

Using OSM and Geographic Information Science

McGill Open Mapping Group

Demo of OpenStreetMap.org + Slido

OpenStreetMap

Way: Vanier College (1118202124)

Version #1

realign roads + add road attributes + add sidewalks + updates

Edited almost 2 years ago by [ChaireMobiliteKaligrafy](#)
Changeset #129541049

Tags

amenity	college
name	Vanier College
student:count	7840

Nodes

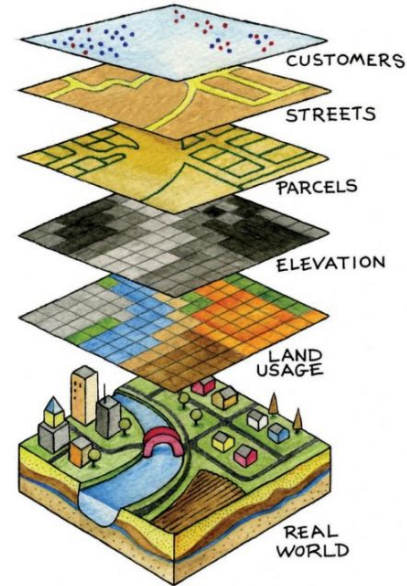
► 34 nodes

[Download XML](#)

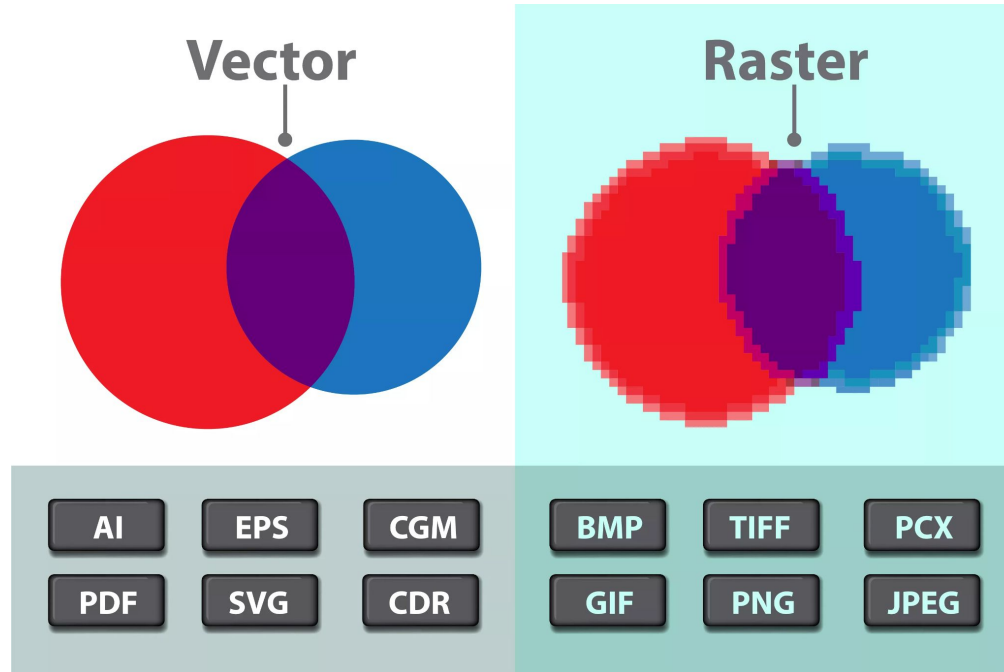
OpenStreetMap contributors ▼ [Make a Donation](#) [Website and API terms](#)

A Primer on GIS

Geographical Information System (GIS)

