



Volcano monitoring with a multiparametric station placed inside a subhorizontal gallery in Tenerife (Canary Islands)

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Measuring gaseous emissions from a volcano is one of the main tasks in volcano monitoring. These emissions can occur inside an active crater as fumaroles or plumes or along the whole volcanic area as diffuse emissions through porous soils or using preferential paths like dikes, faults or fractures.

H₂O, CO₂, SO₂ and H₂S are the main species released by volcanoes. Among them, CO₂ has received special attention in the last years. It has been used as an unrest and/or eruption early warning signal due to his low magma solubility and easily measurement.

In the Canary Islands (oceanic volcanic islands) during the last century hundreds of galleries, subhorizontal drillings with lengths from few meters to kilometers and a 2x2 meters mean section, have been drilled to obtain groundwater. In the island of Tenerife there are about 1200. 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 a three years registration period of a station placed at 1600 meters from the entrance of a gallery in Tenerife. This station measures several parameters like ambient and soil temperature and CO₂ and Radon air concentrations inside the gallery. We also show how outside atmospheric parameters affect the microclimate inside the gallery.