

CASE STUDY

MULTIBEAM ECHOSOUNDER integrated in SB 100 PRO USV for Inspections & Bathymetry



Unmanned Surface Vehicle

WASSP S3R by FURUNO + SB 100 PRO at
Port of Aiguadolç (Sitges)



The Company

Founded in May 2019 in Barcelona as a spin-off of the GPAINNOVA Group, GPASEABOTS' activity revolves around the development of technologies for exploring and preserving the marine environment, such as USVs (Unmanned Surface Vehicles) and smart buoys.

Just a few months after its creation, the company was granted the Fuera de Serie ("state-of-the-art") Design & Innovation Award, promoted by one of the most important publishing groups in Spain, in the category of Sustainability.

In 2020, GPASEABOTS deployed more than 100 buoys to study the coastal waters on beaches

in Eastern Spain and launched the SB 100 PRO model, a multipurpose marine drone for all kinds of tasks in sheltered waters. Depending on the payloads, this USV can be used in the fields of hydrology, water analysis, research, Search & Rescue (SAR), mooring inspection and other tasks. Likewise, its use allows access to restricted areas, in which navigation may be restricted, difficult or dangerous.

Another product developed by GPASEABOTS is SB 100 Cleaner, specially designed for sea water surface cleaning in ports and marinas.



The Opportunity

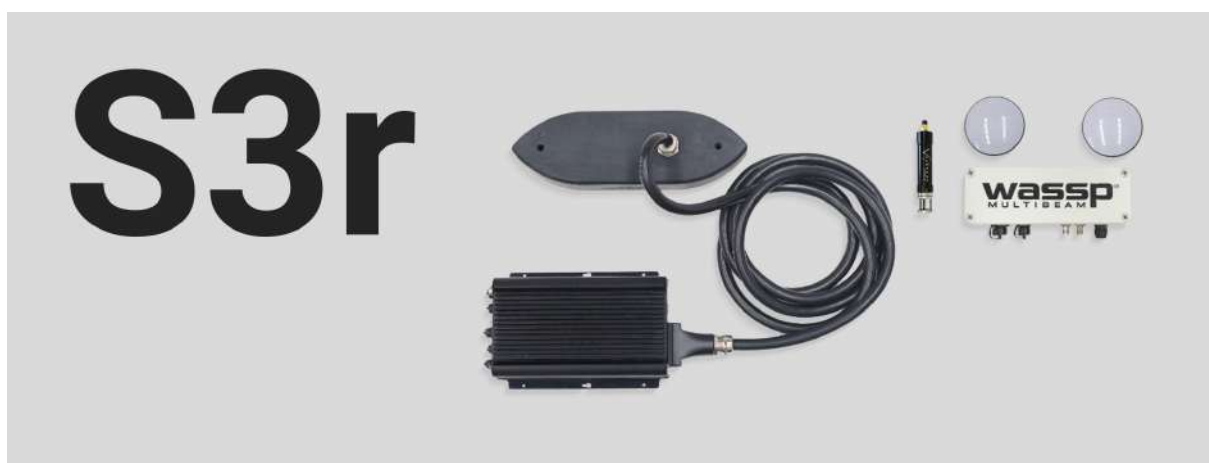
Naval robotics can replace tasks that have always been carried out by traditional methods, which have a high ecological impact and expensive operating costs.

USVs are becoming widespread in several areas in the naval sector. In this real case study, we present a need that is shared by many ports: Mooring inspection in harbors and marinas.

CASE STUDY Using GPASEABOTS' SB 100 PRO USV

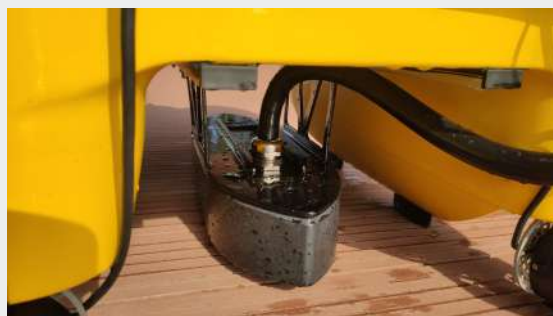
Payloads

GPASEABOTS' SB 100 PRO USV, the most versatile USV platform on the market for sheltered waters activities. It is an indispensable tool for a fast, efficient and precise work. Both the operating cost and its environmental footprint are extremely low, and it allows to expand the range of possibilities in the field of data acquisition.



