

Using OpenStreetMap Data in ArcMap



Written by Kyle Monahan March 8th 2017

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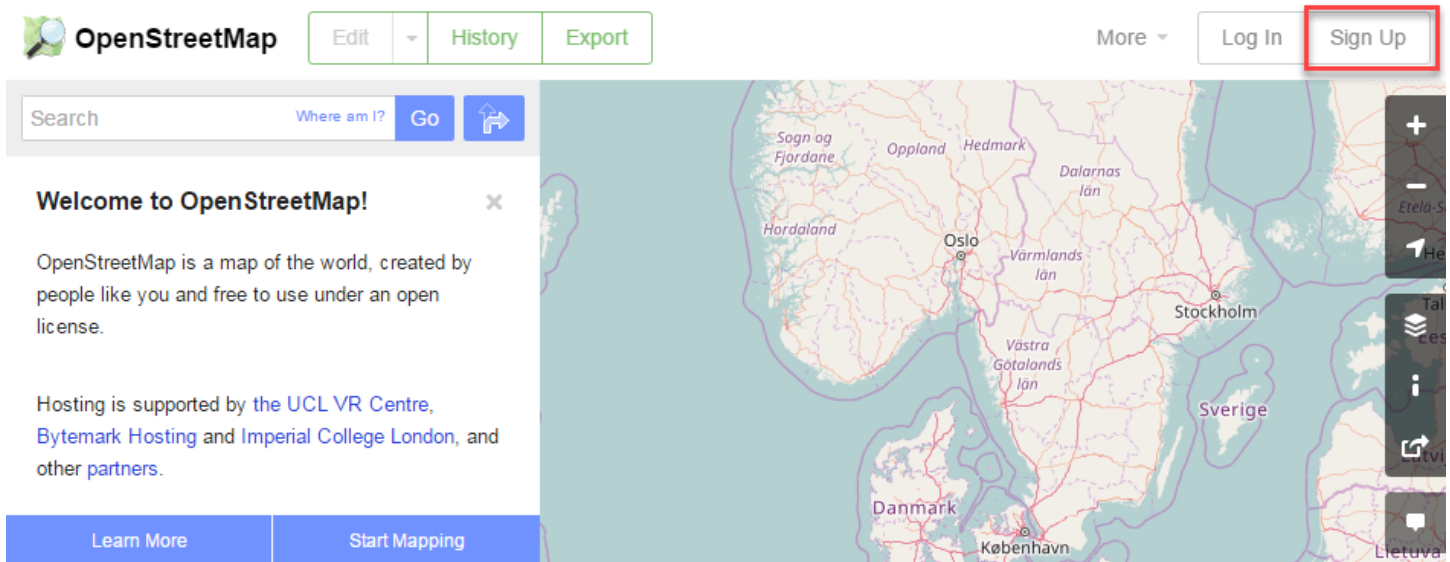
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Skills covered in this Tutorial Include:

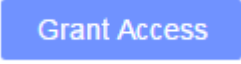
- Understanding the type of data that OpenStreetMap provides
- Learning key concepts when looking for data on online repositories (availability, data format, etc.)
- Using online extraction tools to export OpenStreetMap data into ArcMap

Prior to class

Before class, you will need to register for OpenStreetMap (OSM). To do this, do to openstreetmap.org. You'll see a map of the world appear. In the upper right hand corner, click **Sign Up**.



1. Fill in your email address, display name, and password. OSM will now send you a **confirmation email**. You will need to access the email address given to **confirm the account** and verify your email.
 - a. Be sure to check your **spam filter** for the confirmation email. Once you find it, click on **the confirmation link**.
 - b. If the registration email is from tufts.edu email, it may have been trapped in the **Tufts spam filter**. Go to <https://spamblocker.uit.tufts.edu/euweb/login> and login with the Tufts email (john.jumbo@tufts.edu) and password to check the Tufts spam filter. Once you find it, click on **the confirmation link**.

2. Once you've done that, go back to openstreetmap.org and login with the username and password you've created.
3. We will also have you create an account with the Humanitarian OpenStreetMap Team (HOT) Extract Tool (<http://export.hotosm.org/en/exports/create>).
4. Click Login to **OpenStreetMap**. Login to OpenStreetMap with the username and password you created in Step 3.
5. Click **Grant Access** () to allow the OSM (HOT) Export Tool to access your account.
6. You are now logged into **OSM** and the **HOT Extract Tool**.

Using OpenStreetMap (OSM)

OpenStreetMap is a collaborative effort to create a free and editable map of the world. Many other maps have copyright limitations, but OSM provides layers which you can download and use freely under an open license. If you would like to learn more about OSM, go to <https://www.openstreetmap.org/about>.

