



3D geological models in volcanic terrains, an example from Tenerife (Canary Islands)

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Groundwater is an extremely important natural resource in Tenerife (Canary Islands) and therefore, its extraction has been intensively developed through horizontal and vertical works since 19th century. There are more than 1400 drills made for extracting water in Tenerife Island. Most of them are subhorizontal galleries radial to Teide, with a wide section (2x2m) that allows walk along them. The longest has 6 km of length and the 27% of drill holes are vertical water wells located in shore. This dense network represents a tool with great potential for the knowledge of volcanic islands underground, with more than 1700 km of geological record.

In order to provide different 3D geological models of Tenerife Island a digital database was made with all the geological records. After that, the underground information was represented on maps using geographic information system (GIS).

The development of these 3D geological models are based on two main and controvert hypothesis about the origin of Las Cañadas depression (located in the central part of Tenerife): giant slide vs. caldera collapse. Concerning this geological argument, we used new tools originally developed for sedimentary terrains (petrol extraction or mining) in a volcanic island. Based on modelling technics, geological records were transformed as input data for 3D Geomodeller software, getting as output 3D geological models of the island conditioned by the two main hypothesis.