ATLAS
HYDROGRAPHIC

USER MANUAL

ATLAS PARASTORE-3

Version 1.1

Software Package for
ATLAS PARASOUND-2 Sub-Bottom Profiler

(Acquisition, Visualisation, Processing, Storage, Conversion, Quality Control, Replay and Printing of Data)

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Table of Contents

Change Log

Version	Changes	Authors	Date
0.9	User manual created on the basis of the product description	H. von Lom	25.11.2002
1.0	Various layout changes. Introductory note added. Minor textual corrections. All screen excerpts exchanged by new ones.	K. Huckfeldt	29.04.2003
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1.5	Various editorial changes, figures added in logging alarms and depth window section.	K. Huckfeldt	04.06.2004

1 Abbreviations

ASCII	American Standard Code for Information Interchange
ASD	ATLAS Sounding Data
ATLAS	ATLAS Hydrographic GmbH
CD	Compact Disk
DDS	Digital Data Storage
DS	Deep Sea
FFT	Fast Fourier Transformation
GB	Gigabyte
GHz	Gigahertz
GPS	Global Positioning System
HTML	Hypertext Markup Language
I/O	Input / Output
kB	Kilobyte
kHz	Kilohertz
MB	Megabyte
MD	Medium Depth
NBS	Narrow Beam Echosounder
NMEA	National Marine Electronics Association
PC	Personal Computer
PPS	Pulse Per Second
RAM	Random Access Memory
RW	Read / Write
SEG	Society of Exploration Physicists
SEG-D	Standard Format for Seismic Data
UTC	Universal Time, Coordinated (Greenwich Mean Time)
XDR	External Data Representation
XML	Extensible Markup Language
ZDA	Time and Date NMEA Telegram

2 System Overview

2.1 Introduction

The ATLAS PARASTORE-3 application software is a significantly improved and updated version of the successful ATLAS PARASTORE-2 application.

ATLAS PARASTORE-3 is specifically designed to acquire, visualise, process, store, convert, quality control, replay and print data from ATLAS PARASOUND-2 sub-bottom profilers. This includes not only the parametric data, but also the primary narrow single-beam signal (NBS signal) of the ATLAS PARASOUND-2.

It should be mentioned that ATLAS PARASTORE-3 will work also with all future versions of ATLAS PARASOUND (e.g. ATLAS PARASOUND-3).

ATLAS PARASTORE-3 provides an intuitive graphical user interface with parallel control of the data acquisition process by an online visualisation of recorded data. The recorded data is stored in a hybrid raw data format (ASDF format) containing complete sounding profiles. Optionally, the data can be converted into a standard SEG-D format on hard disk for further processing with arbitrary post-processing software.

2.2 Functional Scope of ATLAS PARASTORE-3

ATLAS PARASTORE-3 provides the following scope of functionality:

1. Acquisition of digital subbottom-profiler data provided by the ATLAS PARASOUND-2 and ATLAS PARASOUND 3 narrow beam echo sounder. The full sounding is acquired.
2. Operates on parametric signal and narrow beam signal (NBS signal) in parallel.
3. Colour coded visualisation of subbottom profiler data in arbitrary number of windows with different scales.
4. Appropriate processing algorithms: bandpass filtering, clipping, negative flank subtraction, threshold filtering.
5. Additional storage of the data in standard data formats
6. Colour coded online print
7. Information window for all system parameters combined with navigation information.
8. Graphical output of navigation and water depth
9. Network capability.
10. Replay of recorded data

2.3 Operating Environment

ATLAS PARASTORE-3 was developed to operate on a standard PC running under Microsoft Windows 2000. It hence provides the typical look and feel of this widespread graphical user interface.

2.4 Data Flow Principle

ATLAS PARASTORE-3 is an network capable client program to acquire, store, process and visualise data of an ATLAS PARASTORE System. The data is digitised by a central control unit, which serves subbottom profiler data, combined with additional external sensor data via network to one or more ATLAS PARASTORE-3 clients. System control of the ATLAS PARASTORE is achieved with ATLAS HYDROMAP CONTROL.

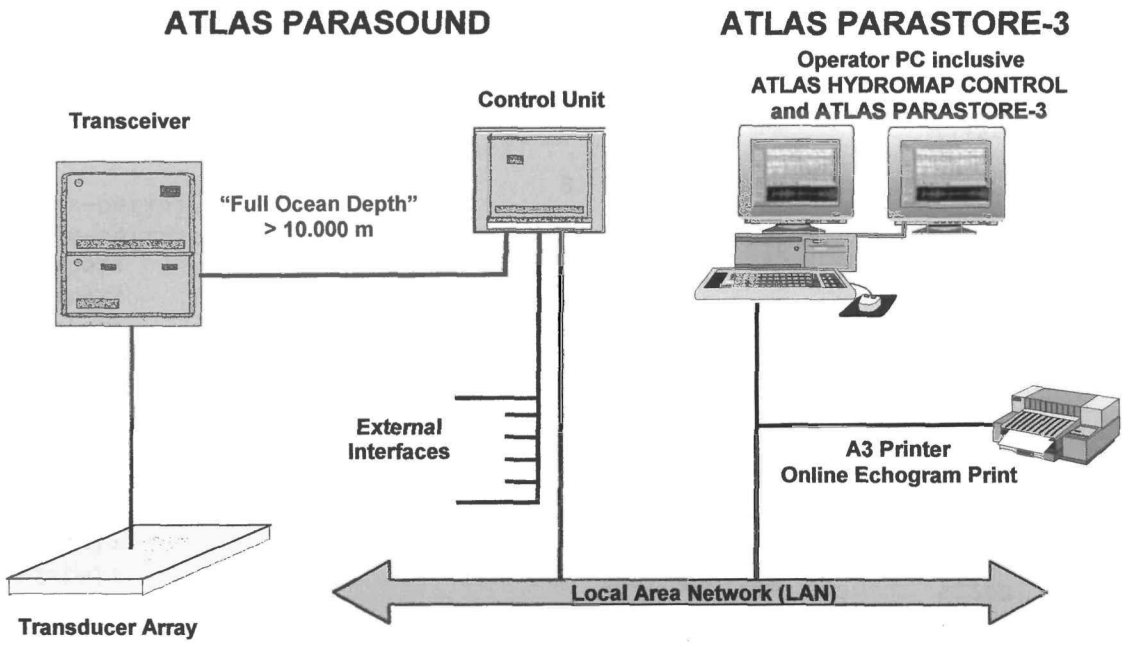

Figure 2-1: Configuration of an ATLAS PARASOUND Sub-Bottom Profiling System

2.5 Installation Remarks

For details of the installation process consult the INSTALL.TXT file that comes with the distribution.

2.6 Data Acquisition of ATLAS PARASTORE-3

ATLAS PARASTORE-3 acquires digitally sampled raw data files of an ATLAS PARASOUND sub-bottom profiler in the new ASD (ATLAS Sounding Data) data format. To prevent aliasing, the data is already low-pass filtered with an appropriate pass frequency before digitisation. Digitising takes place at the control unit (see fig. 2-2), which acts as a centralized data server. Additional external sensor data is also collected here, i.e. motion sensor data (roll, heave and pitch) and navigational data (position, course, speed).

The ATLAS PARASOUND provides two channels of data, i.e. the NBS data and the parametric data. Both channels are sampled with a rate of typically 50 kHz at a gain adjustable resolution of 16 Bit. Therefore, nearly independent of the water depth a maximum data volume of approx. 200 kB of uncompressed data per second is created.

This data is then distributed on demand via standard Ethernet network to one or more ATLAS PARASTORE-3 clients for storage, processing and visualisation on screen and / or paper.

The user may choose between the following data acquisition modes:

1. Acquire both the parametric data and the NBS data.
2. Acquire parametric data only.
3. Acquire NBS data only.
4. No data are acquired; this is relevant when only the survey depth and navigation are of interest.

Data acquisition means the transfer of digitised raw data from the control unit to the ATLAS PARASTORE-3 client. This data contains a complete sounding, starting at the time of the first emitted signal and ending after the last received echo and just before emitting the next signal. For convenience, it is easier to speak of a sounding sequence, as a ATLAS PARASOUND system supports different operation modes (PAR, NBS, NBS/PAR, PAR Pilot), which result in different sequences of emitted and received signals. A complete sounding comprises a sounding sequence. The length of the sounding sequence depends on the water depth and the preferences, set by the user with ATLAS HYDROMAP CONTROL.

After acquiring the data, i.e. transferring it to the local hard disk, the user may select, if this data shall be stored for further data backup, or only be used for visualisation and removed after a settable amount of time. Based upon the maximum possible data stream, approx. 40 GB of space are required for 3 days of *continuous* system operation. Hence, on a usual PC platform the system can operate without any need of backup for several days. For longer system operation, a parallel backup of the data with third party software is required.

2.6.1 ASD Storage Format for Echo Sounder Raw Data

The acquired ATLAS PARASOUND raw data are stored on the hard disk in the ASD raw data file format. ASD is a hybrid file format for storage of complete sounding profiles. It contains an XML-formatted ASCII header and an XDR-formatted binary section containing the sounding data. ASD raw data files are recognisable by the file extension ".asd". The file names are generated automatically and contain the date and time of file creation. In order to archive ASD files, standard Windows backup software can be applied. The ASD format specification is public and can be used for third-party software applications.

Additionally to the digitally sampled measurement data, ATLAS PARASTORE-3 stores and visualises an extensive set of auxiliary data which is needed for system control as well as for further data processing and later data interpretation. This information is provided in the XML formatted header section of the ASD files.

ATLAS PARASOUND raw data headers include the following information:

- Mounting position of the ATLAS PARASOUND transducers
- Mounting position of the motion sensor
- Parametric signal frequency and signal length
- NBS signal frequency, signal length, gain, transmission power and beam width
- *Complete motion sensor information (roll, heave, pitch) for the sounding*
- ATLAS PARASOUND operation mode
- Absolute time of sounding start
- Number of samples and sample rate
- Heave corrected delay of recording

The stored data is in any case the plain raw data, that means no processing settings in ATLAS PARASTORE-3 influence the data storage.

2.6.2 Auxiliary Data

Auxiliary data which is needed for system control as well as for further data processing and later data interpretation is also collected central at the control unit and distributed via network. It is visualized by ATLAS PARASOTORE-3 and may also be stored in standard data format (see 2.6.4) and in separate ASCII files for logging purposes.

The following auxiliary parameters are recorded:

- Position
- Course over ground
- Heading
- Speed
- Water depth as determined by ATLAS PARASOUND

Storage also includes all major system settings as there are:

- PARASOUND Depth Range
- PARASOUND Operation Mode
- PARASOUND parametric signal frequency
- PARASOUND number of parametric signal pulses (parametric signal length)
- PARASOUND TVG setting
- PARASOUND NBS signal frequency
- PARASOUND NBS signal opening angle
- PARASOUND NBS gain setting
- PARASOUND NBS signal power setting
- Data sample frequency
- Data signal length in number of samples

2.6.3 Meta Information

Meta Information may be stored for each echogram window. A meta information record contains an exact time stamp and a depth value. This data is written in plain ASCII format, one line per record. It will become useful for offline operation of the system to reconstruct the operator activity during survey operation.

2.6.4 Data Storage in Standard Format

While ASD files contain the complete sounding including the whole water column, usually only the sediment response of the signal is of interest for scientific needs. Therefore, in parallel to ASD file storage also the depth window, which is chosen by the operator for visualisation may be stored in standard echo sounder or seismic data formats. Currently, storage in the PS3-format, as well as SEG-D format is supported. PS3 is a compressed data format, closely related to the SEG-Y standard, consisting of a 16 byte/sample data record with a 240 byte data header which contains most of the auxiliary information.

PS3 had become the standard data format for digitally recorded ATLAS PARASOUND data in the last years.

2.6.5 Data Storage Reduction

To reduce the volume of the data stream at locations, where the ship is not moving, e.g. at a probing site, an ATLAS PARASTORE-3 wait time may be defined by the operator. This time value controls the rate, at which ASD data is transferred from the control unit to the ATLAS PARASTORE-3 client. A wait time of zero means acquisition of data at maximum rate.

2.7 Data Visualisation

ATLAS PARASTORE-3 is a software package written for the widespread Windows operating system. The graphical user interface conforms to the common look and feel of Windows software. Visualisation of recorded data as well as of specific system information or auxiliary data is performed in appropriate sub-windows. ATLAS PARASTORE-3 contains a set of different window types which are described in the following sections. For windows which are related to acoustic measurement data, it is possible to select whether the data source is ATLAS PARASOUND NBS data or ATLAS PARASOUND parametric data. Within each of these windows, the current visualisation and processing parameter settings are displayed.

2.7.1 Main Window

The main window provides menus to access and modify all relevant system parameters as well as to open different kinds of data visualisation windows and data information windows.

Furthermore it gives immediate information on the status of the major functional elements of ATLAS PARASTORE-3:

- Acquisition of parametric signal
- Acquisition of NBS signal
- Storage of parametric signal
- Storage of NBS signal

- Online Echogram Print
- Data Storage in standard format
- Wait time

Additionally, some overall information is given on the disk fill of local hard drives, the sounding Ids and time stamps of the most recently acquired ASD files and the current system time and the system uptime.

An activity-timer counts the seconds between two consecutive soundings. It is reset to zero each time new data is acquired, hence serving as an additional control to proper system operation.

2.7.2 Data Visualisation Windows

2.7.2.1 Echogram Window

The echogram window visualises the recorded soundings in a colour-coded display scheme. Depending on the logical display resolution the absolute maximum amplitude of a corresponding range of samples colour-coded to an adjustable colour scale. Echograms are then presented as a vertical row of pixels in the window. The vertical display resolution is controlled by the physical properties of the display and the logical vertical size of the display area, the 'canvas size'.

The echogram window typically does not show the whole sounding, but only a specific adjustable depth window, to resolve the internal seafloor structure scanned by the ATLAS PARASOUND. The depth of the depth window is controlled conveniently by pressing large up and down buttons or by entering the desired depth value directly. The vertical size of the window can also be adjusted. In normal operation it will usually reflect the penetration depth of the ATLAS PARASOUND and hence be in the order of 200 m.

Additionally to the colour coded amplitude visualisation, the maximum amplitude of each echogram is given as a blue bar below the echogram and furthermore as numerical value in the status bar of the window. Also, annotated vertical axes are drawn each time, a new depth window is selected. A horizontal axis shows distance bars, time controlled ticks and annotations.

The logical size of the canvas may exceed the size of the viewable area, restricted only by the increasing amount of computer memory used. The user may move the view area on this canvas with the help of a vertical and horizontal scrollbar. However, if the number of recorded echograms exceeds the size of the canvas, the display is shifted a selectable number of pixels to the left, removing the corresponding number of pixels at the left end of the canvas, to achieve new space for continued visualisation. Alternatively, the user may decide to wipe out the display area entirely and start again visualisation from the left side of the window.

All display parameters and the behaviour of associated processes are controlled in the tabulated dialog area to the right of the echogram window. All tabs have an Apply-Button, which has to be pressed to become changes to take effect. Accordingly the Reset-Button restores the last parameters.

All parameters are on a per window basis. It is hence possible to open several instances of echogram windows, which all operate on the same raw data set, but with different scales and/or processing parameters.

