TeachOSM

GETTING STARTED WITH OPENSTREETMAP
Module 12: Creating a Simple Web Map

Recommended Ages/Grades
High School Students

Course Time Needed
Preparation: 1-2 hours
Execution: 50-90 minutes of class time

Materials Needed

For the educator:
Computer w/ Internet
Computer mouse
Web Browser
OSM Account

For the student(s):
Same as for the educator

Have questions or comments?
Reach out to us through email info@teachosm.org or tweet @TeachOSM

Learning Objectives
After completing this lesson, students will be able to:
1) Filter & export data from OpenStreetMap
2) Import and style map data in uMap
3) Publish a simple web map

This Lesson Meets:

National Geography Standards

Standard 1: How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information

Standard 2: How to use mental maps to organize information about people, places and environments in a spatial context.

Advanced Placement – Human Geography

Unit 1 – Thinking Geographically:
  → Different types of maps and what they tell you
 → How geographers collect and use data

Overview

In this worksheet you will find the steps for creating a map suitable for publishing on the web. With some tweaking, you can use these steps to create a static map for inclusion in a document. This module introduces several important geographic and cartographic concepts:

➔ Elements of a Good Map - Why should your audience care?

➔ Present an Understandable Map - Highlight your message for stakeholders

➔ Build a Cartographic Portfolio – Test design styles, refine student skills in mapping presentation

There are two parts to this project: 1) extracting data from OpenStreetMap, and 2) importing & styling the data in a web mapping application. We introduce two open-source tools to accomplish this: Overpass-Turbo to extract data, and uMap to format & publish your map.

You can find these utilities at the links below:

Overpass-Turbo: https://overpass-turbo.eu   uMap: https://umap.openstreetmap.fr/
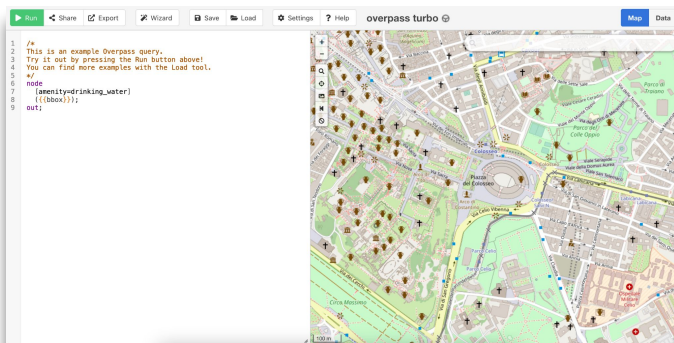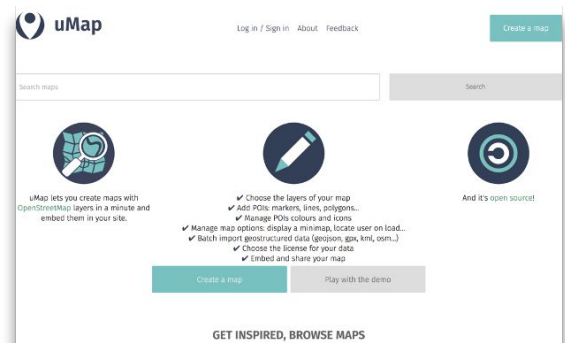
Preparation & Prerequisites

⇢ Facilitators and students should have created an OpenStreetMap account before undertaking this Module.

⇢ Facilitators and students should have a basic grounding in OpenStreetMap editing techniques.
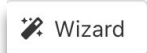
▶ **Watch:** How to use the Overpass-Turbo interface for OpenStreetMap data:
https://www.youtube.com/watch?v=gfuUbpAFoys

Part 1: Export your data from OpenStreetMap

Step 1: Determine the data type:

1. There are several methods for extracting subsets of OSM data, but the simplest is to use the **wizard** at https://overpass-turbo.eu/ The button looks like this: 🪄 Wizard

2. To use the wizard, it is helpful to review the structure of OSM data to know what data you'll extract:
   a. **Nodes** are simply points.
   b. **Ways** are lines. When lines close to form a polygon, they are **areas**.
   c. **Relations** are lines or polygons that are logically related, e.g. interstate highways are formed from multiple ways joined together.
   d. **Tags** are identifiers and descriptive attributes.

