USGS
science for a changing world

EarthExplorer
Help Documentation

Version 2.0

December 2012

Document History

Number	Date and Sections	Notes
1	February 2011	Original document 0.1
2	April 2011	Updated with comments/table of contents
3	June 2011	Updated with comments from LTA staff
4	July 2011	Updated graphics, fomatting.
5	September 2011	Updated to guidelines on user docs and review by LDCM
6	September 2012	Updated login/registration

Table of contents

Document History ii
Table of contents iii
Table of Figures iv
I. Introduction 1
A. Key Features 1
B. System/Browser requirements 1
II. User Interface 3
A. Header/Footer Elements 3
B. Body 5
III. Registration and Profile 10
A. Registration 10
B. Login 17
C. Profile 18
IV. Perform a Search 23
A. Search Criteria Tab 23
B. Select Data Set(s): 42
C. Enter Additional Criteria: 45
D. View Search Results 49
Appendix 73

Table of Figures

Figure 1 - EarthExplorer User Interface 3
Figure 2 - Header 3
Figure 3 - EarthExplorer Menu Bar 4
Figure 4 - Footer 5
Figure 5 - Body 6
Figure 6 - Google Map Navigation Controls 7
Figure 7 - Custom Location Features 8
Figure 8 - Registration 11
Figure 9 - Registration Login 11
Figure 10 - User Affiliation/Data Usage Form 13
Figure 11 - Address 16
Figure 12 - Confirmation Page 17
Figure 13 - Login 17
Figure 14 - Login/Password 18
Figure 15 - Menu Bar Items 18
Figure 16 - Edit User Profile 19
Figure 17 - Interface Options 19
Figure 18 - Data Set List 20
Figure 19 - Sort Order 20
Figure 20 - Metadata View 20
Figure 21 - Saved Criteria 21
Figure 22 - Standing Request 21
Figure 23 - Order Tracking 22
Figure 24 - EarthExplorer Search Tabs 23
Figure 25 - Point Search 24
Figure 26 - Line Search 24
Figure 27 - Rectangle Search 25
Figure 28 - Polygon Search 26
Figure 29 - Circular Polygon Tool 27
Figure 30 - Example circle area of interest 27
Figure 31 - Clear Selection 28
Figure 32 - Add Map to Selection 28
Figure 33 - Add Map to Selection Example 28
Figure 34 - Enter Address 29
Figure 35 - Enter Address Location 29
Figure 36 - Enter Latitude/Longitude 30
Figure 37 - Enter Latitude/Longitude Location 30
Figure 38 - Place Name 31
Figure 39 - Place Name - Multiple Options 31
Figure 40 - Place Name - Multiple Option - Selected Place 32
Figure 41 - Path/Row 33
Figure 42 - Path/Row Location 34
Figure 43 - US Feature Place name Search 35
Figure 44 - US Feature Place name Search Results 35
Figure 45 - US Feature Place name Selected 36
Figure 46 - Add Coordinate 37

Figure 47 - Add New Coordinate 37
Figure 48 - Add New Coordinate Location 37
Figure 49 - Delete or Edit Coordinates 38
Figure 50 - Predefined Area - Add Shape 38
Figure 51 - Predefined Search Area 39
Figure 52 - Upload ESRI Shapefile 39
Figure 53 - Upload KML/KMZ file 40
Figure 54 - Example uploaded KML file 40
Figure 55 - KML Example ..... **Error! Bookmark not defined.**
Figure 56 - Dates Selected 42
Figure 57 - Number of records to return 42
Figure 58 - EarthExplorer Search Tabs – Data Sets 43
Figure 59 - Data Set Selection Expandable View 43
Figure 60 - Dataset mouse over example 44
Figure 61 - Dataset with cost of reproduction icon 44
Figure 62 - Data Set Prefilter 44
Figure 63 - EarthExplorer Additional Criteria Tab 45
Figure 64 - Example Additional Criteria form 46
Figure 65 - Data Set Criteria forms 47
Figure 66 - Unique Criteria Form 48
Figure 67 - EarthExplorer Results Tab 49
Figure 68 - Example Results 49
Figure 69 - Search Result Control 50
Figure 70 - Show All Footprints 51
Figure 71 - Show All Browse 51
Figure 72 - Browse Opacity Example 52
Figure 73 - Select Data Set Results 53
Figure 74 - Example Search Results 54
Figure 75 - Example Scene Level Results 55
Figure 76 - Footprint Overlay 55
Figure 77 - Browse Overlay 56
Figure 78 - Login before downloading 56
Figure 79 - Download Options Dialog 57
Figure 80 - Download Scene 57
Figure 81 - Download Scene Dialog 57
Figure 82 - Bulk Download - Added to Item Basket 58
Figure 83 - Bulk Download Item Basket 58
Figure 84 - Bulk Download Order Review 59
Figure 85 - Bulk Download Validation 59
Figure 86 - Order Scene 60
Figure 87 - Item Basket Example 60
Figure 88 - Item Basket 61
Figure 89 - Checkout Summary 61
Figure 90 - Roll View 62
Figure 91 - Example Scene Level Results 63
Figure 92 - Show Browse and Metadata 63
Figure 93 - Browse and Metadata View 64
Figure 94 - Multiple Browse Display Example 65
Figure 95 - Open New Window – Display Browse 66
Figure 96 - FGDC Format 66

Figure 97 - Default Search Results Returned = 100 67
Figure 98 - Total Search Results of query = 2570 67
Figure 99 - Search Criteria - Number of records to return 67
Figure 100 - Export Options 68
Figure 101 - Submit Standing Request 70
Figure 102 - Standing Request Form 71
Figure 103 - Manage Criteria 71
Figure 104 - Standing Request 72

I. Introduction

EarthExplorer (**http://earthexplorer.usgs.gov)** provides online search, browse display, metadata export, and data download for earth science data from the archives of the U.S. Geological Survey (USGS). EarthExplorer provides an enhanced user interface using state-of-the art JavaScript libraries, Hypertext Preprocessor (PHP), and the advanced Oracle spatial engine.

A. Key Features

Key features in EarthExplorer include:

- Fast, geospatial search engine
- Map viewer for viewing overlay footprints and browse overlays
- Simple, fast Graphical User Interface (GUI)
- Data access tool to search and discover data
- Textual query capability
- Keyhole Markup Language (KML) export capability to interface with Google Earth
- Save or export queries, results, and map overlay for reuse
- Request on-demand products
- Access to browse images from standard products
- User authentication service for access to specialized datasets and tools
- Access to Landsat Data Continuity Mission (LDCM) quality band data
- Standard product downloads
- User notifications of new acquisitions and available products through subscription services
- Updated software code base supporting JavaScript and PHP

B. System/Browser requirements

The following are the hardware and software requirements for using EarthExplorer:

- Hardware Requirements – Windows:
  - 233 Gigahertz (GHz) processor - 2GHz or better recommended
  - Minimum of 256 Megabyte (MB) Random Access Memory (RAM) – 4 Gigabyte (GB) recommended
  - Minimum of 20GB of free space - 100GB recommended
  - Display capable of 800x600 with 256 colors and 32MB of video RAM
  - Mouse
  - Keyboard
- Hardware Requirements – Apple Mac:
  - Intel x86 or PowerPC G3, G4, or G5 - 2GHz or better recommended
  - Minimum of 256MB RAM - 4GB recommended
  - Minimum of 20GB of free space - 100GB recommended
  - Display capable of 800x600 with 256 colors and 32MB of video RAM
  - Mouse
  - Keyboard
- Support handheld and tablet devices via browsers

- Network Requirements:
  - Broadband connection 15 Megabit per Second (Mbps)
  - 3G network impacts display speed
- Software Requirements:
  - Operating System: Windows XP, Windows Vista, Windows 7, Windows Server 2000, Windows Server 2003, Windows Server 2008
  - Mac OS X
  - Unix
  - Linux
  - Solaris
- Browsers supported:
  - Internet Explorer (7.x, 8.x, 9.x)
  - Firefox (3.x, 4.x)
  - Chrome (10.x)
  - Opera (10.x)
  - Safari (5.x)

II. User Interface

The EarthExplorer user interface provides the overall capability for users to interact with the EarthExplorer components and services. The EarthExplorer user interface (Figure 1) is composed of the following key elements:

- Standard USGS header/footer elements
- EarthExplorer menu bar
- Body

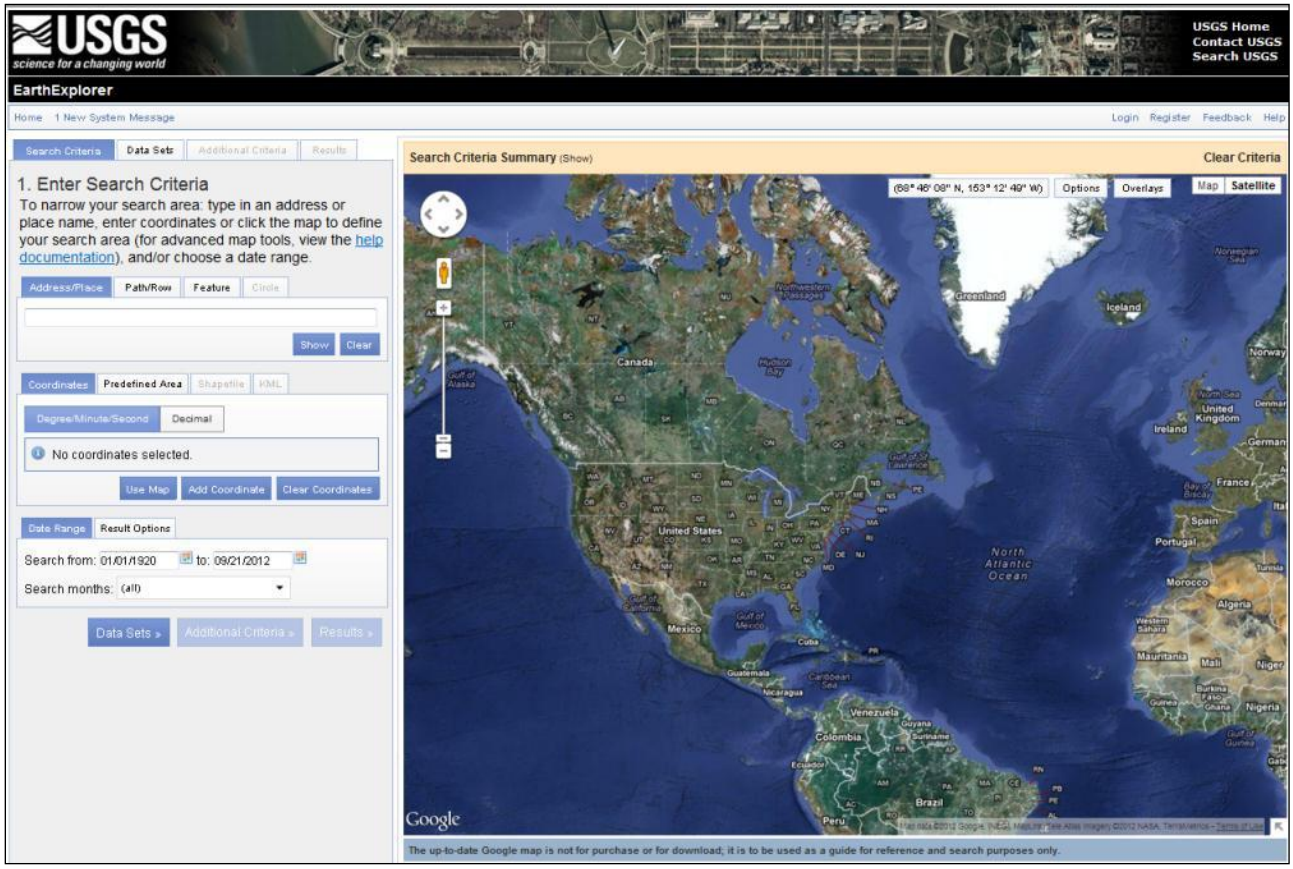


Figure 1 - EarthExplorer User Interface

A. Header/Footer Elements

The EarthExplorer header/footer elements are based on the USGS Visual Identification Policy standard guidelines. The EarthExplorer client is compliant with Section 508 guidelines.

1. Header

The EarthExplorer client header (Figure 2) is located at the top of the web page. The header is common across all web pages in EarthExplorer but may be different based on your user role or 'branding' applied to the EarthExplorer client.

Figure 2 - Header

Elements of the header include:

- USGS Logo (upper left corner) reflects the relevance of the Bureau's work in today's world and communicates USGS's purpose to the public.
- USGS Links (upper right corner) reflect links to the USGS website, USGS contact information, and the USGS search tool.
- Title Bar is a standard bar describing the website; in this case, 'EarthExplorer'.
- EarthExplorer Menu Bar.

2. **EarthExplorer Menu Bar**

The EarthExplorer menu bar (Figure 3) is directly below the header. The EarthExplorer menu bar supplies a common starting point to access additional functionality, options, and preferences for the EarthExplorer client via dropdown menus.

Figure 3 - EarthExplorer Menu Bar

The common menu items in the menu bar include:

- Home – Returns you to a common starting point within the application.
- System Message – Provides links and information regarding system status and upcoming events/changes.
- Login – Provides a link to the EarthExplorer Login.
- Register – Provides a link to the EarthExplorer Registration Service.
- Feedback – Provides a link to the feedback form.
- Help – Provides information about EarthExplorer.

Additional menu bar items display when you register or log in. Some of these additional features include:

- Profile – Provides access to your profile preferences and allows you to customize your profile.
- Save Criteria – Allows you to save your search criteria for future searches.
- Load Favorite – Allows you to load/apply a saved search criteria.
- Manage Criteria – Allows you to modify previously saved search criteria.

These options are described in further details in the EarthExplorer Profile (Section III).

3. **Footer**

The EarthExplorer client footer (Figure 4) is located at the bottom of the web page. The footer is common across all web pages in EarthExplorer but may be slightly different based on your user role or 'branding' applied to the EarthExplorer client.

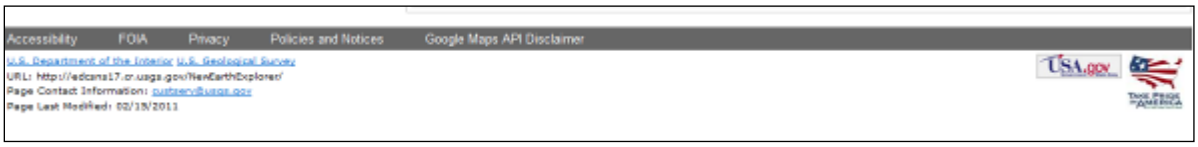


Figure 4 - Footer

The common menu items in the footer include:

- Accessibility – Provides a link to the USGS Accessibility Policy (Section 508). The USGS Accessibility Policy ensures that all electronic and information technology developed, procured, maintained, or used by the USGS is accessible to people with disabilities.
- FOIA – Provides a link to the U.S. Geological Survey Freedom of Information Act (FOIA) Electronic Reading Room. FOIA requests for a copy of USGS records can be made by any individual or public/private organization other than a Federal agency.
- Privacy – Provides a link to the USGS Privacy Policies. This information identifies USGS and the Department of Interior (DOI) privacy policies.
- Policies and Notices – Provides a link to the USGS Policies and Important Notices website. This information describes the principal policies and other important notices that govern information posted on USGS websites.
- Google Maps API Disclaimer – Provides a link to the Google Maps API Disclaimer. This information outlines the Google Map Application Programming Interface (API) terms and conditions for using the Google Map service.

B. **Body**

The body (Figure 5) includes the main EarthExplorer capabilities and is composed of the Data Search Functions and the Google Map components.

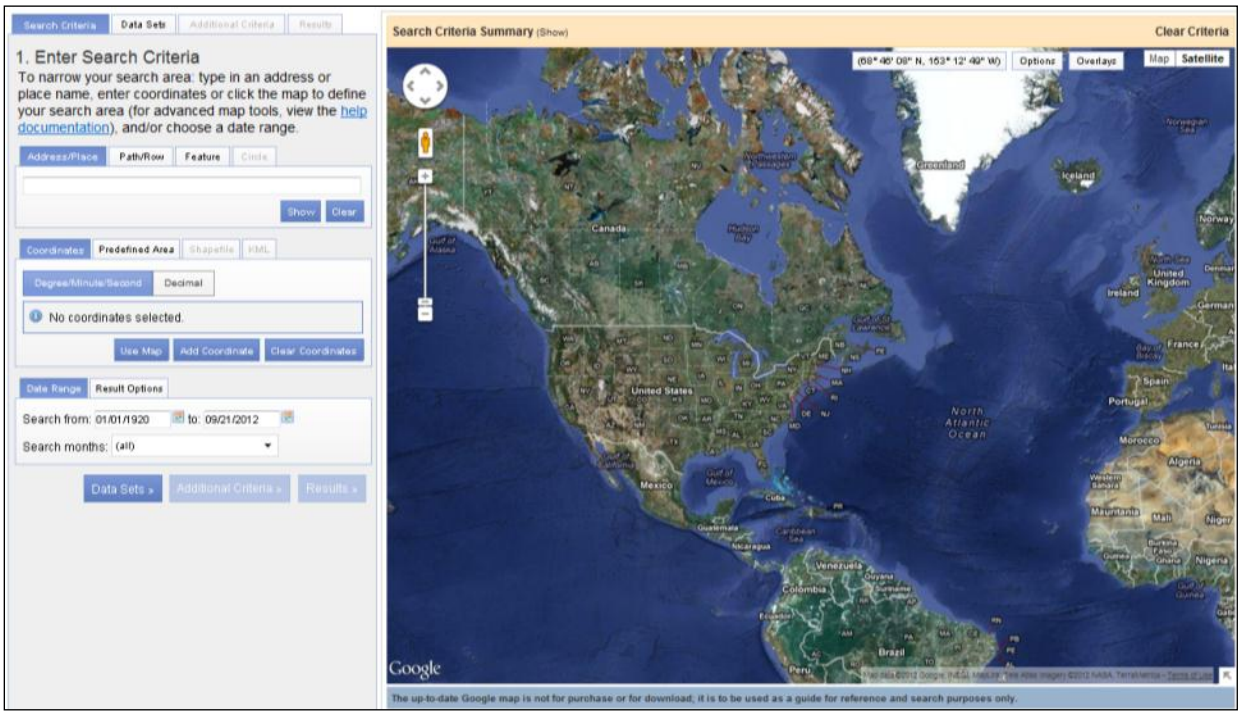


Figure 5 - Body

1. **Search Criteria**

The EarthExplorer Data Search component is located on the left side of the EarthExplorer body element. The Data Search components are divided among 4 tabs and allow users to enter search criteria, select datasets to query, enter additional criteria, and review results in a tabular window. Additional details on the Data Search component are provided in the 'Perform a Search' in section IV.

2. **Google Map**

The Google Map component is located on the right side of the EarthExplorer body element. The Google Map application interface embeds Google Maps within the EarthExplorer client. The Google Map is a useful tool for defining a search area and for verifying that results fall in the area of interest.

Before using the Google Map component, you should be familiar with the navigation and location features provided in the Google Map interface for EarthExplorer.

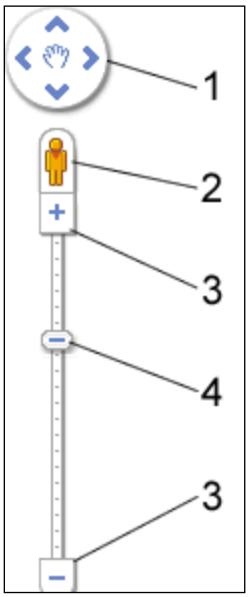


Figure 6 - Google Map Navigation Controls

Use the following controls to navigate Google Maps (Figure 6):

- Pan Control – Click the appropriate arrow to move the view north, south, east or west.
- Street View – Click and drag to navigate to the street-level view of the interested area.
- Zoom – Click the plus sign (+) to zoom in to the center of the map; click the minus sign (–) to zoom out.
- Zoom Slider – Drag the zoom slider up/down to zoom in or out incrementally.
- Pan – Click and drag the map to the desired location or view.
- Use Page Up, Page Down, Home, and End for faster scrolling up, down, left, and right, respectively.
- Press Control and click the plus sign (+) to zoom in or press Control and click the minus sign (–) to zoom out.

The Google Map component provides the following custom location features (Figure 7) to aid in locating point of interest.

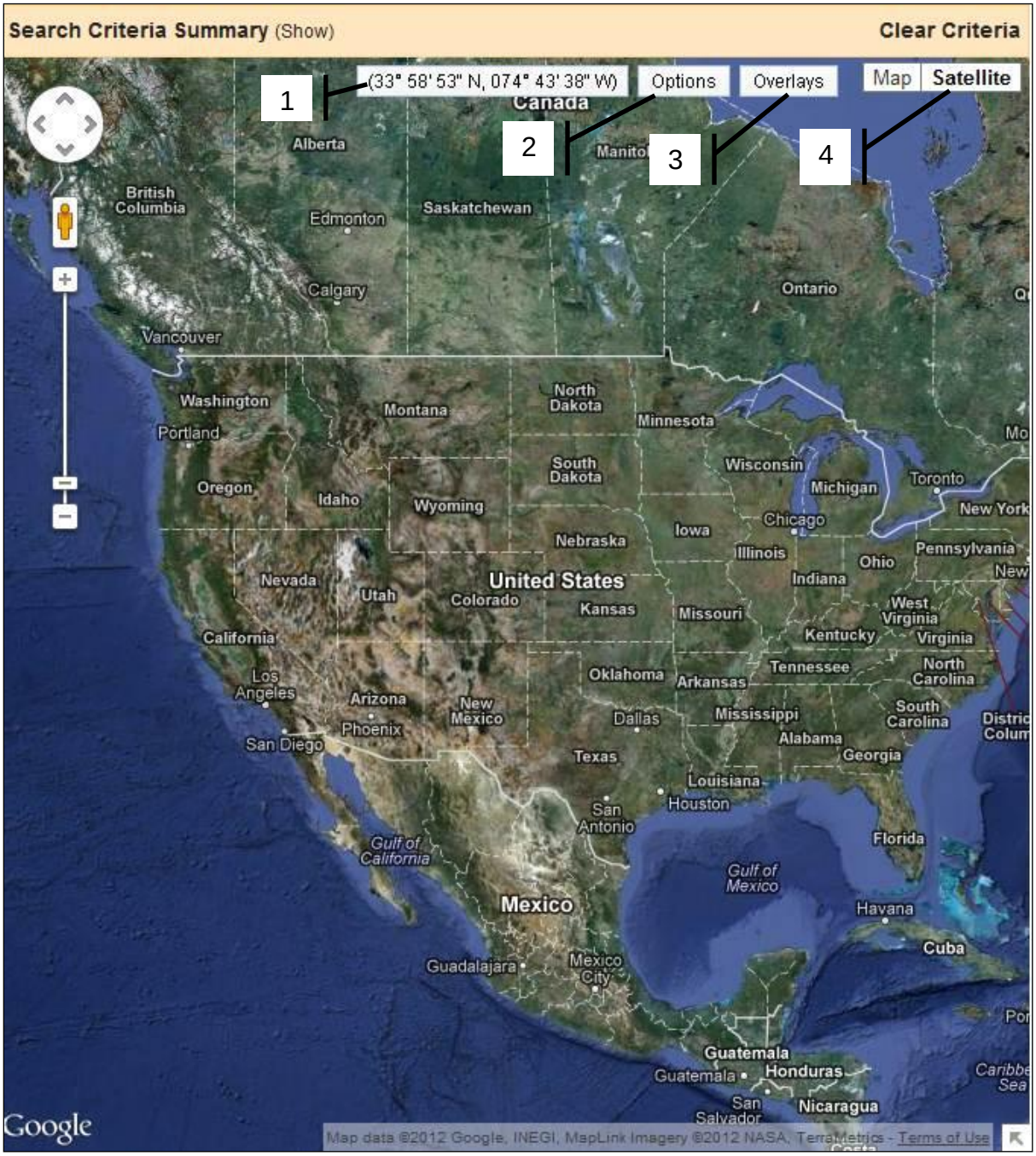


Figure 7 - Custom Location Features

Google Maps offers the following location features:

- (1) Coordinates – Coordinate values update as you move the mouse on the map interface.
- (2) Options
  - Auto-Center – Centers the map on the display
  - Polygon – Allows entering search criteria by polygon
  - Circle – Allows entering search criteria by using a circle radius
- (3) Overlays – Displays a grid based on the selection

    - Decimal – Overlays a decimal degree grid over the map interface. Click to turn on and off.
    - DMS – Overlays Degrees, Minutes, Seconds (DMS) grid over the map interface. Click to turn on and off.
- (4) Map/Satellite – Toggles between the Map View and the Satellite View.
    - Map View:
        - Terrain – Shows basic topographic features.
    - Satellite View:
        - 45° – Zooms to special 45° imagery for certain locations.
        - Labels – Displays feature labels.

III. Registration and Profile

Registered users can use all of EarthExplorer's features, including saving search criteria, downloading data, and accessing subscription services. The USGS EarthExplorer system requires users/customers 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.

To ensure privacy and security, all information entered in the EarthExplorer Registration Service uses Hypertext Transfer Protocol with Secure Sockets Layer (HTTPS) protocol. This privacy ensures that the information is encrypted from your browser to the EarthExplorer application.

A new policy implemented on October 1, 2012 requires all users to update their registration information. There have been additional items added to the registration questionnaire which will provide the USGS with information required to make future decisions for improving the user access experience. After the initial update, users will be prompted every other year to re-verify the user profile.

The EarthExplorer Registration interface consists of the following key elements:

- Registration
- Login
- Profile

User interface features in the registration service include the following:

- Values in **Bold Black** with an asterisk '*' are required values.
- The 'Continue' button performs an edit check; if the values entered pass the edits for that form, the information is saved and advances to the next page in the registration process.
- An invalid entry produces a popup message explaining the error.
- The 'Cancel' button returns to the initial registration page without saving any information.
- The 'Reset' button clears all information from the current form.

A. Registration

To register, select the 'Register' menu item from EarthExplorer menu.

