

Application Note

GeoTexture - Side Scan Normalisation and Texture Mapping



KONGSBERG

KONGSBERG GEOACOUSTICS GeoSwath Plus - Side Scan Data Processing

GeoSwath Plus

GeoSwath Plus acquires wide swath bathymetry and co-registered geo-referenced side scan data. The applied phase measuring bathymetric sonar technology provides data coverage of up to 12 times the water depth, giving unsurpassed survey efficiency in shallow water environments, while meeting IHO standards for seabed mapping.

GeoTexture

GeoTexture is a suite of software for processing side scan data, mosaic creation and seabed classification. Its most common applications are found in civil engineering, geological and environmental site surveys, where high quality seafloor imagery, sediment classification and habitat mapping are key requirements.



Using GeoSwath Plus and GeoTexture together

The GeoSwath Plus bathymetric sonar collects co-registered bathymetry and true geo-referenced side scan data. Vessel motion, bathymetry and local slopes are available in the data files so that the normalisation algorithms in GeoTexture can correct for these, which substantially improves the quality of the mosaic and ease the interpretation of the seafloor images. The results are high-contrast waterfalls and mosaics with minimal motion artefacts.

In addition the software can be trained to recognise different seabed types. When ground truthing data is available to guide the training process, the results are maps of the real seafloor types.

GeoTexture mosaics can be exported into GS+ (the acquisition and processing software for GeoSwath Plus). This allows the direct correlation between bathymetry and high quality side scan mosaics.

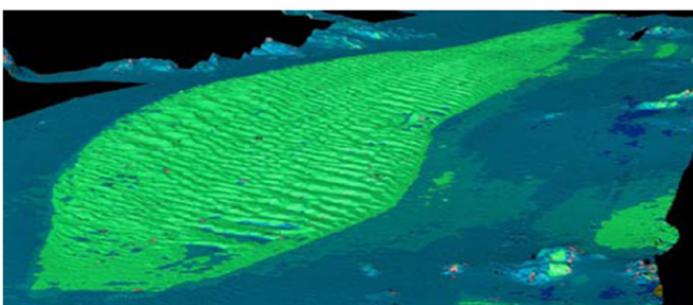
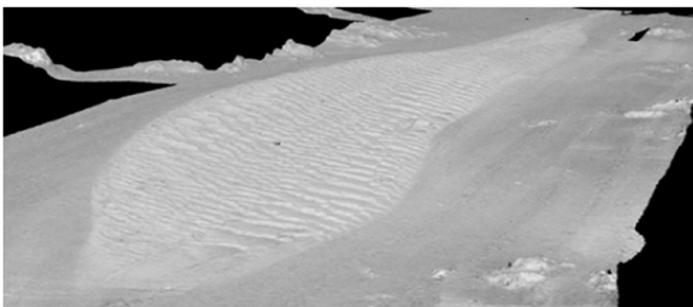
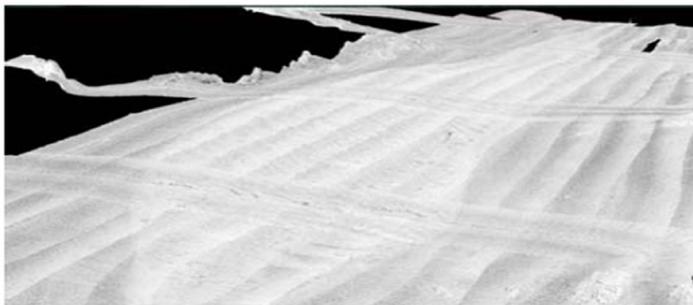
Data Examples

Sediment classification 1

GeoSwath Plus images from Shallow Survey Conference 2005 data set.

The side scan data has been processed in order to generate normalised and seabed classified mosaics.

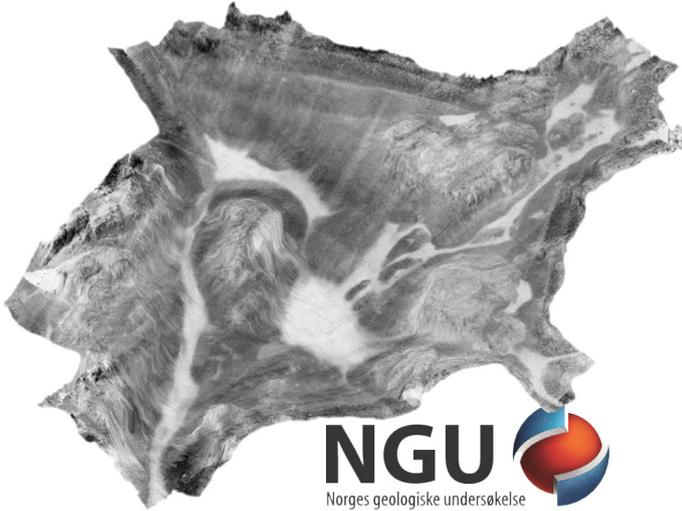
The final mosaics have been overlaid on top the bathymetry using GS+ processing software, which provides fully geo-referenced 3D side scan and seabed classification. Note the different seabed types: a sand wave field with surrounding muds and sandy muds.



