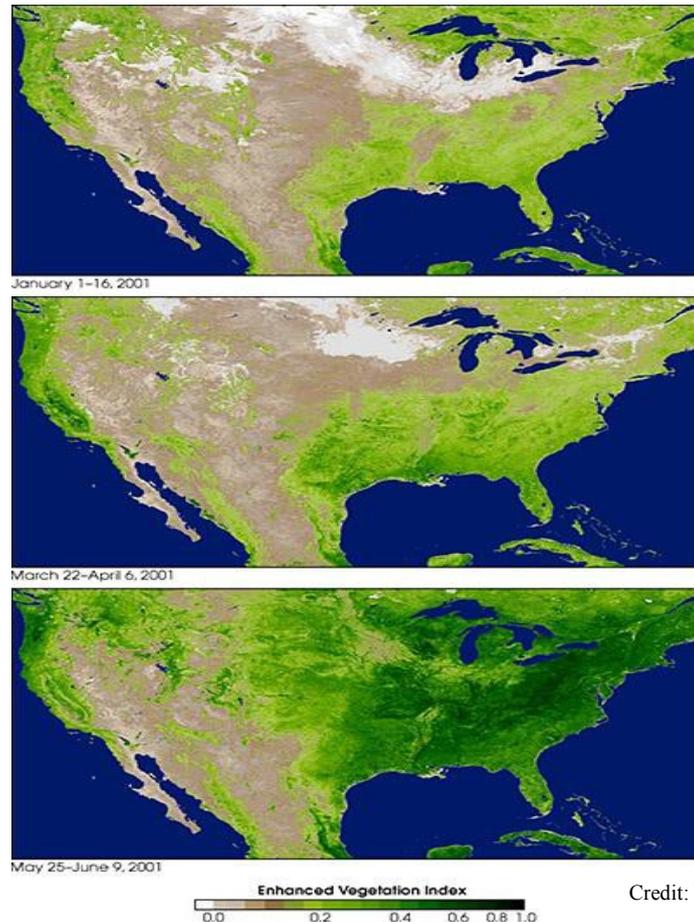


Overview of Web-tools for Data Access

Landsat and MODIS NDVI

Spatial and Temporal selection of Data
Importing Data into GIS



Credit: NASA/GSFC/University of Arizona

Web Tools

Oak Ridge National Laboratory Distributed Active
Archive Center (ORNL DAAC)

<http://daac.ornl.gov/>

USGS LandsatLook Viewer

<http://landsatlook.usgs.gov/>

SERVIR Global

<https://www.servirglobal.net/>

Acquire MODIS NDVI

Oak Ridge National Laboratory Distributed Active Archive Center (ORNL DAAC)

<http://daac.ornl.gov/>

The screenshot shows the ORNL DAAC website interface. The browser address bar displays daac.ornl.gov. The website header includes the ORNL DAAC logo and the text "Distributed Active Archive Center for Biogeochemical Dynamics". A navigation bar contains tabs for "About Us", "Products", "Data", "Tools", and "Help". The "Tools" tab is highlighted with a red circle, and a dropdown menu is visible, listing "MODIS Land Subsets", "MODIS Fixed Site Subsets", "MODIS Global Subsets", and "MODIS Web service". The "MODIS Global Subsets" option is highlighted in blue. Below the navigation bar, the page content is divided into sections: "Welcome", "About Us", "About Data", "Get Data", "Data Tools", "Help", "ORNL DAAC", "News", and "Past announcements...". The "ORNL DAAC" section contains a diagram illustrating the carbon cycle, showing sources like combustion and fossil fuel combustion, and sinks like plant and animal respiration, soil assimilation, and phytoplankton assimilation. The "News" section lists several recent publications, including "ISLSCP Initiative II Near-Surface Meteorology Data Set Released" and "Global Soil Phosphorus Distribution Maps Published".

Hover mouse over **Tools** tab and the **MODIS Land Subsets** drop down menu will appear. Click on **MODIS Global Subsets**.

The Global Subsetting and Visualization Tool provides customized subsets of MODIS Land products on demand for any location on Earth.

MODIS Land Subsets
Oak Ridge National Laboratory DAAC

MODIS Global Subsets: Data Subsetting and Visualization

Select Center of Area of Interest
Lat/Lon **OR** Field Site
then Continue

Click and drag the balloon to select Center Pixel

Closest matching address:
Bear Creek Road, Oak Ridge, TN 37830, USA

Enter Signed Decimal Latitude and Longitude of Center Pixel in WGS84 datum
[for example, Walker Branch TN is 35.958767 -84.287433]

Latitude	Longitude
35.958767	-84.287433

Select the Country to Contain a MODIS Site as the Center Pixel
[Sites within the Selected Country will be Presented in Subsequent Choices]

- Algeria
- Angola
- Antarctica
- Argentina
- Australia
- Austria
- Belgium
- Benin
- Bolivia
- Botswana

Continue
Restart this Visualization

MODIS Field Site Subsets || ORNL DAAC || NASA || ORNL || Privacy Policy and Important Notices || Help/Question || Rate Us |
Website maintained by the Oak Ridge National Laboratory for the National Aeronautics and Space Administration.
Tel: +1 (865) 241-3952 or E-mail: USO
Revision Date: Thu May 8 14:01:21 2014

Select your Region of Interest by entering the geographic coordinates in decimal degrees or using the interactive map. You will be choosing the center of your region of interest. The subset tool will retrieve data ranging from one pixel to a polygon 201 x 201 km.

Latitude: 39.735378749476
Longitude: -122.805499736

Closest matching address:
Forest Route 22N15, Mendocino National Forest, CA, USA

Enter Signed Decimal Latitude and Longitude of Center Pixel in WGS84 datum
[for example, Walker Branch TN is 35.958767 -84.287433]

Latitude	Longitude
39.735378749	-122.8054997

Continue

After choosing the center point of your region of interest, Click Continue.



MODIS Global Subsets: Data Subsetting and Visualization

Latitude [39.735378749476] Longitude [-122.80549973625]
1km Horizontal Tile [8] Vertical Tile [5] Sample [667] Line [31]

Select a Product and Subset Size, then Click on "Continue"

- [MCD43A1] MODIS/Terra+ Aqua BRDF and Calculated Albedo
- [MCD43A4] MODIS/Terra+ Aqua Nadir BRDF-Adjusted Reflectance 16-Day L3 Global 500m SIN Grid
- [MOD09A1] Surface Reflectance
- [MOD11A2] Land Surface Temperature and Emissivity
- [MOD13Q1] Vegetation Indices (NDVI, EVI)
- [MOD15A2] Leaf Area Index (LAI) and Fraction of Photosynthetically Active Radiation (FPAR) 8 Day Composite
- [MOD15A2GFS] Terra Gap-Filled, Smoothed Leaf Area Index (LAI) 8 Day Composite [Collection 4]
- [MOD16A2] Evapotranspiration
- [MOD17A2_51] Gross primary production (GPP) [Collection 5.1]

Specify the Number of Kilometers Encompassing the Center Location

Above and Below Left and Right

(0-100) (0-100)

100 100

Continue

Restart this Visualization

Now you are able to select your data product
[MOD13Q1] Vegetation Indices (NDVI/EVI)

As well as the size of your subset (km)

Click Continue.

MODIS Global Subsets: Data Subsetting and Visualization

MODIS/Terra Vegetation Indices (NDVI/EVI)

16-Day L3 Global 250m SIN Grid [Collection 5]

Latitude [39.7353787494761] Longitude [-122.80549973625]

1km Horizontal Tile [8] Vertical Tile [5] Sample [667] Line [31]

250m Horizontal Tile [8] Vertical Tile [5] Sample [2669] Line [127]

The Requested Data Area is Approximately 200.25 Kilometers Wide and 200.25 Kilometers High

Select Starting Date

Day 049 of the Year 2000 [Feb. 18,2000] ▲
Day 065 of the Year 2000 [Mar. 05,2000] ▲
Day 081 of the Year 2000 [Mar. 21,2000] ▲
Day 097 of the Year 2000 [Apr. 06,2000] ▲
Day 113 of the Year 2000 [Apr. 22,2000] ▲
Day 129 of the Year 2000 [May. 08,2000] ▲
Day 145 of the Year 2000 [May. 24,2000] ▲
Day 161 of the Year 2000 [Jun. 09,2000] ▲
Day 177 of the Year 2000 [Jun. 25,2000] ▲
Day 193 of the Year 2000 [Jul. 11,2000] ▼

Select Ending Date

Day 353 of the Year 2013 [Dec. 19,2013] ▲
Day 001 of the Year 2014 [Jan. 01,2014] ▲
Day 017 of the Year 2014 [Jan. 17,2014] ▲
Day 033 of the Year 2014 [Feb. 02,2014] ▲
Day 049 of the Year 2014 [Feb. 18,2014] ▲
Day 065 of the Year 2014 [Mar. 06,2014] ▲
Day 081 of the Year 2014 [Mar. 22,2014] ▲
Day 097 of the Year 2014 [Apr. 07,2014] ▲
Day 113 of the Year 2014 [Apr. 23,2014] ▲
Day 129 of the Year 2014 [May. 09,2014] ▼

[Pre-selected Dates Reflect ALL Available Dates for the Selected Product/Location]



GeoTIFF Options

- Generate GeoTIFF in MODIS Sinusoidal Projection
- Generate GeoTIFF and Reproject to Geographic Lat/long

Enter Your Email Address

[You will be notified via email when the data has been prepared]

Continue

Restart this Visualization

Select the temporal start and end dates for your data.

Choose **Generate GeoTIFF and Reproject to Geographic Lat/long**

Enter email address for processed request to be sent and Click Continue.

MODIS Global Subsets: Data Subsetting and Visualization

Order Verification

MODIS/Terra Vegetation Indices (**NDVI/EVI**)

16-Day L3 Global 250m SIN Grid [Collection 5]

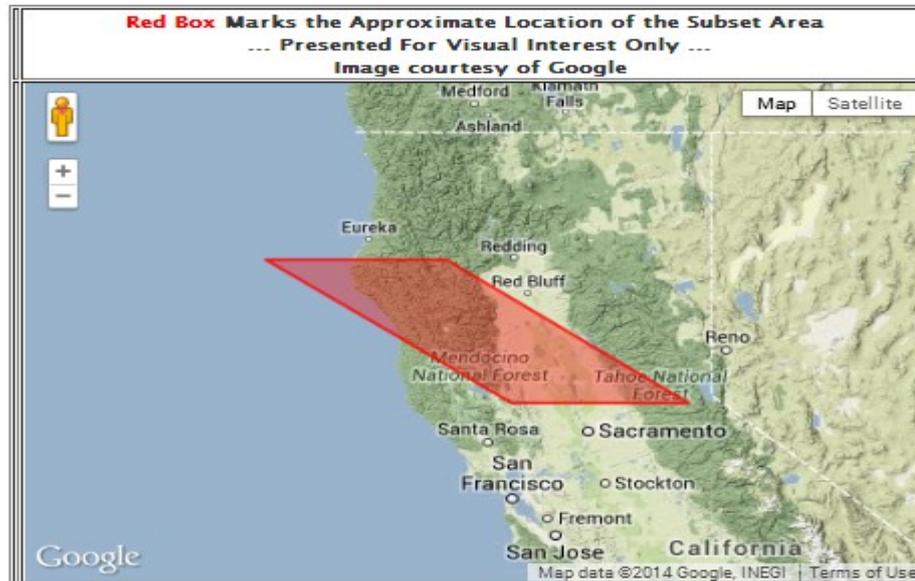
Latitude [39.7353787494761] Longitude [-122.80549973625]

1km Horizontal Tile [8] Vertical Tile [5] Sample [667] Line [31]

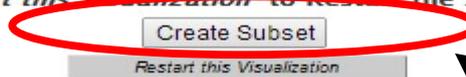
250m Horizontal Tile [8] Vertical Tile [5] Sample [2669] Line [127]

The Requested Data Area is Approximately 200.25 Kilometers Wide and 200.25 Kilometers High

The Time Period Considered Will Include December. 19, 2002 to March. 06, 2003



The Email Address "bblevins37@gmail.com" will Receive Data Retrieval Instructions
If the Selected Parameters Above are Correct, Select "Create Subset" to Begin Processing,
or use the Browser's "Back" Button to Access Previous Choices,
or Select "Restart this Visualization" to Restart the Selection Process



Click **Create Subset** to begin processing.



MODIS Global Subsets: Data Subsetting and Visualization Order Summary

MODIS/Terra Vegetation Indices ([NDVI/EVI](#))
16-Day L3 Global 250m SIN Grid [Collection 5]
Latitude [39.7353787494761] Longitude [-122.80549973625]
1km Horizontal Tile [08] Vertical Tile [05] Sample [667] Line [31]

The Requested Data Area is Approximately 200.25 Kilometers Wide and 200.25 Kilometers High

The Time Period Considered Will Include December. 19, 2002 to March. 06, 2003

The Email Address "bblevins37@gmail.com" will Receive Data Retrieval Instructions

Order Submitted

Request Identifier: 06Jun2014_15:41:17_552114817L39.7353787494761L-122.805499736255801L801_MOD13Q1

Status:

There are **4** orders in queue. Depending on the system load and the size of the orders in the queue your order might take up to 16 hours to complete. Thank you for your patience.

[Restart this Visualization](#)

[MODIS Field Site Subsets](#) || [ORNL DAAC](#) || [NASA](#) || [ORNL](#) || [Privacy Policy and Important Notices](#) || [Help/Question](#) || [Rate Us](#) |

Website maintained by the Oak Ridge National Laboratory for the National Aeronautics and Space Administration.

Tel: +1 (865) 241-3952 or E-mail: [USO](#)

Revision Date: Thu May 8 14:01:21 2014

The tool will send you an email message containing the URL where you can access the output.

ORNL DAAC MODIS MOD13Q1 order

Inbox x



uso@daac.ornl.gov

5:07 PM (22 hours ago) ☆



to me ▾

ORNL DAAC MODIS Subset Order

Click on the following URL to obtain your results.

http://daac.ornl.gov/glb_viz_2/05Jun2014_17:05:37_542743837L40.402132L-110.22102S801L801_MOD13Q1/index.html

Order Summary

Product:MOD13Q1

Location Centered on: Latitude [40.402132] Longitude [-110.22102]

Size: Approximately 200.25 Km wide and 200.25 Km high

Time Period: June. 25, 2000 to July. 11, 2000

This subset order will be deleted 30 days from the date of the order.

Data Citation:

Oak Ridge National Laboratory Distributed Active Archive Center (ORNL DAAC). 2012. MODIS subsetted land products, Collection 5. Available on-line [<http://daac.ornl.gov/MODIS/modis.html>] from ORNL DAAC, Oak Ridge, Tennessee, U.S.A. Accessed Month dd, yyyy.

Tool Tip:

Get Subsets command line using MODIS Web Service <http://daac.ornl.gov/modiswebservice>

Contact:

uso@daac.ornl.gov

You will receive an email that provides the URL

ORNL DAAC MODIS MOD13Q1 order

Inbox x



uso@daac.ornl.gov

5:07 PM (22 hours ago) ☆



to me ▾

ORNL DAAC MODIS Subset Order

Click on the following URL to obtain your results.

http://daac.ornl.gov/glb_viz_2/05Jun2014_17:05:37_542743837L40.402132L-110.22102S801L801_MOD13Q1/index.html

Order Summary

Product:MOD13Q1

Location Centered on: Latitude [40.402132] Longitude [-110.22102]

Size: Approximately 200.25 Km wide and 200.25 Km high

Time Period: June. 25, 2000 to July. 11, 2000

This subset order will be deleted 30 days from the date of the order.

Data Citation:

Oak Ridge National Laboratory Distributed Active Archive Center (ORNL DAAC). 2012. MODIS subsetted land products, Collection 5. Available on-line [<http://daac.ornl.gov/MODIS/modis.html>] from ORNL DAAC, Oak Ridge, Tennessee, U.S.A. Accessed Month dd, yyyy.

Tool Tip:

Get Subsets command line using MODIS Web Service <http://daac.ornl.gov/modiswebservice>

Contact:

uso@daac.ornl.gov

The email will have the specifications of the subset order and a link to access the visualizations and download the data.

Data Visualization and Download

Process status

12.23 Minutes elapsed

Process Completed

MODIS/Terra Vegetation Indices (NDVI/EVI)

16-Day L3 Global 250m SIN Grid [Collection 5]

Latitude [39.7353787494761] Longitude [-122.80549973625]

1km Horizontal Tile [08] Vertical Tile [05] Sample [667] Line [31]

Order Details	
Product:	MOD13Q1
Coordinates:	Latitude: 39.7353787494761, Longitude: -122.80549973625 (WGS84 datum)
Areal Extent:	Approximately 200.25 km Wide x 200.25 km High
Subset Date Range:	December. 19, 2002 (2002353) to March. 06, 2003 (2003065)
Map Links:	Google Map Google Earth MODIS Tile Mapper
Quality Control Conditions:	As Specified by Science Team (See QC table below)

[Visualize Individual Composite Dates](#)

Note: This page contains many grids. Please scroll to the right/left and up/down to view all of the grids

Plot Years : Start Date: 2002 ▼ End Year: 2003 ▼

NEW Stack Time series

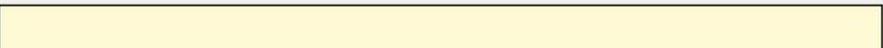
MOD13Q1 / 250m_16_days_NDVI [Scale Factor = .0001, Units= NDVI ratio - No units]
Includes all pixels that have acceptable quality

MOD13Q1 / 250m_16_days_NDVI [Scale Factor = .0001, Units= NDVI ratio - No units]

Pixels having the same land cover as the center pixel.

