

Subsurface deformations related to seamount subduction at the toe of the Nankai accretionary prism off Kumano

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Although the relationship between subducted seamount and seismicity has been discussed, the nature of structures formed by seamount subduction remains unclear. In this study, we focus on the structures of the toe of the accretionary prism, which might have been formed by a seamount subducting into the Nankai Trough off Kumano.

At the Kumano frontal prism, magnetic anomaly shows that a small seamount subducted into the west side of the NanTroSEIZE transect. The stratigraphy and ages of IODP Sites C0006, C0007, and C0024 constrain the structural development of the frontal thrust system. In the front prism, an out-of-sequence thrust (OOST) has been developed after the formation of the imbricate thrusts, and its activity was started after ~0.5 Ma based on the tephrochronology of Site C0024. This OOST activity would reflect the subduction of the seamount. On the west side of the OOST, indented topography and landslides are developed, indicating slope failures caused by seamount subduction. Okuma et al. (this meeting) proposed that the friction of the plate boundary fault affects the deformation processes of the accretionary prism rather than the topographic factor of the subducting seamount. Seismic profiles (Shiraishi et al., 2020) show that the plate boundary fault is located far above the seamount, therefore the friction of the decollement above the seamount should be the same as the surrounding area. To construct topographic and structural features around the seamount, pore fluid pressure of the decollement may be decreasing due to the development of faults. The landslide at the toe of off Kumano frontal prism will be investigated by the SHINSEI MARU KS-22-3 cruise, and the preliminary results will be also introduced in the presentation.