

CE-G0800 GIS in in Water Resources
Spring 2022

**Downloading Remote
Sensing data**

By

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-
- <https://earthexplorer.usgs.gov/>
 - Create an account on above website
 - Get account activated

Data Selection process

Search Criteria Data Sets Additional Criteria Results

1. Enter Search Criteria

To narrow your search area: type in an address or place name, enter coordinates or click the map to define your search area (for advanced map tools, view the [help documentation](#)), and/or choose a date range.

Geocoder KML/Shapefile Upload

Select a Geocoding Method

Feature (GNIS)

Search Limits: The search result limit is 100 records; select a Country, Feature Class, and/or Feature Type to reduce your chances of exceeding this limit.

US Features World Features

Feature Name

(use % as wildcard)

State

All

Feature Type

All

Show

Clear

Polygon Circle Predefined Area

Degree/Minute/Second

Decimal

1. Lat: 40° 54' 45" N, Lon: 074° 24' 55" W

Use Map

Add Coordinate

Clear Coordinates

Search Criteria Data Sets Additional Criteria Results

2. Select Your Data Set(s)

Check the boxes for the data set(s) you want to search. When done selecting data set(s), click the *Additional Criteria* or *Results* buttons below. Click the plus sign next to the category name to show a list of data sets.

Use Data Set Prefilter (What's This?)

Data Set Search:

- HCMM
- ISERV
- Land Cover
- Landsat
 - Landsat C2 U.S. Analysis Ready Data (ARD)
 - Landsat Collection 2 Level-2
 - Landsat Collection 2 Level-1
 - Landsat 8-9 OLI/TIRS C2 L1
 - Landsat 7 ETM+ C2 L1
 - Landsat 4-5 TM C2 L1
 - Landsat 1-5 MSS C2 L1
 - Landsat C2 Atmospheric Auxiliary Data
 - Landsat Collection 1
 - Landsat Legacy
- LCMAP
- NASA LPDAAC Collections
- Radar
- Sentinel
- UAS
- Vegetation Monitoring
- ISRO Resourcesat

Search Criteria Data Sets Additional Criteria Results

3. Additional Criteria (Optional)

If you have more than one data sets selected, use the dropdown to select the additional criteria for each data set.

Data Sets:

Landsat 8-9 OLI/TIRS C2 L1

Landsat Product Identifier L1

WRS Path

WRS Row

Satellite

Sensor Identifier

Day/Night Indicator

Day

Nadir/Off Nadir

Sun Elevation L0RA

Land Cloud Cover

0

to

5

Search Criteria Data Sets Additional Criteria **Results**

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 Result Controls ▾

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

Landsat 8-9 OLI/TIRS C2 L1 ▾

« First ‹ Previous 1 of 4 Next › Last »

Displaying 1 - 10 of 39

ID:
LC09_L1TP_014031_20220314_20220314_02_T1
Date Acquired: 2022/03/14
Path: 014
Row: 031

ID:
LC09_L1TP_014032_20211109_20220119_02_T1
Date Acquired: 2021/11/09
Path: 014
Row: 032

ID:
LC08_L1TP_014032_20210927_20211001_02_T1
Date Acquired: 2021/09/27
Path: 014
Row: 032

ID:
LC08_L1TP_014031_20210506_20210517_02_T1
Date Acquired: 2021/05/06

- You will see several images for your research area.
- Select appropriate image for download
- If you are working on change detection project, you might need several images.
- Once you finalize the image, with specific time period, select download option
-

Download Options ✕

Product Options ▾ **Landsat** Collection 2 Level-1 Product Bundle

Download	Full-Resolution Browse (Natural Color) GeoTIFF (14.00 MiB)
Download	Full-Resolution Browse (Thermal) GeoTIFF (14.00 MiB)
Download	Full-Resolution Browse (Quality) GeoTIFF (14.00 MiB)
Download	Full-Resolution Browse (Natural Color) JPEG (6.00 MiB)
Download	Full-Resolution Browse (Thermal) JPEG (6.00 MiB)
Download	Full-Resolution Browse (Quality) JPEG (6.00 MiB)

Selection of Band

Product Download Options for LC08_L1TP_014032_20191024_20200825_02_T1

Landsat Collection 2 Level-1 Product Bundle

1.07 GiB Landsat Collection 2 Level-1 Product Bundle

The following items are available for individual download

(Item Name Filter)

- 📄 114.50 KiB **LC08_L1TP_014032_20191024_20200825_02_T1_ANG.txt**
Landsat Collection 2 Level-1 Band File
- 📄 77.19 MiB **LC08_L1TP_014032_20191024_20200825_02_T1_B10.TIF**
Landsat Collection 2 Level-1 Band File
- 📄 75.42 MiB **LC08_L1TP_014032_20191024_20200825_02_T1_B11.TIF**
Landsat Collection 2 Level-1 Band File
- 📄 74.38 MiB **LC08_L1TP_014032_20191024_20200825_02_T1_B1.TIF**
Landsat Collection 2 Level-1 Band File
- 📄 75.97 MiB **LC08_L1TP_014032_20191024_20200825_02_T1_B2.TIF**
Landsat Collection 2 Level-1 Band File
- 📄 79.15 MiB **LC08_L1TP_014032_20191024_20200825_02_T1_B3.TIF**
Landsat Collection 2 Level-1 Band File

Add All to Bulk

Close

Select appropriate band data for your application/project.

For normal or true color image, you pick Band 2, 3 and 4 (i.e. Visible band)

Bands	Wavelength (μm)	Res (m)
Band 1 – Coastal aerosol	0.43–0.45	30
Band 2 – BLUE	0.45–0.51	30
Band 3 – GREEN	0.53–0.59	30
Band 4 – RED	0.64–0.67	30
Band 5 - Near Infrared (NIR)	0.85–0.88	30
Band 6 – SWIR 1	1.57–1.65	30
Band 7 – SWIR 2	2.11–2.29	30
Band 8 – Panchromatic	0.50–0.68	15
Band 9 – Cirrus	1.36–1.38	30
Band 10 – Thermal Infrared (TIRS) 1	10.60–11.19	30
Band 11 – Thermal Infrared (TIRS) 2	11.50– 2.51	30

Open the data in ArcGIS

The screenshot displays the ArcGIS Pro interface with the following components:

- Project:** MyProject8 - Map - ArcGIS Pro
- Map:** Raster Layer
- Command Search:** Tarendra (The City College of New York - ESRI ArcGIS Online)
- Toolbars:** Project, Map, Insert, Analysis, View, Edit, Imagery, Share, Appearance, Data, Clipboard, Navigate, Layer, Selection, Inquiry, Labeling, Offline.
- Contents:** Map, LC08_L1TP_014032_20191024_20200825_02, Value (65535, 3930), LC08_L1TP_014032_20191024_20200825_02, Value (65535, 3169), LC08_L1TP_014032_20191024_20200825_02, Value (65535, 4510), Topographic.
- Symbology - LC08_L1TP_014032_2019102...:** Primary symbology, Stretch, Band (Band_1), Color scheme, Invert, Value (3930, 65535), Label (3930, 65535), Stretch type (Percent Clip), Min (0.250), Max (0.250), Gamma (2.0).
- Statistics:** Mask, Advanced Labeling, Dataset, Options, Min (3930), Max (65535), Mean (7355.56804169), Std. dev (737.99150174).
- Status Bar:** 1:1,184,202, 425,489.74E 4,348,580.33N m, Selected Features: 0.

Compositing images

The screenshot displays the ArcGIS Pro interface with the **Geoprocessing** pane open. The main map shows a grayscale composite image overlaid on a geographic map. The **Geoprocessing** pane is titled **Composite Bands** and shows the following parameters:

- Input Rasters:**
 - LC08_L1TP_014032_20191024_20200825_02_T1_B2.TIF
 - LC08_L1TP_014032_20191024_20200825_02_T1_B3.TIF
 - LC08_L1TP_014032_20191024_20200825_02_T1_B4.TIF
- Output Raster:** Composite_NYC.tif

The **Geoprocessing** pane also shows a search bar with the text **composite** and a list of search results, including **Composite Bands (Data Management Tools)** and **Create Composite Address Locator (Geocoding Tools)**.

The **Contents** pane on the left shows the **Map** layer with the following items:

- LC08_L1TP_014032_20191024_20200825_02 (Value: 65535, 3930)
- LC08_L1TP_014032_20191024_20200825_02 (Value: 65535, 3169)
- LC08_L1TP_014032_20191024_20200825_02 (Value: 65535, 4510)
- Topographic

The **Symbology** pane on the right shows the **Primary symbology** for the selected layer, with the following settings:

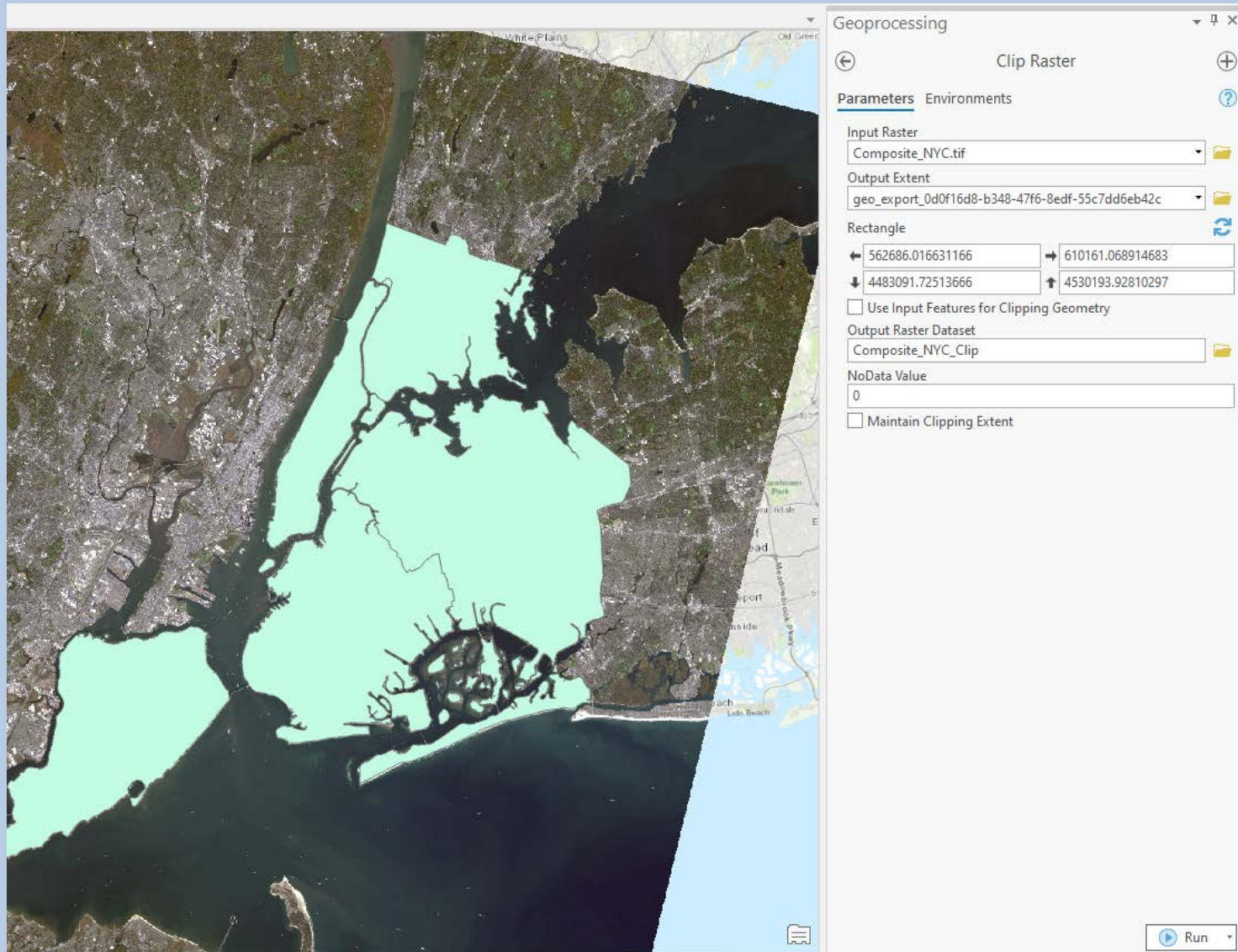
- Stretch:** Stretch
- Band:** Band_1
- Color scheme:** Standard
- Value:** 3930 (Range: 3930 to 65535)
- Label:** 3930 (Range: 3930 to 65535)
- Stretch type:** Percent Clip (Min: 0.250, Max: 0.250)
- Gamma:** 2.0

