



Standard Operating Procedure

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| SOP code | SOP_GIS_002_v01 |
| Title | Download data point directly from a GPS device into a QuatumGIS framework |
| Written by | Jorge Cano Ortega |
| Date & signature | 20/11/2012 |
| Approved by | Simon Brooker (GAHI-LSHTM)/Maria Rebollo (CNTD-LSTM) |
| Date & signature | |
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| Date | Amendment | Approved by & signature | Reason of the amendment |
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1. OBJECTIVES

Provide the guidance to download and/or to import data points gathered from a handheld GPS receiver into a QuatumGIS framework. How to save the set of data points as a *shapefile* (feature layer) is also explained.

2. DEFINITIONS

COM or serial port is a serial communication physical interface through which information transfers in or out one bit at a time. Throughout most of the story of personal computers, data transfer through serial ports connected the computer to devices such as terminals and various peripherals.

GPS: Global Positioning System. It is a global navigation satellite system (GNSS) developed by the United States Department of Defence and managed by the United States Air Force 50th Space Wing.

QuantumGIS (<http://www.qgis.org/>) is a cross-platform and user friendly Open Source Geographic Information System (GIS). QGIS supports vector, raster, and database formats and lets you browse and create map data on your computer.

Shapefile (or ESRI shapefile) is a popular geospatial vector data format for Geographic Information Systems software. It is developed and regulated by ESRI as a mostly open specification for data interoperability among ESRI and other software products. Shapefiles spatially describe geometries: point, polylines and polygons.

USB: Universal Serial Bus is an industry standard developed in the mid-1990s that defines the cables, connectors and communication protocols used in a 'bus' for connection, communication and power supply between computers and electronic devices. USB was designed to standardize the connection of computer peripherals to personal computers.



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3. APPLICABLE TO

National Control Programme Managers and Data managers

Researchers involve in field data collection and working with a handheld GPS receiver

4. RESPONSIBILITIES

Data managers and ultimately the National Control Programme managers are responsible of managing the data collected in the field. In this regard, they have to download the data (coordinates) gathered in the field from the GPS receivers to a computer periodically and to store these data in such a format that they can eventually be used in a GIS framework. These responsibilities can also be applied to researchers involve in field data collection and working with GPS receivers.

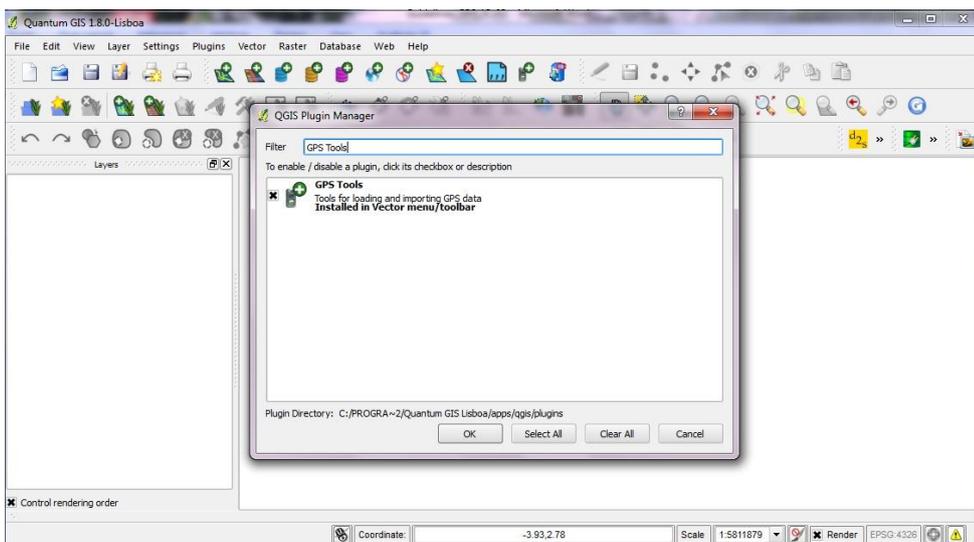
5. RELATED SOPS

- SOP_FIELD_001_v01_EN → Using a handheld GPS receiver model GARMIN GPS eTrex H in field data collection.
- SOP_FIELD_002_v01_EN → Using a handheld GPS receiver model GARMIN GPS MAP in field data collection.
- SOP_GIS_001_v01_EN → Download data point from a GPS device using EasyGPS software.
- Manual “Using a handheld GPS receiver in field data collection” GAHI – CNTDs.

