

## MIRAI MR13-06 Leg1 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2016-04-30

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

Cruise ID: [MR13-06 Leg1](#)

Conductivity-Temperature-Depth Profiler (CTD): Processed (PI)

Data Policy: [JAMSTEC](#)

Observation Items: Pressure, Temperature, Salinity, Dissolved oxygen, Fluorescence, PAR

Science Keywords:

OCEANS > OCEAN CHEMISTRY > OXYGEN  
OCEANS > OCEAN TEMPERATURE > WATER TEMPERATURE  
OCEANS > SALINITY/DENSITY > SALINITY  
OCEANS > OCEAN OPTICS > PHOTOSYNTHETICALLY ACTIVE RADIATION  
OCEANS > OCEAN OPTICS > FLUORESCENCE

Cruise Report

[http://www.godac.jamstec.go.jp/catalog/data/doc\\_catalog/media/MR13-06\\_leg1-2\\_all.pdf](http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR13-06_leg1-2_all.pdf)

### For Using Data

**Principal Investigator**

Shigeto Nishino (JAMSTEC)

**Use Constraints**

See [Terms and Conditions](#) about constrain of use.

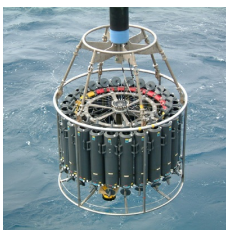
**Data Citation**

See [Terms and Conditions](#) about data citation.

### Instrument

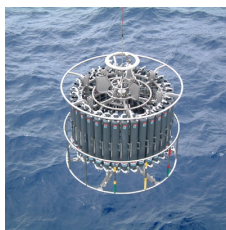
Instrument:

Water sampling system with CTD (30  
litters \* 24 bottles)



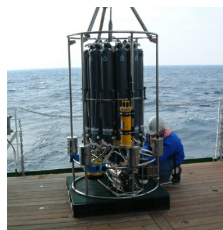
Instrument:

Water sampling system with CTD (12  
litters \* 36 bottles)



Instrument:

Water sampling system with CTD (12  
litters \* 12 bottles)



Instrument:

Conductivity temperature depth  
measurements (CTD)



### Data Citation

Nishino, S., 2013, R/V Mirai Cruise Report MR13-06, edited by S. Nishino, 226pp., JAMSTEC, Yokosuka, Japan.

Upon consultation in advance with the chief of investigation and the person(s) in charge of research issues who gathered that data, we request that the text of the results material contain a statement to the effect that it was obtained during the R/V Mirai cruise of MR13-06, the Chief Scientist, Shigeto Nishino (JAMSTEC), and the following Principal Investigators (PIs) for gathering the data.

Chief Scientist

Shigeto Nishino

Japan Agency for Marine - Earth Science and Technology (JAMSTEC)

2-15 Natsushima, Yokosuka, Kanagawa 237-0061, Japan

Tel: +81-46-867-9487, Fax: +81-46-867-9437

E-mail: [nishinos@jamstec.go.jp](mailto:nishinos@jamstec.go.jp)

PI for CTD

Shigeto Nishino (JAMSTEC)

And also the data were obtained under the GRENE (Green Network of Excellence) Arctic Climate Change Research Project of the Ministry of Education, Culture, Sports, Science and Technology in Japan (MEXT).

### Overview

Exchange format data (211 CSV files)

Output items are as follows.

- Pressure (SN 1027)
- Temperature (SN 031359)
- Salinity (SN 042435)
- Dissolved oxygen (RINKO III; SN 0024)

- Dissolved oxygen (SBE43; SN 430575)
- Fluorescence (SN 2936)
- Light transmission (SN 1363DR)
- Coefficient of beam attenuation (SN 1363DR)
- PAR (SN 049)

#### System

- (1) Pressure sensor: SBE9plus, Sea-Bird Electronics, Inc.
- (2) Temperature sensor: SBE3, Sea-Bird Electronics, Inc.
- (3) Salinity sensor: SBE4, Sea-Bird Electronics, Inc.
- (4) DO sensor: RINKO III, JFE Advantech Co., Ltd.
- (5) DO sensor: SBE43, Sea-Bird Electronics, Inc.
- (6) Fluorometer: Seapoint Sensors, Inc.
- (7) Transmissometer: C-Star, WET Labs, Inc.
- (8) PAR sensor: Satlantic, Inc.

