

maplibre-gl-terrastyle - new drawing plugin for maplibre-gl-js

18 July 2025

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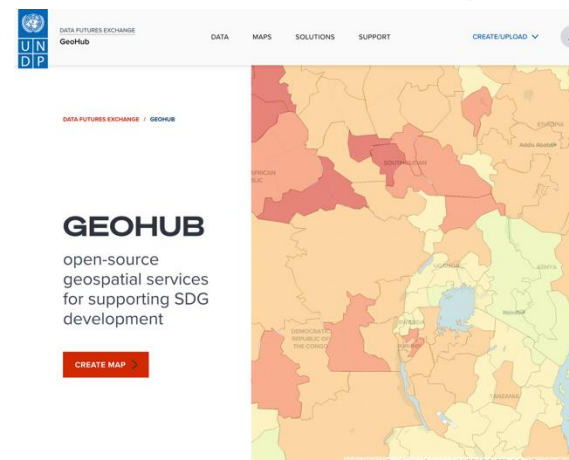
Jin Igarashi

- Currently working at United Nations Development Programme (UNDP) as a full-stack GIS developer (2021 to August 2025)
- Hold an MSc in Water, Sanitation and Health Engineering from the University of Leeds, UK.
- The following open-source projects I am currently working on



<https://github.com/watergis>

OSS to help water utilities to manage assets

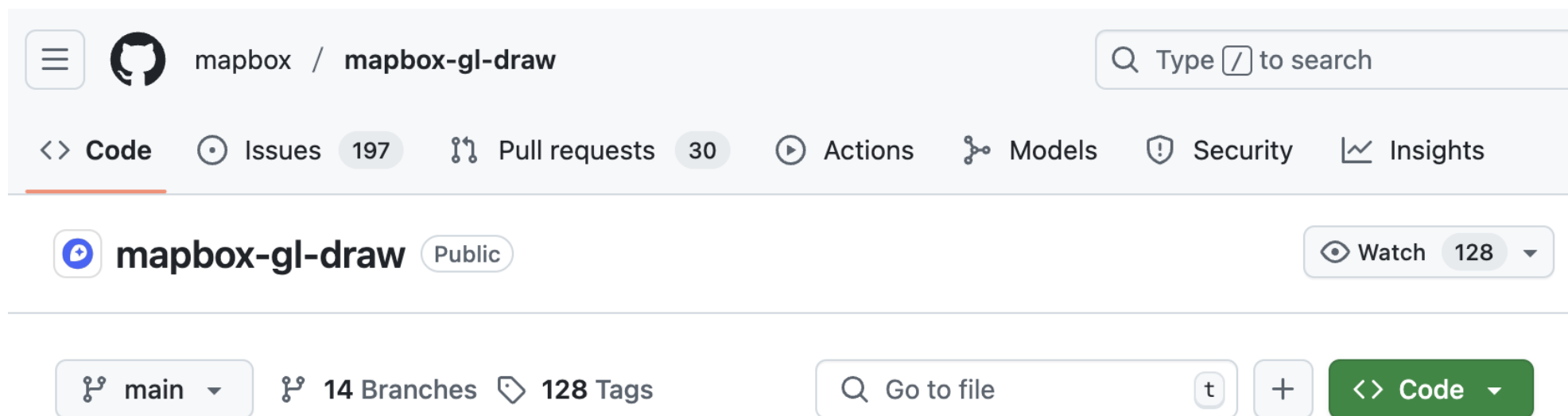


UNDP GeoHub

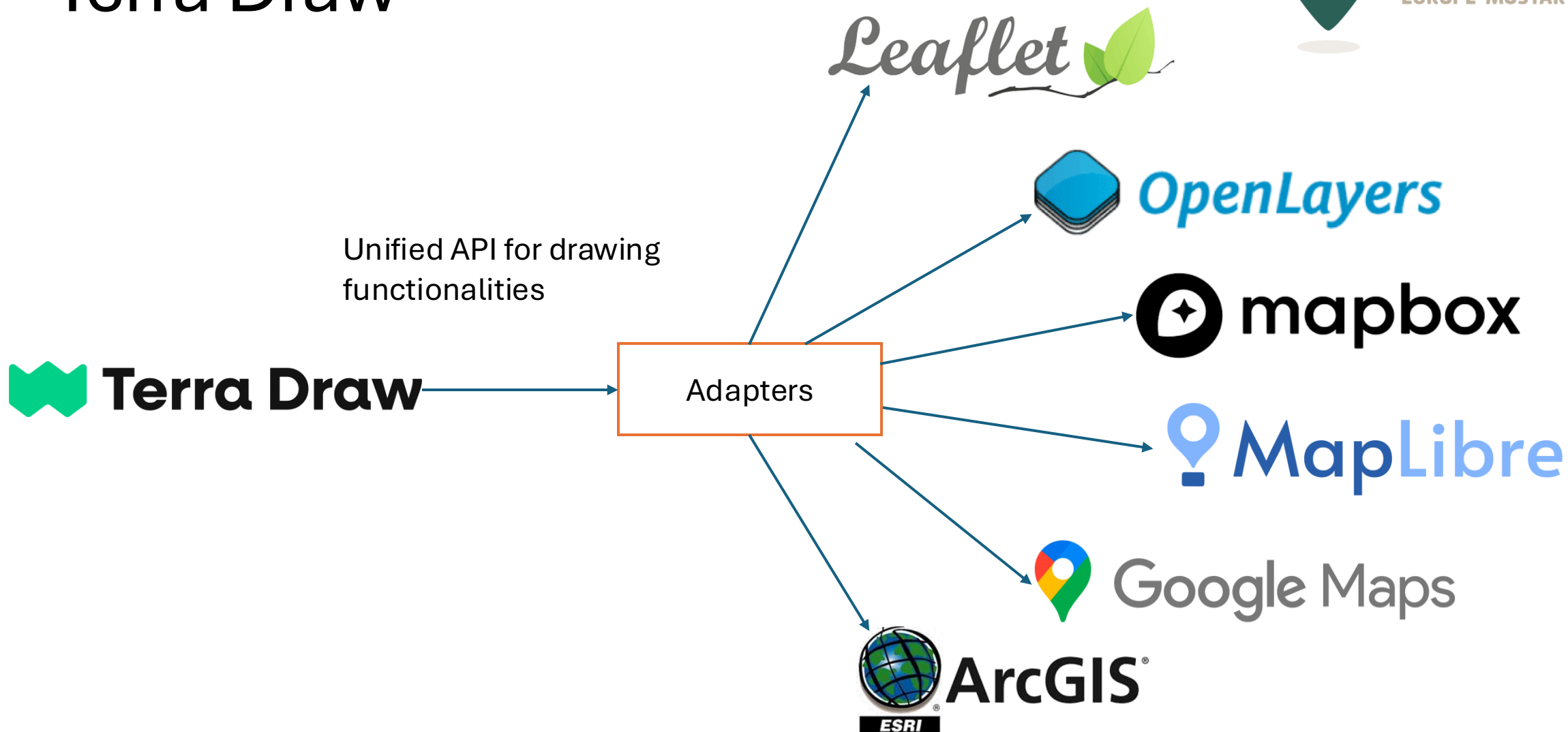
<https://github.com/UNDP-Data/geohub>

mapbox-gl-draw

- Mapbox-gl-draw has been used for long time to provide drawing features for both Mapbox and Maplibre
- However, the use of mapbox-gl-draw is sometimes tricky and several issues associated with Maplibre



Terra Draw



More details about Terra Draw

- Check the recording of “Terra Draw: 3 Years of Open Source Map Drawing” conducted by @JamesLMilner
- <https://talks.osgeo.org/foss4g-europe-2025/talk/XHMYBK/>

Terra Draw: 3 Years of Open Source Map Drawing

 .ical

07-18, 14:00–14:30 (Europe/Sarajevo), CA01 

Drawing on web maps can be surprisingly complex, especially when handling diverse mapping libraries and intricate user requirements. Three years ago, Terra Draw was created to simplify and standardize user drawing functionality across popular web mapping platforms, including Leaflet, OpenLayers, Google Maps, MapboxGL JS, and MapLibreGL JS. Since then, it has evolved into a robust open-source library, offering a range of built-in drawing modes for simple geometries like points, lines, and polygons, as well as advanced features like snapping, rotation, and scaling that "just work" across different mapping ecosystems.

What is maplibre-gl-terrastyle?

What controls are available?

Maplibre
TerraDraw
Control

Provide standard drawing
tools to maplibre

Maplibre
Measure
Control

Provide measuring features
to maplibre

What features are available?