6. PROCEDURES

There are different ways to manage a waypoint list within QGIS:

1. **Loading data from a file.** To load a GPX file your first need to load the plugin ‘GPS Tools’ that you may find in the QuatumGIS plugins repository (<http://plugins.qgis.org/>), though in the latest version released this plugin is already included in the interface.



To load the plugin ‘GPS Tool’, go to **Plugins > QGIS Plugin Manager > GPS Tool** (see **Figure 1**). When this plugin is loaded a button with a small handheld GPS device will show up in the Tool bar.

- Click on the  **GPS Tools** icon and open the **Load GPX file** tab (see **Figure 2**).
- Browse to the folder which contains the GPX file and select it. Use the browse button to select the GPX file, and then use the checkboxes to select the feature types you want to load from that GPX file. Each feature type (waypoint, track and routes) will be loaded in a separate layer (i.e. waypoint list as a point layer) when you click OK (see **Figure 2 & 3**).

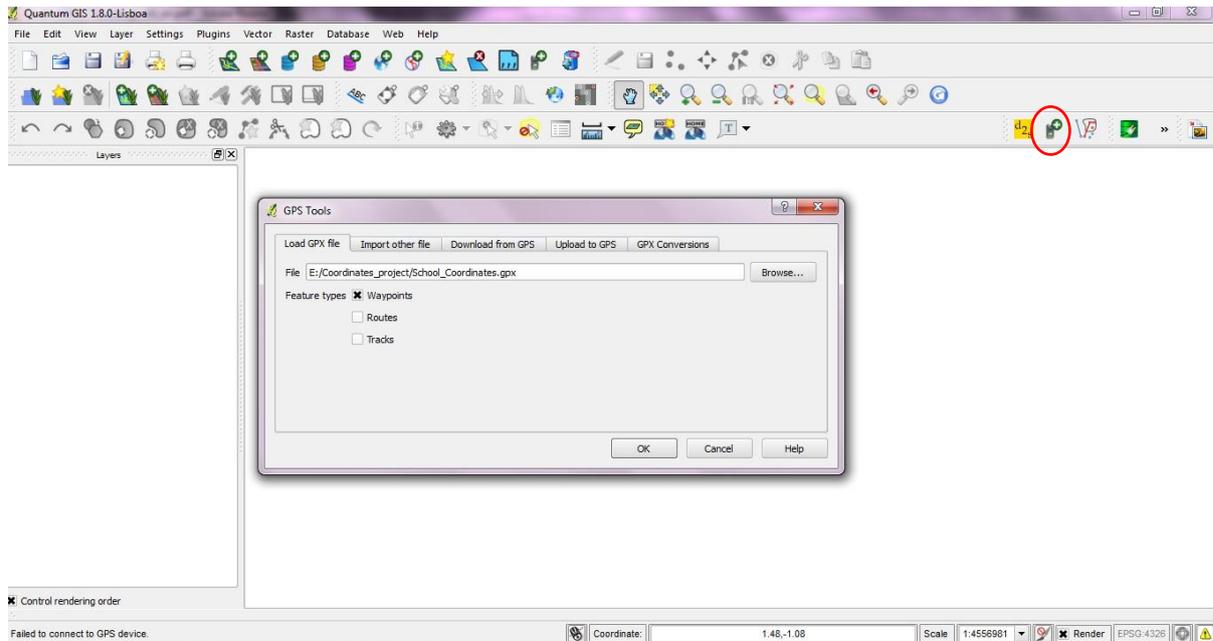


FIGURE 2. Load a GPX file using the GPS Tools plugin.

