

What science remains of the 1976 earthquake?

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The 1976 earthquake that devastated the Friuli region, in north-eastern Italy, can be considered the watershed for the Italian seismology. Before it, very poor instrumental data and following research are available for even strong earthquakes (e.g. the 1968 Belice earthquake). Conversely, already in December 1976 an international meeting was organized in Udine (Friuli) covering all aspects of seismology, geophysics, and engineering related to the Friuli earthquake. The temporary deployment of seismometric stations in the epicentral area allowed the scientists to collect valuable data on the long seismic sequence; geological and geophysical surveys were organized aiming at identifying the faults that generated the earthquakes and at quantifying the influence of the soil amplification in the observed damage.

Forty years after the earthquake, still some studies are developed to investigate the main features of the phenomenon and to explore the characteristics of the involved seismic sources. The research developed soon after the earthquake was already able to constrain spatially the seismic episode although no clear evidence was possible to find about the generating faults. Several years later, with sophisticated modelling of seismological and geodetic data, and field geology, it was possible to identify the blind thrust faults involved in the seismic sequence.

The stress tensor inversion has revealed two main episodes in the aftershock sequence, this evidence remains corroborated also by the observed slight migration of foci during the sequence.

The challenging aspect is still given by the question if the spatial and seismic characteristics identified for the 1976 source constrain properly the seismic hazard estimates produced for the region.