

## KAIREI KR09-16 Total Magnetic Intensity (TMI)

Last Modified: 2019-06-25

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

Cruise ID: **KR09-16**

**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/KR09-16\\_all.pdf](http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/KR09-16_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)

2009-11-05 07:44 – 2009-11-08 21:13

### 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. and Tierra Technica Ltd.

Type : PM-217

Measurement range : 30,000 -70,000 nT

Resolution : 0.01 nT

Accuracy : less than 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 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

$A_n = F - F_{igrf}$

$A_n$ : Total geomagnetic field intensity anomaly

$F$ : Observed total geomagnetic field intensity

$F_{igrf}$ : 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)

### Quality control of data

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

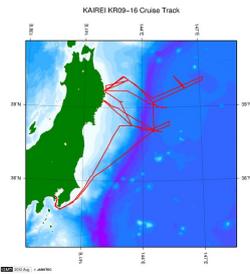
- Time error (inversion of time, continuation of same timestamps)
- Ground speed of the ship below 1knot or exceeding 20knot
- Total geomagnetic field intensity anomaly exceeding  $\pm 4000$ nT
- Spatial gradient of the total geomagnetic field intensity anomaly exceeding  $\pm 300$ nT/km

### Note

- (1) File naming rule: Cruise ID\_corr.tmag
- (2) Sampling rate: 30 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

[Cruise Data](#) [Dive Data](#)



[Enlarge Image](#)

### KR09-16

Ship Name: KAIREI

Period: 2009-10-30 - 2009-11-12

Chief Scientist: Makoto Yamano (The University of Tokyo)

Proposal Title: Studies on the thermal structure and the water distribution in the upper part of the Pacific plate subducting along the Japan Trench

## Update History

2019-06-25	An observation data was registered.
2019-03-29	An observation data was registered.
2018-05-09	An observation data was registered.
2012-09-28	An observation data was registered.

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HAKUHO MARU

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DEEP TOW  
HYPER-DOLPHIN  
URASHIMA  
YOKOSUKA DEEP TOW  
6K Camera DEEP TOW  
6K Sonar DEEP TOW  
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POWER GRAB SAMPLER (SHELL)  
POWER GRAB SAMPLER (CLOW)  
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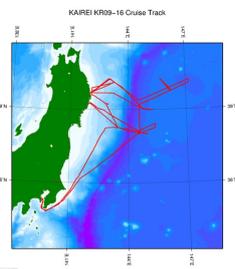
Data Policy: [JAMSTEC](#)

### 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	

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[Enlarge Image](#)

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Title: subducting along the Japan Trench

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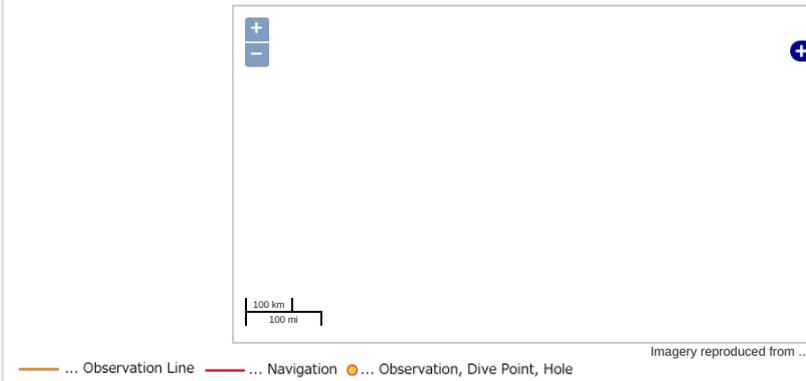
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Observation Items: Total magnetic field intensity

Science Keywords:

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### Observation Map



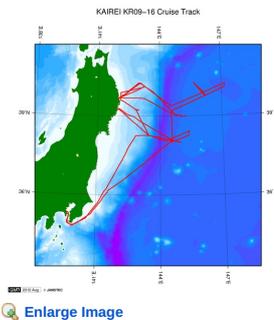
### Data List

#### File names

KR09-16\_tmag.zip

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