GEOMAGNETIC SURVEY AT SEA

This is a continuation of the report of geomagnetic surveys at sea by the Hydrographic and Oceanographic Department. This report gives brief summary of two cruises, Kaikata Seamount, Nishinoshima in 2010.

Key word: marine geomagnetic survey.

1. Surveys

The total magnetic intensity at sea surface was measured by a proton precession magnetometer of PM-217 installed on the survey vessel Shoyo of the Hydrographic and Oceanographic Department (JHOD). The sensor was towed about 350m behind the vessel. The data from the sensor were sampled every 20 seconds.

2. Data processing and Results

The measured total magnetic intensity includes components of external field variation. The correction of the external field variation was carried out based on the continuous magnetic observations at a reference magnetic observatory close to the survey area. The details on the compiled magnetic surveys, the name of the reference magnetic observatory, the reference values for external field correction and the epoch year of data processing are listed in Table 1.

For calculations of the total intensity magnetic anomaly values, the IGRF model was used as the core field model in accordance with the recommendation of the IAGA.

Geomagnetic total intensity anomaly maps are shown in Fig. 1, Fig. 3 .

Magnetization intensity map are shown in Fig. 2 .

Reduction and compilation of this report were made by K.Ogata,K.Onodera and K.Koyama belong to the Geodesy and Geophysics Office.

References

The results of geomagnetic surveys at sea for preceding years are found in the following publication series.

Data Report of Hydrographic Observations, Series of Astronomy and Geodesy, No.18, 1984,

Ibid. , No.19, 1985,

Ibid. , No.20, 1986,

Ibid. , No.21, 1987,

Ibid. , No.22, 1988,

Ibid. , No.23, 1989,

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Ibid. , No.29, 1995,

Ibid. , No.30, 1996,

Ibid. , No.31, 1997,

Ibid. , No.32, 1998,

Ibid. , No.33, 1999,

Ibid. , No.35, 2001,

Ibid. , No.37, 2003,

Ibid. , No.38, 2004,

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Table 1. Details on the compiled magnetic surveys at sea

Cruise index	KTA09	NISI10
Area	Kaikata Seamount	Nishinoshima
Period	Mar, 2010	Oct, 2010
Vessel	Shoyo	Shoyo
Magnetometer	PM-217	PM-217
Positioning	Integrated Navigation System	Integrated Navigation System
Track lines	0.5 naut. Mile	0.5 naut. Mile
Anomaly map	Fig. 1	Fig. 3
Scale of original map	1/150000	1/250000
Map projection	TM	TM
Reference Magnetic Observatory	Kakioka (36° 13.'9 N, 140° 11.'2 E)	Chichijima (27° 05.'8 N, 142° 11.'1 E)
Reference value for an External field correction	46453.6 nT	41069.7nT
Core field model	IGRF2010	IGRF2010
Contour interval	50nT	50nT
Epoch year	2010.3	2010.10
Magnetization intensity map	Fig. 2 Contour interval 0.25A/m	

