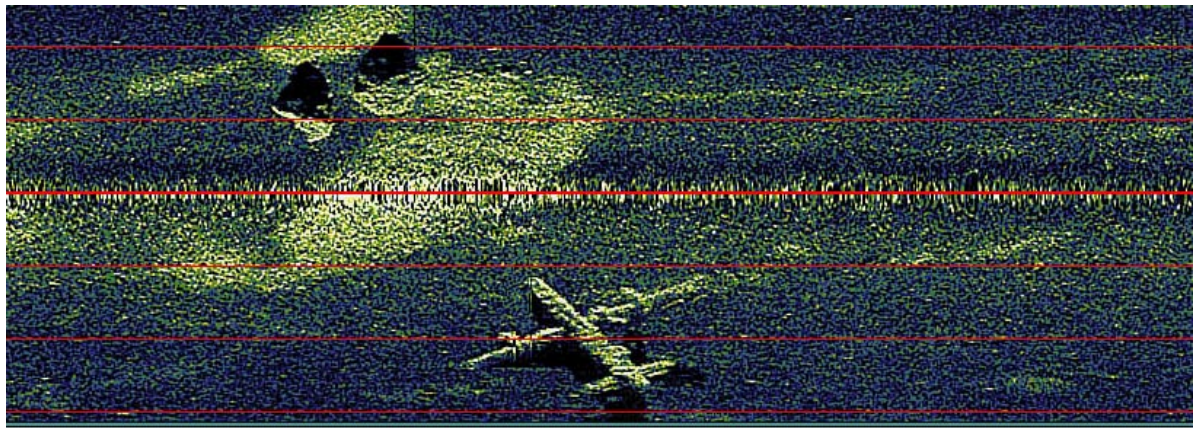
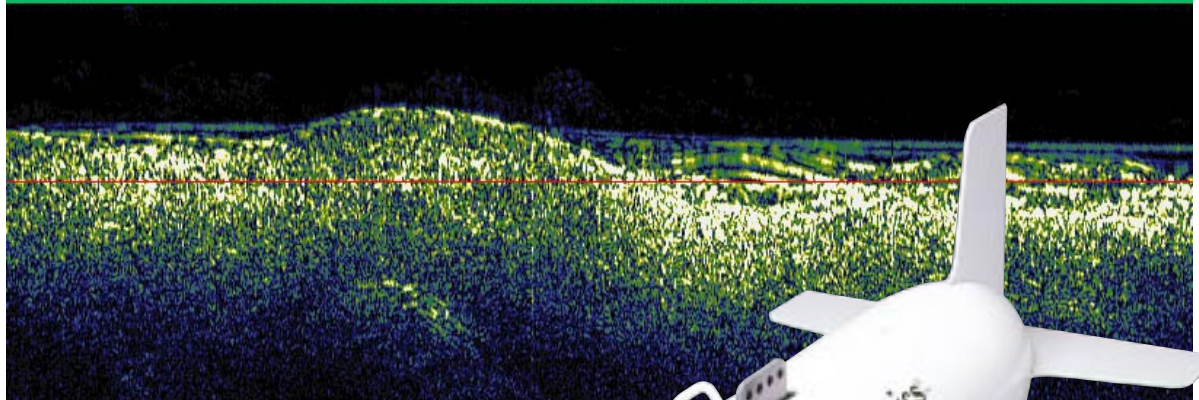


Combined Chirp Side Scan Sonar/Chirp Sub-Bottom Profiling for high resolution seafloor imaging

One System, All the Answers



Horiz. Ch. 3 - Dly=4.50m Dur=27.0m



- ▶ ACOUSTICS
- ▶ FLOTATION
- ▶ **G E O P H Y S I C A L**
- ▶ HYDROPHONES
- ▶ IMAGING
- ▶ MODEMS
- ▶ ROBOTICS



Discover the SIS-1000

The SIS-1000 Seafloor Imaging System has quickly become the industry standard for shallow water (<1000M) seafloor survey operations. This field proven, highly versatile survey tool offers a fully digital platform capable of collecting high resolution chirp side scan/sub-bottom data, as well as a full suite of customer selected sensor data. The high resolution, extended range chirp data and multiple data sensor capability provide the surveyor with a significant savings in instrument cost and survey time.



1 One Workstation—SIP-100

The SIP-100 incorporates Datasonics' DSP technology with a processor developed in partnership with the world leader in sonar processing systems.

- Chirp DSP based side scan sonar, operating in the 100 kHz region, allows full 1500 meter swath, with resolution equivalent to much higher frequency systems.
- Chirp DSP based sub-bottom profiling, operating in the 2 to 7 kHz region, allows maximum sediment penetration with greatly improved resolution.
- Gain, TVG, image correction, color palette, and other programmable parameters are under trackball control.
- Digital interface provided for thermal graphic recorders.

1 One Tow Vehicle—TTV-190

The TTV-190 is a fully digital platform with standard Chirp side scan/sub-bottom transducer arrays, digital multiplexor, subsea electronics, and RS-232 ports for optional sensors.

- Hydrodynamically stable tow vehicle includes pitch, roll and heading sensors, optional position responder/transponder, and other customer selected sensors.
- 0.5° side scan sonar horizontal radiation pattern, combined with broad band Chirp DSP match filter processing, provides optimal cross-track and along track resolution.
- Tow vehicle operates in depths up to 1000 meters.

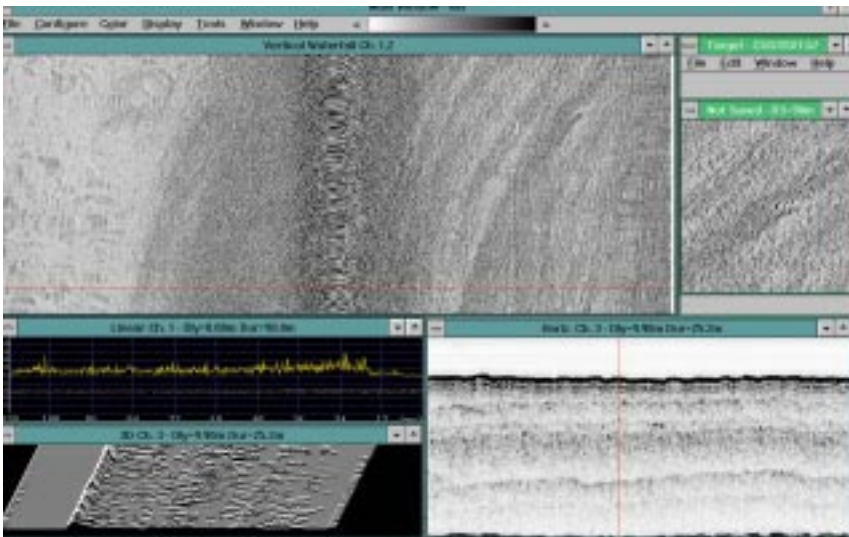
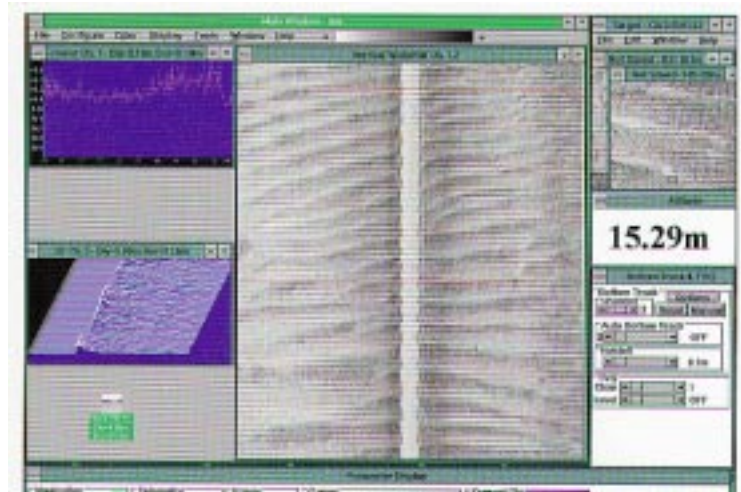


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One Cable—Chirplink

The Chirplink multiplexor was designed through a program to develop a full ocean depth telemetry module for a multi-sensor seafloor mapping system.

- Two-way communication with tow vehicle over single coax with digital high speed multiplexor. Standard cable length—up to 4,000 meters.
- Digital multiplexor for single coaxial tow cables. Communication rates: sonar data—up to 2 megabit/sec; uplink status—9600 bits/sec; downlink command—9600 bits/sec.



1

One Image—ChirpScan

Through DSP technology and complex sonar processing, all sensor information is processed and stored in the SEG Y or QMIPS format, resulting in a data product which is archived as one format, one file, one medium.

- Graphic User Interface (GUI) allows for complete control, monitoring, and storage of all system data.
- Complete side scan slant range and scale correction provided, as well as grazing and beam angle compensation.
- 16 bit side scan and sub-bottom A/D resolution and SEG Y or QMIPS compatible data logging provide optimum sonar data acquisition.
- Full diagnostic and help menus available for real-time support and trouble shooting.



SIS-1000 CHIRP SEAFLOOR IMAGING SYSTEM

Versatile configurations, infinite possibilities— hull mount, ROV and AUV configurations

Modular design combined with flexible software allow for multiple system configurations.

- Component suite for installation on ROV or AUV. Electronics package includes full side scan, sub-bottom, and digital multiplexor components.
- Hull mount upgrades for Chirp sub-bottom, using existing transducer arrays, eliminate the need for costly downtime and drydocking.
- Additional serial ports provide capability for addition of magnetometer, CTD, pressure, heave compensation, and other sensors.



▲ SIS-1000 configured for AUV application.

Chirp-based sonar survey systems are in use worldwide. Contact Benthos for complete specifications and sample data records.

SYSTEM SPECIFICATIONS

SIP-100 Shipboard Sub-System

ChirpScan Processing: Sonar/status control PC based workstation; 3-DSP based sonar matched filter processing channels.
Display: High resolution video display: 1280 x 1024/1280 x 2048.
Recording: Magneto-optical disk.
Status Display: Vehicle pitch, roll, heading (standard); speed, altitude, and depth (optional).
Customer input ship position, vehicle position, event marks; all status data recorded.
Sonar Display: Side scan port, starboard; sub-bottom; all sonar data recorded.
Corrections: Slant range and speed; beam angle/grazing angle.
Multiplexor: Chirplink digital MUX for coaxial cables.
Sonar data: up to 1.5 megabit/sec.
Uplink status: 9600 bit/sec.
Downlink command: 9600 bits/sec.
Power Supply: 110/220 VAC autosensing.

Side Scan

Side Scan Transducers: Multi-element array, single line array transmit, dual receive arrays.
0.5° horizontal beam; 60° vertical beam.
Frequency: 100 kHz band swept FM; port and starboard channels sweeping in opposite directions; 7.5 cm resolution.
Processing: Calibrated transmit waveform stored in ROM; match filter FFT digital signal processing.
Swath (range) Selection: ±50 meters to ±750 meters.

Sub-Bottom

Sub-bottom Transducer: Transmit projector array; line array receiving hydrophone; 30° conical radiation pattern.
Frequency: 2 kHz to 7 kHz swept FM (4 KW output), synchronous with side scan.
Resolution: 10 cm.
Processing: Calibrated transmit waveform stored in ROM; matched filter FFT digital signal processing.
Scale Selection: 25 meters to 750 meters full scale.

TTV-190 Tow Vehicle Sub-System

Depth rating: 1000 meters.
Vehicle Dimensions: 18 inches OD x 64 inches long.
Weight: In air: 300 lbs.; in water: 170 lbs.



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