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Glacial-interglacial SST variations and phytoplankton community changes in a core sediment the East Sea (Japan Sea), S-Korea

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A high-resolution organic geochemical study of core E09-08 was conducted to evaluate glacial-interglacial climatic and oceanic changes over the last 500 kiloyears (kyr). The analysis revealed distinct fluctuations during glacial-interglacial periods. In particular, the alkenone-based sea surface temperature (SST) showed typical glacial-interglacial variation, implying glacial-interglacial scale climatic changes in the East Sea. The SST ranged from 8 to 24°C during marine isotope stages (MIS) 8 and 9. n-Alkanes, terrestrial plant biomarkers, also showed distinct glacial-interglacial fluctuations. In general, the total concentration of n-alkanes increased during glacial periods and it decreased during interglacial periods with varying magnitude (Fig. 1). Also, average chain length (ACL) shows glacial-interglacial fluctuation, glacial increase and interglacial decrease except for MIS12, generally correspond to the pattern of total n-alkane fluctuation. Therefore, climate changes during the glacial-interglacial period can alter the n-alkanes concentration. Additionally, marine algal-derived biomarkers of Cholesterol, Brassicasterol and Beta-sitosterol exhibited distinct fluctuation that was especially larger during MIS6 and 8, suggesting that phytoplankton productivity has fluctuated in accordance with climatic changes over the last 500 kyr. This implies that phytoplankton productivity has fluctuated in accordance with the climatic changes since the last 500 kyr. Further, these climatic changes may affect the phytoplankton community in East Sea, in particular during MIS 6 and 8.

Biography

Sangmin Hyun has been studied on Marine Geological fields since he worked at Korea Institute of Ocean Science and Technology(KIOST) in 1997. Main research activities include 1) studying the paleoclimatology and paleoceanography by the GC/MS and biomarkers such as alkenones and n-alkane. In particular, he is interested in low-latitude hydrology and oceanographic changes which is related with global-scale changes.

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