

Assignment 3: Search Download and View GIS Data in QGIS

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1. Intro-fossgis-umass

1.1. Author Attribution

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1.2. Module Licensing Information

Version 1.0.



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1.3. Reviewed by

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2. Assignment: Searching, downloading and viewing GIS data in QGIS

2.1. Objectives

This lab will give you a chance to use your recently acquired skills to find GIS data on the internet. It also represents an opportunity to get more familiar with the QGIS interface and some basic GIS tasks.

2.2. Assignment

Read through this material before starting your work: it will help you to have a better understanding of the tasks you need to complete.

This is a map of Northampton, Massachusetts, a fairly large town in the western part of the state. The lab will be focusing on this town and the surrounding area:



In this assignment, you will complete the following activities:

1. Find a scanned and georeferenced topomap for a portion of the area of interest (Tiff format) and download it (make sure to get the area that includes Skinner park).
2. Get some 1:5,000 Black & White Digital Orthophoto quads that fall inside the area of interest (get at least one that includes Skinner park).
3. Download the Massachusetts highway roads vector file for the area.
4. Extract the data and bring it into QGIS.
5. Print a copy of your map.
6. Answer some questions.

2.3. Guidelines

1. USGS georeferenced topomaps.

- Go to MassGIS and find the scanned USGS topo quad images. MassGIS serves most raster data sets (including the georeferenced topomaps) in 4x4 km tiles with an ID number. There is an index of these numbers by location available at this link: http://www.mass.gov/mgis/ix_oq.htm. To best determine which tiles you need, check this useful resource they provide: http://www.mass.gov/mgis/quad_imgs.pdf. It's in pdf format, so you'll need a program that can read pdf files, such as adobe acrobat reader [<http://www.adobe.com/products/acrobat/readstep2.html>] or kpdf [<http://kpdf.kde.org/>]. You can change the zoom display (low left area of the window) until you are able to read the orthophoto numbers.
- The next image is a hint to save you time--it's the footprint of the area of interest over the Massachusetts town boundaries layer:

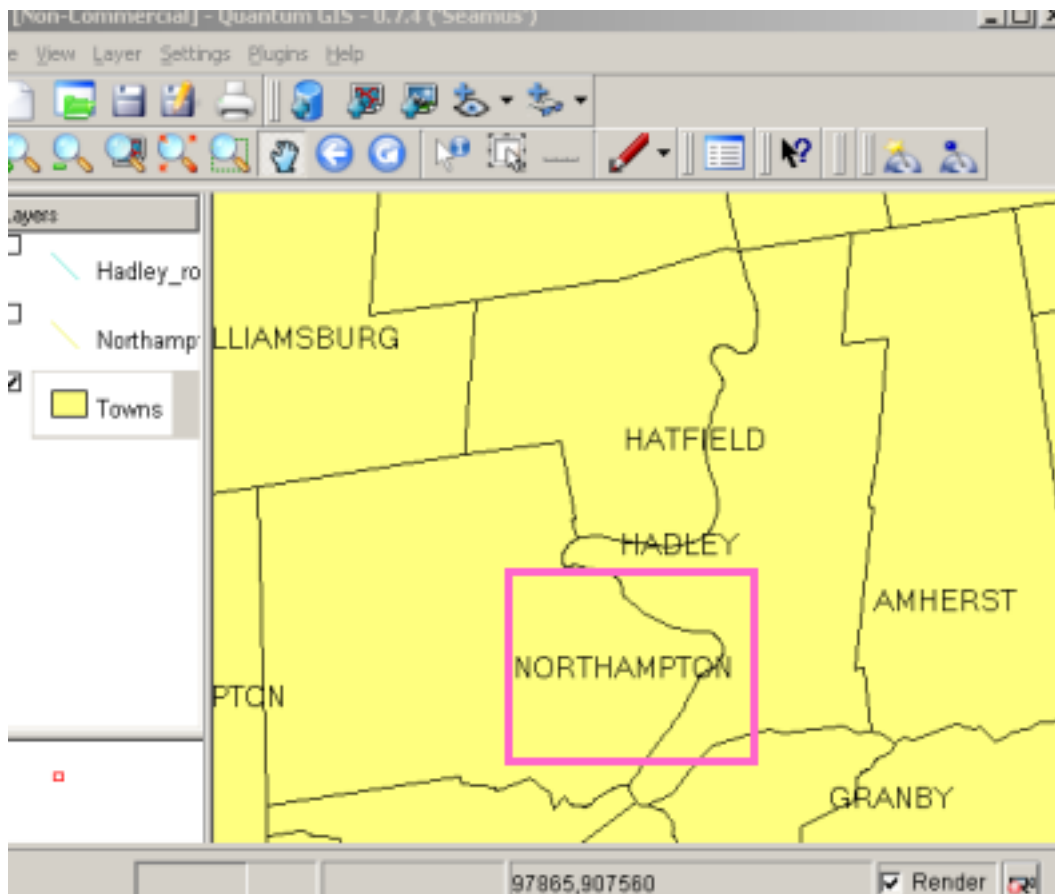


Figure 1:

Footprint

- Decide which numbers you need and write them down. You can get, as we did in the next image, one quad for Skinner park and one for Northampton city.