217102 of 641601 pixels [33.84%] belong to the same class as the center pixel "(1) Evergreen Needleleaf Forest"

1.00

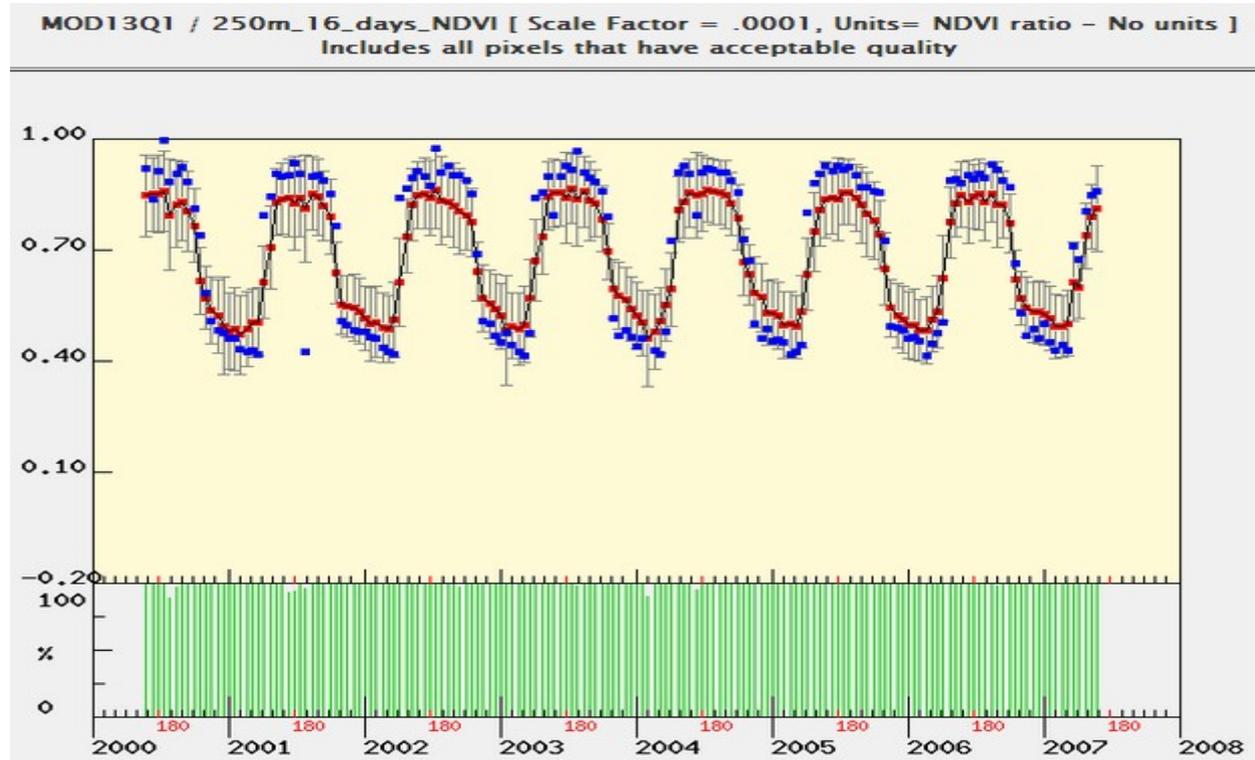


1.00

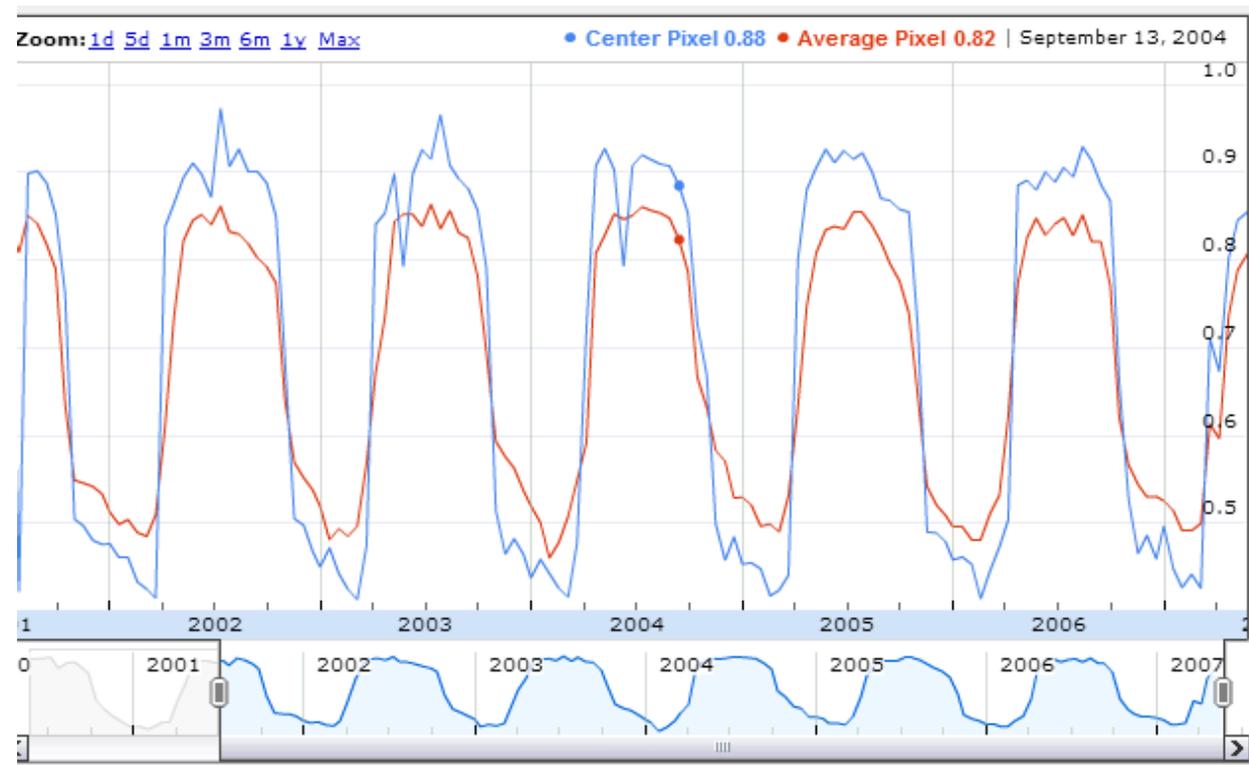


The tool provides interactive time series plots of the measurement, an ASCII file of the pixel values for the selected product along with quality information, average and standard deviations for the area selected, and a file that can be imported directly into GIS software.

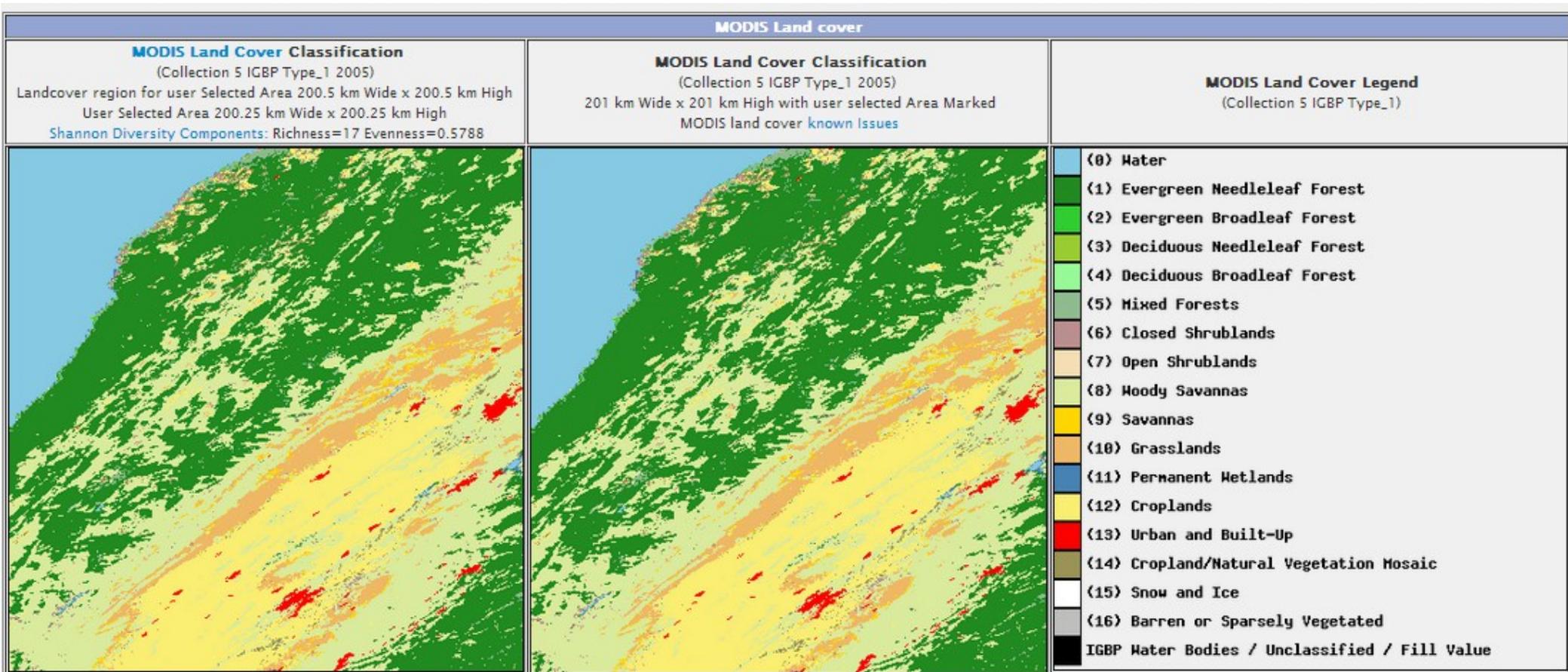
Time series plots of the measurement with average and standard deviations for the area selected,



Interactive time series plot

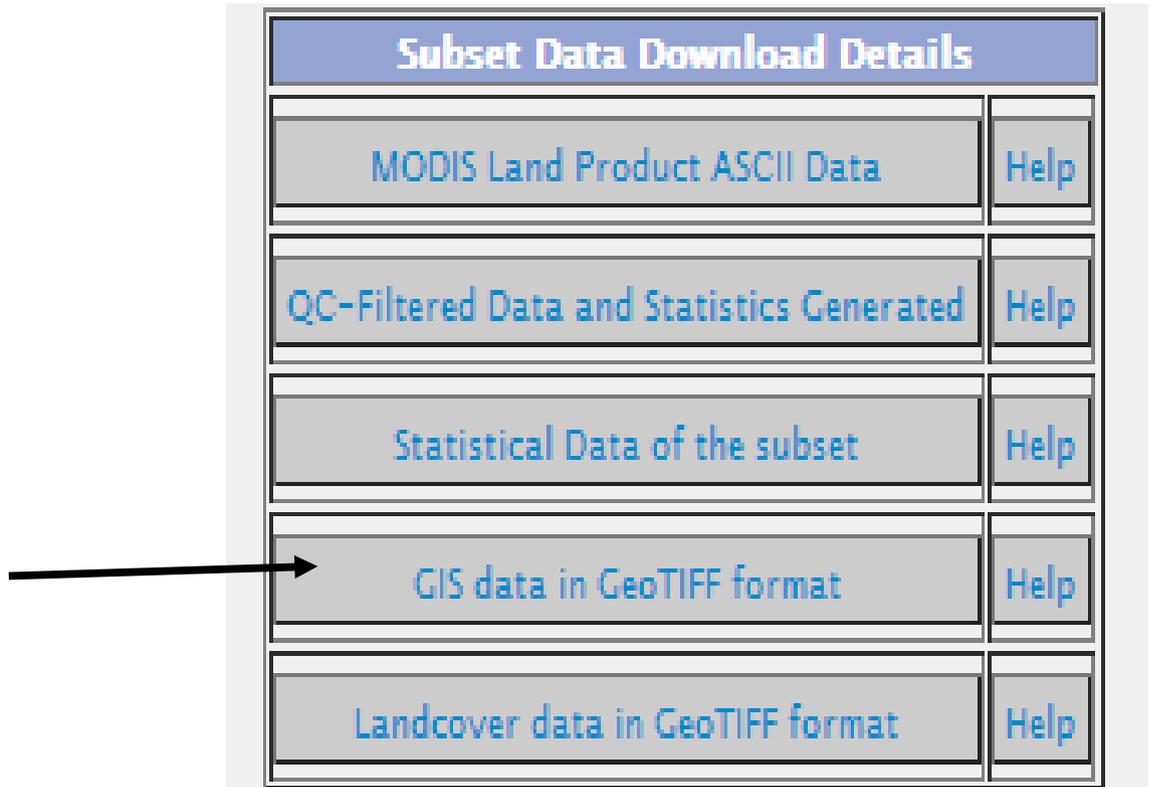


Also provided is a land cover grid (IGBP classification) of the area, along with an estimate of heterogeneity (Shannon richness and evenness).



Click on files to download:

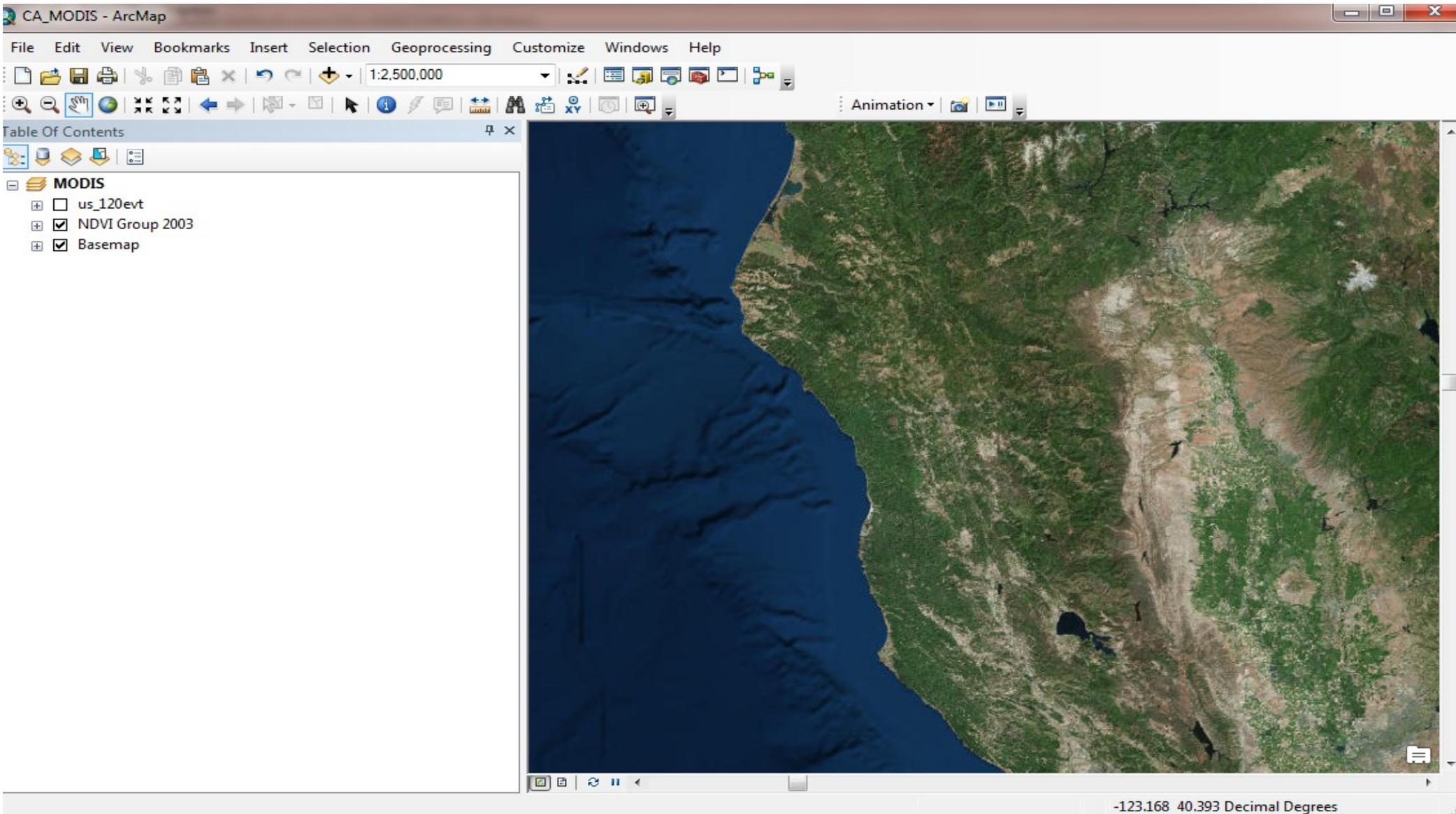
- ASCII file of the pixel values for the selected product
- Data quality information
- **GeoTIFF format (raster data)**
- Landcover data

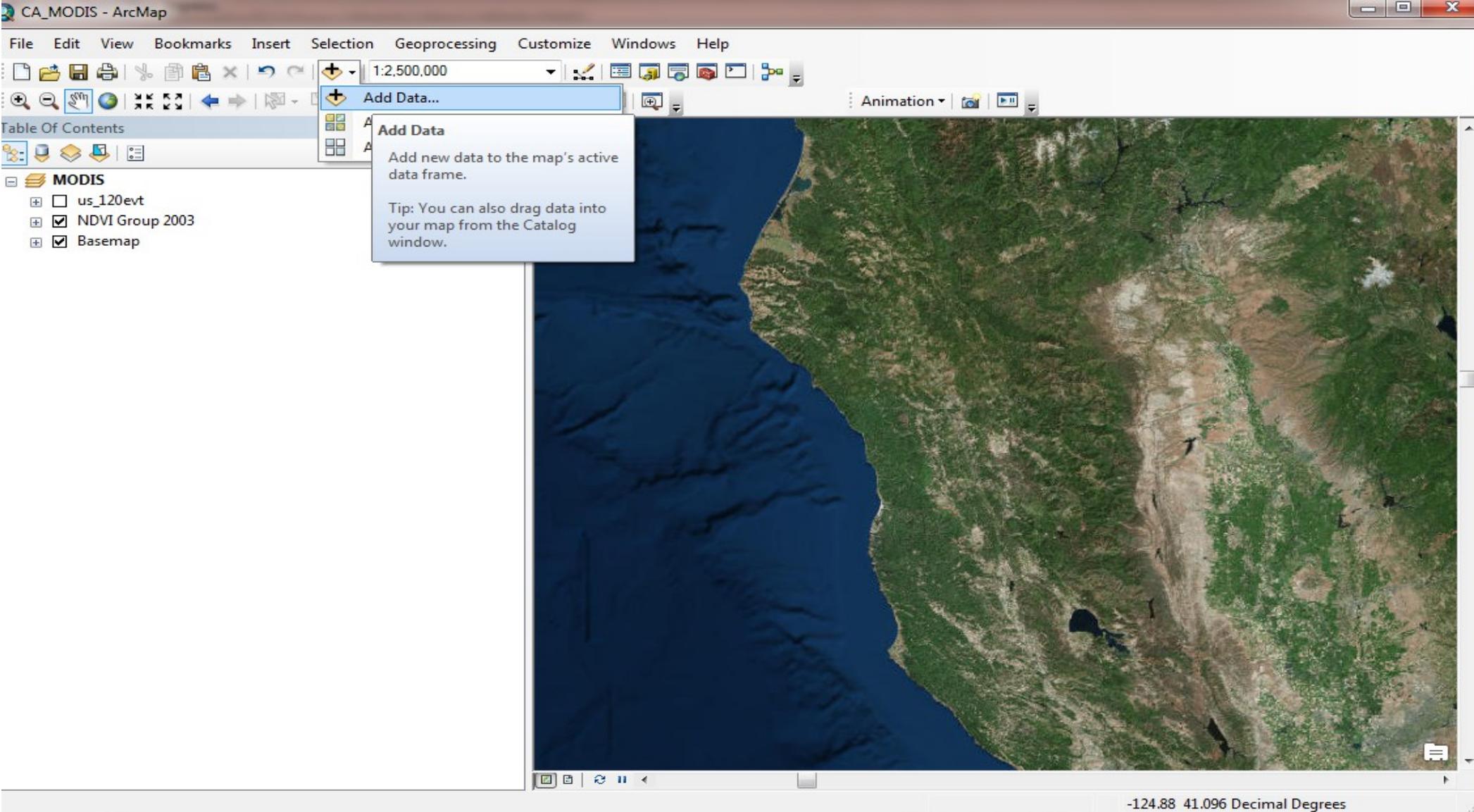


Subset Data Download Details	
MODIS Land Product ASCII Data	Help
QC-Filtered Data and Statistics Generated	Help
Statistical Data of the subset	Help
GIS data in GeoTIFF format	Help
Landcover data in GeoTIFF format	Help

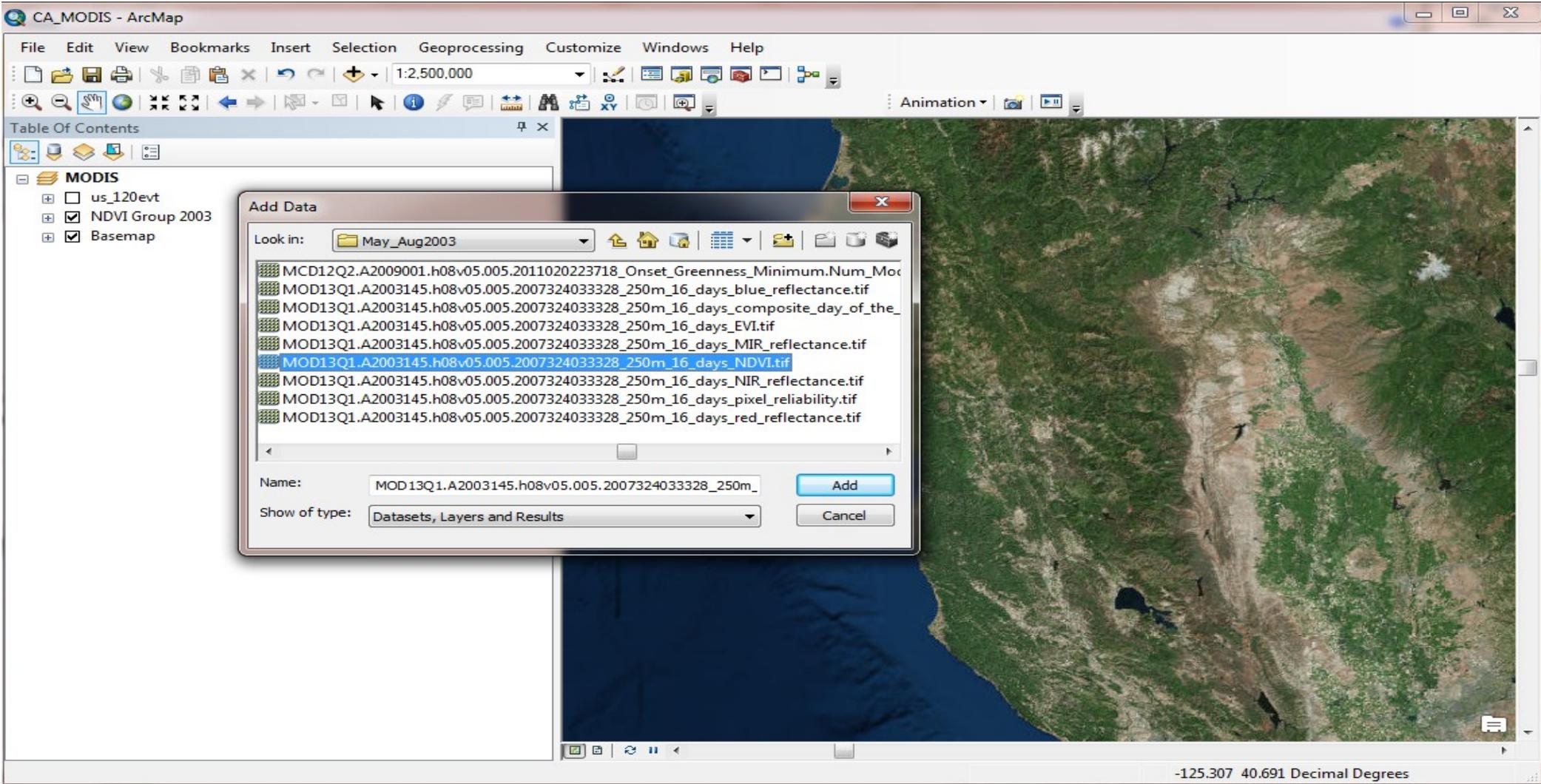
NOTE: MODIS data will be downloaded as a tar.gz zipped file. You will need unzip software such as WinZip or 7-Zip to unzip.

