

Distribution of methane in seawater from shallow gas hydrate areas in the Japan Sea

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We have analyzed the concentrations of methane dissolved in the bottom seawaters collected from shallow gas hydrate occurrences including active gas venting and the associated distribution of carbonates/bacterial mats during the NT15-E03 expedition in the Japan Sea. Methane concentrations are close to the normal bottom water level over the mud seafloor, however, they increase typically near the gas venting, carbonate, and bacterial mat sites; gas venting had only been active during the formation of carbonates and bacterial mats. Contrary, the number of benthos does not correlate with the concentration of dissolved methane, it probably reflects the location and seafloor condition, not the present concentration of methane. The concentration of methane rapidly decreases with shallowing depth due to the oxidation and diffusion of methane ejected from the seafloor in water column, reaching normal seawater level at the intermediate depth. Environmental impacts of the gas venting, possibly gas explosion on the seafloor, are very limited near the seafloor. This study was conducted as a part of the shallow methane hydrate exploration project of METI.