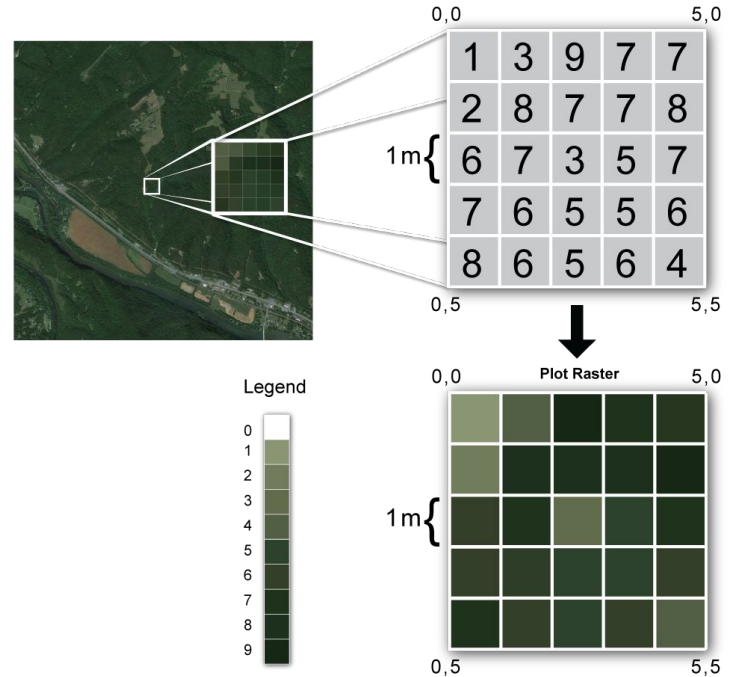


Geographic Information Science



GIS - Raster Data

- Represents grids of data as images
- A cell in the grid represents some area in the world
- Stores numerical values, visualized as colours
- Imprecise!



GIS - Raster Data - Examples

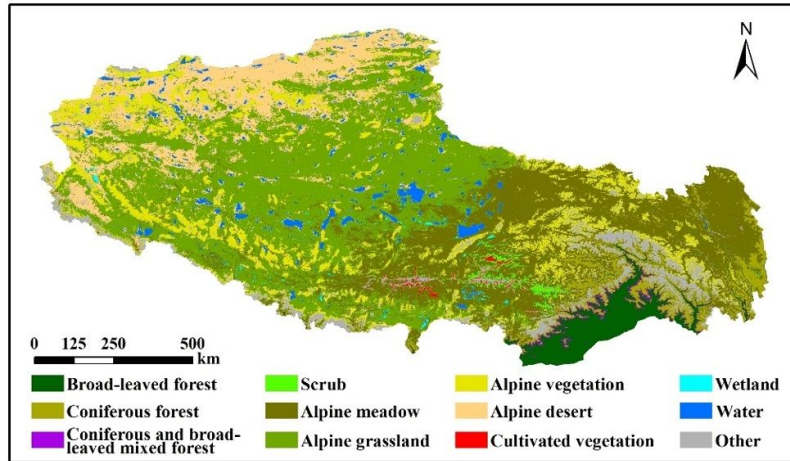
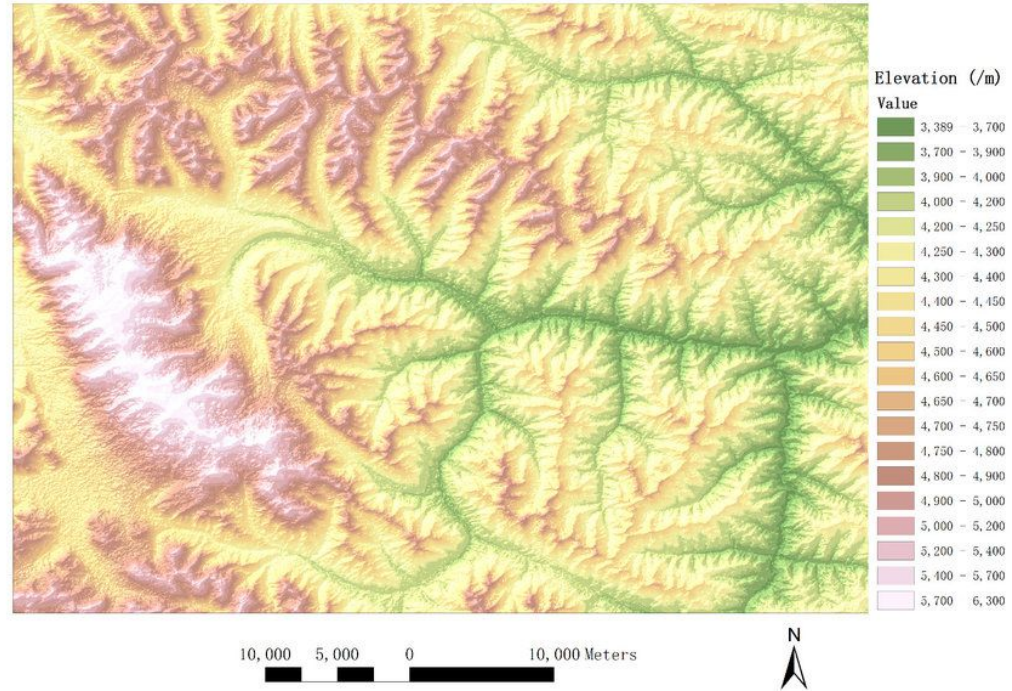
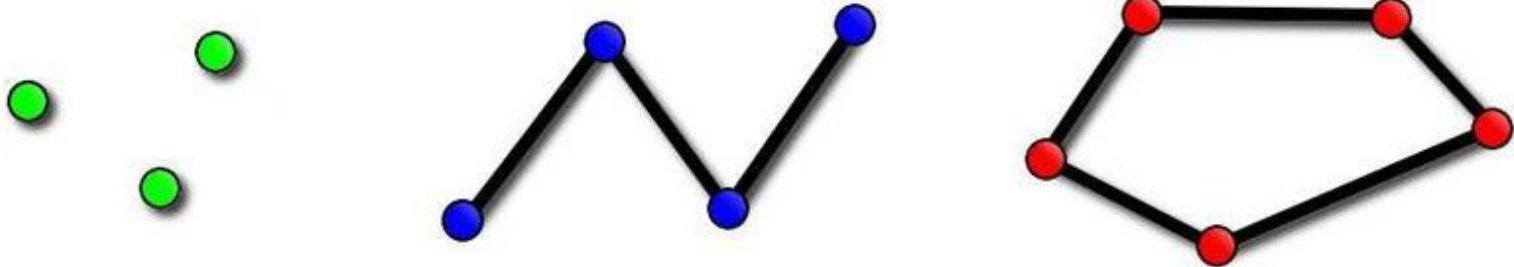


