

Raster Mosaicing and Clipping

QGIS Tutorials and Tips



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Raster Mosaicing and Clipping

This tutorial explores some basic raster operations in QGIS such as viewing, mosaicing and subsetting.

Overview of the task

We will download some public domain raster data for Brazil and view it in QGIS. Next, we will merge these into a single mosaic and clip it using a country boundary to get a single seamless dataset for the country.

Other skills you will learn

- Searching and downloading near real-time public domain satellite imagery.
- Selecting a single feature from a vector layer and saving it to a new shapefile.

Get the data

We need Brazil country boundary to clip our raster. You can get the [Admin 0 - Countries](#) shapefile from Natural Earth.

[NASA/GSFC, Rapid Response site](#) has a good collection of near real-time satellite imagery. A good regional product is [USDA Foreign Agricultural Service \(FAS\) subsets..](#) We will use 2km resolution FAS subsets for Brazil for this tutorial.

Here is how to search and download the relevant data.

1. Open the [South America region subsets](#). Find the Brazil subsets shown in the FAS Subsets section. Click on any one of them.

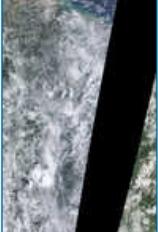
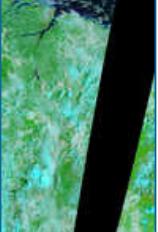
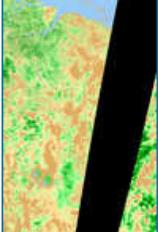
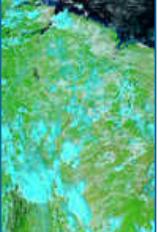
The screenshot shows the NASA Earth Data interface. At the top, there is a navigation bar with links for NASA Earth Data, Data Discovery, Data Centers, Community, Science Disciplines, and Search EOSDIS. Below the navigation bar, the text "South America" is displayed, followed by "Select a subset:". Two maps of South America are shown side-by-side. The left map is titled "AERONET Subsets" and shows numerous small red rectangular boxes scattered across the continent. The right map is titled "FAS Subsets" and shows several larger red rectangular boxes. One specific subset in Brazil is highlighted with a white box and a cursor icon pointing to it, labeled "FAS_Brazil1".

2. In the details page, click the 2km link under the product of your choice. Here we will download the NDVI product. [Learn more about NDVI](#).

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[Usage Guideline:](#)

Read about the [status of LANCE Rapid Response MODIS images](#) after the hardware failure of the disk array that contains the images on December 10, 2013.

Date: 2013/363 - 12/29			
Date: 2013/363 - 12/29 Pixel size: 2km 1km 500m 250m  True Color Satellite: Terra	Date: 2013/363 - 12/29 Pixel size: 2km 1km 500m 250m  7-2-1 Satellite: Terra	Date: 2013/363 - 12/29 Pixel size: 2km 1km 500m 250m  3-6-7 Satellite: Terra	Date: 2013/363 - 12/29 Pixel size: 2km 1km 500m 250m  NDVI Satellite: Terra
Date: 2013/363 - 12/29 Pixel size: 2km 1km 500m 250m  True Color Satellite: Aqua	Date: 2013/363 - 12/29 Pixel size: 2km 1km 500m 250m  7-2-1 Satellite: Aqua		Date: 2013/363 - 12/29 Pixel size: 2km 1km 500m 250m  NDVI Satellite: Aqua

3. Click the Download GeoTIFF file link to download the raster image.

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NASA Earth Data Data Discovery ▾ Data Centers ▾ Community ▾ Science Disciplines ▾ Search EOSDIS ▾

FAS_Brazil1 Subset - Aqua 2km NDVI 2013/363 (12/29)

Read about the [status of LANCE Rapid Response MODIS images](#) after the hardware failure of the disk array that contains the images on December 10, 2013.

Vectors selected: none

Change vector options:

View alternate pixel size: [1km | 500m | 250m](#)

View alternate band combination: [True Color](#) | [Bands 7-2-1](#)

[View Terra image](#) | [See all images available for this area this day](#)

[Usage Guidelines](#)

[Display metadata \(including time of input data\)](#)
[Display worldfile](#) | [Display projection file](#)
[Download JPG image with ancillary files \(.zip\)](#)
[Download KMZ file for GoogleEarth](#)
[Download GeoTIFF file](#)

[View this region interactively with Worldview](#)
(Worldview does not work with Internet Explorer 8 or older.)

[Learn how to download this region using GDAL](#)



Repeat the process for all 7 FAS subsets for Brazil.

For convenience, you can directly download sample data used in this tutorial from links below.

[ne_10m_admin_0_countries.zip](#)

[FAS_Brazil1.2013363.aqua.ndvi.2km.tif](#)

[FAS_Brazil2.2013363.terra.ndvi.2km.tif](#)

[FAS_Brazil3.2013363.aqua.ndvi.2km.tif](#)

[FAS_Brazil4.2013363.aqua.ndvi.2km.tif](#)

[FAS_Brazil5.2013363.aqua.ndvi.2km.tif](#)

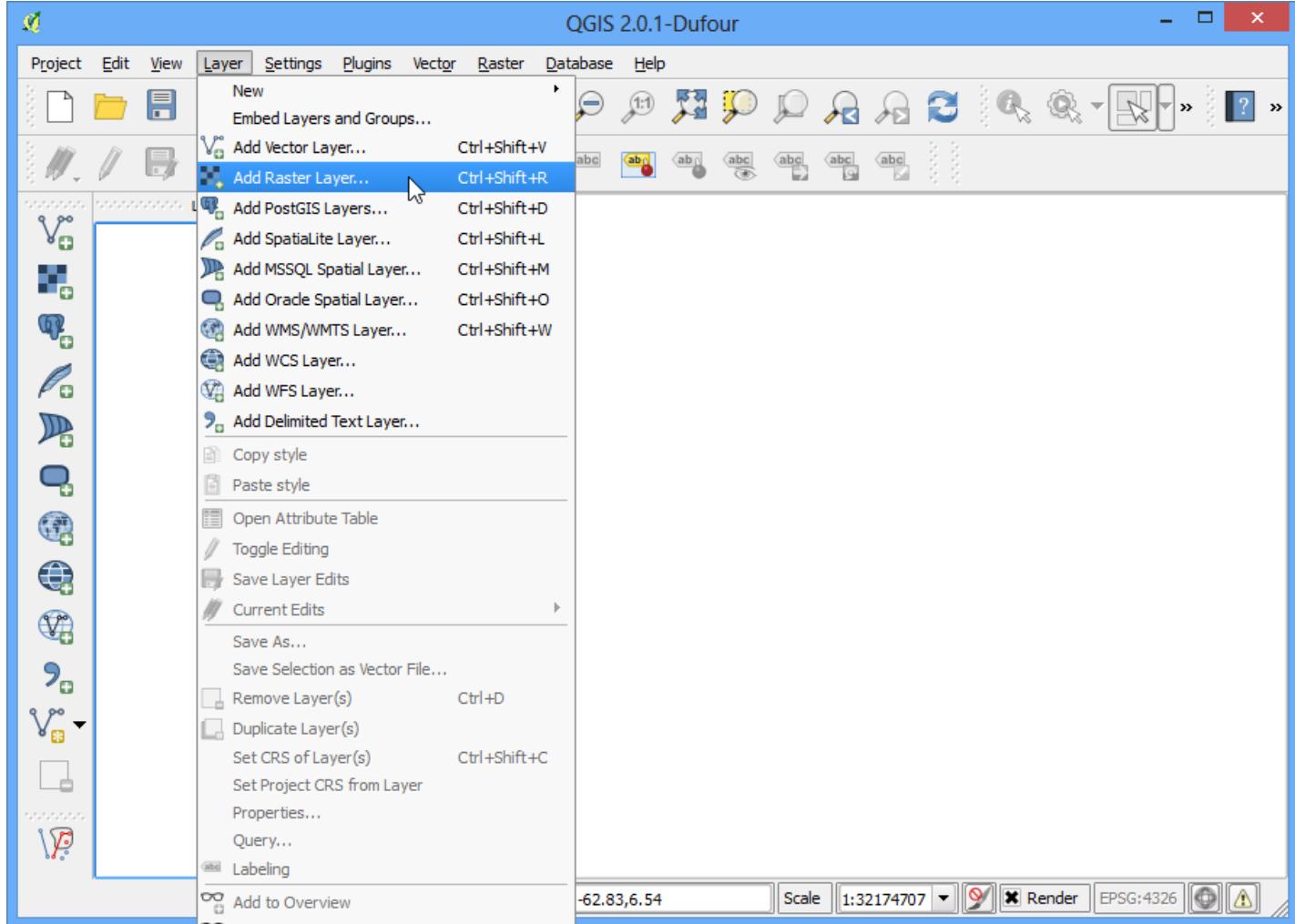
[FAS_Brazil6.2013363.terra.ndvi.2km.tif](#)

