

PEVOLCA authorities call for cooperation by public ahead of rise in visitors for All Saints holiday weekend

- Free shuttle bus to operate for access to volcano zone, with alternatives to LP-3 road in place for private vehicles**
- Lava overruns fronts of flows 1 and 3 and has travelled 900 metres in last 24 hours**
- Flow 3 now partly merged with 9, with offshoot heading towards Las Majadas and is now 20 metres from Camino de Aniceto**

The heads of the Canary Islands' Volcano Emergencies Plan (PEVOLCA) today called on the public to cooperate with law enforcement bodies and emergency teams to help guarantee road safety ahead of the anticipated rise in visitors to La Palma during the All Saints holiday weekend. The public are urged to use the special free bus shuttle put in place by the Canarian government and the island's governing Cabildo. The shuttle will depart every 20 minutes from the old airport at Buenavista (Breña Baja) to Tajuya Square in El Paso.

People wishing to travel in their own vehicles to visit the towns of El Paso, Los Llanos de Aridane and Tazacorte are asked to use alternative routes to the LP-3 road and drive through Las Cuestas de El Paso and Hermosilla. The LP-3 should remain free for use by emergency services, heavy vehicles, public transport, local residents and authorised persons.

All persons visiting the area are asked to cooperate fully to help avoid accidents, with those on foot asked to wear high visibility jackets.

Regarding the evolution of the volcano, the eruption pattern remains the same as in the last three days, with high volumes of lava emitted and no reconfigurations of the cone

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in the last 24 hours. A new lava flow has emerged from the vent on the north-west flank of the main cone and is moving south-west along older flows. It has split into two branches, one of which is travelling west and the other south-west. The latter has overrun the fronts of flows 1 and 3 and is advancing along ground hitherto unaffected by the eruption. During the last 24 hours it has travelled 900 metres.

These and other conclusions of the Scientific Committee were examined today by the Steering Committee of the Canary Islands' Volcano Emergencies Plan (PEVOLCA), which was chaired today by Gustavo Armas, director general for security and emergencies. The usual chairman and minister responsible for the Plan, Julio Pérez, was unable to be present as he was in Madrid for the conference of regional justice ministers held today (Friday).

PEVOLCA technical director Miguel Ángel Morcuende explained that lava flow no. 3 had joined flow 9 overnight along the sector with highest intensity. An offshoot is moving towards Las Majadas, north of Camino Aniceto, and could pose a danger to the road leading to Puerto Naos, which is not under threat from the lava at present. Given the possibility that the road will be affected, work is under way to widen the road from Puerto Naos up to Charco (Fuencaliente).

The total area affected by the volcano eruption is estimated to be 915.73 hectares, 10.27 more than yesterday's figure. The maximum width between the far edges of the flows remains at 2900 metres, although there are parts within this area which have not been damaged by the lava.

Emissions of sulphur dioxide (SO₂) associated with the plume remained high yesterday and are in accordance with the eruption process, reaching 15,000 tonnes per day. However, a downward trend has been observed during the last 5 days.

The spokeswoman for the scientific committee and director of the National Geographic Institute (IGN) in the Canary Islands, María José Banco, reported that seismicity continues to be located primarily near that of the early days, at depths of 10 to 15 km, although earthquakes have also been recorded at depths below 20 km. According to

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Blanco, although the last two days have seen a fall in the number of events at depths below 20 km, this has no medium-term significance.

No new deformations of note have been recorded and stations furthest from the eruption zone continue to reflect slight regional deflation of deep origin.

Weather conditions for the coming days suggest a positive scenario for airport operations although the temperature inversion could be detrimental to air quality as it will prevent pollutant and airborne particle dispersal.

In terms of air quality, yesterday brought improved average levels of SO₂ concentrations throughout the island. Emissions of this gas, which is associated with the eruption process, did not lead the hourly (350 µg/m³) or daily (125 µg/m³) limit values to be exceeded at any of the air quality monitoring stations.

As mentioned in previous reports, where a given hourly or daily threshold is exceeded, the Canarian Health Service will issue an alert which will be notified via the 1-1-2 emergencies number. The alert is based on an air quality ‘traffic light’ system: blue means the air quality is good; green means reasonably good; yellow means moderate; amber denotes adverse; red, highly adverse; maroon, extremely adverse.

A total of 454 people are being accommodated in hotels at present. Of these, 70 are in a hotel in Los Llanos de Aridane and 384 in Fuencaliente. All are being cared for by the Spanish Red Cross in coordination with local social services. In addition, 44 dependent persons are being accommodated in community health centres on the island.

An estimated 60 km of roads have been damaged by the eruption. Of these, approximately 8.5 km are main roads on the island, 9.3 km are streets, 1.9 km roads through populated areas, and 40 km correspond to other types of municipal road.

