Volume

1

QUANTUM GIS

The New Age for Geographic Information Systems

Beginners User Guide

COEP 4082 COMMUNITY MAPPING COURSE

Assignment #2

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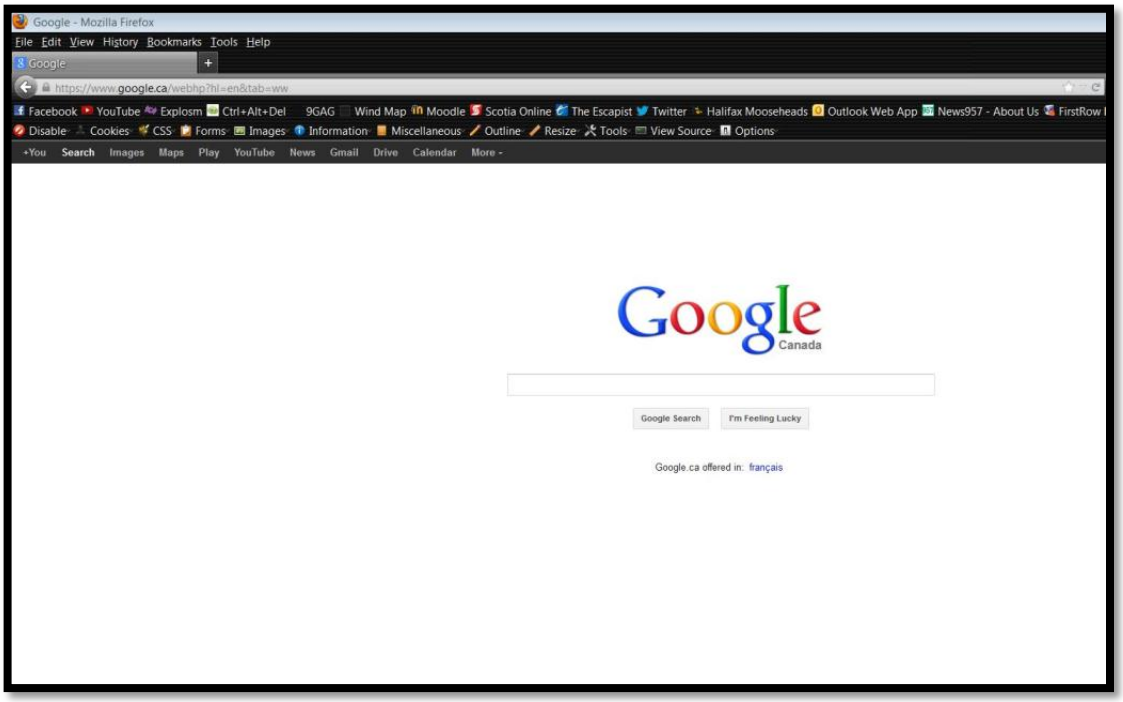
1.0 Downloading QGIS

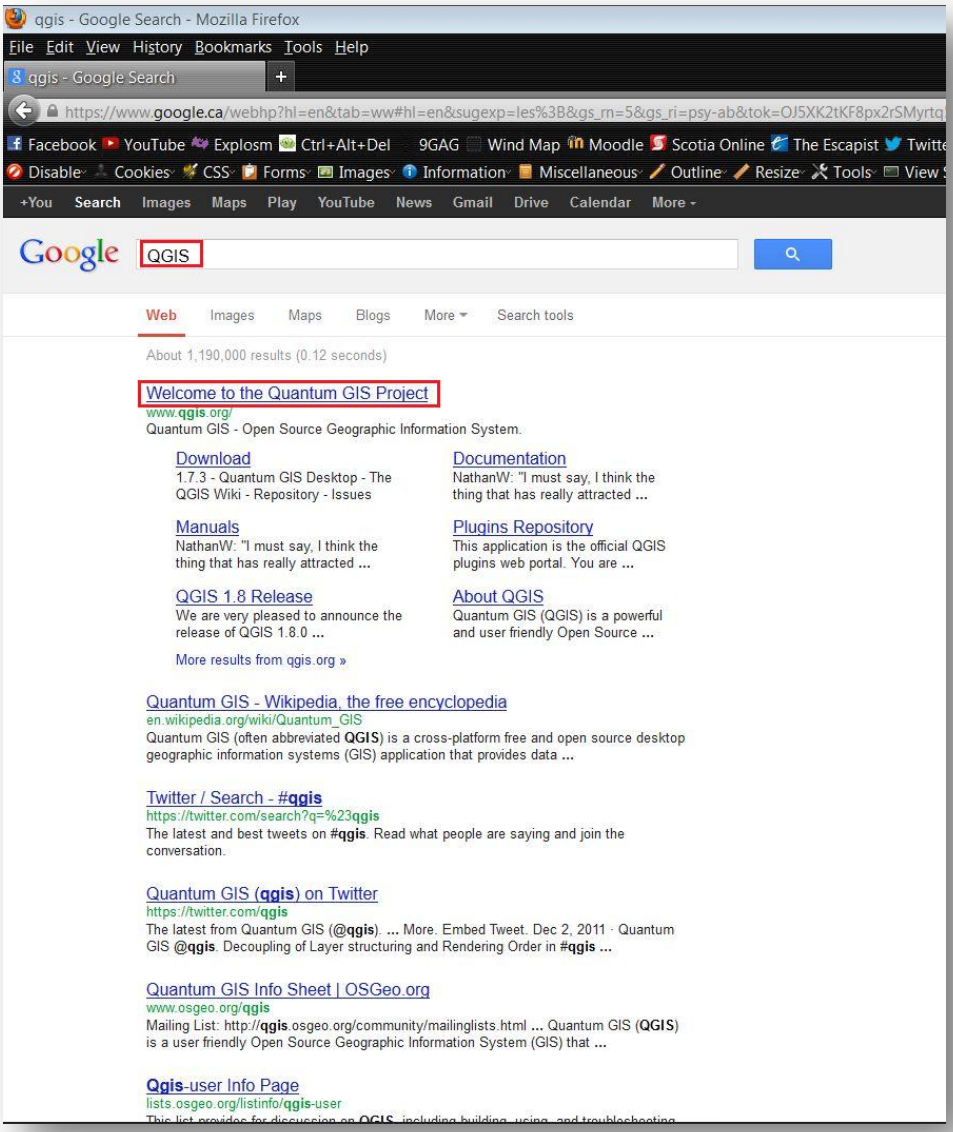
QGIS (or Quantum GIS) is a very useful tool in the fact that it is a completely open source program that is user defined. What this means is that, by being open source, it does not cost anything to use (which is great for those of us who are recreational GIS users) and by being user defined, everything within the program was created by the vast QGIS community that has grown over the past few years. This tutorial will guide the reader on where to go to download and set up this surprisingly powerful program.

