

## MIRAI MR04-01 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2017-06-22

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

Cruise ID: [MR04-01](#)

Conductivity-Temperature-Depth Profiler (CTD): Processed (DMO)-QCed

Data Policy: [JAMSTEC](#)

Observation Items: Pressure, Temperature, Salinity, Dissolved oxygen

Science Keywords:

OCEANS > OCEAN CHEMISTRY > OXYGEN  
OCEANS > OCEAN TEMPERATURE > WATER TEMPERATURE  
OCEANS > SALINITY/DENSITY > SALINITY

### **i** For Using Data

#### Principal Investigator

Data Management Office

JAMSTEC / BPPT joint cruise in the Indonesian waters.

#### Use Constraints

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

#### Data Citation

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

### Instrument

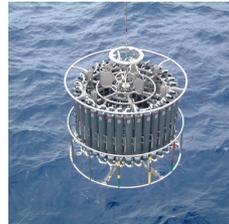
Instrument:

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)



### Overview

CTD(Conductivity-Temperature-Depth profiler) is used to observe the vertical profiles of temperature and conductivity.

Usually, this system is operated with multicylinder water sampler.

Observed signal is transmitted from sensor to the operation room on board using wire cable, and electric power is supplied from vessel to sensor.

Details of sensors attached to CTD system for MR04-01 cruise are presented in "System".

The following software, developed and supplied by the Sea-Bird Electronics, Inc., was used in MR04-01.

SEASAVE(ver 5.27b) for data acquisition

SEASOFT(ver 5.27b) for data processing

Data presented on this website is averaged over 1db.

### System

#### • Pressure sensor

Model : SBE9plus, Sea-Bird Electronics,Inc.

Serial number : 51190

Measurement range : up to 10500m

Accuracy : 0.015% F.S.

Resolution : 0.001% F.S.

#### • Temperature sensor

Model : SBE3, Sea-Bird Electronics,Inc.

Serial number : 031525

Measurement range : -5.0 to +35degC

Accuracy : 0.001degC

Resolution : 0.0002degC

#### • Salinity sensor

Model : SBE4, Sea-Bird Electronics,Inc.

Serial number : 041206

Measurement range : 0.0 to 7 S/m

Accuracy : 0.0003 S/m

Resolution : 0.00004 S/m

• DO sensor

Model : SBE43, Sea-Bird Electronics, Inc.

Serial number : 430394

Measurement range : 120% of surface saturation

Accuracy : 2% of saturation

Sensors used in each cast is as follows.

Cast name	Serial number of sensor			
	Pressure	Temperature	Salinity	Dissolved Oxygen
001S01	51190	031525	041206	430394
002S01	51190	031525	041206	430394
003S01	51190	031525	041206	430394
004S01	51190	031525	041206	430394
005S01	51190	031525	041206	430394
006S01	51190	031525	041206	430394
007S01	51190	031525	041206	430394
008S01	51190	031525	041206	430394
009S01	51190	031525	041206	430394
010S01	51190	031525	041206	430394
011S01	51190	031525	041206	430394
012S01	51190	031525	041206	430394
013S01	51190	031525	041206	430394
014S01	51190	031525	041206	430394
015S01	51190	031525	041206	430394
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021S01	51190	031525	041206	430394
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038S01	51190	031525	041206	430394
039S01	51190	031525	041206	430394
040S01	51190	031525	041206	430394
041S01	51190	031525	041206	430394
042S01	51190	031525	041206	430394
043S01	51190	031525	041206	430394
044S01	51190	031525	041206	430394
045S01	51190	031525	041206	430394
046S01	51190	031525	041206	430394
047S01	51190	031525	041206	430394
048S01	51190	031525	041206	430394
049S01	51190	031525	041206	430394
050S01	51190	031525	041206	430394
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064S01	51190	031525	041206	430394
065S01	51190	031525	041206	430394
066S01	51190	031525	041206	430394
067S01	51190	031525	041206	430394
068S01	51190	031525	041206	430394
069S01	51190	031525	041206	430394

