Hands-on Session
"Creating QGIS2Web Maps a Step Further....."

OTGA-INCOIS Training Course on Coastal Vulnerability Mapping and analysis using QGIS

International Training Centre for Operational Oceanography (ITCOocean)

Indian National Centre for Ocean Information Services (INCOIS), Hyderabad, India

20-24 November, 2023

N. Kiran Kumar
Scientist-E
ICT, INCOIS

Creating QGIS2 Web Maps

Web Maps is a great medium to publish your GIS data to their web and make it accessible by other users. Creating a web map is a very different process than creating one in a GIS. GIS users are typically aren't web programmers and it presents a challenge when one needs to create a web map that is of the same quality as a map creating in a GIS.

Fortunately, there are tools available to easily translate your work in QGIS to web maps. In this Hands-on Session, you will learn how to use the QGIS2Web plugin to create a web map using Open Layers or Leaflet libraries from your QGIS project.

Overview of the task

We will create a open layers web map for **Historical Tsunami Events**

Other skills you will learn

- How to use Edit Widgets in QGIS to hide certain fields and set custom types.
- How to apply symbology to a vector layer feature.
- Creating popups with feature attributes values that appear on mouse over.

Get the data

We will use the **Historical Tsunami Events** dataset provided by INCOIS.

Download the Day-3ExampleDataset Folder.

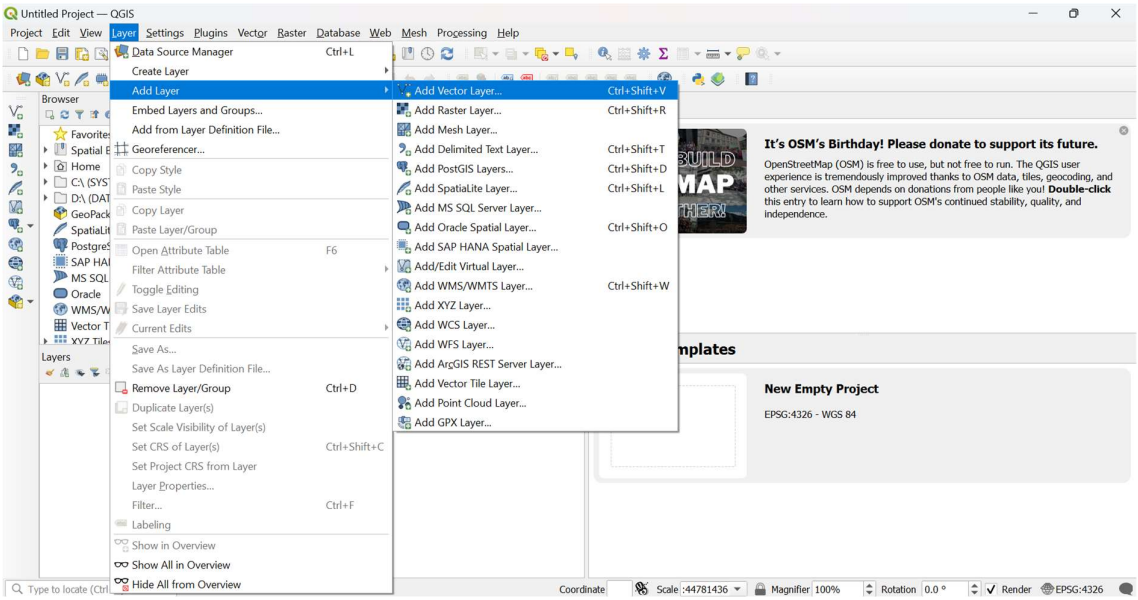
which contains Historical Tsunami Events, Continents, etc shapefiles and World Earth Tiff Files

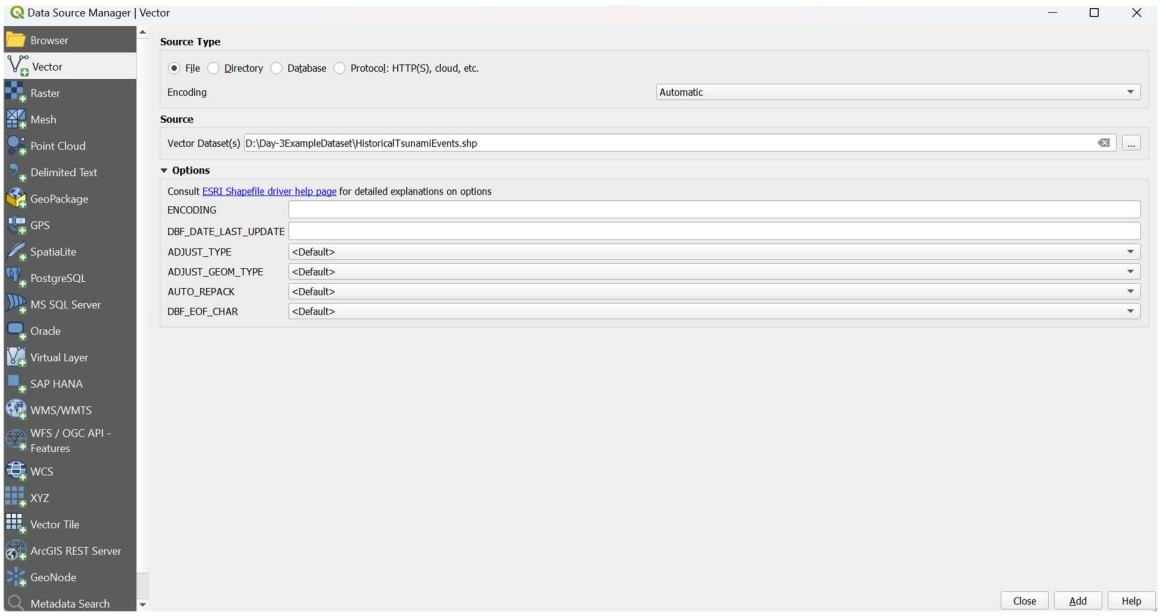
For convenience, you may directly download a copy of the datasets from the links below:
Day-3ExampleDataset.zip

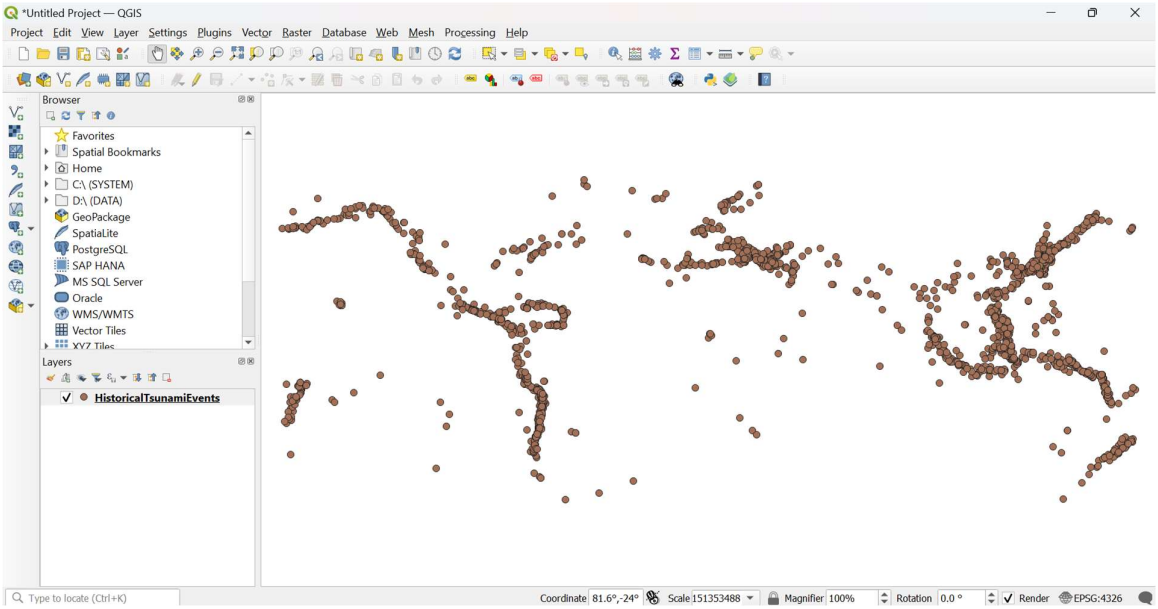
Data Source [INCOIS]

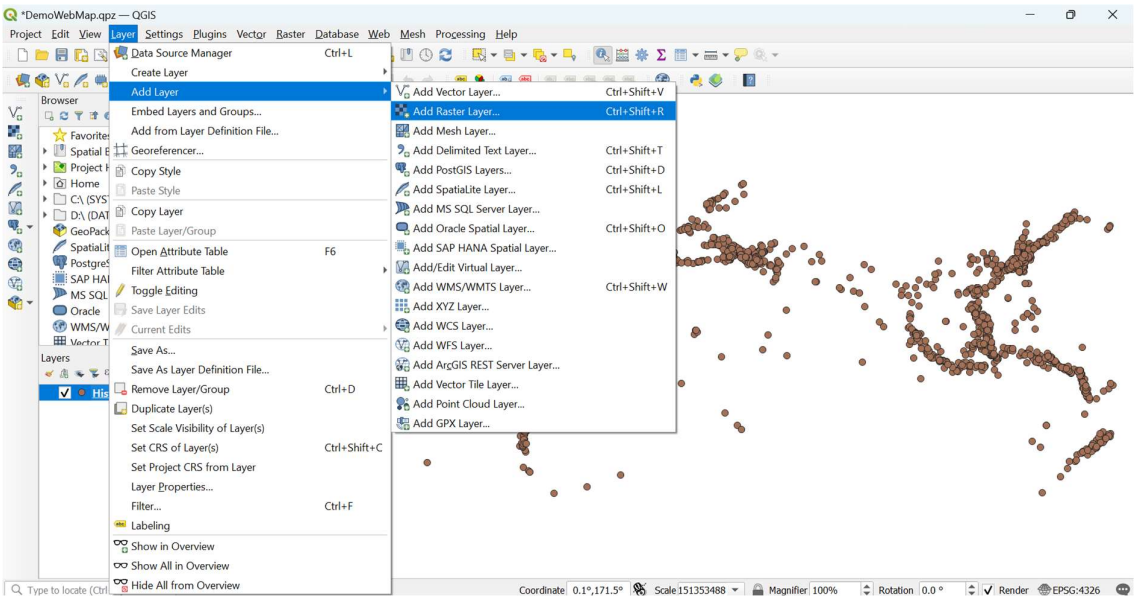
Procedure:

