

SSS035-24

会場:国際会議室

時間:5月24日 12:30-12:45

VSPによる南海トラフ熊野灘の付加帯のS波速度構造 S-wave velocity structure in the accretionary prism beneath the Kumano Basin, Nankai Trough, Japan, revealed by vertical

日野 亮太^{1*}, Bangs Nathan², 真田 佳典³, 朴 進午⁴, von Huene Roland⁵, Moore Gregory⁶, 辻 健⁷, 野 哲郎³, 荒木 英一郎³, 木下 正高³

Ryota Hino^{1*}, Nathan Bangs², Yoshinori Sanada³, Jin-Oh Park⁴, Roland von Huene⁵, Gregory Moore⁶, Takeshi Tsuji⁷, Tetsuo No³, Eiichiro Araki³, Masataka Kinoshita³

¹ 東北大学大学院理学研究科, ² テキサス大学, ³ 海洋研究開発機構, ⁴ 東京大学大気海洋研, ⁵ カリフォルニア大学, ⁶ ハワイ大学, ⁷ 京都大学大学院工学研究科

¹Tohoku Univ., ²Univ. of Texas, ³JAMSTEC, ⁴AORI, Univ. of Tokyo, ⁵Univ. of California, ⁶Univ. of Hawaii, ⁷Kyoto Univ.

The Kumano Basin is a forearc basin located on the landward slope of the Nankai Trough. It lies directly above the large co-seismic slip area of the 1944 Tonankai earthquake (M 8.1) and directly above the megasplay fault. Although a number of surface seismic surveys have been acquired in this area to reveal seismic signatures characterizing an asperity of megathrust earthquakes, S-wave velocity structure remains almost unknown. In 2009, we conducted a walk away vertical seismic profiling (VSP) experiment using a large, 7,800 cu. in. airgun array as a sound source and an array of 16 three-component downhole seismometers as receivers, during the IODP Exp. 319. P-to-S converted waves were successfully observed on the horizontal component of the downhole seismic records. Refracted S waves that were converted at the seafloor from P waves have arrival times that are explained by assuming V_p/V_s values of 1.73 in the old accretional sedimentary layer overlain by the unconsolidated basin sediment with $V_p/V_s > 2.0$. The obtained V_p/V_s ratio, or equivalent Poisson's ratio, is somewhat smaller than the value estimated in the Ashizuri region, southwestern end of the Nankai subduction system, although the observed V_p values are almost the same in the two regions. The lower Poisson's ratio in the old accreted sediment suggests that the layer is highly cemented and therefore impermeable. The existence of the impermeable layer in the hanging wall side of the mega-splay fault could increase pore pressure along the fault zone where VLF earthquakes are observed frequently.

キーワード: 深海掘削, 鉛直地震探査

Keywords: IODP, VSP