



Source properties of earthquake sequences in the South-Western Carpathians (Romania)

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The crustal seismicity in Romania is concentrated in front of the Carpathians Arc bend (Vrancea region) and at the contact between the extra-Carpathian platform regions and Carpathians orogen. The region investigated in this paper is characterizing the contact of the western side of the South Carpathians with the Getic-Depression and with the Apuseni Mountains. Four earthquake sequences are analyzed: (1) the main shock of magnitude $M = 4.5$, followed by 40 aftershocks in 30 December 2011- 5 January 2012 close to Tg Jiu city, (2) a sequence of 14 events occurred on 24-31 March 2011 in the Hațeg region (main shock magnitude of $M = 4.0$), (3) a sequence of 35 events occurred on 8 – 11 September 2013 in the Hațeg region (main shock magnitude of $M = 4.7$) and (4) a sequence of 60 events occurred in the Caras-Severin area on 31 October – 15 December 2014 (main shock magnitude of $M = 4.8$). We apply empirical Green's function deconvolution in combination with cross-correlation analysis and spectral ratios techniques to determine the source parameters and relocate hypocenters. Despite the relative small size of the events, high-quality waveforms for pairs of co-located events are available in different sites. The new results, together with previous determinations, provide an useful database to investigate the source scaling properties in correlation with seismotectonics modeling. Finally, source characteristics (location, focal mechanism, clustering) are discussed in connection with the seismotectonics features all along the Carpathians and adjacent extra-Carpathians contact areas.