

Reconstruction of long-term fluctuation of East Asian winter monsoon using the Japan Sea sediments

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East Asian winter monsoon (EAWM) is characterized by cold, dry northwesterlies from the Siberian high that blow over the Japan Sea. Recent studies indicate that EAWM fluctuation recorded as fluctuations in the occurrence of ice-rafted debris (IRD) and sea-surface temperature (SST) of NE Japan Sea. Records of IRD and SST showed a close relation with oxygen isotope records of Chinese stalagmites. For example, the co-occurrence of maxima in the abundance of IRD and minima in SST during MIS 3-5 indicates that the intensity of the EAWM was enhanced during periods of low summer insolation and high oxygen isotope ratios in Chinese stalagmites. SST in the SW Japan Sea had larger influence on the surface water properties flowed into the Japan Sea through the Tsushima Strait than that in the NE Japan Sea. On the other hand, the occurrence of IRD was influenced by the location of southern margin of sea-ice expansion. Because cooling of surface water by the EAWM promotes the formation of deep water in the northern Japan Sea, microfossil assemblages also have been influenced by the EAWM intensity. Combination of IRD-SST-microfossil results might be useful to understand the EAWM fluctuations. Reconstruction of long-term fluctuation of the EAWM and its relation to global climate changes is an interesting topic on the IODP Japan Sea expedition.

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