To obtain more screen size for visualisation, the tabulated dialog can be removed with a single mouse click.

Note: All visualised and also all data stored in standard data formats is heave corrected.

2.7.2.1.1 Tab Window Scale

This tab allows full control of the On Screen display of echogram data. Parameters, which may be influenced are:

- Vertical depth window size (can be set in m or ms TWT)
- Scale of the maximum amplitude section.
- Horizontal width of an echogram in pixels.
- Scale of the distance bar
- Tick interval
- Annotation interval
- Canvas size
- Scroll mode (see section 2.7.2.1)
- Scroll width

2.7.2.1.2 Tab Processing

The processing tab allows adjustment and application of various processing algorithms. These algorithms are performed on the visualised data only, that means, that no processing is applied to stored data. The following processing algorithms which are discussed in more detail in section 2.9 can be applied or modified:

- Mean value subtraction
- Band pass filtering and associated pass frequencies
- Adaptive band pass filtering
- Clipping
- Data threshold
- Negative flank suppression
- Logarithmic scale

2.7.2.1.3 Tab Online Print

This tab controls an online print, which associated with this echogram window (see section 2.8). Online Print has to be switched on and off here. The following print layout parameters can be adjusted:

- Vertical axis length
- Vertical axis overlap
- Maximum amplitude scale
- Ship's speed scale
- Horizontal axis scale
- Horizontal tick interval
- Horizontal time annotation
- Horizontal Position annotation
- Distance bar scale
- Whether an informative set of headlines shall be printed on each page
- Whether the used processing algorithms shall be annotated.

2.7.2.1.4 Tab Storage

This tab controls the storage of the visualised depth window in a standard data format. The depth is controlled by the associated screen visualisation. However, the window length may differ. The adjustable parameters are:

- The depth window length
- A resample interval to reduce storage volume
- The filename prefix. File names are generated automatically according to the current system time and can be preceded by this prefix
- A file path on the hard disk, which may be used for the data storage.
- The data format used for data storage
- The maximum file size **or** the maximum survey time in a file, whichever comes first. Keeping files smaller increases the security as the loss of data through open files is reduced in case of system failure.

This tab also controls the storage of Meta Information. Parameters here are:

- The filename prefix. . File names are generated automatically according to the current system time and can be preceded by this prefix
- The storage path

2.7.2.2 Spectrogram Window

The spectrogram window is intended for online quality control of the data. It has the same look as the echogram window and also offers the same functionality with some exceptions given below. The main difference is, that the amplitude spectrum of the data is calculated as the last processing step before data visualisation. Therefore this window is suited to show the frequency content of the acquired data.

The vertical axis length, now given in kHz, is calculated automatically corresponding to the Nyquist-frequency of the visualised source data, i.e. from 0 to 25 kHz for the standard digitisation frequency of ATLAS PARASOUND. This scale cannot be changed. To achieve a more detailed view of the spectrum the vertical canvas size can be increased accordingly.

The amplitude spectrum will be calculated only for the data in the given depth window. Consequently, the window delay and the up- and down- buttons work in the same manner as in the echogram window and change the delay of the visualised data set. The length of the window is set by the vertical axis length in the window scale tab.

The output of the spectrogram window can not be stored in a standard data format. Therefore it has no storage tab.

For the functionality of all tab settings see the identical functionality of the echogram window (2.7.2.1).

2.7.2.3 Single Trace Window

The single trace window visualizes a single echogram in a so called 'wiggle'-type representation, i.e. it shows the time-depth function of the signal as a curve. The window is closely connected to the echogram window (2.7.2.1) or to the spectrogram window (2.7.2.2) and displays the depth range of the echogram which is chosen there. Hence there can be one single trace window for each active echogram window.

The single trace window is mainly intended for signal quality control and therefore displays raw data only. It provides its own set of data processing operations, which are, however, identical to the settings of the tab processing of the echogram window (2.7.2.1.2).

2.7.2.4 Survey Status Window

The survey status window gives an overview on a multitude of different system parameters as well as additional external data. It consist of three tabs, which show different sets of system parameters.

Information in this window is updated whenever new information arrives. The corresponding time span may differ depending on the parameter, as for example navigational data usually can be updated every second whereas ATLAS PARASOUND system data is transferred in ASD files at a lower rate.

Fields, which contain no valid information are marked with "-"

2.7.2.4.1 Tab Overview

The overview tab shows a mixture of parameters, which give information on navigation as well as on some basic ATLAS PARASOUND settings. The parameters are presented in a large font:

- Navigational time
- The ship's position
- The water depth as determined by the ATLAS PARASOUND
- The water depth as determined by an arbitrary auxiliary depth sensor
- The ship's speed
- The ship's course over ground
- The current parametric signal frequency
- The current parametric signal length
- The sample frequency of the A/D converter
- The recording length of the sounding

2.7.2.4.2 Tab Survey

The survey tab shows parameters, which are mostly obtained by external sensors:

- Navigational time
- The ship's position
- The ship's speed
- The ship's course over ground
- The ship's heading
- The water depth as determined by the ATLAS PARASOUND
- The water depth as determined by an arbitrary auxiliary depth sensor
- The ship's heave at the time of the last sounding
- The ship's roll at the time of the last sounding
- The ship's pitch at the time of the last sounding

2.7.2.4.3 Tab PARASOUND

The PARASOUND tab displays various parameters reflecting the operation of the ATLAS PARASOUND system:

- The parametric signal frequency (if parametric acquisition is active)
- The parametric signal length (if parametric acquisition is active)
- The operation mode (NBS, PAR, NBS / PAR, PAR Pilot)
- The selected reference depth
- The selected system depth range
- The selected pulse train performance (moderate, optimal, minimum or maximum)
- The NBS signal frequency (if NBS acquisition is active)
- The NBS beam width (if NBS acquisition is active)
- The NBS transmission power (if NBS acquisition is active)
- The NBS reception gain (if NBS acquisition is active)
- The recording sample frequency
- The recording length
- The number of recorded samples

2.7.2.5 Track Map Window

The track map window displays the position of the ship as a continuous track plot in a cartesian coordinate system with the longitude along the x-axis and the latitude along the y-axis. The window features to main operation modes which are called true motion and manual center, respectively. In true motion mode, the origin of the coordinate system is adjusted each time, the ship's position moves outside the visual area. In manual center mode, no automatic adjustment takes place.

The map size can be adjusted in appropriate steps to cover a region of ca. 100 m^2 to 100 km^2.

2.7.2.6 Depth Map Window

The depth map window shows the water depth along the ship's track as a continuous graphical plot in a Cartesian coordinate system with the distance along the track along the x-axis and the water depth along the y-axis. The distance is calculated relative to the oldest element in the auxiliary data buffer, i.e. to the element, which is oldest at the time of window opening. The plot is re-centred automatically each time, the accumulated distance exceeds the window axis length. The x-axis and the y-axis can be adjusted in length manually.

The PARASOUND-DS depth and the HYDROSWEEP depth can be shown in parallel.

2.8 Online Print

The data visualised in an echogram window may in parallel be printed out as an colour coded online print. The depth window, which will be printed, is controlled by the screen visualisation, i.e. the window depth. However, the scale may differ. It is often convenient to select an enlarged vertical depth window to get a better overview of the surveyed structures. Additionally, the increased resolution of current printers provides much more detail.

The online print uses the same processing parameters as the associated screen visualisation and also uses the same colour coding technique. However, a different colour palette is used and additionally to the maximum echogram amplitude also the ship's course and speed is shown. At adjustable time intervals, the data can be marked with time stamps as well as geographic positions.

Online Print may be output at an arbitrary windows printer.

Note: Only one echogram window can have access to the online printer at any time. If a second echogram window asks for access on the online printer, which is already in use, the user is asked to stop online printing in the currently printing window first.

2.9 Data Processing

To increase the signal to noise ratio (S/N) and to enhance the image quality of the data visualisation, several numerical and graphical processing algorithms can be applied.

2.9.1 Subtract Mean

The mean amplitude value of the visible depth window is calculated and subtracted from each samples amplitude to remove constant offsets in the data.

2.9.2 Band Pass Filter

This is a very fast filter algorithm operating in the time domain. Lower and upper boundaries of the filter may be varied appropriately to the signal frequency. Filter flank steepness can be influenced by applying the filter several times (Filter Iteration). This filter should be applied to reduce noise.

2.9.3 Adaptive Band Pass Filter

This filter uses the same algorithm as the band pass filter. But here the width of the pass band is selected and the filter automatically centres itself on the main signal frequency. This becomes quite handy, if the signal frequency is varied for specific purposes as for example penetration or resolution studies.

2.9.4 Clip

The clip value represents a threshold amplitude which corresponds to the highest available colour value. All amplitudes above this value obtain this colour. Thus it can be used to emphasize weaker reflectors in the echogram and should be adapted carefully on the sedimentary environment.

If clipping is switched off, the echograms will be scaled to the maximum amplitude in the depth window on a per trace basis.

2.9.5 Threshold

The threshold value represents a threshold amplitude which corresponds to the lowest available colour value. All amplitudes below this value obtain this colour. Thus it can be used to remove a noisy background from the visualisation. It has to be applied carefully, as it may also remove true reflection energy.

2.9.6 Negative Flank Suppression

Negative flanks occur, wherever a pixel will obtain a colour, which is less than the colour of the pixel above. In that case, the pixel is set to the lowest colour. This algorithm enhances the optical vertical resolution on the screen, as distinct reflectors are more clearly separated from each other.

2.9.7 Logarithmic Scale

With logarithmic scale enabled the color scale is adjusted logarithmically. Thus, more colours are available for lower signal amplitudes and less colours are available for higher ones. This option can be valuable to distinguish weaker reflectors. However, true amplitudes are much harder to estimate.

2.10 Colour palettes

Predefined colour palettes are used for the colour coded visualisation of data. These palettes may e adjusted to fit specific needs or preferences. The palettes are plain ASCII files with the following record format:

```
red    green  blue    ! comment
```

Each record defines one colour. The palettes in use for the visualisation are:

Screen Visualisation:	DayScreenPal.pal
Online Print Visualisation:	OnlinePrintPal.pal

They may be modified by any kind of ASCII editor.

Note: The last four records are predefined to indicate colours for axes and annotations, maximum amplitudes, course and speed as commented in the files.

2.11 Access philosophy

ATLAS PARASTORE-3 favours the distinction between normal users and administrators. Administrator rights are required to modify data acquisition parameters, data storage parameters and online print parameters. The administrator status is **not** password protected. The provision of these two different user types within ATLAS PARASTORE-3 has the objective to prevent unintended changes of the data acquisition, data storage and online print functionality.

2.12 Logging/Alarms

ATLAS PARASTORE-3 performs extensive logging of events, which may require operator activities, as well as of several operator actions, which influence system operation, e.g. changes in data acquisition or data storage.

All logging events are shown in the logging window and optionally stored to log files. Note that system events, which often indicate operation failures are displayed in red, while user actions appear in blue.

Acoustical alarms also indicate situations, which may require immediate reaction of the operator. Different tunes are played if

- a specific time has elapsed (cyclic alarm suitable as a watchdog functionality)
- the seafloor is close to the upper or lower border of an echogram window
- the PARASOUND depth differs too much from the HYDROSWEEP depth
- the visualization is delayed relative to the acquisition
- the internal echogram buffer is full (indicating a system overload)

2.13 A note on printing

ATLAS PARASTORE-3 uses any kind of installed windows printer for printed output. Also networked printers are supported. The windows printing philosophy, however, favours so called paginated output. That means, that pages are printed not earlier than if the whole page is completed. Hence it may take a considerable amount of time until a page of the online print is actually plotted.

Also it has to be kept, that modern printers with resolutions of significantly more than 300 dpi require large amounts of memory for preparation. This may cause severe performance hazards if not considered. For best performance choose colour printers, which may be set to a resolution of 300 dpi or make sure, that enough memory is installed in your system.

2.14 Recommended Hardware Configuration

For the operation of ATLAS PARASTORE-3, the following hardware configuration is recommended:

- Ruggedised High Performance PC (e.g. Hewlett Packard or Dell)
  (currently with Pentium 4 Processor, 1.7 GHz or higher)
- 512 MB RAM
- 60 GB Hard Disk (or higher)
- CD-RW Drive for data exchange and data distribution
- DDS Drive for data archiving (DDS3 or higher)
- 100 Mbit/s 3COM Network Controller
- GeForce Nvidia Graphic Board or Matrox Graphic Board
  (resolution: 1280 x 1024 or 1600 x 1200)
- One 21" Monitor or optionally two 21" Monitors
- Soundblaster Sound Card (if the PC Motherboard does not have a Sound Chip)
- 2 Active Loud Speakers
- Keyboard, Mouse
- Operating System Windows NT 2000 (or higher)
- CD-RW Burning Software
- DDS Archiving Software

3 Operation Procedures

The following sections are intended to serve as rough guideline to typical system operation and represent in a simplified manner a typical surveying application of ATLAS PARASTORE-3. They deal with the initial system startup, a standard survey environment and the system usage as an unattended recording system.

3.1 System Start-up

ATLAS PARASTORE-3 is started by simply double-clicking the ATLAS PARASTORE-3 icon on the desktop or by selecting the appropriate entry in the windows start menu.

ATLAS PARASTORE-3 will then display immediately the main window and try to contact two windows services, which serve as the network interface to the control unit. It then requests parametric data acquisition. While the program waits for the acknowledgement of the data delivery, the colour of the parametric data acquisition checkbox in the main window is set to yellow, indicating that a request has been made, but is not yet confirmed.

If the yellow turns to green the confirmation was received and the system is fully functional. ASD data is already transferred from the control unit to the local hard drive in the background.

The initial decision has to be made, if the ASD data shall persist on the local hard disk for later backup or if all storage, if any, will be in a standard format. If changes to the default are necessary, the next task is, to switch into administrator status:

- Open the 'Switch Account' Dialog in the 'Settings' menu.
- Select the 'Administrator' radio button
- Close this dialog
- Open the 'Acquisition Control' dialog in the 'Settings' menu.
- Change the settings of the data acquisition accordingly: Buffered mode, if ASD data shall e non-persistent
- Press 'OK'
- Switch Account back to normal user again.

3.2 Online Operation Tasks

After successful start of the system as described above, the main window should be moved in a corner of the screen, where it is not hidden by other windows, as it allows access to all sub-windows and also shows the state of the major system components as there are the acquisition of parametric and NBS signal, the raw data storage state (as set in the 'Acquisition Control' dialog described above), if the online printer is active and if data is stored somewhere in a standard format.

Control the correct acquisition of raw data by checking the activity timer. This timer should be reset to zero periodically, indicating the arrival of a new sounding.

Note: ATLAS PARASTORE-3 currently not checks, if the requested type of data is recorded at the control unit, i.e. if the ATLAS PARASOUND is configured to produce this data. Parametric data will not be available, if the system is operated in NBS mode.

Enter overall information on the survey in the 'General Survey' dialog.

Open the 'Survey Status' window and check, whether navigation data arrives and is correct and also check the relevant system parameters in the 'PARASOUND' tab. Move this dialog below the main window, to gain enough free screen space to open an echogram window. Switch the 'Survey Status' dialog back to the 'Overview' tab.