First off, an internet connection is required to access the download file. Anything can be used to download QGIS (the download website does not discriminate based on your browser preference like most other sites do) but for this tutorial, I will be using Mozilla FireFox as my weapon of choice. The first thing you will want to do is access the Google search website at www.google.ca:



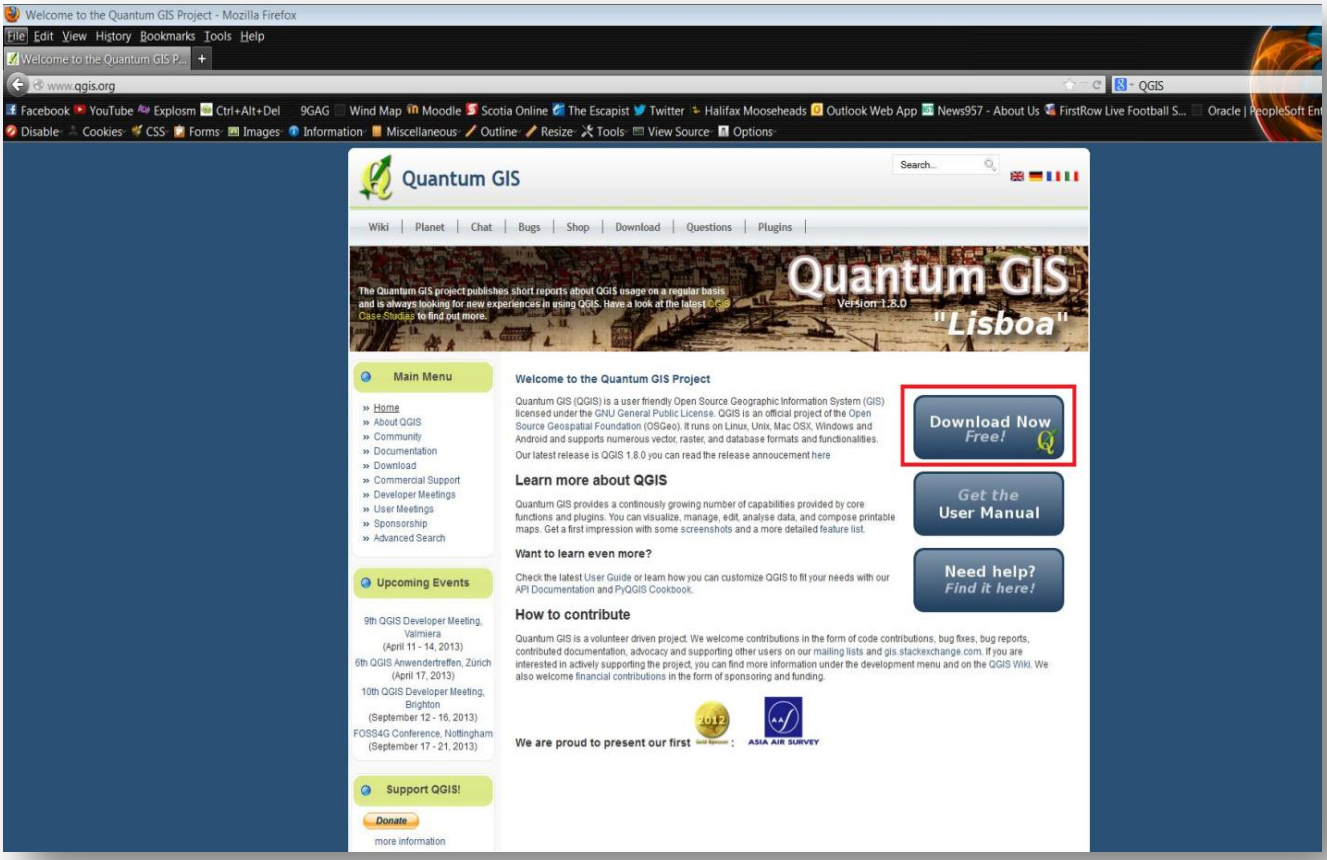
Google Search Home Page

From this, type “QGIS” or “Quantum GIS” into the search bar. This will lead you to another webpage with multiple options to choose from:



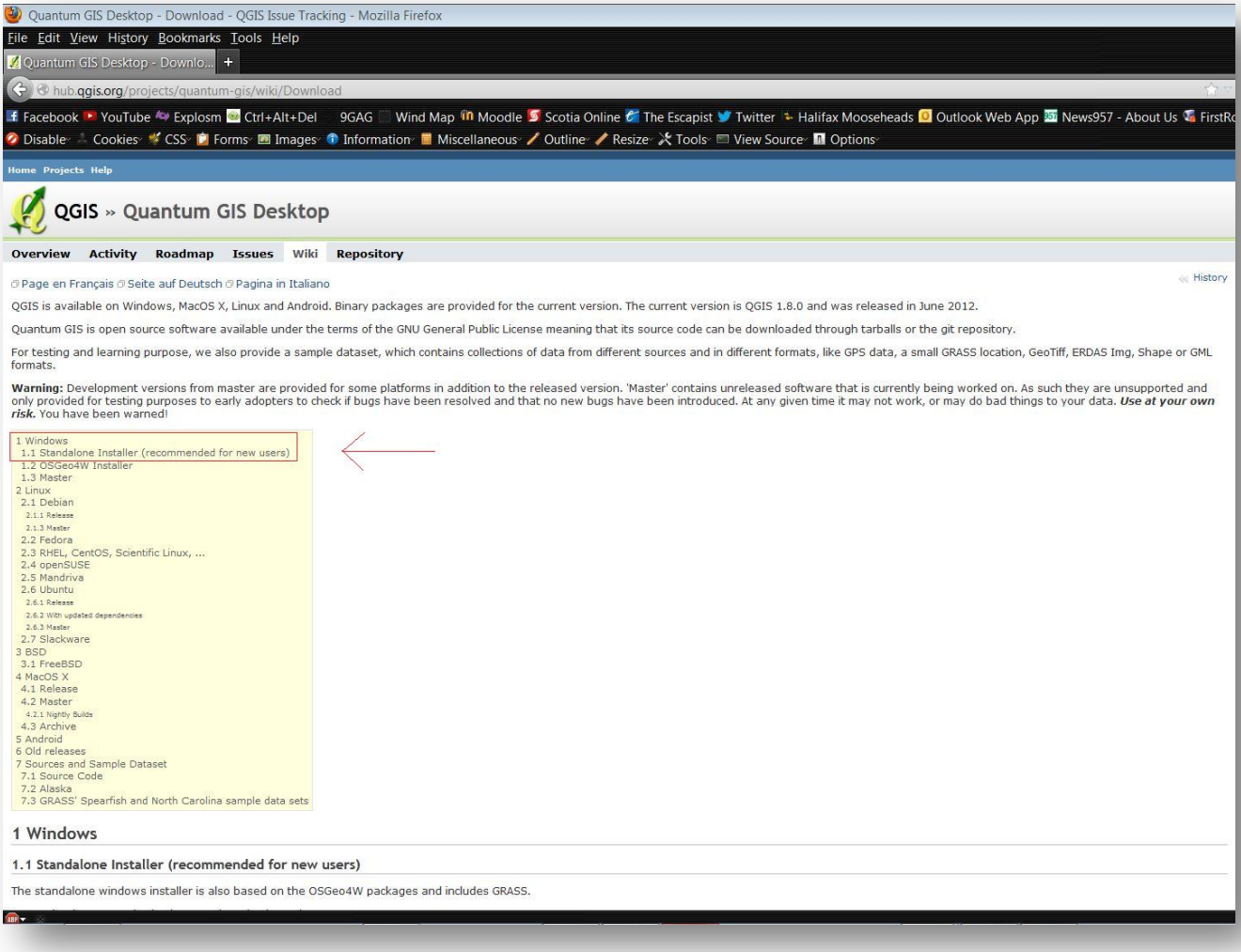
Quantum GIS Search

When this page is reached, hundreds of links will appear that will display anything from news, related articles or user help guides on how to do certain tasks within the QGIS environment. However, we only need one link to complete our task, and that should be the first one. This will bring you to the QGIS homepage where downloading the package has become a streamlined process. On the home page, you should see a large blue button that states “Download”:



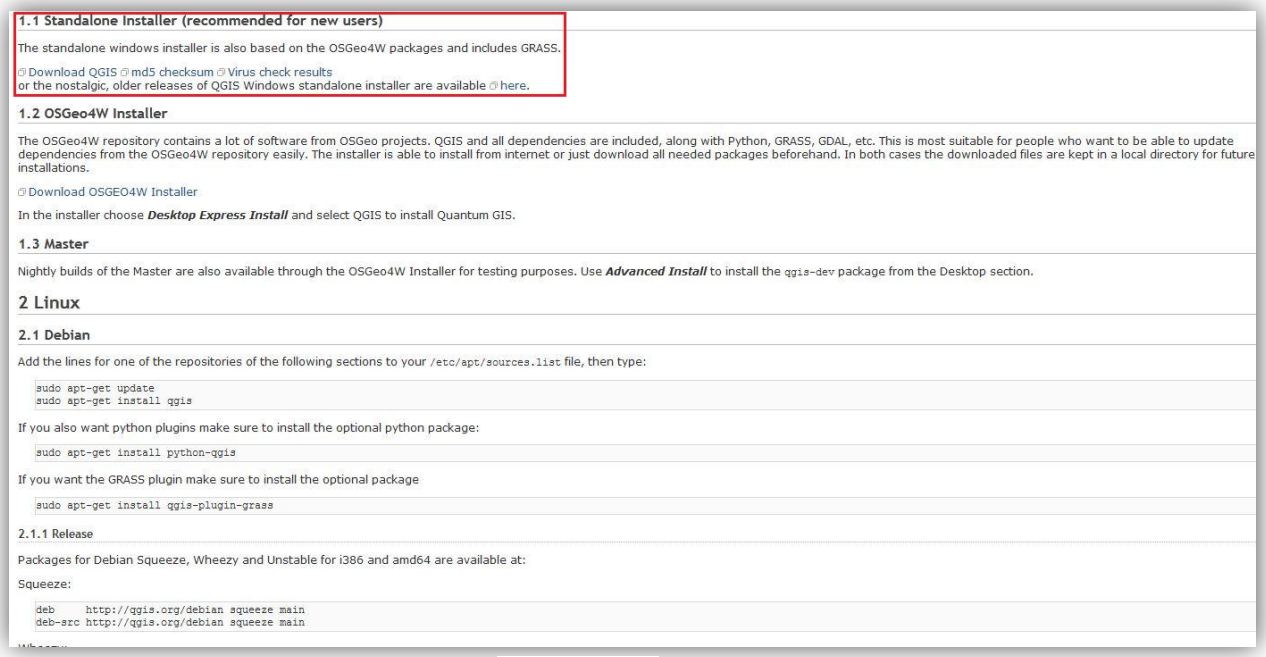
Quantum Home Page

Once selected, the user is directed to a “repository” page that houses dozens of links for many different levels of GIS users and operating systems. This ranges from full packages and customized ones to Microsoft Windows and Linux. However, we just want the standard, first time users package:



QGIS Repository Page

Once the user clicks the “recommended for new users” option (as seen from above), the user will be guided to the software’s location within the repository:



1.1 Standalone Installer (recommended for new users)

The standalone windows installer is also based on the OSGeo4W packages and includes GRASS.

Download QGIS md5 checksum Virus check results
or the nostalgic, older releases of QGIS Windows standalone installer are available here.

1.2 OSGeo4W Installer

The OSGeo4W repository contains a lot of software from OSGeo projects. QGIS and all dependencies are included, along with Python, GRASS, GDAL, etc. This is most suitable for people who want to be able to update dependencies from the OSGeo4W repository easily. The installer is able to install from internet or just download all needed packages beforehand. In both cases the downloaded files are kept in a local directory for future installations.

Download OSGEO4W Installer

In the installer choose ***Desktop Express Install*** and select QGIS to install Quantum GIS.

1.3 Master

Nightly builds of the Master are also available through the OSGeo4W Installer for testing purposes. Use ***Advanced Install*** to install the `qgis-dev` package from the Desktop section.

2 Linux

2.1 Debian

Add the lines for one of the repositories of the following sections to your `/etc/apt/sources.list` file, then type:

```
sudo apt-get update
sudo apt-get install qgis
```

If you also want python plugins make sure to install the optional python package:

```
sudo apt-get install python-qgis
```

If you want the GRASS plugin make sure to install the optional package

```
sudo apt-get install qgis-plugin-grass
```

2.1.1 Release

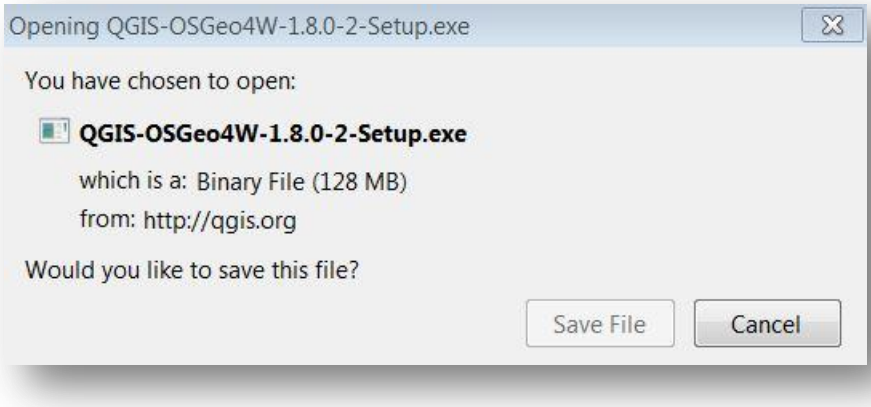
Packages for Debian Squeeze, Wheezy and Unstable for i386 and amd64 are available at:

Squeeze:

```
deb     http://qgis.org/debian squeeze main
deb-src http://qgis.org/debian squeeze main
```

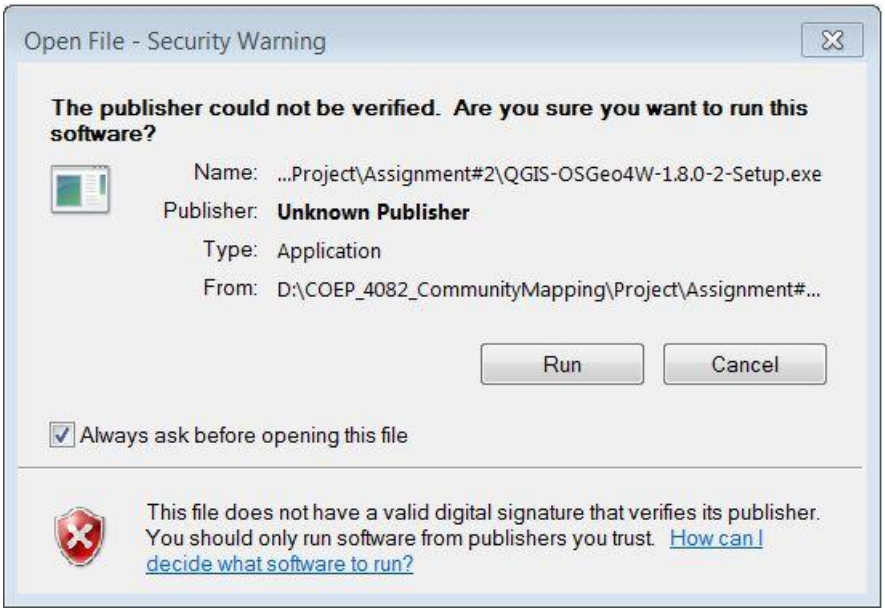
Download Link

Within the "1.1" designation, the user must select the "Download QGIS" option and it will pop up a "Would you like to save QGIS" window for those of you using FireFox. For Microsfot Explorer or other web browsers, the download should begin immediately.