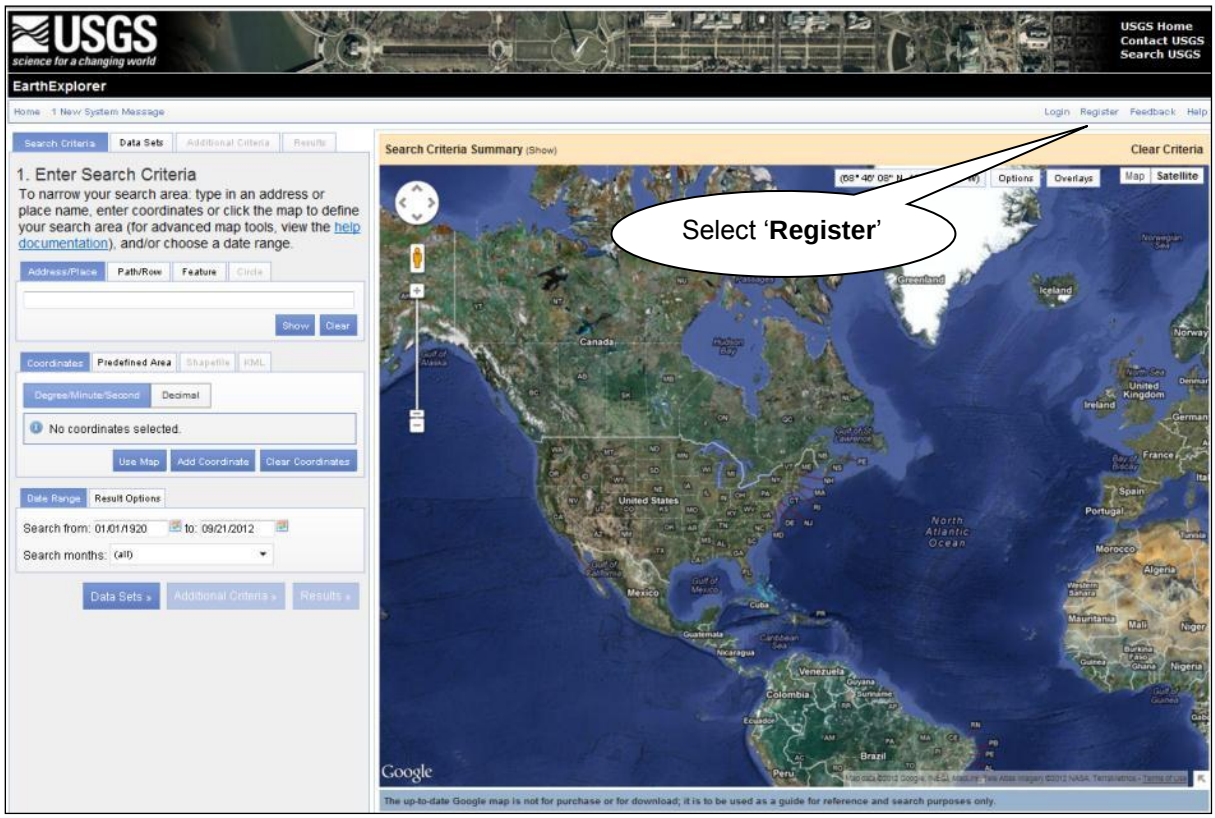


Figure 8 - Registration

1. **Registration Login Page**

The Registration process (Figure 8) requires users 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.

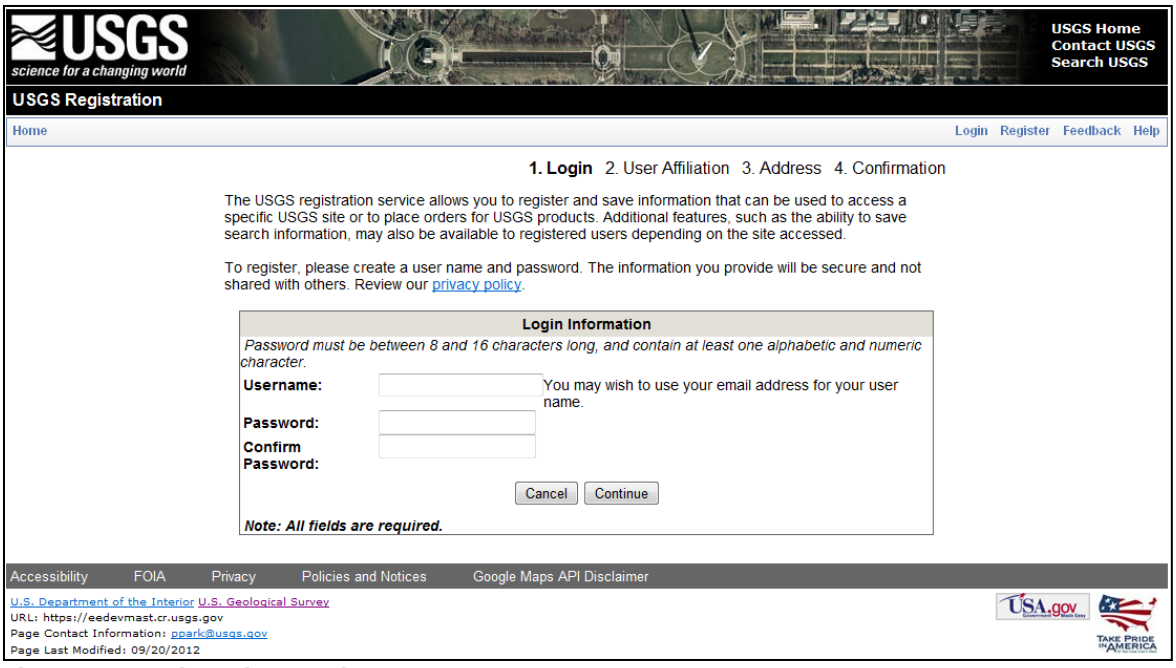


Figure 9 - Registration Login

The Registration Login page (Figure 9) requires users to type the following values:

- *Username **(Required)** – Type preferred username.
- *Password **(Required)** – Type a password. The password must be between 8 and 16 characters long and contain at least one alphabetic character and one numeric character.
- *Confirm Password **(Required)** – Type the password entered in the previous password field.
- Cancel – Returns to the initial registration page without saving any information
- Continue – Performs a check; if the values entered are valid, the information is saved and you advance to the User Affiliation/Data Usage form.

2. **User Affiliation/Data Usage Information Page**

The User Affiliation/Data Usage Information page (Figure 10) allows users to enter affiliation and identify uses of the data. This information is used to gather statistics on data applications and types of organizations using remotely-sensed data.

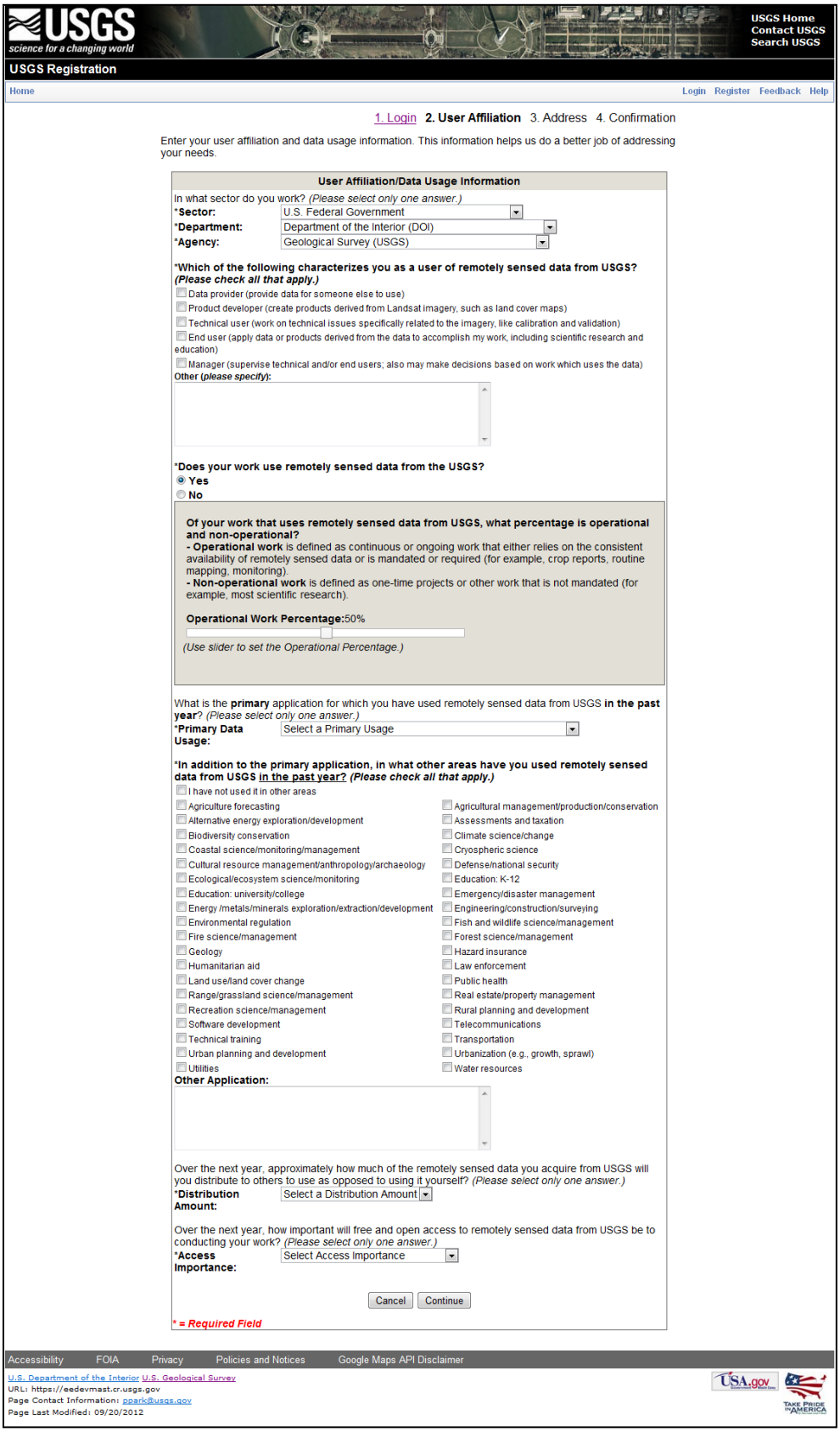


Figure 10 - User Affiliation/Data Usage Form

The User Affiliation/Data Usage (Figure 10) form identifies affiliation along with the primary and secondary uses of the data. The USGS uses this information to determine data usage trends, which provide target specific user groups.

The User Affiliate/Data Usage page requires users to type the following values:

- *Sector: Indicates the organization affiliation **(Required)**
  - U.S. Federal Government
  - U.S. State/Provincial/Department Government
  - U.S. Local Government
  - Tribe/Nation/Indigenous Group
  - Non-U.S. Federal/National Government
  - Academic Institution
  - Non-profit Organization
  - Private Business
  - General Public
  - Other

- Additional Department/Agency: Based on the value selected above, additional information may be required, such as:
  - *Department **(Required)**
  - *Agency **(Required)**

- User of remotely sensed data: *Which of the following characterizes you as a user of remotely sensed data from USGS? Select the characteristic that identifies your role as a user of remote sensed data. **(Required)**
  - Data provider
  - Product developer
  - Technical user
  - End user
  - Manager
  - Other (please specify)

- *Data Use: Does your work use remotely sensed data from the USGS (Y/N) **(Required)**? If yes, select the operational percentage that identifies the percentage used for operational support.

- *Primary application: Select the primary application for which you have used remotely sensed data from the USGS in the past year. Select one (1) item from the drop down item box. **(Required)**

- *Secondary use of data: In addition to the primary application, in what other areas have you used remotely sensed data from USGS in the past year? (Please check all that apply.) **(Required)**

- Other Application – If none of the secondary values match, enter the other application(s) of the data.

- *Distribution characteristics: Over the next year, approximately how much of the remotely sensed data you acquire from USGS will you distribute to others to use as opposed to using it yourself? *(Please select only one answer.)* ***(*Required)**

- *Importance of free and open access to data: Over the next year, how important will free and open access to remotely sensed data from USGS be to conducting your work? *(Please select only one answer.)* ***(*Required)**

Cancel – Returns to the initial login page without saving any information.

Continue – Performs validation of the information entered; if the values entered are valid, the information is saved and you advance to the User Affiliation/Data Usage form.

3. **Address page**

Type the address information in the Address page (Figure 11). The address information is used only for contact information; however, some data products require shipping information to deliver products. Address information is not shared with any commercial or other government agencies. Please refer to the USGS/DOI Privacy Policy concerning how this information is used.

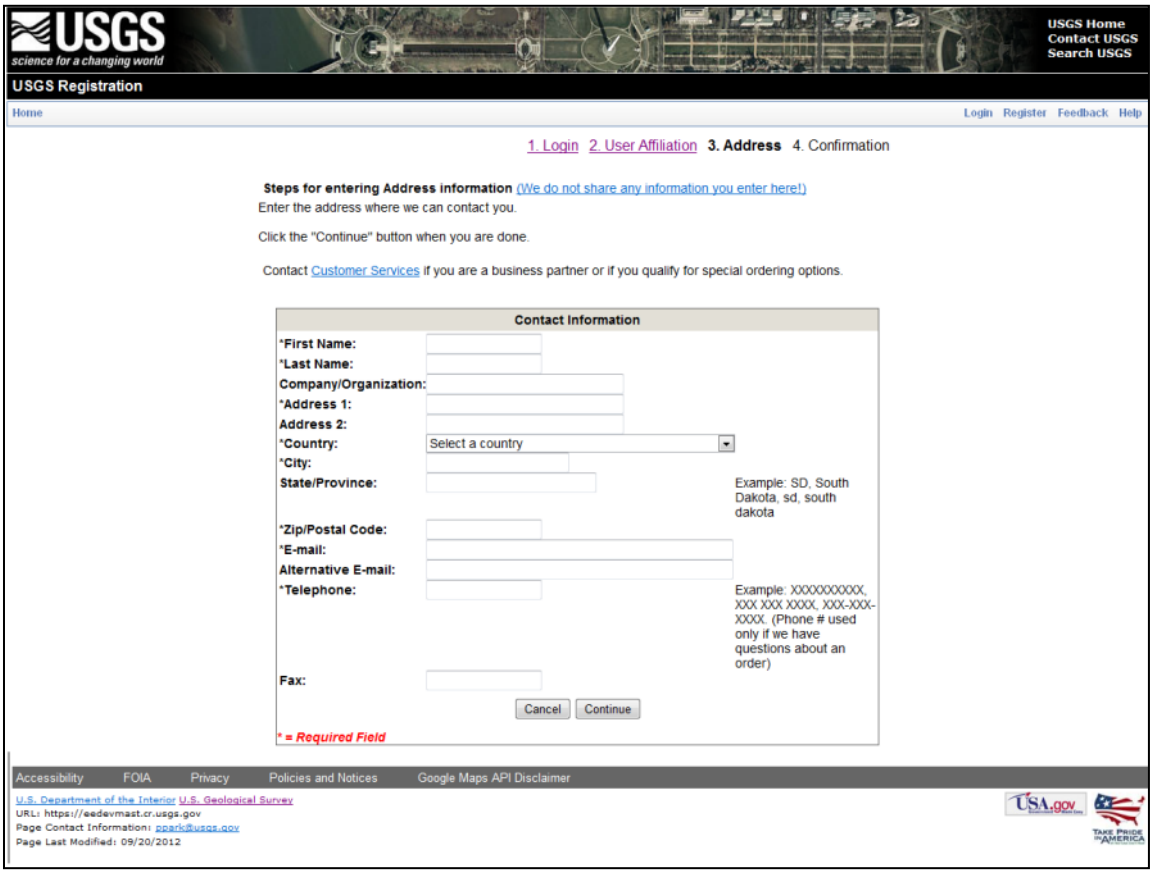


Figure 11 - Address

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.

4. **Confirmation**

The Confirmation page (Figure 12) displays after successful registration. Click ‘Return to the page where I registered’ to return to the page you started the registration process.

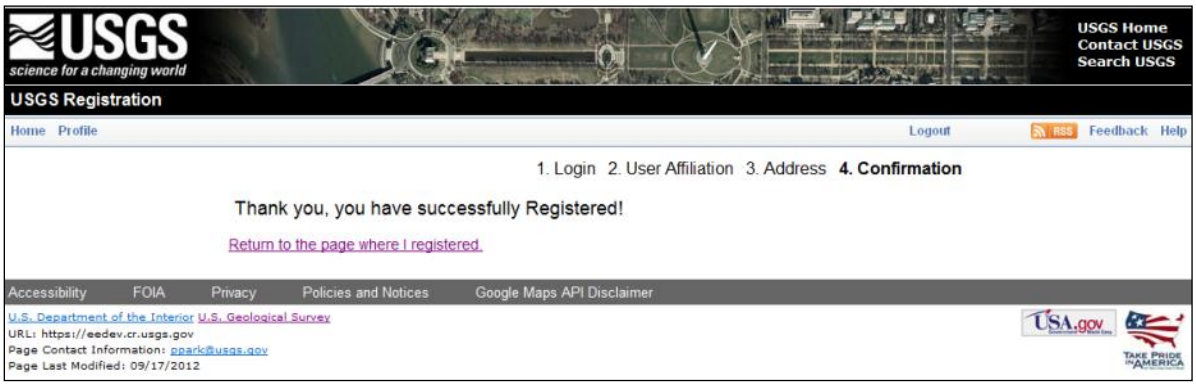


Figure 12 - Confirmation Page

After registering for the first time, you are automatically logged in to EarthExplorer.

B. Login

The Login page allows users to log in to EarthExplorer. A registered user can use all of EarthExplorer's features, including saving search criteria, downloading data, and accessing subscription services.

5. **Login Process**
   a. To log in, select the 'Login' menu item from the EarthExplorer menu (Figure 13). (Note: After registering the first time, you are automatically logged in.)

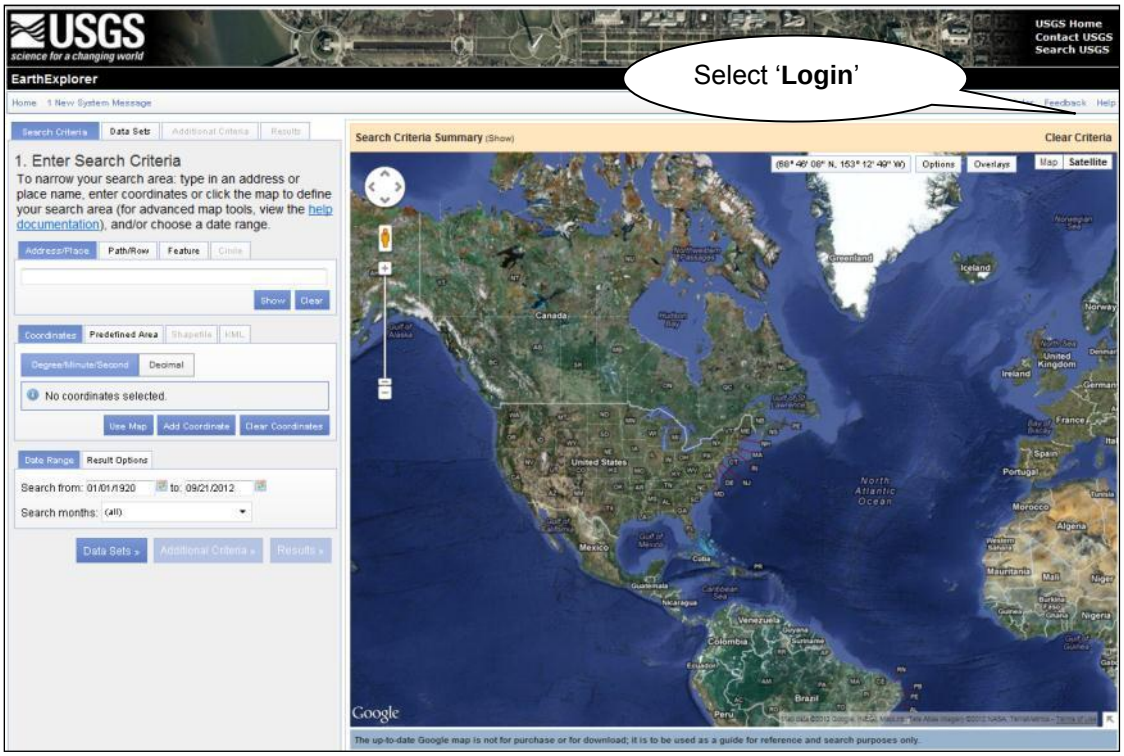


Figure 13 - Login

   b. Type the username and password and then click the 'Sign In' button (Figure 14).

Figure 14 - Login/Password

c. Click the Forgot your password? link to receive directions for updating the password.
d. Once logged in, additional items appear in the main menu bar:

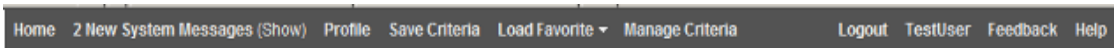


Figure 15 - Menu Bar Items

6. **Logout Process**

To log out of EarthExplorer, click 'Logout' in the EarthExplorer menu.

C. Profile

The Profile menu allows users to modify profile information.

7. **Profile Home**

The 'Profile Home' option allows users to modify profile information (Figure 16). The Username cannot be modified.

a. Change Password – View and change a password
b. Contact Address – View and modify contact address
c. User Affiliation – View and modify your affiliation

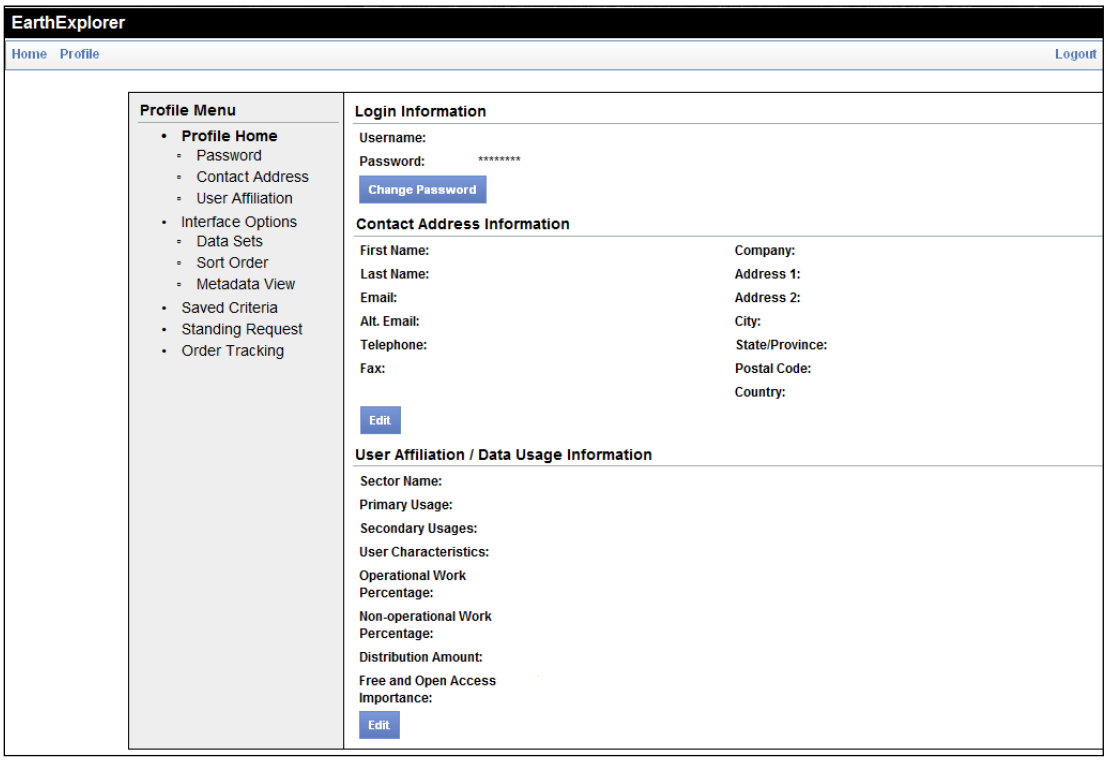


Figure 16 - Edit User Profile

Click the 'Edit' button to modify the desired information.

8. **Interface Options**

The 'Interface Options' page allows users to modify information associated with the overall system interface. The following options modify the overall EarthExplorer interface:

d. Interface options (Figure 17) – Modifies tool tips, the number of metadata results per page, allow standing requests and other specific system options. For some options, only the Application Administrator can modify.

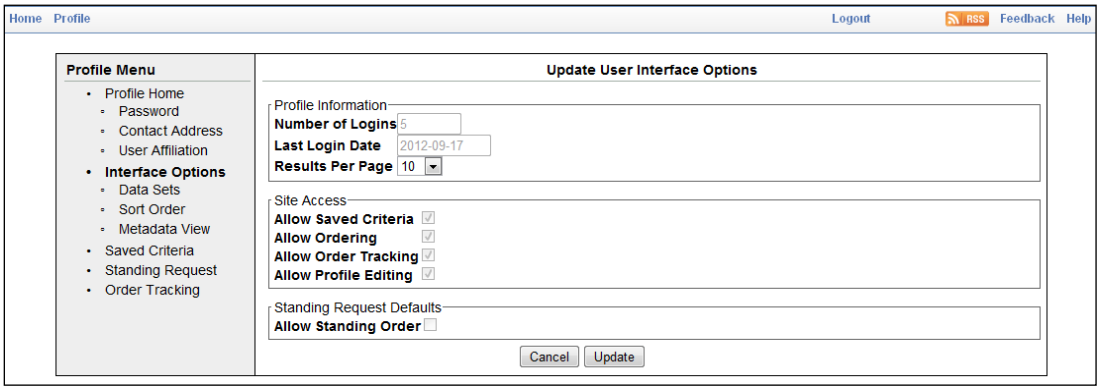


Figure 17 - Interface Options

e. Data Sets page (Figure 18) – Modifies the list of datasets shown in the Data Sets Component.

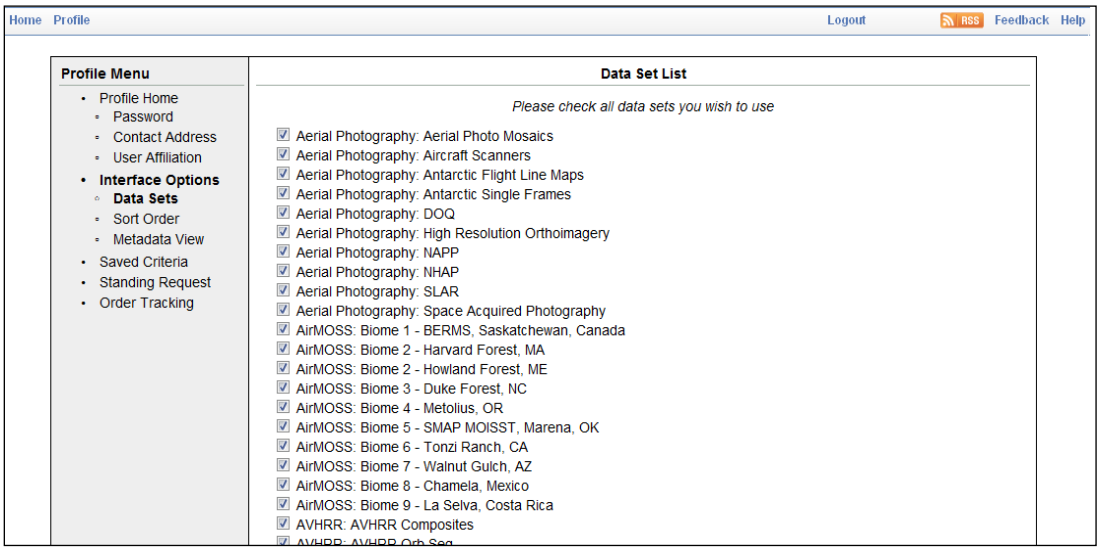


Figure 18 - Data Set List

f. Sort Order page (Figure 19) – Modifies the sort order for each dataset.

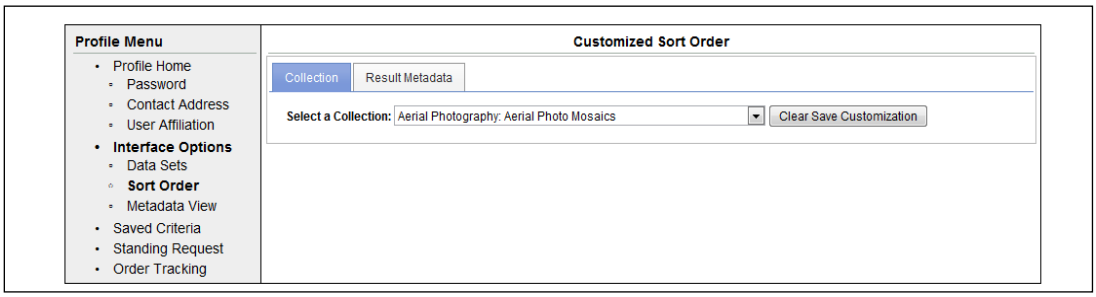


Figure 19 - Sort Order

g. Metadata View page (Figure 20) – Modifies the detailed metadata view for each dataset.

