

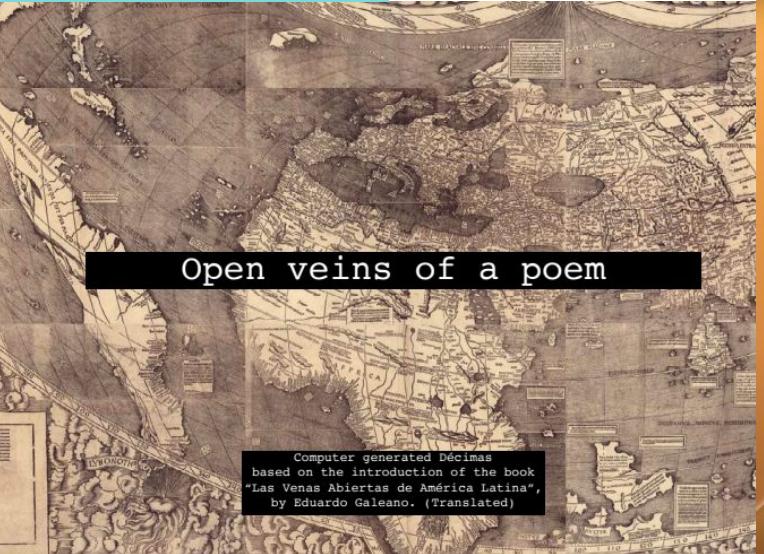
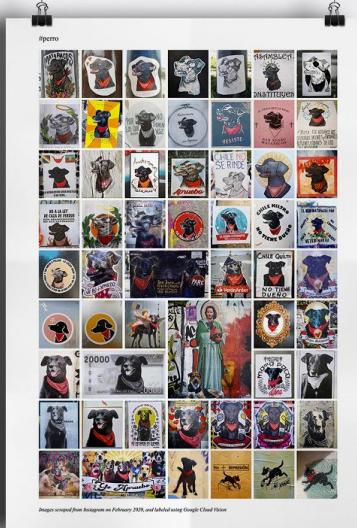
# Cartografía crítica y creación de mapas en la web

Processing Community Day  
Quito 2023  
Karina Hyland

Enter a City

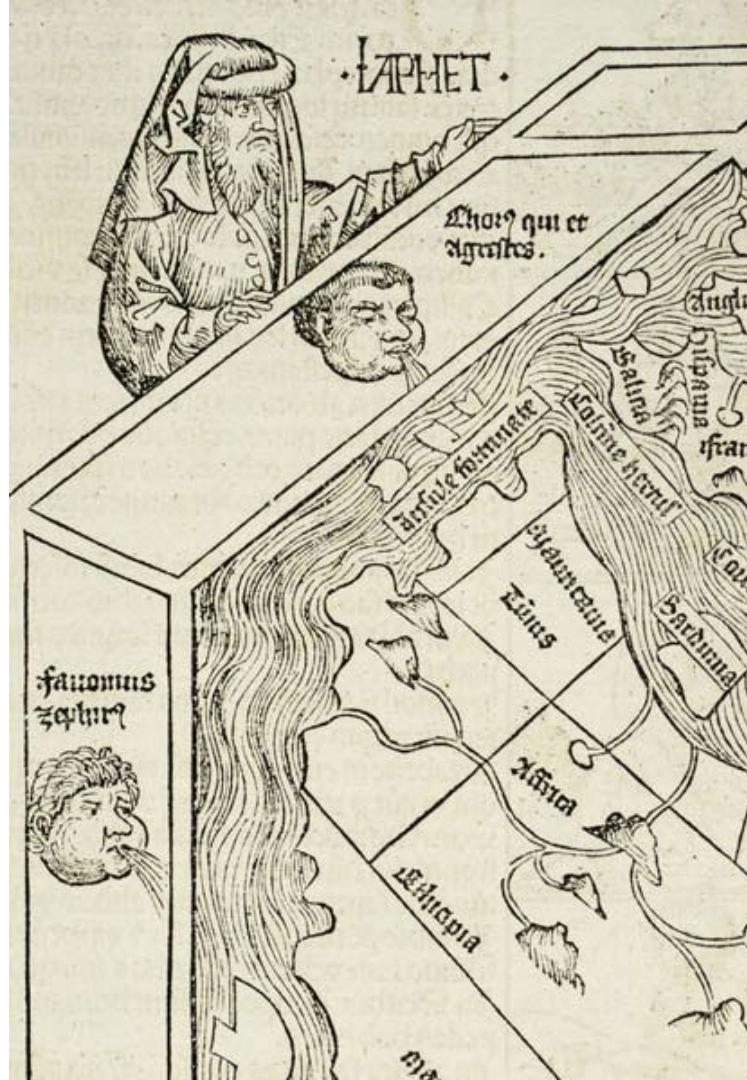
Submit

In Hong Kong  
the wind blows  
from the East



# Contenidos de hoy

1. Breve introducción a los mapas
2. Ejemplos de cartografías críticas
3. Taller: crear tu propio mapa en la web





A historical map of the world, centered on the North Atlantic and Europe. The map uses a grid system with latitude and longitude lines. Landmasses are shown in brown, and the ocean is in blue. Various place names and geographical features are labeled throughout.

¿Qué es un mapa?

**Un mapa es una representación simbólica de las relaciones entre elementos del espacio, como objetos, regiones o temas.**

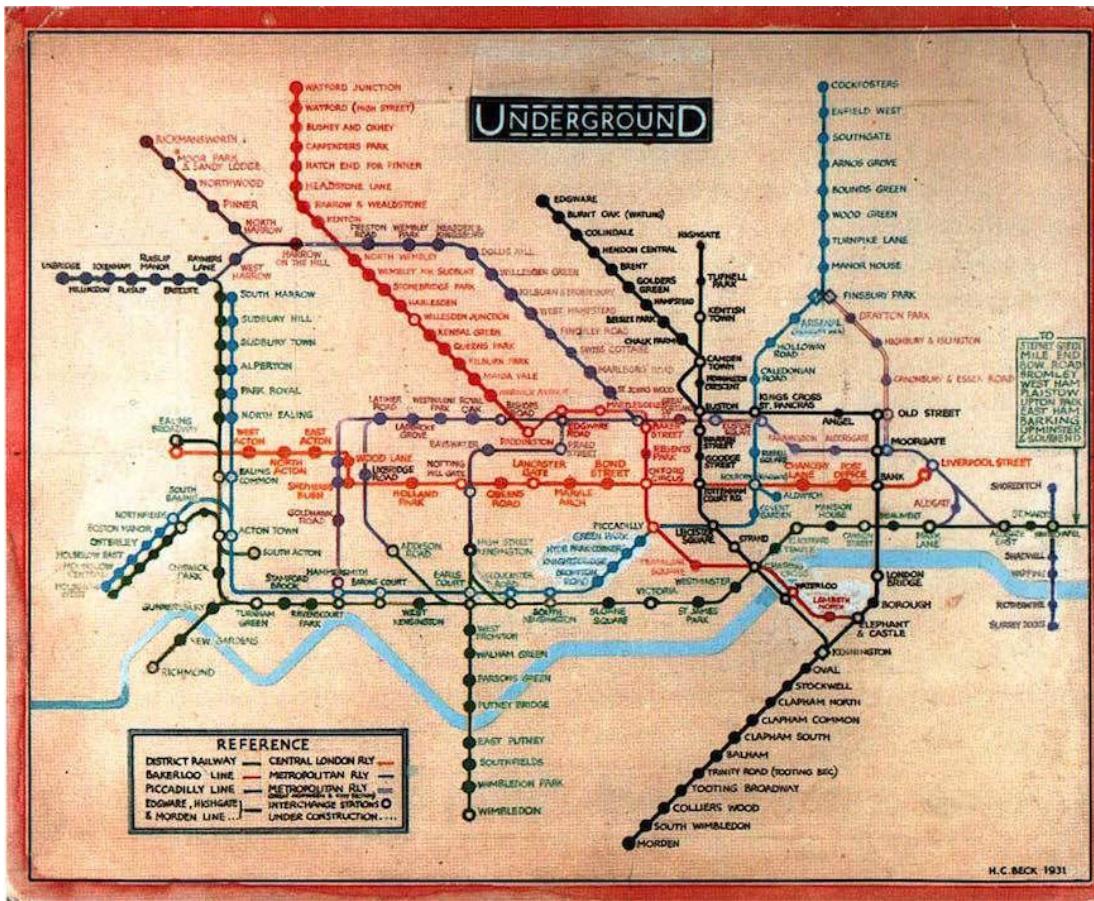
Pueden ser estáticos, plasmados en papel o en algún otro medio duradero, o dinámicos e interactivos. Aunque se usan más comúnmente para mostrar geografía, pueden representar cualquier espacio, real o ficticio, sin importar el contexto o la escala.

LONDON

# UNDERGROUND

## RAILWAYS

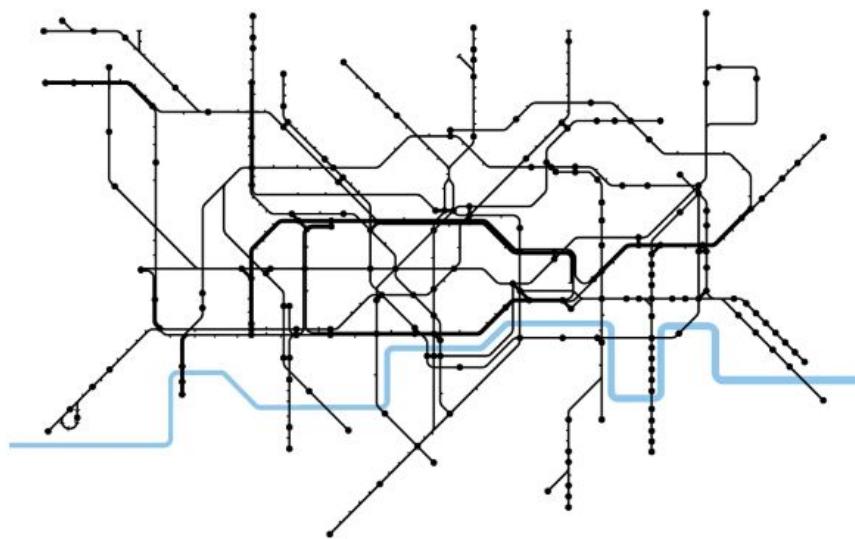








Real Geography of London's Underground Network



Reshaped Structure According to the London Tube Map







*¿Qué queremos representar?*

**Un mapa es una representación simbólica de las relaciones entre elementos del espacio, como objetos, regiones o temas.**

Pueden ser estáticos, plasmados en papel o en algún otro medio duradero, o dinámicos e interactivos. Aunque se usan más comúnmente para mostrar geografía, pueden representar cualquier espacio, real o ficticio, sin importar el contexto o la escala.



