

Using OpenStreetMap Data in ArcMap

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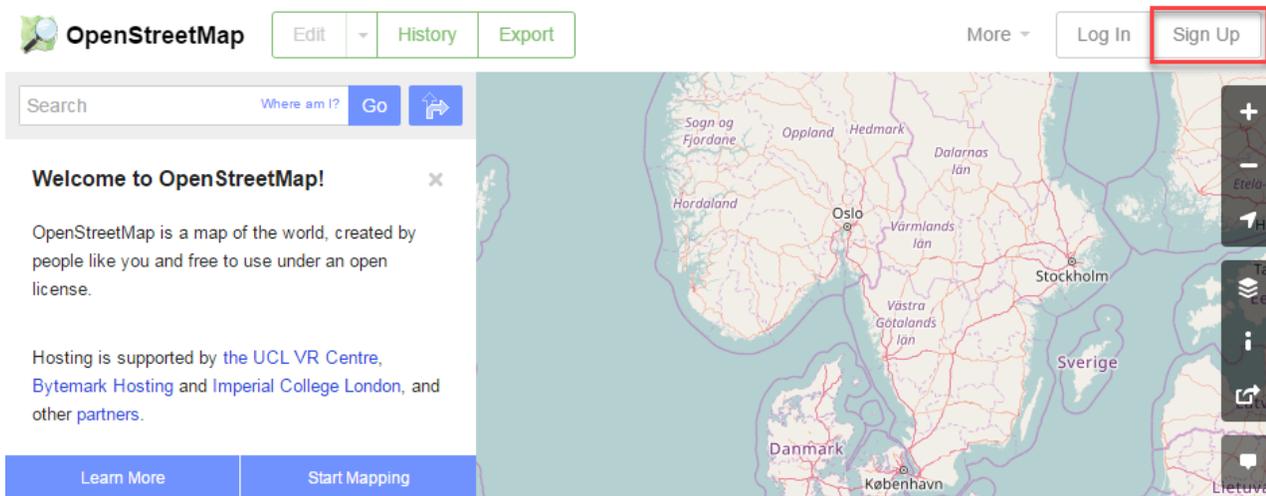
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Skills covered in this Tutorial Include:

- 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, go 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 you used your tufts.edu email to register, the confirmation email may have been trapped in the **Tufts spam filter**. Go to spamblocker.uit.tufts.edu and login with your Tufts email address (john.jumbo@tufts.edu not jjumb01) 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) Export Tool. Navigate to export.hotosm.org.
4. Click **Login** in the upper right hand corner and login with the username and password you created in **Step 1**.
5. A pop up will appear. Click **Grant Access** to allow the OSM (HOT) Export Tool to access your account.

Grant Access

6. You might be prompted to confirm your email address again. If this happens, type in your email address again and you will be sent another confirmation email. Locate the confirmation email from **HOT Export Tool** and click on *the confirmation link*. (You might have to check your spam filter again.)
7. 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. Scroll down the results list and click on **State Boundary Aleppo, Syria**. This will highlight the boundaries of Syria and the location of Aleppo. Zoom in 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? Look at the available layers (☰) and the legend (i). Use the query tool (👉?) to find out more about some interesting feature. (You might need to zoom in for that.)

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 at wiki.openstreetmap.org. Some selected pages to open and look through:

- **OSM 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) Export Tool** – Allows custom OSM GIS extracts for much of the world. This is the **first method** we will use to extract OSM data.
 - <https://export.hotosm.org/en/v3/exports/new/describe>
- **Humanitarian Data Exchange HDX) OSM Extracts**
 - <https://data.humdata.org/dataset?tags=openstreetmap>

