IETMapCal

Purpose.

IETMapCal is designed to generate and apply numeric constants to an algorithm that enables the accurate plot of data at GPS positions onto graphic images, such as Satellite pictures, using our RadPlotIET thematic plotting application.

General Method.

To achieve this, the application determines the relationship between the values of the GPS coordinates of two identified locations on the graphic and the pixel coordinates of those two locations on that same graphic.

At the completion of the calibration process, the user is prompted to "Copy" the calibrated graphic.

The "Copy" function, if used, copies the graphic together with its calibration data file directly into the appropriate directories which must already exist.

Procedure.

For demonstration purposes, a previously captured Satellite picture, with two identified locations included will be used and graphics referred to as a Map.
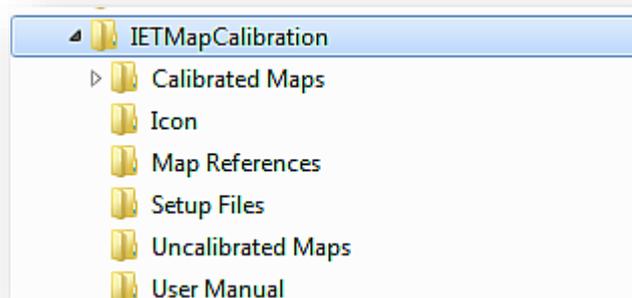
Copyright.

Directory Structure.

The IETMapCal application **<u>must</u>** be installed into the **root directory** of whatever disk it is installed on.

Directory Contents.

IETMapCalibration:- This directory contains the application executable file as well as all the required subdirectories.

Calibrated Maps:- This subdirectory contains all the maps (Graphics) which have completed the calibration process. It also has a subdirectory (**Map Data**) containing the calibration data pertinent to each calibrated map. Each calibration data file has the name of the map with the extension ".IET"; these files can be opened using "Notepad"™ etc. The Maps can be in any standard graphics format, most usually "Jpg".

Icon:- Contains 2 graphics files used when installing the application.

Map References Contains backup copies of the Datum and Reference latitude and longitude pertinent to calibrating a map. Data is in text format.

Setup Files. Contains the files and setup application for installing the application. Has no function when setup is complete.

Uncalibrated Maps. Contains maps (Graphics) which have not been calibrated as well as maps that have been calibrated.

User Manual. PDF of instructions for using and installing IETMapCal.

Installing IETMapCal.

This application functions as a normal Windows™ application, it saves and looks for data in specified locations, all of which are located in the IETMapCalibration directory or one of its subdirectories.

It is essential that the IETMapCalibration directory is located in the root directory of the disk it is being installed on.

Installing.

1. Copy the IETMapCalibration directory, together with its subdirectories into the root directory of the disk you wish to install the application on.
2. Open the "Setup Files" subdirectory.
3. Double Click on "Setup.Exe"
4. Follow prompts.
5. Opt to Install the application in the **IETMapCalibration directory**.
6. Setup shortcut to IETMapCal.exe as required.
7. Check that application loads correctly.
8. Check that Uncalibrated Maps list is populated.
9. Check that Selected Uncalibrated Maps loads and is displayed in the GUI.
10. Left double click on a map to load it and confirm that it is able to be dragged while left mouse button is pressed.

Capturing a Map to calibrate.

Note. It is the responsibility of the user to secure any copyright permissions required form the copyright owner of any copyrighted material used in conjunction with this, and any other, IET application. IET has no right to bestow any such permissions.

For demonstration purposes, a captured satellite picture will be used.

We recommend using the downloadable Irfanview 64 Bit graphics editor as we have found it very effective and intuitive to use, licencing is your responsibility.

