XIII. PRELIMINARY CONCLUDING REMARKS

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A continuous seismic reflection method revealed a few kilometers thickness of terrigenous sediments on the continental slope, less terrigenous sediments on the inner trench slope and thin pelagic sediments on the Pacific floor with a thickness of a few hundreds of meters.

The thick terrigenous sediments on the continental slope are correlated to the Neogene (HONZA, 1976). Neogene layers are developed over the whole of the continental slope along the Japan Trench. The layers are distinguished into three types; the acoustic basement, a vague alternated layer and a strongly alternated one. The acoustic basement as derived from the continuous seismic reflection method also has an alternated pattern as shown by the multiple reflection method (ISHIWADA, 1974). The layer may be correlated with the Cretaceous sequences on the eastern margin of the Kitakami and Abukuma areas which are developed along the eastern margin of the intermediate uplifted belt of the Tohoku Arc. The second vague alternated layer has no data with which correlate it with the succession on land along the eastern part of the Tohoku Arc. However, there is a possibility that the these layer may be Paleogene which occurs on the eastern margin of the Kitakami-Abukuma areas. The upper most layer is correlated to Neogene sediments and is distinguished in several sublayers (HONZA, 1976).

The structural trends of the layers are approximately parallel to the shore line and to the trench axis. The major structural trends in the continental slope are divided in three zones. They are the uplifted zone with its axis in the near shore land area which can be seen as monoclinically dipping layers towards the ocean basin on the continental shelf and on the upper most part of the continental slope; the subsided zone in the mid-slope area; and the uplifted zone on the outer margin of the slope (trench slope break area).

Less Neogene sediments are suggested from reflection results on the inner trench slope. No consolidated rocks which are commonly present on the continental slope and in the oceanic floor as acoustic basements are noted in the area of the inner trench slope. The sedimentary layers have a transparent pattern beneath the thin terrigenous sediments. Overthrusting is suggested from shadows of faults in the transparent layers and in the thin layered sediments on the inner trench slope. These facts can be correlated with the accretion mechanism of oceanic sediments on the inner trench slope.

Antithetic faults which may reflect the tensional stresses in the outer trench slope along the full length of the trenches occur. The origin of these faults has been discussed in previous papers (KANAMORI, 1971; MALAHOFF, 1970; HONZA, 1976). No terrigenous sediments are suggested on the outer trench slope of the Japan and Kurile Trenches, which is in contrast to their presence in the Peru-Chile Trench (PRINCE and KULM, 1975). The antithetic faults are suggested to be caused by the tensional stress condition created on the convex side due to bending. This contrasts with the reverse faulting mechanism resulting in the uplift of terrigenous sediments onto the upper part of the outer trench slope. The pelagic sediments of the benches in the inner trench slope have uniform and non-disturbed patterns on which thin stratified layers are deposited. The layers may have

been supplied from the neighbouring uplifted fault blocks. Antithetic faults occur discontinuously along the full length of the trench and extend approximately 10 nautical miles. The faults are partly observed to extend for 20 nautical miles. The peakes and highs of the inner trench slope extend continuously for tens of nautical miles.

A high magnetic anomaly zone over the upper continental slope continues in the whole of the Tohoku Arc and also extends to the north of the Arc. The anomaly is interpreted to originate from deep intrusives with a width of several kilometers from the analytical calculation of the anomaly patterns (OGAWA and SUYAMA, 1974). These intrusives may be mafic-ultramafic bodies which occur on the line of the northern extension of the anomaly zone on land of Hokkaido (SEGAWA and OSHIMA, 1975). These mafic-ultramafic intrusives may have originated to the product of accretion along the trench which had developed during an older stage of the island arc activity during the late Mesozoic as postulated by HONZA (1976).

The anomaly zones in the oceanic floor extend to the inner trench slope where the oceanic basement reflector can be traced under the slope.

The free-air gravity anomaly has a minimum value a little to the landward side of the trenchs which is also partly suggested by the Bouguer anomaly. This suggests the presence of underthrusted oceanic plate beneath the continental plate in the trench area overlain by light material which consists of the lower part of the inner trench slope. Horizontal tensional stress is suggested beneath the outer trench slope and horizontal compressional stress is suggested in the upper part of the inner trench slope as in the continental slope of the Aleutian Trench (STAUDAR, 1968). This suggests that the stress condition in and near the trench changes a little to the land-ward side of the trench axis.

The low free-air anomalies around the Cape Erimo, Hokkaido may suggests a large amount of accumulation of sediments. The low anomalies lie between and around the junction of the two older island arcs, i.e. the Kitakami and Abukuma belts and Hidaka belt, and also lie near the triple junction point of the Japan and Kurile Trenchs. The position of the Hidaka Belt reversed from the paired metamorphic belts of the SW Japan Arc during Late Mesozoic. These facts may suggest that the two belts had been approaching each other during older active stage of the island arc, neverthless, there are no historical data to correlate the thick accumulated sediments.

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