



Site Effect Studies using the 8th of January 2006 Kythira Earthquake Data Recorded in Crete (Southern Greece)

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In the frame of this study the applicability of microtremors to ground motion prediction and site effects assessment is tested. In that direction, the convergence of the spectral ratios extracted from strong earthquake data and microtremor measurements is examined. Specifically, the main shock of the 8th of January 2006 earthquake of magnitude $M=6.9$ that occurred near the Island of Kythira at the SW part of the Hellenic Arc and microtremor measurements are used to verify the compatibility of the derived spectral ratios in the frequency and in the amplification domain. Seismograms and microtremor recordings are acquired by a new digital teleseismic network that is comprised of three component short period and broadband permanent seismic stations installed in the whole territory on the Island of Crete. The Horizontal to Vertical Spectral Ratio Technique (HVSR) is applied to the main shock of Kythira earthquake and to microtremor data. The spectral ratio obtained from the two different data sets converges both in frequency and amplitude. To enhance the validity of HVSR results a wavelet approach of HVSR (WHVSR) technique is also applied to the raw periodograms of the original time series to denoise them performing wavelet transform denoising techniques. In a considerable set of cases this technique behaves better than the traditional HVSR technique in terms of narrow frequency ranges at amplification points.

This work is partially supported by the project TALOS in the framework of the Crete Regional Operational Programme.