

Upheaval of the Central Part of the Muroto Peninsula, Kochi, Shikoku, Japan detected by Leveling Survey

Makoto Omura[1]; Hideaki Maemoku[2]

[1] Dept. of Environmental Science, Kochi Women's Univ.; [2] Geography, Edu., Hiroshima Univ.

The vertical crustal movements around the Muroto peninsula, Kochi, Shikoku, Japan show characteristic pattern in relation with crustal activity around the Nankai Trough. However, the leveling survey only along the coast cannot reveal the pattern of vertical crustal movements inland of the peninsula.

Therefore, a leveling route across the Muroto peninsula was set up in July 2001. The leveling route was formed by an array of 84 bench marks along 'Route 493' and

it connected two bench marks (BM5156 and BM5125) established by Geographical Survey Institute (GSI) on the both sides of the peninsula near the coast. Total distance was 46.7 km (including 20 km of double leveling). Maximum height difference in the route was 433 m.

We carried out Leveling surveys by using a digital level 'Leica NA3000' and invar staves (3m) in December 2001, March, September-November, 2002. GSI established additional second order leveling line along the route. The second order leveling survey was carried out in January - February, 2004. About 50 benchmarks were common for the two survey. So the height changes were obtained for about 2 years.

The comparison of the height obtained by the successive leveling surveys revealed the pattern of the vertical crustal movement across the peninsula. The pattern showed that the inland area upheaved a several millimeters in about 2 years relative to the coast. It is suggested that the present topography are growing. It is strongly required to continue the leveling survey and GPS measurements to study the forthcoming Nankai Earthquake.

The leveling surveys were carried out under cooperation of Dr. K. Fujimori of the Department of Geophysics, Faculty of Science, Kyoto University. The project was also financially supported by the society for the support of Hiroshima University (2001) and the Faculty of Human Life and Environmental Science, Kochi Women's University (2002, 2003). GSI provided the technical advice and the data of 'Highly Precise Three Dimensional Survey at Intensive Area, Muroto District, 2004'. Authors deeply thank them.