



Late Pliocene start of Atlantic Cold-Water Coral Mound formation

Freya Hemsing and Norbert Frank

Heidelberg University, Institute of Environmental Physics, Germany (freya.hemsing@iup.uni-heidelberg.de)

We review the initial larvae settling of framework-forming cold-water corals in the Atlantic. Records of 53 coral-bearing sediment cores from 13 coral mound provinces were compiled including a new core penetrating a coral mound in the Gulf of Cádiz. Flourishing glacial coral environments in the Gulf of Cádiz yielded maximum mound aggradation rates of up to 120cm/ka. Similarly high mound aggregation rates have been recorded in the modern North Atlantic off Ireland and Norway or, for the last glacial, at more southern sites off Angola, Mauritania and Brazil. In contrast, inactive coral mound states and erosion lead to much lower and even negative aggregation sometimes over whole climate cycles. On the basis of the record compilation, we find an uneven distribution of vertical mound aggradation rates in the Atlantic with the median for maximal aggregation rates and minimal aggregation spanning from 20 to 4 cm/ka clearly highlighting the complexity of cold-water coral mounds. Nevertheless, we propose that common processes and therefore timescales can be found. Extrapolating the minimal and maximal aggregation rates to the base of typical mound heights of the unstudied mound structures in the Atlantic, we suggest that these unlikely exceed ages of 0.8 to 3.8 million years and hence the late Pliocene.