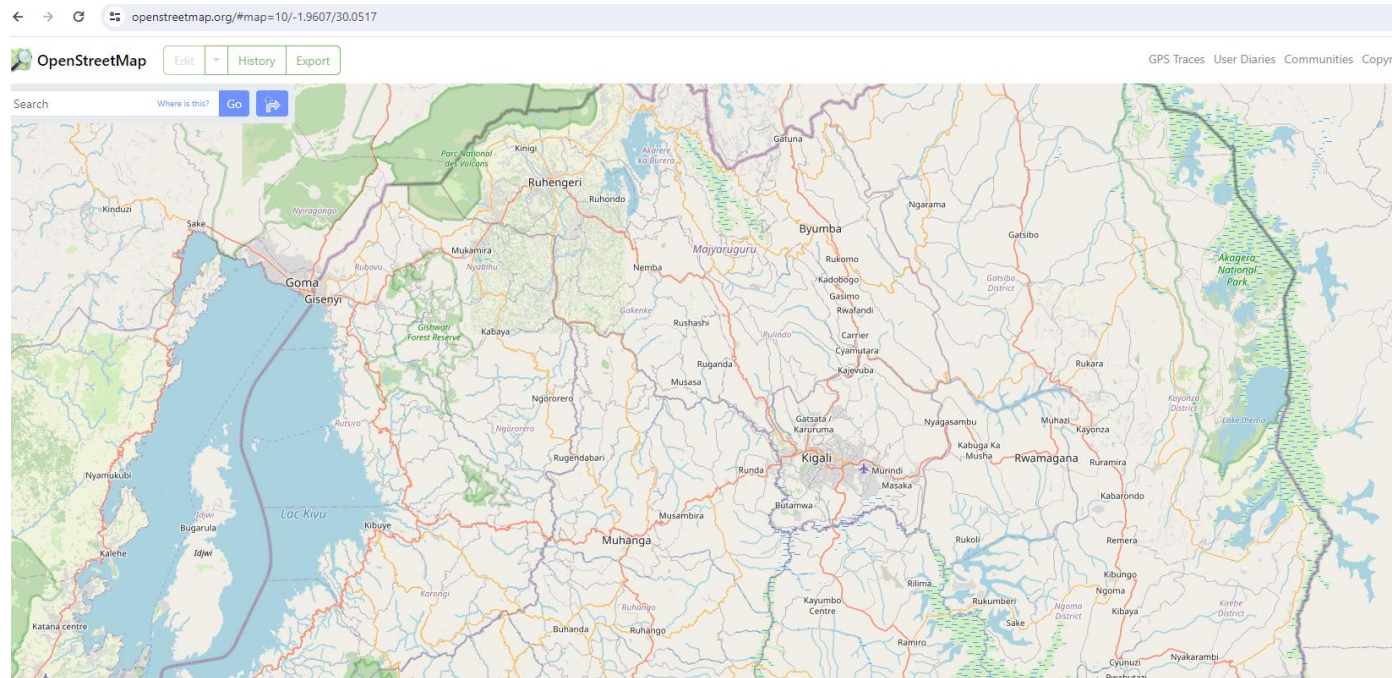


# QGIS and OpenStreetMap

Project CANATHIST –  
COEB Huye (Rwanda)

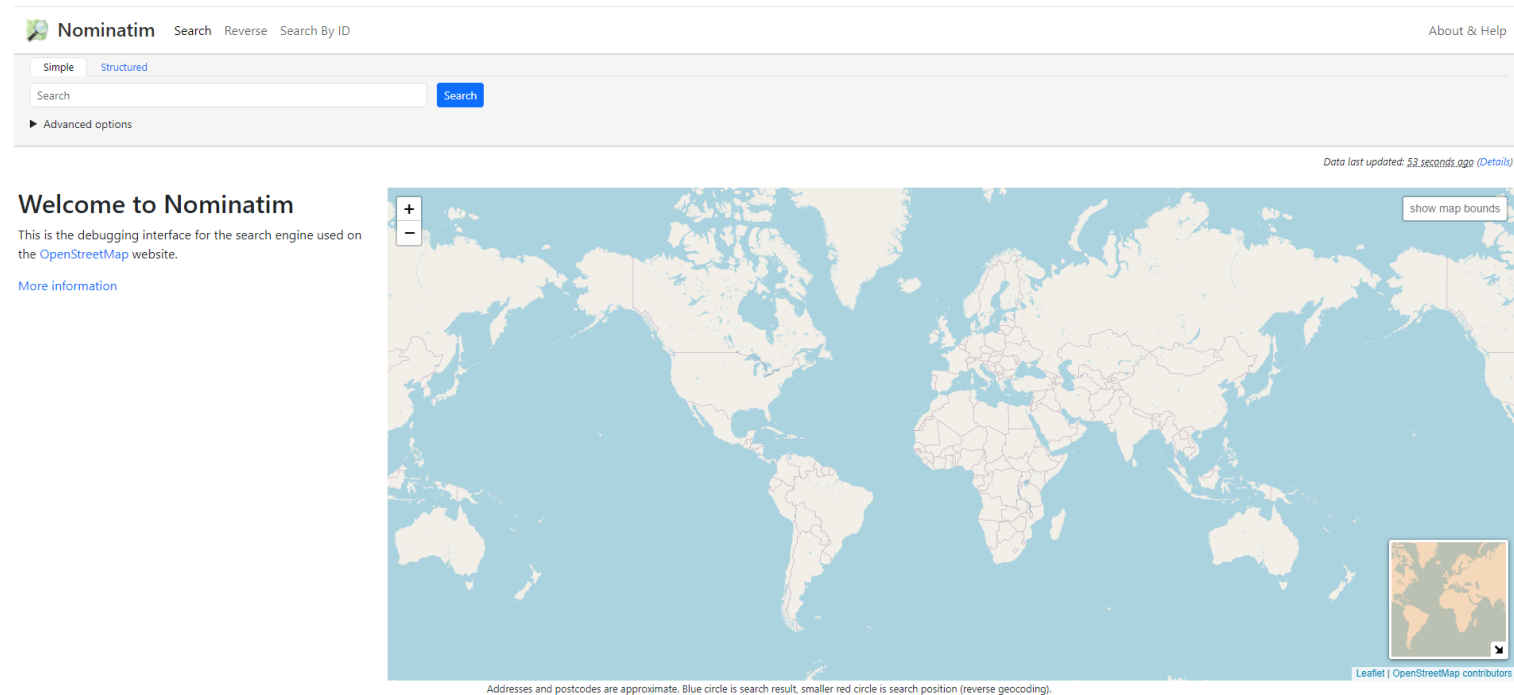
# Interesting resources

- OpenStreetMap (free and open, community-driven map and map services fed by citizensciences)
- <https://www.openstreetmap.org>



# Interesting resources

- Nominatim – registry of localities bound to OpenStreetMap
- <https://nominatim.openstreetmap.org/ui/search.html>
- Downloadable in QGIS (*QuickOSM* plugin)



Nominatim Search Reverse Search By ID About & Help

Simple Structured

Search Search

Advanced options

Data last updated: 53 seconds ago (Details)

### Welcome to Nominatim

This is the debugging interface for the search engine used on the [OpenStreetMap](#) website.

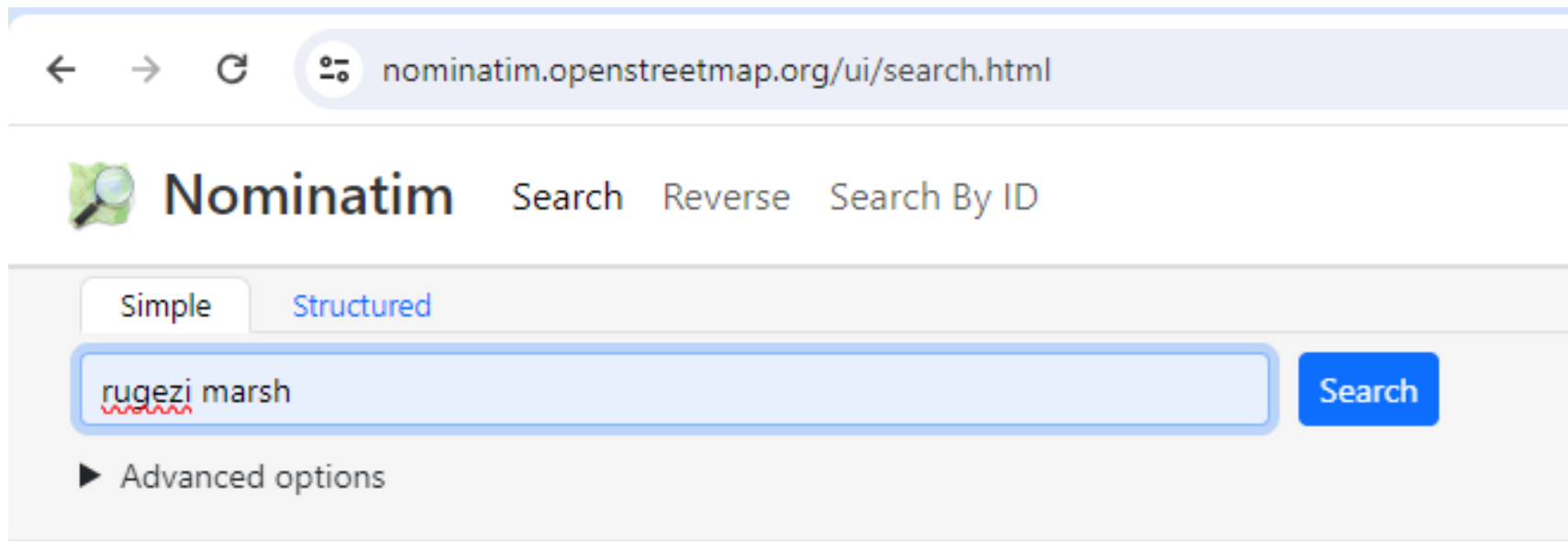
[More information](#)

Addresses and postcodes are approximate. Blue circle is search result, smaller red circle is search position (reverse geocoding).

