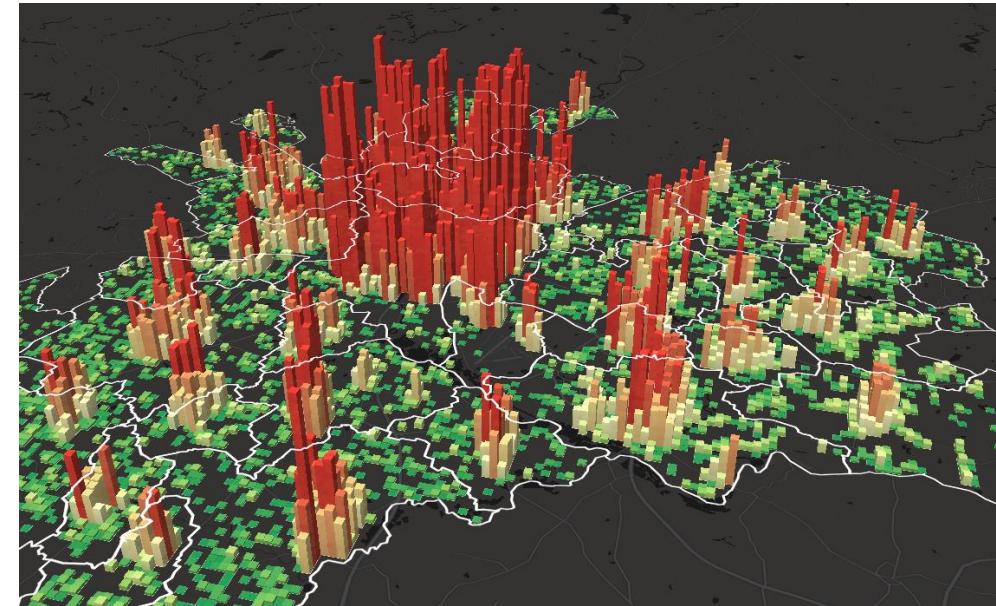




# ATELIER : Introduction à la bibliothèque JavaScript MapboxGL



@Boris Mericskay

# MapBoxGL

MapBoxGL est une bibliothèque JavaScript libre de cartographie en ligne *open-source* utilisant les spécifications WebGL (tuiles vectorielles, affichage 3D)

<https://www.mapbox.com/mapbox-gl-js/>

Exemples: <https://www.mapbox.com/mapbox-gl-js/examples>

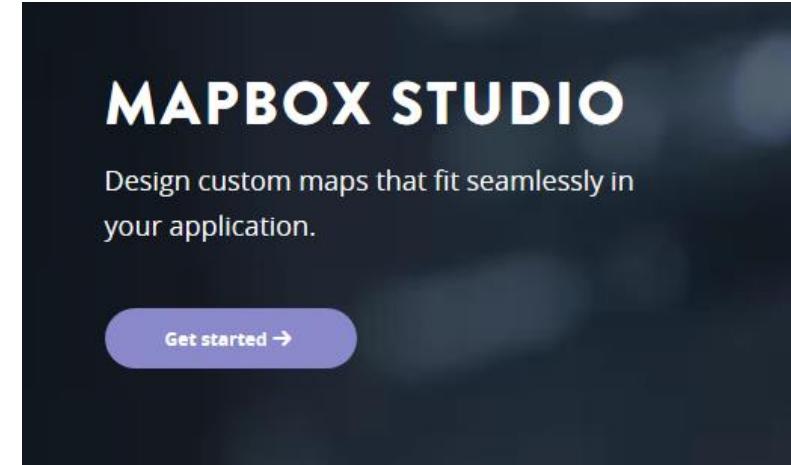
Tutoriels : <https://www.mapbox.com/help/tutorials/>

Documentation: <https://www.mapbox.com/mapbox-gl-js/api/>



# L'écosystème Mapbox

- Mapbox Studio
  - Créer des fonds de carte (*style*)
  - Héberger des jeux de données (*tilessets*)
- API MapboxGL.js
  - Bibliothèque JavaScript pour créer des cartes Web
  - La mobilisation de MapboxGL nécessite une clef d'accès = besoin d'un compte Mapbox



## Mapbox GL JS

Current version: [mapbox-gl.js v0.44.0](#)

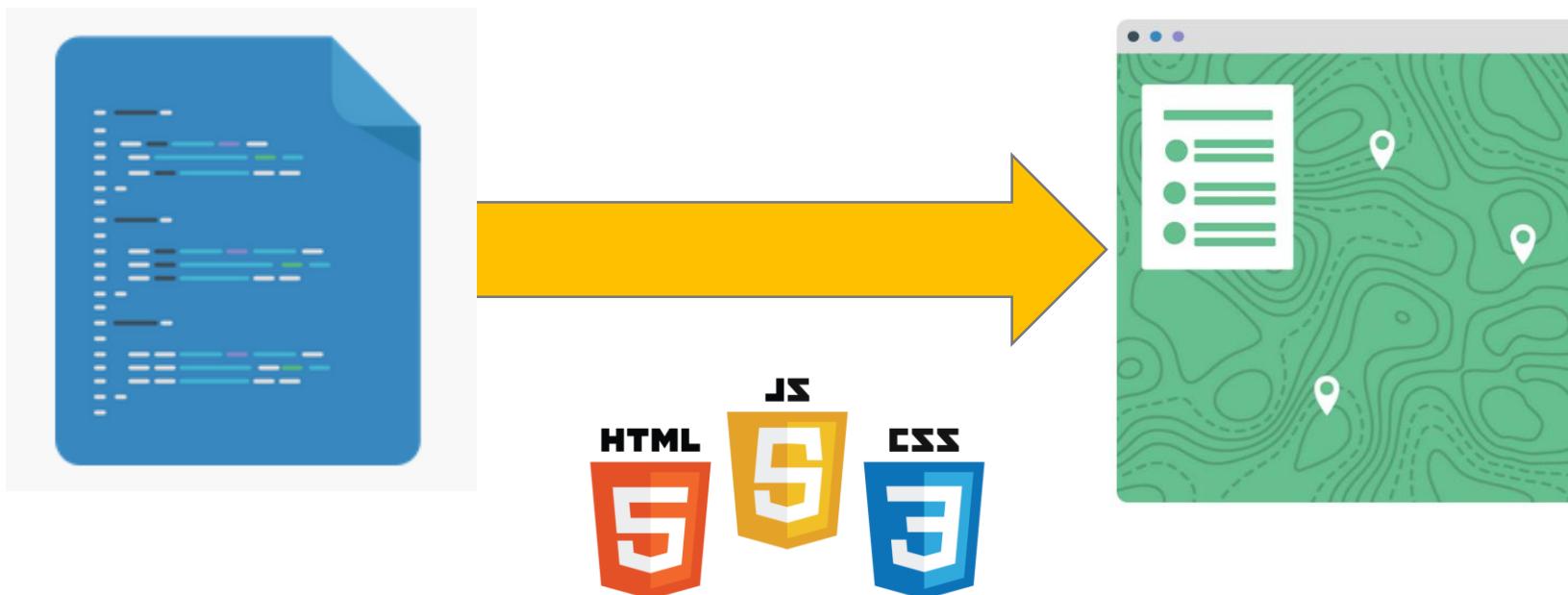
Mapbox GL JS is a JavaScript library that uses WebGL to render interactive maps from [vector tiles](#) and [Mapbox styles](#). It is part of the Mapbox GL ecosystem, which includes [Mapbox Mobile](#), a compatible renderer written in C++ with bindings for desktop and mobile platforms. To see what new features our team is working on, take a look at our [roadmap](#).

# Quelques exemples

- <https://www.mapbox.com/gallery/>
- <https://blocks.org/mastersigat>
- <https://htmlpreview.github.io/?https://github.com/mastersigat/Plan-interactif/blob/master/Prototype.html#>
- <https://medium.com/@BorisMericskay/extrusion-3d-de-donn%C3%A9es-spatiales-9c67d76431b9>

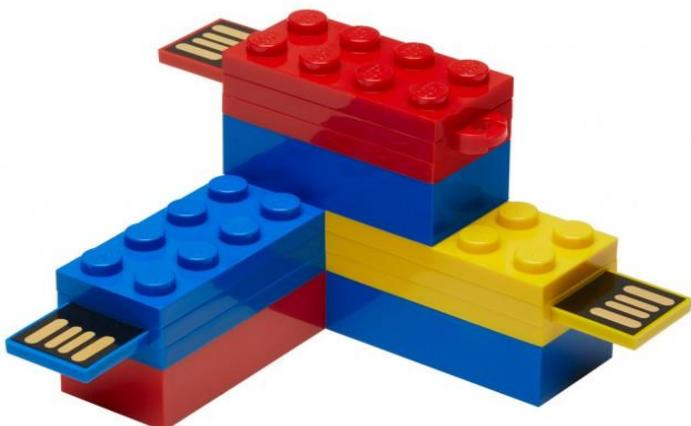
# Objectifs atelier

- Publication de données spatiales sur le Web
- De la page HTML à l'application en ligne
- Familiarisation avec le Javascript, l'HTML et le CSS



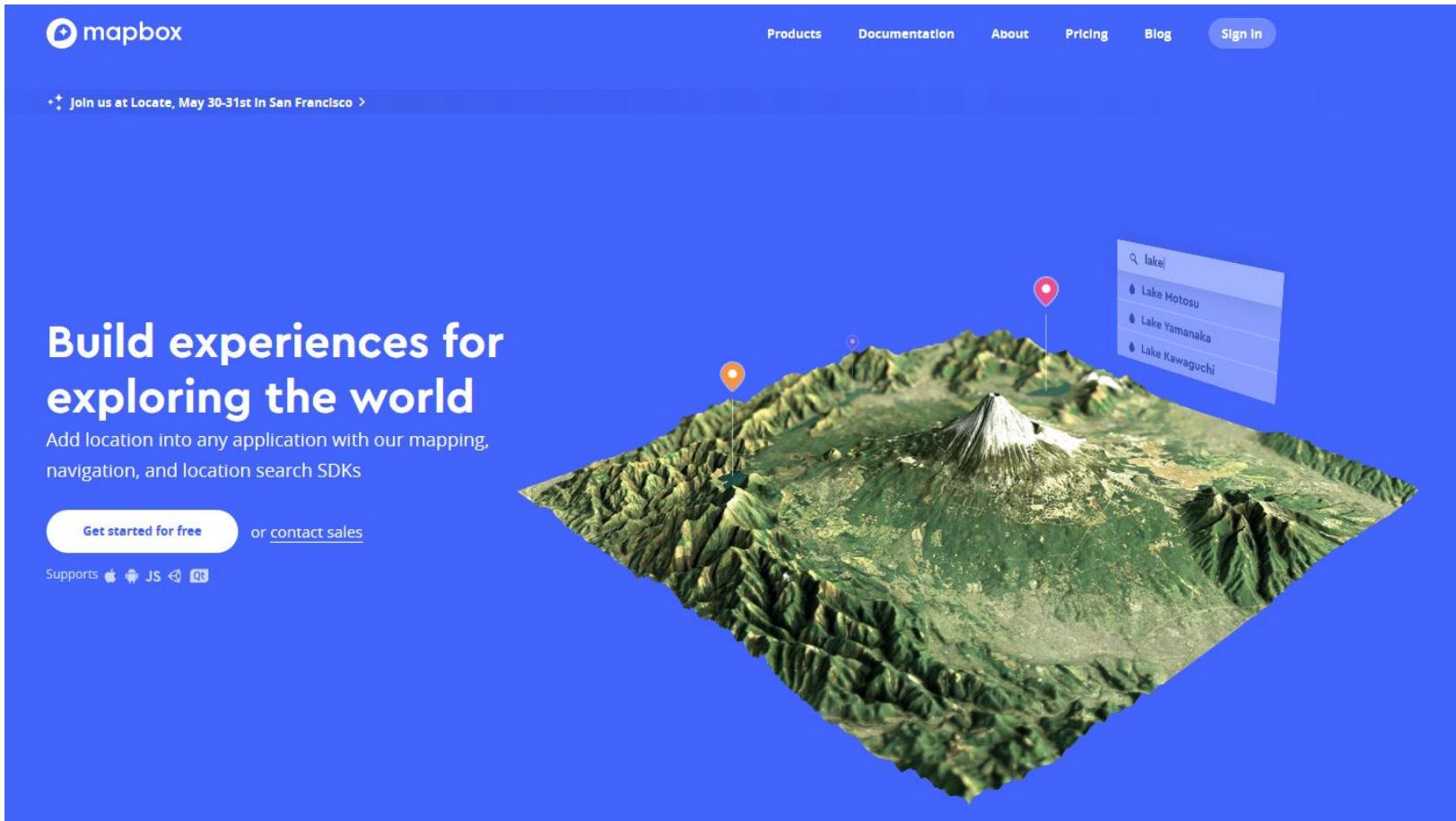
# Coder = LEGO

- Vous allez à partir de maintenant « jouer » au LEGO en assemblant des lignes de codes pour construire des cartes sur Internet !



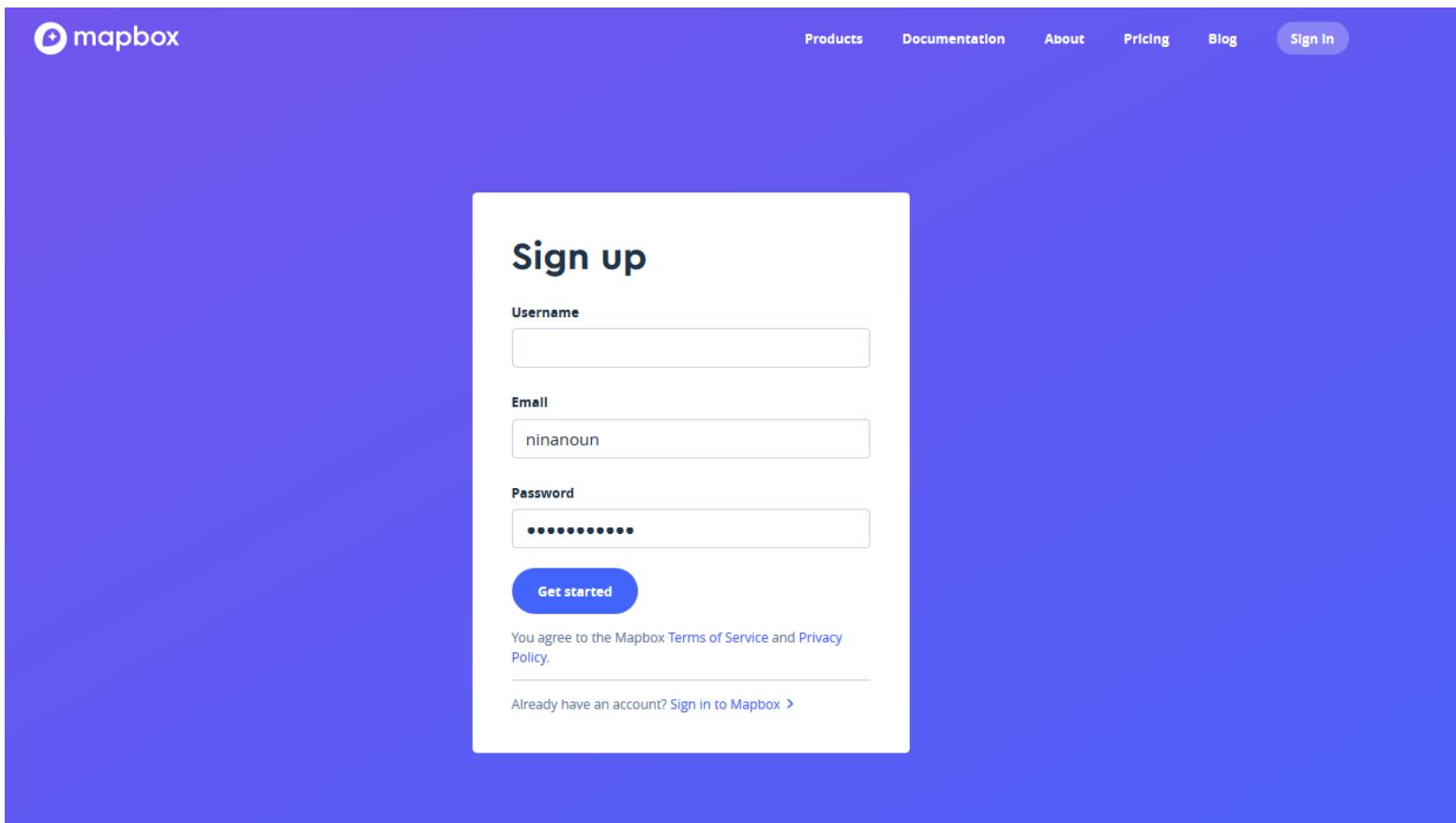
```
4 L.mapbox.accessToken = 'pk.eyJ1IjoibmluYW5vdW4iLCJhIjoiSkN4dn dmTSJ9.6plSt07M5AuAbDa601m54A';
5 var map = L.mapbox.map('map', 'mapbox.light').setView([48.11,-1.66], 13);
6 // Ajouts des WMS
7
8 var orthophotographie = L.tileLayer.wms('http://geobretagne.fr/geoserver/photo/wms?', {
9 format: 'image/png',
10 transparent: true,
11 layers: 'ortho-ouverte'
12 }).addTo(map);
13
14 var quartiers = L.tileLayer.wms('http://geobretagne.fr/geoserver/re nnesmetropole/wms?', {
15 format: 'image/png',
16 transparent: true,
17 layers: 'quartiers_vdr'
18 }).addTo(map);
```

# Créer un compte Mapbox



# Créer un compte Mapbox

<https://www.mapbox.com/signup/>



# Limitations d'un compte gratuit

**PAY-AS-YOU-GO**

<b>Free to start</b> <b>\$0 up to</b>	<b>Web apps</b> 50,000 map views / mo 50,000 geocode requests / mo 50,000 directions requests / mo 50,000 Matrix elements / mo	<b>Mobile SDKs</b> 50,000 monthly active users 50,000 geocode requests / mo 50,000 directions requests / mo 50,000 Matrix elements / mo
<b>Then \$0.50 per</b>	<b>Web apps</b> 1,000 web map views 1,000 geocode requests 1,000 directions requests 1,000 Matrix elements / mo	<b>Mobile SDKs</b> 500 monthly active users 1,000 geocode requests 1,000 directions requests 1,000 Matrix elements / mo

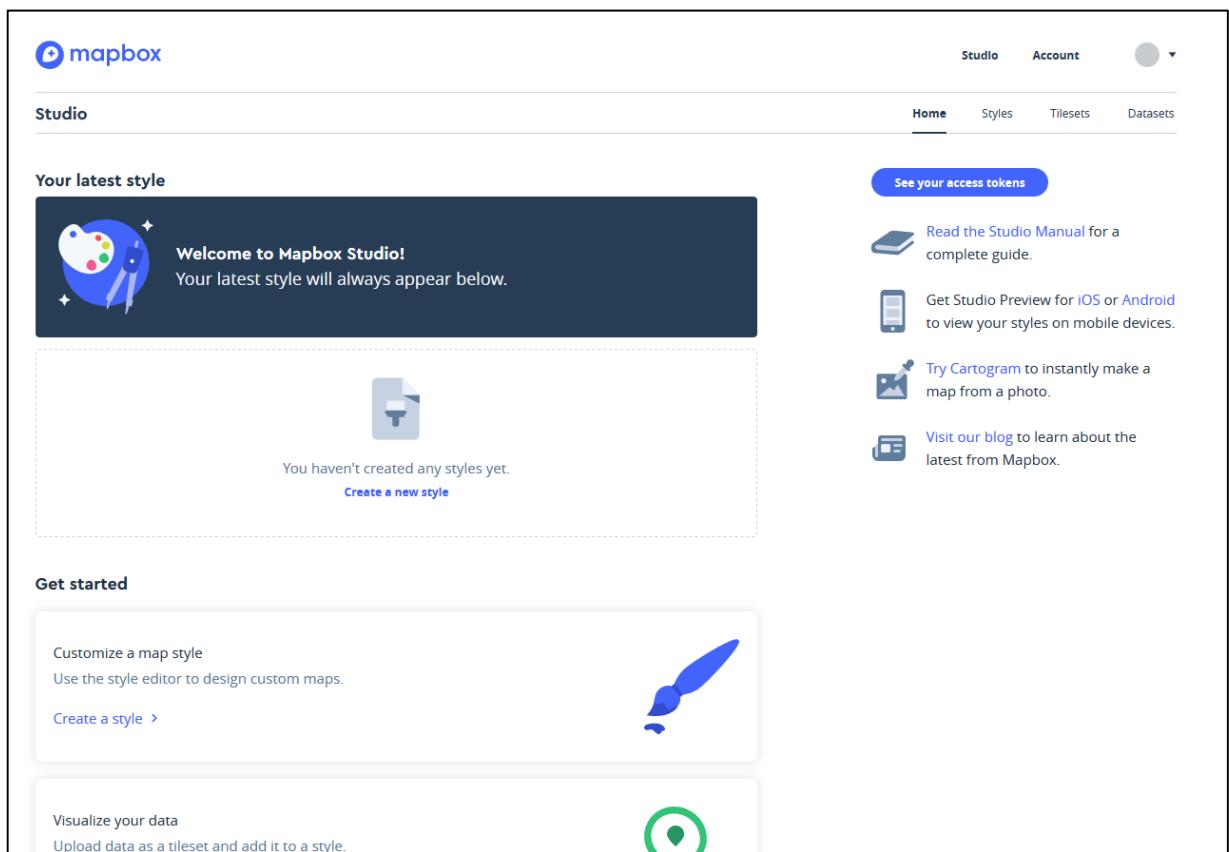
**Pay-as-you-go plan includes**

Satellite & street maps	Mapbox Studio	50 GB tileset storage
5 GB dataset storage	Unlimited Studio styles	Public/free web & mobile apps

[Current plan](#)

# Mapbox Studio

- Environnement en ligne de gestion des :
  - Fonds de carte (*Styles*)
  - Jeux de données (*Tilesets*)
  - Des clefs d'accès à l'API (*Account*)



# Mapbox Studio

- Créer et gérer des jeux de données (Tilesets)

The screenshot shows the Mapbox Studio interface, specifically the Tilessets section. At the top, there's a navigation bar with links for Studio, Account, Home, Styles, **Tilessets** (which is highlighted with a red box), and Datasets. Below the navigation, the title "Tilessets" is displayed. A search bar and sorting options (Sort by: Name, Modified, Size) are present. A "New tileset" button is located in the top right of the main content area. The main content lists five default tilesets:

Thumbnail	Name	Type
	Terrain (RGB-encoded dem)	Default tileset
	Mapbox Satellite	Default tileset
	Mapbox Terrain V2	Default tileset
	Mapbox Traffic V1	Default tileset
	Mapbox Streets v7	Default tileset

Below the tileset list, it says "0 tilesets". To the right of the tileset list, there are three sections with descriptive text and links:

- What is a tileset?**

A tileset is a collection of raster or vector data broken up into a uniform grid of square tiles at 22 preset zoom levels. [Read more.](#)
- How to create tilesets**

Click [New tileset](#) to upload your data. Mapbox renders [vector tiles](#) from your data so you can create styles from it. You can also use Mapbox default tilesets. Read the [Vector tiles docs](#) to find out more.
- How to use tilesets**

Once your vector tiles are ready, you can add them to a new or existing style. First open your style in the style editor. Next, you can either create a new layer with this tileset as the source, or you can change an existing layer's data source to this tileset.