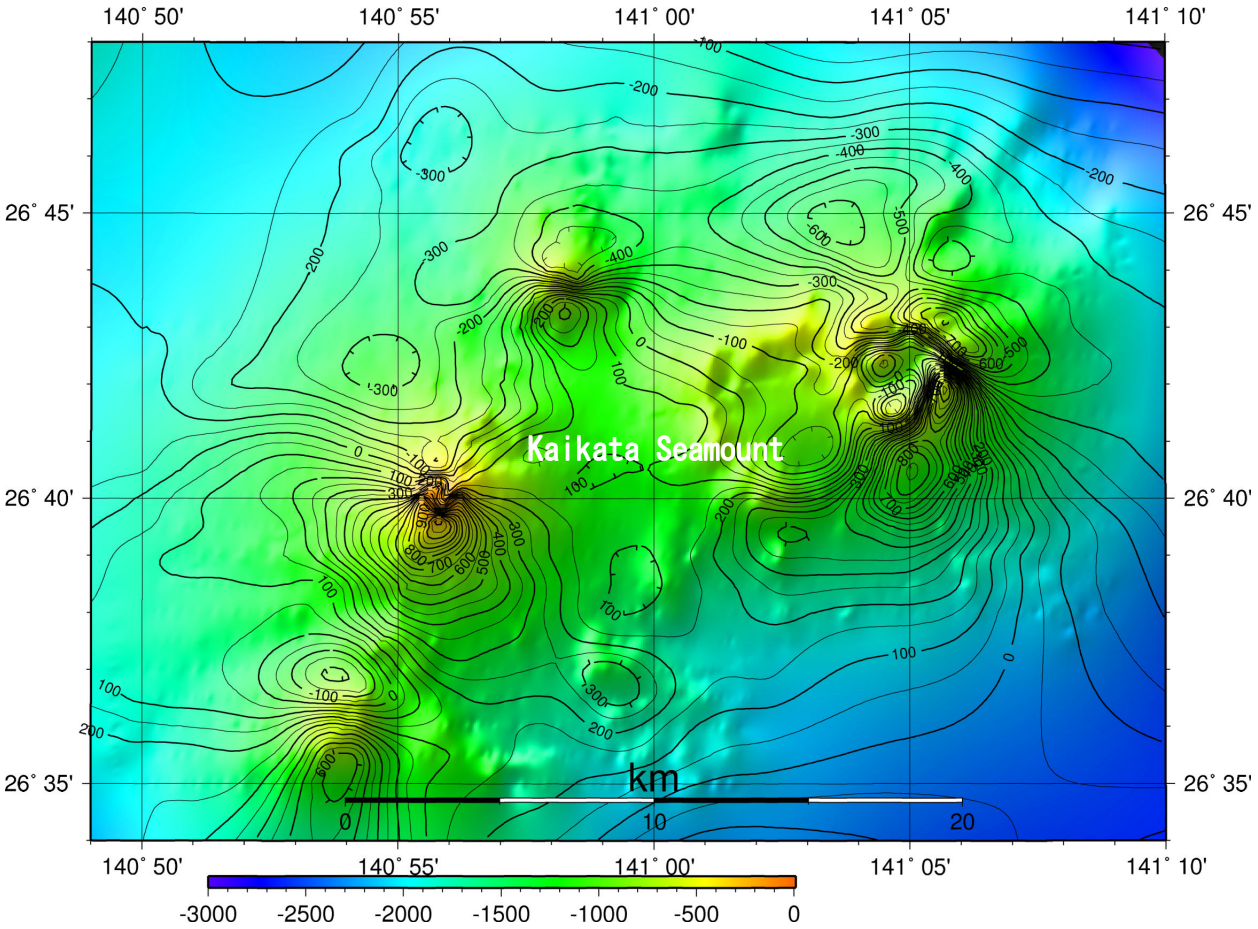

Fig.1 Geomagnetic total intensity anomaly map in and around Kaikata Seamount.