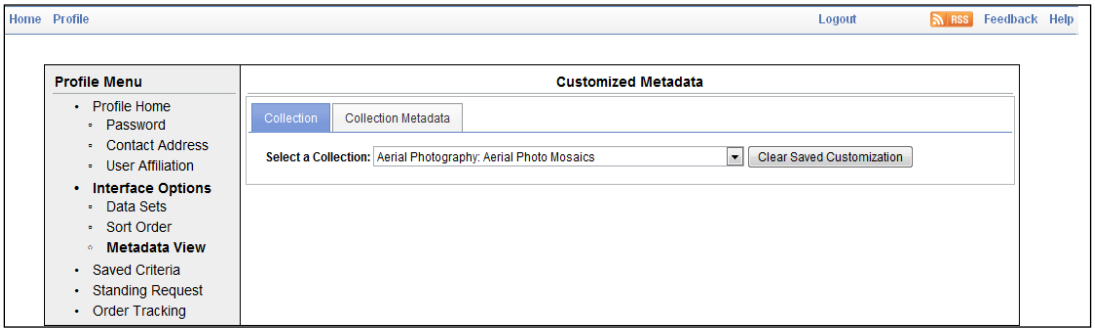


Figure 20 - Metadata View

9. **Saved Criteria**

The ‘Saved Criteria’ option (Figure 21) – Modifies the saved criteria options from previous searches.

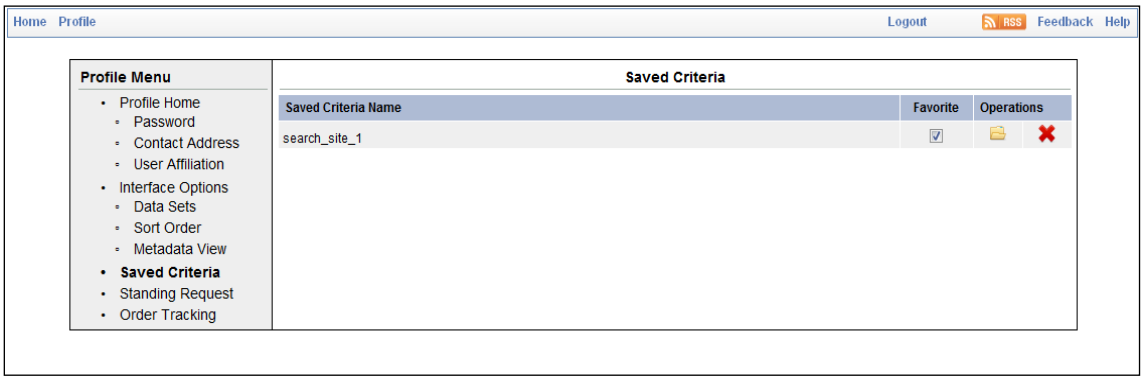
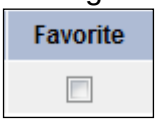


Figure 21 - Saved Criteria

In Figure 21, the search criterion was saved with the name 'Search_Site_1'. Any information can be entered when saving the search criteria.

- Selecting the favorite box 

icon saves the search criteria to the favorites list
- The load criteria icon loads the search criteria automatically to EarthExplorer
- The delete icon removes the search criteria from the saved criteria

10. **Standing Request**

Click the 'Standing Request' (Figure 22) to view a list of entered standing requests.

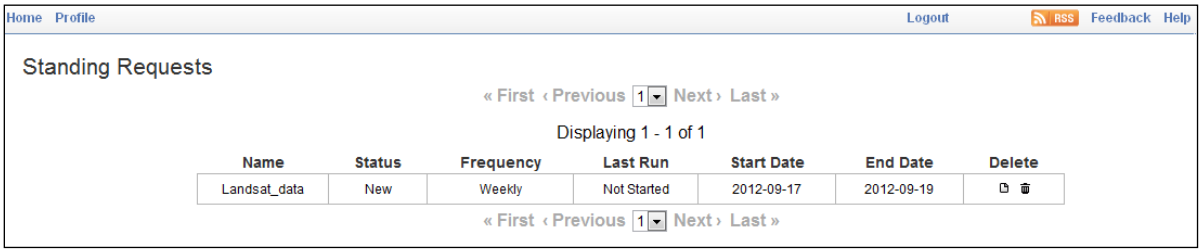


Figure 22 - Standing Request

The Standing Request function sends a notification via email when a new acquisition matches the search criteria for the requested dataset. The metadata and browse can be reviewed for the returned scenes. See Section IV, D, 3, Standing Request for more details on the Standing Request function.

11. **Order Tracking**

Click the 'Order Tracking' (Figure 23) option to display the list of orders that have been placed.

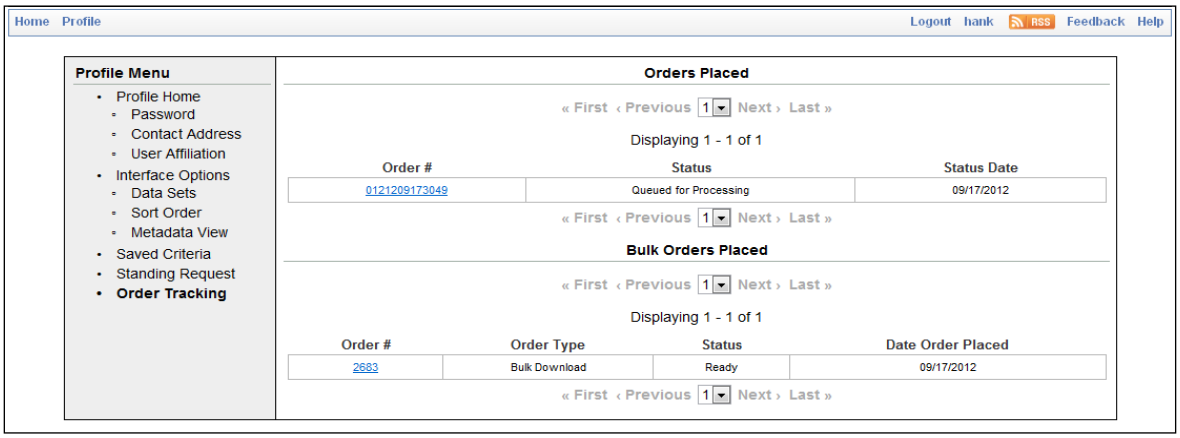


Figure 23 - Order Tracking

Click the order number to show the order details, the products ordered, and the current status of each item ordered.

IV. Perform a Search

EarthExplorer allows users to search, download, and order data held in USGS archives through a number of query options. EarthExplorer uses tabs in the search application to move through each portion of the process. The EarthExplorer search process/component is divided into four main areas (Figure 24):

- Search Criteria Tab – Provides the interface for entering various search options.
- Data Sets Tab – Provides the interface for selecting the datasets to be searched.
- Additional Criteria Tab – Provides an interface for entering additional search criteria specific to the selected datasets.
- Results Tab – Provides the interface for displaying a textual and graphical view of the query results.

Figure 24 - EarthExplorer Search Tabs

A. Search Criteria Tab

The Search Criteria tab provides a location to enter search criteria for an area of interest. Users have the option to either type the location criteria via the textual information component or with the Google Map interface. The search criteria options include:

- Google Map Interface – Enter the area of interest through the Google Map interface
- Address/Place – Type an address or place name
- Area Selected – Enter coordinates to define an area of interest. The area selected is updated as changes are made
- Predefined Area – Select from a list of predefined areas for a query
- Upload shapefile or KML file – Update a ESRI shapefile or KML file as the query area
- Dates Selected – Enter a date or date range
- Number of records to return – Modify the number of scenes returned from a search.

1. Enter Area of Interest Search using Google Map Interface

Using the Google Map interface, enter the geospatial area of interest using the mouse or other pointing device.

Options for entering location criteria include:

a. Define a single point search (Figure 25) – Click an area on the map once using the mouse to define a single point search. The latitude and longitude of the point selection displays under the 'Coordinates' section. The coordinates can be toggled between Degree/Minute/Second and Decimal degrees.

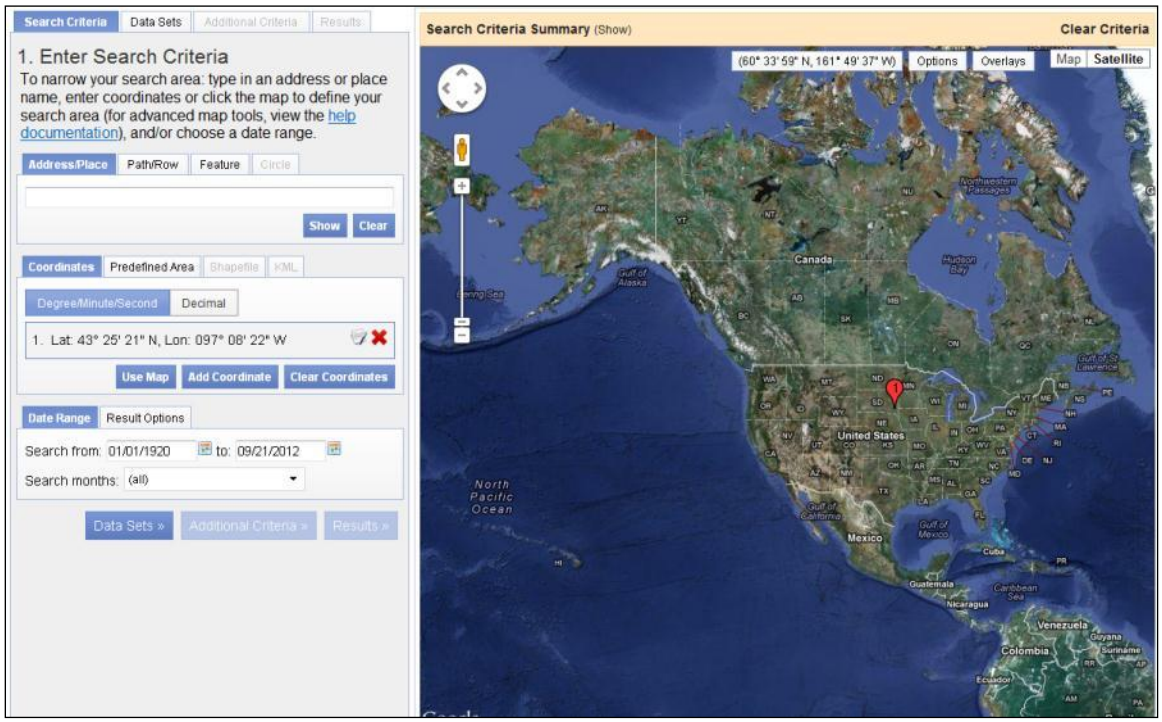


Figure 25 - Point Search

b. Define a line search (Figure 26) – To perform a line search, select two points on the map to define a line segment. The latitude and longitude of the two points selected display under the 'Coordinates' section.

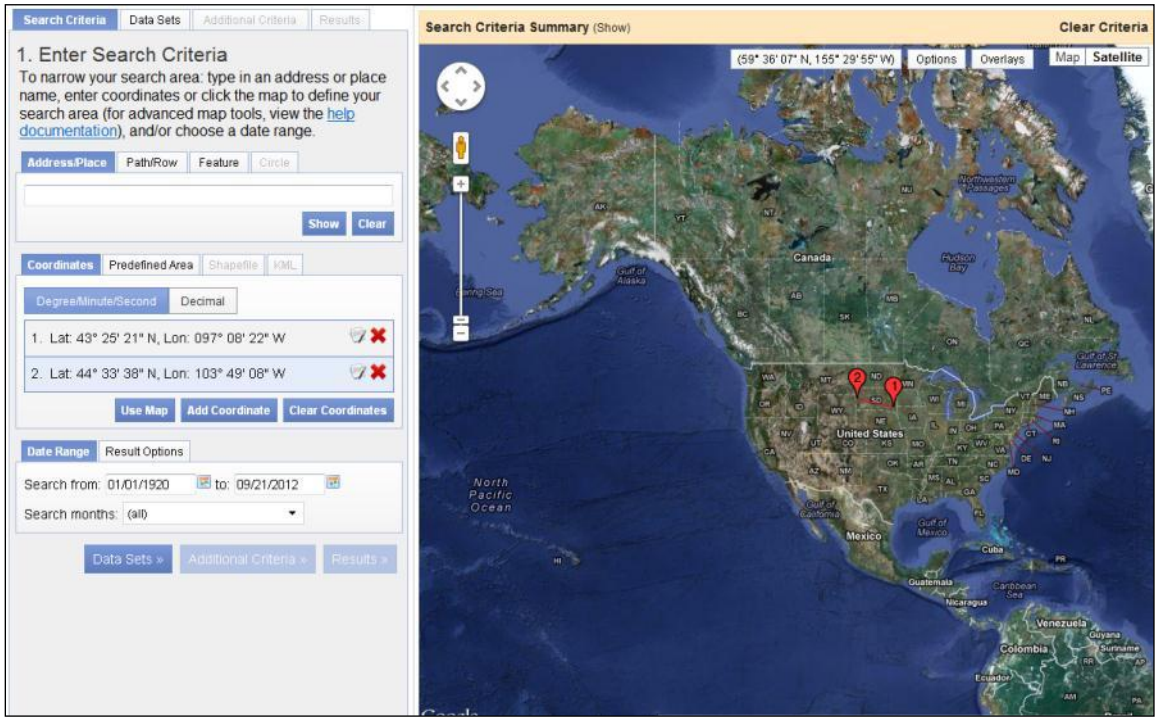


Figure 26 - Line Search

c. Define a rectangle search (Figure 27) – Press the Shift key after starting the selection, and continue to hold the Shift key until the correct rectangle or square is defined. This action defines the constraints of the rectangle /

square. If you press the Shift key before making the selection, the resulting selection is added to the existing selection. The latitude and longitude of the four points selected display under the 'Coordinates' section. To modify the rectangle, click one of the numbered points on the map and drag the point to a new location.

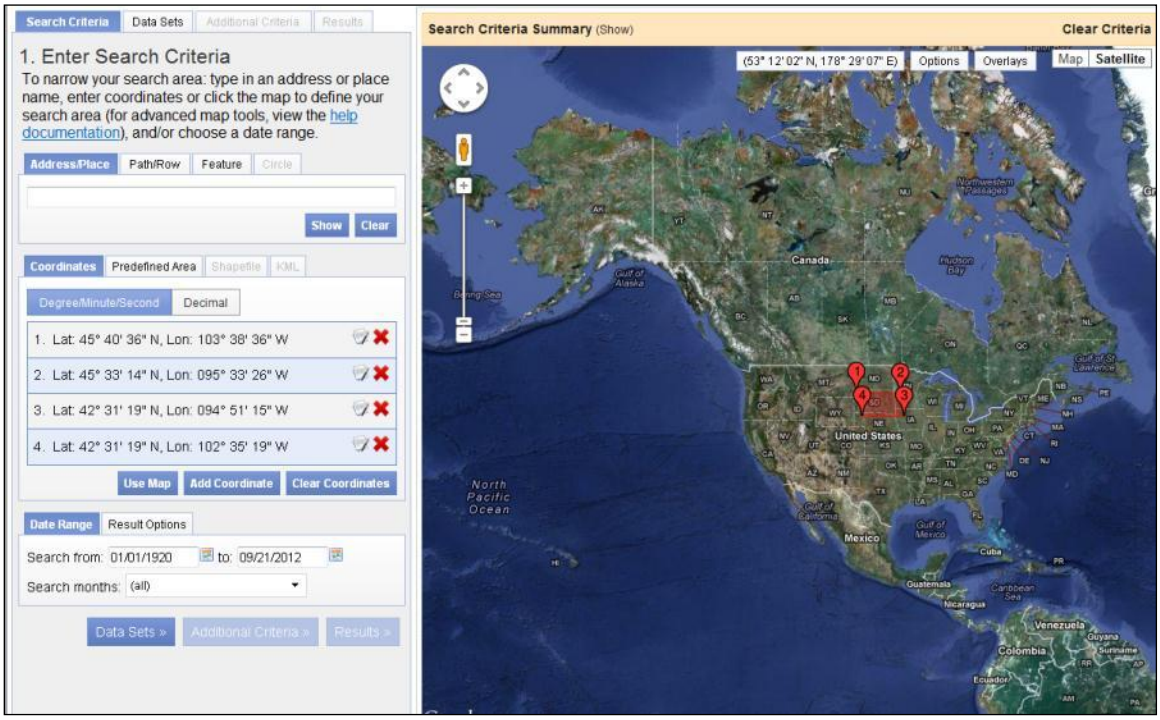


Figure 27 - Rectangle Search

d. Define a polygon – Click multiple times to define an area (Figure 28). As each point of the polygon is selected, the latitude and longitude of the defined polygon displays under the 'Coordinates' section. To modify the rectangle, click one of the numbered points on the map and drag the point to a new location.

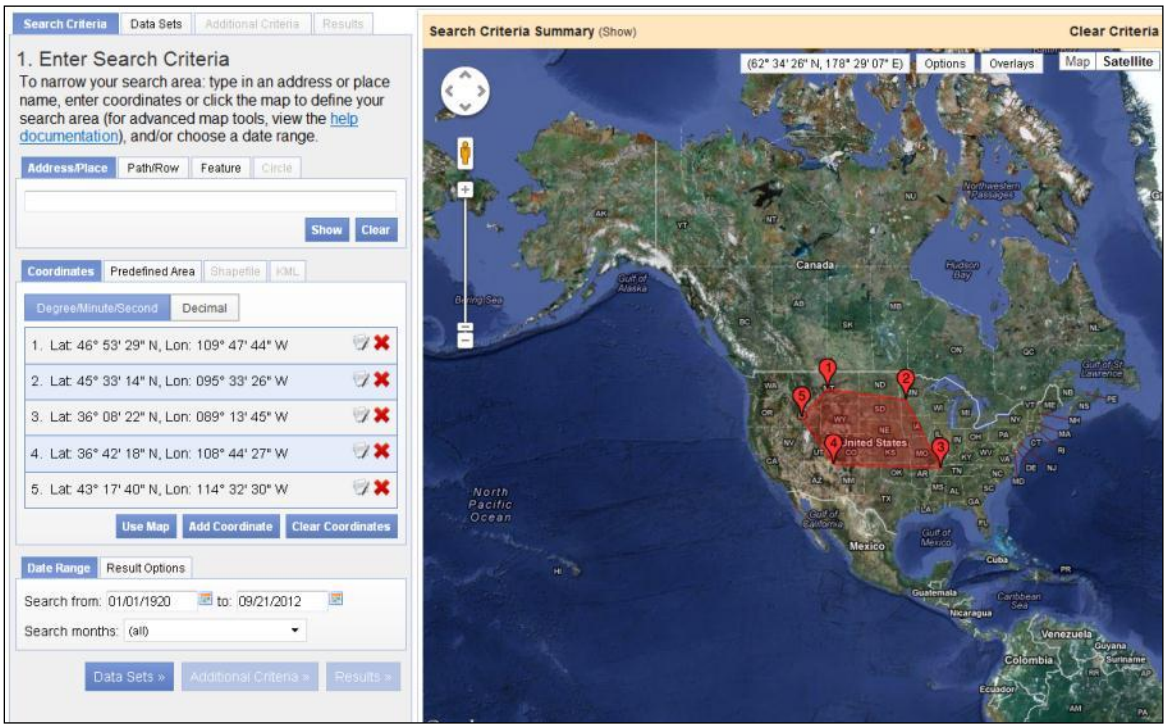


Figure 28 - Polygon Search

e. Define a circle – Select the Options tab on the Google Map display then click the ‘Circle’ option (Figure 29). The ‘Search Criteria’ box allow entry of a circle polygon. To define a circle, click two points on the map (Figure 30). To modify the circle radius, click and drag one of the points to a new location. The coordinates of the points defining the circle display under the ‘Coordinates’ section. Click “Point Polygon Tool” to turn off the Circular Polygon tool.

Figure 29 - Circular Polygon Tool

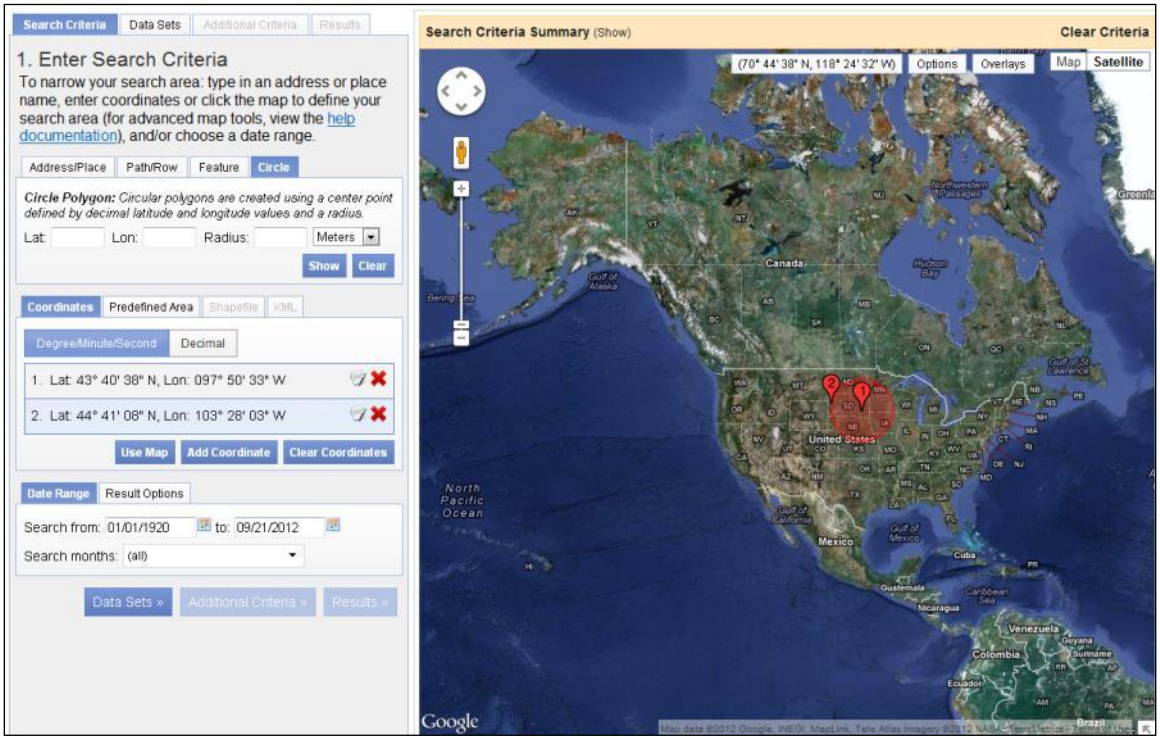


Figure 30 - Example circle area of interest

f. Clear Selection (Figure 31) – Click the ‘Clear Coordinates’ button to clear the search criteria from the map.

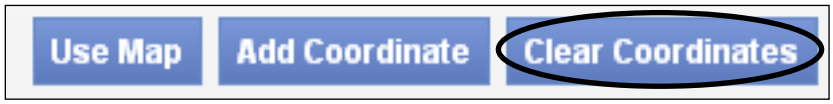


Figure 31 - Clear Selection

g. Add Map to Selection (Figure 32) – Click the ‘Use Map’ button to add the current map view as the area of interest.

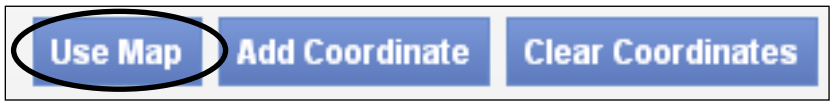


Figure 32 - Add Map to Selection

The color of the screen changes, indicating the area displayed on the map as an area of interest (Figure 33). The latitude and longitude of the map extent display under the ‘Coordinates’ section.

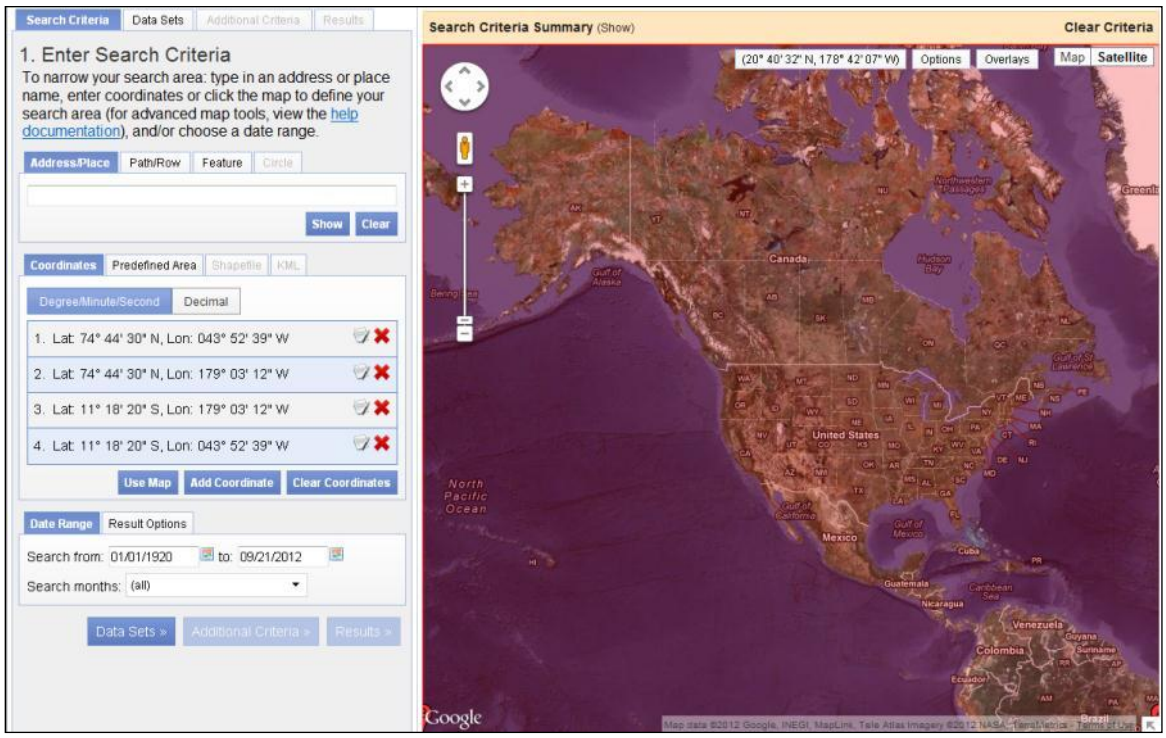


Figure 33 - Add Map to Selection Example

2. **Enter Search using Address/Place**

The Address/Place subcomponent allows you to enter a specific address, latitude, longitude, United States or World feature, or Landsat Worldwide Reference System (WRS) Path/Row.

a. Address – Enter a specific address; for example, in the Address: field, type 47914 252nd St, Sioux Falls, SD (Figure 34). Press Enter or click ‘Show’ to display the location on the map along with the latitude and longitude under the ‘Coordinates’ section (Figure 35).

