QGIS

50 BEST PLUGINS OF 2016

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What is **QGIS**?

**QGIS** is a free and open-source software that has become one of the leading Geographic Information Systems (GIS) in the market in recent years. QGIS provides tools for visualizing, editing and analyzing geographic information through a friendly graphical user interface.

QGIS runs on multiple operating systems and integrates with several open-source software packages including GRASS GIS, SAGA and R, among others.
What is a QGIS plugin and what is it used for?

A QGIS plugin is a piece of software that expands QGIS core functionality by adding extra features specialized in a given processing task.

A plugin may serve a specific purpose. For example, a plugin can make easier for the user to either edit vector layers, conduct spatial or statistical analyses, access online mapping services, publish maps on the Internet, or handle layers or files, among other applications.

Programming languages that can be used to develop QGIS plugins include C++ and Python. Python plugins are usually easier to write, understand, maintain and distribute.

QGIS plugins are classified as stable or experimental. Experimental plugins are still in early stages of development and are not recommended yet for production use.

In this e-book I highlight some of the best QGIS plugins, including stable and also experimental ones. Experimental plugins are identified in following pages with this icon:
How to install a QGIS plugin?

Start QGIS and click ‘Manage and install plugins...’ in the Plugins menu. A graphical interface as the one in the screenshot is open.

Plugins can be searched by name or keyword (e.g., buffer). A short description, user rating, amount of downloads, author and version, among other information, is shown for each plugin.

For including experimental plugins in the list of available plugins, mark the ‘Show also experimental plugins’ check box in the Settings section.

OK, let’s take a look at the best QGIS plugins!
1. Vector Layers Edition
1 CADDigitize

Offers a set of tools, similar to those found in a CAD software, for digitizing lines and polygons of different shapes including rectangles, ellipses and circles.

Additionally, CADDigitize allows you to entering data to the attribute table once the new element has been digitized.
This plugin contains several tools for performing CAD-like functions such as object rotation, parallel lines creation or orthogonal line design.

Moreover, a very interesting feature of this plugin is that offers a CAD console that makes possible to execute CAD-like commands.
Expanding the set of functions included in the previously seen plugins, QAD features supplementary tools for creating polygons based on buffered objects, adding symbols and text, scaling and copying objects, stretching them, breaking them, join them... An amazing collection!
QuickMultiAttributeEdit is a simple and easy-to-use plugin. It allows editing values in a field of the attribute table for one or more selected features in a vector layer.

Furthermore, this plugin keeps the latest input value in case the user needs it for other features. Very handy!
2. Statistical **Data Analysis**
This plugin helps the user to compute basic statistics for a given field of the attribute table. **Statist** calculates central tendency and variability measures, sum and count, among others. Frequency histogram is displayed using the matplotlib library, that is quite familiar to Python users.

As additional functionality, this plugin allows computing of statistics for texts fields, as well as statistics calculation only for selected features, as can be seen in the screenshot.
Group Stats

This is a good one! Do Excel pivot tables sound familiar to you?

Well, this plugin helps you to easily generate statistical reports for groups or categories given a field of the attribute table of a vector layer. For instance, you could calculate total area of each land cover class per state.

Also note that it is possible to compute several statistics at once with this plugin. I suggest you to read this tutorial to start learning how to use Group Stats.
Qscatter generates an interactive scatterplot, a quite helpful tool for data exploration. For using it, first you must select a set of point features and then define the pair of columns from the attribute table that will be plotted. If you click any of the points in the Chart, then you will see that the corresponding feature is enclosed in a red box in the map.
With this plugin you can calculate statistical properties of time series or test for normality of data distribution displaying both the statistic and the plot.

Furthermore, this plugin helps to compare data for two variables through a scatterplot, although the graph is not interactive (as the one produced by Qscatter).
3. Spatial Analysis and Modeling
Multi Ring Buffer

Creates multiple buffer rings around a feature or set of features of a selected layer. Rings are built based on a fixed distance.

Features can be dissolved before buffering if needed by the user. It is important to note that buffers are created in units (m, km, ...) of layer CRS.
If you need variable distance buffers instead of fixed distances, then try the Multi-distance buffer plugin.