Today, we will use the online export tools within **OSM** and the **HOT Extract Tool** to export and work with data from Aleppo, Syria and other locations of your choice.

1. Go back to openstreetmap.org. **Search** for "Syria" in the search bar and click on "Aleppo, Syria." Zoom to a city in Syria and see what data are available. You can *view* the data here even if you aren't logged in.
2. Search through **two** other locations, using the mouse scroll wheel or the plus (+) and minus (-) signs on the map tool to explore different map extents.
3. How does that data shown change as you zoom to different extents? Why does this matter?
4. What type of data do you see for your locations?

Tools for Extraction and Export of OSM Data

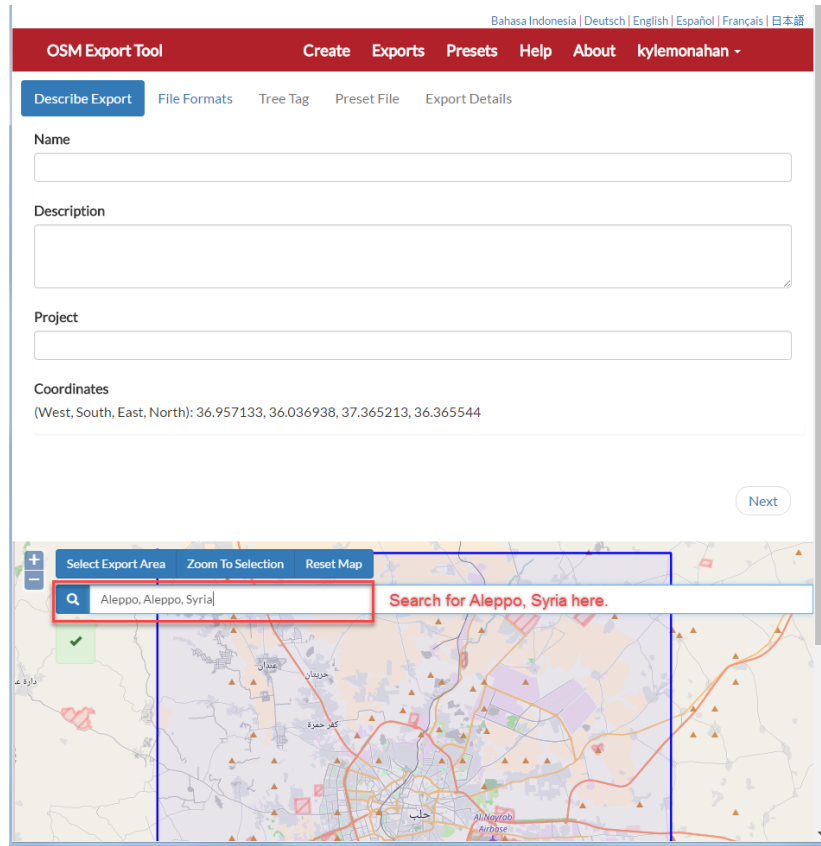
There are many methods for downloading and working with OSM data. A great reference for this information is found in the [OSM Wiki \(https://wiki.openstreetmap.org/wiki/Main_Page\)](https://wiki.openstreetmap.org/wiki/Main_Page). Some selected pages to open and look through:

- [OSM Wiki Shapefiles](https://wiki.openstreetmap.org/wiki/Shapefiles) - Overview of tools and techniques to download OSM in GIS formats. You can find a summary of the tools you can use to access OSM data here, including the ones below.
 - <https://wiki.openstreetmap.org/wiki/Shapefiles>
- [Humanitarian OpenStreetMap Team \(HOT\) Extract Tool](http://export.hotosm.org/en/exports/create/) - Allows custom OSM GIS extracts for much of the world. This is the **first method** we will use to extract OSM data.
 - <http://export.hotosm.org/en/exports/create/>
- [Mapzen Metro Extracts](https://mapzen.com/data/metro-extracts/) - Selected global metro OSM areas available in GIS formats. User can also define area for custom GIS format extraction. Allows for export of data by feature type, which can be useful. This is the **second method** we will use to extract OSM data.
 - <https://mapzen.com/data/metro-extracts/>
- You can save OSM (.osm) files and zipped feature files from these websites, and import that data into ArcGIS.

