Submarine Eruption at El Hierro

The submarine volcano eruption at the island of El Hierro: more than 2 years registering physical-chemical anomalies

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Abstract

On October 10 2011 an underwater eruption gave rise to a novel shallow submarine volcano south of the island of El Hierro, Canary Islands, Spain. During the eruption large quantities of mantle-derived gases, solutes and heat were released into the surrounding waters. In order to monitor the impact of the eruption on the marine ecosystem, periodic multidisciplinary cruises were carried out with different projects: Bimbache, Raprocan, Cetobapth and Vulcano.

The extreme physical-chemical perturbations caused by this event during the first six months, comprising thermal changes, water acidification and deoxygenation, resulted in significant alterations to the activity and composition of local plankton communities. Our findings highlight the potential role of this eruptive process as a natural ecosystem-scale experiment for the study of extreme effects of global change stressors on marine environments.

On the other hand, and due to the fact that the degasification phase is still active, a post-eruptive monitoring were necessary in order to have a completely view of the system variability. In this way, in January 2013, the Spanish Government together with FEDER funded approved VULCANO project (CTM2012-36317) with three multidisciplinary cruises (March, October 2013 and March 2014), which have already proved and quantified that the physical-chemical anomalies are still present in an area of 200 meters radio around the main crater of the submarine volcano.

References

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