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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)

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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. ***Due to the eruption that started on February 13, 2026, two seismic stations (the PVD and GPS stations) threatened by lava flows had to be urgently dismantled by OVPF teams, with assistance from Section Aérienne de Gendarmerie and Peloton de Gendarmerie de Haute Montagne.***
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 May 2026, the OVPF-IPGP recorded at Piton de La Fournaise:

- 29 shallow volcano-tectonic earthquakes (0 to 2.5 km above sea level) below the *Bory* and *Dolomieu* summit craters;
- 150 deep volcano-tectonic earthquakes (below sea level);
- 14 long-period earthquakes;
- 695 rockfalls or landslides.

May 2026 was characterized **primarily by deep seismic activity** (Figures 1 and 2), with 150 volcano-tectonic earthquakes occurring at depths between 6 and 8 km below sea level, west of the summit of Piton de la Fournaise (Figure 2). The trend in seismicity rates derived from the manual log (manually marked, Figure 1, middle) appears to vary more significantly than that obtained from automatic detections via template matching (Figure 1, bottom), which seems to be related to an observational bias. In particular, there is a fairly clear correlation between the operator analyzing the data and the number of events detected in the manual log. This bias is explained by the fact that deep events are difficult to identify and that signal classification can be relatively subjective for these very low-magnitude earthquakes.

These deep events likely correspond to the continued pressurization of the deep magmatic system of Piton de la Fournaise.

Only 29 shallow volcano-tectonic earthquakes were detected, with a single event locatable beneath the *Dolomieu* crater (Figure 2).

Numerous rockfalls were also observed (695 events). As is usually the case, these rockfalls occurred partly at the summit of Piton de la Fournaise and along the *Cassé de la Rivière de l'Est*, but also at the recently formed eruptive cones and lava flows on the east-southeast flank of Piton de la Fournaise. These events likely correspond to collapses of cones and lava tubes. Signals classified as long-period are also largely localized near the former eruptive cones. The long-period nature of these signals may result either from the propagation of elastic waves in weakly consolidated media (e.g., Bean et al., 2008) or from changes in the hydrothermal system near the eruptive site (Zecevic et al., 2013).

