

Using Custom Land Cover Data

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Contents

- Objective: Learn how to load custom land cover data and to compute the land cover change sub-indicator using Trends.Earth.
- Estimated time of completion: 40 minutes
- Internet access: Not required

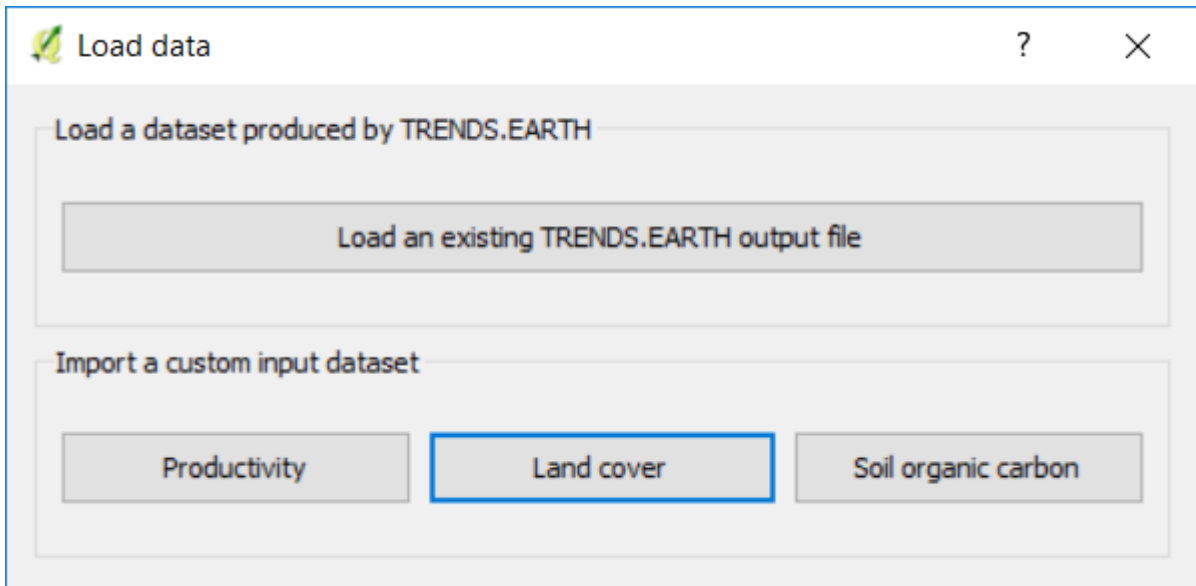
Note: [Download this page as a PDF for offline use](#)

Note: The land cover dataset for this tutorial were provided by the [Regional Centre For Mapping Resource For Development](#) and can be downloaded from [this link](#).

1. To load custom land cover data click on the () icon in the Trends.Earth toolbar.



2. The Load data menu will open. Select Land cover from the Import a custom input dataset section.



3. In the Load a Custom Land Cover dataset use the radio button to select the format of the input file (raster or vector). For this tutorial select raster, but you could run it with your land cover vector data if you prefer. Click on Browse to navigate to the land cover file you wish to import.

Load a Custom Land Cover Dataset

Select a file

Raster dataset (.tif, .dat, .img)

Click "Browse" to choose a file... Browse

Band number: ▼

Polygon dataset (shapefile, KML, KMZ, GeoJSON)

Click "Browse" to choose a file... Browse

Field containing data: ▼

Modify resolution (in meters)

300 ▲
▼

Year of data

2015 ▲
▼

Choose a land cover aggregation method

Edit definition

Use sample when reading cover classes from input file

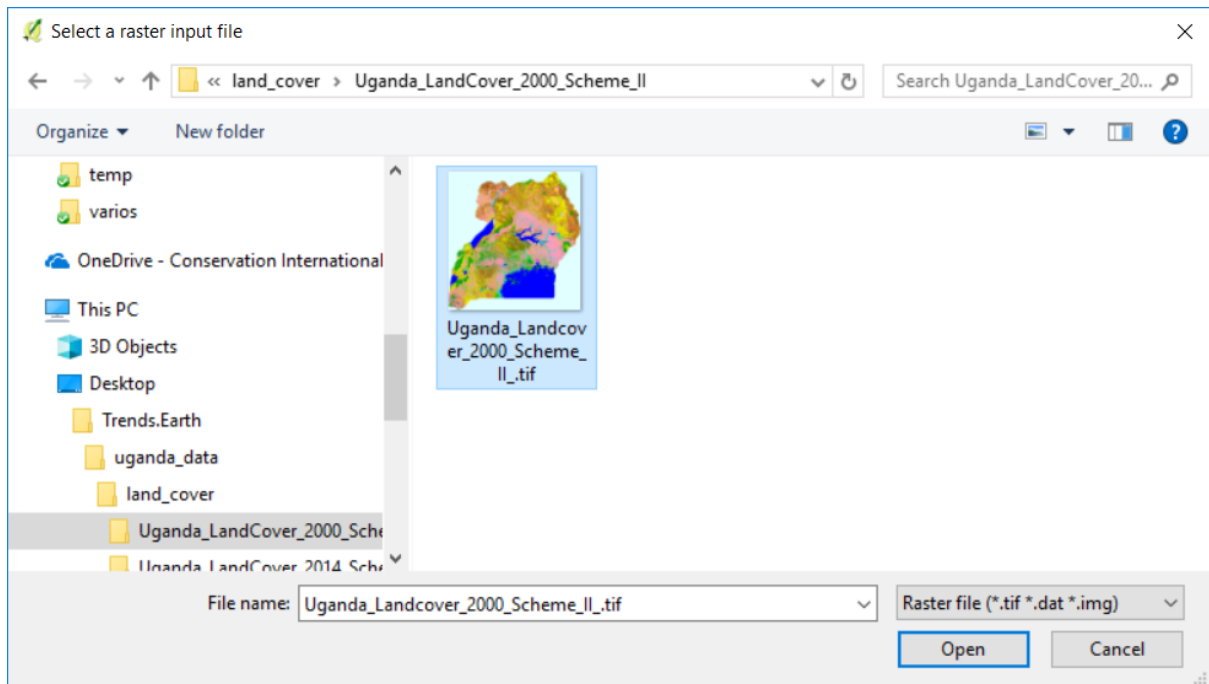
Note: If reading a large file it is recommended that the above option be checked, as it will significantly speed the process of reading the input classes from the dataset. However, if you find that Trends.Earth is not identifying all of the classes in the input file, it may be necessary to turn off this option.

