The 40-year Catalogue of Focal Mechanisms for Vrancea Seismic Zone

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The analysis of focal mechanisms for seismic events in the South-Eastern Carpathian region (Vrancea area) is presented in the current study. The database which includes about 250 events projected on a uniform magnitude scale (Mw) was compiled from data provided by ISC bulletin and a series of nine supplementary catalogues for the geographic area in the limits: Latitude 44-50, Longitude 24-30, for the continuum reference period of 40 years. The results of the computations are presented in the form of GMT maps and Tables.

The analysis of seismic source parameters: epicenter, depth, magnitude, and focal mechanism have been performed.

The scope of the study was not to give any priority to a particular catalogue during comparison, but rather to identify the differences and similarities of the seismic source parameters. The contribution of each catalogue is different, and two major groups could be defined: ANSS, ROM+, FSU, USGS, SBL, which report epicenter coordinates, focal depths and magnitudes and ISC, HVD, MED, ONC, M&P, which also contain information about the focal mechanisms. Comparison criteria for the source parameters of the same events were set as follows:

- epicenter coordinates not exceeding the interval +-25km;
- hypocenter depths not exceeding the interval +-10km;
- magnitude (Mw) values not differing more than +-0.1;
- +-45 (strike), +-12 (dip), +-45 (rake).

The proposed intervals for the comparative analysis have a physical background, namely the geometric shape of the source and the finite length of the rupture area as approximated by a point source.

An immediate by- product of these data is T- and P-axes distribution of the depth interval 100-150km, which corresponds to the high seismic intensity segment of the Vrancea zone, emphasized the well-known directivity of these intermediate-depth earthquakes.