Node ⊡   Way ⋯ ⋯ ⋯   Relation ⊞   Tag k=v

Being familiar with the keys and values in the tags will help you extract data. Find the feature you're interested in on the **Map Features page** on the OSM wiki:
https://wiki.openstreetmap.org/wiki/Map_features
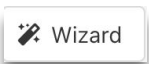
Step 2: Extract the data from Overpass-Turbo:

1. Point your browser to https://overpass-turbo.eu/
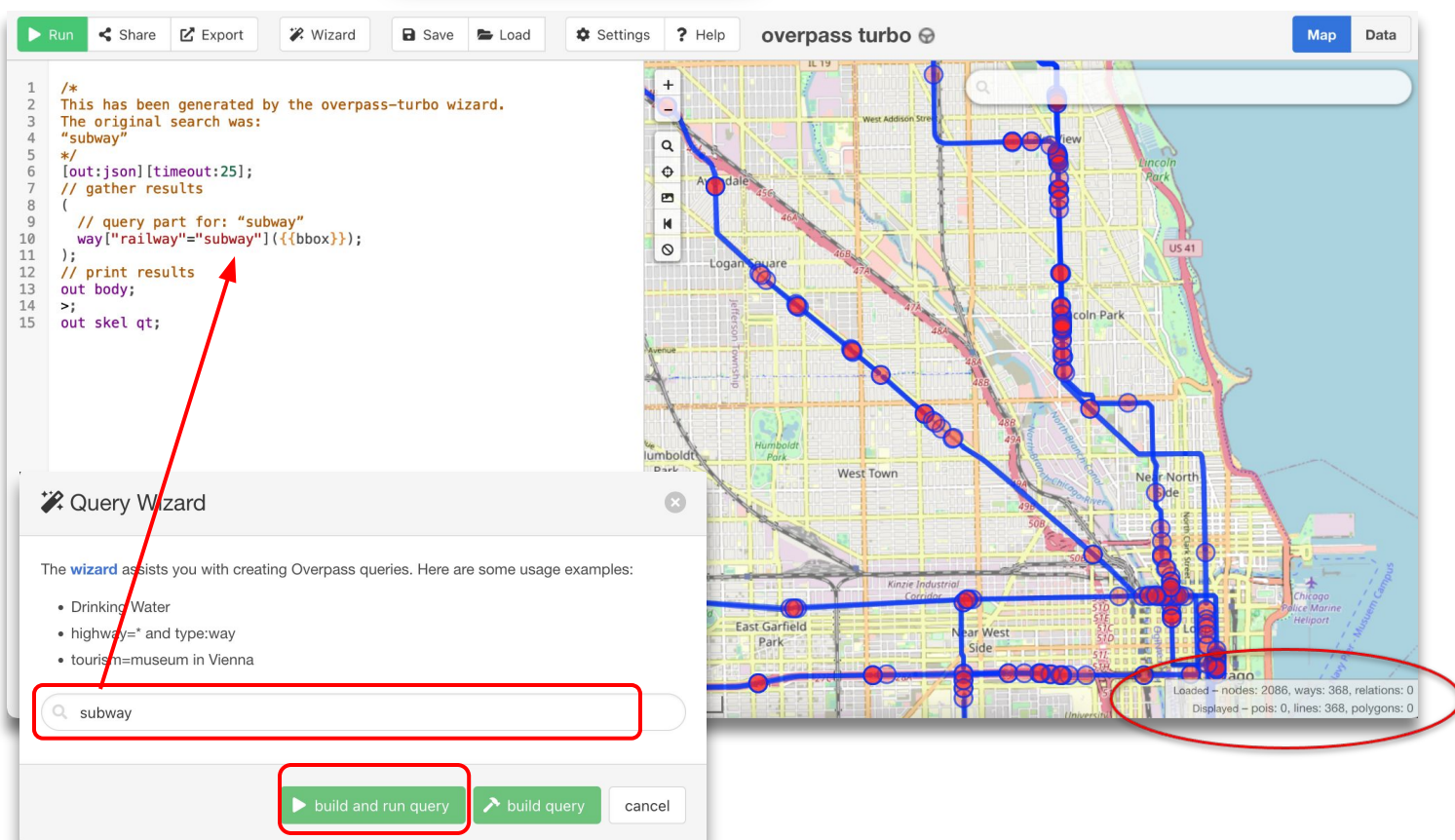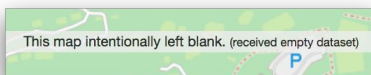
2. Zoom the map to your **area of interest (AOI)**. Or, you can use the search box, shown below, to find a place.
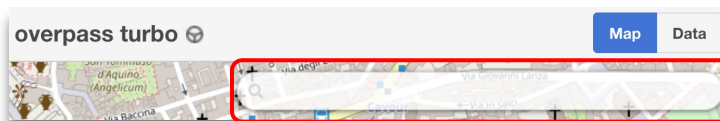
   a. Be sure your whole AOI is visible - the default search is the visible area

   b. It's okay to overgrab data because we can delete it later in uMap

Step 2: Extract the data from Overpass-Turbo (cont'd):

1. Use the wizard to enter key and values for the data you want to extract to show on your map:

    a. Click the wizard button... ⚡ Wizard

    b. The wizard has some example to guide you. For this exercise, we entered **'subway'** in the search bar, outlined in red below. Enter your term, then click, **'Build and run query'**, also shown below.

