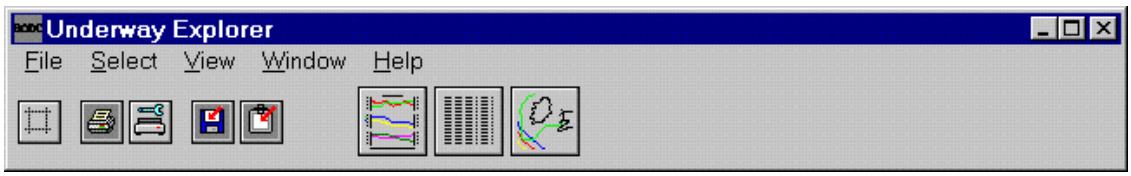
BODC Underway Explorer

Parent

Home

When the program starts up, the Underway Explorer control window is opened. Initially, the Select, View and Window menus and most of the control buttons are inactive. These are activated by opening the File menu and choosing a project from the Select Project sub-menu. If the software has just been installed then this will offer a choice of one. However, by making appropriate changes to the *Windows95* Registry, the software may be used in conjunction with other BODC CD-ROM products that include underway data.

Once the project has been selected, the control window appears thus:



This presents five pull-down menus, plus two types of button. The menus are accessible through mouse clicks or by pressing Alt and the appropriate 'hot key' simultaneously. Hot key characters are underlined in the menus.

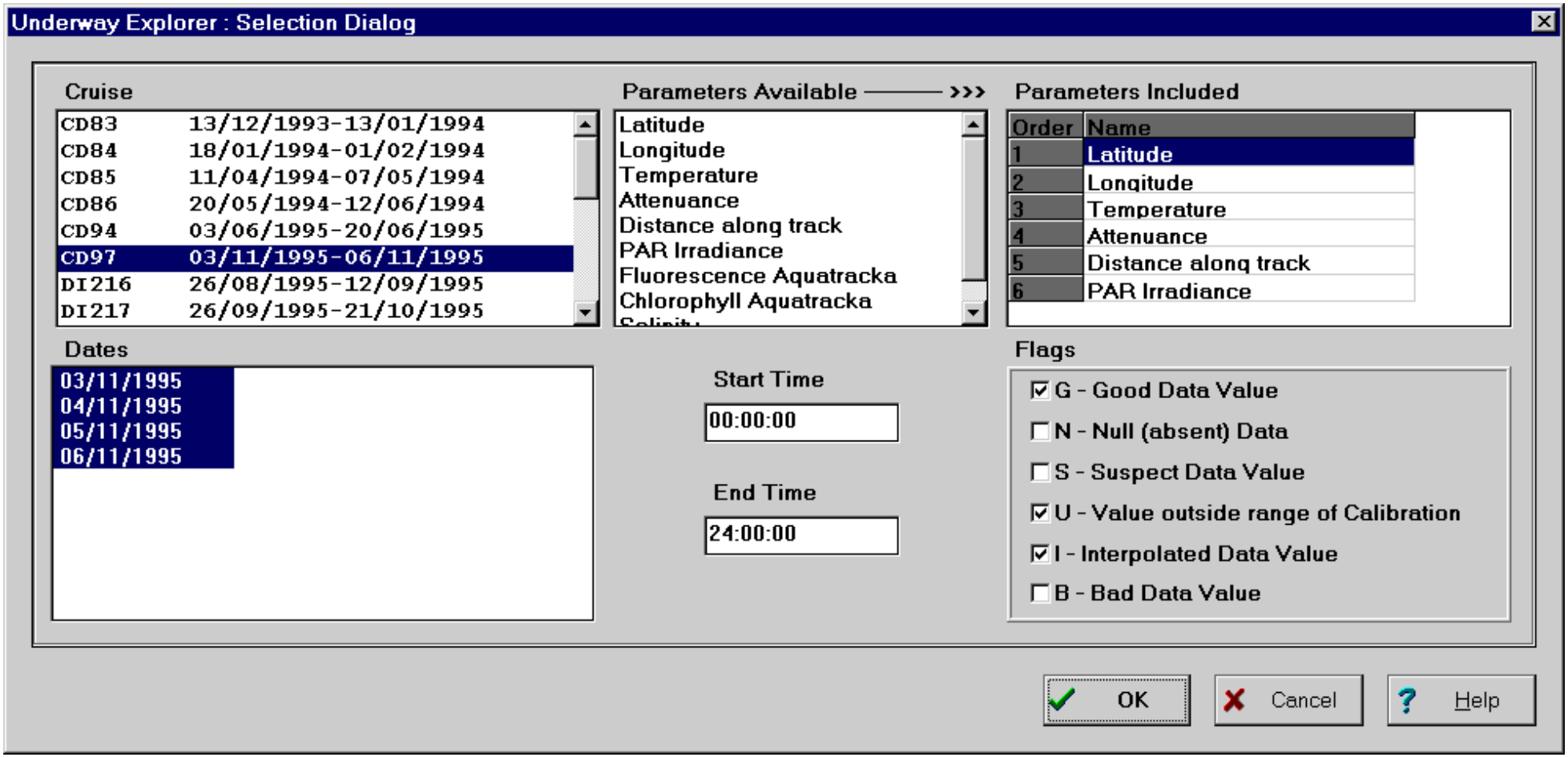
The group of five smaller buttons are termed universal control buttons. These invoke a standard set of control options. However, their detailed function is context sensitive, depending upon which view window has focus. They are therefore documented in the view window descriptions. These options may also be invoked by the File pull-down menu.