Views



Timelines



Aerial Photographs



Automobile Maps



Composite Maps



Airlines



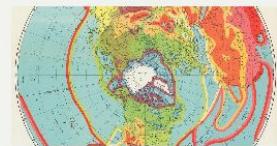
Mountains Rivers



Space



Manuscript



Climate



Ethnographic



Ottoman Maps



World



The Americas



Celestial



Maritime



U.S. Civil War



Antarctica



Data Visualization



Cities



Globes



Atlases



Africa



Children's Maps



Pictorial Maps



Asia



Europe



Geology Maps

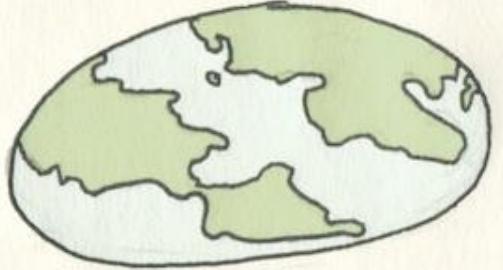


Arctic



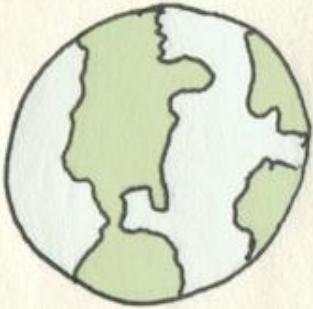
United States





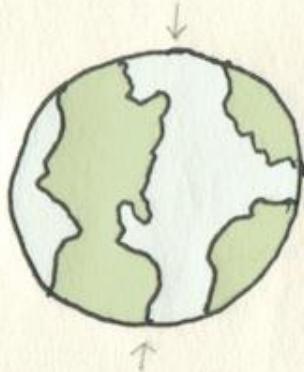
FLAT EARTH

DEFINITELY WRONG



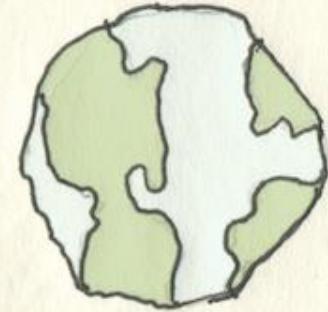
PERFECT SPHERE

IF ONLY, BUT NO



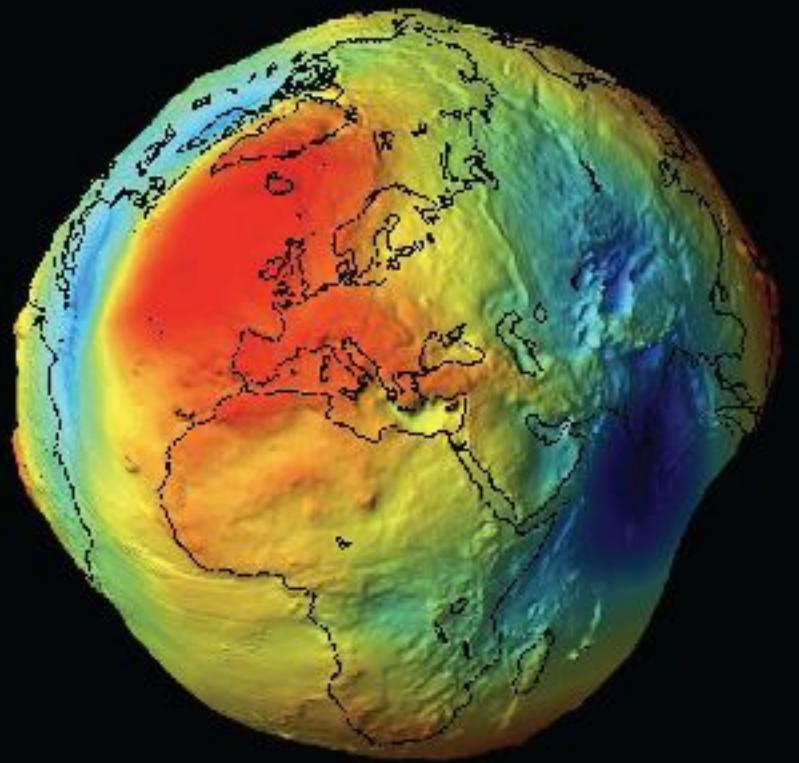
REFERENCE ELLIPSOID

CLOSE ENOUGH  
USUALLY



GEOID

FOR WHEN YOU  
REALLY GOTTA  
BE RIGHT



# Proyecciones del mapa mundial

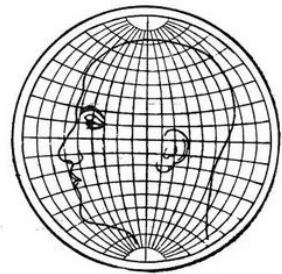


FIG. 42.—Man's head drawn on globular projection.

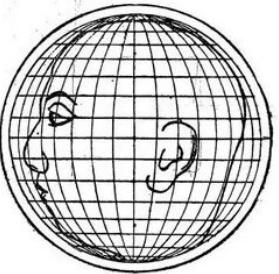


FIG. 43.—Man's head plotted on orthographic projection.

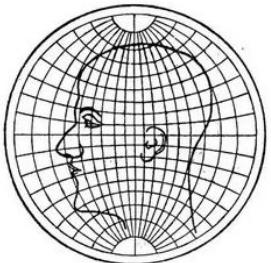


FIG. 44.—Man's head plotted on stereographic projection.

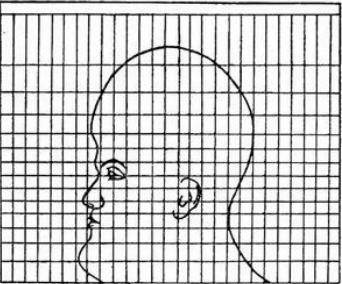


FIG. 45.—Man's head plotted on Mercator projection.



Robinson

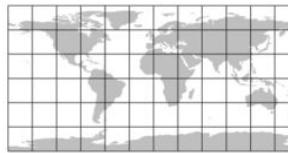
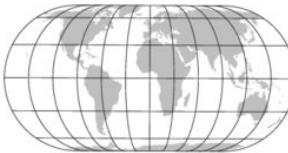


