

## MIRAI MR16-06 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2019-08-31

ReadMe Observation Data Data Format

Cruise ID: [MR16-06](#)

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

Data Policy: [JAMSTEC](#)

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

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/MR16-06\\_all.pdf](http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR16-06_all.pdf)

### For Using Data

#### Principal Investigator

Shigeto Nishino (JAMSTEC)  
 Data Management Office

#### Use Constraints

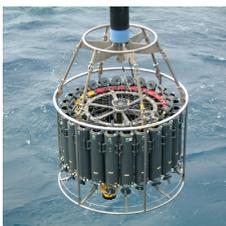
See [Terms and Conditions](#) about constrain of use.

#### Data Citation

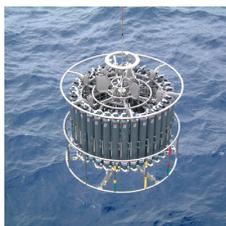
See [Terms and Conditions](#) about data citation.

### Instrument

Instrument:  
 Water sampling system with CTD (30  
 liters \* 24 bottles)



Instrument:  
 Water sampling system with CTD (12  
 liters \* 36 bottles)



Instrument:  
 Water sampling system with CTD (12  
 liters \* 12 bottles)



Instrument:  
 Conductivity temperature depth  
 measurements (CTD)



### Data Citation

Please mention that this cruise was conducted under the Arctic Challenge for Sustainability (ArCS) Project, which was funded by the Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT).

### System

#### (1) Pressure sensor

Model : SBE9plus, Sea-Bird Electronics, Inc.  
 Serial No. : 09P54451-1027 (117457)  
 Measurement range : up to 10500 m  
 Accuracy : 0.015 %F.S.  
 Resolution : 0.001 %F.S.  
 Last Calibration Date : 16-Jun-2016

#### (2) Temperature sensor

Model : SBE03-04/F, Sea-Bird Electronics, Inc.  
 Serial No. : 031359  
 Measurement range : -5.0 to +35 degC  
 Accuracy : 0.001 degC  
 Resolution : 0.0002 degC  
 Last Calibration Date : 01-Jun-2016

#### (3) Salinity sensor

Model : SBE04C, Sea-Bird Electronics, Inc.  
 Serial No. : 042435  
 Measurement range : 0.0 to 7 S/m  
 Accuracy : 0.0003 S/m  
 Resolution : 0.00004 S/m  
 Last Calibration Date : 12-May-2016

- (4) Dissolved oxygen sensor  
 Model : RINKO III, JFE Advantech Co., Ltd.  
 Serial No. : 0024  
 Measurement range : 0 to 200 %  
 Accuracy : Non-Linear  $\pm 2$  %FS  
 Resolution: 0.01 to 0.04 %  
 Last Calibration Date : 21-Jan-2016
- (5) Transmissometer  
 Model : C-Star, WET Labs, Inc.  
 Serial No. : CST-1726DR  
 Last Calibration Date : 26-May-2015
- (6) UV Nitrate Sensor  
 Model : Deep SUNA, Satlantic Inc.  
 Serial No. : 385  
 Measurement range : 0 - 3000 umol/kg  
 Last Calibration Date : 02-Jul-2015
- (7) Turbidity Meter  
 Model : Seapoint Turbidity Meter, Seapoint Sensors, Inc.  
 Serial No. : 14953  
 Measurement range : 0 - 500 FTU (Gain: 5X)  
 Resolution: 0.1FTU
- (8) Fluorometer (001M001~031M001, 072M001~099M001)  
 Model : Seapoint Chlorophyll Fluorometer, Seapoint Sensors, Inc.  
 Serial No. : 3618  
 Measurement range : 0 - 50 ug/l (Gain: 3X)  
 Resolution: 0.02ug/l  
 Fluorometer (032M001~071M001)  
 Model : Seapoint Chlorophyll Fluorometer, Seapoint Sensors, Inc.  
 Serial No. : 3618  
 Measurement range : 0 - 5 ug/l (Gain: 30X)  
 Resolution: 0.02ug/l
- (9) PAR sensor  
 Model : PAR-Log ICSW, Satlantic Inc.  
 Serial No. : 1025  
 Measurement range : 0 - 5000 umol photons/m<sup>2</sup>/s  
 Last Calibration Date : 06-Jul-2015