Mode name		Description	Mode name		Description
render		Main button	angled-rectangle		Add a angled rectangle
point		Add a point	sensor		Add a sensor polygon
linestring		Add a line	sector		Add a sector polygon
polygon		Add a polygon	select		Select & modify a feature
rectangle		Add a rectangle	delete-selection		Delete selected feature
circle		Add a circle	delete		Delete all feature
freehand		Draw a freehand polygon	download		Download features



Plugin own feature

10 modes from Terra Draw API, and 4 modes from the plugin API itself

Motivation to develop the plugin

- Terra Draw offers a unified API for drawing, however, you still need to write more code to bring it to a map application
- For instance, you need to do followings by yourself:
 - Making buttons for each Terra Draw mode
 - Adding icons
 - Implementing Integration with your selected map library
- I wanted to have a maplibre plugin to be added simply without any configuration

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MAPLIBRE GL TERRA DRAW

Default control is MaplibreTerraDrawControl.
If you want to use measure control, enable
to choose MaplibreMeasureControl.

Measure Control

OPEN AS DEFAULT

Select modes you want



Simple installation

Code is available based on
your selected options!
Just copy and paste!

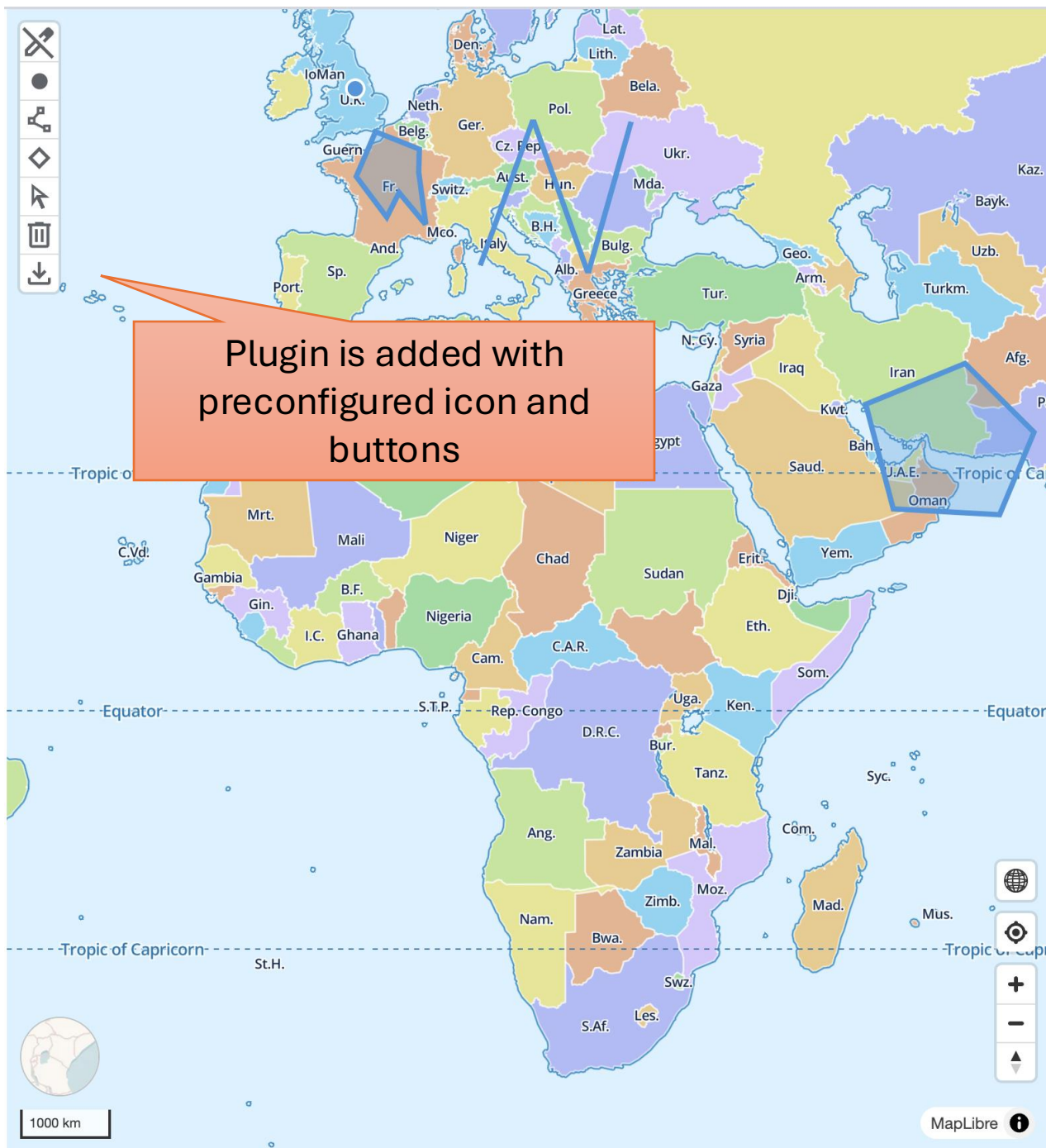
```
import { Map } from 'maplibre-gl';
import 'maplibre-gl/dist/maplibre-gl.css';
import { MaplibreTerraDrawControl } from '@watergis/maplibre-gl-terraDraw';
import '@watergis/maplibre-gl-terraDraw/dist/maplibre-gl-terraDraw.css';
```