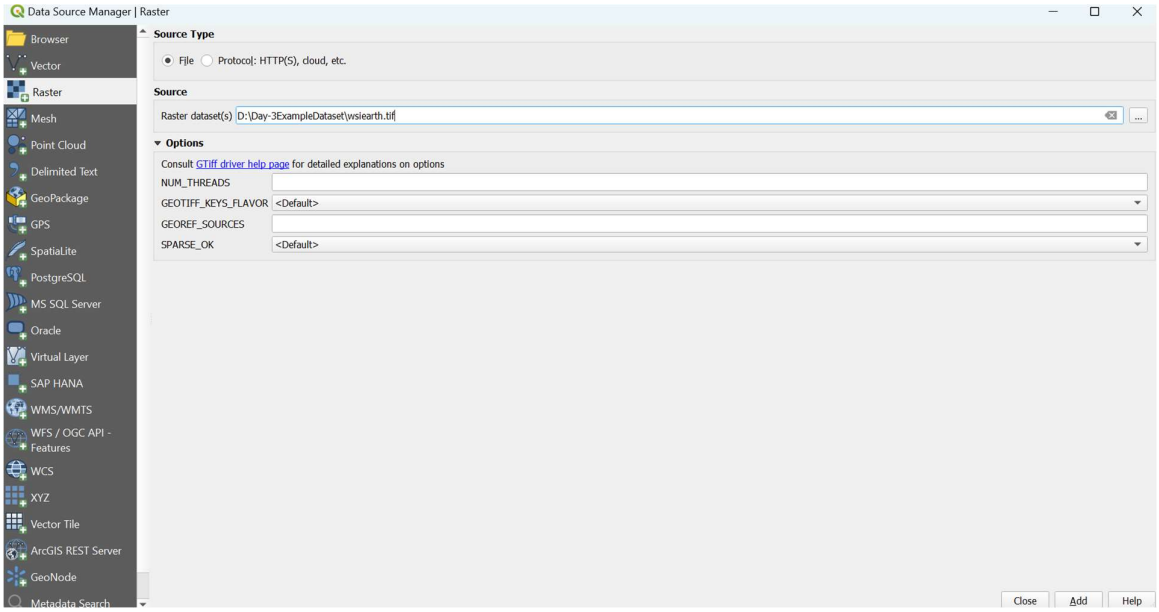
1) Open QGIS and go to Layer ▸ Add Vector Layer. Browse to the location "Day-3ExampleDataset\" and select the file HistoricalTsunamiEvents.shp
Click Add and the layer HistoricalTsunamiEvents to "yourchoiceofname" by right click Rename Layer option; and also Add Raster Layer and select the file wsiearth.tif and save the QGIS Project as **DemoWebMap.qpz**

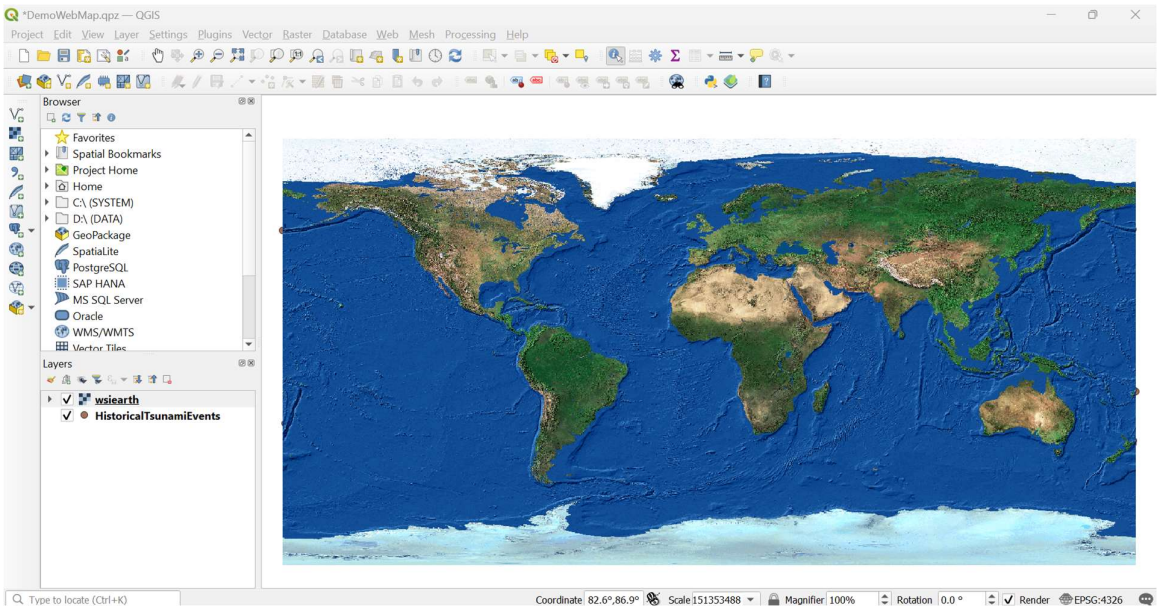




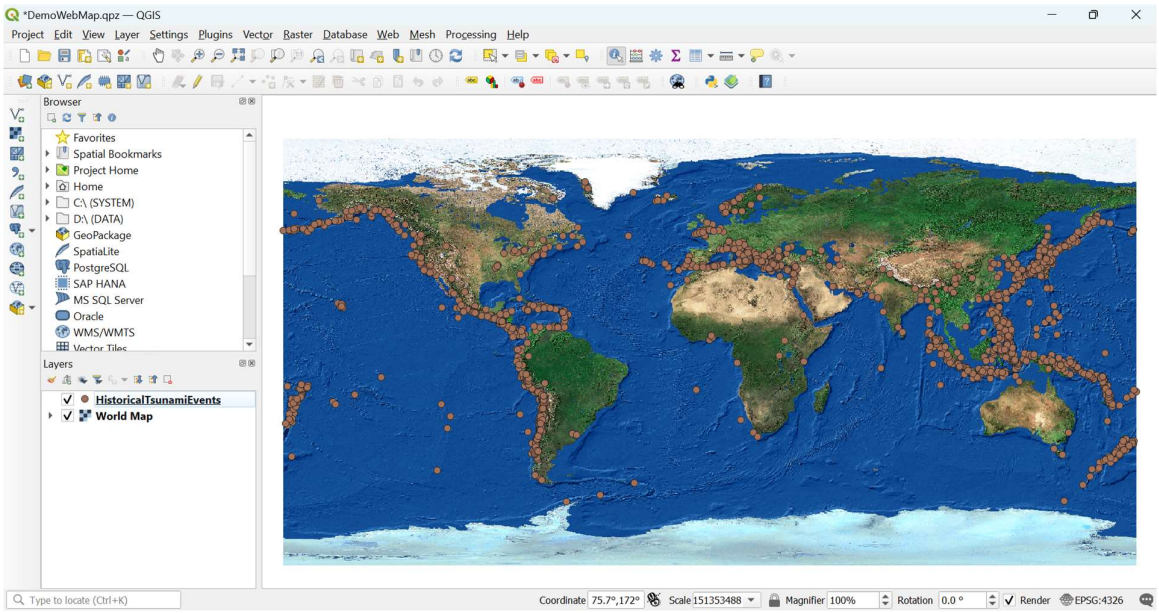

*Untitled Project — QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Home
C:\ (SYSTEM)
D:\ (DATA)
GeoPackage
SpatiaLite
PostgreSQL
SAP HANA
MS SQL Server
Oracle
WMS/WMTS
Vector Tiles
Layers
HistoricalTsunamiEvents
Type to locate (Ctrl+K)
Coordinate 81.6°,-24°
Scale 151353488
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326


*DemoWebMap.qpz — QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Data Source Manager Ctrl+L
Create Layer
Add Layer
Embed Layers and Groups...
Add from Layer Definition File...
Georeferencer...
Copy Style
Paste Style
Copy Layer
Paste Layer/Group
Open Attribute Table F6
Filter Attribute Table
Toggle Editing
Save Layer Edits
Current Edits
Save As...
Save As Layer Definition File...
Remove Layer/Group Ctrl+D
Duplicate Layer(s)
Set Scale Visibility of Layer(s)
Set CRS of Layer(s) Ctrl+Shift+C
Set Project CRS from Layer
Layer Properties...
Filter... Ctrl+F
Labeling
Show in Overview
Show All in Overview
Hide All from Overview
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 SpatiaLite 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... Ctrl+Shift+W
Add XYZ Layer...
Add WCS Layer...
Add WFS Layer...
Add ArcGIS REST Server Layer...
Add Vector Tile Layer...
Add Point Cloud Layer...
Add GPX Layer...
Coordinate 0.1°,171.5°
Scale 151353488
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326

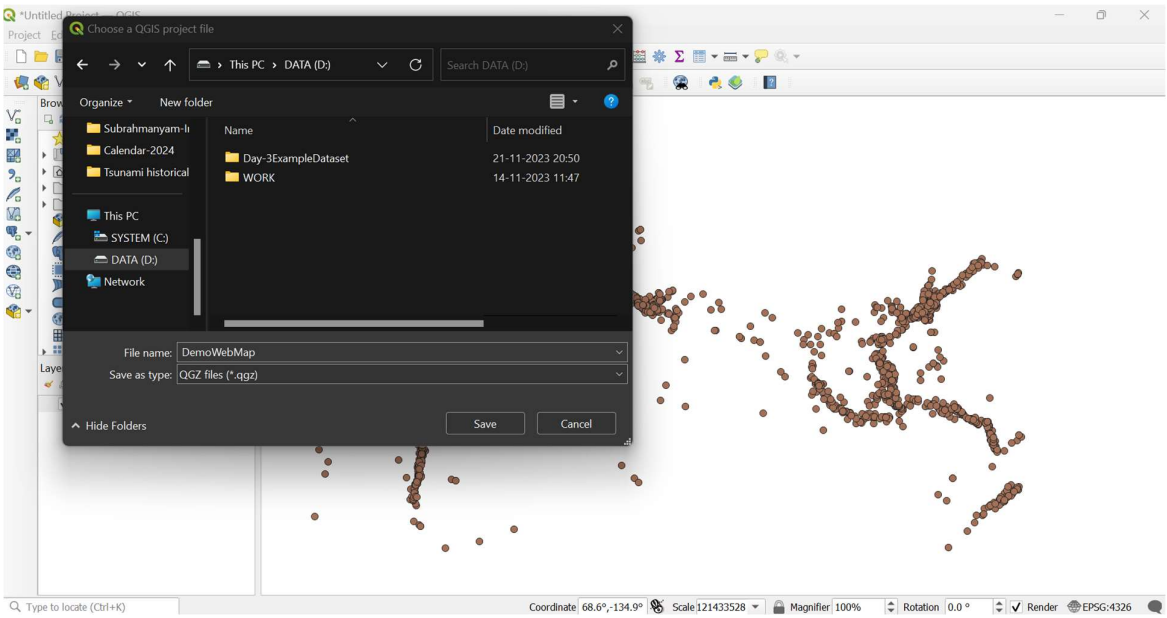




You can rename the layer name wsiearth to World Map and reorder the layers

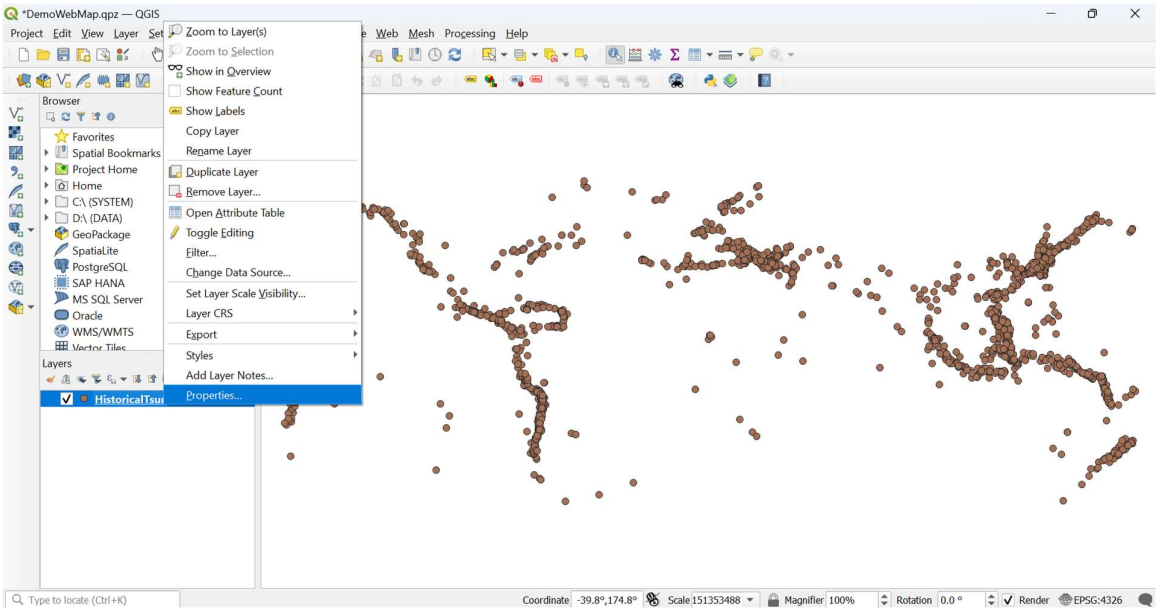


Please Check/Uncheck the layers to make visible/invisible in the Map Canvas.

