

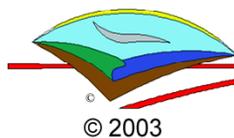
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Satellite and Aerial Imagery  
Demonstration Project

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***USGS Earth Explorer  
Satellite and Aerial  
Imagery***

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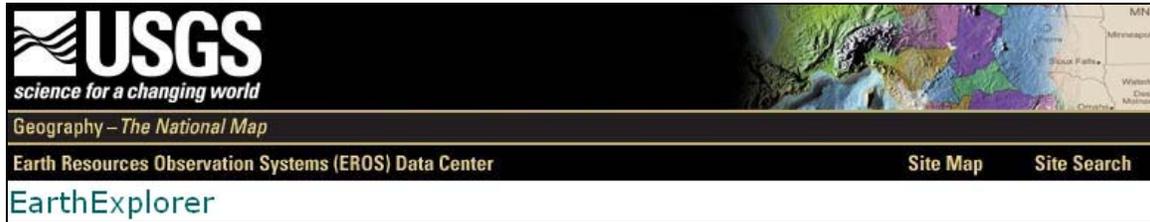
September 2003

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## Part A. Selected Earth Explorer Imagery Datasets



The U.S. Geological Survey's (USGS) Earth Explorer Web site at <http://earthexplorer.usgs.gov> provides access to millions of land-related products including:

- Satellite images from Landsat, advanced very high resolution radiometer (AVHRR), and Corona data sets
- Aerial photographs from the National Aerial Photography Program, NASA, and USGS data sets
- Digital cartographic data from digital elevation models, digital line graphs, digital raster graphics, and digital orthophoto quadrangles
- USGS paper maps

Digital, film, and paper products are available, and many products can be previewed before ordering. Products with online browse images include:

- Landsat multispectral scanner satellite images
- Landsat thematic mapper satellite images
- Landsat enhanced thematic mapper+ satellite images
- AVHRR satellite images
- Corona satellite images
- Digital orthophoto quadrangles

Data set documentation is provided in Earth Explorer. Data processing histories, temporal and spatial extents, and distribution options conform to the Federal Geographic Data Committee's geospatial metadata profile.

## **NAPP Aerial Photography**

The National Aerial Photography Program (NAPP) provides a standardized set of cloud-free aerial photographs covering the conterminous U.S. over five-to-seven year cycles. The program began in 1987 and continues to be the most recent and consistent source of high-quality USGS aerial photography.



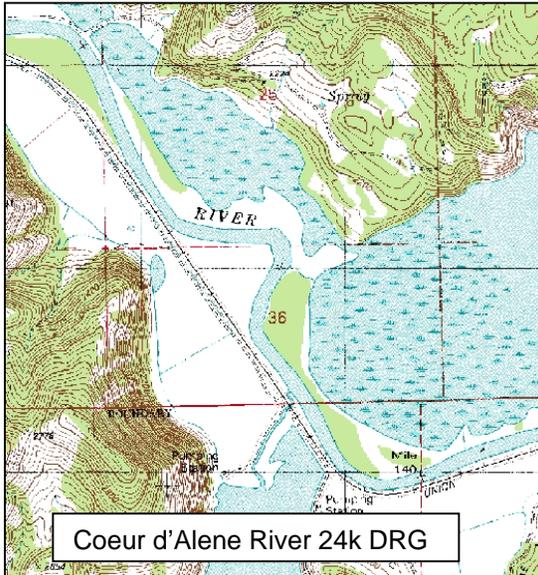
The photographs are available in black & white (B/W) or color infrared (CIR), depending on location and date. Each photo is centered on one-quarter section of a 7.5-minute USGS quadrangle, and covers approximately a 5.5 x 5.5 mile area. The photos are acquired from airplanes flying at an altitude of 20,000 feet using a 6 inch focal length camera resulting in a scale of 1:40,000. Each 9-by 9-inch photo (without enlargement)

covers an area of slightly more than 5 miles on each side. Flightlines for the NAPP program are flown in a north-to-south direction through the east and west halves of 7.5-minute.

## **Topographic Digital Raster Graphics (DRG)**

A Digital Raster Graphic (DRG) is a scanned image of a USGS standard series topographic map, including all map collar information. The image inside the map neatline is georeferenced to the surface of the earth and fit to the Universal Transverse Mercator (UTM) projection. The horizontal positional accuracy and datum of the DRG matches the accuracy and datum of the source map. The map is scanned at a minimum resolution of 250 dots per inch.

DRGs have been made for all quadrangles in the USGS standard topographic map series for the United States, its territories and trusts. Source maps include:



- 7.5-minute maps of the conterminous United States, Hawaii, and limited areas of Alaska at 1:24,000- and 1:25,000-scale.
- 7.5 x 15-minute maps in limited areas of the conterminous United States at 1:25,000-scale.
- Pacific Island maps at 1:20,000-, 1:24,000-, and 1:25,000-scales.
- Puerto Rico and the Virgin Islands at 1:20,000-scale.
- Culebra, its adjacent islands, and the Island of Vieques at 1:30,000-scale.
- Alaska at 1:63,360-scale.
- 30 x 60-minute maps of the conterminous United States at 1:100,000-scale.

- 1 x 2-degree maps of the United States at 1:250,000-scale.

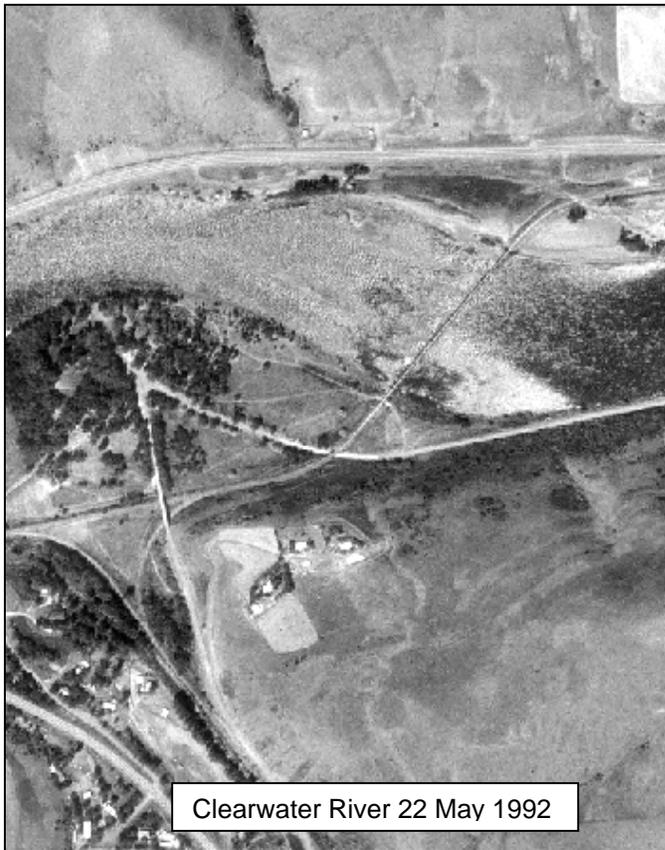
The USGS DRG can be a good source of historic land feature information with well defined data characteristics. The tutorial: ***Introduction to USGS Topographic DRGs*** has more information about DRG's.

## Digital Orthophoto Quadrangles (DOQ)

A Digital Orthophoto Quadrangle (DOQ) is a computer-generated image of an aerial photograph in which the image displacement caused by terrain relief and camera tilt has been removed. The DOQ combines the image characteristics of the original photograph with the georeferenced qualities of a map.

USGS DOQs are black and white (B/W, panchromatic), natural color, or color-infrared (CIR) images with 1-meter ground resolution. The USGS produces three types of DOQs:

- 3.75-minute (quarter-quad) DOQs
- 7.5-minute (full-quad) DOQs (partial US coverage)
- County DOQs (partial US coverage).



Clearwater River 22 May 1992

3.75-minute (quarter-quad) DOQs cover an area measuring 3.75-minutes longitude by 3.75-minutes latitude. Most of the U.S. is currently available, and the remaining locations should be complete by 2004. Quarter-quad DOQs are available in both Native and GeoTIFF formats. Native format consists of an ASCII keyword header followed by a series of 8-bit binary image lines for B/W and 24-bit band-interleaved-by-pixel (BIP) for color. DOQs in native format are cast to the Universal Transverse Mercator (UTM) projection and referenced to either the

North American Datum (NAD) of 1927 (NAD27) or the NAD of 1983 (NAD83). GeoTIFF format consists of a georeferenced Tagged Image

File Format (TIFF), with all geographic referencing information embedded within the .tif file. DOQs in GeoTIFF format are cast to the UTM projection and referenced to NAD83. The average file size of a B/W quarter quad is 40-45 megabytes, and a color file is generally 140-150 megabytes. Quarter-quad DOQs are distributed on CD-ROM, DVD, 8-mm tape, and File Transfer Protocol (FTP) as uncompressed files.

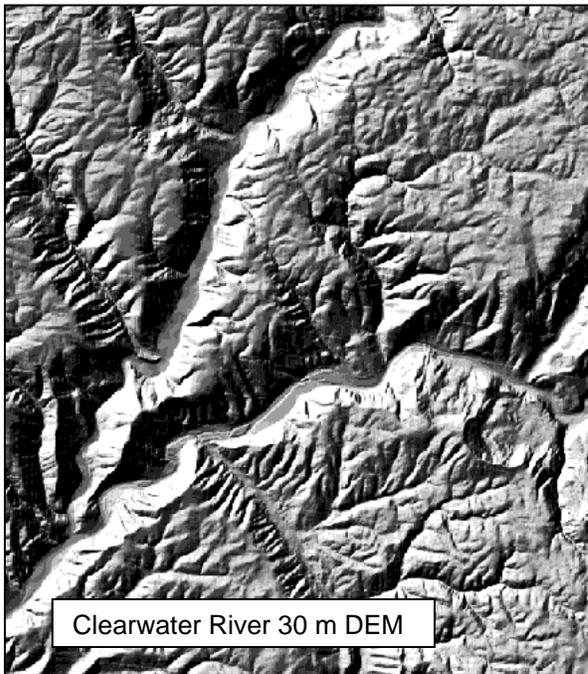
7.5-minute (full-quad) DOQs cover an area measuring 7.5-minutes longitude by 7.5-minutes latitude. Full-quad DOQs are mostly available for Oregon, Washington, and Alaska. Limited coverage may also be available for other states. Full-quad DOQs are available in both Native and GeoTIFF formats. Native is formatted with an ASCII keyword header followed by a series of 8-bit binary image lines for B/W. DOQs in native format are cast to the UTM projection and referenced to either NAD27 or NAD83. GeoTIFF is a georeferenced Tagged Image File Format with referencing information embedded within the .tif file. DOQs in GeoTIFF format are cast to the UTM projection and referenced to NAD83. The average file size of a B/W full quad is 140-150 megabytes. Full-quad DOQs are distributed on CD-ROM, DVD, 8-mm tape, and FTP as uncompressed files.

County DOQs consist of collections of individual DOQs that have been compiled on a county-by-county basis. There is fairly good coverage for counties in Kansas, Georgia, Minnesota, North Carolina, and Pennsylvania. Other states may also have limited counties available. The files are cast to the UTM projection and referenced to either NAD27 or NAD83. County DOQs are packaged as individual JPEG-compressed 8-bit binary files on CD-ROM.

## **National Elevation Dataset (NED)**

The National Elevation Dataset (NED) is a seamless raster product derived primarily from USGS 30-meter Digital Elevation Models (DEMs), along with higher resolution data where available.

NED data for the conterminous United States, Hawaii, Puerto Rico, the Pacific Islands, and the Samoan Islands is expressed in decimal degree geographic coordinates (latitude/longitude). It is horizontally referenced to the North American Datum of 1983 (NAD83) and vertically referenced to the North American Vertical Datum of 1988 (NAVD88). The resolution is one arc-second (approximately 30 meters). NED data is also available at 1/3 arc-second resolution (approximately 10 meters) for some areas of the conterminous United States.



