

SH4/P5/ID12 - HVSR METHOD SENSITIVITY INVESTIGATION FOR THE CORSSA ARRAY IN W. CORINTH GULF (GREECE)

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The Aegion area located in the western part of the Gulf of Corinth, one of the most seismically active areas in Greece, was selected as target area for the EU funded project CORSEIS. Within the framework of this project the Corinth Soft Soil Array (CORSSA) an array of surface and down-hole accelerometers was installed in the hanging wall of the Aegion Fault, a normal type tectonic feature crossing the city of Aegion. The array consists of four 3D down-hole accelerometers and an additional one at the surface. The deepest of the sensors is installed in a conglomerate formation at 178m depth while the remaining three sensors are located within fluviodeltaic marine deposits at depths of 60, 30 and 14 meters. Detailed geophysical, geological and geotechnical surveys carried out during the CORSEIS project have provided the necessary parameters for the definition of the geological structure and dynamic soil properties at the installation site. The array remains in operation after the completion of the project providing valuable acceleration records.

The ability of the horizontal-to-vertical spectral ratio (HVSR) method to provide credible estimates of amplification properties of soil layers has been debated ever since its original introduction in 1989, although the method is nowadays widely used in microzonation studies. The issues raised are mainly related to the interpretation of the actual HVSR measurements and in particular whether these can be used only as an indicator of the resonant frequency or the interpretation can be extended so that the amplitudes can be considered as representing amplification spectra at the measured site. In the present study amplification phenomena at the various depths and site characteristics of the CORSSA array are investigated using the horizontal-to-vertical spectral ratio HVSR calculated for the recorded events. In addition, the theoretical HVSR are modeled by taking into account the available geotechnical and geophysical characteristics of the CORSSA site soil profile and compared with the observed ones in order to test the accuracy and sensitivity of the geotechnical model and verify the amplification factors obtained from the analysis of the recorded data.