Through its graphical interface, you can add or remove buffer distances quite easily. Moreover, this plugin let you apply a buffer only to selected features in a given layer.
Buffer by Percentage

A bit more advanced, this plugin generates buffers as a proportion of feature area, thus it can be applied only to polygon layers. Buffers defined as a percentage area less than 100% can also be created.

Furthermore, an attribute field can be used for creating buffers with a different area percentage for each feature if needed.
When a *dissolve* operation is performed, sometimes it is helpful to compute some statistics based on the dissolved polygons. For instance, one may want to calculate total area of a major administrative unit (e.g., state) resulting from summing areas of minor administrative units (e.g., county) that are dissolved.

Several statistical measures are available in this plugin, including count, first, last, max, mean, median, min, standard deviation and sum.
Online Routing Mapper

This plugin may help you to quickly identify and map routes using online services such as Google Directions, Here, or MapBox, among others.

You only need to point the start and stop locations in the map and that’s it! The result of the analysis is loaded to the canvas automatically.
This plugin creates clusters by combining points in a selected layer that are located within a specified distance. First select a points layer and then press the ‘2. Setup First Cluster’ button. Also, if you zoom in or zoom out, you will see that the numbering in each cluster changes accordingly.
Cartograms are a particular type of data visualization in which the geometry of a map is distorted in order to convey information of a certain variable.

Now users can generate this kind of map using the Cartogram plugin. As shown in the screenshot, one only needs a polygon layer and a field that will be used to distort the map geometry.
If you are in the need of computing landscape metrics or zonal statistics for a raster, **LecoS** can give you a hand.

This is a plugin that contains an extensive group of functions for land cover analysis at the class or landscape levels. Moreover, this plugin allows overlaying a vector layer in order to calculate landscape metrics for each polygon in batch mode.

Definitely **LecoS** is worth a try!
MOLUSCE is a plugin developed for analyzing and modeling land use/land cover change. It helps to evaluate total change area at the land cover class level, model change probability, simulate change using cellular automata and perform model validation.

One of its most interesting features is that it allows modeling transition potential using four different techniques: neural networks, logistic regression, multi-criteria evaluation or weights of evidence.
Easy AHP facilitates to conduct multi-criteria analyses which are frequently used for supporting decision making in land use studies, suitability assessments and environmental resources use projects, among others.

Through a friendly graphical interface, this plugins makes possible to perform a weighted linear combination on the analyzed variables. For this application, weights are calculated based on the Analytic Hierarchy Process (AHP) methodology.
geoUmbriaSUIT

This is a more advanced plugin aimed for suitability assessment through spatial multi-criteria analysis. In particular, geoUmbriaSUIT includes environmental, economic and social criteria for the assessment.

I suggest you take a look at this plugin documentation to learn how to use it and understand better how it works.
4. Remotely-sensed Data Processing
One of my favorites! This plugin offers an extensive group of tools for processing imagery taken by remote sensors.

It includes functionality for downloading and automatically pre-processing Landsat and Sentinel imagery, creating training areas, performing supervised classification and assessing classification accuracy, analyzing land cover change, and converting results to vector format, among many others.

A plugin that every image analyst should master!
As expected, one can conduct principal component analysis on multi- or hyper-spectral imagery with this plugin.

Besides producing principal components output in GeoTIFF format (only format supported), this plugin generates a text file with statistical results produced by the algorithm, including eigenvalues for all the principal components.
A plugin that I needed more than once and finally somebody else has developed it!

This plugin takes every image stored in a directory and then identifies and saves its boundary in a shapefile. It creates the boundary for one out of two possible analysis: for the whole image extent (which usually includes nodata pixels) or for valid pixels only.

**Image Boundary** works with several commonly used image formats (*.tif, *.img, etc.).
5. Accessing Web Services
One of the most popular QGIS plugins: it’s been downloaded more than 650K times!