The **WASSP S3R Solution** is a fully integrated kit which includes all the core components required for a multibeam survey operation, designed to ensure functionality, ease of use and cost effectiveness, all the while achieving accuracies required by international survey standards such as IHO S-44 Standard 1a and Special Order.

INCLUDES: S3 with a Processor DRX IP66, Transducer WBFT 90-190kHz, SBG Ellipse Dual RTK INS (heading, position, pitch & roll, heave), Mini SVS Valeport, CDX, RPM and survey licenses.

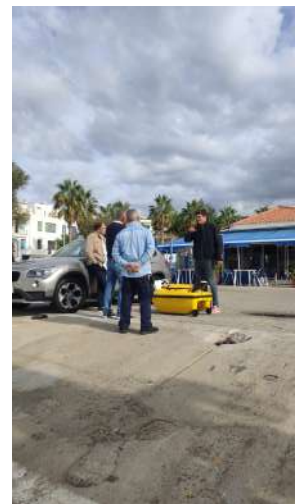


Operation Examples:

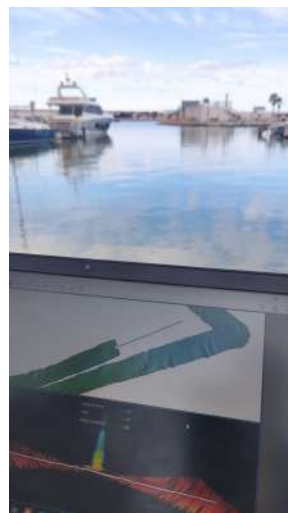
1. Transport



2. Planify Mission & Deployment



3. Acquisition Time



Location:

The location for a demo session that took place in the context of a trade mission was the Port of Aiguadolç, in the coastal town of Sitges, 35 km (22 miles) away from Barcelona (Spain).

