

Japan Sea oxygen isotope stratigraphy and monsoon signals recorded in sedimentary color variation of IODP Site U1427

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Oxygen isotope stratigraphy in the Japan Sea has not well been developed because the oxygen isotope variation recorded in the Japan Sea sediments is distinct from the so-called “standard” isotope curve. Owing to its semi-enclosed geographical setting, limitation of seawater exchange due to low sea level during the glacial periods made surface environment and isotope record quite different from open ocean. Another difficulty is discontinuous occurrence of fossil foraminifera in the deep sea sediments, which is mainly due to drastically varied deep water oxygen and carbonate saturation levels. In this study, we have tried to construct the Japan Sea oxygen isotope stratigraphy using shallow sedimentary sequence at Site U1427 retrieved from 330 m water depth, which contains well-preserved fossil foraminifera. Comparison of the benthic oxygen isotope records at Sites U1427 and U1429 (the East China Sea) using correlative tephra layers as stratigraphic constraints revealed that negative peaks at U1427 correspond to positive peaks at glacial maxima at U1429. Based on this comparison and microfossil data, we constructed isotope stratigraphy at Site U1427 for the last ~1 Myr. We also tried to correlate sedimentary color variations at shallow and deep sites. Combined with correlative tephra layers, sedimentary color variations in shallow and deep sites are well correlated in orbital- and millennial-scale. We will discuss sedimentary color variations and relationship between shallow and deep sedimentary sequences.

Keywords: Integrated Ocean Drilling Program, Japan Sea, sea level change