

# GeoTide Predictor



# GeoTide Predictor User Guide

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Document: GeoTide Predictor User Manual

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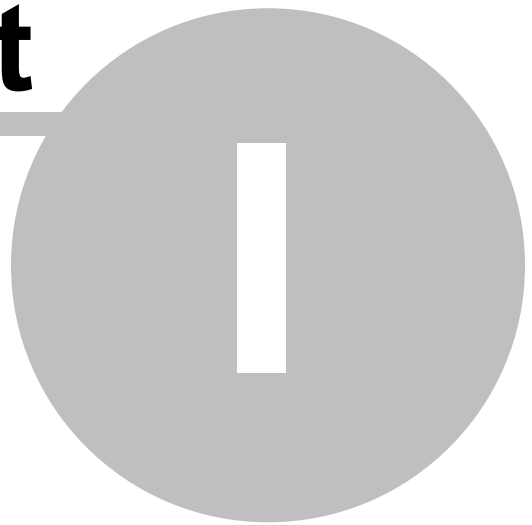
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# Part

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## Overview

# 1 Overview

**GeoTide Predictor** is part of the **GeoTide** tidal analysis and prediction package. The GeoTide package is a Microsoft Windows compatible application designed for the professional tidal surveyor and hydrographer. This document describes how to use **GeoTide Predictor** to create high quality predictions of tidal height and tidal stream velocity. For details of how to use **GeoTide Analyzer** please refer to its help file or manual.

This document is not intended as an introduction or guide to the mathematics of tidal prediction.

## 1.1 Introduction

**GeoTide Predictor** produces high quality tidal predictions of tidal height and tidal stream vector (speed and direction). The package reads location constants files generated by its sister application GeoTide Analyzer with file extension (.tc1) and (.tc2). It provides the following features:-

- Graphical Height Display
- Graphical 2D Stream Display
- High and Low Tide time and heights
- Passage times
- Predictions at regular intervals
- Web (HTML) formatted monthly height prediction tables
- Instant Cursor Readout.
- Export of Tabular Data in ASCII exportable and rtf printable files

In addition, throughout **GeoTide Predictor**, you can enter F1 at any time to view the relevant help topic for that window.

## 1.2 Running

Click the **GeoTide Predictor** icon on the start menu, or on the desktop to start the program.

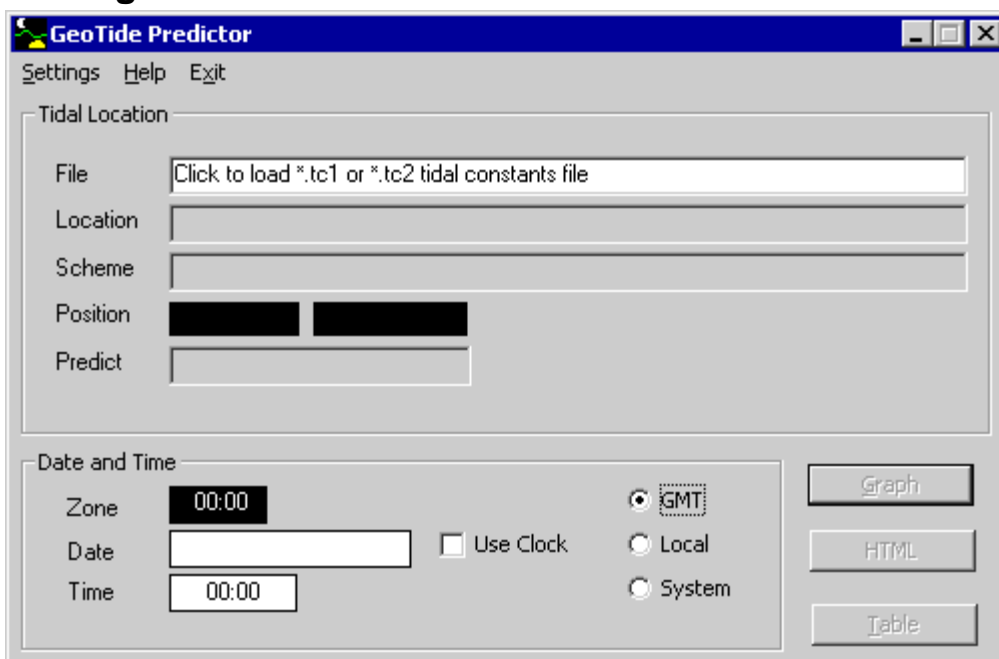


The following screen is displayed while memory is allocated and system checks are carried out.



Click OK to proceed to the main **GeoTide Predictor** screen shown in the following section.

## 1.3 Getting Started



### Steps

#### 1. Select a Location Constants File

On the main screen click the File text box and load a tidal location constants file for the location for which you want to make predictions.

#### 2. Set the Start Date and Time

You can either use the computer clock as the starting date and time for prediction as shown or you can enter a different start date and time by unchecking the checkbox called "Use Clock".

#### 3. Select the Time Zone

You can select here whether to use GMT, Local or System time zones. these can be setup using the **Settings>Time Zones** menu.

#### 4. Creating Output

Click:-

- **Graph** to obtain a tidal prediction graph,
- **HTML** to create an "Admiralty Style" tide table formatted as a web-page (html).

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For this option you will be able to change the various format settings,

- **Table** to create an tide table which can be exported as plain text or in rich text format or printed. This option enables you to change the type of table you require.

