



Cold-water coral growth in relation to the hydrography of the Celtic and Nordic European Continental Margin

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Along the Atlantic European continental margin, living cold-water coral reefs occur over a wide bathymetric and hydrographical range. Focussing on two regions, the Celtic and the Norwegian shelves we found that they are bound to different intermediate water masses. Measurements of the physical and geological properties have shown that parameters such as temperature, salinity, dissolved oxygen content, current intensities, and different substrates do vary in a wide range without impacting the distribution of living cold-water coral reefs to a first degree. The habitat of living reefs within the NE Atlantic comprises a temperature-salinity field with its lower boundary being equivalent to the Intermediate Salinity Maximum (ISM). The ISM on the Celtic Margin is represented by Mediterranean Outflow Water while it is replaced by Atlantic Water on the Norwegian Margin. The upper limit corresponds to water mass boundaries of Eastern North Atlantic Water / Mediterranean Outflow Water on the Celtic Margin and Norwegian Coastal Water / Atlantic Water on the Norwegian Margin. Our study shows that cold-water corals in the North Atlantic tolerate a wide range of environmental conditions. However, our data indicate that living cold-water coral reefs occur almost exclusively within the density envelope of 27.35 - 27.65 kg/m³. This may favour nutrient concentration and possibly supports larval drift along the European continental margin.