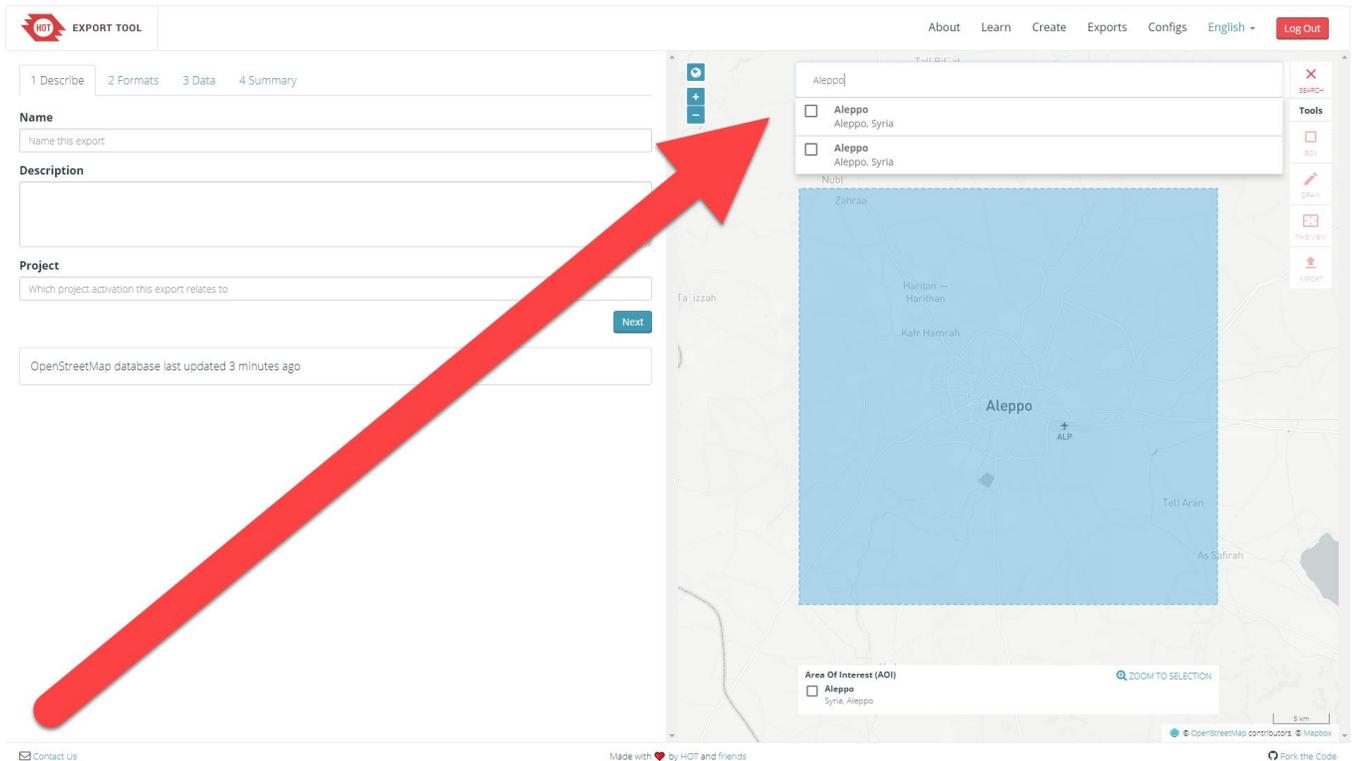
Method 1: Humanitarian OpenStreetMap Team (HOT) Export Tool

The Humanitarian OpenStreetMap Team Export 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 export.hotosm.org.
2. Click on **Create** in the navigation bar at the top right of the page.



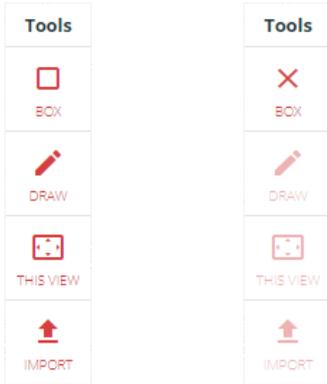
3. The OSM Export Tool will open. In the **Search** bar right underneath the navigation bar, begin to type in “Aleppo, Syria”. A drop down menu will appear. Click on either Aleppo selection. Notice a blue selection box appears around the area of interest. Use the zoom buttons or your mouse to explore the area.



