

## **Source scaling in the Vrancea subcrustal nest (Romania): an overview over the last 75 years**

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The Vrancea seismic nest is a distinctive case of unusually clustered seismicity at intermediate depths. The source scaling properties are essential elements to understand and model the tectonic processes responsible for generating earthquakes in such a confined lithospheric volume. The purpose of the present paper is to investigate the scaling laws for the Vrancea subcrustal earthquakes on the basis of well-defined source parameters. Spectral ratios technique and empirical Green's function deconvolution are applied to retrieve source parameters. Previous results combined with new determinations result in an enlarged database: 298 events in a 75-year time interval, with magnitudes from  $M_w$  2.4 to  $M_w$  7.7 (1940 major event). The results show for the most of the small-to-moderate earthquakes relative simple source time function and source spectrum, compatible with a circular source model with homogeneous rupture process. A few exceptions of complex sources are obtained for moderate-magnitude events, whereas for the major events the source complexity looks like to be more common. The scaling of seismic moment with source dimension and the stress drop scaling as determined from observations are matching well (within inherent deconvolution errors) the theoretical scaling for generally adopted source models. Particular high stress drop values, for moderate and large events, indicate fast and efficient rupture processes at different scales, possibly explained by fast running shear melting processes.