NED Seamless raster data is distributed through the the National Map Seamless Data Distribution System Viewer at: <http://seamless.usgs.gov/index.htm>. The data is provided according to a user-specified area of coverage and is available on CD-ROM or DVD for any selected area, regardless of size. Instantaneous download is also available for areas up to 30 square degrees latitude/longitude (in 100 mb files). NED data is available in

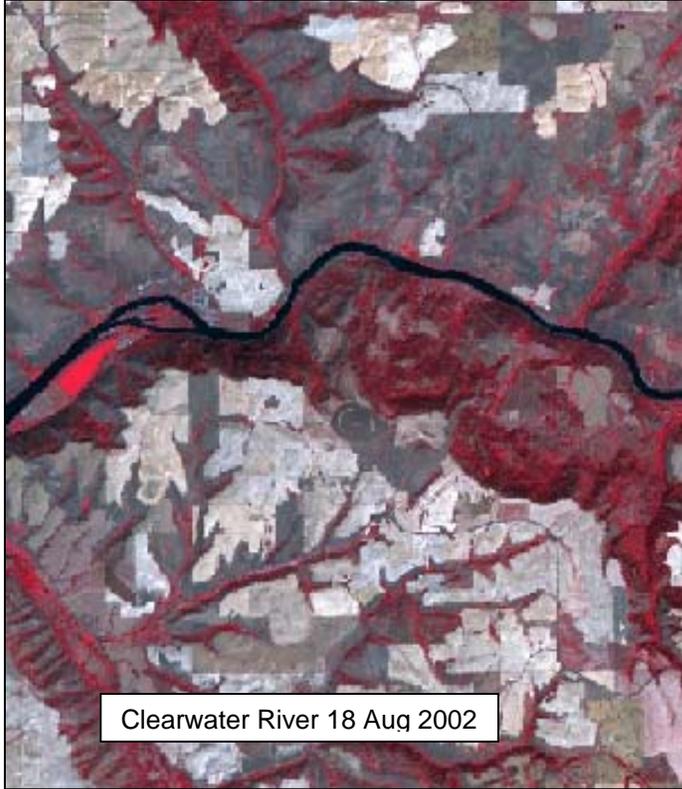
several formats:

- ArcGrid is a proprietary format, which is primarily used in ArcInfo. The ArcGrid format is delivered as a workspace, which is not tarred or gzipped.

- GRIDFLOAT is a non-proprietary floating-point binary data file with accompanying ASCII descriptor files.
- BIL is a non-proprietary integer binary file format with accompanying ASCII descriptor files. The BIL integer format is recommended for software packages that do not support floating-point data.
- TIFF is a 32 bit floating point grid format.

## ASTER Satellite Imagery

The Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) is one of a number of instruments on board the



Terra platform, which was launched in December 1999. ASTER provides fourteen spectral bands with 15- to 90-meter resolution depending on bands. ASTER does not acquire data continuously, and its sensors are activated only to collect specific scenes upon request.

The instrument's three sensor telescopes provide different spectral range and resolution. The VNIR (visible and near-infrared) sensor provides 4 bands

at 15-meter resolution. The SWIR (short-wave infrared) sensor provides 6 bands at 30-meter resolution. The TIR (thermal infrared) sensor provides 5 bands at 90-meter resolution. The swath width for all sensors is 60 kilometers. ASTER data is generally available in the Universal Transverse Mercator (UTM) projection, although some individual scenes may be cast to an alternative projection. The data is referenced to the World Geodetic Survey (WGS) system of 1984 (WGS84). Files are in the HDF-EOS format, and are distributed on CD-ROM, DVD, DLT, 8-mm tape, and File Transfer Protocol (FTP).

Imagery products developed from ASTER data include standard imagery datasets and on-demand products. Three processing levels are available for any scene in the archive:

- Level 1A (Raw uncorrected)
- Level 1B (Systematic correction)
- Level 2 (Systematic Decorrelation Stretch)

Users who do their own image processing favor the standard products. They offer the most flexibility to work with the original data. On-demand products are processed by LP DAAC User Services with peer-reviewed algorithms to create a suite of commonly requested higher-level image products. Several higher-level products are available upon request, but only if a Level 1B scene exists:

- Level 2 On-Demand Decorrelation Stretch
- Level 2 Brightness Temperature
- Level 2 Surface Emissivity
- Level 2 Surface Reflectance
- Level 2 Surface Kinetic Temperature
- Level 2 Surface Radiance
- Level 2 Surface Radiance - TIR only
- Level 3 ASTER DEM; created from Level 1A data

## **MODIS Satellite Imagery**

The Moderate Resolution Imaging Spectroradiometer (MODIS) is one of the instruments carried on board the Terra platform launched in



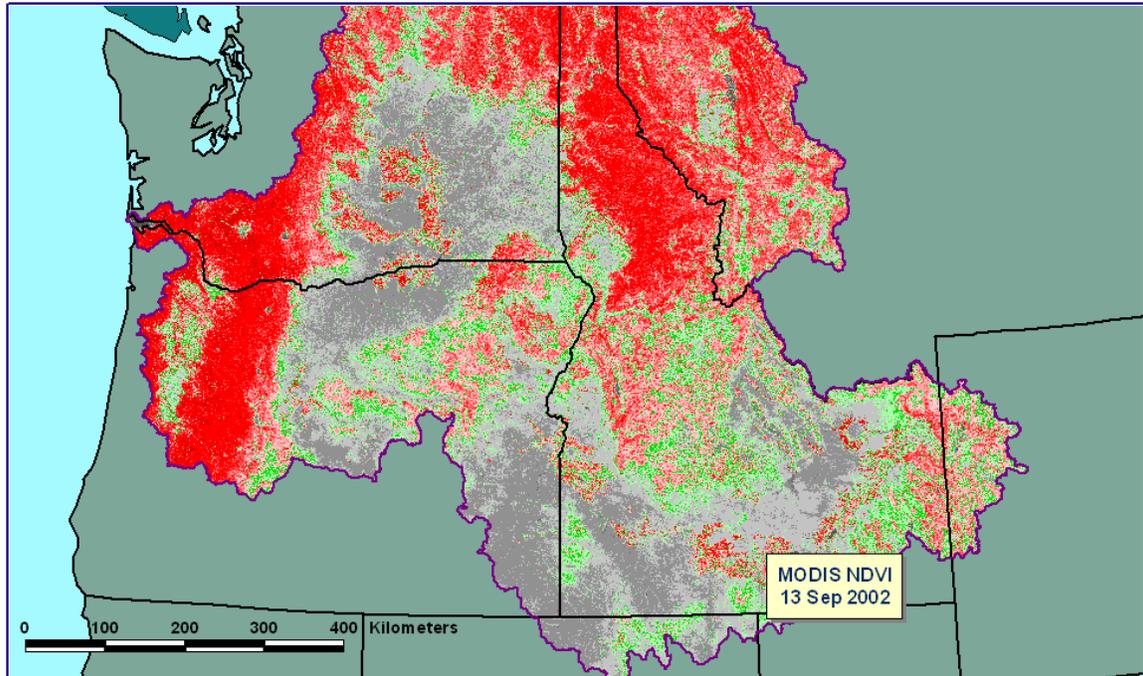
December 1999. MODIS provides continuous global coverage every one to two days, and collects data from 36 spectral bands (band designations). Two bands (1-2) have a resolution of 250 meters. Five bands (3-7) have a resolution of 500 meters. The remaining bands (8-36) have a resolution of 1000 meters. The swath width for MODIS is 2,330 kilometers.

All MODIS instrument data (Level 1A/1B) is archived and distributed by the ECS-GSFC Data Center. The USGS EROS Data Center distributes a variety of MODIS-derived land data products. Several levels of processing are available:

- Level 2 consists of derived geophysical variables at the same resolution and location as the Level 1 MODIS source data.
- Level 3 consists of derived geophysical variables mapped on uniform space-time grid scales.
- Level 4 consists of model output or results from analyses of lower-level data (i.e. variables derived from multiple measurements).

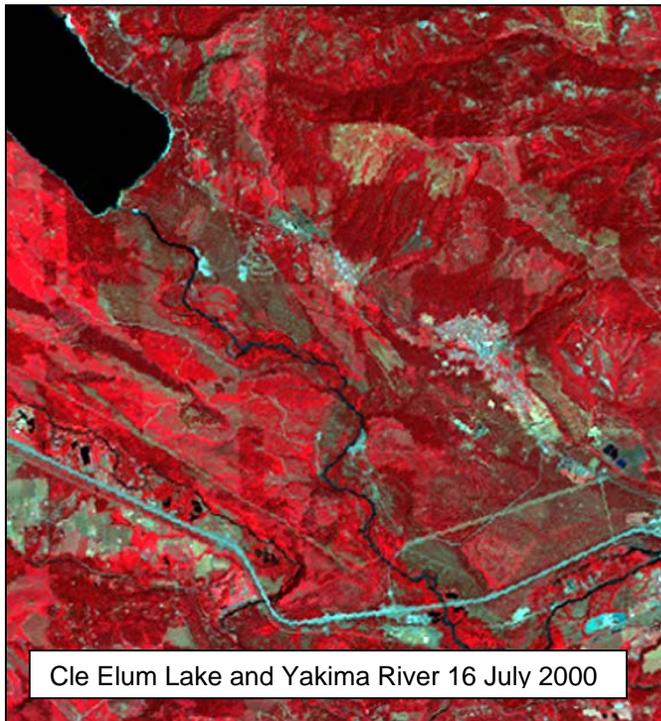
All MODIS products are provided in HDF-EOS format, and the file size will vary from 50 Mb to 1.2 Gb. The data is distributed on CD-ROM, DVD, DLT, 8-mm tape, or via File Transfer Protocol (FTP). Processing of MODIS images usually requires sophisticated remote sensing software and a greater user expertise. Some organizations,

notably the Global Land Cover Facility at the University of Maryland (<http://glcf.umiacs.umd.edu/index.shtml>), process and distribute higher-level products in GIS accessible formats.



Columbia River Basin MODIS Normalized Difference Vegetation Index 13 Sep 2002.

## Landsat 7 Satellite Imagery



The Enhanced Thematic Mapper Plus (ETM+) is a multispectral scanning radiometer that is carried on board the Landsat 7 satellite. The sensor has provided continuous coverage since July 1999, with a 16-day repeat cycle. The ETM+ instrument provides image data from eight spectral bands. Spatial resolution is 30 meters for the visible and near-infrared (bands 1-5 and 7). Resolution of the panchromatic (band 8) is 15 meters and the thermal

infrared (band 6) is 60 meters. The approximate scene size is 170 x 183 kilometers (106 x 115 miles).

Three levels of correction are available:

- Raw Uncorrected (Level 0Rp) has no radiometric or geometric correction applied. Scan lines are reversed and nominally aligned. Image data is provided in 8-bit (DN) values.
- Radiometric Correction (Level 1R) includes radiometric correction, but no geometric correction. Scan lines are reversed and nominally aligned. Image data is provided in 16-bit (radiance) values.
- Systematic Correction (Level 1G) includes both radiometric and geometric correction. Image data is provided in rescaled 8-bit (DN) values. The scene will be rotated, aligned, and georeferenced to a user-defined map projection. Geometric accuracy of the systematically corrected product should be within 250 meters (1 sigma) for low-relief areas at sea level.

Landsat 7 images are available in HDF, Geotiff and Fast L7A format. Most users find the Geotiff format easiest to use with GIS. Landsat 7 images may be ordered in several projections, UTM WGS84, Space Oblique Mercator (SOM-B) and Albers Equal-Area Conic. Images are distributed on CD or may be downloaded from a USGS server after confirmation of payment. The download method is reliable and relatively fast with images generally available within one to two days.



An instrument malfunction occurred onboard Landsat 7 on May 31, 2003. The problem was caused by failure of the scan line corrector (SLC), which compensates for the forward motion of the satellite. Subsequent efforts to recover the SLC were not successful, and the problem appears to be permanent.

The Landsat 7 ETM+ is still capable of acquiring useful image data with the SLC turned off, and Landsat 7 will continue to collect data in the SLC-off mode. The

USGS EDC is currently upgrading the necessary systems to process and distribute SLC-off products to users at the earliest possible date. Initial data products will include Level 0Rp, Level 1R, and Level 1G through LPGS only. The target release schedule for distribution of SLC-off data is November 2003.

Pending the SLC-off product release, all Landsat 7 scenes that were acquired since May 31, 2003 (approximately 21:45 GMT) cannot be searched or ordered via any of the Landsat 7 search and order interfaces. Once released, the initial SLC-off data products will be accessible via the EOS Data Gateway (EDG) only.

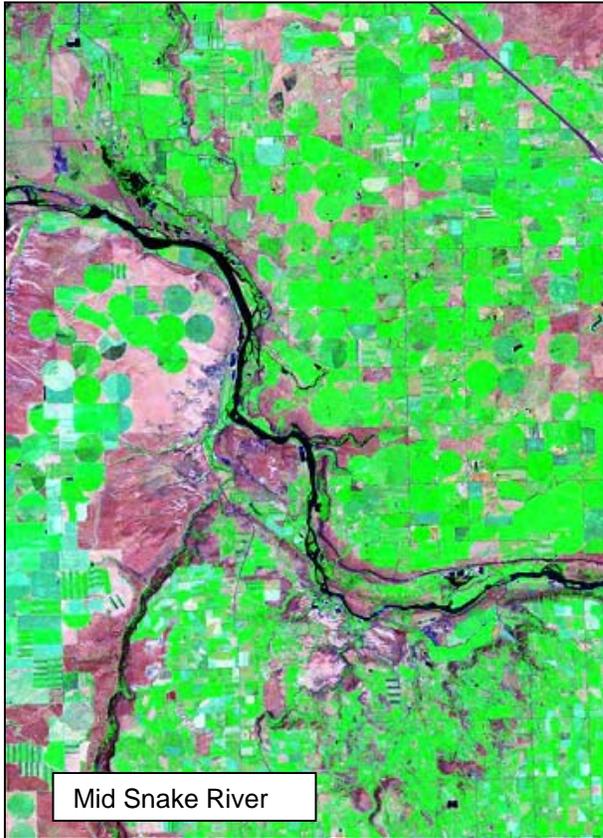
## Landsat 5 Satellite Imagery



Thematic Mapper (TM) is a multispectral scanning radiometer that was carried on board Landsats 4 and 5. The TM sensors have provided nearly continuous coverage from July 1982 to present, with a 16-day repeat cycle. TM image data consists of seven spectral bands (band designations) with a spatial resolution of 30 meters for most bands (1-5 and 7). Resolution for the thermal infrared (band 6) is 120 meters. The approximate scene size will be 170 x 183 kilometers (106 x 115 miles).