# Importer des données dans Mapbox Studio

- Mapbox studio permet de stocker 50GO de données vectorielles et matricielles

## Tilesets

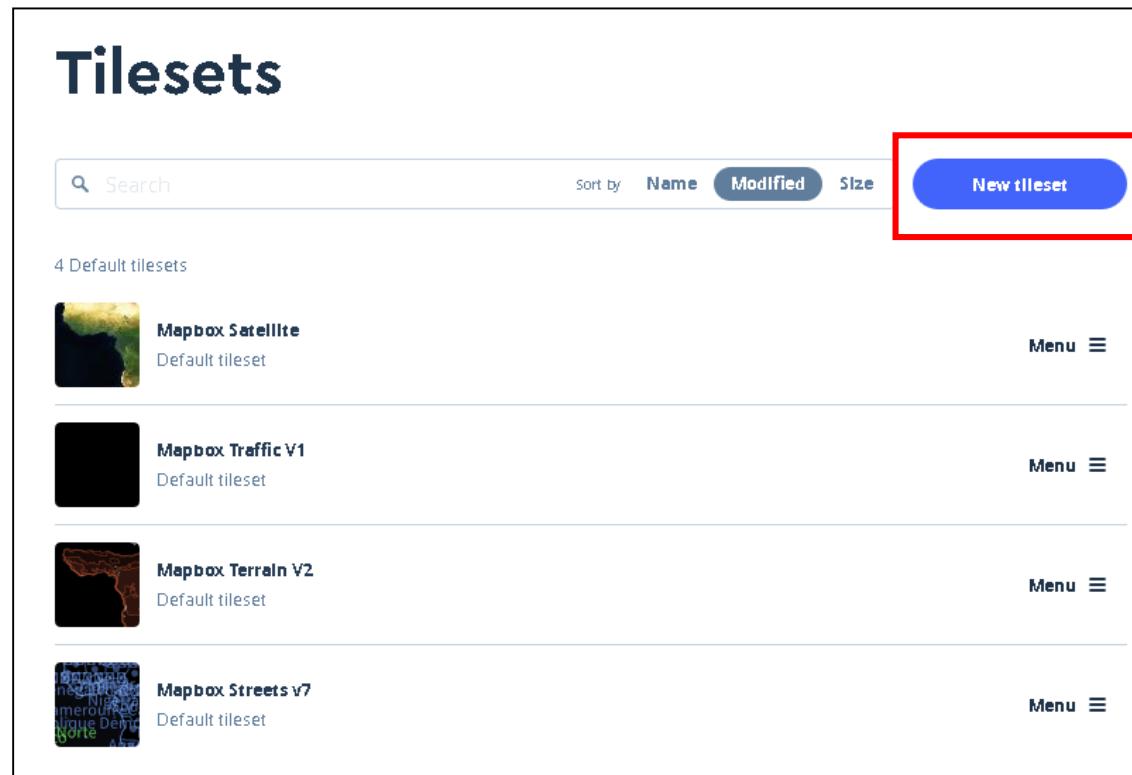
Search Sort by Name Modified Size

New tileset

4 Default tilesets

- Mapbox Satellite
- Mapbox Traffic V1
- Mapbox Terrain V2
- Mapbox Streets v7

Menu

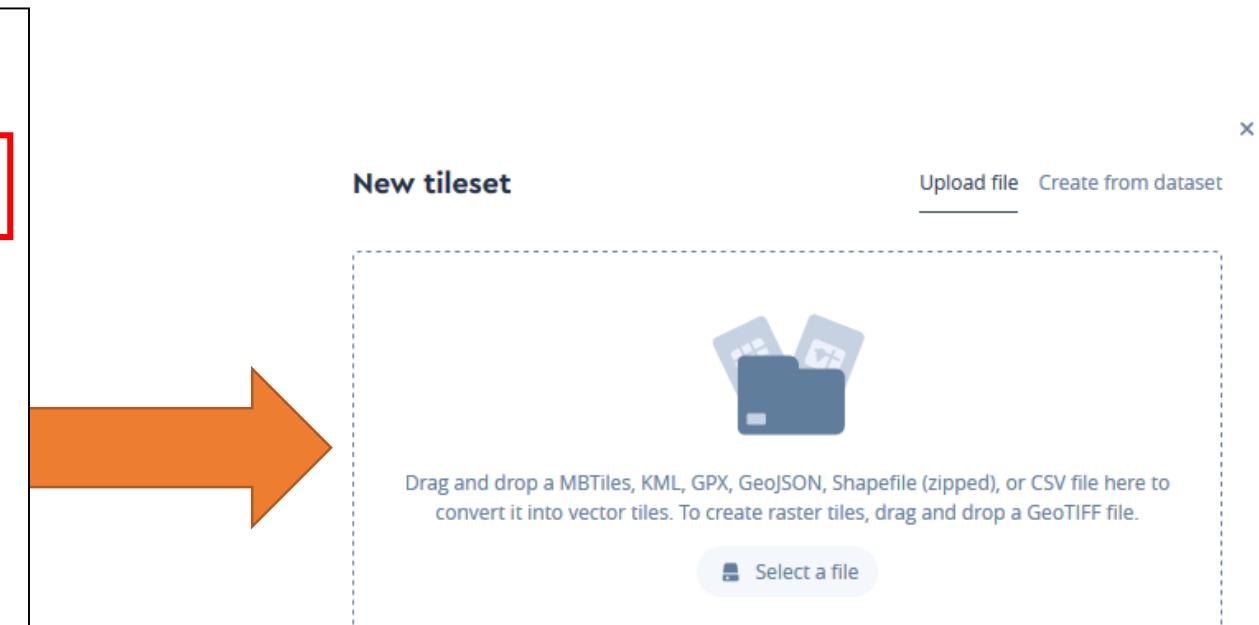


### New tileset

Upload file Create from dataset

Select a file

Drag and drop a MBTiles, KML, GPX, GeoJSON, Shapefile (zipped), or CSV file here to convert it into vector tiles. To create raster tiles, drag and drop a GeoTIFF file.



# Mapbox Studio

- Créer et gérer des fonds de cartes ( Styles)

The screenshot shows the Mapbox Studio interface. At the top, there's a navigation bar with 'Studio' and 'Account' tabs. Below the navigation is a secondary navigation bar with 'Home', 'Styles' (which is highlighted with a red box), 'Tilesets', and 'Datasets'. The main content area is titled 'Styles'. On the left, there's a section for 'Create a new style' featuring a 'Basic Template' button with a preview image of a map and a 'Create' button. Next to it is a 'More ways to create' section with a 'Pick a template or upload a style.' button. Below these are sections for 'Your styles' (with a search bar and sorting options 'Name' and 'Modified') and 'How to create styles' (with a description and a link to 'View Classic styles or projects >'). At the bottom, there's a message 'You haven't created any styles yet.' with a 'Create a style' button. The footer contains links for 'Changelog', 'Developer documentation', 'Studio manual', 'Contact', 'Terms + Privacy', and '© Mapbox'.

# Mapbox Studio

- Créer et gérer ses clefs d'accès à l'API (Access tokens)

The screenshot shows the Mapbox Studio account interface. At the top, there's a navigation bar with 'Studio' (selected), 'Account' (highlighted with a red box), and other options like 'Dashboard', 'Access tokens', 'Statistics', 'Invoices', and 'Settings'. Below the navigation is a welcome message 'Welcome, dsfdsf!'. A 'Let's get started' section contains two cards: 'Integrate Mapbox' (with an icon of a smartphone) and 'Mapbox Studio' (with an icon of a map). The 'Access tokens' section is the main focus, featuring a button '+ Create a token'. It explains that tokens are needed for various Mapbox services. A 'Default public token' is listed with its ID: pk.eyJ1IjoizHNmZHNmIiwibSI6ImNqaDNlMGpqMzBlaXkycXFsm3hsazB4bGg1fQ.gCQk04\_Zp7L5EzlyeaZ6WQ. A 'Refresh token' button is also present. At the bottom, there are buttons for 'STYLES:TIRES', 'STYLES:READ', 'FONTS:READ', and 'DATASETS:READ'. To the right of the main content area, there's a sidebar with sections for 'Plan' (Pay-as-you-go, Change plan), 'Current billing cycle usage' (No usage information to display, Learn more about pricing), and 'Tools & resources' (Integrate Mapbox, Design in Mapbox Studio, Documentation, Help).

# Template de départ

```
<!DOCTYPE html>
<html>
<head>
    <meta charset='utf-8' />
    <title>MapboxGL</title>

    <script src='https://api.tiles.mapbox.com/mapbox-gl-js/v0.45.0/mapbox-gl.js'></script>
    <link href='https://api.tiles.mapbox.com/mapbox-gl-js/v0.45.0/mapbox-gl.css' rel='stylesheet' />

    <style>
        #map {position:absolute; top:0; bottom:0; width:100%;}
    </style>

</head>

<body>
<div id='map'></div>

<script>
    // AccesToken
    mapboxgl.accessToken = 'pk.eyJ1IjoibmluYW5vdW4iLCJhIjoiY2pjdhBoZGlzMnV4dDJxcGc5azJkbWRiYSJ9.o4dZRrdHcgVEKCveOXG1YQ';

    // Configuration de la carte
    var map = new mapboxgl.Map({
        container: 'map',
        style: 'mapbox://styles/mapbox/light-v9', // Fond de carte
        center: [-1.68, 48.12], // lat/long
        zoom: 15, // zoom
        pitch: 50, // Inclinaison
        bearing: -10 // Rotation
    });
</script>

</body>
</html>
```

# Template de départ

```
<!DOCTYPE html>
<html>
<head>
    <meta charset='utf-8' />
    <title>MapboxGL</title>

    <script src='https://api.tiles.mapbox.com/mapbox-gl-js/v0.45.0/mapbox-gl.js'></script>
    <link href='https://api.tiles.mapbox.com/mapbox-gl-js/v0.45.0/mapbox-gl.css' rel='stylesheet' />

    <style>
        #map { position: absolute; top:0; bottom:0; width:100%; }
    </style>

</head>

<body>
    <div id='map'></div>

    <script>
        // AccesToken
        mapboxgl.accessToken =
            'pk.eyJ1IjoibmluYW5vdW4iLCJhIjoiY2pjdhBoZGlzMnV4dDJxcGc5azJkbWRiYSJ9.o4dZRrdHcgVEKCveOXG1YQ';

        // Configuration de la carte
        var map = new mapboxgl.Map({
            container: 'map',
            style: 'mapbox://styles/mapbox/basic-v9', // fond de carte
            center: [-1.68, 48.12], // lat/long
            zoom: 15, // zoom
            pitch: 50, // Inclinaison
            bearing: -10 // Rotation
        });
    </script>
</body>
</html>
```

Appel API MapboxGL

Style de la carte

Clef d'accès à l'API

Fond de carte  
Niveau de zoom  
Centrage de la carte (X,Y)  
Inclinaison de la carte  
Rotation de la carte

# Coder en ligne ou en local

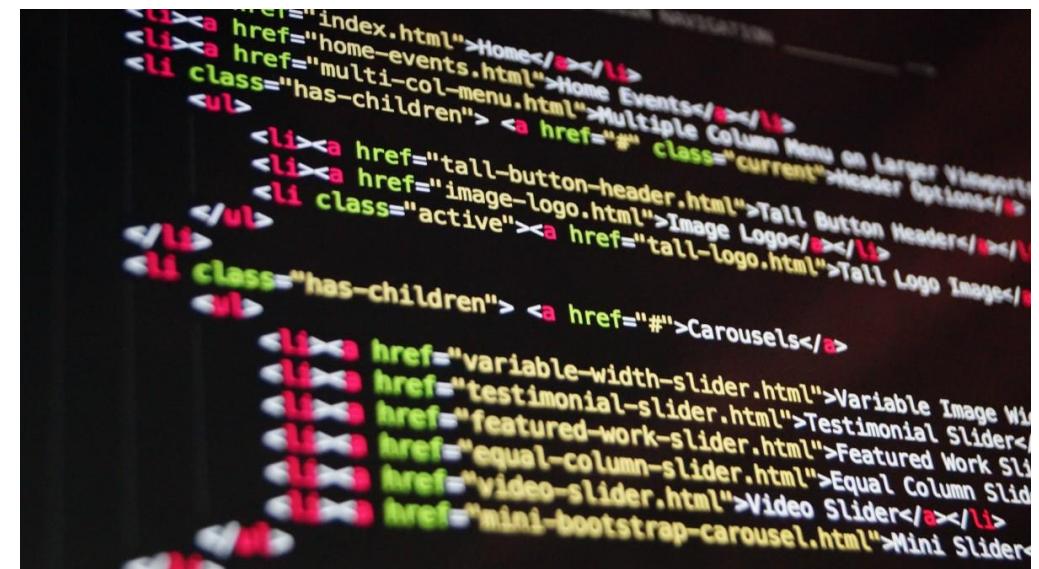
- Utiliser un éditeur de code installé  
OU
- Utiliser un éditeur de code en ligne

<https://liveweave.com/>

<https://plnkr.co/>

<https://jsfiddle.net/>

...



```
<ul>
  <li><a href="#">Home</a></li>
  <li><a href="home-events.html">Home Events</a></li>
  <li><a href="multi-col-menu.html">Multiple Column Menu on Larger Viewports</a>
    <ul>
      <li><a href="#" class="current">Header Options</a></li>
      <li><a href="tall-button-header.html">Tall Button Headers</a></li>
      <li><a href="image-logo.html">Image Logo</a></li>
      <li class="active"><a href="tall-logo.html">Tall Logo Images</a></li>
    </ul>
  </li>
  <li class="has-children"> <a href="#">Carousels</a>
    <ul>
      <li><a href="variable-width-slider.html">Variable Image Width Sliders</a>
      <li><a href="testimonial-slider.html">Testimonial Slider</a>
      <li><a href="featured-work-slider.html">Featured Work Slider</a>
      <li><a href="equal-column-slider.html">Equal Column Slider</a>
      <li><a href="video-slider.html">Video Slider</a></li>
      <li><a href="mini-bootstrap-carousel.html">Mini Carousel</a></li>
    </ul>
  </li>
</ul>
```

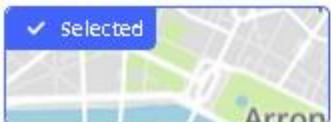
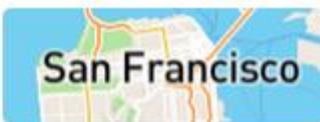
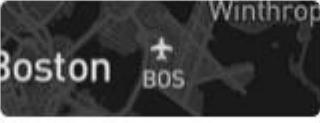
# Les fonds de carte

# Changer de fond de carte

- Les fonds de cartes de Mapbox > tuiles vectorielles ☺

```
style: 'mapbox://styles/mapbox/dark-v9',
```

→ Attention pas de majuscule au nom du fond de carte

 <b>Basic</b> Simple and flexible starting template. ❖ Streets	 <b>Bright</b> Template for complex custom basemaps. ❖ Streets	 <b>Streets</b> A complete basemap, perfect for incorporating your own data. ❖ Streets, Terrain	 <b>Satellite</b> A beautiful global satellite and aerial imagery layer. ❖ Satellite	 <b>Satellite Streets</b> Global imagery enhanced with road and label hierarchy. ❖ Satellite, Streets	 <b>Navigation Preview Day</b> Traffic on a light streets basemap that highlights congestion. ❖ Streets, Terrain, Traffic
 <b>Outdoors</b> General basemap tailored to hiking, biking, and sport. ❖ Streets, Terrain	 <b>Dark</b> Subtle dark backdrop for data visualizations. ❖ Streets, Terrain	 <b>Light</b> Subtle light backdrop for data visualizations. ❖ Streets, Terrain	 <b>Navigation Preview Night</b> Traffic on a dark streets basemap that highlights congestion. ❖ Streets, Terrain, Traffic	 <b>Navigation Guidance Day</b> Light basemap tailored to in-app navigation. ❖ Streets, Terrain	 <b>Navigation Guidance Night</b> Dark basemap tailored to in-app navigation. ❖ Streets, Terrain

