

# Characteristics of the seismic activity of the island of Vulcano, Italy, during a decades-long monitoring

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Seismic hazard assessment is particularly relevant in case of unrest of quiescent volcanoes. The case of the sudden unrest of Vulcano, Italy, in September 2021 is an example of this, due to its potential threat of phreatic explosions 131 years after the end of its last Vulcanian eruption. The geophysical (e.g., seismic activity, ground deformation) and geochemical parameters (gas composition and temperature of fumaroles) abruptly increased and remained high for several months, forcing Italian authorities to evacuate some families from areas with high values of CO<sub>2</sub>. Despite the decades-long monitoring of the Vulcano Island, it was difficult to gather information concerning old geophysical and geochemical data, as most of them were in analog format and/or dispersed in old repositories. In this light, we have reviewed available seismic data since 1985, when another unrest occurred. Our data collection focused on identifying the main characteristics of the seismic activity on and around the island, reducing uncertainties for the assessment of future seismic scenarios.