

VmDas

Quick Start Guide

Ver. 1.44

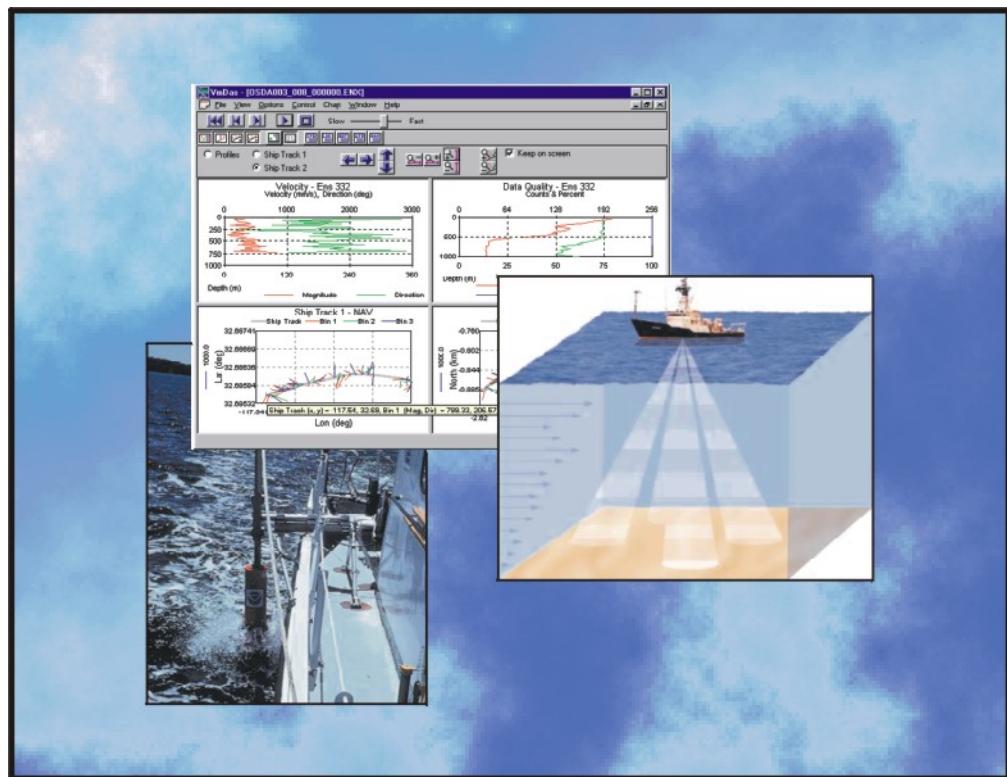


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VmDas Quick Start Guide

Introduction

This Quick Start Guide will lead you through the steps required for a successful *VmDas* Vessel Mount deployment. Please read the entire guide, and then follow the instructions in the order they are presented. Additional information can be found in the *VmDas* User's Guide that is supplied on CD-ROM.



NOTE. To purchase a printed copy of the *VmDas* User's Guide, contact our Customer Service department at rdifs@teledyne.com or call (858) 842-2600 and order P/N 95A-6015-00.

How to Contact Teledyne RD Instruments

If you have technical issues or questions involving a specific application or deployment with your instrument, contact our Field Service group:

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Overview

The first step is to familiarize yourself about *VmDas*. Read the short descriptions of the hardware and software that are needed for a deployment.

This Section Covers:

- Hardware Overview
- Software Overview
- Installing the Software

Hardware Overview

In order to use *VmDas*, your ADCP must be one of the following.

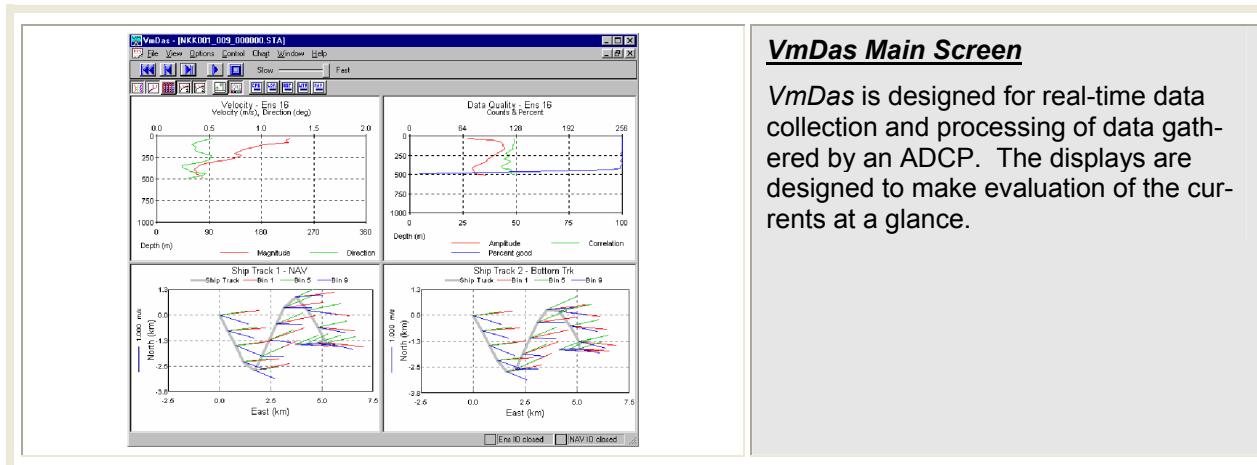
- Ocean Surveyor/Observer ADCP
- BroadBand ADCP
- WorkHorse ADCP with the Bottom Track upgrade installed



NOTE. The Bottom Track upgrade is available for WorkHorse Monitor and Sentinel ADCPs.

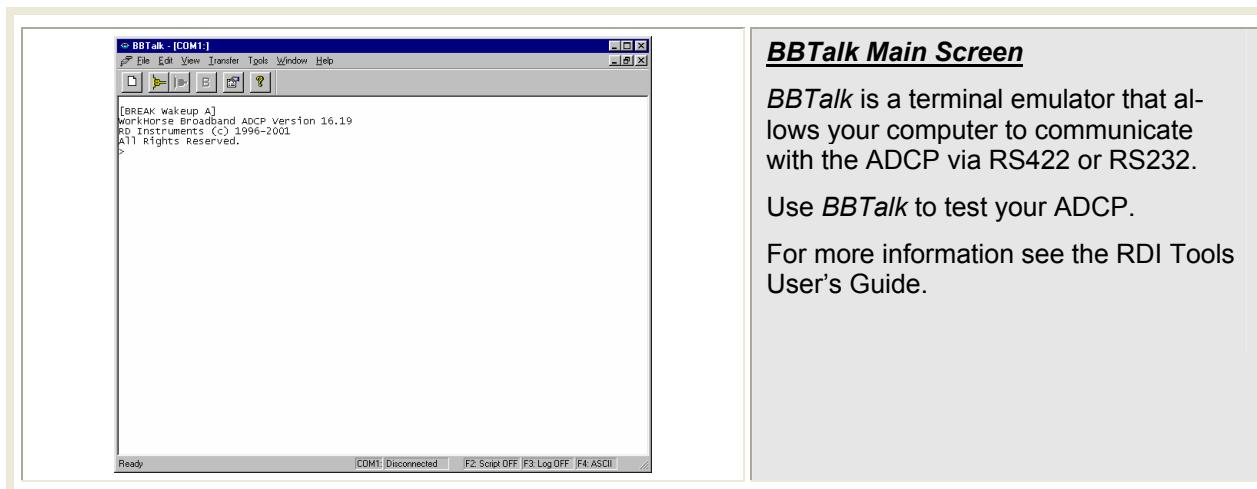
Software Overview

You will need several software programs to test and collect data with the ADCP.



VmDas Main Screen

VmDas is designed for real-time data collection and processing of data gathered by an ADCP. The displays are designed to make evaluation of the currents at a glance.

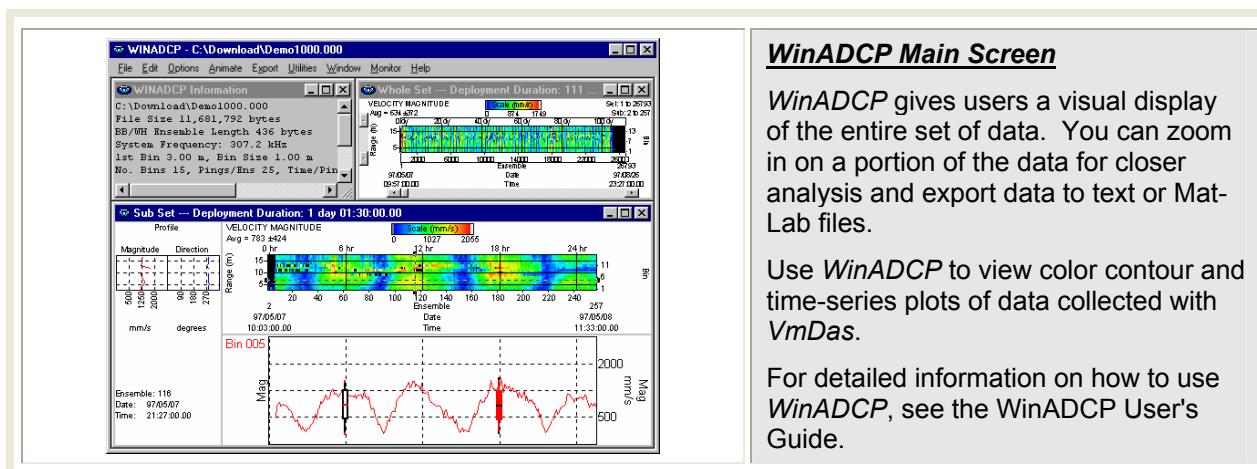


BBTalk Main Screen

BBTalk is a terminal emulator that allows your computer to communicate with the ADCP via RS422 or RS232.

Use BBTalk to test your ADCP.

For more information see the RDI Tools User's Guide.



WinADCP Main Screen

WinADCP gives users a visual display of the entire set of data. You can zoom in on a portion of the data for closer analysis and export data to text or MatLab files.

Use WinADCP to view color contour and time-series plots of data collected with VmDas.

For detailed information on how to use WinADCP, see the WinADCP User's Guide.

Installing the Software

You will be installing several software packages. These will be required for testing and deployments.

TRDI software requires a Windows® compatible computer with the following specifications:

- Windows XP® or Windows 2000®
- Pentium III 600 MHz class PC (higher recommended)
- 64 megabytes of RAM (128 MB RAM recommended)
- 50 MB Free Disk Space plus space for data files (A large, fast hard disk is recommended)
- One Serial Port (two or more High Speed UART Serial Ports recommended).
VmDas can use up to six serial ports in some configurations.
- An Ethernet card if network I/O is desired
- Minimum display resolution of 1024 x 768, 256 color (higher recommended)
- CD-ROM Drive
- Mouse or other pointing device



Software Installation

- a. Insert the compact disc into your CD-ROM drive and then follow the browser instructions on your screen. If the browser does not appear, complete Steps "b" through "d."
- b. On the Windows task bar, click the **Start** button, and then click **Run**.
- c. Type <drive>:launch. For example, if your CD-ROM drive is drive D, type d:launch.
- d. Follow the browser instructions on your screen

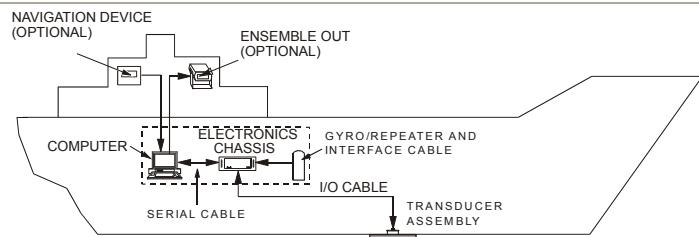
ADCP Setup and Installation Overview

Take a moment to familiarize yourself with the requirements for a Vessel Mounted deployment. See the ADCP Technical Manual for detailed information on how to install and verify the installation for the ADCP.



NOTE. This guide assumes you will be using a Vessel Mounted Ocean Surveyor ADCP and that the system has been installed and all Sea Acceptance Testing has been completed.

Connections Overview

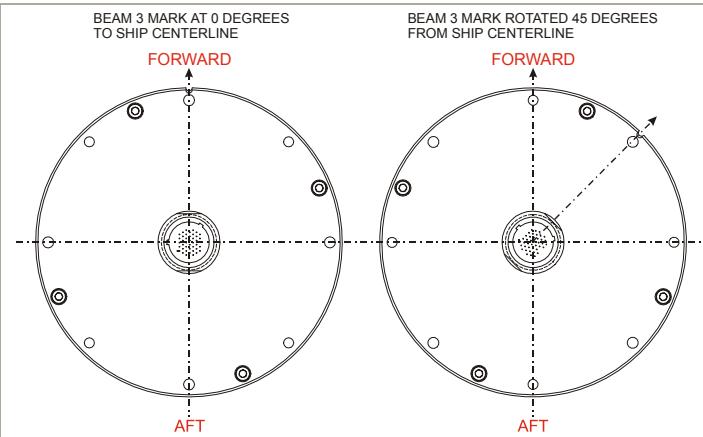


The Ship Board ADCP is made up of the following minimum items:

- ADCP Transducer
- ADCP Transducer Cable
- ADCP Electronics Chassis
- Computer running *VmDas*
- Heading Input
- Navigation Input

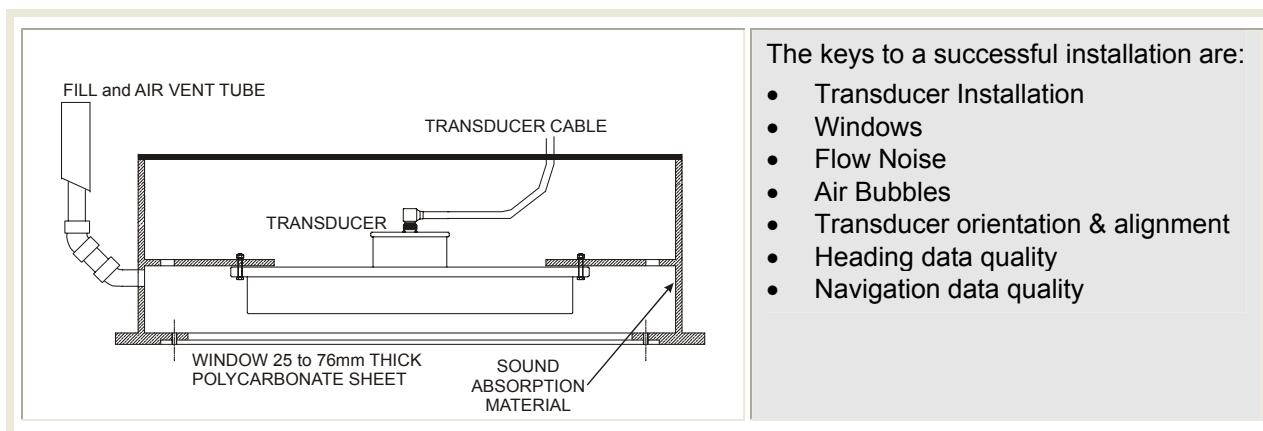
Shipboard Installation Overview

Proper installation is critical to the success of data quality. Read the ADCP Technical Manual [Installation Guide](#) for details on ADCP installation.



The ADCP Transducer installation requires that the position of Beam 3 with respect to the bow (heading reference) be well known (less than 0.5 degrees).

Note: Look for a small notch on the transducer housing to identify Beam 3.



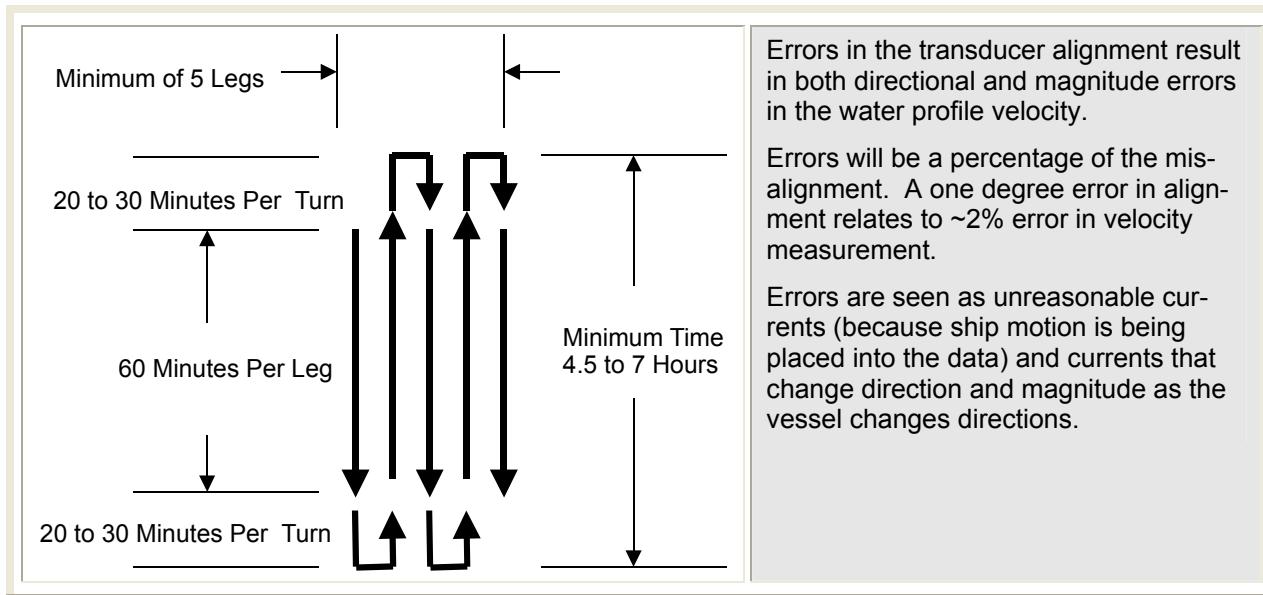
The keys to a successful installation are:

- Transducer Installation
- Windows
- Flow Noise
- Air Bubbles
- Transducer orientation & alignment
- Heading data quality
- Navigation data quality

Transducer Alignment Overview

The Sea Acceptance Testing confirms the ADCP is operational and able to perform to its specifications (see the ADCP's Technical Manual). The performance of any ADCP relies greatly upon the installation into any platform. Therefore, the system must be tested at sea to understand the effects of the platform on the ADCP performance. At sea testing includes tests for Acoustic Interference, Transducer Alignment, Profiling Range, and Profiling Reasonableness testing.

The mounting alignment of the transducer to the relative position of the heading input from the vessel is critical in the velocity estimates made by the ADCP. Once the correction value is determined by following the transducer alignment test, it is entered via the **Transforms** tab (see “Setup the Transform Tab,” page 20).



NOTE. Detailed instructions for the transducer alignment are included in the ADCP's Technical Manual.

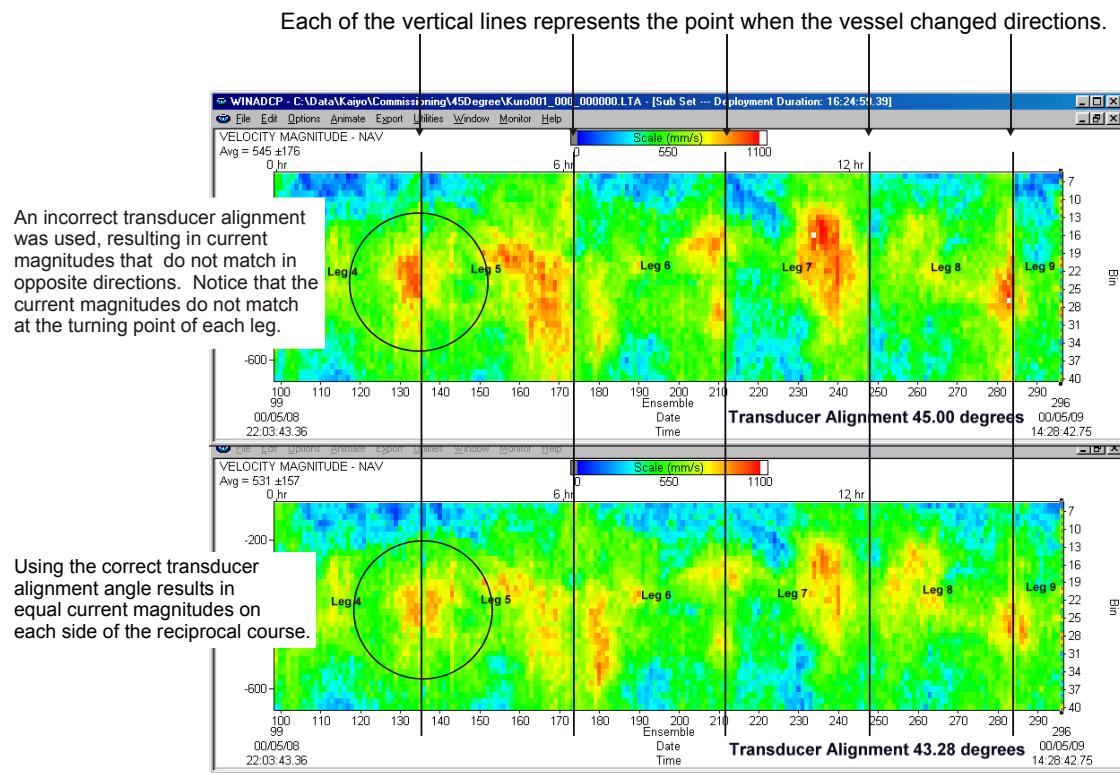
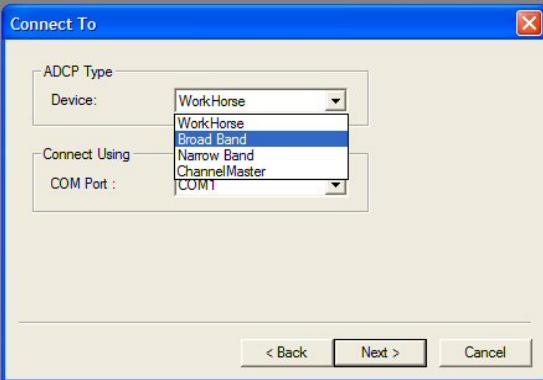


Figure 1. Transducer Alignment

Test the ADCP

Before deploying the ADCP, it is a good idea to make sure that it is working properly. This simple test checks that the ADCP is functioning and able to communicate with the computer.



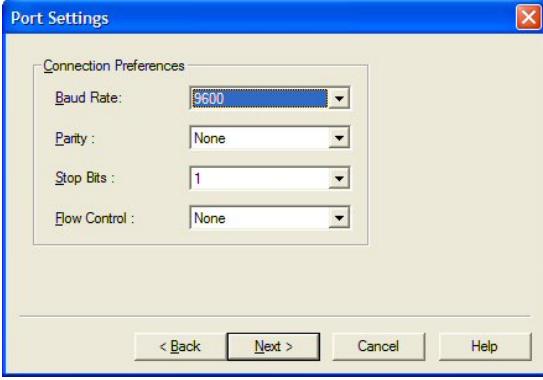
Start BBTalk

Start the **BBTalk** program (for help on using **BBTalk**, see the RDI Tools User's Guide).

On the **Connect To** screen, select the **Device** (Ocean Surveyor/Observer systems should select **Broad Band**).