The three larger buttons open the three display windows which are (from left to right) the Plot View, the Data View and the Map Area View. These windows may also be opened using the View pull-down menu and selecting the Plot, Data and Map options as appropriate. The view focus may be controlled through the Window pull-down menu or simply by clicking on the window control bar.

The view windows may be opened immediately, but will only display the default data selection. However, it is assumed that users will want to control the data displayed, which is defined using the Selection Dialog. This is invoked by choosing the Select pull-down menu.

The Selection Dialog

Click on the window within the dialog to find out what it does



The Cruise Window

This window is used to specify the cruise from which data are displayed. If the number of cruises is too great to be displayed at once, then the list may be moved up and down using the scroll bar at the right hand side of the window.

The cruise is selected by simply clicking on it. Note that there will be a delay of a second or two after a cruise has been selected because the program needs to access the data file on the CD-ROM to obtain the dates covered by the cruise.

The Parameters Available Window

This window displays the parameters that are available in the underway file of the cruise currently selected. If the number of parameters is too great to be displayed at once, then the list may be moved up and down using the scroll bar at the right hand side of the window.

Parameters may be dragged from here and dropped into the Parameters Included window as required.

The Parameters Included Window

The Underway Explorer is capable of displaying up to six parameters at a time, whereas an underway file may contain some twenty or thirty parameters. The Parameters Included window specifies which of the parameters are to be included in the display windows.

Parameters are inserted into the Parameters Included window from the Parameters Available window by dragging and dropping. Parameters are deselected using the right mouse button. It is not necessary to specify all six parameters. It is perfectly permissible to set any of the list items to 'Unused' by right clicking.

The number of parameters specified and the order of them in the list has some relevance. The Plot View window displays up to three stacked time series plots with two parameters displayed per plot. Parameters one and two are displayed on the top plot, three and four on the middle and five and six on the bottom. The parameters are displayed in the Data View window from left to right in the order one to six.

Where the parameters are placed in the display windows may not seem to be particularly important. However, the effects are more dramatic when less than six parameters are selected. If both of the parameter slots for a plot are set to 'Unused' then the display of that plot is suppressed. Consequently, it is possible to fill the Plot Display window with just one or two plots instead of three.

It is also possible to produce three plots with just one parameter each by filling slots one, three and five. These plots have the axis labels on the left hand side. If slots two, four and six are filled then the axis labels are on the right hand side. Note that whilst embedding used and unused slots provides a mechanism for controlling the appearance of the Plot View window, it has the side effect of embedding 'Unused' columns in the Data View window.

The order of parameters in the list may be modified by dragging and dropping the slot numbers within the window.

The Dates Window

This window, together with the start and end time windows, allows a subset of the underway data file to be selected. Initially, the whole cruise is selected. To select data from a single day, simply click the date. To select a range of days, either drag the cursor over the required dates or click the first date in the range and then shift click the last date.

Initially, the selection is from 00:00 on the first day selected to 23:59:59 on the last day selected (annotated as 24:00 for convenience). This may be further refined using the start and end time windows.

The Start and End Time Windows

By default the data selected extend from the start of the first day selected to the end of the last day selected. To refine this, enter the desired start and end times into the start and end time windows. Simply click on the window and use the keyboard to enter the desired time.

The Flags Window

Every data value in the underway data files include flags that have been applied either by the originating logging systems or during BODC quality control. The flags used are:

G	Good data
N	Null data (usually accompanied by a value of 0)
S	Suspect data
U	Data outside calibration range
I	Interpolated data
B	Bad data

Data flagged 'U' are the result of calibration extrapolation and therefore may be less reliable than data within the calibration range. However, the data will have been reviewed during quality control inspection and if a serious problem has been identified then the flags will have been upgraded to 'S'.

Data are only flagged 'I' if the data were identified as interpolated by the originator, or if they have been interpolated by BODC processing software. This latter possibility is restricted to navigation channels.

