

The 2016-17 Central Apennines seismic sequence: analogies and differences with recent Italian earthquakes

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Abstract

On August 24th, 2016, a severe, very long seismic sequence started in Central Italy. It was characterized by nine major shocks M5+, two of which with moment magnitude Mw 6.0 (August 24th, 2016) and 6.5 (October 30th, 2016). A complex seismogenic fault system was activated, with the rupture of several segments. The affected area was very large, developing in NNW-SSE direction along the Apennines, due to both the large magnitude values and the distance among the epicenters of the nine major shocks. The maximum observed (cumulated) intensity was XI in both MCS and EMS scales. After one year, 78,500 seismic events had been recorded by the National Institute of Geophysics and Volcanology national seismic network. 299 people lost their life, all due to the first main shock. Devastating damage was experienced by buildings, cultural heritage, roads and other lifelines, resulting in huge economical direct losses.

The emergency response was coordinated, according to the Law 225/1992, by the Italian National Department of Civil Protection. The main scientific features of the sequence and the main technical emergency activities are shown, discussed and, when possible, compared to the main recent Italian earthquakes, i.e., 1997 Umbria-Marche, the 2009 Abruzzo and 2012 Emilia earthquakes, pointing out analogies and differences.