2. Overpass-Turbo will search the visible area and return a map, like the one shown below. The highlighted lines and dots are features returned from OpenStreetMap that match our query for **'subway'**.

3. If your query has no results, you might see a message like this, and you'll have to adjust your search terms a bit:

Nodes, ways and relations are shown here. If you want to make sure you only get nodes, enter the following into the wizard:
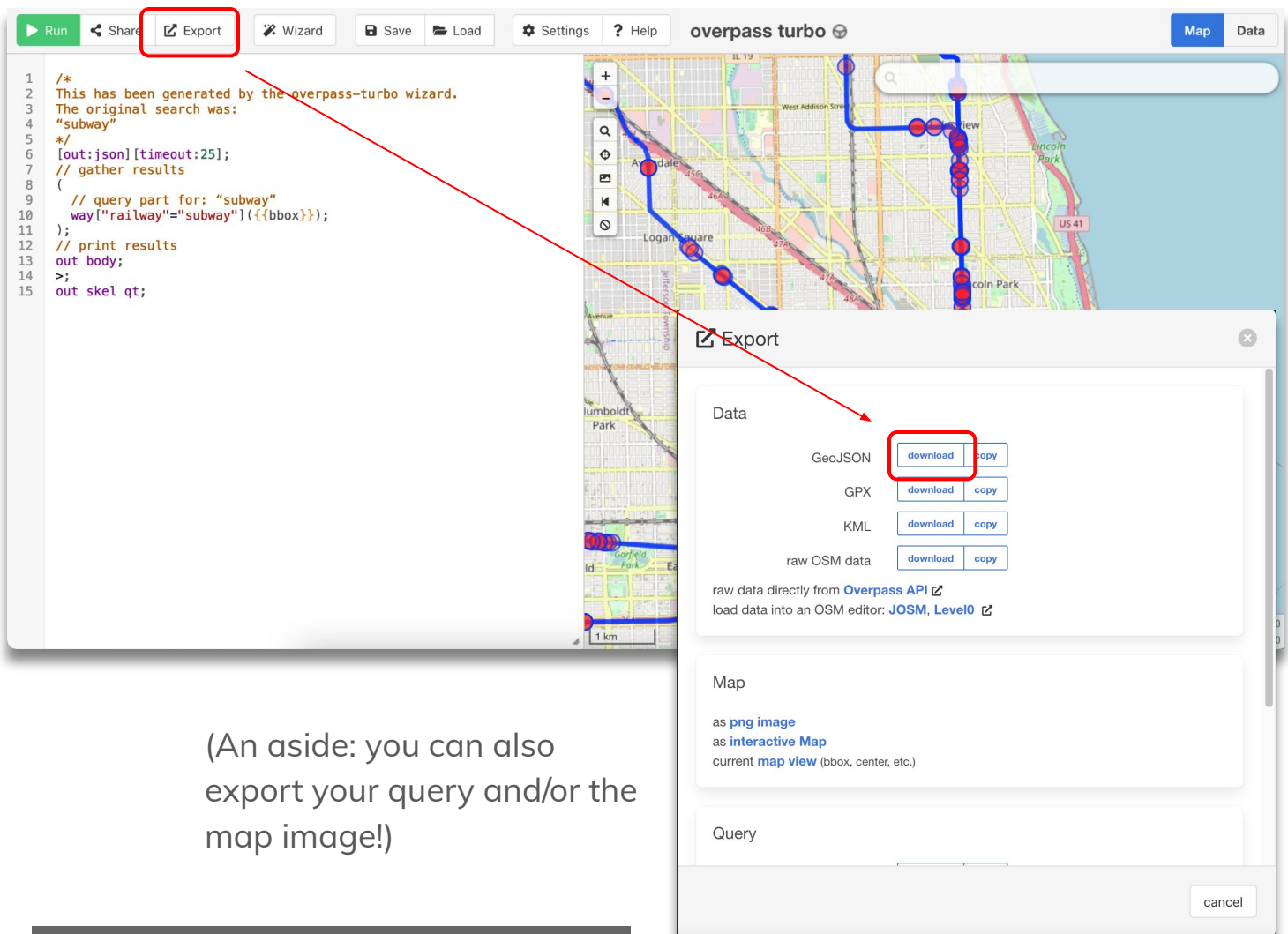**type:node**

Step 2: Extract the data from Overpass-Turbo (cont'd):

4. Now **export** the data to a file. Click the export button, shown at right. ⬀ Export

5. From the Data options, select GeoJSON and click 'download', as highlighted below. A file called, 'export.geojson' will be saved to your default download location (like your desktop or Downloads folder).