Figure 34 - Enter Address

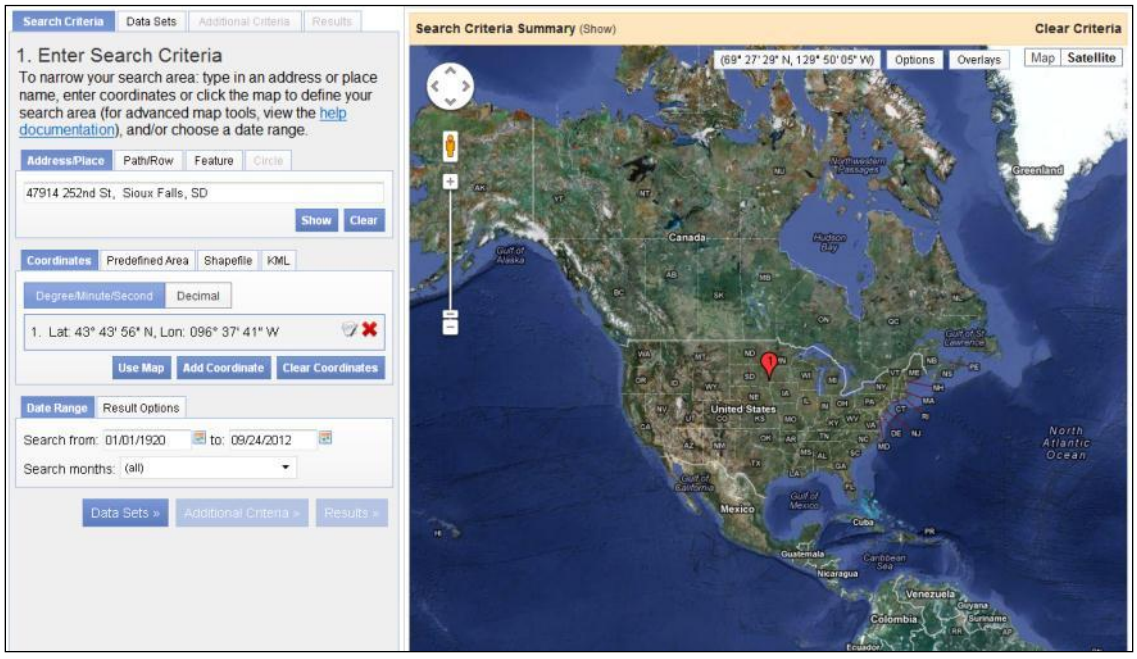


Figure 35 - Enter Address Location

b. Latitude/Longitude – Enter a specific latitude/longitude; for example, type 43 43' 57" N, 096 37' 42" W (Figure 36). Press Enter or click 'Show' to display the location on the map and to populate the 'Coordinates' section. (Figure 37).

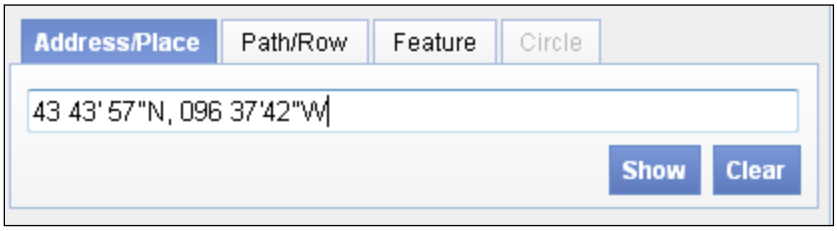


Figure 36 - Enter Latitude/Longitude

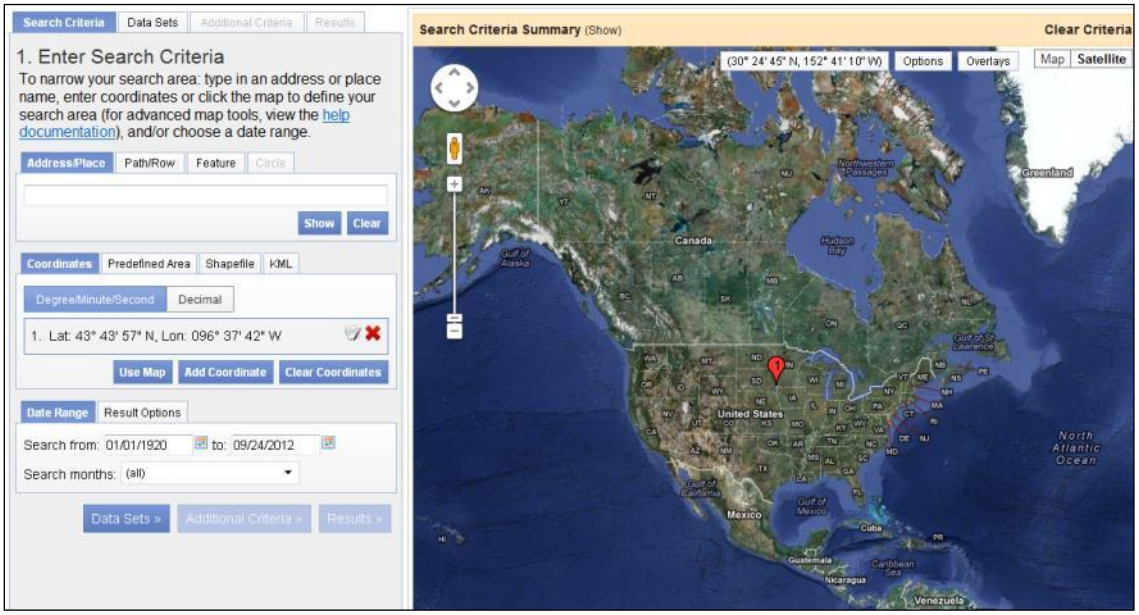


Figure 37 - Enter Latitude/Longitude Location

c. Place Name – Enter a place name. For example, type Mount Rushmore (Figure 38) and press Enter or click ‘Show’ to display the location on the map and to populate the ‘Coordinates’ section.(Figure 39).

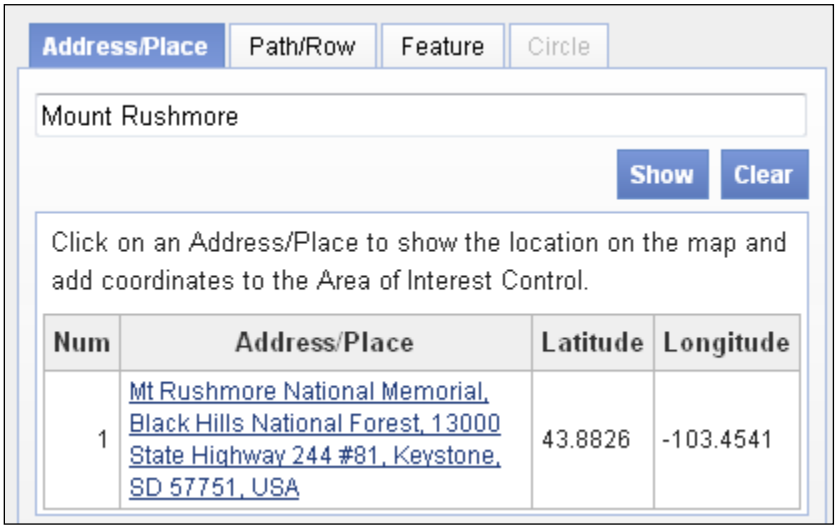


Figure 38 - Place Name

If you are unsure of a specific location, type a placename and press Enter (or click ‘Show’) to display a list of possible options. For example, type EROS and then click ‘Show’ to display a list of possible places that match EROS.

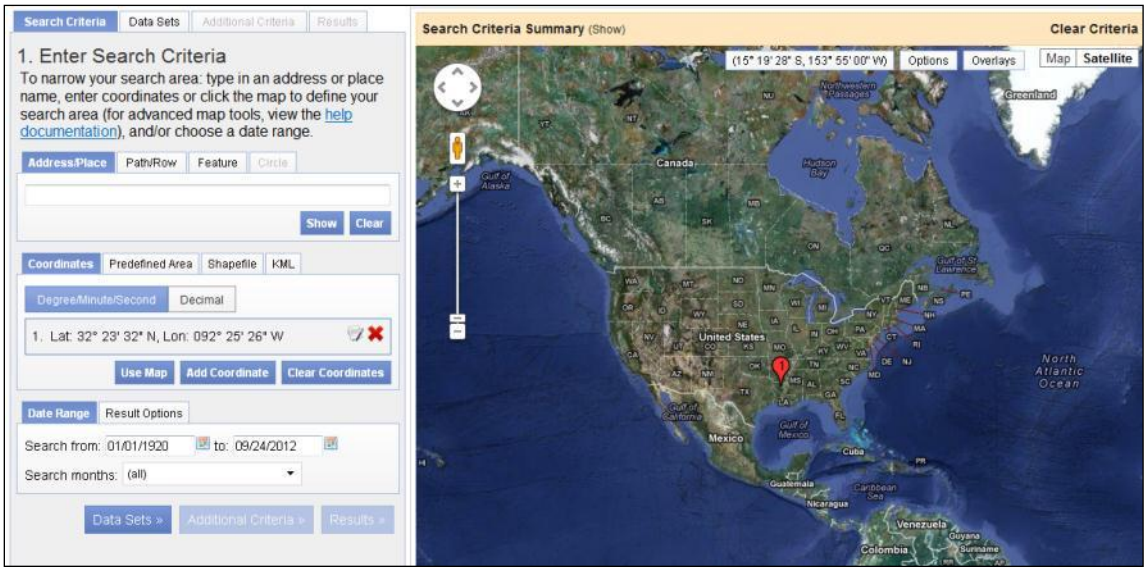


Figure 39 - Place Name - Multiple Options

Click an item in the Address/Place list to show the location on the map (Figure 40).

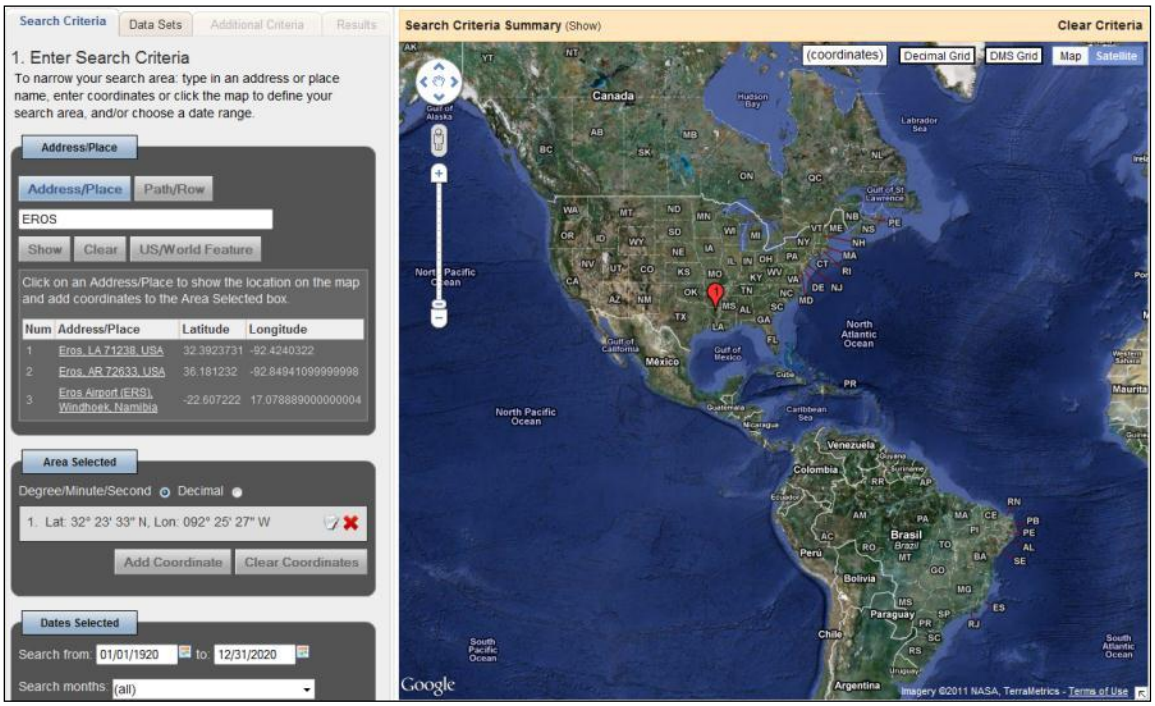


Figure 40 - Place Name - Multiple Option - Selected Place

d. Path/Row – Select the Path/Row option to enter WRS1 or WRS2 path row criteria for the search.

   Select the Path/Row button to display the Path/Row WRS criteria dialog box (Figure 41). Select either WRS1 or WRS2 and then type the Path and Row for the desired area. For example, select 'WRS2' and type Path: 31 and Row: 29 to identify the center point for WRS2, Path 31, and Row 29. Click 'Show' to identify the path/row location on the map (Figure 42).

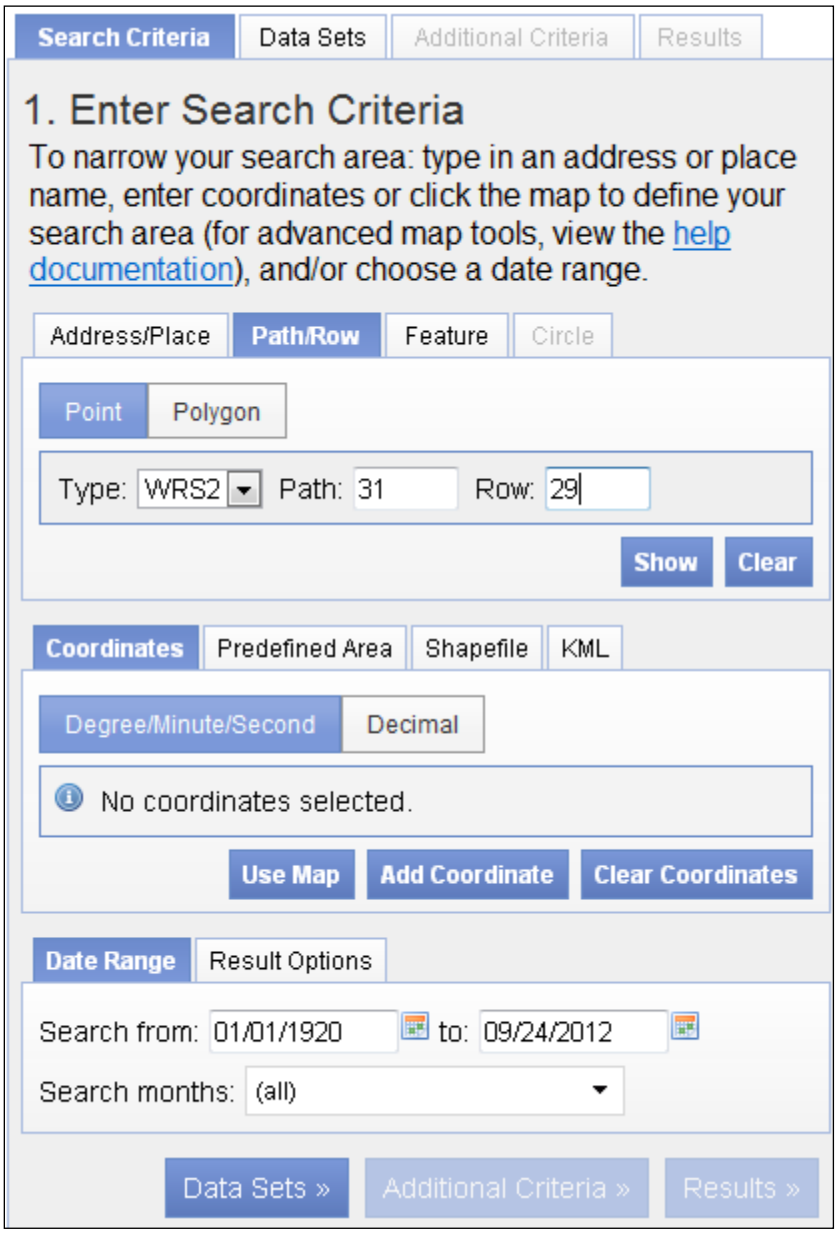


Figure 41 - Path/Row

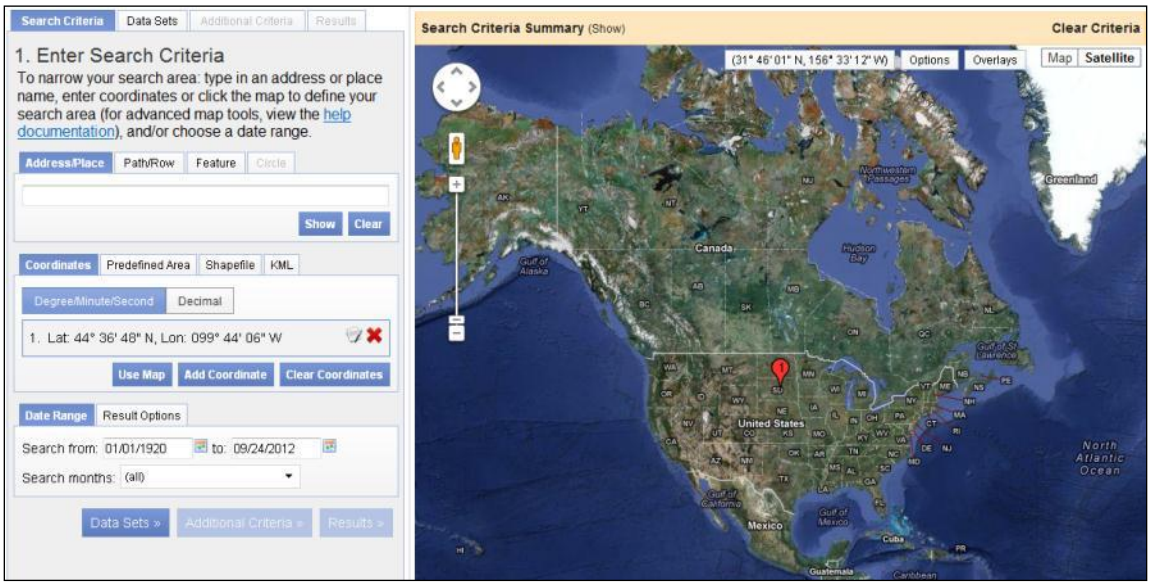


Figure 42 - Path/Row Location

e. US/World Feature – Select either a United States or World feature.

   Click the ‘Feature’ button to display the US/World Feature Search dialog box. Type in a geographic feature name or select a State/Country, Feature Class, or Feature type from a popdown menu (Figure 43).

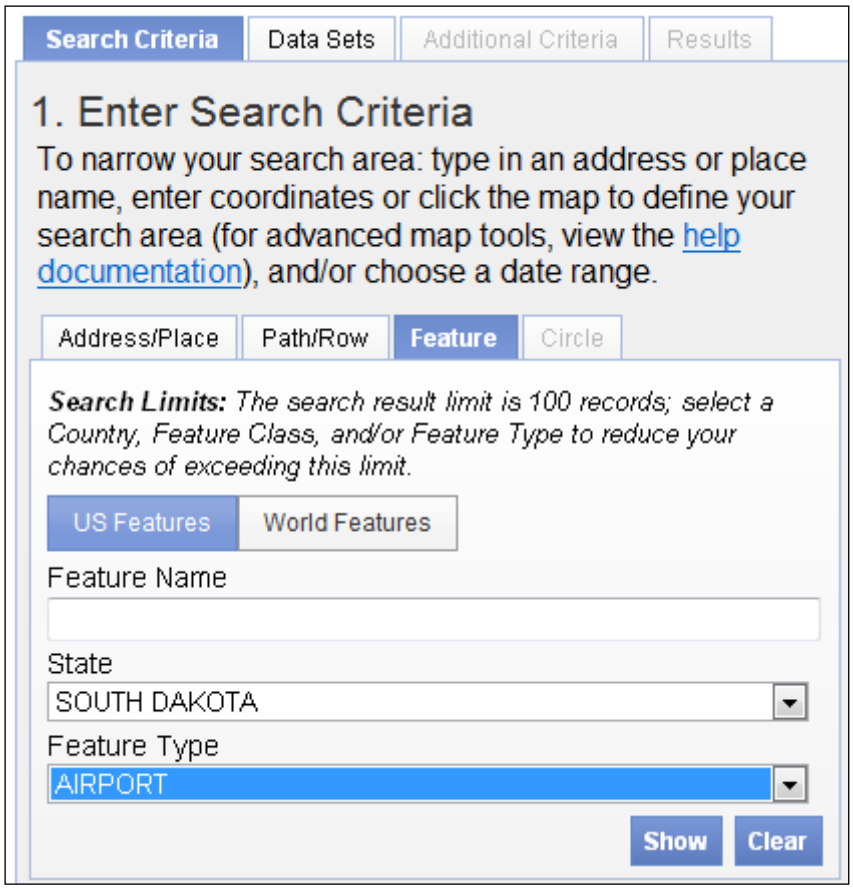


Figure 43 - US Feature Place name Search

For example, on the 'US Features' tab, select 'South Dakota' from the State dropdown, select 'Airport' from the Feature Type dropdown, and click 'Search' to display a list of all airports in South Dakota (Figure 44).

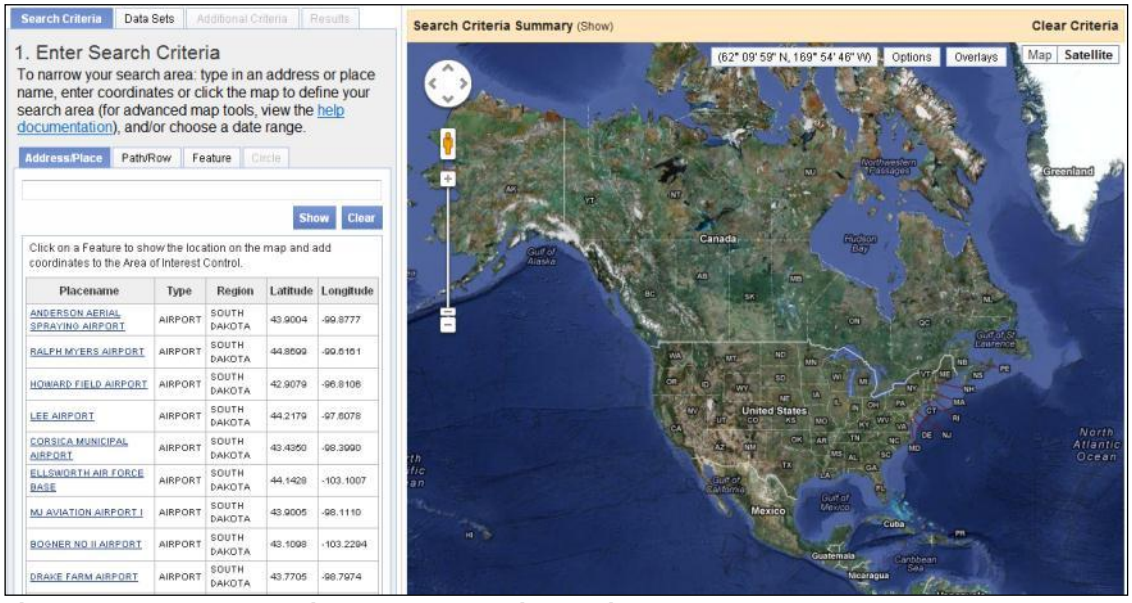


Figure 44 - US Feature Place name Search Results

Click the desired feature from the results list to close the dialog and display the feature location on the map (Figure 45).

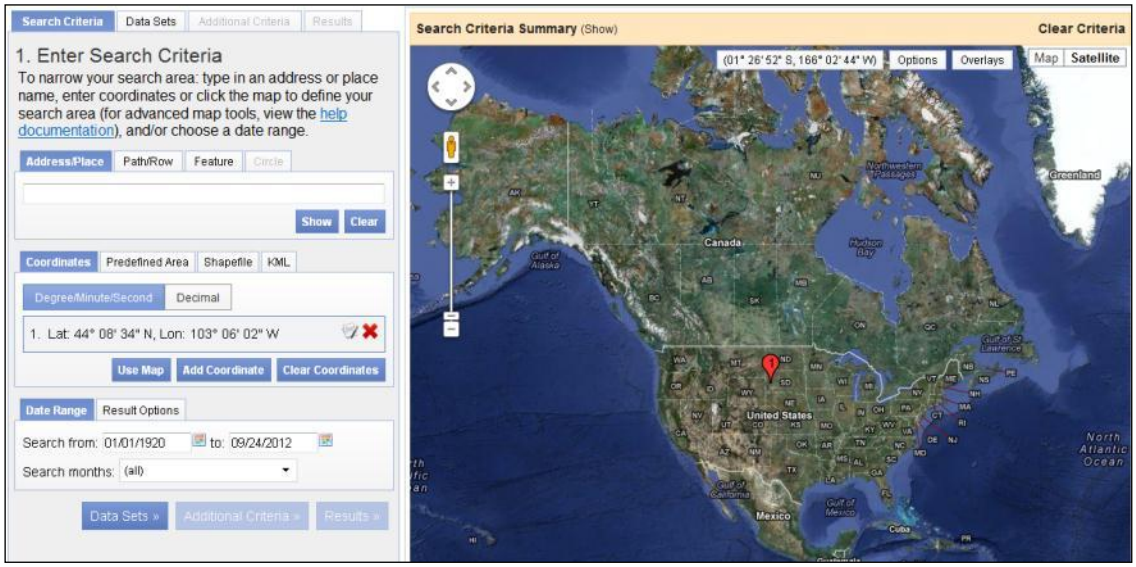


Figure 45 - US Feature Place name Selected

3. **Enter Search manually using Coordinates or Shapes Area Selected**

A second way to define an area of interest is to manually type the latitude/longitude in the Coordinates tab.

To enter latitude/longitude coordinates manually, select the 'Degree/Minute/Second' or 'Decimal' option. This method displays how the latitude/longitude information is entered. Click 'Add Coordinate' (Figure 46).

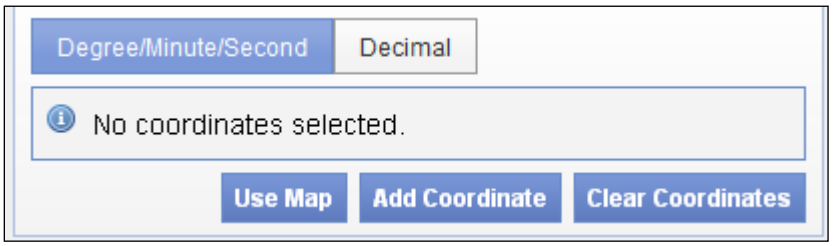


Figure 46 - Add Coordinate

Click 'Add Coordinate' to display the 'Add new Coordinate' dialog box. As shown in Figure 47, enter degrees, minutes, and seconds of a point in the dialog box. After clicking Add, the dialog disappears, the point displays on the map, and the coordinates are displayed. Use this method to enter multiple points (Figure 48).

