



# GeoSwath Plus

## Integrated Survey Software

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### Introduction

GeoSwath Plus is an entirely new software package from GeoAcoustics which offers enhanced functionality for standard vessel based GeoSwath applications, as well as allowing GeoSwath to be easily used for ROV and AUV applications. The software has been written for Windows XP, and can act as Ethernet broadcast or receiver, allowing local or remote acquisition and processing.

GeoSwath Plus offers significant benefits to existing GeoSwath users as it offers many important new features:

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### Survey Management

- All files, settings etc are stored by project name.
- All file types automatically organised within each project. Simple survey management.
- Audit trail: All data points “tracked” through processing sequence.

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### Data Acquisition

- New raw data format. IHO compliant *Range Angle Amplitude*.
- Format contains all peripheral data, is “open” and accessible to third parties.
- Ethernet data streaming in real time, simple ROV and AUV integration.
- All serial communications are separate processes, no samples are lost.
- Faster ping rep rate, up to 30 pps.

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### Timing and Navigation, New Features

- New absolute time stamp with complete GPS 1PPS time stamp solution and automatically synchronised PC clock.
- Centimetric positioning is now possible with RTK variable latency facility to cope with RTK/DGPS/GPS transitions with quality flags recorded in serial strings.
- Full 7 parameter geodetic transformations to convert to any local grid.

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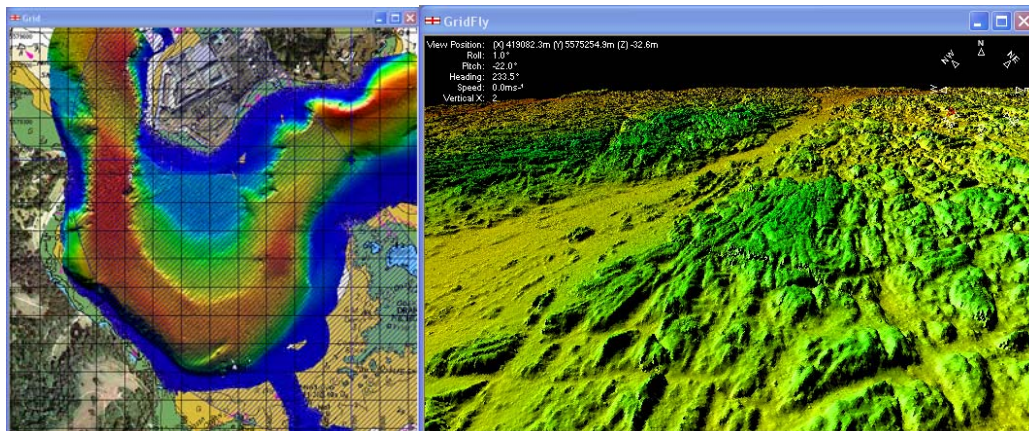
### Data Processing

- All data points are kept, filters now flag points rather than delete them. Filters now rationalised and improved.
- All peripheral data can be viewed and edited before processing.
- Bathymetry and side scan are now automatically created for each processing run of each raw file.
- Graphical entry of vessel offsets in 3-D.
- Swath or side scan can be gridded whilst processing.

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### Calibration

- Grid based, accurate and repeatable.
- Graphical selection of sections of calibration lines to be used.
- Profile view of any section of calibration data.
- Automatic update of calibration offsets.



From the Plymouth Data Set acquired for the Shallow Survey 2005 Conference

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**DTM Generation**

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- Available grid size now limited only by PC.
- Scanning of files no longer required.
- Port/starboard can be selected.
- Virtual functions merged with gridder.
- Gridding method now stored with file.
- Improved measurement and profile selection.
- Improved perspective.
- Faster redraw and graphics.
- Sun illuminated as fast as un-illuminated.
- Improved 3-D measurement and profile selection.

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**File Handling**

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- Reading & writing of XYZ, Surfer and XTF files
- CUBE compatible output

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**Quality Control**

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- Integration of all file and processing functions allows audit trail from raw data to final processed data to be followed.
- Grid files “know” which swath files, filters and settings were used.
- Swath files “know” which raw data, tide, SVP, filters, calibration offsets were used and know the statistics on the filtered points.
- Calibration offsets “know” which swath files were used and keeps track of the history to the uncalibrated swath.
- Raw data files “know” when and where they were logged and all settings.
- A HTML document containing a hierarchical record of all processing steps from raw data file to DTM is produced

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**GeoSwath Plus Specifications**

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GeoSwath is available in three frequency versions, 125 kHz, 250 kHz and 500kHz. The system accuracy of all versions exceed the Special Order specifications, as set out in *IHO Standards for Hydrographic Surveys, Special Publication 44, 4<sup>th</sup> Edition, April 1998*.

Sonar Frequency	125 kHz	250 kHz	500 kHz
Maximum Operating Depth Below Transducers	200 metres	100 metres	50 metres
Maximum Swath Width	600 metres	300 metres	150 metres
Range	Up to 12 x depth	Up to 12 x depth	Up to 12 x depth
Resolution (pulse width and bandwidth limited)	24mm	12mm	6mm
Slant range resolution	6mm	3mm	1.5mm
Spacing between across track data samples	12mm	12mm	12mm
Two Way Beam Width	0.9° Azimuth	0.5° Azimuth	0.3° Azimuth
Transmit Pulse Length	16 µS to 1mS	8 µS to 1mS	4 µS to 500uS
Swath Update Rate			
50m Swath Width	30 swaths per second	30 swaths per second	30 swaths per second
150m Swath Width	10 swaths per second	10 swaths per second	10 swaths per second
300m Swath Width	5 swaths per second	5 swaths per second	
600m Swath Width	2.5 swaths per second		

*Specification sheet subject to change without notice.  
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