JOSM map editing for SUMO

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Overview

JOSM (Java Open Street Map) is a software that works with OpenStreetMap to edit and modify osm files and specific sections of a map. This can then be exported as a `.osm` file and can be used in traffic simulation by using the `netconvert` program inherent to SUMO. This serves as an introduction and guideline how to utilize JOSM to create a road network in SUMO - it is by no means a comprehensive overview of everything in JOSM.

JOSM steps

While following these steps, this video and this guide may also be helpful to follow along with.

1. JOSM can be downloaded here and click on the `Laucnh josm.jnlp` link.
2. After downloading JOSM, open the interface. To download a segment of a map, click on the download button to open a window with OpenStreetMap data and left click to create a rectangle to select the region of interest. Figure 1 illustrates this.

   Note: If this does not work or there is an error, go to the menu `Edit - Preferences`, select the remote control menu and enable it. This webpage explains further.

   Another way to do this is to simply open up OpenStreetMap in your browser, locate the area you are interested in, click on `Export` in the top left corner, then click on the `Manually select an area` and finally click on `Edit with Remote Control (JOSM or Merkaartor)`. Note to edit with remote control in JOSM, first JOSM must be open and you must edit the remote control preferences described above. Figure 2 details the process.
3. After download the map, a new window will open with the selected region and more options - this is where the editing occurs. Note when downloading the area more than just the road map is downloaded - buildings, trees, rivers, etc... Here, if we click on segments of roads or highways, under the `Tags` section (on the right side of the interface), the properties of each will be displayed such as the number of lanes, the name of the road, and so on.

   If we are simply interested in retrieving the road network, we can simply delete the extraneous surroundings. This is simply done by clicking and pressing delete. Figures 3 and 4 show the interface as well as the cleaned-up map with just the desired road networks.

   Note: When moving the map around, make sure to have `Download OSM data continuously` off. You can check this in the `File` menu to turn this feature off when panning/zooming/editing.
4. After editing the map, it is ready for importing into SUMO. Save the map you have edited with JOSM and put it in the same folder as the python script `osm2xml.py`. Follow the instructions and this is the resulting network generated for traffic simulation. Figure 5 shows the SUMO network.