Leaflet | OpenStreetMap contributors

# Interesting resources

- Nominatim – registry of localities bound to OpenStreetMap





# Interresting resources

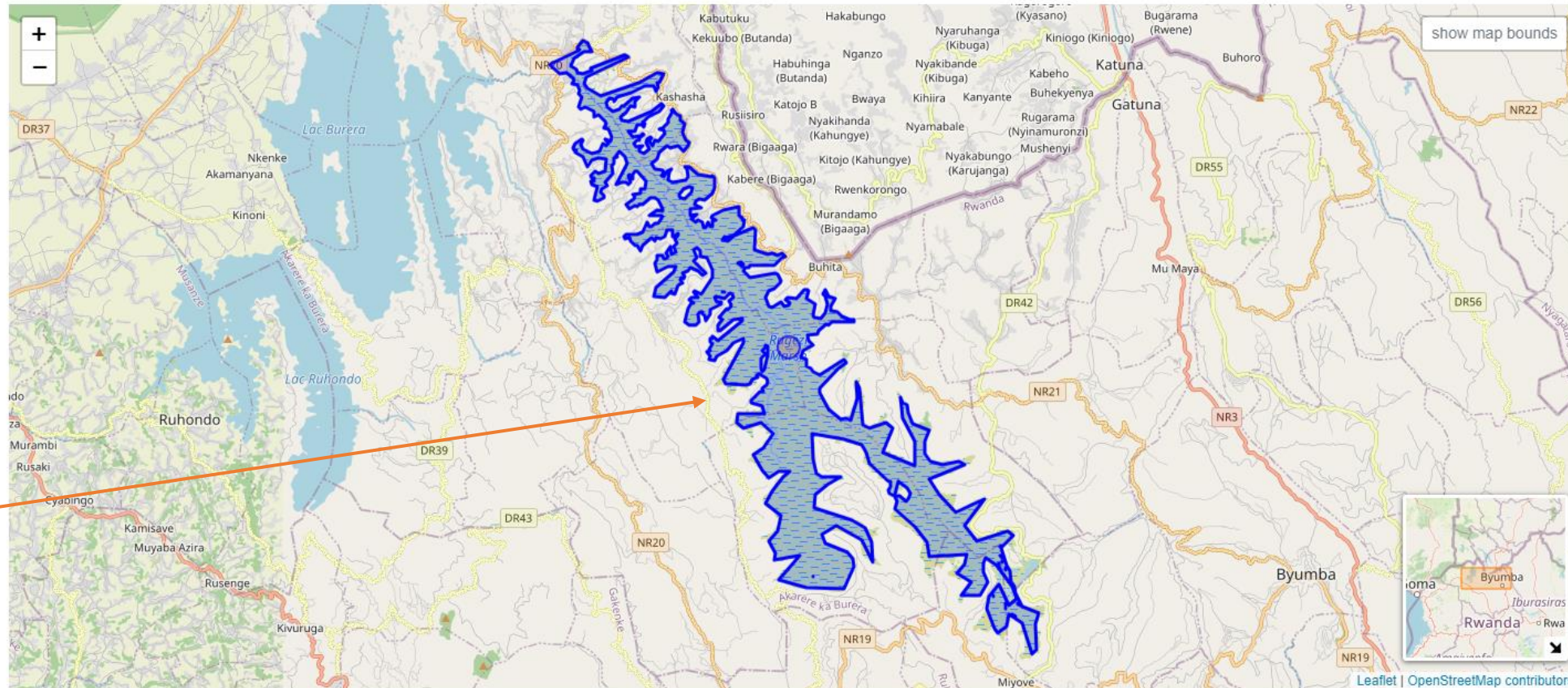
- Nominatim – registry of localities bound to OpenStreetMap

Data from API request (debug output)

Data last updated: 53 seconds ago (Details)

Rugezi Marsh, Gatabe, Burera District, Northern Province, Rwanda Wetland

Search for more results




Addresses and postcodes are approximate. Blue circle is search result, smaller red circle is search position (reverse geocoding).

Polygons can be downloaded and converted as a permanent layer in QGIS

# Interesting resources

- Nominatim – registry of localities bound to OpenStreetMap

 **Nominatim** [Search](#) [Reverse](#) [Search By ID](#)

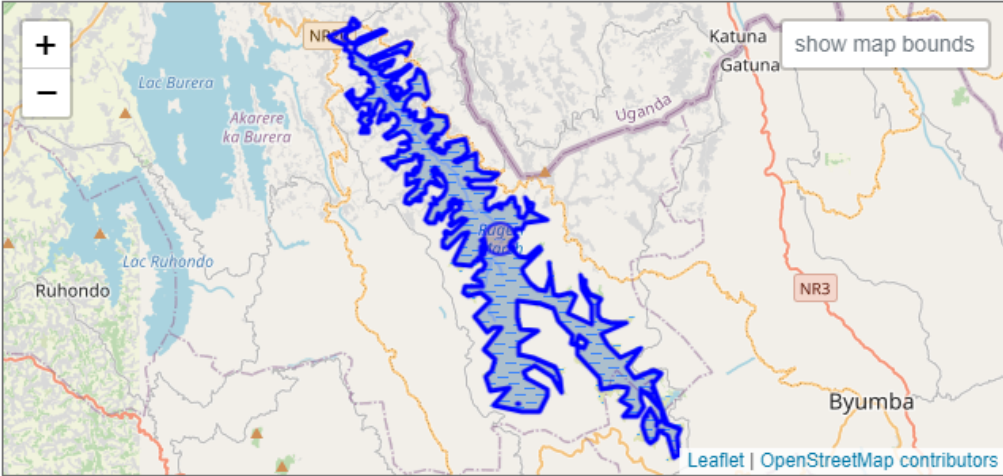
[Show](#)

OSM type+id (N123, n123, W123, w123, R123, r123), Place id (1234) or URL (<https://openstreetmap.org/way/123>)

*Data from API request (debug output)*


## Rugezi Marsh [link to this page](#)

Name	<b>Rugezi Marsh</b> (name) <b>Rugezi Marsh</b> (name:en) <b>Marais de Rugezi</b> (name:fr)
Type	natural:wetland
Last Updated	2024-05-06T14:57:57.759337+00:00
Search Rank	22
Address Rank	0 (other)
Importance	0.19324803174625985
Coverage	Polygon
Centre Point (lat,lon)	-1.50902775,29.907075392185998
OSM	<a href="#">relation 10466043</a>
Place Id	32216277 ( <a href="#">on this server</a> )
Wikipedia Calculated	<a href="#">en:Rugezi Marsh</a>



Leaflet | OpenStreetMap contributors

# Interesting resources

 **Nominatim** Search Reverse Search By ID


[Show](#)

OSM type+id (N123, n123, W123, w123, R123, r123), Place id (1234) or URL (<https://openstreetmap.org/way/123>)

*Data from API request (debug output)*

## Rugezi Marsh [link to this page](#)

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Coverage	Polygon
Centre Point (lat,lon)	-1.50902775,29.907075392185998
OSM	<a href="#">relation 10466043</a>
Place Id	32216277 ( <a href="#">on this server</a> )
Wikipedia Calculated	<a href="#">en:Rugezi_Marsh</a>



2-levels category keywords allowing download from QGIS



# Interesting resources

- Geonames – free locality repository linked to GNS and NIMA (public and military agencies of the USA)
- <https://www.geonames.org/>
- <https://www.geonames.org/export/codes.html> (nomenclature for types geographical classes : *populated places, streams, parks etc...* )





# Interesting resources

- Geonames –

Geonames search interface showing results for "rugezi".

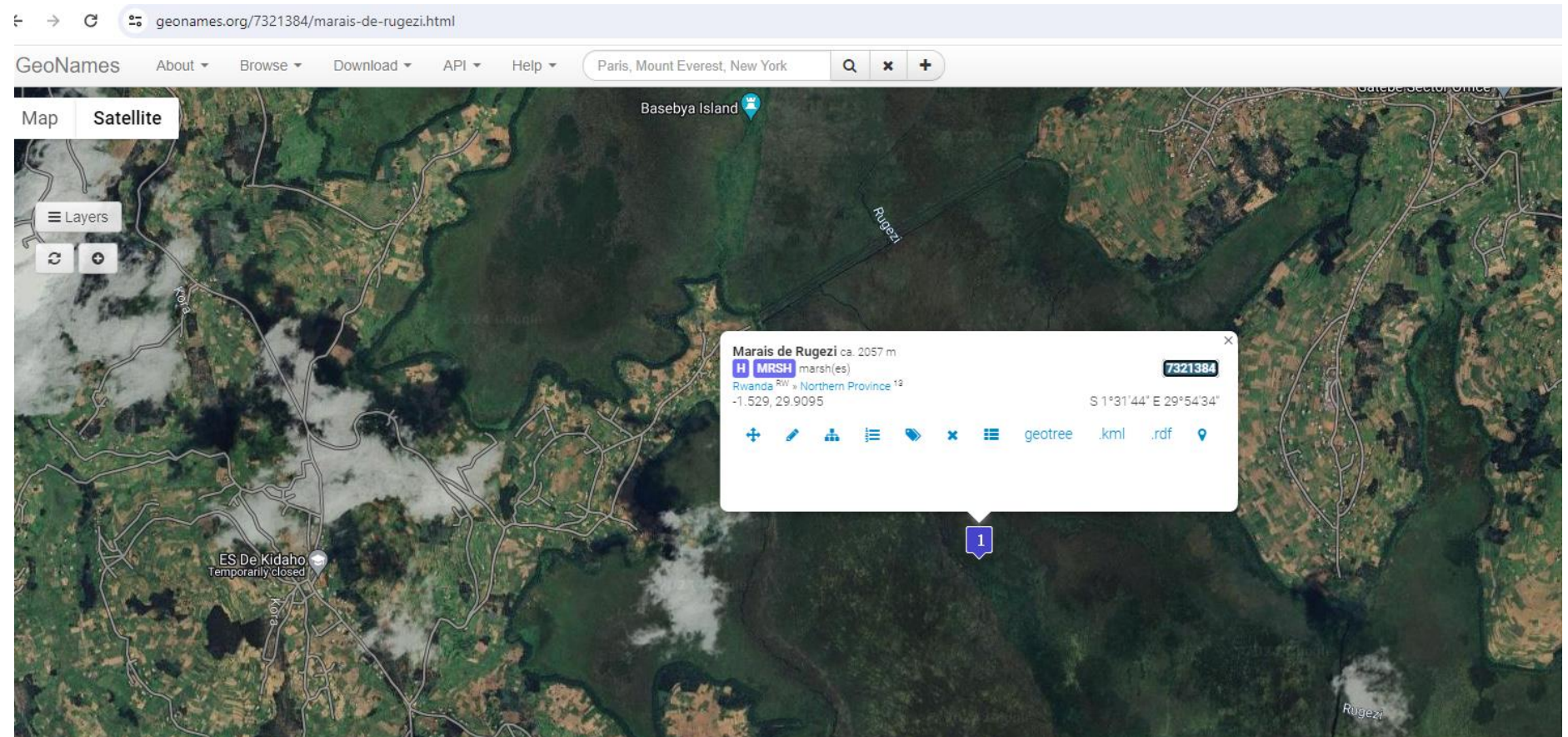
Search input: rugezi | Country dropdown: all countries | search button | [advanced search](#)

6 records found for "rugezi"

