

August 1-3, Foundation University, Dumaguete



# PIISIIITIIA NGMIA PA

*open data & software • free maps • community • talks • workshops*



KAART

Hivos  
people unlimited

mapbox

Grab

Mapillary UΔV4GEO

building highway

data mining  
OpenStreetMap  
With  
Overpass Turbo



# OpenStreetMap (OSM)

- The world's largest free and co-created database of geodata, and maps.
- Free and open, **without** legal, or technical restrictions.



# OSM data license

## Freedoms

- **Share:** To copy, distribute and use the database.
- **Create:** To produce works from the database.
- **Adapt:** To modify, transform and build upon the database.

## Conditions

- **Attribute:** You must attribute any public use of the database, or works produced from the database, in the manner specified in the ODbL.
- **Share-alike:** If you publicly use any adapted version of this database, or works produced from an adapted database, you must also offer that adapted database under the ODbL.
- **Keep open:** If you redistribute the database, or an adapted version of it, then you may use technological measures that restrict the work as long as you also redistribute a version without such measures.

# URLs for bulk OSM data

- [planet.osm.org](http://planet.osm.org)
- [download.geofabrik.de](http://download.geofabrik.de)
- [download.bbbike.org](http://download.bbbike.org)
- [export.hotosm.org](http://export.hotosm.org)

# overpass-turbo.eu

- **Overpass Turbo** is a web-based data-mining front-end for querying the powerful Overpass API, and display results on an interactive map.

# OSM Elements

- OpenStreetMap objects are a combination of **geometries** and **tags**.
  - **Node** – a single point
  - **Way** – an ordered list of nodes
    - Polylines – first and last nodes do not coincide
    - Polygon – first and last nodes coincide
  - **Relation** – a logical grouping of nodes, ways, or other relations



# OSM Elements

- OpenStreetMap objects are a combination of **geometries** and **tags**.
  - Tags are object attributes, and are composed of a **key-value** pair
  - Object may have at least one tag.

`highway = traffic_signal`

Key

Value

Examples :

`amenity = bench`

`leisure = park`

`highway = residential`

`amenity = atm`

# OSM Elements



# The Interface

Menu

Run Share Export Wizard Save Load Settings Help

```
1 /*
2 This has been generated by the overpass-turbo wizard.
3 The original search was:
4 "highway=traffic_signals in "San Juan, Metro Manila""
5 */
6 [out:json][timeout:25];
7 // fetch area "San Juan, Metro Manila" to search in
8 {{geocodeArea:San Juan, Metro Manila}}->.searchArea;
9 // gather results
10 (
11     // query part for: "highway=traffic_signals"
12     node["highway"]="traffic_signals"(area.searchArea);
13     way["highway"]="traffic_signals"(area.searchArea);
14     relation["highway"]="traffic_signals"(area.searchArea);
15 );
16 // print results
17 out body;
18 >;
19 out skel qt;
```

Query Box

Search Box

Zoom to data  
your location  
define bound box  
toggle wide map  
toggle data overlay

Controls

Viewport

Views

Map Data

# Query Wizard

Run Share Export Wizard Save Load Settings Help overnass turbo

1

```
1  /*
2   * This has been generated by the overpass-turbo wizard.
3   * The original search was:
4   * "highway = traffic_signals"
5   */
6   [out:json][timeout:25];
7   // gather results
8   (
9     // query part for: "highway=traffic_signals"
10    node["highway"]="traffic_signals";
11    way["highway"]="traffic_signals";
12    relation["highway"]="traffic_signals";
13  );
14  // print results
15  out body;
16  >;
17  out skel qt;
```

2

3

Query Wizard

The **wizard** assists you with creating Overpass queries. Here are some usage examples:

