

ESR DATING OF FOSSIL SHELLS FROM MAYA-WHARF BORING CORE IN WESTERN JAPAN

Daiichiro Yoshida, Chihiro Yamanaka and Motoji Ikeya

Some fragments of fossil shells were sampled from the Ma8, Ma10, and Ma12 marine clay beds of the Maya-Wharf boring cores in Hyogo Prefecture, western Japan, and dated by ESR. Total doses of the fossil samples were determined by an additive dose method with exponential fitting. Annual dose rates were calculated based on the contents of ^{238}U , ^{232}Th , and ^{40}K in the sediments around the fossils, in addition to correction of water content of the sediments, ^{222}Rn loss, and thickness of the fossil shells. The ESR dates thus obtained were 92 ± 15 to 127 ± 20 ka for the Ma12, 216 ± 45 to 322 ± 79 ka for the Ma10, and 227 ± 65 to 246 ± 41 ka for the Ma8. The former two dates are consistent with the previously estimated ages of the Ma12 and Ma10, while the latter dates are much younger than ages of the Ma8 estimated based on the fission-track age of an intercalated tuff and correlation with marine oxygen isotope stages. The younger ESR dates for the Ma8 are considered to arise from some reasons: underestimations of total doses due to extension of ESR-signals by the higher-rate radioisotope addition to the saturated fossil shell samples, and overestimation of annual doses based on limited sediment samples. Although there remained such problems, our results suggest the possibility of systematic ESR dating of fossil shells in long boring core sediments.