05-2023 Landsat Collection 2 EarthExplorer Help

Note: New download methods have been added (May 2023) to improve access to individual files, including adding files from multiple scenes/tiles to a Bulk Order. Previous methods have not changed, just new functions added.

Landsat Collection 2 (Level-1, Level-2, Analysis Ready Data (ARD), and Level-3 Science Products) products on EarthExplorer. Products include multiple files which may be downloaded individually or in a .tar bundle. The list of possible files will vary depending on Sensor, Level, and Product.

Data Types and Products

- The <u>Landsat Collection 2</u> webpage contains information concerning data type and products. The Data Format Control Book's (DFCB) are accessible from the webpage.
- Landsat Collection 2 Level-1, Level-2, Analysis Ready Data (ARD), and Level-3 Science Products Data Types
 - Collection 2 Level-1
 - L1GT -- Includes radiometric and geometric corrections
 - L1TP -- Includes radiometric, geometric, and precision correction
 - Collection 2 Level-2
 - L2SP Includes Surface Reflectance (SR), Surface Temperature (ST), ST intermediate bands, an angle coefficients file, and Quality Assessment (QA) Bands.
 - L2SR -- Includes Surface Reflectance (SR), an angle coefficients file, and Quality Assessment (QA) Bands.
 - Analysis Ready Data (ARD)
 - Tile Brightness Temperature (BT)
 - Tile Surface Reflectance (SR)
 - Tile Surface Temperature (ST)
 - Tile Top of Atmosphere (TOA)
 - Level-3 Science Products
 - Burned Area (BA)
 - Dynamic Surface Water Extent (DSWE)
 - Fractional Snow Cover Area (fSCA)
 - Fractional Snow Cover Area (fSCA) Statistics
- Downloads are available as a .tar bundle, which includes all available files. When downloading individual files, these are the most commonly used.
 - Spectral Bands in Cloud Optimized GeoTIFF (COG) format
 - Bands 1-11 (Landsat 8-9 OLI/TIRS)
 - Bands 1-8 (Landsat 7 ETM+)
 - Bands 1-7 (Landsat 4-5 TM)
 - Bands 1-4 (Landsat 4-5 MSS)
 - Bands 4-7 (Landsat 1-3 MSS)
 - $\circ \quad \text{Angle Files} \quad$

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- Solar Azimuth Angle (SAA)
- Solar Zenith Angle (SZA)
- Sensor Azimuth Angle (VAA)
- Sensor Zenith Angle (VZA)
- Angle Coefficient File
- Quality Assessment (QA)
 - Pixel Quality Assessment Band (QA_Pixel)
 - Radiometric Saturation and Terrain Occlusion QA Band (QA RADSAT)
- Metadata
 - Material Library File (MTL) (Object Description Language-based) format
 - Extensible Markup Language (XML)

Landsat Collection 2 Download Methods

Information below pertains to Landsat Collection 2 download functions. Additional help documentation is available through <u>EarthExplorer</u> or directly from <u>EarthExplorer Help</u> <u>documents</u>.

• View Results

The "Results" Tab (Search Criteria	Data Sets	Additional Criteria	Results) executes a search

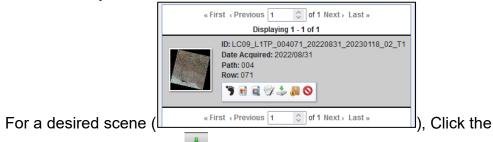
using the search criteria and displays the results.

The left side of the page displays the results panel with thumbnail and textual information for each scene returned from the search. The right side of the page displays the map interface with the identified area of interest (Figure 1).



Figure 1 - Results

Download Options



"Download Options" icon 述 to display the available data. Users must be registered and logged in.

The Download Options box displays (Figure 2):

- New Download Method Options to download individual files to bulk, directly download individual files, and Select Files.
- Product Options Dropdown opens to list bundle and individual band/files
- **Download** Click to download the Full-Resolution Browse.