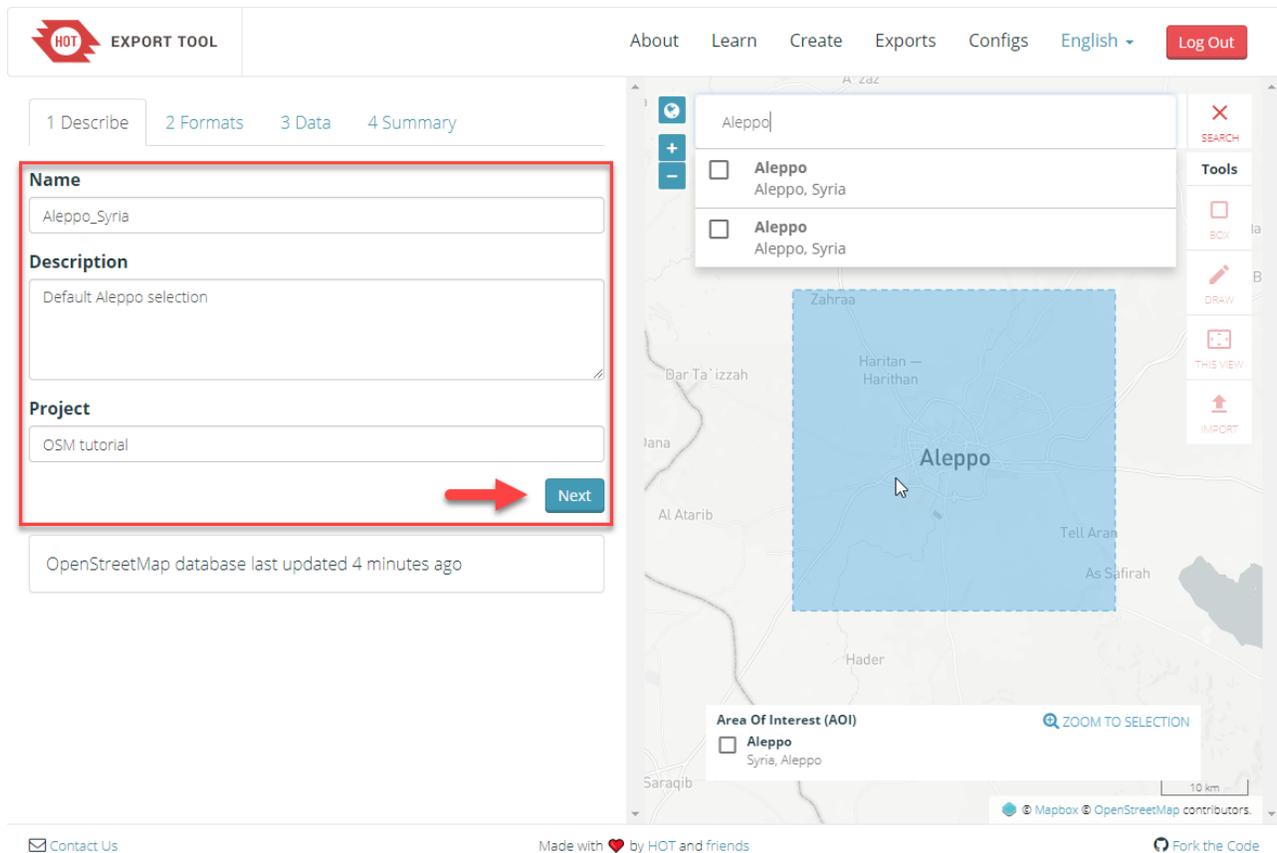
4. To draw your own blue selection box, click on the “X” on the search button to clear the current selection.



5. Now use the “Box,” “Draw,” or “This View” tools to create your own selection. Practice using each tool. To switch between tools, click the “X” on the current tool you are using to clear your selection before creating a new area of interest. (Note that *click-hold-drag* does not work for these tools. To use *Box*, you must first click to define one of the corners and then click again to define the opposite corner. *Draw* works in a similar manner.)



6. After exploring the map and the selection tools, clear your selection. Use the search bar to once again navigate to Aleppo, and click on the default selection as you did in **Step 3**.
7. Fill out the following on the “**Describe**” tab to the left of the map (see below):
 - a. **Name [REQUIRED]:** 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.