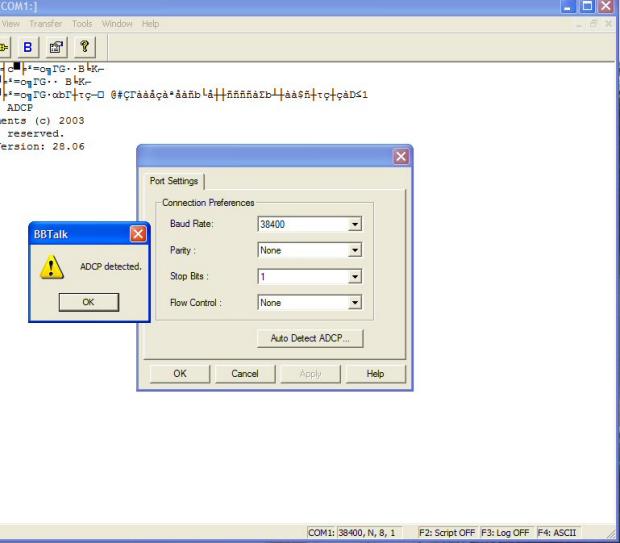
Select the **COM Port** the ADCP cable is connected to.

Click **Next**.



Enter the **Baud Rate**, **Parity**, **Stop Bits**, and **Flow Control**. If you are unsure of the settings, leave them at the default settings.

Click **Next**, than **Finish**.



Communications Settings

On the **File** menu, click **Break** (you can also press the **End** key to send a break or use the Toolbar and press the **B** button).

You should see the wakeup message appear on the log file window.

If the wakeup message is not readable, do the following.

On the **File** menu, click **Properties**. Click the **Auto Detect ADCP** button. Click **OK** when the ADCP is detected. Try to wakeup the ADCP again.

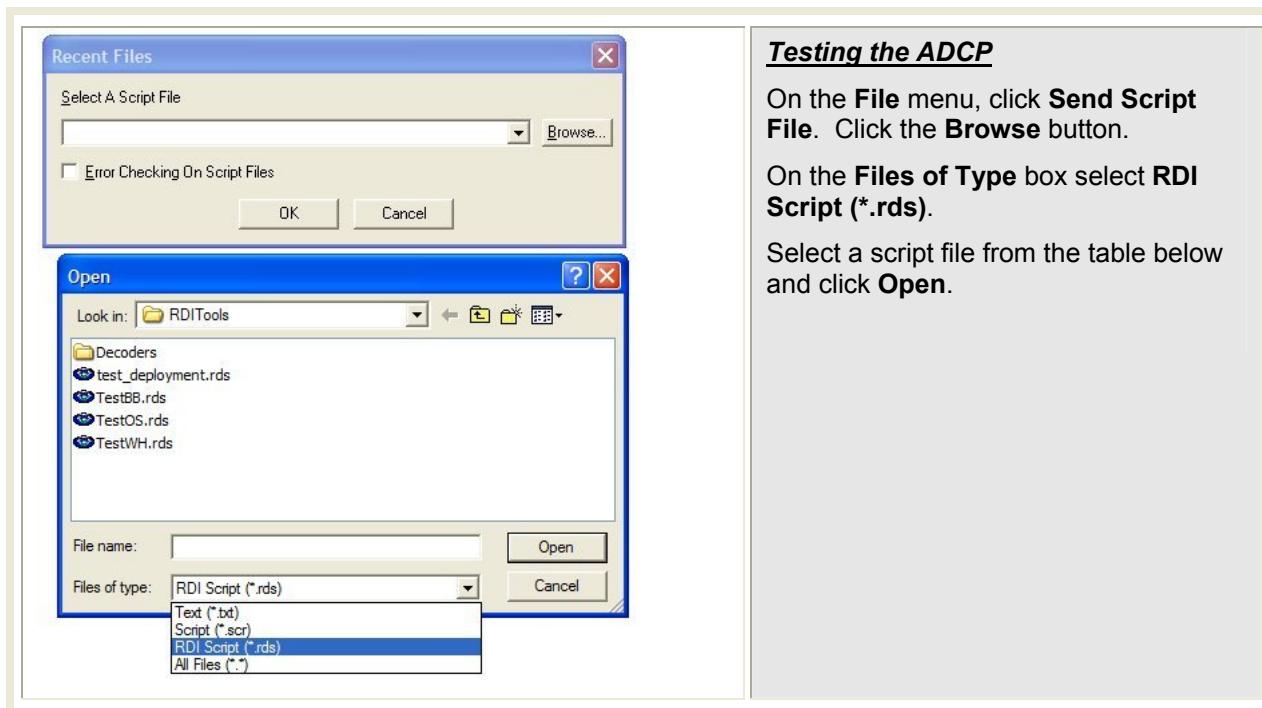
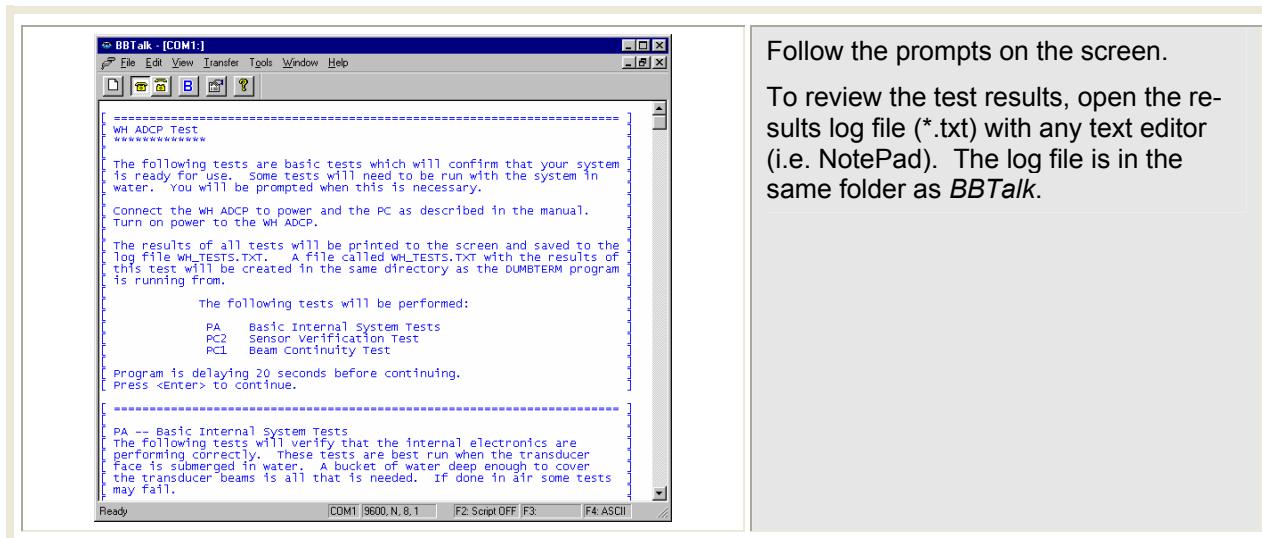


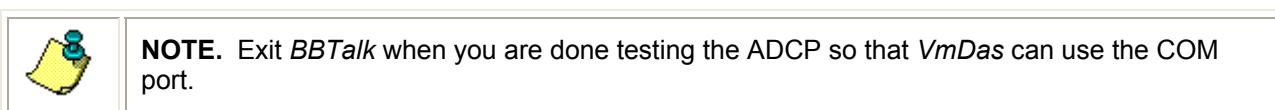
Table 1: BBTalk Script Files

Script File Name	ADCP Type	Results Saved to
testBB.rds	Broadband	BB_RSLTS.txt
testOS.rds	Ocean Surveyor	OS_RSLTS.txt
testWH.rds	Workhorse	WH_RSLTS.txt



Follow the prompts on the screen.

To review the test results, open the results log file (*.txt) with any text editor (i.e. NotePad). The log file is in the same folder as BBTalk.



First Time Setup of VmDas

Options control how *VmDas* processes data during collection and reprocessing. Some options are changed every deployment; others are seldom changed.

In this section you will setup the **Communications**, **ADCP Setup**, **Averaging**, **Transform**, and **Data Screening** tabs. These tabs are typically a one-time setup. Once the settings are made, they are saved to a Data Option file (*.ini) so they may be used for deployments.



NOTE. Data Options can be edited only when **Collect Data** or **Reprocess Data** mode is selected on the **File** menu, and collection or reprocessing data is not in progress.

Start *VmDas*.

On the **File** menu, click **Collect Data**.

On the **Options** menu, click **Load**.

Select the *Default.ini* file and click **Open**. This will set *VmDas* to the factory default options.

On the **Options** menu, click **Edit Data Options** to display a tabbed dialog box.

Setup Communications

Click the **Communications** tab and set the communications settings for the ADCP and NMEA ports. Up to four serial ports may be enabled and configured for input, and three more serial ports for output.

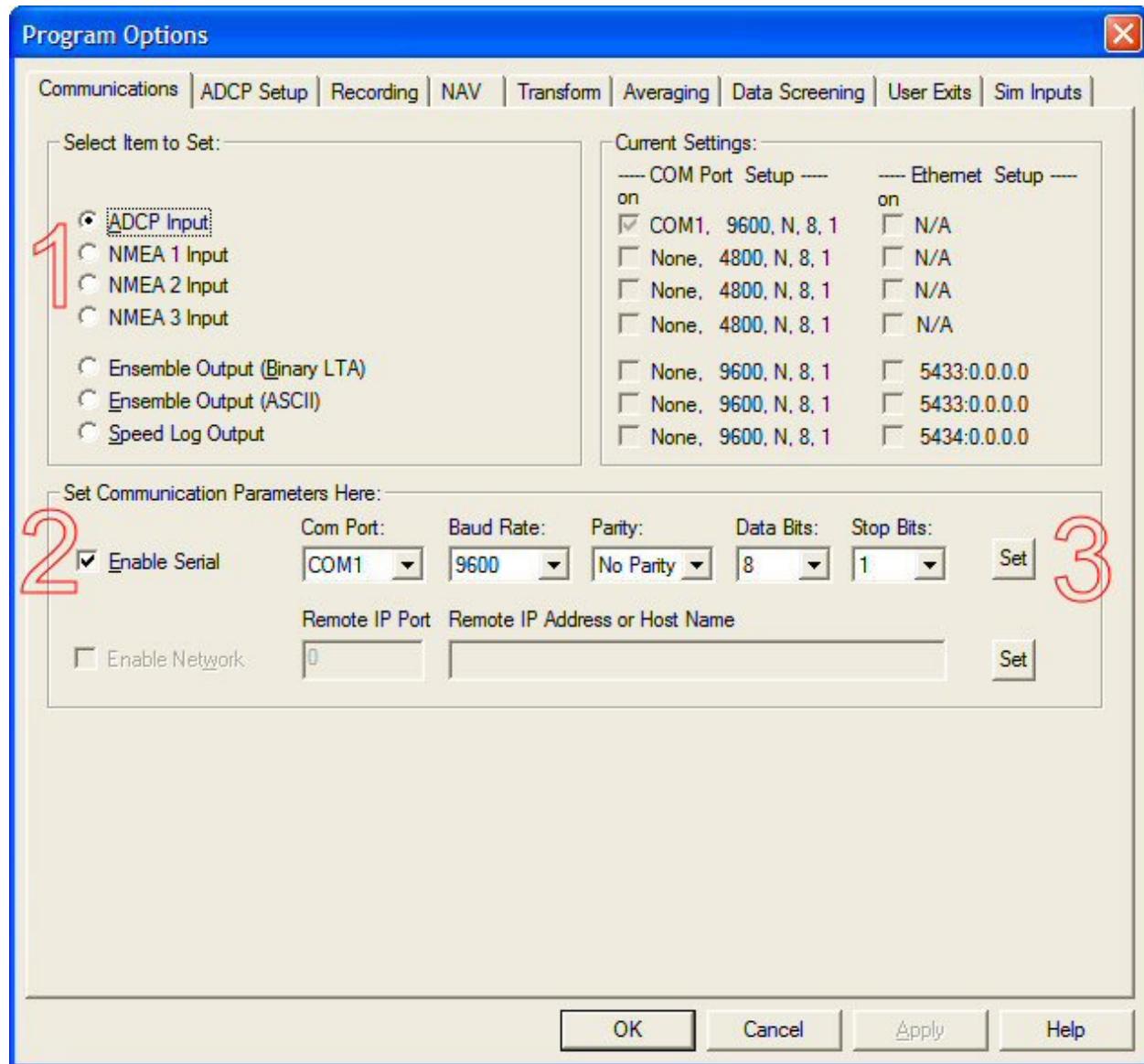


Figure 2. Communications Tab

ADCP Input

ADCP input is required. *VmDas* logs the ADCP data to an *.enr file and then does several processing steps to it. Data is stored in several files as processing proceeds. Raw and processed data may be displayed.

The figure consists of three vertically stacked screenshots from the *VmDas* software interface, each with a large red number indicating the step:

- Screenshot 1:** A "Select Item to Set" dialog box. It contains a list of options under the heading "Select Item to Set:":
 - 1** **ADCP Input**
 - NMEA 1 Input
 - NMEA 2 Input
 - NMEA 3 Input
 - Ensemble Output (Binary LTA)
 - Ensemble Output (ASCII)
 - Speed Log Output
- Screenshot 2:** A "Set Communication Parameters Here" dialog box. It includes fields for "Com Port:" (set to COM1), "Baud Rate:" (set to 9600), "Parity:" (set to No Parity), "Data Bits:" (set to 8), and "Stop Bits:" (set to 1). A checkbox labeled "Enable Serial" is checked. The number **2** is overlaid on the left side of the dialog.

1. Click the **ADCP Input** radio button in the **Select Item to Set** box. When this is done, the controls in the **Set Communication Parameters Here** box apply to the ADCP Input port.
- Screenshot 3:** A "Set Communication Parameters Here" dialog box. It shows the same communication settings as Screenshot 2. The "Enable Serial" checkbox is checked. The number **3** is overlaid on the right side of the dialog.

2. In the **Set Communication Parameters Here** box, click the **Enable Serial** check box to enable the controls for configuring the serial port.

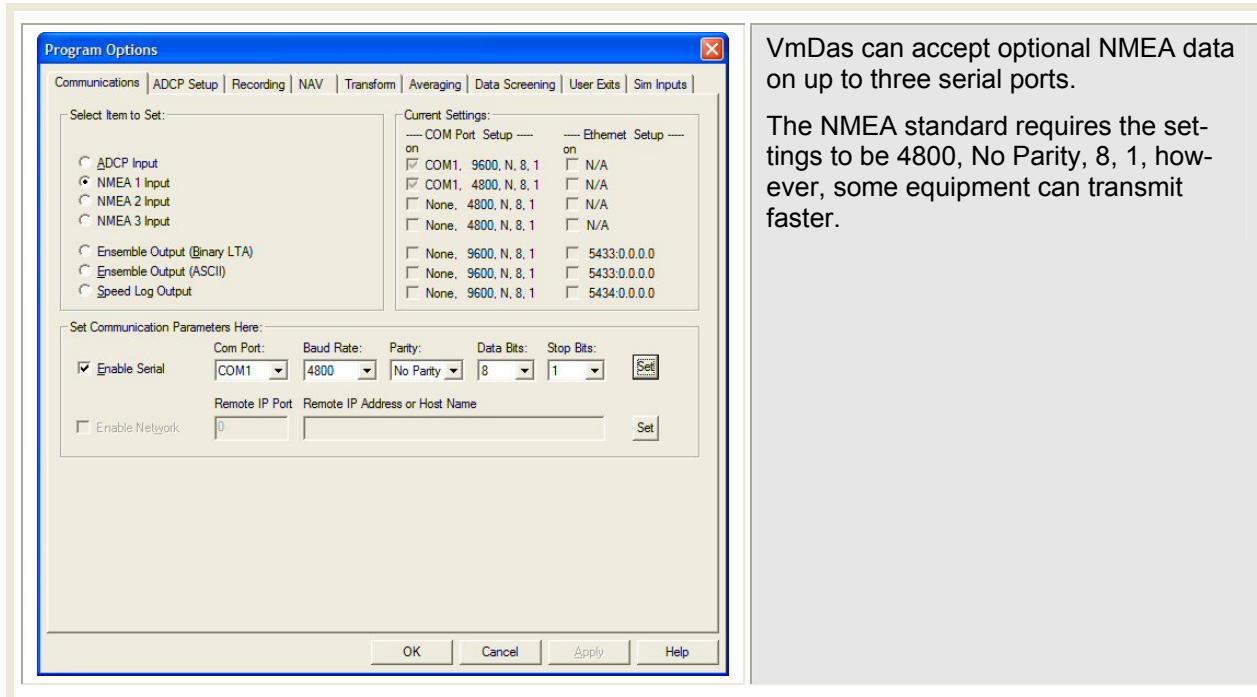
Set the serial port to match the ADCP serial port wakeup settings. TRDI strongly recommends 9600, No Parity, 8, 1 for the ADCP Input port.

3. When the settings are correct, click the **Set** button and verify that the settings are reflected in the top row of the **Current Settings** section.

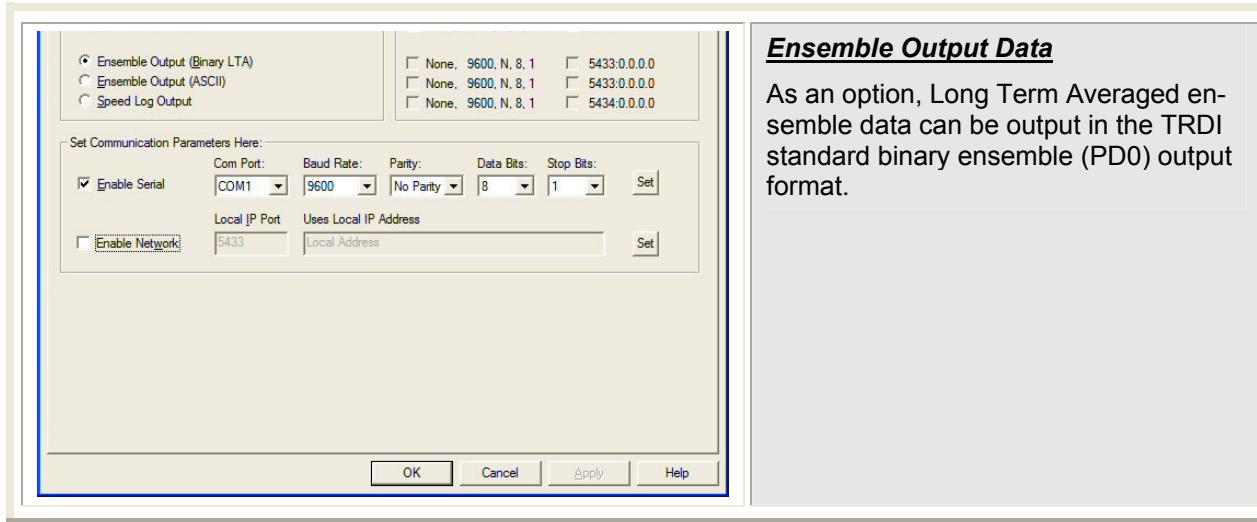
Caution: If you do not click the **Set** button, your setting will be lost when another **Select Item to Set** box is selected.

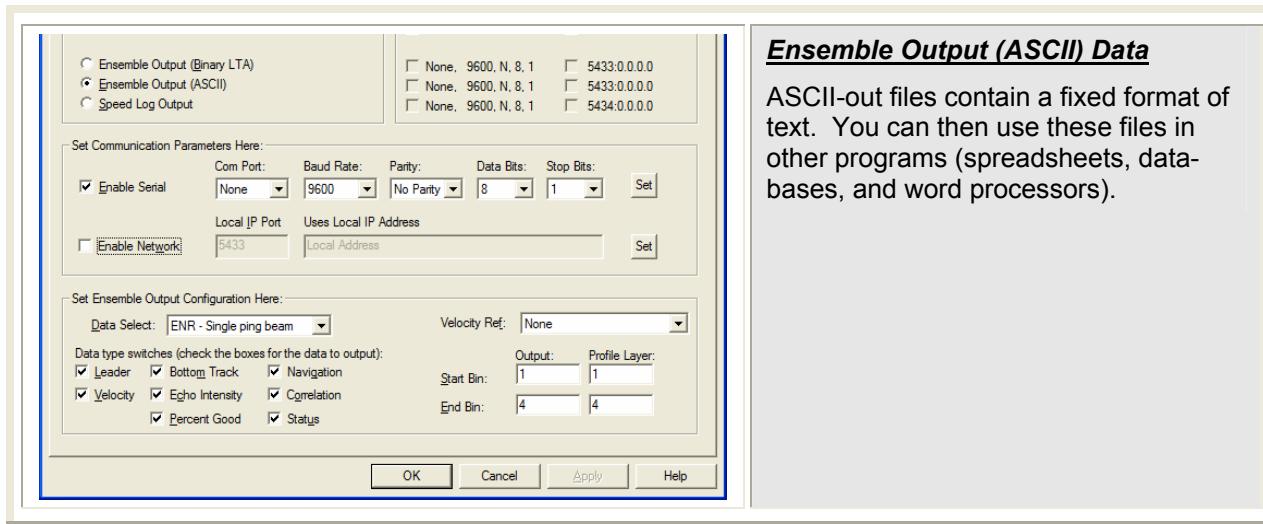
NMEA Data

NMEA input is optional. All enabled NMEA input is logged to *.n1r, *.n2r, and *.n3r files. VmDas can also use GGA, VTG, heading, and tilt data.



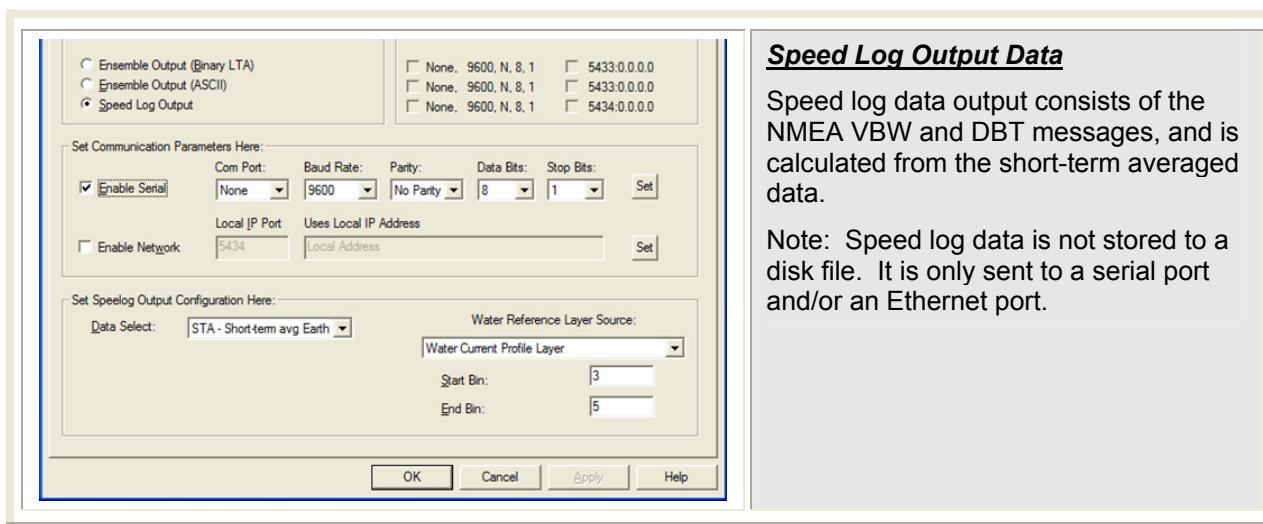
VmDas Outputs





Ensemble Output (ASCII) Data

ASCII-out files contain a fixed format of text. You can then use these files in other programs (spreadsheets, databases, and word processors).