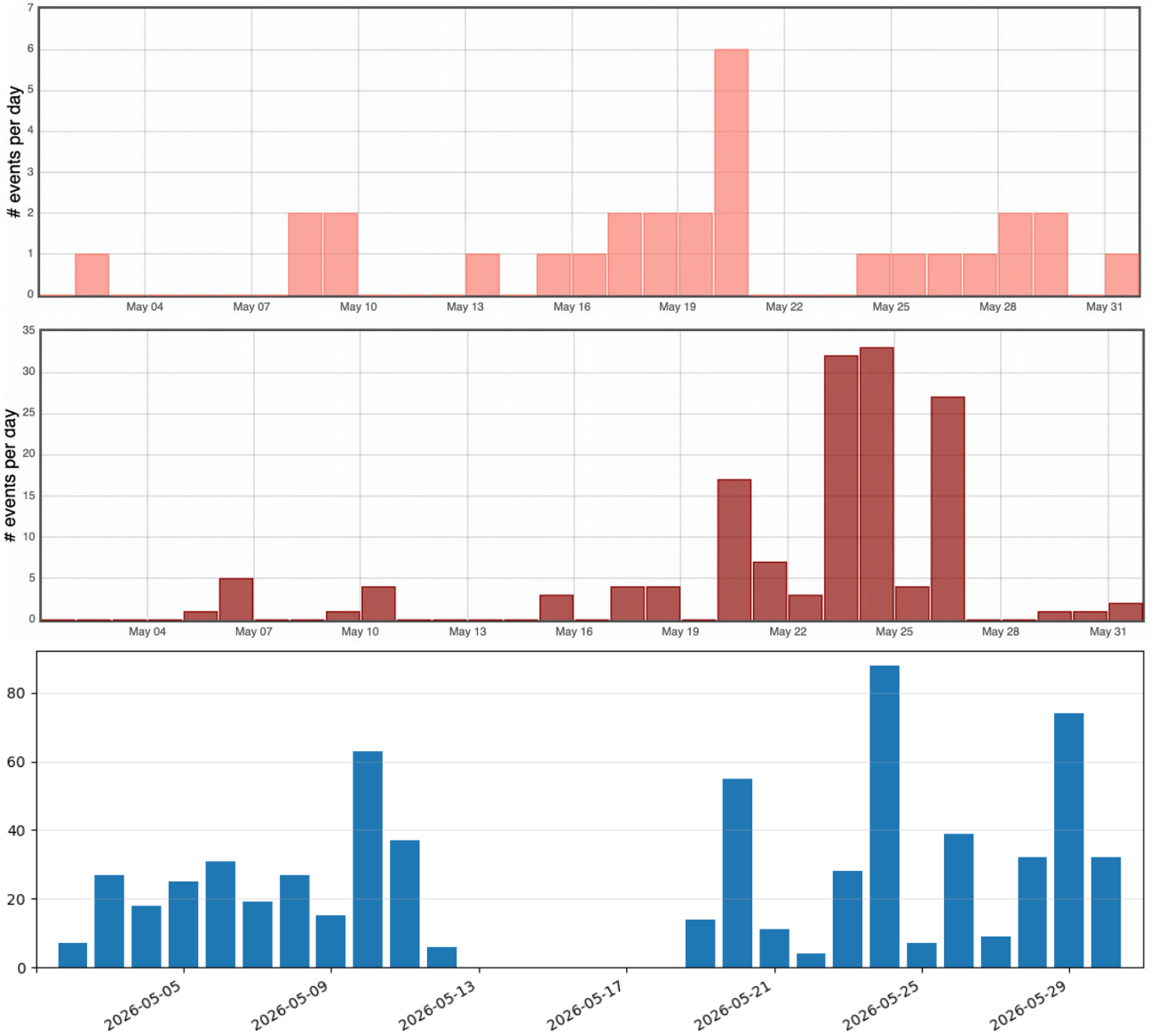

Figure 1: Number of (top) shallow volcano-tectonic, (middle) deep volcano-tectonic manually identified and (bottom) automatically identified via template matching per day recorded in May 2026 (©WebObs/OVPF-IPGP).

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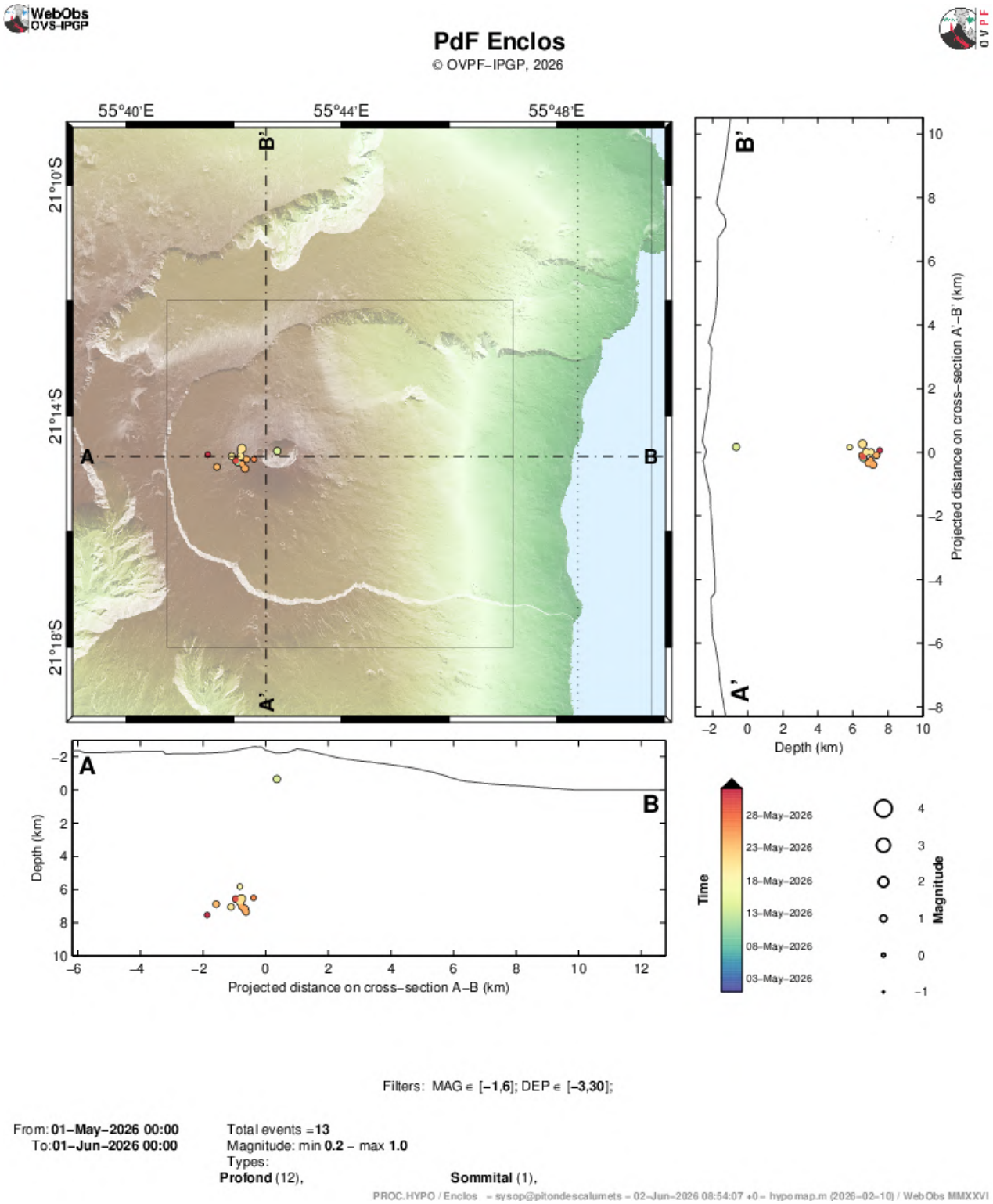

Figure 2: Seismicity below Piton de la Fournaise in May 2026. Location map (epicenters) and north-south and east-west cross-sections (hypocenters) of earthquakes as recorded by OVPF-IPGP. Only manually located earthquakes are shown on the map (©WebObs/OVPF-IPGP).