Import library and css

```
const map = new Map({
  container: 'map',
  style: 'https://demotiles.maplibre.org/style.json',
  center: [0, 0],
  zoom: 1,
});
```

Use map.addControl

```
// As default, all Terra Draw modes are enabled,
// you can disable options if you don't want to use them.
const draw = new MaplibreTerraDrawControl({
  modes: ['render', 'point', 'linestring', 'polygon', 'select', 'delete-selection', 'delete', 'download'],
  open: true,
});
map.addControl(draw, 'top-left');
```



Measuring distance, area and elevation

Measure control

```
import { Map } from 'maplibre-gl';
import 'maplibre-gl/dist/maplibre-gl.css';
import { MaplibreMeasureControl } from '@watergis/maplibre-gl-terra draw'
import '@watergis/maplibre-gl-terra draw/dist/maplibre-gl-terra draw.css'

const map = new Map({
  container: 'map',
  style: 'https://demotiles.maplibre.org/style.json',
  center: [0, 0],
  zoom: 1,
});

// As default, all Terra Draw modes are enabled,
// you can disable options if you don't want to use them.
const draw = new MaplibreMeasureControl({
  modes: ['render', 'point', 'linestring', 'polygon', 'select', 'delete-selection', 'delete', 'download'],
  open: true,
  distanceUnit: 'kilometers', distancePrecision: 2, areaUnit: 'metric', areaPrecision: 2, computeElevation: true
});
map.addControl(draw, 'top-left');
```

Simply switch
MaplibreTerra drawControl to
MaplibreMeasureControl

MEASURE CONTROL OPTIONS

DISTANCE UNIT

km mi ° rad

AREA UNIT

metric imperial

MEASURE PRECISION

Distance precision (Line)



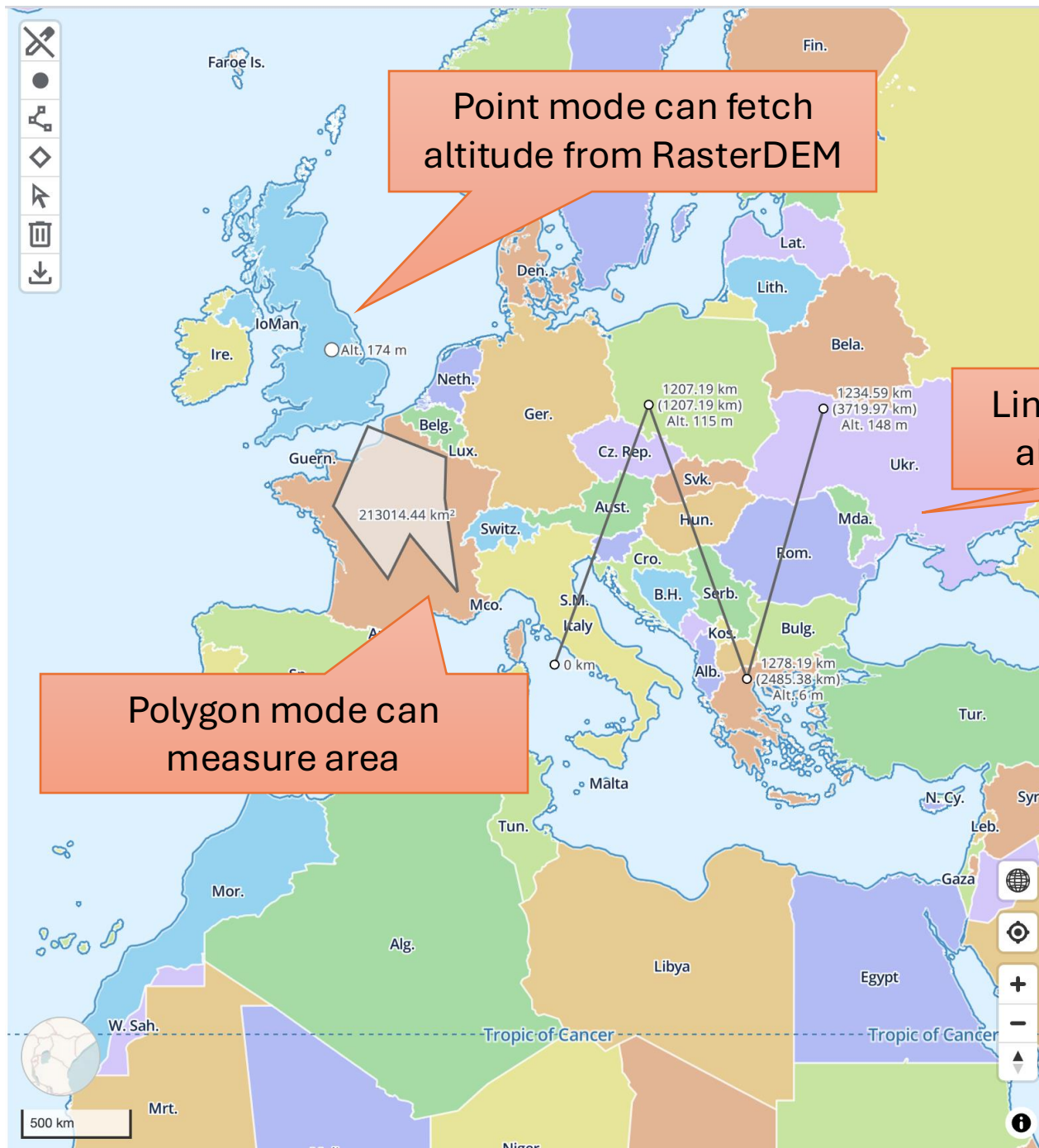
Area precision (Polygon)



