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GPS Mapping Software

OziExplorer Help

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Conditions of Use

The **unregistered** version of this program can be used without cost and without time limits.

The **registered** version must not be used unless you are the license holder.

Software Design Philosophy

Must be able to use scanned maps. Most countries do not have access to many good quality maps on CD.

Must be able to display pictures of interesting sites.

It was critically important that a large number of Waypoints and Events could be added to the map quickly. When planning a trip I usually add up to 100 Waypoints and up to 300 Events (sometimes more) to the map for uploading to the GPS.

Note : Events are only available in Lowrance and Eagle GPS receivers.

Must be able to print the map and a list of the waypoints. I take these with me on the trip, as well as the original map to refer to.

The software was developed to allow me to set up my 4 wheel drive trips. Before the trip I scan in the relevant map if I have not already done so. I then sit down and work out where I am going, and using OziExplorer, position waypoints on all the road and track intersections and towns etc. Add in Map Features and Map Comments where appropriate. Use events to mark the position of the roads and tracks. I save all these to files as necessary. I add waypoints and events to more than cover the region I expect to visit to allow for change of plans. When I am happy with the map I then send the waypoints and events to the GPS and print the map and waypoint list.

After the trip I download the waypoints from the GPS to get any new ones I may have added. I download the track and display it on the map and save it to a file.

The software has also been designed for marine based activities and has many features built into it for this purpose.

System Requirements

Operating System : Windows 95/98/ME/NT4/2000/XP/Vista/7

Memory : 256 MB of RAM (1GB or more preferred)

CPU : Pentium 200MHz or better (higher CPU speeds will work better)

Monitor : VGA Monitor 800x480 (greater preferred)

Hard Disk - OziExplorer does not require very much HD space (about 10MB), it is the maps you have which require the most space. The file size of maps can vary from approximately 1MB to 4GB per map. So the Hard Disk space requirement depends on the number of maps you have stored.

This is a guide only, you may be able to run OziExplorer on lesser systems but it would be very slow.

Conditions of Use

OziExplorer is provided for entertainment and experimentation purposes only, it is not intended as a primary source of navigation or as the primary means of piloting and guiding of vehicles. Always rely on your own navigational skills and official maps or charts before making a decision on any actions you take.

Warranty

We provide no warranty what-so-ever with this Software, and do not warrant that the functions contained in the Software will meet your requirements or that the Software operation will be uninterrupted, error free or 100% accurate, while we have worked hard to make it as bug free as possible, it is expected that you will find bugs, problems, inconsistencies, miscalculations and so on.

Limitations of Liability

In no event will we be liable to you for any damages including any lost profits, lost savings, or other incidental or consequential damages arising out of the use or inability to use the Software or for any claims by any other party. The use of the software is at the exclusive risk of the user.

License Conditions

A Registered or Purchased copy of OziExplorer may either be used by a single person who uses the software personally on one or more computers, or installed on a single workstation used nonsimultaneously by multiple people, but not both. This is not a concurrent use license.

You may access the software through a network, provided that you have Registered or Purchased an individual copy for each workstation that will access OziExplorer through the network regardless of whether they use OziExplorer at different times or concurrently.

Feedback

While we can not guarantee that every aspect of the Software will work exactly as you want it to, we can guarantee that we will do our best to solve problems, add features and make enhancements to its operation.

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Printing OziExplorer Help

If you highlight and right click on a topic of the Contents in the left pane of the Help, a menu will be displayed.

Options are:

- Print the selected topic (print the selected topic or heading only)
- Print the selected heading and all subtopics

To Print the Complete Help File

- Select the heading "OziExplorer Help"
- Right mouse click to display the options dialog
- Select "Print selected heading and all subtopics"
- Click "OK"

To Print a Topic or Heading

- Select the required topic
- Right mouse click to display the options dialog
- Select "Print the selected topic"
- Click "OK"

Note: If you find your pages are printing with a footer on each page, this can be removed. On the File Menu of your web browser (eg Internet Explorer), select "Page Setup" to display the options dialog, under "Headers and Footers" delete the contents of the Footer box.

Getting Started

If you are a first time user of OziExplorer please take the time to read this.

I have tried to make OziExplorer as user friendly as possible but mapping is a very complex subject and there are many things you must know in order to select the correct option or enter the correct value, Almost everything you need to know is explained in the help files so it is essential that you **read the help** that is provided. If you are having trouble communicating with the GPS read the **Common User Problems** section of the help.

The 1st thing you must do is configure OziExplorer to suit your requirements. Refer to the Configuration help.

You are probably keen to start using one of your own maps, to do this you must have an image of a map which you have obtained by scanning a paper chart or have purchased in digital form. If you do not have a purchased (registered) copy or retail version of OziExplorer then you are limited to using BMP files. Otherwise you can use map images in BMP, TIF, PNG, JPG or ECW format. USA DRG, BSB or Maptech Charts can also be imported. Refer to the Creating (Calibrating) Maps help.

Refer to the Demonstration Data Help on the Help Menu for a tutorial based on the supplied demonstration files. This will give you a better understanding of the features of the software and how to use them.

With OziExplorer you cannot do very much until you have a map loaded. If you do not have a map of your area to load there is a blank map available and this is created by selecting the **Blank Map (Auto Scale)** option on the map menu. With a blank map all operations of Oziexplorer can be done, within the limitations of a blank map. See the Using the Blank Map help for details.

Ozi*Explorer*

Program History

Version Release Policy

So users can have quick access to the new features the developmental releases of the software are

posted almost as soon as the coding is finished . Some testing is done but usually not enough, the new features will most likely have bugs, adding in the new code may also cause problems with existing code which had been functioning correctly. Check the web site regularly for new releases.

Release Version 3.95.5s (May 2013)

Changes

- Added support for Windows 8 internal GPS using the API (experimental support was in the previous version).
  - Windows 8 GPS API does not provide speed or heading. These are calculated from position data and time so may not be as accurate.
  - Windows 8 GPS API does not provide satellite info.
  - You must turn on the GNSS Device (the GPS) in windows settings.
  - You must turn on the "Windows Location platform" in Control Panel Location Settings.
- Fixed issue with BSB kap files converted with img2ozf.
- Fixed issue with importing mapinfo raster maps with tab file and geographic (lat/lon) projection.

Release Version 3.95.5p/q/r (March 2013)

Changes

- Added support for the new OZF4 image format (soon to be released).
- Added the ETRS89 datum
- Fixed internet maps so they can be used from the cache (without initially connecting to the internet).
- Fixed Google Terrain internet map, it works again.
- Version 3.95.5q - Fixed datum error in seamless maps
- Version 3.95.5q - Added support for BigTiff (tif images > 4 GBytes)
- Version 3.95.5r - Fixed seamless maps not being able to load .ozf4 and some .ozfx3 images.

Release Version 3.95.5n (November 2011)

Changes

- Added the following Garmin GPS receivers to the GPS list in OziExplorer Configuration.
  - eTrex 10/20/30
  - Montana
  - Edge 200/500/800
  - Astro
  - Aera
- Removed the Seamless Map from Map searches (it was always found regardless).
- Added an option on the OziExplorer Help menu to delete the "MapView" Map Image thumbnails. Sometimes the thumbnails become corrupted (usually are black) - this allows them to be easily removed.
  The thumbnails can be removed at any time as they are automatically created when needed.

Release Version 3.95.5m (August 2011)

Changes

- Added Seamless maps - same as in the development version, please see the help for details.

    - This is the loading of multiple maps into OziExplorer so they are merged together to form one map.
    - This is a first look at the seamless map support in the release version and issues can be expected.
    - See the extensive details in the OziExplorer help.
- Updated map version number in the url for for Google Satellite maps (part of Internet Maps).
- Updated Open Street Map support (part of Internet Maps) - it is import to reduce the load on the Open Street Map server..
    - Changed User Agent String.
    - Reduced number of threads being used to get tiles.
    - No additional tiles are now queued - other those those in the viewing area.
- Some settings in Internet Maps can now be controlled by an **im.dat** text file (download from the OziExplorer internet maps web page).
- The Track Tail (track collected for viewing on screen as you move) is now a buffer of 10000 track points.
    - The last 10000 track points are automatically saved and loaded.
    - The track tail is no longer logged into track 1.
    - The Track Tail defaults are on the Track tab in Configuration.
    - The are options for the Track Tail on the Moving map menu.
    - A smart algorithm based on changed distance and heading is used to log points.
- Track logging to File is now enhanced.
    - You can specify Daily Files, Weekly Files, Monthly Files or "Never change the file" (the previous version method).
    - The default is a Daily Log file - this means for each day of travelling a new track file is automatically created.
    - The Track Log File default is on the Track tab in Configuration.
    - There are options for the Log Track to File on the Moving map menu.
- The number of user loaded tracks has been increased to 1000 (from 75).
- When a Track is loaded it is automatically inserted into the next free track (not track 1), previous versions always loaded a single track into track 1.
- A new property for Line Style has been added for tracks.

Release Version 3.95.5h / 3.95.5i / 3.95.5j / 3.95.5k (June 2010)

Fixes

- 3.95.5j - Fixed issue with waypoints not being redrawn when changing from Internet maps to another map.
- 3.95.5j - Fixed issue with map dragging near the edge of the map.

- 3.95.5i - Fixed the issue of Internet maps not saving the **Tile Store Path** for maps other than Open Street Map.
- 3.95.5i - Fixed the issue of only *.rt2 files being displayed in the open file dialog when loading routes.

- AIS - Class B vessels now display the name and other parameters.
- There have been a few other minor fixes.

Changes

- 3.95.5k - Added support for the new Garmin Zumo 220 and Nuvi 1490 models.
- 3.95.5k - Updated map version number in the url for for Google Satellite maps (part of Internet Maps).
- 3.95.5k - Fine tuning done for more and less detailed map option.

- 3.95.5k - The printing of the route list has been improved.
- 3.95.5k - Changed how the first waypoint in a route is handled when navigation is started - the proximity zone no longer defaults to 100 meters but is now the same as the "Route Waypoint proximity" setting.

- 3.95.5j - Added the display of elevation onto the top status line next to the position when using OziExplorer3D.
- 3.95.5j - Improved waypoint list printing.
  - Choose Portrait or Landscape.
  - Choose Font size.
  - Adjustment to the column width for the waypoint name.

- Added / fixed support for the Garmin Dakota and Oregon x50 GPS models.
- Added support for the Garmin GPSMAP 78 and 62 models.
- The Garmin Oregon and Colarado can now be used for Moving Map - Set the GPS Interface to "Garmin Spanner" (do not install or start the Garmin Spanner software, it is not needed) - connect to the PC using normal USB cable - on the GPS screen set mass Storage Mode OFF - in OziExplorer configuration make sure "Garmin USB" and "Use PVT for Garmin instead of NMEA" are both checked - start moving map in OziExplorer.
- Added **time zone offset** into the track files and the offset can be edited in track properties. Any display of a track point time will use the time zone offset if it is available.
- The User Toolbar can now have different sizes. The setting is on the User Toolbar configuration dialog.
- A **Find GPS Port** button has been added to the GPS tab in OziExplorer configuration. The ports on the PC will be scanned and the information about the GPS found will be displayed so the information can be manually entered into OziExplorer configuration.
- Options for **More and Less Detailed Map** have been added - the options can be added to the User toolbar or Function keys, they are not available on the standard menus.
- More Internet maps have been added - by opening the Internet map the new maps can be seen on the drop down menu.
- Added option to Internet maps to ignore the cache so new tiles will be downloaded from the internet.
- The help for OziExplorerCE has been removed from the OziExplorer help to reduce confusion between the two programs.
- For Windows Vista and 7 the default folder where OziExplorer stores its system files has been changed to "c:\{user}\.OziExplorer" , this has been done to make it easier for users to find these files (the AppData folder which was used by previous versions is hidden by default in Vista and 7). Please Note - existing installations will still use the same folder they are currently using, this ensures your configuration files will still be found.

Release Version 3.95.5g **(December 2009)**

Fixes

- Fixed issue with 24bit color tif image support.
- Fixed issue where internet maps would stall (stop loading tiles).
- Fixed an issue with routes in gpx files.
- Fixed an issue with AIS configuration where the "Ship Label" settings were not being saved.

Changes

- Added latest Garmin GPS models to the selection in configuration.
- Added support for lower case and extended characters for Garmin GPS.
- Added moving map support for the Garmin Nuvi, Zumo and Streetpilot models when

connected to the PC by the special Garmin serial cable. These use the PVT protocol. Only tested with the Nuvi 760 but it is assumed other models mentioned will work.

Release Version 3.95.5f (October 2009)

Fixes

- moving map compass display fixed for non 100% zooms.
- some fixes and improved support for XP and vista themes.

Changes

- Google maps changed their map url, this has been fixed.
- New Zealand have released their new NZTM topo maps so have added support for New Zealand NZTM grid and datum.
- Added support for the new topo maps for New Zealand. The topo50 maps are 24bit color geotiffs, the topo 250 are 24bit color geotiffs but stored within the tif as color planes (an unusual tif format for PC use).
- 24 bit color tif files can now be paged instead of having to be fully loaded into memory.
- Added support for loading planar configuration tif files (but not paged - must be fully loaded).
- Automatic Ship Identification (AIS) help is now listed in the Help contents.
- Added the ability to store altitude in kml files.

Release Version 3.95.5e (September 2009)

Fixes

- Exporting waypoints to text file fixed.
- Some minor cosmetic issues fixed.

Changes

- Added the new Garmin Dakota to the GPS list.
- Project Manager
  - When a project is loaded the tracks are now loaded in the same order that they appeared in the Track Control when the project was created.
  - You can now specify a map position where the loaded project starts.
- OziExplorerCE .rt2 route files can now be loaded, rt2 files cannot be saved but OziExplorerCE can read OziExplorers .rte files.
- Added a Zoom Number display to the Internet maps control toolbar.

Release Version 3.95.5d (August-2009)

Fixes

- Fixed issues with Update options on Help menu not being remembered.
- The change of compiler caused some unusual issues on some systems.

Changes

- Added support for Open Street Maps and Virtual Earth Internet maps.
- Google Maps support now works differently, it is part of the "internet maps" control, script

errors should no longer happen. The Google Maps.map file will still work but is no longer provided - use the Internet Maps.map file instead.
- Changed Google Earth support so the Google Earth software is no longer closed until OziExplorer is closed.

Release Version 3.95.5c (August-2009)

Fixes

- Fixed issues with shape file import and export.

Changes

- Added support for USA Terraserver maps.
- Added zoom level menu to Google maps.
- Added ability to sort on CPA for the AIS (ship indentification system).

Release Version 3.95.5b (August-2009)

Fixes

- some more minor fixes.

Changes

- Now includes support for Google Maps within OziExplorer. There is a link to the OziExplorer Google Maps page (on the OziExplorer page) where the .map file can be downloaded.
- Some fixes done for the Google Earth support.
- Added the ability to check if there is an update available. The default is a daily check but can be changed using the option on the Help menu. The update is not automatically downloaded but you are advised if there is one available and the changes that have been made.

Release Version 3.95.5a (July-2009)

Fixes

- some minor fixes.

Changes

- Now includes support for Google Earth within OziExplorer. There is a link to the OziExplorer Google Earth page (on the OziExplorer page) where the .map file can be downloaded.
- Fixed some unusual Vista issues.
- Added support for AIS (Automatic Ship Identification) system. The option is on the Moving Map menu. This is the same as included in the development version of OziExplorer.
- Changed to a new version of the compiler used to develop OziExplorer.

Release Version 3.95.4s (Oct-2008)

Fixes

- Fixed some issues with the support for NV Digital Charts.

- Fixed issues with gpx files being used with Garmin Mapsource.

Changes

- For **Windows Vista** the OziExplorer configuration files (and other OziExplorer system files) are placed in a specific folder in the "User" area of C drive. This caused problems when more than one copy of OziExplorer was run on the same computer or when OziExplorer was run from a removable drive. **This version** will place the configuration files in the "User" area in a folder name based on the **OziExplorer installation folder name** so the configuration files are kept separate for more than one installation. If OziExplorer is on a **removable drive** the configuration files are stored in the OziExplorer installation folder on the removable drive. If it is desired to force the configuration files be kept in the OziExplorer installation folder a special file called "**AppDataLocal.dat**" can be placed in the OziExplorer installation folder, it does not matter what is in the file the presence of the file is the trigger.

Release Version 3.95.4r **(Sep-2008)**

Fixes

- Minor fixes relating to map import.

Changes

- Added support for NV Digital Charts. These are imported using the BSB import option.
- Added direct support for the Garmin Colorado, Oregon, Nuvi and Zumo GPS receivers. OziExplorer reads and writes the GPX files stored in the GPS when it is connected to the PC as a disk drive.
- Added Garmin symbols to GPX export and import if OziExplorer is configured to use a Garmin GPS.
- Minor changes to work better with the Australian Natmap 2008 raster maps.

Release Version 3.95.4q **(Apr-2007)**

Fixes

- Removed 216 error when closing OziExplorer and running Windows Vista (again).
- Minor fix to correct the loading of some BSB4/5 charts.

Changes

- Added support for the Australian UBD regional cities and towns DVD Version 3. The map files can be downloaded from the Australian page of our web site.
- When using Garmin PVT mode for moving map OziExplorer will now automatically reconnect to the GPS if PVT data transmission has been interrupted.

Release Version 3.95.4p **(Feb-2007)**

Fixes

- Removed 216 error when closing OziExplorer and running Windows Vista.

Changes

- Windows Vista does not allow programs to store configuration files in the "Program Files" folder tree. If installed on Windows Vista this version of OziExplorer stores its configuration files in the **AppData** folder of the current **User**. Note that this folder is not visible to a User unless the "Show Hidden Files and Folders" option is selected in "Search and Folder Options".

Release Version 3.95.4n (Nov-2006)

Fixes

- minor

Changes

- Added support for the Australian UBD Version 4 maps - version 4 .map files can be downloaded from the Australian page of the web site.
- Added Russian language support

Release Version 3.95.4m (May-2006)

Fixes

- NASA changed the web page links to the SRTM height data, these links on the OziExplorer 3D/Elevation menu have been fixed.

Changes

- Added support for the D801 PVT mode for the new Garmin "x" series GPS receivers.
- Added the Garmin Edge to the list of Garmin GPS receivers in configuration.
- Added support for the Garmin Edge track download (D304 data type). Track upload is not supported in this model.
- Added support for additional ozfx3 image format types.

Release Version 3.95.4k (December-2005)

Fixes

- NASA changed the web site for download of SRTM data, the links used to download SRTM height data have been fixed (preliminary fixes were done in the version 3.95.4j soon after its release, this version contains the official fix).
- GPX and KML import generated access violations, these have been fixed (preliminary fixes were done in version 3.95.4j soon after its release, this version contains the official fix).
- The GPX format OziExplorer generated failed to load in some other software, this has been fixed.

Changes

- For GPX and KML file formats the <, >, and & symbols and now being translated as special characters.
- Modified the Google Earth KML import to import a track as single track with sections (instead of multiple tracks).
- Added the ability to export Tracks as Points in ESRI Shape File export.
- Modified the Mapview code to remove the large flicker when resizing the window.

- For Eastern languages OziExplorer replaces the degree and minute symbols with spaces (question marks were being displayed).
- When loading a project file the map zooms and centers to show the data extents (if possible, the lowest zoom number available may not be able to show the data.).
- Added a Zoom Data Extents button to the User Toolbar, if you already have a user Toolbar defined you will need to add the button manually if you want it displayed.

Release Version 3.95.4j (December-2005)

Fixes

- minor fixes.

Changes

- Added support for the **UBD Australian City maps**. Only the new "Australian City Streets Version 3" maps are supported. See the Australian page of our web site for details. **NOTE: The interface to OziExplorer does not work on systems running Windows 95 / 98 / ME Operating Systems.**
- Added support for **Projects** - a Project can be defined which includes a map and various data files. Projects can be created and saved and the map and all the data files are loaded when the Project is loaded.. The Project Manager option is located on the Options menu.
- Added support for reading and writing **GPX files**, the options are on the Load and Save menus. These options can also be installed on the User Toolbar.
- Added support for **Google Earth** - reading and writing KML files ; view waypoints and tracks in Google Earth ; show current map position in Google Earth. These options can also be installed on the User Toolbar.
- Added the ability to join tracks together, this option is located on the "More Options" button on the Track Control toolbar.
- A new option is provided on the 3D / Elevation menu (OziExplorer3D must be installed) to download SRTM height data for the region of map being viewed.
- Increased the number of user datums supported from 10 to 30.
- In Configuration the number of Com Ports has been increased to 50.

Release Version 3.95.4i (May-2005)

Fixes

- minor fixes.

Changes

- Added support for the Magellan Explorist USB GPS Receivers. There is a new selection in the GPS Models called "Magellan USB". The upload/download is done by reading and writing files directly into the GPS. Note that because of the slight difference in the way the Explorist USB does its route files the reading of the route files from the Explorist USB has not yet been implemented.
- Added the VICGRID94 grid (for Victoria Australia).
- For Garmins - if the altitude is not available in a downloaded waypoint or trackpoint record but the depth is available the depth will be read as the altitude.
- Have finally written the proper printing code for ozfx3 images produced by MapMerge so full printing is now available.
- Some other internal changes.

Release Version 3.95.4h (March-2005)

Fixes

- Moving map when using PVT mode for Garmin USB GPS receivers was causing random Access Violations, this has been fixed.
- Proximity / Route Symbols attached to a waypoint were not being displayed when the proximity was entered, this has been fixed.

Changes

- Added new the Garmin GPS Receiver models to the list in Configuration.
- The print preview window will now remember the last zoom level used.
- Some other internal changes.

Release Version 3.95.4g (December-2004)

Fixes

- nil

Changes

- Added support for Kompass maps www.kompass.at - please note that the dll to use Kompass maps is required to be downloaded from the our Optional Extras web page.
- When measuring distances the "total distance" is no longer is zeroed when loading a new map.

Release Version 3.95.4f (December-2004)

Fixes

- a few minor fixes.

Changes

- Added support for the new Garmin protocols used in the Garmin Quest and the new firmware for the 276C and 296 models.
- Added limited support for jpr files during map import.
- added support for RGBA format png image files.

Release Version 3.95.4e (November-2004)

Fixes

- Fixed a minor problem with waypoint sorting in the waypoint list when selecting waypoints.
- Fixed a problem where the screen display lagged behind the actual position, only applies when using PVT mode with a Garmin USB Gps.
- Fixed import of E00 and SHP files when using units of feet.
- Fixed minor screen drawing problem for track replay.
- Fixed the import of Albers map projection for SHP files broken a couple of versions ago.

Changes

- Added support for the ProjCenterLongGeoKey Geotiff key for map importing.

Release Version 3.95.4d (October-2004)

Fixes

- Waypoint selection from the map did not always show correctly in the waypoint list (once selected they could not be unselected from the map).

Changes

- Added support for variation to the ozfx3 image format which the next versions of Map Merge and Img2ozf will create. This variation of the ozfx3 format will be quicker to load and change zooms (this will not be noticeable on the PC but will be noticeable in OziExplorerCE on a PDA).
- The Enter key can now be used to open a map from the "Find map" list.

Release Version 3.95.4c (September-2004)

Fixes

- Fixed the display of symbols in the waypoint list which I very intelligently managed to break in the previous version.

Release Version 3.95.4b (September-2004)

Fixes

- Waypoint symbols would not change to the specified foreground and background colors, this has been fixed. Note this does not apply to the colored Garmin symbols which always use their own colors.

Changes

- Support for the Garmin GPS 18 USB GPS has been added. In OziExplorer configuration select the GPS Make as Garmin, GPS Model as Other Garmins, on the COM tab tick the "Garmin USB" checkbox and tick the "Use PVT for Garmin instead of NMEA" checkbox.
- The creation of the image thumbnails for MapView from large TIF or BSB images could cause problems as it required too much memory for some systems, this has been improved.
- The printing of ozfx3 map images created by Map Merge was too restrictive, the restrictions have been relaxed but not totally removed.

Release Version 3.95.4a (August-2004)

Fixes

- On small BSB or TIF map images specifying low % zooms could cause an access violation.
- The size of the MapView window was not being saved.
- Waypoints symbols were not being printed or saved correctly when maps were printed or saved.
- The MapView window may show even though it had been turned off in configuration.
- Hidden waypoints would still show the hint when the mouse pointer was hovered over their

position.
- When a waypoint was created from a track point it would not show until the screen was refreshed.
- OziAPI waypoint functions which were broken with this version have been fixed.
- Some other minor problems have been fixed.

Release Version 3.95.4 (August-2004)

Fixes

- Fixed an access violation problem with upload/download for older model Garmins.
- Hidden waypoints were being saved with the image when using the "Save Map Image" option.
- The Waypoint List used when calibrating a map from waypoints was showing the waypoint number instead of the waypoint name.
- Other minor problems fixed.

Development Version 3.95.3g6 (August-2004)

Fixes

- Under certain circumstances the map could not be saved from the Check Map Calibration option, this has been fixed.
- Fixed a problem with loading route files caused a couple of versions ago when the number of waypoints was increased, the route waypoints did not match the loaded waypoints.
- More changes for Lambert Conformal Conic import, mapinfo tab files in Lambert CC are now supported, fixed problem where the parameters were being saved in the .map file as feet instead of meters (if the import was in feet).
- Fixed a problem with the new ozfx3 format when creating 3D maps.

Development Version 3.95.3g5 (July-2004)

Fixes

- Fixed the calibration from waypoint list.
- Fixed the "Projected Track" line in moving map.
- Printing of ozfx3 images should now work.
- Lambert Conformal Conic dialog now allows entry of latitude origin, calculations no longer assume latitude origin equals zero (not tested yet), this applies to map calibration and map import.

Development Version 3.95.3g4 (July-2004)

Changes

- More fine tuning of the Garmin USB interface code, fixed various minor problems.
- Added support for the new waypoint and track protocols used in the Garmin 172C and 178C.
- Added the Lambert Conformal Conic map projection to the DRG (map image) import dialog - this is relatively untested.
- Added the ability to specify meters or feet in the DRG (map image) import dialog - this has had very limited testing. If you specify feet then you must also use feet for any of the projection parameters which require a distance.

New/Updated Features

- New software called the "Map Merging Utility" is now available to merge maps together and create a new map for use in OziExplorer which is a mosaic of many maps. This is available for download on the Map Merging Utility page.
- The number of waypoints has been increased to 10,000. This involved a lot of code rewriting so you may find errors and inconsistencies, these will be fixed as they are found.
- The Waypoint list is now floating and can be left open while manipulating waypoints on the map.
- The Mapview window can now be made larger than the previous version (just drag the borders to resize, the dragging looks a little messy right now but that will be fixed).
- The image in the Mapview window is now of better quality for all map image types. To obtain the better quality you must have the "Create Map Thumbnail" option ticked on the Maps tab in OziExplorer configuration. The thumbnails are saved in the System Files folder and are shared with the "Map Merging utility" if it is installed in the OziExplorer folder.

Development Version 3.95.3g3 (June-2004)

Changes

- Support for the Garmin USB gps receivers has been fine tuned, it may support more models now but I have only tested it on a 60CS. Let me know if any models still do not work.
  - If using a Garmin USB connection you must tick the "Garmin USB" checkbox on the COM tab in OziExplorer Configuration.
- Support for Garmin USB PVT mode for moving map has been rewritten and should not lock up.
  - If using Garmin USB connection you must also tick the "Use PVT for Garmin instead of NMEA" checkbox on the COM tab in OziExplorer Configuration.
  - If the GPS does not have a fix it does not output any PVT data.
- Added support for Maptech .025 map files.

New/Updated Features

- New Map Searching dialog, the list of maps in a search are now presented in a new dialog, all the columns can be sorted by clicking on the column header, I find sorting by pixel scale is very useful.
- New Printing dialog - allows print preview with selection of the pages you want to print, the area to be printed can now be selected by drawing a box on the main map.
- New Track Filtering methodology for reducing the number of points in a track, this is a much better algorithm and gives very good results, also has the ability to specify the number of points required in the track.

Development Version 3.95.3g2 (May-2004)

Fixes

- Some minor things.

Changes

- Garmin USB support now includes the Garmin 2610 and other USB models. If using Garmin USB connection you must tick the "Garmin USB" checkbox on the COM tab in OziExplorer Configuration.

- Moving Map PVT mode for USB connections should now work. If using Garmin USB connection you must also tick the "Use PVT for Garmin instead of NMEA" checkbox on the COM tab in OziExplorer Configuration.
- Fixed the Symbols for the Garmin 60C/CS.

Development Version 3.95.3g1

Fixes

- Waypoint download from the Garmin 60C/CS could stall when using USB, should now be fixed.

Development Version 3.95.3g **(April-2004)**

Fixes

- Some minor things.

Changes

- Added preliminary Garmin USB upload/download support for the Garmin 60C and 60CS. There are some things that do not work yet and these will fixed soon.
    - PVT mode (using USB) for real time tracking is not supported yet.
    - Getting a specific single route using the OziExplorer Route Editor does not work because the 60 uses names for Routes not numbers.
- Added preliminary upload/download support for the Garmin Forerunner. The Forerunner handles tracks a bit different to other models, I am not sure if I have the difference between the saved tracks and active track working properly yet.

Release Version 3.95.3f **(February-2004)**

Fixes

- The Compass Rose was not displaying in the correct position on some image format types.
- Some fixes for languages other than English - some strings were not being translated.

Changes

- The Compass Rose now adjusts itself so it displays correct bearings for non-conformal maps (maps with different scales north-south and east-west). The Australian Raster 250K mosaic and the Toporama maps of Canada are examples of such maps. With non-conformal maps the tick marks around the compass will not be in even intervals.
- Added support for Maptech Terrain Navigator maps (.024,.100,.250) and Maptech Aeronautical charts (.AER). To use these maps you need to download the Maptech DLL's from our Optional Extras web page.

Release Version 3.95.3e **(December-2003)**

Fixes

- none

Changes

- Added some additional function calls for the OziAPI, see the OziAPI web page for details.
- Some of the Header files provided with the SRTM-30 Height Data files have just a carriage return as the end of line marker, as far as I know this is not a recognised standard (linefeed or carriage return + linefeed are) so OziExplorer was not reading the files correctly. OziExplorer has been changed to allow for this.
- some other minor changes.

Release Version 3.95.3d (November-2003)

Fixes

- none

Changes

- The addition of Italian help.
- Some changes to languages other than English.

Release Version 3.95.3c (September-2003)

Fixes

- Both uppercase and lower case was allowed for waypoint names and messages in the Magellan Sportrak basic model, this is not correct and has been fixed, now only uppercase is allowed.
- A minor problem with Brunton/Silva dates downloaded from the gps when using a different date separator has been fixed.

Changes

- Geoscience Australia has released the new 250K Mosaic map of Australia. This map is in a geographic projection (latitude/Longitude) so is not a constant horizontal scale when when moving north/south. OziExplorer has been modified to recognize the varying scale and make adjustments when drawing objects on the map. Example - proximity zones and range rings will plot as ellipses so the distances are correct.
- During map searching any corrupted or incorrect map files will now be ignored instead of generating an error exception.

Release Version 3.95.3b (July-2003)

Fixes

- Printing a map could generate an access violation, this has been fixed
- Some other minor fixes.

Changes

- The translated text for the new features has now been updated for the Dutch version.

Release Version 3.95.3a (July-2003)

Fixes

- Anchor Alarm - had problems when the regional settings were using a "," instead of a "." as the decimal separator - fixed.
- The GPS Fix Data when displayed using the command line parameter showed a window which was not active - fixed.
- The SRTM height data support had problems with files from the southern hemisphere - fixed.
- Some other minor fixes.

Changes

- The Moving Map menu help has been modified to include links to the GPS Fix Data and the Anchor Alarm help.
- If visible the Compass is now drawn onto the map image when the map image is saved.

Release Version 3.95.3 (July-2003)

Fixes

- Map searching would not work if there are commas in the path names where maps are stored, fixed.
- PNG map images would always render in grey scale on 256 color systems, fixed.
- The Event marker symbols in Lowrance USR files were not being saved correctly.
- The moving map track log was putting a comma in the altitude field in the track log file instead of dot when using the "," as a decimal separator.
- Italian version - fixed a problem with the Italy grids selection not being correct. Note maps already created using the Italy grids may need to have the grid selected again in Map Calibration.
- Some other minor fixes.

Changes

- An Anchor Alarm has been added, the option is on the Moving Map menu and there is help available.
- A satellite display has been added to the GPS Fix Data option on the Moving map menu.
- There is preliminary support for the Maptech BSB version 4 charts, to use BSB 4 charts the dll's must be downloaded from the Optional Extras page on our web site.
- Preliminary support has been added for importing map images by using a supplied Mapinfo .tab files (tab files which mapinfo uses to georeference a RASTER image only). Only support for lat/lon and Transverse Mercator grids (utm should be ok) has been done. Tab files using other grids can be emailed to me (with the image) and I will see if I can add support to the code.
- The .ozline2 files (index files for some DEM file types) will need to be created again, this is an automatic process. This is to remove a problem where the indexes were being recreated when the time zone on the PC was changed. The good news is that for Grid ASCII files the indexing process is now much faster.
- SRTM height data files can now be used directly in OziExplorer. Download the files, unzip them and place them in the "Globe (Arcview)" configuration folder. Do not change the file name of the .hgt file as it is used to position the dem.
- Added the Garmin Geko 201 to the list of GPS Receivers in OziExplorer configuration.
- Importing of Geotiff images now supports the Albers Equal Area projection.

Release Version 3.95.2 (13th-Mar-2003)

Fixes

- Fixed a bug in map searching - if you removed all the .map files from a folder it would not be re-indexed so would always show the old maps (which were removed) as existing. These folders are now checked, if there are no map files the index file is removed.
- The Shift Enter key combination to add waypoints and other objects now works again.
- The printing of 24bit color Tiff images has been fixed (it was broken by changes in previous version).

Changes

- Map Searching
  - More fine tuning - mostly to do with the index map and getting it to notice changes in the map files.
  - Added the ability to re-index the map files to the Map menu. This will re-index the map files so they will be up to date for map searching functions. In theory this is not necessary for normal operation operation as OziExplorer will automatically keep the map index files up to date.
  - Map Searching will now ignore hidden .map files.
  - Updated map search section of the help file.
- Index Map - Added the ability to turn on and off the list of the available maps which follows the mouse pointer; this option is on the drop down menu button.
- OziAPI - many new functions have been added; see the OziAPI web page for details.

Release Version 3.95.1 (26-Feb-2003)

Fixes

- Fixed minor problems with the Garmin symbol set for some models.

Changes

- nil

Beta Version 3.90.4k1

Fixes

- Fix to area calculation method which could occur in some cases when the map was not at 100% zoom.
- Waypoint proximities would always print even though they were turned off via the menu option, now fixed.
- A problem with saving PCX5 trk files has been fixed.

Changes

- Some more fine tuning of the new map search function.
  - Some relatively common map files being generated outside of OziExplorer are leaving the MMPNUM parameter out of the map file, this defines the number of corner markers being used and is required by OziExplorer for finding maps. I have now modified the search function to assume the number of corner markers is 4 if this parameter is not found. If this affects you the files in the System Files folder under OziExplorer must be

deleted so the indexes can be created again.
- Help is now available for Map Searching in the "Map Related" section of the help Index.
- An Index file is no longer created for folders which do not have map files in them.

Beta Version 3.90.4k

Fixes

- Some minor printing problems with waypoint proximities.

Changes

- Map Search
  - Problems were caused when scanning map files with missing information (map files created manually outside of OziExplorer) - an exception was generated because required parameters were not in the file, changes have been made to ignore map files which do not have the map corners (lat/lon) and other parameters in the map file.
  - When creating the indexes the folder being scanned is shown on the status line.
  - Some other minor fine tuning.

Beta Version 3.90.4j1

Fixes

- Old version .map files were not being searched correctly and could not be found in the new search routines added in the previous version "j". This has been fixed.

Changes

- I must apologise, I changed the format of the DEM "ozline" index file without realizing that this would prevent versions previous to the "j" version from reading them correctly. The ozline files are used with GridAscii and USA 24K DEMs only, they are stored with the corresponding DEM file.

  I have now changed the name of the "ozline" file to "ozline2". This means :

  - The ozline2 files will need to be created when this "j1" version is run, this is a one time process (again ...). **If you have many/large GridAscii or USA 24K DEM's this will take considerable time to complete, during this time OziExplorer may appear to be frozen and not responding so please be patient.**
  - If you created ozline files with version "j" please delete them as they are not correct for versions previous to "j" and will not work correctly, if you run a previous version it will recreate them if it does not find them.
  - If you do not intend to run versions previous to "j" then delete the "ozline" files as they are no longer used, "j1" uses "ozline2" files.

Beta Version 3.90.4j

Fixes

- Corner Markers now relocate to the correct position when zooming the map in calibration mode.

Changes

- Map searching when you have many thousands of maps is now much faster, the map paths are indexed and stored in index files with OziExplorer. The first time a folder with maps is searched it is indexed (this is a slow part), after that the searching is fast. If a .map file in a folder is changed or deleted or added the folder is automatically re-indexed the next time the folder is searched. Fast map searching works with "Map Find", "Moving Map", "Track Replay", and "Index Map".
- Added some new calls to the OziAPI
- When importing images using the Import DRG options the image file name is now displayed on the DRG defaults dialog.
- When creating waypoints from Name Search the full name is now used for the waypoint name.
- Ozi3D - The creation of the .ozline files for Elevation data files (DEM's) has been modified to include a checksum so the ozline file can be recreated if the Elevation data file changes, this means that with this version all the ozline files will be created again the first time the elevation files are used - this may take a while, but this happens only once.
- OziExplorer can now load ECW images from ecw web servers - place the url to the image as the first line in a text file which has a .ecwp extension, then you can use this file to load and calibrate or import the image.
- The ECW image library code has the ability to keep the memory cache for an image active even though the image has been closed by OziExplorer. The more images you open the more memory is used (within certain limits). I have now changed the way OziExplorer handles this by closing the file and getting the library to free all the memory cache being used for that image. This may help systems which have limited memory available.

Beta Version 3.90.4i

Fixes

- When creating map comments at zooms other than 100% they now initially display at their real size rather than at the 100% size.
- Other minor fixes.

Changes

- Added support for the Lowrance iFinder and any other Lowrance which reads and writes USR files on a multimedia card.
- Now supports lowercase characters for the Magellan Meridian and SportTrak GPS receivers.
- Holding the Ctrl key down now allows dragging of the map in all circumstances.
- Added new Garmins to the GPS list in Configuration.
- Waypoint names can now be of any length for use in OziExplorer. Of course they will be trimmed when uploaded to the GPS. In any dialogs where waypoint names can be edited the name will be displayed in a different color when the length used by the GPS has been exceeded.
- When Deleting track points the track is not split into a new section automatically.
- many other minor changes.

Waypoint List

- Added display of the symbol in the list.
- Added the ability to modify most properties of selected waypoints, these options are on a drop down menu on a button on the Waypoint list toolbar.

Event List

- Added display of the symbol in the list.
- Added the ability to modify most properties of selected events, these options are on a drop down menu on a button on the Event list toolbar.

Track Logging

- Added an option to the Moving Map menu to turn Track Logging to File On and Off.
- Added an option to the Moving Map menu to turn Track Logging to Memory / Screen On and Off.
- Added the ability to specify the name of the file used to log the track.
- The Track logging status appears on the lower status line next to the GPS position - F = logging to file; M = logging to memory/map

Beta Version 3.90.4h2

Fixes

- Fixed a bitmap leak in ECW when using very large maps and greater than 100% zoom. Also fixed a couple of minor memory leaks in all ECW handling.
- Fixed a problem with DTED elevation data when there is no more data available past the edge of the current region.
- Fixed a problem with OZF2 map images on win 95, 98, ME when using zooms below 100% and there are waypoints on the map. The map would write over the top of the menu and toolbars.

Changes

- Added new command to the OziAPI for moving map control.
- Added new command to the OziAPI for finding maps.
- Increased number of waypoints per route to 255.

Beta Version 3.90.4h1

Fixes

- OZF2 maps sometimes generated an exception when changing zoom levels - fixed.
- There was a memory leak with the OZF2 format causing additional memory to be taken each time the map was scrolled. This was particularly noticeable in moving map where the map is continuously being scrolled.

Changes

- Changes to how file attachments to waypoints and map features were processed meant files attached by url's did not work, a change has been made to allow these to pass through my checking code so they work again.

Beta Version 3.90.4h

Fixes

- New versions of Garmin GPS firmware caused OziExplorer to give a "floating point error" under certain circumstances when downloading waypoints, this has been fixed. Downloading tracks under certain circumstances caused the same error but for a different reason, now fixed.
- Fixed the edge affects that occurred on the 3D maps when using DTED and Grid ASCII DEM files. The edge affects were visible when moving viewing across DEM boundaries.

Changes

General

- To scroll the map by dragging with the mouse no longer requires the "Drag Map" button to be depressed, the map can be dragged at any time.
- The "Drag Map" button is now used to "Lock" and "Unlock" the dragging of map objects (waypoints, map features .....).

OZF2

- There have been many changes to how the OZF2 format is used. OziExplorer now generates most of the zoom levels "on the fly" and they no longer need to be stored in the OZF2 file. This results in considerably smaller files. Only the Zoom levels 20% and below are stored in the OZF2 file.
- Existing OZF2 files can still be used - there is no change to the OZF2 file format. A new version of the Img2Ozf converter is available - see the Img2OZF web page for details.
- OziExplorer no longer displays scroll bars when using OZF2 files, the map can be scrolled by dragging with the mouse or by using MapView.

3D

- There has been a change in the way OziExplorer adds altitudes to waypoints and tracks when using the 3D add-an. Altitude is no longer automatically added when a waypoint or track point is created or moved. There is a differing of opinion on how this should work - example when dragging a waypoint a short distance the original potentially more accurate altitude from the GPS may want to be kept instead of being replaced by the DEM altitude. Altitudes can now be added from the Waypoint and Track Lists - the options are on the one of the drop down menu buttons. Of course for any function in OziExplorer which requires the altitude (track profile or sending to Ozi3D) the altitudes are still automatically added "on the fly" if there is no altitude.

Beta Version 3.90.4g

Fixes

- minor fixes

Changes

- Additional changes to suit the "New" OziExplorer API just released (the link to the API is on the Utilities web page).
- The Moving Map Control and Navigation Control now remember their positions and the PgUp/PgDn and Arrow keys now work on the Moving Map Control and Navigation Control.
- 16 Million color (24bit) and grey scale png images can now be loaded.
- Added the VICGRID map grid (for Victoria Australia).
- The "Find Map from Entered Position" dialog now includes separate buttons for positioning the point on the current map and finding maps which include the position.

Beta Version 3.90.4e

Fixes

- For some dem types (USGS DEM and ASCII grid) we discovered that we had misinterpreted the way the start coordinates of the dem are given. This caused the heights to be offset slightly from their actual location (half a grid spacing in the east-west and north-south directions). This has been fixed.

Changes

- Added support for the NIMA DTED height data.
- Added additional parameters to the default.ozproj file for working with the user grid and projections, also added the ability to shift a DEM in the x and y directions (unrelated to the fix above) - see the Height Data web page or help for details.
- Added the option to turn ON and OFF the ability to read depth from the NMEA sentence. This is to allow for those cases where a GPS is outputting the depth sentence but the GPS is being used on land. This only affects the ability to read the DBT and DPT NMEA sentences, if your GPS does not output these sentences then this option has no affect. The option can be found on the Moving Map tab in OziExplorer Configuration.
- The MGRS grid can now be displayed as a grid on the map.
- ECW images can now also be imported using the "Import DRG" option on the Import menu, this provides the ability to specify the missing parameters.

Beta Version 3.90.4d

Fixes

- Fixed a problem when using USA 24K DEM's with old format headers.
- Also added the ability to use USA 24K DEM's which have line feeds at the end of each record.
- Fixed a problem when importing Arcview shape files which have null records.
- Fixed some problems with 16 color (4 bit) ozf files.

Changes

- Added the ability to use Grid Ascii and ArcView BIL height data files which are **not in Lat/Lon**. Most Grids (supported by OziExplorer) and datums can be used. This is handled by placing a special file called **default.ozproj** in the folder where the particular DEM files are stored. OziExplorer looks for this file as it scans the dems and uses the Grid, datum and zoned contained in the file. See the Height Data help (bottom of the page) on information on how to do this. (This should enable those New Zealanders trying to get some of their free data which is in the NZ grid and using the Geodetic Datum 1949 to work with OziExplorer (you need the Grid Ascii data files by the way).)
- USA 24K DEM's in Lat/Lon format can now be used - Canada DEM's appear to be in this format.
- Added the ability to select the map viewing window on the 3D Map Creation control.

Beta Version 3.90.4c

Fixes

- Fixed a problem when calculating height data for Ozi3D when using the filtering option.

Changes

- nil

Beta Version 3.90.4b

Fixes

- Some USA 250K DEMS have a slightly different way of formatting fields in the header to the others. Ozi3D would reject these as not being valid even though they are - now fixed.
- Regional Map and Index Map would not properly load maps with a Transverse Mercator (User Grid) projection - fixed.

Changes

- nil

Beta Version 3.90.4a

Bugs

- Removed some more track manipulation bugs put in by the previous version.

Changes

- Added the interface for Elevations and OziExplorer3D.
- Added the ability to use the function function key assignments while these windows have the focus, Navigation Control, Index Map, Name Search, Route Editor and the NMEA Output window.
- Added Blue and Gray to Night Vision colors
- Added Set Intensity (map brightness) button to the User Toolbar button and Function Key selections. This option allows you to cycle through the intensities at 10% intervals.
- The ability to create a Waypoint from a Track point has been added to the right click menu of an active Trackpoint.
- DRG Image Import will now assume that if there is a negative Northing in the georeference file (tfw,jgw,sdw etc) that the map is situated in the southern hemisphere and will subtract the Northing the 10,000,000 false Northing.
- On the Index map the currently loaded map is highlighted (where applicable).
- quite a few minor changes.

Beta Version 3.90.3h1

Bugs

- Removed some track manipulation bugs put in by the previous version (drag track point, insert trackpoint and edit track point position).

Changes

- nil

Beta Version 3.90.3h

Bugs

- Fixed the PVT problem when using serial port driver #2
- Fixed the "Start NMEA Communication with GPS" and "Stop NMEA Communication with GPS" menu options being enabled/disabled when they should not have been, this only occurred when using PVT mode.
- Fixed the DRG import bug introduced a couple of versions ago.
- Fixed the Map Projection combo box in map calibration, it was set to display too many options in the list causing it to scroll over the mouse causing a option to be selected. Only happened on 800x600 or smaller screens.
- other minor bugs.

Changes

- Fine tuned the Brunton / Silva GPS support, now much more reliable.
- More of the Open file dialogs can now be resized.

Beta Version 3.90.3g

Bugs

- More fixes for the Brunton / Silva support, mainly for route download.

Changes

- Added options to delete all waypoints and routes from the Brunton / Silva GPS.

Beta Version 3.90.3f

Bugs

- The Map Feature name in map feature properties was accidentally restricted to 10 characters, now fixed.
- E00 files could not be imported correctly, fixed.
- The Help link on the waypoint File Attachment dialog help button has been fixed.
- The waypoint file attachments for waypoint and route proximity's has been reworked. The route proximity attachments were not working properly at all and have been fixed.

Changes

- The Brunton / Silva support has been reworked for routes and should now be working properly. The help section for Brunton / Silva has been modified to include more information, particularly about the software version of the GPS.
- Added a new brighter icon to the exe file, the icon of a shortcut to OziExplorer can be changed by using the Change Icon button in the shortcut properties.

Beta Version 3.90.3e

Bugs

- The waypoint description in waypoint properties was accidentally restricted to 10 characters, now fixed.

Beta Version 3.90.3d

Bugs

- Windows XP - Fixed some problems caused by XP theme.
- other minor things

Changes

- The buffer length for NMEA strings has been extended from 80 characters to allow for radio modems (TNC's) which add characters in front of the standard NMEA sentence, the string was being truncated and the NMEA string was seen by OziExplorer as not valid.
- Added a **Track reverse** function on Track Control menu
- The Track Control now has an option on the More Options button to move any selected track **direct to Track 1**.
- **Regional Map Window** - has more window sizes available - and can be disconnected from tracking with the main map window so it can be scrolled independently. The tracking disconnect is on the right click menu on the regional map window.
- A button has been added to the User toolbar and Function Key selections to **instantly clear track 1** (no warning given).
- **Garmin Geocaching Symbols** have been added to the list of Garmin Symbols, if your GPS supports them you will have to create a new OziExplorer symbol set for it by using the Create Symbol set button on the GPS tab in OziExplorer configuration.
- Moving map now has the ability to use **User drawn pointers**. Select User 1 , User 2 or User 3 options as the pointer types in the Pointer field on the Moving Map tab in OziExplorer configuration. An example file has been provided as a download.
- If the track files (or other files) attached to a map cannot be found at the link specified in the file OziExplorer will try to find them in the exe file path, data file path and so on.
- The Index map now has the ability to automatically hide itself when a map is opened, this option is on the drop down menu on the index map toolbar.
- MLR GPS support has had many changes and additional options added.
- Added the ability to set number of stop bits to Com settings (some MLR GPS receivers require this).
- Added support for Silva Multinavigator and Brunton Multinavigator GPS receivers.
- Added the **VICMAP-TM** grid (pseudo AMG), this is for maps produced by VICROADS of Victoria Australia. These maps can be imported using the **Import / All DRG Maps on CD** option. When asked specify the Datum as Australian Geodetic 1966 and the Map Projection as VICMAP-TM (no zone number needed).
- Added the 2 grids for Italy (Italy 1 and Italy 2).
- **Waypoints** can now have **files attached** to them for viewing or activation when entering a waypoint proximity or route waypoint proximity zone. This means that **sound files (.wav) can be played and symbols displayed** when entering these zones. There is a new button on the waypoint properties dialog called Attachments where the files can be specified. OziExplorer help has the full details. The attached files can now also be played and displayed by version 1.10.2 of **OziExplorerCE**, set the waypoints up in PC OziExplorer first.

Beta Version 3.90.3c

Changes

- The scroll bars have been removed from maps using MrSID images, this allows me to reduce the memory requirements (a design thing). MrSID images are really too slow to scroll by using scroll bars anyway. Scrolling can be done by using the MapView window, double clicking on the map, the "drag map" option (the hand) on the toolbar or by holding down the Ctrl key and dragging with the mouse (the drag map option need not be active). If you really want scroll bars back put a file called **sidscrollbar.dat** in the oziexplorer folder and restart OziExplorer (if you get errors on loading a MrSID map remove it and see if you still get the errors)..
- Because MrSID images are slow to page there was a white flash as a new image page was loaded after a zoom level was changed, I have removed the flash by disabling the erase background action for the viewing area. Hopefully this will not affect other aspects of the code.
- A few resource leaks have been fixed in the MrSID code.
- A 75% zoom level has been added for ECW maps.

Beta Version 3.90.3b

Changes

- The MapView image was upside down and map printing was upside down when using the new MrSID image format. This only happened on win98/me. It hopefully is now fixed.

Beta Version 3.90.3a

Bugs

- Fixed a problem with the display datum not displaying grid coordinates correctly. This happened when the display datum was different to the map datum.

Changes

- The NMEA sentences output to the Autopilot are now selectable.
- Added support for the MrSID format. There are a few issues with this.
    - The MrSID format seems to be slow at paging the image from disk, this is not related to the code in OziExplorer, as when using the same image, OziExplorer loads a page slightly faster than the MrSID Viewer software. There seems to be no way to speed this up.
    - Therefore scrolling and zooming of the image will be slow as image pages a read from disk.
    - The zooms available have been adjusted to suit the MrSID "native" zoom levels, these give clear images at these levels of zoom. If the zooms are not available in the SID image then the zoom will not work correctly at this stage.
    - If you add a file called **sidfull.dat** to the oziexplorer folder (it doesn't matter what is in the file) and restart OziExplorer then it will load the SID image fully into memory (a lot of memory is required). Loading will be very slow but scrolling and zooming will be fast. Zoomed images and mapview will not be as clear.
    - There are a couple of SID images (on the Australian NSW TopoView CD's) which OziExplorer cannot load (2 out of 1000+) but the MrSID Viewer can, it is not known why and there seems to be no way to fix this.

Release Version 3.90.3

Bugs

- Fixed a problem with the index map giving an access violation when many maps were clicked quickly.
- Fixed some minor problems with dialogs not displaying correctly when using large fonts.

Changes

- nil

Beta Version 3.90.2a

Bugs

- Fixed autopilot bug not outputting to serial port when using the same port as the GPS.
- Closing the Area Calculation window no longer clears track 1 (it was not intentional).
- some other minor fixes

Changes

- Added an **additional serial port driver** to the code, the COM tab in configuration now allows a choice of 2 drivers. There is an increasing use of USB to Serial Port convertors being used on laptop computers. The quality of the drivers provided with some adapters makes it difficult to provide code which works with all of them. Two Serial Port Drivers which use different techniques are provided and either of them can be selected, there is a good chance that one of them will work. The driver that was used in previous versions is "Driver 1", the new driver is "Driver 2" which is the default driver.
- The **"Save Map to Image File"** option on the File Menu has been completely rewritten to reduce the resources required in win 95/98/ME. The map image is now saved in strips so the full image is never loaded and therefore a large windows "bitmap" object is not created.
- The map images are now **saved in 24 bit color** so they will be larger than the 8 bit color used in the previous version. The advantage of this is there will not be a problem with the palette when drawing waypoints, tracks and other OziExplorer objects on the image. If you want to use the saved images in OziExplorer you should use a program such as Paint Shop Pro or similar to convert them back to 256 colors.
- The Index Map now has an option on the drop down and right click menu to **Refresh the Maps** from the Search Path folder.
- The Index Map also has an option on the drop down and right click menu to "**Highlight**" the map polygons the cursor is hovering over.

Release Version 3.90.2

Changes

- nil

Release Version 3.90.1

Bugs

- Fixed problem with zoom window cross hairs not lining up with mouse cursor (for some

graphics card models).
- Fixed import of Quovadis .cal files for the new versions of the cal file.

Changes

- nil

Release Version 3.90.0

Bugs

- minor fixes

Changes

- nil

Beta Version 3.85.8.1

Changes

- More changes have been made to Name Search. There is now the ability to search for names within a radius of a specified position. There are some other minor changes as well and a couple of bug fixes.

Beta Version 3.85.8.0

Bugs

- Fixed a bug in the Index map when there were more than 2000 maps to process.
- Found and fixed a resource leak, it showed mainly in the Index Map window as the window was resized but was in every window that has the extra button in the caption bar to "roll" the window up.

Changes

- No new features added just fine tuning of the Index map and Name Search.

Beta Version 3.85.7.8

Bugs

- Fixed a bug in the Regional Map window when using certain types of BSB charts.

Changes

- An Index Map function has been added, this allows you to display a small map in a window and see the borders of all the maps in specified folders drawn onto the map, see the help for full details.
- Nightvision support has been added for ECW maps.

- A button has been added to the top status line to allow the display datum to be adjusted.
- Datum selection has been added to all dialogs which display the position.
- Name Search has been refined a little more.
- The Track List now has a button to split and join track sections.

Beta Version 3.85.7.6/7

Bugs

- Fixed the problem of leaving the comm port open in the MLR support.
- some other minor bugs.

Changes

- A Name Search ability has been added. So far there is just a World cities database available for download, the ability to create databases from freely available names files on the internet will be available soon.
- Added Daylight Saving time support when converting from UTC to local time.
- The Map search dialog has been changed slightly.
- NMEA input processing has been adjusted to give more priority to altitude and gps fix information when using large map images. The problem was the info would not be updated as the map drawing was using all the available time.
- The help has been brought up to date (mostly).
- Versions from 3.85.7.4 have changes made to the handling of the "Tabs" of the **map calibration panel** and the **configuration dialog** to reduce the large amount of resources used by these screens as the tabs are clicked. This required a little bit of recoding, if these screens give problems such as missing settings please let me know.
- Added high speed binary track download for MLR GPS receivers.
- Added reading of the DPT (depth) NMEA sentence.
- Added a Points list, access the list from the Point Control.

Beta Version 3.85.7.4/5

Bugs

- Fixed a bug with the default waypoint symbol not being used correctly.

Changes

- If most people do what I do and move the map image files around all the time, the links to the map images stored in the map files soon get broken. A new page has been added in the configuration which allows you to specify various paths and drives and so on where the map images may be stored, see the config help for details.
- The distance the map scrolls per mouse click on the scrollbar arrows or when using the cursor keys can now be set in the configuration. Previous version had this fixed at 200 pixels.
- Modified the Garmin upload/download handling to make it more reliable under adverse conditions (poor cable contact, that sort of thing).
- Added the loading of track data files produced by the Compe-Gps software.

Beta Version 3.85.7.3

Bugs

- Fixed a problem with the serial port handling
- Fixed a minor problem with the track profile plot when attempting to view the profile of newly downloaded tracks.
- Some minor bugs in ECW handling

Changes

- nothing new thats usable yet.

Beta Version 3.85.7.2

Bugs

- Fixed track import from text files.
- Fixed problem with moving map using NMEA Only GPS setting.
- Fixed various format problems with the waypoint, event, map feature, map comment and track list.
- Other minor fixes.

Changes

- Added support for **MLR** GPS Receivers.
- When printing maps the Track Line Width per unit trackwidth can now be specified on the print dialog.
- Img2Ozf.exe now supports ECW map images.
- Track files can now be loaded as points (useful for converting tracks to points to upload to a Magellan 315/320 as POI's using Datasend to create a crude map).
- The text for Magellan POI's for Datasend is now always saved in uppcase.

Beta Version 3.85.7.1

Bugs

- The **Garmin Symbol Set Creator** (added to the previous version) had a bug where it would not read the symbol set correctly if it was the last one in the file, now fixed.
- Fixed some of the default GPS parameters for the new Garmins.
- Other minor fixes.

Changes

- **MAJOR CHANGE** - The problem of working with ALL "**USB to Serial port adapters**" is still around. I have done a lot of experimenting with an adapter and have recoded the serial port handling to use the most basic windows API function calls available for serial input/output. I am hoping this will get around the problems/bugs/differences in the supplied drivers of many of the USB to Serial adapters. Of course this new code is also used for the standard serial ports as well. **Please let me know if it does or does not work with your USB to serial adapter and of course if it does not work with standard serial ports.**
- Added the symbol sets for the Garmin eTrex Legend, Venture and Vista, if they are not correct please let me know.

Beta Version 3.85.6.5

Bugs

- The saving of "new" map files indicated the map file was read only (even though it didn't yet exist), this was a bug introduced in the previous version, now fixed.
- Fixed a minor altitude reading problem when downloading waypoints from certain Garmin GPS receivers.

Changes

- Added entries for new Garmin models in the GPS models selection.
- Added the ability for the user to define the symbol sets used in OziExplorer for Garmin GPS receivers. This option is on the GPS tab of configuration and is a button called "create" immediately above the "GPS Symbol Set" combo box. Help is available on the Symbol Set Creator dialog which explains its functions.

Beta Version 3.85.6.4

Bugs

- Fixed an access violation error when editing track point properties from the track list.
- Fixed scale unit problem on the track profile, the scale would sometimes look like this. example 8.0 9.0 10 11 11 12 12 13

Beta Version 3.85.6.3

Bugs

- Fixed a rare naming problem when creating the map file names for Maptech charts.
- Fixed import problem when importing some BSB version 3 CD's.
- Fixed a minor bug when scrolling maps in the ECW image format.
- Fixed a bug that was introduced in 3.85.6.2 when plotting tracks as polygons or alarm zones, they were not placed correctly at zooms other than 100%.
- Editing of Track point times was in UTC instead of Local Time - fixed.
- Fixed some problems with MGRS grid entry.