**Part**

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**Main Screen**

## 2 Main Screen

The main screen is used to load the location tidal harmonic constants which have been generated by the GeoTide Analyzer program. Enter the start date of the prediction and select the type of output, as graph, HTML or ASCII / RTF table on this screen. You can also change certain settings here such as units, the time zone offset, and the draught of vessel. The settings are saved after use ready for next time the system is operated.

### File

Click the text box to the right of this label and select the tidal constants file which you want to use to make your prediction. These will be file type tc1 or tc2

### Use Clock

Clicking Use Clock will automatically and continuously use the system clock to provide the start of the prediction date and time. Uncheck "Use Clock" if you want to manually enter a prediction date and time as the start of the prediction period.

### GMT / Local / System

There are three time zones in which GeoTide-Predictor can operate. You can manually set which type of time zone to use by using the options provided. You can setup the system time zone in the Time Zone Settings window.

The following pages describe each menu function in turn.

## 2.1 Menus

Settings Help Exit

The top level menus are Settings, Help and Exit.

### Settings

Used for changing the height and speed units, the vessel draught, the time zone and the type of monitor

### Help

To access this help system.

**Exit**

To leave the system.

**2.1.1 Settings Menu**

The Settings menu provides the following options

**Draught Enter**

The draught of a vessel to calculate clearance lines.

**Time Zone**

Set the time zones of the users computer.

**Monochrome / Colour**

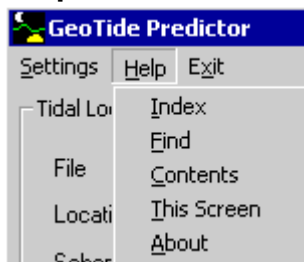
Change the Screen to a monochrome/colour display.

**Time Height Units**

Meters, feet and inches.

**Tidal Stream Units**

knots, miles per hour, kilometres per hour meters per second.

**2.1.2 Help**

The help menu provides

**Index**

Opens the help file on the "Index" page.

**Find**

Opens the help file on the "Find" page.

**Contents**

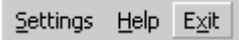
Opens the help file on the "Contents" page.

**Geomatix website**

Opens a web browser on the Geomatix website.

**About**

Displays version and other information about this program.

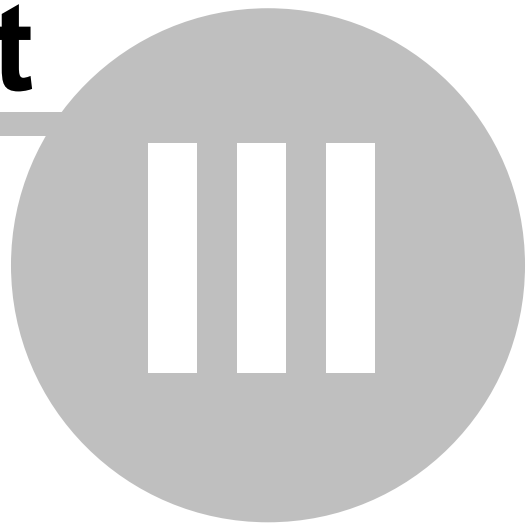
**2.1.3 Exit**A screenshot of a menu bar with three items: 'Settings', 'Help', and 'Exit'. The 'Exit' item is highlighted with a grey background.

The exit option closes the program.

If the settings have changed you will be prompted as to whether you want to save the new settings. If you want GeoTide Predictor to start next time with the same settings as now, such as charted depth, vessel draught, units etc then click Yes.