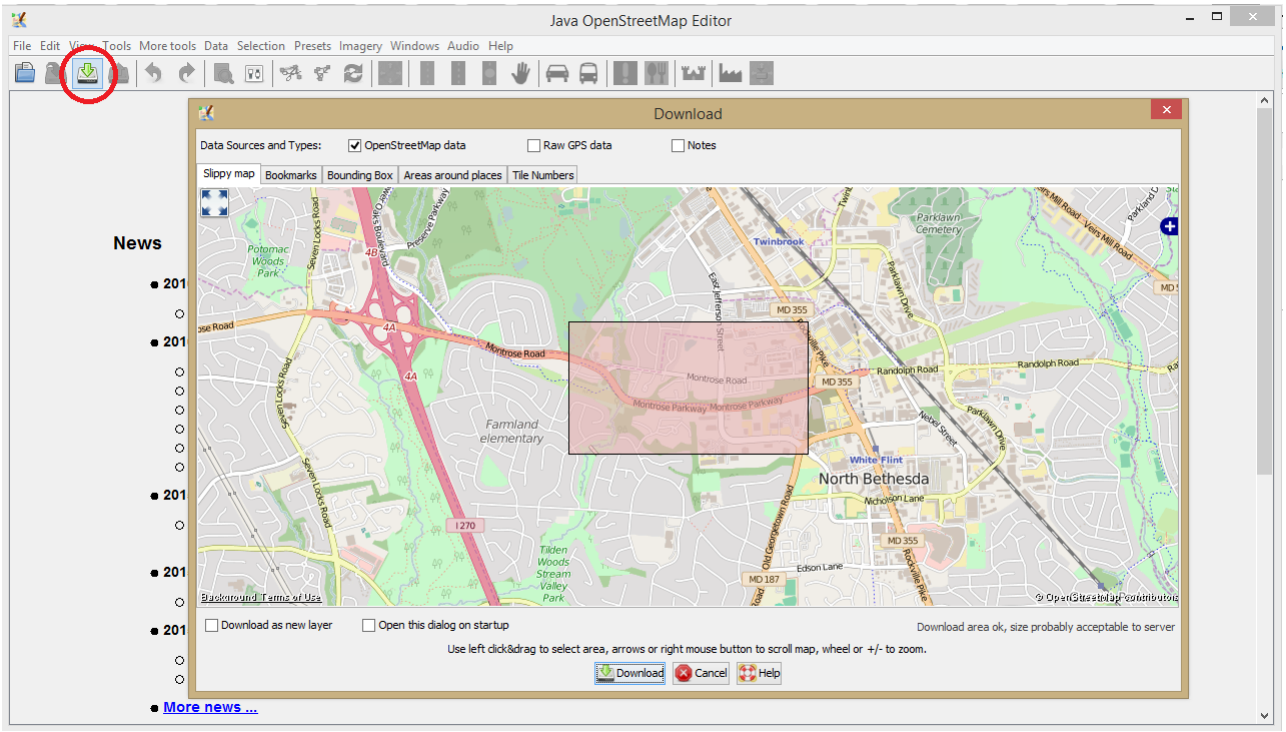

Figure 1: The window in the background appears when opening JOSM. Clicking on the download button (indicated by the red circle) opens the new window where you can select the region of interest by left clicking to create a rectangle. Finally, press download to install the region.

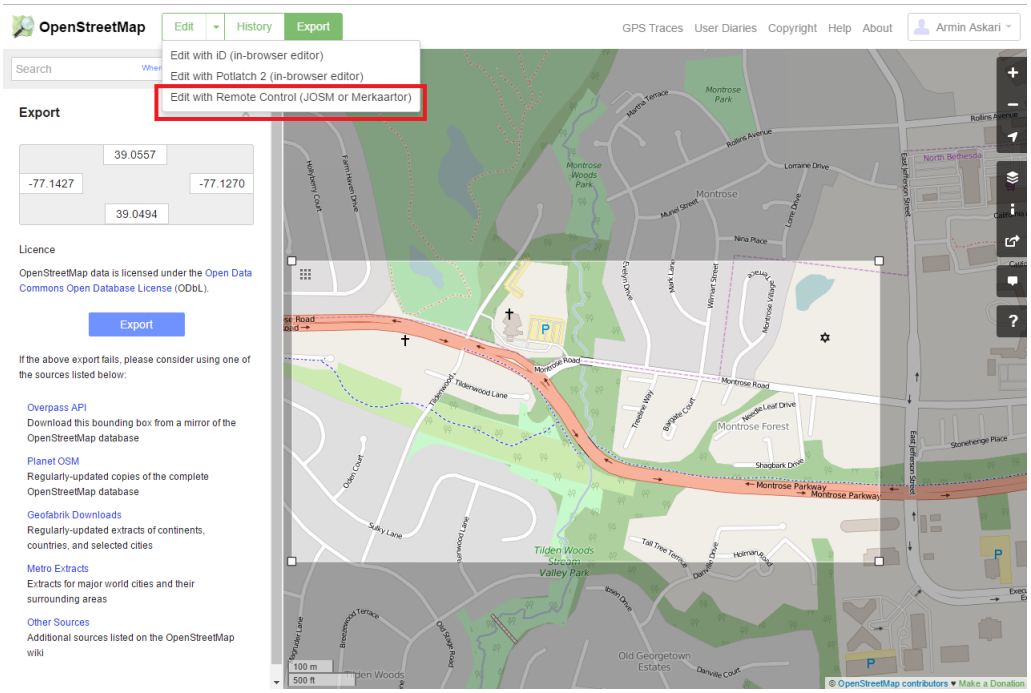

Figure 2: After searching the region you are interested in, click the `Export` button and below the coordinates but above `License` there link `Manually select an area` will appear. With this, you can draw a rectangle over the region of interest and finally click on `Edit with Remote Control (JOSM or Merkaartor)` to open the map in JOSM.