[FAS_Brazil7.2013363.aqua.ndvi.2km.tif](#)

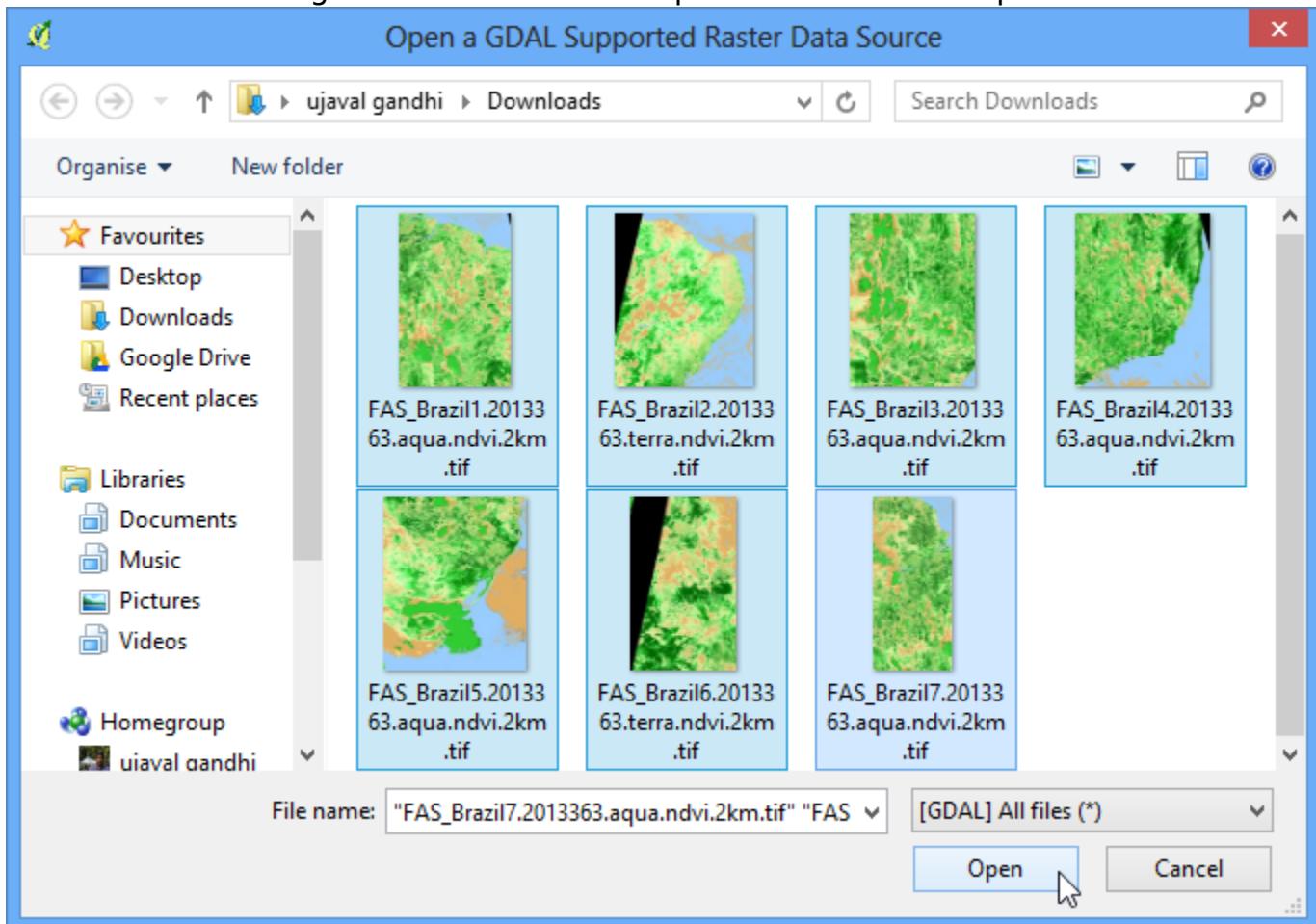
Data Sources: [LANCE] [NATURALEARTH]

Procedure

4. Open QGIS and go to Layer ▶ Add Raster Layer...



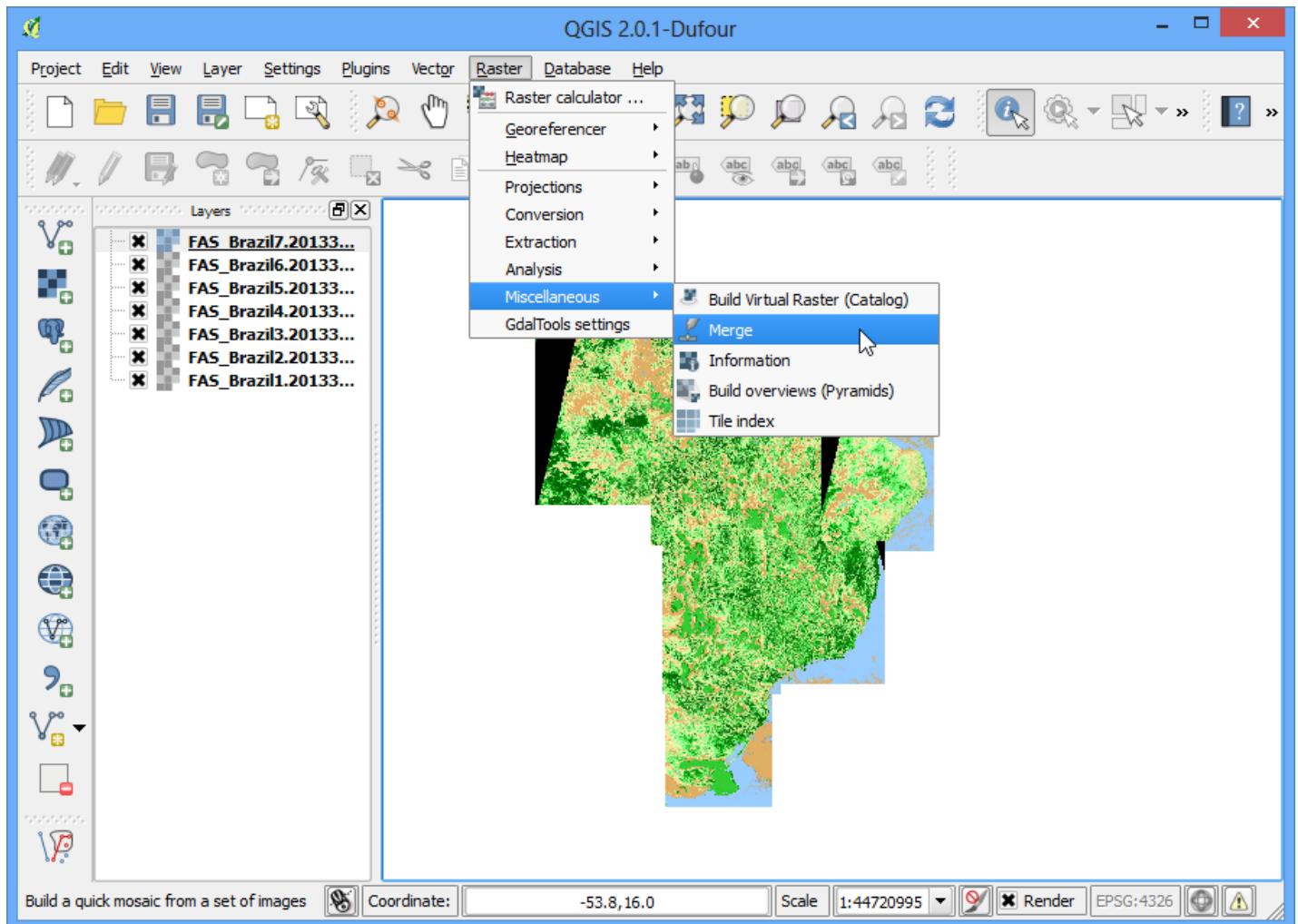
5. Browse to the directory with the individual images. Hold down the Ctrl key and click on the image files to make a multiple selection. Click Open.