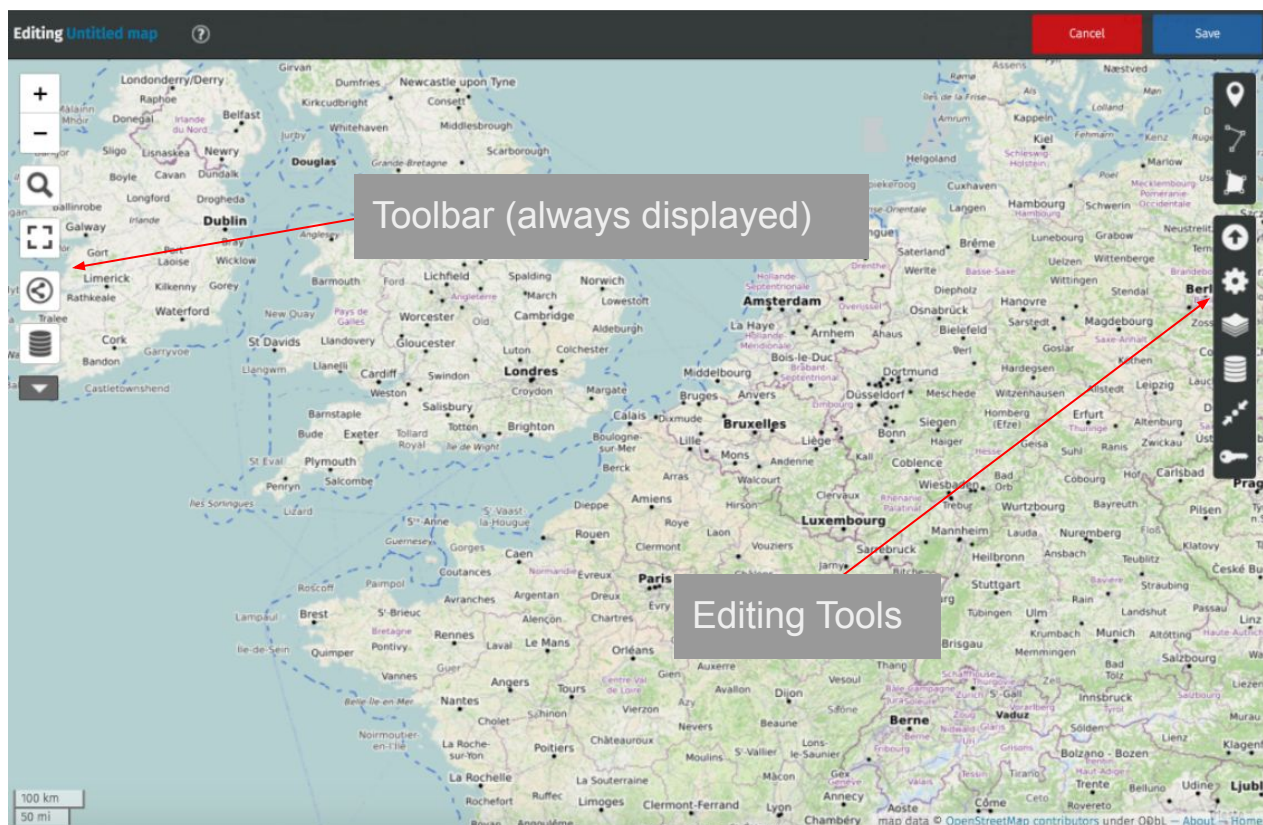(An aside: you can also export your query and/or the map image!)

Now that you've extracted the data from OSM, you're ready to move on to Part 2: creating your web map.

Step 3: Creating your map in uMap

1. Point your browser to **http://umap.openstreetmap.fr/en** and click 'Create a Map'

   Create a map

2. You'll arrive at a screen that looks like the image below:

3. UMap automatically starts in editable mode, with the editing tools on the right. The toolbar on the left is what will remain on the final webmap.
4.

Step 3: uMap Editing Tools

1. When the horizontal dark grey bar is present across the screen and you can see these tools, you are in editing mode. You can disable editing, but easily go back by toggling with the large pencil icon.
    We will be using these tools in the next steps.