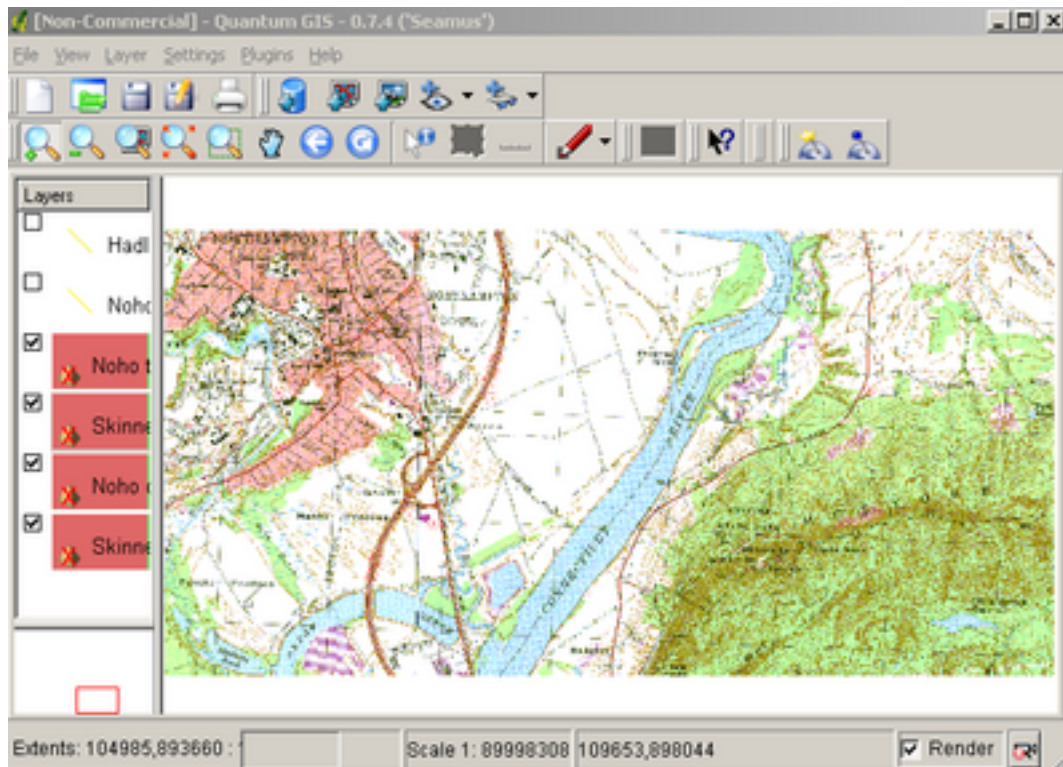


Figure 2:

USGS Topos

- Go to the download area for raster datasets <http://www.mass.gov/mgis/dwn-imgs.htm>.
- Scroll down and go to "Scanned 1:25,000 USGS Topographic Quad Images". Find the images you want, download the .tif (image) and .tfw (text file header with spatial information). (NOTE: here you can either
 - right click the files and "save link as" or
 - drag the files directly to an open "window" of your search_data_lab folder)

2. Orthophotos

- Get the 1:5,000 Black & White Digital Ortho Images (you already know the quad numbers from the previous section, they are the same as the topo maps).
- Download the .tif and .tfw from the ftp site: <ftp://data.massgis.state.ma.us/pub/ortho5/>

3. Roads layer

- Get the layer Executive Office of Transportation-OTP Roads. You will need both Hadley and Northampton towns: when you double click the ".exe" files in the MassGIS page, a little window comes up offering to extract the compressed data. Specify your work folder and proceed. It will download and extract the files simultaneously.
 - Note: If you are using linux? you will need to use the program called *Cabextract* to get the information. It's available in most repositories, and the source code is also available here [<http://www.kyz.uklinux.net/cabextract.php>]. Once you've installed the program, simply open up a command prompt, navigate to the location of the file, and type the following:

```
Cabextract eotroads.exe
```

4. Bring the data layers into QGIS.

- Open QGIS.
- Add raster (ortho and topo files) and vector layers (roads layer) from your work folder.
- Assign projection data to all layers, give them a more recognizable name: (this link from a previous lesson will help you with some of the tasks you may want to do: http://linuxlab.sbs.umass.edu/introFossgisUmass/index.php?title=An_example_of_regional_web_resources:_Massachusetts%2C_US)
Rearrange layers in the table of contents. Change the display colors if you want.