# Changer de fond de carte

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4      <meta charset='utf-8' />
5      <title>MapboxGL</title>
6
7      <script src='https://api.tiles.mapbox.com/mapbox-gl-js/v0.44.0/mapbox-gl.js'></script>
8      <link href='https://api.tiles.mapbox.com/mapbox-gl-js/v0.44.0/mapbox-gl.css' rel='stylesheet' />
9
10     <style>
11         #map { position: absolute; top: 0; bottom: 0; width: 100%; }
12     </style>
13
14     </head>
15
16     <body>
17         <div id='map'></div>
18
19     <script>
20         // AccesToken
21         mapboxgl.accessToken = 'pk.eyJ1IjoibmluYW5vdW4iLCJhIjoiY2pjdhBoZG1zMnV4dDxcGc5azJkbWRiYSJ9.o4dZRrdHcgWEKCveC
22
23         // Configuration de la carte
24         var map = new mapboxgl.Map({
25             container: 'map',
26             style: 'mapbox://styles/mapbox/satellite-v9',
27             center: [-1.68, 48.12], // lat/long
28             zoom: 15, // zoom
29             pitch: 50, // Inclinaison
30             bearing: -10 // Rotation
31         });
32
33     </script>
34
35     </body>
36
37     </html>
```



# Mettre un fond de carte personnel

- Mettre votre clef d'accès personnelle à la place de celle fournie

The screenshot shows the Mapbox Studio interface. On the left is a dark sidebar with navigation links: Home, Styles, Tilesets, Datasets, Stats, and Classic. At the bottom of the sidebar are 'No updates' and 'Account' with a user icon, and 'Signout'. The main area has three sections: 'Styles' (with a 'Go to styles' button), 'Tilesets' (with a 'Go to tilesets' button), and 'Datasets' (with a 'Go to datasets' button). Below these are links to 'Get started with the style editor', 'Gallery', 'Classic styles', 'About Mapbox data', 'Vector tiles spec', and 'Datasets API documentation'. On the right, there's a 'Home' link and a 'Welcome' message 'Hello mastersiget, you are on'. Under 'Account', there's a profile icon, a 'Starter plan' badge ('50.0k map views'), and a 'Manage account' button. The 'Access token' section contains the text 'Your default access token is:' followed by a token value 'pk.eyJ1j0ab#0@y21m9q1LChfjoiy2lon.' which is highlighted with a red rectangular box. Below it is a 'Delete' button. A note says 'If you need your access token to use any of the Mapbox APIs and libraries, click here.' There's also an 'Add or revoke tokens' button. The 'Help' section includes links to 'Mapbox Studio guides', 'Get started with Mapbox Studio', 'Publish your Mapbox Studio map style', 'Mapbox API Documentation', and 'View All'. The 'On the blog' section lists 'Design', 'Styling lanes in Mapbox Studio', 'GI', and 'Beautifying map labels with better line handling'.

# Incorporer un fond de carte personnel

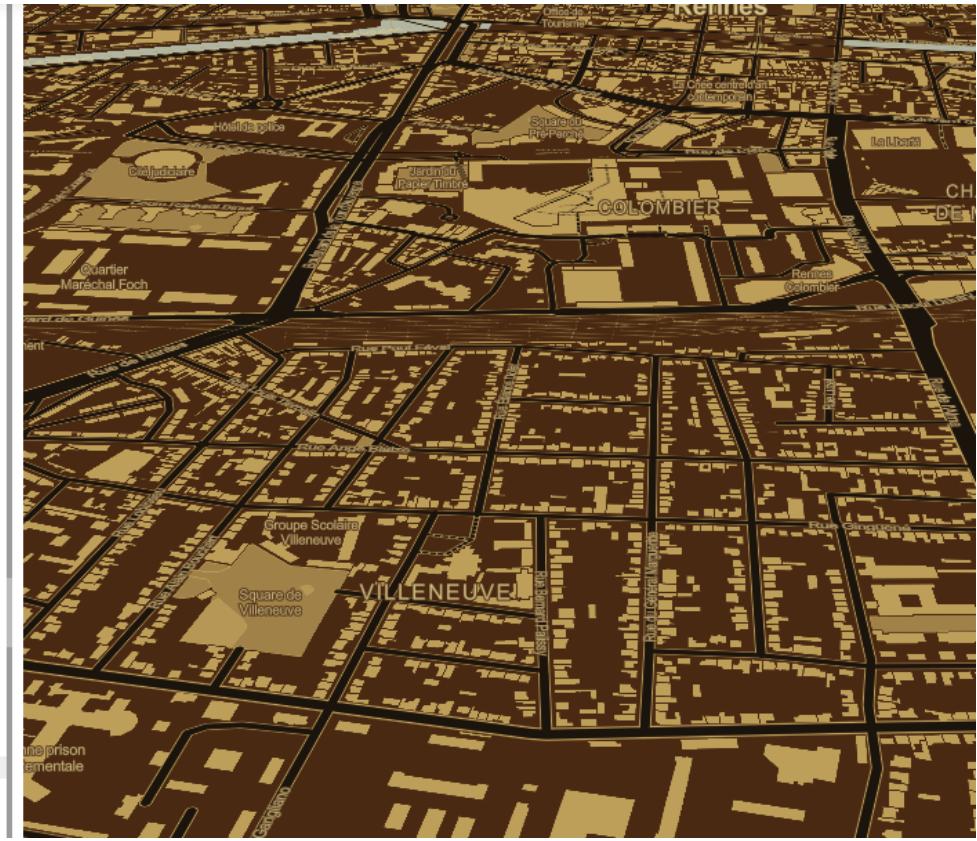
- Récupérer l'URL de votre fond de carte personnel

The screenshot shows the Mapbox Studio interface with the 'Styles' tab selected. A card for 'My Cartogram Style' is highlighted, showing it was published on June 27, 2017, and is private. A context menu is open over this card, with the 'Share, develop & use' option highlighted by a red box.

The screenshot shows the preview page for 'My Cartogram Style'. The title 'My Cartogram Style' is displayed, along with the publication date (June 27, 2017) and privacy status (Private). The preview map shows a cartogram of New York City where areas represent population density. A context menu is open over the map, with the 'Style URL' option highlighted by a red box. The URL 'mapbox://styles/mastersigat/cj4Foc5e...' is visible in the menu.

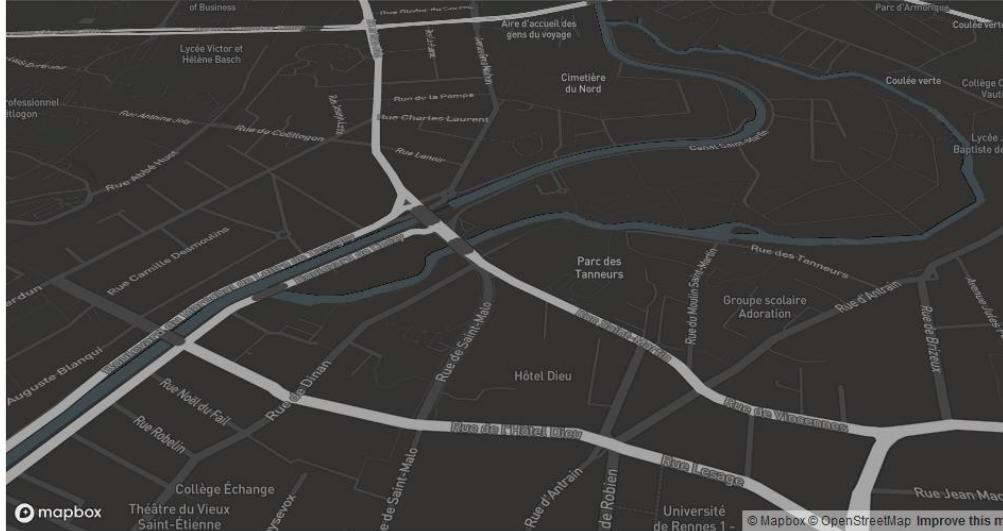
# Incorporer un fond de carte personnel

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4   <meta charset='utf-8' />
5   <title>MapboxGL</title>
6
7 <script src='https://api.tiles.mapbox.com/mapbox-gl-js/v0.44.0/mapbox-gl.js'></script>
8 <link href='https://api.tiles.mapbox.com/mapbox-gl-js/v0.44.0/mapbox-gl.css' rel='stylesheet' />
9
10 <style>
11 #map { position:absolute; top:0; bottom:0; width:100%; }
12 </style>
13
14 </head>
15
16 <body>
17 <div id='map'></div>
18
19 <script>
20   // AccesToken
21 mapboxgl.accessToken = 'pk.eyJ1IjoibWFzdGVyc2lnYXQiLCJhIjoiY2loNG9mamxwMHp2dHgxbTBjY2h1b2RteiJ9.dDYKXX9907pbT6sTAJ4FvA';
22
23   // Configuration de la carte
24 var map = new mapboxgl.Map({
25   container: 'map',
26   style: 'mapbox://styles/mastersigat/cj4foc5eo3hsr2sqlomdgeuvd',
27   center: [-1.68, 48.12], // lat/long
28   zoom: 15, // zoom
29   pitch: 50, // Inclinaison
30   bearing: -10 // Rotation
31 });
32
33 </script>
34
35 </body>
36 </html>
37
```



## Exemple

#MapboxGL / Première carte



Built with [blockbuilder.org](#)

[Open](#)

# index.html

```
<!DOCTYPE html>
<html>
<head>
  <meta charset='utf-8' />
  <title>Display a map</title>
  <meta name='viewport' content='initial-scale=1,maximum-scale=1,user-scalable=no' />
  <script src='https://api.tiles.mapbox.com/mapbox-gl-js/v0.44.0/mapbox-gl.js'></script>
  <link href='https://api.tiles.mapbox.com/mapbox-gl-js/v0.44.0/mapbox-gl.css' rel='stylesheet' />
  <style>
    body { margin:0; padding:0; }
```

<https://bl.ocks.org/mastersigat/3b97a088768a11552fa9c85a1806f3e5>

# Ajouter des données

OSM, données hébergées et données en local

# Ajout de données OSM

- MapboxGL permet aussi de mobiliser des données OSM
  - Le jeu de données (*tileset*) Mapbox Streets v7 propose un ensemble de couches OSM (routes, bâtiments, labels, hydrologie,...)

**Mapbox Streets v7**

ID du tileset OSM

Default tileset

Preview

Map ID: mapbox.mapbox-streets-v7

Details

Learn about the layers and fields in the Mapbox Streets v7 source

Format: pdf Type: vector

Zoom extent: z0 ~ z16

Data will be visible above zoom 16, but may appear simplified. Learn how to adjust zoom extent

Bounds: -180.0,-85.1,180.0,85.1

Nom de la couche

maritime	Number: Maritime boundaries are 1, all others are 0.
aeroway	state(s) a boundary is part of. Format: 'AA' or 'AA-BB'

boundary

all others are 0.

states(s) a boundary is part of. Format: 'AA' or 'AA-BB'

1 properties

type

One of: runway, taxiway, apron

1 properties

airport\_label

name\_fr

French name of the airport

13 properties

Mapbox Streets V7			mapbox.mapbox-streets-v7
admin	aeroway	airport_label	
barrier_line	building	country_label	
housenum_label	landuse	landuse_overview	
marine_label	motorway_junction	mountain_peak	
place_label	poi_label	rail_station_label	
road	road_label	state_label	
water	water_label	waterway	
waterway_label			

# Ajout de données OSM

- Ajouter cette commande à la fin du script

On appelle ici les routes issues d'OSM

```
map.on('load', function () {  
  
    map.addSource('mapbox-streets-v7', {  
        type: 'vector',  
        url: 'mapbox://mapbox.mapbox-streets-v7'});  
  
    map.addLayer({  
        "id": "Routes",  
        "type": "line",  
        "source": "mapbox-streets-v7",  
        "layout": {"visibility": 'visible'},  
        "source-layer": "road",  
        "paint": {"line-color": "#FF7F50", "line-width": 1}  
    });  
  
});
```

# Ajout de données OSM

- Ajouter cette commande à la fin du script

On appelle ici les routes

```
map.on('load', function () {  
  
    map.addSource('mapbox-streets-v7', {  
        type: 'vector',  
        url: 'mapbox://mapbox.mapbox-streets-v7'});
```

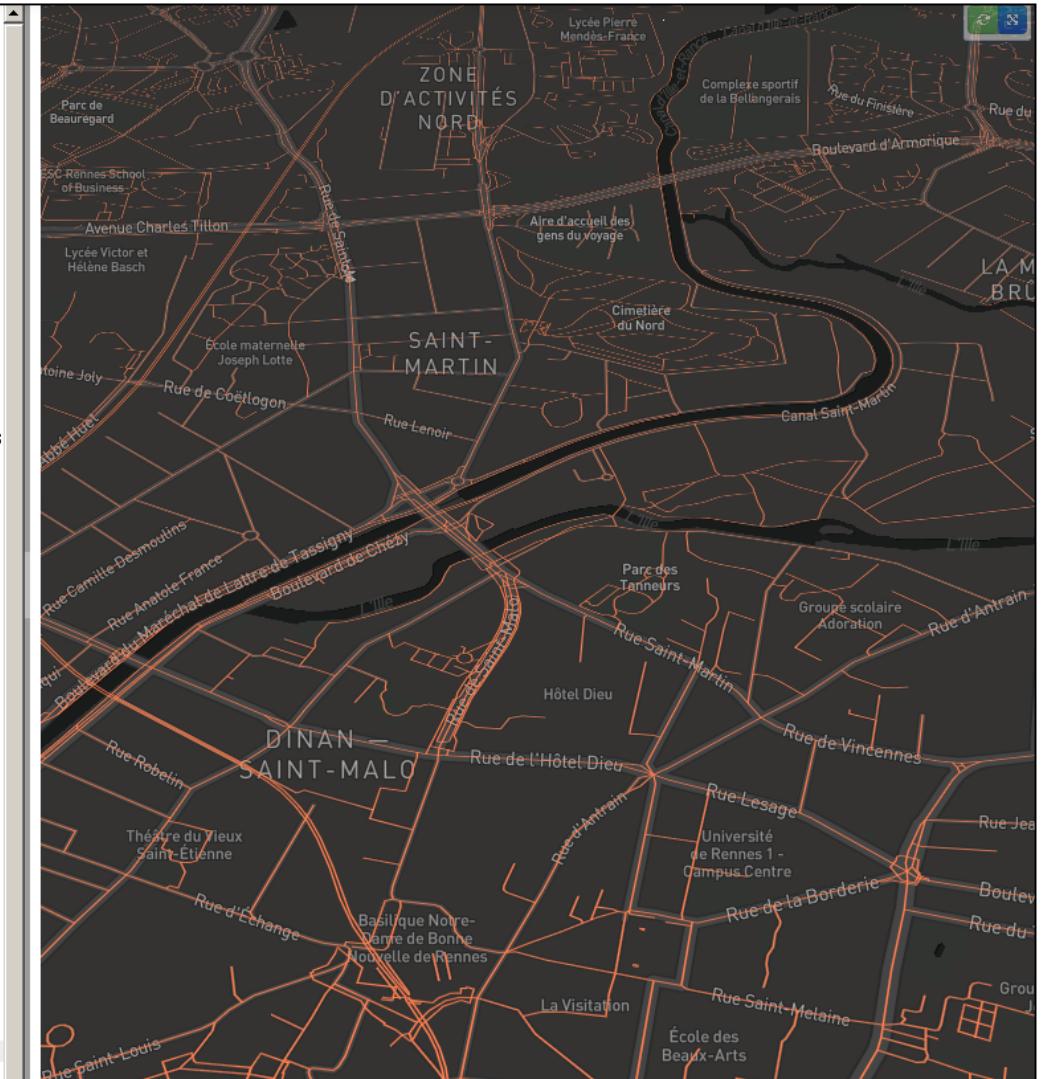
Appel de la source de données

```
    map.addLayer({  
        "id": "Routes",  
        "type": "line",  
        "source": "mapbox-streets-v7",  
        "layout": {"visibility": 'visible'},  
        "source-layer": "road",  
        "paint": {"line-color": "#FF7F50", "line-width": 1}  
    });  
});
```

Appel de la couche de données

# Ajout de données OSM

```
1 <!DOCTYPE html>
2 <html>
3   <head>
4     <meta charset='utf-8' />
5     <title>MapboxGL</title>
6
7     <script src='https://api.tiles.mapbox.com/mapbox-gl-js/v0.44.0/mapbox-gl.js'></script>
8     <link href='https://api.tiles.mapbox.com/mapbox-gl-js/v0.44.0/mapbox-gl.css' rel='stylesheet' />
9
10    <style>
11      #map { position:absolute; top:0; bottom:0; width:100%; }
12    </style>
13
14  </head>
15
16  <body>
17    <div id='map'></div>
18
19    <script>
20      // AccesToken
21      mapboxgl.accessToken = 'pk.eyJ1IjoibWFzdGVyc2lnYXQiLCJhIjoiY2loNG9mamxwMHp2dHgxbTBjY2hlb2RteiJ9.dDYKXX9907pbT6sTAJ4FvA';
22
23      // Configuration de la carte
24      var map = new mapboxgl.Map({
25        container: 'map',
26        style: 'mapbox://styles/mapbox/dark-v9',
27        center: [-1.68, 48.12], // lat/long
28        zoom: 15, // zoom
29        pitch: 50, // Inclinaison
30        bearing: -10 // Rotation
31      });
32
33      // Ajout de données OSM
34
35      map.on('load', function () {
36
37        map.addSource('mapbox-streets-v7', {
38          type: 'vector',
39          url: 'mapbox://mapbox.mapbox-streets-v7'});
40
41        map.addLayer({
42          "id": "routes",
43          "type": "line",
44          "source": "mapbox-streets-v7",
45          "layout": {"visibility": 'visible'},
46          "source-layer": "road",
47          "paint": {"line-color": "#FF7F50", "line-width": 1}
48        });
49      });
50
51    </script>
```



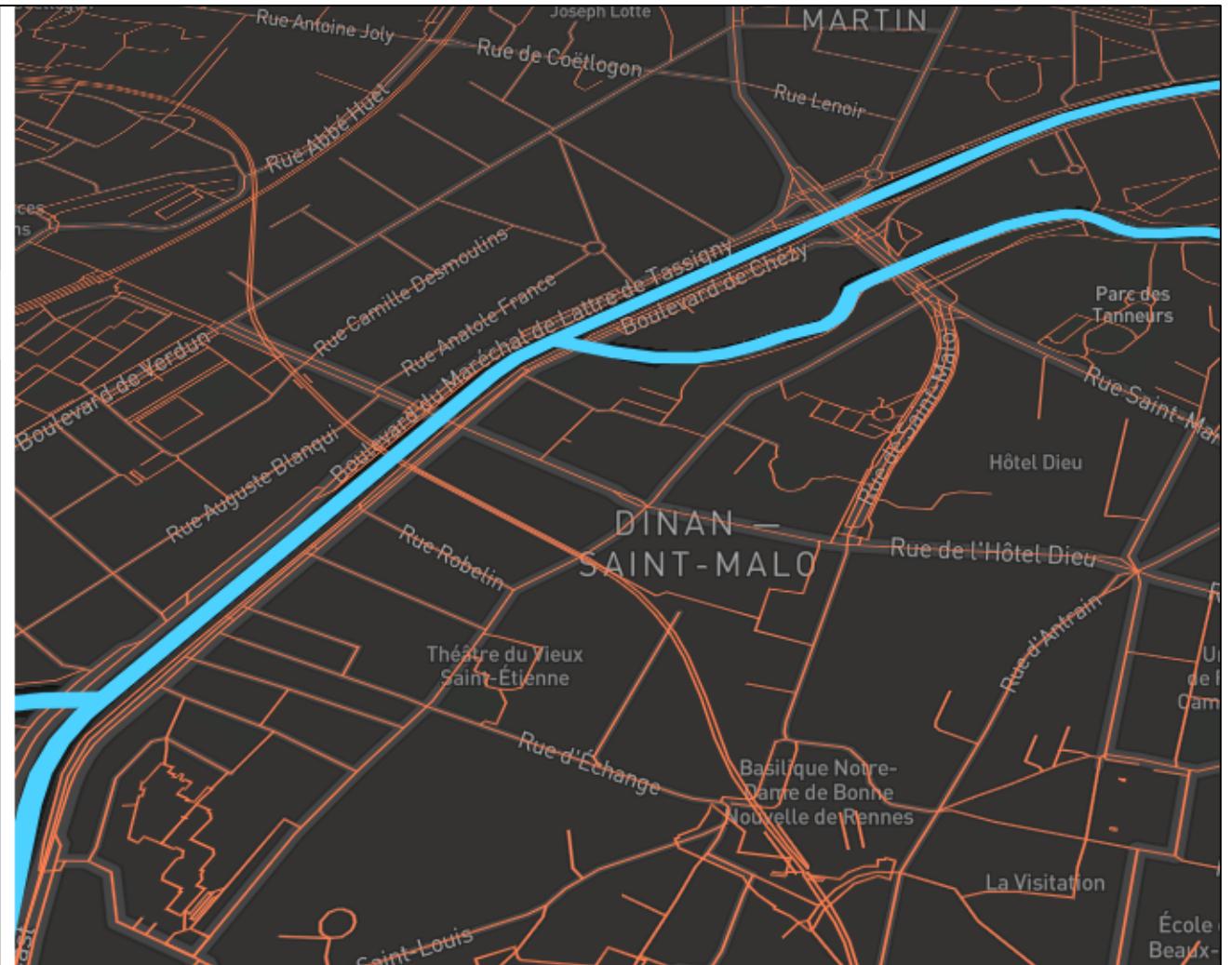
# Ajout de données OSM

- Ajout du réseau hydrographique
  - Ajouter à la suite de l'appel de la couche des routes juste un appel de couche car la source est la même que pour les routes (*mapbox-streets-v7*)

```
// Hydrologie  
  
map.addLayer({  
    "id": "hydrologie",  
    "type": "line",  
    "source": "mapbox-streets-v7",  
    "source-layer": "waterway",  
    "paint": {"  
        "line-color": "#4dd2ff",  
        "line-width": 3  
    }  
});
```

# Ajout de données OSM

```
33 // Ajout de données OSM
34
35 map.on('load', function () {
36
37 // Config source
38 map.addSource('mapbox-streets-v7', {
39   type: 'vector',
40   url: 'mapbox://mapbox.mapbox-streets-v7'});
41
42 // Ajout routes
43 map.addLayer({
44   "id": "routes",
45   "type": "line",
46   "source": "mapbox-streets-v7",
47   "layout": {"visibility": 'visible'},
48   "source-layer": "road",
49   "paint": {"line-color": "#FF7F50", "line-width": 1}
50 });
51
52 // Ajout hydrologie
53
54 map.addLayer({
55   "id": "hydrologie",
56   "type": "line",
57   "source": "mapbox-streets-v7",
58   "source-layer": "waterway",
59   "paint": {"line-color": "#4dd2ff",
60     "line-width": 10}
61 });
62
63 });
64
65 </script>
```