#### Correction method

##### - Temperature

Coefficients of primary temperature correction: correct\_tmp\_pri\_MR1306\_p490.txt

Coefficients of dependencies for pressure (Pcor) and time (Tcor) and offset were calculated from the data > 490dbar.

$\text{corrCTDTMP} = \text{CTDTMP} - (\text{Pcor} * \text{CTDPRS} + \text{Tcor} * \text{Sumdate} + \text{offset})$

(Sumdate is assumed to be elapsed days from the sensor calibration date)

##### - Salinity

Coefficients of primary conductivity correction: correct\_cnd\_pri\_MR1306\_t.txt

Coefficients of dependencies for pressure (Pcor), conductivity (Ccor), conductivity \* pressure (CPcor) and time (Tcor) and offset were calculated from the data, the standard deviation of which was < 0.0002, with a less weighted operation if the data were < 500dbar.

$\text{corrCTDCND} = \text{CTDCND} - (\text{Pcor} * \text{CTDPRS} + \text{Ccor} * \text{CTDCND} + \text{CPcor} * \text{CTDCND} * \text{CTDPRS} + \text{Tcor} * \text{Sumdate} + \text{offset})$

(Sumdate is assumed to be elapsed days from the time of the first observation at Sta. 000, Cast 1 (000M001), when the CTD was at the bottom.)

##### - Dissolved oxygen (RINKO III)

Coefficients of primary RINKO III correction: correct\_rnk\_pri\_MR1306\_t.txt

Time variables of primary RINKO III: MR1306\_prs\_scanmax.txt

##### - Dissolved oxygen (SBE43)

Coefficients of primary SBE43 correction: correct\_o43\_pri\_MR1306.txt

First, we calculated gradients of up cast dissolved oxygen profiles from the bottle data. Then, we weighted the gradients and calculated correction coefficients for the dissolved oxygen based on SBE\_application note 64-2. The corrected dissolved oxygen was estimated from the coefficients as follows.

$\text{corrCTDOXY} = (\text{soc} + \text{cof1}) * (\text{CTDOXV} + \text{voffset} + \text{cof6}) * (1.0 + ((\text{A1} + \text{cof2}) * \text{CTDTEMP}) + ((\text{B1} + \text{cof3}) * \text{CTDTEMP}^2) + ((\text{C1} + \text{cof4}) * \text{CTDTEMP}^3)) * \text{saturation} * \exp((\text{E1} + \text{cof5}) * \text{CTDPRS} / (\text{CTDTEMP} + 273.15))$

##### - Fluorescence

Coefficients of fluorescence correction: correct\_fl\_MR1306\_w.txt

We linearly correlated the fluorescence with the bottle data obtained from the Welschmeyer method. The data used for the calculation were sampled from mid night to 5 a.m. (LST).

$\text{corrCTDFL} = \text{slope} * \text{CTDFL} + \text{offset}$

##### - Light transmission

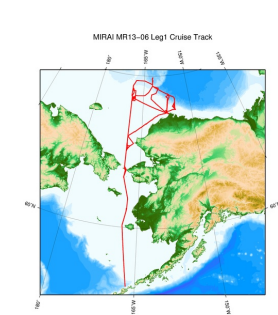
Time variable of light transmission: xmiss\_sumdate\_MR1306.txt

Vdark was an average of CTD pre-casts for all stations.

Vref was calculated from slopes of temporal variation in the following casts; 029M001, 030M001, 031M001, 032M001, 033M001, and 056M001.

Vref offset was set to be a value not to exceed 100% for the light transmission and fall below 0 for the coefficient of beam attenuation, when they were calculated from the above-mentioned slope.

#### Related Information



[Enlarge Image](#)

##### MR13-06 Leg1

Ship Name: MIRAI

Period: 2013-08-28 - 2013-10-07

Chief Scientist: Shigeto Nishino (JAMSTEC)

Project Name: [Arctic Ocean Climate System Reaserch]

Proposal ▶ Study on environmental changes in the sea-ice reduction regions of the Arctic Ocean

Title:

#### Update History

- |            |                                    |
|------------|------------------------------------|
| 2016-04-30 | An observation data was registerd. |
| 2015-10-31 | An observation data was registerd. |

#### JAMSTEC

- Site Policy
- Privacy Policy
- 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

#### Information of the Submersibles

- KAICO
- 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)

#### Go to a Cruise Information

Cruise ID:

#### Go to a Dive Information

Dive ID:

POWER GRAB SAMPLER  
(CLOW)  
BMS

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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

## MIRAI MR13-06 Leg1 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2016-04-30

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

Cruise ID: [MR13-06 Leg1](#)

Conductivity-Temperature-Depth Profiler (CTD): Processed (PI)

Data Policy: [JAMSTEC](#)

### CTD WOCE-type1

#### Format Description for the Processed (PI) Data

Provided in the Exchange Format of CCHDO (CLIVAR and Carbon Hydrographic Data Office). Please see the following link for details of Exchange Format.