Importing NDVI into ArcMap





NDVI data is delivered in GeoTIFF raster format which is easily imported to Arcmap. Simply use the Add Data Icon drop down window and select Add Data.



Navigate to the location in which you placed your unzipped NDVI data. There are many files in the file folder and you will have to scroll find the Geotiff data.

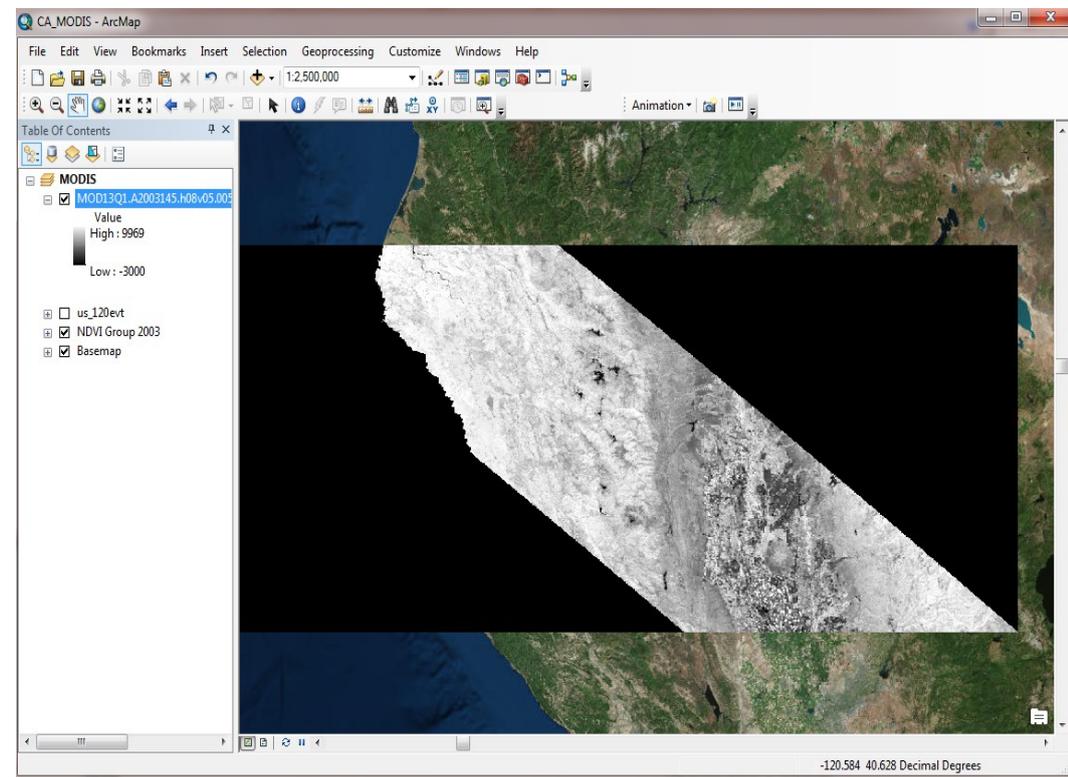
[MOD13Q1.A2003145.h08v05.005.2007324033328_250m_16_days_NDVI.tif](#)

Note the naming convention here: Product, Year, Julian Day of the year (Day 145 = May 25)

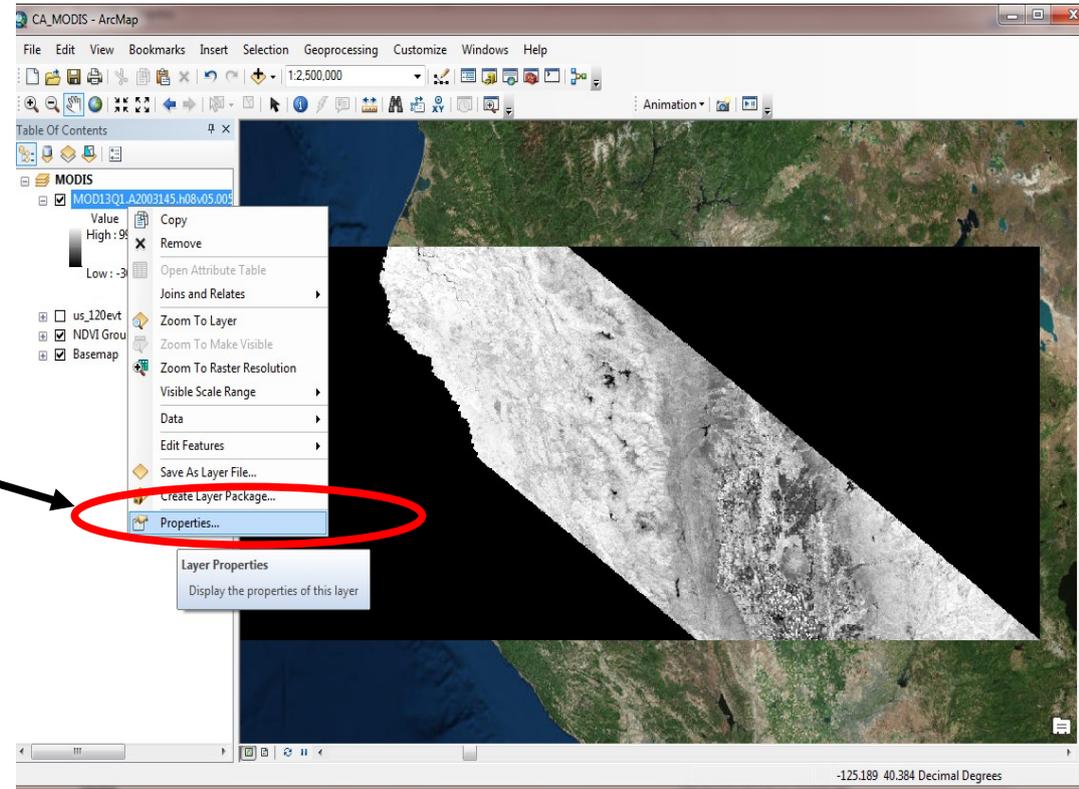
Click Add.

This will be the result.

In order to view this better, we must adjust the symbology of the NDVI data.

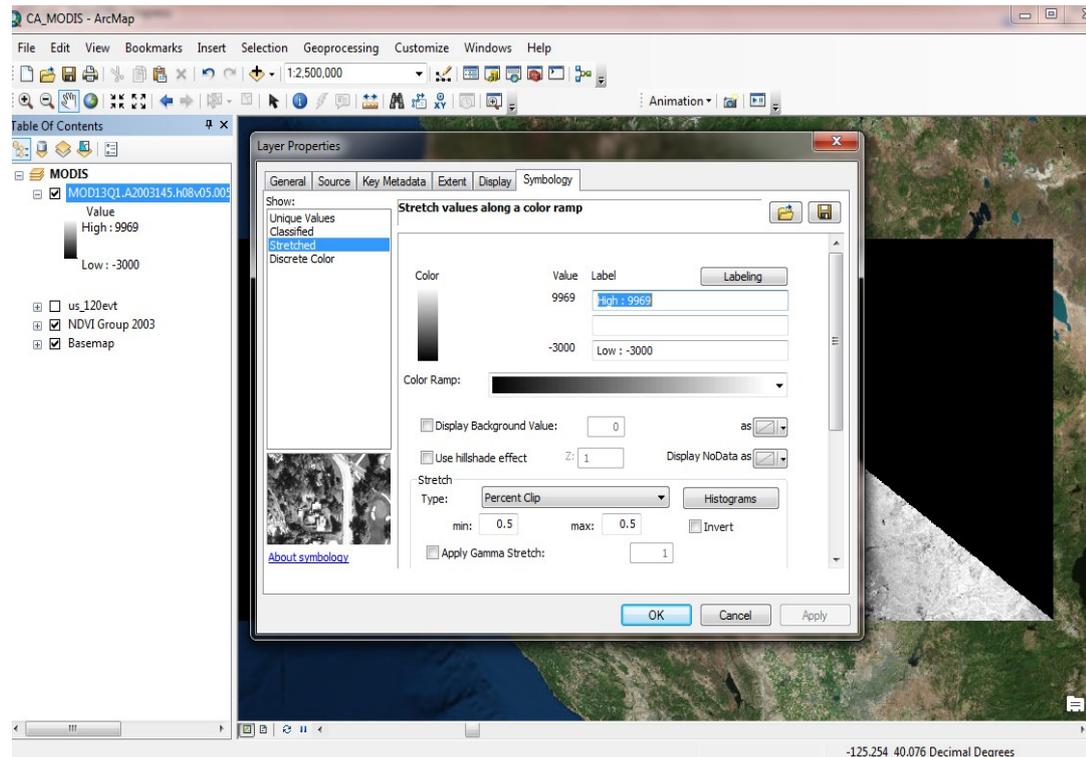


Right Click the NDVI layer and open the layer's **Properties**.



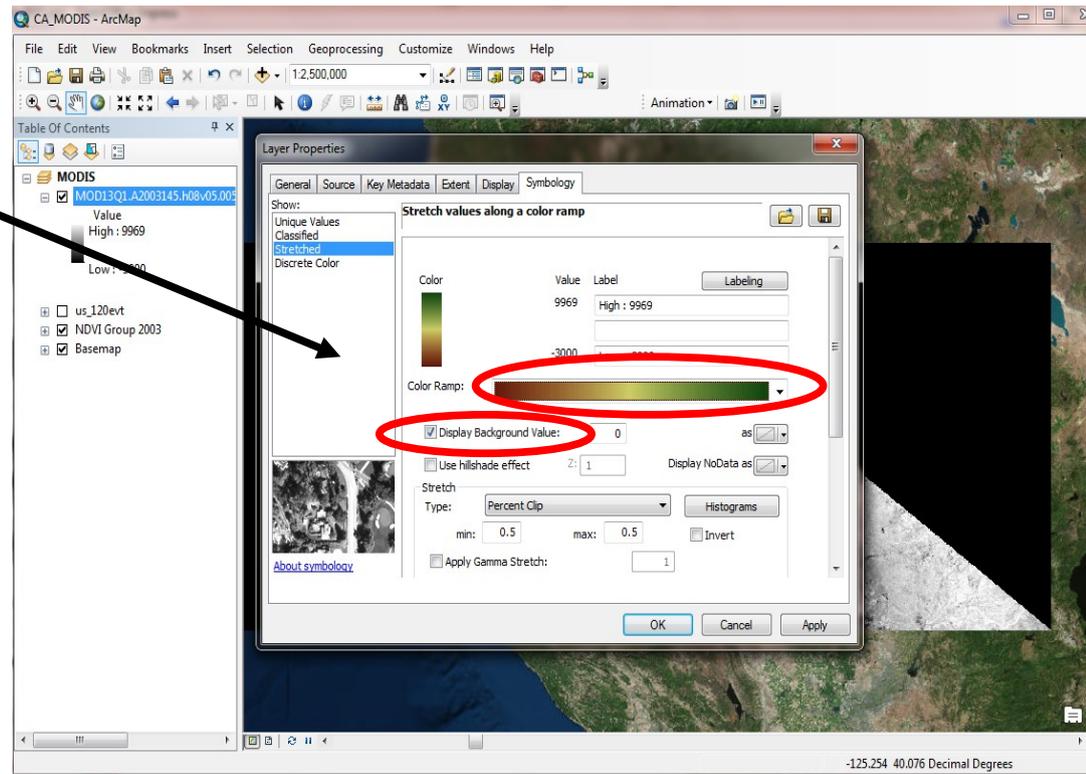
Under the Symbology tab:

Check Display background Value of “0” to
“No Display”



Choose and appropriate color ramp.

Click OK.



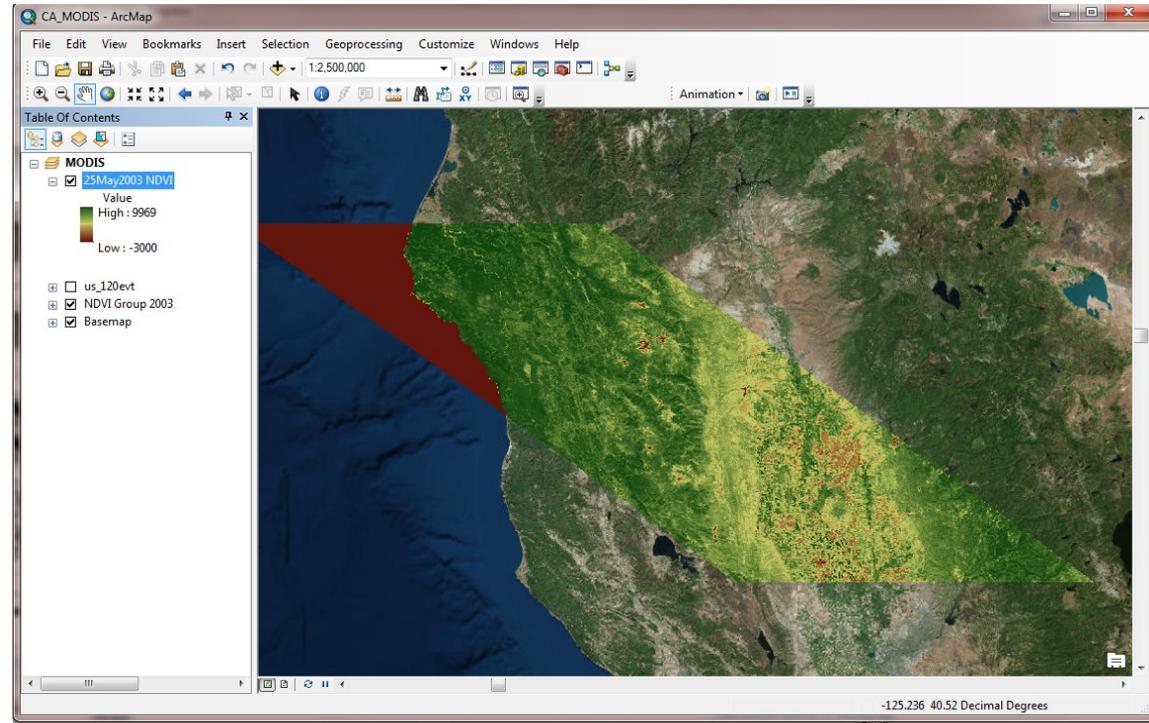
This will be the result.

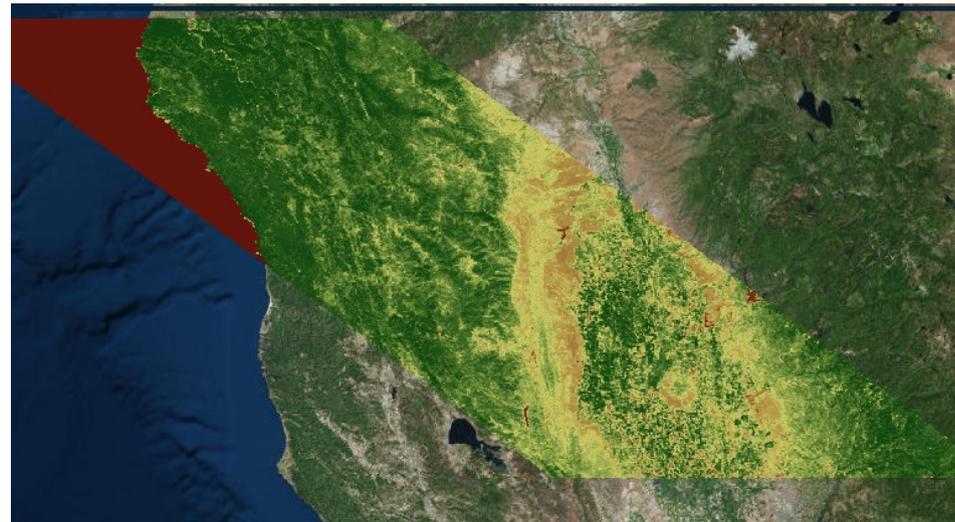
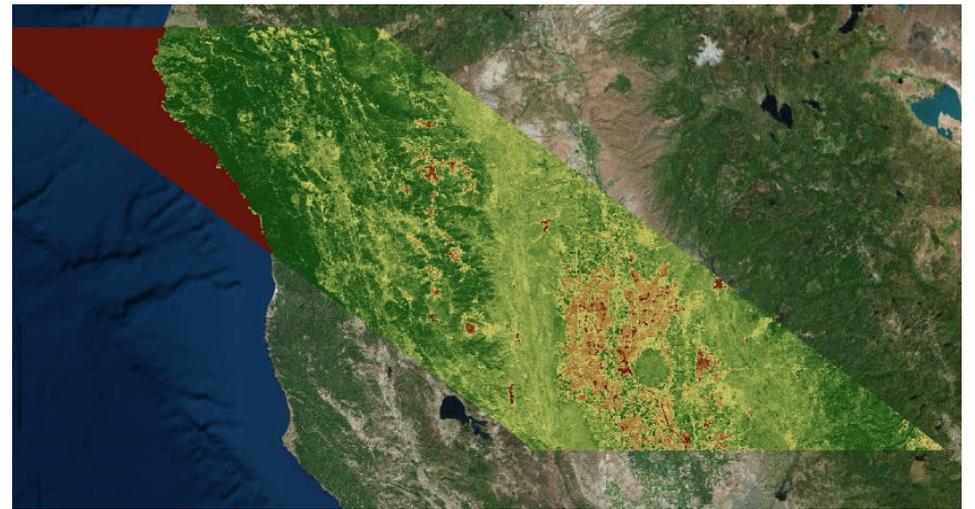
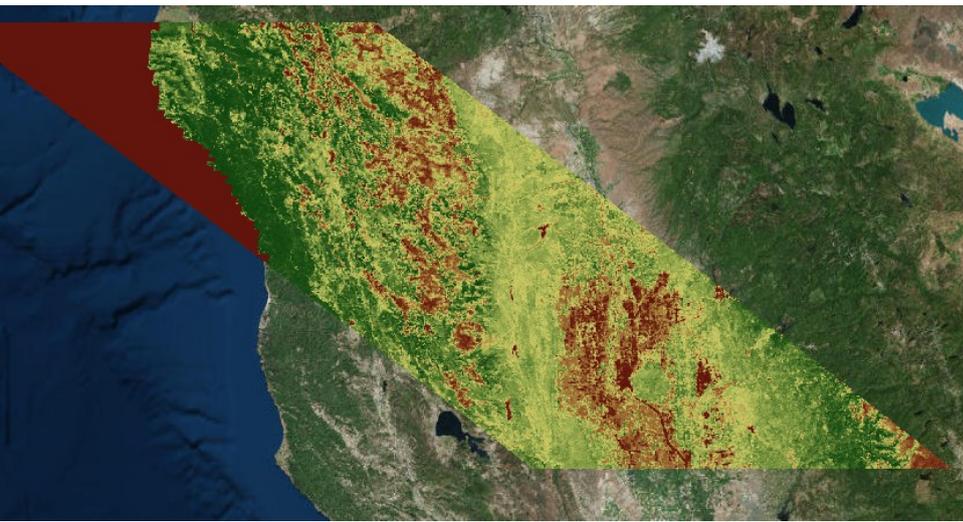
High NDVI values are indicated by dark green, low in yellow to red.