Speed Log Output Data

Speed log data output consists of the NMEA VBW and DBT messages, and is calculated from the short-term averaged data.

Note: Speed log data is not stored to a disk file. It is only sent to a serial port and/or an Ethernet port.

ADCP Setup Tab

Click the **ADCP Setup** tab. Use this tab to set the ADCP commands.

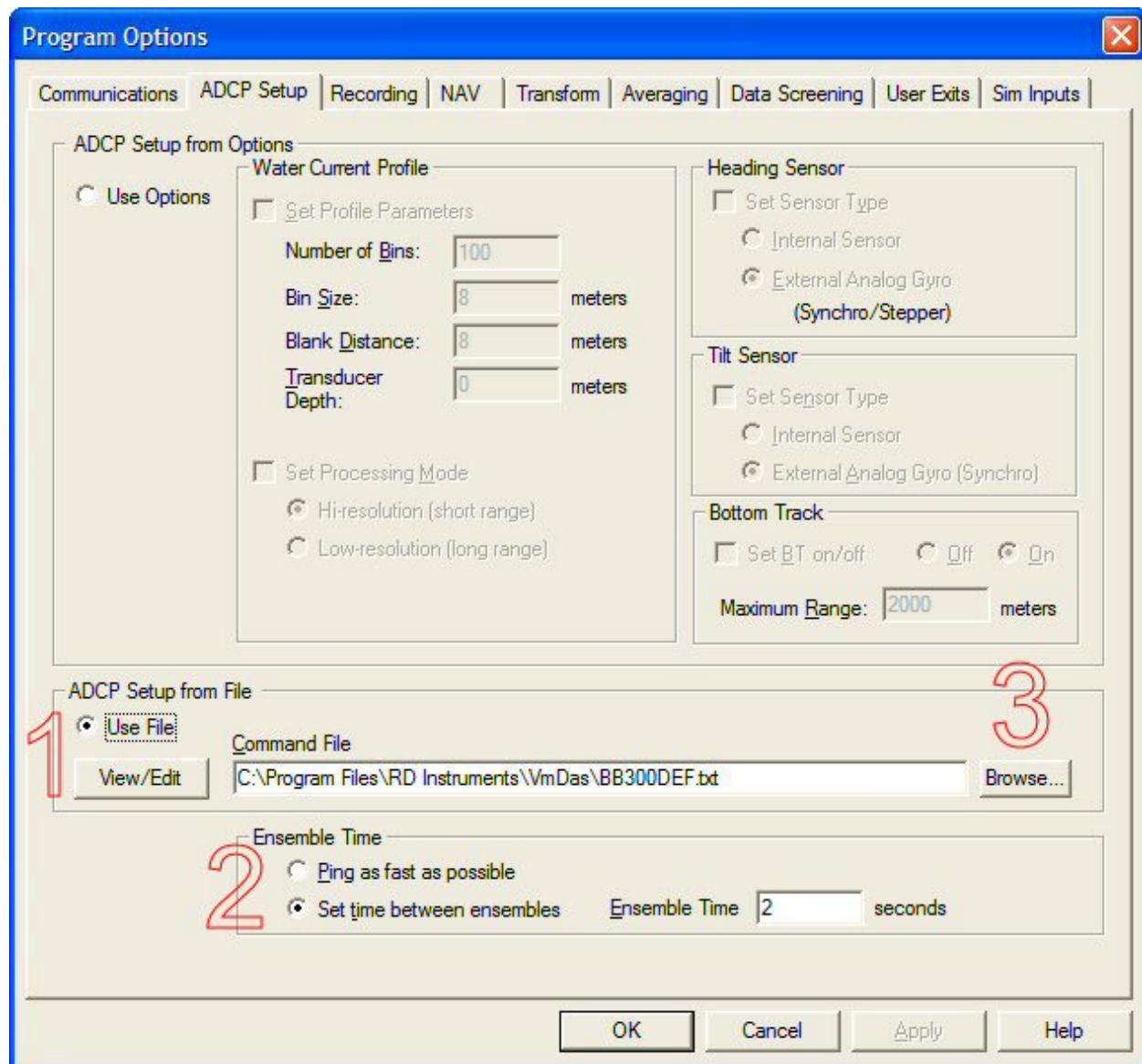
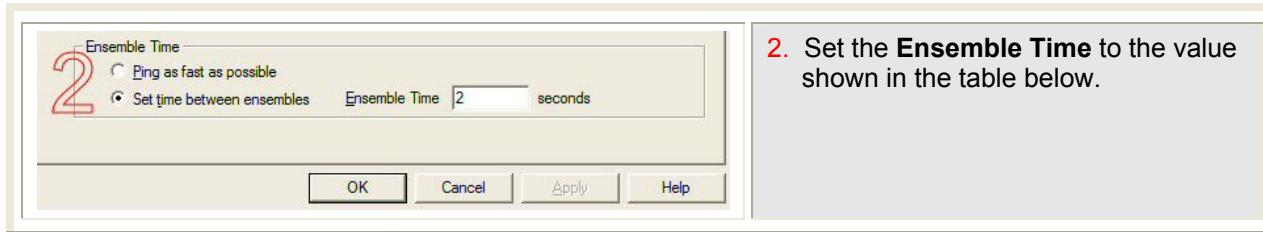


Figure 3. ADCP Setup Tab

**Table 2:** Ensemble Time

Frequency (kHz)	With Bottom Track (sec)	Without Bottom Track (sec)
38	4	2
75	2	1
150	1	1
300		
600	Select Ping as Fast as possible	
1200		

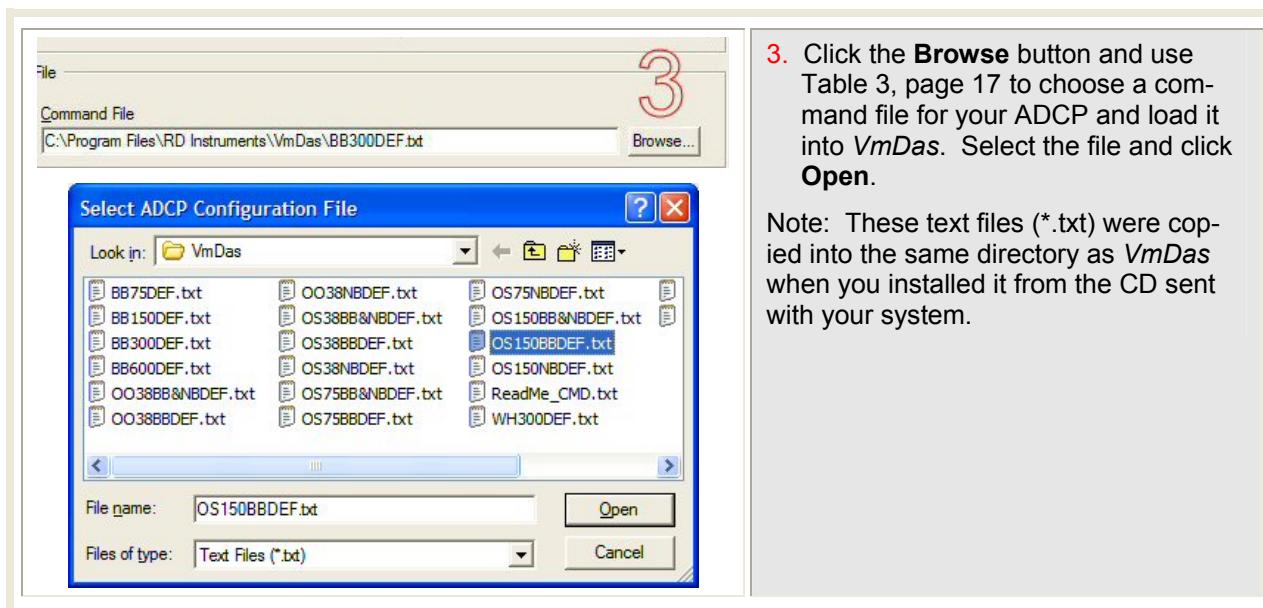


Table 3: Example Data Option Files

File Name	Description
OS38BBDEF	Default setup for an Ocean Surveyor (OS) 38kHz ADCP in the highest precision (broad bandwidth) but reduced range profiling mode.
OS38NBDEF	Default setup for an Ocean Surveyor (OS) 38kHz ADCP in the longest range (narrow bandwidth) but reduced precision.
OS38BB&NBDEF	Default setup for an Ocean Surveyor (OS) 38kHz ADCP in the highest precision (broad bandwidth) and the longest range (narrow bandwidth) but reduced precision.
OS75BBDEF	Default setup for an Ocean Surveyor (OS) 75kHz ADCP in the highest precision (broad bandwidth) but reduced range profiling mode.
OS75NBDEF	Default setup for an Ocean Surveyor (OS) 75kHz ADCP in the longest range (narrow bandwidth) but reduced precision.
OS75BB&NBDEF	Default setup for an Ocean Surveyor (OS) 75kHz ADCP in the highest precision (broad bandwidth) and the longest range (narrow bandwidth) but reduced precision.
OS150BBDEF	Default setup for an Ocean Surveyor (OS) 150kHz ADCP in the highest precision (broad bandwidth) but reduced range profiling mode.
OS150NBDEF	Default setup for an Ocean Surveyor (OS) 150kHz ADCP in the longest range (narrow bandwidth) but reduced precision.
OS150BB&NBDEF	Default setup for an Ocean Surveyor (OS) 150kHz ADCP in the highest precision (broad bandwidth) and the longest range (narrow bandwidth) but reduced precision.
BB75DEF	Default setup for a BroadBand (BB) 75kHz ADCP to provide the most range with the optimal precision.
BB150DEF	Default setup for a BroadBand (BB) 150kHz ADCP to provide the most range with the optimal precision.
BB300DEF	Default setup for a BroadBand (BB) 300kHz ADCP to provide the most range with the optimal precision.
WH300DEF	Default setup for a WorkHorse (WH) 300kHz ADCP to provide the most range with the optimal precision.
WH600DEF	Default setup for a WorkHorse (WH) 600kHz ADCP to provide the most range with the optimal precision.
WH1200DEF	Default setup for a WorkHorse (WH) 1200kHz ADCP to provide the most range with the optimal precision.
OO38BBDEF	Default setup for an Ocean Observer (OO) 38kHz ADCP in the highest precision (broad bandwidth) but reduced range profiling mode.
OO38NBDEF	Default setup for an Ocean Observer (OO) 38kHz ADCP in the longest range (narrow bandwidth) but reduced precision.
OO38BB&NBDEF	Default setup for an Ocean Observer (OO) 38kHz ADCP in the highest precision (broad bandwidth) and the longest range (narrow bandwidth) but reduced precision.



NOTE. These text files (*.txt) were copied into the same directory as VmDas when you installed it from the software CD sent with your system.

Setup the NAV Tab

Use the NAV tab to enable the ports and decide whether or not to save GGA or VTG data in the NAV field of the ENS, ENX, STA, and LTA files. Choose which enabled ports to read it from on the drop down list. Only enabled ports appear in the drop down lists.

You can enable a backup source for GGA or VTG. If you choose a backup source, the primary source will be put into the NAV field. If primary data becomes invalid, backup data will be saved in the NAV field instead.

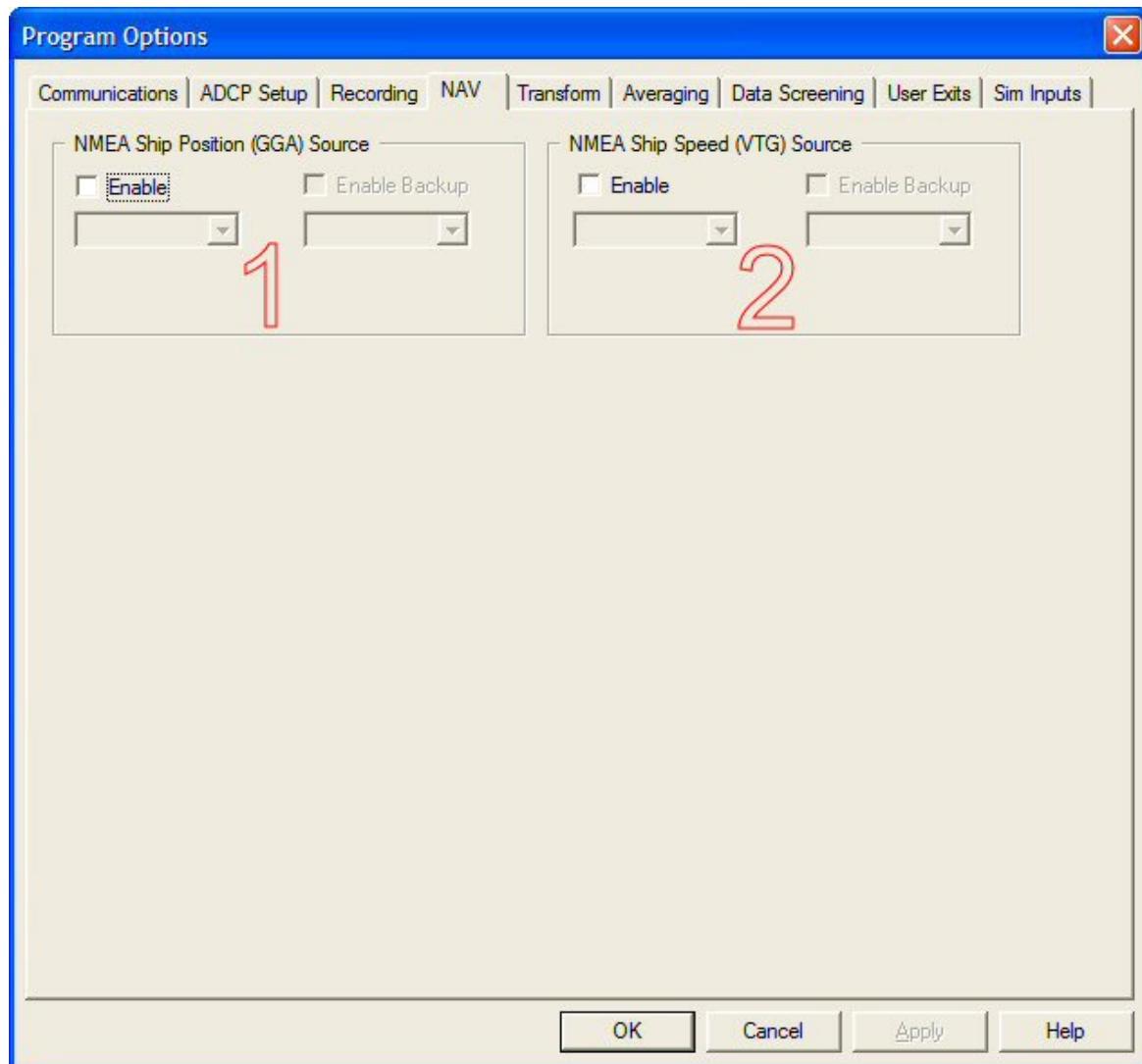
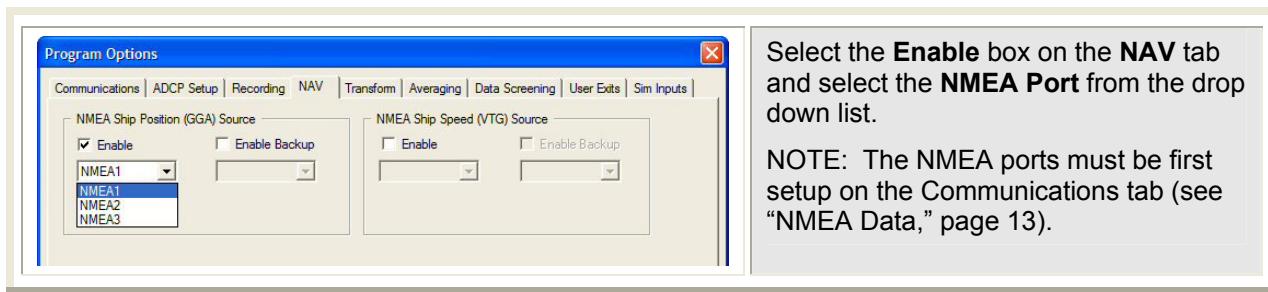
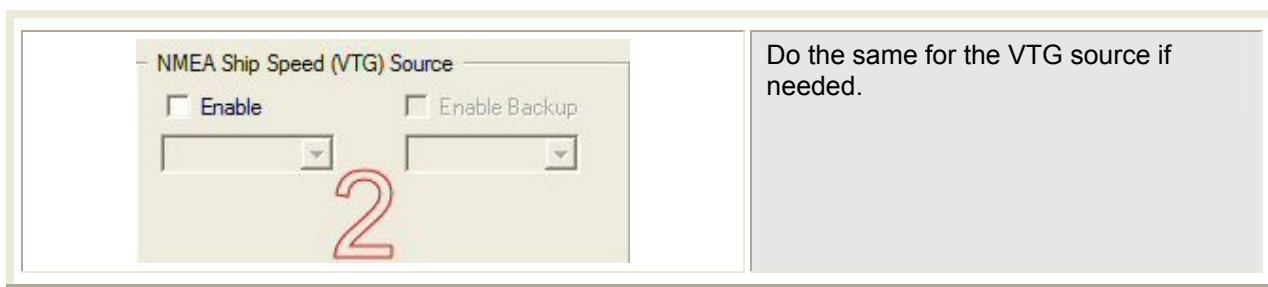
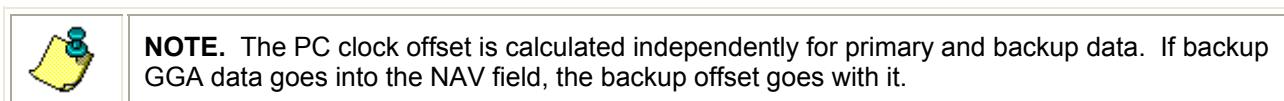
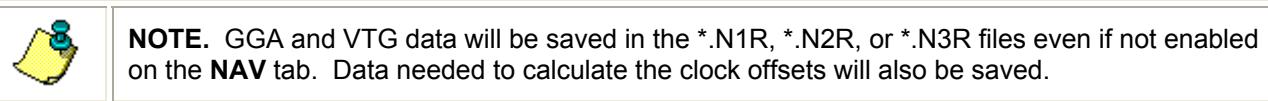


Figure 4. NAV Tab



VmDas uses the PC time as its time reference. GGA data contains a time value. *VmDas* calculates the offset between the PC and GGA clocks. This is saved and used to synchronize data.



Setup the Transform Tab

VmDas reads single ping beam coordinate data from the ADCP. *VmDas* transforms the data to earth coordinates and averages it. How the transformation is done depends on details of the geometry of the ADCP, sensors, and the platform they are mounted on. Use this screen to select the **Heading Source**, **Tilt Source**, **Heading Sensor Magnetic/Electrical Corrections**, and **ADCP Alignment Correction**.

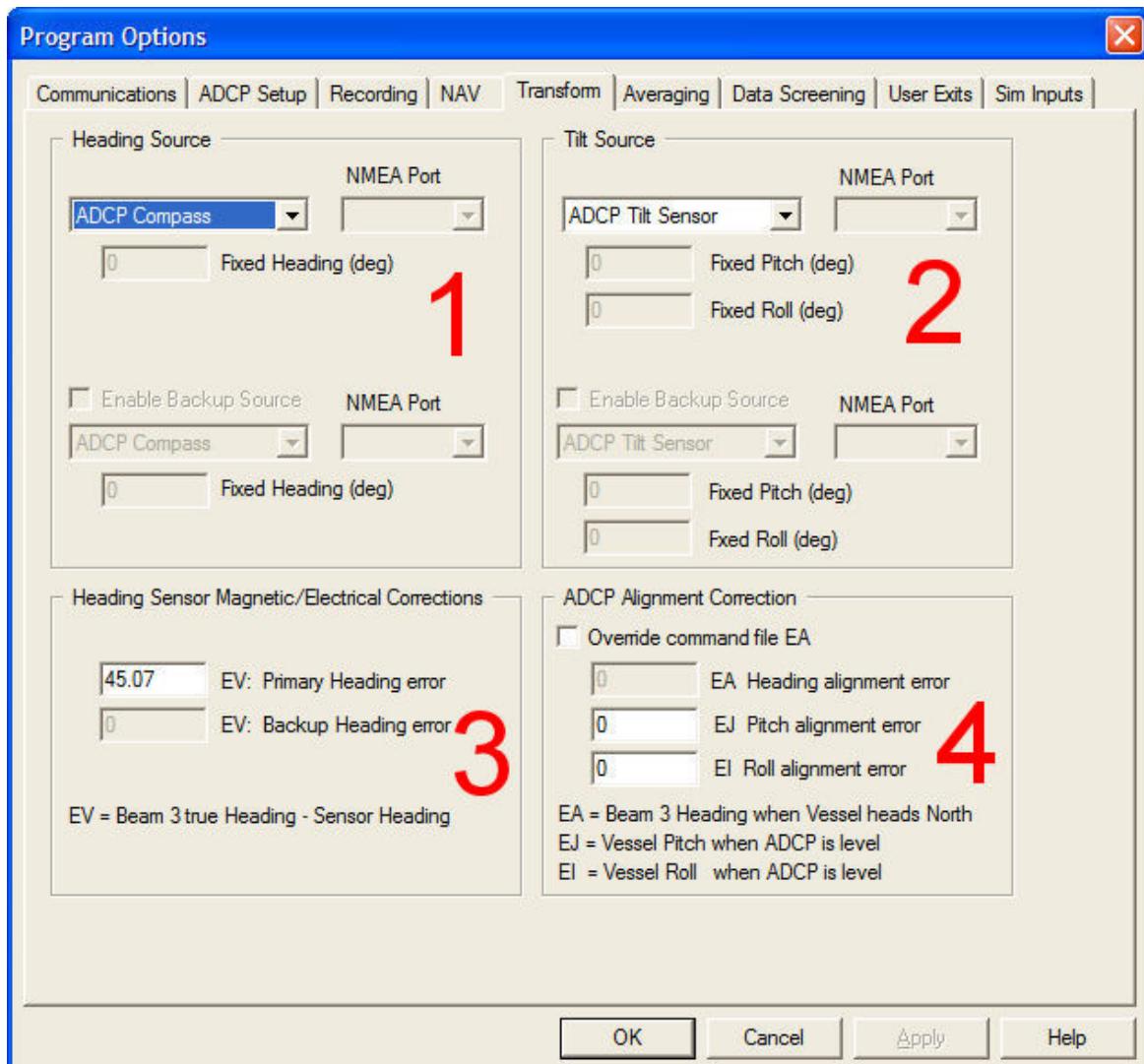
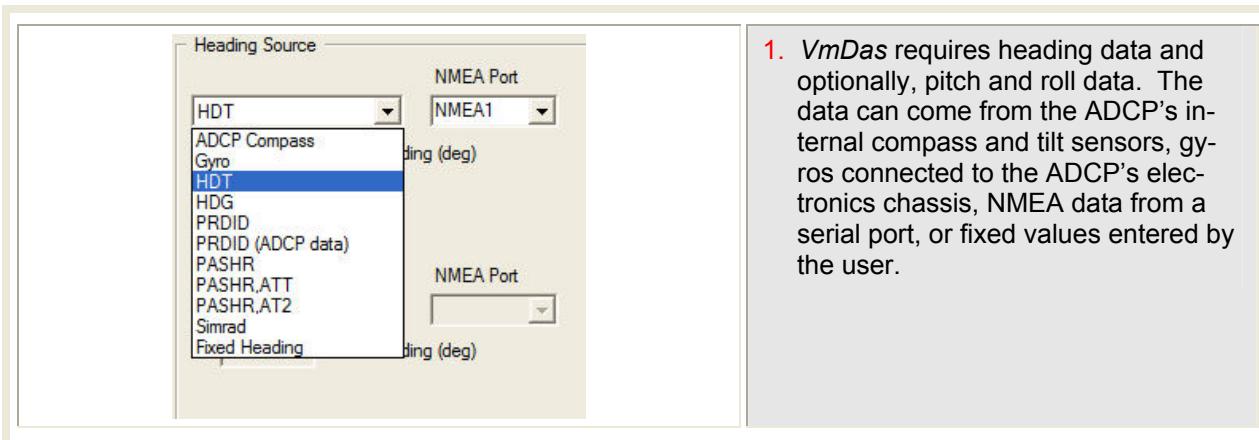


Figure 5. Transform Tab

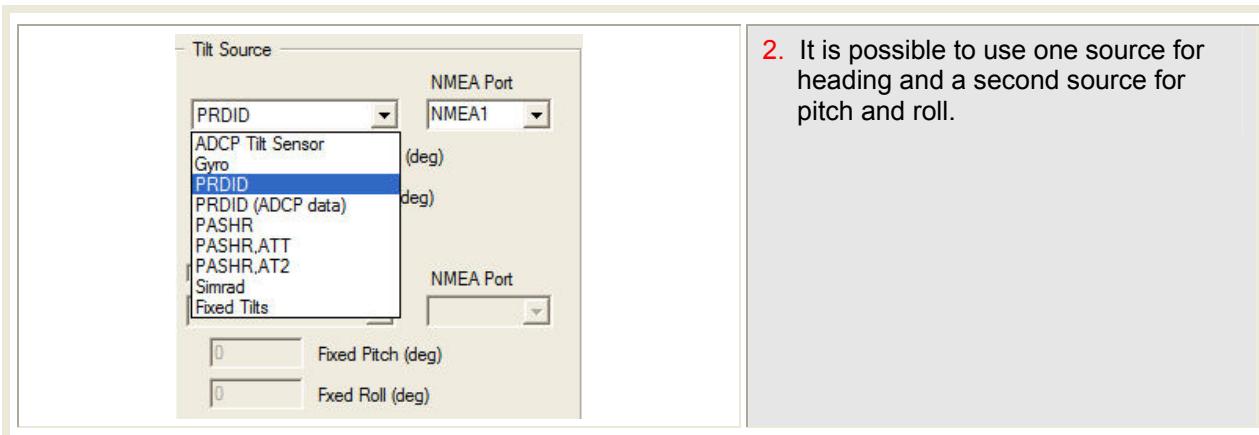
?