Images available to the public are systematically corrected and include both radiometric and geometric correction. Landsat 5 scenes are rotated, aligned, and georeferenced to a user-defined map projection. Absolute geometric accuracy of the systematically corrected TM product can vary, depending upon the accuracy of the predicted ephemeris that is used for processing. Users should be aware that subsequent image geocorrection and/or coregistration to known ground control points (GCPs) may be necessary with a TM product.

## **EarthSat GeoCover™ Satellite Imagery**



EarthSat GeoCover™ (Thematic Mapper) consists of a global set of high quality, relatively cloud-free terrain-corrected Landsat TM sensor data from the Landsat 4 and 5 satellites. The average acquisition date is 1990 +/- 3 years, but individual scenes may range from 1985 to 1996.

The GeoCover dataset was produced as part of the part of the NASA Scientific Data Buy. The EDC archive currently consists of scenes covering for North America, Europe, and parts of Asia. Any scene that is not available at EDC can be obtained directly from EarthSat

at [www.geocover.com](http://www.geocover.com) .

Original Landsat 4 and 5 images were processed with special algorithms to create a radiometrically seamless blend of contrast adjustment across areas of potentially extreme contrast ranges. The final GeoCover images contain three bands at 28.5 ground pixel resolution (GPR):

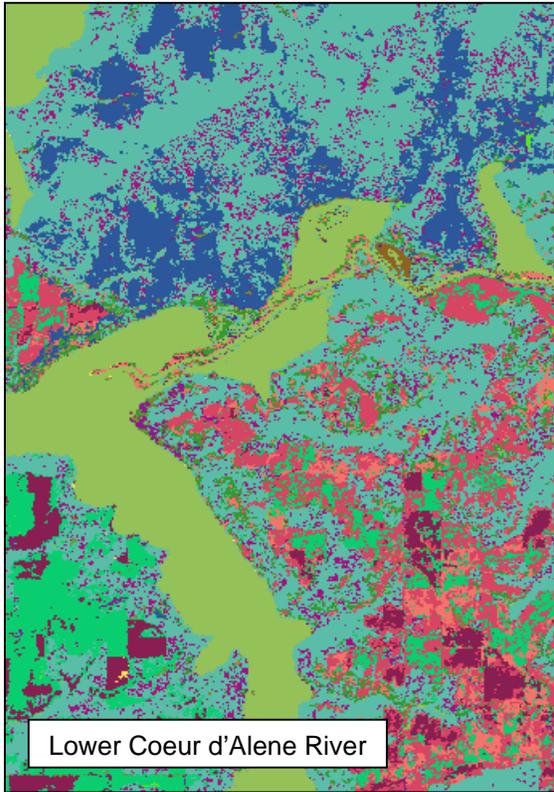
- TM Band 7 (mid-infrared light) is displayed as red
- TM Band 4 (near-infrared light) is displayed as green
- TM Band 2 (visible green light) is displayed as blue

Absolute Positional Accuracy: 50 meters Root Mean Square Error.

The GeoCover Landsat mosaics are delivered in a Universal Transverse Mercator (UTM) / World Geodetic System 1984 (WGS84) projection. The mosaics generally extend north-south over 5 degrees of latitude, and span east-west for the full width of the UTM zone. For

mosaics between 60 degrees north and 60 degrees south latitude, the width of the mosaic is the standard UTM zone width of 6 degrees of longitude. For mosaics above 60 degrees of latitude, the UTM zone is widened to 12 degrees, centered on the standard UTM meridian. To insure overlap between adjacent UTM zones, each mosaic extends for at least 50 kilometers to the east and west, and 1 kilometer to the north and south.

## National Land Cover Data 1992



The National Land Cover Data 1992 (NLCD 92) is a 21-category land cover classification scheme that has been applied consistently over the conterminous U.S. It is based primarily on the unsupervised classification of Landsat TM (Thematic Mapper) 1992 imagery. Ancillary data sources included topography, census, agricultural statistics, soil characteristics, other land cover maps, and wetlands data. The NLCD 92 classification is provided as raster data with a spatial resolution of 30 meters.

The NLCD is available either as individual state coverages or as a downloadable seamless product. The state datasets are cast to the Albers Equal-Area Conic projection and are referenced to the North American Datum of 1983 (NAD83). Accuracy assessment has not been completed for every location, so there are two separate categories of the NLCD 92 product to reflect this status:

- Final product consists of the NLCD 92 data for which accuracy assessment is complete. The final product is available on CD-ROM in GeoTIFF format. The data is also available via FTP download in either generic binary 8-bit or GeoTIFF format.
- Preliminary product consists of the NLCD 92 data for which accuracy assessment is not complete. The data is available in either generic binary 8-bit or GeoTIFF format, and it is distributed via FTP download only.

The seamless product consists of NLCD 92 for the conterminous U.S. and can be downloaded as a user-specified area of coverage. The data is expressed in geographic coordinates (latitude/longitude), and it is referenced to the North American Datum of 1983 (NAD83). The files are available in GeoTIFF, ArcGrid, or BIL format. Instantaneous download is available for areas up to 30 square degrees latitude/longitude (in 100 mb files). The seamless data is also available on CD-ROM for any selected area regardless of size.

## Part B. Search, Browse and Order a Landsat 7 image.

Start an internet browser and navigate to the USGS EarthExplorer website at <http://edcsns17.cr.usgs.gov/EarthExplorer/>. The main screen is the entry point into the browseable imagery archives. A user has a choice of accessing the search capabilities as a guest or registered user. For this tutorial select the simpler choice of entering as a guest. Frequent users will find the benefits of registration, such as custom settings and storable search criteria to worth the extra effort.

The screenshot shows the Earth Explorer website in a Microsoft Internet Explorer browser window. The address bar displays <http://edcsns17.cr.usgs.gov/EarthExplorer/>. The page features the USGS logo and the text "science for a changing world". Below the logo, it identifies the "Earth Resources Observation Systems (EROS) Data Center" and includes links for "SITE MAP" and "SITE SEARCH". The main heading is "EarthExplorer", followed by a description of the site's purpose: "Query and order satellite images, aerial photographs, and cartographic products through the U.S. Geological Survey. Log in as a [guest](#) or as a [registered user](#). Registered users have access to more features than guests do. If you plan on using EarthExplorer frequently, you may wish to register. Please note that this site uses [Session Cookies](#). All products on this site can also be ordered from [Customer Services](#)."

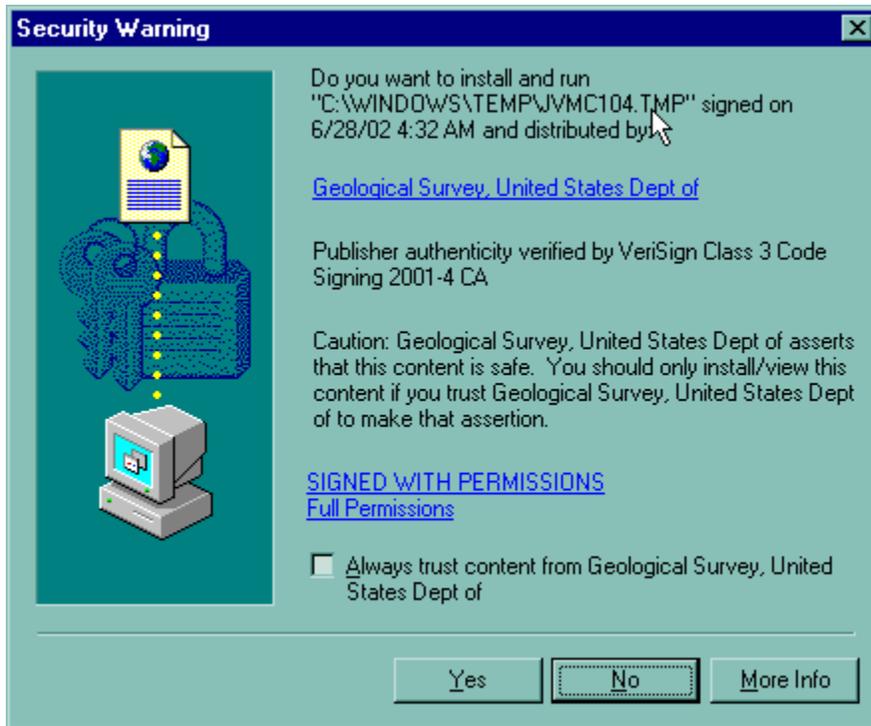
Two options for user interaction are highlighted with a red box:

- New!** Java Script Version (works with PC, **Macintosh**, and Unix platforms: Netscape 6.0+ or IE 5.5+) [More info](#)
- Java Applet Version (Works with PC and Unix platforms: IE 4.0+ or Netscape 4.06+, **not 6.0+**) [More info](#)

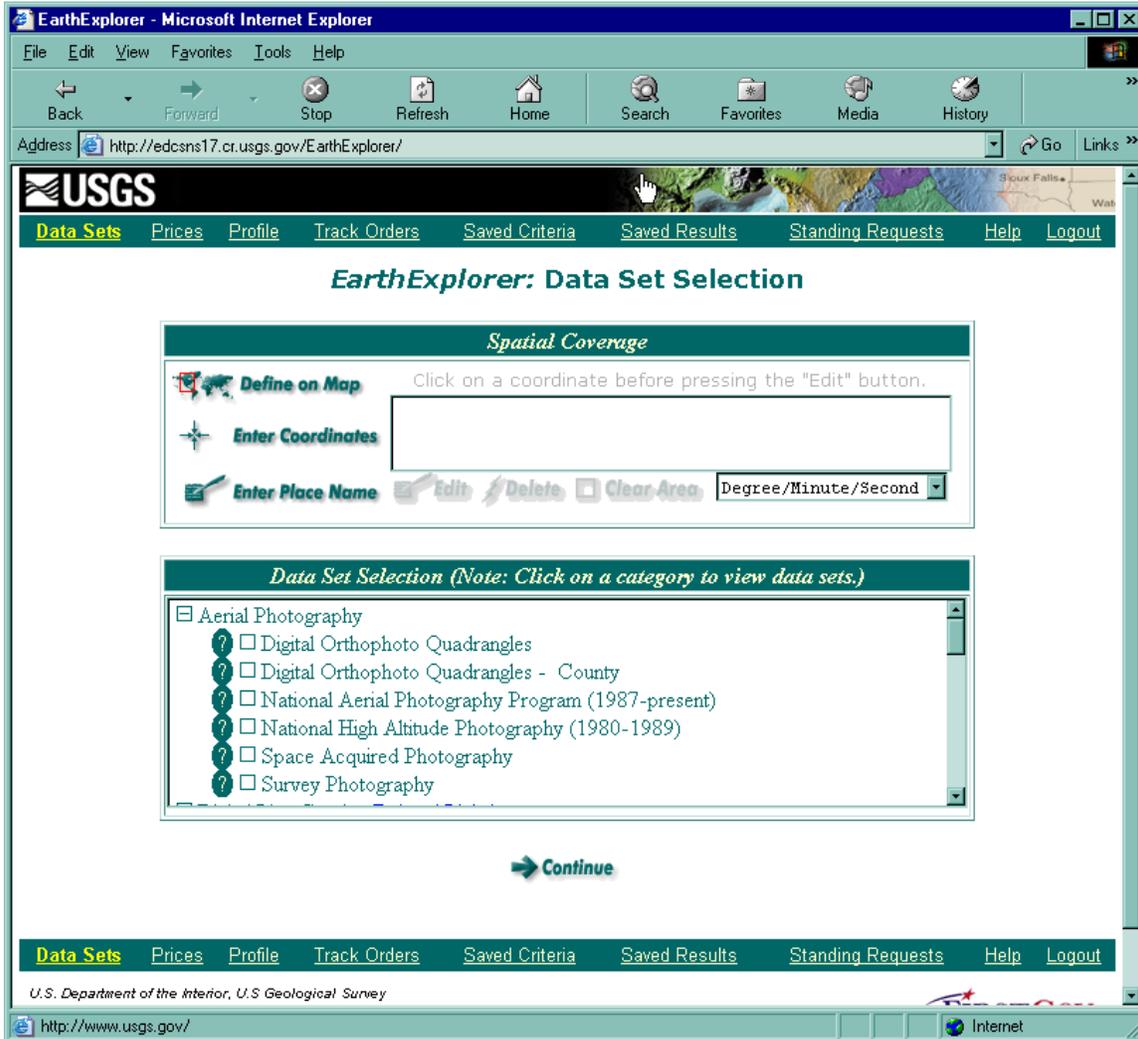
Below this, users can choose to "Enter as a: **Guest**" or "Or **Register**". For registered users, there are fields for "Enter User Name:" and "Enter Password:" with "LOGIN" and "RESET" buttons. A link for "MapFinder" or "PhotoFinder" is also present.

