

Space Journalism!

¡Periodismo en el espacio!

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@A_L

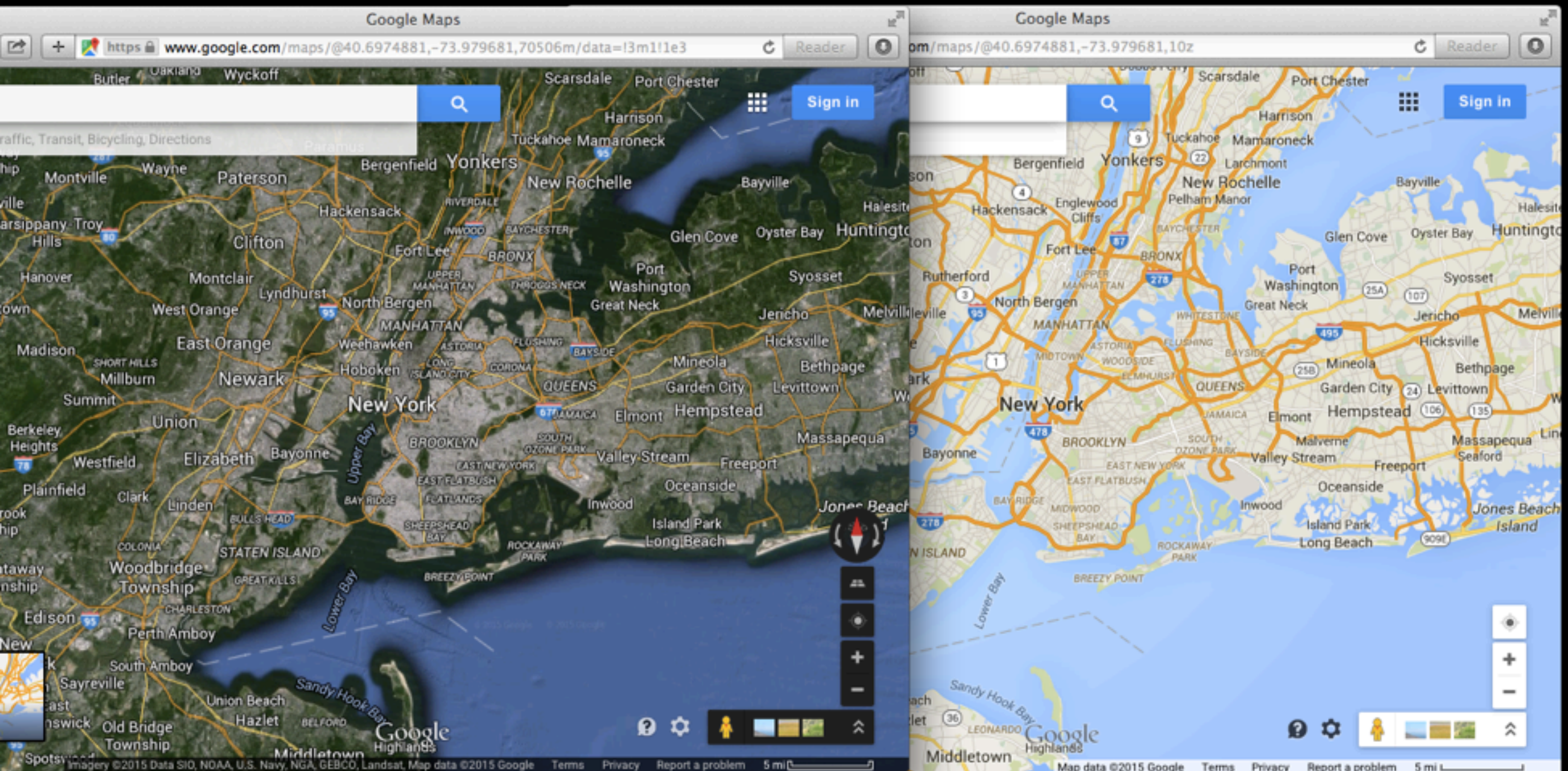
<http://j.mp/jpd-spacejournalism>

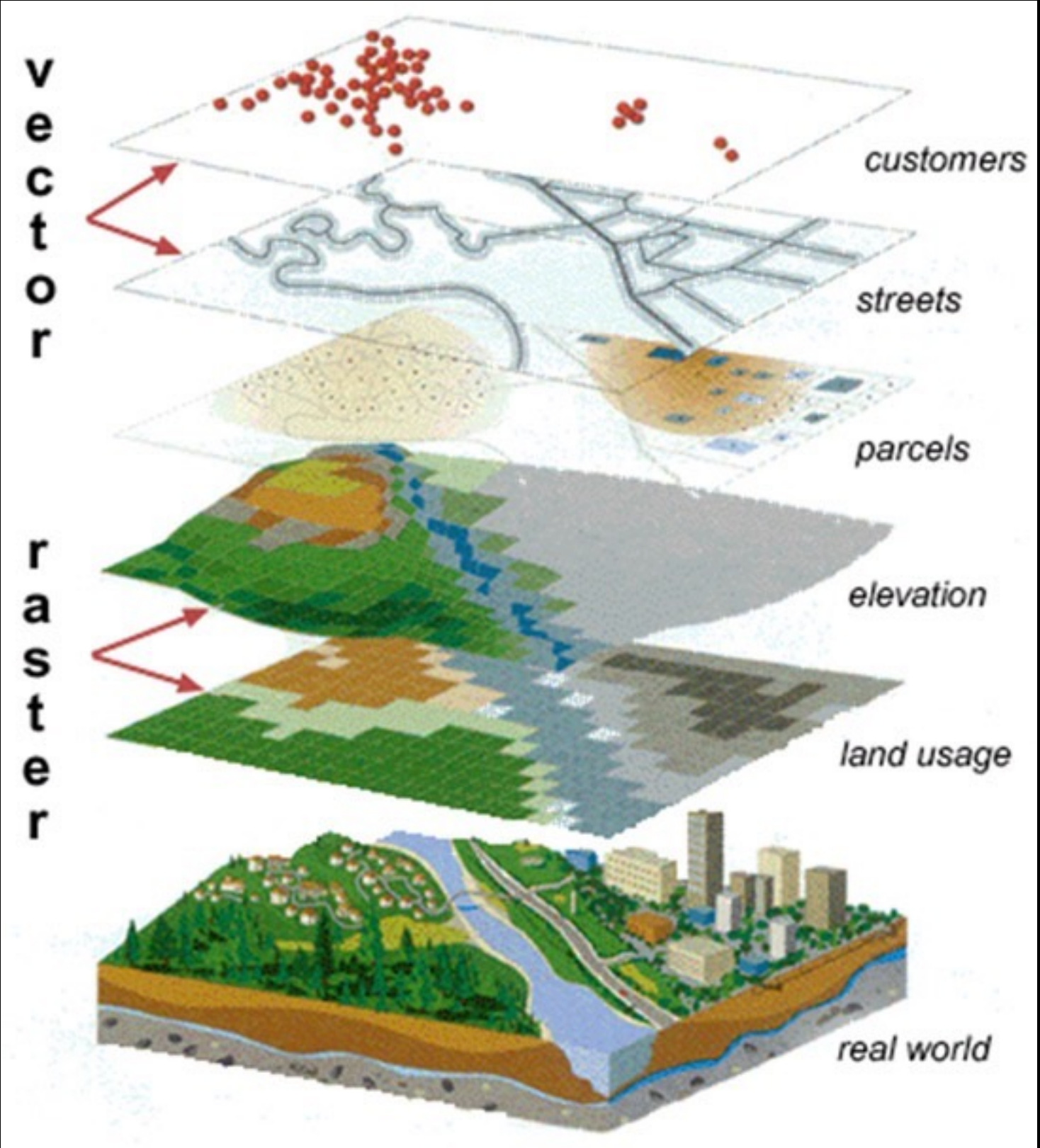
Agenda

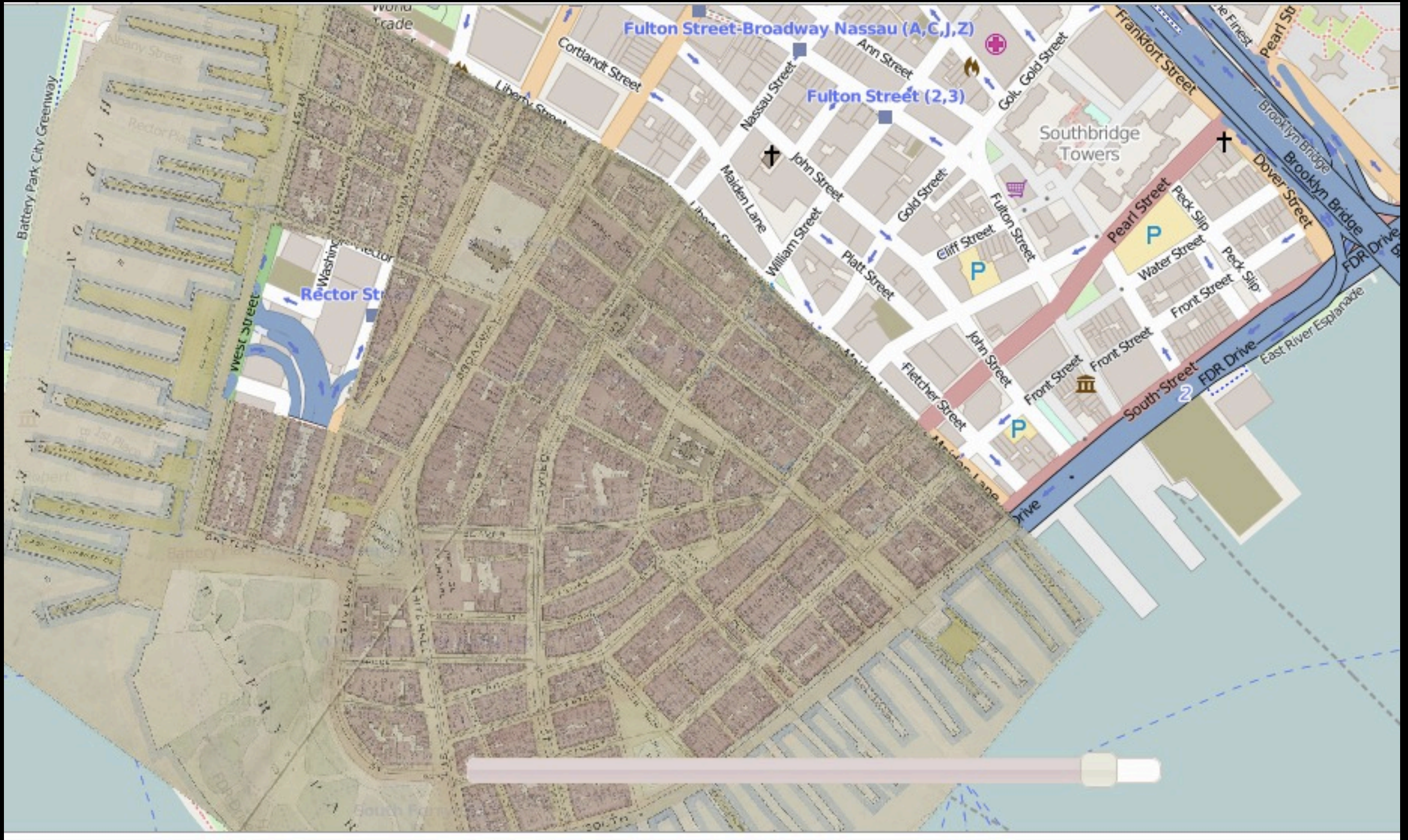
1. What is raster data? *¿Qué son los datos de 'raster'?*
2. How to get the data *¿Como obtener los datos?*
3. How to process the data *¿Como procesar los datos?*
4. Telling stories from space *Decir historias desde el espacio*
5. Questions *Preguntas*

1. What is raster data?

¿Qué son los datos de 'raster'?