Dark grey bar indicates edit mode.
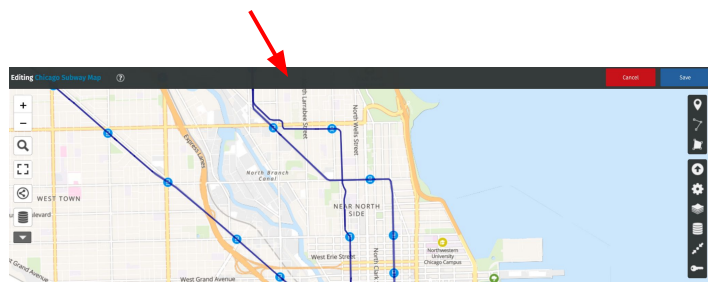
Manual Drawing Tools

Import Data ——

Map Settings ——

Select Basemap ——

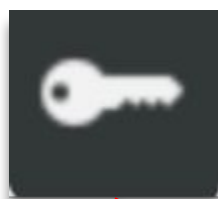Create & Manage Layers ——

Save Center & Zoom ——

Control Editing Permissions ——

Step 4: Controlling who can edit your map

If you want to allow everyone to be able to edit the map (and this means *EVERYONE* in the world that may come across it) you can set those permissions by clicking on the key icon. Otherwise, you can share editing with others by sharing a "secret edit link":

Click the 'key' icon, show below to restrict who can edit your map:

Step 3: Overview of map making process

1. Edit map title and provide description
2. Click Save
3. Pan/zoom to AoI
4. Pick basemap from tilelayer options
5. Create data layer(s)
6. Add a layer and give it a name
7. Import data or draw points/lines/polygons into your layer
8. Style data
9. Save center and zoom level
10. Copy URL from the browser's address bar or copy embed code
11. Share the map with your target audience!

uMap lets you create maps with OpenStreetMap layers in a minute and embed them in your site.

Step 5: Put a title on your map

1. Name your map! - This will become part of the URL.

2. Click on the '**Settings'** icon, shown here:

3. Enter a good description. Viewers will be able to see this text under the "About" section under the Browse Data option in the final map.

4. Enter *metadata* about your sources. Click '**Credits'** and enter **'OpenStreetMap'.**
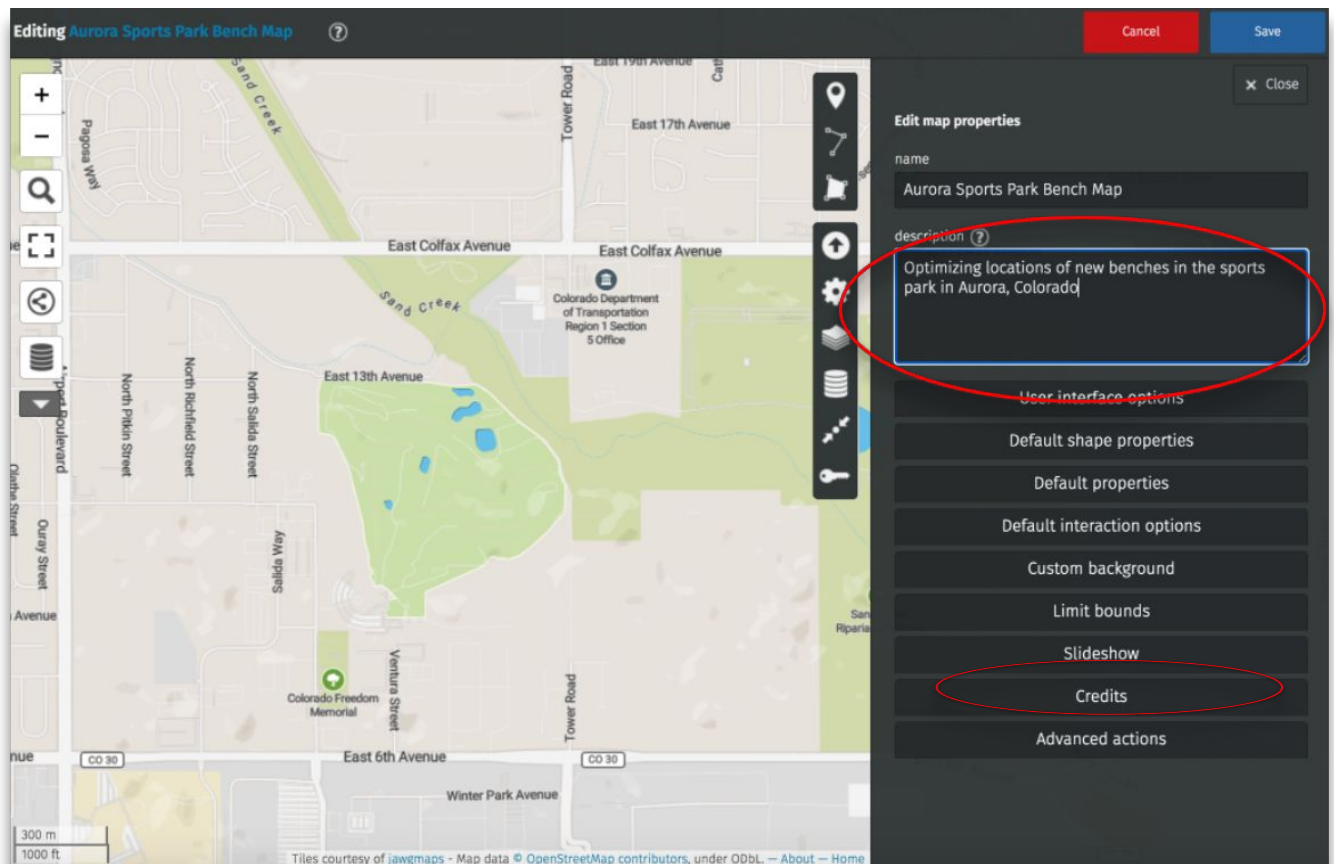
# Step 6: Select your basemap & center your map

