

ZOOPLANKTON RESPONSE TO VOLCANIC ASH DEPOSITION AFTER THE ERUPTION OF LA PALMA VOLCANO

M.H. Fernández-Méndez*¹, A. N. Sarmiento-Lezcano¹, M. Couret¹, L. Armengol^{1,2}, A. González-Vega^{1,3}, C. Presas-Navarro³, J.M. Arrieta³, E. Fraile-Nuez³ and S. Hernández-León¹

¹Instituto de Oceanografía y Cambio Global, IOCAG, Universidad de Las Palmas de Gran Canaria, Unidad Asociada ULPGC-CSIC, Campus de Taliarte, 35214 Telde, Gran Canaria, Canary Islands, SPAIN. henar.fernandez101@alu.ulpgc.es, sarmientolez@ulpgc.es, alba.gonzalez@ulpgc.es, shernandezleon@ulpgc.es

²Center for Coastal Research, University of Agder, Kristiansand, Norway.
laia.armengol@ulpgc.es

³Instituto Español de Oceanografía (IEO) - Consejo Superior de Investigaciones Científicas (CSIC). 38180 Santa Cruz de Tenerife, Tenerife, Canary Islands, SPAIN.
carmen.presas@ieo.es, jesus.arrieta@ieo.es, eugenio.fraile@ieo.es

Abstract:

The zooplankton community has been extensively analysed around the Canary Islands, including the coastal submarine eruption occurred in “El Hierro” island, where the zooplankton changed due to the physical disturbances caused by the strong effect upon the physical and chemical scenarios in the water column. The ridge of “Cumbre Vieja” is the most recent active volcanic region around the Canary Islands. The eruption led to ash deposition around La Palma Island. The ash deposited on the ocean generates changes in the physical and biological variables affecting phytoplankton and zooplankton communities. This study provides information about the zooplankton composition before, during, and after the volcanic eruption occurred in September 19th 2021. Sampling was carried out on board the RVs *Ramón Margalef* and *Ángeles Alvariño* in the context of the VULCANA project from IEO-CSIC institutions in September 26th (Vulcana-III-0921) and October 26th during 2021 (Vulcana-III-1021), and February 2nd (Vulcana-III-0222) during 2022. We compared the results of the biological stations performed near the island with the northwest station of the RAPROCAN monitoring cruise as a farfield reference. We also show the previous oceanographic conditions throughout the eruptive process. Sea surface temperature, salinity, mixed layer depth, chlorophyll a, dissolved oxygen, and depth of the euphotic zone were obtained from the Copernicus Marine Environment Service. Zooplankton was sampled using a WP2 net in vertical hauls from 200 m depth to the surface. These samples were processed with ZooScan through EcoTaxa. Environmental variables such as temperature and chlorophyll changed near the volcano in comparison to the distant oceanographic station. We discuss those changes in relation to the effect of ashes released by the volcano.

Key words: Zooplankton, chlorophyll, volcano, La Palma, Canary Islands.

Acknowledgments: We thanks the crew of RV Ángeles Alvariño as well as graduate students and researchers from the Instituto Español de Oceanografía (IEO-CSIC) and Biological Oceanography and Global Change Group (GOBCAG) for their assistance with sampling. Zooplankton samples and CTD data were obtained through the VULCANA project funded by the IEO-CSIC institutions. CTD farfield stations were carried out in the context of the RAPROCAN project also funded by IEO-CSIC.