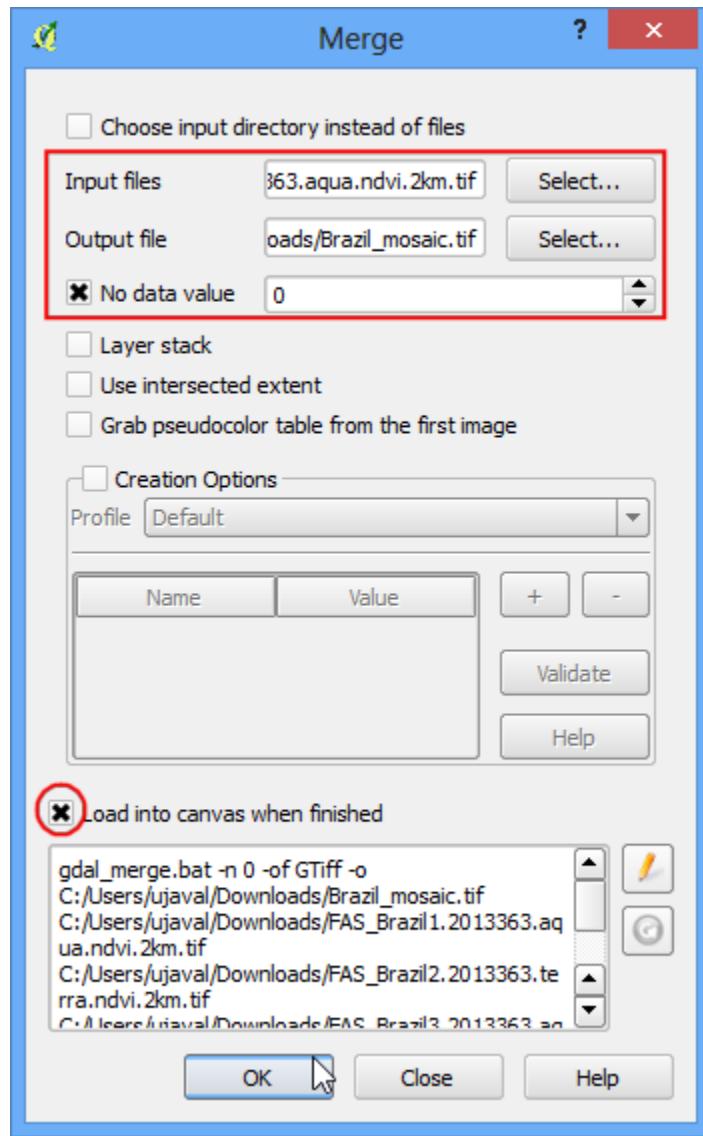
6. You will see the images load up in the Table of Content on the left panel. Now let us create a single *Mosaic* image from all these individual images. Click on Raster ▶ Miscellaneous ▶ Merge.

Note

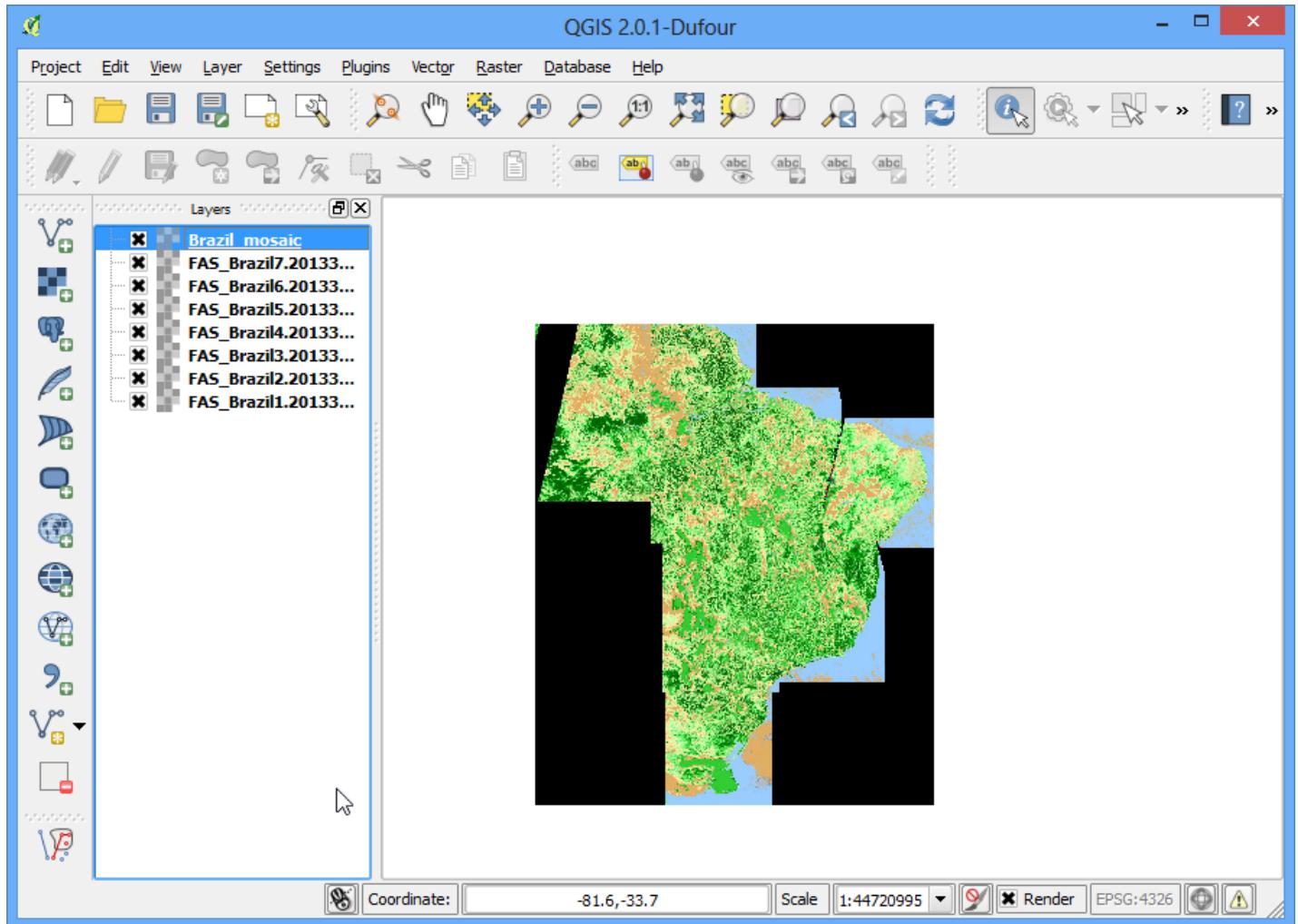
The Raster menu in QGIS comes from a core plugin called GdalTools. If you do not see the Raster menu, enable the GdalTools plugin from Plugins ▶ Manage and install plugins ▶ Installed. See [Using Plugins](#) for more details.