Figure 1 Vegetation map of the Xizang Autonomous Region at 250 m in 2020



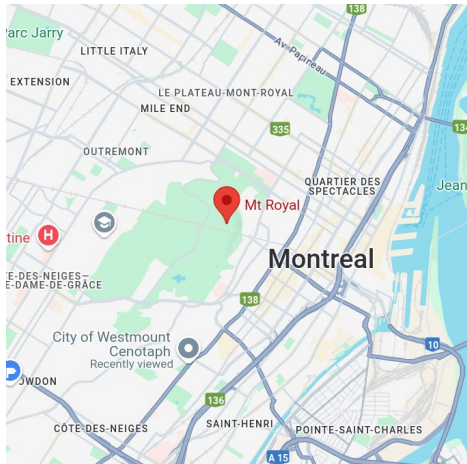
GIS - Vector Data

- Represents real world features exactly using latitude & longitude
- Three types:
 - **Points:** some coordinates
 - **Lines:** an ordered list of coordinates
 - **Polygons:** an ordered list of coordinates forming an enclosed area



GIS - Vector Data - Examples

- Points
 - Represent places, e.g. the location of a store, mountaintop, or
- Lines
 - Represents linear features, e.g. roads, bus route
- Polygons
 - Represents areas, e.g. rooms, parks, political boundaries



GIS - Slido

Join at

slido.com
#9232 031



GIS Software

- How to use create and use geographic data?
- How to identify connections between data?
- How to produce maps?

