

## MIRAI MR20-E01 Navigation

Last Modified: 2020-11-30

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

Cruise ID: [MR20-E01](#)

Navigation: Processed (DMO)-QCed

Data Policy: [JAMSTEC](#)

Observation Items:

Science Keywords:

#### Cruise Report

[http://www.godac.jamstec.go.jp/catalog/data/doc\\_catalog/media/MR20-E01\\_all.pdf](http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR20-E01_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: Fugro Survey Limited  
Model: StarPack-D  
Receiver location: Compass deck [starboard side]  
Compass 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: Elac  
Model: SeaBeam3012  
Frequency: 12kHz  
Range: 50m - 11,000m

##### 4) Anemometer

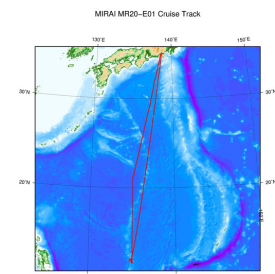
Manufacturer: Koshin Denki Kogyo Co., Ltd.  
Model: KE-500  
Altitude: 24m (above sea level)  
Starting wind speed: 2m/s or less  
Durability: 90m/s  
Accuracy: 10m/s or less +/- 0.5m/s  
10m/s or more +/- 5%

#### 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



[Enlarge Image](#)

#### MR20-E01

Ship Name: MIRAI

Period: 2020-08-01 - 2020-09-13

Chief Scientist: Satoru Yokoi (JAMSTEC)

Proposal ▶ Study on air-sea interaction associated with the northward-propagating boreal summer intraseasonal oscillation

Title: intraseasonal oscillation

#### Update History

|            |                                    |
|------------|------------------------------------|
| 2020-11-30 | An observation data was registerd. |
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[Update History](#)

[Feeds](#)

#### Lists

[Publication List](#)

[Amount of Public Info.](#)

#### Data

[Map Search](#)

[Data Tree](#)

[Detailed Search](#)

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[NATSUSHIMA](#)

[KAIYO](#)

[YOKOSUKA](#)

[MIRAI](#)

[KAIREI](#)

[CHIKYU](#)

[KAIMEI](#)

[SHINSEI MARU](#)

[HAKUHO MARU](#)

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[SHINKAI 2000](#)

[SHINKAI 6500](#)

[DEEP TOW](#)

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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  
海洋研究開発機構  
JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY

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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 (Ground)           | f4.1          | knot            |  |
| 7   | 51 - 55   | Course (Ground)               | f5.1          | degree          |  |
| 8   | 57 - 60   | Ship speed (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 (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

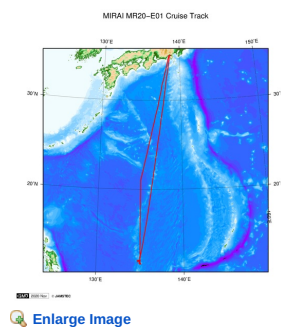
- 3 - assumed good\*
- 4 - failed range check (4 ~ 11000 m)
- 9 - system error or input error

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



### MR20-E01

Ship Name: MIRAI  
Period: 2020-08-01 - 2020-09-13  
Chief Scientist: Satoru Yokoi (JAMSTEC)  
Proposal ▶ Study on air-sea interaction associated with the northward-propagating boreal summer  
Title: intraseasonal oscillation

## Update History

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What's New  
Update History  
Feeds

### Lists

Publication List  
Amount of Public Info.

### Data

Map Search  
Data Tree  
Detailed Search

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BMS

### Go to a Cruise Information

Cruise ID:

### Go to a Dive Information

Dive ID:



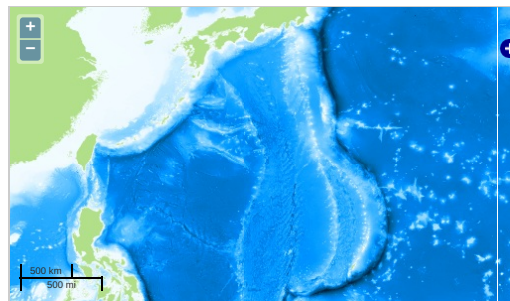
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[ReadMe](#) [Observation Data](#) [Data Format](#)

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Science Keywords:

### Observation Map

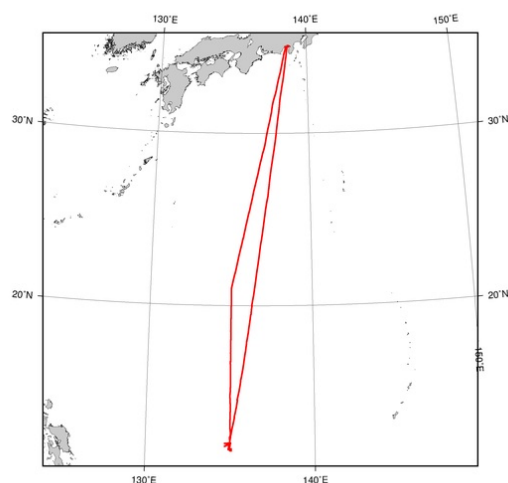


... Observation Line ... Navigation ... Observation, Dive Point, Hole

Imagery reproduced from ...

### Figures

MR20-E01: Navigation



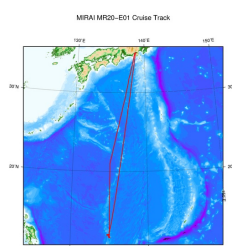
### Data List

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File names

☐ MR20-E01.dat

### Related Information



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[Application for Data and Samples](#)  
[Data Policy](#)

[What's New](#)  
[Update History](#)  
[Feeds](#)

Lists

[Publication List](#)  
[Amount of Public Info.](#)

Data

[Map Search](#)  
[Data Tree](#)  
[Detailed Search](#)

Information of the Ships

[NATSUSHIMA](#)  
[KAIYO](#)  
[YOKOSUKA](#)  
[MIRAI](#)  
[KAIREI](#)  
[CHIKYU](#)  
[KAIMEI](#)  
[SHINSEI MARU](#)  
[HAKUHO MARU](#)

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[KAIKO](#)  
[SHINKAI 2000](#)  
[SHINKAI 6500](#)  
[DEEP TOW](#)  
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