Specific Crustal Deformation in peninsulas before and after Kanto Earthquake(1923) and Nankai Earthquake(1946)

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We investigated a long term vertical deformation of the crust before and after Kanto Earthquake(1923) and Nankai Earthquake(1946), using the yearly mean of tidal observation data at Aburatsubo and Kushimoto station. We also investigate the transition of crustal deformation after those earthquakes, using leveling survey and tidal observation data.

Three years running mean was used for the analysis to eliminate a short term effect of oceanic fluctuation such as the change of sea current. Even though these procedure is adopted, long term fluctuation of several years cycle would remain. Therefore a reference station, which locates in the same sea area and has no remarkable deformation, is selected.

Kato and Tsumura(1979) method is usually adopted for the discussion on the vertical crustal deformation by tidal data. However, there are no stations in the same sea area usually adopted for this method for Aburatubo before Kanto Earthquake and Kushimoto before Nankai Earthquake. Therefore, we used Hosojima station as a reference station for Kushimoto. As Aburatsubo station does not have such station, the tidal data itself was used for the analysis.

The result is:

1)Both station seem that long term submergence have stopped about twelve years before the earthquakes. In case of Kushimoto, even slight uplift is suspected. This change of submergence rate can be proved comparing AIC between two models with constant rate submergence and with two different submergence rate.

2)Both station started submergence, which is considered to be caused by plate subduction. However the rates are smaller than that before the earthquakes. Especially in Kushimoto, rate was -7mm/yr before the earthquake, but it became -3mm/yr after the earthquake.

3)Three tidal stations, Abratsubo, Mera and Yokosuka locating in south Kanto area, show the same submergence trend.

4)Frequent leveling survey has been carried out repeatedly on Miura peninsula. Recently, the route between the leveling datum and Aburatsubo station is surveyed every year. The trend of submergence derived from leveling data is very steady without any notable fluctuations.