# Estimation of stress fields and changes in deformation scale along subduction zone in the Cretaceous Shimanto sub belt, Shikoku

# Tadahiro Shibata[1]; Yoshitaka Hashimoto[2]

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

Evolution of stress fields and its relation to deformation stages within accretionary complexes are significant to understand change in physical properties of rocks along subduction interface. In this study, we examined the relationships between changes in stress field and deformation style in a on-land accretionary complex on the basis of multiple inverse method and detail observation of deformations such as slicken line on the melange foliation, meso-scale fault and so on in the Cretaceous Shimanto belt, Tokushima, SW Japan.

Four stages of deformations are identified by detailed observations of deformation and structural geological analysis, that is, 1: melange formation, 2: micro-crack formation, 3: meso-scale fault activities, and 4: faults related to underplating. In addition, stress fields associated with deformation stages of micro-crack formation and meso-scale faults are estimated by Multiple inverse method. The result suggests that there are one stress field for micro-cracking and two stress fields for meso-scale faults. The estimated stress field for micro-cracking, which may be formed due to reactivation of melange foliation, is characterized by corner of decollment and sigma one is about from 10 degree to 20 degree. Stress fields for meso-scale faults, which are considered to be developed before and after formation of duplexing fault, represent the angles between decollement and sigma one is about from 15 degree to 45 degree. Those results coincide with the stress fields representing shear deformations.

Deformation scales in each deformation stages from melange formation to duplex faulting are enlarged progressively in the width of shear zone, slip distance and frequency in a distance. This fact suggests that change in stress fields and deformation scale reacted to the stress field occur along subduction interface. Because the duplexing fault is suggested as one of candidate for seismogenic fault, the change in deformation scale from melange formation to duplexing is possible to be a significant process preparing to get a seismogenic property.