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Observatoire volcanologique du Piton de la Fournaise

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PITON DE LA FOURNAISE *(VNUM #233020)*
Latitude: *21.244°S*
Longitude: *55.708°E*
Summit elevation: *2632 m*

Piton de la Fournaise is a basaltic hot spot volcano located in the southeastern part of La Réunion Island (Indian Ocean). The volcano first erupted about 500,000 years ago. Its volcanic activity is characterized by frequent effusive eruptions (with emissions of lava fountains and lava flows) that occur on average twice a year since 1998. More rarely, larger explosive eruptions (with blocks covering the summit area and ash emissions that can disperse over long distances) have happened in the past with a centennial recurrence rate.
Most of the current eruptive activity (97% during the last 300 years) occurs from vents inside the Enclos Fouqué caldera. A few eruptions, however, have occurred from vents outside the caldera (most recently in 1977, 1986, and 1998). Such eruptions can potentially threaten communities that live in the surrounding areas.
Since late 1979, the activity of Piton de la Fournaise is monitored by the Piton de la Fournaise Volcanological Observatory (Observatoire Volcanologique du Piton de la Fournaise - OVPF), which belongs to the Institut de Physique du Globe de Paris (IPGP).

Alert level: Vigilance **(from May, 7 2026)**	
March 12 (10h) to May 5 (6h) 2026: Alert 2-2 ***May 5 (6h) to May 7 (15h) 2026: Sauvegarde***	***(cf. table in the appendix)***

A. Piton de la Fournaise activity

Seismicity

The seismological network of the Piton de la Fournaise Volcanological Observatory consists of 41 seismological stations currently in operation, representing a total of 109 channels sampled at 100 Hz and transmitted in real time to the observatory. This network includes 32 three-component broadband stations, 2 three-component short-period stations and 7 analogue stations with one vertical component.
Earthquakes are located based on the arrival times of P and S waves, which are manually plotted in the SeisComP software (www.seiscomp.de) using automatic or visual detections. The earthquakes are then located using NonLinLoc software (Lomax et al., 2000), using a three-dimensional velocity model. This model takes into account a velocity gradient according to the topography and assumes a constant VP/VS ratio of 1.7. The P-wave velocity is 3.3 km/s at the free surface and increases linearly with depth at a gradient of 0.3 s^{-1}.

Observations

In August 2026, the OVPF-IPGP recorded at Piton de La Fournaise:

- 24 shallow volcano-tectonic earthquakes (from 0.2 to 1.5 km above sea level), mostly located beneath the Bory and Dolomieu summit craters;
- 30 deep earthquakes (below sea level) located both under the western part of the terminal cone and beneath the east flank;
- 113 rockfalls or collapses.

August 2026 was characterized by **a relatively low seismic activity beneath Piton de la Fournaise** (Figures 1 and 2), with 24 shallow volcano-tectonic earthquakes (above the shallow magma reservoir) and 30 deep earthquakes located between 6 and 8 km below sea level, west of the summit, as well as beneath the eastern flank of the volcano at depths of 1 to 3 km below sea level (Figure 2). This seismicity nevertheless remains higher than during the period of quiescence at Piton de la Fournaise between August 2023 and November 2025.

A total of 113 rockfalls were also recorded. As commonly observed, these rockfalls were partly located in the summit area of Piton de la Fournaise and along the Cassé de la Rivière de l'Est, but also around the eruptive cones and recently emplaced lava flows on the east-southeastern flank of Piton de la Fournaise.

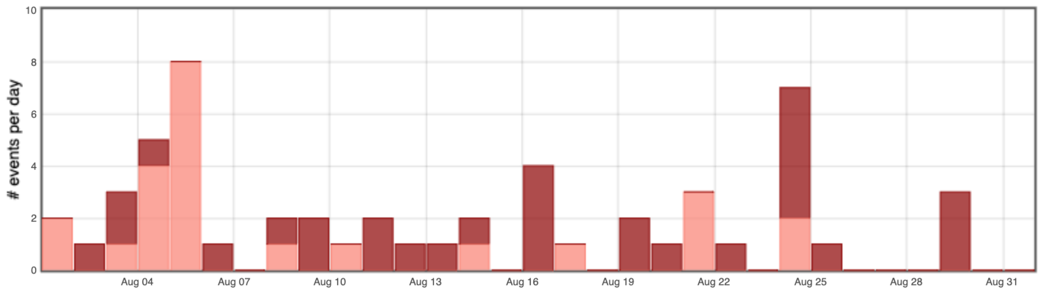

Figure 1: Daily rate of shallow (orange histogram) and deep (red histogram) volcano-tectonic earthquakes from the "main courante" catalog in August 2026 (©WebObs/OVPF-IPGP).