- Drinking Water
- highway=\* and type:way
- tourism=museum in Vienna

4

build query build and run query cancel

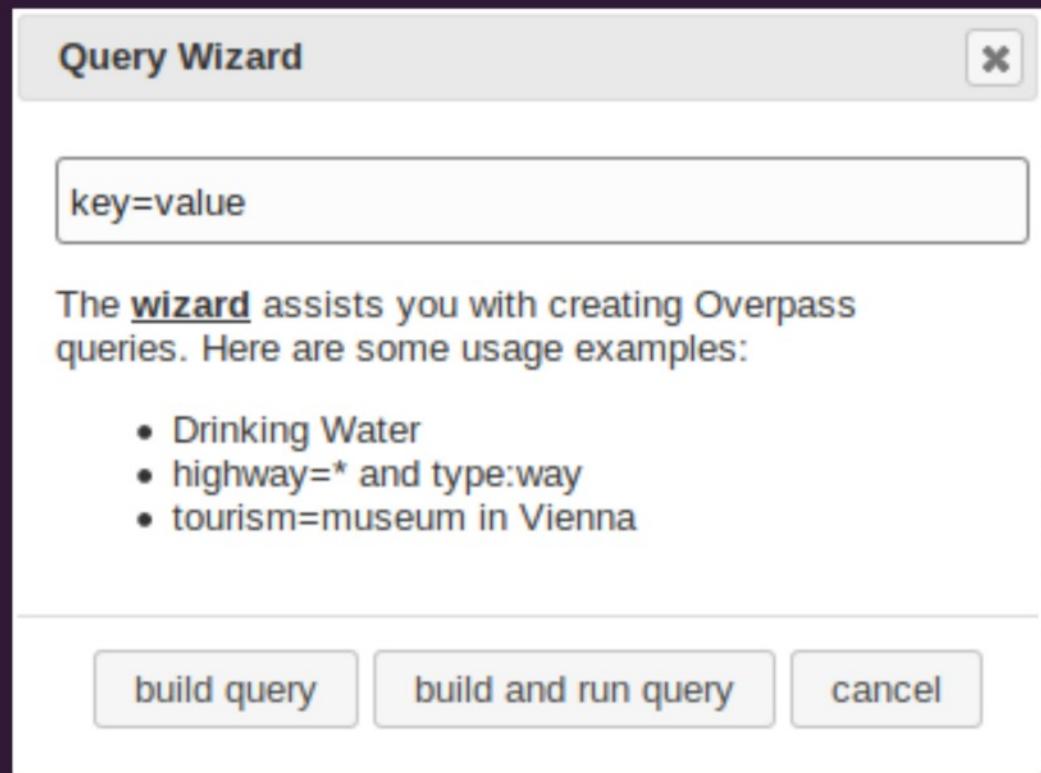
# Results

Run Share Export Wizard Save Load Logout Settings Help overpass turbo Map Data

```
1  /*
2   This has been generated by the overpass-turbo
3   wizard.
4   The original search was:
5   "highway=traffic_signals"
6   */
7   [out:json][timeout:25];
8   // gather results
9   (
10    // query part for: "highway=traffic_signals"
11    node["highway"="traffic_signals"]({{bbox}});
12    way["highway"="traffic_signals"]({{bbox}});
13    relation["highway"="traffic_signals"]
14    ({{bbox}});
15    // print results
16    out body;
17    >;
18    out skel qt;
```

Loaded – nodes: 65, ways: 0, relations: 0  
Displayed – pois: 65, lines: 0, polygons: 0

# Shops in Dumaguete



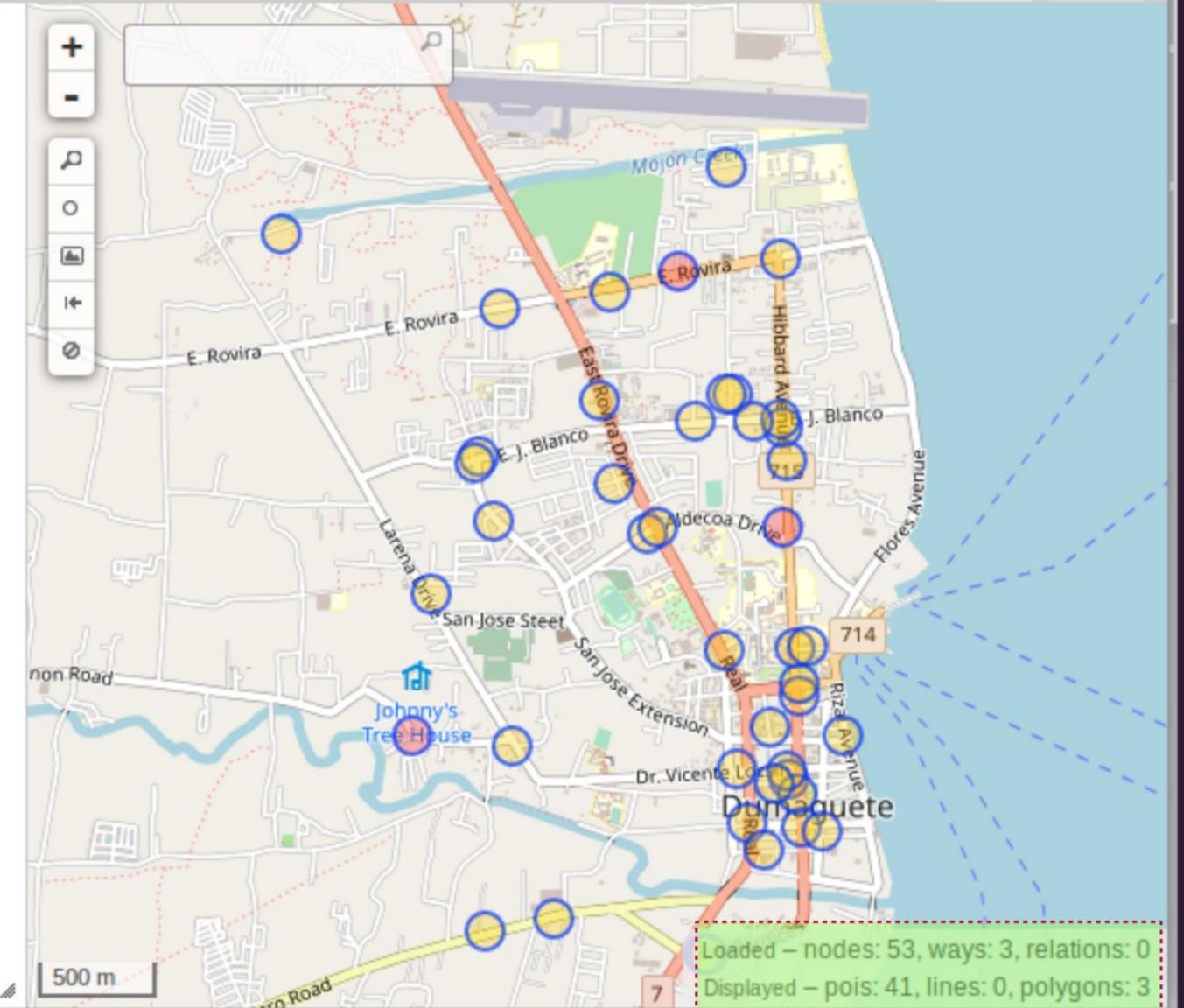
- The **Query Wizard** allows anyone to query OSM features

# Shops in the area

Run Share Export Wizard Save Load Settings Help overpass turbo

Map Data

```
1  /*
2   This has been generated by the
3   overpass-turbo wizard.
4   The original search was:
5   "shop=convenience"
6   */
7   [out:json][timeout:25];
8   // gather results
9   (
10    // query part for:
11    "shop=convenience"
12    node["shop"="convenience"]
13    ({{bbox}});
14    way["shop"="convenience"]
15    ({{bbox}});
16
17    relation["shop"="convenience"]
18    ({{bbox}});
19  );
20  // print results
21  out body;
22  >;
23  out skel qt;
```



# Shops with multi-floors

The screenshot shows the Overpass Turbo interface. At the top, there are buttons for "Load", "Settings", "Help", and "overpass turbo". To the right of the toolbar are "Map" and "Data" buttons. A search bar is positioned above the map area.