Changes

- Now includes time and altitude upload/download for Magellan tracks for the new 315/320 software version. The date for each trackpoint is not provided with the download (only the time) so Oziexplorer assumes the date for each point is the download date (incrementing as the time flows over to the next day).
- The code for Magellan download from the GPS has been modified.
- The new D109 Waypoint format for the updated GPSMAP 162/168 and the StreetPilot 3 has been added.
- The window for selecting symbols for map features can be sized and remembers its position and size.
- The Refresh Map option on the map right click menu now clears the map find bullseye which is left on the map after using the Find Map at Cursor option..
- When searching for a more detailed map or the next map when in moving map mode and the image link in the map is not correct then this map can be ignored (you will not even know about it). This option is configurable and is on the moving map tab in configuration. Be careful when using this because if the map images are on a CD and a new CD is required you will

NOT be prompted to change the CD and press the retry button.
- The track distance is now updated in the track control when you drag track points.
- NMEA input is now more flexible, it will look through the received string for a valid NMEA string and extract it, this is for reading input from TNC modems which may have placed a prefix on the NMEA string.
- The Swedish grid has been added to import map options and Shape File import and Exporting.
- **Time** is now an option for the x-axis on the track profile and you can now select the profile background color.
- Map Features can now have a default symbol set (do this on the Map Feature properties dialog).
- The Track Control has its buttons reorganized to stop some confusion, a new button has been added to save the track selected in the list. The height of the window can now be set and is remembered.
- The Point Control has similar changes to the Track Control.
- There is the ability to have manually created track points popup the track point properties dialog, useful for adding altitude information if clicking on contours. This button is on the track control.
- The export of waypoint text files now includes altitude.
- Import of Track text files has been added.
- The export of track text files now includes altitude and also includes extra calculated fields - the "track section number, the "distance between points in meters", the "time between points in secs", the "speed between points in meters/sec" and the "heading from the previous point". The extra fields are ignored when a track text file is imported and need not be included.
- The Import of ECW maps has been added but with the following limitations. The map projection must be based on UTM or Lat/Lon (geodetic). Only certain datums are supported during the import.
- Added the Plessis Ellipsoid

Beta Version 3.85.6.2

Bugs

- Fixed the Hide and UnHide options on the View menu.
- Fixed bug in the Track profile distance.
- Fixed display problem in Waypoint distance dialog and Route Print dialog (Spanish version only).
- Fixed problem in the Grid display where it would lock up when zooming (Spanish version only).

Changes

- Added MGRS and Maidenhead grids.

Beta Version 3.85.6.1

Bugs

- Fixed a couple of things in the Ozi API functions.
- many minor problems

Changes

- The Spanish version is ready for beta release and is available on the Spanish language version of the OziExplorer web page.
- The serial port communication library has been changed. This has improved GPS upload/download performance and hopefuly will fix most of the problems that have occured with serial port communication from time to time.
    - Having to change the com timeout to speed up upload/download (com timeout setting is no longer required)
    - May work better with USB to serial adapters.
- Because of the change in the communication library the GPS upload/download code has required some rewriting. It has had limited testing at this stage.
- NMEA serial input has also been rewritten.
- The memory buffer size for OziMC can now be specified manually.
- Added the the European 1950 (Spain and Portugal) datum.
- Added a horizontal scrollbar to the file list box on the Options dialog in Map Calibration and to the option lists on the user toolbar configuration dialog.
- In order to develop a Spanish version and also make changes for other types of map formats approximately 2500 to 3000 changes have been made to the source code. That is why it has been so long since the last development version was released. With so many changes bugs may have been introduced into previously working code.

Beta Version 3.85.5h

Bugs

- Many problems fixed in the France grids
- Blank map grid problem fixed when using different datum.
- For Garmins the Get and Send Routes button on the user Toolbar were not working correctly.

Changes

- For Magellans - enabled the sending and receiving of single route numbers from the Route Editor window.
- Magellan routes now download from the route number in the GPS into the same route number in the OziExplorer route list. This is a little tricky because Magellans treat the route number as a name (in the download protocols) but by checking this possibility (of receiving a name instead of a number) in the code it should work ok.
- Individual routes can now be moved up and down in the Route Editor - more functions are still to be added.
- Added Ozi API messages - Numbers 111, 160, 161 and 230.

Beta Version 3.85.5g

Bugs

- Fixed bug in Van Der Griten map projection.
- Some distance calculations fixed.
- The Track profile window size problem when first used has been fixed.
- The Track Profile would cause errors in win98 and 95 when large zooms were used, some checks have been added to correct this.

Changes

- Added a properties dialog for trackpoints, you can now edit the altitude, date/time and the position of an individual track point. The properties dialog can be accessed by double clicking or right clicking an an active trackpoint or by using the track point list.
- Added the support for all document types to the Map Features. You have always been able to attach a bmp or jpg image to a map feature. You can now attach any document type, and when selected the document is passed to Windows and it will open it in whatever application is normally used in your system to open that document type. The best document type to use is HTML (web browser) as you can display images and text and link that document to any other document.
- Added the loading the IGC track format for gliding, may need a bit more work yet.
- Added the France grids (I, II, III and IV) for the France maps. The calibrating of maps using these grids has special requirements and you should read the help that is available in the Map Related section of the help file. The use of this function has not yet been tested.
- There is now the ability to select the datum the coordinates are displayed in. The datum name is shown on the position display line, clicking on the datum name will allow you to select the datum to use. The 1st datum in the list is called "Map Datum" and this means the display datum will always match the map datum (and is the OziExplorer has always worked), otherwise select the datum of choice. The datum is saved and used the next time OziExplorer is loaded. Please note SO FAR this works only for the Position display, the object hints and the map grids, **ALL OTHER** lists, print outs and properties are **STILL** displayed in the map datum.

Beta Version 3.85.5f

Bugs

- The last version put a bug in the map comments object, it could not be dragged and the right click menu could not be activated, this has been fixed.

Changes

- A Track Profile option has been added, plot Altitude or Speed graphically against the Distance. It still requires a bit of work, printing perhaps, saving as an image. View / Tracks / Track Profile is the menu option. Also available from the Track Control (the More Options ... button) and is a configurable button on the "User" toolbar. There is help available by clicking on the Help button on the Track Profile dialog.

Beta Version 3.85.5e

Changes

- I was not happy with the waypoint calibration window so I changed it from a combo box to a list box for the waypoints. Also added the waypoint description to the list. The memory for the list of waypoints for the window is now dynamically allocated instead of taken as a chunk.
- When checking the calibration of a map sometimes a waypoint would cover where the calibration point should be so the point could not be added or moved. To overcome this if you click on the waypoint the calibration point is added where you click (through the waypoint), use the zoom window to position the mouse. However if the position is not correct remember you can hold down the shift key and use the arrow keys to move the calibration point position.
- A **track filtering** option has been added, View / Tracks / Track Filter Control is the menu option. Also available from the Track Control (the More Options ... button). There is help available by clicking on the Help button on the Track Filter Control dialog. The filters you setup can be saved and loaded, I have included a few examples in the zip with the exe file.

Beta Version 3.85.5d

Bugs

- The waypoint selection for calibration points was still not right, I have made many changes this time and it is getting better. It should work ok now - if not let me know.

Changes

- nil

Beta Version 3.85.5c

Bugs

- Fixed a bug in the new waypoint selection for calibration points, the use of a "," as a decimal separator had not been allowed for. I also enchanced the display of waypoints in the list a little bit.

Changes

- nil

Beta Version 3.85.5b

Bugs

- PCX5 export Altitudes are now in meters
- Uploading tracks to Garmins with a date of zero has been fixed.

Changes

- OziExplorer has now been converted back from the Delphi 5 compiler to Delphi 3. Delphi 5 caused slow operation and introduced many bugs, the bugs could be fixed but the slow operation was more the problem.
- You can now select the calibration point positions from a list of waypoints. The waypoints must be loaded before you enter the calibration screen, there is some help which can be accessed from the wp selection dialog.
- The track list now shows the Track Point ID, the same ID is shown in the hint for "active" trackpoints. This allows the points on the map and in the list to be matched. The point ID appears to be a point number but it is not, as an example if you insert a point in the middle of a track the point ID's will no longer be in order. The point ID is dynamic and is allocated as the track is loaded or a track point is created.

Beta Version 3.85.5a

Bugs

- Positions were sometimes displayed as "26 17 60.0" instead of "26 18 00.0", this should now be fixed.
- Other minor bugs.

Changes

- OziExplorer has now been converted from Delphi 3 to the Delphi 5 compiler, this may cause some problems, some have already been fixed but there may be more.
- Support for ECW map images has been improved, the images are now paged from disk on demand, this means quicker loading and much larger images can be loaded.
- The altitude is now saved in PCX5 export files.

Release Version 3.85.4

Bugs

- Minor bug in waypoint list and the editing of waypoints has been fixed.

Changes

- nil

Beta Version 3.85.3e

Bugs

- Fixed a problem in OziMC in the CreateOziMC.exe program. Selecting regions in OziSM smartmaps that bordered the zero longitude on the west side or bordered zero latitude on the south side would not be created.

Changes

- The timeout for Magellan downloading (from the GPS) has been increased from 3.5 secs to 10 secs. For some reason the Magellan 315/320 pauses during downloads when using 4800 Baud, the pause was just exceeding 3.5 secs so OziExplorer would indicate an error. I am not sure how long this problem has existed but it is only now being reported. When using 9600 Baud the pauses are very short and download proceeds normally.

Beta Version 3.85.3d

Bugs

- In configuration "Keep Map Zoom" was not being stored correctly, it was always set the same as "Keep Map Objects".
- Fix in AutoPilot output, longitude was missing a leading zero.
- Map file names (including path) were being limited to 120 characters (by error), this has been fixed, the length can now be up to 255 characters.

Changes

- Added the symbols for the Magellan map 330 and an option on the GPS selection. The symbols were created from a Faxed page of the manual so they maybe not quite correct in shape.
- Added an option on the GPS selection for the eTrex Summit.
- Added BWC sentence to Autopilot output.

- More changes to MIF file import to handle Mapinfo user datums.
- Added in the Norske datum for Norwegian Charts

Beta Version 3.85.3c

Bugs

- changed the version number this time
- If there are more than 9 calibration points (either from a map import or added to the .map file manually) they would be deleted when the map was saved from the calibration screen, this has been fixed.

Changes

- For BSB charts a setting has been added to change from the manufacturers calibration to the OziExplorer calibration (where applicable, not all BSB charts have a manufacturers calibration supplied). This setting is on the Option button in Map Calibration. This was done because, while it is rare, the manufacturers calibration can sometimes be in error.
- For BSB charts you are now allowed to change the corner markers if there are only 4 and you can adjust the calibration points if there are 9 or less.

Beta Version 3.85.3b

Bugs

- Major bug in "total route distance remaining" and ETE/ETA has finally been found and fixed.

Changes

- MapInfo MIF file import now can import files in the Transverse Mercator (including UTM) projection.
- E00 file import improved slightly.
- Tracks which have changed (from track 2 onwards) are now flagged and reported if you try to remove them without saving.
- Added some zoom button choices to the User Toolbar, added a "Full" zoom option to the right click map menu.

Beta Version 3.85.3a

Bugs

- Major bug in the previous development version **3.85.2z** fixed, when changing to Blank map - any loaded waypoints did not have the datum translated when the blank map was created. If the waypoints were saved then or saved after another map was loaded then the waypoint positions could be corrupted depending on the datum used for the map and the datum used for the blank map. If the datums are the same then no corruption occurs, if the datums are different then corruption occurs. If the data is not saved then no corruption of the data files occur.

  It may be possible in some cases to "fix" the "corrupted" waypoint files by shifting the datum back. If you put a file called "dshift.dat" in the oziexplorer folder (it doesn't matter what is in the file) and restart Oziexplorer a Datum Shift option will appear at the bottom of the map

menu. Example - if your map is in NAD 27 and the Blank map is in NAD 83 (WGS84) and your waypoints were saved and the positions in the file are now corrupted then load the original map (you must be able to see some of the waypoints in the incorrect position, select the Datum Shift option. Select the datum as WGS84 (or the same datum that you have set for the blank map when the corruption occured). Shift the datum in the forward direction, the waypoints will move (hopefully into the correct spot). The shifting can be done as many times as required in any direction. If you can get them into the correct spot save the file.
- Some fixes to shape file import.
- Fixed datum bug in waypoint append to wpt file
- Fixed the access violation error that occured on the map find dialog when selecting a map.

Changes

- NOTE - This version has changed the way the Function keys assignments are stored in the ini file - you will need to **reconfigure your Function Keys**. This change was done to allow for the new custom toolbar option.
- Added a user customizable toolbar, this still needs a bit more development but works ok.
- Added Wagner IV and Bonne map projections.
- Added some more map projections to BSB import (Albers and Wagner IV).
- The mark (target) that appears on the map when looking in the track list or "Finding a Map at the Cursor" is now removed when - the track list is closed - or a new map is opened from a menu option.
- Mapinfo (mif) file import has been improved, it can now import, lines, polylines, rectangles, ellipse, arcs and points.
- Added E00 file import, a little bit experimental.
- The **Close Map** option on the File menu now closes the map (in fact loads a blank map) and closes all the data files, The **Blank Map** option on the Map menu loads the blank map and keeps the data files loaded.

Beta Version 3.85.2z

Bugs

- The printing of grid lines could cause the lines to be disjointed (bits missing), this hopefully has been fixed. Note that printing UTM gridlines will still be disjointed (or misaligned) where they cross a zone boundary, this is just a fact of life.
- minor fixes.

Changes

- Added support for the ECW image format. This format provides very high compression, see www.ermapper.com , there is a free image converter available. It is a lossy compression format, the higher the compression the smaller the file but the worse the image will look.
- The Date/Time and Altitude are now uploaded in the track for the Garmin eMap, eTrex and similar models, of course not all models will accept the date/time.
- When using the Track Point List the currently selected Track Point is marked on the map.
- Waypoints and Events can now be marked by drawing a box around them, there is a new menu called "Edit" which has various options. The marked waypoints or events can be deleted or saved. The Mark Control can be used to do the same tasks as the menu options.
- All waypoints within a specified distance of another waypoint can be marked.
- The lower scale limit for map printing has been lowered to 1:500 (from 1:5000), only down to 1:1000 is shown in the combobox for scale, you must enter lower values manually. Using such low values on maps at larger scales can cause large number of pages (which OziExplorer will

warn about) or may even cause numeric overflows.
- 24bit Color TIFF files can now be used - please note that these are fully loaded into RAM not paged from disk as the 8bit color TIFF images are. For large images the amount of RAM and other resources required required can be a factor in whether the images can be used or not.
- Selecting the "Blank" map no longer automatically removes the waypoints, tracks etc, it is now treated the same as any other map.
- There is now the ability to add the date/time to track points for tracks that do not have them provided the track was collected at a set time interval (optionis on track control).
- There is a new option on the Waypoint List to "Append" the selected waypoints to any waypoint file.
- There are now zoom buttons (+) (-) for increasing and decreasing the zoom level below the Zoom combo box on the Toolbar.
- The NMEA input can now be displayed. This uses the old AutoPilot output window which has now been renamed to "Show NMEA Input & Output" and moved to the Moving Map menu.
- The size of the grid line labels when printing can now be specified.
- Shape files (.shp) can now be imported even if there is no DBF file with them.
- Img2Ozf Utility
    - Fixed a color problem with PNG Images
    - Fixed a memory leak, the more images that were processed in a session the more RAM that was used.
    - Deletes the temp file (.$$$) when the processing is done
    - More meaningful text in the status line as the image is processed
    - Saves the various settings of zoom levels etc.

Release Version 3.85.2

Bugs

- If the name of a MapTech PCX or RML chart had a ":" in the name then the Oziexplorer Map file was not created.
- The Waypoint and Event lists did not print the position correctly in deg/min mode, the minutes came out as 000000 instead of the correct number, one of those last minute changes programmers promise themselves they will never do.
- PCX5 waypoint import was not getting the description field.
- The Track Replay window will now Show and also Hide when it is attached to a Function Key.
- Deleting track points from the track list would cause an error if the track was not number 1.

Changes

- The Regional map window now shows the name of the loaded map.

Release Version 3.85.1

Bugs

- OziMC addon - Fixed a bug in saving features if the save was selected from the "Yes/No/Cancel" dialog if the Cancel Edit button was selected.
- If there was a large amount of free disk space on the drive where Oziexplorer was installed it was being determined that there was not enough free space on the drive (negative number returned) so the oziexp.ini file was put in the "Windows or Winnt" folder instead of the

oziexplorer folder.
- Fixed a printing bug, Map Features would not print in correct color (just blackish).

Changes

- Changes were made to support the new "ozf2" image format - it is essential that this version of Ozi be used if using ozf2 files. To use the OZF2 format you need the download the Img2Ozf.exe program from the Optional Extras section of the web page. See the help link on the **Image Formats Supported** help section, this is under the **Map Related** section.

Release Version 3.85

Bugs

- Very large Tif files could not be saved to an image, they generated an integer overflow, now fixed.
- When trying to save very large tracks into OziMC, an exception was generated (a buffer overflowed), this buffer has now been doubled in size.
- Importing DRG maps using Albers projection only worked for the first map in a multi import.

Changes

- There is now a configuration option to select if Bearings are in True or Magnetic.
- Some adjustments have been made to the Quovadis map import to support the UTM option in QuoVadis map calibration.

Beta 3.83.m

Bugs

- Manually created track points had their time set as local time instead of UTC time.

Changes

- Due to popular demand the blank map is no longer automatically loaded on program startup.
- Due to popular demand the Map Find dialog now has an option to close it automatically when a map is selected.
- The warning message if HTML help is not available has been modified in the way it is shown. Also if HTML help is not supported you will not see blank dialogs where the "startup" help would have been.
- Sorting a large number of POI's caused a "Stack Overflow", adjustments have been made to stack size and some other minor changes.
- If you are using the Depth (reading the DBT NMEA sentence) it is now displayed with 1 decimal point.

Beta 3.83.k

Bugs

- When a track with active points was moved from Track 1 the active points were left active, this has been fixed the points are made inactive just before moving.

- When Changing Symbols for some Garmins using the waypoint list the changed symbol was not correct.
- The Maptech map import was not correct if the map crossed the 180 deg longitude or if it used a Polyconic projection, both problems fixed (I think).
- Exporting Waypoints using the USER Grid used the wrong User grid parameters, now fixed.

Changes

- When using the POI Manager if there were any invalid bmp files in the Dsymbols folder an error message would be generated, this has now been altered and the invalid bmp files are simply ignored. The Dsymbols.zip file contained a couple of invalid bitmaps, this has been fixed, delete all files in the dsymbols folder and download the dsymbols again. You may have had .nic files in the folder, these are no longer required.
- The Info Dialog (Button on Toolbar) now includes a few additional items.

Beta 3.83.h

Bugs

- Waypoint projection in Nautical Miles was incorrect.

Changes

- The Date and Time for track points is now read from Waypoint+ text files instead of using the PC Date/Time.
- Added the Van Der Grinten map projection.
- Added Range Rings around moving map position, see the new Range Ring Setup option on the Moving Map menu.
- Show/Hide Range Rings has also been added to the Function Key configuration options.
- The NMEA depth sentence DBT has been added to the NMEA input processing and will be automatically read if available. If found the Altitude will change to Depth.
- When selecting the GPS as "NMEA Only" in configuration a "GPS - NMEA Only" menu will be made available. There is an option to send waypoints to the GPS in the NMEA WPL sentence format, many GPS receivers can accept uploaded waypoints in this format. There is also an option to receive waypoints in the same format "WPL" (if the GPS can be configured to output its waypoints in this format), these options needs a little more work to allow other "non-standard" NMEA sentences to be used.
- If you are importing a USA USGS DRG map with just a tfw file and the map image name is in the standard USGS format (example O43107C4.TIF) then OziExplorer will work out the correct UTM Zone number to use from the file name and put it in the Zone field of the DRG Import Options dialog as the default.
- There are some map images supplied as jpg files with an additional .jgw file, the jgw file is the same as a tfw file, OziExplorer will now use this file automatically if it exists.

Beta 3.83.g

Bugs

- Fixed the GPF (in User.exe) which occured when exiting the program. This was related to not closing (in the code) an embedded HTML help window before exiting.

Changes

- Regional Map loading has now been modified so if the map image is not found in the location specified in the .map file then it looks in the same folder as the .map file, basically this is now the same as the loading of a map for the Main Map window.
- A couple of users report the symbols for waypoints will not print, the cause cannot be found (may be specific printer related). Some changes have been made but this may not help. The "old" version symbol printing can be activated by placing a file called "nopcanvas.dat" into the folder where oziexplorer is installed, is does not matter what is in the file.

Beta 3.83.f

Bugs

- The Waypoint, Track, Map Feature, and Map Comment lists did not refresh when the map was changed, now fixed.
- The Route name was being saved with 14 characters instead of 16, now fixed.

Changes

- Added the ability to use PNG map images in the regional map window (an oversight).
- Added the ability to change the Garmin Display Format of selected waypoints in the waypoint list.

Beta 3.83.e

Bugs

- Fixed yet another bug in DRG import, the UTM Zone was read incorrectly from geotiffs.

Changes

- Version 3.83.e **reduces the windows resources required by a factor of 2** over the previous version.
  Version 3.83.d System = 27 User = 8 GDI = 38
  Version 3.83.e System = 10 User = 8 GDI = 21
- The Windows HTML Help OCX (hhctrl.ocx) is not loaded until help is used for the 1st time.
- Added a note about HTML Help which is displayed if your system does not support HTML Help.

Beta 3.83.d

Bugs

- Fixed another bug in DRG import, the datum was always being set to NAD 27 CONUS regardless of the real datum

Changes

- Added the ability to use BSB charts (.kap images) in the regional map window. This was an oversight.

- Added another formatting option to the Grid Line display, you can now specify only the last 3 digits be displayed. Only the last 3 digits are displayed if they are not 000, if the grid number is an even multiple of 1000 (last 3 digits are 000) then it is displayed as example - 243* where the full number would be 243000. This lets you work out the full coordinate number.

Beta 3.83.c

Bugs

- Fixed a bug in formating the lat/lon fields if using decimal degrees and are using a comma as a decimal separator in regional settings.
- When deleting track points from the track point list, deleting an already deleted point caused an exception error - fixed.
- Fine tuning to DRG import - new geotiff tag supported - map datum and zone (if found) is now passed through to the "DRG Import Defaults" dialog as the defaults.
- Fixed bug in Shape File import/export which caused map calibration to be corrupted (depends on map projection used).

Changes

- The Delete key will now delete a track point in the Track Point List.
- In Shape file export of Waypoints the Date/Time is saved in the AUX1 field and the Altitude (in feet) is saved in the AUX3 field.
- When using Alt K to add a waypoint in moving map mode the Altitude is now saved with the waypoint.

Beta 3.83.b

Bugs

- Fixed a bug in the alarm zones, they would not display using the correct polygon fill.
- Importing New Zealand maps using a tfw file in NZMG had an error - now fixed.
- Saving the image of a Maptech PCX or RML chart did not work correctly.
- The Altitude in the Object hints was not always correct, the string used was too short and the altitude number was truncated - now fixed.
- Fixed a rare bug in the Garmin download protocol code which gave a checksum error when no error existed.
- Fixed a bug in the download of Routes from the Garmin eMap (and other models which use the D202 protocol). Only 1 route would be downloaded.
- Fixed a bug in Points files attached to the map, this would sometimes produce an exception error, caused by unitialized variables.

Changes

- Added the use of PVT output for Garmin GPS receivers which support it. The option to turn this on is on the Comm Tab in OziExplorer Configuration.
- Added the ability to save the map grid default configuration, there is now a default button on the Grid Configuration dialog. When ever the Grid Config dialog is displayed for a map where a grid is not already configured the defaults will be entered automatically (if you have saved defaults), all you have to do is turn the grid on.
- Added the ability to display the Grid (on the map grid) without the meters - example 1273000 can now display as 1273 - there is a new option on the Grid Configuration dialog.

- When using Moving Map mode with a Magellan 315/320 (and most likely other Magellan models) they would indicate a Heading of 0 degrees when they were moving at zero velocity (regardless of the last heading). OziExplorer now traps this and will use the last heading whenever the velocity returned from the GPS goes to zero.
- The sorting of POI names was based on just using the 1st 3 characters of the name. This was done to speed up the sorting. Apparently this caused problems with the Magellan GPS 315/320 find function. The sorting now uses the whole name.
- The tracklist now changes dynamically to show the track selected in the track control list.
- The width of the Route lines can now be changed in configuration - see the Objects tab.
- Added Delete Waypoints, Tracks etc for Magellans, the new options are on the Magellan Menu.
- Added "Vertical Near-Side Perspective" and "Lambert Azimuthual Equal Area" Map Projections.
- Added support to import PCX5 files which use the UTM position format.
- The DRG import has been rewritten. Basically it will still work the same but has many internal changes, it can now automatically use the new format FGD files.

Beta 3.83.a

Bugs

- Sometimes the Waypoint colors would not work correctly, fixed
- OziMC caused extra points to be added to a feature when saving, changes have been made to the save routine.
- There was a minor bug in the Load BSB function (sometimes produced garbage lines in image), corrected.
- Printing Lat/Lon grid on a map would sometimes not work correctly, grid woulf not appear, now fixed.
- Navigating along a route with same wp in more than once would not work, now fixed.
- If the same wp was in route twice the route would not draw correctly when it was the active navigating route, now fixed
- Autopilot operation did not work correctly if serial port was shared with GPS and Autopilot, now fixed.
- Many,many others.

Major Changes

- New Garmin support, eMap and eTrex.
- The Garmin upload/download code has been rewritten quite a bit.
- New GPS configuration screens which make it easier to select the correct model GPS.
- For Magellans with POI's only - the ability to add and edit the POI's from the Datasend CD has been added, see the Datasend help.
- There is now a new object in OziExplorer called a Point, this object defines a point in space and has a name and some other properties. Points belong to a set of points which also has properties. The number of points which can be displayed is unlimited. There is a new Point Control dialog to manage Point Sets. See the Point help for full details.
- Mapcreate Names in can now be used in OziMC, you also need the new version of CreateOziMC.exe.
- Maptech RML and PCX charts (.HDR) can now be imported and used. You need to download the necessary dll's as well from the web site.
- QuoVadis Navigator maps on CD can be imported. Tested with the Africa and Canada maps.

Other Changes

- Symbol sets have been added for most Magellan models.
- The full Symbol set for Garmins has been added for GPS receivers such as the III+, 12Map, StreetPilot and its cousins, eMap, eTrex, and others. These symbols incorporate some color. Please note that the foreground and background colors of these symbols cannot be changed in the property dialogs of waypoints etc.
- Export and Import ESRI (ArcInfo) Shape files for points, polylines and polygons..
- New Track Control, with some new options such as the ability to move tracks between track numbers.
- Track List with Speed, Altitude, Heading and Distance etc
- Speed, Altitude, Heading, Distance travelled on Track replay
- Tracks can now be displayed as polygons (filled in various ways).
- Alarm Zones can be created and attached to a map. Alarm zones a re just a special type of filled track.
- Lock Mapfind to Current map folder, only searches the folder where the currently loaded map was loaded from.
- Attach tracks and point sets. The attaching of track files to the map no longer has a limit of 3000 points, you can now attach up to 50 tracks. The new object Point Sets can also be attached to a map, limit of 50 files also.
- The NMEA communication is no longer stopped when a new map is loaded.
- New Moving Map centering item - it provides centering with more view ahead in direction of travel.
- Button on Moving Map control to suspend centering of map. This allows you to move around on the map manually and also load a different map if required.
- There is a new option on the file menu to allow the changing of the Image file for current map.
- There is a new option on the file menu to change Image file path for all maps in a folder.
- The default properties for all objects (Waypoints etc) are now set by a default button their properties dialogs.
- Now loads OziCE track and waypoint files correctly.
- Waypoint projectiion now does in UTM projection to simulate the same method used if you were projecting the points manually on a UTM map.
- Waypoint projection also allows you to project a new trackpoint from the last trackpoint.
- DRG import can now use the georeference information from geotiff files, you need the Ozigeotiff.dll file
- The Track Hints (turned on in the Track Control) now include Date, Time, Distance, Speed, Heading.
- If there is room in the map image palette of your map images then the standard Oziexplorer palette is added into the palette of the images, for TIFF, BSB and JPG images. The saving and printing of the Map Image should now get the colors correct.
- TIF and BSB maps/charts can be fully loaded into RAM (instead of paged from disk) by including control files in the Oziexplorer folder, see Special Keys and Stuff help.
- More command line options, see Special Keys and Stuff help.
- The Hook for Moving Map position to be sent from other 3rd party programs has been modified to allow the position to be sent to OziExplorer via the clipboard, this is to stop the disk drive from being continually accessed on laptops. There is a new example mmFile program to demonstrate the technique.
- Holding the Shift key down and using the Arrow keys moves the nouse cursor by pixels, this allows the cursor to be positioned accurately for setting of waypoints etc.
- If the Toolbar is hidden it now remains hidden the next time Oziexplorer is started.
- Regional Map window improved slightly, can be changed in size, right click on the regional map window for menu..
- The size waypoints,map features and events can be specified when being printed on a map.

- Zoom window can now be activated from the Calibration window.
- The display of corner markers for the map neat line can now be turned on on the main calibration screen instead of having to go into the options dialog.
- Whwn creating new waypoint on the map, the automatic name generation will make sure a name is not selected which is already used by the loaded waypoints.
- The route selected in the route editor is now plotted on top of the other routes and in a wider pen
- The track selected in the Track Control is now plotted on top of the other tracks and has each track point position highlighted.
- Map comments are now resized when zooming.
- There have been many other minor changes.

Beta 3.81.c

Bugs

- The PCX5 file exporting (which has only been done for exporting to Mapsource, PCX5 is too strict on file version numbers) had a problem with altitude. Also Mapsource seems to have a problem with reading the file unless the altitude is -9999, so the altitude is now always written as -9999 into the file. Anyway it should work better now.

Changes

- Many users have had problems with the new html help system with the help components being out of date, a link has been provided to the the help file component upgrade from Microsoft.
- The html help system of course requires the engine of Internet Explorer be installed, some users have removed IE from their systems so the help will not function. The **"old" Oziexplorer help system** has now been compiled into a separate program which can now be downloaded and installed into the directory where you installed Oziexplorer. Version 3.81.c of Oziexplorer will detect it and automatically use it instead. Of course you do not get the searching, index, or better printing of the new html help.

Beta 3.81.b

Bugs

- Using the Route Editor buttons, deleting or moving a waypoint in a route calculated the distances between the waypoints incorrectly, now fixed.
- The track move had a problem moving a track when the map was zoomed, an oversight now corrected.
- The date reading code on file import has been slightly adjusted, this may remove a problem with the dates when importing waypoint files.
- The upload of routes to the Magellan NAV6000 has been modified so it may now work.

Changes

- The help system has been moved into windows html help (the standard system), this allows the usual help functions including full text search. The help system will be further improved in the near future.
- There is now a new feature which allows you to assign functions to the function keys (F2-

F12), the option is on the File menu just below configuration.
- There are now save buttons for all the major file types on the main screen, there is also a button to save all the files as well.
- Options have been included to write PCX5 data files for waypoints and tracks, these options are on the Garmin menu.
- There is now an option on the active track point right click menu to delete a track point and split the track at the same time.
- Deleting marked active trackpoints using the button on the track control now splits the track instead of joining the remaining track point sections together.

Beta 3.81.a

Bugs

- A bug in the mmFile hook has been removed.
- A bug in PCX5 import not getting the descriptions has been fixed.
- Getting routes from the Magellan NAV6000 has been adjusted, notice I didn't say fixed, need to test this one.
- minor fixes

Changes

- **Track Replay** has been extensively enhanced, can now track the movement, load next map, replay any track number etc.
- More **windows now remember their positions** (track replay, zoom, mapview, route editor, track control and NMEA Simulator). On some of the windows you need to open the window and close it to get it to remember the position.
- **Waypoint export** has been changed slightly, there is a new format exclusively for Waypoint+, the datum is fixed to WGS84. This exports in the same way as the Text File option on the Garmin menu.
- It is now possible to **export tracks**, this needs to be enhanced a bit more yet. The format for Waypoint+ also applies here.
- It is now possible to **open many tracks at once**, simply select multiple files in the file open dialog. The tracks are opened into tracks 1 to 30 (a max of 30).
- **New Datums** have been added to the list. Pulkovo 1942 (there a 2 datums for this one (1) & (2) as there are 2 different formats available). Pulkovo 1942 (1) is used for QuoVadis maps. S42, Israeli and Rijksdriehoeksmeting (Dutch) datums have also been added.
- **Altitude** is now included in the Waypoint properties editor.
- There is now a **Track Moving feature**. You can move a track around pixel by pixel to position it correctly and then save it. You can move by the complete track or just "active" track points. See "Track Move Control" option on the View Menu or the Track Control.
- There is now the ability to include input (depth) from an **echo sounder** (depth sounder) using the **DBT** sentence. There is a "hook" program OziSounder.exe which reads the input from a serial port and transfers the sentence to OziExplorer using a file hook. The OziSounder program can be downloaded from the web site. To use this you need a sounder which outputs NMEA and 2 serial ports, 1 for GPS and one for sounder.
- The **Save to Bitmap** option has been enhanced to also include the **png** format. ... About time, no more 50Mbyte BMP's...
- The **display waypoint with comment** has been changed from just the first 16 characters to the full description.
- It is now possible to specify the position a map automatically opens to, see the "**Save Map**

Position" option on the map menu.
- A selection of **User Grids** have been added to the User Grid (Transverse Mercator) dialogs. Select the grid from the combo box and it fills in the parameters for you.

Version 3.80.4

Changes

- The zoom window could cause GPF's (crash) in certain Graphics Cards (Savage (S3 chip set), Asus 3400, Asus 3800 (possibly certain other TNT2 chip set cards) and others) , this was actually caused by bugs in the graphics card drivers but by recoding the zoom window the particular circimstance which caused the crash could be avoided.
- When using large images (usually in PNG format) the mapview window would be blank. This problem should now be fixed. A similar problem exists on the main map when zooming to say 10% (same cause), I don't intend to fix this as I don't feel it is important enough to change the main map code.
- A problem has been fixed where loading waypoints which have negative latitudes less than 1 degree on the blank map would not be displayed (calibration was calculated incorrectly).

Version 3.80.3

Changes

- Fixed very minor bug where trying to print a selected area of the map if you had not actually selected an area gave a program error, it now generates a suitable message.

Version 3.80.2

Changes

- Fixed bug where lat/longs which were between 0 and -1 were not exported correctly.

Version 3.80.1

Changes

- Minor fix to mapfind search to locate small maps closer to current map, that is immediately adjacent. There was a possibility these small maps could be skipped over in the search.

Version 3.80

Changes

- One minor change to the Grid Display setup, The save button wording becomes red when changes are made indicating that you need to save the changes and the dialog displayed when the save button was pressed has been removed.
- Added ability to use comm ports 5 and 6.

Beta 3.73h.5

Bug Fixes

- Major bug fixed in OziMC multipolygon editing for World maps. The regions are much larger than smartmaps and caused a variable overflow in the IntersectLine function which caused the check to see if the track was in the polygon not to be correct. As usual with these types of bugs only some regions are affected.

Changes

- In Grid Setup window changing the AutoScale checkbox now redraws the grid so you can see the changes if you have the map zoomed when changing the grid spacings.

Beta 3.73h.4

Bug Fixes

- Minor problem with new track point button in the track control not deactivating correctly
- Grid labels not displaying the degrees correctly (17 degrees being displayed as 15 degrees etc) was found to be in my rounding logic and only happened for negative degree values.
- Minor problem with comma as decimal separator fixed for grid label display.
- Route properties adding waypoints in reverse order, it took a lot of skill for me to do that, has been fixed (I hope).

Changes

- GPS Fix Data form, Distance Display form now remember their last position.
- Arrows added to route properties form to allow waypoints to be moved up and down in a route.
- ^M (moving map control), ^N (navigation control), Alt S (nmea simulator) now display and **remove** the forms.

Beta 3.73h.3

Bug Fixes

- Importing of Albers projection maps required a UTM zone to be entered even though it was not required, now fixed.
- Minor problem with grid line colors being incorrect in some circumstances, fixed.
- Scrolling with the left and right arrows caused the grid labels not to draw correctly, fixed.
- Fixed problems with "saving maps to bitmap", some colors wrong, labels not drawn for grids etc.

Changes

- When importing Map Features and Map Comments, the positions are translated from the datum in the .map file to the datum of the map currently loaded as indeed they should be.
- Waypoints can now be projected with a True or Magnetic Bearing.
- When in moving map mode the screen is redrawn continuously causing the objects especially the grid to be redrawn. This really cannot be avoided, but changes have been made to only

redraw the screen when the position on the map has changed, this may eliminate some of the redrawing. This change was actually in 3.73h.2 as well.

Beta 3.73h.2

Bug Fixes

- minor fix in grid refresh after check calibration of map.

Changes

- Changed the palette handling for screen drawing back to the old method as the default.
- Changed grids so there will be a maximum of 200 drid lines drawn vertically and horizontally, this is to prevent an excess number of lines being drawn (screen gets filled with color) and control being lost. This still allows grids to be placed very close if desired.
- Changed Oziexplorer .map import so the image file does not have to be with the map file, the image file is now searched for but it naturally must be on the same CD (or disk).

Beta 3.73h.1

Notes

The new features added have required code changes to some "core" functions, this may introduce bugs into these functions which have been working ok. Please report any bugs you find in this version.

Bug Fixes

- MapView when loading B&W tifs with CCITT compression were distorted, now fixed. Had to change code in the general tiff loading area, hope it hasn't affected anything else. CCITT is not a good compression to use, change to huffman and you will see a performance boost (B&W images only).
- The route printout now includes the name of the route file and the waypoint file instead of the waypoint file in the wrong place.
- The lockup if deleting the only event from the event list is fixed.
- The date entry has been fixed and should now work with all date formats in regional settings.
- The logging of track data (to file mmTrack.plt) was logging the positions in the map datum but WGS84 in the file header, this caused the data to be incorrectly translated when loaded, now fixed, all positions are saved in WGS84.
- Importing waypoints did not work if the format string (in the file) was not in uppercase, now fixed.
- many more minor things.

Changes

- New map printing options - print a selected area, print a specific number of pages wide/deep. The help has been updated with the changes.
- The Grid display option is in this version, it was very complicated to code, see the help for the details.
- There is now the ability to import OziExplorer .map files from a CD to a Hard Drive, the image file path is changed to the path where the original map file was located and the files are changed from read only. This option is on the File/Import menu.
- DRG import options - Other image formats can now be used not just TIF, recurses through the

subdirectories and finds all maps, can import Albers projection maps, default Datum and Zone can be specified. Default datum, default zone and the Albers projection only applies to maps which **only** have the TFW file.
- *Changes to the way the map screen is redrawn to try and get around bugs in some graphics card drivers. If this causes problems there is a way to get the screen redrawn using the old method.*
- Map Comments can now have size, colors etc saved as the default, this is done using the new button on the map comment properties dialog.
- You can now import Map Features and map Comments from another Oziexplorer map onto the currently loaded map, this option is on the File/Import menu. Its a bit basic at the moment. It will reject them if they are not actually on the map so it is safe to import form a map which covers a larger extent.
- There is now an option to close the comm port on all the GPS model menus. This allows you to close the port so you can use the port with other software without having to close Oziexplorer.
- Route Editor in Route Properties now has enhanced features for adding waypoints to the route, add selected, insert selected etc.
- In the waypoint list the delete key can be used to delete waypoints.
- The finding of new Maps when in moving map mode can now be restricted to just the directory where the currently loaded map is stored. The default setting can be set in Moving map configuration and there is a new button on the Moving map control to change the option "on the fly".
- A new waypoint can now be created by **projecting** from an existing waypoint, distance and bearing are required, option is on waypoint right click menu.

Old History

Known Problems in this Version

★ Maps cannot be calibrated across the 180 degree longitude line.

If there are Map Features on the Map - After sending waypoints the GPS and then bringing them back a Waypoint will be created on top of the Map Feature. The work around is to delete them manually. The Registered only feature "Merge Waypoints" does fix the problem provide the Map Feature waypoint names start with "MF".

Configuration

- **System**
- **Maps**
- **Map Images**
- **GPS**
- **Communication**
- **Objects**
- **Track**
- **Moving Map**
- **Navigation**

This option is located on the File Menu.

System

Load Last Map - Ticking this box will cause the last map being used to be automatically loaded the next time you run the software.

Set Last Zoom and Position - The last map being used will be loaded with the same zoom level and be displayed at the same position as you were last using. This is also subject to the **Load Last Map** being checked as well.

Show Map View - For Registered users, ticking this box will display the Map View screen on program startup.

Show Zoom Window - Ticking this box will display the small Cursor Zoom Window on program startup.

Ask Before Quitting - If ticked OziExplorer will ask you to confirm before it Quits.

Window Position - Specifies the position and size of the OziExplorer window when it loads. You can select the **Maximize** option where the window will be full screen or the **At Stored Position** option where the window will assume the position and size that it had when you last pressed the **Store Window Position** button.

Store Window Position - Press this button to store the position and size of the OziExplorer window (see above). To save this position you must press the **Save** configuration button also.

Map Scroll Increment - The distance the map scrolls per mouse click on the scrollbar arrows or when using the cursor keys.

Data File Datum - for Registered users, the Datum which will be used when saving Data files (waypoints, events or routes), the Datum is stored in the file. The Lat/Long is automatically translated from the Map Datum to the Data File datum specified. This datum is not critical and could be left to WGS 84 at all times. It is useful if you want to manipulate the data files with other software.

When reading Data Files the positions are translated from the Datum they were with to the Map Datum. The Datum is stored in the Data Files with the data so it is known when the file is loaded.

Map File Path - the Folder where the map (.map) files are kept. OziExplorer will always look in this folder and its subfolders for maps, the preferred choice is to create a folder called MAPS under the OziExplorer folder. You could the create subfolders under the MAPS folder to separate your maps into various categories. Even though you can open a map file from any folder the map find function and moving map "find next map" will look in the Map File path folder as the default.

Data File Path - the Folder where the data files are stored, the preferred choice is to create a folder called DATA under the Oziexplorer directory.

Maps

Distance Units - Specify the unit all calculated distances are displayed in. If you specify Kilometers smaller units will be in meters. If you specify Miles or Nautical Miles smaller units will be in feet.

Speed Units - Specify the units to use for speed display.

Altitude Units - Specify the units to use for altitude.

Bearings - The Bearings can be displayed in True or Magnetic North.

Distance Calcs - Specifies whether the software is to use a sphere or ellipsoid when calculating distances, the ellipsoid method should be the more accurate.

The various GPS receivers use different methods, the list below is based on observation of how the the models tested calculated the distance so may not apply across the board.

Garmins appear to use an ellipsoid; **Lowrance/Eagles** and **Magellans** appear to use a sphere. It may be advisable to select the method in OziExplorer which best agrees with your GPS. The difference between the 2 methods is about 1% so it not really noticeable for small distances.

Country or Region - Select your country or if not there select the region of the world you are in. When entering geographic positions this causes the N/S or E/W field to default to a choice valid for the region you select.

Lat/Long Display - Specifies in what format the Lat/Long coordinates are displayed in.

Blank Map Datum - Specify the Datum to use for the Blank map. This datum is used the next time a blank map is created, that is the next time the "Blank map" option on the Map menu is used, it does not affect the datum of a blank map which is already being displayed. See Datums help for more information.

Create Map Thumbnail - This applies to certain image types. This will cause a small image file (.mv1, its really just a bmp file) to be created as the map is loaded and is stored in the same directory as the .map file. The next time the map is loaded this small image is used to create the MapView instead of having to load in the large image again. There is no thumbnail created for images less than 1 Mbyte in size as these are already quick to load.

Map Load Options

Keep Map Objects - Keeps the waypoints, events, routes and tracks in memory when you load a new map, they will display on the map if possible but even if not displayed on the map they are still loaded and active, **YOU MUST REMEMBER THIS**, if you don't want them loaded you must use the Clear options on the Map menu. It is up to you to decide how you want OziExplorer to handle this. This feature and the **keep zoom level** are necessary when doing on screen navigation using moving map so your waypoints and routes and therefore navigation assistance are retained for the next map.

Keep Zoom Level - When you load a new map the zoom level you are now using will be retained.

Alternate Grid - this determines which grid coordinates are displayed and requested by the software. This does not apply to map calibration where you can make an independent choice.

The User Grid is based on the **Transverse Mercator Projection** and requires you to set up the following fields by pressing the adjacent button.

- Latitude Origin
- Central Meridian
- Scale factor
- False Easting
- False Northing

It is beyond the scope of this help file to explain the purpose of these fields, please obtain and

consult other documentation on Grids and/or Coordinate systems for more information.

Use Map User Grid - This option links the Map User Grid (Transverse Mercator projection), which is setup when calibrating, to the User Grid which you setup for the Alternate Grid in configuration. If this is true and the map being loaded has a user grid set, the "map user grid" is automatically copied to the "Alternate User Grid" for coordinate display.

Map Images

This section has various option for locating the image for a map that is being loaded.

Note : This is the image file search sequence

1. The link to the image file stored in the .map file is checked
2. The folder where the .map file is stored is checked
3. The **Image File Paths** are checked (if specified)
4. The **Drives** which have been ticked are checked
5. The **CDROM drives** (if the option is enabled) are determined and checked.

Image File Paths - Each of the specified paths (if ticked) are checked to see if the required image file can be found.

Check Drives - If the map image has not been found each of the specified drives are searched. It searches for the image using the folder name specified for the image file (stored in the .map file) but uses the specified drive letter, if not found there it searches the root folder of the specified drives.

Always Check All CD Drives - If this option is checked and a map image cannot be found the CDROM drives are determined and checked for the map image. It searches for the image using the folder name specified for the image file (stored in the .map file) but uses the CDROM drive letter, if not found there it searches the root folder of the CDROM drives. This option is separate to the **Check Drives** option where CD drives can also be specified, the difference this option determines the CD drive letters itself before checking them.

GPS

Find GPS Port (button) - Scans the ports on the PC looking for the specified GPS type. If found the details are displayed in a list and can be used to help configure OziExplorer.

GPS Make - Select the make of GPS from the list provided.

GPS Model - Select the model of GPS you have.

GPS Symbol Set - Specifies the symbol set that the selected model of GPS supports.

- Garmin16 - for GPS 12,12XL,12CX, II+, 48, 126, 128 and others
- There are other sets for specific models
- Garmin Symbols - Contains the complete set of Garmin symbols (but does not include Garmin16), choose this if the specific symbol set is not provided. However not all the symbols will be recognized by the GPS.

GPS Parameters - When you select a GPS make and model the GPS parameters are automatically filled in, **DO NOT** assume that the parameters are correct for all GPS Receivers, check the features of your GPS in the manual and enter the correct values.

Click on these links below to read specific information for each of the different makes

Magellans , Garmins , Lowrance & Eagle , MLR , NMEA Only

GPS Upload/Download Datum - Specifies the Datum OziExplorer will use when it uploads data (waypoints, tracks etc) to the GPS and the Datum it assumes the data is in when it is downloaded to OziExplorer from the GPS. **Garmins** and **Magellans** always use the WGS 84 datum when uploading/downloading data. **Lowrance/Eagles** vary, some use the datum the GPS is set to and others always use WGS 84, you need to experiment to find out which one uses what datum. See Datums help for more information.

GPS NMEA Output Datum - Specifies the Datum the GPS sends its NMEA position data in. **Garmins** always send it in the datum you have your GPS set to. Most **Lowrance/Eagles** always send it in WGS 84 others send it in the datum the GPS is set to. For **Magellans** you need to check this, some models output in WGS84 and others such as the 315/320 output in the Datum the GPS is set to. See Datums help for more information.

Communication

Com Port - Select the Com port on the PC you have used for connecting your GPS.

Parity - Select the Parity your GPS uses in its own comm setup, if not known try ***none***.

Baud Rates - OziExplorer allows you to specify separate Baud rates for Upload/Download and NMEA communication.

Stop Bits - Allows 1 or 2 stop bits to be selected.

Upload/Download Baud rate - Set to match the setting you have in your GPS, for best performance use the highest speed available. The setting you choose for the GPS must match the setting you have selected in OziExplorer.

NMEA Baud rate - You can set the Baud rate for NMEA communication separately from the Upload/Download Baud rate. When you use Moving Map (i.e. reading NMEA from the GPS) the software will automatically use the NMEA baud rate, *if not known try 4800.*

Garmin USB - This is selected if your Garmin GPS supports USB data transfer.

Use PVT for Garmin instead of NMEA - Most Garmins have the ability to output their position using the PVT protocol which has all the information required for moving map (real time tracking) operation. When using this method the GPS must be placed in **GRMN/GRMN HOST** or **Garmin** mode (depending on model).

Serial Port Driver - There is an increasing use of USB to Serial Port convertors being used on laptop computers. It is difficult to provide code which works with all of these. 2 Serial Port Drivers which use different techniques are provided and each of them can be selected. If communication difficulties are experienced then the other driver can be tried. The Default driver is "Driver 2".

Click on these links below to read specific information for each of the different makes

Magellans , Garmins , Lowrance & Eagle ,MLR ,Brunton/Silva ,NMEA Only , Tripmate , Earthmate

Auto Pilot

See the Auto Pilot Output help for more details.

Outputs the Standard NMEA sentences which can control an Autopilot. The sentences output are $GPRMC, $GPRMB, $GPAPB, $GPBWC.

Active - Tick the box to enable the Autopilot output. The NMEA sentences are output to the selected com port whenever you are using moving map mode. The NMEA strings only contain valid navigational information if you are navigating along a route or to a waypoint. Otherwise the parameters in the strings are empty.

Com Port - Select the com port which has the autopilot connected, if the com port is the same number as the "General Comm Settings" for the GPS then the same Baud Rate and Parity is used.

Baud Rate - Set the Baud Rate for the port if the port number is different to the "General Comm Settings".

Parity - Set the Parity for the port if the port number is different to the "General Comm Settings".

Interval - The time interval in seconds between the batches of NMEA strings being sent to the Autopilot. All the supported strings are output in the same batch.

Objects

Route Line Width - The width of the line (in pixels) used to display the route lines on the screen.

Track

Track 1 Defaults

Line Color - Specifies the color used when a track is initially created.

Line Width - Specifies how wide the track will be drawn on the screen. For speed in drawing it is better to leave the track width set to one (1), the best visual setting is a width of two (2).

Line Style - Specifies the line style used when a track is initially created.

Track Control Initial Size - This determines how the track control dialog is first displayed.

- Toolbar Only - the smallest size.
- Toolbar + All Tracks - shows the full dialog.

Track Tail Defaults

Line Color - Specifies the color used for the track tail.

Line Width - Specifies how wide the track will be drawn on the screen. The best visual setting is a width of two (2). A track width set to one (1) will draw faster.

Line Style - Specifies the line style used to draw the track tail.

Track Log File - New File - Specifies the frequency to create a new log file.

- Never - never change the file. If logging is turned on, track data will be logged to the **mmTrack.plt** file.
- Daily Files, Weekly Files, Monthly Files - at the specified interval a new file is created (TrackLog <date>).
- The default is a Daily Log file - this means for each day of traveling a new track file is automatically created.

Moving Map

These options cannot be adjusted in the shareware version.

Screen Update Rate - The interval in seconds between screen updates. Screen updating can take considerable time and cause flickering of map objects, this does not look good and reduces performance on slower laptops. Specify an update rate of a few seconds or more to reduce this.

Store Track Point Interval - The interval between track point updates in distance units (Kilometers, Miles or Nautical Miles), or how often a track point is collected.

Track Tail Length - How many points of the track are displayed. Displaying too many points will slow screen refresh performance dramatically. It is best to limit the number of points displayed. The full number of points are still collected. Setting to zero will display all points collected so far.

Dock Controls - If this option is checked the Moving map and Navigation controls will be docked to the right hand side of the OziExplorer window, if not checked the controls will be floating.

Scroll Method - Select the method to use for map scrolling.

- *"Keep Map Centered on Position"* will always keep the GPS location in the center of the screen (unless approaching the edge of the map).
- *"Center When Near Window Edge"* will allow the GPS location to move towards the edge of the screen but when within 25% of the edge the map will scroll to recenter the GPS location
- "Show more Map in Heading Direction" the GPS location will be positioned on the map so more of the map is shown in direction your are heading.

Pointer - Select the shape of pointer desired. The boat and car (4x4) look fairly ordinary but the aeroplane is pretty good. There are 3 User pointers that can be selected - see creating moving map user pointers.

Scale - This is the size of the pointer seen on screen. The larger the pointer the more time it takes to draw so be careful if you are using a very slow laptop.

Pointer Color - The best color to choose for the pointer depends on the major color used on your maps, for dark maps with lots of brown/green a good color is orange.

Pointer Solid Color - If this option is ticked the pointer is drawn using a solid color instead of being transparent - you can see map details through the pointer.

Always Check for More Detailed Map - If the check box is ticked OziExplorer will check at whatever interval you have specified to see if there is another map available which is more detailed. The selection is based on distance per pixel, if another map has a smaller distance per pixel it will be selected and loaded. This in no way interferes with or replaces the normal function of loading the next map when you cross the map neat line or leave the image. This process involves scanning all the map files in the "Map File Path" and checking their extent and scale. You cannot set a checking interval less than 30 seconds, this is to prevent excessive thrashing of the hard disk.

Ignore Maps with Error - When scanning for a new map to load any maps where the image cannot be found are ignored.

Current map Path - If checked Moving Map will try to find the next map in the folder where the currently loaded map was loaded from. If unchecked Moving Map will use the Map File Path set in configuration to find the next map.

NMEA Check Sum - This will enable the checking of the **Check Sum** contained in the **NMEA sentence**. Any sentence (rmc or gga) which fails the check sum is flagged on the status line with <CSumError> and the sentence is ignored. This should be turned on for normal use, you only need to turn it off when using a NMEA talker which does not output the check sum.

Use Depth Sentence - If this is ticked OziExplorer will automatically obtain the depth from the DBT or DPT NMEA sentences and replace the altitude on the display and in the logged track with the Depth.

Navigation

Show Leg Details - When ticked the active route will show the distance and bearing to the next waypoint in the route along the track line. This may sometimes obscure vital information so you can turn it off using this check box. This option also controls the appearance of the same item on the distance measuring function when using the "Mark" button.

Leg Distance Color - This is the color the leg distance will be displayed in.

Route Wp Proximity - This is a radius of an imaginary circle drawn around the waypoint you are navigating to. When your position enters this circle you are deemed to have reached the waypoint, an alarm is displayed, and the next leg (if any) of the route is activated. Setting a small value means it is harder to navigate to the waypoint and you may miss it altogether. However this is not the only way to end a leg of the route, if you go past the waypoint without actually hitting the proximity zone you are also deemed to have completed that leg.

Do not confuse this with the **proximity zone** you can set around any waypoint, this proximity is active whenever your are using moving map mode. The **Route Wp Proximity** however only applies to the waypoint you are navigating to.

Alarm Duration - The length of time the alarms will sound for (in seconds), setting to 0 will turn off the alarm sound. Alarms include :

- Approaching any waypoint which has a proximity set within its proximity's.
- Approaching the active waypoint in the active route.
- You have travelled to or past the next (active) waypoint in the active route.
- You have reached the end of the route.
- You have entered an Alarm Zone.

Show Line from Position - When ticked a line will be plotted from your present position to the next waypoint in the route.

Project Track Line - This will project (draw) a line from your present position along your current course.

Projected Line Width - The width of the projected line (above). If the line width is greater than 1 the line will be drawn as a solid line instead of dashed, this is a limitation of the Windows API.

Projected Line Color - The color of the projected line (above).

Compass Button - Press button to configure the Compass Rose

- **Show Compass Rose** - Tick this check box to display the compass rose around the moving map position.

- **Direction** - The Direction that zero degrees on the compass points.
- **Circle Color** - The color of the circle lines which make up to compass.

- **Line Color** - The color of the lines (tick marks) which make up the compass.
- **Circle Line Width** - The width of the circle lines. Set to zero to not draw the compass circles.

- **Line Width** - The width of the lines (tick marks).
- **Cross Length** - The length of the cross which is drawn across the moving map position (the center of the compass).

OziExplorer

Tutorial

Working with the Demonstration Map and Data

Hopefully you have managed to get OziExplorer up and running and configured to your requirements.

These tutorials will guide you through some of the more common features of the software. Some of the tutorials use the supplied **Demonstration data** as examples, you can load a map and add map objects to the map.

- Map Tutorial - Learn about maps and how to use a map in OziExplorer. Introduction to map objects - Waypoints, Events, Track Points, Map Features and Map Comments are referred to collectively as Map Objects.
- Configuration Tutorial - In the section on Configuration is a guide to configuring some of the critical program settings such as where your maps and data will be stored, the GPS you will be using with the software and much more.
- Tracking (moving map) Tutorial - Learn about Real Time Tracking (moving map) and Track Logging (log your track as you travel). Use the built-in simulator to try this out.
- Upload/Download Tutorial - If your GPS supports this feature, connect your GPS and you can download and upload data.
- Waypoints Tutorial - Working with Waypoints and the Waypoint List.
- Map Comments and Features Tutorial - Adding and modifying map comments and map features.
- Tracks Tutorial - Working with Tracks and using the Track Control.
- Map Calibration Tutorial - Learn how a map is calibrated manually. This will be required if you scan your own maps.
- Other useful features Tutorial - and other features like Index Map and Name Search.

If you have a printer you can print this tutorial so you can follow it more easily while carrying out the suggested operations with OziExplorer.

If you highlight and right click on a topic of the Contents in the left pane of the Help, a menu will be displayed. One of the menu options is "Print ...". This allows you to print all of that topic.

While this tutorial covers just the basic operations of OziExplorer, you should read the other sections of the help file to familiarize yourself with all aspects of the software.

Be sure you read these section of the OziExplorer help:

- Hints and Tips
- Frequently Asked Questions
- Special Keys and Stuff

Lowrance & Eagle

Direct upload/download support is provided for most Lowrance & Eagle models.

Models Supported

New model Lowrance GPS receivers (such as the iFinder) which use the Lowrance Mapcreate software version 5 or 6 no longer allow upload/download via the serial port. These units read and write files (with the extension .usr) to the plug-in memory card.

Lowrance (using USR Files on a Memory Card)

- iFinder
- LMS-240
- LCX-16CI
- LCX-15MT
- LCX-15CI
- GlobalMap 2400
- GlobalMap 3000MT
- USR File (select this GPS model for any not listed above which read and write USR files)

Lowrance (using Serial port upload/download)

- GlobalNav 200
- GlobalNav 212
- GlobalNav 12
- GlobalNav 310
- GlobalMap 100
- GlobalMap 1600
- Older Lowrances (via WS1)
- Other Lowrances

Eagle

- Explorer
- Expedition

- Expedition II
- Map Guide
- Map Guide Pro
- View
- AccuMap
- UltraMap
- Older Eagles (via WS1)
- Other Eagles

OziExplorer will not work with the **Eagle AccuNav Sport** and similar models, these use a upload/download protocol which OziExplorer does not support. To enable these GPS models to be used OziExplorer can write data files for the **WS1** software produced by Lowrance. Only Waypoints and Events are written to the files at this stage. Note that Oziexplorer cannot create these files it simply writes the data into a pre-existing file.

OziExplorer **cannot** upload or download **tracks** for the **Lowrance Global Map 12** and similar models, these use a protocol for the tracks which is not supported by OziExplorer.

There is a program available called G7ToWin which can read tracks from these units and also write them to direct to OziExplorer track files.

Another option for these units is that OziExplorer can read and write from and to the clipboard in the format used by the latest GPS Data Manager software (GDM) available from the Lowrance and Eagle web sites, by using the GDM software to cut and paste to and from the clipboard the tracks can be uploaded and downloaded between OziExplorer and the GPS via GDM.

OziExplorer Configuration Setting

1. Go to the GPS tab on the Configuration dialog
2. Using GPS Make combo box select ***Lowrance*** or ***Eagle***
3. Using the GPS Model combo box select the model from the list. If your model is not on the list select the model as ***Other Lowrances*** or ***Other Eagles***
4. Using the GPS Symbol Set combo box select the Symbol set to match the symbols in your GPS. If unsure leave it as it is as the most likely symbol set has already been selected.
5. Adjust the GPS Parameters to match the specification of your model of GPS. These parameters may be mentioned in the manual. If unsure leave them as they are as the most likely set of parameters has already been selected.
6. Set the GPS Upload/Download Datum to WGS 84 (almost always). Most Lowrance and Eagles always send their data and expect their data positions to be referenced to the WGS 84 datum, However some model Eagle Explorers and Lowrance GlobalNav 200's send and receive their data referenced to whatever datum you have the GPS set to, for these units set the GPS Upload/Download datum to match the setting in the GPS.
7. Set the GPS NMEA Output Datum to the same as the Upload/Download Datum.
8. Goto the **Comms tab** on the Configuration dialog.
9. Select the Comm Port Number to match the one you are using on the PC
10. Set Parity to none
11. Set Stop Bits to 1
12. Set the Upload/Download Baud rate to match the setting you have in your GPS.
13. The NMEA Baud rate must be set the same as the Upload/Download Baud Rate.
14. Do not alter the AutoPilot settings unless required.

Special Instructions

Lowrance/Eagles can transmit NMEA sentences and perform upload/download at the same time and

use the same comm setup for both. To get NMEA output (for use with the Moving Map part of OziExplorer) you may have to turn it on within the GPS setup, you may also need to specify which NMEA sentences to output, see your GPS manual for details.

This page covers the various ways a Garmin GPS can connect to a PC and how to configure the GPS and OziExplorer.

Notes

OziExplorer cannot send maps to any Garmin GPS, the type of maps OziExplorer uses are not in the correct format required by a GPS.

A Serial Port is also known as a Com Port and both names are used throughout this document.

Types of Output by Garmin GPS

Upload/Download Data Protocols - The standard method Garmins use for uploading/downloading of waypoints, routes and tracks. The Interface setting in the GPS must be set to Garmin mode.