1.   Click on the **'Basemap'** icon, shown here:

2.   Find your *area of interest* (AoI) by panning (click-hold & drag) and using the +/- keys to zoom to a good level for displaying your AoI. You can save this setting for your final map by clicking the **'Save center and zoom'** button, shown at right:

3.   Next pick a tile layer that will make your map uncluttered. Bring in just the context you need, but no more. One of the monotone options may be perfect!
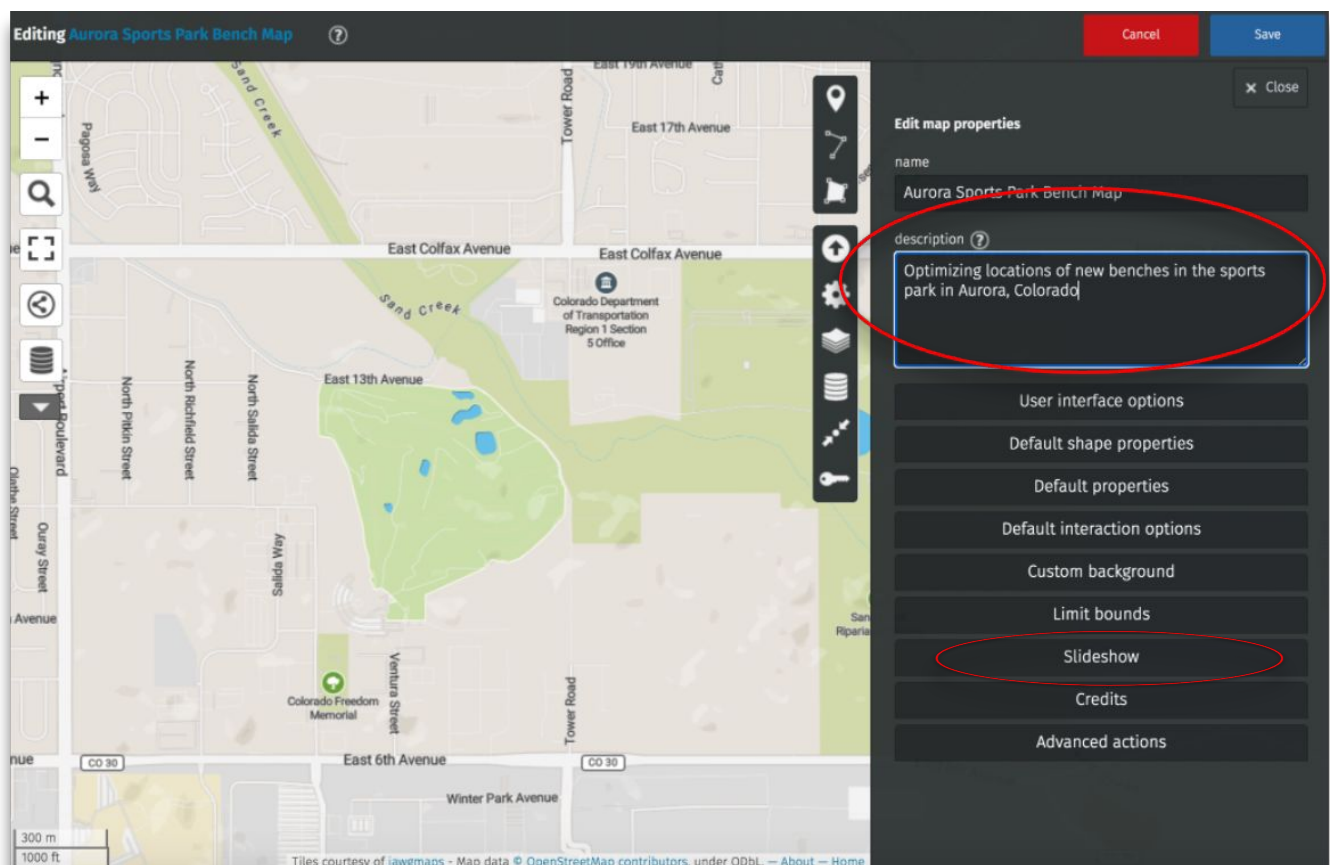
Step 7: Add your data layers

