

HOW TO IMPORT GEOGRAPHICAL CO-ORDINATES (LAT/LONG) INTO IRRIMAKER

In Recent days Irrimaker users are based all over the world, currently in as many as 74 Countries and this number is sure to grow as more and more people discover the absolute pleasure of working with such a top class software program. In past articles I wrote about GPS co-ordinates and the South African Grid co-ordinate system and I felt it appropriate to discuss a two methods on how to import geographical co-ordinates (or GPS co-ordinates) into Irrimaker. This is also a question that is frequently asked so hopefully this article will be of value to many of our readers.

Quick explanation of Latitude and Longitude

The latitude (abbreviation: Lat., ϕ , or phi) of a point on the Earth's surface is the angle between the equatorial plane and a line that passes through that point and is normal to the surface of a reference ellipsoid which approximates the shape of the Earth. This line passes a few kilometers away from the center of the Earth except at the poles and the equator where it passes through Earth's center. Lines joining points of the same latitude trace circles on the surface of the Earth called parallels, as they are parallel to the equator and to each other. The North Pole is 90° N; the South Pole is 90° S. The 0° parallel of latitude is designated the equator, the fundamental plane of all geographic coordinate systems. The equator divides the globe into Northern and Southern Hemispheres.

The Longitude (abbreviation: Long., λ , or lambda) of a point on the Earth's surface is the angle east or west from a reference meridian to another meridian that passes through that point. All meridians are halves of great ellipses (often improperly called great circles), which converge at the north and south poles.

A line passing near the Royal Observatory, Greenwich (near London in the UK) has been chosen as the international zero-longitude reference line, the Prime Meridian. Places to the east are in the eastern hemisphere, and places to the west are in the western hemisphere. The antipodal meridian of Greenwich is both 180°W and 180°E. The zero/zero point is located in the Gulf of Guinea about 625 km south of Tema, Ghana.

(Reference:

https://en.wikipedia.org/wiki/Geographic_coordinate_system#Geographic_latitude_and_longitude)

Co-Ordinate format:

As far as Irrimaker is concerned, the user need to know a few things before co-ordinates can be loaded into the software.

- 1) GPS co-ordinates (Lat/Long) may be expressed in three number formats, they are as follows:

Degrees Minutes Decimal Seconds	Decimal Degrees	Degree Decimal Minutes
33°32'17.18"S	21°43'29.69"E	-33.538106° 21.724914°
		33° 32.286'S 21° 43.495'E

