

A Study of the Interaction among Mining-Induced Seismic Events in the Legnica–Głogów Copper District, Poland

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A b s t r a c t

We applied the Coulomb stress transfer technique to investigate interactions among seismic events induced by mining works in the Rudna mine in the Legnica–Głogów Copper District in Poland. We considered events with energy greater than 10^5 J from the period 1993-1999. We examined the influence of the cumulative static stress changes (Δ CFF) due to previous events on the generation of subsequent ones.

The results indicate that in many cases strong mining tremors produce changes in the state of stress of a sufficient magnitude to influence subsequent events. The location of over 60% of events is consistent with stress-enhanced areas where the values of Δ CFF were above 0.01 MPa. For most of the events located inside areas of a calculated negative Δ CFF, their modelled rupture zone was partially located inside stress enhanced area, providing thus additional evidence for possible triggering at the nucleation point.

Key words: Legnica–Głogów Copper District, Rudna mine, induced seismicity, Coulomb stress changes.