How To: Search using Earthdata Search

Some tips on searching for data using Earthdata Search.

Searching: in general

Earthdata Search's text search field attempts to understand complex queries like "land surface temperature over Uganda for the last 10 years."

Sometimes a text search does not return useful results. This happens most often when the search includes:

- an unrecognized, misspelled or ambiguous location name;
- the name of a body of water, river and/or landmark.

For best results,

- **If you know the specific collection name, shortname, id or project you are looking for**, start your search using the free text field;
- **otherwise, skip the free text field**, and start your search using the checkboxes on the left to specify the most relevant scientific keywords.
- Next, specify the **location** you are interested in using the spacial criteria button (the compass icon) located to the right of the free text field.
- Finally, specify the **time** you are interested in using the temporal criteria button (the clock icon) located to the right of the free text field.

So for example, to search for "land surface temperature over Uganda for the last 10 years"

1. Check the following checkboxes on the left:
   Keywords | Land Surface | Land Temperature
   Keywords | Surface Radiative Properties | Land Surface Temperature
   Keywords | Surface Thermal Properties | Land Surface Temperature
2. Enter temporal criteria: click the clock button next to the free text field, and enter Start: 2008-01-01 00:00:00 and Stop: Today.
3. Enter spacial criteria: click the compass button next to the free text field, and draw a bounding rectangle around Uganda.

Getting data: in general

You can download a granule, multiple granules, a single collection, or multiple collections.

TO DOWNLOAD A GRANULE, MULTIPLE GRANULES, OR A COLLECTION:

Click a collection to view its granules. In granule view, you'll see only the granules for the collection that fit your spacial and temporal constraints. Note that you can further refine what granules are selected using the "Granule Search" text field, the "Granule Filters" (the link with funnel icon) to the right of it, and the date slider at the bottom of the screen.

To download all selected granules, click the big green "Download All" button on the right hand side of the screen.

To download an individual granule, click the "Download single granule data" button (the down arrow icon) beside the granule

After clicking "Download All" or "Configure and download single granule data," you will see one or more of the following order options, depending on what the data provider supports:
o "Direct Download" - Allows you to download data as-is now from your browser, either by accessing a list of download links, by downloading a file of data links for offline processing, or by downloading a script that can be used with curl or wget. (Note: tips for using the download script can be found here.)
o "Stage for Delivery" - Allows you to submit a request for a staged delivery. You will receive an email with download instructions when the data is ready.
o "Customize Product" - Allows you to select custom service options to be performed (e.g. subsetting, reprojection, etc.) You will receive an email with download instructions when the data is ready.

TO DOWNLOAD MULTIPLE COLLECTIONS

1) Use the "Add to project" button to add collections to your "project" (similar to a shopping cart), and then click the "My Project" button in the upper right hand side of the screen.
2) For each collection in your project, click the collection and select the granules you want to download.
3) Go back to the project, and select the big green "Download Project Data" button on the right.

Searching: Filtering granules

In granule view, you can filter the granules selected using any combination of the following:

- temporal criteria (clock button upper left) - enter / modify the date criteria
- spacial criteria (compass button upper left) - enter / modify the location criteria
- the date slider at the bottom of the page
- the "Granule Search" field – enter one or more granule names or patterns
- the "Granules Filters" link (the funnel link to right of the Granule Search field) - specify Day / Night, Cloud Cover and other collection-specific attributes

Searching for granules by filename

To search for a specific granule file in Earthdata Search, you will first need to know the name, shortname or id of the collection to which it belongs.

When you have that, search for the collection, then click the collection in the search results, and in granule view use the "Granule Search" field to filter the collection's granules using the significant part of granule filename.

For example, to search for file N42W072.zip in in the collection having the shortname ASTGTM:

1. Search for collection ASTGTM
2. Click on the collection, and in granule view in the "Granule Search" field type *N42W072*

Searching by recurring date: How to search for all Novembers from 2000 to 2018:

1. In the upper left corner of the screen, click the temporal icon (the clock).
2. In the dialog, check "Recurring"
3. In the dialog, click in "Start," then click "Nov," then click "1"
4. In the dialog, click in "End," then click "Nov," then click "30"
5. In the dialog, adjust "Year Range" to be 2000 - 2018
6. In the dialog, click "Apply Filter"

Customizations: Data subsetting, reformatting, reprojection, etc

"Customizations" refer to optional data processing/subsetting services that may be available from data providers. These may include data reformatting (e. g. to NetCDF, GeoTIFF, KLM and other file formats), data reprojection, data subsetting, and other options.

For a specific collection, the availability of customizations depends on whether the collection's provider supports customization services for it. Collections for which customizations are available are indicated with the label "CUSTOMIZABLE" following the collection name.

To see only customizable products, check the "Features | Customizable" checkbox on the left in collection view.

To specify a customization option, place an order for one or more granules of a customizable collection, and then choose the "Customize Order" option.

NOTE: customization services are not offered for all products, and not all customizable products support every option.

