

# La Palma Earthquakes

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## Abstract

In September 2021, a significant jump in seismic activity on the island of La Palma (Canary Islands, Spain) signaled the start of a volcanic crisis that still continues at the time of writing. Earthquake data is continually collected and published by the Instituto Geográfico Nacional (IGN). ...

*Keywords:* La Palma, Earthquakes

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## 1. Introduction

Source: [Article Notebook](#)

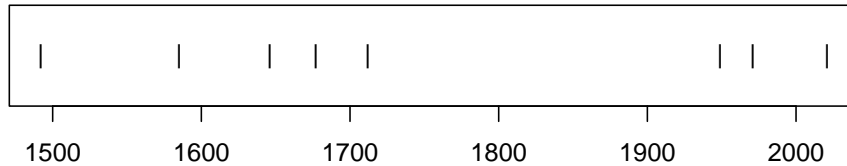


Figure 1: Timeline of recent earthquakes on La Palma

Source: [Article Notebook](#)

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Based on data up to and including 1971, eruptions on La Palma happen every 79.8 years on average.

Studies of the magma systems feeding the volcano, such as [1], have proposed that there are two main magma reservoirs feeding the Cumbre Vieja volcano;

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one in the mantle (30-40km depth) which charges and in turn feeds a shallower crustal reservoir (10-20km depth).

Eight eruptions have been recorded since the late 1400s (Figure 1).

Data and methods are discussed in Section 2.

Let  $x$  denote the number of eruptions in a year. Then,  $x$  can be modeled by a Poisson distribution

$$p(x) = \frac{e^{-\lambda} \lambda^x}{x!} \quad (1)$$

where  $\lambda$  is the rate of eruptions per year. Using Equation 1, the probability of an eruption in the next  $t$  years can be calculated.

Table 1: Recent historic eruptions on La Palma

| Name                | Year |
|---------------------|------|
| Current             | 2021 |
| Teneguía            | 1971 |
| Nambroque           | 1949 |
| El Charco           | 1712 |
| Volcán San Antonio  | 1677 |
| Volcán San Martin   | 1646 |
| Tajuya near El Paso | 1585 |
| Montaña Quemada     | 1492 |

Table 1 summarises the eruptions recorded since the colonization of the islands by Europeans in the late 1400s.

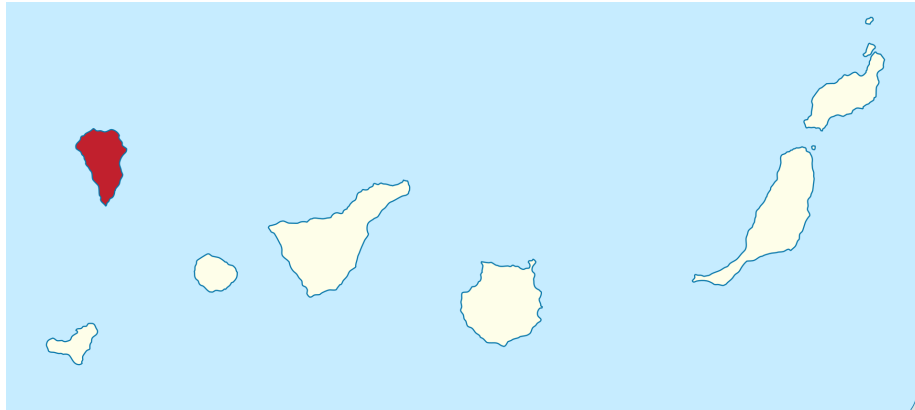


Figure 2: Map of La Palma

La Palma is one of the west most islands in the Volcanic Archipelago of the Canary Islands (Figure 2).

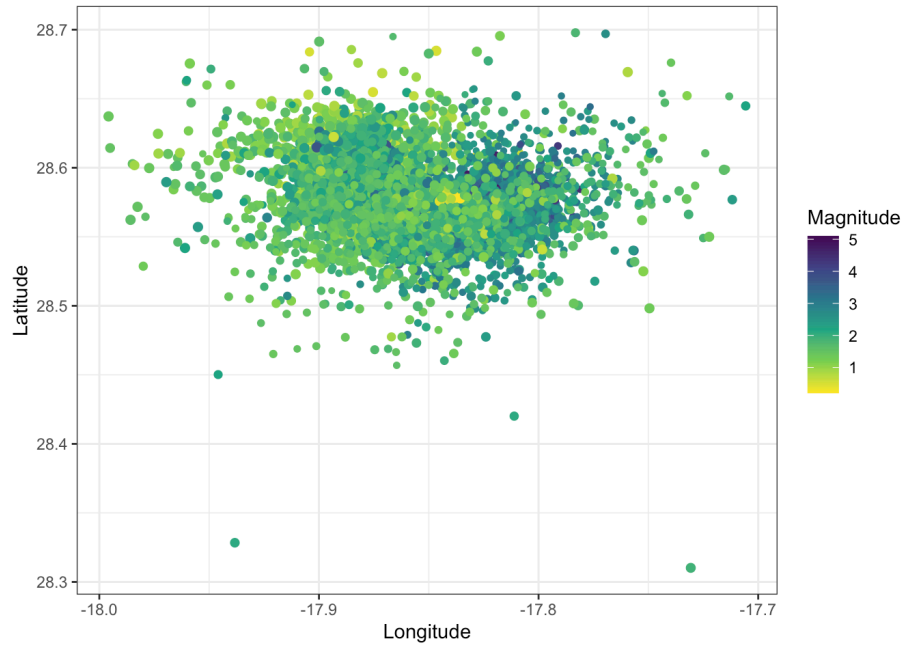


Figure 3: Locations of earthquakes on La Palma since 2017

Source: [Explore Earthquakes](#)

Figure 3 shows the location of recent Earthquakes on La Palma.

## 2. Data & Methods

## 3. Conclusion

## References

- [1] J. Marrero, A. García, M. Berrocoso, Á. Llinares, A. Rodríguez-Losada, R. Ortiz, Strategies for the development of volcanic hazard maps in mono-genetic volcanic fields: the example of La Palma (Canary Islands), Journal of Applied Volcanology 8 (7 2019). [doi:10.1186/s13617-019-0085-5](#).