Open an echogram window (Parametric or NBS, depending on the operation mode). Set the initial delay just some ten meters above the detected water depth, which you can determine in the 'Survey Status' dialog and press 'Apply'. A new vertical axis will be drawn, reflecting the selected water depth and depth window length and the first echograms will appear in the display window.

Switch to the 'Processing' tab and adjust the filter values appropriately to the signal frequency. For a typical parametric subbottom profiler frequency of 4 kHz, a setting of 2 – 6 kHz is a good start. Adjust the clip value to emphasize the seafloor reflector and additional buried reflectors as convenient. Adjust other processing options as needed. Press 'Apply' after each parameter change to make the changes take effect.

Switch to the 'Online Print' tab and set the print scales as needed. Mark the 'Online Print' check button. A standard windows printer setup dialog will show up which allows the selection of an installed printer. Acknowledge your selection and then press the 'Apply' button again in the echogram window. The printer spooler will show an new job, which is slowly increasing in size.

Note: Online print can only be operated with administrator status enabled.

Switch to the 'Storage' tab. As soon, as you activate the 'Storage' check button, the selected depth window will be stored in PS3 formatted files on the selected drive. If ASD data will be stored for backup, it is recommended to also enable the Meta Information Storage, as this will allow a later easier restoring of the displayed depth window from the raw ASD data.

After all settings are satisfactory, remove the settings tabs by clicking the '<<' button to enlarge the visible echogram screen.

Continuously adjust the depth of the visible depth window with the 'Up' and 'Down' buttons on the right side of the window to the seafloor topography. This is the usual survey operation.

Note: It is possible to zoom into or out of the currently visualised depth window. This will not affect the storage of the data, as this is controlled only by the window depth. However, it is recommended to keep the main echogram window at constant scale parameters and to simply open a second temporarily echogram window for short term zoom operations.

Important: Keep an eye on the disk fill gauge in the main window and if required start backup of the stored data to free up disk space again. If the disks are full ATLAS PARASTORE-3 will probably stop all data acquisition as no more ASD files can be transferred from the control unit.

3.3 Unattended operation

Unattended operation can be useful, if the ATLAS PARASTORE-3 is only used for raw data acquisition, for example in a secondary backup system.

After successful start of the system as described above, the main window should be moved in a corner of the screen, where it is not hidden by other windows, as it allows access to all sub-windows and also shows the state of the major system components as there are the acquisition of parametric and NBS signal, the raw data storage state (as set in the 'Acquisition Control' dialog described above), if the online printer is active and if data is stored somewhere in a standard format.

Now:

Open the 'Switch Account' Dialog in the 'Settings' menu.

Select the 'Administrator' radio button

Close this dialog

Check the 'Parametric Storage' check box and / or the 'NBS Storage' check box in the main window as needed. Both fields will then change to green.

Control the correct acquisition of raw data by checking the activity timer. This timer should be reset to zero periodically, indicating the arrival of a new sounding and the sounding Ids should increase.

Three times per day check the disk fill gauge and perform data backup operation if necessary.

Important: If the disks are full ATLAS PARASTORE-3 will probably stop all data acquisition as no more ASD files can be transferred from the control unit.

4 Window Based Description

4.1 Window Element Types

In the following sections, you find descriptions of the characteristics of the window element types applied within ATLAS PARASTORE-3

4.1.1 Active Elements

Buttons:

Action Button:

A *mouse click initiates an action.*

Navigation Button:

A *mouse click opens a window that allows further input or selection.* Typically, three dots behind the name indicate that the button is a navigation button as opposed to an action button.

Radio Button:

A mouse click selects exactly one of several available radio buttons.

Check Buttons:

A mouse click selects one or more of available check buttons.

Data Input Fields:

Text Input Field:

A *text input field is a field that shows a currently valid textual information and allows* the *input* of an arbitrary new text. The length of the text field might be restricted. If there is a restriction it is shown by a number in brackets following the type name (e.g. "Text input (16)") .

Time Input Field:

A time input field is a field that shows a currently valid time and allows the *input* of a new time in the form [H|HH]:[M|MM].[S|SS].

Date Input Field:

A date input field is a field that shows a currently valid date and allows the *input* of a new date in the form [D|DD].[M|MM].[YY|YYYY] (e.g. 1.1.99, 01.1.1999, 01.01.00).

Numeric Input Field:

A numeric input field is a field that shows a currently valid numeric value and allows the input a new numeric value.

Menus:

Option Menu:

An option menu shows the currently valid option and allows the selection of a new option from a limited number of items.

Lists:

Selection List:

A selection list includes a list of items. An item is selected by clicking on it. Double-clicking usually selects the item and carries out the action usually initiated by OK.

4.1.2 Passive Elements

Data Output Fields:

A data output field is a field that that shows a currently valid textual information. The textual information can be an arbitrary text, a date, a time or a numeric value. A data output field cannot be edited but the content is available for the Motif cut and paste facility.

Views:

Function View:

A function view is a graphical output window containing axes with labels and tick marks and a function graph. Clicking in with the mouse pointer in a function view opens a small window that shows the current cursor position within the shown co-ordinate system.

Position View

A position view is a graphical output window for the presentation of tracks and areas. Clicking in with the mouse pointer in a function view opens a small window that shows the current cursor position within the shown co-ordinate system.

4.2 Main Window

Path:

- Main

Purpose/Description:

The main application window of ATLAS PARASTORE-3 shows the state of the major system components as there are the acquisition of parametric and NBS signal, the raw data storage state, if the online printer is active and if data is stored in a standard format. It also provides information on the overall disk fill, whether data is transferred from the control unit and on the system uptime.

The menu of the main window provides access to the entire functionality of ATLAS PARASTORE 3.

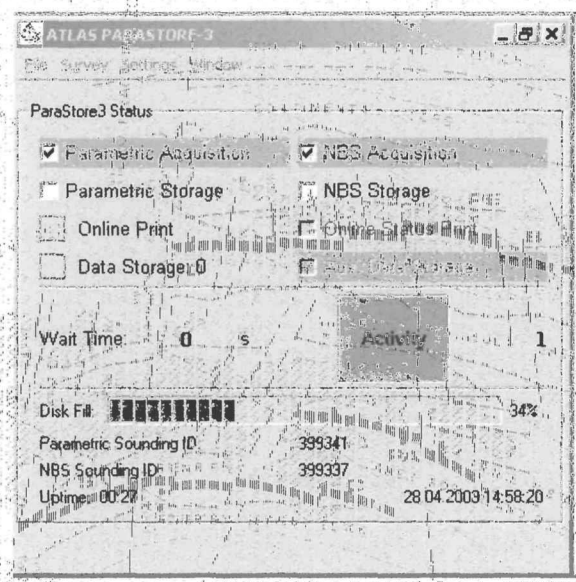

Figure 4-1: The main window of ATLAS PARASTORE-3

Window Elements:

Table 4-1: Window Elements within the Main Window

Element	Purpose/Description	Type
Parametric Acquisition	Activates / deactivates the acquisition of parametric signal. Only available in administrator mode.	Check button
NBS Acquisition	Activates /deactivates the acquisition of NBS signals. Only available in administrator mode.	Check button
Parametric Storage	Activates / deactivates the persistent storage of acquired parametric signal data. Only available in administrator mode.	Check button
NBS Storage	Activates / deactivates the persistent storage of acquired NBS signal data. Only available in administrator mode.	Check button
Online Status Print	Not yet implemented.	Check button
Auxiliary Data Storage	Not yet implemented.	Check button
Online Print	Indicates if the an online print of the acquired soundings is	Display

	activated in one echogram window.	
Data Storage	Indicates the number of Echograms with an active data storage in standard format.	Display
Activity	Activity Timer. The timer reset indicates the acquisition of a new ASD file.	Display
Wait Time	Displays the specified minimum wait time between two soundings.	Display
Disk Fill	Indicates the filling status of all local hard disks in %.	Progress Bar
Parametric Sounding ID	Shows the ID of the last acquired parametric sounding.	Display
NBS Sounding ID	Shows the ID of the last acquired NBS sounding.	Display
Uptime	Time since application start in hours.	Display
System time	Current system date and time	Display
Log output	Shows time stamped lines of system events and major user actions	Display

4.2.1 Main Menu Bar

4.2.1.1 File Menu

Path:

- Main / File

Purpose/Description:

Additionally to the program exit the file menu offers basic session management as loading and saving of parameter sets.

Figure 4-2: File Menu

Menu Items:

Table 4-2: Items of the File Menu

Menu Item	Description
Load Parameter Set ...	Opens a standard windows 'load file' dialog. Allows import of a selectable XML formatted configuration file, which sets all parameters of the current session. This allows full restore of earlier survey sessions including opening and initialising visualisation windows.
Save Parameter Set As ...	Opens a standard windows 'save file' dialog. Allows export of a selectable XML formatted configuration file, which contains all parameters of the current session including the status of all open visualisation windows.
Exit	Exits ATLAS PARASTORE-3 and closes the current session.

4.2.1.2 Survey Menu

Path:

- *Main / Survey*

Purpose/Description:

The Survey Menu provides access to the echogram windows which are intended to visualise the acquired soundings, to the 'General Survey Information' dialog and to the 'Survey Status' window

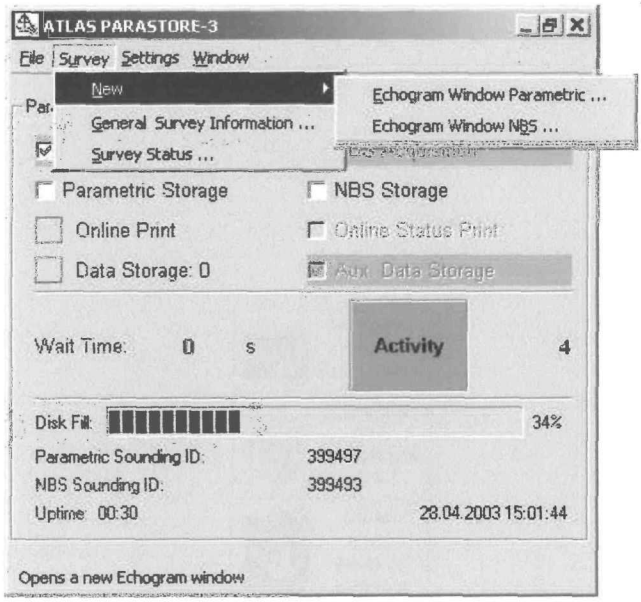

Figure 4-3:Survey Menu

Menu Items:

Table 4-3: Items of the Survey Menu

Menu Item	Description
New / Echogram PAR ...	Opens an echogram window for visualisation of the parametric signal..
New / Echogram NBS ...	Opens an Echogram window for visualisation of the NBS signal.
General Survey Information ...	Opens the 'general survey information' dialog to enter overall survey information (cruise, ship, study region and operator).
Survey Status ...	Opens the 'Survey Status' window which displays ATLAS PARASOUND status information, navigation and motion data.

4.2.1.3 Settings Menu

Path:

- Main / Settings

Purpose/Description:

The Settings Menu offers access to the 'Acquisition Control' dialog and the 'Switch Account' dialog

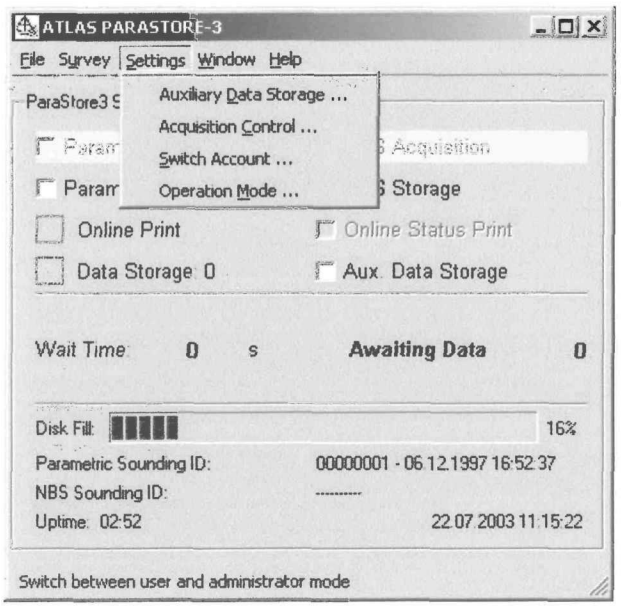

Figure 4-4: Settings Menu

Menu Items:

Table 4-4: Items of the Settings Menu

Menu Item	Description
Auxiliary Data Storage ...	Opens the 'Auxiliary Data Storage' dialog for the configuration of the auxiliary data storage time interval.
Acquisition Control ...	Opens the 'Acquisition Control' dialog for the configuration of the online raw data acquisition and storage.
Logging / Alarms ...	Opens the 'Logging / Alarms' dialog for the configuration of log message handling and acoustical alarms.
Switch Account ...	Opens the 'Switch Account' dialog for the selection of normal user mode or administrator mode.
Operation Mode ...	Opens the 'Operation Mode' dialog for switching between online and offline operation and for the configuration and control of the offline operation.

4.2.1.4 Window Menu

Path:

- Main / Window

Purpose/Description:

The Window Menu shows a list of the currently opened data visualisation windows.

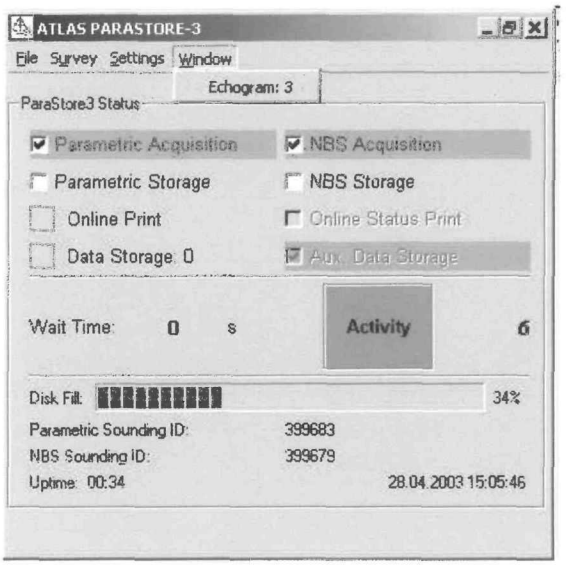

Figure 4-5: Window Menu

4.2.2 General Survey Information Dialog

Path:

- Main / Survey / General Survey Information

Purpose/Description:

The General Survey Information Window offers the possibility to define short identification strings that identify and characterise a survey. The information will be added to the Online Print Headers.

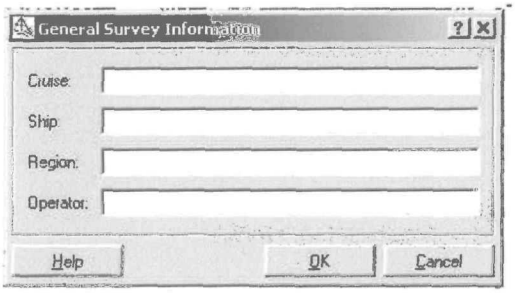

Figure 4-6: General Survey Information

Window Elements:

Table 4-5: Window Elements within the General Survey Information Window

Element	Purpose/Description	Type
Cruise	Cruise identification	Text input
Ship	Name of the vessel	Text input
Region	Study area	Text input
Operator	Name of the cruise operator	Text input

4.2.3 Survey Status Window

Path:

- Main / Survey / Survey Status

Purpose/Description:

The survey status window gives an overview on a multitude of different system parameters as well as additional external data. It consist of three register cards, which show different sets of system parameters.