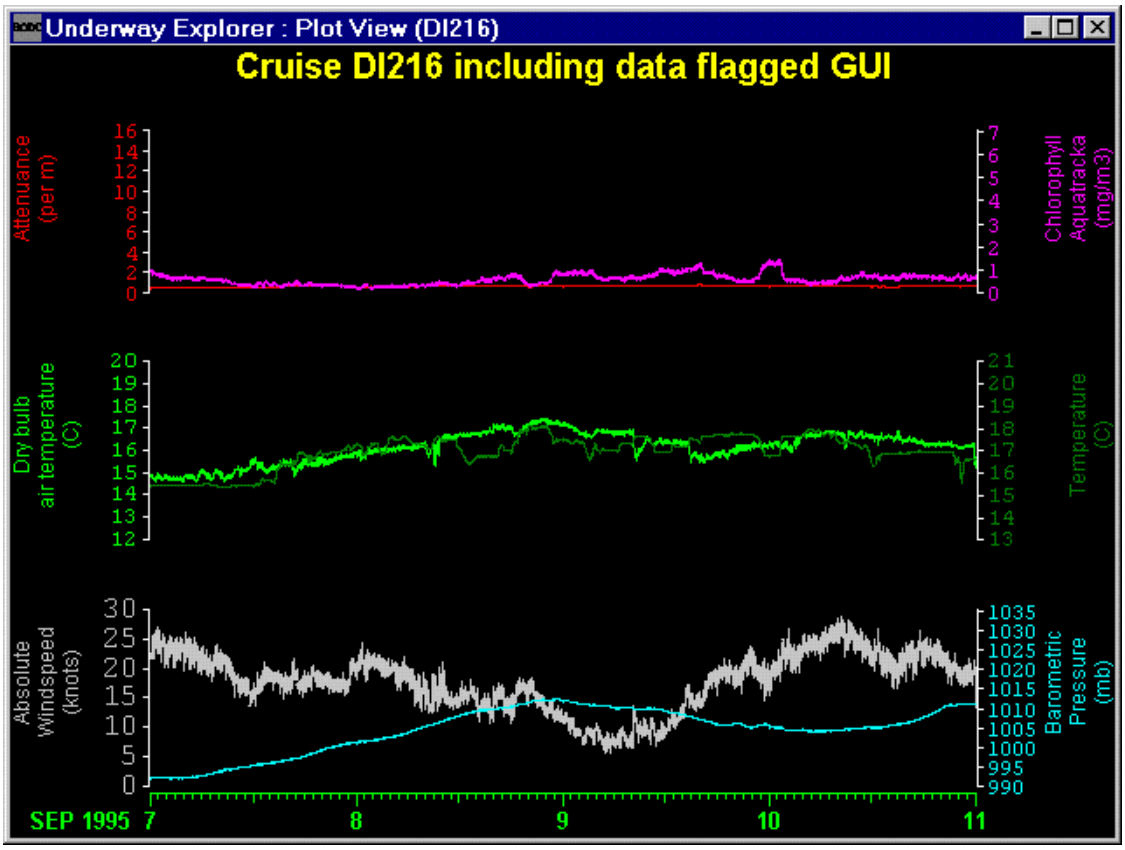
In practice, 'B' flags are very rarely used. They are carried across from the UK vessel system where they identify known hardware failures.

Data carrying the flags checked in the Flags Window will be included in the plots displayed in the Plot View window. The plotting of data points with other flags is suppressed. The flags may also be optionally used to restrict the data included in the Data View window.

Flags are checked and unchecked in the Flags Window by clicking on the check boxes.

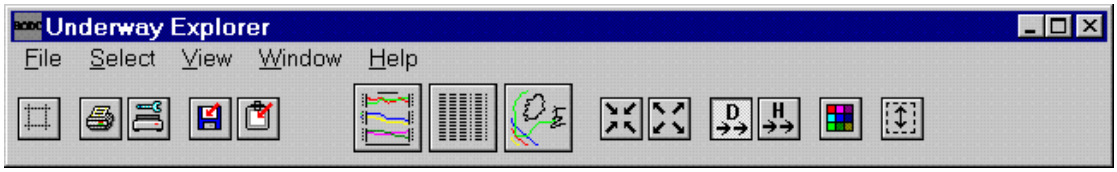
The Plot View

The Plot View window opens up looking something like this:



This is purely a data display window and as such, it doesn't do very much. The only thing it can do is to scroll the subset of the time series displayed left (forwards in time) or right (backwards in time) by a day or an hour by clicking on the window with the left or right mouse button as appropriate.

However, observant users will have noticed that whenever the Plot View window has the focus, the Control Window changes its appearance as shown below with a second crop of window-specific control buttons to the right of the window selection buttons.



Click on any of the universal or window-specific control buttons
to see what they do.

Selecting the View pull-down menu gives access to the following options in the Plot section:

Zoom In
Zoom Out
Scroll Width
Colours
Scale

These provide the same functionality as the window-specific control buttons.

