

Preliminary site-effects characterization by inversion of HVSR data in mining area

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The aim of this work is to examine the possibility of obtaining shear wave velocity profile by inversion of HVSR data calculated at the Legnica Glogow Copper District. The LGCD is a region located in Far-Sudets Monocline having a high degree of sediments diversification in subsurface layers. The Quaternary sediments is represented by multilayer system of gravels, cays, sand with different thickness and lithology type, with total thickness ranged 16m to 73m. The seismic noise measurement and induced event measurement caused by underground work were used for HVSR calculation. The records come from continues measurement of local seismicity monitored by LUMINEOS surface seismic network, operated by Institute of Geophysics PAS (<https://tcs.ah-epos.eu>). That gives also possibility to compare at that same place, HVSR curve's calculated using seismic noise with events measurements. Next Vs profiles for reliable H/V curve were estimated through inversion of HVSR data. Some of the results were compared with Vs profiles interpreted from the seismic survey methods evaluating the elastic condition (stiffness) of the ground (MASW method) and with geological profiles interpreted on the basis of bore-hole drilling. That comparison confirmed the results of HVSR data inversion. That analysis allowed to estimate surface distribution of ground type according to European standard Eurocode 8, based on average wave propagation velocity in 30-metre-thick layer and thickness of surface layer based on its fundamental resonance frequencies.

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