

2022-06-03, Sentinel-2

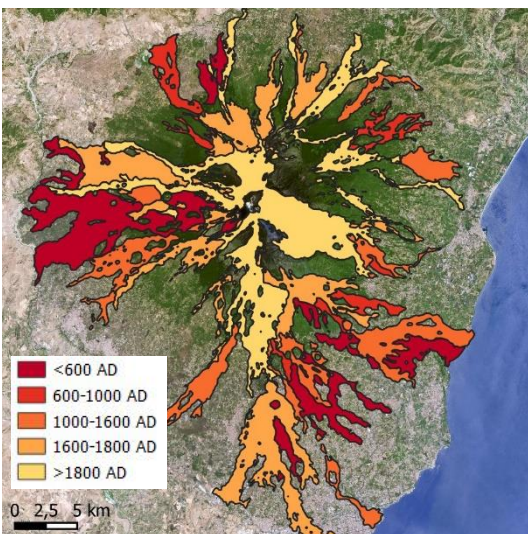
Mount Etna, located on the island of Sicily in Italy, is one of the most active volcanoes on Earth, which is reflected in a high frequency of eruptions. People living at and near the slopes of the volcano are used to being repeatedly disturbed by volcanic activities. They make use of the advantages of the situation, particularly the fertile volcanic soil and the role of the volcano as a tourist landmark.

Among other techniques advanced satellite data are used to closely monitor and quantify the damages caused by this natural event. Satellite technology plays a crucial role in tracking the eruption's progression. High-resolution imagery provides real-time insights into the volcano's behaviour, allowing to map the lava flows, ash plumes, and gas emissions. These observations enable timely warnings to protect nearby communities and air traffic.



2022-06-21, Sentinel-2

The satellite maps presented here show the changing situation during an eruption of Mount Etna in natural colours, additionally integrating a shortwave infrared band highlighting the lava stream to the east.



Age of the lava sheets

Exercises

- Look at the satellite images and try to identify important landuse and land cover classes as well as the peak of Etna (note: the true color images have been mixed with infrared data to highlight the active lava flow).
- Look at the satellite images and compare them. What differences in the size of the hot lava flows, in the intensity of the smoke column and in the wind direction can you see?
- Look at the overview map with the age of the lava sheets and try to estimate the area covered by material from Etna. How long are the lava flows to the coast?
- How do the eruptions affect the people living in the region? What are advantages, what are disadvantages of the vicinity of the volcano?

Additional Material



View of the ash column during an eruption of Mount Etna (photograph: gnucks)

Links and Sources

- https://www.esa.int/ESA_Multimedia/Images/2021/02/Etna_erupts - Sentinel-2 image of an eruption in winter 2021.
- <https://earth.esa.int/web/earth-watching/image-of-the-week/content/-/article/mount-etna-italy/index.html> - true color and false color infrared image.
- https://www.esa.int/Applications/Observing_the_Earth/Copernicus/Satellites_monitor_Mount_Etna_s_unpredictable_behaviour - about the use of satellite data for monitoring volcanoes.