Holocene microfossil (diatom and benthic foraminifera) records in the Nakdong River delta, South Korea

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Objectives

Based on fossil diatom and foram, we consider development history of the Nakdong River delta, especially

(1) on the timing of maximum influence of seawater
(2) on the cause of the coarse-grained deposits developed at ~9.5 ka

- almost continuous microfossil records during 11–2 ka
- diatom (mainly epilimnion) vs. foram (hypolimnion)

Summary

(1) Maximum influence of the seawater was in Zones 3–4 (~8–5 ka). The slight difference on the timing between diatom and foram is probably explained by both shoaling the site (decreasing the accommodation space) and alteration of the pelagic water by the coastal water of the East China Sea.

(2) Coarse-grained deposits (~39–35 m; ~9.5 ka) with molluscan shells between Zones 2 and 3 were likely formed as transgressive lag with rapid sea-level rise.

Materials & Methods

(Diatom:) maximum in Zone 4
(Foram:) maximum in Zone 3; increasing coastal water in Zone 4.
* (ND-02:) influence of seawater in Zones 3 & 4
→ Foram. at core ND-01 --- upward shoaling
* diatom flora (abundant Paralia sulcata)
→ Pelagic water may be altered by coastal water of the East China Sea.

Relation of the delta development to sea-level changes

Coarse-grained deposits (“Transgressive lag”)

Coarse-grained deposits (~39–35 m; ~9.5 ka) with molluscan shells
- rapid deepening (between ~40 m to ~32 m)
- transitional fauna (at ~38 m)
- mixtures of various preservation statuses
→ transgressive lag with rapid sea-level rise.

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