NMEA Data - A standard method of outputting position data. Garmins have an Interface setting in the GPS to enable outputting of NMEA data. When a Garmin GPS is outputting NMEA data it cannot do upload/download of waypoints, routes or tracks.

PVT Data - A method used by Garmin to output position data when the Interface setting in the GPS is set to Garmin mode. Significantly older Garmin models do not have the ability to output PVT data. PVT data does not include GPS satellite data so there is no way in OziExplorer to display satellite information (NMEA does supply satellite data).

GPX File - A standard file format for storing GPS data. Usually the GPS connects to the computer as a mass storage device (disk drive). The waypoint and track data is saved in GPX file format to the GPS (drive). OziExplorer reads / writes GPX files.

Types of Connections Used by Garmin GPS

Connect to PC using a Serial port - These models have upload/download capabilities and can output NMEA data and also PVT data.

Connect to PC using a USB port

- **Garmin USB -** These models have upload/download capabilities (not the GPS 18 USB) and output PVT data. The Garmin USB GPS drivers must be installed for a Garmin USB GPS to be able to transfer data. The drivers should have been supplied on CD with the GPS but is also available for download from www.garmin.com .

- **Mass storage device** - These models connect to a computer as a disk drive and

have upload / download using GPX files. Some models may also be able to connect via a serial cable.

Connect to PC using a Serial port or a USB port - These models have both interfaces so can be either of the types above.

iQue M3 and M5 (and future Garmins based on the PocketPC platform) - These do not use the standard Garmin upload/download protocols or output NMEA data so cannot be interfaced to OziExplorer. OziExplorerCE (Pocket PC version) will run on these devices.

iQue 3200 and 3600 (and future Garmins based on the Palm platform) - These do not use the standard Garmin upload/download protocols or output NMEA data so cannot be interfaced to OziExplorer.

GPS 10 (and future Bluetooth models) - Uses Bluetooth for communications with a PC, does not have upload/download capability, outputs NMEA sentences. This can be considered a GPS connected to a serial port outputting NMEA data for use for Moving Map.

Which Port is My GPS Using

USB Port - If you are using a Garmin USB GPS then it connects to a USB port.

Serial Port - If you are using a GPS which connects to a Serial Port then there are other options.


If you are connecting to a standard Serial port (pictured left) then it is most likely Com Port 1 or 2 and may be labeled on the PC.

If you are using a Compact Flash GPS then it will create a new Serial Port, if you are using a USB to Serial Port adapter then it will create a new Serial Port, a Bluetooth GPS will use the Bluetooth Serial Port.

The Com Port number of these Serial Ports is not always known or obvious. Here are a couple of methods to determine

You can use the Devices section of the System Shortcut in the Windows Control Panel to see what Com ports are available.

You can use our GpsPortChecker program to see if it can find your GPS.

The sections below provide the configuration settings for -

1. Garmin GPS Connecting by a Serial Port
2. Garmin GPS Connecting by a USB Port (Garmin USB GPS)

3. Garmin GPS Connecting by a USB Port (Mass Storage Device)

1. Garmin GPS Connecting by a Serial Port

(this also includes connecting through a USB to Serial Port adapter)

Settings for the Upload/Download of Waypoints, Routes and Tracks

Please double check all settings - do not assume they are correct.

GPS Configuration (done within the GPS)

- On the GPS menu the **Interface setting** must be set to **Garmin mode**, on older models this is called GRMN/GRMN Host mode. Refer to the GPS manual on how to find this setting.

OziExplorer Configuration (done within the OziExplorer software)

- On the File menu choose the Configuration option, this will open the configuration dialog.
- Select the GPS tab.
- Select the GPS Make as Garmin
- Select the GPS Model to match the model of Garmin GPS you have. If you model is not listed then select the "Other Garmins" setting. The GPS parameters can be adjusted to match the specifications for the model of GPS (refer to the GPS manual for this).
- Set the **GPS Upload/Download Datum** to WGS 84, Garmins always do upload/download of positions in the WGS 84 datum regardless of what datum the GPS is set to.
- Select the **COM tab** on the Configuration dialog.
- Set the **Com Port** number that you have connected the GPS to.
- Set the **Parity** to None.
- Set the **Stop Bits** to 1
- Set the **Upload/Download Baud Rate** to 9600
- Make sure the **Garmin USB** Checkbox is **unticked**
- The **Serial Port Driver** should be set to Driver 2 (this is the default)
- Auto Pilot Output can be ignored.

Settings for Moving Map (real time tracking)

There are 2 ways to configure a Garmin GPS for moving map use.

1. OziExplorer Configuration for Moving Map - Garmin Interface setting in the GPS set to Garmin Mode (outputs PVT data)

Please note - The GPS must be turned on when Moving Map in OziExplorer is started as OziExplorer needs to send commands to the GPS.

- On the File menu choose the Configuration option, this will open the configuration dialog.
- Select the GPS tab.
- Select the GPS Make as Garmin
- Select the GPS Model to match the model of Garmin GPS you have. If you model is not listed then select the "Other Garmins" setting. The GPS parameters can be adjusted to match the specifications for the model of GPS (refer to the GPS manual for this).
- The **GPS NMEA Output Datum** is ignored.
- Select the **COM tab** on the Configuration dialog.
- Set the **Com Port** number that you have connected the GPS to.
- Set the **Parity** to None.
- Set the **Stop Bits** to 1
- The **NMEA Baud Rate** is ignored..
- Make sure the **Use PVT for Garmin instead of NMEA** Checkbox is **ticked**
- The **Serial Port Driver** should be set to Driver 2 (this is the default)
- Auto Pilot Output settings can be ignored.

2. OziExplorer Configuration for Moving Map - Garmin Interface setting in the GPS set to NMEA Out Mode

- On the File menu choose the Configuration option, this will open the configuration dialog.
- Select the GPS tab.
- Select the GPS Make as Garmin
- Select the GPS Model to match the model of Garmin GPS you have. If you model is not listed then select the "Other Garmins" setting. The GPS parameters can be adjusted to match the specifications for the model of GPS (refer to the GPS manual for this).
- Set the **GPS NMEA Output Datum** to the same datum the GPS is set to, Garmins always output the positions in NMEA data in the datum the GPS is set

to.

- Select the **COM tab** on the Configuration dialog.
- Set the **Com Port** number that you have connected the GPS to.
- Set the **Parity** to None.
- Set the **Stop Bits** to 1
- Set the **NMEA Baud Rate** to 4800 (almost all Garmins output NMEA data at 4800 Baud, there are a couple of models which allow other Baud rates to be specified, if you do change from 4800 in the GPS then you must set the same value in OziExplorer).
- Make sure the **Use PVT for Garmin instead of NMEA** Checkbox is **unticked**
- The **Serial Port Driver** should be set to Driver 2 (this is the default)
- Auto Pilot Output settings can be ignored.

2. Garmin GPS Connecting by a USB Port (Garmin USB GPS)

If you are using a USB to Serial Port adapter to connect your GPS you must have a serial port GPS so refer to the section "Garmin GPS connecting through a Serial Port".

Settings for the Upload/Download of Waypoints, Routes and Tracks and Moving Map (the GPS outputs PVT data)

Please note - The GPS must be turned on when Moving Map in OziExplorer is started as OziExplorer needs to send commands to the GPS.

Please double check all settings - do not assume they are correct.

OziExplorer Configuration (done within the OziExplorer software)

- On the File menu choose the Configuration option, this will open the configuration dialog.
- Select the GPS tab.
- Select the GPS Make as Garmin
- Select the GPS Model to match the model of Garmin GPS you have. If you model is not listed then select the "Other Garmins" setting. The GPS parameters can be adjusted to match the specifications for the model of GPS (refer to the GPS manual for this).
- Set the **GPS Upload/Download Datum** to WGS 84, Garmins always do upload/download of positions in the WGS 84 datum regardless of what datum the GPS is set to.
- Select the **COM tab** on the Configuration dialog.

- The **Com Port** is ignored
- The **Parity** is ignored.
- The **Stop Bits** is ignored
- The **Upload/Download Baud Rate** is ignored.
- Make sure the **Garmin USB** Checkbox is **ticked**
- Make sure the **Use PVT for Garmin instead of NMEA** Checkbox is **ticked**
- The **Serial Port Driver** is ignored.
- Auto Pilot Output settings can be ignored.

3. Garmin GPS Connecting by a USB Port (Mass Storage Device)

Please note - The GPS will connect to the computer as a disk drive.

Upload / Download is by GPX file.

OziExplorer Configuration (done within the OziExplorer software)

- On the File menu choose the Configuration option, this will open the configuration dialog.
- Select the GPS tab.
- Select the GPS Make as Garmin
- Select the GPS Model to match the model of Garmin GPS you have.
- Set the **GPS Upload/Download Datum** to WGS 84, Garmins always do upload/download of positions in the WGS 84 datum regardless of what datum the GPS is set to.
- Select the **COM tab** on the Configuration dialog.
- The **Com Port** is ignored
- The **Parity** is ignored.
- The **Stop Bits** is ignored
- The **Upload/Download Baud Rate** is ignored.
- Make sure the **Garmin USB** Checkbox is **ticked**.
- Make sure the **Use PVT for Garmin instead of NMEA** Checkbox is **ticked**
- The **Serial Port Driver** is ignored.
- Auto Pilot Output settings can be ignored.

The **Oregon** and **Colardo** can be used for moving map

- Set the GPS Interface to "Garmin Spanner" (do not install or start the Garmin Spanner software, it is not needed)
- connect to the PC using normal USB cable
- on the GPS screen set mass Storage Mode OFF
- in OziExplorer configuration make sure "Garmin USB" and "Use PVT for Garmin instead of NMEA" are both checked
- start moving map in OziExplorer

Special Notes

Symbols

There are various Symbol sets for the Garmins, some have been predefined in the Symbol Set combo box. If there is no defined symbol set for your GPS then use the **Create** button on the GPS tab in OziExplorer Configuration to specify the set of symbols your particular Garmin model supports, or use the Garmin symbol set. This gives access to all the Garmin symbols, however those which your GPS does not support cannot be uploaded and will be ignored. Any symbols which aren't applicable to a particular model are ignored and replaced with the dot symbol.

Tracks

Some model Garmins only have 1 track and this is downloaded without problems.

Some model Garmins such as the GPS III which can store multiple tracks in the GPS, results in all of the tracks being download as a single track.

Current Garmin models download the Active Track and the saved tracks as separate tracks, after downloading these will be shown in the Track Control as separate tracks. These tracks must be saved separately by highlighting the track in the track list and selecting the save button on the Track Control toolbar.

OziExplorer - Magellan GPS Support

This page covers the various ways a Magellan GPS can connect to a PC and how to configure the GPS and OziExplorer.

Links to Sections

Which Port is My GPS Using

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Notes

OziExplorer cannot send maps to any Magellan GPS, the type of maps OziExplorer uses are not in the correct format required by a GPS.

A Serial Port is also known as a Com Port and both names are used throughout this document.

Types of Connections Used by Magellan GPS

Connect to PC using a Serial port - These models have upload/download capabilities and can output NMEA data.

Connect to PC using a USB port (Explorist and other models) - These models have 2 connection modes which are set within the GPS.

1. USB File transfer Mode - The GPS connects to the PC as a Disk Drive and data files can be read and written to the drive.

2. NMEA Data Comm Mode - The GPS creates a new Serial Port on the PC and connects to the PC as a Modem on the Serial Port. NMEA data is transmitted through the serial port.

Which Port is My GPS Using

If you are using a Magellan USB GPS in File Transfer Mode then it connects to a USB port.

If you are using a Magellan GPS which connects to a Serial Port or a Magellan GPS in NMEA Data Comm Mode then there are other options.

If you are connecting to a standard Serial port (pictured left) then it is most likely Com Port 1 or 2 and may be labeled on the PC.

If you are using a USB to Serial Port adapter then it will create a new Serial Port.

The Com Port number of these Serial Ports is not always known or obvious. Here are a couple of methods to determine

You can use the Devices section of the System Shortcut in the Windows Control Panel to see what

Com ports are available.

You can use our GpsPortChecker program to see if it can find your GPS.

Configuring OziExplorer to use a Magellan GPS Connecting by a Serial port

(this also includes connecting through a USB to Serial Port adapter)

Settings for the Upload/Download of Waypoints, Routes and Tracks and Moving Map

Please double check all settings - do not assume they are correct.

GPS Configuration (done within the GPS)

- For Moving Map operation the GPS must be configured to output NMEA data. This is done by using the GPS menu system. If you are presented with various NMEA options the one to choose is V2.1 GSA.

OziExplorer Configuration (done within the OziExplorer software)

- On the File menu choose the Configuration option, this will open the configuration dialog.
- Select the GPS tab.
- Select the GPS Make as Magellan
- Select the GPS Model to match the model of Magellan GPS you have. If you model is not listed then select the "Other Magellans" setting. The GPS parameters can be adjusted to match the specifications for the model of GPS (refer to the GPS manual for this).
- Set the **GPS Upload/Download Datum** to WGS 84, Magellans always do upload/download of positions in the WGS 84 datum regardless of what datum the GPS is set to.
- Set the **GPS NMEA Output Datum** to the same datum the GPS is set to, Magellans always output the positions in NMEA data in the datum the GPS is set to.
- Select the **COM tab** on the Configuration dialog.
- Set the **Com Port** number that you have connected the GPS to.
- Set the **Parity** to None.
- Set the **Stop Bits** to 1
- Set the **Upload/Download Baud Rate** to match the Baud rate setting you have in the GPS.

- Set the **NMEA Baud Rate** to the same as the **Upload/Download Baud Rate**.
- The Garmin USB Checkbox is ignored.
- The Use PVT for Garmin instead of NMEA Checkbox is ignored.
- The **Serial Port Driver** should be set to Driver 2 (this is the default)
- Auto Pilot Output can be ignored.

Configuring OziExplorer to use a Magellan GPS Connecting by a USB Port (Magellan USB GPS) (Explorist and other models)

If you are using a USB to Serial Port adapter to connect your GPS you must have a serial port GPS so refer to the section "Magellan GPS connecting through a serial port".

Settings for the Upload/Download of Waypoints, Routes and Tracks - GPS must be set to File Transfer Mode

Please double check all settings - do not assume they are correct.

OziExplorer Configuration (done within the OziExplorer software)

- On the File menu choose the Configuration option, this will open the configuration dialog.
- Select the GPS tab.
- Select the GPS Make as **Magellan**
- Select the GPS Model as **Magellan USB**. The GPS parameters can be adjusted to match the specifications for the model of GPS (refer to the GPS manual for this).
- Set the **GPS Upload/Download Datum** to WGS 84.
- Select the **COM tab** on the Configuration dialog.
- All parameters on the COM tab are ignored.

OziExplorer Configuration for Moving Map - GPS must be set to NMEA Data Comm Mode

Please double check all settings - do not assume they are correct.

GPS Configuration (done within the GPS)

- The NMEA option to choose is V2.1 GSA.

OziExplorer Configuration (done within the OziExplorer software)

- On the File menu choose the Configuration option, this will open the configuration dialog.
- Select the GPS tab.
- Select the GPS Make as **Magellan**
- Select the GPS Model as **Magellan USB**. The GPS parameters can be adjusted to match the specifications for the model of GPS (refer to the GPS manual for this).
- Set the **GPS Upload/Download Datum** to WGS 84.
- Select the **COM tab** on the Configuration dialog.
- Set the **Com Port** number. (It will be configured as a modem in Windows - try COM3 but it may be different on your PC)
- Set the **Parity** to None.
- Set the **Stop Bits** to 1
- Set the **NMEA Baud Rate** to 115200.
- The **Use PVT for Garmin instead of NMEA** Checkbox is ignored.
- The **Serial Port Driver** should be set to Driver 2 (this is the default)
- Auto Pilot Output settings can be ignored.

Configuring a Magellan Explorist for use by OziExplorer

For the Explorist and OziExplorer to communicate the correct communication mode must be specified in the Explorist, this is done by using the Communications Menu.

To get to the Communication Menu press the **Menu button**, select the **Adv. Features** option, select the **Communications** option

A new menu appears which has the following options.

File Transfer

Used for transferring data between the PC and the Explorist. The Explorist is seen as a disk drive by the PC. OziExplorer requires this mode for transferring waypoints and tracks.

NMEA Data Comm

To use NMEA Data Comm mode a driver must be installed on the PC, the driver is provided on the CD provided with the Explorist. The supplied driver may not work with Vista but a Vista driver is available on the Magellan web site.

The Explorist outputs NMEA data. OziExplorer requires this mode for moving map (real time

tracking).

After selecting NMEA Data Comm the **NMEA** must be selected, always select "**V2.1 GSA**".

The driver sets up a modem on the PC which is attached to a com port. It is this com port which must be used in OziExplorer configuration as the Com Port number.

The comm port number can be found by looking at modems in the System devices

Use the PC Start menu to open the Control Pane, click on the System icon then the Hardware tab, then the Device Manager Button.

This opens the hardware list.

Double click on Modems, this opens the modem properties, select the Advanced tab, click on Advanced Port Settings button, the Com Port Number is at the bottom.

Power Only

No communication with the PC, all it does is provde power for the Explorist.

Using a Magellan Triton with OziExplorer

OziExplorer can be used with the Triton by using the Magellan VantagePoint software.

VantagePoint can read and write gpx files and so can OziExplorer. So by the use of gpx files you can move the data between OziExplorer, VantagePoint and the gps.

In VantagePoint the options are available by clicking on the VP logo on the top left of the software (you use the Open and Save menu options to load to and from VP).

To transfer data from OziExplorer to VantagePoint, use the "Export to GPX (Wps and Tracks)" option on the Save Menu to save the data in GPX format.

To load data from VantagePoint to OziExplorer, use the "Import GPX File (Wps and Tracks)" option on the Load Menu to load the GPX file.

MLR

Models Supported

- SP12 X
- SP24
- SP24 XC
- SP24 XC VOL LIBRE
- FX312
- FX312 XC

- FX312 4X4
- FX412
- FX412 XC
- Other models may not be supported fully

OziExplorer Configuration Setting

1. Go to the GPS tab on the Configuration dialog
2. Using GPS Make combo box select ***MLR***
3. Using the GPS Model combo box select the model from the list. If your model is not on the list select the model as ***Other MLR***.
4. Using the GPS Symbol Set combo box select the Symbol set to match the symbols in your GPS. If unsure leave it as it is as the most likely symbol set has already been selected.
5. Adjust the GPS Parameters to match the specification of your model of GPS. These parameters may be mentioned in the manual. If unsure leave them as they are as the most likely set of parameters has already been selected. MLR GPS receivers do not have Events (one of the parameters), this can be set to 500 so they can be used as markers on the map.
6. Set the GPS Upload/Download Datum to match the datum setting in your GPS.
7. Set the GPS NMEA Output Datum to match the datum setting in your GPS.
8. Goto the **Comms tab** on the Configuration dialog.
9. Select the Comm Port Number to match the one you are using on the PC
10. Set Parity to none
11. Set the Stop Bits - some models such as the **FX** series require **2 Stop bits**, others such as the **SP24** require only 1. Check your GPS manual for details.
12. Set the Upload/Download Baud rate to match the setting you have in your GPS. **Note** : This may always need to be set to 4800. For the "Fast" download methods the baud rate will be adjusted automatically by the software.
13. The NMEA Baud rate must be set the same as the Upload/Download Baud Rate.
14. Do not alter the AutoPilot settings unless required.

Special Instructions

Datums

The MLR expects and transmits the positions for NMEA strings and upload/download positions in whatever datum the GPS is currently set to. It is import therefore that in OziExplorer configuration the GPS Upload/Download datum and the NMEA Output datum be set to match the datum setting in the GPS.

The "Fast" download methods use "WGS 84" and this is automatically used in the software.

Baud Rates

The MLR always uses a Baud rate of 4800. In OziExplorer configuration set the GPS Upload/Download and the NMEA Baud rates to 4800. If required for the "Fast" download methods the baud rate is automatically adjusted by the software.

Upload/Download

These comments apply to the SP24 GPS but probably also apply to the other models.

To do any download from the unit you must have the GPS set to Menu Level 2 or 3 (at least for the SP24).

Not that the Symbol number is not included with a waypoint when downloading using the "Fast" method.

Waypoint and Route Download (from the GPS)

Some units have a high speed Waypoint download ability, there is an option on the MLR menu in OziExplorer called "Get Waypoints from GPS (fast method)", if your GPS supports this option then no special settings in the GPS are required, download can be initiated by the software.

If you are downloading using the "Get Waypoints from GPS (nmea method)" then the GPS settings as described below are required.

The **Data Output Format** setting must be set to **WPTS + ROUTES**

After making this change in the GPS you must select the **VALID** option which is on the same screen as the FORMAT option.

Waypoint and Route Upload (to the GPS)

The **Data Input** setting must be set to **NMEA**

Track Download (from the GPS)

Some units have a high speed Track download ability, there is an option on the MLR menu in OziExplorer called "Get Track from GPS (fast method)", if your GPS supports this option then no special settings in the GPS are required, download can be initiated by the software.

If you are downloading using the "Get Track from GPS (nmea method)" then the GPS settings as described below are required.

The **Data Output Format** setting must be set to **TRACK**

After making this change in the GPS you must select the **VALID** option which is on the same screen as the FORMAT option.

Track Upload (to the GPS)

MLR GPS receivers do not allow the track to be uploaded to the GPS.

silva.gif (2605 bytes)

Models Supported

- Multi-Navigator

NOTE : GPS Receivers with Version **2.01**software installed have a problem when uploading and downloading routes, the route is cut off at 16 waypoints. We do not know what other versions may also have this problem.

The Version is displayed on the first screen you see when the GPS is turned on.

At the time of writing this document GPS software Versions **2.12** and **2.13** are available for download and installing into your GPS from these sites.

Version 2.13 is available from www.silva.se but you need the Global Map Planner software to install it.

Version 2.12 is available from www.brunton.com and comes with its own installer software.

It appears to be possible to use the installer software from Brunton to install the file available from Silva (we tried it and it worked ok).

OziExplorer Configuration Setting

1. Go to the GPS tab on the Configuration dialog
2. Using GPS Make combo box select ***Brunton / Silva***
3. In the GPS Model combo box there is only one mode which can be selected (the Multi-Navigator).
4. In the GPS Symbol Set combo box leave it set to **Garmin Symbols**. The Brunton / Silva does not use symbols for waypoints.
5. Adjust the GPS Parameters to match the specification of your model of GPS. These parameters may be mentioned in the manual. If unsure leave them as they are as the most likely set of parameters has already been selected. Brunton / Silva GPS receivers do not have Events (one of the parameters), this can be set to 500 so they can be used as markers on the map.
6. Set the GPS Upload/Download Datum to WGS 84 regardless of the datum setting in the GPS.
7. Set the GPS NMEA Output Datum to WGS 84 regardless of the datum setting in the GPS.
8. Goto the **Comms tab** on the Configuration dialog.
9. Select the Comm Port Number to match the one you are using on the PC
10. Set Parity to none
11. Set Stop bits to 1.
12. Set the Upload/Download Baud rate to 4800 or 19200. **Note** : Only baud rates of 4800 or 19200 can be used. It is best to use **19200** for faster upload/download speeds but we have found that 19200 is not always as reliable when the GPS is busy with other tasks (finding satellites for instance - see special notes below).
13. The NMEA Baud rate must be set to 4800.
14. Do not alter the AutoPilot settings unless required.

Special Notes

To make **Upload to the GPS more reliable and faster** it is suggested that the GPS Receiver engine of the GPS be turned **OFF** before uploading to the GPS.

To turn the GPS engine off - Press the **DOWN** arrow (middle bottom button) until you are on the **POSITION** screen press the **YES** button (lower left), this will present a screen with **TURN OFF GPS** on it, press the **YES** button, the GPS receiver engine is now turned OFF.

Track Download

When set to log track points in a TIME mode the GPS will log points even when it does not have a position fix. OziExplorer will "reject" these points during the download process. Therefore the number of points kept in the downloaded track may not be the same number that is downloaded.

Track Upload

The GPS does not allow a track to be uploaded.

Waypoint Upload

Waypoints are stored in the GPS in specified locations (slots), if a waypoint is downloaded from say slot 25 then it will be uploaded back into slot 25 and so on.

If you want to add new waypoints into the GPS then you need to download the waypoints from the GPS first (or load a previously downloaded copy from a file) and then add the new waypoints into OziExplorer and then upload them to the GPS. If you simply add new waypoints to OziExplorer they will be added into slot 1, slot 2 .... and so on, when uploaded to the GPS they will overwrite the waypoints already in those slots.

USB mouse type GPS

The GPS will come with a software driver which will add a virtual serial port to your PC. The driver must be installed.

Connect the GPS to the computer. Use the **Find GPS Port** button on the GPS tab in OziExplorer configuration. The ports on the PC will be scanned and the information about the GPS found will be displayed so the information can be manually entered into OziExplorer configuration.

In OziExplorer configuration -

- On the **GPS Tab** - choose the GPS Make as "**USB Mouse GPS**".
- On the **COM Tab** - select the Com Port - the com port to select is the the port installed by the GPS driver.
- On the **COM Tab** - select the NMEA Baud Rate - the Baud Rate can be different for each GPS, if unsure, check your GPS manual.

Bluetooth GPS

The GPS will come with a software driver which will add a virtual serial port to your PC. The driver must be installed.

Connect the GPS to the computer. Use the **Find GPS Port** button on the GPS tab in OziExplorer configuration. The ports on the PC will be scanned and the information about the GPS found will be displayed so the information can be manually entered into OziExplorer configuration.

In OziExplorer configuration -

- On the **GPS Tab** - choose the GPS Make as "**Bluetooth GPS**".
- On the **COM Tab** - select the Com Port - the com port to select is the the port installed by the GPS driver.
- On the **COM Tab** - select the NMEA Baud Rate - the Baud Rate can be different for each GPS, if unsure, check your GPS manual.

NMEA Only

see also GPS - NMEA Only menu

This GPS make is selected if your GPS is not one of the directly supported types.

When this GPS make is selected a menu called **GPS - NMEA Only** appears in the menus. This menu has 2 options for uploading and downloading waypoints which may work with many makes of GPS, these options are detailed here GPS - NMEA Only menu

Even if you own a GPS which is not supported by OziExplorer for upload/download of waypoints etc it can still be used for moving map operation if it outputs the correct NMEA sentence(s).

The required sentence(s) are :

- $GPRMC or
- $GPGGA and $GPVTG or
- $GPGLL and $GPVTG

However there is no guarantee that the software will work with other receivers.

NOTE - other talker Id's are also allowed e.g. $LCGGA (Loran-C receiver).

If you do not know the Baud rate of the GPS you are using try 4800 as this is the standard for NMEA output.

Tripmate GPS

Provision has been made to support the Tripmate GPS by outputting the code needed to start this GPS outputting NMEA.

You must create a file called **tripmate.dat** in the folder where OziExplorer is installed (it doesn't matter what is in the file), OziExplorer will check for the existence of this file and if found will indicate a Tripmate GPS is being used. Select the **GPS Make** in OziExplorer GPS configuration as **NMEA Only**.

There is a delay of 5 seconds when moving map mode is started while OziExplorer waits for the Tripmate to startup.

Earthmate GPS

For OziExplorer to work with the Earthmate USB GPS for moving map, serial emulation drivers are required.

Check the support section of the Delorme website for the latest drivers.

Toolbar

Click on the Images in the toolbar (buttons) to be directed to the description.

Hide Toolbar - Hides the toolbar, a new button will be displayed to show the toolbar again.

OziExplorer will remember the position of the toolbar the next time it is started.

Quit OziExplorer - Quits the program.

Load File Menu - Shows a menu of options for loading maps and various objects into OziExplorer, see the Load Menu help for details.

Save File Menu - Shows a menu of options for saving maps and various objects into OziExplorer, see the Save Menu help for details.

Position & Set Waypoints on Map - Pressing this button allows you to add waypoints directly onto the map by point and click, see the Waypoints help for details.

Position & Set Events on Map - Pressing this button allows you to add events directly onto the map by point and click, see the Events help for details.

Position & Set Map Features on Map - Pressing this button allows you to add map features directly onto the map by point and click, see the Map Features help for details.

Position & Set Map Comments on Map - Pressing this button allows you to add map comments directly onto the map by point and click, see the Map Comments help for details.

Manually Create Track Points - Pressing this button allows you to add track points directly onto the map by point and click.

Mark Position on Map, Draw Distance Line - Used for Distance Measurement and for centering the Simulated GPS.

Manually create a Point - Pressing this button allows you to add Points directly onto the map by point and click.

Show/Hide Track Control - Shows or Hides the Track Control.

Show/Hide Tracks on Map (All Tracks) - Turns on the display of the tracks on the map.

Show/Hide Point Control - Shows or Hides the Point Control.

Show/Hide Points on Map (All Sets) - Turns on the display of Point Sets on the map.

Show/Hide the Route Editor - Shows or Hides the Route Editor.

Show/Hide Route Plot - Turns on the display of Routes on the map.

Show the Waypoint List - Shows the Waypoint List.

Show the Distance between Waypoints - Show the Distance between Waypoints dialog, see the Distance Between Waypoints help for more details.

Show Line from Position to Cursor - Turns on the line which connects the position of the map where you last clicked to the mouse cursor.

Show the Distance and Bearing Display - Show the Distance and Bearing Display, see the Distance and Bearing Display help for full details.

Show/Hide the Cursor Zoom Window - Shows or hides the cursor zoom window.

Show/Hide the Map View Window - Shows or hides the map view window. Right click on the map view window to see some more options.

Select the Zoom Range for the Map - For selecting the Zoom level for the map. The PgUp and PgDn keys cycle through these zoom levels also.

Activate Object Drag - With this button down, objects (Waypoints, Events, Map Features or Map Comments) on the map can be dragged to a new position. Press and hold on an object using the left mouse button. While dragging the object it will be replaced with a transparent box and the cursor will change to crosshairs.

Press and Hold to Show all Vital Information - Press and hold the button down to show a dialog of information about the current map and important configuration settings.

Find Map Arrows - Use the Arrows to find maps to the North, South, East and West. The yellow circle in the centre of the arrows finds maps which match the coordinates at the center of the screen. See Using the Find Map help for more details.

Lock Find to Current Map Path - With this button down (x) the Map Find feature will only search the Path (folder) where the currently loaded map was loaded from.

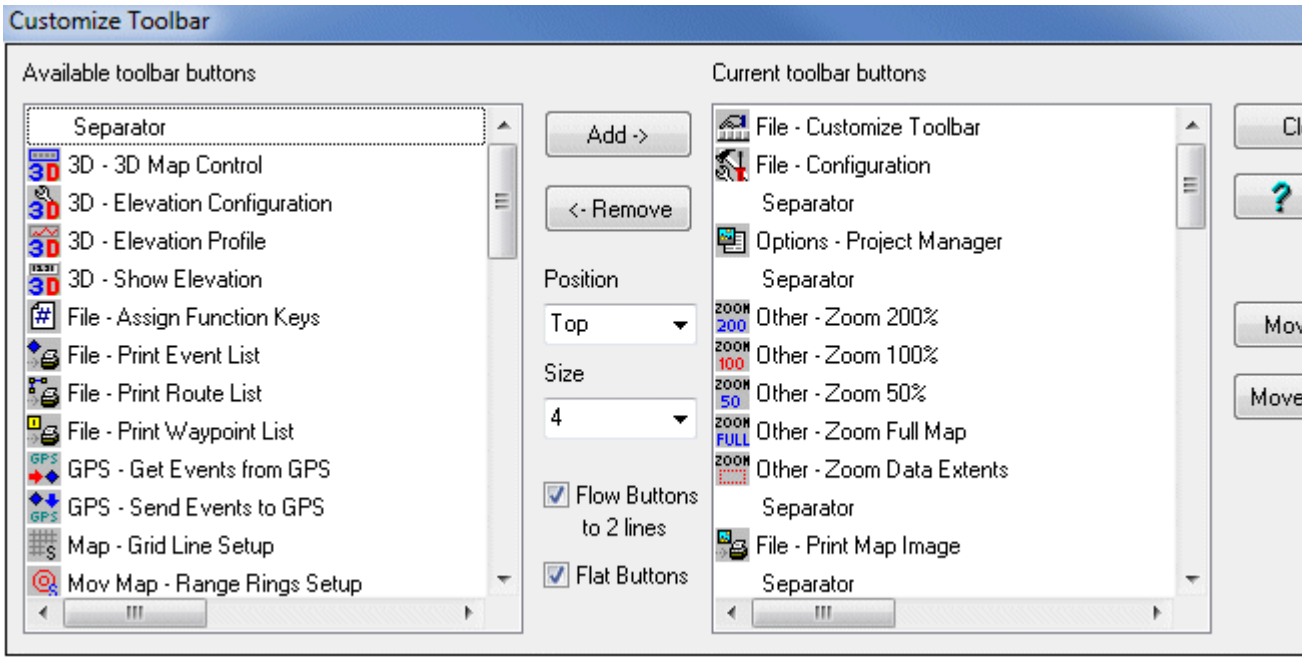
Show the Index Map - Shows an Index Map with available maps drawn in outline. See the Index Map help for full description.

Search by Place Name - Shows a dialog which allows place names stored in a database to be searched. See the Name Search help for full description.

User Toolbar

The user toolbar allows operations that are used regularly to be placed on a toolbar for easy access.

Configuration



Available toolbar buttons - The list of Buttons which can be added to the toolbar.

Current toolbar buttons - The list of Buttons currently selected to appear on the toolbar.

Separator - This is a special button to place a line between a set of buttons. Many separators can be added to the toolbar.

Add -> - Adds the Button to the current toolbar list.

<- **Remove** - Removes the Button from the current toolbar list.

Close - Closes the window and creates the toolbar.

Move Up - Moves the selected button description up in the list. The list is the order the buttons will appear on the toolbar. Use the up/down buttons to position the buttons in the order you require.

Move Down - Moves the selected button description down in the list.

Position - The position of the toolbar on the OziExplorer window.

Size - The size of the buttons.

Flow Buttons to 2 lines - If the number of Buttons cannot fit on 1 line a second line will be created. If the Buttons cannot fit on 2 lines then the remaining buttons will not be displayed.

Flat Buttons - The buttons will display as just the symbol, taking on a button appearance when the cursor is placed on them.

File Menu

Load From File - Contains the basic File Loading options, see Load Menu for details and more options.

Save To File - Contains the basic File Saving options, see Save Menu for details and more options.

Close Map - Closes the currently opened map and creates a blank map.

Load and Calibrate Map Image - This option allows you to calibrate an image of a map so it can be used in OziExplorer, see Creating Maps for details.

Check Calibration of Map - Allows you to change the various parameters and calibration points of the loaded map, see Creating Maps for details.

Change Image File Name, Path & Drive - Sometimes it is necessary to change the name or location of the Image file used for the map, this option allows the image path of the currently loaded map to be changed, see Changing the Name and Location of Map Images for details.

Import Map - For Importing maps in other formats into OziExplorer. OziExplorer reads the calibration (georeference) information from these maps and creates OziExplorer .map files which the allows the maps to be opened into OziExplorer. During the import process the map images are not moved so if importing from a CD (for example) the CD must be available when opening the imported map into OziExplorer.

Single DRG Map - see Importing DRG Maps for full details.

All DRG Maps on a CD or in a Folder - see Importing DRG Maps for full details.

Single BSB or NOS/GEO Chart - see Importing and Using BSB Charts for full details.

All BSB or NOS/GEO Charts on a CD or in a Folder - see Importing and Using BSB Charts for full details.

Kompass Maps - see Importing Kompass Maps for full details.

Maptech RML, PCX, 024 or AER Charts - see Importing Maptech PCX or RML Maps for full details.

QuoVadis Navigator Maps on CD - see QuoVadis Map Import for full details.

ECW Maps (UTM or Lat/Lon based only) - see ECW Map Import for full details. Note the import DRG options above can also be used and in some cases this is a better option as it will prompt you for any missing

OziExplorer Map Files (*.map) on CD - Some map manufacturers are providing OziExplorer Map (.map) files on the CD with the map images. These map files can sometimes be used direct from the CD but of course cannot be modified. This option allows you to import these .map files from the CD and place them on your hard disk in a folder you specify. In the process the CD is searched for the required map image which belongs to each .map file so the links to the map images are maintained correctly. DO NOT try to import the .map files from a hard disk as the entire hard disk must be searched for each .map file and this can take considerable time. Note that the map images are not moved, the .map files are just copied to the specified folder on the hard disk and the link to the map image is adjusted in the .map file. The CD must still be in the drive to load the maps.

Map Features and Comments from Map File - Imports the Map Features and Map Comments from the selected Map file and adds them to the currently loaded map. Only Features or Comments which are actually positioned on the map are imported.

Print

- Prints Waypoint, Event and Route Lists, see Printing Lists
- Prints the Map, see Printing Maps

Save Map to Image File - This option allows the map image with all the various objects (waypoints, tracks etc) drawn on it. The image can be saved as a bmp or png file. Specify which format by including the .bmp or .png extension in the name. The image can also be saved as a Dithered 2 color Black and White image which gives a much smaller file size, see Save Map to Image File help for details.

Configuration - Set the Configuration options for OziExplorer, see Configuration

Customize Toolbar - Add and remove buttons from the User Toolbar, See the User Toolbar help for details

Assign Function Keys - Assign the Function keys to specific OziExplorer functions.

Change Language - Specifies which language to use (if other languages available).

Quit - Quits oziexplorer

Select menu

Selection Control - This displays a Marking Control which allows most options on the Edit menu to be used in a more convenient manner.

Select Waypoints - Draw a box around Waypoints to Select them.

Select Events - Draw a box around Events to Select them.

Select track Points (Track 1) - Draw a box around track points in Track 1 to Select them. To select tracks points for other tracks, move the track to track 1 using the buttons on the Track Control.

Select Nearest Waypoints - Shows a dialog which allows the Selecting of Waypoints which are within a specified distance of another Waypoint or within a specified distance of any point in Track Number 1. See Nearest Waypoints help for details.

Invert Selection - Inverts the selection so those selected become unselected and vice versa.

Delete Selected Objects - Deletes the Selected objects.

Save Selected Objects - Save the selected objects to a specified file name.

Copy Map Screen to Clipboard - This will copy the current Map screen view to the clipboard, all objects on the map are included. Any windows showing on top of the map are also included.

Load Menu

Load Map File - This option is for opening an OziExplorer Map File. This is the option you must use to open and display a calibrated map on screen.

Open Recent Maps - This list keeps the 16 most recent maps you have loaded. Click on the map name to load it.

Clear Recent Maps List - Clears the Recent Map List.

Load Waypoints from File - Load a file of waypoints. Waypoint files have a .wpt extension.

Load Events from File - Load a file of events. Event files have a .evt extension.

Load Track from File (Multi) - Load a track file. Track files have a .plt extension. More than 1 track file can be selected, the first file is loaded into Track 1, the next into Track 2 and so on.

Load Routes from File - Load a file of routes. Route files have a .rte or .rt2 extension.

Load Points from File

- **Load Points from File (Multi)** - Load a point file. Point files have a .pnt extension. More than 1 point file can be selected, the first file is loaded into Point Set 1, the next into Point Set 2 and so on.
- **Load Points from Waypoint File** - This option loads a file of waypoints but loads them into a Point Set. Note that Points do not have all the properties of waypoints and these additional properties are not loaded.
- **Load Points from Track File** - This option loads a file of track points but loads them into a Point Set. Note that Points do not have all the properties of track points and these additional properties are not loaded.

Load Project File - Load all files in a project. Project files have a .ozp extension. A Project file is setup in the Project Manager on the Options Menu.

Append Waypoints from File - Loads a file of waypoints and appends them to those already loaded.

Append Visible Waypoints from File - Loads a file of waypoints only keep

Append Events from File - Loads a file of events and appends them to those already loaded.

Append Track from File - Loads a track file and appends the track to the track already loaded into track 1.

Import Waypoints from Text File - Allows waypoints to be imported from a text file in one of the OziExplorer import formats. See Importing Waypoints to and from a Text File help.

Import Tracks

- **Track from Text File** - Allows a track to be imported from a text file in one of the OziExplorer import formats.
- **From Mapinfo mif Files** - This is a limited import of these files, positions must be in Lat/Lon format.
- **From Mapgen Vector Files** - This is a limited import of these files, positions must be in Lat/Lon format.
- **From ArcInfo E00 Files** - This is a limited import, there are limitations on the projections and position formats which can be imported.
- **From IGC Track Files** - Allows a track to be loaded from an IGC track file.
- **From Compe-Gps Track Files** - Allows a track to be imported from a Compe-Gps .trk track file.

Import ESRI Shape File

- **Points** - Imports files of points in the ESRI Shape file format (.shp), see Importing ESRI Shape Files for details.
- **Polylines & Polygons** - Imports files of polylines or polygons in the ESRI Shape file format (.shp), see Importing ESRI Shape Files for details.

Import GPX File (Wps and Tracks) - Loads waypoints and tracks from a GPX file. Waypoints can replace or be appended to currently loaded waypoints.

Import Google Earth (kml) File - Loads waypoints and tracks from a Google Earth kml file. Waypoints can replace or be appended to currently loaded waypoints.

Save Menu

Save Map File - Saves the currently loaded map to a file, a new file name can be specified if desired. This option is used when making changes to a map such as adding Map Features or Map Comments.

Save Waypoints to File - Saves the currently loaded Waypoints to a file, a new file name can be specified if desired.

Save Events to File - Saves the currently loaded Events to a file, a new file name can be specified if desired.

Save Track to File - Saves the currently loaded Track (Track 1) to a file, a new file name can be specified if desired. If Track Numbers other than Track 1 are to be saved use the Track Control.

Save Routes to File - Saves the currently loaded Routes to a file, a new file name can be specified if desired.

Save Points to File

- **Save Points to Points File** - Saves the currently loaded Point Set (Point Set 1) to a file, a new file name can be specified if desired.

- **Save Points to Waypoint File** - Saves the currently loaded Point Set (Point Set 1) to a Waypoint file, a new file name can be specified if desired. In this process the point properties are converted to waypoint properties, any properties that do not also exist in Waypoints are lost.
- **Save Waypoints to Points File** - Saves the currently loaded Waypoints a Point file, a new file name can be specified if desired. In this process the waypoint properties are converted to point properties, any properties that do not also exist in Points are lost.

Export Waypoints to Text File - Provides options to export the currently loaded Waypoints in various formats. The resultant file is a comma delimited text file, see Exporting Waypoints for details.

Export Track

- **To Text File** - Provides options to export the currently loaded Track (Track 1) in various formats. The resultant file is a comma delimited text file, see Exporting Tracks for details.
- **To IGC Track File**

Export to ESRI Shape File (see Exporting to ESRI Shape Files for details)

- **Point Set 1 to Points** - Saves the currently loaded Point Set (Point Set 1) to a ESRI (ArcInfo) Shape file (.shp) in the point format.
- **Waypoints to Points** - Saves the currently loaded Waypoints to a ESRI (ArcInfo) Shape file (.shp) in the point format.
- **Tracks to Polylines** - Saves the currently loaded Track (Track 1) to a ESRI (ArcInfo) Shape file (.shp) in the polyline format.

Export to GPX File (Wps and Tracks)

- Save Waypoints and Tracks to a GPX file.

Export to Google Earth

- Save Waypoints and Tracks to a Google Earth KML file
- View Waypoints and Tracks in the Google Earth software
- View current map position in the Google Earth software

View Menu

Show

- **Main Toolbar**
- **User Toolbar**
- **Zoom Window** - Shows or Hides the small Cursor Zoom Window.
- **Map View** - Shows or Hides the Map View Window.

Hide - Hide Map Objects, allows you to hide individual types of Map objects as well as all Map objects at once. To hide a specific Map object use the Hide option on the Right Click Menu for an object.

UnHide - UnHide Map Objects, will redisplay all map objects which have been hidden, this also includes those which have been hidden by using the Hide option on the right click menu of a map object (waypoint,event etc).

Lists

- **Waypoint List** - Shows a list of the currently loaded waypoints. See the Waypoint List help for details.
- **Event List** - Shows a list of the currently loaded events. See the Event List help for details.
- **Map Feature List** - Shows a list of the map features on the map. See the Map Feature List help for details.
- **Map Comment List** - Shows a list of the map comments on the map. See the Map Comment List help for details.

Distance Between Waypoints - Measures distance and bearing between Waypoints, see Distance Between Waypoints for details.

Distance Display - Measures distances and bearings on the Map, see Distance and Bearing Display for details.

Route Editor - Allows the manipulation of routes, See the Route Editor help for details.

Show Routes on Map - Shows and Hides the display of the Routes on the map.

Tracks

- **Track Control** - Allows the manipulation of tracks. See the Track Control help for details.
- **Track Replay Control** - Replays a track. See the Track Replay Control help for details.
- **Track Move Control** - For nudging the track around on screen. See the Track Move Control help for details.
- **Track Filter Control** - For reducing the number of points in a track by filtering based on various parameters. See the Track Filter help for details.
- **Track Profile** - For plotting the track profile of altitude or speed against distance or time. See the Track Profile help for details.
- **Track Reverse** - Reverses the order of points in a track.

Show Tracks on Map - Shows and Hides the display of the Tracks on the map.

Points

- **Point Control** - Allows the manipulation of Point Sets. See the Point Control help for details.

Show Points on Map - Shows and Hides the display of the Points on the map.

Datum List - Shows all the datums that OziExplorer supports in a list.

Options Menu

Project Manager - Allows Projects to be created which consist of a map and data files. See Project Manager help for details.

Name Search - Provides a list of names from a name database which can be searched and plotted on a map. See Name Search help for details.

Night Vision - Turns all screen colors into shades of red for better vision at night.

Set Intensity - Allows you to set the intensity of the screen colors to reduce the brightness of the screen at night.

Area Calculation - Calculates the area of polygons drawn on the map, see Area Calculations help for details.

Project New Waypoint - This option allows you to project a Waypoint (or a Track point) from another waypoint (or the last track point). See Project a Waypoint or Trackpoint help for details.

Moving Map Menu

Moving Map Control - Displays the Moving Map Control which allows various options to be set and displays basic speed and heading information. See the Moving Map Control for details.

Show GPS Fix Data - see GPS Fix Data help for details.

Anchor Alarm - see Anchor Alarm help for details.

Ship Automatic Identification System (AIS) - see AIS Configuration help for configuration details. Ships sending AIS information will be plotted on a map displayed in OziExplorer. This allows you to view a list of the ships sending AIS and also to configure the AIS com port.

Start NMEA Communication with the GPS - Starts communication with the GPS, if all is ok OziExplorer should show your position on the screen. You are now in moving map mode. Text will

be displayed in the status line indicating that "Moving Map is ON". When receiving NMEA data of the correct type the text "<+>" will toggle ON and OFF in the status line. If this is not happening then there is no NMEA sentence of the correct type being received by the software, or the data within the sentence is not valid. There is a button included on the standard User Toolbar to start or stop communication with the GPS.

Stop NMEA Communication with the GPS - Stops communication with the GPS.

Ignore NMEA Valid Data Flag - This is for those GPS receivers which send an **invalid data flag** with the data when they are in simulator mode (such as Lowrance and Eagles and others), if the flag is not ignored no position will be plotted when using the GPS in simulator mode.

- However it is no good ignoring the valid data flag if the GPS is not in simulator mode or does not have a satellite fix, the data will be ignored anyway.
- **Important** - turn this ***off*** when your GPS has a true fix.

Show NMEA Input & Output - Shows the NMEA sentences that OziExplorer is receiving and the NMEA sentences that OziExplorer is sending (to an Autopilot).

NMEA Simulator - To simulate the input of the $GPRMC sentence from a GPS. See the NMEA Simulator help for details.

Log Track Tail - The track is automatically logged and displayed on the map. See "The Track" section of the Moving Map help page for more information.

Copy Track Tail to Track 1 - Copies the track tail to Track 1.

Clear Track Tail - Clears the track tail.

Log Track to File - The track is automatically logged to a file. The file name and creation interval is dependent on the **Track Log File** setting on the Track tab in Configuration. The track log can be stored to different files Daily, Weekly, Monthly or Never. The default setting is **Daily**. e.g. The Daily track log file name includes the date (TrackLog 2011-08-12 daily.plt). The track log file is just a normal track file and can be opened and displayed on the map at a later time.

If the setting "Never" is used, the track file name specified in the option below is used (the default file name is **mmTrack.plt**).

Change Track Log File - Allows you to specify a new file to log the track to.

Clear Track Log File - Erases the track log file you specified in the option above. It will automatically be recreated the next time a track is logged in Moving Map mode. If you have track logging to file turned on and are using the **Never** (create a new file) option, the log file will just keep growing in size so it needs to be erased from time to time.

Automatically Scroll Map - This option turns on or off the automatic map scrolling which will keep your current position displayed in the viewing area of the map as you move.

Range Rings Setup - Shows the Range Rings setup dialog.

Set Waypoint at Position

- **Man Overboard** (Alt O) - Selecting this option or pressing (Alt O) will create a waypoint at the current GPS position and automatically activate navigation to the waypoint.
- **Marker** (Alt K) - Selecting this option or pressing (Alt K) will create a waypoint at the current GPS position.

Attach Cursor Line to Position - If the "Show Line from Position to Cursor" button on the Toolbar is active then the line will always be drawn from the current GPS position to the mouse cursor.

Show Regional Map Window - see Regional Map help for details.

Map Menu

This page describes the options on the Map Menu.

Re-index Map Files - This will re-index the map files so they will be up to date for map searching functions. For normal operation it is not necessary to do this operation as OziExplorer will automatically keep the map index files up to date.

Index Map - Opens the Index Map. See the Index Map help for details.

Blank Map (Auto Scale) - This will create a blank map scaled to cover the whole world. When any data is loaded onto the map it will automatically rescale to suit the data. You can zoom in and out of the data using the normal Zoom controls.

ReScale Blank Map - Will force the Blank map to rescale itself based on the data currently displayed. Useful when you manually add or delete data and want the map to scale itself to the remaining data.

Grid Line Setup - Displays the map grid setup dialog, see the Displaying Lat/Lon and other Grids help for details.

Clear All Waypoints - Clears all Waypoints from memory and the map, if you have made changes you will be prompted if you want to save the Waypoint file.

Clear All Events - As above but for Events.

Clear Route Data from Map - As above but for Routes.

Clear All Tracks from Map - As above but for Tracks.

Clear All Points from Map - As above but for Point Sets.

Clear All of Above - Clears All Waypoints, Events, Routes, Tracks and Points.

Add or Drag Map Object - All these options are also available as buttons on the Button Bar.

- **Waypoint** - Allows you to add a Waypoint by point and click on the map.
- **Event** - As above but for an Event.
- **Map Feature** - As Above but for a Map Feature.
- **Map Comment** - As above but for a Map Comment.
- **Track Point** - Allows track points to be created on the map.
- **Points** - Allows Points to be created on the map.
- **Mark** - See the Distance & Bearing Display for details.
- **Drag Object** - Allows objects to be moved by dragging the object with the mouse pointer.

Find Maps - see the Find Map Help for full details.

Save Map Position - The option stores the current position of the map and will open the map in that position each time it is opened. If the **Set Last Zoom and Position** option is enabled in configuration then it (the last zoom and position) will take priority if this map is being opened when you start OziExplorer.

Navigation Menu

Navigation Control - Displays the Navigation Control, the the Navigation Control help for details.

Navigate To .....

- **Navigate along a previously defined route**
  Select the route from the list supplied.
  Load a new set of routes from a route file using the **Load** button.
  Reverse the direction of the route using the **Reverse Route** Check Box.
- **To a waypoint selected from a list of waypoints**
  A list of the waypoints currently loaded are displayed for you to select from.

Cancel Navigation - Cancels the navigation and turns off all visable navigation features and resets all parameters.

View Waypoint Proximity Zones - Proximity zones can be set around waypoints at any specified distance. If you enter this zone an alarm will sound. If you have set proximity zones this option will

show or hide them. The proximity zones are displayed around waypoints as red circles with a blue diagonal hatch.

Note : While the proximity waypoints are similar to those found in Garmin GPS receivers it is not possible at this stage to upload these to the Garmin.

Garmin Menu

Garmin GPS which connects as Mass Storage Device and uses GPX files to store data

Load Waypoints and Routes from GPS - Loads the Waypoints and Routes from the GPS and displays them on the map. The waypoints can then be manipulated and saved to a file for future use.

Load Current Track from GPS - Loads the current track from the GPS and displays it on the map. The track can then be manipulated and saved to a file for future use.

Load Saved Tracks from GPS - Loads saved tracks from the GPS and displays them on the map. The tracks can then be manipulated and saved to a files for future use.

Save Waypoints to GPS - Saves the Waypoints to the GPS (in a GPX file). When the GPS is turned on, the waypoints will be read by the GPS from the GPX file.

Save Track 1 to GPS - Saves Track 1 to the GPS (in a GPX file). When the GPS is turned on, the track will be read by the GPS from the GPX file.

Save All Tracks to GPS - Saves all tracks to the GPS (in a GPX file). When the GPS is turned on, the tracks will be read by the GPS from the GPX file.

Save Routes to GPS - Saves the Routes to the GPS (in a GPX file). When the GPS is turned on, the routes will be read by the GPS from the GPX file.

Delete Files from GPS - Shows a list of GPX files on the GPS. Select the files to delete and press the Delete button.

USB or Serial Garmin GPS

Merge Waypoints from GPS - Downloads Waypoints from the GPS and keeps or discards them based on selected criteria.

Get Waypoints from GPS - Downloads the Waypoints from the GPS and displays them on the map. The waypoints can then be manipulated and saved to a file for future use.

Get Track from GPS - Downloads the Track from the GPS and displays it on the map. The track can then be manipulated and saved to a file for future use. The downloaded track is always put into Track 1. If the GPS supports more than 1 track (and the GPS model supports it) then you are asked which track to download, other models will just download all the tracks as one and there is no way to avoid this.

Get Routes from GPS - Downloads the Routes from the GPS and displays them on the map. The routes can then be manipulated and saved to a file for future use. It is preferred that Waypoints should have already been downloaded from the GPS (or loaded from a file) and be displayed on the map before downloading the routes.

Send Waypoints to GPS - Uploads the Waypoints loaded on the map to the GPS.

Send Track to GPS - Uploads the Track which is loaded into Track 1 to the GPS. If the GPS supports more than 1 track (and the GPS model supports it) then you are asked which track to upload to. Other models with multiple tracks can only upload to the main track.

Send Routes to GPS - Uploads the Routes which are loaded to the GPS. It is preferred (but not necessary) that the Waypoints used in the Routes be uploaded to the GPS first.

Text File Support

These options read and write waypoints and tracks in the Waypoint+ software text format.

Get Waypoints from WP+ Text File

Get Track from WP+ Text File

NOTE : When importing a Waypoint+ text file the file must have been written from Waypoint+ using the WGS84 datum, OziExplorer does **NOT** try to use different datums when importing Waypoint+ text files.

Save Waypoints to WP+ Text File

Save Track to WP+ Text File

NOTE : When exporting to a Waypoint+ text file the WGS 84 datum will always be used.

PCX5 Support

These options read and write waypoints and tracks in the Garmin PCX5 file formats. These files can also be read by Garmins Mapsource software.

OziExplorer cannot read the Mapsource export format.

The positions in the files must be in Lat/Lon or UTM format.

OziExplorer assumes the datum used for the positions in the file is the same as its configured GPS upload/download datum.

PCX5 is very intolerant if the software version in the file does not match the version of PCX5 being used, if this is the case then the version number in the file can be adjusted in a text editor. Mapsource ignores the version number.

Get Waypoints from GRM File

Get Track from GRM File

Save Waypoints to WPT File

Save Track to TRK File

Turn Off GPS - Turns off the GPS, if the GPS is busy it may not respond to this command.

Get Almanac from GPS - Gets the Satellite Almanac from the GPS and saves it to the specified text file.

Show GPS Protocol Info - Shows the various upload/download protocols that the GPS supports. This option is not particularly useful, its just for interest.

Magellan Menu

Some Magellan models connect to the computer as a drive and the data is transferred to/from a file on the GPS. To open/save a file to/from the GPS on these models use the options below to display a dialog to locate the GPS (drive letter) and file.

Get Waypoints from GPS - Downloads the Waypoints (Landmarks) from the GPS and displays them on the map. The waypoints can then be manipulated and saved to a file for future use.

Get Track from GPS - Downloads the Track from the GPS and displays it on the map. The track can then be manipulated and saved to a file for future use. The downloaded track is always put into Track 1.

Get Routes from GPS - Downloads the Routes from the GPS and displays them on the map. The routes can then be manipulated and saved to a file for future use. The Waypoints (Landmarks) should have already been downloaded from the GPS (or loaded from a file) and be displayed on the map before downloading the routes. This option is not available for the Explorist USB models.

Send Waypoints to GPS - Uploads the Waypoints (Landmarks) loaded on the map to the GPS.

Send Track to GPS - Uploads the Track which is loaded into Track 1 to the GPS.

Send Routes to GPS - Uploads the Routes which are loaded to the GPS. The Waypoints (Landmarks) used in the Routes must be uploaded to the GPS first.

DataSend POI Manager - For working with the POI's available on the Magellan Datasend CD, see DataSend POI Manager help for details. This option is only available for the Magellan 315 and 320 GPS receivers.

Lowrance Menu

There are various Lowrance menus depending on which model of GPS is selected. This document covers the main Lowrance menu.

The GPS receivers which transfer their data using USR files on a memory card have a different menu which only has 2 options for Loading and Saving the USR files.

Merge Waypoints from GPS - Downloads Waypoints from the GPS and keeps or discards them based on selected criteria.

Merge Events from GPS - Downloads Events from the GPS and keeps or discards them based on selected criteria.

Get Waypoints from GPS - Downloads the Waypoints from the GPS and displays them on the map. The waypoints can then be manipulated and saved to a file for future use.

Get Events from GPS - Downloads the Events from the GPS and displays them on the map. The events can then be manipulated and saved to a file for future use.

Get Track from GPS - Downloads the Track from the GPS and displays it on the map. The track can then be manipulated and saved to a file for future use. The downloaded track is always put into Track 1. If the GPS suports more than 1 track then you are asked which track to download.

Get Routes from GPS - Downloads the Routes from the GPS and displays them on the map. The routes can then be manipulated and saved to a file for future use. The Waypoints should have already been downloaded from the GPS (or loaded from a file) and be displayed on the map before downloading the routes.

Send Waypoints to GPS - Uploads the Waypoints loaded on the map to the GPS.

Send Events to GPS - Uploads the Events on the map to the GPS.

Send Track to GPS - Uploads the Track which is loaded into Track 1 to the GPS. If the GPS suports more than 1 track then you are asked which track to upload to.

Send Routes to GPS - Uploads the Routes which are loaded to the GPS. The Waypoints used in the Routes must be uploaded to the GPS first.

MLR Menu

Get Waypoints from GPS (nmea method) - Downloads the Waypoints from the GPS and displays them on the map. The waypoints can then be manipulated and saved to a file for future use.

Get Waypoints from GPS (fast method) - Downloads the Waypoints from the GPS and displays them on the map using a fast binary protocol. The waypoints can then be manipulated and saved to a file for future use. Note that waypoints downloaded using the "Fast" method do not have the waypoint symbol number with the downloaded data.

Get Routes from GPS - Downloads the Routes from the GPS and displays them on the map. The routes can then be manipulated and saved to a file for future use. The Waypoints should have already been downloaded from the GPS (or loaded from a file) and be displayed on the map before downloading the routes.

Get Track from GPS (fast method) - Downloads the Track from the GPS and displays it on the map using a fast binary protocol. Not all MLR's may support this protocol. The track can then be manipulated and saved to a file for future use. The downloaded track is always put into Track 1.

Get Track from GPS (nmea method) - Downloads the Track from the GPS and displays it on the map using the NMEA protocol. The track can then be manipulated and saved to a file for future use. The downloaded track is always put into Track 1.

Get Map Profile from GPS - Some MLR's have the ability to store a simple map as lines, this downloads the map data as a track.

Send Waypoints to GPS - Uploads the Waypoints loaded on the map to the GPS.

Send Routes to GPS - Uploads the Routes which are loaded to the GPS. The Waypoints used in the Routes must be uploaded to the GPS first.

Send Map Profile to GPS - Some MLR's have the ability to store a simple map as lines, this allows the map to be uploaded from track 1.

Reset GPS - Use with caution, this resets the GPS back to factory defaults removing all configuration and data.

It is not possible to send tracks to an MLR GPS.

Brunton / Silva Menu

Get Waypoints from GPS - Downloads the Waypoints from the GPS and displays them on the map. The waypoints can then be manipulated and saved to a file for future use.

Get Routes from GPS - Downloads the Routes from the GPS and displays them on the map. The routes can then be manipulated and saved to a file for future use. The Waypoints should have already been downloaded from the GPS (or loaded from a file) and be displayed on the map before downloading the routes.