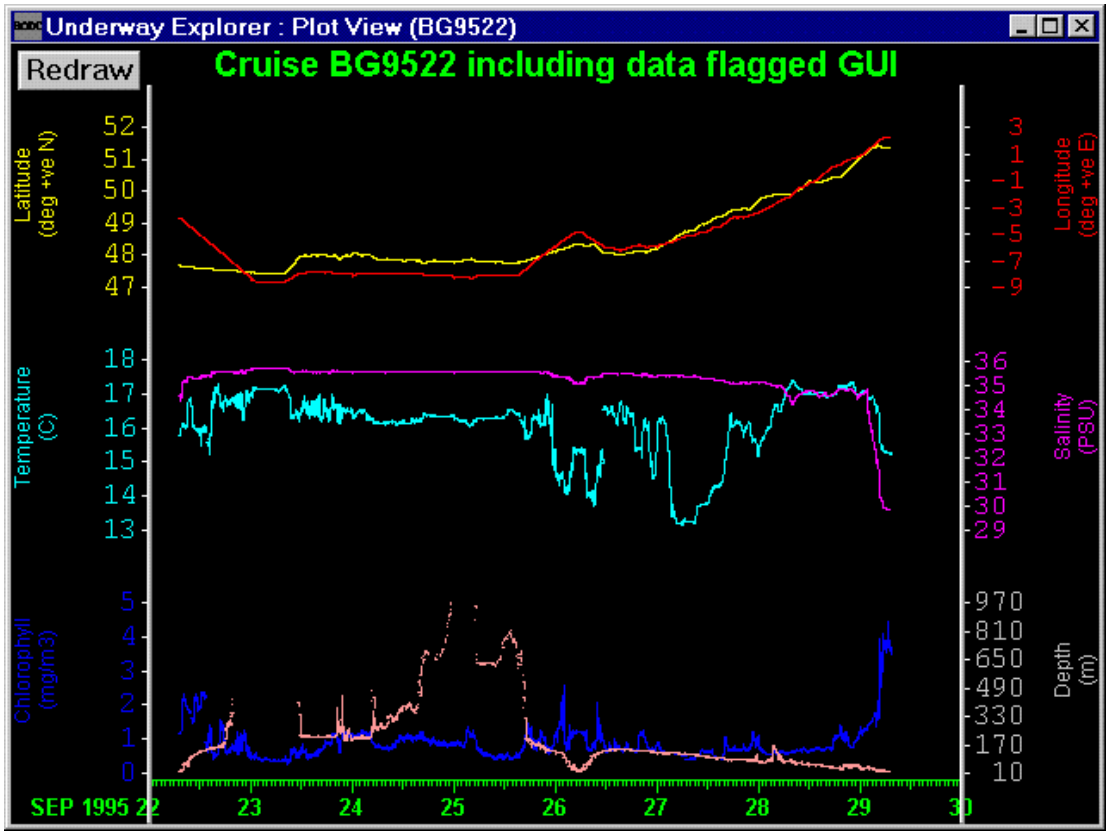
Selecting the File pull-down menu gives access to the following options in addition to the usual 'Close' and 'Exit':

Save As
Copy to Clipboard
Page Setup
Print
Print Setup

These provide the same functionality as the universal control buttons.

Zoom In and Zoom Out
Plot View

When the Zoom In option is selected, the appearance of the Plot View window changes thus:



The points to note are the two vertical grey bars over the Y-axes and the 'Redraw' button. These bars may be dragged into the body of the plot. Once the feature of interest has been bounded by the bars, press the 'Redraw' button and the selected data will be expanded to fill the full plot.

Obviously, the Zoom Out option is only available once the Zoom In option has been invoked. Selecting Zoom Out returns the plot to magnification in force before the Zoom In option was selected. Note that it is possible to Zoom In repeatedly and the Zoom Out option returns to the magnification set by the previous zoom.

Scroll Width
Plot View

The data in the Plot View window may be scrolled left or right using the left and right mouse buttons. This scrolling, by default, is a day at a time. However, this may be reduced to an hour at a time and subsequently returned to a day at a time using the Scroll Width option.

Colours
Plot View

The Colours option allows the colour of each individual element of the Plot View window to be changed by the user. Control is provided through the Colour Dialog.

The plot elements, including the background, are shown in their current colours. To change the colour of an element, double click on it and the standard *Windows* Color Dialog is opened up allowing the colour for that element to be chosen.

Once all the elements have been set up as required, then selecting OK will cause the Plot View window to be redrawn in its new colour scheme.

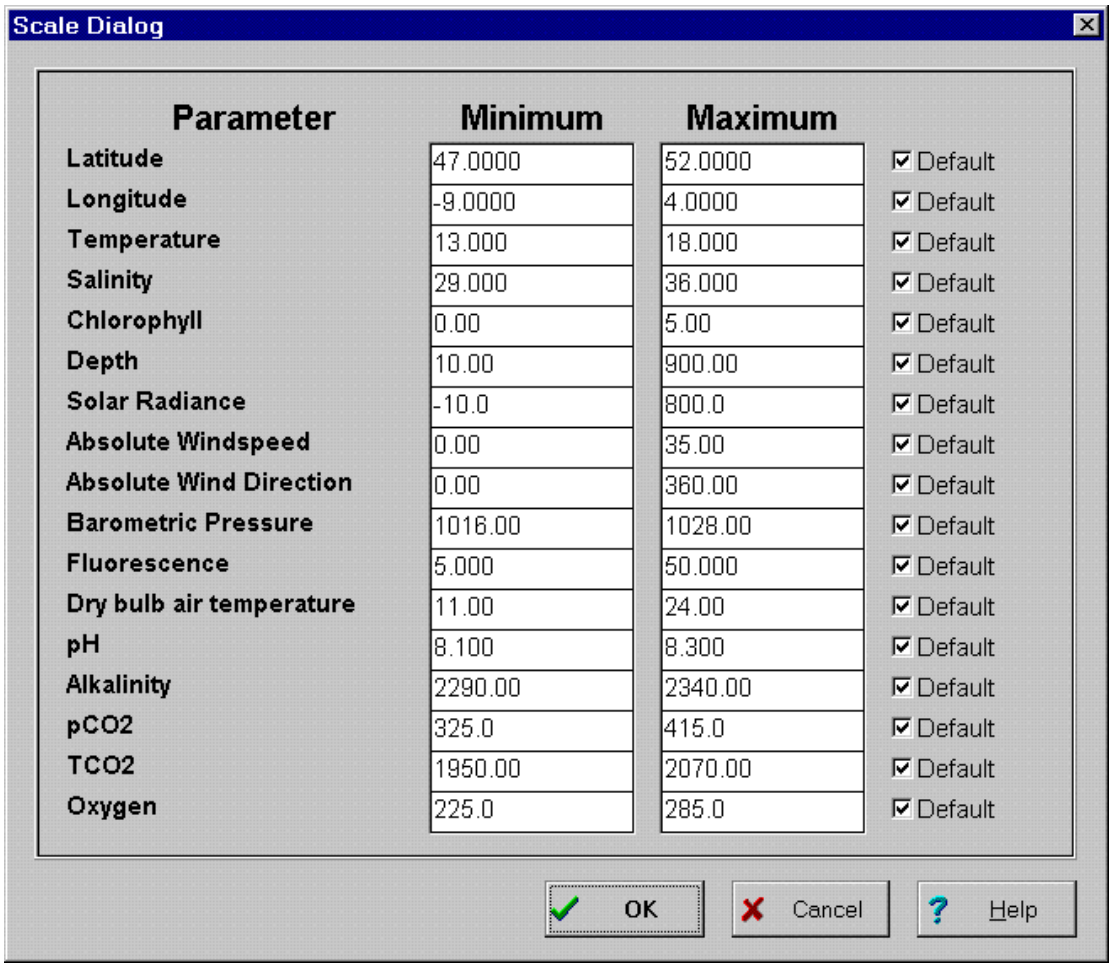
The 'B&W' button imposes a colour scheme of all elements in black on a white background. Thus a format suitable for printing on a black and white printer may be obtained through a single button push. When the button has been pressed, it transforms into a 'Colour' button that will restore the previous colour scheme at a stroke.

