Microtremor array exploration in Metropolitan Manila

Hiroaki Yamanaka[1], Motoi Takezono[2], Yoshihiro Kinugasa[3], Ogata Yoshihisa[4], Kiminobu Eto[5]

[1] T.I.Tech, [2] T.I.Tech., [3] Dept. of Environmental S&T, TITech, [4] Dept. of Enviromental Sci. of Tech Tokyo Institute of Technology, [5] Dept. of Built Environment, Tokyo Institute of Technology

http://yama1.depe.titech.ac.jp/

Long-period microtremor array measurements were conducted at 4 sites in Metropolitan Manila, the Philippines, in order to know deep S-wave profiles for the purpose of estimation of strong ground motion. Temporary arrays with 7 stations were deployed in circles with radius of 0.1 to 1.5 km to measure vertical microtremors at each site. Phase velocities at periods from 0.3 to 4 sec were estimated from a frequency-wavenumber spectral analysis of array records. They exhibit dispersive features suggesting propagation of Rayleigh waves. Each phase velocity was inverted to a 1D S-wave profile by an inversion method based on a genetic algorithm. A 3- or 4-layers model to a depth of the basement with an S-wave velocity of about 3 km/s was constructed at each site.