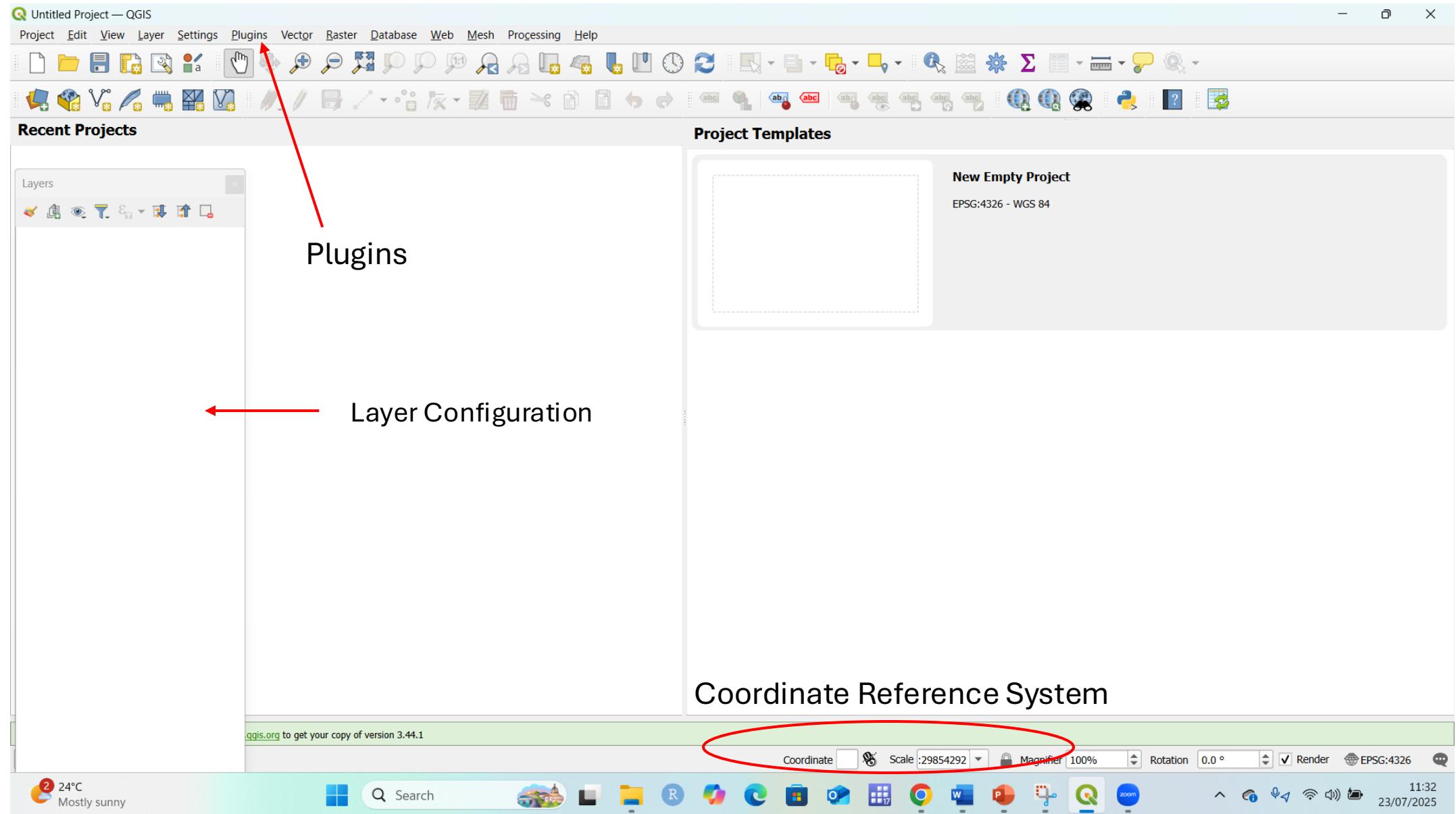


QGIS

What is QGIS?

- QGIS (Quantum Geographical Information System) is a free, open-source desktop GIS application used for **viewing, editing, analyzing, and visualizing** geospatial data.
- **Key Features:**
 - Supports vector, raster, and database formats (e.g., Shapefile, GeoTIFF, PostGIS)
 - Offers spatial **analysis, geoprocessing tools, and map creation**
 - Integrates **plugins** for advanced workflows
- GIS uses Global Positioning system (GPS)

QGIS platform



Untitled Project — QGIS

Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help

Recent Projects

Layers

Plugins

Project Templates

New Empty Project
EPSG:4326 - WGS 84

Coordinate Reference System

Coordinate Scale :29854292 Magnifier 100% Rotation 0.0° Render EPSG:4326

24°C Mostly sunny

Search

11:32 23/07/2025

3

A red arrow points from the text "Plugins" to the Plugins menu item in the top menu bar. Another red arrow points from the text "Layer Configuration" to the Layers panel on the left.

QGIS project

- A **Project in QGIS** is a workspace that organizes and stores all elements of your mapping and analysis work. It includes:
 - **Layer Configuration:** Vector and raster layers with symbology, labels, and styling.
 - **Coordinate Reference System (CRS):** Defines spatial reference and projection settings.
 - **Map Layouts:** Saved map compositions for printing or export.
 - **Attribute Data:** Integrated tabular data for analysis and visualization.
 - **Plugins & Tools:** Custom processing scripts and geoprocessing tools.

QGIS Plugins

- **What are QGIS Plugins?**
- QGIS uses **plugins** to add extra tools and features.

Example: **QuickMapServices** plugin helps to generate basemaps

How to add Plugins in QGIS

- **Open QGIS**

- Launch QGIS on your computer.

- **Go to the Plugins Menu**

- Click on Plugins in the top menu bar.
 - Select **Manage and Install Plugins...**