Information in this window is updated whenever new information arrives. The corresponding time span may differ depending on the parameter, as for example navigational data usually can be updated every second whereas ATLAS PARASOUND system data is transferred in ASD files at a lower rate.

Fields, which contain no valid information are marked with "-".

The Survey Status Window is read only.

4.2.3.1 Register Card: Overview

Path:

- Main / Survey / Survey Status / Overview

Purpose/Description:

The Overview Register Card combines relevant PARASOUND-2 system parameters and values of the Survey Status Window, which are important to control the seismic survey, within one view. The large font layout is intended to meet the requirements of a watch keeping situation.

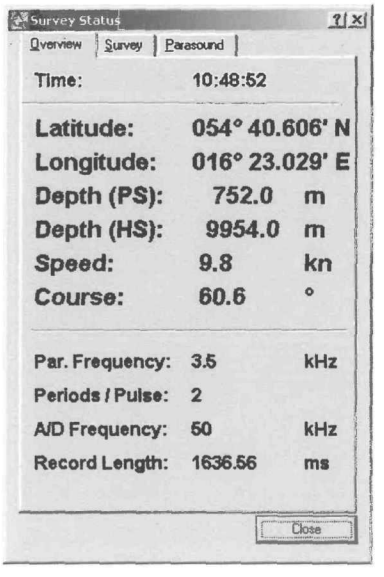

Figure 4-7: Survey Status Window / Overview

4.2.3.2 Register Card: Survey

Path:

- Main / Survey / Survey Status / Survey

Purpose/Description:

On-line display of navigation, depth and motion data acquired by the ATLAS PARASOUND-2 system.

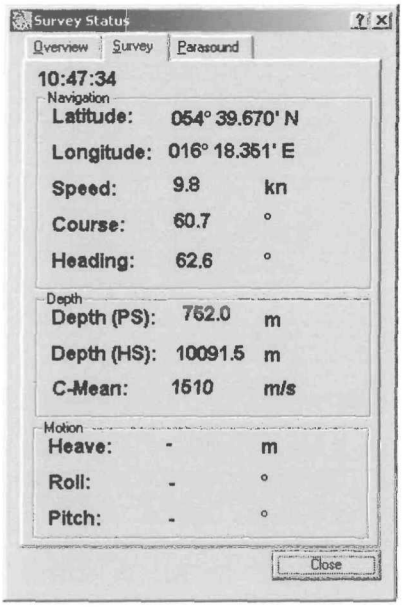

Figure 4-8: Survey Status Window / Survey

4.2.3.3 Register Card: PARASOUND

Path

- Main / Survey / Survey Status / Survey

Purpose/Description:

Display of status parameters for parametric and NBS signal acquisition of ATLAS PARASOUND-2.

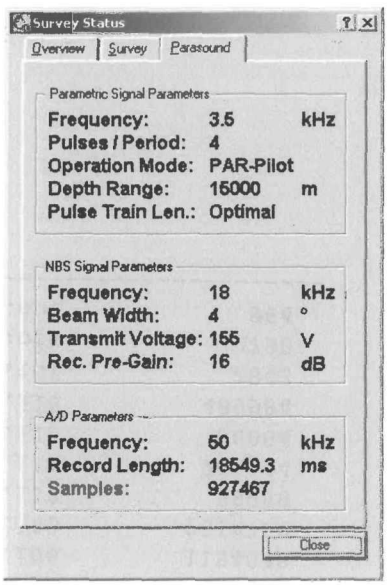

Figure 4-9: Survey Status Window / PARASOUND

4.2.4 Auxiliary Data Storage Dialog

Path:

- Main / Settings / Auxiliary Data Storage Dialog

Purpose/Description:

The Auxiliary Data Storage dialog controls the storage time interval of the auxiliary data parameters as well as a storage location for the resulting ASCII files (see 2.6.2 for list of stored parameters).

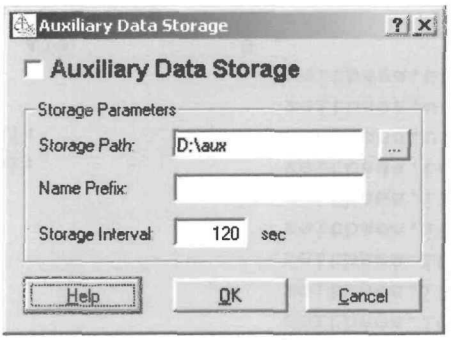

Figure 4-10: Auxiliary Data Storage Window

Window Elements:

Table 4-6: Window Elements within the Auxiliary Data Storage Window

Element	Purpose/Description	Type
Auxiliary Data Storage	Activates / Deactivates the storage of auxiliary data to ASCII files.	Check Button
Storage Path	Defines the storage path for the auxiliary data files. There will be created one file for each calendar day of recording.	Text Input
Name Prefix	Defines a prefix text, which may be set in front of the file name. Each filenames is automatically generated to the form: prefixYYYYMMDD.nav, where YYYY stands for the year, MM for the month and DD for the day.	Text Input
Storage Interval	Defines the storage interval in seconds. One set of auxiliary data parameters is written to one line of the output ASCII file each storage interval seconds.	Integer Input

4.2.5 Acquisition Control Dialog

Path:

- Main / Settings / Acquisition Control Dialog

Purpose/Description:

The Acquisition Control Dialog controls the data acquisition process. Acquisition of parametric and NBS signal can be switched on/off and a minimum wait time between two consecutive data transfers can be defined.

The raw data storage is active, when the system is not in buffered mode.

Buffered mode means, that the oldest transferred ASD files are automatically removed if the summed size of all ASD files exceeds the specified amount of data on the hard disks.

Additionally the size of the internal buffer for auxiliary data is configured.

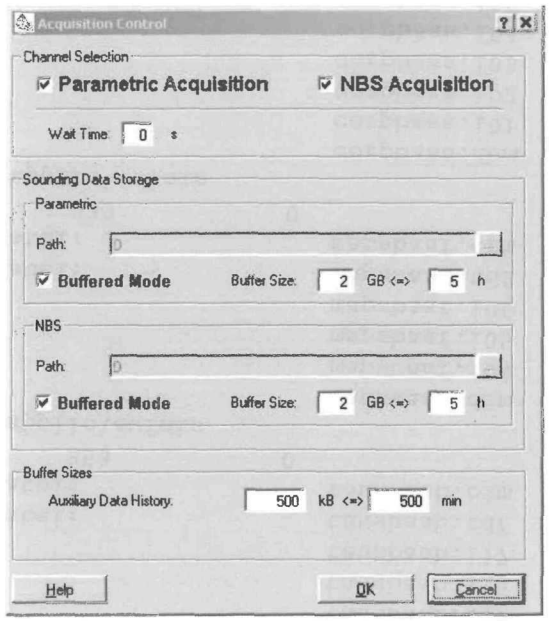

Figure 4-11: Acquisition Control Window

Window Elements:

Table 4-7: Window Elements within the Acquisition Control Window

Element	Purpose/Description	Type
Parametric Acquisition	Activates / Deactivates the acquisition of the parametric signal. Equivalent to main menu Parametric Acquisition	Check Button
NBS Acquisition	Activates / Deactivates the acquisition of the NBS signal. Equivalent to main menu NBS Acquisition	Check Button
Wait Time	Minimum time delay between 2 soundings in seconds. If the wait time is zero, all recorded data is acquired	Integer Input

Element	Purpose/Description	Type
Sounding Data Storage / Parametric / Buffered Mode	Activates / Deactivates the buffered handling of raw parametric ASD data. When in buffered mode the oldest transferred ASD files are automatically removed if the summed size of all ASD files exceeds the specified Buffer Size on the hard disks. Inverse equivalent to Main Menu Parametric Storage. If Buffered Mode is switched off, the operator has to take care to ensure sufficient hard disk space by performing appropriate backup tasks.	Check Button
Sounding Data Storage / Parametric / Buffer Size	Defines the size of the buffer for parametric ASD data in GB. The buffer is held on hard disk.	Integer Input
Sounding Data Storage / Parametric / Path	Shows the storage location for parametric signal data.	Text Input
Sounding Data Storage / NBS / Buffered Mode	Activates / Deactivates the buffered handling of raw NBS ASD data. When in buffered mode the oldest transferred ASD files are automatically removed if the summed size of all ASD files exceeds the specified Buffer Size on the hard disks. Inverse equivalent to Main Menu NBS Storage. If Buffered Mode is switched off, the operator has to take care to ensure sufficient hard disk space by performing appropriate backup tasks.	Check Button
Sounding Data Storage / NBS/ Buffer Size	Defines the size of the buffer for NBS ASD data in GB. The buffer is held on hard disk.	Integer Input
Sounding Data Storage / NBS/ Path	Shows the storage location for NBS signal data.	Text Input
Buffer Sizes / Auxiliary Data History	Defines the size of the internal buffer for auxiliary data in KB. The buffer is held in computer memory.	Integer Input

4.2.6 Logging / Alarms Dialog

Path:

- Main / Settings / Logging/Alarms Dialog

Purpose/Description:

The Logging/Alarms Dialog controls the log functionality of ATLAS Parastore-3 and toggles all available acoustical alarms.

The system emits warning and information events if states are detected which may indicate malfunction and which may require operator reaction or if the operator performs actions, which immediately influence data acquisition. All warnings and informations are displayed as a line of text in the main window log output. Red lines indicate warnings while blue lines indicate informations. Each line has the following form:

W/I-*nnn* informational text.

where W stands for warning or I stands for information, *nnn* is a unique identification number and the text gives a short description of the event.

Additionally, warnings create a pop-up dialog with the same line of text. **Note** that these pop-up dialogs must be acknowledged by the operator to disappear, but **note** also, that the problem, which caused the warning, must also be solved before acknowledging. Otherwise the dialog will reappear quickly. Each warning creates only one dialog, even if the cause is triggered again and again (e.g. for a timeout warning). However, several different warnings may appear in parallel which will create a corresponding number of dialogs.

Warnings and informations are optionally logged to a log file on disk. These files have the extension .log and the filenames have the form ddmmyyyy.log

Acoustical alarms also are implemented for several system states which shall help the operator to avoid typical operational errors. See below for details.

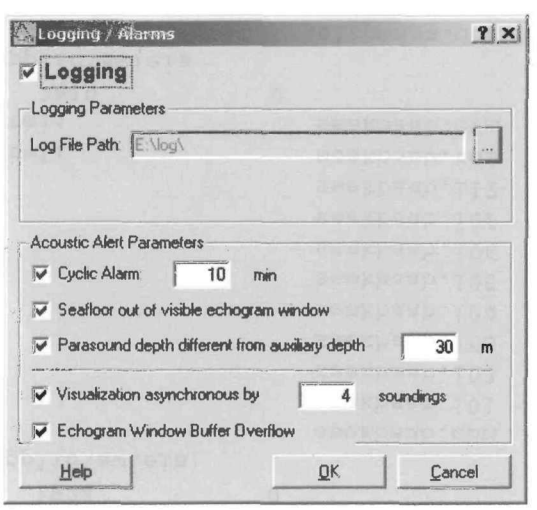

Figure 4-12: Logging / Alarms Control Window

Window Elements:

Table 4-8: Window Elements within the Logging / Alarm Control Window

Element	Purpose/Description	Type
Logging	Activates / Deactivates the logging of system warnings and informations. Pop-up dialogs cannot be disabled to ensure proper system functionality.	Check Button
Log File Path	Shows the current output path for log files	Text Display / Tool Button
Cyclic Alarm	Activates / Deactivates the sounding of an alarm tune at the specified time interval. This alarm is intended as a timer for a manual protocoll interval.	Check Button
Cyclic Alarm Interval	Time interval for the cyclic alarm in minutes	Text Input
Seafloor Out Of Visible Echogram Window	*Activates / Deactivates the sounding of an alarm tune if the* seafloor is close to the upper or lower border of an open echogram window. It indicates that the operator has to move the window with its up and down buttons	*Check Button*
PARASOUND Depth Different from Auxiliary Depth	Activates / Deactivates the sounding of an alarm tune if the PARASOUND depth differs from the Auxiliary depth by the given amount. This alarm indicates probably problems of water depth detection in one of the two systems which may require operator interaction.	Check Button
PARASOUND Depth Different from Auxiliary Depth Amount	The amount of allowed depth difference between PARASOUND depth and auxiliary depth in meters	Text Input
Visualisation Asynchronous *nnn* soundings	Activates / Deactivates the sounding of an alarm tune if the soundings displayed in the echogram or spectrogram windows are much older than the currently acquired *soundings. This alarm therefore may indicate a beginning* overload of the system which is typically caused by too many open visualisation windows.	Check Button
Visualisation Asynchronous *nnn* Soundings	Number of soundings between visualisation and acquisition which is allowed before the corresponding alarm tune is played.	Text Input
Echogram Window Buffer Overflow	Activates / Deactivates the sounding of an alarm tune if the internal echogram buffer overflows. This alarm indicates a major performance problem which is typically caused by too many open visualisation windows. Note that no data is lost but the visualisation is delayed significantly.	Check Button

4.2.7 Switch Account Dialog

Path:

- Main / Settings / Switch Account Dialog

Purpose/Description:

The 'Switch Account' dialog allows to change the user status between administrator and normal user. Administrator status is required to access system critical parameters as data acquisition, storage or online print.

In Normal User mode the system is therefore protected against unintended modifications of critical parameters.

The administrator is not password protected.

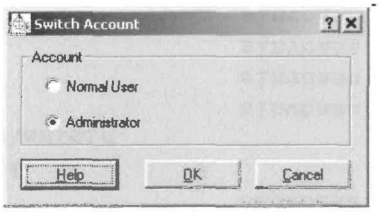

Figure 4-13: Switch Account Window

Window Elements:

Table 4-9: Window Elements within the Switch Account dialog

Element	Purpose/Description	Type
Normal User	Activates the "Normal User" mode with limited rights concerning parameter changes.	Radio Button
Administrator	Activates the "Administrator" mode with full rights concerning parameter changes.	Radio Button

4.2.8 Operation Mode Dialog

Path:

- Main / Settings / Operation Mode Dialog

Purpose/Description:

The 'Operation Mode' dialog allows to switch the system between online and offline operation. In online operation the system processes and visualizes the data received from the control unit. This is the usual operating mode. In offline mode the system allows a replay of data which was recorded at earlier times. The offline operation provides full system functionality, i.e. all visualisation windows behave and work the same as in online operation mode (including all processing, visualisation, storage and printing capabilities), except that the data source is different.

Note, that recording of ASD-data from the control unit may take place in parallel as will be indicated in the main window. However, it is not possible to display online and offline data in parallel.

