4.2.2 Setting up OpenMapKit

Overview

OpenMapKit (OMK) is an extension that launches directly from within OpenDataKit (ODK) Collect when the OpenStreetMap question type is enabled in a standard survey. It is what allows you to browse OSM features, and to create and edit OSM tags.

Not sure if OpenMapKit is right for your project? Review Data Collection Applications.

Set-up Process

1. [Create OMK forms]
2. Create .mbtiles
3. Create .osm layer
4. Create constraint file
5. Download and set up ODK and OMK applications
6. [Add all above files to mobile data collection devices]

Creating OMK Forms

When using OMK survey applications, you will need to create the files that will serve as the survey forms.

Forms for OMK are slightly altered from ODK forms to incorporate the OSM tagging scheme and need to be built using spreadsheet software (such as Excel or LibreCalc). In addition to the structure of an ODK form, OMK forms require an additional 'osm' tab that alters the form structure for OMK. Documentation on how to design a form can be found here.

- Example OMK form
- Blank OMK form

Form conversion

After forms are developed, they need to be converted from .xlsx/.xls to .xml to be used by the ODK application. This can be done by using XLSform online or offline.

Create .mbtiles

MBTiles (.mbtiles) is the file format used for storing map tiles as a single file - the most common use case as baselayers for mobile mapping applications. There are multiple tools to create mbtiles, with selection based on baselayer type (aerial imagery), addition of vector layers, file size, zoom, etc. Many factors can influence the type of basemap that you need for your field data collection.

- If you are mapping buildings in areas that are rural and/or there are few landmarks in OSM, use an **aerial imagery basemap mbtile**.
- If you are working with mappers or surveyors with low map literacy, **aerial imagery basemap mbtiles** could reduce issues.
- If you are mapping points (such as POI) and/or working in well-mapped areas, simply using **OSM basemap mbtiles** would be feasible.
- If your mapping area is being divided into assignment areas or enumeration areas to divide among surveyors, consider adding **vector layers** to your mbtile for mappers work from.

I need .mbtiles with…	HOT Export Tool	Tile Mill	TileHuria
Aerial Imagery Basemap	X	☒	☒
OSM Basemap	☒	☒	☒

I need .mbtiles with…	HOT Export Tool	Tile Mill	TileHuria
Vector layers (i.e. enumeration areas)	X	☒	X

Resources

- OSM Wiki: https://wiki.openstreetmap.org/wiki/MBTiles
- Mapbox: https://docs.mapbox.com/help/glossary/mbtiles/

HOT Export Tool

HOT Export Tool allows users to download OSM data by specifying tags, area of interest, and file type. Learning resources and walkthroughs can be found at the HOT Export Tool Learn page.

Skill level: Easy

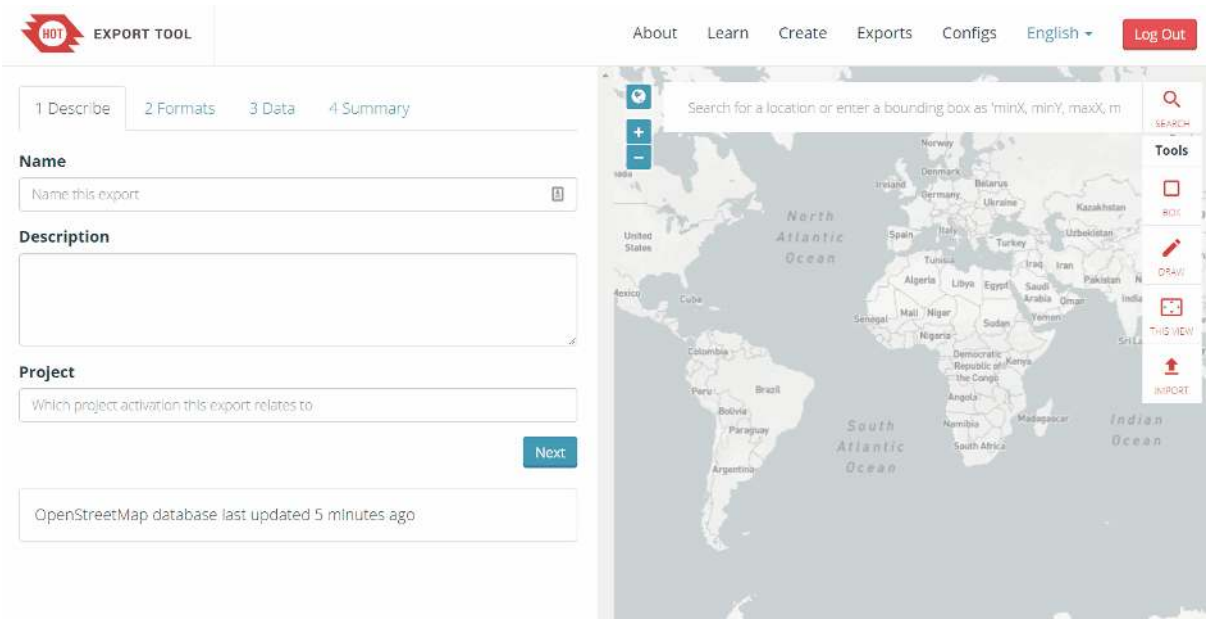
Tools and Technology Needed:

- Computer
- Internet Connection
- OSM Account

To get started, open an internet browser and go to: https://export.hotosm.org/ To use the HOT Export Tool, you will need to log in using your OSM username and password, by clicking the red “Log In” button in the top right-hand corner.

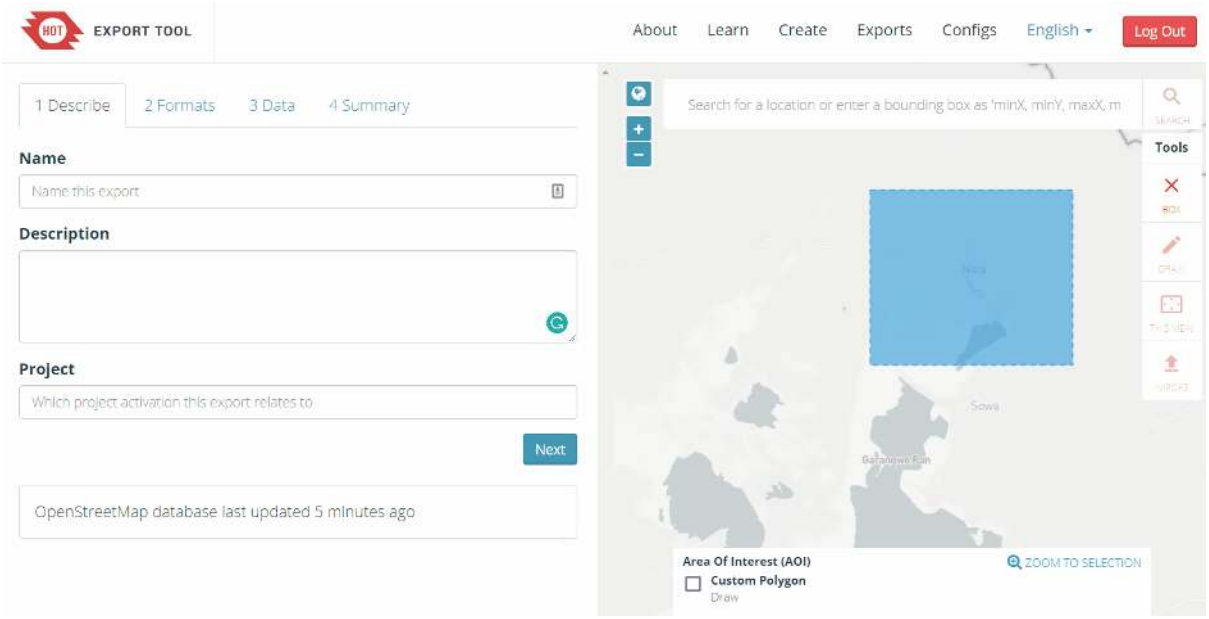
Select ‘Create’ in the top menu.