Plate Carrée



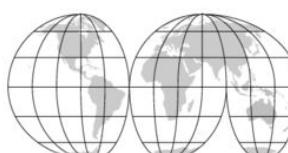
Eckert IV



Mollweide



Wagner VII



Interrupted Mollweide



Winkel Tripel

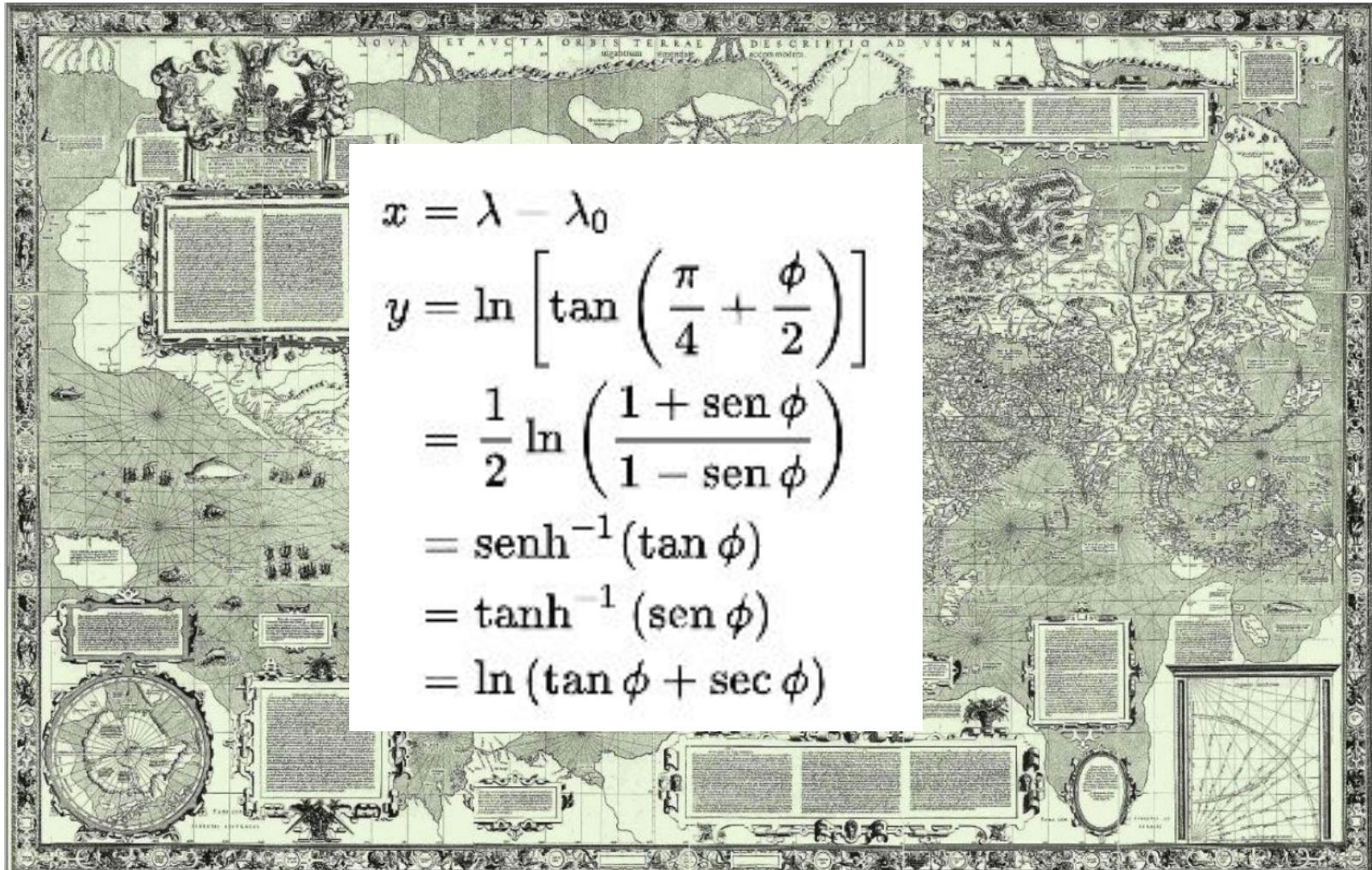


Mercator



Goode Homolosine





$$x = \lambda - \lambda_0$$

$$y = \ln \left[ \tan \left( \frac{\pi}{4} + \frac{\phi}{2} \right) \right]$$

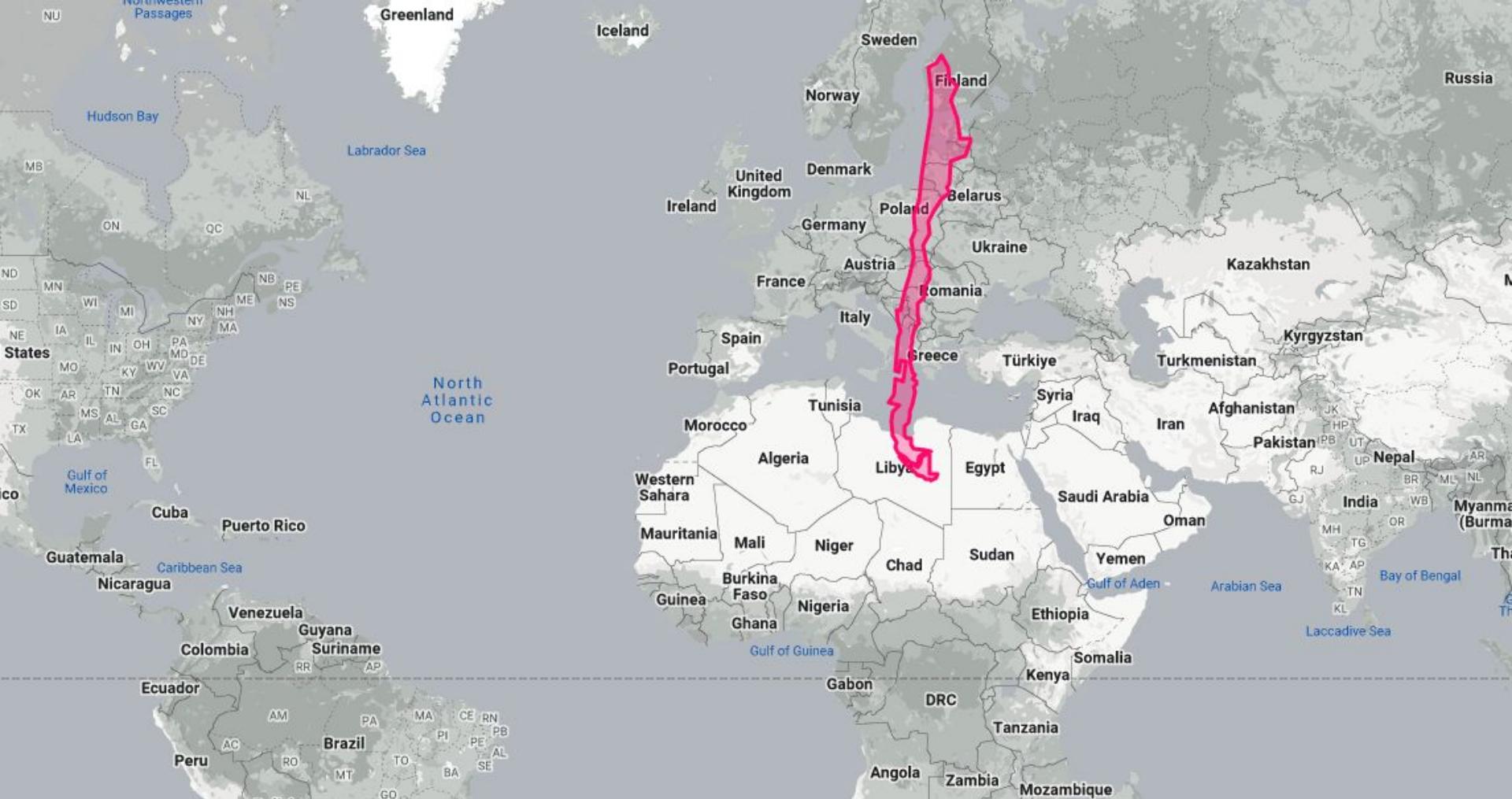
$$= \frac{1}{2} \ln \left( \frac{1 + \sin \phi}{1 - \sin \phi} \right)$$

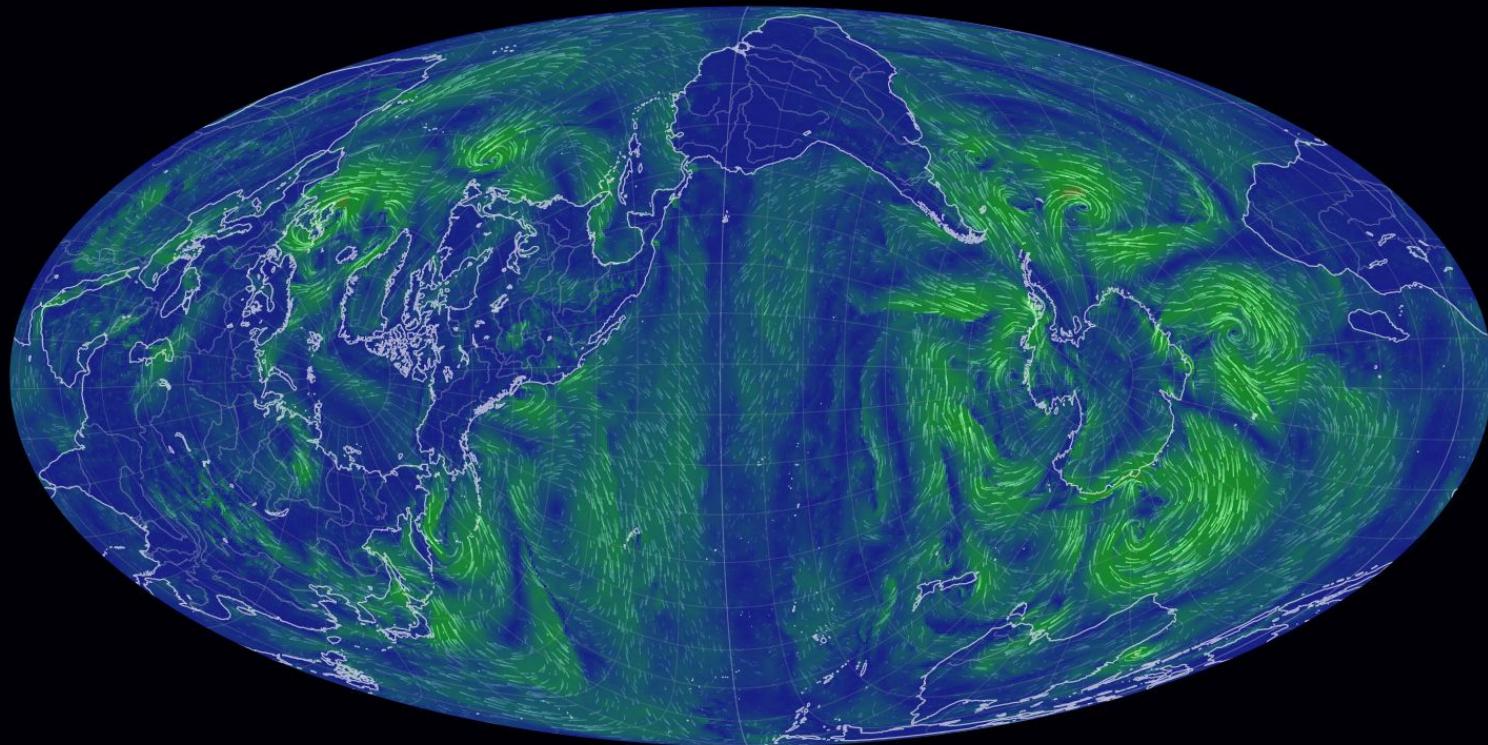
$$= \operatorname{senh}^{-1}(\tan \phi)$$

$$= \tanh^{-1}(\sin \phi)$$

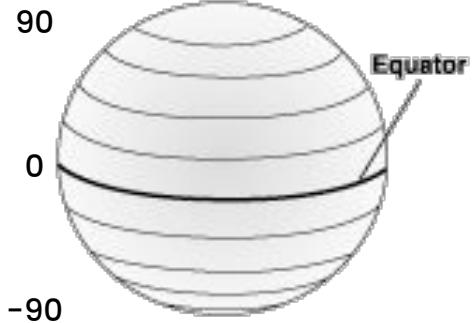
$$= \ln(\tan \phi + \sec \phi)$$



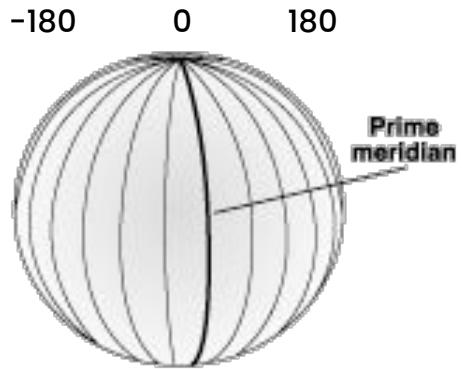




# Sistema de coordenadas geográficas



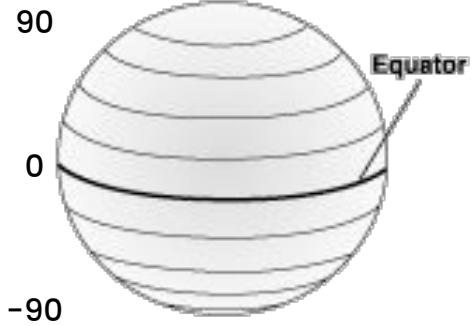
**Paralelos**  
Líneas de latitud



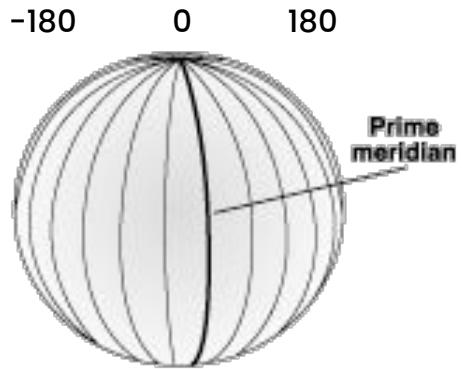
**Meridianos**  
Líneas de longitud



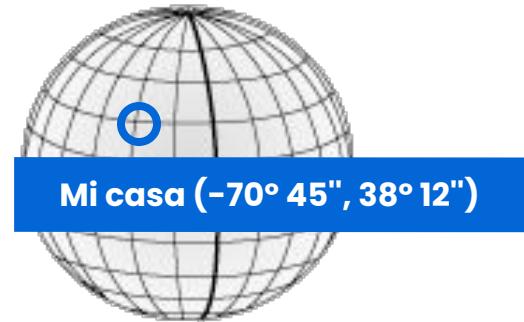
# Sistema de coordenadas geográficas



**Paralelos**  
Líneas de latitud



**Meridianos**  
Líneas de longitud



Null Island ( $0^\circ, 0^\circ$ )