[CCHDO | CLIVAR & Carbon Hydrographic Data Office](#)

Data in following cruise is not expressed with Exchange Format. Please see the site of each cruise for format.

MR02-K05 Leg1

MR04-05

#### Format Description for the QCed Data

Each data file contains one line header (meta data) followed by data lines for each cast.

The number of data lines are recorded in the header.

Header part

No.	Column	Content	Format	Remarks
1	1	Header ID	a1	fixed as '#'
2	3 - 6	Data ID	a4	CTD
3	8 - 22	Cruise ID	a15	MYYY-(K)XX(_legx)
4	24 - 31	Cast name	a8	
5	33 - 40	Date	i8	YYYYMMDD (UTC)
6	42 - 45	Time	i4	hhmm (UTC)
7	47 - 55	Latitude	i2,a1,f5.2,a1	dd-mm.mmN(S)
8	57 - 66	Longitude	i3,a1,f5.2,a1	ddd-mm.mmE(W)
9	68 - 71	Number of data lines	i4	
10	72 - 73	Terminator	-	CR+LF

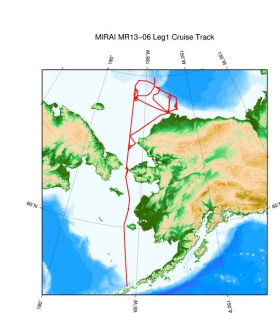
Data part

No.	Column	Content	Unit	Format	Remarks
1	1 - 11	Pressure	dbar	f11.3	
2	12 - 22	Temperature	deg-C	f11.4	ITS-90
3	23 - 33	Salinity	PSU	f11.4	PSS-78
4	34 - 44	Dissolved oxygen	umol/kg	f11.3	
5	45 - 55	Flag	-	i11	1 - 7 : space 8 : flag of pressure 9 : flag of temperature 10 : flag of salinity 11 : flag of dissolved oxygen * reference : <a href="#">Definition of Quality Control Flags</a>
6	56 - 57	Terminator	-	-	CR+LF

Each contents of the data part is stored in 11 bytes.

Missing value is presented by '-5', and error value is presented by '-9'.

### Related Information



[Enlarge Image](#)

#### MR13-06 Leg1

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Project Name: [Arctic Ocean Climate System Reaserch]

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Go to a Dive Information

Dive ID:

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HAKUHO MARU

6K Camera DEEP TOW  
6K Sonar DEEP TOW  
KM-ROV  
POWER GRAB SAMPLER  
(SHELL)  
POWER GRAB SAMPLER  
(CLOW)  
BMS

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JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY

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OCEANS > OCEAN OPTICS > FLUORESCENCE

### Observation Map

1. Clicking the icon displays a balloon with observation information.
2. Then click the observation name, figures will be displayed.



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

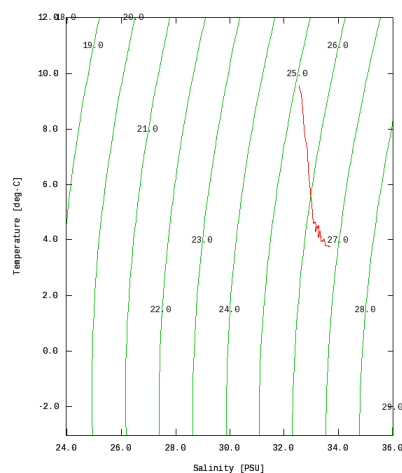
Imagery reproduced from ...

### Figures

00000\_00001\_ct1



MR13-06 Leg1: 00000\_00001\_ct1  
Conductivity-Temperature-Depth Profiler (CTD): Salinity



### Data List

[Add to Basket](#)























☐ File names

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 00086_00001_ct1.csv
 MR1306_prs_scanmax.txt
 correct_cnd_pri_MR1306_t.txt
 correct_fl_MR1306_w.txt
 correct_o43_pri_MR1306.txt
 correct_rnk_pri_MR1306_t.txt
 correct_tmp_pri_MR1306_p490.txt
 xmiss_sumdate_MR1306.txt

● Observation List  
The list of observation is shown as follows.