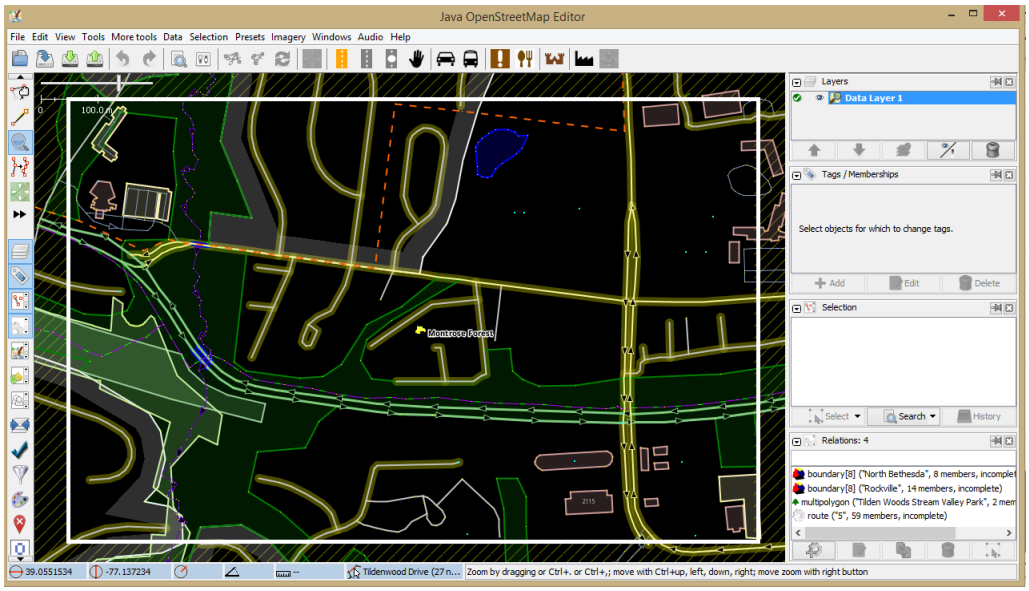

Figure 3: This is the window that appears after clicking the download button from the window that appears in Figure 1. Note that the white rectangle (manually drawn in) shows the region highlighted in Figure 1 and the slanted yellow lines on the outside are not part of the region. However, it is important to know this is not the region that is imported by SUMO - to see the region imported you must completely zoom out.