**Open Layers** loads different kinds of base maps (e.g., streets, satellite, hybrid or physical maps) from distinct providers (Google, OSM, Bing, ...). Furthermore it opens an overview panel that can be used for either visualizing a different base map, adding a new layer to the canvas, or exporting the view in the overview as an image or as a kml file.

A great plugin to install and try!
Another plugin intended for adding base maps from online providers is **QuickMapServices**.

A quite interesting feature of this plugin is that it provides the user with the ability of including new data sources in a very simple way. Instructions are clearly detailed [in this link](#).

It is also possible to create or change groups or services in the plugin menu and to modify their visibility.
QuickOSM presents an effective graphical interface for querying and downloading OpenStreetMap data.

You can use this plugin for either searching OSM data by key/value pairs, define geographical extent (either map canvas or a layer extent) or saving queries for run them later.

An additional plugin for loading OSM layers is QOSM, which works in a similar way than the Open Layers plugin, offering better cacheing, among other features.
With this plugin we can download very easily OSM data just by defining a rectangular area over our study site.

All the different geometries (lines, points, polygons, etc.) are saved in a .osm file from which we can load the information when we need it later. All the attribute data are stored in the table of each layer in the .osm file.
OSMInfo

This plugin gets and displays full information from OpenStreetMap database about all the features that are nearby or enclosing a given location.

Same as other plugins related to OSM, OSMInfo extracts data using the Overpass API.
osmSearch

This plugin searches OSM data by name or address and has the option for centering the map canvas automatically when clicking each search result, which facilitates finding exactly what we are looking for.

For similar functionality take a look at the Quick Finder plugin.
This plugin opens a window panel in QGIS and displays Google Street View (or Bing) with the view showing the location where the user has clicked on the QGIS map.

A number of ancillary elements can be added to the window such as address, image date, or zoom/pan controls. Furthermore it is also possible to open Street View in a web browser or save image info and current location in a shape file.

Also take a look at Street View, a plugin similar to go2streetview but with a more basic functionality.
6. Web Map Publishing and Visualization
qgis2web

This excellent plugin helps you to generate a web map using layers loaded in your QGIS project, replicating aspects such as style or extent.

Users can create a Leaflet or an OpenLayers web map and add controls, base maps and popups if required.

Now you can generate in just a minute your own web map, ready to share or publish in your website!
QGIS Cloud Plugin

If you don’t have a website to publish your maps, then you can use this plugin to host your web maps to the cloud through qgiscloud.com. In the free plan you can upload up to 50Mb and publish your maps in just 5 steps:

• Install the plugin
• Create a cloud database
• Load data
• Create a map, and
• Publish your map

And that’s it, you’ll have your map available over the Internet!
With **Qgis2threejs** you can generate 3D visualizations of your QGIS project powered by WebGL technology. In the plugin website you will find some very interesting examples about how to create these 3D views, which can be exported as HTML pages.
Only one click and that’s it. This plugin launches GoogleEarth and display the layers (one or more) that are currently selected in QGIS.

GEarthView displays just the current extent of the QGIS view. Simple and quick.

A similar plugin is send2GE: a user clicks her map in any location and then send2GE launches GoogleEarth showing a pin (placemark) on the site corresponding to the click location.
7. File and Layer Management
I bet you didn’t know this plugin!

With **autoSaver** you can enable QGIS to save automatically both the project and layers in edit mode. You can choose a time interval for automatic saving as well as saving in an alternate backup file.

This plugin can *save* you from losing your work (and from a headache!) due to unforeseen events.
Another simple but very useful plugin.

**Backup layer** creates a backup of a selected layer and saves it as a zipped file appending creation date (yyyy/mm/dd) and time to the name of the file.

Thus this plugin offers a quick way to generate a backup of your layer before you start editing it.
Have you loaded a lot of vector layers from different sources (i.e., folders) and need to save them in a unique directory? The Qpackage plugin can help you with that task.

Click the ‘Load layers of the current project’, select the destination folder and define the export CRS. Note that shapefiles are the only format available for export data in this plugin.
With **Bulk vector export** you can export to a given folder all the vector layers that are loaded and visible in the map.

You can save to any of the more than 30 formats. You can also choose between exporting layers in their respective CRS or in the project CRS.