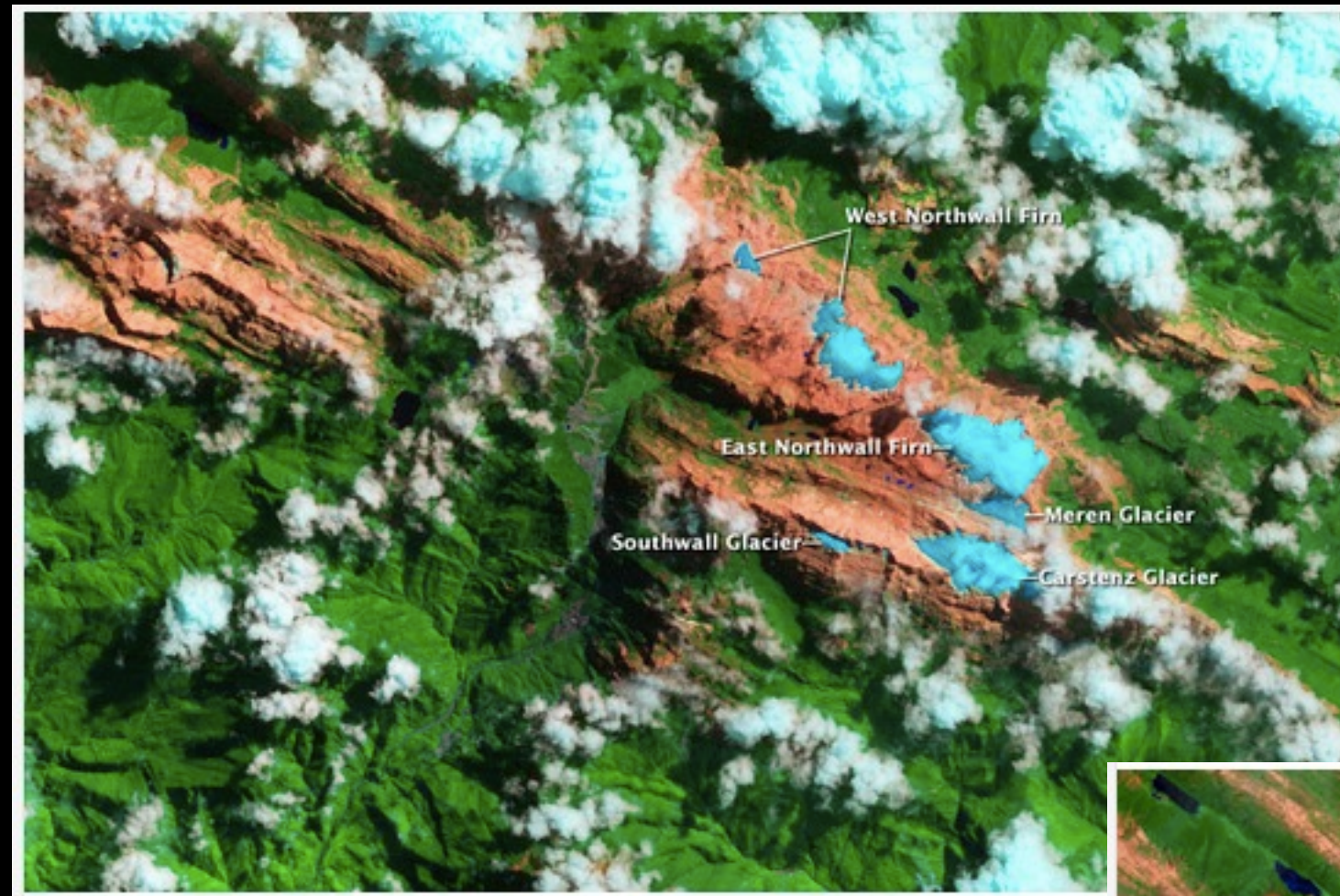


<http://maps.nypl.org/warper/maps/17757>



<https://www.mapbox.com/blog/Monitoring-oil-reserves-from-space/>

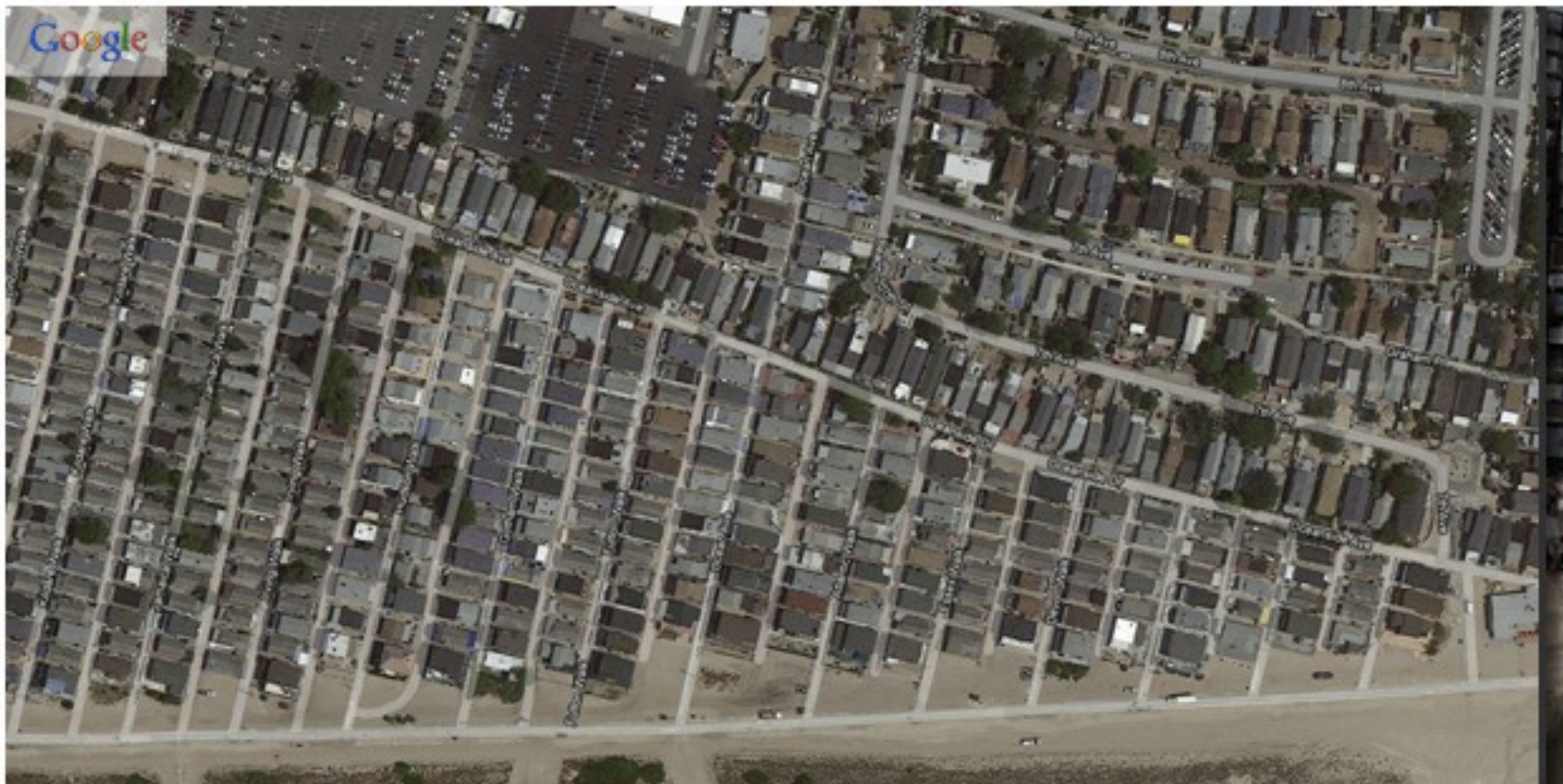
1989



2009



<http://earthobservatory.nasa.gov/IOTD/view.php?id=79084&src=ve>

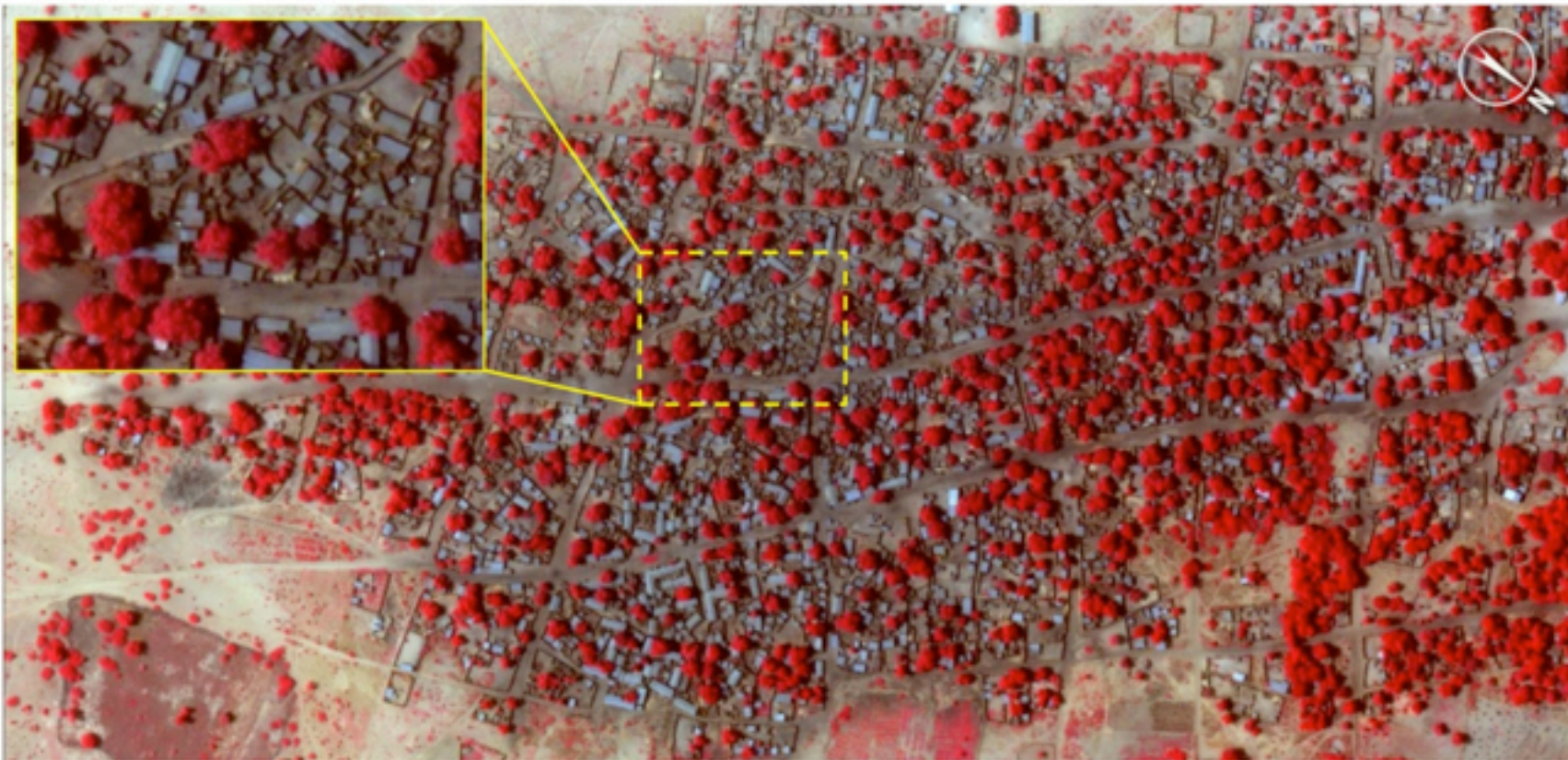


Before Hurricane Sandy



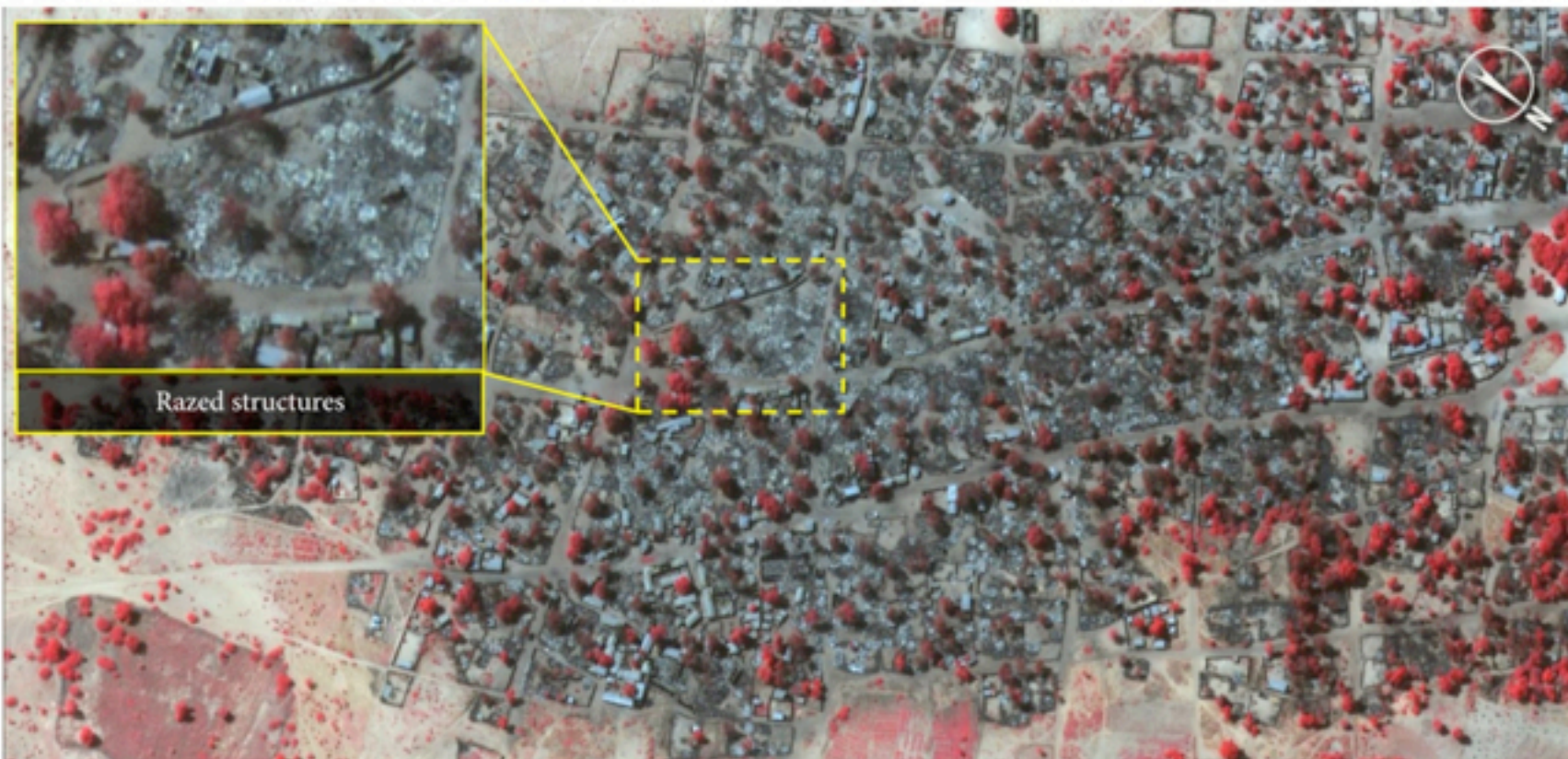
After Hurricane Sandy

<http://oceanservice.noaa.gov/news/weeklynews/nov12/ngs-sandy-imagery.html>



13° 6'33.77"N, 13°52'34.98"E

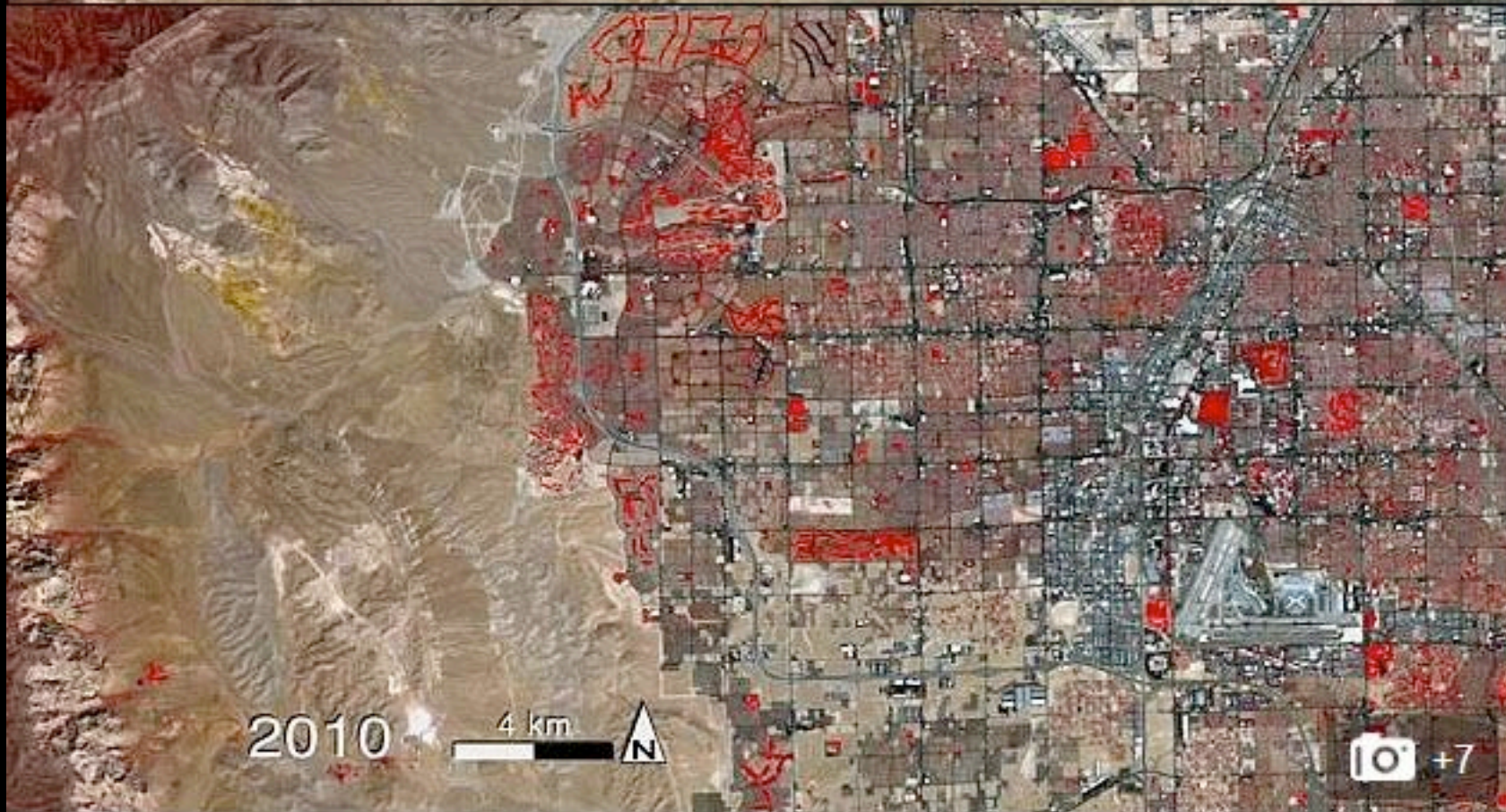
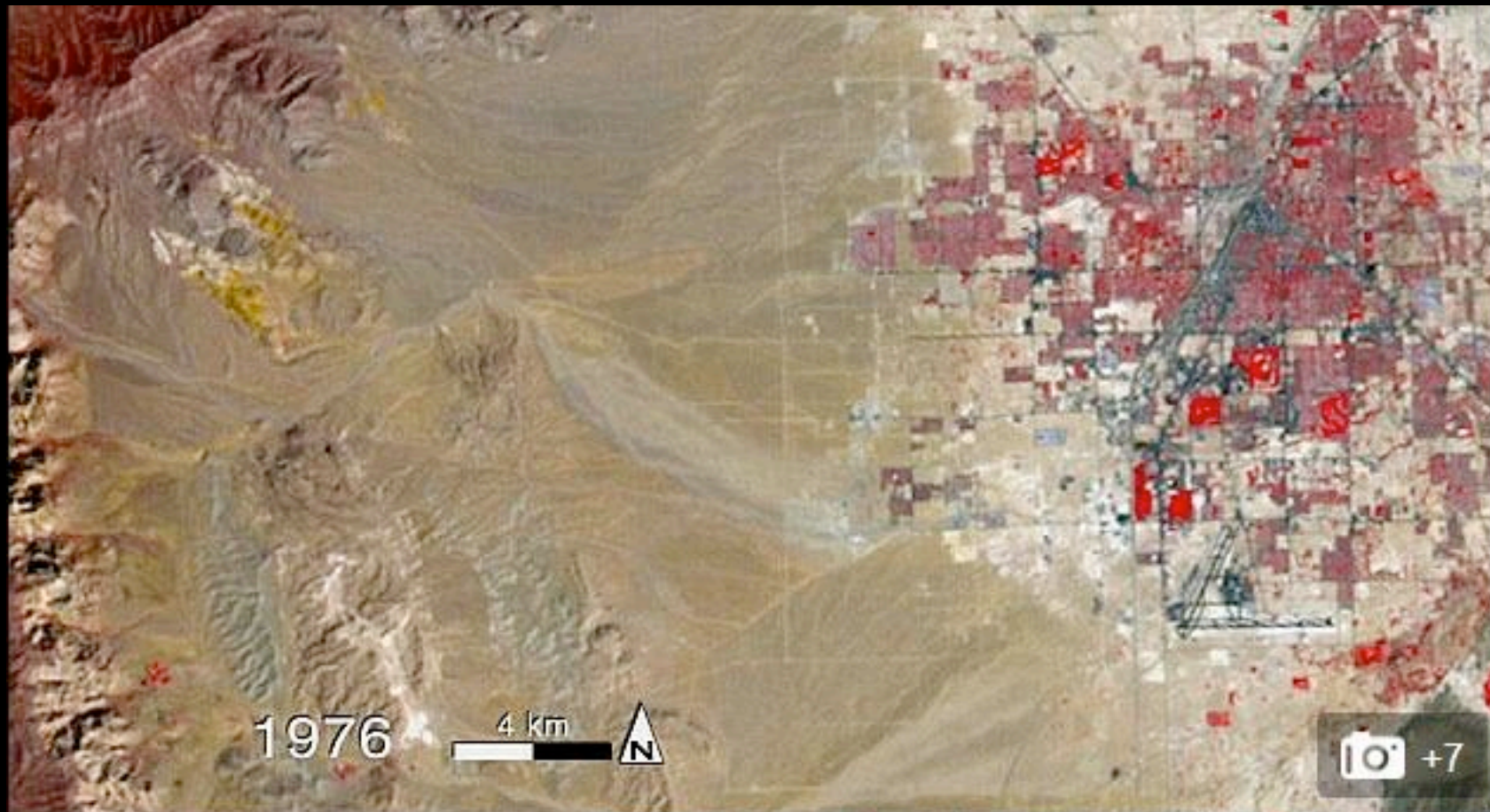
DigitalGlobe False-Color Infrared Imagery, January 2, 2015



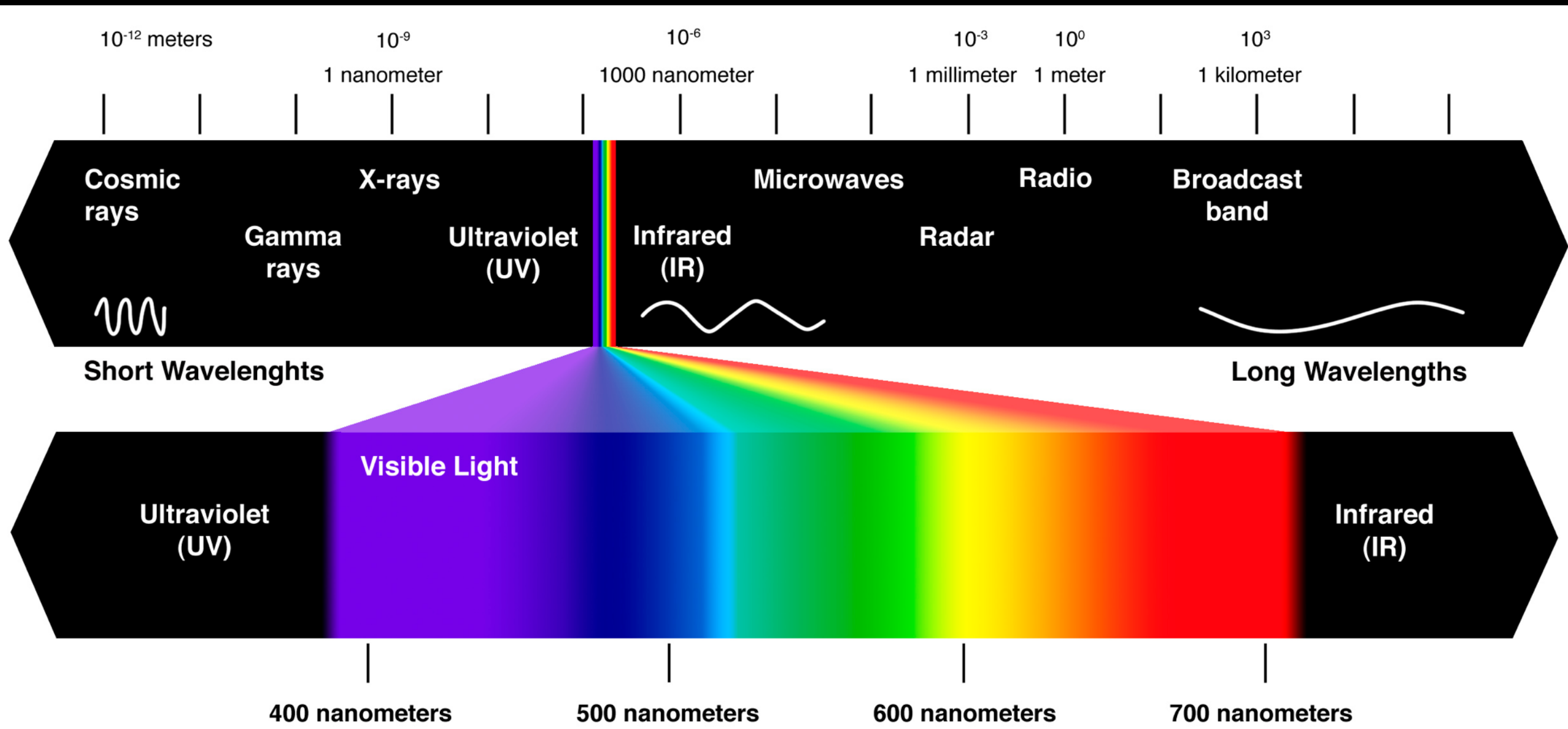
13° 6'33.77"N, 13°52'34.98"E

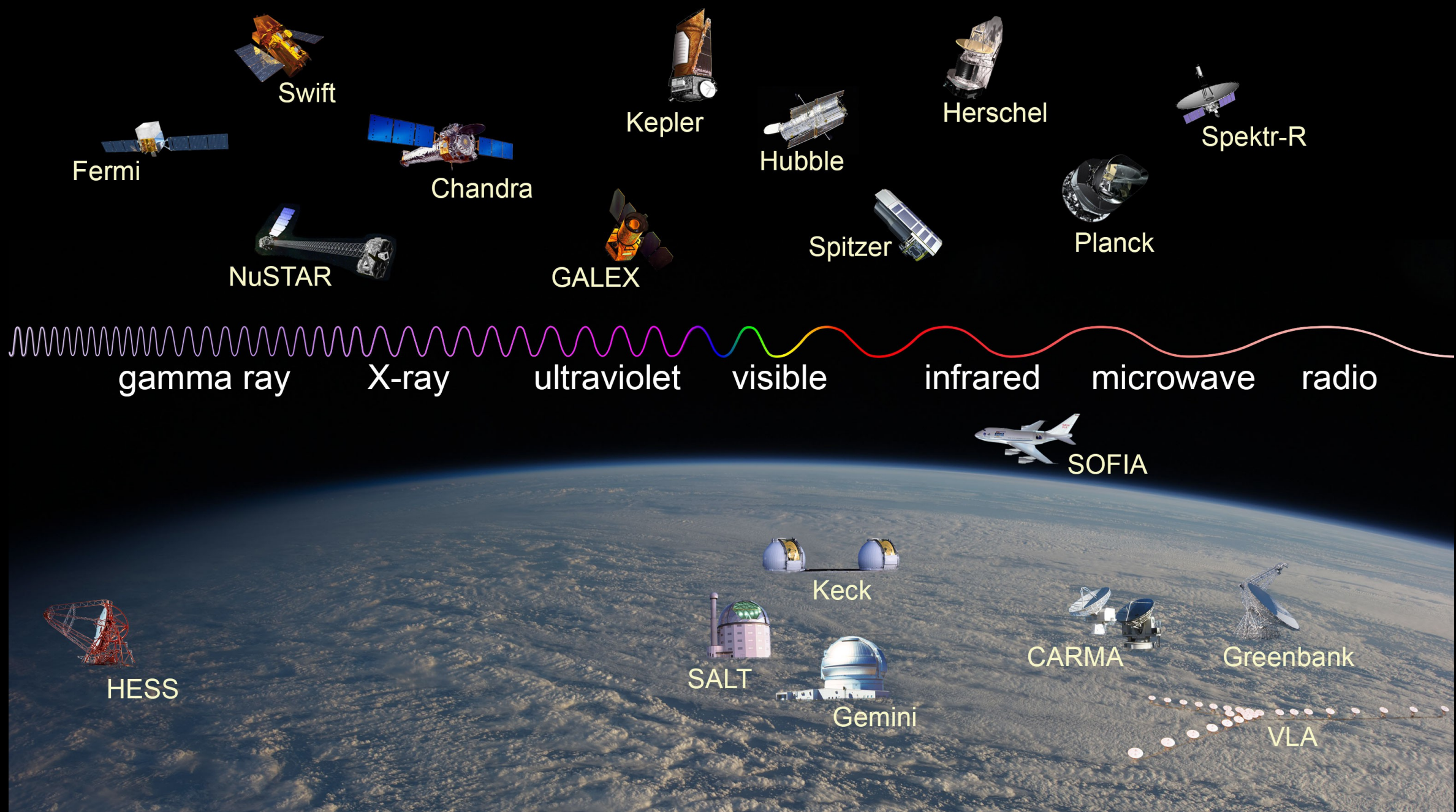
DigitalGlobe False-Color Infrared Imagery, January 7, 2015

<http://www.bagnewsnotes.com/2015/01/the-boko-haram-massacre-from-outer-or-is-it-inner-space/>