Output raster file (.tif)

Click "Browse" to choose a file... Browse

OK Cancel

4. Use the Select input file window to navigate to the file to be imported, select it, and click Open.



5. Back at the Load a Custom Land Cover dataset window you have options for selecting the band number in which the productivity data is stored, in case your input file is a multi band raster. You also have the option of modifying the resolution of the file. We recommend leaving those as defaults unless you have valid reasons for changing them.
6. Define the year of reference for the data. In this case, since the land cover dataset for Uganda was developed for the year 2000, define it as such. Make sure you are assigning the correct year.
7. Click Browse at the bottom of the window to select the Output raster file.

Load a Custom Land Cover Dataset

Select a file

Raster dataset (.tif, .dat, .img)

/land_cover/Uganda_LandCover_2000_Scheme_II/Uganda_Landcover_2000_Scheme_II_.tif Browse

Band number: 1

Polygon dataset (shapefile, KML, KMZ, geojson)

Click "Browse" to choose a file... Browse

Field containing data:

Modify resolution (in meters)

300

Year of data

2000

Choose a land cover aggregation method

Edit definition

Use sample when reading cover classes from input file

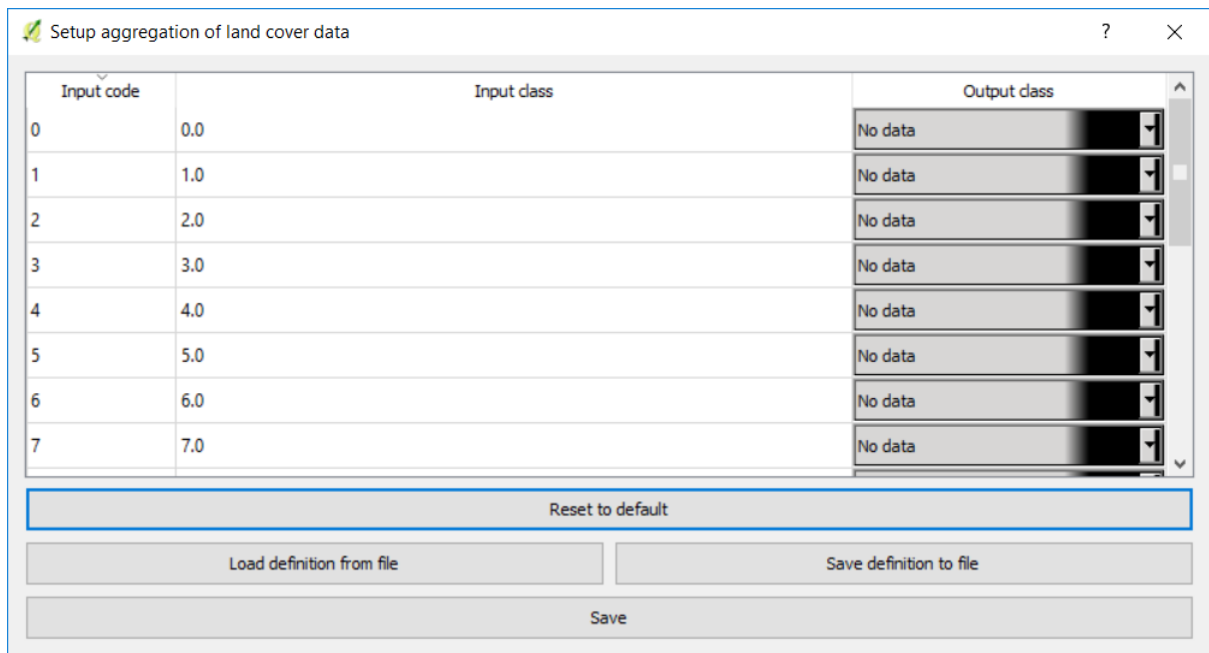
Note: If reading a large file it is recommended that the above option be checked, as it will significantly speed the process of reading the input classes from the dataset. However, if you find that Trends.Earth is not identifying all of the classes in the input file, it may be necessary to turn off this option. (Applies only if raster input is chosen)

Output raster file (.tif)

















Click "Browse" to choose a file... Browse

OK Cancel

- Click on the Edit definition button, this will open the Setup aggregation of land cover data menu. Here you need to assign each of the original input values of your dataset to one of the 7 UNCCD recommended land cover classes.