NOTE. You can only enable a backup source if the primary source is an NMEA message.

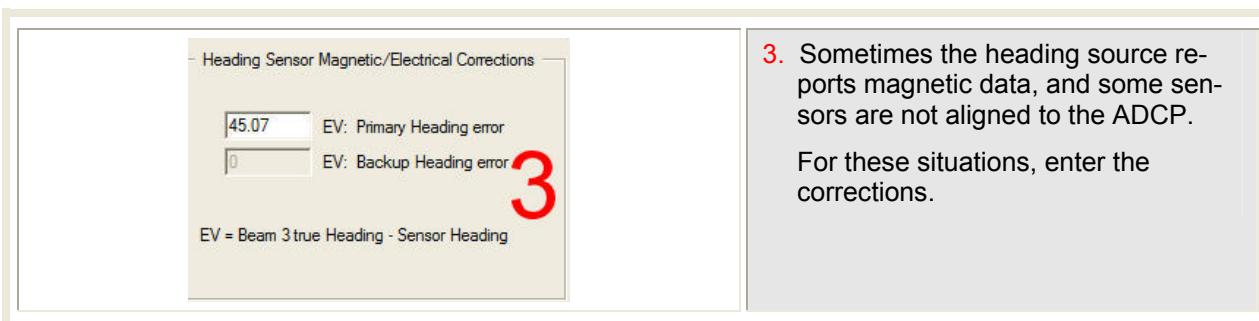
A fixed heading or tilt is never bad. The ADCP never tells you that the variable leader's heading, pitch, or roll is bad. Instead, it quietly replaces the bad data with a fixed value set by EH, EP, or ER commands. This is done whether the bad data comes from the ADCP's internal sensors or external gyros attached to the ADCP.



1. VmDas requires heading data and optionally, pitch and roll data. The data can come from the ADCP's internal compass and tilt sensors, gyros connected to the ADCP's electronics chassis, NMEA data from a serial port, or fixed values entered by the user.

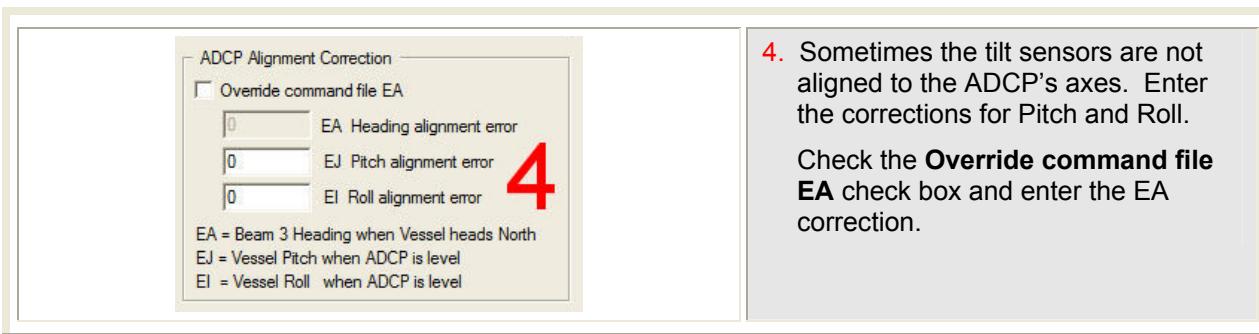


2. It is possible to use one source for heading and a second source for pitch and roll.



3. Sometimes the heading source reports magnetic data, and some sensors are not aligned to the ADCP.

For these situations, enter the corrections.



4. Sometimes the tilt sensors are not aligned to the ADCP's axes. Enter the corrections for Pitch and Roll.

Check the **Override command file EA** check box and enter the EA correction.

Setup the Averaging Tab

The Averaging property page allows you to set the Ensemble Averaging interval and Reference Layer Averaging properties.

- The **Averaging Method** controls how many pings are averaged together in the STA (Short Term Average) and LTA files (Long Term Average).
- The **Profile Ping Normalization Reference Layer** can be used when no Bottom Track or GPS is available.

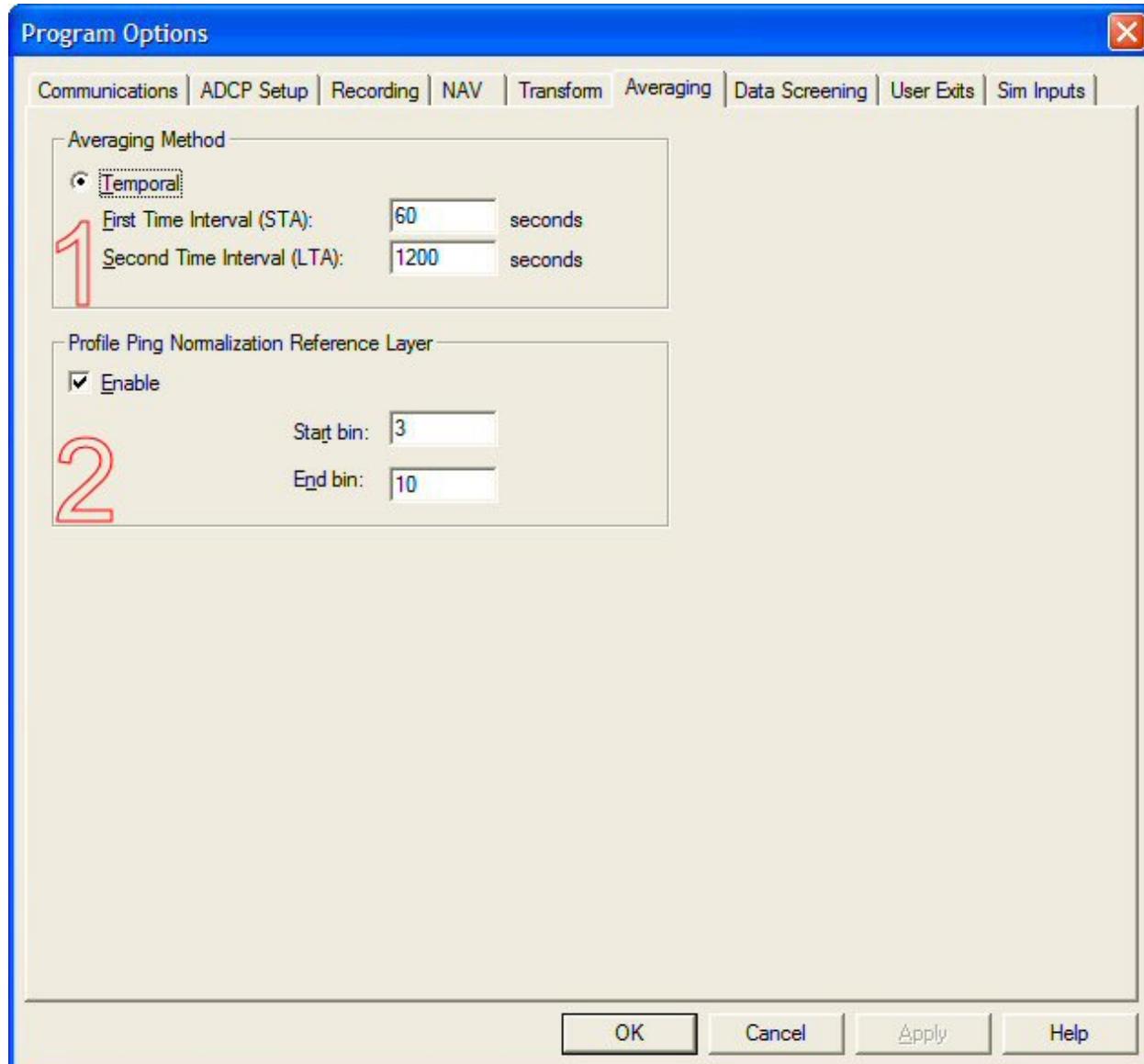
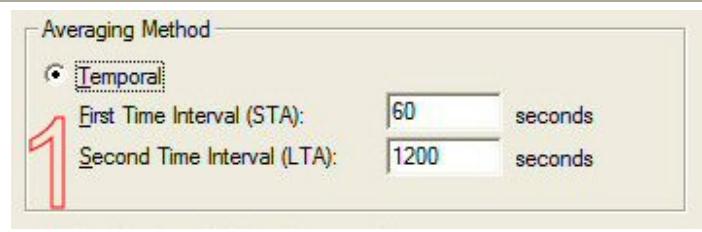


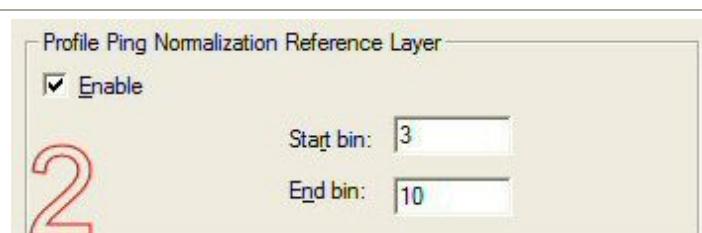
Figure 6. Averaging Tab



1. The **First Time Interval** is what we refer to as the Short Term Average (which will become file name with a *.STA extension).

The **Second Time Interval** is what we refer to as the Long Term Average (which will become file name with a *.LTA extension).

You can set these to any times you like and they may even be the same value.



2. When using a Reference Layer, use bins in the upper part of the profile and bins that have a high percent good (more than 85%). If you select a bad bin range, the averages will be wrong and data will be bad.

Setup the Data Screening Tab

Click the check boxes for the data screening options you wish to enable. When a box is checked, its associated edit box becomes enabled, and you may enter a threshold value for screening the data. The screened single-ping data is saved with an *.ENS extension.

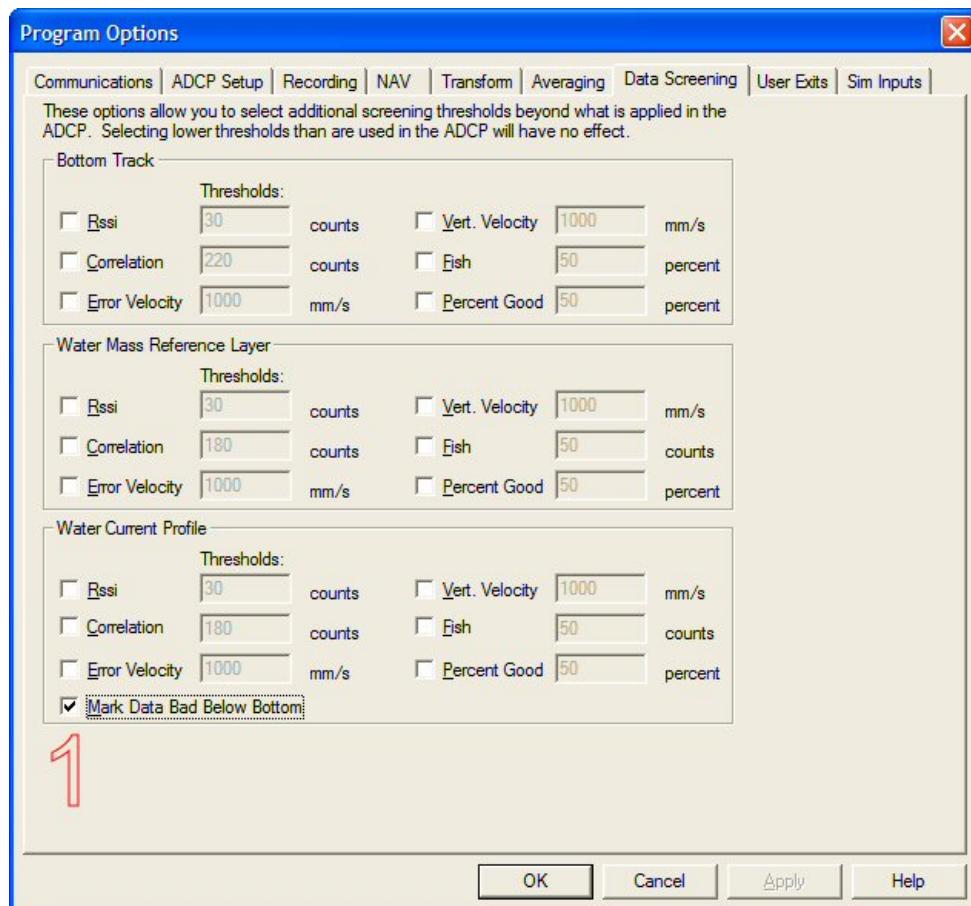


Figure 7. Data Screening Tab

Water Current Profile

Thresholds:	
<input type="checkbox"/> RSSI <input type="text" value="30"/> counts	<input type="checkbox"/> Vert. Velocity <input type="text" value="1000"/> mm/s
<input type="checkbox"/> Correlation <input type="text" value="180"/> counts	<input type="checkbox"/> Fish <input type="text" value="50"/> counts
<input type="checkbox"/> Error Velocity <input type="text" value="1000"/> mm/s	<input type="checkbox"/> Percent Good <input type="text" value="50"/> percent
<input checked="" type="checkbox"/> Mark Data Bad Below Bottom	

1

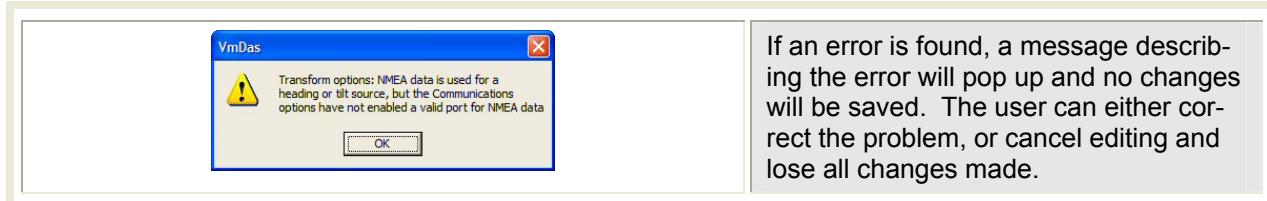
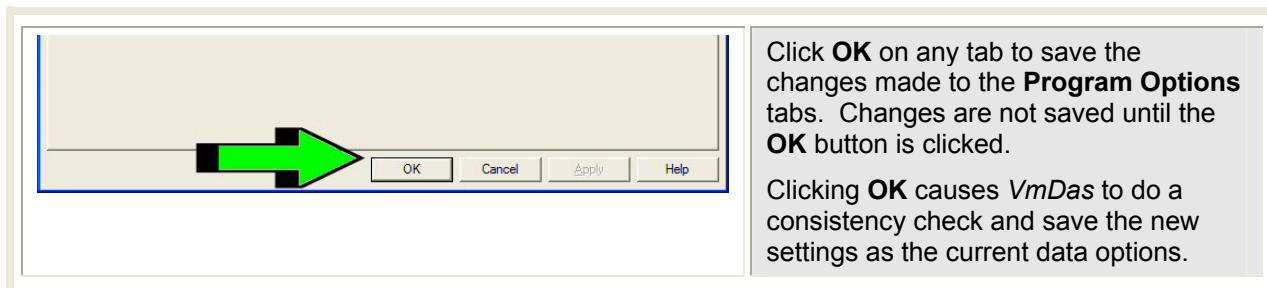
You are able to screen data based on the items in this menu and the thresholds you decide during real-time or when reprocessing. This screening will affect what is displayed on the screen and what data is recorded to the *.STA and *.LTA files. *The original raw data will be unaffected by what is setup here.*

1. For real-time data collection, we recommend you only enable **Mark Bad Below Bottom**. You can reprocess data later and change the settings in this screen to see what the effect it has on the data.

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Teledyne RD Instruments

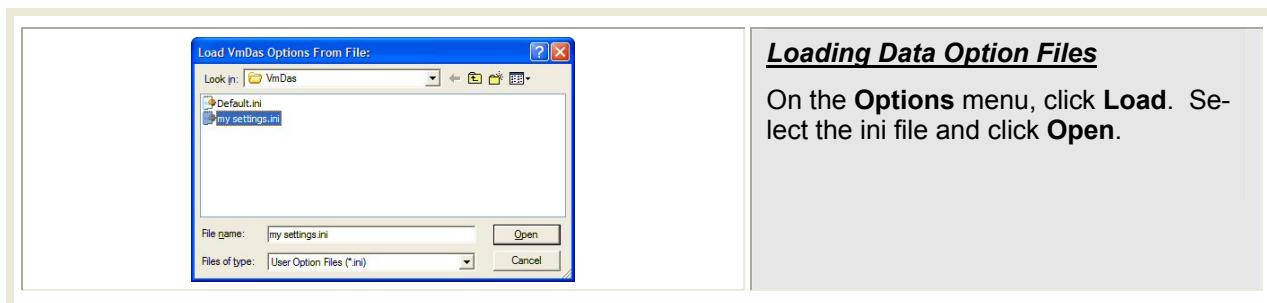
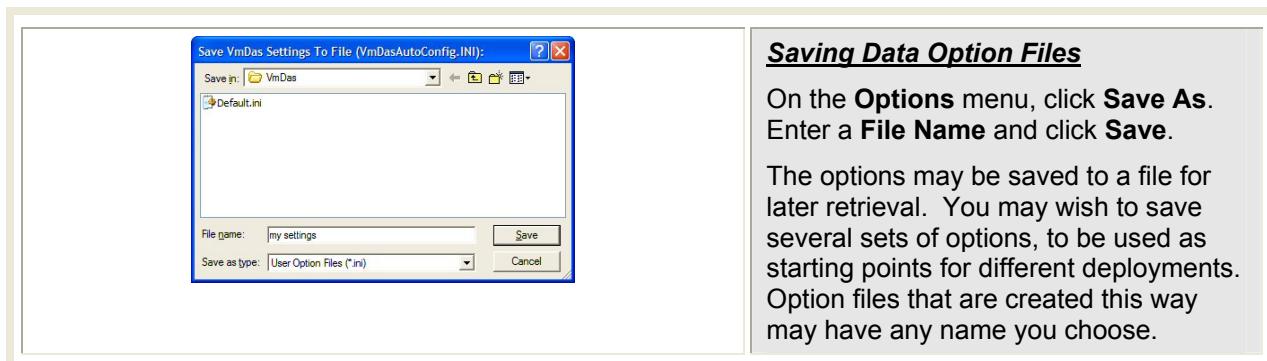
Save Changes to the Data Option File



