Environmental Engineering and Management Journal xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
http://www.eemj.icpm.tuiasi.ro/; http://www.eemj.eu

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THE 1991 SEISMIC CRISIS IN THE WEST OF ROMANIA AND ITS IMPACT ON SEISMIC RISK AND HAZARD ASSESSMENT

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Abstract

The paper represents a multidisciplinary investigation of the relation between seismicity, active stress field and geological structure for the West of Romania. The study is based on revised and updated catalogues of earthquakes (3572 events) and focal mechanisms (89 solutions). The large spatio-temporal variations of the stress tensor parameters, b-value (b=0.74-0.81) and fractal dimensions of seismicity (D=1.05-2.34) highlight both clustering patterns along active fault systems and scattered epicentres within planes or volumes. A tectonic model with at least three blocks bordered by active faults is proposed controlling SHmax trend: it rotates clockwise in time and 3D space by up to 900 along with the changes of the stress regime from the compressional to extensional and activity migration between two major and complex fault systems. Low b-values characterize the regardless of the size of data source, but the smaller source/dataset, with or without aftershocks included, ensures a more realistic estimation of seismicity that is confirmed by seismic history (Tr_Mw5.5 = 76 years).

Key words: active tectonics, earthquakes, focal mechanisms, stress regime, seismic hazard

Received: May, 2019; Revised final: September, 2019; Accepted: November, 2019

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