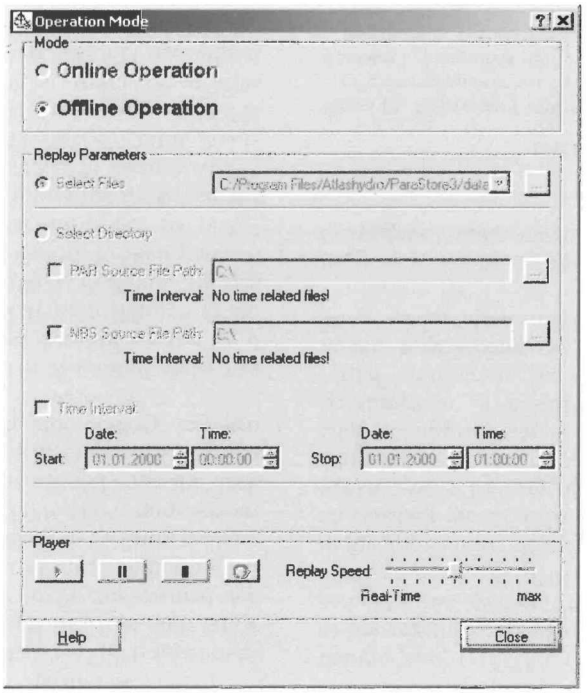

Figure 4-14: Operation Mode Window

Window Elements:

Table 4-10: Window Elements within the Operation Mode dialog

Element	Purpose/Description	Type
Online Operation	Activates Online Operation Mode. All data visualisation windows must be closed before switching will be allowed.	Radio Button
Offline Operation	Activates Offline Operation Mode. All data visualisation windows must be closed before switching will be allowed.	Radio Button
Replay Parameters / Select Files	Activates individual selection of files to be replayed. Use the corresponding tool button to open a standard file selection dialog and mark the desired files directly. In this mode, parametric and NBS data may be mixed.	Radio Button

Element	Purpose/Description	Type
Replay Parameters / Select Directory	Activates selection directories containing the files to be replayed. One directory for NBS data and one for parametric data is supported. All corresponding files will be automatically selected and sorted in chronological order	Radio Button
Replay Parameters / PAR Source File Path	Activates replay of all parametric data in the corresponding directory. Use the corresponding tool button to open a standard directory selection dialog and mark the desired directory. Below the line the time interval of the data found will be displayed.	Check Button
Replay Parameters / NBS Source File Path	Activates replay of all NBS data in the corresponding directory. Use the corresponding tool button to open a standard directory selection dialog and mark the desired directory. Below the line the time interval of the data found will be displayed.	Check Button
Replay Parameters / Time Interval	Activates restriction of the selected replay data to the given time interval.	Check Button
Replay Parameters / Start - Date / Time	Start date and time of the data to be replayed	Date Input / Time Input
Replay Parameters / Stop - Date / Time	End date and time of the data to be replayed	Date Input / Time Input
Player / Start Button (>)	Starts the offline operation. The operation will continue until the end of the selected data or time interval, or it will continue 'endlessly', depending on the setting of the MODE button	Push Button
Player / Pause Button (||)	Pauses the offline operation until the button is pressed again	Push Button
Player / Stop Button (x)	Ends the offline operation. The Start Button has to be pressed again to restart the offline operation from the beginning of the selected data or time interval.	Push Button
Player / Mode Button(-> / 0)	Switches between endless mode (auto repeat) and single playback of the offline operation.	Push Button
Player / Replay Speed	Sets the speed of the offline operation. At real-time speed the time distance between individual echograms corresponds to the truly time distance at recording time. At max speed the time distance is limited only by hardware constrictions. Settings in between increase the speed by setting fixed time distances between the replayed echograms. Steps are (from real-time to max): 1000, 800, 600, 400, 200, 100, 50, 20, 10, 5 ms. Note, that a setting of 1000 ms may well result in slower replay than real-time, if the replayed data were recorded in shallow water environment.	Slider

4.2.9 Echogram Window

Path:

- Main / Survey / Echogram PAR (NBS)

Purpose/Description:

The echogram window is the main data visualisation window of ATLAS PARASTORE-3. It visualises the recorded soundings heave corrected in a colour-coded display scheme and offers several processing algorithms t increase image quality.

Additionally the data visualised in the window may be stored in the PS3 data format for later processing. This greatly reduces the amount of recorded data to the usually interesting depth section of the sediment response.

One echogram window at any time is able to produce a specifically scaled online print of the visualised data on a colour printer.

Several instances of this window may be opened in parallel, each operating on the same raw data.

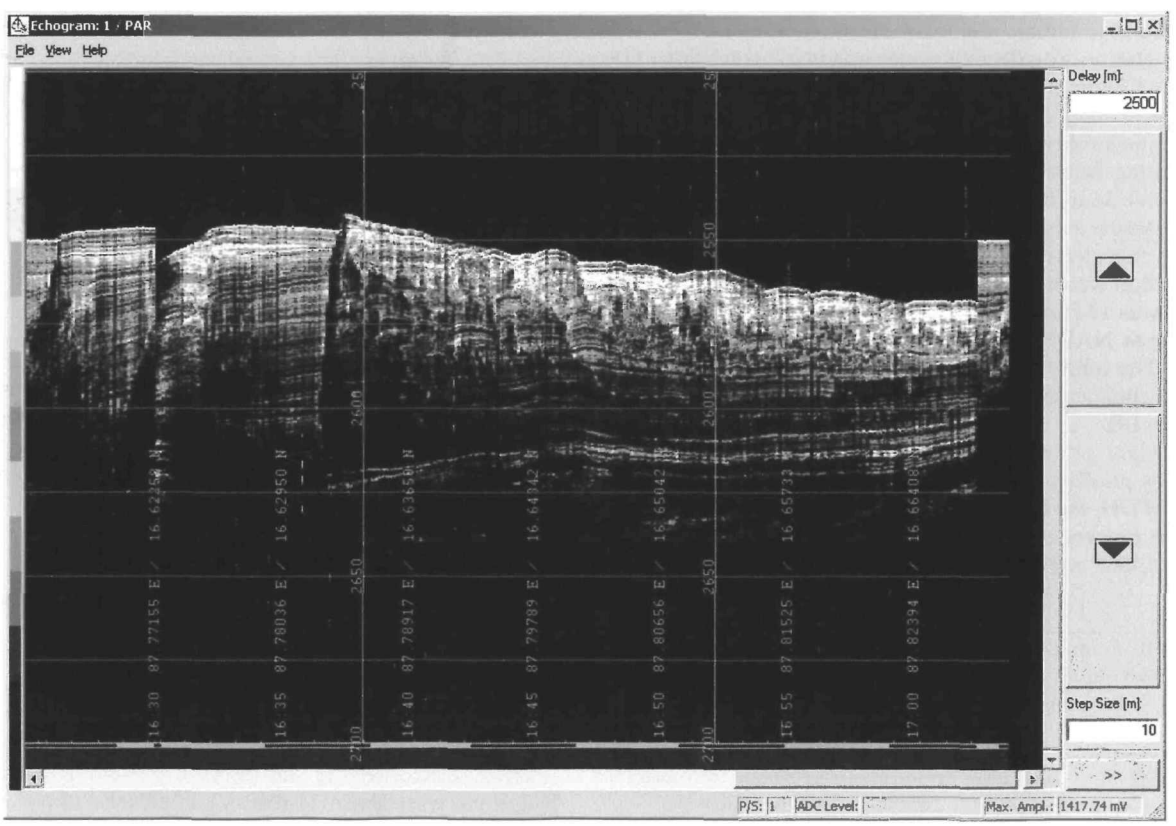

Figure 4-15: Echogram Window – reduced presentation (PAR)

Window Elements:

Table 4-11: Window Elements within the Echogram Window

Element	Purpose/Description	Type
Colour Bar	Shows the used colour scale which will be applied to the signal amplitudes. Corresponding amplitude values decrease from top to bottom.	Display
Echogram View	Shows the colour coded echograms as a vertical row of pixels. The vertical display resolution is controlled by the physical properties of the display and the logical vertical canvas size. Typically a specific adjustable depth window is shown here. It can be moved up and down with the corresponding buttons. The maximum amplitude of each echogram is given below the echogram. Annotated vertical axes are drawn each time, a new depth window is selected. A horizontal axis shows distance bars, time controlled ticks and annotations. In PAR Pilot mode of ATLAS PARASOUND, when one sounding contains several emitted signals, a corresponding number of echograms is presented, which are 400 ms apart.	Scroll View
Step Size	Amount of meters, the depth window will be moved up / down each time pressing the UP / DOWN button.	Integer Input
Delay	Controls the depth of the upper border of the depth window. The delay can be entered directly or is automatically adjusted when the up and down buttons are used. The corresponding echograms will be heave corrected. Has to be confirmed with Apply button	Float Input
UP Button	Moves the depth window Step Size meters up. Takes effect immediately.	Action Button
DOWN Button	Moves the depth window Step Size meters down. Takes effect immediately.	Action Button
<< / >> Button	Hides / Shows the parameter register cards	Action Button
Max. Ampl.	Maximum Amplitude of the current echogram in mV	Data Output Field
ADC Level	Gain adjustment of ADC converter, corresponding to VA needle indicator. Green means A/D level below 12 bit, yellow means A/D level 12 to 14 bit, red means A/D level above 14 bit ⇔ close to overamplification	Data Output Field
P/S	Number of pulses per sounding	Data Output Field

4.2.9.1 Register Card: Window Scale

Path:

- Main / Survey / Echogram PAR (NBS) / Window Scale

Purpose/Description:

The register card Window Scale controls the configuration of the echogram view.

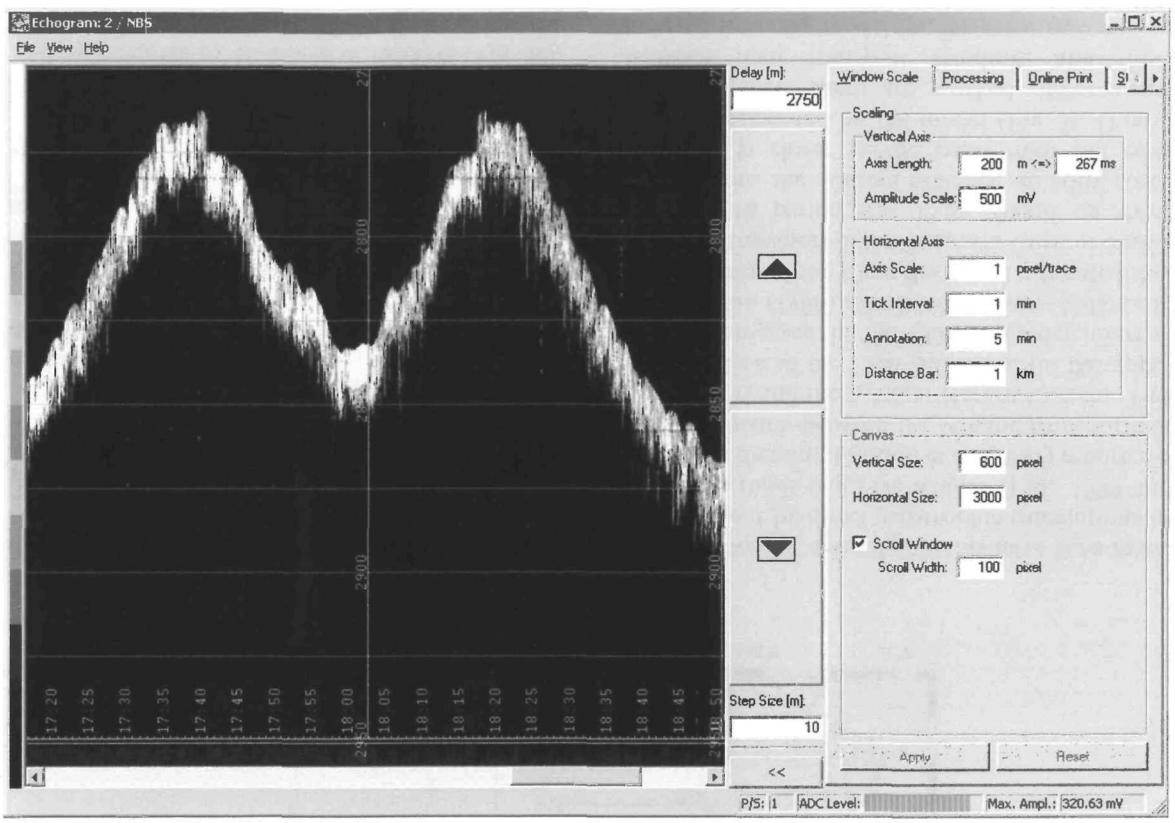

Figure 4-16: Echogram Window / Window Scale (NBS)

Window Elements:

Table 4-12: Window Elements within the Echogram Window / Window Scale

Element	Purpose/Description	Type
Vertical Axis / Axis Length	Length of the displayed vertical axis (i.e. the depth window) in m or milliseconds.	Float Input
Vertical Axis / Amplitude Scale	Axis scale for the display of the maximum echogram amplitude in mV.	Float Input
Horizontal Axis / Axis Scale	Horizontal axis scale in pixel / traces. Each echogram has the corresponding width.	Integer Input
Horizontal Axis / Tick Interval	Time tick interval in minutes along the horizontal axis. Draw small ticks along the axis at the specified interval.	Integer Input

Element	Purpose/Description	Type
Horizontal Axis / Annotation	Annotation interval in minutes. Draws a time stamp along the axis at the specified interval.	Integer Input
Horizontal Axis / Distance Bar	Distance bar scale in km. Sounding distances are continuously summed up to the total profile length. Every Distance Bar Scale kilometres, the distance bar changes colour.	Float Input
Canvas / Vertical Size	No of pixel of the logical drawing areas height. This allows a much larger drawing area, than is visible in the echogram view. Invisible areas my be viewed by moving around in the view with the scrollbars	Integer Input
Canvas / Horizontal Size	No of pixel of the logical drawing areas width. This allows a much larger drawing area, than is visible in the echogram view. Invisible areas my be viewed by moving around in the view with the scrollbars	Integer Input
Canvas / Scroll Window	Activates / Deactivates Scroll mode of the echogram view. If activated, the whole view content is moved Scroll Width pixels to the left, if no space is left for the display of new echograms. Thus, new space is available on the right end of the view while the oldest echograms at the left side are removed. If Scrolling is deactivated, the screen will be wiped and echogram visualisation will start again from the left border of the canvas	Check Button
Canvas / Scroll Width	No of pixels to shift the echogram view content. Effective only, if Scrolling is enabled.	Integer Input

4.2.9.2 Register Card: Processing

Path:

- Main / Survey / Echogram PAR (NBS) / Processing

Purpose/Description:

The register card Processing controls the applied processing algorithms. The algorithms are applied to the screen visualisation and also to the online print, if this is active.

