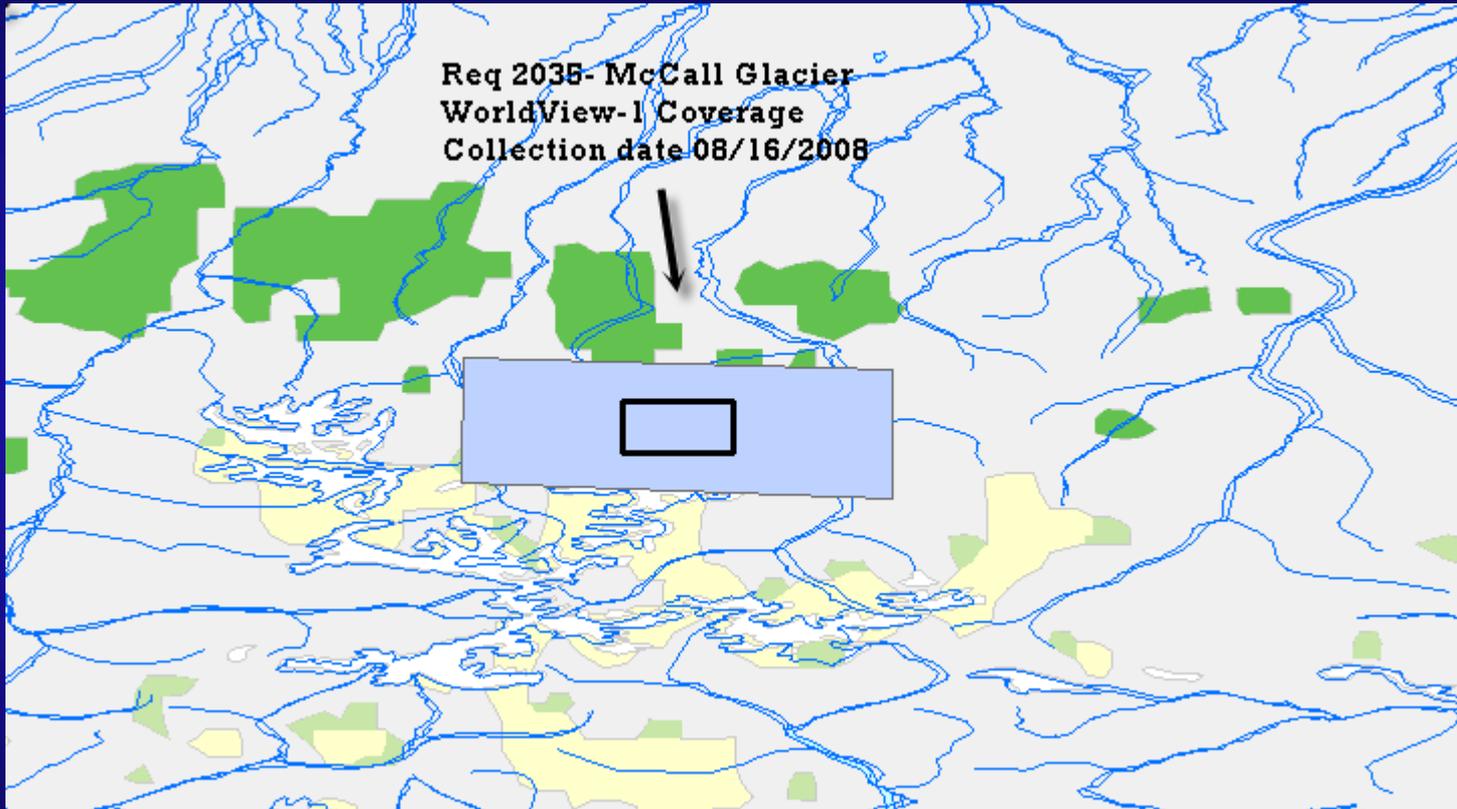


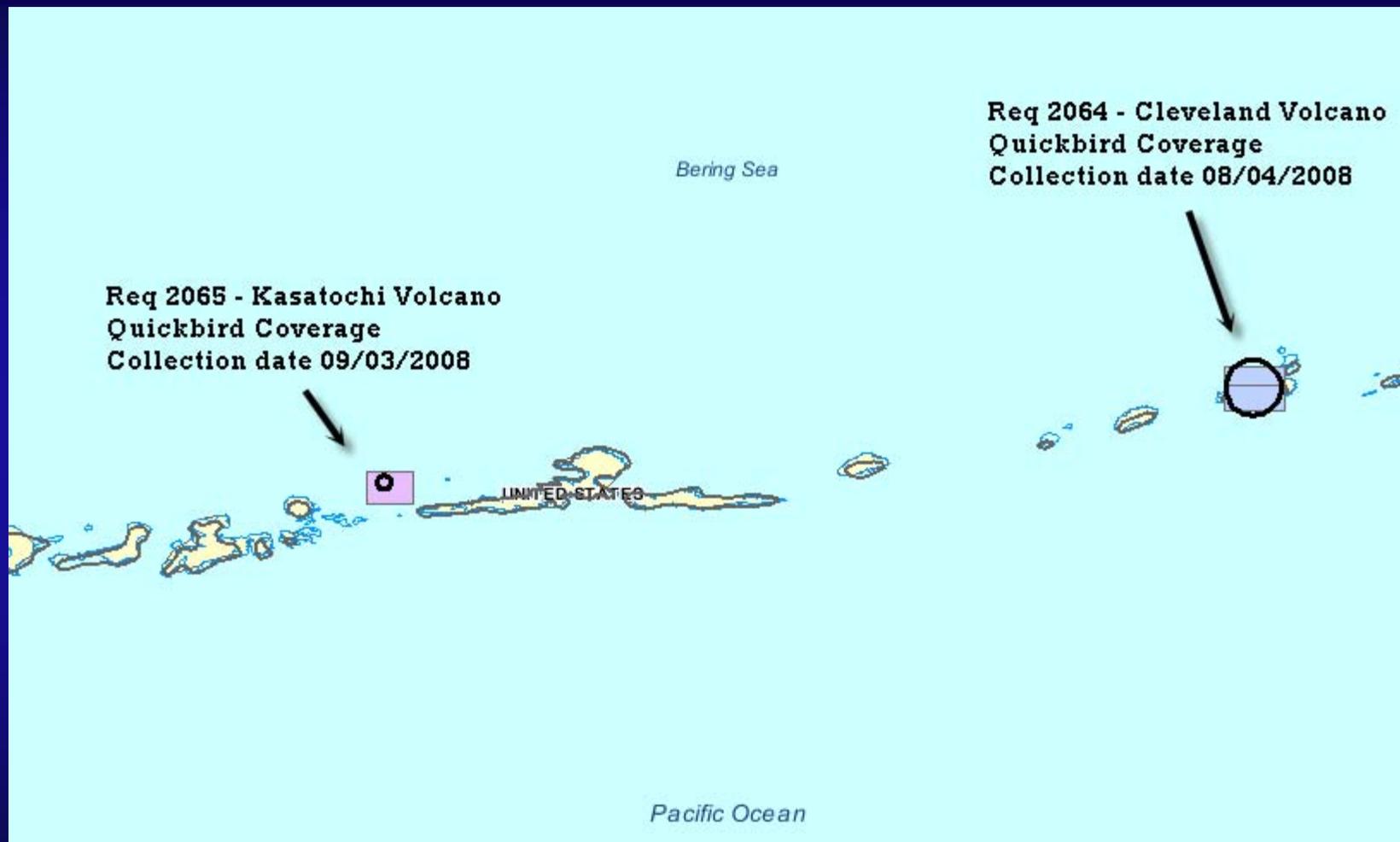


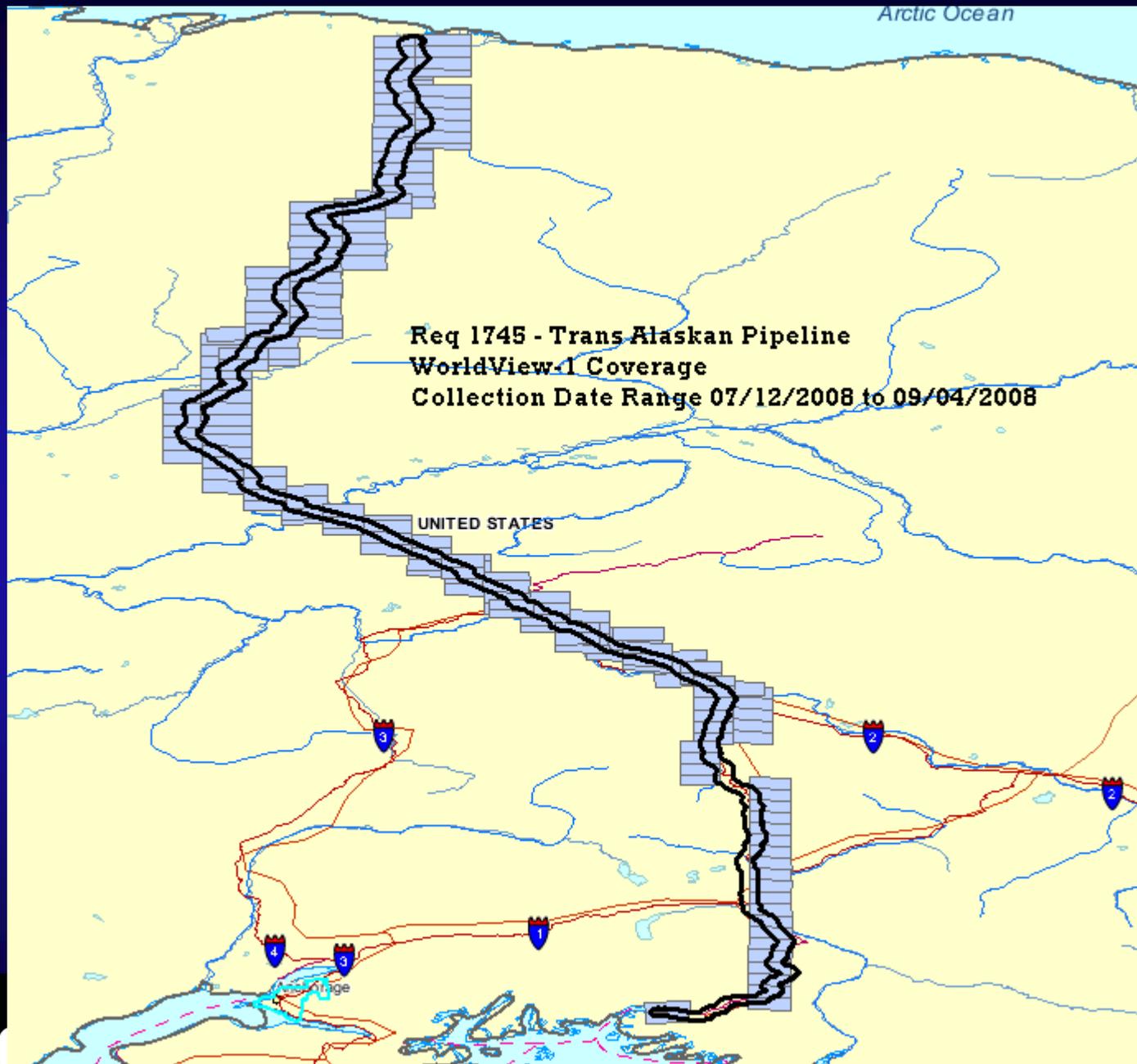












Req 1604 - Kotzebue, AK
Quickbird Coverage
Collection Date
08/07/2006



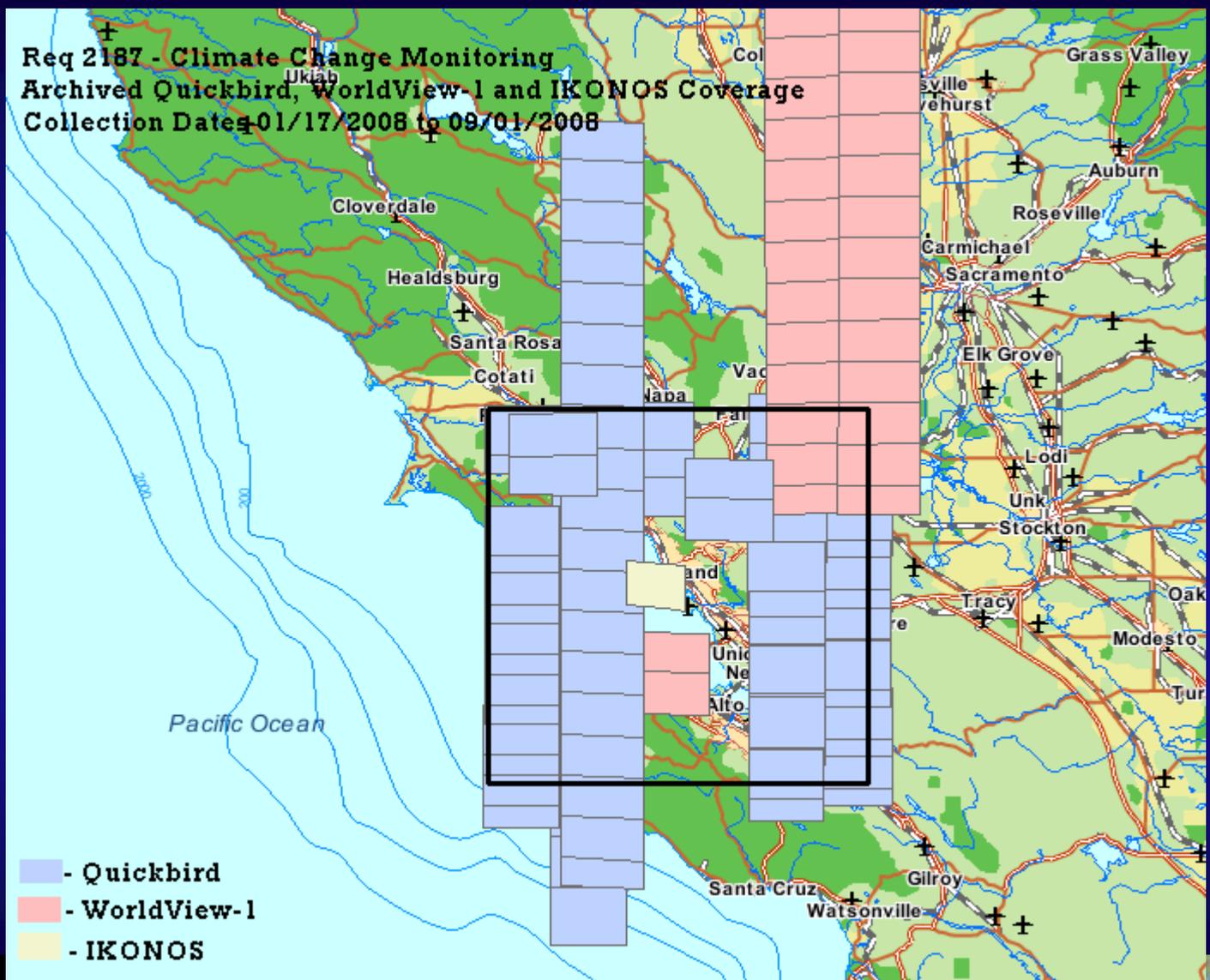
UNITED STATES

Bering Sea

Req 1605 - St Mary, AK
Quickbird Coverage
Collection Date
09/04/2006



**Req 2187 - Climate Change Monitoring
Archived Quickbird, WorldView-1 and IKONOS Coverage
Collection Dates 01/17/2008 to 09/01/2008**



| | A | B | C | D | E | F | G | H | I | J | K | L |
|----|--|-------------|---|---------------------------------------|-----------------------------|----------------------|-----------------------------|--------------------|-------------|------------------|------------------|----------------------|
| 1 | Week | Requirement | Agency | Area of Interest | IR# / Job# / WARP | Access Method | Date Requested / Received | Satellite | # of Images | License | Format | Product |
| 2 | Apr29-May05 | 1319 | USGS | Tipasa, Algeria | NGA / WARP | NGA - WARP | 4/23/07 -- 4/24/07 | Quickbird | 4 | Nextview | NITF and Geotiff | |
| 3 | | 1317 | USDA / Forest Service | Medley Hollow, Mo | NGA IR# 006000140 (Bob L) | NGA - New Collect | 4/10/07 -- 5/02/07 | Quickbird | 1 | Nextview | GeoTiff | Basic Level 1B |
| 4 | | 1375 | USGS | Simien, Ethiopia | NGA IR# 006000144 (MaryAnn) | NGA - DG Library | 4/24/07 -- 5/01/07 | Quickbird | 3 | Nextview | GeoTiff | Basic Level 1B |
| 5 | | 1392 | USGS | Lahore, Pakistan | NGA Job #71004559 (Matt) | NGA - DG Library | 4/25/07 -- 4/30/07 | Quickbird | 3 | Nextview | GeoTiff | Basic Level 1B |
| 6 | | 1394 & 1395 | USGS | Tanzania | NGA Job # 71004570 (Matt) | NGA - DG Library | 4/27/07 -- 5/01/07 | Quickbird | 1 | Nextview | GeoTiff | Basic Level 1B |
| 7 | | | | | | | | | | | | |
| 8 | May06-May12 | 1037 | USGS | Yomba Res Reese River Watershed, NV | NGA IR# 000600086(Bob) | NGA - New Collect | 4/5/2007 -- 05/07/07 | Quickbird | 3 | Nextview | NITF / Geotiff | Basic Level 1B |
| 9 | | 1410 | USGS | 1410 China Tibet Yangtze Glacier | NGA IR# 0006000088(Ann) | NGA - New Collect | 4/16/07 -- 05/09/07 | Quickbird | 1 | Nextview | GeoTiff | Basic Level 1B |
| 10 | | 1409 | USDA / National Agricultural Statistics Service | Midwest | Requested from USDA | USDA Library | 04/30/07 -- 05/08/07 | AWiFs | 19 | Tier 2 | GeoTiff | |
| 11 | | | | | | | | | | | | |
| 12 | May13-May19 | 1417 | USDA / Natural Resources Conservation Service | Lisianski Island- NW Hawaiian Islands | NGA job (Bob) | NGA - DG Library | 05/10/07 -- 05/14/07 | Quickbird | 1 | Nextview | GeoTiff | Basic Level 1B |
| 13 | | 1439 | USGS | Rath26-27/Row 31 | Requested from USDA | USDA Library | 05/14/07-- 05/17/07 | Landsat TM and ETM | 9 | None | DAT | |
| 14 | | 1440 | USGS | Mayon,Philippine | NGA / WARP | NGA - WARP | 5/11/07 -- 05/16/07 | Quickbird | 3 | Nextview License | NITF and Geotiff | |
| 15 | | 1408 | Bureau of Land Management | Powder River Basin Aquatic | NGA job (Bob) | NGA - CSIL | 4/12/07 -- 05/18/07 | SPOT | 10 | Uplift | DAT | |
| 16 | | | | | | | | | | | | |
| 17 | May20-May 26 | 1416 | USDA / Farm Service Agency | Aberdeen Proving Grounds, MD | NGA job (Bob) | NGA - New Collect | 4/30/07 -- 05/22/07 | Quickbird | 3 | Nextview | Geotiff | Basic Level 1B |
| 18 | | 1312 | USDA / Natural Resources Conservation Service | Cordova, AK | NGA job (Bob) | NGA - New Collect | 4/20/07 -- 05/24/07 | Quickbird | 1 | Nextview | Geotiff | Standard Level 2A |
| 19 | | | | | | | | | | | | |
| 20 | May27-June2 | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | June3-June9 | 1330 | USGS | Rosebud Reservation, SD | NGA IR#0006000085(Bob) | NGA - New Collect | 3/29/07 -- 06/04/07 | IKONOS | 9 | Nextview | NITF | Level: Standard Geom |
| 23 | | 1315 | USGS | Caribou-Poker, AK | NGA job (Bob) Spreadsheet | NGA - DG Library | 4/06/07 -- 06/05/07 | Quickbird | 4 | Nextview | NITF | Standard Level 2A |
| 24 | | 1321 | USGS | Yukon Delta, AK | NGA job (Bob) Spreadsheet | NGA - New Collect | 4/6/07 -- 06/06/07 | IKONOS | 8 | Nextview | NITF | Level: Standard Geom |
| 25 | | 1315 | USGS | Caribou-Poker, AK | NGA job (Bob) Spreadsheet | NGA - DG Library | 4/06/07 -- 06/08/07 | Quickbird | 4 | Nextview | NITF | Standard Level 2A |
| 26 | | | | | | | | | | | | |
| 27 | June10-June16 | 1315 | USGS | Caribou-Poker, AK | NGA job (Bob) Spreadsheet | NGA - DG Library | 4/06/07 -- 06/11/07 | Quickbird | 4 | Nextview | Geotiff | Standard Level 2A |
| 28 | | 1344 | DOD | Whiting Field, FL | NGA job (Bob) Spreadsheet | NGA_GeoEye Library | 4/06/07 -- 06/14/07 | IKONOS | 1 | Nextview | Geotiff | Orthorectified |
| 29 | | | | | | | | | | | | |
| 30 | June17-June23 | | | | | | | | | | | |
| 31 | | | | | | | | | | | | |
| 32 | June24-June30 | 1311 | USDA / Natural Resources Conservation Service | Valdez, AK | NGA job (Bob) Spreadsheet | NGA - New Collect | 4/06/07-- 06/25/07 | Quickbird | 2 | Nextview | Geotiff | Basic Level 1B |
| 33 | | 1283 | DDI / BLM | Southern part of TAPS Buffer | NGA job (Bob) Spreadsheet | NGA - New Collect | 4/06/07-- 06/25/07 | Quickbird | 2 | Nextview | Geotiff | Basic Level 1B |
| 34 | | 1420 | USGS | NW CO | NGA job (Bob) | NGA - New Collect | 6/07/07-- 06/27/07 | IKONOS | 7 | Nextview | Geotiff | Level: Standard Geom |
| 35 | | | | | | | | | | | | |
| 36 | July1- July7 | 1451 | DOC / NOAA | New Orleans area | NGA job (Bob) | NGA - DG Library | 6/13/07 -- 07/02/07 | Quickbird | 44 | Nextview | Geotiff | Standard Level 2A |
| 37 | | 1492 | USGS | Talbot County, MD | NGA job (Bob) | NGA - CSIL | 6/26/07-- 07/05/07 | IKONOS | 2 | Nextview | NITF | Level Standard Geom |
| 38 | | 1493 | USGS | Island of Macias Nguema Africa | NGA job (Matt) | NGA - GeoEye Library | 06/29/07-- 07/06/07 | IKONOS | 3 | Nextview | NITF | Level Standard Geom |
| 39 | | 1493 | USGS | Island of Macias Nguema Africa | NGA job (Matt) | NGA - DG Library | 6/29/07-- 07/06/07 | Quickbird | 2 | Nextview | Geotiff | Basic Level 1B |
| 40 | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 43 | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |
| 46 | All data received will be copied for EROS collection and original media (DVD/CD) will be passed along to CIDR POC. | | | | | | | | | | | |



Some illustrated applications

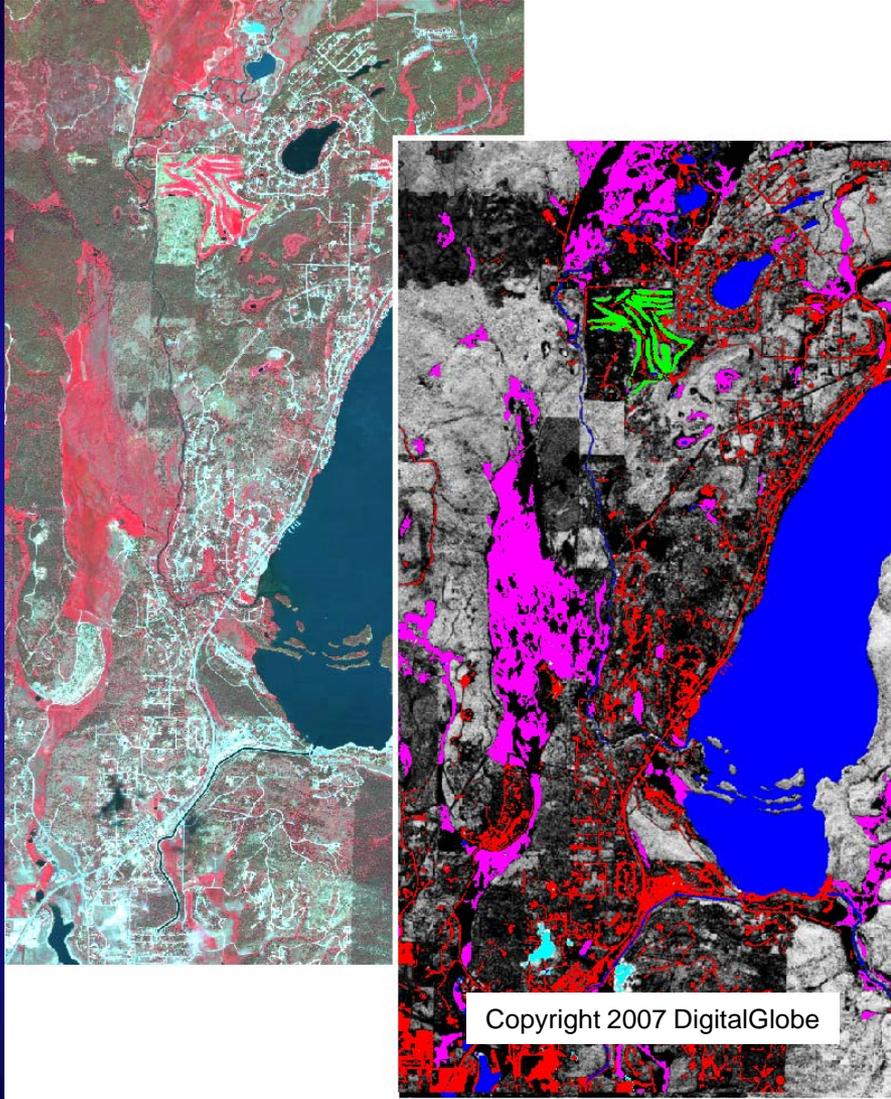


Automated Feature Extraction of Total Disturbed Surface Areas Jonah Area of the Green River Basin in Wyoming QuickBird Imagery



Jonah Area of the Green River
Basin in Wyoming
DigitalGlobe QuickBird II
Imagery

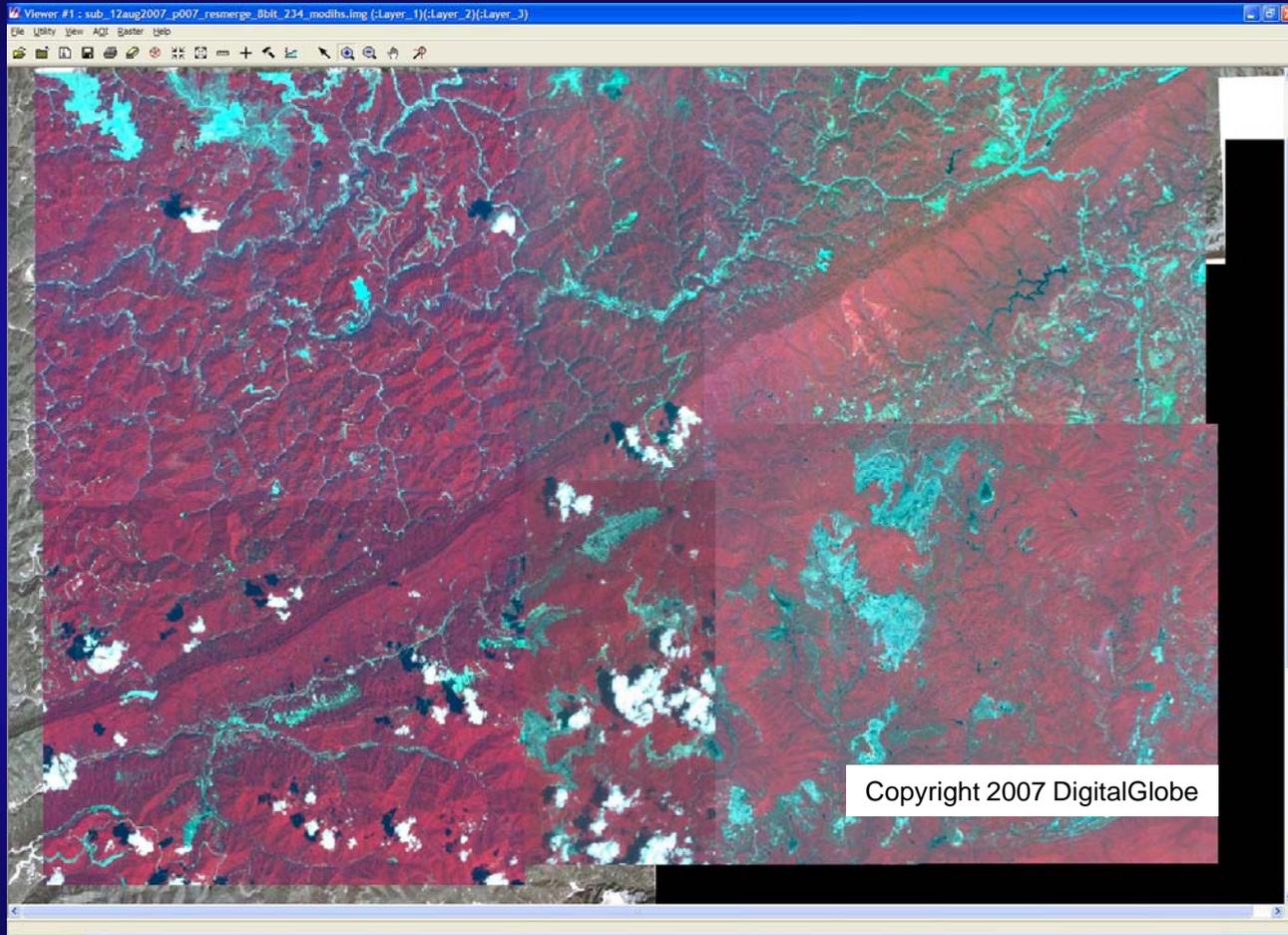
Classification of Land use Features – Forest Health Mapping



Mountain Pine Beetle Infestation -
Grand County, Colorado
QuickBird Imagery



Colliers Creek – Change Detection



World Heritage Site - Egypt

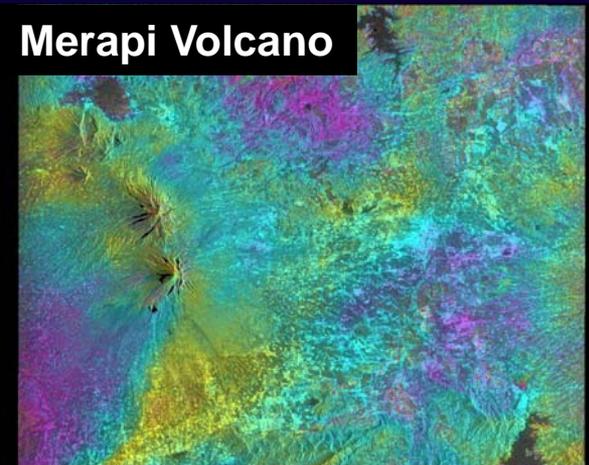


Summary and Future outlook

- High value realized through this Civil/NGA relationship
 - Broad numbers of smaller applications served
 - Data reuse = good government
 - **No access to NGA Funds for Law Enforcement and Regulatory**
- CRSSP Near-term Requirements WG refining prioritization process to assure equitable access
- NGA expects to continue civil support at current or increased capacity throughout 2009
 - GeoEye-1 (and WorldView-2) adding significant additional capacity
 - Opportunity for additional civil agency users

Radar Application Development

Merapi Volcano



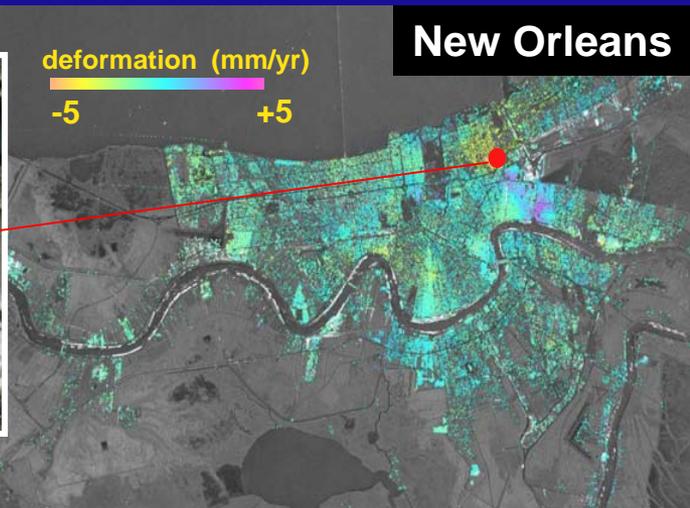
InSAR suggests the volcano is likely an “open-system”

InSAR measures subsidence of New Orleans

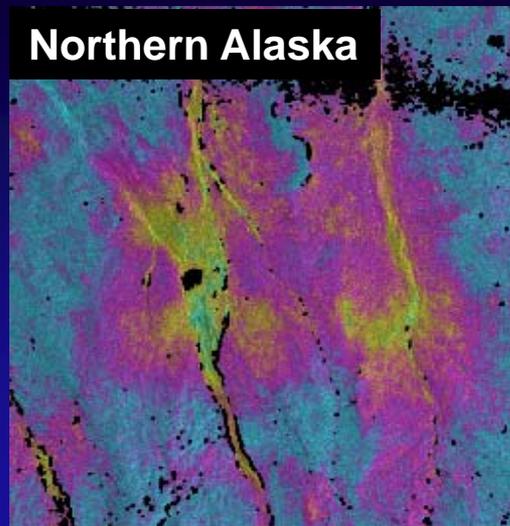


deformation (mm/yr)
-5 +5

New Orleans

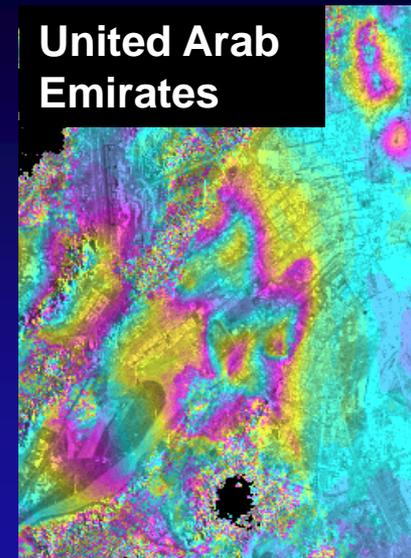


Northern Alaska



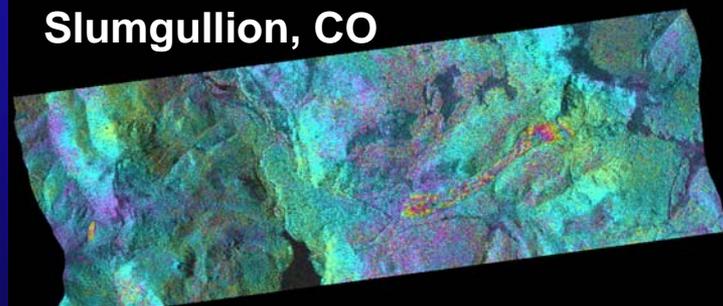
InSAR measures 6-8 cm subsidence due to permafrost

United Arab Emirates



InSAR measures 2-3 cm uplift due to artificial recharge of group water

Slumgullion, CO



InSAR measures the movement of the landslide at a rate of 4 mm/day

KILAUEA CALDERA

Pu`u`O`o

EAST RIFT ZONE

Napau Crater

June 18/19 eruption site

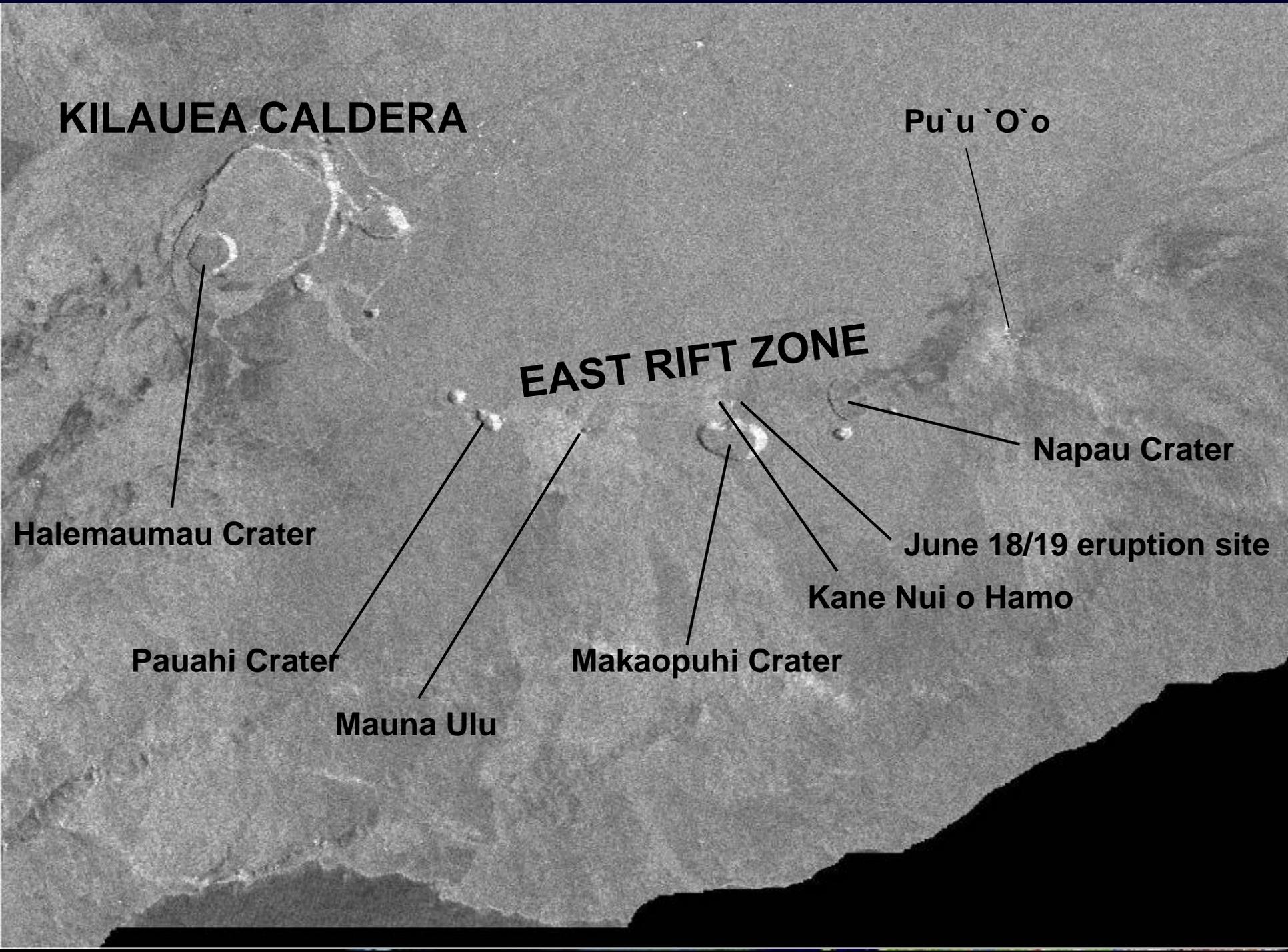
Kane Nui o Hamo

Makaopuhi Crater

Mauna Ulu

Pauahi Crater

Halemaumau Crater



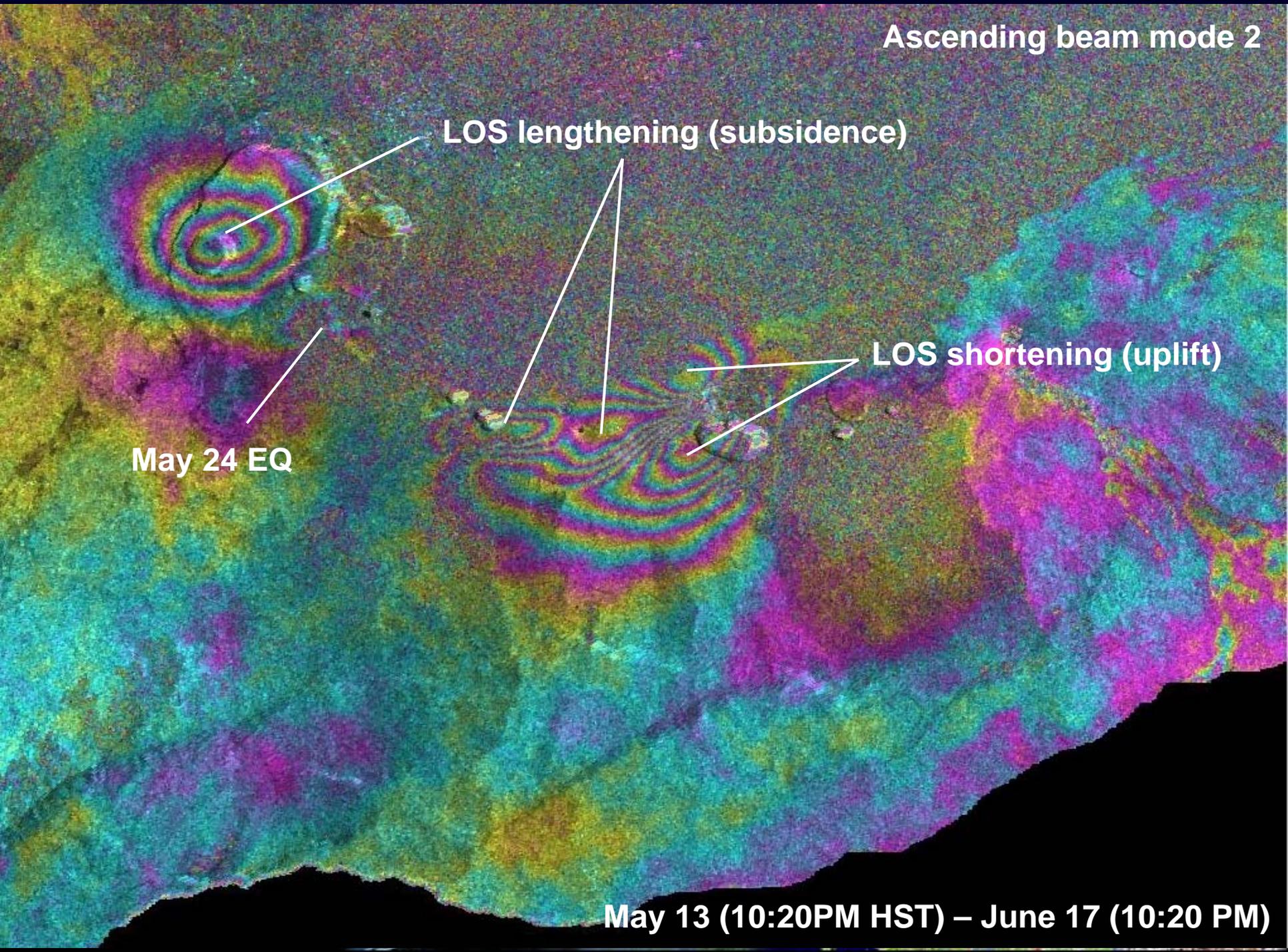
Ascending beam mode 2

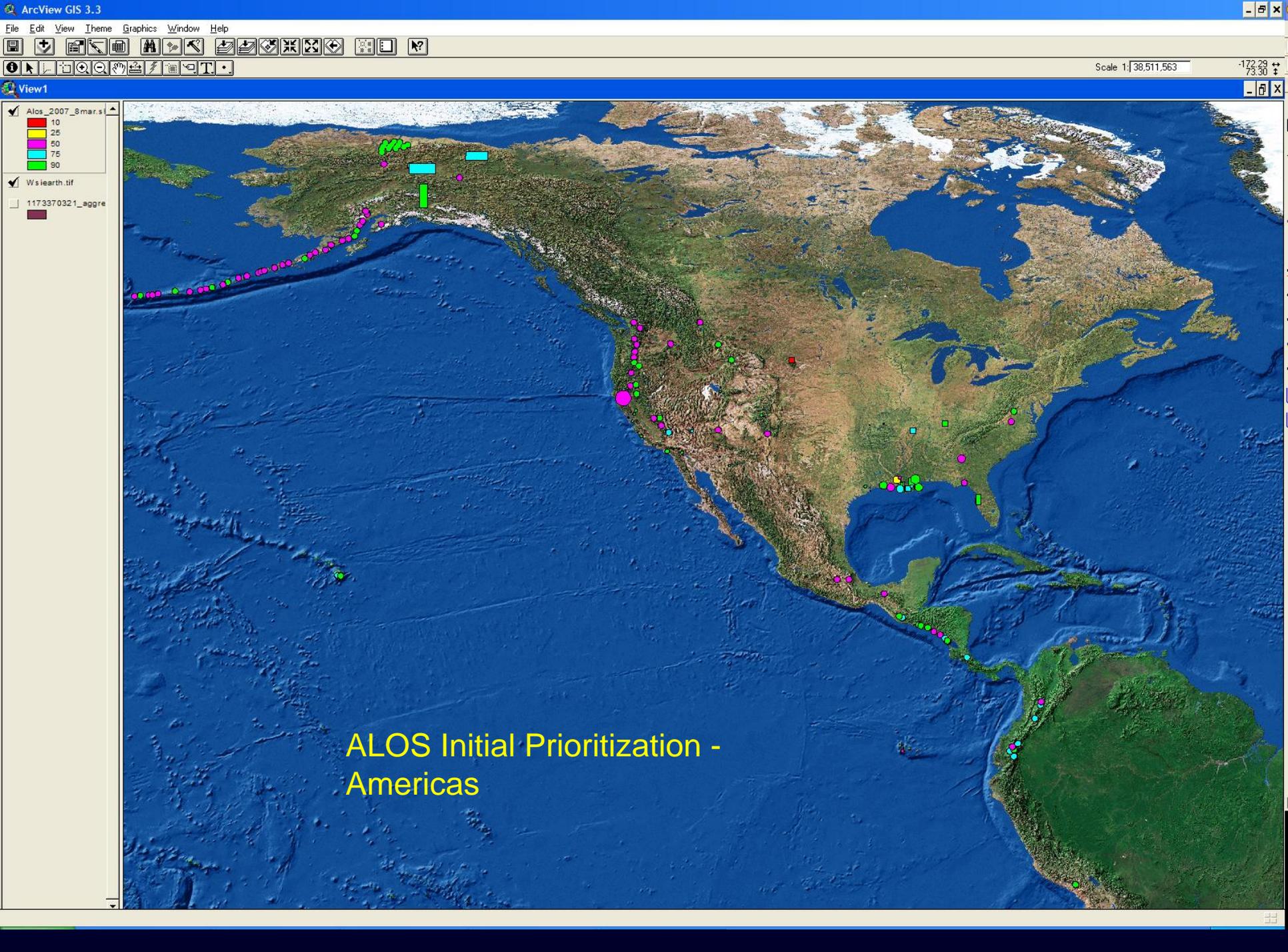
LOS lengthening (subsidence)

LOS shortening (uplift)

May 24 EQ

May 13 (10:20PM HST) – June 17 (10:20 PM)





Data Discovery

Earth Explorer

<http://edcsns17.cr.usgs.gov/EarthExplorer/>



Data Discovery

- Combines “Point and Click” ease with textual query capabilities to form an easy to use search and order interface
- Allows users to search spatially over multiple datasets

The screenshot displays the USGS EarthExplorer website. At the top, the USGS logo is visible with the tagline "science for a changing world". The page title is "EarthExplorer" and it includes navigation links for Home, Prices, and Help. A message banner indicates "There are 3 messages." and a navigation bar contains links for Login, Register, Why Register?, and Shopping Basket.

The main content area is divided into three sections:

- 1. Select your dataset(s)**: This section provides instructions on how to select datasets and lists various options such as Aerial Photography, AVHRR, Declassified Data, Digital Elevation, Digital Line Graphs, Digital Maps, EO-1, Global Land Survey, Landsat Archive, Landsat Decadal, Landsat Science, Radar, SPOT, and USGS Commercial.
- 2. Enter your search criteria**: This section includes a search form with fields for "Address/Place name" (with a "Search" button), "From (mm/dd/yyyy)" (set to 01/01/1920), and "To (mm/dd/yyyy)" (set to 12/31/2020). There is also a checkbox for "Search these months only."
- 3. Search >>>**: This section features a map of the United States with state boundaries and names. The map includes a scale bar (0 to 1000 miles and kilometers) and a coordinate display showing (37 43 07 N, 095 37 30 W). Below the map, there are links for "Help", "Hide Map", "Clear My Area Selection", and "Add Map to Selection". A note states: "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."

Data Search Results

- Search results grouped by dataset
- Displays browse imagery and footprints by scene
- Allows users to export results into a KML file viewable in Google Earth

QUICKSTART 2 AUTHORIZED
152 of 152 metadata records retrieved. Showing 1-10

| | Preview Image | Show Footprint | Show All Fields | Exclude | FTP Link | USGS Entity Id | Acquisition Date | Platform | Sensor | File Format | Processing Level | Center Coordinate | Cloud Cover | Sun Elevation | Sun Azimuth |
|----|---------------|----------------|-----------------|--------------------------|----------|----------------------|------------------|--------------|---------------|-------------|------------------|-------------------------------|-------------|---------------|-------------|
| 1 | | Show | Show | <input type="checkbox"/> | Download | Q8220040916180004M00 | 2004/09/16 | QUICKSTART-2 | Multispectral | GEOTIFF | Level 2A | 37°33'38.37"N, 108°40'29.83"W | 0 | 51.5 | 151.5 |
| 2 | | Show | Show | <input type="checkbox"/> | Download | Q8220040916180004P00 | 2004/09/16 | QUICKSTART-2 | Panchromatic | GEOTIFF | Level 2A | 37°33'38.37"N, 108°40'29.83"W | 0 | 51.5 | 151.5 |
| 3 | | Show | Show | <input type="checkbox"/> | Download | Q8220040916180007P00 | 2004/09/16 | QUICKSTART-2 | Panchromatic | GEOTIFF | Level 2A | 37°25'12.18"N, 108°40'34.81"W | 0 | 51.6 | 151.4 |
| 4 | | Show | Show | <input type="checkbox"/> | Download | Q8220040916180008M00 | 2004/09/16 | QUICKSTART-2 | Multispectral | GEOTIFF | Level 2A | 37°25'12.18"N, 108°40'34.81"W | 0 | 51.6 | 151.4 |
| 5 | | Show | Show | <input type="checkbox"/> | Download | Q8220040926181002M00 | 2004/09/26 | QUICKSTART-2 | Multispectral | GEOTIFF | Level 2A | 37°19'31.67"N, 108°49'37.24"W | 0 | 48.9 | 158.6 |
| 6 | | Show | Show | <input type="checkbox"/> | Download | Q8220040926181002P00 | 2004/09/26 | QUICKSTART-2 | Panchromatic | GEOTIFF | Level 2A | 37°19'31.67"N, 108°49'37.24"W | 0 | 48.9 | 158.6 |
| 7 | | Show | Show | <input type="checkbox"/> | Download | Q8220040926181005M00 | 2004/09/26 | QUICKSTART-2 | Multispectral | GEOTIFF | Level 2A | 37°13'38.64"N, 108°49'33.47"W | 0 | 49 | 158.6 |
| 8 | | Show | Show | <input type="checkbox"/> | Download | Q8220040829173907M00 | 2004/08/29 | QUICKSTART-2 | Multispectral | GEOTIFF | Level 2A | 37°17'13.43"N, 108°40'37.82"W | 0 | 57.1 | 143.6 |
| 9 | | Show | Show | <input type="checkbox"/> | Download | Q8220040829173907P00 | 2004/08/29 | QUICKSTART-2 | Panchromatic | GEOTIFF | Level 2A | 37°17'13.43"N, 108°40'37.82"W | 0 | 57.1 | 143.6 |
| 10 | | Show | Show | <input type="checkbox"/> | Download | Q8220040908181003P00 | 2004/09/08 | QUICKSTART-2 | Panchromatic | GEOTIFF | Level 2A | 37°17'23.14"N, 108°59'24.98"W | 0 | 55.1 | 151.7 |

1 2 3 4 5 6 7 8 9 10 11 -Next

Showing page 1 of 16
Go to page: Go

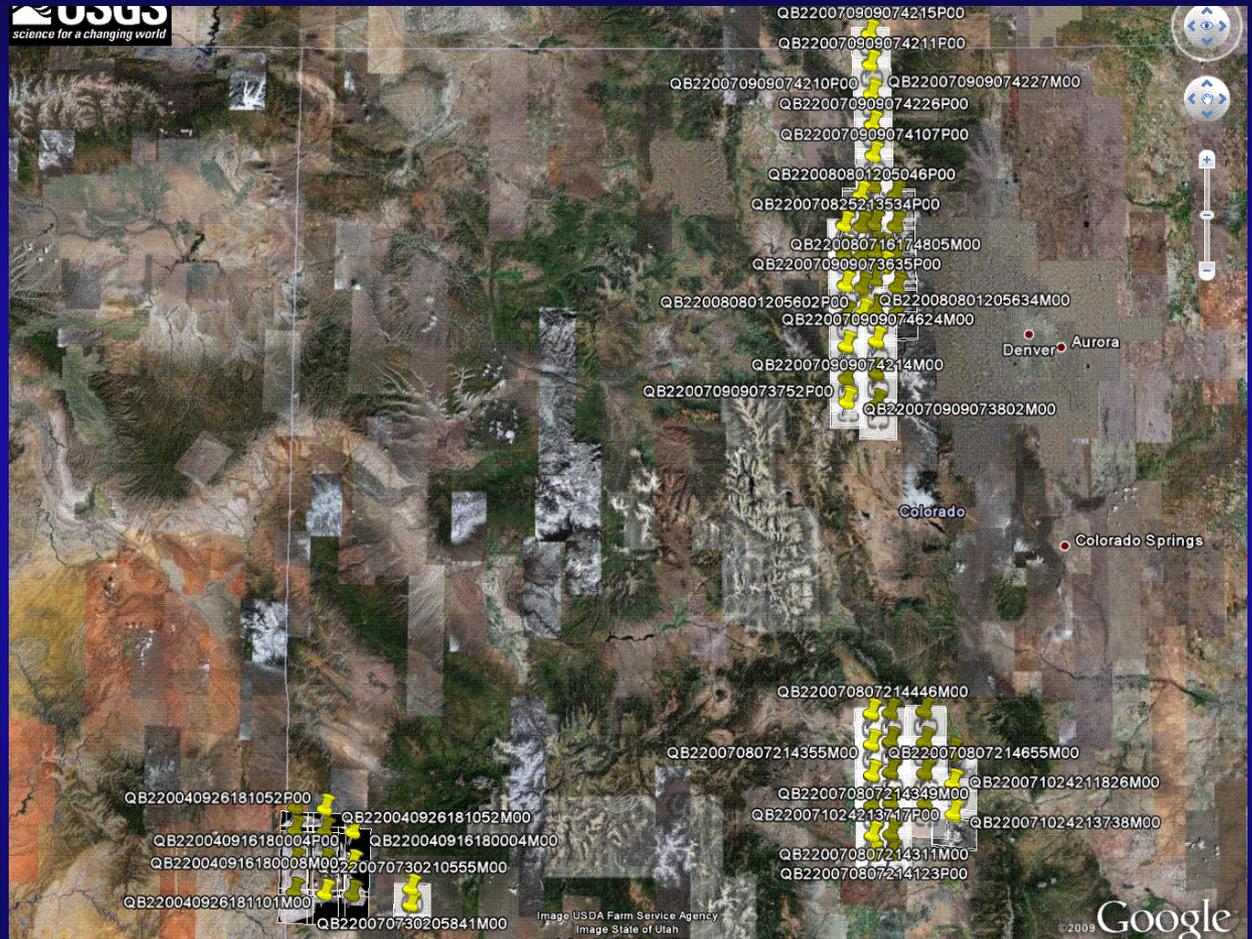
[Redefine Criteria](#) [Result Summary](#)

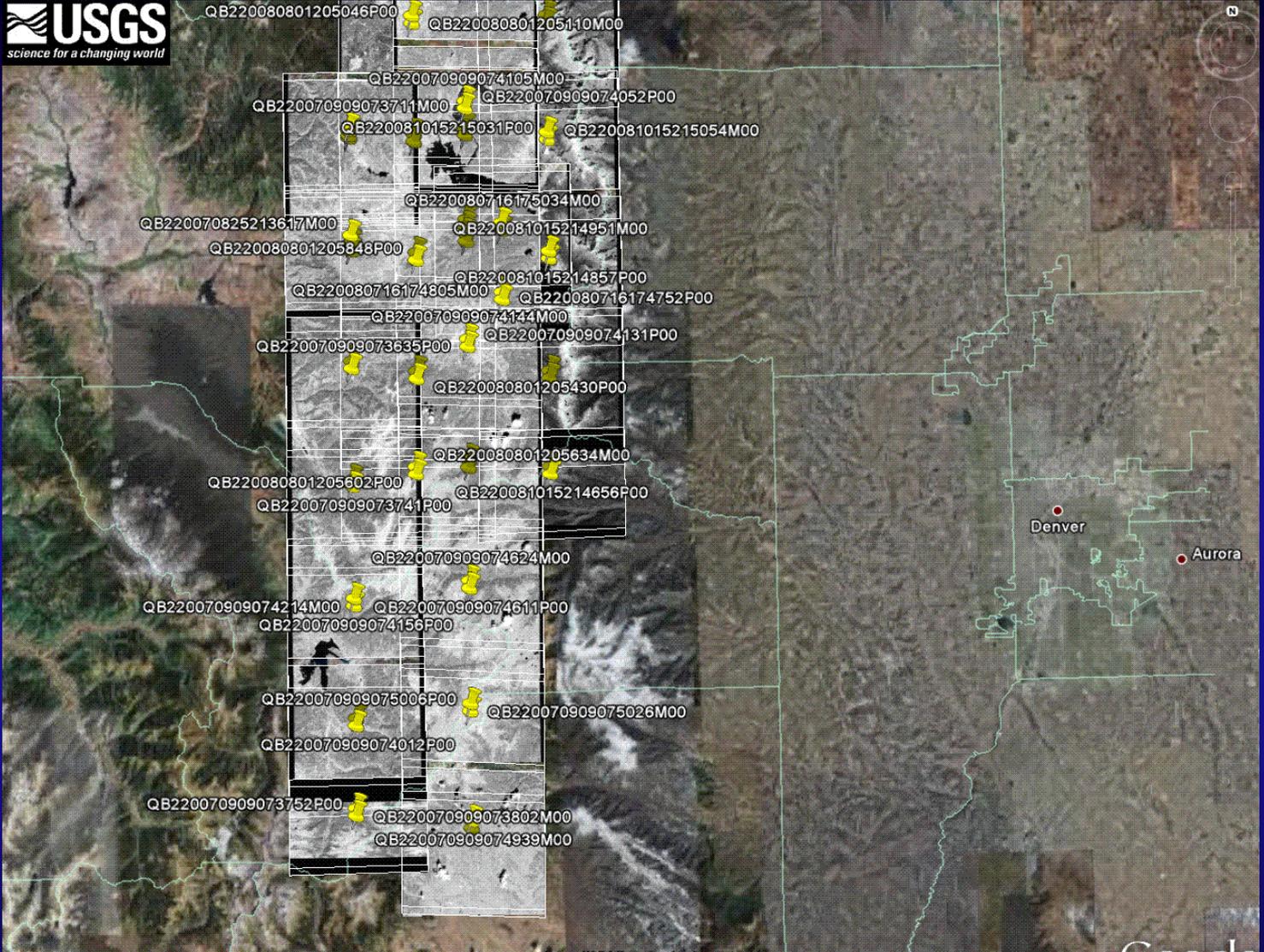
Hide Excluded Records
 Restore All Excluded Records
 Change Columns and Sort Order of Results
 Show All Records

1/27/04

KML Option

USGS
archived
Quickbird
scenes in CO





Quickbird scenes in vic Denver



Data Download

Sign in

Register to Download

You must be a registered user to download files. If you are already a registered user, please sign in below. If you are not a registered user, you may become one by initiating the [registration process](#).

* Please Note: Once you sign in, you may be asked a subset of questions if they were left blank in your registration profile.

Sign in using your USGS registered user name and password

Enter User Name:

Enter Password:

[Forgot your password?](#)

and continue using this site without signing on or registering.

Accessibility FOIA Privacy Policies and Notices

U.S. Department of the Interior | U.S. Geological Survey
URL: <http://earthexplorer.usgs.gov>
Page Contact Information: custserv@usgs.gov
Page Last Modified: April 21, 2008

- Registered users can electronically download selected datasets at no cost to them

Download Information

for

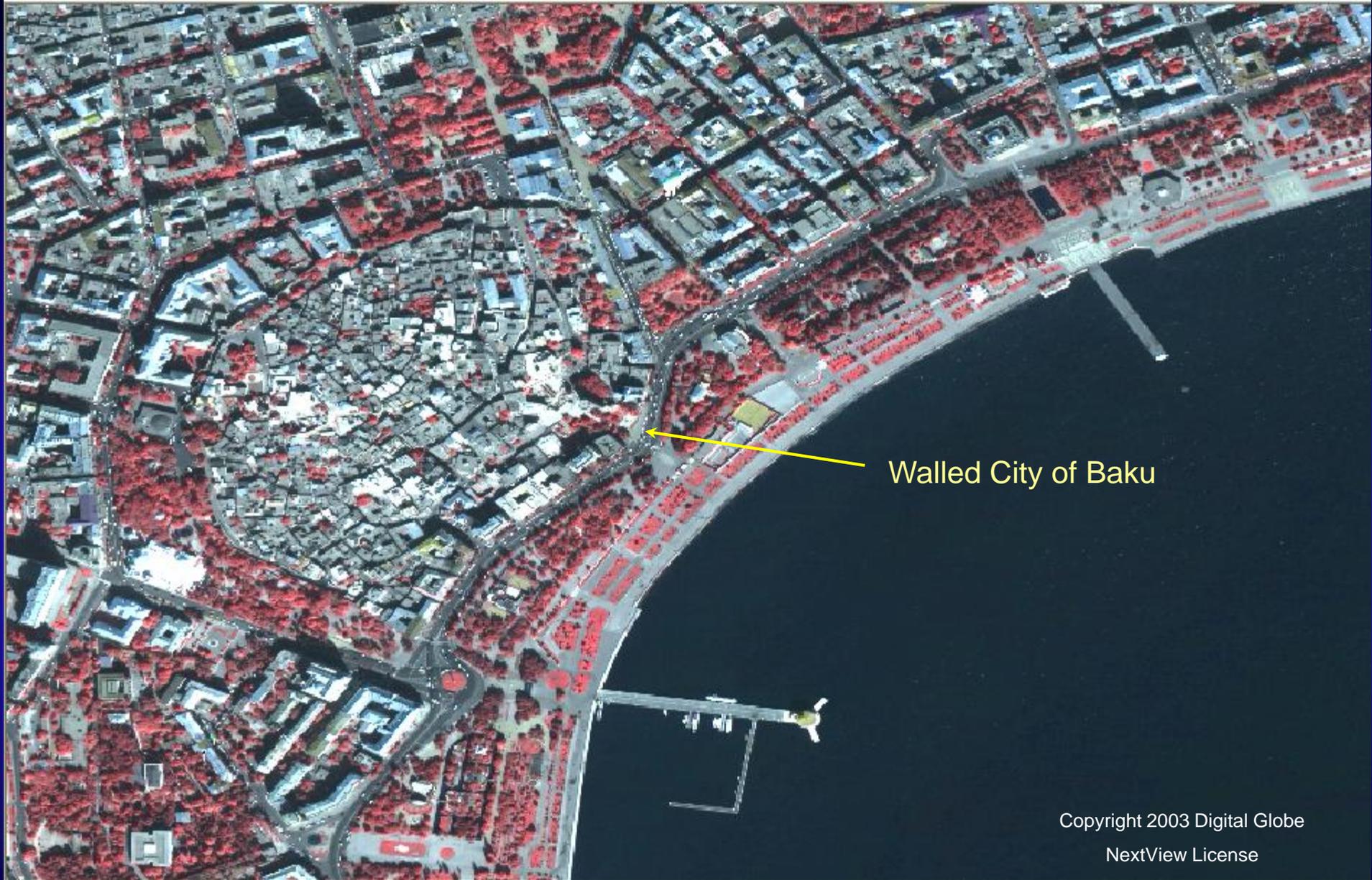
File Name: 5RRD07012_201.tif

- **Due to high demand and limited bandwidth, please limit downloads to one file per session.**
- This free service is intended to satisfy low volume data requests.
- Use of this data requires analysis software which is not typically found on workstations. Software is available on the internet or from commercial vendors.
- **Initiation of this data transfer may be delayed several minutes** while the file is retrieved from our robotic tape library.
- Note that data you have requested may be several hundred megabytes in size and transfer time may exceed an hour on a broadband (DSL, cable, T1) line.



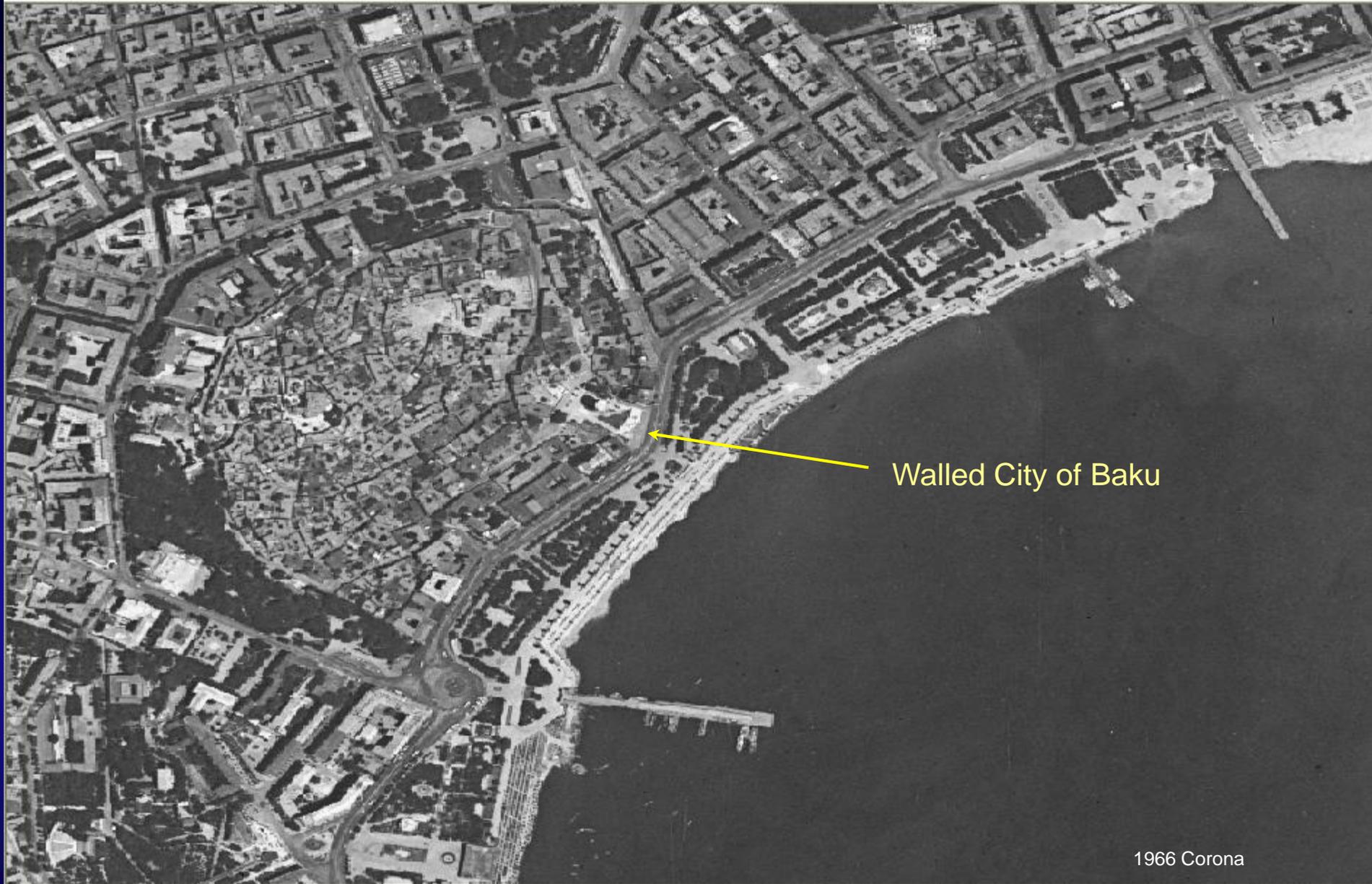
June 27, 1966 Corona from USGS archive





Walled City of Baku

Copyright 2003 Digital Globe
NextView License



Walled City of Baku

1966 Corona



USGS Web Enabling and Data Distribution

Check for updates at <http://eros.usgs.gov>

June 08, 2009

USGS Conversion to Electronic Geospatial Data Distribution

Over the past two years, the USGS has been steadily expanding the amount of digital geospatial data from its Earth Resources Observation and Science (EROS) Center archive that are available electronically in standard formats at no cost. In part, this expansion was achieved by scanning very large volumes of film images that were originally captured by aircraft- and satellite-borne cameras. Users can now preview and instantly download their selections from millions of land images and map graphics. In some cases, user selections that are not yet in the electronic-distribution format must be scanned or otherwise processed before they become available for free download. Users are encouraged to visit the **Earth Explorer** viewer at <http://earthexplorer.usgs.gov> or the **Global Visualization** viewer at <http://glovis.usgs.gov> to see what data are currently available for their areas of interest.

The transition toward a fully and freely available archive has in some cases included the elimination of traditional USGS products that required inefficient, "custom" procedures to produce. **As of July 1, 2009 USGS/EROS will no longer accept customer orders for any products other than those offered electronically at no charge.**

However, as EROS continues to routinely work through the archive to scan aerial and satellite film images for free distribution, customers will be allowed to pay a service fee for specific images to be scanned. For example, beginning October 1, 2009 EROS will be using new scanning equipment to provide free, higher-resolution products than are currently available from certain data sets such as the National High Altitude Photography Program – by going from 63-micron to 25-micron scans (from 400 to 1000 dots per inch). Since it will take at least three years to systematically work through the vast EROS film archive, customers will retain the option of paying to have specific images of interest pulled from the archive for immediate scanning and posting for free download.

February 13, 2009

As of March 1, USGS Product Return Policy will be updated

As of March 1st, the United States Geological Survey (USGS) Earth Resources Observation and Science (EROS) Center is updating the Product Return Policy to balance customer accounts as we move toward Web Enabled products (free download). USGS/EROS will limit the return policy for products to 30 days. Please verify that your orders are free from defects and contact our customer service if you have any questions.

*Unsatisfactory products are defined as those mistakenly provided by the USGS or unusable because of defects that are the fault of the USGS.

September 15, 2008

National Aerial Photography Program (NAPP) medium resolution digitized images are available for download at no charge

Effective August 25, 2008 the National Aerial Photography Program (NAPP) medium digitized images are available for download at no charge from the U.S. Geological Survey Earth Resources Observation and Science (EROS) Center. NAPP images can be previewed and downloaded using the USGS EarthExplorer Web site at <http://earthexplorer.usgs.gov> or the GloVis Web site at <http://glovis.usgs.gov>.

High Resolution Scanned images will continue to be available for a nominal charge.

For more information on NAPP, please visit <http://eros.usgs.gov/products/aerial/napp.php>.



Data Discovery

GloVis

<http://glovis.usgs.gov>

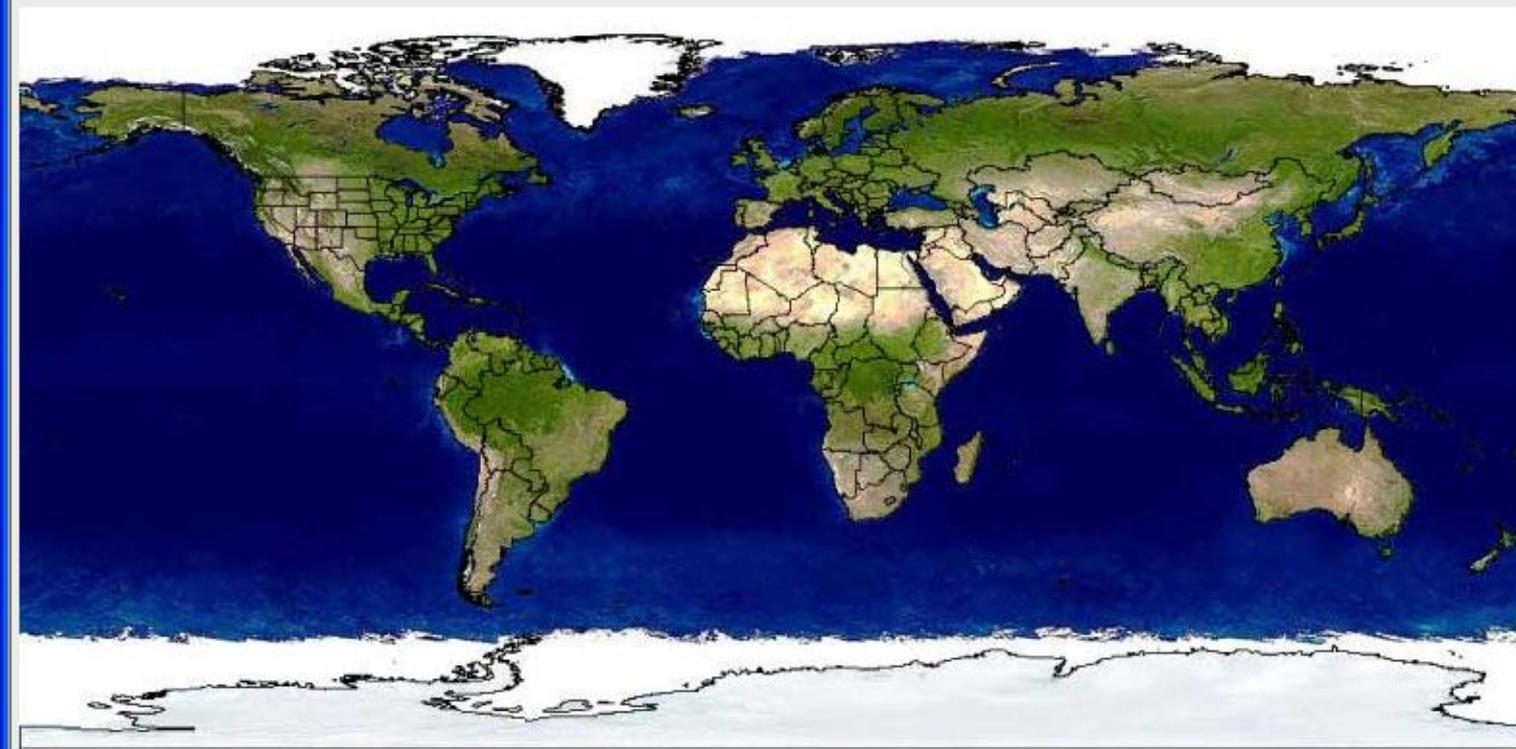


Center for Earth Resources Observation & Science (EROS)
USGS Global Visualization Viewer

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

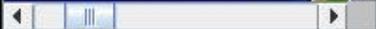
Select Collection

Latitude Longitude



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

- Agrial
- ASTER
- EO-1
- Landsat Archive
 - Data Descriptions
- Landsat Decadal
 - L7 SLC-off (2003->)
 - L7 SLC-on (1999-2003)
 - Landsat 4-5 TM
 - Landsat 4-5 MSS
 - Landsat 1-3 MSS
- MODIS Aqua
- MODIS Terra
- TerraLook
 - L4-7 Combined



WRS-2 Path/Row: 35 29

Lat/Long: 44.6 -105.9

Max Cloud: 100%

Scene Information:

ID: 7035029000625650
 Cloud Cover: 0% Qty: 9
 Date: 2006/9/13

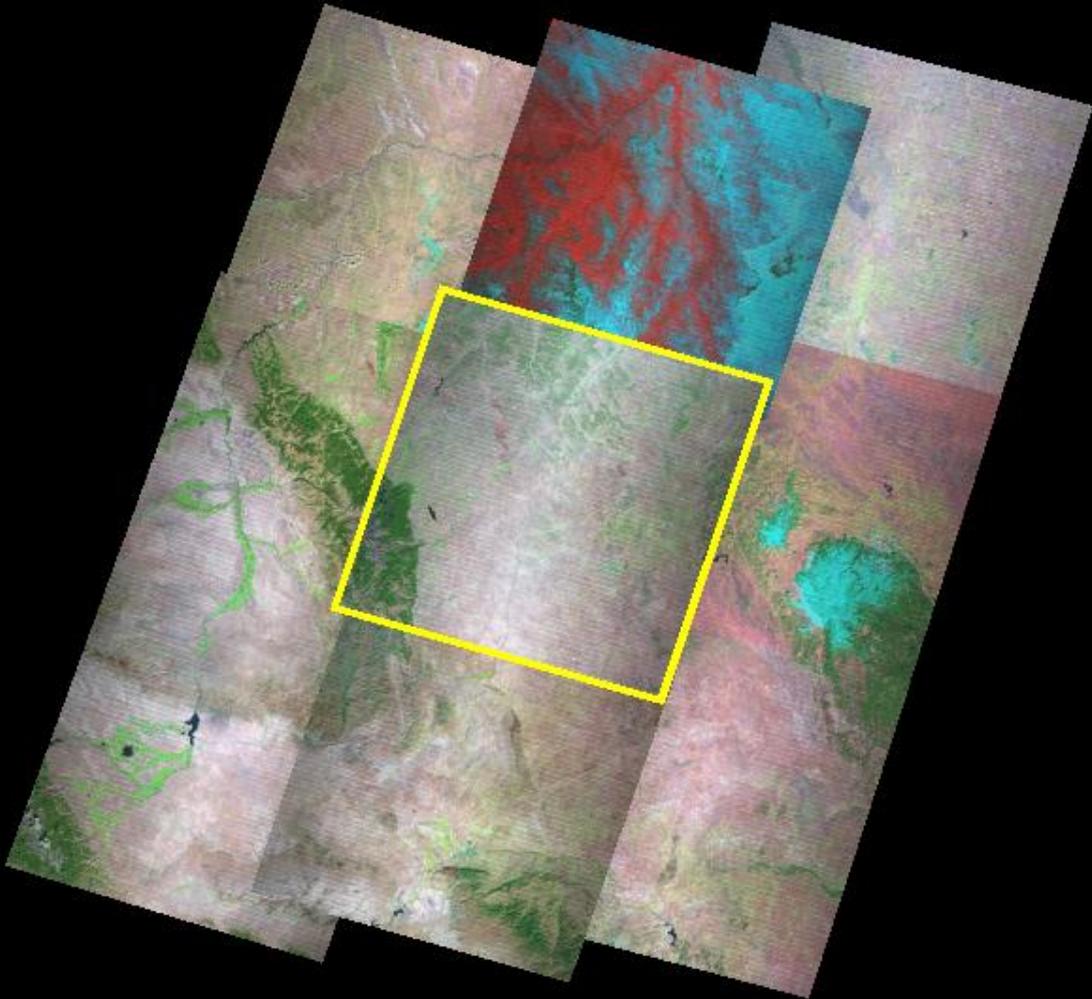
Sep 2006

L7 SLC-off (2003->) List

| | | | |
|--|--|--|--|
| | | | |
|--|--|--|--|



1000m No Limits Set



Data Discovery

Other Government



Internet Explorer users must check java options and use JRE 1.5 before proceeding. (see FAQ item 2)



+ United States Department of Agriculture +

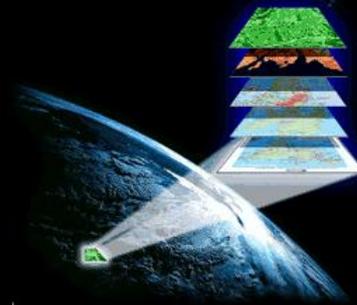
+ Service Center Initiative +

Get Data Login Check Order Status Maps News FAQ About Contact Administration

Line Image

Geospatial

the one stop source of
natural resources data



+ Natural Resources Conservation Service +
+ Farm Service Agency +
+ Rural Development +

The Geospatial Data Gateway provides One Stop Shopping for natural resources or environmental data at anytime, from anywhere, to anyone. **The Gateway** allows you to choose your area of interest, browse and select data from our catalog, customize the format, and have it downloaded or shipped on CD or DVD.

SYSTEM STATUS

NATIP 2003, 2004 and 2005 products are unavailable due to hardware limitations at the data service site. If you wish to order these products, please go [here](#).

Effective 13-DEC-06, JRE 1.5 is **REQUIRED** for Step 1 and 2. The JRE can be downloaded and installed [here](#). In addition, see [FAQ #2](#) on how to configure your browser.

Data Gateway

Minimum Requirements: Microsoft Internet Explorer 5.5 or Netscape Communicator 4.76 with Java enabled.

WARNING: This is a United States Department of Agriculture computer system, which may be accessed and used only for official Government business (or as otherwise permitted by regulation) by authorized personnel. Unauthorized access or use of this computer system may subject violators to criminal, civil, and/or administrative action. All information on this computer system may be intercepted, recorded, read, copied, and disclosed by and to authorized personnel for official purposes, including criminal investigations. Access or use of this computer system by any person, whether authorized or unauthorized, constitutes consent to these terms.

[USA.gov](#)

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<http://datagateway.nrcs.usda.gov/>

Mechanism to directly access NGA acquired Hi-Res NextView Licensed Imagery

<https://warp.nga.mil>

Web-based Access and Retrieval Portal (WARP) - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites

Address <https://warp.nga.mil/> Go Links

NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY

[NGA Home](#)

WELCOME TO THE WEB-BASED ACCESS AND RETRIEVAL PORTAL (WARP)

Search NGA: Go

Google™

[Login to WARP](#)

[Register with WARP](#)

This is a Restricted Access Network. This system

You are currently using **Microsoft Internet Explorer Version 6.0**. If you can't read the scrolling message above, your browser is not Java enabled or you currently have Java features disabled. If you can't read the name and version of your browser on the previous sentence, your browser does not support or has JavaScript features disabled. You must enable these features before proceeding.

You will need a username and password to have access to this server. If you would like to obtain a username and password please [click here to register](#). Please contact the [WARP Staff](#) with WARP questions or comments. For technical issues or other difficulties please contact the [WARP-UNIL Technical Support](#) at 1-800-455-0899 for further assistance. Current Technical Support hours are from Monday through Friday from 7:00am to 3:00pm EST.

[Click here to Login to WARP](#)

WARP

Applet ticker started Internet

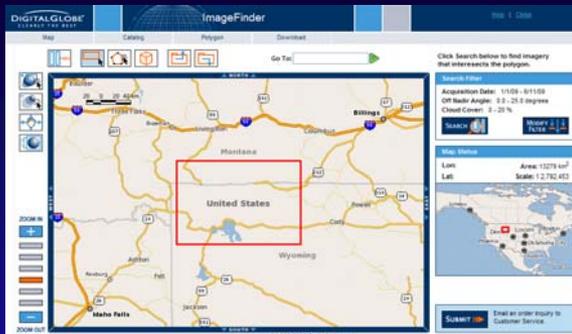
Data Discovery

Vendors

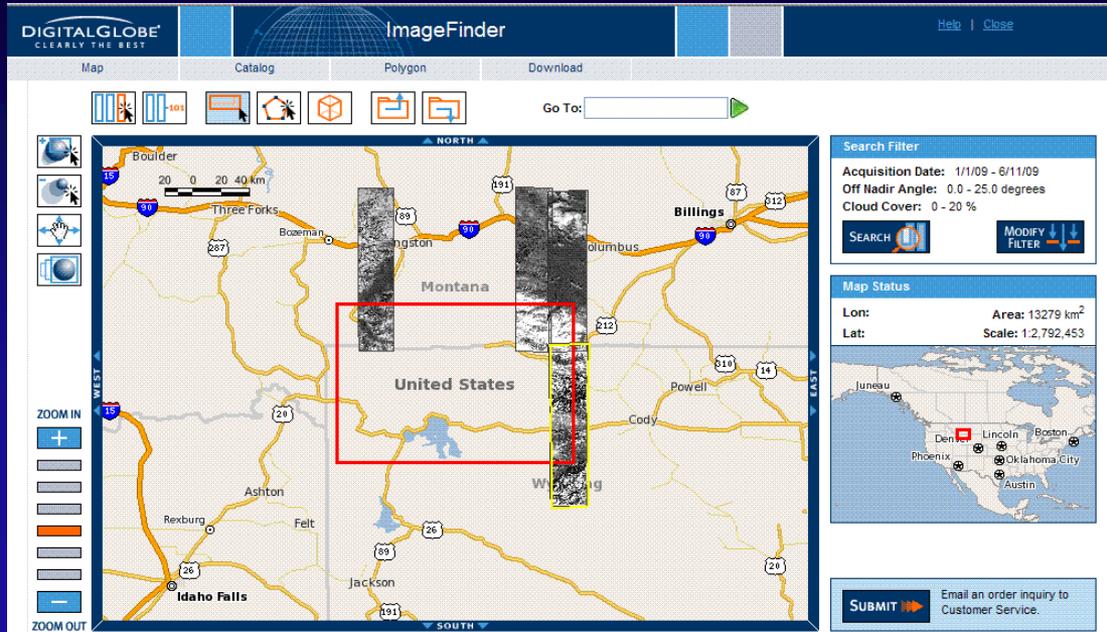
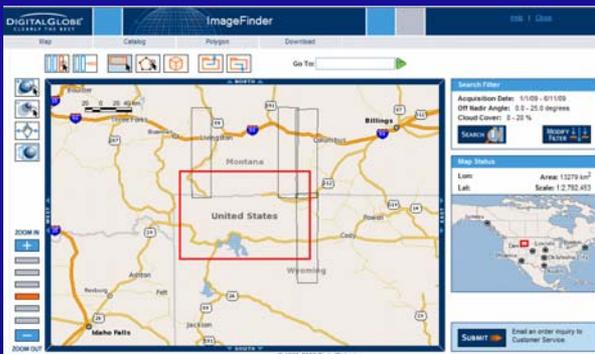


DigitalGlobe® ImageFinder

<http://browse.digitalglobe.com/imagefinder/main.jsp>



Search



Catalog - Windows Internet Explorer

http://browse.digitalglobe.com/imagefinder/catalogListDisplay.do?noCache=1244595524219&noCache=1244595598156

4 images meet your filter criteria

| Select | Browse Image | Catalog Id | Sensor Vehicle | Acquisition Date | Total Max Off Nadir Angle | Area Max Off Nadir Angle | Area Min Sun Elevation | Total Cloud Cover Pct | Area Cloud Cover Pct | Imaging Bands |
|--------------------------|--|------------------|----------------|------------------|---------------------------|--------------------------|------------------------|-----------------------|----------------------|---------------|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> 4 View | 1020010006E81C00 | WV01 | 2009/03/14 | 5.27° | 2.14° | 40.77° | 0% | 0% | Pan Only |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> 3 View | 102001000584FC00 | WV01 | 2009/01/18 | 6.87° | 5.97° | 22.88° | 4% | 10% | Pan Only |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> 2 View | 102001000738C200 | WV01 | 2009/05/13 | 18.94° | 16.54° | 61.43° | 21% | 0% | Pan Only |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> 1 View | 1020010006109D00 | WV01 | 2009/01/31 | 16.46° | 16.46° | 25.78° | 4% | 5% | Pan Only |

GeoEye GeoFUSE

<http://geofuse.geoeye.com/landing/Default.aspx>



- GEOFUSE HOMEPAGE
- ONLINE MAPS
- GOOGLE EARTH™ TOOLS
- ONLINE RESOURCE CENTER
- ADVANCED SEARCH OPTIONS
- ARCMAP™ TOOLBAR
- HELP & DOCUMENTATION
- IMAGESEARCH (LEGACY APP)
- WWW.GEOEYE.COM

GeoFUSE Find • Use • Serve • Extend

GeoEye's Imagery Sources collect vast amounts of high-resolution satellite and aerial imagery from around the globe each day. This imagery is processed and used in a multitude of applications such as mapping, disaster response, infrastructure management, and environmental monitoring. Now, with GeoEye's new suite of Search & Discovery tools, our customers can browse the GeoEye image catalog archives, quickly and easily locating and previewing imagery for their specific needs. Using the information obtained through use of these tools, our customers can easily communicate the information necessary to place orders for imagery products that meet their project requirements.



Online Maps

With a simple and easy-to-use interface, Online Maps allows our customers to use the Internet for locating and identifying available imagery from our extensive archive. Built on the familiar and ubiquitous Google Maps™ platform and ESRI® ArcGIS® Server 9.3 technology, and by employing the powerful Google™ geocoder, Online Maps makes it easy for our customers to locate a place on the globe and search for GeoEye archive images using just a few simple tools.

[Access Online Maps](#)



Google Earth™ Integration Tools

For our customers that are Google Earth™ users, the Google Earth™ Integration Tools are the perfect solution for quickly locating GeoEye imagery products. With a single click, our customers can integrate GeoEye imagery searches into the Google Earth™ interface. A simple "follow me" network link allows you to initiate a search with a simple click after identifying an area or point of interest.

[Access Google Earth™ Integration Tools](#)

Google Earth™ Integration Tools

For best results, please **launch Google Earth™** prior to clicking on the links below.



Search & Discovery Tools

For our customers that are Google Earth™ users, the Google Earth™ Integration Tools are the perfect solution for quickly locating GeoEye imagery products. With a single click, our customers can integrate GeoEye imagery searches into the Google Earth™ interface. A simple "follow me" network link allows you to initiate a search with a simple click after identifying an area or point of interest.

[Access Search & Discovery Tools](#)



Featured Full-Resolution Images

GeoEye maintains a gallery of full-resolution Featured Images to promote visibility in the marketplace and increase the Company's brand awareness and exposure. Our goal is to help others use our products for mapping, monitoring and measuring the Earth. As the trusted imagery expert, we frequently support requests for illustrating current events, natural disasters and global news by providing sample, full-resolution Featured Images for free in exchange for promotional credit to GeoEye. Media, non-government organizations, publishing houses, not-for-profit and educational institutions often rely on our high-quality, map-accurate imagery to tell their story and document our changing environment. For publishing guidelines, please go to the GeoEye Media Room

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- [San Francisco, California, IKONOS](#)
- [Dehli, India, GeoEye-1](#)
- [Uluru \(Ayers Rock\), Australia, IKONOS](#)
- [The Pyramids of Giza, Egypt, IKONOS](#)
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- [Venice, Italy, IKONOS](#)
- [Baltimore, Maryland, IKONOS](#)
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- [Greensburg, Kansas May 2007, MJ Harden Aerial](#)
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- [Chicago, Illinois, GeoEye-1](#)
- [Muscat, Oman, GeoEye-1](#)



Search

Fly To Find Businesses Directions

Fly to e.g., 37 25' 19.1"N, 122 05' 06"W

yellowstone national park

Yellowstone National Park, Wyoming

Places

Temporary Places

GeoEye Image Catalog Search Results v4.5

Search Request Information

Click Me for Help!

- 2009
- 2008
- 2006
- 2005
- 2004
- 2003
- 2002
- 2001
- 2000
- Map Legend
- GeoEye Logo

Layers

View: Core

- Primary Database
- Geographic Web
- Roads
- 3D Buildings
- Borders and Labels
- Traffic
- Gallery
- Global Awareness
- Places of Interest
- More
- Terrain



6 JUL 2000 - 14 NOV 2000



89

212

2000004253805THC

Yellowstone National Park, Wyoming Search GeoEye Image Catalog

GeoEye Legend

Sunny Images (0% to 20% Cloud Cover)

Partly Cloudy Images (21% to 50% Cloud Cover)

Cloudy Images (50% to 100% Cloud Cover)

Preview Quality Imagery by



Image © 2009 DigitalGlobe © 2009 Tele Atlas

©2007 Google™

Pointer 44°51'13.57" N 110°17'11.74" W

Streaming 100%

Eye alt 38.76 mi



Search

Fly To: Find Businesses Directions

Fly to e.g., 37.25° 19.1'N, 122.05° 06'W

yellowstone national park

[Yellowstone National Park, Wyoming](#)

Places

Temporary Places

- Thumbnail: 2006082818402 5700000116112492000033
- Thumbnail: 2000070718071 6000000101234882000004
- Thumbnail: 2000111318130 3700000101252912000006
- Thumbnail: 2000102218104 3100000101075982000006
- Thumbnail: 2000070718071 6000000101234882000004
- GeoEye Image Catalog Search Results v4.5
- [Search Request Information](#)
- Click Me for Help!
- 2009
- 2008

Layers

View: Core

- Primary Database
- Geographic Web
- Roads
- 3D Buildings
- Borders and Labels
- Traffic
- Gallery
- Global Awareness
- Places of Interest
- More
- Terrain

USGS science for a changing world

GeoEye

Preview Image: IKONOS-2, 2000033201802THC, 6/28/2006, GEO

20 JAN 2006 MAR 2009

2000033201802THC

Yellowstone National Park

GeoEye Legend

- Sunny Images (0% to 20% Cloud Cover)
- Partly Cloudy Images (21% to 50% Cloud Cover)
- Cloudy Images (50% to 100% Cloud Cover)

Preview Quality Imagery by

GeoEye

Image © 2009 DigitalGlobe © 2009 Tele Atlas

Google

Pointer 44°45'25.24" N 110°26'11.73" W Streaming 100% Eye alt 10.10 mi





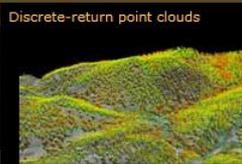
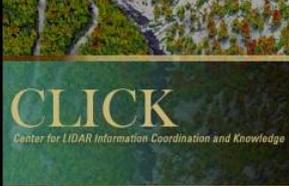
Elevation





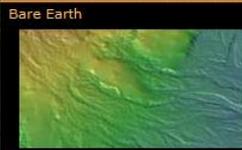
Welcome to the USGS Center for LIDAR Information Coordination and Knowledge

- Home
- Bulletin Board
- Data Viewer
- Websites/References
- Contact Us



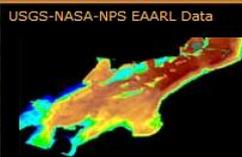
Discrete-return point clouds

Find out more about discrete-return lidar: See if publicly-available lidar is in your area of interest; ask and answer questions about the data, processing, derivatives and more on our bulletin board; look for articles and other websites about lidar.



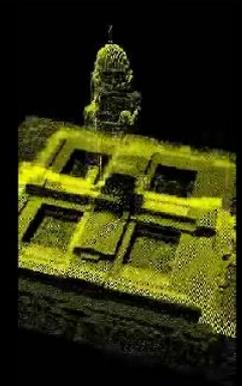
Bare Earth

Find out more about the USGS bare earth derivatives from lidar: Go to our [National Elevation Dataset \(NED\)](#) page. NED contains bare earth elevation data created by lidar and other sources.



USGS-NASA-NPS EAARL Data

Find out more about USGS Coastal and Marine Geology Program's collaboration with NASA and NPS to publish data acquired by the [Experimental Advanced Airborne Research Lidar \(EAARL\)](#) system. Optionally, visualize and download lidar data and CIR imagery in Google Earth.



Upcoming Events / Recent Links

- [View a dynamic calendar of upcoming events on the CLICK Bulletin Board.](#)
- [Report from the NLI Workshop \[screen quality\]](#)
- [Report from the NLI Workshop \[print quality\]](#)
- [Presentations from the NLI Workshop](#)

Mission

There has been increasing demand for research utilizing all information generated from lidar remote sensing data and not just bare earth digital elevation models (DEMs). While this technology has been a proven mapping tool, effective for generating bare earth DEMs, research on using the entire point cloud of this remote sensing data for scientific applications have been slowed by:

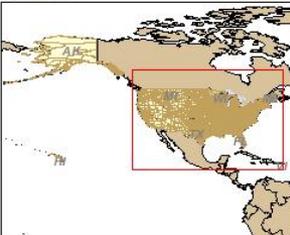
- The high cost of collecting lidar
- A steep learning curve on research and understanding involving utilizing the entire point cloud.

The goal of CLICK is to facilitate data access, user coordination and education of lidar remote sensing for scientific needs.



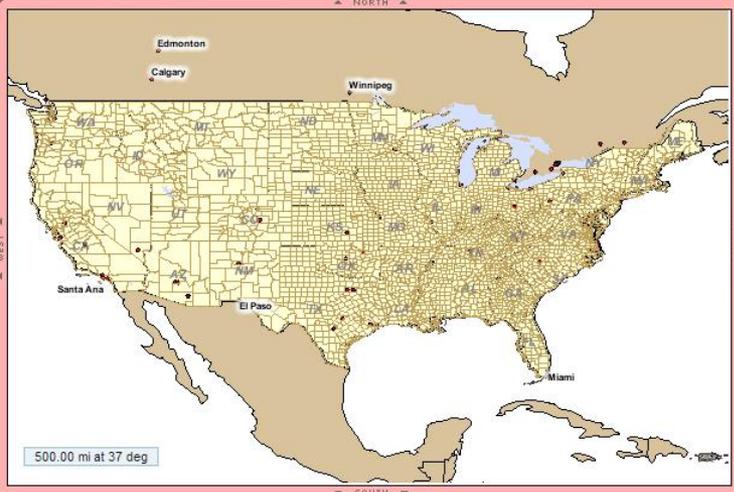
Search Project Information

Overview



Map

Size Navigation Quick Zoom Selection



Base Layers

- County Boundary
- Interstate Highways
- Highways
- Major Roads
- Streets
- States(1)
- States(2)
- Counties
- Major Cities
- Cities
- Misc Data

Overlay Layers

- USGS reference data
- FEMA Map Mod flood data
- JPL OnEarth satellite imagery
- NOAA hydrographic data

Zoom Controls

Select State

Bounding Box (decimal degrees)

Max Y: 57.0000
Min X: -126.3015 Max X: -64.6985
Min Y: 16.0000

Search Parameters

Also Search: NDOP projects Ramona imagery projects Ramona elevation projects

Search All Fields:

Search by Content Status

Progress:

Search by Location

Place Keyword: (state or county)

Search by Time Period

Fiscal Year:

Search by Agency

Lead Agency:

- BLM
- CENSUS
- FEMA
- FS
- NGA

Participating Agency:

- for use by FEMA Map Mod
- BLM
- CENSUS
- FEMA

Search by Elevation Details

Surface Mapped:

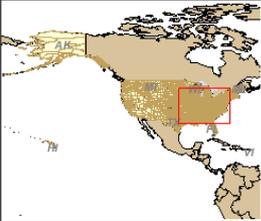
Horizontal Posting Range: (meters) From To

Vertical Accuracy Range: (meters) From To

Collection Method:

Search Results

Overview



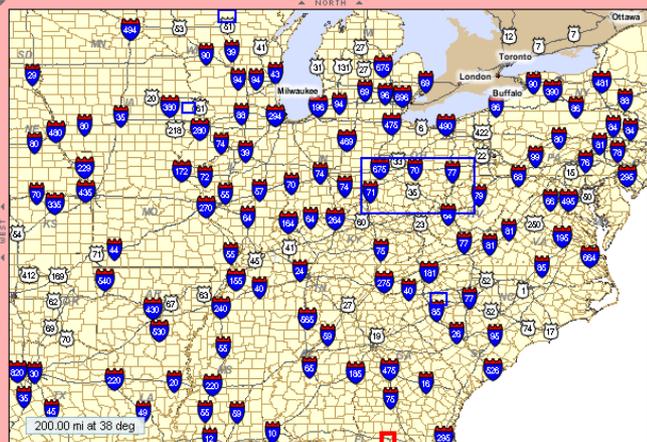
Zoom Controls

Select State

Bounding Box (decimal degrees)
 Max Y: 45.5500
 Min X: -97.6493 Max X: -74.4107
 Min Y: 30.0835
 Zoom Map

Map

Size Navigation Quick Zoom Selection



200.00 mi at 38 deg

Base Layers

- County Boundary
- Interstate Highways
- Highways
- Major Roads
- Streets
- States(1)
- States(2)
- Counties
- Major Cities
- Cities

Overlay Layers

- USGS reference data
- FEMA Map Mod flood data
- JPL OnEarth satellite imagery
- NOAA hydrographic data

Search Results
 Delete

Check: All, None

| Delete | View | Edit | Project Name | Source | Lead Agency | Fiscal Year | Find Overlapping Projects |
|--------------------------|------|------|---|------------------|---------------------------------------|-------------|---------------------------|
| <input type="checkbox"/> | | | Jefferson County, FL, lidar mapping | NDP | NOAA | 2007 | Find |
| <input type="checkbox"/> | | | DIGITAL ELEVATION MODEL (DEM) 2007, In , Lincoln County, WI,... | Ramona elevation | Lincoln County GIS | 2007 | Find |
| <input type="checkbox"/> | | | DIGITAL ELEVATION MODEL (DEM) from State of NC 2005 flight, ... | Ramona elevation | Rutherford County Gov | | Find |
| <input type="checkbox"/> | | | DIGITAL ELEVATION MODEL (DEM), In , Jones County, IA (Jones ... | Ramona elevation | Jones County | | Find |
| <input type="checkbox"/> | | | DIGITAL ELEVATION MODEL (DEM) DEM Created To support Ohio St... | Ramona elevation | Ohio Office of Information Technology | 2007 | Find |

Displaying 1 - 5 of 5 results View 10 results per page

[Upload Project Information](#) [Enter Project Information](#) [Search Project Information](#)

Export All Search Results

Brief Summary Full

CSV [download](#) [download](#) [download](#)

XML [download](#) [download](#) [download](#)

Last Updated: Monday, July 31, 2006 12:00 AM ET



For More Information

USGS CRSSP Home Page: *<http://crssp.usgs.gov>*

CIDR tool: *<http://cidr.cr.usgs.gov>*

NGA WARP tool: *<https://warp.nga.mil>*

Email: tcecere@usgs.gov

Phone: 703-648-5551



Documenting RS Requirements

“Provide a voice to the Department on RS requirements/issues from across DOI ...”



Methodology

- **Phased approach**
- **Primary Source Captured (Vetted)**
 - Congressional Mandates
 - Agency Directives
 - Charters
 - Laws
 - Agreements
 - Etc.
- **First round focused on “anecdotally” understanding the observations/measurements needed to “optimally” and/or “adequately” perform the task at hand.**

Phase 2 - NOAA Model

| US DEPARTMENT OF AGRICULTURE | | | | | | SPATIAL | | | | | | | | MEASUREMENTS | | | | | | TEMPORAL | | | | | | | | |
|---|---------------|------|---------------------|------------------------------|-----|---|---|-----------------|------------------|-------------------|-----------|------------------|-----------|------------------|-----------|------------------|-------------------|--------------------|---------------------|------------|-------------------|---------------|----------------------|------------------|-------------------------|-------------|--------------------|--|
| Observational Requirement | Obs. Req. Pri | Type | User | Time line | T/Q | Remote Sensors Used | Geo. Cover | Vert. Rnge. Low | Vert. Rnge. High | Vert. Rnge. Units | Vert. Res | Vert. Res. Units | Horz. Res | Horz. Res. Units | Mpng. Acc | Mpng. Acc. Units | Msmnt. Range. Low | Msmnt. Range. High | Msmnt. Range. Units | Msmnt. Acc | Msmnt. Acc. Units | Msmnt. Precsn | Msmnt. Precsn. Units | Smplng. Interval | Smplng. Interval. Units | Data Latncy | Data Latncy. Units | |
| FOOD SUPPLY, CROP CONDITIONS, USDA PROGRAM SUPPORT (General Parameters) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Conservation Practices | 1 | P | NRCS | FY09 FY10 FY12 FY13 | T | Aerial Imagery, Landsat | CONUS, AK, HI | Surface | | | Surface | | 0.5 | m | 0.5 | m | | | | | | | | | 8 | days | | |
| Crop Conditions | 1 | P | NASS, FAS, FSA, RMA | FY09 FY10 FY12 FY13 | T | AWIFS, MODIS, Landsat, SPOTveg, AVHRR | CONUS, AK, HI | | | | | | 30 | m | | | | | | | | | | | <10 | days | | |
| Global Crop Conditions | 1 | P | NASS, FAS, FSA, RMA | FY09 FY10 FY12 FY13 | T | AWIFS, MODIS, Landsat, SPOTveg, AVHRR | Global | | | | | | 30 | m | | | | | | | | | | | <10 | days | | |
| Cropland Data Layer: US | 1 | P | NASS | FY09 FY10 FY12 FY13 | T | LANDSAT | Midwest/Mississippi Delta/Northern Plains | | | | | | 30 | m | | | | | | | | | | | <10 | days | | |
| Crop Growth Stage | 1 | P | NASS | FY09 FY10 FY12 FY13 | T | LANDSAT - 5 | Midwest/Mississippi Delta/Northern Plains | | | | | | 30 | m | | | | | | | | | | | <10 | days | | |
| Crop Mapping (includes Field Crop Acreage, Density, Spacing, Yield, and Condition/Stress) | 1 | P | RMA | FY09 FY10 FY12 FY13 | T | LANDSAT, Commercial (1-5 meter), Aerial - 4 | Global | | | | | | 30 | m | | | | | | | | | | | <10 | days | | |
| Detect Fertilization by Crop Region | 1 | P | FAS | FY09 FY10 FY12 FY13 | T | | Global | | | | | | 1 to 30 | m | | | | | | | | | | | Event | | | |
| Detect Field Preparation by Crop Region | 1 | P | FAS | FY09 FY10 FY12 | T | | Global | | | | | | 1 to 30 | m | | | | | | | | | | | Event | | | |



Phase 3 – Tie to “Observables”

NOAA
example –
observations
tied to CORL
- GCMD

| | | | | |
|---|---|--------------|------------------------------|------------------------------|
| EC-COR - Wave Height | Ocean Waves: Height | Hydrosphere | Water Quality/WaterChemistry | Water Temperature |
| EC-COR - Wind Speed: Surface, Ocean | Sea Surface Winds: Speed | Hydrosphere | Water Quality/WaterChemistry | Water Temperature |
| EC-COR - pH | pH: Ocean | Land Surface | Frozen Ground | Permafrost |
| EC-COR: Total Alkalinity | Total Alkalinity | Land Surface | Geomorphology | Fluvial Landforms/Processes |
| EC-ERP_AOML - Acoustic backscatter in water column (AOML) | Acoustic backscatter in water column (AOML) | Land Surface | Land Temperature | Land Skin Temperature |
| EC-ERP_AOML - Air Temperature: Surface, site (AOML) | Air Temperature: Surface, site (AOML) | Land Surface | Land Temperature | Land Skin Temperature |
| EC-ERP_AOML - Atmospheric Pressure: Sea Level (AOML) | Atmospheric Pressure: Sea Level (AOML) | Land Surface | Land Temperature | Land Skin Temperature |
| EC-ERP_AOML - Bathymetry (AOML) | Bathymetry (AOML) | Land Surface | Land Temperature | Land Skin Temperature |
| EC-ERP_AOML - Benthic Habitat: Aquatic Vegetation (AOML) | Benthic Habitat: Aquatic Vegetation (AOML) | Land Surface | Land Temperature | Road Temperature: Subsurface |
| EC-ERP_AOML - Benthic Habitat: Characteristics (AOML) | Benthic Habitat: Characteristics (AOML) | Land Surface | Land Temperature | Road Temperature: Surface |
| EC-ERP_AOML - Benthic Habitat: Infauna (AOML) | Benthic Habitat: Infauna (AOML) | Land Surface | Land Use/Land Cover | Biomass: Vegetation |
| EC-ERP_AOML - Benthic Habitat: Macrofauna (AOML) | Benthic Habitat: Macrofauna (AOML) | Land Surface | Land Use/Land Cover | Biomass: Vegetation |
| EC-ERP_AOML - Benthic Habitat: Type (AOML) | Benthic Habitat: Type (AOML) | Land Surface | Land Use/Land Cover | Land Cover |
| EC-ERP_AOML - Biodiversity (AOML) | Biodiversity (AOML) | Land Surface | Land Use/Land Cover | Land Cover |
| EC-ERP_AOML - Chlorophyll: Profiles, site (AOML) | Chlorophyll: Profiles, site (AOML) | Land Surface | Land Use/Land Cover | Land Cover |
| EC-ERP_AOML - Chlorophyll: Surface, site (AOML) | Chlorophyll: Surface, site (AOML) | Land Surface | Land Use/Land Cover | Land Cover |
| EC-ERP_AOML - Contaminant: Sediment (AOML) | Contaminant: Sediment (AOML) | Land Surface | Land Use/Land Cover | Land Cover |
| EC-ERP_AOML - Contaminant: Water (AOML) | Contaminant: Water (AOML) | Land Surface | Land Use/Land Cover | Land Cover |
| EC-ERP_AOML - Current: Direction (AOML) | Current: Direction (AOML) | Land Surface | Land Use/Land Cover | Land Cover |
| EC-ERP_AOML - Current: Speed (AOML) | Current: Speed (AOML) | Land Surface | Land Use/Land Cover | Land Cover |
| EC-ERP_AOML - Currents: Lagrangian (AOML) | Currents: Lagrangian (AOML) | Land Surface | Land Use/Land Cover | Land Cover |
| EC-ERP_AOML - Dissolved Gases: Oxygen (AOML) | Dissolved Gases: Oxygen (AOML) | Land Surface | Land Use/Land Cover | Land Resources |
| EC-ERP_AOML - Nutrients: Profiles (AOML) | Nutrients: Profiles (AOML) | Land Surface | Land Use/Land Cover | Land Use Classes |
| EC-ERP_AOML - Nutrients: Surface (AOML) | Nutrients: Surface (AOML) | Land Surface | Land Use/Land Cover | Land Use Classes |
| EC-ERP_AOML - Ocean Color: Coastal (AOML) | Ocean Color: Coastal (AOML) | Land Surface | Land Use/Land Cover | Plant Litter Characteristics |
| EC-ERP_AOML - Ocean Color: Offshore (AOML) | Ocean Color: Offshore (AOML) | Land Surface | Land Use/Land Cover | Vegetation Cover |
| EC-ERP_AOML - Ocean Optical Properties: Backscatter (AOML) | Ocean Optical Properties: Backscatter (AOML) | Land Surface | Land Use/Land Cover | Vegetation Cover |
| EC-ERP_AOML - Ocean Optical Properties: Fluorescence (AOML) | Ocean Optical Properties: Fluorescence (AOML) | Land Surface | Land Use/Land Cover | Vegetation Cover |
| EC-ERP_AOML - Ocean Optical Properties: Light Extinction (AOML) | Ocean Optical Properties: Light Extinction (AOML) | Land Surface | Land Use/Land Cover | Vegetation Cover |
| EC-ERP_AOML - Ocean Optical Properties: Particulate Absorption (AOML) | Ocean Optical Properties: Particulate Absorption (AOML) | Land Surface | Land Use/Land Cover | Vegetation Fraction: Green |
| EC-ERP_AOML - Ocean Temperature: Profiles, site (AOML) | Ocean Temperature: Profiles, site (AOML) | Land Surface | Land Use/Land Cover | Vegetation Fraction: Green |



FY09 Actions (for discussion)

- Document activities within DOI Bureaus that can utilize remotely sensed assets (including in situ)
 - Understand what needs to be observed and to what scale
 - Understand what needs to be differentiated
 - Document the successes and difficulties of using RS today
- Document current RS methodolog(y/ies) being utilized for each activity
 - Is it working?
 - Where are the gaps?
 - Efficiencies to be gained via RS?

Future Land Imaging Systems

- Data continuity concerns
- Landsat Data Continuity Mission (LDCM)
- Participation with other future missions
 - Civil Missions
 - Defense Missions
 - International Missions