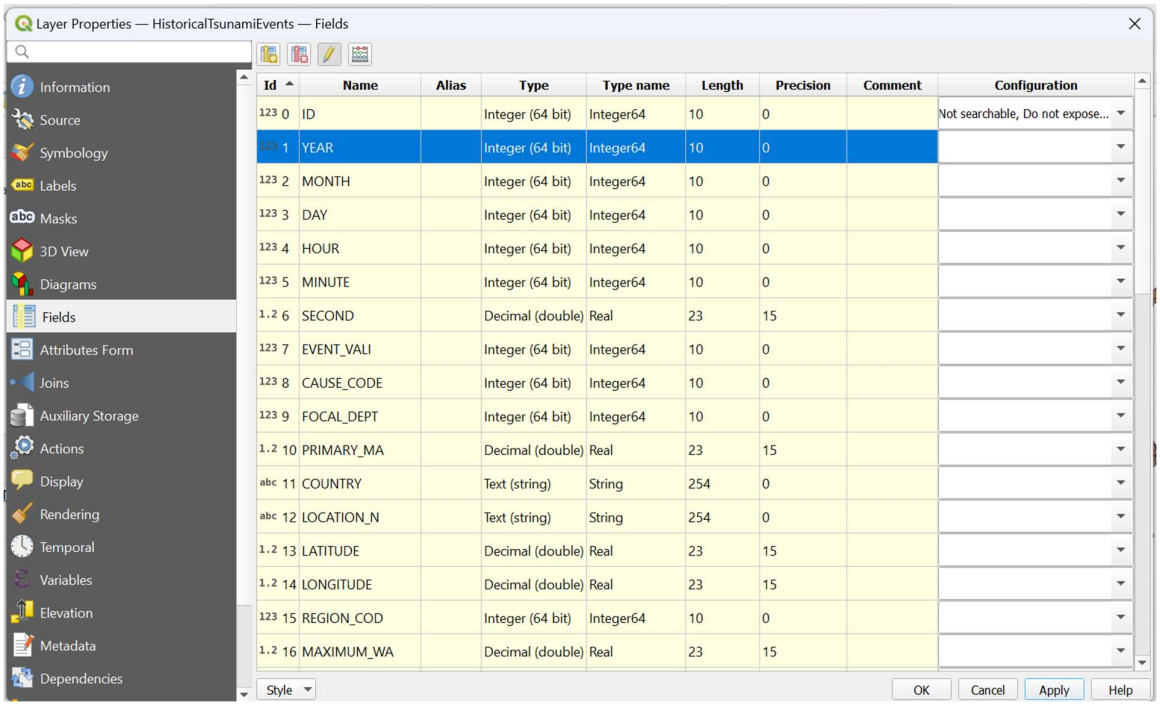


2) We will now create a map in QGIS that looks and behaves just like we would like in the web map. The plugin qgis2web will use replicate the QGIS settings and automatically create the web map without us knowing about web mapping libraries.

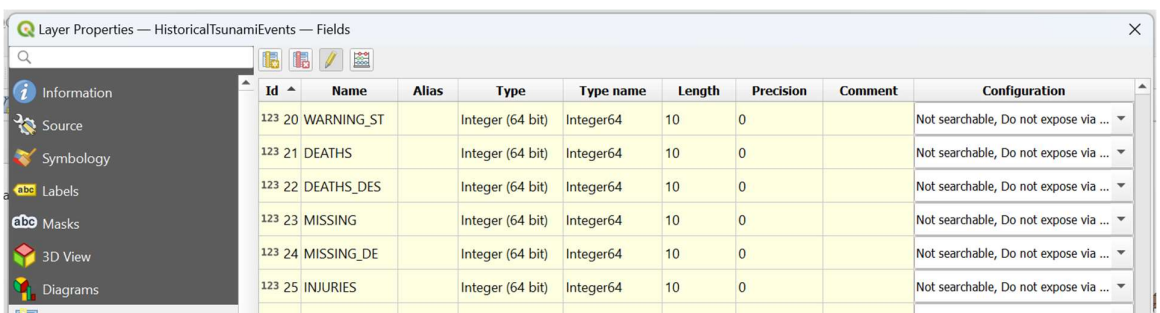
   When a user clicks on a HistoricalTsunamiEvents marker, we want an info-window to display useful information about the HistoricalTsunamiEvents information. This information is already present in the attribute table of the HistoricalTsunamiEvents layers. Right-click on the HistoricalTsunamiEvents layer and select Properties.



3) Switch to the Fields tab. You will notice the different attributes present in the layer. Some of these aren't relevant to the users of our web map, so we can choose to hide these.
We will keep the following fields and hide the others.

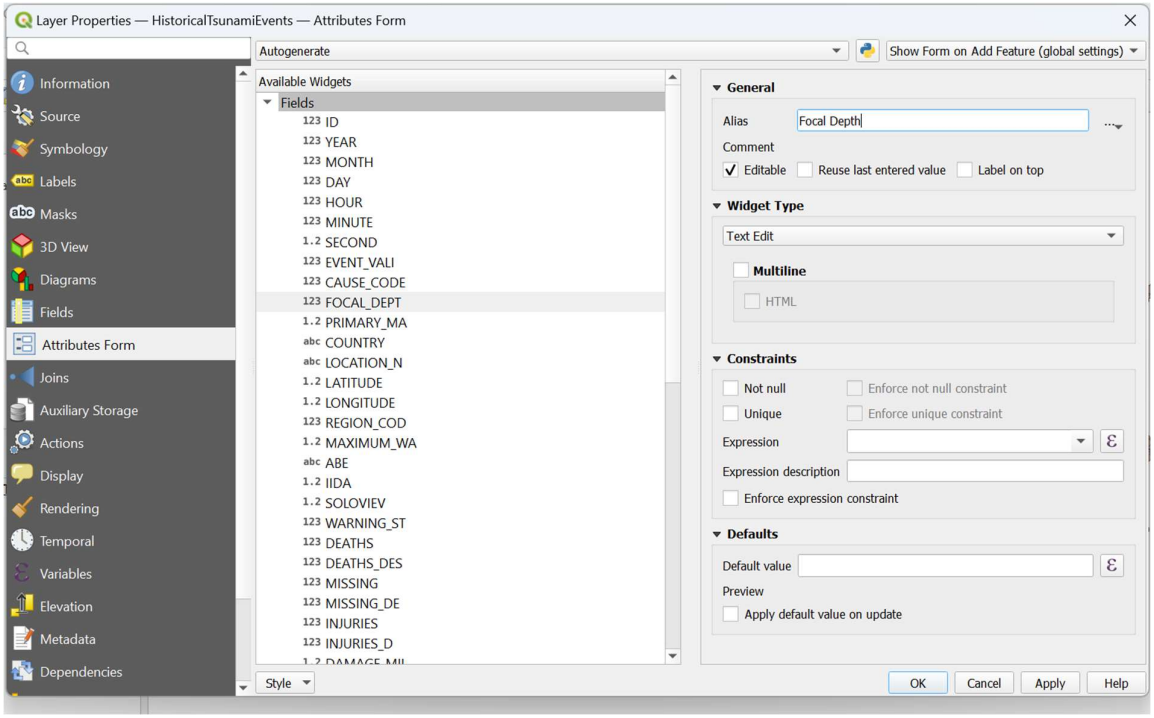


Id	Name	Alias	Type	Type name	Length	Precision	Comment	Configuration
123 0	ID		Integer (64 bit)	Integer64	10	0		Not searchable, Do not expose...
123 1	YEAR		Integer (64 bit)	Integer64	10	0		
123 2	MONTH		Integer (64 bit)	Integer64	10	0		
123 3	DAY		Integer (64 bit)	Integer64	10	0		
123 4	HOUR		Integer (64 bit)	Integer64	10	0		
123 5	MINUTE		Integer (64 bit)	Integer64	10	0		
1.2 6	SECOND		Decimal (double)	Real	23	15		
123 7	EVENT_VALI		Integer (64 bit)	Integer64	10	0		
123 8	CAUSE_CODE		Integer (64 bit)	Integer64	10	0		
123 9	FOCAL_DEPT		Integer (64 bit)	Integer64	10	0		
1.2 10	PRIMARY_MA		Decimal (double)	Real	23	15		
abc 11	COUNTRY		Text (string)	String	254	0		
abc 12	LOCATION_N		Text (string)	String	254	0		
1.2 13	LATITUDE		Decimal (double)	Real	23	15		
1.2 14	LONGITUDE		Decimal (double)	Real	23	15		
123 15	REGION_COD		Integer (64 bit)	Integer64	10	0		
1.2 16	MAXIMUM_WA		Decimal (double)	Real	23	15		