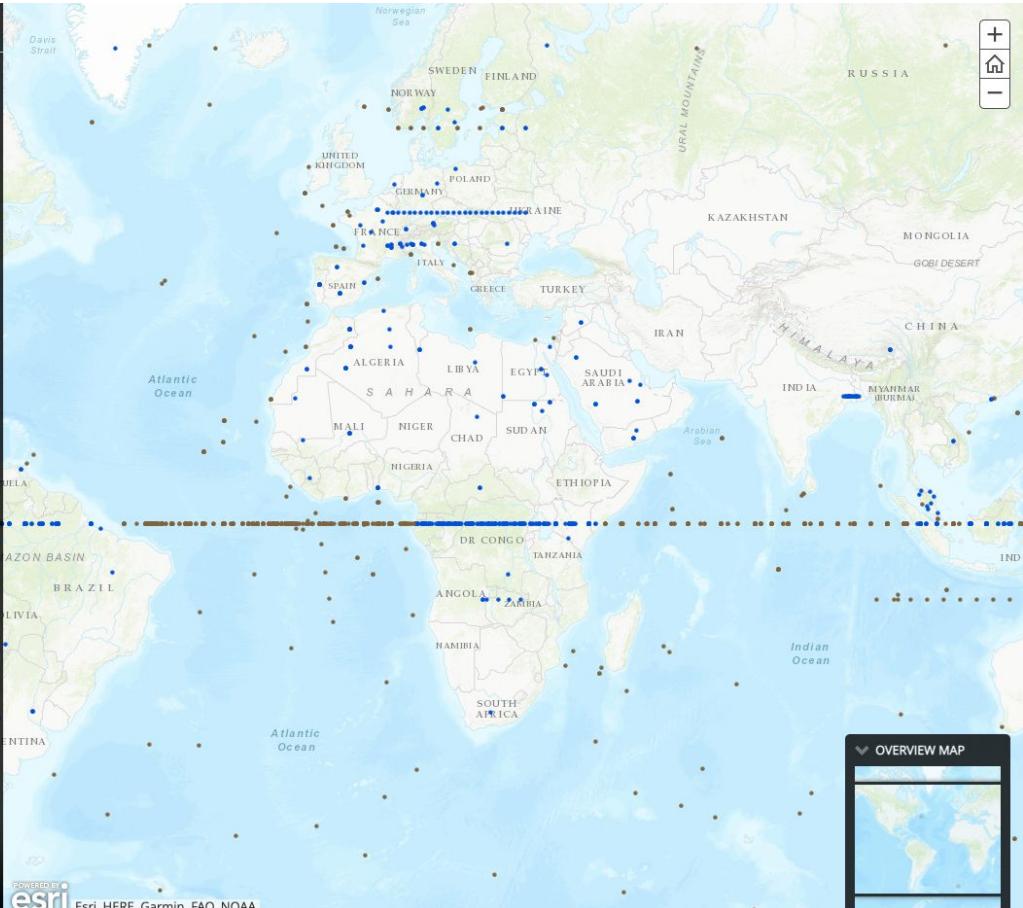


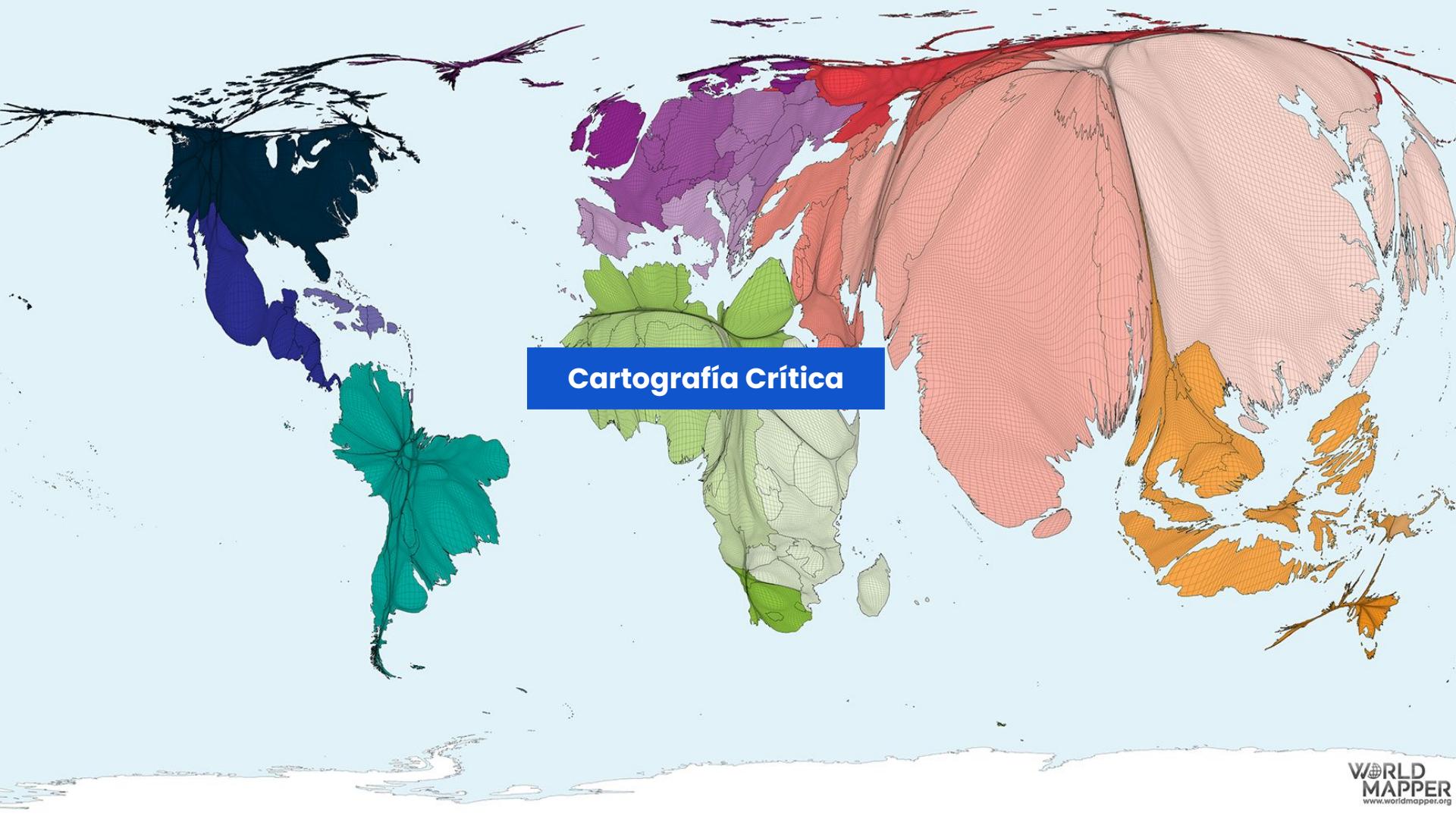


## Nill Points

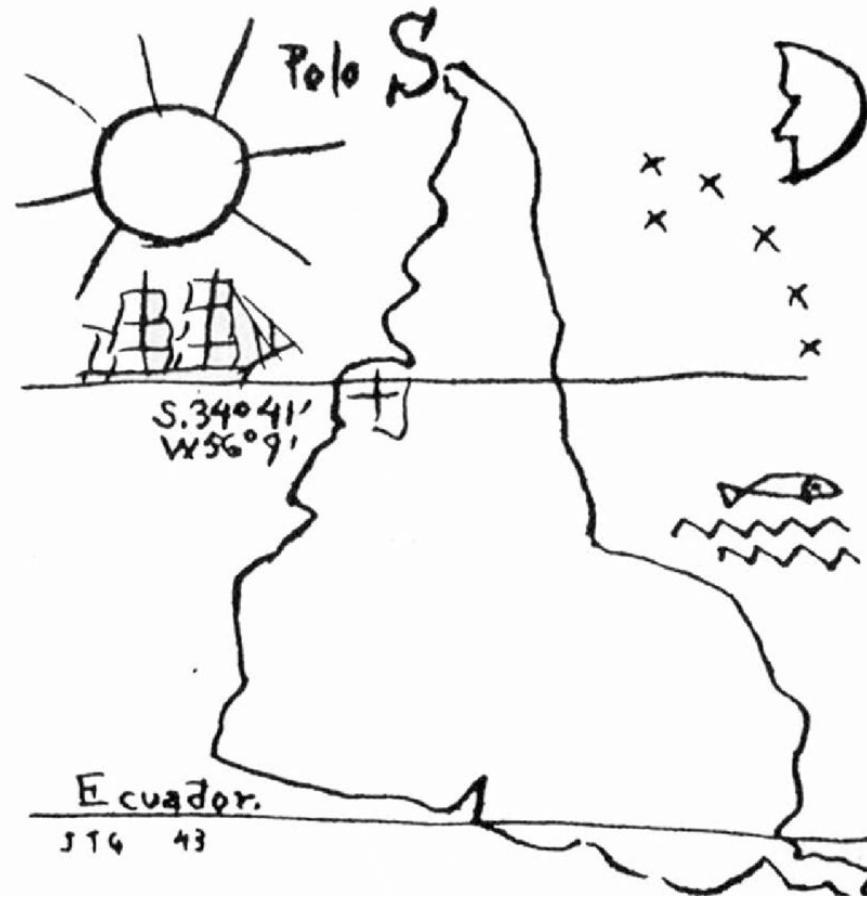
Null Island has, for many years, been a single, somewhat isolated state of indeterminate sovereignty located at 0,0 (zero latitude, zero longitude) on WGS84 but...

- ...other coordinate systems exist and using our own database of supported projections we've found a total of 5,716 similar features, not all of them islands.
- As an homage to the original Null Island, here we show the locations of all Null Islands, Null Lakes and even a Null Black Hole that represents the edge of the event horizon where no-one can hear your coordinates scream. Collectively we're calling them Nill Points.