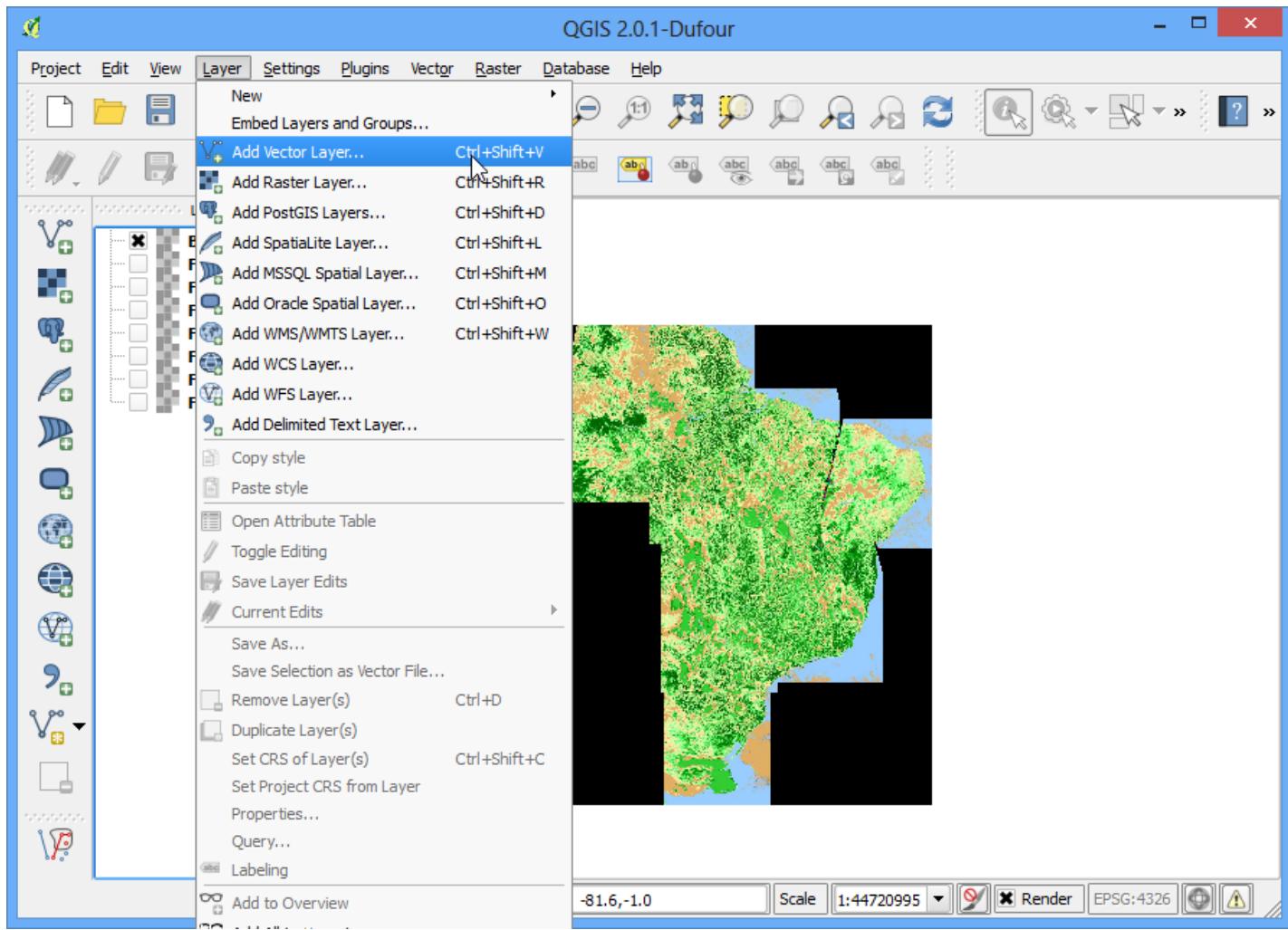
7. In the Merge dialog, click Select... next to Input files and browse to the directory containing all the individual geotiffs. Keep holding Ctrl key and select all the subsets. Now click Select... next to Output file and name the output as Brazil_mosaic.tif. At the bottom, check the box next to Load into canvas when finished. Click OK.



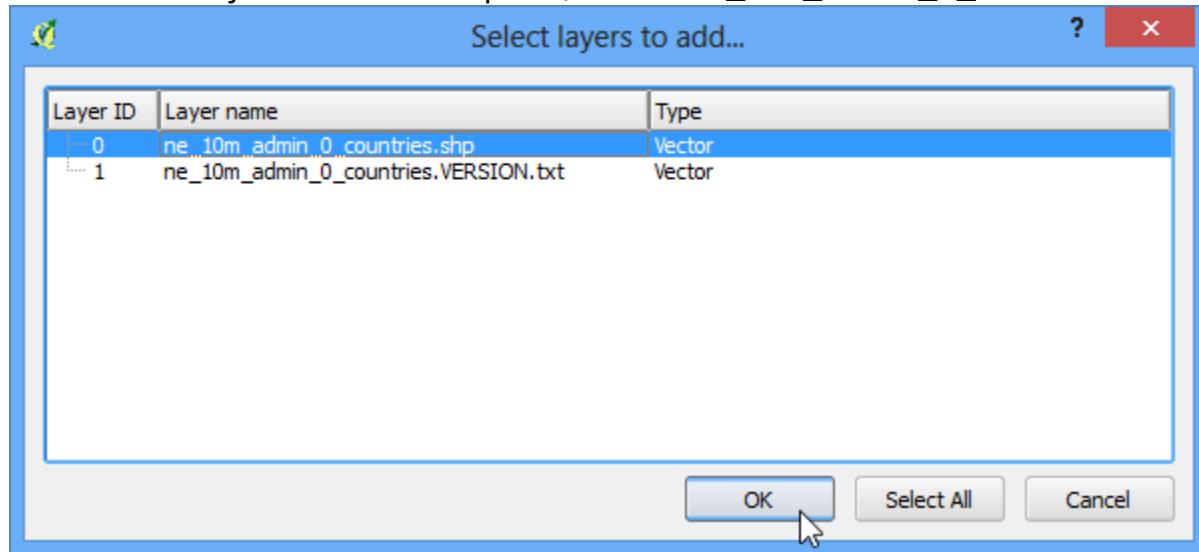
8. You will get a pop-up message saying *Processing complete*, once the mosaic is created and loaded to the QGIS Canvas. You will see that the individual images are now combined and mosaiced into a single layer. You can now turn off individual layers by un-checking the box next to them.



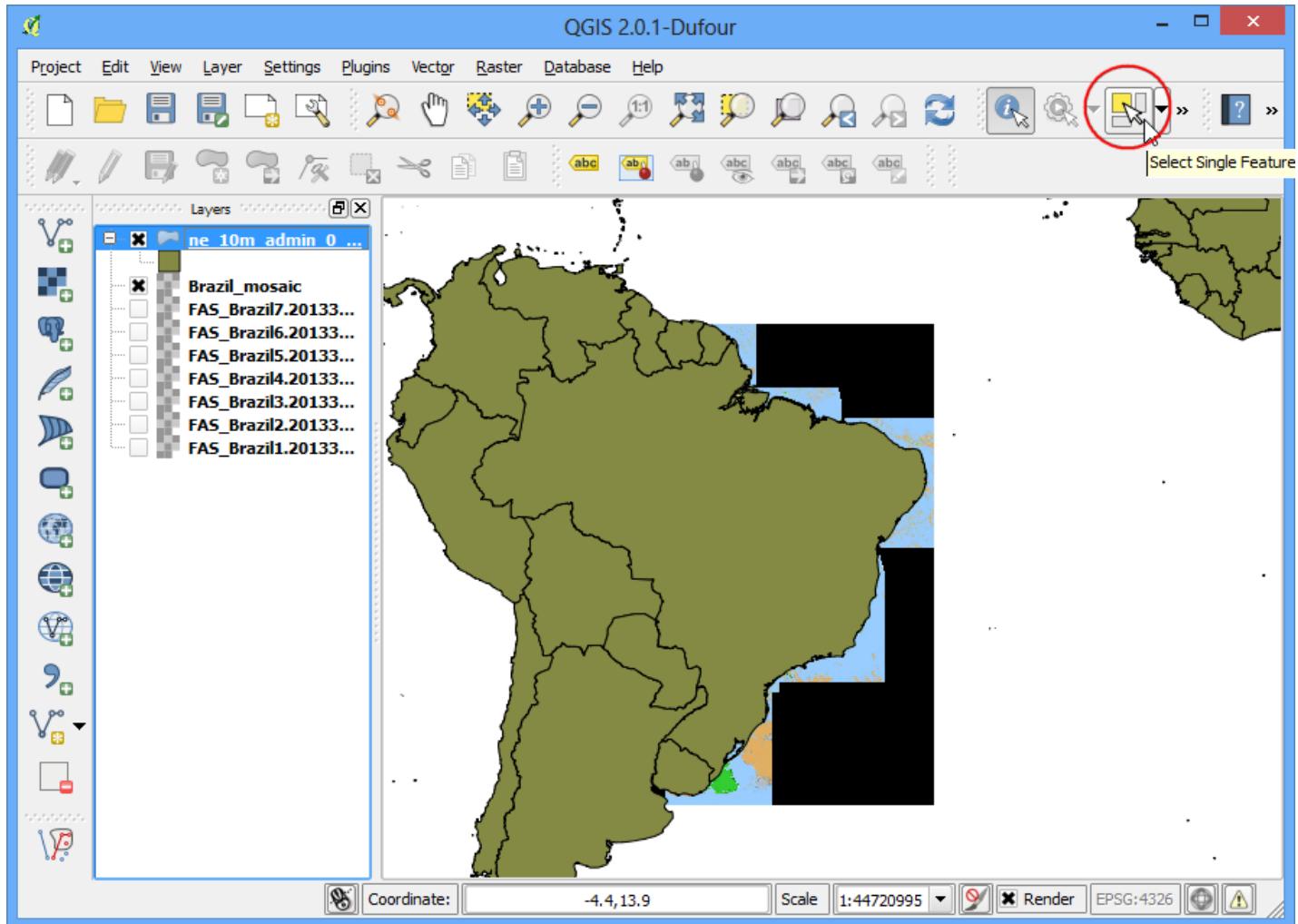
9. Another Raster operation you can do is to subset or *crop* an image. We can use a polygon from a vector layer to crop the raster to the exact shape. Let's load the country polygons shapefile we downloaded from Natural Earth. Go to Layer ▶ Add Vector Layer.



