

Do Bacteria Generate Hydrocarbon Under the Anoxic Environment? - Preliminary Report of Sagara Drilling Program -

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We introduce an outline and the preliminary results of the Sagara Drilling Program, which was conducted mainly by JAMSTEC and Shizuoka University from end of January to mid March 2002.

Carbon cycle among lithosphere, biosphere, atmosphere and hydrosphere is considered as the main factor controlling complex interactions of the climate changes. It is widely accepted that buried organic matters have changed into much more complicated hydrocarbons such as natural oil and gas in a sediment under the thermal conditions. It is also recognized, on the other hand, that bacteria activities on generating hydrocarbon under the anoxic environments and that such activities may play an important role to synthesis of hydrocarbons from hydrogen and/or carbon dioxide.

Sagara Oil Field is located at the central Honshu Arc, and is well-known as the only field in Japan facing to the Pacific side of Japan Arc, whereas all the others are in the Japan Sea side. It is composed mainly of sandstone and mudstone of late Miocene Sagara Group. Sagara Oil Field produces light oil even though there is no heat source in an adjacent area. In addition, the Nankai accretionary prism, which has a plenty amount of gas hydrate, is presently developing just off the field. Therefore, it is interesting that the formation processes of hydrocarbons in those two sites might be closely related and interacted each other.

We will examine our hypotheses, which the synthetic processes of hydrocarbon by bacteria under anoxic environment, and which its interactions between in the Sagara Oil Field and the Nankai prism. We are planning to drill up to 200 mbgl and deal with core and fluid samples and logging data.

The SDP Scientific Party and each role follow: DEEPSTAR-JAMSTEC, Kyoto University (bacteria); Hokkaido University (organic matter, free gas); Shizuoka University (free gas, core); IFREE4-JAMSTEC and DSR-JAMSTEC (general description and analyses of core, logging data).