



## **HORIZONTAL-TO-VERTICAL SPECTRAL RATIO OF AMBIENT NOISE FOR ASSESSING SITE EFFECTS IN URBAN ENVIRONMENT: THE CASE OF THESSALONIKI CITY (NORTHERN GREECE)**

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Ambient noise measurements of a dense mesh (about 100mX100m) were performed within the historical center of the city of Thessaloniki (Northern Greece), that was strongly affected by the 20/6/1978 destructive earthquake. The data were processed using the horizontal-to-vertical spectral ratio technique. Fundamental frequencies and corresponding amplitudes for each site were calculated. Selected cross-sections in the city - with respect to fundamental frequency - compared with already available theoretical and experimental 2D approximation results show very good agreement. Contour maps were produced for both fundamental frequency and corresponding (h/v) amplitude for the historical center of the Thessaloniki city, which were compared with existing geotechnical and geological data and found to be satisfactorily correlated. Damage distribution due to 20/6/1978 earthquake seems to be quite consistent with fundamental frequency spatial distribution taking into account that the majority of the affected buildings were of six to nine stories. The aforementioned results encourage the use of ambient noise measurements along with the (h/v) spectral ratio technique as a non-expensive and fast tool in microzonation studies to be carried out in urban environments.