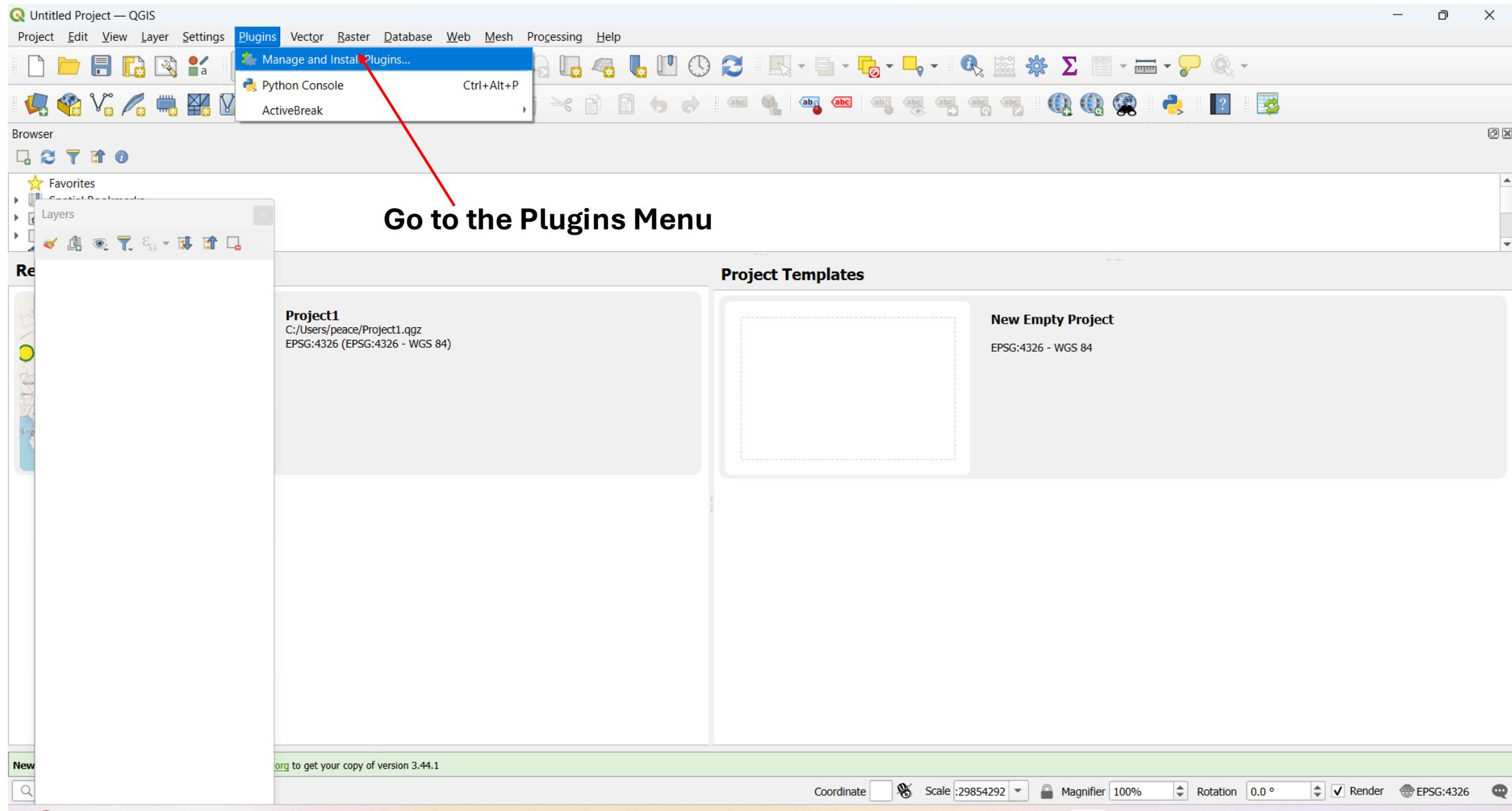
- **Search for the Plugin**

- In the dialog box that appears, go to the **All** tab or use the **Search bar**.
 - Type the name or keyword of the plugin you want (e.g., “QuickMapServices”).

- **Install the Plugin**

- Select the plugin from the list.
 - Click the **Install Plugin** button on the bottom right.

Add Plugin “QuickMapServices”



Search “QuickMapServices”)

Untitled Project – QGIS

Plugins | All (1624)

Search...

All Plugins

On the left you see the list of all plugins available for your QGIS, both installed and available for download. Some plugins come with your QGIS installation while most of them are made available via the plugin repositories. You can temporarily enable or disable a plugin, click its checkbox or double-click its name... Plugins showing in red are not loaded because there is a problem. They are also listed on the 'Invalid' tab. Click on the plugin name to see more details, or to reinstall or uninstall this plugin.

Type “QuickMapServices”

Installed

Not installed

Install from ZIP

Settings

3D Arcs
3DCityDB Tools
AcATAma
Accessibility calculator
Actions for relations
Active Fire
ActiveBreak
Adaplin Tool
Add a point road sign
Add Legend Labels to Layer
Add to Felt
Aderyn Data Search
Adjust Style
AdressesFr
Adresssuche
Advanced Line Editor
AemetOpenDataDownload
Aerodrome Utilities
AfpolGIS Data Connector
AGIS
agknow for QGIS
AGT - Archaeological Geo
Aino
AlgoMaps
All Geocoders At Once
Alloy Search Here
ALS Downloader
Altitudecorrector
Amazon Location Service
AmigoCloud
AMII-Assistente.de Mapa

Upgrade All Uninstall Plugin Reinstall Plugin Close Help

Browser

Volumes
Favorites
Spatial Bookmarks
Home
(Macintosh HD)
GeoPackage
SpatiaLite
PostgreSQL
SAP HANA
STAC
MS SQL Server
Oracle
WMS/WMTS
Cloud
Scenes
SensorThings
Vector Tiles
XYZ Tiles
WCS
WFS / OGC API - Features
ArcGIS REST Servers

Layers

8/14/25

Untitled Project — QGIS

Project Edit View Layer Settings Plugins Vector

Plugins | All (1638)

All

- Installed
- QuickMapServices
- QuickMultiAttributeEdit3

QuickM

QuickMapServices

Easy to add basemaps and geoservices

Easy to use list of services and search for finding datasets and basemaps. Please contribute new services via <https://qms.nextgis.com>. Developed by NextGIS. Any feedback is welcome at <https://nextgis.com/contact>

★★★★★ 2618 rating vote(s), 8751464 downloads

Tags wfs, wms, openstreetmap, osm, service, tms, geojson, internet, qms, basemap

More info homepage bug tracker code repository

Author NextGIS

Available version (stable) 0.21.2 updated at 24/03/2025 15:34 E. Africa Standard Time

Upgrade All

Install Plugin

Close Help

Processing Toolbox

Search... Recently used 3D Tiles Cartography Check geometry Database File tools Fix geometry GPS Interpolation Layer tools Mesh Metadata tools Network analysis Plots Point cloud conversion Point cloud data management Point cloud extraction Raster analysis Raster creation Raster terrain analysis Raster tools Vector analysis Vector coverage Vector creation Vector general Vector geometry Vector overlay Vector selection Vector table Vector tiles GDAL GRASS

Type to locate (Ctrl+K)

Coordinate 2.90204°, 0.11381° Scale 1:30391 Magnifier 100% Rotation 0.0° Render EPSG:4326