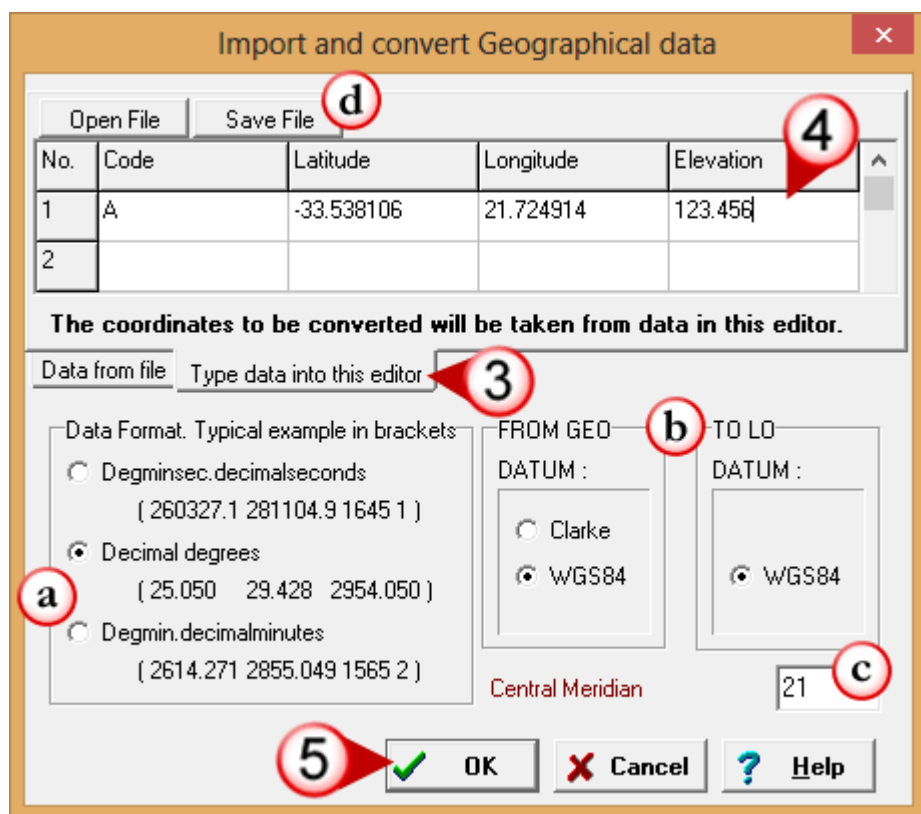
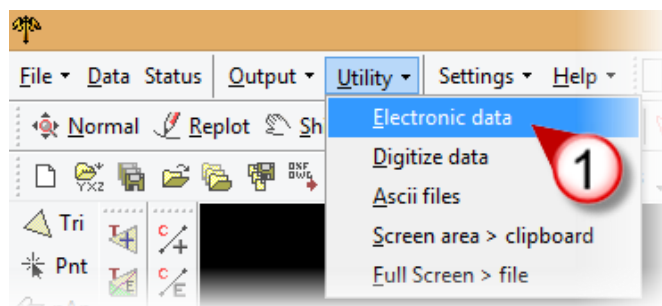
- 2) GPS co-ordinates need to be **transformed** into GRID (Y,X or E,N) co-ordinates for use in Irrimaker.
- 3) GRID co-ordinates are expressed as meter values in Irrimaker which is also the primary unit that Irrimaker work in.
- 4) The central meridian of the area is determined by the Longitude value. It is always the closest odd numbered degree value. In the example above the central meridian is 21°. Notice the letters S and E and where they are used. S = South meaning Latitude and E = East meaning Longitude.
- 5) The co-ordinate datum should normally be set when you do your survey. It is usually a setting on your GPS. If you can find the datum setting, set it to WGS84 and you will be OK in most cases.

Steps to import Lat/Long data into Irrimaker are as follows:

Typing co-ordinates manually:

In Irrimaker, Click on **Utility > Electronic Data** (1). Then select **Geographical** (2). Now click on the page option **"Type data into this editor"** (3) and start typing in the co-ordinates (4). It is important to select the correct **Data Format** (a) based on the value format you are typing into the editor. The **Datum** that the points was surveyed in (b) and the **Central Meridian** (c) need to be defined. When you are finished, click **OK** (5).

Tip: This editor does not store the data entered into it automatically. If you enter more than 5 points this way, I suggest you Save the data (d) just in case you made a typing error and need to reload the data to make adjustments. There is nothing as frustrating as having to type data into the editor over and over again!



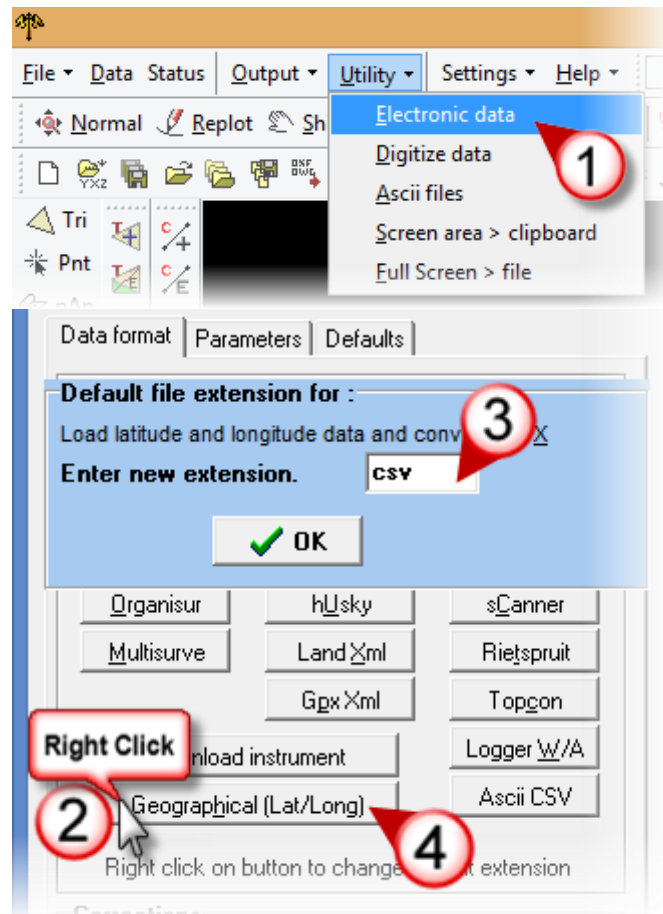
Loading co-ordinates from file:

If you have more than 5 points to import, possibly in an electronic format like a csv or txt file, it might be necessary to import the data rather than typing point for point into Irrimaker.

Tip: You can create a csv file with a program like Microsoft Excel.

Step 1: In Irrimaker, Click on **Utility** > **Electronic Data** (1) then **Right Click** (2) on the **Geographical** button. Type the file extension of the file type you would like to import into Irrimaker (3), click OK, then **Left Click the Geographical** button (4). Next click on **Data from file** (5).

Tip: At this stage you should already be aware of the **Data Format** of the co-ordinates, if you are unsure, use the **Preview** option (A) to open the csv file and do a quick inspection of the data format.



Step 2: Now, set the **Data Format** (B) options accordingly, press OK and locate the csv file you want to import and open it.

The Latitude and Longitude coordinates will be loaded and converted to Y and X coordinates based on the user defined central meridian.

See the Help file for additional information.

5 The coordinates to be converted will be read from a file **A** **Preview**

Data from file | Type data into this editor

B

Data Format. Typical example in brackets

- ☒ Degminsec.decimalseconds
(260327.1 281104.9 1645 1)
- ☐ Decimal degrees
(25.050 29.428 2954.050)
- ☐ Degmin.decimalminutes
(2614.271 2855.049 1565 2)

FROM GEO DATUM :
☐ Clarke
☒ WGS84

TO LO DATUM :
☒ WGS84

Central Meridian 21

☒ OK ☐ Cancel ☐ Help

Step 3: Click **READ FORMAT** (6) and select **Format 2** (7) Inspect your data (8) and enter the **Sequence** (9) of your data.

Tip: The Sequence referred to here is a alphabetic letter that will represent each column of data. It should be understood that each data set or file users use may be different and Irrimaker does not automatically know how to interpret the data at this stage, so the user need to tell Irrimaker which column is which. C=Code or point name, A= Latitude value, O=Longitude value, Z=Elevation and D=is used to exclude values that must be ignored. **It is very important that the sequence is perfect otherwise this function will not work.**

Import ASCII coordinates

Filename: C:\@Junk\BOOK4.csv

Use the A character to identify the Latitude coordinate
Use the O character to identify the Longitude coordinate

System Settings : S-360-LO21-

6 **10** **9** **7**

READ FORMAT | DEFAULTS

{Columns} eg. AAA OOO ZZ

Sequence: cAOZ

☒ L ☐ R

Format 1 **Format 2**

Project Description > 1,-343652.024,200900.8482

C A O Z

2, -343659.1143, 200913.67881, 11.252
3, -343707.7434, 200950.0843, 10.544
4, -343743.3356, 200938.3209, 10.597
5, -343743.019, 200927.0096, 12.588
6, -343742.7782, 200922.5834, 11.898
7, -343741.6582, 200912.0101, 11.256

8

Select **DEFAULTS** (10)
In this case, the **column delimiter** is a

Comma (,) and the **Decimal notation** is a Point(.). Press OK and Irrimaker will transform the Lat/Long co-ordinates to GRID.

IMPORTANT: This step is often ignored which may cause this function to be unsuccessful. Be sure to select the correct column delimiter based on the data as displayed.