COMPUTE ELEVATION

enabled disabled

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Point mode can fetch
altitude from RasterDEM

Line mode can measure
altitude and distance

Polygon mode can
measure area

Using turf.js for
measuring area and
distance

TURF

How can it fetch altitude dynamically?



Render altitude as label layer

Longitude/Latitude

maplibre-gl-terrain-draw

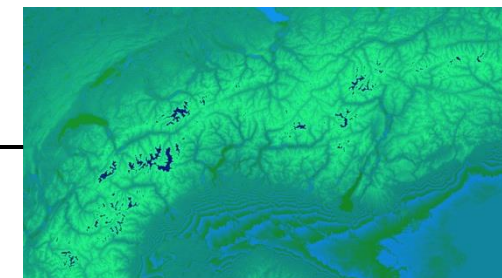
@watergis/terrain-rgb

<https://github.com/watergis/terrain-rgb>

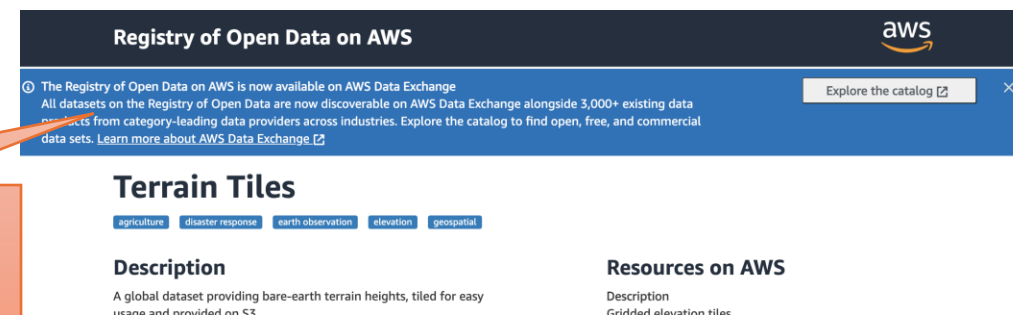
Get elevation tile from
/z/x/y.{webp|png}

Terrain RGB or
Terrarium

Raster-dem



As default, the plugin use
terrarium DEM hosted in AWS



Bring your own raster-dem

```
const drawControl = new MaplibreTerradrawControl.MaplibreMeasureControl({
  modes: ['point', 'linestring', 'delete', 'download'],
  open: true,
  // enable the flag to compute elevation
  computeElevation: true,
  // set your own terrainRGB or terrarium source.
  // PNG or WEBP is supported.
  terrainSource: {
    url: 'https://wasac.github.io/rw-terrain-webp/tiles/{z}/{x}/{y}.webp',
    tileSize: 512,
    minzoom: 5,
    maxzoom: 15,
    encoding: 'mapbox'
  }
});
```

This example uses 10m resolution DEM provided by land authority of Rwanda

Query elevation directly from TerrainRGB

This example shows how you can calculate length of line and query elevation from custom TerrainRGB DEM dataset.