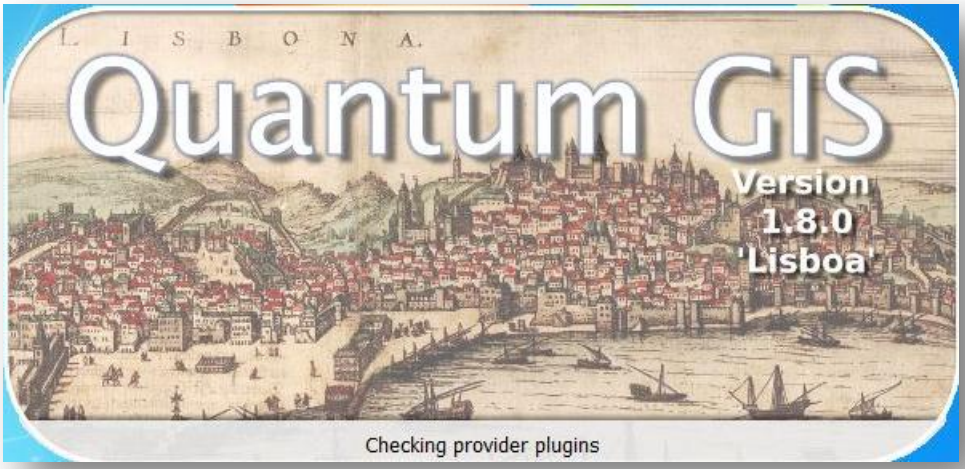


FireFox save QGIS Prompt

Once this package has finished downloading onto your computer, it should be in the form of a *.exe application. *.exe is an "executable" file that runs multiple processes when you select it. If you double-click the new *.exe file, the following prompt should appear:



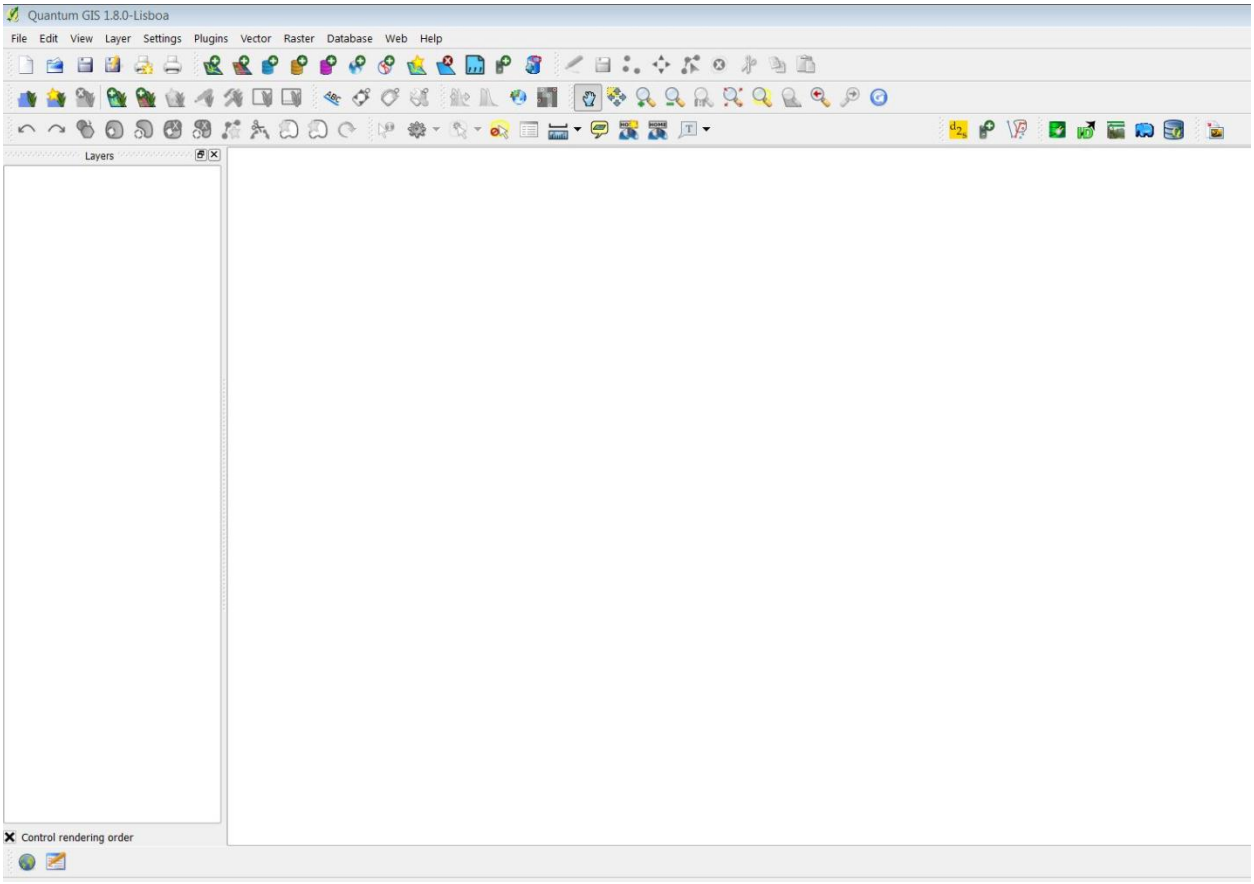
By selecting “Run”, the user prompts an Install wizard that guides the user through the process needed to download QGIS. All the user needs to do is follow the on screen instructions and continue through and install the software. After the wizard is complete, the user should see a new icon on their desktop. Once selected, the downloading phase of QGIS is complete!