1. Different layers of data will essentially be different items in your legend. The example shown below shows three different layers. Think about how you want to symbolize each data layer and create separate layers.
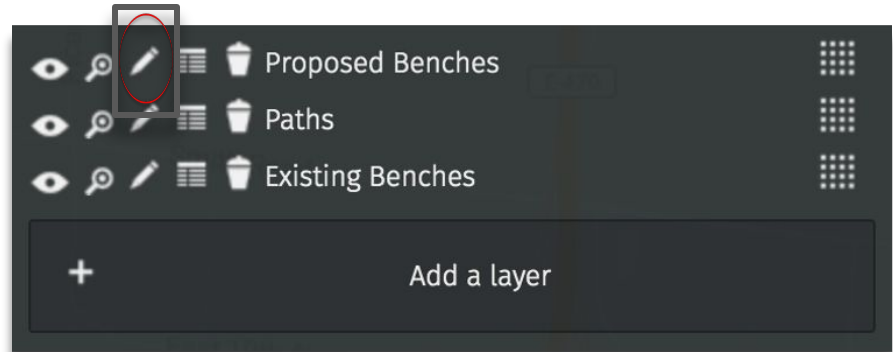
2. Click on the 'layer' icon, then click the pencil (circled above) to name each layer. You can then import data to these layers.

3. Alternatively, you also have the option of creating new layers when importing data. Click the 'Upload' button, shown at right:

4. Click **'Browse'** as shown at right, and locate your file. Select **'geojson'** for the file format, then select **'Import in a new layer'.** Finally, click 'Import' to complete the import.
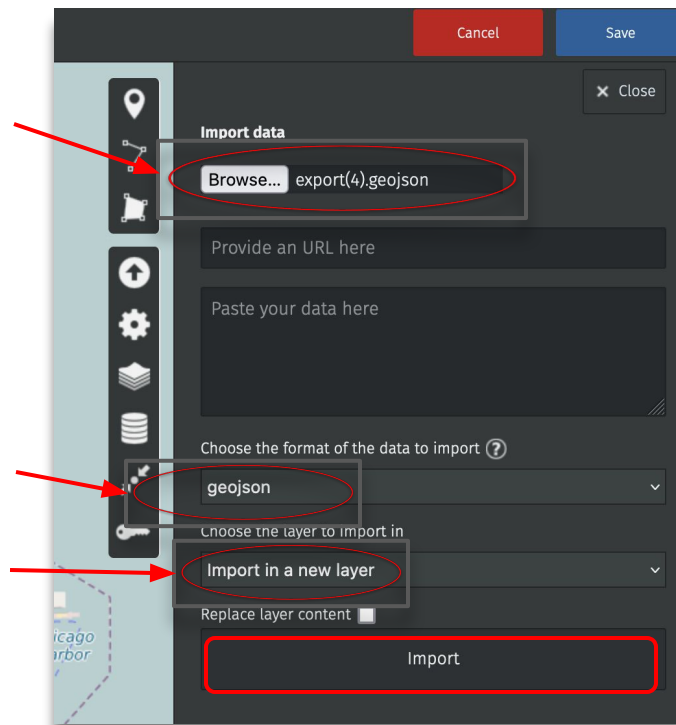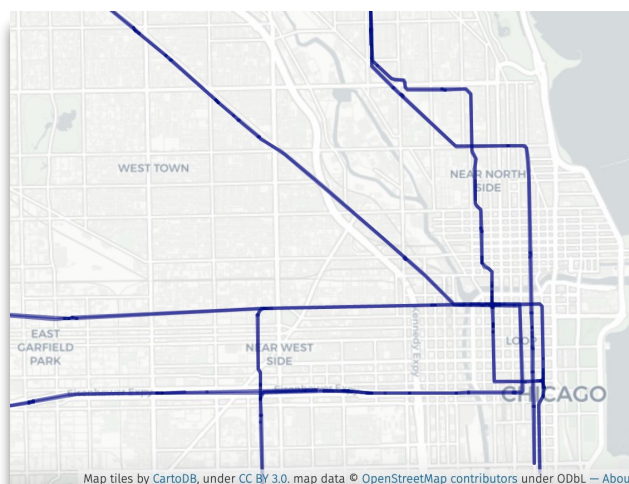
Step 8: Style your map

