

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 three cruises, Kita-fukutoku-tai carried out in 2002, offing of Kii-Tokai in 2003 and Wakamiko in 2004.

Key word: marine geomagnetic survey.

1. Surveys

The total magnetic intensity at sea surface was measured by a proton precession magnetometer of PMM-200 installed on the survey vessel Shoyo, Takyo and Meiyo of the Hydrographic and Oceanographic Department (JHOD). The sensor was towed about 300m 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. 1~3 .

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

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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,

Ibid. , No.24, 1990,

Ibid. , No.25, 1991,

Ibid. , No.26, 1992,

Ibid. , No.27, 1993,

Ibid. , No.28, 1994,

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,

Table 1. Details on the compiled magnetic surveys at sea

Cruise index	02KIF 03KIF	03KIT
Area	Kita-Fukutoku-tai	Offing of Ki-Tokai
Period	Jun.24– Jul. 12, 2002 May.24 – Jun.7, 2002 Jun.6 – Jun.17, 2003	Jul. 4 – Jul.28, 2003
Vessel	Takyo Shoyo	Shoyo
Magnetometer	PMM-200	PMM-200
Positioning	GPS	GPS
Track lines	0.5 ~ 1.5 naut. Mile	0.8~5.0 naut. Mile
Anomaly map	Fig. 1	Fig. 2
Scale of original map	1/200000	1/500000
Map projection	TM	Lambert Conformal Conic
Reference Magnetic Observatory	Hachijo (33° 04.'2 N, 139° 49.'7 E)	Hachijo (33° 04.'2 N, 139° 49.'7 E)
Reference value for an External field correction	45,216nT	45,208nT
Core field model	IGRF2000	IGRF2000
Contour interval	100nT	25nT
Epoch year	2002.6	2003.6

Cruise index	04WAK
Area	Wakamiko
Period	Apr.22– May. 11, 2004
Vessel	Meiyo
Magnetometer	PMM200
Positioning	GPS
Track lines	0.5 naut. Mile
Anomaly map	Fig. 3
Scale of original map	1/50000
Map projection	TM
Reference Magnetic Observatory	Kanoya (31° 25.'2 N, 130° 52.'9 E)
Reference value for an External field correction	46334.7nT
Core field model	IGRF2000
Contour interval	20nT
Epoch year	2004.4