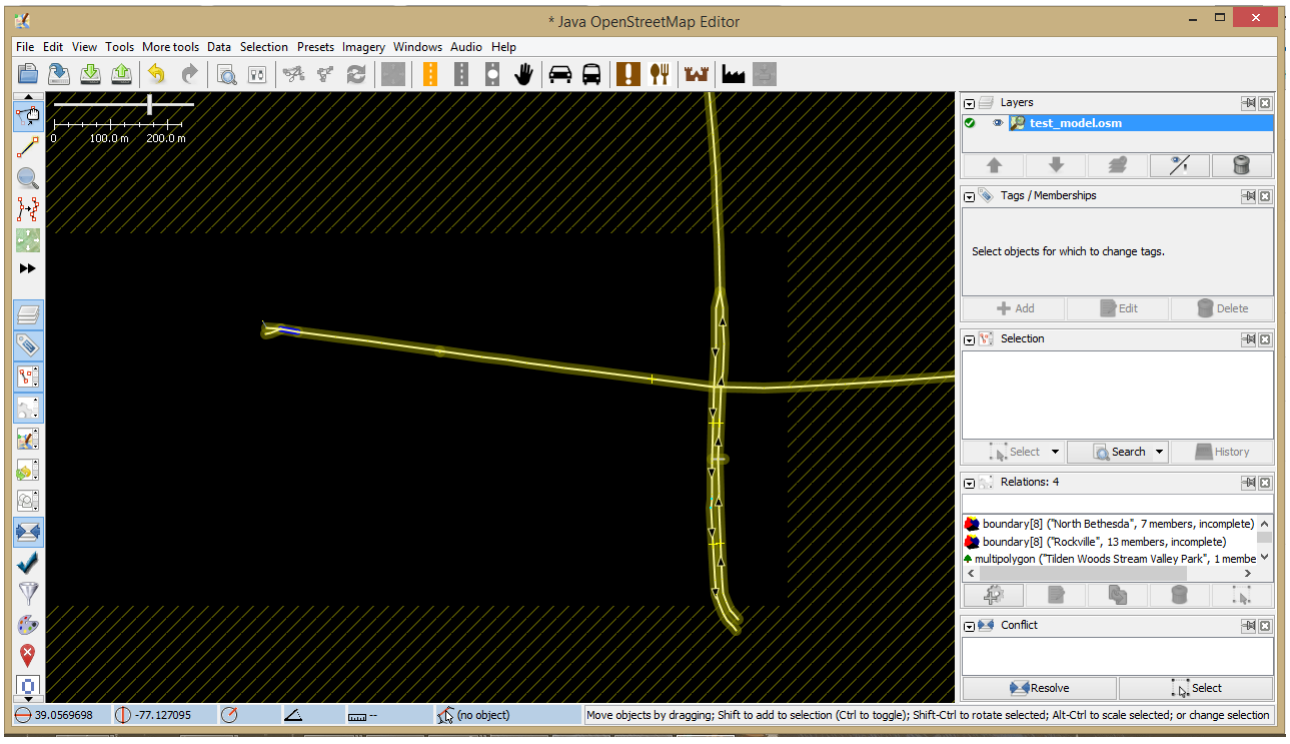

Figure 4: This is the edited region after deleting the necessary parts from Figure 3. Note it is important that we deleted everything in region covered by the slanted yellow lines or those roads would have been imported into SUMO as well. This is now ready to be imported into SUMO.

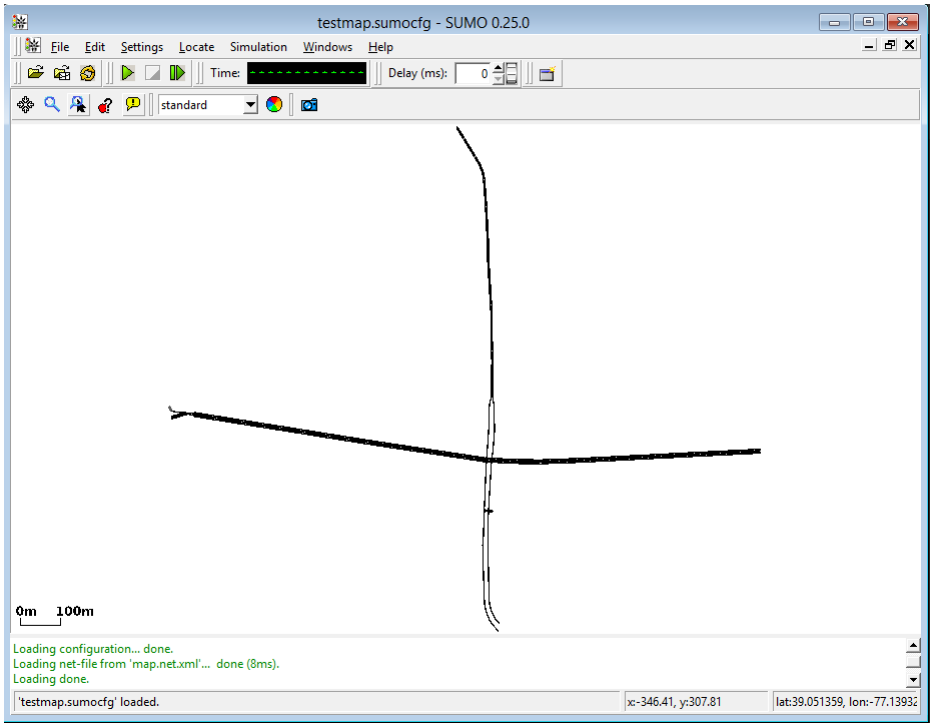

Figure 5: SUMO road network based on figure 4.