

Comparative study of piston cores south of Hawaii and submersible observations on the Hilina slump, south flank of Kilauea

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The southern flank of the Kilauea volcano, Hawaii now moving toward the south due to compensate the instability and the most prominent part of this movement is called as Hilina Slump. The submarine portion of this Hilina Slump was surveyed as one of the activity of JAMSTEC deep-sea research cruise during 1998 and 2002.

DSRV SHINAKAI 6500 and ROV KAIKO dives demonstrated that the most portion of this lower slope of the slump body is made up by thick pile of volcanoclastic rocks. Most of them are hyaloclastite, which produced around the coastal area of volcanoes of Hawaii. These volcanoclastic rock fragments include probably Kilauea, Mauna Loa and possibly Mauna Kea volcanoes products.

On the other hand during the JAMSTEC cruises, piston cores were collected from deep sea of south of Hawaii. These cores include bedded and dispersed volcanoclastic materials and they contained the nearly continuous volcanostratigraphic record of Hawaii.

Recent structural study of the Hilina slump region suggested that the tectonic complexity like tectonic repetition by low angle thrust (e.g. Morgan et al., 2000). The aim of this study is to know the surficial geology of Hilina slump and its adjacent area using the comparison between the submersible using study and piston core analysis.

The volcanic glasses, which included in the volcanoclastic rocks of Hilina slump area, contain major amount of tholeiitic rock fragments and minor amount of alkalic rock fragments. The alkalic rock fragments are also included in the piston core P6 (120km south of Hawaii). These alkalic rock fragments seem collative and though to be the product of initial stage of Kilauea (e.g. Lipman et al., 2002). We divided the P6 core into below three horizons.

1) Low and very low S subaerially or shallow water erupted shield stage Kilauea like tholeiitic fragments with minor amount of high S deepwater erupted Loihi like fragments.

2) Low S shallow water erupted Kilauea and very low S subaerially erupted Mauna Loa like tholeiitic fragments with minor amount of high S deep water erupted pre-shield stage Kilauea alkalic fragments.

3) Very low S subaerially erupted Mauna Loa tholeiitic fragments.

The Hilina slump area volcanoclastic rocks show similar change with P 6 core, when put them in order with distance from island of Hawaii or

Water depth, except for sulfur contents. Probably, the Kilauea like tholeiitic rock fragments of Kea type Hilina volcanoclastic rock samples are the product of Kilauea, or the product of older Kea trend volcano, Mauna Kea.