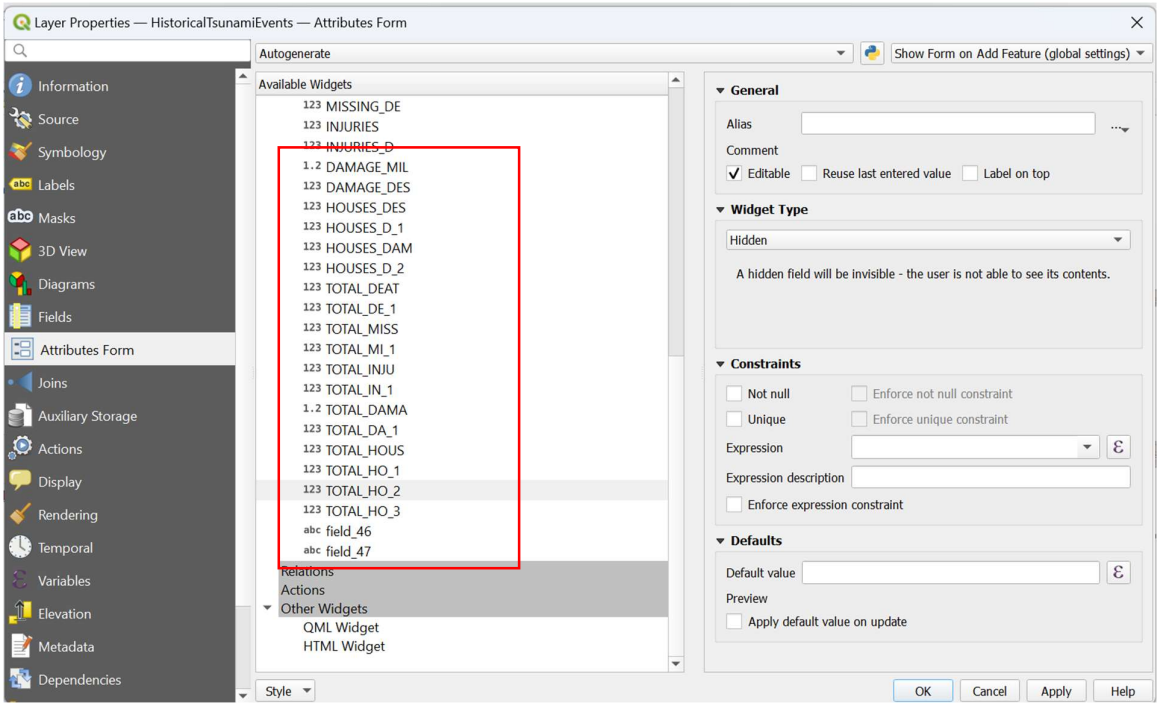


Id	Name	Alias	Type	Type name	Length	Precision	Comment	Configuration
123 20	WARNING_ST		Integer (64 bit)	Integer64	10	0		Not searchable, Do not expose via ...
123 21	DEATHS		Integer (64 bit)	Integer64	10	0		Not searchable, Do not expose via ...
123 22	DEATHS_DES		Integer (64 bit)	Integer64	10	0		Not searchable, Do not expose via ...
123 23	MISSING		Integer (64 bit)	Integer64	10	0		Not searchable, Do not expose via ...
123 24	MISSING_DE		Integer (64 bit)	Integer64	10	0		Not searchable, Do not expose via ...
123 25	INJURIES		Integer (64 bit)	Integer64	10	0		Not searchable, Do not expose via ...

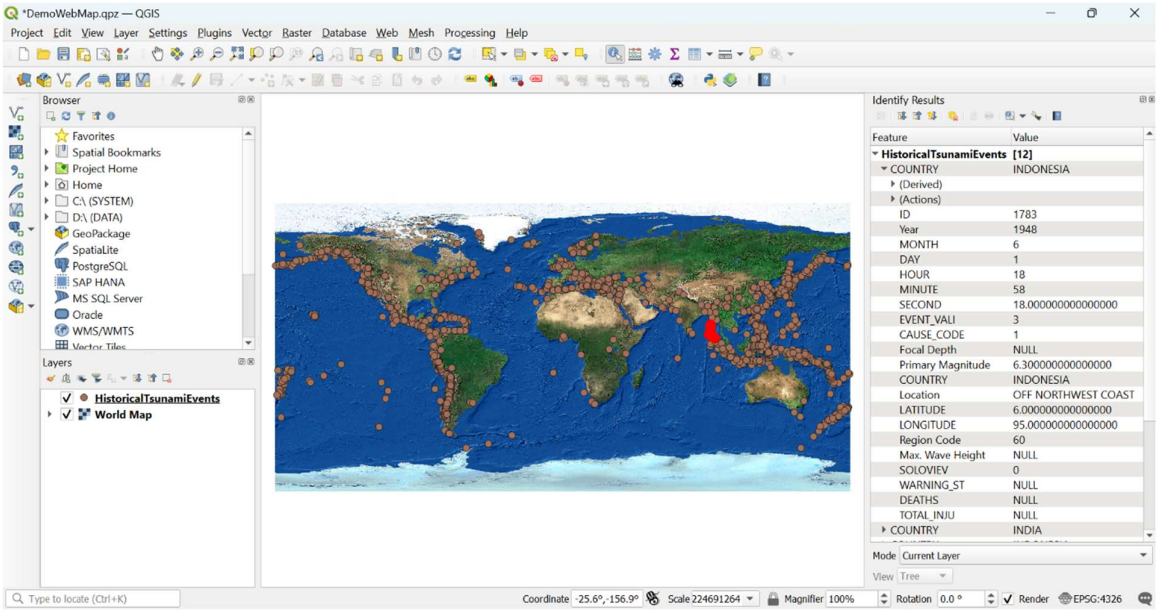
Click on Attributes Form under Layer properties Available Widgets enter Alias as Focal Depth for FOCAL_DEPT field and repeat the same for other field Names also under Widget type, you can explore the other options available.



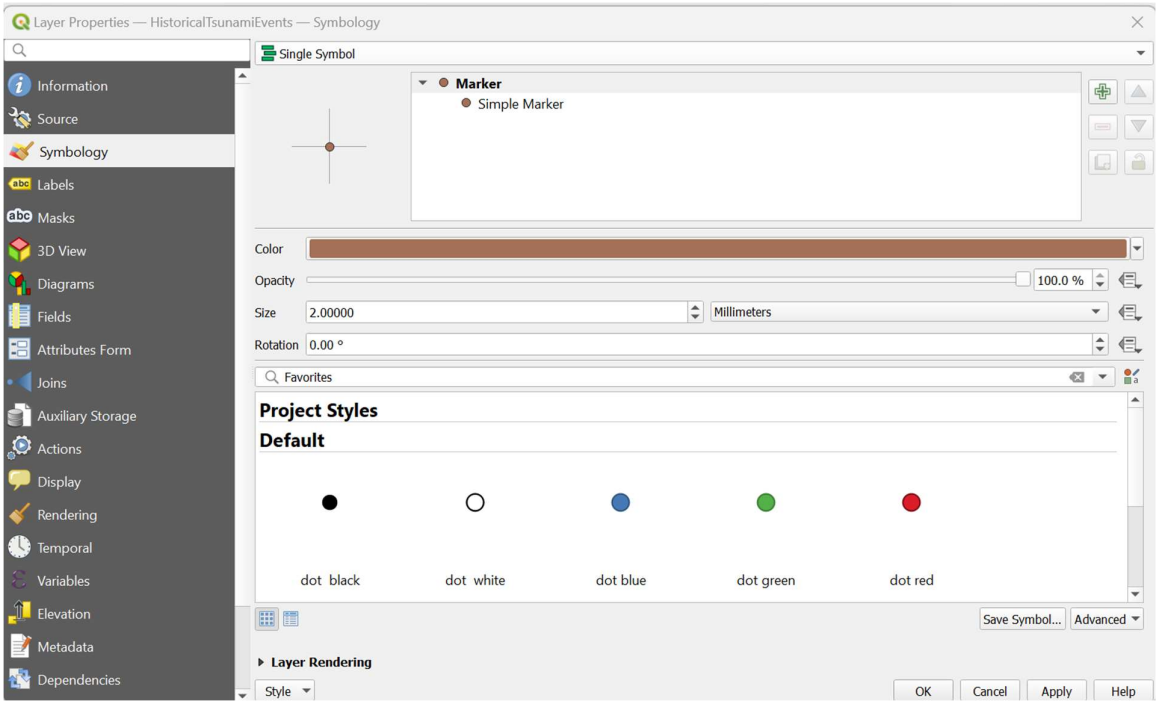
4) Similarly set other fields to Hidden type. As you may have notices, there are other field types available that allow us to set how the fields appear to the users of our map, the other fields like below under Widget type select Hidden.



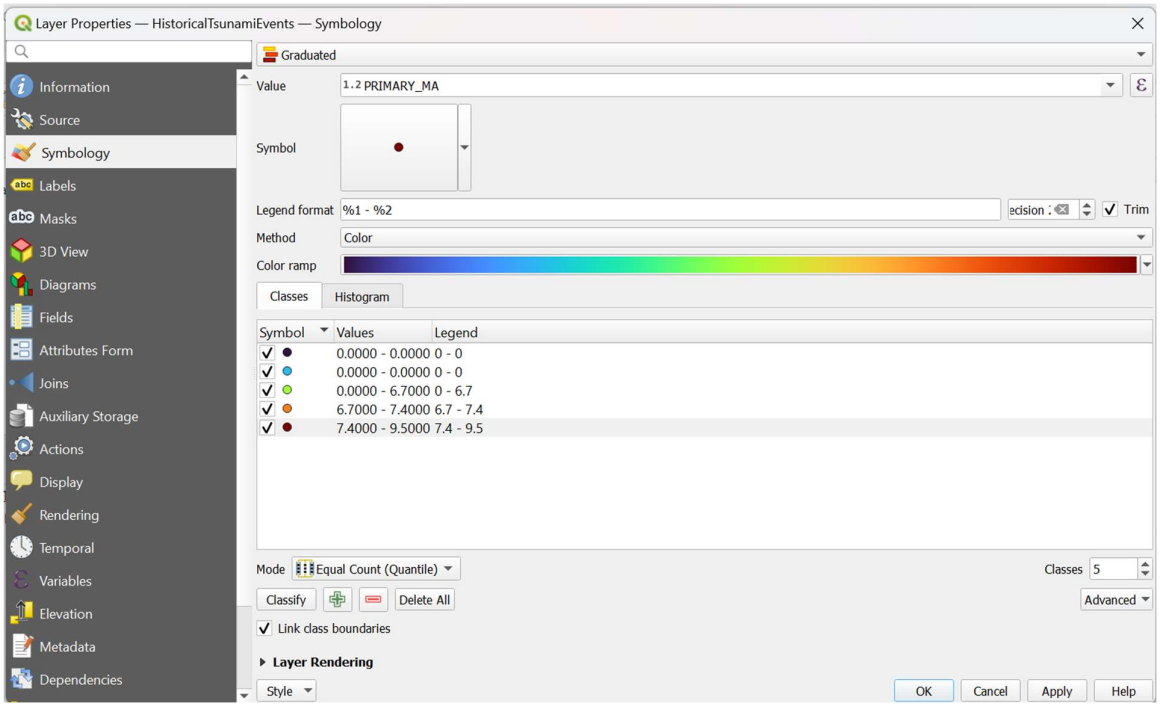
5) Select the Identify Tool and click on any feature on the Map Canvas on the right side you can see the Identify Results.