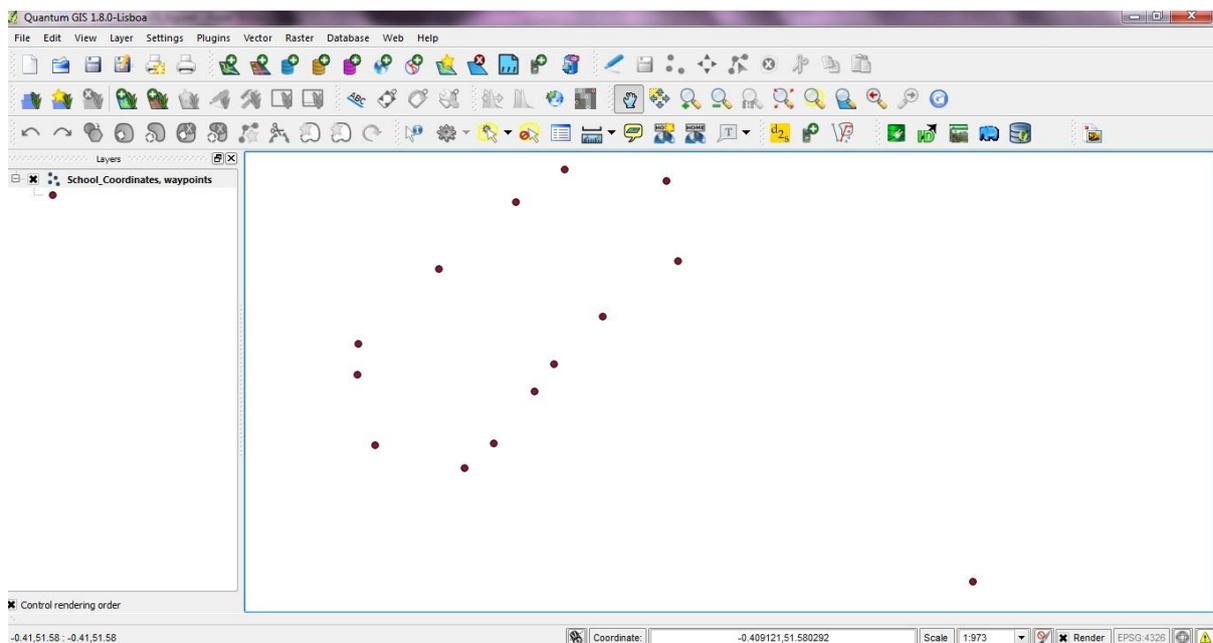


FIGURE 3. Waypoints saved as GPX file using EasyGPS software displayed within QGIS.

2. **Downloading GPS data from a device.** QGIS can use GPSTabel to download data from a GPS device directly as new vector layers.

- For this we use the **Download from GPS** tab of the GPS Tools dialog (see **Figure 4**). Here, we select the type of GPS device, the port that it is connected to (or usb if your GPS supports this), the feature type that you want to download, the GPX file where the data should be stored, and the name of the new layer.
- When you click **OK** the data will be downloaded from the device and appear as a layer in QGIS.

