Analysis of background seismicity recorded at Mefite d’Ansato CO2 emission field in the framework of FURTHER project: first results.

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FURTHER – “The role of FLUIDs in the pReparaTory pHase of EaRthquakes in Southern Apennines” is an INGV Departement Strategic Project devoted to define the role of fluids in earthquake genesis. One of the target areas of the multidisciplinary study is Mefite d’Ansanto, which is the largest area of non-volcanic low temperature CO₂ emission field on the Earth. In particular, Work Package 1.4 is dedicated to the application of analysis methodologies in time and frequency domains, aimed to intercept eventual variations in fluid behavior before or in correspondence of local and regional earthquakes, using recordings from the INGV National Seismic Network (IV) and local networks. For this purpose, temporary acquisition surveys have been locally deployed.

On November 20, 2020, a stand-alone seismic station equipped with a Guralp CMG40T 60s broadband sensor, was installed close to the Mefite emission field. In this study we analyze some characteristics of the local seismicity, e.g., frequency content, energy temporal pattern (RMS) and polarization (Montalbetti et al., 1970), and estimate site effects (Nakamura, 1989; http://www.geopsy.org/). Here we present the first results of the ongoing investigation of the seismic noise wavefield in the Mefite area. The temporal pattern of the retrieved seismological observables is compared with the meteorological parameters, such as temperature and rainfall, to find possible relationships with exogenous factors.

Preliminary analysis of the waveforms acquired by the stations of the (IV) have been also performed. We selected the stations inside a radius of 30 km from Mefite area to eventually retrieve the fluid dynamics footprint in the recorded wavefield.

The identification of the wavefield and site characteristics will be useful to define the features of the next survey planned in the area.
References