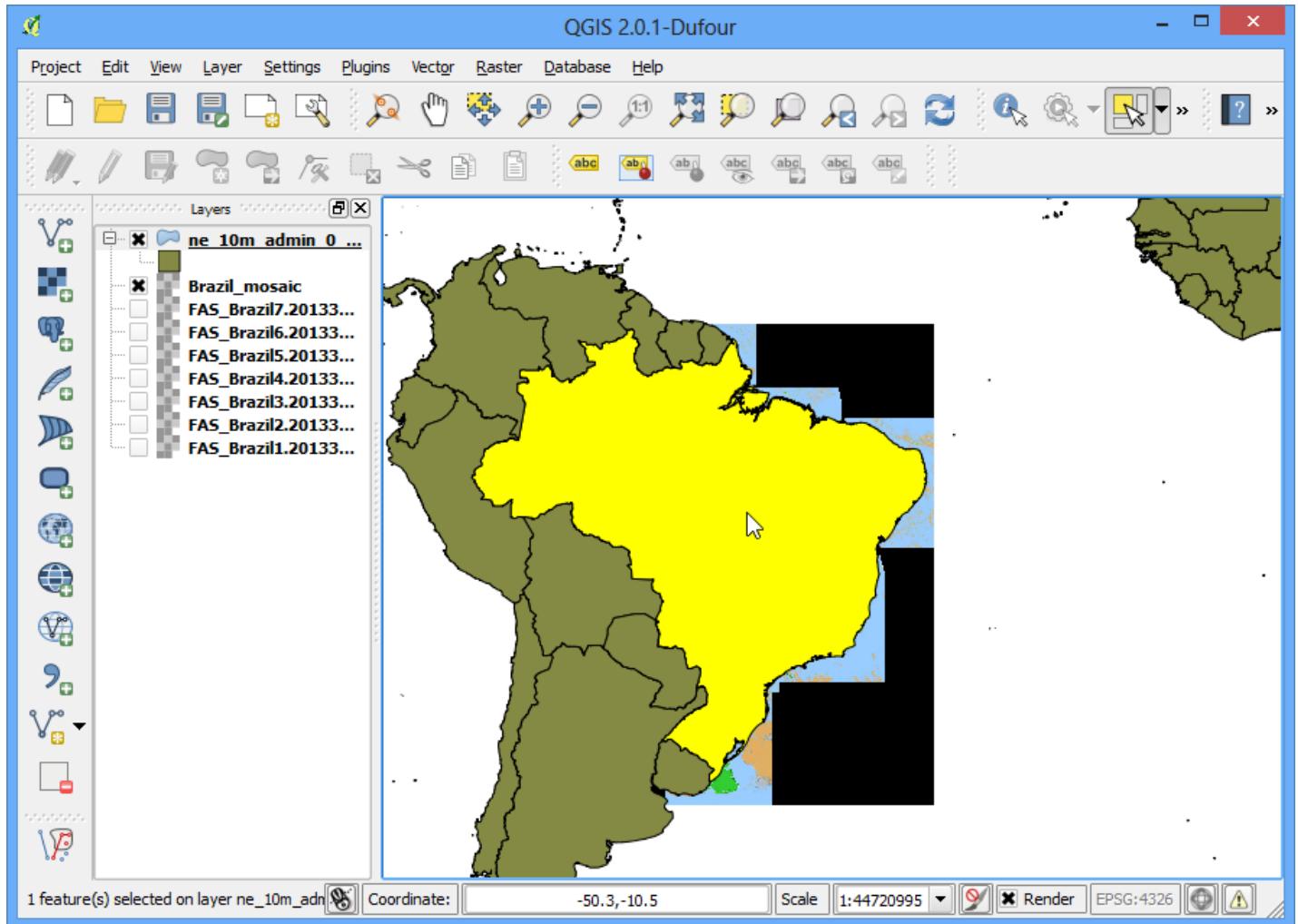
10. Select the `ne_10m_admin_0_countries.zip` file and click Open. When prompted to select the layer within the zip file, select `ne_10m_admin_0_countries.shp`.



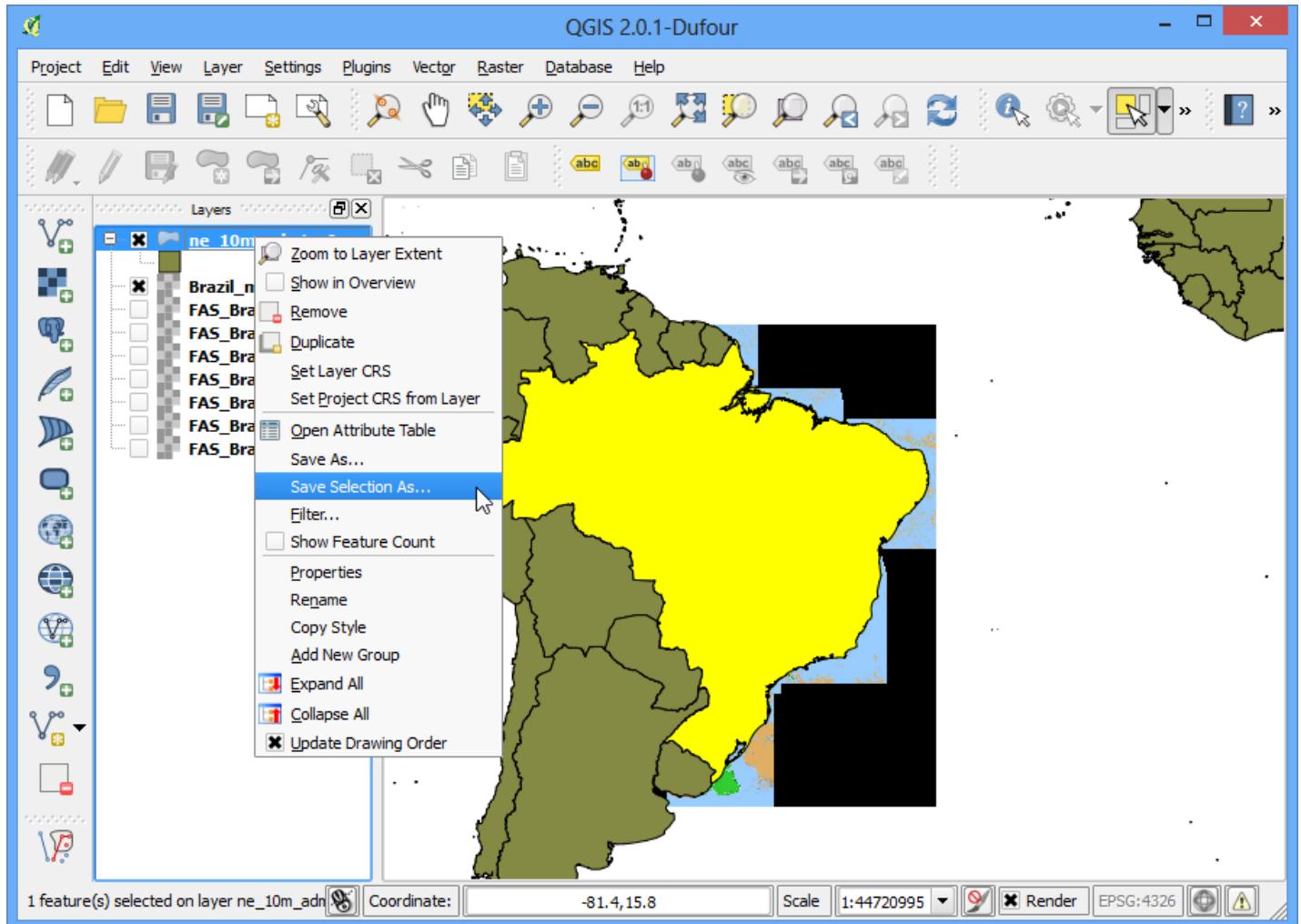
11. Once the vector layer is loaded, we want to select and extract the polygon for Brazil. Select the Select Single Feature tool from the toolbar.



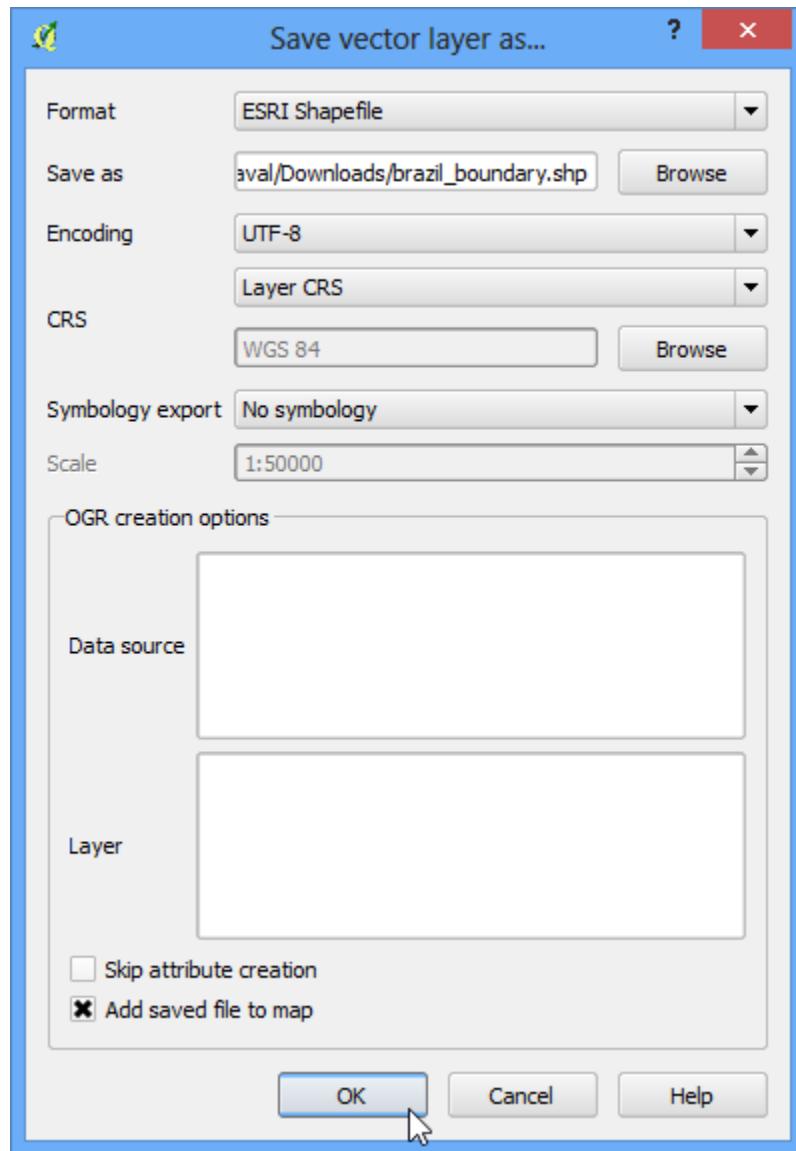
12. Click anywhere on the Brazil polygon and it will be selected.



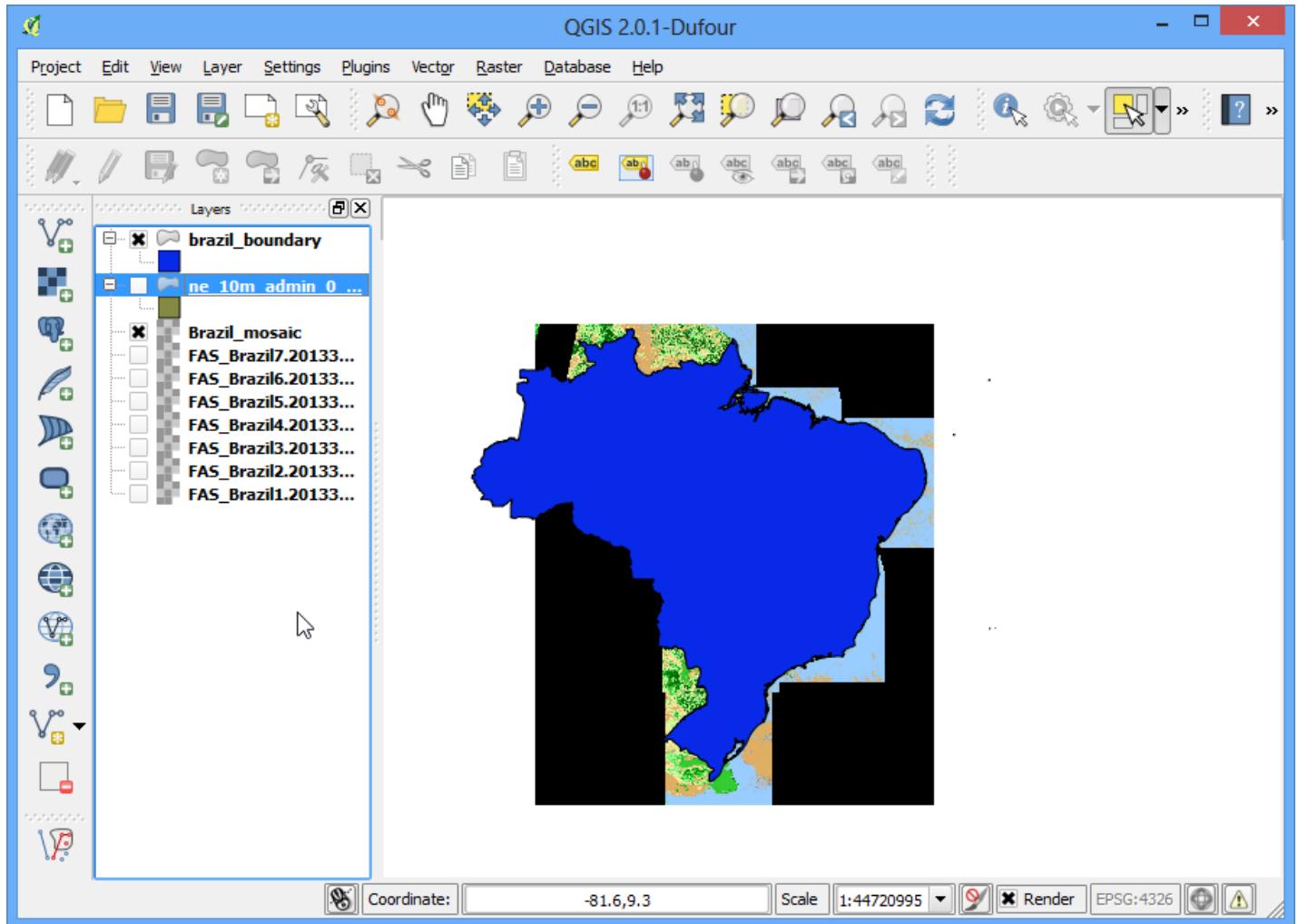
13. Right-click the ne_10m_admin_0_countries layer and select Save Selection As....