Select an AOI on the map by searching a place, uploading a .geojson, or drawing an area in the map to the right. To draw an area of interest, zoom in and find a location of your choice (i.e. Zwedru, Accra). Once you have zoomed in to your area of interest, select the box tool from the Tools Menu on the right. Click one corner to start drawing a box, then select the opposite corner to complete the box. This is your AREA OF INTEREST that will be downloaded.

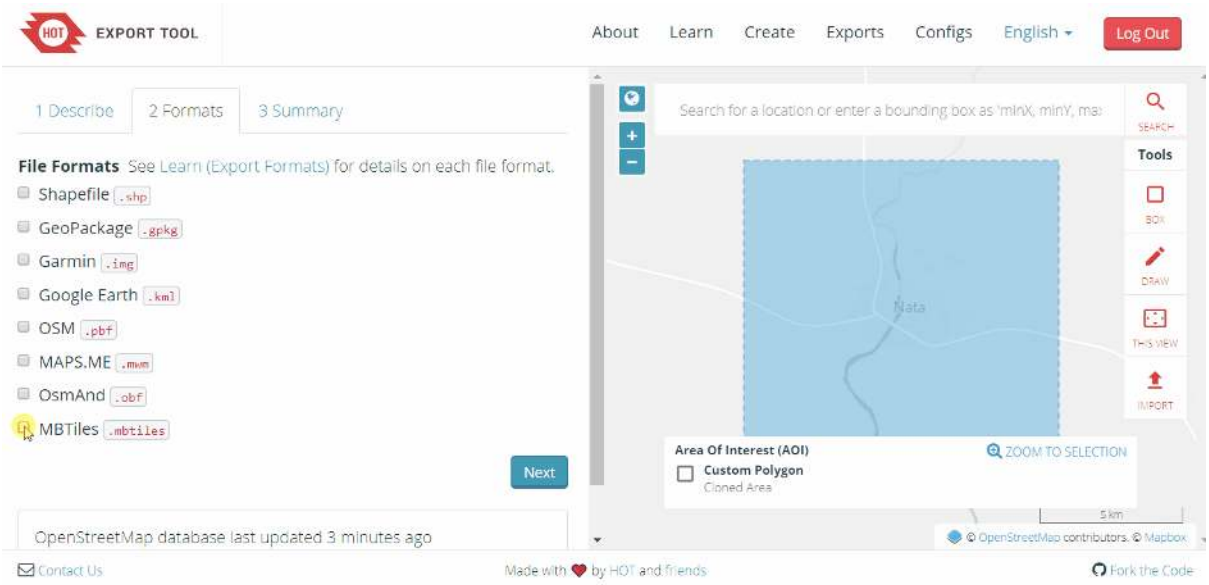


On the left hand side of the window, fill out the “1 Describe” options:

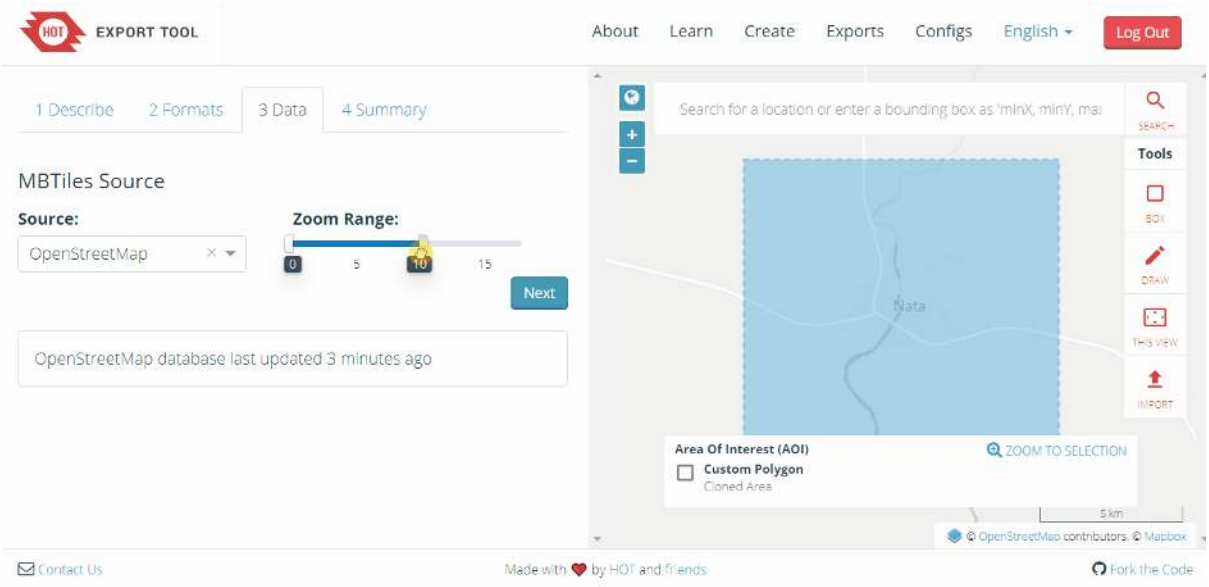
- Name: “[YOUR OSM USERNAME] Test Export”
  - For example, “jessbeutler Test Export”
- Description (optional)
- Project (optional)
  - For example, “Government Inclusion Project”



