



THE AVEZZANO EARTHQUAKE (CENTRAL APENNINES) OF 13 JANUARY 1915: A MULTIDISCIPLINARY CONTRIBUTION TO THE HAZARD ASSESSMENT OF THE AREA

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The 13 January 1915, M_w 7, $I_0=XI$ MCS, Avezzano earthquake is one of the more energetic earthquake of Italian seismic history. The earthquake hit the Fucino Plain (central Apennines) and over 200 villages suffered heavy damage and some collapses, 20 of them where completely destroyed, 33,000 people died and many thousands were injured.

The central Apennines comprise one of the most threatening seismogenic regions in Europe. The source responsible for the 13 January 1915 earthquake falls within the core of inner extensional domain of the central Apennines. This source is considered a surface-breaking, about 30 km-long, NW-SE-striking, SW-dipping normal fault. The exact kinematics of the fault is still debated, despite a. the direct observations of the coseismic fault scarps formed during the earthquake (Oddone, 1915), b. the model fault obtained by inversion of 1915 coseismic elevation changes (Ward and Valensise, 1989), c. the paleoseismological observations (Galadini and Galli, 1999), and d. the exposure of the white ribbon of fresh limestone fault plane along the southwestern slope of Mt. Serrone.

To constraining the seismic source and the main macroseismic parameters (location, magnitude) of the earthquake we use the last release (4.0) of the Boxer code. We also performed a detailed analysis of the 44 seismograms of 15 stations available, collected and digitized by the SISMOS group of the INGV, in order to locate the hypocenter and to compute the moment tensor with a new method developed for historical (i.e. pre-WWSSN) seismograms. A new hypocenter relocation was made possible thanks to the availability of station bulletins recently scanned by SISMOS under the GEM project in collaboration with the ISC.

The search of the seismogenic fault of the 1915 earthquake takes advantage by combining geological information, parameters derived by macroseismic data and parameters computed by historical seismograms.

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