	Name	Country	Feature class	Latitude	Longitude
1	<a href="#">Rugezi</a>	<a href="#">Tanzania</a> , Mara	populated place	S 2° 6' 0"	E 33° 12' 0"
2	<a href="#">Rugezi</a> Lugeri, Lugezi, Rugezi, Rusumo	<a href="#">Rwanda</a> , Northern Province	stream	S 1° 25' 29"	E 29° 48' 41"
3	<a href="#">Rugezi</a>	<a href="#">Rwanda</a> , Eastern Province	slope(s)	S 1° 34' 12"	E 30° 23' 50"
4	<a href="#">Rugezi</a>	<a href="#">Uganda</a> , Western Region Kanungu District	stream	S 1° 1' 0"	E 29° 44' 0"
5	<a href="#">Rugezi</a>	<a href="#">Rwanda</a> , Southern Province	intermittent stream	S 2° 44' 15"	E 29° 30' 54"
6	<a href="#">Marais de Rugezi</a>	<a href="#">Rwanda</a> , Northern Province	marsh(es)	S 1° 31' 44"	E 29° 54' 34"

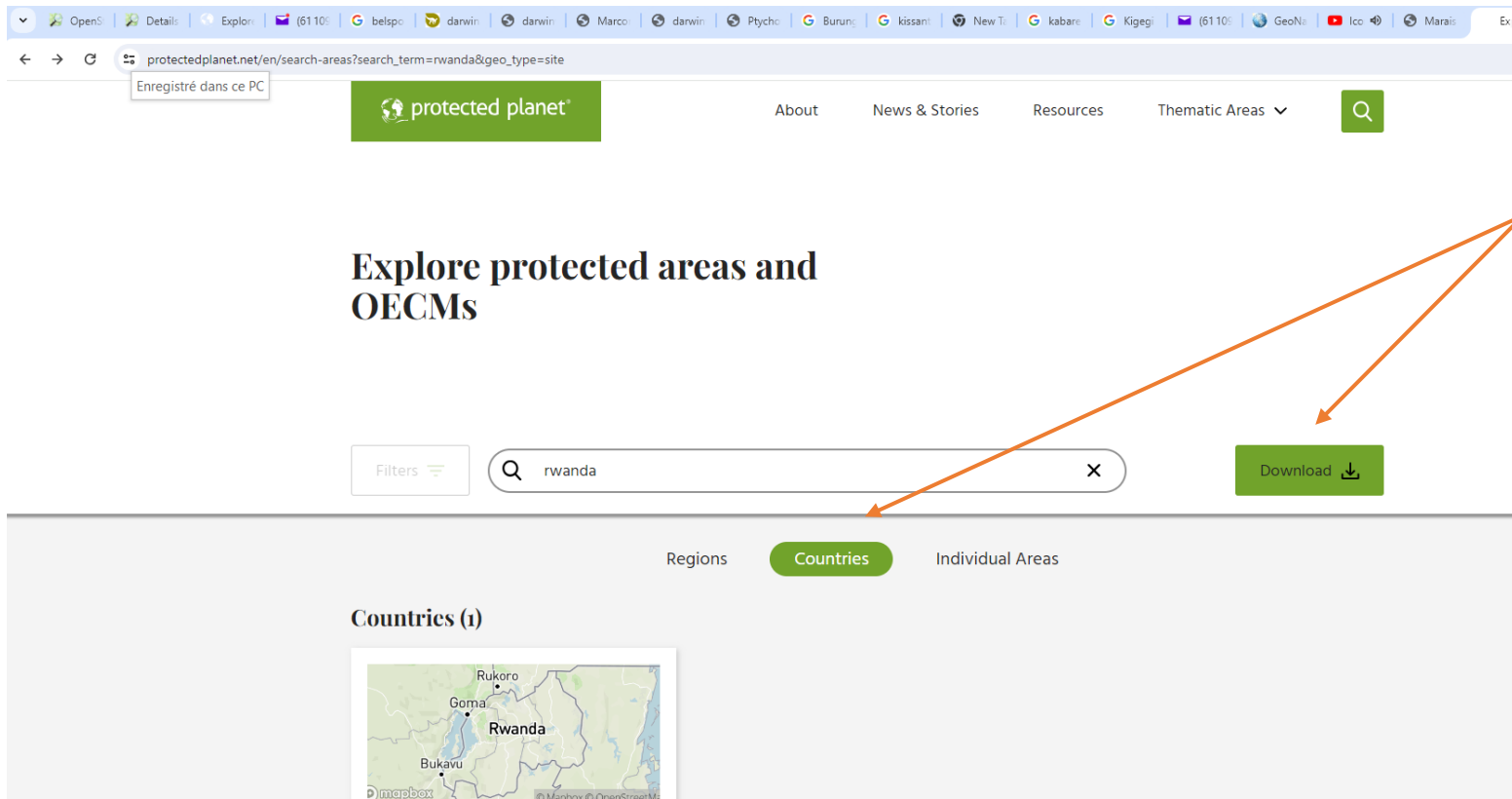
# Interesting resources

- Geonames



# Interesting resources

- Protected Planet : global repository of protected areas
- <https://www.protectedplanet.net/en>

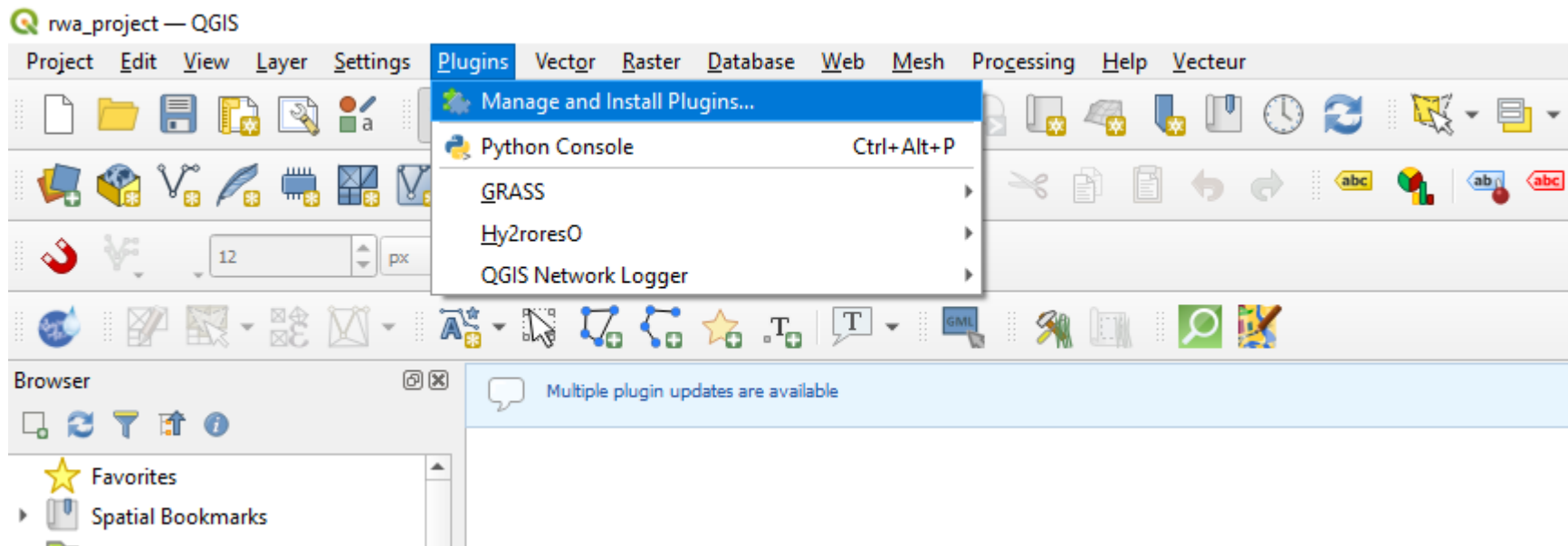


The screenshot shows the Protected Planet website interface. The browser address bar displays the URL: `protectedplanet.net/en/search-areas?search_term=rwanda&geo_type=site`. The website header includes the logo and navigation links: About, News & Stories, Resources, and Thematic Areas. A search bar contains the text "rwanda". Below the search bar, there are tabs for "Regions", "Countries" (which is selected), and "Individual Areas". Under the "Countries" tab, the heading "Countries (1)" is visible, followed by a map of Rwanda showing protected areas. A green "Download" button is located to the right of the search bar. Two orange arrows point from a text box on the right to the search bar and the "Download" button.

Country-level data downloadable as shapefiles (3 levels zip files within a main zip folder)

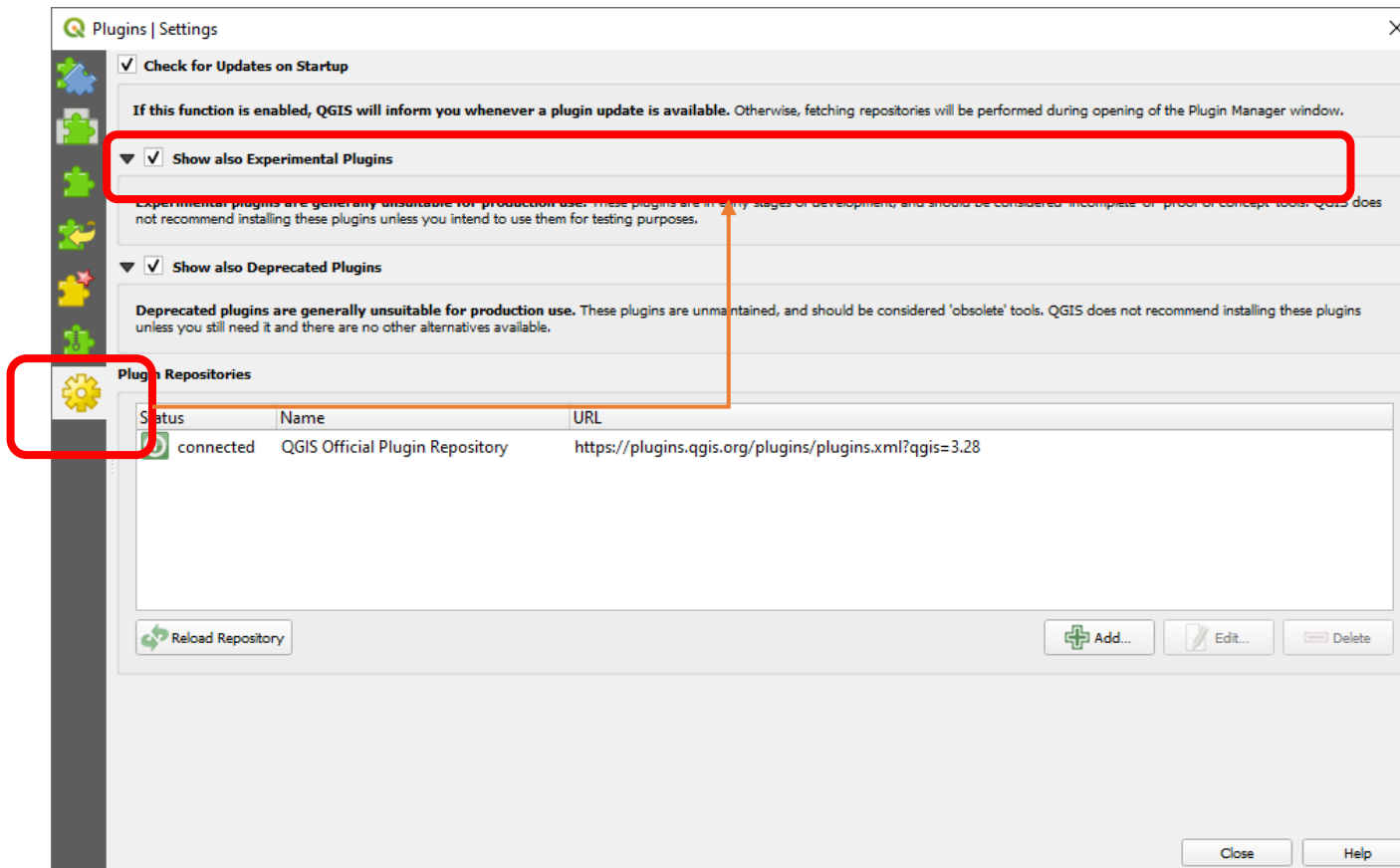
# QGIS – Display and Download from OpenStreetMap

