

Pilot study on carbon cycle of Marine Crenarchaeota in the Arctic Ocean using molecular biological approaches

Chie Sato[1]; Motoo Utsumi[2]; Yukiko Kuroki[3]; Masao Uchida[4]

[1] Life and Env. Sci., Univ. of Tsukuba; [2] Grad School of Life & Environ. Sciences, Univ. of Tsukuba; [3] Life and Environmental Sciences, Univ. Tsukuba; [4] NIES

Ongoing Arctic warming is already melting ice, including sea-ice thinning and retreat and also enhanced melting would induce significantly ecological influences on microbial communities, especially in the shelf environment. In summer 2008, the Arctic Ocean cruise by R/V MIRAI (MR08-04) was done in the Chukchi Sea, Canada Basin and Makarov Basin. In this cruise, we collected water samples using CTD from 29 stations to investigate the distributions of bacterial population density in the water column and compare the differences of bacterial population composition by sea area. We used Catalyzed Reporter Deposition Fluorescence in situ hybridization (CARD-FISH) technique targeting archaeal and eubacterial rRNA for identifying and enumerating marine microbial cells. This approach was enhanced for the sensitivity seawater samples, allowing easy identification and enumeration of bacterioplanktonic cells. After that, we could calculate the amount of archaeal carbon biomass in the Arctic Ocean carbon cycle. These microbial and ecological data will give a useful knowledge to understand ecological influence in recent changing Arctic Ocean. The details of this study will be presented in the conference.