



Local site effect assessment using two felt earthquakes recorded by Israel Seismic Network

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Ground motion records of two earthquakes $M_L=5.2$ (11.02.2004) and $M_L=4.7$ (07.07.2004), occurring in the Dead Sea Rift, were used for site response estimation. The horizontal-to-vertical (H/V) spectral ratios of earthquake shear wave have been used to estimate the resonance frequencies and their associated amplitude level. The spectral ratio of six stations located directly on the outcropping rocks of limestone, well-cemented conglomerates, chalk and basalt have flat H/V ratio shape in the frequency range 0.4-10 Hz and amplitudes are close to unity. Amplification effects of factor 4-6 are observed at various frequencies in the 0.8-4.0 Hz at fourteen stations by near-surface geological conditions. Through the analysis it became evident that H/V ratio from ambient noise recorded at the same site provides estimation of the resonance frequency and its associated amplification level, which are similar to those obtained from H/V spectral ratio of accelerograms.

At three stations, which are located on the high plateau near top escarpment or on small mountains and hills, we observe increased ground motion in the frequency range 1-3 Hz with amplification factor up to 5. At these stations there are great differences between NS and EW components of motion.

In Israel felt earthquakes present sufficiently long return period and these earthquakes add significantly to our knowledge about influence of the effects of local geology and topography on ground motion and may be used in seismic hazard assessment and delineation of future locations of severe damage.