

Volcaniclastic materials included in sediments and sedimentary rocks collected from the south of Hawaii.

Jirou Naka[1], Toshiya Kanamatsu[2], Yu'suke Kubo[2]

[1] IFREE, JAMSTEC, [2] JAMSTEC

Archipelagic aprons exist of surrounding sea floor of oceanic islands, and it seems that clastic materials derived from these islands deposited in them. It seems that recent volcaniclastic materials, which derived from active volcanoes of Hawaii deposited in the archipelagic apron of south of Hawaii. Four piston core samples were collected at 120 (P6), 200 (P11), 250 (P5), and 330 km south off Hawaii during the 1998 and 2001 deep sea research cruises, and surficial bottom samples of south flank of Hawaii were also collected by submersibles during 1998 and 1999 cruises. We report preliminary results of the volcanostratigraphic record of these cores and surficial sediments.

Most of volcaniclastic materials in surficial sediments of south flank of Hawaii were derived from the nearest volcanoes.

Based on comparison of lithology, magnetic susceptibility and other characters between piston core samples P5 and 6, sedimentation rate of P6 is about 5 times faster than P5. Lower than about 2.3 meter below sea floor of P5 is reversely magnetized, and older than 0.78 Ma. On the other hand, in the comparison of lithology and other characters, among P5, 11 and 12, sedimentation rate of P11 seems 2 times slower than P5 and P12 seems somewhat slower than P5. Therefore, the volcaniclastic turbidite layers around 2m in P11, around 5m in P5 and around 4.5m in P12 seem correlative. P6 is located at the outer part of Hawaiian Deep. However, horsts and grabens, whose maximum height is up to 100m, exist in much southern area. P5 and 12 are located in the graben and 11 are on horst. Therefore, P11 shows lowest sedimentation rate among these piston core samples. Moreover, some folds, which seems slump related structure, existed in P5 and 12 and the apparent sedimentation rate of P5 and 12 seems faster.

Heavy to moderate bioturbation is common in these piston core samples except for well bedded volcaniclastic turbidite layers and volcaniclastic materials are scattered in them. Especially in P6, volcaniclastic materials are observed in most horizons and almost continuous volcanostratigraphic records are preserved in it. Glass chemical composition in P6 change from Kilauea type to Mauna Loa type around 4 meter below sea floor. And alkalic rock fragments are included in between 1.7 and 3.3 meter below sea floor. Only Kilauea type, tholeiitic rock fragments are observed in shallower than there. This alkalic rock fragments included part seems the distal part of sedimentary rock section of lower part of Hilina slump, which include alkalic rock fragments.