QGIS Loading Screen

2.0 Navigating QGIS

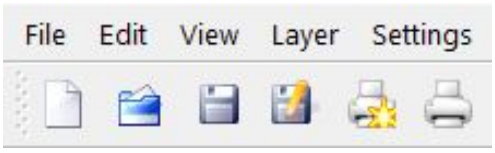
With the downloading complete, the user is free now to explore the QGIS interface. But the first thing that comes to mind when the program is run is that there are a lot of buttons and new things to explore that, if you do not have a background in GIS, may not understand completely how to use. This portion of the QGIS user manual will go over the basic tool you should know and how to use them, as somewhat a brief guide into the power of GIS



QGIS Interface Window

For this part of the user manual, only the important icons that pertain to what we will be using them for (at first) will be discussed. Other icons will be discussed later on in the report as they are needed.

So, first off, these icons are mandatory to be learned first:



Main Interface Icons

These icons are “Main Interface” icons and are how you control the systematic portions of your project. This is how you open new files, save and even print. It is also where you can zoom in, edit files and even manipulate the spatial projection of the map (what the map would look like from a different perspective).

 - This icon allows the user to start a new project

 - This icon allows the user to open a pre-existing project or file

 -This icon allows the user to save the project in the same location it was accessed

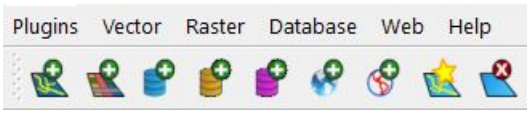
 -This icon allows the user to save a copy of the file into a different folder

 -This icon activates a new “Print Composer” function (This will be accessed later)

 -This icon activate the current Print Composer (this will also be discussed later)

With these icons, you can create, save and print a project that you personally create. The printing options will be discussed at a later date because that is an entirely different beast all together.

The next necessary icons to learn are the GIS layer icons:



GIS Layer Icons

Now, most of the icons on this toolbar will be discussed at a different time (or not at all in some cases). But for the most point, these icons are very important for GIS operations:

 -**Add Vector Layer**: This icon allows the user to take previously obtained vector information and upload it to their QGIS project. A vector layer is usually accurately surveyed information and consist of multiple lines and vertices. This is the majority format for most GIS data.

 -**Add Raster Layer**: This icon works similar to the Vector Layer icon, but is instead used for processing digitized raster information in the GIS project. A raster is a pixelated image that can range from air photos to 3D images that can be created within most GIS platforms. Rasters can be used to make information processing and imaging faster, but vector is (more often than not) more accurate

 -**New Shapefile Layer**: This icon allows the user to create their own shapefile from scratch. When selected, the user can decide if they want point, line or polygon data to be recorded. Then, with a blank shapefile, they can populate it by creating shapes and lines that stores whatever data the user requires.

 -**Remove Layers**: This icon does simply as its name states: it removes layers from your project.

And the last toolbar that is required to know for our projects is the Navigation Toolbar. This set of icons is what allows us to look around our project, zoom in/zoom out or see the full extent of our layers:

Navigation Toolbar

 - **Pan Tool**: Allows the user to look around their GIS Project

 - **Pan Map To Selection**: With the user selecting an area or position in their study area, this button will pan over to that area alone.

 - **Zoom In**: Allows the user to magnify a location on their map

 -**Zoom Out**: Allows the user to distance themselves from a location on their map

 -**Zoom To Full Extent**: Allows the user to zoom to the farthest extent that will allow them to see all of their data on a specific project.

