

## MIRAI MR14-03 Total Magnetic Intensity (TMI)

Last Modified: 2019-06-26

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

Cruise ID: [MR14-03](#)

**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

### 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)

2014-06-07 23:38 – 2014-06-08 06:51

### Instrument

Instrument:

Cesium magnetometer



### Overview

The cesium vapor magnetometer measures the total magnetic by using electron paramagnetic resonance. In order to avoid the ship's magnetization, the instrument is towed by the vessel about 400 - 500m. 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 : Geometrics, inc.

Type : G-882

Measurement range : 20,000 - 100,000 nT

Resolution : 0.002 nT

Accuracy : less than 2 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)

### 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

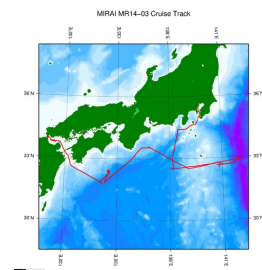
(1) File naming rule: Cruise ID\_corr.tmag

(2) Sampling rate: 1 second(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



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**MR14-03**  
Ship Name: MIRAI  
Period: 2014-06-02 - 2014-06-11  
Chief Scientist: Harumi Ohta (JAMSTEC)

#### Update History

2019-06-26	An observation data was registerd.
2018-06-29	An observation data was registerd.
2018-05-12	An observation data was registerd.
2016-06-25	An observation data was registerd.

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Dive ID:

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**JAMSTEC**  
JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY

国立研究開発法人  
海洋研究開発機構

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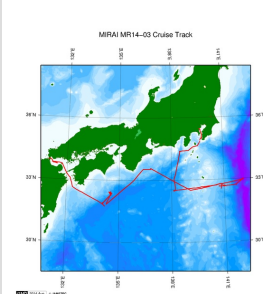
Total Magnetic Intensity (TMI): Processed (DMO)-Corrected

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	

### Related Information



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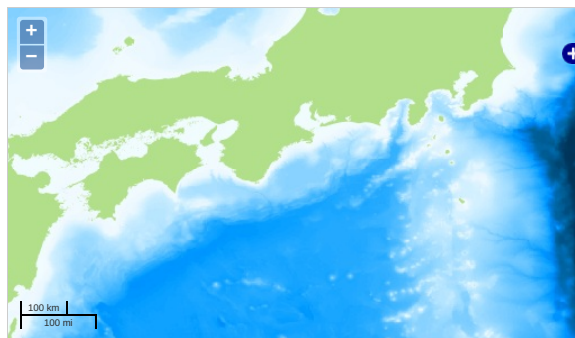
Observation Items: Total magnetic field intensity

Science Keywords:

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### Observation Map



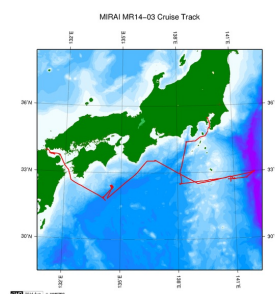
— ... Observation Line — ... Navigation ● ... Observation, Dive Point, Hole

### Data List

File names

☐ MR14-03\_corr.tmag

### Related Information



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