

## MIRAI MR13-05 Navigation

Last Modified: 2014-08-13

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

Cruise ID: [MR13-05](#)

Navigation: Processed (DMO)-QCed

Data Policy: [JAMSTEC](#)

Observation Items:

Science Keywords:

### Cruise Report

[http://www.godac.jamstec.go.jp/catalog/data/doc\\_catalog/media/MR13-05\\_all.pdf](http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR13-05_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.

### Instrument

Instrument:

Radio navigation system



### Overview

The following information is continuously collected and recorded as the Navigation QCed data during the cruise of R/V MIRAI.

Location  
Meteorological elements  
Surface temperature  
Current direction and velocity  
Water depth

Data are recorded every one minute, and data file named after cruise code.

### System

Manufacturer: SENA Co., Ltd.

Model: Sena Advanced Integrated Navigation System version 19 for MIRAI

Data format version 02.6

### Sensor specifications

#### 1) GPS receiver

Manufacturer: Trimble Navigation Limited (Receiver)

Fugro Survey Limited (D-GPS)

Model: SPS751 (Receiver)

Starfix-XP (D-GPS)

Receiver location: Navigation deck [starboard side]

Navigation deck [port side]

Output data: NMEA (D-GPS)

Manufacturer: Trimble Navigation Limited

Model: 4000DS

Receiver location: Navigation deck [starboard side]

Navigation deck [port side]

Output data: NMEA

#### 2) Doppler sonar

Manufacturer: FURUNO ELECTRIC CO., LTD.

Model: DS-30

Range: Ship speed: -10.00 - +40.00knot [Cross direction]  
-9.99 - +9.99knot [Horizontal direction]

Current direction and speed: 0.0 - 9.9knot [All direction]

Accuracy: Current speed: +-(2.0%+0.2knot)

#### 3) Multi narrow beam echo sounder

Manufacturer: L3Communications ELAC Nautik

Model: Sea Beam 3012

Frequency: 12kHz

Range: 50 - 11000m

#### 4) Anemometer

Manufacturer: Koshin Denki Kogyo Co., Ltd.

Model: KE-500

Altitude: 24m (above sea level)

Starting wind speed: 2m/s or less

Durability: 90m/s

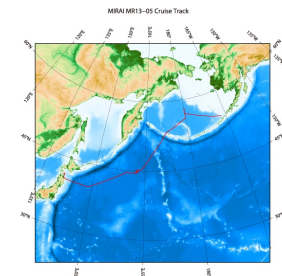
Accuracy: 10m/s or less +/-0.5m/s  
10m/s or more +/-5%

#### Note

Please see the 'data set' and 'readme' for the detail of the following observation.

Air temperature: Marine Meteorology  
Sea surface temperature: Underway Thermosalino Graph  
Atmospheric pressure: Marine Meteorology  
Relative humidity: Marine Meteorology  
Water depth: Bathymetry (MBES)  
Current direction/speed: Shipboard Acoustic Doppler Current Profiler (ADCP)

#### Related Information



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#### MR13-05

Ship Name: MIRAI  
Period: 2013-08-12 - 2013-08-26  
Chief Scientist: Saburo Sakai (JAMSTEC)  
Proposal ▶ Study of distribution and optical characteristics of ice/water clouds and marine aerosols  
Title:

#### Update History

|            |                                     |
|------------|-------------------------------------|
| 2014-08-13 | An observation data was registered. |
| 2013-10-31 | An observation data was registered. |

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#### Go to a Cruise Information

Cruise ID:

#### Go to a Dive Information

Dive ID:

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**JAMSTEC** 国立研究開発法人  
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## MIRAI MR13-05 Navigation

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### Navigation Qced

The one record of this data has 117 bytes of data part and 12 bytes of flag part.