USGS/NASA Landsat



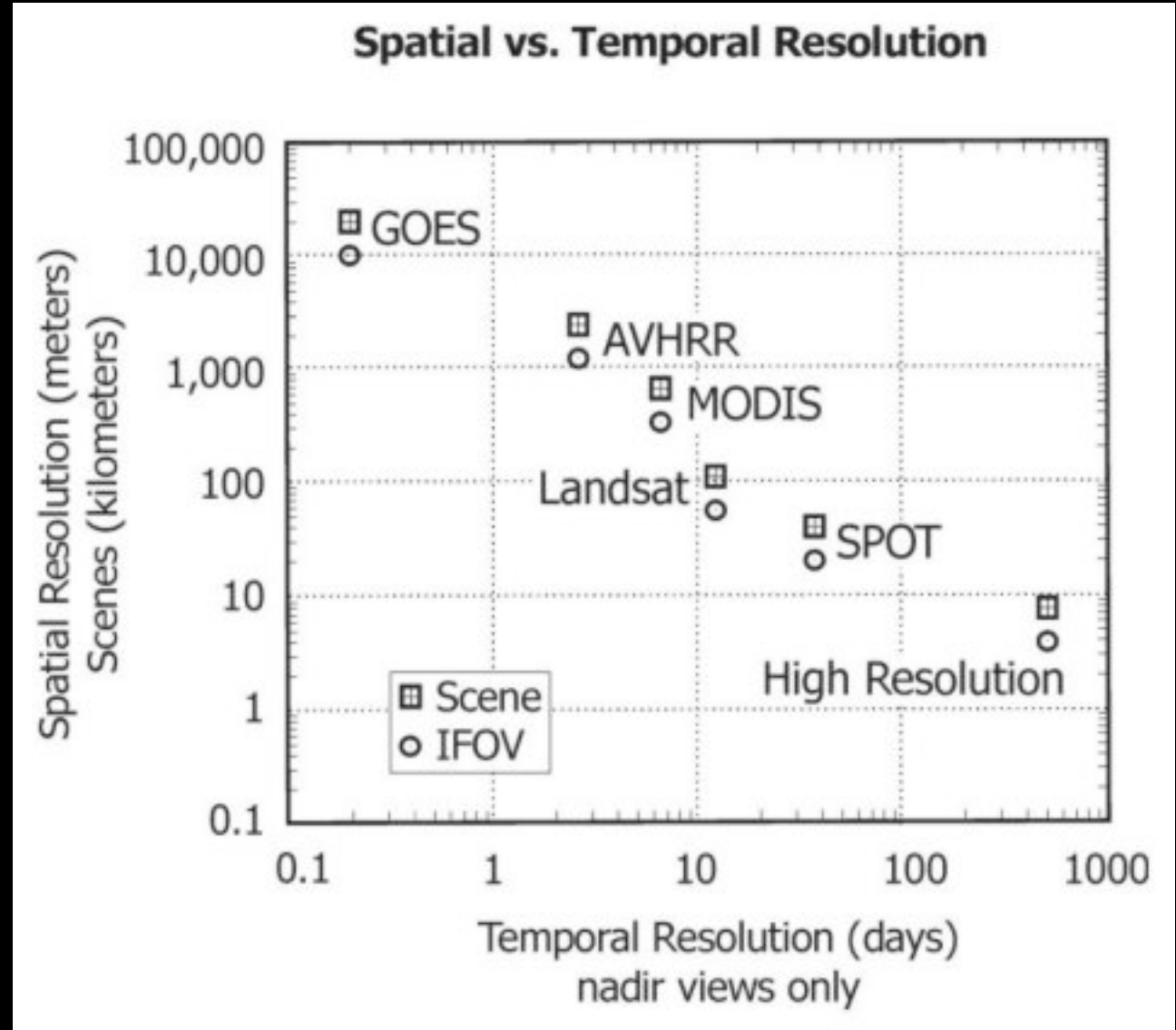
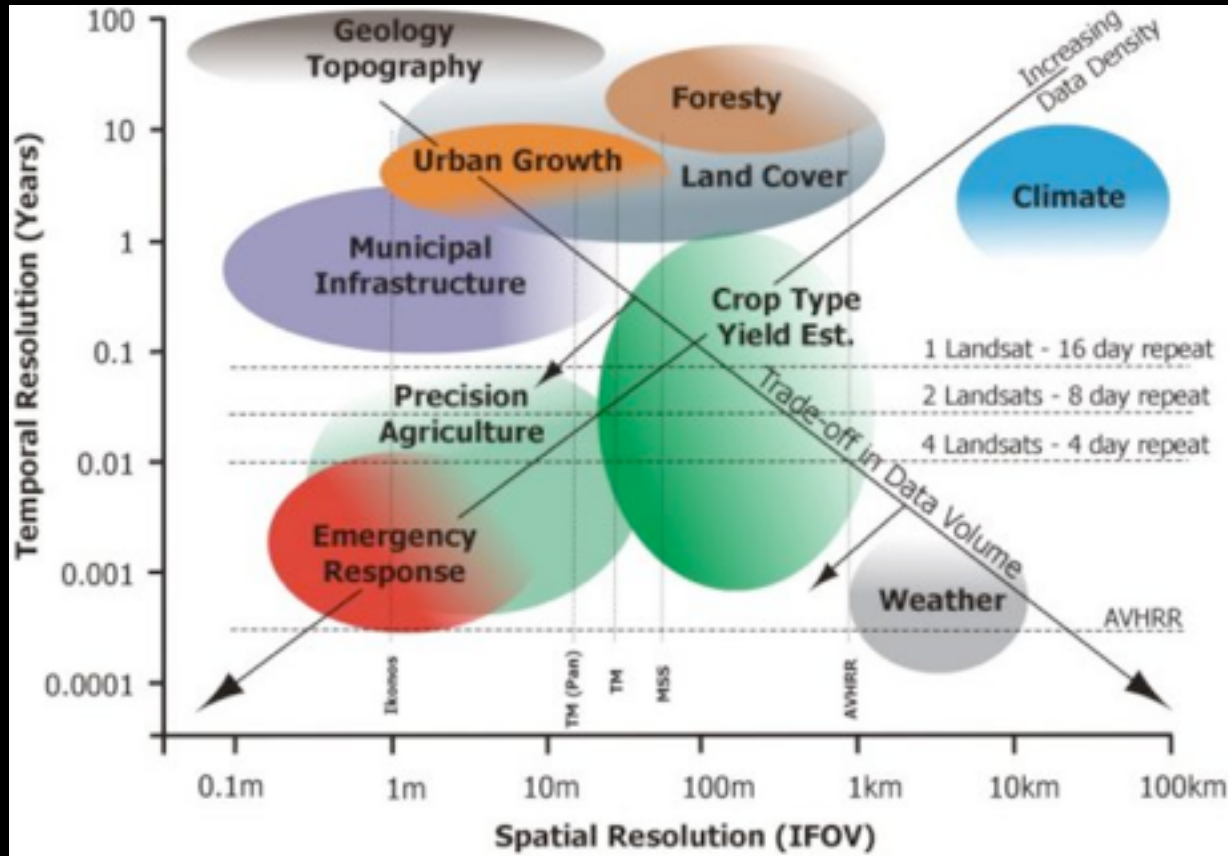


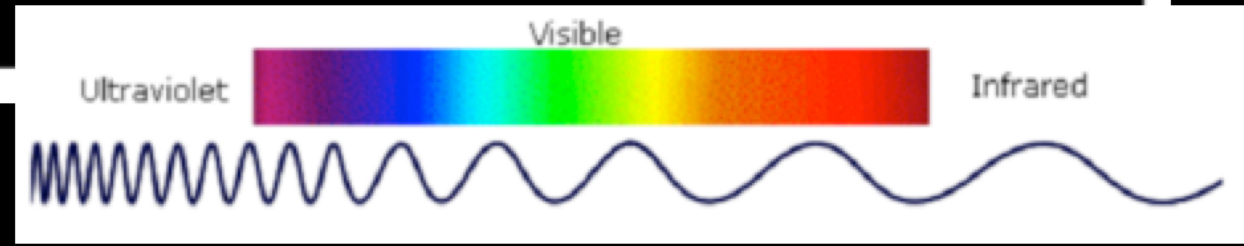
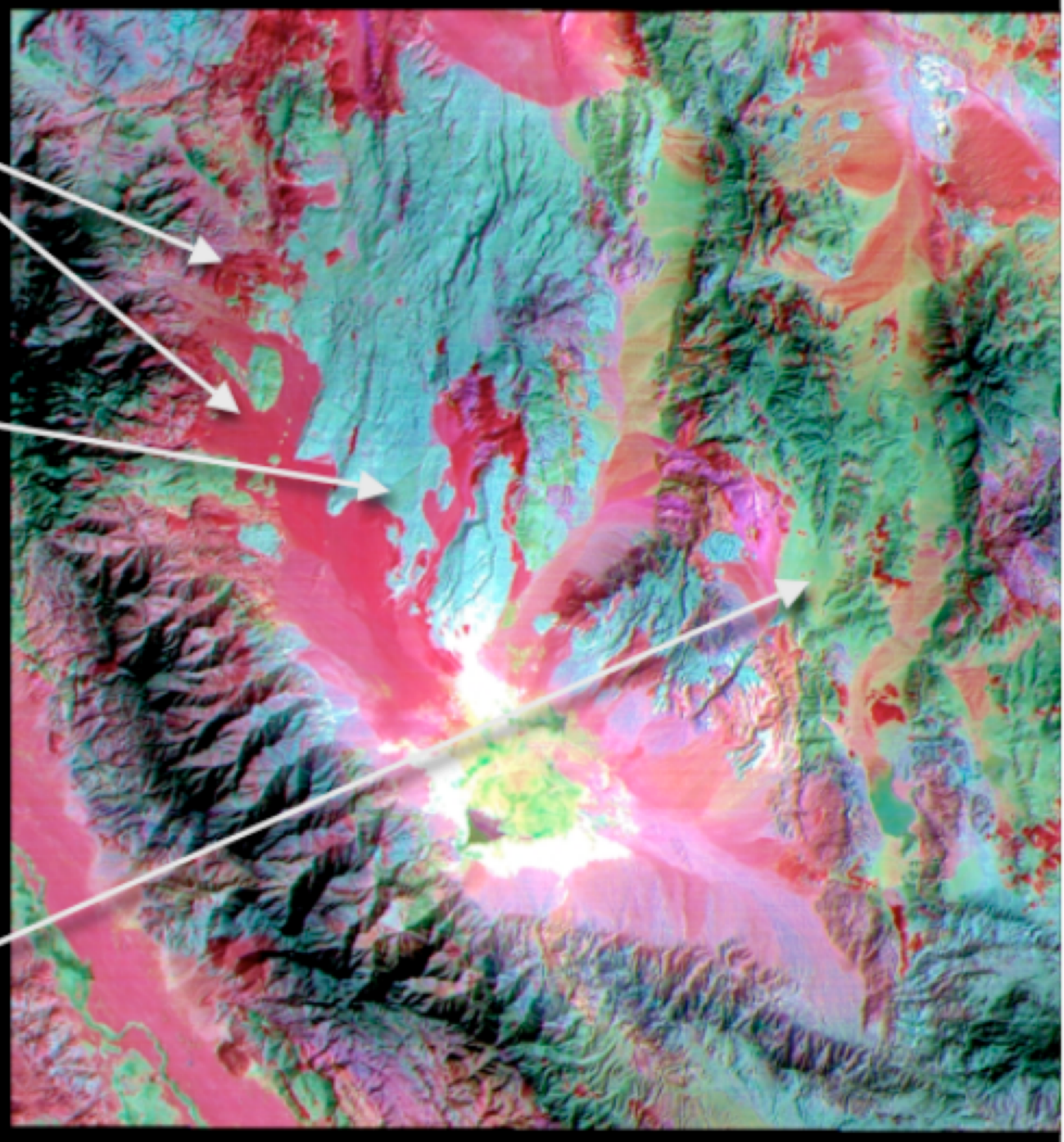
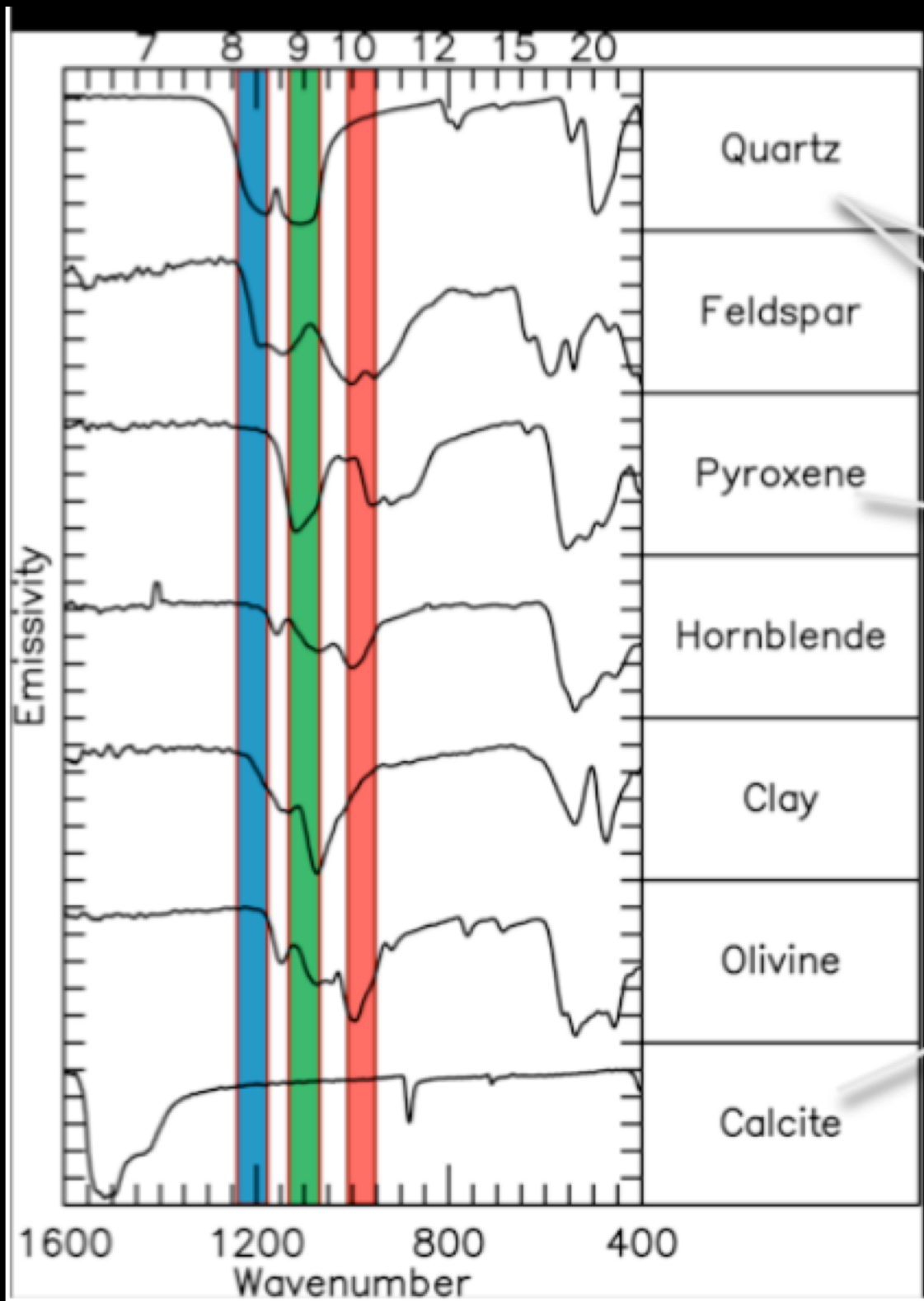
Resolution

Spectral, Spatial, Temporal

Resolución

Espectral, Espacial, Temporal







Red: concrete

Green: grass

Blue: water

Pink: asphalt

Brown & tan: bare soil
and gravel

Dark green: trees

Cyan: roofing
materials

MODIS: 250m resolution

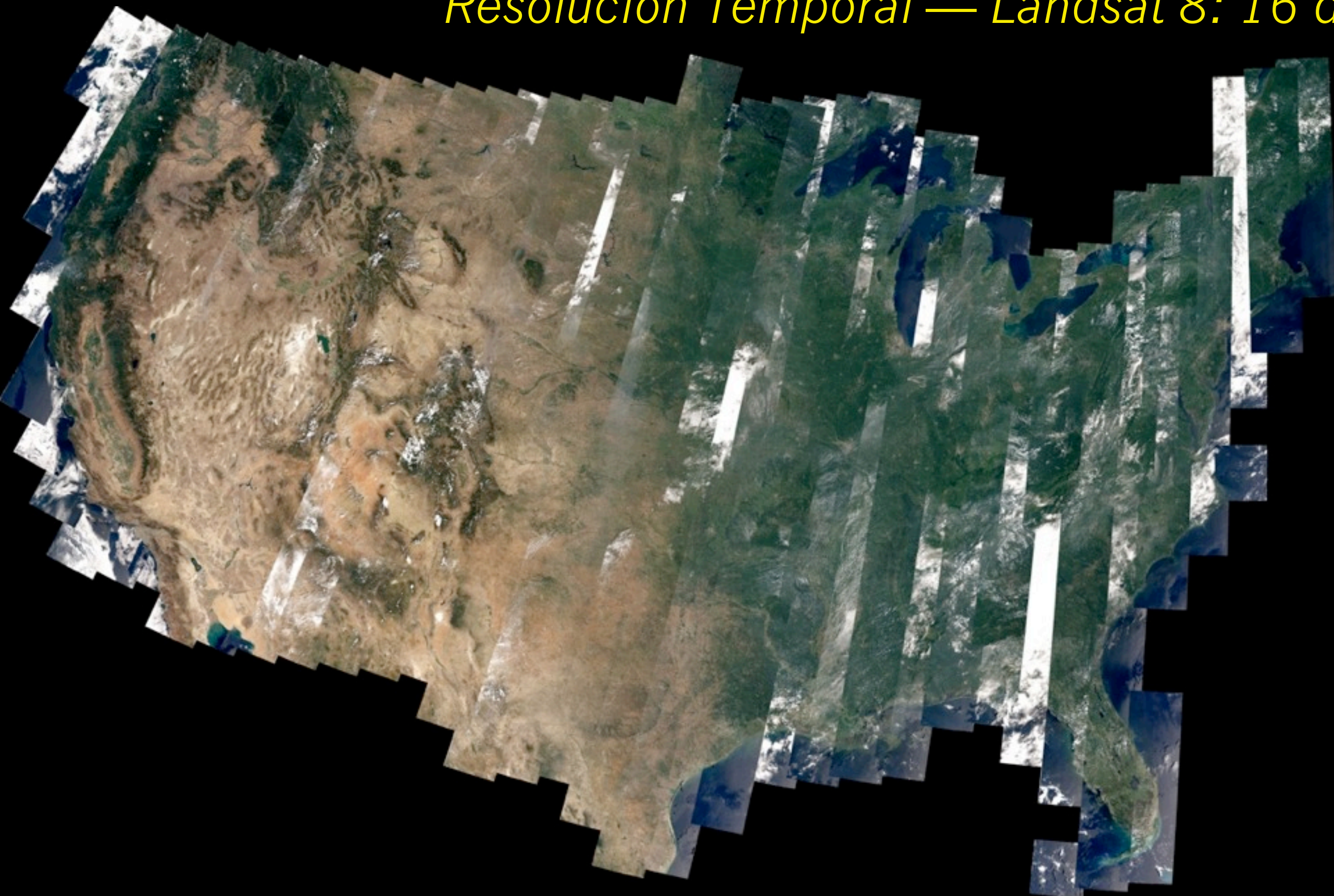


Landsat 8: 15-30m resolution



Temporal Resolution — Landsat 8: 16 days

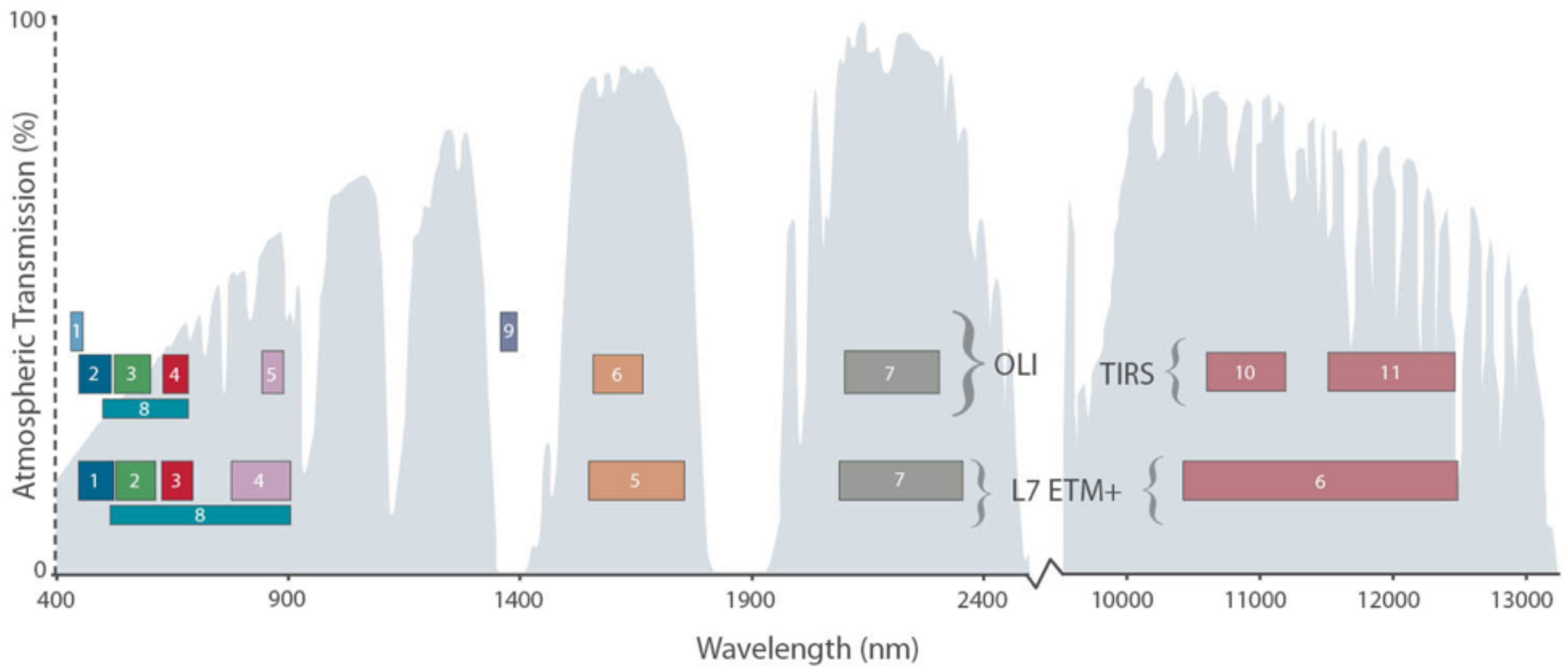
Resolución Temporal — Landsat 8: 16 días



<http://earthobservatory.nasa.gov/IOTD/view.php?id=83099>

Spectral Resolution: Landsat 8

Resolución Espectral — Landsat 8



Spectral Resolution: Landsat 8

Resolución Espectral — Landsat 8

Landsat 8 Operational Land Imager (OLI) and Thermal Infrared Sensor (TIRS) Launched February 11, 2013	Bands	Wavelength (micrometers)	Resolution (meters)
	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	100 * (30)
Band 11 - Thermal Infrared (TIRS) 2	11.50 - 12.51	100 * (30)	

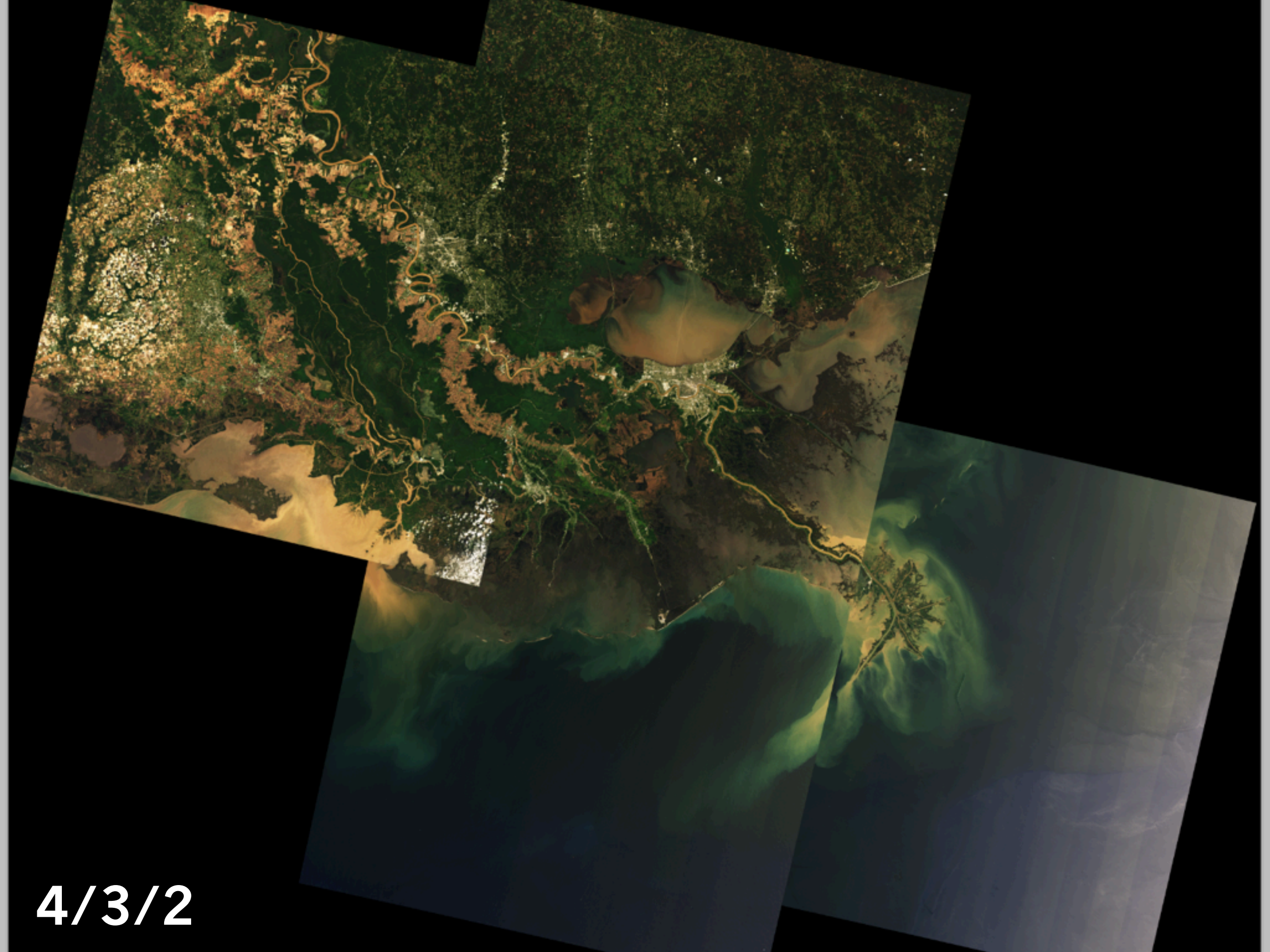
Landsat 8 Band Combinations

Combinaciones de bandas en Landsat 8

Natural Color	4	3	2
False Color (urban)	7	6	4
Color Infrared (vegetation)	5	4	3
Agriculture	6	5	2
Atmospheric Penetration	7	6	5
Healthy Vegetation	5	6	2
Land/Water	5	6	4
Natural With Atmospheric Removal	7	5	3
Shortwave Infrared	7	5	4
Vegetation Analysis	6	5	4

Example: “Losing Ground”

Ejemplo: “Losing Ground”



4/3/2



7/5/3



4/3/2 + 5 mask

2. How to get the data

¿Como obtener los datos?