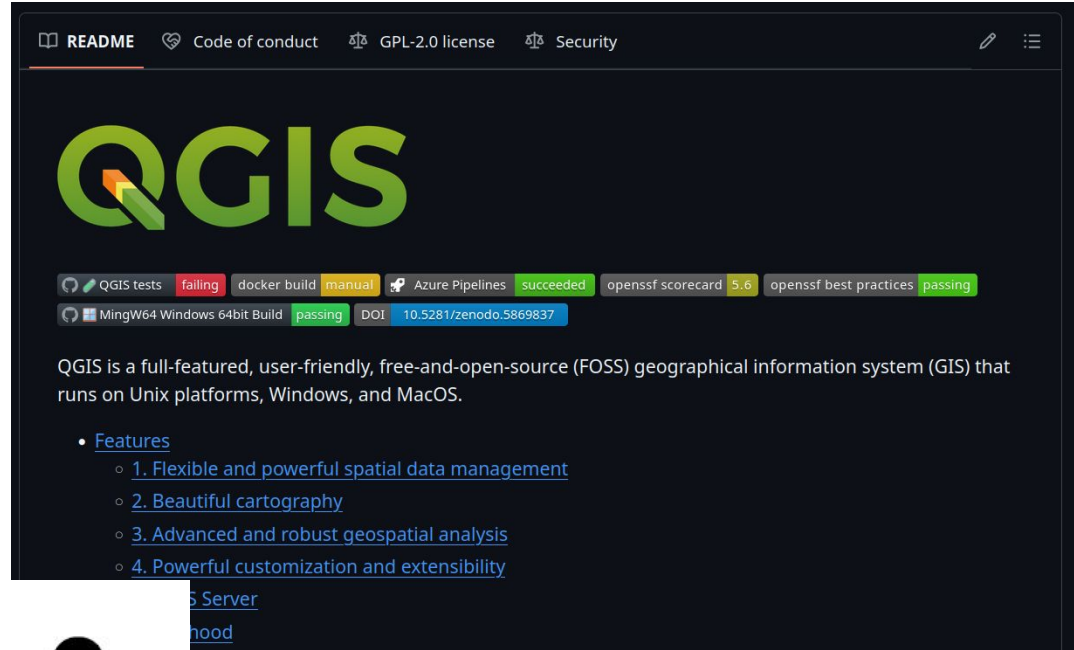
GIS software!

GIS Software

- David vs Goliath



esri



QGIS & OSM for Research

Research question: the Economist Intelligence Unit has tasked us with determining the most liveable neighborhood in Montreal out of 7 options for their 2024 Canada report.

Home > Canadian Liveability Index 2024



EIU report

The Canadian Liveability Index 2024

EIU's index quantifies the challenges presented to an individual's lifestyle in Canada's only liveable city, Montreal.

Find out which Montreal neighborhood topped our rankings for the third consecutive year.

[Download free summary](#)

QGIS & OSM for Research

Research question: the Economist Intelligence Unit has tasked us with determining the most liveable neighborhood in Montreal out of 7 options. The metrics are as follows:

1. Coffee shops good (*# of cafes within 500 m = α*)
2. Fast food bad (*# of fast food locations within 500 m = β*)
3. Bus stops good (*# of bus stops within 500 m = δ*)

$$\text{Liveability index} = 3\alpha + \delta - \beta^2$$

(highly paid engineers determined this metric)

