



Shallow Shear Wave Velocity Structure of Adapazari (Turkey) Region by MASW And MAM Measurements and Some Implications

T. Ozcep, F. Ozcep, and O. Ozel

Istanbul University, Geophysics, Istanbul, Turkey (ferozcep@istanbul.edu.tr)

Wave-propagation method to generate the near-surface Vs profile are called spectral analysis of surface waves that uses the spectral analysis of ground roll generated by an impulsive source and recorded by a pair of receivers. This method has been widely and effectively used in many shallow shear wave velocity structure. The 17 August 1999 Izmit earthquake ($M_w=7.4$) ruptured a 140 km segment of the North Anatolian Fault, extending from the Izmit bay in the west to Akyazi in the east, and caused about 20,000 loss of life and totally 20,000 collapsed buildings. In the study area, the shear wave velocities are obtained by multi channel analysis of surface wave for 100 points in study area. The phase velocity-dispersion curve for each point and shear wave velocity are obtained by inversion distance profile for first 50 meters of soil. The records that are depending on field conditions with different geophone intervals are taken. Passive source when it is compared by active source reaches deeper parts of soils, because the lower frequency of natural noises are recorded different noises that are given more information from the deeply distance. After the data are collected from the field, data-processing are carried out, the phase velocities for the different frequency are obtained by using a computer program and after the process dispersion curve is obtained. During the field studies, the seismic refraction data are also collected. The initial model that obtained from these data is used the initial model data. By using both forward and inverse solutions algorithm, S wave velocities are calculated and drown depending on distance. For 100 sites, soil classifications are mapped according to the Eurocode-8, UBC (NEHRP) and the Turkish Seismic Design Code. The site classification, based on Vs30 in seismic design codes, are compared with fundamental periods and amplification values that obtained by using real earthquake data obtained from region. This study was supported by Istanbul University Research Fund (Project Number: T-1355).