

## GEO 542: Introduction to Remote Sensing – Fall 2026

### Workshop1: EarthExplorer Imagery into ArcGIS Pro

Now that you have learned how to download data from EarthExplorer, you need to be able to use them in image processing/GIS software. This workshop addresses image processing procedures should metadata files not be available.

If we used the following criteria in an image search on EarthExplorer: Calgary, Alberta for Landsat 4-5 for the month of June from 2009 to 2011 from the Landsat Collection 2 Level-2 selected and less than 10% cloud cover.... the following result occurs.

Geocoder
GeoJSON/KML/Shapefile Upload

Select a Geocoding Method  
Address/Place (Google)

Address/Place (Google)

Show Clear

Click on an Address/Place to show the location on the map and add coordinates to the Area of Interest Control.

| Num | Address/Place                       | Latitude | Longitude |
|-----|-------------------------------------|----------|-----------|
| 1   | <a href="#">Calgary, AB, Canada</a> | 51.0447  | -114.0719 |

Polygon
Circle
Predefined Area

Degree/Minute/Second
Decimal

*i* No coordinates selected.

Use Map
Add Coordinate
Clear Coordinates

Date Range
Cloud Cover
Result Options

Search from:  to:

Search months:

Landsat

+

Landsat Collection 2 Level-3 Science Products

+

Landsat C2 U.S. Analysis Ready Data (ARD)

-

Landsat Collection 2 Level-2

Landsat 8-9 OLI/TIRS C2 L2

Landsat 7 ETM+ C2 L2

Landsat 4-5 TM C2 L2

## 4. Search Results

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

Show Browse/Footprint Controls

Show Result Controls

Data Set

[Click here to export your results »](#)

Landsat 4-5 TM C2 L2

« First

◀ Previous

1

⬆ ⬇ ⬆

of 1

Next ▶

Last »

Displaying 1 - 1 of 1

ID: LT05\_L2SP\_042024\_20100613\_20200824\_02\_T1

Date Acquired: 2010/06/13

Path: 042

Row: 024

« First

◀ Previous

1

⬆ ⬇ ⬆

of 1

Next ▶

Last »

## Product Download Options for LT05\_L2SP\_042024\_20100613\_20200824\_02\_T1



Landsat Collection 2 Level-2 Product Bundle



715.89 MiB

Landsat Collection 2 Level-2 Product Bundle

The following items are available for individual download

(Item Name Filter)

|  |            |                                                                                                                                              |
|--|------------|----------------------------------------------------------------------------------------------------------------------------------------------|
|  | 34.07 KiB  | <b>LT05_L2SP_042024_20100613_20200824_02_T1_ANG.txt</b><br><i>Landsat Collection 2 Level-2 Band File - ANG.txt</i>                           |
|  | 13.67 KiB  | <b>LT05_L2SP_042024_20100613_20200824_02_T1_MTL.txt</b><br><i>Landsat Collection 2 Level-2 Band File - MTL.txt</i>                           |
|  | 20.01 KiB  | <b>LT05_L2SP_042024_20100613_20200824_02_T1_MTL.xml</b><br><i>Landsat Collection 2 Level-2 Band File - MTL.xml</i>                           |
|  | 895.45 KiB | <b>LT05_L2SP_042024_20100613_20200824_02_T1_QA_PIXEL.TIF</b><br><i>Landsat Collection 2 Level-2 Band File - QA_PIXEL.TIF</i>                 |
|  | 304.17 KiB | <b>LT05_L2SP_042024_20100613_20200824_02_T1_QA_RADSAT.TIF</b><br><i>Landsat Collection 2 Level-2 Band File - QA_RADSAT.TIF</i>               |
|  | 10.81 MiB  | <b>LT05_L2SP_042024_20100613_20200824_02_T1_SR_ATMOS_OPACITY.TIF</b><br><i>Landsat Collection 2 Level-2 Band File - SR_ATMOS_OPACITY.TIF</i> |

Add All to Bulk

Close

You need to download the Product Bundle (in this case 715.89 mB).  
By downloading the image, you would have received the file:

LT05\_L2SP\_042024\_20100613\_20200824\_02\_T1.tar

It is now necessary to unzip this file and extract the data files contained within it.  
Right click on the file and select Extract All...

