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Characteristic of seismic noise in underground mining conditions

Abstract

Seismic noise is present in every point in the Earth. Its importance in imaging as well as monitoring of geological structure has significantly increased since ambient noise tomography, HVSR, ReMi, SPAC and others methods were introduced. The vast majority of these methods based on surface measurements, where origin of seismic noise sources is well identified.

We present characterization of seismic noise which were registered 1 km below the surface at “Budryk” coal mine located in Poland. We used 8 geophones installed in a longwall panel. From over 1-month registration we extracted various types of seismic noise sources associated mainly with longwall coal-cutter, operating machineries and seismicity. We characterized them in time and frequency domains. Eventually, we discussed their implementation to image and monitor rock mass during mining.