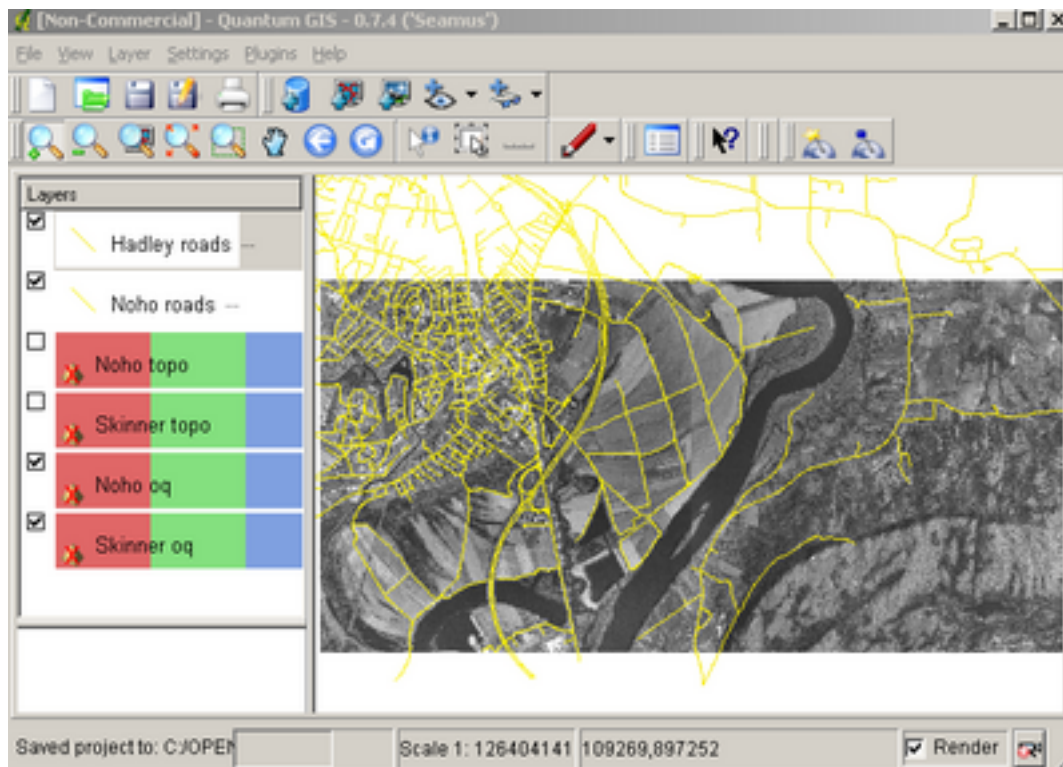


Figure 3:

Map

Explore the data, zoom, pan, activate the different layers, play around.

5. Print a map with your downloaded data.

- Go to file-->print

2.4. Answer the questions

1. How many orthoquads would you need to cover completely the town of Northampton? Explain the strategy you followed to come up with that information.
2. Look at the next image: which feature is the arrow pointing at? (hint: go to your map, zoom into that area in the orthophoto and then, activate the topo layer).

