

## MIRAI MR18-04 Leg1 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2020-12-22

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

Cruise ID: [MR18-04 Leg1](#)

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/MR18-04\\_leg1\\_all.pdf](http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR18-04_leg1_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 MR18-04\_leg1 cruise are presented in "System".

The following software, developed and supplied by the Sea-Bird Electronics, Inc., was used in MR18-04\_leg1.

SEASAVE(ver 7.23.2) for data acquisition

SEASOFT(ver 7.26.7.114) for data processing

Data presented on this website is averaged over 1db.

### System

· Pressure sensor

Model : SBE9plus, Sea-Bird Electronics,Inc.

Serial number : 117457

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 : 042435

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 : 432211, 430949

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
001M001	117457	031525	042435	432211
002M001	117457	031525	042435	432211
002M002	117457	031525	042435	432211
003M001	117457	031525	042435	432211
004M001	117457	031525	042435	432211
004M002	117457	031525	042435	432211
005M001	117457	031525	042435	432211
006M001	117457	031525	042435	432211
006M002	117457	031525	042435	432211
006M003	117457	031525	042435	432211
K02M001	117457	031525	042435	430949
K02M002	117457	031525	042435	430949
K02M003	117457	031525	042435	430949
K02M004	117457	031525	042435	430949
K02M005	117457	031525	042435	430949
K02M006	117457	031525	042435	432211
K02M007	117457	031525	042435	432211
K02M008	117457	031525	042435	432211
K02M009	117457	031525	042435	432211
KEOM001	117457	031525	042435	430949
KEOM002	117457	031525	042435	430949
KEOM003	117457	031525	042435	430949
KEOM004	117457	031525	042435	430949

**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
datcrv	Convert raw data to engineering units, and store converted data in file.
tcorp*	Corrected the pressure sensitivity of the temperature(SBE3) sensor.
rinkocor*	Corrected the hysteresis of dissolved oxygen(RINKO III) 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.
sectionu*	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.
bottomcut*	Bottom cut deletes discontinuous scan bottom data if it's created by BINAVG.
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.

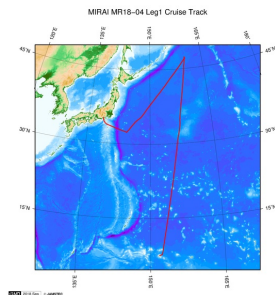
[QUALITY CONTROL AND PROCESSING OF HISTORICAL OCEANOGRAPHIC TEMPERATURE, SALINITY, AND OXYGEN DATA](#)

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 (dissolved oxygen obtained by RINKO sensor, fluorescence intensity, transmittance, 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**



[Enlarge Image](#)

#### MR18-04 Leg1

Ship Name: MIRAI

Period: 2018-07-19 - 2018-08-09

Chief Scientist: Tetsuichi Fujiki (JAMSTEC)

Project Name: [Station K2, Station KEO]

Proposal The observational study to construct and to extend the "western Pacific super site network"

Title:

#### Update History

2020-12-22	An observation data was registered.
2020-08-31	An observation data was registered.

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Cruise ID:

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Dive ID:

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

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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

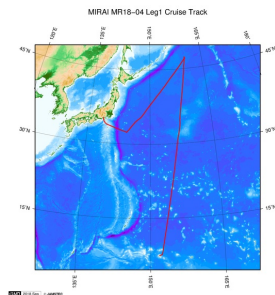
QCed data were added flag according to the NODC (National Oceanographic Data Center) quality control procedure, additionally visually checked. Please see the site of NODC of the following link for quality control procedure.

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

#### Sample Program

[ex\\_read2.f](#)

#### Related Information



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#### MR18-04 Leg1

Ship Name: MIRAI

Period: 2018-07-19 - 2018-08-09

Chief Scientist: Tetsuichi Fujiki (JAMSTEC)

Project Name: [Station K2, Station KEO]

Proposal The observational study to construct and to extend the "western Pacific super site network"

Title:

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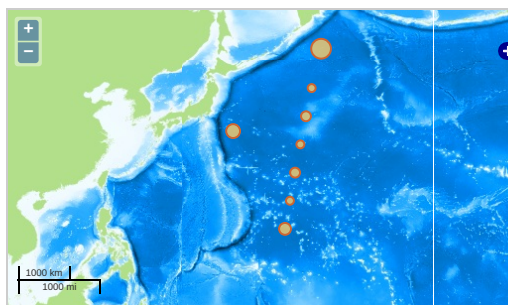
Observation Items: Pressure, Temperature, Salinity, Dissolved oxygen

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.