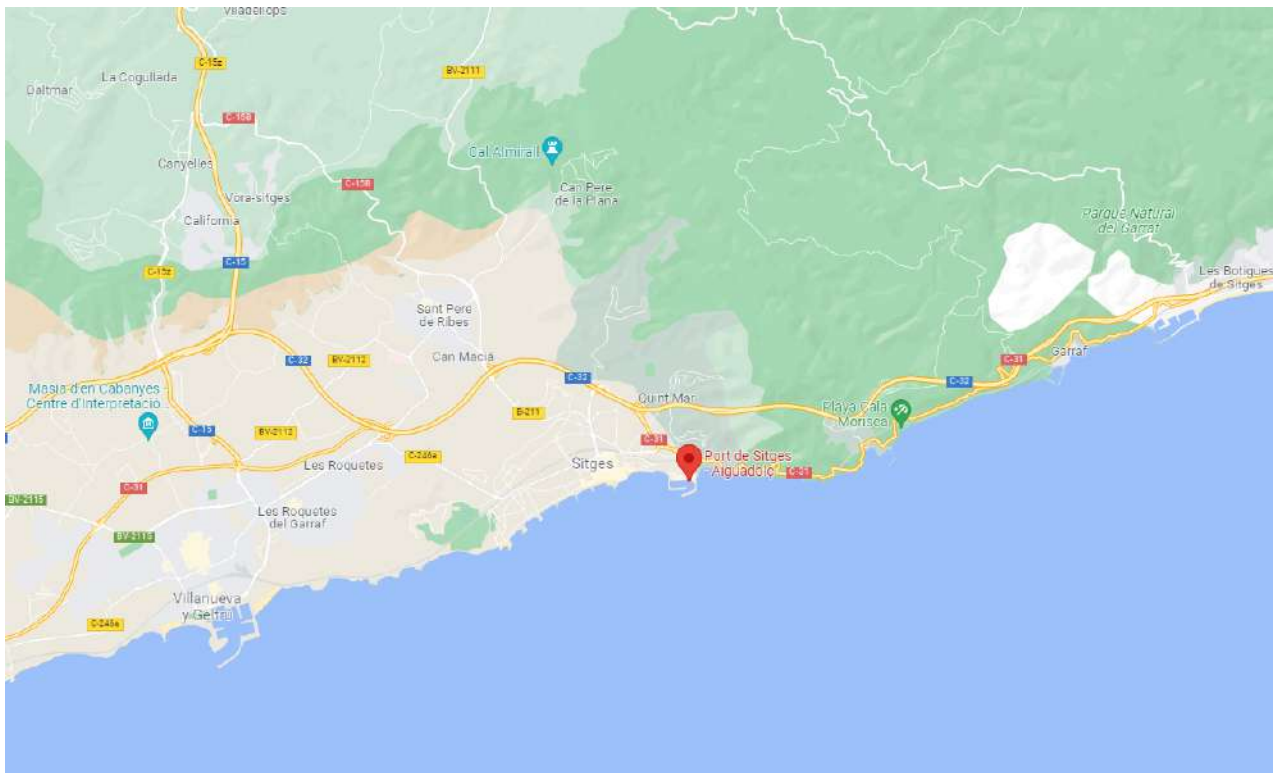


Port of Aiguadolç

41°14'10.6"N 1°49'26.0"E

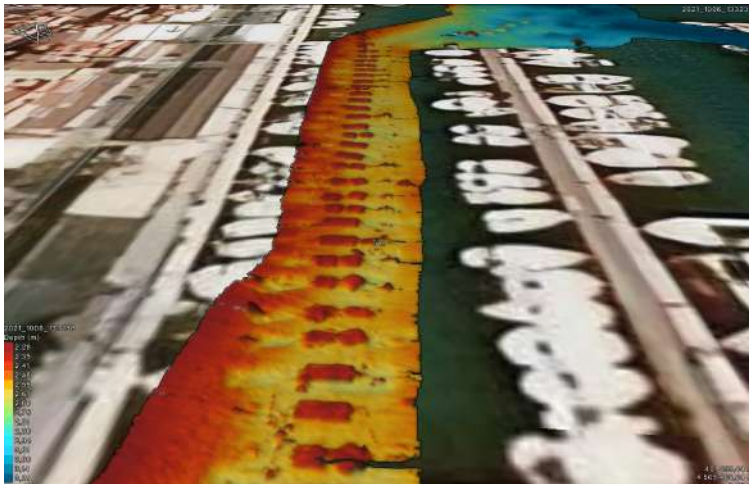
<https://www.portdesitges.com/>

Localization



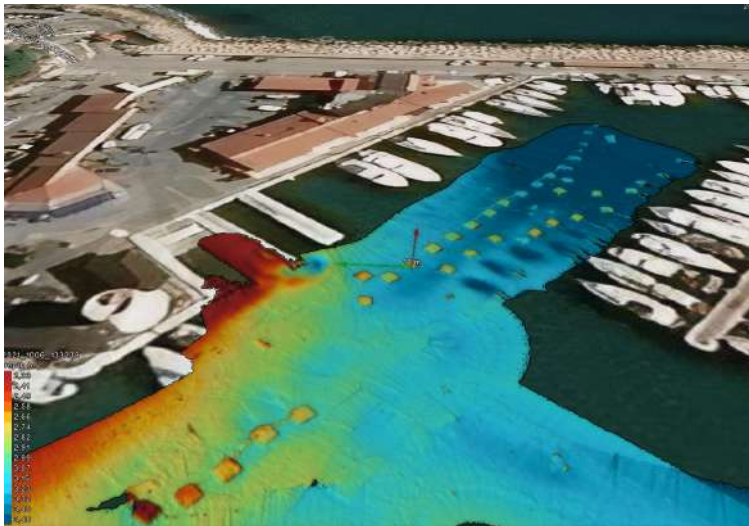
Data Acquisition Examples

The following images correspond to live data gathering, with the deployment of the USV SB 100 PRO + WASSP S3R by FURUNO.



This tool allows instant identification of the position of moorings in harbours and marinas.

