



## **Variation on depth of the seismic source scaling properties in the subcrustal lithosphere beneath Vrancea (Romania) region**

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Previous research focused on seismicity, tomography and seismic source scaling in the Vrancea region revealed significant subducting slab irregularity which was assumed to be in connection with multiple parameter and multi-scale fields, reflecting differences in the physical, geochemical and tectonic processes at different scale lengths. A substantial new amount of high-quality earthquake data have been recently gained through the progress of seismic networks on the Romanian territory within the cooperation programme with the University of Karlsruhe (Germany): Collaborative Research Centre 461 programme (Bonjer et al., 2000) and the tomography experiment CAL-IXTO'99 (Wenzel et al., 1999). The main purpose of the present study is to study the depth dependence of the seismic source scaling in the Vrancea subducting slab on the basis of these new data. Spectral ratios and empirical Green's function deconvolution methods are applied for a set of 130 earthquakes with magnitudes  $2.9 \leq M_w \leq 6.0$ , occurred between 1996 and 2005. The two relative methods are employed to pairs of collocated events and similar focal mechanism, in order to inspect the scaling properties over the seismic active depth domain (60-220 km). The results are discussed in connection with previous studies based on fractal statistics analysis. The clustering properties of time, space and size distributions as well as the scaling variations in the subducting lithosphere are ascribed to differences in specific source mechanisms or/and structural inhomogeneity properties with hierarchical distribution.