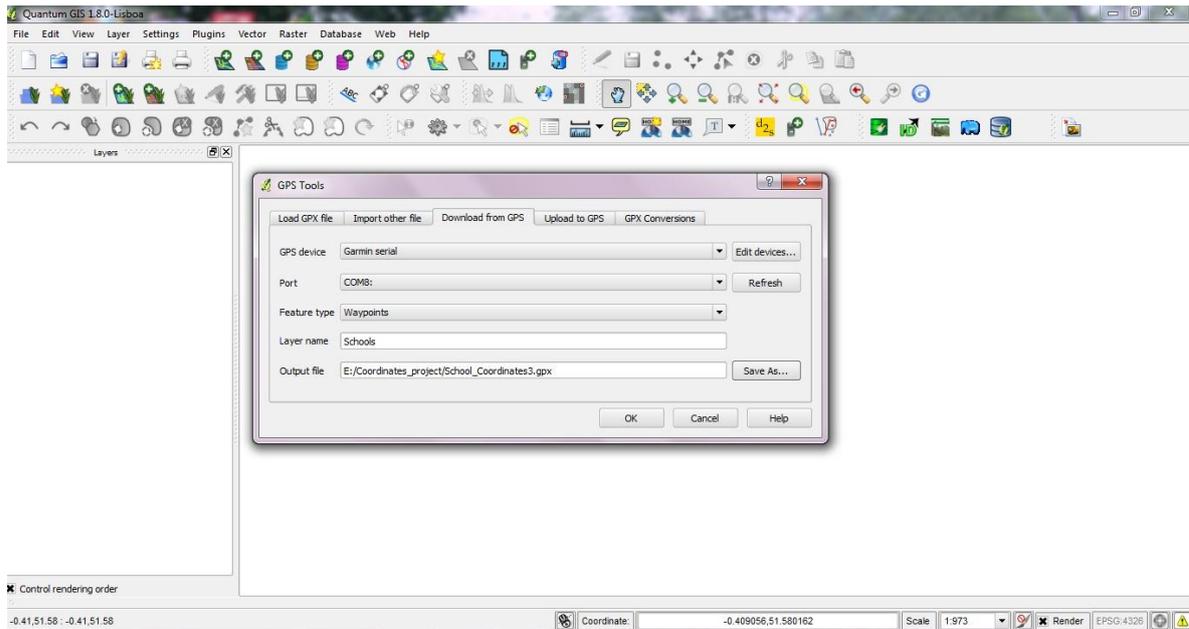


FIGURE 4. Click on the **Download from GPS** tab in the **GPS Tools** dialog box.

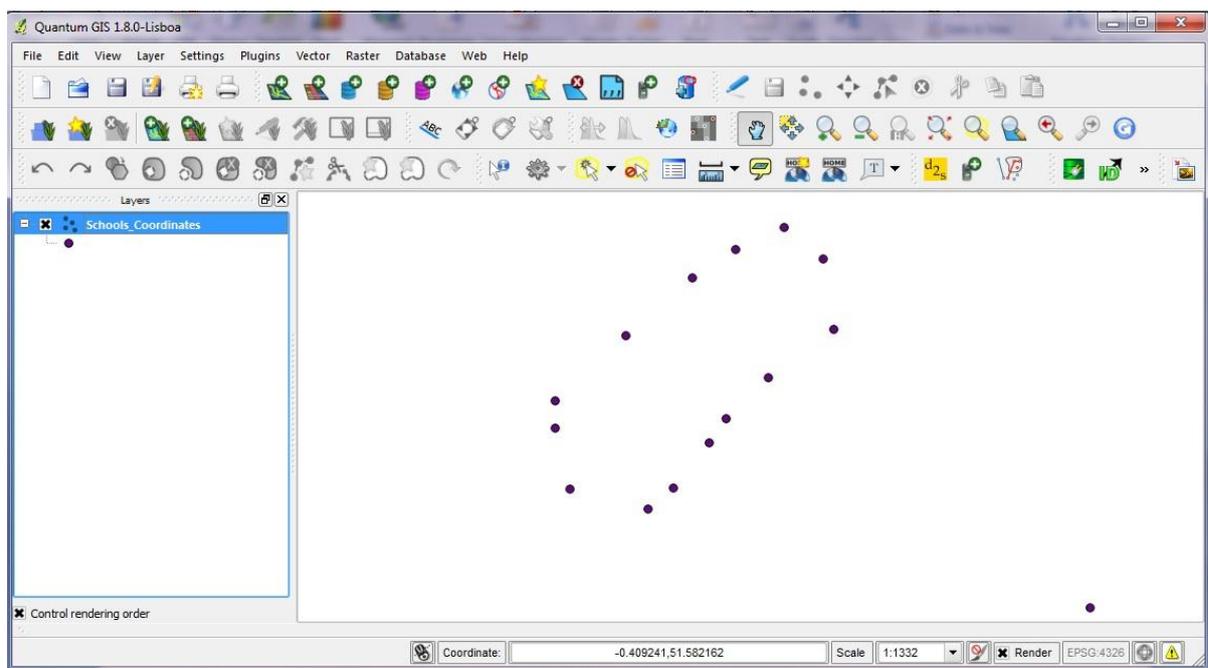


FIGURE 5. Data point downloaded from the GPS device will be displayed as a layer in the QGIS framework.

- Two new features will be created; a GPX file, which will automatically be stored in the folder specified, and a temporal feature, which will only be displayed as a layer in the QGIS framework. The latter should be stored as a shapefile (.shp format) to be used in future projects, otherwise only the GPX file will be maintained (see **Figure 5**).
- Right-click on the layer name to open **Layer properties** dialog box and click on **Save as** option (see **Figure 6**).