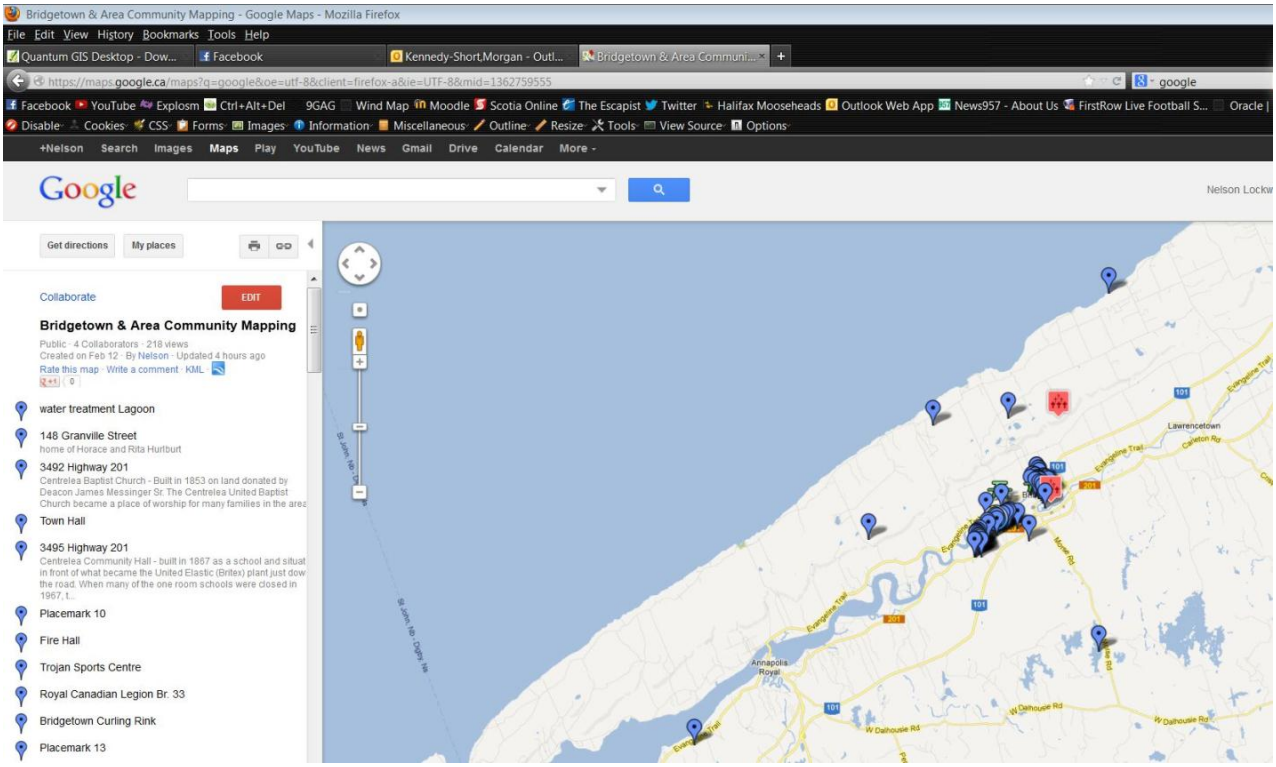
 -**Zoom To Selected**: Allows the user to select an area on a map and zoom in to it

For the moment, these are the only important icons to know and as this project progresses, more icons will be added in future chapters. But for now, enjoy the ability to add, manipulate and navigate data on your own terms.

3.0 Downloading KML Files From Google

Over the past couple weeks, we have been showing you how to use online mapping services (Google Maps) to map out your community, place markers that symbolize personal or cultural significance as well as give you a sense of spatial understanding and basic GIS principles. Now, we will show you how to take that data from Google Maps and export it out to a solitary file. Then, we will show you how to bring those place markers and information you have created into QGIS so you may further manipulate it yourself.

So, first off, you will need to access your maps that are saved on the Google Maps account:

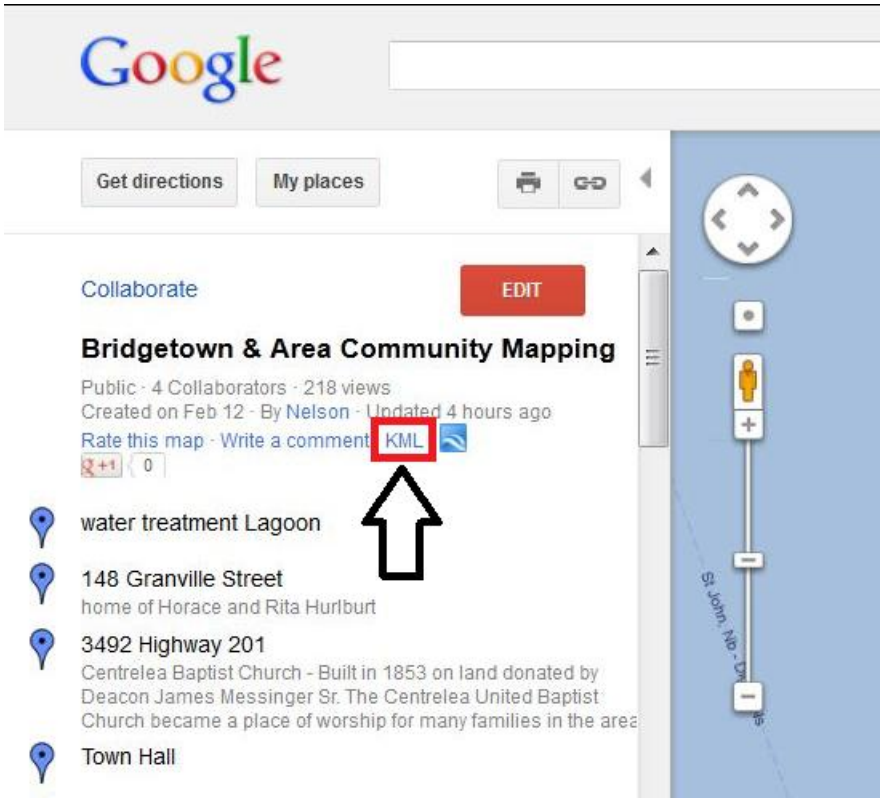


Google Maps

This is the product we have been working on for the past few weeks. With us populating our study are with personal and cultural assets, we have a nice looking map in progress. But how do we take this information and export it so it can be used in other programs? Well, that's an easy task. All you have to do is download the KML file (Keyhole Markup Language) from the Google Maps site and import it into the new program. Now, a KML file stores the points information as well as its Lattitude/Longitude information. That

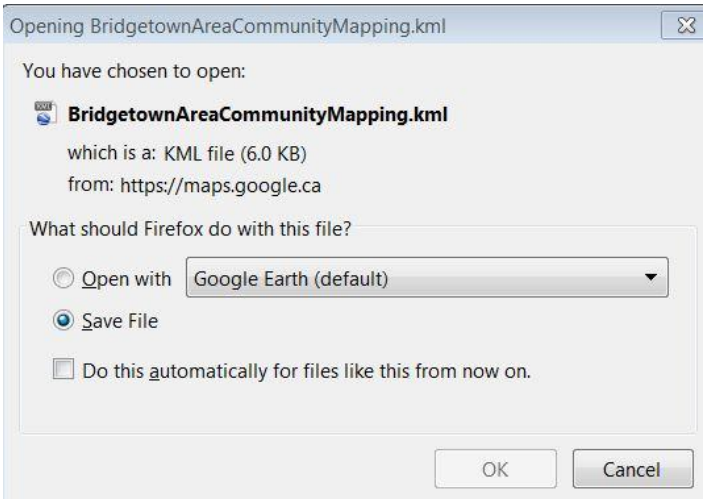
means that a KML file can be used in any program that utilizes spatial coordinate systems.