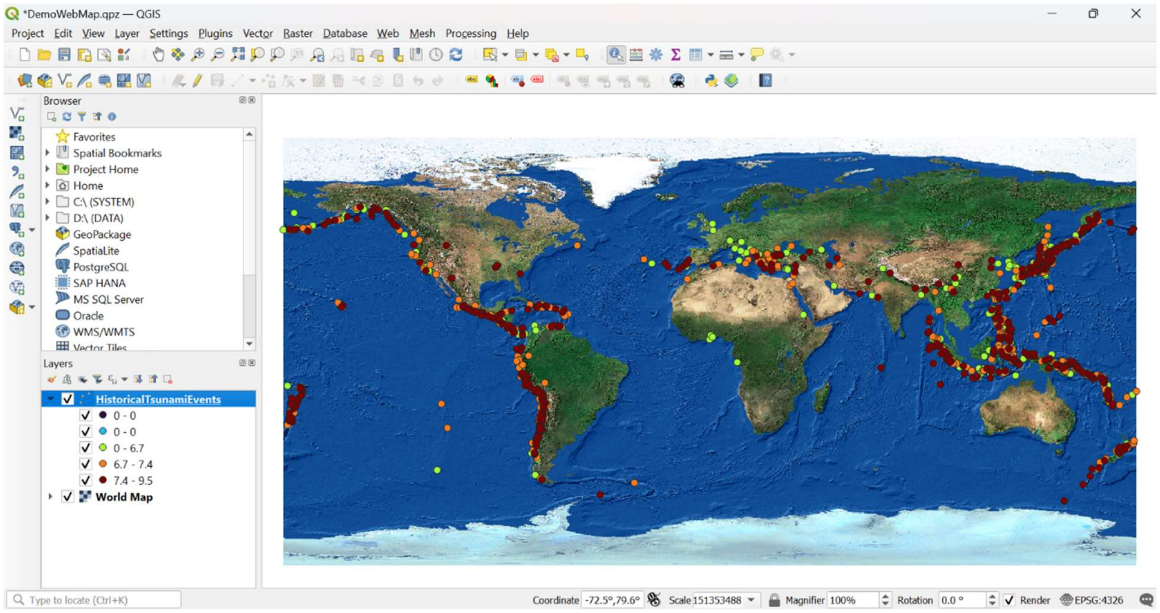


6) Click on Layer Properties of HistoricalTsunamiEvents and select Symbology

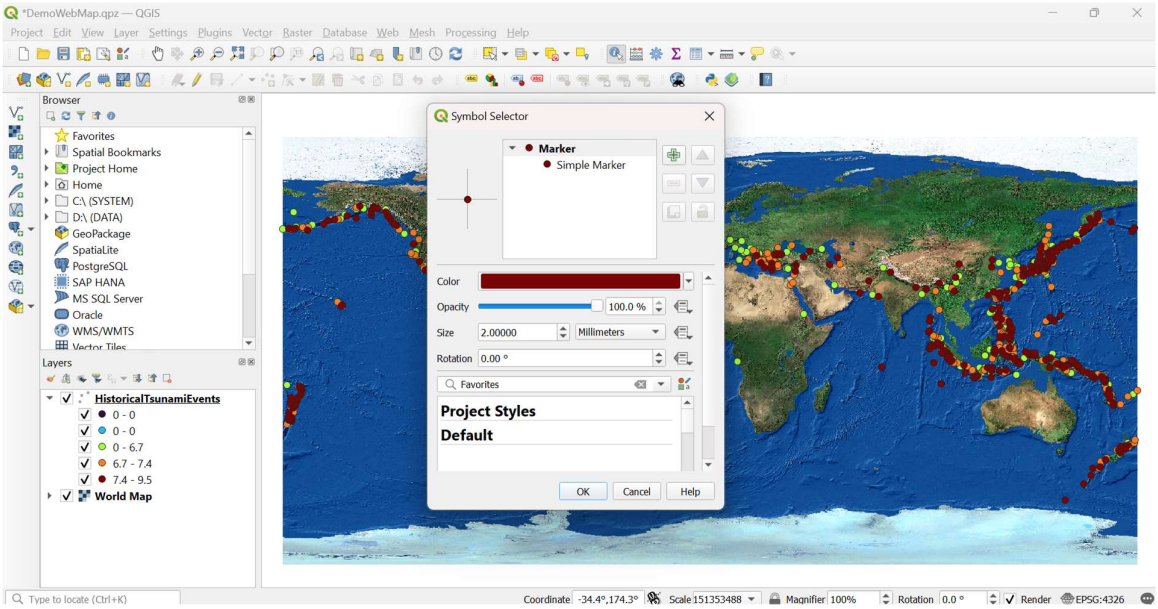


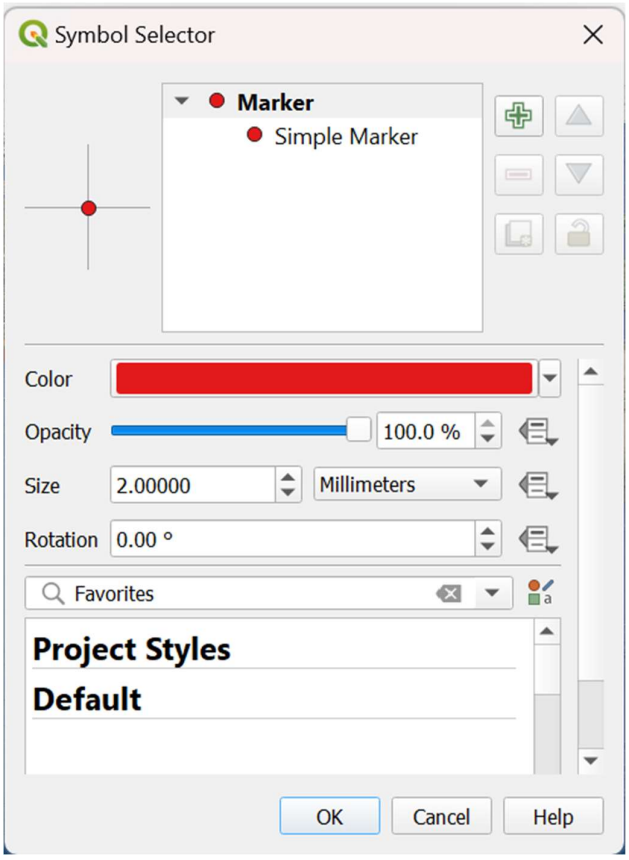
Select Graduated from the drop down list; Value as PRIMARY_MA; Color Ramp as Turbo; Click on Classify and finally Click Apply and OK



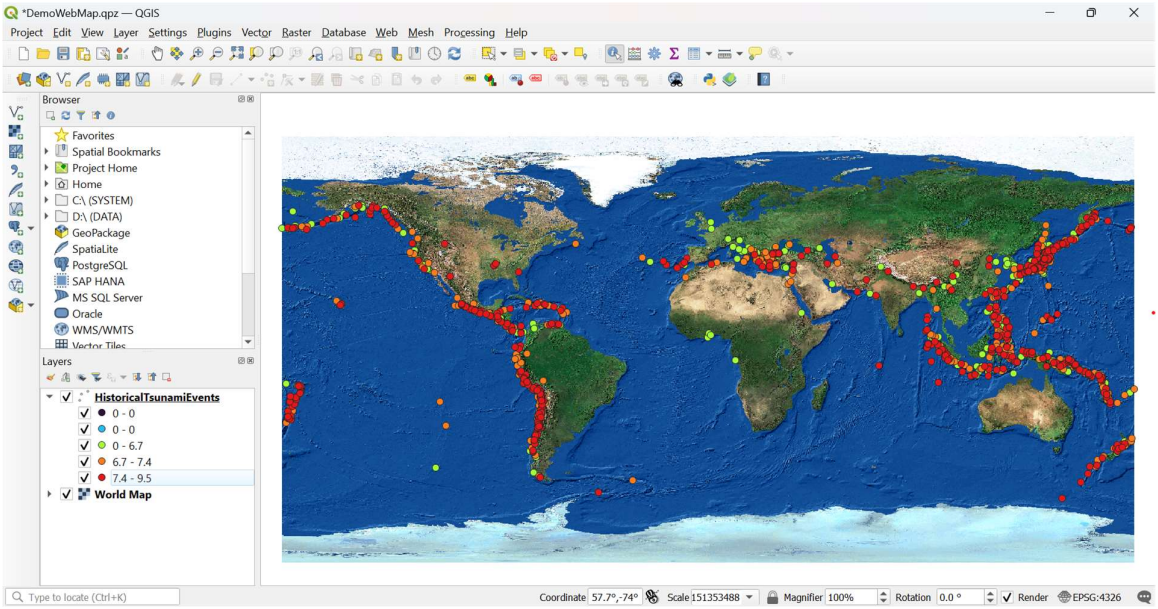


Now, Click on the Symbol under Layer List of Historical Tsunami Events to change the color.