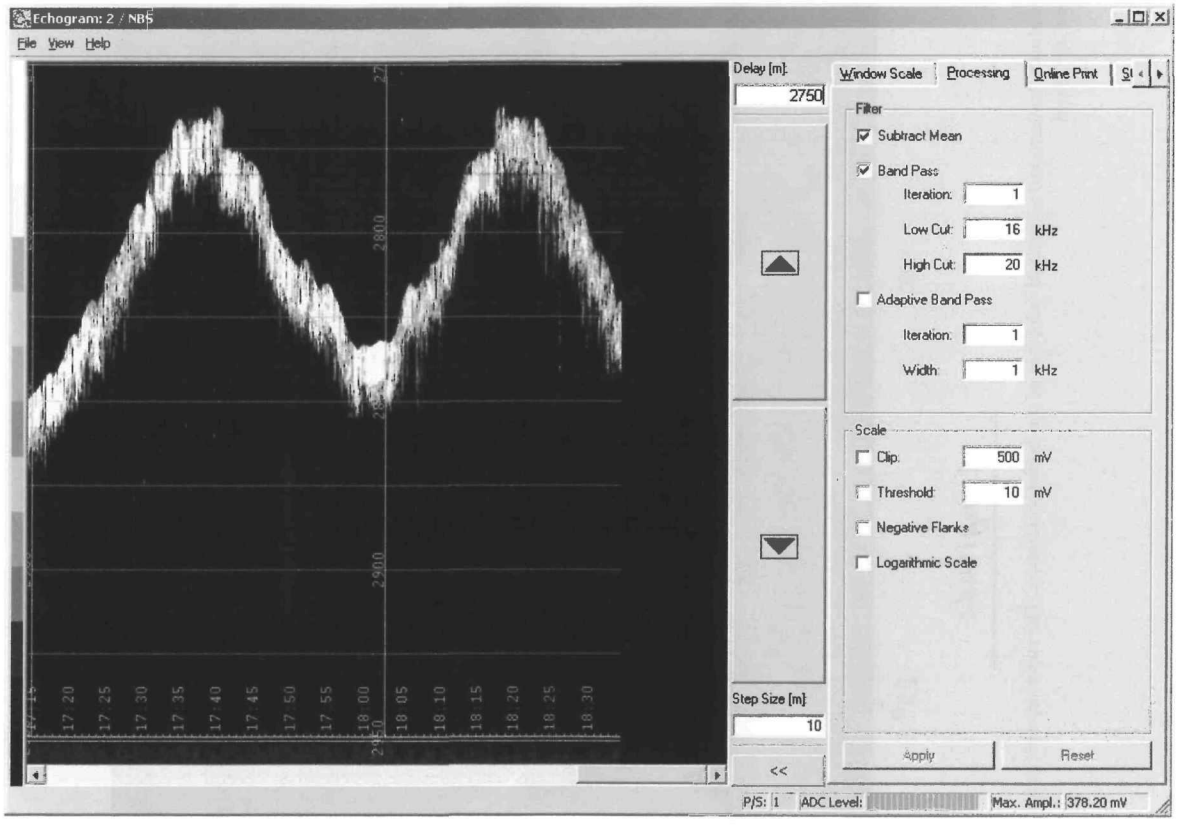

Figure 4-17: Echogram Window / Processing (NBS)

Window Elements:

Table 4-13: Window Elements within the Echogram Window / Processing

Element	Purpose/Description	Type
Subtract Mean	Activates / Deactivates mean value subtraction	Check Button
Band Pass	Activates / Deactivates band pass filtering	Check Button
Band Pass / Iteration	Number of filter iterations on one echogram. Higher values result in steeper filter flanks, but also in increased cpu load.	Integer Input
Band Pass / Low Cut	Low cut frequency of the band pass filter in kHz	Float Input
Band Pass / High Cut	High cut frequency of the band pass filter in kHz	Float Input
Adaptive Band Pass	Activates / Deactivates adaptive band pass filtering	Check Button

Element	Purpose/Description	Type
Adaptive Band Pass / Iteration	Number of filter iterations on one echogram. Higher values result in steeper filter flanks, but also in increased cpu load.	Integer Input
Adaptive Band Pass / Width	Bandwidth of the adaptive band pass filter. The filter is automatically centred on the signal frequency.	Float Input
Clip	Activates / Deactivates Clipping and sets clip value in mV. If Clipping is active, all amplitude values beyond this value will be coded with the highest colour. If Clipping is deactivated, the highest colour will be applied to the aximum echogram amplitude.	Check Button, Float Input
Threshold	Activates / Deactivates Threshold and sets threshold value in mV. If Threshold is enabled, all amplitudes below this value will be coded with the lowest colour.	Check Button, Float Input
Negative Flank	Activates / Deactivates Negative Flank Suppresion	Check Button
Logarithmic Scale	Activates / Deactivates logarithmic colour scale	Check Button

4.2.9.3 Register Card: Online Print

Path:

- Main / Survey / Echogram PAR (NBS) / Online Print

Purpose/Description:

The register card Online Print controls an optionally associated Online Print of the visualised soundings.

Note: *The right to access the printer is unique. That means at the same time only one single Echogram Window has the right to activate the Online Print option. If the operator wants to activate the Online Print option in a specific echogram window, though this option is already activated in another echogram window, he will be asked to deactivate Online Print in the other window first.*

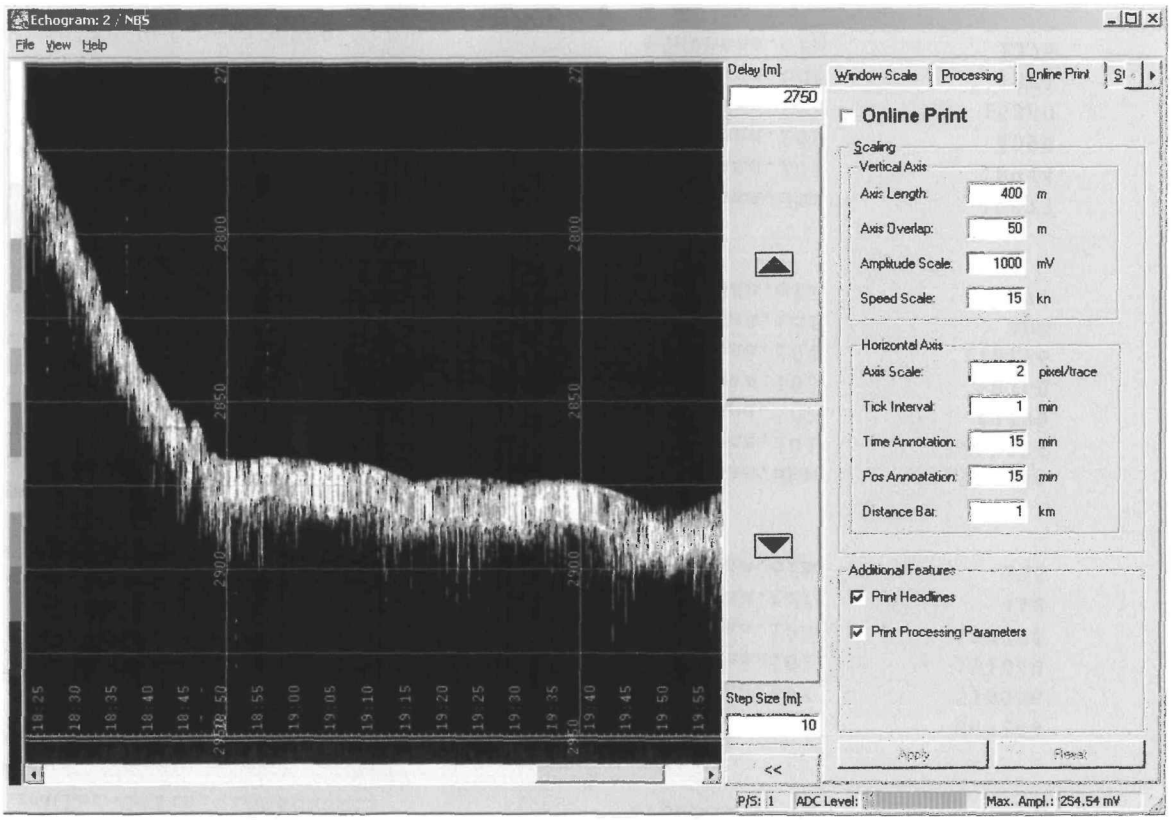

Figure 4-18: Echogram Window / Online Print (NBS)

Window Elements:

Table 4-14: Window Elements within the Echogram Window / Online Print

Element	Purpose/Description	Type
Online Print	Activates / Deactivates Online Print. If the corresponding printer is not in use by another window, the user will have to select the printer from a standard windows printer dialog.	Check Button
Scaling / Vertical Axis / Axis Length	Vertical axis length of the online print in m. This value may well exceed the vertical axis length of the Window Scale thus producing a more seldom redraw of the vertical axis. However, the software ensures, that the depth window, selected for screen visualisation is always kept inside the online print depth window.	Float Input
Scaling / Vertical Axis / Axis Overlap	If the lower border of the screen visualisation depth window is Axis Overlap meters below the Online Print depth window, a new axis is drawn with top border equal to the screen visualisation window depth.	Float Input
Scaling / Vertical Axis / Amplitude Scale	Axis scale for the display of the maximum echogram amplitude in mV.	Float Input
Scaling / Vertical Axis / Speed Scale	Axis scale for the display of the ship's speed in knots.	Float Input
Scaling / Horizontal Axis / Axis Scale	Horizontal axis scale in pixel / traces. Each echogram has the corresponding width. Note, that modern colour printers have a resolution which is much higher than that of the screen. Therefore a resolution of at least 2 pixels per trace is suggested.	Integer Input
Scaling / Horizontal Axis / Tick Interval	Time tick interval in minutes along the horizontal axis. Draw small ticks along the axis at the specified interval.	Integer Input
Scaling / Horizontal Axis / Time Annotation	Annotation interval in minutes. Draws a time stamp along the axis at the specified interval.	Integer Input
Scaling / Horizontal Axis / Pos Annotation	Position annotation interval in minutes. Draws a Ship's position annotation along the axis at the specified interval.	Integer Input
Scaling / Horizontal Axis / Distance Bar	Distance bar scale in km. Sounding distances are continuously summed up to the total profile length. Every Distance Bar Scale kilometres, the distance bar changes colour.	Float Input
Additional Features / Print Headlines	Print a set of headlines on the beginning of each new page. These lines show also the entries of the General Survey Dialog.	Check Button
Additional Features / Print Processing Parameters	Print a line describing the selected processing algorithms and their settings at the beginning of each page.	Check Button

Path:

- Main / Survey / Echogram PAR (NBS) / Storage

Purpose/Description:

The register card Storage controls the optional associated storage of the visualised data in the PS3 format. It also controls the optional storage of Meta Information.

Note that the Echogram Window Delay controls the depth window of the stored echogram. However, the length of the window can be set here individually.

Note also, that the stored data is not affected by any kind of processing algorithm.

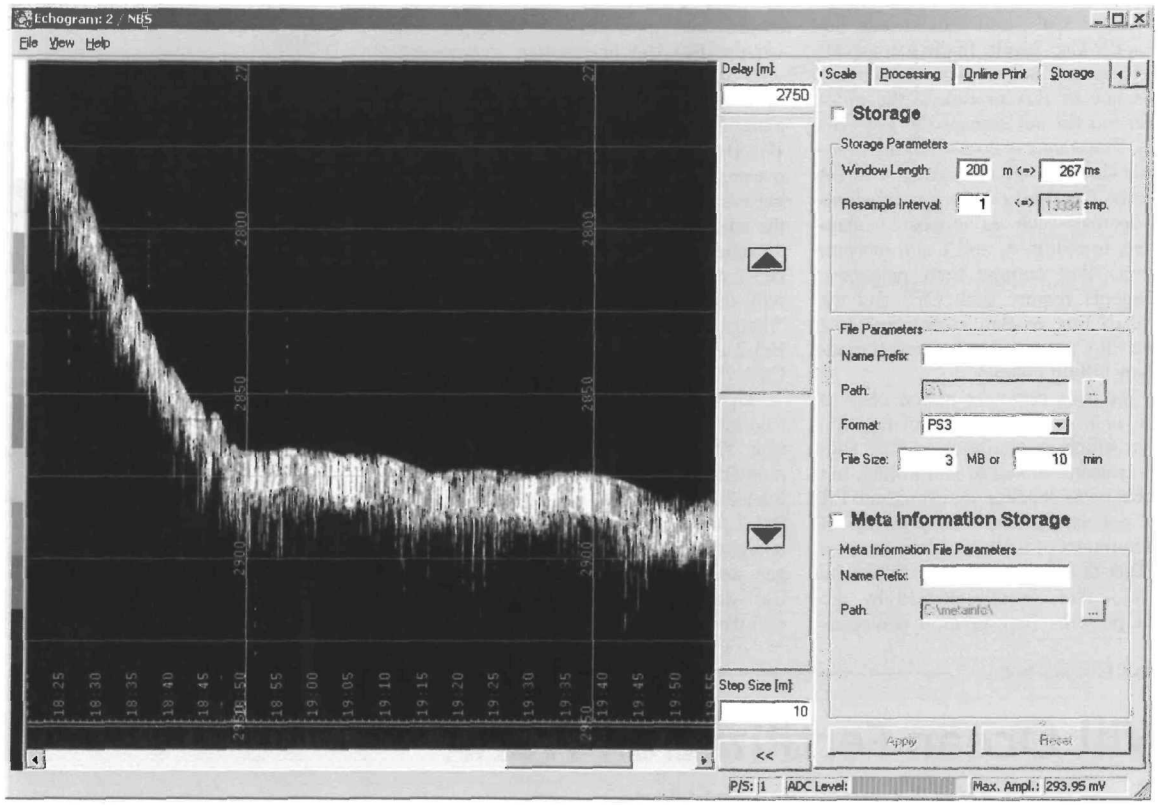

Figure 4-19: Echogram Window /Storage (NBS)

Window Elements:

Table 4-15: Window Elements within the Echogram Window / Storage

Element	Purpose/Description	Type
Storage	Activates / Deactivates data storage in the selected format (see below: File Parameters / Format).	Check Button
Storage Parameters / Window Length	Vertical axis length of the storage depth window in m or ms. This value is independent from the Window Scale Vertical Axis length.	Float Input
Storage Parameters / Resample Interval	Optional resample interval. The raw data may be re-sampled before storage to reduce the data volume. However, valuable information may be lost by this operation	Integer Input

Element	Purpose/Description	Type
File Parameters / Name Prefix	A Prefix, which will precede the automatically generated file name to allow easier identification of the files.	Text Input
File Parameters / Path	Input box for the name of the drive and the directory under which the data is to be stored. The information can be typed in or being selected from a standard Windows directory browser which opens when pressing the button [...] to the right of the input box..	Text Input / Browser Selection
File Parameters / Format	Selection of the data format for the files to be stored as well as the selection of the number of output files to be created. Selectable Formats: • PS3 • SEG-D • PS3/ SEG-D (two separate output files)	Option Menu
File Parameters / File Size	Maximum file size of a single PS3 file in MB or Minutes. File size should be restricted to increase the security and minimise the risk of data loss. A new file will be created, if the file size is exceeded or the time span of recordings in the file is bigger than this value, whatever comes first.	Float Input
Meta Information Storage	Activates / Deactivates Meta Information Storage	Check Button
Meta Information File Parameters / Name Prefix	A Prefix, which will precede the automatically generated file name to allow easier identification of the files.	Text Input
Meta Information File Parameters / Path	Path to be used for the storage of Meta Information files.	Text Input

Path:

- Main / Survey / Spectrogram PAR (NBS)

Purpose/Description:

The spectrogram window is intended for quality control. It visualises the amplitude spectrum of a given depth window of the recorded soundings heave corrected in a colour coded display scheme and offers several processing algorithms.

