



Description

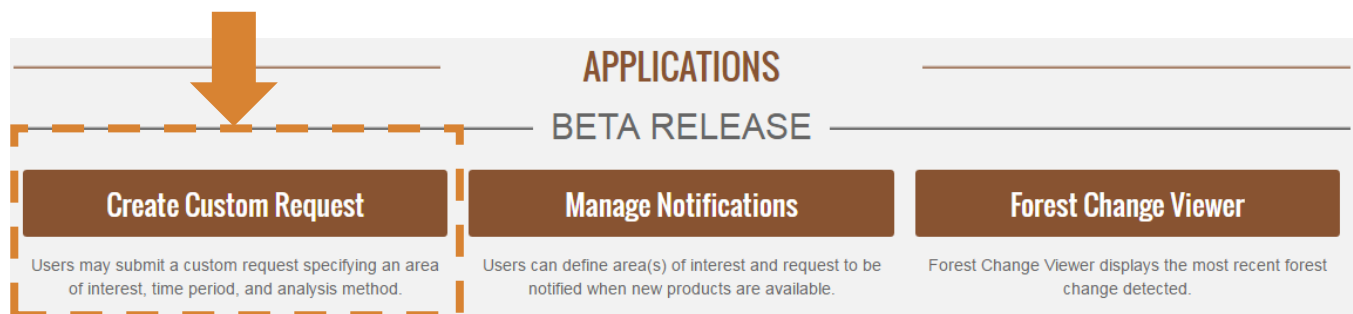
Forest harvesting is one of the silvicultural activities that can be detected using the Landsat Forest Area Change Tools (LandsatFACT). Forest managers are often interested in identifying and monitoring forest harvests to support forest management objectives. While harvesting methods can vary from complete final harvests to selective thinning, these harvests can often be identified using LandsatFACT’s remote sensing products. This case study demonstrates how to use the Custom Request application and Forest Change Viewer to locate forest harvest sites.

Harvesting in Eastern North Carolina During the Spring of 2016

The steps below describe and illustrate how to identify forest harvests using the LandsatFACT applications between April and May of 2016 in Greene County, North Carolina. In this example, the user has a specific area and time window of interest, making the Custom Request application an ideal tool.

STEP 1 Create a Custom Request

The **Custom Request** application can be found from the [LandsatFACT Home page](#).



After clicking the “Create Custom Request” button, a form is presented to fill out the details of the request. The user is asked to: **1** provide a name of the request (for user reference), **2** choose the area of interest, **3** choose dates for the change analysis, and **4** confirm the order by selecting the imagery scenes that best fit the request.

Create Custom Request

1. Name your Custom Request

Name of your Custom Request *

2. Define your Area of Interest

Area Type *

Select County Draw Area Upload Shapefile

Select State

North Carolina

Select County

Greene County

3. Choose the Two Dates to Compare in Your Custom Request

Choose Initial Date *

Month Day Year

Apr 1 2016

Choose End Date *

Month Day Year

May 26 2016

1

Provide a Name for the Custom Request

2

Select an Area of Interest

3

Select Two Dates

The **Initial Date** represents the baseline point in time from which forest change will be analyzed. Therefore, to identify forest harvests, it is recommended that a date be chosen that pre-dates the start of the harvesting operations(s). Alternatively, if monitoring the progression of an ongoing operation, an **Initial Date** should be selected that best fits the user's time period of interest. The **End Date** represents the point in time that will be compared against **Initial Date** conditions to derive a forest change product.


4

Confirm Request

4. Confirm the Landsat Scene's in Your Custom Request

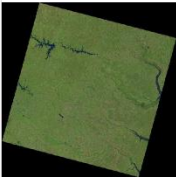
Location of Custom Request

Map which shows the locations of landsat scene's for your Custom Request



Initial Scene(s) *

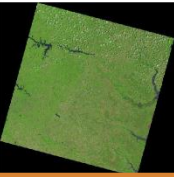
SCENE: LC80150352016104LGN00



Date: 2016-04-13
Cloud Cover: 0.08%

End Scene(s) *

SCENE: LC80150352016136LGN00



Date: 2016-05-15
Cloud Cover: 9%

Submit Preview

Display of Landsat Scene Extents that Intersect Area of Interest

Use Arrows to Browse Available Imagery >> Note Cloud Cover Percentage & Date Acquired to Make Selection >> Click Submit

When browsing and selecting a scene using the image slider, look for imagery with the least amount of cloud cover for the specific area of interest that best fits the desired date window of interest. Landsat data are available every (8) days from alternating satellite platforms. Imagery may not be available for the exact date of interest.

After submitting the Custom Request, a message will appear toward the top of the page confirming that the request has been received. Users will be notified by email once the change products are available. The status of the request can be viewed on the **Custom Request Status** page.

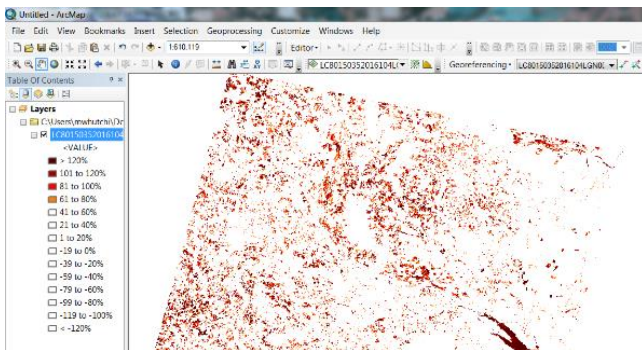


Your Custom Request titled "Forest Harvesting in Eastern NC" has been submitted. Please check the **Custom Request Status** page for information about your Custom Request. You will be notified by email when the products are available. ✕