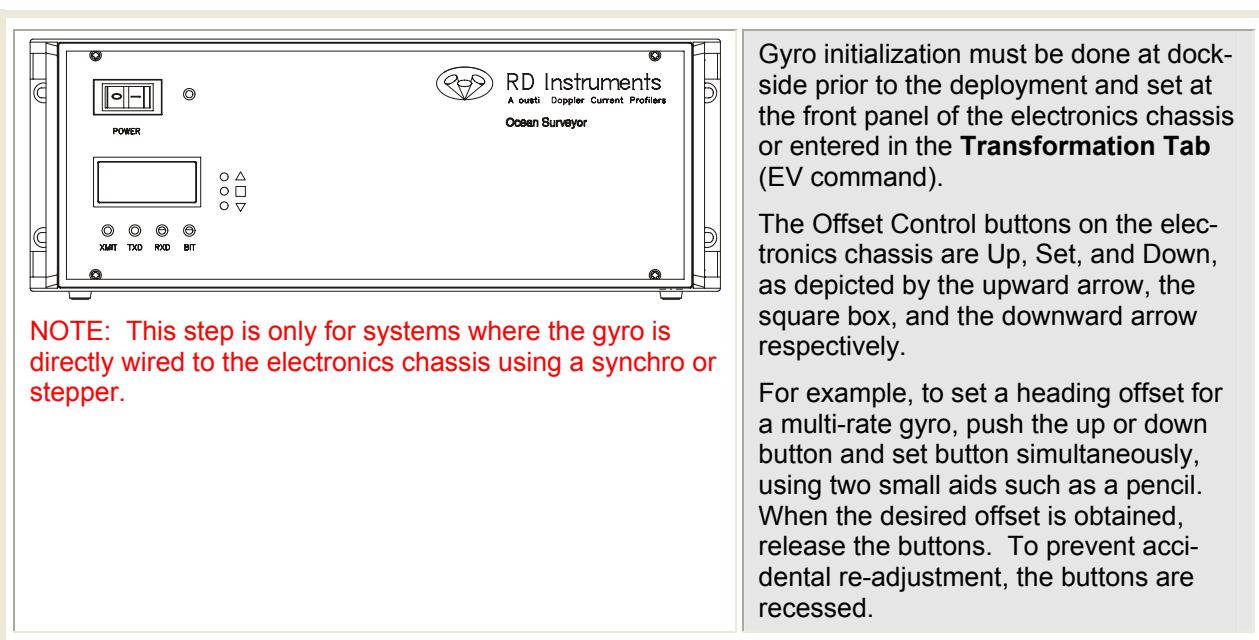
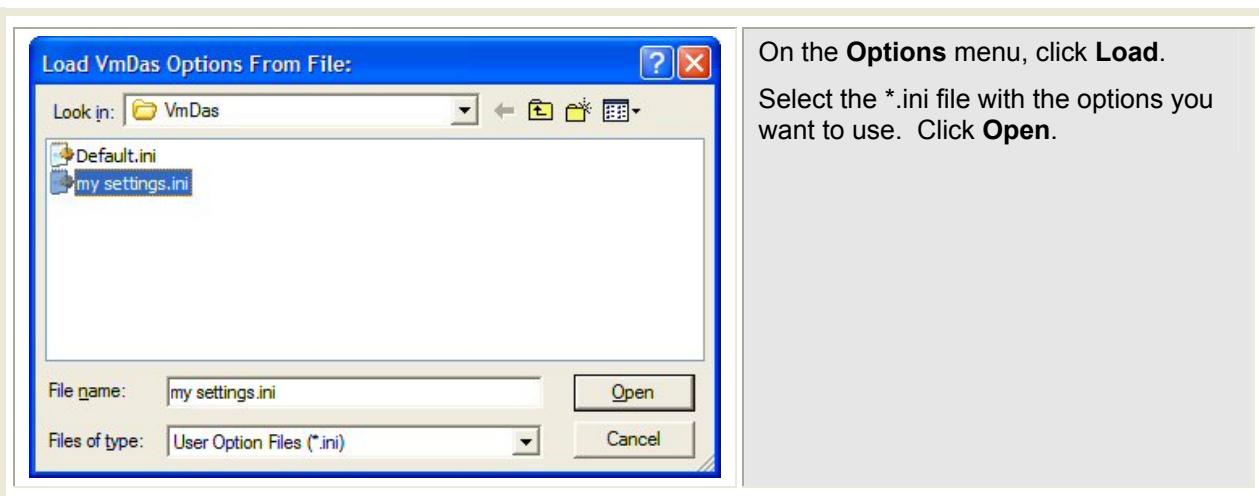
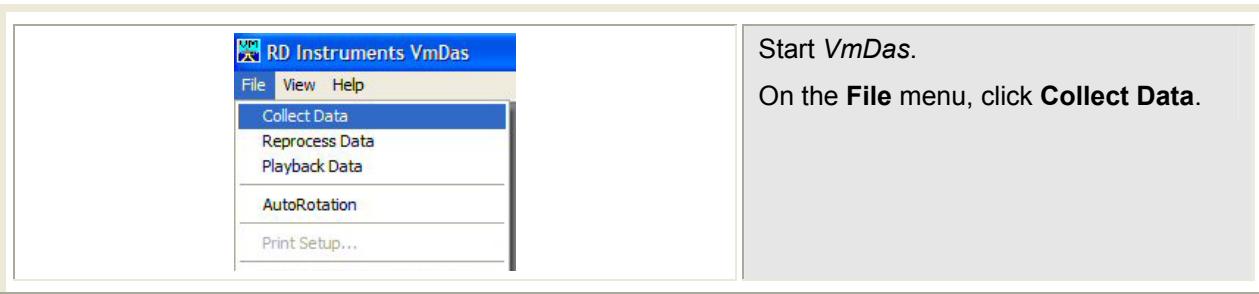
Saving and Loading Data Option Files

VmDas saves the current options to the *C:\Windows\VmDasAutoConfig.ini* file whenever you close data collection, reprocessing, or playback modes (**File**, **Close** or the gray **X** button) or exit *VmDas* (**File**, **Exit** or the red **X** button). These most recently saved options are used whenever *VmDas* is started. You can save the current options to your own *.ini file and load the file to use them as the current options. The current data options are the starting point when you edit options.

Exit VmDas
- File Close

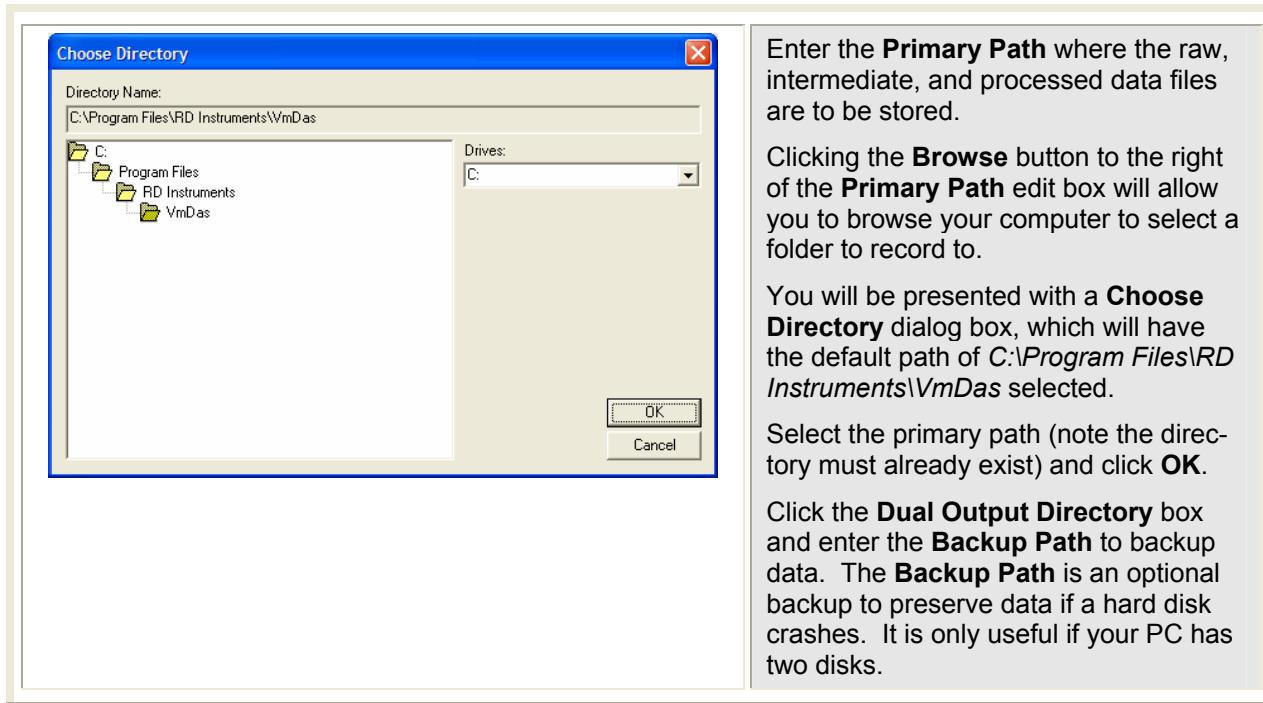
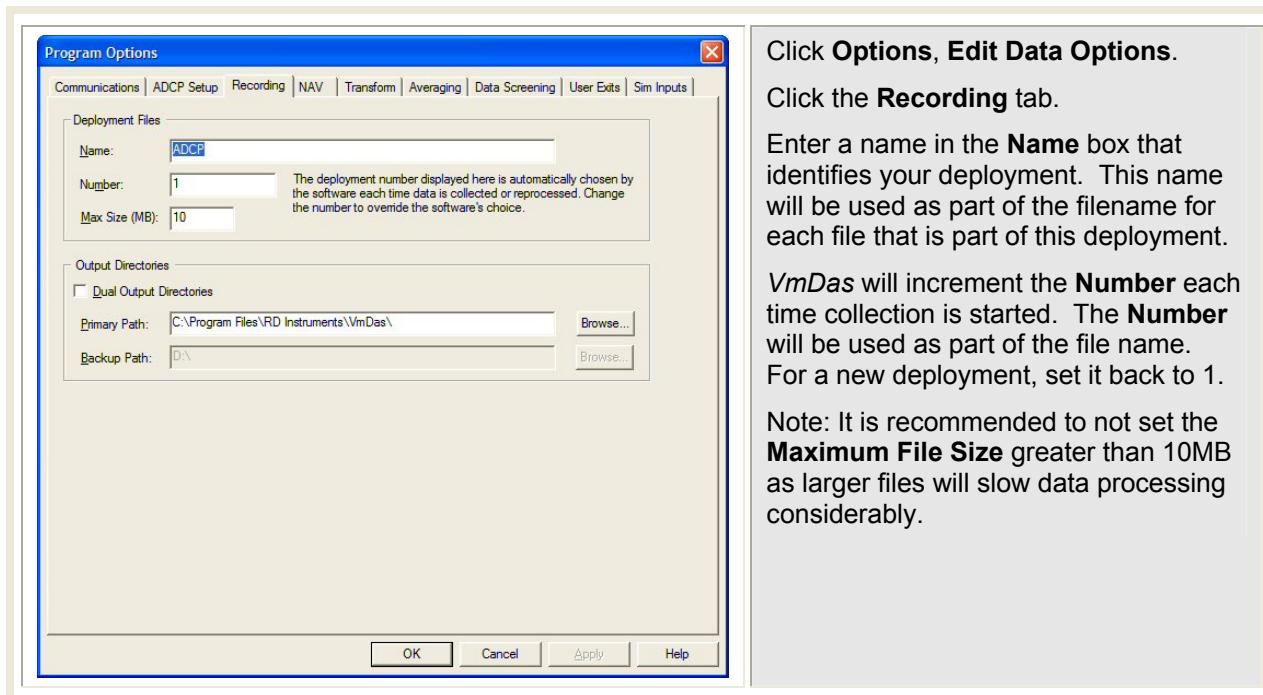


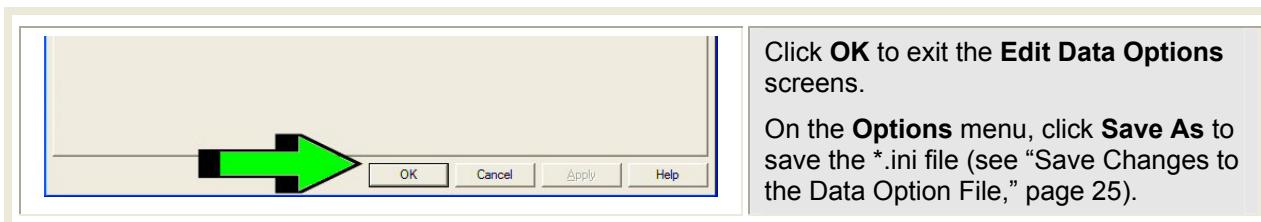
Collecting Data



Set Recording Options

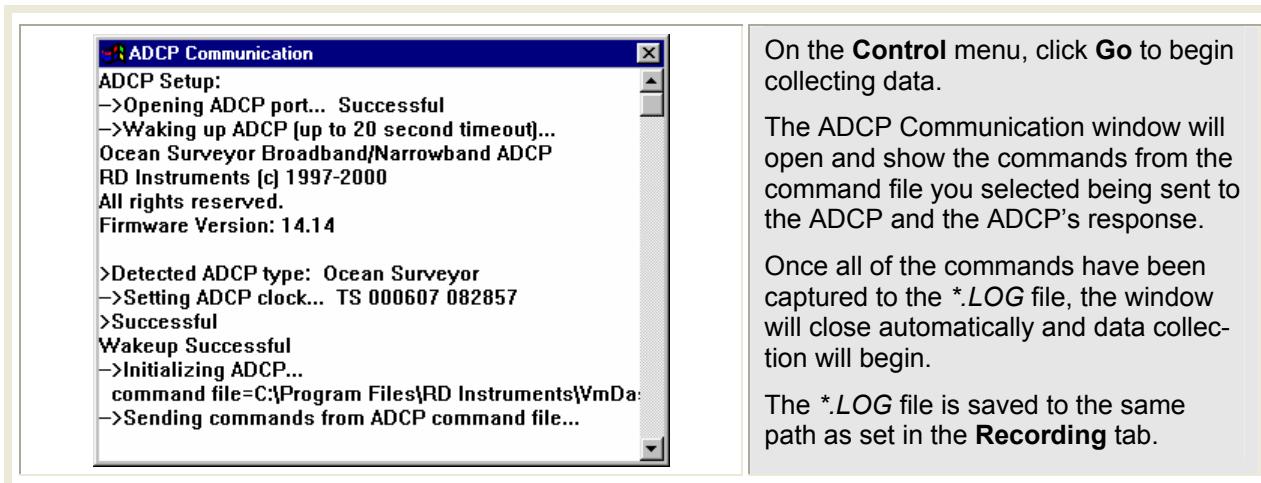
The Recording property page allows you to set the deployment name and path to where the data files are recorded. The Recording name is typically the only change that will occur each deployment.





Click **OK** to exit the **Edit Data Options** screens.

On the **Options** menu, click **Save As** to save the *.ini file (see "Save Changes to the Data Option File," page 25).



On the **Control** menu, click **Go** to begin collecting data.

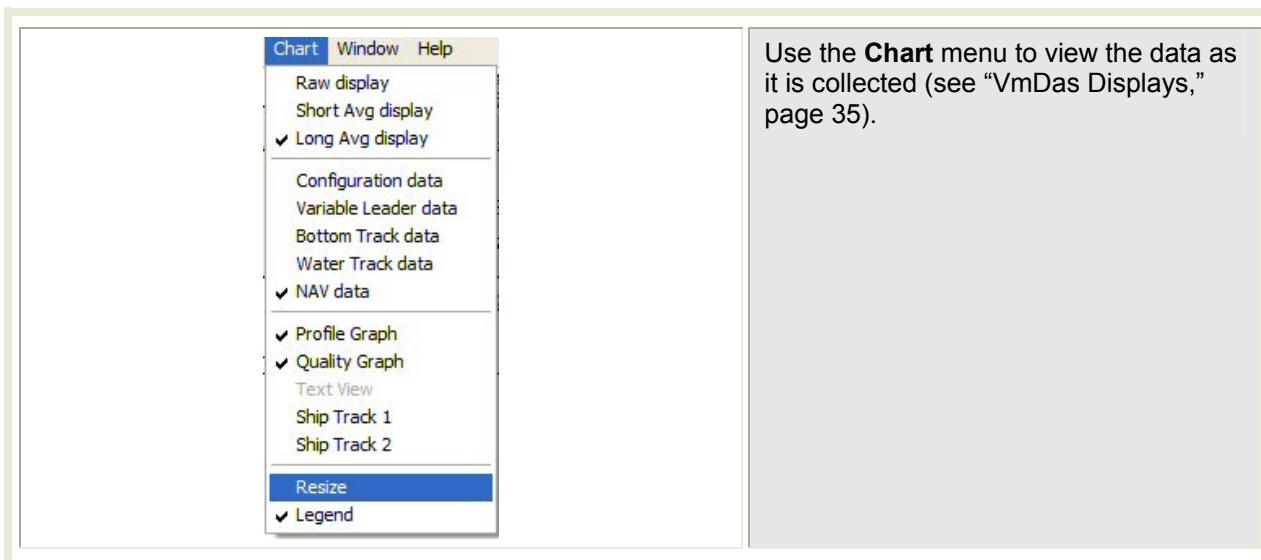
The ADCP Communication window will open and show the commands from the command file you selected being sent to the ADCP and the ADCP's response.

Once all of the commands have been captured to the *.LOG file, the window will close automatically and data collection will begin.

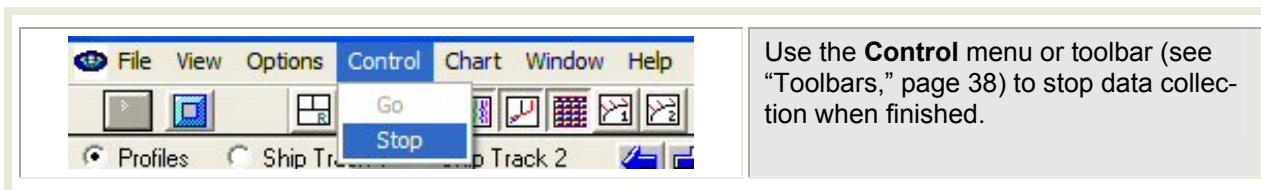
The *.LOG file is saved to the same path as set in the **Recording** tab.



NOTE. You can review the ADCP Communication window by selecting **View, ADCP Communication**. You should carefully check for error messages from the ADCP when starting a new configuration for the first time.



Use the **Chart** menu to view the data as it is collected (see "VmDas Displays," page 35).



Use the **Control** menu or toolbar (see "Toolbars," page 38) to stop data collection when finished.

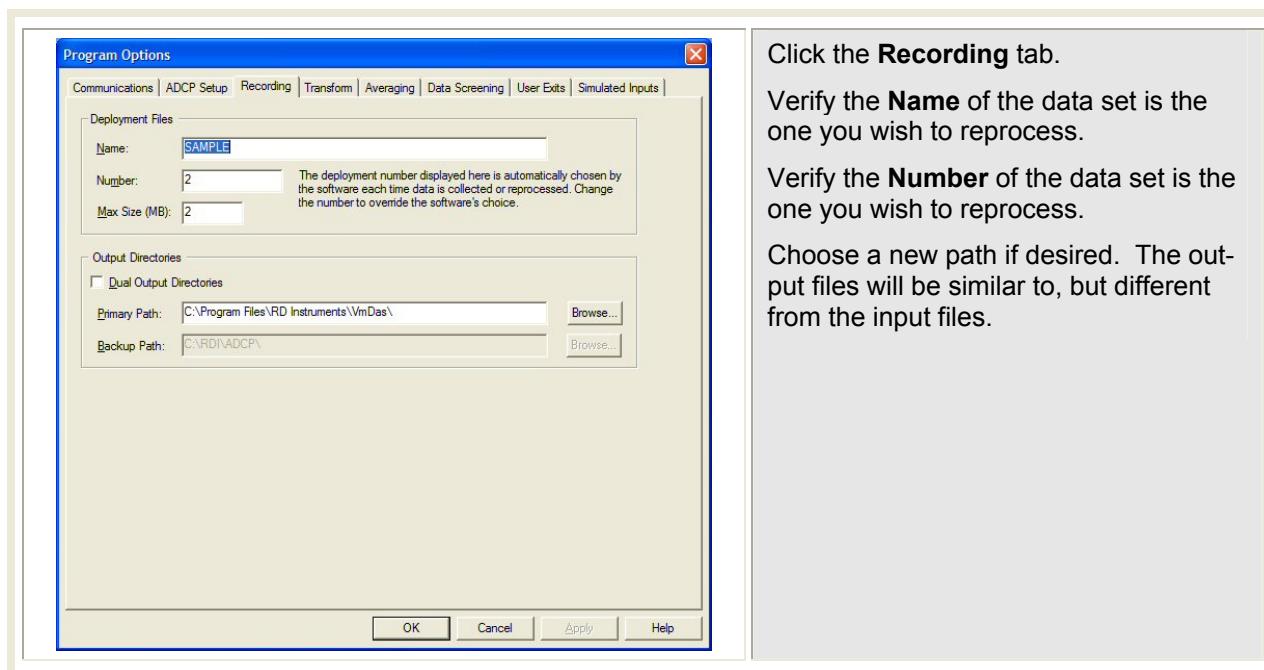
Reprocessing Data

When data is collected, the raw data is logged in *.ENR and *.N*R files. Then it is processed and stored in a variety of files (see “[File Naming Conventions](#),” page 44). The options selected before data collection begins controls how the processing is done. The *.ENR and *.N*R files are not changed during reprocessing.

Reprocessing data starts over with the raw *.ENR and *.N*R files. It allows you to choose new options and repeat processing steps. You can then playback the reprocessed data to display it. This is useful if you want to fix a mistake or just change parameters. For example, suppose you collected data with the wrong EA value. You can correct the value on the **Transform** tab and reprocess the data file. Maybe you want new screening parameters or averaging intervals. The following example shows the overall process without selecting specific options to change.

The figure consists of three vertically stacked screenshots of the RD Instruments VmDas software interface:

- Screenshot 1:** Shows the main menu bar with "File" selected. The "Reprocess Data" option is highlighted in blue. To its right, a text box provides instructions: "Start VmDas. On the **File** menu, click **Reprocess Data**."
- Screenshot 2:** Shows a "Select deployment to open for reprocessing" dialog box. The "Look in:" dropdown is set to "VmDas". A single file, "SAMPLE002_000000.VMO", is listed in the file list. Below the list are "File name:" and "Open" buttons, and "Files of type:" dropdown set to "VmDas Deployment Files (*.vmo, *.vmp)". To its right, a text box provides instructions: "Browse and locate the *.vmo file for the data you wish to reprocess. For this example, select the SAMPLE002_000000.VMO file. Click Open."
- Screenshot 3:** Shows the main VmDas application window with the "Options" menu open. The "Edit Data Options" option is highlighted in blue. To its right, a text box provides instructions: "Click Options, Edit Data Options."

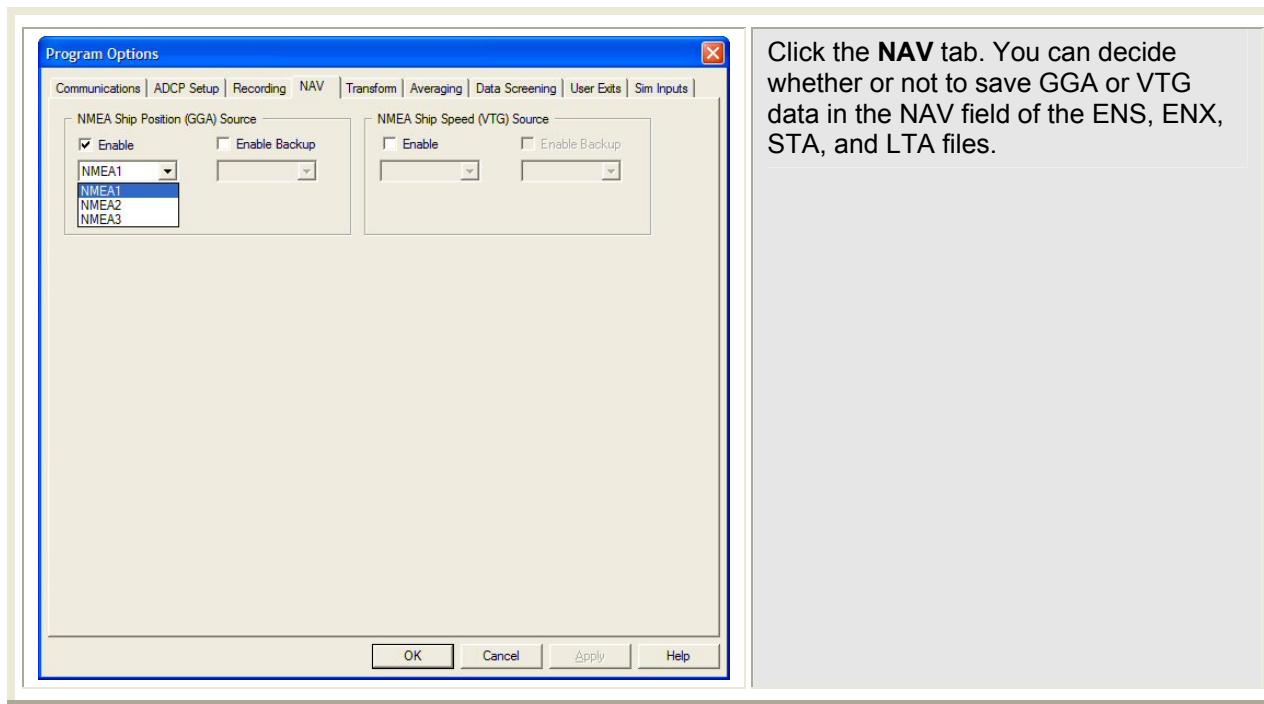


Click the **Recording** tab.