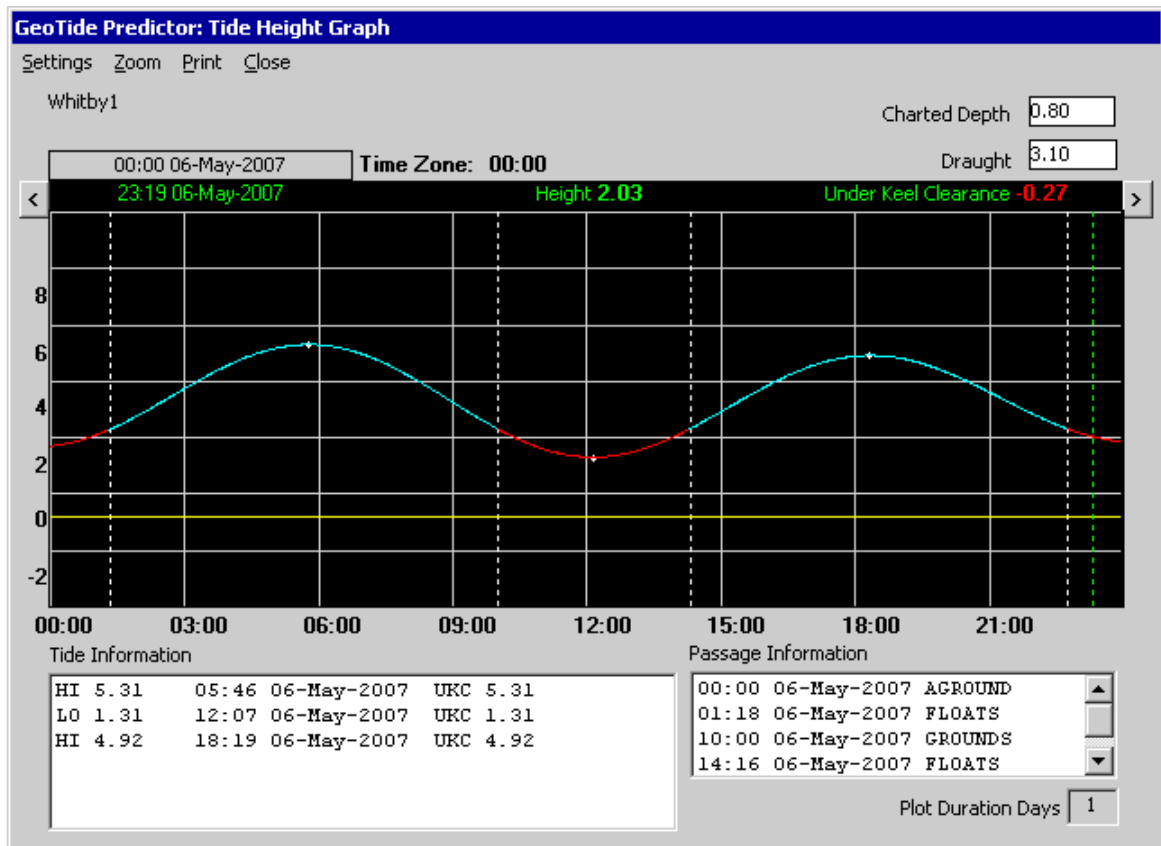
**Part**

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**Tide Height Graph**

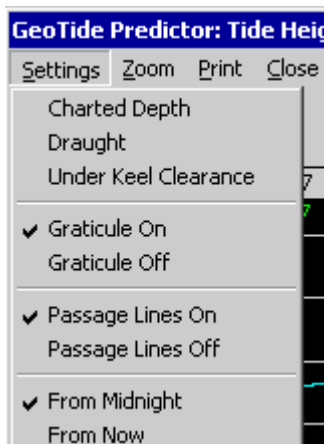
### 3 Tide Height Graph



Click the **Graph** prediction button on the main screen to display the Tide Height Graph window.

The window contains a graphical area and two scrollable text boxes. The graph displays the tidal height, on which, the times when the vessel would be aground are drawn in red, and when the vessel would be afloat are drawn in blue. The details of the high and low tide and the times of clear passage are listed in the scrollable text boxes. The vertical axis shows the height of the tide above chart datum (CD), while the charted depth is shown as a horizontal yellow line on the graph relative to chart datum. The green vertical dotted line is the graph readout facility which can be dragged left and right using the mouse. When dragged the readouts of tide height and under keel clearance at the upper edge of the graph are updated appropriately.

#### 3.1 Menus



## Settings Menu

### **Charted Depth**

Used to sets a known value of charted depth in a seaway for example, to calculate passage times. This is identical to clicking the charted depth box on the graphical screen.

### **Draught**

Used to sets the draught of the vessel. This is identical to clicking draught box on the graphical screen.

### **Under Keel Clearance**

Used to enter a known figure of under keel clearance, say from an echo sounder. This figure together with the draught and the tide height (above chart datum) is used to recalculate the charted depth of the seaway. It is calculated using the predicted tidal height at the moment in time indicated by the green dotted cursor readout.

### **Reticule On/Off**

Toggles the graph reticule, (horizontal and vertical grid) on and off.

### **Passage Lines On/Off**

Toggles the Passage-Time lines on and off

### **From Midnight**

Starts the horizontal time axis at midnight

### **From Now**

Starts the horizontal time axis at Now

## Zoom

### **In**

Zooms in (magnifies) the y axis.

### **Out**

Zooms out (diminishes) the y axis.

In either case the scale of the x axis remains unchanged.