STEP 2 Viewing the Results of the Custom Request

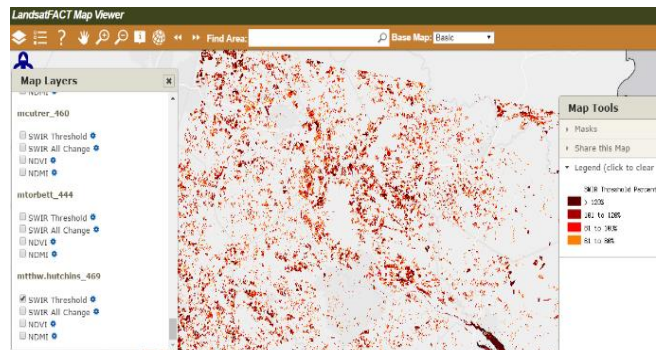
Once the Custom Request has been processed, users will receive an email with a download link and the status on the Custom Request Status page will be updated to include a download link. Users have two options at this time to view the Custom Request change products produced: **1 download the data** and **view within a desktop GIS application** and **2 view** the results **within the Forest Change Viewer**.

1 Download the Data & View Within Desktop GIS



Unzip the file and use the (.lyr) files to symbolize the data products in (for ArcGIS). GeoTIFFs may also be viewed in Quantum GIS, Google Earth Pro, and similar desktop applications.

2 View the Data Within the Forest Change Viewer

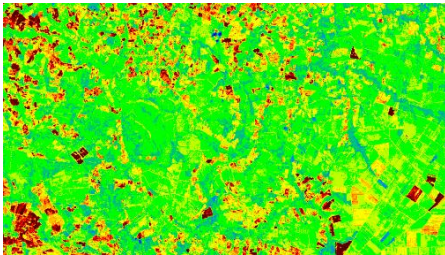
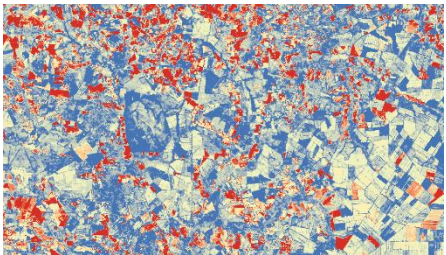
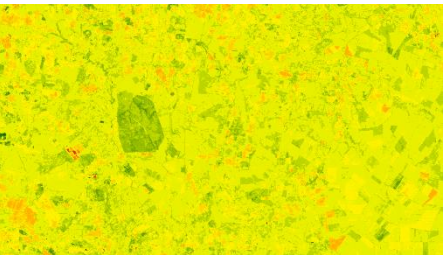


Results will be in the Custom Requests section...

STEP 3 Interpreting the Change Products

There are many different remote sensing methods for detecting change. LandsatFACT currently uses three vegetation indices:

<p>1 Shortwave Infrared Differencing (SWIR)* Indicator of drastic vegetation change</p>	<p>2 Normalized Differential Moisture Index (NDMI) Indicator of vegetation moisture</p>	<p>3 Normalized Differential Vegetation Index (NDVI) Indicator of vegetation health</p>
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*Here we will focus on the Shortwave Infrared Differencing (SWIR) product because it tends to show drastic vegetation changes on the landscape well, particularly forest harvesting. We will also use the threshold symbology that only shows areas of drastic change (at least 60% change):

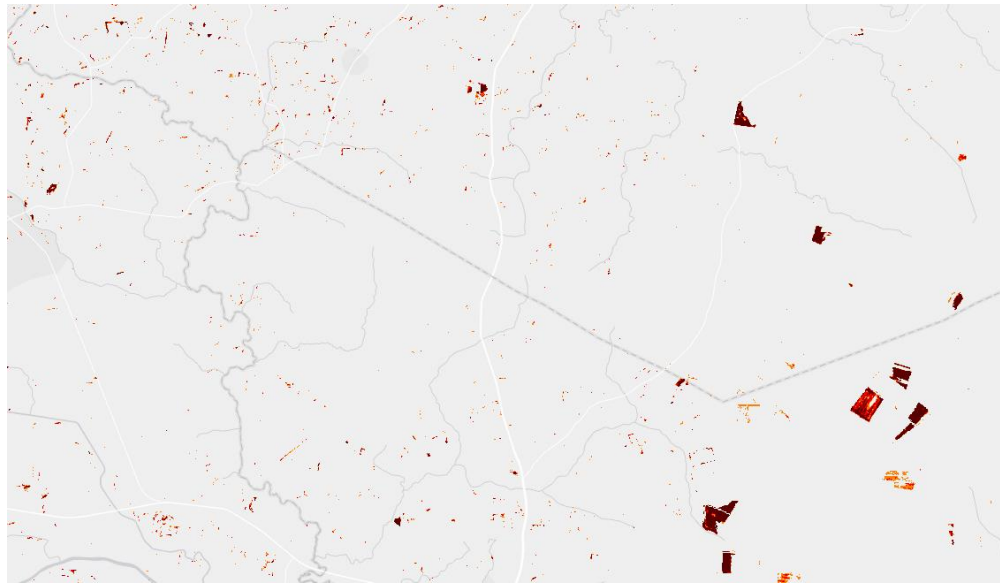
USING LANDCOVER AND CLOUD MASKS

Another useful tip for interpreting change on the landscape is to use the landcover masks to view certain landcover types. This can be done in the LandsatFACT Map Viewer:



In the Map Tools, turn on Masks to View Areas that are Cloud-free and with Forested Landcover

The map then shows areas of change that meet the selected mask criteria:



We can then zoom in to some of the large dark-red areas showing change and use an imagery basemap to examine further. Many of these areas are showing potential harvest sites:

