Seasonal variation in assemblage of planktic foraminifera from the sediment trap samples in the Bay of Bengal

*Ayumi Maeda[1,2], Azumi Kuroyanagi[3], Hiroshi Nishi[3], Birgit Gaye[4], Hodaka Kawahata[2,1]

1. Department of Earth and Planetary Science, Graduate School of Science, The University of Tokyo, 2. Atmosphere and Ocean Research Institute, The University of Tokyo, 3. The Tohoku University Museum, Tohoku University, 4. Institute of Biogeochemistry and Marine Chemistry, University of Hamburg

The monthly resolution of sediment trap samples revealed the shell fluxes and the composition of the assemblages of planktic foraminifers in the Bay of Bengal in the three periods (November 1988 to October 1989, December 1990 to October 1991, and January 1993 to October 1993). The shell fluxes and the distribution patterns of planktic foraminifers varied between each experimental period. The highest values of shell fluxes were observed in either or both of summer and winter monsoon periods, while the lowest values were observed from March to May. The strong seasonality is possibly caused by the phytoplankton bloom in monsoon periods and the strong surface stratification in spring.
We identified 25 species of planktic foraminifers in the samples and 7 species constitute more than 80% of foraminiferal assemblage. The 7 species are divided into three populations: carnivorous spinose species (*G. ruber*, *T. sacculifer* and *G. siphonifera*), herbivorous non-spinose species (*G. menardii* and *N. dutertrei*), and opportunistic/upwelling species (*G. glutinata*, *G. bulloides*). In the summer and winter monsoon periods, the orders of the increase for foraminiferal species are similar. At first, non-spinose species increase and nearly at the same time opportunistic species become dominant. Subsequently spinose species increase in assemblage which shows the opposite pattern on relative contribution of spinose species and opportunistic species. In winter monsoon periods, the first presence of more opportunistic species in the same living depths may be caused by the deeper mixed layers where the phytoplankton bloom is observed in both of surface and subsurface layers. In contrast to winter monsoon periods, the increase for foraminifers start from subsurface-dwelling non-spinose species and then, surface-dwelling spinose species are dominant in summer monsoon periods. The orders of increase for foraminifers possibly reflect the initiation of the primary and the secondary production in subsurface layer under cloudiness and strong stratification inhibiting the surface propagation.

Keywords: planktic foraminifera, Bay of Bengal, sediment trap

