

Distribution of granule containing cells in deep-sea hydrothermal plume

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Deep-sea hydrothermal plume harbors chemolithoautotrophic microbes depending on high concentration of sulfur, methane and hydrogen supplied from hydrothermal fluid. These microbes plays two important roles in deep-sea geochemical cycle; 1. They produce organic carbon as primary producer in deep-sea ecosystem. 2. They remove phosphate, arsenate, iron, manganese, and REEs from water column by oxidation reaction or absorption to their organic yields. SUP05 microbes are most abundant and important group in hydrothermal plume microbial community. The SUP05s utilize various reduced sulfur compounds and hydrogen as electron donor and they accumulate sulfur glance in the cell. The accumulation of sulfur is effective and important strategy for SUP05s growth because the sulfur concentration in the plume becomes decreasing during the plume evolution. In this study, I investigated the spatial distribution of granule containing cells in hydrothermal plume using backscatter signal of flowcytometer at a single cell level and compared with total cell densities, SUP05 cell densities, and physicochemical parameters.

Keywords: Deep-sea hydrothermal plume, microbial ecology, cell growth zone, sulfur cycle, primary production, flow cytometry