**Cartografía Crítica**



**Referencias**

Zona que abarca la mayor diversidad biocultural de la tierra, más del 65% de las lenguas, de la flora y de la fauna.

Países cuya población rural supera el 50% del total.

19 Países con una población rural de más de 10 millones de mujeres.

Países donde está presente la "Vía Campesina", organización internacional de 200 millones de personas de áreas rurales que trabajan para defender sus territorios y la soberanía alimentaria.

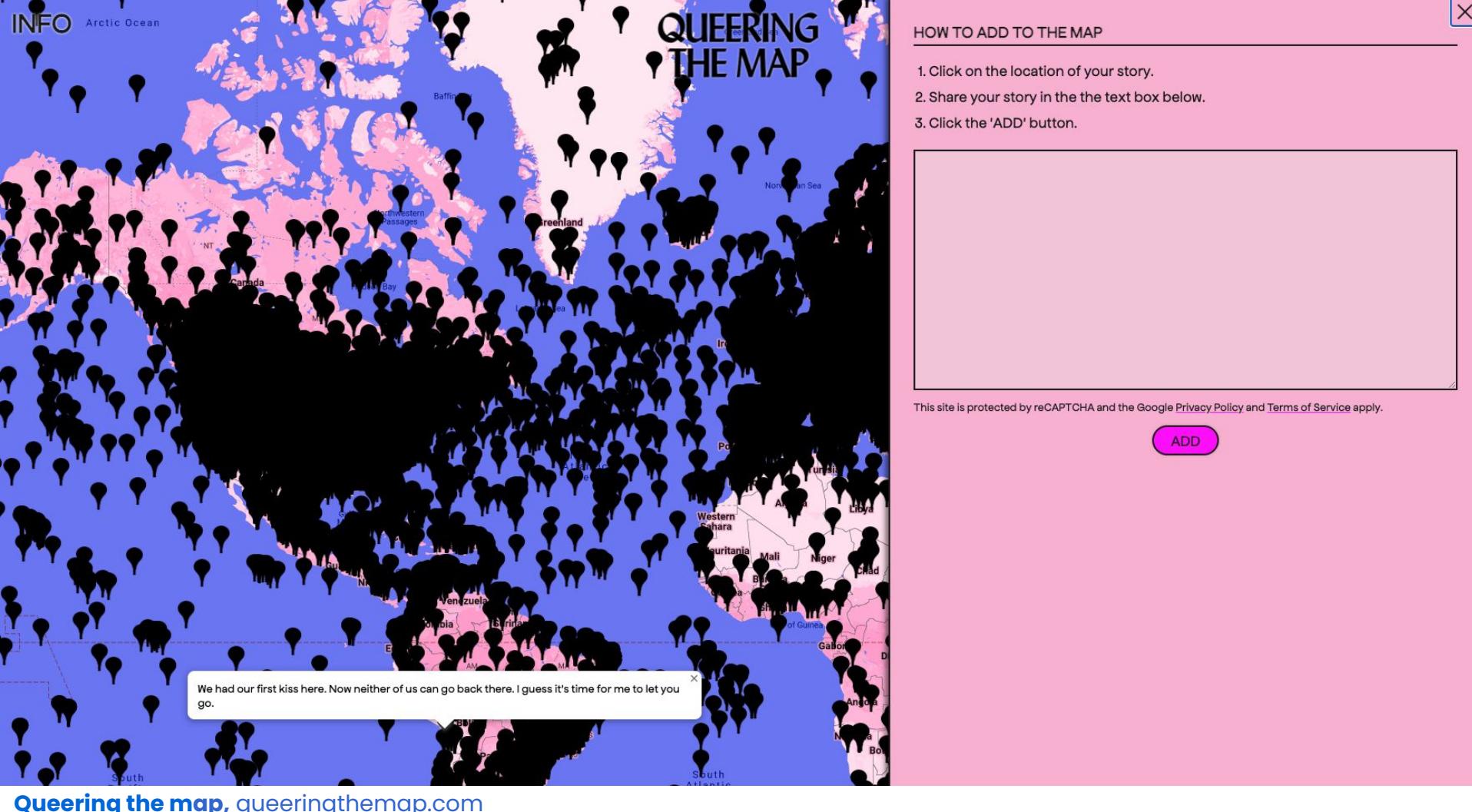
Principales causas de la explotación que causa el éxodo de población:

- Violencia armada
- Hidrocarburos
- Migración
- Monocultivos OGM

Países donde se encuentran las casas centrales de las principales empresas agroindustriales, petroleras, mineras, alimenticias, de semillas transgénicas y agrícolas.

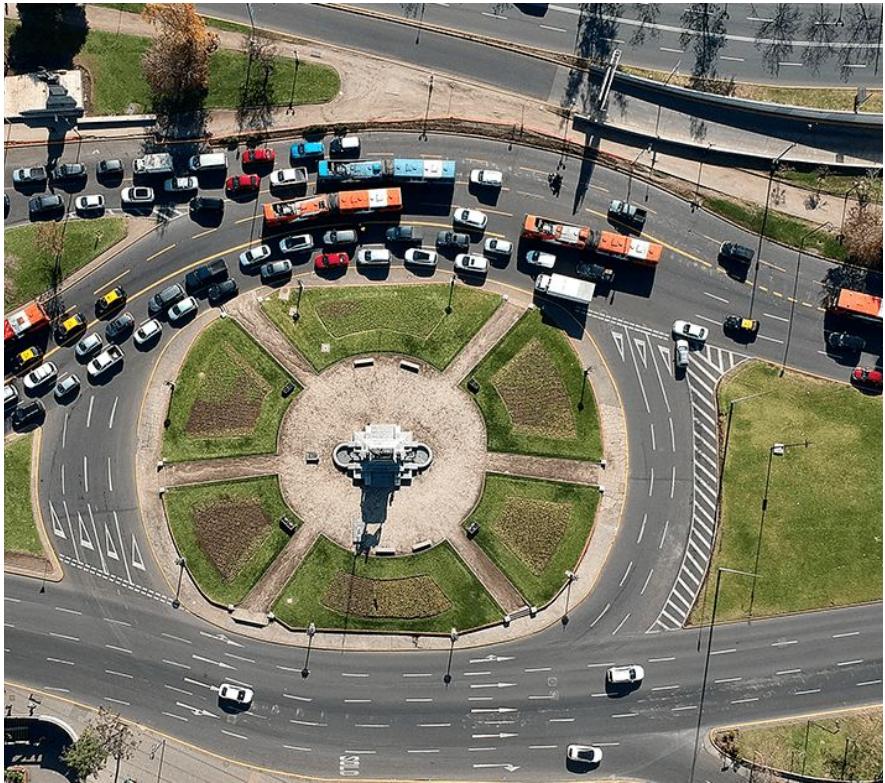
Ciudades de más de 10 millones de habitantes.







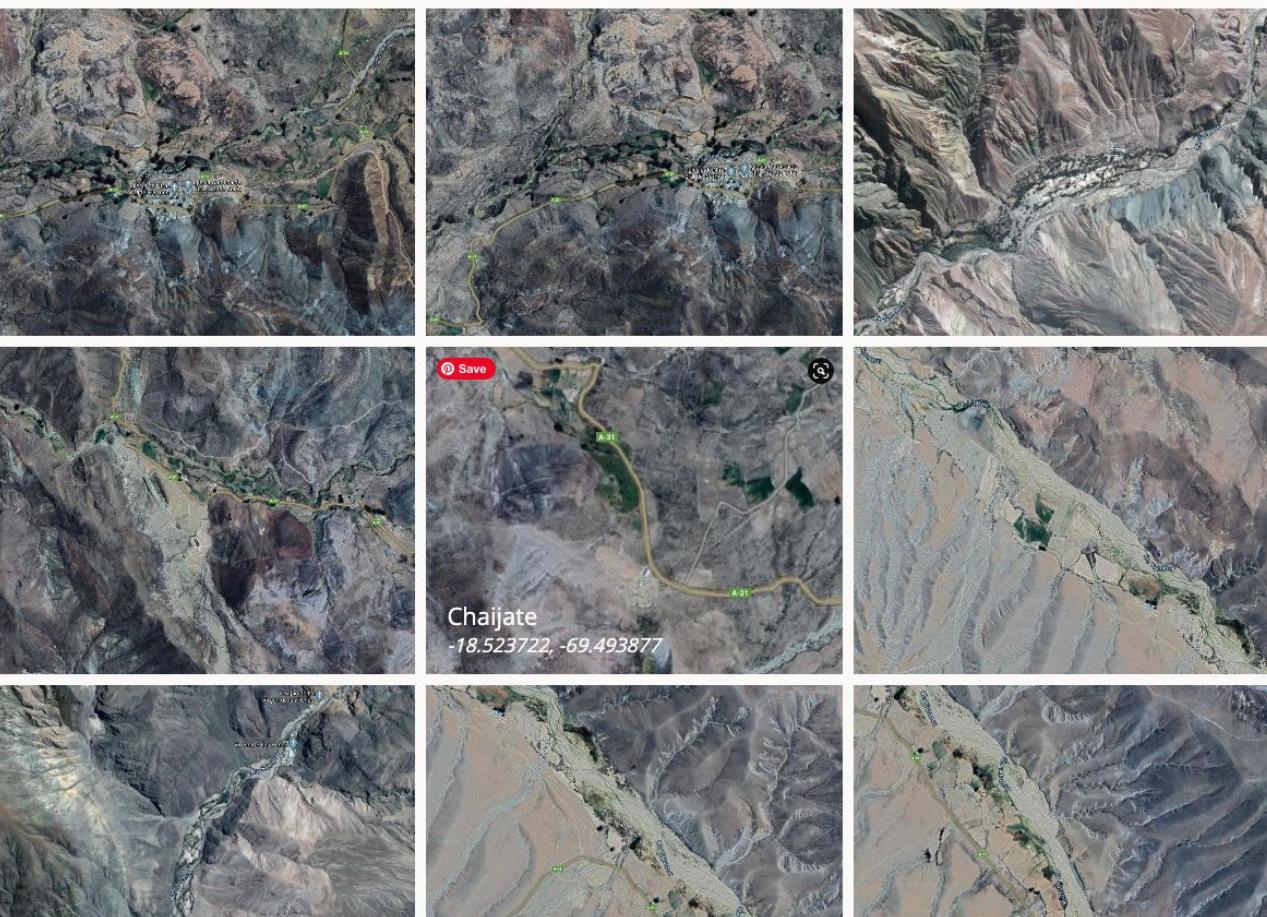
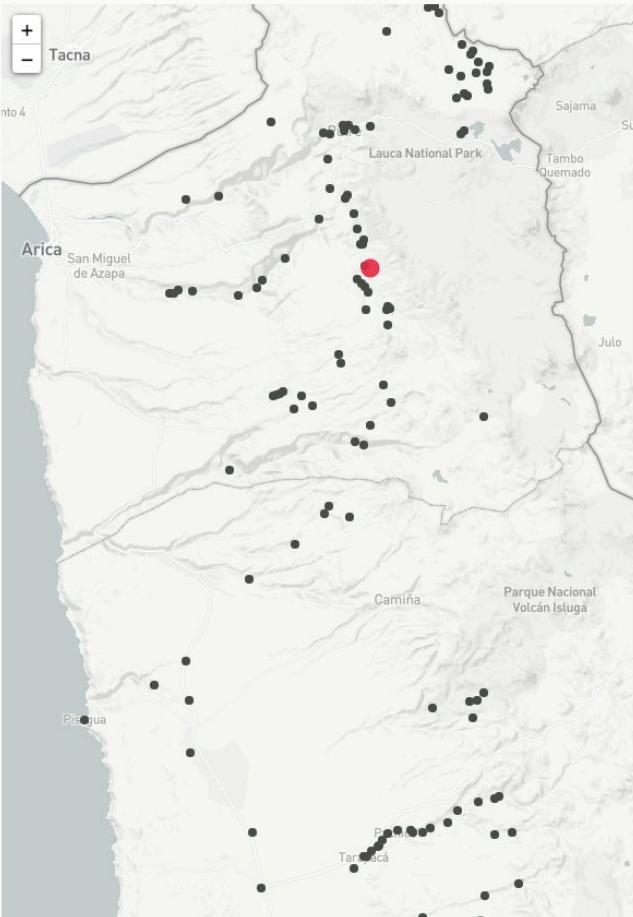
Google Maps vs Open Street Map, Santiago (Chile)



