# Correlation between residual uplift and recurrence interval of the Kanto earthquake based on developmental process of coastal lowland

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It is well known that the marine terraces are formed due to uplift of the seabed during the earthquake. The marine terrace consists of a near-flatter terrace surface emerged above sea level during the earthquake and a low terrace riser of less than several meters in height formed after the earthquake and is distributed in a staircase pattern along the coastline. In the previous research, one step of maritime terrace is often recognized as a trace of an earthquake once, and based on this premise, many previous researches were conducted to estimate the reoccurrence interval and the amount of uplift during the earthquake. However, Maemoku (1988) inferred that one step level of flat terrace surface is the topography formed by multiple repetitions of coseismic uplift and interseismic earthquake settlement occurring in the plate subduction zone of the Nankai Trough. And the stepped terrace was formed by the active fault of the land side. We got geomorphological and geological data demonstrating this previous reasoning on the Miura Peninsula located directly above the plate subduction zone of the Sagami trough.

On the rocky coast of the Miura Peninsula, two step of marine terrace surfaces formed in association with the 1923 Taisho and 1703 Genroku earthquakes are observed near 1 m and 2 m above sea level,(Matsuda et al., 1974). In the inner part of the estuary creek, which is formed many in the peninsula, the coastal lowland landfilled with sediments transported from the hinterland into the bay floor is distributed around the altitude of 2 m as similer as 1703 terrace surface. We examined the development process of coastal lowland in the inner part of estuary creek.

As a result of the detailer geomorphological interpretation, a flat coastal lowland apparently spreading as a single face is composed of multiple small maritime terraces, not one terrain. The marine terraces were divided into 5 areas with less than 2.1 m above sea level by topographical interpretation. As a result of investigating the emergent time and the distribution altitude of the marine terrace surface, the marine surface of the 1923 Taisho earthquake in the order of 1.22 m - 1.37 m in the order of younger, the wave erosion shelf surface of the 1703 Genroku earthquake by Nishihata et al. (1988): 2.3 m, the marine surface of the 1293 year pre-earthquake (after 1260-1380 cal.AD): 1.27 m, the marine surface of the earthquake (915 cal.AD to 1150 cal.AD) around the year AD is 1.63 to 1.93 m, Terraced surfaces are distributed until the earlier age.

In this way, the reasons that different formational time of terraces remain in coastal lowlands with extremely altitude is formed in Miura peninsula are as follows, because 1: the coseismic uplift due to the elastic repulsion and the interseismic subsidence accompanying the strain accumulation are repeated (Shimazaki et al., 2011; Kim and Mannen, 2018), therefore 2: a new marine surface is formed near the sea level by the next earthquake (Kim and Mannen, 2018), and 3: there is a condition that the terrace surface is preserved by the coating layer. In addition, because the height of the ground is stable in the long term due to the balance of uplift and subsidence, and it is estimated that wide coastal lowlands, which apparently appear as a continuous ground surface, develop by repetition of uplift and subsidence. Between 1293 and 1703, where the period of occurrence of the earthquake occurred long, the raised surface in 1293 returned to the original altitude, and between 1703 and 1923 in which the occurrence interval of the earthquake was short, the raised surface in 1703 The next Kanto earthquake occurred

 

before going back to the original altitude.

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