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Near-bottom magnetic surveys around hydrothermal sites in the southern Mariana Trough using AUV

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Near-bottom magnetic survey by using an AUV is an effective method to reveal the detailed magnetic anomaly signatures of ocean floor such as those around hydrothermal vent sites. In order to detect signals of hydrothermally altered rocks in the southern Mariana Trough, the measurements of total intensity and three-components of the geomagnetic field are conducted by using AUV URASHIMA during the YK-09-08 cruise. Four three-axis fluxgate type magnetometers and overhauser type magnetometer are attached on AUV URASHIMA.

During the cruise, three components of geomagnetic field by the four fluxgate type magnetometers are successfully obtained along the all dive tracks of AUV URASHIMA. Total intensities of geomagnetic field by the overhauser magnetometer are only collected along almost E-W oriented observation lines due to the sensitivity of the sensor.

We will present vector magnetic anomaly field around hydrothermal sites in the southern Mariana Trough and distribution of crustal magnetization derived from the inversion method.

Keywords: magnetic anomaly, Mariana Trough, AUV, hydrothermal vent