1. Select the graphic to be captured.
2. Size the graphic to include all relevant inclusions, infrastructure etc.
3. Insert a suitable marker (Datum) as near as practicable to the top LH corner of the graphic.
4. Record the Latitude and Longitude of the Datum marker. (Notepad™ etc.)
5. Insert a suitable marker (Reference) as near as practicable to the bottom RH corner of the graphic.
6. Record the Latitude and Longitude of the reference marker. (Notepad™ etc.)
7. Copy the graphic onto the clipboard.
8. Paste the clipboard graphic into your graphics editing application.
9. Edit the graphic to remove any extraneous area; remaining graphic **MUST** include Datum & Reference markers.
10. Resize the graphic to preferred size and **maintaining aspect ratio**.
11. Save the graphic to the IETMapCalibration/Uncalibrated Maps directory. (*Suitable descriptive name and save as Jpg file.*)
12. Save the Notepad™ Datum & Reference file to the IETMapCalibration/ Map References directory. (Same Name as Map with .Txt extenstion). (*Not used by the application but is for future reference if required.*)

Calibrating the Graphic for displaying GPS position based data.

1. Load IETMapCal application.
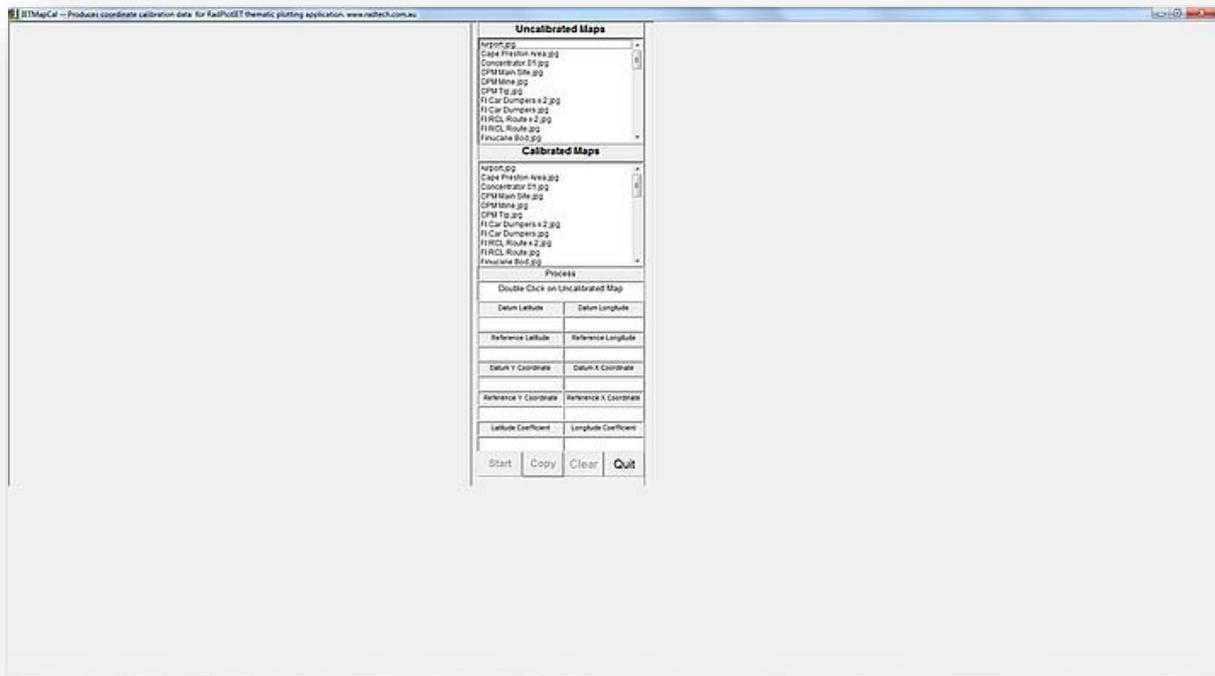
2. Double click on Uncalibrated Map (*Yandi01.Jpg*) to load map into GUI.
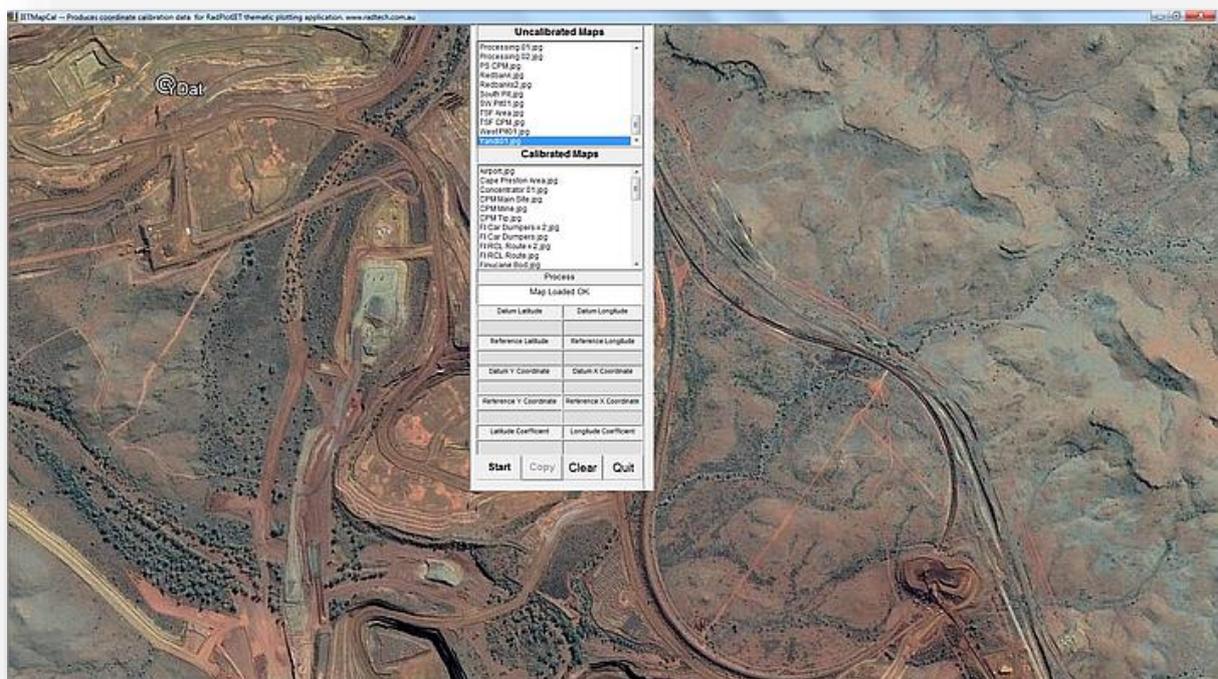
3. Click on "Start" button and follow prompts to input datum and reference point coordinates. (This is easily and accurately achieved by copying and pasting the