At the bottom, there is a navigation menu with links for "DOI", "USGS HOME", "Biology", "Geology", "Mapping", "Water", and "EROS HOME". Footer information includes the U.S. Department of the Interior, USGS URL (<http://earthexplorer.usgs.gov>), maintainer email ([custserv@usgs.gov](mailto:custserv@usgs.gov)), last update date (Wednesday, May 01, 2002), and links to "USGS Privacy Statement" and "Accessibility". The "FIRST GOV" logo is also visible.

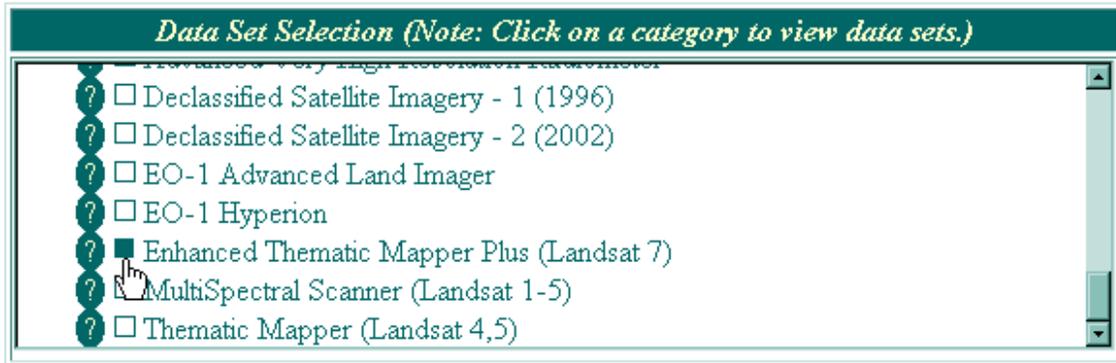
1. Internet explorer users may be warned of an attempt to install temporary software that is needed to run the EarthExplorer application. Click Yes if you are wish to proceed.



- EarthExplorer can search, browse and order many of the USGS imagery and map products including digital orthoquadrangles, aerial photography and satellite imagery. Scroll through the dataset to view the available data sets.

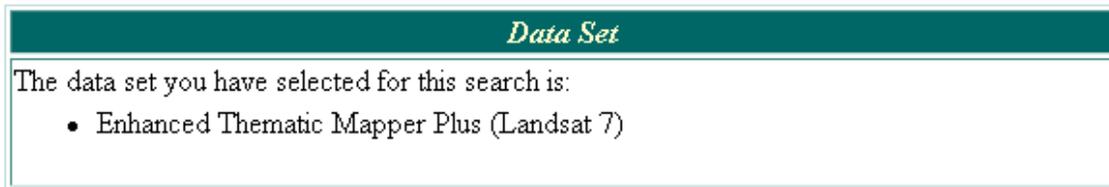


3. Select the data set Enhanced Thematic Mapper Plus (Landsat 7). Click Continue to move to the next screen. A user may select multiple data sets for the search.



Continue

4. The next screen lists the Enhanced Thematic Mapper Plus as the selected data set. In this tutorial we will not use the interactive map to locate imagery. This is a useful feature that greatly assists searches for aerial photography. Instead, we will specify the WRS2 path and row numbers to limit the search to a single Landsat 7 scene location.



5. In this exercise we will search for all Landsat 7 images at Path 45 Row 27 of the World Reference System 2 (WRS2). This image (scene) covers the lower Teanaway River near Cle Elum, WA. A related tutorial explains the WRS2 designation system and showed how to find the path and row number of the Landsat 7 scene of the lower Teanaway.

The Landsat 7 satellite was launched in April 1999. Images from the other satellites in the Landsat series (i.e., 2, 4, 5) may be search in EarthExplorer if an earlier time period is desired. Constrain the current search to between April 15, 1999 and March 31, 2003, then enter Path 45 and Row 27 into the search dialog box. It is sometimes useful to set image cover to 0 to quickly identify cloud free images. Accept the default setting of All image cloud cover.

<i>Acquisition Date</i>	
<b>Start Date:</b>	April 15 1999 <input checked="" type="radio"/> Linear
<b>End Date:</b>	March 31 2003 <input type="radio"/> Seasonal

<i>Path Row Search</i>	
<b>WRS Path:</b>	45 to <input type="text"/>
<b>WRS Row:</b>	27 to <input type="text"/>

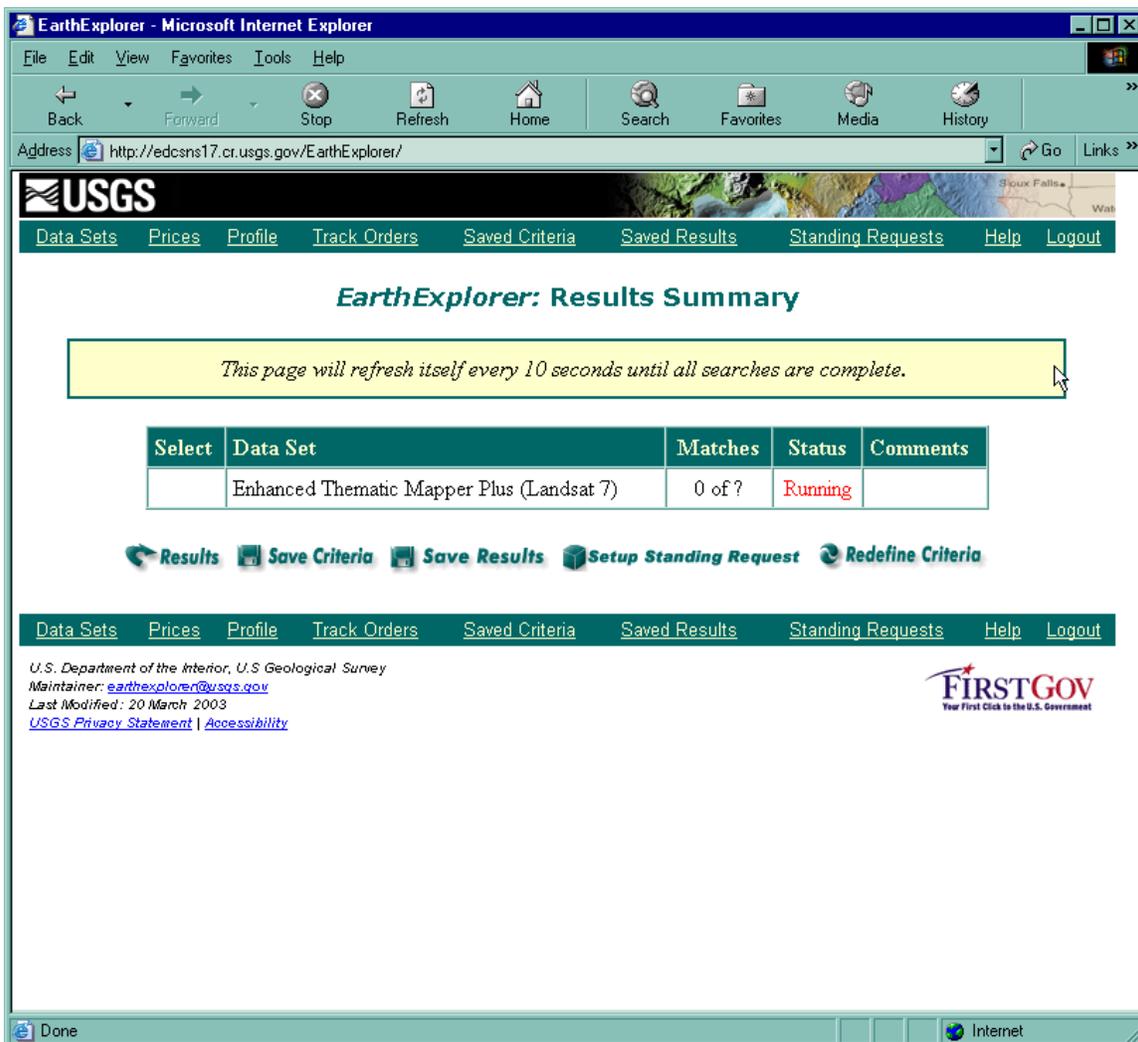
  

<i>Cloud Cover</i>	
<b>Image Cloud Cover:</b>	All

- Set the records limit to 100 to be sure identify all images in the time period and click search  at the bottom of the screen.

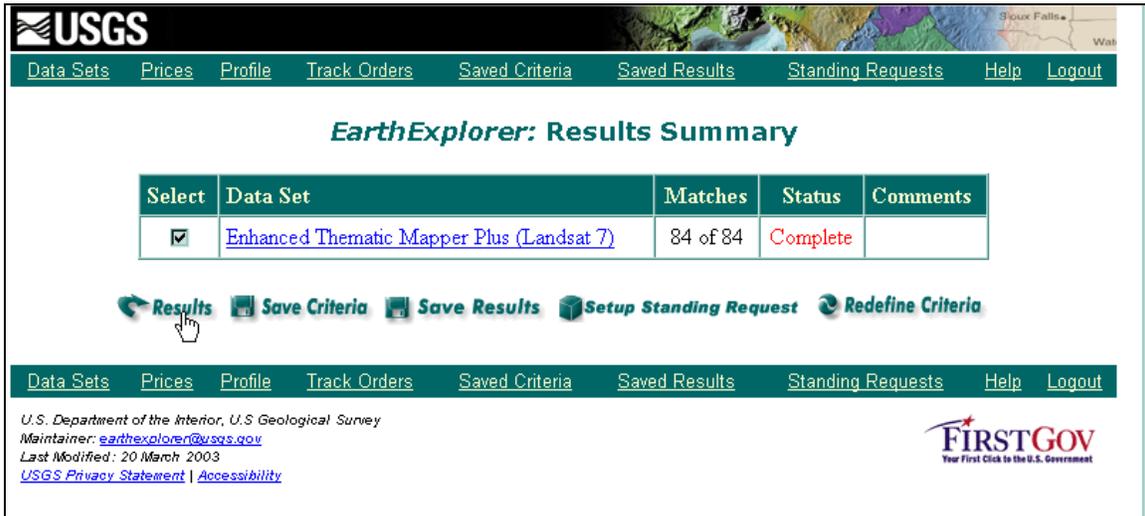


It may take several minutes to complete the search depending on the demand on the USGS server. Status of the search is reported on the Results Summary screen.



- The Results Summary screen will periodically refresh and eventually report the completed search. A total of 84 Landsat 7 images were found for Path 45 Row 27. Click the Results

 icon to view a tabular summary of the search.

