

MIRAI MR11-03 Total Magnetic Intensity (TMI)

Last Modified: 2019-06-26

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

Cruise ID: [MR11-03](#)

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

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR11-03_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)

2011-04-23 23:36 ~ 2011-04-25 07:14

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 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)

Latitude (degree)

Longitude (degree)

Observed total magnetic field intensity (nT)

Quality control of data

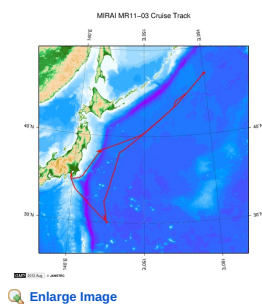
Following criteria were used for removal of data of low reliability:

- 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 ± 4000 nT
- Spatial gradient of the total geomagnetic field intensity anomaly exceeding ± 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



MR11-03

Ship Name: MIRAI
Period: 2011-04-14 - 2011-05-05
Chief Scientist: Makio Honda (JAMSTEC)
Project Name: [Station K2, Station S1, Station KEO, Station KNOT]
Proposal ▶ Studies on the microbial-geochemical processes that regulate the operation of the biological pump in the subarctic and subtropical regions of the western North Pacific

Update History

| | |
|------------|-------------------------------------|
| 2019-06-26 | An observation data was registered. |
| 2018-06-29 | An observation data was registered. |
| 2018-05-12 | An observation data was registered. |
| 2013-05-09 | An observation data was registered. |

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KAIYO
YOKOSUKA
MIRAI
KAIREI
CHIKYU
KAIMEI
SHINSEI MARU
HAKUHO MARU

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YOKOSUKA DEEP TOW
6K Camera DEEP TOW
6K Sonar DEEP TOW
KM-ROV
POWER GRAB
SAMPLER (SHELL)
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SAMPLER (CLOW)
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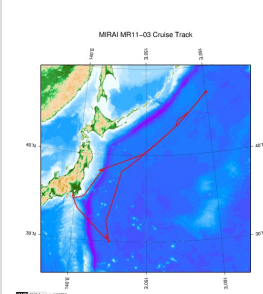
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TMI Corrected

| 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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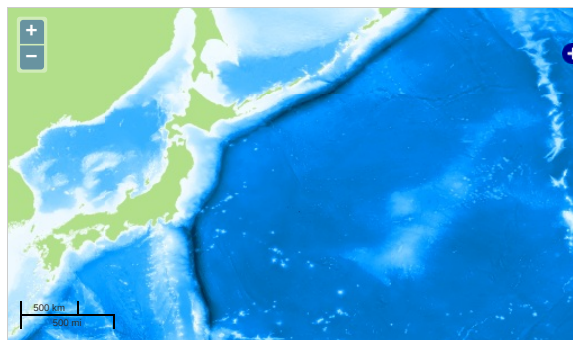
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Observation Map



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

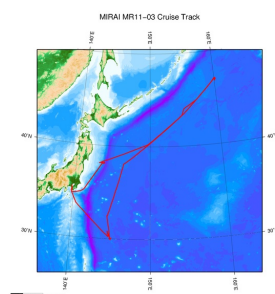
Imagery reproduced from ...

Data List

File names

☐ MR11-03_0_corr.tmag

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