

## **Given the increase in visitors, PEVOLCA has stepped up road safety and the shuttle service to the volcano viewpoint continues**

- **Flow 3 has advanced 1,500 meters in the last 24 hours, parallel to flow 9, reaching the Las Hoyas area**
- **The affected area is estimated at 963 hectares and the maximum width between the flow is 3,000 meters**
- **An earthquake was registered this morning of magnitude of 5.0 mblg with intensity IV-V, the strongest so far and earthquakes of intensity VI are not ruled out.**

The Steering Committee of the Canary Islands Special Plan for Volcanic Emergencies (PEVOLCA) of the Government of the Canary Islands, chaired by the Canary Islands' Minister of Public Administrations, Justice and Security, Julio Pérez, has insisted today on the reinforcement of the preventive measures launched yesterday in view of the increase in visitors to La Palma during the All Saints' Day long weekend, with the aim of guaranteeing the safety of people and not hindering the work of the emergency services.

In this respect, everyone who wishes to access the area to see the volcano should use the free shuttle bus service, which the Canary Islands Government Plan and the Island Council have made available to users. This service will depart every 20 minutes from the old Buenavista airport, in Breña Baja, to the Plaza de Tajuya in the municipality of El Paso. Departures from the old airport are from 10:00 to 22:40, today, Saturday, and Sunday and Monday, with the last bus leaving Tajuya at 24:00.

People who wish to access the municipalities of El Paso, Los Llanos de Aridane and Tazacorte by private vehicle must use alternative routes to the LP-3 and drive along the slopes of El Paso and Hermosilla, since the LP-3 must be free for the circulation of

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emergency services, heavy vehicles, resident and authorized persons, as well as for public transport. In addition, all drivers are requested to exercise caution when driving and pedestrians should wear reflective vests to prevent accidents and being hit by vehicles.

The Steering Committee also highlighted the support work carried out by the emergency services, both professionals and volunteers, allowing neighbors to access the exclusion zones and collect belongings or clear ash. In addition, 169 vehicles passed through the Tzacorte checkpoint yesterday to visit the cemetery.

Regarding the flows, the Technical Director of PEVOLCA, Miguel Ángel Morcuende, pointed out that flow 3 has spilled over flow 9 to which it has joined by moving into troughs, and has now reached the vicinity of the coast. This flow is the one that is causing the greatest damage and affecting buildings, banana trees and greenhouses in its path.

At noon today, Saturday, the above flow was about 400 meters from the sea and is being monitored, although it is not ruled out that it will not reach the water since there is a flat area over which it can continue to move. However, if it reached the sea, it would not be necessary to take confinement measures since this area has already been evacuated and the San Borondón urban center is 3,800 meters away, far enough away as to not be affected.

As for flow 4, it has been standing still near Perdido beach for several days and does not seem to be receiving much input. However, PEVOLCA continues to monitor it because the coastal nuclei of Tzacorte would need to be confined should the lava come into contact with the sea.

The spokesperson for the Scientific Committee and director of the National Geographic Institute (IGN) in the Canary Islands, María José Blanco, explained at today's press conference that the lava emitting focus on the northwest flank of the main cone is feeding a flow that is moving towards the southwest over previous flows, forking into two arms, one of which is advancing to the west and the other to the southwest. The

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latter has overtaken the front of flows 1 and 3, moving over previously unaffected terrain in a southwesterly direction, having advanced 1,500 meters in the last 24 hours, reaching the low part of the island in the Las Hoyas area.

The area affected by the volcanic eruption is estimated at 963.73 hectares, 48 hectares more than yesterday's data, while the maximum width between the flows has increased by 100 meters to 3,000, mainly due to the advance of flow 3. There are areas that have not been damaged by lava in places between the streams.

According to the latest data provided by the Copernicus satellite regarding the number of destroyed or damaged buildings, the eruption process has affected approximately a total of 2,681 buildings, of which 2,532 may be totally destroyed and 149 damaged. or at risk. These data will be filtered with the Cadastre data over the next few days.