#### Correction method

##### - Temperature

Coefficients of primary temperature correction: correct\_tmp\_pri\_MR1606\_p490.txt  
 Coefficients of dependencies for pressure (Pcor) and time (Tcor) and offset were calculated from the data > 490dbar.  
 $corrCTDTMP = CTDTMP - (Pcor * CTDPRS + Tcor * Sumdate + offset)$   
 (Sumdate is assumed to be elapsed days from the sensor calibration date)

##### - Salinity

Coefficients of primary conductivity correction: correct\_cnd\_pri\_MR1606\_t\_p490.txt  
 Coefficients of dependencies for conductivity (Ccor), pressure (Pcor), conductivity \* pressure (CPcor) and time (Tcor) and offset were calculated from the data > 490dbar.  
 $corrCTDCND = CTDCND - (Pcor * CTDPRS + Ccor * CTDCND + CPcor * CTDCND * CTDPRS + Tcor * Sumdate + offset)$   
 (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\_MR1606\_t.txt  
 Coefficients of correction for the dissolved oxygen and time were calculated from the data.  
 (Sumdate is the cumulative number of days of powering RINKO III.)

##### - Fluorescence

Coefficients of fluorescence correction (section A): correct\_fl\_MR1606\_w1\_all\_a.txt  
 Coefficients of fluorescence correction (section B): correct\_fl\_MR1606\_w1\_all\_b.txt  
 Coefficients of fluorescence correction (section C): correct\_fl\_MR1606\_w1\_all\_c.txt  
 We linearly correlated the fluorescence with the bottle data obtained from the Welschmeyer method.  
 For the coefficient calculation, it divided into three sections, and calculated using all data without dividing into time zones.  
 $corrCTDFL = slope * CTDFL + offset$   
 section A : 001M001 to 031M001  
 section B : 032M001 to 071M001  
 section C : 072M001 to 099M001

##### - Light transmission

Coefficients of light transmission: correct\_xms\_mr1606.txt  
 Vdark was calculated an average of CTD pre-casts, and calculated from the minimum value of the Vdark average of casts deeper than 490 dbar. Vref was cast from Vref cast deeper than 490 dbar to 3-sigma filter to calculate slope (conf1) and intercept (conf0) of the time fluctuation. 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.  
 $Vdark = 0.0012$   
 $Vref = 0.0002791 (conf1) * sumdate + 4.7343971 (conf0) + 0.0014033 (offset)$   
 (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.)

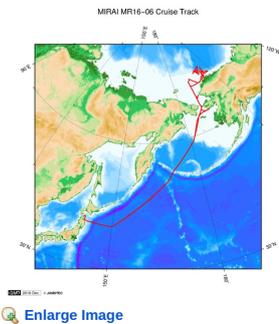
##### - PAR

Coefficients of PAR: offset = -0.1040

##### - Nitrate

Coefficients of Nitrate (Deep SUNA): correct\_nit\_MR1606\_t.txt  
 All data were used to calculate the nitrate value (Ncor), time coefficient (Tcor), and Offset.  $corrCTDNIT = CTDNIT - (Ncor * CTDNIT + Tcor * Sumdate + Offset)$   
 (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.)

#### Related Information



**MR16-06**

Ship Name: MIRAI  
 Period: 2016-08-22 - 2016-10-05  
 Chief Scientist: Shigeto Nishino (JAMSTEC)  
 Project Name: [Arctic Ocean Climate System Research]  
 Proposal ▶ Predictability study on weather and sea-ice forecasts linked with user engagement  
 Title:

**Update History**

2019-08-31	An observation data was registered.
2019-07-31	An observation data was registered.
2018-10-31	An observation data was registered.

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- [Feeds](#)

**Lists**

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- [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** 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 MR16-06 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2019-08-31

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

Cruise ID: [MR16-06](#)

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

Data Policy: [JAMSTEC](#)

### Format Description for the Processed (DMO/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](#)

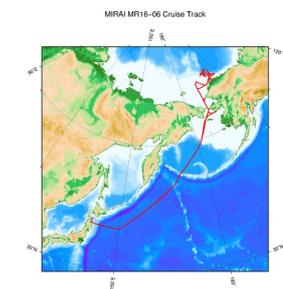
Output items are as follows.

- CTDPRES (Pressure)
- CTDTMP (Temperature)
- CTDSAL (Salinity)
- CTDOXY (Dissolved oxygen)
- XMISS (Light transmission)
- XMISSCP (Coefficient of beam attenuation)
- FLUOR (Fluorescence)
- TURB (Turbidity)
- PAR (PAR)
- CTDNRA (Nitrate)

The data flags are as follows.

