

## **M2 Internship Position**

# **Automatic detection and location of hydro-acoustic signals linked to Mayotte submarine eruption**

### **Supervisors**

Jean-Marie Saurel (IPGP/UP), Lise Retailleau (OVPF/IPGP/UP), Valérie Ferrazzini (OVPF/IPGP/UP), Clément Hibert (ITES), Thémis Palpanas (LIPADE/UP)

### **Description**

Submarine volcanic eruptions generate numerous seismic and hydro-acoustic signals (West Mata, Axial Seamount) and Mayotte is no exception. Ocean Bottom Seismometers (OBS) have been deployed since 2019 to continuously monitor the eruption. They record earth motion on a 3 component geophone and sound propagating in the water column through an hydrophone. Manual analysis of continuous OBS data have highlighted the recording of very short hydro-acoustic signals. The location of a few tens of them have shown they can be associated to active lava flows as in previous studies at Axial Seamount.

The goal of this internship is to automatically detect and locate the hydro-acoustic signals on the continuous OBS recordings since the first deployment in February 2019. The proposed work is to first use template matching type algorithms to detect those weak signals in the continuous data recording. This will first allow to assess hydro-acoustic activity level evolution along the eruption. Next, those signals will be located and the location accuracies will be assessed using the numerous water sound velocity measures performed during marine surveys. Finally, the locations will be compared and associated to the lava flows identified during bathymetry surveys.

### **Where**

The work will be performed at IPGP, 1 rue Jussieu, 75235 Paris Cédex 05

The internship is funded through the diiP institute

### **How to apply**

Please contact Jean-Marie Saurel (saurel[at]ipgp.fr)