

## MIRAI MR11-02 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2017-06-22

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

Cruise ID: [MR11-02](#)

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

Cruise Report

[http://www.godac.jamstec.go.jp/catalog/data/doc\\_catalog/media/MR11-02\\_all.pdf](http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR11-02_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:

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 MR11-02 cruise are presented in "System".

The following software, developed and supplied by the Sea-Bird Electronics, Inc., was used in MR11-02 .

Seasave-Win32 (ver 7.20g) for data acquisition

SBDataProcessing-Win32 (ver 7.18d)

Data presented on this website is averaged over 1db.

### System

#### · Pressure sensor

Model : SBE9plus, Sea-Bird Electronics,Inc.

Serial number : 79511

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 : 032730

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
002M01	79511	032730	041206	430394
004M01	79511	032730	041206	430394
006M01	79511	032730	041206	430394
JKOM01	79511	032730	041206	430394
K02M01	79511	032730	041206	430394
K02M02	79511	032730	041206	430394
K02M03	79511	032730	041206	430394
K02M04	79511	032730	041206	430394
K02M05	79511	032730	041206	430394
K02M06	79511	032730	041206	430394
KEOM01	79511	032730	041206	430394
S01M01	79511	032730	041206	430394
S01M02	79511	032730	041206	430394
S01M03	79511	032730	041206	430394
S01M04	79511	032730	041206	430394
S01M05	79511	032730	041206	430394
S01M06	79511	032730	041206	430394
S01M07	79511	032730	041206	430394
S01M08	79511	032730	041206	430394
S01M09	79511	032730	041206	430394

**Calibration Information**

Calibration Information is as follows.

[Calibration Information](#)

**Data processing**

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

("\*" is not SEASOFT original procedure.)

command	function
datcnv	Convert raw data to engineering units, and store converted data in file.
tcorp*	Corrected the pressure sensitivity of the temperature(SBE3) sensor.
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.
wfilter	Median filter removes spikes of fluorometer data.
section	Extract rows of data from file.
loopedit	Mark a scan with badflag if scan fails pressure reversal or minimum velocity tests.
despike*	Remove spikes of the data.
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.

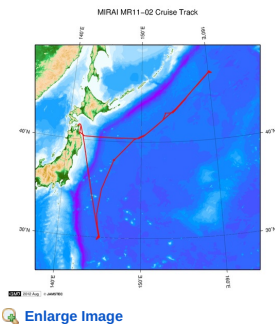
[QUALITY CONTROL AND PROCESSING OF HISTORICAL OCEANOGRAPHIC TEMPERATURE, SALINITY, AND OXYGEN DATA](#)

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

**Note**

(1) In this cruise, there is extra data (fluorescence intensity, distance to bottom) in additional to temperature, salinity, dissolved oxygen that has been opened to the public. Please contact us from "Contact Us" above if necessary.

**Related Information**



#### MR11-02

Ship Name: MIRAI

Period: 2011-02-11 - 2011-03-09

Chief Scientist: Makio Honda (JAMSTEC)

Project Name: [Station K2, Station S1, Station KEO]

Proposal ▶ Studies on the microbial-geochemical processes that regulate the operation of the biological pump in the subarctic and subtropical regions of the western North Pacific

#### Update History

2017-06-22	An observation data was registered.
2014-08-08	An observation data was registered.
2014-02-20	An observation data was registered.
2013-07-18	An observation data was registered.

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SHINKAI 2000

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DEEP TOW

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POWER GRAB SAMPLER

(SHELL)

POWER GRAB SAMPLER

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Dive ID:

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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 MR11-02 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2017-06-22

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

 Cruise ID: [MR11-02](#)

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

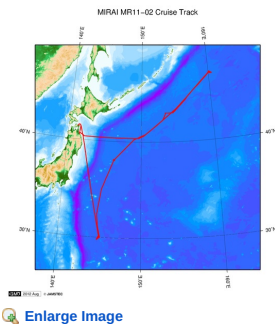
QCed data were added flag according to the NODC (National Oceanographic Data Center) quality control procedure, additionally visually checked. Please see the site of NODC of the following link for quality control procedure.

