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Recurrence interval and relative size of Nankai Earthquakes evaluated from tsunami sediments along the coast of Shikoku

Makoto Okamura^{1*}, Hiromi Matsuoka¹

¹Kochi University

Nankai earthquakes are plate boundary earthquakes associated with the Nankai subduction zone that have been recorded in historical documents a total of nine times since the Tenmu Nankai earthquake in A.D. 684. In order to reveal pre-historical evidence of Nankai earthquakes, we investigated core sediments from ponds and lakes on the coast of southwestern Japanese Islands along the Nankai Trough. We collected over 200 piston and vibro core samples from twenty ponds and lakes in this region. Ryujin-ike pond which located in the western end of this region preserved tsunami sediments during the last 3500 years. Kaniga-ike and Tadasu-ike pond located center of this region recorded tsunami events during the last 2000 years and 1300 ~4500 BP respectively. Observations of these core samples showed as follows. (1) Hoei earthquake in A.D. 1707 was the largest Nankai earthquake during the last several hundred years. (2) The average recurrence interval of tsunami events were 200~400 years. This recurrence interval is rather longer than historical 100~200 years. This result implies that relatively large Nankai earthquakes only have been recorded in the sediments. (3) There are no evidences of extremely large tsunami triggered by earthquake that ruptured entire section of the Nankai to Ryukyu subduction zone during the last 4500 years.

The recurrence intervals of 200~400 years suggest that the next Nankai earthquake may occur as the largest tsunami event in historical time.

Keywords: Nankai Earthquakes, tsunami sediments