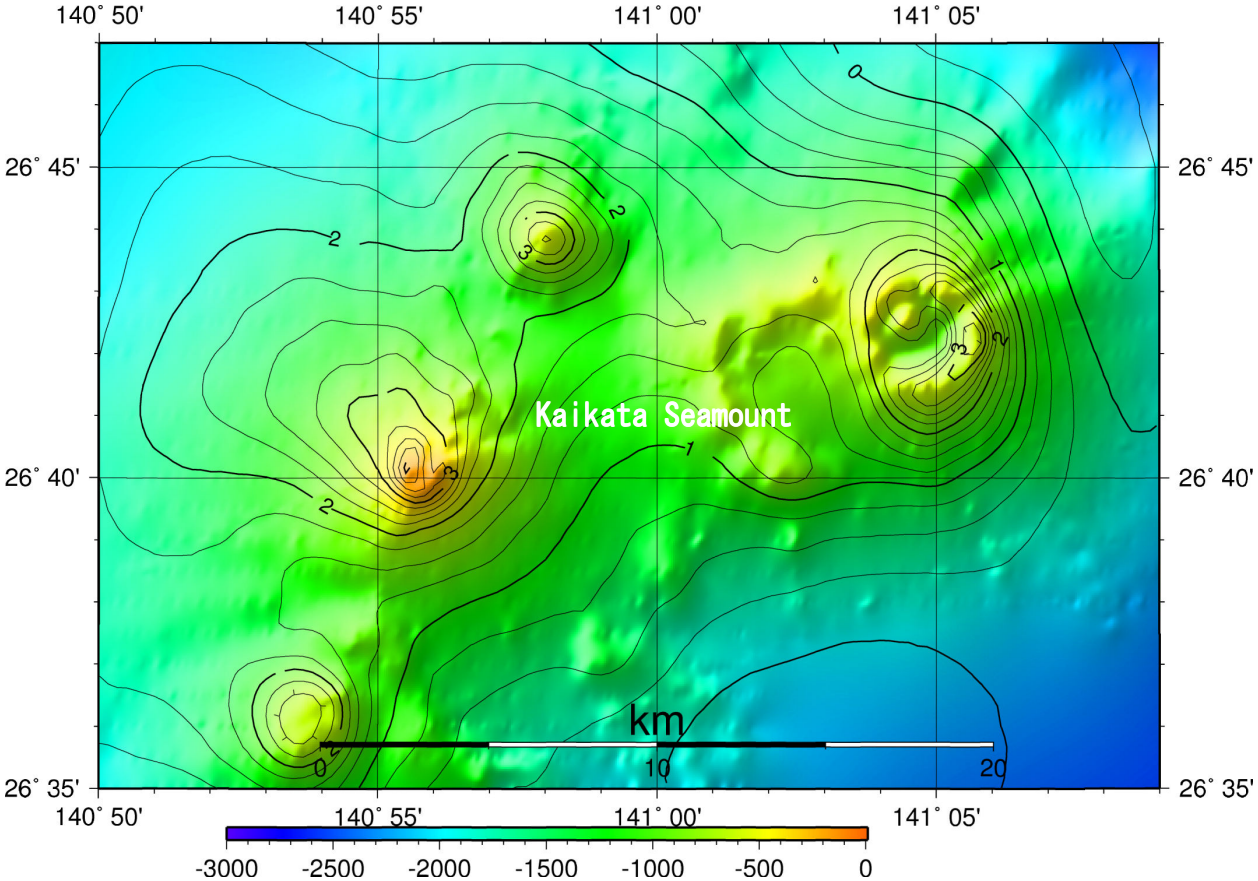

Fig.2 Magnetization intensity map in and around Kaikata Seamount.

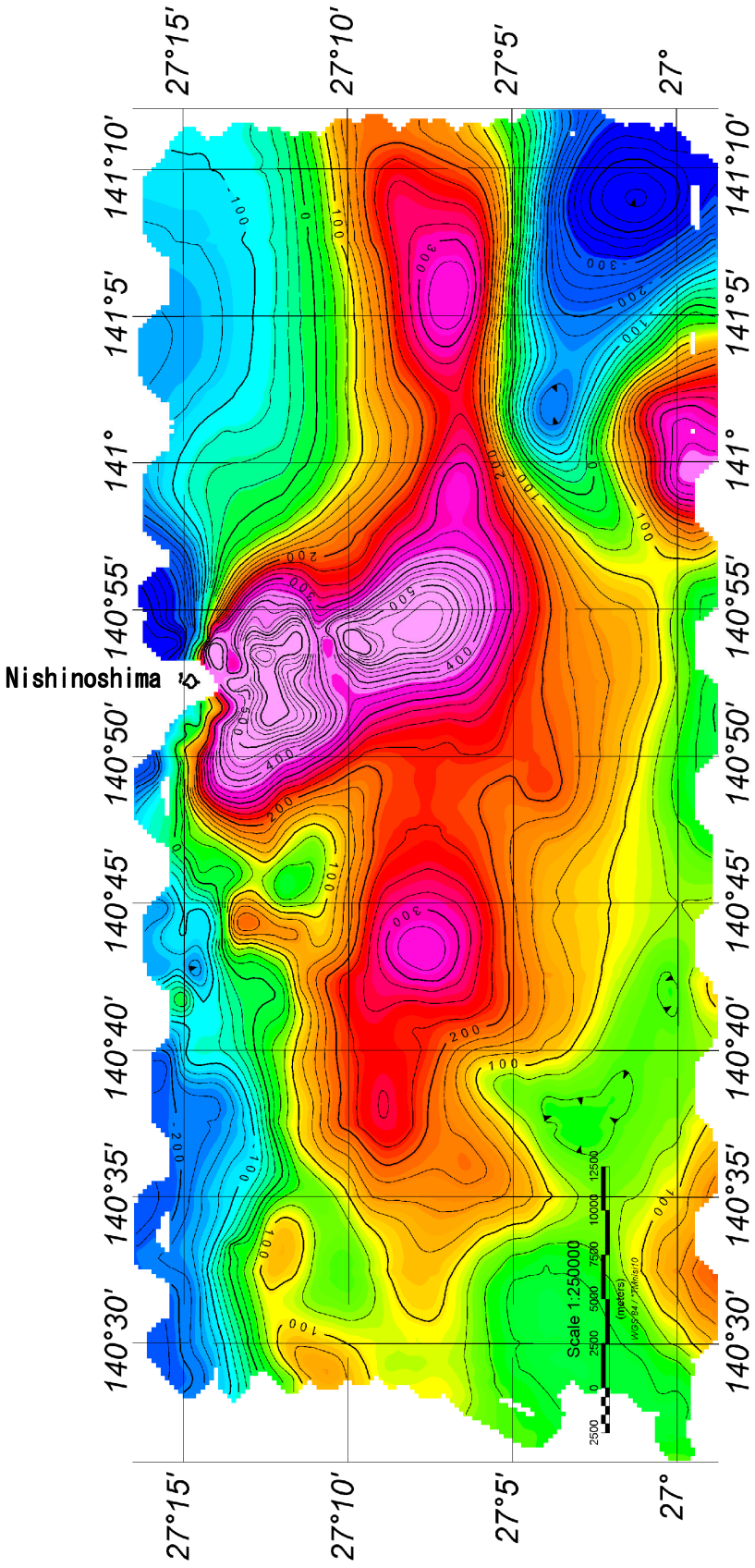

Fig.3 Geomagnetic total intensity anomaly map in Nishinoshima south area.