Note that changes to the colour scheme are stored in the program's ini file and will therefore become the defaults for subsequent program runs.

Scale
Plot View

The default Y-axis scales are determined by the program for the data. However, this may not always be what is required. For example most users will not want salinities logged on the passage from harbour to determine the scale used for oceanic salinities.

The scales are redefined by the Scale Dialog.



The axis minimum and maximum values are simply typed into the appropriate boxes. Clicking the 'Default' check boxes restores the program's preferred values. Once everything is as required, clicking the 'OK' button implements the changes.

Save As
Plot and Map Views

Choosing the 'Save As' option invokes the standard *Windows* dialog box. The contents of the Plot View window or Map View window (whichever has the focus) are saved in *Windows* bitmap format, sometimes known as 'bmp' format.

Copy to Clipboard
Plot and Map Views

This option causes the contents of the Plot View window or Map View window (whichever has the focus) to be copied to the *Windows* Clipboard in *Windows* bitmap format.

Page Setup
All Views

The Page Setup option invokes the Page Setup dialog that allows the left, right, top and bottom margins for printed output to be redefined. By default, these are set at 2.54 cm (1 inch).

Print
All Views

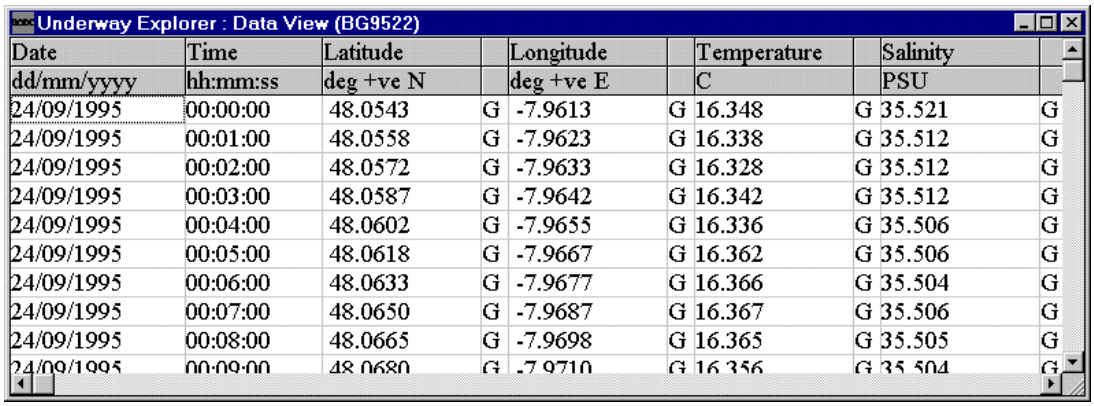
The Print option opens up the standard *Windows* Print dialog that offers printer selection, Print Setup and number of copies options prior to submission of the View contents to the printer.

Print Setup
All Views

The Print Setup opens up the standard *Windows* Print Setup dialog. The options available depend upon the printer currently selected. This option may also be invoked from the Print dialog.