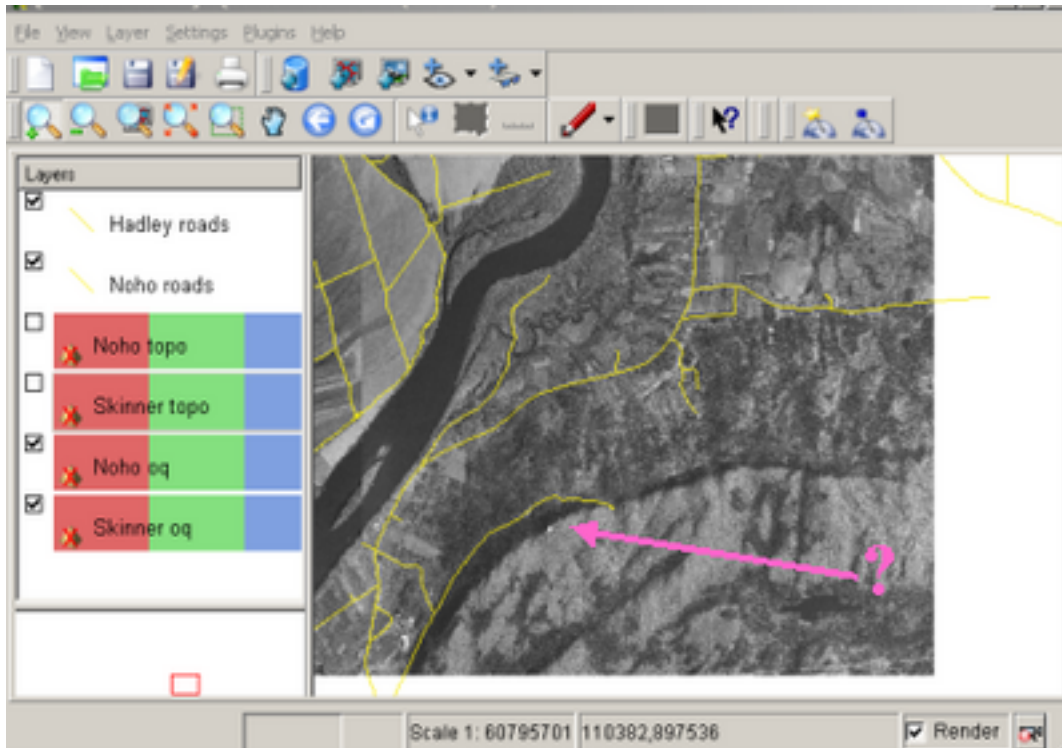


Figure 4:

Feature Identification

3. What is the approximate elevation of that feature? Provide the units too.
4. Look at the next image. Find that spot in your map, and compare the topo view with the orthophoto view.

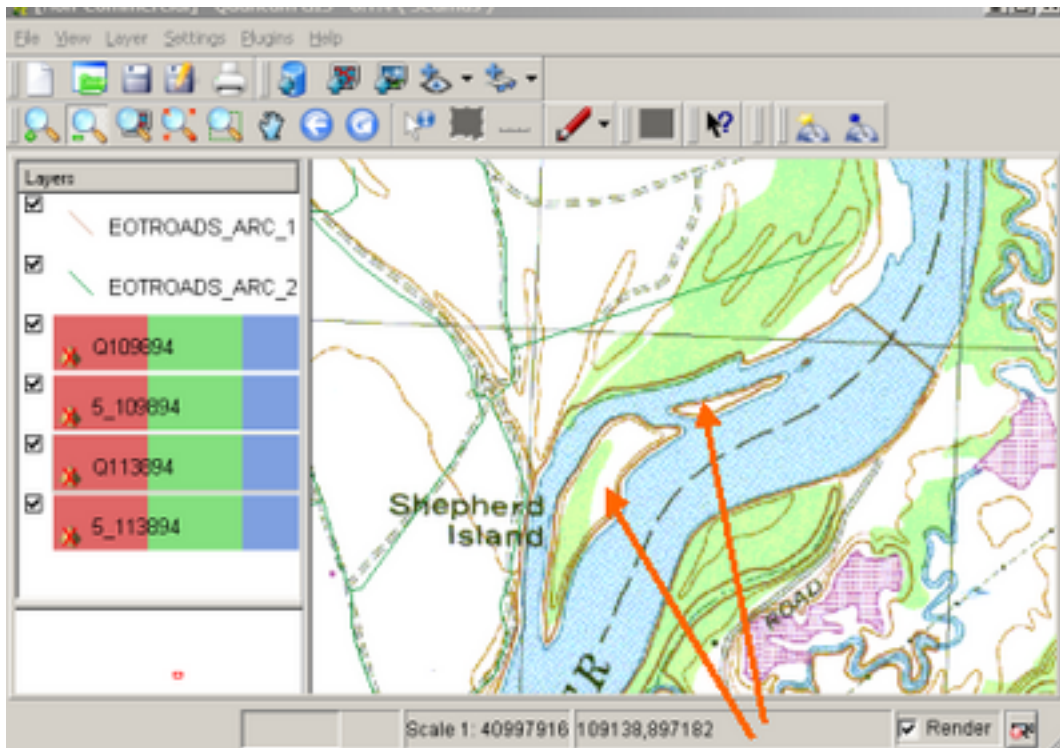


Figure 5:

Topo/Orthophoto comparison

Do you see any difference? What has happened? Which data is more recent? Justify your response or provide any source that helped you figure this out.

5. Extra credit: Provide some interesting links to international GIS data that were not already mentioned in http://linuxlab.sbs.umass.edu/fossgis/index.php?title=Web_GIS_data_resources

2.5. Assignment Deliverables

1. A document with the maps that show the data you downloaded and brought into QGIS (Follow the same style/method from previous lab: http://linuxlab.sbs.umass.edu/fossgis/index.php?title=Lab_8:_Intro_to_Quantum_GIS#Guidelines)
2. Numerated responses to the 4 questions in previous section.

The more interesting data links you submit, the better! This will give you a lot of practice searching for data in the internet, and a good insight into which data is available out there.

Please email a .pdf of the assignment to your instructor. The file can be created through Open Office, Microsoft Word, etc. If you do not have a .pdf creator, you can download a print to .pdf program, such as PDFCreator [<http://sourceforge.net/projects/pdfcreator/>].