One spectrogram window at any time is able to produce a specifically scaled online print of the visualised data on a colour printer.

Several instances of this window may be opened in parallel, each operating on the same raw data.

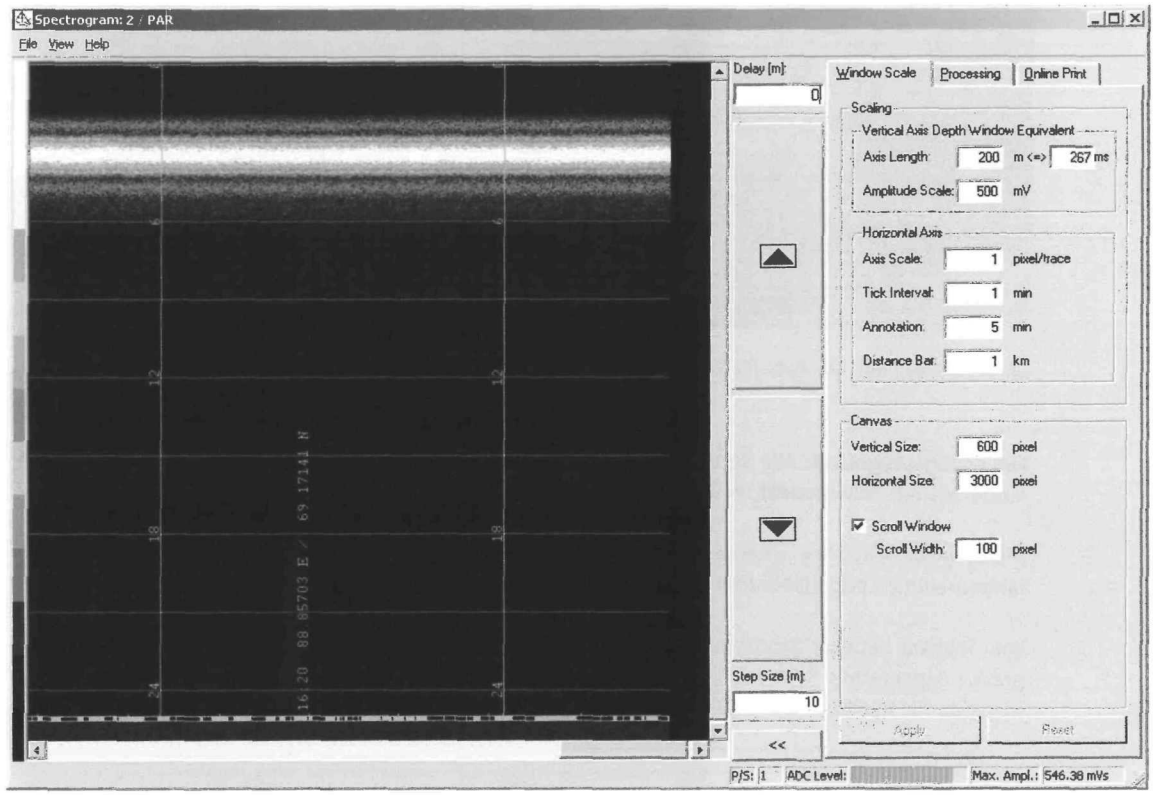

Figure 4-20: Spectrogram Window (PAR, test data)

Window Elements:

Table 4-16: Window Elements within the Spectrogram Window

Element	Purpose/Description	Type
Colour Bar	Shows the used colour scale which will be applied to the signal amplitudes. Corresponding amplitude values decrease from top to bottom.	Display

Element	Purpose/Description	Type
Spectrogram View	Shows the colour coded amplitude spectra as a vertical row of pixels. The vertical display resolution is controlled by the physical properties of the display and the logical vertical canvas size. Typically, the spectrum of a specific adjustable depth window is shown here. It can be moved up and down with the corresponding buttons. The vertical axis length is calculated automatically to the Nyquist-frequency of the digitisation frequency. The maximum amplitude of each echogram is given below the echogram. Annotated vertical axes are drawn each time, a new depth window is selected. A horizontal axis shows distance bars, time controlled ticks and annotations. In PAR Pilot mode of ATLAS PARASOUND, when one sounding contains several emitted signals, a corresponding number of echograms is presented, which are 400 ms apart.	Scroll View
Step Size	Amount of meters, the depth window will be moved up / down each time pressing the UP / DOWN button.	Integer Input
Delay	Controls the depth of the upper border of the depth window. The delay can be entered directly or is automatically adjusted when the up and down buttons are used. The corresponding echograms will be heave corrected. Has to be confirmed with Apply button	Float Input
UP Button	Moves the depth window Step Size meters up. Takes effect immediately.	Action Button
DOWN Button	Moves the depth window Step Size meters down. Takes effect immediately.	Action Button
<< / >> Button	Hides / Shows the parameter register cards	Action Button
Max. Ampl.	Maximum Amplitude of the current echogram in mV	Data Output Field
ADC Level	Gain adjustment of ADC converter, corresponding to VA needle indicator. Green means A/D level below 12 bit, yellow means A/D level 12 to 14 bit, red means A/D level above 14 bit ⇔ close to overamplification	Data Output Field
P/S	Number of pulses per sounding	Data Output Field

4.2.10.1 Register Card: Window Scale

Path:

- Main / Survey / Spectrogram PAR (NBS) / Window Scale

Purpose/Description:

The register card Window Scale controls the configuration of the spectrogram view.

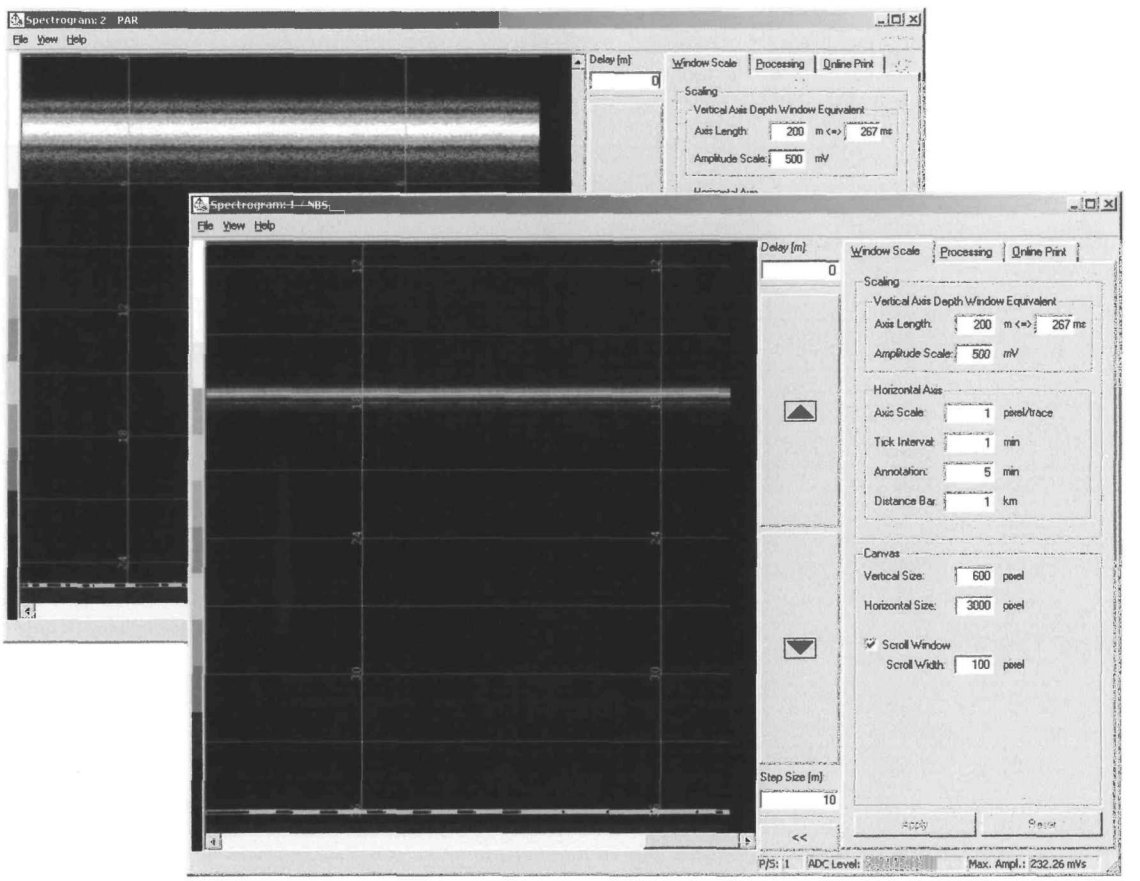

Figure 4-21: Spectrogram Window /Window Scale (NBS/ PAR, test data)

Window Elements:

Table 4-17: Window Elements within the Spectrogram Window / Window Scale

Element	Purpose/Description	Type
Vertical Axis Depth Window Equivalent / Axis Length	Length of the depth window considered for amplitude spectrum calculation in m or milliseconds.	Float Input
Vertical Axis Axis Depth Window Equivalent / Amplitude Scale	Axis scale for the display of the maximum echogram amplitude in mV.	Float Input
Horizontal Axis /	Horizontal axis scale in pixel / traces. Each echogram has the corresponding width.	Integer Input

Element	Purpose/Description	Type
Axis Scale		
Horizontal Axis / Tick Interval	Time tick interval in minutes along the horizontal axis. Draw small ticks along the axis at the specified interval.	Integer Input
Horizontal Axis / Annotation	Annotation interval in minutes. Draws a time stamp along the axis at the specified interval.	Integer Input
Horizontal Axis / Distance Bar	Distance bar scale in km. Sounding distances are continuously summed up to the total profile length. Every Distance Bar Scale kilometres, the distance bar changes colour.	Float Input
Canvas / Vertical Size	No of pixel of the logical drawing areas height. This allows a much larger drawing area, than is visible in the echogram view. Invisible areas my be viewed by moving around in the view with the scrollbars	Integer Input
Canvas / Horizontal Size	No of pixel of the logical drawing areas width. This allows a much larger drawing area, than is visible in the echogram view. Invisible areas my be viewed by moving around in the view with the scrollbars	Integer Input
Canvas / Scroll Window	Activates / Deactivates Scroll mode of the echogram view. If activated, the whole view content is moved Scroll Width pixels to the left, if no space is left for the display of new echograms. Thus, new space is available on the right end of the view while the oldest echograms at the left side are removed. *If Scrolling is deactivated, the screen will be wiped and echogram visualisation will* start again from the left border of the canvas	Check Button
Canvas / Scroll Width	No of pixels to shift the echogram view content. Effective only, if Scrolling is enabled.	Integer Input

4.2.10.2 Register Card: Processing

Path:

- Main / Survey / Spectrogram PAR (NBS) / Processing

Purpose/Description:

The register card Processing controls the applied processing algorithms. The algorithms are applied to the screen visualisation and also to the online print, if this is active.

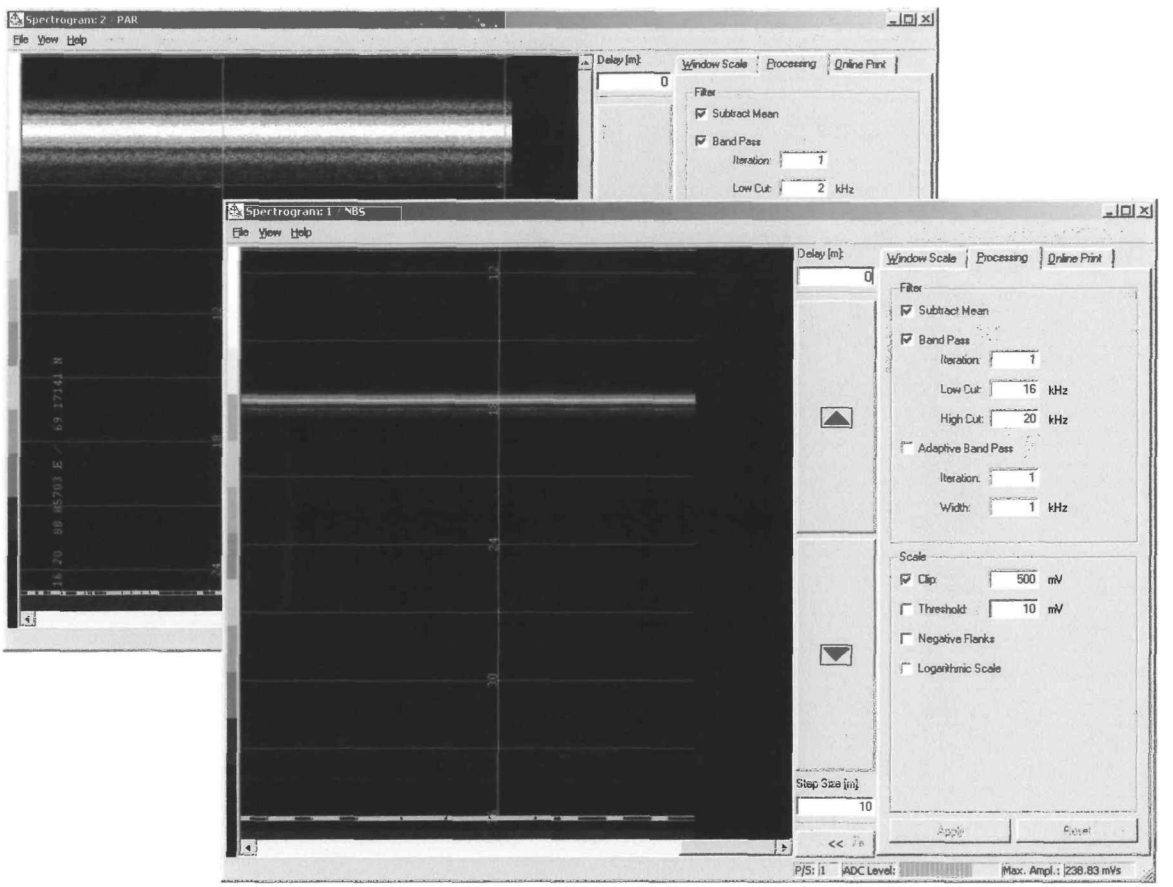

Figure 4-22: Spectrogram Window /Processing (NBS/ PAR, test data)

Window Elements:

Table 4-18: Window Elements within the Spectrogram Window / Processing

Element	Purpose/Description	Type
Subtract Mean	Activates / Deactivates mean value subtraction	Check Button
Band Pass	Activates / Deactivates band pass filtering	Check Button
Band Pass / Iteration	Number of filter iterations on one echogram. Higher values result in steeper filter flanks, but also in increased cpu load.	Integer Input
Band Pass / Low Cut	Low cut frequency of the band pass filter in kHz	Float Input

Element	Purpose/Description	Type
Band Pass / High Cut	High cut frequency of the band pass filter in kHz	Float Input
Adaptive Band Pass	Activates / Deactivates adaptive band pass filtering	Check Button
Adaptive Band Pass / Iteration	Number of filter iterations on one echogram. Higher values result in steeper filter flanks, but also in increased cpu load.	Integer Input
Adaptive Band Pass / Width	Bandwidth of the adaptive band pass filter. The filter is automatically centred on the signal frequency.	Float Input
Clip	Activates / Deactivates Clipping and sets clip value in mV. If Clipping is active, all amplitude values beyond this value will be coded with the highest colour. If Clipping is deactivated, the highest colour will be applied to the aximum echogram amplitude.	Check Button, Float Input
Threshold	Activates / Deactivates Threshold and sets threshold value in mV. If Threshold is enabled, all amplitudes below this value will be coded with the lowest colour.	Check Button, Float Input
Negative Flank	Activates / Deactivates Negative Flank Suppresion	Check Button
Logarithmic Scale	Activates / Deactivates logarithmic colour scale	Check Button

4.2.10.3 Register Card: Online Print

Path:

- Main / Survey / Spectrogram PAR (NBS) / Online Print

Purpose/Description:

The register card Online Print controls an optionally associated Online Print of the visualised spectrograms.

Note: The right to access the printer is unique. That means at the same time only one single Spectrogram Window has the right to activate the Online Print option. If the operator wants to activate the Online Print option in a specific echogram window, though this option is already activated in another echogram window, he will be asked to deactivate Online Print in the other window first.

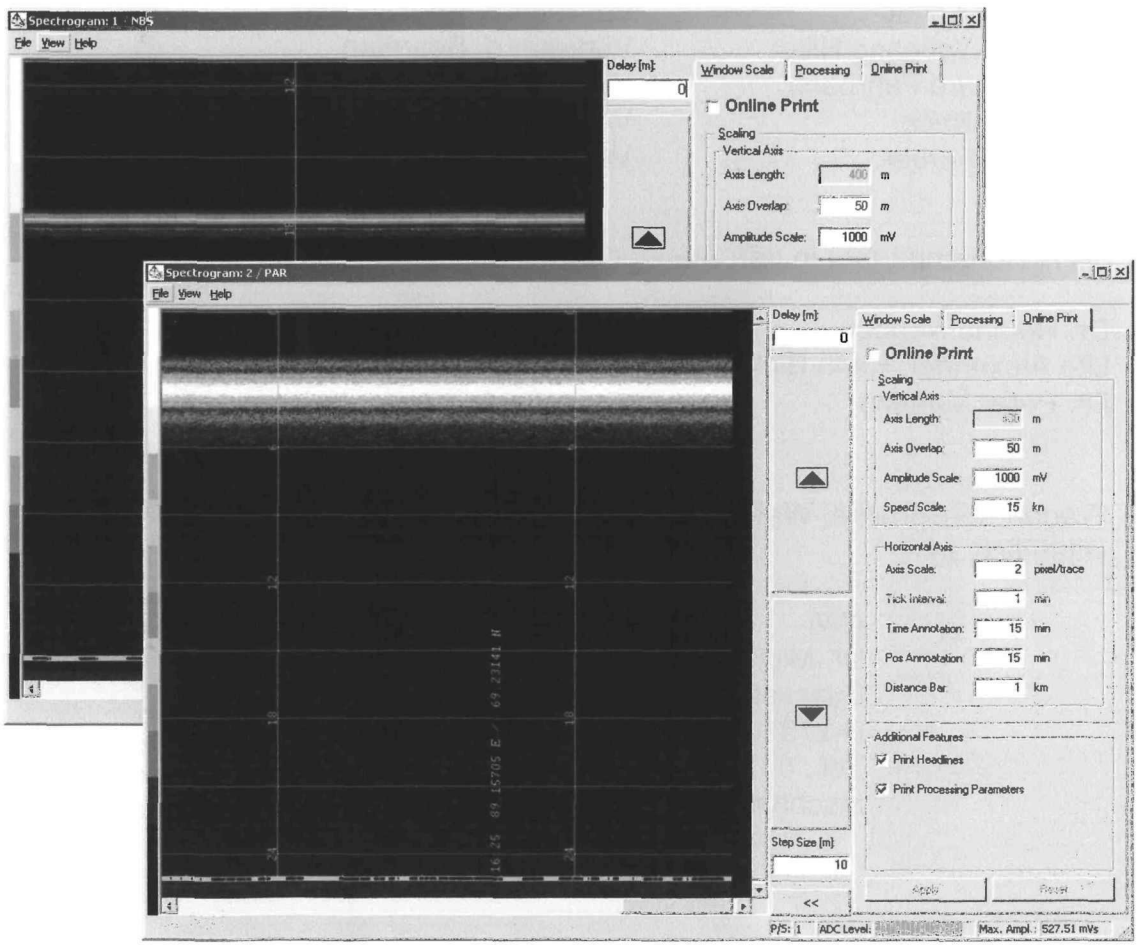

Figure 4-23: Spectrogram Window /Online Print (NBS/ PAR, test data)

Table 4-19: Window Elements within the Echogram Window / Online Print

Element	Purpose/Description	Type
Online Print	Activates / Deactivates Online Print. If the corresponding printer is not in use by another window, the user will have to select the printer from a standard windows printer dialog.	Check Button
Scaling / Vertical Axis / Amplitude Scale	Axis scale for the display of the maximum echogram amplitude in mV.	Float Input
Scaling / Vertical Axis / Speed Scale	Axis scale for the display of the ship's speed in knots.	Float Input
Scaling / Horizontal Axis / Axis Scale	Horizontal axis scale in pixel / traces. Each echogram has the corresponding width. Note, that modern colour printers have a resolution which is much higher than that of the screen. Therefore a resolution of at least 2 pixels per trace is suggested.	Integer Input
Scaling / Horizontal Axis / Tick Interval	Time tick interval in minutes along the horizontal axis. Draw small ticks along the axis at the specified interval.	Integer Input
Scaling / Horizontal Axis / Time Annotation	Annotation interval in minutes. Draws a time stamp along the axis at the specified interval.	Integer Input
Scaling / Horizontal Axis / Pos Annotation	Position annotation interval in minutes. Draws a Ship's position annotation along the axis at the specified interval.	Integer Input
Scaling / Horizontal Axis / Distance Bar	Distance bar scale in km. Sounding distances are continuously summed up to the total profile length. Every Distance Bar Scale kilometres, the distance bar changes colour.	Float Input
Additional Features / Print Headlines	Print a set of headlines on the beginning of each new page. These lines show also the entries of the General Survey Dialog.	Check Button
Additional Features / Print Processing Parameters	Print a line describing the selected processing algorithms and their settings at the beginning of each page.	Check Button

4.2.11 Single Trace Window

Path:

- Main / Survey / Echogram PAR (NBS) / View / Single Trace

Purpose/Description:

The single trace window offers the possibility to display the echogram which is currently visualised in the parent echogram window as a 'wiggle'-type curve, i.e. as full depth-amplitude function. The depth range of the displayed echogram is identical to that of the parent echogram window, however, independent and individual data processing operations may be applied to provide an additional means of quality control.

There can be exactly one single trace window for each active echogram window and the single trace window will be closed when its parent echogram window is closed.

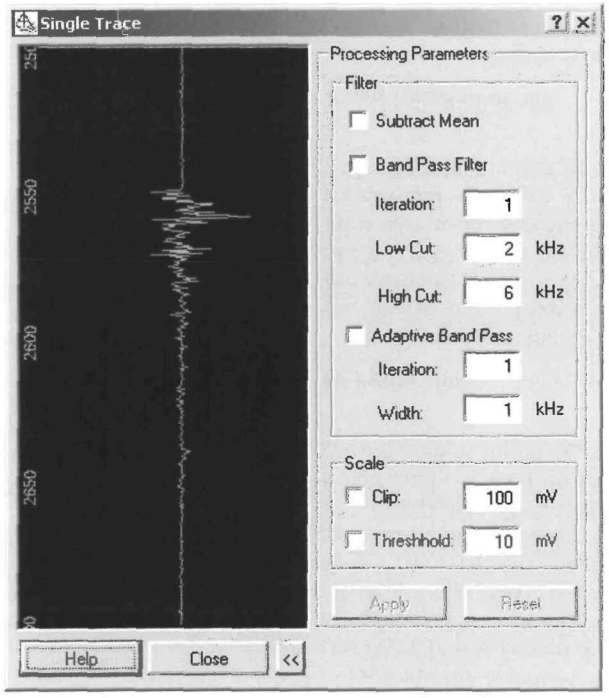

Figure 4-24: Single Trace Window

Window Elements:

Table 4-20: Window Elements within the Single Trace Window

Element	Purpose/Description	Type
Subtract Mean	Activates / Deactivates mean value subtraction	Check Box
Band Pass	Activates / Deactivates band pass filtering	Check Box
Band Pass / Iteration	Number of filter iterations on one echogram. Higher values result in steeper filter flanks, but also in increased cpu load.	Integer Input
Band Pass / Low Cut	Low cut frequency of the band pass filter in kHz	Float Input
Band Pass / High Cut	High cut frequency of the band pass filter in kHz	Float Input

Element	Purpose/Description	Type
Adaptive Band Pass	Activates / Deactivates adaptive band pass filtering	Check Box
Adaptive Band Pass / Iteration	Number of filter iterations on one echogram. Higher values result in steeper filter flanks, but also in increased cpu load.	Integer Input
Adaptive Band Pass / Width	Bandwidth of the adaptive band pass filter. The filter is automatically centred on the signal frequency.	Float Input
Clip	Activates / Deactivates Clipping and sets clip value in mV. If Clipping is active, all amplitude values beyond this value will be clipped. If Clipping is deactivated, the amplitude axis will be scaled to the maximum echogram amplitude.	Check Box and Float Input
Threshold	Activates / Deactivates Threshold and sets threshold value in mV. If Threshold is enabled, all amplitudes below this value will be set to zero.	Check Box and Float Input

4.3 Track Window

Path:

- Main / Survey / Track Windows

Purpose/Description:

The track window allows visualisation of the ship's track in an annotated cartesian coordinate system. The longitude is given on the x-axis, the latitude is given on the y-axis respectively.

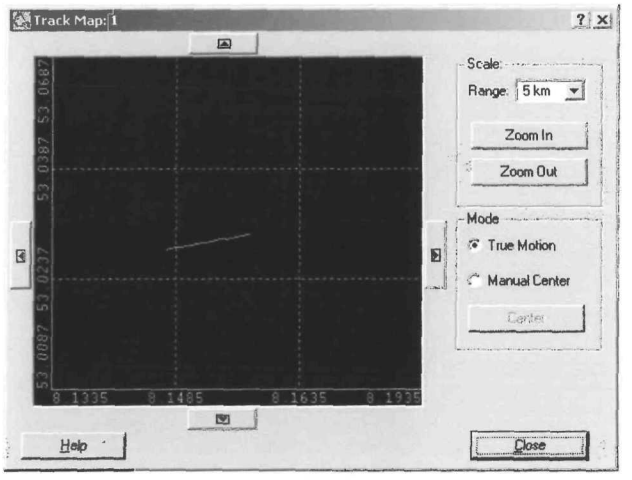

Figure 4-25: Track Window

Window Elements:

Table 4-21: Window Elements within the Track Window

Element	Purpose/Description	Type
Scale / Range	Sets the range covered along the axes, i.e. allows a coverage of the area from 100 m^2 to 100 km^2	Combo Box
Scale / Zoom In	Changes the covered region to one step smaller	Push Button
Scale / Zoom Out	Changes the covered region to one step bigger	Push Button
Mode / True Motion	Toggles mode to true motion. Thus, the map origin is adjusted whenever the ship position reaches the border of the map region	Radio Button
Mode / Manual Center	Toggles mode to manual center. Thus, the map origin is not adjusted automatically when the ship position reaches the border of the map region	Radio Button
Mode / Center	Change map origin to put the ship position in the center of the map. Only enabled in manual center mode	Push Button
Up (^)	Moves the map origin one quarter of the range to the North	Push Button
Down (v)	Moves the map origin one quarter of the range to the South	Push Button
Left (>)	Moves the map origin one quarter of the range to the East	Push Button
Right (<)	Moves the map origin one quarter of the range to the West	Push Button
Help	Opens the Helpbrowser	Push Button
Close	Closes the dialog	Push Button

4.4 Depth Window

Path:

- Main / Survey / Depth Windows

Purpose/Description:

The depth window shows the water depth along the ship's track as a continuous graphical plot in a cartesian coordinate system with the distance along the track along the x-axis and the water depth along the y-axis. Two different water depths can be shown in parallel: the PARASOUND-DS depth and the HYDROSWEEP depth.

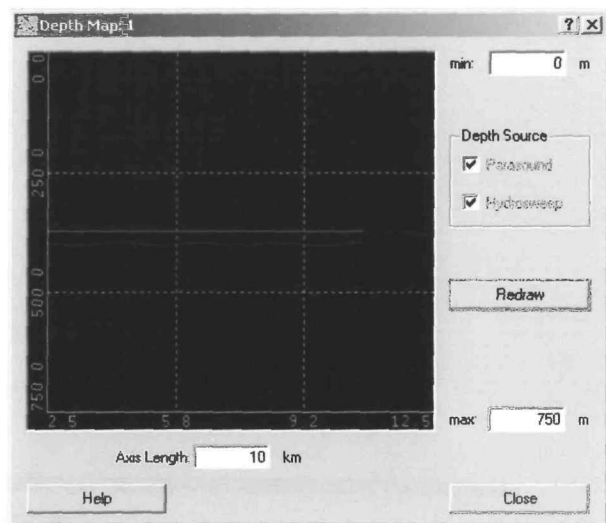

Figure 4-26: Depth Window

Window Elements:

Table 4-22: Window Elements within the Depth Window

Element	Purpose/Description	Type
Min	Sets the upper border of the y axis, i.e. the shallowest depth to be drawn. Press Redraw to apply a changed setting to the plot.	Text Input
Max	Sets the lower border of the y axis, i.e. the deepest depth to be drawn. Press Redraw to apply a changed setting to the plot.	Text Input
Depth Source / PARASOUND	Activates / Deactivates plotting of PARASOUND depth. The depth is drawn in red.	Check Button
Depth Source / HYDROSWEEP	Activates / Deactivates plotting of HYDROSWEEP depth. The depth is drawn in blue.	Check Button
Redraw	Forces a complete redraw of the plot and must be used if changes in one of the text input fileds shall be applied.	Bush Button
Axis Length	Length of the horizontal axis in km	Text Input
Help	Opens the Helpbrowser	Push Button
Close	Closes the dialog	Push Button

5 References

/1/ ATLAS Hydrographic GmbH:
ATLAS PARASOUND DS-3
– Highest Level Narrow-Beam Parametric Sub-Bottom Profiler for Deep-Sea Applications –
Product Description
Bremen (Germany), October 2002

/2/ ATLAS Hydrographic GmbH:
ATLAS PARASOUND-2
Operating Instructions
Bremen (Germany), October 2002

/3/ ATLAS Hydrographic GmbH:
ATLAS HYDROMAP CONTROL
– Software Application for the Control of All ATLAS Echo Sounders –
Product Description
Bremen (Germany), October 2002

/4/ STN ATLAS Marine Electronics GmbH:
ATLAS PARASOUND
System Description
Bremen (Germany), 02/1998