- 1: Not calibrated
- 2: Acceptable measurement
- 3: questionable measurement
- 4: bad measurement
- 6: Interpolated over > 1 dbar interval

### Related Information



#### MR16-06

Ship Name: MIRAI

Period: 2016-08-22 - 2016-10-05

Chief Scientist: Shigeto Nishino (JAMSTEC)

Project Name: [Arctic Ocean Climate System Research]

Proposal ▶ Predictability study on weather and sea-ice forecasts linked with user engagement

Title:

[Enlarge Image](#)

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#### Lists

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[KAIMEI](#)

[SHINSEI MARU](#)

[HAKUHO MARU](#)

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[KAIKO](#)

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[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:

**MIRAI MR16-06 Conductivity-Temperature-Depth Profiler (CTD)**

Last Modified: 2019-08-31

[Read Me](#) [Observation Data](#) [Data Format](#)

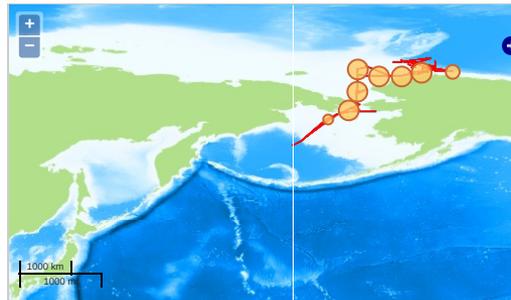
Cruise ID: **MR16-06**  
 Conductivity-Temperature-Depth Profiler (CTD): Processed (DMO/PI)  
 Data Policy: **JAMSTEC**  
 Observation Items: Pressure, Temperature, Salinity, Dissolved oxygen, PAR, Fluorescence

Science Keywords:

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- OCEANS > OCEAN OPTICS > PHOTOSYNTHETICALLY ACTIVE RADIATION
- 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.



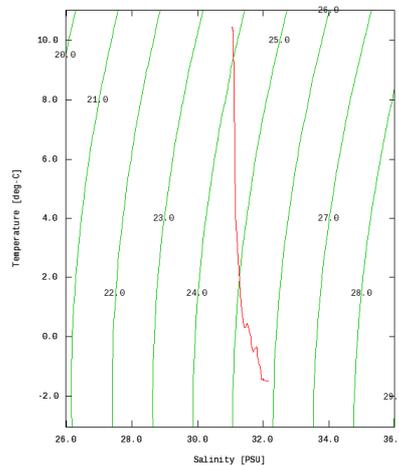
— ... Observation Line — ... Navigation ● ... Observation, Dive Point, Hole

**Figures**

00001\_00001\_ct1.csv



MR16-06: 00001\_00001\_ct1.csv  
 Conductivity-Temperature-Depth Profiler (CTD): Salinity



**Data List**

File names
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File names
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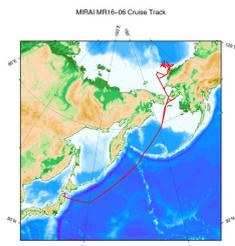
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00099_00001_ct1.csv
correct_cnd_pri_MR1606_t_p490.txt
correct_fl_MR1606_w1_all_a.txt
correct_fl_MR1606_w1_all_b.txt
correct_fl_MR1606_w1_all_c.txt
correct_nit_MR1606_t.txt
correct_rnk_pri_MR1606_t.txt
correct_tmp_pri_MR1606_p490.txt
correct_xms_mr1606.txt