Plaza Italia antes y después, Santiago (Chile)

# Atlas of the Forgotten Chile

About



962 Queen St  
Hong Kong, Hong Kong Island  
[View on Google Maps](#)



CAUSEWAY  
BAY

22 Queen St  
Edinburgh, Scotland  
[View on Google Maps](#)



Queen Street, Sheung Wan, Hong Kong

Google

Keyboard shortcuts | © 2023 Google | Terms of Use | Report a problem



Google

Keyboard shortcuts | © 2023 Google | Terms of Use | Report a problem



Scotia  
Sea

*Take a walk in the ocean*

A map of Google Sea Views

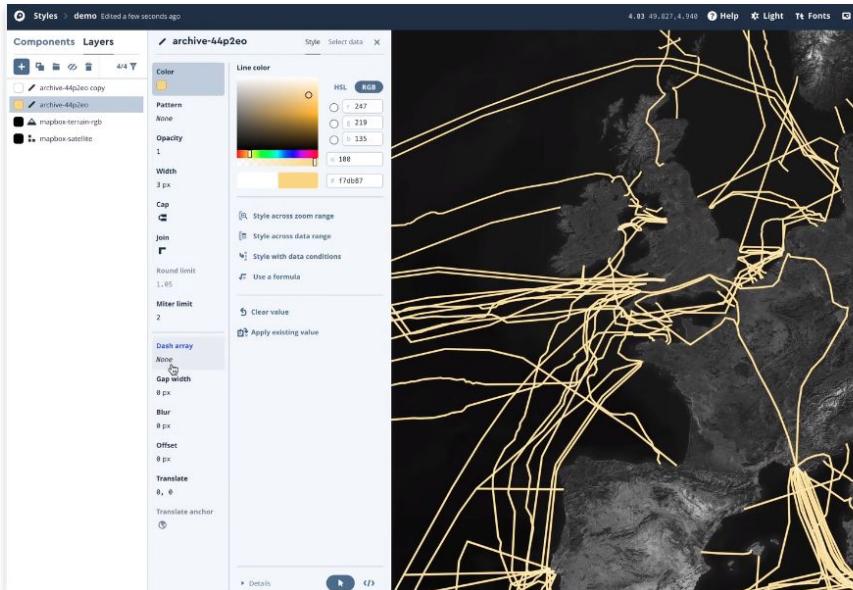


ma Ridge



# Tecnologías ocupadas:

- [Street View Mapper](#)
- [Leaflet](#)
- [Mapbox Studio](#)



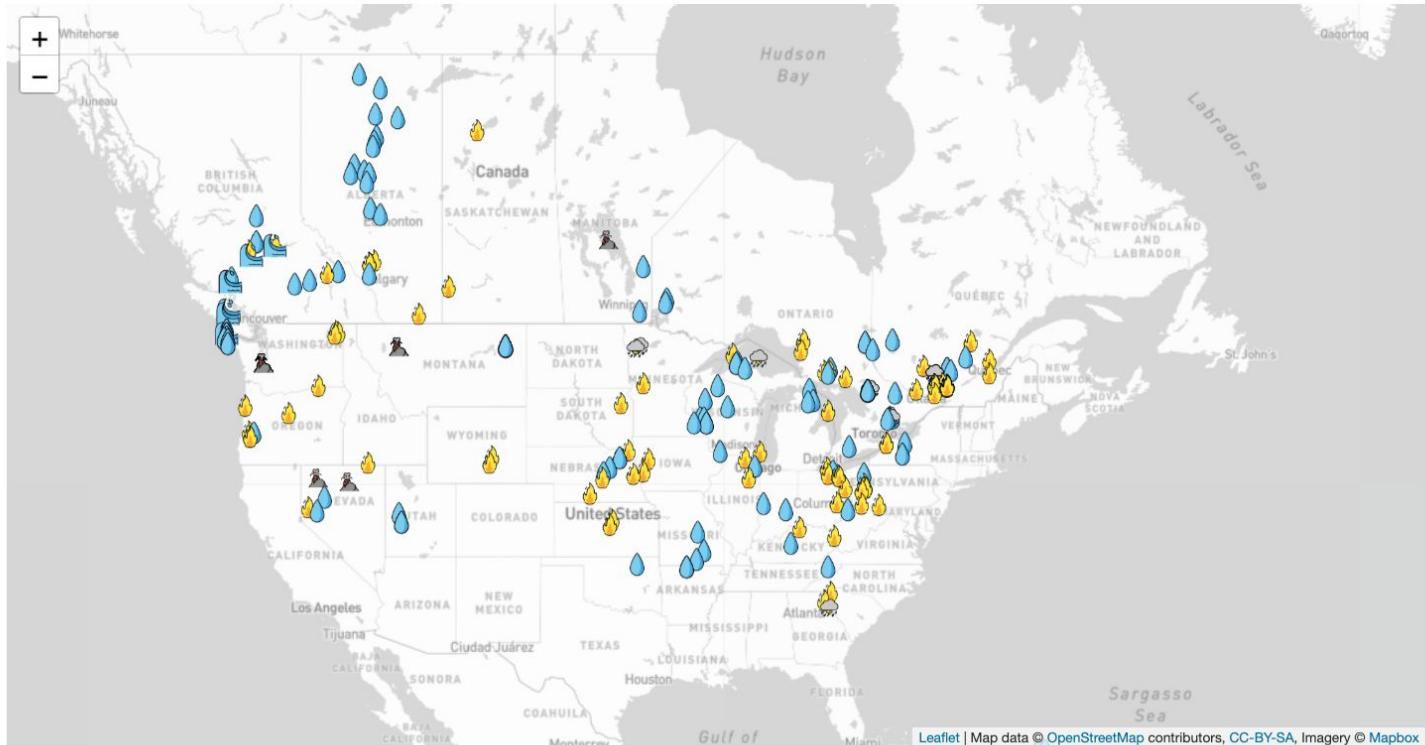
A screenshot of the 'streetview-mapper-app' web application. At the top, it says 'Streetview Mapper' and shows a map of Brooklyn, New York. A specific location is highlighted with a yellow marker. To the right of the map is a street view image of two people standing on a sidewalk. Below the map, there's a 'Location Info' section with fields for latitude, longitude, heading, pitch, and panorama ID. At the bottom, there's a large yellow button labeled 'Save to database' and the word 'Google'.

# A map of disaster maps



Each icon represents a record in the [maps division](#) of the Library of Congress that illustrates a natural disaster

Disaster	Icon
Lava	🌋
Flood	💧
Fire	🔥
Mudflow	💩
Tsunami	🌊
Tornado	🌪
Avalanche	🏔
Cyclone	🌀
Blizzard	❄️
Nuclear	☢️
Storm	🌧
Earthquake	🌐
Hurricane	🌀
Drought	🏜
Heat wave	🌡



\*Icons by [OpenMoji](#)