Note, the values range from -3000 to 9969. This because the data must be factored by 0.0001 , which reflects the actual NDVI values ranging from -0.3 to +0.9969.

You may wish to rename the layer to the Date and product (25May2003 NDVI).

Repeat this procedure for all NDVI data in order to perform seasonal or annual vegetation analysis or to assess variations in growing season length.





Examples of quantitative analysis include:

Importing and calculating average NDVI for a particular month over the past few years, subtracting NDVI of the current year for that same month to assess vegetation condition versus past year averages. This would be an NDVI anomaly.

Threshold NDVI values from past years for drought monitoring or fire risk modeling.

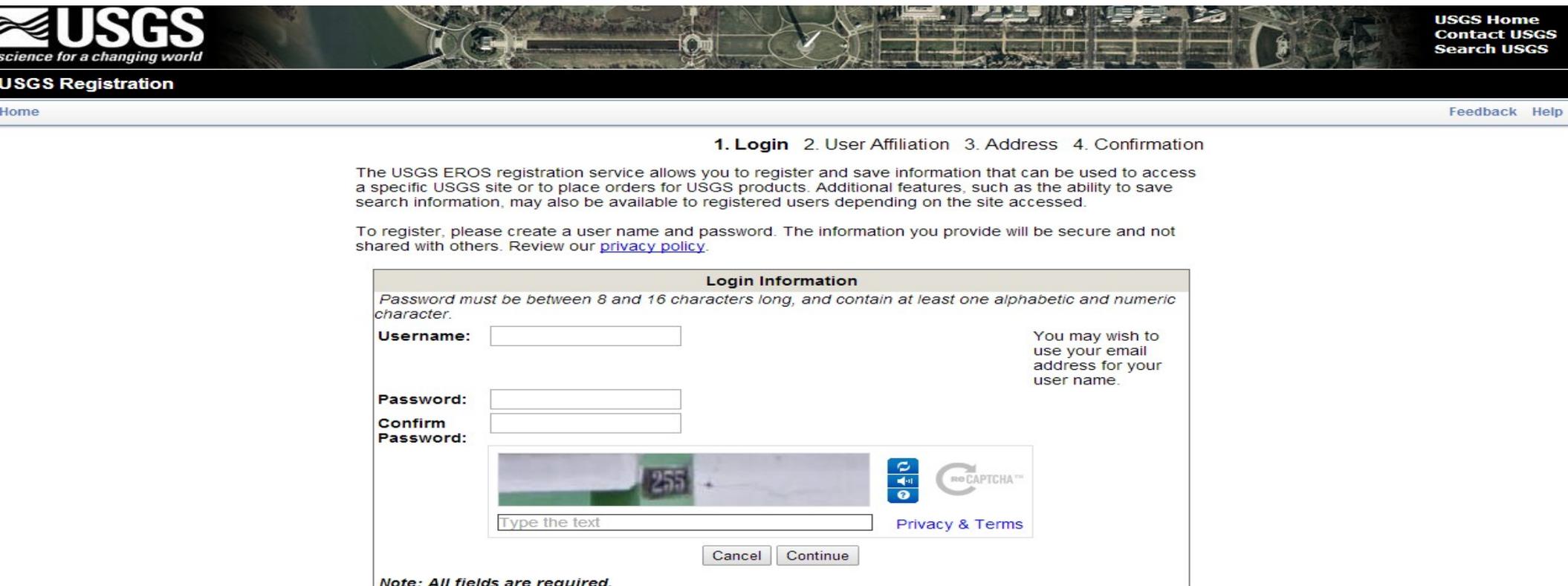
MODIS NDVI can be combined with many other Earth observations for a multitude of applications.

Acquire Landsat data

Before we start:

Although Landsat data is free, we must register an account with USGS in order to obtain the data.

<https://earthexplorer.usgs.gov/register/>



The screenshot shows the USGS Registration page. At the top left is the USGS logo with the tagline "science for a changing world". To the right of the logo is the text "USGS Registration". In the top right corner, there are links for "USGS Home", "Contact USGS", and "Search USGS". Below the header is a navigation bar with "Home" on the left and "Feedback Help" on the right. The main content area is titled "1. Login" and includes a progress indicator: "1. Login 2. User Affiliation 3. Address 4. Confirmation". Below this is a paragraph explaining the registration service: "The USGS EROS registration service allows you to register and save information that can be used to access a specific USGS site or to place orders for USGS products. Additional features, such as the ability to save search information, may also be available to registered users depending on the site accessed." This is followed by another paragraph: "To register, please create a user name and password. The information you provide will be secure and not shared with others. Review our [privacy policy](#)." The registration form is titled "Login Information" and contains the following fields and instructions: "Password must be between 8 and 16 characters long, and contain at least one alphabetic and numeric character." "Username:" with an input field. "Password:" with an input field. "Confirm Password:" with an input field. A note on the right says: "You may wish to use your email address for your user name." Below the password fields is a CAPTCHA image showing the number "255" and the text "Type the text" with an input field. To the right of the CAPTCHA are icons for "noCAPTCHA™" and a "Privacy & Terms" link. At the bottom of the form are "Cancel" and "Continue" buttons. A note at the very bottom states: "Note: All fields are required."

Acquire Landsat data

LandsatLook Viewer

<http://landsatlook.usgs.gov/>

The image shows the USGS LandsatLook Viewer interface. At the top left, the USGS logo and "LandsatLook Viewer" are displayed, along with "Contact USGS" and "Help" links. A search bar with the placeholder "search for a location" and a magnifying glass icon is at the top right, next to "Labels", "Basemaps", and "Bookmarks" buttons. The main map area shows the United States with state boundaries and major cities labeled. A vertical zoom control is on the left side. On the right, a "Display" panel is open, featuring a blue button that says "Zoom-in to 1:1M to select scenes". Below this, there are sections for "Time" (with a "Slider Date" and a range slider), "Enhancements" (with radio buttons for "Only One", "Current & Older", "None", "Percent Clip", and "Stretch 3SD"), and "Transparency" (with a slider from "off" to "visible"). At the bottom of the "Display" panel are "Tools" buttons: "Metadata", "Table", "Measure", and "Export Display". Below the "Display" panel is an "Advanced Query" section. At the bottom left, the scale is "1 : 18 M", latitude is "51.34°N", longitude is "-114.14°W", and the format is "png". At the bottom right, there is a scale bar from 0 to 400 and the text "POWERED BY esri".

USGS LandsatLook Viewer

Contact USGS | Help

Yosemite National Park

Scale: 1 : 1 M | Lat: 37.70°N Lon: -119.61°W | Format: png

Display

Select Scenes

Years: 1999 - 2014
Days: All year
Cloud: 20%
Sensors: TM,ETM+,OLI

Time

Slider Date

Only One Current & Older

Enhancements

None Percent Clip Stretch 3SD

Transparency

off visible

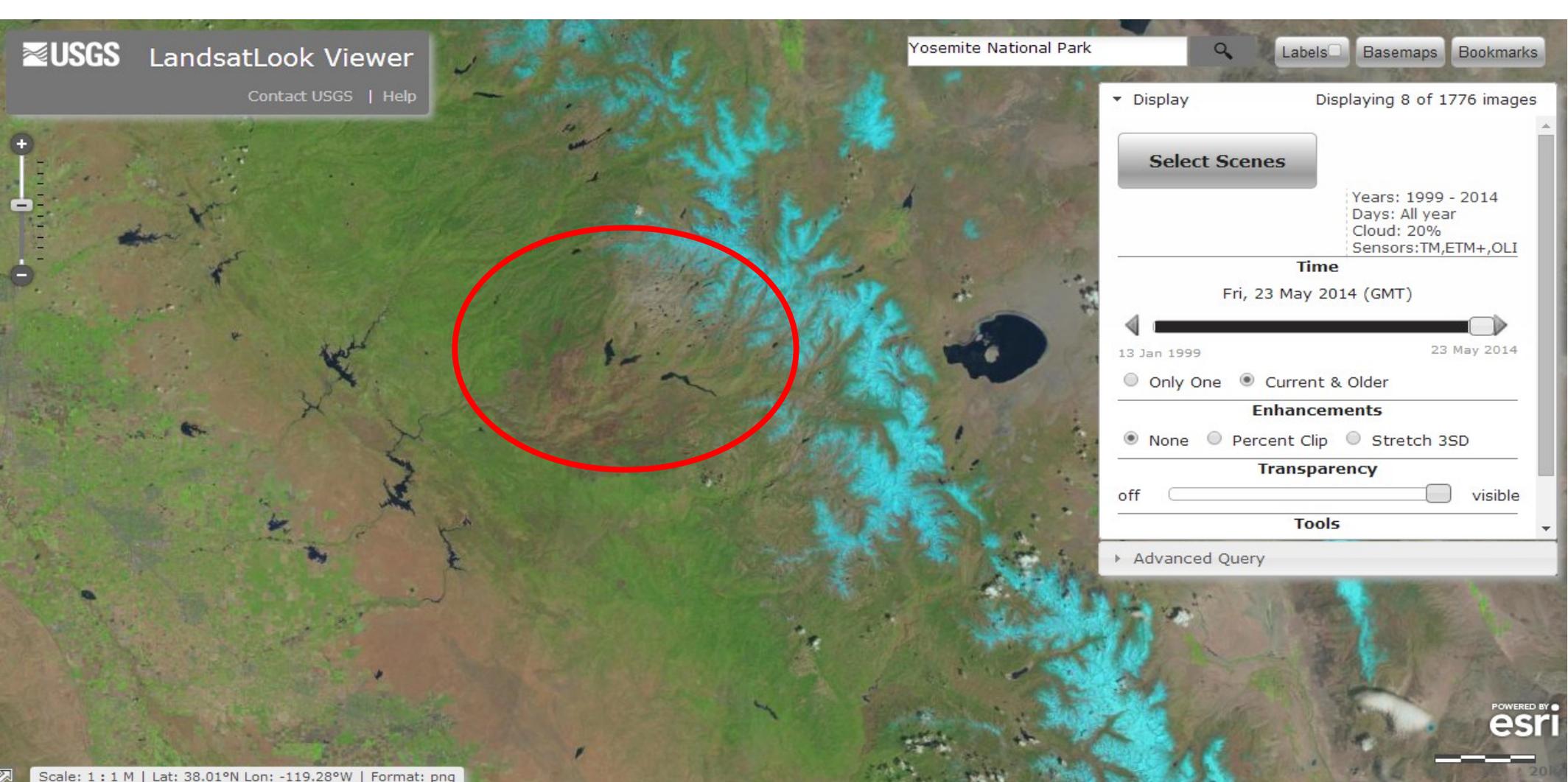
Tools

Advanced Query

Locate your region of interest by either typing the location in the text box or by navigating the interactive map.

Zoom in to your region of interest until scale shows 1:1M in the lower left corner

Once zoomed in to 1:1M, [Select Scenes](#) in the Display window is activated.



Click [Select Scenes](#) in the Display window to get all the Landsat images in the region.

You can see the burn scar caused by the Rim Fire (August 2013) easily in the image (the brown area to the west of Mono Lake and Yosemite).

USGS LandsatLook Viewer

Contact USGS | Help

Yosemite National Park

Labels Basemaps Bookmarks

Display

Displaying 8 of 1776 images

Select Scenes

Years: 1999 - 2014
Days: All year
Cloud: 20%
Sensors: TM,ETM+,OLI

Time

Fri, 23 May 2014 (GMT)

13 Jan 1999 23 May 2014

Only One Current & Older

Enhancements

None Percent Clip Stretch 3SD

Transparency

off visible

Tools

Advanced Query

Scale: 1 : 1 M | Lat: 38.01°N Lon: -119.28°W | Format: png

POWERED BY esri

Note the total number of images (1776), so we want to narrow down.

We do this by opening up the Advanced Query drop down box .

USGS LandsatLook Viewer

Contact USGS | Help

Yosemite National Park

Labels Basemaps Bookmarks

Display Displaying 8 of 1776 images

Advanced Query

Dates

from: 1999 to: 2014

Days of the Year

from: January 01 to: December 31

Maximum Cloud Cover

10%

Sensors

MSS TM ETM+ ETM_SLC_OFF+

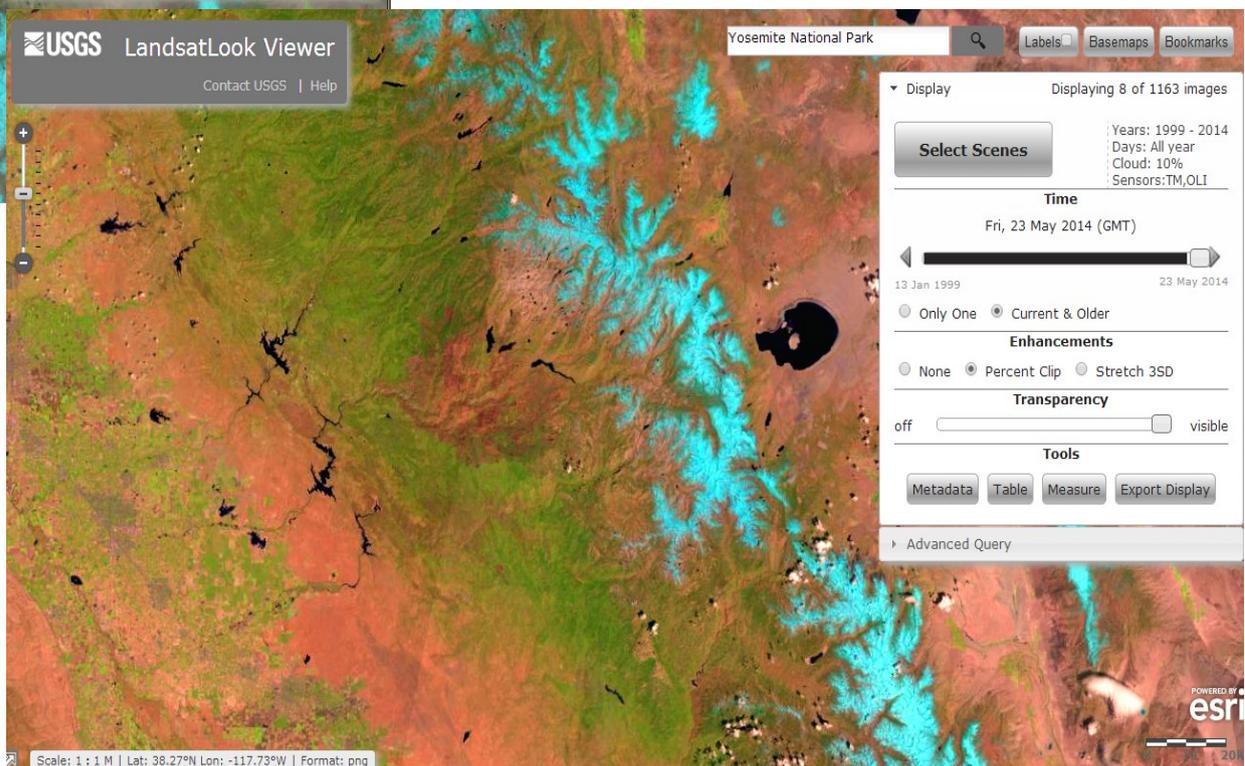
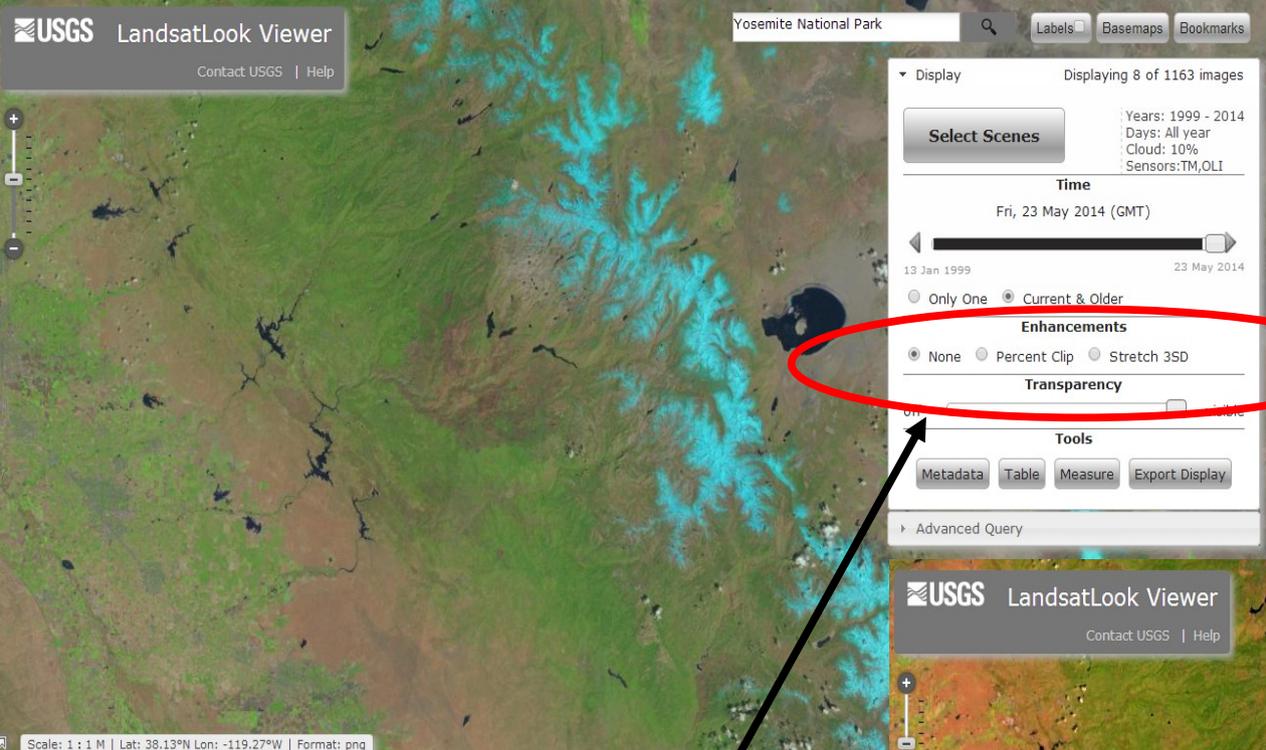
OLI

Apply

Scale: 1 : 1 M | Lat: 37.83°N Lon: -119.15°W | Format: png

POWERED BY esri

Under Advanced Query the default maximum cloud cover is 20%. Change that to 10% using the slider. Also only select sensors TM (Landsat 5) and OLI (Landsat 8). Click Apply.



Enhancements options allow you to see the imagery better. For example if there are a lot of clouds or snow in the image, it may appear a little dark with little contrast. When you click **Percent Clip** it brightens the images.

Note that the most current date is 23 May 2014.

The fire occurred in August 2013 so we want to choose images dates on either side of that date.

The easiest way to do this is to figure out what path and row most of the fire is in.

Note that **Current & Older** is selected.

This means that all the images in the viewable region are being displayed.

In fact, several Landsat images are showing in this region and we need to select the one that shows the rim fire the best.

Click on the **Only One** option.

