

High Precision Multibeam Survey of a Carbonate Mound Area in the Porcupine Basin

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GEOMOUND is a research project funded mainly by the European Union, which focuses on the geological evolution of giant, deep-water carbonate mounds in the Porcupine Basin and in the southeast part of the Rockall Basin, off western Ireland and the UK. It is one among other projects to investigate deep water mineral and biological resources along the European continental margin. Besides gathering and analysing geophysical, seismic and geological data, one objective is to produce an inventory of recorded giant mounds located at the continental margin in the mentioned basins. In order to understand processes which exist in conjunction with these mounds, their genesis and structure, the topography and morphology of that region has to be known in detail. For this reason, a systematic multibeam survey (Hydrosweep DS-2) in conjunction with sub-bottom profiling (Parasound) was performed along the eastern continental slope of the Porcupine Basin by the German RV "Polarstern" during leg ANT XVII/4 in June 2000.

In order to assure highest accuracy and quality of the final product, an overlap between neighbouring multibeam swathes of at least 10% was realised, using real time Differential-GPS for navigation. Multibeam and navigation data were painstakingly checked for systematic and random errors using Hydrographic Data Cleaning Software (HDGS). Based on the cleaned data, a Digital Terrain Model (DTM) with a grid size of 20 m was determined. First results derived from the DTM are presented as large scale bathymetric charts and 3D-visualisations of selected areas. A terrain analysis will be utilized to describe morphological features of the continental slope. Pseudo sidescan data which are in addition to the depth measurements supplied by the multibeam system, are used to identify small morphological features on the sea floor. They are generally not depictable by standard multibeam measurements. However, they will be visualized using sidescan data and Parasound sub-bottom profiler recordings.