

Catalogue des formations de l'année 2025 - 2026

Formations disciplinaires

-  Apport de la géophysique à la compréhension et à la surveillance des systèmes volcaniques (18 heures) (6 Crédits/Points)
-  ED STEP - INTRODUCTION TO DATA ASSIMILATION (20 heures)
-  Séminaire Journée des doctorants - Col du Lautaret

Formations disciplinaires

Apport de la géophysique à la compréhension et à la surveillance des systèmes volcaniques

Lieu : Domaine Universitaire

Date de début de la formation : 2 mars 2026

Date ouverture des inscriptions :

Date fermeture des inscriptions : 20 février 2026

Langue de l'intervention : français et anglais

Public prioritaire : Spécialités doctorales du domaine

Equipe pédagogique :

- Virginie Pinel (IRD) - Jean Soubestre (MCF, UGA) - Claire Bouligand (MCF, UGA) - Fabien Albino (Phys. Adjoint, UGA)

Pré requis :

aucun

Mots clés :

volcans- géophysique

Objectifs :

Course outline:

Day1 Introduction to volcanoes and magmatic processes - Lecture - 3H

Day1 Deformation on volcanoes Lecture 3H

Day2 Seismo-volcanic signals - Lecture + Practical work 3H

Day2 Hydrothermal systems - Lecture 3H

Day3 Machine learning applied to volcanology - Lecture + Practical work 3H

Day3 Modelling of some volcanic aspects - Lecture 3H

Day 4 (Later) Paper reading session - Papers - 3H

Total 21H

Speakers ;
Fabien Albino (MCF, UGA) 4H
Claire Bouligand (MCF,UGA) 3H
Virginie Pinel (IRD) 4H
Jean Soubestre (MCF, UGA) 10H

Programme :

The use of geophysics in understanding and monitoring volcanic systems.

General objective: to provide key physical concepts of volcanic system behaviour and knowledge about the current state and challenges of volcanic monitoring.

We will briefly describe the different types of volcanic systems and the physical processes that govern their activity. The course will then focus on geophysical methods (mainly seismology, geodesy, electrical methods) and their application to the study of volcanoes and associated hydrothermal systems. We will detail the imaging methods used for these complex and heterogeneous environments, the information on the signal source that can be obtained from geophysical observations, and the monitoring methods commonly used in observatories or during acquisition campaigns. Modelling (numerical or analogue) of volcanic systems, which allows the interpretation of observed geophysical signals in terms of magmatic or hydrothermal sources, will also be an important part of this course.

ED STEP - INTRODUCTION TO DATA ASSIMILATION

Lieu : amphi H, Ensimag
Date de début de la formation : 5 janvier 2026
Date ouverture des inscriptions :
Date fermeture des inscriptions : 15 décembre 2025
Langue de l'intervention : anglais
Public prioritaire : Spécialités doctorales du domaine

Equipe pédagogique :

Equipe pédagogique : Elise Arnaud (UGA), Eric Blayo (UGA), Arthur Vidard (Inria)

Pré requis :

Necessary background for the course

- Basic notions in probability and statistics (Expectation, variance, covariance matrix)
- Basic notions in linear algebra
- Basic notions in differential calculus

Objectifs :

Data assimilation is often presented as the art of combining various sources of information (most often, measurements and numerical models) to estimate the state of a partially observed dynamical system.

In geophysics, it is now a research topic per se. It is mainly used to:

- define as precisely as possible a physical state (atmosphere, ocean, ...) of a system to predict its

temporal evolution;

- optimally estimate a system state over a period of time for example, to study its variabilities;
- identify systematic errors in models;
- optimize the design of observation networks;
- extrapolate values of non observed variables;
- estimate parameters in physical laws.

The course aims at introducing the theoretical concepts and practical implementation aspects of modern data assimilation with a peculiar focus on high dimensional, non linear systems, as usually met in geosciences.

Séminaire Journée des doctorants - Col du Lautaret

Date de début de la formation : 12 mai 2026

Date ouverture des inscriptions :

Date fermeture des inscriptions : 15 décembre 2025

Langue de l'intervention : français

Public prioritaire : Aucun

Equipe pédagogique :

Alexandra Gourlan Latifa Hamed Abdelouahab Délégués ED STEP