QGIS & Research Live Demo



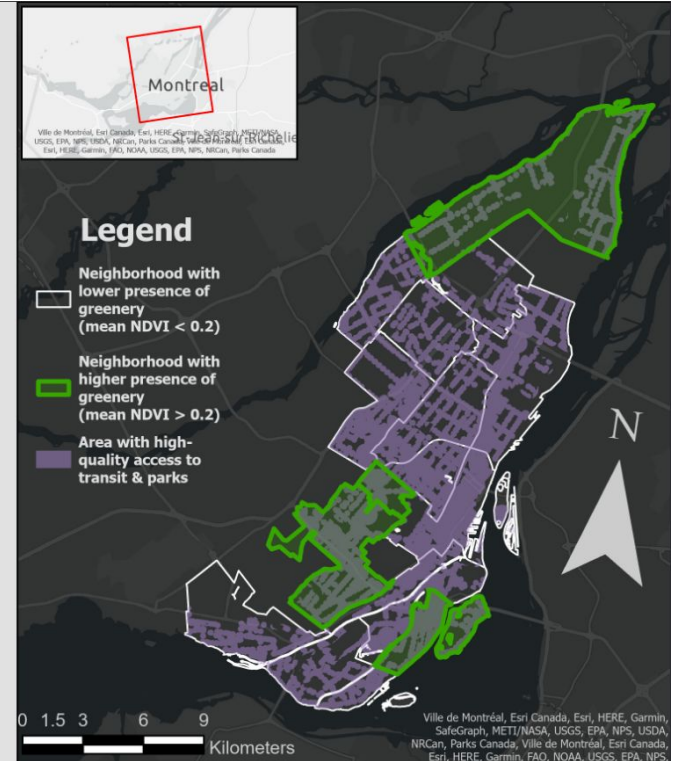
QGIS & OSM for Serious Research

- Copernicus Open Data Portal
- National census data
- ... and more!

Parks, Transit, and Trees: Where is there all three in Eastern Montreal?

Author: Nicholas Foisy
18 December 2023
GEOG201 - Final Exam

Data source:
City of Montreal (2023),
Société de transport
de Montréal (2023),
Copernicus Data Space
Ecosystem (2023),
OpenStreetMap Contributors
(2023)



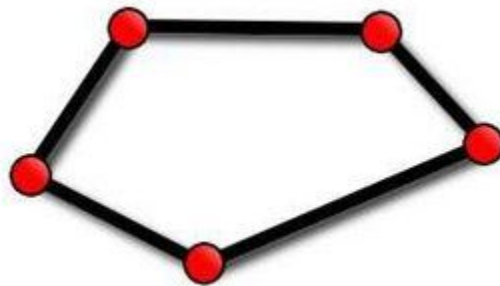
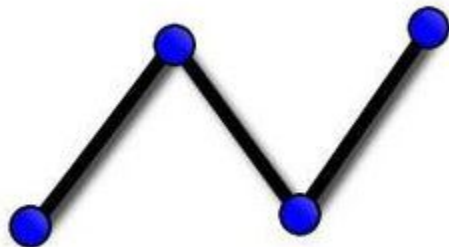
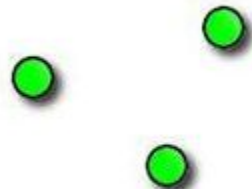
Curbcut & Web Mapping



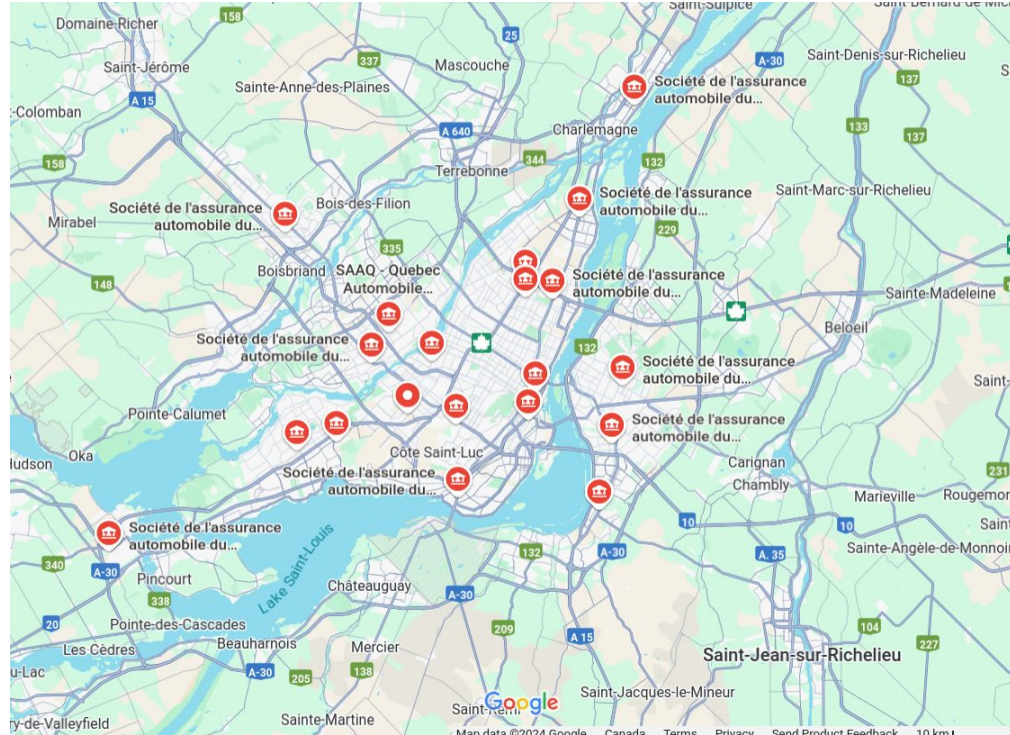
Modelling the world with OpenStreetMaps Workshop