Deformation

The permanent network for monitoring deformation at Piton de la Fournaise currently comprises:
- 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).
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.

Observations

Following the end of the eruption on April 12, 2026, slight inflation of the edifice was again recorded, with a noticeable slowdown beginning in late April (Figures 3 and 4). Since late May, this inflation appears to have ceased. This will be confirmed next month.

Strain maps show that the elongation has shifted westward from early May (Figure 5).

Numerical modelling

Modeling of deformation sources shows (Figure 6):
- Between April 26 and May 10, 2026: two inflation sources, one located west of the Bory crater at a depth of approximately 11 km below sea level, and the other one at a shallower depth near sea level beneath the western rim of the Dolomieu crater.
- Between May 10 and May 24, 2026: one source of inflation located 600 m above sea level beneath the western rim of the Dolomieu crater.

These various sources, although associated with relatively moderate volume variations, certainly reflect the refilling of the shallow magmatic system by deeper magma.

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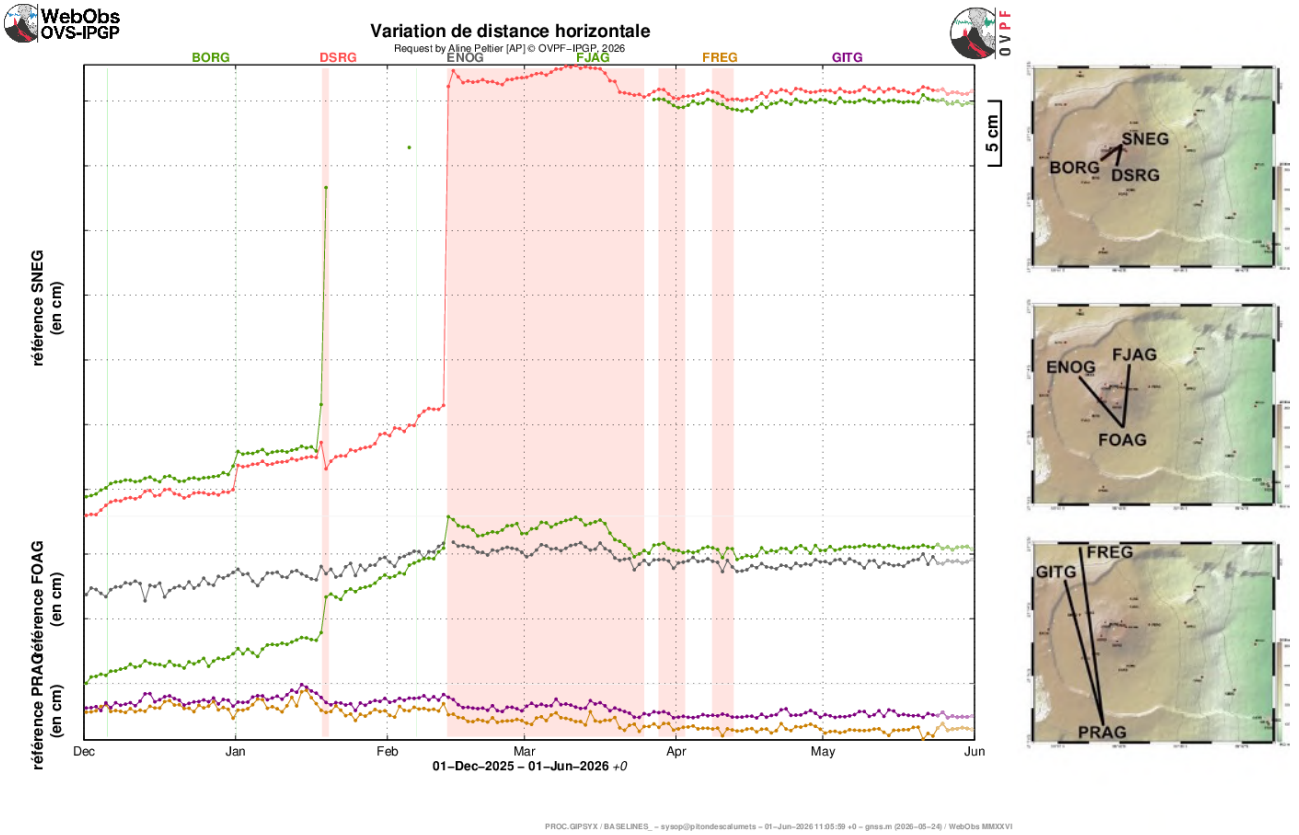

Figure 3: Ground deformation records over the past six months (the red and green bars represent eruptive and intrusive periods, respectively). The time series plots show the changes in horizontal distance between pairs of GNSS stations located around the Dolomieu summit crater (reference: SNEG; top graph), the terminal cone (reference: FOAG; middle graph) and the Enclos Fouqué caldera (reference: PRAG; 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).