WorldView: MODIS (preprocessed)

The screenshot displays the NASA WorldView web application interface. The browser address bar shows the URL: https://earthdata.nasa.gov/labs/worldview/?p=geographic&l=MODIS_Aqua_CorrectedReflectance_...

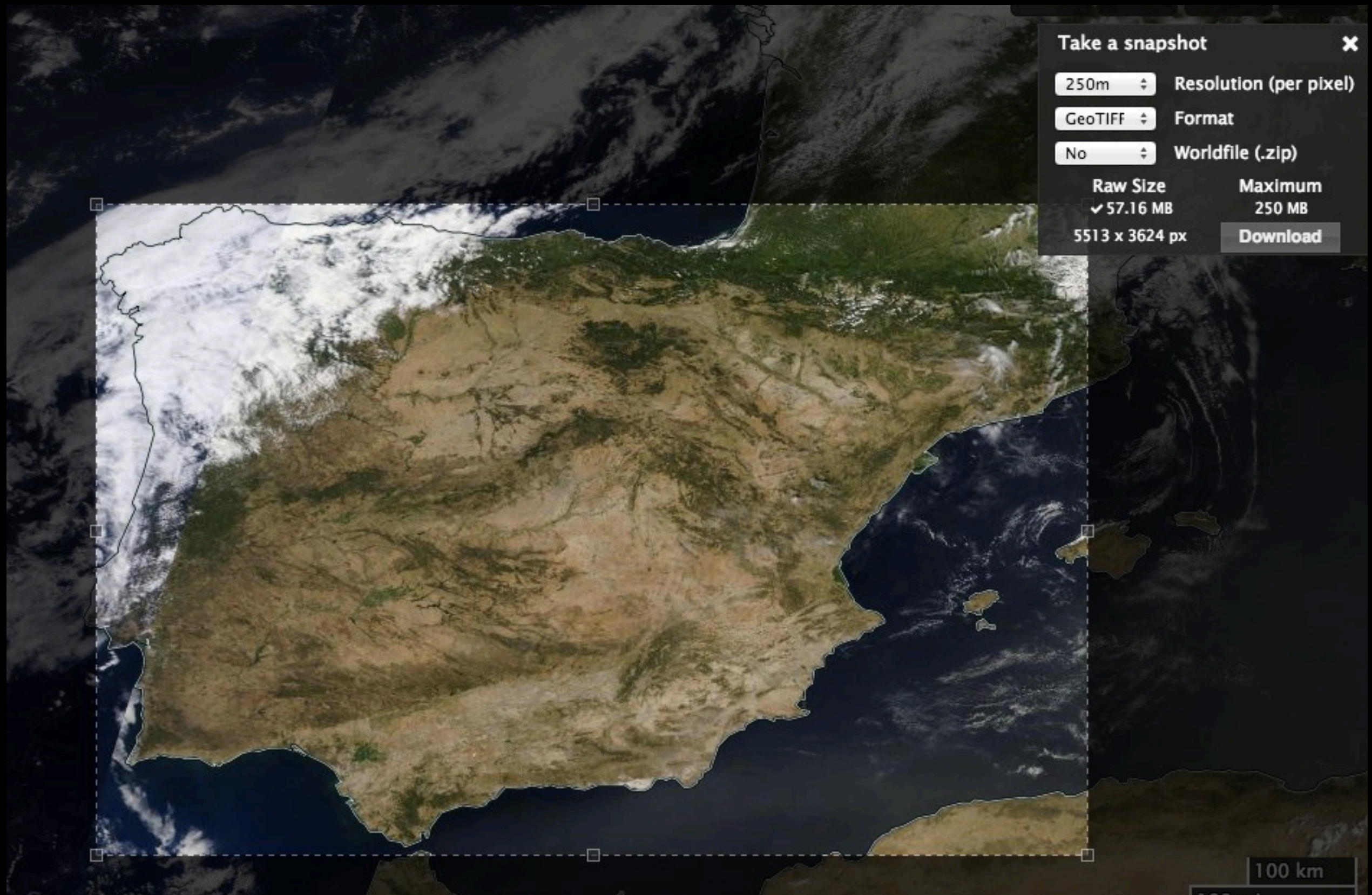
The interface includes a sidebar on the left with the following layers:

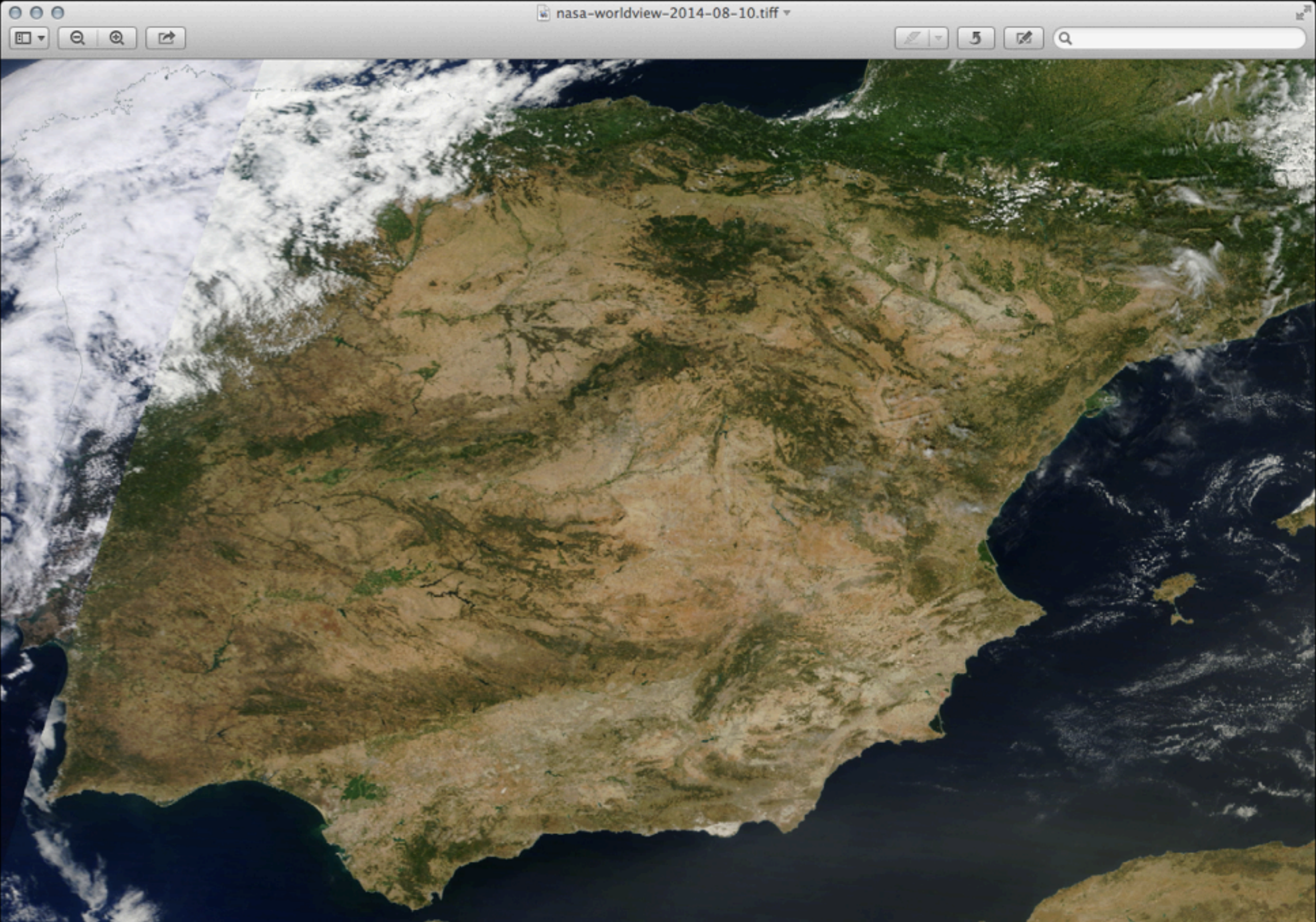
- Active** (with +, download, and up arrows)
- BASE LAYERS**
 - Corrected Reflectance (True Color) Aqua / MODIS
 - Corrected Reflectance (True Color) Terra / MODIS
- OVERLAYS**
 - Place Labels © OpenStreetMap (license), Natural Earth
 - Coastlines / Borders / Roads © OpenStreetMap (license), Natural Earth
 - Coastlines © OpenStreetMap (license)

The main map area shows a satellite view of the Mediterranean region. A scale bar indicates 100 km and 100 mi. The coordinates 41°45'16"N, 2°17'42"W EPSG:4326 are displayed. A timeline at the bottom shows the date 2014 AUG 10, with navigation arrows and a dropdown menu for time intervals (DAYS, MONTHS, YEARS).

<https://earthdata.nasa.gov/labs/worldview/>

WorldView: MODIS (preprocessed)





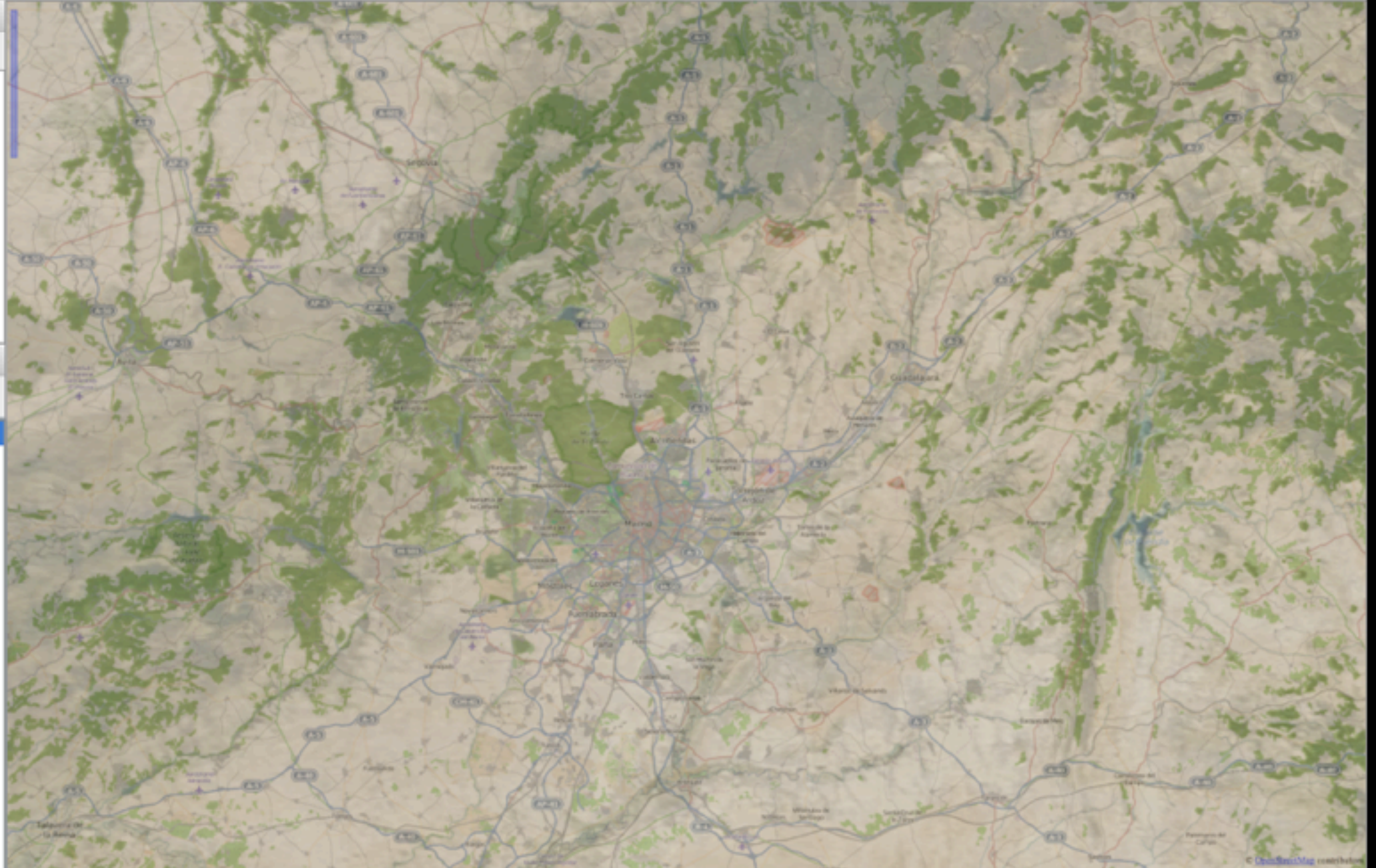


Browser

Home
Favourites
/Volumes
MSSQL
PostGIS
SpatiaLite
OWS
WCS
WFS
WMS

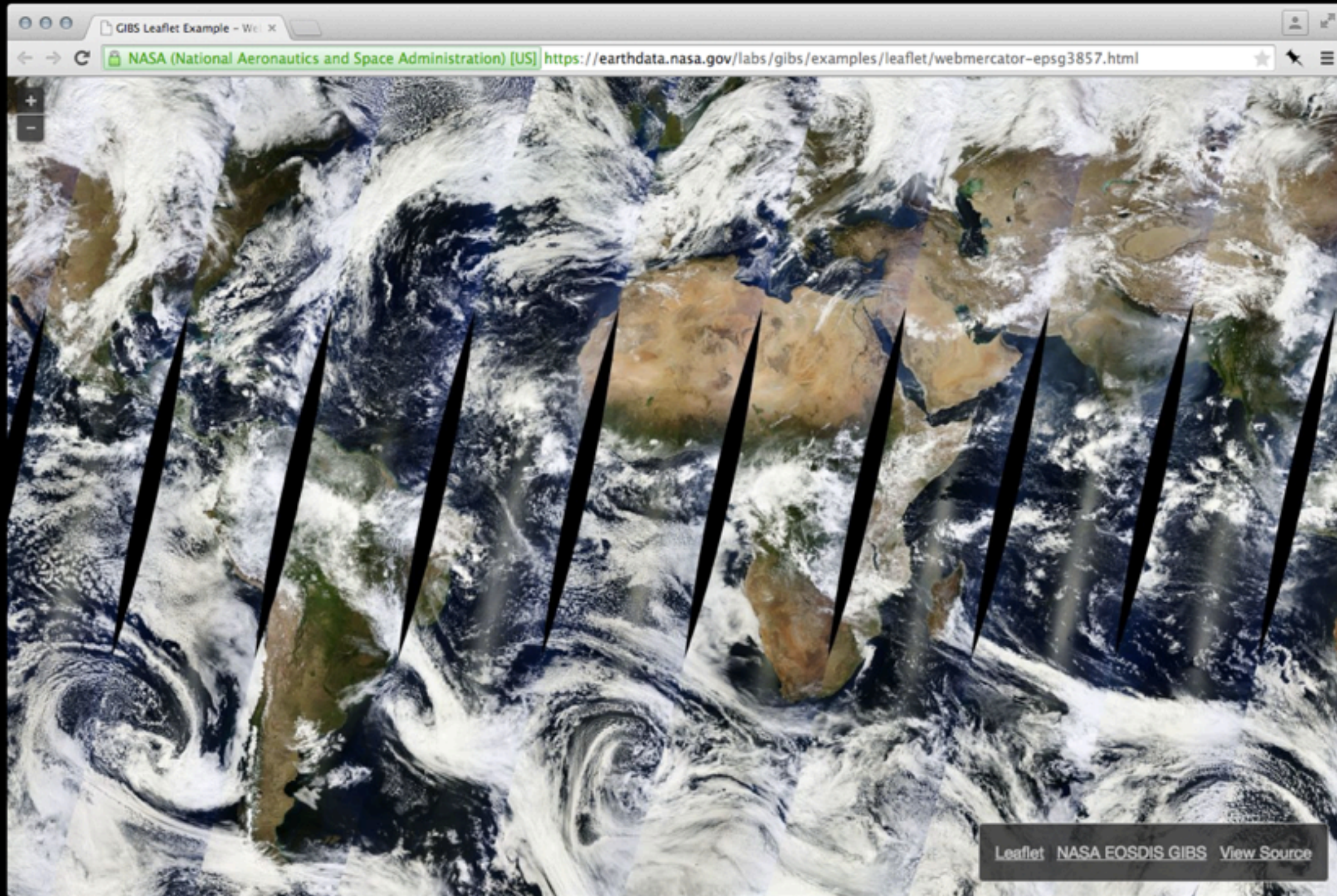
Layers

- nasa-worldview-20...
- OpenStreetMap



Use Directly In Your Own Leaflet/Google Maps

Utilizar en sus propios mapas de Leaflet o Google



<https://github.com/nasa-gibs/gibs-web-examples>

Use Directly In Your Own Leaflet/Google Maps

Utilizar en sus propios mapas de Leaflet o Google

```
"http://map1{s}.vis.earthdata.nasa.gov/wmts-webmerc/" +  
"{layer}/default/{time}/{tileMatrixSet}/{z}/{y}/{x}.jpg";
```

<https://github.com/nasa-gibs/gibs-web-examples>

EarthExplorer (raw data) *EarthExplorer (datos crudo)*

The screenshot displays the EarthExplorer interface. On the left, the '4. Search Results' section lists four data sets with their respective Entity IDs, coordinates, acquisition dates, paths, and rows. Each result includes a small thumbnail image and a set of control icons. The main map area shows a satellite view of Louisiana with a large, semi-transparent data overlay. The overlay is a large, irregular polygon covering a significant portion of the state, with a red border. The map includes labels for various locations such as Baton Rouge, Plaquemine, and New Iberia. The interface also features a search criteria summary, a 'Show Result Controls' dropdown, and a 'Data Set' section with a link to export results. The bottom of the map area contains a Google logo and a disclaimer: 'The up-to-date Google map is not for purchase or for download; it is to be used as a guide for reference and search purposes only.'