**Query Wizard** (left side):

- Input field: `shop=convenience && "building:levels"=*`
- Description: The wizard assists you with creating Overpass queries. Here are some usage examples:
  - Drinking Water
  - highway=\* and type:way
  - tourism=museum in Vienna
- Buttons: `build query`, `build and run query`, `cancel`

**Map Area (right side):**

- A red line highlights a specific building on the map.
- The building's details are shown in a modal window:
  - Way 291045664**
  - Tags:**
  - `building=retail`
  - `building:levels=1` (highlighted with a red border)
  - `name=La Tienda`
  - `shop=convenience`
- Labels on the map include: E. Rovira, Hibbard Avenue, Flores Avenue, 715, 714, Aldecoa Drive, East Rovira Drive, E. J. Blanco, Larena Drive, San-Jose Street, Johnny's Tree House, San Jose Extension, Real, Dr. Vicente Locsin, and Dumaguete.
- Bottom status bar: Loaded – nodes: 4, ways: 1, relations: 0  
Displayed – pois: 0, lines: 0, polygons: 1

# Shops with phone or email

**Query Wizard**

```
shop=* && (phone=* || email=*)
```

The wizard assists you with creating Overpass queries. Here are some usage examples:

- Drinking Water
- highway=\* and type:way
- tourism=museum in Vienna

**build query**   **build and run query**   **cancel**

The screenshot shows the Overpass Turbo interface with a map of Dumaguete, Philippines. A search query is entered in the Query Wizard: `shop=* && (phone=* || email=*)`. The results are displayed on the map with blue circles indicating found locations. One specific location is highlighted with a yellow circle and labeled "Node 3707452936". The info box for this node contains the following details:

**Node 3707452936**

**Tags:**

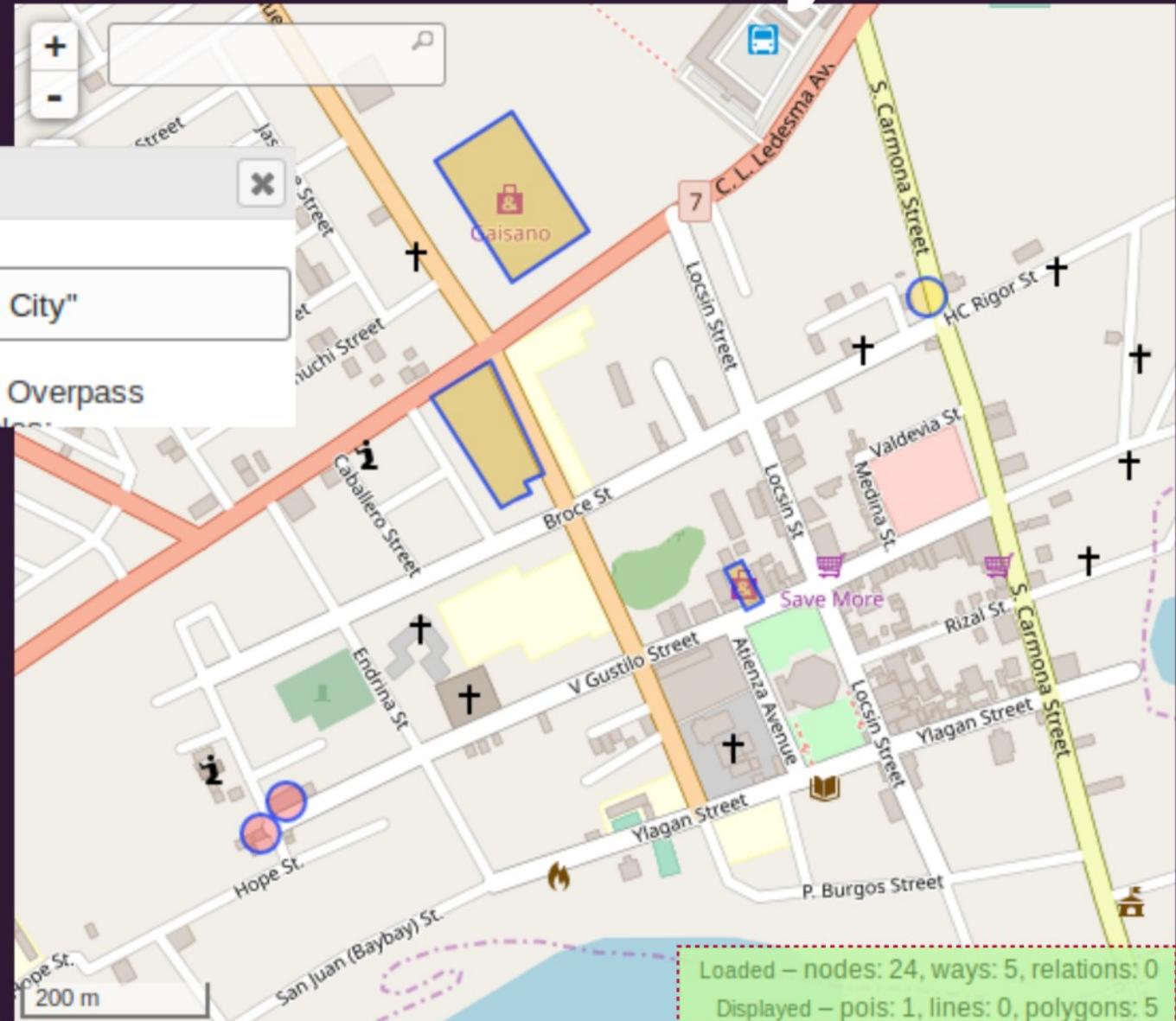
```
addr:city=Dumaguete  
addr:street=Maria Christina  
name=Expressions.Flower Shop  
phone=+63 35 225 1046  
shop=florist
```