Figure 2 – Download Options Box

- New Download Method Section above the Product Options dropdown offers an optional way to download and/or add to bulk Landsat Collection 2 data.
 - Product and Number of Files Display how many individual files are available for the product selected. Examples:

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Download Options All Level-1 Files (20 files) xample 1: Landsat 8-	to Bulk F	Iles Now	Select Files	Download Options X All Level-1 Files (27 files) Add All Files to Bulk Download All Files Now Select Files Example 2: Landsat 7 ETM+		
Download Options ARD Tile Brightness Temperature (3 files) ARD Tile Surface Reflectance (9 files)	Add All Files to Bulk Add All Files to Bulk	Download All Files Now Download All Files Now	X Select Files Select Files	Download Options Landsat BA All Files (6 files) Add All Files to Bulk Download All Files Now Select Files Example 4: Burned Area		
ARD Tile Surface Temperature (10 files) ARD Tile Top of Atmosphere (9 files) Example 3: Analysis R	Add All Files to Bulk Add All Files to Bulk	Download All Files Now Download All Files Now	Select Files			

 Add All Files to Bulk -- Click (Figure 4) button to add all individual files to the Item Basket for Bulk download.



Figure 4: Add All Files to Bulk

 Download All Files Now – Click button (Figure 5) and the system starts downloading each of the individual files one at a time. Note of Caution: Depending on your browser settings, this may open a new tab for each file, and you may be prompted for where to save each file.

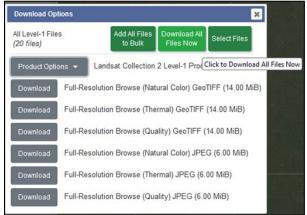


Figure 5: Download All Files Now

 Select Files – Click button (Figure 6) and a new window will pop up with the list of individual files (Figure 7) for the scene to toggle on or off. There is an option to customize the File Groups for each Data Set, permanently. <u>Data Set</u> <u>Customization</u> is located in the User Settings. See <u>User Setting Help</u> documentation for assistance.



Figure 6: Select Files

ielect files from this File Group. Use "Add All Selec lasket. Files will appear in a different data set in th ave your selection to make it permanent.	
O ANG.txt	Select All Deselect All
B1.TIF	
B2.TIF	
B3.TIF	
D B4.TIF	
D B5.TIF	
B6.TIF	
B7.TIF	
D B8.TIF	
B9.TIF	
B10.TIF	
B11.TIF	
MTL.txt	
MTLxml	
QA_PIXEL.TIF	
QA_RADSAT.TIF	
O SAA.TIF	
SZA.TIF	
O VAA.TIF	
	Add All Selected Clos

Figure 7: List of Files

Click the toggle next to the files not desired (Figure 8). Once selection is made, Click to Add to Download Bulk or Download All Selected Files. Only the files toggled "on" are downloaded or added to the Item Basket.

Related Files - All Level-1 Files *	£
ANG.txt	
B1.TIF	
B2.TIF	
B3.TIF	
D B4.TIF	
D B5.TIF	
D B6.TIF	
D B7.TIF	
B8.TIF	
D B9.TIF	
D B10.TIF	
D B11.TIF	
MTL.txt	
MTL.xml	
QA_PIXEL.TIF	
SAA.TIF	
SZA.TIF	
D VZA.TIF	
Add All Selected to Bulk Download All Selected Now Close	
0 T	_

Figure 8: Toggled Scenes Off

• **Product Options** – Click on Product Options (Figure 9) and Product Download Options dialog displays (Figure 10).

