

Innomar SES-2000 compact integration to an autonomous surface vehicle and application for marine site characterisation

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Marine Site Characterisation Geophysical Survey

Accurate Bathymetry

- Exposure/Freespan identification
- Scour monitoring

Seabed Imaging:

- Sidescan Sonar
- Backscatter



Geological Survey:

- Regional context or site specific
- Sub Bottom Profiler
- 2DHR

Object Detection:

- Unexploded Ordnance (UXO)
- Pipe / Cable Detection
- Boulder Detection (3DSBP)

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Mobilisation

Innomar Compact

Motion Compensation:
POS MV wavemaster

Positioning :
StarFix G2+

Navigation Software:
QPS QINSy V8.1

Simultaneous acquisition:
R2Sonic 2024 MBES
1200 kHz RDI Sentinel Workhorse ADCP

Communication :
WIFI Long Range



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Mobilisation



- Hull Mounted transducer
- Limited Space
 - Rack mounting
 - Narrow hull (16U)
- SESWin on a multi task acquisition computer (MBES, Nav and SESWin)
- Mobilisation on dry



Rack mouting (16U) before fitting



Innomar compact transducer hull mounted

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Rack Fitted in the Autonomous Vehicle



Limited space to access the Innomar Compact TPU

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Operations

- Mob: 2 days
- Launch and wet test: 1 day
- Ops
 - D1: 5.2 km
 - D2: 62.1 km
 - D3: 52.9 km
 - D4: 64.5 km
- Demob: 1 day



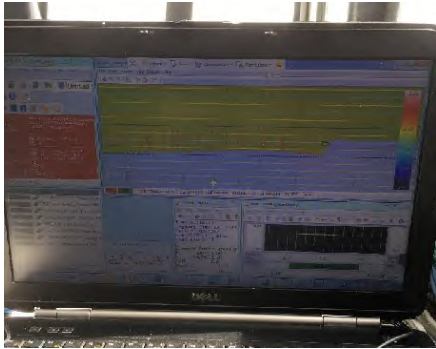
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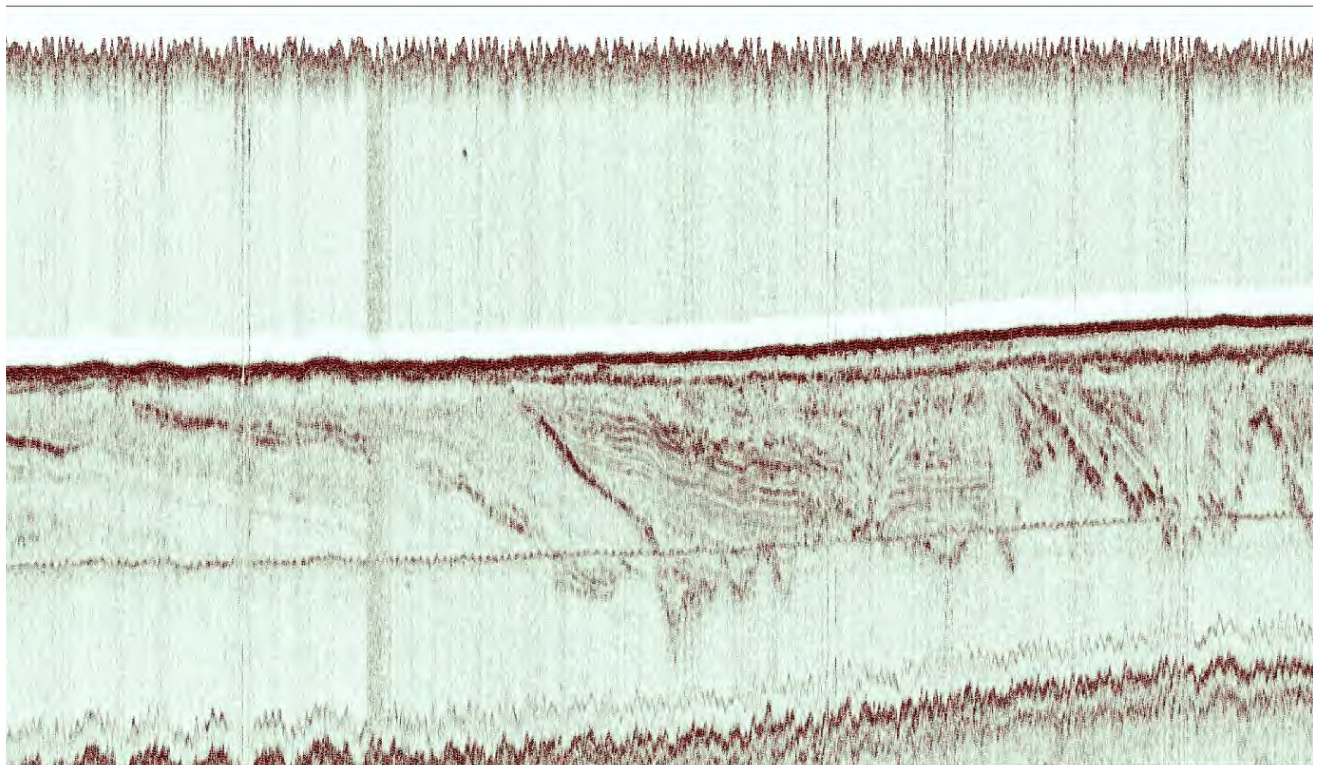
Operations



- 1 Surveyor controlling the MBES acquisition via Teamviewer, on a support vessel
- SESWin running on the background of the Acquisition Computer
- Vessel running the lineplan autonomously



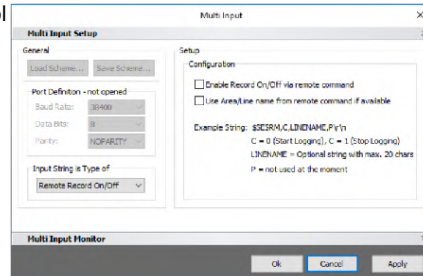
Data Example





Lesson learned

- Roll sensitive
- Further Automation possible:
 - Remote control



- Area with limited manoeuvrability due to vessel size/obstruction.
- Area with risk for persons
 - Polluted
 - Collapsing structure
- Other trial
 - C-Cat MBES only
- Further trial
 - C-Cat MBES/Innomar
 - Quattro on autonomous vehicle

