

CIRCULATION PATTERN OVER NORTH ATLANTIC SEAMOUNTS: ORMONDE AND FORMIGAS

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Abstract: Seamounts constitute an obstacle to the free ocean flow giving rise to a variety of hydrodynamical processes and phenomena such as, among others, Taylor columns/caps. As a consequence of that, seamounts may turn into very productive ecosystems with high biodiversity, which provide a particularly good environment for the settle of some organisms, acting as stepping stones and contributing to its dispersal. In this study, we verify if these oceanographic effects explain the presence of cold-water corals of Mediterranean origin in the Atlantic. To achieve this, CTD, LADPC and biochemical measurements were carried out in three seamounts in the path of the Mediterranean Outflow Water (MOW): the Gazul mud volcano, and the Ormonde and Formigas seamounts. Taylor columns were not observed in any of the three sampled areas. In fact, the oceanographic processes in those areas are more influenced by the vertical distribution of water masses, which determine the stability of the water column. Moreover, the high values of the Brunt-Väisälä frequency around the MOW halocline can lead to the formation of internal waves. These perturbations in the water column can enhance the vertical mixing, producing suspension, which, in turn, could affect the vertical distribution of cold-water corals.

Key words: Seamounts, Mediterranean Outflow Water, Taylor columns/caps, Internal waves.

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