Regarding the eruptive process, Blanco pointed out that yesterday at noon and for several hours there was a continuous process of audible explosions of great intensity and emitting a considerable volume of ash covering the entire Valley. This episode could be caused by intense degassing.

The emission of sulfur dioxide (SO<sub>2</sub>) associated with the plume was high yesterday, but slightly decreased.

Regarding seismicity, the Scientific Committee spokesperson said that an earthquake of the magnitude of 5.0 mblg and intensity IV-V was recorded this morning, the maximum in the series so far and that the current level of seismicity continues to indicate that it is possible there will be more earthquakes felt by the public, possibly up to intensity VI (EMS) In this regard, PEVOLCA has reiterated its warnings to the population so that they know how to act if an earthquake surprises them, both indoors and outdoors. Up to now, there is no knowledge of any damage as a result of these earthquakes, such as glass breakage or falling objects. However, PEVOLCA is insisting that the precautions already recommended be followed.

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Regarding the deformation, the stations closest to the eruption center are showing a stable pattern. At the stations furthest from the eruption center, there is a slight regional deflation.

The meteorological conditions are favorable for the operation of the airport, with winds from the southeast and east, but the decrease in the thermal inversion to 900 meters will make it difficult for pollutants to be dispersed. Regarding air quality, the hourly or daily thresholds for sulfur dioxide or PM10 particles have not been exceeded in any of the stations. The specific peaks in Los Llanos de Aridane seem to be associated with road traffic and cleaning work.

In any case, the Steering Committee continues to insist that the population should wear an FFP2 mask and protective goggles in areas near the volcano, as a precautionary measure, and to take special care with vulnerable people.

The number of people temporarily housed in hotel centers today is at 454, of which 384 are staying at the hotel in Fuencaliente and 70 in Los Llanos de Aridane. In addition, 44 dependent people are being cared for in nursing or care homes on the island.

Finally, the Steering Committee have verified that there have been no new incidents in the water supply, electricity or telecommunications services.

## **The Scientific Committee's Daily Report**

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Prior to the meeting of the Steering Committee, the Plan's Scientific Committee met and heard the findings of its members on the evolution of the eruption since yesterday. The Scientific Committee is coordinated by the Canary Island Government's Directorate General for Safety and Emergencies and is comprised of representatives of Spain's National Geographical Institute (IGN), Science Research Council (CSIC), Canarian Institute of Volcanology (Involcan), Spanish Geological and Mining Institute IGME), National Institute of Meteorology (AEMET), National Oceanographic Institute (IEO), and the universities of La Laguna and Las Palmas de Gran Canaria.

Its findings were the following:

The fissure eruption is still displaying a strombolian mechanism (a mixed character mechanism, with explosive phases producing pyroclastic deposits and effusive phases producing lava flows, simultaneously), with a predominance of the effusive phase at the moment. In volcanology, the magnitude of the volcanic eruptions is measured on the scale of the Volcanic Explosivity Index (VEI acronym in English) with values between 0 and 8; in the case of this eruption the estimated VEI, up to now, is 2. The behavioural pattern of the eruption has not changed from the that of the previous three days.

The morphology of the cone is constantly changing due to the successive processes of growth and reconfiguration. The eruption process has episodes of increased and decreased strombolian activity, as well as pulses with phreatomagmatic activity.

A stream has been emerging from the lava emitting focus on the NW flank of the main cone, which is moving southwest on top of previous streams, forking into two arms, one of which is advancing to the west and the other to the southwest. The latter lava flow has passed the front of streams 1 and 3, and is moving over previously unaffected terrain in a southwesterly direction. It has advanced 1,500 m in the last 24 h and has reached the lower island in the Las Hoyas area.

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Several vents are currently active but with intermittent expulsions (both pyroclasts and lava), varying as the configuration of the eruption zone changes. The appearance of new vents around the main cone, as well as other vents on the surface (visible gas emissions) within the exclusion zone is not ruled out.

Audible explosions of great intensity occurred at noon yesterday and continued for several hours. These explosions emitted a considerable volume of ash covering the entire valley. This episode could have been caused by intense degassing.

The height of the eruptive column as measured today is 4000 m.

