Transnational Access to on-site modelling resources and hazard assessment tools: Establishing the pillars of scientific collaboration

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Infrastructure

The Spanish Research Council (CSIC) is the largest public multidisciplinary research organisation in Spain (114 Institutes, > 2,700 scientists, 2600 pre-and post-doctoral researchers).

The Institute of Earth Sciences Jaume Almera (ICTJA) is one of the three institutes dedicated to advance the understanding of Earth System Science.

The Group of Volcanology of Barcelona (GVB) was created in 1990 and since then has focused on the study of volcanic processes and volcanic risk assessment and management.

Physical access to on-site modelling resources

On-site access to modelling resources, including initial training, guidelines and technical assistance to simulate with the FEM modelling software COMSOL Multiphysics: (i) thermo-fluid dynamic processes occurring during the phases of magma injection, accumulation and cooling and (ii) local and regional stress field of volcanic areas.

The on-site access has been complemented with further remote assistance to the users to help finishing their research work.

Physical access to on-site hazard assessment tools

On-site access to VOLCANBOX (http://www.volcanbox.eu), an e-tool that integrates in a systematic and sequential way a series of well-tested tools, addressing various aspects of the volcanic hazard processes and risk assessment.

VOLCANBOX users can apply probabilistic methods to assess and forecast volcanic eruptions and hazards, as well as their spatial and temporal likelihood of occurrence.

Funded project: MAGMAGROW

Objective: Simulate the deformation of the reservoir induced by magma flowing and cooling in order to understand the evolution of magma reservoirs, how magma flows, transports and transfers heat while accumulating into a growing reservoir surrounded by elastic host-rock.

Results contribute to the understanding of volcanic activity and associated hazards and production of geothermal energy.

Funded project: e-THA

Objective: Volcanic hazard assessment at San Miguel Volcano (El Salvador). Using the long-term hazard assessment at San Miguel, the project has successfully incorporated the monitoring data (1995 – 2018) and has processed it using Bayesian Inference and HASSET tool Short-Term, both tools included in VOLCANBOX.

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