

Application Note

GeoAcoustics GeoSwath Plus



KONGSBERG

Shallow Water Bathymetry and Side Scan Surveys using Vessels of Opportunity

GeoSwath Plus

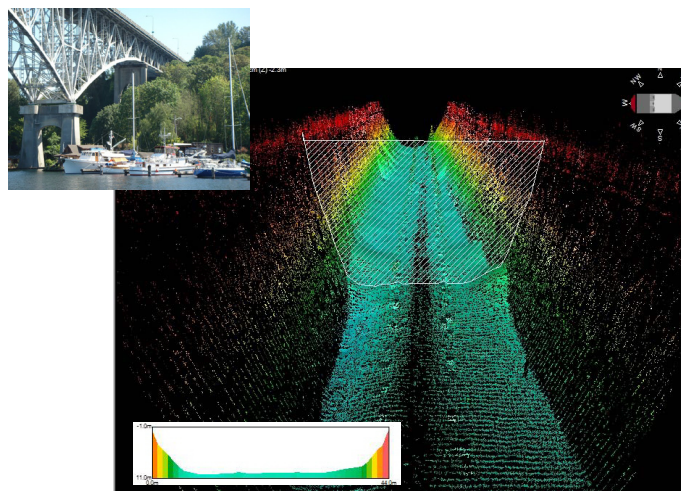
The *GeoSwath Plus* shallow water multibeam offers very efficient simultaneous swath bathymetry and side scan seabed mapping with accuracies that exceed the IHO standards for hydrographic surveys.

The applied phase measuring bathymetric sonar technology has an insonification angle of 240° , providing seafloor coverage beyond 12 times the water depth and makes it possible to image vertical structures up to the water line.

The compact system is readily installed on small vessels of opportunity.



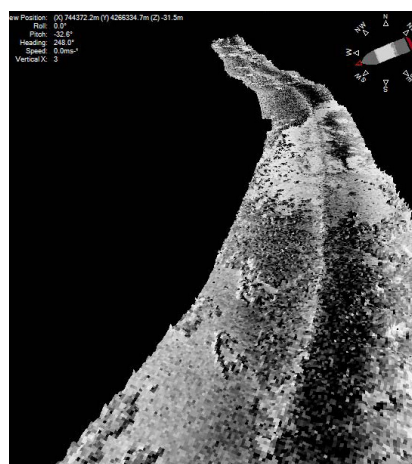
GeoSwath Plus installed on the Seishiroumaru fishing vessel in Tokyo Bay



Surveying Fremont Canal, Seattle, WA

The viewing angle of 240° and the wide seafloor coverage allow mapping of the waterway from the bottom to the surface in a single pass. The 40 m wide and 10 m deep canal links Salmon Bay and Lake Union. *GeoSwath Plus* is extensively used in canal and river surveys.

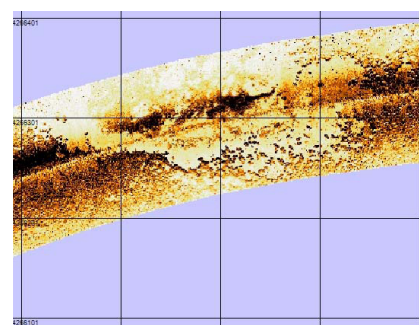
Rijkswaterstaat the arm of the Dutch Ministry of Transportation and Water Management with responsibilities including the construction and maintenance of waterways and flood prevention chose to install four *GeoSwath Plus* systems in their survey fleet for surveying the shallow rivers, canals and coastal seas within the Netherlands.



Mapping Posidonia sea grass meadows in the Mediterranean

Posidonia plays an important role for the marine ecosystem. Its presence is revealed in the geo-referenced side scan data, simultaneously obtained with the high resolution bathymetry data.

The **US Army Corps of Engineers (USACE)** deploys three systems for tasks including bottom type characterisation and submerged vegetation mapping.





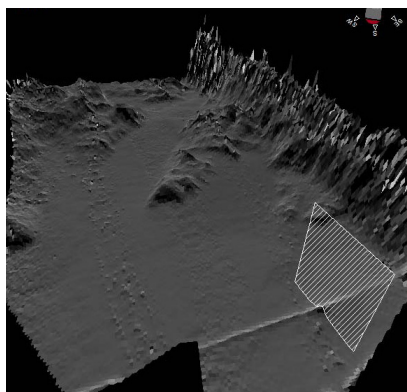
GeoSwath Plus set-up

The typical set-up for over-the-side installation for small boat operations comprises the wet-end transducer v-plate, which holds the port and starboard transducers, together with a sound velocity sensor (MiniSVS), an altimeter (single beam echosounder), and a motion reference unit (MRU).

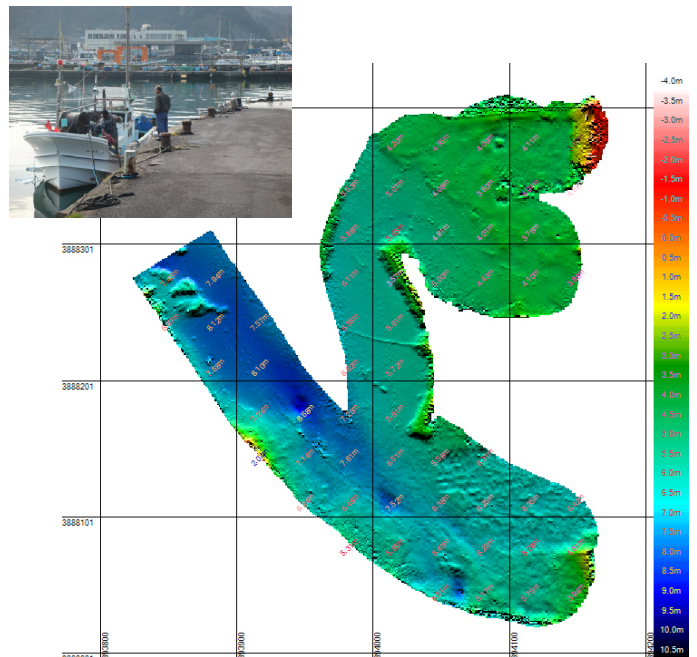
The compact deck unit houses the sonar electronics together with an integrated PC, running *GeoSwath Plus* software under Windows for data acquisition, system calibration, post-processing and data presentation, making the *GeoSwath Plus* a truly turn-key solution. The vessel's position and heading sensors also link to the deck unit with tide information and sound velocity profiles added to complete the calculation. In an alternative set-up the system can be used as a sonar sensor with most commercial hydrographic survey software packages.

Surveying Hota Harbour, Chiba Prefecture, Japan

The system is ideally suited for harbour and marine construction surveys as it can be mounted on any vessel of opportunity and delivers high resolution bathymetry and geo-referenced side scan data in a single pass. There is no need for towing a side scan tow fish thus enabling manoeuvrability in confined spaces and reducing the risk of damaging equipment. The combined interpretation of bathymetry and side scan data makes it possible to derive quantitative information for construction, dredging and surveillance projects. *GeoSwath Plus* is the standard system in the growing **ports and harbour and**



marine engineering sector of the Far East, including in hydroelectric dam projects in mainland China, such as the Xiaolangdi Dam on the Yangze River.



Note the swath coverage beyond 12 times water depth in parts of the survey. The bathymetry map reveals a pipeline crossing in centre of the harbour and the slipway in the north-east, which has been imaged up to the waterline.

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