The total area of farmland affected is estimated to be 266 hectares, of which 145.7 are banana plantations, 58.36 hectares are vineyards, and 23.38 are avocado crops. No

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updated figures for damage to buildings are available from the Land Register or the Copernicus satellite.

Daily Scientific Committee Report

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 comprises representatives of Spain's National Geographical Institute (IGN), Science Research Council (CSIC), Canarian Institute of Vulcanology (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 conclusions were as follows:

“The fissure eruption continues to display a strombolian mechanism (a hybrid mechanism with, simultaneously, phases of explosivity that produce pyroclast deposits and effusive phases that trigger lava flows). The effusive phases are more common at present. In vulcanology, the magnitude of volcanic eruptions is measured on the Volcanic Explosivity Index (VEI) on a scale of 0 to 8; the estimated VEI of the present eruption is 2 so far. The eruption behaviour pattern remains the same as during the last three days.

The morphology of the cone is repeatedly changing as a result of the successive growth and reconfiguration processes. The eruption process can consist of episodes of higher and lower strombolian activity, together with pulses with phreatomagmatic activity.

A new lava flow has emerged from the vent on the NW flank of the main cone and is moving SW along older flows. It has split into two branches, one of which is travelling west and the other south-west. The latter branch has overrun the front of flows 1 and 3 and is moving on hitherto unaffected ground, travelling 900m in the last 24 hours.

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Several vents remain active with intermittent activity (pyroclasts and lava), which varies as the configuration of the eruption zone changes. The emergence of new vents in the vicinity of the main cone cannot be ruled out, nor can other surface observables (visible gas emissions) inside the exclusion zone.

The plume height has been measured today at 3300 m.

The wind at low to middle troposphere levels (below 3500 m) is expected to gradually veer E from N. The ash and CO₂ plume should move SW and W of the eruption zone, leading to a favourable scenario for operations at airports in the Canary Islands. The temperature inversion will be situated today at around 1200 m and is expected to fall in altitude (settling tomorrow at around 800 m) and become more pronounced (3°C). Combined with the prevailing breezes on the W side of the island, these conditions will be negative for air quality in the coming days.

Seismicity continues to be largely concentrated close to that of early days, at depths of between 10 and 15 km. Earthquakes deeper than 20 km are being recorded also. Magnitudes of 4.2 mbLg and intensities of IV have been reached. The high amplitude values of the tremor signal remain unchanged, with intensification pulses. The seismicity at intermediate and deep levels is part of the same current eruption process. No significant surface seismicity is being recorded at present. Current levels of seismicity continue to suggest that more earthquakes may be felt by the population, possibly reaching intensities of VI (EMS), with minor rockfalls possible on steep slopes. Relevant information on this aspect is included in the Recommendations section below.

No new deformations of note have been recorded and stations furthest from the eruption zone continue to reflect slight regional deflation of deep origin.

During yesterday (28/10), sulphur dioxide (SO₂) emissions associated with the volcanic plume (visible emissions of volcanic gases) remained high and in accordance

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with the eruption process, reaching 15,000 tonnes per day (value probably underestimated). Nonetheless, a downward trend is seen in SO₂ emissions in the last 5 days. Diffuse emissions of carbon dioxide (CO₂) associated with the 220 km² of the Cumbre Vieja volcanic rift (non-visible emissions of volcanic gases) fell between 12-22/10 but have risen since 22/10, reaching an estimated 1372 tonnes per day on 28/10. Diffuse CO₂ emissions monitored at the Los Llanos de Aridane geochemical station (LP10) show a higher magmatic-hydrothermal fraction than that observed at the Fuencaliente station (LP08). All these geochemical observations are consistent with the current eruption process.

In terms of air quality, yesterday brought improved average levels of SO₂ concentrations throughout the island. Emissions of this gas, which is associated with the eruption process, did not cause the hourly (350 µg/m³) or daily (125 µg/m³) limit values to be exceeded at any of the air quality monitoring stations. The highest hourly values, nearly 300 µg/m³, were recorded at the Los Llanos de Aridane station at 18:00, although these fell quickly during the late evening and night. Meanwhile at Puntagorda, following the peaks recorded in the early hours of 28/10 (below the hourly average), measurements were low throughout the day except for a spike of 170 µg/m³ recorded at 18:00. Hourly limits have not been exceeded today. The highest values were recorded during the morning at the Los Llanos de Aridane station, with an hourly maximum of 161 µg/m³ at 07:00. However, the latest measurements indicate a downward trend.