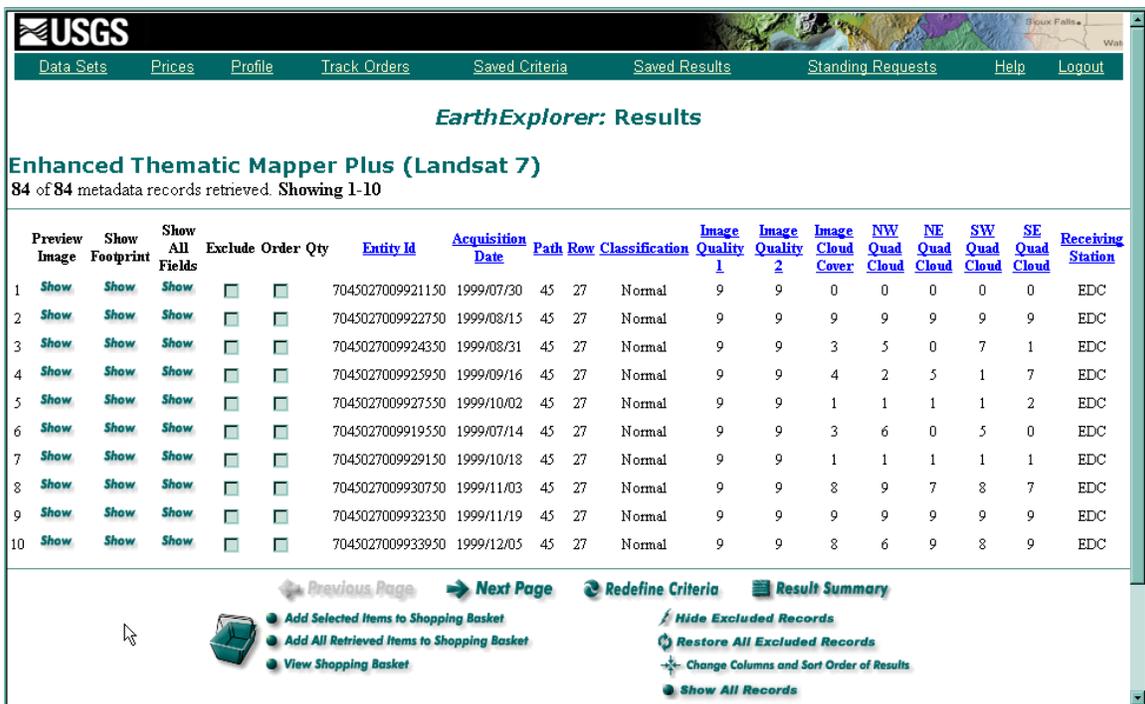


The screenshot shows the 'EarthExplorer: Results Summary' page. At the top is the USGS logo and a navigation menu with links: Data Sets, Prices, Profile, Track Orders, Saved Criteria, Saved Results, Standing Requests, Help, Logout. The main heading is 'EarthExplorer: Results Summary'. Below it is a table with the following content:

Select	Data Set	Matches	Status	Comments
<input checked="" type="checkbox"/>	<a href="#">Enhanced Thematic Mapper Plus (Landsat 7)</a>	84 of 84	Complete	

Below the table are several icons: Results (with a mouse cursor), Save Criteria, Save Results, Setup Standing Request, and Redefine Criteria. At the bottom, there is another navigation menu identical to the top one, and footer text: 'U.S. Department of the Interior, U.S. Geological Survey', 'Maintainer: earthexplorer@usgs.gov', 'Last Modified: 20 March 2003', 'USGS Privacy Statement | Accessibility', and the 'FIRSTGOV' logo.

The Results listing provides descriptive information about the individual Landsat images and offers a link to a reduced resolution browse image. Images are listed in chronological order.



The screenshot shows the 'EarthExplorer: Results' page for 'Enhanced Thematic Mapper Plus (Landsat 7)'. It indicates '84 of 84 metadata records retrieved. Showing 1-10'. Below this is a detailed table of results:

Preview Image	Show Footprint	Show All Fields	Exclude	Order	Qty	Entity Id	Acquisition Date	Path	Row	Classification	Image Quality 1	Image Quality 2	Image Cloud Cover	NW Quad Cloud	NE Quad Cloud	SW Quad Cloud	SE Quad Cloud	Receiving Station
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027009921150	1999/07/30	45	27	Normal	9	9	0	0	0	0	0	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027009922750	1999/08/15	45	27	Normal	9	9	9	9	9	9	9	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027009924350	1999/08/31	45	27	Normal	9	9	3	5	0	7	1	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027009925950	1999/09/16	45	27	Normal	9	9	4	2	5	1	7	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027009927550	1999/10/02	45	27	Normal	9	9	1	1	1	1	2	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027009919550	1999/07/14	45	27	Normal	9	9	3	6	0	5	0	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027009929150	1999/10/18	45	27	Normal	9	9	1	1	1	1	1	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027009930750	1999/11/03	45	27	Normal	9	9	8	9	7	8	7	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027009932350	1999/11/19	45	27	Normal	9	9	9	9	9	9	9	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027009933950	1999/12/05	45	27	Normal	9	9	8	6	9	8	9	EDC

At the bottom of the table are navigation controls: Previous Page, Next Page, Redefine Criteria, Result Summary, Add Selected Items to Shopping Basket, Add All Retrieved Items to Shopping Basket, View Shopping Basket, Hide Excluded Records, Restore All Excluded Records, Change Columns and Sort Order of Results, and Show All Records.

Ten Landsat images are listed on each page of the Results listing. The Acquisition Date is the day that the Landsat image was collected.

<u>Entity Id</u>	<u>Acquisition Date</u>	<u>Path</u>	<u>Row</u>
7045027009921150	1999/07/30	45	27
7045027009922750	1999/08/15	45	27
7045027009924350	1999/08/31	45	27
7045027009925950	1999/09/16	45	27
7045027009927550	1999/10/02	45	27
7045027009919550	1999/07/14	45	27
7045027009929150	1999/10/18	45	27
7045027009930750	1999/11/03	45	27
7045027009932350	1999/11/19	45	27
7045027009933950	1999/12/05	45	27

The Entity Id number is a coded description of the image. This code can be useful when checking image metadata. For example the image acquired on July 30, 1999 is coded:

7 = Satellite number
045 = Path
027 = Row
00 = WRS row offset (set to 00)
99 = Last two digits-year of acquisition
108 = Julian date (day-of-year) of acquisition
5 = ETM plus sensor
1 or 2 = Version # (0 = Original scene)

The image quality codes describe the amount of cloud cover in the four quadrants of the image. A zero signifies an almost cloud-free image while a 9 indicates nearly complete cloud cover.

<u>Image Quality 1</u>	<u>Image Quality 2</u>	<u>Image Cloud Cover</u>	<u>NW Quad Cloud</u>	<u>NE Quad Cloud</u>	<u>SW Quad Cloud</u>	<u>SE Quad Cloud</u>
9	9	0	0	0	0	0
9	9	9	9	9	9	9

- Click the Preview Image Show icon **Show** for image no. 1, July 30, 1999. The cloud cover values indicate this should have less than 10% cloud cover.

**EarthExplorer: Results**

**Enhanced Thematic Mapper Plus (Landsat 7)**  
84 of 84 metadata records retrieved. Showing 1-10

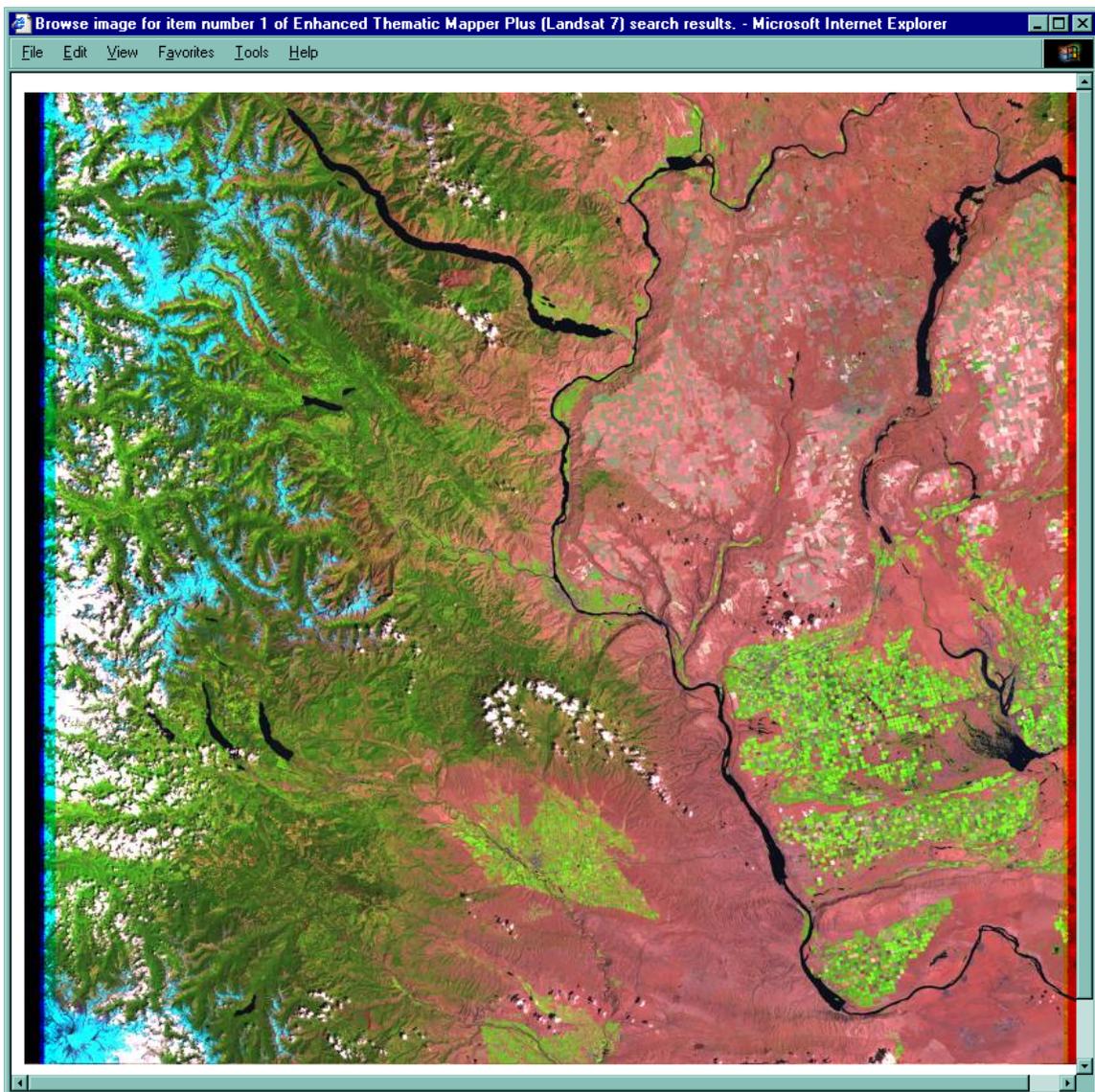
Preview Image	Show Footprint	Show All Fields	Exclude	Order	Qty	Entity Id	Acquisition Date	Path	Row	Classification	Image Quality 1	Image Quality 2	Image Cloud Cover	NW Quad Cloud	NE Quad Cloud	SW Quad Cloud	SE Quad Cloud	Receiving Station
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		70450270099211.50	1999/07/30	45	27	Normal	9	9	0	0	0	0	0	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		70450270099227.50	1999/08/15	45	27	Normal	9	9	9	9	9	9	9	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		70450270099243.50	1999/08/31	45	27	Normal	9	9	3	5	0	7	1	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		70450270099259.50	1999/09/16	45	27	Normal	9	9	4	2	5	1	7	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		70450270099275.50	1999/10/02	45	27	Normal	9	9	1	1	1	1	2	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		70450270099195.50	1999/07/14	45	27	Normal	9	9	3	6	0	5	0	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		70450270099291.50	1999/10/18	45	27	Normal	9	9	1	1	1	1	1	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		70450270099307.50	1999/11/03	45	27	Normal	9	9	8	9	7	8	7	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		70450270099323.50	1999/11/19	45	27	Normal	9	9	9	9	9	9	9	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		70450270099339.50	1999/12/05	45	27	Normal	9	9	8	6	9	8	9	EDC

Navigation: [Previous Page](#) [Next Page](#) [Redefine Criteria](#) [Result Summary](#)

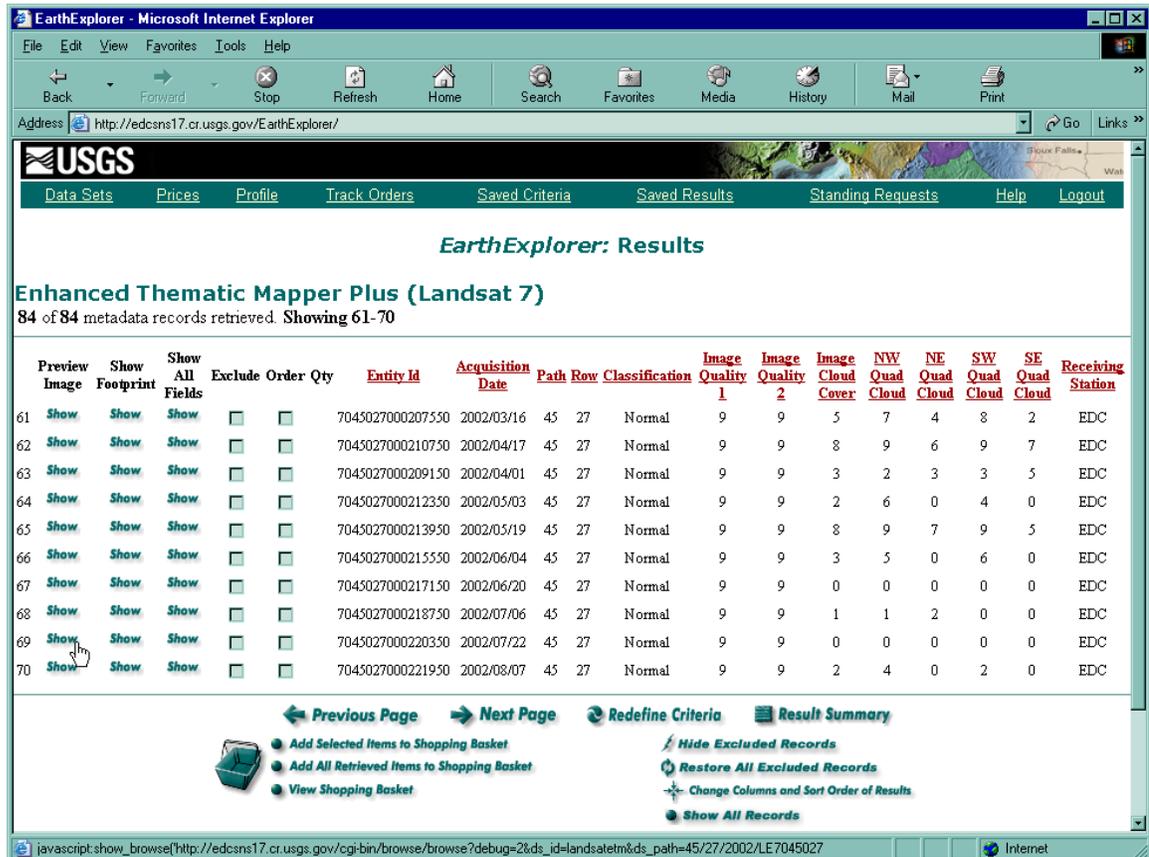
Actions: [Add Selected Items to Shopping Basket](#) [Add All Retrieved Items to Shopping Basket](#) [View Shopping Basket](#) [Hide Excluded Records](#) [Restore All Excluded Records](#) [Change Columns and Sort Order of Results](#) [Show All Records](#)