With a quick inspection, technicians can see if the position of the moorings is correct according to the technical specifications. It is also possible to check the size of the blocks in detail, identifying the position of the connecting chains between moorings.

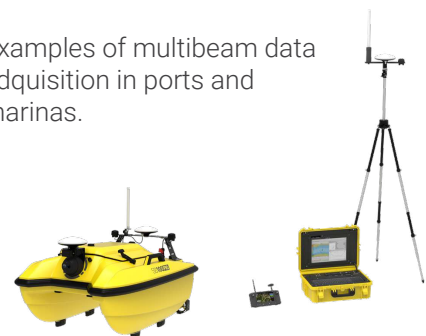


On the other hand, this working tool is able to identify sand accumulations in dykes and shipyards. Knowing the level of the ever-changing seabed is essential for a safe navigation in enclosed harbours.

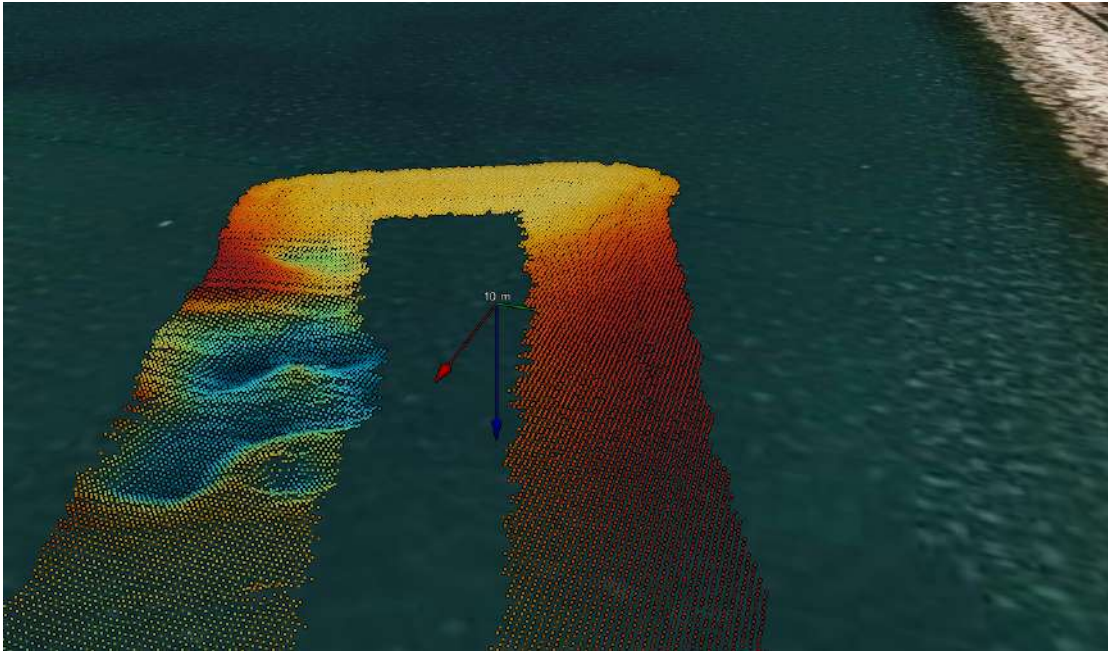
Compatible with most leading hydrographic software such as HYPACK, EIVA, QPS, CARIS, BEAMWORX and others.

Specific application: Control and monitoring of dock constructions, multibeam bathymetry, draught control, dredging, volume calculation, inspection of structures and location of submerged artefacts.

Examples of multibeam data acquisition in ports and marinas.



