Molluscan fossils and sedimentary processes of the Holocene marine clay deposits: results of Shimonada core in Iyonada Sea

Yoshiharu Yokoyama[1], Futoshi Nanayama[2], Hisao Ando[3], Kazuhiro Otsuka[4]

[1] Dept. of Earth Sciences, Graduate School of Waseda Univ,, [2] MRE, GSJ/AIST, [3] Dept. Environ. Sci., Fac. Sci., Ibaraki Univ., [4] Active Fault Research Center,GSJ,AIST

Holocene marine clay deposits from the Shimonada core in Iyonada Sea are examined by an integrated analysis of molluscan fossil assemblages, sand content, sedimentary rate and calender ages. The Shimonada core lithostratigraphically consists of five depositional units (DU), A to E in upward sequence: A) gravel, B) massive sandy clay with rootlet and brackish molluscs, C) bioturbated sandy clay with thin very fine sand layers, containing brackish and tidal-flat molluscs, D) bioturbated clay with inner-bay stagnant water molluscs and E) bioturbated sandy clay with two very fine sand layers and inner-bay mud bottom and nearshore sandy mud bottom molluscs. Five molluscan fossil assemblages are recognized through species composition as follows: 1) brackish, 2) tidal flat, 3) inner-bay stagnant water, 4) inner-bay mud and 5) nearshore muddy sand assemblages.

Tide-influenced salt marsh and estuary environments represented by B with assemblage 1) appeared before 12,000-11,000 cal. yBP. Tidal flat environment (C with 1) and 2)) was prevailing during 11,000-10,000 yBP. After rapid sea-level rise at about 10,000 yBP, possibly resulting from subsidence by an event of the Shimonada-oki-minami and Shimonada-oki-kita faults, inner-bay stagnant environment (D with 3)) had appeared in the graben off Shimonada, Iyonada Sea during 10,000-8,000 yBP. Inner-bay muddy environment (E with 4) and 5)) have continued since the graben had filled by mud with high sedimentation rate until 8,000 cal. yBP. While mud sedimentation rate decreased, sand content relatively increased at about 8,000 cal. yBP, possibly reflecting muddy sediment bypassing. This seems to have resulted from tidal currents and transgression associated with the formation of Seto Inland Sea.