# Ajout de données OSM

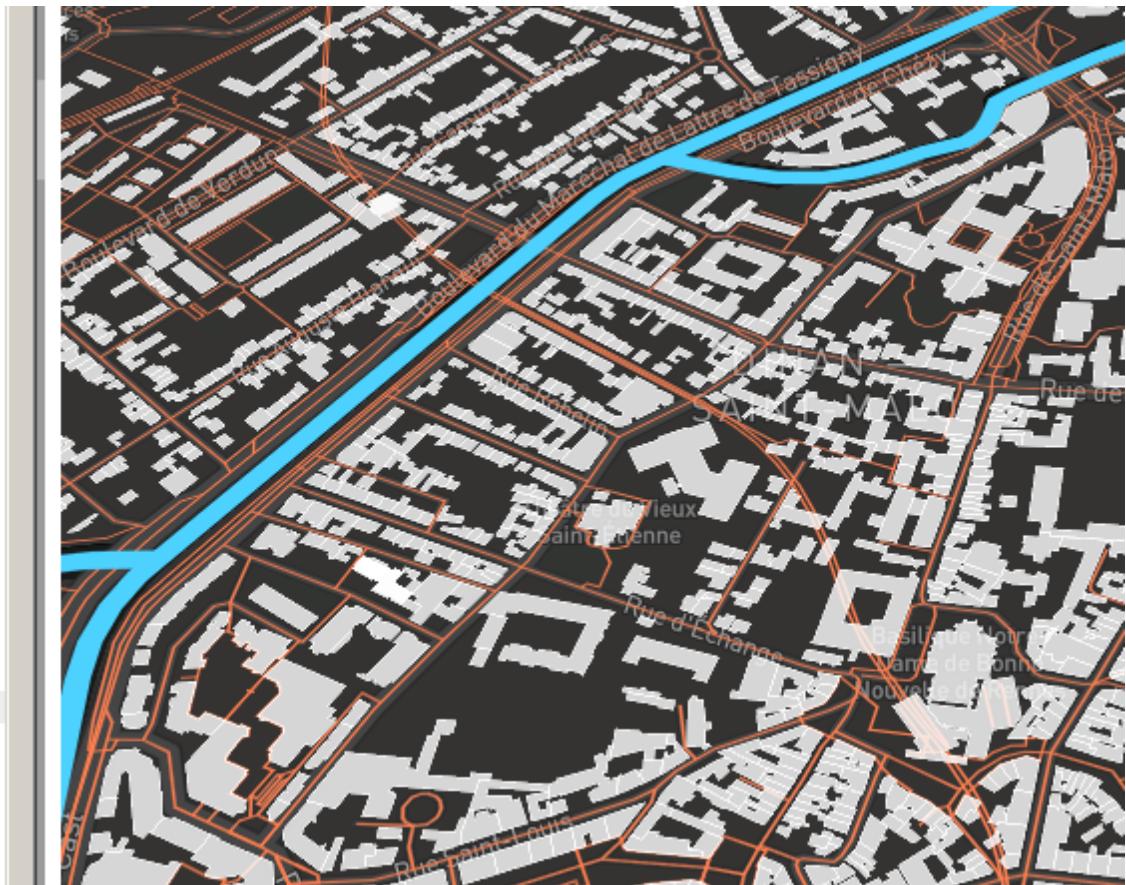
- Ajout les **bâtiments** (ajouter juste un appel de couche car la source est la même que pour les routes)

```
// Batiments

map.addLayer({
    "id": "batiments",
    "type": "fill",
    "source": "mapbox-streets-v7",
    "source-layer": "building",
    "paint": {"fill-color": "#FFFFFF",
              "fill-opacity": 0.8}
});
```

# Ajout de données OSM

```
52 // Ajout hydrologie
53
54 map.addLayer({
55   "id": "hydrologie",
56   "type": "line",
57   "source": "mapbox-streets-v7",
58   "source-layer": "waterway",
59   "paint": {"line-color": "#4dd2ff",
60     "line-width": 10}
61 });
62
63 // Batiments
64
65 map.addLayer({
66   "id": "batiments",
67   "type": "fill",
68   "source": "mapbox-streets-v7",
69   "source-layer": "building",
70   "paint": {"fill-color": "#FFFFFF",
71     "fill-opacity": 0.8}
72 });
73
74
75 });
76
77 </script>
78
```



# Filtrer des données OSM

- Il est possible de filtrer les données pour l'affichage
  - On peut par exemple filtrer les routes selon leur classe



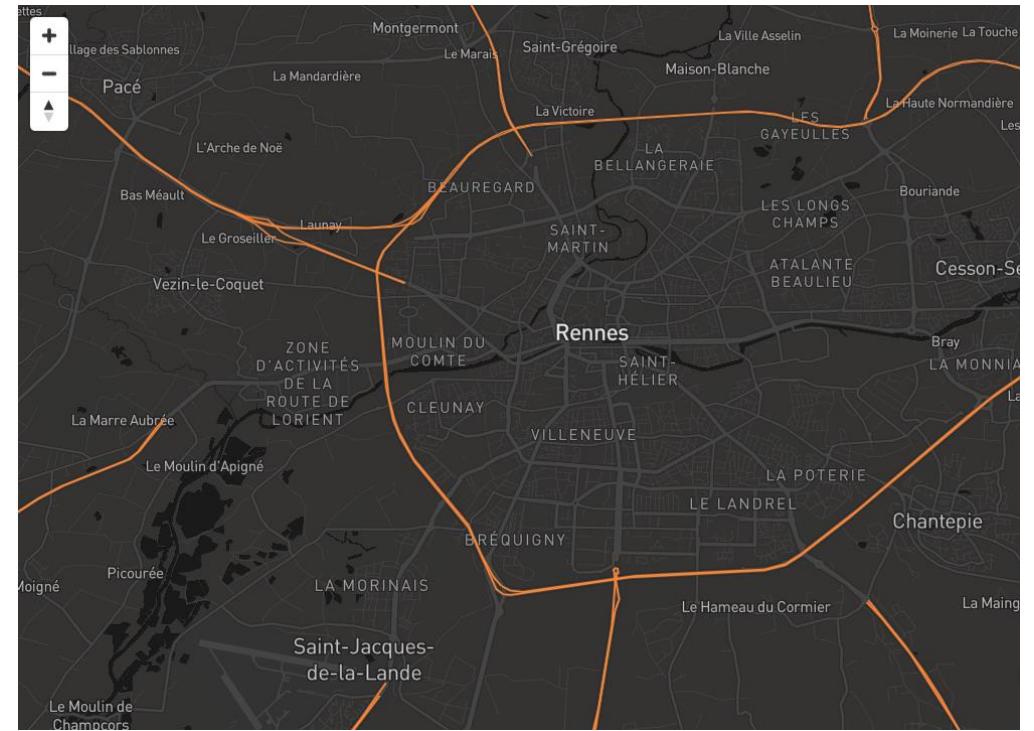
The screenshot shows the Mapbox Streets v7 dataset page. On the left, there's a world map with various place names labeled. On the right, the 'road' layer details are displayed:

- road**: This layer contains mostly LineStrings.
- class**: One of: 'motorway', 'motorway\_link', 'trunk', 'primary', 'secondary', 'tertiary', 'link', 'street', 'street\_limited', 'pedestrian', 'construction', 'track', 'service', 'ferry', 'path', 'golf'
- layer**: Number. Specifies z-ordering in the case of overlapping road segments. Common range is -5 to 5. Available from zoom level 13+.
- oneway**: Text. Whether traffic on the road is one-way. One of: 'true', 'false'
- structure**: Text. One of: 'none', 'bridge', 'tunnel', 'ford'. Available from zoom level 13+.
- type**: In most cases, values will be that of the primary key from OpenStreetMap tags.

# Filtrer des données OSM

- Je ne veux afficher que les routes à double sens

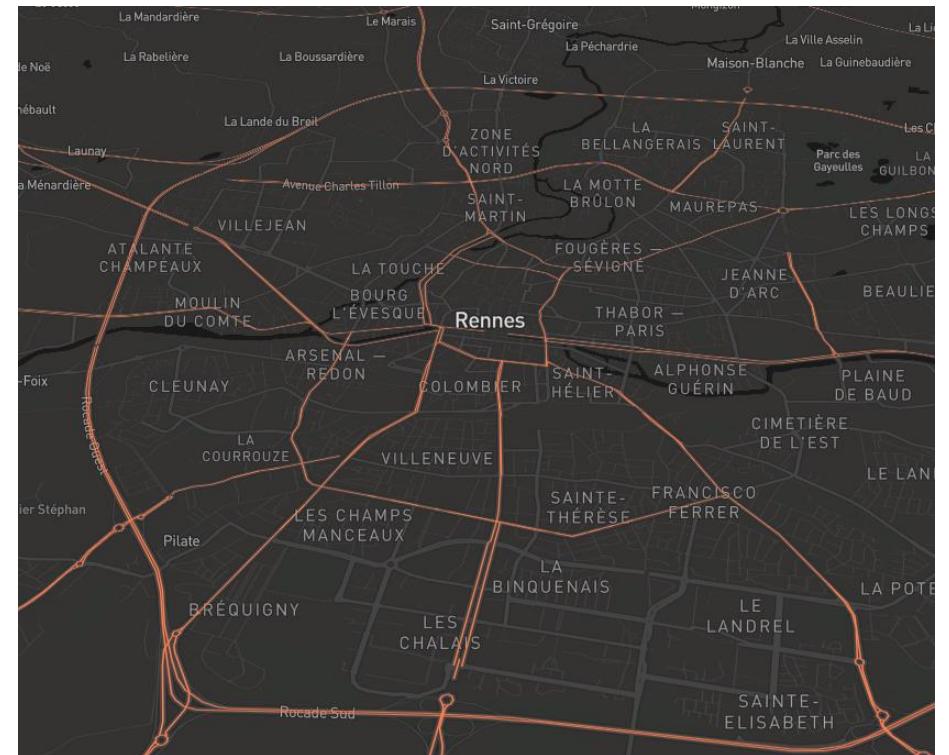
```
map.addLayer({  
  "id": "routes",  
  "type": "line",  
  "source": "mapbox-streets-v7",  
  "source-layer": "road",  
  "filter": [']==', 'class', 'trunk'],  
  "layout": {"visibility": 'visible'},  
  "paint": {"line-color": "#ff8533", "line-width": 1.3}  
});
```



# Filtrer des données OSM

- Je ne veux afficher que les routes principales (double sens, principales,...)

```
map.addLayer({  
  "id": "routes",  
  "type": "line",  
  "source": "mapbox-streets-v7",  
  "source-layer": "road",  
  "filter": ["all", ["in", "class", "motorway", "trunk", "primary"]],  
  "layout": {"visibility": 'visible'},  
  "paint": {"line-color": "#ff8533", "line-width": 1.3}  
});
```



# Exemple

#MapboxGL / Afficher et filtrer des données d'OSM



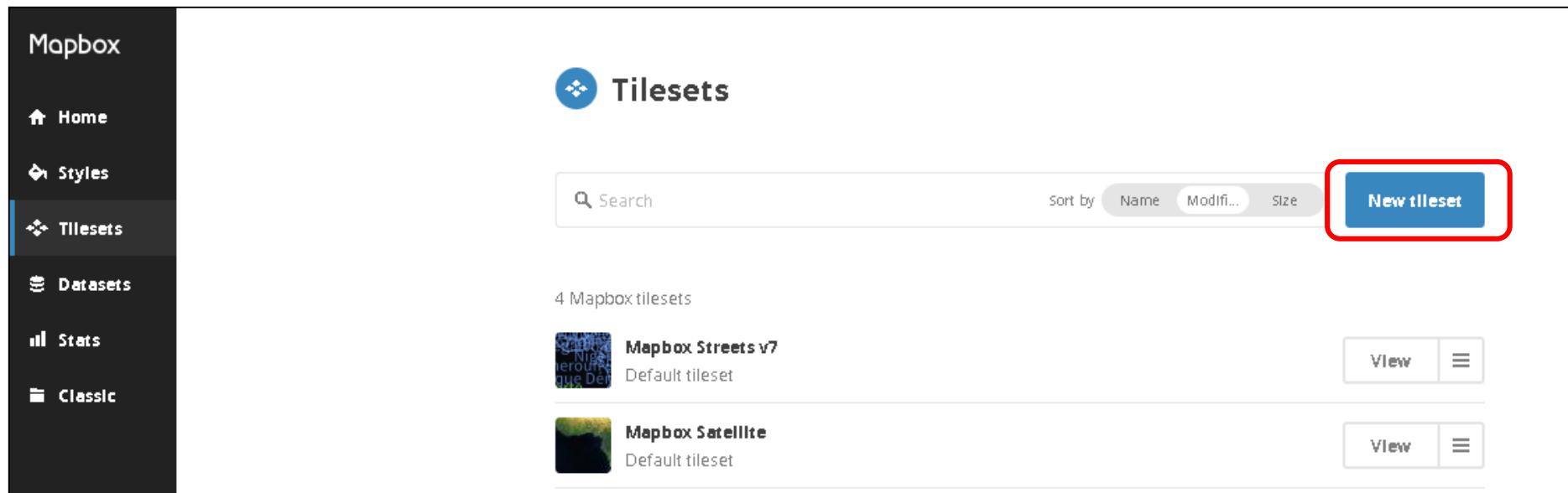
Built with [blockbuilder.org](#)

[Open](#)

<https://bl.ocks.org/mastersigat/deff3908c0f5a4ab86b1167069e03a0d/373ca79f998e08aa42742d03891fcdf732dc3f39>

# Ajout de données personnelles

- Première étape charger des données comme des Tilesets dans le Studio de Mapbox (csv, geojson, gpx, kml, shapefile zippé)
  - Intégrer le jeu de données des arrêts de bus et celui de la base équipements



# Ajout de données personnelles

- Aller chercher les infos dans le studio de Mapbox (Tilesets)

The screenshot shows the Mapbox Tilesets interface. On the left is a dark sidebar with navigation links: Home, Styles, Tilesets (which is selected and highlighted in blue), Datasets, Stats, and Classic. Below these are notifications: 'No updates' and 'Account'. The main area is titled 'Tilesets' and shows a search bar, sorting options (Sort by Name, Modified, Size), and a 'New tileset' button. It displays 3 Mapbox tilesets (Satellite, Streets v7, Terrain V2) and 8 user tilesets. One user tileset, 'IRIS-6apbfw', is highlighted with a red box. Other visible tilesets include 'limites\_proprietes-auaqb7' and 'parcours-des-lignes-de-bus-du-1rjnez'. At the bottom, it shows storage usage: 110 MB of 5.0 GB used, with links to Refresh and Upgrade Plan.

Name	Size	Last Modified	Action
Mapbox Satellite			View
Mapbox Streets v7			View
Mapbox Terrain V2			View
IRIS-6apbfw	345 KB	Modified 20 days ago	View
limites_proprietes-auaqb7	103 MB	Modified 22 days ago	View
parcours-des-lignes-de-bus-du-1rjnez	2 MB	Modified a month ago	View

# Ajout de données personnelles

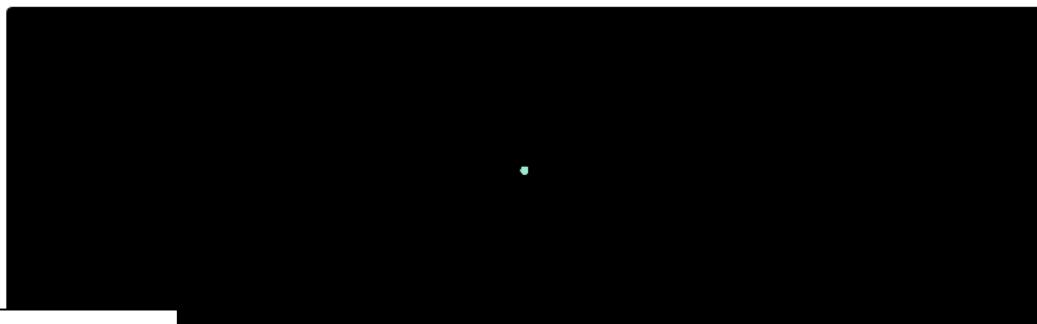
```
map.addSource('Arrets', {  
    type: 'vector',  
    url: 'mapbox://'+ iddutileset});  
  
map.addLayer({  
    'id': 'Arrets',  
    'type': 'circle',  
    'source': 'Arrets',  
    'source-layer': 'nomdelacouche',  
    'layout': {'visibility': 'visible'},  
    'paint': {'circle-radius': {'base': 1.5,'stops': [[13, 2], [22, 60]]}, 'circle-color': '#000000',}, minzoom:10  
});
```

# Ajout de données personnelles

## Bus-5ypx1k

Modified a few seconds ago

**Preview**



**Nom de la couche**

**Layer details**

**Bus-5ypx1k**

code	String
codeinseecommune	String
coordonnees	String
estaccessiblepmr	String
id	String
mobilier	String

8 properties

Add tileset to style  
Replace  
Make private  
Delete

**ID de votre Tileset**

Map ID: ninanoun.58widelk

Details

Format: pbf    Type: vector    Size: 514 KB

Zoom extent: z0 ~ z14  
Data will be visible above zoom 14, but may appear simplified. [Learn how to adjust zoom extent](#)

Bounds: -1.9,47.9,-1.5,48.3

# Ajout des arrêts de bus

```
map.addSource('Arrets', {  
    type: 'vector',  
    url: 'mapbox://ninanoun.58widelk'});
```

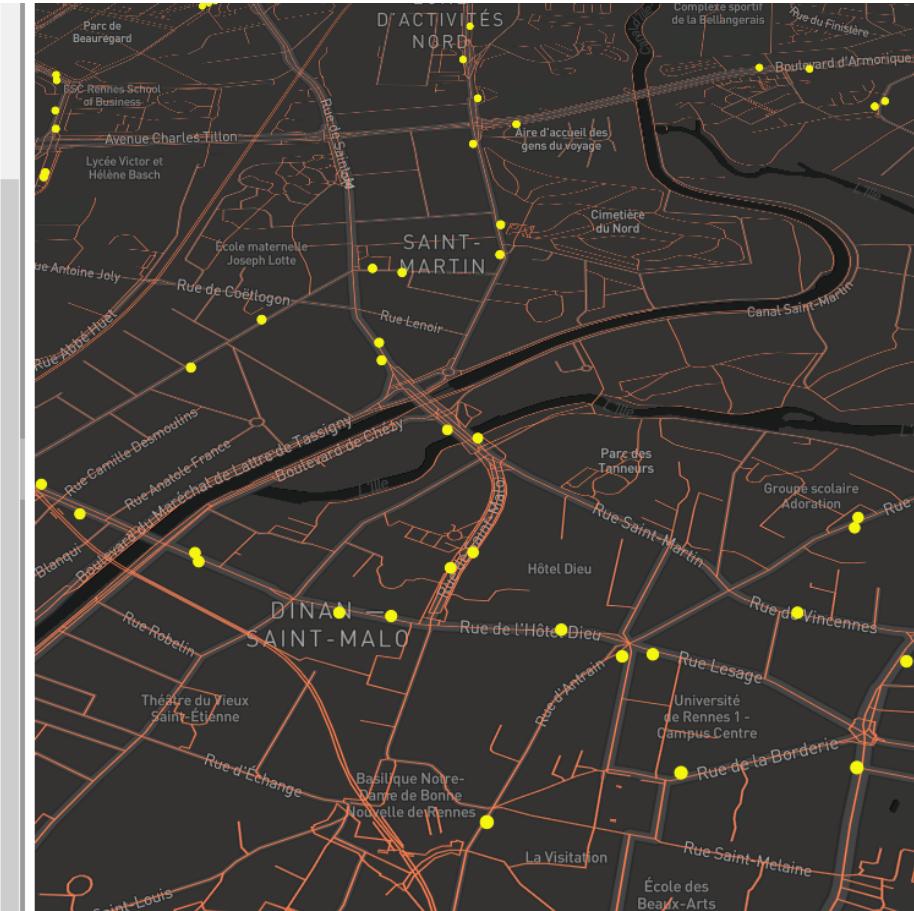
Bien renseigner l'ID de votre Tilesets

```
map.addLayer({  
    'id': 'Arrets',  
    'type': 'circle',  
    'source': 'Arrets',  
    'source-layer': 'Bus-5ypx1k',  
    'layout': {'visibility': 'visible'},  
    'paint': {'circle-radius': {'base': 1.5,'stops': [[13, 2], [22, 60]]}, 'circle-color': '#000000',}, minzoom:12  
});
```

Bien renseigner le nom de votre Tilesets

# Ajout des arrêts de bus

```
19+ <script>
20+   // AccesToken
21  mapboxgl.accessToken = 'pk.eyJ1IjoibmluYW5vdW4iLCJhIjoiY2pjdhBoZG1zMnV4dDJxcGc5azJkbWRiYSJ9.o4dZRrdHcgVEKCveOXG1Y
22
23  // Configuration de la carte
24  var map = new mapboxgl.Map({
25    container: 'map',
26    style: 'mapbox://styles/mapbox/dark-v9',
27    center: [-1.68, 48.12], // lat/long
28    zoom: 15, // zoom
29    pitch: 50, // Inclinaison
30    bearing: -10 // Rotation
31  });
32
33  map.on('load', function () {
34
35  map.addSource('mapbox-streets-v7', {
36    type: 'vector',
37    url: 'mapbox://mapbox.mapbox-streets-v7'});
38
39  map.addLayer({
40    "id": "routes",
41    "type": "line",
42    "source": "mapbox-streets-v7",
43    "layout": {"visibility": 'visible'},
44    "source-layer": "road",
45    "paint": {"line-color": "#FF7F50", "line-width": 1}
46  });
47
48+ map.addSource('Arrets', {
49  type: 'vector',
50  url: 'mapbox://ninanoun.58widelk'});
51
52+ map.addLayer({
53  'id': 'Arrets',
54  'type': 'circle',
55  'source': 'Arrets',
56  'source-layer': 'Bus-Syypx1k',
57  'layout': {'visibility': 'visible'},
58  'paint': {'circle-radius': 5, 'circle-color': '#f5f60d',}
59  });
60
61
62  });
63
64 </script>
```