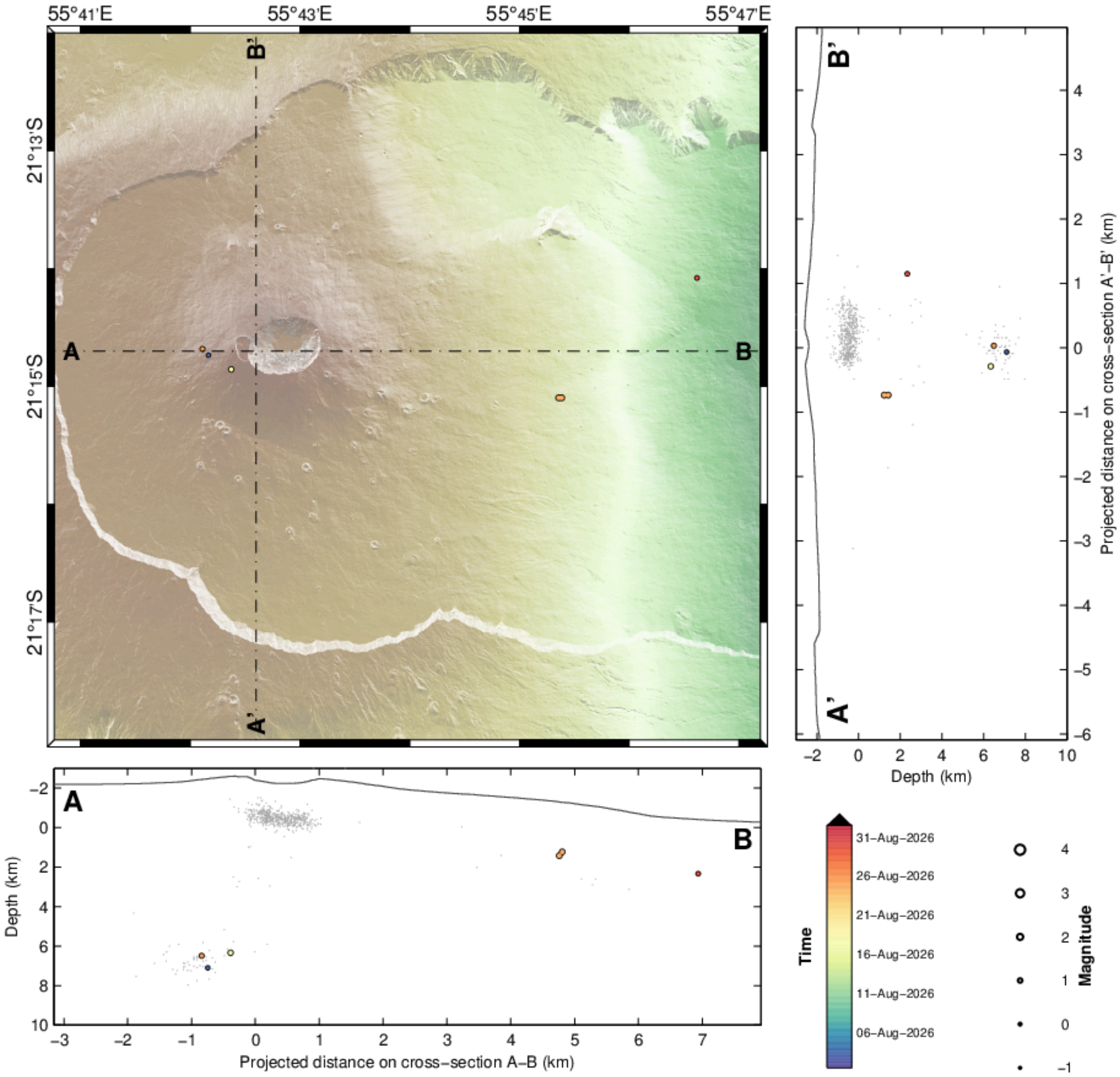

Figure 2: Seismicity below Piton de la Fournaise in August 2026. Location map (epicenters) and north-south and east-west cross-sections (hypocenters) of earthquakes as recorded by OVPF-IPGP. Only manually located earthquakes are shown on the map (©WebObs/OVPF-IPGP).

Deformation

The permanent network for monitoring deformation at Piton de la Fournaise currently consists of:
- 27 GNSS (Global Navigation Satellite System) stations,
- 11 pairs of tiltmeters at 10 different sites,
- 3 three-component extensometers.
Once the data have been retrieved (every 15 min to every day depending on the stations), they are automatically processed using the GipsyX/JPL software (Bertiger et al., 2020; Murphy et al., 2024) to obtain precise geographic coordinates. These calculations incorporate the new JPL products in ITRF2020 (Altamimi et al., 2023, Rebischung et al., 2024). The calculated coordinates are expressed relative to the Figure Centre (FC), a concept more suited to small-scale area of work.
The characteristics of one (or two) probable deformation source(s) (location, depth, and volume variation), which best fit the observations over a given time period, are also modeled in a homogeneous and elastic medium by a Bayesian inversion of pCDM deformation sources (Nikkhoo et al., 2016; Beauducel et al., 2020).
Based on GNSS positioning measurements, strain and their spatial distribution are also estimated by calculating the relative changes in distance between each pair of stations. Strain is a parameter expressed in microstrain (denoted as μstr, representing a change of one millionth of the distance), which allows for the visualization and quantification of areas undergoing extension or compression.

Observations

Following the stop in the inflation observed in June 2026, a low edifice inflation was recorded in August 2026, with **a slight increase in the distances between station pairs located on either side of the summit craters** (Figure 3). **The extension on either side of the summit area is less than 1 cm** (Figures 3 and 4). The displacement vectors and the 3D linear strain map indicate that **the source of inflation is located at the summit of the edifice** (Figure 4).

Numerical models of the sources causing these deformations show, for the period from August 1 to 31, 2026, **a primary inflation source, slightly offset beneath the western edge of the summit area, located at about 1 km above sea level (**Figure 5). A secondary source of deflation is located beneath the eastern flank at approximately 10 km below sea level (Figure 5).
The surface source could be linked to a slight increase in pressure within the shallow magma reservoir.