coordinates saved in the *Yandi01.Txt* Notebook ™ file in the IETMapCalibration/ Map References directory.)

4. After all the required coordinates have been entered, the mouse courser will change to a Cross.

5. Place the centre of the cross over the center of the Datum Point Marker then right click the mouse.

6. If necessary, reposition the graphic so that the Reference Marker is visible. This is achieved by left clicking the mouse and dragging the graphic.

7. Place the centre of the mouse courser cross over the center of the Reference point marker and right click the mouse.

8. The graphic has now been calibrated and its name entered into the list of Calibrated Maps. The Calibration data file has been generated and saved in the IETMapCalibration/Calibrated Maps/Map Data directory.

Select and Copy a calibrated Map to the RadPlotIET application.

1. Left click on the (single) map name you wish to copy in the Calibrated Maps list in the IETMapCal GUI to select the required map.
2. Press the "Copy" button once.
3. The selected map is then copied into the RadPlotIET/Maps directory. The calibration data file is copied into the RadPlotIET/Maps/Map Data directory.

Note..For the copy function to operate, IETMapCal must be installed in the root directory of the same disk on which RadPlotIET is installed.

Should any minor adjustment of Plot Position appear to be required, this can be achieved using the "Adjust Datum" function in the RadPlotIET application Setup functions.

Should any major misalignment be apparent, confirm the accuracy of the datum and reference points coordinates and that they have been accurately entered into IETMapCal. (*It is easy to inadvertently move the mouse when right clicking on the Datum & reference markers*)

After confirming the accuracy of the entered coordinates, any misalignment can be corrected by re-calibrating the Map; any existing calibration data for that map will be overwritten.