The relationships between a northern coherent unit and a southern melange unit in the Cretaceous Shimanto Belt, Shikoku

toshio ito[1]; Yoshitaka Hashimoto[2]

[1] Natural Enviromental Sci,Kochi Univ; [2] Dep. of Nat. Env. Sci., Kochi Univ.

Accretionary complexes are composed of melange units which represent strong deformation textures such as block in matrix, and coherent units which are relatively weak deformed sequence.

Recently, pseudotachylyte is found from the boundary between the southern coherent unit and northern melange unit, which suggests that the boundary is a candidate for a seismogenic fault along subduction interface. It is not clear, however, how the boundary is formed in a subduction zone.

The object of this study is to make a growth process of the coherent unit in accretionary complexes clear and understand the structural relationships between southern melange unit and northern coherent unit.

Growth process of a coherent unit of the Hiwasa Formation which is distributed along the Kaifu valley, south-east of Tokushima, is revealed by detailed field survey based on 1:500 route maps.

Structural data, detailed lithofaces data, and facing data suggest that the study area shows a primary fold and thrust structure. This fact may indicate that the study area is formed at the toe of accretionary prism by offscraping process. In addition, direction of the maximum principle stress estimated from the fold plane in the study area does not coincide with that from the melange zone which is located just southward of this study area. The inconsistency in the directions of the maximum principle stresses between the coherent unit and the melange unit supports strongly the difference of formation processes between them. Moreover, sedimentary age of the coherent unit differs from that of melange unit. Thermal structure estimated from vitrinite reflectance has a linear incremental trend from the north to the south penetrating the both units. On the basis of all evidence, processes of juxtaposition of those units are suggested as follows.

1. The study area of coherent unit is accreted at the toe of an accretionary complex by offscraping. 2. The study area is structurally buried due to growth of accretionary complex and Out of Sequence Thrust activities. 3. Melange unit is underthruted and underplated just below the coherent unit. 4. The maximum temperature heated both of the units. Consequently, the boundary is a significant one dividing the quite different units in mechanically and historically.