Data part

| 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 - 19   | Datum                            | a3            |                 | W84:WGS84<br>TD_:TOKYO DATUM   |
| 4   | 21 - 31   | Latitude                         | i2,x1,f7.4,a1 | degree - minute | dd-mm.mmmN(S)  |
| 5   | 33 - 44   | Longitude                        | i3,x1,f7.4,a1 | degree - minute | ddd-mm.mmmE(W)   |
| 6   | 46 - 49   | Ship speed<br>(Ground)           | f4.1          | knot            |  |
| 7   | 51 - 55   | Course<br>(Ground)               | f5.1          | degree          |  |
| 8   | 57 - 60   | Ship speed<br>(Water)            | f4.1          | knot            | *1   |
| 9   | 62 - 66   | Gyro                             | f5.1          | degree          |  |
| 10  | 68 - 72   | Air temperature                  | f5.1          | deg-C           |  |
| 11  | 74 - 78   | Sea surface temperature<br>(SST) | f5.2          | deg-C           |  |
| 12  | 80 - 85   | Atmospheric pressure             | f6.1          | hPa             | Adjusted to the sea surface level  |
| 13  | 87 - 89   | Relative humidity                | i3            | %               |  |
| 14  | 91 - 93   | True wind direction              | i3            | degree          | Averaged over the previous 6 seconds *2                                    |
| 15  | 95 - 98   | True wind speed                  | f4.1          | m/sec           | Averaged over the previous 6 seconds *2<br>No anemometer height adjustment |
| 16  | 100 - 106 | Depth                            | f7.1          | m               |  |
| 17  | 108 - 112 | Current direction                | f5.1          | degree          | Calculated value   |
| 18  | 114 - 117 | Current speed                    | f4.1          | knot            | Calculated value   |

Flag part

| No. | Column | Description | Format | Remarks   |
|-----|--------|-------------|--------|---|
| 19  | 119    | Flag 1      | i1     | QC flag for 'Latitude' and 'Longitude'              |
| 20  | 120    | Flag 2      | i1     | QC flag for 'Ship speed (Ground)'                   |
| 21  | 121    | Flag 3      | i1     | QC flag for 'Course (Ground)'                       |
| 22  | 122    | Flag 4      | i1     | QC flag for 'Ship speed (Water)'                    |
| 23  | 123    | Flag 5      | i1     | QC flag for 'Gyro'                                  |
| 24  | 124    | Flag 6      | i1     | QC flag for 'Air temperature'                       |
| 25  | 125    | Flag 7      | i1     | QC flag for 'Sea Surface Temperature (SST)'         |
| 26  | 126    | Flag 8      | i1     | QC flag for 'Atmospheric pressure'                  |
| 27  | 127    | Flag 9      | i1     | QC flag for 'Relative humidity'                     |
| 28  | 128    | Flag 10     | i1     | QC flag for 'Wind direction' and 'Wind speed'       |
| 29  | 129    | Flag 11     | i1     | QC flag for 'Depth'                                 |
| 30  | 130    | Flag 12     | i1     | QC flag for 'Current direction' and 'Current speed' |

\*1 The plus and minus sign of No.8 [Ship speed (Water)] about R/V KAIREI indicates the velocity of direction of a bow and stem.

\*2 No.14 [True wind direction] and No.15 [True wind speed] about R/V SHINSEI MARU are instantaneous value.

\* The terminator of each record is 'CR+LF' code.

\* Missing value and format error value are filled with '9'.

Definition of Quality Control Flags

Flag 1 : Longitude and Latitude

- 1 - accepted
- 2 - questionable value
- 4 - failed in location check
- 9 - system error or input error

Flag 2 : Ship speed (ground)

- 1 - accepted
- 2 - questionable value
- 4 - failed range check (under 20 knots)
- 9 - system error or input error

Flag 3 : Course (ground)

- 1 - accepted
- 2 - questionable value
- 4 - failed range check (0 ~ 360 degree)
- 9 - system error or input error

Flag 4 : Ship speed (water)

- 1 - accepted
- 4 - failed range check (under 20 knots)
- 9 - system error or input error

9 - system error or input error

Flag 5 : Gyro

- 1 - accepted
- 4 - failed range check (0 ~ 360 degree)
- 9 - system error or input error

Flag 6 : Air temperature

- 3 - assumed good\*
- 4 - failed range check (-20 ~ 40 degC)
- 9 - system error or input error