Cast name	Serial number of sensor	Pressure	Temperature	Salinity	Dissolved Oxygen
070S01	51190	031525	041206	430394	430394
071S01	51190	031525	041206	430394	430394
072S01	51190	031525	041206	430394	430394
073S01	51190	031525	041206	430394	430394
074S01	51190	031525	041206	430394	430394
075S01	51190	031525	041206	430394	430394
076S01	51190	031525	041206	430394	430394
077S01	51190	031525	041206	430394	430394
078S01	51190	031525	041206	430394	430394
079S01	51190	031525	041206	430394	430394
080S01	51190	031525	041206	430394	430394
081S01	51190	031525	041206	430394	430394
082S01	51190	031525	041206	430394	430394
083S01	51190	031525	041206	430394	430394
084S01	51190	031525	041206	430394	430394
085S01	51190	031525	041206	430394	430394
086S01	51190	031525	041206	430394	430394
087S01	51190	031525	041206	430394	430394
088S01	51190	031525	041206	430394	430394
089S01	51190	031525	041206	430394	430394
090S01	51190	031525	041206	430394	430394
091S01	51190	031525	041206	430394	430394
092S01	51190	031525	041206	430394	430394
093S01	51190	031525	041206	430394	430394
094S01	51190	031525	041206	430394	430394
095S01	51190	031525	041206	430394	430394
096S01	51190	031525	041206	430394	430394
097S01	51190	031525	041206	430394	430394

#### Calibration Information

Calibration Information is as follows.

##### Calibration Information

#### Data processing

(1) Data processing sequence for SEASOFT is as follows;

command	function
datcnv	Convert raw data to engineering units, and store converted data in file.
alignctd	Align data relative to pressure (typically used for conductivity, temperature, and oxygen).
wildedit	Mark a data value with badflag to eliminate wild points.
celltm	Perform conductivity thermal mass correction.
filter	Low-pass filter columns of data.
section	Extract rows of data from file.
loopedit	Mark a scan with badflag if scan fails pressure reversal or minimum velocity tests.
derive	Calculate oxygen. (with oxygen sensor)
binavg	Average data, basing bins on pressure, depth, scan number, or time range.
derive	Calculate salinity, density, etc..
split	Split data in file into upcast and downcast files.

(2) Quality control

QCed data were added flag according to the NODC (National Oceanographic Data Center) quality control procedure.

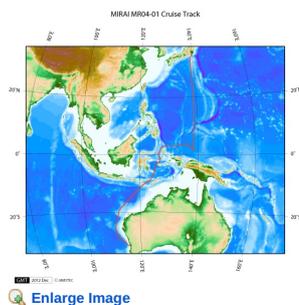
- 1) The gradient check of adjacent depth data
- 2) The density inversion check
- 3) The broad range check set up at given ocean space and depth

Please see the site of NODC of the following link for quality control procedure in detail.

##### [QUALITY CONTROL AND PROCESSING OF HISTORICAL OCEANOGRAPHIC TEMPERATURE, SALINITY, AND OXYGEN DATA](#)

In addition, an abnormal value is identified by a visual check, and the data after visual QC is released.

#### Related Information



##### MR04-01

Ship Name: MIRAI  
 Period: 2004-02-22 - 2004-03-22  
 Chief Scientist: Kunio Yoneyama (JAMSTEC)  
 Project Name: [MJO Research]

#### Update History

2017-06-22	An observation data was registered.
2016-04-07	An observation data was registered.
2014-07-24	An observation data was registered.
2014-02-06	An observation data was registered.
2013-03-27	An observation data was registered.
2012-11-25	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**  
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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海洋研究開発機構  
JAPAN AGENCY FOR MARINE EARTH SCIENCE AND TECHNOLOGY

## MIRAI MR04-01 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2017-06-22

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

Cruise ID: [MR04-01](#)

Conductivity-Temperature-Depth Profiler (CTD): Processed (DMO)-QCed

Data Policy: [JAMSTEC](#)

### CTD DMO

#### Format Description for the Corrected 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'.

Definition of Quality Control Flags

#### 1. Depth Flags

- 0 - accepted value
- 1 - error in recorded depth ( same or less than previous depth )
- 2 - density inversion