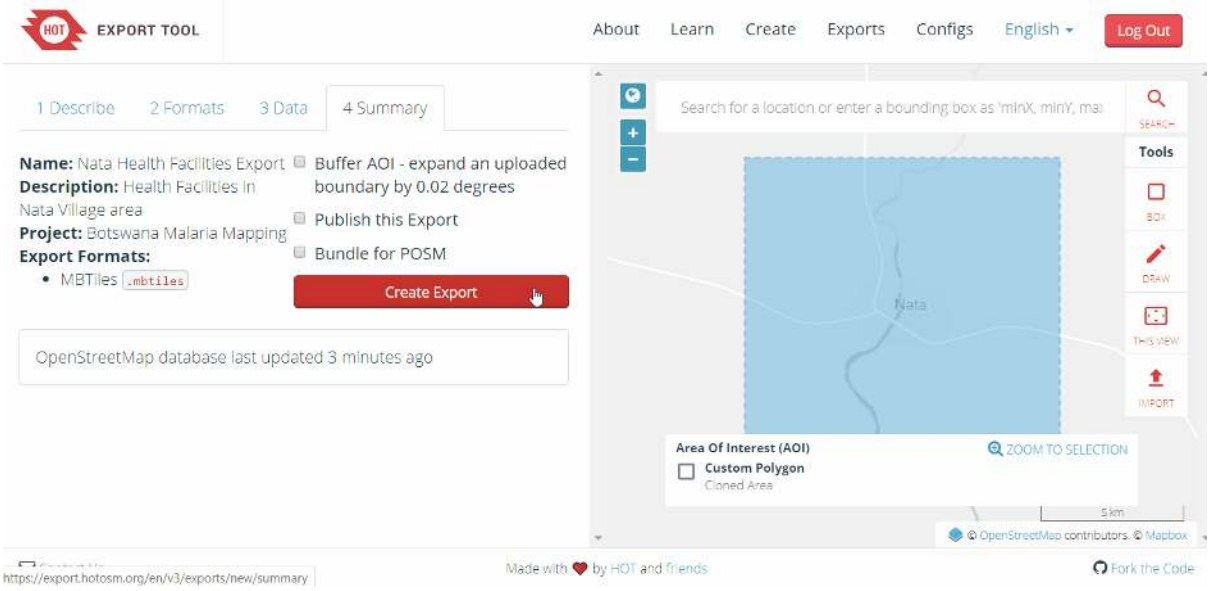
Select preferred file type in the 'Formats' tab. Select .mbtiles.



In the 'Data' tab, select the 'OpenStreetMap' as the source. Then select the zoom range. The higher the zoom range, the more you will be able to zoom in on the basemap. Note, higher zoom ranges increase the size of files.



In the 'Summary' tab, select 'Create Export'. While processing, a "Running" status will show. Processing time depends on export size. Once completed, the file will be available for download & sent to your email.



This process will take several minutes to process.