6 21°C 8/14/25 Partly cloudy

Search

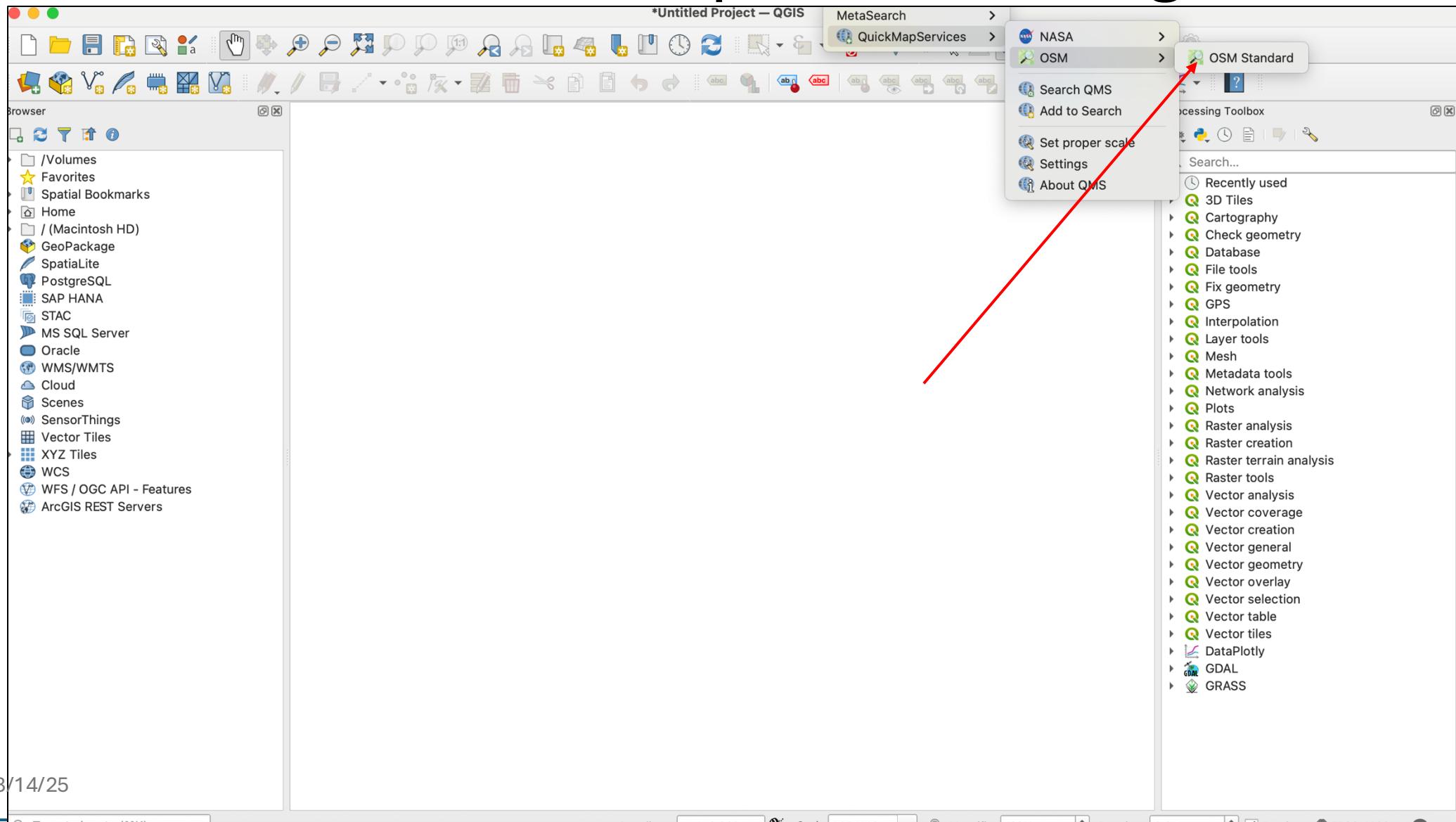
9

Use “QuickMapServices” Plugin

To use the **QuickMapServices** plugin:

- Go to Web > QuickMapServices > OSM > OSM Standard
- It will load a base map in your QGIS project.

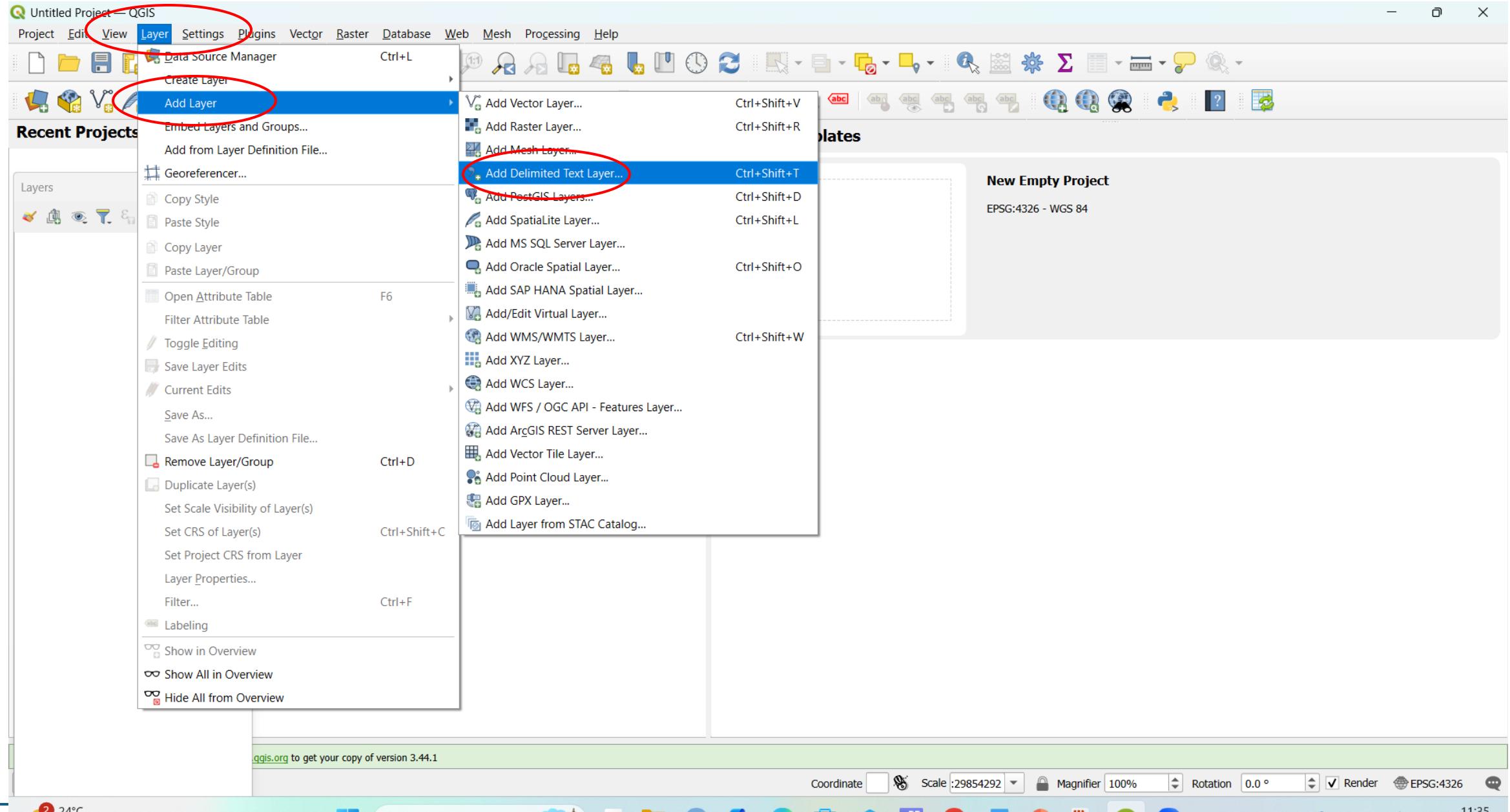
Use “QuickMapServices” Plugin



Loading data into QGIS

- Different files can be used by GIS to extract information.
- Examples include CSV, Shape files for different locations.
- Files should contain location data for mapping.

Loading csv data to QGIS



The screenshot shows the QGIS application interface. The 'Layer' menu is open, and the 'Add Delimited Text Layer...' option is highlighted with a red circle. The QGIS toolbar and various panels like 'Recent Projects' and 'Layers' are visible.

