



Study of gaseous emission inside a gallery in a volcanic island: Tenerife (Canary Islands)

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Among the main species released by volcanoes, two have received special attention in the last years. The first one is the carbon dioxide, CO₂, which has been used as an unrest and/or eruption early warning signal due to his low magma solubility and easy measurement. The second one is Radon, a radioactive isotope with a half-life of 3.8 days, which is used as an important tool to forecast earthquakes and volcanic eruptions.

In the Canary Islands (oceanic volcanic islands) during the last century hundreds of galleries, subhorizontal drillings with lengths from few meters to kilometres and a 2x2 meters mean section, have been drilled to obtain groundwater. In the island of Tenerife there are about 1200 of them. These infrastructures can cut across some preferential rising paths like dikes or fractures, so they turn to be optimum places to measure volcanic gas emissions. In addition, atmospheric parameters influence significantly decreases inside the galleries.

In this work we present data analysis from one year period of four multiparametric stations placed inside a subhorizontal gallery 3 kilometres long in the NW rift of Tenerife. These stations were deployed around an anomalous soil temperature point found at about 2000 meters from the entrance. Each station measured ambient and soil temperature and CO₂ and radon air concentration inside the gallery every thirty minutes. We also show how outside atmospheric parameters affect the microclimate inside the gallery.