FEMALE

FEMALE implements an unprecedented and new approach for the analysis of volcano-seismic data aimed at Forecasting Volcanic Eruptions using Signal Processing and Machine Learning techniques.

It will use artificial intelligence techniques to analyse continuous seismic signals from a suite of volcanoes rather than isolated events to create a new parametric database. Correlating parameter evolution with volcanic processes will advance the analysis of seismo-volcanic signals, improve the management of volcanic crises, and provide reliable tools for forecasting volcanic eruptions.

Analysing a variety of volcanic processes at selected volcanoes, both that culminated and did not culminate in eruptions FEMALE will create an Inventory of Case Studies based on the analysis of past volcanic unrest to be used for future volcanic eruption forecasts. This novel methodology of comparing eruptive and non-eruptive cases is critical to obtaining a true statistical base from which to forecast future eruptions.

FEMALE will establish a new universally applicable, exportable, simple, and useful methodology to forecast volcanic eruptions using continuous and labelled volcano seismic signals. We will derive a new perspective on the relationship between seismic activity and volcano dynamics by focusing on producing successful volcanic eruption forecasts.

FEMALE propose to change the procedures currently used for seismo-volcanic analysis. For the first time this new approach will allow the inclusión of all relevant signal information and supersede the use of compulsory a-priori models.

The final product of FEMALE is conceived as a set of useful tools for managing forecasts of volcanic eruptions. Analysing, detecting and identifying seismo-volcanic patterns and comparing them with specific volcanic processes will make it possible to forecast future volcanic scenarios.