**Coordinates:**

9.3096973 / 123.3062631 (lat/lon)

Loaded – nodes: 16, ways: 0, relations: 0  
Displayed – pois: 16, lines: 0, polygons: 0

# Shops tagged as buildings in San Carlos City



# Shops with “eleven”

Query Wizard

```
shop=* && name~"[Ee]leven"
```

The screenshot shows the Overpass Turbo interface. On the left, a "Query Wizard" sidebar contains the query: "shop=\* && name~"[Ee]leven"". The main area is a map of Dumaguete, showing streets like E. Rovira, E.J. Blanco, Larena Drive, San-Jose Street, and Johnny's Tree House. A red line highlights a specific location. A callout box on the right provides details for "Node 4359702889":

- Tags:** name=7-Eleven, shop=convenience
- Coordinates:** 9.3083314 / 123.3095544 (lat/lon)

At the bottom of the map, status information is displayed: "Loaded – nodes: 8, ways: 0, relations: 0" and "Displayed – pois: 8, lines: 0, polygons: 0".

http://overpass-turbo.eu/s/L99

# Using “around” vs “in”

The screenshot illustrates the use of the 'around' and 'in' operators in Overpass queries. The map shows the Foundation University campus and its surroundings. The 'Query Wizard' window displays the search term: `amenity=fast_food[around]"Foundation University"`. The code editor on the left shows the generated Overpass query:

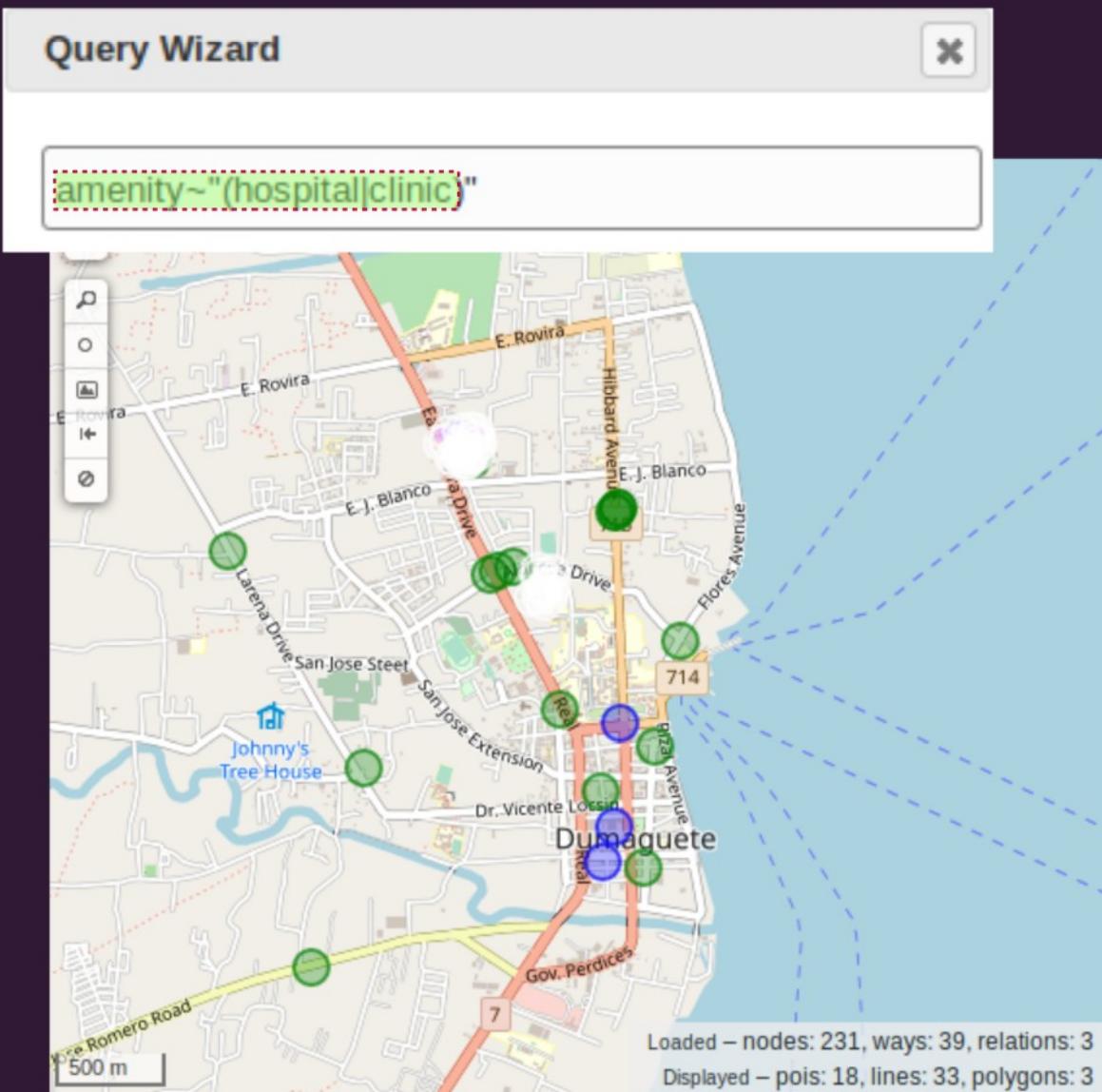
```
/*
This has been generated by
the overpass-turbo wizard.
The original search was:
"amenity=fast_food around
"Foundation University"
*/
[out:json][timeout:25];
// adjust the search radius
{{in meters} here
{{radius=1000}}
// gather results
(
    // query part for:
"amenity=fast_food"

node["amenity"="fast_food"]
(around:{{radius}},
{{geocodeCoords:Foundation
University}});
    way["amenity"="fast_food"]
(around:{{radius}},
{{geocodeCoords:Foundation
University}});

relation["amenity"="fast_foo
d"](around:{{radius}},
{{geocodeCoords:Foundation
University}});
)
```

