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The structural deformation and formation process of Enshu active fault system

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The accretionary prism and the forearc basin are developed in the Nankai Trough, SW Japan. Many active faults are recognized and classified into 5 fault systems in the eastern Nankai Trough. The Enshu Faults System, the most landward one, has an ENE-WSW direction and run over 200 km along the northern edge of the Tokai-Enshu-Kumano forearc basins. Swath bathymetry, sidescan sonar imagery and seismic reflection profiles indicate that fault planes dip landward and dextral strike-slip displacement of Anoriguchi canyon crossing one of the faults [1]. The flower structures on seismic profiles also support strike slip deformations along these faults. Such deformations are thought to be derived from oblique subduction of the Philippines Sea Plate. Structural investigation of this area is important for earthquake disaster mitigation as well as understanding of oblique subduction tectonics due to the area being adjacent to densely populated cities.

Japan Oil, Gas and Metal National Corporation conducted closely spaced seismic reflection survey at the Tokai-Kumano area in 2001. Restoration of depositional environment was done by determination of depositional sequences and their distributions [2]. In this study, we present deformation style and fault activity based on detailed interpretation of seismic reflection profiles and analysis of sediment thickness across the faults recognized as lineaments on the sidescan sonar images. Additionally, we also mention about seafloor deformations by faulting of the Enshu Fault System in the Shima spur.

Keywords: Nankai Trough, Oblique subduction, Seismic reflection survey, Active fault