JavaScript: `show_browse(http://edcns17.cr.usgs.gov/cgi-bin/browse/browse?debug=2&ds_id=landsatm&ds_path=45/27/1999/LE7045027`

9. A separate browse image window opens with a low resolution version of the actual Landsat 7 image. The top of the image is oriented towards, but not exactly, to the north. The Teanaway River lies just east of the three parallel reservoirs in the right center area of the image. Cloud cover is obscuring some of the forested terrain, but lower Teanaway River appears cloud free. Snow cover takes on a bluish tinge and can be distinguished from the more whitish cloud cover with this this particular band combination.



10. Click the Next Page icon  several times to view the image listing for the summer of 2002. The July 22, 2002 image cloud cover is less than 10 percent. Open its preview image.



**EarthExplorer: Results**

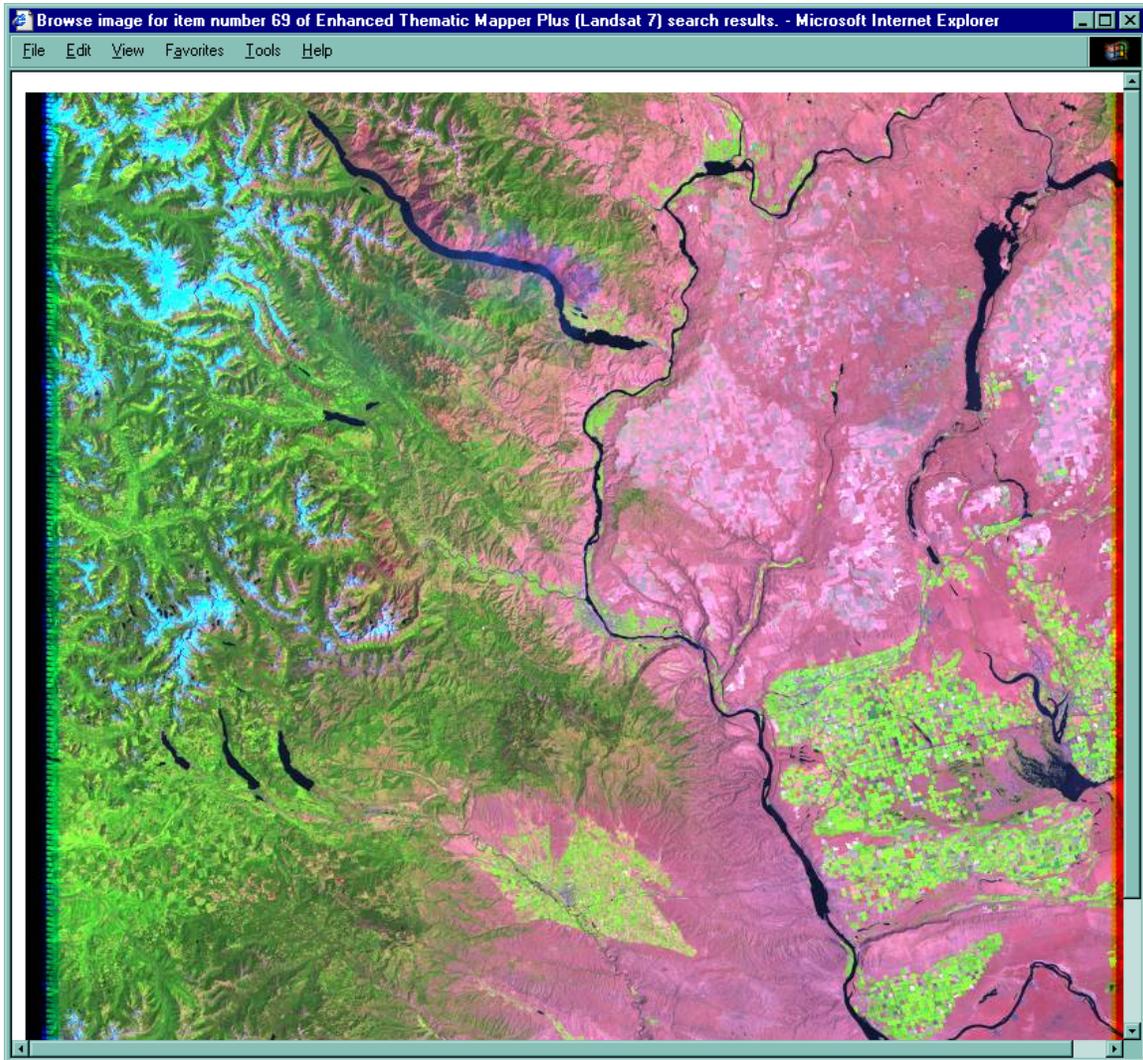
**Enhanced Thematic Mapper Plus (Landsat 7)**  
84 of 84 metadata records retrieved. Showing 61-70

Preview Image	Show Footprint	Show All Fields	Exclude	Order	Qty	Entity Id	Acquisition Date	Path	Row	Classification	Image Quality 1	Image Quality 2	Image Cloud Cover	NW Quad Cloud	NE Quad Cloud	SW Quad Cloud	SE Quad Cloud	Receiving Station
<a href="#">61 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000207550	2002/03/16	45	27	Normal	9	9	5	7	4	8	2	EDC
<a href="#">62 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000210750	2002/04/17	45	27	Normal	9	9	8	9	6	9	7	EDC
<a href="#">63 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000209150	2002/04/01	45	27	Normal	9	9	3	2	3	3	5	EDC
<a href="#">64 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000212350	2002/05/03	45	27	Normal	9	9	2	6	0	4	0	EDC
<a href="#">65 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000213950	2002/05/19	45	27	Normal	9	9	8	9	7	9	5	EDC
<a href="#">66 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000215550	2002/06/04	45	27	Normal	9	9	3	5	0	6	0	EDC
<a href="#">67 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000217150	2002/06/20	45	27	Normal	9	9	0	0	0	0	0	EDC
<a href="#">68 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000218750	2002/07/06	45	27	Normal	9	9	1	1	2	0	0	EDC
<a href="#">69 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000220350	2002/07/22	45	27	Normal	9	9	0	0	0	0	0	EDC
<a href="#">70 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000221950	2002/08/07	45	27	Normal	9	9	2	4	0	2	0	EDC

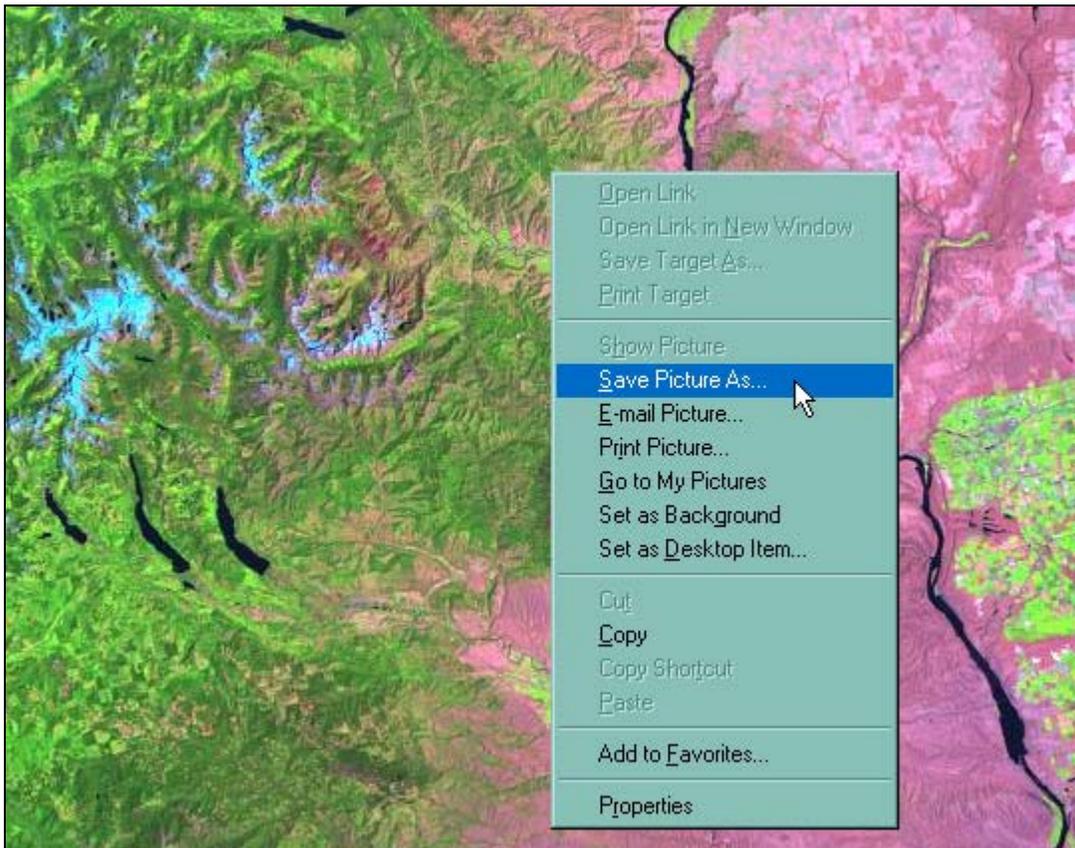
Navigation: [Previous Page](#) [Next Page](#) [Redefine Criteria](#) [Result Summary](#)

Actions: [Add Selected Items to Shopping Basket](#) [Add All Retrieved Items to Shopping Basket](#) [View Shopping Basket](#) [Hide Excluded Records](#) [Restore All Excluded Records](#) [Change Columns and Sort Order of Results](#) [Show All Records](#)

11. There appears to be no cloud cover in this image. However, there is a thin smoke haze over Lake Chelan in the upper central area of the image. This is probably a wildfire. Note the checkboard pattern of the forests in the lower left quadrant. It is fairly easy to distinguish the irrigated cropland around Ellensburg, WA and west of Moses Lake, WA.



12. To save the image in jpeg format for later viewing, position the mouse cursor on the image, then press and hold the right mouse button. This activates the Windows Explorer drop down menu. Select Save Picture As and save the image file in a desired location. This search and view feature of the EarthExplorer provides a easy means to collect browse images of potential Landsat purchases. The browse images themselves help build a understanding of land cover and seasonal variation.



- Click the Show All Fields in the listing for the July 22 image. This will open a separate window with a text listing of basic image metadata.