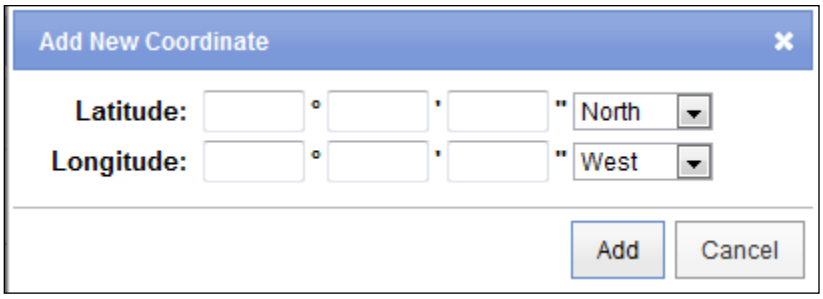


Figure 47 - Add New Coordinate

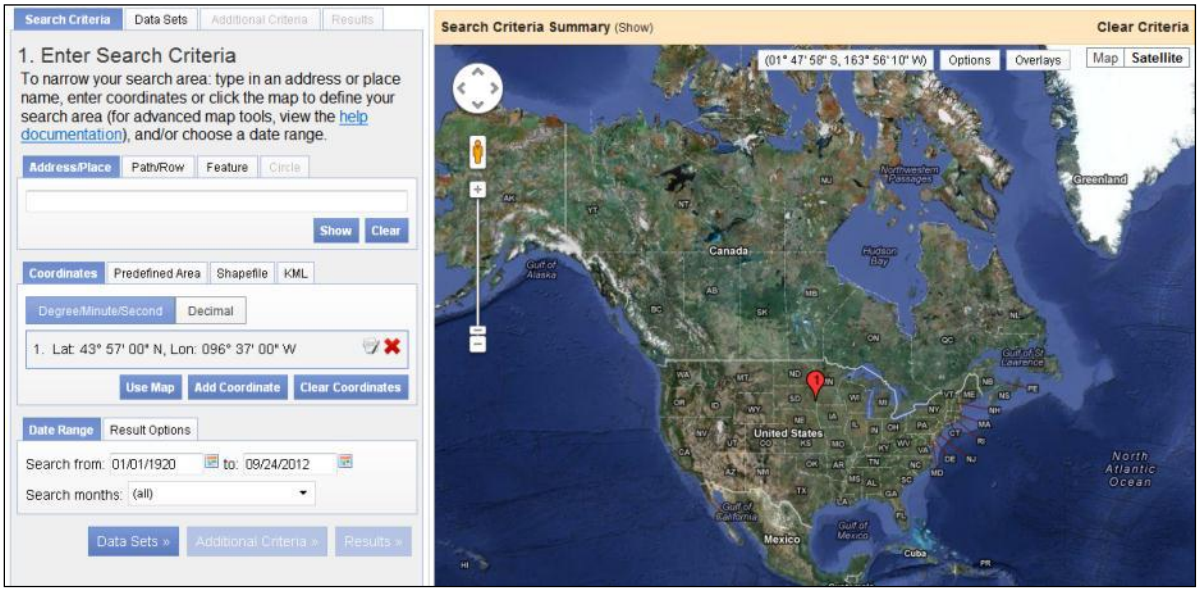


Figure 48 - Add New Coordinate Location

Click ✖ to delete a coordinate or click ✎ to edit a coordinate (Figure 49).

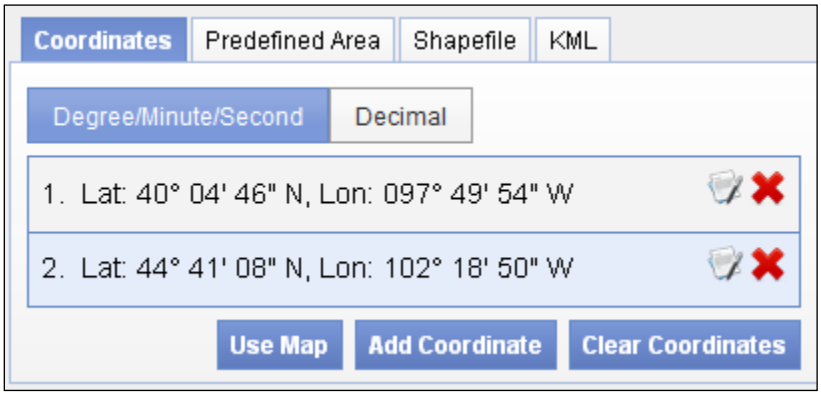


Figure 49 - Delete or Edit Coordinates

4. **Predefined Area**

The 'Predefined Area' option provides a list of predefined areas to perform a search on. The list of predefined areas includes:

- States
- Counties
- Congressional Districts

Selecting the 'Predefined Area' tab displays the 'Add Shape' dialog box as shown in Figure 50. Select the desired State, Area type (State, County, Congress District), and Area (County name or Congressional District name).

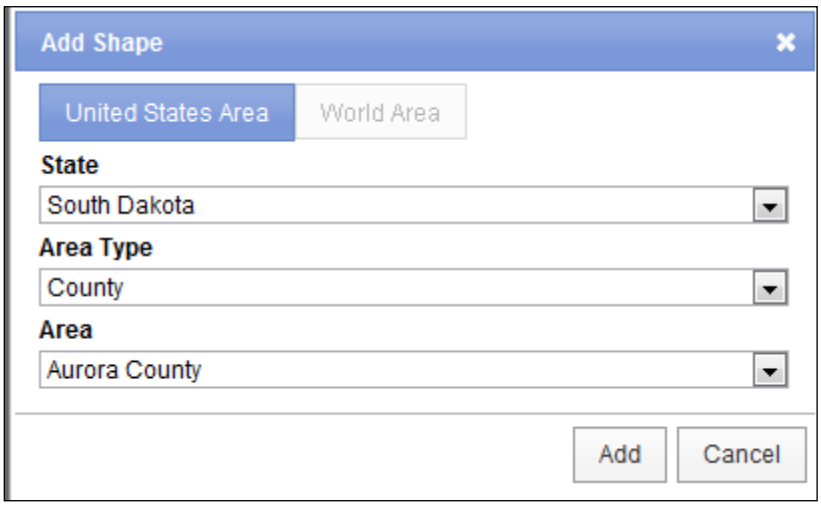


Figure 50 - Predefined Area - Add Shape

The outline of the selected Predefined area is then displayed on the Google Map interface (Figure 51).

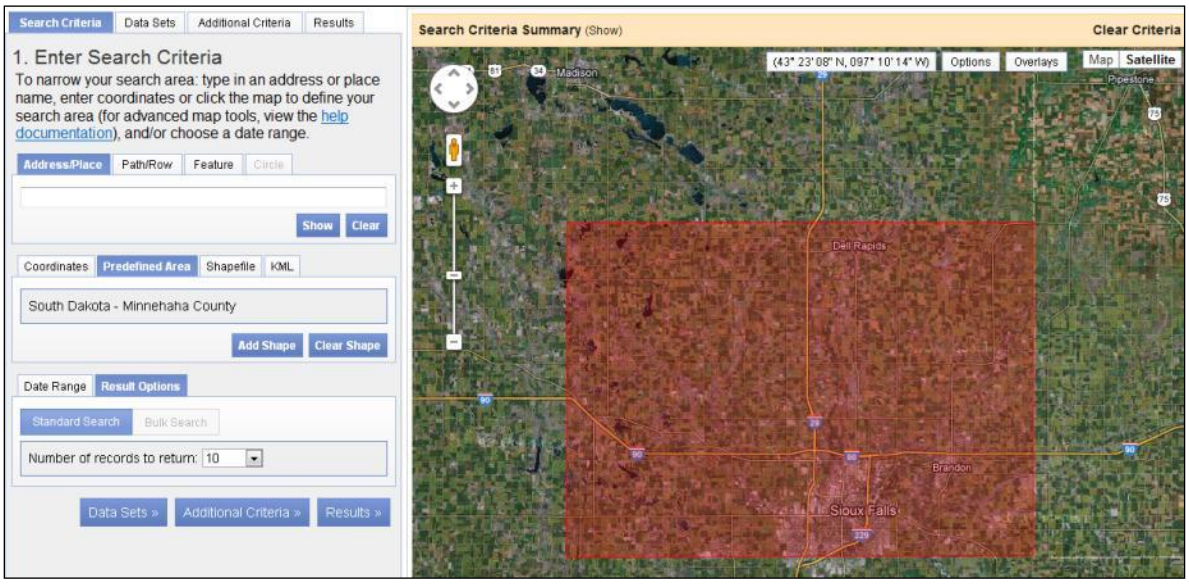


Figure 51 - Predefined Search Area

5. **Upload ESRI Shapefile or KML file**

The EarthExplorer interface provides the capability to upload either an ESRI Shapefile or Google Earth Keyhole Markup Language file as search criteria.

a. Upload ESRI Shapefile

Selecting the 'Shapefile' tab on the 'Coordinates' dialog box displays the input form for the uploading ESRI Shapefile information for a search area (Figure 52). Shapefiles are limited to one record containing one polygon or line string with a maximum 30 points.

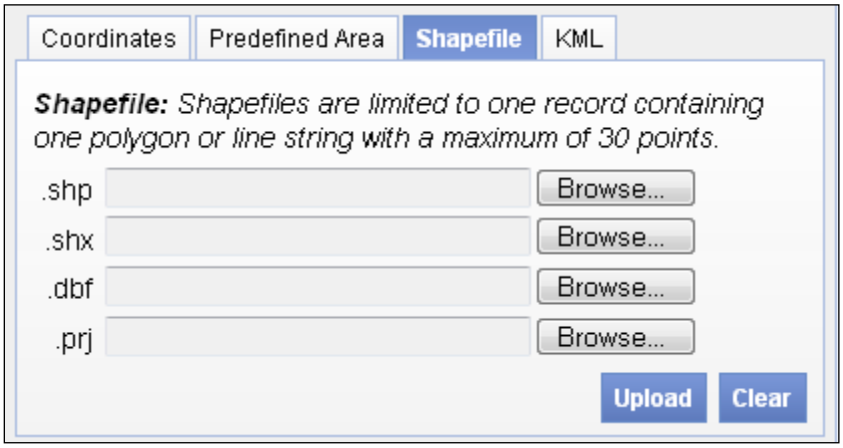


Figure 52 - Upload ESRI Shapefile

The ESRI Shapefile dialog box requires all of the following files: .shp, .shx, .dbf and .dbf.

b. Upload KML/KMZ file

Selecting the ‘KML’ tab on the ‘Coordinates’ dialog box displays the input form for the uploading a KML or KMZ file for a search area (Figure 52). The KML or KMZ file is limited to one record containing one polygon or line string with a maximum 30 points.

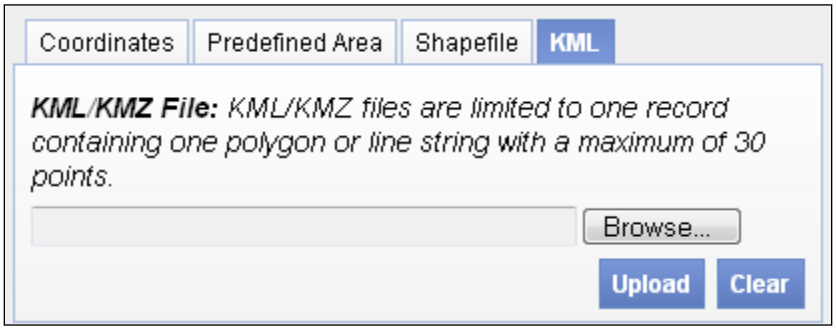


Figure 53 - Upload KML/KMZ file

Browse to the desired KML or KMZ file, select the desired file, and then select the ‘Upload’ file button to process the KML/KMZ file to the desired polygon search area. Figure 54 is an example KML file uploaded to EarthExplorer with 4 polygon points identified in the KML.

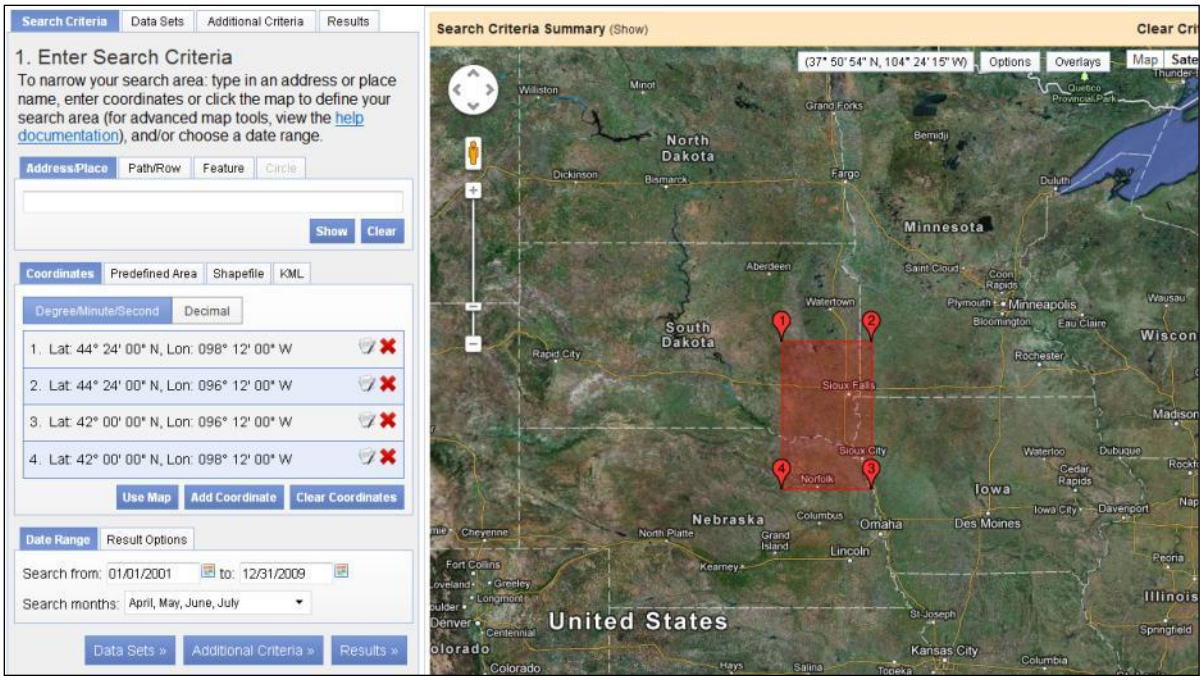


Figure 54 - Example uploaded KML file

The following is the example used to create the KML polygon search example.

```
<?xml version="1.0" encoding="UTF-8"?>
<kml xmlns="http://earth.google.com/kml/2.0"> <Document>
<Placemark>
 <Polygon> <outerBoundaryIs>  <LinearRing>
  <coordinates>
   -98.2,44.4
   -96.2,44.4
   -96.2,42
   -98.2,42
   -98.2,44.4
  </coordinates>
 </LinearRing> </outerBoundaryIs> </Polygon>
 <Style>
  <PolyStyle>
   <color>#a00000ff</color>
  <outline>0</outline>
  </PolyStyle>
 </Style>
</Placemark>
</Document></kml>
```

Figure 55 - KML Example

6. **Dates Selected**

The ‘Dates Selected’ option provides a method for entering a beginning and ending date range to refine the search criteria (Figure 55). You are not required to modify the default date range; however, a date range is highly recommended to reduce the number of search results returned from a search. ‘Search Months’ allows you to specify which months to search within the date range specified.

For example, Figure 55 shows a search range of 01/01/2008 to 12/31/2009, with selected months of April, May, June, and July.

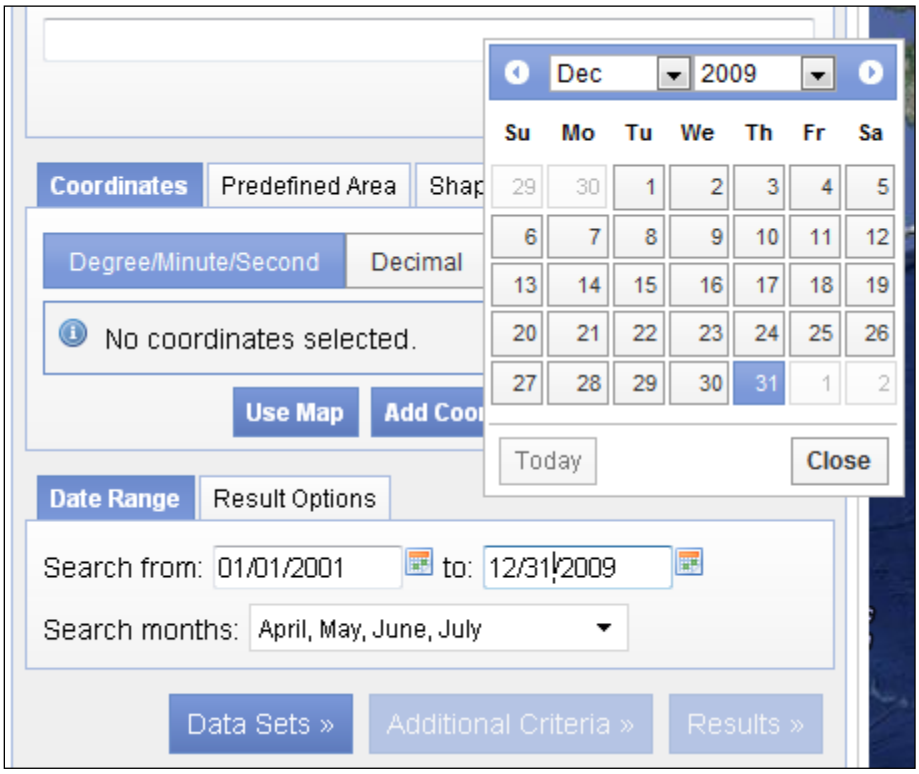


Figure 55 - Dates Selected

7. **Number of records to return**

The EarthExplorer interface allows you to select the number of records to return from a search. Use the 'Results Options' tab to select the maximum number of scenes returned (Figure 56).

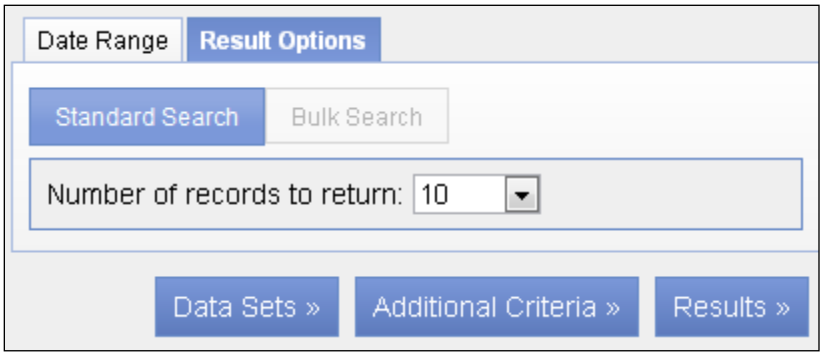


Figure 56 - Number of records to return

Once you enter the search criteria, click the 'Data Sets' tab at the top or bottom of the 'Enter Search Criteria' form.

B. **Select Data Set(s):**

The 'Data Sets' tab selects which dataset(s) to search (Figure 57).

Figure 57 - EarthExplorer Search Tabs – Data Sets

The 'Data Set' menu (Figure 58) categorizes datasets into similar data collections. EarthExplorer uses a dynamic tree menu with expandable/collapsible links for each major data category. Click the plus sign (⊞) next to the category name to expand the list of datasets for that collection. Click the minus sign (⊟) next to the category name to collapse the list.

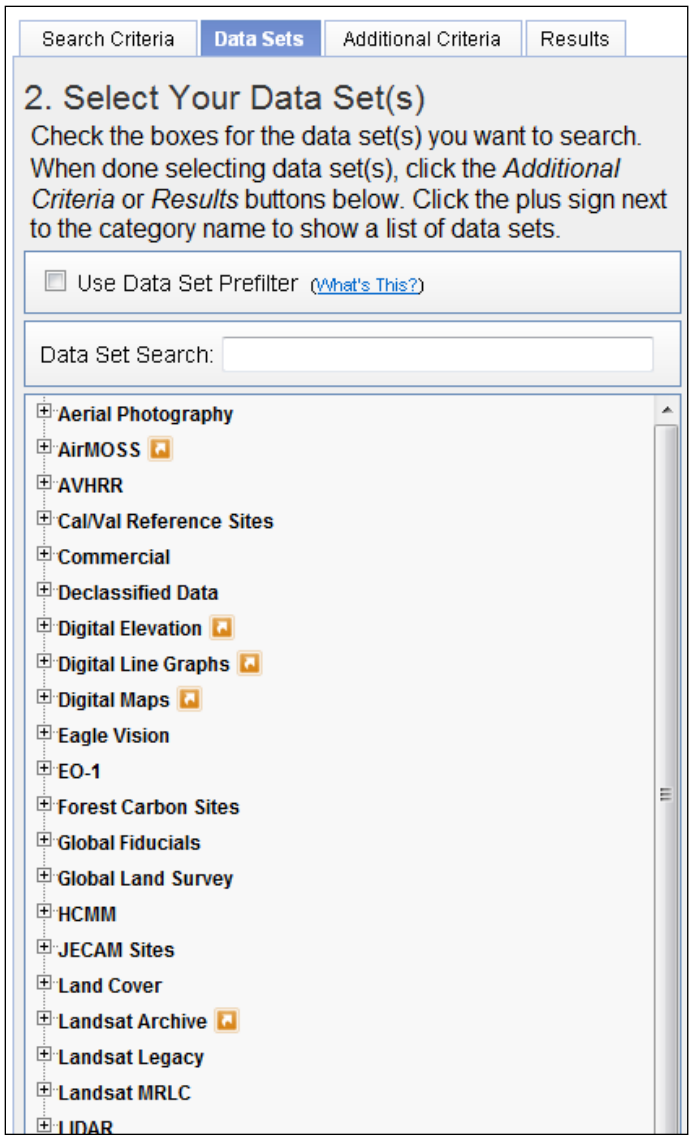


Figure 58 - Data Set Selection Expandable View

Information about a collection is identified with the 'Related Links' icon (). Information about each dataset is identified with the Information icon (). Moving the mouse pointer over a dataset displays a longer description of the dataset (Figure 59).

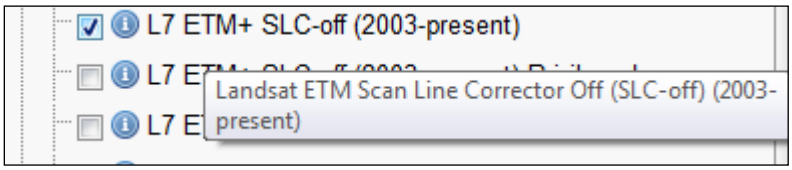


Figure 59 - Dataset mouse over example

The majority of the datasets are available for download from the USGS at no cost. A few datasets have a minimal fee to cover the cost of increasing the priority in production. These datasets are identified with a dollar sign icon ( ) (Figure 60).

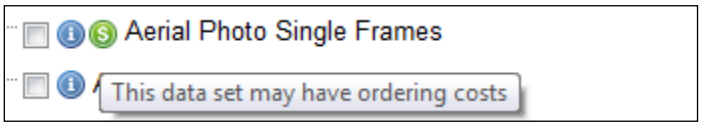


Figure 60 - Dataset with cost of reproduction icon

Data Set Prefilter – Select the Data Set Prefilter option to filter any datasets that do not match a user's search criteria (Figure 61). Apply the prefilter to narrow the list of datasets to include only those based on the area of interest, date range, and months selected on the Search Criteria tab.

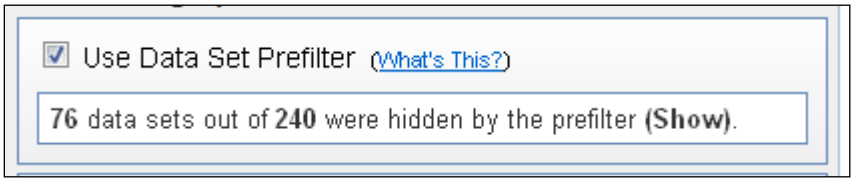


Figure 61 - Data Set Prefilter

The prefilter does not guarantee results for the defined search criteria.

Click the 'Clear All Selected'

button to unselect all datasets that were selected.

After selecting a dataset, click the 'Additional Criteria' tab to enter additional criteria, or click the 'Results' tab to execute the search and view the results for the criteria entered.

C. **Enter Additional Criteria:**

The ‘Additional Criteria’ tab is an optional input area that allows the entry of additional search criteria specific to the dataset(s) selected. Click the ‘Additional Criteria’ tab to display the additional criteria for the first dataset selected (Figure 62). The type and number of search criteria will vary by dataset.

Figure 62 - EarthExplorer Additional Criteria Tab

To narrow the results of a search, each dataset in EarthExplorer has additional specific criteria that can be entered (Figure 63).

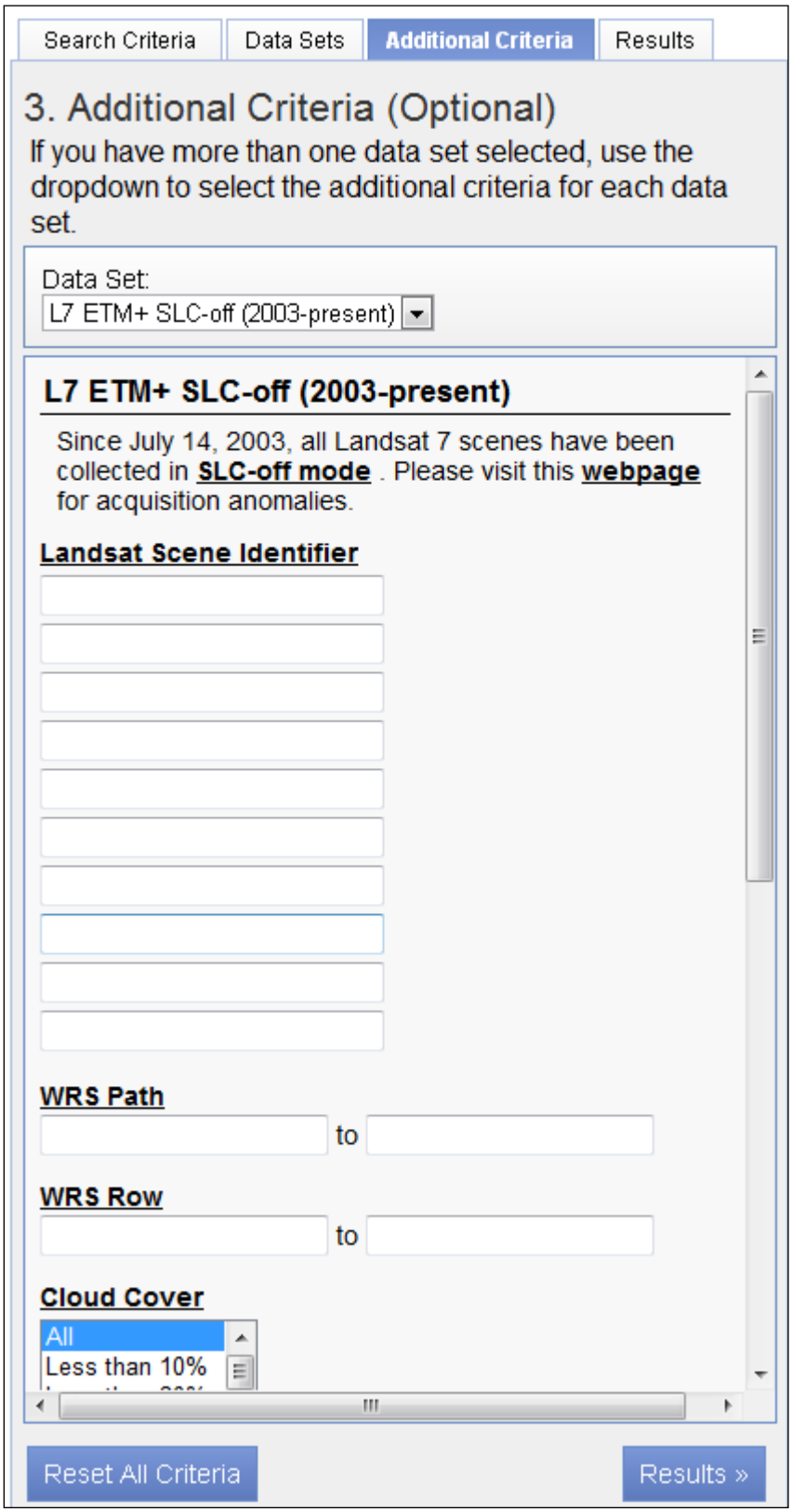


Figure 63 - Example Additional Criteria form

Select the dataset from the dropdown (if you only select one dataset, only one dataset appears in the dropdown) (Figure 64).