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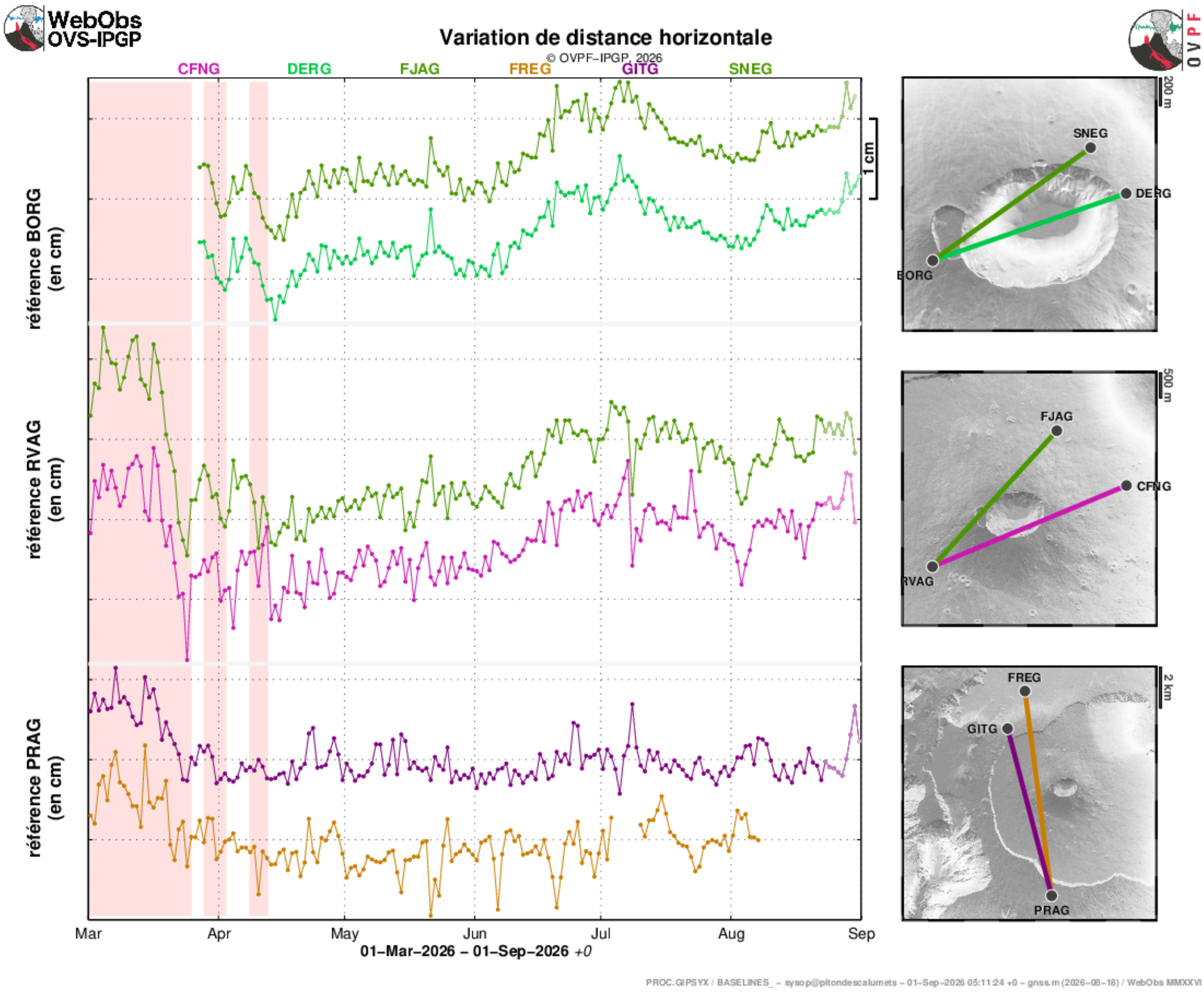

Figure 3: Ground deformation records over the past six months (the red and green bars represent eruptive and intrusive periods, respectively). The time series plots show the changes in horizontal distance between pairs of GNSS stations located around the Dolomieu summit crater (top graph), the terminal cone (middle graph) and the Enclos Fouqué caldera (bottom graph), from north to south (see location on the right). Increasing distances (or baseline elongation) indicate volcano inflation, while decreasing distances (or baseline contraction) reflect edifice deflation (©Webobs/OVPF-IPGP).

** Glossary: The summit GNSS signals indicate the influence of a shallow pressure source below the volcano, while distant GNSS signals indicate the influence of a deep pressure source below the volcano. Inflation usually means pressurization; and conversely deflation usually means depressurization.*

