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# Microearthquake sequences along the Irpinia normal fault system in Southern Apennines, Italy

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Microearthquakes reflect a continuous readjustment of tectonic structures, such as faults, under the action of local and regional stress fields. Low magnitude seismicity in the vicinity of active fault zones may reveal insights into the mechanics of the fault systems during the inter-seismic period and shine a light on the role of fluids and other physical parameters in promoting or disfavoring the nucleation of larger size events in the same area. Here we analyzed several earthquake sequences concentrated in very limited regions along the 1980 Irpinia earthquake fault zone (Southern Italy), a complex system characterized by normal stress regime, monitored by the dense, multi-component, high dynamic range seismic network ISNet (Irpinia Seismic Network).

On a specific single sequence, the May 2008 Laviano swarm, we performed accurate absolute and relative locations and estimated source parameters and scaling laws that were compared with standard stress-drops computed for the area. Additionally, from EGF deconvolution, we computed a slip model for the mainshock and investigated the space-time evolution of the events in the sequence to reveal possible interactions among earthquakes.

Through the massive analysis of cross-correlation based on the master event scanning of the continuous recording, we also reconstructed the catalog of repeated earthquakes and recognized several co-located sequences. For these events, we analyzed the statistical properties, location and source parameters and their space-time evolution with the aim of inferring the processes that control the occurrence and the size of microearthquakes in a swarm.