

Thermohaline circulation change during the last 35,000 yr in the northwestern Pacific

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Trace elements incorporated in foraminiferal shells in marine sediments provide us the essential information to clarify the paleoceanographic condition. We investigated the thermohaline circulation changes in the northwestern Pacific from Last Glacial Maximum (LGM) to deglacial period using metal/Ca ratio of benthic foraminifera in sediment core sample recovered from off Shimokita Peninsula, Aomori, Japan. (41 7.1 N, 142 24.2 E, water depth: 1,366 m). This core was 13 m length in total and bottom ^{14}C age of planktonic foraminifera (*N. pachyderma* left coiling) suggested 35,000 yr BP. Therefore it is suitable for reconstructing high-resolution deglacial thermohaline circulation history.

Trace metals (Cd, Mg, Ca) of benthic foraminiferal shells (*Uvigerina akitaensis*) were analyzed by the magnetic sector field ICP-MS (HR-ICP-MS). Cadmium-Calcium ratio (Cd/Ca) indicating paleo-nutrient in the deepwater fluctuated from 0.1 to 0.24 $\mu\text{mol/mol}$ through the core. Magnesium-Calcium ratio (Mg/Ca) indicating paleo-seawater temperature fluctuated from 1.3 to 2.7 $\mu\text{mol/mol}$ through the core. Both chemical tracers presented lower during the last glacial age and higher during the deglacial. Moreover, rapid oscillation in both proxies coincided the periods Bolling-Allerod (BA) and Younger Dryas (YD) periods, respectively. These fluctuation patterns accord with the atmospheric oxygen isotope record of GRIP core. It is suggested that global rapid climatic change affected not only surface environments but also thermohaline circulation in the northwestern Pacific.