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

Observation	Time and Date	Lat. [°]	Lon. [°]
00001_00001_ct1.csv	2016-08-30 02:19	63.0944	-173.9848
00002_00001_ct1.csv	2016-08-30 09:44	63.8599	-172.3035
00003_00001_ct1.csv	2016-08-30 17:34	64.7108	-170.3487
00004_00001_ct1.csv	2016-08-30 21:43	65.0597	-169.6059
00005_00001_ct1.csv	2016-08-31 03:52	65.2700	-169.0561
00006_00001_ct1.csv	2016-08-31 07:54	65.6492	-168.7016
00007_00001_ct1.csv	2016-08-31 19:33	66.2694	-168.9139
00007_00002_ct1.csv	2016-08-31 22:10	66.2723	-168.8940
00007_00003_ct1.csv	2016-08-31 23:10	66.2672	-168.9051
00008_00001_ct1.csv	2016-09-01 06:44	67.1991	-168.9016
00009_00001_ct1.csv	2016-09-01 10:11	67.5661	-168.8219
00010_00001_ct1.csv	2016-09-01 19:32	68.0349	-168.8315
00011_00001_ct1.csv	2016-09-02 01:11	68.5001	-168.7387
00012_00001_ct1.csv	2016-09-02 04:45	68.9995	-168.7418
00013_00001_ct1.csv	2016-09-02 08:35	69.4990	-168.7446
00014_00001_ct1.csv	2016-09-02 12:09	69.9995	-168.7430
00015_00001_ct1.csv	2016-09-02 15:42	70.5009	-168.7470
00016_00001_ct1.csv	2016-09-02 19:22	70.9961	-168.7437
00017_00001_ct1.csv	2016-09-02 23:32	70.7517	-167.0026
00018_00001_ct1.csv	2016-09-03 03:32	70.7501	-164.9990
00019_00001_ct1.csv	2016-09-03 07:54	70.7491	-162.9998
00020_00001_ct1.csv	2016-09-03 12:31	70.7495	-161.0016
00021_00001_ct1.csv	2016-09-04 00:32	71.4276	-158.7163
00022_00001_ct1.csv	2016-09-04 04:30	71.5792	-157.8273
00023_00001_ct1.csv	2016-09-04 06:54	71.4954	-157.6682
00024_00001_ct1.csv	2016-09-04 09:03	71.4142	-157.4987
00025_00001_ct1.csv	2016-09-04 11:38	71.3300	-157.3235
00026_00001_ct1.csv	2016-09-04 13:36	71.2444	-157.1620
00027_00001_ct1.csv	2016-09-04 14:52	71.2888	-157.2504
00028_00001_ct1.csv	2016-09-04 15:59	71.3738	-157.4140
00029_00001_ct1.csv	2016-09-05 01:12	71.3850	-158.6075
00030_00001_ct1.csv	2016-09-05 06:07	71.5351	-157.7525
00031_00001_ct1.csv	2016-09-05 07:07	71.4548	-157.5754
00032_00001_ct1.csv	2016-09-07 01:38	71.6285	-154.9111
00033_00001_ct1.csv	2016-09-07 02:36	71.6979	-155.0971
00034_00001_ct1.csv	2016-09-07 03:39	71.7650	-155.2825
00035_00001_ct1.csv	2016-09-07 04:46	71.8139	-155.5945
00036_00001_ct1.csv	2016-09-07 06:17	71.8757	-156.0377
00037_00001_ct1.csv	2016-09-07 08:34	71.8224	-155.8339
00038_00001_ct1.csv	2016-09-07 10:52	71.7993	-155.3858
00039_00001_ct1.csv	2016-09-07 13:45	71.7356	-155.2111
00040_00001_ct1.csv	2016-09-07 15:51	71.6645	-155.0154
00041_00001_ct1.csv	2016-09-07 17:36	71.5972	-154.7970
00042_00001_ct1.csv	2016-09-07 23:35	71.5668	-152.0032
00043_00001_ct1.csv	2016-09-08 05:34	71.7866	-153.0073
00044_00001_ct1.csv	2016-09-08 08:57	71.9585	-154.0022
00045_00001_ct1.csv	2016-09-08 20:14	72.4914	-155.3521
00046_00001_ct1.csv	2016-09-09 06:13	72.2798	-156.0005
00047_00001_ct1.csv	2016-09-09 10:19	72.4689	-157.0093
00048_00001_ct1.csv	2016-09-09 14:01	72.7885	-158.0076
00049_00001_ct1.csv	2016-09-10 02:20	73.3088	-160.8633
00050_00001_ct1.csv	2016-09-10 05:10	73.2895	-160.0103
00051_00001_ct1.csv	2016-09-10 09:10	73.5243	-160.9027
00052_00001_ct1.csv	2016-09-10 21:57	72.4761	-159.0017
00053_00001_ct1.csv	2016-09-11 20:34	72.4660	-158.8131
00054_00001_ct1.csv	2016-09-13 04:53	72.8306	-158.8139
00055_00001_ct1.csv	2016-09-13 08:02	72.9970	-158.4985
00056_00001_ct1.csv	2016-09-13 11:19	73.1663	-158.0095
00057_00001_ct1.csv	2016-09-13 15:18	73.3325	-157.5119
00058_00001_ct1.csv	2016-09-13 18:58	73.1627	-157.8822

