

Source of iodine and methane in gas hydrate layers in the Kumano Basin, Nankai Trough

YAMAMOTO, Itsuki¹ ; TOMARU, Hitoshi^{1*} ; MATSUZAKI, Hiroyuki²

¹Department of Earth Sciences, Chiba University, ²MALT, University of Tokyo

Because iodine has a strong biophilic behavior in marine system, pore waters in methane hydrate layers are often enriched in iodine as well as methane. The presence of long-lived radioisotope of iodine in nature therefore provides the potential age of source formations for methane. We have determined iodine isotopic ratios of pore waters collected frequently from sandy methane hydrate zone between 200 and 400 m below the seafloor in the Kumano Basin, Nankai Trough to examine the loci of source formations and processes to deliver and accumulate methane in the present methane hydrate stability.

Concentrations of iodine dissolved in pore waters peak at the top of sandy gas hydrate layers at 200 mbsf, where the iodine isotopic ratios also show the lowest/oldest values. Methane and iodine could have been derived from the landward old sediments through the sandy aquifers to the present methane hydrate zone. Transport of methane from old organic-rich sediments to the hydrate stability preferentially accumulates methane hydrates in thick sandy layers in the Kumano Basin.

Keywords: Methane hydrate, Iodine isotope, Pore water