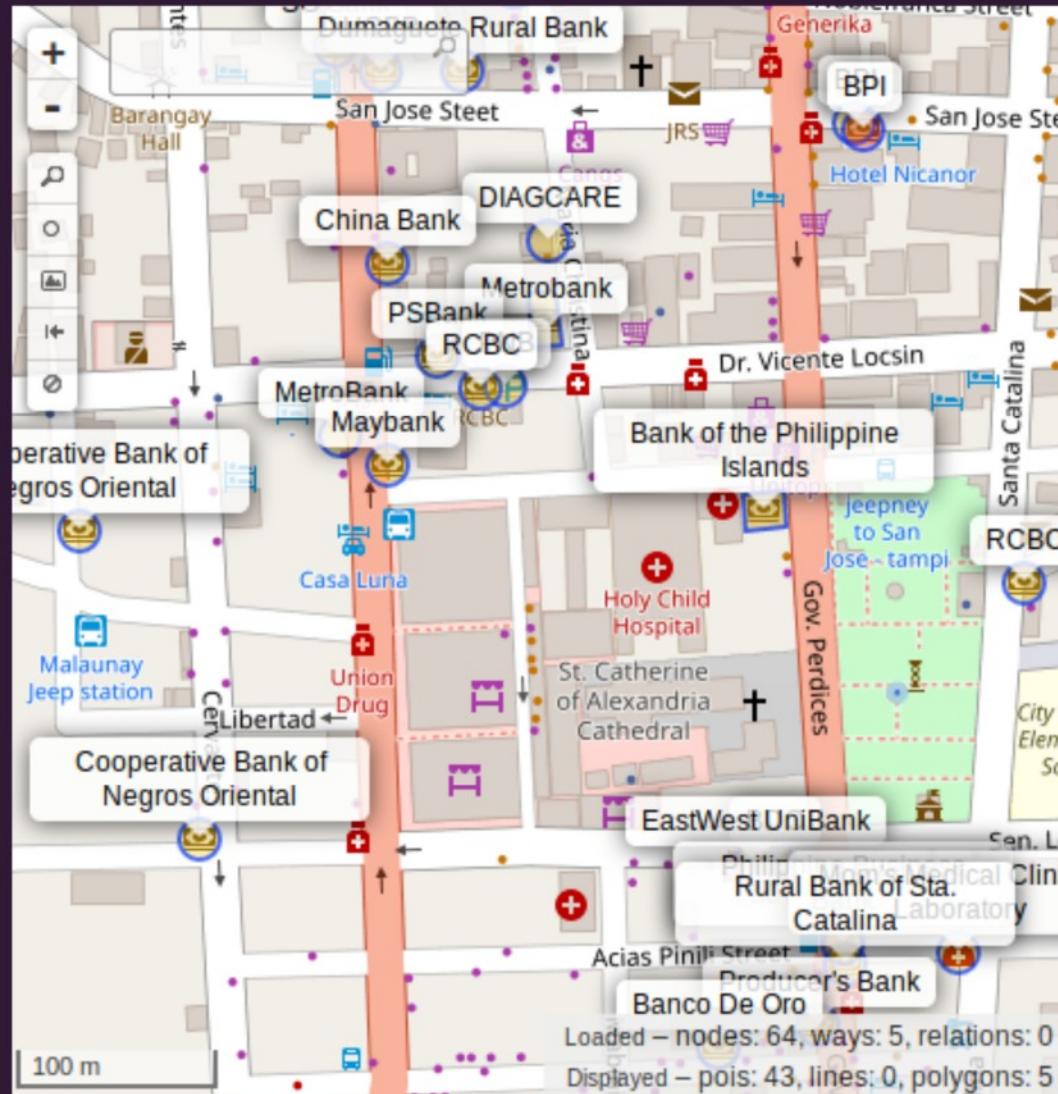
The 'around' operator is highlighted in green in the code editor, while the 'in' operator is highlighted in red. The 'Query Wizard' window also highlights the 'around' operator in green.

# MapCSS - Color Coding



```
{} {{style:  
  
node, area  
{ color:white; fill-  
color:white; }  
  
node [amenity=hospital]  
{ color:blue; fill-  
color:blue; }  
  
node [amenity=clinic]  
{ color:green; fill-  
color:green; }  
}}}
```