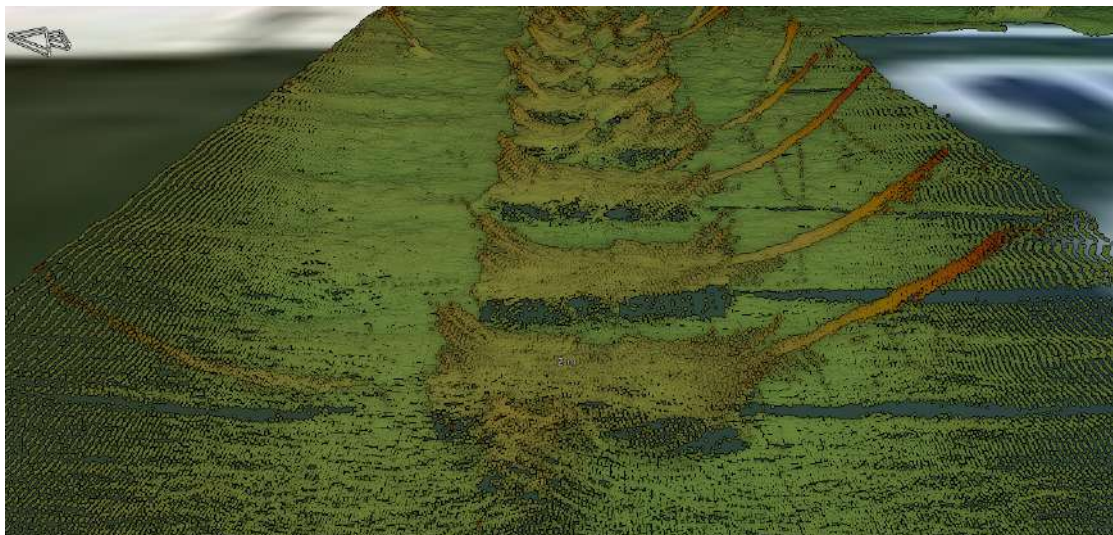
Data Acquired Examples



See accumulations and losses of sand at the port entrance. It is common for sediment to accumulate at harbour entrances after storms, reducing the draught and causing the risk of vessels running aground.

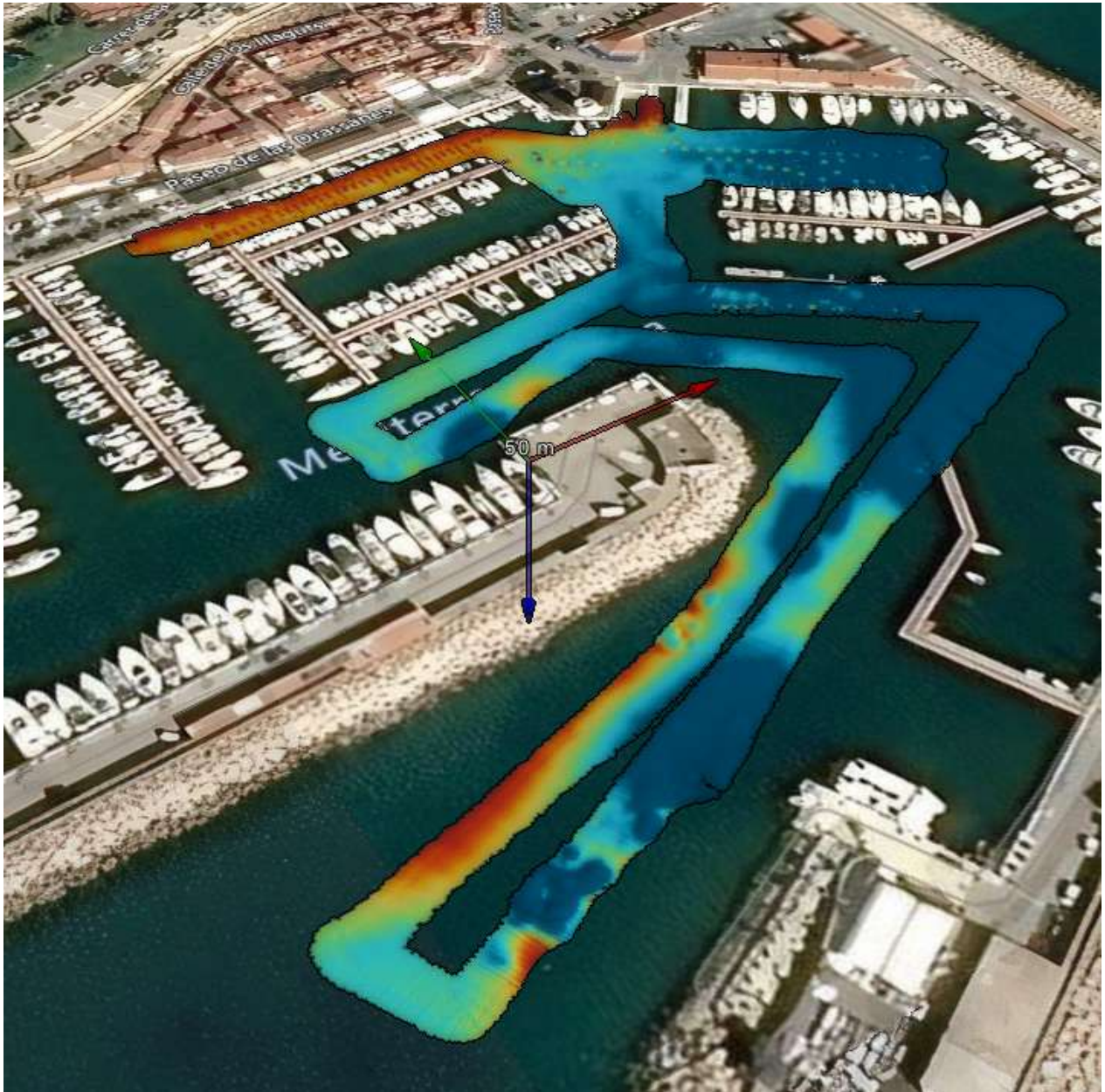
A recurrent bathymetric survey is usual in order to monitor the movement of sand and to be able to plan precision dredging when required.