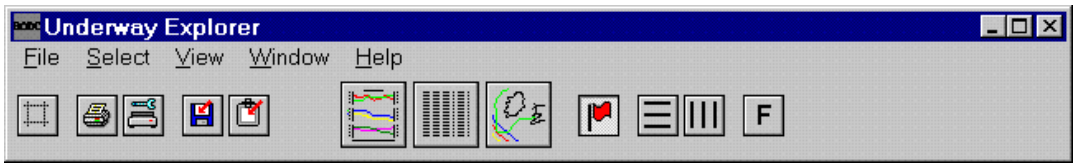
The Data View

The Data View presents the actual numerical data in a grid format that will be familiar to any spreadsheet user thus:



Date	Time	Latitude		Longitude		Temperature		Salinity	
dd/mm/yyyy	hh:mm:ss	deg +ve N		deg +ve E		C		PSU	
24/09/1995	00:00:00	48.0543	G	-7.9613	G	16.348	G	35.521	G
24/09/1995	00:01:00	48.0558	G	-7.9623	G	16.338	G	35.512	G
24/09/1995	00:02:00	48.0572	G	-7.9633	G	16.328	G	35.512	G
24/09/1995	00:03:00	48.0587	G	-7.9642	G	16.342	G	35.512	G
24/09/1995	00:04:00	48.0602	G	-7.9655	G	16.336	G	35.506	G
24/09/1995	00:05:00	48.0618	G	-7.9667	G	16.362	G	35.506	G
24/09/1995	00:06:00	48.0633	G	-7.9677	G	16.366	G	35.504	G
24/09/1995	00:07:00	48.0650	G	-7.9687	G	16.367	G	35.506	G
24/09/1995	00:08:00	48.0665	G	-7.9698	G	16.365	G	35.505	G
24/09/1995	00:09:00	48.0680	G	-7.9710	G	16.356	G	35.504	G

Whenever the Data View window has the focus, the Control Window changes its appearance as shown below with a second crop of window-specific control buttons to the right of the window selection buttons.



Click on any of the universal or window-specific control buttons
to see what they do.

Selecting the View pull-down menu gives access to the following options in the Data section:

Use Flags
Setup

Selecting the Setup option provides the following options from a sub-menu:

Horizontal Lines
Vertical Lines
Font

The following options are available from the File pull-down menu in addition to Open Project, Close and Exit.

Save As
Copy to Clipboard
Page Setup
Print
Print Setup

These options provide the same capability as the universal control buttons.

Use Flags
Data View

This option determines how the program handles the quality control flags that are assigned to each data value. If the option is active then the data displayed in the Data View are restricted to those with their quality control flags in the list specified in the Select dialog. If the option is inactive, all data from the data file are included in the Data View window. Naturally, the flags are included in the data listing.

The Use Flags option is indicated as active by a check mark next to it in the pull-down menu. In addition, the icon on the Use Flags button changes from a flag with no wind to a flag flying in the wind,

Horizontal and Vertical Lines
Data View

These are the background grid lines present in the Data View window. They are simply toggled on and off using either the buttons or by checking and unchecking the pull-down menu options.

Font
Data View

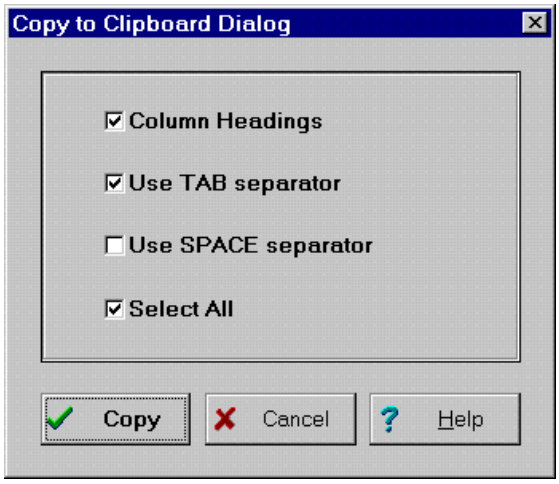
Choosing the Font option or pressing the 'F' button opens up a *Windows* standard Font dialog. This allows the font type, size, colour etc. to be selected. Changes affect all the data displayed in the Data View window.

Save As
Data View

Choosing the 'Save As' option invokes the standard *Windows* dialog box. The contents of the 'Plot View' window are saved in *Windows* Comma Separated Variable format, sometimes known as 'CSV' format.

Copy to Clipboard
Data View

Invoking the Copy to Clipboard option when the Data View window has the focus opens up the Copy to Clipboard dialog thus:

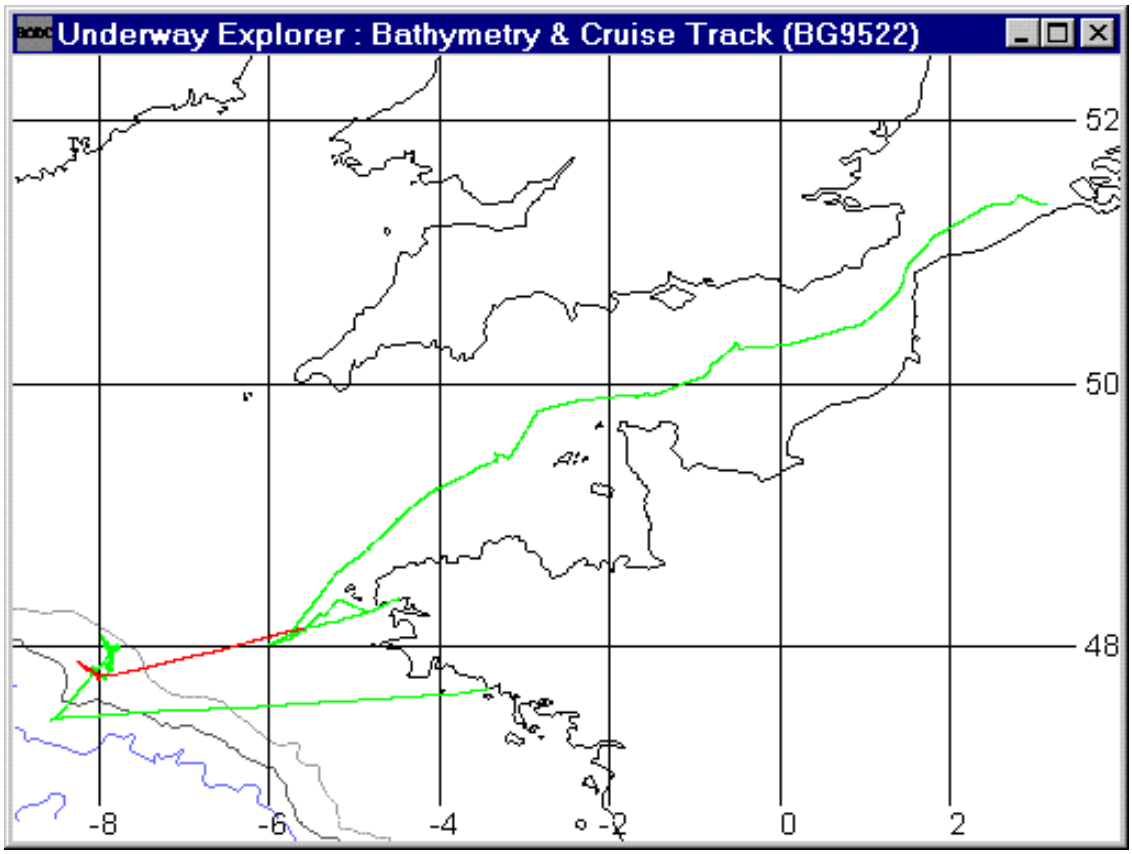


This allows control through the check boxes of whether the column headings are copied, whether fields are tab or space delimited and whether the whole Data View contents are copied. If the Select All option isn't checked only data from the Data View window that have been highlighted by dragging the mouse cursor over them will be copied. Once the check boxes are set up, the data are copied by pressing the copy button.

Note that this option has the potential for placing huge amounts of data onto the Clipboard. If the program runs out of resources, it will copy as much as it can and then issue a warning message. If this occurs, the data must be transferred to other applications by saving to a file and then loading the file into the desired application.

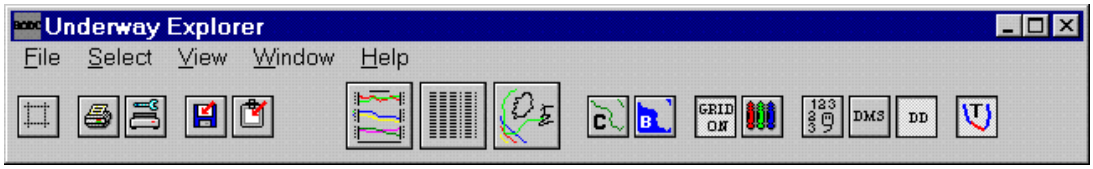
The Map Area View

The Map Area View provides spatial context information on the data displayed in the other two views. It presents a map with GEBCO bathymetry overlain by the cruise track thus:



It can be seen that part of the cruise track is in green whilst a small section is in red. The red section shows the track covered by the ship whilst collecting the currently selected data.

When the Map Area view has focus, the Control Window changes its appearance as shown below with a second crop of window-specific control buttons to the right of the window selection buttons.



Click on any of the universal or window-specific control buttons to see what they do.

Selecting the View pull-down menu gives access to the following options in the Map section:

Bathymetry
Coastline
Background
Graticule
Cruisetrack
Cursor Position

The following options are available in the File pull-down menu in addition to Open Project, Close and Exit:

Save As
Copy to Clipboard
Page Setup
Print
Print Setup

These provide the same functionality as the universal control buttons.

Bathymetry
Map View

The bathymetry option allows the bathymetric contours included in the base map to be specified. By default, contours are selected at 100 m intervals from 200 m to 1000 m and then at 1000 m intervals.

Invoking the Bathymetry option opens the Bathymetry dialog. The available contours are listed and may be selected by clicking on them. Normal *Windows* conventions are adopted for the selection of more than one contour: i.e. the Ctrl key must be held down when clicking on the second and subsequent selections. Holding down the Shift key when clicking causes a range to be selected.

Coastline
Map View

Invoking the Coastline option or pressing the 'C' button allows the colour of the coastline to be changed. The standard *Windows* Color dialog is opened from which the desired colour may be selected by clicking.

Note that the coastline may be suppressed if desired by simply setting its colour to the background colour.

Background
Map View

Invoking the Background option or pressing the 'B' button allows the colour of the map background to be changed. The standard *Windows* Color dialog is opened from which the desired colour may be selected by clicking.

Graticule
Map View

The Graticule option controls the appearance of the grid overlying the base map. Invoking it opens up a sub-menu containing the following options:

Display
Colour
Style
Format

The first two of these may also be invoked through the GRID ON/GRID OFF and adjacent colour buttons.

When the Display option is checked or the button is pressed in with the GRID ON caption, the graticule is present. Otherwise it is suppressed.

Invoking the Colour option or pressing the button with the three crayons logo allows the colour of the grid to be changed. The standard *Windows* Color dialog is opened from which the desired colour may be selected by clicking.

Choosing the Style option opens a dialog that offers a range of line styles with different mark/space ratios which may be used for the grid lines.

The Format option gives a choice over whether the grid is labelled in decimal degrees or in degrees, minutes and (for limited area plots only) seconds.

Cruisetrack
Map View

The Cruisetrack option provides control over the appearance of the cruise track plotted on the map. Invoking it opens a sub-menu offering the following.

Selected Colour
Unselected Colour
Display

The Display option may also be invoked by the 'T' button.

Invoking the Selected Colour option allows the colour of the cruise track with selected data to be changed. The standard *Windows* Color dialog is opened from which the desired colour may be selected by clicking.

Invoking the Unselected Colour option allows the colour of the cruise track with no data selected to be changed. The standard *Windows* Color dialog is opened from which the desired colour may be selected by clicking.

When the Display option is checked, the cruise track is displayed. Otherwise it is suppressed.

Cursor Position
Map View

The Cursor Position option controls the appearance of a digital readout of the mouse cursor position when it is within the active area of the Map View window. Invoking it opens a sub-menu offering the following options.

Display
Colour
Overlay
Background
Format

The Display and Format options are also controlled by the mouse icon and DMS/DD buttons respectively. Note that DMS stands for degrees, minutes and seconds and DD stands for decimal degrees.

The Display option simply controls whether or not the digital readout is displayed.

The Colour option allows the colour of the display digits to be changed. The standard *Windows* Color dialog is opened from which the desired colour may be selected by clicking.

The Overlay option controls how conspicuous the cursor position display is. When the option is checked, the cursor position display background is transparent. Otherwise, it is solid.

The Background option allows the colour of the display background to be changed. The standard *Windows* Color dialog is opened from which the desired colour may be selected by clicking.

The Format option controls whether the cursor position is displayed in degrees, minutes and seconds or decimal degrees.

Editing the *Windows 95* Registry

Introduction

Most *Windows 95* users, the author included, regard the *Windows 95* Registry Editor program, *Regedit,* as a tool of last resort grasped in desperation when the operating system has totally fallen apart. Further, daring to use *Regedit* is considered, with some justification, to be a foolproof way of wrecking a perfectly healthy *Windows* 95 installation.

However, *Regedit* may be used safely to view the contents of the Registry and providing great care is taken to ensure that it is backed up and there is adequate 'first aid' available to restore a damaged Registry it may be used to modify the Registry. However, there are very few circumstances where users would wish to do more than inspect what is there. These are documented below.

The BODC Registry entries may be found under HKEY_CURRENT_USER, then Software and finally British Oceanographic Data Centre. Under here is a Projects folder which contains a sub-folder for each project (i.e. BODC CD-ROM product) for which the software is configured. Each project also has its own folder containing a series of sub-folders.

Migrating Files onto the Hard Disk

The Underway Explorer will run considerably faster if its data files are transferred from CD-ROM onto hard disk. Two types of file need to be moved onto the hard disk: the underway data files and the bathymetric contour data files used in the Map View. On disk 1 the OMEX1 CD-ROM, these will be found in the directories UNDERWAY and GEB_CON.

The first stage in the migration is to copy the files from the CD-ROM to the hard disk using either *File Manager* or *Windows Explorer*. It doesn't matter what the directories on the hard disk are called (they may be buried several layers deep if desired), providing the FILE folder of the Registry entry for the project is modified accordingly.

For the sake of argument, let's say that they have been placed in the directories OMEX1\DATA\UNDERWAY and OMEX1\DATA\GEB respectively on the C drive. The 'Bathymetry directory' and 'BM file directory' entries must be modified so that they appear as follows:

Bathymetry directory	"C:\OMEX1\DATA\GEB"
BM file directory	"C:\OMEX1\DATA\UNDERWAY"

Installing Additional Projects

Whilst it is theoretically possible to use *Regedit* to build the necessary Registry entries to add another project, this would be both long winded and so error prone as to be suicidal. Consequently, BODC intend to make Setup programmes available to install additional projects. Please get in touch if you would like to extend the Underway and, for projects which include suitable databases, Database Explorers to cover further BODC CD-ROM products.

Recovering from a 'White Out'

The Underway Explorer provides total user control over screen colours. Changes to the screen colours are written to the Registry as soon as the window to which they relate is closed. Total flexibility brings with it the potential for disaster such as changing all the foreground colours and the background colour to the same shade. Whilst, it is possible to recover from this situation using the Underway Explorer user interface, clicking a blank screen in the right place many times over can be a little frustrating to say the least.

Many users will find it easier to use *Regedit* to save the day. A list of all the colours used may be found in the Colours sub-folder for each project. These may be set to either text names or hexadecimal numbers (not recommended). The following are all valid text colour names:

clBlack	clWhite	clRed	clBlue	clAqua
clFuschia	clGray	clSilver	clGreen	