For this example, the Uganda dataset has 18 land cover classes:

- | | |
|--|--|
|  1 - Dense Natural Forest |  10 - Closed bushland |
|  2 - Moderate Natural Forest |  11 - Open Bushland |
|  3 - Sparse Natural Forest |  12 - Perennial Commercial Cropland |
|  4 - Sparse Woodland |  13 - Subsistence Cropland |
|  5 - Dense Woodland |  14 - Subsistence Cropland |
|  6 - Moderate Woodland |  15 - Wetland |
|  7 - Sparse Woodland |  16 - Water Body |
|  8 - Closed Grassland |  17 - Settlement |
|  9 - Open Grassland |  18 - Other Land |

From the Metadata of the land cover dataset, we know that the best aggregation approach is the following:

- No data = 0
 - Tree covered = 1 through 7
 - Grassland = 8 through 11
 - Cropland = 12 through 14
 - Wetland = 15
 - Water body = 16
 - Artificial = 17
 - Other land = 18
9. Use the Setup aggregation of land cover data menu to assign to each number in the Input class its corresponding Output class.

When you are done editing, click Save definition file. This option will save you time next time you run the tool, by simply loading the definition file you previously saved.

Click Save to continue

Setup aggregation of land cover data

Input code	Input class	Output class
0	0.0	No data
1	1.0	Tree-covered
2	2.0	Tree-covered
3	3.0	Tree-covered
4	4.0	Tree-covered
5	5.0	Tree-covered
6	6.0	Tree-covered
7	7.0	Tree-covered
8	8.0	Grassland
9	9.0	Grassland
10	10.0	Grassland
11	11.0	Grassland
12	12.0	Cropland
13	13.0	Cropland
14	14.0	Cropland
15	15.0	Wetland
16	16.0	Water body
17	17.0	Artificial
18	18.0	Other land

Reset to default

Load definition from file Save definition to file

Save

- Back at the Load a Custom Land Cover dataset window, click Browse at the bottom of the window to select the Output raster file.

Load a Custom Land Cover Dataset

Select a file

Raster dataset (.tif, .dat, .img)

/land_cover/Uganda_LandCover_2000_Scheme_II/Uganda_Landcover_2000_Scheme_II_.tif

Band number: 1

Polygon dataset (shapefile, KML, KMZ, geojson)

Click "Browse" to choose a file...

Field containing data:

Modify resolution (in meters)

300

Year of data

2000

Choose a land cover aggregation method

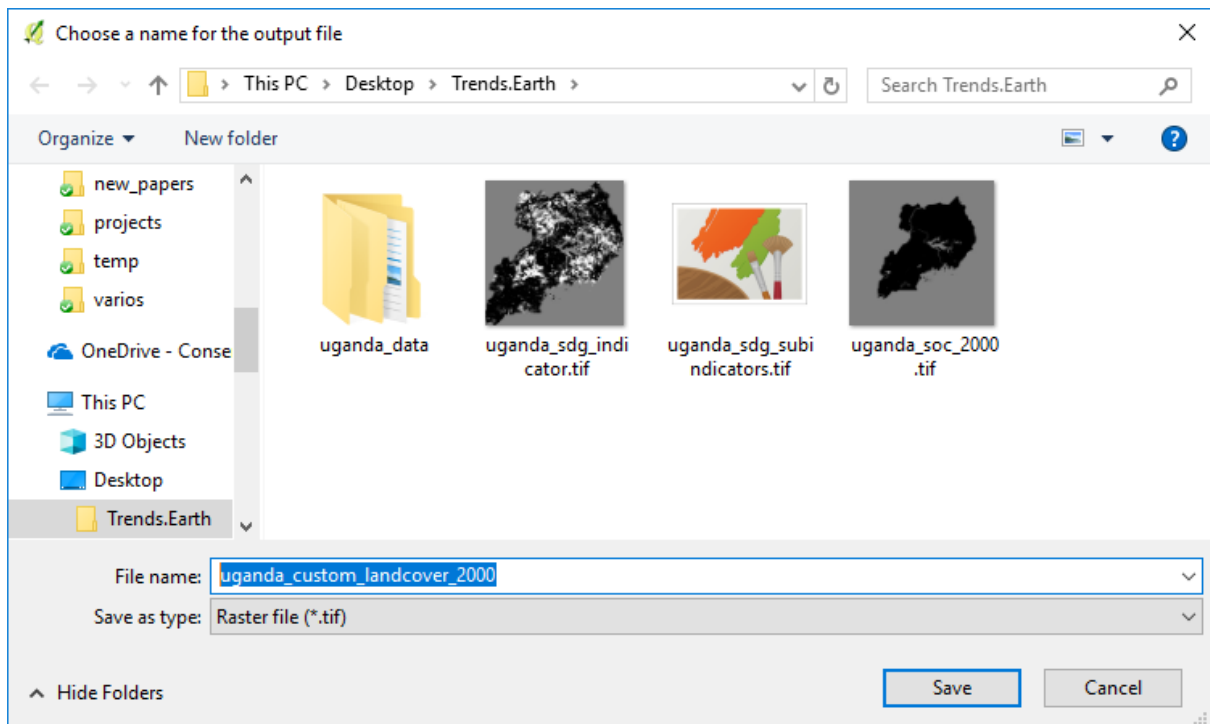
Use sample when reading cover classes from input file

Note: If reading a large file it is recommended that the above option be checked, as it will significantly speed the process of reading the input classes from the dataset. However, if you find that Trends.Earth is not identifying all of the classes in the input file, it may be necessary to turn off this option. (Applies only if raster input is chosen)

Output raster file (.tif)

Click "Browse" to choose a file...

8. Navigate to the folder where you want to save the file. Assign it a name and click Save.



9. Back at the Load a Custom Land Cover dataset click OK for the tool to run.

Load a Custom Land Cover Dataset

Select a file

Raster dataset (.tif, .dat, .img)

/land_cover/Uganda_LandCover_2000_Scheme_II/Uganda_Landcover_2000_Scheme_II_.tif

Band number:

1

Polygon dataset (shapefile, KML, KMZ, geojson)

Click "Browse" to choose a file...

