

MCS profiles of knolls scattered in the southern Okinawa trough

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In the Okinawa trough, recently new hydro-thermal sites has been reported by several organizations. Especially, relatively large hydrothermal sites (e.g. the Iheya north site, the Noho site, and the Gondou site) were found in the middle part of the Okinawa trough.

The Iheya north site is known as one of the most active hydrothermal field. In the field, Tsuji et al.(2012) pointed out that there is the strong reflector which has opposite polarity to that of the seafloor reflector, and this indicates the seismic velocity below the negative-polarity reflector is lower than that of the overlying sequence. On the other hand, in the southern part of the trough not so many large scale hydrothermal sites have been found.

The Japan Coast Guard (JCG) conducted high density topographic surveys using a multibeam echo sounder and seismic surveys using a multi-channel streamer cable. As a sample of the result of our seismic experiments, we choosed the MCS time section of the Tarama knoll. The tarama knoll is 3 km in diameter and 500 m in hight. It has a hydrothemal field on the east flank.

On the seismic profile, several signals which imply the volcanic activity were imaged, such as:

volcanic sediments layer is located on the top of the land-derived sediment layer;

a strong reflector which has oposite polarity is detected between the volcanic sediments and the land originated sediments; and
strong reflectors which seems from dykes and sills by penetration of magma was observed.

some of these characteristics are consistent with the Iheya north site. This opposite polarity layer, therefore, may indicate the water supply source of the Tarama knoll's hydrothemal system.

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