

## MIRAI MR12-02 Leg1 Navigation

Last Modified: 2014-08-09

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

Cruise ID: [MR12-02 Leg1](#)

Navigation: Processed (DMO)-QCed

Data Policy: [JAMSTEC](#)

Observation Items:

Science Keywords:

### Cruise Report

[http://www.godac.jamstec.go.jp/catalog/data/doc\\_catalog/media/MR12-02\\_leg1-2\\_all.pdf](http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR12-02_leg1-2_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: L3 Communications 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: 0.2m/s or less

Durability: 90m/s

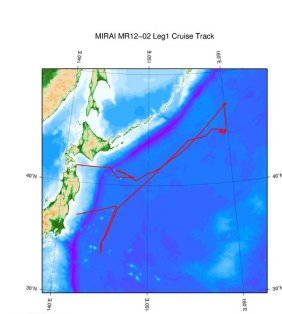
Accuracy: 10m/s or less +/-0.5m/s  
\$nbsp;10m/s or more +/-5%

#### 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](#)

#### MR12-02 Leg1

Ship Name: MIRAI  
Period: 2012-06-04 - 2012-06-24  
Chief Scientist: Makio Honda (JAMSTEC)  
Project Name: [Station K2, Station KNOT]  
Proposal ▶ Change in material cycles and ecosystem by the climate change and its feedback  
Title:

#### Update History

2014-08-09	An observation data was registerd.
2012-12-06	An observation data was registerd.
2012-10-26	An observation data was registerd.
2012-10-19	An observation data was registerd.

#### JAMSTEC

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#### 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

#### Information of the Submersibles

KAIKO  
SHINKAI 2000  
SHINKAI 6500  
DEEP TOW  
HYPER-DOLPHIN  
URASHIMA  
YOKOSUKA DEEP TOW  
6K Camera DEEP TOW  
6K Sonar DEEP TOW  
KM-ROV  
POWER GRAB SAMPLER (SHELL)  
POWER GRAB SAMPLER (CLOW)  
BMS

#### Go to a Cruise Information

Cruise ID:

#### Go to a Dive Information

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

## MIRAI MR12-02 Leg1 Navigation

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

Cruise ID: [MR12-02 Leg1](#)

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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 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 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

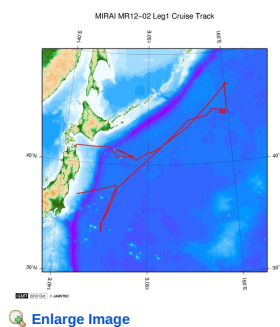
- 3 - assumed good\*
- 4 - failed range check (4 ~ 11000 m)
- 9 - system error or input error

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



### MR12-02 Leg1

Ship Name: MIRAI  
Period: 2012-06-04 - 2012-06-24  
Chief Scientist: Makio Honda (JAMSTEC)  
Project Name: [Station K2, Station KNOT]  
Proposal ▶ Change in material cycles and ecosystem by the climate change and its feedback  
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KM-ROV  
POWER GRAB SAMPLER (SHELL)  
POWER GRAB SAMPLER (CLOW)  
BMS

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Cruise ID:

### Go to a Dive Information

Dive ID:



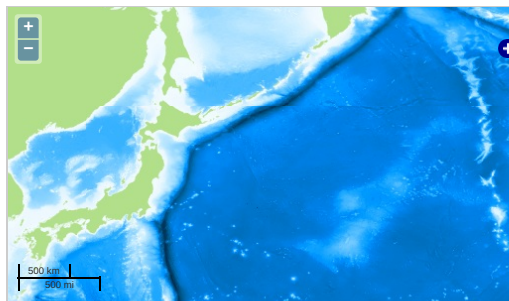
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### Observation Map

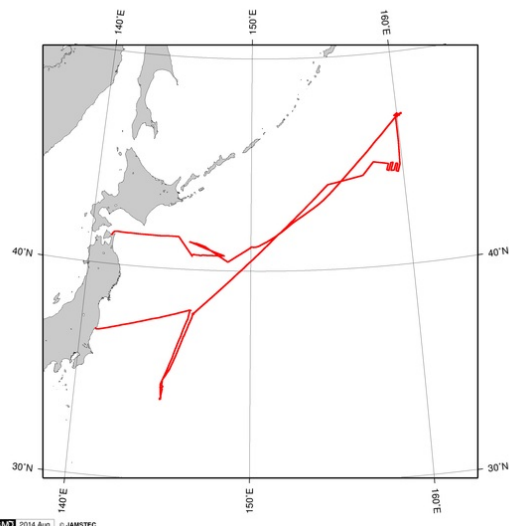


... Observation Line ... Navigation ... Observation, Dive Point, Hole

Imagery reproduced from ...

### Figures

MR12-02 Leg1:Navigation



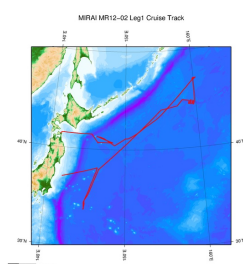
### Data List

[Add to Basket](#)

#### File names

☐ MR12-02\_leg1.dat

### Related Information



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