

Is Deep Sea Cold Water Corals distribution constrained by CO₂ distinct signatures?

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The MEDWAVES (MEDiterranean out flow WATER and Vulnerable EcosystemS) cruise was developed in the framework of the ATLAS project, with the main objective of determining areas under the influence of the Mediterranean Overflow Water within the Mediterranean and Atlantic areas. MEDWAVES cruise (LEG 1: Cadiz – Punta Delgada and LEG 2: Punta Delgada – Málaga) was completed between September-October 2016 on board the Spanish R/V Sarmiento de Gamboa. Within the specific aim of evaluating the biogeochemical role of the Mediterranean Water, over and around the Formigas, Ormonde and Seco de los Olivos seamounts, and the Gazul Mud volcano, some CO₂ system variables were measured on board (pH, total alkalinity and carbonate ion concentration) together with dissolved oxygen samples.

The chemistry of the CO₂ in the Mediterranean Sea is very particular, characterised by warm, salty and high alkalinity waters [1]. The Mediterranean Water goes into the Atlantic Ocean through the strait of Gibraltar, being clearly identified as the most saline water of the water column located at approximately 1000 dbar [2]. Apart from the water mass characteristic, other properties and organism characteristics of the Mediterranean Sea are spilt into the Atlantic. According to the objectives of MEDWAVES cruise and taking into account the fine scale sampling made over the 400m above the bottom, we will characterise the CO₂ system of the four different areas, trying to distinguish the signature of the Mediterranean Water in each seamount. The presence of depth cold water coral in those seamounts is poorly known and we would like to connect those of Mediterranean Sea with those of the continental shelf of Portugal, the Azores and the Mid-Atlantic Ridge with the CO₂ variables. Hence, a second step will be to evaluate the connexion between the cold water corals and the CO₂ system.

- [1] M. Alvarez, H. Sanleón-Bartolomé, T. Tanhua, L. Mintrop, A. Luchetta, C. Cantoni, K. Schroeder, G. Civitarese, The CO₂ system in the Mediterranean Sea: a basin wide perspective, *Ocean Sci.* 10 (2014) 69–92. doi:<http://dx.doi.org/10.5194/os-10-69-2014>.
- [2] F. Fraga, C. Mouriño, M. Manríquez, Las masas de agua en la costa de Galicia: junio-octubre, *Res Exp Cient.* 10 (1982) 51–77.