Exercise: Importing Earthquake Data into QGIS and Creating a Map

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Objective

In this assignment, you will learn how to import a CSV file containing earthquake data into QGIS, use Latitude and Longitude columns to display the data as points, and visualize the spatial distribution of earthquakes.

Dataset

- File: **earthquake.csv**
- Contents: The dataset includes earthquake records with columns such as:
- `ID` – Unique identifier for each earthquake
- `Date` – Date of occurrence
- `Latitude` – Latitude coordinate of epicenter
- `Longitude` – Longitude coordinate of epicenter
- `Magnitude` – Earthquake magnitude (Richter scale)
- `Depth` – Depth of earthquake in kilometers

Instructions

Step 1: Open QGIS

- Launch **QGIS Desktop** from your computer.
- Create a **new empty project** (*Project → New*).

Step 2: Load the CSV file

- Go to **Layer → Add Layer → Add Delimited Text Layer**.
- Browse and select the file **earthquake.csv**.
- Ensure the **File format** is set to *CSV (comma separated values)*.
- Verify that QGIS correctly detects the delimiter (comma).

Step 3: Set the Geometry

- In the dialog, look for the **Geometry Definition** section.
- Choose **Point coordinates**.
- Set:
  - **X field** = `Longitude`
  - **Y field** = `Latitude`
- Click **Add** → then **Close**.
- The earthquake points should now appear on the map canvas.

Step 4: Check Coordinate Reference System (CRS)

- At the bottom-right corner of QGIS, click the CRS indicator.
- Set CRS to **EPSG:4326 – WGS 84** (standard for latitude/longitude).
- Confirm that the points are displayed properly.

Step 5: Style the Map

- In the **Layers Panel**, right-click on the imported earthquake layer → **Properties**.
- Go to the **Symbology** tab.
- Change the symbol size based on **Magnitude** (use *Graduated* symbology).
- Choose a color ramp (e.g., Yellow → Red, where red shows higher magnitude).
- Apply and check your visualization.

Step 6: Add a Base Map

- Go to **Plugins → Manage and Install Plugins**.
- Search for **QuickMapServices** and install it.
- Go to **Web → QuickMapServices → OSM → OSM Standard** to add a base map.
- Earthquake points should now overlay on a real-world basemap.

Step 7: Save Your Project and Export Map

- Save your project as **earthquake_project.qgz**.
- To export a map:
  - Go to **Project → New Print Layout**.
  - Add the map to the layout.
  - Insert a **Title, Legend, Scale bar, and North arrow**.
  - Export your final map as **PDF or PNG**.

Deliverables

Submit the following:

1. Your **QGIS project file** (`earthquake_project.qgz`).

2. A **map output** (PDF/PNG) showing the spatial distribution of earthquakes
3. A short note (200–300 words) describing the pattern of earthquakes you observe.