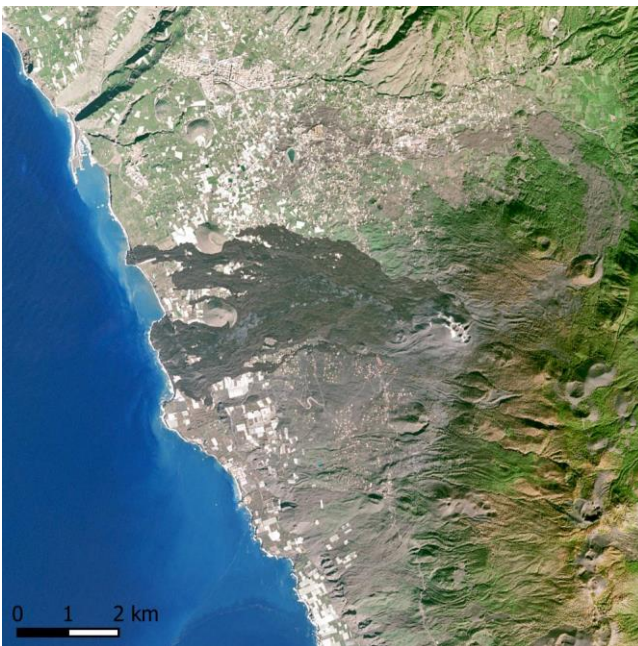


2021-09-30, Sentinel-2 – Lava flow



2022-01-03, Sentinel-2 – Lava sheet

In the autumn of 2021, the island of La Palma, part of the Spanish Canary archipelago off the coast of West Africa, saw a spectacular volcanic eruption.

On September 19th, the Cumbre Vieja volcano, dormant for decades, erupted violently. In a devastating spectacle it unleashed ash and molten lava. Rivers of red-hot lava flew down the volcano's slopes, engulfing homes, farms, and roads. Although the eruption did not claim any lives, the total damage was huge. It was estimated at over 800 million Euros, including the destruction of infrastructure, residential areas, and agriculture. More than 2,800 buildings were destroyed.

La Palma heavily relies on tourism, which suffered a severe blow as the island was temporarily overshadowed by the eruption. Tourism revenue plummeted by approximately 60%, temporarily causing significant job losses and business closures. Additionally, the destruction of farmland and infrastructure disrupted the island's agricultural and transportation sectors.

Local authorities acted swiftly, evacuating thousands to ensure their safety. Using among others satellite data, scientists closely monitored the eruption's progression, providing essential data for informed decision-making.

Exercises

- Look at the satellite images and try to identify the different land cover classes (note: the true colour image from 2021 has been mixed with infrared bands to highlight the hot lava flow). What changes are caused by the eruption and the lava flow?
- Concentrate especially on the coastline. Which changes can you see?
- Look at the lava field and try to estimate the area directly covered by lava.

Additional Material

View towards the still hot lava field (photograph: Eduardo Robaina)

Links and Sources

- https://www.esa.int/ESA_Multimedia/Images/2021/10/La_Palma_lava_flows_into_the_sea - Sentinel-2 image of the lava flow.
- https://www.esa.int/Applications/Observing_the_Earth/Copernicus/La_Palma_volcano_How_satellites_help_us_monitor_eruptions - Background on the use of satellite data for monitoring volcanoes.
- https://www.esa.int/ESA_Multimedia/Images/2021/11/La_Palma_volcano_zoom - Astronaut photo taken from the International Space Station ISS.