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

#### Sample Program

[ex\\_read2.f](#)

#### Related Information



[Enlarge Image](#)

#### MR11-02

Ship Name: MIRAI

Period: 2011-02-11 - 2011-03-09

Chief Scientist: Makio Honda (JAMSTEC)

Project Name: [Station K2, Station S1, Station KEO]

Proposal ▶ Studies on the microbial-geochemical processes that regulate the operation of the biological pump in the subarctic and subtropical regions of the western North Pacific

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(SHELL)

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BMS

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JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY

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Last Modified: 2017-06-22

ReadMe **Observation Data** Data Format

Cruise ID: **MR11-02**

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

Data Policy: **JAMSTEC**

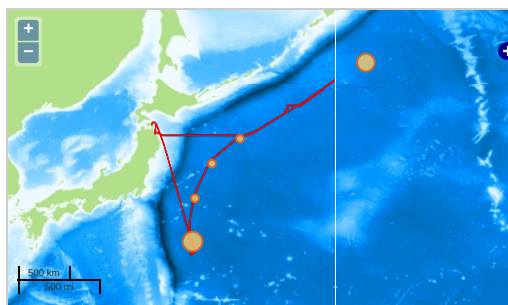
Observation Items: Pressure, Temperature, Salinity, Dissolved oxygen

Science Keywords:

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

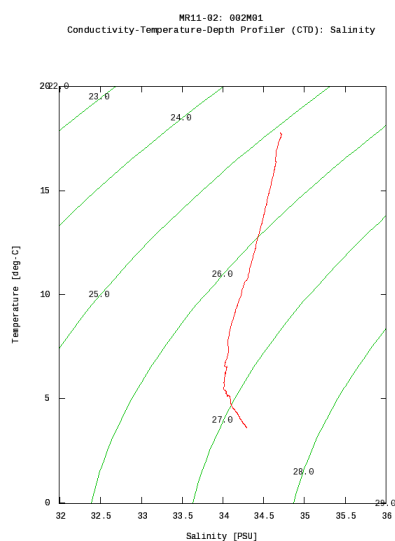
### Observation Map

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



### Figures

002M01



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

#### File names

<input type="checkbox"/>	002M01.dat
<input type="checkbox"/>	004M01.dat
<input type="checkbox"/>	006M01.dat
<input type="checkbox"/>	JKOM01.dat
<input type="checkbox"/>	K02M01.dat
<input type="checkbox"/>	K02M02.dat
<input type="checkbox"/>	K02M03.dat
<input type="checkbox"/>	K02M04.dat
<input type="checkbox"/>	K02M05.dat
<input type="checkbox"/>	K02M06.dat
<input type="checkbox"/>	KEOM01.dat
<input type="checkbox"/>	S01M01.dat
<input type="checkbox"/>	S01M02.dat

#### File Names

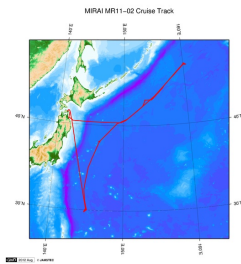
S01M04.dat  
S01M05.dat  
S01M06.dat  
S01M07.dat  
S01M08.dat  
S01M09.dat  
ex\_read2.f (Sample Program)

#### Observation List

The list of observation is shown as follows.

Observation	Time and Date	Lat. [°]	Lon. [°]
002M01	2011-02-19 08:50	31.1086	144.7796
004M01	2011-02-20 08:45	34.9498	144.9913
006M01	2011-02-23 21:40	40.2475	148.9933
JKOM01	2011-02-21 02:45	38.0321	146.4985
K02M01	2011-02-25 17:47	47.0006	160.1666
K02M02	2011-02-25 20:46	47.0113	160.1583
K02M03	2011-02-26 04:40	46.9050	160.2466
K02M04	2011-02-26 17:40	46.9990	160.0791
K02M05	2011-03-01 17:40	46.8796	160.3626
K02M06	2011-03-02 05:10	46.8803	160.2023
KEOM01	2011-02-19 15:55	32.3688	144.5930
S01M01	2011-02-13 07:11	30.0005	144.9976
S01M02	2011-02-13 19:45	29.9995	145.0023
S01M03	2011-02-14 17:40	30.0025	144.8948
S01M04	2011-02-14 22:40	30.0010	144.9938
S01M05	2011-02-15 09:26	29.9981	145.0029
S01M06	2011-02-16 01:10	29.9991	144.9910
S01M07	2011-02-17 18:16	30.0001	144.9986
S01M08	2011-02-18 10:05	29.9963	144.9938
S01M09	2011-02-18 22:40	29.9028	144.8341

#### Related Information



[Enlarge Image](#)

#### MR11-02

Ship Name: MIRAI

Period: 2011-02-11 - 2011-03-09

Chief Scientist: Makio Honda (JAMSTEC)

Project Name: [Station K2, Station S1, Station KEO]

Proposal Title: Studies on the microbial-geochemical processes that regulate the operation of the biological pump in the subarctic and subtropical regions of the western North Pacific

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