Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

SSS035-25 会場:国際会議室 時間:5 月 24 日 14:15-14:30

無人探査機 NSS を用いて明らかになった熊野沖南海トラフ沈み込み帯分岐断層の高解像度浅部構造
High resolution shallow structures of splay faults in the Nankai subduction zone off Kumano revealed by ROV NSS

芦 寿一郎 [1*], 中村 恭之 [2], 辻 健 [3], 池田 安隆 [4], 大塚 宏徳 [1], KH-10-3 乗船研究者 [1]
Juichiro Ashi[1*], Yasuyuki Nakamura[2], Takeshi Tsuji[3], Yasutaka Ikeda[4], Hironori Otsuka[1], KH-10-3 shipboard scientists[1]

[1] 東京大学大気海洋研究所, [2] 海洋研究開発機構, [3] 京都大学大学院工学研究科, [4] 東京大学大学院理学系研究科
[1]AORI, Univ. Tokyo, [2]JAMSTEC, [3]Grad. School of Engineering, Kyoto Univ., [4]Grad. School of Science, Univ. Tokyo

Structures of the accretionary prism off Kumano were well investigated by dense seismic reflection survey. IODP Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE) has been conducted based on these data. However, subbottom profiling (SBP) and surface sediment samplings were limited due to steep and complex topography under strong Kuroshio Current. We carried out deep-tow subbottom survey and pinpoint core sampling by ROV NSS (Navigable Sampling System) during Hakuho-maru KH-10-3 cruise. A pilot vehicle of NSS is equipped with four thrusters, observation cameras and a hook for a heavy payload. We introduced a chirp subbottom profiling system of EdgeTech DW-106 for high resolution mapping of shallow structures on this study.

Megasplay faults at shallow depth around IODP drilling sites were well imaged by 3D seismic survey. One of three SBP data shows a fault plane at a depth deeper than 10 meter below a seafloor. Surface sediments exhibit continuous stratification although reflectors are weak above this blind fault. Chaotic sediments are often observed at a base of a fault scarp suggesting slumping or sliding. Active cold seep at each fault scarp was recognized at the prism slope 30 km southwest of the IODP sites. One of fault scarps at a water depth around 3300m is characterized by dense traces of bivalves suggesting diffusive methane flux through thin sediment cover above a fault. SBP reveals a blind fault at the depth deeper than 10m below seafloor. Above the upper termination of this fault, chaotic sediments are found below a stratified cover sequence of five meters thick. It is suggested that diffusive methane flux occurs through such thin sediment cover. We installed a long-term heat flow meter for monitoring of cold seep activity.

キーワード: 活断層, 分岐断層, 冷湧水, 付加体
Keywords: active fault, splay fault, cold seep, accretionary prism