- 1 Plugins/”Manage and Install Plugins”



# QGIS – Display and Download from OpenStreetMap

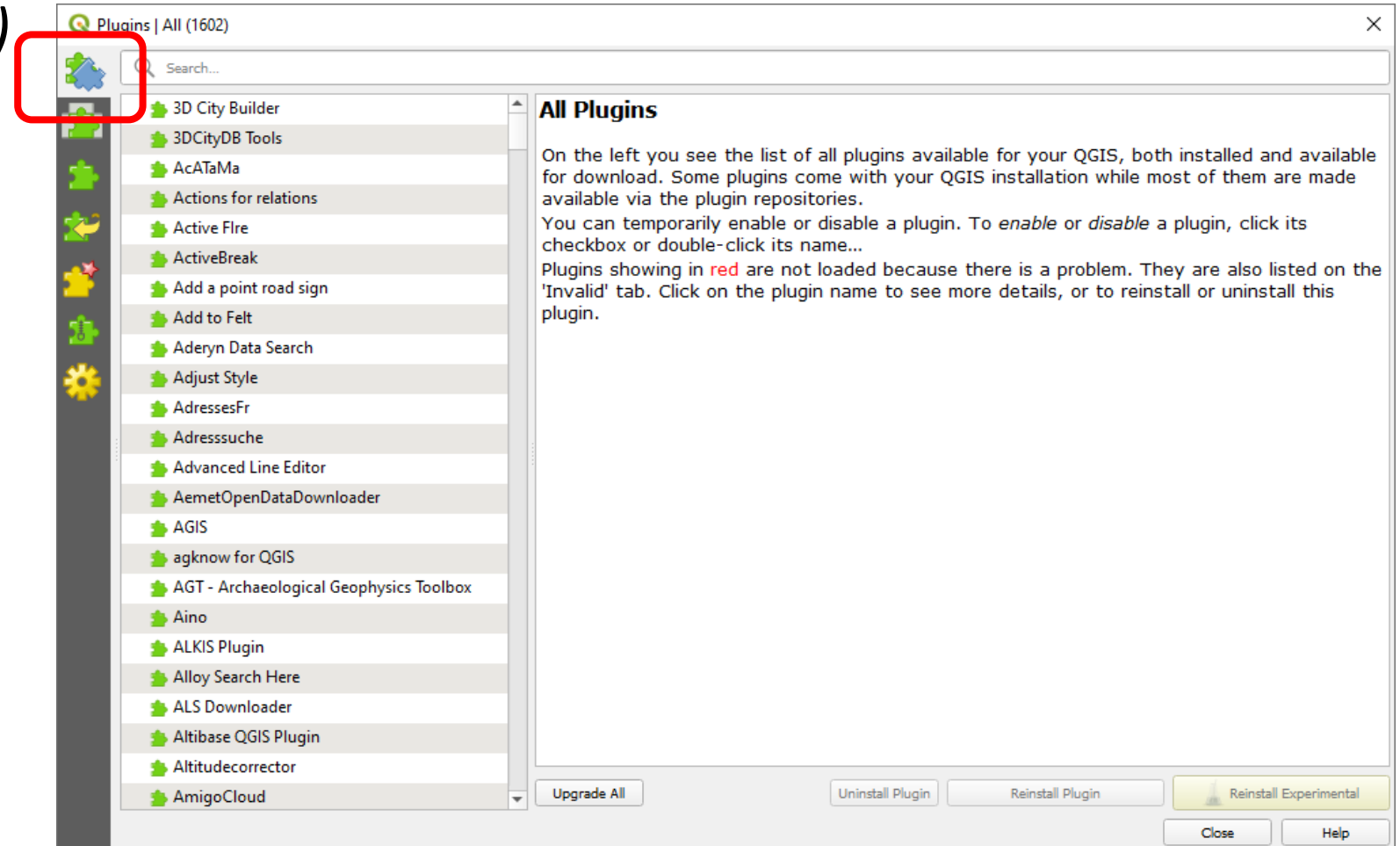
- 2 In the pop-up *Settings/“Show Also Experimental Plugins”*





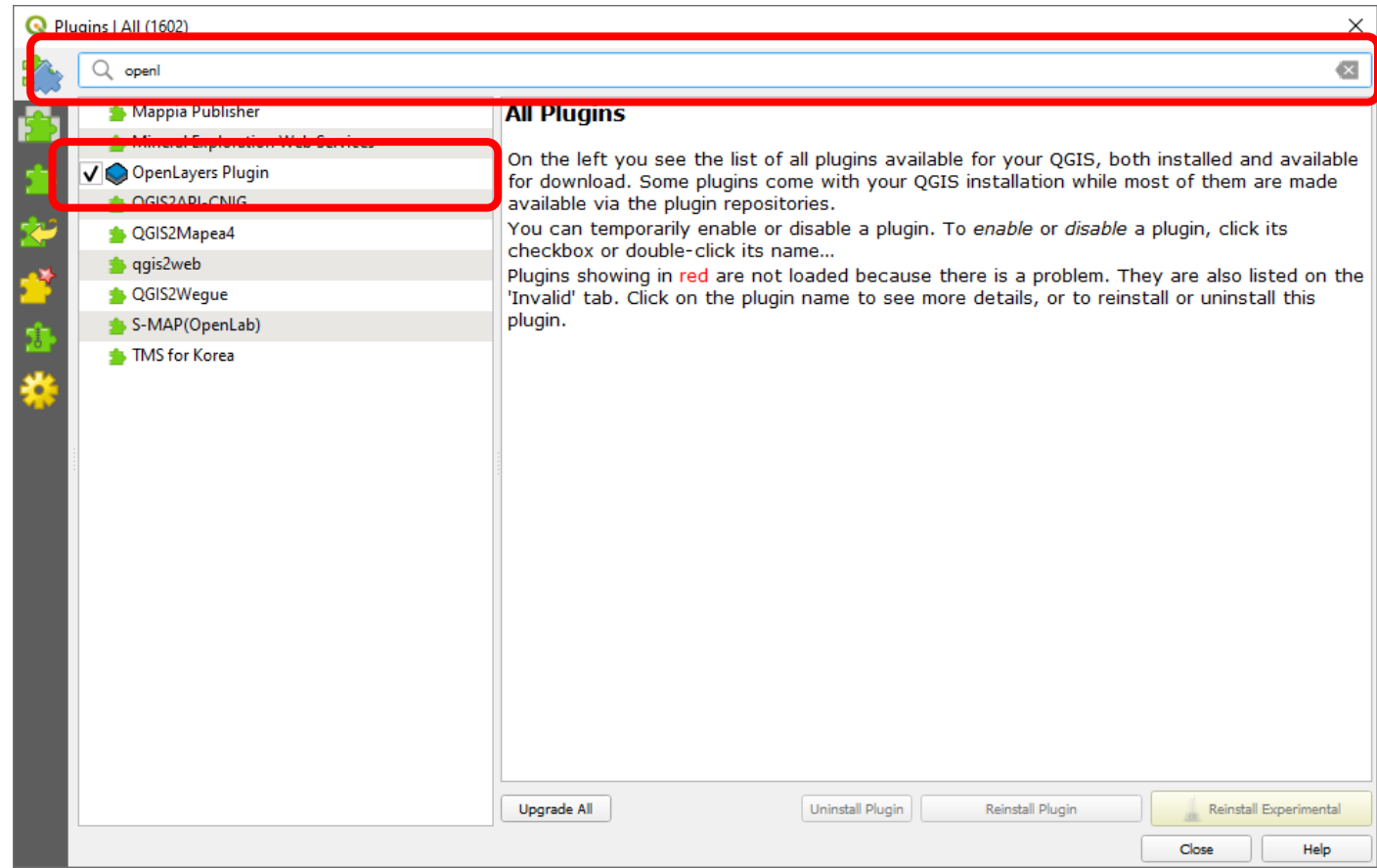
# QGIS – Display and Download from OpenStreetMap

- 3 list (top left icon)



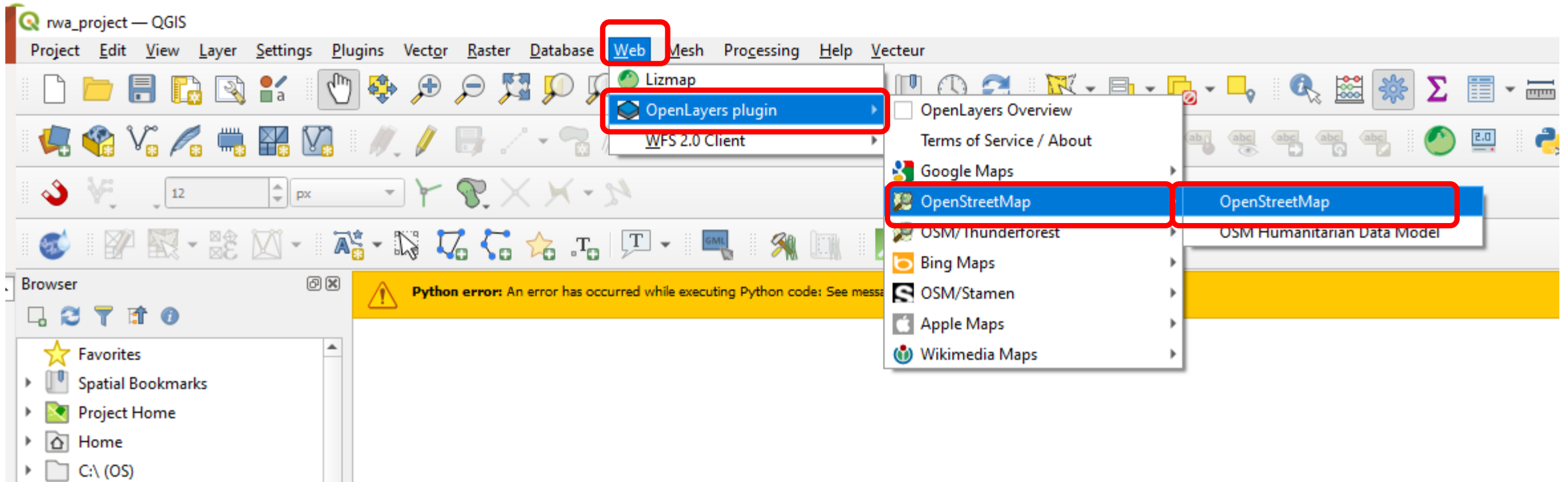
# QGIS – Display and Download from OpenStreetMap