Get Track from GPS - Downloads the Track from the GPS and displays it on the map. The track can then be manipulated and saved to a file for future use. The downloaded track is always put into

Track 1.

Send Waypoints to GPS - Uploads the Waypoints loaded on the map to the GPS.

Send Routes to GPS - Uploads the Routes which are loaded to the GPS. The Waypoints used in the Routes must be uploaded to the GPS first.

Delete Waypoints and Routes - This will delete all the waypoints and routes from the GPS. There is option available in the GPS Receiver itself which also does this and may be quicker.

Delete Routes - This will delete all the routes stored in the GPS but does not delete any waypoints.

GPS - NMEA Only Menu

see also NMEA Only

Send Waypoints to GPS Using $GPWPL NMEA Sentence - This option will output the waypoints through the serial port to the GPS using the standard $GPWPL NMEA sentence. If your GPS supports this function the waypoints will be loaded into your GPS. The baud rate and datum used are set in the configuration. The **GPS NMEA Output Datum** and the **NMEA baud rate** are used.

Get Waypoints from GPS Using $GPWPL NMEA Sentence - If your GPS has the ability to send its waypoints via the serial link using the $GPWPL NMEA sentence then OziExplorer can read these as waypoints. This requires that your GPS can be set via its menu's to transmit its waypoints, if this cannot be done then this feature in OziExplorer is of no use.

Select the menu option, then set the GPS to start transmitting its waypoints. The sentences are displayed in the dialog as they are received, when transmission of the waypoints stops you need to manually press the close button. Any waypoints received are displayed on the map and in the waypoint list, you need to save these to a waypoint file using the Option on the Save button (on the Toolbar).

Creating Maps

What is a Map

A map in OziExplorer is an image of a map which has been calibrated (georeferenced) so OziExplorer can use any pixel position on the map to determine the true geographic position. When you calibrate a map OziExplorer creates a .map file which contains the calibration information and a link to the image you are using.

The other method of creating maps is to import them. There are maps and charts available in digital form which have the calibration (georeferencing) for the map included either directly in the file or provided as information in an additional file. Importing these maps reads the calibration information from the map files and creates an OziExplorer map file.

Creating the Image File

Where do you obtain the map images from - you can obtain them from 3rd parties who have produced them in digital form as images or you can scan them yourself.

To create your own maps you need access to a scanner.

Scan the maps at or about 125 to 200 dpi (dots per inch) and 256 colors. The dpi can be modified to suit your requirements but the colors should always be 256 unless you have some other reason for changing this.

The amount of control you have for setting these parameters depends on your scanner and its software.

If you are using an unregistered version which only uses a 2 point calibration method you must scan the map with the latitude lines running exactly horizontal. If using the registered version it is not critical to have the scanned image perfectly aligned with the grid lines as a rotated image can be handled by a multipoint calibration using 3 or more points.

Save the scanned image as a BMP file, this is the only type of map image supported in the shareware version. The registered version also supports TIF, JPG, PNG and other formats.

You need to know the latitude and longitude of at least 2 points on the map, preferably near opposite corners of the image.

From the **File Menu** select the **Load and Calibrate Map Image** option.

Give the map a name.

If using a Registered version you can specify the Datum for the Map. The Datum should be written somewhere on the map from which the scan was taken, otherwise you must determine the datum from other sources.

What Calibration Method to Use

The calibration method to use depends on the map projection.

The unregistered version is limited to using **2 calibration points** and as stated above the

Latitude/Longitude lines must run parallel to the edges of the screen for the calibration to be acceptable.

The **3 point method** uses an affine transformation to calculate the calibration coefficients. This is a linear transformation and will work with maps which are rotated or skewed but the lat/Lon or Easting/Northing grid must be linear (i.e. be straight lines) after the **map projection calculations** have been applied. As an example, a map with curved lat/Lon lines may in fact be linear when projected and therefore calibrated in the Transverse Mercator projection.

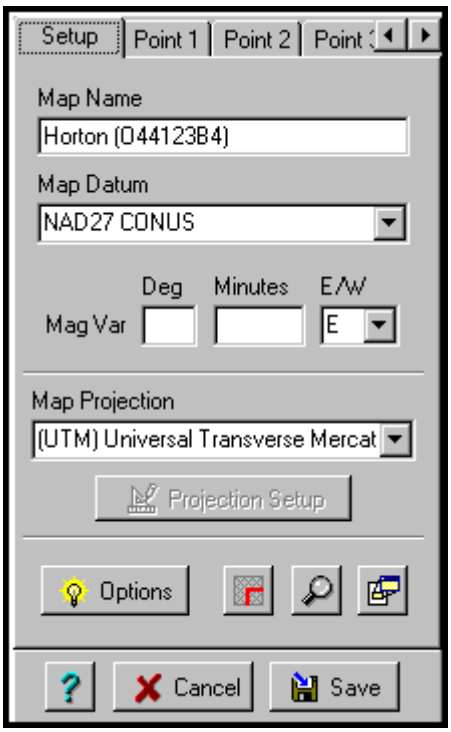
The **4,5,6 point method** use a least squares method fit to the linear Affine method to do the transformation. This method will work with maps which are rotated or skewed. It is the same as the 3 point method but gives an overdetermined calibration taking into account all the points. It uses the same method as the 3 point but gives a calibration which is an average of all the points.

The **7 or more point method** has the option of using a 2nd order polynomial to do the transformation. This method will work with maps which are rotated or skewed and have a large curve in the Lat/Lon or Grid lines. The polynomial option is located on the Options button on the map calibration window.

While the polynomial method can calibrate maps with curved grids the curve must be constant for all parts of the map. Example - if a Latitude line towards the bottom of the map is curved a line near the top of the map must have the same amount of curve, the method cannot give an accurate calibration if the map is warped by different amounts over the extent of the map.

If after calibrating you find the waypoints etc do not stay where originally placed on the map this indicates the calibration is not accurate enough, the forward calibration is different to the inverse calibration, the map is most likely warped or needs to be calibrated using a different map projection.

When dealing with maps with curved Lat/Lon lines and you are not sure of the projection it is advisable to try calibrating using the Transverse Mercator projection as this is the most common for general purpose topographic maps.



Tabs

Setup - Displays the setup window

Point 1, Point 2, ... Point 9 - Shows windows for up to 9 calibration points to be entered, use the arrows on the right hand side of the tabs to scroll the tabs.

Buttons

Projection Setup - When disabled there are no parameters required, otherwise enter the necessary parameters.

Options - See Options for details.

Show/Hide Corner markers - See Display Corner Markers for details.

Show Cursor Zoom Window - Shows this window.

Show MapView Window - Shows this window.

Fields

Map Name - The name you want to give to this map.

Map Datum - The actual datum of the map. To be fully correct this must be the datum of the positions of the points used to calibrate the map. Since these points are usually taken from the map itself then the MapDatum should be the actual datum of the map you are calibrating. If the map datum is not specified correctly then any positions obtained from the GPS and plotted on the map will be in error.

Mag Var - The Magnetic Variation, this may be given on the border of the map. If not specified OziExplorer will calculate the magnetic Variation when it is required.

Map Projection

Selecting the Map Projection or Grid

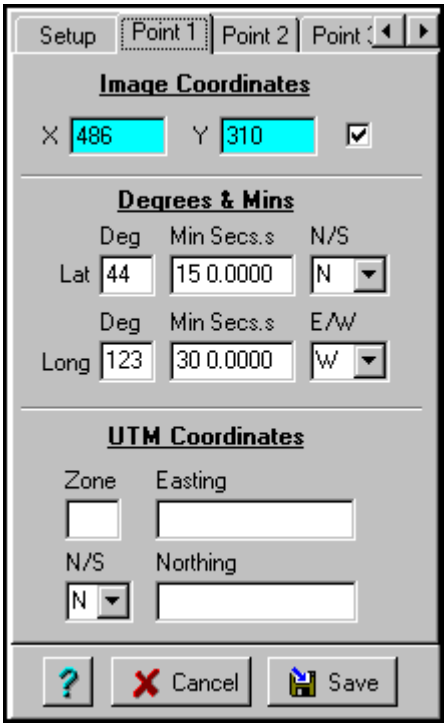
These instructions only apply to the registered version of OziExplorer. The unregistered version is limited to a 2 point calibration in a projection called Latitude/Longitude.

The Map Projection to choose depends on the projection and/or primary Grid system used by the map. This is usually stated somewhere on the map. Most (but not all) topographic maps used for general purpose mapping are in the **Transverse Mercator** projection and if you do not know the projection this is a good one to start with. Maps for marine use are usually in the **Mercator** projection.

The combo box labeled **Map Projection** gives a choice of various Map projections or Grid systems supported by OziExplorer.

If you are using a map which is laid out in a standard Grid system such as UTM (Universal Transverse Mercator), BNG (British National Grid) etc simply choose the grid from the list, all the parameters required are known by the software.

Specifying the Calibration points



Fields

Image Coordinates (X,Y) - The x and y pixel coordinates of the map image.

Degrees & Mins

Lat - The latitude of the specified image coordinate. See Special Keys and Stuff for notes on how to enter positions in different degree formats.

Long - The longitude of the specified image coordinate.

Grid Coordinates (in this case **UTM Coordinates** but the name will vary depending on the selected Grid in the Map Projection)

Zone - The Zone used by the coordinate, this field is not always required. UTM, British National Grid and the Irish Grid require a zone.

N/S - The coordinate **N**orth or **S**outh of the Equator, this field is not always required, mainly used for **UTM** coordinates.

Easting - The coordinate in the east/west direction.

Northing - The coordinate in the North/South direction.

Notes

When using scanned maps the edges of the image can sometimes be distorted when the original map is placed on the scanner so it is better not to place any of the calibration points near the edge of the image.

2 point method - The 2 points can be placed anywhere on the map but it is preferable to give the 2 points as wide a spread on the map as possible. ***Do not place the 2 points in a horizontal or vertical line.***

3 point method - (Registered versions only) The 3 points can be placed anywhere on the map. The preferable locations are towards 3 of the corners. ***Do not place the 3 points in a straight line in any direction.***

4 or more points - (Registered versions only) The points can be placed anywhere on the map but the geometry of the points can have a big effect. The preferable locations are 4 points towards each corner of the map and the rest evenly distributed over the map. ***Make sure that the points have a good spread across the map.***

Entering Positions

For any point you can enter either the Latitude/Longitude or the Grid coordinates. You can enter some points as Lat/Lon and some as Grid coordinates it does not matter.

The Grid coordinate system used will change depending on the selection in the Map Projection combo box. If there is no standard Grid system for the projection selected then UTM will be used.

When specifying Degrees and decimal Minutes - do not put in negative numbers, use the N/S and E/W to specify the hemisphere quadrant you are in.

Some Grid systems use Zones and the zone must be entered, other Grid systems do not use zones and this field will be disabled. For UTM the zone consists of a number and a letter, only the number part is required, the letter part cannot be entered.

Click on the Point 1 tab (the mouse pointer will now have a number 1 on it). Position the cross hairs over the known point and click the left mouse button. The point coordinates are entered into the fields. Now enter the known latitude and longitude of that point or the Grid coordinate, if you enter both only the Lat/Lon position will be used.

Click on the point 2 tab (the mouse pointer will now have a 2 on it), position the cross hairs over the 2nd known point and click the left mouse button. The point coordinates are entered into the fields. Enter the known position of that point.

The other points (3 to 9) are handled in the same manner.

A calibration point can be **excluded** from inclusion in the calibration by unchecking the box next to the x/y coordinate.

Press the Save button, you need to specify a map name, the extension MAP must be used. The map file stores the name you gave the map, the coordinates of the calibration points and the location and name of the image file. Later it will also store the Map Features and Map Comments.

To display a map use the **Load Map File** option on the Load menu.

NOTE : The location of the Map image file is stored within the MAP file. If you move the image file and try to load the map you will get an error message and be asked if you want to browse the hard disk to find the image. If you do find the image simple save the map to save the new location of the image in the map file.

Image Types Supported

The shareware version can only use BMP files for the map image.

The registered version can use BMP, JPG, PNG files but the preferred format is TIFF files as these can be paged from disk and therefore have a lower RAM requirement.

The TIFF files supported must have at least the following format :

- Scanlines must be arranged in strips (not tiles), preferably 1 scanline per strip.
- 256 colors or 256 GrayScale (8 bit) , 16 color (4 bit) , 2 color (B&W)(1 bit) - 16 bit and 24 bit color are not supported.
- Packbits is the only compression method supported for color images, FAX CCITT 3 can be used for 1 bit (B&W) images.

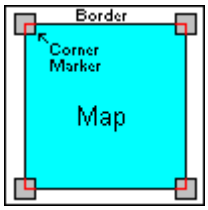
The PNG (Portable Network Graphics) format is a highly compressed format which can give similar compression to GIF. To use this format you need to have the dll LPNG.DLL available from the web site. Put the dll in the Oziexplorer directory.

For Map Feature pictures the image type can be BMP or JPG.

Display Corner Markers - Many maps have a border around the actual map (called the neat line). OziExplorer can make use of the neat line to change maps when you cross this boundary when using moving map real time tracking mode. So the software can detect where the actual map boundaries are you must position the corner markers on the map corners.

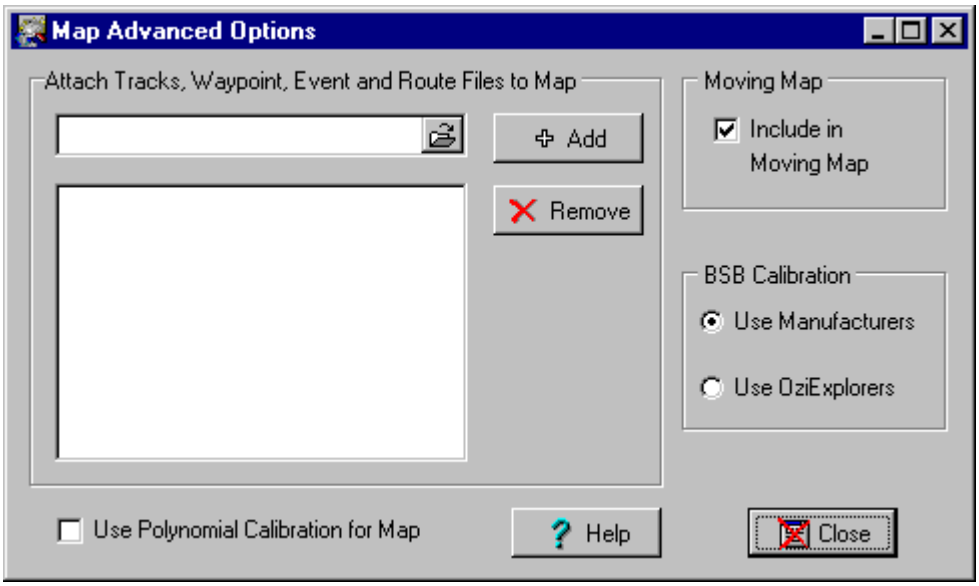
The corner markers will default to the corners of the image, if your map has no borders (neat line) there is no need to move the corner markers.

To place the Corner Markers :

1. Press the Show Corner Markers Button. The corner markers will now be visible, they will initially be positioned on the corners of the image.
2. Close the Advanced Option dialog to get it out of the way.
3. Move the map image to show a corner marker and drag it to the corner of the actual map, if the borders are large you may have to drag the marker and then reposition the map a couple of time before you can position the marker.
4. Do this process for each corner.
   When finished the effect should be something like this.
   

5. Save the map to store these positions.

Options



Attaching Track,Waypoint, Event or Route Files to the Map

Attaching Tracks to the Map

You can attach tracks to any map and they will automatically be loaded when the map loads. Once loaded they are **permanently displayed** on the map and will not disappear when the **Show Track** button is raised as will normal tracks.

The track files you attach are just normal tracks downloaded from your GPS or more usually, manually created using the **Manually Create Track Points** button. The color and width of the track plot is set for the track using the **Track Control** dialog, the attached track will use these same settings when it is displayed.

How to Attach a Track to the Map

1. If the map is already loaded choose the **Check Calibration of Map** option on the File Menu.
2. Press the **Options** button in the calibration frame - the **Map Advanced Options** dialog will be displayed.
3. Press the **Open Folder** button on the edit box (to the immediate left of the Add button).
4. Select a .plt file which has the track you want to attach to the map - it will appear in the edit box.
5. Press the Add button to add it to the list.
6. Repeat steps 3 to 5 until you have added all the tracks you require, up to 50 tracks can be attached.
7. Press the **Close** button.
8. Press the Save button to save the map using the same or a new name.
9. Its done.

The limitations are as follows :

- There is a limit of 50 attached track files.
- Attaching too many tracks with too many track points can slow performance.

Uses

- The attached tracks can be used to display new roads not shown on the map
- You can design tracks in geometric shapes to show special features

- Tracks which have been specified as **Alarm Zones** perform a special function when using moving map mode.

Attaching Waypoint, Event or Route Files to the Map

When you attach these files you can only attach **1 of each** . The software will allow you to attach more than 1 of each type but only the 1st of each type in the list will be processed. The attached files are loaded automatically each time the map is opened. **However** if you have specified in the configuration to **Keep Map Objects** (waypoints,events and routes) in the **Map Load Options** these files will only be loaded if there are none of the specific object type in memory. This is done because the 2 options conflict with each other, you cannot keep the specific object type (say waypoints) and also load a waypoint file as well, as this would destroy the waypoints (objects) already in memory.

Even with the Keep Map Objects enabled when you load a new map, the ability to attach waypoints etc to a map is still very useful the 1st time you load (or autoload) a map for each session of OziExplorer.

Use Polynomial Calibration for map

To use this option you must have 7 or more calibration points specified.

If this option is ticked OziExplorer will use 2nd order polynomial calculations when calibrating the map. This allows maps to be calibrated even if they are not truly square (linear). This is useful for calibrating maps where the true map projection is not known.

Limitations - Using a polynomial calibration on a truly linear map can cause unpredictable results.

Moving Map Options

Include in Moving Map - Once you have ticked this option this map will be checked when your position moves off the existing map and the software is attempting to locate the next map to automatically load. There are good reasons for not including certain maps in the moving map process. Example - if you included the world map and there were no other "better" maps for the software to select it would be loaded. You may also have other maps for experimenting which you may not want automatically loaded. However if a map not ticked for automatic inclusion in the moving map process is loaded manually the software **WILL** attempt to find another map.

BSB Calibration

Many BSB charts have a set of calibration equations provided by the manufacturer of the BSB chart. There are some charts where these equations have errors in them and calculate an incorrect calibration. This option allows the calibration of the manufacturer to be replaced by a calibration calculated by OziExplorer. If the **selection is disabled** then you do not have a BSB chart loaded or the BSB chart loaded does not have the calibration equations provided.

Image Formats Supported

There are 3 things required in a good raster image format for mapping use.

1. High compression to give small file sizes.
2. The ability for the image to be paged from disk to reduce the amount of memory required.
3. Fast loading of the image or image pages.

Standard Image Formats

BMP - Not recommended but is the only format supported in the shareware/demo version. No compression so image files are large. Image must be fully loaded into RAM.

The formats below can only be used in the registered version of OziExplorer.

TIF - The TIF format has many different variations and compression schemes which can be used. This format allows paging from disk so is efficient on memory usage.

- **LZW** compression - Gives good compression of maps and images.
- **Packbits** compression - Gives good compression of raster maps with solid colors but does not compress self scanned images very well.

This is the recommended standard image format to use if the larger file sizes when using packbits compression is not of concern.

24bit Color TIFF files can be used and are paged from disk as the 8bit color TIFF images are. (Please note that 24bit Planar TIFF images are fully loaded into RAM, for large images the amount of RAM required can be a factor in whether the images can be used or not.)

PNG - This format gives good compression but the image must be decompressed and fully loaded into memory (it cannot be paged from disk). This is the preferred "non-paging" format to use. (8bit or 24bit color images are supported)

ECW - Highly compressed format. This format allows paging from disk so is efficient on memory usage. Images can also be loaded from ECW image servers - see Importing ECW help for details.

SID - Highly compressed format. This format allows paging from disk so is efficient on memory usage.

JPG - Provides excellent compression but it is slow to load and the fully uncompressed image must be loaded into Memory (non-paging), not recommended for use with large images.

JP2 - JP2000 is a format which gives good compression. If the JP2 file is supplied with a (.j2w) file, OziExplorer can use it for geo-referencing.

Special Formats Used for Mapping

BSB - a proprietary format developed specifically for mapping, the use of professionally created images gives good compression and the image can be paged from disk. This format cannot be written by the user. This is a proprietary format which is licensed for use in OziExplorer.

Maptech PCX (.HDR,.A01,.A02....) - An older format produced by Maptech but still in use. This is a proprietory format which is licensed for use in OziExplorer.

Maptech Superdisk Format (.RML) - Similar to the PCX format above but the images are compressed. This is a proprietory format which is licensed for use in OziExplorer.

OziExplorer's own Formats

These formats below were developed especially for use in OziExplorer and OziExplorerCE. The Img2Ozf and MapMerge programs create Ozfx3 images. OZF and OZF2 are supported but no longer produced.

OZF2 / OZFx3 - These formats which give good compression, can be quickly paged from disk, are efficient for decompression of small image sections and also have separate images built into the format for zoom levels 25% and below. Other zoom levels below 100% (90, 80, 70 ...) are created as needed by OziExplorer using a smoothing function and look almost as good as the original image. There is a small disadvantage of having some of the zoom images included in the file as the file size is slightly larger but the nice looking zooms make up for this.

See the separate help for the Img2ozf program for more details.

The OZF2 / OZFx3 format is the best format to use in OziExplorer for most map images.

Map Projections

A map projection is a means of projecting the spherical earth onto a flat plane.

There are numerous projection methods available, OziExplorer supports the more common these. If there is a need for a projection not supported a request to the author of the software may result in it being included in future versions.

It is essential that the correct map projection be specified. In many cases the projection is not given or the projection is given but not the required parameters, in these cases it is very difficult to work out what to use.

Also be aware then many maps in digital form may have had the projection altered during the imaging process, as an example many of the US DRG maps have been reprojected from Polyconic to Transverse Mercator (actually UTM format).

Supported Projections and Grid Systems

Latitude/Longitude

This is a projection where the lines of latitude and longitude are projected as straight lines at 90 degrees to each other.
It is also used for calibrating a map in the shareware version or in the registered version if the true projection is not known.

Mercator

Commonly used in marine charts. The rhumb lines (lines of constant bearing) are straight lines. The latitude and longitudes are straight lines which meet at right angles.

Transverse Mercator

The Transverse Mercator projection is very commonly used for topographic maps and is the projection you are most likely to be using. The map is projected from a central meridian (line of longitude) which is straight, the equator (a line of latitude is also straight) all other lines of longitude and latitude are curved. Scale exaggeration increases the further away from the central meridian, this projection therefore is only useful for a small region either side of the central meridian. Since most maps we use only cover a relatively small region or zone these errors induced by the scale change are too small to be important.

Also know as the **Gauss Conformal Cylindrical** projection.

Many common grid systems are based on the Transverse Mercator projection such as UTM, Gauss Krueger, German Grid, Dutch Grid, Israeli Grid. All these grids can be setup in the **User Grid**.

The following parameters are required to use a map with a Transverse Mercator Projection. These parameters are sometimes referred to as a **User Grid**.

Latitude Origin - may be zero (0) degrees
Central Meridian - Must be known for your particular map
Scale Factor - used to set up a grid system
False Easting - used to set up a grid system
False Northing - used to set up a grid system

(UTM) Universal Transverse Mercator

The UTM is not really a projection in its own right but is a Grid coordinate system based on a special case of the Transverse Mercator projection. The Latitude origin is set at 0 degrees; the Central Meridian is the centre of one of the 60 UTM zones which circle the earth 6 degrees apart; the scale factor is set at 0.9996; the False Easting is set at 500000; the False Northing is set at 0 for the northing hemisphere and 10000000 for the southern hemisphere.

The Central Meridian is calculated by OziExplorer based on your calibration points.

(BNG) British National Grid

The BNG is a Grid coordinate system based on the Transverse Mercator projection, all required parameters to set up the projection are automatically used. Also known as the OSGB grid.

(IG) Irish National Grid

The IG is a Grid coordinate system based on the Transverse Mercator projection, all required parameters to set up the projection are automatically used.

(NZG) New Zealand Grid

This is a specific projection and a grid system only used by New Zealand. All required parameters are known.

(NZTM2) New Zealand TM 2000

This is a specific projection and a grid system only used by New Zealand. All required parameters are known.

(SG) Swedish Grid

The Swedish Grid is a Grid coordinate system based on the Transverse Mercator projection, all required parameters are known.

(SUI) Swiss Grid

This is a specific projection and a grid system only used by Switzerland. All required parameters are known.

Lambert Conformal Conic

A sterographic projection which gives good directional and shape relationships, useful for large scale mapping. Used for air navigation and meteorological charts.

You need to enter the 2 lines of Latitude and the Central Meridian which are required to calculate this projection, these must be known for the particular map you are using.

Sometimes the projection can be specified with only 1 line of Latitude, since oziExplorer expects there to be 2 lines of latitude specified which are different values simply enter one of the values as a slightly different number (say add .000001 of a minute to the value).

Sinusoidal

The lines of latitude are straight and equally spaced. The Central Meridian is straight all other lines of longitude are curved. Good projection for large continental sized areas.

You need to enter the Central Meridian for the particular map you are using.

Polyconic (American)

Preserves area,shape, distance and azimuth for small areas, best for north-south extents. Former projection for US topographic maps, not recommended for larger areas because of distortion.

You need to enter the Central Meridian for the particular map you are using.

Albers Equal Area

Best for maps of east-west extents away from the equator, one of the most commonly used projections for maps of conterminous USA.

You need to enter the 2 lines of Latitude and the Central Meridian which are required to calculate this projection, these must be known for the particular map you are using. The Latitude Origin may also be required but defaults to zero degrees.

The France Grids

Calibration Procedure

Lambert I, II, III, IV maps

Map Datum - Select the datum you want to use for the map, the most likely would be "European 1950 (Mean France)". Even though the France Grids use "NTF France" for the IGN coordinates there is no need to choose this as the map datum as OziExplorer will automatically use the "NTF France" datum in its internal calculations but produce the positions in the selected map datum.

Grid Selection - In the Map Projection field select the France grid number you want to use, this should be the grid number the map uses for the +'s placed on the map as these are the points which will be used for the calibration.

Use the + marks printed on the map for calibration. The numbers for the +'s are shown on the edge of the map. You must add 000 to the IGN coordinates shown on the map edge to get the full Easting or Northing.

New Maps (Lambert 93)

The new maps are much easier to calibrate as they have a full grid in UTM "WGS 84" printed on them.

Select the Map datum as WGS 84

Select the Map Projection as UTM.
(Actually it may be more accurate to select the Map Projection as Lambert Conformal Conic and set the parameters as Latitude 1 = 44deg, Latitude 2 = 49deg and the Central Meridian as 3deg.). However it doesn't seem to make much difference to the calibration.

Calibrate the points using the UTM Grid on the map. You must add 000 to the UTM coordinates shown on the map edge to get the full Easting or Northing.

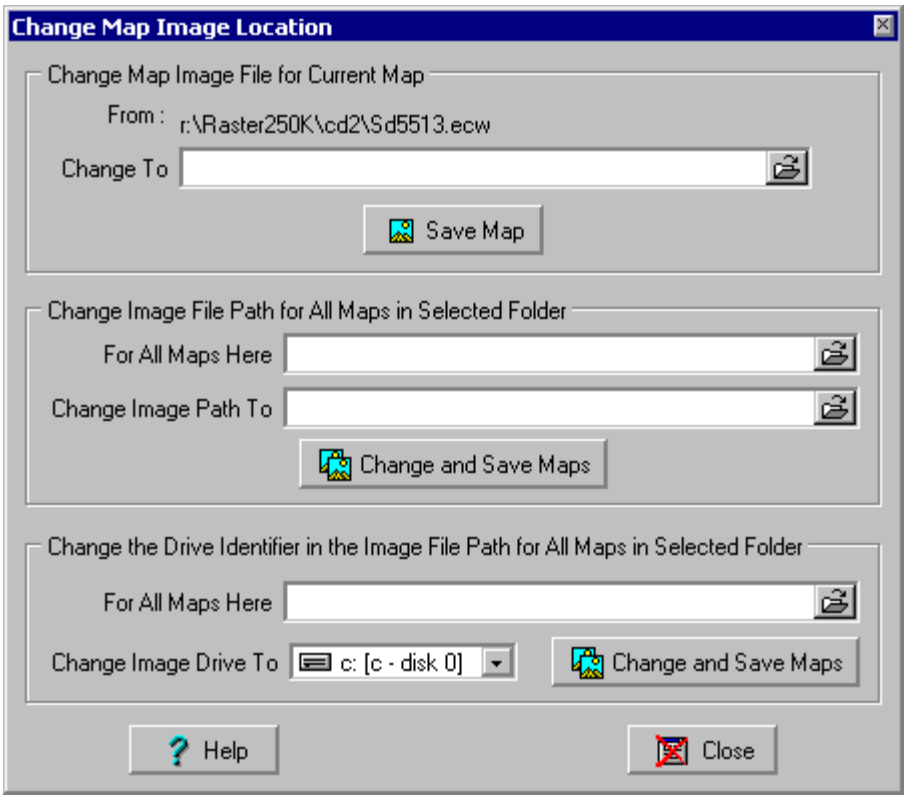
The France Grid is also shown on the maps as +'s so it is also possible to calibrate using the same method as the Lambert I, II, III, IV maps..

Changing the Name and Location of Map Images

The location and name of the image (link) for the map is stored within the map file (these files have a .map file extension). If you move the map images then this link is no longer correct and needs to be changed.

This feature allows you to :

1. Change the link for the map image within the currently loaded map to a new location or to a new location and name if required.
2. Change the links for the map images for all the map files in a specified folder to a new location. This option only changes the location (path) for the images not the image name.
3. Change the **Drive** specified in the links for the map images for all the map files in a specified folder to a new location. This option only changes the **Drive identifier** in the location (path) for the images not the full image path or the image name.



Fields

Change Map Image File for Current Map

Change To - Select the image file you want the currently loaded map to be changed to.

Save Map - Saves the map file with the selected image link.

Change Image File Path for All Maps in Selected Folder

For All Maps Here - Specify the location of the maps to change. Note : all map files in this path will be changed.

Change Image Path To - Select the path where the images are located.

Change and Save Maps - Process all the map files.

Change the Drive Identifier in the Image File Path for All Maps in Selected Folder

For All Maps Here - Specify the location of the maps to change. Note : all map files in this path will be changed.

Change Image Drive To - Select the new Drive that you want to change the image link to. The path or image name is not changed, only the Drive identifier in the path is changed.

Change and Save Maps - Process all the map files.

Import Map Features and Comments from Map File

Allows you to import the Map Features and Comments from an existing map file into the currently loaded map.

Only the Features and Comments which will be located on the current map will be imported.

There is only 1 input required, that is the name of the map file you want to import the Features and Comments from.

If any Features or Comments are imported the currently loaded map must be saved to make these permanent.

Importing DRG Maps

For Registered (purchased) copies only.

- **Introduction**
- **Importing a Single DRG Map**
- **Importing a DRG CD or Folder**
- **Importing DRG's with only a .tfw File** (or other geo-reference file)

While it is simpler to be able to import the DRG maps, it is possible, for those which cannot be imported, to calibrate the maps by hand using 3 Lat/Long points, 3 corners of the map are quite adequate for an accurate calibration.

Introduction

Use this option to import maps of the supported map image types (TIF, BMP, PNG, JPG, SID, ECW, ...) An example is the USGS DRG raster maps provided by the USA government.

DRG stands for **Digital Raster Graphic** but are really images of maps in a digital image format which have the map geo-referencing supplied either as a separate file or embedded within the image format.

Examples

- Some images are supplied with a **.tfw** file, a **.tfw** file is a simple text file which contains very basic calibration (georeferencing) information.
- A **Geotiff** image file has the calibration (georeferencing) data embedded within the image file.

Georeference information may also be supplied in a .jgw file for JPG images, a .sdw file for SID images, ...

OziExplorer has various levels for importing these maps and try's to select the method which has the most information to give the best calibration and other parameters.

The georeference information is obtained in this order of priority:

1. If the file is a Geotiff and the information is in the correct format or,
2. from the TFW file if it is available or,

3. from the FGD file if it is available

If the **FGD** file is available then additional information is obtained from it :

- The Map Name
- The Map Scale
- The positions of the map corners (the border or neat line).

If the positions of the corner markers can be obtained then 3 of the corners are used as calibration points. There have been the some instances where the corners of the map stored in the FGD file are in error, this produces an incorrect calibration.

Maps from other sources may have a **.XML** or **.MET** file and these serve a similar purpose.

NOTE: If there is no DRG (or similar) file and the image is not Geotiff then the .TFW file is used. This file contains very basic calibration information and is missing some necessary parameters, this process is described fully below, see **Importing DRG's with only a .tfw File** .

If none of the above are available then the map image cannot be imported and must be calibrated manually.

Geotiff

OziExplorer can extract the georeference information from Geotiff files but it only knows how to decode the information if it is from a known source. Decoding is limited to just the commonly used map projections and grids.

The ability to decode other sources of georeference information in Geotiff files will be added on an as need basis where it is possible to do so.

(To import geotiff images, a geotiff support file (dll) is required. This can be downloaded from our website.)

Importing a Single DRG Map

Select the **Import Map**/**Single DRG Map** Option on the File Menu.

Step 1 - Find the image file of the map you want to import.

You need to know the name of the image file of the map you want to import. (It must be one of the supported image types such as TIF, BMP, PNG, JPG, SID, ECW, ...). You will have to find out this name from the information supplied with the CD, I would assume.

Press the OK button and the software will allow you to navigate through your Disk Drives and Directories until you locate the file. If the CD is from the USGS then the file would normally be located in the DATA folder. When you have located the file, select it by double clicking on the name or click on the name and press the Open button.

A METADATA (FGD or other) file may also be available for the image. This is usually located in the METADATA directory of the CD. If you copy the image file to your hard drive the metadata (FGD) file must also be copied and placed in the same directory as the image file.

Step 2 - Specify the Name and Path of the OziExplorer Map file you want to create.

The Map file name will be the same name as the image file but with a .MAP extension. The name of the file can be changed but do not change the extension. Save the file.

Step 3 - The newly created Map will now be opened.

From now on you open the Map by selecting the MAP file using the Load Map from File option. The original image must always be available when opening the map.

The map calibration used can be viewed using the normal **Check Calibration of Loaded Map** menu option.

Importing all DRG maps on a CD or in a Folder on your Hard Disk

This option allows you to import all DRG maps from a CD but can also Import DRG maps which have been copied to a Hard Disk. If you have a USGS CD and copy the image files to the hard disk you must also copy the fgd files from the metadata directory, place these in the same directory as the tif files.

Select the **Import Map/All DRG Maps on CD or Folder** Option on the File Menu.

The **Import DRG Maps** dialog will appear.

Image File Path - The path where the Image files are located. Press the button at the right hand end of the **Image File Path** field (or enter the Image File Path directly into the field). Select the path (directory) by browsing the disks.

Map File Path - The Path where the created map files will be placed. Press the button at the right hand end of the **Map File Path** field (or enter the Map File Path directly into the field). Select the path (directory) by browsing the disks.

Use Geotiff if available - If checked and the map images are in Geotiff format and the format is known then the georeference information will be extracted from the image file.

Press the Import button, the maps will be imported.

The new map files are created in the **Map File Path** you have specified in the configuration.

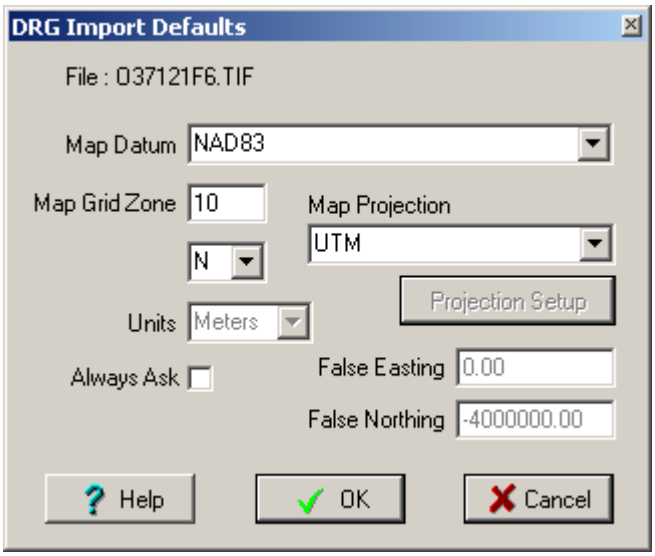
At the end of the process the number of maps successfully imported (and not imported if any) will be displayed.

The maps are now ready to use, simply open the map you want to view using the OziExplorer **Load Map from File** menu option.

Importing DRG's with only a .tfw File

This also applies to JPG files which have a .jgw file, the jgw file is the same as a tfw file, sdw files can also be used for .SID images, OziExplorer will use these file automatically if it exists.

While not preferred, it is possible to import DRG maps which only have the **.tif** (or other image format) and a **.tfw** file. There are a lot of parameters missing such as datum, UTM zone number, scale, map bounding coordinates + others. Most of these can be ignored and set manually after the map is imported.



A dialog will be opened which requests some of this information.

Map Datum - specify the map datum to be used.

Map UTM Zone - specify the zone, 2 digits only. For UTM projection maps the UTM zone number must be known to import the map so you must know this in advance. On the USA DRG maps the zone number is usually provided on the lower left hand corner of the map image, the datum is also provided there. You will need to open the map image in a paint program such as Paint Shop Pro www.jasc.com to view the image.

If you are importing a USA USGS DRG map with just a tfw file and the map image name is in the standard USGS format (example O43107C4.TIF) then OziExplorer will work out the correct UTM Zone number to use from the file name and put it in the Zone field of the DRG Import Options dialog as the default.

Hemisphere - Select the correct Hemisphere (North or South of the equator).

Always Ask - if checked this dialog will be shown for each map imported, if unchecked the parameters entered into the dialog will be assumed to apply to all maps.

Map Projection - Select the map projection which matches the projection of the map you are importing. If it is unknown, it is often provided on the map image. You will need to open the map in a paint program (see above). Some projections are not supported. Some projections require additional parameters (an example is Lambert Conformal Conic), the Projection Setup dialog will popup for you to enter these parameters.

Not all tfw files have the data values exactly as OziExplorer expects, so not all maps can be imported correctly with just the tfw file.

Converting Geotiff Image Files from 24 bit color to 8 bit.

Note : OziExplorer can read both 24 bit and 8 bit tif images and both formats are paged in as required.

If a 24 bit image is converted to 8 bit color the Geotiff georeference information is lost.

This document describes a technique to save the georeference information and to then put it back

into the file.

You need

Software to convert the Geotiff image from 24 bit to 8 bit color. Paint Shop Pro (www.jasc.com) works well.

The Tiff Utilities available from the Utilities section of the OziExplorer web site (www.oziexplorer.com).

Steps

These instructions assume the geotiff file you are converting is called **mytiff.tif** and is located in a folder called **c:\images**, replace this with the real name of the tif file and path.

Step 1

Open a DOS window.

Step 2

Use the listgeo.exe program to save the georeference information from the geotiff file into a file called **mytiff.met**, actually this file can have any name.

listgeo c:\images\mytiff.tif >c:\images\mytiff.met

Step 3

Convert the image to 8 bit color using Paint Shop Pro, the image is saved to mytiff1.tif, the compression method must be packbits and this is set up in the options button on the save dialog.

Step 4

Use the geotifcp.exe program to put the georeference information back into the file.

geotifcp -g c:\images\mytiff.met c:\images\mytiff1.tif c:\images\mytiff2.tif

Importing and Using BSB Charts

Use this option for importing the following charts.

- BSB3, BSB4, BSB5 charts
- NOS/GEO charts
- NV.Digital charts

For Registered copies only.

While it is simpler to be able to import the BSB Charts, it is possible, for those which cannot be imported, to calibrate the maps by hand using 3 Lat/Long points, 3 calibration points are usually adequate for an accurate calibration.

Importing a Single BSB Chart

Select the **Import Map**/**Single BSB Chart** Option on the File Menu.

Step 1 - Find the **KAP** file of the map you want to import.

You need to know the name of the **KAP** file (the image file) of the map you want to import. You will have to find out this name from the information supplied with the CD, I would assume.

Press the OK button and the software will allow you to navigate through your Disk Drives and Directories until you locate the file. The file would normally be located in the BSBCHART directory of the BSB CD. When you have located the file, select it by double clicking on the name or click on the name and press the Open button.

Step 2 - Specify the Name and Path of the OziExplorer Map file you want to create.

A default Map file name will be given based on information extracted from the KAP file. The name of the file can be changed but do not change the extension. Save the file.

Step 3 - The newly created Map will now be opened.

From now on you open the Map by selecting the MAP file using the Load Map from File option. The original KAP file must always be available when opening the map.

Importing a BSB Charts on a CD or in a Folder

This option allows you to import all the BSB Charts from a CD but can also Import BSB Charts which have been copied to a Hard Disk.

Select the **Import Map**/**All BSB Charts from CD** Option on the File Menu.

Press the button at the right hand end of the **Image File Path** field (or enter the Image File Path directly into the field).

Select the path (directory) by browsing the disks.

Press the Import button, the maps will be imported.

The new map files are created in the **Map File Path** you have specified in the import dialog.

At the end of the process the number of maps successfully imported (and not imported if any) will be displayed.

The maps are now ready to use, simply open the map you want to view using the OziExplorer Load Map menu option.

Options

Shift datum - Some BSB charts have been georeferenced based on the WGS84 or NAD83 datum even though the source chart (image) is based on another datum. When this is done the calibration is correct but the positions displayed do not agree with the grid shown on the map as this grid is based on the original source map datum. The **Shift Datum** option allows you to change the georeferencing back to the original source map datum. You cannot choose just any datum, it must be datum the chart was originally produced in.

Examples - Charts produced by **NDI (Canada)** have been georeferenced to NAD83 but the source datum may have been NAD27 Canada Mean (or similar). BSB topographic maps produced by **Maptrax (Australia)** have been georeferenced to WGS84 but the source datum may have been Aust geodetic 1966.

Conditions - Not all charts can have the datum shifted.

NDI charts where the source datum is NAD83 or WGS84 will not be shifted, even if you specify a Shift datum.

Any chart must be georeferenced in NAD83 or WGS84 within the BSB file before it will be shifted. Charts must meet these conditions before they will have the datum shifted even if you do specify a Shift Datum.

NOTES :

Some BSB charts use datums which OziExplorer doesn't support, when this happens OziExplorer will set the Map Datum to "Auto Shift ....." and handle the datum conversions internally. Do not alter this setting as this could cause the calibration to be incorrect.

Any BSB charts which are imported will have the calibration locked, this means you cannot adjust the calibration points or corner markers manually. I have had to do this because BSB charts carry the calibration equations within the header of the chart so adjusting the calibration points will not alter this, the older charts do not have the equations but may have more calibration points than you are allowed to adjust manually so again there is no point adjusting only some.

BSB charts can have an unlimited number of calibration points, OziExplorer only uses the first 30 it finds, this limitation only applies to version 1 charts as version 2 charts have the calibration equations supplied.

The corner markers cannot be adjusted because there may be more than are allowed to be manually adjusted, the corner markers are set from the BSB file header.

Importing NOS/GEO Charts

NOS/GEO charts are similar in format to BSB charts and can be imported using the BSB Import option.

See Importing BSB Charts help.

Importing NV.Digital Charts

NV.Digital charts are similar in format to BSB charts and can be imported using the BSB Import option.

See Importing BSB Charts help.

Importing Maptech PCX or RML Charts

This option is on the **File/Import Maps** menu.

These types of Maptech Charts can be imported using this option.

- This option is used to import Maptech PCX charts, these charts have a .HDR file extension (which are the files you import) and a series of files with the extensions of .A01, .A02.... etc.
- Maptech RML charts (Superdisks) are also imported with this option. These charts have a .RML file extension.
- Maptech Terrain Navigator .024, .100 and .250 charts can be imported.
- Maptech .AER aeronautical charts can be imported.

The process involves OziExplorer examining the chart files on the CD (or folder) and creating OziExplorer .map files for each chart. The .map files are saved on the hard disk in the path specified. It is these .map files which are used to open the charts into OziExplorer.

The map images are not moved from the CD so the CD needs to be in the drive when the map files are opened.

Note

- This Import option does not apply to **Maptech BSB charts**, these are imported using the separate **BSB Import** options on the Import menu..

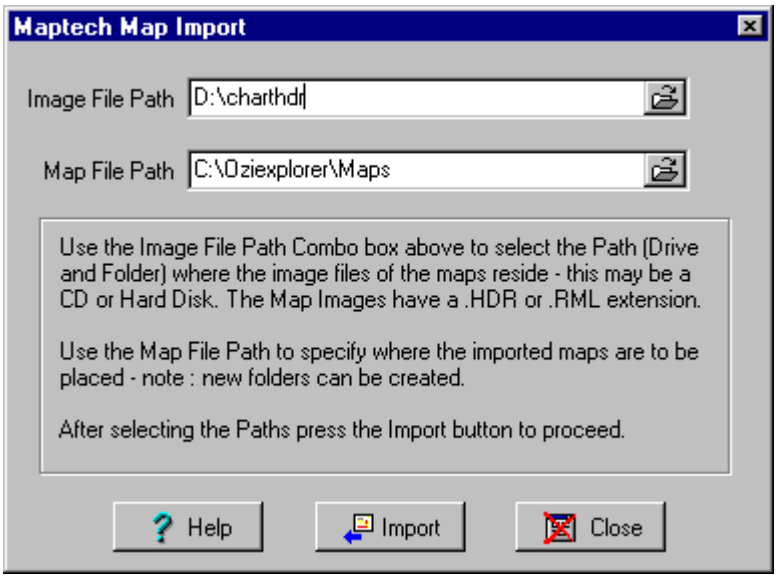


Image File Path - The Path where the chart files are located, for PCX charts this is the path where the .HDR files are located and is usually the charthdr folder on the CD. For Superdisks this is where the .RML files are located.

Map File Path - The path where you want the OziExplorer .map files to be placed, it is these files you will use to open the map in OziExplorer.

Import - Imports the maps and creates the OziExplorer .map files. The .map files can then be loaded from the map file path using the **Load Map from File** option on the Load button on the Toolbar. The map image files are not moved and must be available from their original location (usually the CD).

QuoVadis Map Import

This option is on the **File/Import** menu.

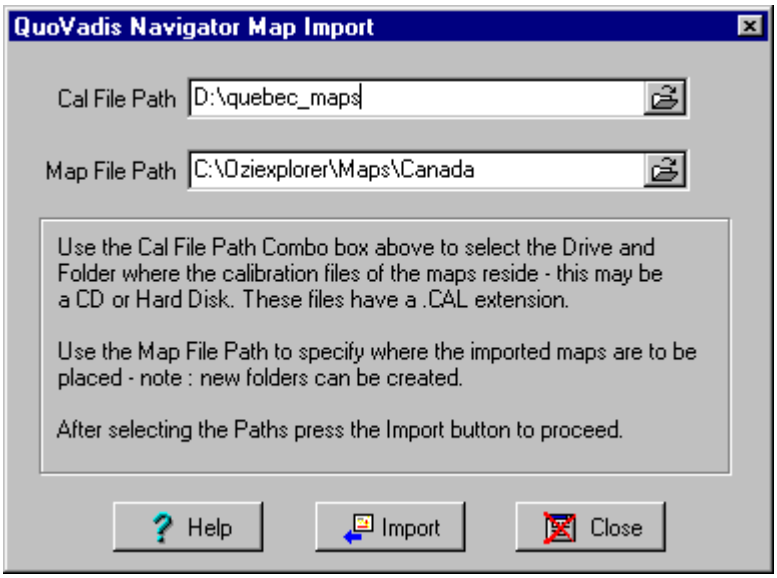
This does not mean every mapping CD sold by QuoVadis can be imported into OziExplorer. Only certain mapping CD's produced by QuoVadis Navigator can be imported. This includes but may not be restricted to specific Africa and Canada CD's. These maps come with calibration files for the Quovadis software. It is these .cal files that are imported to create OziExplorer .map files. If there are no .cal files on the CD then it cannot be imported.

Not every map calibration file that has been created by the QuoVadis Mapping Software can be imported using this option. The option has been specifically created for importing the QuoVadis Navigator CD's, only CAL files in the calibration formats (+some others) found on these CD's can be imported.

Please not that the Quovadis map calibration files are quite different from OziExplorer .map calibration files, this makes it difficult to do a perfect translation of 1 format to the other. If you find any maps that do not import correctly please notify me at info@oziexplorer.com

The process involves reading the .cal files on the CD and creating OziExplorer .map files for each map. The .map files are saved on the hard disk in the path specified. It is these map files which are used to open the maps into OziExplorer.

The map images are not moved from the CD so the CD needs to be in the drive when the map files are opened.



Cal File Path - The Path where the .cal files are located, this is usually a CD.

Map File Path - The path where you want the OziExplorer .map files to be placed, it is these files you will use to open the map in OziExplorer.

Import - Imports the maps and creates the OziExplorer .map files. The .map files can then be loaded from the map file path using the **Load Map from File** option on the Load button on the Toolbar. The map image files are not moved and must be available from their original location (usually the CD).

ECW Import

This option is on the **File/Import Maps** menu.

This option is used to import map images in ECW format, these charts have a .ECW file extension.

NOTE : ECW images can also be imported using the Import DRG options on the Import menu. This is useful if the map cannot be imported using the ECW Import option as many essential parameters can be added manually.

It is also possible to use ECW images located on an ECW image server.

- Create a text file with an extension of .ecwp
- Add the url of the ECW image as the first line of the file.

  Example a file called **gtopo30.ecwp** would have the first line of the file as
  ecwp://www.earthetc.com/images/world/gtopo30.ecwp

- The .ecwp file can then be imported using the Import ECW option. NOTE : The ecwp file must always be kept as OziExplorer will refer to it each time the image is required when the OziExplorer map file is opened.

ECW images can have geo-referencing included within the image header and if this information is included then the images can be imported and the OziExplorer .map file created. Only ECW images which use a map projection of Lat/Lon or UTM can be imported. Other map projection data will not be decoded correctly and will result in incorrect geo-referencing (calibration) of the map.

The process involves scanning the image files on the CD and creating OziExplorer .map files for each image. The .map files are saved on the hard disk in the path specified. It is these map files which are used to open the charts into OziExplorer.

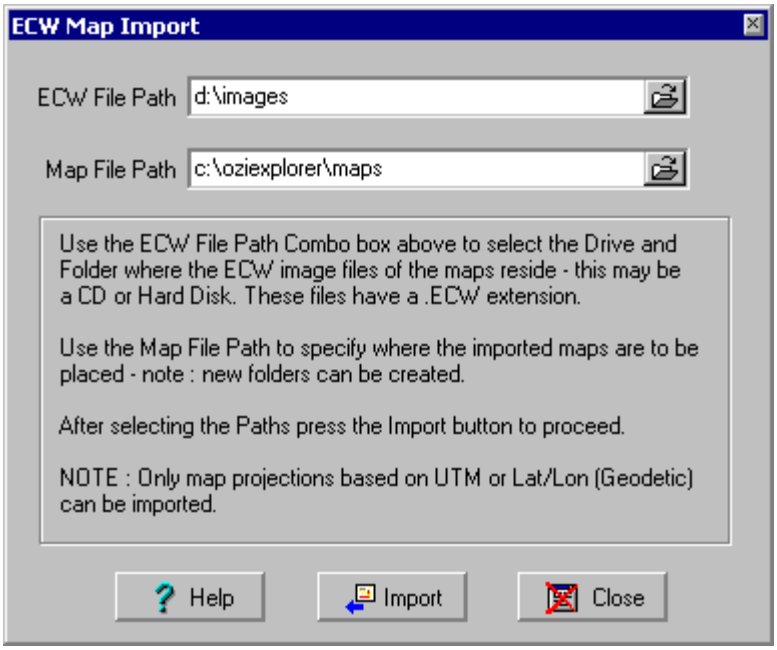


Image File Path - The Path where the ECW image files are located.

Map File Path - The path where you want the OziExplorer .map files to be placed, it is these files you will use to open the map in OziExplorer.

Import - Imports the maps and creates the OziExplorer .map files. The .map files can then be loaded from the map file path using the **Load Map from File** option on the Load button on the Toolbar. The map image files are not moved and must be available from their original location (usually the CD).

SID Import

SID images are imported using the Import DRG options on the **File/Import Maps** menu. See the help on Importing DRG maps for more details.

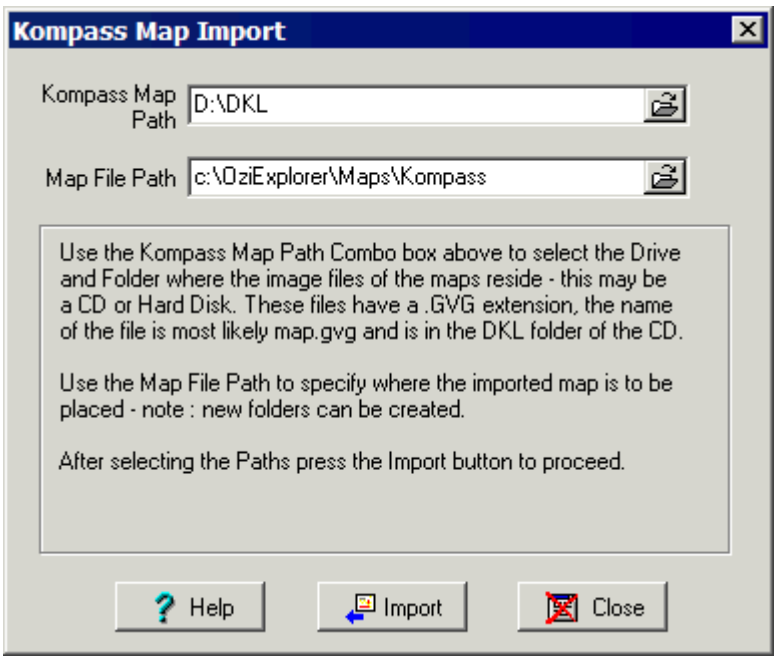
SID images are normally supplied with a file with a .sdw extension, this file contains the geo-reference information and must be available with the .sid file when importing the map images.

Kompass Map Import

This option is on the **File/Import** menu.

Kompass maps can be used in OziExplorer but they must be first imported to create the .map file. The .map file can then be loaded into OziExplorer using the Load Map File option on the Load menu.

The map images are not moved from the CD so the CD needs to be in the drive when the map files are opened.



Kompass Map Path - The Path where the Kompass map is located, the map file is most likely map.gvg and is in the DKL folder on the CD.

Map File Path - The path where you want the OziExplorer .map files to be placed, it is these files you will use to open the map in OziExplorer.

Import Button - Imports the maps and creates the OziExplorer .map files. The .map files can then be loaded from the map file path using the **Load Map from File** option on the Load button on the Toolbar. The map image files are not moved and must be available from their original location (usually the CD).

Save Map to Image File

This option allows you to save the map as an image file. All the objects (waypoints, tracks routes etc) are drawn on the image. The image saved is almost exactly as you see it on the screen.

The image can be saved as a PNG image file (specify a .png file extension) or a BMP image file (specify a .bmp file extension). The png file will be much smaller because the format is compressed.

Images are saved in 24bit color format, if the image is required as a 8 bit color image (256 colors max) use a paint program such as Paint Shop Pro to reduce the colors.

Why are the images saved as 24bit color - A 256 color image has a limited palette, to be able to draw objects on the map in their correct color a larger palette is required.

Black & White Image (2 Color dithered) - The image is reduced to 2 colors (black & white) before saving, this results in a much smaller image. However to do the color reduction a large amount of

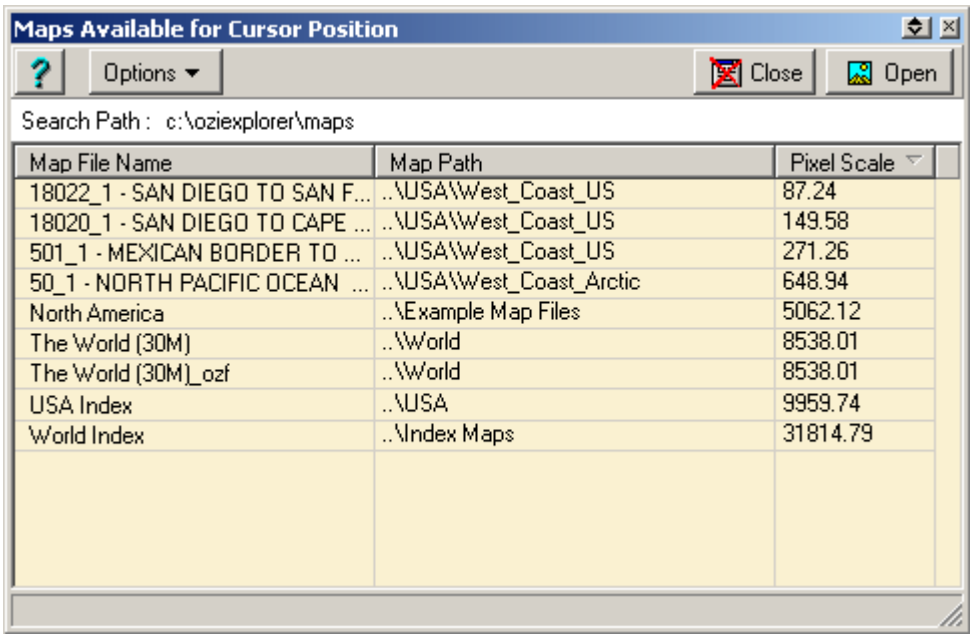
memory is required to process it. If you do require an image of this type the best option would be to save it as a color image and use a paint program such as Paint Shop Pro to process it.

Map Searching

The searching of maps is used for many functions of OziExplorer

- Map Find commands
- Index Map
- Name Search
- Moving Map - changing maps
- Moving Map - more detailed map

The map search may find one or more maps to load. In Moving Map, the most detailed map (best scale) will be loaded. Any of the Map Find commands (for example, if one of the directional arrows on the Find Maps toolbar button is pressed) will load the map if only one map is found. If more than one map is found a list of the maps is displayed in a Map Search dialog.



The maps in the list can be sorted, click on the heading of the column to sort. The example above is sorted on Pixel Scale. Select the map to you want to load and press the **Open button** , **double click on the selected map** or press the **Enter key**.

Options Button - select whether you want the dialog to automatically close or shrink the dialog when you open the map.

How it works

There are 2 stages involved in the search

1. Creating/Checking the Index files

When a search is performed OziExplorer will scan all the folders in the search path and create an index file for them if it does not already exist. The index files are stored in the System Files folder which is attached to the oziexplorer folder.

In order to discover if the map files in a folder have changed, been added to, or a new folder created OziExplorer stores a checksum in the index file. When you do a map search OziExplorer checks if the folders have changed, if something has changed OziExplorer creates or updates the index file, **however** in order to improve performance OziExplorer will not do this check again until **60 seconds** have elapsed since the last check.

Certain operations are exempt from this rule

- Any Index Map operation will always check the map indexes.
- Saving a Map file in OziExplorer will force an index check the next time a map search is done.
- Changing the OziExplorer configuration will force an index check the next time a map search is done.
- Clicking on the red **X** on the Map Find buttons on the toolbar will force an index check the next time a map search is done.
- Restarting OziExplorer will also force an index check the next time a map search is done.

There is an option on the Map menu to **Re-index Map Files**, this will re-index the map files so they will be up to date for map searching functions. For normal operation it is not necessary to do this operation as OziExplorer will automatically keep the map index files up to date.

2 .Searching the Index files

The actual map search just looks into the index files, this means the search is very fast because all the original map files do not have to be searched..

General

In order to find a map OziExplorer compares the search position to see if it fits within the corner markers of the map, if it does then that map is further processed to see if it meets other criteria (more detailed and so on).

So for a map to work correctly in a map search the corner markers must meet certain conditions.

- The corner markers must be present - in some cases imported maps do not get corner markers until they are saved in OziExplorer for the first time - OziExplorer warns of this when the map file is first loaded.
- The corner markers must be set in the correct position for the map. I know this seems obvious but there are many maps available which are created outside of OziExplorer which do not have correct corner markers.
- The corner markers of the maps must not cross the 180 degree longitude
- The corner markers must be within the mathematical limitations of the map projection being used. World maps or continental type maps are usually the ones which do not always meet these conditions.

Tips

If you make changes to the map files stored in a folder OziExplorer may not pick this change up until 60 seconds have elapsed since the last search. You can force OziExplorer to scan for changes by clicking on the red **X** on the Map Find buttons on the toolbar (you need to click it twice so it returns to its original position). Restarting OziExplorer will also scan for changes.

Be careful if you specify a root folder as a path (say C:\ ) as OziExplorer will scan the entire hard disk for map files, this could take considerable time.

