

# Using QGIS to convert a spreadsheet (or a .csv file) into a point-Shapefile

## Tutorial overview

This tutorial will show you how to generate a georeferenced point dataset (ESRI shapefile) from a spreadsheet or a .csv File

## What you need

- QGIS 2.2 or above
- A spreadsheet or a .csv File containing different entries and at least X- and Y-coordinates in separate columns. Additional attributes can be stored in separate columns (the file Hotels.xls is included in the tutorial .zip and can be used as an example).

## A) Save your spreadsheet as .csv file.

A CSV is a Comma Separated Value file. The entries (lines) are stored in a simple, unformatted text file with their values (the content of the different columns) separated by commas (or other separator as specified by yourself, e.g. semicolons, points, etc.)

**GOAL:** convert your data in a format that can be read and directly imported into QGIS as a point Shapefile.

>>>> If your data are already in .csv format, you can skip part A. <<<<

1. Open your data with a spreadsheet software (MS Excel, LibreOffice Calc, Apple Numbers or similar)
2. Choose **Save As...** (or similar) and select .csv as a Format (the most common spreadsheet software should offer this option; see Figure 1 for an example).

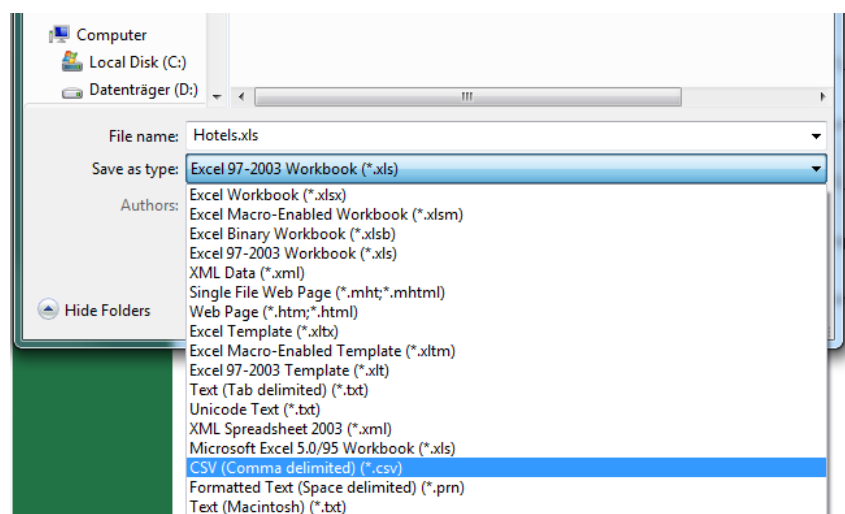


Figure 1: dropdown menu of MS Excel for choosing the file format

3. The spreadsheet software will eventually warn you about losing the formatting of your data when saving them as .csv. Ignore the warning and continue.

4. If you open your file in a text editor you should see something like this:

```
lat;lon;name;Locality;beds
46.024;8.85648;Albergo Santo stefano;Miglieglia
46.048923;8.890086;Hotel Castagno;Mugena
46.019314;8.891059;Albergo al Ponte;Cademario
46.022982;8.885412;Hotel Cacciatori;Cademario
45.996081;8.825901;Hotel I Grappoli;Sessa
46.021587;8.891565;Kurhaus Cademario;Cademario
...
```

Figure 2: .csv File in a text editor

## B) Import your .csv file into QGIS

**GOAL:** import the file converted in part A) into QGIS as a point Shapefile

1. Open QGIS
2. Go to the menu **Layer → Add Delimited Text Layer** or click on the corresponding button of the toolbar (see Figure 3).