Another plugin with similar functionality is **Batch Save Layers**, although this plugin only offers six file formats to export to.
LayersByField

This is a basic plugin that one can need in more than one opportunity.

LayersByField helps us to separate a layer into multiple layers based on an attribute field that holds categories, making the split by unique values.

The Unique_values_saver plugin can also be used for this purpose.
Layer Metadata Dock opens an alternate panel that shows, in an organized and quick way, basic metadata information of the layers loaded in the QGIS view.

With this plugin one can select which metadata to be shown. Furthermore, it is possible to group layers by different criteria: class (vector/raster), CRS, extent, geometry (polygon, line, ...), layer name, among other.
Layer Board is useful for visualizing and editing layer properties of vector and raster layers loaded in a QGIS project.

This plugin helps to change properties of several layers simultaneously, to change layer style and save it as the default style, and to export properties information as text file (.csv).
Sometimes when one has too many layers loaded in a QGIS view it becomes quite difficult to identify to what layer a given feature belongs to. For those situations, **pickLayer** can be extremely useful.

This plugin shows and highlights layers that contain features where one has clicked over the map. Once one select the desired layer, **pickLayer** can execute a certain action such as opening the attribute table, starting editing, or zooming to the layer or to the selected feature.
This plugin opens a synchronized window and loads layers that you have selected in the QGIS view. You can load in a new window either layers that are visible in QGIS or a different set of layers.

Given that the windows are synchronized, the map in QGIS moves if you move the map in the auxiliary window, and vice versa.

In the same way, if you zoom in/out in QGIS, then the zoom in the auxiliary window changes accordingly.
Dockable MirrorMap

With this plugin one can open one or more dock panels that are synchronized (regarding zooming and panning) with the main QGIS view.

A dock has a couple of icons at the bottom left for loading or removing layers or groups that are selected in QGIS view.

A very useful functionality of this plugin is that one can set a distinct map scale in each dock panel.
MapSwipe Tool helps you visualize a layer that is below another one just by clicking and dragging a slider horizontally or vertically.

A similar plugin is **Toggle Active Layer**: with this plugin just click the map for toggling visibility of the active layer, which will make possible to visualize the layer below.

These two plugins are practical tools for quick comparison between layers.
This plugin lets visualize (turn on/turn off) a set of layers or groups of layers cyclically. One can set visualization speed by defining loop delay in seconds.

An additional trick: if loop delay is set as 0.0 secs, then one can use the fast forward and fast rewind buttons to control the visualization manually.

This plugin is particularly useful if one wants to see a sequence of layers or groups, not just comparing a couple of them.
Raster Transparency

With this plugin we are able to change transparency of pixels in a raster layer interactively.

Plugin controls are used to modify the threshold value up to which pixels become transparent allowing setting transparency to pixels with values lower or greater than the threshold.

**Raster Transparency** can be a quite helpful plugin for visually examining possible reclassifications of a raster layer in a virtual way.
Transperator makes transparent all the nodata pixels in a raster layer.

Usually nodata pixels are displayed as black, as in the screenshot in this slide. With this plugin we can remove all those black pixels with just one click.
8. Print Composer and Settings
Maps Printer

This plugin can be quite useful when you have created several *print composers* for a project and need to manage them, either to open/close them or to export them to a given format.

*Maps Printer* allows you to handling several *print composers* at once from a single interface and print them to PDF or to an image format (*.tif, *.png, etc.).
Instant Print purpose is to provide a quick way to print a selected area in your map using one of the printer composers for the layout.

Besides providing several print formats (including PDF, JPG, BMP and PNG), this plugin allows setting print scale and moving the area selected to be printed.
Are you tired of your GIS looking the same way all the time? Then try this plugin for customizing QGIS interface however you wish.

You can use predefined templates included with plugin installation or you can modify them and create your own. You only need some basic knowledge of CSS (Cascading Style Sheets).

It’s time to change the look and feel of QGIS!
Thanks for reading up to here

Hope you have learned new and useful tools that help you improve your processing workflows for production and analysis of geographic information in QGIS.

See you in my blog!