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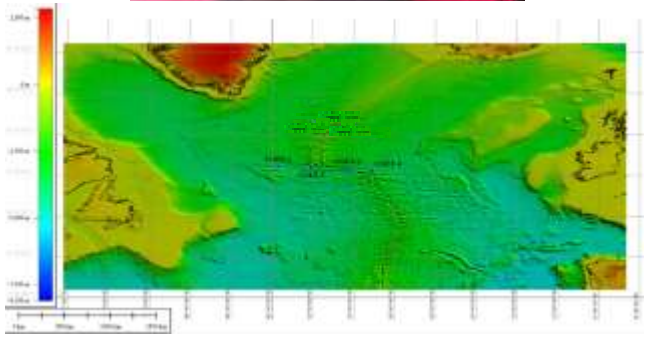
Orientation: Ocean Observation and Global Change
Specialization Area: Ocean Observation
Research Area: 1.1 Physical Oceanography



Bathymetric map of the region Charlie Gibbs Fracture Zone (black rectangle) with the location of the four corers that we will obtain in 2023 (blue points).

Ph.D. project: **Sedimentary and Paleoceanographic Processes at Charlie-Gibbs Fracture Zone (North Atlantic Ocean)**

Supervisors: Dr. Guillermo Francés Pedraz (Universidade de Vigo)

Summary: The Labrador Sea, Irminger Sea and Norwegian Sea are the main areas of formation of the North Atlantic Deep Water, which forms the colder and deeper branch of the Atlantic Meridian Overturning Circulation (AMOC). The AMOC is the most efficient mechanism for capturing atmospheric CO2 in the ocean. So due to the increase of atmospheric CO2 associated with anthropogenic activities, knowing the strength of this mechanism is crucial for knowing how marine life will be affected. For this knowledge, we can use the records of sediments of strategic areas where the branches of the AMOC pass. In this project, we are going to focus on the Charlie-Gibbs Fracture Zone (52º30'N 31º45'W), which is a deep and narrow passage that connects the Iceland basin with Irminger and Labrador basins in North Atlantic. The Iceland-Scotian Overflow Water, which is a branch of North Atlantic Deep Water, crosses through this fracture zone and influences sedimentary processes. Therefore, with a sedimentary fill, we will be able to estimate how stronger this bottom current was according to different climatic scenarios of the Holocene and Upper Pleistocene and what has been their influence on the AMOC.
To carry out this project, next summer (July of 2023) we will obtain four gravity corers and four box corers in the Charlie-Gibbs Fracture Zone on board the Sarmiento de Gamboa vessel.
The main objective of this thesis is to know the millennial and submillennial variability of the deep circulation of the North Atlantic during the last climatic cycle, working at high resolution and using different techniques and analyses.