An Empiric Relationship between Sediment Thickness of Different data and Resonance Frequency which Calculated by Using the H/V Ratio Method of Seismic Noise for Gölcük-Değirmendere Area (Turkey)

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Over the past decades ambient noise surveys gain importance by the broad band instruments technology advanced. Despite the fact that the source of the surface ways on ambient noise is definitely is not proved, acquired resonant frequencies are quite reliable. Within this scope noise measurements were done in the Gölcük-Değirmendere area (Turkey) and the resonance frequency of each site was estimated from the main peak in the spectral ratio between horizontal and vertical components. It was carried out 43 one-station tremor measurement points as a part of the TUBITAK project named "Determining the risk analysis and management of urban disaster areas of Kocaeli- Gölcük- Değirmendere town". The calculated parameters and H/V was criticized with reliable H/V curve and clear H/V peak limitations. It was obtained a velocity-depth function for the study area. Calculated resonant frequencies and iteratively obtained shear wave velocities were used to determining a best-fitting exponential function for our empiric depth-frequency relation. By this means it was calculated up to 800 m the soft-sediment thickness for the study area which would pose a danger to the area and crucial local site effects under dynamic load.

Keywords: Ground resonance frequencies, velocity-depth function, soft sediment thickness.