Display Displaying 8 of 1163 images

Select Scenes

Years: 1999 - 2014
Days: All year
Cloud: 10%
Sensors: TM, OLI

Time

Fri, 23 May 2014 (GMT)

13 Jan 1999 23 May 2014

Only One **Current & Older**

Enhancements

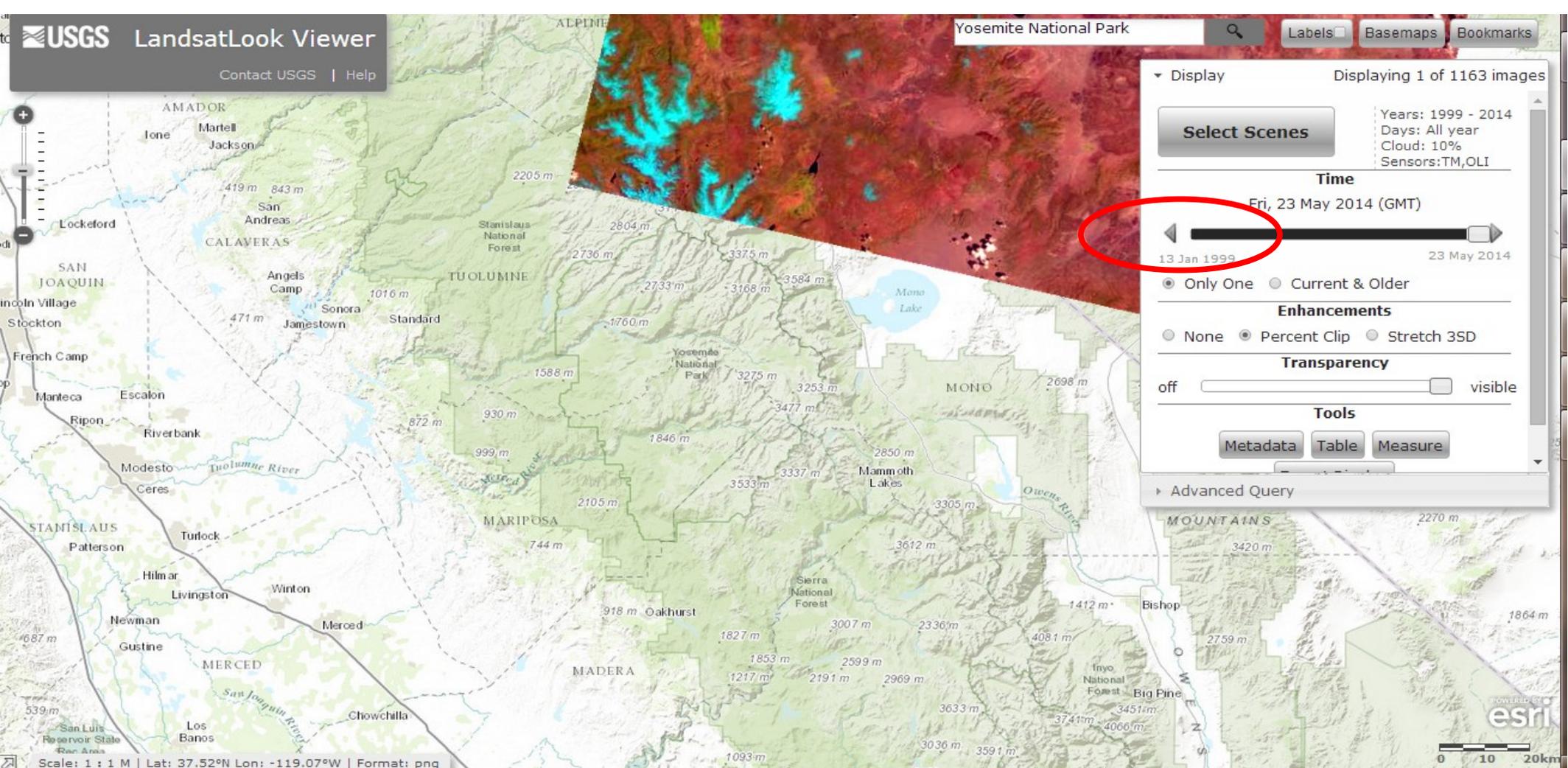
None Percent Clip Stretch 3SD

Transparency

off visible

Tools

Metadata Table Measure Export Display

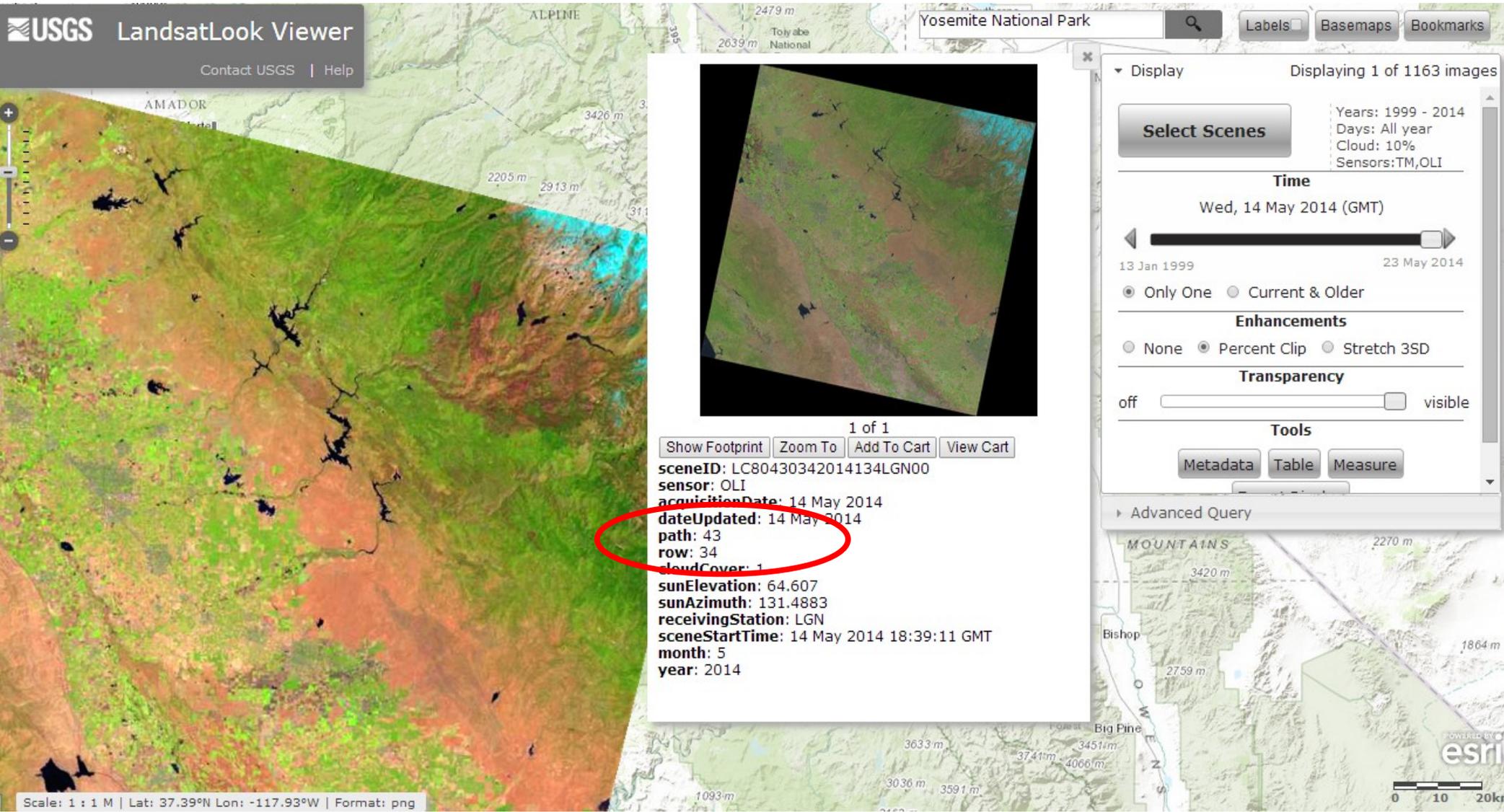


Now you can see the image available for May 23rd, which does not cover the rim fire area.

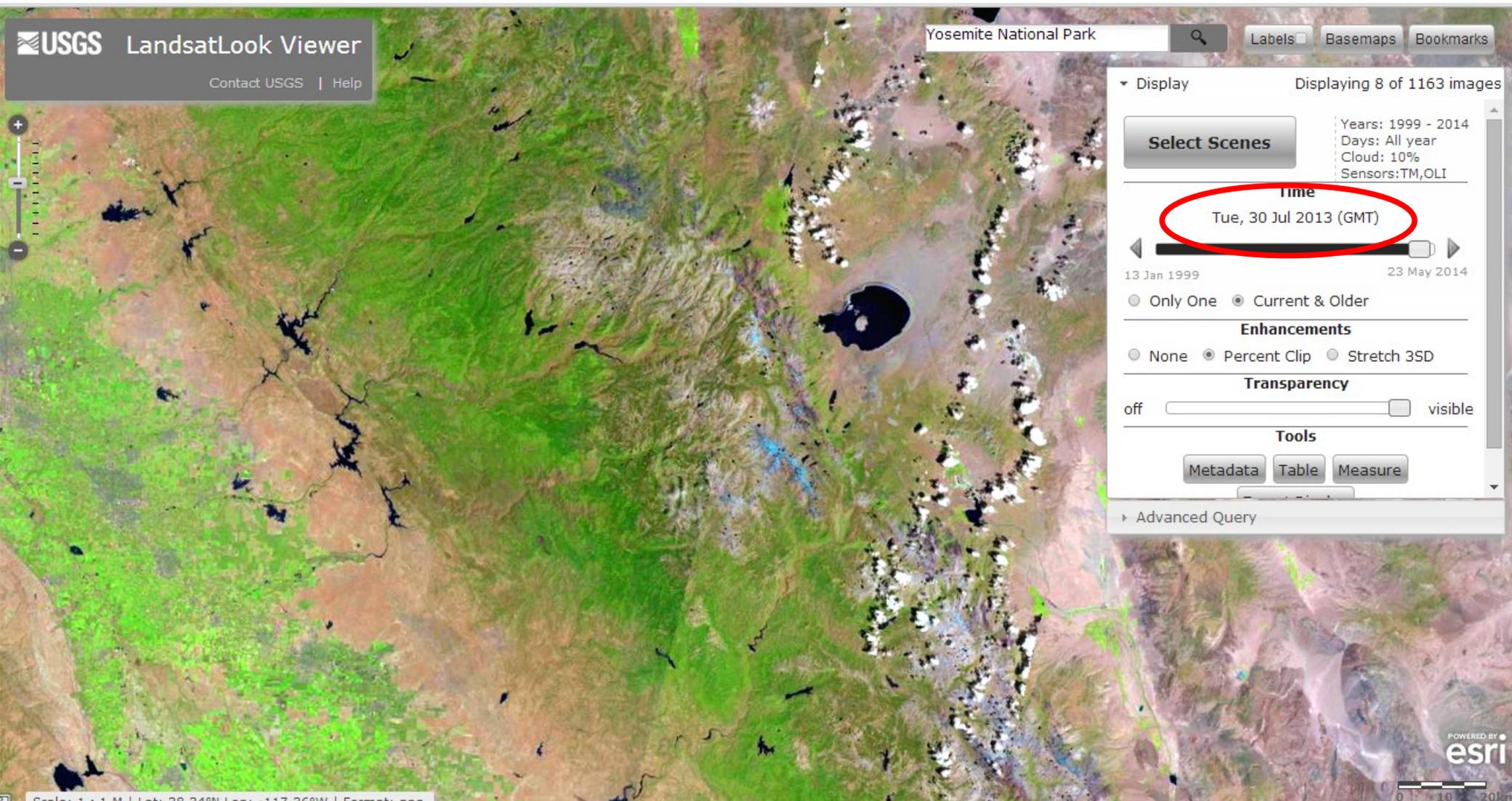
Click the [Time](#) slider back to a date when the acquisition of the Landsat Image covered the rim fire area. In this case, May 14. If a scene does not cover your area by this method, you may switch the **Current & Older** back on and click **Metadata**.

The screenshot shows the USGS LandsatLook Viewer interface. The main map displays a satellite image of a mountainous region with a cyan-colored Landsat path and row overlaid. The interface includes a search bar at the top right, a 'Display' panel on the right side, and a 'Tools' panel below it. The 'Time' section in the 'Display' panel is circled in red and shows 'Wed, 14 May 2014 (GMT)'. The 'Tools' panel also has a 'Metadata' button circled in red, with an arrow pointing to the 'Advanced Query' section below it. The 'Display' panel also shows 'Select Scenes', 'Enhancements', and 'Transparency' options. The 'Advanced Query' section is partially visible at the bottom of the 'Display' panel.

In this case, May 14 shows the Landsat Path and Row of interest to us. In order to find the specific Path and Row for this area we must click on [Metadata](#).



In the Metadata window, note that the Path and Row are 43/34. This is the path and row you should choose for any dates of imagery for the Rim Fire. If in **Current & Older** mode, toggle through the scenes to find the one that covers your area. Note the Path and Row. Close the Metadata.



Since the fire started in August 2013, to get a pre-fire image, go to a date in June 2013. The slider isn't particularly accurate in selecting all the scenes when in **Only One** mode. The best way to do this is click **Current and Older** back on and using the Time slider, go to August 1 (or late July), then click on Metadata. .

The screenshot displays the USGS LandsatLook Viewer interface. The main window shows a satellite image of Yosemite National Park. A metadata window is open, displaying the following information:

- sceneID: LC80430342013211LGN00
- sensor: OLI
- acquisitionDate: 30 Jul 2013
- dateUpdated: 01 Apr 2014
- path: 43
- row: 34
- cloudCover: 0
- sunElevation: 63.15749
- sunAzimuth: 129.0031
- receivingStation: LGN
- sceneStartTime: 30 Jul 2013 18:41:37 GMT
- month: 7
- year: 2013

The metadata window also includes buttons for "Show Footprint", "Zoom To", "Add To Cart", and "View Cart". The "Add To Cart" button is circled in red. The "path: 43" and "row: 34" fields are also circled in red. The "Zoom To" button is circled in blue. The "Add To Cart" button is circled in blue. The "View Cart" button is circled in blue. The "Add To Cart" button is circled in blue. The "View Cart" button is circled in blue.

The control panel on the right side of the interface includes the following options:

- Display: Displaying 8 of 1163 images
- Select Scenes: Years: 1999 - 2014, Days: All year, Cloud: 10%, Sensors: TM, OLI
- Time: Tue, 06 Aug 2013 (GMT)
- Enhancements: None, Percent Clip, Stretch 3SD
- Transparency: off, visible
- Tools: Metadata, Table, Measure

The interface also shows a search bar at the top with "Yosemite National Park" entered, and a scale bar at the bottom left indicating "Scale: 1 : 1 M | Lat: 37.27°N Lon: -117.93°W | Format: png".

With the Metadata window open, use the arrow buttons on either side of the image to find the path and row 43/34. The best scene available that is **both** path and row 43/34, shows our region best **AND** is pre-fire is 30 July 2013. Click [Add To Cart](#).

USGS LandsatLook Viewer

Contact USGS | Help

Yosemite National Park

Labels Basemaps Bookmarks

Display Displaying 8 of 1163 images

Select Scenes

Years: 1999 - 2014
Days: All year
Cloud: 10%
Sensors: TM,OLI

Time

Mon, 16 Sep 2013 (GMT)

13 Jan 1999 23 May 2014

Only One Current & Older

Enhancements

None Percent Clip Stretch 3SD

Transparency

off visible

Tools

Metadata Table Measure

Advanced Query

2 of 8

Show Footprint Zoom To Add To Cart View Cart

sceneID: LC80430342013259LGN00
sensor: OLI
acquisitionDate: 16 Sep 2013
dateUpdated: 01 Apr 2014
path: 43
row: 34
cloudCover: 0
sunElevation: 51.03545
sunAzimuth: 149.2319
receivingStation: LGN
sceneStartTime: 16 Sep 2013 18:41:35 GMT
month: 9
year: 2013

Scale: 1 : 1 M | Lat: 37.83°N Lon: -118.42°W | Format: png

POWERED BY esri

0 10 20 km

To get a post fire image, use the [Time](#) slider select a date after the fire (~Mid to late September 2013). Click on [Metadata](#). Look for path 43/34. The best data available is 16 September 2013.

Click [Add To Cart](#). To view scenes you have added to the cart, Click View Cart.

Showing: Cart

Remove from Cart | Export Image | Get LandsatLook Image | Get Landsat Data

Show 10 entries Search:

<input type="checkbox"/>	sceneID	sensor	acquisitionDate	dateUpdated
<input checked="" type="checkbox"/>	LC80430332013211LGN00	OLI	2013-07-30	2014-04-01
<input checked="" type="checkbox"/>	LC80430342013259LGN00	OLI	2013-09-16	2014-04-01

Display Displaying 8 of 1163 images

Select Scenes

Years: 1999 - 2014
Days: All year
Cloud: 10%
Sensors: TM,OLI

Time

Mon, 16 Sep 2013 (GMT)

13 Jan 1999 23 May 2014

Only One Current & Older

Enhancements

None Percent Clip Stretch 3SD

Transparency

off visible

Tools

Metadata | Table | Measure

Advanced Query

Showing 1 to 2 of 2 entries

Previous Next

Select the items from the cart you want to acquire by checking the boxes next to the scene.

Click [Get Landsat Data](#).

0 scenes were automatically added to your item basket. Please select the appropriate order type for each scene and click 'Apply'.

Pending Scenes

Entity Id	Collection	Order	Bulk Download	Available Products	
LC80430332013211LGN00	L8 OLI/TIRS	<input type="checkbox"/>	<input type="checkbox"/>	Bulk Products LandsatLook "Natural Color" Image LandsatLook "Thermal" Image LandsatLook "Quality" Image LandsatLook images with Geographic Reference Level 1 GeoTIFF Data Product	
LC80430342013259LGN00	L8 OLI/TIRS	<input type="checkbox"/>	<input type="checkbox"/>	Bulk Products LandsatLook "Natural Color" Image LandsatLook "Thermal" Image LandsatLook "Quality" Image LandsatLook images with Geographic Reference Level 1 GeoTIFF Data Product	

Toggle All Bulk Download

Apply

Go to Item Basket



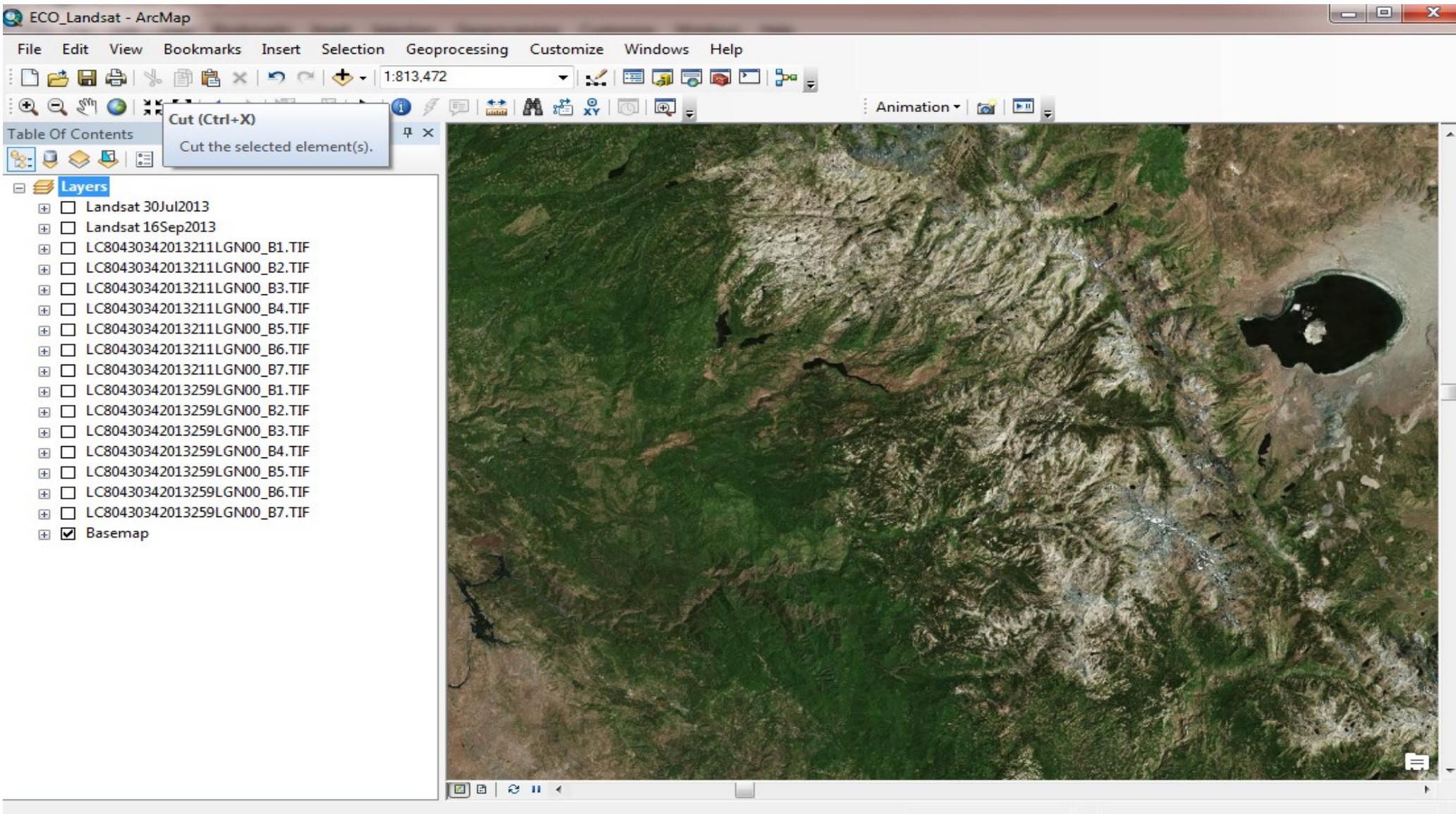
You will be navigated to a screen showing the available data for download. Click on the [Download](#) icon to the right.

