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Comparing bacterial PLFAs and respiratory quinones in marine sediments

Tadao Kunihiro (1), Bart Veuger (1), Dick van Oevelen (1), Diana Vasquez (1), Marie le Guitton (1), Lara Pozzato (1), Kazuyoshi Moriya (2), Michinobu Kuwae (3), Koji Omori (3), Arata Katayama (4), Karline Soetaert (1), Henricus T. S. Boschker (1), and Filip J.R. Meysman (1)

(1) Royal Netherlands Institute for Sea Research (NIOZ), Yerseke, Netherlands, (2) Kanazawa University, Kanazawa, Japan, (3) Ehime University, Matsuyama, Japan, (4) Nagoya University, Nagoya, Japan

In this study, we examined the biomass and community structure of sediment bacteria from marine sediments using bacterial phospholipid-derived fatty acids (PLFA) analysis and respiratory quinone profiling method. We also examined relationship between organic carbon contents and concentrations of each biomarker in the sediments.
Bacterial PLFAs and respiratory quinones have been utilized as bacterial biomarkers to quantify bacterial abundance and to characterize bacterial community structure. Compared to molecular techniques, the main advantage of PLFA analysis and quinone profiling is the possibility to elucidate simultaneously the microbial biomass and community structure at broad taxonomic group levels.
While PLFAs have been widely used as quantitative bacterial biomarkers in marine sediments, the applications of the quinone method to marine sediments are very few. In this study, we investigated the relationship between both groups of bacterial biomarkers in a broad range of marine sediments ranging from the tidal flats to the deep sea. Results revealed a good correlation between both bacterial biomarker groups and a higher taxonomic resolution for the quinones.