McGill Open Mapping Group

Basics of geospatial data



How to represent places?



How to represent streets?



How to represent buildings and rooms?



The screenshot displays a Mapbox interface with a dark-themed map of McGill University. Buildings are represented as light gray polygons. The interface includes a search bar at the top, navigation controls on the right, and a JSON data panel on the right side. The JSON panel shows a FeatureCollection with a MultiPolygon geometry and its coordinates.

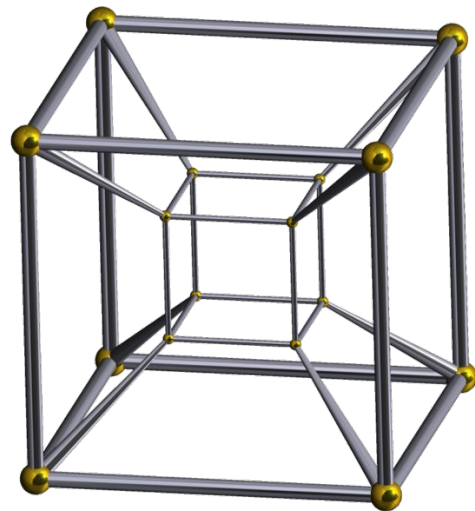
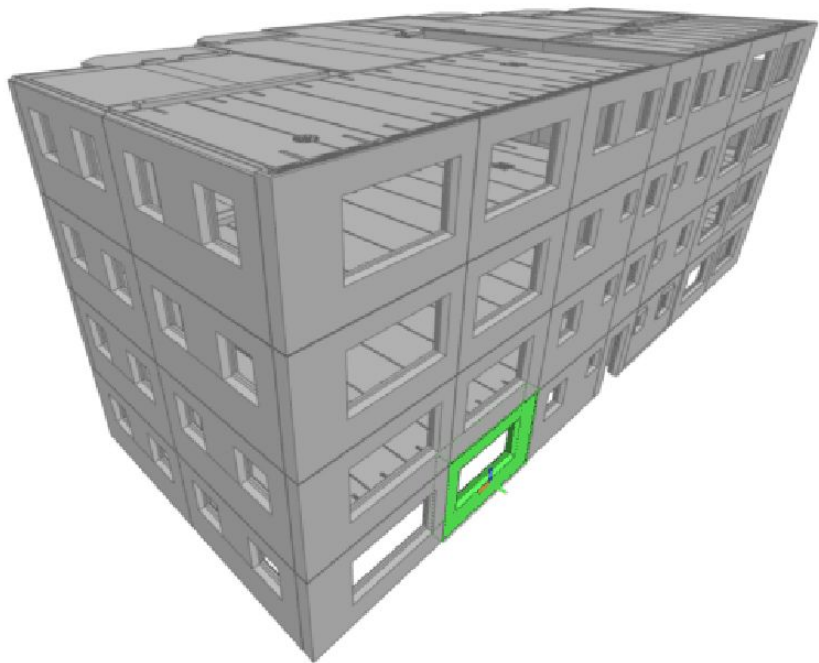
Mapbox interface elements:

- Top bar: Open, Save, New, Meta
- Search bar: Search
- Navigation controls: +, -, compass, street view, etc.
- Map styles: Standard, Satellite, Streets, Outdoors, Light, Dark (selected), OSM
- Mapbox logo
- Mapbox © OpenStreetMap Improve this map

JSON data panel (JSON view):

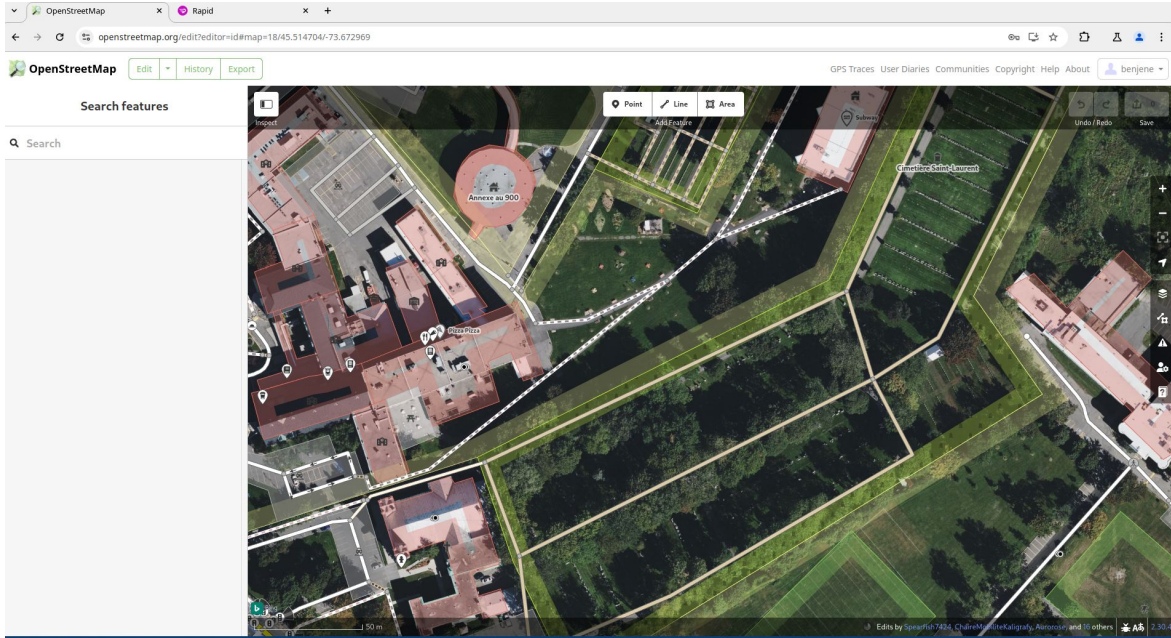
```
1 {
2   "type": "FeatureCollection",
3   "features": [
4     {
5       "type": "Feature",
6       "geometry": {
7         "type": "MultiPolygon",
8         "coordinates": [
9           [
10            [
11              [
12                -73.575721456,
13                45.505912868
14              ],
15              [
16                -73.575693194,
17                45.50589991
18              ],
19              [
20                -73.57568306,
21                45.505910247
22              ],
23              [
24                -73.574967953,
25                45.505563829
26              ],
27              [
28                -73.575097502,
```