A weak E-NE synoptic flow is anticipated, intensifying in the afternoon, with weak leeward breezes. At higher altitudes, the wind will turn SE. In the next few days the NE flow will continue. The expected dispersion of the ash cloud is towards the SW-W, which favors the operation of the Canary airports. The thermal inversion is between 2 and 4°C at 1,200 m., descending to 900 m over the course of today. Dry and stable atmosphere is forecast above the inversion. The forecast is for little or no cloudiness, with clouds evolving in the afternoon and no probability of precipitation.

Seismicity continues to be mainly located close to the seismicity of the first days, at depths of between 10 and 15 km. Earthquakes have also been recorded at depths of more than 20 km. This morning, an earthquake with a magnitude of 5.0 mblg was recorded with intensity IV-V. High values of the amplitude of the tremor signal are still being registered, with intensification pulses. The seismicity registered at intermediate and deep depths is part of the current eruptive process. No significant surface seismicity is being recorded. The current level of seismicity continues to suggest that more earthquakes which will be felt by the public may occur, and could reach VI intensities (EMS) and cause small rock falls in sloping areas. Relevant information on this topic is included in the Recommendations section of this report.

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The stations closest to the eruption center are observing a stable pattern. A slight regional deflation is being seen at stations furthest from the eruption center.

The emission of sulfur dioxide (SO<sub>2</sub>) associated with the volcanic plume (visible emanations of volcanic gases) could not be estimated yesterday (29/10), as a consequence of various instrumental problems with the remote optical sensors to perform these types of measurements. In the case of diffuse emission of carbon dioxide (CO<sub>2</sub>), associated with the 220 km<sup>2</sup> of the Cumbre Vieja volcanic ridge (non-visible emissions of volcanic gases), a downward trend of this geochemical parameter was observed from 12/10 to 22/10, but since 22/10 an upward trend has been observed, with a diffuse emission of carbon dioxide (CO<sub>2</sub>) of 1,414 tons per day being registered on 29/10. The monitoring of the diffuse flow of carbon dioxide (CO<sub>2</sub>) in the geochemical station of Los Llanos (LP10) is still indicating a higher magmatic-hydrothermal fraction than that observed in the geochemical station of Fuencaliente (LP08). All these geochemical observations are consistent with the current eruption process.

Regarding air quality, the mean average levels of sulfur dioxide (SO<sub>2</sub>) concentration yesterday were significantly lower than the reference hourly limit values of 350 µg/m<sup>3</sup> in all the stations on the island. The concentrations of this gas, which is associated with the eruption process, did not exceed the daily limit values of 125 µg/m<sup>3</sup> in any of the stations belong to the air quality network. The Los Llanos de Aridane station registered a maximum hourly recording of 161 µg/m<sup>3</sup> at 07.00 hours. The hourly limits have not been exceeded today, with maximums lower than 200 µg/m<sup>3</sup> early in the morning in Tazacorte, Los Llanos de Aridane and El Paso, which is currently in remission.

With regard to particles of less than 10 microns (PM10), we continue to register values are being recorded below the daily threshold of 50 µg/m<sup>3</sup> in all the stations on the island, except in Los Llanos de Aridane. The trend observed over the last few days in this station, with unfavorable values between 09.00 and 18.00 approximately, intensified yesterday with a maximum hourly concentration of 395 µg/m<sup>3</sup> at 12.00, which decreased during the evening. The recordings in the Los Llanos de Aridane continue to reflect the incidence of ash falls from the volcano, which is strongly

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influenced by the daily wind dynamics. As a consequence of this, the daily PM10 threshold was exceeded at this station with a level of 60  $\mu\text{g}/\text{m}^3$ . The levels have remained low since midnight, with an upward trend in Los Llanos de Aridane in the latest hourly data.

