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## of the Coda Calibration Tool Methodology to Intermediate Depth Events in the Vrancea Region, Romania

The Vrancea region is renowned for its intense seismicity, encompassing both crustal and intermediate-depth earthquakes derived from distinct sources. Crustal seismicity is primarily associated with the deformation of the overlying crust, while subcrustal earthquakes arise from a vertically extended source zone between 60 and 180 km within a sinking lithospheric slab. This unique region generates two to four events per century with  $M > 7$  within a confined volume, making it an ideal natural laboratory for testing the Coda Calibration Tool (CCT). The CCT, a Java-based application, has been recently enhanced to include hypocentral distance to calibrate one-dimensional narrowband coda models. The tool relies on empirical relationships between stable coda wave properties to estimate average source parameters, such as moment magnitude ( $M_w$ ), radiated energy, apparent stress, and corner frequency. These parameters are generally more accurate than those obtained from traditional direct-wave methods, particularly in regions with complex seismic wave propagation. The seismic characteristics of Vrancea provide valuable constraints for calibrating path terms in the CCT, particularly across varying depth intervals of the intermediate-depth source zone. With events ranging from  $M_w$  3.5 to 6.0 and minimal aftershock contamination, Vrancea offers an ideal setting for refining the CCT's calibration process.

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