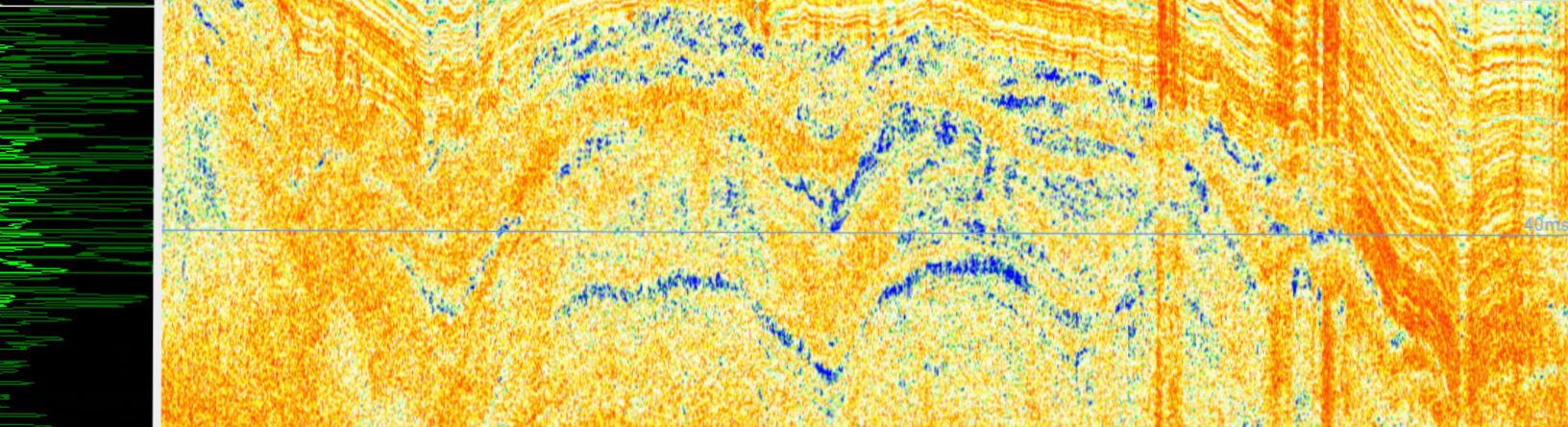


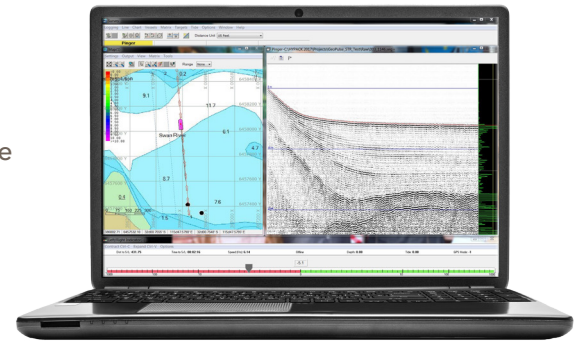


# HYPACK SUB-BOTTOM<sup>®</sup>

A SOFTWARE PACKAGE DESIGNED FOR THE ACQUISITION AND PROCESSING OF SUB-BOTTOM PROFILING DATA

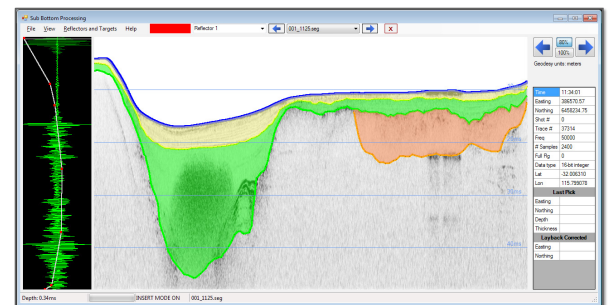
## About HYPACKSUB-BOTTOM<sup>®</sup>

HYPACK<sup>®</sup> SUB-BOTTOM is our sub-bottom profiling (SBP) software package designed for marine geophysical, engineering & geotechnical site surveys, dredging, and mining applications. It's a simple and easy-to-use solution for all your sub-bottom profiling survey requirements. The package has a comprehensive global geodesy model and a simplified hardware setup with the ability to setup up the preferred positioning systems together with numerous analog and digital sub-bottom profiling systems.



## HYPACK<sup>®</sup> SUB-BOTTOM currently supports the following SBP systems:

- Single channel Analog SBP (pinger, chirp, boomer, bubble pulser, sparker & airgun)
- Simultaneous dual channel Analog SBP (e.g. simultaneous acquisition of pinger/boomer data)
- EdgeTech - 3000 Series
- Innomar SES - 2000
- GeoAcoustics GeoPulse Plus Chirp
- Falmouth Scientific HMS-622 Chirp
- Knudsen Pinger & Chirp
- Teledyne Odom Chirp III
- Older Benthos systems
- Specialty Devices Inc
- SyQwest (B2010/SB3510HD & StrataBox)



**HYPACK**  
a xylem brand

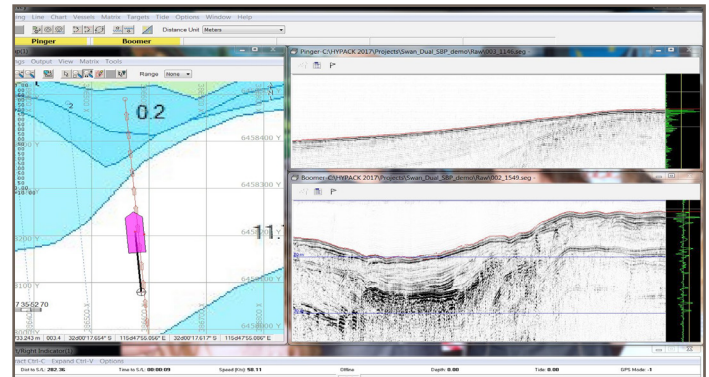
## Easy to Configure & Acquire Sub-bottom Profiling Data

The software is intuitive to configure by following a few basic steps: Firstly define the project geodesy, configure the survey hardware, import background charts (ENCs & web maps), plan the survey lines then start the survey program to acquire the data. Within the survey program the SBP system can be further configured & tuned.

- Sub-Bottom Profiler: HYPACK® SUB-BOTTOM supports numerous SBP systems, both analog and digital, from the industry's leading manufacturers.
- Accurate positioning for hull-mounted, towed or systems on unmanned vehicles (AUV or ROV). Hull-mounted systems require only a simple GPS. For towed systems, HYPACK® reads any of over a dozen cable counters, and performs layback calculations or USBL/LBL acoustic positioning can be utilized. Separate (AUV, ROV) navigation files (raw or EDT) are also supported in the full HYPACK® MAX package.
- Two SBP systems, no interference: A sophisticated triggering system enables simultaneous acquisition of two different SBP systems with no acoustic interference between the systems.

## Survey Acquisition Control

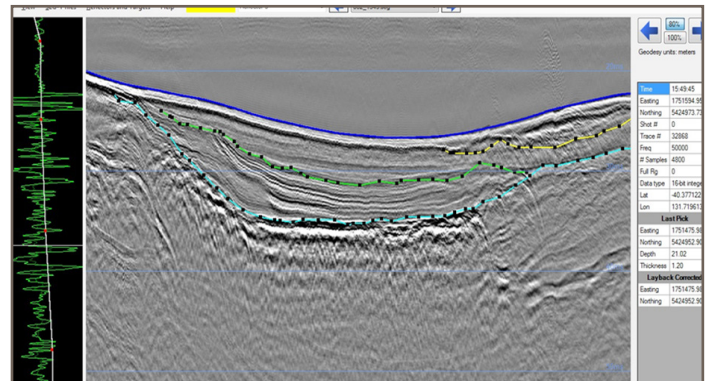
- Allow for real-time view of all sensor data.
- View boat and survey tracks along-side the scrolling sub-bottom profiling data.
- Display options include unipolar vs bipolar displays and controls for color together with band-pass filtering and TVG.
- The data is stored in SEG-Y format.



Dual SBP acquisition in HYPACK® SURVEY with no acoustic interference between the SBP systems. Note the positions of the sensors in relation to the vessel.

## Processing

- Loads large datasets.
- Supports SEG-Y and JSF data formats. Reads most third party SEG-Y files.
- Digitize layers, pick targets and export to ASCII files.
- Apply gain (automatic and user-defined TVG) & band pass filtering.
- Bottom tracking and swell correction.
- Adjust sound velocity in water and sediment.
- Apply HYPACK tide files.
- View SBP data and interpretations in a 3D fence diagram.



HYPACK® SUB-BOTTOM processor showing data with digitized interpretation.

## Exporting Data & Final Products

- DXF file with layer information.
- Export All Format files.
- Export XYZ ASCII data for all reflectors.
- Export fence diagrams for 3D view of data.
- Plot data in HYPLOT.