

Iodine concentration of pore waters associated with gas hydrates in the northern South China Sea

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As an ideal tracer of gas hydrate, iodine concentration in pore waters of marine sediments has been verified in many areas on the world. In addition, the iodine isotope also can be used to date source of methane. In this study, we present the first data of iodine contents in pore waters from marine sediments at the Pearl River Estuary Basin of the South China Sea, and discuss the possible source of gas hydrate.

The samples were from Core SC-B, which was drilled to 191 mbsf at the Pearl River Estuary Basin. Pore waters of the marine sediment were collected by a vacuum apparatus at room temperature on board, then were directly saved in bottles at $\sim 4^{\circ}\text{C}$.

The iodine contents of pore waters vary from 200 to 385 $\mu\text{mol/L}$, which is markedly higher than that of seawater (0.44 $\mu\text{mol/L}$). The large concentration fluctuations of iodine in pore waters were found below 158 mbsf, where the gas hydrates present, which is likely responsible by dissociation of hydrates. Thus, based on this observation, the strongly enriched iodine concentrations in the pore water can be used to identify occurrence of the gas hydrate, at the northern South China Sea.

One pore water sample yield an $^{129}\text{I}/\text{I}$ ratio age of ca. 21 Ma, which is older than the host sediments (less than 5.53Ma). It rules out derivation of most of the iodine and methane from the sediments hosting the gas hydrates. Thus, Below the host sediments, the underlying formation have high organic matter contents, which is the most likely source of methane.

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