# MapCSS – with text

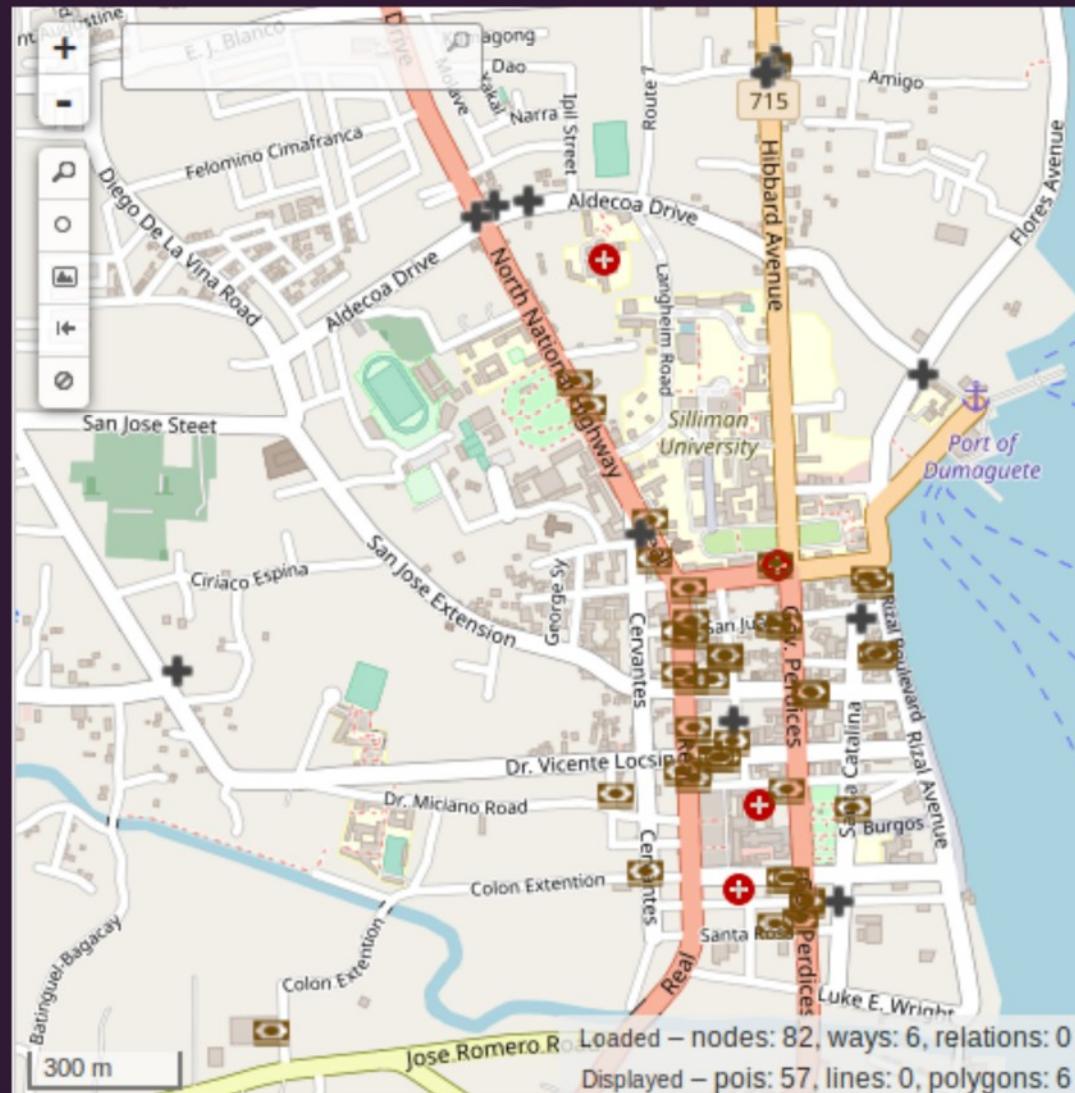


```
{ style:
```

```
node, way,  
relation{text: name; }
```

```
}
```

# MapCSS – Using Icons



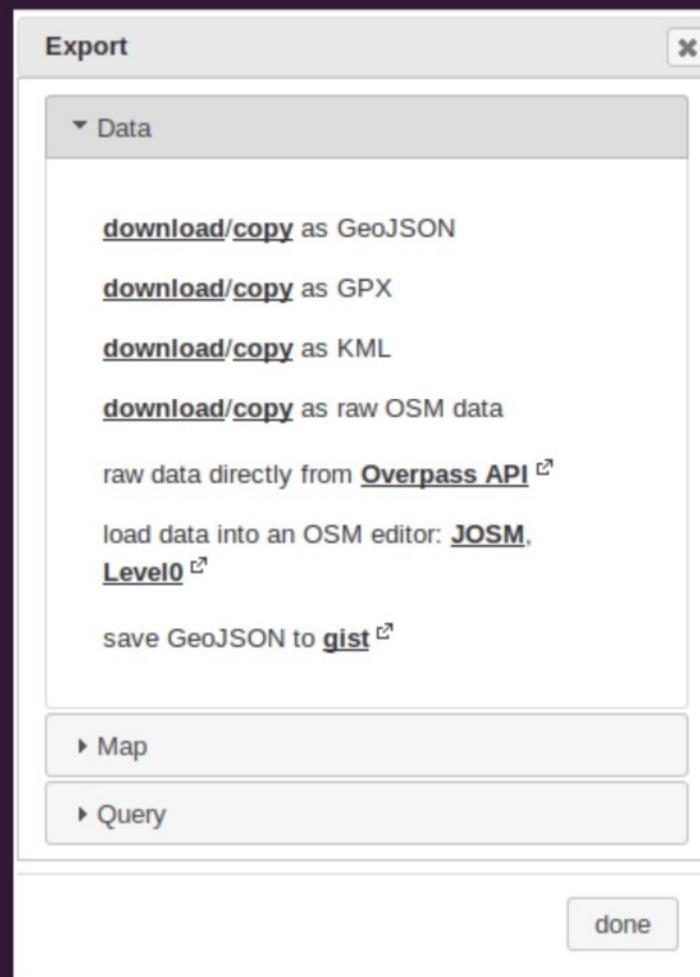
```
{ style:  
  
node [amenity=clinic] {  
    icon-image:  
    url('icons/maki/hospital-12.png');  
    icon-width: 18;  
}  
  
node [amenity=bank] {  
    icon-image:  
    url('https://wiki.osm.org/w/images/thumb/3/3b/Bank-16.svg/16px-Bank-16.svg.png');  
    icon-width: 18;  
}  
}
```

# Changing Tile Servers

- `http://{s}.tile.openstreetmap.fr/hot/{z}/{x}/{y}.png`
- `http://{s}.tile.stamen.com/watercolor/{z}/{x}/{y}.png`
- `https://maps.wikimedia.org/osm-intl/{z}/{x}/{y}.png`
- More: [https://wiki.osm.org/wiki/Tile\\_servers](https://wiki.osm.org/wiki/Tile_servers)

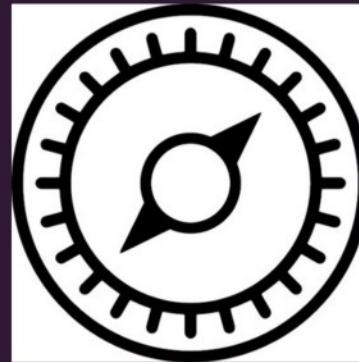
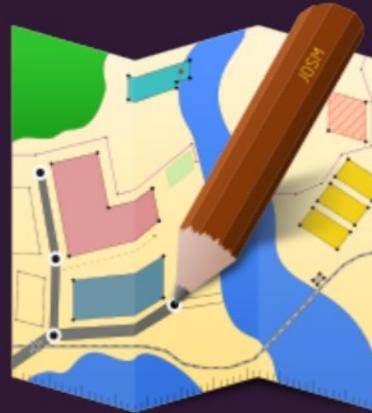
# Exporting Results

- Data
- Map
- Query



# Overpass at work ...

- JOSM
- MapRoulette
- MapContrib
- OsmHydrant
- Umap
- ...