**EarthExplorer: Results**

**Enhanced Thematic Mapper Plus (Landsat 7)**  
84 of 84 metadata records retrieved. Showing 61-70

Preview Image	Show Footprint	Show All Fields	Exclude	Order Qty	Entity Id	Acquisition Date	Path	Row	Classification	Image Quality 1	Image Quality 2	Image Cloud Cover	NW Quad Cloud	NE Quad Cloud	SW Quad Cloud	SE Quad Cloud	Receiving Station
<a href="#">61 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>		7045027000207550	2002/03/16	45	27	Normal	9	9	5	7	4	8	2	EDC
<a href="#">62 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>		7045027000210750	2002/04/17	45	27	Normal	9	9	8	9	6	9	7	EDC
<a href="#">63 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>		7045027000209150	2002/04/01	45	27	Normal	9	9	3	2	3	3	5	EDC
<a href="#">64 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>		7045027000212350	2002/05/03	45	27	Normal	9	9	2	6	0	4	0	EDC
<a href="#">65 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>		7045027000213950	2002/05/19	45	27	Normal	9	9	8	9	7	9	5	EDC
<a href="#">66 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>		7045027000215550	2002/06/04	45	27	Normal	9	9	3	5	0	6	0	EDC
<a href="#">67 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>		7045027000217150	2002/06/20	45	27	Normal	9	9	0	0	0	0	0	EDC
<a href="#">68 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>		7045027000218750	2002/07/06	45	27	Normal	9	9	1	1	2	0	0	EDC
<a href="#">69 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>		7045027000220350	2002/07/22	45	27	Normal	9	9	0	0	0	0	0	EDC
<a href="#">70 Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>		7045027000221950	2002/08/07	45	27	Normal	9	9	2	4	0	2	0	EDC

Navigation: [Previous Page](#) [Next Page](#) [Redefine Criteria](#) [Result Summary](#)

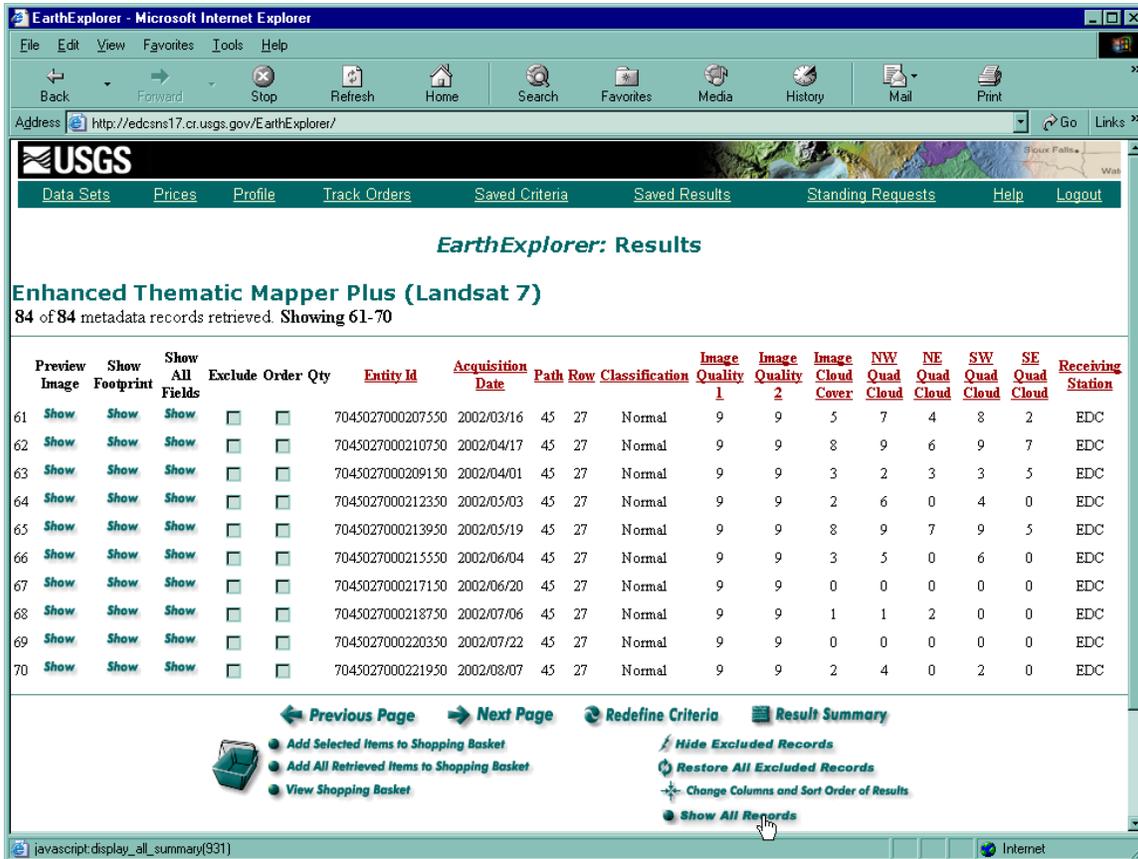
Shopping Basket: [Add Selected Items to Shopping Basket](#) [Add All Retrieved Items to Shopping Basket](#) [View Shopping Basket](#)

Records: [Hide Excluded Records](#) [Restore All Excluded Records](#) [Change Columns and Sort Order of Results](#) [Show All Records](#)

14. The metadata listing can be copied and pasted or saved as an ascii text file. It includes the time of day the image was acquired in Universal Coordinated Time (UTC).

Dataset Attribute	Attribute Value
<a href="#">Entity ID</a>	7045027000220350
<a href="#">Acquisition Date</a>	2002/07/22
<a href="#">WRS Path</a>	45
<a href="#">WRS Row</a>	27
<a href="#">NW Corner</a>	48°25'48"N, 121°19'29"W
<a href="#">NE Corner</a>	48°03'45"N, 118°48'01"W
<a href="#">SW Corner</a>	46°49'02"N, 121°54'31"W
<a href="#">SE Corner</a>	46°27'39"N, 119°27'28"W
<a href="#">Center Coordinates</a>	47°27'04"N, 120°22'19"W
<a href="#">Image Cloud Cover</a>	0 to 9% Cloud Cover
<a href="#">NW Quad Cloud Cover</a>	0 to 9% Cloud Cover
<a href="#">NE Quad Cloud Cover</a>	0 to 9% Cloud Cover
<a href="#">SW Quad Cloud Cover</a>	0 to 9% Cloud Cover
<a href="#">SE Quad Cloud Cover</a>	0 to 9% Cloud Cover
<a href="#">Image Quality 1</a>	9
<a href="#">Image Quality 2</a>	9
<a href="#">Flight Path</a>	Descending
<a href="#">Sun Elevation</a>	57.1903801
<a href="#">Sun Azimuth</a>	138.3812103
<a href="#">Scene Start Time</a>	2002:203:18:37:30.6650000
<a href="#">Scene Stop Time</a>	2002:203:18:37:57.7402499
<a href="#">Day or Night</a>	Day

15. Click Show All Records  **Show All Records** for a complete listing of the 84 images identified in the search.



**EarthExplorer: Results**

**Enhanced Thematic Mapper Plus (Landsat 7)**  
84 of 84 metadata records retrieved. Showing 61-70

Preview Image	Show Footprint	Show All Fields	Exclude	Order Qty	Entity Id	Acquisition Date	Path	Row	Classification	Image Quality 1	Image Quality 2	Image Cloud Cover	NW Quad Cloud	NE Quad Cloud	SW Quad Cloud	SE Quad Cloud	Receiving Station
61	Show	Show	<input type="checkbox"/>	<input type="checkbox"/>	7045027000207550	2002/03/16	45	27	Normal	9	9	5	7	4	8	2	EDC
62	Show	Show	<input type="checkbox"/>	<input type="checkbox"/>	7045027000210750	2002/04/17	45	27	Normal	9	9	8	9	6	9	7	EDC
63	Show	Show	<input type="checkbox"/>	<input type="checkbox"/>	7045027000209150	2002/04/01	45	27	Normal	9	9	3	2	3	3	5	EDC
64	Show	Show	<input type="checkbox"/>	<input type="checkbox"/>	7045027000212350	2002/05/03	45	27	Normal	9	9	2	6	0	4	0	EDC
65	Show	Show	<input type="checkbox"/>	<input type="checkbox"/>	7045027000213950	2002/05/19	45	27	Normal	9	9	8	9	7	9	5	EDC
66	Show	Show	<input type="checkbox"/>	<input type="checkbox"/>	7045027000215550	2002/06/04	45	27	Normal	9	9	3	5	0	6	0	EDC
67	Show	Show	<input type="checkbox"/>	<input type="checkbox"/>	7045027000217150	2002/06/20	45	27	Normal	9	9	0	0	0	0	0	EDC
68	Show	Show	<input type="checkbox"/>	<input type="checkbox"/>	7045027000218750	2002/07/06	45	27	Normal	9	9	1	1	2	0	0	EDC
69	Show	Show	<input type="checkbox"/>	<input type="checkbox"/>	7045027000220350	2002/07/22	45	27	Normal	9	9	0	0	0	0	0	EDC
70	Show	Show	<input type="checkbox"/>	<input type="checkbox"/>	7045027000221950	2002/08/07	45	27	Normal	9	9	2	4	0	2	0	EDC

Navigation buttons: Previous Page, Next Page, Redefine Criteria, Result Summary, Add Selected Items to Shopping Basket, Add All Retrieved Items to Shopping Basket, View Shopping Basket, Hide Excluded Records, Restore All Excluded Records, Change Columns and Sort Order of Results, Show All Records.

A message box appears advising that the user may continue using the browser while the results are summarized. Results for relatively small searches are usually generated within a few seconds.

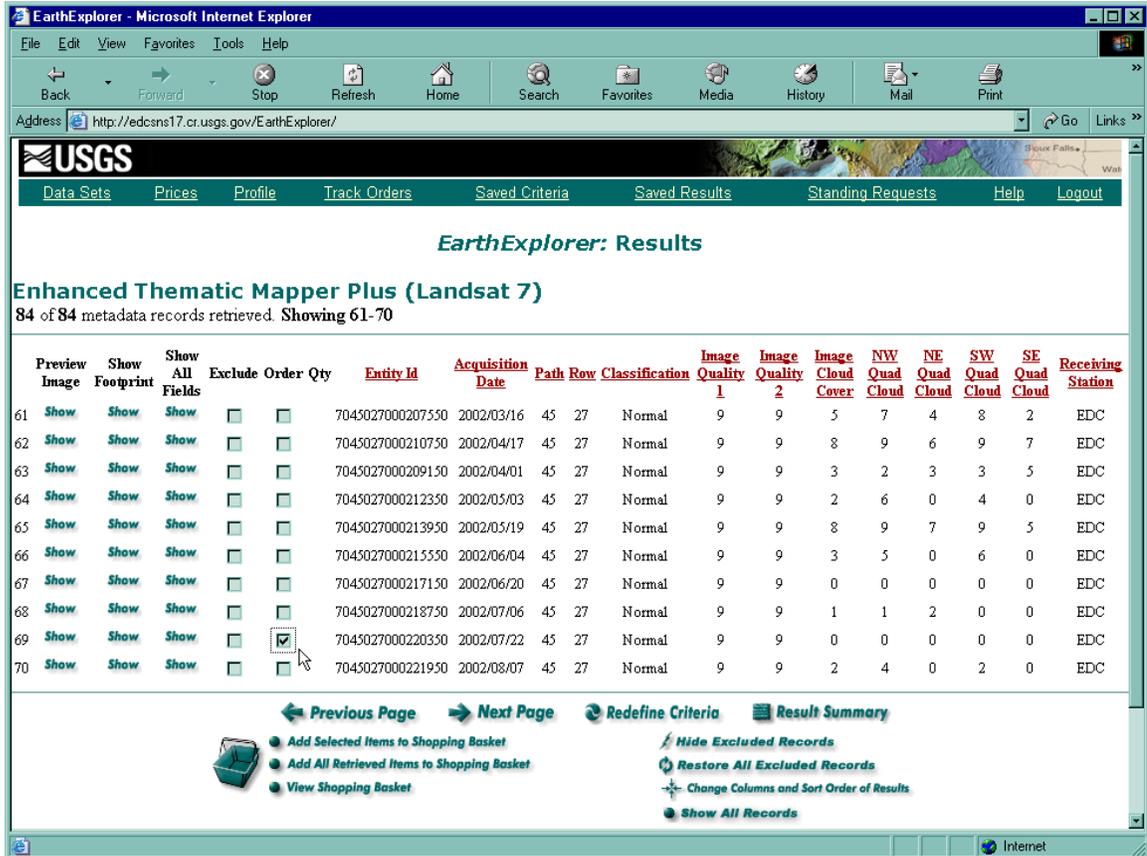


- A separate window opens with the complete list of images. Save the contents of this window as a text file using the normal windows File menu. This text file can later be imported into a spreadsheet or word processing software package.