#### 2. Observed Level Flags

- N - missing value
- 0 - accepted value
- 1 - range outlier ( outside of broad range check )
- 2 - failed inversion check
- 3 - failed gradient check
- 4 - zero anomaly
- 5 - failed combined gradient and inversion checks
- 6 - failed range and inversion checks
- 7 - failed range and gradient checks
- 8 - failed range and zero anomaly checks
- 9 - failed range and combined gradient and inversion checks
- A - failed visual check

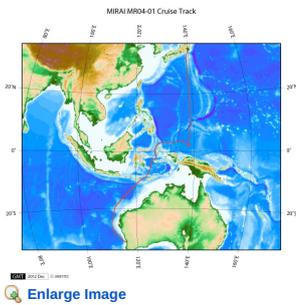
QCed data were added flag according to the NODC (National Oceanographic Data Center) quality control procedure, additionally visually checked. Please see the site of NODC of the following link for quality control procedure.

[QUALITY CONTROL AND PROCESSING OF HISTORICAL OCEANOGRAPHIC TEMPERATURE, SALINITY, AND OXYGEN DATA](#)

#### Sample Program

[ex\\_read2.f](#)

#### Related Information



**MR04-01**

Ship Name: MIRAI  
 Period: 2004-02-22 - 2004-03-22  
 Chief Scientist: Kunio Yoneyama (JAMSTEC)  
 Project Name: [MJO Research]

**Update History**

2017-06-22	An observation data was registerd.
2016-04-07	An observation data was registerd.
2014-07-24	An observation data was registerd.
2014-02-06	An observation data was registerd.
2013-03-27	An observation data was registerd.
2012-11-25	An observation data was registerd.

<p><b>JAMSTEC</b>  <a href="#">Site Policy</a>  <a href="#">Privacy Policy</a>  <a href="#">Application for Data and Samples</a>  <a href="#">Data Policy</a>  <b>What's New</b>  <a href="#">Update History</a>  <a href="#">Feeds</a></p>	<p><b>Lists</b>  <a href="#">Publication List</a>  <a href="#">Amount of Public Info.</a>  <b>Data</b>  <a href="#">Map Search</a>  <a href="#">Data Tree</a>  <a href="#">Detailed Search</a></p>	<p><b>Information of the Ships</b>        NATSUSHIMA        KAIYO        YOKOSUKA        MIRAI        KAIREI        CHIKYU        KAIMEI        SHINSEI MARU        HAKUHO MARU</p>	<p><b>Information of the Submersibles</b>        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</p>	<p><b>Go to a Cruise Information</b>        Cruise ID: <input type="text"/> <input type="button" value="Go"/></p> <p><b>Go to a Dive Information</b>        Dive ID: <input type="text"/> <input type="button" value="Go"/></p>
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 JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY

**MIRAI MR04-01 Conductivity-Temperature-Depth Profiler (CTD)**

Last Modified: 2017-06-22

ReadMe **Observation Data** Data Format

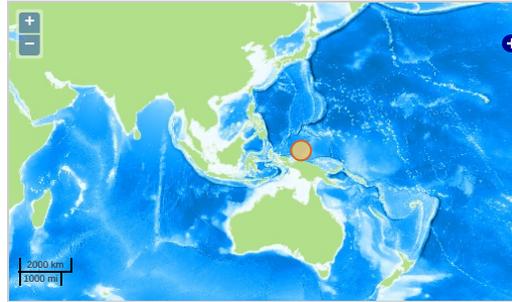
Cruise ID: **MR04-01**  
 Conductivity-Temperature-Depth Profiler (CTD): Processed (DMO)-QCed  
 Data Policy: **JAMSTEC**

Observation Items: Pressure, Temperature, Salinity, Dissolved oxygen  
 Science Keywords:

- OCEANS > OCEAN CHEMISTRY > OXYGEN
- OCEANS > OCEAN > WATER
- TEMPERATURE TEMPERATURE
- OCEANS > SALINITY/DENSITY > SALINITY

**Observation Map**

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



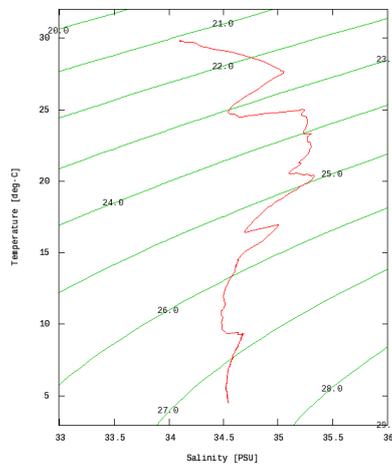
— ... Observation Line — ... Navigation ● ... Observation, Dive Point, Hole Imagery reproduced from ...