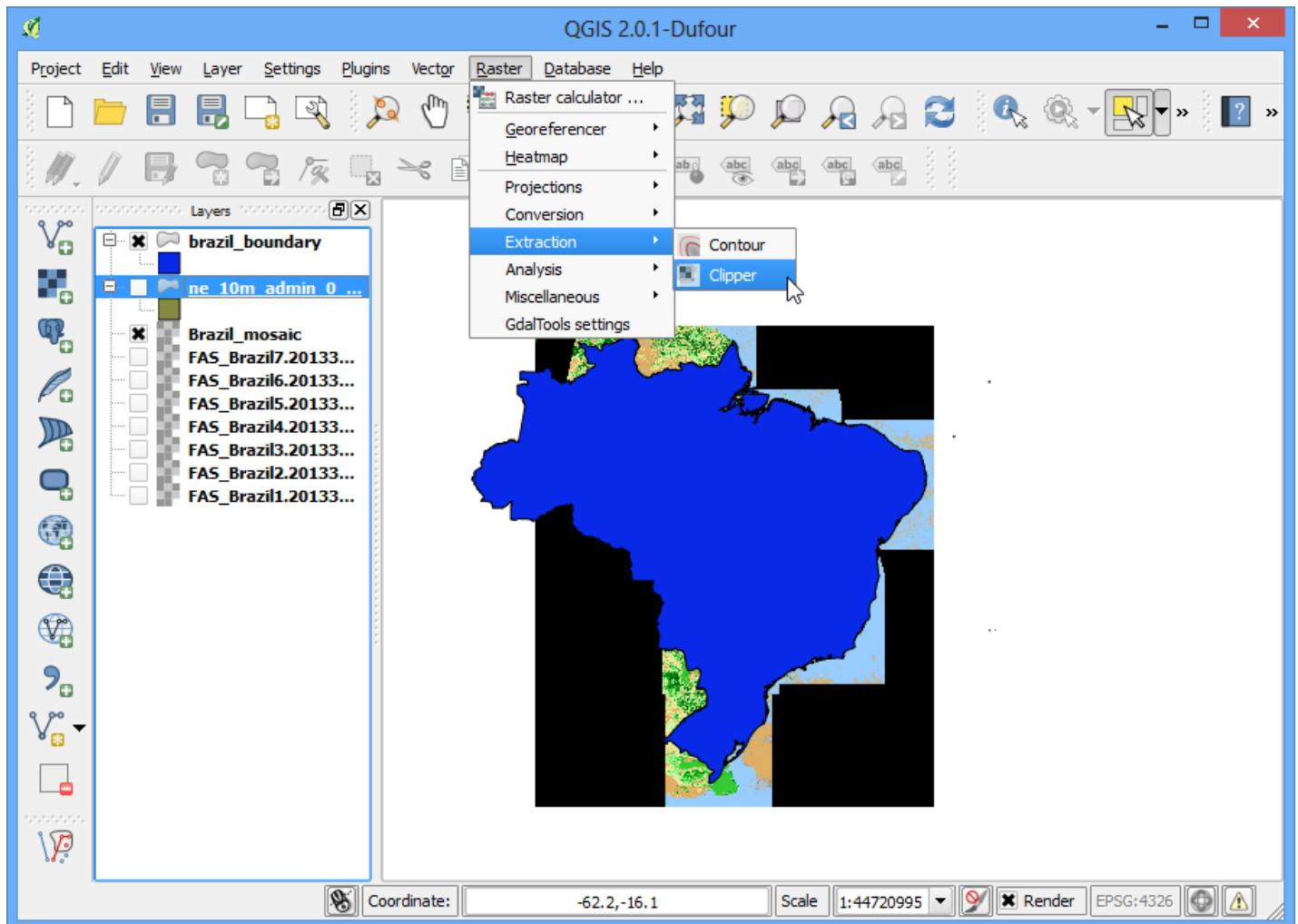
14. Name your output as `brazil_boundary.shp` and make sure Add saved file to map box is checked. click OK.



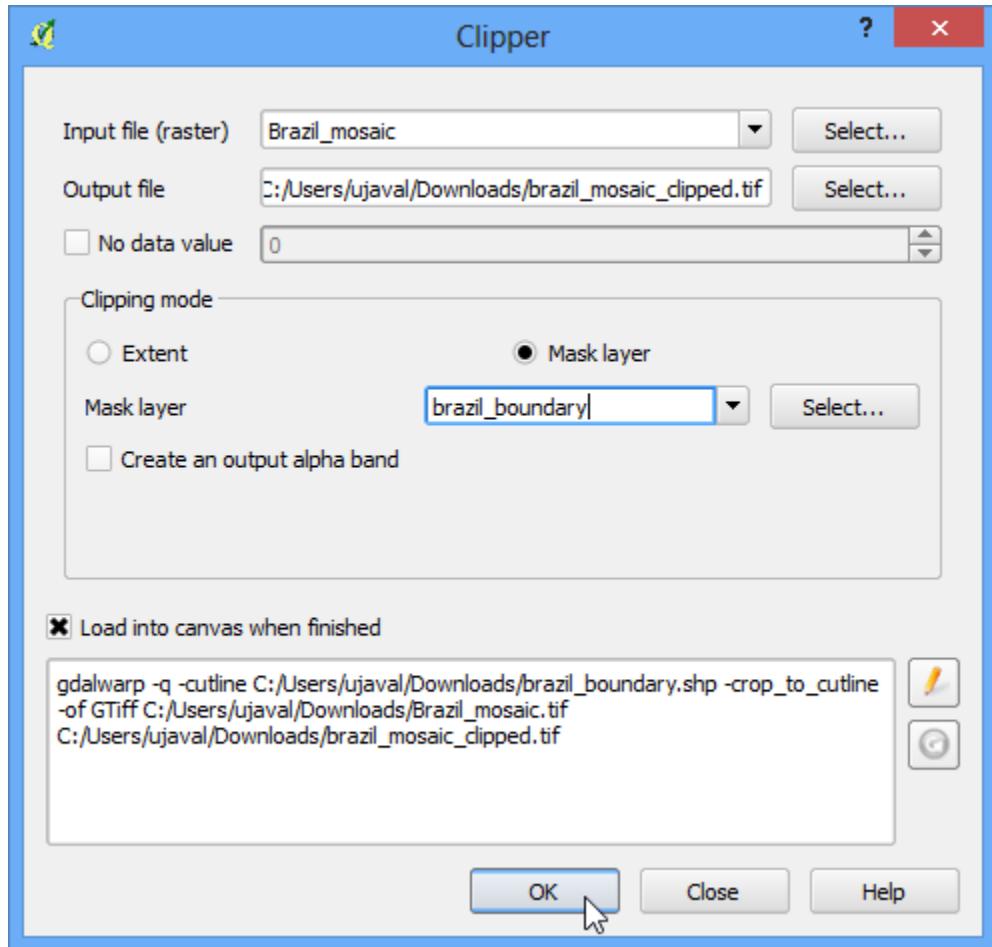
15. You will see the Brazil boundary polygon now loaded in QGIS.



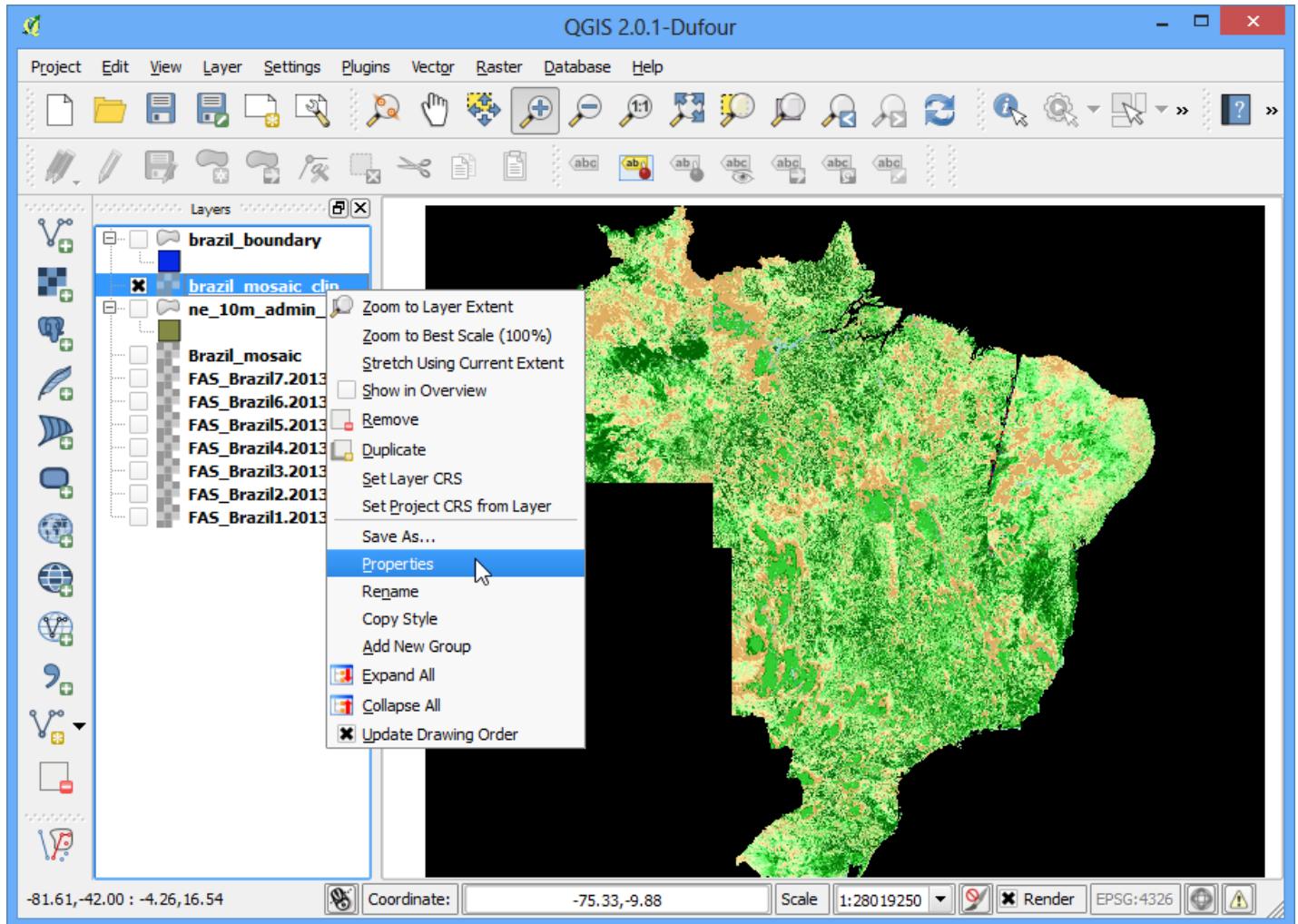
16. Now go to Raster ▶ Extraction ▶ Clipper.



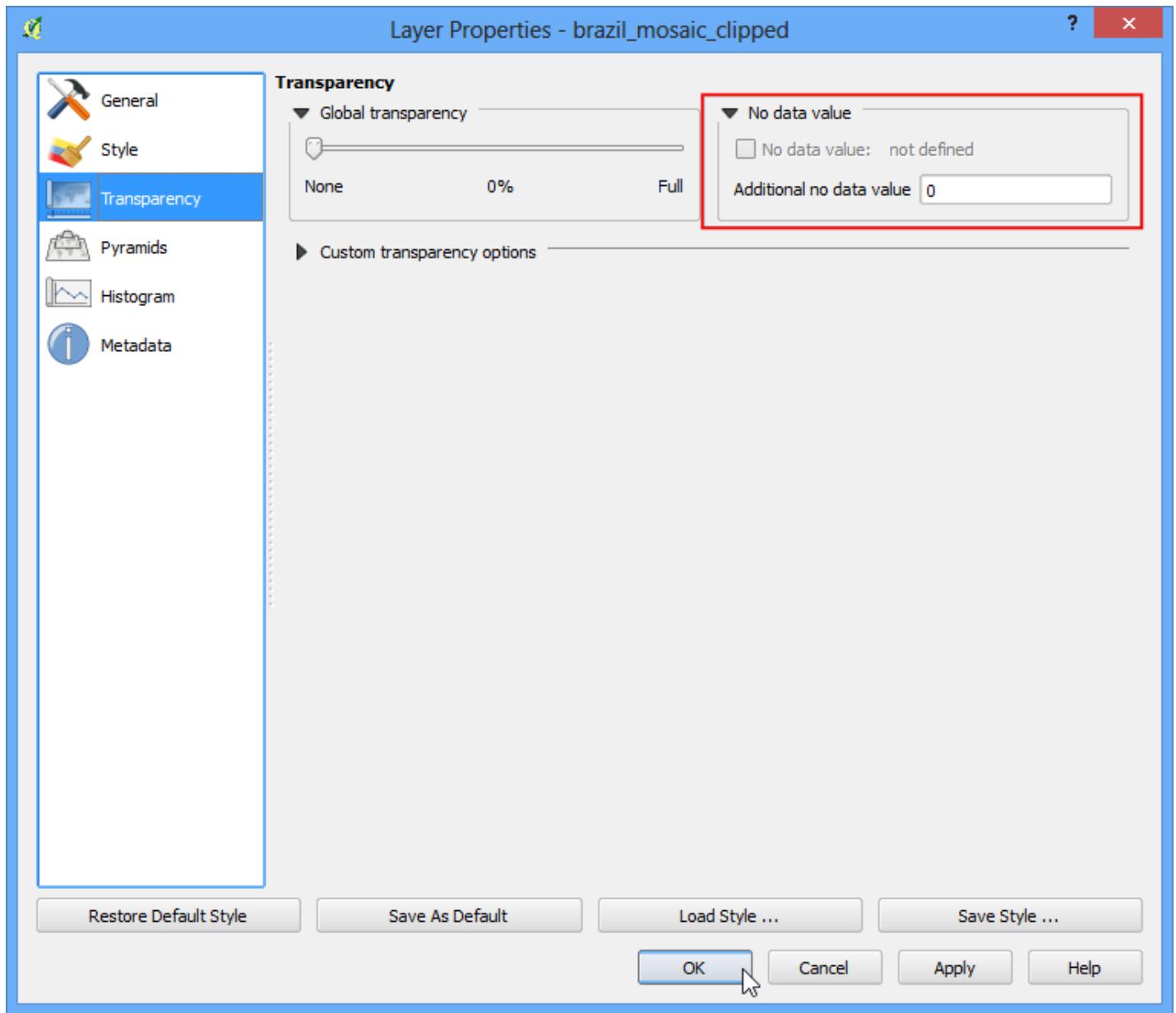
17. Select the input file (raster) as Brazil_mosaic. Name the Output file as Brazil_mosaic_clipped. In the Clipping mode section, choose Mask layer. Select the newly created brazil_boundary as the mask layer. Check the box next to Load into canvas when finished. Click OK.



18. The new cropped layer will be loaded into QGIS. You will notice the black pixels surrounding the actual mosaic. Let's remove that. Right-click on the Brazil_mosaic_clipped layer and select Properties.



19. Go to the Transparency tab, and add 0 as an Additional no data value.



20. Now you have a nice mosaic cropped to a country boundary that you can use in your project as a background layer or do further analysis on.