Layer Menu Options:

- Add Vector Layer... (Ctrl+Shift+V)
- Add Raster Layer... (Ctrl+Shift+R)
- Add Mesh Layer...
- Add Delimited Text Layer... (Ctrl+Shift+T)**
- Add PostGIS Layers... (Ctrl+Shift+D)
- Add SpatialLite Layer... (Ctrl+Shift+L)
- Add MS SQL Server Layer...
- Add Oracle Spatial Layer... (Ctrl+Shift+O)
- Add SAP HANA Spatial Layer...
- Add/Edit Virtual Layer...
- Add WMS/WMTS Layer...
- Add XYZ Layer...
- Add WCS Layer...
- Add WFS / OGC API - Features Layer...
- Add ArcGIS REST Server Layer...
- Add Vector Tile Layer...
- Add Point Cloud Layer...
- Add GPX Layer...
- Add Layer from STAC Catalog...

Project Overview:

New Empty Project
EPSG:4326 - WGS 84

Coordinate: 29854292 Scale: 1:100000 Magnifier: 100% Rotation: 0.0° Render: EPSG:4326

Data Source Manager — Delimited Text

File name Encoding

File Format

CSV (comma separated values)
 Regular expression delimiter
 Custom delimiters

Record and Fields Options

Geometry Definition

Point coordinates X field Z field
 Well known text (WKT) Y field M field DMS coordinates
 No geometry (attribute only table) Geometry CRS

Layer Settings

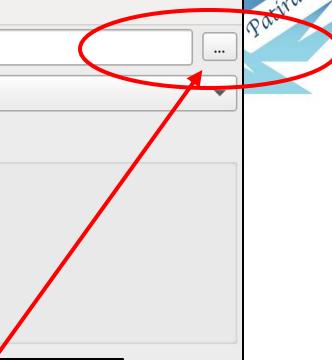
Use spatial index Use subset index Watch file

Sample Data

Please select an input file

Help **Add** **Close**

Click on the three dots to access the folder with the csv file



iCloud

iCloud Drive

Shared

Locations

Network

Tags

Favorites

Media

Music

Photos

Movies

redatamanagement

Search

Date Modified

Name

Size

Kind

Pre-Survey-quiz-links

Pre-Webinar Survey

Follow_Up_Items_Table

Email_List

Data_Management_Schedule

Step_Meta_data

Crop.qgz

Installing_R_and_RStudio_2025_7

Crop.qmd

Crop.shx

Crop.shp

Crop.dbf

Crop.prj

Crop.cpa

Country_CO.csv

yield_df.csv

Country_Coordinates_yield_data.csv

appendicitis_data.xlsx

area harvested per crop.csv

Epidemiology data.xlsx

Gall bladder dataset-uci.xlsx

yield pa hectare.csv

diabetes prediction.csv

csv file to be uploaded

All files (*.*)

New Folder

Hide Options

Cancel

Open

8/14/25

Name	Date Modified	Size	Kind
Pre-Survey-quiz-links	Today at 6:18 PM	14 KB	Micros...(docx)
Pre-Webinar Survey	Today at 5:33 PM	2.8 MB	Micros...(docx)
Follow_Up_Items_Table	Today at 1:04 PM	27 KB	Micros...(docx)
Email_List	Today at 1:00 PM	62 KB	Plain Text
Data_Management_Schedule	Today at 12:54 PM	17 KB	Micros...(docx)
Step_Meta_data	Yesterday at 7:24 PM	22 KB	Micros...(docx)
Crop.qgz	Yesterday at 4:55 PM	18 KB	QGIS P...ntainer
Installing_R_and_RStudio_2025_7	Yesterday at 4:18 PM	25 KB	Micros...(docx)
Crop.qmd	Yesterday at 10:20 AM	713 bytes	Quarto...wn File
Crop.shx	Yesterday at 9:24 AM	226 KB	Document
Crop.shp	Yesterday at 9:24 AM	791 KB	ESRI S...cument
Crop.dbf	Yesterday at 9:24 AM	18.2 MB	Document
Crop.prj	Yesterday at 9:24 AM	145 bytes	Document
Crop.cpa	Yesterday at 9:24 AM	5 bytes	Document
Country_CO.csv	Jul 12, 2025 at 11:17 PM	1.9 MB	comma...values
yield_df.csv	Jul 12, 2025 at 11:12 PM	1.5 MB	comma...values
Country_Coordinates_yield_data.csv	Jul 12, 2025 at 10:54 PM	3 KB	comma...values
appendicitis_data.xlsx	Jul 12, 2025 at 12:50 PM	213 KB	Micros...k (.xlsx)
area harvested per crop.csv	Jul 12, 2025 at 12:50 PM	203 KB	comma...values
Epidemiology data.xlsx	Jul 12, 2025 at 12:50 PM	210 KB	Micros...k (.xlsx)
Gall bladder dataset-uci.xlsx	Jul 12, 2025 at 12:50 PM	78 KB	Micros...k (.xlsx)
yield pa hectare.csv	Jul 12, 2025 at 12:50 PM	152 KB	comma...values
diabetes prediction.csv	Jul 12, 2025 at 12:50 PM	35 KB	comma...values

Data Source Manager — Delimited Text

File name /Users/stephenopiyo/Desktop/Video/Data_Management/redatamanagement/Country_CO.csv

Encoding UTF-8

File Format

CSV (comma separated values)

Regular expression delimiter

Custom delimiters

Record and Fields Options

Number of header lines to discard 0

Decimal separator is comma

First record has field names

Trim fields

Detect field types

Discard empty fields

Custom boolean literals

True False

Geometry Definition

Point coordinates

Well known text (WKT)

No geometry (attribute only table)