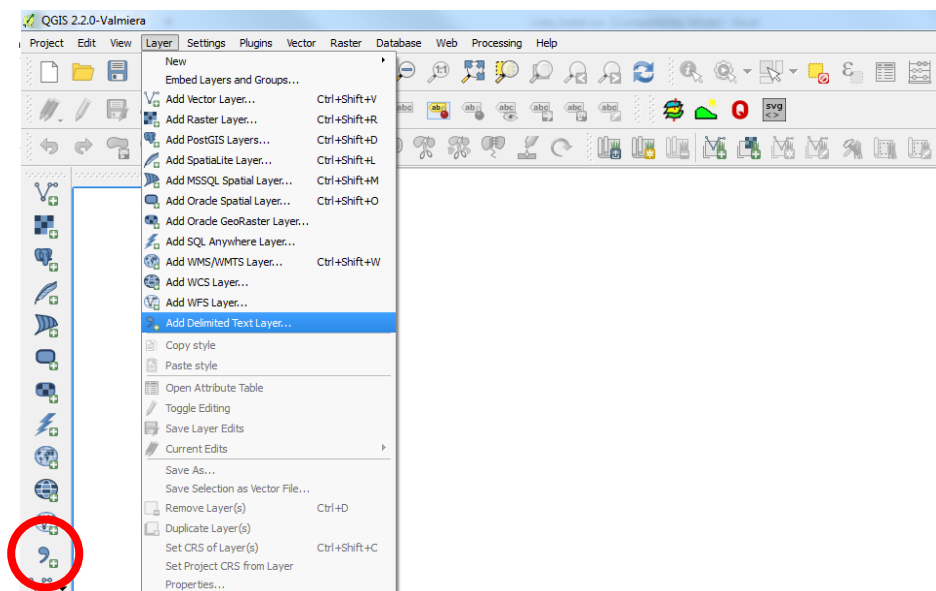


Figure 3: Add Delimited Text Layer

3. Click on **Browse...** to select the file you converted in A) or use directly the tutorial data (see Figure 4).
4. QGIS define the name of the layer based on the name of your file. You can change it if you want.

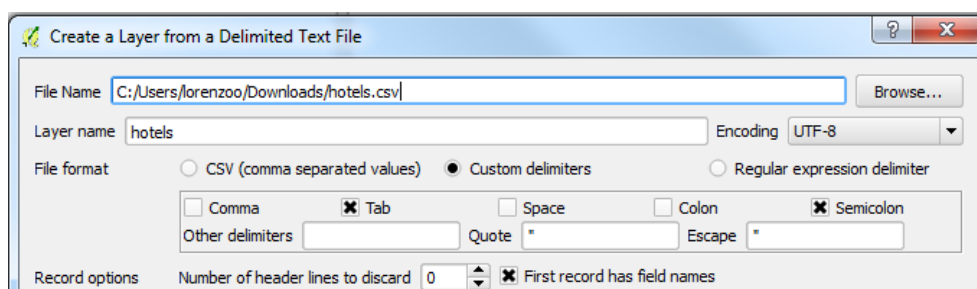


Figure 4: Import .csv File - Part A

5. Based on the delimiter of your file you need to choose **CSV (comma separated values)** or **Custom delimiters** in order to import your data correctly. In our case, as we have seen in Figure 2, the delimiter is a semicolon. Therefore, we select the second option and activate the check button **Semicolon**. It is also possible to define another, personal delimiter if necessary.
6. Select the number of header lines to be discarded. If (as in our case) the field names are stored in the first record (the first line of the .csv file) you should check the corresponding check box and select '0' as **Number of header lines to discard**.
7. Choose **Point coordinates** as geometry and select from your attributes the fields containing the X and the Y values (Figure 5).  
In QGIS the x-Axis refers to the longitude (abscissa or horizontal axis resp. west-east direction) while the y-Axis refers to the latitude (ordinate or vertical axis resp. south-north direction).
8. You do not need to select any other option. The exact meaning of the different options can be found clicking on the **Help** button of the tool's dialog window.