**Figures**

001S01



MR04-01: 001S01  
 Conductivity-Temperature-Depth Profiler (CTD): Salinity



Only values evaluated as "good : all flags are 0" are plotted in profiles.  
 Please see Format Page for the definition of quality flags.

**Data List**

<input type="checkbox"/> File names
<input type="checkbox"/> 001S01.dat
<input type="checkbox"/> 002S01.dat
<input type="checkbox"/> 003S01.dat
<input type="checkbox"/> 004S01.dat
<input type="checkbox"/> 005S01.dat
<input type="checkbox"/> 006S01.dat
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<input type="checkbox"/>	File Names
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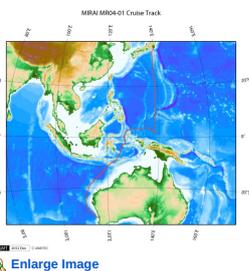
- Observations**
- 097S01.dat
- ex\_read2.f (Sample Program)

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

Observation	Time and Date	Lat. [°]	Lon. [°]
001S01	2004-03-02 23:29	2.0001	138.4988
002S01	2004-03-03 02:25	2.0053	138.4931
003S01	2004-03-03 05:25	2.0001	138.4995
004S01	2004-03-03 08:23	2.0033	138.5115
005S01	2004-03-03 11:20	2.0343	138.4891
006S01	2004-03-03 14:25	1.9998	138.4990
007S01	2004-03-03 17:24	2.0033	138.4971
008S01	2004-03-03 20:22	2.0055	138.4978
009S01	2004-03-03 23:19	2.0061	138.4951
010S01	2004-03-04 02:21	1.9938	138.4968
011S01	2004-03-04 05:21	1.9970	138.4986
012S01	2004-03-04 08:22	1.9821	138.5428
013S01	2004-03-04 11:20	2.0051	138.5018
014S01	2004-03-04 14:23	1.9980	138.4983
015S01	2004-03-04 17:22	2.0161	138.5071
016S01	2004-03-04 20:23	2.0059	138.4980
017S01	2004-03-04 23:22	2.0059	138.4970
018S01	2004-03-05 02:20	2.0133	138.4991
019S01	2004-03-05 05:22	2.0048	138.4980
020S01	2004-03-05 08:20	2.0128	138.5053
021S01	2004-03-05 11:18	2.0031	138.5018
022S01	2004-03-05 14:22	1.9963	138.4978
023S01	2004-03-05 17:23	2.0106	138.5021
024S01	2004-03-05 20:24	2.0008	138.5003
025S01	2004-03-05 23:24	2.0028	138.5004
026S01	2004-03-06 02:21	2.0506	138.2083
027S01	2004-03-06 05:24	2.0741	138.1650
028S01	2004-03-06 08:21	2.0093	138.4315
029S01	2004-03-06 11:18	2.0021	138.5020
030S01	2004-03-06 14:20	1.9983	138.4970
031S01	2004-03-06 17:23	2.0059	138.5026
032S01	2004-03-06 20:24	2.0013	138.5036
033S01	2004-03-06 23:23	1.9966	138.4965
034S01	2004-03-07 02:19	2.0665	138.5336
035S01	2004-03-07 05:24	2.0315	138.5343
036S01	2004-03-07 08:20	2.0098	138.4981
037S01	2004-03-07 11:19	2.0051	138.4946
038S01	2004-03-07 14:22	2.0101	138.4988
039S01	2004-03-07 17:26	2.0083	138.5048
040S01	2004-03-07 20:25	2.0120	138.4988
041S01	2004-03-07 23:25	2.0173	138.5045
042S01	2004-03-08 02:23	2.0598	138.4178
043S01	2004-03-08 05:23	2.0743	138.4666
044S01	2004-03-08 08:21	1.9311	138.5033
045S01	2004-03-08 11:19	2.0583	138.5053
046S01	2004-03-08 14:21	2.0075	138.5053
047S01	2004-03-08 17:25	2.0118	138.4955
048S01	2004-03-08 20:24	2.0115	138.5046
049S01	2004-03-08 23:25	2.0139	138.5008
050S01	2004-03-09 02:23	2.0040	138.5029
051S01	2004-03-09 05:24	2.0113	138.4990
052S01	2004-03-09 08:20	2.0066	138.4936
053S01	2004-03-09 11:20	2.0043	138.4900
054S01	2004-03-09 14:19	2.0038	138.5020
055S01	2004-03-09 17:22	2.0023	138.5021
056S01	2004-03-09 20:24	2.0583	138.1331
057S01	2004-03-09 23:24	2.0460	138.2423
058S01	2004-03-10 02:21	2.0761	138.4160
059S01	2004-03-10 05:23	2.0259	138.3055
060S01	2004-03-10 08:21	2.1383	138.0873
061S01	2004-03-10 11:19	2.1528	138.3221
062S01	2004-03-10 14:21	2.0675	138.5320
063S01	2004-03-10 17:25	2.0070	138.5010
064S01	2004-03-10 20:24	2.0138	138.5045
065S01	2004-03-10 23:24	2.0151	138.5033
066S01	2004-03-11 02:23	2.0023	138.4975
067S01	2004-03-11 05:24	2.0121	138.5011
068S01	2004-03-11 08:20	1.9970	138.5108
069S01	2004-03-11 11:20	2.0011	138.4951
070S01	2004-03-11 14:20	2.0025	138.4976
071S01	2004-03-11 17:24	2.0066	138.4936
072S01	2004-03-11 20:22	2.0058	138.4933
073S01	2004-03-11 23:23	2.0055	138.4703
074S01	2004-03-12 02:24	2.0213	138.4863
075S01	2004-03-12 05:24	2.0318	138.4925
076S01	2004-03-12 08:20	2.0188	138.5003