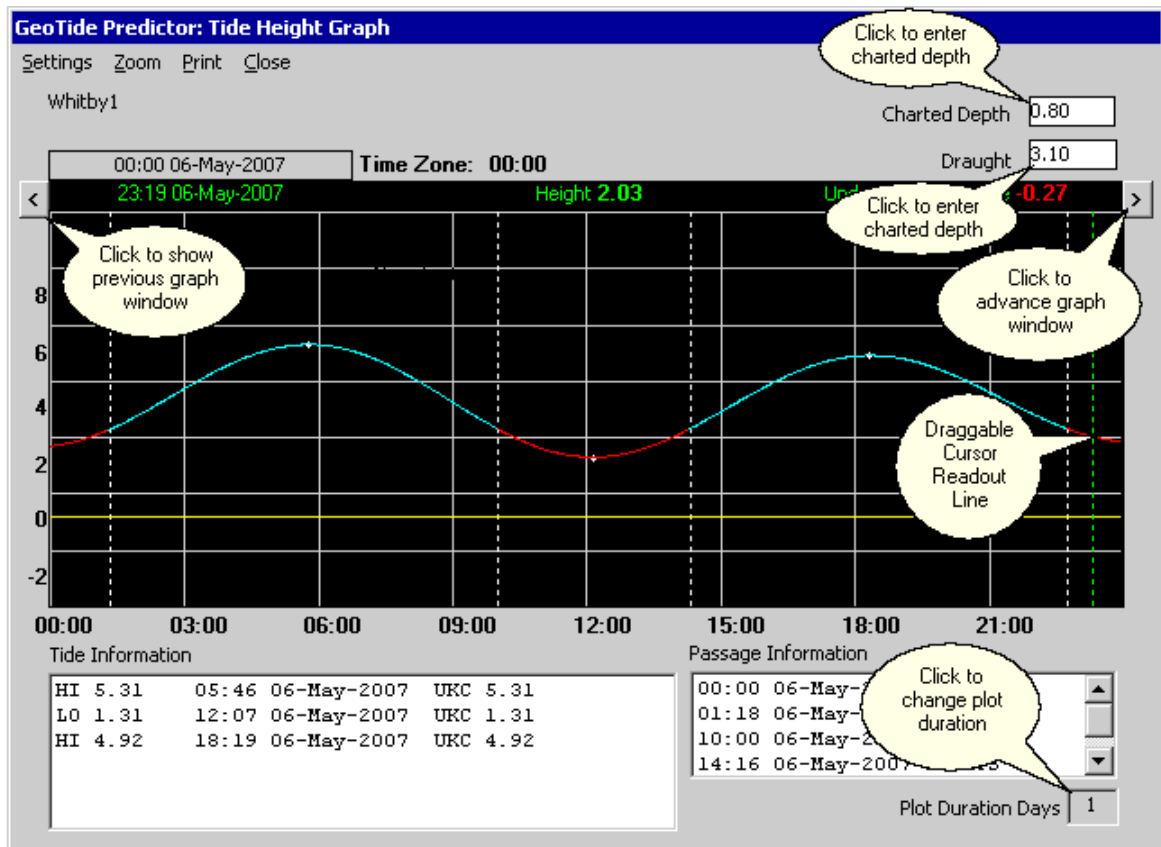
## Print

Click Print to output an image of the current Tide Height Graph Window to the default windows printer. If required, use the Start | Settings | Printers option to redefine your default printer before printing.

## Close

Click to close the Tide Height Graph screen and return to the main window.

## 3.2 Operation



### Charted Depth

Used to sets a known value of charted depth in a seaway for example, to calculate passage times. This is identical to clicking the **Settings>Charted Depth** menu on the graphical screen.

### Draught

Used to sets the draught of the vessel. This is identical to clicking the **Settings>Draught** menu on the graphical screen.

### Plot Duration

Click to change the number of days of the plot.

### Cursor Line

The cursor line is the dotted green vertical line. You can drag this to read out the values from the graph.

< >

Click on the buttons marked "<" and ">" to redraw the preceding or following tidal graph.

**Part**

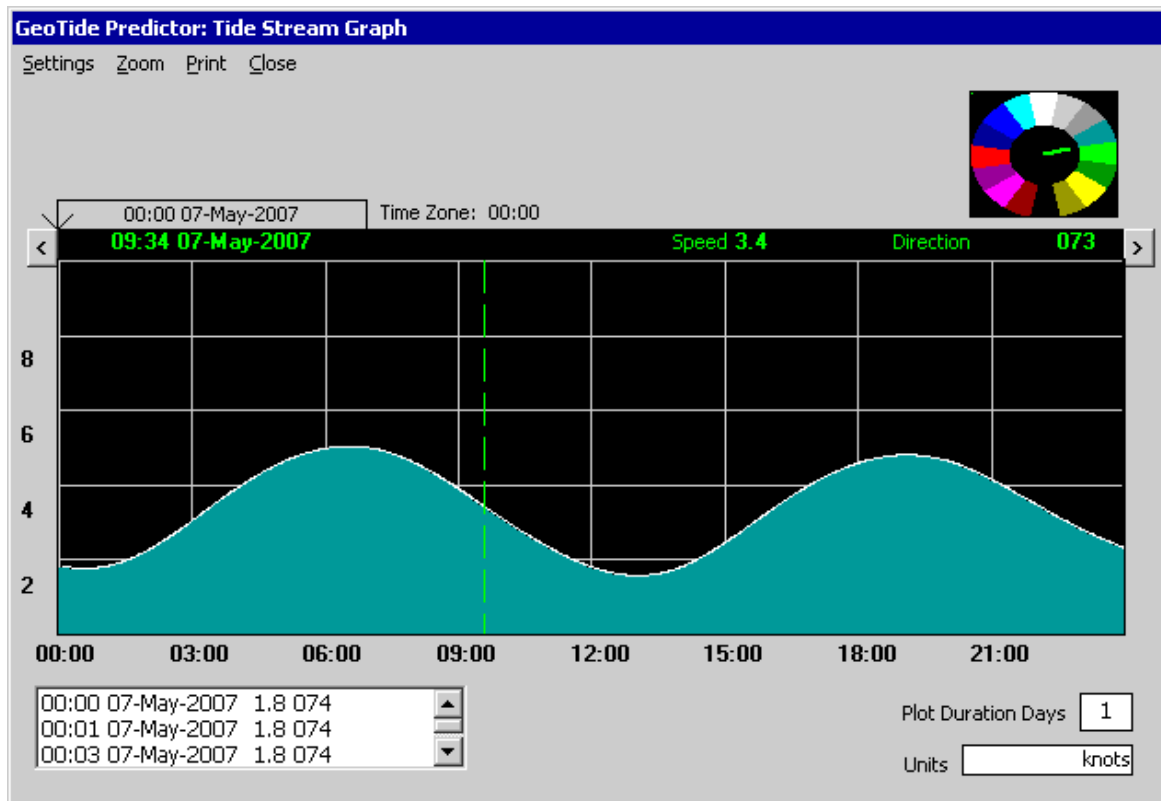
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**IV**

**Tide Stream Graph**

## 4 Tide Stream Graph



After loading the harmonic constants for a tidal stream (as a tc1 or tc2 file) , click the Graph prediction button on the main screen to display the Tide Stream Graph.

The vertical axis of the graph represents the speed of the tide, while the on the right hand side an arrow indicates the direction of the tidal stream at the time represented by the green cursor line. The stream speed and direction at the cursor are also listed in a scrolling text display.

The plot duration can be changed by clicking the plot duration text box.

### 4.1 Menus

#### Settings

##### Graticule On/Off

Toggles the graph graticule on and off

##### From Midnight

Starts the horizontal time axis midnight

##### From Now

Starts the horizontal time axis at Now

#### Zoom

**In** Zooms in (magnifies) the y axis

**Out** Zooms out (diminishes) the y axis

In each case the x axis remains unchanged.

**Print**

Prints the current image using the windows default printer.

**Close**

Close closes this screen and returns you to the main screen

**4.2 Operation****Plot Duration**

Click the plot duration to change the number of days of the plot.

**Cursor Line**

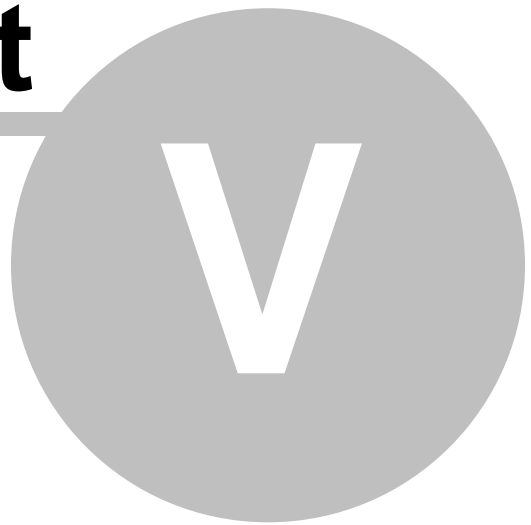
The cursor line is the dotted green vertical line. You can drag this to read out the values from the graph.

< >

Click on the buttons marked "<" and ">" to display the following and preceding graphs.

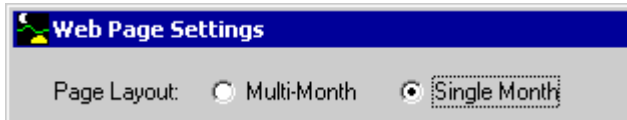
**Part**

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**HTML Tide Table**

## 5 HTML Tide Table



Clicking the HTML prediction button on the main screen displays the Web Page Settings window. This facility creates admiralty style web pages containing monthly tide tables of high and low tides. The tables start at the prediction date which you entered on the main screen. If you want the tide tables to begin on the first day of the month, you should enter the first day of the month on the main screen.

This window has two appearances depending on the setting of the Single Month or the Multi-Month options.

### Single Month

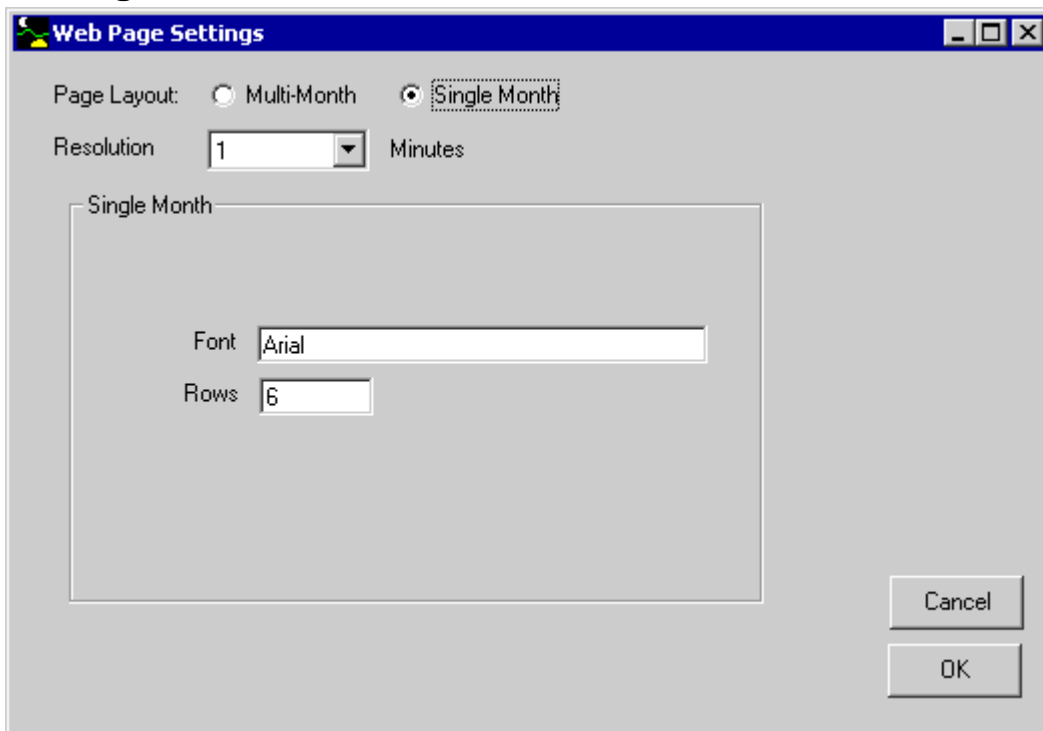
The Single Month option creates a web page containing only one month,

### Multi-Month

This option creates a web page containing more than one month's tide tables.

Notice that in either case the resolution can be changed from 1 to 6 minutes. This setting determines the accuracy with which turning points are determined. Selecting a resolution of 6 minutes is considerably faster but is less accurate than the one minute setting.

### 5.1 Making a one month table



Use the Single Month option creates a web page containing a single month. You can specify the font and the number of rows (not columns) of the output. This is in addition to the Resolution option described above.

### Resolution

This option can be changed from 1 to 6 minutes. This setting determines the accuracy

with which turning points are determined.

