Geophysical Research Abstracts
Vol. 16, EGU2014-14412, 2014
EGU General Assembly 2014

Seismicity of the Sannio-Matese region in the 15 years before the ML=5, 29 December 2013 Matese Massif Earthquake (central-southern Apennines, Italy)

Girolamo Milano (1), Guido Ventura (2), and Rita Di Giovambattista (2)
(1) Osservatorio Vesuviano - INGV, Napoli, Italy (girolamo.milano@ov.ingv.it), (2) INGV, Roma, Italy

The Sannio-Matese region represents one of the most seismically active segments of the Apennine chain. In terms of seismic-hazard evaluation, this sector of the chain is considered one of the most dangerous areas of Italy since, during historical times, it was hit by highly destructive earthquakes with I0>IX MCS, as well as by low-energy seismic sequences and swarms. Notable historical earthquakes, separated by long periods of relative quiescence, occurred in 1456, 1688, 1702, 1732, 1805. On 29 December 2013 a seismic sequence, started with a ML=5 earthquake, affected the Matese Massif. This sequence struck the internal part of the massif where no seismogenic structures were known so far. Recent detailed studies on the seismicity of the Sannio-Matese area have shown that the seismic activity in the last 15 years has been characterized by the occurrence of isolated events, generally with magnitude less than 3.0, typically 2.5, with hypocenters within the uppermost 15 km of the crust. To this background seismicity, low magnitude seismic sequences and swarms superimposed. Key examples are the 1997-98 (M<4.2) and 2001 (M<3.6) sequences and the low-magnitude swarms (M<3.2), lasting few days and consisting of some tens of events occurred in 1999, 2000, 2005 and 2010. Isolated events prevalently align NW-SE along the Apennine chain axis whereas seismic sequences and swarms mainly concentrate at the tips of seismogenic sources of the large destructive events or between them along NNE-SSW fault segments. In the last 15 years, only very few isolated events ($M \leq 2.5$) occurred along the Matese Massif. The epicentral areas of the 1997-98, between the seismogenic sources of the 1805 and 1688 events, and the 2001, at the NW tip of the 1805 source, sequences suggest that, before the 29 December 2013 earthquake, the seismic release in the Matese Massif was concentrated in its WNW and ESE edges.