In the bottom part of the dialog window, you can always see how your data are going to be imported based on the selected options.

	lat	lon	name	Locality	beds	Opening
1	46.024	8.85648	Albergo Santo stefano	Miglieglia	28	01.01 - 31.12
2	46.048923	8.890086	Hotel Castagno	Mugena	20	01.01 - 31.12
3	46.019314	8.891059	Albergo al Ponte	Cademario	27	01.01 - 31.12
4	46.022982	8.885412	Hotel Cacciatori	Cademario	50	05.04 - 30.10
5	45.996081	8.825901	Hotel I Grappoli	Sessa	115	15.03 - 26.10
6	46.021587	8.891565	Kurhaus Cademario	Cademario	164	01.01 - 31.12
7	46.049186	8.899524	Pensione S. Michele	Arosio	24	22.12 - 16.11
8	46.047041	8.900683	B&B Hike & Bike	Arosio	8	01.01 - 31.12
9	46.01132	8.856595	Pensione Belcantone	Novaggio	20	01.12 - 31.10
10	46.010054	8.855244	Pensione Novaggio	Novaggio	17	01.01 - 31.12
11	46.022317	8.840179	Casa Scaut Alpe di Pazz	Novaggio	36	01.01 - 31.12
12	45.998207	8.814895	Locanda della Pace	Sessa	15	01.01 - 31.12

Figure 5: Import .csv File - Part B

9. When you are happy with your settings click **OK**
10. Choose the Coordinate Reference System of your data.

**IMPORTANT:** this refers to the reference system of your points' coordinates and not to the reference system you would like to use for your final data. For instance, if like in our case you collected Lat/Lon geographic coordinate the correct Coordinate Reference System (CRS) will be *WGS 84 (EPSG:4326)*. If your coordinates are in another CRS then select the corresponding one. Remember: **the coordinate system of your other data or of your current project does not play any role in this step!**

11. You should be able to see the points corresponding to your entries in QGIS as shown in Figure 6. If you already had data in your QGIS project, the points should geographically match the other data.