### Font

Enter here the name of the windows font which you want to use to create the table

### Rows

Enter here the number of rows required. Because of the differing number of days in a month the final row will not always be a complete row.

### Cancel

Click to restore the previous values and to close this window.

### OK

Click to create the web page. You will need to name the output file. The file created can be viewed in a web-browser, or it can be converted to a word processor format such as RTF or .doc using a word processor such as Microsoft Word.

## 5.2 Making a many month table

	Font	Size	Bold
Place Name	Arial	3	<input checked="" type="checkbox"/>
Year	Arial	2	<input checked="" type="checkbox"/>
Months	Arial	2	<input checked="" type="checkbox"/>
Units	Arial	1	<input type="checkbox"/>
Table	Arial	1	<input type="checkbox"/>

This option creates a web page containing tide tables of more than one month's duration. You can specify separately the shape of the table, in terms of the number of months duration, and the days height of the columns, and also you can specify the font, its size and whether or not it is a bold typeface and set headings text and so-on. The tide times and heights are written into the table in the typeface specified. The font and font size cannot be specified, since these must correspond with those of the table. If you do not want an object to be written, delete the font size in the font size text box.

**Resolution option** can be changed from 1 to 6 minutes. This setting determines the accuracy with which turning points are determined. Selecting a resolution of 6 minutes is considerably faster but less accurate than the one minute setting.

### Place Name

The place name, which was originally entered when the data was imported into GeoTide Analyzer, appears at the top row of the web page in the font, size and typeface specified.

If no font size is specified the place name is not printed.

**Year**

The year of the start prediction date is shown at the next row of the web page in the font, size and typeface specified. If no font size is specified the year is not written.

**Months**

The month, as text, appears above each months columns, in the next row of the web page in the font, size and typeface specified. If no font size is specified the month is not printed.

**Units**

The units header appears above each tide column, in the next row of the web page in the font, size and typeface specified. If no font size is specified the units header is not printed. The two text boxes contain the text header to be written, the first specifying the Time Header and the second specifying the Height Header.

**Table**

The tide times and heights are written into the table in the font, size and typeface specified.

**The Day Number / Day of Week**

This option includes either the day number of the month or the day of week in the table

**Number of Months**

This lets you set the number of months duration of the tide table.

**Start New Column every .. days**

Set here the height of the table in terms of number of days before a new column is begun.

**OK**

Click to create the web page

**Cancel**

Click to restore the previous values and to close this window.

## 5.3 Typical Tide Table

A typical web page of output is shown below.

**Whitby1**  
2007

January				February				March			
Time	Ht.m	Time	Ht.m	Time	Ht.m	Time	Ht.m	Time	Ht.m	Time	Ht.m
1 0152	4.92	17 0229	4.74	1 0332	4.84	17 0348	5.30	1 0238	4.52	17 0239	5.05
Mo 0759	1.87	We 0829	1.98	Th 0926	1.88	Sa 0944	1.31	Th 0831	2.21	Sa 0835	1.55
1408	5.05	1438	5.12	1534	5.29	1555	6.01	1438	4.94	1447	5.76
2030	1.42	2104	1.35	2159	1.26	2220	0.60	2104	1.55	2112	0.81
2 0248	5.00	18 0319	4.98	2 0411	4.98	18 0430	5.55	2 0317	4.77	18 0323	5.43
Tu 0850	1.79	Th 0916	1.74	Fr 1005	1.71	Su 1027	1.00	Fr 0912	1.93	Su 0922	1.10
1458	5.25	1525	5.47	1613	5.47	1640	6.27	1519	5.22	1535	6.14
2122	1.25	2151	1.03	2236	1.14	2302	0.48	2141	1.34	2156	0.56
3 0337	5.06	19 0404	5.18	3 0445	5.07	19 0510	5.68	3 0351	4.97	19 0404	5.70
We 0935	1.71	Fr 1000	1.50	Sa 1039	1.57	Mo 1109	0.81	Sa 0946	1.68	Mo 1005	0.76
1544	5.41	1610	5.78	1649	5.59	1723	6.34	1554	5.44	1620	6.35
2208	1.13	2236	0.79	2310	1.09	2343	0.52	2213	1.19	2238	0.48
4 0421	5.08	20 0447	5.34	4 0517	5.12	20 0549	5.69	4 0420	5.12	20 0444	5.85
Th 1017	1.66	Sa 1042	1.30	Su 1112	1.48	Tu 1150	0.77	Su 1017	1.48	Tu 1048	0.57
1625	5.51	1654	6.00	1722	5.63	1806	6.22	1626	5.58	1703	6.35
2250	1.09	2319	0.66	2342	1.12			2243	1.12	2318	0.59
5 0502	5.06	21 0529	5.41	5 0547	5.11	21 0023	0.74	5 0448	5.22	21 0523	5.86
Fr 1055	1.65	Su 1125	1.18	Mo 1143	1.46	We 0628	5.58	Mo 1046	1.34	We 1130	0.57

Done

**Part**

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**Tide Table Settings**

## 6 Tide Table Settings

**Tide Table Settings**

Duration

Number of Days

---

List

High and Low Waters

Regular Intervals (mins)

Times of Passage

Highest

Lowest

Clearance Information

Charted Depth

Draught

Use the options to set what you want to list in your tide table. In addition to the simple choices made above, the clearance information option will also list the Under Keel Clearance in the table. You can also set the Draught and Charted Depth here if you wish.

### Number of Days

Sets the number of days of predictions which you want the table to include. The start date is set on the main screen.

### High and Low Waters

Produces listing of High and Low Tides and Times.

