IGN Geochemical Volcano Monitoring Network: QGIS-plugin development for visualization and interpretation of hydrochemical data

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Hydrogeochemical study of groundwater constitutes a very important tool for surveillance of volcanically active zones such as the Canary Islands. As part of the IGN Geochemical Volcano Monitoring Network in Tenerife, during the last 7 years (2009-2016) periodic groundwater sampling has been carried out at several points of the island. In situ measurements of physicochemical parameters and analysis of major components and trace elements have been accomplished.

In order to provide the visualization and improve the interpretation of these data, a free access QGIS plugin has been developed in Python language. Through a user-friendly graphic user interface (GUI), it is possible to represent different parameters and chemical species from a standard Excel file. The representation is done by Gnuplot software, being able to obtain both temporal evolutions of any parameter and Piper diagrams for a specific date or a time period.

The main advantage of this tool is the possibility to visualize and handle large amounts of data in a simple and fast way through different types of graphs, depending on physicochemical parameters, chemical species, observation periods and selected sampling points. The combination of these representations allows a more comfortable data analysis, as well as the identification of possible trends or variations related to volcanic activity.