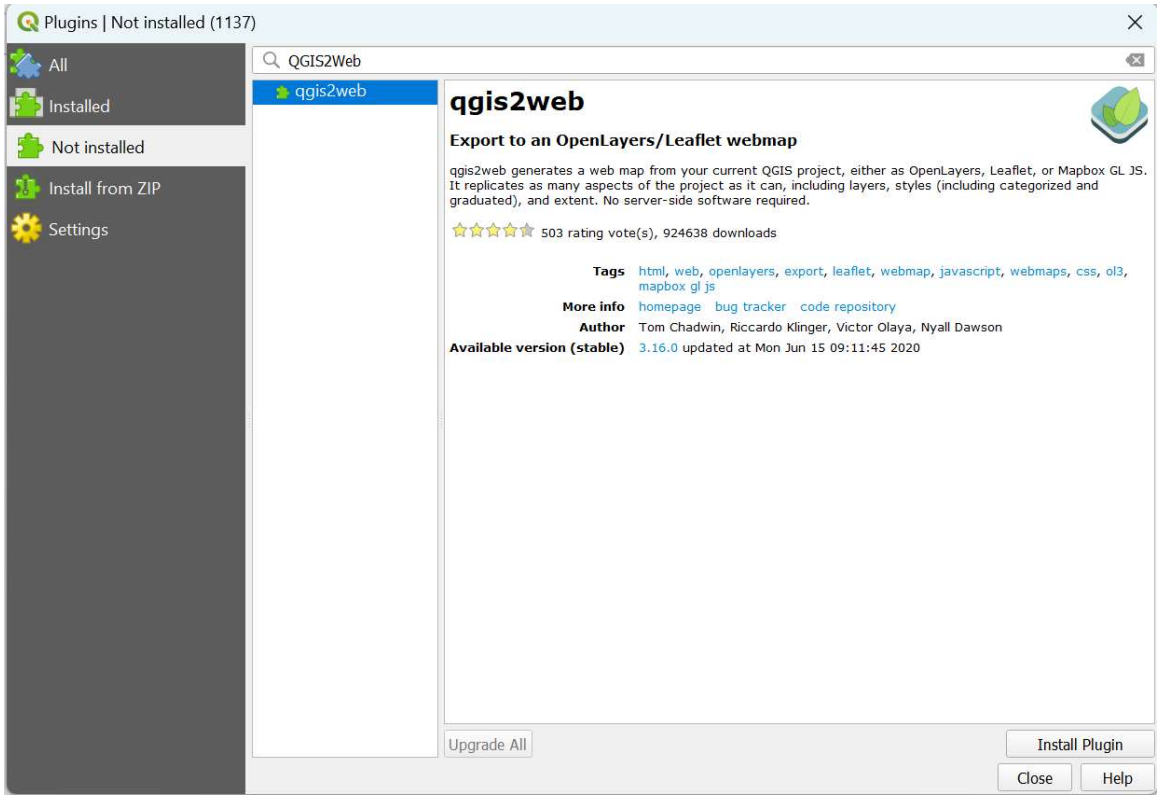


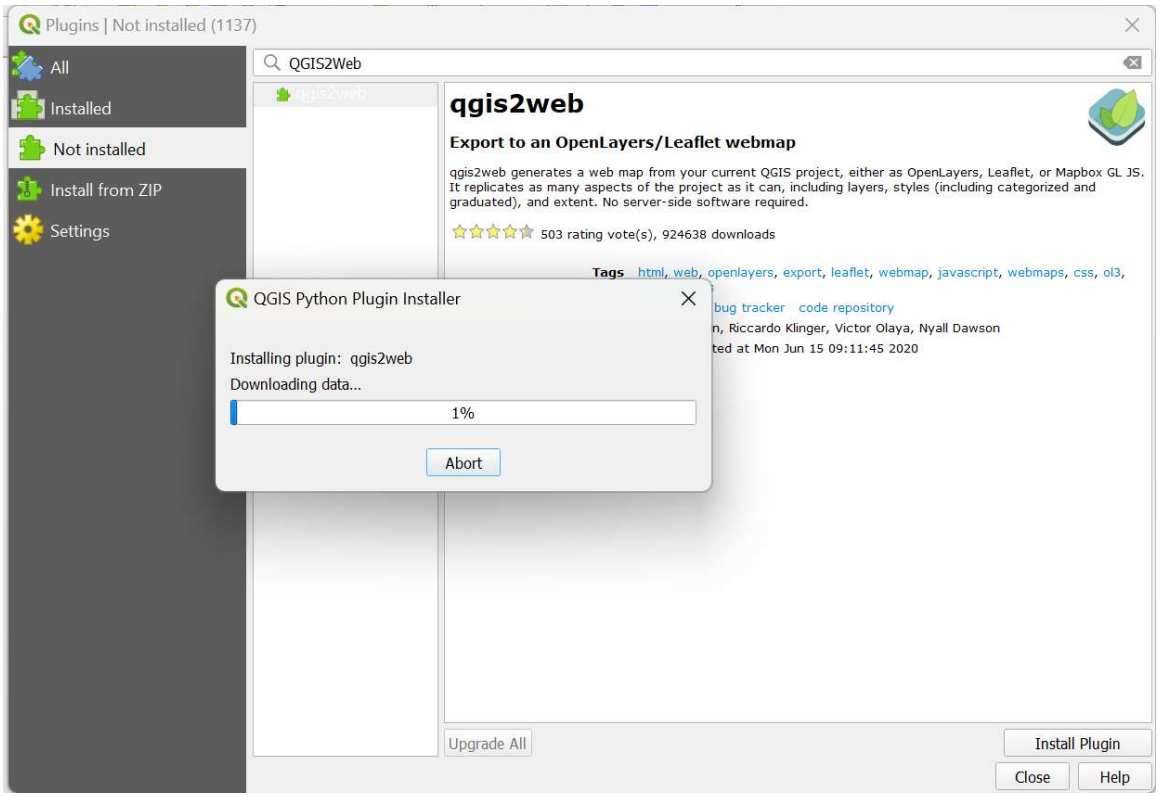


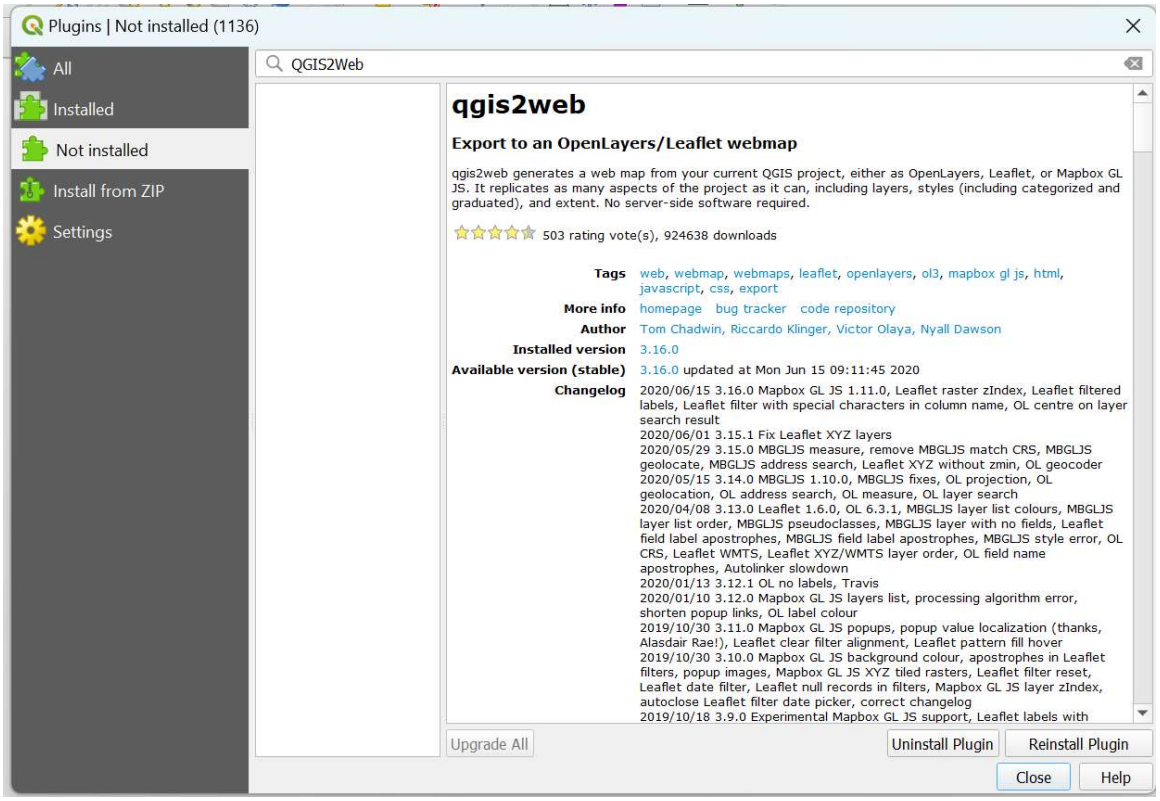
Select the Color Red and Click OK. Now the Major Tsunami Events of Magnitude 7.4 – 9.5 has changed to Red Color Symbols on the Map Canvas.



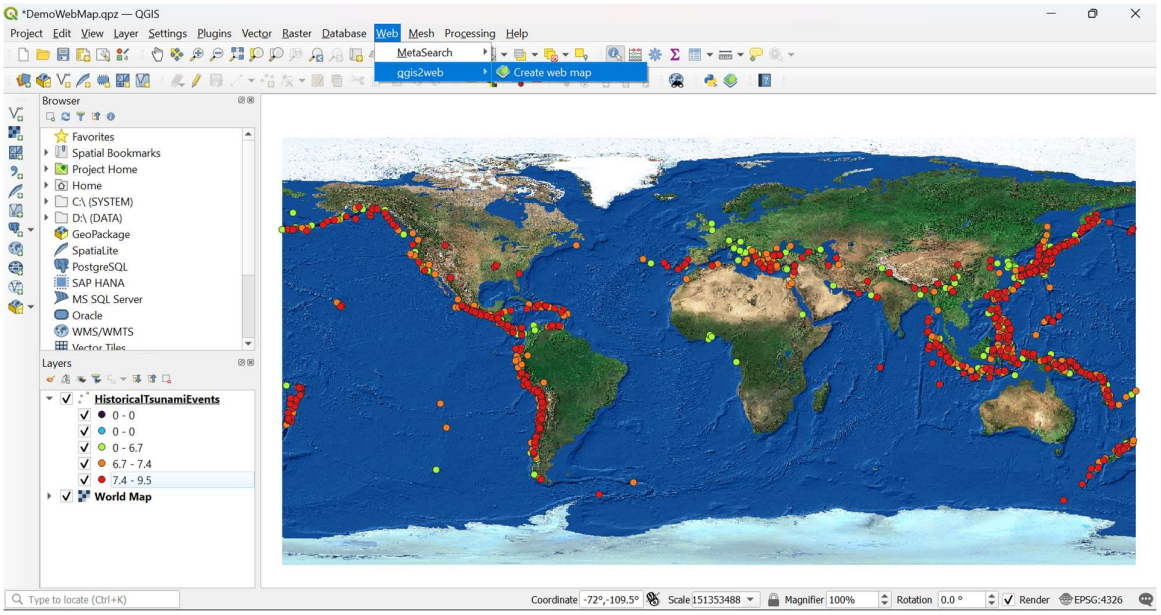
7) Now we are ready to export our project to a web map. Install the qgis2web plugin by going to Plugins ▸ Manage and Install Plugin (See Using Plugins for more details on installing plugins in QGIS). Once the plugin is installed, go to Web ▸ qgis2web ▸ Create a web map.

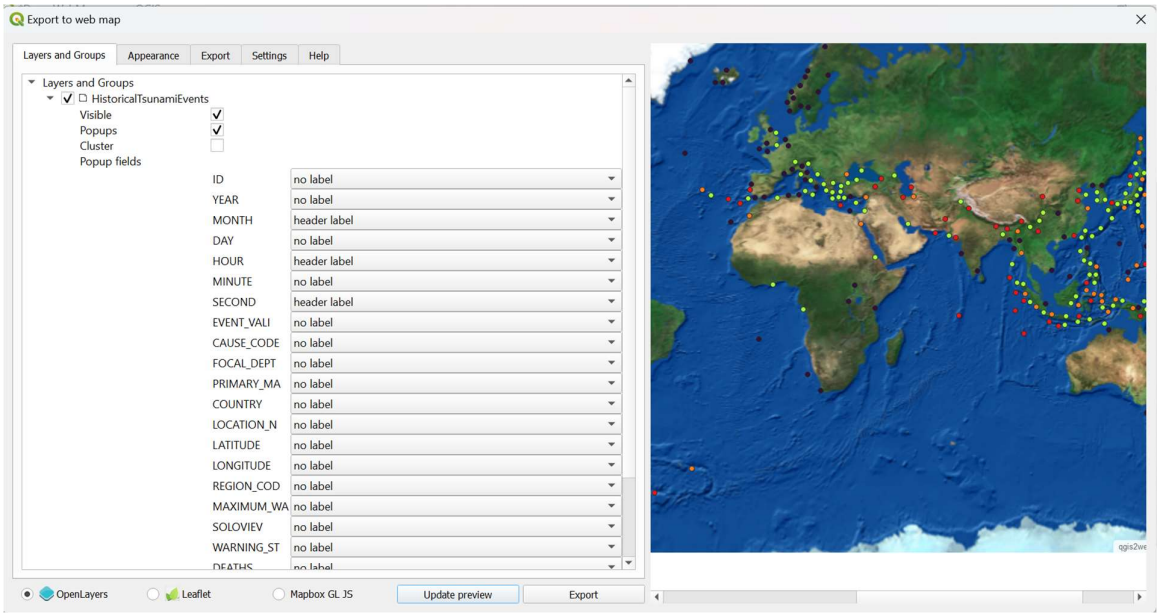



Plugins | Not installed (1137)
All
Installed
Not installed
Install from ZIP
Settings
QGIS2Web
qgis2web
Export to an OpenLayers/Leaflet webmap
qgis2web generates a web map from your current QGIS project, either as OpenLayers, Leaflet, or Mapbox GL JS. It replicates as many aspects of the project as it can, including layers, styles (including categorized and graduated), and extent. No server-side software required.
503 rating vote(s), 924638 downloads
Tags html, web, openlayers, export, leaflet, webmap, javascript, webmaps, css, ol3,
bug tracker code repository
n, Riccardo Klinger, Victor Olaya, Nyall Dawson
ted at Mon Jun 15 09:11:45 2020
QGIS Python Plugin Installer
Installing plugin: qgis2web
Downloading data...
1%
Abort
Upgrade All
Install Plugin
Close
Help

