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Hydrodynamic condition recorded by δ^{18}O and δ^{13}C values of benthic foraminifera during the formation of Nakdong River delta in the southeastern Korea

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Two cores (ND-01, ND-02) were drilled in the lower delta plain of the Nakdong River delta (southeastern Korea): one is located in the upstream toward the upper plain delta and another is located in the downstream at the rim of river mouth. Both cores preserved the same and consistent four main lithologic successions (upper sand unit, middle mud unit, lower sand unit, lower mud unit) characterized by the excellent correlation based on multi-proxy sediment properties. δ^{18}O and δ^{13}C values of benthic foraminifera were measured using Pseudorotalia gaimardii (d'Orbigny) (>63 μm) for the middle mud unit of core ND-01 and Elphidium advenum (>125 μm) for the middle mud unit and lower sand unit of ND-02, based on the occurrence and abundance. Aside from the inter-species offset, the variation of δ^{18}O and δ^{13}C values between two cores is correlated remarkably, which indicates that the hydrodynamic condition was almost same between two sites during the deposition. δ^{18}O values of benthic foraminifera reflect primarily the seawater isotope change decided by the balance between incoming marine seawater and the outflowing freshwater discharge in response to the sea level rising condition, although the temperature effect was also incorporated. δ^{13}C values of benthic foraminifera mainly represent the extent of ^{13}C of dissolve inorganic carbon (DIC) which is also controlled by the freshwater and seawater DIC as well as by the degree of primary production. Specific correlation between two sites in terms of δ^{18}O and δ^{13}C values confirms that the delta evolution experienced the same hydrodynamic condition.