When the export process is completed, the 'Status' bar will be updated to 'COMPLETED'. Download the file by clicking on the file link, as highlighted below.

Tile Huria

Tile Huria is a simple tool for creating mbtiles based on an area provided via Geojson format with aerial imagery.

Skill level: Easy

Tools and Technology Needed:

- Computer
- Internet Connection
- .geojson file for area of interest

TileMill

TileMill is an offline, downloadable application used to create mbtiles. TileMill allows for vector layers to be inserted into mbtiles (i.e. assignment area shapefiles, roads).

Skill level: Hard

Tools and Technology Needed:

- Computer
- Internet Connection
- .shp files for vector layering

Resources

- TileMill Documentation: https://tilemill-project.github.io/tilemill/docs/crashcourse/introduction/

Download

- Tile Mill: https://tilemill-project.github.io/tilemill/
- For aerial imagery basemaps- SAS Planet:

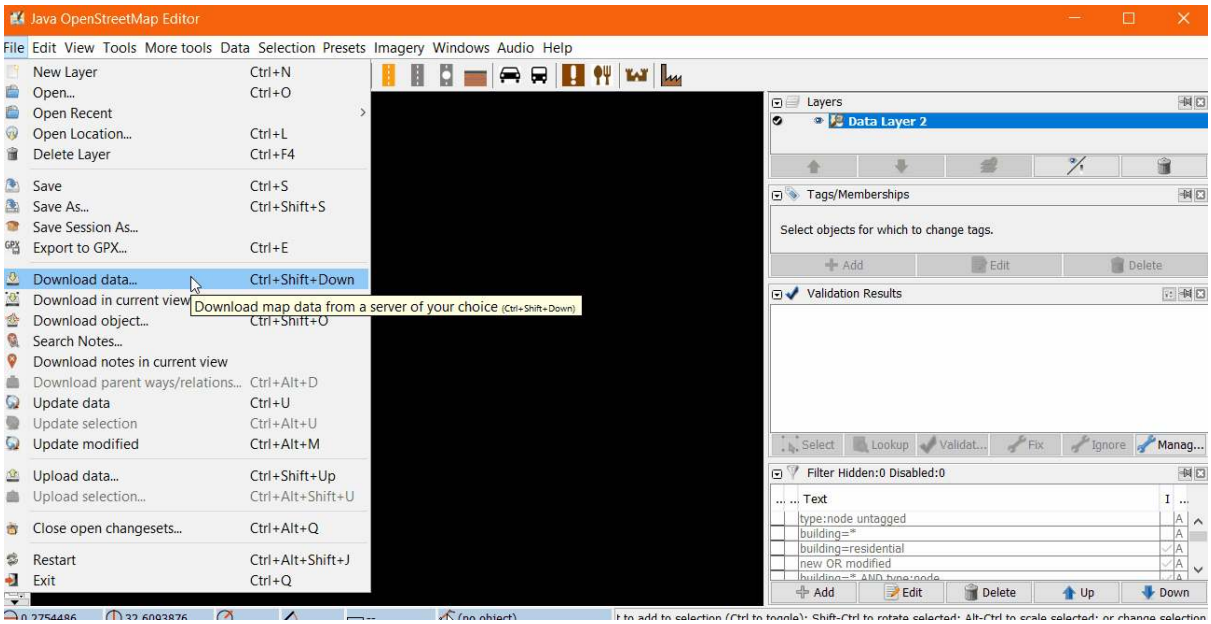
Create .osm layer

To conduct data collection using OpenMapKit (OMK), you will need to create an .osm layer. This .osm layer provides the buildings for selection in the OMK application.

