

## Profiles of methanol in pore water of deep-sea sediments in eastern margin of Japan Sea and around Oki islands

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Methane hydrate, a clathrate compound of methane in water cages, is recognized as an unconventional natural gas and has been studied for natural gas resource in future. For better understanding of shallow methane hydrate, it is of great interest to elucidate the microbial environment related to generation and consumption of methane. In geochemical approaches, the depth profiles of methane as well as CO<sub>2</sub>, sulfate ion, and so on have been investigated. Although the other C1 compounds like methanol and formaldehyde may be closely related to microbial activity, a few studies have revealed profiles of methanol and formaldehyde in deep-sea environment. Yamamoto et al. (2011) reported that methanol concentration in deep-sea sediments of the off-Joetsu area, eastern margin of Japan Sea was lower than detection limit in shallow region and increased gradually with depth deeper than ~10 mbsf. The profile of formaldehyde had a similar trend to the methanol profile. The deepest sample was recovered from ~40 mbsf at that time. Therefore, we are keen to explore deeper region for further understating of depth profiles of methanol and formaldehyde. We had an opportunity to have deeper samples in HR14 cruise (June-July, 2014). The pore water samples were obtained by squeezing deep-sea marine sediments and measured by headspace GC/MS. The concentrations of methanol are below the detection limit in shallow region and increase from a certain depth. The tendency of the profiles is good agreements with the previous results by Yamamoto et al. (2011). The concentration at much deeper region does not monotonically increase, so that methanol would be not only diffused from deeper region but also affected by microbial activity. In addition, pore water samples around Oki islands were obtained in UT14 cruise (July, 2014) and analyzed by the same procedures to investigate methanol and formaldehyde profiles in different sampling locations. Methanol concentrations are below detection limit in most core samples. Nevertheless, high concentrations of methanol in pore water in shallow region were observed in PC1415. This may indicate that methanol distribution is not homogeneous even inside the mound of shallow gas hydrate. This study was supported by 2014 development and promotion program of methane hydrate.

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