- 3 list (top left icon)
  - Search “OpenLayers Plugins”

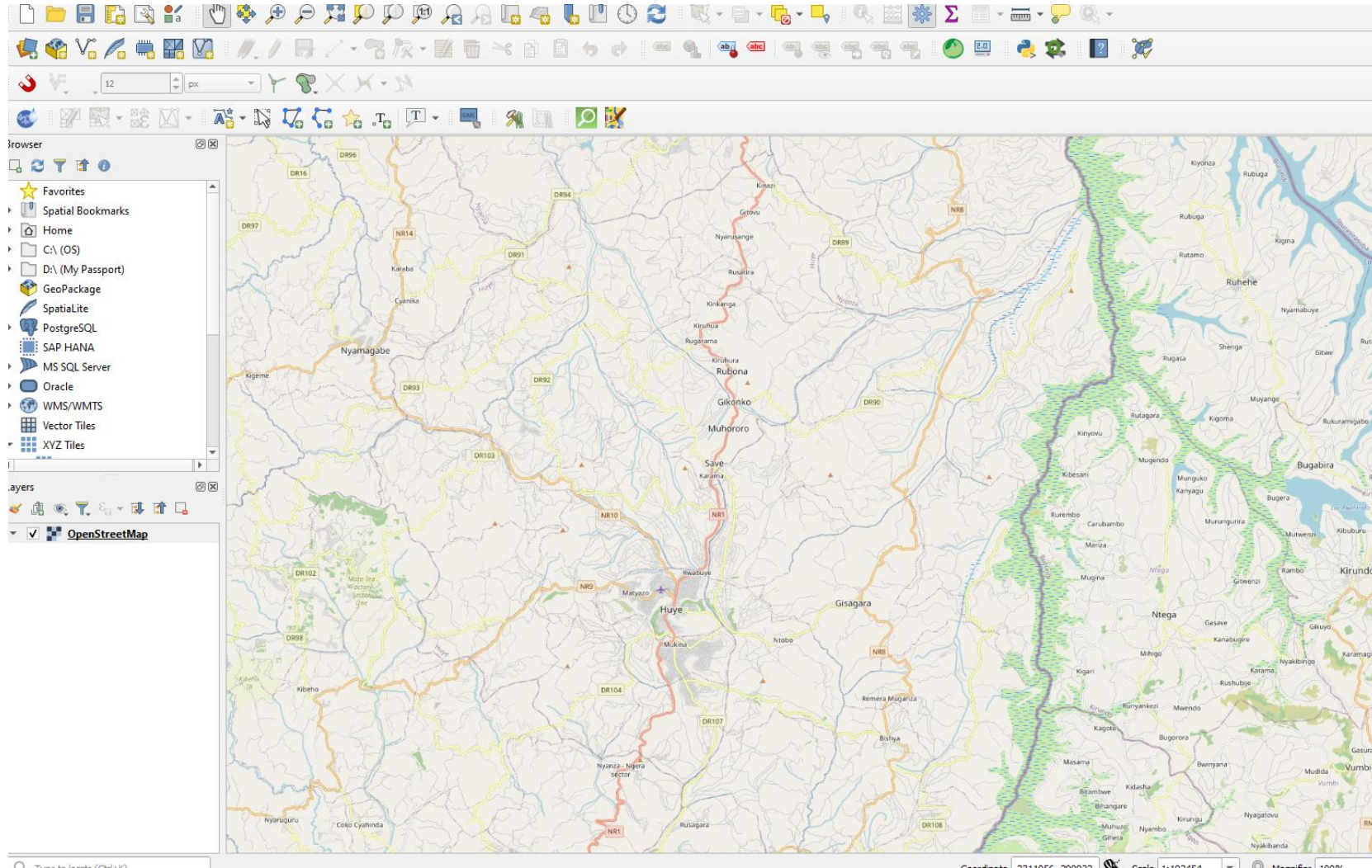


# QGIS – Display and Download from OpenStreetMap

- 4 A plugin to display Interactive backgrounds (OSM, Bing with satellite) becomes available in **Web/OpenLayers Plugin**



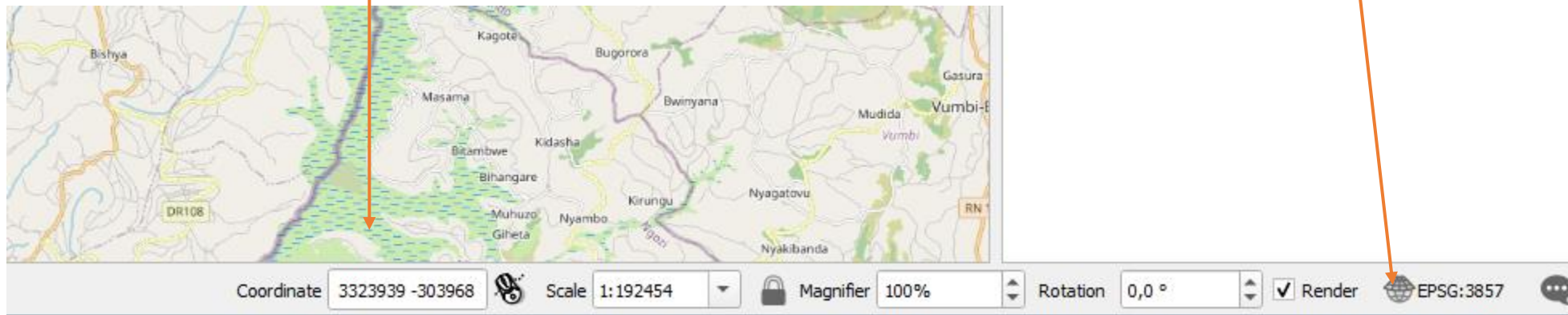
# QGIS – Display and Download from OpenStreetMap



# QGIS – Display and Download from OpenStreetMap

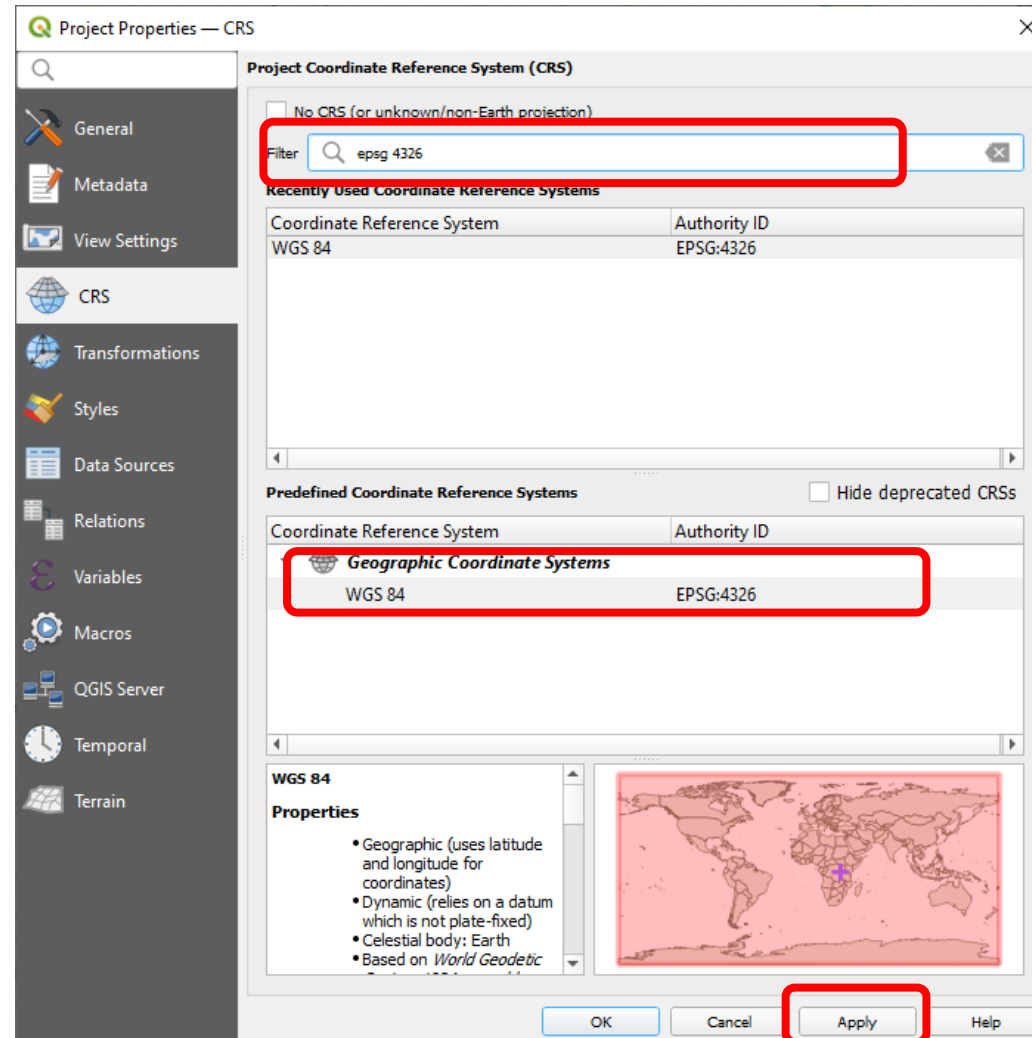
5.1. Beware, the coordinates are not GPS anymore, but use an universal metric system

5.2 Click on this icon and enforce "WGS 84" or "EPSG 4326" to switch back to GPS coordinates





# QGIS – Display and Download from OpenStreetMap



# QGIS – Display and Download from OpenStreetMap

6. Coordinates are back in degrees  
(and use the EPSG:4326 spatial  
reference system i.e GPS)

The screenshot displays the QGIS desktop environment. The main map window shows a topographic map of Rwanda with various geographical features and place names. A red box highlights the status bar at the bottom, which contains the following information:

- Coordinate:  $-2,7192^{\circ} 29,9221^{\circ}$
- Scale: 1:185779
- Magnifier: 100%
- Rotation:  $0,0^{\circ}$
- Render:
- CRS: EPSG:4326

On the right side of the interface, the Layers panel is visible, listing several processing tools:

- Vector geometry
- Vector overlay
- Vector selection
- Vector table
- Vector tiles
- GDAL
- GRASS
- QuickOSM
- SAGA Next Gen