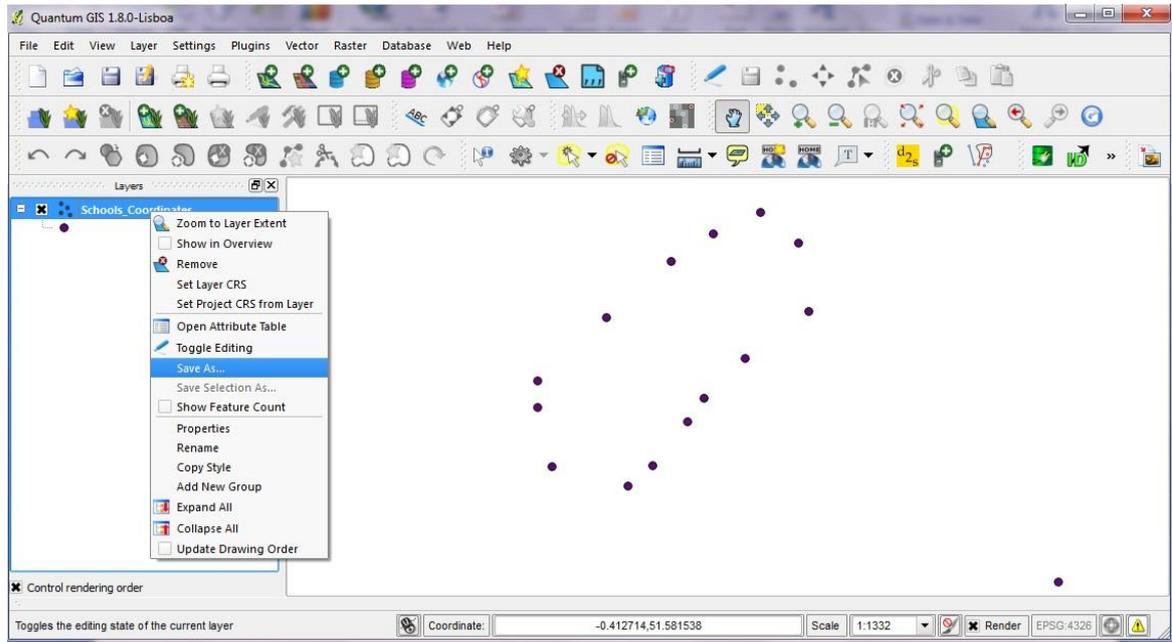


FIGURE 6. Open **Layer properties** dialog box and click on **Save as** option.

- **Save as** dialog box will be opened, enabling you to set the name of the new layer and format (.shapefile) (see **Figure 7**).