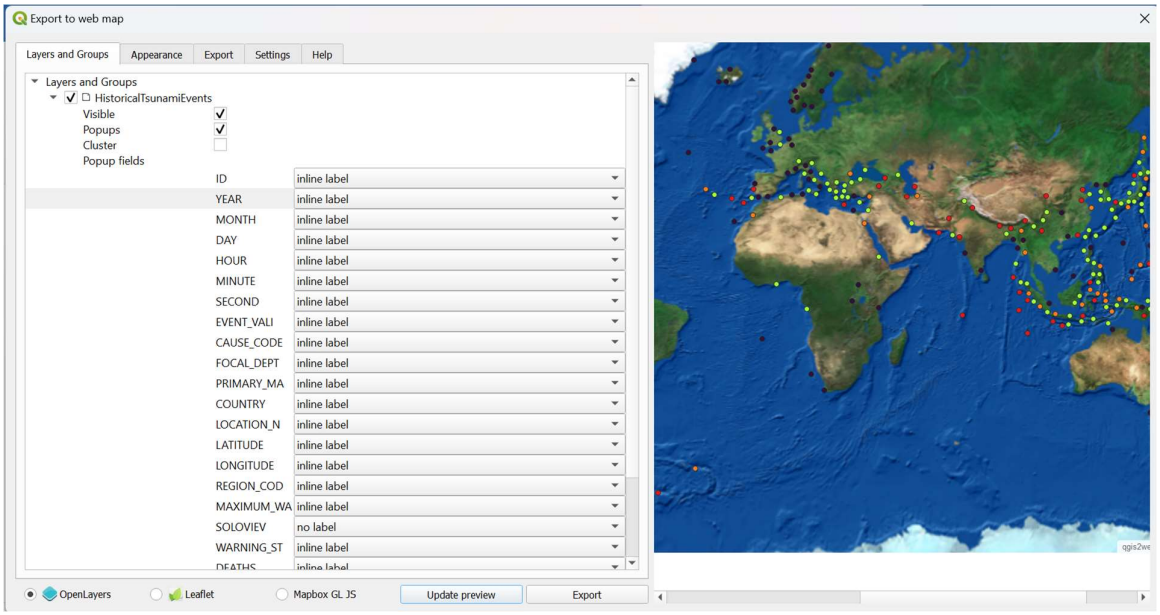

Plugins | Not installed (1136)
All
Installed
Not installed
Install from ZIP
Settings
QGIS2Web
qgis2web
Export to an OpenLayers/Leaflet webmap
qgis2web generates a web map from your current QGIS project, either as OpenLayers, Leaflet, or Mapbox GL JS. It replicates as many aspects of the project as it can, including layers, styles (including categorized and graduated), and extent. No server-side software required.
503 rating vote(s), 924638 downloads
Tags web, webmap, webmaps, leaflet, openlayers, ol3, mapbox gl js, html, javascript, css, export
More info homepage bug tracker code repository
Author Tom Chadwin, Riccardo Klinger, Victor Olaya, Nyall Dawson
Installed version 3.16.0
Available version (stable) 3.16.0 updated at Mon Jun 15 09:11:45 2020
Changelog 2020/06/15 3.16.0 Mapbox GL JS 1.11.0, Leaflet raster zIndex, Leaflet filtered labels, Leaflet filter with special characters in column name, OL centre on layer search result
2020/06/01 3.15.1 Fix Leaflet XYZ layers
2020/05/29 3.15.0 MBGLJS measure, remove MBGLJS match CRS, MBGLJS geolocate, MBGLJS address search, Leaflet XYZ without zmin, OL geocoder
2020/05/15 3.14.0 MBGLJS 1.10.0, MBGLJS fixes, OL projection, OL geolocation, OL address search, OL measure, OL layer search
2020/04/08 3.13.0 Leaflet 1.6.0, OL 6.3.1, MBGLJS layer list colours, MBGLJS layer list order, MBGLJS pseudoclasses, MBGLJS layer with no fields, Leaflet field label apostrophes, MBGLJS field label apostrophes, MBGLJS style error, OL CRS, Leaflet WMTS, Leaflet XYZ/WMTS layer order, OL field name apostrophes, Autolinker slowdown
2020/01/13 3.12.1 OL no labels, Travis
2020/01/10 3.12.0 Mapbox GL JS layers list, processing algorithm error, shorten popup links, OL label colour
2019/10/30 3.11.0 Mapbox GL JS popups, popup value localization (thanks, Alasdair Rae!), Leaflet clear filter alignment, Leaflet pattern fill hover
2019/10/30 3.10.0 Mapbox GL JS background colour, apostrophes in Leaflet filters, popup images, Mapbox GL JS XYZ tiled rasters, Leaflet filter reset, Leaflet date filter, Leaflet null records in filters, Mapbox GL JS layer zIndex, autoclose Leaflet filter date picker, correct changelog
2019/10/18 3.9.0 Experimental Mapbox GL JS support, Leaflet labels with
Upgrade All
Uninstall Plugin
Reinstall Plugin
Close
Help

Go to Menu → Web → qgis2web → Click on Create Web Map





8) Select OpenLayers option and Click on Update Preview and Under Layers and Groups → Pop fields – change it to inline label for all the fields.



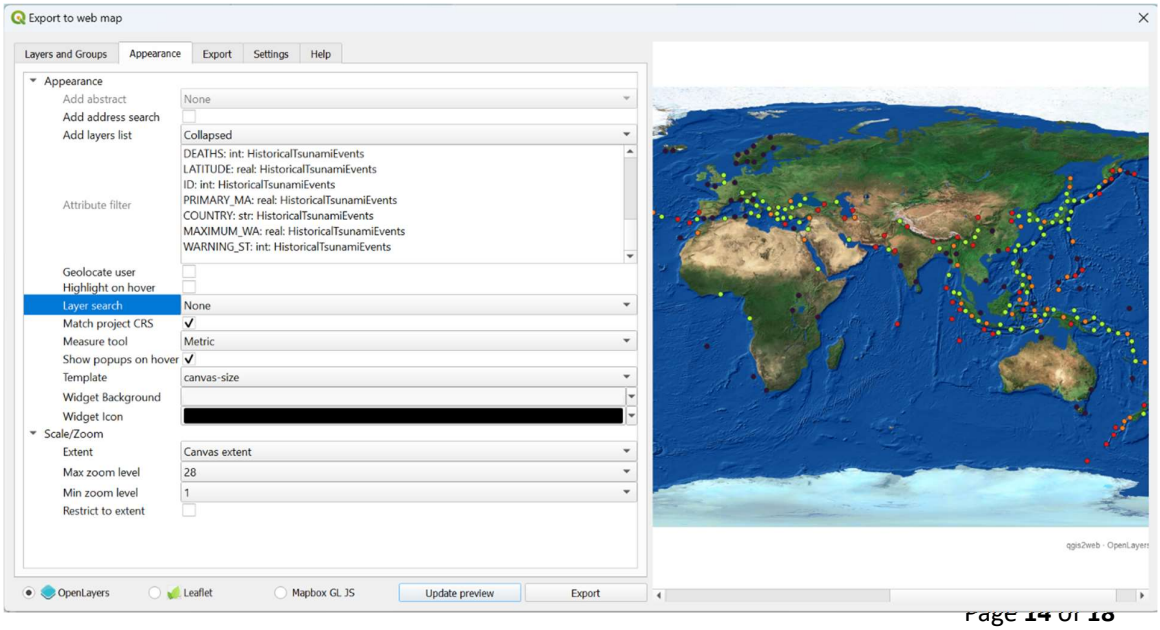
What is Leaflet?

Leaflet is an open source JavaScript library for mobile-friendly interactive maps. It is developed by Vladimir Agafonkin of MapBox with a team of dedicated contributors. Weighing just about 30 KB of gzipped JS code, it has all the features most developers ever need for online maps.

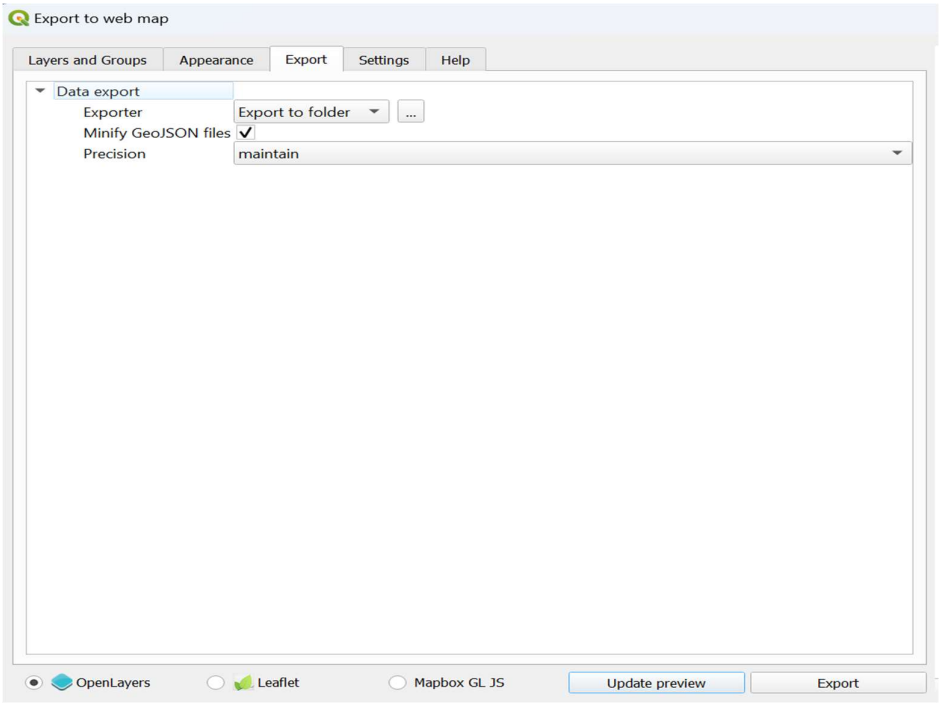
What is OpenLayers?

An opensource javascript library to load, display and render maps from multiple sources on web pages.

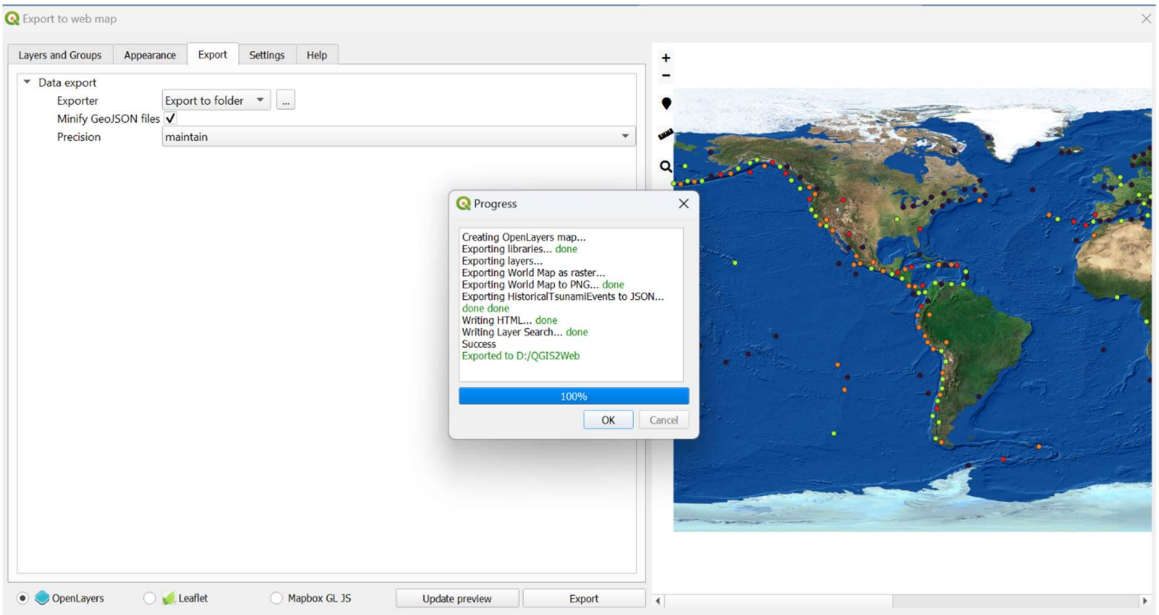
9) Under Appearance → Check the check boxes as below.



