

Down Hole Experiment to Monitor Water Circulation Associated with Earthquake at Eastern Nankai Trough

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The eastern Nankai Trough is divided into four sub-regions from geotectonic point of view. Those are trough inner slope, trough floor, the Zenisu Ridge and south of the Zenisu Ridge. The trough inner slope is structurally classified into the lower and upper domains. The boundary between the two domains, which is defined by large thrusts resulting from overthrusting of the upper onto the lower domain, is tectonic line, dividing trough filled sediments of Pleistocene and underlain hemipelagic sediments of Pliocene in age (lower domain) and pre-middle Miocene strata partly including old accretionary prism (upper domain). Epicenters of historical great earthquakes determined using tsunami data are located in the vicinity of the boundary faults (Iida, 1985). The present seismicity in the upper domain, however, is very low. The low seismicity is in marked contrast to the high seismicity at the southern margin of the Zenisu Ridge locating oceanward of the trough axis where active shallow seismicity

are prevailing. This suggests a sequence in time in the seismicity of two large basement thrusts oceanward and landward of the Nankai Trough.

Based on the dive results, the boundary is realized through numerous slopes and steps. Benthic communities dominated by deep-sea giant clams of the genus *Calyptogena* and tube worms are distributed on the steps (Ashi et al., 1994). The communities suggest an intensive fluid flow coming up along the fault and venting out from the sea bottom as well as the frontal thrust at the trough axis. The framework of the present fluid circulation will be presumably completely rearranged after the coming great earthquake expected in the near future. Monitoring of fluid flow change and comparison with flows before and after the earthquake, which would be enabled by down hole experiment, could give us critical information about the relationship between fluid activity and earthquake activity.