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.
Note: You must be logged in to download and order scenes

Show Result Controls

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

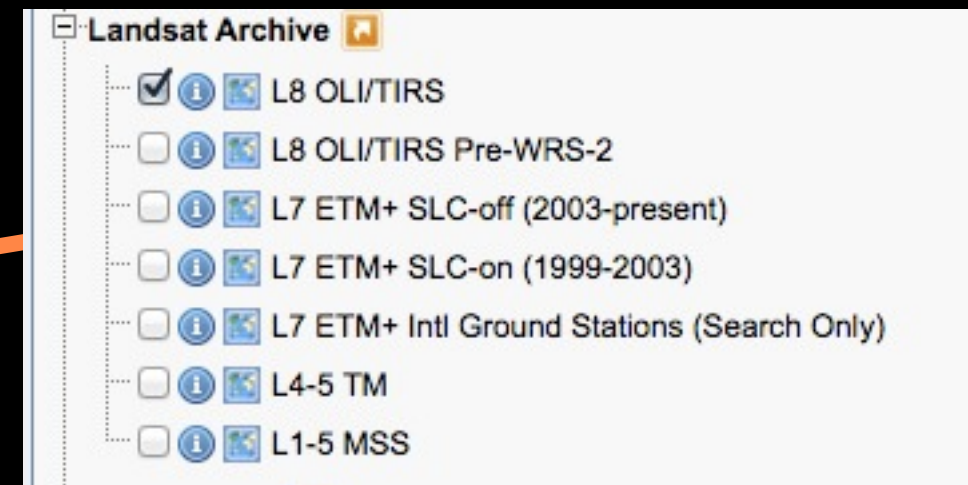
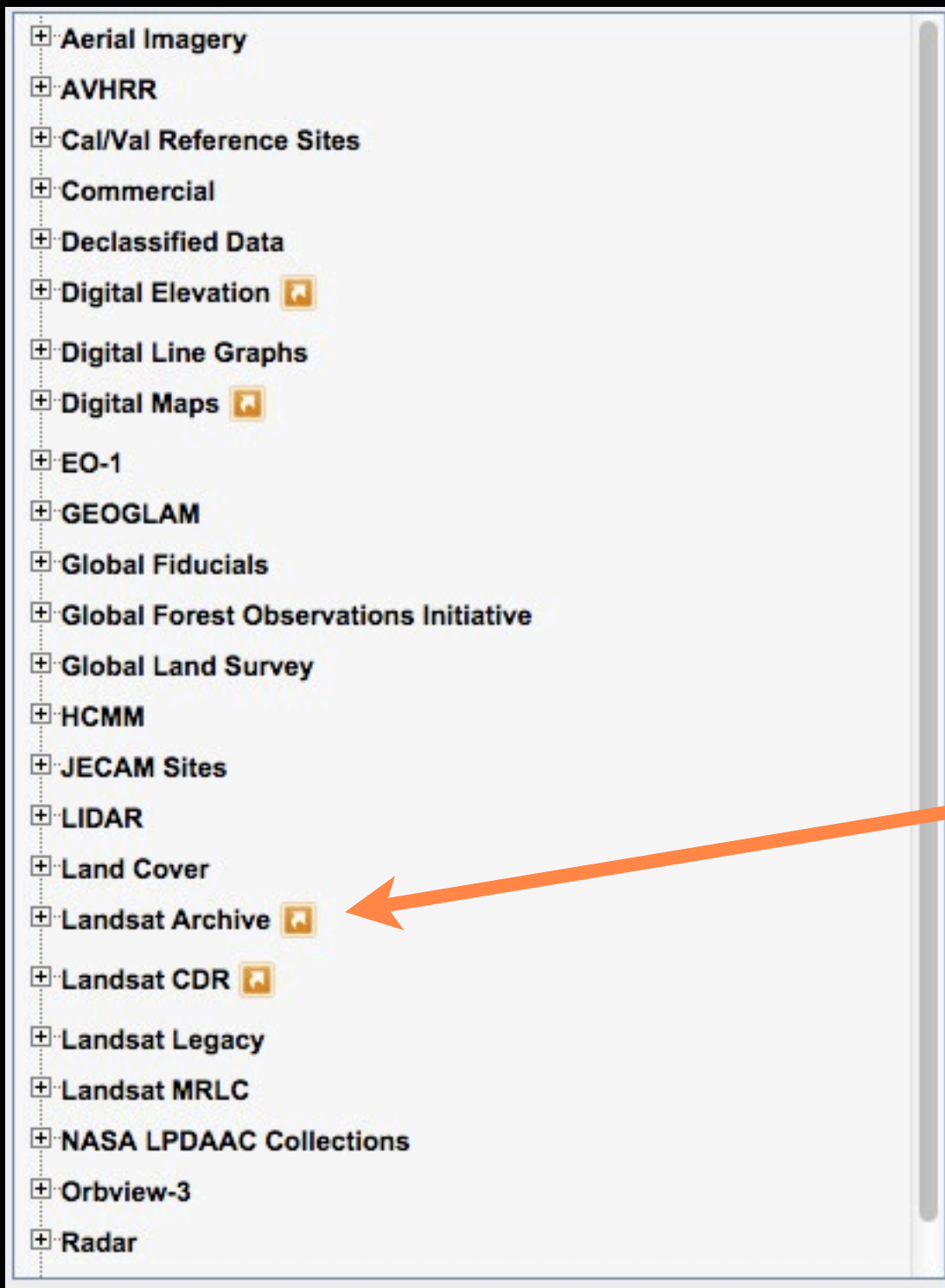
LS OLI/TIRS

5		Entity ID: LC80210392015047LGN00 Coordinates: 30.30605,-88.57946 Acquisition Date: 16-FEB-15 Path: 21 Row: 39
6		Entity ID: LC80230382015045LGN00 Coordinates: 31.74238,-91.2838 Acquisition Date: 14-FEB-15 Path: 23 Row: 38
7		Entity ID: LC80230392015045LGN00 Coordinates: 30.30618,-91.66444 Acquisition Date: 14-FEB-15 Path: 23 Row: 39
8		Entity ID: LC80220382015038LGN00 Coordinates: 31.74201,-89.75133 Acquisition Date: 07-FEB-15 Path: 22 Row: 38

Entity ID: LC80220392015038LGN00

<http://earthexplorer.usgs.gov>

EarthExplorer



<http://earthexplorer.usgs.gov>

EarthExplorer

3. Additional Criteria (Optional)

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

Data Sets:

L8 OLI/TIRS

OLI_TIRS
TIRS

Data Type Level 1

All
Level 1GT
Level 1T

Data Type Level 0Rp

All
Level 0Rp

Cloud Cover

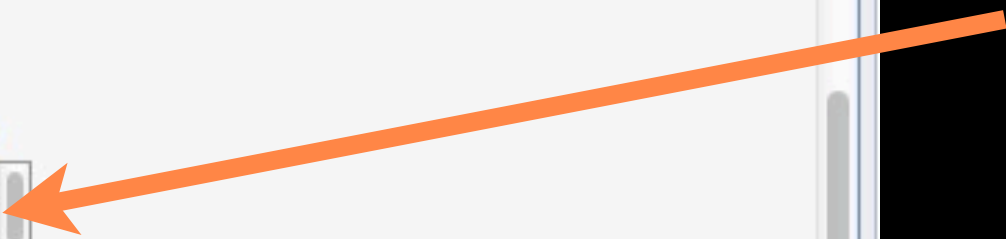
All
Less than 10%
Less than 20%
Less than 30%
Less than 40%

Day/Night

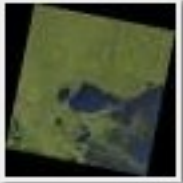
All
Day
Night

Nadir/Off Nadir


All
Nadir



EarthExplorer

7 

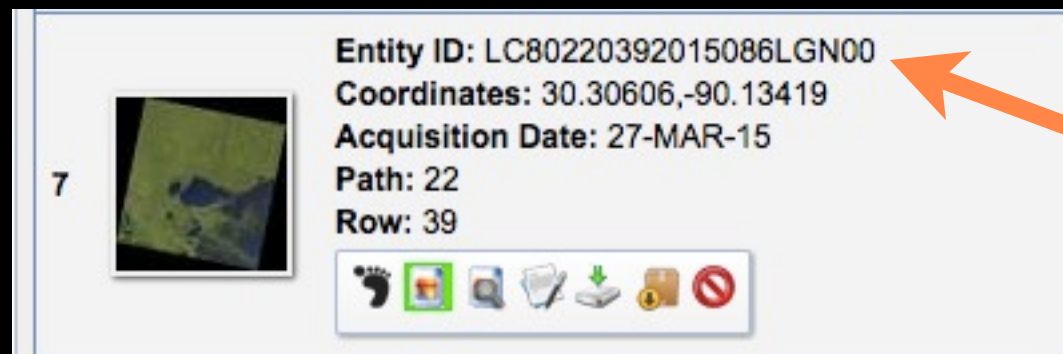
Entity ID: LC80220392015086LGN00
Coordinates: 30.30606,-90.13419
Acquisition Date: 27-MAR-15
Path: 22
Row: 39



Download Options ✕

- [Download](#) LandsatLook "Natural Color" Image (8.0 MB)
- [Download](#) LandsatLook "Thermal" Image (2.6 MB)
- [Download](#) LandsatLook "Quality" Image (564.6 KB)
- [Download](#) LandsatLook images with Geographic Reference (11.1 MB)
- [Download](#) Level 1 GeoTIFF Data Product (875.1 MB)

Hint! *¡Consejo!*



Entity ID: LC80220392015086LGN00
Coordinates: 30.30606,-90.13419
Acquisition Date: 27-MAR-15
Path: 22
Row: 39

landsat-util

<https://github.com/developmentseed/landsat-util>

```
> pip install landsat-util
```

```
> landsat download LC80220392015086LGN00
```

Landsat on AWS

<http://aws.amazon.com/public-data-sets/landsat/>

3. How to process the data *¿Como procesar los datos?*

Two Methods *¿Como procesar los datos?*

- 1. Open Source Software + Command Line Tools**
- 2. Photoshop**

Landsat 8 scene / bands

File	Band Name	Bandwidth (μm)	Resolution (m)
LC80140322014139LGN00_B1.TIF	Coastal	.43 – 0.45	30
LC80140322014139LGN00_B2.TIF	Blue	0.45 – 0.51	30
LC80140322014139LGN00_B3.TIF	Green	0.53 – 0.59	30
LC80140322014139LGN00_B4.TIF	Red	0.64 – 0.67	30
LC80140322014139LGN00_B5.TIF	NIR	0.85 – 0.88	30
LC80140322014139LGN00_B6.TIF	SWIR 1	1.57 – 1.65	30
LC80140322014139LGN00_B7.TIF	SWIR 2	2.11 – 2.29	30
LC80140322014139LGN00_B8.TIF	Pan	0.50 – 0.68	15
LC80140322014139LGN00_B9.TIF	Cirrus	1.36 – 1.38	30
LC80140322014139LGN00_B10.TIF	TIRS 1	10.6 – 11.19	100
LC80140322014139LGN00_B11.TIF	TIRS 2	11.5 – 12.51	100
LC80140322014139LGN00_BQA.TIF			
LC80140322014139LGN00_MTL.txt	metadata		

GDAL

```
> brew install gdal
```

```
> sudo apt-get install gdal-bin
```

Windows: <http://trac.osgeo.org/osgeo4w/wiki>

ImageMagick/convert (Photoshop of the command line)

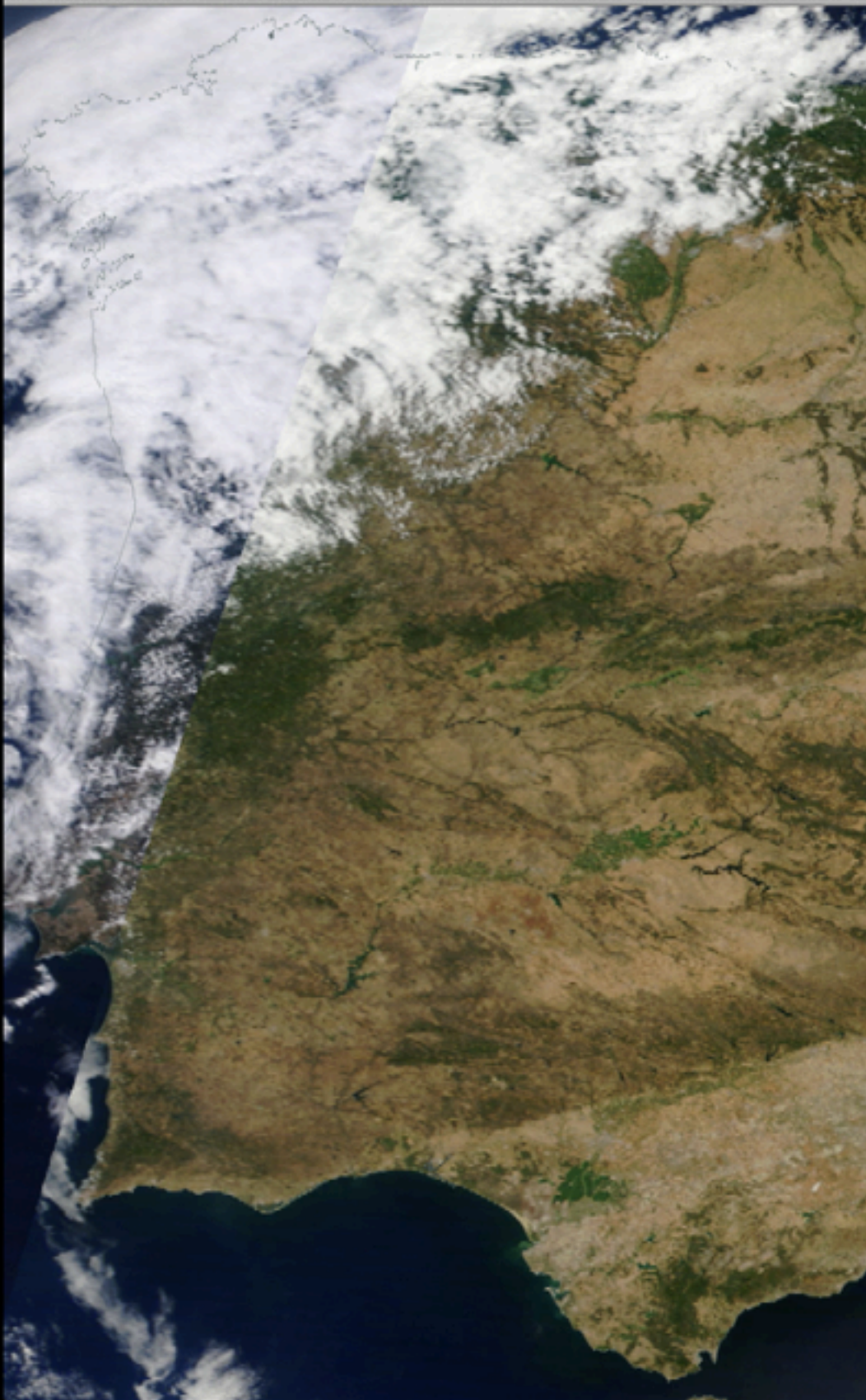
```
> brew install --with-libtiff imagemagick
```

```
> sudo apt-get install --with-libtiff imagemagick
```

Windows: <http://www.imagemagick.org/script/binary-releases.php>

gdalinfo – report information about a file.
gdal_translate – Copy a raster file, with control of output format.
gdaladdo – Add overviews to a file.
gdalwarp – Warp an image into a new coordinate system.
gdaltindex – Build a MapServer raster tileindex.
gdalbuildvrt – Build a VRT from a list of datasets.
gdal_contour – Contours from DEM.
gdaldem – Tools to analyze and visualize DEMs.
rgb2pct.py – Convert a 24bit RGB image to 8bit paletted.
pct2rgb.py – Convert an 8bit paletted image to 24bit RGB.
gdal_merge.py – Build a quick mosaic from a set of images.
gdal2tiles.py – Create a TMS tile structure, KML and simple web viewer.
gdal_rasterize – Rasterize vectors into raster file.
gdaltransform – Transform coordinates.
nearblack – Convert nearly black/white borders to exact value.
gdal_retile.py – Retiles a set of tiles and/or build tiled pyramid levels.
gdal_grid – Create raster from the scattered data.
gdal_proximity.py – Compute a raster proximity map.
gdal_polygonize.py – Generate polygons from raster.
gdal_sieve.py – Raster Sieve filter.
gdal_fillnodata.py – Interpolate in nodata regions.
gdallocationinfo – Query raster at a location.
gdalsrsinfo – Report a given SRS in different formats. (GDAL >= 1.9.0)
gdalmove.py – Transform the coordinate system of a file (GDAL >= 1.10)
gdal_edit.py – Edit in place various information of an existing GDAL dataset (projection, geotransform, nodata, metadata)
gdal_calc.py – Command line raster calculator with numpy syntax
gdal-config – Get options required to build software using GDAL.
gdalmanage – Identify, copy, rename and delete raster.
gdalcompare.py – Compare two images and report on differences.

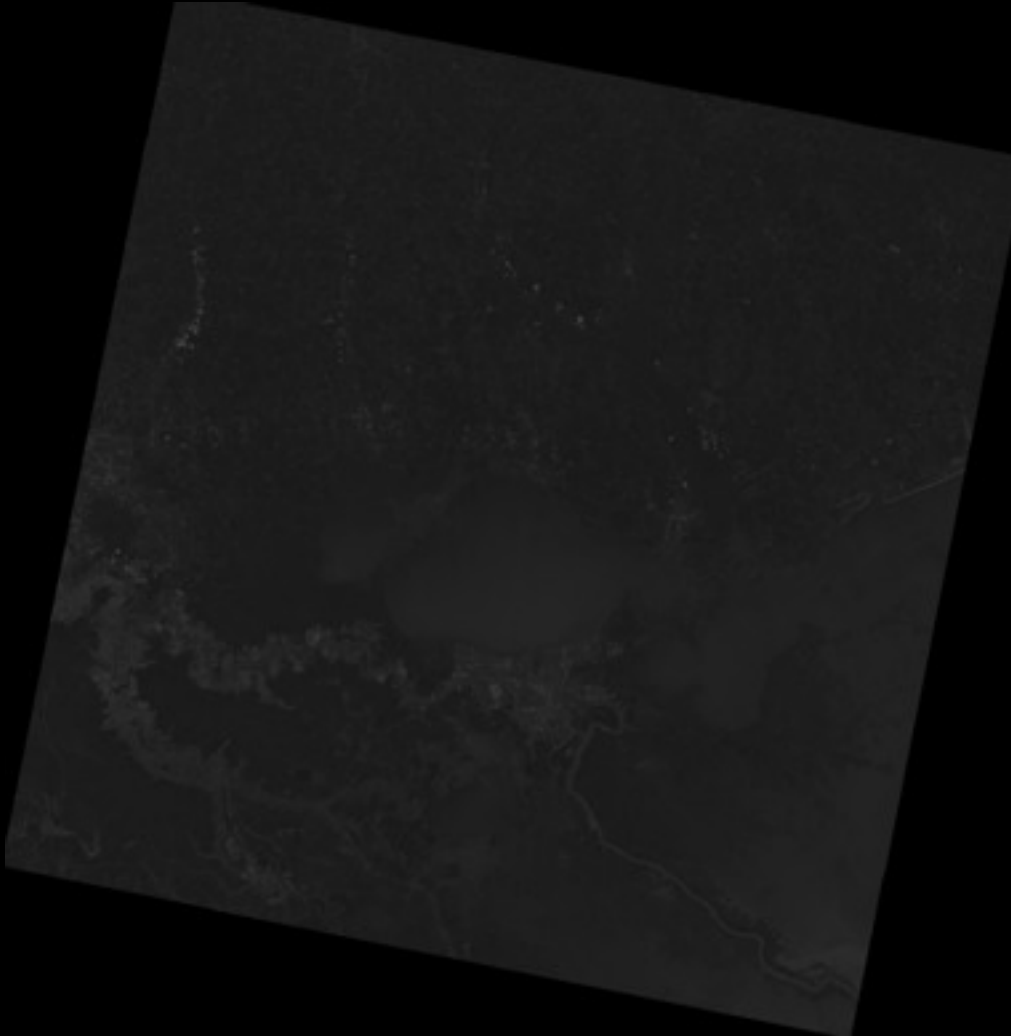
http://www.gdal.org/gdal_utilities.html



```

$ gdalinfo nasa-worldview-2014-08-10.tiff
Driver: GTiff/GeoTIFF
Files: nasa-worldview-2014-08-10.tiff
Size is 5513, 3624
Coordinate System is:
GEOGCS["WGS 84",
    DATUM["WGS_1984",
        SPHEROID["WGS 84",6378137,298.257223563,
            AUTHORITY["EPSG","7030"]],
        AUTHORITY["EPSG","6326"]],
    PRIMEM["Greenwich",0],
    UNIT["degree",0.0174532925199433],
    AUTHORITY["EPSG","4326"]]
Origin = (-9.397740235709779,43.846409438391717)
Pixel Size = (0.002197265625000,-0.002197265625000)
Metadata:
  AREA_OR_POINT=Area
  TIFFTAG_RESOLUTIONUNIT=2 (pixels/inch)
  TIFFTAG_XRESOLUTION=72
  TIFFTAG_YRESOLUTION=72
Image Structure Metadata:
  INTERLEAVE=PIXEL
Corner Coordinates:
Upper Left  ( -9.3977402,  43.8464094) ( 9d23'51.86"W, 43d50'47.07"N)
Lower Left  ( -9.3977402,  35.8835188) ( 9d23'51.86"W, 35d53' 0.67"N)
Upper Right (  2.7157852,  43.8464094) ( 2d42'56.83"E, 43d50'47.07"N)
Lower Right (  2.7157852,  35.8835188) ( 2d42'56.83"E, 35d53' 0.67"N)
Center      ( -3.3409775,  39.8649641) ( 3d20'27.52"W, 39d51'53.87"N)
Band 1 Block=5513x1 Type=Byte, ColorInterp=Red
Band 2 Block=5513x1 Type=Byte, ColorInterp=Green
Band 3 Block=5513x1 Type=Byte, ColorInterp=Blue

```

```
$ gdalinfo LC80220392015086LGN00_B4.TIF
Driver: GTiff/GeoTIFF
Files: LC80220392015086LGN00_B4.TIF
Size is 7541, 7701
Coordinate System is:
PROJCS["WGS 84 / UTM zone 15N",
  GEOGCS["WGS 84",
    DATUM["WGS_1984",
      SPHEROID["WGS 84",6378137,298.257223563,
        AUTHORITY["EPSG","7030"]],
      AUTHORITY["EPSG","6326"]],
    PRIMEM["Greenwich",0],
    UNIT["degree",0.0174532925199433],
    AUTHORITY["EPSG","4326"]],
  PROJECTION["Transverse_Mercator"],
  PARAMETER["latitude_of_origin",0],
  PARAMETER["central_meridian",-93],
  PARAMETER["scale_factor",0.9996],
  PARAMETER["false_easting",500000],
  PARAMETER["false_northing",0],
  UNIT["metre",1,
    AUTHORITY["EPSG","9001"]],
  AUTHORITY["EPSG","32615"]]
Origin = (662385.0000000000000000,3471015.0000000000000000)
Pixel Size = (30.0000000000000000,-30.0000000000000000)
Metadata:
  AREA_OR_POINT=Point
Image Structure Metadata:
  INTERLEAVE=BAND
Corner Coordinates:
Upper Left  ( 662385.000, 3471015.000) ( 91d17'33.56"W, 31d21'44.30"N)
Lower Left  ( 662385.000, 3239985.000) ( 91d19'42.34"W, 29d16'42.10"N)
Upper Right ( 888615.000, 3471015.000) ( 88d55' 3.62"W, 31d18'31.28"N)
Lower Right ( 888615.000, 3239985.000) ( 89d 0'10.70"W, 29d13'44.46"N)
Center      ( 775500.000, 3355500.000) ( 90d 8' 7.67"W, 30d17'59.84"N)
Band 1 Block=7541x1 Type=UInt16, ColorInterp=Gray
```


Let's use GDAL tools to combine band files to make our satellite map.

