

S32B-05 - Volcano-Tectonic Seismicity During the Unrest Phase on the Island of Vulcano (Italy) from Mid-September 2021 to December 2022

📅 Wednesday, 13 December 2023

🕒 11:07 - 11:17

📍 157 - South (Upper Mezzanine, South, Moscone Center)

Abstract

In mid-September 2021 there was a rapid increase in geophysical and geochemical parameters on the island of Vulcano, Italy, reaching alarming values. This phase of unrest aroused serious concern among Civil Protection, local authorities and the scientific community due to the risk of phreatomagmatic activity, with potentially serious repercussions on the inhabitants of the island and on visiting tourists.

The beginning of the unrest was marked by a high occurrence rate of local micro-seismicity related to fluid dynamics within the shallower hydrothermal system (mainly Long Period and Very Long Period events); Volcano-Tectonic (VT) earthquakes increased in late October after most of the monitored parameters reached their climax.

Afterwards, major episodes of VT activity were also recorded from March to April and at the end of the year 2022, when an earthquake of M_L 4.6 occurred on December 4, SW of the island of Vulcano.

Here, we analyze the VT earthquakes from January 2020 to December 2022, in terms of space-time distribution, energy release and focal mechanisms in the framework of the regional geodynamic context and in the light of the main characteristics of the seismic activity recorded in the Vulcano area over the past 36 years.

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