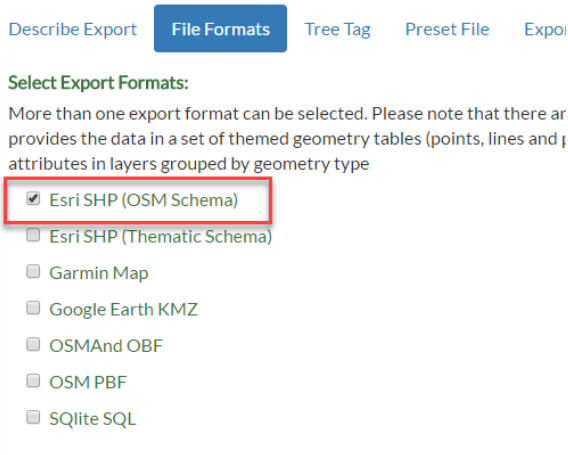
Method 1: Humanitarian OpenStreetMap Team (HOT) Extract Tool

The Humanitarian OpenStreetMap Team Extract Tool is a service which allows for customized OSM GIS data extracts for much of the developing world. It is a streamlined and simple interface, and we will use this method first.

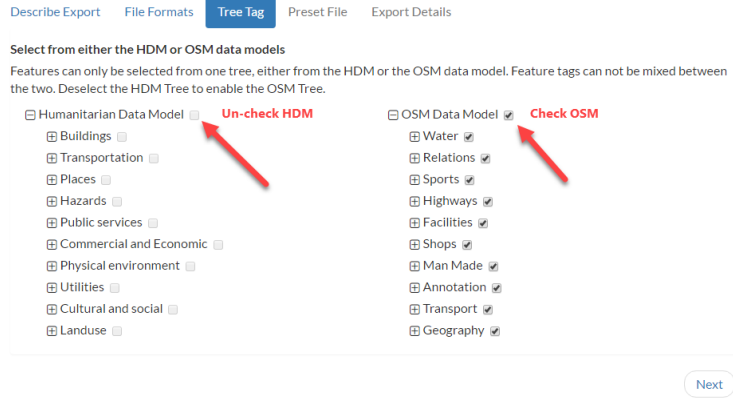
1. Open the website in your browser by navigating to: <http://export.hotosm.org/en/>
2. The OSM Export Tool will open. In the **Search** bar halfway down the page, type in "Aleppo, Syria".




3. Click on **Select Export Area**. Drag and drop a box around your area of interest, capturing as much of the city of Aleppo as you think is relevant.
4. The **Coordinates** above the map will adjust to the box you have selected. Fill out the following:
 - a. **Name:** Put in a name for the extract such as: *Aleppo_Syria*
 - b. **Description:** A short description of the scope of the export and why you selected that area.
 - c. **Project:** If you have multiple extracts for a single project, you can use the same project to organize them.
5. When you are done, click **Next**. Now we have to select an export format, which controls how the data is organized and sorted after export. We will choose **ESRI SHP (OSM Schema)**.



6. Click on **Tree Tag**. **Un-check Humanitarian Data Model** and **check OSM Data Model**.



- Click on **Export Details** and then click Create Export (). A spinning gear will show you that the OSM Export Tool is processing.
- Once the initial processing is complete, you will see a screen showing the status of the export process. You can see the **status** of your export, and the duration of each step.

Tasks:	Name	Duration	Size	Status
	Extract OpenStreetMap Data	0:00:05	11.863 MB	SUCCESS
	OpenStreetMap (PBF) File	0:00:00	0.892 MB	SUCCESS
	Generate OpenStreetMap Schema	--	--	RUNNING
	ESRI Shapefile (SHP)	--	--	PENDING

- When the extract is complete, you will see both a download link in your browser and an email in your inbox. Click on **ESRI Shapefile** to download the zipped shapefiles. Save the zipped shapefiles (SHP) file to your H: drive as *your_location_shp.zip*.

Export Runs

2:11:03 pm, March 8th 2017

Run Id: 5eac0d80-447c-4c1c-898d-434e96617dad

Status: COMPLETED

Run by: kylemonahan

Started: 2:09:54 pm, March 8th 2017

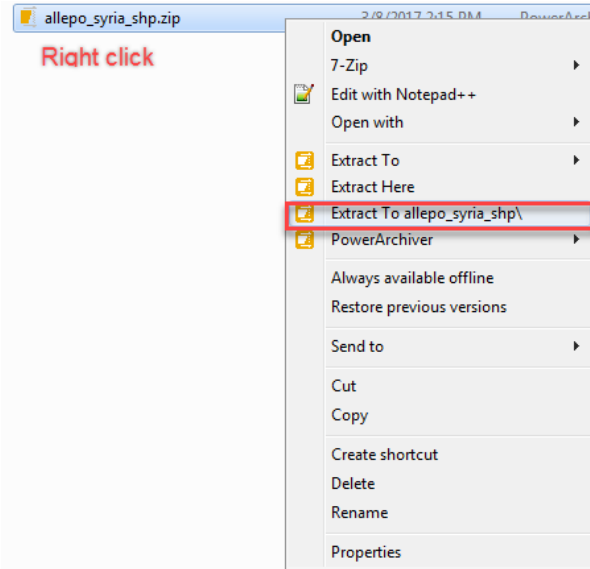
Finished: 2:11:03 pm, March 8th 2017

Duration: a minute

Download:

File	Duration	Size
OpenStreetMap (PBF) File	0:00:00	0.892 MB
ESRI Shapefile (SHP)	0:00:01	2.221 MB

- Create a folder called *OSM* in your H: drive (*Right click inside Explorer Window > New > Folder*). Then create a folder called *Aleppo* inside the *OSM* folder. Navigate to the saved location (*your_location_shp.zip*) and **unzip** the zipped shapefiles (*Right Click > Extract to [filename]*). Cut and paste these **unzipped** shape files to your *Aleppo* folder.



11. Open a blank map in ArcMap. Go to **Add Data** and navigate to the unzipped shapefiles and add it to the map.
12. You will see three shapefiles present, separated by geometry: *planet_osm_point*, *planet_osm_line*, and *planet_osm_polygon*. Right click on each and explore the **Attribute Table**.
13. Symbolize the attributes using the cartographic principals you’ve learned to create a cleaner map.

Method 2: MapZen Metro Extracts

1. Open the website in your browser by navigating to: <https://mapzen.com/data/metro-extracts/>
2. Search for “Aleppo, Syria.” Why do you find?
3. If you search for an item where pre-made extracts aren’t available from MapZen, the **Get Extract** wizard will appear (see B below). **Do not click Get Extract!** We will use a premade extract instead. Nonetheless, this is a useful functionality for accessing less popular metro regions.

metro extracts

Every week, Metro Extracts automatically creates snapshots of [OpenStreetMap](#) data into manageable, metro-area files in a variety of formats for you to use. Download an extract from the list of **200 most popular extracts** below to get started right away.

Can't find what you are looking for? You can get **custom extracts** of anywhere in the world. To get started, search for the place you are looking for.

Your Custom Extracts | Documentation | Tutorial | File Format Guide

Search for a pre-made extract

SEARCH FOR A CITY OR REGION

Q [example: Los Angeles] SEARCH

POPULAR EXTRACTS:

- ABU DHABI**
Dubai
- ALGERIA**
Algiers
- ANGOLA**
Luanda

We don't have an extract for Aleppo Governorate ready to download, but you can make your own!

Step 1: Confirm the boundaries of your custom extract. Drag the corners of the blue box on the map to adjust.

Step 2: Choose a name for your extract:

Aleppo Governorate, Syria

GET EXTRACT

(Note: Custom extracts take about 30-60 minutes to generate and you will be guided to sign in or sign up for a free Mapzen Developer account)

4. Now, browse the list of [popular extracts here](https://mapzen.com/data/metro-extracts/) and select a metro region of interest.
5. In the download page for your metropolitan area of interest, click on Shapefile under “**Datasets grouped into individual layers by OpenStreetMap tags.**” Note that you can also save data as individual layers by lines, points or polygons, as we did with Method 1. For ease of use, you might want to save data using this method in the future.

6. **Save** the shapefiles as Map_Zen_Extracts in your H: drive. Navigate to the zipped shapefiles and unzip them (*Right Click > Extract to [filename]*).
7. Open a blank map in ArcMap. Go to **Add Data** and navigate to the unzipped shapefiles and add them to the map.
8. You will see three shapefiles present, separated by tags. Right click on each and explore the **Attribute Table**.
9. Symbolize these layers as you did with the OSM data.

Further reading and viewing

If you would like to learn more about OSM and HOT tools, please see these links.

- Jeff Haack. "[Beginning OpenStreetMap 1 - Getting Started - HOT](#)." Online video clip. YouTube. 22 October, 2011.
- Jeff Haack. "[Beginning OpenStreetMap 2 - Signing Up and Making Your First Edits - HOT](#)." Online video clip. YouTube. 24 October, 2011.
- Humanitarian OpenStreetMap Team (HOT). "News" <https://hotosm.org/updates>. Online news aggregate. HOT. Last Updated: 06 March, 2016.
- [Map Kibera](#). "Citizen Mapping Project in Nairobi Using OSM" Unknown date. Accessed: 3-8-2017
- [LearnOSM](#). "LearnOSM Step by Step." Unknown date. Accessed: 3-8-2017
- [TeachOSM](#). "Teach OpenStreetMap Step by Step." Unknown date. Accessed: 3-8-2017