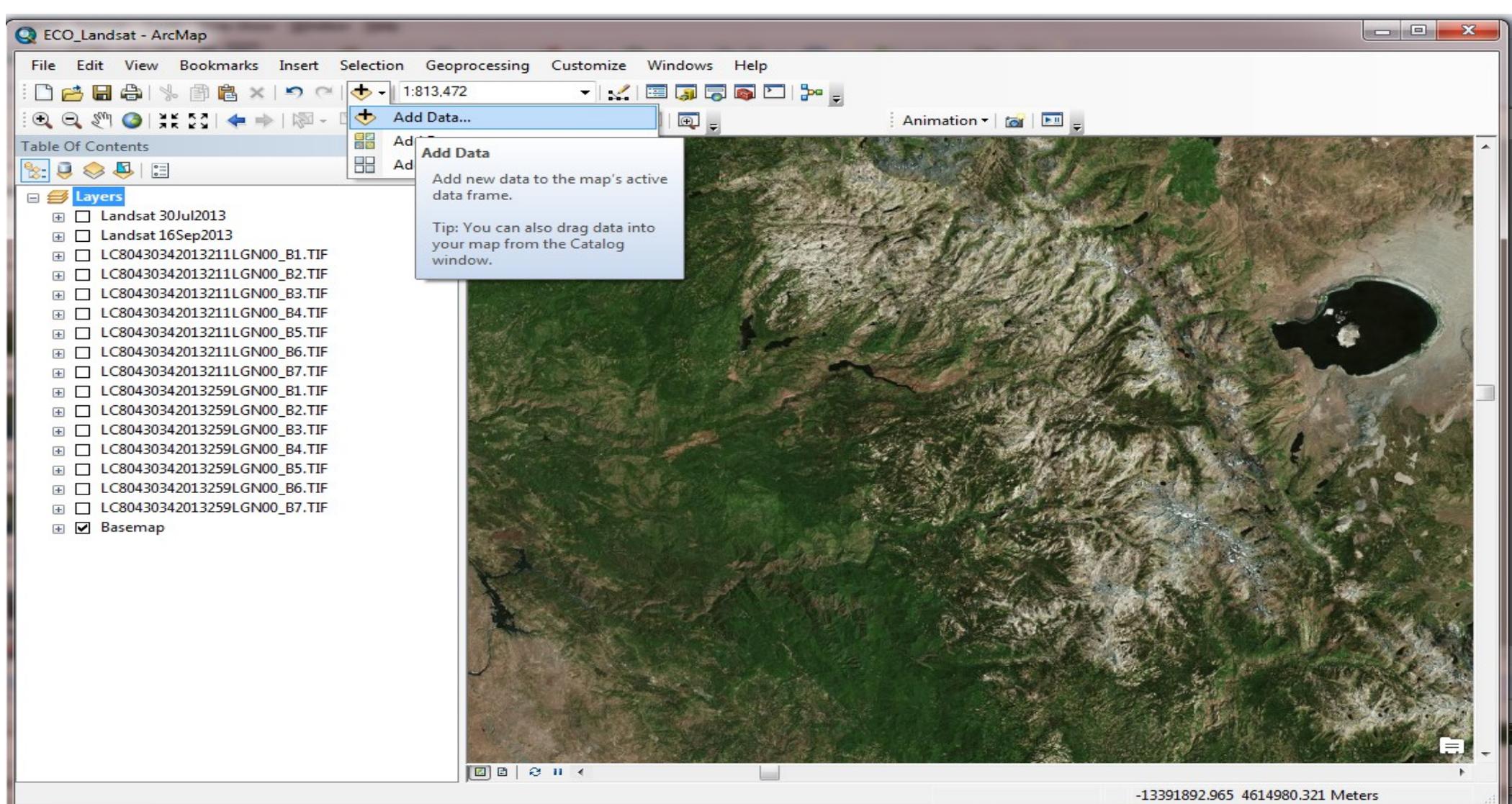
- [Download](#) LandsatLook "Natural Color" Image (5.1 MB)
- [Download](#) LandsatLook "Thermal" Image (2.3 MB)
- [Download](#) LandsatLook "Quality" Image (180.0 KB)
- [Download](#) Landsat look images with Geographic Reference (7.5 MB)
- [Download](#) Level 1 GeoTIFF Data Product (953.2 MB)

We are interested in the [Level 1 GeoTIFF Data Product](#). Click the [Download](#) button.

Repeat the same procedure to download the after rim fire Landsat scene.

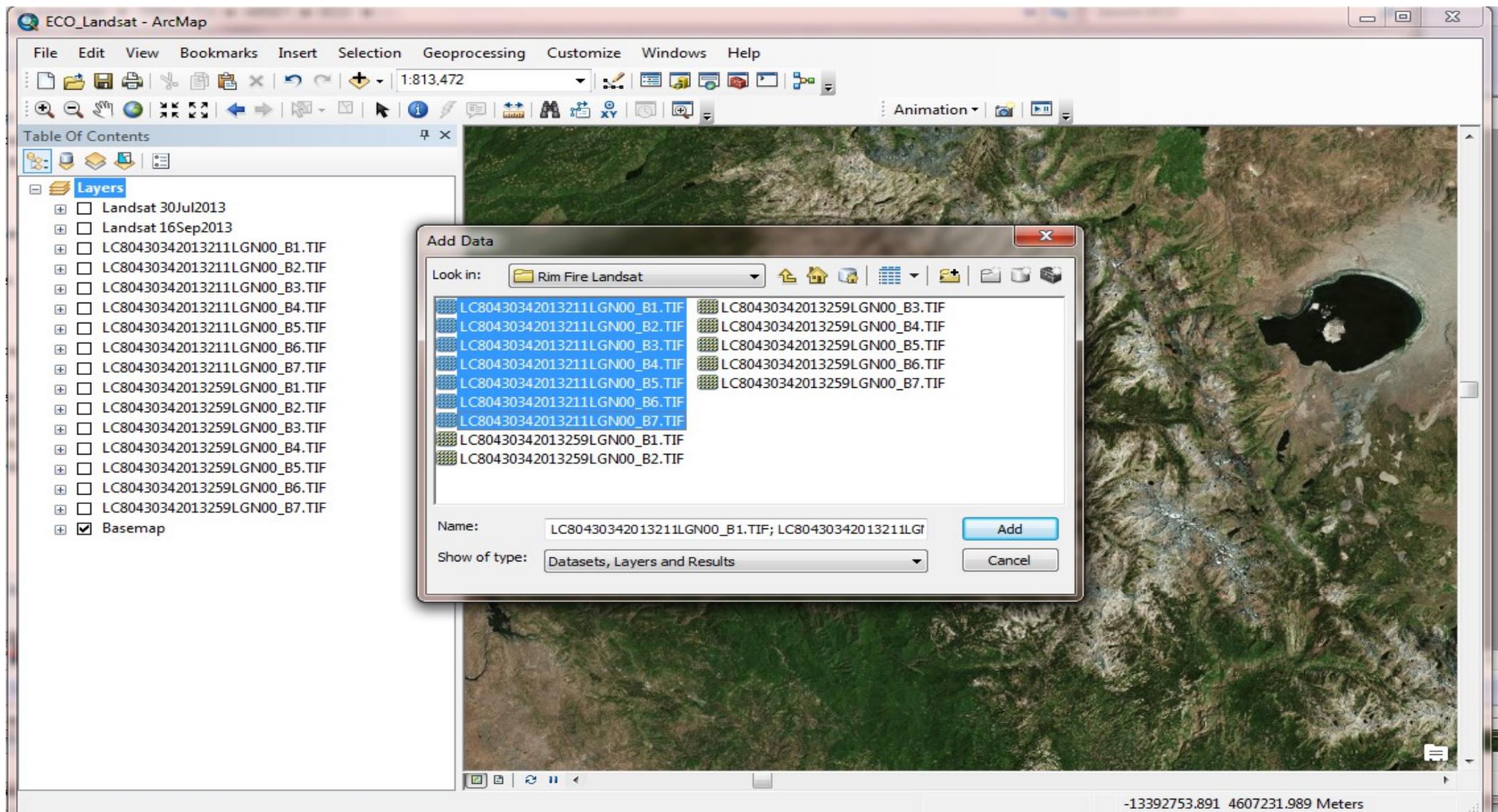
Importing Landsat into ArcMap





Landsat data is delivered in GeoTIFF raster format which is easily imported to Arcmap.

Simply use the [Add Data](#) Icon drop down window and select Add Data.



Navigate to the location in which you placed your unzipped Landsat data. Choose all the bands (B1 through B7) associated with July 30th, 2013.

LC80430342013211LGN00_B1.TIF

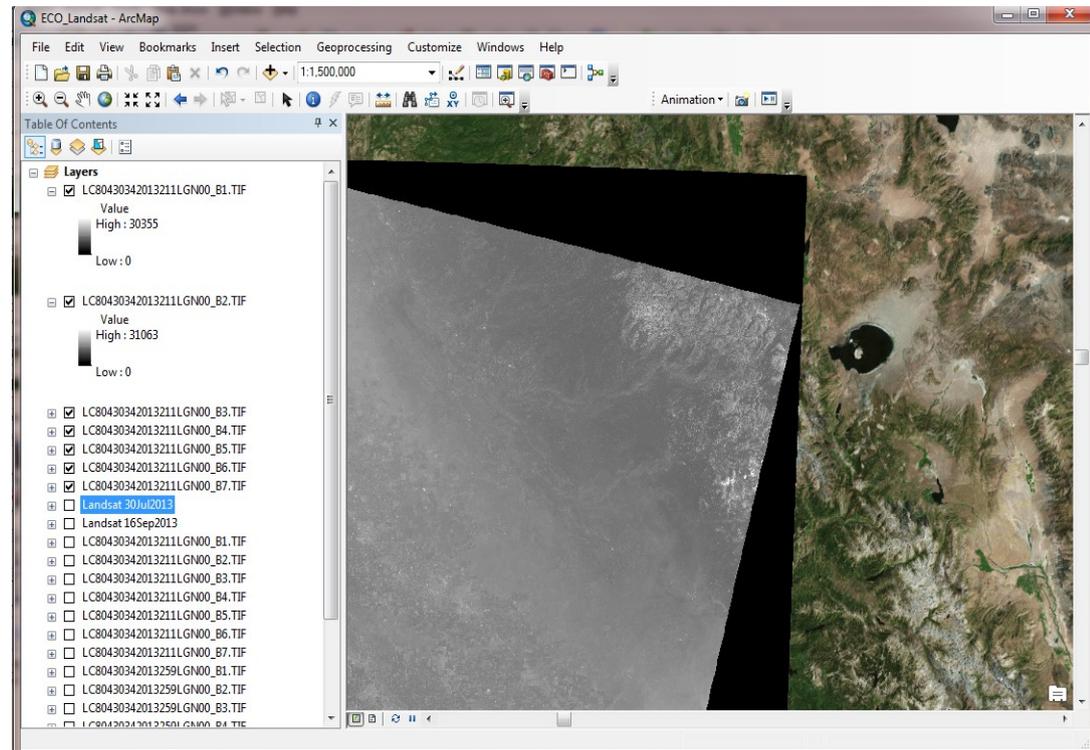
Note the naming convention here: Product, Year, Julian Day of the year (Day 211 = July 30)

Click Add.

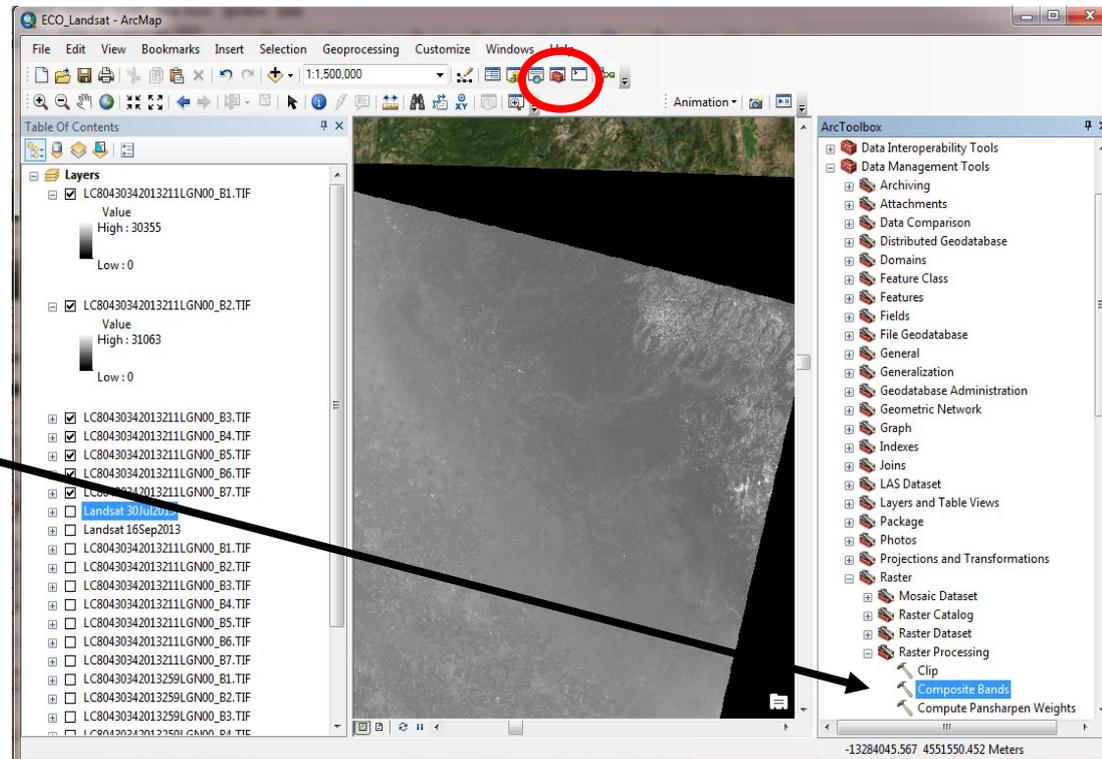
This will be the result.

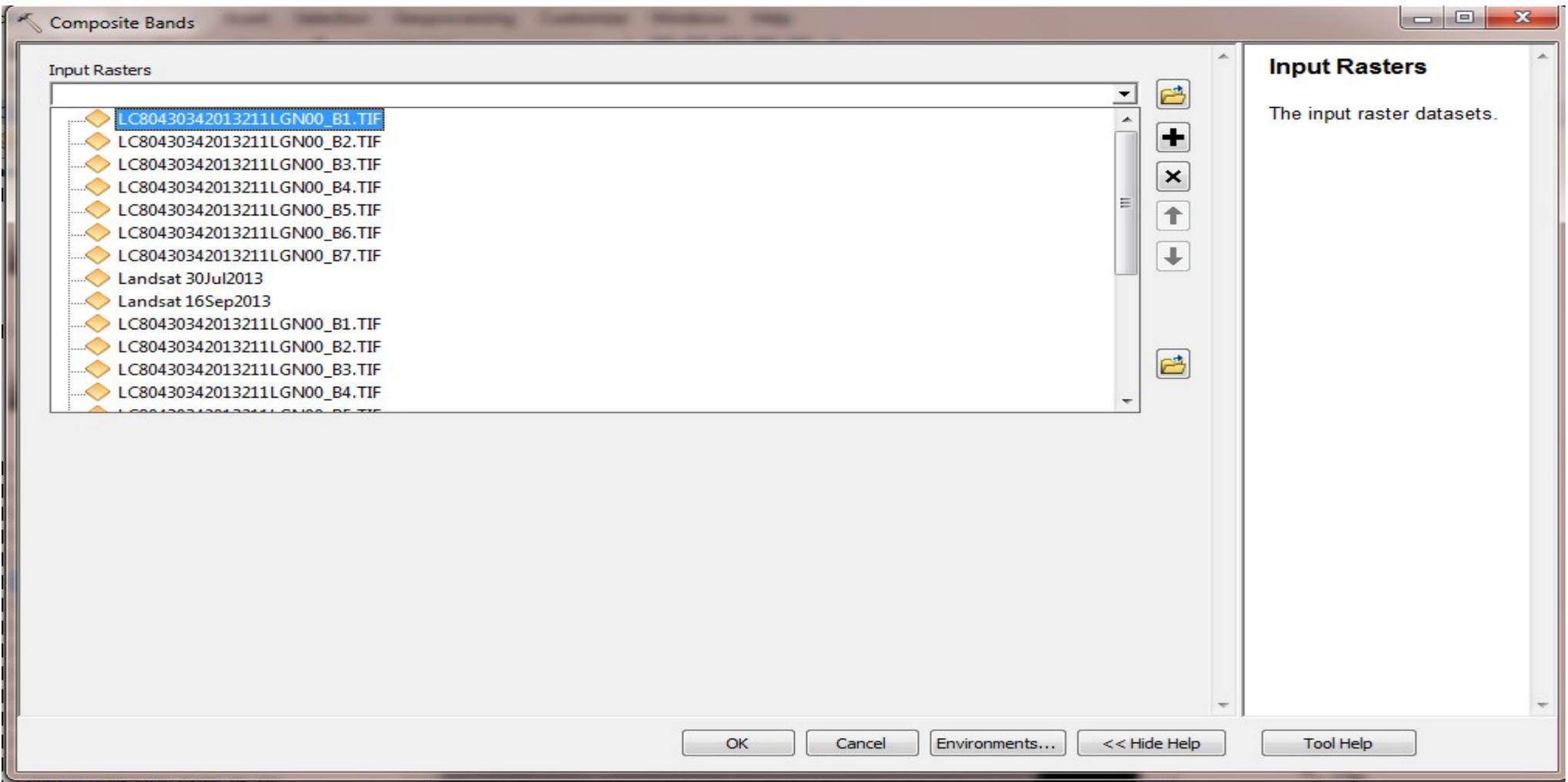
All 7 bands were added individually to the map.

Next, in order to create band combinations, we must first create a composite band raster.



Open [ArcToolbox](#), navigate to [Data Management](#), [Raster](#), [Raster Processing](#), and open the [Composite Bands](#) tool.





In the **Input Rasters** field, open the drop down box to individually add the layers B1-B7 for the same Landsat scene date.

Click **OK**.

This is the resulting raster data, with all bands included.

From here we can assign bands combinations will be displayed.