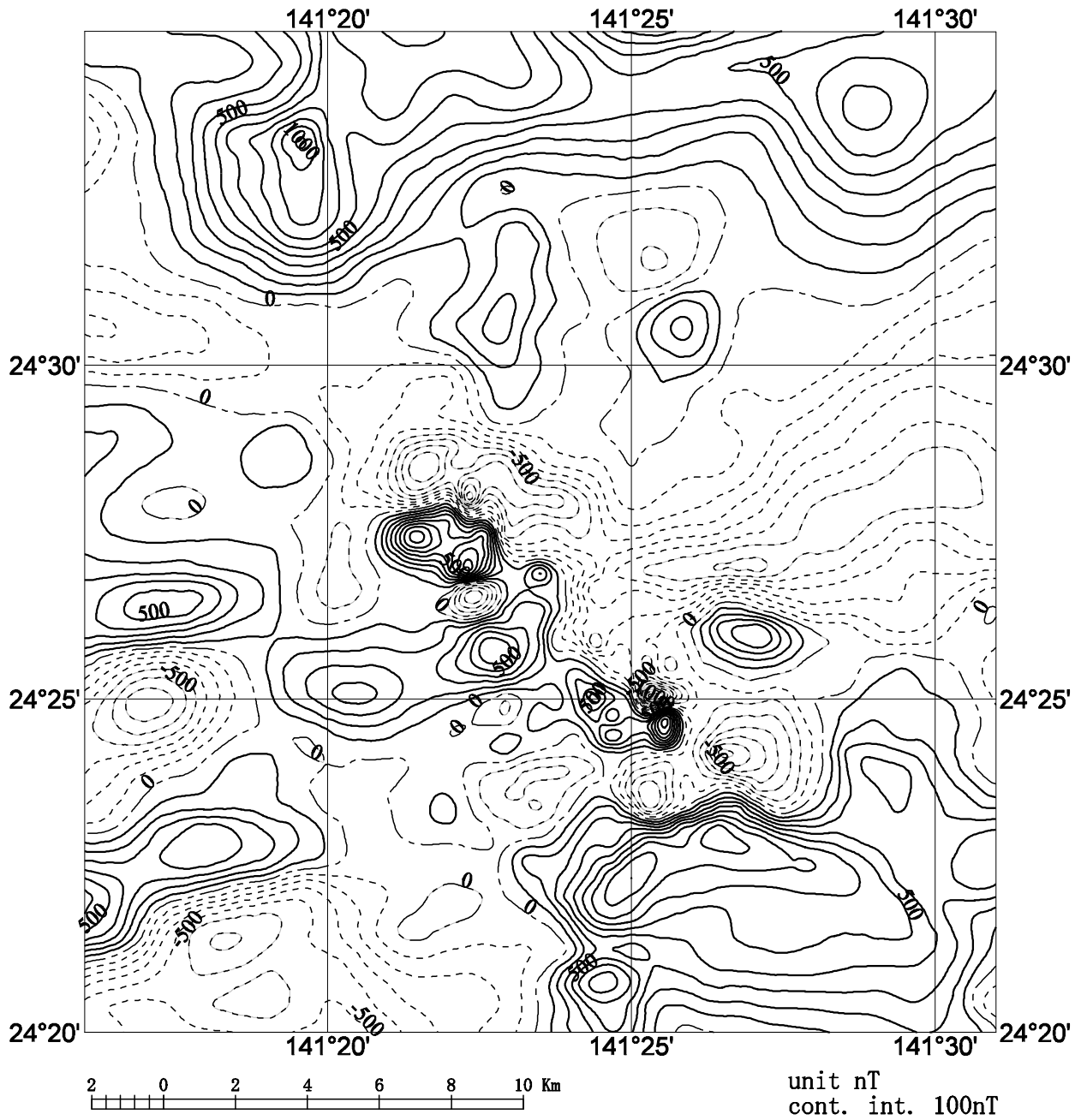


Fig.1 Geomagnetic total intensity anomaly map
in and around Kita-Fukutoku-tai

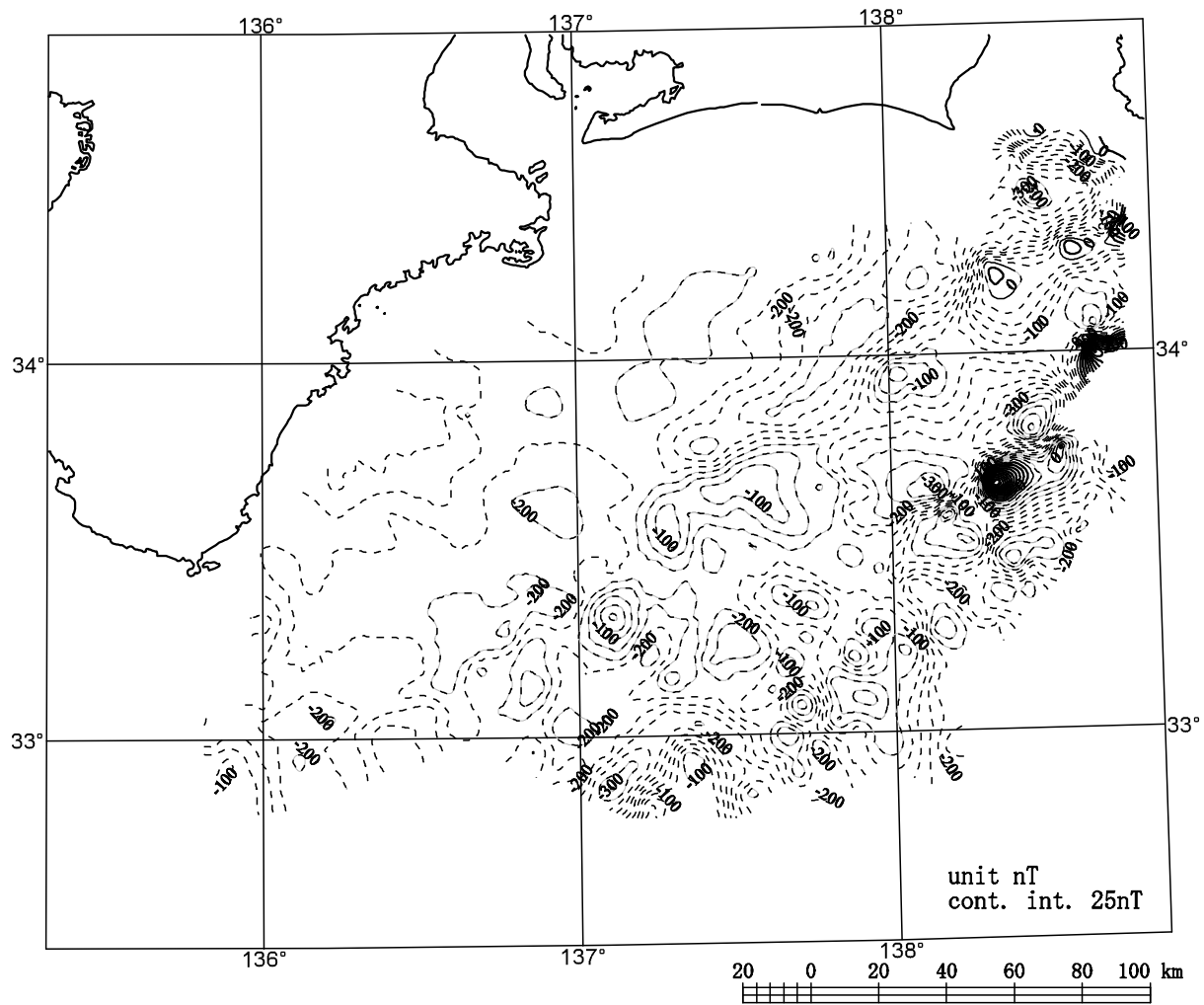