Field containing data:

Modify resolution (in meters)

300

Year of data

2000

Choose a land cover aggregation method

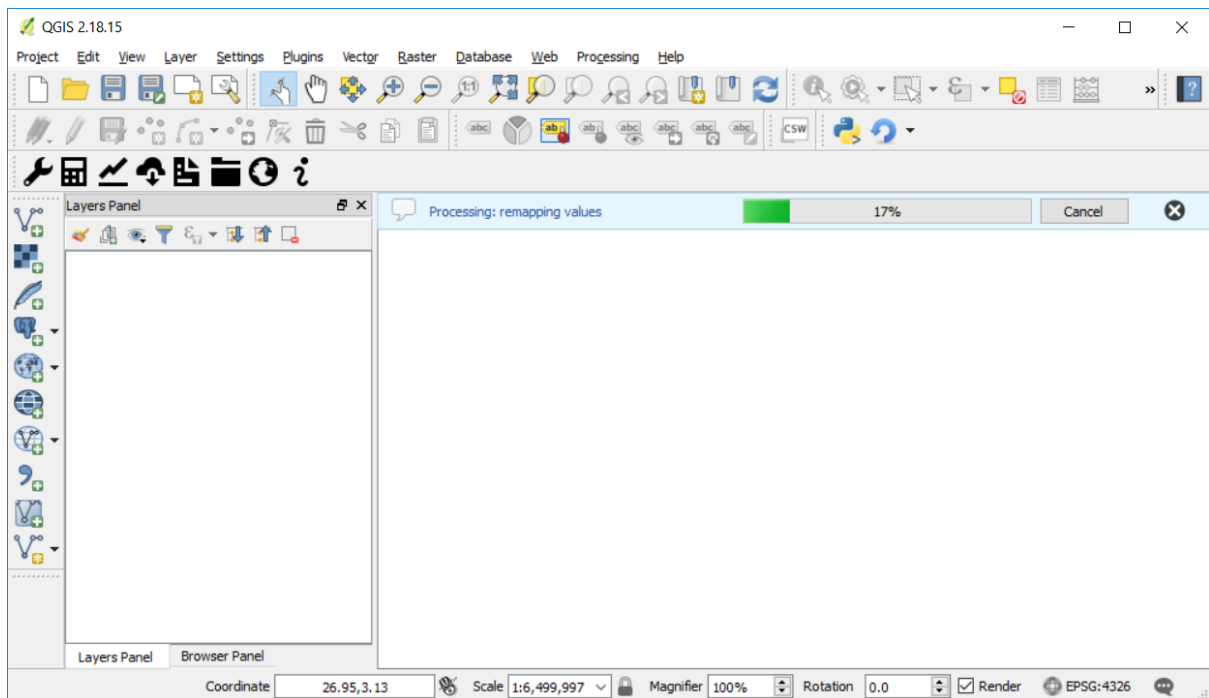
Use sample when reading cover classes from input file

Note: If reading a large file it is recommended that the above option be checked, as it will significantly speed the process of reading the input classes from the dataset. However, if you find that Trends.Earth is not identifying all of the classes in the input file, it may be necessary to turn off this option. (Applies only if raster input is chosen)

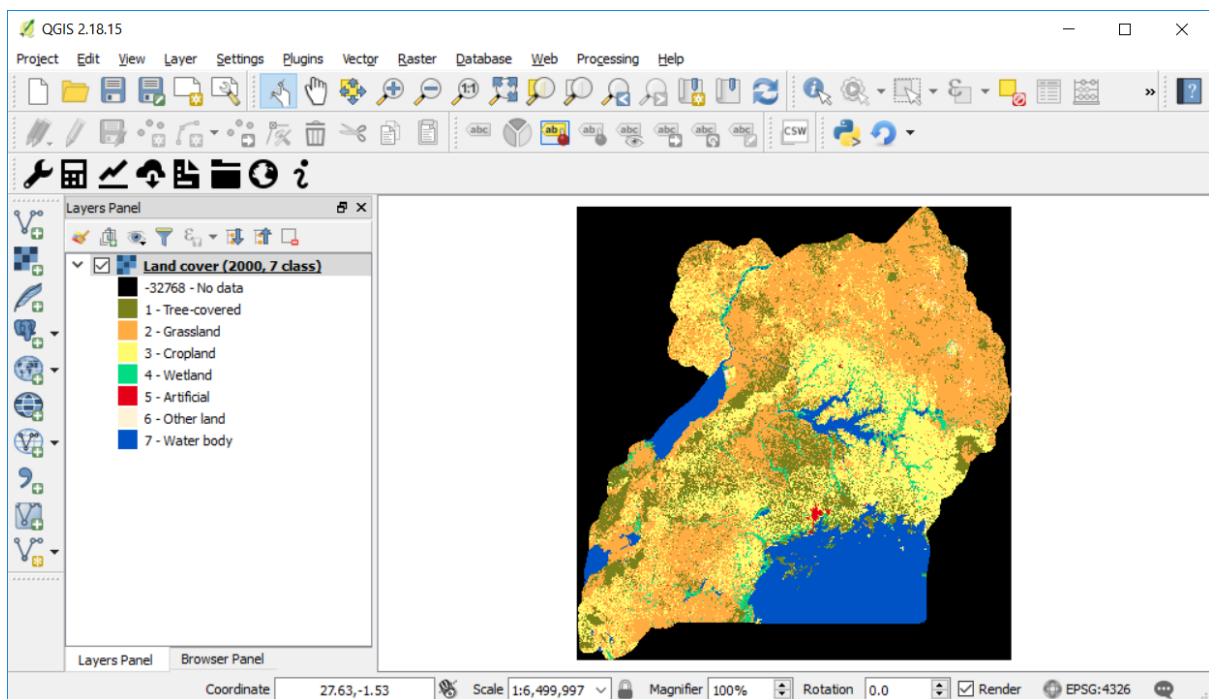
Output raster file (.tif)

ts and Settings/mgonzalez-roglich/Desktop/Trends.Earth/uganda_custom_landcover_2000.tif