X field Longitude

Y field Latitude

DMS coordinates

Z field

M field

Geometry CRS EPSG:4326 - WGS 84

Layer Settings

Sample Data

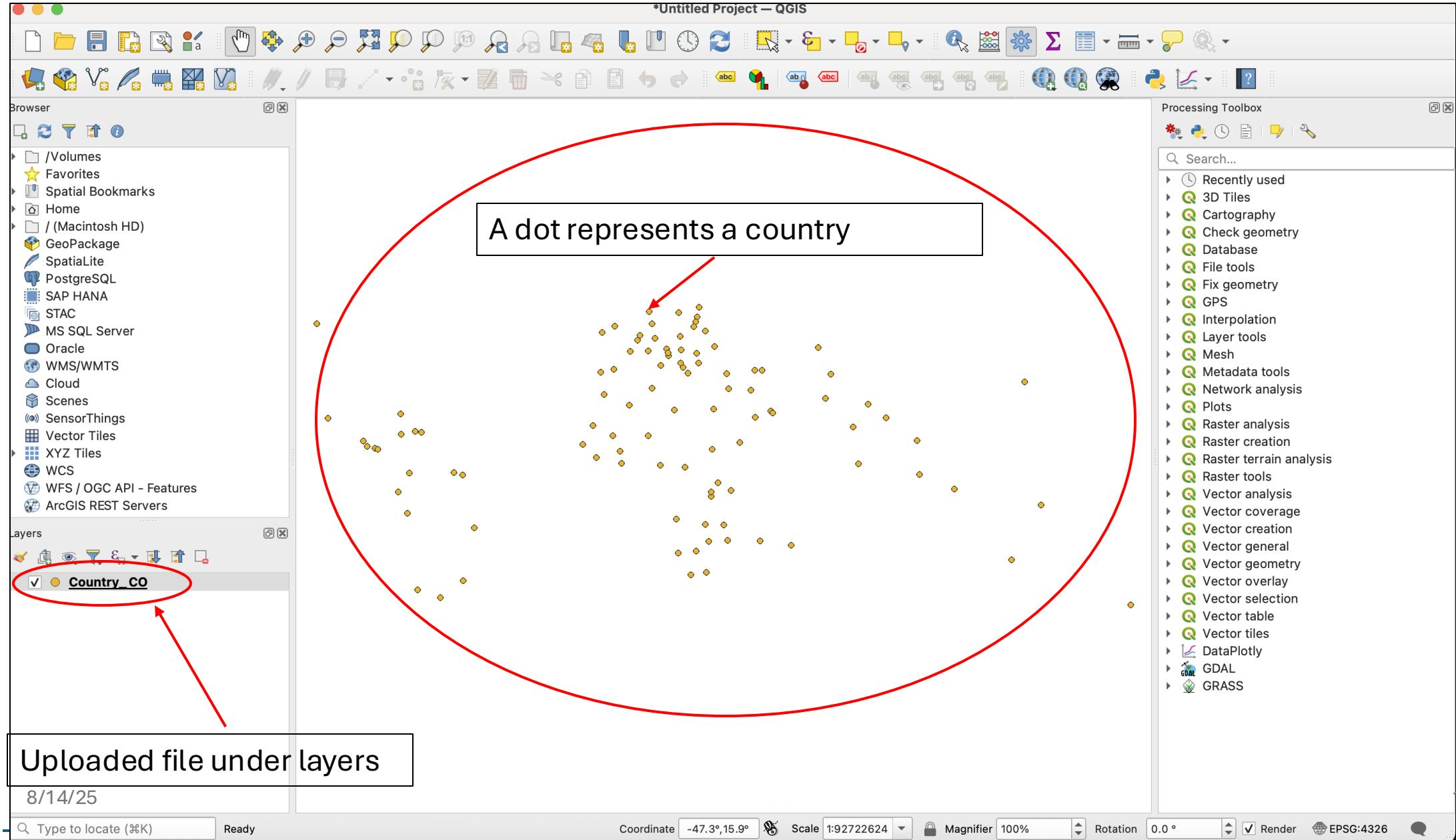
Country	Latitude	Longitude	No	Item	Year	hg/ha_yield	average_rain_fall_mm_per_
Albania	41.1533	20.1683	0	Maize	1990	36613	1485
Albania	41.1533	20.1683	1	Potatoes	1990	66667	1485
Albania	41.1533	20.1683	2	Rice paddy	1990	22222	1485

Add

Close

8/14/25

*Untitled Project — QGIS



A dot represents a country

Uploaded file under layers

8/14/25

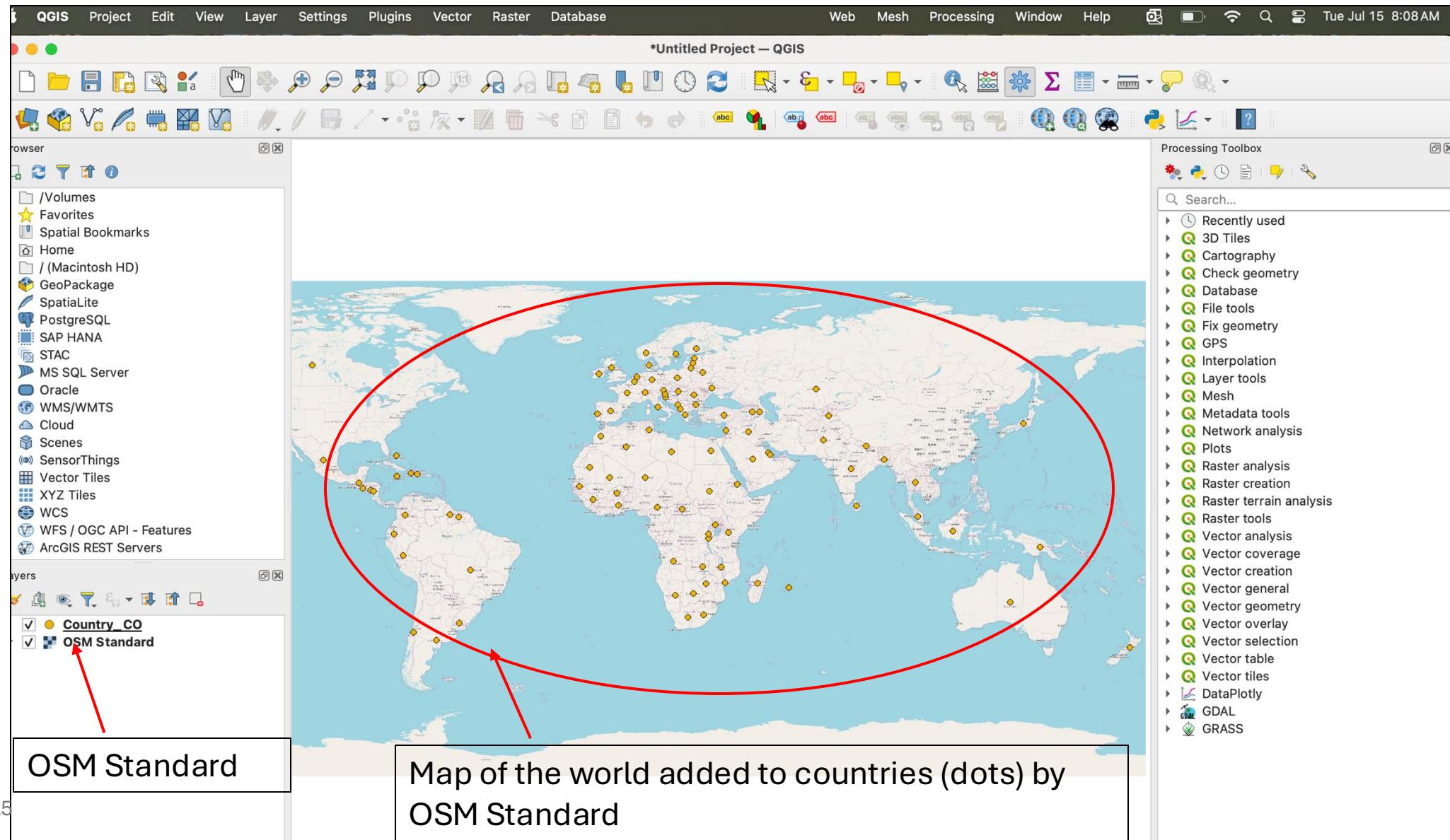
Coordinate -47.3°, 15.9° Scale 1:92722624 Magnifier 100% Rotation 0.0 ° Render EPSG:4326

Type to locate (%K) Ready

Processing Toolbox

- Recently used
- 3D Tiles
- Cartography
- Check geometry
- Database
- File tools
- Fix geometry
- GPS
- Interpolation
- Layer tools
- Mesh
- Metadata tools
- Network analysis
- Plots
- Raster analysis
- Raster creation
- Raster terrain analysis
- Raster tools
- Vector analysis
- Vector coverage
- Vector creation
- Vector general
- Vector geometry
- Vector overlay
- Vector selection
- Vector table
- Vector tiles
- DataPlotly
- GDAL
- GRASS

OSM Standard added to the Layers



The screenshot shows a QGIS interface with a world map. A red circle highlights the continent of Europe and parts of Africa. Numerous yellow dots are scattered across the map, representing countries. In the bottom left corner, there is a callout box with the text "OSM Standard". In the bottom right corner, there is another callout box with the text "Map of the world added to countries (dots) by OSM Standard". The "Country_CO" layer is selected in the layers panel, indicated by a checked checkbox.

