

BPO003-16

会場:201B

時間:5月26日 12:30-12:45

北太平洋セジメントトラップ実験から得られた浮遊性有孔虫寒帯種の安定同位体比季節変動

Stable isotopic composition of polar planktonic foraminifera: Results from sediment trap study in the North Pacific

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Planktonic foraminifera provide a record of the upper ocean environment through their species assemblage and individual tests. Oceanographic condition at high-latitude plays an important role in the changes in global ocean environment, thus it is significant to assess the detailed past ocean situation in this region. *Neogloboquadrina pachyderma* (Ehrenberg) mainly distribute and dominate in sub-polar and polar region, thus it is an important species for the reconstruction of paleo-oceanography in the high latitude. In the study, we investigated the changes in oxygen isotope of *N. pachyderma* (sin.) using a 3.5-year sediment trap sample (about two-weeks resolution), and inferred 1) vital offset value in the area, 2) size effect, and 3) apparent calcification depth. In this study area, offset values were approximately 1 permil throughout the sampling period for both size except for 2000 (around 0.8 permil offset). Oxygen isotope values of *N. pachyderma* (sin.) exhibit definite seasonal variation throughout the sampling period, 1998 -2001. $d^{18}O$ values of both small (125-180 μm) and large (180-250 μm) shells decreased in autumn (September-October) with a minimum around September-October, and increased in spring with a maximum value around April-May. They ranged from 0.58 to 2.53 permil for smaller shells and 0.52 to 2.27 permil for larger shell throughout the study period. The differences in $d^{18}O$ between small and large shells generally decreased during winter, and increased summer. During winter, water column is well mixed, and differences is small (0.14-0.21 permil), while water column become stratified during summer, and differences became big (0.30-0.51 permil). During stratified water column period, larger shell mostly represented lighter $d^{18}O$ values, up to 0.54-0.79 permil lighter values. The large seasonal change in difference of $d^{18}O$ suggests that the different $d^{18}O$ between shell size would be mainly affected by water column situation rather than individual kinetic/metabolic effect. During stratification period, larger shell and smaller ones would mainly calcify at 24-35m and ~45m water depth, respectively. On the other hand, both size mainly reflect the water environment at 45-55m to their shells during water column mixed.

キーワード: 浮遊性有孔虫, *Neogloboquadrina pachyderma*, 酸素同位体比, セジメントトラップ, 北西部北太平洋

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