

Crustal movement simulation test in the western area of Kanagawa prefecture by using of CHIKAKU System

Toshiya Tanbo[1], Toshikazu Tanada[1]

[1] Hot Springs Res. Inst. of Kanagawa Prefecture

We report about the research on the numerical simulation of the crustal movement for western area of Kanagawa prefecture at Hot Springs Research Institute of Kanagawa prefecture (HSRI).

We are continuing observations of crustal movement in the western area of Kanagawa prefecture, which promote the prediction research of the 'Western Kanagawa Prefecture Earthquake (WKE)' and the activities monitoring of Hakone volcano. The observation data of crustal movement which reaches in about ten years has been accumulated in the HSRI by these observations. Furthermore, HSRI qualitatively interpreted crustal movement in the western area of Kanagawa Prefecture based on these data, and has tried the detection of the unusual crustal movement based on the prediction research on the WKE. Moreover, to promote the monitoring of crustal movement, we think that it is necessary to estimate a pre-seismic crustal movement by the numerical simulation quantitatively. Therefore, we can expect that the unusual crustal movement can be recognized easily. At first, we aimed at the construction of the simulation model which can explain steady crustal movement in the western area of Kanagawa prefecture.

In this study, we used the solid earth simulation software CHIKAKU System to modeling and simulation (static contact analysis), which is developed by the group of Physical and Chemical Research Institute. Modeling referred to Hagiwara (1991) (Philippine Sea plate), Zhao et al. (1992) (Mohorovicic's and Conrad discontinuity), Geographical Survey Institute 250m DEM (land surface), Asada, and Okino (1998) (ocean floor). In the simulation, an interplate coupling is assumed, and stress accumulation process is analyzed. The hexahedral mesh structure was made by the resolution of about 5km in the western area of Kanagawa prefecture. Actually, to keep the coordination of GPS survey data and result of the simulation, the result of crustal structure survey by artificial earthquake in the western area of Kanagawa prefecture is made to reflect in the simulation model, and it finally aims at the construction of the mesh structure of about 1km.