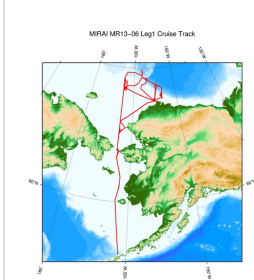
Observation	Time and Date	Lat. [°]	Lon. [°]
00000_00001_ct1	2013-08-28 20:25	54.2623	-166.5400
00001_00001_ct1	2013-08-31 19:51	65.7697	-168.7510
00002_00001_ct1	2013-08-31 21:45	65.7052	-168.5230
00003_00001_ct1	2013-08-31 22:58	65.6573	-168.2520
00004_00001_ct1	2013-09-01 01:45	66.0040	-168.7480
00005_00001_ct1	2013-09-01 04:45	66.5032	-168.7510
00006_00001_ct1	2013-09-01 08:05	67.0032	-168.7440
00007_00001_ct1	2013-09-01 11:12	67.5015	-168.7490
00008_00001_ct1	2013-09-01 18:48	68.0042	-168.7630
00009_00001_ct1	2013-09-01 22:17	68.5033	-168.7460
00010_00001_ct1	2013-09-02 01:52	69.0025	-168.7490
00011_00001_ct1	2013-09-03 05:09	71.3430	-157.6090
00012_00001_ct1	2013-09-03 07:34	71.5808	-157.8440
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00014_00001_ct1	2013-09-04 00:29	71.2452	-157.1710
00015_00001_ct1	2013-09-04 03:08	71.2788	-157.2730
00016_00001_ct1	2013-09-04 03:55	71.3263	-157.3500
00017_00001_ct1	2013-09-04 05:31	71.3707	-157.4300
00018_00001_ct1	2013-09-04 06:50	71.4112	-157.5070
00019_00001_ct1	2013-09-04 08:40	71.4542	-157.5910
00020_00001_ct1	2013-09-04 09:34	71.4975	-157.6760
00021_00001_ct1	2013-09-04 11:43	71.4923	-156.9520
00022_00001_ct1	2013-09-04 13:56	71.5468	-156.3540
00023_00001_ct1	2013-09-04 16:22	71.6270	-155.7600
00024_00001_ct1	2013-09-04 19:21	71.6087	-154.8510
00025_00001_ct1	2013-09-04 21:07	71.6832	-154.9750
00026_00001_ct1	2013-09-04 22:51	71.7365	-155.1100
00027_00001_ct1	2013-09-05 01:09	71.8130	-155.2960
00028_00001_ct1	2013-09-05 02:57	71.9348	-155.6560
00029_00001_ct1	2013-09-05 08:55	72.6803	-154.7990
00030_00001_ct1	2013-09-07 22:34	74.5003	-161.9840
00031_00001_ct1	2013-09-08 05:47	74.5305	-161.9120
00032_00001_ct1	2013-09-09 02:27	74.5373	-161.9670
00033_00001_ct1	2013-09-09 08:45	74.1678	-162.0050
00034_00001_ct1	2013-09-09 21:39	73.9972	-168.7420

Observation	Time and Date	Temp	Lat, Long
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00038_00001_ct1	2013-09-10 14:56	72.5012	-167.7480
00039_00001_ct1	2013-09-10 16:47	72.7500	-167.7420
00040_00001_ct1	2013-09-10 18:48	73.0003	-167.7470
00041_00001_ct1	2013-09-10 21:13	72.7532	-168.2410
00041_00002_ct1	2013-09-11 02:41	72.7495	-168.2510
00041_00003_ct1	2013-09-11 08:43	72.7503	-168.2420
00041_00004_ct1	2013-09-11 14:43	72.7487	-168.2500
00041_00005_ct1	2013-09-11 20:42	72.7505	-168.2500
00041_00006_ct1	2013-09-12 02:41	72.7510	-168.2510
00041_00007_ct1	2013-09-12 08:43	72.7492	-168.2460
00041_00008_ct1	2013-09-12 14:42	72.7498	-168.2520
00041_00009_ct1	2013-09-12 20:41	72.7498	-168.2610
00041_00010_ct1	2013-09-13 02:40	72.7498	-168.2450
00041_00011_ct1	2013-09-13 08:43	72.7503	-168.2470
00041_00012_ct1	2013-09-13 14:43	72.7497	-168.2470
00041_00013_ct1	2013-09-13 20:42	72.7513	-168.2530
00041_00014_ct1	2013-09-14 02:41	72.7508	-168.2470
00041_00015_ct1	2013-09-14 08:42	72.7495	-168.2500
00041_00016_ct1	2013-09-14 14:49	72.7495	-168.2500
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00041_00028_ct1	2013-09-17 14:42	72.7502	-168.2490
00041_00029_ct1	2013-09-17 20:41	72.7495	-168.2480
00041_00030_ct1	2013-09-18 02:41	72.7512	-168.2480
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00041_00065_ct1	2013-10-01 14:40	72.7485	-168.2490
00042_00001_ct1	2013-09-11 00:33	72.8992	-168.2460
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00042_00011_ct1	2013-09-21 00:40	72.9013	-168.2600

