

# WINTER SCHOOL VOLCANOES & HEALTH

LABORATOIRE MAGMAS & VOLCANS, CLERMONT-FERRAND, FRANCE

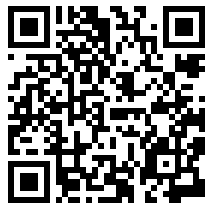
12-16 JANUARY 2026



## JOIN US !

Submit a **motivation letter** and a **CV**  
by the **14th of September 2025**  
at [winter-school.lmv@uca.fr](mailto:winter-school.lmv@uca.fr)

SCAN TO GET  
MORE INFORMATION



A limited number of grants (covering transport and accommodation) will be provided to students who request it.



MASTER'S/PHD STUDENTS  
OR POST-DOC RESEARCHERS



INTERESTED IN INTERDISCIPLINARY  
RESEARCH ON THE HEALTH HAZARDS  
OF VOLCANIC EMISSIONS

Theoretical and practical training to  
study the health hazards of volcanic  
eruptions.

Lectures and practicals at the interface  
between:

- Volcanology
- Geochemistry
- Petrology
- Atmospheric Sciences
- Health Sciences
- Social Sciences
- Biology
- Nuclear Physics

## PROGRAM

### DAY 1 – MONDAY 12 JAN. : Health hazards from volcanic eruptions and population-based studies

#### Morning : 3h of lectures

- General introduction on the health effects of volcanic activity.
- Human health in volcanic environments: lessons from epidemiological studies.
- Psychology of disasters and human behaviour in front of health risks: socio-psychological studies in volcanic environments.

#### Afternoon : 3h of practicals

- Practical on existing epidemiological and socio-psychological data.
- Introduction to psychosocial concepts and behavioural science.
- Statistical data processing with R.

### DAY 2 – TUESDAY 13 JAN. : Gas emissions

#### Morning: 3h of lectures

- Radioactivity of volcanic emissions and associated health effects.
- Characterization of gas emissions (ground and plumes) and associated health effects.
- *In vitro* approaches for the evaluation of the biological reactivity of gases.

#### Afternoon: 3h of practicals

- Demonstration of various gas sampling and measurement techniques (Popcorn, multigas, accumulation chamber) in the field or in the laboratory.

### DAY 3 – WEDNESDAY 14 JAN. : Visit of the Lemptégy volcano and health response crisis management exercise

Morning: Visit of Lemptégy volcano

Meal at Lemptégy

Afternoon: Crisis management exercise.

### DAY 4 – THURSDAY 15 JAN. : Particle emissions and biological reactivity

#### Morning: 3h of lectures

- Physicochemical characterisation of particle emissions.
- *In-vivo* and isotope metallomics approach for understanding the impact of volcanic products on biological systems.
- Pathophysiology of lung aggression.

#### Afternoon : 3h of practicals

- SEM analyses at the grain scale of volcanic emissions
- Preparation for isotopic analyses applied to biological samples by MC-ICP-MS
- Mineralogical analysis by Raman spectroscopy
- Ash leaching
- Isolation of respirable ash samples by aerodynamic separation.

### DAY 5 – FRIDAY 16 JAN. : Exposure to volcanic emissions

#### Morning: 3 h of lectures

- Analyses of volcanic deposits for the characterisation of particle dispersion in volcanic emissions.
- Air quality in volcanic environments.
- Numerical modelling for gas dispersion assessments.

#### Afternoon: 3h of lectures

- Development of a human exposure index to volcanic emissions using GIS methods.
- Numerical modelling using a case study example.
- Time series analyses of air quality and comparison to volcanological data using a case study example.