



New High Resolution Bathymetry Model of the English Channel

Hampshire, UK, 04 January 2010 - SeaZone took a major step forward in December 2009 towards its aim to create a high resolution and accurate bathymetry model of the UK Continental Shelf by completing the first phase of its Bathymetry Improvement Programme for the northern English Channel between South Foreland and Land's End. The new bathymetry model will become a core reference dataset in SeaZone's digital marine mapping product, HydroSpatial. With increasing pressure on the marine environment and the requirement to maximise value from existing public sector information holdings, the new model in particular and HydroSpatial generally are already proving to be important tools to support offshore renewable energy development, marine planning and policy making. The bathymetry model, believed to be the first of its kind, is created from 'best available' digital survey bathymetry data from a variety of different sources. It is being used by British Geology Survey to improve our understanding of sea bed geology and by Cefas (and others) as input to habitat mapping.

SeaZone has spent the past three years gathering and digitising data, going as far as identifying and gaining permission to use and capture survey sheets (also known as fair sheets) stored in archive at the UK Hydrographic Office. In total, SeaZone has invested in the capture of over 400 surveys to create this unique database of the UK's underwater terrain. The data represents the most detailed water depth data available, either from modern multibeam surveys or single beam surveys dating back to 1970. All of the data used in the work has been collected to the IHO's International Survey Standard, S-44, and quality controlled at the UK Hydrographic Office or another competent authority. By using survey data as input, the new model is more accurate than depth data displayed on traditional navigational charts, which is widely known to be coarser in resolution and conservative in depth.

To date, SeaZone has collated over 2.2 billion soundings from 5,000 surveys. Accurate area extents and metadata are created for each survey and the metadata published to the MEDIN portal, as well as being used internally by SeaZone and its customers. The data and metadata is used as input to SeaZone's Digital Survey Bathymetry (DSB) data product and as input to the bathymetry model. From this unique Oracle database, significant resource is invested to create a single seamless surface of sea bed elevation representing the most up to date and dense data available. The work, typically known as 'survey de-confliction', is undertaken using specially designed GIS software developed at SeaZone to read survey points directly from Oracle.

The de-confliction work separates the many overlapping surveys against each other based on a number of rules or attributes, most importantly survey age, survey type and sounding density. The result is a set of modified survey extents which are clipped against one another to keep the best available data in full, creating a seamless surface of depth soundings. The clipped survey extents are used to label each sounding in the Oracle database, with an active or inactive identifier, so that only the active soundings from each survey are used as input into the bathymetric model. The survey extents also form a meta layer, similar to the 'source data diagram' on an Admiralty Chart, which is used to identify the age and provenance of the data used in the model. An example of these clipped survey extents in the Isle of Wight area is shown as Figure 1 overleaf.

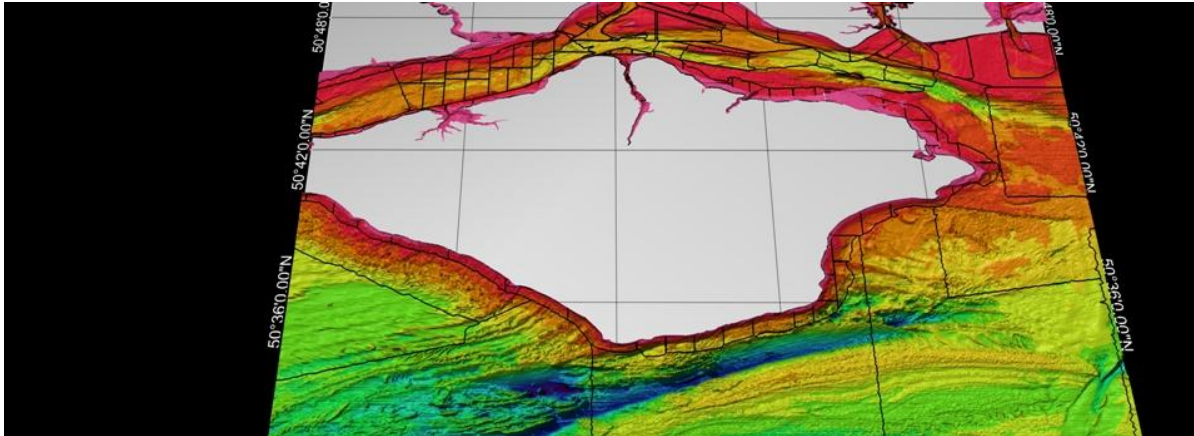


Image generated in IVS 3D Fledermaus

Figure 1: Deconflicted survey extents overlaid on the bathymetric model of the Solent and waters surrounding the Isle of Wight, (30m grid resolution)

Using SeaZone's French partner, Geomod, BathySIS software, the de-conflicted sounding data are used to create a triangulated irregular network (TIN) model (using Delaunay triangulation methods), which in turn is used to create a gridded model of varying resolutions. Figures 2a and 2b show a comparison of a gridded bathymetry model using only data derived from nautical charts (Figure 2a) and a model using digital survey data as input (Figure 2b). At a resolution of 1 arc second (or approximately 30m), physical features such as trenches, ridges, sand banks and sand waves are more easily distinguishable, even in areas where only single beam echo sounder data is used as input. By maximising the value of existing data in this way, investment in new surveys, such as those of the MCA's Civil Hydrography Programme, can be better targeted on priority or unsurveyed areas. As new data becomes available, this can be easily ingested into SeaZone's database to update the model.

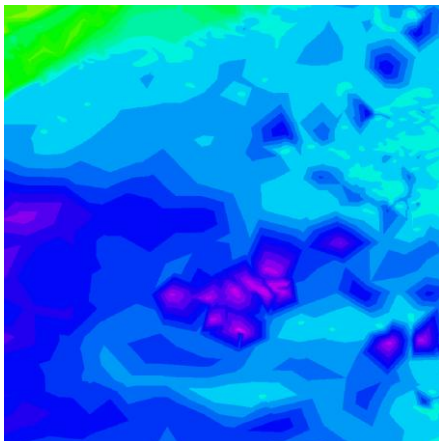


Figure 2a

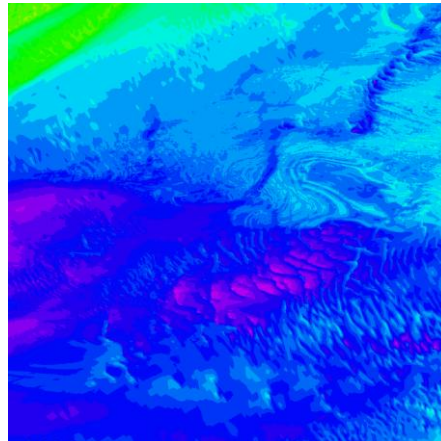


Figure 2b

Comparison of the bathymetric model (1arc second grid resolution) created from survey data from nautical charts (2a) and from digital survey data (2b)

Acknowledgements

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to this programme. The modelling work is supported by a contract from CEFAS (Centre for Environment, Fisheries and Aquaculture Science) where the results are being used to undertake habitat mapping work in the English Channel on behalf of Defra.

Further Information

For further information, including how your organisation can prioritise an area of particular interest or otherwise contribute to SeaZone's Bathymetry Improvement Programme (BIP), please contact SeaZone directly using the details below.

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Notes to Editors:

SeaZone is a world leader in the field of marine geographic information solutions, including its innovative data product, SeaZone HydroSpatial, the first 'off the shelf' authoritative digital marine map.

SeaZone's knowledge of marine science, data acquisition and use, with expertise in geographic information systems (GIS) and data management, provides customers with innovative solutions that address their data access, processing and management needs.

Over 500 organisations across the oil and gas, renewable energy, conservation and public sectors use SeaZone data, software and services to help support decision making in the Marine Environment and Coastal Zone.

The company, SeaZone Solutions Limited, is wholly owned by Admiralty Holdings Ltd (AHL), which is owned by the UK Secretary of State for Defence and operated on his behalf by the United Kingdom Hydrographic Office (UKHO).