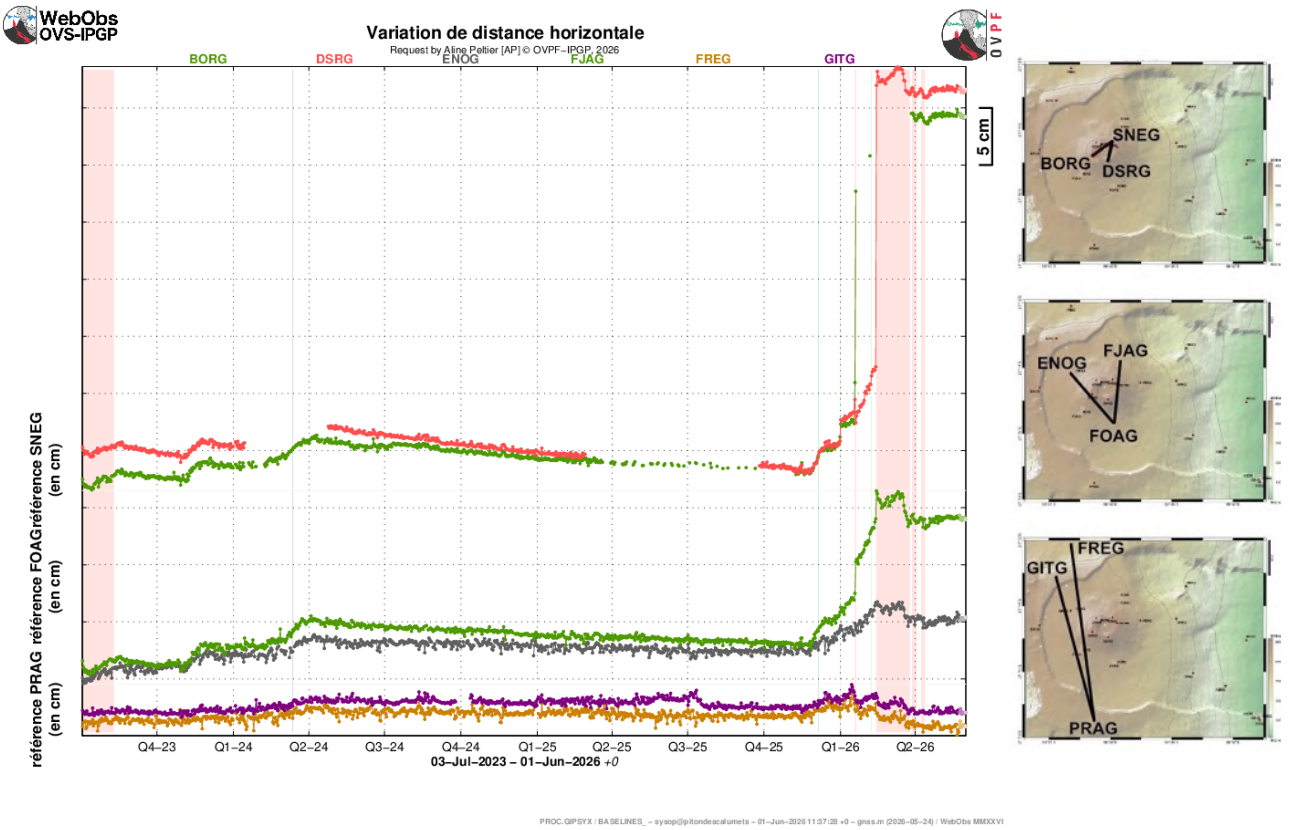

Figure 4: Ground deformation records since the eruption of July-August 2023 (the red and green bars represent eruptive and intrusive periods, respectively). The time series plots show the changes in horizontal distance between pairs of GNSS stations located around the Dolomieu summit crater (reference: SNEG; top graph), the terminal cone (reference: FOAG; middle graph) and the Enclos Fouqué caldera (reference: PRAG; 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.*