Flag 7 : Sea surface temperature

- 3 - assumed good\*
- 4 - failed range check (-3 ~ 37 degC)
- 9 - system error or input error

Flag 8 : Atmospheric pressure

- 3 - assumed good\*
- 4 - failed range check (890 ~ 1040 hPa)
- 9 - system error or input error

Flag 9 : Relative humidity

- 3 - assumed good\*
- 4 - failed range check (0 ~ 100 %)
- 9 - system error or input error

Flag 10 : Wind direction and wind speed

- 3 - assumed good\*
- 4 - failed range check (0 ~ 360 degree : wind direction, 0 ~ 60 m/s : wind speed)
- 9 - system error or input error

Flag 11 : Depth

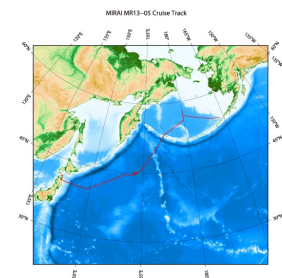
- 3 - assumed good\*
- 4 - failed range check (4 ~ 11000 m)
- 9 - system error or input error

Flag 12 : Current direction and current speed

- 3 - assumed good\*
- 4 - failed range check (0 ~ 360 degree : current direction, 0 ~ 5 knots : current speed)
- 9 - system error or input error

\* 'assumed good' means that this data passed range check but may contains leap or inappropriate zero.

## Related Information



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### MR13-05

Ship Name: MIRAI

Period: 2013-08-12 - 2013-08-26

Chief Scientist: Saburo Sakai (JAMSTEC)

Proposal ▶ Study of distribution and optical characteristics of ice/water clouds and marine aerosols

Title:

## Update History

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### Go to a Dive Information

Dive ID:



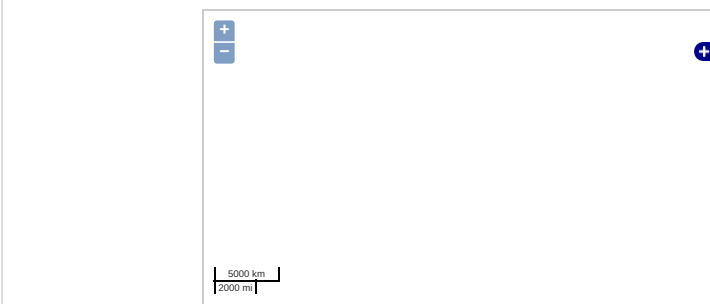
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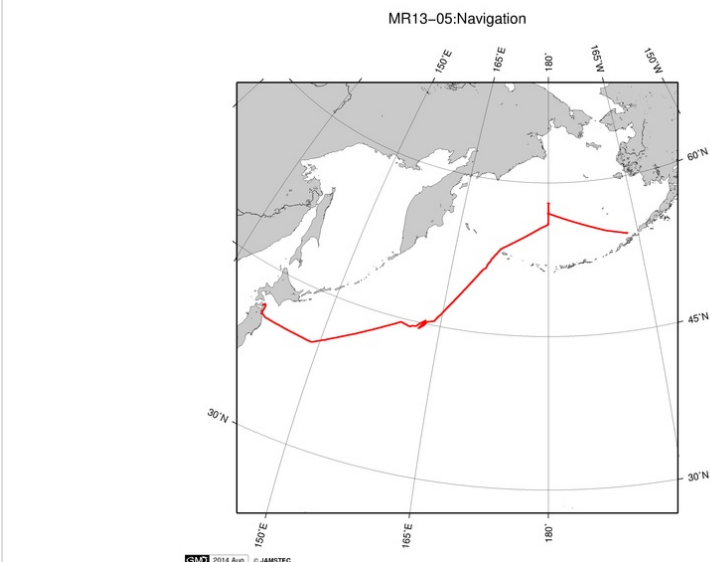
### Observation Map



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

Imagery reproduced from ...

### Figures



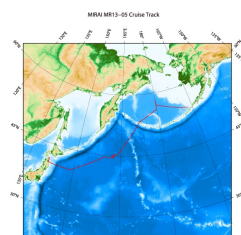
### Data List

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File names

☐ MR13-05.dat

### Related Information



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