Observation	Time and Date	Lat (°N)	Lon (°E)
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00042_00014_ct1	2013-09-24 00:34	72.9000	-168.2500
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00043_00004_ct1	2013-09-14 06:39	72.6005	-168.2530
00043_00005_ct1	2013-09-15 06:39	72.6002	-168.2480
00043_00006_ct1	2013-09-16 06:40	72.6005	-168.2490
00043_00007_ct1	2013-09-17 06:40	72.6007	-168.2470
00043_00008_ct1	2013-09-18 06:41	72.6012	-168.2490
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00044_00011_ct1	2013-09-21 12:38	72.7503	-167.7510
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00044_00016_ct1	2013-10-01 12:36	72.7510	-167.7350
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00045_00003_ct1	2013-09-13 18:42	72.7513	-168.7560
00045_00004_ct1	2013-09-14 18:36	72.7522	-168.7600
00045_00005_ct1	2013-09-15 18:35	72.7513	-168.7570
00045_00006_ct1	2013-09-16 18:35	72.7510	-168.7570
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00045_00009_ct1	2013-09-19 18:33	72.7513	-168.7550
00045_00010_ct1	2013-09-20 18:33	72.7512	-168.7580
00045_00011_ct1	2013-09-21 18:34	72.7503	-168.7520
00045_00012_ct1	2013-09-22 18:34	72.7512	-168.7520
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00062_00001_ct1	2013-10-02 02:05	71.5003	-168.7460
00063_00001_ct1	2013-10-02 05:09	70.9995	-168.7490
00064_00001_ct1	2013-10-02 08:19	70.5000	-168.7490
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00066_00001_ct1	2013-10-02 15:06	69.5000	-168.7450
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00068_00001_ct1	2013-10-02 22:56	68.3013	-167.0450
00069_00001_ct1	2013-10-03 00:58	68.2497	-167.2010
00070_00001_ct1	2013-10-03 01:40	68.2020	-167.3330
00071_00001_ct1	2013-10-03 03:54	68.1010	-167.6760
00072_00001_ct1	2013-10-03 05:07	68.0025	-168.0030
00073_00001_ct1	2013-10-03 07:08	67.8733	-168.2510
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Observation	Time and Date	Lat. [°]	Lon. [°]
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00076_00001_ct1	2013-10-03 17:36	68.2502	-168.7500
00077_00001_ct1	2013-10-03 20:31	68.0008	-168.7560
00078_00001_ct1	2013-10-04 00:08	67.7507	-168.7500
00079_00001_ct1	2013-10-04 02:37	67.4995	-168.7490
00080_00001_ct1	2013-10-04 05:10	67.2508	-168.7500
00081_00001_ct1	2013-10-04 07:41	67.0005	-168.7550
00082_00001_ct1	2013-10-04 11:08	66.5012	-168.7630
00083_00001_ct1	2013-10-04 14:40	65.9998	-168.7500
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00086_00001_ct1	2013-10-04 21:23	65.6508	-168.2510

#### Related Information



[Enlarge Image](#)

#### MR13-06 Leg1

Ship Name: MIRAI  
 Period: 2013-08-28 - 2013-10-07  
 Chief Scientist: Shigeto Nishino (JAMSTEC)  
 Project Name: [Arctic Ocean Climate System Research]  
 Proposal ▶ Study on environmental changes in the sea-ice reduction regions of the Arctic Ocean  
 Title:

#### Update History

2016-04-30	An observation data was registered.
2015-10-31	An observation data was registered.

#### JAMSTEC

Site Policy  
 Privacy Policy  
 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

#### Information of the Submersibles

KAICO  
 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: