



# **Land Remote Sensing Data Access Workshop**

**EarthExplorer**

**Use Cases**

**March 13-14, 2012**

**USGS National Training Center, Building 53, Denver Federal Center, Denver, CO**

**U.S. Department of the Interior**

**U.S. Geological Survey**

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# EarthExplorer Use Cases

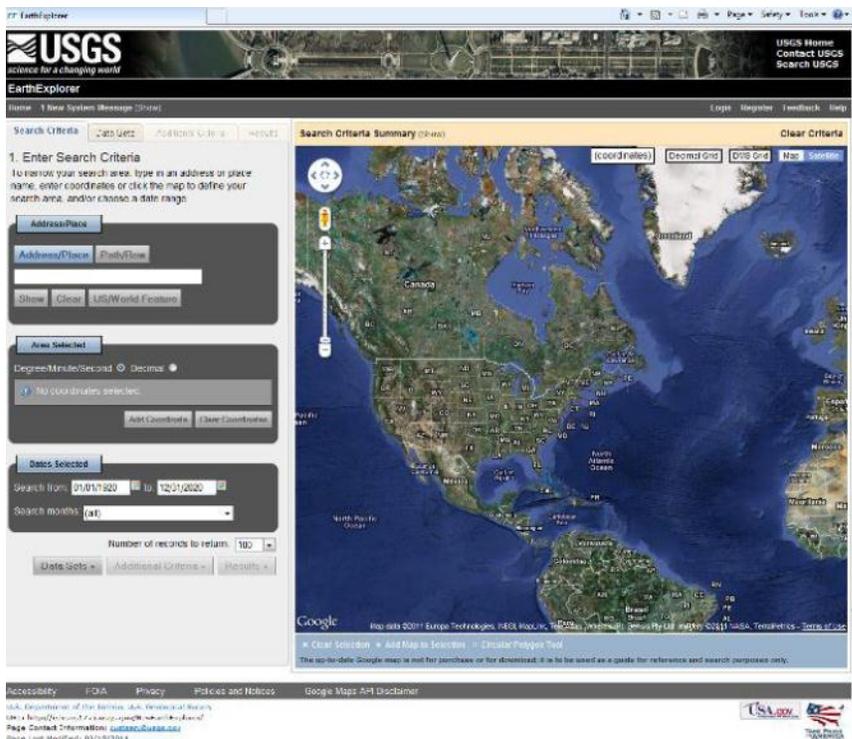
## EarthExplorer Use Case 1: Register for an Account and View Profile Information

1.1. Open a browser window and navigate to the EarthExplorer site: earthexplorer.usgs.gov

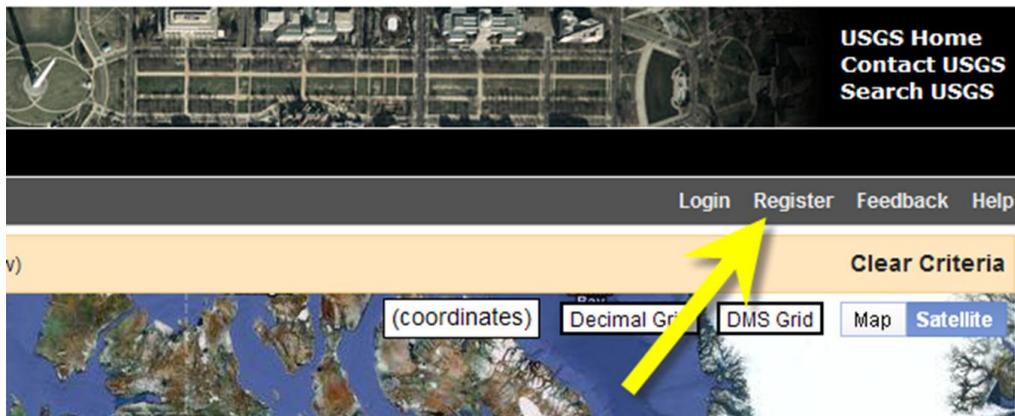


Current supported browsers include:

- Internet Explorer (7.x, 8.x, 9.x).
- Firefox (3.x, 4.x).
- Chrome (10.x).
- Opera (10.x).
- Safari (5.x).



1.2. To register, select the “Register” menu item from EarthExplorer menu.



- The USGS EarthExplorer system requires you to register to download data.
- The information gathered from the registration process is not distributed to other organizations and is only used to determine trends in data usage and for certain orders.
- The same login can be used for the USGS Global Visualization Viewer (GloVis) and USGS Hazards Data Distribution System (HDDS) systems.
- The Registration process requires you to create a username and password, select a secret question, and type a secret answer. Once registered with EarthExplorer, only the “Login” process is required.

**1. Login** 2. User Affiliation 3. Address 4. Confirmation

The USGS registration service allows you to register and save information that can be used to access a specific USGS site or to place orders for USGS products. Additional features, such as the ability to save search information, may also be available to registered users depending on the site accessed.

To register, please create a user name and password. The information you provide will be secure and not shared with others. Review our [privacy policy](#).

**Login Information**

*Password must be between 8 and 16 characters long, and contain at least one alphabetic and numeric character.*

**Username:**  You may wish to use your email address for your user name.

**Password:**

**Confirm Password:**

**Secret Question:**

**Secret Answer:**

**Note: All fields are required.**



Passwords must be 8 characters long, must contain at least 1 alphabetic character and 1 numeric character, and must not be the same as the user name.

1.3. Select a secret question when registering. If you forget your password, answering the secret question allows you to change your password.



Select a question that can be answered easily but is difficult for others to guess.

Secret questions should be treated the same as any other confidential information and should never be shared.

1.4. Select continue on this page to enter your user affiliation.



The User Affiliation/Data Usage Information page allows you to enter your affiliation and identify uses of the data. This information is used to gather statistics on how the data is used and what organizations are using this data.

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[1. Login](#) **2. User Affiliation** 3. Address 4. Confirmation

Enter your user affiliation and data usage information. This information helps us do a better job of addressing your needs.

**User Affiliation/Data Usage Information**

User Affiliation (Should reflect your eligibility to receive data, not your home organization)

\*Affiliation:

Data Usage (used to determine how products are being used and what to offer in the future):

\*Primary Data

Usage:

Secondary Usage (Please select all that apply):

<input type="checkbox"/> Agriculture	<input type="checkbox"/> Energy	<input type="checkbox"/> Insurance	<input type="checkbox"/> Socioeconomics
<input type="checkbox"/> Climate Change	<input type="checkbox"/> Fire	<input type="checkbox"/> International Land Issues	<input type="checkbox"/> Telecommunications
<input type="checkbox"/> Cryosphere	<input type="checkbox"/> Forestry	<input type="checkbox"/> Land Change	<input type="checkbox"/> Terrestrial Monitoring
<input type="checkbox"/> Ecosystem Studies	<input type="checkbox"/> Geology	<input type="checkbox"/> National Security	<input type="checkbox"/> Visualization
<input type="checkbox"/> Education	<input type="checkbox"/> Human Ecology	<input type="checkbox"/> Natural Resources	<input type="checkbox"/> Water
<input type="checkbox"/> Emergency Response	<input type="checkbox"/> Human Health	<input type="checkbox"/> Planning	

Other Use:

\* = Required Field

1.5. After you have entered your affiliation and data use, select continue.

1.6. Type the address information in the Address page.



The address information is used only for contact information. Some products require shipping information to deliver products. Address information is not shared with any commercial or other government agencies.

[1. Login](#) [2. User Affiliation](#) **3. Address** 4. Confirmation

**Steps for entering Address information (We do not share any information you enter here!)**

Enter the address where we can contact you.  
Provide Billing and Shipping addresses only if different from your Contact Address.  
Click the "Submit Address Information" button when you are done.

Contact [Customer Services](#) if you are a business partner or if you qualify for special ordering options.

The image shows a web form titled "Contact Information". It contains several input fields with red asterisks indicating required fields: \*First Name, \*Last Name, \*Address 1, \*Country, \*City, \*Zip/Postal Code, \*E-mail, and \*Telephone. There are also optional fields for Company/Organization, Address 2, Alternative E-mail, and Fax. A dropdown menu for Country is labeled "Select a country". Examples are provided for State/Province (SD, South Dakota, sd, south dakota) and Telephone (XXXXXXXXXX, XXX XXX XXXX, XXX-XXX-XXXX). At the bottom of the form are three buttons: Cancel, Reset, and Continue. A legend at the bottom left states "\* = Required Field".

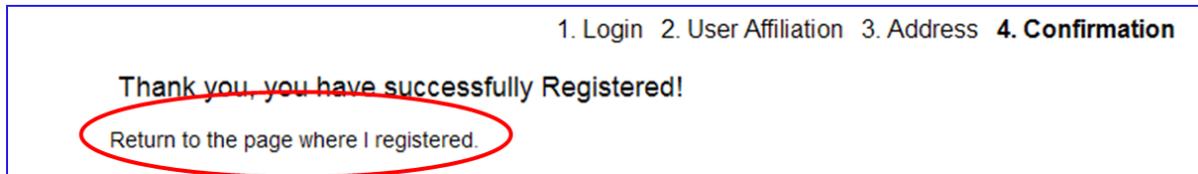


The Address page requires you to type the following values:

- First Name (Required) – First name of the user.
- Last Name (Required) – Last name of the user.
- Company/Organization – affiliated company or organization.
- Address 1 (Required) – Address line 1.

- Address 2 – Address line 2.
- Country (Required) – Country you are from.
- City (Required) – City where you reside.
- State/Province (Required) – State/province where you reside.
- Zip/Postal Code (Required) – Zip code or postal code.
- E-mail (Required) – Email address.
- Alternative E-mail – Additional email address.
- Telephone (Required) – Primary telephone number.
- Fax – Fax number.

1.7. The Confirmation page displays after successful registration. Click “Return to the page where I registered” to return to the page where you started the registration process.

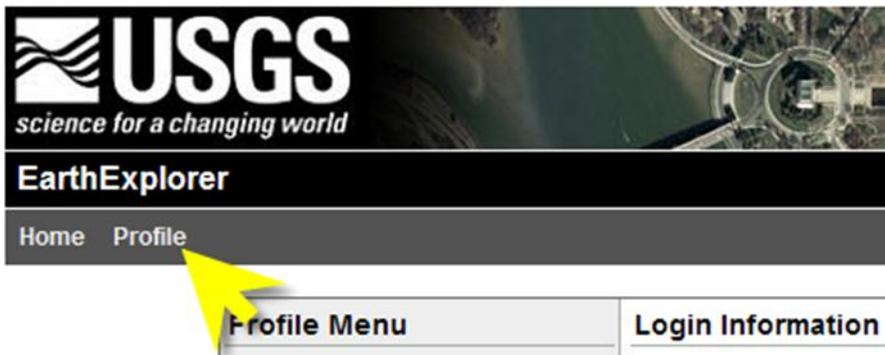


- After registering for the first time, you are automatically logged in to EarthExplorer.
- A registered user can use all of EarthExplorer's features, including saving search criteria, downloading data, and accessing subscription services.
- EarthExplorer includes a “forgot password” link for users to answer the secret question and change their password instantly.



Note your username and password as for future reference.

- Once logged in, the user can click the “profile” button to:
  - Change Password – View and change a password.
  - Edit Secret Question – View and change a secret question.
  - Contact Information – View and modify contact information.
  - Billing Address – View and modify billing information.
  - Shipping Address – View and modify shipping information.
  - User Affiliation – View and modify your affiliation.

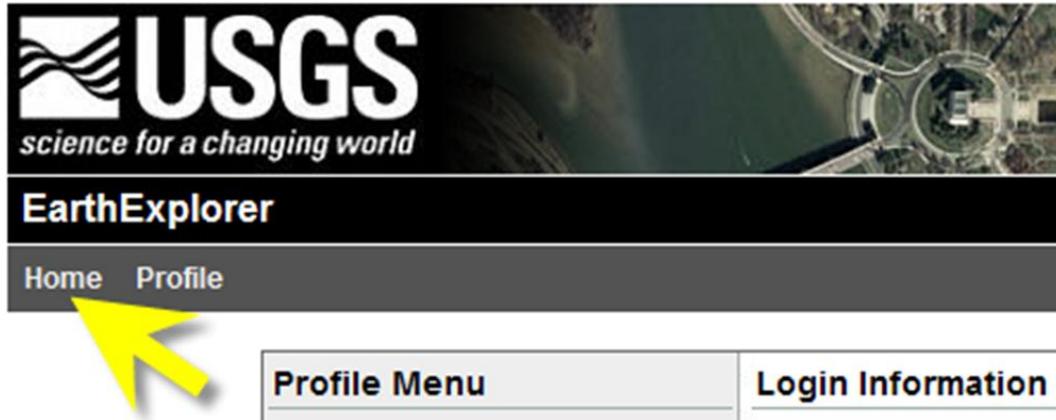


EarthExplorer - Devsys

Home Profile Logout Feedback Help

Profile Menu	Login Information		
<ul style="list-style-type: none"> <li>• Profile Home</li> <li>• Password</li> <li>• Secret Question</li> <li>• Contact Address</li> <li>• Billing Address</li> <li>• Shipping Address</li> <li>• User Affiliation</li> <li>• Interface Options               <ul style="list-style-type: none"> <li>• Data Sets</li> <li>• Sort Order</li> <li>• Metadata View</li> </ul> </li> <li>• Saved Criteria</li> <li>• Standing Request</li> <li>• Order Tracking</li> </ul>	Username: <input type="text"/> Password: <input type="password"/> <input type="button" value="Change Password"/>		
	<b>Secret Question Information</b> Secret Question: What is your school mascot? Secret Answer: <input type="password"/> <input type="button" value="Edit"/>		
	<b>Contact Address Information</b> First Name: <input type="text"/> Last Name: <input type="text"/> Company: <input type="text"/> Address 1: <input type="text"/> Address 2: <input type="text"/> City: <input type="text"/> State/Province: <input type="text"/> Postal Code: <input type="text"/> Country: <input type="text"/> Email: <input type="text"/> Alt. Email: <input type="text"/> Telephone: <input type="text"/> Fax: <input type="text"/> <input type="button" value="Edit"/>	<b>Billing Address Information</b> First Name: <input type="text"/> Last Name: <input type="text"/> Company: <input type="text"/> Address 1: <input type="text"/> Address 2: <input type="text"/> City: <input type="text"/> State/Province: <input type="text"/> Postal Code: <input type="text"/> Country: <input type="text"/> Email: <input type="text"/> Alt. Email: <input type="text"/> Telephone: <input type="text"/> Fax: <input type="text"/> <input type="button" value="Edit"/>	<b>Shipping Address Information</b> First Name: <input type="text"/> Last Name: <input type="text"/> Company: <input type="text"/> Address 1: <input type="text"/> Address 2: <input type="text"/> City: <input type="text"/> State/Province: <input type="text"/> Postal Code: <input type="text"/> Country: <input type="text"/> Email: <input type="text"/> Alt. Email: <input type="text"/> Telephone: <input type="text"/> Fax: <input type="text"/> <input type="button" value="Edit"/>
	<b>User Affiliation / Data Usage Information</b> Affiliation Name: US Federal Government - Executive Branch Department Name: Department of the Interior (DOI) Agency Name: Geological Survey (USGS) Primary Usage: <input type="text"/> Secondary Usages: None selected. <input type="button" value="Edit"/>		

This concludes EarthExplorer Use Case 1. Click the “home” button to begin Use Case 2.



## EarthExplorer Use Case 2: Obtain ASTER L1B and Landsat 7 data over the U.S. for a time and place.



Both data sets are free and open to end-users.

2.1. Begin on the “Search Criteria” tab. Here we will select the geographical and temporal constraints for our search.

The screenshot displays the EarthExplorer Search Criteria interface. On the left, the 'Search Criteria' tab is active, showing a form for entering search parameters. The form includes sections for 'Enter Search Criteria', 'Coordinates', and 'Date Range'. The 'Date Range' section shows a search from 01/01/1920 to 12/31/2020. The 'Number of records to return' is set to 100. On the right, the 'Search Criteria Summary' tab is active, displaying a satellite map of the United States and surrounding regions. The map shows the search area with a bounding box and coordinates (61°28'57" N, 179°48'14" E). The map includes labels for various countries and bodies of water, such as Canada, United States, Mexico, North Pacific Ocean, and North Atlantic Ocean. The Google logo is visible in the bottom left corner of the map area.



EarthExplorer allows for many ways to select an area. A user can click once to select a point, twice to select a line, or more times to define a square, rectangle or polygon. There are also options to define a circle, upload a Shapefile, or upload a KML file (shown below). For this exercise however, we will simply select a square around Denver.

The screenshot displays the Earth Explorer search interface. On the left, the 'Search Criteria' panel is active, showing the '1. Enter Search Criteria' section. It includes a text input field for 'Address/Place', 'Path/Row', 'Feature', or 'Circle'. Below this are tabs for 'Coordinates', 'Shapefile', and 'KML', with 'Coordinates' selected. Under 'Coordinates', there are options for 'Degree/Minute/Second' and 'Decimal'. A message states 'No coordinates selected.' Below this are buttons for 'Use Map', 'Add Coordinate', and 'Clear Coordinates'. The 'Date Range' section shows a search from '01/01/1920' to '12/31/2020' with a dropdown for 'Search months: (all)'. At the bottom, there is a 'Number of records to return: 100' dropdown and buttons for 'Data Sets >', 'Additional Criteria >', and 'Results >'.

On the right, the 'Search Criteria Summary (Show)' panel is visible, showing a map of North America. A yellow arrow points to a search area around Denver, Colorado. The map displays coordinates (72° 29' 20" N, 047° 49' 58" W) and a search area defined by a square. A 'Clear Criteria' button is located in the top right corner of the map panel. The map also shows various geographical features like the Gulf of Alaska, Gulf of Mexico, and North Atlantic Ocean.

2.2. Zoom in to the Denver Colorado area. Once you have the city in the view window, click once in the upper left corner to set a point. Notice in the Search Criteria section that the point has been added. If you would like to delete the point, click the red X. Continue clicking until you have selected an area just larger than the city.

The screenshot displays a web application interface for defining search criteria. On the left, the 'Search Criteria' panel is titled '1. Enter Search Criteria'. It includes instructions: 'To narrow your search area: type in an address or place name, enter coordinates or click the map to define your search area (for advanced map tools, view the [help documentation](#)), and/or choose a date range.' Below this are input fields for 'Address/Place', 'Path/Row', 'Feature', and 'Circle', with 'Show' and 'Clear' buttons. The 'Coordinates' section has tabs for 'Shapfile' and 'KML', and radio buttons for 'Degree/Minute/Second' (selected) and 'Decimal'. A list of four coordinates is shown, each with a red 'X' delete button. A yellow arrow points to the first coordinate: '1. Lat: 40° 02' 53" N, Lon: 105° 18' 57" W'. Below the list are 'Use Map', 'Add Coordinate', and 'Clear Coordinates' buttons. The 'Date Range' section has 'Search from: 01/01/1920' and 'to: 12/31/2020' date boxes, a 'Search months: (all)' dropdown, and a 'Number of records to return: 100' dropdown. At the bottom are 'Data Sets >', 'Additional Criteria >', and 'Results >' buttons. On the right, the 'Search Criteria Summary (Show)' panel shows a map of the Denver area with a red search area. A yellow arrow points to a red pin on the map. The map header shows coordinates '(39° 36' 41" N, 105° 33' 57" W)' and buttons for 'Options', 'Overlays', 'Map', and 'Satellite'. The map footer includes 'Map data ©2012 Google, Imagery ©2012 TerraMetrics' and 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.'

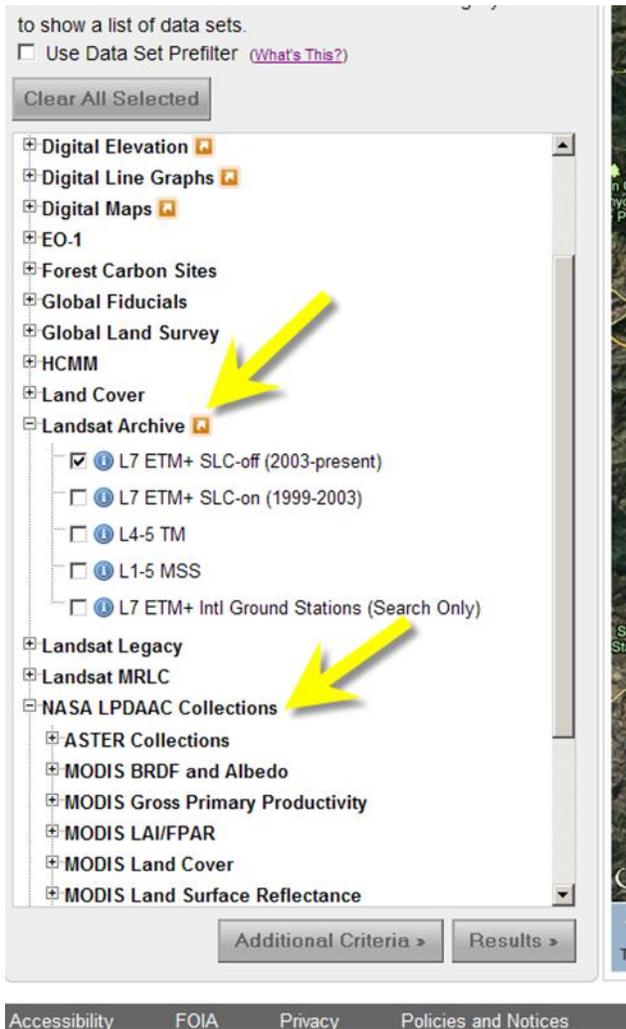
2.3. Now you should have a set of 4 coordinates listed. If you need to adjust the area, click on any of the points and drag it to a new location.

2.4. In the “Date Range” area, click on the date box and change them to search for data from July 1 2010 to July 31 2010.

The screenshot displays a web-based search interface. On the left is a 'Search Criteria' form with several sections: 'Enter Search Criteria' with a text input and 'Show'/'Clear' buttons; 'Coordinates' with a list of four coordinate pairs and 'Use Map', 'Add Coordinate', and 'Clear Coordinates' buttons; and 'Date Range' with a date range from 07/01/2010 to 07/31/2010, a 'Search months' dropdown, and a 'Number of records to return' dropdown set to 100. At the bottom of the form are three tabs: 'Data Sets', 'Additional Criteria', and 'Results'. On the right is a 'Search Criteria Summary' map showing a red shaded area over a geographic region, with various city names and landmarks visible. The map includes a search bar at the top with coordinates (39° 10' 50" N, 105° 56' 52" W) and buttons for 'Options', 'Overlays', 'Map', and 'Satellite'. A Google logo and a disclaimer are at the bottom of the map.

2.5. Once you have finished entering the date range, click the 'Data Sets' tab at the top or bottom of the 'Search Criteria' form.

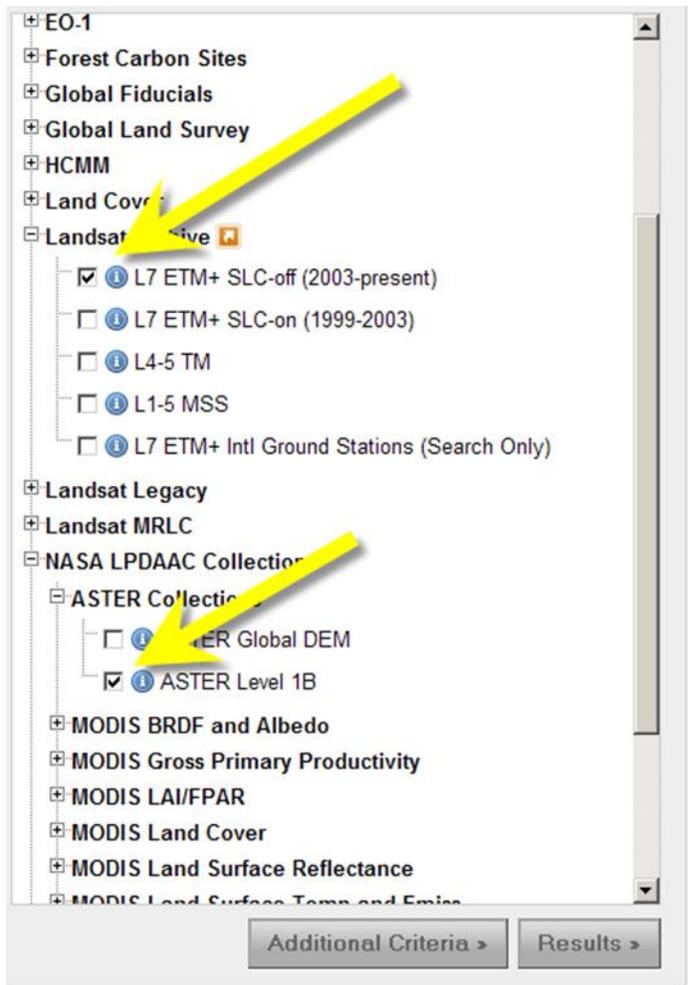
2.6. The “Data Sets” page shows all of the available data sets to search. The page uses a tree structure to organize the data. Click on the plus signs next to Landsat Archive and NASA LP DAAC Collections.



2.7. Check in the box next to the L7 ETM+ SLC-off (2003-PRESENT) Product.

2.8. Expand the ASTER Collections section.

2.9. Place a check in the box next to ASTER Level 1B and click “OK” in the resulting pop up box. This message gives more information on the ASTER SWIR detector anomaly.



2.10. Select the “Additional Criteria” button.



“Additional Criteria” are optional. This section allows you to select each data set you defined earlier, and add more filters to your results. These options are different for each data set.

2.11. Click the drop down under dataset and note the available options. For this exercise we will not select any of these.

2.12. Click the “Results” tab.

Search Criteria Data Sets **Additional Criteria** Results

### 3. Additional Criteria (Optional)

If you have more than one data set selected, use the dropdown to select the additional criteria for each data set.

**Criteria Forms**

Data Set:  
ASTER Level 1B  
L7 ETM+ SLC-off (2003-present)  
ASTER Level 1B

**Entity ID**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Cloud Cover**

All  
Less than 10%  
Less than 20%  
Less than 30%  
Less than 40%

**Day Night**

All (Day, Night, or Both)

**WRS Row**

\_\_\_\_\_ to \_\_\_\_\_

**WRS Path**

\_\_\_\_\_ to \_\_\_\_\_

**VNIR1 Mode**

All

**SWIR\_MODE**

All

**VNIR2 Mode**

All

**TIR Mode**

\_\_\_\_\_

Reset All Criteria Results >



The “Results” tab shows the result controls, the data sets and the granules matching the search.

### 2.13. Click on “Show Result Controls”

The screenshot displays a web application interface with two main panels. The left panel, titled "4. Search Results", contains a "Show Result Controls" dropdown menu with a yellow arrow pointing to it. Below this, there is a "Data Set" section showing "L7 ETM+ SLC-off (2003-present)" and an "Export Metadata" button. A list of search results is shown, with the first four items visible. Each item includes a thumbnail, an Entity ID, Acquisition Date, Path, and Row number. The right panel, titled "Search Criteria Summary (Show)", displays a Google Map of the Denver area with a red search area. The map includes a search bar with coordinates [39° 32' 06" N, 105° 58' 40" W] and buttons for "Options", "Overlays", "Map", and "Satellite".

Entity ID	Acquisition Date	Path	Row
LE70330322010189EDC00	08-JUL-10	33	32
LE70330322010189EDC00	08-JUL-10	33	33
LE70330322010189EDC00	15-JUL-10	34	33
LE70330322010189EDC00	15-JUL-10	34	32
LE70330322010205EDC00	24-JUL-10		

2.14. Check the box next to “Show All Browse”

The screenshot shows a web interface with tabs for 'Search Criteria', 'Data Sets', 'Additional Criteria', and 'Results'. The 'Results' tab is active, displaying '4. Search Results'. Below the title is a paragraph: 'If you selected more than one data set to search, use the dropdown to see the search results for each specific data set.' A 'Hide Result Controls' section contains four checkboxes: 'Show All Footprints' (unchecked), 'Show All Browse' (checked), 'Add All Results from Page to Bulk Download' (unchecked), and 'Add All Results from Page to Order' (unchecked). A 'Browse Opacity: 100%' slider is below these. A 'Data Set:' dropdown menu is set to 'L7 ETM+ SLC-off (2003-present)', with an 'Export Metadata' button to its right. A list of search results follows, each with a thumbnail, Entity ID, Acquisition Date, Path, and Row number, and a set of action icons.

4. Search Results

If you selected more than one data set to search, use the dropdown to see the search results for each specific data set.

Hide Result Controls

- Show All Footprints
- Show All Browse
- Add All Results from Page to Bulk Download
- Add All Results from Page to Order

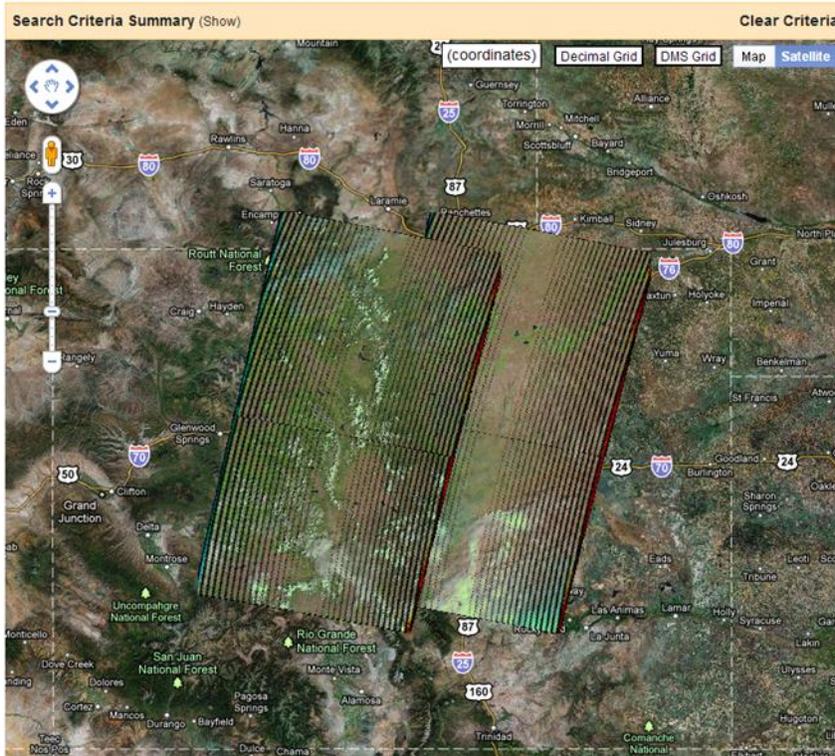
Browse Opacity: 100%

Data Set: L7 ETM+ SLC-off (2003-present) Export Metadata

4		Entity ID: LE70340332010196EDC00 Acquisition Date: 15-JUL-10 Path: 34 Row: 33	
5		Entity ID: LE70330332010205EDC00 Acquisition Date: 24-JUL-10 Path: 33 Row: 33	
6		Entity ID: LE70330322010205EDC00 Acquisition Date: 24-JUL-10 Path: 33 Row: 32	
		Entity ID: LE70340332010212EDC00 Acquisition Date: 31-JUL-10 Path: 34	



The map display now updates with the browse images over-layed on the map. This can be done with the “Show All Footprints” box as well, but only for one product at a time.





Each search result record includes a thumbnail image, textual information on each scene, links to view browse and download data, and other visualization controls. These controls can be different for each product.



Show Footprint



Add to Bulk Downloads



Browse Overlay



Order Scene



Show Metadata and Browse



Exclude Scene



Download Options



- USGS products have 3 delivery options. The first is download, the second is bulk download, and the third is order.
- LP DAAC products currently only offer the download option.

2.15. Click the drop down box at the top of the results to switch between products.



Make sure the Landsat product is selected.

Add Results From Page to Order

Browse Opacity: 100%

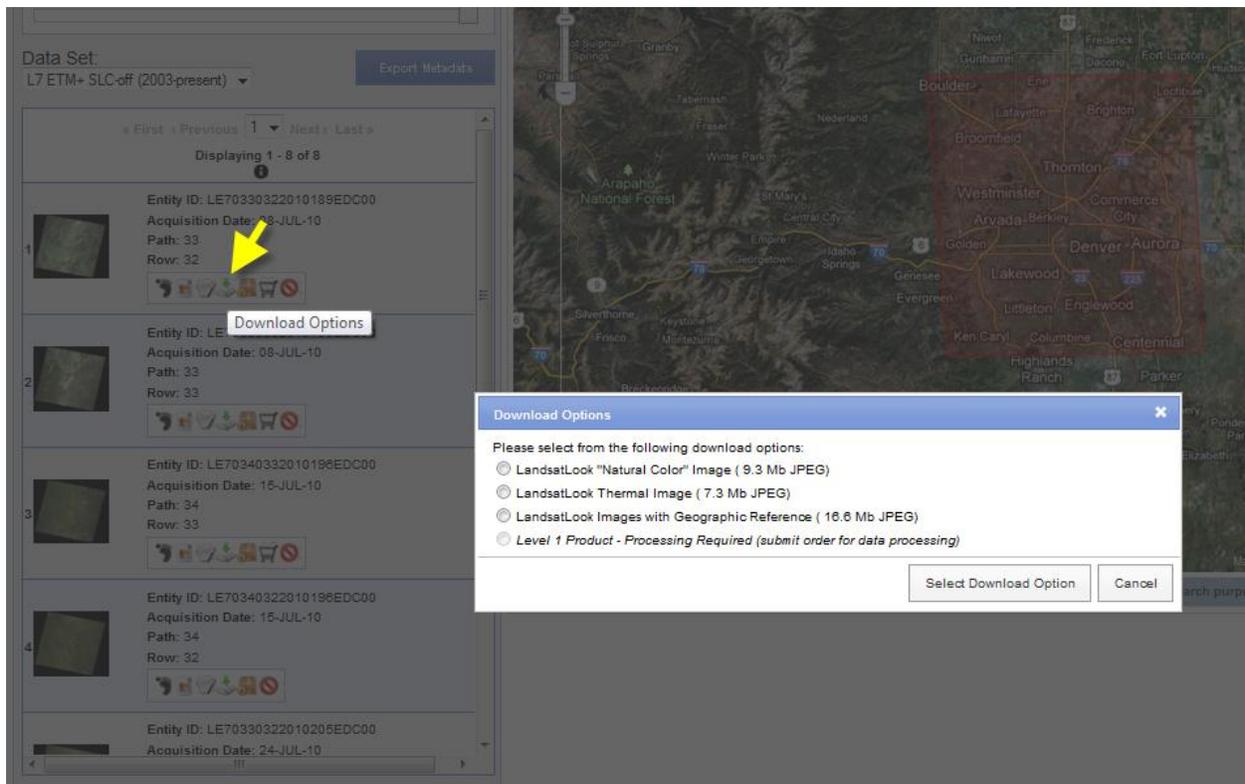
Data Set: L7 ETM+ SLC-off (2003-present) Export Metadata

« First « Previous 1 « Next » Last »

Displaying 1 - 8 of 8

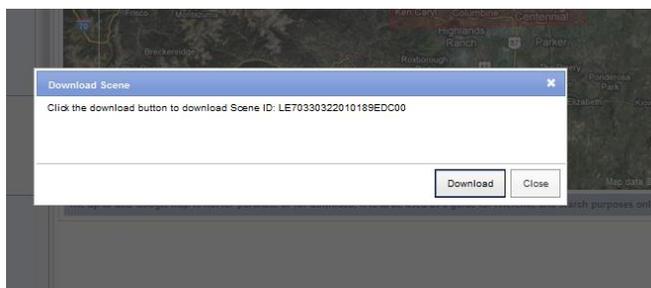
1		Entity ID: LE70330322010189EDC00 Acquisition Date: 08-JUL-10 Path: 33 Row: 32
2		Entity ID: LE70330332010189EDC00 Acquisition Date: 08-JUL-10 Path: 33 Row: 33
3		Entity ID: LE70340332010198EDC00 Acquisition Date: 15-JUL-10 Path: 34 Row: 33
4		Entity ID: LE70340322010198EDC00 Acquisition Date: 15-JUL-10 Path: 34 Row: 32
		Entity ID: LE70330322010205EDC00 Acquisition Date: 24-JUL-10

2.16. Click on the “Download Options” button.



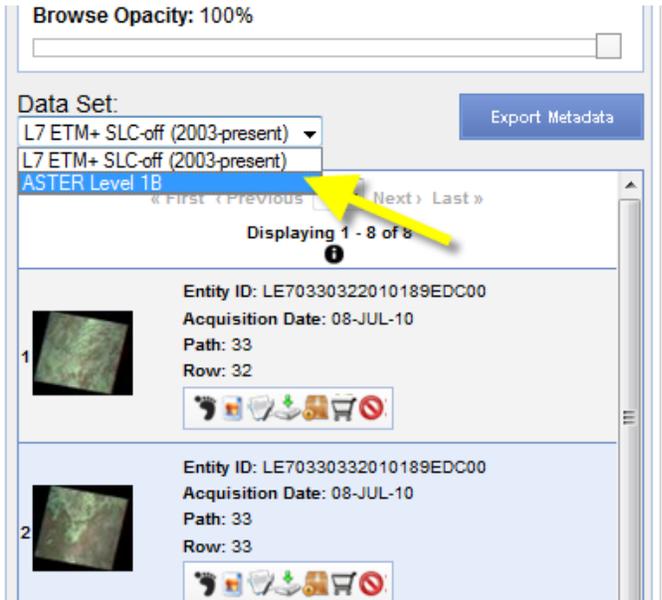
2.17. For the Landsat product we selected there are 4 data options. For this exercise click on the first option LandsatLook “Natural Color” Image.

2.18. Click the “Select Download Option” button. You will then be presented with a box to download the data.

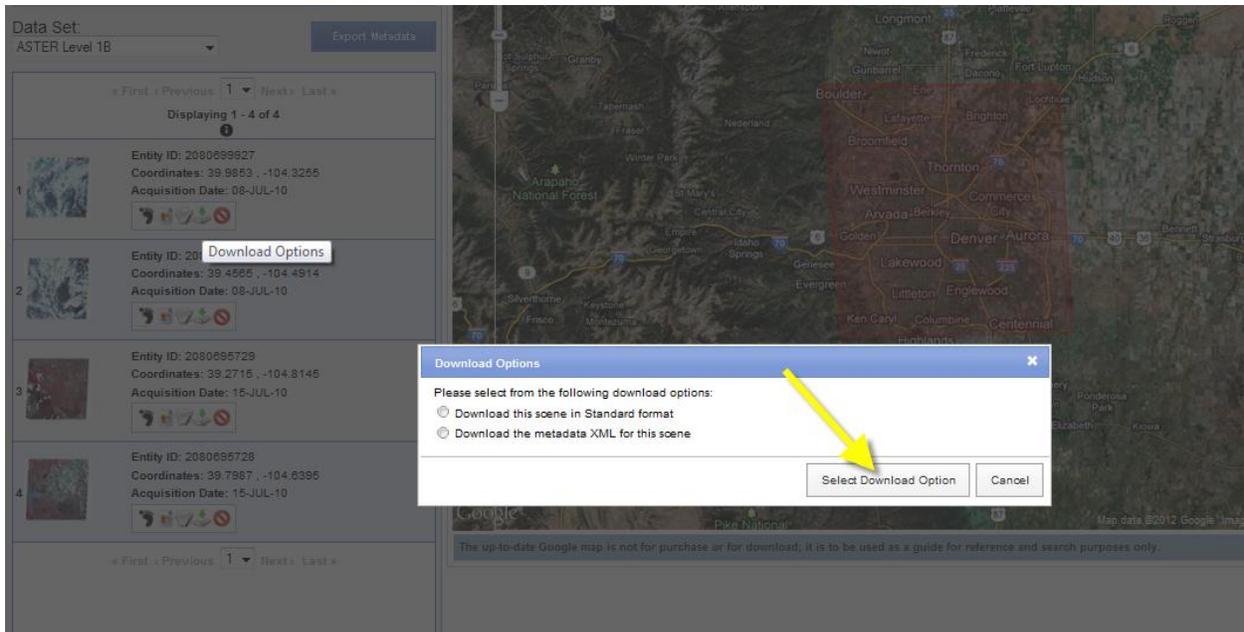


2.19. Click the “Close” button to return to the Search Results tab.

Select the ASTER Level 1B data set.



2.20. Select a scene and click the “Download Options” icon.

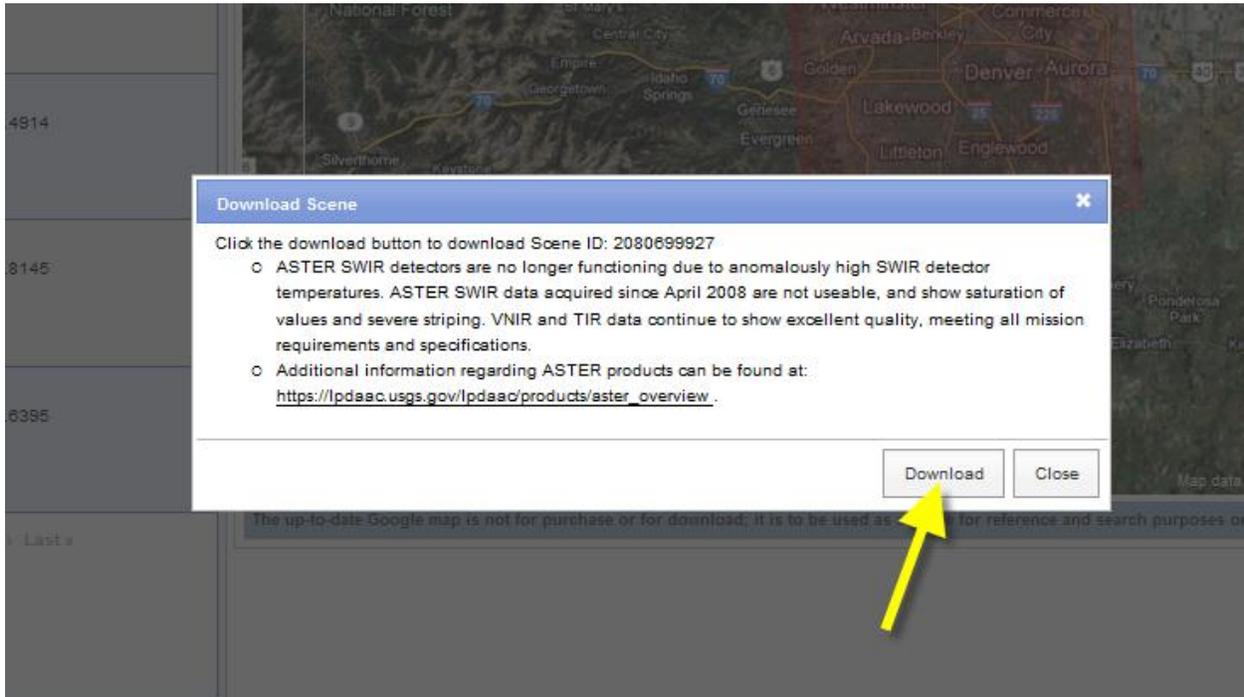


2.21. Select “Download this scene in Standard format” and click the “Select Download Option” button.



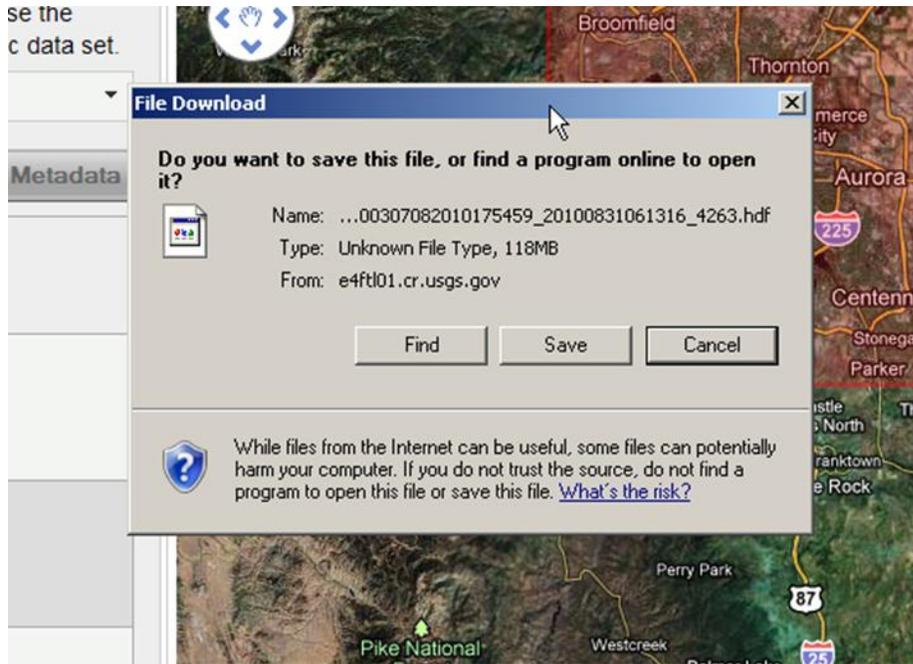
You will then be presented with the SWIR band warning and a link to additional product information.

2.22. Click on the “Download” button.



After clicking the “Download” button you are presented with a file save dialog box.

2.23. Click the “Cancel” button.



This concludes EarthExplorer Use Case 2. Click the “Home” button to begin Use Case 3.



## EarthExplorer Use Case 3: Search for MODIS data and Create a Subscription for Future Acquisitions

3.1. Click the “Clear Criteria” button in the upper right corner.

3.2. Select the area around Denver.

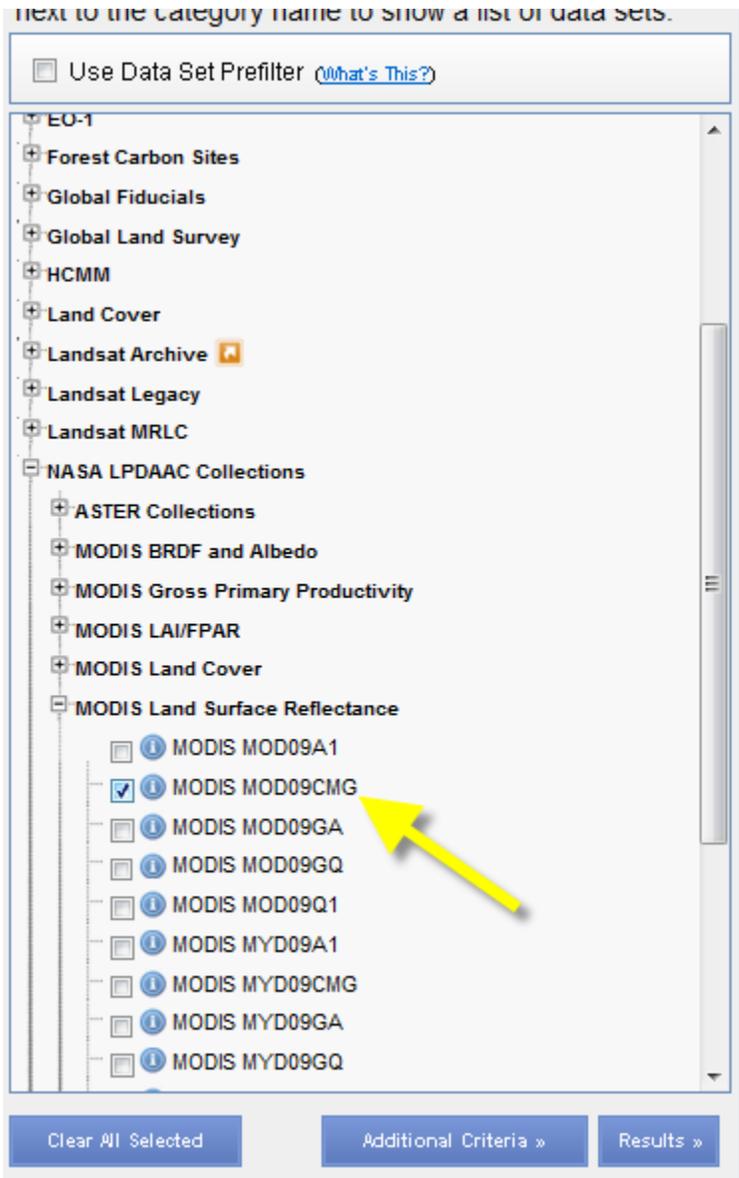
The screenshot displays the Earth Explorer search interface. On the left, the 'Search Criteria' panel is active, showing the '1. Enter Search Criteria' section. It includes a 'Date Range' section with a yellow arrow pointing to the search date range: 'Search from: 06/01/2011 to: 06/01/2011'. Below this, the 'Number of records to return' is set to 100. On the right, the 'Search Criteria Summary' panel shows a map of the Denver area with a red rectangular search area. A yellow arrow points to the 'Clear Criteria' button in the top right corner of the map area. The map shows the Denver metropolitan area, including cities like Boulder, Thornton, and Aurora, and is overlaid with a red search area. The map interface includes a search bar with coordinates (39° 31' 44" N, 105° 11' 12" W) and buttons for 'Options', 'Overlays', 'Map', and 'Clear Criteria'.

3.3. Select the following date to search:

- June 1 2011

3.4. Click the “Data Sets” tab.

3.5 Select the ‘NASA LPDAAC Collections’ then select ‘MODIS Land Surface Reflectance’ and finally select ‘MODIS MOD09CMG’.



3.6. Click the “Results” tab.

3.7. Once the results are displayed, select the “Submit Standing Request” button.

Search Criteria Data Sets Additional Criteria Results

#### 4. Search Results

If you selected more than one data set to search, use the dropdown to see the search results for each specific data set.

Data Set: MODIS MOD09CMG Export Metadata

« First < Previous 1 Next > Last »  
Displaying 1 - 1 of 1

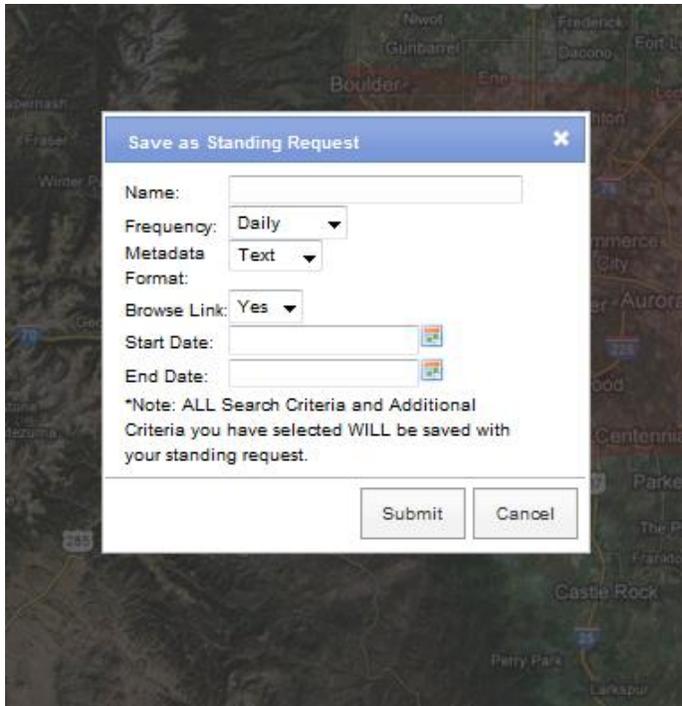
Entity ID: 2085854708  
Coordinates: 0 , 0  
Acquisition Date: 01-JUN-11

« First < Previous 1 Next > Last »

Submit Standing Request »



A pop up box appears on the screen. This gives you the opportunity to enter the standing request criteria.



### 3.8. Enter Standing Request Criteria

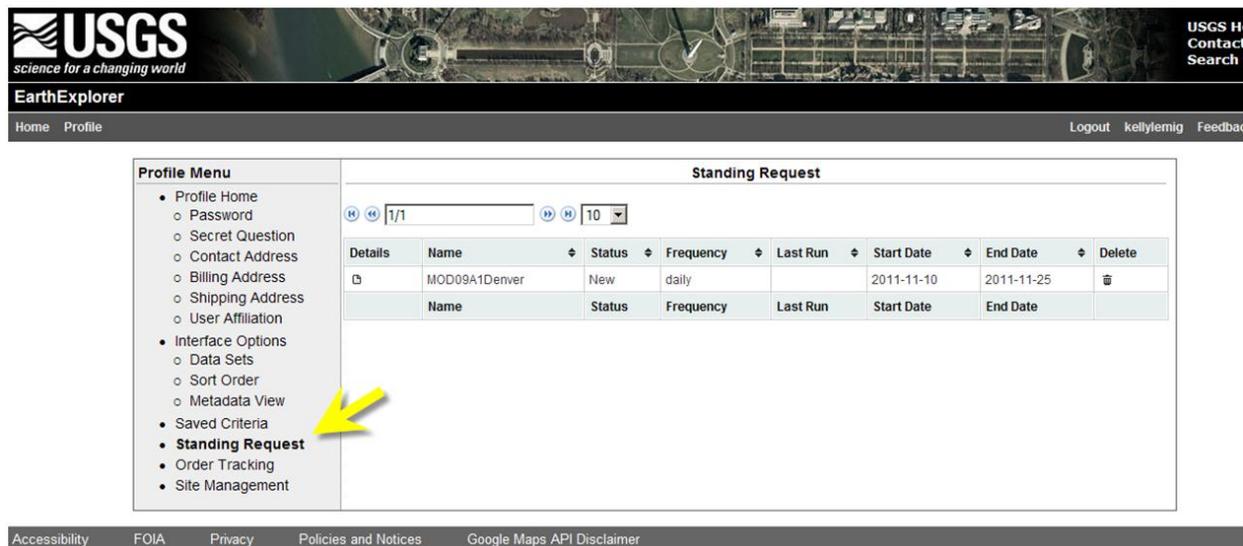
- Enter a name for this request. For this example, enter MOD09CMGDenver in the “Name” field.
- Frequency – Select Daily, Weekly, Monthly, or Quarterly, which determines how frequently the search will run.
- Metadata Format – Identify the format of the metadata (Text, CSV, FGDC, and Pipe Delimited).
- Browse Link – Determine if a link (Yes/No) to the browse image is included in the standing request search results.
- Start Date – Select the start date for the standing request.
- End Date – Select the end date for the standing request.
- Click the “Submit” button to execute the standing request.

### 3.9. Click “Submit”

3.10. To review standing requests, click “Profile” on the EarthExplorer Main menu bar.



3.11. This action displays the “Profile Menu”. Click “Standing Request” on the Profile menu to see the list of entered standing requests



The Standing Request module sends you an email when a new acquisition matches the search criteria. You can then review metadata and browse for the returned scenes.

This concludes EarthExplorer Use Case 3.