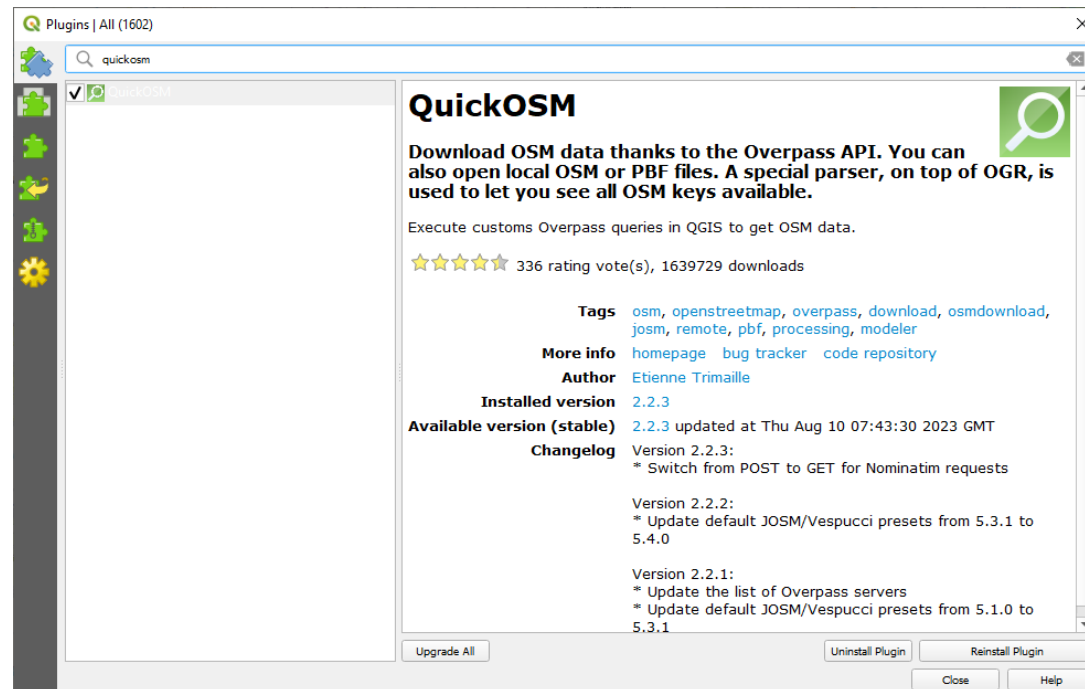
Orange arrows point from the text box above to the coordinate field and the EPSG:4326 field in the status bar.

# QGIS- repository of projections

- <https://spatialreference.org/>
- Provided the acronym and code for QGIS (Proj4 wKT) to handle projections in GIS systems

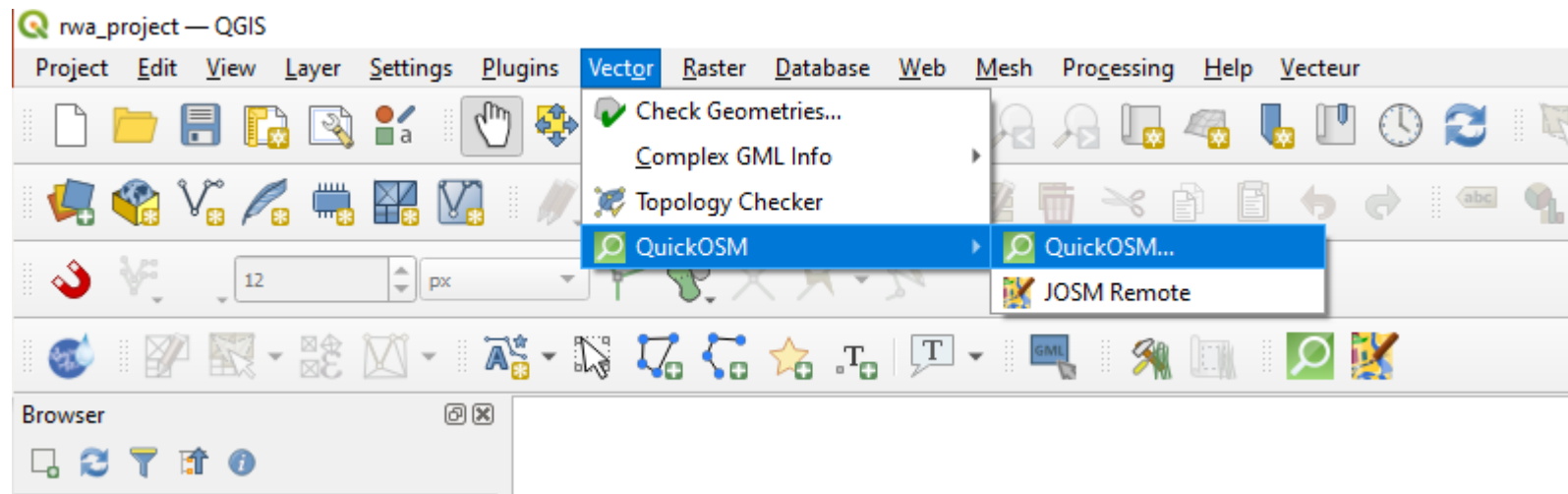
# Download from OpenStreetMap

- The **QuickOSM** (developed by Etienne Trimaille) allows to convert QGIS items (including lines for rivers and roads and polygons for parks and other areas...) into permanent GIS layers



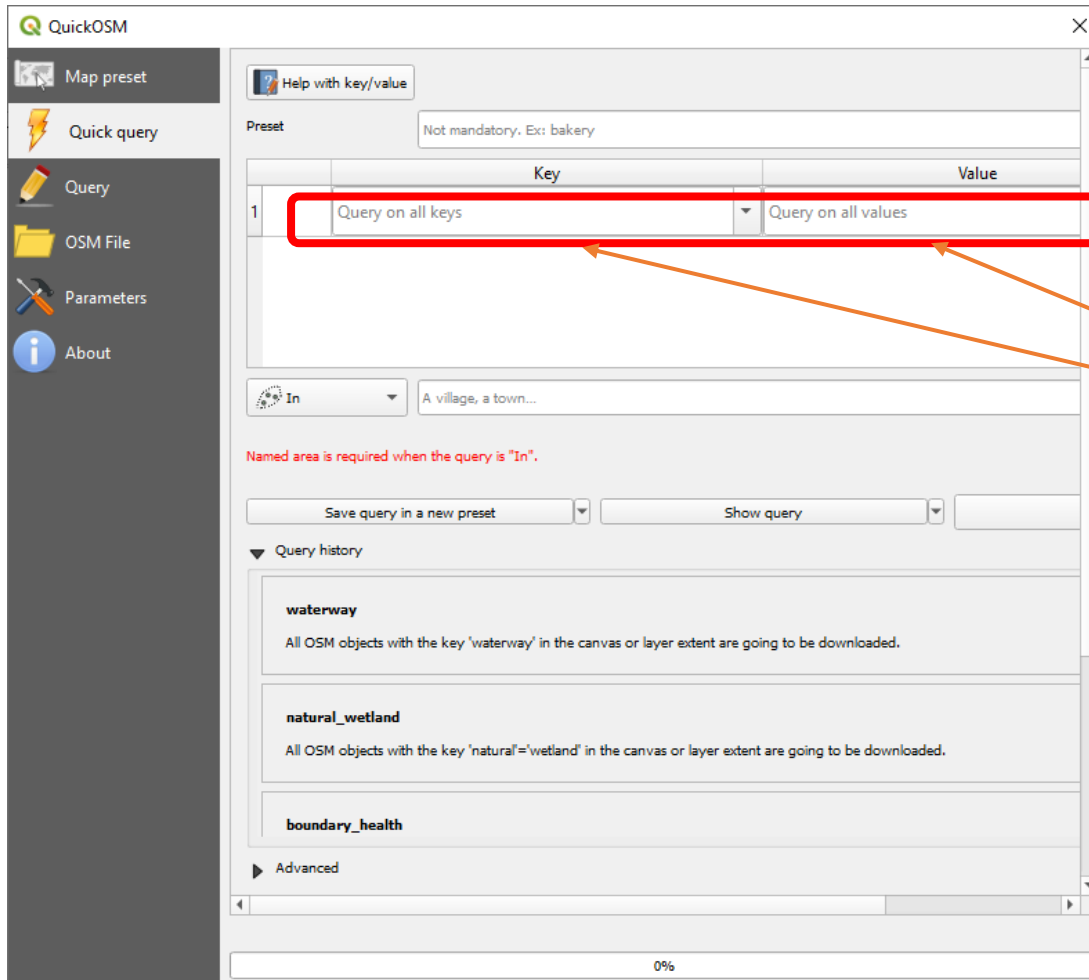
# Download from OpenStreetMap

- 1 Once installed, this plugin is available through **Vector/QuickOSM**



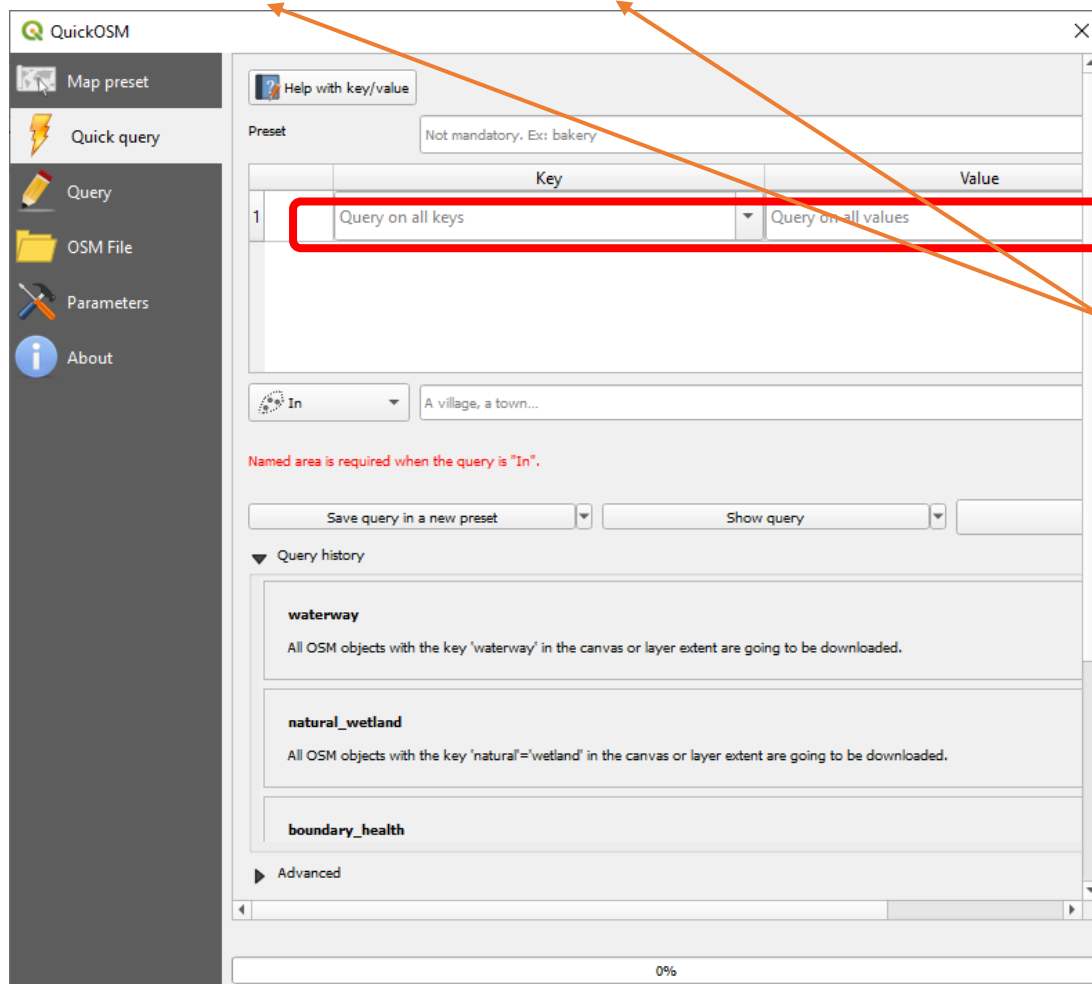


# Download from OpenStreetMap



Use Key and Value to define the type of items to download (correspond to the categories if Nominatim (see above))