10. A progress bar will appear showing the percentage of the task completed.

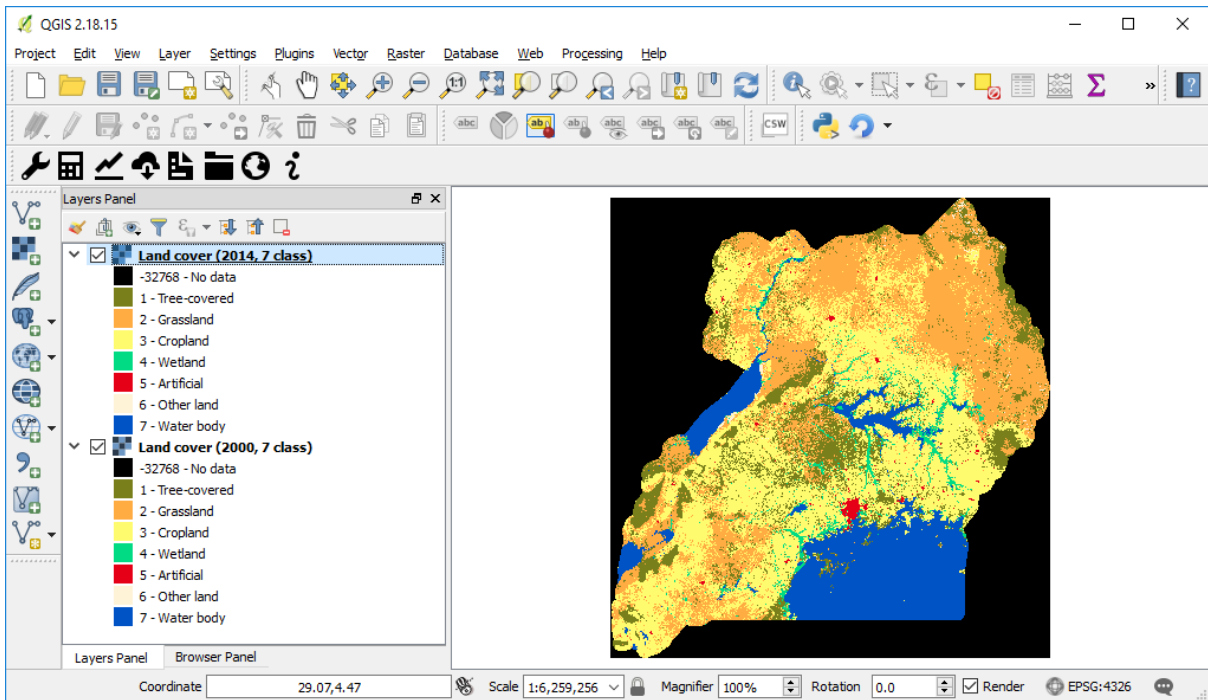


11. When the processing is completed, the imported land cover dataset will be loaded to QGIS.



Note: You have one imported custom land cover data for one year (2000), but two are needed to perform the land cover change analysis. Repeat now steps 1 through 11, but this time with the most recent land cover map. For this tutorial, we will use another land cover map from Uganda from the year 2015. Make sure to change the year date in the import menu.

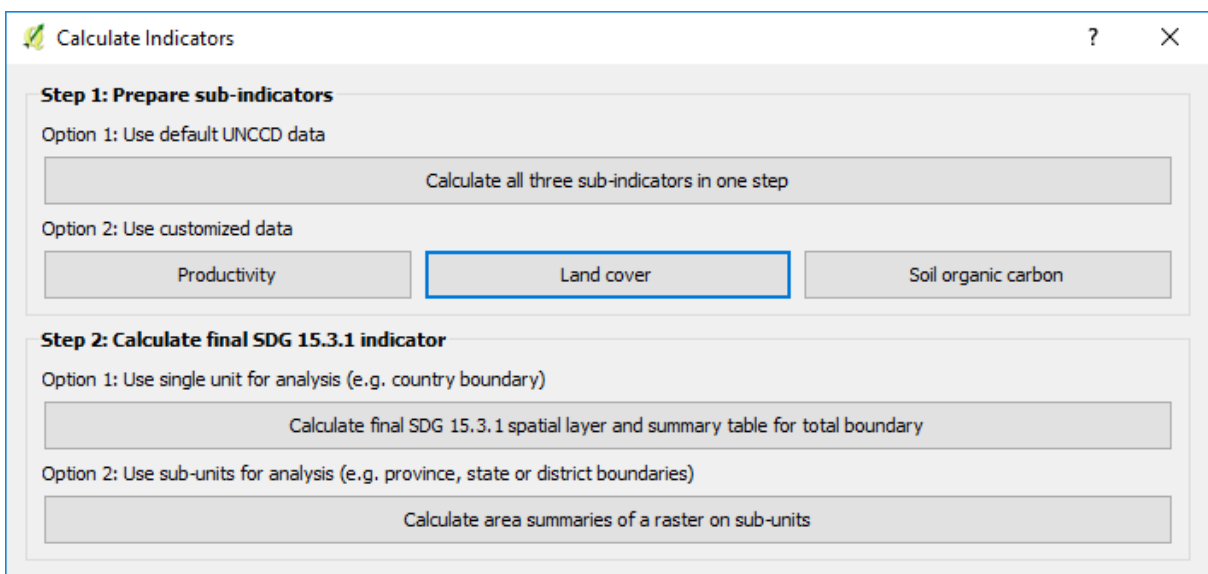
12. Once you have imported the land cover maps for years 2000 and 2015, you should have them both loaded to QGIS.