Usamos instrumentos GDAL para combinar bandas y hacer una mapa satélite

1. Reproject to 3857

Reproyectar a 3857

```
> for band in {4,3,2}
do
gdalwarp -t_srs EPSG:3857 LC80220392015086LGN00_B$band.TIF
LC80220392015086LGN00_B$band-projected.tif
done
```

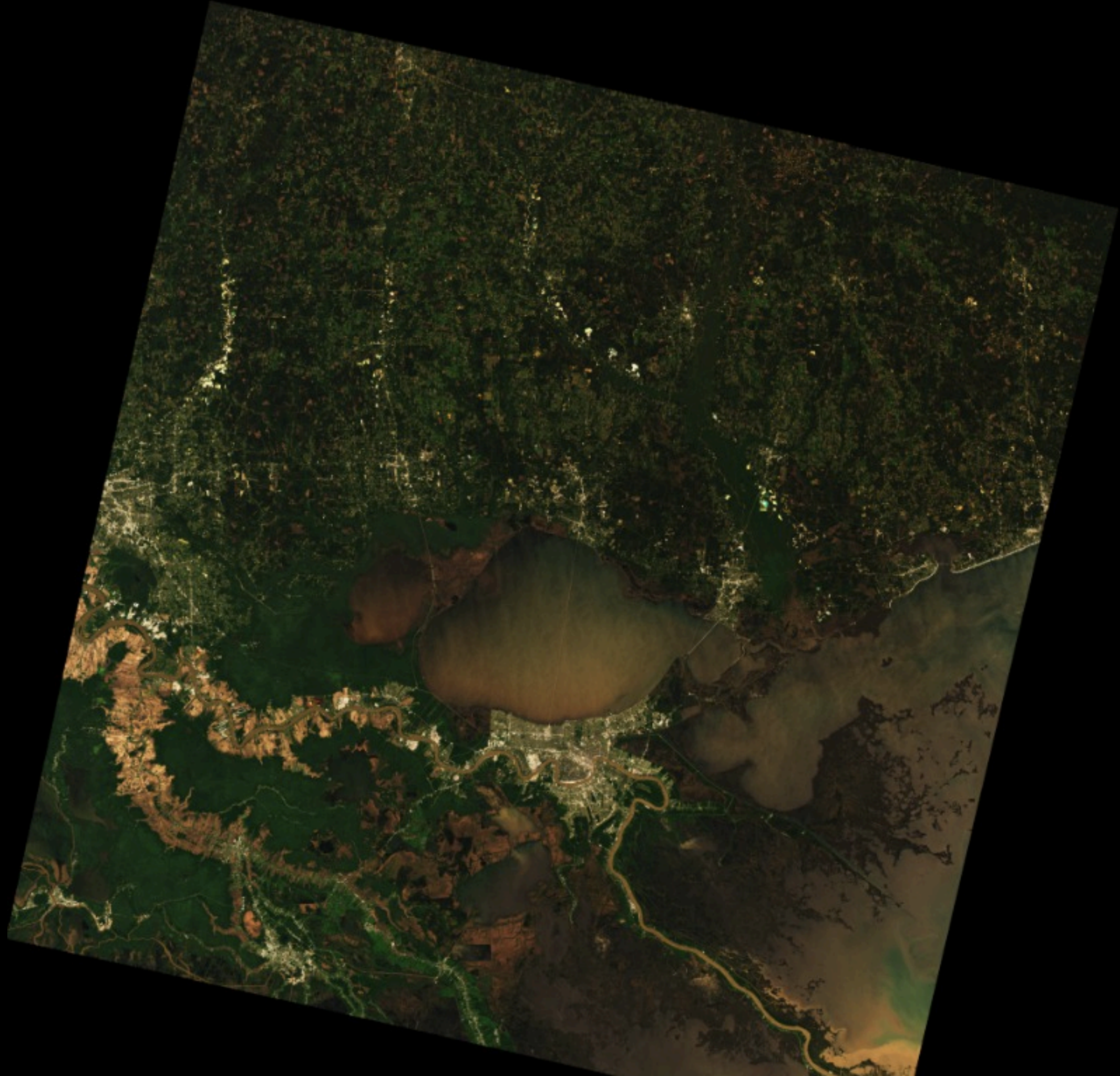

2. Combine & Adjust

Combinar y Ajustar

```
> convert -combine LC80220392015086LGN00_B{4,3,2}-projected.tif  
LC80220392015086LGN00_RGB-projected.tif
```

```
> convert -channel B -gamma 0.925 -channel R -gamma 1.03 -channel  
RGB -sigmoidal-contrast 50x16% LC80220392015086LGN00_RGB-  
projected.tif LC80220392015086LGN00_RGB-projected-corrected.tif
```

```
> convert -depth 8 LC80220392015086LGN00_RGB-projected-corrected.tif  
LC80220392015086LGN00_RGB-projected-corrected-8bit.tif
```

3. Rescue geo headers *Rescatar "geo headers"*

```
> listgeo -tfw LC80220392015086LGN00_B4-projected.tif
```

```
> mv LC80220392015086LGN00_B4-projected.tfw  
LC80220392015086LGN00_RGB-projected-corrected-8bit.tfw
```

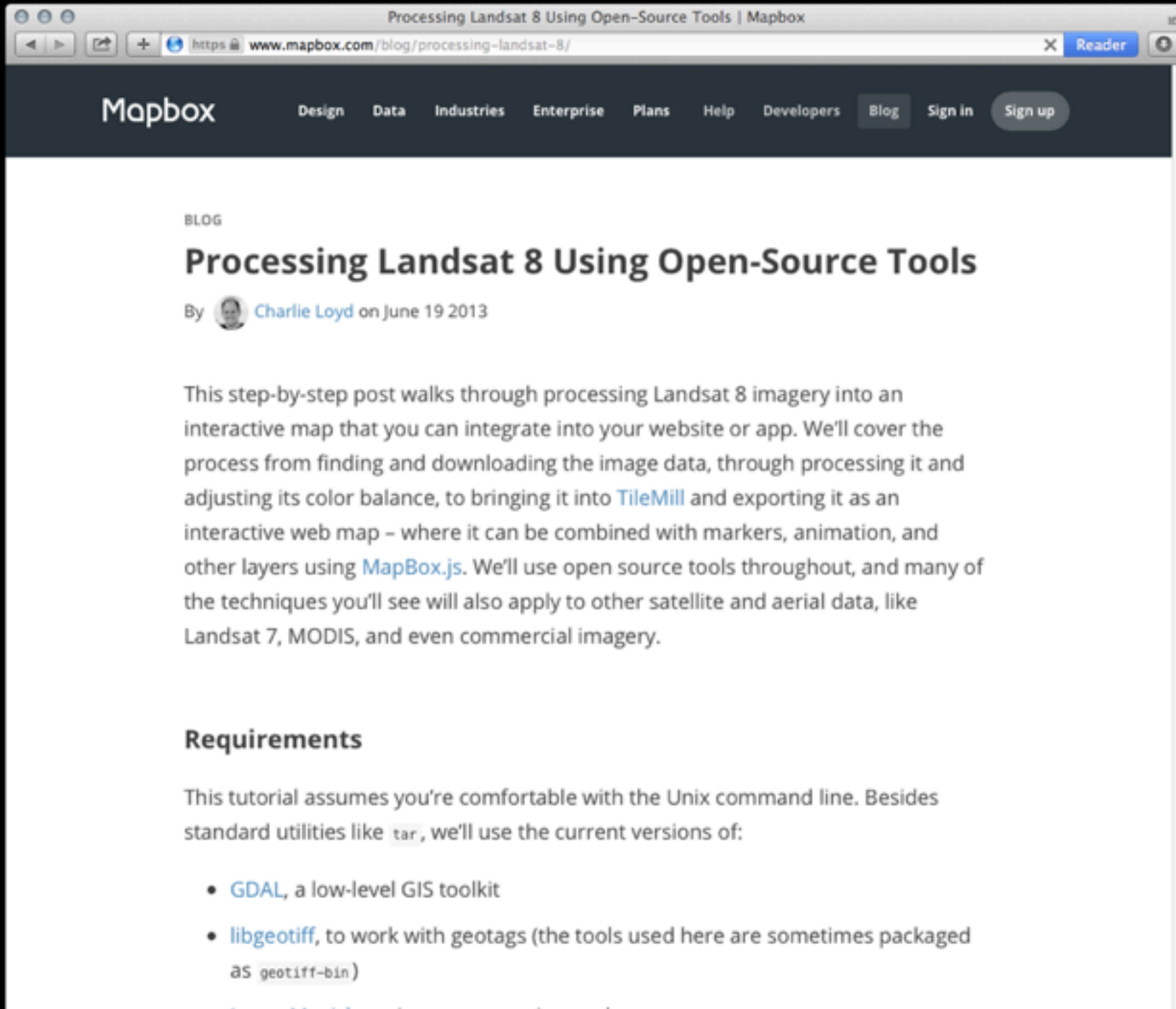
```
> gdal_edit.py -a_srs EPSG:3857 LC80220392015086LGN00_RGB-projected-  
corrected-8bit.tif
```

```
> gdal_translate -a_nodata 0 LC80220392015086LGN00_RGB-projected-  
corrected-8bit.tif LC80220392015086LGN00_RGB-projected-  
corrected-8bit-nodata.tif
```


What we just did

Lo que acabamos de hacer

<https://www.mapbox.com/blog/processing-landsat-8/>




The screenshot shows a web browser window with the address bar displaying `https://www.mapbox.com/blog/processing-landsat-8/`. The page header includes the Mapbox logo and navigation links for Design, Data, Industries, Enterprise, Plans, Help, Developers, Blog, Sign in, and Sign up. The main content area features a blog post titled "Processing Landsat 8 Using Open-Source Tools" by Charlie Loyd, dated June 19, 2013. The post's introductory text describes a step-by-step guide to processing Landsat 8 imagery into an interactive map. A "Requirements" section follows, listing tools like GDAL, libgeotiff, and ImageMagick.

Processing Landsat 8 Using Open-Source Tools | Mapbox

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BLOG

Processing Landsat 8 Using Open-Source Tools

By  Charlie Loyd on June 19 2013

This step-by-step post walks through processing Landsat 8 imagery into an interactive map that you can integrate into your website or app. We'll cover the process from finding and downloading the image data, through processing it and adjusting its color balance, to bringing it into [TileMill](#) and exporting it as an interactive web map – where it can be combined with markers, animation, and other layers using [MapBox.js](#). We'll use open source tools throughout, and many of the techniques you'll see will also apply to other satellite and aerial data, like Landsat 7, MODIS, and even commercial imagery.

Requirements

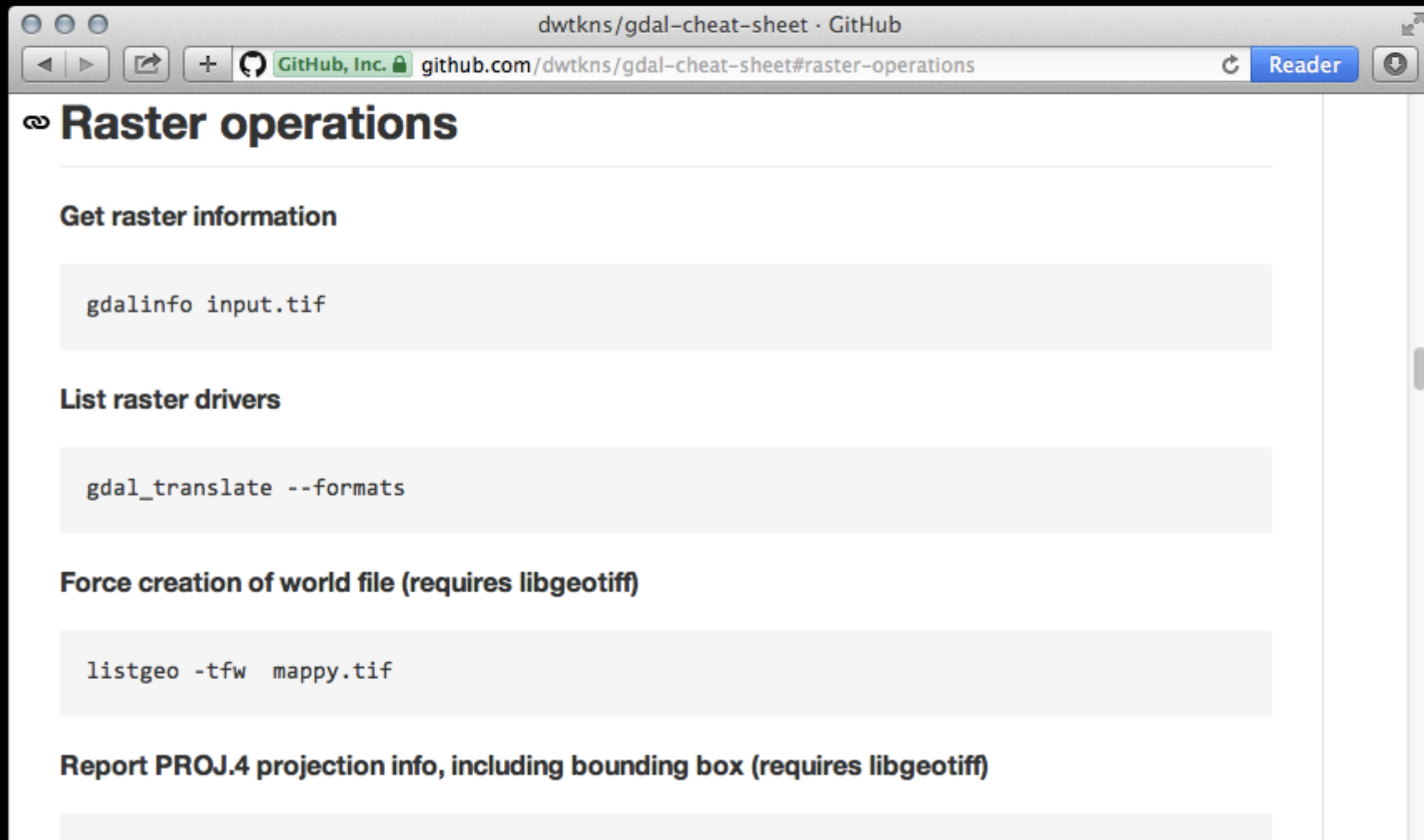
This tutorial assumes you're comfortable with the Unix command line. Besides standard utilities like `tar`, we'll use the current versions of:

- [GDAL](#), a low-level GIS toolkit
- [libgeotiff](#), to work with geotags (the tools used here are sometimes packaged as `geotiff-bin`)
- [ImageMagick](#), an image processing package

Derek Watkins' GDAL cheat sheet

Consejos 'GDAL' de Derek Watkins

<https://github.com/dwtkns/gdal-cheat-sheet#raster-operations>



The screenshot shows a web browser window displaying a GitHub page. The browser's address bar shows the URL `github.com/dwtkns/gdal-cheat-sheet#raster-operations`. The page title is "dwtkns/gdal-cheat-sheet · GitHub". The main content area is titled "Raster operations" and contains several sections with code snippets:

- Get raster information**
`gdalinfo input.tif`
- List raster drivers**
`gdal_translate --formats`
- Force creation of world file (requires libgeotiff)**
`listgeo -tfw mappy.tif`
- Report PROJ.4 projection info, including bounding box (requires libgeotiff)**

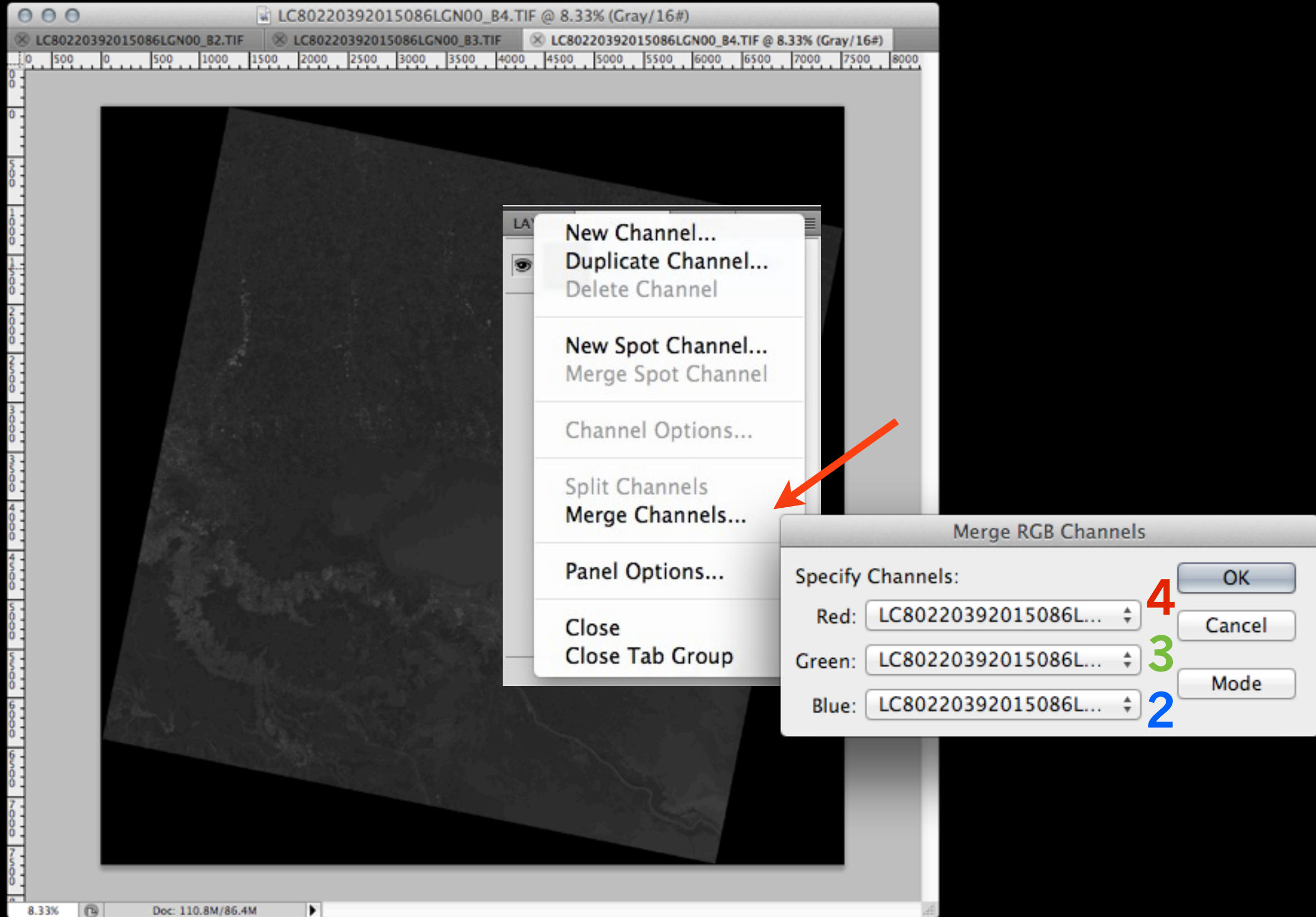
Or, with landsat-util

> landsat process LC80220392015086LGN00

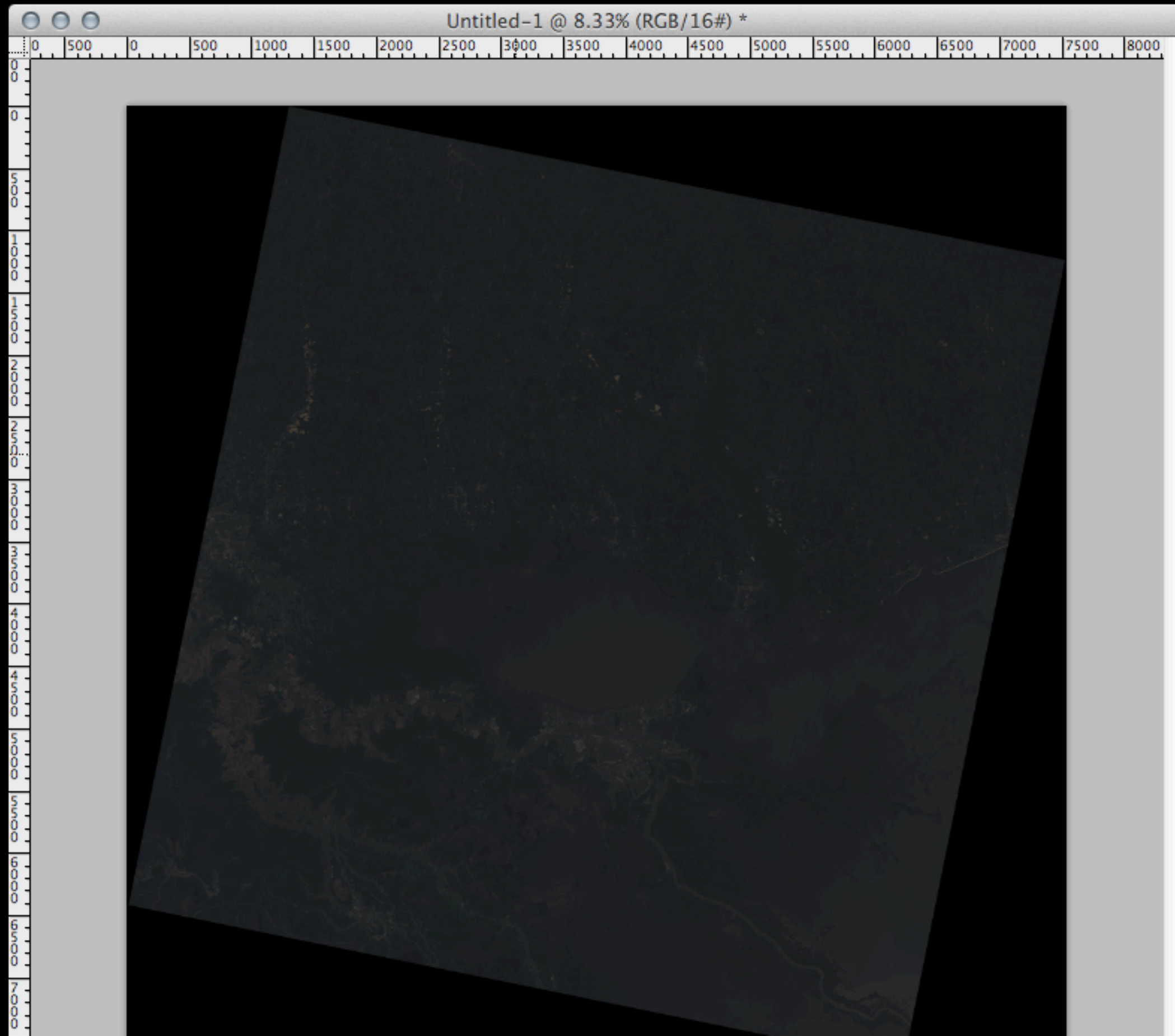
Con 'landsat-util'