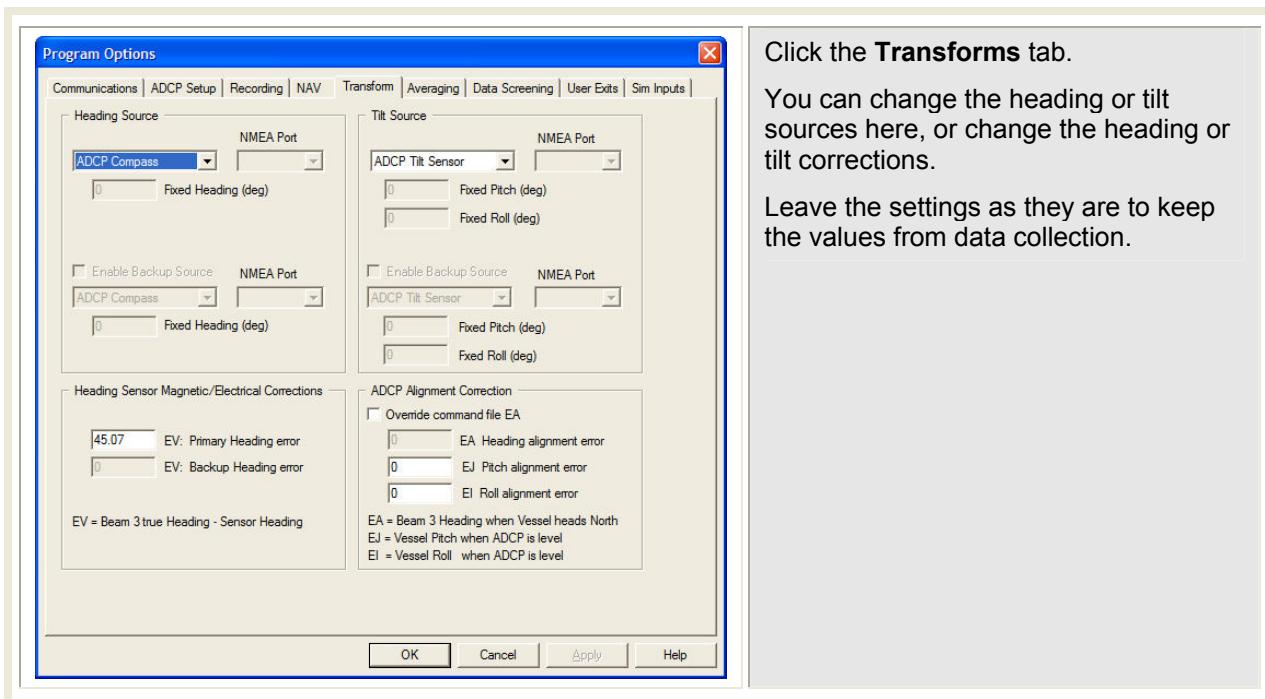
Verify the **Name** of the data set is the one you wish to reprocess.

Verify the **Number** of the data set is the one you wish to reprocess.

Choose a new path if desired. The output files will be similar to, but different from the input files.



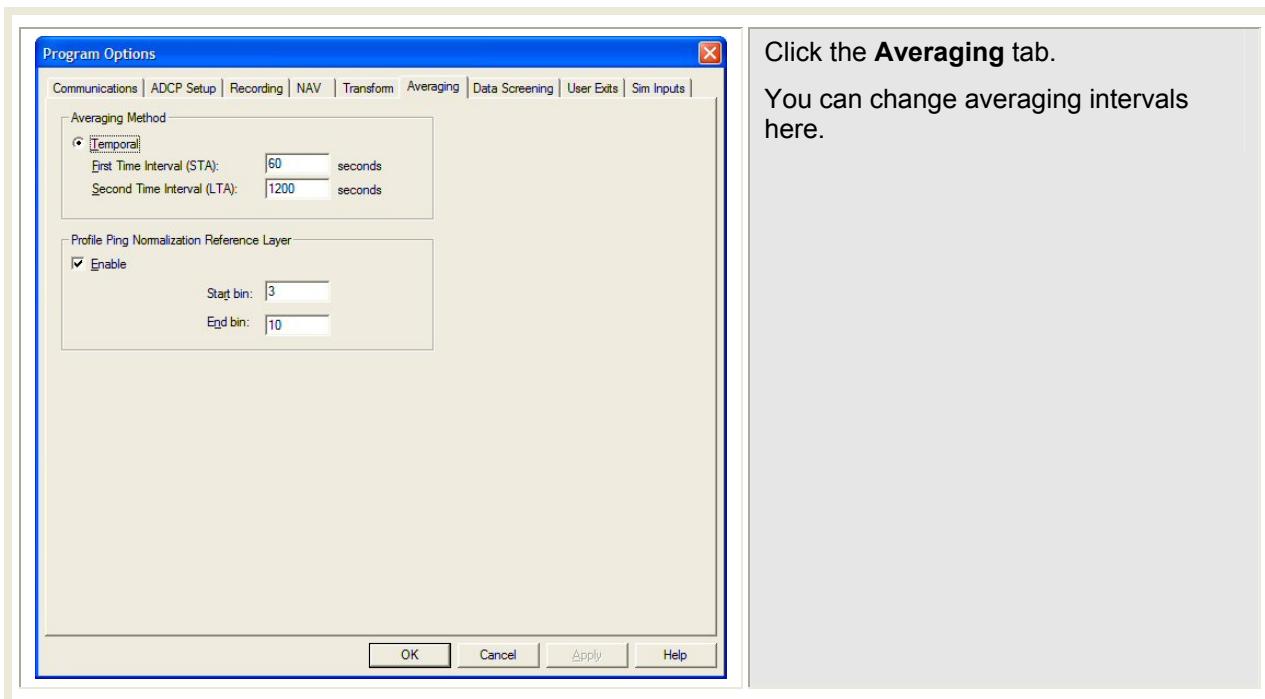
Click the **NAV** tab. You can decide whether or not to save GGA or VTG data in the NAV field of the ENS, ENX, STA, and LTA files.



Click the **Transforms** tab.

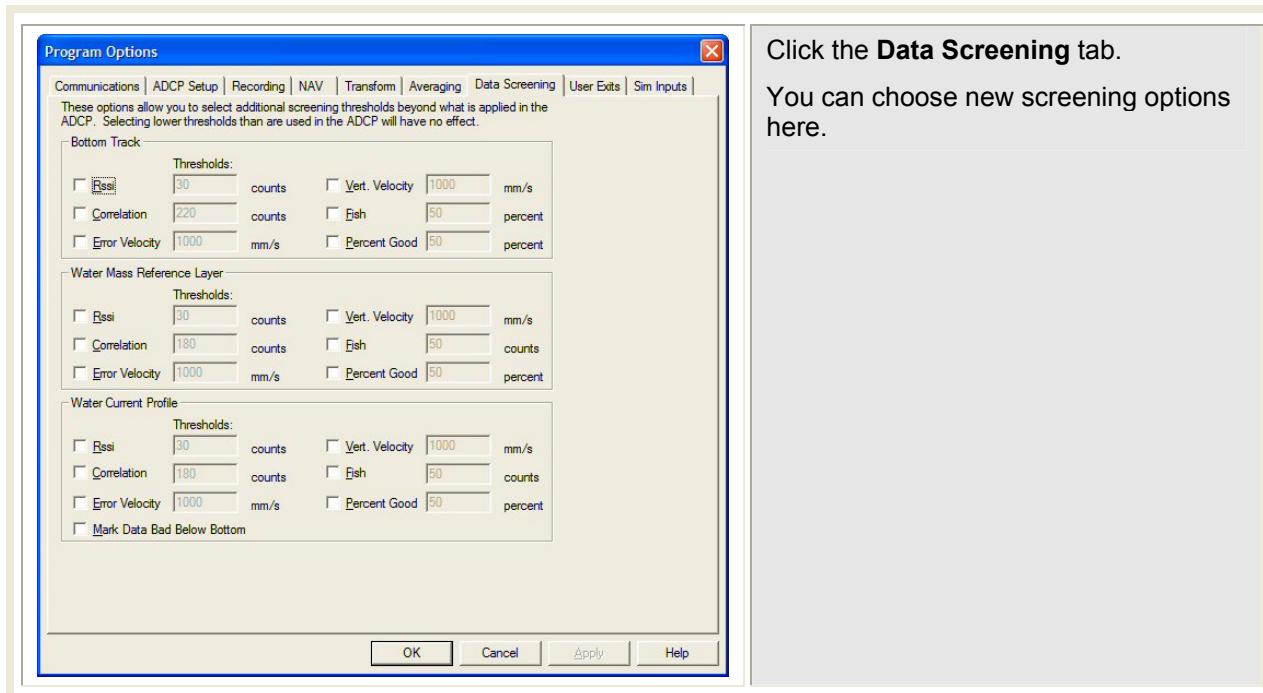
You can change the heading or tilt sources here, or change the heading or tilt corrections.

Leave the settings as they are to keep the values from data collection.



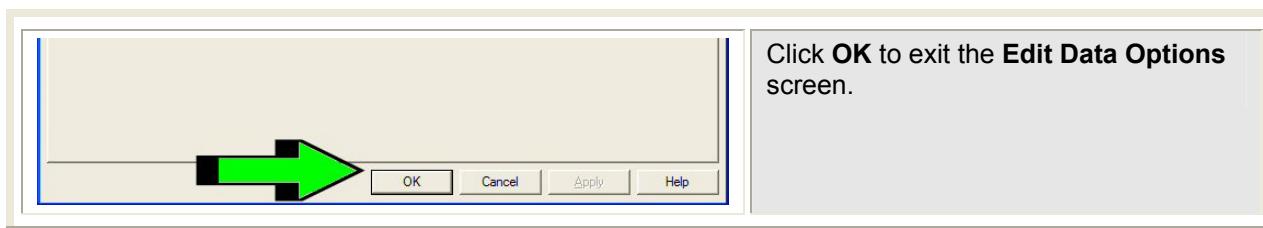
Click the **Averaging** tab.

You can change averaging intervals here.

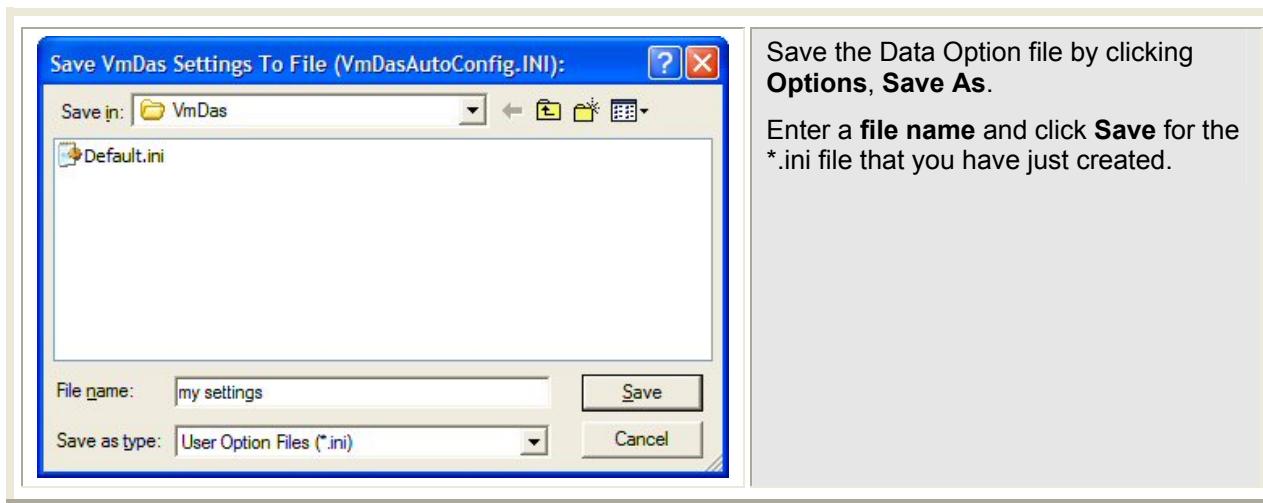


Click the **Data Screening** tab.

You can choose new screening options here.

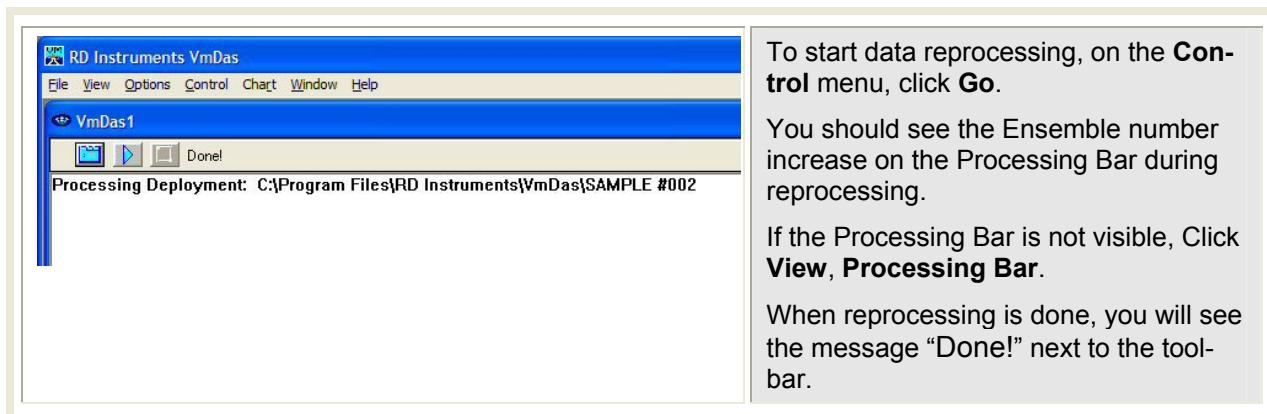


Click **OK** to exit the **Edit Data Options** screen.



Save the Data Option file by clicking **Options, Save As**.

Enter a **file name** and click **Save** for the *.ini file that you have just created.



To start data reprocessing, on the **Control** menu, click **Go**.

You should see the Ensemble number increase on the Processing Bar during reprocessing.

If the Processing Bar is not visible, Click **View, Processing Bar**.

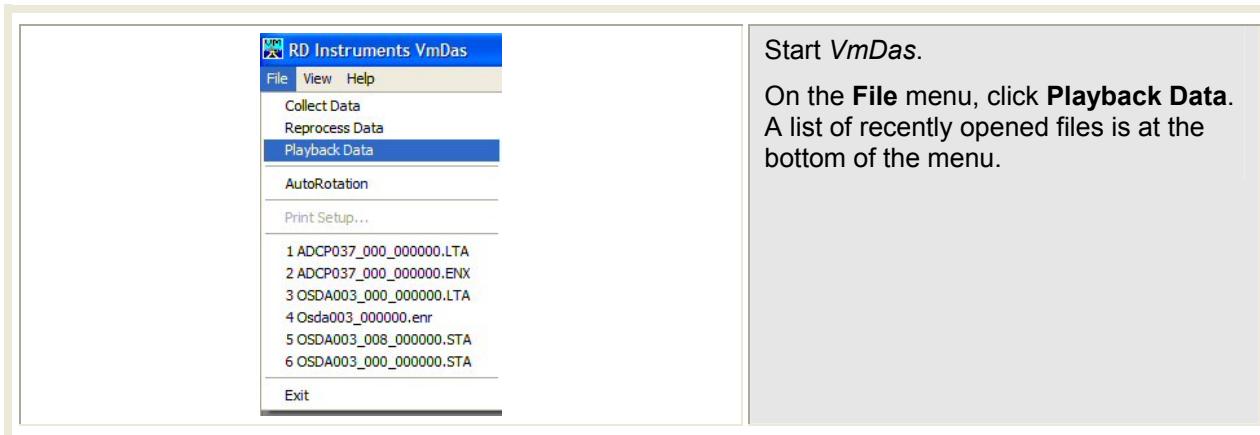
When reprocessing is done, you will see the message “Done!” next to the toolbar.



NOTE. No data is displayed during Reprocessing. Use the Playback mode to view the data after Reprocessing.

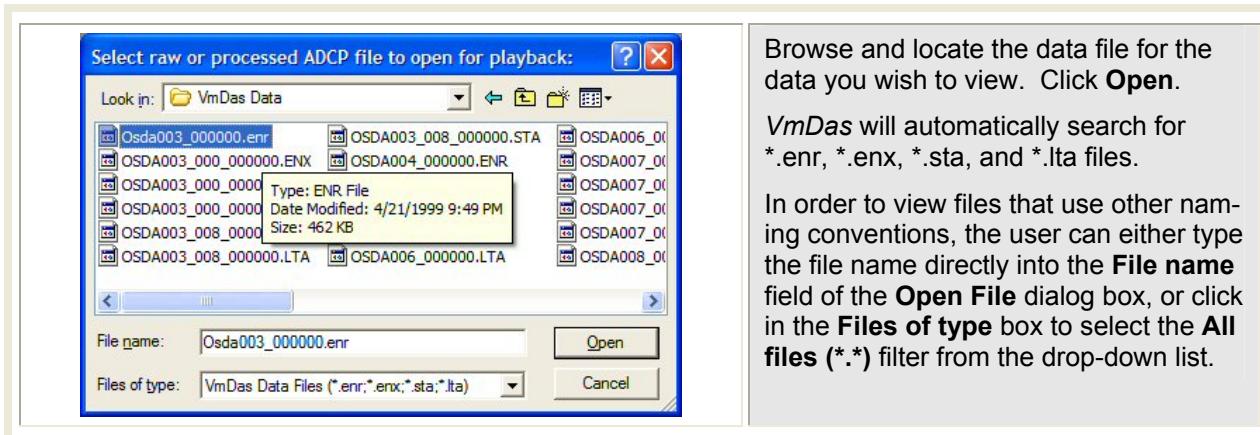
Playback Data

Playback is used for displaying data that has already been collected or reprocessed. See “VmDas Displays,” page 35 for descriptions of what can be displayed.



Start VmDas.

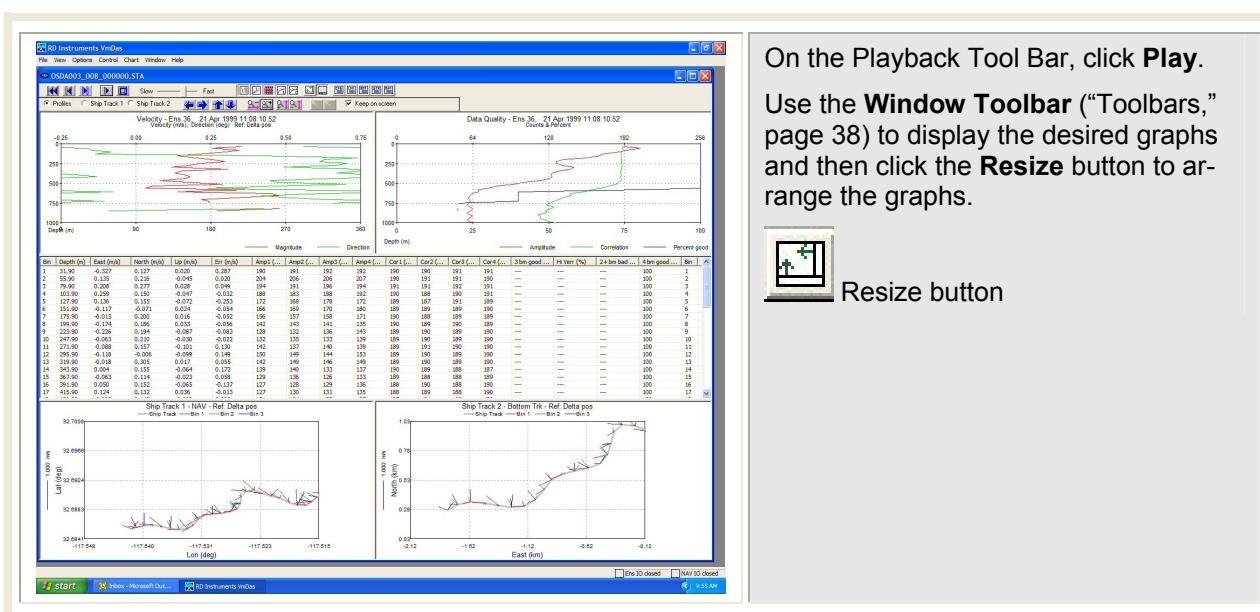
On the **File** menu, click **Playback Data**. A list of recently opened files is at the bottom of the menu.



Browse and locate the data file for the data you wish to view. Click **Open**.

VmDas will automatically search for *.enr, *.enx, *.sta, and *.lta files.

In order to view files that use other naming conventions, the user can either type the file name directly into the **File name** field of the **Open File** dialog box, or click in the **Files of type** box to select the **All files (*.*)** filter from the drop-down list.



On the Playback Tool Bar, click **Play**.

Use the **Window Toolbar** (“Toolbars,” page 38) to display the desired graphs and then click the **Resize** button to arrange the graphs.

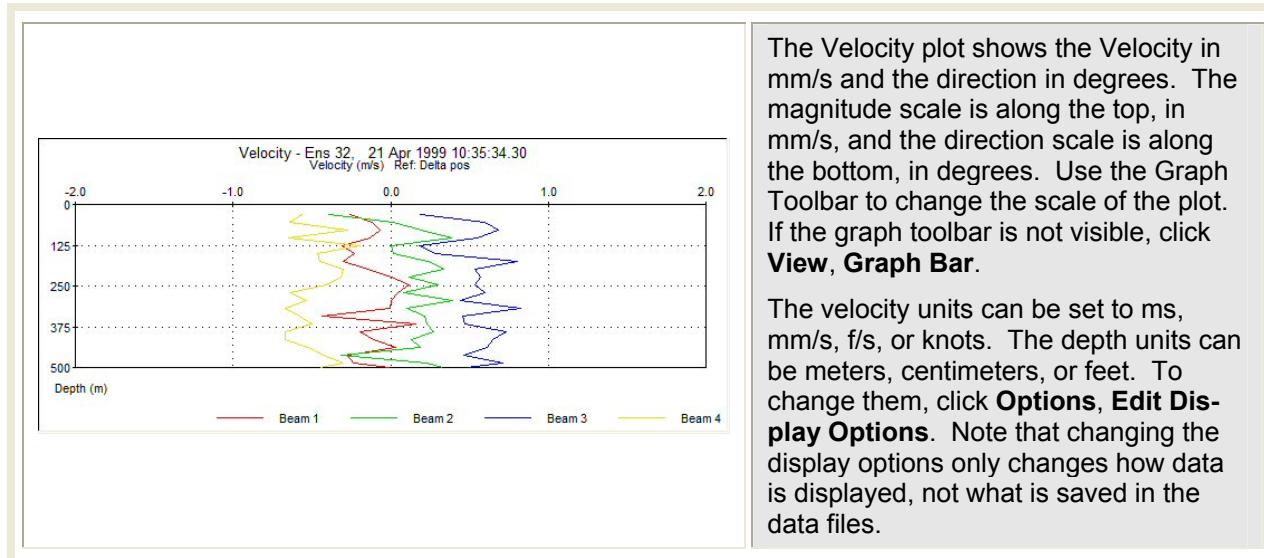


Resize button

VmDas Displays

VmDas can be configured to look as you prefer.

