

Interaction change of mineral and microorganism corresponding submarine hydrothermal activity transition in the Suiyo Seamount

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The active hydrothermal field of the Suiyo Seamount, Izu-Bonin Arc, Western Pacific, Japan, was drilled during 2001 to 2002. Drilled holes were cased and active biological activities, including Archaea-type sulfate-reducing bacteria, were found inside of casing pipes. Chemical precipitates, i.e., scales, including fossilized microorganism, were sampled by ROV Hyperdolphin from casing pipes. It is found through the course of this study that chemical precipitates include 0.6wt% organic carbon. The $\delta^{13}\text{C}$ value of organic matter was -27.7 per mil which is typical value of submarine hydrothermal vent chemoautotroph. It is also found through the FE-SEM observation that the fossilized microbes and amorphous Fe-S compounds were covered by amorphous silica. These findings suggest that (1) microbial activities in the human-made casing pipe was extremely high and (2) drilling action made unique environment (such as no competition to other microbes, or availability of H_2 from H_2O decomposition) and that is suitable for activity of Archaea.