Fig.2 Geomagnetic total intensity anomaly map off Kii-Tokai

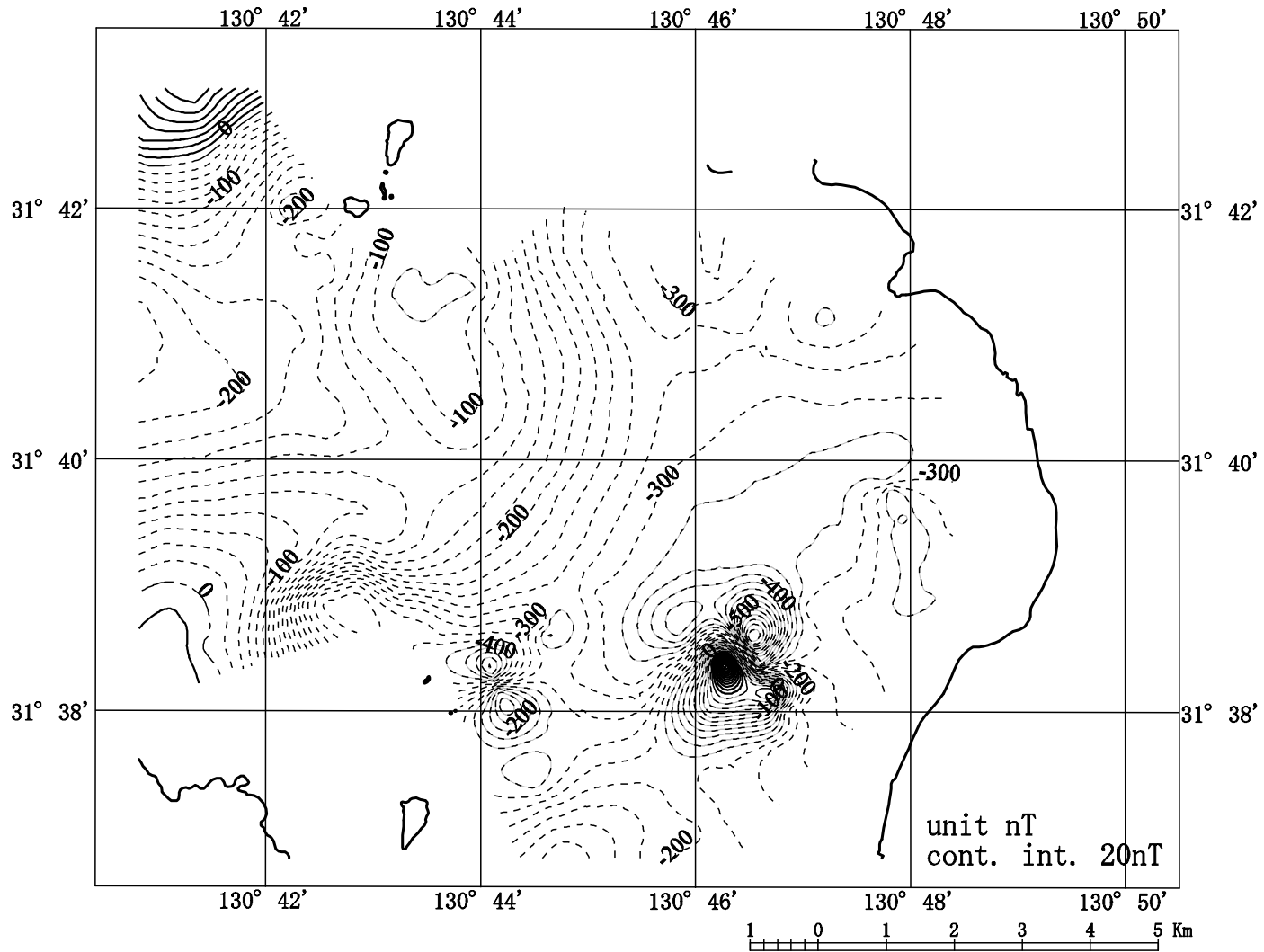


Fig.3 Geomagnetic total intensity anomaly map around Wakamiko