Recent developments in microtremor surveys

Microseisms and microtremors (hereafter called microtremors) are considered to be caused by ocean swells and human activities, respectively. Though they are recognized as noise to seismic observations, they can be turned into useful signal in other point of view. The nature of microtremors has been long studied. And the utilization of microtremors for engineering applications have been actively made in Japan such as the classification of site conditions based on the predominant periods, and the estimation of subsurface velocity structures by means of the spatial auto-correlation (SPAC) method and the horizontal-to-vertical (H/V) spectral ratio. These methods are now widely used all over the world in order to estimate shallow subsurface structures in terms of the prediction of strong ground motions. And in the last decade, studies on microtremors have been revitalized, mainly because seismic interferometry was developed and seismic observations became more efficient. For example, the H/V method was reinterpreted based on the theory of diffuse waves. And the centerless circular array (CCA) method was newly developed. Moreover, temporal changes in shallow subsurface structures caused by the nonlinear site effect can be detected by analyzing long-term continuous records of microtremors. In this session, we widely invite contributions on the nature of microtremors and their applications to exploration in order to understand the present status and discuss future directions of the subjects.

Determination of Subsurface Structure of the Mt. Daisen area in Tottori Prefecture by Microtremor and Gravity Survey

Earthquake damages occurred by the earthquake that occurred at the Middle West of Tottori in 1983, 2002 and the 2000 Western Tottori earthquake in Mt.Daisen area of Tottori Prefecture. It is supposed that the damage influenced the subsurface structure. It is important that the information of subsurface structures is obtained for prediction of ground motion in the area. Microtremor and gravity surveys were carried out in the plains of the shore part and Mt.Daisen area. S-wave velocity models are obtained at the array observation 3 sites and predominant period distribution at 3-components observation newly. The gravity anomalies were obtained by gravity survey data newly.