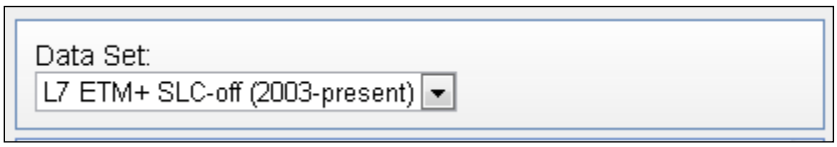


Figure 64 - Data Set Criteria forms

Each criteria page is different and is based on the unique dataset attributes defined for that dataset. In the following example, the specific search criteria include:

- WRS Path
- WRS Row
- Cloud Cover
- Data Category
- Day Night
- Landsat Scene Identifier

Click the title of a search criteria attribute link to the data dictionary for the selected data set to provide information about the particular search item.

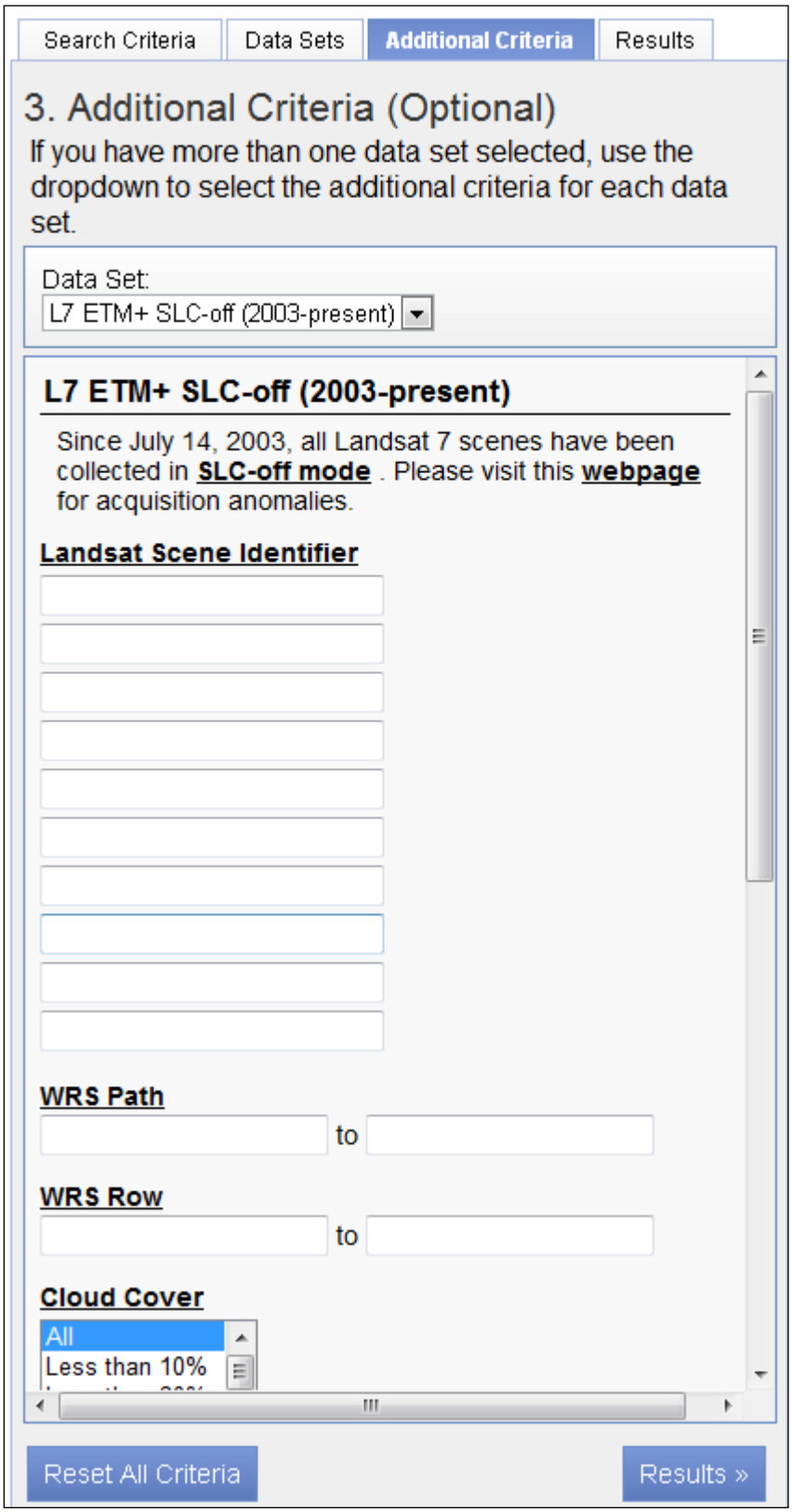


Figure 65 - Unique Criteria Form

Enter the additional criteria as desired to narrow the search (Figure 65).
Click the 'Reset' button to clear the page of the current dataset listed. The 'Reset All' button clears the criteria forms for all the datasets listed. Once you enter the additional

criteria (if any), click the ‘Results’ tab near the top of the screen or the button near the bottom of the screen to execute a search.

D. **View Search Results**

The ‘Results’ tab (Figure 66) executes a search using the search criteria and displays the results for the search criteria. The left side of the page displays the results panel with the thumbnail and textual information for each scene returned from the search. The right side of the page displays the Google Map interface with an outline of the identified area of interest (Figure 67).

Figure 66 - EarthExplorer Results Tab

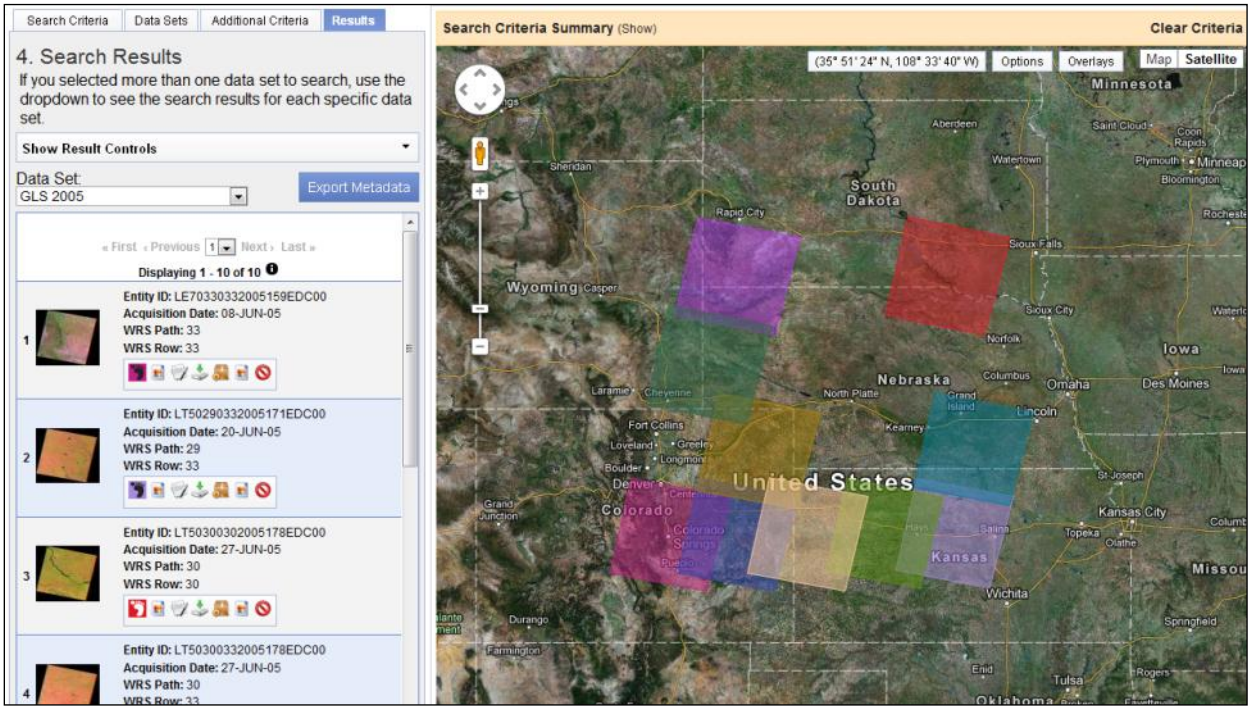


Figure 67 - Example Results

The Search Results panel includes the following components:

- Show Result Controls – Shows all footprints, provides browse options, adds all page results to the shopping basket, and modifies the opacity of browse displayed on the map
- Search Results List – Displays the thumbnail, textual information, icons to view details of each scene, view browse, and request downloads of data and other visualization controls for each record returned from the search
- Google Map Interface – Displays the search area, views footprints on the map, and reviews a browse image for each scene through the Google Map interface

1. **Search Result Controls**

The Search Results Controls (Figure 68) provide options for:

- Displaying all footprints on the map display from the search results list
- Displaying all browse on the map display from the search results list
- Adding all search results displayed on this page to the item basket

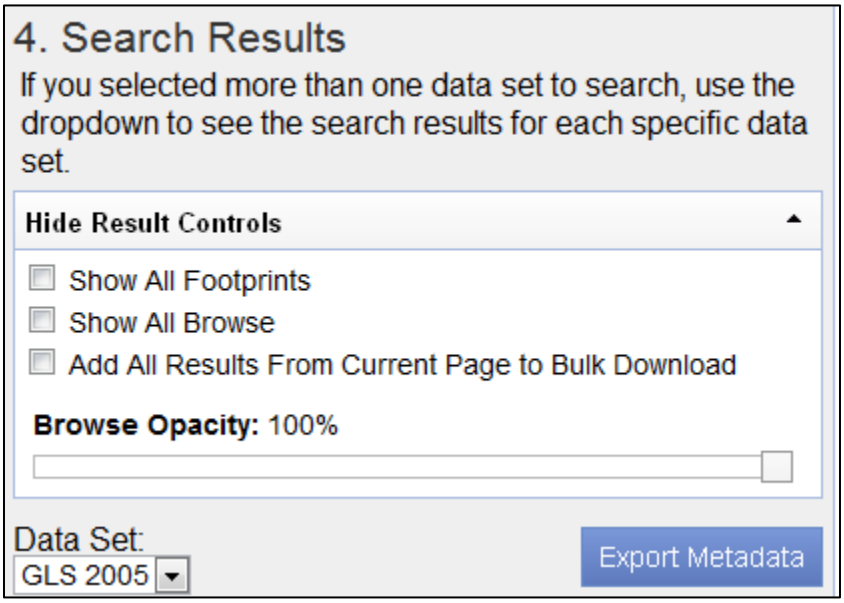


Figure 68 - Search Result Control

Select ‘Show All Footprints’ (Figure 69) to display footprints from the current page of results.

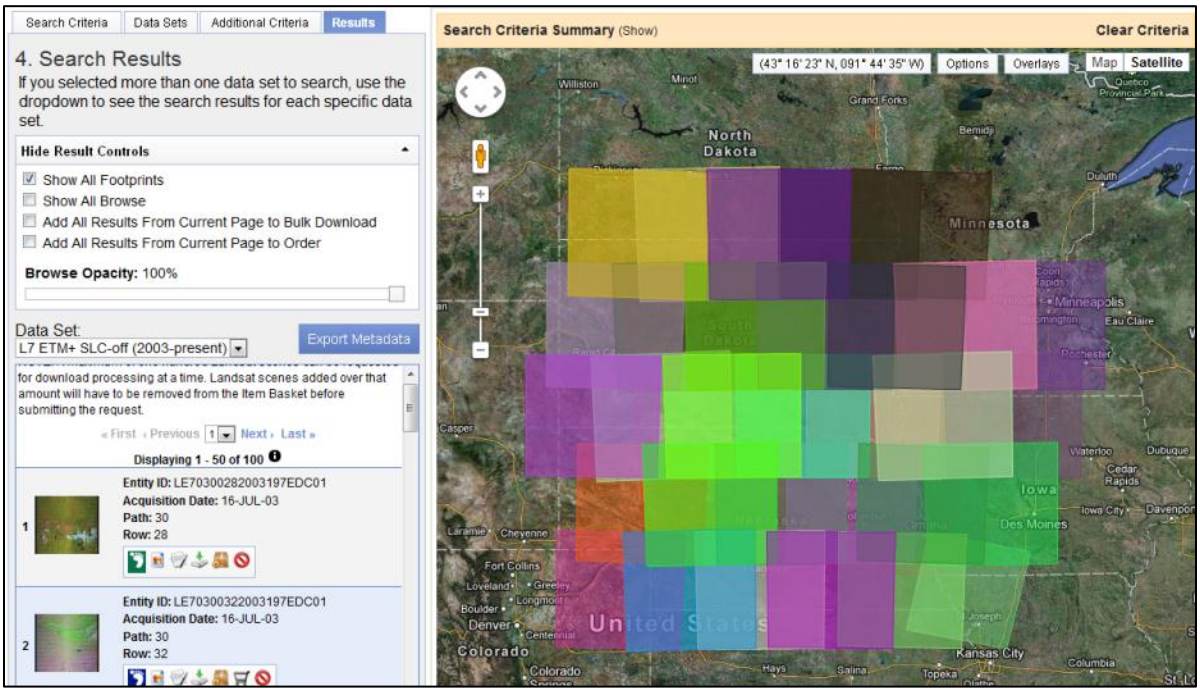


Figure 69 - Show All Footprints

Select ‘Show All Browse’ (Figure 70) to display all browse from the current page of results.

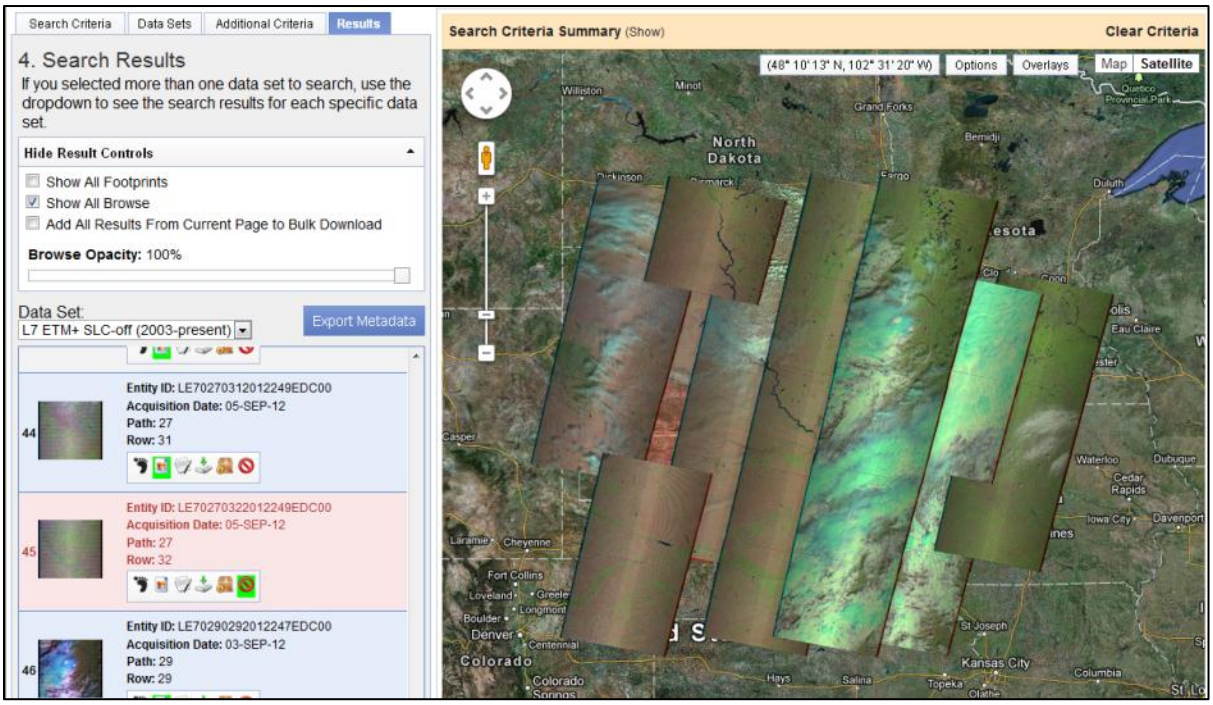


Figure 70 - Show All Browse

Select ‘Add All Results from Page to Order’ to add all results displayed on the current page to the item selection basket.

The ‘Browse Opacity’ slider (Figure 71) adjusts the opacity level of the overlay browse images.

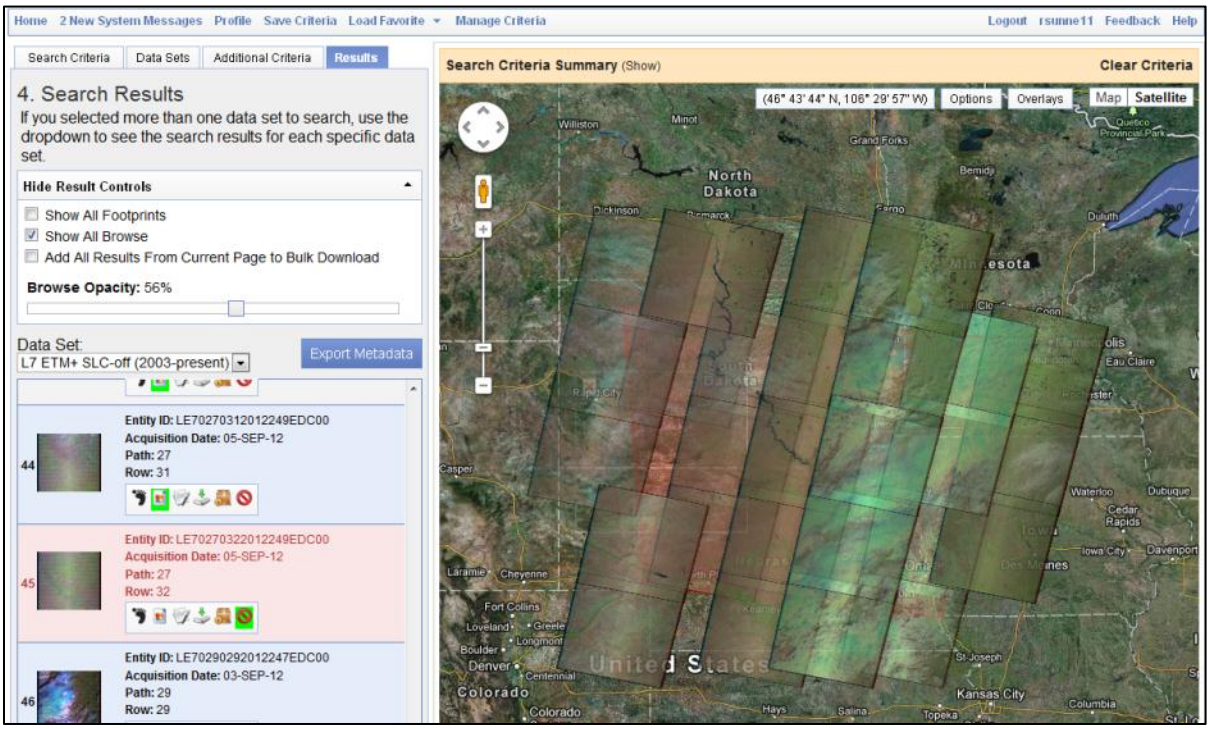


Figure 71 - Browse Opacity Example

2. **Search Results List**

The Search Results List provides the controls for displaying the search results. Each search result includes a thumbnail image, attribute information on each scene, links to view browse and download, and other visualization controls.

c. Multiple Datasets

EarthExplorer searches multiple datasets (Figure 72). The results of the first dataset display in the results panel. Use the “Data Set” selection box to select and view each additional dataset.

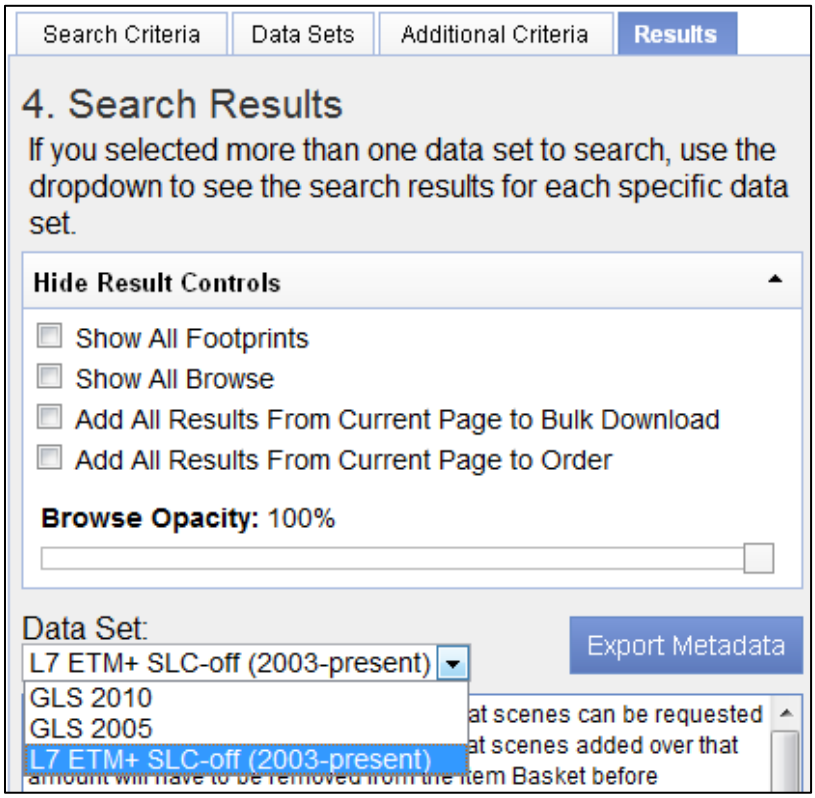


Figure 72 - Select Data Set Results

Figure 73 displays an example of search results.

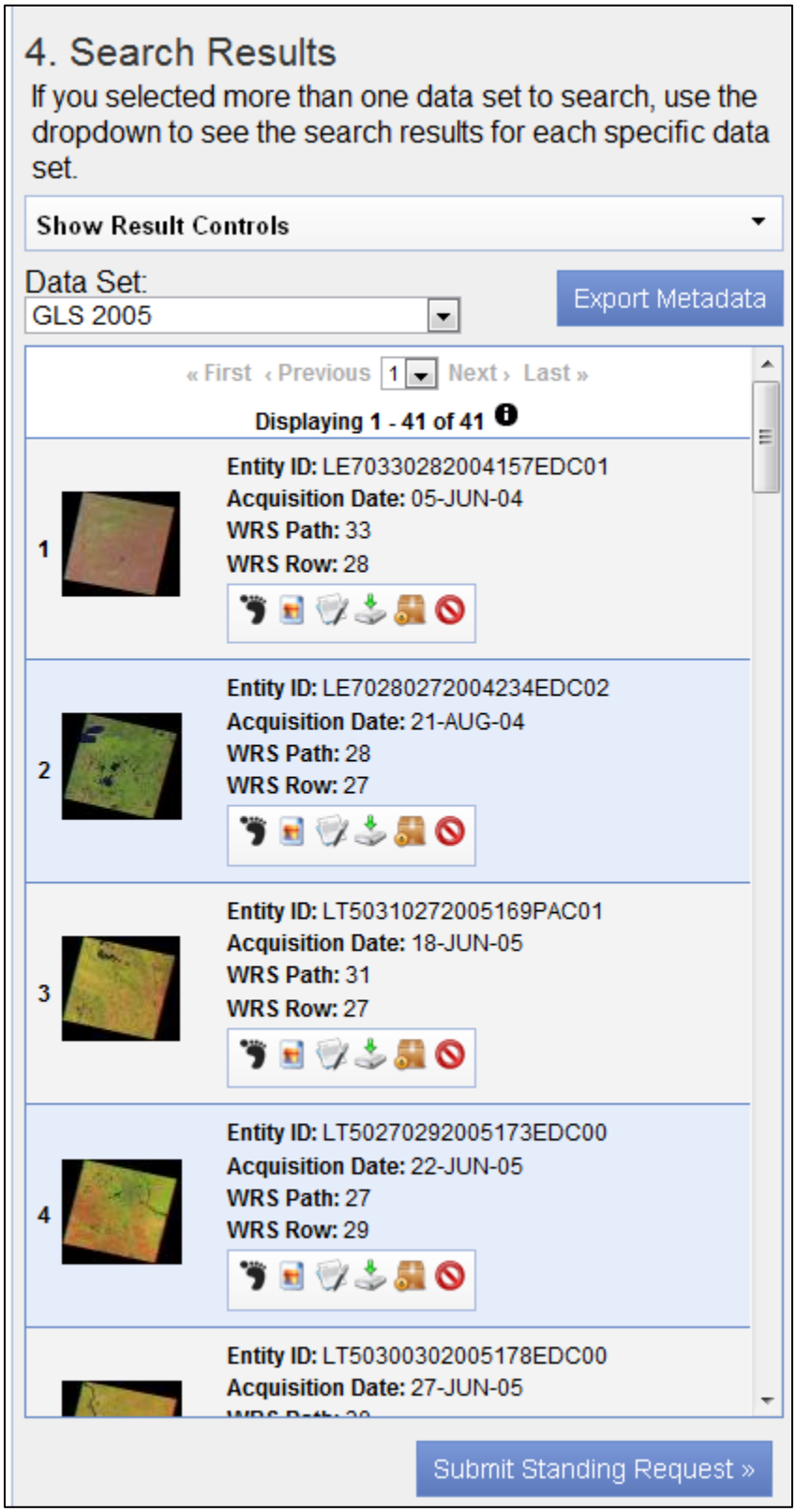


Figure 73 - Example Search Results

d. Overlay and Download Controls

Each search result record includes a thumbnail image, attribute information on each scene, links to view browse and download data, and other visualization controls. Based on the dataset and user profile, some controls may not be available (Figure 74).

