

## HAKUHO MARU KH-21-1 Navigation

Last Modified: 2021-04-30

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

Cruise ID: [KH-21-1](#)

Navigation: Processed (DMO)-QCed

Data Policy: [JURCAOS-JAMSTEC](#)

Observation Items:

Science Keywords:

### 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:

Wide Area Differential GPS system



### Overview

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

- 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: Clover Tech  
Model: DL1800

### Sensor specifications

#### 1) GPS receiver

Manufacturer: Trimble Navigation Limited  
FURUNO ELECTRIC CO., LTD.  
Model: SPS356  
GP-170  
Receiver location:

#### 2) Seawater Temperature

Manufacturer: Murayama DENKI Ltd.  
Model: RK(C)  
S/No.: 084.2  
Measurement range: -10 - +40degC  
Accuracy: +/-0.5%  
Sensor location: Outer Panel [port side] (near Fr.64)

#### 3) Doppler sonar

Manufacturer: FURUNO ELECTRIC CO., LTD.  
Model: DS-60  
Range: Ship speed: -10.00 - +40.00 knot [Cross direction]  
-9.99 - 9.99 knot [Horizontal direction]  
Current direction and speed: 0.00 - 9.99 knot [All direction]  
Accuracy: Water tracking: +/-1.0% or +/-0.1 knot, whichever is greater

#### 4) Multi narrow beam echo sounder

Manufacturer: Elac  
Model: SeaBeam3020  
Frequency: 20kHz  
Range: 50m - 11,000m

#### 5) Single beam echo sounder

Manufacturer: Kongsberg Maritime  
Model: EA 600  
Frequency: 12kHz

#### 6) Anemometer

Manufacturer: NIPPON ELECTRIC INSTRUMENT, INC.  
Model: N-162A  
Altitude: 17m  
Range: Wind direction: all direction  
Wind speed: 2 - 60m/s

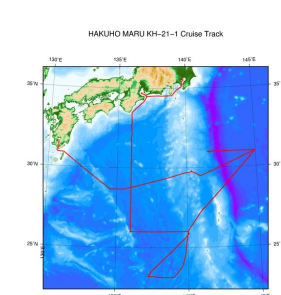
Accuracy:                      Wind speed:                      +/- 0.5m/s (less 10m/s)  
10m/s or more +/-5%

#### Note

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

Water depth:                      Bathymetry (MBES)  
Current direction/speed:                      Shipboard Acoustic Doppler Current Profiler (ADCP)

#### Related Information



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#### KH-21-1

Ship Name: HAKUHO MARU  
Period: 2021-02-13 - 2021-02-25  
Chief Scientist: Eitarou Oka (The University of Tokyo)  
Proposal Study of formation, advection, and dissipation of Subtropical Mode Water using profiling floats  
Title: equipped with dissolved oxygen and pH sensors

#### Update History

Date	Description
2021-04-30	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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## HAKUHO MARU KH-21-1 Navigation

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Cruise ID: [KH-21-1](#)

Navigation: Processed (DMO)-QCed

Data Policy: [JURCAOS-JAMSTEC](#)

### 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.mmmmN(S)
5	33 - 44	Longitude	i3,x1,f7.4,a1	degree - minute	ddd-mm.mmmmE(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

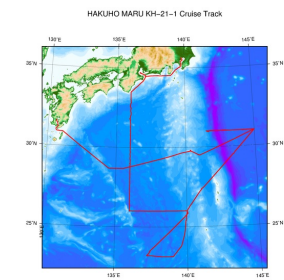
- 3 - assumed good\*
- 4 - failed range check (4 ~ 11000 m)
- 9 - system error or input error

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



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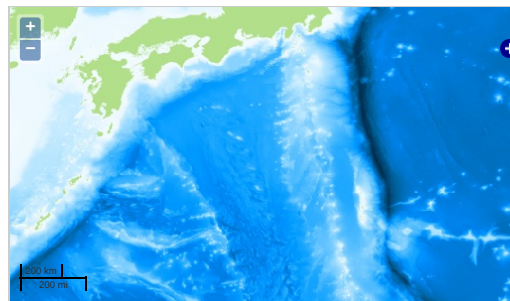
Navigation: Processed (DMO)-QCed

Data Policy: [JURCAOS-JAMSTEC](#)

Observation Items:

Science Keywords:

### Observation Map

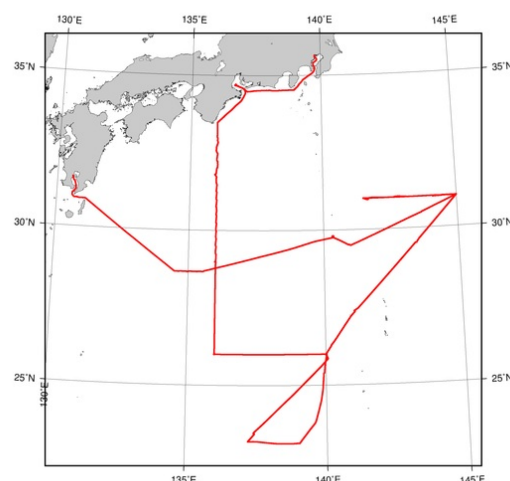


— ... Observation Line — ... Navigation ● ... Observation, Dive Point, Hole

Imagery reproduced from ...

### Figures

KH-21-1: Navigation



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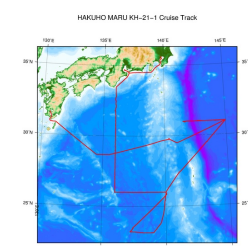
### Data List

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File names

☐ KH-21-1.dat

### Related Information



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