OSM Standard

Map of the world added to countries (dots) by
OSM Standard

8/14/25

OSM Standard

Country_CO

OSM Standard

Recently used

3D Tiles

Cartography

Check geometry

Database

File tools

Fix geometry

GPS

Interpolation

Layer tools

Mesh

Metadata tools

Network analysis

Plots

Raster analysis

Raster creation

Raster terrain analysis

Raster tools

Vector analysis

Vector coverage

Vector creation

Vector general

Vector geometry

Vector overlay

Vector selection

Vector table

Vector tiles

DataPlotly

GDAL

GRASS

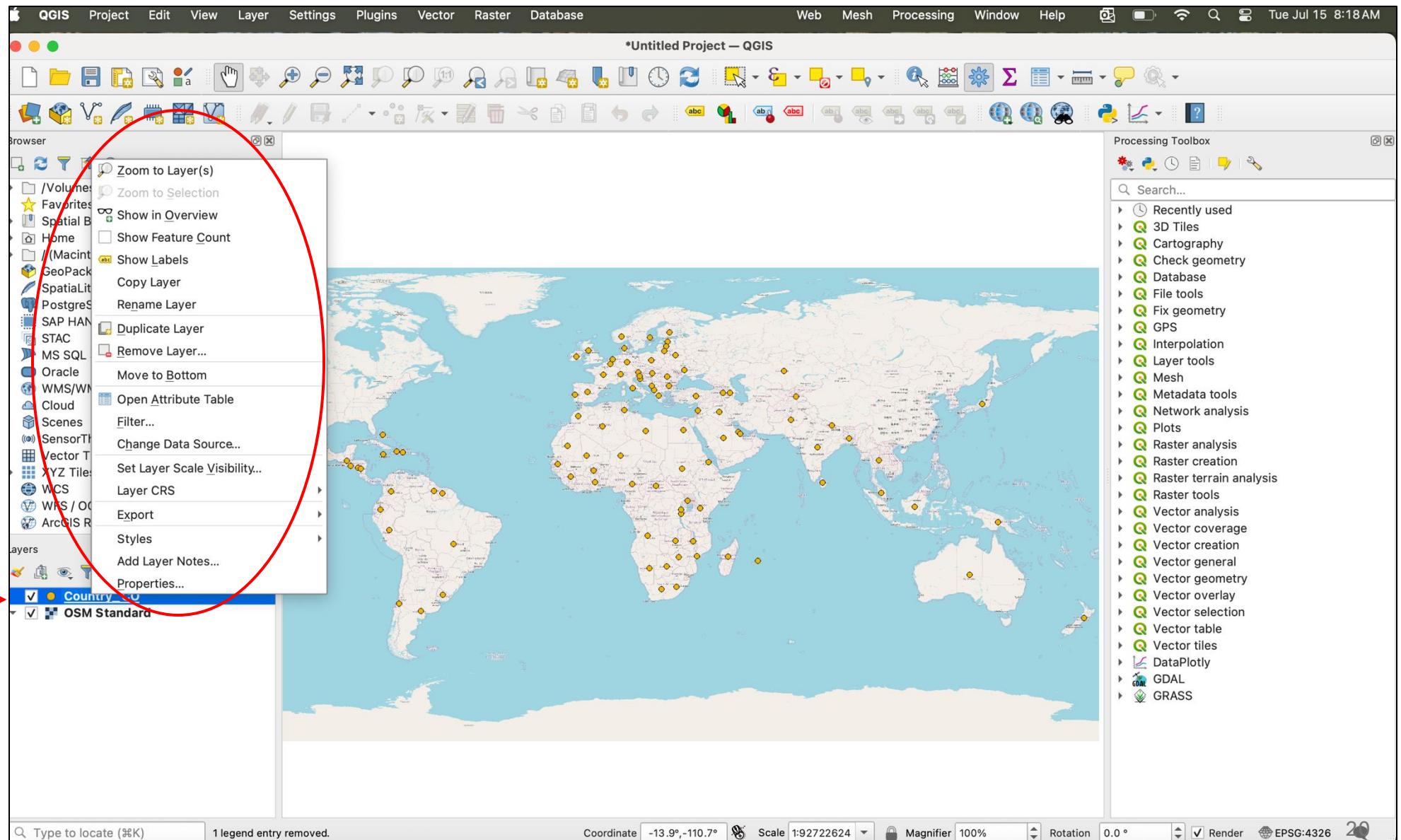
Attribute Table

Attribute table contains all the variables and is also known as the Data set.