# Ajout la couche équipements

```
map.addSource('Equipements', {
```

```
    type: 'vector',
```

```
    url: 'mapbox://ninanoun.4xcn5ude'});
```

Bien renseigner l'ID de votre Tilesets

```
map.addLayer({
```

```
    'id': 'Equipements',
```

```
    'type': 'circle',
```

```
    'source': 'Equipements',
```

```
    'source-layer': 'base-orga-var-6k0zky',
```

Bien renseigner le nom de la couche a afficher

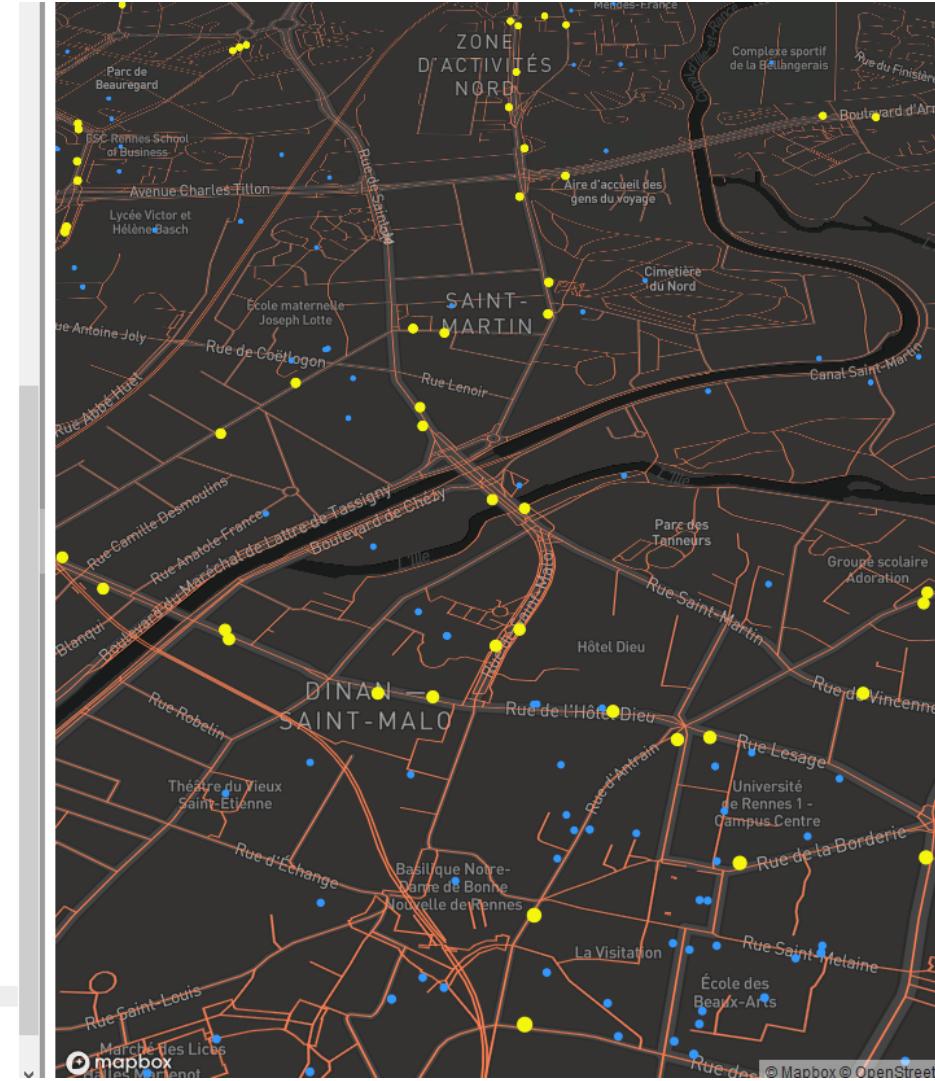
```
    'layout': {'visibility': 'visible'},
```

```
    'paint': {'circle-radius': {'base': 1.5,'stops': [[13, 2], [22, 60]]}, 'circle-color': '#3399ff'}, minzoom:14
```

```
});
```

# Ajout la couche équipements

```
33+ map.on('load', function () {
34
35 // Ajout routes OSM
36
37+ map.addSource('mapbox-streets-v7', {
38   type: 'vector',
39   url: 'mapbox://mapbox.mapbox-streets-v7'});
40
41 map.addLayer({
42   "id": "routes",
43   "type": "line",
44   "source": "mapbox-streets-v7",
45   "layout": {"visibility": "visible"},
46   "source-layer": "road",
47   "paint": {"line-color": "#FF7F50", "line-width": 1}
48 });
49
50 // Ajout arrêts de bus
51
52+ map.addSource('Arrets', {
53   type: 'vector',
54   url: 'mapbox://ninanoun.58wide1k'});
55
56+ map.addLayer({
57   "id": 'Arrets',
58   "type": 'circle',
59   "source": 'Arrets',
60   "source-layer": 'Bus-5pxl1k',
61   "layout": {"visibility": "visible"},
62   "paint": {"circle-radius": 5, "circle-color": '#f5f60d'}
63 });
64
65 // Ajout couche équipements
66
67+ map.addSource('Equipements', {
68   type: 'vector',
69   url: 'mapbox://ninanoun.4xcn5ude'});
70
71+ map.addLayer({
72   "id": 'Equipements',
73   "type": 'circle',
74   "source": 'Equipements',
75   "source-layer": 'base-orga-var-6k0zky',
76   "layout": {"visibility": "visible"},
77   "paint": {"circle-radius": 3, "circle-color": '#3399ff'}
78 });
79
80 });
81
82 </script>
83
84 
```



# Mettre en forme les données

- Pour personnaliser la symbologie des données se référer à la documentation

<https://www.mapbox.com/mapbox-gl-js/style-spec/#layers>

Type d'objets géographiques dans MapboxGL :

- circle (point)
- symbol (point avec pictogramme)
- line (ligne)
- fill (polygone)
- fill-extrusion (polygone 3D)
- ...

# Mettre en forme les données

- Changer la taille
- Changer la couleur
  - <http://www.code-couleur.com/>
- Définir des niveaux de zoom (max/min)

```
'paint': {'circle-radius': {'base': 1.5,'stops': [[13, 2], [22, 60]]}, 'circle-color': '#3399ff'}, minzoom:14
```

# Ajouter les limites de propriétés



**limites\_proprietes-auaqb7**

Modified on Dec 16, 2016

Add to style

1 vector layer Stats

**limites\_proprietes**

2 properties | This layer contains mostly LineStrings

Description String

Name String

Replace

Make private

Delete

Map ID

ninanoun.a4kdgiot

Format pbf Type vector Size 103 MB

Zoom extent z14 ~ z20

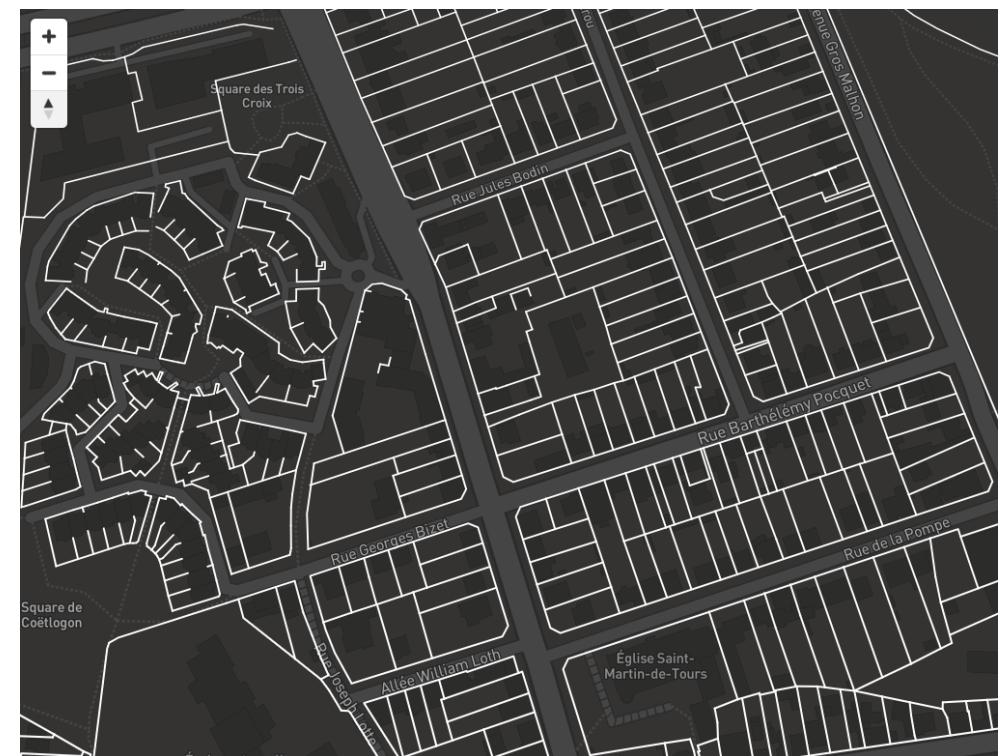
Data will not be visible below zoom 14. Data

# Ajouter les limites de propriétés

```
//Proprietes

map.addSource('Proprietes', {
  type: 'vector',
  url: 'mapbox://ninanoun.a4kdgiot'
});

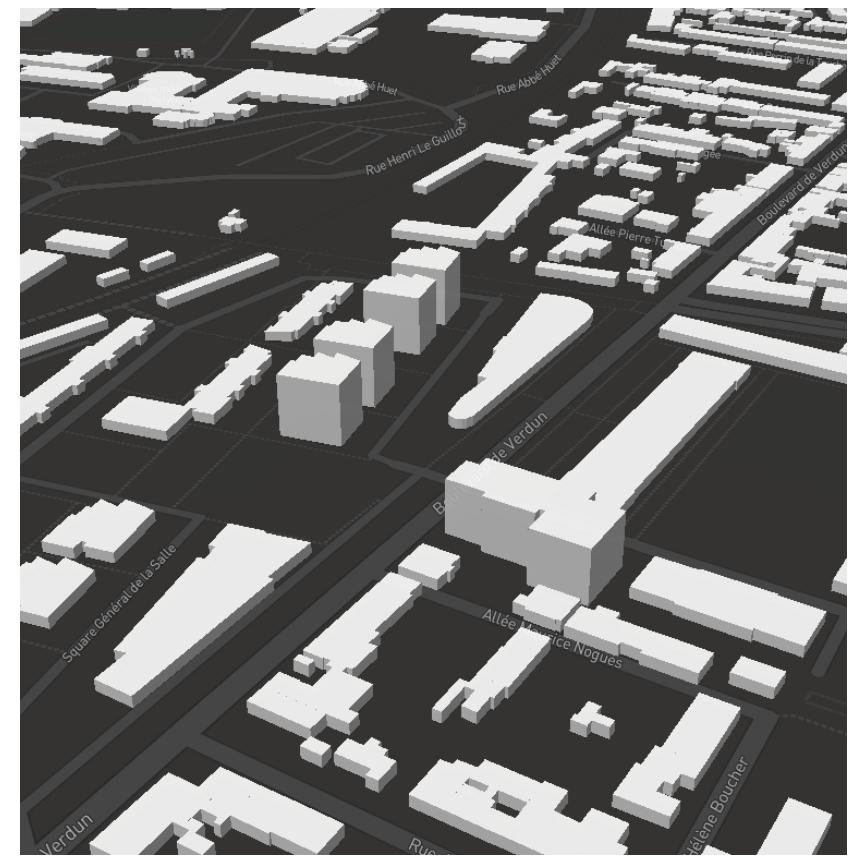
map.addLayer({
  'id': 'Proprietes',
  'type': 'line',
  'source': 'Proprietes',
  'source-layer': 'limites_proprietes',
  'layout': {'visibility': 'visible'},
  'line-join': 'round','line-cap': 'round'},
  'paint': {'line-color': '#FFFFFF', 'line-width': 1.5}
});
```



# Ajouts de données 3D

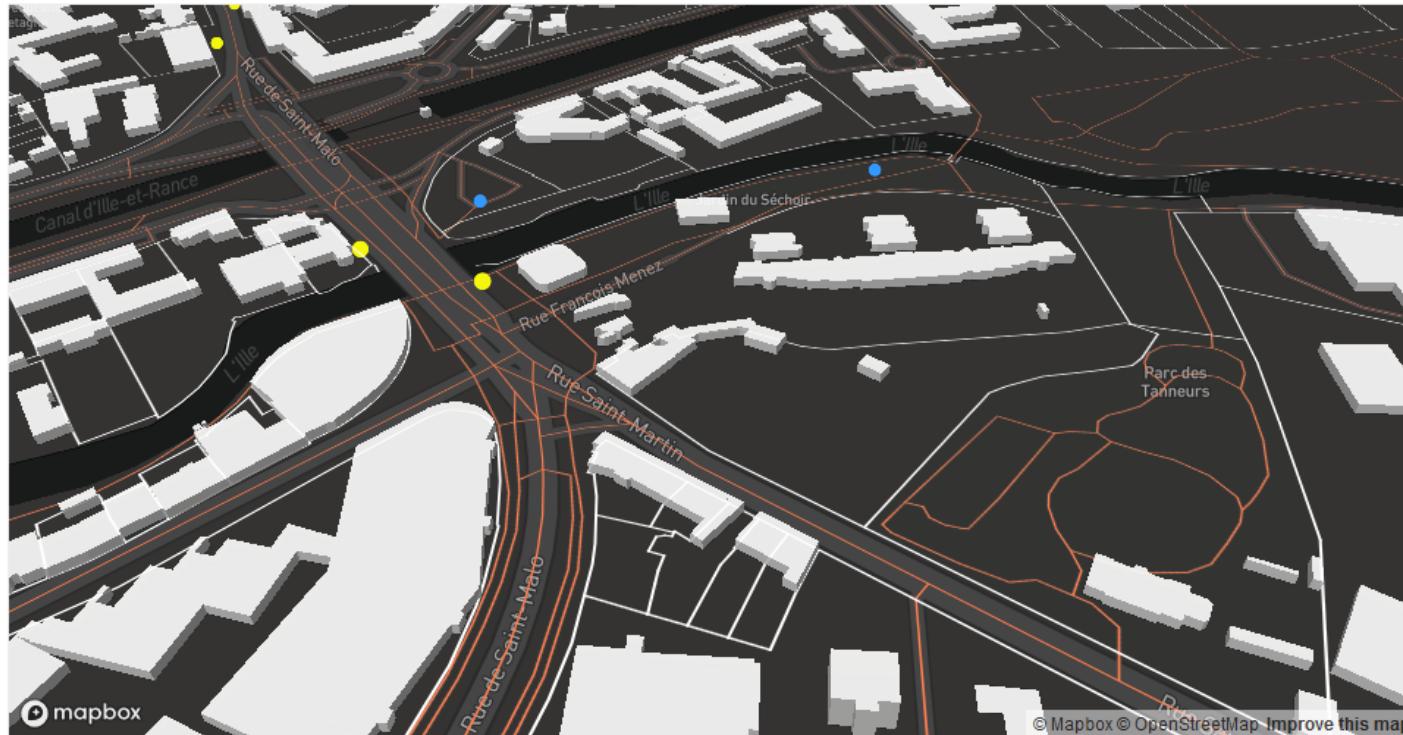
```
// Ajout batiments 3D
```

```
map.addLayer({
  'id': 'Batiments_3D',
  'source': 'composite',
  'source-layer': 'building',
  'filter': ['==', 'extrude', 'true'],
  'type': 'fill-extrusion',
  'minzoom': 15,
  'paint': {'fill-extrusion-color': '#555555', 'fill-extrusion-height':
  {'type': 'identity','property': 'height'},
  'fill-extrusion-base': {'type': 'identity','property': 'min_height'},
  'fill-extrusion-opacity': 0.8
})
});
```



# Exemple

#MapboxGL / Ajout de données personnelles



Built with [blockbuilder.org](#)

[Open](#)

<https://bl.ocks.org/anonymous/f2c04bc06e759c2da1c3c9767fe572fa/923cca7180834e94060c4032d0e412e5ee92ae47>

# Ajouter des données en local

- Il est possible de mobiliser des jeux de données (Geojson) stockés en local (même dossier que la page html) ou accessible via une URL

```
map.on("load", function() {  
    //Couche EPCI  
    map.addLayer({  
        id: "epci",  
        type: "line",  
        source: {type: "geojson",  
            data: "./epci.geojson" },  
        paint: {'line-color': '#000000',  
            'line-width':1}  
    });  
});
```

```
map.on("load", function() {  
    //Couche EPCI  
    map.addLayer({  
        id: "epci",  
        type: "line",  
        source: {type: "geojson",  
            data: 'URL'  
        paint: {'line-color': '#000000',  
            'line-width':1}  
    });  
});
```

# Interactivité avec les données

Hover et Click

# Interactivité avec les données / Hover

- Hover de d'une couche (survol) = couche arrêts
  - Cette commande doit être placée à la fin du script

```
//Interactivité HOVER

var popup = new mapboxgl.Popup({
  closeButton: false,
  closeOnClick: false });

map.on('mousemove', function(e) {
  var features = map.queryRenderedFeatures(e.point, { layers: ['Equipements'] });
  // Change the cursor style as a UI indicator.
  map.getCanvas().style.cursor = (features.length) ? 'pointer' : '';

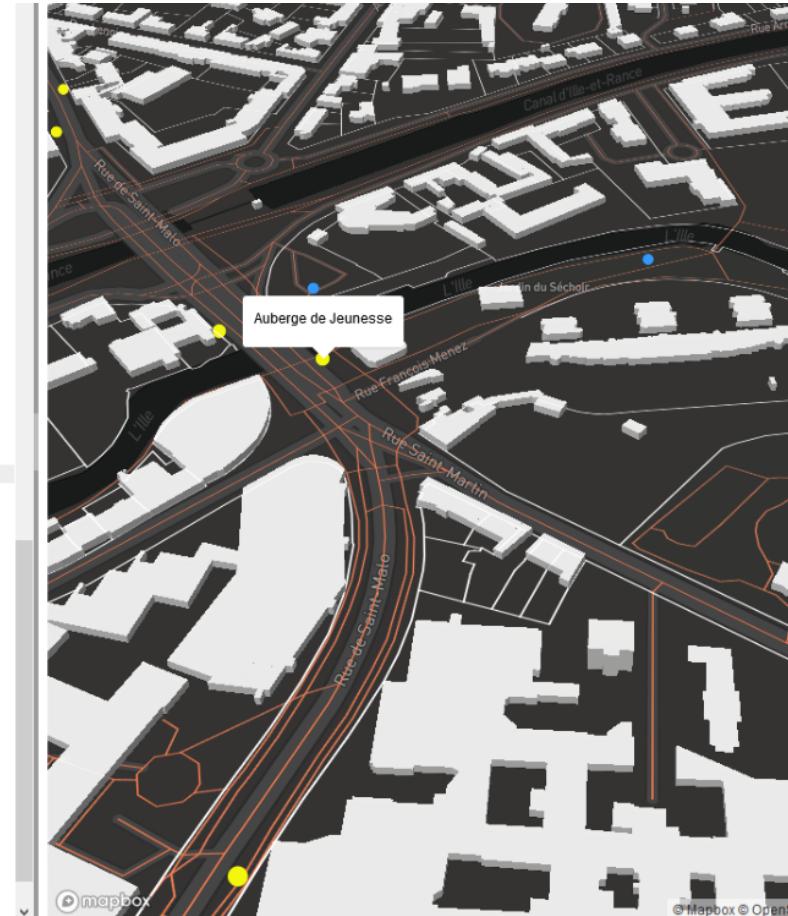
  if (!features.length) {
    popup.remove();
    return;
  }

  var feature = features[0];
  popup.setLngLat(feature.geometry.coordinates)
    .setHTML(feature.properties.organom)
    .addTo(map);

});
```