*Shallow Survey Conference 2005, Plymouth, NH.
Common data set.*

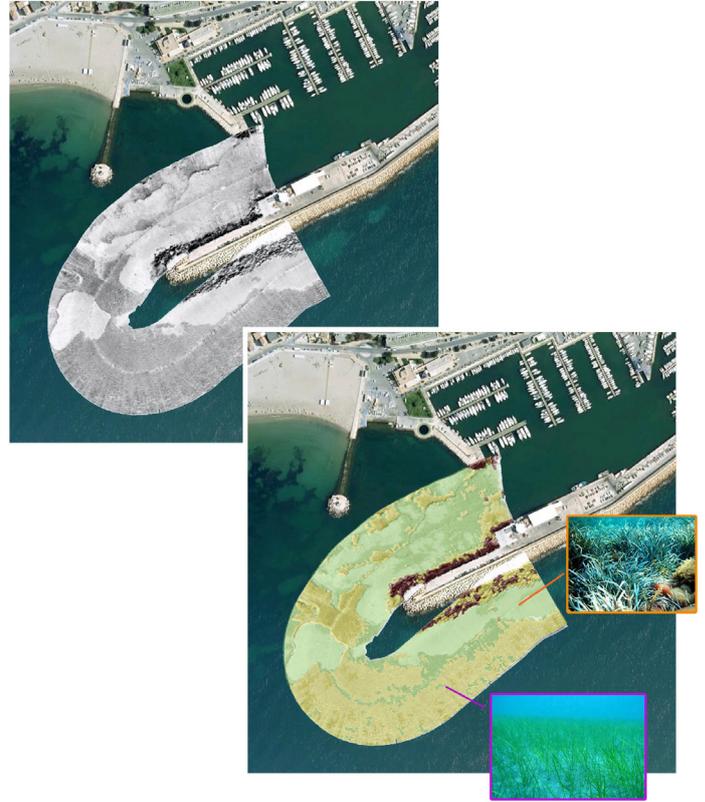
Sediment classification 2

Sediment deposits in an Norwegian fjord. The water depth reaches from 10 m in the river inlet to the north-east to 200 m in the south-western corner. The sediment deposits from the river are clearly visible.



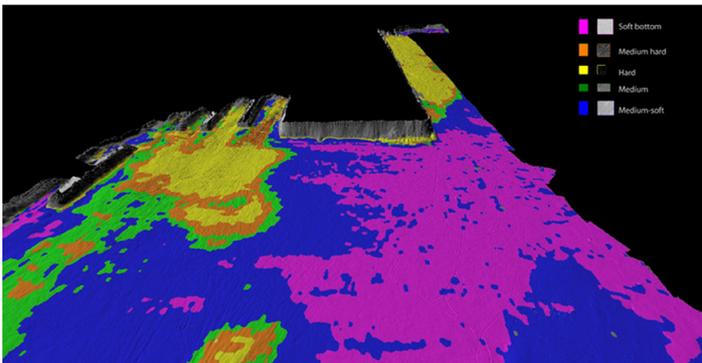
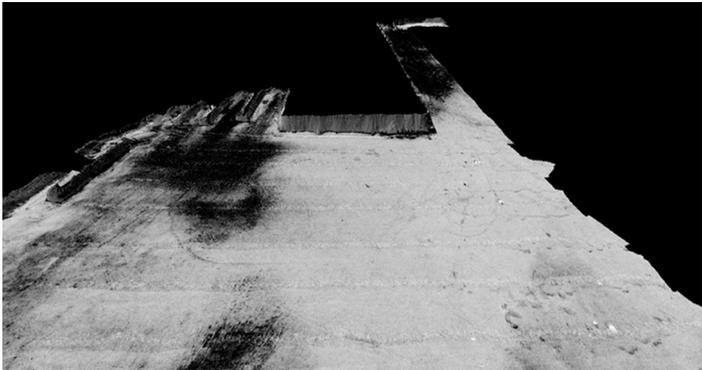
Habitat mapping 1

Habitat mapping application using Kongsberg's side scan 2094 digital and GeoTexture. Villajoyosa Marina, Spain. The data shows Posidonia meadows, which are importing breeding grounds for the fish population.



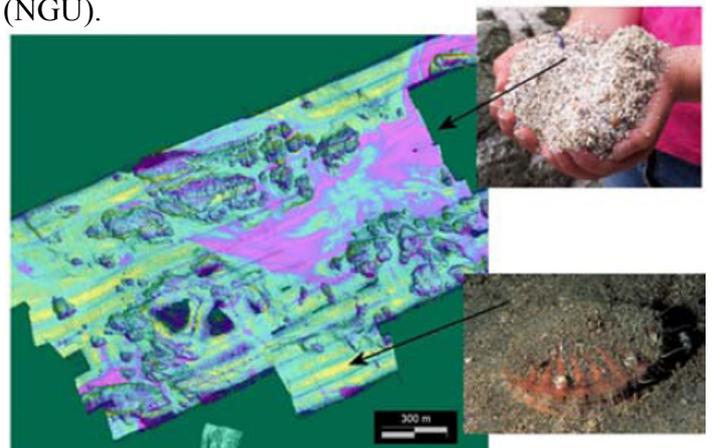
Sediment classification 3

Sediment deposits in Wellington harbour. Shallow Survey Conference 2012, New Zealand.



Habitat mapping 2

Habitat mapping validated with ground truth samples. Data courtesy of Norwegian Geological Survey (NGU).



MG0060913

KONGSBERG GEOACOUSTICS LTD is engaged in continuous development of its products, and reserves the right to alter the specifications without further notice

KONGSBERG GEOACOUSTICS LTD

Shuttleworth Close
Gapton Hall Industrial Estate
Great Yarmouth NR31 0NQ
United Kingdom

Telephone +44 1493 600666
www.km.kongsberg.com/geoacoustics
km.geoacoustics.sales@kongsberg.com