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Microtremor Measurements in Borg El Arab city, Alexandria, Egypt: Analysis of the Correlation with local Geology

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Seventy-eight microtremor measurements have been done in Burg Elarab city, Alexandria, Egypt. The dataset has been processed using the horizontal to vertical spectral analysis (H/V). In most sites, H/V curve for amplitude spectra display a clear peak suggesting the presence of a soil-bedrock impedance contrast. Other sites, however, show more than one peak indicating the presence of more than one impedance contrast through sedimentary cover. Two groups of fundamental frequencies range can be discriminated; the majority group varies from 1.0 Hz to 1.36 and the minority group from 3.9 to 4.35 Hz. The presence of the two groups of frequencies range is interpreted based on the geology of study area. As the majority group is corresponding to Quaternary deposit and the minority one is overly on the Calcarinate bars. Additionally, the estimated values for the fundamental frequency from microtremor data are compared with that from data estimated from SPT-N values of a few boreholes within the area of interest where it is shown a good agreement.