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Seismic Zone of Craiova and its Surroundings

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The mapping of the Romanian area, based of the seismic range, put Craiova and the metropolitan zone, in seismic class C of level 8. This increased level is due to crustal fissure, oriented N-S on the Craiova meridian, which resonates with seismic waves from Vrancea epicenter.

Craiova and the metropolitan zone is placed on the separated lithologic substrates, so, the effects of seism are not uniform between urban and peri-urban areas. The highest piedmont area and the terraces (V, IV, III), with a predominant substrate of conglomerate and sandstone, decrease effect of the earthquake. The first and the second terraces and the meadow, with a predominant content of marls and clays, are very elastic and increase the effect of earthquake. The most exposed are the villages placed on the right side of the Jiu River, where these landforms are very common and in case of earthquake, can be reactivated.

In Romania there are just shallow depth and intermediate depth earthquakes. The frequency of earthquakes with a greater than 7.2 magnitude on the Richter scale is three times in a century. The most magnitude for a Romanian earthquake took place on 10 of November 1940 and it has a magnitude of 7.6 on the Richter scale. The 1977 Vrancea Earthquake occurred on March 4, 21:20 local time. It had a magnitude of 7.2 with an epicenter in Vrancea. The fracture occurred at a depth of 94 kilometers but it was a multishock earthquake with several outbreaks in the south-west part of Vrancea County. In 55 seconds the earthquake killed about 1,500 people in Romania (1,400 in Bucharest), wounded more than 11,300 and about 33,000 buildings and structures collapsed. The shock wave was felt in almost all countries in the Balkan Peninsula, as well as Ukraine and Moldova, but with a lower intensity.

When the moving is vertically, in a time of 7-8 seconds, the next move is horizontally. The horizontally waves, shear waves, carry 75% of total energy. The poorly constructed buildings will fall even vertical movement. The seismic zone of Vrancea is very deep. Therefore, there is a time between the vertically and horizontally waves. For example, in Bucharest there are almost 38 seconds and for Craiova there are 50 seconds. Because it is placed in an major risk area, Romania implemented a real time warning system for earthquakes, which costs 1,6 millions euro. This system detect the magnitude just in 4 seconds. In Romania there are around 400 earthquakes per year, but with low intensity. When in Vrancea is the first four moves, in Bucharest the scientists already know the magnitude of the earthquake. For magnitude over 7 level, the system (REWS) alerts all Emergency Services, through the Special Communication Service. In hospitals, the doctors has 30-40 seconds available for their patient protection. This system generate the Shake Map, with intensity of earthquake around the entire country. So, the authorities can be more efficiently.

Bibliography
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