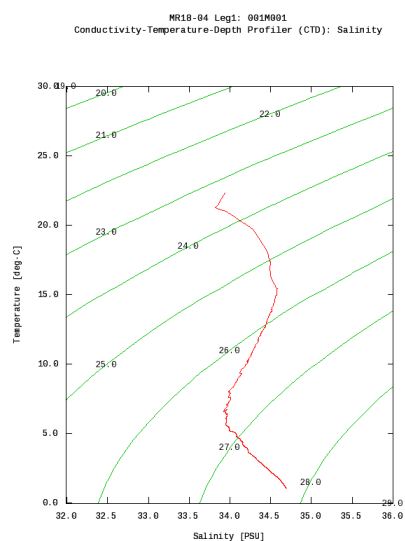


— ... Observation Line — ... Navigation ● ... Observation, Dive Point, Hole

Imagery reproduced from ...

### Figures












001M001



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

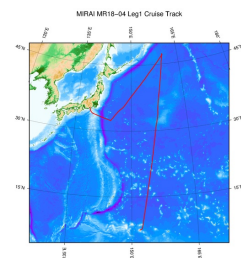
<input type="checkbox"/> File names
<input type="checkbox"/> 001M001.dat
<input type="checkbox"/> 002M001.dat
<input type="checkbox"/> 002M002.dat
<input type="checkbox"/> 003M001.dat
<input type="checkbox"/> 004M001.dat
<input type="checkbox"/> 004M002.dat
<input type="checkbox"/> 005M001.dat
<input type="checkbox"/> 006M001.dat
<input type="checkbox"/> 006M002.dat
<input type="checkbox"/> 006M003.dat
<input type="checkbox"/> K02M001.dat
<input type="checkbox"/> K02M002.dat
<input type="checkbox"/> K02M003.dat

-  K02M001.dat
-  K02M005.dat
-  K02M006.dat
-  K02M007.dat
-  K02M008.dat
-  K02M009.dat
-  KEOM001.dat
-  KEOM002.dat
-  KEOM003.dat
-  KEOM004.dat
-  ex\_read2.f (Sample Program)

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

Observation	Time and Date	Lat. [°]	Lon. [°]
001M001	2018-07-30 23:28	40.0121	158.3345
002M001	2018-08-01 15:39	35.0075	157.3233
002M002	2018-08-01 21:57	35.1034	157.3195
003M001	2018-08-03 01:59	30.0166	156.3305
004M001	2018-08-04 12:57	24.9996	155.3905
004M002	2018-08-04 19:34	24.9783	155.4093
005M001	2018-08-05 23:37	20.0048	154.4785
006M001	2018-08-07 09:50	15.0118	153.6016
006M002	2018-08-07 18:53	15.0000	153.5998
006M003	2018-08-07 22:34	14.9986	153.6045
K02M001	2018-07-25 01:49	46.9993	160.0058
K02M002	2018-07-25 20:57	47.0255	159.9853
K02M003	2018-07-26 01:10	47.0363	159.9908
K02M004	2018-07-26 15:23	47.0063	160.0075
K02M005	2018-07-26 16:00	47.0078	160.0103
K02M006	2018-07-28 03:36	46.9995	159.9808
K02M007	2018-07-28 05:24	47.0050	159.9953
K02M008	2018-07-29 06:13	47.0028	160.0066
K02M009	2018-07-29 08:12	47.0103	160.0136
KEOM001	2018-07-20 06:30	32.3745	144.3885
KEOM002	2018-07-20 10:21	32.3525	144.4065
KEOM003	2018-07-20 16:52	32.3730	144.3981
KEOM004	2018-07-21 02:38	32.3661	144.4103

### Related Information



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#### MR18-04 Leg1

Ship Name: MIRAI  
Period: 2018-07-19 - 2018-08-09  
Chief Scientist: Tetsuichi Fujiki (JAMSTEC)  
Project Name: [Station K2, Station KEO]  
Proposal The observational study to construct and to extend the "western Pacific super site network"  
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