## **OBLIGATIONS AND RECOMMENDATIONS**

### **MARINE PLUME:**

- Close attention should be paid to the wind forecast to monitor possible changes in the direction of the plume and act accordingly, especially in the case of people with weakened respiratory systems (for example, asthmatics) as they are more vulnerable at lower concentrations.
- People should also wash their eyes after any exposure, since symptoms are often not noticed until later.
- These marine plumes can be seen up to several kilometers from the source, although they appear more diluted. In the event that the marine plume reaches population centers, people should stay indoors whenever possible and keep all doors and windows closed.
- A distance of at least 500 m from the active areas of the lava deltas (with lava input and visible manifestations), and a distance of 200 m for the more stable areas, should be kept for the safety of the navigation of scientific vessels conducting scientific work in this area. Navigation for scientific purposes for managing the emergency can be carried out at shorter distances, under the responsibility of the owner and the captain or skipper of the vessel, as long as it has the approval of the Technical Directorate of PEVOLCA and the Maritime Captaincy.



## LAVA FLOWS:

- People should not approach the lava flows due to the risk of being exposed to the gas emissions, possible rock falls and high temperatures.
- Given the notable thicknesses observed in some points of the lava stream, collapses of its front may occur which, in steeper areas, may involve the formation of large fragments of the lava flow, which can become detached from the front of the flow and suddenly move distances of several meters, depending on the topography, from the front of the stream. Small pyroclastic streams may also appear in steep areas.

## FALLING PYROCLASTS:

- People are reminded that there is an exclusion radius of 2.5 km around the vents to minimize the risk of impact from pyroclasts and exposure to gases.
- In the event of increased explosive activity, violent explosions could cause window panes to break. People should stay away from windows in a radius of up to 5 km from the cone.
- People should stay indoors in areas affected by heavy ash fall (deposits clearly seen on the ground) and even more so when there is mist. The use of FFP2 face masks and goggles is also recommended outdoors.
- In the event that ash reaches other islands, people in affected areas should wear surgical masks. Ash should be cleared on roofs where it is a few centimeters thick. It is of the utmost importance that when clearing the ash people strictly follow the procedure set out by Civil Protection authorities (moisten ash, eye protection, wear a mask, protect the skin and so forth). When clearing the ash, FFP2 masks and gloves should be used, and the ash should be slightly moistened

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before sweeping and the use of blowers should be avoided, except for cleaning the airport facilities by specialized personnel with their corresponding PPE. The use of blowers increases the resuspension of the most harmful particles to health.

A distance of at least 1000 m from the main emission center is recommended for the safety of scientists on the ground inside the exclusion zone. Approaching the vents at shorter distances is permitted, for scientific observation purposes for emergency management, with the approval of the PEVOLCA Technical Directorate.

Attention should be paid to and exposure should be minimized to any observable phenomenon inside the exclusion zone and at distances of less than 3 km from the current emission center in the southern sector.

#### SEISMIC MOVEMENTS:

The PEVOLCA scientific committee is continuously monitoring the volcanic activity.

Both at home and in the workplace, the public should take preventive measures: reinforce shelves, make sure lamps are well supported and remove large objects from the furniture.

#### Outdoors:

If you are outside and there is an earthquake, find an open place and stay away from structures that could fall onto the road and stay away from areas at risk of collapse.

For your own safety, remember to follow these self-protection tips:

- Go to open spaces.
- Stay away from buildings, balconies, traffic lights, streetlights, power lines or trees.



- Do not go near areas where there is a danger of rock falls.
- Follow the recommendations of the authorities and get information from official channels and the media.
- If you are in a vehicle, slow down and stop the engine when possible, away from buildings and steep areas. Turn on the emergency lights and stay in the vehicle until the earthquake ends.

#### Indoors:

If you are surprised by an earthquake when inside your home, keep calm and follow these self-protection tips:

- Do not go outside while the shaking lasts.
- Protect yourself under a door frame or a sturdy piece of furniture, such as a table.
- Do not stand or sit near windows.
- If you have to leave your house, disconnect the water, electricity and gas.
- In case of evacuation, go down the stairs and do not use the elevator.
- Follow the recommendations of the authorities and get your information from official channels and the media.

The general public on the island of La Palma are recommended to use FFP2 masks outdoors.

Land and maritime exclusion zones must be respected for reasons of protecting people's health and safety.



Continuous monitoring of the seismic activity has been stepped up and any significant change will be notified. The public are asked to be on the alert for information issued by the Civil Protection authorities.

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