

# **GIS : A new tool for volcanic gases' survey – a case study at Vulcano Island, Southern Italy**

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Southern Italy is characterized by several active volcanic regions like Mt. Vesuvio, Campi Flegrei, Etna and the Aeolian Islands. Some of them are surrounded by some of the most densely populated areas in Europe like Napoli and Catania or are major targets for modern tourism, like Vulcano Island. Therefore in view of hazard mitigation it is very important to understand the structural and geological settings of these areas.

Temperature of the fumaroles is one parameter (with chemical composition of the gases) which could indicate a future eruption. In this purpose, the variations of the temperature have to be particularly studied. That is why we created: i) a web site collecting the temperatures' measurements of the fumaroles' vents of La Fossa crater, Vulcano and ii) an add-on for Google Earth showing the location of the fumaroles' vents. The purpose of the project is to create an internet resource which saves time to all researchers as it will publish available and future temperature measurements of fumaroles from La Fossa crater, Vulcano Island.

The base of the system consists of interactive digital maps and photos of the interested area. Each map is a layer of the system. Each layer represents data for a date of temperature measurements. The user can select in a menu one or more layers to be seen in the software. The background of all layers is the geological map of Vulcano Island or an aerial photo of La Fossa crater. Clicking on the location of a fumaroles' vent, a new web page appears, summarizing the temperature's evolution versus time appears, the gases' composition and photos of the fumaroles' vent (when they are available).

During the same project, we develop an add-on for Google Earth allowing a nicer interface to locate the fumaroles' vents. Http links between the add-on and the web site exist to view the temperature's evolution of each fumarole.

This program can be adapted for all volcanoes and a lot of kind of data (isotopic compositions, deformation, epicenters' location, data from reduction capacity sensor or economic, population data around the volcano). It will run on and off-line. So you can have it on CD-Rom with your own data to study them.

An internet GIS can also be a source of information for the educated tourists and a base to train local guides.