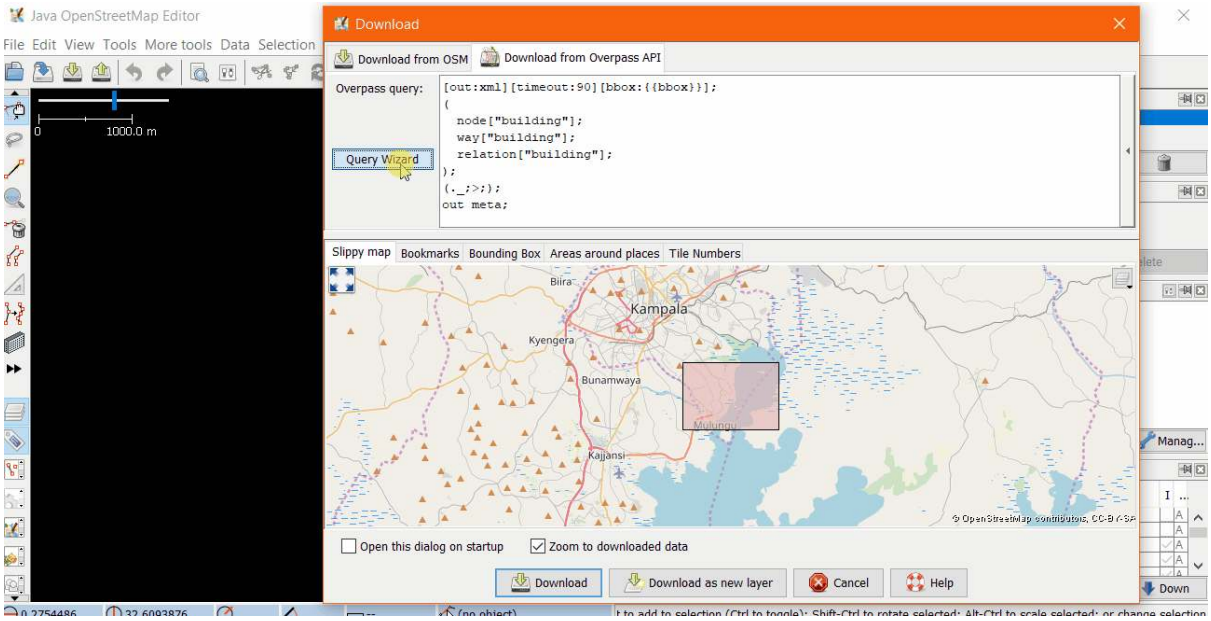
Skills and Technology Needed

- Computer
- Internet Connection
- JOSM Installed
- Basic JOSM skills

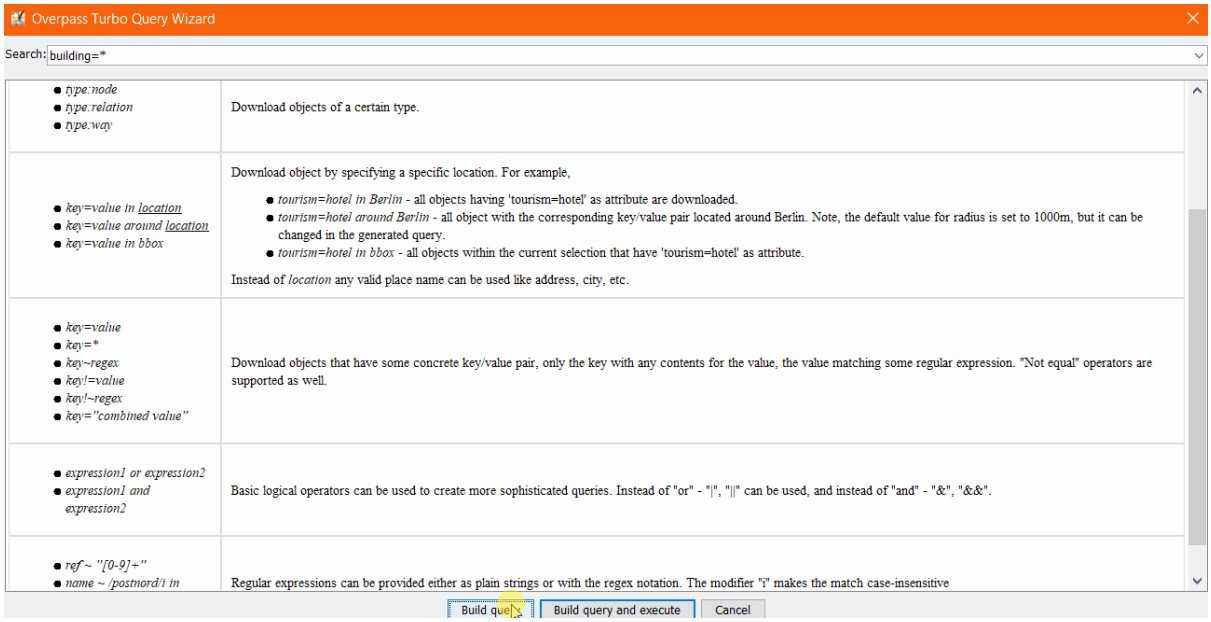
In JOSM, click the top-menu File > New Layer to start. Then click the top-menu File > Download Data.



