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Crustal seismicity and the active fault systems in the SW of Romania

V. Raileanu (1), C. Dinu (2), M. Radulian (1), A. Bala (1), V. Diaconescu (2), E. Popescu (1), M. Popa (1)

(1) National Institute for Earth Physics, Romania (raivic@infp.infp.ro), (2) University of Bucharest, Romania.

Seismicity of Romania is dominated by the strong intermediate depth earthquakes (Mw>7)located in the SE Carpathians, in the Vrancea zone. Nevertheless the crustal seismicity can not be neglected because it is dispersed on the most part of territory and sometimes it reaches moderate magnitudes (Mw<6) which can generate some local damages or even casualties. Crustal seismicity (h<60 km depth)in Romania is concentrated within several zones: in the front of the Eastern Carpathians Arc Bend, South Carpathians, Dobrogea, Banat, Crisana and Maramures. These provinces overlay both platform (East European, Scythian and Moesian platforms) and orogen tectonic units (North Dobrogea Orogen and Carpathian Orogen with its adjacent depressions). Crustal seismicity is a result of the neotectonic activity and it is observed both at the contact between tectonic units and inside of the same tectonic unit. Banat and Danubian zones (the western margin of the South Carpathians adjacent to the Danube river) showed an important seismicity in the last century with events up to Mw 5.6. Danubian zone is located at the western edge of the South Carpathians where some basement fractures oriented towards N and NE represent the main sources of seismic events, as the fault plane solution for the event of 16.07.1991, Mw 5.6 has shown. The density of seismic events is relatively high mainly at the border with Serbia and along the Danube river. A correlation between earthquake epicenters with fault plane solutions and the known fault systems is emphasized. Banat is a seismically active zone with earthquakes which sometimes generated locally damages (12.7.1991, Mw 5.6). In the last century several events with Mw up to 5.6 were recorded. They are connected to the fault systems which separate the uplifted blocks of the deep grabens of the Pannonian Depression or at the contact of depression with the Carpathian Oro-

gen. A correlation of epicenters and fault plane solutions with the fault systems is as well achieved for this zone. In addition a rheological crustal model for Banat zone is proposed and its correlation with the focal depths is analysed. A statistical analysis of the hypocenters distribution in the depth for the last century events displays a strong concentration in the 5-10 km depth interval and other secondary peaks around 20 km and 35 km depth, respectively. The first peak is in a good agreement with the shear strength peak of the rheological model suggesting the strong influence of rheology on the rupture nucleation depth on the earthquake fault plane.