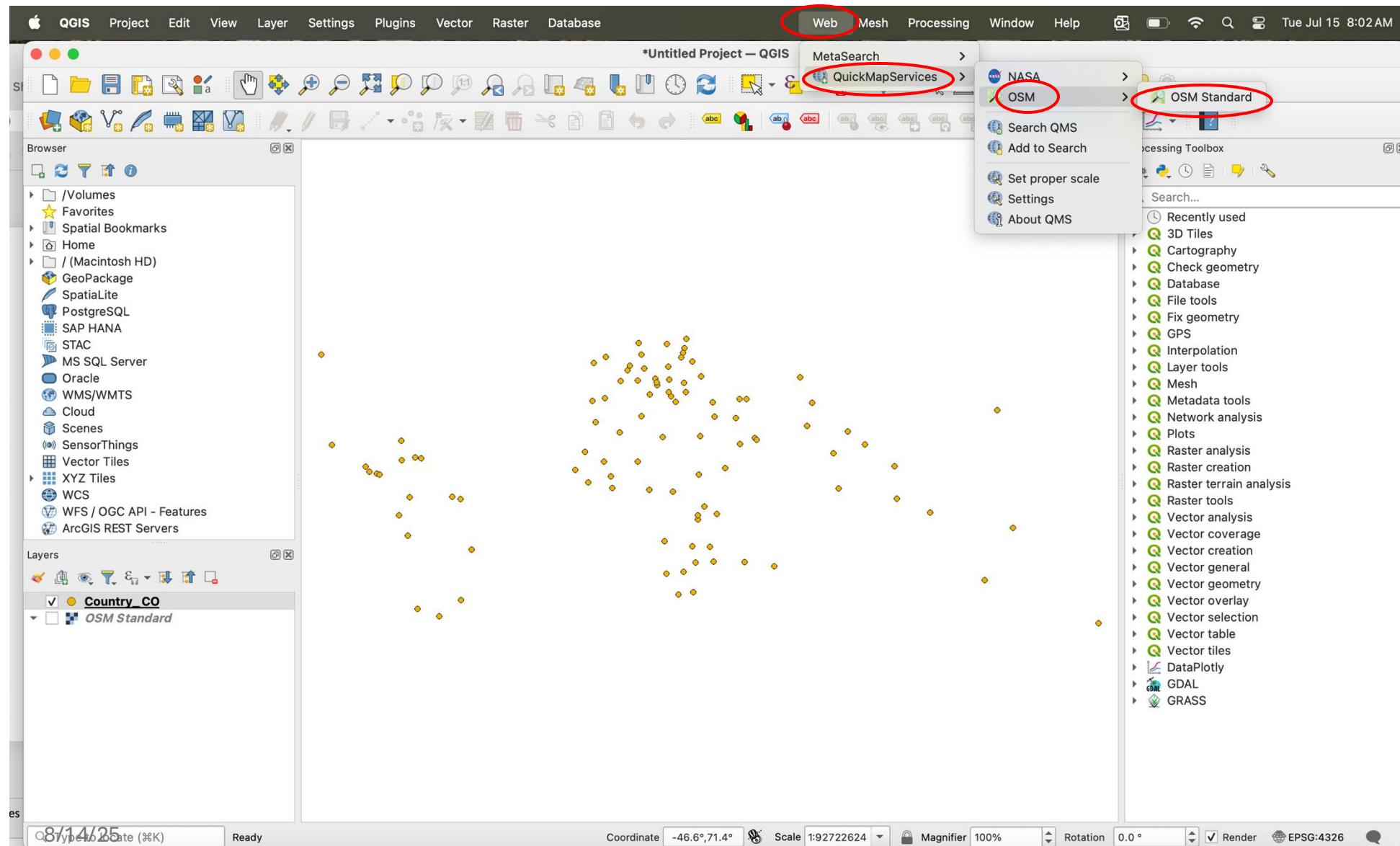
View Attribute Table/Data Set

- Right-click the layer > `Open Attribute Table`
- In the attribute table window, click the `Show as Dock` button (top-right) to dock it in the QGIS interface.
- Click on the righthand lower corner to view the data

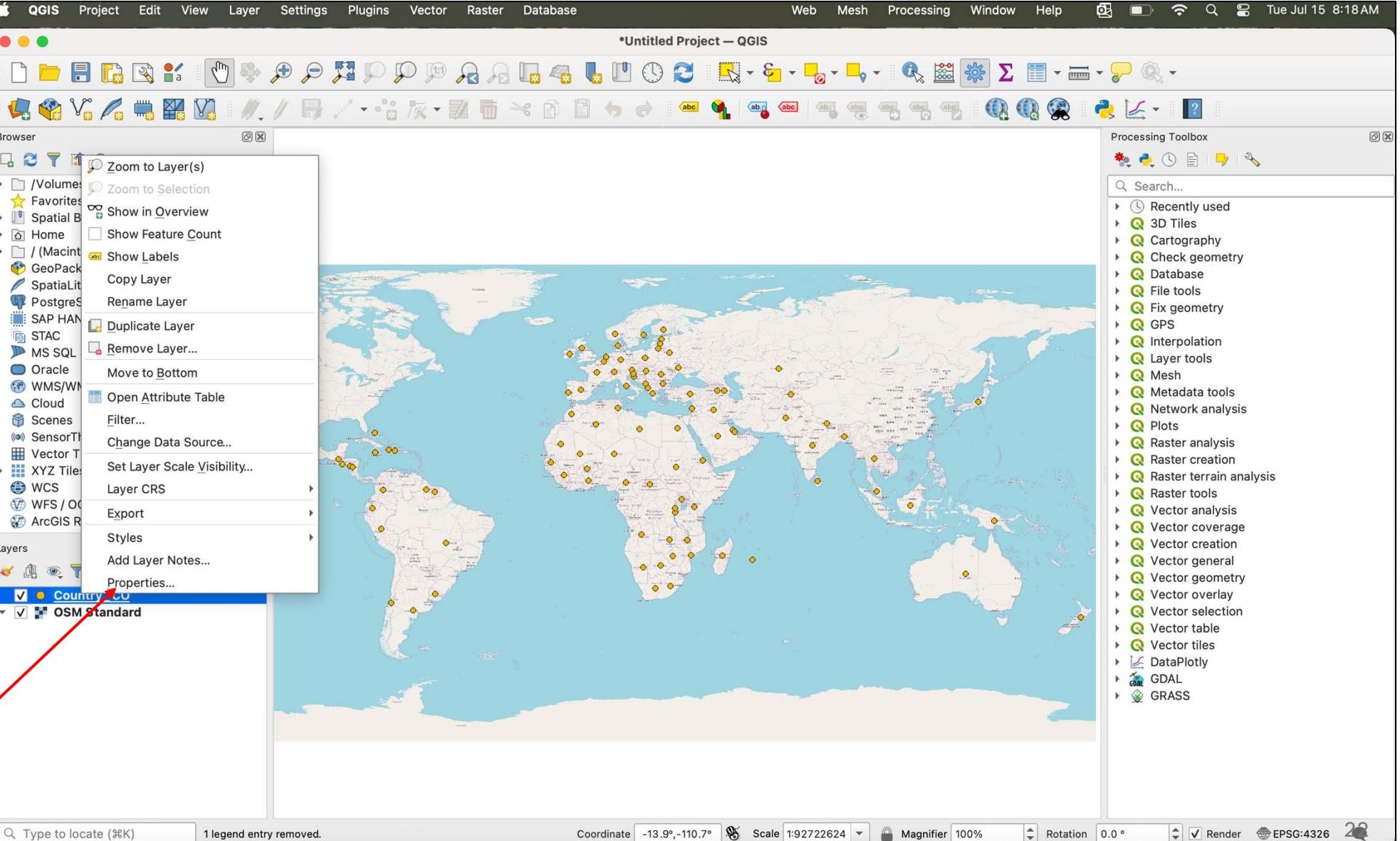
Editing



Add basemap using QuickMapServices



Editing



QGIS Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Window Help Tue Jul 15 8:18AM

*Untitled Project — QGIS

Processing Toolbox

Search... Recently used 3D Tiles Cartography Check geometry Database File tools Fix geometry GPS Interpolation Layer tools Mesh Metadata tools Network analysis Plots Raster analysis Raster creation Raster terrain analysis Raster tools Vector analysis Vector coverage Vector creation Vector general Vector geometry Vector overlay Vector selection Vector table Vector tiles DataPlotly GDAL GRASS

Browser

- /Volumes
- Favorites
- Spatial Browser
- Home
- / (Macintosh)
- GeoPack
- SpatialLite
- PostgreSQL
- SAP HANA
- STAC
- MS SQL
- Oracle
- WMS/WFS
- Cloud
- Scenes
- SensorTool
- Vector Tools
- XYZ Tiles
- WCS
- WFS / OGC
- ArcGIS REST

