Blooming and ecological function of MG II archaea in the Pearl River Estuary

W. XIE[1], S. CHEN[1], P. WANG[1], C. ZHANG[1]

[1] Sate Key Lab of Marine Geology, Tongji University, Shanghai, 200092, P.R. China (xiewei@tongji.edu.cn, correspondance: archaeazhang_1@tongji.edu.cn)

Marine Group II archaea widely occur in the ocean and reside mostly in the photic zone, living heterotrophically. In this study, we quantified the abundance of the 16S rRNA gene of MG II from the water column of different salinities in the Pearl River Estuary (site A: 0.8‰; site B: 18.1‰; site C: 23.9‰: site D: 31‰) over a 12-month period. The results showed that the abundance of MG II at site C ($8.5\pm10.1\times10^7$ copies/L) was significantly higher than at the other three sites (A: $3.5\pm8.8\times10^5$ copies/L; B: $2.7\pm4.5\times10^7$ copies/L; D: $2.2\pm4.4\times10^7$ copies/L) in all seasons, indicating the perennial blooming of MG II that might be due to the optimal combination of available organic carbon and salinity at site C. We also observed that the abundances of MG II and the autotrophic MG I archaea became better correlated toward the marine water (R^2: A, 0.06; B, 0.1; C, 0.24; D, 0.64), indicating the potential functional relationship between these two physiologically different groups of archaea with increasing salinity.