# Interactivité avec les données / Hover

```
90      "type": "line",
91      "source": "Proprietes",
92      "source-layer": "limites_proprietes",
93      "layout": {"visibility": "visible",
94      "line-join": "round", "line-cap": "round"},
95      "paint": {"line-color": "#FFFFFF", "line-width": 1.5}
96    });
97
98    // Ajout batiments 3D
99
100   map.addLayer({
101     "id": "Batimenten_3D",
102     "source": "composite",
103     "source-layer": "building",
104     "filter": ["==", "extrude", "true"],
105     "type": "fill-extrusion",
106     "minzoom": 15,
107     "paint": {"fill-extrusion-color": "#FFFFFF", "fill-extrusion-height": {
108       "type": "identity", "property": "height"},
109     "fill-extrusion-base": {"type": "identity", "property": "min_height"},
110     "fill-extrusion-opacity": 0.9
111   }
112 });
113
114 });
115
116 //Interactivité HOVER
117
118 var popup = new mapboxgl.Popup({
119   closeButton: false,
120   closeOnClick: false
121 });
122
123 map.on('mousemove', function(e) {
124   var features = map.queryRenderedFeatures(e.point, { layers: ['Arrets'] });
125   // Change the cursor style as a UI indicator.
126   map.getCanvas().style.cursor = (features.length) ? 'pointer' : '';
127
128   if (!features.length) {
129     popup.remove();
130     return;
131   }
132
133   var feature = features[0];
134   popup.setLngLat(feature.geometry.coordinates)
135   .setHTML(feature.properties.nom)
136   .addTo(map);
137
138 });
139 </script>
```



# Interactivité avec les données / Hover

- Hover de deux couches (survol)

```
//Interactivité HOVER

var popup = new mapboxgl.Popup({
  closeButton: false,
  closeOnClick: false });

map.on('mousemove', function(e) {
  var features = map.queryRenderedFeatures(e.point, { layers: ['Arrets'] ['Equipements'] });
  // Change the cursor style as a UI indicator.
  map.getCanvas().style.cursor = (features.length) ? 'pointer' : '';

  if (!features.length) {
    popup.remove();
    return;
  }

  var feature = features[0];

  popup.setLngLat(feature.geometry.coordinates)
    .setHTML(feature.properties.nom)
    .addTo(map);

  var feature = features[1];

  popup.setLngLat(feature.geometry.coordinates)
    .setHTML(feature.properties.organom)
    .addTo(map);
});
```

# Interactivité avec les données / Hover

```
115
116 //Interactivité HOVER
117
118 var popup = new mapboxgl.Popup({
119   closeButton: false,
120   closeOnClick: false });
121
122 map.on('mousemove', function(e) {
123   var features = map.queryRenderedFeatures(e.point, { layers: ['Arrets'] ['Equipements'] });
124   // Change the cursor style as a UI indicator.
125   map.getCanvas().style.cursor = (features.length) ? 'pointer' : '';
126
127 if (!features.length) {
128   popup.remove();
129   return;
130 }
131
132 var feature = features[0];
133
134 popup.setLngLat(feature.geometry.coordinates)
135 .setHTML(feature.properties.nom)
136 .addTo(map);
137
138 var feature = features[1];
139
140 popup.setLngLat(feature.geometry.coordinates)
141 .setHTML(feature.properties.organom)
142 .addTo(map);
143 });
144
145
146 </script>
147
```

# Interactivité avec les données / Click

- Click d'une couche (popup) = couche arrets

```
//Interactivité CLICK

map.on('click', function (e) {
    var features = map.queryRenderedFeatures(e.point, { layers: ['Arrets'] });

    if (!features.length) {
        return;
    }

    var feature = features[0];
    var popup = new mapboxgl.Popup({ offset: [0, -15] })
        .setLngLat(feature.geometry.coordinates)
        .setHTML('<h2>' + feature.properties.nom + '</h2><h3>' +
            +"Mobilier : " + feature.properties.mobilier + '</h3><p>' +
            +"Accessibilité PMR : " + feature.properties.estaccessiblepmr + '</p>' )
        .addTo(map);
});

map.on('mousemove', function (e) {
    var features = map.queryRenderedFeatures(e.point, { layers: ['Arrets'] });
    map.getCanvas().style.cursor = (features.length) ? 'pointer' : '';
});
```

# Interactivité avec les données / Click

```
96  });
97  // Ajout batiments 3D
98
99
100 - map.addLayer({
101   'id': 'Batimenst_3D',
102   'source': 'composite',
103   'source-layer': 'building',
104   'filter': ['==', 'extrude', 'true'],
105   'type': 'fill-extrusion',
106   'minzoom': 15,
107   'paint': {'fill-extrusion-color': '#FFFFFF', 'fill-extrusion-height':
108     {'type': 'identity','property': 'height'},
109     'fill-extrusion-base': {'type': 'identity','property': 'min_height'},
110     'fill-extrusion-opacity': 0.9
111   }
112 });
113
114 });
115
116 //Interactivité CLICK
117
118 - map.on('click', function (e) {
119   var features = map.queryRenderedFeatures(e.point, { layers: ['Arrets'] });
120
121 -   if (!features.length) {
122     return;
123   }
124
125   var feature = features[0];
126   var popup = new mapboxgl.Popup({ offset: [0, -15] })
127     .setLngLat(feature.geometry.coordinates)
128     .setHTML('<h2>' + feature.properties.nom + '</h2><h3>' +
129     +"Mobilier : " + feature.properties.mobilier + '</h3><p>' +
130     +"Accessibilité PMR : " + feature.properties.estaccessiblepmr + '</p>' )
131     .addTo(map);
132 });
133
134 map.on('mousemove', function (e) {
135   var features = map.queryRenderedFeatures(e.point, { layers: ['Arrets'] });
136   map.getCanvas().style.cursor = (features.length) ? 'pointer' : '';
137 });
138
139
140 </script>
141
142 </body>
143 </html>
***
```



# Exemple

#MapboxGL / Interactivité avec les données  
(hover/click)



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<https://bl.ocks.org/anonymous/32ab9ab043074bd5cb38fb153237ef2e/7c1739a41825727cd73aaed9a94af9f91a7f4e99>

# Menu de gestion des couches

# Ajouter un menu pour gérer les couches

- Première étape: définir le style (CSS) de votre menu

```
#menu {  
    width: 20%; margin-right: auto; margin-left: auto;  
    Z-index: 1; top: 10px; right: 10px; position: absolute;  
    border-color: #FFFFFF; background-color: #808080 ;  
    font-size: 12px; font-family: 'Helvetica Neue', Arial, Helvetica, sans-serif; }  
  
#menu a {  
    display: block; color: #FFFFFF; padding: 8px 16px;  
    text-align: center; font-weight: bold;  
    border-style: solid; border-color: #000000;}  
  
#menu a.active { background-color: #CC6600;  
    color: #FFFFFF;}  
  
#menu a:hover:not(.active) {  
    background-color: #CC6600;  
    color: #FFFFFF;}
```

```
1  <!DOCTYPE html>  
2  <html>  
3  <head>  
4      <meta charset='utf-8' />  
5      <title>MapboxGL</title>  
6  
7      <script src='https://api.tiles.mapbox.com/mapbox-gl-js/v0.44.0/mapbox-gl.js'></script>  
8      <link href='https://api.tiles.mapbox.com/mapbox-gl-js/v0.44.0/mapbox-gl.css' rel='stylesheet' />  
9  
10 <style>  
11     #map { position:absolute; top:0; bottom:0; width:100%; }  
12     #menu {  
13         width: 20%; margin-right: auto; margin-left: auto;  
14         Z-index: 1; top: 10px; right: 10px; position: absolute;  
15         border-color: #FFFFFF; background-color: #808080 ;  
16         font-size: 12px; font-family: 'Helvetica Neue', Arial, Helvetica, sans-serif; }  
17  
18     #menu a {  
19         display: block; color: #FFFFFF; padding: 8px 16px;  
20         text-align: center; font-weight: bold;  
21         border-style: solid; border-color: #000000;}  
22  
23     #menu a.active { background-color: #CC6600;  
24         color: #FFFFFF;}  
25  
26     #menu a:hover:not(.active) {  
27         background-color: #CC6600;  
28         color: #FFFFFF;}  
29  
30 </style>  
31  
32 </head>  
33  
34 <body>  
35     <div id='map'></div>  
36  
37 <script>  
38     // AccessToken
```

# Ajouter un menu pour gérer les couches

- Deuxième étape: créer un Div pour votre menu et placer la dans la Div de la carte

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

```
81      <button id='Rennes2'>Université Rennes 2</button>
82  </div>
83
84  <div id="map"><div id="menu"></div></div>
85
86  <script>
87
88 // Appel de la carte
```

# Ajouter un menu pour gérer les couches

- Dernière étape : Ajouter à la fin du script la commande pour configurer votre menu

```
var toggleableLayerIds = ['Routes', 'Arrets', 'Equipements', 'Proprietes', 'Batiments_3D'];

for (var i = 0; i < toggleableLayerIds.length; i++) {var id = toggleableLayerIds[i];

    var link = document.createElement('a');
    link.href = '#';
    link.className = 'inactive';
    link.textContent = id;

    link.onclick = function (e) {var clickedLayer = this.textContent;
        e.preventDefault();
        e.stopPropagation();
        var visibility = map.getLayoutProperty(clickedLayer, 'visibility');
        if (visibility === 'visible') {
            map.setLayoutProperty(clickedLayer, 'visibility', 'none');
            this.className = "";} else {this.className = 'active';
            map.setLayoutProperty(clickedLayer, 'visibility', 'visible');};

    var layers = document.getElementById('menu'); layers.appendChild(link); }
```

# Ajouter un menu pour gérer les couches

```
160
161
162 //Interactivité CLICK
163
164 map.on('click', function (e) {
165   var features = map.queryRenderedFeatures(e.point, { layers: ['Arrets'] });
166
167   if (!features.length) {
168     return;
169   }
170
171   var feature = features[0];
172   var popup = new mapboxgl.Popup({ offset: [0, -15] })
173     .setLngLat(feature.geometry.coordinates)
174     .setHTML('<h2>' + feature.properties.nom + '</h2><h3>' +
175     +"Mobilier : " + feature.properties.mobilier + '</h3><p>' +
176     +"Accessibilité PMR : " + feature.properties.estaccessiblepmr + '</p> ')
177     .addTo(map);
178 });
179
180 map.on('mousemove', function (e) {
181   var features = map.queryRenderedFeatures(e.point, { layers: ['Arrets'] });
182   map.getCanvas().style.cursor = (features.length) ? 'pointer' : '';
183 });
184
185
186 var toggleableLayerIds = ['Routes', 'Arrets', 'Equipements', 'Proprietes', 'Batimenst_3D'];
187
188 for (var i = 0; i < toggleableLayerIds.length; i++) {var id = toggleableLayerIds[i];
189
190   var link = document.createElement('a');
191   link.href = '#';
192   link.className = 'inactive';
193   link.textContent = id;
194
195   link.onclick = function (e) {var clickedLayer = this.textContent;
196   e.preventDefault();
197   e.stopPropagation();
198   var visibility = map.getLayoutProperty(clickedLayer, 'visibility');
199   if (visibility === 'visible') {
200     map.setLayoutProperty(clickedLayer, 'visibility', 'none');
201     this.className = '';} else {this.className = 'active';
202     map.setLayoutProperty(clickedLayer, 'visibility', 'visible');} };
203
204   var layers = document.getElementById('menu'); layers.appendChild(link);
205
206
207 </script>
```



# Ajouter un menu pour gérer les couches

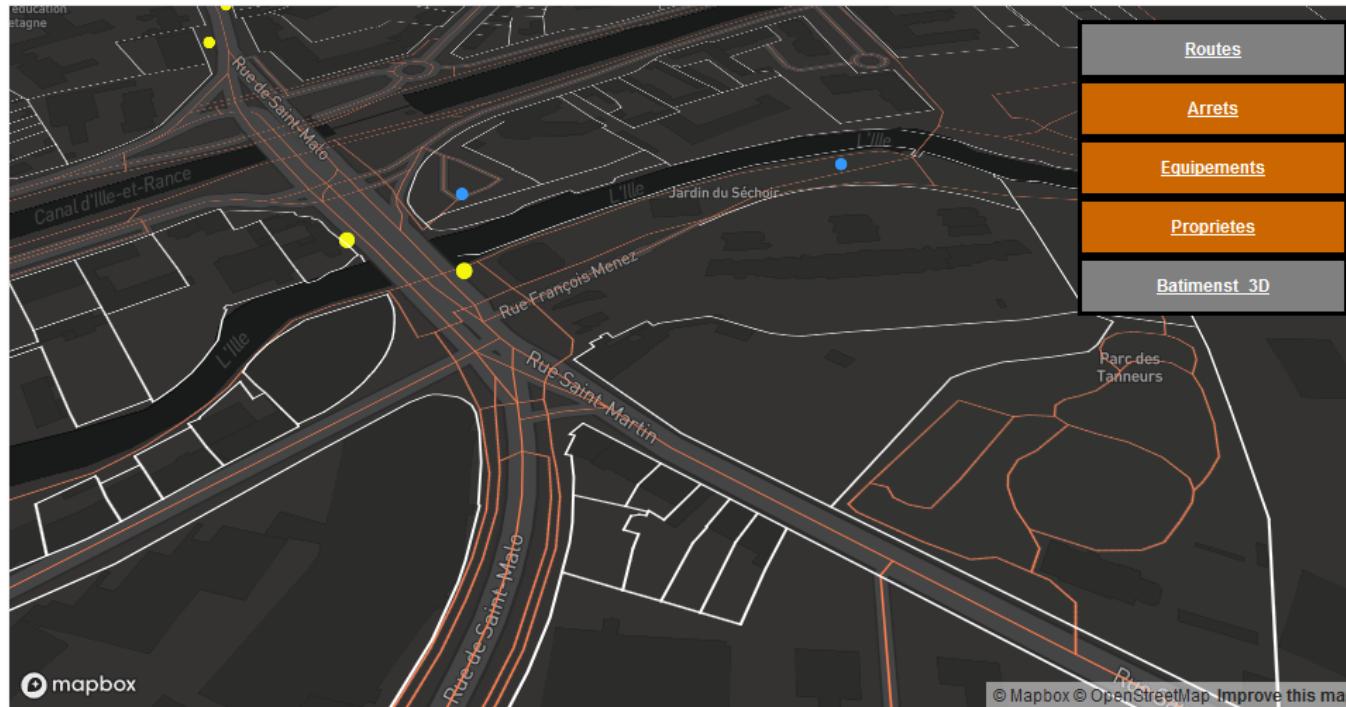
- Pour personnaliser si les couches sont active ou pas il suffit de le préciser dans la commande de visibilité *layout*
  - *visible* = couche active
  - *none* = couche non visible

```
map.addLayer({'id': 'Arrets',
              'type': 'circle',
              'source': 'Arrets',
              'source-layer': 'Bus-5ypx1k',
              'layout': {'visibility': 'visible'},
              'paint': {'circle-radius': 7, 'circl
```

```
map.addLayer({'id': 'Arrets',
              'type': 'circle',
              'source': 'Arrets',
              'source-layer': 'Bus-5ypx1k',
              'layout': {'visibility': 'none'},
              'paint': {'circle-radius': 7, 'circle-color': '#f5f60d'}  });
```

# Ajouter un menu pour gérer les couches

#MapboxGL / Gestion des couches avec menu



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[Open](#)

<http://blockbuilder.org/anonymous/2a2aa65314bd60f6808dd7dc9b3b6241>

# Ajout d'outils

```
// Ajout boutons navigation a la fin du script
```

```
var nav = new mapboxgl.NavigationControl();
map.addControl(nav, 'top-left');
```

```
// Ajout Echelle cartographique a la fin du script
```

```
map.addControl(new mapboxgl.ScaleControl({
  maxWidth: 120,
  unit: 'metric'}));
```

```
137   return;
138 }
139
140 var feature = features[0];
141 var popup = new mapboxgl.Popup()
142   .setLngLat(feature.geometry.coordinates)
143   .setHTML(feature.properties.nom)
144   .addTo(map);
145 });
146
147 map.on('mousemove', function (e) {
148   var features = map.queryRenderedFeatures(e.point, { layers: ['Arrets'] });
149   map.getCanvas().style.cursor = (features.length) ? 'pointer' : '';
150 });
151
152 // Ajout boutons navigation a la fin du script
153
154 var nav = new mapboxgl.NavigationControl();
155 map.addControl(nav, 'top-left');
156
157 // Ajout Echelle cartographique a la fin du script
158
159 map.addControl(new mapboxgl.ScaleControl({
160   maxWidth: 120,
161   unit: 'metric'}));
162 |
163
164 </script>
165
166 </body>
167
168 </html>
```



# Les onglets géographiques

# Onglets géographiques

- L'idée est de proposer des boutons pour aller directement à un endroit sur la carte
  - Première étape rajouter une boutons dans la div *map*

```
<div>
    <button id='Gare'>Quartier Gare-Centre</button>
    <button id='Rennes1'>Université Rennes 1</button>
    <button id='Rennes2'>Université Rennes 2</button>
</div>
```

```
1
2  </head>
3  ...
4  <body>
5
6
7  <div id='map'>
8  <div>
9      <button id='Gare'>Quartier Gare-Centre</button>
0      <button id='Rennes1'>Université Rennes 1</button>
1      <button id='Rennes2'>Université Rennes 2</button>
2  </div>
3  <div id="menu"></div>
4  </div>
5
6  <script>
7      // AccesToken
8  mapboxgl.accessToken = 'pk.eyJ1IjoibmluYW5vdW4iLCJhIjoiY2p
9
0  |
```

# Onglets géographiques

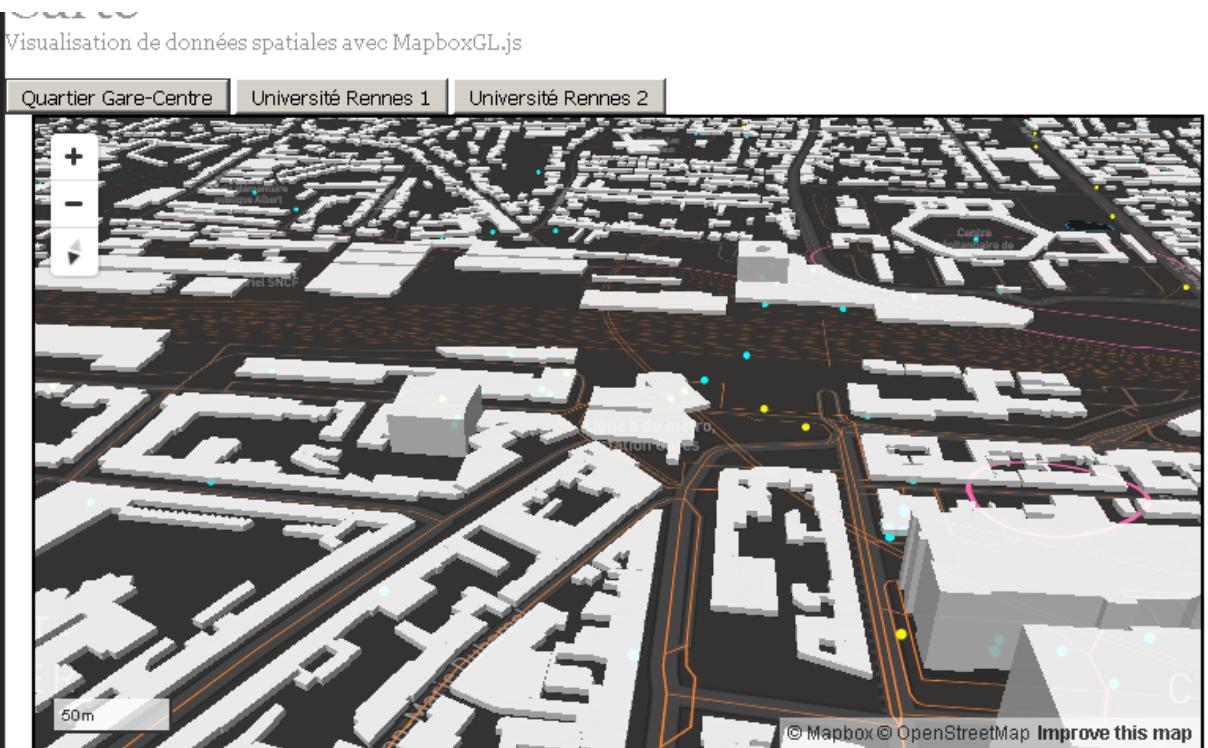
- Seconde étape, rajouter dans le script (à la fin) la configuration des onglets géographiques

```
// Configuration onglets géographiques

document.getElementById('Gare').addEventListener('click', function ()
{ map.flyTo({zoom: 16,
            center: [-1.672, 48.1043],
            pitch: 145,
            bearing: -197.6 });
});
```

# Onglets géographiques

```
172     .setLngLat(feature.geometry.coordinates)
173     .setHTML(feature.properties.nom)
174     .addTo(map);
175 });
176
177 map.on('mousemove', function (e) {
178     var features = map.queryRenderedFeatures(e.point, { layers: ['Arrets'] });
179     map.getCanvas().style.cursor = (features.length) ? 'pointer' : '';
180 });
181
182 var nav = new mapboxgl.NavigationControl();
183 map.addControl(nav, 'top-left');
184 map.addControl(new mapboxgl.ScaleControl({
185     maxWidth: 120,
186     unit: 'metric'}));
187
188
189 // Configuration onglets géographiques
190
191 document.getElementById('Gare').addEventListener('click', function ()
192 { map.flyTo({zoom: 16,
193             center: [-1.672, 48.1043],
194             pitch: 145,
195             bearing: -197.6 });
196 });
197
198 </script>
199
```