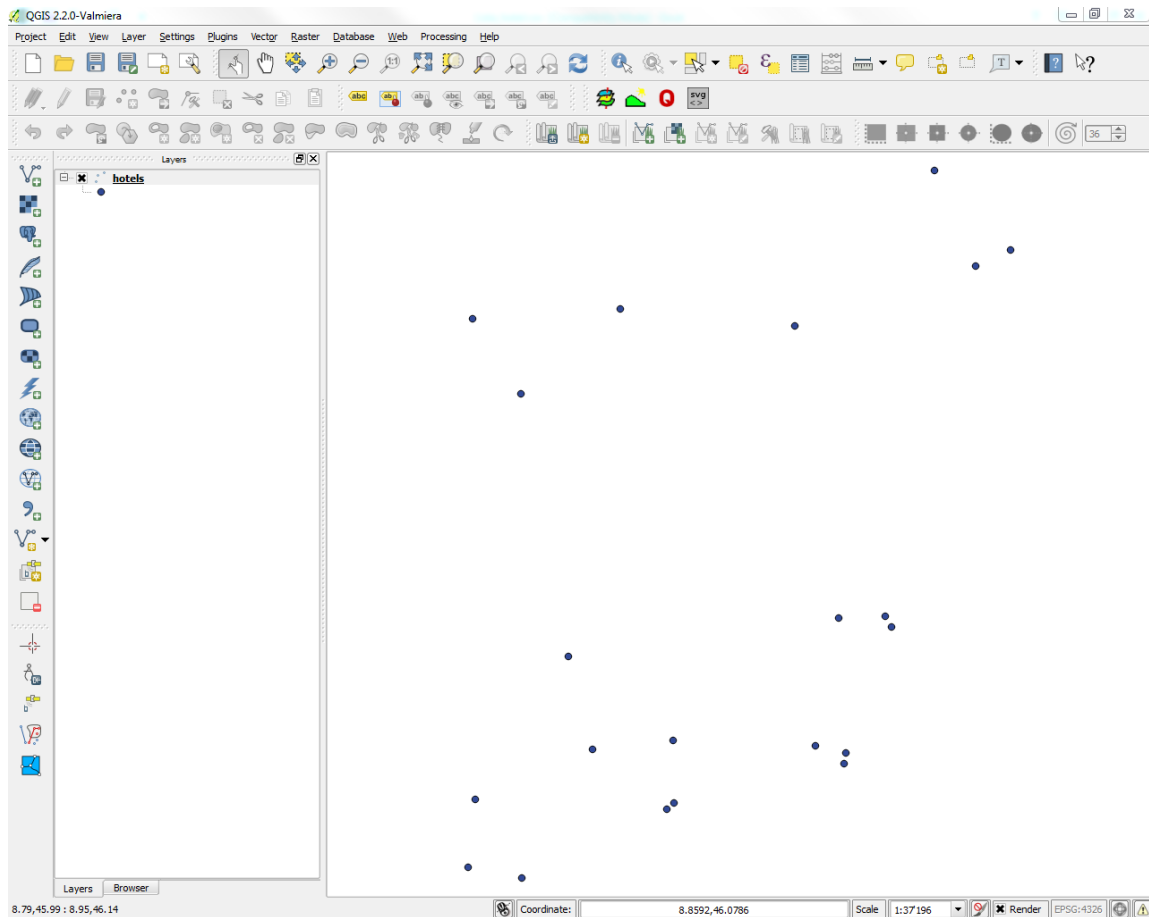


Figure 6: Points imported into QGIS

12. If you do not see the points, check the «*Common Problems*» section at the end of this tutorial.

## C) Save the data as Shapefile

Your points are now correctly visualized in your project, but they are still stored in .csv Format. In Order to better work with your data, you should store the data as Shapefiles. At the same time you can use this step in order to change the CRS of your data, for instance in order to avoid eventually on-the-fly reprojection or known data analysis issues.

**GOAL:** save the data as Shapefiles and eventually specify a different CRS for them.

1. Right-click the imported points and choose **Save As...** (see Figure 7).

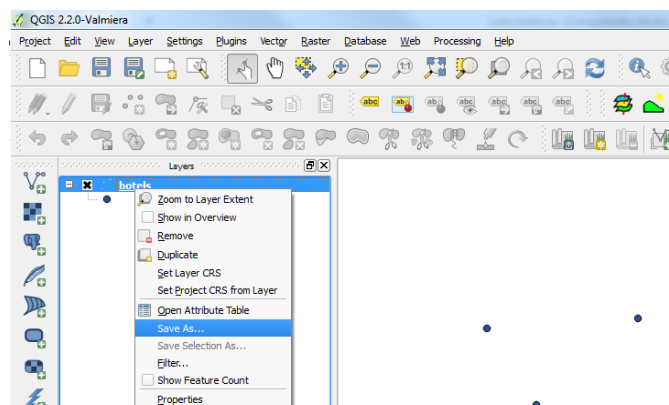
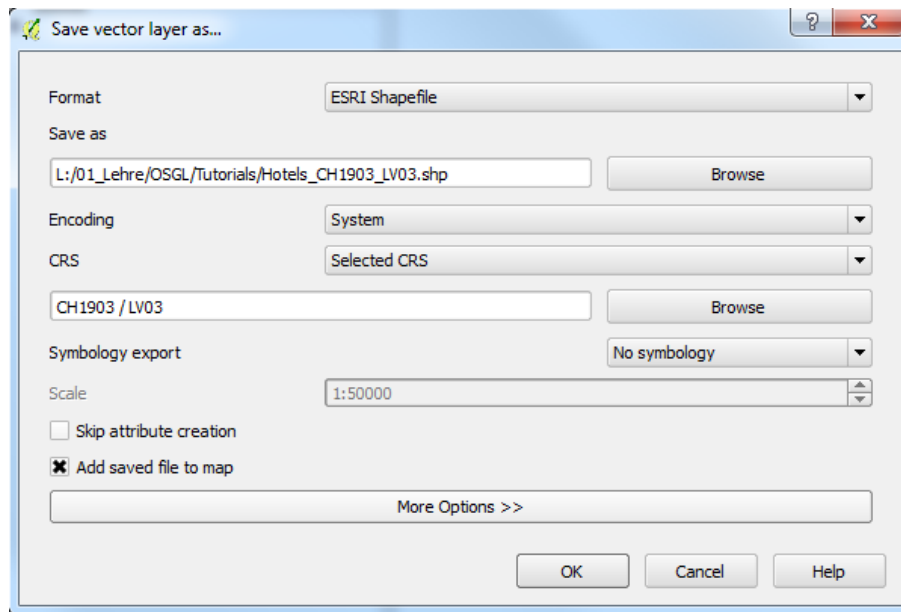