# Up-to-date map with Umap



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Search maps

Search



uMap let you create maps with  
[OpenStreetMap](#) layers in a minute and  
embed them in your site.



- ✓ Choose the layers of your map
- ✓ Add POIs: markers, lines, polygons...
- ✓ Manage POIs colours and icons
- ✓ Manage map options: display a minimap, locate user on load...
- ✓ Batch import geostructured data (geojson, gpx, kml, osm...)
- ✓ Choose the license for your data
- ✓ Embed and share your map



And it's [open source!](#)

[Create a map](#)

[Play with the demo](#)

# Export query to “compact”

Run Share Export Wizard Save

Export

/\*  
This has been generated by the  
turbo wizard.  
The original search was:  
"amenity~(atm|bank)"  
\*/  
[out:json][timeout:25];  
// gather results  
{  
 // query part for:  
 "amenity~(atm|bank)"/  
 node["amenity~(atm|bank)"]  
 ({bbox});  
 way["amenity~(atm|bank)"]  
 relation["amenity~(atm|bank)"]  
 ({bbox});  
};  
// print results  
out body;  
>;  
out skel qt;

Data

Map

Query

[download/copy as standalone query](#)

[download/copy as raw query](#)

[download/copy as osm wiki](#)

convert to [Overpass-XML](#)

convert to [compact](#) [OverpassQL](#)

done

200 m

Map Data 714

Katada Street

Mercury Drug

San Jose Street

Duma

Gov. Perdigies

Cangs

Robinsons Supermarket

Burgos

Acias Pinili Street

Santa Rosa

Gov.

Rizal Boulevard

Rizal Avenue

Ama Calleja

Loaded – nodes: 73, ways: 5, relations: 0  
Displayed – pois: 52, lines: 0, polygons: 5

# Banks and ATMs

Editing Untitled map [?](#)

[Cancel](#) [Save](#)

Display on load

Data is browsable [?](#)

[Shape properties](#)

[Advanced properties](#)

[Interaction options](#)

[Remote data](#)

Url [?](#)  
`https://overpass-api.de/api/interpreter?data=[c`

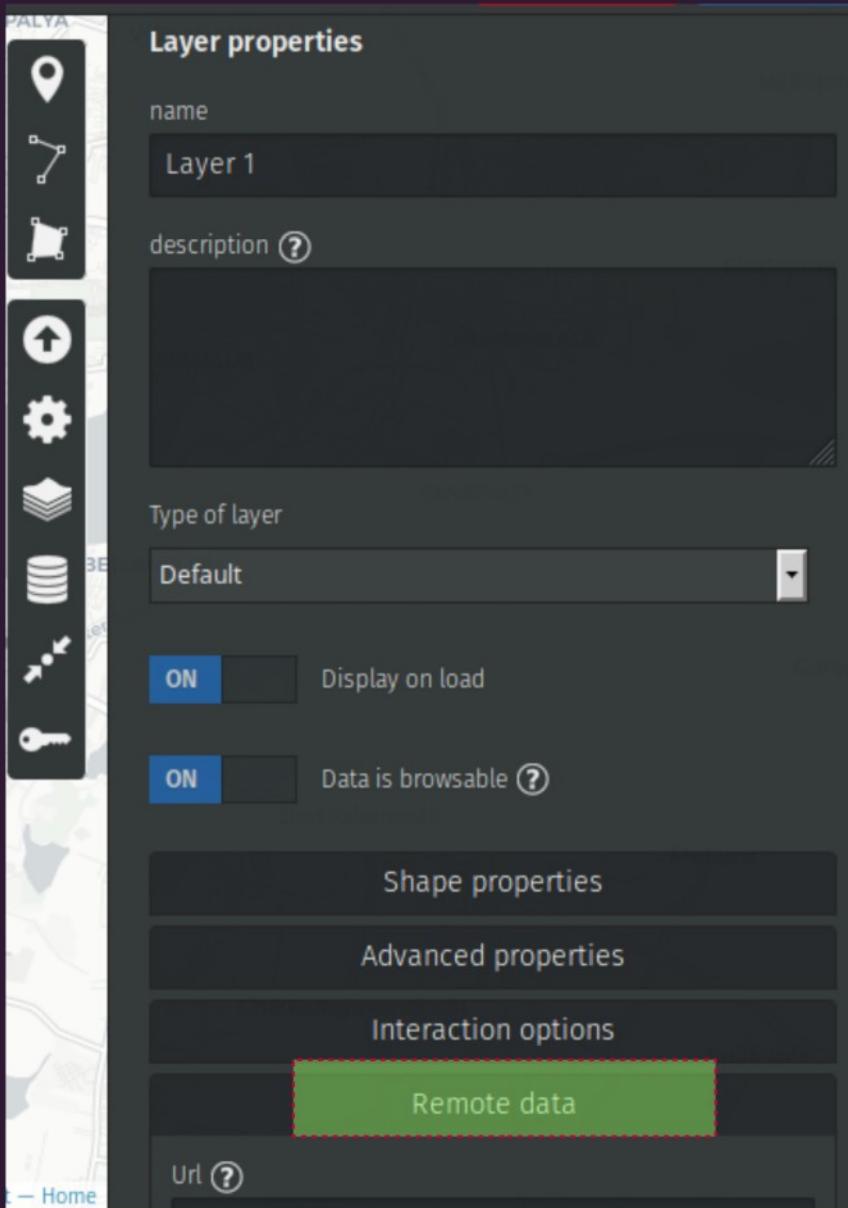
Format  
osm

From zoom

Optional.