8. 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 **Shapefile (.shp)**.

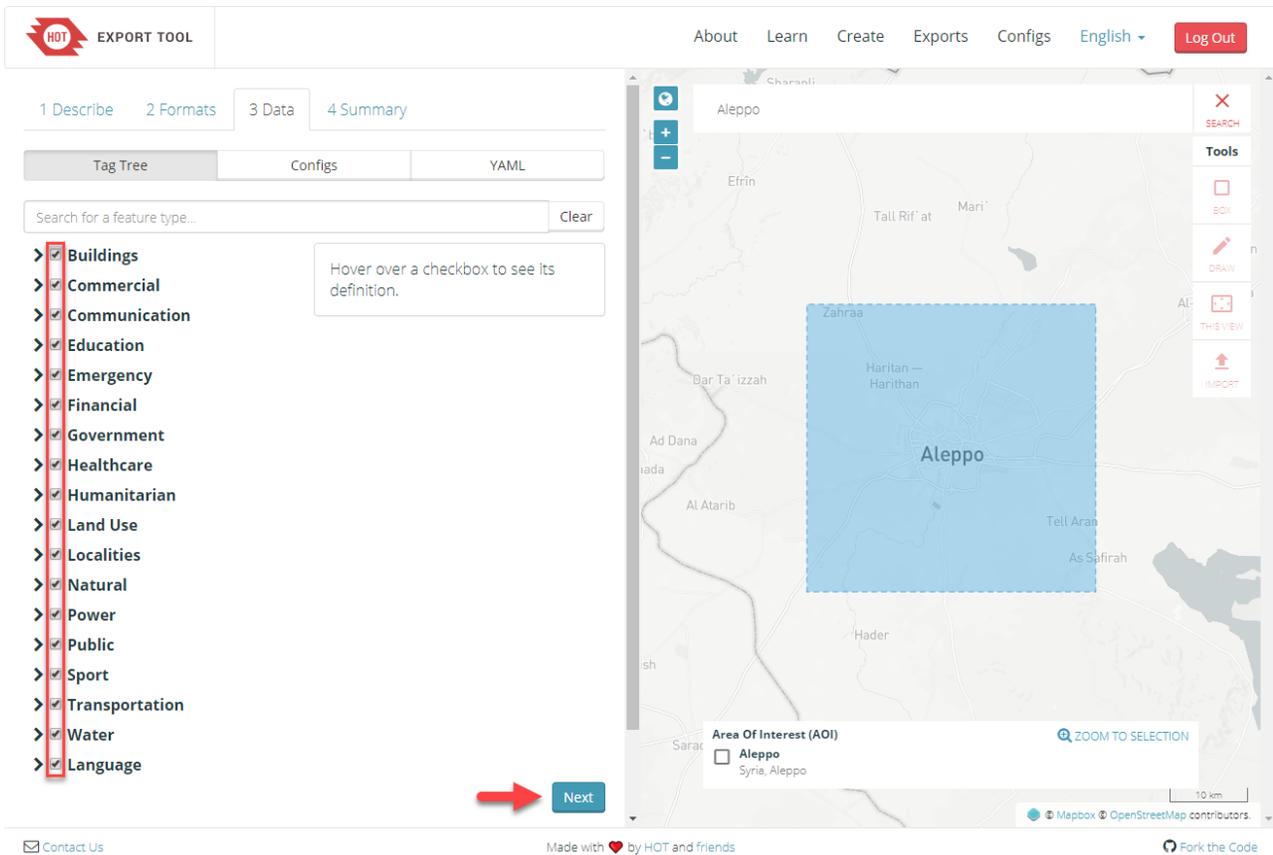
1 Describe

2 Formats

File Formats See [Learn \(Exp](#)

- Shapefile .shp
- GeoPackage .gpkg
- Garmin .img
- Google Earth .kml
- OSM .pbf
- MAPS.ME .mwm
- OsmAnd .obf
- MBTiles .mbtiles

9. Click on **Next**. This brings you to the “Tag Tree” selection under the Data tab. Use your mouse to hover over a checkbox and see its definition. Explore your options. **Check all** of the options from *Buildings* to *Language*. Then click **Next**.