Entity Id	Acquisition Date	Path	Row	Classification	Image Quality 1	Image Quality 2	Image Cloud Cover	NW Quad Cloud	NE Quad Cloud	SW Quad Cloud	SE Quad Cloud	Receiving Station
1	7045027009921150	1999/07/30	45 27	Normal	9	9	0	0	0	0	0	EDC
2	7045027009922750	1999/08/15	45 27	Normal	9	9	9	9	9	9	9	EDC
3	7045027009924350	1999/08/31	45 27	Normal	9	9	3	5	0	7	1	EDC
4	7045027009925950	1999/09/16	45 27	Normal	9	9	4	2	5	1	7	EDC
5	7045027009927550	1999/10/02	45 27	Normal	9	9	1	1	1	1	2	EDC
6	7045027009919550	1999/07/14	45 27	Normal	9	9	3	6	0	5	0	EDC
7	7045027009929150	1999/10/18	45 27	Normal	9	9	1	1	1	1	1	EDC
8	7045027009930750	1999/11/03	45 27	Normal	9	9	8	9	7	8	7	EDC
9	7045027009932350	1999/11/19	45 27	Normal	9	9	9	9	9	9	9	EDC
10	7045027009933950	1999/12/05	45 27	Normal	9	9	8	6	9	8	9	EDC
11	7045027009935550	1999/12/21	45 27	Normal	9	9	0	0	0	0	1	EDC
12	7045027000000650	2000/01/06	45 27	Normal	9	9	9	8	9	9	9	EDC
13	7045027000005450	2000/02/23	45 27	Normal	9	9	3	2	5	1	5	EDC
14	7045027000002250	2000/01/22	45 27	Normal	9	9	6	4	9	3	8	EDC
15	7045027000007050	2000/03/10	45 27	Normal	9	9	1	0	2	0	1	EDC
16	7045027000008650	2000/03/26	45 27	Normal	9	9	0	0	0	0	0	EDC
17	7045027000010250	2000/04/11	45 27	Normal	9	9	0	0	1	0	0	EDC
18	7045027000011850	2000/04/27	45 27	Normal	9	9	9	9	9	9	9	EDC
19	7045027000013450	2000/05/13	45 27	Normal	9	9	1	1	0	1	0	EDC
20	7045027000015050	2000/05/29	45 27	Normal	9	9	2	3	1	3	1	EDC
21	7045027000016650	2000/06/14	45 27	Normal	9	9	7	7	8	5	5	EDC
22	7045027000018250	2000/06/30	45 27	Normal	9	9	4	4	6	6	1	EDC
23	7045027000019850	2000/07/16	45 27	Normal	9	9	0	0	0	0	0	EDC
24	7045027000021450	2000/08/01	45 27	Normal	9	9	0	0	0	0	0	EDC
25	7045027000023050	2000/08/17	45 27	Normal	9	9	0	0	0	0	0	EDC
26	7045027000024650	2000/09/02	45 27	Normal	9	9	9	9	9	8	9	EDC
27	7045027000026250	2000/09/18	45 27	Normal	9	9	9	9	8	9	9	EDC
28	7045027000027850	2000/10/04	45 27	Normal	9	9	0	0	0	0	0	EDC
29	7045027000029450	2000/10/20	45 27	Normal	9	9	9	9	9	9	9	EDC
30	7045027000031050	2000/11/05	45 27	Normal	9	9	7	8	6	9	7	EDC
31	7045027000032650	2000/11/21	45 27	Normal	9	9	1	1	1	1	2	EDC
32	7045027000034250	2000/12/07	45 27	Normal	9	9	5	1	8	3	9	EDC
33	7045027000035850	2000/12/23	45 27	Normal	9	9	9	9	9	9	9	EDC
34	7045027000100850	2001/01/08	45 27	Normal	9	9	9	9	9	9	9	EDC
35	7045027000102450	2001/01/24	45 27	Normal	9	9	7	7	5	8	8	EDC

17. Check the Order box for the July 22, 2002 image to add this image to the user's shopping basket.

Click  **Add Selected Items to Shopping Basket** then  **View Shopping Basket** to begin the ordering process.



**EarthExplorer: Results**

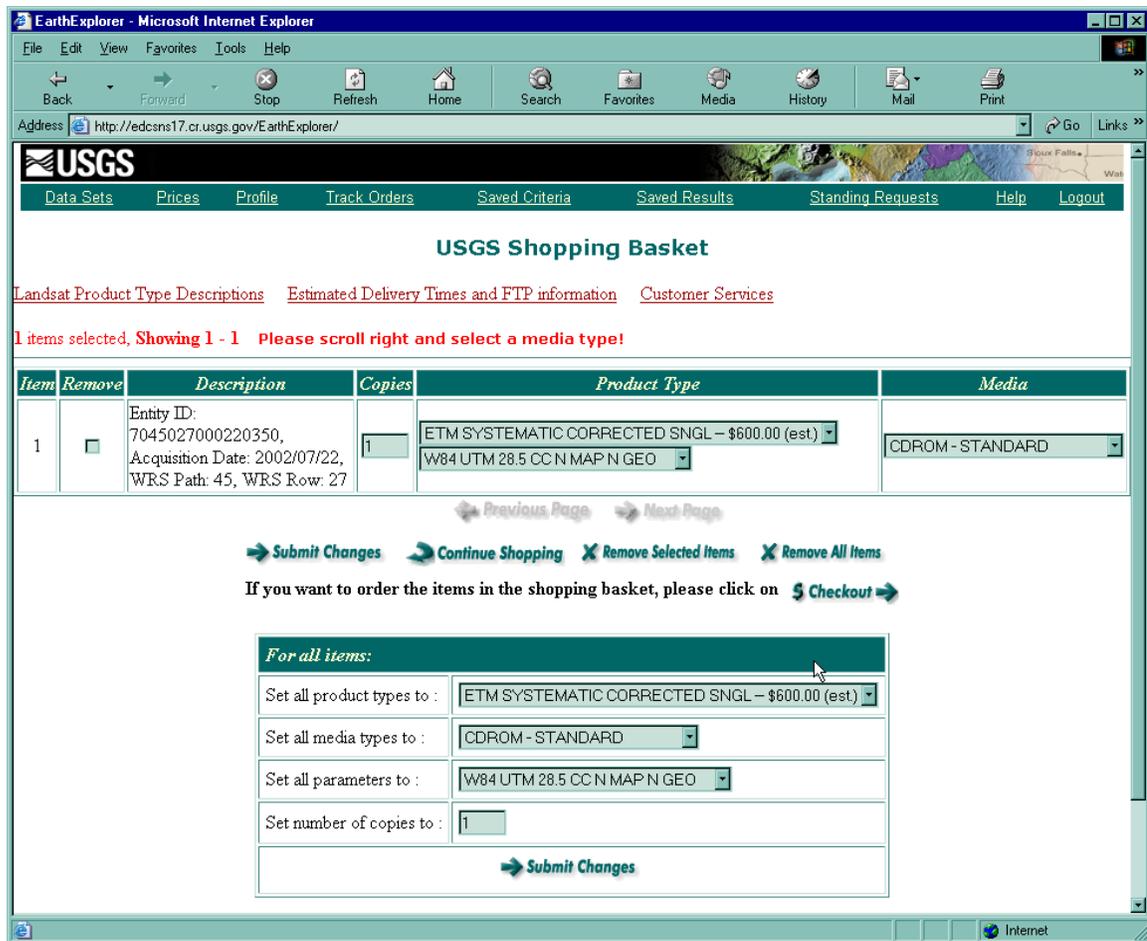
**Enhanced Thematic Mapper Plus (Landsat 7)**  
84 of 84 metadata records retrieved. Showing 61-70

Preview Image	Show Footprint	Show All Fields	Exclude	Order	Qty	Entity Id	Acquisition Date	Path	Row	Classification	Image Quality 1	Image Quality 2	Image Cloud Cover	NW Quad Cloud	NE Quad Cloud	SW Quad Cloud	SE Quad Cloud	Receiving Station
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000207550	2002/03/16	45	27	Normal	9	9	5	7	4	8	2	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000210750	2002/04/17	45	27	Normal	9	9	8	9	6	9	7	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000209150	2002/04/01	45	27	Normal	9	9	3	2	3	3	5	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000212350	2002/05/03	45	27	Normal	9	9	2	6	0	4	0	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000213950	2002/05/19	45	27	Normal	9	9	8	9	7	9	5	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000215550	2002/06/04	45	27	Normal	9	9	3	5	0	6	0	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000217150	2002/06/20	45	27	Normal	9	9	0	0	0	0	0	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000218750	2002/07/06	45	27	Normal	9	9	1	1	2	0	0	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		7045027000220350	2002/07/22	45	27	Normal	9	9	0	0	0	0	0	EDC
<a href="#">Show</a>	<a href="#">Show</a>	<a href="#">Show</a>	<input type="checkbox"/>	<input type="checkbox"/>		7045027000221950	2002/08/07	45	27	Normal	9	9	2	4	0	2	0	EDC

Navigation: [Previous Page](#) [Next Page](#) [Redefine Criteria](#) [Result Summary](#)

Actions: [Add Selected Items to Shopping Basket](#) [Add All Retrieved Items to Shopping Basket](#) [View Shopping Basket](#) [Hide Excluded Records](#) [Restore All Excluded Records](#) [Change Columns and Sort Order of Results](#) [Show All Records](#)

18. Options on the Shopping Basket screen allow the user to select the image format and delivery method. It also shows the price of the product. Landsat images cost \$600 each plus a small handling fee. The user has the choice of receiving the image on compact disc (CD) or downloading the image by FTP. Landsat image data sets 8 separate band files with smaller metadata files totaling about 600 mb. It is usually more convenient and less worrisome to order the data set on CD if delivery time is not critical. USGS usually sends the CD within a few days. FTP transfers are usually available the next day.

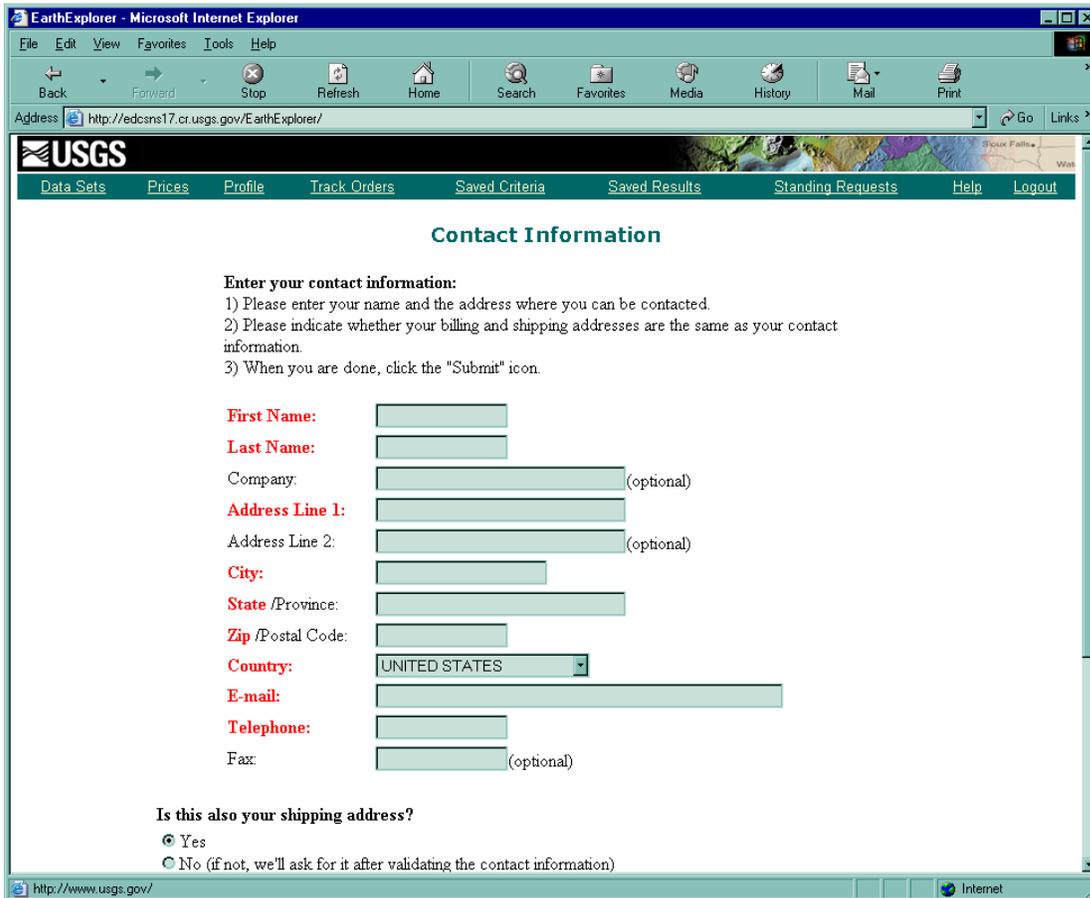


19. Explanations of the product types are given in a related Landsat 7 tutorial. For this tutorial just examine the product types and select the W84 UTM 28.5 CC N Map N GEO product type. Product type codes indicate the map datum and projection, pixel size, resampling technique, the application of terrain correction, image orientation, format type and product format.

Information on Product Formats							
<u>Datum</u>	<u>Map Projection</u>	<u>Pixel Size</u>	<u>Resampling Technique</u>	<u>Terrain Correction</u>	<u>Image Orientation</u>	<u>DEM Availability</u>	<u>Product Format</u>
W84	UTM	30	CC	N	SAT	N	GEO

20. Click  when satisfied with the product format and delivery method.

21. From this point EarthExplorer functions like most internet order applications. The user must give shipping and billing information and specify a payment method. Credit cards are accepted.



Click Logout on the EarthExplorer Contact Information to exit the ordering process. This concludes the Landsat 7 search and order tutorial.



