

Newly identified gigantic plate-boundary earthquakes occurring along the Sagami Trough, central Japan

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M8-M9 class earthquakes generally repeated through the stress release process in subduction plate boundaries. Along the Sagami Trough where Philippine Sea plate is subducting under the Eurasia plate, 1703 Genroku Kanto earthquake (M8.1) and 1923 Taisho Kanto Earthquake (M7.9) occurred, accompanying distinct coastal uplift in the Boso peninsula on the overriding plate. Referring to these crustal movements, Holocene paleoseismology has been deduced from emergent coastal topography analysis. However, the report of 25 m high marine cave dated at ca.5200 yBP by Ishida (2001) led us to reconsider the previous paleoshoreline chronology. We carefully made more detailed air-photo reading and radiocarbon-dated coral and shell fossils sampled from several paleo-tidal zones. Based on their fruitful results, we report the latest Holocene paleoseismological table and newly identified types of gigantic plate-boundary earthquakes along the Sagami Trough.

(1) Uchibo coast: At least 7 paleo-tidal levels (Tii to Tviii in descending order) stepped in several meters apart are recognized. Tiv-related sediments, 20m above sea level (asl), product shell fossil dated 2540 yBP, underlain by marine sediments including in-situ corals dated 6820 yBP which lived in about 10 m deeper than that paleo-sea level. This suggest that ca.7000 yBP shoreline height is 30 m asl. This higher position of 7000 yBP is supported by the evidence that the boring shell fossil is dated 5420 yBP was collected in the archaeological Idenoo marine cave 25 m asl.

(2) Sotobo coast: At least 5 paleo-tidal levels (T2 to T7 in descending order) stepped in several meters apart are recognized. T3 is correlated with the previous Numa I and its height attain to 30 m asl.

(3) Correlative paleoshoreline levels between Uchibo and Sotobo coast are at most four and the residuals are limitedly distributed in each coast. This chronology and configuration of paleoshorelines indicates three types of earthquakes at which mainly uplifted area of coast are different one another, that is named Uchibo type, Sotobo type and Boso type here.

Keywords: plate-boundary earthquake, Sagami Trough, Holocene emerged shoreline topography, coral and shell fossil, radiocarbon date, paleoseismology