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南海トラフの浅部超低周波地震と付加体内構造
Very-low-frequency earthquakes and imbricate thrusts within the accretionary prism in the Nankai subduction zone

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We describe the possible source faults of very-low-frequency (VLF) earthquakes within the accretionary prism in the Nankai subduction zone, Japan. A high-resolution 3D seismic image of a megasplay fault system in the Nankai subduction zone in the region off Kumano was obtained (Moore et al., 2007). Many centroid-moment tensor solutions for VLF earthquakes were calculated from seismic data observed by on-shore broadband seismic networks (Ito and Obara, 2006). In order to understand the generation mechanism of VLF earthquakes, which are considered to reflect slow slip events, it is important to determine the parameters such as fluid pressure and frictional properties of the source faults the corresponding slow slip events. We compare the locations and fault geometry of moment tensors of VLF events to 3D seismic image, and investigate the possible source faults of VLF earthquakes from the imbricate thrusts that are imaged by performing a 3D seismic survey. Many events located within the accretionary prism near or above the decollement and nodal planes of VLF events were consistent with fault geometry of the megasplay or decollement. The decollement above the plate boundary corresponded to regions with high amplitudes and negative polarities in the 3D seismic image, suggesting that VLF events may occur on faults with high fluid pressure. Sakaguchi et al. (2011) had determined the high localized temperatures to be higher than 380^{o}C by vitrinite reflectance geothermometry in the case of the decollement and megasplay faults. They had suggested that frictional heating accompanied by velocity weakening at a high slip velocity occurred along the decollement and megasplay faults during megathrust events. Our observations suggest that frictional heating at the decollement and/or megasplay fault occurs accompanied by velocity weakening even at medium slip velocities.

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