13. Now that both land cover datasets have been imported into Trends.Earth, the land cover change analysis tool needs to be run. Search for the Trends.Earth toolbar within QGIS, and click on the Calculate icon (📊).



14. The Calculate Indicators menu will open. In that window, click on Land cover button found under Step 1 - Option 2.



15. The Calculate Land Cover Change window will open. In the Setup tab, click on Custom land cover dataset. Use the drop down option next to Initial layer (initial year) and Final layer (target year) to change the dates accordingly. When done, click Next.

16. The Define Degradation tab is where you define the meaning of each land cover transition in terms of degradation. Transitions indicated in red (minus sign) will be identified as degradation in the final output, transitions in beige (zero) will be identified as stable, and transitions in green (plus sign) will be identified as improvements.

For example, by default it is considered that a pixel that changed from Grassland to Tree-covered will be considered as improved. However, if in your study area woody plant encroachment is a degradation process, that transition should be changed for that particular study area to degradation (minus sign).

If you have made no changes to the default matrix, simply click Next.

If you did change the meaning of some of the transitions, click on Save table to file... to save the definition for later use. Then click Next.

Calculate Land Cover Change

Land Cover Setup Define Degradation Area Options

Land cover in target year

	Tree-covered	Grassland	Cropland	Wetland	Artificial	Bare land	Water body
Tree-covered	0	-	-	-	-	-	0
Grassland	+	0	+	-	-	-	0
Cropland	+	-	0	-	-	-	0
Wetland	-	-	-	0	-	-	0
Artificial	+	+	+	+	0	+	0
Bare land	+	+	+	+	-	0	0
Water body	0	0	0	0	0	0	0

Land cover in initial year

Legend

Degradation: - (Red)

Stable: 0 (Yellow)

Improvement: + (Green)

*The "Grassland" class consists of grassland, shrub, and sparsely vegetated areas (if the default aggregation is used).

Reset table Load saved table... Save table to file...

Previous Next

Calculate

17. In the Area tab define the area of analysis. There are two options:

- Use provided country and state boundaries: If you want to use this option make sure the Administrative area option is highlighted, and then select the First Level (country) or Second Level (state or province depending on the country).

Note: The Natural Earth Administrative Boundaries provided in Trends.Earth are in the public domain. The boundaries and names used, and the designations used, in Trends.Earth do not imply official endorsement or acceptance by Conservation International Foundation, or by its partner organizations and contributors.

If using Trends.Earth for official purposes, it is recommended that users choose an official boundary provided by the designated office of their country.

- Use your own area file: If you want to use your own area of analysis, make sure the Area from file option is highlighted. Then click Browse and navigate to the folder in your computer where you have the file stored.

When you have selected the area for which you want to compute the indicators, click Next.

Calculate Land Cover Change

Land Cover Setup Define Degradation Area Options

Area to run calculations for

Administrative area

First level: Uganda

Second level: All regions

Disclaimer: The provided boundaries are from [Natural Earth](#), and are in the [public domain](#). The boundaries and names used, and the designations used, in trends.earth do not imply official endorsement or acceptance by Conservation International Foundation, or by its partner organizations and contributors.

Area from file

Click "Browse" to choose a file...

