

南部マリアナトラフ熱水活動域における深海磁気異常マッピングとBMSコアの岩石磁気学的測定

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Deep-sea magnetic anomaly mapping and rock-magnetism of the BMS cores at the hydrothermal sites in the southern Mariana Trough

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Magnetic anomalies observed in the ocean are basically originated from the variation of magnetization of oceanic crust. Hydrothermal vent activities are a possible cause of reduction of magnetization intensity in the small scale due to alteration of oceanic crust by the fluid circulation. Detailed magnetic anomalies obtained by near-bottom survey is a useful in estimating variations of crustal magnetization caused by alteration around hydrothermal vent sites (e.g. Tivey and Johnson, 2002). In order to detect magnetic signals resulted from the variations of crustal magnetization under the hydrothermal vent sites area in the southern Mariana Trough, the magnetic field around the hydrothermal sites were measured by using the AUV "URASHIMA" during the Cruise YK09-08. Four fluxgate (three-component) magnetometers and an Overhauser (total intensity) magnetometer were attached on the AUV. The magnetic field data were collected along the survey lines of 80-300m height from the seafloor.

Crustal magnetization were calculated from downward component of magnetic anomalies assuming a constant thickness source layer (250m). Some of the hydrothermal sites show lower magnetization than those of the surrounding areas. These low magnetization areas suggest that the basaltic rocks have been altered by hydrothermal activities.

In the cruise of Taiga10M, we collected 4cm diameter and 1-4 m length cores from the seafloor rocks using the BMS (Boring Machine System) of the Hakurei-Marun No. 2. We are going to measure remanent magnetization and basic magnetic property of these samples. The measured rock-magnetic data will give direct constraints on the magnetization values of the model and therefore contribute to a better understanding for the geological structures of the hydrothermal sites.