Observation	Time and Date	Lat. [°]	Lon. [°]
00058_00001_ct1.csv	2016-09-13 18:53	73.4987	-157.0084
00058_00002_ct1.csv	2016-09-13 21:43	73.5076	-157.0495
00059_00001_ct1.csv	2016-09-14 01:22	73.7513	-156.1512
00060_00001_ct1.csv	2016-09-14 05:41	73.8593	-156.5806
00061_00001_ct1.csv	2016-09-14 12:22	73.7106	-157.7580
00062_00001_ct1.csv	2016-09-14 15:34	73.6219	-158.4671
00063_00001_ct1.csv	2016-09-14 20:21	73.5073	-159.2914
00064_00001_ct1.csv	2016-09-15 00:45	73.3871	-160.2040
00065_00001_ct1.csv	2016-09-15 03:56	73.2309	-161.3131
00066_00001_ct1.csv	2016-09-15 07:27	73.1588	-162.3163
00067_00001_ct1.csv	2016-09-15 21:54	73.3052	-160.8022
00067_00002_ct1.csv	2016-09-16 02:07	73.2988	-160.7832
00067_00003_ct1.csv	2016-09-16 03:28	73.2952	-160.8232
00068_00001_ct1.csv	2016-09-16 21:59	72.4762	-155.4209
00069_00001_ct1.csv	2016-09-17 05:22	72.3150	-155.4653
00070_00001_ct1.csv	2016-09-17 07:43	72.1663	-155.5189
00071_00001_ct1.csv	2016-09-17 09:55	72.1671	-156.2133
00072_00001_ct1.csv	2016-09-18 23:27	71.9905	-165.8795
00073_00001_ct1.csv	2016-09-19 05:13	72.5193	-167.3114
00074_00001_ct1.csv	2016-09-19 10:50	71.9989	-168.7517
00075_00001_ct1.csv	2016-09-19 14:15	71.5001	-168.7481
00076_00001_ct1.csv	2016-09-19 17:30	70.9980	-168.7490
00077_00001_ct1.csv	2016-09-19 21:17	70.4991	-168.7436
00078_00001_ct1.csv	2016-09-20 01:02	69.9981	-168.7466
00079_00001_ct1.csv	2016-09-20 04:14	69.5013	-168.7444
00080_00001_ct1.csv	2016-09-20 07:31	69.0007	-168.7480
00081_00001_ct1.csv	2016-09-20 11:19	68.5019	-168.7488
00082_00001_ct1.csv	2016-09-20 13:19	68.2516	-168.7504
00083_00001_ct1.csv	2016-09-20 16:44	67.7513	-168.7524
00084_00001_ct1.csv	2016-09-20 18:58	68.0077	-168.7514
00085_00001_ct1.csv	2016-09-20 21:49	67.7504	-168.5006
00086_00001_ct1.csv	2016-09-21 00:07	68.0012	-167.9952
00087_00001_ct1.csv	2016-09-21 02:49	68.2043	-167.3319
00088_00001_ct1.csv	2016-09-21 04:26	68.3019	-167.0544
00089_00001_ct1.csv	2016-09-21 05:53	68.2491	-167.1983
00090_00001_ct1.csv	2016-09-21 07:28	68.1008	-167.6673
00091_00001_ct1.csv	2016-09-21 09:24	67.8761	-168.1674
00092_00001_ct1.csv	2016-09-21 11:53	67.5738	-168.8461
00093_00001_ct1.csv	2016-09-21 18:30	67.1968	-168.8877
00094_00001_ct1.csv	2016-09-21 23:54	66.2708	-168.8925
00095_00001_ct1.csv	2016-09-22 04:19	65.7638	-168.7595
00096_00001_ct1.csv	2016-09-22 06:36	65.6523	-168.2485
00097_00001_ct1.csv	2016-09-22 08:26	65.6502	-168.6965
00098_00001_ct1.csv	2016-09-22 11:46	65.2661	-169.0512
00099_00001_ct1.csv	2016-09-22 18:31	65.0524	-169.6184

#### Related Information



[Enlarge Image](#)

#### MR16-06

Ship Name: MIRAI  
 Period: 2016-08-22 - 2016-10-05  
 Chief Scientist: Shigeto Nishino (JAMSTEC)  
 Project Name: [Arctic Ocean Climate System Research]  
 Proposal ▶ Predictability study on weather and sea-ice forecasts linked with user engagement  
 Title:

#### Update History

2019-08-31 An observation data was registered.  
 2019-07-31 An observation data was registered.  
 2018-10-31 An observation data was registered.

#### JAMSTEC

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 Privacy Policy  
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 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  
 BK Camera DEEP TOW  
 BK 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:

