



# ***GeoSwath ROV/AUV***

## ***Swath Bathymetry***

### ***with co-registered Side Scan***

### ***for Survey ROV's & AUV's***

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#### ***Introduction***



*GeoSwath mounted on a Minerva ROV shown with 500 kHz ROV transducers*

GeoSwath ROV/AUV is a wide swath bathymetric sonar designed as a payload sonar on survey class remotely operated vehicles (ROV's) and autonomous underwater vehicles (AUV's). The robust and compact GeoSwath ROV/AUV is suitable for integration on most vehicle sizes. It provides co-registered swath bathymetry and side scan data over a very wide swath, giving accurate high resolution charts and images of the seafloor. The data can be processed in GeoTexture software to give bottom classification and texture analysis.

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#### ***General Description***

GeoSwath ROV/AUV is a PC based wide swath bathymetry system offering state of the art performance. Based on the successful bathymetric sonar technology used in the boat mounted GeoSwath Plus, the design emphasis has been to minimise size and power requirements.

GeoSwath ROV/AUV is available in three frequency versions: 125, 250 and 500 kHz. It maintains the same high accuracy of bathymetric survey as GeoSwath Plus, with the advantages of being able to operate via the umbilical in the case of ROV's or autonomously for AUV's.

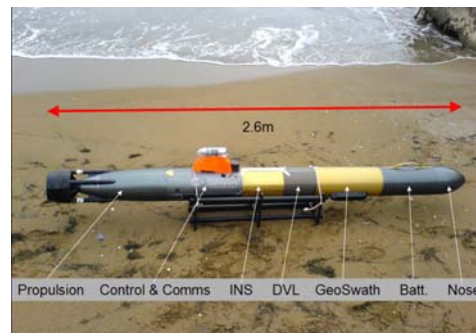
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#### ***System Capabilities***

GeoSwath ROV/AUV can collect data for bathymetric mapping, along with co-registered true digital side scan data, in water depths up to 200 metres under the transducers.

GeoSwath ROV/AUV offers wide swath coverage of up to 12 times water depth, to a maximum swath width of 780 metres.

GeoSwath ROV/AUV requires inputs from sound velocity, heading, position and motion sensors, these can either be from the vehicle's existing sensor package or GeoAcoustics can offer a complete range of recommended sensors. The GeoSwath ROV/AUV software can integrate all ancillary data from the vehicle sensors either in real-time over Ethernet or during post processing using time-stamped data.



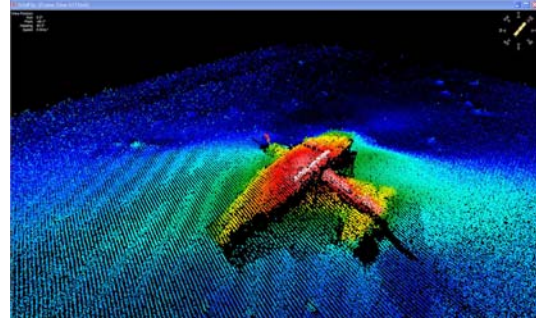
*GeoSwath module on a Gavia AUV (one of the two 500 kHz transducers is visible)*

The GeoSwath ROV/AUV post processing software provided with the system is a fully functional data processing toolset, including:

- Integration of ancillary data.
- Inspection and editing of sonar and ancillary data.
- Generation and filtering of fully corrected swath and side scan data.
- Gridding and mosaicing.
- 2D and 3D visualisation (including fly-through).
- Output of raw data, bathymetry grids, side scan mosaics and combined products.

### GeoSwath ROV Operation

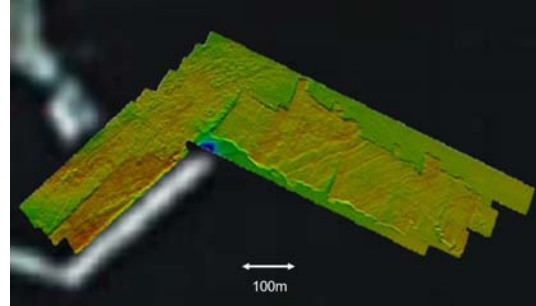
The GeoSwath ROV electronics module and transducers are easily installed on most ROV platforms, requiring only power and an Ethernet connection for communications. Survey data can be stored locally on the ROV using the GeoSwath ROV hard drive or transmitted to the surface in real time via the umbilical cable, or both. Where data is transmitted to the surface in real time all the acquisition display features of the GeoSwath Plus system are available to the user.



Aircraft wreckage recorded from a Gavia AUV

### GeoSwath AUV Operation

Autonomous AUV operation can be achieved either by command from the AUV mission control computer, or using pre-set parameter files loaded prior to start of mission. After AUV retrieval the data is downloaded via Ethernet to the GeoSwath AUV shore processing computer for data editing, post processing, and chart generation.



Post dredge survey using a Gavia AUV

### System performance

Sonar Frequency	125 kHz	250 kHz	500 kHz
Maximum Water Depth Below Transducers	200 metres	100 metres	50 metres
Maximum Swath Width	780 metres	390 metres	190 metres
Range	Up to 12 x depth	Up to 12 x depth	Up to 12 x depth
Depth Resolution	6 mm	3 mm	1.5 mm
Two Way Beam Width	0.85° Azimuth	0.75° Azimuth	0.5° Azimuth
Transmit Pulse Length	128 µs to 896 µs	64 µs to 448 µs	32 µs to 224 µs
Swath Update Rate (max)	Up to 30 per second (range dependent)		
Transducer Dimensions	540 x 260 x 80mm	375 x 170 x 60mm	255 x 110 x 60mm
Transducer Weight	11.6kg (in air) 3.3kg (in water)	3.8kg (in air) 1.8kg (in water)	1.5kg (in air) 0.5kg (in water)

### Technical Specification

Data Storage/Retrieval	120GB hard drive, 10/100/1000 BaseT Ethernet link.
Mission Endurance	12 hour data collection (using onboard data storage).
Interface to ROV/AUV	Ethernet (2 x 1Gbit Ethernet ports available), RS232 for ancillaries.
Power Requirements	24VDC, 50W (at max ping rate), 20W (standby).
Max Depth Rating	1000m (optional 4000m).
Electronic Module Size	20 cm OD x 36.6 cm long.
Electronic Module Weight	12kg (in air), 3kg (in water).

Specification sheet subject to change without notice (9-SwathROV/AUV-6900/A 02/2008)



**GeoAcoustics Asia Pacific Pte Ltd**  
 30 Loyang Way, #07-12,  
 Singapore 508769  
 Tel: +65 6546 3687  
 Fax: +65 6546 3690  
 e-mail: singapore.sales@geoacoustics.com  
 www.geoacoustics.com



**GeoAcoustics Limited**  
 Shuttleworth Close, Gapton Hall Ind. Est.,  
 Gt. Yarmouth, Norfolk, UK, NR31 0NQ  
 Tel: +44 (0) 1493 600666  
 Fax: +44 (0) 1493 651100  
 e-mail: uk.sales@geoacoustics.com  
 www.geoacoustics.com



**GeoAcoustics Inc**  
 12626 William Dowdell Drive  
 Cypress, Texas 77429, USA  
 Tel: +1 281 894 5570  
 Fax: +1 281 894 7196  
 e-mail: us.sales@geoacoustics.com  
 www.geoacoustics.com