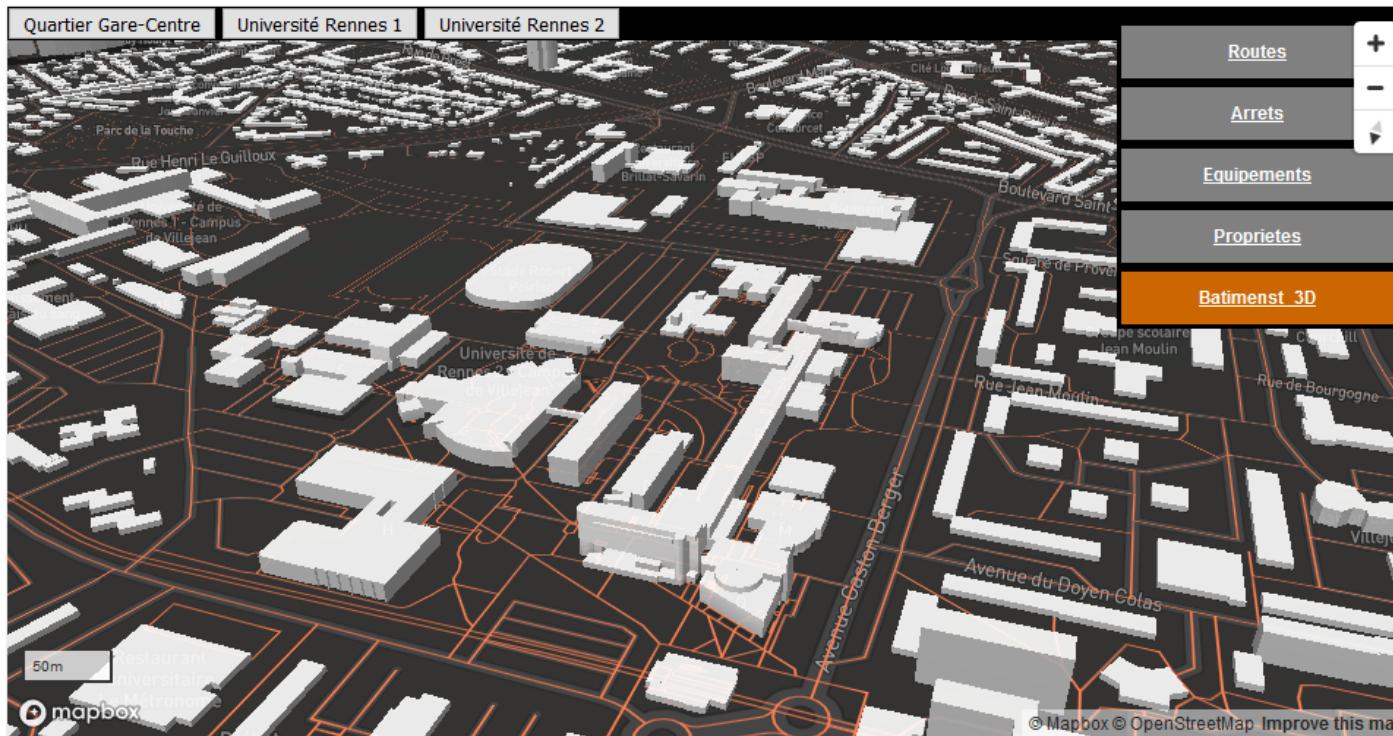
# Onglets géographiques

- Configurer les deux autres onglets géographique (Rennes 2 et Rennes1)

```
9 // Configuration onglets géographiques
10
11 document.getElementById('Gare').addEventListener('click', function () {
12     map.flyTo({zoom: 16,
13     center: [-1.672, 48.1043],
14     pitch: 145,
15     bearing: -197.6
16 });
17 });
18
19 document.getElementById('Rennes1').addEventListener('click', function () {
20     map.flyTo({zoom: 16,
21     center: [-1.6396, 48.1186],
22     pitch: 145,
23     bearing: 197.6
24 });
25 });
26
27 document.getElementById('Rennes2').addEventListener('click', function () {
28     map.flyTo({zoom: 16,
29     center: [-1.7023, 48.1194],
30     pitch: 45,
31     bearing: 50
32 });
33 });
34
35
36 </script>
```

# Exemple

## #MapboxGL / Onglets géographiques



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[Open](#) ↗

<https://blocks.org/anonymous/ced9aaa2574f2709ec7f0e25dbf5e84b/96d8ff9ffa7ee1f7f849ed0c999897dfddd61982>

# Mise en forme poussée des données spatiales

Pictogrammes, catégorisation, graduation, cercles gradués, extrusion 3D, combinaison de deux variables

# Utiliser des pictogrammes

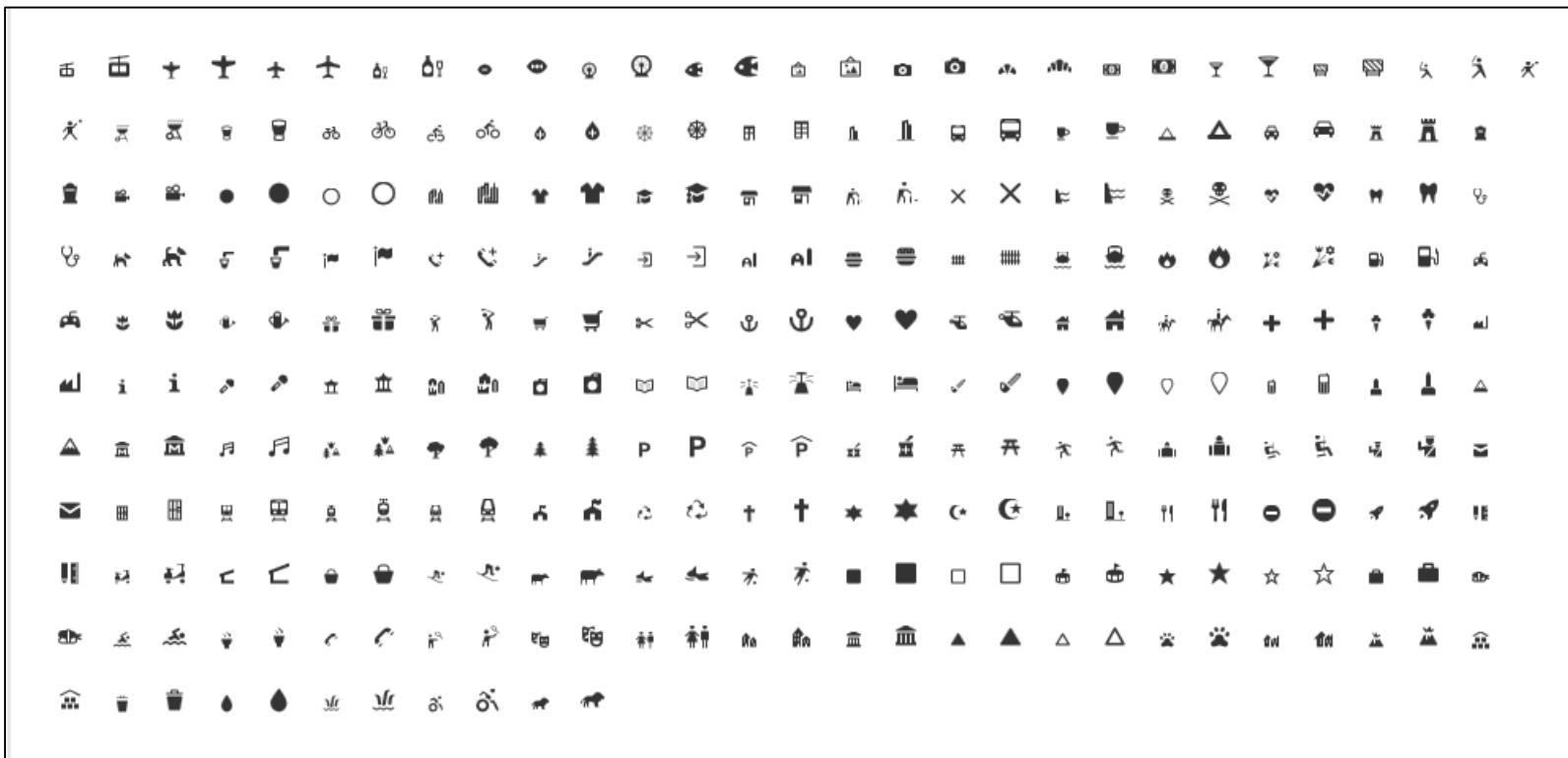
- Utiliser la symbologie des symboles (pictos)

```
map.addSource('Arrets', {  
    type: 'vector',  
    url: 'mapbox://ninanoun.7mtp5buo'});  
  
map.addLayer({  
    "id": "Arrets",  
    "type": "symbol",  
    "source": "Arrets",  
    "source-layer": "topologie-des-points-darret-d-9ya955",  
    "layout": { "icon-image": "bus-15",  
               "icon-size": 1.5}  
});
```

# Mise en forme de données personnelles

- Mobiliser la bibliothèque vectorielle Maki

<https://www.mapbox.com/maki-icons/>



# Graduation couleur

- Configurer les options de mise en forme
  - Il faut spécifier la **variable mobilisée**, les valeurs des **bornes** et les **couleurs**

## Cercles

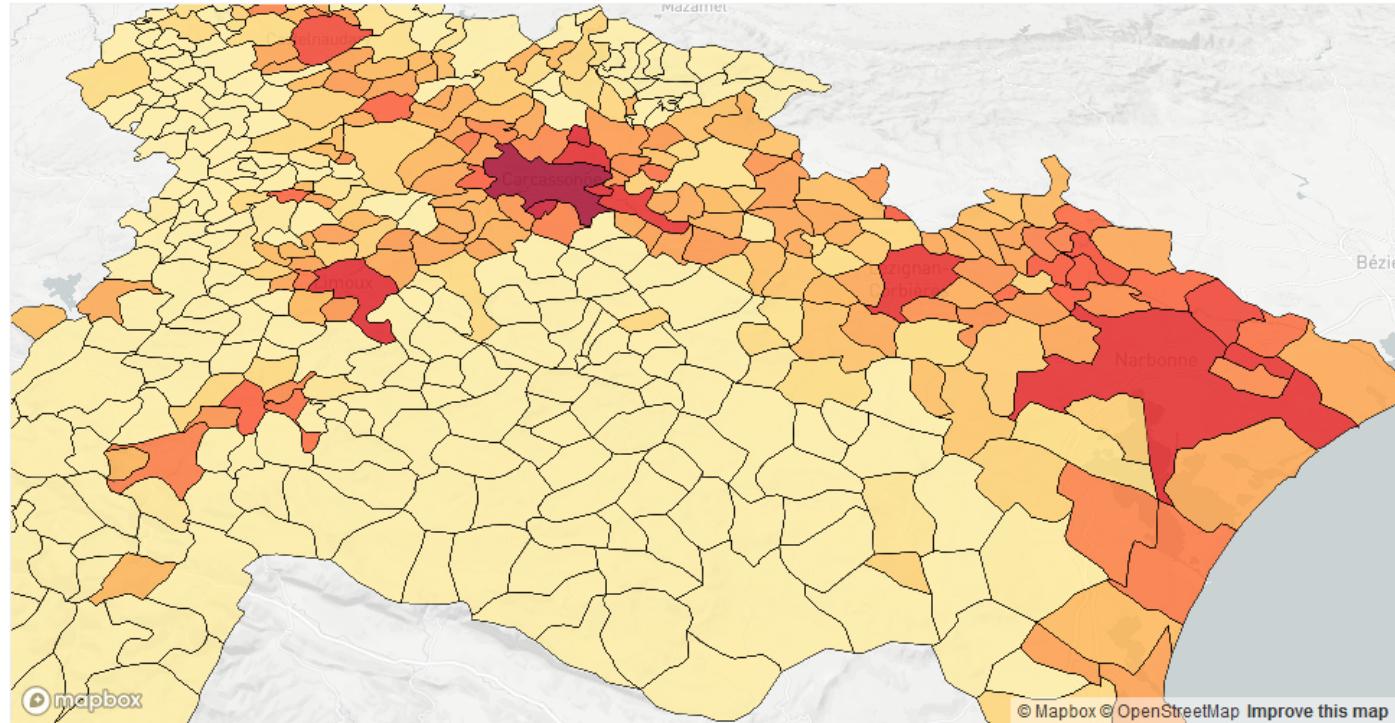
```
'paint': {'circle-radius': {'base': 1.5,'stops': [[13, 2], [22, 60]]},  
          'circle-color': {'property': 'hauteur',  
                          type: 'exponential',  
                          stops: [[0, '#edf8e9'],  
                                  [5, '#c7e9c0'],  
                                  [10, '#a1d99b'],  
                                  [15, '#74c476'],  
                                  [20, '#006d2c']]}}}
```

## Polygones

```
'paint': {'fill-color': {'property': 'densite',  
                         'stops': [[1, '#1a9850'],  
                                   [10, '#91cf60'],  
                                   [20, '#d9ef8b'],  
                                   [50, '#ffffbf'],  
                                   [100, '#fee08b'],  
                                   [150, '#fc8d59'],  
                                   [200, '#d73027']]},  
           'fill-opacity': 0.9}
```

# Exemple

## #MapboxGL / Carte choroplète



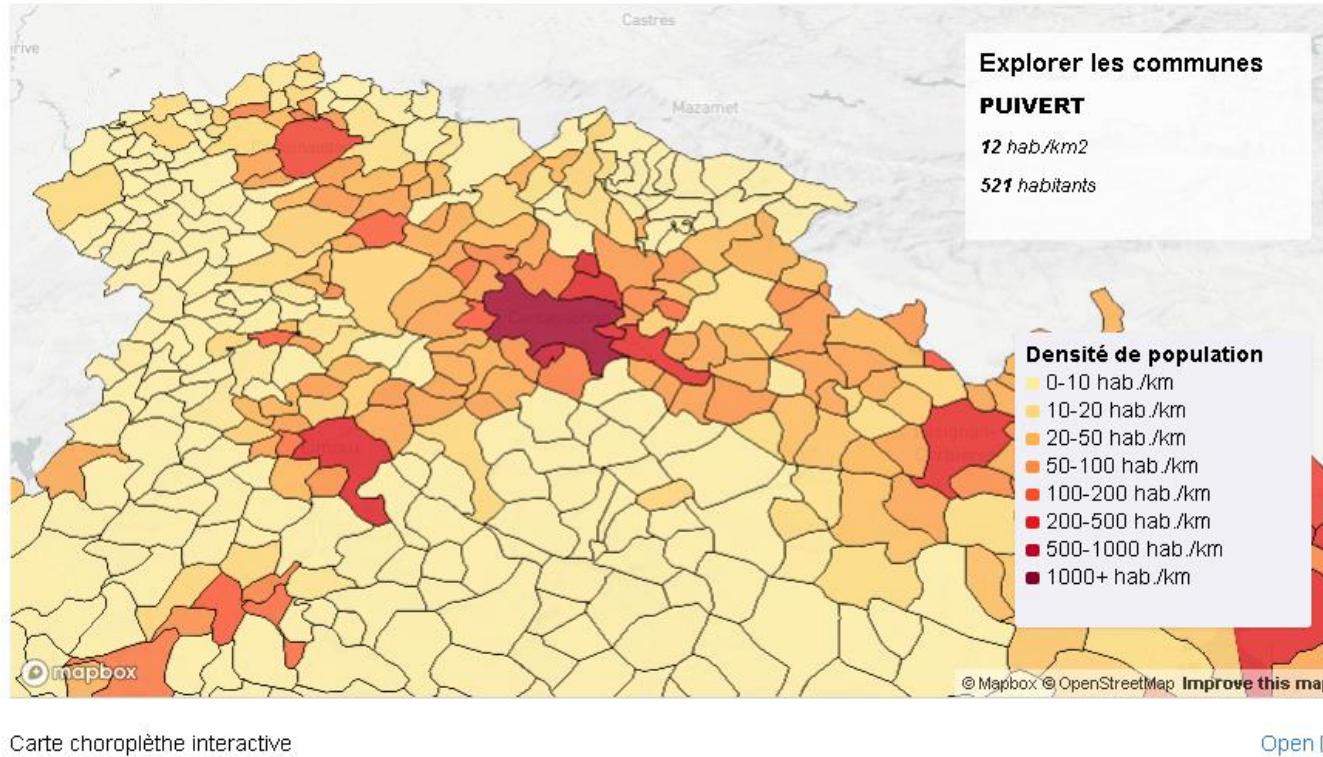
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[Open](#) ↗

<https://bl.ocks.org/mastersigat/d6c98f9c0f2e60811fc1da967f3c79d5/f4bfae333f5fccf219481b9e636807d6ed930ad4>

# Exemple

## #MapboxGL / Carte choroplète interactive



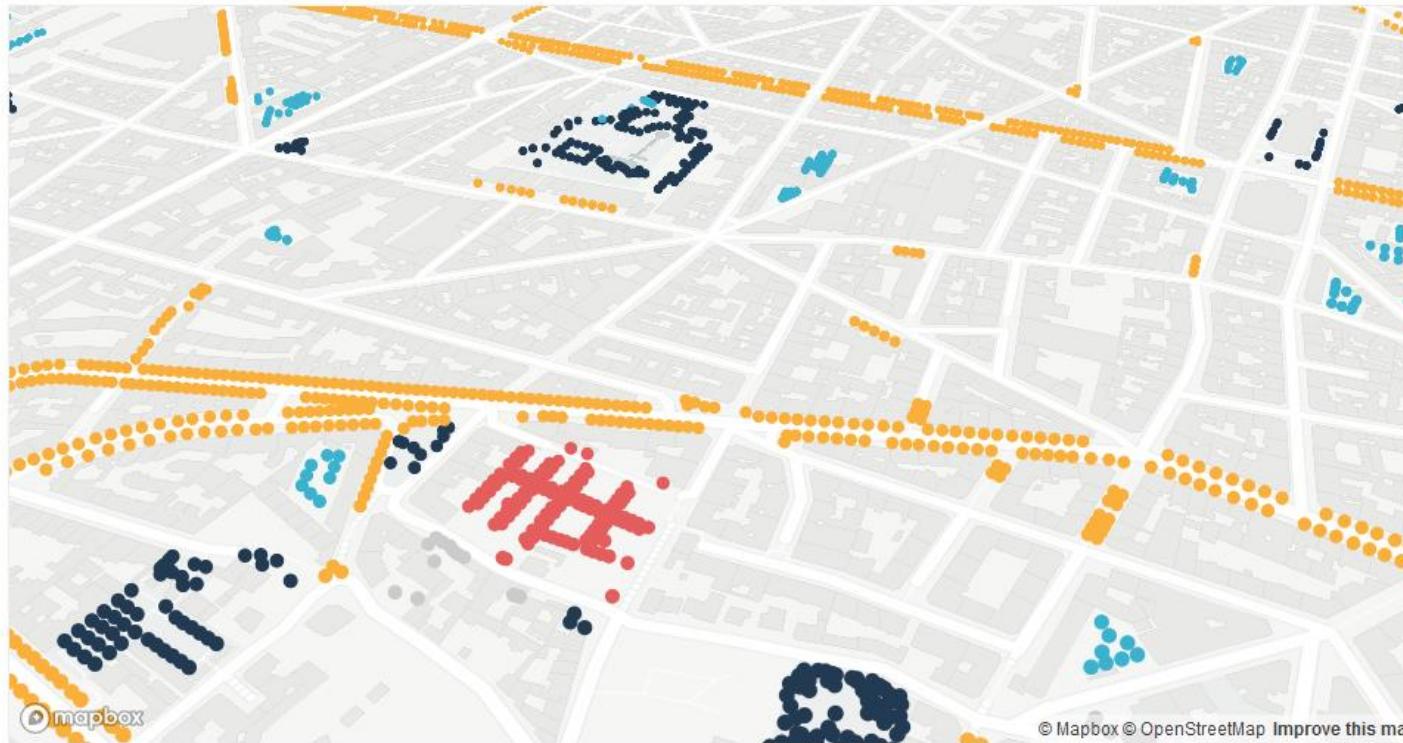
<https://bl.ocks.org/mastersigat/02576120fff70307c85ebb7eeef3d05e>

# Catégorisation

- Configurer les options de mise en forme
    - Il faut spécifier la **variable mobiliser**, les valeurs des **catégories** et les **couleurs**

# Exemple

#MapboxGL / Catégorisation de données



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<https://bl.ocks.org/mastersigat/b2d09221e018183559391b1f828e5547/7b69c180be73a3695f6e88ee cbd5090c4d01b1cd>