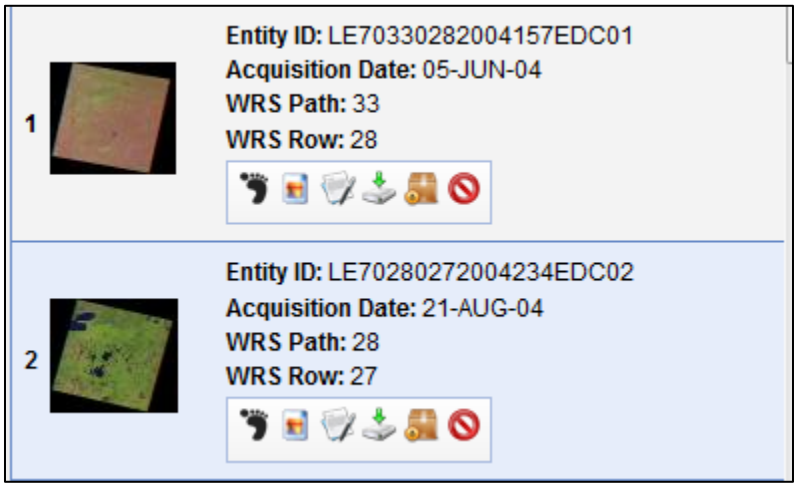


Figure 74 - Example Scene Level Results

The following is an overview of the overlay and download controls:

- Show Footprint – Select the 'Show Footprint' ( ) icon to display the footprint of the selected scenes on Google Map (Figure 75). When the footprint option is on, the footprint icon is highlighted. Click the highlighted icon to turn off the footprint option. Multiple footprints can be selected and displayed on the map. Each footprint displays in a different color.

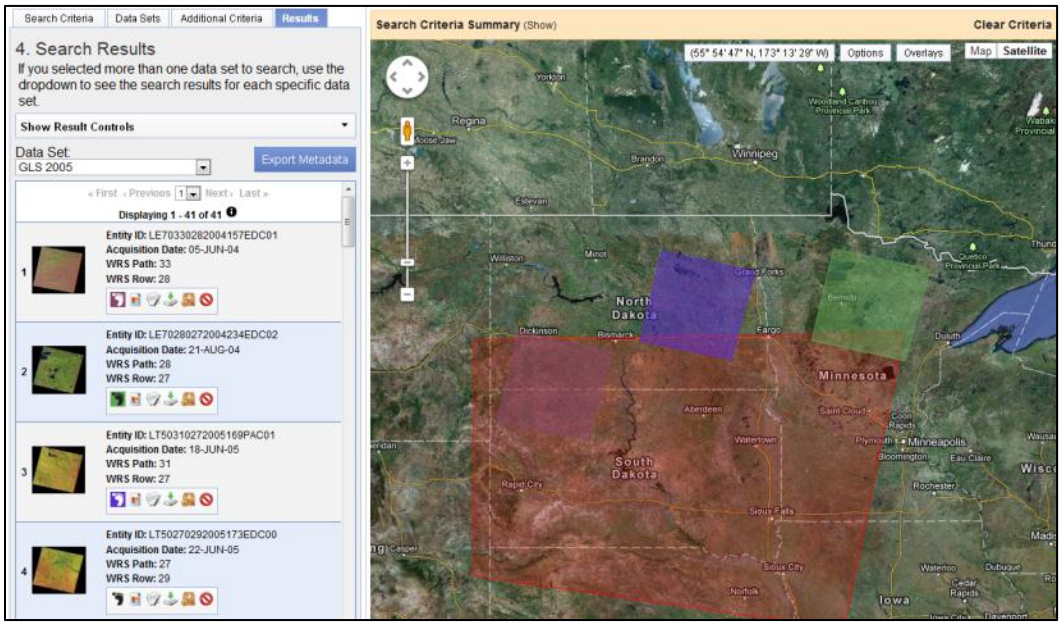


Figure 75 - Footprint Overlay

- Show Browse Overlay – Click the 'Show Browse Overlay' ( ) icon to display a preview image (browse) of the scene on the map (Figure 76).

When the browse option is on, the browse icon is highlighted. Click the highlighted icon to turn off the browse option. Multiple browse can be selected and displayed on the map.

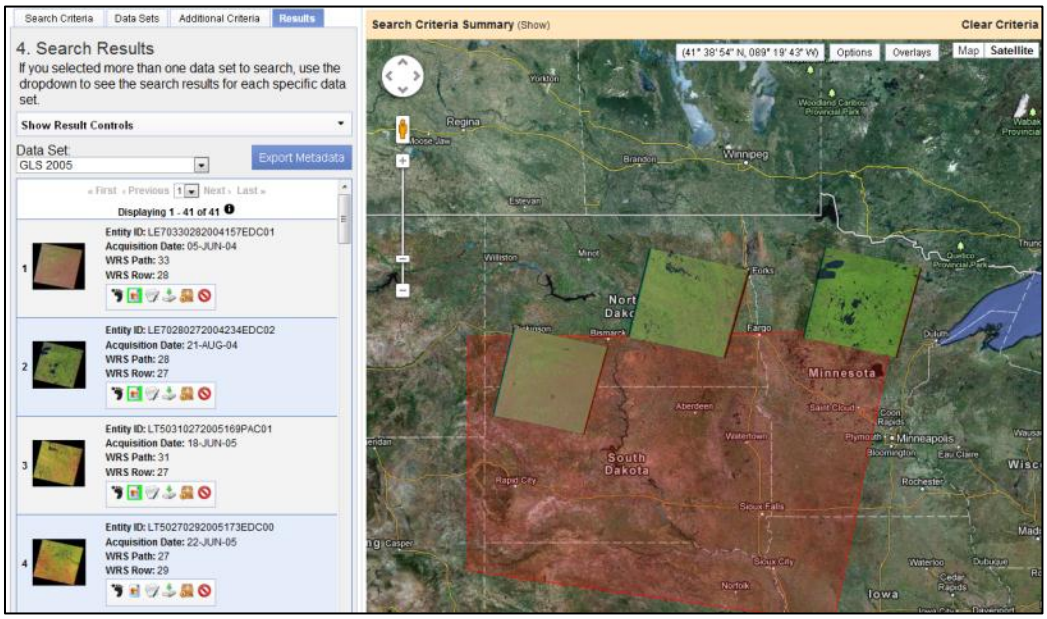


Figure 76 - Browse Overlay

- Show Metadata and Browse – Click the thumbnail image or icon to display the browse image and full metadata for the selected scene (Section IV, f).

- Download Options – Click the 'Download Options' icon ( ) to allow registered users to download the selected data (Figure 77). Selecting the 'Download Options' icon before registering or logging in displays the following prompt:

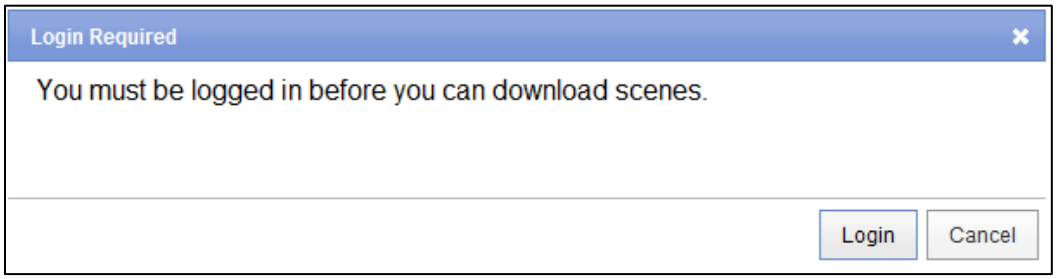


Figure 77 - Login before downloading

Click the 'Login' to log in to EarthExplorer.

After logging in and clicking the 'Download Options' icon, a page similar to the following displays (Figure 78):

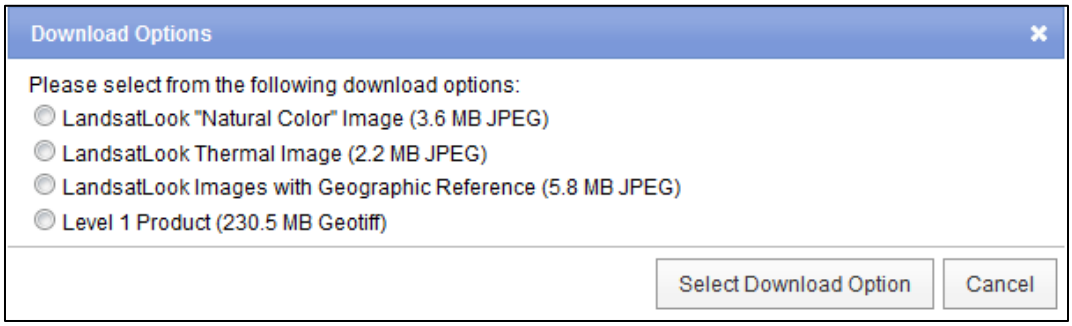


Figure 78 - Download Options Dialog

Depending on the dataset, multiple products may be available for download. After selecting the desired product, and clicking "Select Download Option", the following dialog displays (Figure 79):

Figure 79 - Download Scene

Click 'Download' to start the download process. A 'File Download' dialog box displays (Figure 80). Select 'Save' to prompt for the location to save the file.

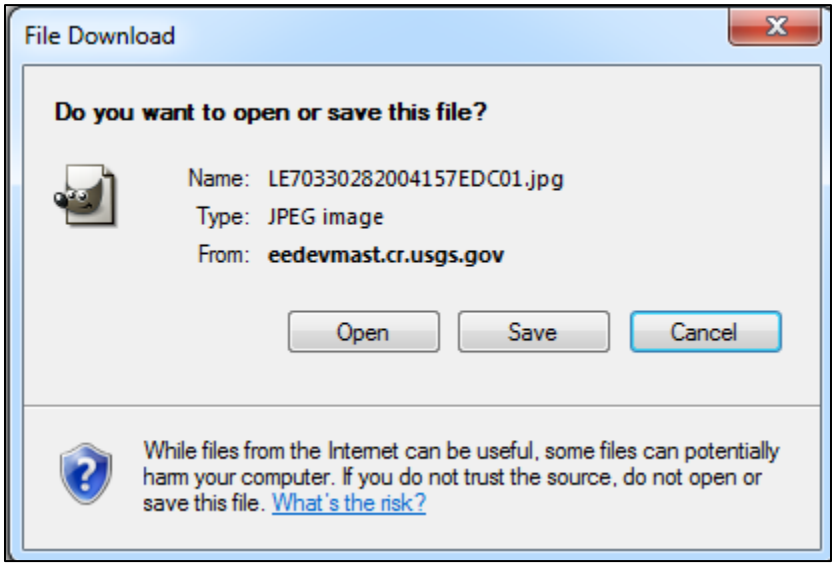


Figure 80 - Download Scene Dialog

- Bulk download – Click the 'Bulk Download' icon ( ) to allow registered users to bulk download the selected data (Figure 81). Selecting the 'Bulk Download' icon adds the selected scenes to the Item Basket.

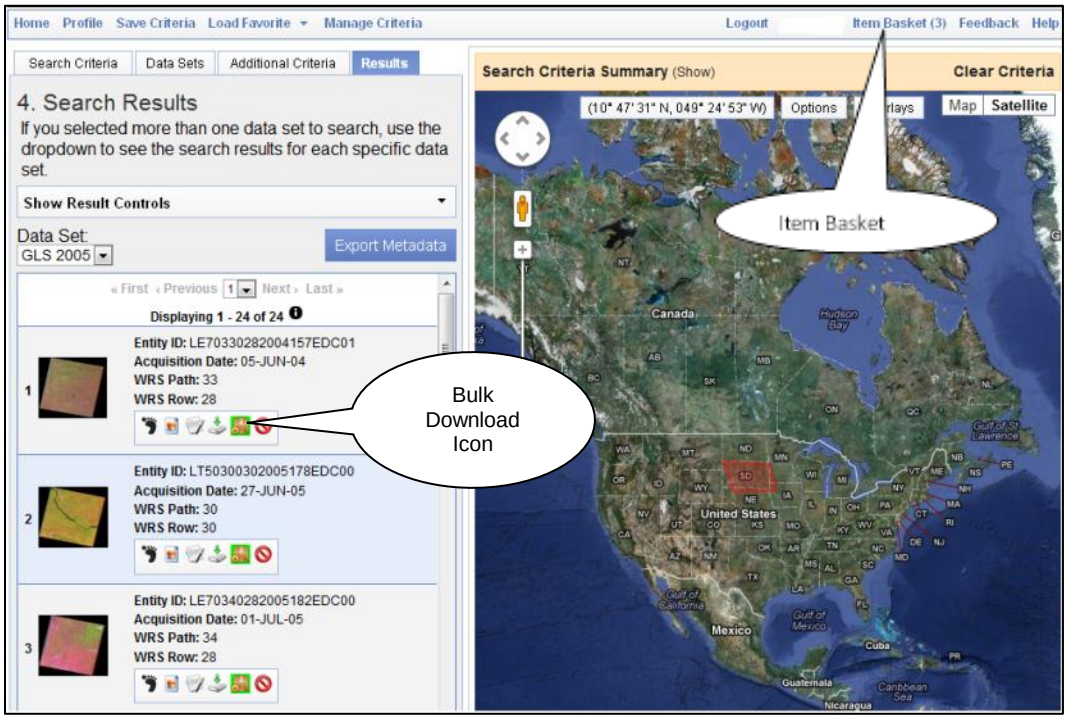


Figure 81 - Bulk Download - Added to Item Basket

Selecting the 'Item Basket' in the menu displays the 'Bulk Download Item Basket' (Figure 82). Based on the dataset, multiple options may be available to select the type of product(s) to download.

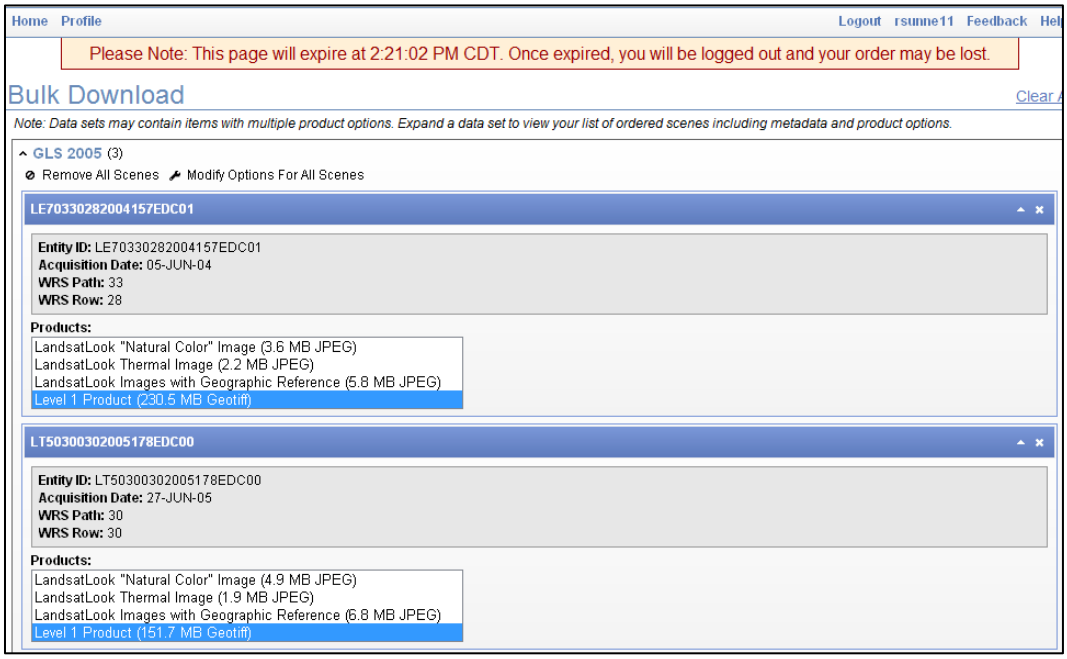


Figure 82 - Bulk Download Item Basket

After identifying the type of product desired, select the 'Proceed to Checkout' button to review the bulk request (Figure 83).

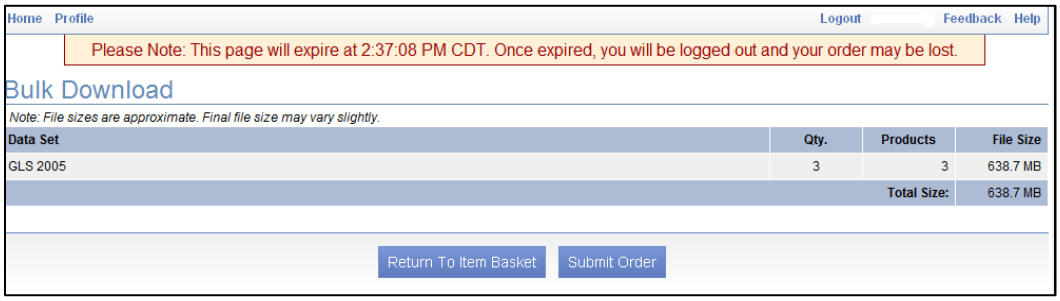


Figure 83 - Bulk Download Order Review

Selecting the 'Submit Order' button submits the bulk order for processing.

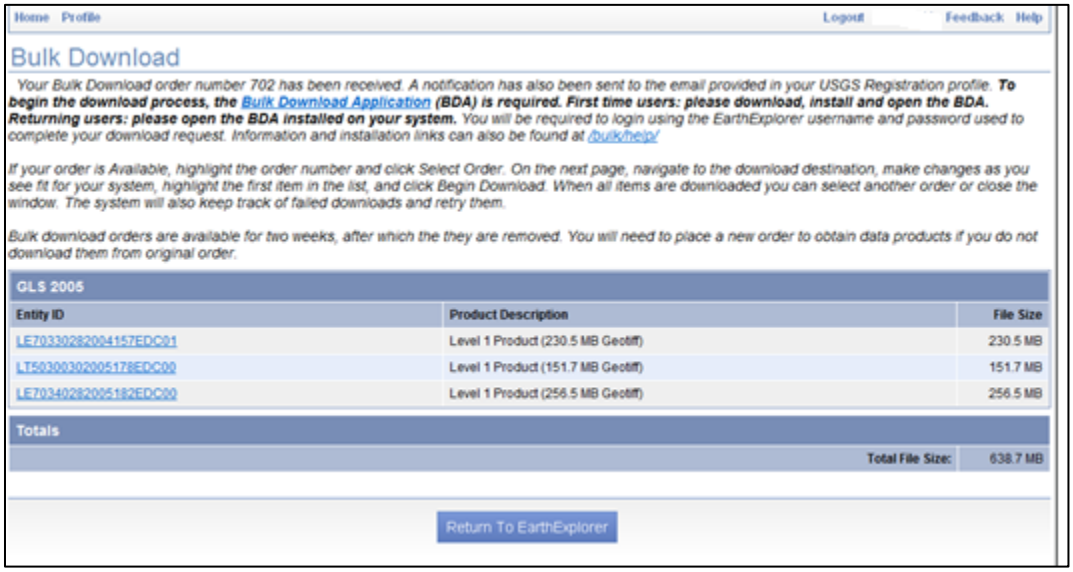


Figure 84 - Bulk Download Validation

The 'Bulk Download Validation' form (Figure 84) displays the scenes requested through the bulk download interface. To begin the download process, the Bulk Download Application (BDA) is required. First time users: please download, install and open the BDA. Returning users: please open the BDA installed on your system. You will be required to login using the EarthExplorer username and password used to complete your bulk download request.

e. Order Controls

The majority of the products available through EarthExplorer for registered users are available via download. In some cases, order requests are available for selected products. Ordering products usually requires some specialized image or data processing. If a dataset has an option for ordering, the 'Order Scene' icon ( ) displays. This option allows registered users to order or request specialized processing on certain products. The 'Order Scene' icon is greyed out unless you are registered and logged in. In addition, a few products require a small fee for the cost of processing.

Click the ‘Order Scene’ icon to add the selected scene to the ‘Item Basket’. As each scene is added to the ‘Item Selection’ basket on the menu bar, the number of scenes added to the basket is updated and the ‘Order Scene’ icon changes to green (Figure 85).

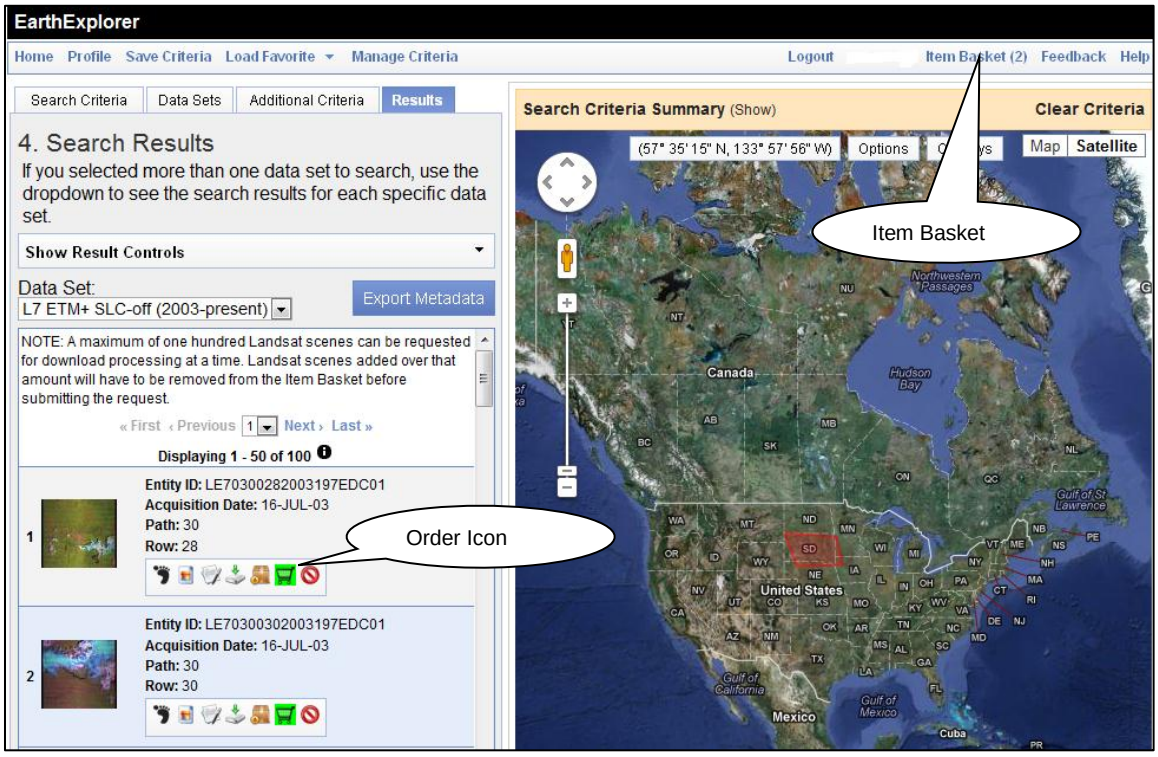


Figure 85 - Order Scene

In some cases, additional ordering parameters may be required to complete an order.

To view items in the Item Basket, click ‘Item Basket’ in the menu bar or the ‘View Item Basket’ button at the bottom of the results page (Figure 86).

Figure 86 - Item Basket Example

In the following example, the first item is for an Aerial Photo Single Frame scanning request. There is one option for the micron size of processing parameters. The cost of scanning is $30 per scene.

The second item is a request for a Landsat 7 Enhanced Thematic Mapper Plus (ETM+) Level 0, Scan Line Corrector (SLC) OFF On-Demand product. Processing parameters are not available for this product; this item is at no cost.

The overall cost is $30 for the scanned product with a $5 handling fee per order (Figure 87).

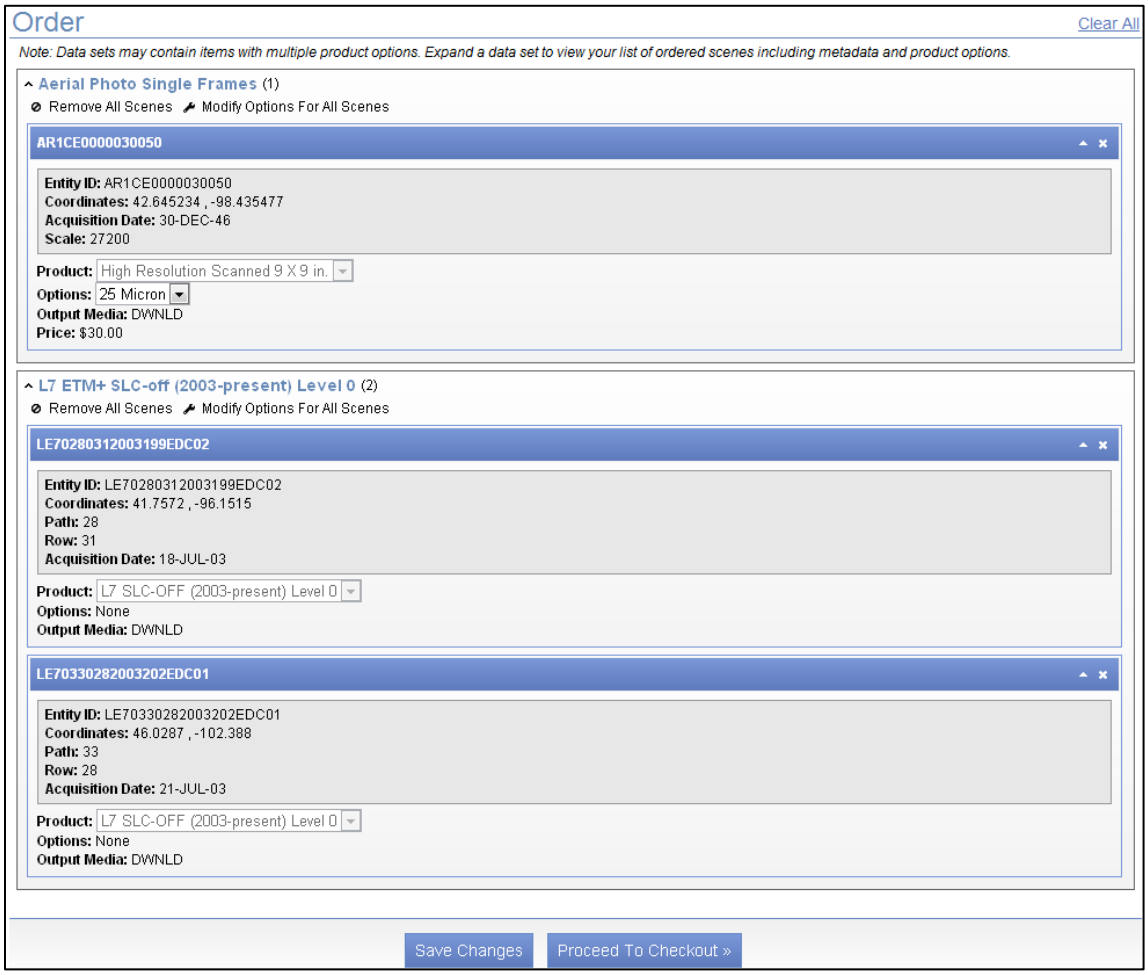


Figure 87 - Item Basket

Click 'Submit Order' to submit the order for processing. You will receive a confirmation email. The Checkout Summary page displays and you can print or save this summary for your records (Figure 88).

