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Silicoflagellates and surface water-mass variation at ODP Site 704 in the South Atlantic Ocean for the last 10Myrs

ONODERA, Jonaotaro[1*] ; SEKI, Osamu[2]

[1]JAMSTEC-RCGC, [2]Institute of Low Temperature Science, Hokkaido University

At ODP Site 704 (46.9○S, 7.4○E) in the South Atlantic Ocean, we estimated latitudinal migration of subpolar and subtropical surface water masses for 10 million years on the basis of silicoflagellate fossil assemblage variations in the sediment core samples. Biogeographical silicoflagellate distribution corresponds to cold water and subtropical water masses. This distribution pattern can be applied to the estimation on latitudinal migration of subpolar/subtropical boundary. Although the fossil preservation was poor in the oldest period from 10Ma to 6.5Ma, the extinct genus *Bachmannocena* considered as a temperate or cosmopolitan species was observed for the period. Continuous occurrence of the cold water genus *Distephanus* was observed from ˜6.5Ma to present. The modern annual sea-surface temperature (SST) is 5.6 ℃ at the studied site, and silicoflagellate assemblage is composed of the genus *Distephanus*. The relative abundance of sea ice-related species in the silicoflagellate assemblages increased from 2.7Ma. However, subtropical genus *Dictyocha* intermittently dominated the assemblage from 5.7Ma to 4.0Ma. The co-occurrence of cold and subtropical water species suggest that the subpolar/subtropical boundary or the mixed water had covered the studied site. The temporal increase of subtropical silicoflagellates at the same periods had been reported at ODP Site 1165 (64.4○S) located in further south near the Antarctic. However, it should be noted that alkenone SST did not show the clear increase at the study site for the occurrence period of *Dictyocha*.

Keywords: silicoflagellate, biogeography, paleoceanography, Ocean Drilling Program (ODP), South Atlantic Ocean