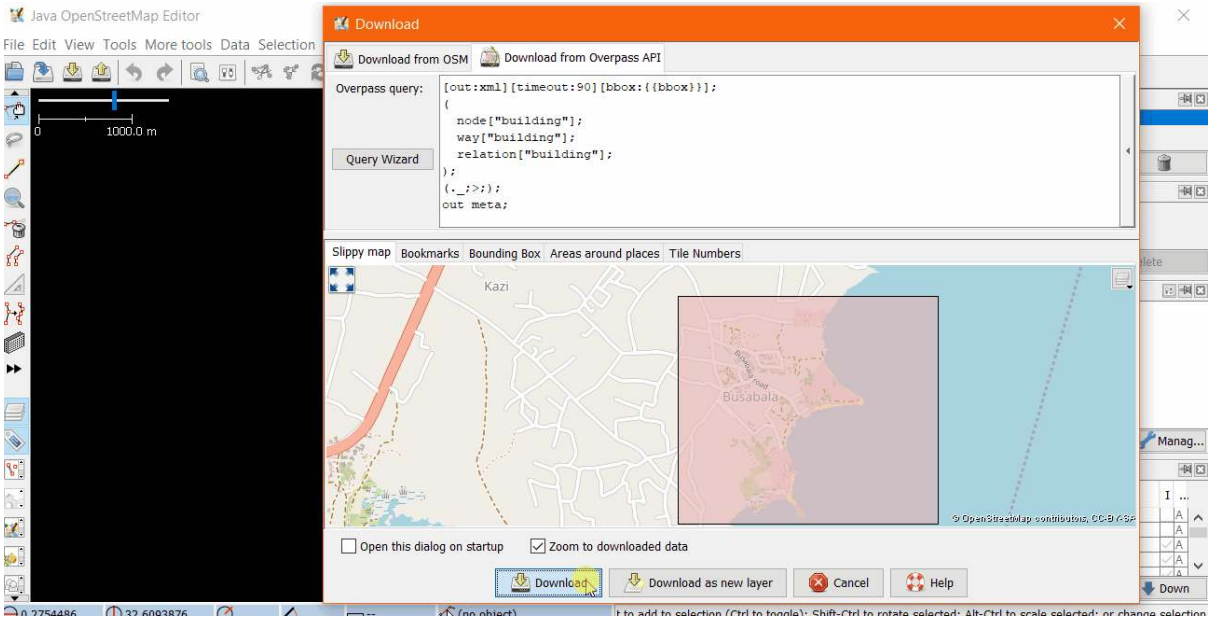
In the 'Download' window, click the tab 'Download from Overpass API'. This will allow you to download data with specific key=value tags in an area of interest. The top of this tab provides space for a query to be entered. Click 'Query Wizard.'