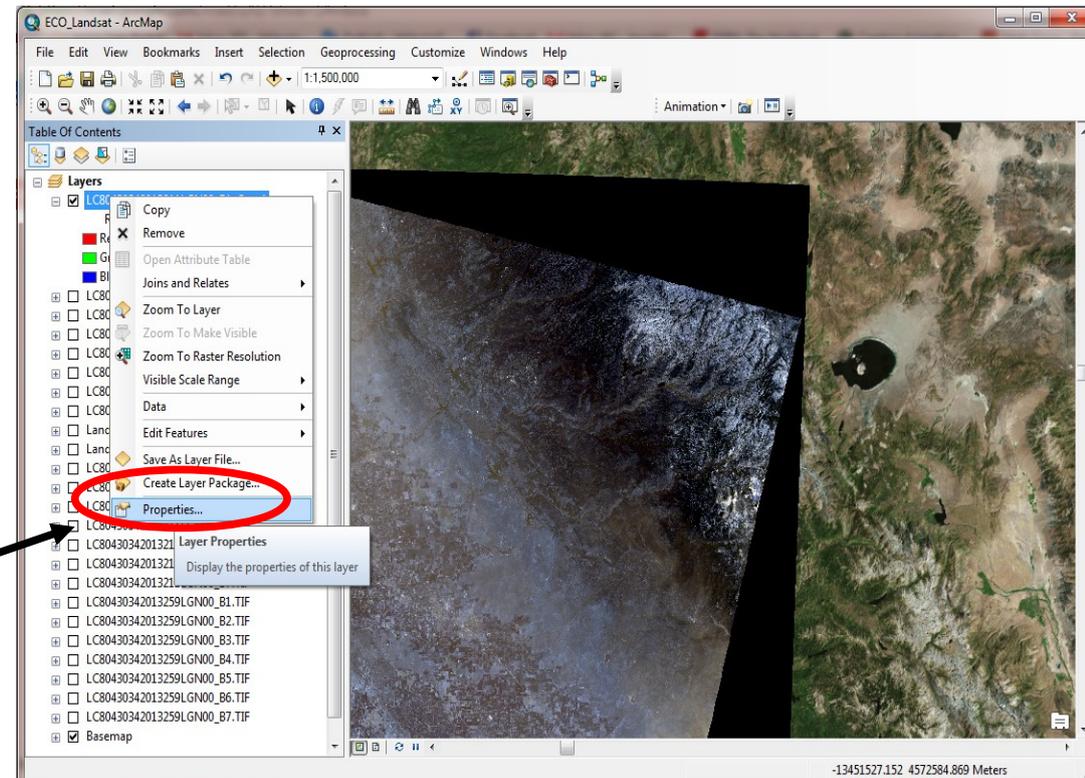
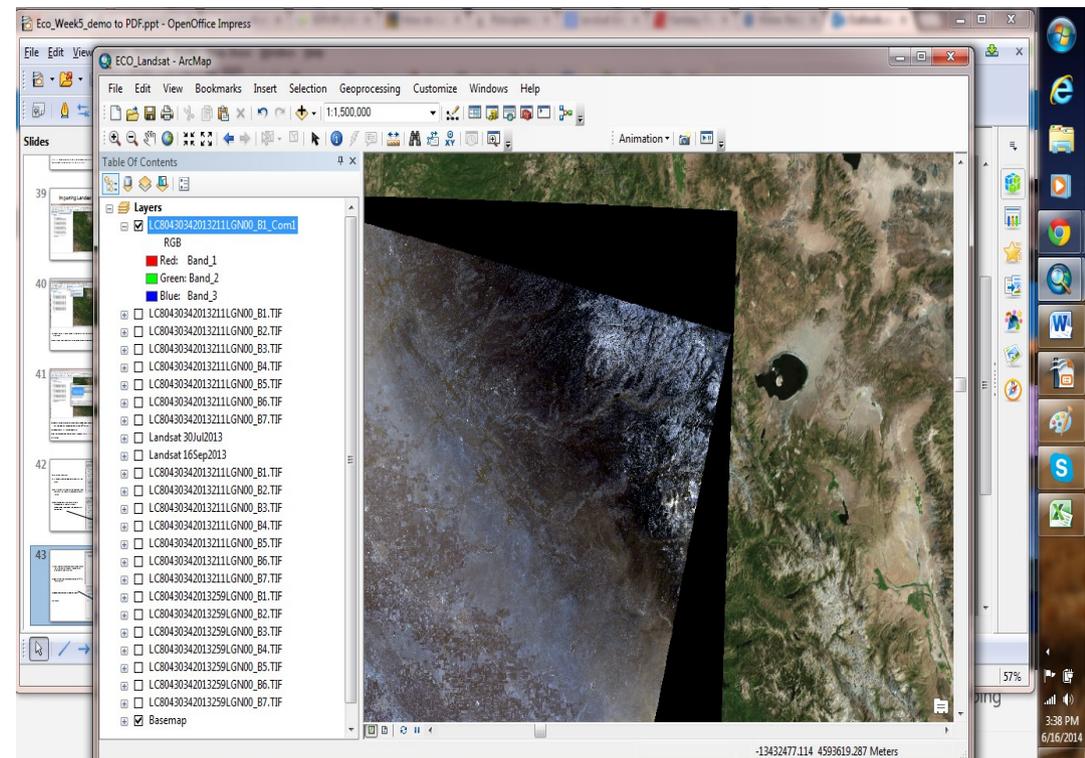
Different band combinations can help us identify areas of vegetation loss or gain, (land cover change).

By default, RGB (Red, Green, Blue) will be assigned Bands 1,2,3, respectively.

In False Color images vegetation is shown in red). Differences in varying degrees of red may be easier to observe.

False color images for Landsat 8 data is band combination **5,4,3**

Right click the composite layer and open the layer properties.



Open the **Symbology** Tab.

This is where we can assign which band combinations will be displayed.

Change the Red channel to Band 5, the Green channel to Band 4 and the Blue channel to Band 3. This will show Landsat 8 data as false color.

Landsat 8: Band 5 = Near infraRed

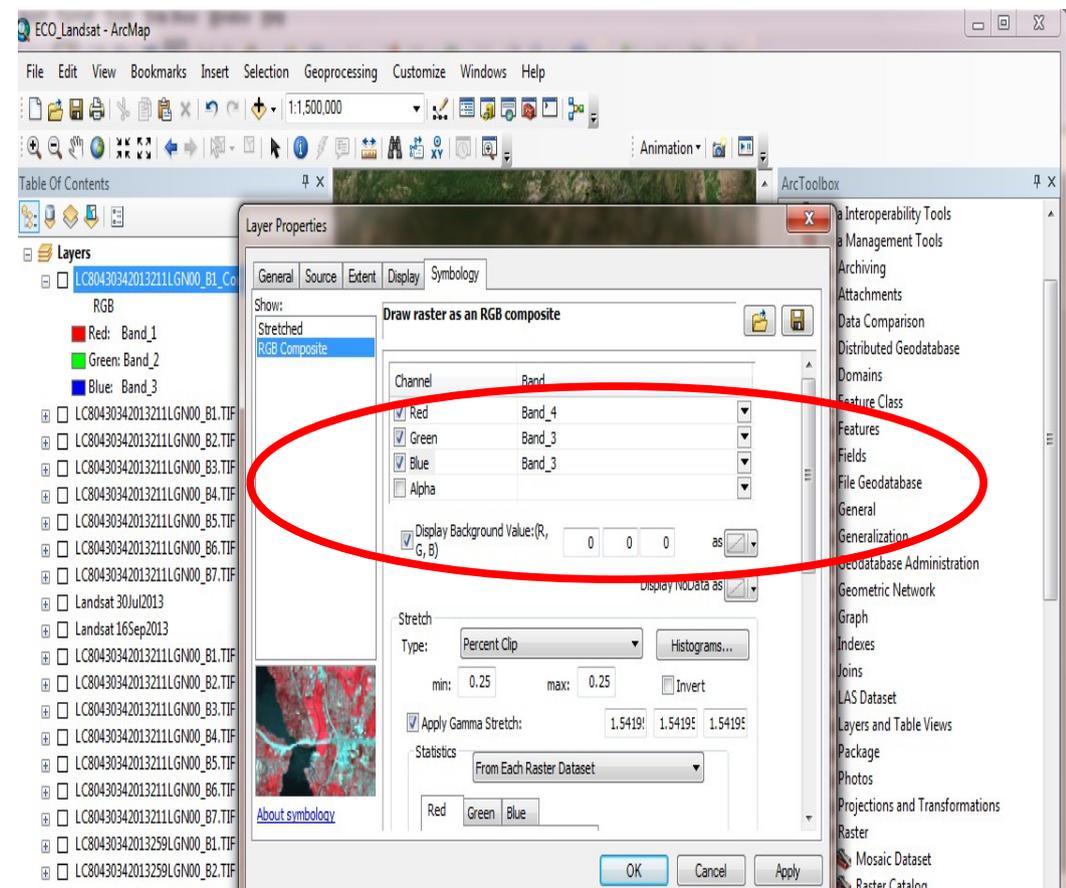
Band 4 = Red

Band 3 = Green

Also, to remove areas of black (no data) within the scene, check the box next to

“Display Background Value, “0” as “No Color””.

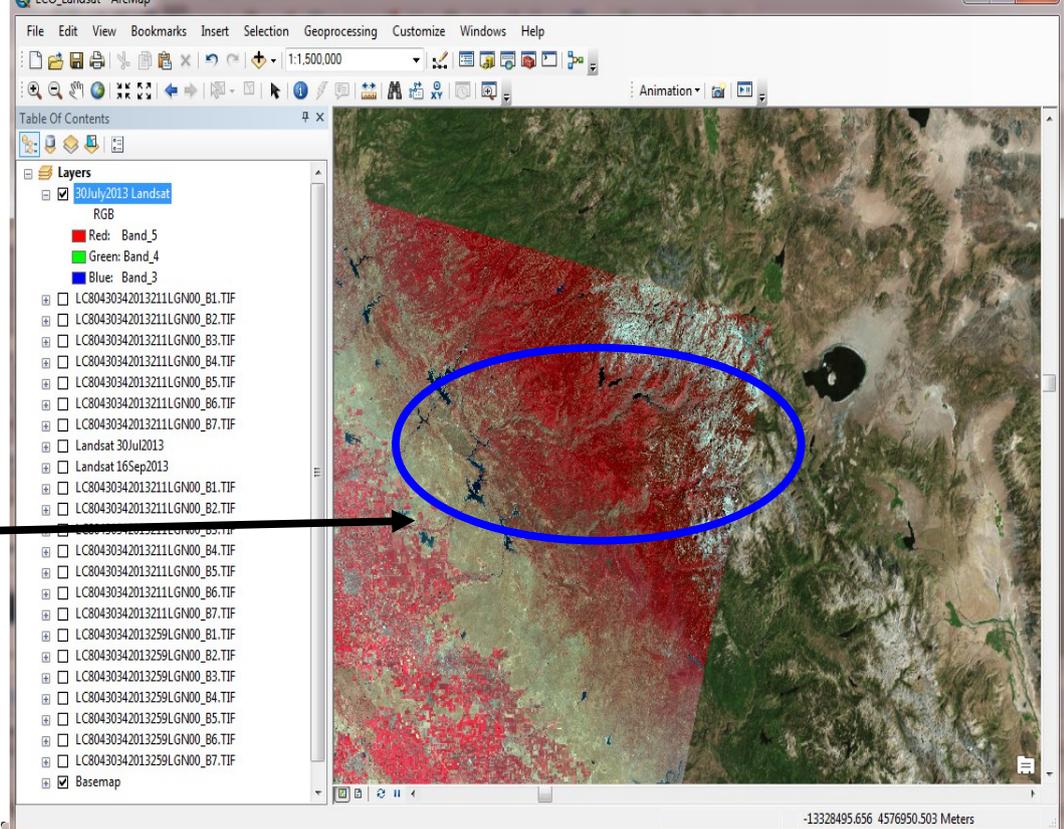
Click OK.



This will be the result. Vegetation is displayed in red in a false color band combination.

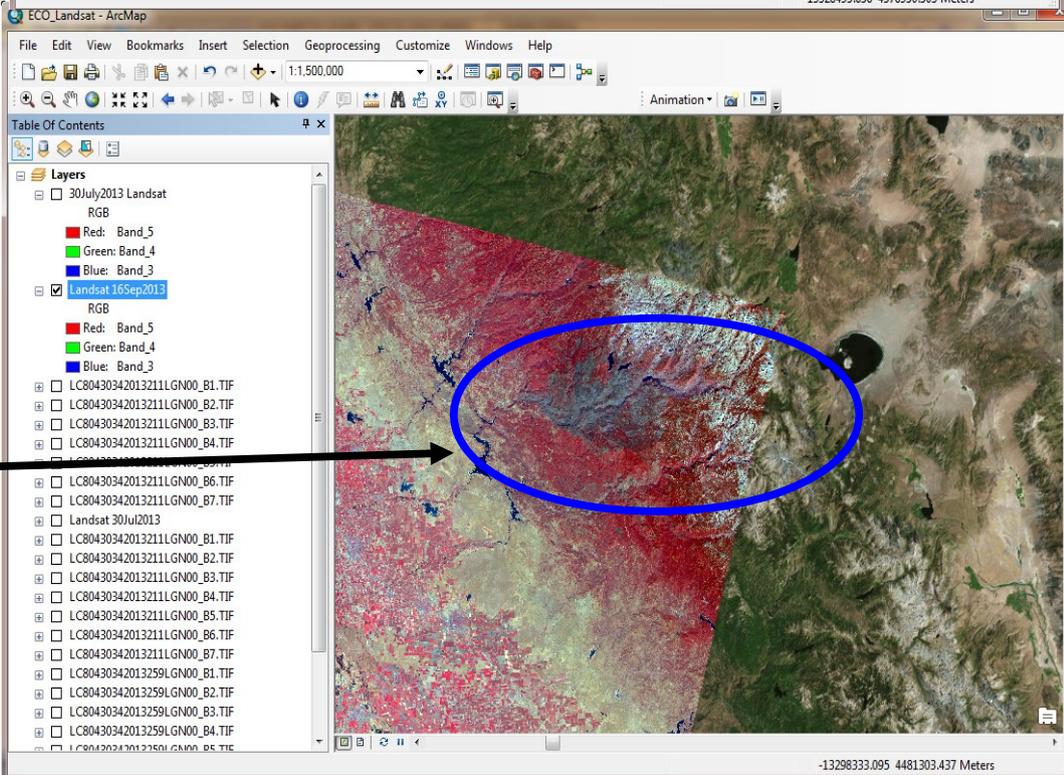
Here is our region of interest, pre Rim Fire (July 30, 2013).

You may wish to rename the layer to the Date and product (30July2013 Landsat).



Repeat this procedure for the post Rim Fire date Landsat scene we acquired (Sept. 16th, 2013).

Here is the post Rim Fire image, showing the burn scar in the vegetation.

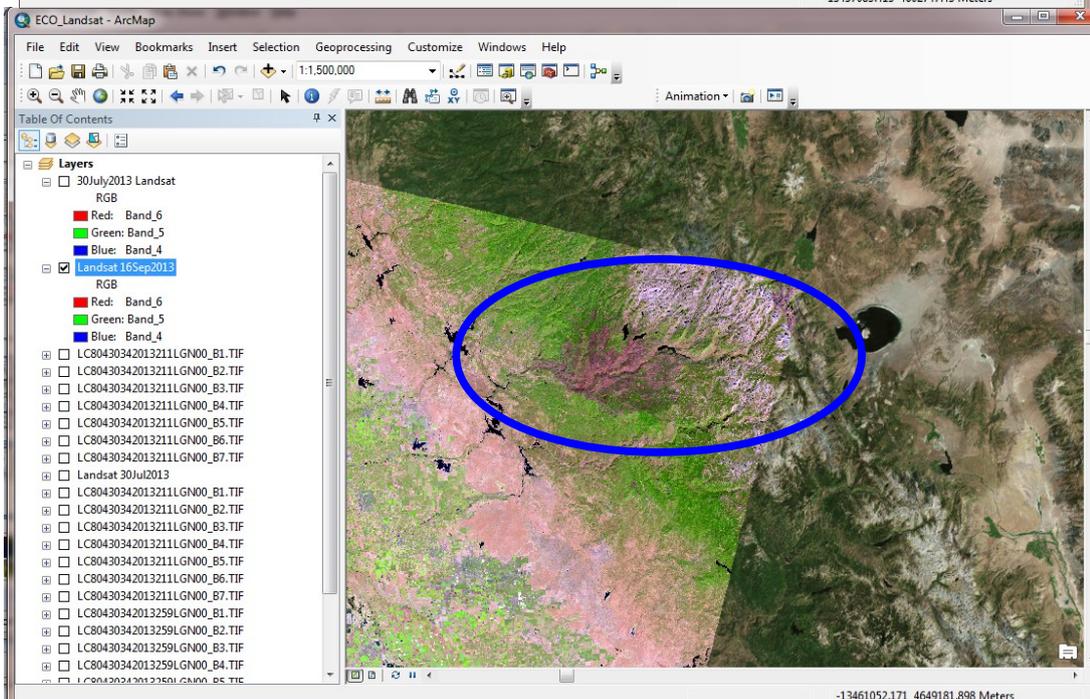
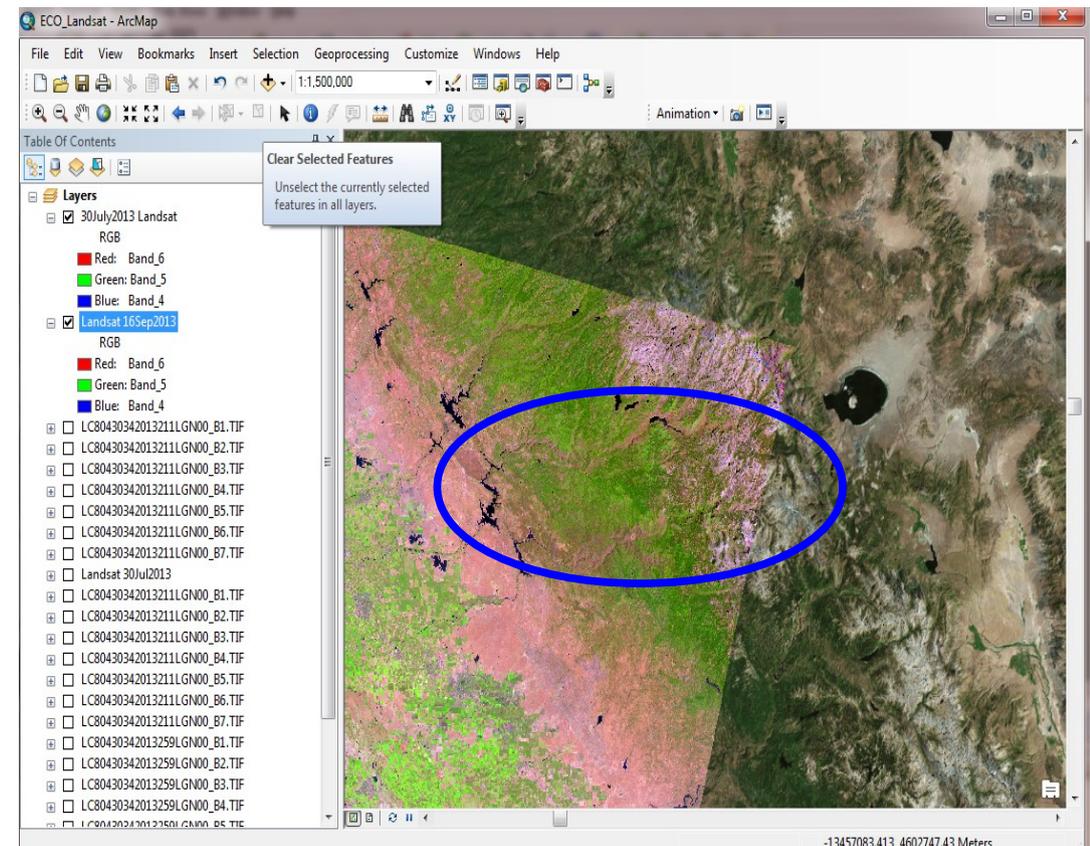


Alternatively, you may be able to visualize the difference in land cover by switching the bands to a combination that includes the Mid- Infrared band (band 6).

Using the same procedure, as before, within the layer symbology tab, this time change the Red channel to Band 6, the Green channel to Band 5 and the Blue channel to Band 4.

The result will show vegetation as varying degrees of green.

With the Rim Fire Burn scar clearly seen.



SERVIR GLOBAL

The Regional Visualization and Monitoring System

Login

Help

Contact



USAID
FROM THE AMERICAN PEOPLE



Search This Site...

SEARCH

GLOBAL

MESOAMERICA

AFRICA

HIMALAYA

MyCOE

SERVIR AST

Product Catalogue

Our Work

Maps & Data

About

News

GEOSS Themes



Success Stories

View All

Latest News

View All

Declaratoin for Feder....pdf

Show all downloads...

SERVIR is a global network of regional partners dedicated to environmental management through the integration of Earth observations and geospatial technologies. We create new tools for use by stakeholders in developing countries to improve environmental management and resilience to climate change. Since its inception in 2004, SERVIR has helped decision makers in SERVIR hub regions improve monitoring and forecasting of water and air quality, extreme weather, biodiversity changes, land cover changes, and more.

SERVIR GLOBAL

The Regional Visualization and Monitoring System

Login

Help

Contact



USAID
FROM THE AMERICAN PEOPLE



Search This Site...

