



Energy Magnitude for seismically active mining regions in Poland

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Several different magnitude scales are used for mining-induced seismicity to describe the strength of the seismic source. Since there is no relationship between magnitudes in different mining regions, it is impossible to transfer any kind of conclusions and correlation between geomechanical conditions, mining operations and seismic source parameters between them. In this work we are trying to overcome this problem by introducing common magnitude scale based on conversion of routinely calculated in the mines seismic energy into energy magnitude M_e . To define the M_e , we follow the idea from natural earthquakes assuming that M_e is equal to local magnitude M_L (Dineva and Mereu 2009). Data from regional broad-band seismic networks was used to calibrate the M_L . The energy, M_e and other source parameters were estimated with data recorded on the local broad-band systems. We present the improved results obtained formerly for mining induced seismic activity that occurred on Legnica – Głogów Copper District, Poland, and the new magnitude scale for Upper Silesian Coal Basin. In conclusion we define the steps, which have to be followed in the future to make the M_e scale more common in different mining areas.