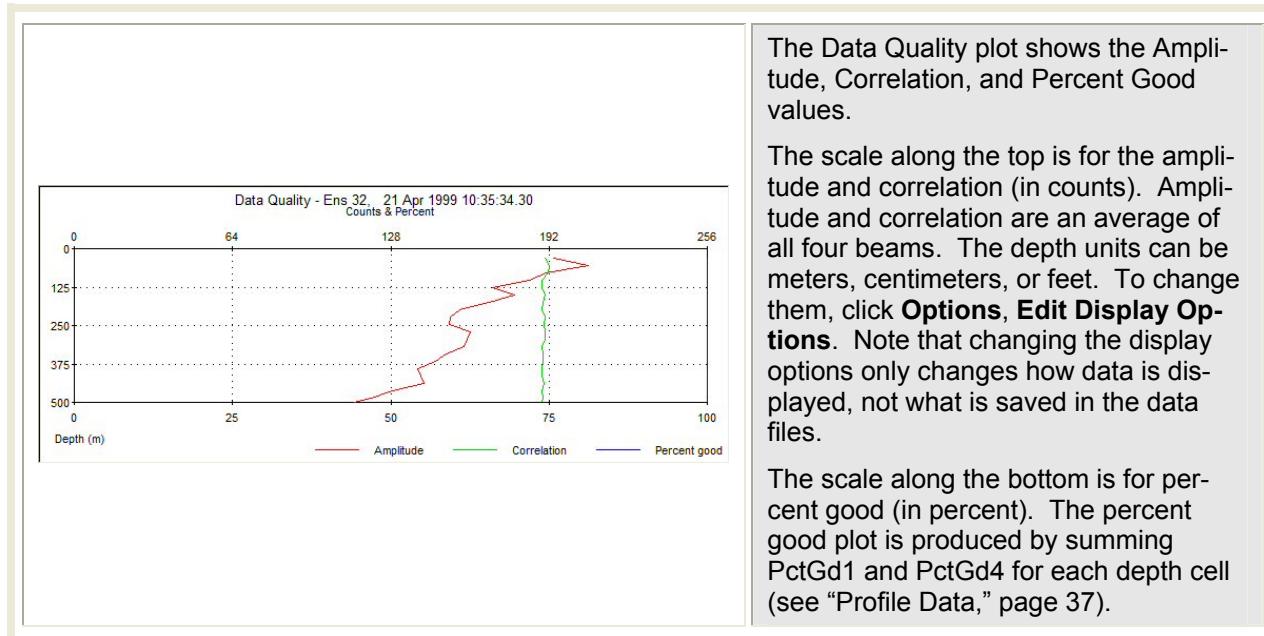
Velocity Plot



The Velocity plot shows the Velocity in mm/s and the direction in degrees. The magnitude scale is along the top, in mm/s, and the direction scale is along the bottom, in degrees. Use the Graph Toolbar to change the scale of the plot. If the graph toolbar is not visible, click **View, Graph Bar**.

The velocity units can be set to ms, mm/s, f/s, or knots. The depth units can be meters, centimeters, or feet. To change them, click **Options, Edit Display Options**. Note that changing the display options only changes how data is displayed, not what is saved in the data files.

Data Quality Plot

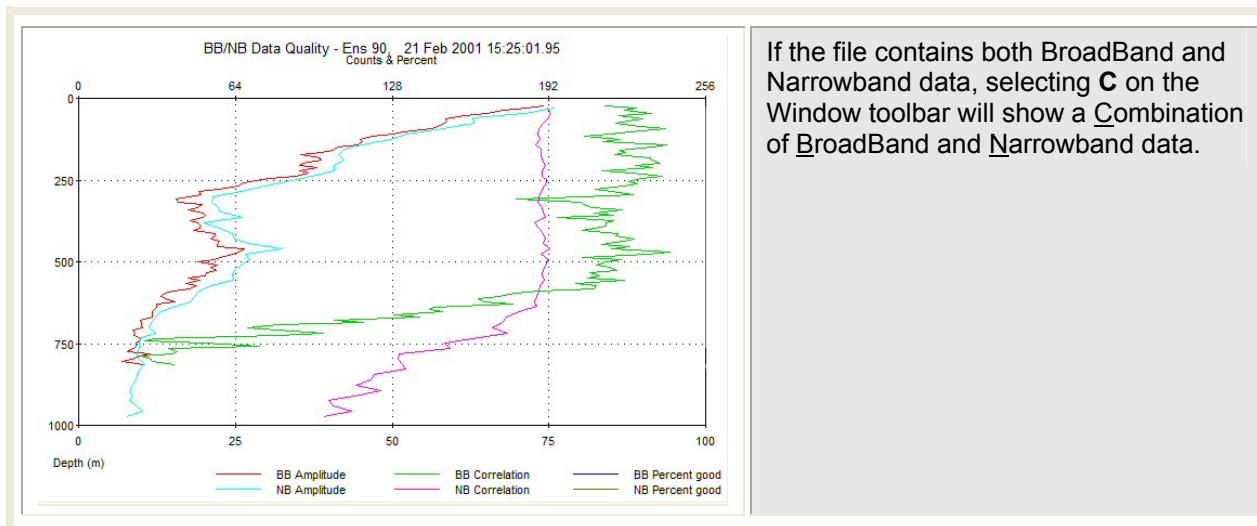


The Data Quality plot shows the Amplitude, Correlation, and Percent Good values.

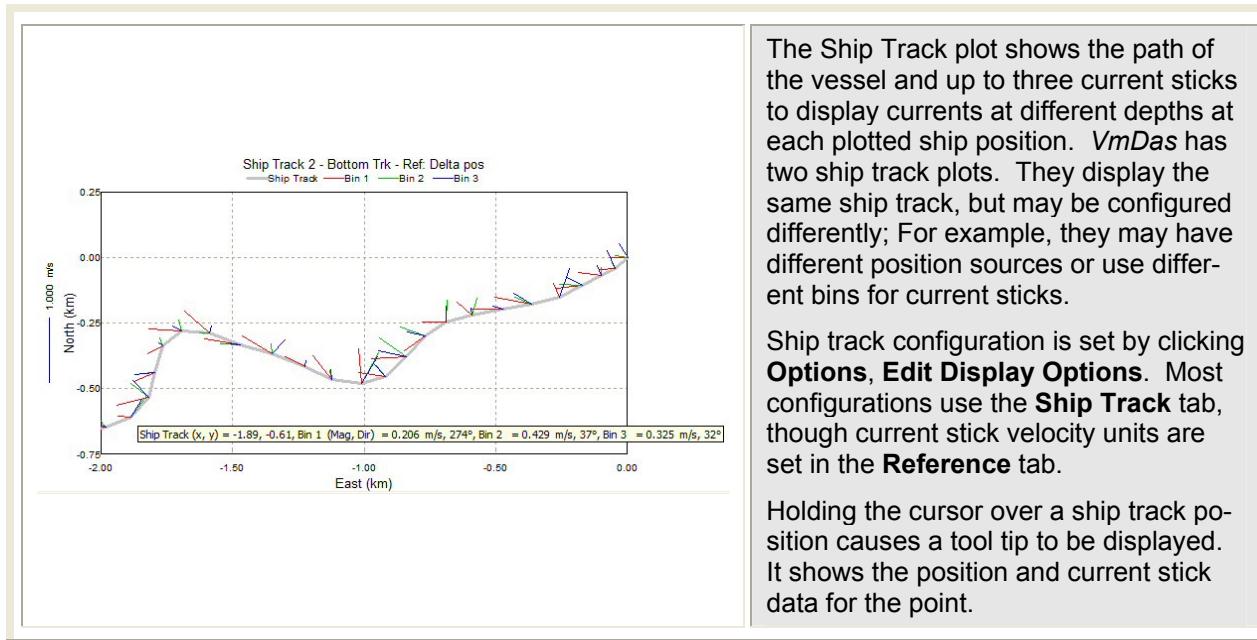
The scale along the top is for the amplitude and correlation (in counts). Amplitude and correlation are an average of all four beams. The depth units can be meters, centimeters, or feet. To change them, click **Options, Edit Display Options**. Note that changing the display options only changes how data is displayed, not what is saved in the data files.

The scale along the bottom is for percent good (in percent). The percent good plot is produced by summing PctGd1 and PctGd4 for each depth cell (see "Profile Data," page 37).

Combination Plots



Ship Track Plot



NOTE. In Data Collection mode, the ship track plots are not available in the raw data view.

Profile Data

Bin	Depth (m)	Bm1 (m/s)	Bm2 (m/s)	Bm3 (m/s)	Bm4 (m/s)	Amp1 (...)	Amp2 (...)	Amp3 (...)	Amp4 (...)	Cor1 (...)
1	31.90	-0.257	-0.391	0.191	-0.563	190	196	195	195	190
2	55.90	-0.116	0.015	0.600	-0.643	207	208	207	209	191
3	79.90	-0.069	0.198	0.685	-0.271	189	194	193	187	192
4	103.90	-0.134	0.388	0.547	-0.645	185	184	173	194	185
5	127.90	-0.305	0.007	0.182	-0.198	166	170	172	169	188
6	151.90	-0.231	0.017	0.278	-0.464	178	177	186	172	190
7	175.90	-0.298	0.240	0.807	-0.449	172	159	163	178	192
8	199.90	-0.143	0.337	0.535	-0.302	159	160	145	159	187
9	223.90	0.001	0.116	0.569	-0.316	157	159	145	147	191
10	247.90	0.116	0.301	0.538	-0.404	130	165	147	165	189
11	271.90	0.046	0.083	0.601	-0.639	149	166	163	163	190
12	295.90	0.004	0.395	0.445	-0.533	144	161	164	166	191
13	319.90	-0.006	0.104	0.823	-0.667	167	149	154	160	192
14	343.90	-0.438	0.218	0.457	-0.577	158	144	134	165	191
15	367.90	0.160	0.227	0.473	-0.499	143	147	154	141	189
16	391.90	-0.193	0.275	0.730	-0.671	144	137	135	140	190
17	415.90	-0.107	0.131	0.651	-0.672	132	147	128	153	187
...

The Profile Data display shows a tabular view of the ADCP's Profile Data, and includes the following fields.

Bin - The ADCP depth cell number that the row of tabular data applies to. This field is repeated at the far right of the table for easy reference when looking at data in the rightmost columns of the table when the entire table is not in view.

Depth - The depth of the center of the depth cell. If a transducer depth has not been entered, this is the range to the depth cell from the ADCP transducer. If a transducer depth has been entered, this is the range to the depth cell from the water surface, measured in the selected depth units.

Bm1 through Bm4 - When viewing raw data, these are the individual beam velocities at the depth cell, measured in the selected velocity units. Bm1 through Bm4 are replaced by East, North, Up, and Err when viewing averaged data, and then refer to the Earth-referenced velocity components at the depth cell, and are also shown in the selected velocity units.

Amp1 through Amp4 - The echo intensities (amplitudes) for each beam at the depth cell, measured in counts. The Amplitude plot in the data quality profile graph is produced from the average of Amp1 through Amp4 for each depth cell.

Cor1 through Cor4 - The correlation magnitude values for each beam at the depth cell, measured in counts. The Correlation plot in the data quality profile graph is produced from the average of Cor1 through Cor4 for each depth cell.

PctGd1 through PctGd4 - The percent good data at the depth cell, measured in percent. In the raw data view, PctGd1 through PctGd4 refer to individual beam percentages, however percent good data is typically not by the ADCP output for single-ping data. These fields are more useful when looking at the averaged data views, where PctGd1 through PctGd4 have the following meaning:

- **PctGd1** - is the percentage of good 3-beam measurements in the averaging period for the depth cell.
- **PctGd2** - is the percentage of measurements rejected due to high error velocity in the averaging period for the depth cell.
- **PctGd3** - is the percentage of measurements that were rejected due to having fewer than three beams good for the averaging period in the depth cell.
- **PctGd4** - is the percentage of good 4-beam measurements in the averaging period for the depth cell.



NOTE. The percent good plot in the data quality profile graph is produced by summing PctGd1 and PctGd4 for each depth cell.

Other Displays

<table border="1"> <tr><td>Leader</td><td>Non-standard data format</td><td>Heading</td><td>250.00 ± 237.0</td><td>deg</td></tr> <tr><td>Ens Num</td><td>[30]</td><td>Date</td><td>[21 Apr 1999]</td><td>Pitch</td><td>-1.35 ± 5.20</td><td>deg</td></tr> <tr><td>BIT Err</td><td>[OK]</td><td>Time</td><td>[11:02:11.77]</td><td>Roll</td><td>[0.92 ± 5.20]</td><td>deg</td></tr> <tr><td></td><td></td><td></td><td></td><td>Salinity</td><td>[35 ppt]</td><td>Xdr Depth</td><td>[...]</td></tr> <tr><td></td><td></td><td></td><td></td><td>Sound Vel</td><td>[1500 m/s]</td><td></td><td></td></tr> </table>	Leader	Non-standard data format	Heading	250.00 ± 237.0	deg	Ens Num	[30]	Date	[21 Apr 1999]	Pitch	-1.35 ± 5.20	deg	BIT Err	[OK]	Time	[11:02:11.77]	Roll	[0.92 ± 5.20]	deg					Salinity	[35 ppt]	Xdr Depth	[...]					Sound Vel	[1500 m/s]			<p>The leader data shows a text box of the ADCP's leader data.</p>																	
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Ref width	[...]	Error/Bm 4	[...]	[...]																																																	
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<table border="1"> <tr><td>NAV</td><td>Speed</td><td>Avg</td><td>Made good</td><td>Start Time</td><td>[11:02:17 A.M.]</td><td>End Time</td><td>[11:03:15 A.M.]</td><td>Heading</td><td>[...]</td></tr> <tr><td>Ens Num</td><td>[30]</td><td>Mag</td><td>[1.780]</td><td>[1.840]</td><td>m/s</td><td>Start Lat</td><td>[32 41 08 N]</td><td>End Lat</td><td>[32 41 08 N]</td></tr> <tr><td>Date</td><td>[--/-/-]</td><td>Dir</td><td>[263.8]</td><td>[261.2]</td><td>deg</td><td>Start Lon</td><td>[117 32 01 W]</td><td>End Lon</td><td>[117 32 05 W]</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>Pitch</td><td>[...]</td><td>Roll</td><td>[...]</td></tr> </table>	NAV	Speed	Avg	Made good	Start Time	[11:02:17 A.M.]	End Time	[11:03:15 A.M.]	Heading	[...]	Ens Num	[30]	Mag	[1.780]	[1.840]	m/s	Start Lat	[32 41 08 N]	End Lat	[32 41 08 N]	Date	[--/-/-]	Dir	[263.8]	[261.2]	deg	Start Lon	[117 32 01 W]	End Lon	[117 32 05 W]							Pitch	[...]	Roll	[...]	<p>The Navigation Data shows a text box of the position and velocity data from a NMEA navigation device.</p>												
NAV	Speed	Avg	Made good	Start Time	[11:02:17 A.M.]	End Time	[11:03:15 A.M.]	Heading	[...]																																												
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<table border="1"> <tr><td>System configuration</td><td>CX/CC</td><td>Convex</td><td>Ens Length</td><td>[1507 bytes]</td><td>Bin 1 dist</td><td>[31.90 m]</td><td>Time/ping</td><td>[00:00:00]</td></tr> <tr><td>Sys freq</td><td>[38400 Hz]</td><td>Up/down</td><td>Down</td><td>Bins</td><td>[50]</td><td>Blank dist</td><td>[8.00 m]</td><td>Pings/ens</td><td>[1]</td></tr> <tr><td>Oper Mode</td><td>Narrow bandwidth</td><td>Bm angle</td><td>[30 deg]</td><td>Coord sys</td><td>Earth</td><td>Bin length</td><td>[24.00 m]</td><td>Time/ens</td><td>[00:02:00]</td></tr> </table>	System configuration	CX/CC	Convex	Ens Length	[1507 bytes]	Bin 1 dist	[31.90 m]	Time/ping	[00:00:00]	Sys freq	[38400 Hz]	Up/down	Down	Bins	[50]	Blank dist	[8.00 m]	Pings/ens	[1]	Oper Mode	Narrow bandwidth	Bm angle	[30 deg]	Coord sys	Earth	Bin length	[24.00 m]	Time/ens	[00:02:00]	<p>The System Configuration Data shows a text box of the ADCP's System Configuration Data.</p>																							
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Toolbars

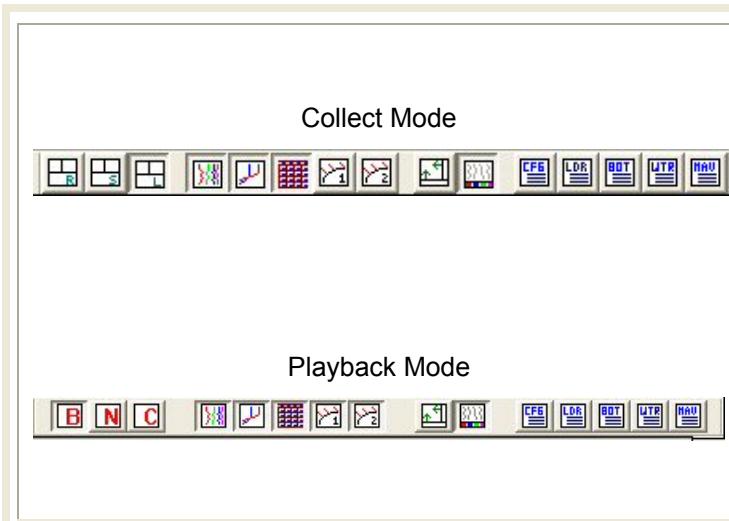
The toolbars control *VmDas* processing and displays. There are three tool bars; Window Tool Bar, Graph Tool Bar, and Playback/Processing Tool Bar.

The Window and Playback/Processing toolbars provide shortcuts. Each button on these toolbars does the same thing as a menu item. There is no matching menu for the Graph toolbar.

Holding the cursor over a button displays a tool tip with a brief explanation of the button. The toolbars are normally docked together at the top of the main window. If more screen space is desired, they can be hidden with the **View** menu. The **View** menu also restores hidden toolbars.

Toolbars can also be moved around or undocked. To do so, move the cursor over a toolbar between the buttons, left click, and drag. Release the mouse button to drop the toolbar.

Window Toolbar



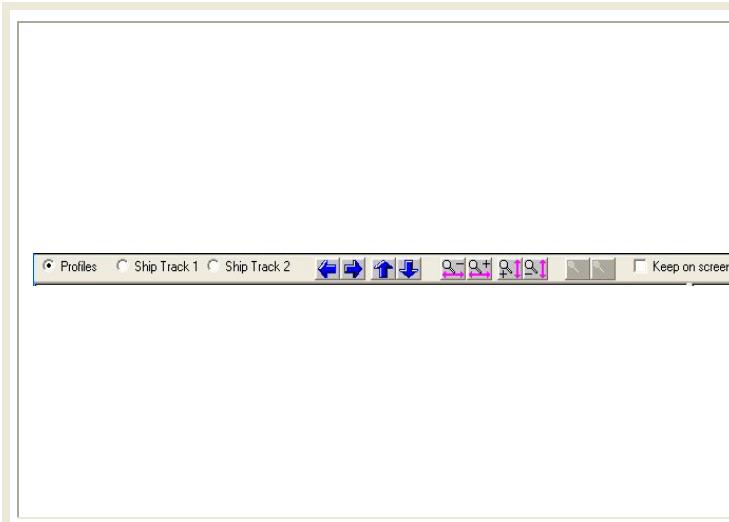
The Window toolbar turns display windows on or off. Each button does the same thing as a **Chart** menu item.

In collect mode the Window toolbar looks like shown here.

In Playback mode, the Raw Data, Short-Term, and Long-Term averaged data buttons (three buttons on the left) will not be displayed.

If the data contains both BroadBand and Narrowband data, three additional buttons are displayed on the left. Selecting **C** will show a Combination of Broad-Band and Narrowband data.

Graph Toolbar



The Graph toolbar controls the appearance of the graphs.

The radio buttons to the left select which graph is affected by the controls on the right.

The arrow buttons move the plotted data in the indicated directions, while the zoom buttons change the scale ranges. The two zoom buttons with the red, green, and blue lines re-scale the current sticks on the Ship Track plots.

Click the **Keep on Screen** box to keep the leading edge of the Ship Track plot always on the graph.



NOTE. There is no menu to do the Graph toolbar commands. Even if you hide the other two toolbars to make more space, you might want to keep this toolbar visible until the graphs are set up the way you like them.

Playback / Processing Tool Bar

This toolbar is available in all three modes. It controls how *VmDas* reads and/or processes ensembles.

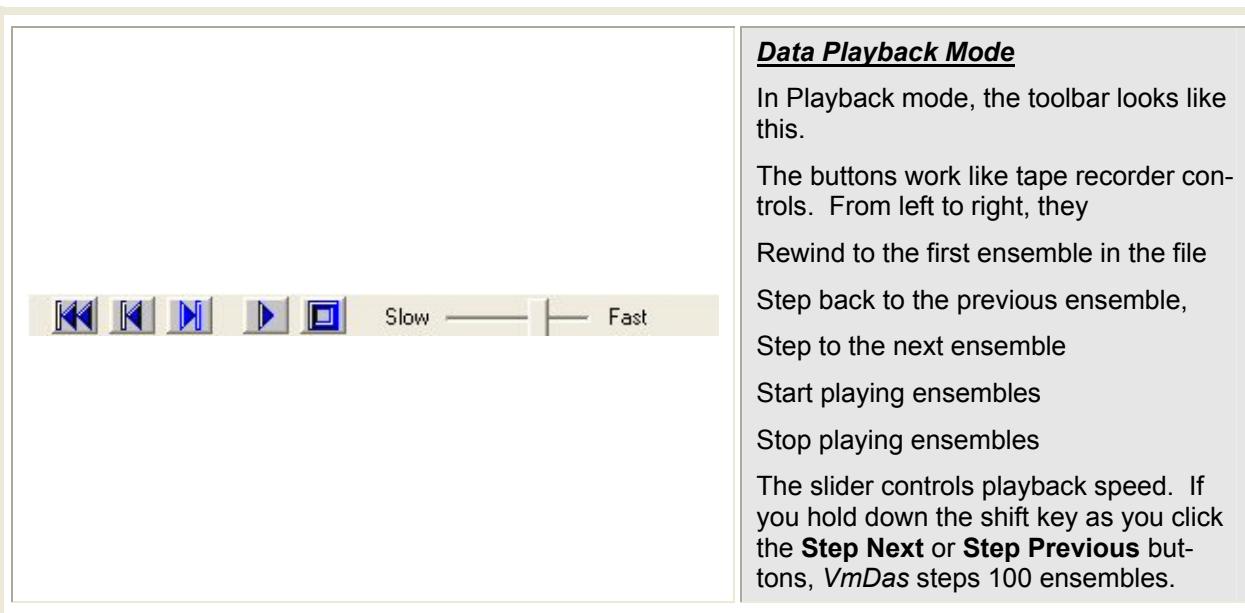


Data Collect Mode

In Collect mode, the toolbar looks like this.

The left button starts data collection.

The right button stops data collection.



Data Playback Mode

In Playback mode, the toolbar looks like this.