Index Map

The Index Map dialog allows an OziExplorer map to be loaded and displayed. An outline of all the maps stored in the **Search Path** will be drawn onto the loaded map. By moving the mouse over the window the maps available are displayed as a hint and the cursor changes to a finger pointer. By clicking the mouse all the maps available will be displayed in the map search list where the required map can be selected.

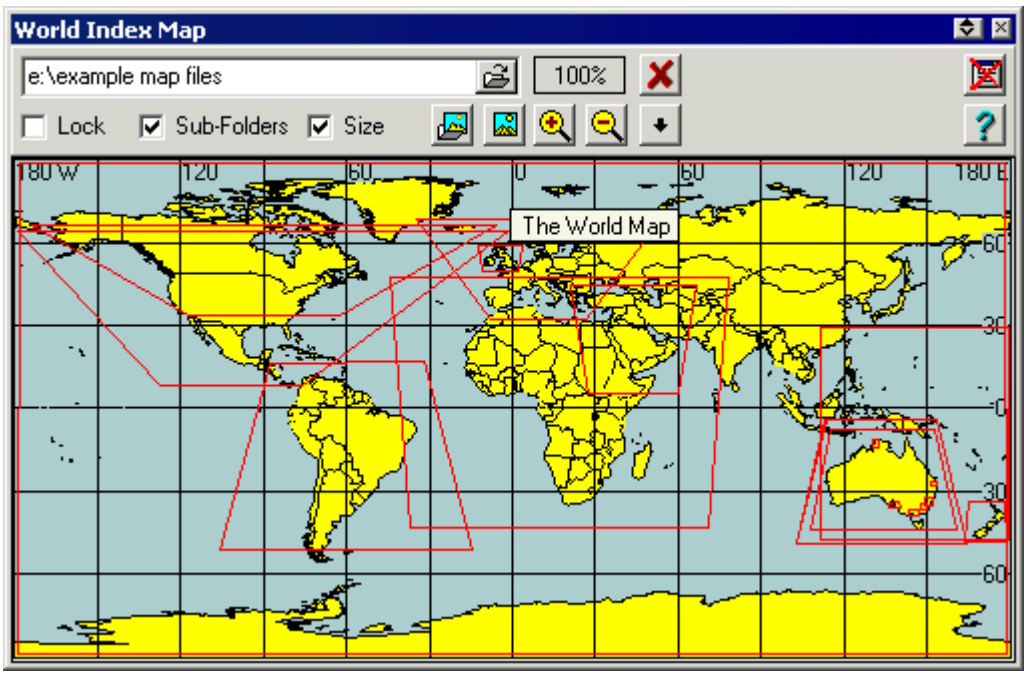
Guidelines

The map loaded into the dialog should be small (approximately 1/4 screen size is a good guide). If your map is larger use a program such as Paint Shop Pro to reduce it in size (if possible) and recalibrate it. You can have a selection of maps to use as index maps depending on the area you are working in.

Whatever map you choose to load into the index map window will be fully loaded into memory. Highly compressed images such as BSB or JPG will take considerable time to load and require a lot of memory.

There is a limit of 10000 maps which will be scanned in the folders and only the first 100 found under the cursor as it is moved across the index map will be displayed as a hint but they are still available in the map search window.

It is not always possible to display all maps on an index map or use all maps for an index map. The corner markers of the maps must not cross the 180 degree longitude and the corner markers must be within the mathematical limitations of the map projection being used. World maps or continental type maps are usually the ones which do not always meet these conditions.



Fields

Search Path - The path to search, any maps in this path will have their outline drawn on the

index map.

Lock - The Search Path will be locked to the path of the currently loaded map in the main OziExplorer window.

Sub-Folders - If checked any sub-folders below the Search Path will be searched as well.

Size - The window will resize to fit the loaded map (within certain limitations).

Buttons

 The Search Path will be set to the **Map File Path** that is specified in the main OziExplorer configuration.

 Load a new map into the dialog.

 Zooms the map in and out.

 Display a dropdown menu of options below

- **Refresh Maps** - Will rescan the Search Path folder and redraw the map polygons.
- **Recent Index Maps** - Keeps a list of the most recent Index Maps used which can be selected.
- **Recent Search Paths** - Keeps a list of the most recent Search Paths used which can be selected.
- **Load New Map** - Load a new map into the dialog
- **Highlight** - Will show the map polygons the cursor is hovering over in a different color. If you have a large number of maps drawn on the index map then this option may be too slow to use.
- **Fast Draw** - If checked the map polygon lines on the index map will be drawn with straight lines (which is must faster), if unchecked the map polygon lines will be drawn with curved lines which follow the curvature of the lat/lon lines on the index map (much slower to draw).
- **Auto Hide** - After a map is opened the Index Map is automatically hidden.
- **Show Map List at Pointer** - Will show a list of the maps available at the pointer location on the index map.

 Unloads the map and frees all the resources being used, when the Index Map dialog is opened again the map must be reloaded.

 Closed the dialog but keeps the map loaded.

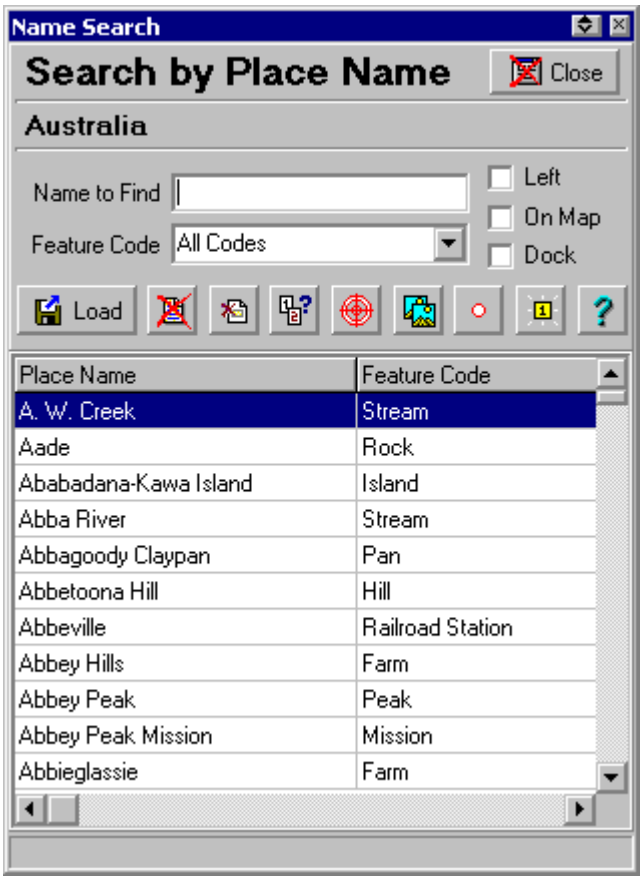
 Shows this help.

Name Search

Name Searching allows you to pick a name from the list of names and either plot the position of the place on the current map or search for maps which contain the location.

Limitations

Name Searching will not work on any map where the east and west map corner markers (the map boundary) are on either side of the 180deg longitude line.



Fields

Name to Find - Enter then name or part name of the place you want to find.

Feature Code - Select the type of feature to see in the list.

Left - When checked the text in the "Name to Find" field is searched for, starting at the left most character in the list.

On Map - When checked only those places which are located on the currently loaded map are displayed in the list.

Dock - When checked the Name Search dialog is docked to the right hand side of the window.

Buttons

Load Name Database - Used to load a Names database. Additional databases may be available in the Name Search folder if it exists.


Clear the Name to Find - Refreshes the search and also removes the text from the "Name to Find" field.


Clear the Feature Code - Resets the Feature Code to "All Codes".


Advanced Search - Advanced options - such as places located within a specified distance from a selected point (see below)

Plot Location - Plots the location of the place on the currently loaded map. If the place is not located on the map it automatically searches for other maps.

Find Maps - Searches for other maps the place may be located on. Searching uses OziExplorers standard methods. It either searches for maps in the "Map File Path" set in configuration or the path of the currently loaded map depending on the settings in OziExplorer.

Plot Locations as Points - Plots the location of all the positions on the map as "Points".

Create Waypoint - Creates a waypoint at the current selected location.

Help - Shows this help.

Close - Closes the Name Search dialog.

Other

When entering text into the "Name to Find" field searching automatically commences 1.5 seconds after you typed the last character.

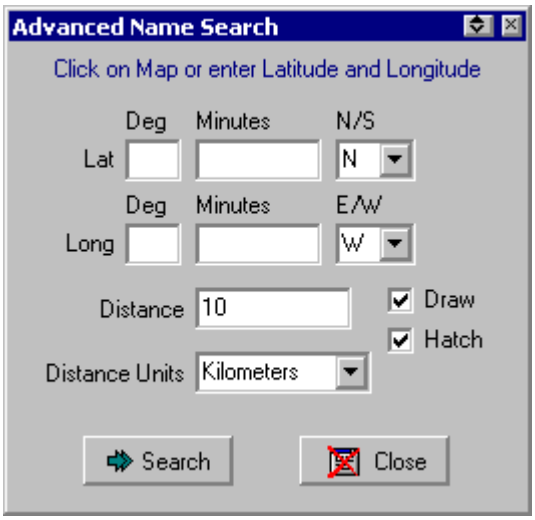
The column widths in the list can be adjusted by dragging on the column boundary, the column width setting will be stored.

The datum of the positions in the .names file defaults to "WGS 84".

If a different datum is needed one of the lines of the .types file will contain the datum name, an example is below.

DATUM,Australian Geodetic 1966

Advanced Name Search



Lat, Long - Enter the position, click on the map to enter the position automatically.

Distance - The search radius.

Distance Units - The units used for the search radius.

Draw - The circle will be drawn on the map.

Hatch - The circle will be filled with a diagonal pattern.

Search - Start the search, the locations within the specified circle will show in the name Search list.

Close - Close the Window.

Using the Find Map Feature

 The symbol used on the Button bar for the Find Map options.

The Find Map option is available on the Button Bar, the Map Menu, the Waypoint List, and on the Right Click Menu for any of the Map Objects (waypoints, events etc).

The **Find Map** option will scan all the maps in the **Map File Path** (set in Configuration).

If the small Red **X** button is not depressed then the **Map File Path** and its **subfolders** are searched for maps which will contain the specified position.

If the small Red **X** button is depressed then the Map Find feature will only search the Path (folder) where the currently loaded map was loaded from.

The Red X button is the same as selecting the "Lock to Current map Path" option on the Find Maps option on the Map menu.

This section describes the options available on the Button bar and Map Menu.

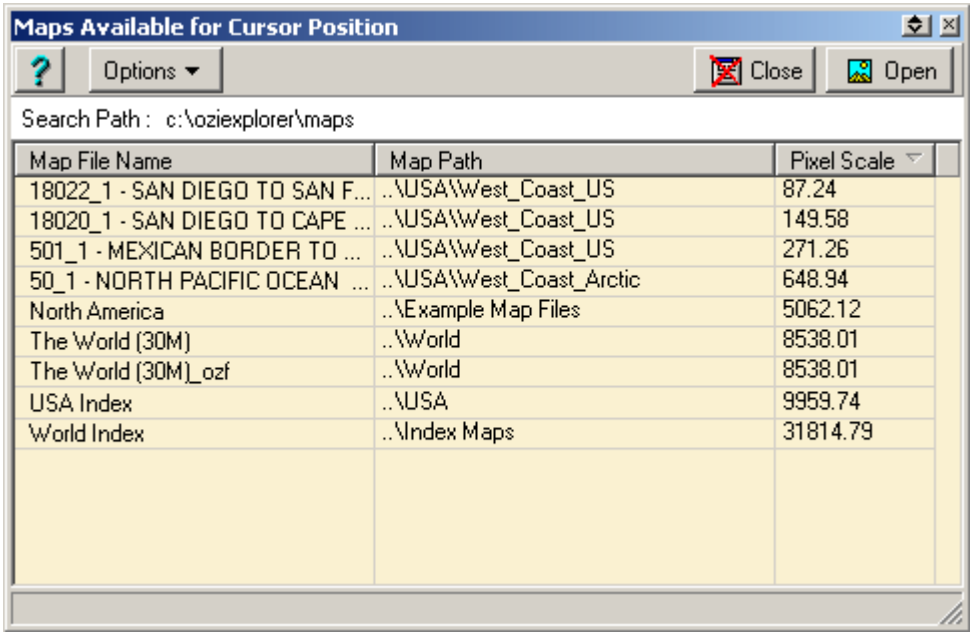
From Entered Position - The option is only available on the Find Maps option on the Map menu. A dialog will be presented to allow you to enter a position, the maps are searched for this position.

At Present Position - The present position means the map position at the centre of the screen. The Lat/Lon coordinates at the centre of the screen are calculated and the maps are searched, and maps which can display this position are listed. The yellow circle in the Find Maps button set on the toolbar selects this option.

To the North - To obtain the position to search the following method is used. The Longitude is calculated for the position at the center of the screen. The Latitude is then calculated for a position immediately beyond the north edge of the map, the maps are then searched for this position.

A similar method is used for **South, East and West**. The arrows on the Find Maps button set on the toolbar selects these options.

The Map Find Display



This lists all the maps found which contain the specified position.

The ".." at the start of the map path indicates the map is located in a subfolder below the "Map File Path" (or for Index Map searches it is the Search Path specified).

The maps are shown in the order of the column which shows the small triangle in the title of the column. For Example, click on the title "Pixel Scale" to sort the maps in order of Pixel Scale.

Select the map to you want to load and press the **Open button** , **double click on the selected map** or press the **Enter key**.

Buttons

Help (?) - Displays this help.

Options - Displays a drop down menu.

> **Auto Close Window on Map Open** - When ticked the dialog will be closed when a map is opened.
>
> **Auto Shrink Window on Map Open** - When ticked the dialog will shrink to the window title when a map is opened.

Open - Loads the selected map.

Close - Closes the Find Map dialog.

How Map Searching works

Using the Blank Map

A Blank Map can be created by selecting the **Blank Map (Auto Scale)** option on the Map menu.

Note: If you were using a Blank Map the last time you were using OziExplorer and have the "Load

Last Map" configuration option set, the Blank Map will be created automatically.

When first created the Blank Map will be calibrated to cover the entire world. When you load data from file or download data from the GPS the map will automatically rescale itself so the data will fit completely on the map. When any additional data is added or deleted manually, you can use the **ReScale Blank Map** option on the Map Menu. Other than by using the zoom option there is no way for the user to set this scale.

By default a 10 degree grid is drawn on the map, different grids can be selected by choosing the **Blank Map Grid** on the Map menu.

Magnetic Variation

The Magnetic Variation is used to calculate Magnetic Headings or Bearings from True Headings or Bearings and vice versa.

OziExplorer has 3 methods of obtaining the Magnetic Variation.

1. It can be manually entered for each map in the Calibration screen, this is optional.
2. It can be obtained from the GPS when connected and actively doing real time tracking
3. It can be calculated by OziExplorer for any position on the globe for any given point in time.

Which Magnetic Variation is used

When calculating bearings for "Routes" and "Distance between waypoints (bearings)" the manually entered Magnetic Variation is used, if this has not been entered the calculated Magnetic Variation is used.

When displaying a route for navigation but the GPS is not active then the manually entered Magnetic Variation is used, if this has not been entered the calculated Magnetic Variation is used.

When displaying a route for navigation and the GPS is active and is transmitting the Magnetic Variation or Magnetic Course then this reading is used, if the reading is not available then the manually entered Magnetic Variation is used, if this has not been entered the calculated Magnetic Variation is used.

Seamless Maps (Experimental)

This method of displaying many maps at the same time is experimental and does have some limitations which are explained below.

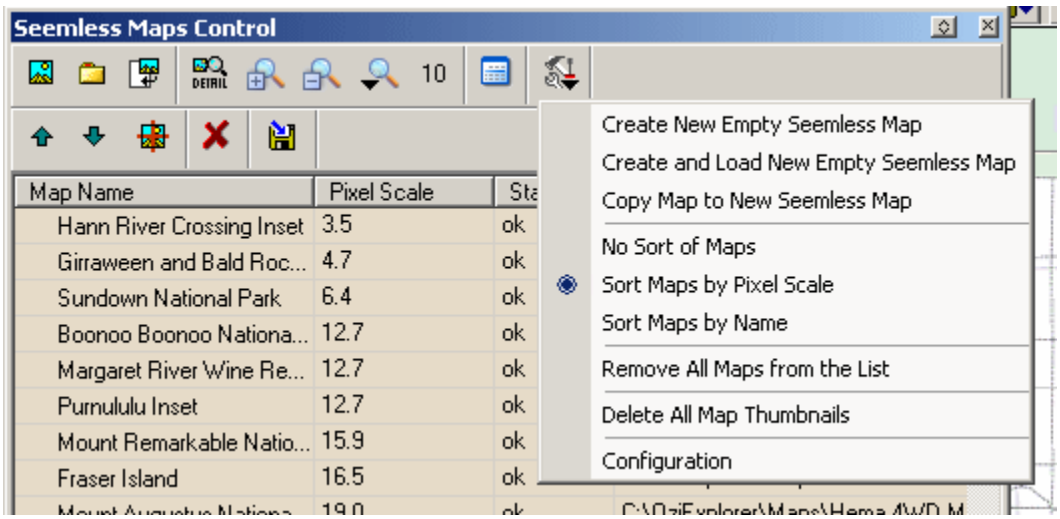
Overview

- A seamless map can be thought of as a container which can have many OziExplorer maps loaded into it. For Example : load a seamless map (.map) file and all the maps contained in the map file will be loaded.
- You can have many seamless maps with each one having many loaded maps.
- To setup your seamless map - As you would normally load a map in OziExplorer, load the map file "Seamless.map" and use the Seamless Map Control to add your maps. The options on the "Options Menu" allow you to create additional seamless map files.

Limitations in this version

- **Map Projection and Datum** - The seamless map can only be displayed in the Mercator map projection and the WGS 84 datum but this will be changed in a future version to allow any map projection / grid and datum to be used for the displayed map.
- **Mapview** - Will be implemented in a future version.
- BSB4/5 and Nv Digital not supported but will be in a future version.
- Internet maps cannot be loaded into a seamless map.
- Some other map types such as UBD and Kompass cannot be loaded into a seamless map.
- Printing will be supported in a future version.
- Saving does not work, it may be supported in a future version.

Getting Started



Steps to set up a Seamless Map.

- Download and install the development version.
- Run this development version and load the seamless map file.
- Use the option on the Options Menu "Create New Emply Seamless Map" to create and name your own map file Eg: "Seamless Map - My Maps.map". This can be done any number of times to create different seamless maps to add different maps. (Maps of different scales or maps for different regions etc).
- Use the "Seamless Map Control" toolbar buttons to add maps to the seamless map.
- There are 4 zoom buttons on the toolbar to change the seamless map zoom.
- In the map list, if the "Status" does not show "ok" the map will not be shown.
- Use the options on the drop down Options Menu to change the list sort order. (NOTE: if maps

have been moved up or down the list using the Up/Down buttons, changing the sort order will re- sort any maps that have been moved).

- The control can be resized by dragging the sides of the control (the size and position will be remembered). Use the Show Action List button to show/hide the action list.

Toolbar Buttons

 **Add Maps** - Select one or more files in a folder to load into the seamless map.

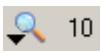
 **Add Maps from a Folder** - Add all maps from a folder and subfolders - Select a folder, all maps in the folder and its subfolders are loaded.

 **Find Maps for Screen Region** - Find and load maps for screen region - Select a folder, all maps in the folder

 **Zoom to 100%** - Zoom in to 100% for the map at the centre of the screen.

 **Zoom In** - Zooms the map in, the zooms from the buttons are finer than the zoom levels from the drop down menu.

 **Zoom Out** - Zooms the map out.

 **Select Map Zoom Level** (menu) - A drop down menu of zoom levels is displayed.

 **Show Action List** - The Seamless map Contol is expanded to show the actions list.

 **Show Options** - A drop down menu of options is displayed. (The menu options are explained below)

 **Move the Selected Map Up** - moves it up. Maps at the top of the list will be displayed on top of maps further down the list.

 **Move the Selected Map Down** - moves it down.

 **Centre Position on the Selected Map** - The map position is moved to the position of the center of the first selected map.

 **Remove the Selected map from the List** - removes the selected maps.

 **Save the Map File** - Save the loaded seamless map (the map is automatically saved when it is closed).

Option Menu

Copy Map to New Seamless Map - There is no limit to the number of seamless maps you can have. This option copies the loaded seamless map to a new name, the new seamless map can then be

loaded and individual maps can then be deleted or added as required.

No Sort of Maps - Does not automatically sort the maps, useful if you want to move the maps into a specific order that will not change.

Sort Maps by Pixel Scale - The maps at the top of the list are shown on top of the maps that are lower in the list. Sorting the maps by their pixel scale is usually the best way as you would normally want the higher detail maps on top.

Sort Maps by Name - Sorts the maps by the map name.

Remove All maps from the List - Removes all the maps from the seamless map list. This does not affect the maps on disk it only removes them from this seamless map.

Delete All Map Thumbnails - For seamless maps OziExplorer creates small thumbnails of various sizes for each map to speed up the loading process. This option deletes the thumbnails and they will be recreated as needed.

Configuration - Shows the configuration dialog.

Configuration

Max Memory (MBytes) - The amount of memory OziExplorer is to use for working with maps. The default is 750 MBytes but much higher or lower values can be specified depending on the amount of memory your PC has.

The Status Bar

Number Maps - the number of maps loaded

Mem Total for Maps - the total memory allocated in seamless maps configuration

Free for Maps - the amount of allocated memory remaining

Datums

What is a Datum?

The latitude and longitude of places on a chart or map depend on what mathematical shape is used to represent the Earth when the chart or map is drawn. Different shapes get used for mapping different areas of the world and these are known as ellipsoids. A datum references a particular ellipsoid known as the *reference ellipsoid*. Different datums can also have different origins and rotations. Both these factors affect the numerical representation of a position.

Datums affect the positions of Latitude/Longitude and local grid systems (UTM, British National Grid etc).

So how does this affect me?

If you have two charts of the same area and they have been drawn on different datums, then the latitude and longitude for the same place is likely be different on each chart. In Australia the

difference between an AGD66 and a WGS 84 charted position can be up to 200 meter's (0.1 miles). This could be the difference between one side of a reef and the other!

If you plot a GPS latitude and longitude on a chart which uses a different datum, you must apply some corrections otherwise you will plot your position in the wrong place. Mapping software such as OziExplorer will usually do these corrections for you.

CHECK YOUR DATUMS CAREFULLY– all latitudes and longitudes which you use for navigation must relate to the SAME datum.

How does OziExplorer Handle Datums?

OziExplorer can handle many different datums and knows how to translate positions from one datum to another. Provided you have entered your datums correctly OziExplorer will ensure that all positions are translated to the correct datum as required.

How to set Datums in OziExplorer

Setting Datums incorrectly will make the positions used in OziExplorer incorrect.

The Map Datum - (set in the Map Calibration screen) must always be set to be the same as the Datum the map was drawn in. (Actually to be more correct the Map Datum must be set to be the same as the Datum used to obtain the positions used to calibrate the map). Changing the Map Datum to anything else will definitely cause positions to be calculated and displayed on the map incorrectly.

The Data File Datum can be set to any datum you like. It only affects the positions stored in the file. It is only provided as a configurable option in case you want to work directly with the data file.

The GPS Upload/Download Datum - must always be set to match the datum your GPS expects its position data to be transmitted in.

- For Garmins this Datum should always be set to **WGS 84.**
- For Magellans this Datum should always be set to **WGS 84.**
- For Lowrance/Eagle - Most should have this Datum set to WGS 84 but care should be taken if using a GlobalNav 200 or Eagle Explorer as certainly some of these units require the Upload/Download Datum to be set to the same datum as the GPS is set to.

The GPS NMEA Output Datum - must always be set to the same datum that the GPS uses for the positions it sends in the NMEA sentences.

- For Garmins the Datum must be set to the same as the Datum setting in the GPS. If using moving map mode and you change the GPS datum then you should always change this datum also.
- For Magellans you need to check this, some models output in WGS84 and others such as the 315/320 output in the Datum the GPS is set to.
- For Lowrance/Eagle - Most should have this Datum set to WGS 84 but care should be taken if using a GlobalNav 200 or Eagle Explorer as certainly some of these units require the NMEA Output Datum to be set to the same datum as the GPS is set to.

Adding User Datums

OziExplorer can use up to 10 user defined datums.

To add User Datums to OziExplorer you need to do the following.

If it doesn't already exist Create a text file called **datums.dat** in the OziExplorer directory. OziExplorer will read this file the next time it is run, the user datums will always be added to the bottom of the list.

Within this file add the following line or lines (if more than 1 datum is to be added).

The format of the line is as follows :

Datum name , Ellipsoid number , dx , dy , dz

Datum name - Any name you want to enter

Ellipsoid number - All datums have a reference ellipsoid, choose the number from the list below. If the ellipsoid is not in this list then you cannot add the datum, you need to contact the author of OziExplorer and have the ellipsoid added into the code.

dx,dy,dz - these must be known for the particular datum you are entering.

A comma must be used between all the fields.

Example - A line in the file may look something like this

NAD 27 User, 4, -8, 160, 176

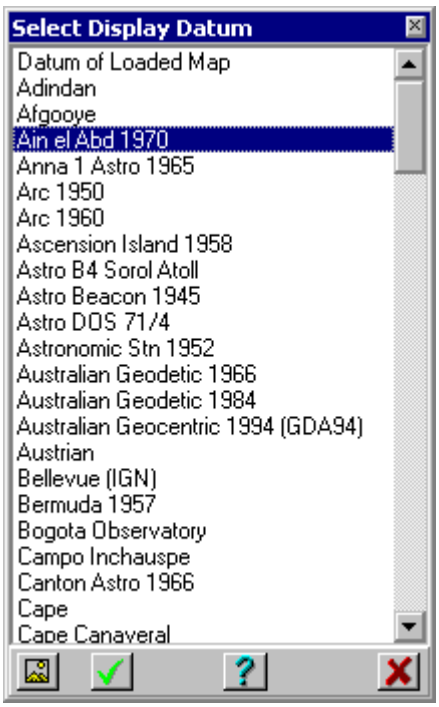
Ellipsoid List

0 : 'Airy 1830'; a : 6377563.396; invf : 299.3249646
1 : 'Modified Airy'; a : 6377340.189; invf:299.3249646
2 : 'Australian National'; a : 6378160.0; invf: 298.25
3 : 'Bessel 1841'; a : 6377397.155; invf:299.1528128
4 : 'Clarke 1866'; a : 6378206.4; invf: 294.9786982
5 : 'Clarke 1880'; a : 6378249.145; invf:293.465
6 : 'Everest (India 1830)'; a : 6377276.345; invf:300.8017
7 : 'Everest (1948)'; a : 6377304.063; invf:300.8017
8 : 'Modified Fischer 1960'; a : 6378155.0; invf: 298.3
9 : 'Everest (Pakistan)'; a : 6377309.613; invf:300.8017
10 : 'Indonesian 1974'; a : 6378160.0; invf: 298.247
11 : 'GRS 80'; a : 6378137.0; invf: 298.257222101
12 : 'Helmert 1906'; a : 6378200.0; invf: 298.3
13 : 'Hough 1960'; a : 6378270.0; invf: 297.0
14 : 'International 1924'; a : 6378388.0; invf: 297.0
15 : 'Krassovsky 1940'; a : 6378245.0; invf: 298.3
16 : 'South American 1969'; a : 6378160.0; invf: 298.25
17 : 'Everest (Malaysia 1969)'; a : 6377295.664; invf:300.8017
18 : 'Everest (Sabah Sarawak)'; a : 6377298.556; invf:300.8017
19 : 'WGS 72'; a : 6378135.0; invf: 298.26
20 : 'WGS 84'; a : 6378137.0; invf: 298.257223563
21 : 'Bessel 1841 (Namibia)'; a : 6377483.865; invf:299.1528128
22 : 'Everest (India 1956)'; a : 6377301.243; invf:300.8017
23 : 'Clarke 1880 Palestine'; a: 6378300.789; invf:293.466

24 : 'Clarke 1880 IGN'; a: 6378249.2; invf:293.466021
25 : 'Hayford 1909'; a: 6378388.0; invf:296.959263
26 : 'Clarke 1858';a:6378350.87;invf:294.26
27 : 'Bessel 1841 (Norway)' ; a:6377492.0176;invf:299.1528
28 : 'Plessis 1817 (France)'; a: 6376523.0 ; invf:308.6409971
29 : 'Hayford 1924'; a : 6378388.0; invf: 297.0
30 : 'Danish (Andrae) 1876'; a: 6377019.25666 ; invf: 300.0
31 : 'Walbeck 1819'; a: 6376896.0 ; invf: 302.7821565
32 : 'Walbeck 1819 (2)'; a: 6377016.7608 ; invf: 302.7821565
33 : 'Tenner 1844'; a: 6377096.0 ; invf: 302.5

Select the Display Datum

This dialog allows the selection of a datum used to display positions and the grid. All dialogs that display positions that do not have their own datum selection provided are shown using the selected display datum. If the selection of the datum in the list is "Datum of Loaded Map" then the display datum will always be the same as the datum of the currently loaded map.



Buttons

Set the Display Datum to always be the same as the currently loaded map. Even if a new map is loaded with a different datum to the one currently loaded the display datum will change to match the datum of the new map which is set in the Map Calibration screen. Pressing this button is the same as selecting "Datum of Loaded Map" at the top of the datum list.

Accept the datum selected in the list as the display datum and close the list. The Datum can also be selected by double clicking on the selection in the list.

Shows this help screen.

 Close the list without making any change.

Moving Map

See also - Moving Map Control Moving Map Menu Configuration

Introduction

When your GPS is connected directly to a computer and the GPS is sending the NMEA $GPRMC or ($GPGGA and $GPVTG) or ($GPGLL and $GPVTG) sentence OziExplorer can plot your location directly onto the map on screen in real time, this is called "Moving Map". You must have a calibrated map available which covers the position the GPS is sending.

Software Simulator - For testing, a software simulator is provided in OziExplorer and details on how to use this are provided below.

Moving Map has the following features.

- Ability to automatically change maps when your position moves off the current map or across the map "neat lines". The "neat lines" (corner markers) are set up in "Check Map Calibration".
- OziExplorer can be set to scan for more detailed maps at configured intervals and load a more detailed map if one is available, Note - you do not have to cross the map "neat line" for this to occur.
- Ability to show the track onscreen (called the Track Tail) and log the track direct to a file.
- Ability to sound and show alarms when approaching waypoints.
- Ability to sound and show alarms when entering Alarm Zones.
- Ability to navigate along a predefined route or to a specific waypoint, see Navigation.

Setting up Maps for Use with Moving Map

When you move off the current map OziExplorer will search through the available maps and select a map which can show the GPS position and provides the best scale. If a suitable map cannot be found OziExplorer will wait 15 seconds and search again, then 30 seconds and search again and then 60 seconds between searches.

Maps are setup for use in Moving Map by default. If necessary, changes can be made in the map calibration screen. See the **Moving Map Options** of the **Creating Maps help** for details and explanation.

GPS Setup

To use moving map your GPS must output certain NMEA sentences in the 0183 format. The required sentence(s) are :

- $GPRMC (preferred) or

- ($GPGGA and $GPVTG) or
- ($GPGLL and $GPVTG).

Most GPS receivers can output the required sentences but most require configuring. You may need to refer to your owners manual for the method.

Some Garmins have the capability of outputting the required information using the PVT format, this is also supported by OziExplorer and this option is turned on in the Comm Tab in Configuration.

The GPS needs to be connected to the USB or serial port of the PC. Other GPS types, such as bluetooth, use driver software to install a virtual serial port.

Starting Moving map

If you have everything setup correctly Moving Map can be started by selecting the **Start NMEA Communication with the GPS** option on the Moving map Menu. Alternatively (and preferred) you can activate the **Moving map Control** and press the Start button.

If it is working ok you should see some indication on the Status Line at the bottom of the map. See the Status Display section below.

If it is not working as expected see the Trouble Shooting section in the Help Index.

Command Line Parameters

To allow moving map to be automatically started when starting OziExplorer the following command line parameters are available. Note, the / is part of the parameter name.

The following command line parameters can be used when starting OziExplorer

/mmstart - Starts Moving Map (NMEA) communication
/mmcontrol - Shows the Moving Map Control
/navcontrol - Shows the Navigation Control
/gpsfix - Shows the GPS Fix window

example command lines

```
oziexp.exe /mmstart /mmcontrol /navcontrol /gpsfix
oziexp.exe /mmstart
oziexp.exe c:\oziexplorer\maps\mymap.map /mmstart /mmcontrol
```

Note that you can specify a map on the command line but if the GPS position is not on that map or the map has not been specified as available for Moving Map OziExplorer will attempt to find a new map.

Status Display

The status line at the bottom of the screen displays the following.

The left hand panel will show "Moving Map is ON" when you start the NMEA communication. It does not have to be receiving data from the GPS to display this message. The panel will show a <+> symbol which will toggle on and off when actual data is being processed. If you see the plus sign it means the correct data is being received and processed for display on the map, if you do not see the <+> symbol something is not right. If the <+> symbol is not being toggled on and off data is not

being processed.

The next panel will display the following, these should be toggled on and off when data is being received.

- <nmea> when any type of nmea data is being received.
- <gprmc> if the $GPRMC nmea sentence is being received, other sentences being used have a similar code.
- <no fix> if the data in the $GPRMC nmea sentence is invalid (no fix or on some GPS units the unit may be being operated in simulator mode).
- < pvt > if using PVT mode for Garmins which support it.

There a 2 little lights that flash. The left hand light will flash blue and white when NMEA sentences are being received. The right hand light will flash green and white when a suitable NMEA sentence is being processed and the data is valid, it will flash red and white when the data is invalid (the gps may not have a fix or it may be in simulator mode).

The right panel displays the position of the GPS.

The time displayed to the right of the position is the PC time the last position was received, this indicates how old the position fix is.

The Track

Track Tail - If the **Log Track Tail** option is ticked on the **Moving Map Menu** the track will be displayed by Moving Map and this is called the **Track Tail**. It is a track of 10,000 points. If the maximum is reached, the first track points collected drop off as needed. To turn on/off the display of the Track Tail, tick/untick the Log Track tail option on the Moving Map Menu. Note : Even with the Log Track Tail unticked, if the Log Track to File option is ticked, all track points will still be stored in a file on the hard disk.

If the **Log Track to File** option is selected on the **Moving Map Menu** then the track is automatically captured can stored to file. The track log can be stored to different files Daily, Weekly, Monthly or Never. **The default setting is Daily**. Never means a different file is never created (see below). This setting is configured on the Track tab in Configuration. A new file (based on the date and time) will be created daily, weekly, monthly as required.

If the **Never** setting is selected for the file frequency and the Log Track to File option is ticked on the Moving Map Menu, the track will be automatically saved to a file **mmTrack.plt** (or a name you specify). The track is always appended to this file even when starting new moving map sessions and the file will keep growing in size. An option is provided on the Moving Map menu to clear this file. The track file **mmTrack.plt (or the file you specify)** is a normal OziExplorer track file and can be loaded and displayed on a map as normal. Each moving map session is treated as a separate track segment. To change the file name (mmTrack.plt), use the option Change Track Log File on the Moving Map Menu.

See the Moving Map tab on the Configuration dialog for setting up the intervals at which the track points are captured and stored. The configuration help has details on this feature. **Note -** capturing of the track is disabled when the interval is set to zero (0).

The track log files can be loaded and saved the same as any track, and it can be loaded and saved at any time to any name.

The time collected and stored for a track is the UTC time extracted from the NMEA sentences but

the date used is the PC date. This is necessary as not all NMEA sentences provide the date. Note that the time initially used to log track points may be the PC time until a time has been collected from the NMEA sentence.

Proximity Waypoints

Proximity zones can be set around waypoints at any specified distance in the units you have specified in the configuration.

If you travel into (enter) this zone while using Moving Map an alarm will sound.

Proximity zones are used to indicate when you are approaching a waypoint and also have a good visual presence so can be used to highlight a waypoint.

Note 1 : Proximities can be used for any waypoint not just those in routes.

Note 2 : Do not confuse waypoint proximities with the **Route Waypoint Proximity**, they are separate parameters. The route waypoint proximity is used to indicate when the leg of a route has been completed and the number applies to all waypoints in the route.

The proximity zones show as red circles with a blue diagonal hatch.

Note : While the proximity waypoints are similar to those found in Garmin GPS receivers it is not possible at this stage to upload these to the Garmin.

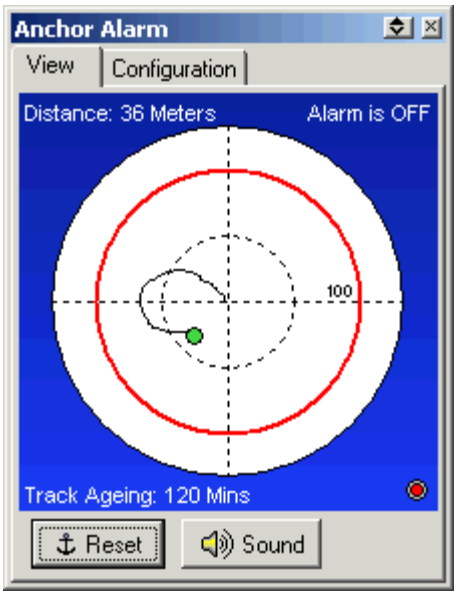
Creating Proximity Waypoints

Any waypoint can have a proximity zone set. Go into the properties for a waypoint, on the properties there is a field called **Proximity Distance**, enter a number into this field.

Anchor Alarm

The Anchor Alarm will check how far your vessel has drifted from its anchor point and sound an alarm when the value exceeds the specified radius.

Screen



The center of the circle is the vessels anchor position.

If the vessels position leaves the red circle then the alarm will sound.

The green dot is the vessels current position.

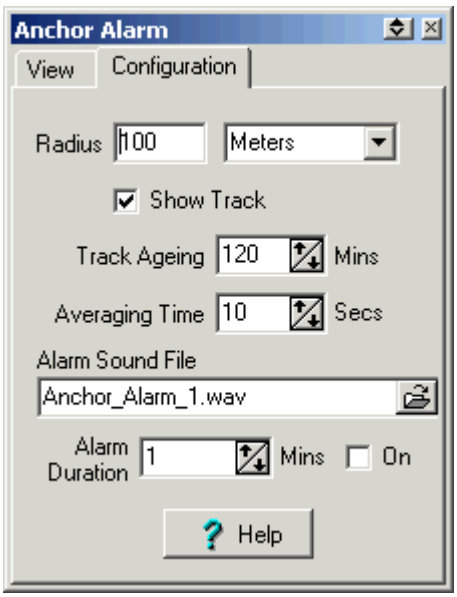
The track behind the green dot shows the movement of the vessel.

Buttons

Reset - Will reset the Anchor position to the vessels current position.

Sound - Will temporarily turn off the alarm sound.

Configuration



Radius - The radius from the anchor position. if the vessel leaves this circle the alarm will sound.

Radius Unit - The unit used for the radius.

Show Track - If ticked the track will be shown as the vessel moves.

Track Ageing - Track points which are older than this value will not be shown.

Averaging Time - The amount of time the vessel position will be averaged when determining the anchoring position. Averaging will give a more accurate anchor position.

Alarm Sound File - The sound file to play when the vessel moves outside the defined radius. Sound Files are normally stored in the **Sound Files** folder which is attached to the OziExplorer folder.

Alarm Duration - How long the alarm sounds for.

On - If ticked the alarm will sound.

Alarm Zones

Alarm Zones are polygons (multi sided boxes) drawn onto the map, if you travel into (enter) into an alarm zone while in moving map mode an alarm will sound.

Alarm zones are mainly used in the marine environment to mark reefs etc but may have uses elsewhere.

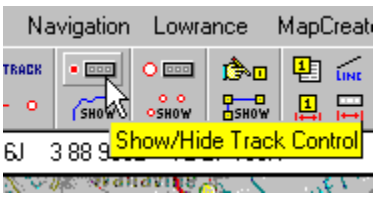
Creating an Alarm Zone

Alarm Zones are just a special type of track and are created using the normal track creation methods.

A map must be loaded.

Select the Create Track button on the Toolbar

Click the mouse on the map around the area you want to turn into an alarm zone. A series of track points will be drawn. Draw a line around the area, just before the area is closed stop drawing the track and select the Track Control



Refer to the Track Control help on how to open the Track Properties.

In the Track properties the Type must be specified as **Alarm Zone**.

Other properties can also be set to suit your requirements.

Alarm Zones will only cause the alarm to be activated if they are attached to the map. This is done using the **Options** button in the **Check Calibration of Map** option which is on the **File Menu**.

To edit an existing Alarm Zone it must be loaded onto the map using the **Load Track from File** option on the Load button on the Toolbar.

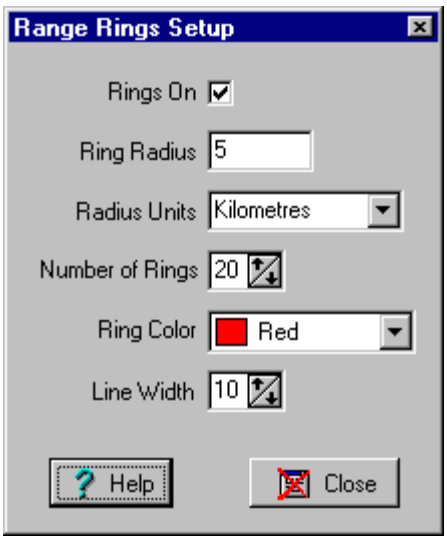
Notes

Note 1 : The number of points in an alarm zone must be 100 or less.

Note 2 : The number of Tracks attached to a map (which includes alarm zones) must be 50 or less.

Range Rings

Range Rings are circles drawn around the current GPS position (using moving map). The radius of the rings and other properties can be specified in the Range Rings Setup dialog.



Rings On - When checked the rings are drawn around the GPS position.

Ring Radius - The radius of the first ring, this is used in combination with the Radius Units below.

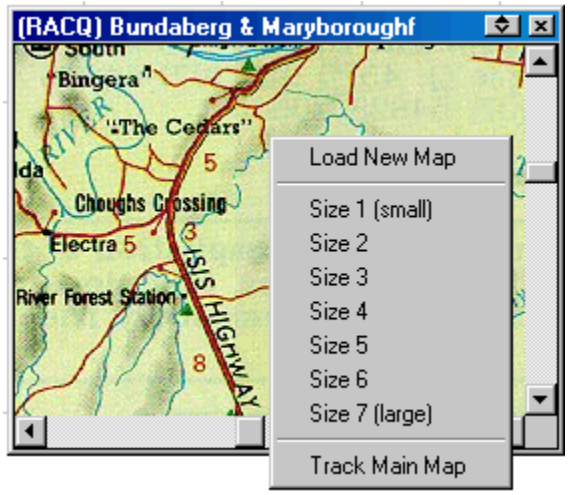
Radius Units - The units to use to obtain the radius distance of the first ring.

Number of Rings - How many rings to draw. Example - if you specify 3 rings are to be drawn and the radius in 1Km then the first ring is drawn at a radius of 1 Km around the GPS, the 2nd line is drawn at a radius of 2 Km, and the 3rd ring is drawn at a radius of 3 Km.

Ring Color - The color of the line used to draw the rings.

Line Width - The width in pixels of the line used to draw the rings.

Regional Map



The regional map window is used when using moving map (real time tracking) mode, it shows your position on a map loaded in the regional map window. When not using moving map mode it centers on the center of the main map.

NOTE - If you do not have a map loaded in the main OziExplorer window then you will not see the map in the regional window as it links to that map. If the area of the map loaded in the main OziExplorer window is not located within the boundaries of the regional map then the regional map will scroll off the window and you will not see it.

The Tracking of the Main map can be turned off by using the "Track Main Map" option on the right click menu. When the Tracking of the main map is turned off the regional map window is given scroll bars to navigate over the map.

I designed it to have display a map which covers a very large area so when tracking you can see where you are positioned relative to local landmarks (towns etc).

Loading a Map into the regional map window.

Select the **Show Regional Map Window** on the Moving Map menu.

If the window is already open then right click on the window to show a menu where the **Open Map** option can be selected.

Saving the Window Position

Open the window by loading a map into it, position the window where required and close it by pressing the **X** in the top right hand corner, from now on the window will be positioned in the same place until changed again using the same method.

Resizing the Window

Right click on the window to show a menu, select the size from the list of options. The size you select is remembered from now on until changed again.

Limitations

While any of the normal type of map images can be loaded in the regional map window the image is

always fully loaded into memory. This means that TIF, BSB, Maptech and OZF maps are fully loaded into RAM (instead of being paged from disk), these maps can be quite large and there is a chance your computer may run out of resources while loading the image, in these cases the loading will be aborted.

Moving Map User Defined Pointers

There are 3 user pointers which can be selected on the Moving Map tab in Configuration.

If Selecting User 1 the pointer will be read from a file called **userPointer1.dat**

User 2 from **userPointer2.dat**

User 2 from **userPointer3.dat**

OziExplorer reads the pointer from the file when moving map is started.

The drawing consists of a set of points which have lines drawn between them.

There is a limit on the size of the drawing, if it is too big it will be clipped when drawn onto the map. Use the example below as a for the size.

This is an example of a file (userPointer1.dat) which draws an aeroplane

```
;moving map user pointer
;aeroplane
;lines starting with ; are treated as comments and not read
;empty lines are not read
;file consists of a set of x,y coordinates - 1 set per line
;a maximum of 100 points
;whole numbers only
;the 0,0 coordinate is plotted at the GPS position
;OziExplorer loads this file when it starts moving map
0,0
3,3
3,7
15,7
15,11
3,13
1,22
5,22
5,26
0,27
0,24
0,27
-5,26
-5,22
-1,22
-3,13
-15,11
-15,7
-3,7
-3,3
0,0
```

Navigation

Introduction

You can use the moving map feature of OziExplorer to simply display your actual position on a map as you move.

You can use the Navigation feature to help you navigate to a waypoint or along a route composed of waypoints.

Navigating Along a Route or to a Specific Waypoint

You must load a set of waypoints and a set of routes (if navigating along a route) before you can select a navigation option. Select **Navigate To .....** on the Navigation menu. Select either ***Along a Route*** or ***Waypoint From a List***. Select either the Route or Waypoint, the route can be reversed by selecting the **Reverse Route** checkbox. If you selected a route the route will be displayed on screen with details of each leg (if relevant configuration option set). Navigation assistance will start as soon as you are receiving a position from the GPS (or simulator). The Navigation Control shows the information you need to navigate to the 1st waypoint.

The Navigation tab in OziExplorer Configuration has settings which affect navigation, you must set these to your requirements.

The software determines if you have reached a waypoint by

- Entering the Route Wp proximity zone (set in configuration)
- Going past the waypoint (a line perpendicular to the leg direction).

If either of these 2 events occur you are deemed to have reached the waypoint and navigation along the next leg of the route will be commenced.

If you have a route but don't want to start at the 1st waypoint you can select which waypoint in a route to navigate to 1st by selecting the **Show Details of Active Route** button which is on the **Moving Map Control**. Select a Waypoint and press the **Navigate To** button.

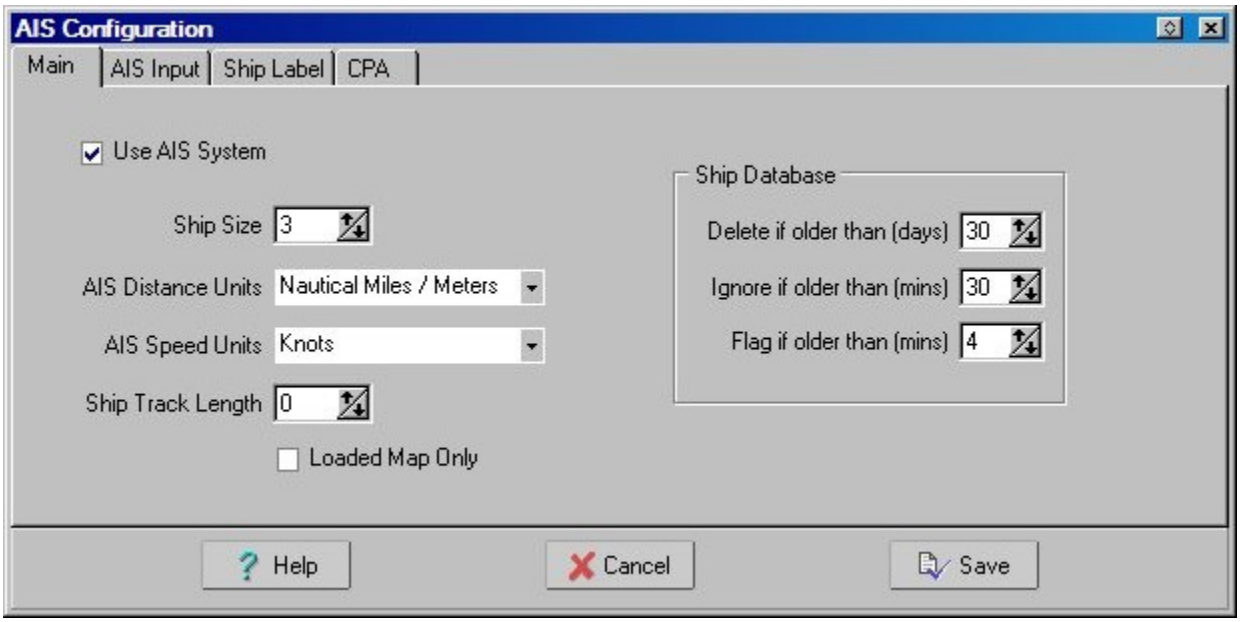
AIS Configuration

Automatic Identification of Ships

All ships above a certain size are required to broadcast their position.

By using an AIS receiver the positions and types of ships can be plotted on the loaded map.

AIS data can be supplied on the same com port as the GPS NMEA data or on a separate com port. If AIS is marked as Active (in AIS configuration) then it is automatically started when Moving Map is started. A button for the AIS control can be manually added to the User Toolbar. For my testing I have been using the Nasa Marine AIS Engine.



Use AIS System - Tick this box if you want the AIS system to be active.

Ship Size - Specify the size of the graphic (triangle) seen on the screen.

AIS Distance Units - Select the distance units you want to use.

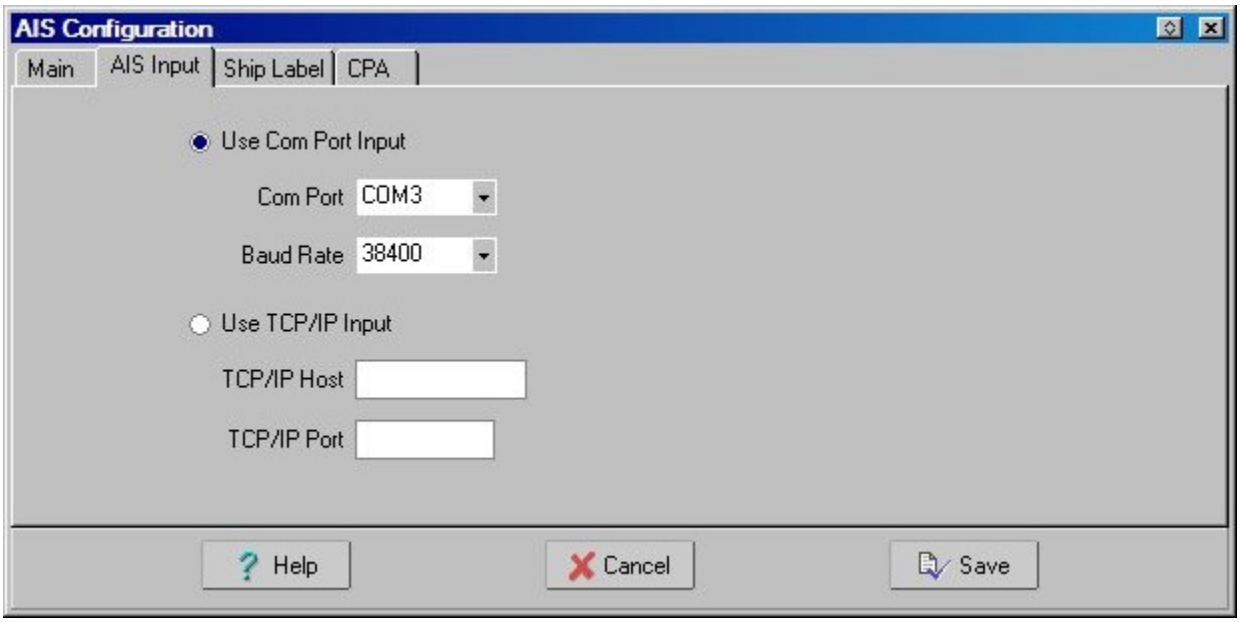
AIS Speed Units - Select the speed units you want to use.

Ship Track Length - Specify the length of track that is plotted behind each ship.

Loaded Map Only - If this is ticked only ships which are positioned on the currently loaded map are processed and displayed.

Ship database

- Delete if older then (days) - If a ship has not been updated within this time it is deleted from the database.
- Ignore if older than (mins) - If a ship has not been updated within this time it is ignored.
- Flag if older than (mins) - If a ship has not been updated within this time it is flagged with a different color in the list (its position may not be valid).

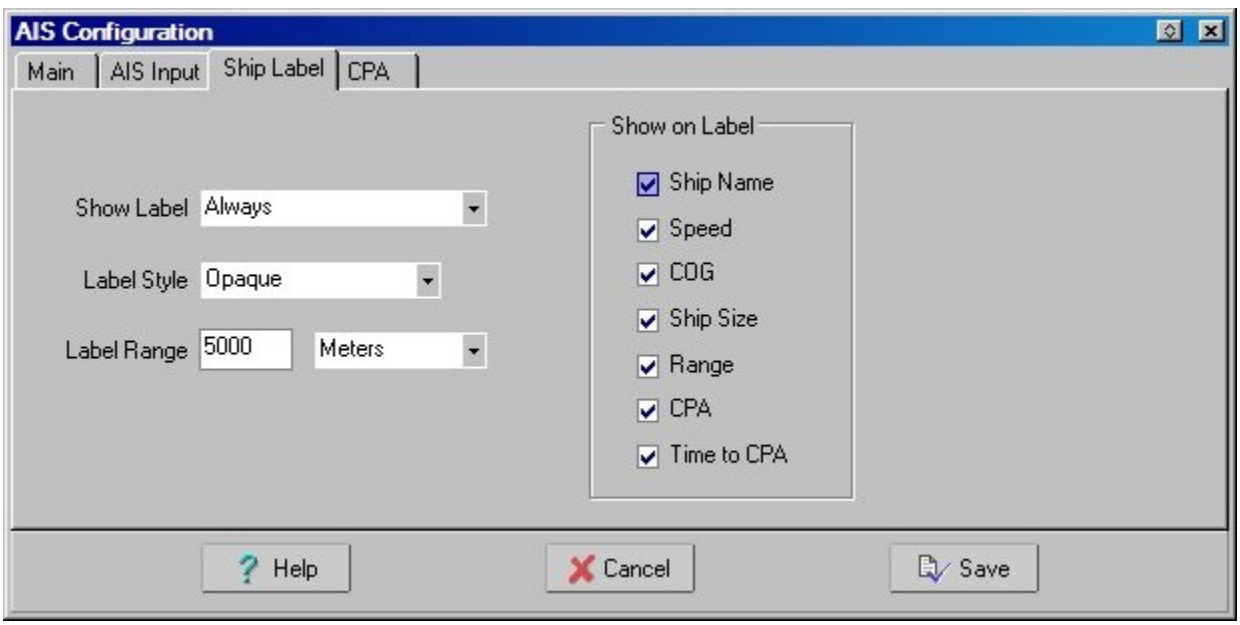


Use Com Port Input - If you have a AIS receiver connected to a com (serial) port.

- **Com Port** - Specify the com port number the receiver is connected to, if the gps and AIS receiver use the same cable the port number can be the same as the gps NMEA port setting set in the main OziExplorer configuration.
- **Baud Rate** - Set the baud rate the receiver uses, if the same port as the gps NMEA then this baud rate setting is ignored.

Use TCP/IP Input - If you are reading AIS data through the internet.

- **TCP/IP Host** - The TCP/IP host address.
- **TCP/IP Port** - The TCP/IP port number the host is using.



Show Label - A label with the ship information is shown on the map next to the ship.

- Never - Never show the label.

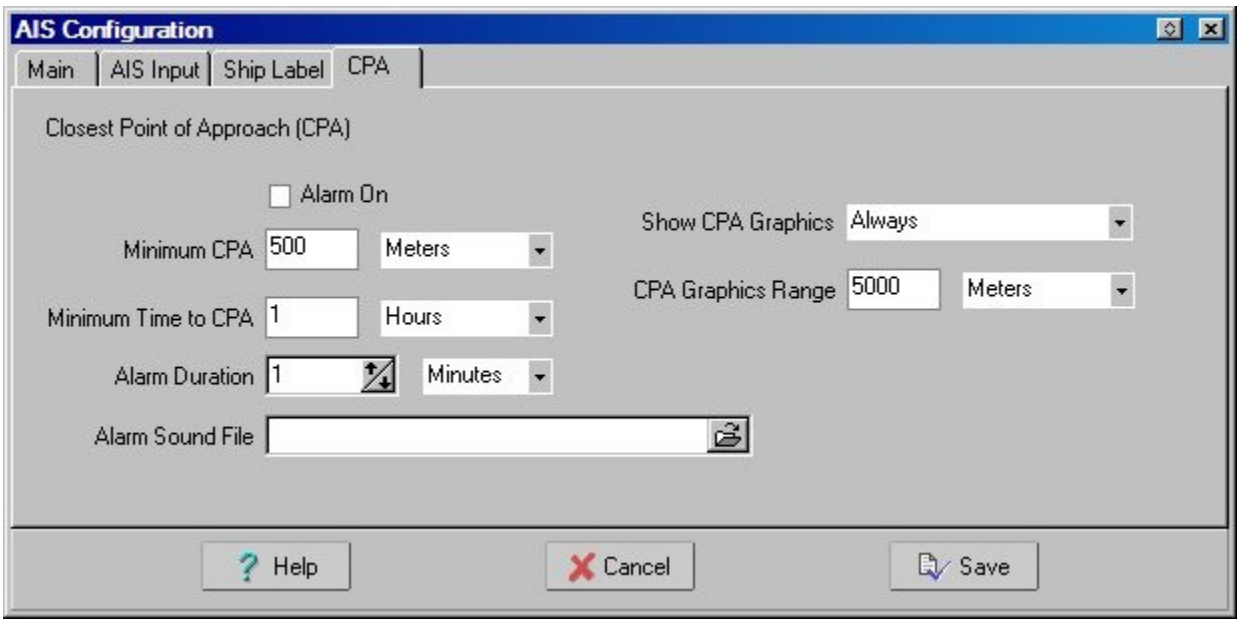
- Always - Always show the label.
- Less than Range - Only show the label if the distance the ship is away is less than the specified range.
- CPA Alarm - On show the label if the ship is generating a CPA alarm.

Label Style - Select the label style that suits.

- Transparent
- Opaque

Label Range - Specify the range using the specified units.

Show On Label - Tick the box to show the information on the label.



Settings for the Closest Point of Approach (CPA)

Alarm On - If this is ticked the alarm will sound if the specified conditions you set happen.

Minimum CPA - Sound the alarm if the cpa to any ship is less than this value.

Minimum Time to CPA - Sound the alarm if the time to the cpa to any ship is less than this value.

Alarm Duration - Sound the alarm for this length of time.

Alarm Sound File - Specify a .wav file for the alarm, if no file is specified a default beep will be used.

Show CPA Graphics - The CPA graphics show lines form each ship and a blue dot at the position the CPA will occur.

- Never - Never show the CPA graphics.
- Always - Always show the CPA graphics.
- Less than Range - Only show the CPA graphics if the distance the ship is away is less than the specified range.

- CPA Alarm - On show the CPA graphics if the ship is generating a CPA alarm.

CPA Graphics Range - Specify the range using the specified units.

Auto Pilot Output

The Auto Pilot Output option has been provided for experimentation purposes only, do not use it to guide your vehicle without supervision.

The functionality has not been tested to a satisfactory degree in this version of OziExplorer.

The Auto Pilot output option is turned on using the options on the Comm tab in the Configuration dialog.

Outputs the Standard NMEA sentences which can control an Autopilot. The sentences output are $GPRMC, $GPRMB and $GPAPB. You must check if these sentences are compatible with your Autopilot.

