

Estimation of volume change of the black shale in the Shimanto accretionary complex, eastern Shikoku

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The Shimanto accretionary complex is composed of zonal melange units and coherent sandstone-shale turbidite units. These units are divided into several formations based on the lithoface. It is likely that sedimentary rock in each formation have suffered volume decrease by compaction and deformation by various kind of accretional processes such as the offscraping and underplating . The volume loss of sedimentary rock in each formation is potentially qualified by analyzing the chemical composition the black shale. The purpose of this presentation is to measure volume change of sedimentary rock in each formation based on the shale chemistry.

Volume change would like be caused by three factors. One is the simple mechanical compaction. Second is the pressure solution deformation enhanced dissolution-precipitation mechanism. It seems that pressure solution is prevailing in the shale during accretion process. The third one is mechanical wear caused by fault friction.

We tried to estimate the degree of volume change of the shale in each formation by using the chemical isocon method relative to degree of Ti, P, Zr and Nb. Several High Field Strength elements (HFSE) are utilized.