

Interpretations of seafloor manifestations by 3D seismic data in the eastern Nankai Trough

Sadao Nagakubo[1]; Toshiaki Kobayashi[1]; Takao Inamori[1]; Tatsuo Saeki[1]; Tetsuya Fujii[1]

[1] JOGMEC

3D seismic surveys were conducted for a resource assessment of methane hydrates at the three areas named 'Tokai-Oki', 'Daini-Atsumi Kaikyu (Knoll)' and 'Kumano-Nada' in the eastern Nankai Trough. We constructed bathymetric charts and a seafloor reflection amplitude maps used by waves reflected from seafloor at the Tokai-Oki, the Daini-Atsumi Knoll and the Kumano-Nada.

The bathymetric charts show detailed features of seafloor we have never known. The bathymetric charts would contribute to the interpretations of structural geology at the areas.

Some areas showing very strong amplitude are extracted on the seafloor reflection amplitude maps. It is expected that the areas showing strong amplitude are correspondent to the distributions of carbonates which precipitate from methane seepage activities.

JAMSTEC (Japan Agency for Marine-Earth Science and Technology) conducted some seafloor observations by dive surveys at the Tokai-Oki and the Daini-Atsumi Knoll, and found some methane seep activities on seafloor.

By comparisons of seismic sections with some areas showing very strong amplitude on the seafloor reflection amplitude maps and methane seepage sites observed by dive surveys, some significant relationships are recognized among methane hydrates, methane-bearing fluids below BSRs and seafloor manifestations.

Methane-bearing fluids related to methane hydrates generate seafloor manifestations with methane seep activities by fluid migrations through shallow faults, highly-permeable sediments and natural hydraulic fractures.

This study is conducted by Research Consortium for Methane Hydrate Resources in Japan (MH21).