

COMPREHENSIVE GEOPHYSICAL SURVEY FOR LARGE URBAN AREAS IN JAPAN

1KINUGASA, Y., 2IRIKURA, K., 3KIKUTA, H. 1Tokyo Institute of Technology, Yokohama, Japan; 2Kyoto University, Uji, Japan; 3Science and Technology Agency, Tokyo, Japan

Learning from the 1995 Kobe earthquake which caused massive damage to the one of the major urban areas in Japan due to its subsurface geological structures, the Japanese Government has launched a new project to reveal the subsurface geological structures of the major urban areas. Special focus has been brought to the three dimensional S-wave velocity structures down to the seismic basement which is composed of rigid rock mass of its S-wave velocity is greater than 3km/sec.

The first three years will be devoted to explore the best combination of survey methods appropriate for urban areas where densely populated and intensive ground noise masks the signals from deep underground. Three areas have been selected as the target areas of this phase; namely Kanto Plain, Nobi Plain and Kyoto Basin. After completion of the first phase, the project will be expanded to the other urban areas in Japan.

During the first phase, where it can be applied, seismic refraction survey is used for detection of the depth and P-wave velocity of the seismic basement. Seismic reflection is applied to reveal the P-wave velocity structure of the sedimentary basin. S-wave velocity structure is obtained by seismic reflection survey although it is often limited to the shallower part of the basin. For S-wave velocity structure of the deeper basin, microtremor array technique is applied.

All these data will be correlated each other and correlated with borehole data to evaluate the adaptability and limitation of each survey method.