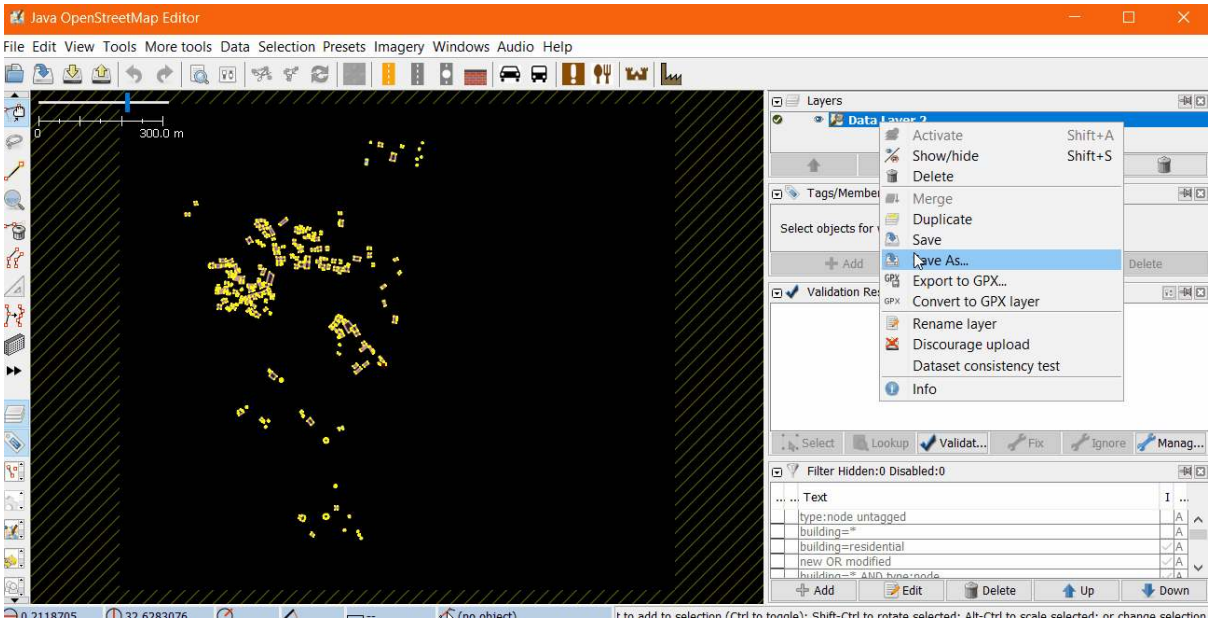
For an OMK .osm layer, we want a layer with only building polygons. In the search bar, type ”building=*”. This will return an OSM feature with a building tag. Click ‘Build query’.



In the slippy map below the Overpass query, navigate to your area of interest in OSM. Drag the map by holding down the right-click button and dragging your mouse. To zoom, use the ‘+’/‘-’ keys on your keyboard. Once navigated to your AOI, hold down the left-button of your mouse or navigation pad and drag your mouse to create a pink box. This pink box is your *bounding box*, all buildings within this area will be downloaded. When complete, click ‘Download’.



Right click on the layer file in the ‘Layers’ window. Click ‘Save as’. The default file type is OSM Server Files (*.osm), this is the correct file type.



Once saved, this file can be uploaded to devices for data collection with OMK.

Create constraint file

Download and set up ODK and OMK applications

Note: You will need ODK to run OMK. We advise installing ODK first to allow for proper set-up and testing. ### Download application

The OMK application can be found on Google Play: https://play.google.com/store/apps/details?id=org.redcross.openmap

If installing on multiple devices with low internet resources, it is recommended to download and share the apk offline.

Tool set-up

1. After downloading the OMK app, a openmapkit folder will be automatically created in on the internal memory of the device. Connect your device to a laptop to confirm that this folder is created. If you don't see this folder on your device's internal storage, Restart the device.
2. Once the device has been restarted, connect it to your laptop, and navigate to internal storage -> openmapkit folder. You will find for sub-folders inside the openmapkit folder. I.e 'constraints', 'deployments', 'mbtiles' and 'osm' folders.
3. If you have a customized constraints file, in the constraints folder, delete the Buildings.json and default.json files. Add your custom the default.json file to the constraints folder.
4. Add your .mbtiles file to the mbtiles folder.
5. Add your .osm file to the osm folder.
6. Now you are set to start working with OMK. Exit the file manager window.
7. Open OMK application.
8. Tap on the Settings button in the top right corner. Under "basemap", select the appropriate .mbtile. Under "OSM XML Layer" select the .osm layer to use for your mapping. Exit settings.
9. Tap on the GPS button, your location will be displayed on the screen.
10. To begin mapping, exit OMK and open the ODK application. You will notice that OMK works within the ODK application.