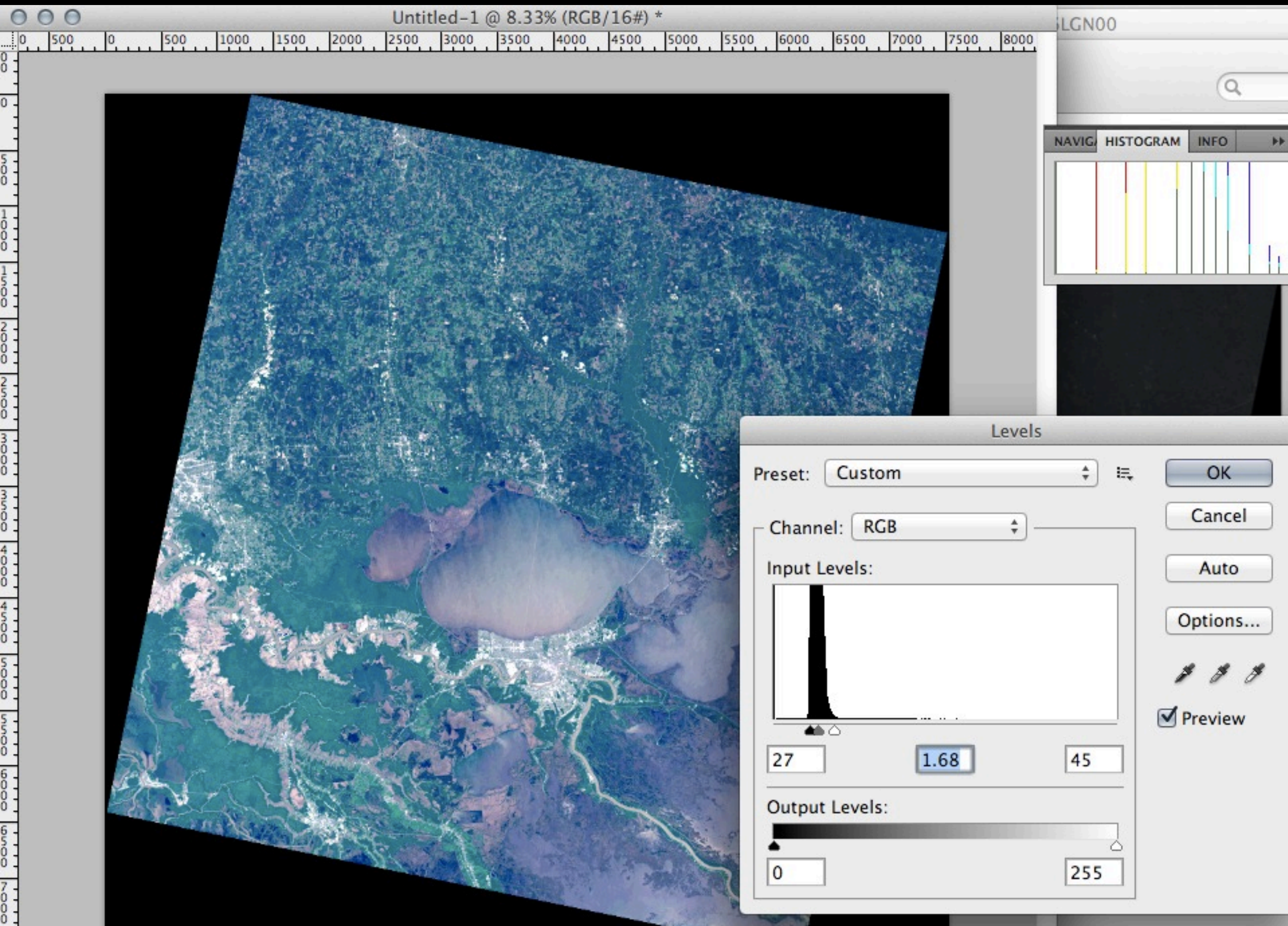
Or, with Photoshop *Con "Photoshop"*



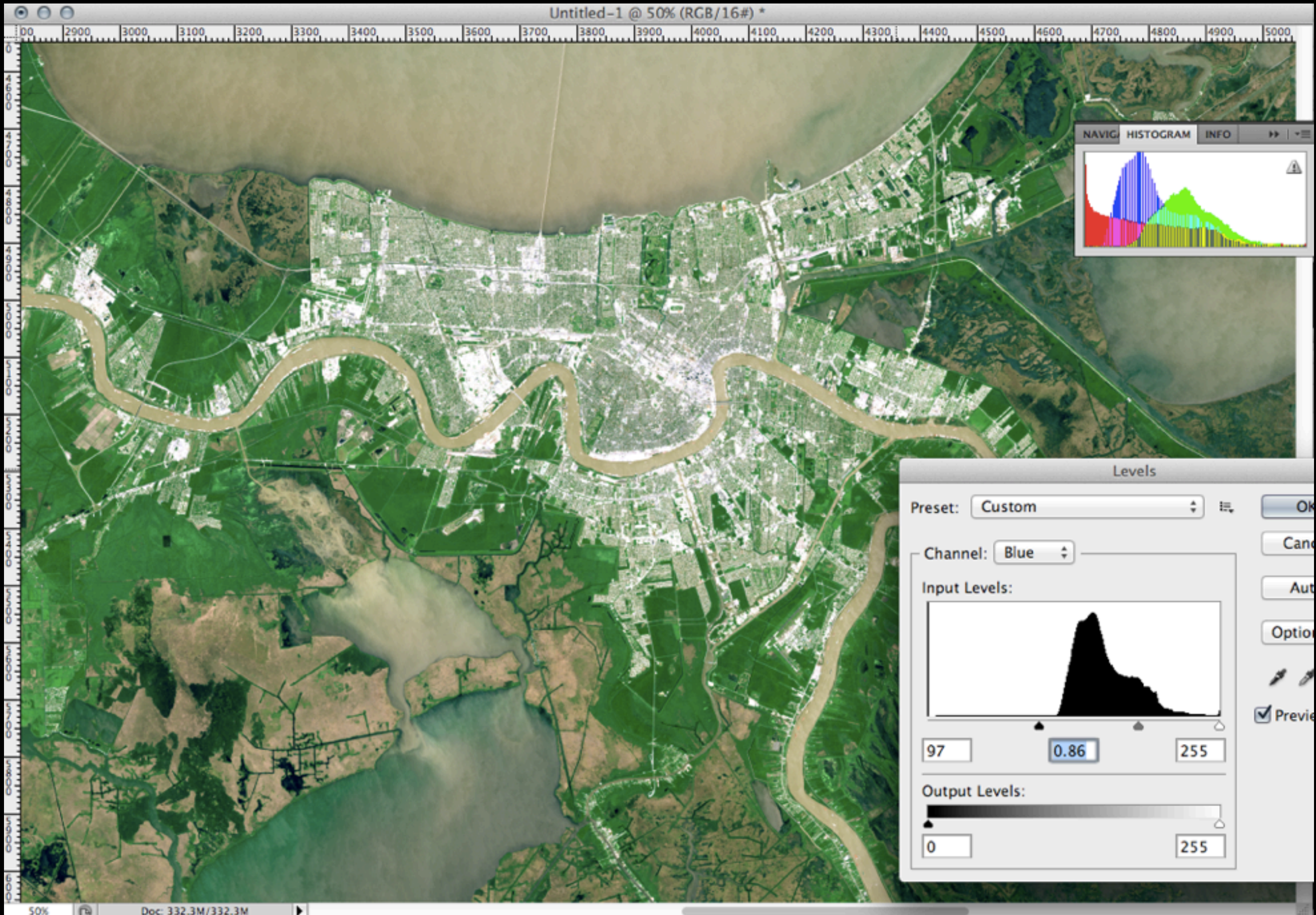
Or, with Photoshop *Con "Photoshop"*



Or, with Photoshop *Con "Photoshop"*



Or, with Photoshop *Con "Photoshop"*

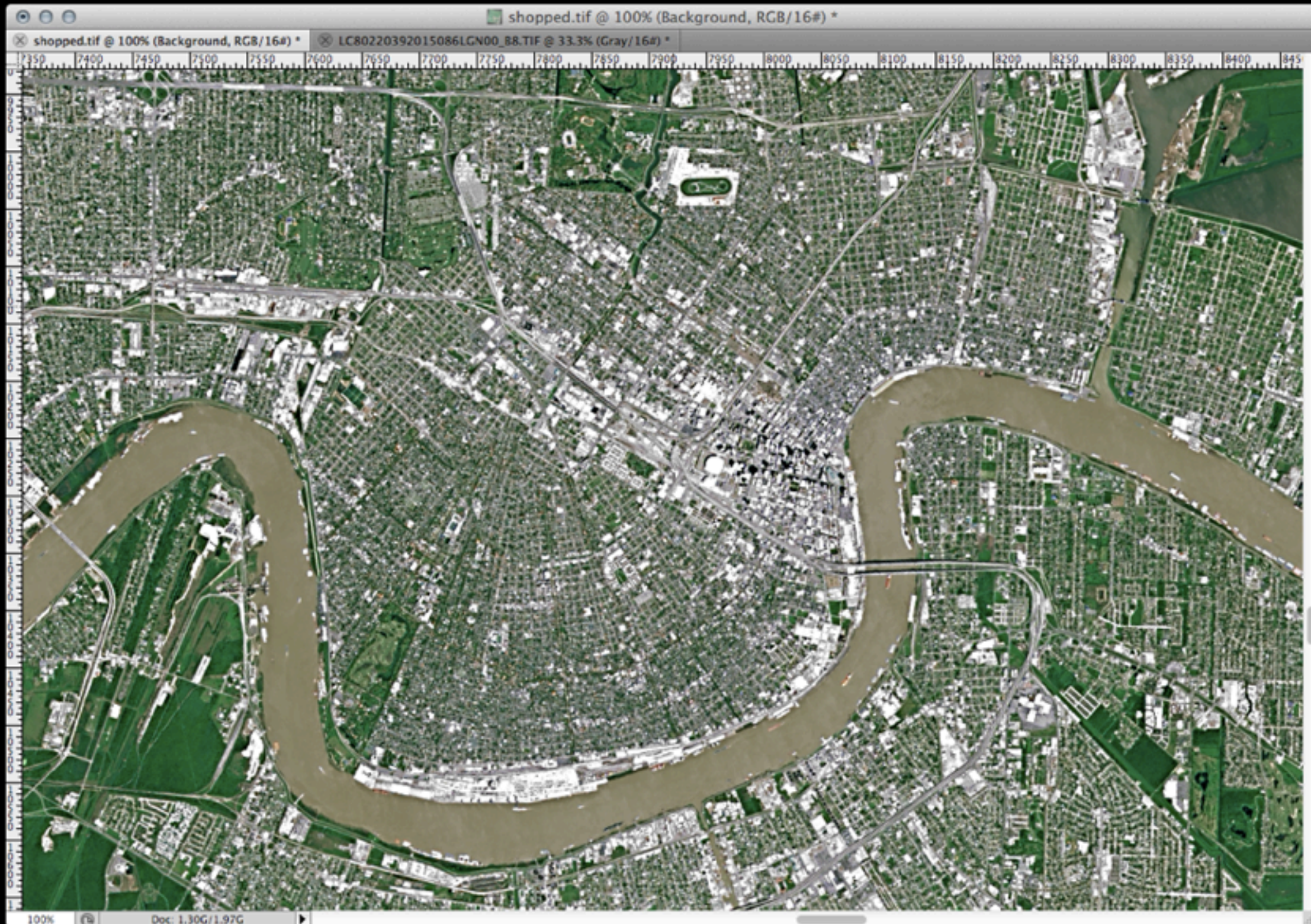


Or, with Photoshop *Con "Photoshop"*



Pansharpening: 15m resolution with Landsat using band 8

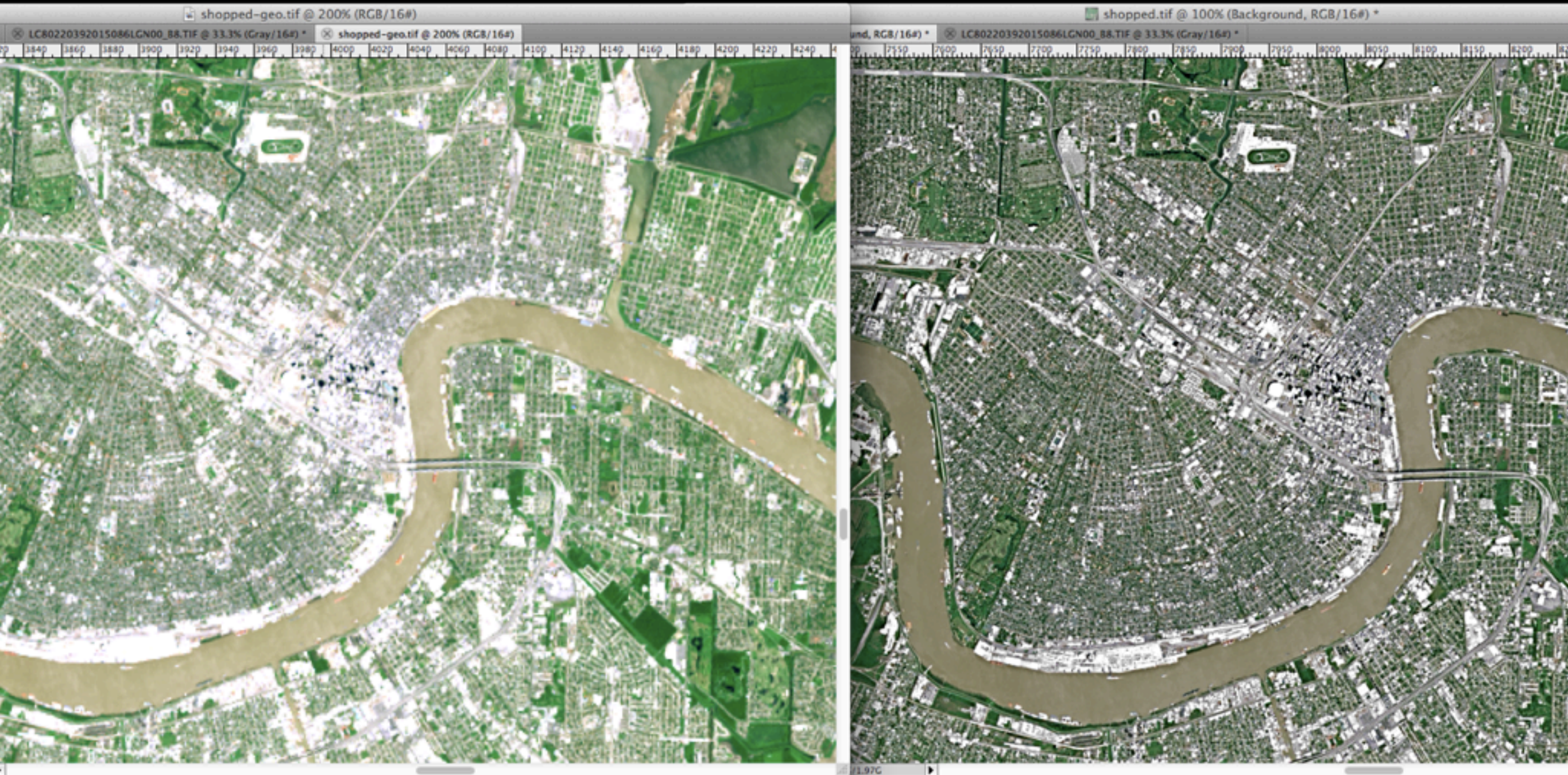
“Pansharpening”: Resolución 15m con Landsat banda 8



<http://www.shadedrelief.com/landsat8/landsat8panchrom.html>

Pansharpening: 15m resolution with Landsat using band 8

“Pansharpening”: Resolución 15m con Landsat banda 8



<http://www.shadedrelief.com/landsat8/landsat8panchrom.html>

Save the geodata! *Rescatar datos geográficos*

```
> listgeo -no_norm LC80220392015086LGN00_B4.TIF > shopped.geo
```

```
> geotifcp -g shopped.geo shopped.tif shopped-geo.tif
```

```
$ gdalinfo shopped-geo.tif
```

```
Driver: GTiff/GeoTIFF
```

```
Files: shopped-geo.tif
```

```
Size is 7541, 7701
```

```
Coordinate System is:
```

```
PROJCS["WGS 84 / UTM zone 15N",
```

```
    GEOGCS["WGS 84",
```

```
        DATUM["WGS_1984",
```

```
            SPHEROID["WGS 84",6378137,298.257223563,
```

```
                AUTHORITY["EPSG","7030"]],
```

```
            AUTHORITY["EPSG","6326"]],
```

```
        PRIMEM["Greenwich",0],
```

```
        UNIT["degree",0.0174532925199433],
```

```
        AUTHORITY["EPSG","4326"]],
```

```
    PROJECTION["Transverse_Mercator"],
```

```
    PARAMETER["latitude_of_origin",0],
```

```
    PARAMETER["central_meridian",-93],
```

```
    PARAMETER["scale_factor",0.9996],
```

```
    PARAMETER["false_easting",500000],
```

```
    PARAMETER["false_northing",0],
```

```
    UNIT["metre",1,
```

```
        AUTHORITY["EPSG","9001"]],
```

```
    AUTHORITY["EPSG","32615"]]
```

```
Origin = (662385.000000000000000,3471015.000000000000000)
```

```
Pixel Size = (30.000000000000000,-30.000000000000000)
```

```
Metadata:
```

**Or, use
Geographic Imager
(\$700)**

More *Más*

<http://j.mp/mapbox-landsat8>


<http://j.mp/eo-truecolor>

Mapbox


Design Data Develop Showcase Plans Help Blog Sign in Try it for free

BLOG

Putting Landsat 8's Bands to Work

By  Charlie Loyd on June 14 2013

Here's a picture of LA, just like an ordinary digital camera would take (if it had ten times as many megapixels and were in space). The image is only two weeks old, taken from Landsat 8, launched by NASA late this winter. Landsat 8 is already one of our favorite data sources - and not just ours: at [State of the Map](#) last weekend, it kept coming up in conversation with people from all kinds of backgrounds. More than just adding fresh true-color imagery from Landsat 8 to MapBox Satellite, we're investing in data services using the multispectral information that the satellite provides. Its non-visual bands let us analyze everything from terrain types to crop growth to natural disasters - all around the world, sometimes within hours. This post introduces some of Landsat 8's features, to give you a feel for what the world looks like through its lens.




NASA EARTH OBSERVATORY
Where every day is Earth Day

Home Images Global Maps Features News & Notes

Home / Blogs / [Elegant Figures](#) / How To Make a True-Color Landsat 8 Image

How To Make a True-Color Landsat 8 Image

October 22nd, 2013 by Robert Simmon       [Share](#)

Since its launch in February 2013, [Landsat 8](#) has collected about 400 scenes of the Earth's surface per day. Each of these scenes covers an area of about 185 by 185 kilometers (115 by 115 miles)—34,200 square km (13,200 square miles)—for a total of 13,690,000 square km (5,290,000 square miles) per day. An area about 40% larger than the united states. Every day.



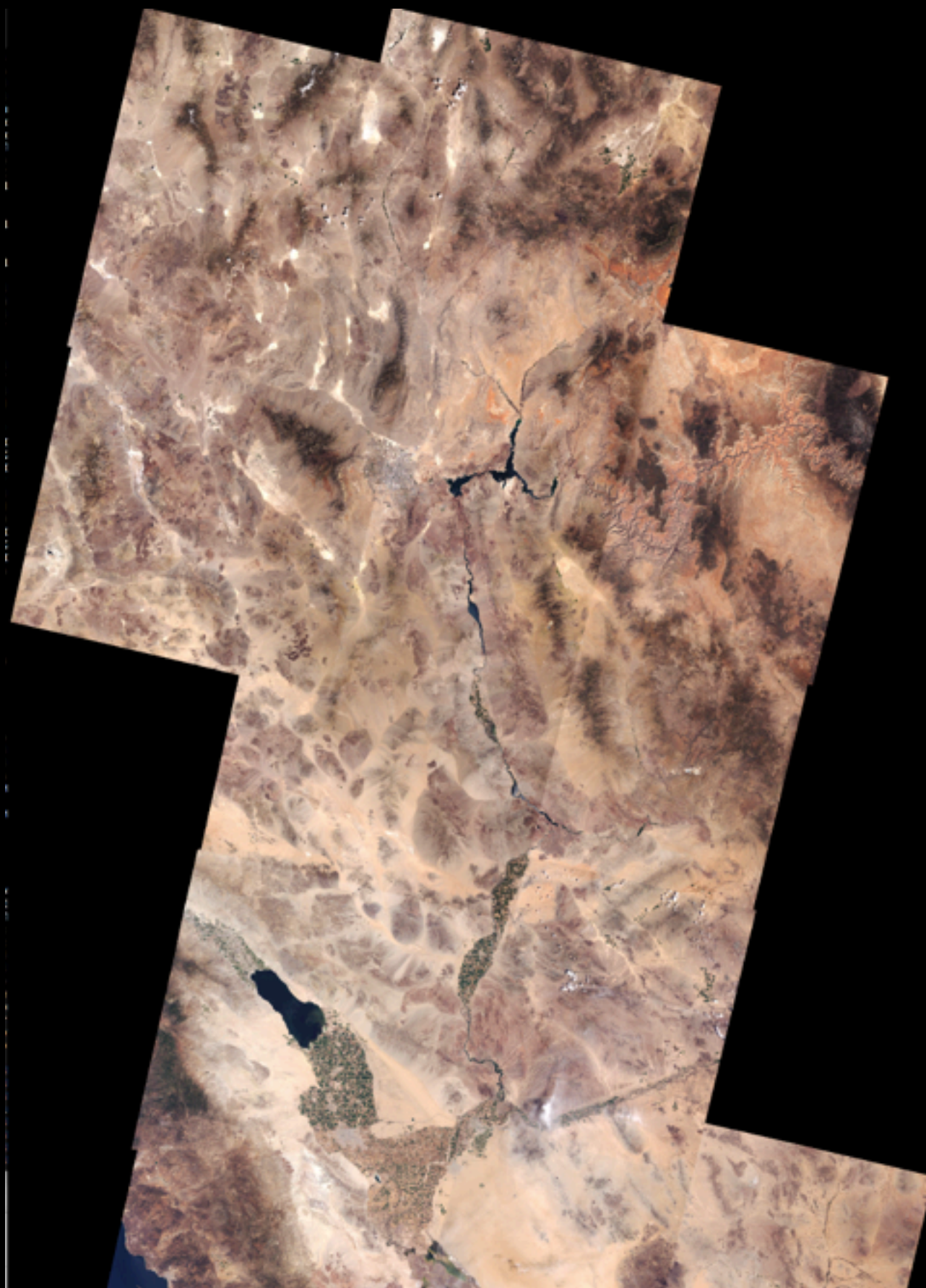
More *Más*

Make your own queryable landsat scene dataset!

