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DETERMINATION OF SHALLOW SHEAR WAVE VELOCITY PROFILES USING AMBIENT VIBRATIONS AT SELECTED SITES IN GREECE

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The use of ambient vibrations for the determination of subsurface shear wave velocity profiles is increasingly gaining popularity as a low cost alternative to elaborate geotechnical site investigations. Based on the analysis of synthetic data, it has recently been suggested that robust constraints on both the shear velocity profile and the depth to the first impedance jump can be obtained if single station H/V spectral ratios are jointly inverted together with dispersion curves obtained from array analysis. In order to test this hypothesis, in August of 2002 we have performed array measurements of ambient vibrations at the Euro-SEISTEST in northern Greece, at six different locations within the city of Thessaloniki, and on the island of Lefkas where strong non-linear effect have been observed in a previous study. At all these locations, the subsurface structures are well known and shear wave velocity profiles have been determined by independent geophysical and geotechnical surveys. Furthermore, information about the intensity and damage distribution is available for the city of Thessaloniki. This detailed knowledge, as well as numerous data from temporary and permanent seismological networks makes these locations unique test cases for site response analysis. We present first encouraging results of the comparison of site models obtained from ambient vibrations with the existing structural models and discuss the consequences for site response prediction using ambient vibration recordings