

OBSERVATION NETWORK OF THE CARBON DIOXIDE SYSTEM AND OCEAN ACIDIFICATION IN THE CANARY ISLANDS

Melchor González-Dávila*, J. Magdalena Santana-Casiano, David Curbelo-Hernández, David González-Santana, Adrián Castro-Álamo, David Estupiñán-Santana and Aridane G. González

Instituto de Oceanografía y Cambio Global, IOCAG, Universidad de Las Palmas de Gran Canaria, ULPGC, Las Palmas de Gran Canaria, Spain.

melchor.gonzalez@ulpgc.es, magdalena.santana@ulpgc.es, david.curbelo103@alu.ulpgc.es, david.gonzalez@fpct.ulpgc.es, adrian.castro@fpct.ulpgc.es, david.estupinan101@alu.ulpgc.es, aridane.gonzalez@ulpgc.es,

Abstract: The observation network of the CO₂ and ocean acidification system of the Canary Islands consists of three oceanographic buoys and two VOS lines. The buoys are located in the coastal areas of Gran Canaria (Gando Bay), El Hierro (Marine Reserve) and La Graciosa (Marine Reserve). The observation lines connect Tenerife-La Gomera-La Palma on one side and Gran Canaria-Tenerife-Lanzarote-Valencia-Barcelona on the other. The buoys are included in the Global Ocean Acidification Observing Network (GOA-ON). The VOS line from Gran Canaria to Barcelona is included in the Integrated Carbon Observation System (ICOS).

The first year's data of this observation network is revealing that the coastal processes are very important in defining the coastal characterization of the CO₂ system. In this sense, the Trade Winds are contributing to the physical and chemical variability in the coastal areas. An example is that Gando Bay (Gran Canaria) is acting as a slight source of CO₂ ($0.27 \pm 0.22 \text{ mmol m}^{-2} \text{ d}^{-1}$). On the other hand, the VOS line's data showed that the net annual CO₂ sink ($-0.26 \pm 0.04 \text{ mol C m}^{-2} \text{ yr}^{-1}$) increased in the northwest African continental shelf ($-0.48 \pm 0.09 \text{ mol C m}^{-2} \text{ yr}^{-1}$).

This observation network is producing a highly valuable CO₂ system and ocean acidification dataset. These data are necessary to understand the impact of climate change in the region, the answer of the ocean, and open new windows to the governance of the blue economy.

Keywords: CARBOCAN, Time-Series, CO₂ system, Ocean Acidification

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