Pay attention in the upper image to punctual dredging marks and the accumulation of sediment at the entrance to the port.

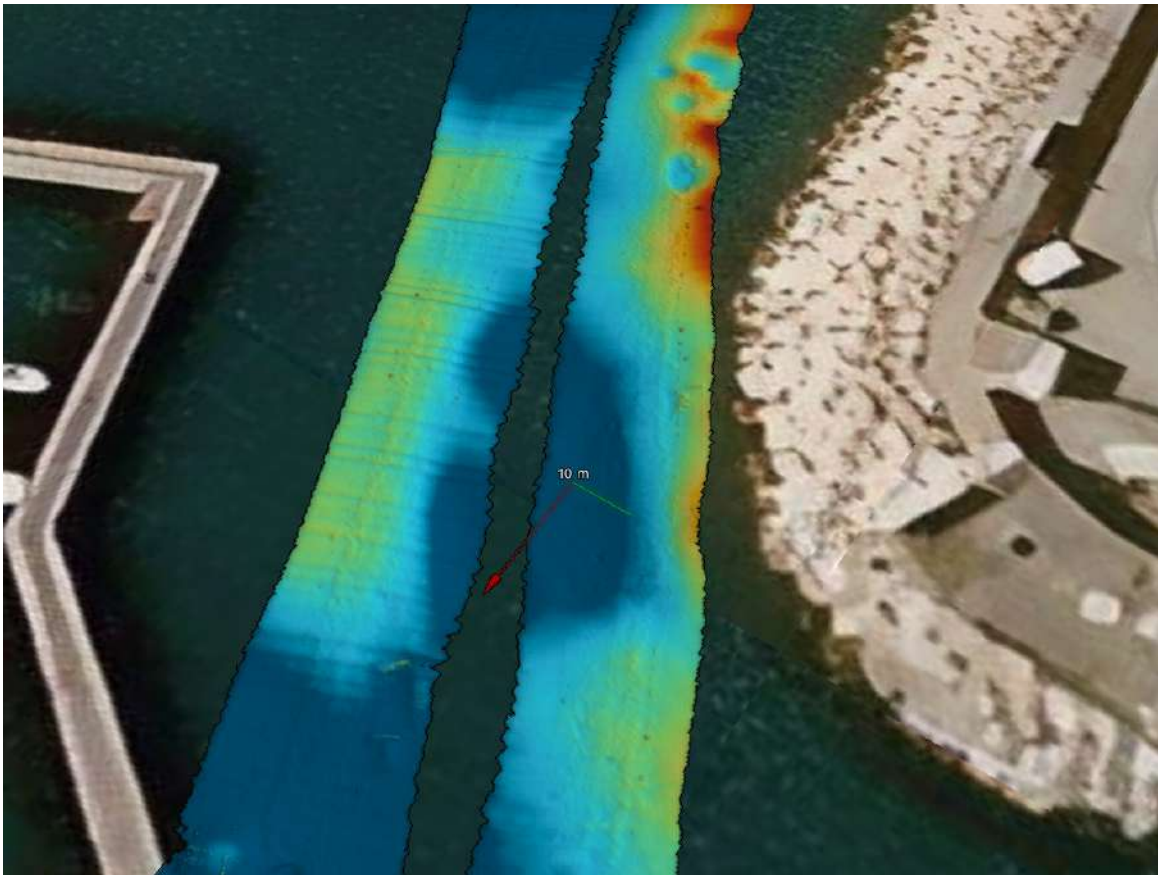


This tool is also capable of identifying the anchoring chains of vessels. As an example, this image of the raw data of this case.

Data Acquired Examples



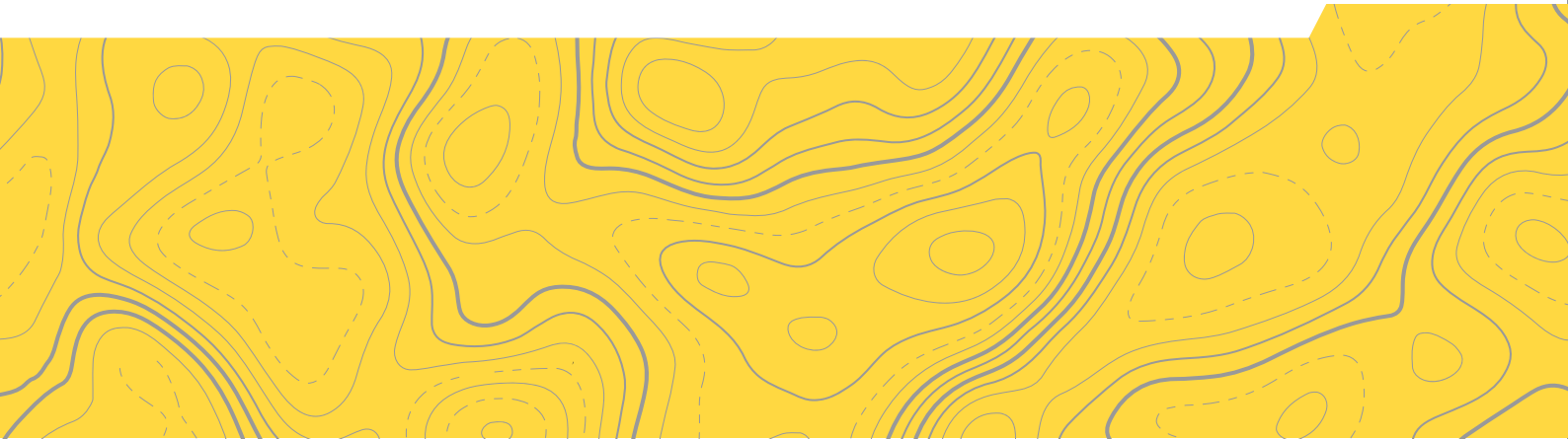
Overview of the surveyed area in the context of a demo session. No coverage passes were made, being a test day of 1 hour duration. The raw data were obtained with Wassp CDX software, worked in parallel with BeamworX and the visualisation in this case with Eiva NaviSuite Viewer.



Conclusions

The multipurpose USV SB 100 PRO equipped with a WASSP S3R multibeam echosounder offers an unbeatable performance. A complete pack with all the necessary instruments to perform entire works while increasing potential applications in several marine sectors. It can carry out control and monitoring of dock constructions, multibeam bathymetry, draught control, dredging, volume calculation, inspection of structures and location of submerged artefacts. INS SBG Ellipse Dual Antenna and SVS Valeport included on it ensure accuracy and quality of data.





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