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Interactive comment on "Indications for different types of brittle failure due to active coal mining using waveform similarities of induced seismic events" *by* S. Wehling-Benatelli et al.

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The manuscript entitled ": Indications for different types of brittle failure due to active coal mining using waveform similarities of induced seismic events", written by S. Wehling-Benatelli et al., is a research article proposed to special issue : Rheology of the Earth – observations, laboratory experiments and numerical modelling from the micro- to the macro-scale – is in the scope of this SE issue. No doubt it is a very interesting and valuable article. The article concern the identification of mining seismic events clusters. For this purpose the method ttesting the waveform similarity – similar-

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ity matrix SM –was used. There we can find a new sorting and visualizing algorithm. The SM algorithm was compared with the well-known algorithm of single-linakage (SL) clustering. The results were comparable. This means that new one SM algorithm is correct. The new SM algorithm may be widely use in mines, to divide mining seismic events to a few clusters. Each cluster characterizes a different mechanism of seismic source and probably different distances of the seismic sources from the excavations. If so, this method may be used to seismic risk assessment and stability of underground excavations under seismic load. When the seismic sources or clusters are closer to the excavations, the rock-bursts hazard are higher. Authors found three main types of clusters from HAMNET dataset and correlated these clusters with different failure mechanisms (different types of brittle failure), as well as with location of seismic hypocenters and “b” values of the Gutenberg-Richter relation. Because the clusters with large magnitude events up to ML 1.8, which tend to locate slightly above or below the two largest clusters, do not follow G-R low, it would be important to describe in more details how the authors calculated “b” value and what was the errors of specified values of “b” ? The next important question is: what was the accuracy of the seismic events location (especially vertical component – you used surface stations network, so as to proof location quality is enough for the purpose of the study presented)? And the last one question: What methodology was used to calculate the seismic moment tensors. Did the Authors use full moment tensor inversion or allowed only for shearing type of focal mechanism ? In my opinion lack of cross-section and lithological profile and the location of major faults, left edges and remnants makes difficult to read the source mechanisms analysis and individual clusters characteristics in relation to real mining and geology conditions.

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