Beyond two dimensions



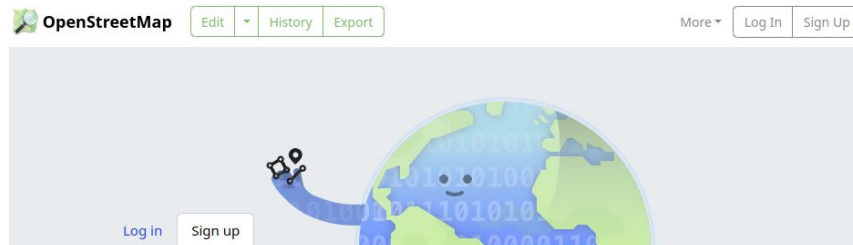
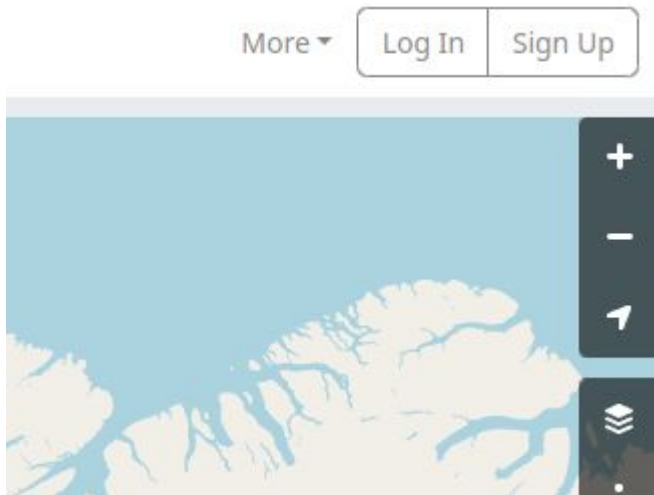
OSM Editors

- OSM iD Editor (classic)
- Facebook's Rapid Editor,
- powered by AI™



Account creation

openstreetmap.org



Free and editable. Unlike other maps, OpenStreetMap is completely created by people like you, and it's free for anyone to fix, update, download and use.

Sign up to get started contributing.

Email

Your address is not displayed publicly, see our [privacy policy](#) for more information.

Display Name

Your publicly displayed username. You can change this later in the preferences.

Password

Confirm Password

By signing up, you agree to our [Terms of Use](#), [privacy policy](#) and [contributor terms](#).

☐ I consider my contributions to be in the [public domain](#).

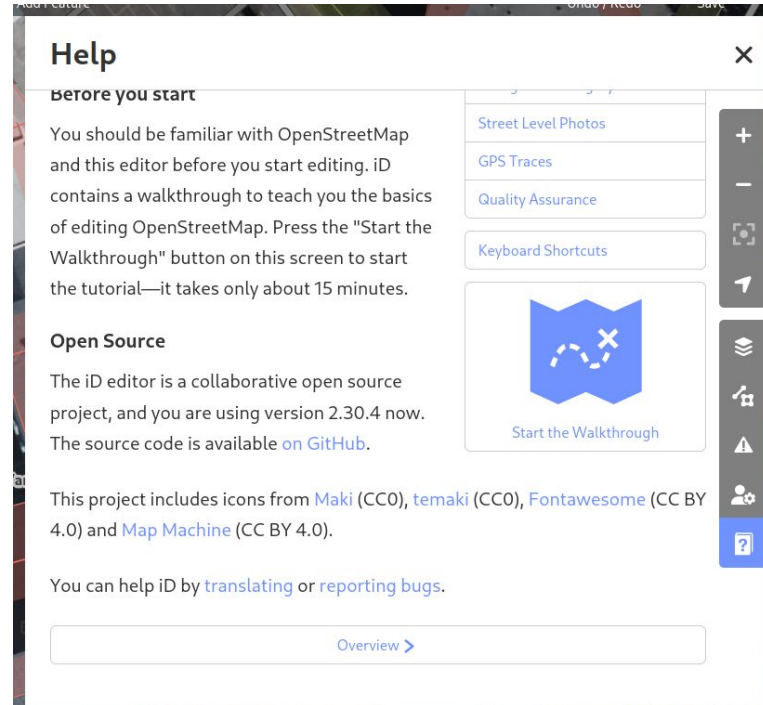
[Sign Up](#)

or sign up with a third party



OSM Mapping Tutorial

1. Go to openstreetmap.org
2. Click on Edit
3. Help > Start the Walkthrough



Mapping things around Vanier