## A map of disasters by country

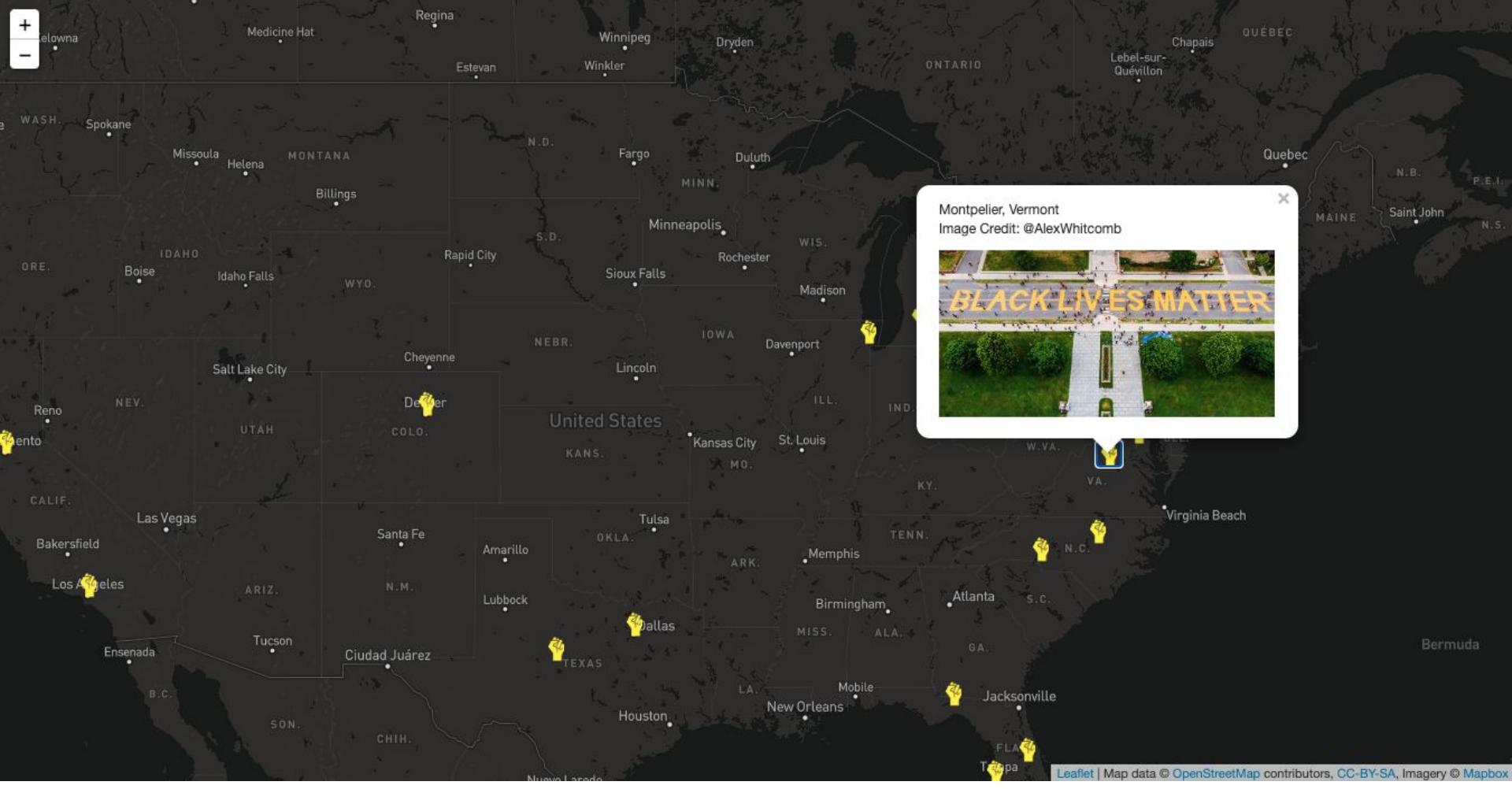
Each icon represents the type of disasters occurred by country logged to [wikipedia](#) and the size represents the quantity

Disaster	Icon
Lava	🌋
Flood	💧
Fire	🔥
Mudflow	💩
Tsunami	🌊
Tornado	🌪
Avalanche	🏔
Cyclone	🌀
Blizzard	☃️
Nuclear	💀
Storm	🌧
Earthquake	🌐
Hurricane	🌀
Drought	🏜
Heat wave	🌡



\*Icons by [OpenMoji](#)

Leaflet | Map data © OpenStreetMap contributors, CC-BY-SA, Imagery © Mapbox



iTaller!

[tinyurl.com/pcd-mapas](http://tinyurl.com/pcd-mapas)

 **Leaflet**

an open-source JavaScript library  
for mobile-friendly interactive maps

Overview Tutorials Docs Download Plugins Blog

Sep 21, 2022 — Leaflet 1.9 has been released!

Leaflet is the leading open-source JavaScript library for mobile-friendly interactive maps. Weighing just about 42 KB of JS, it has all the mapping [features](#) most developers ever need.

Leaflet is designed with *simplicity, performance and usability* in mind. It works efficiently across all major desktop and mobile platforms, can be extended with lots of [plugins](#), has a beautiful, easy to use and [well-documented API](#) and a simple, readable [source code](#) that is a joy to [contribute](#) to.



sneaky-sponge-napkin

README.md EDIT MARKDOWN

**Hello website!**

This is a basic HTML starter project you can build on however you like. No need to save. While you develop your site, your changes will happen ↗ immediately in the preview window. On the left you'll see the files that make up your site, including HTML, JavaScript, and CSS. You can upload assets like images or audio in `assets`. The rest is up to you and your imagination. ↘

Last updated: 28 Feb 2023

**What's in this project?**

- ← `README.md`: That's this file, where you can tell people what your cool website does and how you built it.
- ← `index.html`: This is the main web page for your site. The HTML defines the structure and content of the page using `elements`. You'll see references in the HTML to the JS and CSS files. Try clicking the image in the center of the page!
- ← `style.css`: CSS files add styling rules to your content. New CSS applies styles to the elements in your HTML page. The style rules also make the image move when you click it.



STATUS LOGS TERMINAL TOOLS PREVIEW

tinyurl.com/pcd-mapas

**Hello World!**



# Configuración básica

1. Incluir el archivo CSS de Leaflet en el <head> del proyecto (index.html)

```
<link rel="stylesheet" href="https://unpkg.com/leaflet@1.9.3/dist/leaflet.css"
integrity="sha256-kLaT2GOSpHechhszzB+fInD+zUyjE2LlfWPgU04xyI="
crossorigin="" />
```

2. Incluir el archivo JavaScript de Leaflet después del CSS

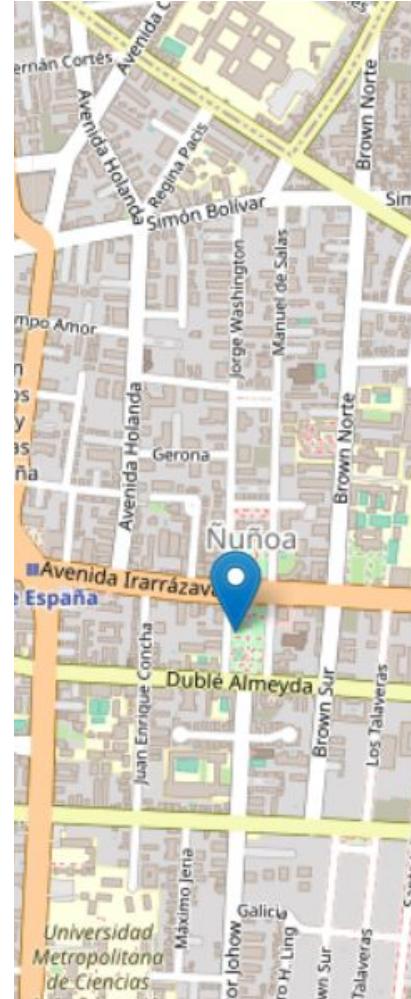
```
<script src="https://unpkg.com/leaflet@1.9.3/dist/leaflet.js"
integrity="sha256-WBkoXOwTeyKclOHuWtc+i2uENFpDZ9YPdf5Hf+D7ewM="
crossorigin=""></script>
```

3. Agregar un elemento div con un id donde quieras que aparezca el mapa

```
<div id="mapa"></div>
```

4. Fijar una altura al contenedor del mapa en la hoja de CSS:

```
#mapa { height: 180px; }
```



# Inicializar el mapa

1. Crearemos un mapa con una coordenada para el centro, seguido del nivel de zoom que tendrá el mapa al iniciar.

```
let mimapa = L.map('mapa').setView([51.505, -0.09], 13);
```

2. Luego agregaremos la base del mapa o "baldosas" (tiles en inglés). Leaflet no provee de estas bases pero podemos encontrar varias de acceso libre como OpenStreetMap o Mapbox.

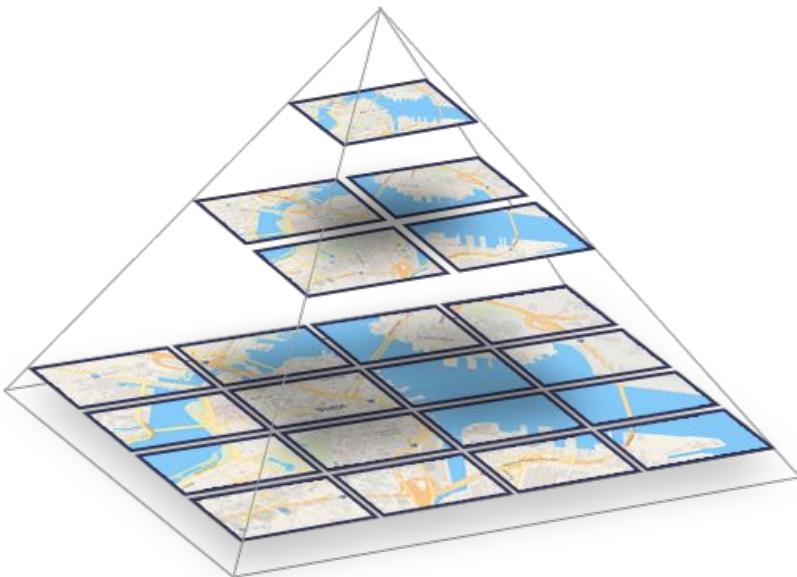
```
L.tileLayer('https://tile.openstreetmap.org/{z}/{x}/{y}.png', {
  maxZoom: 19,
  attribution: '&copy; <a href="http://www.openstreetmap.org/copyright">OpenStreetMap</a>'
}).addTo(mapa);
```

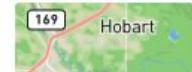
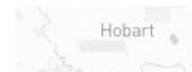
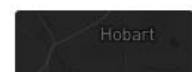
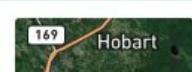
\*En el código encontrarán indicaciones para ocupar los tiles de Mapbox que ofrece más estilos.

3. Por último, agregaremos el primer marcador a nuestro mapa

```
let marker = L.marker([51.5, -0.09]).addTo(mapa);
```

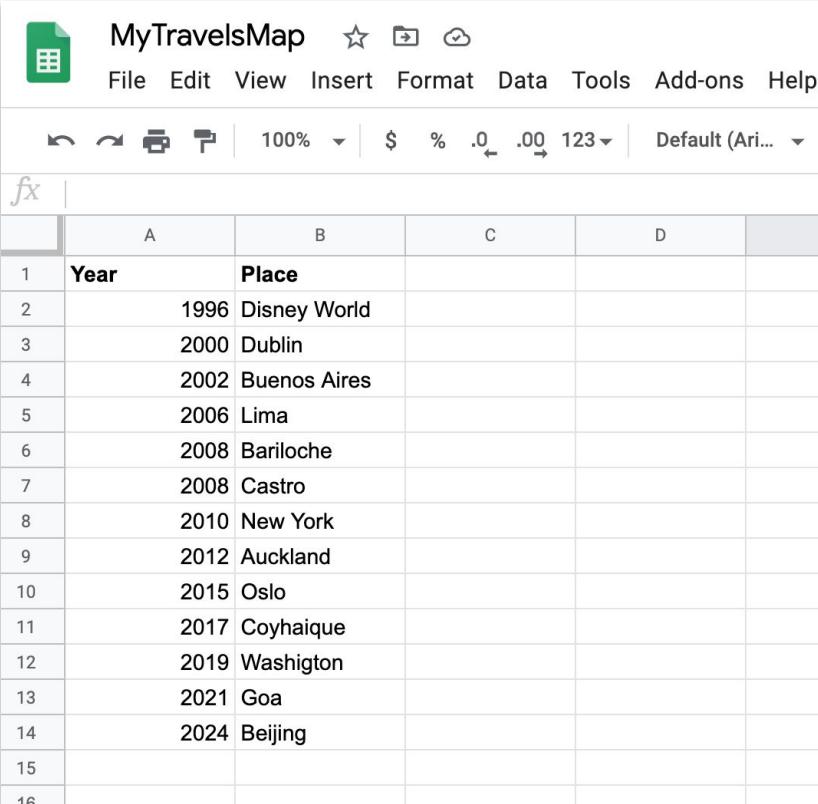
# ¿Baldosas? ¿Azulejos?