The files are normally extracted to your default directory  
C:\Users\yourusername\Downloads\LT05\_L2SP\_042024\_20100613\_20200824\_02\_T1  
although you can normally specify an alternate directory. Once unzipped, you should have a  
series of files that appears like this:

| Name                                                                                                                                            | Date modified    | Type                  | Size      |
|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------------|-----------|
| ▼ Today                                                                                                                                         |                  |                       |           |
|  LT05_L2SP_042024_20100613_20200824_02_T1_ANG.txt              | 2026-09-15 14:37 | Text Document         | 35 KB     |
|  LT05_L2SP_042024_20100613_20200824_02_T1_MTL.json             | 2026-09-15 14:37 | JSON File             | 13 KB     |
|  LT05_L2SP_042024_20100613_20200824_02_T1_MTL.txt              | 2026-09-15 14:37 | Text Document         | 14 KB     |
|  LT05_L2SP_042024_20100613_20200824_02_T1_MTL.xml              | 2026-09-15 14:37 | Microsoft Edge HTM... | 21 KB     |
|  LT05_L2SP_042024_20100613_20200824_02_T1_QA_PIXEL.TIF         | 2026-09-15 14:37 | TIF File              | 896 KB    |
|  LT05_L2SP_042024_20100613_20200824_02_T1_QA_RADSAT.TIF        | 2026-09-15 14:37 | TIF File              | 305 KB    |
|  LT05_L2SP_042024_20100613_20200824_02_T1_SR_ATMOS_OPACITY.TIF | 2026-09-15 14:37 | TIF File              | 11,069 KB |
|  LT05_L2SP_042024_20100613_20200824_02_T1_SR_B1.TIF            | 2026-09-15 14:37 | TIF File              | 71,299 KB |
|  LT05_L2SP_042024_20100613_20200824_02_T1_SR_B2.TIF            | 2026-09-15 14:37 | TIF File              | 62,856 KB |
|  LT05_L2SP_042024_20100613_20200824_02_T1_SR_B3.TIF            | 2026-09-15 14:37 | TIF File              | 67,826 KB |
|  LT05_L2SP_042024_20100613_20200824_02_T1_SR_B4.TIF            | 2026-09-15 14:37 | TIF File              | 76,071 KB |
|  LT05_L2SP_042024_20100613_20200824_02_T1_SR_B5.TIF            | 2026-09-15 14:37 | TIF File              | 83,553 KB |
|  LT05_L2SP_042024_20100613_20200824_02_T1_SR_B7.TIF            | 2026-09-15 14:37 | TIF File              | 76,549 KB |
|  LT05_L2SP_042024_20100613_20200824_02_T1_SR_CLOUD_QA.TIF      | 2026-09-15 14:37 | TIF File              | 1,764 KB  |
|  LT05_L2SP_042024_20100613_20200824_02_T1_SR_stac.json         | 2026-09-15 14:37 | JSON File             | 45 KB     |
|  LT05_L2SP_042024_20100613_20200824_02_T1_ST_ATRAN.TIF         | 2026-09-15 14:37 | TIF File              | 27,017 KB |
|  LT05_L2SP_042024_20100613_20200824_02_T1_ST_B6.TIF            | 2026-09-15 14:37 | TIF File              | 73,730 KB |
|  LT05_L2SP_042024_20100613_20200824_02_T1_ST_CDIST.TIF         | 2026-09-15 14:37 | TIF File              | 21,922 KB |
|  LT05_L2SP_042024_20100613_20200824_02_T1_ST_DRAD.TIF         | 2026-09-15 14:37 | TIF File              | 15,632 KB |
|  LT05_L2SP_042024_20100613_20200824_02_T1_ST_EMIS.TIF        | 2026-09-15 14:37 | TIF File              | 37,823 KB |
|  LT05_L2SP_042024_20100613_20200824_02_T1_ST_EMSD.TIF        | 2026-09-15 14:37 | TIF File              | 20,955 KB |
|  LT05_L2SP_042024_20100613_20200824_02_T1_ST_QA.TIF          | 2026-09-15 14:37 | TIF File              | 27,185 KB |
|  LT05_L2SP_042024_20100613_20200824_02_T1_ST_stac.json       | 2026-09-15 14:37 | JSON File             | 40 KB     |
|  LT05_L2SP_042024_20100613_20200824_02_T1_ST_TRAD.TIF        | 2026-09-15 14:37 | TIF File              | 31,737 KB |
|  LT05_L2SP_042024_20100613_20200824_02_T1_ST_URAD.TIF        | 2026-09-15 14:37 | TIF File              | 24,826 KB |
|  LT05_L2SP_042024_20100613_20200824_02_T1_thumb_large.jpeg   | 2026-09-15 14:37 | JPEG File             | 89 KB     |
|  LT05_L2SP_042024_20100613_20200824_02_T1_thumb_small.jpeg   | 2026-09-15 14:37 | JPEG File             | 11 KB     |

The image data files end with the B\*.TIF extension. Metadata can be found in the files ending with .txt.

Open ArcGIS Pro and bring the first .TIF file into the software. This represents Band1 of the Landsat image. The full file name is:  
LT05\_L2SP\_042024\_20100613\_20200824\_02\_T1\_SR\_B1.TIF.

Also import Bands 2, 3, 4, 5, and 7.

You need to use the **Composite Bands** command to create the file with all the pertinent layers. It is important that you transfer the bands in order. First add LT05\_L2SP\_042024\_20100613\_20200824\_02\_T1\_SR\_B1.TIF and then LT05\_L2SP\_042024\_20100613\_20200824\_02\_T1\_SR\_B2.TIF and so on.

The image should look like this when you zoom in on downtown Calgary:

