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CARBONATE: Deep-sea drilling cold-water coral carbonate mounds – stage 1: mound distributions and drill target selection

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Up to now the carbonate stored in carbonate mounds has not been considered in any global carbonate budget or linked to any global carbon budget involving greenhouse gases. A major challenge exists to quantify the amount and flux of carbon stored by these newly discovered areas of enhanced carbonate accumulation in intermediate water depth. Furthermore, investigations so far reveal that all mounds possess different growth histories depending on the environmental setting and the involved faunal associations. CARBONATE will drill complete sequences through a number of mounds in differing environmental settings using the portable drill rig MeBo (University of Bremen). By understanding how biogeochemical processes control the development of these carbonate mounds and their response to climate change, we will make an important step in quantifying their role as mid-latitude carbonate sinks. In the end, a better understanding of the processes involved in mound formation and development may also result in new views on fossil analogues many of which are less accessible hydrocarbon reservoirs.

The recently available high resolution multi-beam bathymetry data recorded during the Irish National Seabed Survey (INSS) allows, for the first time, a mapping of these mounds and mound-like structures enabling an estimation of their abundance

and quantification of their contribution to continental slope sediments.

Here, we present the first comprehensive overview and quantification of mounds and mound-like structures based on 25m rastered bathymetric data for the Irish sector of the NE Atlantic. Based on the data, we identified over 1600 mound-like structures along the NE Atlantic slope between 46^{o}45'N and 57^{o}30'N. The structures elevate up to 300m above the surrounding seafloor and were usually grouped into distinct provinces often associated with erosive structures such as canyons and moats. 90% of the identified features occurred in water depth between 500 and 1500m.

This data analysis forms the initial steps in drill target selection.