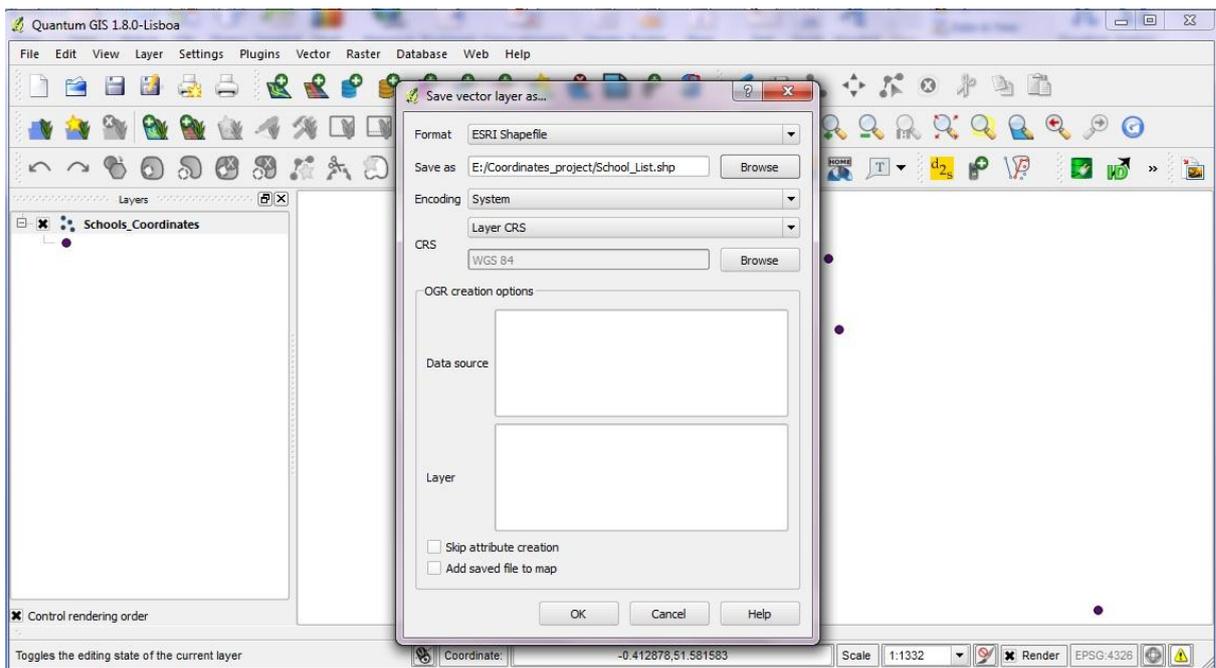
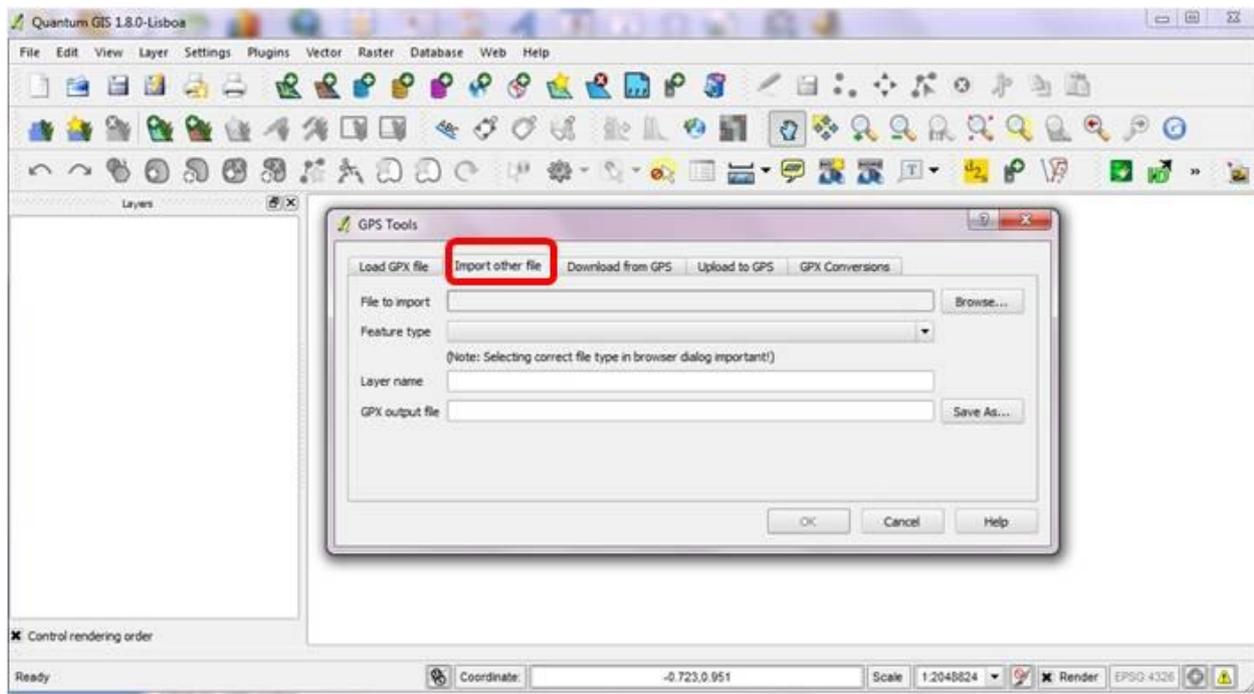


FIGURE 7. Save the set of data points as a .shp file.

3. **Import GPS data.** To import GPS data from a file that is not a GPX file, you use *the Import other file* tab in the **GPS Tools** dialog.

Here you select the file that you want to import (and the file type), which feature type you want to import from it, where you want to store the converted GPX file and what the name of the new layer should be.

Note that not all GPS data formats will support all three feature types, so for many formats you will only be able to choose between one or two types.



7. REFERENCES

- Manual Using a handheld GPS receiver in field data collection
- *QuantumGIS* download and tutorial; <http://www.qgis.org/>