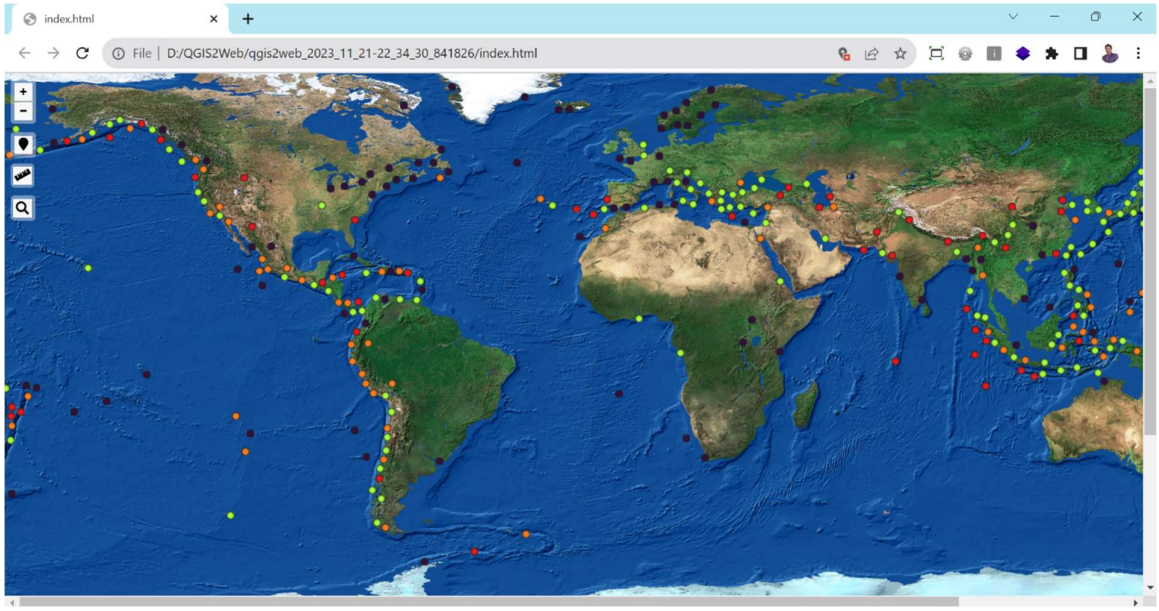
10) Select Folder for Data export of the QGIS Web Map Project



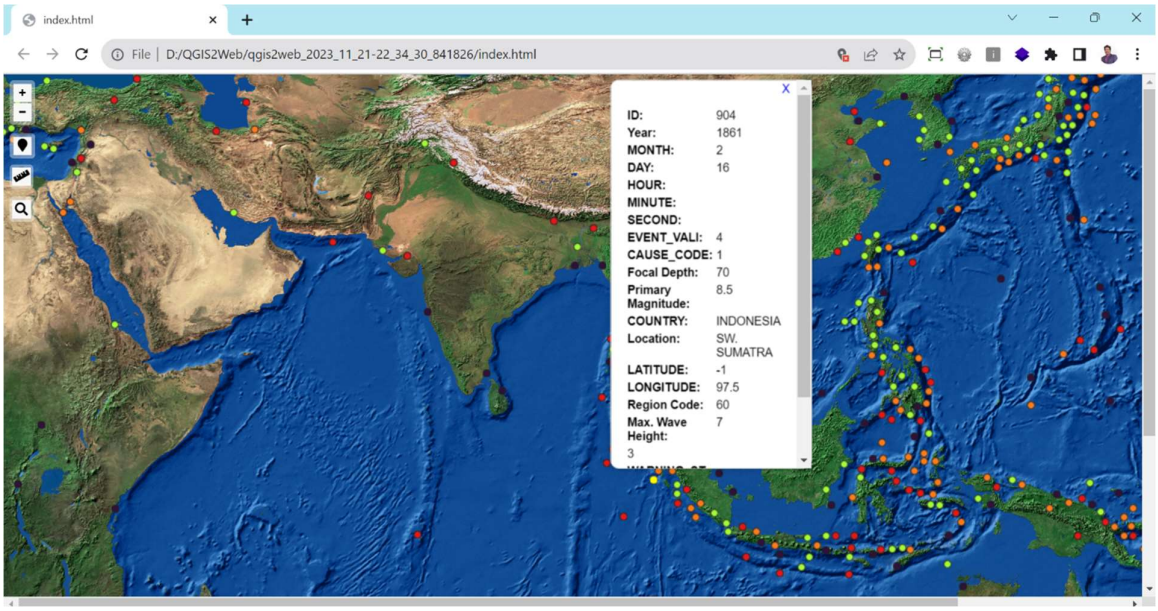
11) Click on Export and wait until the Progress is completed and Click OK.

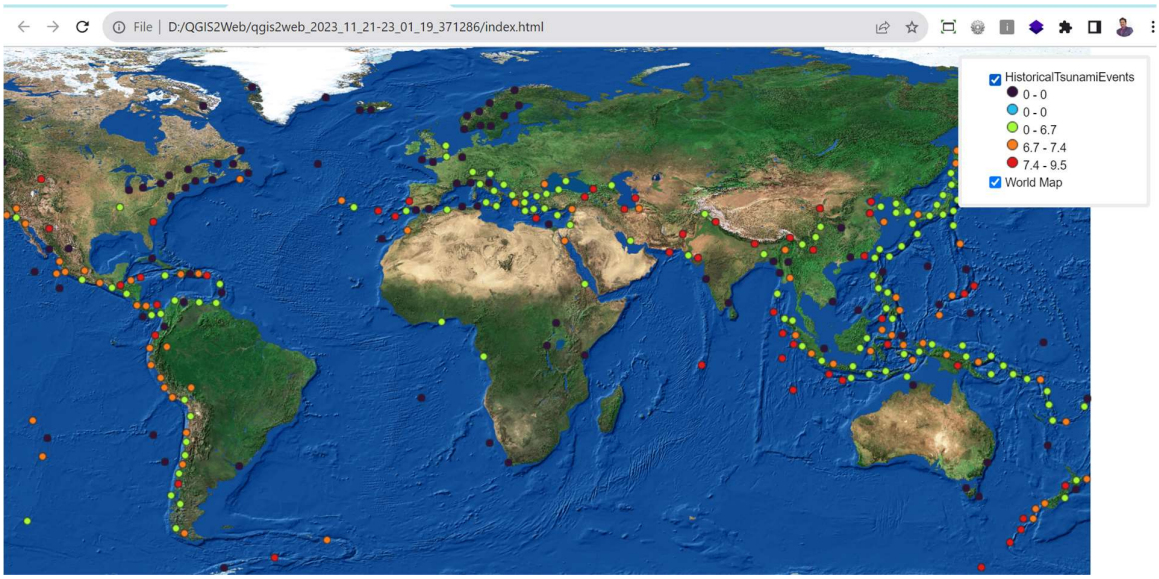


12) Automatically the web map will be opened on your internet browser.



13) Mouse Over/ Click on any feature, a Popup will be displayed with the Identify Results.





14) The qgis2web plugin has many limitations and it cannot do everything that the powerful web mapping libraries OpenLayers and Leaflet can do.

This process can act as the starting point in your web mapping process and save you valuable time by creating a basic template from which you can further customize the web map. To highlight the fact that the output created from this process can be readily changed to suit your requirement.

On your computer, go to the folder where the web map was exported. Locate the resources folder.

"C:\Users\Administrator\AppData\Local\Temp\qgis2web"

15) Locate the line where the map.getView().fit() function is called and add the following code after that. This new line of code instructs the web browser to center the map on the coordinates of India. Save the changes to the qgis2web.js

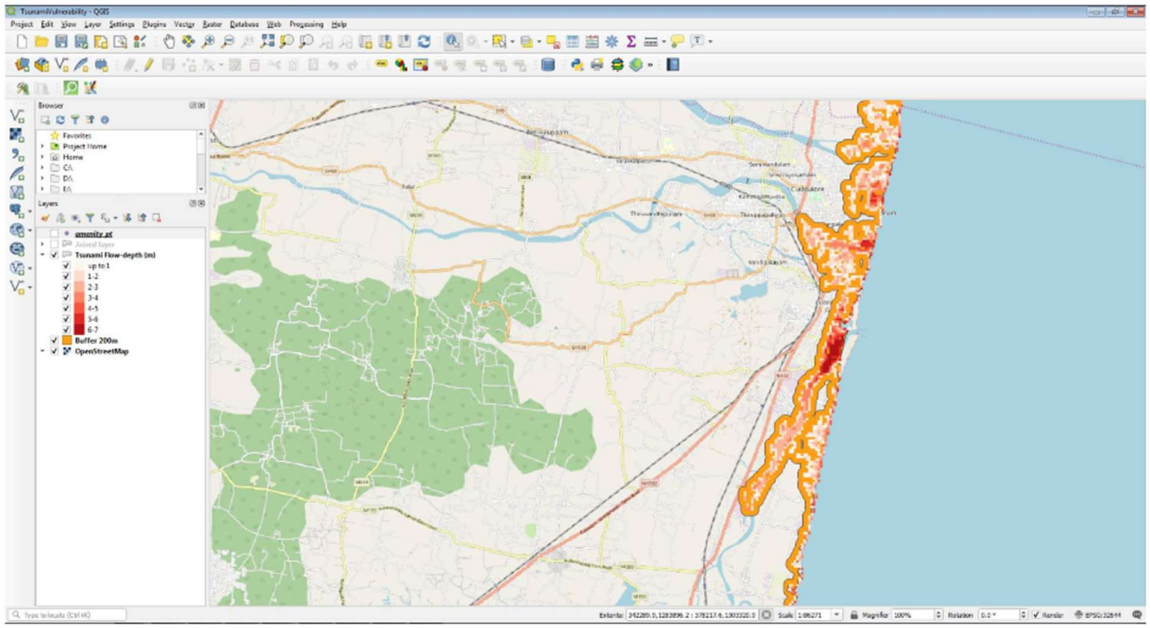
```
map.getView().fit([20, -80, 140, 30], map.getSize());
```

Refresh your browser and see that the web map will load with **India** at the center. This is a trivial example, but you can see how you can use any function available in the OpenLayers or Leaflet libraries to customize the web map.

16) The exported map resides on your computer. While you can see it in action, it is not very useful since you cannot share it anyone.

For others to be able to see the map, you need to upload it to a web server. While the upload process will vary on the type of server you have access to – a cheap and easy way to publish your map on the web would be to use any of the public cloud storage services.

Other Case Studies:



-- 0-0-0-0 --