

## Characteristics of Sediment in Iheya North Knoll and 'the acoustic blanking layer'

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<http://ofgs.ori.u-tokyo.ac.jp/%7Eofgs/>

The Iheya-North Knoll complex, located in the middle Okinawa Trough, attracts intensive microbiological and geochemical interests owing to its active hydrothermalism. Although components of volcanic body itself and sediments which covers the ridge have much influence on the chemistry of the hydrothermal systems, little studies on had been conducted. We had a survey from the geologic point of view at Legs 2 and 3 of KY08-001 cruise (R/V Kaiyo of JAMSTEC).

The complex is divided into two parts: southeastern T-shaped ridges and western flat, round-shaped plateau associated with the small cones. The active hydrothermal area with up to 10 active vents is located at the foot of the northwestern cone. In this decade, extensive sampling for geochemical and microbiological studies have been performed for these vents. Those studies suggest that the rather long pathway of vents fluid from their recharge zone, resulting in the long residence time in the reservoir. Some hydrological models have been proposed and tested so far (cf. Kinoshita et al., in this meeting).

In the Legs 2 and 3 of KY08-01 cruise, the totally 14 of thermocouple-sensor equipped piston core sampling were conducted. During the sample suite, fresh woody pumice were commonly found in near or within the sites of knoll complex associated with relatively lower vesiculated pumice.

Woody pumice contain very little phenocrysts. Pumiceous layers showed mainly normal grading. Some of them showed reddish oxidation skins on the surface, however, little chilled margins were found. During the piston-core operation, several sea-floor depressions of 100 - 300 m in diameter were found in the echo sounder of the vessel. These depressions are possible crater of their explosive eruptions indicated by the extremely vesiculated, deformed and fragmented pumice.

The hydrothermal deposits, including fine-grains of pyrites, were sampled at the two sites: top of the west-cone and the valley between the round-shaped plateau and the T-shaped ridge. Fragments of chimneys were only sampled at the top of the cone that have active hydrothermal vents on its foot.

During the sample suite, mafic materials are rather rare, only found at the foot of the N-S trending ridge of the part of the T-shaped ridge. The banded pumice were also sampled at the two sites on the both eastern and western end of the T-shaped ridge, which indicates the impregnation of the mafic magma into the felsic one in the magma chamber beneath the ridge. This may reflect that the tectonic condition of the Okinawa Trough associated with the mafic magma up-wellings into felsic magma beneath the Iheya-North knoll-complex.

We had conducted Single-channel(YK06-09 cruise) and Multi-channel(KY07-03 cruise) Seismic reflection surveys in this area intend to find out possible hydrothermal passages and understand the geologic structure of Iheya north Knoll. Unfortunately, we couldn't get good data for hydrothermal passages or structure inside the knoll. On the other hand, we got interesting reflection profile, which is thick 'acoustic blanking layer' at the top of the southeastern T-shaped ridge. We collected sediment core samples from the point where the blanking layer is and isn't, and compared them.

They both are composed of volcanoclastic sediment including pumice. There was not much difference between them. We couldn't find out the cause of the blanking, which must be in deeper part than a few meters below.