

For Using Data

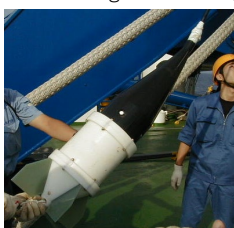
Data Policy	JAMSTEC
Principal Investigator	Data Management Office
Use Constraints	See Terms and Conditions about constrain of use.
Data Citation	See Terms and Conditions about data citation.

Quality level

Processed(DMO)-Corrected

Instrument

Proton magnetometer (YK07-01 -)

**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 - 300 m. As a quality control, data of low reliability was removed (see below).

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
Accuracy :	less than 0.1 nT
Resolution :	0.01 nT
Location :	No.1 Laboratory

Data processing

The following corrections and calculations were performed.

1) International Geomagnetic Reference Field (IGRF)

Synthetic geomagnetic field values are calculated from IGRF 13th 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 1 knot or exceeding 20 knot
- Total geomagnetic field intensity anomaly exceeding +/-4000 nT
- Spatial gradient of the total geomagnetic field intensity anomaly exceeding +/-300 nT/km

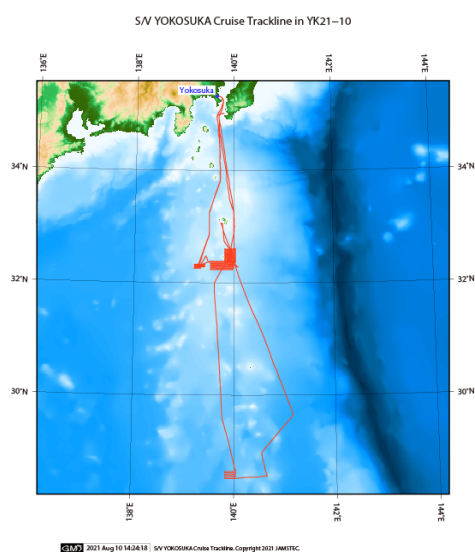
Note

- 1) File naming rule : Cruise ID_corr.tmag
- 2) Sampling rate : 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 DMO at "dmo@jamstec.go.jp".

Related Information



YK21-10

Ship Name:	YOKOSUKA
Period:	2021/06/12 - 2021/06/25
Chief Scientist:	Hidenori Kumagai (JAMSTEC)
Proposal:	Scientific research toward sustainable utilization of marine resources

Format Description for 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	