1. Click on the 'Settings' icon, shown at right.

2. Start by clicking on, 'Default shape properties' to change the colors and icons for your map features.
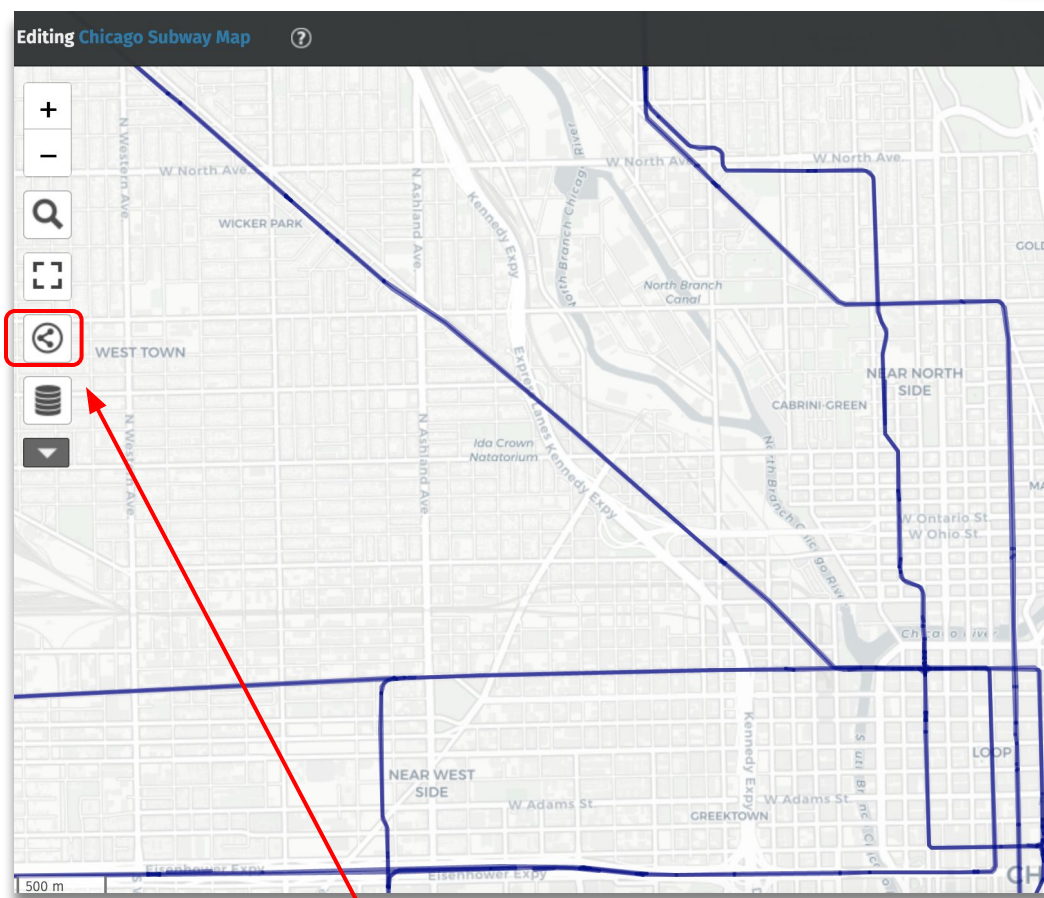
Step 9: Share your map!

1. Share your map by either:
   a. Copying the URL from the browser address bar (w/o lat/lon) and sharing the link.
   b. Embedding the map in a website using the provided code. Find the embed snippet by clicking the share icon.
   c. The share icon is in the standard map menu tools and looks like this:

The link for browsing data in the standard map menu tools serves as the legend for the webmap. The viewer can selectively turn layers on and off. Clicking on this grey bar opens the full legend where credits and licensing can be entered.

Activity 2: Lessons Learned

Discussion Questions

a. How does the Overpass-Turbo wizard help you think about how geographic features are tagged?

b. How does exporting data from OSM expand your view of how to use OSM?

c. How does data portability make maps more useful?

d. In what way does creating a web map help understand how style is independent from the underlying data?

e. Challenge: extend this lesson using live data from OpenStreetMap.

Share your photos and experiences from this lesson with other educators by tweeting **@TeachOSM**

For more lesson plans on geography and open mapping visit **teachosm.org**

Continue to
Module x: Replace with Module Title