You can also click on clearance information if you want this to be displayed as well.

### Regular Intervals

Produces the tide height at regular intervals. The intervals are specified in minutes. You can also click on clearance information if you want this to be displayed as well.

### Times of Passage

Produces the times when the boat will be afloat.

For safety we suggest you always use a larger value for the draught than its actual value in order to allow for a margin of error. As this option is dependant upon clearance factors the clearance information check box is automatically activated.

### Highest

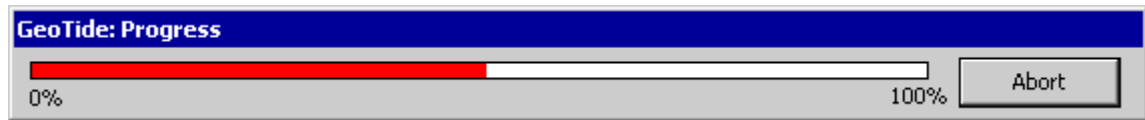
Produces a tidal height table of the highest tides during the interval specified. The number of high tides to be listed can be specified. They are listed in descending order (highest first).

### Lowest

Produces a tidal height table of the lowest tides during the interval specified. The number of low tides to be listed can be specified. They are listed in ascending order (lowest first).

### Calculate

Use this button to enter the new changes into the system and to calculate the tide tables. The progress thermometer will now be displayed and will keep you informed of the progress GeoTide Predictor is making. If you have entered a long time period or small interval the process may take many minutes or even hours.

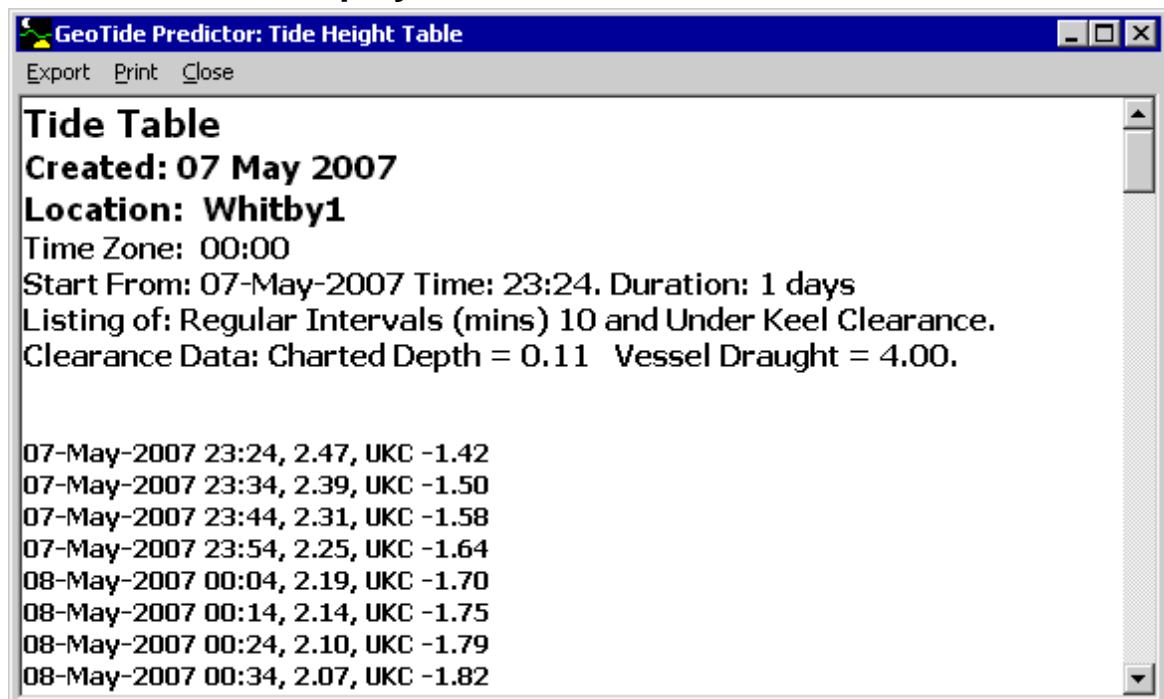


Once complete the Tide Table Height window will be displayed.

### Cancel

Click to cancel the entire table creation process

## 6.1 The Tide Table Display Window



This window is displayed when the Tide Table Settings | Calculate Button has been clicked and the progress bar shows 100%. It may be scrolled and resized with the mouse.

### Export

Causes the tide table to be copied to the windows clipboard or to a file, both as plain text or in Rich Text Format, with which Microsoft Word is compatible.

### Print

Causes the tide table to be printed using the windows printer driver, where you can select the various printers and options.

### Close

Closes this tide table window.



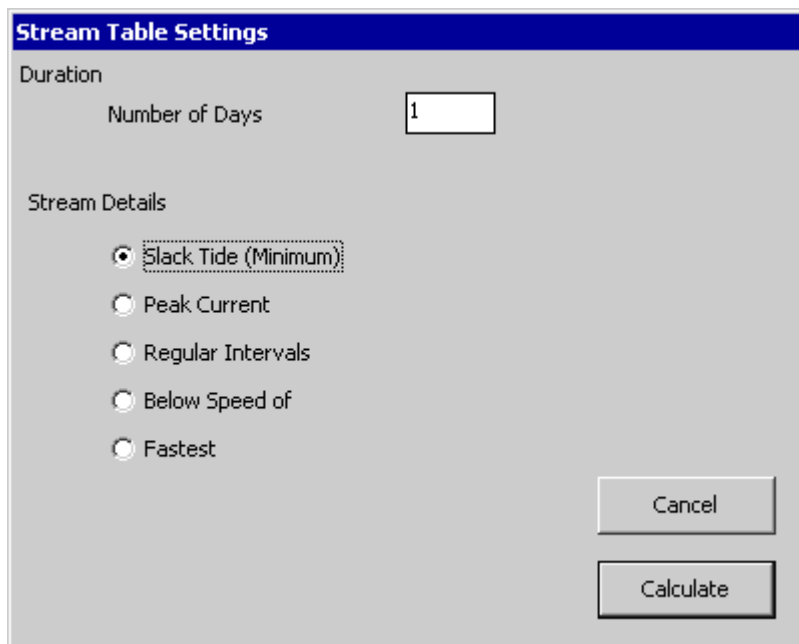
**Part**

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**Stream Table  
Settings**

## 7 Stream Table Settings



**Stream Table Settings**

Duration

Number of Days

Stream Details

Slack Tide (Minimum)

Peak Current

Regular Intervals

Below Speed of

Fastest

Cancel

Calculate

Clicking the Table button on the main page (when a tide stream file is loaded) causes the Tide Stream Table Settings screen to be displayed. This enables you to control what is printed on a table of streams.

### **Slack Tide**

Produces a table of the times of the lowest turning points in the tidal speed graph. The speed is plotted without direction.

### **Peak Current**

This option produces a table of the times of the highest tidal speed graph irrespective of direction.

### **Regular Intervals**

This option produces the tidal stream speed and direction at regular intervals specified in minutes.

### **Below Speed of..**

This option produces the times when the tidal speed falls below the speed specified. This could be useful for the timing of sea operations which are hampered by tidal streams such as fishing and diving.

### **Fastest**

This option produces a table of the fastest tides in the duration - with the fastest first. The number of tidal events to be listed can be specified in the box to the right of this option.

### **Cancel**

Use this button to abandon any changes you may have made on the Settings Panel and to return to the GeoTide Predictor main screen

### **Calculate**

Use this button to enter the new changes into the system and calculate the tide tables.

The progress thermometer will now be displayed and will keep you informed of the

progress GeoTide Predictor is making.



Once completed the Tide Height/Stream Table window is displayed.

## 7.1 The Stream Table Display Window



This window is displayed when the Tide Table Settings | Calculate Button has been clicked and the progress bar shows 100%. The window may be scrolled and resized with the mouse.

### Export

Causes the tide table to be copied to the windows clipboard or to a file, both as plain text or in Rich Text Format, with which Microsoft Word is compatible.

### Print

Causes the tide table to be printed using the windows printer driver, where you can select the various printers and options.

### Close

Closes this tide table window.

**Part**



**Time Zone Settings**

## 8 Time Zone Settings

	Zone	Clock Time	Date
SYSTEM	+ 00:00 -	23:50:40	07-May-2007
LOCAL	00:00	23:50:40	07-May-2007
GMT	+ 23:50:40 -	23:50:40	07-May-2007

Set LOCAL zone automatically for chosen location

NB. Time zones are positive west and negative east of Greenwich Meridian. Reduce time zone by one hour for BST or DST.

OK

Clicking the **File | Settings** menu on the main screen displays the Time Zone Settings window below.

GeoTide Predictor can create predictions for three preset time zones: GMT, Local and System. On this screen you set up the time differences between these time zones. Once set you only have to select the required time zone by clicking the radio-buttons appropriately labelled on the main screen. Clicking the '+' or '-' buttons to advance the zone by 15 minutes.

- Time Zone Settings are displayed on all output to avoid confusion.
- GeoTide Predictor does not automatically apply BST / DST.
- GeoTide Predictor does not use zone information stored by Windows due to inconsistencies arising out of automatic daylight saving corrections..
- Time Zones for marine purposes are defined as positive West / negative East. Warning This is the opposite sign from that used in Microsoft Windows and in most telephone directories world-wide. But it is the standard used by the UKHO and IHO.

Time Zones are a source of considerable confusion. Therefore before using predictions always check that the zone displayed is actually the one required.

### 8.1 SYSTEM

You cannot set the SYSTEM clock here - this is regarded as part of your Windows operating system. To set the system time please see your computer manual. However you can change its zone as far as GeoTide Predictor is concerned. Note that this does not affect the windows time-zone settings which are present on some of the more recent versions of Microsoft Windows.

#### Setting the System Zone

Click the SYSTEM zone '+' or '-' keys shown either side of the zone text box to set the correct zone for your computer system. When you change the zone the value for GMT under the GMT Clock heading will change since  $GMT = System\ Time - Time\ Zone$

### 8.2 LOCAL

The local time zone can be either set automatically from the tidal location file or set manually here.

#### Automatic Local Time Zone

---

Check the checkbox to enable this function. When checked the local time zone will be automatically set to the local zone for each selected location.

**Manual Local Time Zone**

Uncheck the check box to set the local zone to any value you want. Click the LOCAL zone '+' or '-' buttons, shown in red above, to set the correct zone for your tidal prediction location. You should also use this screen for changing to local daylight savings time schemes, such as British Summer Time BST or US Daylight Saving Time DST. You can also use the '+' or '-' buttons on either side of the local clock to set local clock time if you prefer.

You should check that the correct value of Local Time is displayed in the Local Clock.

**8.3 GMT**

Click the button on either side of the GMT Clock, to simultaneously set the difference between GMT and the system time (i.e. the time on your computer's clock) and the difference between GMT and local time.

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