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原著論文

重力と水準高の時間変動に関する考察と
その造行溝地域への適用

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**Consideration on the Relationship between Temporal Changes of Gravity
and Levelled Heights and its Application to Tectonic Regions**

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Abstract

From the relationship between temporal changes of gravity and leveled heights in tectonic region a new practical equation for detecting temporal change in orthometric height, which provides unstable modes of vertical crustal movement in a special case. i.e., orthometric height decay instability caused by growing gravity variation is presented. This instability generates at the time of the maximum growing geoid level so as to stabilize the geopotential in the area and to regulate further crustal upheaval and returns from the height unstable level to the initial linear stable level, generating the earthquakes around the zone of increasing geoidal undulation.

By making some assumptions to solve this equation, unstable fluctuation mode and strong instability mode were estimated to occur with periods of 15-17 years and 44-46 years, respectively, basing on the 7-8 year phase difference of crustal deformation under the assumption of the earthquake recurrence period of 117 years in the Nankai-Tokai zone.

It is pointed out that the occurrences mode of the large anomalous crustal deformation, which may be related to the great earthquake, can be, conversely, estimated by the sequential mode analyses from these superposed instability modes within a few years deviation.