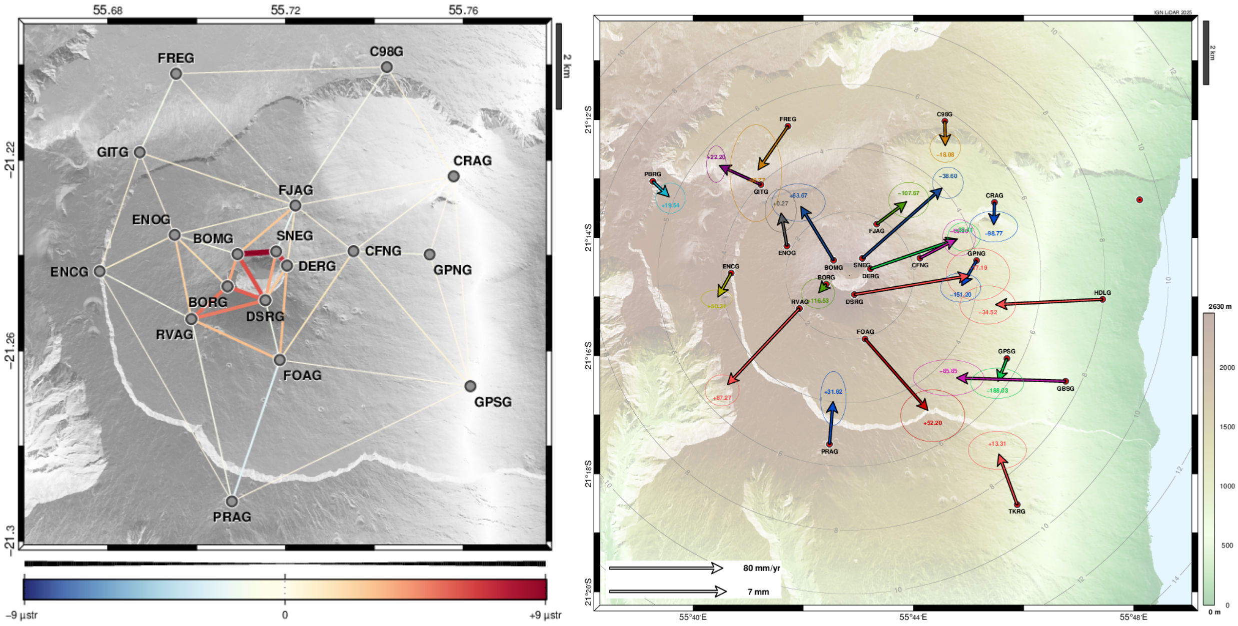

Figure 4: Inflation period of August 1 to 31, 2026
(To the left) 3D linear stress map (in µstrain, or one millionth of a strain). The thickness and color of the baselines indicate the intensity of the stress, either compressive (cool colors) or tensile (warm colors).
(To the right) Vectors representing the average linear velocities of horizontal displacements measured between August 1 and 31, 2026 (scale indicated by the arrows at the bottom left in mm/year for velocity and in mm for the equivalent displacement over the period). Each vector is associated with an error ellipse as well as an indication of the vertical velocity. These velocities are calculated relative to a local reference frame, and the error ellipses are evaluated relative to the standard deviation of the data with respect to a linear trend. The gray concentric circles indicate distances in km from the summit (©WebObs/OVPF-IPGP).

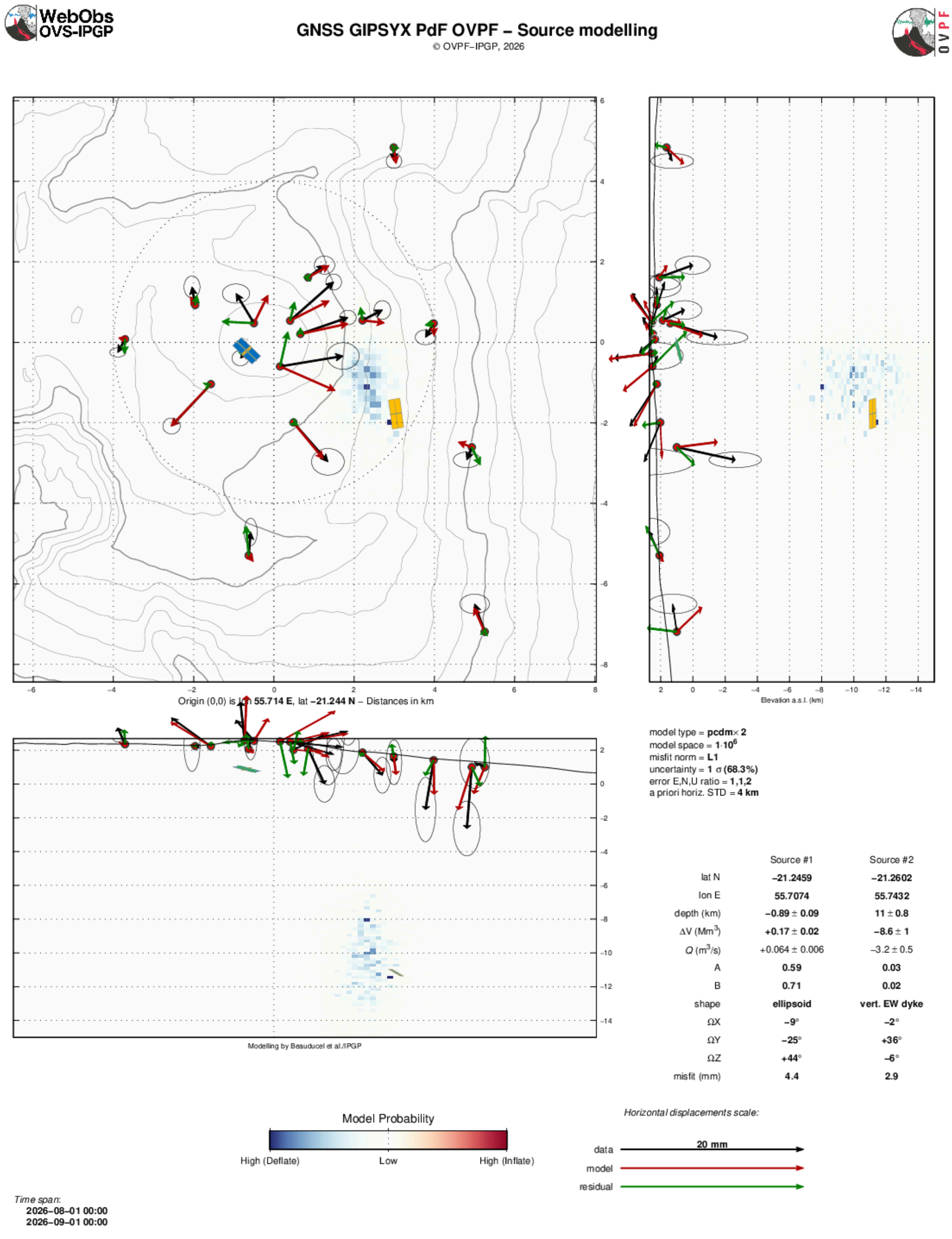

Figure 5: Modelling of the two main pressure sources responsible of ground displacements by Bayesian inversion of pCDM-type sources (Nikkhoo et al., 2016; Beauducel et al., 2020) for the period from August 1 to 31, 2026. The black vectors represent observed data, the red vectors represent modelled vectors, and the green vectors represent the residuals between observed and modelled vectors. The characteristics of the source are listed in the lower right corner. (©WebObs/OVPF-IPGP, topography ©IGN LIDAR 2025).