<https://terrastack.org/examples/query-elevation-terrainrgb>

Access to Terra Draw API

- The plugin provides you an API to access Terra Draw instance directly from your code.
- Use `getTerraDrawInstance()` to access to Terra Draw directly

This is an example of how to add GeoJSON in advance.

```
map.once('load', () => {  
  const drawInstance = drawControl.getTerraDrawInstance();  
  if (drawInstance) {  
    // geojson data to be added  
    const geojson = [  
      {  
        id: '6b438f48-f6da-4649-9212-76f5a1506296',  
        type: 'Feature',  
        geometry: {  
          type: 'Polygon',  
          coordinates: [  
            [26.938972246, 25.217617825],  
            [-4.045232861, 25.217617825],  
            [-4.045232861, -7.839055615],  
            [26.938972246, -7.839055615],  
            [26.938972246, 25.217617825]  
          ]  
        },  
        properties: {  
          // make sure you put terradraw mode for geojson  
          mode: 'polygon'  
        }  
      }  
    ];  
    drawInstance?.addFeatures(geojson);  
  }  
});
```

You can access all APIs of Terra Draw



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The screenshot shows the Terra Draw API documentation website. At the top, there is a navigation bar with the Terra Draw logo, a 'Home' link, and an 'API Docs' link. Below the navigation bar, the main content area is titled 'terra-draw-monorepo'. On the left side, there is a 'Settings' section with a tree view of the project structure. The tree view shows the following structure:

- terra-draw-monorepo (M)
- terra-draw (M)
 - TerraDrawExtend (N)
 - TerraDraw (C)
 - TerraDrawAngledRectangleMode (C)
 - TerraDrawCircleMode (C)
 - TerraDrawFreehandMode (C)
 - TerraDrawLineStringMode (C)
 - TerraDrawPointMode (C)
 - TerraDrawPolygonMode (C)
 - TerraDrawRectangleMode (C)
 - TerraDrawRenderMode (C)
 - TerraDrawSectorMode (C)
 - TerraDrawSelectMode (C)
 - TerraDrawSensorMode (C)
 - TerraDrawAdapterStyling (I)

On the right side, there is a section titled 'terra-draw-monorepo /' followed by 'Index' and 'Modules'. The 'Modules' section lists the following modules:

- terra-draw (M)
- terra-draw-arcgis-adapter (M)
- terra-draw-google-maps-adapter (M)
- terra-draw-leaflet-adapter (M)
- terra-draw-mapbox-gl-adapter (M)
- terra-draw-maplibre-gl-adapter (M)
- terra-draw-openlayers-adapter (M)

Examples

Search examples...



Measure distance and length of feature

This example shows how you can calculate length of line and area of polygon by using...



Using custom font for measure control

This example shows how you can change font glyphs used in MaplibreMeasureControl other than...



Adding default GeoJSON feature to TerraDraw

You can add GeoJSON features by using addFeatures() function in the TerraDraw instance which can be...



Adding GeoJSON feature to TerraDraw custom style

You can add GeoJSON features with custom style by using addFeatures() function in the TerraDraw instance...



Subscribe select event of TerraDraw

This plugin provides a function getTerraDrawInstance to fetch the instance of TerraDraw itself. Using thi...



Customising drawing options

This plugin tries to optimise the better drawing options for each Terra Draw mode. However, preconfigured drawi...



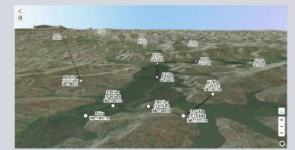
Use different coordinate precision

TerraDraw used 9 digits as default coordinate precision. You can use different coordinate precision instead.



Using custom icon

This plugin provides default icons for each TerraDraw mode button. You can change default icon if you would like t...



Query elevation from Maplibre Terrain

This example shows how you can calculate length of line and query elevation from maplibre raster-dem...



Query elevation directly from TerrainRGB

This example shows how you can calculate length of line and query elevation from custom TerrainRGB DE...



Customising drawing style

The plugin use default color styling provided by TerraDraw. This example shows you how to customise drawing...



11 examples of the plugin usage are available

Live demo



<https://terradraw.water-gis.com>



GitHub

<https://github.com/watervis/maplibre-gl-terrastyle>



Thank you for your attention!