science for a changing world	Product Download Options for LC09_L1TP_004071_20220831_20230118_02_T1 Landsat Collection 2 Level-1 Product Bundle	×
EarthExplorer Manage Criteria -		
Search Criteria Data Sets Additional Crite	▲ 1.21 GB Landsat Collection 2 Level-1 Product Bundle	
4. Search Results	The following items are available for individual download	
If you selected more than one data set to sea dropdown to see the search results for each	(Item Name Filter)	
Show Result Controls	Image: Weight and Sat Collection 2 LC09_L1TP_004071_20220831_20230118_02_T1_ANG.txt Landsat Collection 2 Level-1 Band File - ANG.txt	^
Download Options All Level-1 Files Add All Files Add All Files	LC09_L1TP_004071_20220831_2023018_02_T1_B10.TIF Landsat Collection 2 Level-1 Band File - B70.TIF	
(20 files) to Bulk Product Options Landsat Collection	₩ ± 83.97 M/B LC09_L1TP_004071_20220831_20230118_02_T1_B11.TIF Landsat Collection 2 Level-1 Band File - B11.TIF	
Download Full-Resolution Browse (N:	★ 96.95 MiB LC09_L1TP_004071_20220831_20230118_02_T1_B1.TIF Landsat Collection 2 Level-1 Band File - B1.TIF	
Download Full-Resolution Browse (Tr	K ▲ 88.49 MIB LC09_L1TP_004071_20220831_20220118_02_T1_B2.TIF Landsat Collection 2 Level-1 Band File - B2 TIF	
Download Full-Resolution Browse (Q		
Download Full-Resolution Browse (N:	K	~
Download Full-Resolution Browse (Tr	Add All to Bulk	Close
Download Full-Resolution Browse (Q		Close
	Areaser &	

Figure 9 – Product Options

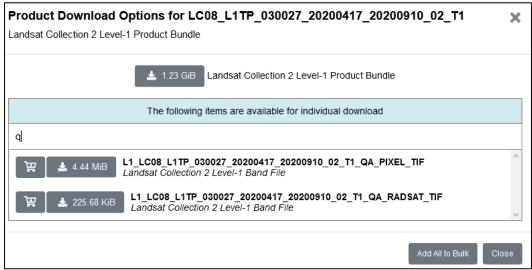


Figure 10 – Product Download Options

(1) **Download Bundle** – Click to download the Landsat Collection 2 product bundle. The file is a .tar file. The bundle download size is provided and contains all files in the product

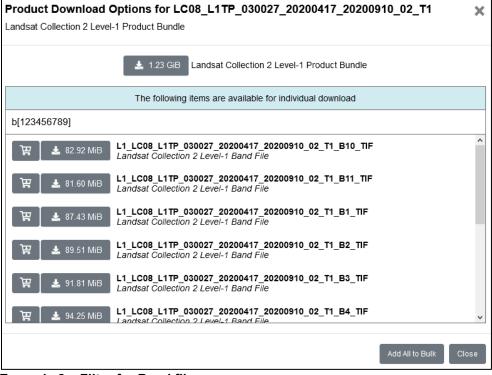
(2) Item Name Filter – Allows user to filter for specific files.

Example 1: Only want Quality files. Type in q. The list will only display the QA files.



Example 1 – Filter for Quality files

Example 2: Only want Band files. Type b[123456789]. The list will only display Band files.



Example 2 – Filter for Band files

(3) Individual Files – Click on shopping basket icon () to add desired files to Bulk Download. Or click on download icon () to download desired file.

(4) Add to Bulk – Click on Add All to Bulk icon (Add All to Bulk) to add all individual files to Bulk Download. The shopping basket icon will turn green (

). After adding data to Bulk Download, close the Product Options window.

Click the "Item Basket" on the menu bar Item Basket (12) 2 Help Feedback Logout, to display the Item Basket with a Bulk Download section. (Figure 11) Access to the Bulk Downloads is the same for all methods of downloads.



Figure 11 – Bulk Download

• Bulk Order

Click Start Order (^{Start Order}) to display the list of Data Sets, then expand each

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Data Set to select which products to add to your Bulk Order. For specific Landsat Collection 2 bulk order help, go to Landsat Collection 2 Bulk Order Help. When products (including bundles, browse, and/or files) have been selected for each data set, use Submit Product Selections at the bottom of the section.

Access the <u>Bulk Download Web Application (BDWA)</u> to download data. See <u>Bulk Download Web Application (BDWA) Help Document</u> for further assistance.