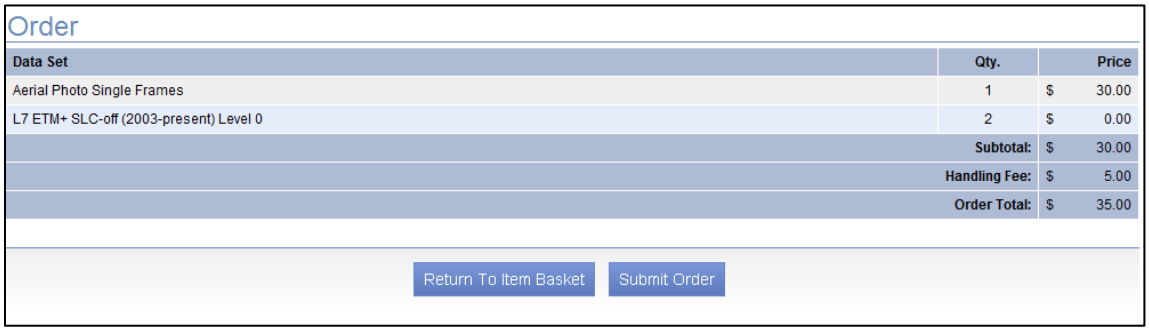


Figure 88 - Checkout Summary

Ordering Aerial Photography provides a method for downloading scenes from an entire roll of film. Select the roll icon ( ) to 'View Related Scenes' to display all of the images that were acquired for the selected scene's roll (Figure 89). These results will show all frames on a roll of film, including untitled images without coordinates.

Figure 89 - Roll View

For each scene on the roll, you can download, add to a bulk order, or order images.

f. Browse and Metadata

EarthExplorer displays a thumbnail image, browse, and detailed metadata information for each scene returned from a search (Figure 90).

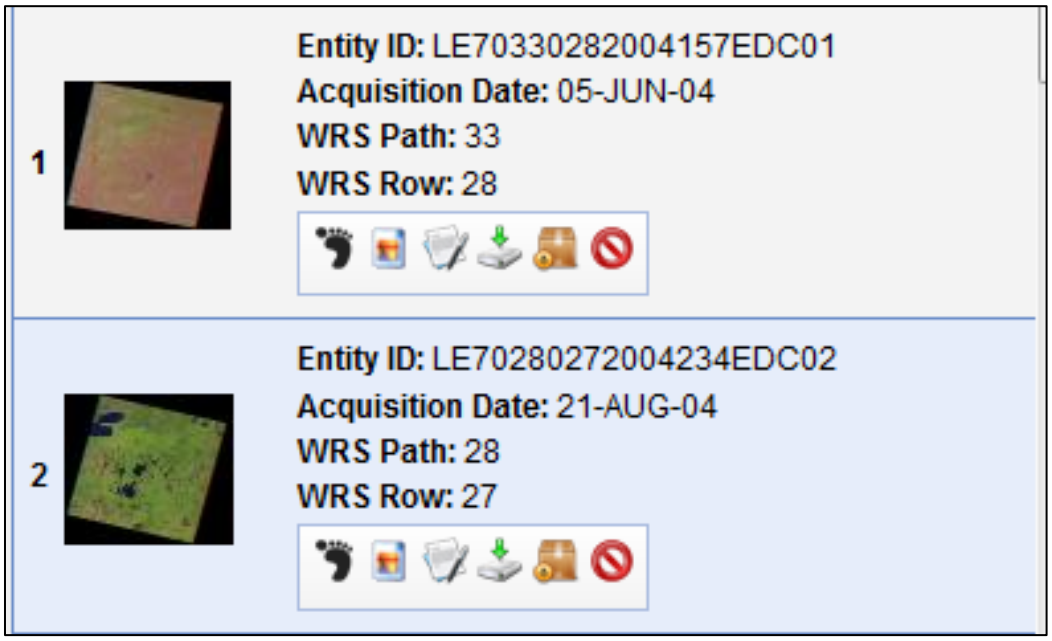


Figure 90 - Example Scene Level Results

Show Browse and Metadata – On the thumbnail, mouse over to display the 'Show Browse and Metadata' (Figure 91).

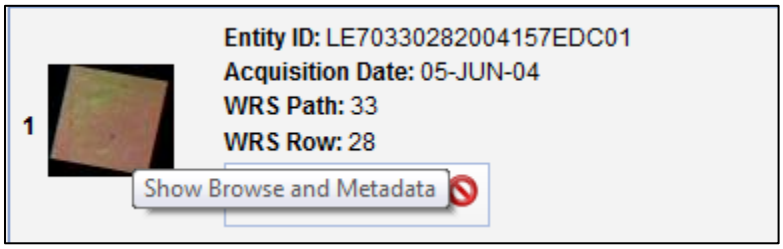


Figure 91 - Show Browse and Metadata

Click the thumbnail image or icon to display the reduced resolution browse image and full metadata for the selected scene (Figure 92).

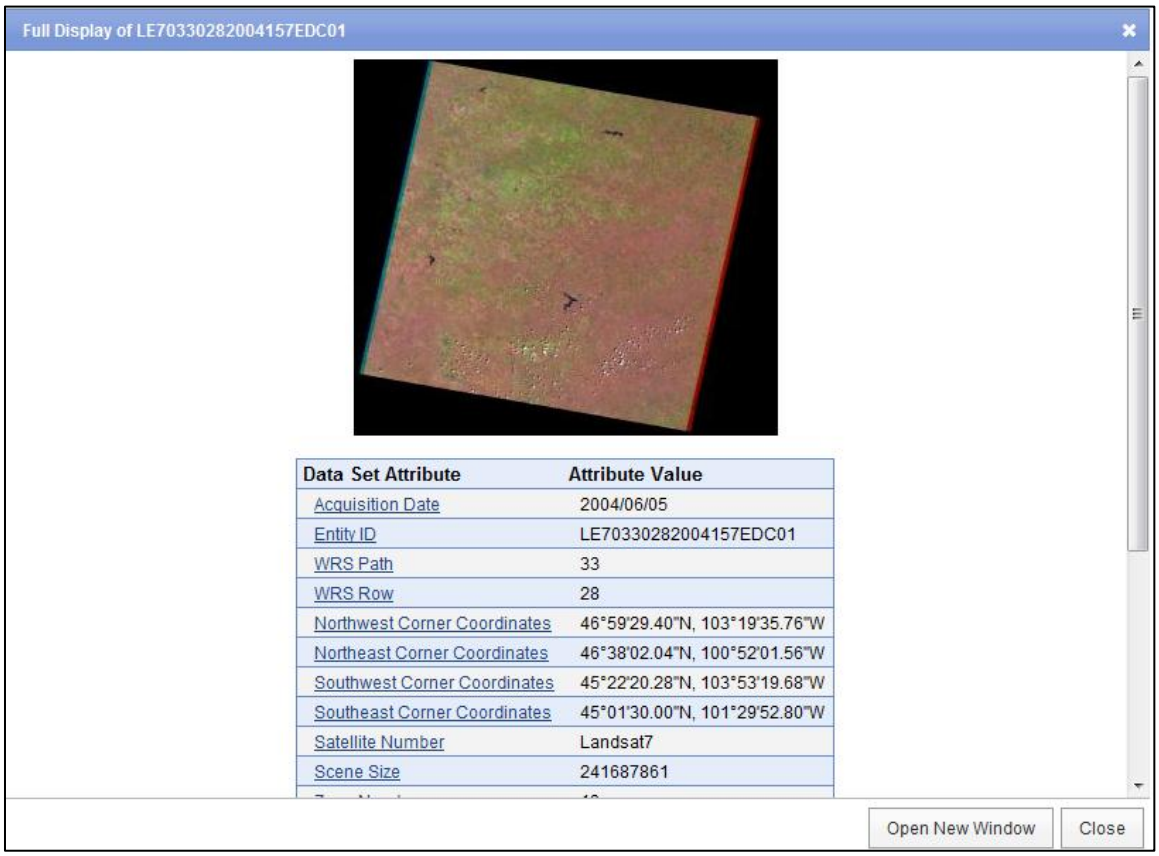


Figure 92 - Browse and Metadata View

The Browse and Metadata view includes the following:

- The Browse image of the selected scene displays at the top center of the lightbox display. If multiple browse areas are available for the image, an image control is displayed to allow viewing multiple browse images.

  Figure 93 is an example of multiple browse for an image. Each available image displays as a thumbnail in the lower left corner of the display. To switch between browse, click the arrow (<>) or click one of the thumbnails at the lower left corner for the page.

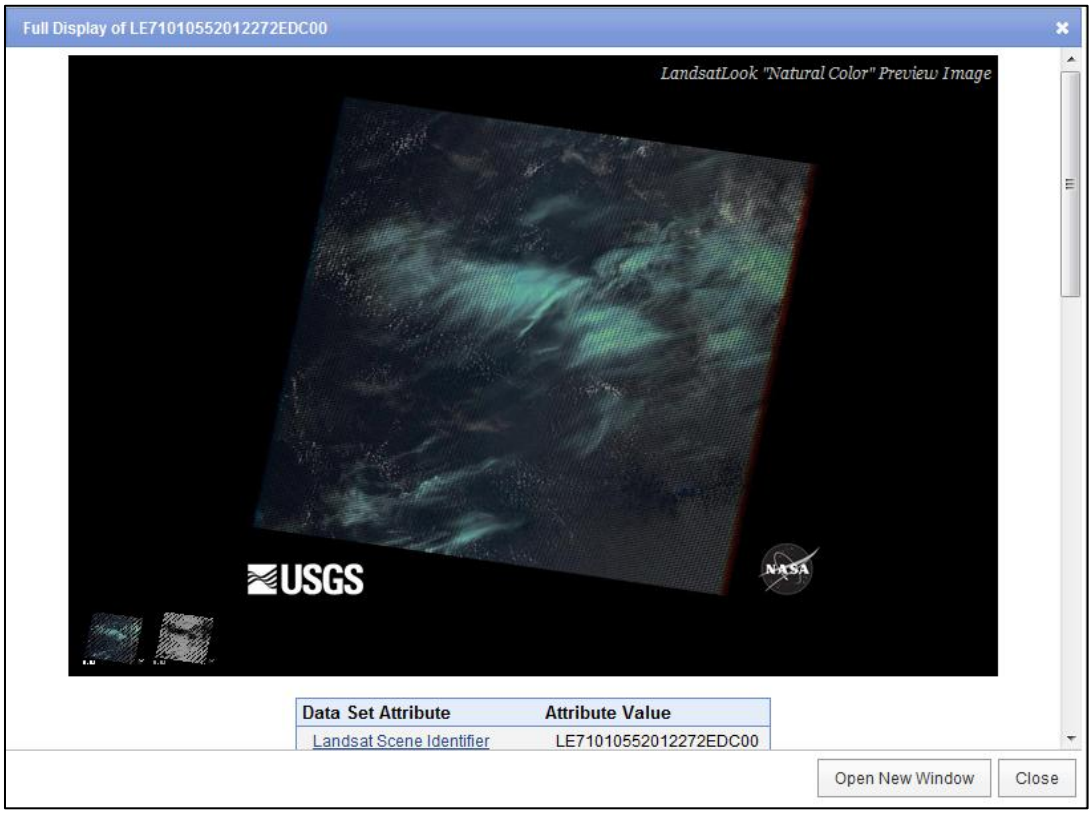


Figure 93 - Multiple Browse Display Example

- Data Set Attributes – Each dataset has unique attributes describing the metadata associated with the scene. Each attribute has a hyperlink to the data dictionary to provide detailed information on that particular dataset.
- Attribute Value – The information associated with each attribute.
- Open New Window – Click ‘Open New Window’ to display the selected browse in a separate window (Figure 94).

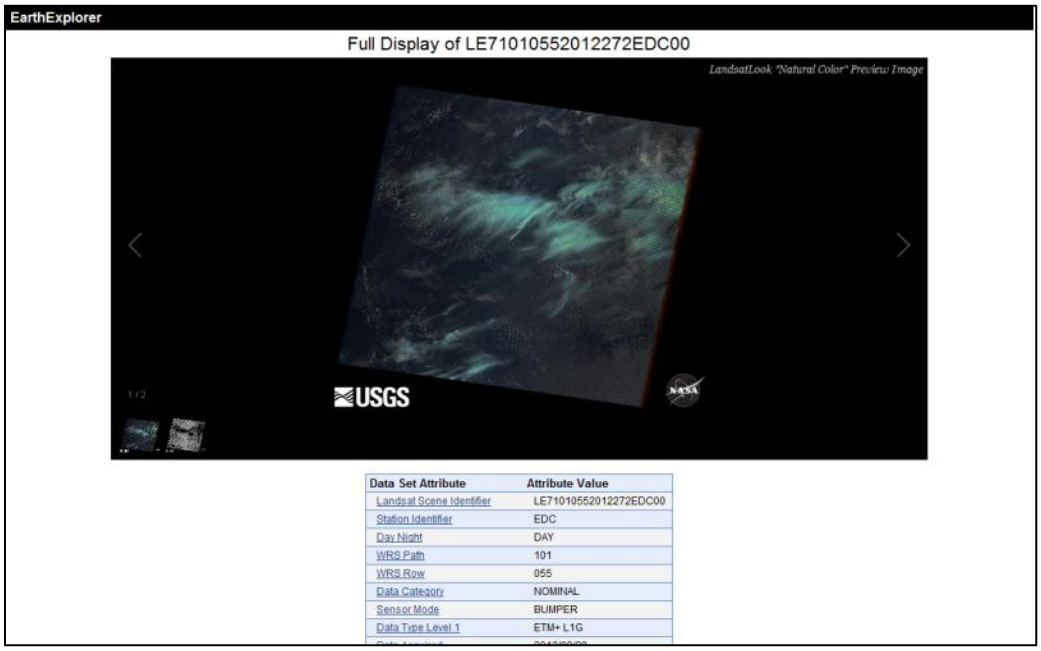


Figure 94 - Open New Window - Display Browse

- FGDC Format – Click the 'FGDC Format' button at the bottom of the Data Set Attributes screen to display the metadata in the Federal Geographic Data Committee (FGDC) format. Scroll down to the bottom of the FGDC view and Click 'Table Format' to return to the 'Browse and Metadata' view (Figure 95).

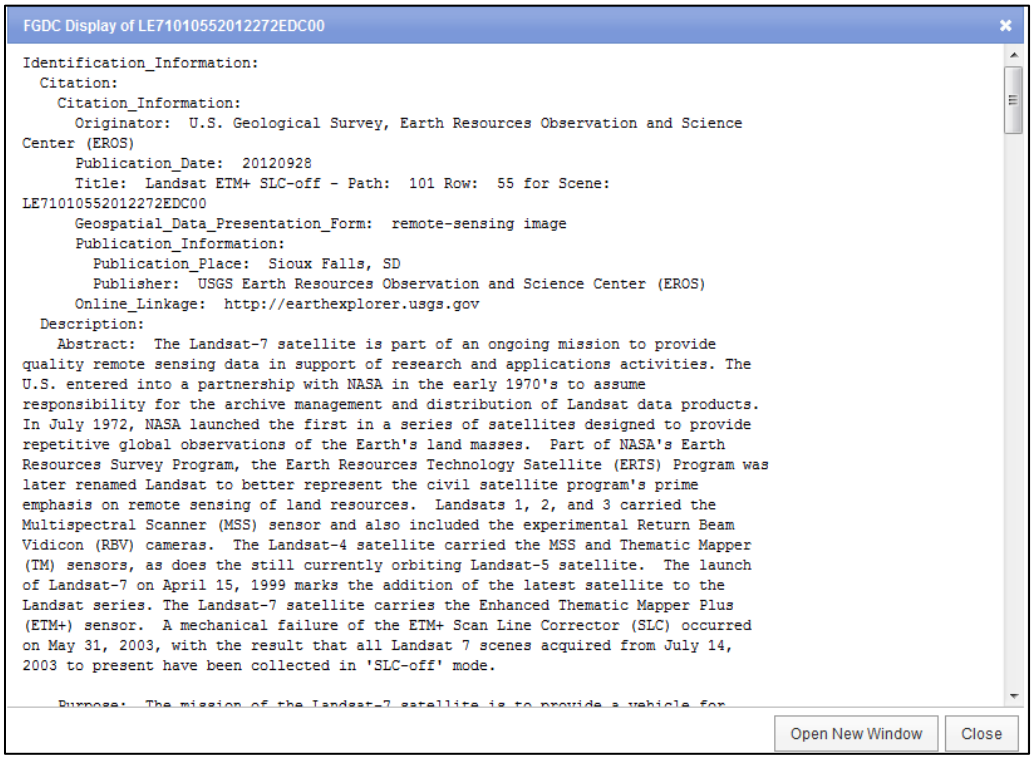


Figure 95 - FGDC Format

g. Search Results Controls

The EarthExplorer user interface controls on the Search Results include:

- Scroll bar – Click to view additional items returned from the search.
- Displaying X – XX of XX - Results Per Page – The default 'Results Per Page' is ten records. To show more results on the page, change the 'Results Per Page' in the 'User Profile' to a higher number. The 'User Profile' requires you to be registered. Additional information on the 'User Profile' is covered in more detail in Section III Registration and Profile.
- Information icon ( ) – Click to see the number of records in the dataset. Figure 96 provides an example. In this case, the search returned 50 records but the number of items in the dataset is 2,570 (Figure 97).

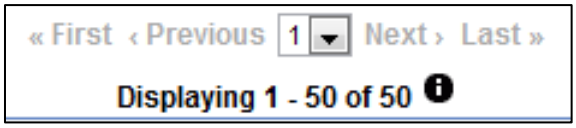


Figure 96 - Default Search Results Returned = 100

Figure 97 - Total Search Results of query = 2,570

To modify the number of search results, refer to the 'Profile' on the EarthExplorer menu. Select the 'Results per Page' in the profile to modify the 'Results Per Page:' on the 'Update User Interface Options' panel (Figure 98).

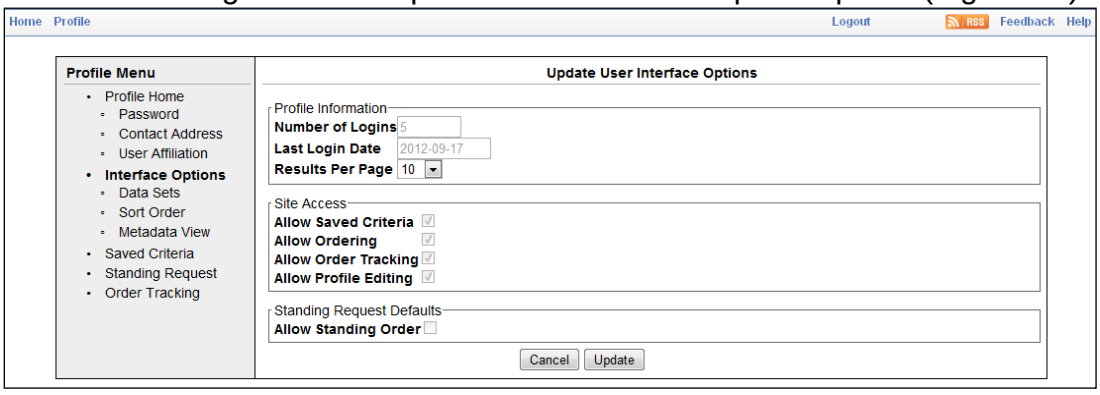


Figure 98 - Search Criteria - Number of records to return

Paging controls include the following:

- Page Number ( ) - Selects a different page of results
- Next - Displays the next page
- Previous - Displays the previous page
- First - Displays the first page

- Last - Displays the last page

h. Export Metadata

EarthExplorer provides an option to ‘Export Metadata’ results in a number of popular formats (Figure 99).

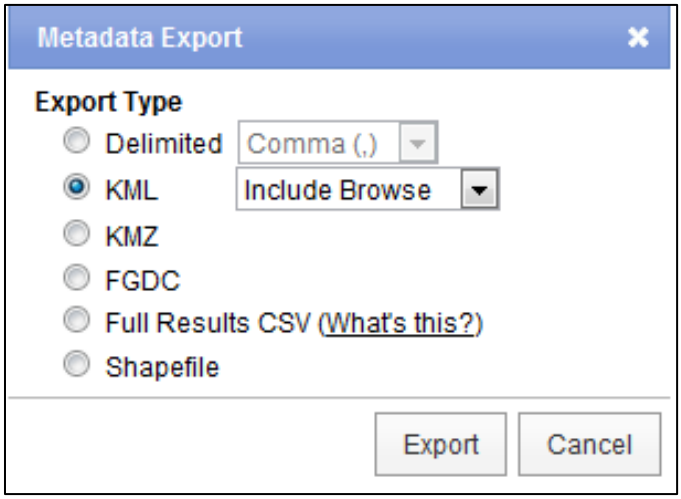
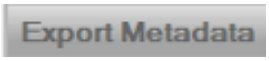


Figure 99 - Export Options

To export metadata, select the ‘Export Metadata’  button. Select the ‘Include Browse’ option to include browse images with the metadata. The following metadata formats are supported:

- Delimited - Generates a .txt file, with the delimiter of choice (comma or pipe) with the returned, non-excluded results from a search. The information includes the full metadata as displayed in the lightbox.
- KML - Generates a .kml file with the returned, non-excluded results from a search. The information in this export includes the full metadata as displayed in the standard metadata dialog. The KML 2.2 standard is used for this KML file. This export format is not available for result sets larger than 1000 results.
- KMZ - Generates a .kmz file with the returned, non-excluded results from a search. The information in this export includes the full metadata as displayed in the standard metadata dialog. The KML 2.2 standard is used for this KMZ file. This export format is not available for result sets larger than 1000 results.
- FGDC - Generates a FGDC format file in ISO 19115 format.
- Full Results (CSV) - Allows a user to enter the number of records to return. The export function uses this number, along with the current search criteria to generate a csv formatted export of search results. The metadata in this export includes the metadata returned on the search result screen. This export does not take into consideration excluded scenes.

- Shapefile - Generates a .zip file with the returned, non-excluded results from a search. Files included in the .zip file include a .shp, .shx, .dbf, and .prj. Shapefiles are generated using the ERSI standards. Limited metadata is included with this export**.** This export is not available for result sets larger than 1000 results.

Click to exclude a scene from the metadata export. Click (Restore Excluded Scenes) to return the excluded scenes to the list.

3. **Standing Request**

The ‘Standing Request’ function allows registered users to run searches for new acquisitions, in the background, using the same search criteria. The Submit Standing Request button is only visible if you are logged in to EarthExplorer.

The ‘Submit Standing Request’

button is at the bottom of the search results list panel (Figure 100).

Figure 100 - Submit Standing Request

Select the ‘Submit Standing Request’ button to display the ‘Save as Standing Request’ form (Figure 101).

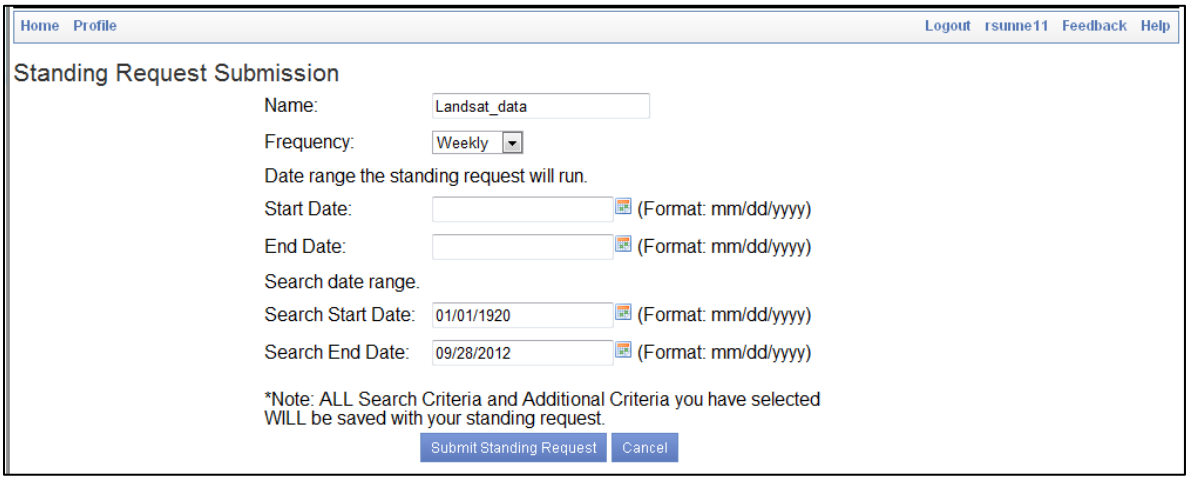


Figure 101 - Standing Request Form

Enter the following criteria for a standing request:

- Name – Enter a name for this request
- Frequency – Select Daily, Weekly, Monthly, or Quarterly, which determines how frequent the search runs
- Date range for the standing request will run.
    - Start Date – Select the start date for the standing request
    - End Date – Select the end date for the standing request
- Search date range.
    - Start Date – Select the start date for the search date
    - End Date – Select the end date for the search date

Click the ‘Submit’ button to execute the standing request.

To review standing requests, click ‘Profile’ on the EarthExplorer Main menu bar (Figure 102).

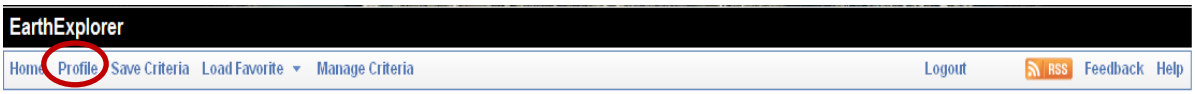


Figure 102 - Manage Criteria

This action displays the ‘Profile Menu’. Click ‘Standing Request’ on the Profile menu to see the list of entered standing requests (Figure 103).

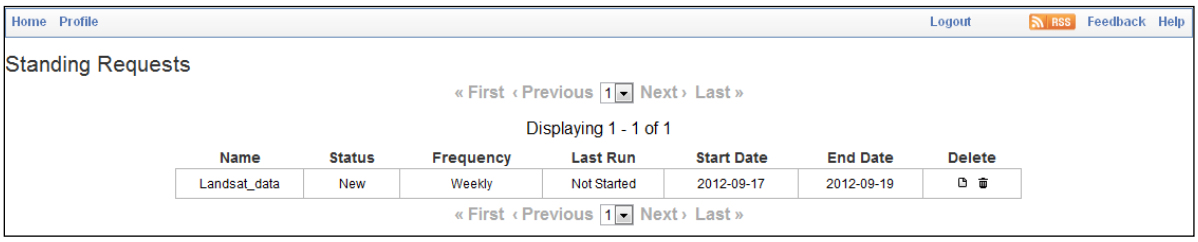


Figure 103 - Standing Request

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.

Appendix

Acronym	Description
API	Application Programming Interface
DMS	Degrees, Minutes, Seconds
DOI	Department of Interior
EE	EarthExplorer
EROS	Earth Resources Observation and Science Center
ETM+	Enhanced Thematic Mapper Plus
FGDC	Federal Geographic Data Committee
FOIA	Freedom of Information Act
GB	Gigabyte
GHZ	Gigahertz
GloVis	USGS Global Visualization Viewer
GUI	Graphical User Interface
HDDS	Hazards Data Distribution Systems
HTTPS	Hypertext Transfer Protocol Secure
KML	Keyhole Markup Language
L1G	Level 1 Systematic Correction
L1T	Level 1 Standard Terrain Correction
LDCM	Landsat Data Continuity Mission
MB	Megabyte
Mbps	Megabit per Second
OGC	Open Geospatial Consortium
PC	Personal Computer
PHP	Hypertext Preprocessor
RSS	Really Simple Syndication
SLC	Scan Line Corrector
USGS	United States Geological Survey
WRS	Worldwide Reference System