

Geologic evidence for great earthquakes during the last 1500 years along the eastern Nankai Trough, central Japan

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Lagoon sequence reveals that great plate boundary earthquakes have caused the coastal area to subside along the eastern Nankai Trough. We analyzed 28 cores including eight drilling cores obtained from a coastal marsh neighboring the plate boundary, Fujikawa-kako Fault zone, central Japan. The lagoon stratigraphy consists of alternation of dark-colored peat and light-colored mud layers; each ranges several tens of cm to 100 cm in thickness.

Six couplets of peat and mud layers were recognized from the stratigraphic record formed in the last 1500 years. Microbiological and sedimentological analyses indicate that rapid water-level rise caused the facies change from peat layers to mud layers. Wide lateral extent of the facies boundary, about 3 km wide and correspondence to historical earthquakes strongly suggest that the facies changes reflect the regional coastal subsidence due to the plate boundary earthquakes.

On the basis of ^{14}C ages and tephrochronology, four peat-mud contacts were correlated to historical earthquakes occurred along the Nankai Trough in AD 684, 1096, 1361 and 1707, respectively. Other two peat-mud contacts, formed in the 6th and 8th century, do not have historical counterparts. They probably indicate the occurrences of earthquakes along the Fujikawa-kako fault zone.