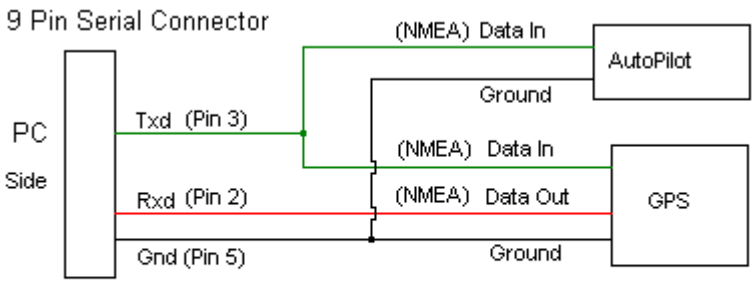
The sentences being output can be viewed by selecting the **Show NMEA Output to Autopilot** option on the Navigation Menu. You must be in active moving map (tracking) mode and also be navigating for the outputs to be valid.

The sentences are output each time a sentence is received from the GPS.

The output also functions when using the NMEA simulator in OziExplorer so this could be used for testing its operation.

The NMEA strings only contain valid navigational information if you are navigating along a route or to a waypoint. Otherwise the parameters in the strings are empty.

The most common connection is where the GPS and Autopilot share the same serial port, this is a diagram of a typical cable connection.



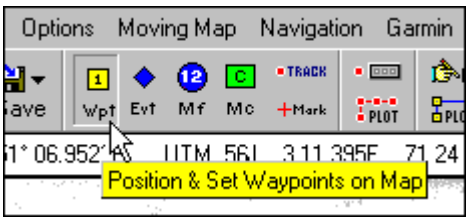
Waypoints

Waypoints are used to mark fishing or hunting locations, landmarks, boat ramps, and virtually any other point of interest.

If you have a compatible make and model of GPS waypoints can be uploaded/downloaded to or from the GPS.

Waypoints can also be included in a Route.

Creating Waypoints



Select the **Position & Set Waypoints** button on the toolbar. The cursor will change to a cross hair when it is in the map area.

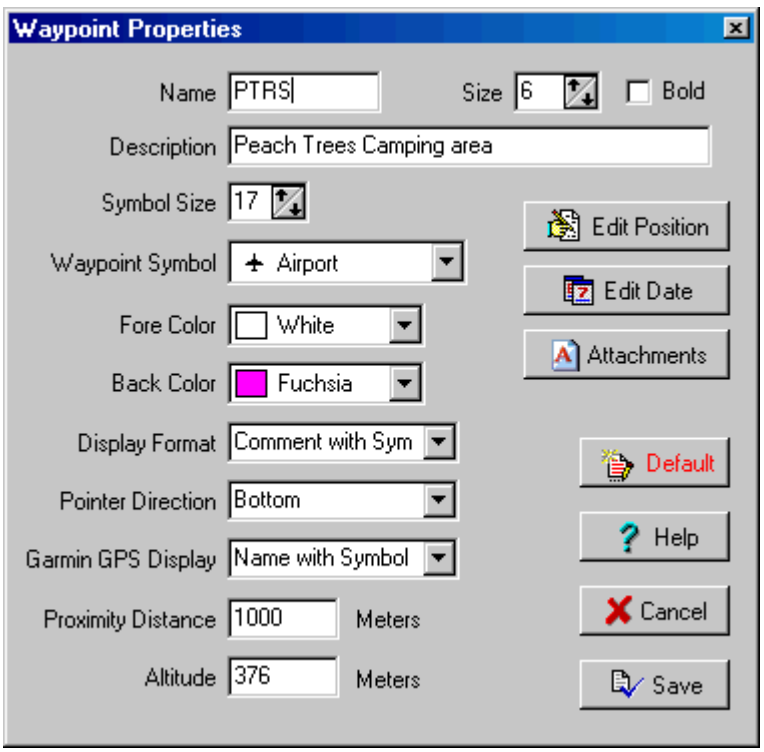
Select the position on the map where you want to place the Waypoint and press the left mouse button.

Editing the Properties of Waypoints

To open the property dialog for a Waypoint either double click on the Waypoint object or right click with the cursor on the Waypoint object and select the properties option on the menu.

The properties of a Waypoint can be modified in the properties dialog, see Waypoint Properties for details.

Waypoint Properties



Fields

Name - The name assigned to the waypoint. The length of the name depends on the model of GPS configured and can be set in GPS configuration. There is usually a limitation of what characters can be used in a waypoint name, check your GPS and/or GPS manual for these.

Size - The size of the font used to display the waypoint on the map.

Bold - Determines if the font is displayed with bold characters.

Description - The description of the waypoint.

Symbol Size - The size the symbol will be drawn on the map. 17 is the normal size of the symbol and this is the size where it will look natural. reducing the size below 17 will result in lost pixels from the symbol and an inferior image.

Waypoint Symbol - Select the symbol from the list provided. The list of symbols provided depends on the symbol set available for the GPS which has been specified in the configuration.

Fore Color - The foreground color of the event symbol.

Back Color - The background color of the symbol.

Display Format - For the map display of the waypoint only, select the display format type. Has no affect on the GPS waypoint display format.

Pointer Direction - The direction the pointer or symbol is located from the waypoint name. This is dependant on the display format which has been selected.

Garmin GPS Display - For Garmin GPS receivers only. Specifies the default way the waypoint is to be displayed on the GPS plotter screen. Not all Garmin models support the feature.

Proximity Distance - The proximity distance is used when using moving map mode (real time tracking). If your position moves inside the waypoint proximity an alarm is sounded. This proximity is not uploaded to the GPS and has no affect on the GPS at all.

Altitude - The Altitude of the waypoint. The units used can be specified in OziExplorer configuration. If the GPS supports it the altitude can be uploaded and downloaded from the GPS.

Buttons

Edit Position - Opens a dialog where the position of the point can be edited.

Edit Date - Opens a dialog where the date assigned to the waypoint can be edited.

Attachments - Allows files to be attached to a waypoint - see Waypoint Attachments help for details.

Default - Saves the currently set waypoint properties as the defaults used when new waypoints are created. The Name, Description, Proximity Distance and Altitude are NOT saved as defaults.

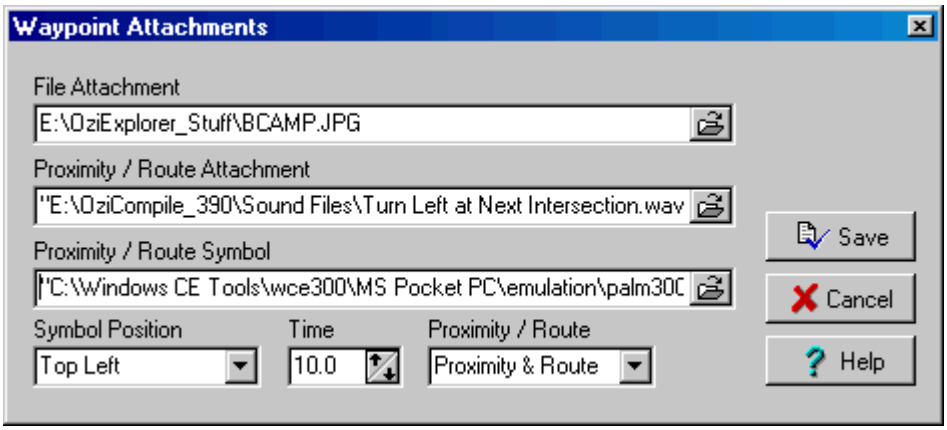
Help - Gives help for the properties dialog.

Cancel - Close the dialog and discard any changes.

Save - Close the dialog and keep the changes.

If you make any changes to the waypoint you must save the waypoint file to make the changes permanent.

Waypoint File Attachments



Fields

File Attachment - Any file can be attached to a waypoint. To attach a file press the button at the end of the field and select the file. To open the file move the mouse cursor over a waypoint and right click, a menu will be presented with an option called "Open File Attachment", select this option and the file will be opened by Windows in whatever program is associated with the file type. If the attached file is a program it will be executed, parameters can be passed to the program by use a "/" character between the program name and the parameters.

Proximity / Route Attachment - Any type of file can be attached but it is usual to attach a sound (.wav) file. If a .wav file is attached then it is played internally by OziExplorer, any other type of file is sent to Windows for action.

Proximity / Route Symbol - Any BMP image can be attached to a waypoint and is displayed when the proximity is entered. A selection of symbols are provided in the PSymbols folder under the OziExplorer folder.

Symbol Position - The position of the symbol relative to the waypoint.

Time - The length of time the wav file is played and the symbol is shown.

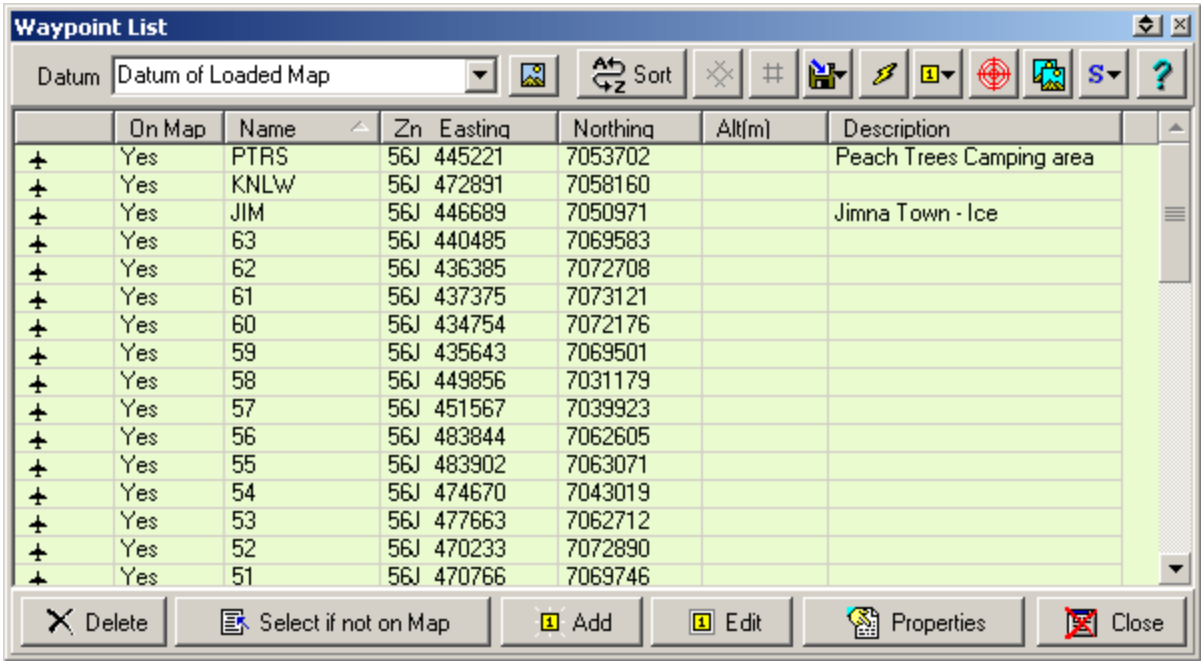
Proximity / Route - The Proximity / Route attachments will be used when the proximity zone of the waypoint is entered for just a waypoint (waypoint proximity) and/or if the waypoint is part of a route (route waypoint proximity).

Notes

A waypoint proximity is set up on the waypoint properties dialog and you can enter any distance you like.

A Route Waypoint proximity is set up on the Navigation Tab in OziExplorer configuration and applies to all waypoints in a route.

Waypoint List



Sorting by Name or Description - Click the left mouse button on the "Name" column title to sort the waypoints by name. To reverse the sort click again on the title. The waypoints can also be sorted by description.

Datum

Datum - The datum of the positions displayed in the list.

Sets the Datum to the Datum of the currently loaded map.

If the **Datum of Loaded Map** is selected then the datum used will always be the same as the datum of the currently loaded map. To see the datum of the loaded map place the mouse pointer on the field and the datum will be displayed as a hint.

Buttons

Sort **Sort** - Sorts the Waypoints permanently into alphabetical Name order. Save the Waypoint file if you want the changes kept.

Position Format Buttons - Show the positions in Degrees or the selected Grid. The Grid will change to reflect whatever Alternate Grid system you have chosen in the Configuration.

- Save selected waypoints to file.

- Send selected waypoints to the GPS.

- Allows you to change the Font Size, Style, Color, Symbol, Display Format, Pointer Direction, Proximity Distance or the Garmin GPS Display Format for All selected waypoints. If the OziExplorer3D add-on has been installed, Altitude can be added to the selected waypoints if Height Data is available for the region of the map.

 - **Plot Location of Selected Waypoint on Current Map** - Will position the current map so the Waypoint is in the center of the screen.

 - **Find Map for Selected Waypoint** - Will find all maps which can display the waypoint, see Find Map help for details.

 - Selection functions, none, all, invert.

Delete - Deletes the selected waypoints.

Select if Not on Map - Selects all Waypoints which will not plot on the currently loaded map, they can then be deleted or another action performed.

Add - Manually Add a new Waypoint.

Edit - Edit the selected Waypoint.

Properties - Opens the properties window for the selected Waypoint, a double click on the waypoint also opens the properties window.

Close - Closes the Waypoint List. If you have made any changes to the Waypoints you will be reminded to save the Waypoint file.

Adding and Editing Waypoints

Editing Waypoints

There are 2 ways to edit waypoints from within the Waypoint List.

Select the waypoint and press the **Edit Button** - this gives an editor where only the major properties are available, this is the preferred method for editing waypoints quickly.

Select the waypoint of press the **Properties Button** - this gives access to all the properties of the waypoint.

Adding Waypoints

To add a new waypoint to the current list press the **Add Button** - this will open up the Add/Edit Waypoint window where the major details of the waypoint can be entered. To set the other properties of the waypoint you must first add the waypoint and then select the properties button to open the properties window.

Add/Edit Waypoint Window

This section describes the fields in the window.

Name - The waypoint name

Position Fields - These are entered using the same coordinate system you have selected in the waypoint list.

Altitude - The altitude of the waypoint.

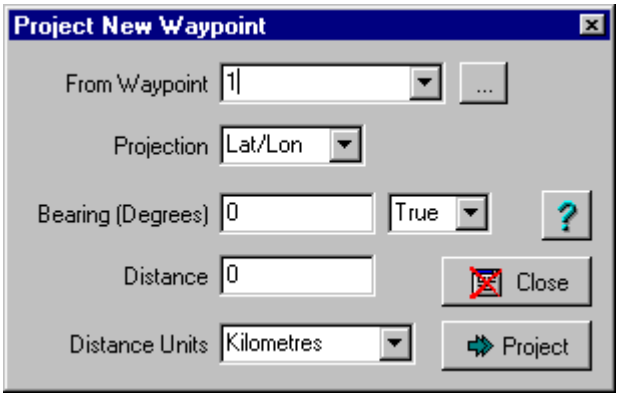
Description - The description of the waypoint.

Symbol - The symbol to use.

Position Datum - This is the datum you were using when you obtained the position of the waypoint you are now entering. The coordinates will be converted from this datum to the datum of the current map.

Project a Waypoint (or Trackpoint)

This feature allows a new waypoint or trackpoint to be created at a specified bearing and distance from a known point (waypoint or last trackpoint).



From Waypoint - Select the Waypoint name to project from or the last Trackpoint

... Button - Refresh the waypoint name list.

Projection - Lat/Lon or UTM. With the Lat/Lon projection the calculation are based on the standard calculations using the latitude, longitude and bearing. With UTM projection the latitude and longitude are converted to x,y coordinates using a Transverse Mercator projection, the bearing and distance are applied to these x,y coordinates and the new position calculated. The UTM projection method more closely approximates drawing lines on a map which uses a Transverse Mercator projection.

Bearing (Degrees) - The direction to project from the current position. Select either True or Magnetic reference. The reference does not apply to UTM projection as the bearing is always referenced to the grid.

Distance - Enter the distance in the units specified below.

Distance Units - Select unit of distance to use.

Close - Close the dialog

Project Button - Do the projection and create the new Waypoint or Trackpoint.

Working with Routes

The Lowrance/Eagle, Garmin, Magellan and MLR GPS units handle the upload and download of routes in different ways.

The Lowrance/Eagles only use the Waypoint numbers to define the waypoints which belong to a route, the waypoint must already be in the GPS. When routes are downloaded and uploaded only the waypoint numbers are sent.

The Magellan and MLR only send the waypoint names to the GPS the waypoints must already exist in the unit.

The Garmins send all the waypoint information (name, position etc) for each waypoint in the route. This causes complications as a waypoint with the same name may already be present on the map. To overcome this problem the assumption is made that the waypoints already displayed on the map take preference and hence the waypoint in the route always takes on the attributes (name, position etc) of the waypoint on the map with the same name.

Creating Routes

From the Tool Bar or View menu select the **Route Editor** option.

On the top window of the Route Editor select the Route Number you want to create.

Press the Properties button at the top of the form.

A new form will appear which will allow you to enter the Route name, description and select the waypoints in the route from those available (loaded from file).

If you are going to upload the routes to a Lowrance or Eagle GPS the Waypoints specified must exist within the GPS or will be uploaded shortly so they will be valid. The GPS will accept Waypoints in the Route which do not exist but will not be able to navigate to them.

If uploading to Garmins the Waypoints in the Route will automatically be created if they do not exist or will overwrite any waypoints already in the GPS which have the same name.

The other way to add Waypoints to the Route is by point and click.

The Waypoints must be visible on the Map either by creating them manually, loading them from a file or downloading them from the GPS.

Press the **Add Waypoint** button on top of the Route Editor.

When the cursor is moved over the Map it will change to an arrow with the word ROUTE written below it. Position the cursor on top of a Waypoint and press the LEFT mouse button - the Waypoint will be added to the Route you have selected.

NOTE - The Routes can be saved to file and loaded from file by using the Load and Save menu options on the button bar.

There is a button on the Route Editor named **ReLink**, this button is for use with Garmin GPS . The Route waypoints also store the waypoint attributes (name, position etc). These attributes could be incorrect if the actual waypoints on the map have been edited since the route was created. The ReLink button will copy the attributes of the waypoints on the map into the route waypoints.

Loading Routes from File

This is still causing me problems on how to code this properly.

At the moment you should make sure you load the waypoint file which you were using when you created the route. It is not possible to display a route unless the waypoints are loaded as well.

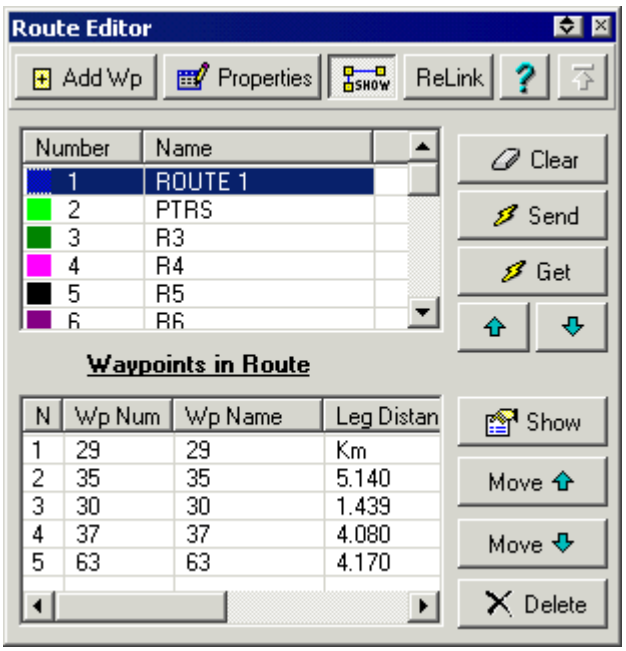
It is possible for the waypoint stored in the route not to agree with the waypoints loaded on the map if the waypoints have been modified since the route was created. This is corrected by pressing the **ReLink** button on the Route editor.

Upload/Download

All the Routes can be uploaded to the GPS or downloaded from the GPS using options on the Lowrance, Garmin, Magellan and MLR menus.

Single Routes can also be uploaded and downloaded using the buttons on the Route Editor.

Route Editor



Lists

Upper List - The number of Routes available. This number depends on how many routes are available in your GPS and how many you specified in the GPS parameters in configuration.

Lower List - A list of the waypoints in the Route selected in the upper list. The list scrolls to the right to see all the columns. To see the list in full press the Show button to the right of the list.

Buttons

Add Wp - Depressing this button the allows you to click on top of waypoints on the map and they are automatically added to the end of the selected Route.

Properties - Opens the selected Route properties.

Show (Routes) - Shows or hides the routes on the map.

ReLink - If you make any changes to a waypoints geographic position or sort the waypoints you need to press this button to relink the waypoints stored in the route to the actual waypoints in the waypoint file you used when the routes were created. Note that relinking does not work if you change the names of 1 or more waypoints. The Route must be manually edited to fix name changes.

Help - Display this help.

Reduce/Expand Arrow - Reduces the size of the Route Editor dialog to get it out of the way.

Clear - Cleas the waypoints from the selected Route.

Send - Send the selected Route to the GPS.

Get - Gets the selected Route from the GPS.

 Route Up/Down - Moves the position of the route up and down in the list.

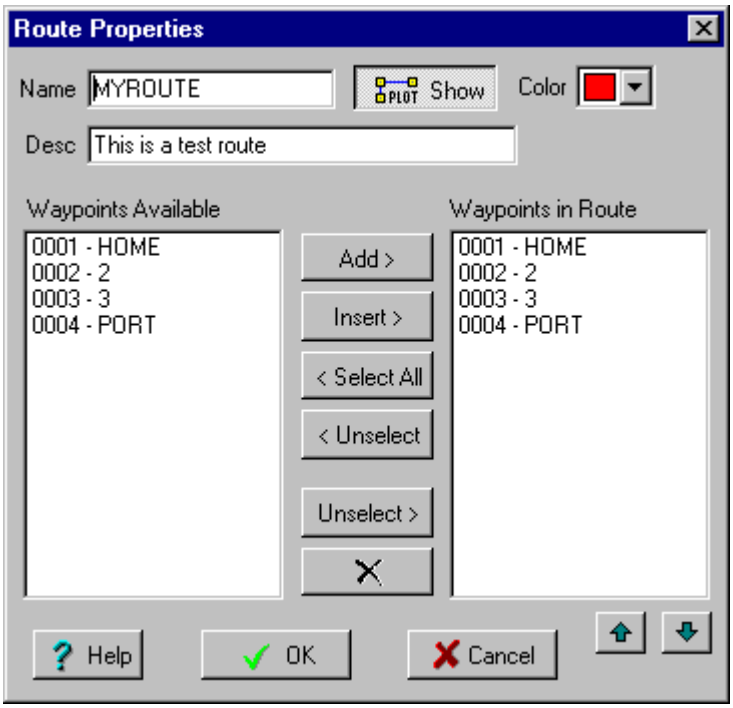
Show (Route List) - Show the Route in a larger dialog.

Move (Up) - Move the selected waypoint up in the list.

Move (Down) - Move the selected down in the list.

Delete - Delete the selected waypoint from this Route.

Route Properties



Fields

Name - The Name of the route, up to 16 characters. This is the name which will be uploaded to the gps if your GPS supports Route names.

Desc - The Description of the Route, up to 40 characters.

Color - The color used to display the Route on the screen.

Waypoints Available - The list of waypoints which have been loaded into OziExplorer.

Waypoints in Route - The list of waypoints in the Route.

Buttons

Show - Show this Route on the map.

Add - Add the selected waypoints in the left list to the end of the Route.

Insert > - Insert the selected waypoints in the left list into the Route before the selected waypoint in the right list.

< **Select All** - Select All waypoints in the left list.

< **Unselect** - Unselect waypoints in the left list.

Unselect > - Unslect waypoints in the right list.

Delete - Delete the waypoint from the Route.

Help - Display theis help.

OK - Close the Dialog and save the changes.

Cancel - Close the Dialog and ignore any changes made.

Events

Events are specific to the Lowrance and Eagle models of GPS.

If you are having trouble finding them described in your Lowrance or Eagle GPS manual they are referred to as Icons. On the box they may be referred to as **Events** or **Event markers**.

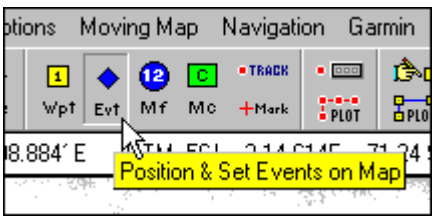
Events are used to mark fishing or hunting locations, landmarks, boat ramps, and virtually any point of interest.

In the GPS an event has only a position and a symbol (the symbol may also be called an Icon).

If you have a compatible model of Lowrance or Eagle GPS events can be uploaded/downloaded to or from the GPS.

If you are using OziExplorer with some other brand of GPS Events can still be used to indicate positions on the map in the various symbols but of course they cannot be uploaded to your GPS.

Creating Events



Select the **Position & Set Events** button on the toolbar. The cursor will change to a cross hair when it is in the map area.

Select the position on the map where you want to place the Event and press the left mouse button.

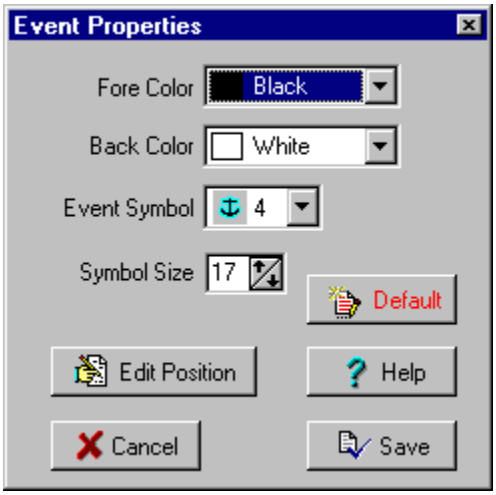
Editing the Properties of Events

To open the property dialog for an Event either double click on the Event object or right click with the cursor on the Event object and select the properties option on the menu.

The properties of an Event can be modified in the properties dialog, see Event Properties for details.

Events can be saved to a file by using the **Save Events to File** option on the Save menu.

Event Properties



Fields

Fore Color - The foreground color of the symbol. The Garmin symbol set does not allow the color to be changed.

Back Color - The background color of the symbol.

Event Symbol - Select the symbol from the list provided. The list of symbols provided depends on the symbol set available for the GPS which has been specified in the configuration.

Symbol Size - The size the symbol will be drawn on the map. 17 is the normal size of the symbol and this is the size where it will look natural. reducing the size below 17 will result in lost pixels from the symbol and an inferior image.

Buttons

Edit Position - Opens a dialog where the position of the event can be edited.

Default - Saves the currently set event properties as the defaults used when new events are created.

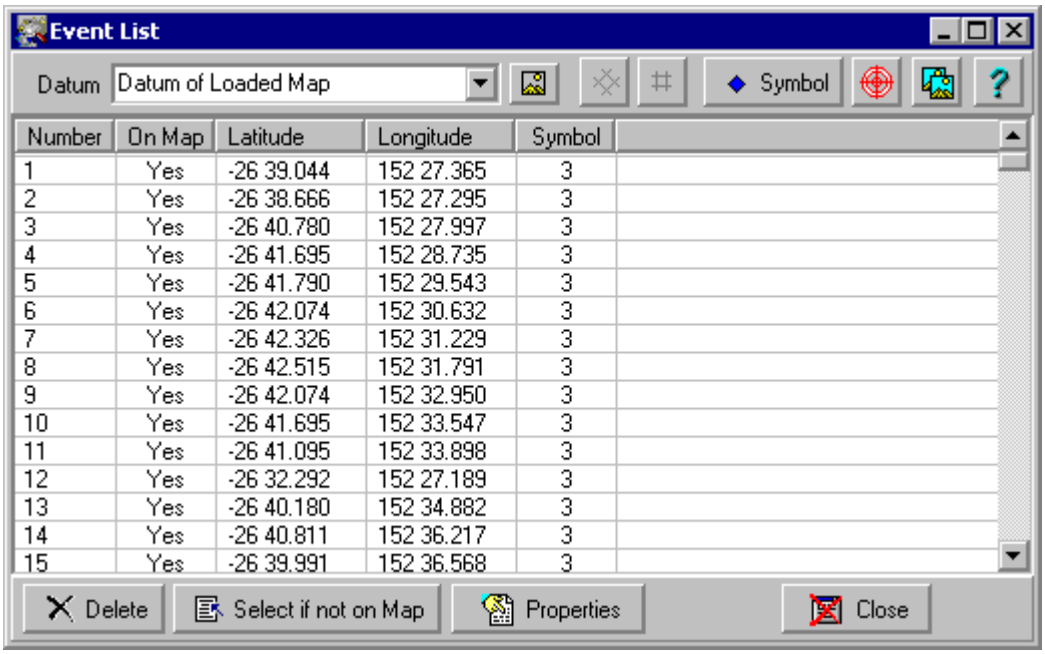
Help - Gives help for the properties dialog.

Cancel - Close the dialog and discard any changes.

Save - Close the dialog and keep the changes.

If you make any changes to the event you must save the event file to make the changes permanent.

Event List



Datum

Datum - The datum of the positions displayed in the list.

Sets the Datum to the Datum of the currently loaded map.

If the **Datum of Loaded Map** is selected then the datum used will always be the same as the datum of the currently loaded map. To see the datum of the loaded map place the mouse pointer on the field and the datum will be displayed as a hint.

Buttons

Position Format Buttons - Show the positions in Degrees or the selected Grid. The Grid will change to reflect whatever Alternate Grid system you have chosen in the Configuration.

Symbol **Symbol** - Allows the Symbol to be changed for all the selected Events..

Plot Location of Selected Event on Current Map - The map is moved to position the selected Event in the center of the map.

Find Map for Selected Event - The maps are scanned and those which contain the position of the selected Event will be shown in a list.

Delete the Selected Events - Deletes all the Events which have been selected.

Select if not on Map - If the Events are not located on the currently loaded map then they are selected.

Properties - Opens the property dialog of the selected Event.

Map Features

Map Features are objects which can be placed on a map, they are used to show the position of places or features of interest. They can be displayed as a blue circle with a number or as a symbol which the user can select.

A link to a picture file can also be added to a map feature and the picture is displayed with the map feature in the properties dialog.

Map Features are saved in the map file.

There is limit of 500 map features per map.

Creating Map Features

Select the **Position & Set Map Feature** button on the toolbar. The cursor will change to a cross hair when it is in the map area.

Select the position on the map where you want to place the map feature and press the left mouse button.

Editing the Properties of Map Features

To open the property dialog for a map feature either double click on the map feature object or right click with the cursor on the map feature object and select the properties option on the menu.

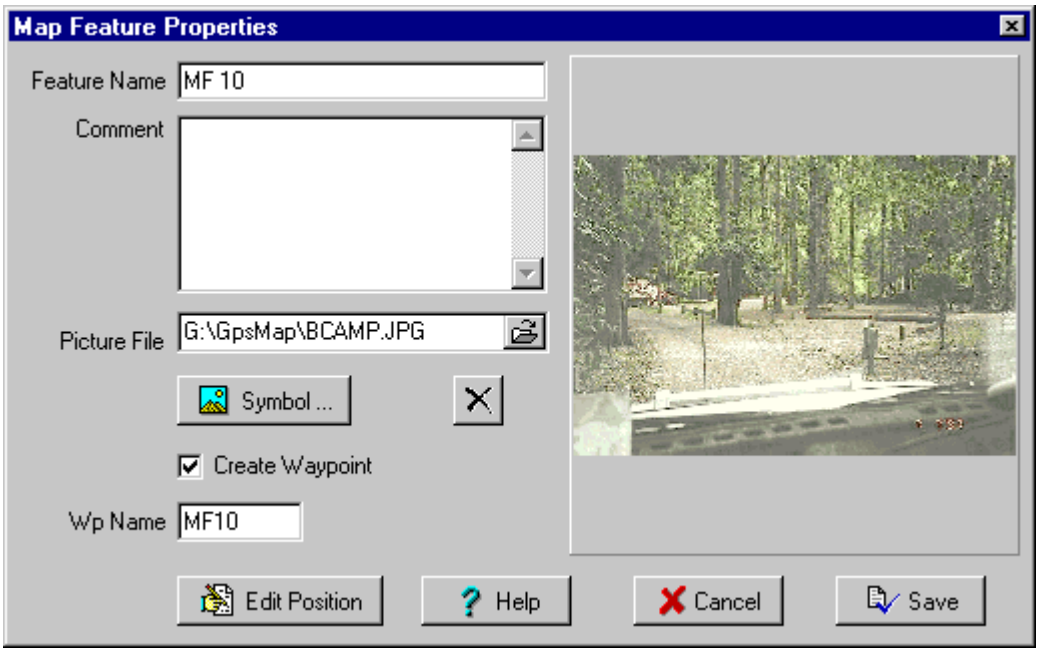
The properties of a map feature can be modified in the properties dialog, see Map Feature Properties for details.

Map Feature Symbols

A map feature can also be displayed as a symbol, extra symbols can be created by the user.

See Map Feature Symbols for details.

Map Feature Properties



Fields

Feature Name - The name you give to the feature, this name is displayed in the hint when the cursor is placed on the map feature object.

Comment - Any comment or description you want to give to the feature.

Picture File - If you want a picture displayed in the properties dialog select the image by clicking on the arrow at the end of the field. BMP or JPG files can be selected.

Symbol - Press the button to select a symbol. This symbol will be used to display the map feature on the map.

Delete Symbol - The X button will remove the link to the symbol and the map feature will display as a blue circle until a new symbol is allocated.

Create Waypoint - If this checkbox is ticked a waypoint will be allocated for the map feature. The waypoint only exists for upload to a gps and will not appear in waypoint lists etc.

Wp Name - The name you want to give to the waypoint when it is uploaded to the GPS.

Buttons

Edit Position - Opens a dialog where the position of the map feature can be edited.

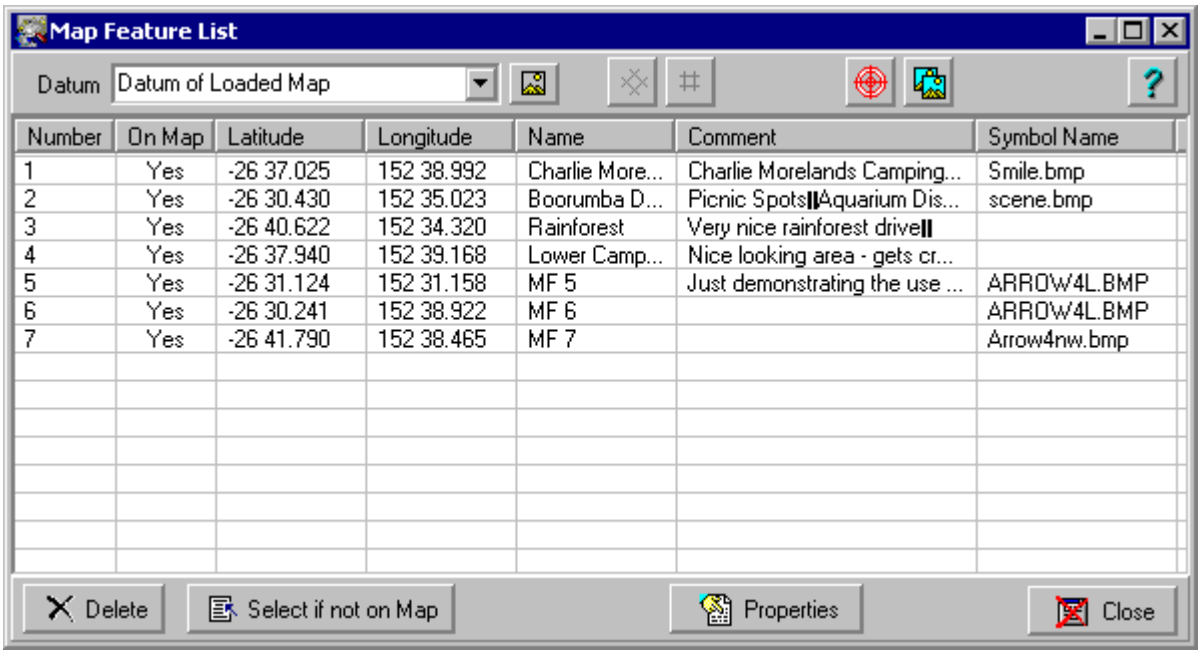
Help - Gives help for the properties dialog.

Cancel - Close the dialog and discard any changes.

Save - Close the dialog and keep the changes.

If you make any changes to the map feature you must save the map file to make the changes permanent.

Map Feature List



Datum

Datum - The datum of the positions displayed in the list.

Sets the Datum to the Datum of the currently loaded map.

If the **Datum of Loaded Map** is selected then the datum used will always be the same as the datum of the currently loaded map. To see the datum of the loaded map place the mouse pointer on the field and the datum will be displayed as a hint.

Buttons

Position Format Buttons - Show the positions in Degrees or the selected Grid. The Grid will change to reflect whatever Alternate Grid system you have chosen in the Configuration.

Plot Location of Selected Map Feature on Current Map - The map is moved to position the selected Map Feature in the center of the map.

Find Map for the Selected Map Feature - The maps are scanned and those which contain the position of the selected Map Feature will be shown in a list.

Delete the Selected Map Features - Deletes all the Map Features which have been selected.

Select if not on Map - If the Map Features are not located on the currently loaded map then they are selected.

Properties - Opens the property dialog of the selected Map Feature.

User Symbols for Map Features

The Map features can be displayed as a symbol. The symbol files are bitmap images.

The symbol for a Map feature is selected on its property dialog.

Symbol Format

The symbol is displayed as a 17x17 pixel grid.

The symbol files are windows Bitmap files (BMP). Any BMP file can be used of any size, if the BMP is too large it is reduced to 17x17 pixels, the aspect ratio is maintained. A bitmap less than 17x17 is displayed as it is.

To design proper symbols with a transparent color the following format should be used.

Create a bitmap which is 18 pixels wide and 18 pixels high. Only the 1st 17 pixels are displayed so design the symbol image within a 17x17 pixel square. The color of pixel 18x18 i.e. the lower right pixel becomes the transparent color, (you will be able to see the map through the transparent color). There are quite a few examples provided to look at in an image editor to see how to design them.

Adding your own Symbols

Simply place your bitmap files in a folder called ***SYMBOLS*** which should be created as a sub-folder of the folder where OziExplorer was installed (normally ***oziexplorer***). The next time OziExplorer is run the new files will be added to the available symbols.

New Symbols Required

A selection of symbols has been provided, if anyone designs new symbols which they feel may be useful to others please email then to me and they will be included in subsequent releases. I may even be able to provide them directly on the web page for download.

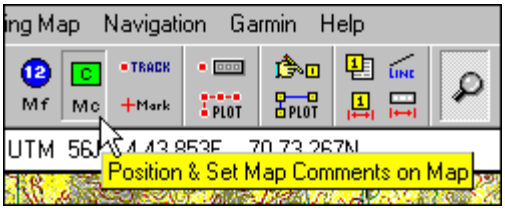
Map Comments

Map Comments are text objects which can be placed on a map, they are used to give specific information or notes you may require.

Map Comments are saved in the map file.

There is limit of 500 map comments per map.

Creating Map Comments



Select the **Position & Set Map Comments** button on the toolbar. The cursor will change to a cross hair when it is in the map area.

Select the position on the map where you want to place the map comment and press the left mouse

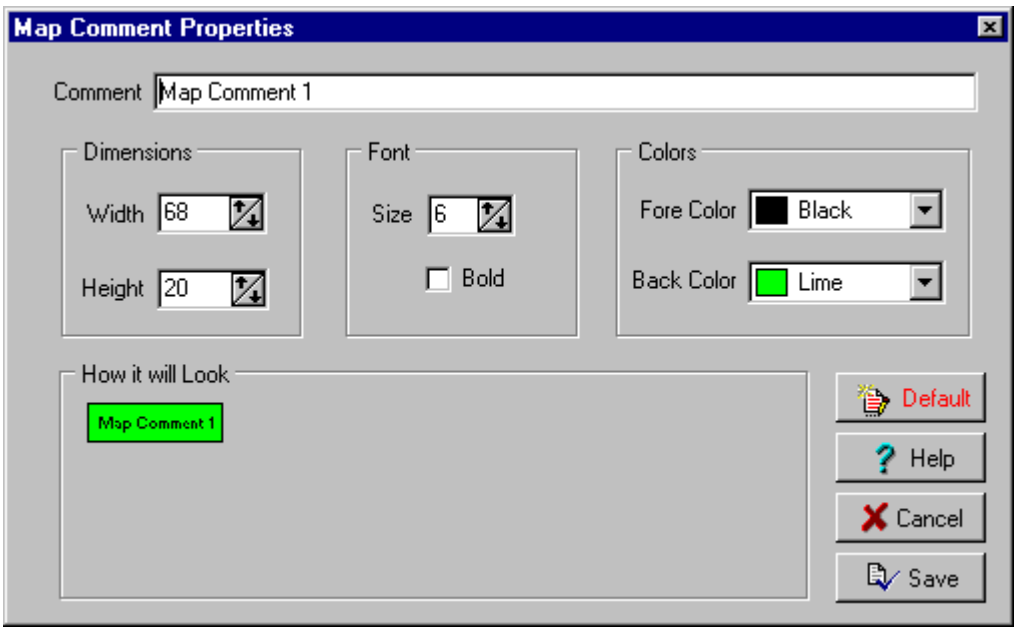
button.

Editing the Properties of Map Comments

To open the property dialog for a map comment either double click on the map comment object or right click with the cursor on the map comment object and select the properties option on the menu.

The properties of a map feature can be modified in the properties dialog, see Map Comment Properties for details.

Map Comment Properties



Fields

Comment - The text you want to see on the map.

Width - The width of the map comment box.

Height - The height of the map comment box.

Size - The size of the font used to display the comment on the map.

Bold - Determines if the font is displayed with bold characters.

Fore Color - The foreground color of the event symbol.

Back Color - The background color of the symbol.

How it will Look - This shows how the comment will look on the map and changes as you adjust the other properties.

Buttons

Default - Saves the currently set map comment properties as the defaults used when new map comments are created. The Comment text is NOT saved as a default.

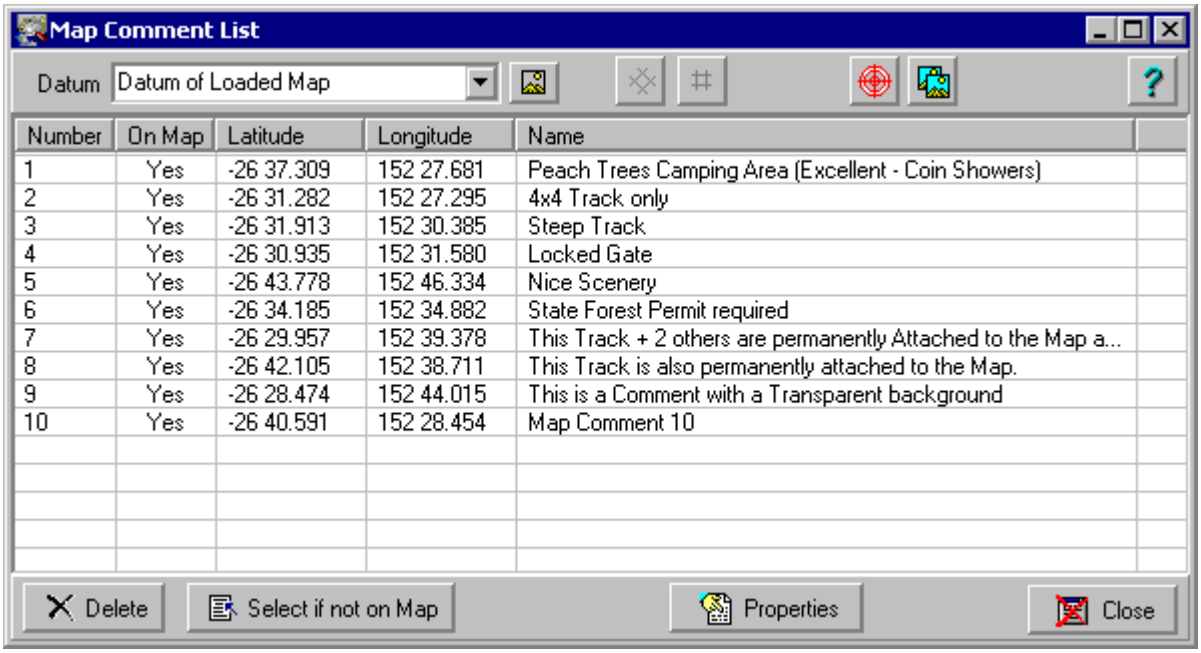
Help - Gives help for the properties dialog.

Cancel - Close the dialog and discard any changes.

Save - Close the dialog and keep the changes.

If you make any changes to the map comments you must save the map file to make the changes permanent.

Map Comment List



Datum

Datum - The datum of the positions displayed in the list.

 Sets the Datum to the Datum of the currently loaded map.

If the **Datum of Loaded Map** is selected then the datum used will always be the same as the datum of the currently loaded map. To see the datum of the loaded map place the mouse pointer on the field and the datum will be displayed as a hint.

Buttons

 **Position Format Buttons** - Show the positions in Degrees or the selected Grid. The Grid will change to reflect whatever Alternate Grid system you have chosen in the Configuration.

 **Plot Location of Selected Map Comment on Current Map** - The map is moved to position the selected Map Comment in the center of the map.

 **Find Map for the Selected Map Comment** - The maps are scanned and those which contain the position of the selected Map Comment will be shown in a list.

Delete the Selected Map Comments - Deletes all the Map Comments which have been selected.

Select if not on Map - If the Map Comments are not located on the currently loaded map then they are selected.

Properties - Opens the property dialog of the selected Map Comment.

Working with Tracks

Tracks can be downloaded from the GPS or manually created and uploaded to the GPS.
Tracks which have been downloaded from the GPS can also be modified manually.

OziExplorer can display multiple tracks on a map at the same time but with the following conditions.

Track 1 can always be considered the **Active Track** for the following reasons.

A Track downloaded from the GPS always loads into track number 1. The track can then be saved to disk and reloaded from disk into any track number. When uploading to the GPS it is always Track number 1 which is uploaded so you must load the track from disk into track 1 first.

There is the ability to **append a track** from a file to the currently loaded track.

When manually creating a track you are always working with Track number 1 and all the buttons for manually entering tracks only apply to track 1.

Uploading to the GPS

Eagle/Lowrance

Uploading a new track to the GPS automatically destroys the track in the GPS you are uploading into. Many Lowrance and Eagles have multiple tracks and you must specify which track you are going to load into.

Garmin

Uploading a new track to a Garmin appends the new track to the existing track. If you want to remove the old track you must delete it manually using the GPS functions. Later model Garmins allow the track to be loaded into named saved tracks or the Active track.

Magellan

Tracks can be uploaded to the later models Magellans such as the 315, 320 etc. The Tracker and ColorTrak with can also upload tracks except for those with the older ROM software versions.

MLR

Tracks cannot be uploaded to an MLR GPS.

Loading Tracks

Track number 1 can be loaded from the Load menu or from the Track Control. All other tracks can only be loaded from the Track Control.

Use the Track Control Property buttons to load and save the tracks and set the properties for each of the tracks. By saving the track the properties are saved with the track. Each track can be displayed independently.

Manually Creating Tracks

Tracks can be created directly onto the map and then saved to file and/or sent to the GPS.

To manually create a Track.

When manually creating a track you are always working with track number 1.

Press down the ***Manually Create Track Point*** Button which is located on the button bar 

Move the mouse pointer to a selected location on the map and press the left mouse button - a track point will be added to the map joined to the last previous point which was created. You can continue adding track points until you have reached the number specified for your GPS.

CAUTION : Eagle and Lowrance units do not store the absolute position of each track point but store the x and y distance in meters from the previous point. The variable in which they store these distances is an integer (2 bytes), this limits the distance (x or y) to 32,535 meters or 32.5 kilometers. What does this mean, it means the distance between any 2 track points in either the x or y direction cannot be greater than 32.5 kilometers (give or take), keep this in mind when manually creating track points as OziExplorer does not as yet warn you when you have exceeded this value. If you upload values greater than the maximum the values wrap and the track can go anywhere (usually in the opposite direction that you intended).

Special keys which can be used when Creating Track Features

For efficient creating of map features the use of these key combinations is essential, I suggest you print them out or write them down so they are easily seen.

Holding the **Alt key** down when creating a new track point will automatically start a new track section.

Holding the **Shift key** down when creating a new track point will "snap" onto the closest track point to the point where you clicked.

Holding the **Shift & Ctrl keys** down together when creating a new track point will "snap" onto the closest track line to the point where you clicked.

Holding the **Shift & Alt keys** down together will create a new track section and "snap" to the nearest track point.

Holding the **Shift & Ctrl & Alt keys** down together (need good finger control) will create a new track section and "snap" to the nearest track line.

These options are also available on the right click menu of "Active" track points.

Splitting and Joining Tracks

Splitting or Joining Track Sections

A track can be split into sections (putting a break in the track). Open the Track Control and select the track to be split. Press the Track List button to show the list of the track points. Select the track point where the break in the track is required. To help select the correct track point, a location cursor  on the currently selected track point is displayed. Press the  split/join button to split the track and create a new track section at the selected track point. If the selected track point is the first point of a section, the section will be joined to the previous section. The section number is shown in the track list for each track point.

Splitting Track Sections into Individual Tracks

To split track sections into individual tracks, on the Track Control, select the track and press the "Split Track Sections into Separate Tracks" button on the second row of buttons on the top of the Track Control. New tracks will be created in the track control for each track section.

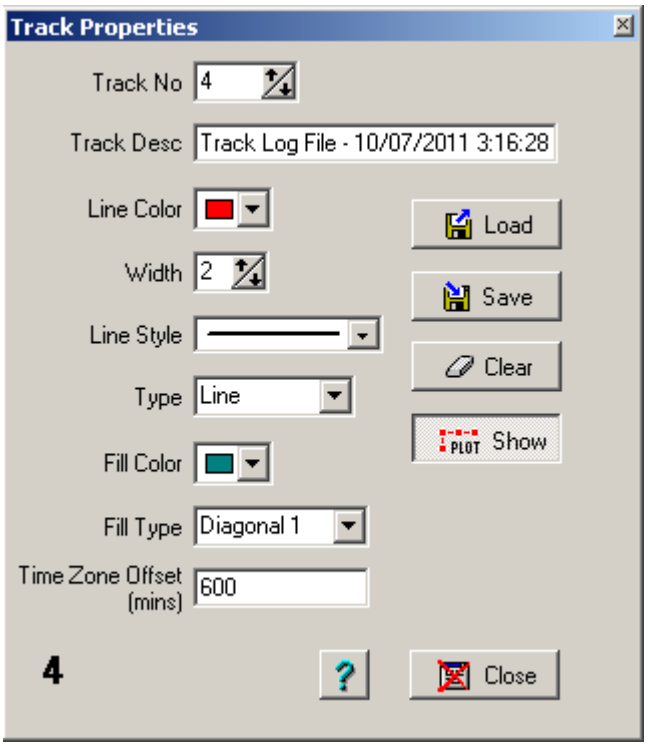
Another method is in the Track List, select the first point for the track to be saved, hold down the Shift key and select the last point for the track. The track points will be selected. (while holding the shift key, the down or up arrow can be used to select the track points). Click the Save button on the top of the Track List to save the selected points to a new track.

Hints for Using Tracks

When you have a large track displayed on the map it can slow down the system quite considerably. To speed up redrawing of the track set the **Track Width** in the configuration screen to 1 pixel. The slowness is evident when you drag another window over the top of the map and the track has to redraw. The problem can be much reduced if you turn off "Show Window contents while dragging" in windows 95.

If you have a large track and have "Active" points set on the processing power required to check if the mouse is over a track point or waypoint or event etc is enormous. It is quite possible to have more than thousands of objects on the screen at once. So only have active track points set when you need them i.e. if you need to drag a point to a new position, delete a point, insert a point or Start a New Track Section.

Track Properties



Fields

Track Desc - Any text to describe this track, up to 35 characters.

Line Color - The Color used to draw the track on screen.

Width - The width in pixels of the line used to draw the track.

Line Style - The style used to draw the track on screen.

Type - The track type.

- **Line** - draws a line between points.
- **Polygon** - Closes the track and fills the inside with the selected fill color and type.
- **Alarm Zone** - A special case of a polygon, a track with an Alarm Zone type can be attached to a map and will issue an alarm when your position enters the zone when in moving map (real time tracking) mode.

Fill Color - The color used to fill the track when it is a closed polygon.

Fill Type - The method used to fill the polygon.

Time Zone Offset (mins) - The time offset for the date / time of the track points. The time zone offset is stored in the track file.

Buttons

Load - Load a track File into this track.

Save - Save the Track to a File.

Clear - Clear the Track from memory.

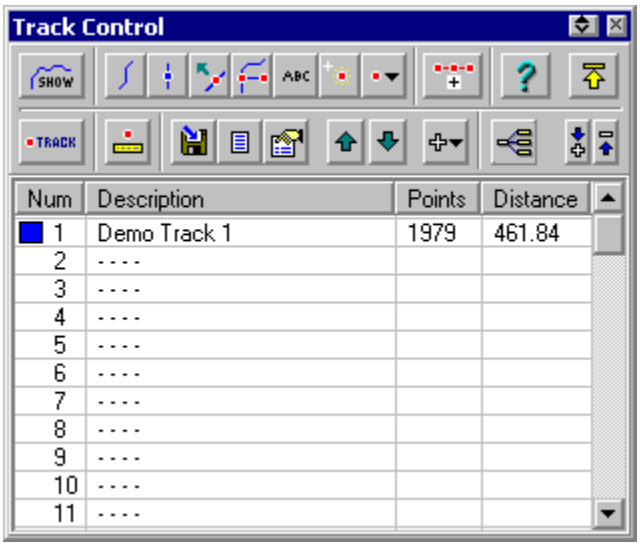
Show - Show this Track on the screen.

Help - Shows this help.

OK - Close the Property Dialog.

The Track Control

To display the ***Track Control*** dialog press down the ***Show/Hide Track Control*** Button on the button bar.



Fields

Num - The numbers 1 to 99 ... indicate the track number. The colored box to the left of the number is the current color of the track when drawn on the map.

Description - The description for each track. This description can be set in the properties of each individual track.

Points - The number of points used by the track, there is a limit on the number of track points for each different GPS Model and Type but there is no limit to how many track points that can be displayed.

Distance - The distance along the track in the "Map Distance" units specified in the configuration.

Buttons

Show/Hide the track display on the map - Display or hide all the Tracks on the map.

Turn Off Active track points - When this button is depressed, Active track points (the track points which have been made "Active") are turned off. This only applies to track 1.

Show Fixed track points - The track points are shown with a cross symbol. These points cannot be manipulated.

In order to manipulate the track the points must be displayed as objects, this is referred to as "Active". Two buttons have been provided to make track points active. Active track points can be dragged to a new position using the Shift key & Left mouse button, a menu can be displayed when the right mouse button is pressed. Only Track 1 can have points made active.

The menu has the following options

- Delete - deletes the point
- New Track Section - **Garmin GPS** receivers allow the track to be broken and restarted at a different position. Select this option to break the track at this point. Note: there is still only 1 track there is just no line joining the segments. If you are using a **Lowrance** or **Eagle GPS** breaking the track into segments has no affect in the GPS when the track is uploaded - **the track points will still be joined on the GPS plotter screen**.

 **Make Track Points in Box Active** - A specific block of track points can be set as "Active" by drawing a box around them with the mouse, use the button on the Track Control to do this. Press the button and move the mouse pointer onto the map, draw a box around some track points, all points within the box will be marked as active.

 **Make All Track Points in Track Section Active** - All points within a specific track section can be marked as "Active", use the button on the Track Control to do this. Press the button and draw a box around 1 or more track points. The first track point found in the box will be chosen and all track points within the same track section will be marked as active.

 **Open properties dialog when creating new track points** - Automatically open the properties dialog for the track point when the track point is created.

 **All New Track Points are Created Active** - If this button is depressed the all new track points created from then on will be created in the active state.

 A menu of options for manipulating active track points.

- **Save Active Track Points to a File** - Track Points which have been made Active are Saved to a file.
- **Delete Active Track Points** - Points marked as Active will be deleted

 **Insert a new track point** - When this button is down the track points are insert mode. To insert a new track between existing points position the mouse over an Active track point, hold the **Alt key** down, press the left mouse button, a new track point will be created to the right of the currently selected point, drag the new point to its required position.

 **Manually Create Track Points** - When this button is depressed new track points can be created by clicking on the map.

 **Show Track Point Hints** - When this button is depressed a hint (track point details) will be displayed when the mouse pointer is positioned on the active track point.

 **Save the Selected Track** - The track currently selected in the list will be saved to a file.

 **Show Track List** - See the Track List help for details.

 **Selected Track Properties** - Shows the Track Properties dialog, see Track Properties help for details.

 **Move track Up** - Moves the selected track up in the list.

 **Move Track Down** - Moves the selected track down in the list. In some cases track 1 needs to be cleared so a new track can be loaded. If the track already in track 1 needs to be kept then the best method is to move an empty track up into its place.

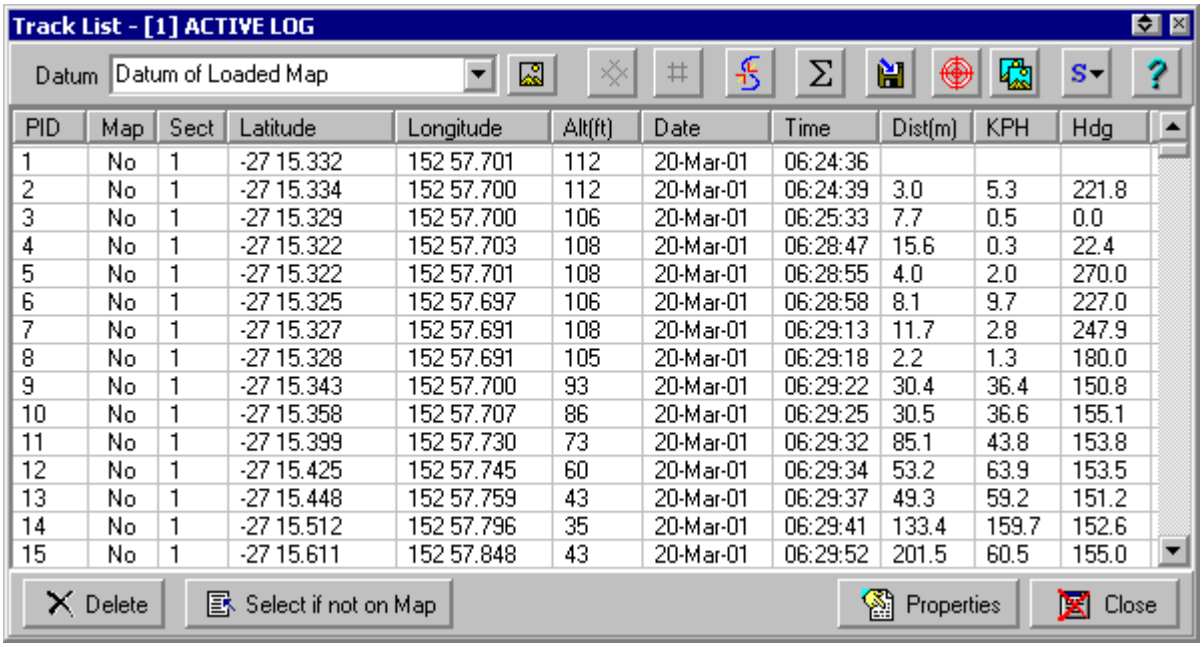
 A menu with additional options

- **Track Replay** - See the Replay Track Control help for details.
- **Track Profile -** For plotting the track profile of altitude or speed against distance or time. See the Track Profile help for details.
- **Track Filter Control -** For reducing the number of points in a track by filtering based on various parameters. See the Track Filter help for details.
- **Track Move Control** - See the Move Track Control help for details.
- **Track Reverse** - Reverses the order of track points in a track.
- **Add Date/Time to Track Points** - Adds the date and time to each track point. The start date and time can be entered and the time between each track point. This only works correctly if the track was collected at specified even intervals of time. Even if the track was collect at specified even intervals of time there is no guarantee that the GPS collected them at those precise intervals so there will be steps in the speed and distance calculations.

 **Split Track 1 into Separate Tracks for Each Track Section** - Many tracks are divided up into sections (consecutive track points are not joined), this option splits the track putting each section into a new track. There is a limit of 74 sections.

 Increases and decreases the height of the Track Control window.