Observation	Time and Date	Lat. (°)	Lon. (°)
077S01	2004-03-12 11:20	2.0190	138.4938
078S01	2004-03-12 14:25	2.0221	138.4905
079S01	2004-03-12 17:23	2.0273	138.4940
080S01	2004-03-12 20:24	2.0231	138.4884
081S01	2004-03-12 23:24	2.0343	138.4670
082S01	2004-03-13 02:23	2.0496	138.2095
083S01	2004-03-13 05:23	2.1135	138.0633
084S01	2004-03-13 08:21	2.1293	138.0461
085S01	2004-03-13 11:19	2.1503	138.0460
086S01	2004-03-13 14:21	2.1185	138.0548
087S01	2004-03-13 17:24	2.1160	138.0631
088S01	2004-03-13 20:26	2.1205	138.0463
089S01	2004-03-13 23:24	2.1146	138.0565
090S01	2004-03-14 02:23	2.1230	138.0333
091S01	2004-03-14 05:25	2.1145	138.0531
092S01	2004-03-14 08:22	2.1245	138.0600
093S01	2004-03-14 11:18	2.1140	138.0576
094S01	2004-03-14 14:19	2.1136	138.0581
095S01	2004-03-14 17:24	2.1269	138.0520
096S01	2004-03-14 20:24	2.1185	138.0595
097S01	2004-03-14 23:23	2.1160	138.0606

#### Related Information



**MR04-01**  
 Ship Name: MIRAI  
 Period: 2004-02-22 - 2004-03-22  
 Chief Scientist: Kunio Yoneyama (JAMSTEC)  
 Project Name: [MJO Research]

#### Update History

2017-06-22	An observation data was registerd.
2016-04-07	An observation data was registerd.
2014-07-24	An observation data was registerd.
2014-02-06	An observation data was registerd.
2013-03-27	An observation data was registerd.
2012-11-25	An observation data was registerd.

#### JAMSTEC

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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

#### 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:

