

Magnetic features and chemical compositions of altered basalts in the Okitsu Melange, Shimanto accretionary complex

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The southern portion of Shikoku is a widely flat magnetic feature based on the availability of high-quality fine-scale airborne magnetic data [GSJ, 1996]. Generally the predominant magnetic anomaly observed on land of Shikoku is approximately flat within 50 nT amplitude, and smaller than the corresponding value observed offshore. In the flat magnetic anomaly zone, we observed both fresh and altered basalts in the Okitsu melange in the Cretaceous Shimanto accretionary complex along the coastal line of the western Kochi. We measured magnetic properties and chemical compositions of basalts, which we sampled in this region. Combining these results, we configure the nature of the disappearance of the magnetic anomaly amplitudes and discuss variations in magnetization on and off Shikoku.

The Okitsu melange in the Shimanto accretionary complex in the western Kochi is a place to discover the pseudotachylyte as a fossil of earthquakes. The pseudotachylyte seems to be formed by the frictional heating with the rapid slip of the fault. The existence of the pseudotachylyte is the evidence for the earthquake and the coseismic thermal occurrences. The Okitsu melange composed of the repeated oceanic stratigraphy with a large amount of basalt and sedimentary rocks.

There are several basalts, which show some wide range of degree of alteration along the Okitsu melange fault zone. There are obviously two types of samples; i.e. group A with low k, Jr, and Q, and group B with high low k, Jr, and Q. The group A samples are distributed along the roof thrust of the Okitsu melange, in which the pseudotachylyte was discovered, on the other hand, samples in the group B are along the bottom of thrust sheet. The results of chemical properties also indicate two significant component types. The altered basalt along the fault zone is composed of the host rock and such white colored crystal vein.