To zoom

Map tiles by [CartoDB](#), under CC BY 3.0. map data © [OpenStreetMap](#) contributors under ODbL — [About](#) — [Home](#)



[`https://overpass-api.de/api/interpreter?  
data=  
\[out:json\]  
\[timeout:25\];  
\(nwr\["amenity"\]="bank"\)  
\(around:1500,12.89558285,77.602621922761\);\)  
;out;>;out  
skel qt;`](https://overpass-api.de/api/interpreter?data=[out:json][timeout:25];(nwr[)

REMOTE DATA

Url [?](#)

`https://overpass-api.de/api/interpreter?data=[c]`

Format

osm

From zoom

Optional.

To zoom

Optional.

ON    Dynamic [?](#)

Licence

Please be sure the licence is compliant with your use.

OFF   Proxy request [?](#)

Editing Untitled map

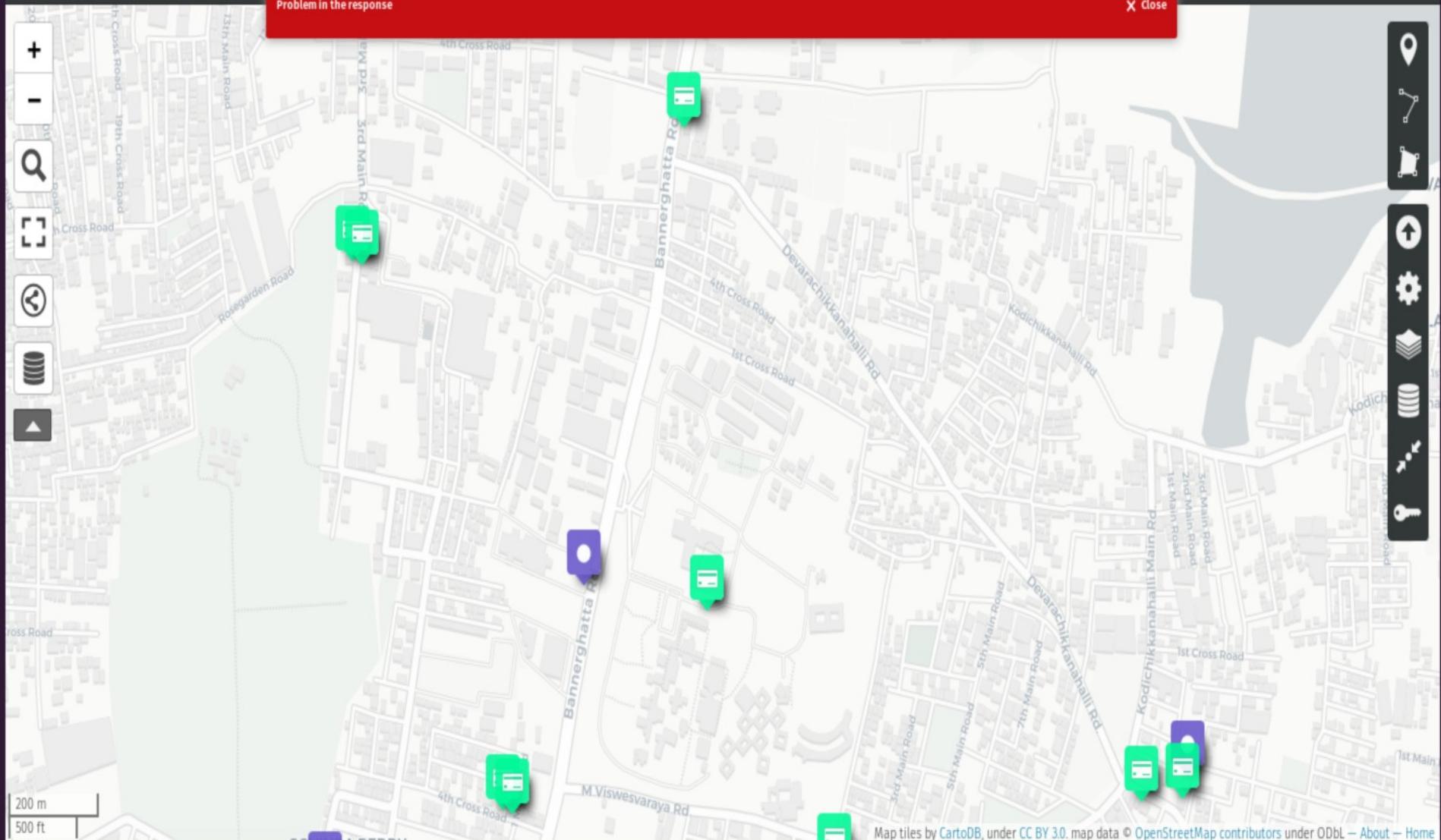
(?)

Problem in the response

X Close

Cancel

Save



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# References

- Project - [github.com/tyrasd/overpass-turbo](https://github.com/tyrasd/overpass-turbo)
- Reference - [osm.org/wiki/Overpass\\_turbo](https://osm.org/wiki/Overpass_turbo)
- OSM features - [osm.org/wiki/Map\\_Features](https://osm.org/wiki/Map_Features)
- Deck copy - [speakerdeck.com/gowin/data-mining-openstreetmap-with-overpass-turbo](https://speakerdeck.com/gowin/data-mining-openstreetmap-with-overpass-turbo)

Questions?