

## Microbial communities and biogeochemistry in different volcanic environments from Canary Islands (Spain)

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The microbial communities of different sites located within the Canary Islands were studied in relationship to the geochemical characteristics of this volcanic environment. In this study, we focused on the microorganisms thriving in terrestrial environments, either from boreholes or water mining activities at these islands. Molecular methods were used to detect the presence of microorganisms in water samples. Two boreholes were studied and were located in Tenerife Island near the summit of Teide Volcano (MM at 2264 m and EP 2133 m above sea level) and water was collected from 450 m (MM) or 370 m (EP) depth at the aquifer water surface. At the water surface, CO<sub>2</sub> content was over 25-fold atmospheric CO<sub>2</sub> content and temperature around 13°C (MM) or 11°C (EP). A highly diverse microbial community was detected and was composed by a large number of bacterial divisions, such as, Firmicutes, Gammaproteobacteria, Actinobacteria, Betaproteobacteria, Bacteroidetes, Epsilonproteobacteria, Verrucomicrobia, Nitrospirae, Chloroflexi, Alphaproteobacteria, and several uncharacterized candidate divisions (OP11, OD1, and OP10). Water is a scarce resource in Canary Islands and search for water sources is an important activity in this archipelago. One of these mines located in La Palma Island was visited and water temperature was 30°C. Some members of the microbial communities were detected and consisted mainly on Alpha and Gammaproteobacteria as the most important groups, and Nitrospirae, Deltaproteobacteria, Verrucomicrobia, Firmicutes, Betaproteobacteria, and Acidobacteria. Results shows the presence of very diverse microbial communities which might have significant consequences for the geochemistry of these underground water sites.

**Keywords** biogeochemistry, microbial communities; volcanic environments; boreholes; water mining