Hacer su propio base de datos de escenas “Landsat”

<http://j.mp/landsatdb>

```
LandsatDB.query("
select
  sceneid
from
  landsat8
where sensor = 'OLI_TIRS'
  and cloudcoverfull < 5
  and dayornight = 'DAY'
  and sunelevation > 30
  and cloudcoverfull < 60
  and st_intersects(
    st_makeenvelope(#{bb[1]}, #{bb[0]}, #{bb[3]}, #{bb[2]}, 4326),
    the_geom)")
```

More *Más*

schooner-tk

<https://github.com/propublica/schooner-tk>

schooner-blend

schooner-cloud

schooner-contrast

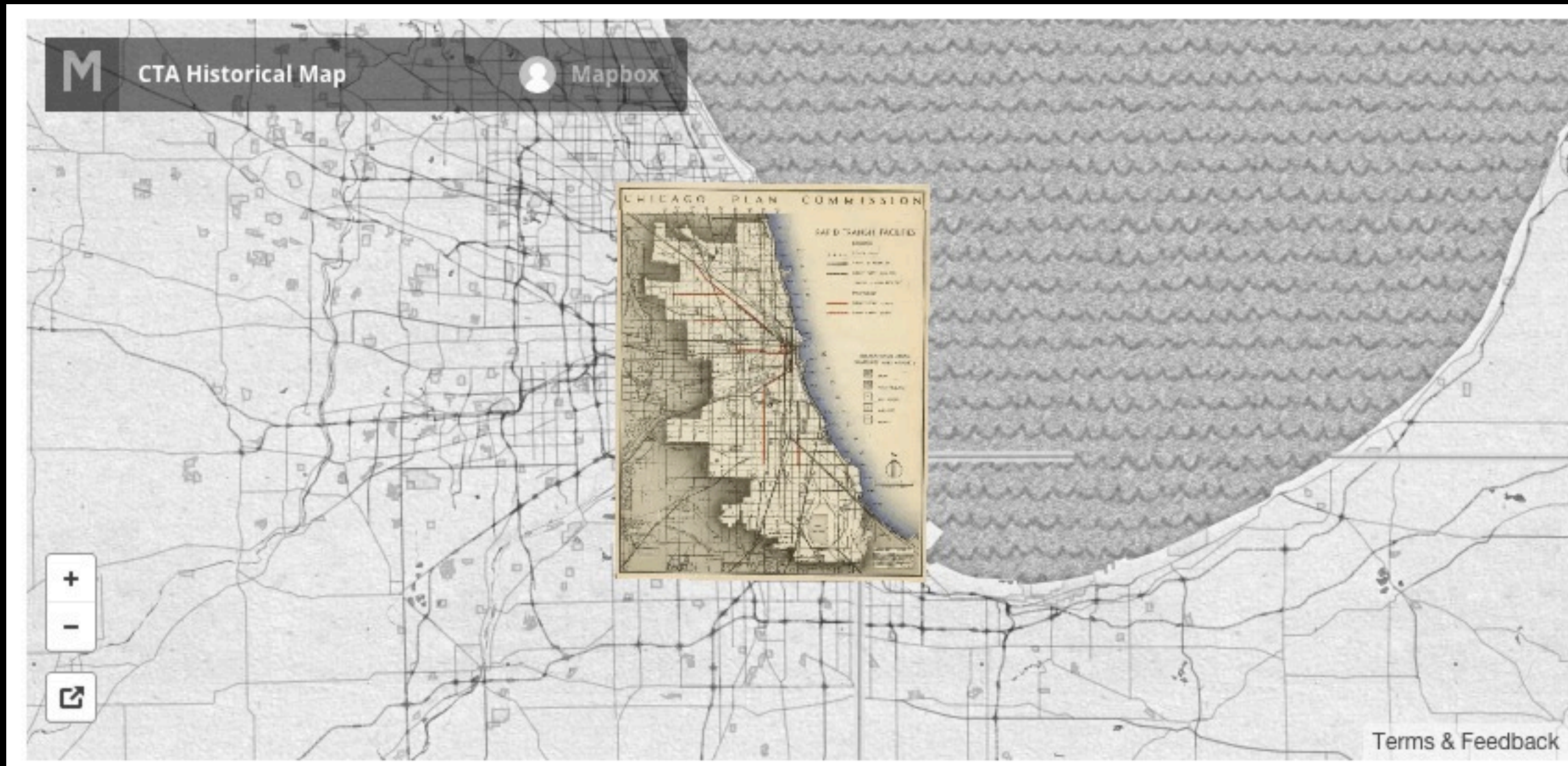
schooner-multibalance

schooner-stitch



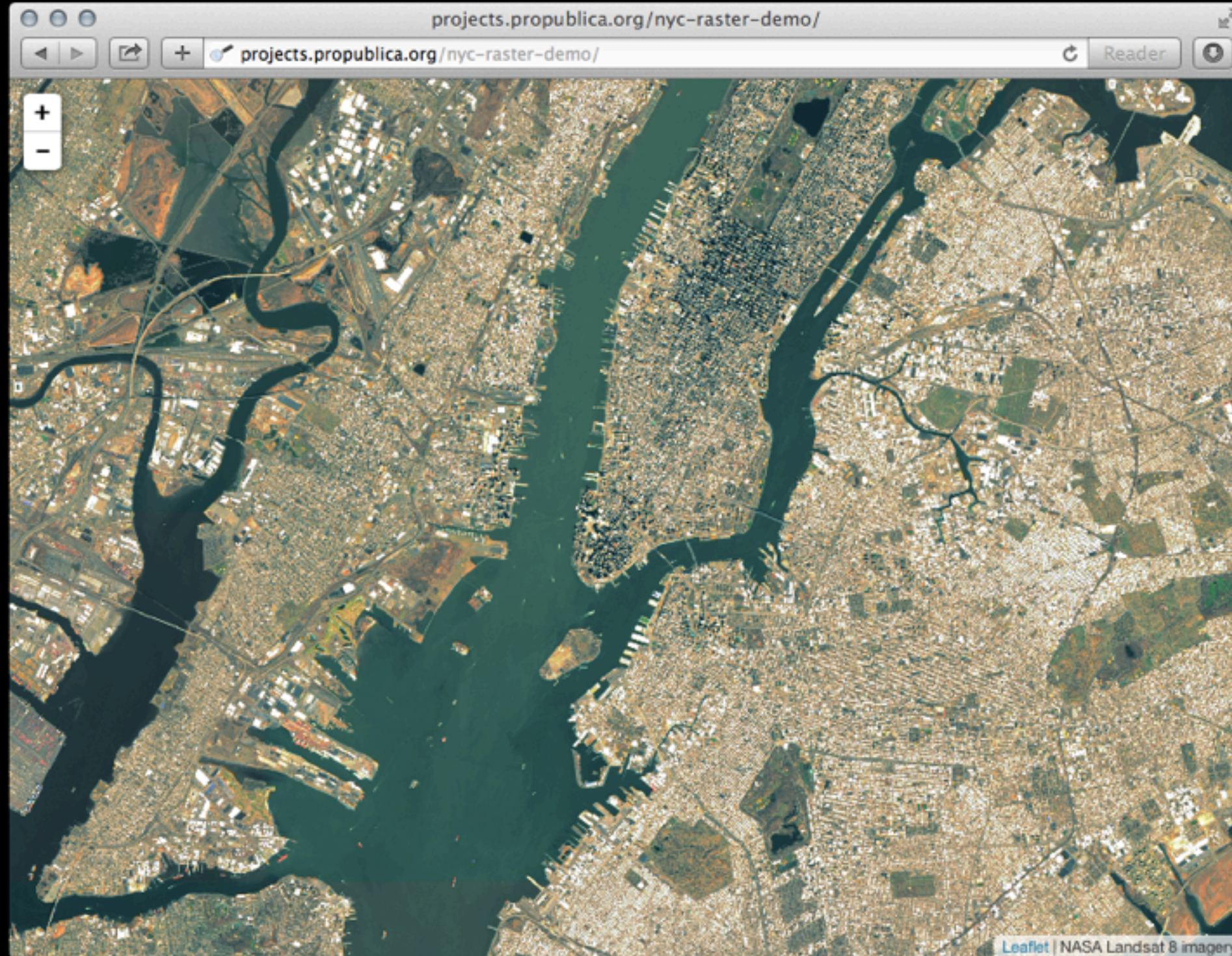
Using the data *Usar los datos*

Mapbox



<https://www.mapbox.com/blog/one-step-raster-imagery-mapboxcom/>

SimpleTiles (ProPublica)



<http://www.propublica.org/nerds/item/announcing-raster-support-for-simple-tiles>

4. Telling stories from space *Decir historias desde el espacio*

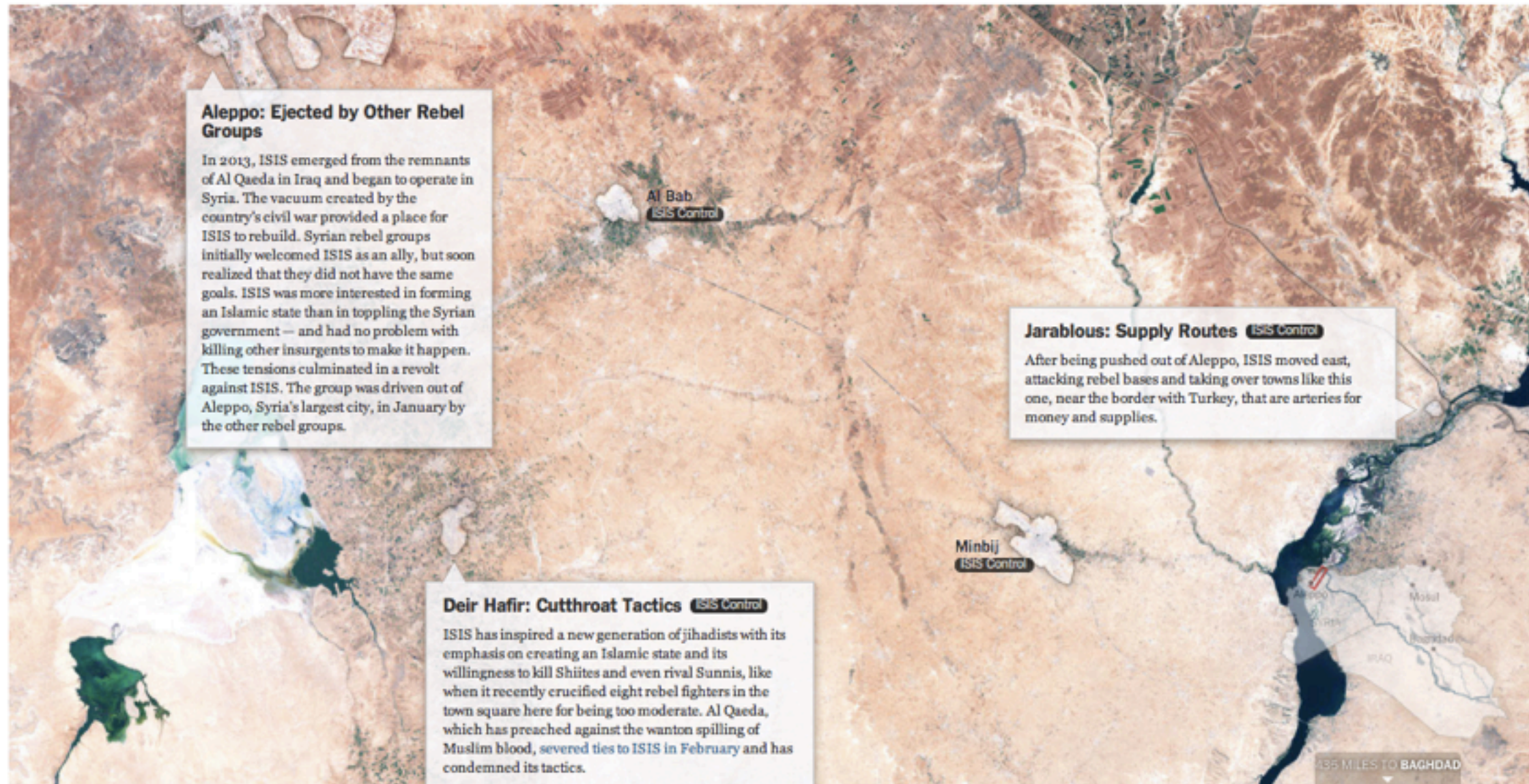
A Rogue State Along Two Rivers

How ISIS Came to Control Large Portions of Syria and Iraq

By JEREMY ASHKENAS, ARCHIE TSE, DEREK WATKINS and KAREN YOURISH July 3, 2014

The militant group called the Islamic State in Iraq and Syria, or ISIS, seemed to surprise many American and Iraqi officials with the recent gains it made in its violent campaign to create a new religious state. But the rapid-fire victories achieved over a few weeks in June were built on months of maneuvering along the Tigris and Euphrates Rivers.

The Euphrates

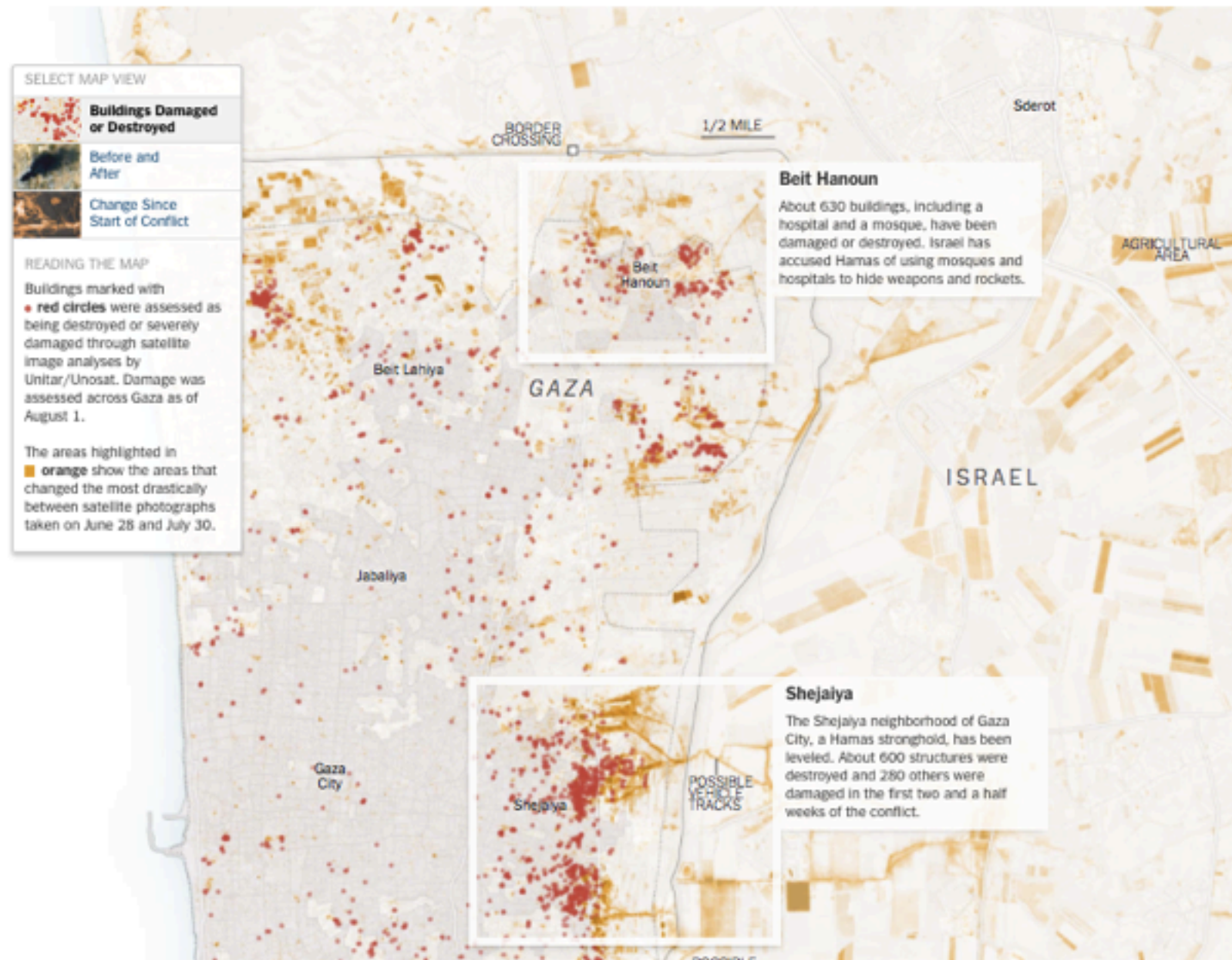


MIDDLE EAST

SHARE

Assessing the Damage and Destruction in Gaza

The damage to Gaza's infrastructure from the current conflict is more severe than the destruction caused by either of the last two Gaza wars, according to the United Nations Relief and Works Agency (Unrwa) and other organizations with staff on the ground, like Oxfam and Human Rights Watch. The fighting has displaced about a fourth of Gaza's population. Nearly 60,000 people have lost their homes, and the number of people taking shelter in Unrwa schools is nearly five times as many as in 2009. The cost to Gaza's already fragile economy will be significant: the 2009 conflict caused losses estimated at \$4 billion — almost three times the size of Gaza's annual gross domestic product. **UPDATED** August 15, 2014



Losing Ground

by Bob Marshall, The Lens, Brian Jacobs and Al Shaw, ProPublica, Aug. 28, 2014

In 50 years, most of southeastern Louisiana not protected by levees will be part of the Gulf of Mexico. The state is losing a football field of land every 48 minutes — 16 square miles a year — due to climate change, drilling and dredging for oil and gas, and levees on the Mississippi River. At risk: Nearly all of the nation's offshore oil and gas production, much of its seafood production, and millions of homes.

[EXPLORE THE COAST](#)



2008

2012

2014

Pointe à la

Lake Hermitage

C

B

A

1 km
3000 ft

New Orleans

2008

2012

2014

Lake Hermitage

C

B

A

pumped sediment

1 km
3000 ft

New Orleans

<http://projects.propublica.org/larestoration>



KILLING the Colorado

- Read the Latest Story
- What You Need to Know

- BIG THOMPSON PROJECT
- MOFFAT TUNNEL
- FLAMING GORGE DAM
- NAVAJO GENERATING STATION
- GLEN CANYON DAM
- HOOVER DAM**
- CENTRAL ARIZONA PROJECT
- PARKER DAM
- IMPERIAL DAM
- YUMA DESALTING COMPLEX
- ALL-AMERICAN CANAL

Las Vegas

f t DONATE

HOOVER DAM



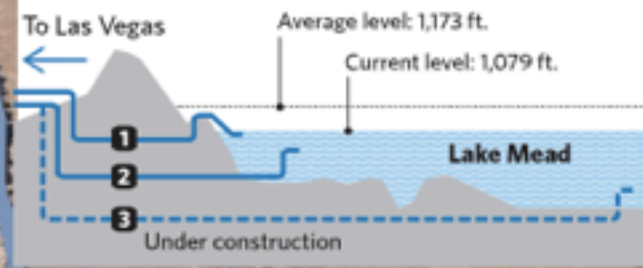
GETS US...
Up to 4 billion kilowatt-hours of electricity annually

COSTS US...
Up to 283 billion gallons lost to evaporation annually

COMPLETED	COST
1936	\$165M

Lake Mead, behind the Hoover Dam, is the nation's largest reservoir, holding as much as 9.4 trillion gallons — providing much of the water in Nevada, Arizona, California and Northern Mexico. As of May 2015, Lake Mead levels had dropped within 12 inches of triggering a federal emergency that would cut back supplies to the 23 million people served by the reservoir. Las Vegas, which gets 90 percent of its water from the lake, is building a third drain intake to ensure it can still draw water as levels drop.

LAKE MOJAVE





1975

WATER USE
40.8 billion gallons

<http://j.mp/vegas-water>

More, more, more <http://j.mp/spacejournalism>
Mas y mas y mas

The screenshot shows a web browser window displaying a GitHub Gist. The browser's address bar shows the URL `https://gist.github.com/briantjacobs/ae5510ca84ef172b2f5f`. The page header includes the GitHub Gist logo, a search bar, and navigation links for 'All Gists', 'Sign up for a GitHub account', and 'Sign in'. The main content area features a profile for 'briantjacobs' with the file name 'storytelling_from_space.md' and a 'Last active on Apr 3' timestamp. The title of the gist is 'Storytelling from Space'. Below the title is a paragraph of text: 'This list of resources is all about acquiring and processing aerial imagery. It's generally broken up in three ways: how to go about this in Photoshop/GIMP, using command-line tools, or in GIS software, depending what's most comfortable to you. Often these tools can be used in conjunction with each other.' This is followed by a section header 'Acquiring Landsat & MODIS' and another section header 'Web Interface'. Under 'Web Interface', there is a bulleted list: 'USGS Earth Explorer - Browser and data access (create a login)' with the URL `http://earthexplorer.usgs.gov/`, and three sub-points: 'Landsat archive', 'Many other products, like aerial/orthophotography', and 'GLOVIS (Java/Firefox required)'. On the right side of the page, there is a sidebar with statistics: 'Code', 'Revisions 19', 'Stars 45', and 'Forks 3'. Below these are fields for 'Embed URL' and 'HTTPS clone URL', and a 'Download Gist' button.

Storytelling from Space

GitHub Gist Search... All Gists Sign up for a GitHub account Sign in

briantjacobs / `storytelling_from_space.md`
Last active on Apr 3

Storytelling from Space

`storytelling_from_space.md` Raw

Storytelling from Space: Tools/Resources

This list of resources is all about acquiring and processing aerial imagery. It's generally broken up in three ways: how to go about this in Photoshop/GIMP, using command-line tools, or in GIS software, depending what's most comfortable to you. Often these tools can be used in conjunction with each other.

Acquiring Landsat & MODIS

Web Interface

- USGS Earth Explorer - Browser and data access (create a login)
<http://earthexplorer.usgs.gov/>
 - Landsat archive
 - Many other products, like aerial/orthophotography
 - GLOVIS (Java/Firefox required)

Code Revisions 19 Stars 45 Forks 3

Embed URL
`<script src="https://`

HTTPS clone URL
`https://gist.github.com/`

You can clone with [HTTPS](#) or [SSH](#).

Download Gist

Thank you!

¡Gracias!

al.shaw@propublica.org

@A_L