# Download from OpenStreetMap



## Examples

- *Key : waterway and Value: empty (leave blank) => all rivers*
- *Key : natural and Value: wetland => marshes*
- *Key : boundary and Value: administrative=> districts*
- ...
- List of categories
- [https://wiki.openstreetmap.org/wiki/Map\\_features](https://wiki.openstreetmap.org/wiki/Map_features)

# Download from OpenStreetMap

QuickOSM

Map preset

Quick query

Query

OSM File

Parameters

About

Help with key/value

Preset: Not mandatory. Ex: bakery

	Key	Value
1	Query on all keys	Query on all values

In

The spatial extent to use for the query.

Save query in a new preset

Show query

Query history

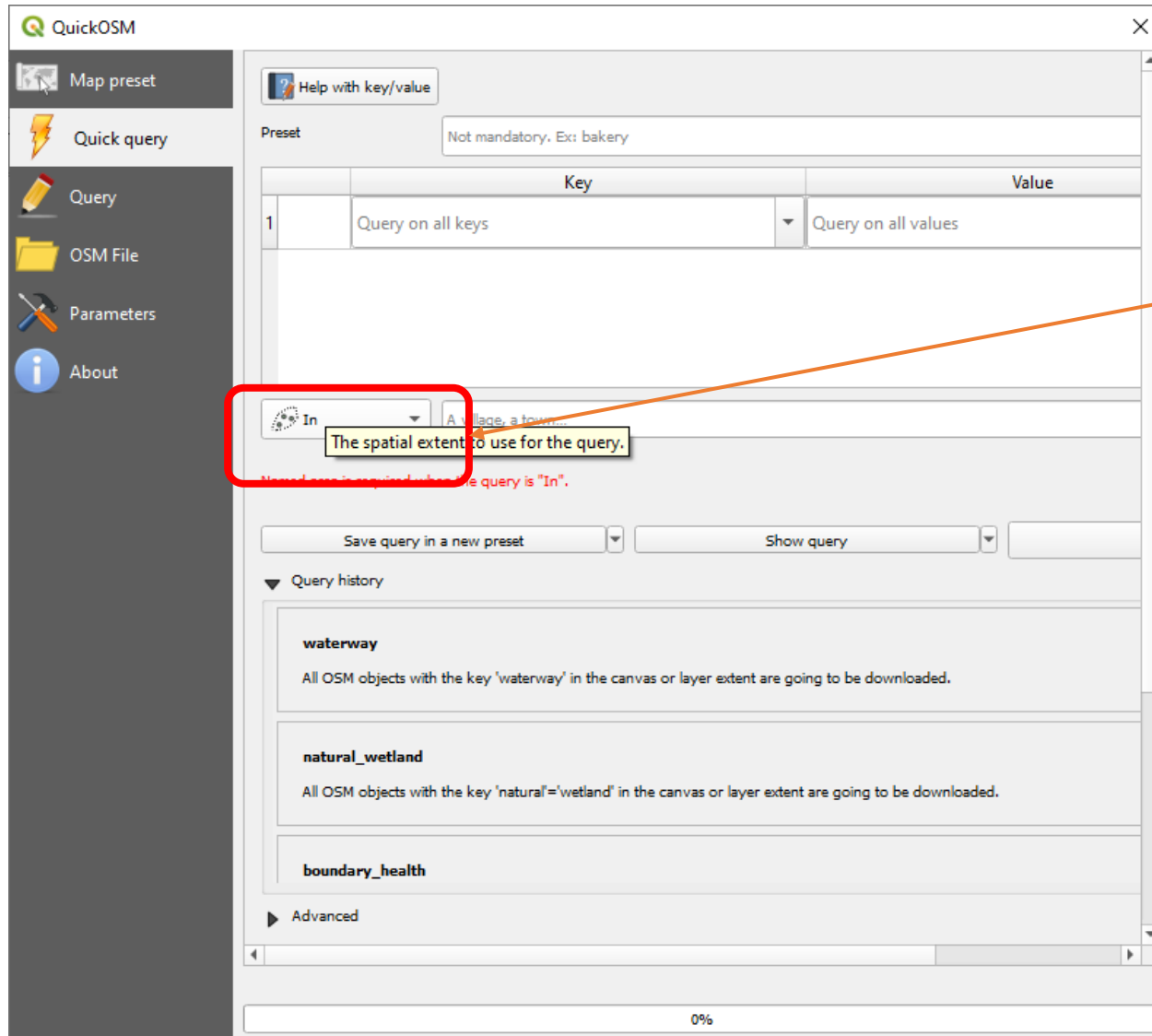
- waterway**  
All OSM objects with the key 'waterway' in the canvas or layer extent are going to be downloaded.
- natural\_wetland**  
All OSM objects with the key 'natural='wetland' in the canvas or layer extent are going to be downloaded.
- boundary\_health**

Advanced

0%

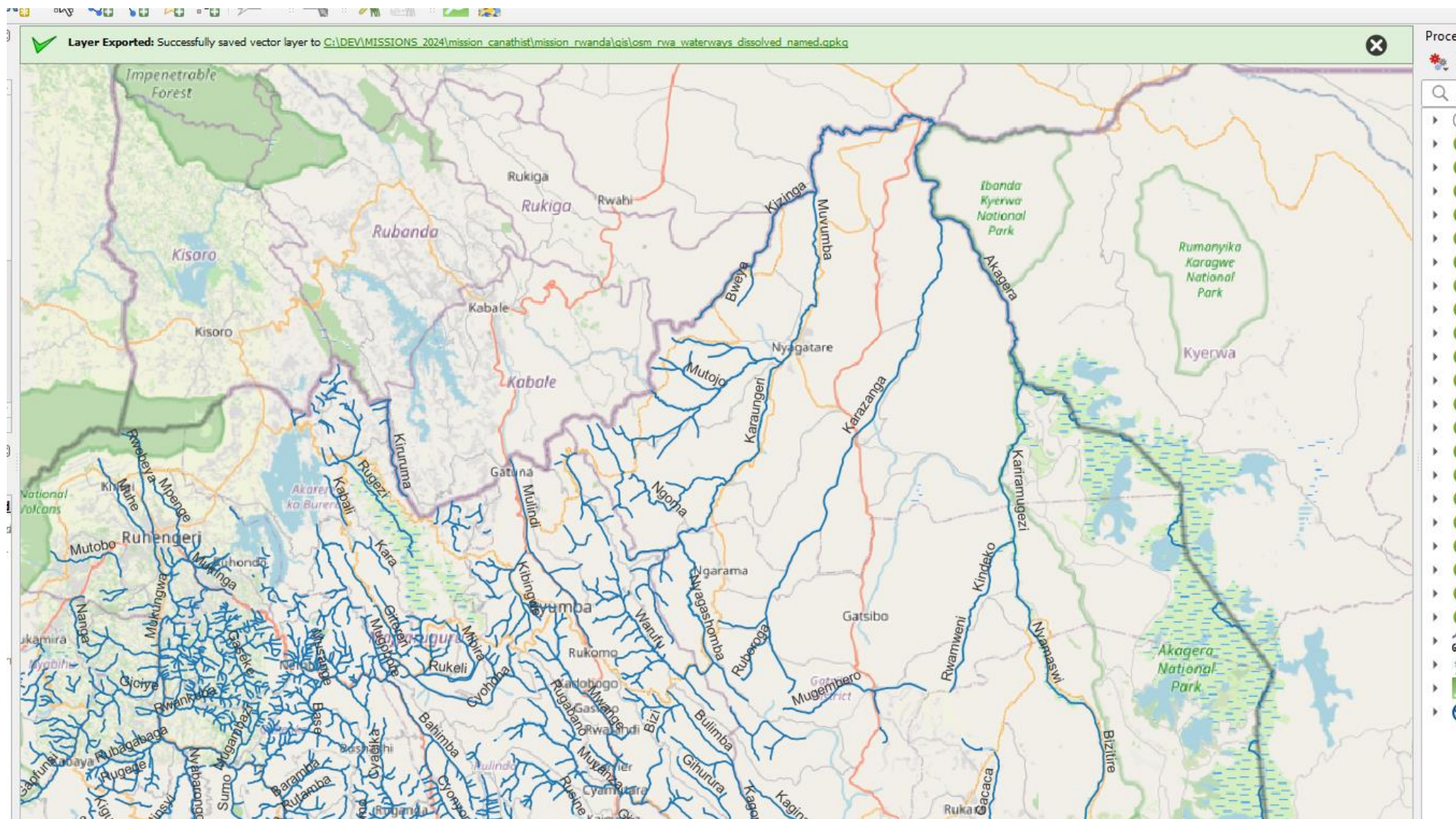
Use this control to define the geographical extent (the tool fails to download items for big areas as there is a 30 seconds timeout)