SEARCH

GLOBAL

MESOAMERICA

AFRICA

HIMALAYA

MyCOE

SERVIR AST

Product Catalogue

Our Work

Maps & Data

About

News

GEOSS Themes

Success Stories

View All

Latest News

View All

Declaratoin for Feder....pdf

Show all downloads...

SERVIR Global's interactive map allows users and decision makers to combine socioeconomic, hydrology, health, climate, agricultural and many more layers upon one another.

Global navigation links: Login, Help, Contact

SERVIR GLOBAL

The Regional Visualization and Monitoring System

Logos: USAID (FROM THE AMERICAN PEOPLE), NASA

Search: Search This Site... SEARCH

Global navigation tabs: GLOBAL, MESOAMERICA, AFRICA, HIMALAYA, MyCOE, SERVIR AST

Secondary navigation: Product Catalogue, Our Work, Maps & Data, About, News, GEOSS Themes

Interactive Mapper menu: Interactive Mapper, Data Catalog, Open Data Policy



Success Stories [View All](#) Latest News [View All](#)

<https://www.servirglobal.net/Global/MapsData/InteractiveMapper.aspx>

To enter the Global Interactive Map, under the [Global](#) tab, go to [Maps & Data](#) drop down menu and select [Interactive Mapper](#).

Global Interactive Mapper

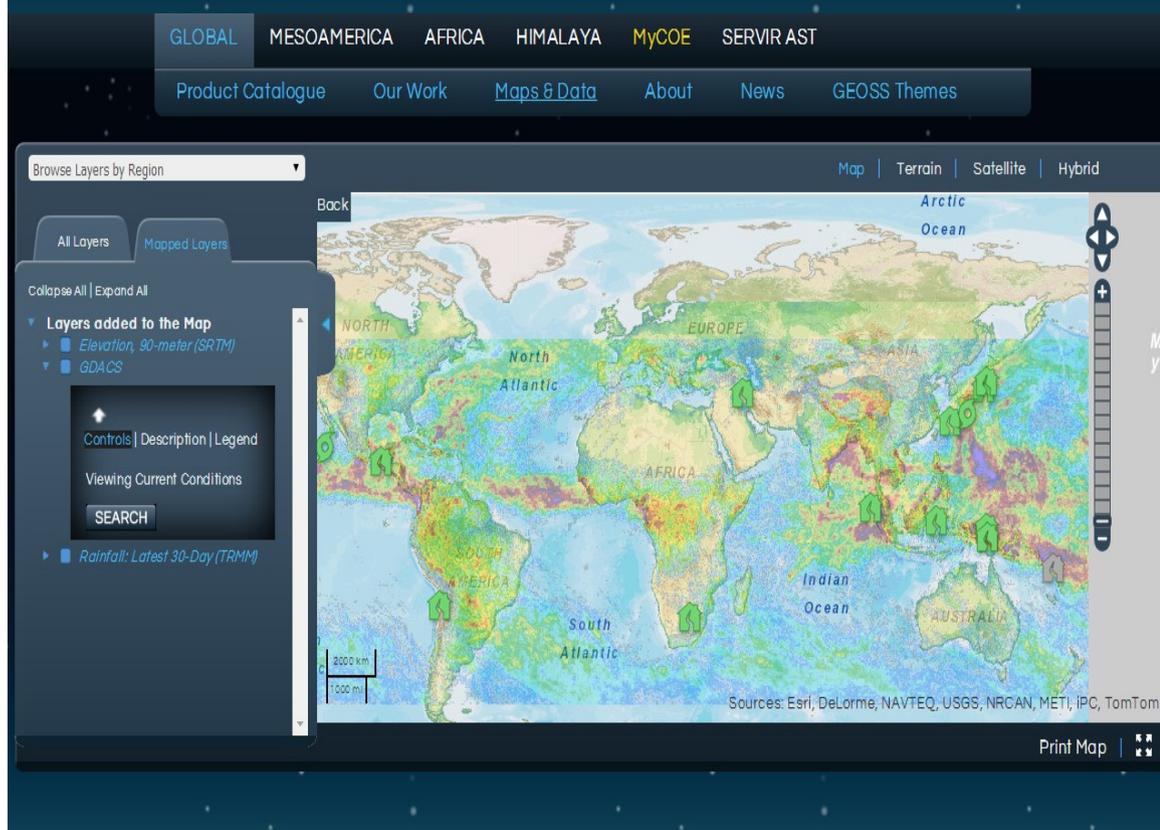
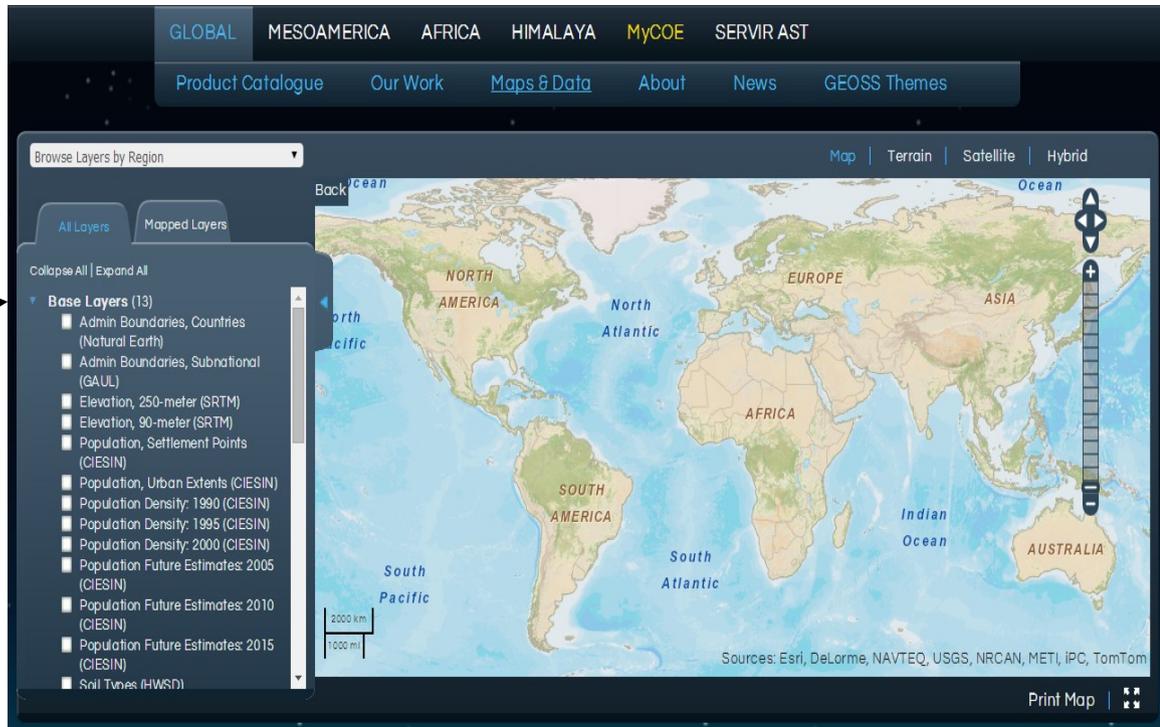
On the left, you may turn on and off

Base layers

Examples include: administrative boundaries, SRTM elevation data, population densities and future estimates

If you scroll down, you may also include thematic layers such as agricultural data, disasters, ecosystems, water and weather.

Users can adjust layer transparencies, build animations and investigate the source of data.

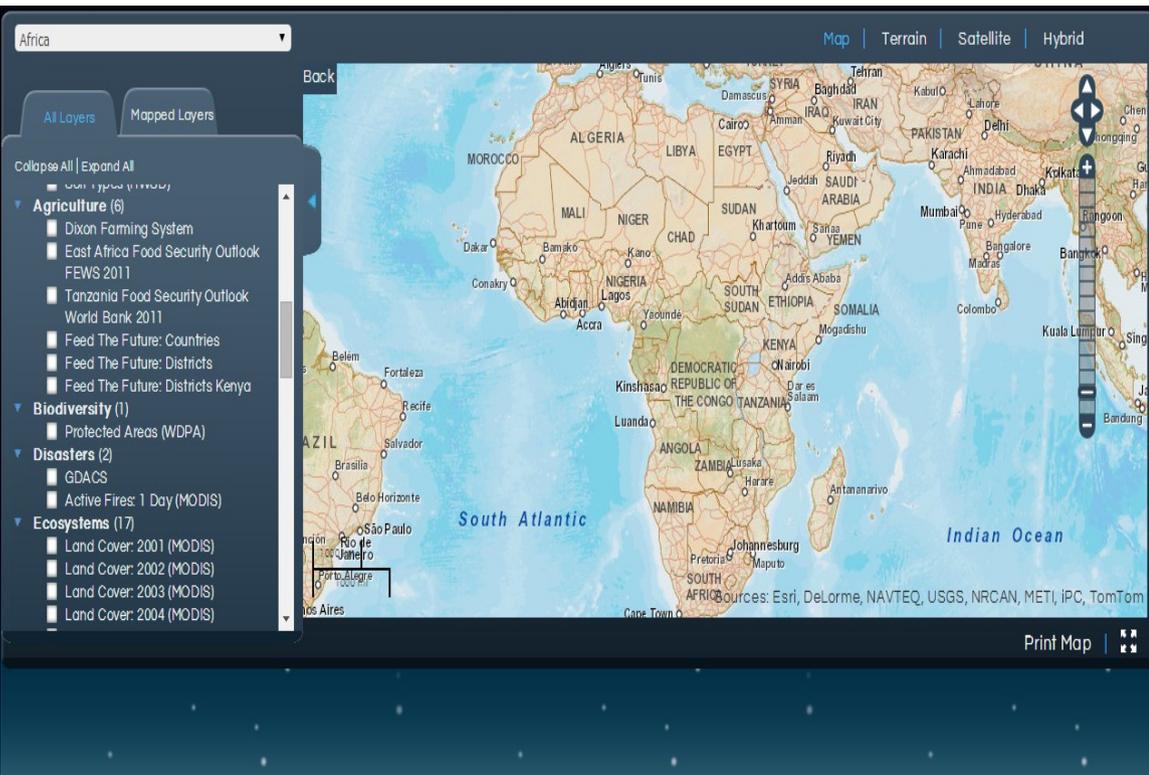
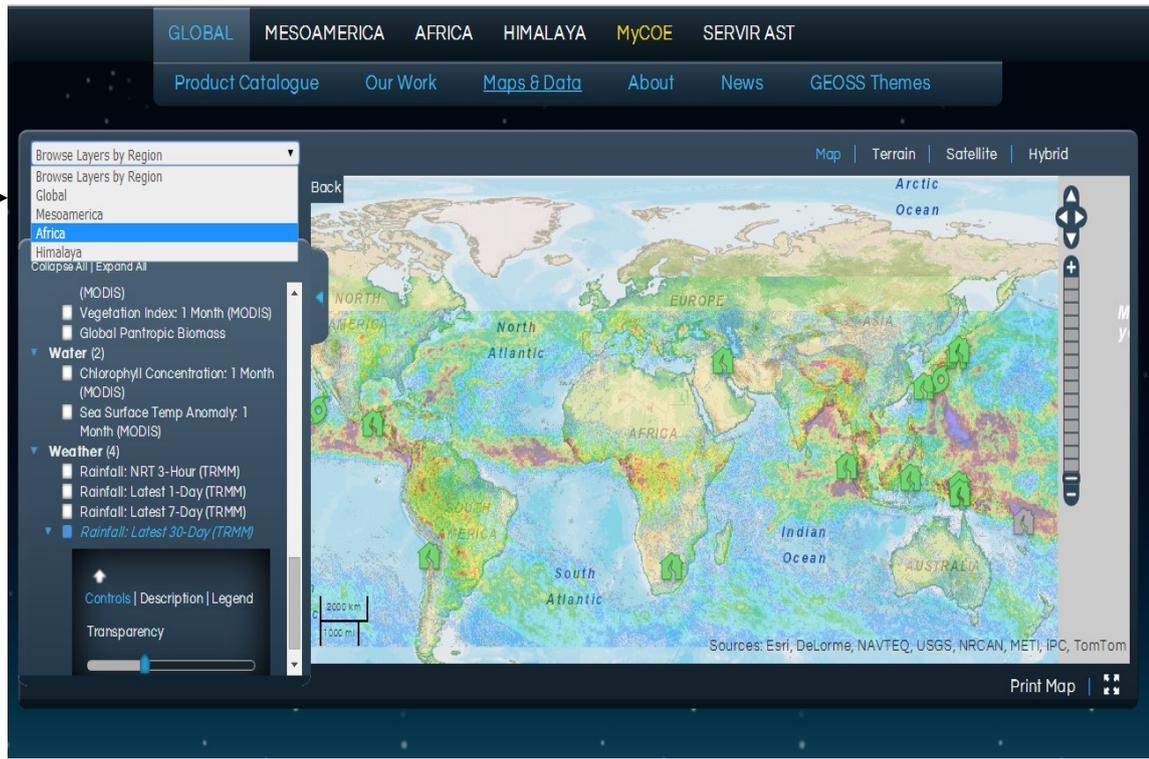


Regional Interactive Mapper: Africa

Using the drop down box, users can navigate to regional maps for Africa, Himalayas, and Mesoamerica

At the regional level, additional data layers can be added to the map.

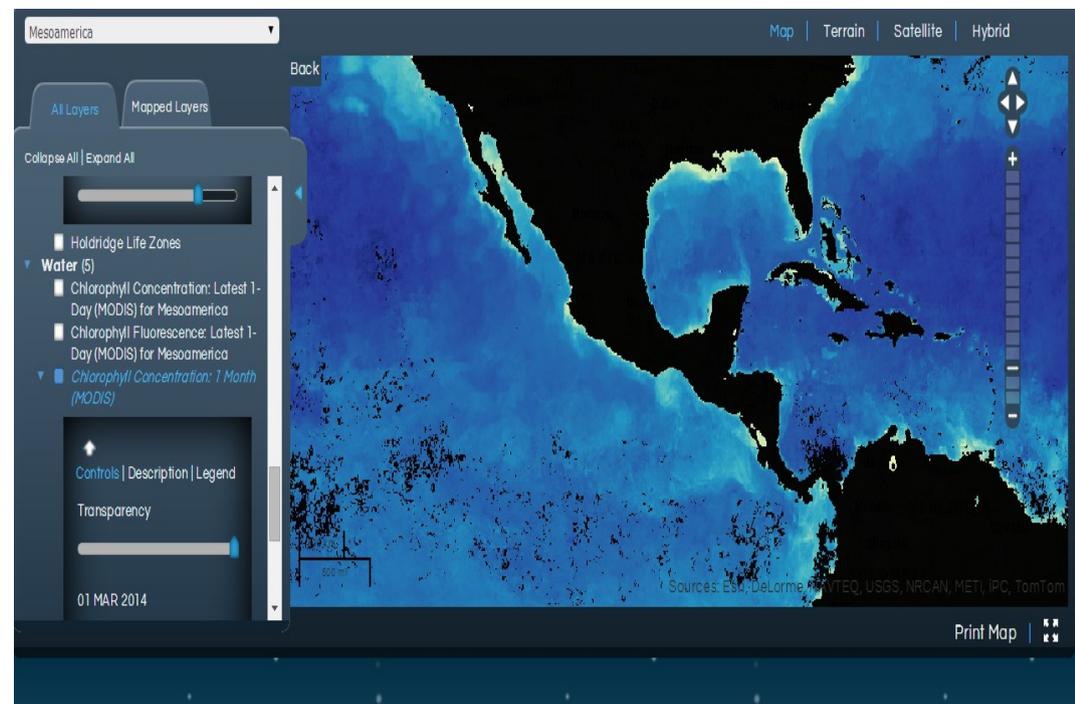
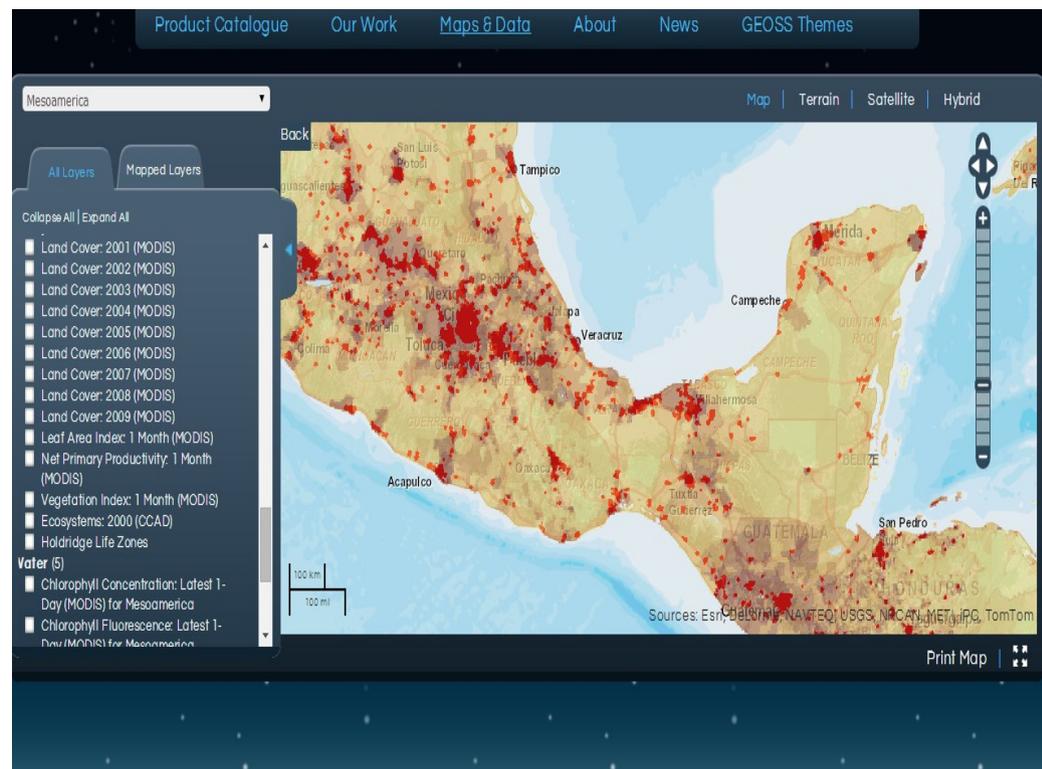
Useful layers include FEWS 2011 East Africa Food Security Outlook, Biodiversity Protected Areas, MODIS NDVI, and the MARA Distribution Model for Malaria.



Regional Interactive Mapper: Mesoamerica

Additional layers for Mesoamerica include:

Urban Extents, 2015 Future Population Estimates, MODIS Chlorophyll Concentrations (phytoplankton), Sea Surface Temperature Anomaly, Infrastructure, Watersheds.



▶ Biodiversity

[View All »](#)



US Department of Interior, SERVIR-Africa/RCMRD, and USGS sponsor workshop in Kenya to streamline mapping of Africa's land cover

3/31/2014

Land cover mapping experts from 15 African countries and from the Department of the Interior International Technical Assistance Program

[Read More](#)



SERVIR AST research reveals new benefits of conserving biological corridors

2/19/2014

To help East African countries participating in an important conservation initiative called REDD+, a SERVIR Applied Sciences team used NASA

[Read More](#)

▶ Climate

[View All »](#)



SERVIR-Himalaya Bangladesh Youth Forum: "Empowering Youth with Earth Observation for Climate Actions"

5/19/2014

The International Centre for Integrated Mountain Development (ICIMOD)/SERVIR-Himalaya and the Bangladesh Centre for Advanced Studies (BCAS)

[Read More](#)



Creativity Kathmandu-style at NASA Space Apps Challenge

4/18/2014

The NASA International Space Apps Challenge is an international mass collaboration engaging developers, Geographic Information System

[Read More](#)

▶ Disasters

[View All »](#)



Sky & Telescope magazine article features ISERV, SERVIR's International Space Station camera

6/18/2014

Sky and Telescope recently published an article about SERVIR's International Space Station camera.

[Read More](#)



ISERV, SERVIR's International Space Station camera, captures images of flooding in Serbia

6/12/2014

An image captured by SERVIR's ISERV imaging system aboard the International Space Station reveals the extent of flooding in Belgrade,

[Read More](#)

▶ Ecosystems

[View All »](#)

To read up on how SERVIR data is being applied in the field, navigate to [Our Work, Science Applications](#). Information on [Capacity Building](#) and training can also be found under Our Work.