Figure 7: Save points as Shapefiles

2. Choose ESRI Shapefile as a format (see Figure 8).
3. Click on **Browse...** and select a location and a name for your Shapefile
4. Choose **Selected CRS** and browse the CRS until you find the desired option.  
In this case, we want to work in a project where all the data are in the Swiss Coordinate System avoiding automatic reprojections done by the software.
5. Select **Add saved file to map**.



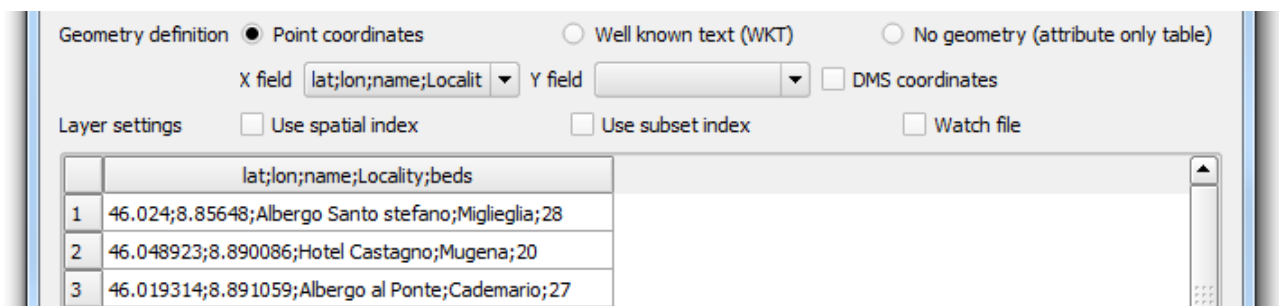
**Figure 8: dialog window for saving points as Shapefiles**

6. Click **OK**.

The point Shapefile is created and is added to the current project. If you are not already working in a specific project, you can close this, open the project where you want to have the data and import them as you usually do for vector files.

## D) Common problems

Problem: I cannot select any meaningful value for X and Y in the import process (See Figure 9).



**Figure 9: impossibility to select meaningful values for x and y in the import process**

Possible solution: check the delimiter used in your .csv File and select the corresponding entry in the dialog window as shown in Figure 10. If your delimiter is not one of the possible options (Comma, Tab, Space, Colon or Semicolon) you can click in the

field **Other delimiters** and type the specific character used as a delimiter in your file (e.g. a point, a plus or whatever else).

**Figure 10: selecting the correct delimiter value**

**Problem:** I went through the whole process but cannot see the point

**Possible solution A:** your points are hidden by other layers: turn the other layers off or change the sequence of your layers bringing the points on top in order to check if this is the reason.

**Possible solution B:** click on «zoom to Layer» in order to check if the points are really not there or just not in the visible area.



**Figure 11: "Zoom to Layer" button**

**Problem:** I can see the points, but they are not placed where I expect them to be.

**Possible solution A:** you selected the wrong CRS when importing the data (Step B-10). Check your data and eventually try again with the correct CRS.

Hint: if you are dealing with values between -90 and 90 for the latitude and -180 and 180 for the longitude your data are probably in geographic coordinates (WGS 84, EPSG code: 4326).

**Possible solution B:** you inverted X and Y coordinates in the import process (step B-8). Zoom to both the extent of the «wrongly» imported data and of your other data and check in the coordinate window at the bottom of the screen the rough coordinates of the locations. If your points have coordinates very similar to the correct ones but swapped as shown in Figure 12, you probably selected the wrong attributes as X and Y coordinates. Repeat step B-8 selecting the correct columns.

**Figure 12: correct and "swapped" coordinates indicating a wrong choice of x and y fields**