10. Under the Summary tab, review your export details. Make sure that only “Publish this Export” is checked, then click **Create Export**.

1 Describe 2 Formats 3 Data 4 Summary

Name: Aleppo_Syria

Description: Default aleppo selection.

Project: OSM Tutorial

Export Formats:

- Shapefile .shp

Buffer AOI - expand an uploaded boundary by 0.02 degrees

Publish this Export

Bundle for POSM



Create Export

11. You will now see a screen showing the status of the export process. You can see the **status** of your export, and the duration of each step. The duration of the export process will depend on the size of the area you have selected, as well as the number and type of tags selected.

<p>Export #9c446770-fee7-49cf-9664-b8df5759db66</p> <hr/> <p>Description: Default Aleppo selection</p> <hr/> <p>Project: OSM tutorial</p> <hr/> <p>Area: 1352 sq km</p> <hr/> <p>Created at: Monday, February 19th 2018, 11:15 am</p> <hr/> <p>Created by: caressijac</p> <hr/> <p>Published: Yes</p> <hr/> <p>Export formats: Shapefile .shp</p> <hr/> <p>OSM Analytics: View this area</p> <hr/> <p>Features Re-Run Clone Delete</p>	<p>Run #d317c2ca-5058-488c-aa6f-0c9799efb118</p> <hr/> <p>Status: RUNNING</p> <hr/> <p>Started: Monday, February 19th 2018, 11:15 am</p> <hr/> <p>Finished:</p> <hr/> <p>Duration: a few seconds</p> <hr/> <p>Shapefile .shp</p>
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12. When the extract is complete, you will see both a download link in your browser and an email in your inbox. Click on the **Shapefile** to download the zipped shapefiles. Save the zipped shapefiles file to your H: drive as *aleppo_syria_shp.zip*.

Export #9c446770-fee7-49cf-9664-b8df5759db66

Description: Default Aleppo selection

Project: OSM tutorial

Area: 1352 sq km

Created at: Monday, February 19th 2018, 11:15 am

Created by: caressijac

Published: Yes

Export formats: Shapefile .shp

OSM Analytics: [View this area](#)

Features Re-Run Clone Delete

Run #d317c2ca-5058-488c-aa6f-0c9799efb118

Status: COMPLETED

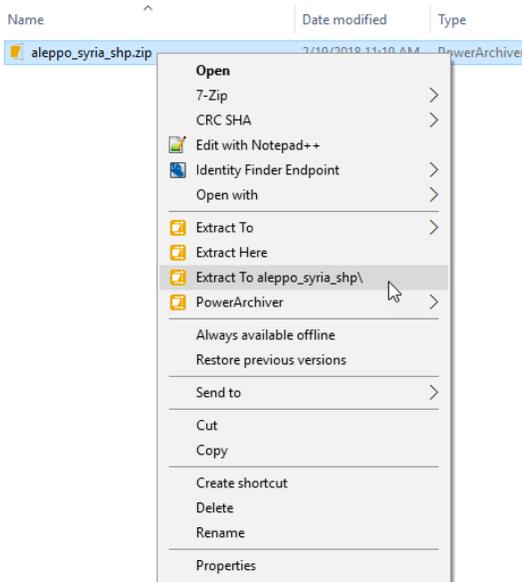
Started: Monday, February 19th 2018, 11:15 am

Finished: Monday, February 19th 2018, 11:16 am

Duration: a minute

Shapefile aleppo_syria_shp.zip
.shp (4.39 MB)

13. Create a folder called *OSM* in your H: drive (*Right click* → *New* → *Folder*). Navigate to the saved location (*aleppo_syria_shp.zip*) and **unzip** the zipped shapefiles (*Right click* > *Extract to aleppo_syria_shp*). Rename this newly created folder (*aleppo_syria_shp*) to **Aleppo**. Cut and paste this folder (*Aleppo*) into the *OSM* folder.



14. Open a blank map in ArcMap. Use your Catalog to navigate to the unzipped shapefiles and add them to the map.
15. 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**.
16. Symbolize the attributes using the cartographic principals you've learned to create a cleaner map.

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