



## Estensione geografica



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## Statistiche

8 visualizzazioni

1 visualizzazioni negli ultimi 14 giorni

## Metadati

## DCAT-AP

N3 TTL XML JSON-LD

## Datacite

Citeproc JSON

Schema.org in JSON-LD Codemeta

Formatted text citation RIS BibTeX

DataCite XML DataCite JSON JATS

OAL-DC

## Schema.org

N3 TTL XML JSON-LD

## NASA

DIF

## ISO 19115

XML

## Condividi

Twitter Facebook

# A dataset from a multi-station analysis of volcanic tremor at Mt. Etna, Italy, in 2021 (MAVT2021)

Tipo Dataset | Classe Dati Sismologici e Infrasonici (terrestri e marini)

Etna Volcanic Unrest Volcanic Tremor Machine Learning Pattern Classification Identification Of Thresholds

The dataset refers to seismic data analyses with a machine learning method in 2021, during which 52 lava fountain episodes occurred at Mt. Etna, Italy. These lava fountains were short-lived (a few hours-long) phenomena, which stemmed from the Southeast Crater, the youngest of the summit craters of the volcano. Each episode was preceded, accompanied, and followed by variations in the amplitude and frequency content of the background seismic radiation, the so-called volcanic tremor. In this perspective, we refined a machine learning analysis based on pattern classification, which was encompassed in the multi-station warning system by Spampinato et al. (2019). The system flags alerts exploiting the spectral characteristics of the volcanic tremor, continuously acquired by the stations of the Etna permanent seismic network. In its original configuration, which combines Self-Organizing Maps (SOM; Kohonen, 2001) and fuzzy clustering analysis (Zadeh, 1965), the system applied a voting scheme based on the number of stations and their weight for which alert criteria are met. Using the warning information of the original configuration, we exploited the application of thresholds to forecast higher levels of volcanic activity, from unrest to paroxysms. In doing so, we considered the values of the RGB (Red/Green/Blue) color code, which are the results of the pattern classification of the volcanic tremor data. In particular, we focused on the red color (R) which tends towards the value 1 (full red saturation) at the climax of each lava fountain. Here, we provide the log files for the time span from January 1 to December 31, 2021, considering five threshold values of R, i.e., 0.50, 0.52, 0.55, 0.58, and 0.60. For each file we report: the UTC time (yyyymmdd\_hh:mm) with increasing step of five minutes; the number of active stations; the value of the alert flag (0=no alert; 1=alert) for each station considered (for example, ECNE) which reached or topped a given value of R (for example, red>0.6).

**Acknowledgments** This work was designed within the project IMPACT (A multidisciplinary Insight on the kinematics and dynamics of Magmatic Processes at Mt. Etna Aimed at identifying preCursor phenomena and developing early warning systems). IMPACT belongs to the Progetti Dipartimentali INGV [DIP7], <https://progetti.ingv.it/index.php/it/progetti-dipartimentali/vulcani/impact#informazioni-sul-progetto>.

Citare come

Falsaperla S., Langer H., Spampinato S., Messina A. A. (2022). A dataset from a multi-station analysis of volcanic tremor at Mt. Etna, Italy, in 2021 (MAVT2021) (Version 1) [Data set]. Istituto Nazionale di Geofisica e Vulcanologia (INGV). <https://doi.org/10.13127/etna/mavt2021>

Formati di codifica dei dati disponibili [zip](#) [ascii](#)[Accedi all'homepage](#)