The buttons work like tape recorder controls. From left to right, they

Rewind to the first ensemble in the file

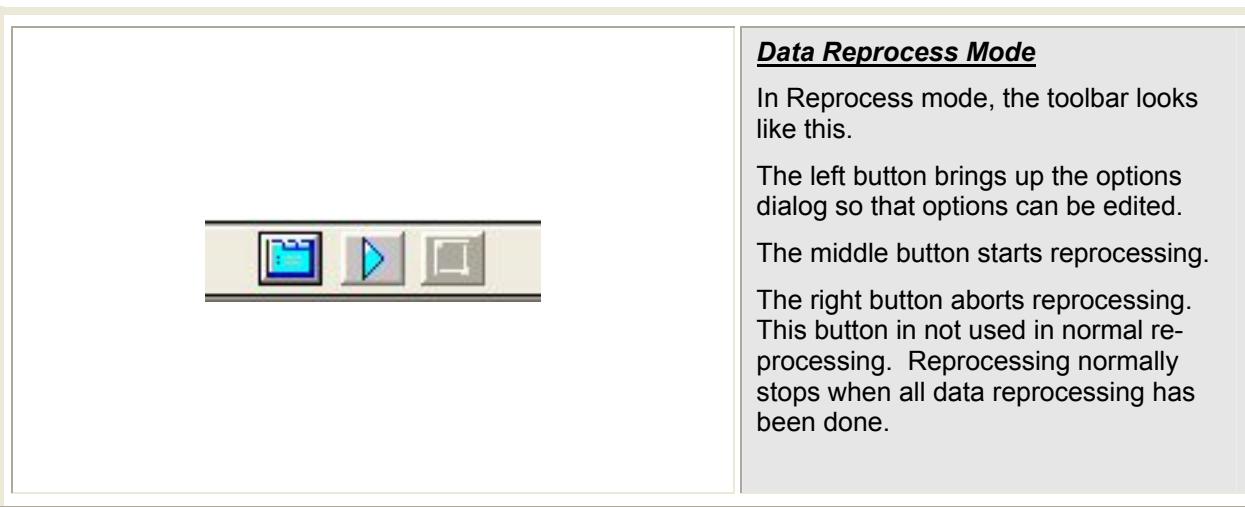
Step back to the previous ensemble,

Step to the next ensemble

Start playing ensembles

Stop playing ensembles

The slider controls playback speed. If you hold down the shift key as you click the **Step Next** or **Step Previous** buttons, *VmDas* steps 100 ensembles.



Data Reprocess Mode

In Reprocess mode, the toolbar looks like this.

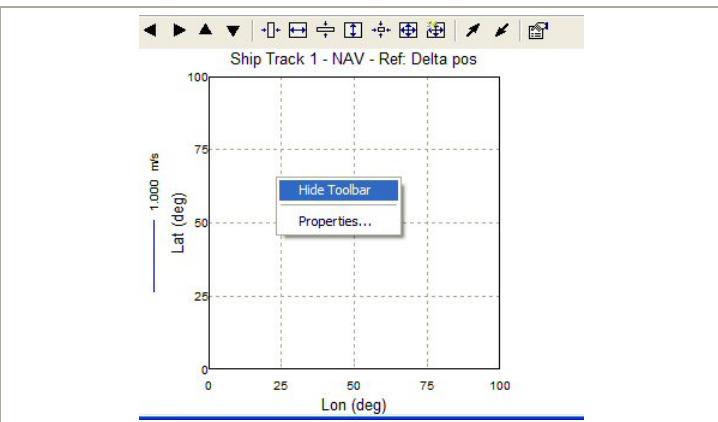
The left button brings up the options dialog so that options can be edited.

The middle button starts reprocessing.

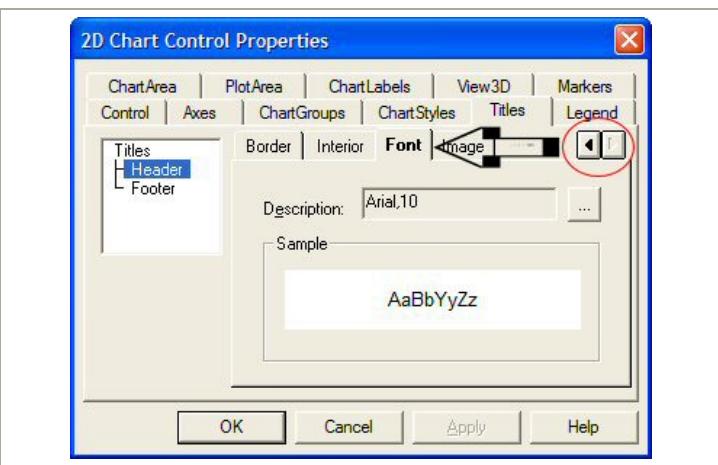
The right button aborts reprocessing.

This button is not used in normal reprocessing. Reprocessing normally stops when all data reprocessing has been done.

Font Size



Stick Ship Track Plots have a tool bar that can be turned on by right clicking on the widow and selecting **Show Toolbar**. Right click on the widow and select **Properties** to change the size of the fonts. Choose the font for labels and data.



You can change the size of the fonts in tabular plots by right clicking on the widow and selecting **Properties**. Use the arrows (circled) to locate the **Font** tab and choose the font for labels and data.

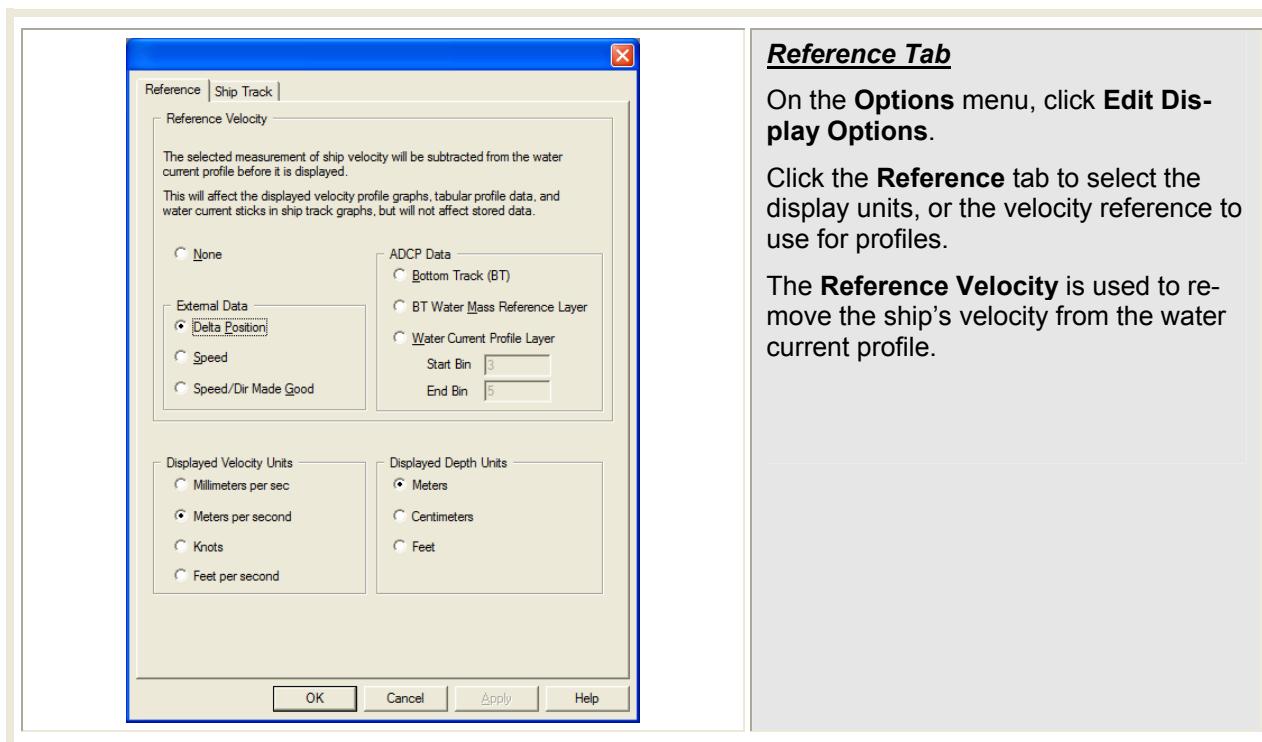
CAUTION: Do not change any other setting as this may cause unpredictable results. Use the **Graph Toolbar** (see “Toolbars,” page 38) to adjust the plot axis.

Status Bar



The Status Bar tells you what COM ports are open and their status.

Display Units and Reference

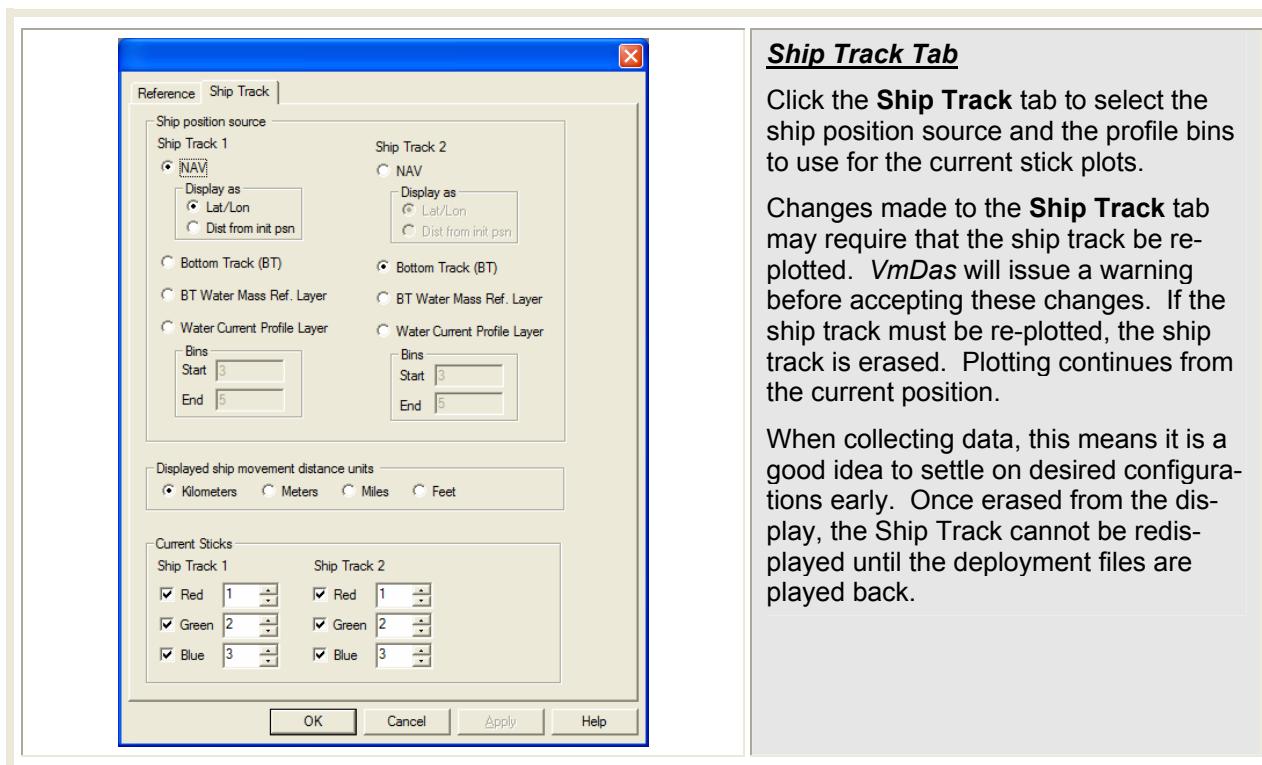


Reference Tab

On the Options menu, click **Edit Display Options**.

Click the **Reference** tab to select the display units, or the velocity reference to use for profiles.

The **Reference Velocity** is used to remove the ship's velocity from the water current profile.



Ship Track Tab

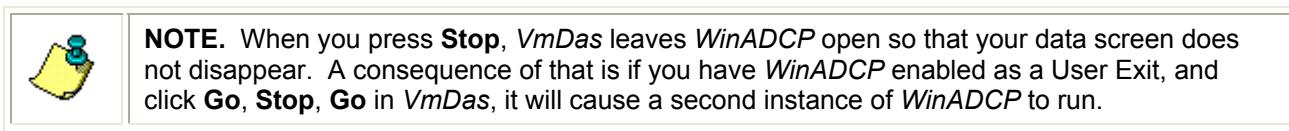
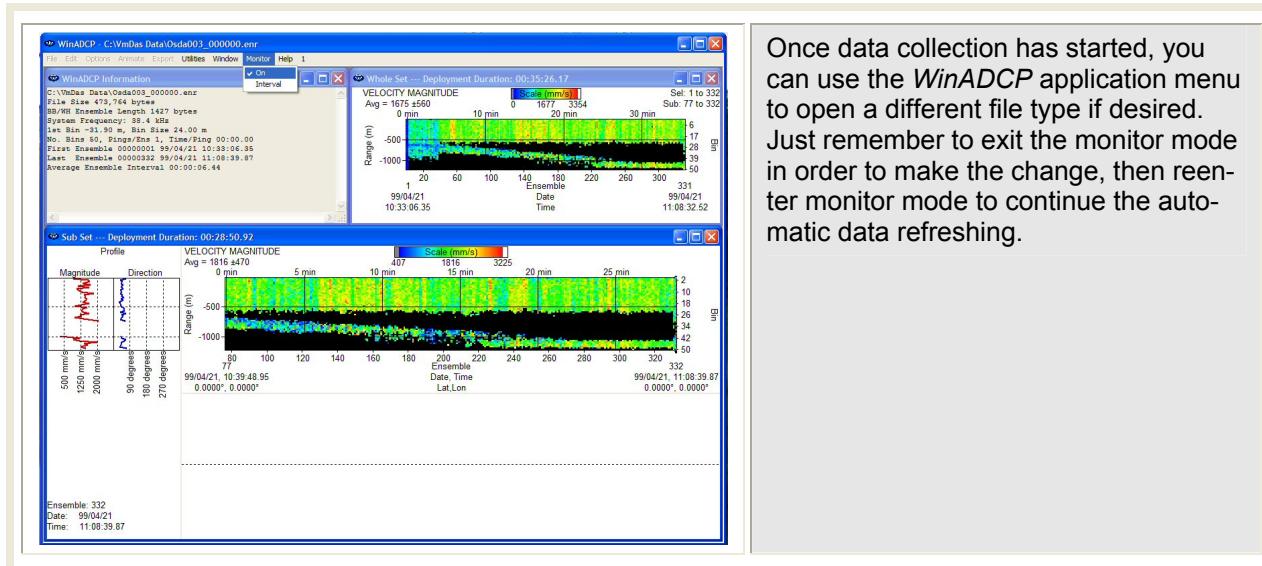
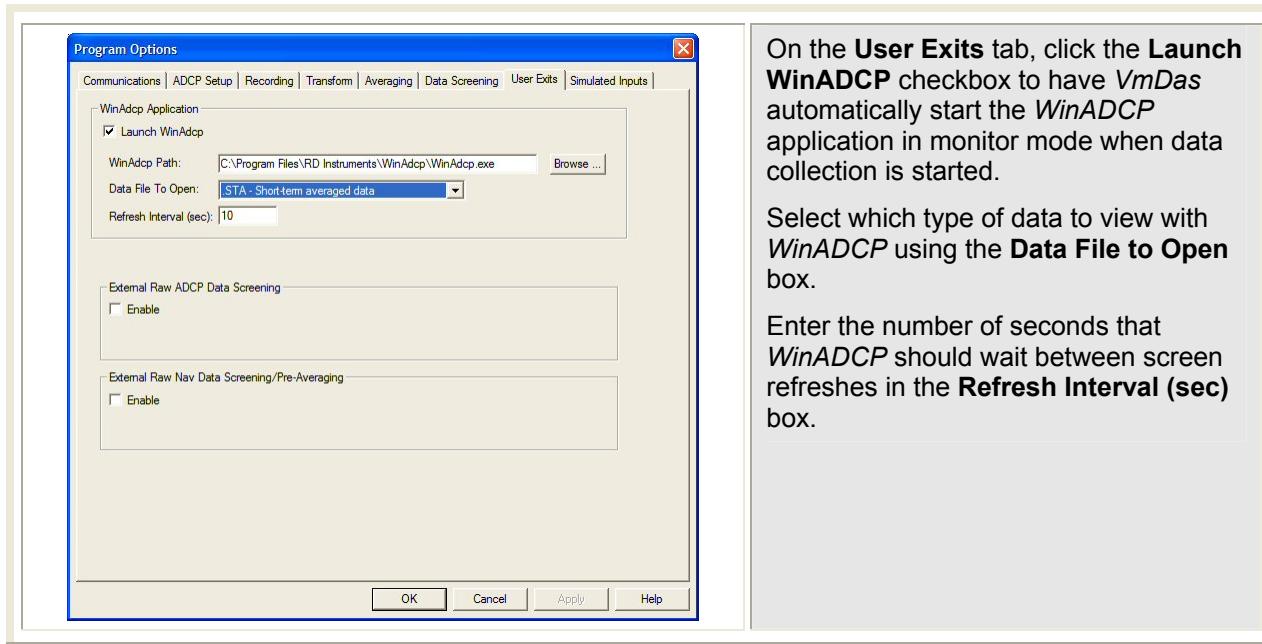
Click the **Ship Track** tab to select the ship position source and the profile bins to use for the current stick plots.

Changes made to the **Ship Track** tab may require that the ship track be re-plotted. *VmDas* will issue a warning before accepting these changes. If the ship track must be re-plotted, the ship track is erased. Plotting continues from the current position.

When collecting data, this means it is a good idea to settle on desired configurations early. Once erased from the display, the Ship Track cannot be redisplotted until the deployment files are played back.

Viewing Data with WinADCP

VmDas can automatically start the *WinADCP* application when data collection is started. When in monitor mode, *WinADCP* will periodically refresh its displays from the data recorded by *VmDas*, and will allow you to view time series and contour graphs of the data. From the *WinADCP* application menu, you can exit the monitor mode to change the *WinADCP* setup, and then reenter the monitor mode to continue the data updates. The *WinADCP* application must be installed on the computer for this option to work.



File Naming Conventions

Data files produced by *VmDas* during **data collect** mode has the following filename format:

DeployName000_000000.Ext,

Where:

- DeployName** is a user-entered name for the deployment (up to 128 characters),
- 000** is the deployment number (changes with each stop/restart),
- 000000** is the file sequence number, which is incremented when the specified maximum file size is reached, and
- Ext** is the file extension, and reflects the type of data in the file

Reprocessed files have a similar format: **DeployName000_000_000000.Ext**,

Where:

- 000** represents the reprocessing number, and gets incremented each time the same raw data is reprocessed. The other fields are the same as for the data collect mode format, and identify the raw data source that was reprocessed.

File Extensions

The file extensions have the following meaning:

- .ENR Raw ADCP data file (see your [ADCP Technical Manual](#) for the output data format).
- .LTA ADCP (plus Navigation Data) data that has been averaged using the long time period specified in the **Options, Edit Data Options, Averaging** tab.
- .STA ADCP (plus Navigation Data) data that has been averaged using the short time period specified in the **Options, Edit Data Options, Averaging** tab.
- .ENS ADCP data after having been screened for RSSI and correlation by VmDas, or adjusted by the customer via a User Exit. Also has Navigation Data records merged into the ensembles from the .NMS file.
- .ENX ADCP single-ping data (plus Navigation Data) after having been bin-mapped, transformed to Earth coordinates, and screened for error velocity, vertical velocity, and false targets. This data is ready for averaging.
- .N1R, Raw NMEA data files (text files).
- .N2R,
- .N3R
- .NMS Binary format Navigation data file after having been screened and pre-averaged.
- .VMO The option settings used for collecting the data (text file).
- .VMP The option settings used for reprocessing the data (text file).
- .ENJ ADCP raw data after adjustment by a user-exit application.
- .N1J, Raw NMEA data after being adjusted by a user-exit application.
- .N2J,
- .N3J
- .LOG ASCII file containing any errors found in NEA, ASCII Ensemble Output, or ADCP communications.

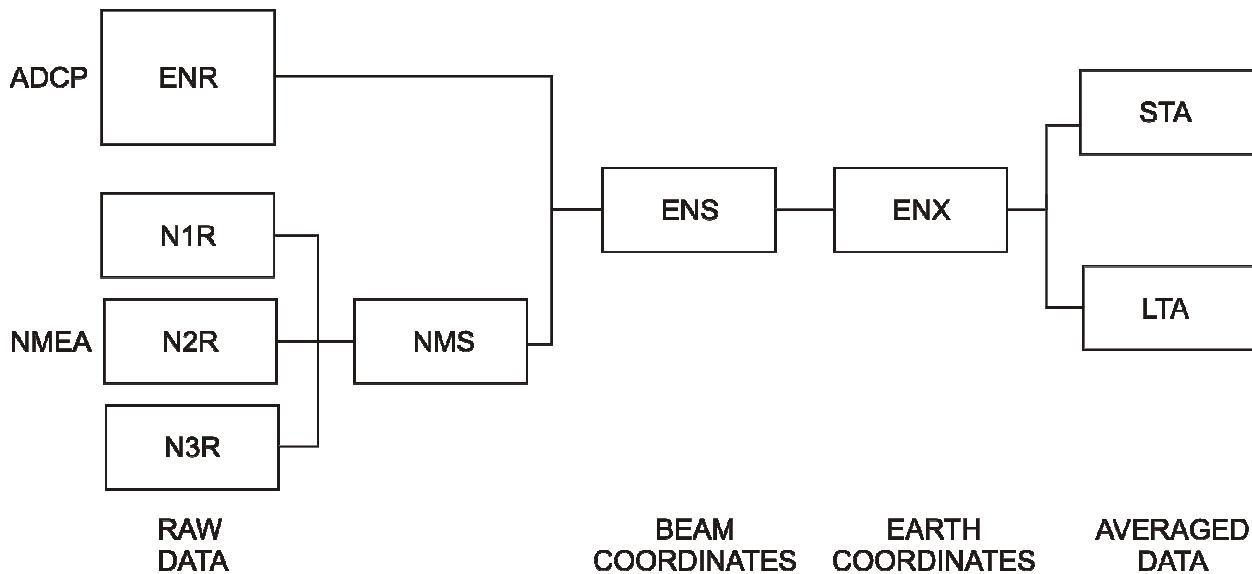


Figure 8. Most Common Data Files

Where to Find More Information

Congratulations! You have completed the Quick Start Guide.

For more detailed information, see the following sections in your ADCP's Technical Manual.

- **Installing the ADCP** – See the ADCP's Technical Manual Installation section for details instruction on installing the ADCP.
- **Testing the ADCP Installation** – See the ADCP's Technical Manual Test section for details instruction on testing the ADCP and verifying the installation of the ADCP.

For more detailed information, see the following sections in the *VmDas* User's Guide.

- **VmDas Tutorial** – Use this section to create your own Data Option files and Command files if you want to change some of the sampling parameters.
- **Command Files and ADCP Configuration** – Use this section for a description of each command and guidelines for setting these commands to acquire reliable data.
- **VmDas and NMEA Data** – *VmDas* can read in, decode, and record ensembles from an ADCP and NMEA data from some specific external devices. *VmDas* uses all of this data to create the different displays for the user.
- **Turnkey Mode** – Use the Turnkey mode to have *VmDas* automatically start and collect data with just a few clicks of the mouse.
- **VmDas Outputs** – *VmDas* can output Ensemble, Speed Log, and ASCII data out the serial port or through an Ethernet port.
- **ADCP Output Data Format and VmDas** – This section shows the format of the *VmDas* Navigation data.

NOTES

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