On the Google Maps page, there is a link that allows you to extract the KML data:



KML Download

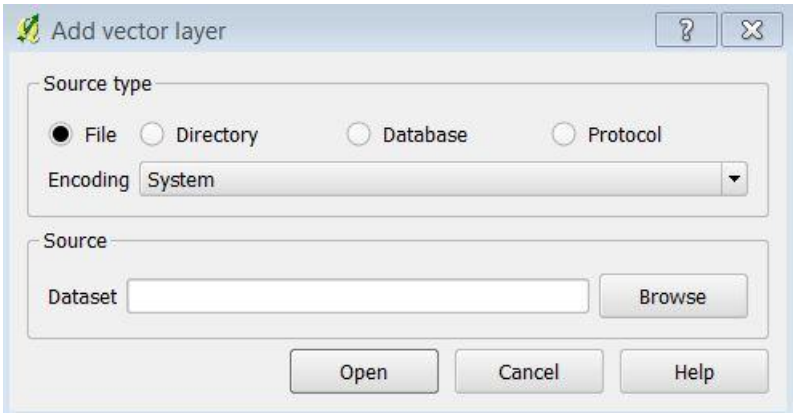
Selecting this opens the following prompt:



Saving KML to a Folder

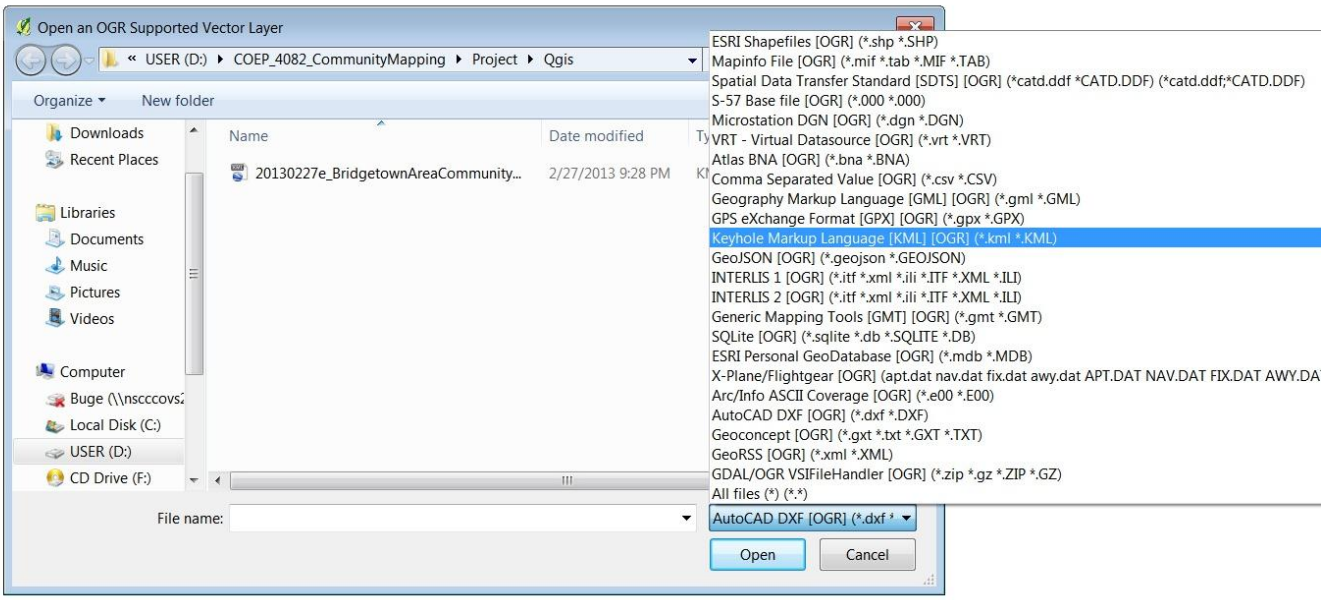
By slecting the “Save File” option and clicking “OK”, the KML file will be downloaded to a folder of your choosing (Note: Remember where you save the KML file, these files can get easily lost).

Next, you want to open up a QGIS project and create a blank session. From there, you will need to select the Add Vector Layer icon that was discussed earlier.



Adding Vector Layer

This can look confusing, but the user just needs to keep everything defaulted. It is already set to look for a file within a system (which is what we need), the only thing it doesn’t know is where to find the data. The user will need to select the “Browse” button and navigate to the folder where it is being stored. But, with QGIS, when you add a vector layer, it will automatically search for an ESRI formatted shapefile (which is the normal format for vector layers these days) and not KML files. You will need to change the file type that it is looking for:



Finding KML

By switching the search from “ESRI Shapefiles” to “Keyhole Markup Language”, the folder you saved your KML file should appear. Select it and press open, followed by “OK” in the Add Vector Layer screen. You should now see a QGIS map with the Google Map information embedded in it.