The **Statistics** pane shows the following values:

Statistics	Dataset
Min	3930
Max	65535
Mean	7355.56804169
Std. dev	737.99150174

A blue arrow points to the **Composite Bands** tool in the **Geoprocessing** pane.

Load the NYC Shapefile and clip the raster



The image displays a GIS software interface. On the left, a satellite-style map of New York City is shown with a cyan-colored clipping mask that follows the city's outline. On the right, the 'Geoprocessing' window is open, showing the 'Clip Raster' tool configuration. The tool parameters are as follows:

- Input Raster:** Composite_NYC.tif
- Output Extent:** geo_export_0d0f16d8-b348-47f6-8edf-55c7dd6eb42c
- Rectangle:**
 - X Min: 562686.016631166
 - X Max: 610161.068914683
 - Y Min: 4483091.72513666
 - Y Max: 4530193.92810297
- Use Input Features for Clipping Geometry
- Output Raster Dataset:** Composite_NYC_Clip
- NoData Value:** 0
- Maintain Clipping Extent

A 'Run' button is located at the bottom right of the tool window.

Clip raster to study area

The screenshot displays the ArcGIS Pro interface with the 'Clip Raster' tool active in the Geoprocessing pane. The main map shows a grayscale composite raster of the New York City area, with a dark gray rectangular area indicating the clipped region. The interface includes a top menu bar with 'Project', 'Map', 'Insert', 'Analysis', 'View', 'Edit', 'Imagery', 'Share', 'Appearance', and 'Data'. The 'Analysis' menu is open, showing various tools like 'Pairwise Buffer', 'Summarize Within', 'Spatial Join', and 'Pairwise Clip'. The 'Geoprocessing' pane on the right shows the 'Clip Raster' tool configuration with the following parameters:

- Input Raster:** Composite_NYC_Clip
- Output Extent:** geo_export_0d0f16d8-b348-47f6-8edf-55c7dd6eb42c
- Rectangle:** X: 562686.016631166 to 610161.068914683; Y: 4483091.72513666 to 4530193.92810297
- Use Input Features for Clipping Geometry
- Output Raster Dataset:** Composite_NYC_Clip1
- NoData Value:** 65535
- Maintain Clipping Extent

The 'Run' button is visible at the bottom of the Geoprocessing pane. A status bar at the bottom indicates 'Clip Raster completed.' and 'View Details Open History'. The map shows a grayscale composite raster of the New York City area, with a dark gray rectangular area indicating the clipped region. The map includes labels for various locations such as Wayne, Paterson, Clifton, Passaic, Newark, Jersey City, Manhattan, and Staten. The map scale is 1:310,432, and the coordinates are 559,751.29E 4,480,227.98N m.