Style URL	Style image
<a href="https://mapbox.com/studio/styles/mapbox/streets-v12">mapbox://styles/mapbox/streets-v12</a>	
<a href="https://mapbox.com/studio/styles/mapbox/outdoors-v12">mapbox://styles/mapbox/outdoors-v12</a>	
<a href="https://mapbox.com/studio/styles/mapbox/light-v11">mapbox://styles/mapbox/light-v11</a>	
<a href="https://mapbox.com/studio/styles/mapbox/dark-v11">mapbox://styles/mapbox/dark-v11</a>	
<a href="https://mapbox.com/studio/styles/mapbox/satellite-v9">mapbox://styles/mapbox/satellite-v9</a>	
<a href="https://mapbox.com/studio/styles/mapbox/satellite-streets-v12">mapbox://styles/mapbox/satellite-streets-v12</a>	
<a href="https://mapbox.com/studio/styles/mapbox/navigation-day-v1">mapbox://styles/mapbox/navigation-day-v1</a>	
<a href="https://mapbox.com/studio/styles/mapbox/navigation-night-v1">mapbox://styles/mapbox/navigation-night-v1</a>	

# Crear la base de datos

1. Crear una hoja de cálculo en Google Drive
2. Crear una columna de lugares y listar cuántos quieran
3. Opcional: agregar una segunda columna con algún dato adicional de ese lugar



The screenshot shows a Google Sheets interface with the title "MyTravelsMap". The spreadsheet has four columns labeled A, B, C, and D. Column A contains row numbers from 1 to 16. Column B contains "Year" and "Place" headers, followed by a list of travel entries. Column C and D are currently empty.

	A	B	C	D
1	Year	Place		
2		1996 Disney World		
3		2000 Dublin		
4		2002 Buenos Aires		
5		2006 Lima		
6		2008 Bariloche		
7		2008 Castro		
8		2010 New York		
9		2012 Auckland		
10		2015 Oslo		
11		2017 Coyhaique		
12		2019 Washigton		
13		2021 Goa		
14		2024 Beijing		
15				
16				

7 minutos

# Geocodifiquémoslo!

1. En el menú hacer click en Add-ons > Get Add-ons
2. Buscar “Geocode by Awesome Table” > Instalar
3. Una vez instalado, hacer click nuevamente en Add-ons > Geocode
4. Seleccionen la columna donde escribieron los lugares y cliquear en “Geocode!”
5. Et voilà > automáticamente agregará las columnas de latitud y longitud con la información que encuentre.
6. Descargar > **.csv** (comma separated values)

**Geocode** X

Geocode gets latitudes and longitudes from **full addresses** and creates a customizable map.

**Current sheet**  
Sheet1

**Address column**  
Place ▼  
Are your addresses in multiple columns?

**Map**  
The map has been created. If you click on a marker in the map, the tooltip will simply display the address. But you can do much better and display any info you want in this tooltip.  
Customize Tooltip Open map

Geocode!

Proudly brought to you by [Awesome Table](#)

# Transformar CSV a JSON

1. Ir a <https://csvjson.com/csv2json>
2. Subir el archivo .csv
3. Click en "Convert"
4. Copiar el resultado (formato de JavaScript Object Notation)

```
"type": "FeatureCollection",
"features": [
  {
    "type": "Feature",
    "properties": {},
    "geometry": {
      "type": "Point",
      "coordinates": [
        -4.119873046875,
        40.94671366508002
      ]
    }
  },
  {
    "type": "Feature",
    "properties": {},
    "geometry": {
      "type": "Point",
      "coordinates": [
        -3.53759765625,
        41.13315883477399
      ]
    }
  },
  {
    "type": "Feature",
    "properties": {},
    "geometry": {
      "type": "Polygon",
      "coordinates": [
        [
          [
            [
              [
                -3.9715576171875004,
                40.63688312646408
              ],
              [
                [
                  -3.878173828125,
                  40.587885288417915
                ],
                [
                  -3.9715576171875004,
                  40.63688312646408
                ],
                [
                  -3.878173828125,
                  40.587885288417915
                ],
                [
                  -3.9715576171875004,
                  40.63688312646408
                ]
              ]
            ]
          ]
        ]
      ]
    }
  }
]
```

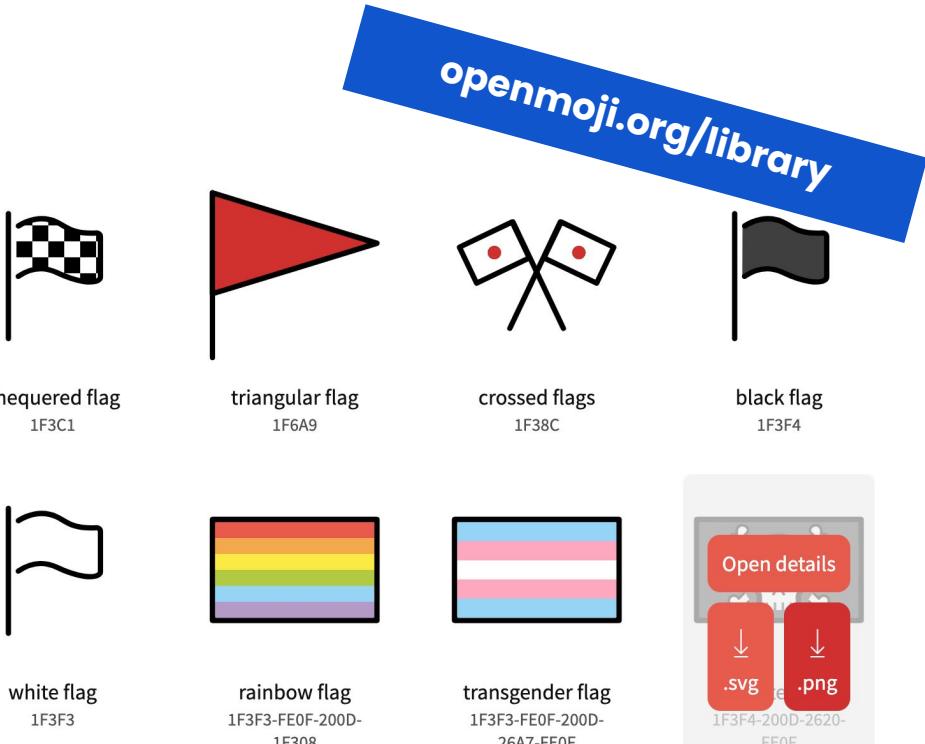
# Posicionar los puntos en tu mapa

1. Pegar los resultados al inicio de **script.js**
2. Crear una función de loop para dibujar un marcador para cada lugar.

```
let midata = [
  {
    "Place": "Quito",
    "Latitude": -0.167443,
    "Longitude": -78.464306,
    "Fecha": 2023
  },
  {
    "Place": "Santiago",
    "Latitude": -33.4488897,
    "Longitude": -70.6692655,
    "Fecha": 2013
  },
]
```

# Marcadores

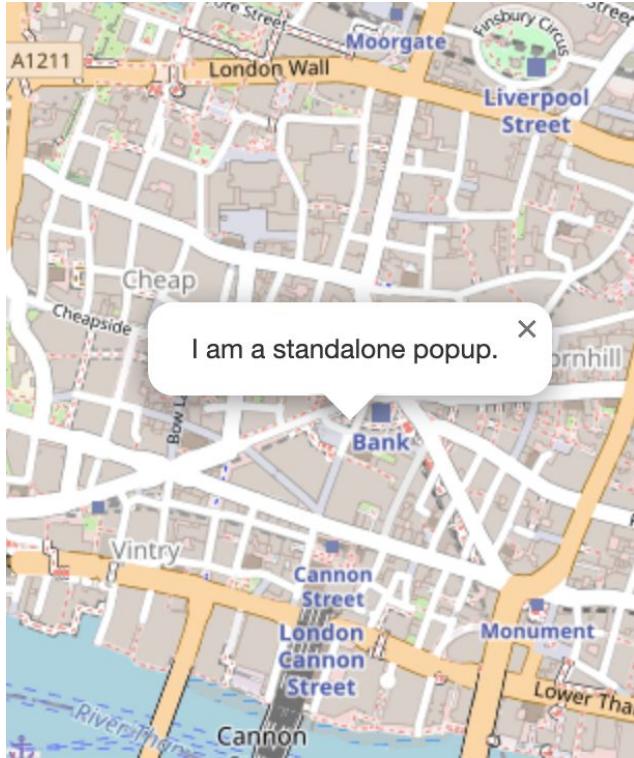
1. Descargar una imagen en formato .png (idealmente de fondo transparente)
2. Subirlo a [glitch.com](https://glitch.com) en la pestaña de **Assets**
3. Hacer click y copiar el URL en la función de ícono en **icon.URL**



# Popup

1. Crear una variable de popup a la que le podemos agregar cualquier información en formato .html
2. Agregar el popup a la función del marcador y listo!

```
.bindPopup (popupText)
```



¡Muchas gracias!

No olviden enviar una captura  
de sus mapas

1. Presentación personal
2. Breve introducción a los mapas
  - a. Definición
  - b. Ejemplo de metro de londres
  - c. Forma de la tierra
  - d. Sistema de coordenadas
  - e. Proyecciones
3. Cartografía crítica
  - a. Qué es la cartografía
  - b. Ejemplos (mapa winnie, mapa guille)
4. Mis proyectos
  - a. BLM murales
  - b. Maps of disaster maps
  - c. Google Sea Views
5. Taller de creación de un mapa en la web