

## **The 2021 eruption of Cumbre Vieja volcano: Petrological insights gained from the initial rapid response to post-eruption study**

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The 2021 eruption of Cumbre Vieja volcano marked the end to a 50-year period of quiescence on La Palma in the Canary Islands, Spain. It began September 19th and continued for 85 days, exceeding the duration of all other historical eruptions since ca. 1480. The initial phase commenced with fire fountaining from fissure vents that sustained varied activity throughout the eruption, from fountain-fed lava flows to strombolian explosions to gas jetting, ultimately building a large cone with multiple craters west of the Cumbre Vieja ridge. By the time the eruption ended December 13th, lava flows had spread over 1000 hectares, creating a ~3.5 x 6.2 km flow field that extends between the cone and the sea. Tephra deposits accumulated over 5500 hectares, mostly to the west-southwest, and were sourced from plumes up to 6000 m high that occasionally reached El Hierro, La Gomera, Tenerife, and Gran Canaria islands. This presentation will discuss a time-resolved series of mineralogical and petrological findings that were made during the eruption response phase [1] and since the eruption has ended. Techniques used to investigate lava and tephra include whole-rock XRF and ICPMS, petrography, QEMSCAN, microXRF, EPMA, LAICPMS, and microCT.

[1] Pankhurst, M. J., Scarrow, J. H., Barbee, O. A., Hickey, J., Coldwell, B. C., Rollinson, G. K., Rodríguez-Losada, J. A., Martín Lorenzo, A., Rodríguez, F., Hernández, W., Calvo Fernández, D., Hernández, P. A. . and Pérez, N. M. (2022) "Rapid response petrology for the opening eruptive phase of the 2021 Cumbre Vieja eruption, La Palma, Canary Islands", *Volcanica*, 5(1), pp. 1–10. doi: 10.30909/vol.05.01.0110.