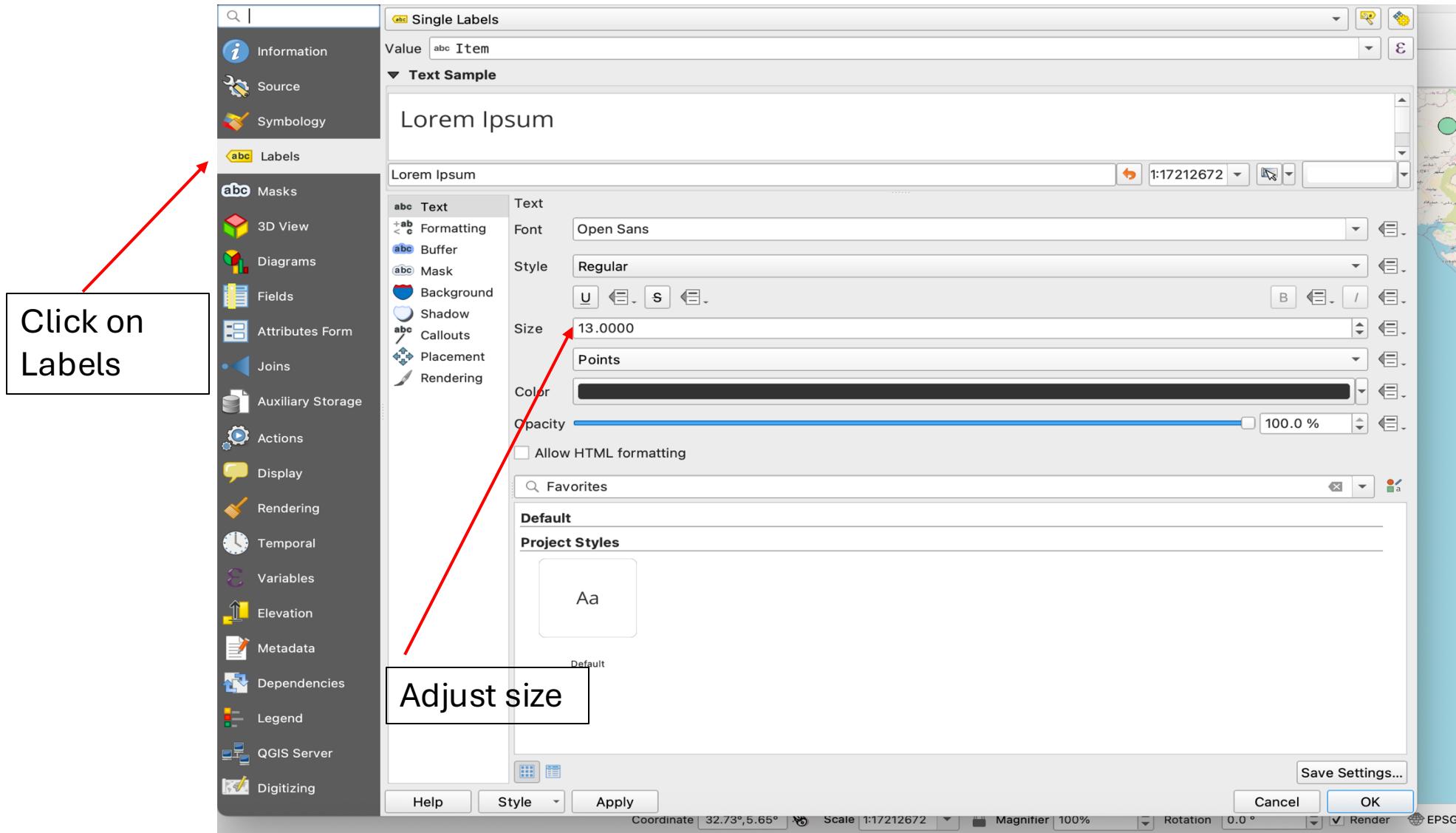
Layers

- Country_CU
- OSM Standard

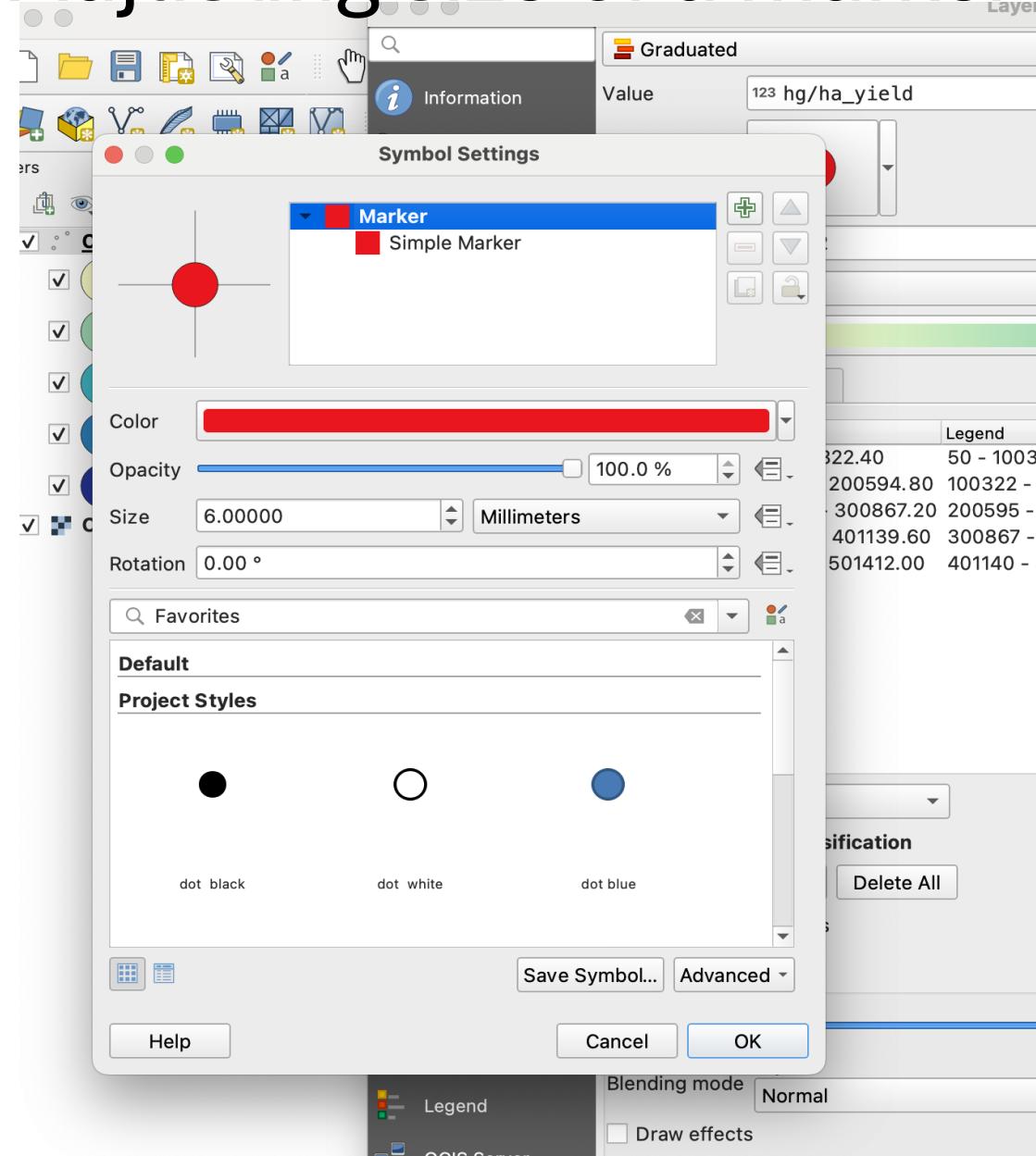
Click on Properties

8/14/25 Type to locate (%K) 1 legend entry removed. Coordinate -13.9°, -110.7° Scale 1:92722624 Magnifier 100% Rotation 0.0° Render EPSG:4326 20

Adjusting size of labels



Adjusting size of a marker



Symbology for Visualizing Spatial Data Effectively

Purpose: Symbology defines how geographic features are visually represented on a map (colors, shapes, sizes).

Access:

Right-click layer → *Properties* → *Symbology*

Types of Symbology:

- **Single Symbol:** All features share the same style.
- **Categorized:** Styles based on a categorical attribute (e.g. land use types).
- **Graduated:** Styles based on numeric values (e.g. population size).
- **Rule-based:** Complex styling using logical rules.
- **Heatmap / Point displacement:** Specialized visualizations for density or overlapping points.

Exporting maps out of QGIS