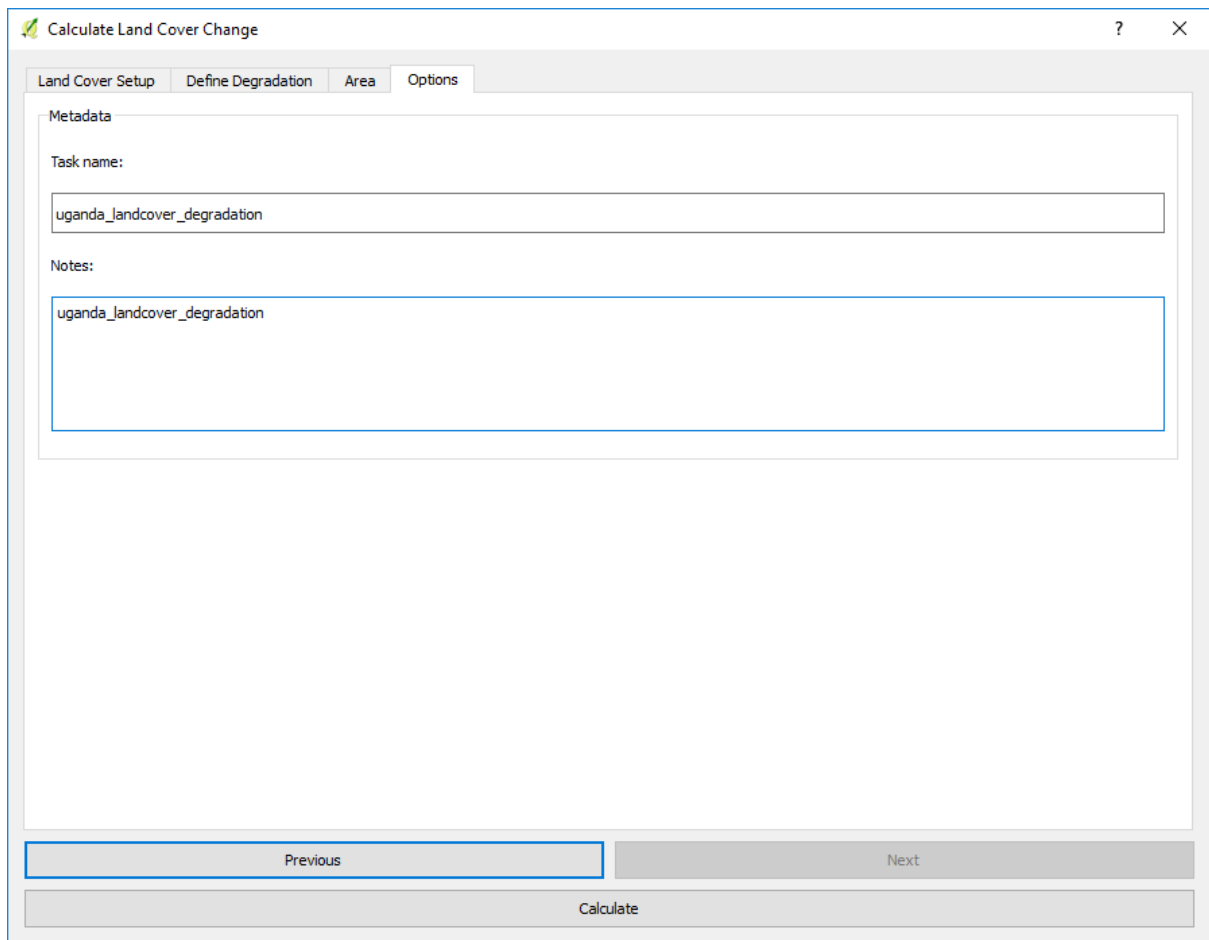
Browse

Previous Next

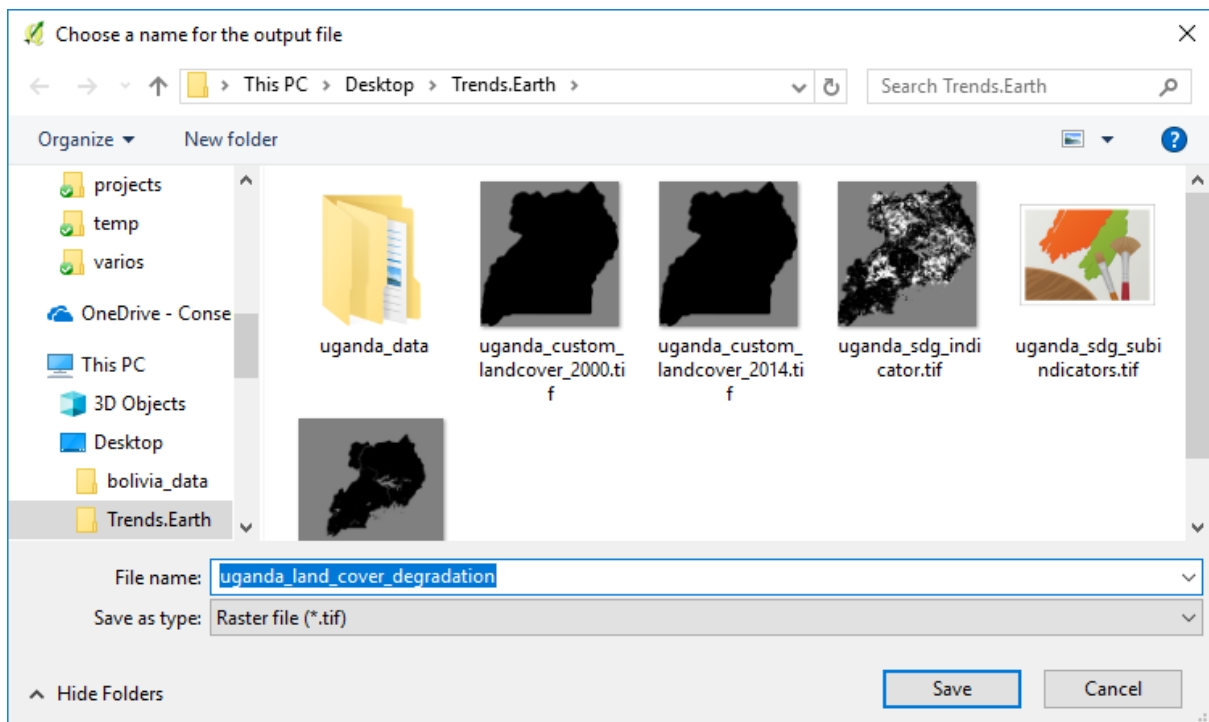
Calculate

18. In the Options tab you can define the Task name and make some Notes to identify the analysis you are running. What information to indicate is optional, but we suggest noting:

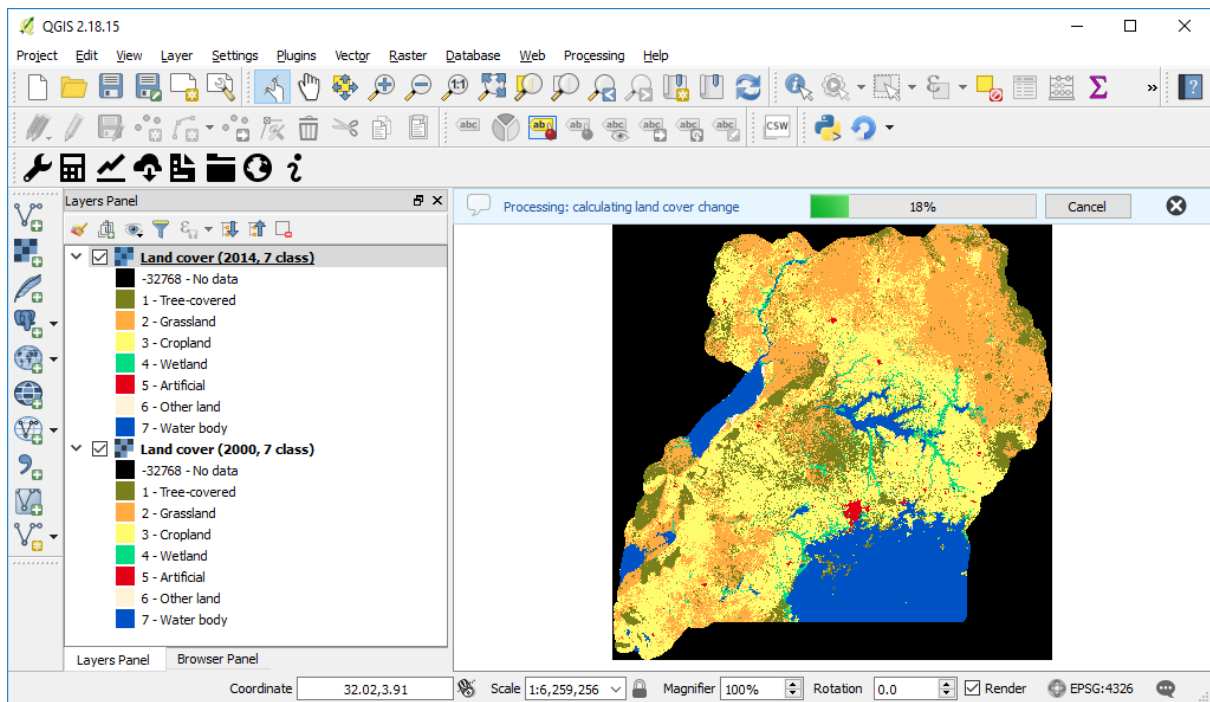
- Area of analysis
- Dates
- Indicators run



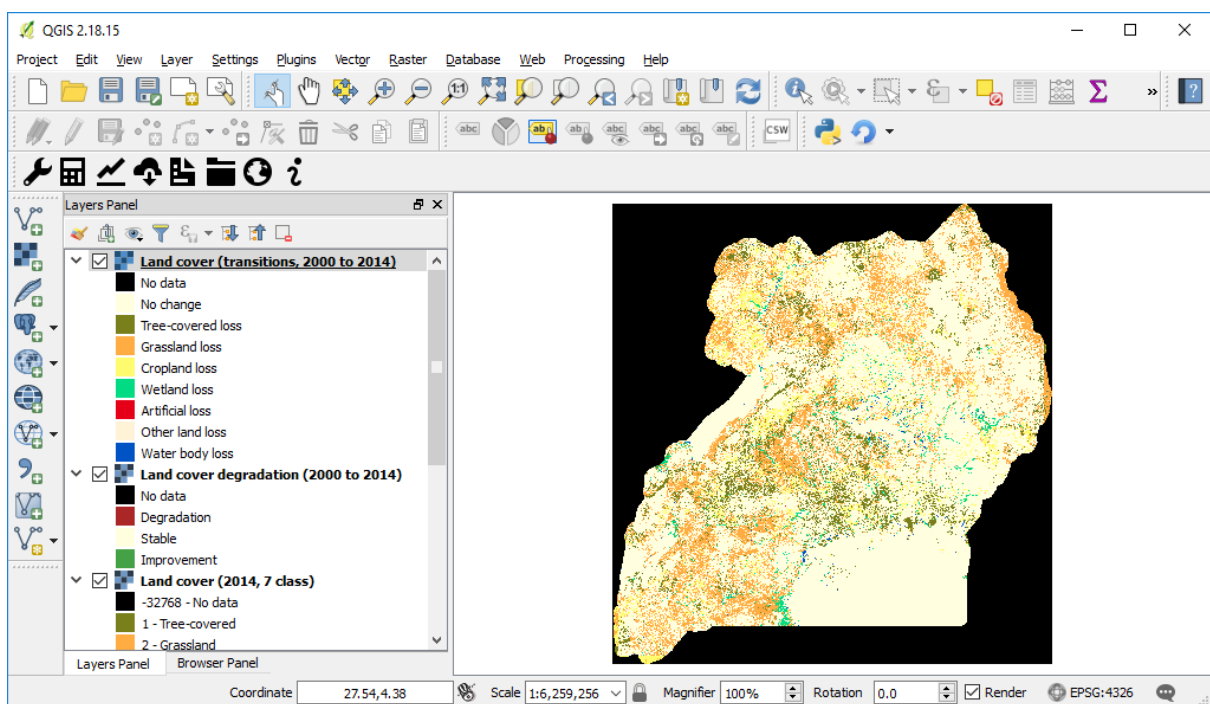
19. When you click Calculate, the Choose a name for the output file will open. Select where to save the file and its name, and click Save.



20. A progress bar will appear showing the percentage of the task completed.



21. When the processing is completed, the imported land cover degradation sub-indicator dataset will be loaded to QGIS.



Note: Refer to the tut_compute_sdg tutorial for instructions on how to use the land cover sub-indicator to compute the final SDG 15.3.1 after integration with changes land productivity and soil organic carbon.