Track List



PID	Map	Sect	Latitude	Longitude	Alt(ft)	Date	Time	Dist(m)	KPH	Hdg
1	No	1	-27 15.332	152 57.701	112	20-Mar-01	06:24:36			
2	No	1	-27 15.334	152 57.700	112	20-Mar-01	06:24:39	3.0	5.3	221.8
3	No	1	-27 15.329	152 57.700	106	20-Mar-01	06:25:33	7.7	0.5	0.0
4	No	1	-27 15.322	152 57.703	108	20-Mar-01	06:28:47	15.6	0.3	22.4
5	No	1	-27 15.322	152 57.701	108	20-Mar-01	06:28:55	4.0	2.0	270.0
6	No	1	-27 15.325	152 57.697	106	20-Mar-01	06:28:58	8.1	9.7	227.0
7	No	1	-27 15.327	152 57.691	108	20-Mar-01	06:29:13	11.7	2.8	247.9
8	No	1	-27 15.328	152 57.691	105	20-Mar-01	06:29:18	2.2	1.3	180.0
9	No	1	-27 15.343	152 57.700	93	20-Mar-01	06:29:22	30.4	36.4	150.8
10	No	1	-27 15.358	152 57.707	86	20-Mar-01	06:29:25	30.5	36.6	155.1
11	No	1	-27 15.399	152 57.730	73	20-Mar-01	06:29:32	85.1	43.8	153.8
12	No	1	-27 15.425	152 57.745	60	20-Mar-01	06:29:34	53.2	63.9	153.5
13	No	1	-27 15.448	152 57.759	43	20-Mar-01	06:29:37	49.3	59.2	151.2
14	No	1	-27 15.512	152 57.796	35	20-Mar-01	06:29:41	133.4	159.7	152.6
15	No	1	-27 15.611	152 57.848	43	20-Mar-01	06:29:52	201.5	60.5	155.0

If the Date and Time have been collected with the track then the speed for each section between track points is calculated.

Datum

Datum - The datum of the positions displayed in the list.

Sets the Datum to the Datum of the currently loaded map.

If the **Datum of Loaded Map** is selected then the datum used will always be the same as the datum of the currently loaded map. To see the datum of the loaded map place the mouse pointer on the field and the datum will be displayed as a hint.

Buttons

Position Format Buttons - Show the positions in Degrees or the selected Grid. The Grid will change to reflect whatever Alternate Grid system you have chosen in the Configuration.

Split or Join Track into sections - Splits a Track and creates a new track section at the selected track point. If the selected track point is the first point of a section, the section will be joined to the previous section.

Show Summary of Selected Track Points - Shows a summary of the selected track points.

Save Selected Track Points to File - Saves the selected track points to a file.

Plot Location of Selected Track Point on Current Map - The map is moved to position the selected track point in the center of the map.

Find Map for Selected Track Point - The maps are scanned and those which contain the position of the selected track point will be shown in a list.

Selection Functions - Provides various ways of working with the selection of the track points.

Delete the Selected Track Points - Deletes all the track points which have been selected.

Select if not on Map - If the track points are not located on the currently loaded map then they are selected.

Properties - Opens the properties dialog for the selected point.

Track Replay

The track replay does not use the date/time for each track point to replay the track.

Track - The Track number to replay.

Color - Selects the track replay color

-10,-,+,+10 - adjusts the track replay speed, higher the number the faster the replay

- Start and stop the replay at it current point

- Clear the replayed track up to its current position

- Replay the track from the start

The **Speed, Heading, Altitude and Distance** are displayed in the units you have selected in the main configuration.

Double click on the distance to zero it at any time, this allows you to measure track distances between points.

Help - Displays this help.

The Track Move Control

Fields

Track No - The Track number to move.

Move Units - The number of pixels to move at each step.

Combo Box - Determines which track points to move.

- All Track Points - All the points belonging to a track are move.
- Active Points Only - Only the Active points are move. Points are made active using the options on the Track Control.

Buttons

Arrows - Moves the track in the indicated direction.

Help - Displays this help.

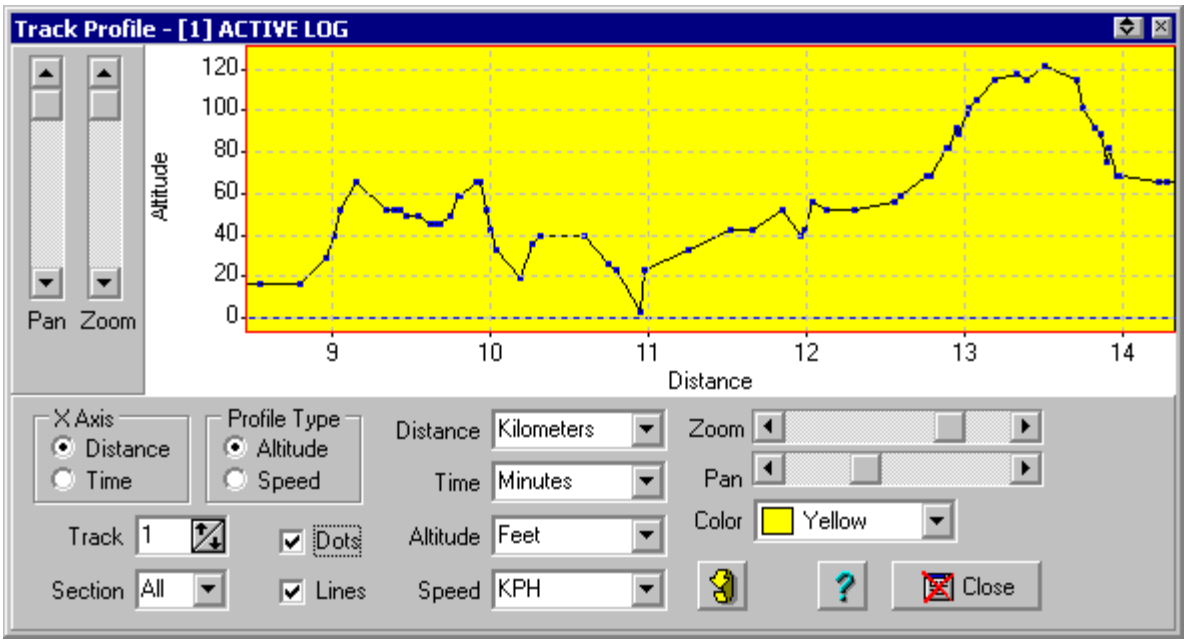
Save - Saves the moved track to a file.

Track Profile

The Track Profile can display a graph of Altitude or Speed against the Distance or Time travelled.

To show the Altitude it must be stored with each track point. Tracks downloaded from the Garmin eTrex, eTrex Summit, eMap do have the altitude. Tracks downloaded from most other GPS receivers do not have the altitude. Tracks collected in moving map mode (real time tracking) will normally have the altitude.

To show the speed the date and time when each track point was collected must be stored with each track point. Garmins store the date/time for each track point, most other GPS receivers do not. The Garmins do not store the date/time for **saved tracks** (tracks saved within the GPS). Tracks collected in moving map mode (real time tracking) will normally have the date/time for each point. Tracks created manually in OziExplorer or downloaded from GPS receivers which do not store the date/time will be assigned a date/time to the point but it is not useful for this purpose.



Clicking on the graph will popup a window which shows

- The Distance and Altitude or Speed of the point where the click was done
- and the details of the closest Track Point

Fields

X Axis - Will graph either Distance or Time on the X Axis.

Profile Type - Will graph either Altitude or Speed.

Track - Select the track Number to view. The tracks must have already been loaded into the track number.

Section - The Section Number in the track. The sections are numbered from 1. The section numbers are drawn on the graph adjacent to the first point in each section.

Dots - Draws a square symbol at each point.

Lines - Draws Lines between points.

Distance - Select the units that the Distance is displayed in.

Time - Select the units that the Time is displayed in.

Altitude - Select the units that the Altitude is displayed in.

Speed - Select the units that the Speed is displayed in.

Zoom - 1 Control for Horizontal and 1 for Vertical. These zoom the scales of the axis.

Pan - 1 Control for Horizontal and 1 for vertical. These slide the axis along.

Color - The background color of the Graph.

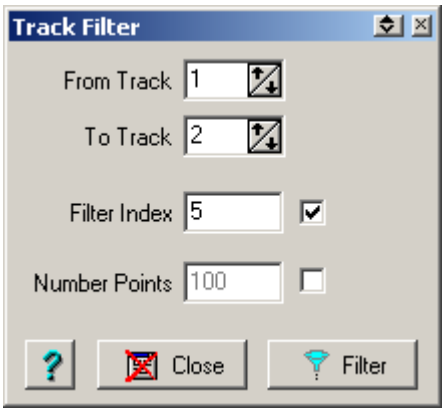
Refresh Button - Loads the Track again and replots it. Useful if you load a new track into a track number and want to view it without having to restart the Track Profile dialog.

Track Filter

The Track Filter provides the ability to reduce the number of points in a track by selectively removing points using the specified parameters.

The best filter setting is the one which produce the smallest number of points but still retain a good representation of the original track.

The track can be filtered using the Filter Index method or the Number of Points method.



From Track - The track number you want to filter.

To Track - The track number where the filtered track is to be placed.

Filter Index - If this method is selected, the higher the index the less points in the filtered track. (default setting = 5).

Number Points - If this method is selected, the track will be filtered to the number of points entered. (default setting = 100). The number of points produced may not exactly match the number specified but will be close.

Filter - Press this button to create the filtered track.

Points

see also Point Properties Point Set Properties Point Control

Do not confuse points with waypoints they are not the same type of object, it is suggested that you also read the section on Waypoints to fully understand the difference.

A point is also not related to a track point, they are a different type of object.

Definitions

Point - A position on the map which has as its main properties a position and a name. All other

properties are derived from the properties of the Point Set. The number of points per Point Set is limited only by the resources of the PC. Points use very few resources so many thousand can be displayed on the map at the same time.

Points cannot be directly uploaded to a GPS and cannot be included in a Route.

Points can be used to add numerous names and/or locations of objects to a map.

Points are used for editing the Magellan Datasend POI's.

Points are used by the OziMC add-on for editing the Name feature.

Points are used for Importing ESRI Shape files (of type point).

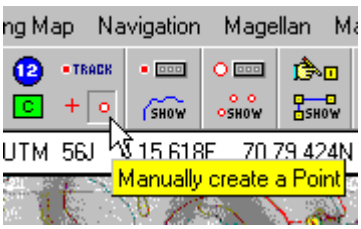
Point Set - Groups points together, each set is made up of zero to an unlimited number of points. Each point set has its own set of properties which can be adjusted, these properties affect all points in the set.

There are 75 Point Sets available.

The properties of a Set of Points can be modified in the properties dialog, see Point Set Properties for details.

To work with Point Sets you use the Point Control

Manually Creating Points



Press the Manually Create Point button on the Toolbar. Click on the map to create a point. The Point Control can be used to modify the behaviour of point creation.

Editing the Properties of Points

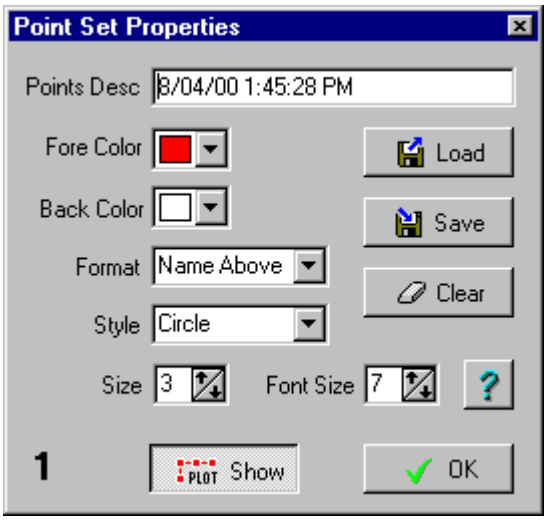
To open the property dialog for a Point you first have to make the Point "active", you do this by using the Point Control. When the Point is active you can either double click on the Point object or right click with the cursor on the Point object and select the properties option on the menu.

The properties of a Point can be modified in the properties dialog, see Point Properties for details.

Point Set Properties

see also Points Point Properties Point Control

These are the properties of a Point Set which can contain an unlimited number of Points. All points in the same set use these properties.



Fields

Points Desc - Any text to describe this set of Points up to 25 characters.

Fore Color - The Color of the foreground used to draw the points on screen.

Back Color - The Color of the background used to draw the points on screen.

Format - How to display the points. Select from the list.

Style - The Style used to display the points. Select from the list.

Size - The size in pixels of the point symbol.

Font Size - The size of text used for the point name.

Buttons

Load - Load a File of points into this Point Set.

Save - Save the Point Set to a File.

Clear - Clear the Point Set from memory.

Show - Show this Point Set on the screen.

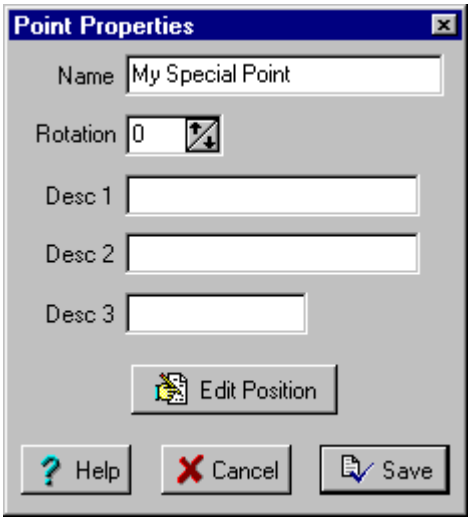
Help - Shows this help.

OK - Close the Property Dialog.

Point Properties

see also Points Point Set Properties Point Control

These are the properties of an individual Point within a Point Set.



Fields

Name - The name assigned to the point, up to 35 characters can be used.

Rotation - Rotates the text on screen, any rotation angle between -90 to 90 can be used, only applies if the Format for Point Set is "Name Only". This property is mainly used by Names in the OziMC add-on.

Desc 1 - The 1st line of the description, up to 20 characters.

Desc 2 - The 2nd line of the description, up to 20 characters.

Desc 3 - The 3rd line of the description, up to 12 characters.

These 3 description fields are available and have specific widths as they are used for Magellan Datasend POI's.

Buttons

Edit Position - Opens a dialog where the position of the point can be edited.

Help - Gives help for the properties dialog.

Cancel - Close the dialog and discard any changes.

Save - Close the dialog and keep the changes.

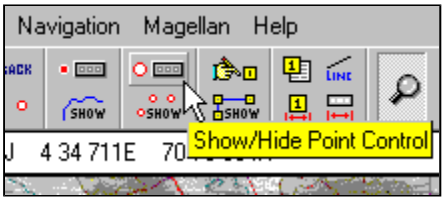
If you make any changes to the point you must save the point file to make the changes permanent.

The Point Control

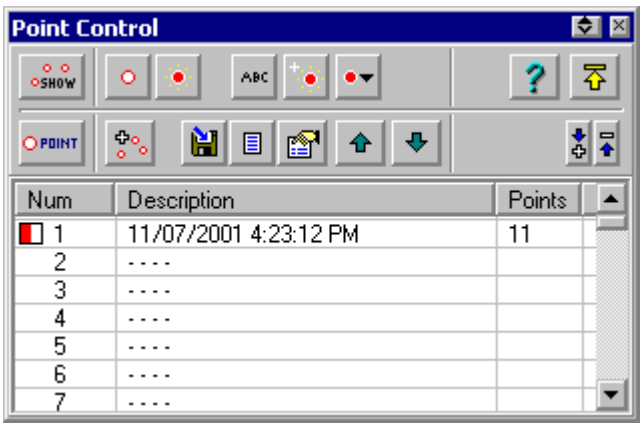
The Point Control is used to manipulate Points and Point Sets. It allows you to edit Point and Point Set properties, create new Points, make Points active and many other things.

see also Points Point Properties Point Set Properties

To activate the Point Control press the **Show/Hide Point Control** button on the Toolbar.



Using the Point Control



Buttons

Show/Hide Points on Map - Display or hide all the Point Sets on the map.

All Points are Made Inactive - All Points which have been made active are made inactive.

Draw Box to make Points Active - A specific block of Points can be set as "Active" by drawing a box around them with the mouse, use the button on the Point Control to do this. Press the button and move the mouse pointer onto the map, draw a box around some Points, all Points within the box will be marked as active.

Open Properties when Creating New Points - When a new Point is created by clicking on the map the Properties dialog is automatically opened.

All New Points are Created Active - When a new Point is created by clicking on the map the Point is automatically made active.

A menu of options for manipulating active points

- **Save Active Points to a File** - Points which have been made Active are Saved to a file.
- **Delete All Points which are Active** - Points marked as Active can be deleted

Manually Create a Point - When this button is depressed new Points can be created by clicking on the map.

Append Point Sets Together - The Points from a Point Set can be appended to another.

Save the Selected Point Set - The point set currently selected in the list will be saved to a file.

Show Point List - See the Point List help for details.

Selected Point Set Properties - Shows the Point Properties dialog, see Point Set Properties help for details.

Move Point Set Up - Moves the selected Point Set up in the list.

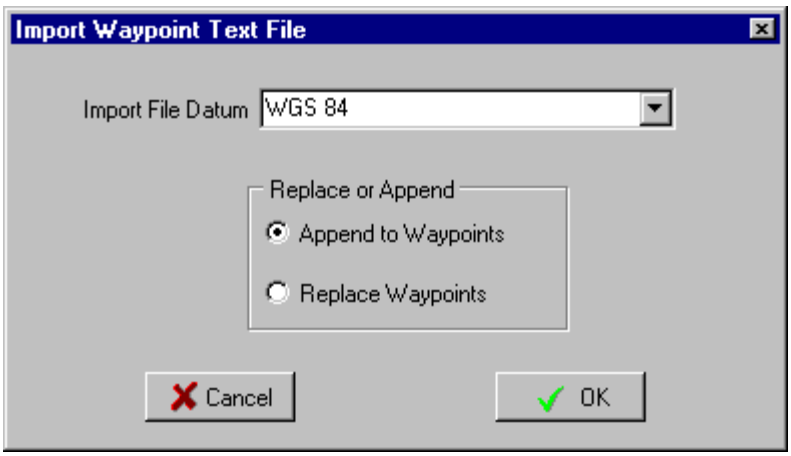
Move Point Set Down - Moves the selected Point Set down in the list. In some cases Point Set 1 needs to be cleared so a new Point Set can be loaded. If the Point Set already in Point Set 1 needs to be kept then the best method is to move an empty Point Set up into its place.

Increases and decreases the height of the Point Control window.

Importing Waypoints from a Text File

see also Exporting Waypoints to a Text File

To Import waypoints simply select the **Import Waypoints from Text File** on the Load menu.



The datum used for importing (the datum used for the positions in the file) can be specified, if the datum is in the file in one of OziExplorers standard datums then it will default to this.

Before manually creating your own text files for importing you should create some waypoints in OziExplorer and Export these to a file in the desired format and use this file as a template.

File Format

The format is the same as the Waypoint text files from Waypoint+ but with some extensions.

However these files are not meant for import by Waypoint+ there are extra options on the Garmin menu for importing and exporting Waypoint+ files. The reason Waypoint+ cannot use these files is the datum names are different, when Waypoint+ finds a datum name it does not recognize it gives an error.

RECORD TYPES

Waypoint+ types

The 1st field is signifies that it is a Waypoint record, the characters **Waypoint** or **WP** can be used.

Each keyword is followed by a designator that describes what kind of storage is used with latitude and longitude. DM and DMS are stored in as single packed floating point number.

D=decimal degrees; ddd.dddddddd (34.064531922)

DM=degrees minutes; ddd.mmmmmmm = ddd mm.mmmmmmm (34.06548 = 34 6.548')

DMS=degrees minutes seconds; ddd.mmssssss = ddd mm ss.sssss (34.06453 = 34 6' 4.53")

UTM=zone,easting,northing

Extended Types

To make it easier for text data entry extra extended types have been added.

DMX=degrees minutes; the degrees and minutes are entered into their own fields separated by commas.

DMSX=degrees minutes seconds; the degrees, minutes are entered into their own field separated by commas.

BNG=zone,easting,northing (British National Grid)

IG=zone,easting,northing (Irish Grid)

NZG=easting,northing (New Zealand Grid)

SG=easting,northing (Swedish Grid)

SUI=easting, northing (Swiss grid)

WP, waypoint name, latitude, longitude, date , time , waypoint description.

Example:

Standard Waypoint+ types

WP, waypoint name, latitude, longitude, date , time , waypoint description.

The date must be in month/day/year format or left out and the current date will be used.

Examples:

WP,D,WPNAME,34.064531922,-117.2959507350,11/23/1995,19:29:00,Description

WP,DM,WPNAME,34.06548,-117.80632,11/23/1995,19:29:00,Description

WP,DMS,WPNAME,34.06453,-117.29595,11/23/1995,19:29:00,Description

WP,UTM,WPNAME,56J,445946,7063980,11/23/1995,19:29:00,Description

Extended Types (preferred for manual data entry)

WP, waypoint name, latitude(multiple fields), longitude(multiple fields), date , time , waypoint description.

Examples:

WP,DMX,WPNAME,34,6.548,-117,80.632,11/23/1995,19:29:00,Description,Symbol

WP,DMSX,WPNAME,34,6,4.53,-117,29,5.95,11/23/1995,19:29:00,Description,Symbol

No fields are case sensitive, lowercase or mixed case can be used in any field.

The symbol is coded as A=0 B=1 C=2 etc

The Garmin GPS waypoint display format is also added to the end of the line after the symbol, however it is not guaranteed that this will be continued in future. N = Name S = Symbol C = Comment

Datum

The datum can be specified in the file.

The Datum Record Type

DATUM,WGS 84

The datum is optional, if it is not there you will be requested for the datum.

The datum must be a recognized OziExplorer datum name, these can be viewed on the datum list.

When importing the file the software will allow you to modify the datum.

Importing Tracks

Tracks can be imported from :

Text File - Allows a track to be imported from a text file in one of the OziExplorer import formats. See Export Track to Text File for an explanation of the fields.

PCX5 files - These files are produced by the Garmin PCX5 software. The positions in the file must be in either Lat/Lon or UTM. This option is on the Garmin menu.

Waypoint+ files - These files are produced by the Waypoint+ software. The positions in the file must be in either Lat/Lon or UTM. This option is on the Garmin menu.

Mapgen Vector files - This is a limited import, the positions in the file must be in Lat/Lon. This option is on the Load button on the Toolbar. The datum used for positions in the file are assumed to be WGS 84.

IGC Track Files - Allows a track to be loaded from an IGC track file.

Compe-Gps Track Files - Allows a track to be imported from a Compe-Gps .trk track file.

Import MapInfo MIF File

This is a limited import, the projection used in the file must be latitude/longitude, positions in the file must be in Lat/Lon or a Transverse Mercator projection (including UTM).

The datum is read from the file and most datums used for positions in the file are supported and the positions are translated automatically.

The following objects are imported.

Point - Imported as points, these are placed in a points object, use the Point Control to manipulate.

Line - Imported as a 2 point track section.

Polyline - Imported as a multi point track section.

Region - Imported as a multi point track section.

Arc - Imported as a multi point track section, the arc is converted to a set of points.

Rectangle - Imported as a 5 point track section which close.

Rounded Rectangle - same as for rectangle, no rounded corners.

Ellipse - Imported as a multi point track section, the ellipse is converted to a set of points.

This option is on the Load button on the Toolbar.

Importing ESRI Shape Files

Shape files are a format developed by ESRI and used in ArcInfo and other GIS packages.

see also Shape File Import/Export Options Exporting to ESRI Shape Files

Conditions and Limitations

Points, polylines and polygons can be imported.

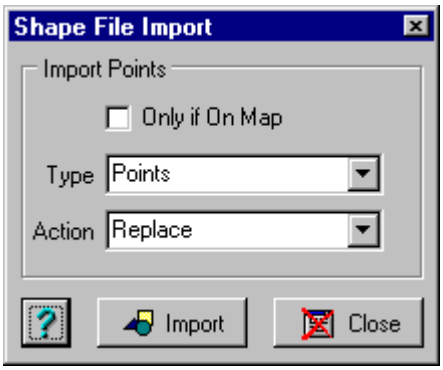
The format of the positions stored in the shape file must be know and specified in the Options dialog during the import process. Failure to use the correct position will give incorrect data.

The position formats supported are Lat/Lon, UTM, Albers projection and the New Zealand grid.

If the positions are in UTM then the UTM Zone of the positions must be known and specified in the Options dialog during the import process. Failure to specify the correct zone will give incorrect data.

The datum used for the positions must also be known and specified in the options dialog during the import process. Failure to specify the correct datum will give incorrect data.

Importing Points



Fields

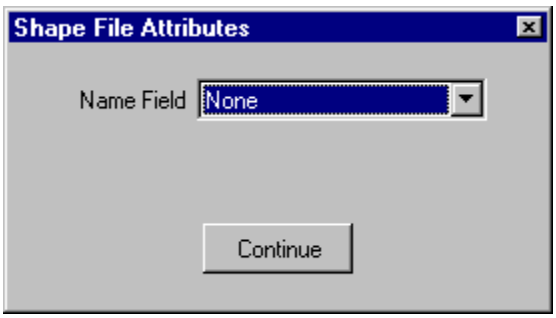
Only if On Map - The point will only be kept if they are positioned on the currently loaded map.

Type

- **Waypoints** - Import the points as Waypoints - Note that OziExplorer has a maximum limit of 10000 waypoints. It is not advisable to load large shape files as waypoints.
- **Points** - Import the points as points - OziExplorer has an unlimited number of points (until your system runs out of resources).

Action

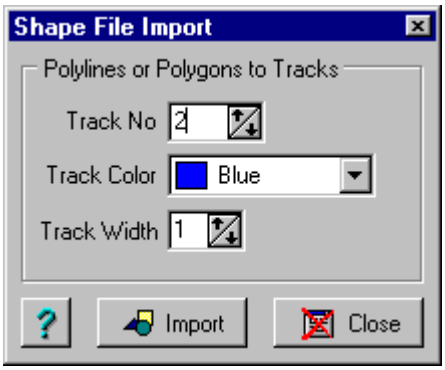
- **Replace** - replaces the currently loaded waypoints or points with these new ones.
- **Append to Existing** - appends these new ones to those already loaded.



During importing the above dialog is presented. To use this dialog you need to know somwthing about the data you are importing. You can select a DBF field as a Name Field and the named stored in the record is used as the name of the imported point or waypoint.

If you imported the points as points then use the point control to manipulate them.

Importing Polylines or Polygons

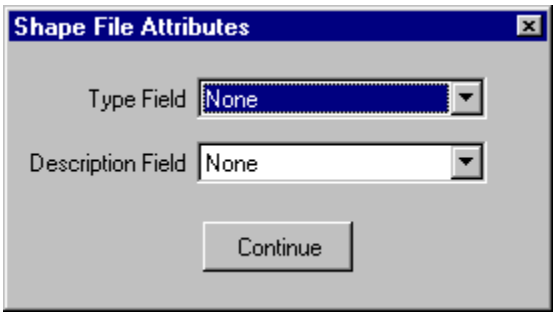


Fields

Track No - The number of the OziExplorer track to use.

Track Color - The color to use for the track.

Track Width - The width to make the track line.



During importing the above dialog is presented. To use this dialog you need to know somwthing about the data you are importing. You can select a DBF field as a Type Field and a new track will be created each time the Type Field contents change. The Description Field is used as the description of the new track.

After importing a polyline or polygon to a track use the track control to manipulate it.

E00 File Import

This could be called experimental.

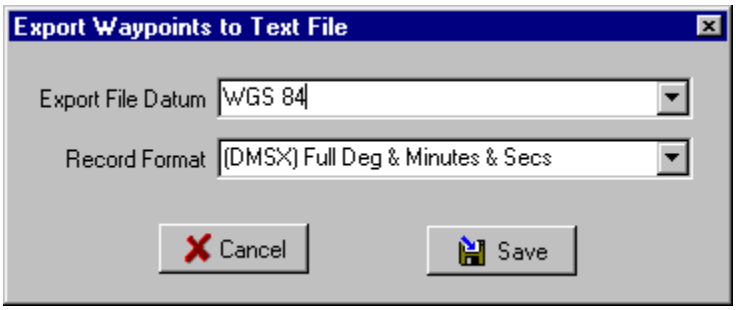
There are limitations on the projections and position formats which can be imported.

When importing the datum and projection of the data in the file can be specified.

Exporting Waypoints to a Text File

see also Importing Waypoints from a Text File

To Export waypoints simply select the **Export Waypoints to Text File** on the Save menu.



The datum used for exporting can be selected and will default to the datum used for the current map.

NOTE : When exporting to a Waypoint+ text file the datum cannot be altered from WGS 84. Also when importing a Waypoint+ text file the file must have been written from Waypoint+ using the WGS84 datum, OziExplorer does **NOT** try to use different datums when importing Waypoint+ text files.

The Record format can be selected, I would suggest you use the DMX format for manual editing, this will allow you to enter the Waypoints in degrees and minutes.

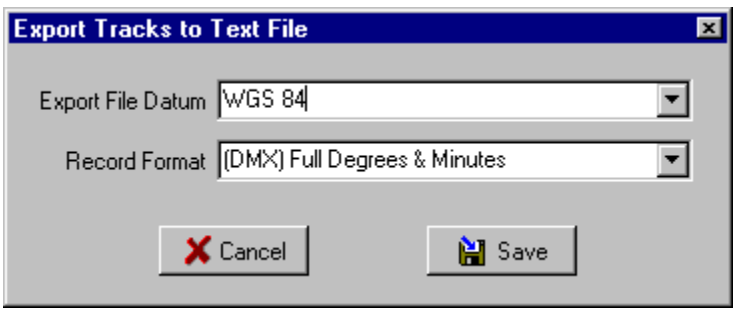
File Format

See Importing Waypoints from a Text File for a full description of the formats.

Exporting Tracks to a Text File

see also Importing Tracks

To Export Tracks simply select the **Export Tracks to Text File** on the Save menu.



The datum used for exporting can be selected and will default to the datum used for the current map.

The Record format can be selected, I would suggest you use the DMX format for manual editing, this will allow you to enter the Waypoints in degrees and minutes.

Export File Format

Line 1 : Geodetic Datum of export data

Track export data

- One line per track point

- each field separated by a comma
- non essiential fields need not be entered but comma separators must still be used (example ,,)

Field 1 : TP - track point identifier
Field 2 : data format selected during export
Field 3 : UTM Zone
Field 4 : y position data in your selected format (Latitude)
Field 5 : x position data in your selected format (Longitude)
Field 6 : Date - month, day, year
Field 7 : Time - hours, minutes, decimal seconds
Field 8 : Section change code
Field 9 : Altitude
Field 10 : Track section
Field 11 : Distance
Field 12 : Time
Field 13 : Speed
Field 14 : Heading

Example :

Datum,WGS 84
TP,UTM,56J,505390,6974571,03/26/2002,07:24:26.386,0,-9999,1, , , ,
TP,UTM,56J,505241,6974663,03/26/2002,07:24:26.386,0,-9999,1,210.2,0.0, ,237.9

Exporting to ESRI Shape Files

Shape files are a format developed by ESRI and used in ArcInfo and other GIS packages.

see also Shape File Import/Export Options Importing ESRI Shape Files

Point Set 1 to Points - Saves the currently loaded Point Set (Point Set 1) to a ESRI (ArcInfo) Shape file (.shp) in the point format.

Waypoints to Points - Saves the currently loaded Waypoints to a ESRI (ArcInfo) Shape file (.shp) in the point format.

Tracks to Polylines - Saves the currently loaded Track (Track 1) to a ESRI (ArcInfo) Shape file (.shp) in the polyline format.

Notes

During the export process the following must be specified :

- The format of the positions as you want them stored in the shape file must be specified. The position formats supported are Lat/Lon, UTM, Albers projection ,the New Zealand grid and the Swedish grid.
- If specifying UTM as the position format then the UTM Zone must be specified.
- The datum used for the positions must be specified.

The DBF file created has the following fields

For exporting OziExplorer Waypoints as points

- Lat - the y position, usually latitude
- Lon - the x position, usually longitude
- Name - the name of the waypoint in the record (if known)
- Aux1 - Date and Time of the taypoint
- Aux2 - not used
- Aux3 - Altitude of the waypoint
- Longname

For exporting OziExplorer Points as points

- Lat - the y position, usually latitude
- Lon - the x position, usually longitude
- Name - the name of the point truncated to 17 characters
- Aux1 - Description 1
- Aux2 - Description 2
- Aux3 - Description 3
- Longname - the full name of the point

For exporting OziExplorer Tracks as polylines

- Tracknum - The OziExplorer track number
- Sectionnum - The section number of the track
- Trackname - The name of the track
- Aux1 - not used

Area Calculations

***Caution* : The accuracy of the calculation of areas from a map depends on many factors (and combination of factors) some of which are :**

- ***the scale of the map***
- ***the type of map projection used***
- ***the size of the area being calculated.***

Do not rely on the result where accuracy is essential.

Limitations

Area calculation will only produce acceptable answers if the following conditions apply.

- There is a limit of 15000 track points that can be used to mark the perimeter for the Area Calculation.
- The Area calculation is only designed to be used on maps covering small areas, say 1:100000, 1:50000, 1:25000 and similar. For maps which display full countries or continents or world maps the caution above applies.
- **The track must not fold back on itself.**

 Is NOT acceptable and will give a bad result.

 This is an example of a good track for area calculation.

Using the Area Calculation

On the **Options Menu** select the **Area Calculation** option.

The Area Calculation dialog will be displayed.

Press the **Create Track Point Button**  on the toolbar and draw a track around the perimeter of the area you want calculated by clicking on the map to form a track. As you draw track points the polygon will be filled with hatching. The area will be displayed in the dialog. Select the units for the area.

Distance & Bearing Display

***Caution* : The accuracy of the calculation of distances from a map depends on many factors (and combination of factors) some of which are :**

- ***the scale of the map***
- ***the type of map projection used***
- ***the length of the distance being calculated.***

Do not rely on the result where accuracy is essential.

The software can calculate the Distance and Bearing from :

- A Waypoint
- An Event
- A Map Feature
- A Track Point
- A Point
- A Position Marker +
- and Any point on the Map

The software can calculate Accumulated Distance from :

- A Position Marker, by moving the Marker and clicking the mouse.
- Along a Track (the distance for a track is displayed on the **Track Control** Dialog).
- Along a Route (the distance for a Route is displayed on the **Route Editor** Dialog).
- and Any point on the Map

Measuring Distances

On the View menu or Tool Bar select the **Distance Display** option.

To measure the distance from a Waypoint, Event, Map feature, Trackpoint or Point simply click on the object, the Distance and Bearing to the mouse pointer will be displayed on the **Distance & Bearing Display** dialog.

Note 1 : To select a Trackpoint or Point the Trackpoint or Point must be "Active" set by using the Track Control or Point Control dialog, so this can only be done for Track 1 or Point Set 1. However distance & bearing is displayed as you are manually creating a track.

Note 2 : When measuring the distance between 2 objects (Waypoints, Events, Map Features and so on) the measurement is taken from the position stored within the object i.e. its Lat/Lon coordinates.

To measure a distance from any point on the map and draw a permanent line between the points select the Mark button + on the Button Bar. This will change the mouse pointer. Select a position on the map and Mark + by pressing the left mouse button. As you move the mouse the distance and bearing to the mouse pointer will be displayed on the **Distance & Bearing Display** dialog. The distance for each segment will be shown on the Distance dialog.

To measure the distance between any points on the map you just need to activate the Distance & Bearing Display, the distance and bearing will be displayed from the last click of the mouse.

To show a line from the mouse position (rubber banding) to the last point on the map select the **Show Line from Position to Cursor** Button on the ToolBar.

Measuring Accumulated Distance

Select the Mark button as described immediately above. As you move the mouse pointer and press the left mouse button a cross is drawn on the Map, a blue cross indicates the start of a measurement line, pressing the left mouse button again will draw the line and show the distance along the line. The **Leg Distance Display** and **Leg Distance Color** are controlled by configuration options on the **Navigation Tab** of the **Configuration** screen.

The previous lines and marks are changed to gray, these marks and lines will be removed the next time the screen is refreshed.

To zero the **Total Distance** display you must **double click** on the total distance number or press the button to the right of the total distance field.

Distance Between Waypoints

***Caution* : Do not assume these measurements are correct at this stage, they need additional testing and proofing, make sure you have verified that the software calculates the measurements correctly yourself before using them for navigation.**

Great Circle Distance

Gives the shortest distance between 2 points on the earths surface. The heading when travelling between them is constantly changing.

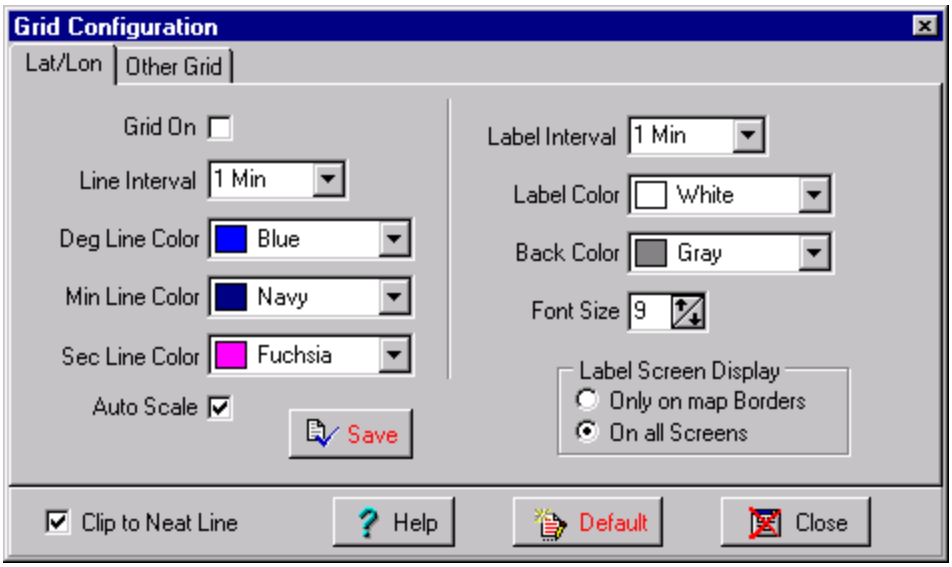
Rhumb Line Distance

Rhumb lines or loxodromes give the distance between 2 points on the earths surface when travelling between them at a constant heading. This is not the shortest distance between the points.

For small distances the 2 methods give the same values.

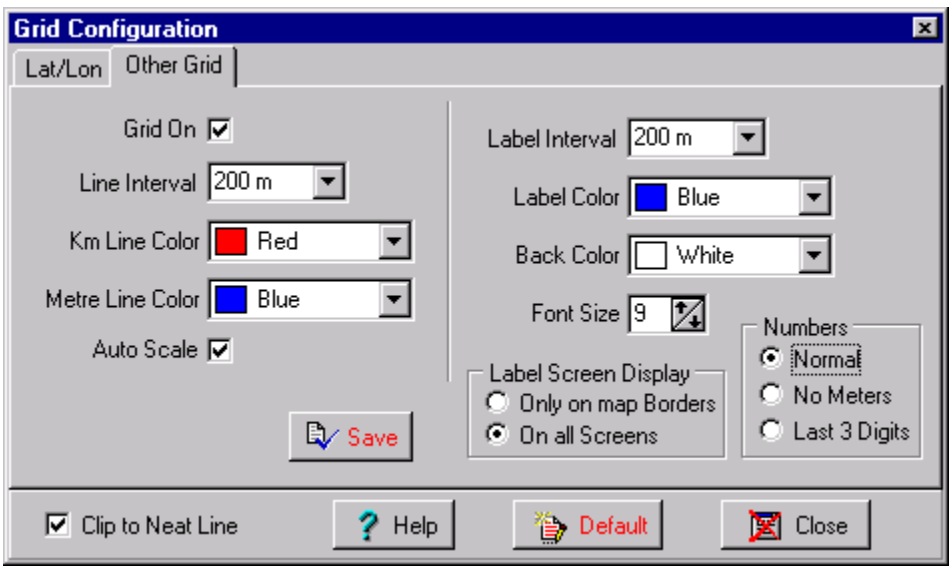
Displaying Lat/Lon and Other Grids

Lat/Lon Grid



The lat/lon grid can be displayed for any map of any scale of any projection. There are some limitations, such as maps crossing the 180 degree longitude and maps which have a border outside a valid lat/lon such as the example world map.

Other Grid



The grid displayed is the one selected in the "Alternate Grid" in configuration. If the UTM grid is selected then the grid displayed on the map is a UTM grid etc.

The display of a grid is very much controlled by the map. It is really only intended for maps of scale say 1:250,000 and below, maps cannot cross a zone boundary (the part displayed on screen anyway). As an example you cannot expect a grid to be displayed on a map which covers a country or the whole world. This does not apply to the UK OSGB (BNG) or the Irish Grid as the format of these grids allow them to be handled as a special case.

I am sure you will find there will be times when the grid will not be displayed on a map.

Parameters

Most of the parameters need no explanation, the ones which are not obvious are decribed below.

Clip to Neat Line - If checked the grid will stop at the neat line boundary which is setup using the corner markers in map calibration. For maps with curved projections odd displays can be noticed if "clip to neat line" is active but these are unimportant.

Auto Scale - If checked as you zoom the map in and out the "Line Interval" will be automatically altered to keep roughly the same line spacing on the display. The line spacing however must be one of the accepted values in the Line Interval selection box.

Numbers

- **Normal** - Grid numbers are displayed in full.
- **No Meters** - If checked the Grid (on the map grid) will be displayed without the meters - example 1273000 can now display as 1273. This only applies if the last 3 digits of the grid are 000, if they are not the grid number is displayed in full.
- **Last 3 Digits** - Only the last 3 digits are displayed if they are not 000, if the grid number is an even multiple of 1000 (last 3 digits are 000) then it is displayed as example - 243* where the full number would be 243000. The * indicates the this is a full grid number without the 000. This lets you work out the full coordinate number. Example - If the number of the next grid line is 200 then the full grid number would be 243200.

Save - Will save you current settings in the the map file and they become the default for the map.

Label Screen Display - "Only on Map borders" the labels will only be shown on the edge of the map. "On all Screens" the labels will be seen on all screens.

Default - Saves the current settings as the defaults to be used when ever the Grid Config dialog is displayed for a map where a grid is not already configured the defaults will be entered automatically (if you have saved defaults), all you have to do is turn the grid on.

Notes

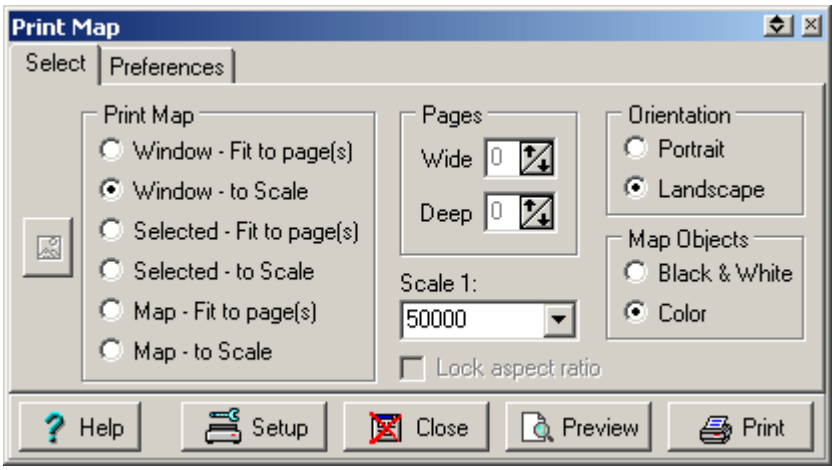
Printing - A grid will be printed if it is displayed on screen at the time of printing.

Limitations

There is a limit of 200 lines for each grid which can be displayed, after this the lines stop. This is to prevent delays in regaining control (if ever) if too fine a grid is chosen. 200 lines on a screen still allows a very fine grid to be used.

There is a limit of 50 labels which can be used on the grid screen display. When this limit is exceeded the labels will stop being displayed. This limit is not restricting as even with 50 the labels overlay each other anyway and cannot be read.

Map Printing Options



Note: Due to licensing conditions, there may be printing restrictions on some map types.

Select Area to print on the main map

Only enabled when a **Selected** option is specified in Print Map. When enabled, you can use the mouse (with the left mouse button depressed) to drag a rectangle on the main map window marking a section of the map you want printed.

If you need to select an area larger than the current screen view you can zoom the map so you see more of the map in the window or use the arrow keys to scroll the map while dragging the selection window.

Print Map

The portion of the image or the size of the printout.

Window - Fit to page(s) - Prints the map portion that is currently visible and fits it to the page, the aspect ratio is retained. Note that the amount of image printed can be controlled by setting the map zoom function to an appropriate level before printing.

Window - to Scale - Prints the map portion that is currently visible. You can select the scale to print to.

Selected - Fit to page(s) - Allows you to draw an area on the main OziExplorer map window. This selected area can then be printed and it is fitted to the page(s). If the Lock Aspect Ratio checkbox is ticked the correct aspect ratio of the page/s will be maintained as you draw the area on the map. Change to zoom level of the map to enable larger areas of the map to be selected.

Selected - to Scale - Allows you to draw an area on the main OziExplorer map window. This selected area can then be printed to the specified scale. Change to zoom level of the map to enable larger areas of the map to be selected.

Map - Fit to page - Prints the map and fits it to the page(s), the aspect ratio is retained.

Map - to Scale - Prints the map to the specified scale.

Scale - Select the scale you want to use to print the map. If the scale you want is not in the list simply enter it in. Be careful specifing low scale values for a large map. This can result in a large

number of pages being printed.

Printing of the map can be **aborted by pressing the Esc key** when the OziExplorer window has the focus. Pressing the Esc key does not give an instant response, but be patient it will respond when it gets control.

Pages

This allows you to set the number of pages wide and the number of pages deep that the "Fit to Page (s)" options use. These values are not applicable to the "to Scale" options. The Wide and Deep work together and because the map is always printed with the correct aspect ratio one of the setting will override the other. In reality they mean the map will be NO wider and NO deeper than the values specified.

Example - to print a map to fit on 2 pages wide specify Wide=2 and Deep =10(a large number), Deep is specified as 10 (or whatever) to make sure it does not affect the Wide value, if Deep was specified as 1 or even 2 it may reduce the wide value to a smaller value (say 1.5) because of the aspect ratio calculations.

Orientation

Selects the page orientation.

Portrait

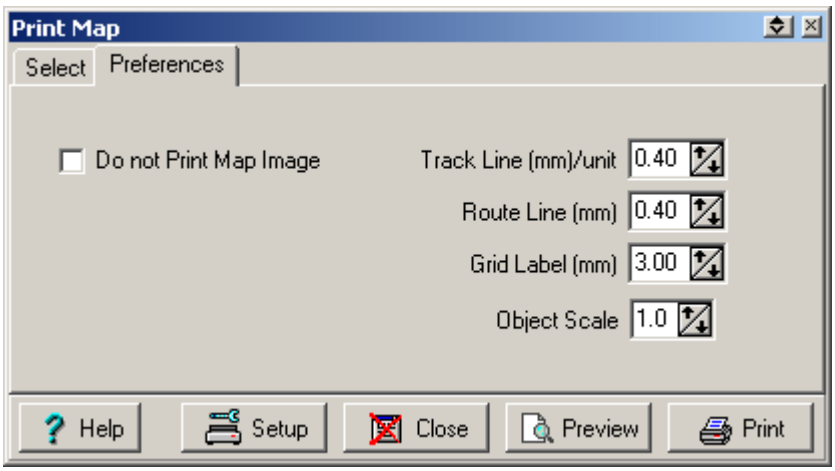
Landscape

Map Objects

Black & White - Prints the Waypoints, Events, Map Features and Map Comments in Black & White for clarity. This does not apply to colored Symbols.

Color - Prints the above in color. Note the colors of the objects may change to match the map palette.

Note : This setting does not affect the way the actual map is printed, only the objects drawn on the map.



Do not Print Map Image

This option allows you to print everything on the map without printing the actual image of the map, useful for printing map overlays on clear plastic.

Track Line (mm/unit)

Controls the Line width used for printing tracks. If the track line width is set to 1 pixel then it prints at the specified mm width, if it is 2 pixels it prints at 2 x the specified mm width and so on.

Route Line (mm)

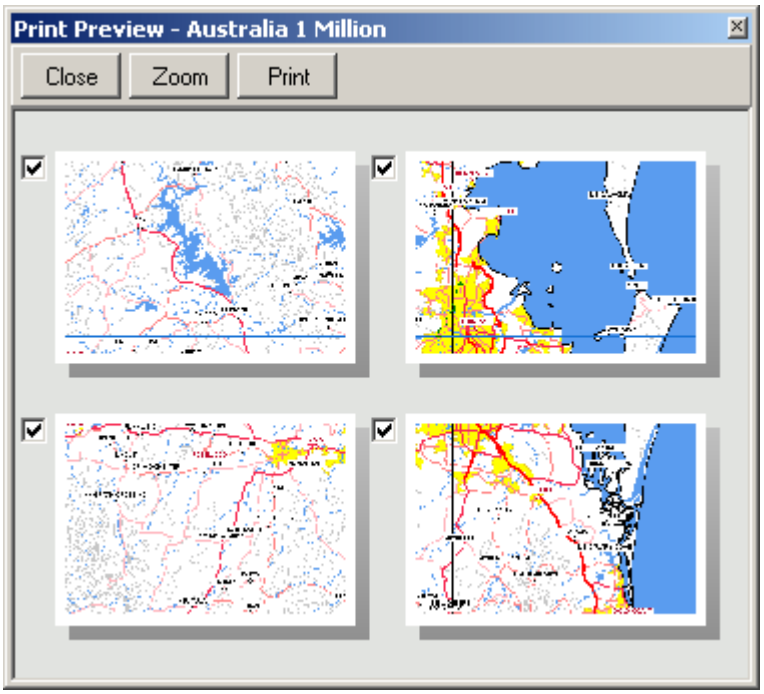
Controls the Line width used for printing routes.

Grid Label (mm)

The height of the font used for printing the Grid labels.

Object Scale

This determines how big the waypoint, events and map features are drawn on the map. A setting of 1 gives a reasonable size, select a larger or smaller scale to change the size accordingly.



Preview

Click on the **Preview button** to show a preview window of the pages to be printed. This allows you to untick the pages that you do not want to print.

Zooming Preview Window

The preview window has a **Zoom button**, click the Zoom button to zoom the preview window. There are 3 levels of zoom, press the Zoom button again to show the next zoom level.

Technical Notes

The minimum scale allowed to be selected is 1:500 - this is to prevent possible problems in calculations of the various parameters required.

It is possible, with the selection of a scale which is too small for the particular map, to generate thousands of pages of print. The software will warn you if the number of pages is going to exceed **20** and will not allow you to print more than **200**. The selection of such a scale will most likely result in a printing error #102 or may result in a GPF error. If you just want a section of the map printed at a much smaller scale use the **zoom levels** and the Print **Window to Scale** option to print just that section.

Each page of a map being printed is regarded as a separate print job - in this way the pages will start being printed while others are being processed.

If the Main OziExplorer window has the focus it is possible to cancel printing by pressing the Esc key. Note that this is not instantaneous but will happen when the current page section is finished.

The size of the waypoints, events and map features is controlled so they will always be visible on any printout. This doesn't mean they will always print at the same size, there is a point at which the size cannot be controlled because they would loose clarity when this point is reached they are simply drawn on the map using a 6 point font.

Other Notes

Tracks and Routes will only print on the map if they are also visible on screen i.e. sort of "What You See Is What You Get" approach.

Waypoint Symbols will not print - This is a problem which seems to occur on just some printers, the cause has not been determined yet. A work around to this problem is to activate a different symbol printing procedure, this can be activated by placing a file called "**nopcanvas.dat**" into the folder where OziExplorer is installed, is does not matter what is in the file. The Object Scale parameter on the print dialog does not work using this method.

If you are using a color inkjet printer with a black only cartridge make sure you have changed the printer setup in windows to monochrome printing (if applicable).

Printing Lists

Lists can be printed for Waypoints, Routes and Events.

The print option is on the File Menu.

Special Keys and Stuff

This page lists the keys which can be used or actions which can be done but are not discoverable by the user and have no other page to be placed in.

Keys

Calibration Points	When in calibration mode the calibration points (circles) can be adjusted by holding down the **shift key** and using the **arrow keys**.

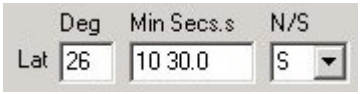
Cursor Move	**The cursor can be moved by holding down the shift key and using the arrow keys**. The map screen must have the focus. If adding waypoints etc holding the shift key down and pressing the Enter key will add the object.
Events	When **adding Events** using the mouse pointer directly on the map, you can hold down the Alt key and instead of adding an Event a Waypoint will be added (saves having to click the buttons on the Toolbar). Conversely when adding Waypoints holding the Alt key down will add an Event instead.
Map Comments	See Map Objects below.
Map Features	See Map Objects below.
Map Objects	There are two ways of dragging objects (Waypoints, Events, Map Features or Map Comments). • Press the Drag button down, press and hold on the object and drag to the new position. • When the Drag button is not active, the map objects can still be dragged, you must also hold down the **shift key** when dragging with the mouse.
Map - Scroll	• Scroll the map by dragging with the mouse, hold down the left mouse button and drag with the mouse. • The map can be scrolled using the keyboard arrow keys. The map screen must have the focus.
Track Points	When **adding Track Points** to a track use the **Alt key** to start a new track section.
Waypoints	When adding Waypoints using the mouse pointer directly on the map, you can hold down the Alt key and instead of adding a waypoint an Event will be added (saves having to click the buttons on the Toolbar). Conversely when adding Events holding the Alt key down will add a Waypoint instead.
Waypoints	See Map Objects above.
Zoom Levels	**The zoom levels can be changed by pressing the PgDn and PgUp keys**. The map screen must have the focus of course.

Stuff

Distance Measurement	To **zero** the **Total Distance field** in the Distance & Bearing window simply double click on the field itself.
Map Open At Startup	To open a particular map at Startup, the map name can be passed as a parameter to OziExplorer. If the map is not local the path and extension (.map) are required.
Position Display	Right click on the **position display** and **alternate grid display** (above the map) to change the display format. These changes are not remembered the next time Oziexplorer is run, use the configuration to do this.
Properties Window	**Double Click** on any **Map Object** (Waypoint, Event, Map Feature or Map Comment) to open the properties window.
Zoom Window	The **Zoom Window** can be dragged to any position, simple click on it and drag.

Lat/Long Position Formats

It is possible to enter Lat/Long positions in other formats instead of just Degrees and Minutes.

Decimal Degrees	To enter as Decimal Degrees you put the decimal part of the number in the minutes field. The decimal point must be the first character in the minutes field. For international settings the decimal separator may also be a comma (,). Example  this is the same as 26 degrees 30 minutes.
Degrees, Minutes & Seconds	To enter as Degrees & Minutes & Seconds you put the Minutes and Seconds in the Minutes field separated by a space. Example  this is the same as 26 degrees 10.5 minutes.
Special Note	It doesn't matter what Lat/Lon format you have specified in Configuration, positions can be entered in any format.

Startup Parameters

The following command line parameters can be used when starting OziExplorer

Note, the / is part of the parameter name.

A map name can be included on the command line but it must come first

/mmstart - Starts Moving Map (NMEA) communication
/mmcontrol - Shows the Moving Map Control
/navcontrol - Shows the Navigation Control
/gpsfix - Shows the GPS Fix window

example command lines

```
oziexp.exe /mmstart /mmcontrol /navcontrol /gpsfix
oziexp.exe /mmstart
oziexp.exe c:\oziexplorer\maps\mymap.map /mmstart /mmcontrol
```

The following files cause changes in OziExplorers actions

"**tiffull.dat**" - Tiff files will be loaded fully into memory instead of being paged from disk as required. Useful for laptops so the disk is not being continually accessed. This does not take into account the memory requirements of the image, if the image is very large it may take considerable time to load or not load at all.
"**bsbfull.dat**" - The same as above but for BSB files.
"**tripmate.dat**" - OziExplorer will look for a tripmate GPS when it starts moving map (nmea) mode.
"showxy.dat" - OziExplorer will show the x,y pixel coordinates of the map image on the status line, this is useful when using OziExplorer to setup image calibration for use in other software.

The file(s) must have the above names and be placed in the same folder as the OziExplorer exe file. The files can have anything in them or be empty it does not matter.

Frequently Asked Questions

see also Hints and Tips Special Keys and Stuff

Why can't I upload to a Garmin GPS at 115,000 BAUD, Mapsource does it.

115,000 baud can be used for uploading maps and for upgrading the ROM software in the GPS, but to the best of my knowledge and experiments it does not work for upload/download of waypoints etc, if someone can show me any software which can do it I will try to do it also.

It would be great if the map calibration points could be set using keyboard control with the arrows, the mouse is too coarse for this.

Already there, the **arrow keys** scroll the whole map, but the **shift + arrow keys** will move the calibration point marker (bulls eyes). The method is to select the cal point required and use the mouse to place the cal marker close to the spot required, then use the shift + arrow keys to move it into place. This is mentioned in the **Special Keys and Stuff** help section.

Why doesn't OziExplorer have zooms larger than 750%

OziExplorer is Raster software (that is it uses images for the map, even the blank map is just an image). Zooming in on a raster image does not improve accuracy. The best a raster map can be calibrated to is +or - 1 pixel, when you zoom in at say 500% (x5 times) each pixel in the map image is increased 5 times, the accuracy of a position is now +or - 5 screen pixels. There seems little point in adding more zoom levels, as the calculations cause pixel rounding the liklehood of causing positional errors (on the zoomed screen that is) increases as the zoom level increases.

I do agree the blank map zooming could be improved as an image need not be used for that but to do that I have to rewrite quite a bit of the code and am saving that for a while.

Why can't there be unrestricted zoom levels.

The true mapping image formats such as TIFF (geotiff), BSB, NOS/GEO, maptech PCX and my own formats OZF and OZF2 are paged from disk as required, so only a small portion of the image is in memory at any time. When a zoom level is required, for example, at 50% zoom only every 2nd scanline (row) of the image is read from disk, at 33% (actually 33.333%) only every 3rd scanline is read, this speeds up image reading and therefore display times. This means only those zoom levels which can be divided into 100 evenly can be done (quickly) (50,33.33,25,20, etc). This limits the zoom levels available and the way zooming can be done. Hence there is no zooming by dragging the mouse and you are not able to enter your own zoom levels into the combo box.

Other image formats could have other zoom levels but I have decided to just use the 1 method, however I have added a 75% zoom level for other image formats.

How come a 75% zoom level is not available for TIF, BSB and OZF files.

See the explanation above.

When I load in some maps the higher level zooms (up to 750) are not available.

With large maps the large levels of zoom cause the size of the map to exceed the internal limitations of windows, this is a by-product of the method I used to implement the zoom. To avoid this problem the levels of zoom which would cause the problem have been removed.

Are there other ways of Zooming instead of having to select the Zoom combo box all the time.

The PgUp/PgDn keys zoom the map in and out.

There are 50, 100 and 200% zoom levels available on the right click map menu.

There are + - zoom buttons on the toolbar.

There will soon be a version released which has specific zoom buttons which can be added to the user toolbar, including a "Full" zoom button.

When I use the Zoom there is a considerable delay until control is returned.

This is an unavoidable problem when using very large BMP image files for the map and your system doesn't have enough memory. In this case Zoom is unusable with very large files, reduce the size of the files if possible. This problem does not occur with tiff files which use a different method for zooming. Tiff files can only be used by the registered version.

I calibrated my map but waypoints do not plot on the map when I download them from the GPS or load them from a file even though they should.

Very likely the map calibration is wrong. Make sure you have set the E/W or N/S fields to specify negative positions of latitude and longitude. Make sure the positions are in Degrees and decimal minutes. If using UTM make sure you specify the correct zone and use the N/S field to indicate if you a north or south of the equator.

All waypoint positions I download plot slightly off from where they should by the same amount, why is this.

Datums, Datums, Datums. A mismatch of datums cause this sort of affect. If you only have the shareware version and have a Lowrance or Eagle make sure the GPS has its datum set to match the Map you are using when you collect the data. ***Note*** *some Lowrance and Eagles now output all data in WGS84 so check out exactly what your GPS does.*

If you have a Garmin it will always download in WGS84 no matter what datum you set the GPS to so with the shareware version there is nothing you can do.

To fix this problem you must have the registered version so datums can be set for the Map and GPS. But before you set Datums read the Datums help.

When I print the map or save it as a BMP or PNG file the tracks or routes are not shown even though I have them loaded.

The tracks or routes will only be printed or saved on the map if they are visible on the screen map (not just loaded), this is a sort of "what you see is what you get" approach.

I have a track loaded and displayed on the map but when I start to use moving map the track seems to disappear even though the show tracks button is down.

The track you have displayed would be loaded into Track 1. When you start using moving map and display the Moving map Control this sets up its own parameters for Track 1, you may have it set to only display a certain number of track points as a tail from your position.

When I add the symbols to the symbols directory in OziExplorer they do not appear in the symbol selection for Waypoints.

The symbols are only for use by Map Features. The symbols used by the waypoints are fixed to match those available in your GPS and cannot be altered by the user.

