

Reexamination of earthquakes occurring along the Sagami Trough, analyzed by Holocene marine terraces in the Boso Peninsula

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The area in and around Boso Peninsula is originally a part of the forearc basin called the Kazusa trough, originating from the subduction of the Philippine Sea plate between the Eurasia plate and the Pacific plate. Two major historical earthquakes, 1703 Genroku earthquake (M8.2) and 1923 Taisho earthquake (M7.9) occurred in the plate boundary as a seismogenic structure. These earthquakes accompanied the distinct uplift related to coseismic crustal movements and the repeated coseismic uplift produced a flight of marine terraces in the southern Boso Peninsula. With the help of the detailed airphoto-reading and the ^{14}C dating of in-situ shell fossils collected from beach sand on emergent shoreline topography, we reexamined the correlation of Holocene marine terraces, and reconstructed the Holocene paleoseismological history of interplate earthquakes originated from the Sagami Trough as follows.

In the eastern coast (Sotobo coast), four major marine terraces are recognized, called the Numa I, Numa II, Numa III and Numa IV below the altitude of 25 m. The shell samples from the Numa II surface show ^{14}C date of 5,050-5,610 Cal BP, and that from the Numa III surface of 4,280-4,540 Cal BP. The Numa I is overlain by the earlier stage Jomon remains (Type Shiboguchi, ca.7,000 Cal BP). However, in the eastern coast (Uchibo coast) five marine terraces are recognizable below the altitude of 25 m and we named them the Terrace I, II, III, IV, V in descending order. The shell fossils from the uplifted marine cave on the Terrace I indicate the ^{14}C date of 5,300 Cal BP (Ishida, 2001), which underlie the middle stage of Jomon remains (Type Kasori E3). Based on these ^{14}C dates and archaeological evidences, the Numa II of Sotobo coast is correlative with the Terrace I of the Uchibo coast, and the Numa IV originally coincides the Terrace IV which are recorded as the uplifted terrace at 1703 Genroku earthquake. Consequently, two terraces are extra in the Uchibo coast than in Sotobo coast after the emergence of the Terrace I/Numa II. This shows that two large earthquakes accompanied by the uplift of Uchibo coast were generated below the Sagami Trough between 5,300 Cal BP and A.D.1703 Genroku earthquake. Such new information on paleoseismology is suggestive of various earthquake types having different seismic source areas.