The structural analysis of melange distributed southwest parts of Yakushima Island.

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Melange is a geologic body characteristic in the plate convergence zone. Tectonic melange is typically formed near decollement, which is a large-scale slip zone above the boundary between subducting plate and overriding sediments of accretionary prism. Strain hardening during progressive deformation processes at the convergence zone causes gradual thickening of tectonic melange (Moore, 1987). However, internal structure of such thickened melanges in which the deformation decreases gradually toward the surface is hardly observed in an outcrop. The purpose of this study is to analyze structure inside the 5 km thick melange exposed in Yakushima Island and clarify process and mechanism of melange formation.

Yakushima Island is located at 70 km south from the southern tip of Kyusyu. The rocks of Paleogene accretionary sediments of the Shimanto group were intruded and metamorphosed by the intrusion of Miocene Yakushima granite in the center of island. The thick melange sequence is exposed in southwest part of Yakushima Island, between Nakama - Kurio village. We carried out detailed mapping of this area.

As the result of structural analysis of melange, we distinguished two zones that have contrasting deformation styles and appear repeatedly in otherwise chaotic sequence; zone 1 preserves original bedding with development of high strain shear zones, and zone 2 develops rootless folds. Two faults system were developed in both zones; layer parallel faults and oblique faults. These faults cross-cut each other. Although there is a difference in local structures, it seemed that these faults formed in the same time, because these fault system were homogeneously developed over the whole area. Melange must have been formed under consistent shear movement. The simultaneous development of contrasting deformation zones and two fault systems are possibility attributed to Rideal shear.