Hints & Tips

see also Frequently Asked Questions Special Keys and Stuff

1. To drag objects around on the map press the Drag button on the toolbar and drag the object with the mouse pointer. If the Drag button is not down, hold down the **shift key** while dragging with the left mouse button.
2. To change the size of the MapView window place the mouse pointer over the small diagonal button in the bottom right of the MapView window and drag the window. This size is remembered the next time you run the software.
3. To scroll the map by dragging use the left mouse button.
4. To display new roads which is not on the map use this technique. Manually create a track where the new road runs. Set the track color and width etc using the Track Control, save it to a file. Attach this track file to the map using the "Attach Track, Waypoint ..... Files" option on the Options section of the map calibration form, the track will then be loaded automatically with the map. This option will also allow you to attach waypoint, event or route files also, however conditions apply for these. Point files can be attached using the same method.
5. You can attach a waypoint, event or route file to a map so it is automatically loaded by using the Options button on the Map Calibration form.
6. To gain access to the properties of a waypoint, event, map feature or map comment place the cursor on the object and press the right mouse button. You can also **double click** on the object to open the properties window.
7. If you have 2 Waypoints or any 2 Map Objects (waypoints, events, map features or map comments) which are overlaying each other or to close together to work with you can hide the object on top by choosing the **Hide** option on the **properties menu** (right click on the object). To Unhide the objects select the **Unhide Options**.
8. If you put the .map file and the image file in the same folder OziExplorer will always find the image regardless of its link in the map file.
9. By Right Clicking on the MapView window a menu of options is provided.
10. By Right clicking on the Regional Map Window a menu of options is provided.

Error Codes

Error Code #	Error Description	Possible Fix
General		
1	This error is displayed instead of the Latiude or Longitude. Most likely caused by an incorrect Map calibration. Error occurs when software attempts to convert a image coordinate (x,y) to a Latitude,Longitude.	Check Map calibration for input errors, All North/South or East/West entered correctly. Calibration points not all in horizontal or vertical line (must have good spread across the map).
2	This error is displayed when attempting to create a Waypoint. Most likely caused by an incorrect map calibration. Error occurs when software attempts to convert a Latitude,Longitude to an image	As above.

	coordinate (x,y).	
Printing a Map		
101	The temporary windows bitmap needed could not be created.	Your system may be very low on resources, memory or hard disk space.
102	Printing Error - The image could not be transferred to the printer, this usually means the section of image being printed causes an error in the windows StretchDiBlit function.	You may not have enough free disk space on C: drive for the image to be spooled. You may need many hundreds of megabytes to spool a large image. Free up some disk space or trying printing with a larger scale.
103	The error occured in the windows Bitblt command.	Should not normally happen, try a reboot of the computer.
Saving a Map Image		
110	The file where the image is to be save could not be created.	The file may may already exist and be marked as read-only.
111	There was not enough disk space to create the image.	Free up some disk space.
112	There was not enough disk space to create the image.	Free up some disk space.
113	The temporary windows bitmap needed could not be created.	Your system may be very low on resources, memory or hard disk space.
114	The error occured in the windows Bitblt command.	Should not normally happen, try a reboot of the computer.

OziExplorer Crashes my System

see also Trouble Shooting Common User Problems

Here I am not meaning the odd bug in OziExplorer which causes an error or occasional crash of the software, I mean a crash which could cause a "General Protection Fault" or a system wide crash or lockup, usually every time you run OziExplorer.

This is rare but there are some systems which do have this problem, possible problems and cures are discussed below.

OziExplorer Configuration file has become corrupted.

Download this program and run it, press the Rename button to find and rename the oziexp.ini file.

http://www.oziexplorer3.com/support/oziexplorer/Rename_OziExp_ini_file.exe

When you run OziExplorer after this it will have a default configuration.

Note: It will be necessary to re-configure OziExplorer.

Graphics Card problems.

The problem may be caused by the Graphics card drivers and usually graphics cards which use high acceleration.

Some of the problems which show up are :

- The computer locks up when the cursor is moved to the top of the map.
- A General Protection Fault is generated in the Graphics card driver
- When scrolling, the map window becomes fragmented.

To test this you can turn down the acceleration of the graphics card and try OziExplorer.

Open the Display Properties.

Depending on the version of Windows the Acceleration settings may be on the Performance tab, or may be accessed by pressing the "Advanced" button on the settings tab and selecting the Troubleshooting tab.

Turn the Acceleration down to 1 click above the minimum setting and test OziExplorer. If the problem disappears then it may have been caused by bugs in the graphics card drivers.

OziExplorer causes a "General Protection Fault" . The error generated will look something like this.

OZIEXP caused a general protection fault
in module GRF128.DRV at 0001:00001263.
Registers:
EAX=00000000 CS=0357 EIP=00001894 EFLGS=00000246

Look at the module name if it has a .DRV extension the module is most likely part of your Graphic Card drivers.

There is little that can be done to Oziexplorer to fix these problems, it is likely being cause by bugs in the graphics card drivers. The drivers are just software programs and are subject to bugs as any other programs are.

The manufacturer of the graphics card may have new drivers available which have fixed the problem so check out their web site.

Turning the acceleration down as per the above instructions is the test for this.

If you get an error **eOutofResources** error this indicates that Windows has run out of Resources. This is a limitation of Windows 95/98/ME. A reboot of the System may help

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This page lists the most common problems that many users seem to have.

see also Trouble Shooting OziExplorer Crashes my System

Communications with the GPS

Garmin GPS - Upload/Download

When using a **Garmin** GPS and are having problems **uploading/downloading** make sure you check these settings:

GPS - set the GPS Interface to **GRMN/GRMN HOST** mode. On newer model Garmins the mode is just called **GARMIN**.

OziExplorer - set the **GPS Upload/Download Baud rate** to **9600**, garmins always do upload/download at this speed.

Garmin GPS - Moving Map mode (NMEA)

When using a **Garmin** GPS and are having problems using **Moving Map mode** make sure you check these settings:

GPS - set the GPS Interface to **NMEA/NMEA** mode. On newer model Garmins the mode may be called **NMEA OUT**.

OziExplorer - set the **GPS NMEA Baud rate** to match the GPS, on most Garmins this is set automatically to **4800** and cannot be altered.

If using a **Magellan** GPS try a Baud rate setting of **9600**, even though they have an option of **19200** I have never found one that works at this speed.

Make sure you have the baud rate settings the same in the **GPS** and in **Oziexplorer**.

Waypoint Positions (any positions) do not agree.

If your waypoint positions are not where you think they should be it is most likely caused by a datum mismatch. Typically a datum problem can alter a position by 50 to 200 meters but it could be less or more for some datums.

Datums are complicated and many users seem to get these settings wrong.

See Datums help for more information.

When using "**Moving Map**" and you position is slightly off the correct position on the map check these items:

1. That you have the ***Map Datum*** set correctly.
2. That you have the OziExplorer ***GPS NMEA Output Datum*** set correctly. For Garmins this must be set to the same datum as the GPS, for most other GPS's it should be set to WGS 84. The Eagle Explorer and Lowrance GN200 require it to be set to match the GPS datum.

See Datums help for more information.

When calibrating a map and are using readings from your GPS make sure the readings were taken with the GPS datum set to the same datum as the map.

Trouble Shooting

see also OziExplorer Crashes my System Common User Problems

Communication Problems

Read this section if you are having problems communicating with your GPS.

This can be divided into 2 sections, problems with the com port on the PC and configuration problems with OziExplorer and/or the GPS.

COM Port Problems

Make sure you do not have any other programs also trying to use the COM port. These may include FAX programs, programs which interface to Palm Pilots and other PDA's, terminal type programs (e.g. Hyperterminal). If you have been using a DOS terminal program to read the output from the GPS you must not only exit the terminal program but may also have to completely exit the DOS window to release the COM port.

If you get the error from OziExplorer "Failure to Open Com Port" this means the port is in use by another program or does not exist, note that OziExplorer has not yet attempted to communicate with the GPS, it does this only after it has successfully opened the COM port.

The serial output from most GPS receivers is in fact RS232C which means the output from the GPS only swings between 0 anf 5 volts instead of the usual + and - 10 volts (nominal). The majority of PC's can handle the 0 to 5 volt input without any problems but I have heard of PC's which could not, but this is rare and should only be checked as a last resort.

It is also possible to lock up the communication port on the GPS, so it is advisable to turn the GPS off and on when attempting to establish communication to reset the port.

Configuration Problems

See the GPS Communication section of the Common User Problems for information about this.

At low Baud rates (4800 or less) OziExplorer is more likely to not communicate with the GPS if NMEA output is turned on, this applies to Lowrance & Eagle units only.

Screen Display Problems

If the map appears blocked and disjointed, usually after zooming the map then this is usually caused by the graphics card drivers. See the section OziExplorer Crashes my System the same fix applies for this.

Waypoint Symbols will not print - This is a problem which seems to occur on just some printers, the cause has not been determined yet. A work around to this problem is to activate a different symbol printing procedure, this can be activated by placing a file called "**nopcanvas.dat**" into the folder where oziexplorer is installed, is does not matter what is in the file. The Object Scale parameter on the print dialog does not work using this method.

OziExplorer Limitations

Maximum Waypoints Loaded = 10000

Maximum Events Loaded = 1000

Maximum number of Routes = 100

Maximum number of Waypoints per Route = 300

The actual number of the above objects is controlled by the numbers specified for the configured GPS model. These can be adjusted on the GPS tab of the configuration. Of course specifying more objects (waypoints,events etc) than the GPS supports means the extra objects cannot be uploaded to the GPS.

Maximum Number of Tracks Loaded = 1000

Maximum Number of Points per Track = unlimited

The actual number of track points is controlled by the number specified in the GPS configuration.

Maximum Number of Point Sets = 75

Maximum Number of Points per Point Set = unlimited

Maximum Map Features per map = 500

Maximum Map Comments per map = 500

Attaching Files to a Map

Maximum Number of Track files attached to a map = 50

Maximum Number of Point Set files attached to a map = 50

Maximum Number of Waypoint files attached to a map = 1

Maximum Number of Event files attached to a map = 1

Maximum Number of Route files attached to a map = 1

OziExplorer File Formats

Waypoint File (.wpt)

Line 1 : File type and version information

Line 2 : Geodetic Datum used for the Lat/Lon positions for each waypoint
Line 3 : Reserved for future use
Line 4 : GPS Symbol set - not used yet

Waypoint data

- One line per waypoint
- each field separated by a comma
- comma's not allowed in text fields, character 209 can be used instead and a comma will be substituted.
- non essential fields need not be entered but comma separators must still be used (example ,,) defaults will be used for empty fields
- Any number of the last fields in a data line need not be included at all not even the commas.

Field 1 : Number - for Lowrance/Eagles and Silva GPS receivers this is the storage location (slot) of the waypoint in the gps, must be unique. For other GPS receivers set this number to -1 (minus 1). For Lowrance/Eagles and Silva if the slot number is not known (new waypoints) set the number to -1.
Field 2 : Name - the waypoint name, use the correct length name to suit the GPS type.
Field 3 : Latitude - decimal degrees.
Field 4 : Longitude - decimal degrees.
Field 5 : Date - see Date Format below, if blank a preset date will be used
Field 6 : Symbol - 0 to number of symbols in GPS
Field 7 : Status - always set to 1
Field 8 : Map Display Format
Field 9 : Foreground Color (RGB value)
Field 10 : Background Color (RGB value)
Field 11 : Description (max 40), no commas
Field 12 : Pointer Direction
Field 13 : Garmin Display Format
Field 14 : Proximity Distance - 0 is off any other number is valid
Field 15 : Altitude - in feet (-777 if not valid)
Field 16 : Font Size - in points
Field 17 : Font Style - 0 is normal, 1 is bold.
Field 18 : Symbol Size - 17 is normal size
Field 19 : Proximity Symbol Position
Field 20 : Proximity Time
Field 21 : Proximity or Route or Both
Field 22 : File Attachment Name
Field 23 : Proximity File Attachment Name
Field 24 : Proximity Symbol Name

Event File (.evt)

Line 1 : File type and version information

Line 2 : Geodetic Datum used for the Lat/Lon positions for each event

Line 3 : Reserved for future use

Line 4 : Reserved for future use

Event data

- One line per event
- each field separated by a comma
- non essential fields need not be entered but comma separators must still be used (example ,,) defaults will be used for empty fields

Field 1 : Number - this is the location in the array (max 1000), must be unique, usually start at 1 and increment.
Field 2 : Latitude - decimal degrees.
Field 3 : Longitude - decimal degrees.
Field 4 : Symbol - 0 to number of symbols in GPS
Field 5 : Map Display Format - not yet used, set to 0
Field 6 : Foreground Color (RGB value)
Field 7 : Background Color (RGB value)
Field 8 : Symbol Size - 17 is normal size

Track File (.plt)

Line 1 : File type and version information
Line 2 : Geodetic Datum used for the Lat/Lon positions for each trackpoint
Line 3 : "Altitude is in feet" - just a reminder that the altitude is always stored in feet
Line 4 : Reserved for future use
Line 5 : multiple fields as below

Field 1 : always zero (0)
Field 2 : width of track plot line on screen - 1 or 2 are usually the best
Field 3 : track color (RGB)
Field 4 : track description (no commas allowed)
Field 5 : track skip value - reduces number of track points plotted, usually set to 1
Field 6 : track type - 0 = normal , 10 = closed polygon , 20 = Alarm Zone
Field 7 : track fill style - 0 =bsSolid; 1 =bsClear; 2 =bsBdiagonal; 3 =bsFdiagonal; 4 =bsCross;
5 =bsDiagCross; 6 =bsHorizontal; 7 =bsVertical;
Field 8 : track fill color (RGB)

Line 6 : Number of track points in the track, not used, the number of points is determined when reading the points file

Trackpoint data

- One line per trackpoint
- each field separated by a comma
- non essential fields need not be entered but comma separators must still be used (example ,,) defaults will be used for empty fields

Field 1 : Latitude - decimal degrees.
Field 2 : Longitude - decimal degrees.
Field 3 : Code - 0 if normal, 1 if break in track line
Field 4 : Altitude in feet (-777 if not valid)
Field 5 : Date - see Date Format below, if blank a preset date will be used
Field 6 : Date as a string
Field 7 : Time as a string

Note that OziExplorer reads the Date/Time from field 5, the date and time in fields 6 & 7 are ignored.

Example
-27.350436, 153.055540,1,-777,36169.6307194, 09-Jan-99, 3:08:14
-27.348610, 153.055867,0,-777,36169.6307194, 09-Jan-99, 3:08:14

Point File (.pnt)

Line 1 : File type and version information
Line 2 : Geodetic Datum used for the Lat/Lon positions for each point
Line 3 : Reserved for future use
Line 4 : Reserved for future use
Line 5 : multiple fields as below

Field 1 : point set fore color (RGB)
Field 2 : point set back color (RGB)
Field 3 : point set size
Field 4 : point set font size
Field 5 : point set format
Field 6 : point set style
Field 7 : point set description (no commas)

Point data

- One line per point
- each field separated by a comma
- non essential fields need not be entered but comma separators must still be used (example ,,) defaults will be used for empty fields

Field 1 : Latitude - decimal degrees.
Field 2 : Longitude - decimal degrees.
Field 3 : rotation angle
Field 4 : point name
Field 5 : description 1 (no commas)
Field 6 : description 2 (no commas)
Field 7 : description 3 (no commas)

Route File (.rte)

Line 1 : File type and version information
Line 2 : Geodetic Datum used for the Lat/Lon positions for each waypoint in the routes
Line 3 : Reserved for future use
Line 4 : Reserved for future use

Route data

- One line per route followed by each waypoint in the route
- each field separated by a comma
- comma's not allowed in text fields, character 209 can be used instead and a comma will be

substituted.
- non essential fields need not be entered but comma separators must still be used (example ,,) defaults will be used for empty fields
- Any number of the last fields in a data line need not be included at all not even the commas.

Route Record

Field 1 : R - indicating route details
Field 2 : Number - this is the location in the array, must be unique, usually start at 0 for Garmins 1 for other and increment.
Field 3 : Name - the waypoint name, use the correct length name to suit the GPS type.
Field 4 : Description.
Field 5 : Route Color as displayed on map (RGB).

Route Waypoint Record

Field 1 : W - indicating route waypoint details.
Field 2 : Route Number - location in array of routes
Field 3 : Number - this is the location in the array of route waypoints, **this field is now ignored**.
Field 4 : Wp Number - this is the number of the waypoint (the Wp number within the GPS for lowrances)
Field 5 : Name - the waypoint name, use the correct length name to suit the GPS type.
Field 6 : Latitude - decimal degrees.
Field 7 : Longitude - decimal degrees.
Field 8 : Date - see Date Format below, if blank a preset date will be used
Field 9 : Symbol - 0 to number of symbols in GPS
Field 10 : Status - always set to 1
Field 11 : Map Display Format
Field 12 : Foreground Color (RGB value)
Field 13 : Background Color (RGB value)
Field 14 : Description (max 40), no commas
Field 15 : Pointer Direction
Field 16 : Garmin Display Format

While all the waypoint details are stored with each route it is always the waypoints loaded on the map which have priority, in other words if a waypoint on the map has the same name and/or array number location as a waypoint in a route loaded from a route file the waypoint on the map could replace the waypoint currently loaded from the route record. This occurs when the user presses the relink waypoints button on the Route Editor.

Date Format

Delphi stores date and time values in the TDateTime type. The integral part of a TDateTime value is the number of days that have passed since 12/30/1899. The fractional part of a TDateTime value is the time of day.

Following are some examples of TDateTime values and their corresponding dates and times:

0 - 12/30/1899 12:00 am
2.75 - 1/1/1900 6:00 pm
-1.25 - 12/29/1899 6:00 am
35065 - 1/1/1996 12:00 am

Map File Format

In the text below the lines in the map file are marked with a dot.

Only those parameters which can be modified/created by the user are described, parameters which are used for special cases are not described.

The lines in green are optional

The Map File

The lines are in the order they are in the map file.

Header and Version of File

- OziExplorer Map Data File Version 2.1

Title of Map - any text string

- Brisbane Region

Link to map image file

- D:\OziMaps\regional\south.ozf2

Can be 1 of 2 things

- 1 TIFF scale factor - redundant, no longer used and has been replaced by line below
- 1 ,Map Code, - only used for special types of maps - **Note** - cannot be modified by the user but must be there.

Datum settings

- WGS 84,, 0.0000, 0.0000,WGS 84 - **Note** - for normal maps only the datum in the first field is used the rest of the parameters are for datum shifts and there is normally no need for these to be modified by the user.

Reserved fields, the lines must be there

- Reserved 1
- Reserved 2

Magnetic Variation entry - degrees,minutes

- Magnetic Variation,,,E

Map Projection

- Map Projection,Lambert Conformal Conic,PolyCal,No,AutoCalOnly,No,BSBUseWPX,Yes

Parameters

1. Map Projection - must match the projection name used in OziExplorer
2. PolyCal - the next parameter is Yes if Polynomial calibration is used and No if not
3. AutoCalOnly - Yes if calibration cannot be adjusted by the user No if it can
4. BSBUseWPX - For BSB images only, Yes if the calibration equations contained in the BSB file are used.

Calibration points, there are always 30
Only 9 points can be modified from within OziExplorer but OziExplorer will use the full 30 if they exist in the .map file.

- Point01,xy, 494, 235,in, deg, 24, 0,S, 148, 0,E, grid, , , ,S
- Point02,xy, 4076, 238,in, deg, 24, 0,S, 154, 0,E, grid, , , ,S
- Point03,xy, 4011, 2854,in, deg, 28, 0,S, 154, 0,E, grid, , , ,S
- Point04,xy, 550, 2851,in, deg, 28, 0,S, 148, 0,E, grid, , , ,S
- Point05,xy, , ,in, deg, , ,S, , ,E, grid, , , ,S
- Point06,xy, , ,in, deg, , ,S, , ,E, grid, , , ,S
- ...
- Point30,xy, , ,in, deg, , ,N, , ,W, grid, , , ,N

Projection setup parmeters, all on one line.

- Projection Setup, 0.000000000, 152.000000000, 1.000000000, 2500000.00, 100000.00, -24.666667000, -27.333333000,,,

Parameters

1. Latitude Origin
2. Longitude Origin
3. K Factor
4. False Easting
5. False Northing
6. Latitude 1
7. Latitude 2
8. Height - used in the Vertical Near-Sided Perspective Projection
9. Sat - not used
10. Path - not used

A marker line, it contains no information but is used as a file marker, must be there

- Map Feature = MF ; Map Comment = MC These follow if they exist

Map Features, there are 3 lines per feature

Line 1 Parameters

1. Number
2. Name
3. Latitude
4. Longitude
5. Show Format - not used
6. Fore Color
7. Back Color
8. Symbol Name
9. Create Waypoint
10. Waypoint Name
11. Format Type - internal use

Line 2 - the link to the picture, if there is no picture a blank line must be there
Line 3 - the description of the feature, if no description the blank line must be there

- MF, 1,MF 1 , -26.557302, 152.679007, 0, 16777215, 16711680, ,1,MF1
- c:\pictures\photo5.jpg
- This is a good camping spot
- MF, 2,MF 7 , -26.713354, 153.249176, 0, 16777215, 16711680,Asterisk.bmp ,1,MF7

Map Comments, there are 2 lines per comment

Line 1 Parameters

1. Number
2. Latitude
3. Longitude
4. Show Format - not used
5. Fore Color
6. Back Color
7. Width
8. Height
9. Font Size
10. Font Style

Line 2 - The text for the comment

- MC, 1, -26.572626, 152.512726, 0, 0, 65280, 68,20,6,0
- Map Comment 1
- MC, 2, -26.661532, 152.633450, 0, 0, 13158342, 182,82,13,1
- Map Comment 2 This is a large map comment
- MC, 3, -26.659946, 152.634492, 0, 0, 13158342, 182,82,13,1
- Map Comment 3

Attached file marker, .plt, .wpt, .evt, .pnt files can be included

- Track File = TF These follow if they exist

The attached files - not limited to just track files

- TF,e:\GpsMap\Data\000_2.plt
- TF,e:\GpsMap\Data\aa_demo1.plt
- TF,e:\GpsMap\Data\000_test.plt
- TF,e:\GpsMap\Data\001_test.plt
- TF,e:\GpsMap\Data\aaa.pnt
- TF,e:\GpsMap\Data\names.pnt

The Moving Map section marker

- Moving Map Parameters = MM? These follow if they exist

Use in Moving Map, if this parameter is set to No then the map will be excluded when looking for a new map to change to when using moving map mode. It does not affect other map find functions.

- MM0,Yes

Number of Map border points (corner markers)
Only 4 points can be set graphically in OziExplorer but up to 100 points can be used when derived from other sources, such as importing BSB charts.

- MMPNUM,4

The x, y pixel location of each border point, there must be an entry for each border point.
These are used by OziExplorer as the map loads to determine the map border points.

- MMPXY,1,494,234
- MMPXY,2,4076,238
- MMPXY,3,4012,2855
- MMPXY,4,549,2852

The lat, lon position of each border point, there must be an entry for each border point.
These values are used in the map find and moving map functions when looking for maps.
If these values are not there then the map will never be found.
If these values do not agree with the MMPXY points (after map calibration is applied) then map finding in moving map will not function correctly.
These values will be overwritten by the calculated value from the above x, y points every time the map is saved.

- MMPLL,1, 147.999332, -23.998496
- MMPLL,2, 154.000701, -23.999946
- MMPLL,3, 154.001025, -28.001546
- MMPLL,4, 147.998983, -28.001469

The scale of the image meters/pixel, its calculated in the left / right image direction.
It is calculated each time OziExplorer is run, the value in the file is used when searching for maps of "more detailed" scale.

- MM1B,170.352987

The lat/lon grid setup

- LL Grid Setup
- LLGRID,No,10 Min,Yes,8421504,255,16711935,10 Min,16777215,8421504,9,1,Yes,x

Parameters

1. LLGRID - identifier
2. Grid On - Yes = display grid
3. Grid spacing - number and unit
4. Autoscale - Yes = autoscale on
5. Degree line color
6. Minute line color
7. second line color
8. label spacing - number and unit
9. label fore color
10. label back color
11. label size
12. label - show on all screens
13. x - ignore

The Other grid setup

- Other Grid Setup
- GRGRID,No,10 Km,Yes,255,16711680,10 Km,16711680,16777215,9,1,Yes,Yes,No,x

1. GRGRID - identifier
2. Grid On - Yes = display grid
3. Grid spacing - number and unit
4. Autoscale - Yes = autoscale on
5. Km line color
6. Meter line color
7. label spacing - number and unit
8. label fore color
9. label back color
10. label size
11. label - show on all screens
12. Clip to neat line
13. No meters shown in label ??
14. Show last 3 digits in label ??
15. x - ignore

The position the map will display when it is opened

- MOP,Map Open Position,3008,2324

The map image width and height - not used, just for information

- IWH,Map Image Width/Height,4440,3590

OziExplorer API

(Application Programming Interface)

The API is a controlling interface, the API provides methods for other programs to control many actions of OziExplorer.

The files and documentation for the API can be downloaded from the Utilities section of the web site www.oziexplorer.com

Introduction

OziExplorer3D is an **optional add-on** to the OziExplorer software, details of the software and an evaluation version can be obtained from our web site www.oziexplorer.com

OziExplorer3D is software which allows map images to be viewed in 3D with the ability to rotate in all directions and zoom in and out of the view.

The 3D maps are created using the OziExplorer GPS Mapping Software, the 3D maps are then viewed by OziExplorer3D, in this respect OziExplorer3D can be considered as an add-on to the OziExplorer GPS Mapping software.

A 3D map can be created from any map that can be loaded in OziExplorer provided you have elevation data for the region.

When the term OziExplorer3D is used the **3D map viewer** is being referred to, when the term OziExplorer is used the **OziExplorer GPS Mapping Software** is being referred to.

A 3D map is composed of a map image (or image part) and a grid of heights at a spacing specified by the user. The software plots the height grid in 3D and then overlays the map image on the grid (this is called texturing) to produce a 3D map.

OziExplorer creates the grid of heights using the height data you have obtained and writes this to a file. Other required information is also written to the file and the file is then passed to OziExplorer3D which loads the file and the map image (or image section) and displays the 3D map.

The evaluation version of OziExplorer3D will work with the evaluation version (shareware/demo version) of OziExplorer but the limitations of both packages will apply.

To get the full benefit of creating and viewing 3D maps you must have a purchased copy of OziExplorer3D and a purchased copy of OziExplorer.

Design Philosophy

Because OziExplorer can handle maps and also requires the use of height data for its own needs it was decided to include the creation of the 3D maps within OziExplorer rather than duplicating its map handling functionality in OziExplorer3D as well. OziExplorer can use a normal OziExplorer map and the height data which the user has installed to create a 3D map file which is then sent to the OziExplorer3D map viewer.

Requirements

- Windows 95/98/ME/NT4/2000/XP with OpenGL support (this is standard for all except Windows 95).
- A graphics card with OpenGL hardware and driver support is preferred for performance reasons but is not essential
- OziExplorer GPS Mapping Software
- OziExplorer3D Software
- Height Data for the regions of interest

Computer systems with 3D graphics cards with acceleration will obtain better performance. OziExplorer3D uses OPENGL programming which is highly dependent on your graphics card drivers. It is expected some systems will have problems because of this.

Features

- Display maps in 3D
- Most maps which can be viewed in OziExplorer can be viewed in 3D (some image types are excluded for licensing reasons)
- Rotate your maps in 3D, view from any direction
- View waypoints, tracks and points on the 3D map
- Zoom in and out
- Apply 3D shading to your map
- Apply Fog to the map
- Load multiple maps in OziExplorer3D (purchased version only)
- Show GPS position on the 3D map
- Save, copy to the clipboard and print the current 3D map view

OziExplorer 3D - FAQ

General Information

- **OpenGL and Windows Operating System**

  OziExplorer3D uses the OpenGL graphics engine for high-performance 3D graphics similar to the engine used in many of the video games. Most video card manufacturers support OpenGL, **but to get the best performance from your computer it is important to make sure you have the most recent drivers.** Hardware acceleration of OpenGL requires special drivers which take advantage of the graphics hardware in the system.

- **What if I only have a basic graphics card and my maps rotate slowly**

  If your system does not have a graphics card with hardware acceleration, the software will perform slowly. The reason for this is that although most Windows users will have access to a software implementation of OpenGL, it uses the CPU (instead of a dedicated graphics card) to render 3D graphics. Windows 95B (OSR2/2.1), Windows 98 and Windows NT 4.0 all ship with Microsoft software implementations of OpenGL.

  If you select "Wire Frame Rotate" in OziExplorer3D configuration, the software will operate better on your system when you drag or rotate your map. Use of smaller map sections with less vertices will improve performance.

- **Will 3D graphics cards improve the performance of OziExplorer3D**

  Yes, if you have a graphics card with built-in opengl 3D support you will get an improved performance from one without. However, you should obtain specialist advice on which graphics best suits.

FAQ

- **I have DEM files which are projected in the local Grid and map datum, how can I use these.**

  OziExplorer has the ability to specify the grid and datum being used, see the Height Data help (bottom of the page) for information on how to do this.

- **When I select the "whole map" my computer is very slow.**

  1. Try selecting a smaller section of the map, some computer systems will not be able to handle selection of the whole map, particularly if the map is large.

  2. Reduce the number of vertices. Some computer systems will slow down if you have 10,000 or more vertices.

  3. If you select "Wire Frame Rotate" in OziExplorer3D configuration, the software will operate better on your system when you drag or rotate your map.

- **My track elevation does not correspond with the map elevation pattern (shape).**

  1. The height datum of the track elevation data and the DEM elevation data may be different.

  2. The map will show the elevations at the accuracy of the data from the DEM file. Also the grid spacing of the data will have an effect. (eg Gtopo30 data is 1km grid spacing which will tend to smooth out the map elevation shape).

  3. The track height data captured by a GPS is not accurate.

  There are two elevation offsets you can make

  - In OziExplorer / Elevation Configuration, you can enter an "Elevation Adjustment" value (m). This will adjust both your Track heights (from GPS) and your map elevations from your DEM files.
  - In OziExplorer3D, the "Elevation Offset" on the Map Control allows you to adjust your 3D map elevation.

- **Can height data captured by my GPS with a track be used to replace DEM data for my map.**

  If height data is downloaded with the track then it will be used in the track display. It cannot be used to replace the elevations shown from the DEM data.

- **My heights do not agree with the contour lines on my map**

  The units (metres /feet) may not be correct, check that the units selected in OziExplorer are the same as the units the contour lines are drawn.

  We have seen DEM data files with incorrect data, use the "Elevation Adjustment" in OziExplorer / Elevation Configuration to adjust the data. (Don't forget to reset the Elevation Adjustment back to zero).

- **My operating system is Windows 95**

  Windows 95 and Windows 95a users may download OpenGL Version 1.1 from Microsoft's website. Download it and place the files in the Windows\System directory. It should fix OpenGL problems with the Win95a Operating System.

  DO NOT run this program unless you have the original edition of Windows 95 AND you are specifically getting the error message that you are missing OpenGL32.DLL.

  Windows 95 OpenGL Update or Download Windows 95 OpenGL Update from Microsoft

- **My map doesn't look smooth, it has ridges which should not be there**

  You have turned off filtering in Elevation Configuration in OziExplorer and then you have "oversampled". In the 3D Map Control dialog in OziExplorer, the value of the grid delta (metres per grid) is a lot less than the elevation data grid. Change the grid size in pixels using the drop down box until the metres per grid value is about equal or greater than the resolution of the elevation data.


Over sampling


Normal


Under sampling

- **It is taking a long time to create my 3D map**

  The number of vertices is too many for your computer system to process quickly. Reduce the number of vertices by increasing the "metres per pixel" or select a smaller area of the map. Older computer systems will have difficulty processing more than approximately 10,000 vertices.

OziExplorer 3D - Sources of Digital Height Data

Height Data from these sites or data files in the same formats are supported

World

SRTM

SRTM (Shuttle Radar Topography Mission), a joint project between the NIMA and NASA to produce digital topographic data for 80% of the Earth's land surface (all land areas between 60º north and 56° south latitude).

Most of the world has been released on a 3-arc-second (approximately 90 meters) grid, with the USA data being available on a 1-arc-second (approximately 30 meters) grid.

Note: Also available for download is SRTM30 (approximately 1km grid) comprising a combination of data from the Shuttle Radar Topography Mission, and the the U.S. Geological Survey's GTOPO30 data set. It is formatted the same as the GTOPO30 convention so should be considered as GTOPO30 data (see below).

(OziExplorer version 3.95.3a or later is required to read SRTM data. A new version can be downloaded from the OziExplorer webpage. Older versions of OziExplorer will not detect SRTM data.)

Downloading

Note: OziExplorer version 3.95.4j or later has the ability to download SRTM height data for the region of map being viewed so manual downloading through the FTP site shown below is not required. The SRTM Download option is on the 3D/Elevation Menu. (OziExplorer3D must be installed for this menu to be visible.)

- **FTP Download** - SRTM data for some regions can be downloaded from here.

Note : The file names represent the bottom left corner of your map, check your map to make sure you obtain the correct files. The naming convention of the files is "N49W110.hgt", for example this file covers the region from 49-50 deg North and 109-110 deg West. In the southern hemisphere, the file "S17E142.hgt" covers the region 16-17 deg South and 142-143 deg East.

If you have downloaded the data for your area but OziExplorer does not display any heights , downloading the wrong files is the most likely cause, double check that you have downloaded the correct data files.

The SRTM data has artifacts, this is particularly noticeable over water (lakes or rivers) and where sharp changes in height occur.

Using the Data

- The files have a .zip extension indicating they are a compressed file. A program called **oziUnGzip.exe** is supplied with OziExplorer3D which can uncompress these files.

- Run the **oziUnGzip** program and select the file (or files) you want to extract, they will be extracted to the same folder as the compressed file. **Note** - You must use version 1.1 of the oziUnGzip program (the version is in the program caption - version 1.0 does not display a version number).

- The file extracted will have the extension .hgt. **Important** - Do not change

the file name of the .hgt file as it is used to position the dem.

- Place the file in the "Globe (Arcview)" Elevation Data folder.
- OziExplorer must be configured to use SRTM data by configuring the use of Globe Data in **Elevation Configuration** (see the Help file for details). If you have not configured this path then you must do that before the height data will be used.
- If you no longer want the original .zip then you can delete it manually using windows explorer.

NGA (NIMA) DTED

NGA (NIMA) DTED is a global Digital Terrain Elevation Database (DTED) provided by the National Imagery and Mapping Agency (USA) with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer).

The NGA DTED data can be downloaded from the NGA Raster Roam page here **NGA DTED Data** for most of the World. *(Free download)*

Downloading

- When you open the web page you will see a map of the World with many options.
- In Desired Product Level, select "DTED Level 0".
- Click on the image at the required Lat/Lon and wait for the next page to be displayed, centered on these coordinates.
- Go to the **Raster Exporter** section at the **bottom of the page**.
- If necessary, change the coordinates in the boxes showing the "bounding rectangle" to adjust the selected area.
- There is a limit on the amount of data you can download at one time.
- When you have the area selected, click on the **Raster Exporter** button.
- The data file will be compiled and the "Raster Roam Requested Download File" web page with the file download link.
- Click on the link and Save the file to a folder on your hard disk.
- It is suggested you download the files to a folder called \Elevation Data\DTED located under the folder where OziExplorer is installed.

Using the Data

- The files have a .zip or .tar extension indicating they are a compressed file. A program called **oziUnGzip.exe** is supplied with OziExplorer3D which can uncompress these files. If you want to use Winzip to uncompress tar files you must turn OFF the smart carriage return linefeed conversion otherwise the data

is destroyed.

- Run the **oziUnGzip** program and select the file (or files) you want to extract, they will be extracted to the same folder as the compressed file. **Note** - You must use version 1.1 of the oziUnGzip program (the version is in the program caption - version 1.0 does not display a version number).

- The DTED data contains many files that are not required by OziExplorer so these are automatically deleted. Only the .dt0 files are kept (or dt1 or dt2).

- If you no longer want the original .zip or .tar file then you can delete it manually using windows explorer.

- The uncompressed DTED data files must be placed in the **NIMA DTED** path that you have configured OziExplorer to point to in **Elevation Configuration** (see the Help file for details). If you have not configured the NIMA DTED path then you must do that before the height data will be used. If your OziExplorer does not have a NIMA DTED path then you need to download a later version.

- **Note** - The DTED data is stored in numerous folders, a separate folder for each 1 degree of longitude. Within each folder numerous .dt0 files are placed, 1 file for each 1 degree of latitude. The files must be left in this structure. The folders must be directly attached to the **NIMA DTED** path you configured in Elevation Configuration, if not they will not be found.

- **Caution** - The data will be extraced into a new folder called **dted** (its part of the path stored with each file in the zip) so be aware that you may end up with path which ends with /dted/dted, if this happens make sure the DTED path in Elevation Configuration includes both the names (example C:\OziExplorer\Elevation Data\dted\dted)

- After adding new height data files to OziExplorer you must restart OziExplorer or go into Elevation Configuration and press the **Save** button to force the new files to be scanned.

Level 1 and level 2 Data

The data available to the public is called Level 0 and has a 30 arc second spacing.

Other higher resolution data called Level 1 and Level 2 is not available to public but can be used in OziExplorer if you have it by making sure the DTED path name ends in a 1 or a 2 (example \dted1) depending on the level you are using. OziExplorer uses the last character in the path name to determine the files to search for (.dt1 or .dt2). Note the use of Level 0 data does not require a special folder name.

GTOPO30 GTOPO30 is a global digital elevation model (DEM) with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer).

The Gtopo30 data can be downloaded from here **GTOPO30 DEM Data** for most of the World. *(Free download)*

Downloading

- From the Gtopo30 web site download the files you require by clicking on the map of the world, a page showing the area you clicked on will be displayed, you can download the file from this page. It is suggested you download the files to the \Elevation Data\Gtopo30 folder located under the folder where OziExplorer is installed.

Using the Data

- The files have a .tar.gz extension indicating they are a Gzip compressed tar file. A program called **oziUnGzip.exe** is supplied with OziExplorer3D which can uncompress these files. If you want to use Winzip to uncompress these files please read the warning on the Gtopo30 web site.
- Run the **oziUnGzip** program and select the .gz file (or files) you want to extract, they will be extracted to the same folder as the .gz file.
- The Gtopo30 data contains a large .src file, this file is not required by OziExplorer (and probably not by any other software) so it is automatically deleted. The files required by OziExplorer are the .DEM and .HDR files, any other files can be deleted if you wish.
- If you no longer want the original .gz file then you can delete it manually using windows explorer.
- The uncompressed Gtopo30 data files must be placed in the **Gtopo30** path that you have configured OziExplorer to point to in **Elevation Configuration** (see the Help file for details). If you have not configured the Gtopo30 path then you must do that before the height data will be used.
- After adding new height data files to OziExplorer you must restart OziExplorer or go into Elevation Configuration and press the **Save** button to force the new files to be scanned.

GLOBE **The Global Land One-km Base Elevation** *(GLOBE)*

The GLOBE project has developed a quality-controlled global Digital Elevation Model (DEM) with a 1 Kilometer spacing (approx).

The Globe data can be downloaded from here **GLOBE Data** for most of the world. *(Free download)*

Downloading

- Press the **Get Data** link on the Globe page
- Press the **Select your own area.** link under the Data heading**,** this will take you to a page where you can specify the region you want to download. (**Do not use the "Any or all 16 "tiles"** link, data downloaded via this graphical interface is **NOT** compatible with OziExplorer.)
- You can Choose Your Type Of Area Selection as the "Text Entry" or the "Map-based (uses a Java applet)", both will produce the same type of files.
- You **MUST** use the following settings to produce data in the correct format
  - **Export Type** ESRI ArcView

- **Data Type** int16
- **File Format** PC binary
- **Compression Option** Compressed tar file
- **Transfer Option** FTP
- Enter a different **File Name** and **Unique Name** if desired.

- Press the Get Data button to create the data files, there will be a delay while the files are created.
- When complete click on the link "click here" to download the data files
- It is suggested you download them to the \Elevation Data\Globe folder located under the folder where OziExplorer is installed.

Using the Data

- The files have a .tgz extension indicating they are a compressed tar file. A program called **oziUnGzip.exe** is supplied with OziExplorer3D which can uncompresss these files. If you want to use Winzip to uncompress these files please read the warning on the Globe web site.
- Run the **oziUnGzip** program and select the .tgz file (or files) you want to extract, they will be extracted to the same folder as the .tgz file.
- If you no longer want the original .tgz file then you can delete it manually using windows explorer.
- The uncompressed Globe data files must be placed in the **Globe (ArcView)** path that you have configured OziExplorer to point to in **Elevation Configuration** (see the Help file for details). If you have not configured the Globe (ArcView) path then you must do that before the height data will be used.
- After adding new height data files to OziExplorer you must restart OziExplorer or go into Elevation Configuration and press the **Save** button to force the new files to be scanned.

NOTE : It may not be of any benefit to get data from both GTOPO30 and GLOBE. Data from either site is likely to be the same data for your region as the data has been derived from the same source.

USA

1:250K DEM

The 1-Degree DEM (also referred to as "1:250K scale" DEM data) with a horizontal grid spacing of 3 arc second (approximately 100 meter) provides coverage of United States, Hawaii, and limited portions of Alaska. (For Alaska - also see the 1:24k section below)

The 250K data can be downloaded from here **USGS Geographic Data Download Home Page** (select 1:250K DEM)

This is a direct link to the graphical download page **FTP via Graphics** links direct to the FTP site. (select your region using the interactive USA Map) Once you

have selected your region, download the **compressed** file format. ***(Free download)***

Files size - from 100K to 2MB

Downloading

- Click on the map to obtain the region you want
- This will take you to a more detailed map, click on the region you want
- This will present you with a list of files which cover the region, to save download time only download the compressed files.
- It is suggested you download them to the \Elevation Data\USADem250 folder located under the folder where OziExplorer is installed.

Using the data

- The files have a .gz extension indicating they are a Gzip compressed file. A program called **oziUnGzip.exe** is supplied with OziExplorer3D which can uncompresss these files.
- Run the oziUnGzip program and select the .gz file (or files) you want to extract, they will be extracted to the same folder as the .gz file.
- If you no longer want the original .gz file then you can delete it manually using windows explorer.
- The uncompressed USA Dem 250K data files must be placed in the **USA DEM 250** path that you have configured OziExplorer to point to in **Elevation Configuration** (see the Help file for details). If you have not configured the USA DEM 250 path then you must do that before the height data will be used.
- After adding new height data files to OziExplorer you must restart OziExplorer or go into Elevation Configuration and press the **Save** button to force the new files to be scanned.

▶ 1:24K DEM

Download from **GISDataDepot.com** (or other source). Once you have selected your region, select "Digital Elevation Models (DEM) - 24K" and download the **compressed** file. ***(Free download)***

Files size vary from 300K to 4MB

Download for Alaska from **USGS** - This data is 15 minute for Alaska and will work with OziExplorer, unzip the .dem files to a folder and configure the path in 3D configuration as USA DEM 24K.

Downloading

- Click on the map to obtain the region you want
- This will take you to a more detailed map, click on the region you want

- This will present you with a list of files which cover the region, to save download time only download the compressed files.

- It is suggested you download them to the \Elevation Data\USADem24 folder located under the folder where OziExplorer is installed.

Using the data

- The files have a .DEM.SDTS.TAR.GZ extension indicating they are a Gzip compressed file. The files are also in the SDTS format, for OziExplorer to use them they must be in the DEM format. A program called **oziUnGzip.exe** is supplied with OziExplorer3D which can :
  - uncompresss the files
  - extract the files from the TAR file
  - convert the SDTS files to a DEM file
  - the TAR and SDTS files are automatically deleted after being converted

- Run the **oziUnGzip** program and select the .gz file (or files) you want to extract, they will be extracted to the same folder as the .gz file.

- If you no longer want the original .gz file then you can delete it manually using windows explorer.

- The uncompressed USA Dem 24K data files must be placed in the **USA DEM 24K** path that you have configured OziExplorer to point to in **Elevation Configuration** (see the Help file for details). If you have not configured the USA DEM 24K path then you must do that before the height data will be used.

- After adding new height data files to OziExplorer you must restart OziExplorer or go into Elevation Configuration and press the **Save** button to force the new files to be scanned.

Australia

SRTM **This should be the best data to use for Australia.**

The data that has been released is 3-arc-second (approximately 90 meter grid).

See the instructions above in the "SRTM" section on how to use the data.

NGA (NIMA) DTED Our testing shows that for Australia this data is much better than the **Gtopo30** and the **Globe** data. (approximately 1 kilometer grid)

See the instructions above in the "World" section on how to use the data.

GTOPO30 Both the GTOPO30 and GLOBE data (**see World section above**) covers Australia.

and GLOBE

(approximately 1 kilometer grid)

See the instructions above in the "World" section on how to use the data.

9 Sec DEM

GEODATA 9 Second DEM Version 2 is available on CD. (Note: This data can also be downloaded from the Geoscience Australia website but the data which is downloaded is NOT in a suitable format that can be used directly by OziExplorer).

The grid spacing is 9 seconds in latitude and longitude (approximately 250 meter grid).

9sec DEM Data Information Page on **Geoscience Australia (Auslig)** website.

Canada

USGS DEM Format

The grid spacing is based on geographic coordinates at a maximum and minimum resolution of 0.75 and 3 arc seconds for the 1:50 000, and 3 and 12 arc seconds for the 1:250 000 respectively, depending on latitude.

Place the .dem file in a folder under the USA DEM 24K path or the USA DEM 250K path set in OziExplorer3D configuration in OziExplorer.

The data can be downloaded from here http://www.geobase.ca/

France

Visual D.E.M.

A CDROM was produced which contains height data for all of France at 75meter grid spacing. This CDROM is no longer available for purchase. The height data on the CDROM is in Vistapro DEM format. For use in OziExplorer this data must be converted. A program is available here for download which converts this data to the Arcview BIL format.

Download the conversion program here Download the FranceVisualDem2BIL software This is a self extracting exe file.

A similar CDROM was produced with height data for the Alps, the conversion program has not been tested with this CDROM but should work ok.

Other

Useful Tools

Here is a link to a "plt2dem" program which makes a DEM file from OziExplorer Track and Waypoint files.

http://gps.prv.pl/plt2dem

(Author: Grzegorz Chyła)

DEM Formats

The Data listed above is the data we are aware of, no doubt there are many other sources of data in other formats.

These are the formats that OziExplorer supports

It is our intention to support other formats where possible and also to support more map projections and coordinate grids. For us to support a particular format we would need a couple of example DEM files, information on the projection/grid used for the data and the specifications for the format of the dem file.

See the bottom of this page for details on making your own "default.ozproj" files.

OziExplorer Name (This is the name given to the "Elevation Data Type and Path" settings in Elevation Configuration in OziExplorer.)	**Data Source**	**Other Names**	**Data Spacing**	**Projection/Grids Supported**
NGA (NIMA) DTED	NGA (NIMA)	Military Specification	30 arc seconds (approx 1 Kilometer)	Data must be in Lat/Lon with a WGS84 datum.
Gtopo30	Gtopo30	Similar to the ArcView BIL format but the data file has a .dem instead of a .bil extension	30 arc seconds (approx 1 Kilometer)	Data must be in Lat/Lon with a WGS84 datum.
Globe (ArcView)	Globe Other data sources will be available in this format	Also known as the ArcView BIL format	Various (The Globe data is 30 arc seconds (approx 1 Kilometer))	The default is Lat/Lon, with a WGS84 datum. A file called **default.ozproj** can be setup in each folder to specify the Grid, Datum and the Zone.
Grid ASCII	AUSLIG (Australia) Other data sources will be available in this format	Some sort of ArcView text format I believe. File extension must be .ASC , .GRD , .TXT	Various (AUSLIG data is 9 arc seconds - approx. 250 meter)	The default is Lat/Lon, with a WGS84 datum. A file called **default.ozproj** can be setup in each folder to specify the Grid, Datum and the Zone.
		• 1 deg dem • 3 arc	3 arc second -	Data must be in Lat/Lon, a default datum of WGS84 assumed.

USA DEM 250	USGS	second dem • 1:250,000 scale dem	approx 100 meter	A file called **default.ozproj** can be setup in each folder to specify the Datum.
USA DEM 24K	USGS	• 7.5 minute dem • 1:24,000 scale dem	mostly 30 meter but some at 10 meter	Data must be in UTM or Lat/Lon, if no datum is specified in the file header a default datum of NAD27 CONUS. A file called **default.ozproj** can be setup in each folder to specify the Datum.

The USA DEM 24K files are usually provided in the **SDTS** file format. OziExplorer does not read files in the **SDTS** format, these files can be converted to DEM using the sdts2dem.exe program provided with OziExplorer3D. The sdts2dem program was written by Sol Katz. A program called oziUnGzip.exe has been provided with OziExplorer3D which can uncompress the dem files and convert them automatically.

Height Data in XYZ format will not be supported as individual heights cannot be quickly read from files in this format.

Using Height Data Files by Specifying the Grid and Datum

Many countries supply Height data files (DEMs) which are projected in their own local grid and datum.

For many types of DEM formats it is not possible to store this information in the DEM file so it must be specified externally.

To do this OziExplorer uses a file called default.ozproj (a Projection file) which stores the Grid, the grid zone (if applicable) and the datum of the data in the DEM files in the folder.

This is an example of a default ozi projection file for using DEM's in other grids and datums.

- Download example file here - default_ozproj.zip
- The use of a default.ozproj file is optional
- If a default.ozproj is not found, the DEM is assumed to be using the default grid and datum for the type of DEM

- *see the table above, whether you will require a default.ozproj file for your DEM*

The default.ozproj file is read as each folder is scanned, all the DEM files in the same folder are assumed to be using the parameters specified in the default.ozproj file. If you have DEM's which use different grids or datums then these must be put in their own folder with a default.ozproj file setup with the correct parameters. OziExplorer scans all sub-folders attached to the folder configured in Elevation Configuration so all the DEM's will be found.

Example Projection File

Below is an example of a default.ozproj file - this file is setup for the New Zealand Grid and Datum.

These are the lines in the file which control the DEM - not all these parameters are required in every instance, the parameters which are not required can be left out of the file. Read the instructions contained in the example default.ozproj file below.

- grid - the grid the dem is using
- datum - the datum the dem is using
- zone - the zone the dem is using
- delta_x - used to offset the height data in the x direction (east - west)
- delta_y - used to offset the height data in the y direction (north - south)

These lines are only needed for certain grids and projections

- lat_origin
- lon_origin
- lat1
- lat2
- k
- false_easting
- false_northing

Example default.ozproj file

```
;this is an example default.ozproj file which has been set up for the New Zealand Grid
;-------------------------------------------------------------------------------
;the grid is a number from the list below.
;0=lat/lon
;1=UTM Grid
;2=Transverse Mercator (user grid)
;3=British National grid (BNG,OSGB)
;4=Irish Grid
;5=New Zealand Grid
;6=Swedish Grid
;7=Swiss Grid
```

```
;8=France I
;9=France II
;10=France III
;11=France IV
;12=Italy 1 Grid
;13=Italy 2 Grid
;14=Vicmap TM Grid
;21=Lambert Azimuthal Equal Area
;22=Lambert Conformal Conic


grid 5
;NZ grid specified

;The parameters below are used for the grid or projection specified above if required
;They are only required for the Transverse Mercator User Grid and for grid numbers
;21 and 22 from the list above.

lat_origin
lon_origin
lat1
lat2
k
false_easting
false_northing
;in this case no parameters are required so they are left blank

;-------------------------------------------------------------------------------
;the Datum is an ID number taken from the datum list in OziExplorer (View menu).
;these are some of the more common datum numbers
;104=WGS 84
;12=AGD 66
;13=AGD 84
;14=GDA 94
;28=European 1950
;31=Geodetic Datum 1949 (New Zealand)
;62=NAD27 CONUS
;79=Ord Survey of Great Britian

datum 31
;Geodetic Datum 1949 specified

;-----------------------------------------------------------------------------------------------
;the zone is the UTM zone number (example - zone 10) or BNG zone letters (example zone - SJ) or .....

zone
;in this case the zone is not required so is left blank

;-----------------------------------------------------------------------------------------------
;These values can be used to offset a dem in the x (east - west) and y (north - south) directions
;in order to have the map and the heights line up correctly.
;If the DEM is in lat/lon then the values must be specified in seconds
;If the DEM is in a Grid (UTM, BNG ....) then the vaues must be in meters.

delta_x
delta_y
;in this case no offsets are required so they are left blank
```

OziExplorer 3D - Elevation Configuration

System Tab

Use Elevation Data - Important, If unticked OziExplorer will not make use of Elevation from Elevation Files or allow 3D maps to be created.

Elevation Display at Startup - If ticked the Elevation Display window (shows the Elevation under the mouse position) will be shown when OziExplorer is started.

Filter Elevation - It is recommended that this parameter be ticked.

If ticked OziExplorer will interpolate the elevation between the known height points (the height grid in the height data file) using a best fit spline through a 16 point grid.

If ticked

- the height profile of the map will be smooth
- the map will take longer to create

If unticked

- the height profile will be noticeably stepped if a small height grid is selected
- the map creation will be faster

Save Small Image Section in 3D File - If ticked the required part of the map image is saved in the 3D1 file. This happens if the uncompressed size of the image is less than 1.5 MBytes. The image section is saved compressed in the 3D1 file.

Number Vertices - This shows the maximum number of vertices that you will allow. This value is set to a conservative 25,000 as a default but can be set between 0 and 2,000,000 as you become familiar with your system performance. If you set too high a value the map may not be usable in OziExplorer3D because of performance issues. **(Note: The Evaluation version of OziExplorer3D is limited to using 100,000 vertices.)**

Elevation Adjust -The figure entered here (in meters) is added to the elevation data of the map as the map is created. This allows the height data used to create the 3D map to be adjusted to allow for difference in height datums etc.

DEM File Paths Tab

Elevation Data Type and path

As OziExplorer is started (or exiting OziExplorer Elevation Configuration) then

Each type of height data file must be kept separate and placed in their own folder(s). The paths below are then set to point to where the files are located. Sub folders belonging to these paths are also scanned for files.

These are the categories of DEM files that OziExplorer supports

- **Gtopo30**

- **Globe (ArcView)**
- **Grid Ascii**
- **USA DEM 250**
- **USA DEM 24K**

See the Height Data help for more details of the type of data supported.

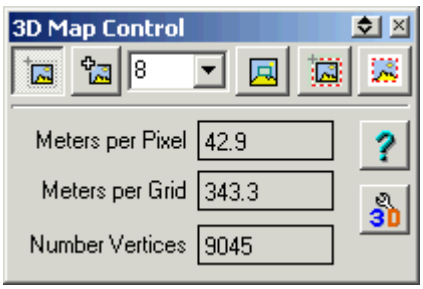
The checkbox beside each path enables the file type to be made active (used in OziExplorer) or not active (not used in OziExplorer).

OziExplorer 3D - 3D Map Control

The 3D Control is used for the creation of 3D maps for use in OziExplorer3D

The creation of 3D maps assumes you have elevation data installed which covers the area of the map you are using.

Use this Control to create a map or part of a map for display in OziExplorer3D.



Buttons

Draw Box to Set Limit of 3D Map - This allows a box to be drawn on the map. The area inside the box can be processed to create a 3D map for display in OziExplorer 3D. To create larger areas of the map use the zoom function in OziExplorer to zoom out first. Note - In unregistered versions of OziExplorer the creation of 3D maps can only be done at 100% zoom.

Create the 3D Map - After selecting the map limits (above) the 3D map will be compiled and transferred to OziExplorer3D.

Grid Size - The grid spacing (in image pixels) use to create the 3D map. When compiling the 3D map an elevation is taken at these points. The grid spacing determines look of the 3D map.

Select Viewing Window - The current viewing window will be selected. Note - This option is disabled in unregistered versions of OziExplorer.

Select Full Map - The full map will be selected. Note - This option is disabled in unregistered versions of OziExplorer.

Select Inside Corner Markers (Neat Line) - The map area inside the corner markers (map neat line) is selected.

- The selected area must form a rectangle with corners at 90 degrees. The corner markers on a map may form a 4 sided polygon where the corners are not at 90 degrees, in these cases the top

left and bottom right corner markers will be used.
- There will be some maps where this option will not work because the corner marker configuration is not as expected.

Note - This option is disabled in unregistered versions of OziExplorer.

Configuration - Opens the Configuration dialog. There is separate available for configuration.

Fields

Meters per Pixel - The approximate number of meters per pixel for this map.

Meters per Grid - The number of meters per grid for the grid size specified.

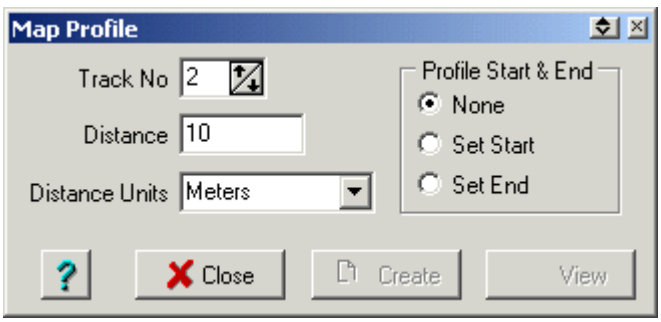
Number Vertices - The number of vertices (grid points) that will be created. The number of vertices determines how the 3D map will look. The number of vertices also determines the performance (usability) of the map in OziExplorer3D. Too many vertices will affect performance.

OziExplorer 3D - Create and View a Track Profile

The creation of a Track Profile assumes you have elevation data installed for the map you are using.

The Track Profile allows a track to be created along a defined straight line. The altitude for positions along this line are determined and stored with the track points for later display.

The created Track Profile is just a normal OziExplorer track and can be manipulated using the standard track methods.



Fields

Track No - When a profile is created it will be placed in a track, this specifies the track number to use.

Distance - The distance to use between each track point as the track profile is created. A smaller distance unit means more track points will be created.

Distance Units - The units for above.

Profile Start & End - This sets the start and end of the profile. Press the "Set Start" option and click on the map to set the start position. The "Set End" button will automatically become active, click on

the map again to set the end position. The **Create** button can then be pressed to create the track and the **View** button can be pressed to view the track.

Buttons

Close - Close the window.

Create - Create a track of the profile.

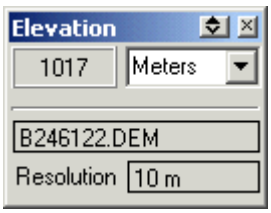
View - View the created profile on a profile graph.

Help - Provides this help.

OziExplorer 3D - Elevation Display

The display of Elevations assumes you have elevation data installed for the map you are using.

The Elevation Display window shows the Elevation under the mouse position.



Fields

Altitude - Displayed in the unit specified.

File Name - The name of the file used to obtain the elevation for this position.

Resolution - The distance between elevations (the grid spacing) in the above file.

OziExplorer 3D - How it Works

With OziExplorer the DEM files are never fully loaded into memory, OziExplorer uses a method of indexing, pre-calculating and caching to extract the required elevation from the dem file in the quickest possible time.

The DEM files are placed in the folder that has been specified for the type of dem.

When OziExplorer is started (or the Elevation Configuration is saved) the DEM File Paths are scanned (if set as active), sub-folders attached to these paths are also included in the scan. If a file called **default.ozproj** is found in the folder the grid and datum are read from it and used for each DEM in the folder. As the DEM files are scanned the details about each dem are stored in memory.

When an elevation is required the most suitable DEM is selected and the elevation is read from the file.

If many types of DEM's are active OziExplorer selects the DEM to use in this order.

1. USA Dem 24K
2. USA Dem 250
3. Grid ASCII
4. NIMA DTED
5. Gtopo30
6. Globe (Arcview)

Example - if a USA Dem 24K and Gtopo30 data exist and are set as active, the USA Dem 24K data will always be used.

Within each type of DEM type the file with the best horizontal resolution of data points is used

If you have a large number of dem files it may become too slow to scan them all, it is therefore suggested you divide them into regions and set the paths to point to a region of interest.

Some dem types are indexed and this produces an extra file called .ozline. If the .ozline file does not exist it is created the first time the dem is scanned. The creation of the .ozline file can take a few minutes but only has to be done once. The .ozline files can be deleted at any time, if required they will be created the next time the dem is scanned.

If **Use Elevation Data** is active and elevation data is available and you are using waypoints or tracks for any purpose, such as Track Profile, sending to OziExplorer3D and so on, then if the data does not include elevations then they are automatically used from the DEM files as required.

When a 3D map is being created OziExplorer divides the map into a grid using the specified grid spacing, it then obtains an elevation for each of the grid points (using interpolation with filtering if specified). The height data is written to the .3d1 file together with any other information required by OziExplorer3D, the file is then passed to OziExplorer3D for display.

OziExplorer 3D - Limitations of Evaluation Version

Limitations of the OziExplorer3D Evaluation Version

- Nag screen pops up whenever a new map is loaded
- Limit of 1 window open at a time (purchased version has no limit (system limitations apply))
- Limit of 100,000 vertices
- Lighting and Fog parameters cannot be adjusted

OziExplorer Shareware/Demo and Trial Versions

This only lists those limitations which apply to creating 3D maps, other limitations may also apply.

- 3D maps can only be created at 100% zoom
- the ability to select the full map and the map inside the neat lines are disabled