

## KAIREI KR02-16 Total Magnetic Intensity (TMI)

Last Modified: 2019-06-25

[ReadMe](#) [Observation Data](#) [Data Format](#)

Cruise ID: **KR02-16**

Total Magnetic Intensity (TMI): Processed (DMO)-Corrected

Data Policy: [JAMSTEC](#)

Observation Items: Total magnetic field intensity

Science Keywords:

OCEANS > MARINE GEOPHYSICS > MARINE  
MAGNETICS  
SOLID EARTH > GEOMAGNETISM

Cruise Report

[http://www.godac.jamstec.go.jp/catalog/data/doc\\_catalog/media/KR02-16\\_all.pdf](http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/KR02-16_all.pdf)

### For Using Data

#### Principal Investigator

Data Management Office

#### Use Constraints

See [Terms and Conditions](#) about constrain of use.

#### Data Citation

See [Terms and Conditions](#) about data citation.

### Period (UTC)

2002-12-11 09:11 ~ 2002-12-15 22:20

### Instrument

Instrument:

Proton magnetometer



### Overview

The proton precession magnetometer measures the total magnetic field intensity as the frequency of electric current which is generated by the proton precession. In order to avoid the ship's magnetization, the instrument is towed by the vessel about 200 - 300m. As a quality control, data of low reliability was removed (see section 5. for quality control criteria). Synthetic geomagnetic field values were calculated from IGRF models.

### Measurement System

Manufacturer : Kawasaki Geological Engineering Co. Ltd.

Type : PROTO10

Measurement range : 30,000 - 65,000 nT

Resolution : 0.01 nT

Accuracy : 0.1 nT

Location : Dry Laboratory

### Data processing

The following corrections and calculations were performed.

#### (1) International Geomagnetic Reference Field (IGRF)

Synthetic geomagnetic field values are calculated from IGRF 12th generation models by using navigation data ; latitude, longitude and date.

Reference: IAGA Division V-MOD Geomagnetic Field Modeling(<http://www.ngdc.noaa.gov/IAGA/vmod/igrf.html>)

#### (2) Calculation of the geomagnetic field anomaly

$An = F - Figrf$

An: Total geomagnetic field intensity anomaly

F: Observed total geomagnetic field intensity

Figrf: Synthetic total geomagnetic field intensity from IGRF

#### (3) Output of the data

Time (UTC)

Latitude (degree)

Longitude (degree)

Observed total magnetic field intensity (nT)

Total geomagnetic field intensity anomaly (nT)

The following corrections and calculations were performed.

#### (1) International Geomagnetic Reference Field (IGRF)

Synthetic geomagnetic field values are calculated from IGRF 11th generation models by using navigation data ; latitude, longitude and date.

Reference: IAGA Division V-MOD Geomagnetic Field Modeling(<http://www.ngdc.noaa.gov/IAGA/vmod/igrf.html>)

#### (2) Calculation of the geomagnetic field anomaly

$An = F - Figrf$

An: Total geomagnetic field intensity anomaly

F: Observed total geomagnetic field intensity

Figrf: Synthetic total geomagnetic field intensity from IGRF

#### (3) Output of the data

Time (UTC)

Time (UTC)  
Latitude (degree)  
Longitude (degree)  
Observed total magnetic field intensity (nT)  
Total geomagnetic field intensity anomaly (nT)

#### Quality control of data

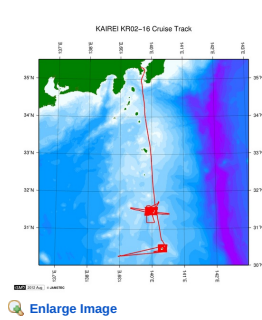
Following criteria were used for removal of data of low reliability:

- Time error (inversion of time, continuation of same timestamps)
- Ground speed of the ship below 1knot or exceeding 20knot
- Total geomagnetic field intensity anomaly exceeding  $\pm 4000\text{nT}$
- Spatial gradient of the total geomagnetic field intensity anomaly exceeding  $\pm 300\text{nT/km}$

#### Note

- (1) File naming rule: Cruise ID\_corr.tmag
- (2) Sampling rate: 20 seconds(It depends on geomagnetic field intensity and inclination )
- (3) Geodetic system: WGS84
- (4) If you would like the raw data set, please contact us from "Contact Us" above.

#### Related Information



#### KR02-16

Ship Name: KAIKEI  
Period: 2002-12-10 - 2002-12-27  
Chief Scientist: Yoshihiko Tamura (JAMSTEC)

#### Update History

2019-06-25	An observation data was registered.
2018-06-29	An observation data was registered.
2012-12-25	An observation data was registered.

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KAIYO  
YOKOSUKA  
MIRAI  
KAIKEI  
CHIKYU  
KAIKEI  
SHINSEI MARU  
HAKUHO MARU

Information of the Submersibles  
KAIKO  
SHINKAI 2000  
SHINKAI 6500  
DEEP TOW  
HYPER-DOLPHIN  
URASHIMA  
YOKOSUKA DEEP TOW  
6K Camera DEEP TOW  
6K Sonar DEEP TOW  
KM-ROV  
POWER GRAB  
SAMPLER (SHELL)  
POWER GRAB  
SAMPLER (CLOW)  
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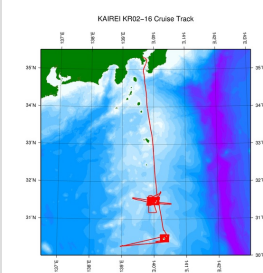
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### TMI Corrected

No.	Column	Content	Format	Unit	Remarks
1	1 - 8	Date	i4,i2,i2		YYYYMMDD (UTC)
2	10 -15	Time	i2,i2,i2		hhmmss (UTC)
3	17 -25	Latitude	f9.5	degree	No sign for the northern hemisphere. Negative for the southern hemisphere.
4	27 -36	Longitude	f10.5	degree	No sign for eastern hemisphere. Negative for the western hemisphere.
5	38 -45	Observed total geomagnetic field intensity	f8.1	nT	
6	46 -53	Total geomagnetic field intensity anomaly	f7.1	nT	

### Related Information



[Enlarge Image](#)

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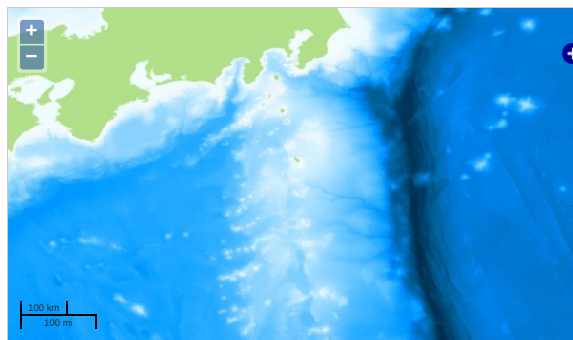
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### Observation Map



— ... Observation Line — ... Navigation ● ... Observation, Dive Point, Hole

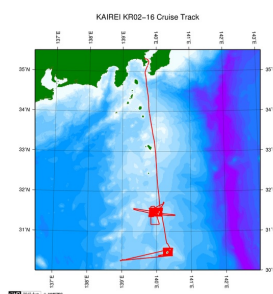
Imagery reproduced from ...

### Data List

File names

☐ KR02-16\_corr.tmag

### Related Information



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