With regard to particles below 10 microns (PM₁₀), values below the daily limit of 50 µg/m³ continue to be recorded at most stations except Los Llanos de Aridane, where hourly averages once again exceeded the limit between 9:00 and 18:00 yesterday, reaching a peak of 196 µg/m³ at 18:00, although subsequently falling during the late evening and night. The measurements at this station are affected by the ash fall from the volcano, which is heavily influenced by the daily wind dynamics. The daily average at Los Llanos de Aridane exceeded the daily limit, reaching 52 µg/m³. Values overnight and this morning remained low in all cases, except at Los Llanos de Aridane where

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they rose gradually during the early part of the day and are currently above the daily threshold.

OBLIGATIONS AND RECOMMENDATIONS

SEA PLUME:

- Particular attention should be paid to the wind forecast to monitor possible changes in direction by the sea plume and act accordingly, particularly in the case of persons with weakened respiratory systems (asthma sufferers, for example) as they are more vulnerable to lower concentrations.
- Eye flushing is also recommended after every exposure given that symptoms are often not noticed until later.
- Sea plumes can be noted up to several kilometres from the source, albeit in a more diluted form. If a plume reaches residential areas, the public are advised to stay indoors if possible and close all doors and windows.
- For safety reasons, research vessels undertaking scientific work in the zone are recommended to keep a distance of at least 500 m in zones with active lava deltas (fed by lava and with visible manifestations) and 200 m in more stable zones. Sailing for scientific purposes related to the management of the emergency is authorised at closer distances on the responsibility of the vessel owner and captain, provided that approval has been sought from the PEVOLCA technical management and Harbourmaster.

LAVA FLOWS:

- The public are also advised not to go near the lava flows due to the risk posed by exposure to gases, possible rockfalls and the high temperatures.
- Given its thickness at certain points, break-ups of the lava front may occur and lead to the formation of large fragments of lava in steeper parts. Depending on the terrain, these may travel distances of several metres from the flow front very

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quickly after detachment. Small pyroclastic flows are also possible on very steep slopes.

FALLING PYROCLASTS:

- The public are reminded that an exclusion zone with a radius of 2.5 km has been established around the vents to minimise the risk of impact of pyroclasts and exposure to volcanic gases.
- If explosive activity becomes more intense, some violent detonations may cause windows to break. People are advised to stay away from windows up to 5 km from the cone.
- In areas affected by heavy ash fall (where ground deposits are clearly seen) and particularly if haze is visible, the public are advised to stay indoors. When outdoors, the wearing of FFP2 masks and goggles is recommended.
- If ash reaches other islands, the wearing of surgical masks is recommended. Roof terraces with ash deposits of several centimetres should be cleaned. The procedure recommended by the civil protection authorities for ash removal from roofing and floors (moisten the ash, protect eyes, wear a mask, protect skin, etc, see attached document) should be followed closely. FFP2 masks and gloves should be worn when clearing ash, which should be moistened slightly before brushing. Blowers should not be used except for the cleaning of airport premises by specialist personnel wearing appropriate PPE. Blowers increase the resuspension of the particulates most harmful to health.

For their safety, scientists working on land inside the exclusion zone are advised to stay at least 1000 m from the main emission zone. They may move closer for scientific observations related to the management of the emergency, with the approval of the PEVOLCA technical authorities.

At distances of less than 3km from the current emission zone in the southern sector and inside the exclusion zone, particular attention should be paid to any observable phenomena and exposure should be kept to a minimum.

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SEISMIC MOVEMENTS

- The PEVOLCA scientific committee monitors the volcanic activity constantly.
- Take preventive measures both at work and at home: secure bookshelves and lamps, and remove large objects from furniture.

Outdoors:

If you are outdoors when an earthquake occurs, head for open spaces and stay clear of structures that might fall to the ground. Stay away also from areas at risk of landslide.

For your own safety, please remember the following self-protection recommendations:

- Head for open spaces.
- Stay away from buildings, balconies, traffic lights, street lights, overhead cables and trees.
- Stay clear of areas at risk of landslides/rockfalls.
- Follow the recommendations issued by the authorities and keep up to date with news from official sources and the media.
- If in a vehicle, reduce your speed and, when possible, switch off your engine - away from buildings and hilly areas. Turn on your hazard lights and stay in the vehicle until the earthquake ends.

Indoors:

If you are indoors when an earthquake occurs, remain calm and follow these self-protection recommendations:

- Do not go outside during the earthquake.
- Take shelter in a doorway or under a solid piece of furniture such as a table.
- Stay away from windows.
- If you need to leave your home, turn off the water, gas and electricity.
- In case of evacuation, use the stairs not the lift.



- Follow the recommendations issued by the authorities and keep up to date with information from official sources and the media.

People on the island of La Palma are advised to wear FFP2 masks when outdoors.

Exclusion zones at sea and on land must still be observed to ensure the safety of the population.

Continuous monitoring of seismic activity has been stepped up and any significant change observed will be notified. Be on the alert for information issued by the appropriate Civil Protection authorities.”