# Download from OpenStreetMap



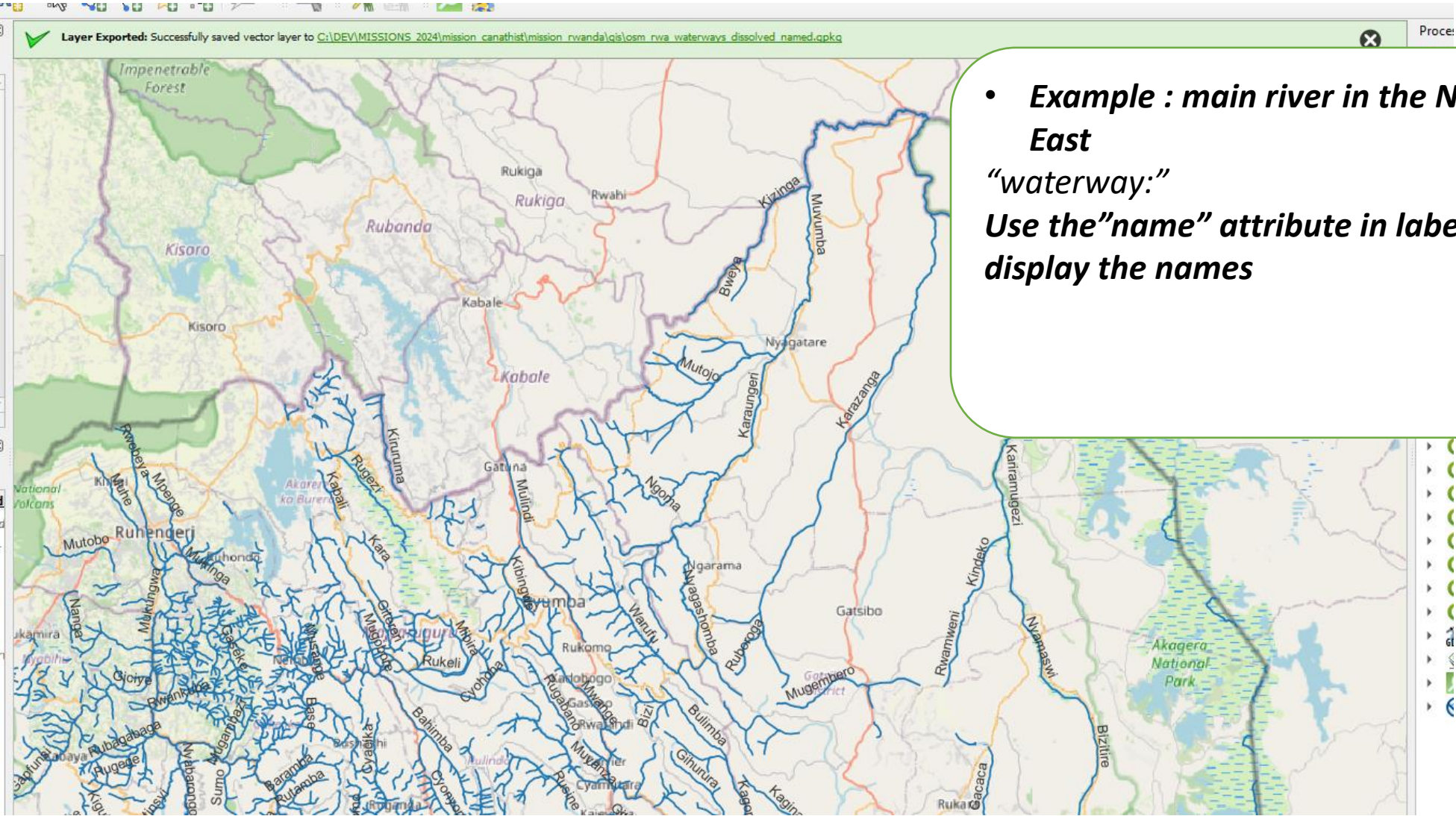
- **Canvas extent:** download within the current QGIS main map windows
- **Layer extent:** use another layer to define the maximal extension (e.g. province of country boundaries)

# Download from OpenStreetMap





# Download from OpenStreetMap



- *Example : main river in the North-East*  
*“waterway:”*  
*Use the “name” attribute in labels to display the names*

# Layer for land coverage (vegetation)

- <https://data.apps.fao.org/map/catalog/srv/eng/catalog.search#/home>
- Catalogue of maps from the FAO (based on GeoNetwork)
  - Use ***Rwanda Landcover*** as search criteria

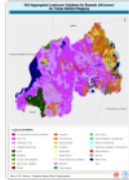
# Layer for land coverage (vegetation)

Rwanda landcover

« < 1 - 50 on 70 > »

Categories ☆☆☆☆☆

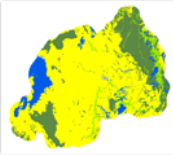
**Aggregated landcover database for Rwanda (Africover) for tsetse habitat mapping**

 This dataset is an aggregated version of the original national Africover landcover multipurpose database. A 26-class legend is used to aggregate the classes present in the original full resolution, multipurpose landcover database. A single legend is applicable to the eight trypanosomiasis-affected countries mapped during Africover  
Raffaele Mattioli

Completed

Categories ☆☆☆☆☆

**Spatially Aggregated Multipurpose Landcover Database for Rwanda - AFRICOVER**

 This dataset is a spatially reaggregated version of the original national Africover multipurpose database. The original full resolution land cover has been produced from visual interpretation of digitally enhanced LANDSAT TM images (Bands 4,3,2) acquired mainly in the year 1999. The data was aggregated by eliminating polygons below a  
Antonio Di Gregorio  
Eugene Rurangwa Burabyo

Completed

Categories ☆☆☆☆☆

**Multipurpose Landcover Database for Rwanda - AFRICOVER**

The full resolution land cover has been produced

Categories ☆☆☆☆☆

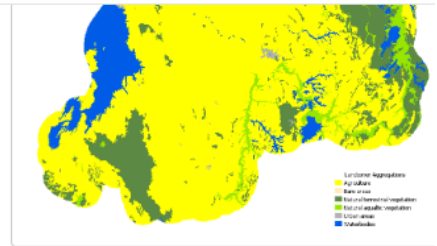
**Boundaries of Rwanda - AFRICOVER**

The national and administrative boundaries have

-ID  
-HECTARES  
-USERLABEL  
-LCCCODE (unique LCCS code)  
-CODE1  
-CODE2  
-CODE3  
-LC

You can download a zip archive containing:  
-the dataset rw-spatial-agg (.shp)  
-the Rwanda Classifiers Used (.pdf)  
-the Rwanda legend (.pdf and .xls)  
-the Rwanda Legend - LCCS Import file (.xls)  
-the spatial-agg-procedure (.pdf)  
-the Userlabel Definitions (.pdf)

Note: the document Rwanda Classifiers Used.pdf, is a list of all the LCCS classifiers used in the study area. They are grouped under the 8 major land cover types. In addition to the standard classifiers contained in LCCS the user may find "user defined" classifiers used by the map producer to add additional information to a specific class, not available in LCCS. The user-defined attributes are always coded with the letter "Z".

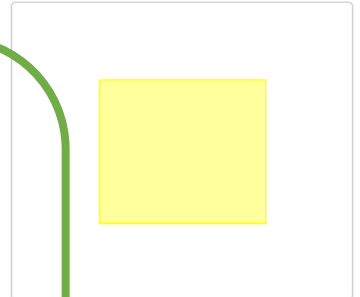


large\_thumbnail

No ratings ★

See all feedback Add your review

Spatial extent



Temporal extent

Publication date  
2002-11-12

Provided by

Updated:  
a year ago

Share on social sites

Completed

### Download and links

	Africover <a href="https://www.fao.org/geospatial/projects/detail/en/c/1035404/">https://www.fao.org/geospatial/projects/detail/en/c/1035404/</a>	Open link
	LCCS Glossary <a href="https://storage.googleapis.com/fao-maps-catalog-data/uuid/f2cd12a7-4463-432e-a9a0-2ed7f75b7380/resources/LCCS_glossary.pdf">https://storage.googleapis.com/fao-maps-catalog-data/uuid/f2cd12a7-4463-432e-a9a0-2ed7f75b7380/resources/LCCS_glossary.pdf</a>	Download
	Spatially Aggregated Multipurpose Landcover Database for Rwanda - AFRICOVER <a href="https://storage.googleapis.com/fao-maps-catalog-data/uuid/f2cd12a7-4463-432e-a9a0-2ed7f75b7380/resources/rw_spatial-agg.zip">https://storage.googleapis.com/fao-maps-catalog-data/uuid/f2cd12a7-4463-432e-a9a0-2ed7f75b7380/resources/rw_spatial-agg.zip</a>	Download

### About this resource




Categories [Imagery base maps earth cover](#)

-ID  
-HECTARES  
-USERLABEL  
-LCCCODE (unique LCCS code)  
-CODE1  
-CODE2  
-CODE3  
-LC  
You can download a zip archive containing:  
-the dataset rw-spatial-agg (.shp)  
-the Rwanda Classifiers Used (.pdf)  
-the Rwanda legend (.pdf and .xls)  
-the Rwanda Legend - LCCS Import file (.xls)  
-the spatial-agg-procedure (.pdf)  
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Note: the document Rwanda Classifiers Used.pdf, is a list of all the LCCS classifiers used in the study area. They are grouped under the 8 major land cover types. In addition to the standard classifiers contained in LCCS the user may find "user defined" classifiers used by the map producer to add additional information to a specific class, not available in LCCS. The user-defined attributes are always coded with the letter "Z".

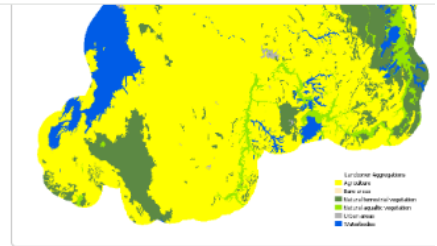
Completed

### Download and links

 Africover <a href="https://www.fao.org/geospatial/projects/detail/en/c/1035404/">https://www.fao.org/geospatial/projects/detail/en/c/1035404/</a>	Open link
 LCCS Glossary <a href="https://storage.googleapis.com/fao-maps-catalog-data/uuid/f2cd12a7-4463-432e-a9a0-2ed7f75b7380/resources/LCCS_glossary.pdf">https://storage.googleapis.com/fao-maps-catalog-data/uuid/f2cd12a7-4463-432e-a9a0-2ed7f75b7380/resources/LCCS_glossary.pdf</a>	Download
 Spatially Aggregated Multipurpose Landcover Database for Rwanda - AFRICOVER <a href="https://storage.googleapis.com/fao-maps-catalog-data/uuid/f2cd12a7-4463-432e-a9a0-2ed7f75b7380/resources/rw_spatial-agg.zip">https://storage.googleapis.com/fao-maps-catalog-data/uuid/f2cd12a7-4463-432e-a9a0-2ed7f75b7380/resources/rw_spatial-agg.zip</a>	Download

### About this resource

Categories Imagery base maps earth cover



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No ratings ★

See all feedback

Spatial extent

Temporal extent

Publication date  
2002-11-12

Provided by

Updated:  
a year ago

Share on social sites

The detail page features links allowing to download layers as shapefiles (attention : landcover use the LCC technical codes without English text)  
Class description available on <https://openknowledge.fao.org/server/api/core/bitstreams/9fbe0b85-879a-412b-a57f-49f2b07d20c3/content>