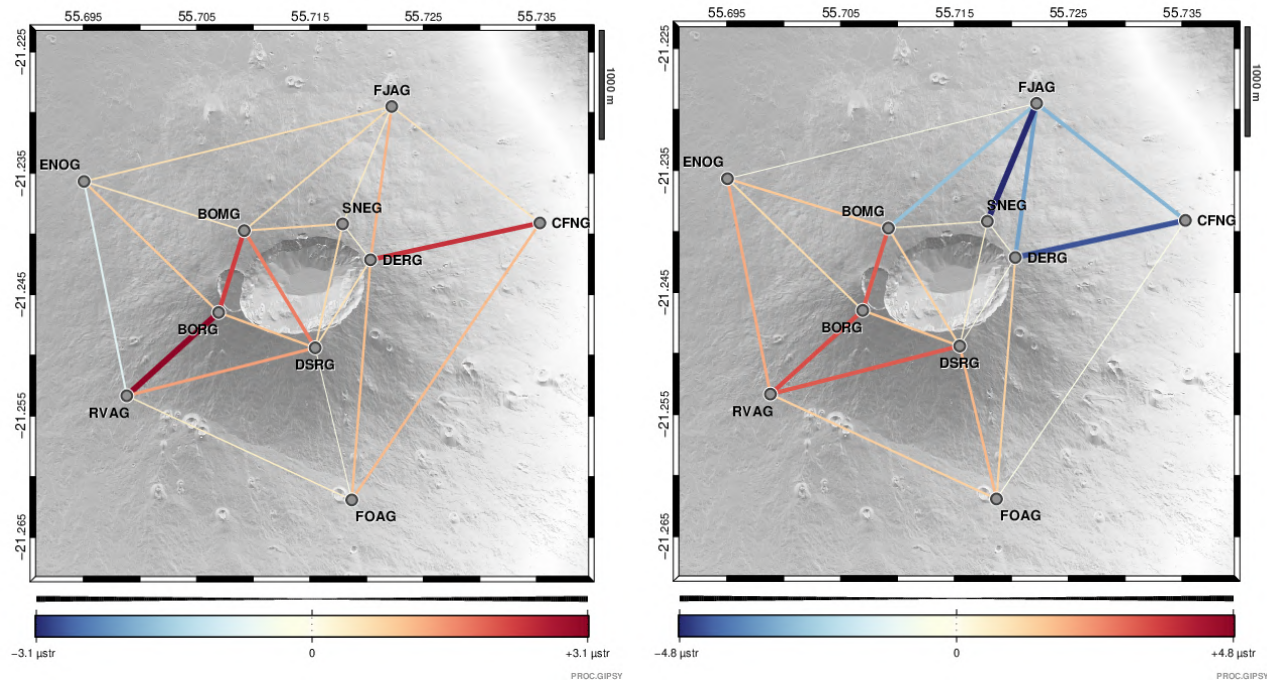

Figure 5: Linear 3-D strain maps (in µstrain, or a deformation of one millionth) for (to the left) the April 26-May 10, 2026 period and (to the right) the May 10-24, 2026 period. The thickness and color of the baselines indicate the intensity of the strain, either compressive (in blue) or tensile (in red) (©WebObs/OVPF-IPGP, topography ©IGN LIDAR 2025).

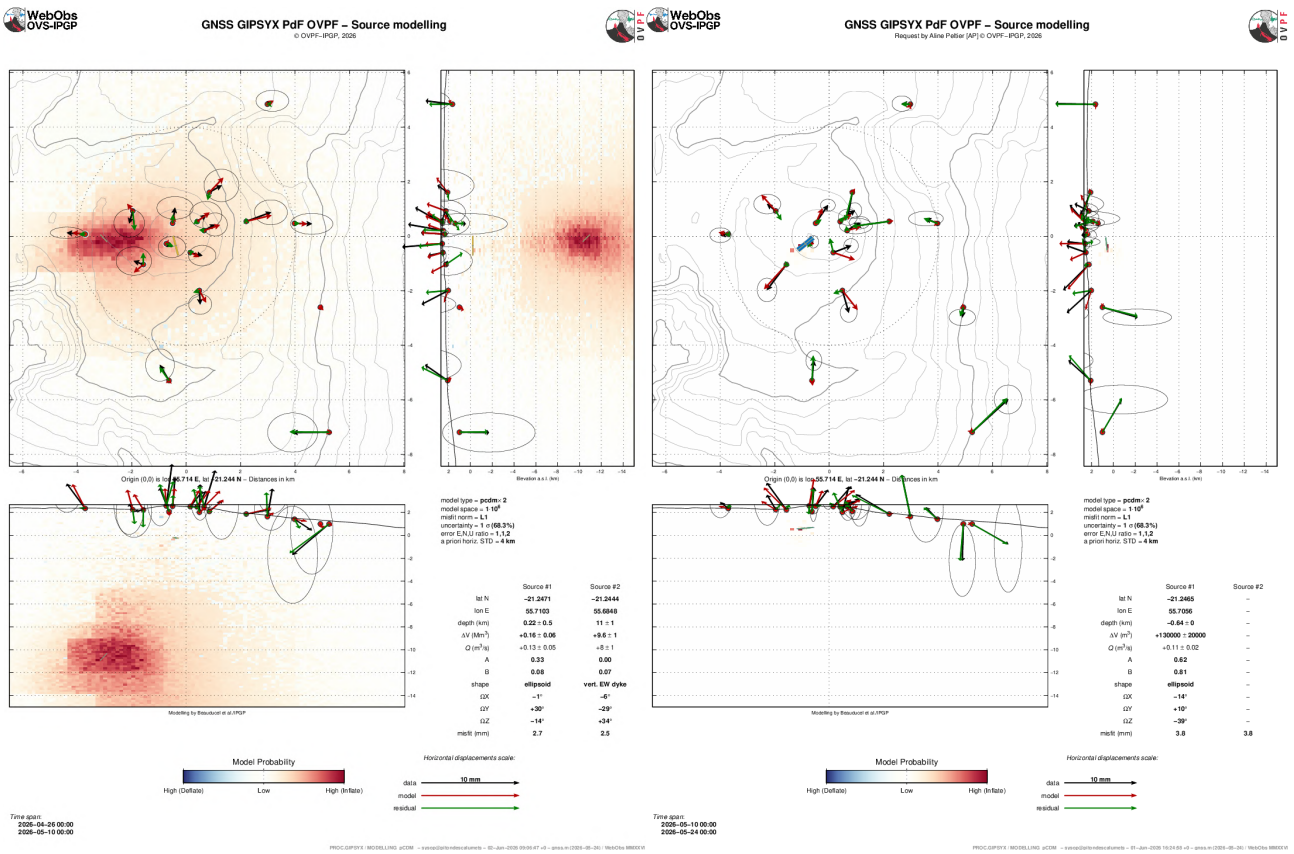

Figure 6: Modelling of the pressure sources responsible of ground displacements (pCDM models, Nikkhoo et al., 2016) linked to (to the left) the April 26 – May 10, 2026 period and (to the right) the May 10-24, 2026 period. The black vectors represent observed data, the red vectors represent modelled vectors, and the green vectors represent the residuals between observed and modelled vectors. The characteristics of each source (primary #1 and secondary #2) are listed in the lower right corner (©Webobs/OVPF-IPGP).

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

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 stations (PCNR, GITN, see location on Figure 7). That marks a clear evolution with respect to the long term of decrease recorded in the period 2021-2025 on these sites (Figure 7).

In 2026, the strongest increase in soil CO_2 emissions have been recorded during the February-April eruption on PCRN and GITN stations.

The PCRN and GITN stations still record high fluxes after the end of the eruption.

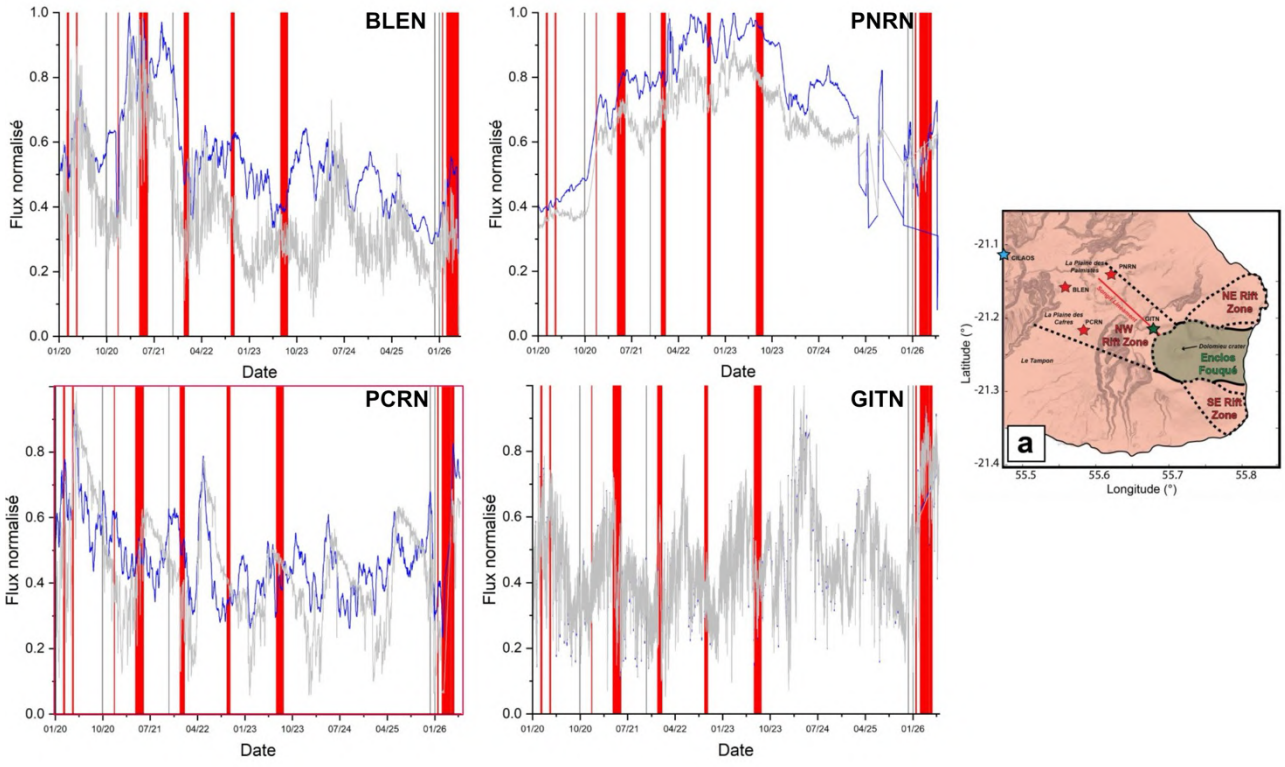

Figure 7: Normalized CO_2 soil emissions (grey: raw data) corrected for short period influence of environmental parameters (OVPF-correction model; 15 days moving average; in blue) of all CO_2 stations (see location on the map on the right). Red bars: eruptions; Gray bars: intrusions (©OVPF-IPGP-OSUL).

** 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 and during the last eruption.

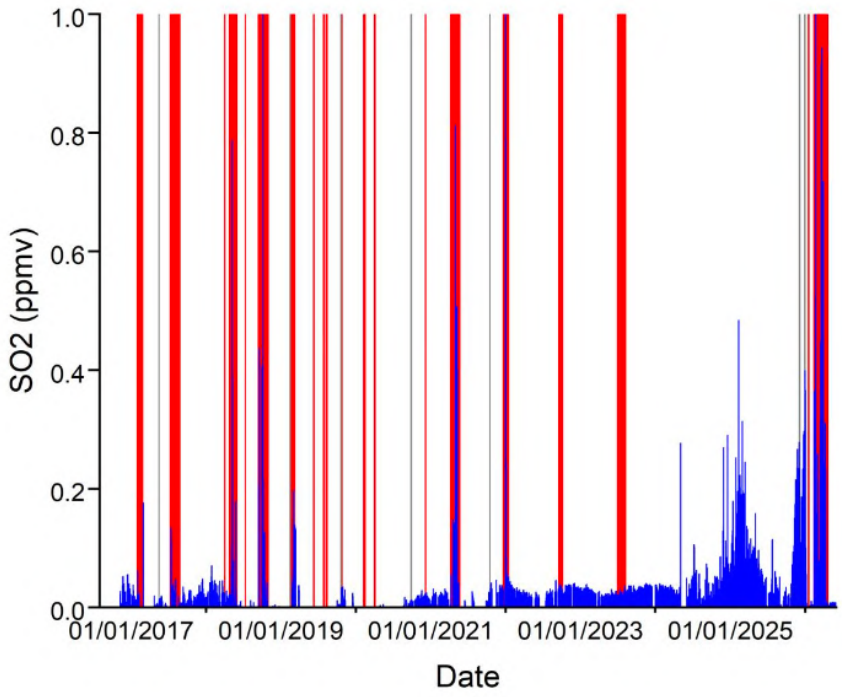

Figure 8: Raw (in blue) concentrations of SO_2 in the atmosphere at the summit of Piton de la Fournaise (MultiGaS station) Red bars: eruptions; Gray bars: intrusions (©OVPF-IPGP-OSUL).

** 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.*

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Phenomenology

No eruptive activity reported in May 2026.

Summary

Following the end of the last eruption on April 12, 2026, a pressurization of the deep magmatic system beneath Piton de la Fournaise was still observed in May 2026, with deep seismic activity and inflation of the volcano edifice.

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

Local and regional seismicity

In May 2026, the OVPF-IPGP recorded:

- 48 local earthquakes (below the island, within a radius of 200 km around the island, Figures 9 and 10);
- 0 regional earthquake (in the Indian Ocean basin).

In **May 2026**, the OVPF-IPGP detected **48 local earthquakes,** located mainly beneath *La Roche Écrite* but also in other areas in the north of the island (Figure 10).
We note a small sequence of about ten earthquakes observed on May 15 in the *Makes* region (west of the *Cilaos* cirque), at a depth of approximately 8 km below sea level. The sequence appears to be more consistent with an earthquake swarm, with magnitudes around Md ≈ 1, than with a typical mainshock-aftershock sequence characterized by a larger main event followed by a series of smaller aftershocks. However, this interpretation remains uncertain given the small number of observed earthquakes, their low magnitude, and the relatively limited coverage of the OVPF-IPGP seismic network in this area.

Most of these earthquakes have **magnitude less than 1** and are difficult to locate accurately. These earthquakes were located between **10 km and 25 km depth in oceanic lithosphere** on which was built the volcanic edifice at the origin of La Réunion island.

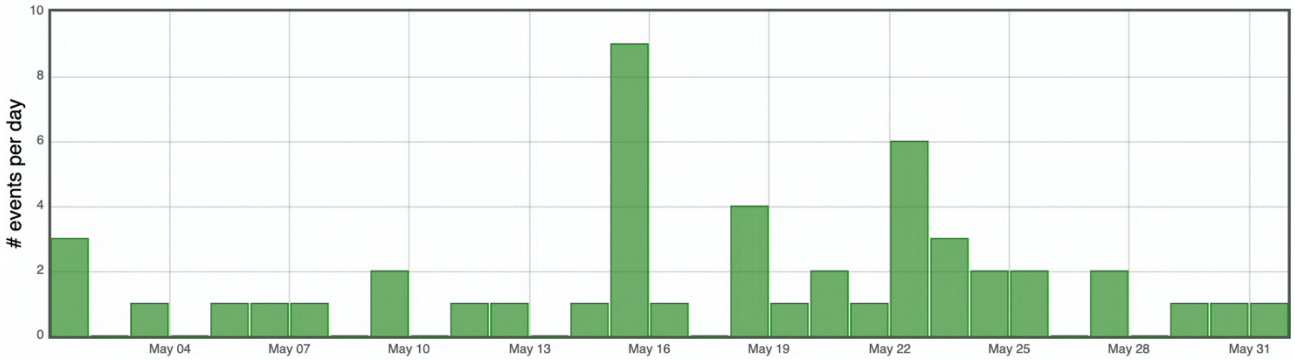

Figure 9: Number of local earthquakes (La Réunion island) per day recorded in May 2026 (©WebObs/OVPF-IPGP).

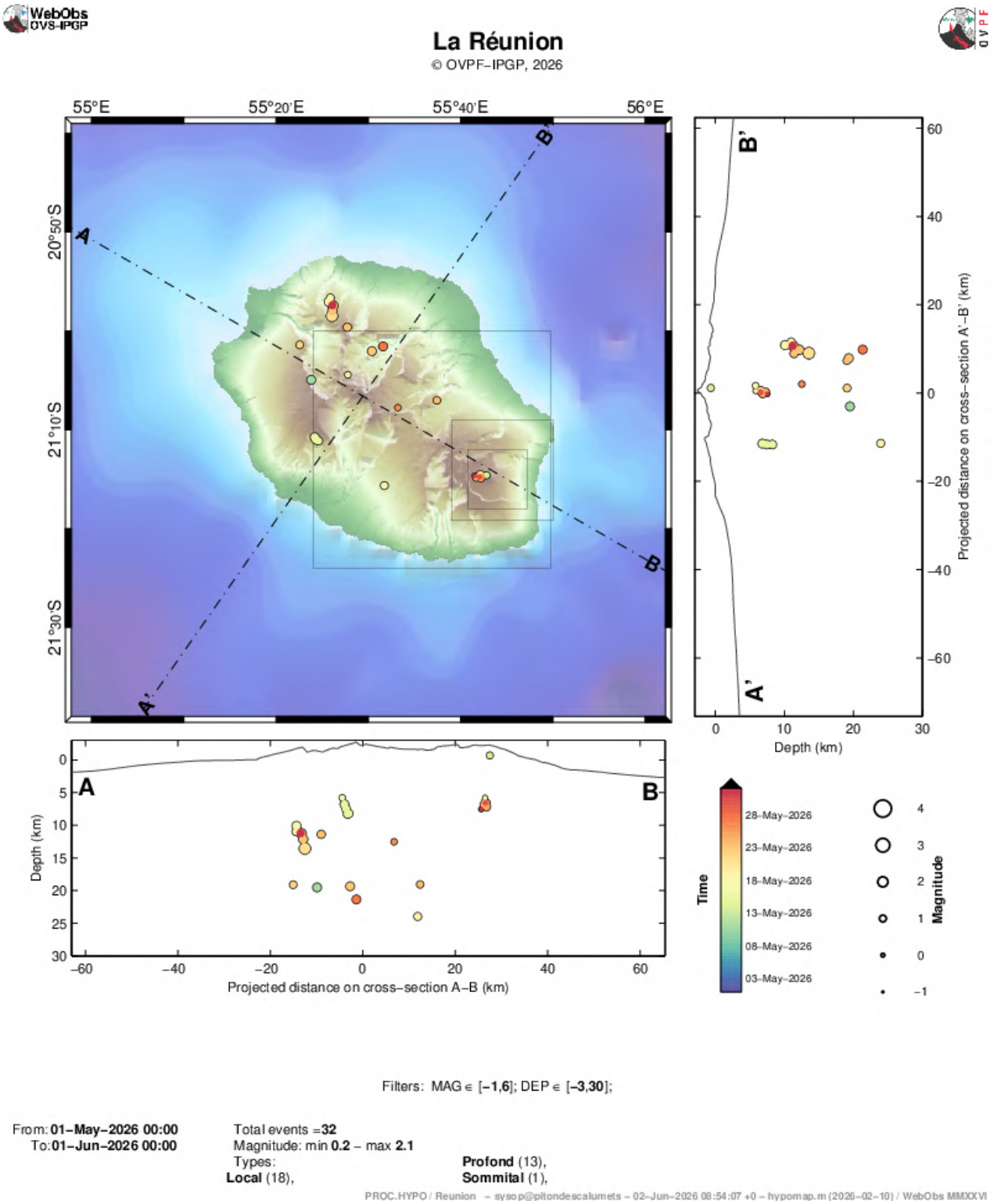

Figure 10: Seismicity below La Réunion in May 2026. Location map (epicenters) and north-west – south-east and south-west – north-east cross-sections (hypocenters) of earthquakes as recorded by OVPF-IPGP. Only localizable earthquakes are shown on the map (©WebObs/OVPF-IPGP).

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

June 2, 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).