Entering grid coordinates: coordinate system options

CALIPSO
Dimensions - Orbit/Path
Enter orbit and path coordinates separated by spaces, e.g. "2,3 5,7 8,8"
Note - Orbit and Path values are not continuous and cannot be used in a range.
More info:
https://www-calipso.larc.nasa.gov/resources/calipso_users_guide/faq.php

MISR
Dimensions - Path/Block
Enter path and block coordinates separated by spaces, e.g. "2,3 5,7 8,8"
Note - Path values are not continuous and cannot be used in a range.
More info:
https://eosweb.larc.nasa.gov/
https://eosweb.larc.nasa.gov/sites/default/files/project/misr/guide/MISR_Science_Data_Product_Guide.pdf

MODIS EASE
Dimensions - Horizontal/Vertical
Enter h and v coordinates separated by spaces, e.g. "2,3 5,7 8,8"
More info:
"For MODIS Sea Ice EASE-Grid products. Tiles are 951 pixels x 951 pixels and 10 degrees by 10 degrees, with half of the tiles (313) located in the north polar grid and half in the south polar grid. In addition:

- The north polar grid tile coordinate system starts at (0,0) (horizontal tile number, vertical tile number) in the upper left corner and proceeds right (horizontal) and downward (vertical). The tile in the bottom left corner is (18,18).
- The south polar grid tile coordinate system starts at (0,20) and the tile in the bottom left corner is (18,38).
- The polar grids are based on the Lambert Azimuthal Equal Area map projection centered on each pole. The grids are compatible with the NSIDC EASE-Grid."

https://nsidc.org/data/modis/ease-grid-tile-locations-sea-ice
http://nsidc.org/data/ease

MODIS Sinusoidal
Dimensions - Horizontal/Vertical
Enter h and v coordinates separated by spaces, e.g. "2,3 5,7 8,8"
More info:
"MODIS Land products use the Sinusoidal grid tiling system. Tiles are 10 degrees by 10 degrees at the equator. The tile coordinate system starts at (0,0) (horizontal tile number, vertical tile number) in the upper left corner and proceeds right (horizontal) and downward (vertical). The tile in the bottom right corner is (35,17)."
http://spatialreference.org/ref/sr-org/modis-sinusoidal/
https://modis-land.gsfc.nasa.gov/MODLAND_grid.html
https://lpdaac.usgs.gov/dataset_discovery/modis

WELD ALASKA Tile
Dimensions - Horizontal/Vertical
Enter h and v coordinates separated by spaces, e.g. "2,3 5,7 8,8"
More info:
A U.S. Landsat ARD 30m tile system based on the Web-Enabled Landsat Data (WELD) project, with coordinates anchored in ALASKA.

	Upper Left Tile (ul corner)					Lower Right Tile (lr corner)			
	(h)	(v)	ulX (m)	ulY (m)		(h)	(v)	lrX (m)	lrY (m)
Alaska	0	0	-851715	2474325		16	13	1698285	374325

https://landsat.usgs.gov/what-us-ard-tile-grid
https://landsat.usgs.gov/ard#Tile%20Grid

WELD CONUS Tile
Dimensions - Horizontal/Vertical
Enter h and v coordinates separated by spaces, e.g. "2,3 5,7 8,8"
More info:
A U.S. Landsat ARD 30m tile system based on the Web-Enabled Landsat Data (WELD) project, with coordinates anchored in CONUS (the continental U.S.)

	Upper Left Tile (ul corner)					Lower Right Tile (lr corner)			
	(h)	(v)	ulX (m)	ulY (m)		(h)	(v)	lrX (m)	lrY (m)
CONUS	0	0	-2565585	3314805		32	21	2384415	14805

https://landsat.usgs.gov/what-us-ard-tile-grid
https://landsat.usgs.gov/ard#Tile%20Grid

WRS-1 (Landsat 1-3)
Dimensions - Path/Row
Enter path and row coordinates separated by spaces, e.g. "2,3 5,7 8,8"
More info:
"The Worldwide Reference System (WRS) is a global notation used in cataloging Landsat data. Landsat 8 and Landsat 7 follow the WRS-2, as did Landsat 5 and Landsat 4. Landsat 1, Landsat 2, and Landsat 3 followed WRS-1.""
https://landsat.usgs.gov/what-worldwide-reference-system-wrs

WRS-2 (Landsat 4+)
Dimensions - Path/Row
Enter path and row coordinates separated by spaces, e.g. "2,3 5,7 8,8"
More info:
"The Worldwide Reference System (WRS) is a global notation used in cataloging Landsat data. Landsat 8 and Landsat 7 follow the WRS-2, as did Landsat 5 and Landsat 4. Landsat 1, Landsat 2, and Landsat 3 followed WRS-1.""
https://landsat.usgs.gov/what-worldwide-reference-system-wrs

Using NASA Earthdata datasets in other works

NASA data are freely accessible; however, when you publish these data or works based on the data, we request that you cite the datasets within the text of your work, and include references to the datasets in your reference list.

References to datasets should have enough detail to allow your audience to obtain the datasets themselves and conduct their own studies based on your work. (For complete provenance and understanding of specifically which parts of data were used and how, it also may be necessary to describe in detail, within the body of your work, exactly how the data is used.)

Because each discipline within Earth science has its own unique approach to data, each dataset provider has posted examples on how to cite and reference its discipline-specific data and services.

These can be found at:
https://earthdata.nasa.gov/earth-observation-data/data-citations-acknowledgements

Related articles

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- How To: Configure and Confirm Download Methods in Earthdata Search
- How To: Use Smart Handoffs in Earthdata Search