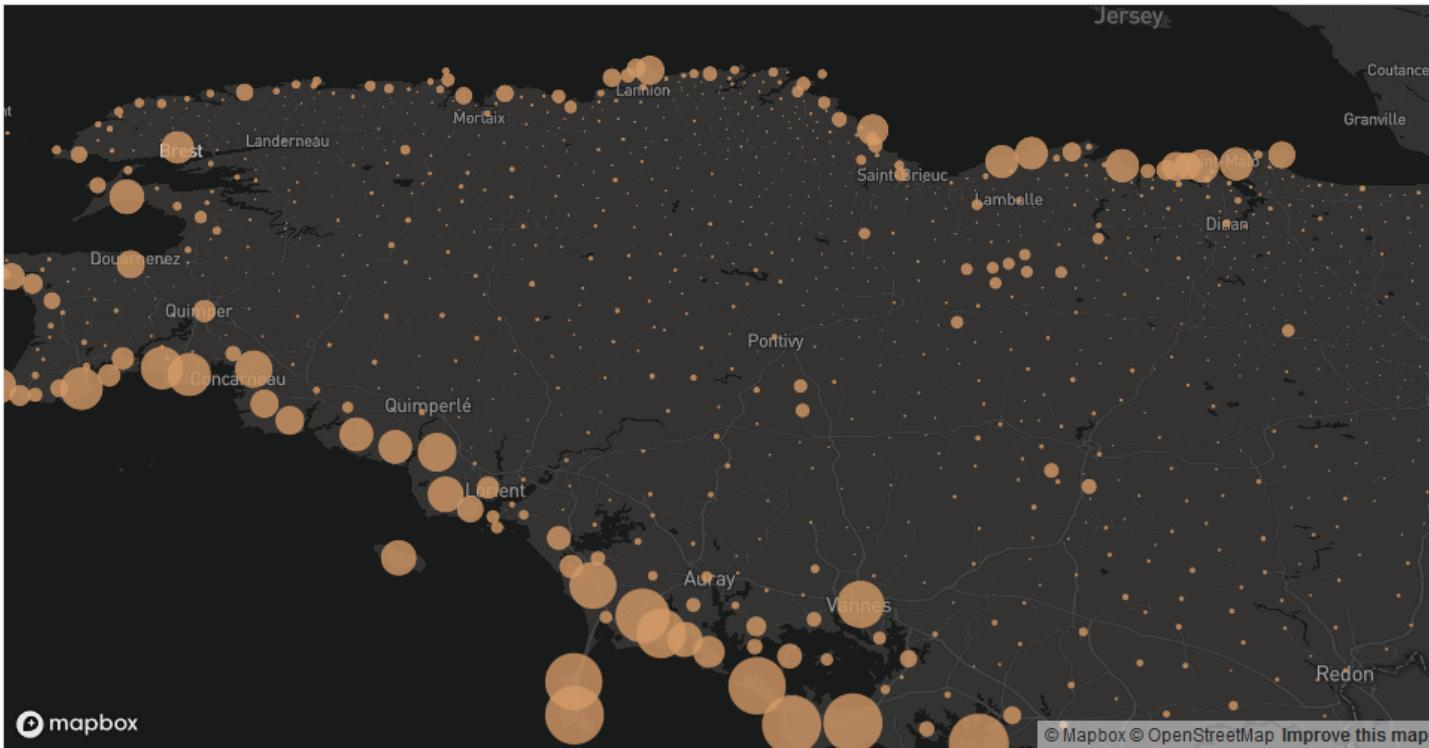
# Cercles gradués

- Configurer les options de mise en forme
  - Il faut spécifier la **variable mobiliser** et les valeurs des **bornes (valeur, taille du cercle)**

```
paint: {'circle-color': '#D49A66',
        'circle-radius': {property: 'population',
                         type: 'exponential',
                         stops: [[10, 1],[2000, 20]]},
        'circle-opacity': 0.8}
```

# Exemple

## #MapboxGL / Cercles gradués



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<https://bl.ocks.org/anonymous/54872b5379a59b0cee850a112af572b0/3ec842a0b6ff9fe82ed7426309c629a7f2a84efe>

# Extrusion 3D

- Récupérer le template

#Template / Extrusion MapboxGL



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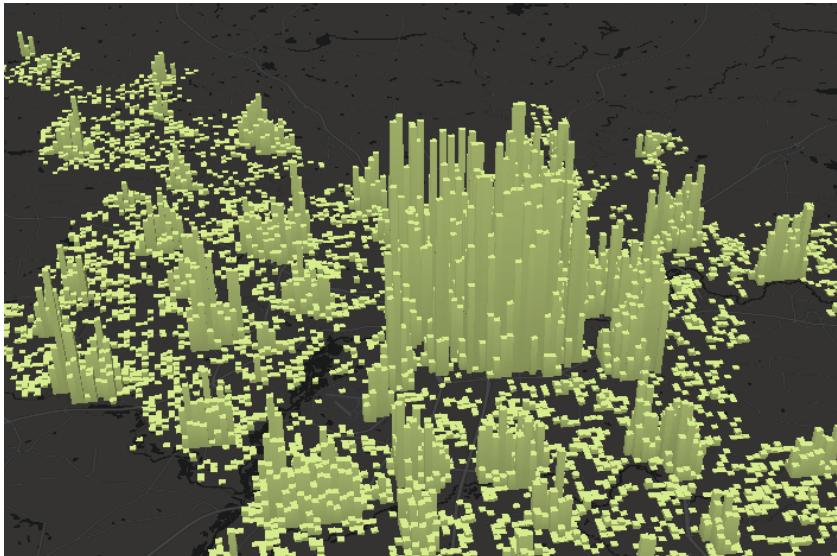
# index.html

```
<!DOCTYPE html>
<html>
<head>
<meta charset='utf-8' />
<title>Display a map</title>
<meta name='viewport' content='initial-scale=1, maximum-scale=1, user-scalable=no' />
```

<https://bl.ocks.org/mastersigat/64af1a273f155037214d96406cb4777a/7c3f5c36742ec2dcf231059e903b144118c79d42>

# Extrusion 3D

- Configurer les options de mise en forme
  - Il faut spécifier la **variable mobilisée** et les modalités de **l'extrusion (valeur, taille de l'extrusion)**



```
map.addLayer({
  'id': 'extrude',
  'type': 'fill-extrusion',
  'source': 'Carro',
  'source-layer': 'karook-dcnhdj',
  'layout': {'visibility': 'visible'},
  'paint': { 'fill-extrusion-color': '#d9ef8b',
    'fill-extrusion-height': {
      'property': 'Individus',
      'stops': [[1, 0],
                [10, 100],
                [700, 7000]]},
    'fill-extrusion-opacity': 0.95,
    'fill-extrusion-base': 0 }
});
```

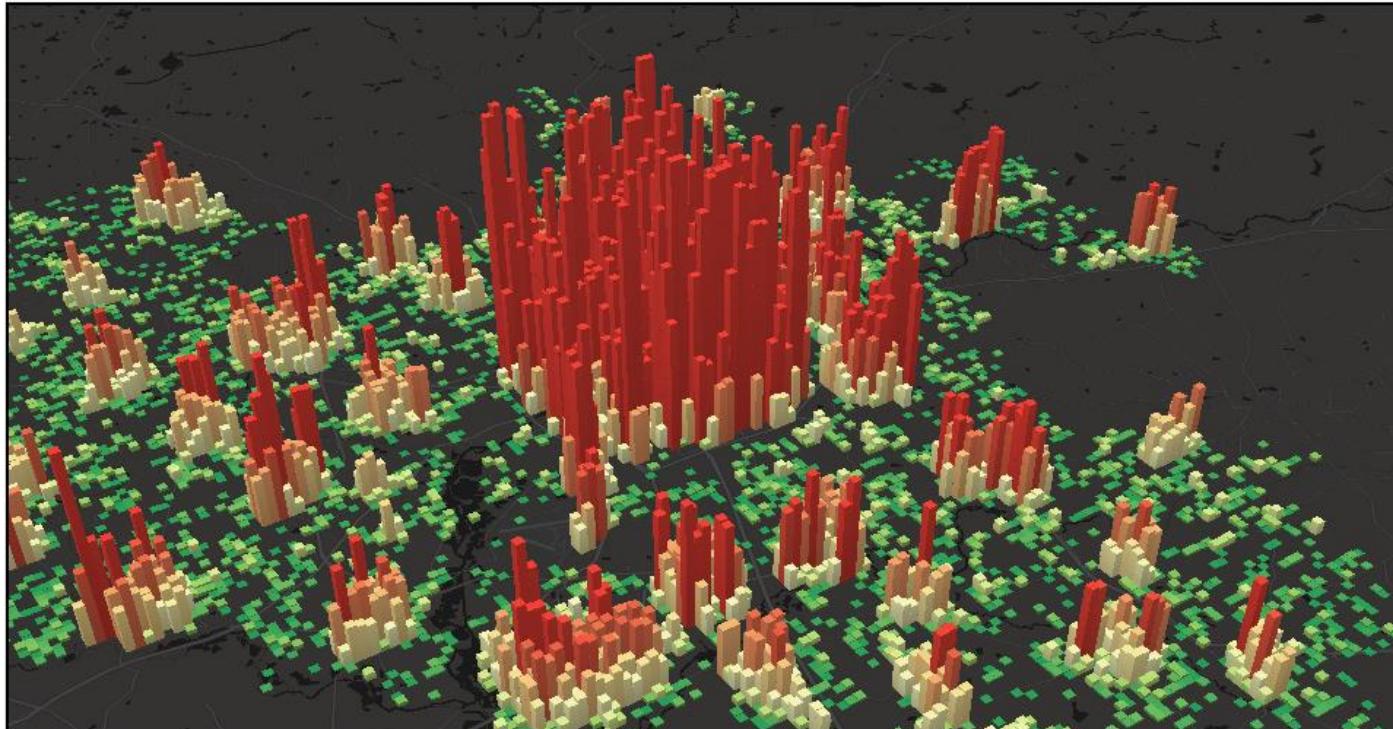
# Extrusion 3D

- Ajouter des couleurs

```
'paint': {
  'fill-extrusion-color': {
    'property': 'Individus',
    'stops': [
      [1, '#1a9850'],
      [10, '#91cf60'],
      [20, '#d9ef8b'],
      [50, '#ffffbf'],
      [100, '#fee08b'],
      [150, '#fc8d59'],
      [200, '#d73027']]
  },
  'fill-extrusion-height': {
    'property': 'Individus',
    'stops': [[1, 0],
              [10, 100],
              ...]
  }
}
```

# Exemple

#MapboxGL / Extrusion 3D données



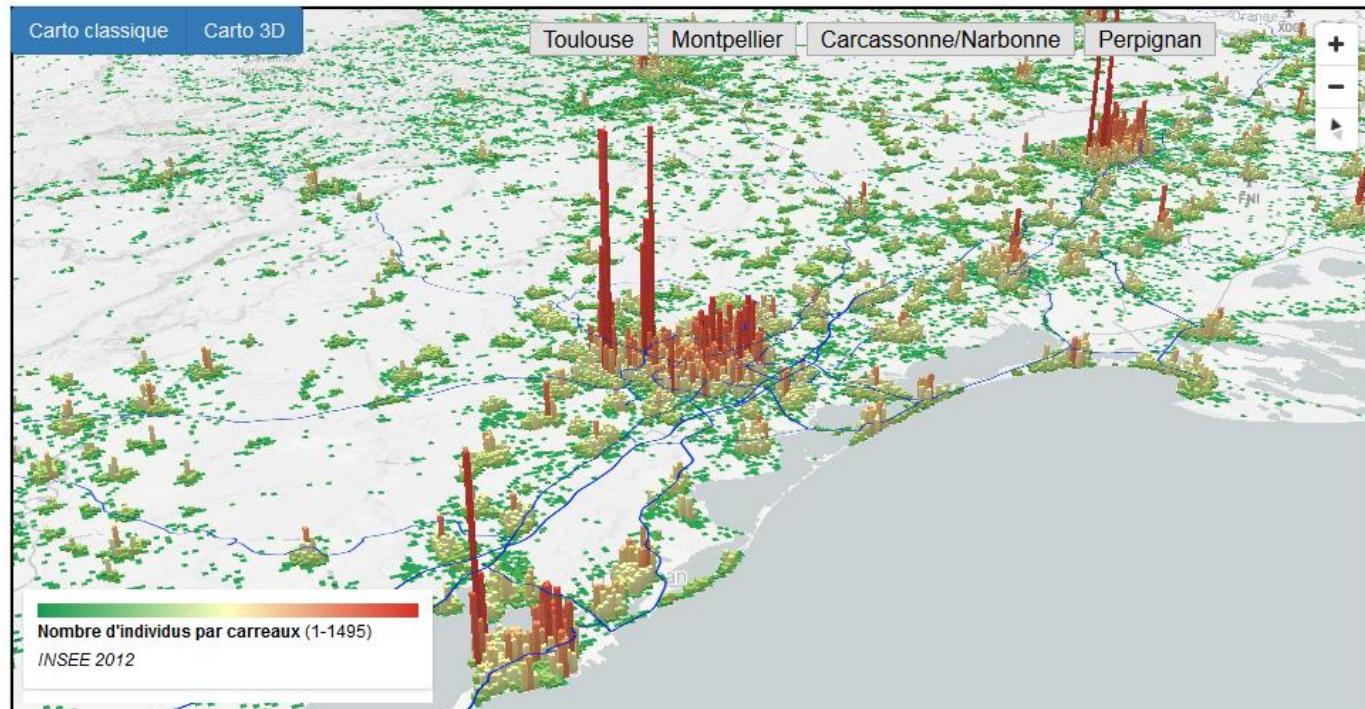
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Open

<https://bl.ocks.org/mastersigat/32c10e630346ff96c5749ba791cb3052/6fc71a60b632aa09540d22aacc619fc7d3552a74>

# Exemple

#MapboxGL / Extrusion carreaux



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Open

<https://blocks.org/mastersigat/c5bef54cfad8dd7bd0a9f384a45d771e>

# Deux variables

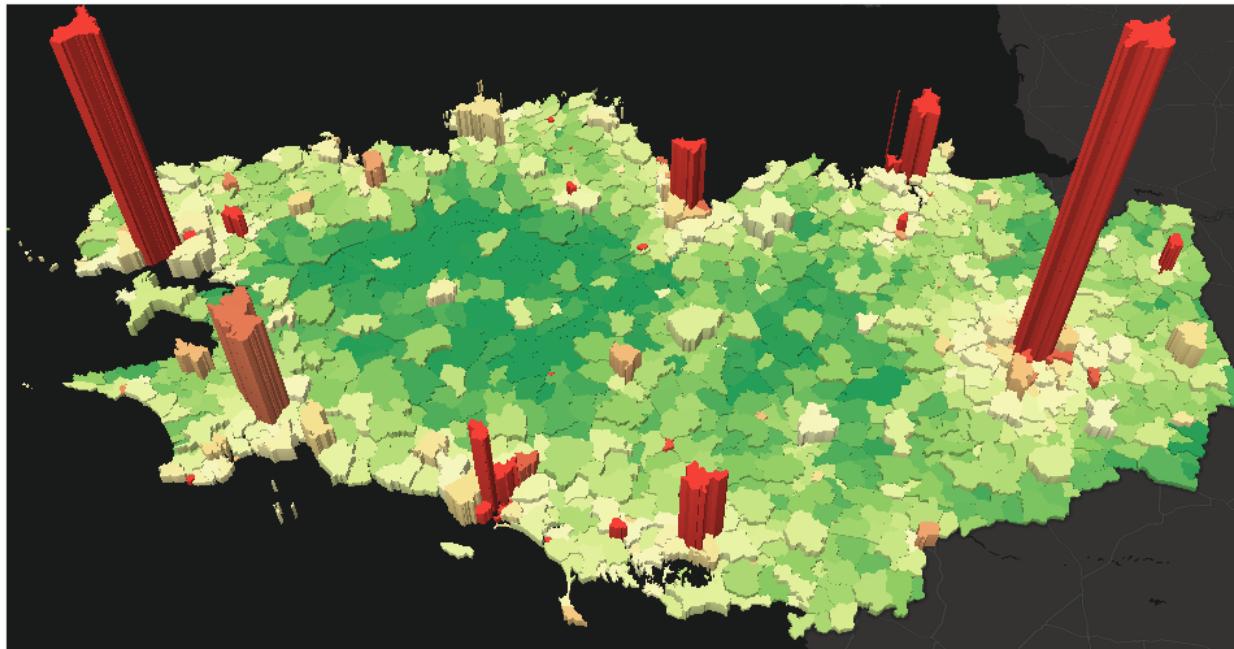
```
map.addLayer({
  'id': 'extrudecommunes',
  'type': 'fill-extrusion',
  'source': 'communes',
  'source-layer': 'TD1_Data-3kid81',
  'layout': {'visibility': 'visible'},
  'paint': {
    'fill-extrusion-color': {
      'property': 'densite',
      'stops': [[20, '#1a9850'],
                 [50, '#91cf60'],
                 [100, '#d9ef8b'],
                 [200, '#ffffbf'],
                 [500, '#fee08b'],
                 [1000, '#d73027']]],
      'fill-extrusion-height': {'property': 'popOK',
                                'stops': [[100, 10],
                                           [100, 100],
                                           [200000, 100000]]},
      'fill-extrusion-opacity': 0.8,
      'fill-extrusion-base': 0
    }
  });
}
```

Symbologie graduation de couleur  
(densité)

Symbologie extrusion 3D de la population

# Exemple

#MapboxGL / Symbologie deux variables  
(graduation et extrusion 3D)



Built with [blockbuilder.org](#)

[Open](#)

<https://bl.ocks.org/mastersigat/2eb5c08efe8fcfce104e74a1da83aacf/9456dbabf83f73492d53310594cf56666fe03c5>

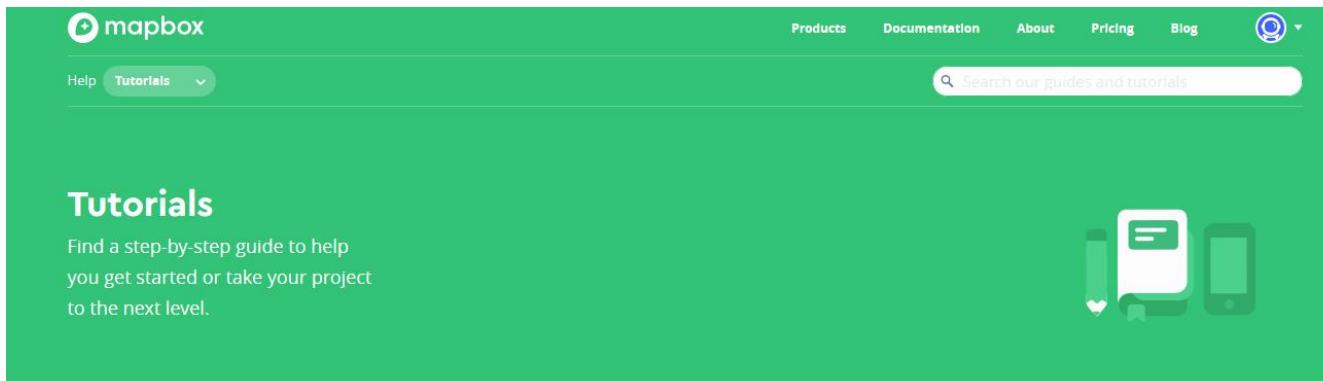
# Exemples divers

<https://bl.ocks.org/mastersigat>

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#MapboxGL / Carte choroplèthe	symbolologie mapbox	#MapboxGL / Graduation couleur point	#MapboxGL / Graduation2
#MapboxGL / Cercles gradués	#MapboxGL / Catégorisation	#MapboxGL / Données personnelles (mise en forme et interactivité)	#MapboxGL / Afficher et filtrer des données d'OSM
#Leaflet / Ajouter des WMS comme fonds de carte et couches	#MapboxGL / Carte campus	#MapboxGL / Ajouter des données personnelles	#MapboxGL / Ajouter des données OSM
#MapboxGL / Menu de gestion des couches	#MapboxGL / Carte choroplèthe interactive	#MapboxGL / Première carte	#Leaflet / Carte choroplèthe interactive
#Leaflet / Personnaliser les menus	#leaflet / Ajouter un GeoJSON	#Leaflet / Ajouter des marqueurs (interactivité + photo)	# Leaflet / Sélecteur de fonds de carte
#Leaflet / Première carte			

# Tutoriels

<https://www.mapbox.com/help/tutorials/>



Four tutorial cards are displayed on the Mapbox Tutorials page. 1) "Web apps (18)" - A map of the United States where states are colored in shades of red and orange, representing a choropleth map. Below it is the text "Make a choropleth map, Part 1: create a style". 2) "Add custom icons or markers" - A detailed map of a city street grid with several blue location markers. Below it is the text "Add custom icons or markers". 3) "Garfield Park" - A map of Chicago with a callout box highlighting "Garfield Park Home of the Garfield Park Conservatory". Below it is the text "Garfield Park". 4) "Reykjavik Roasters" - A map of Reykjavik with a callout box highlighting "Reykjavik Roasters" and "A good coffee shop". Below it is the text "Reykjavik Roasters".