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Double-Difference relocation and focal mechanisms of Lucanian Apennine (southern Italy) seismicity.

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We present our results on the seismicity pattern and seismotectonics of the Lucanian Apennine and surrounding areas making use of a newly acquired high-quality waveform dataset collected during two recent passive seismic experiments carried out in the region. From the continuous recordings of the temporary stations we extracted over 15600 waveforms which were hand-picked along with those recorded by the permanent stations of the Italian National Seismic Network obtaining a dataset of 15666 P- and 9228 S-arrival times. We examined the seismicity occurred in the period 2001-2008 relocating events with magnitudes ML $\geq$ 1.5 using the double differences (DD) technique. The relocated seismicity is more concentrated within the upper crust and it is mostly clustered along the Lucanian Apennine chain. Finally, we computed fault plain solutions. In particular two well-defined clusters are located in the Potentino and in the Abriola-Pietrapertosa sector (central Lucanian region). Their hypocentral depths are slightly deeper than those observed beneath the chain. We suggest that these two seismic features are representative of the transition from the inner portion of the chain with NE-SW extension to the external margin characterized by dextral strike-slip kinematics. In the easternmost part of the study area, below the Bradano foredeep and the Apulia foreland, the seismicity is generally deeper and more scattered. Focal mechanisms computed in this work are in large part normal and strike-slip solutions and their tensional axes (T-axes) have a generalized NE-SW orientation.