Gas geochemistry

The permanent geochemical network for monitoring gas emissions from Piton de la Fournaise currently comprises:
- 3 MAX-DOAS stations measuring the optical thickness of SO2 (ppm.m) in the atmosphere. Measurements are taken every 10 to 15 minutes during the day when weather conditions are favorable (Arellano et al., 2020).
- 1 MultiGaS station measuring excess H2O, CO2, SO2 and H2S relative to the atmosphere, with measurements taken every 6 hours.
- 4 stations measuring CO2 flux through the soil. At these stations, meteorological parameters (temperature, pressure, humidity, wind speed and direction) are also recorded in order to correct signals from environmental disturbances (Boudoire, 2017; Bénard et al., 2023). Measurements are taken every hour.

CO_2 concentration in the soil

CO_2 emissions from the soil have decreased on all stations during the volcano quiescence in 2023- 2024 (Figure 6).
The first recorded change in sol gas emissions has occurred in March-July 2024, with a strong increase in CO_2 emissions in the most distal area (BLEN) and a marked increase in the proportion of magmatic contribution (isotopic data) at PCRN and GITN stations in July 2024 (Figure 7).

Since 2025, average CO_2 soil emissions tend to be constant on the most distal stations (BLEN, PNRN) and to increase on the most proximal (PCRN, GITN). That reversals of the trends marks a clear evolution with respect to the long term of decrease recorded in the period 2021-2025 on these sites.

In 2026, the strongest increase in soil CO_2 emissions have been recorded during the February-April eruption on PCRN and GITN stations. **After the February-April eruption, a trend of continuous decrease is recorded at the most distal BLEN station and at the most proximal (GITN) station** (Figure 6). On the contrary, **PCRN still records high fluxes after the end of the last eruption, and a possible new trend of moderate increase is recorded at the distal PNRN station.**

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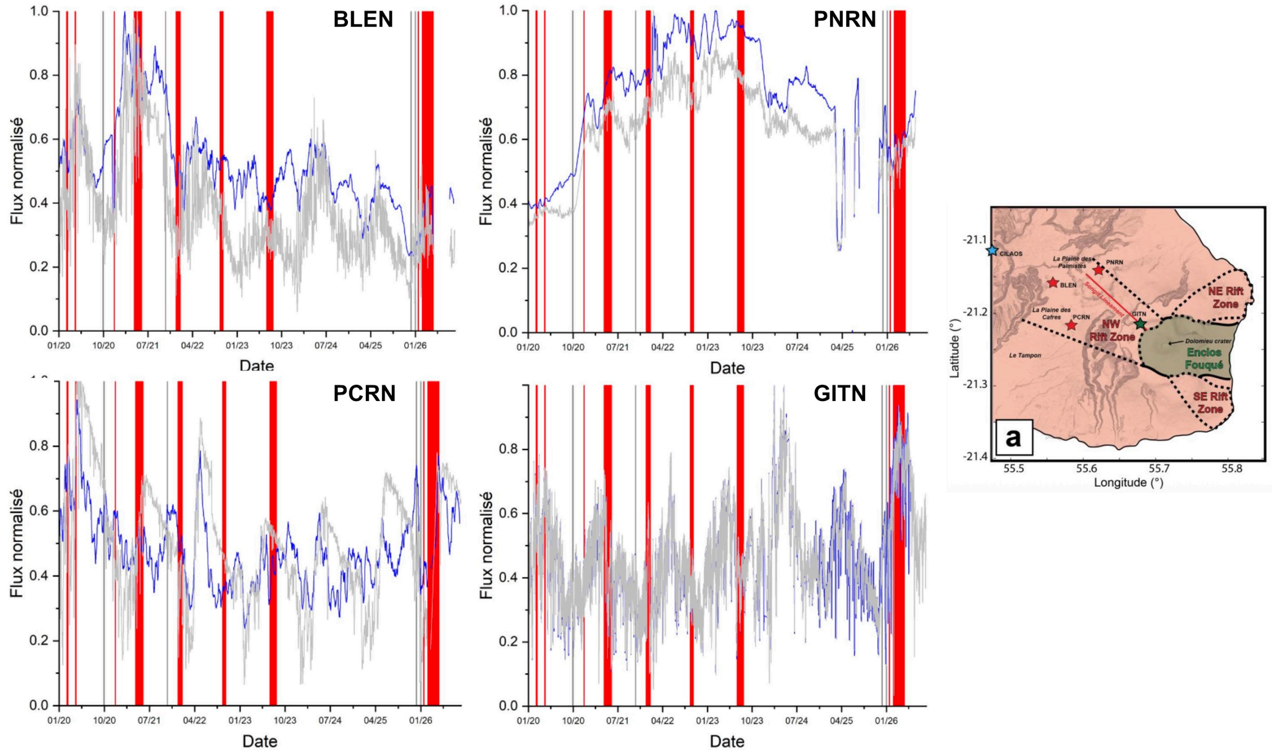

Figure 6: Normalized CO_2 soil emissions (grey: raw data) corrected for short period influence of environmental parameters (OVPF-correction model; 15 days moving average; in blue) of all CO_2 stations (see location on the map on the right). Red bars: eruptions; Gray bars: intrusions (©OVPF-IPGP-OSUL).

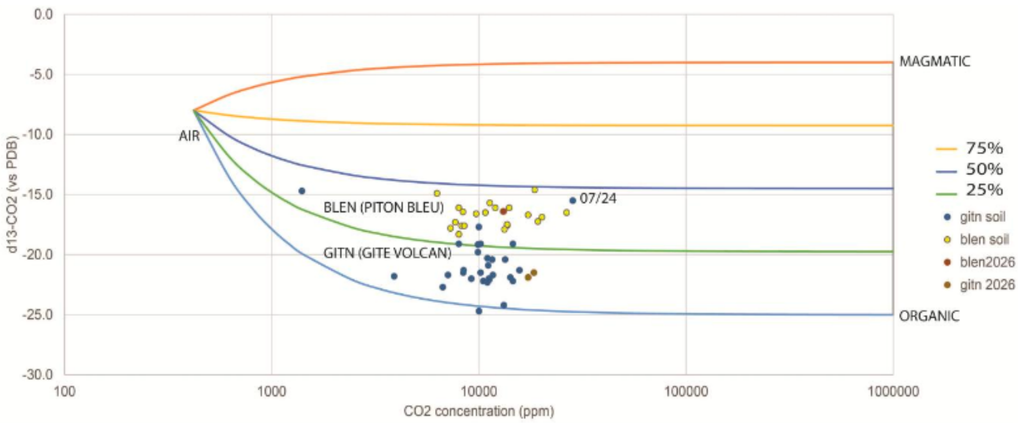

Figure 7: Carbon isotope (δ13C) variations in CO_2 from soil gas emitted from a proximal (GITN) and distal (BLEN) station. Measurements performed during the main peak (June 2024) at BLEN and at the beginning of the inversion in CO_2 trend at PCRN have recorded the highest percenage of the magmatic contribution..

** Glossary: CO_2 is the first gas to be released from deep magma (rising from the mantle), so its detection in the far field often means a deep rise of magma. Its near-field evolution may be related to magmatic transfer in the shallowest part of the feeding system (< 2-4 km below the surface).*

Summit fumaroles composition obtained by the MultiGas method

Since the end of the February – April 2026 eruption, only weak SO_2 and H_2S concentrations (< 0.1 ppmv) are recorded in the atmosphere at the volcano summit (Figure 8), typical of background values recorded during quiescence phases. **These values are significantly lower than those recorded in the months before the eruption and during the eruption**.

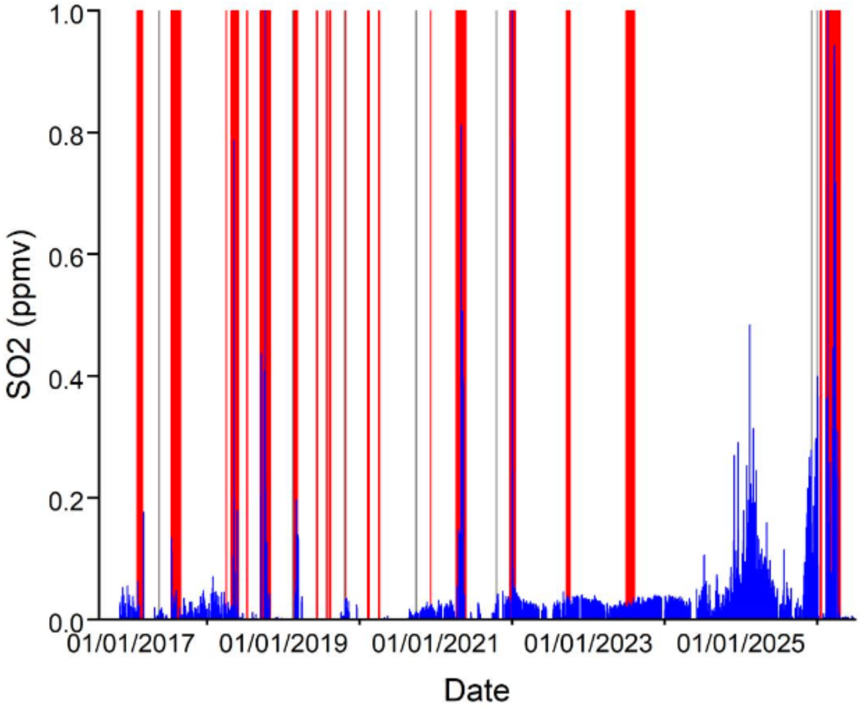

Figure 8: Raw (in blue) concentrations of SO_2 in the atmosphere at the summit of Piton de la Fournaise (MultiGaS station) Red bars: eruptions; Gray bars: intrusions (©OVPF-IPGP-OSUL).

** Glossary: The MultiGaS method allows measuring the concentrations of H_2O, H_2S, SO_2 and CO_2 in the atmosphere at the summit of the Piton de la Fournaise volcano. Magmatic transfer in the Piton de la Fournaise feeding system can result in an increase in SO_2 concentrations and in the C/S ratio (carbon/sulfur).*

SO_2 flux in the air obtained by DOAS method

The SO_2 fluxes in the air were low; close or below the detection threshold.

** Glossary: During rest periods, SO_2 flux at Piton de la Fournaise is below the detection threshold. The SO_2 flux may increase during magma transfer in the shallowest part of the feeding system. During eruptions, it is directly proportional to the amount of lava emitted at the surface.*

Phenomenology

No eruptive activity reported in August 2026.

Summary

In August 2026, **a slight edifice inflation was recorded, indicating a slight increase in pressure within the shallow reservoir**. Shallow seismic activity beneath the summit remained low in August. However, a deep seismic activity persisted, which may suggest fluid movement at depth.

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B. Seismic activity on La Réunion and in the Indian Ocean basin

Local and regional seismicity

In August 2026, the OVPF-IPGP recorded:

- 55 local earthquakes (within a 200 km radius of the island, Figures 9 and 10);
- 3 regional earthquakes (in the Indian Ocean region)

In **August 2026**, OVPF-IPGP recorded **55 local earthquakes**. As commonly observed, a large proportion of these local earthquakes were of **low magnitude** (< 1) and were therefore difficult to locate accurately. They were located at depths ranging from **10 to 25 km** within the **oceanic lithosphere** on which the volcanic edifice that formed La Réunion was built.

A swarm of deep earthquakes, located at a depth of 20 km offshore the northeastern coast of the island, was also observed between August 6 and 9 (Figures 6 and 7). The seismicity rate remained moderate, reaching a maximum of approximately 15 earthquakes per day, with magnitudes up to 1.9. The temporal distribution of the events and their magnitudes did not correspond to a typical “mainshock–aftershock” sequence*, but rather to swarm-like activity, with no clearly identifiable mainshock. The origin of this swarm remains uncertain. However, no upward migration of the seismicity toward the surface was observed, and the available data show no evidence suggesting fluid propagation toward shallow levels.

**Sequence in which a main earthquake is followed by earthquakes of generally lower magnitude, known as aftershocks, resulting from the evolution of stresses in the affected area following the mainshock.*

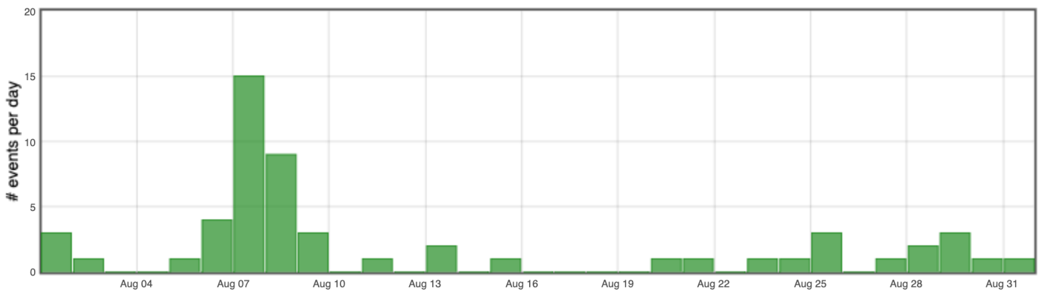

Figure 9: Number of local earthquakes (within a 200 km radius of La Réunion island) per day recorded in August 2026 (©WebObs/OVPF-IPGP).

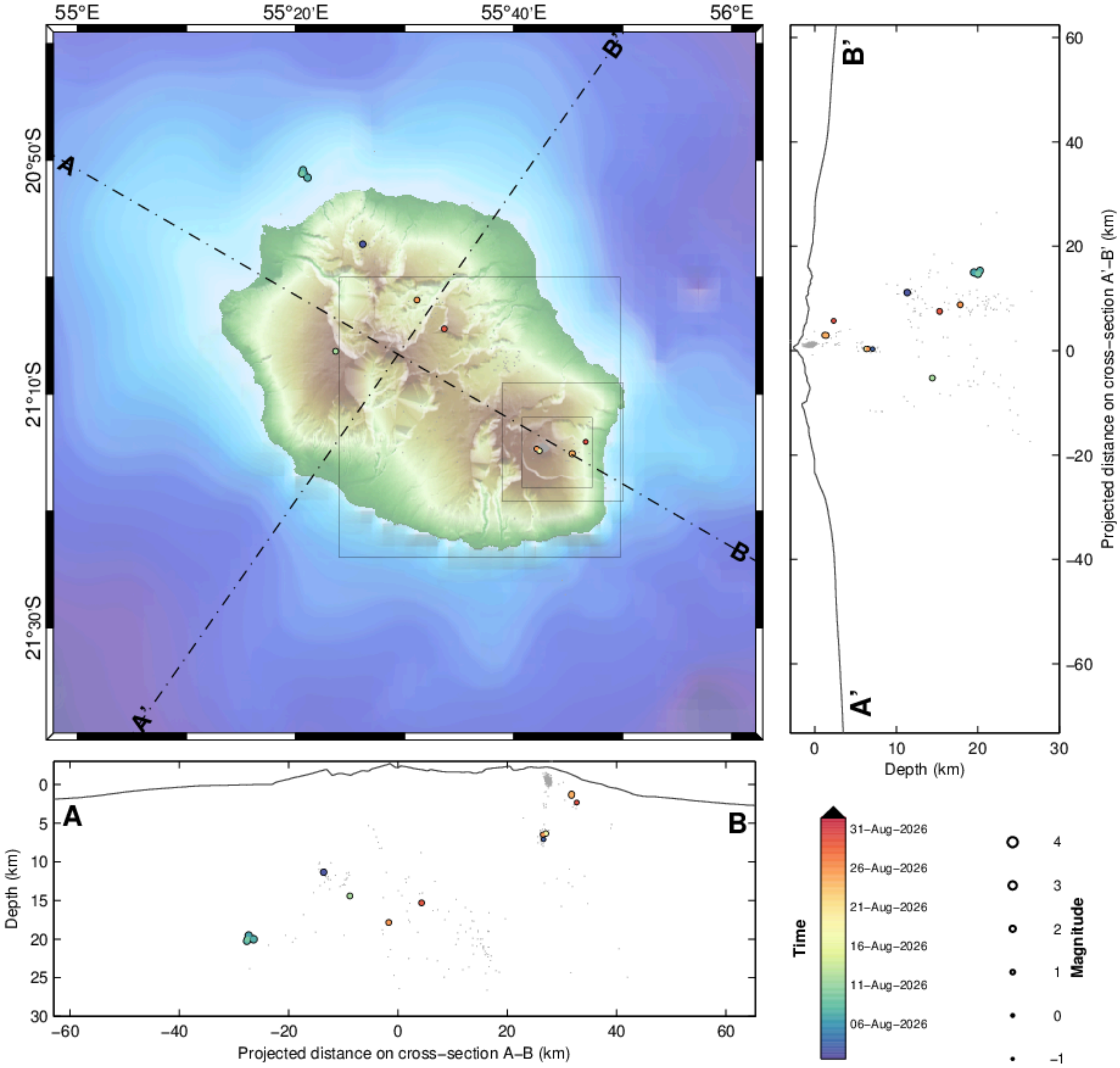

Figure 10: Seismicity below La Réunion in August 2026. Location map (epicenters) and north-west – south-east and south-west – north-east cross-sections (hypocenters) of earthquakes as recorded by OVPF-IPGP. Only localizable earthquakes are shown on the map (©WebObs/OVPF-IPGP).

Seismic-volcano activity in Mayotte

The « REseau de surveillance VOlcanologique et SIsfmologique de MAyotte (REVOSIMA) » is the structure in charge of the volcano and seismic monitoring of Mayotte. IPGP and BRGM coordinate and manage REVOSIMA. Operational monitoring of seismo-volcanic activity is carried out by IPGP (OVPF), under the joint responsibility of BRGM and in close association with IFREMER and CNRS. REVOSIMA is supported by a scientific and technical partnership. The REVOSIMA consortium: IPGP and Université Paris Cité, BRGM, IFREMER, CNRS, BCSF-RéNaSS, ITES and Université de Strasbourg, IGN, ENS, SHOM, TAAF, CNES, Université Grenoble Alpes and ISTerre, Université Clermont Auvergne, LMV and OPGC, Université de La Réunion, Université Paul Sabatier, Toulouse and GET-OMP, Université de la Rochelle, Université de Bretagne Occidentale, IRD and collaborators.

The seismic-volcano activity in Mayotte for the month is presented in the REVOSIMA monthly bulletin.

All information on the REVOSIMA and the activity in Mayotte can be found on the dedicated webpages:
- https://www.ipgp.fr/observation/infrastructures-nationales-hebergees/revosima/
- https://www.ipgp.fr/actualites-du-revosima/
- https://www.facebook.com/ReseauVolcanoSismoMayotte/
- https://bsky.app/profile/revosima.bsky.social

September 1, 2026
OVPF-IPGP Director

C. Appendix

Definition of Volcanic Alert Levels for Piton de la Fournaise

from *disposition spécifique « Volcan Piton de la Fournaise » - arrêté n°2242-* Emergency plan set up by the department responsible for the protection of the population in the event of unrest or activity of the Piton de la Fournaise

•**"Vigilance"**: possible eruption in medium term (a few days or weeks) **or** presence of risks on the sector (rockfalls, increase of gas emissions, still hot lava flows…).

Access to the Enclos Fouqué caldera and to the summit volcano are allowed with restrictions.

• **"Alert 1"**: probable or imminent eruption.

Access to the Enclos Fouqué caldera and to the summit are closed and prohibited.

• **"Alert 2"**: ongoing eruption.
Alert 2-1: ongoing eruption inside the Enclos Fouqué caldera without threat to the safety of people, property or the environment

Alert 2-2: ongoing eruption inside the Enclos Fouqué caldera with direct or indirect threat to the safety of people, property or the environment.

Access to the Enclos Fouqué caldera and to the summit are closed and prohibited. For Alert 2-2, evacuation of the people and vehicles depending on the issues.

• **"Alert 2-3"**: ongoing eruption outside the Enclos Fouqué caldera with threat to the safety of people, property or the environment.

Access to the Enclos Fouqué caldera and to the summit are closed and prohibited. Evacuation of the people and vehicles depending on the issues.

• **"Sauvegarde"**: end of eruption.

Evaluation of a partial reopening of the Enclos Fouqué caldera access.

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Acknowledgments
Thank you to organizations, communities and associations for publicly posting this report for the widest dissemination

Information
All information on the Piton de la Fournaise activity can be found on the OVPF-IPGP media:
- Internet website : ipgp.fr/fr/ovpf/actualites-ovpf
- Bluesky : @ovpf.bsky.social
- Facebook : facebook.com/ObsVolcanoPitonFournaise

A preliminary automatic daily bulletin of the OVPF-IPGP, relating to the activities of the day before, validated by an analyst, is published daily. It can be accessed directly at this link:
http://volcano.ipgp.fr/reunion/Bulletin_quotidien/bulletin.html

The seismicity validated in continuous by OVPF-IPGP can also be followed on the RENASS portal: https://renass.unistra.fr/fr/zones/la-reunion

The OVPF-IPGP data are distributed by the IPGP data centre - Volobsis - and are also available on the EPOS and Epos-France websites (doi:10.18715/REUNION.OVPF).