

MIRAI MR16-08 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2018-12-29

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

Cruise ID: [MR16-08](#)

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/MR16-08_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 MR16-08 cruise are presented in "System".

The following software, developed and supplied by the Sea-Bird Electronics, Inc., was used in MR16-08.

SEASAVE(ver 7.23.2) for data acquisition

SEASOFT(ver 7.23.2) for data processing

Data presented on this website is averaged over 1db.

System

· Pressure sensor

Model : SBE9plus, Sea-Bird Electronics,Inc.

Serial number : 79492

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 : 031359

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 : 432211
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
C01M01	79492	031359	041206	432211
C02M01	79492	031359	041206	432211
C03M01	79492	031359	041206	432211
C04M01	79492	031359	041206	432211
C05M01	79492	031359	041206	432211
C06M01	79492	031359	041206	432211
C07M01	79492	031359	041206	432211
C08M01	79492	031359	041206	432211
C09M01	79492	031359	041206	432211
C10M01	79492	031359	041206	432211
C11M01	79492	031359	041206	432211
C12M01	79492	031359	041206	432211
C13M01	79492	031359	041206	432211
C14M01	79492	031359	041206	432211

Calibration Information

Calibration Information is as follows.

[Calibration Information](#)

Data processing

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

mat is not SEASOFT original procedure.

command	function
datcnv	Convert raw data to engineering units, and store converted data in file.
tcprp*	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.
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.

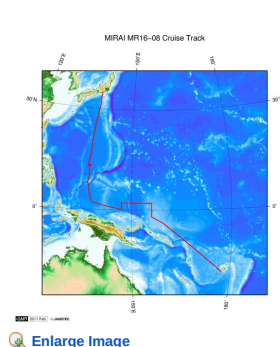
[QUALITY CONTROL AND PROCESSING OF HISTORICAL OCEANOGRAPHIC TEMPERATURE, SALINITY, AND OXYGEN DATA](#)

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 (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



MR16-08

Ship Name: MIRAI
Period: 2016-11-27 - 2016-12-23
Chief Scientist: Iwao Ueki (JAMSTEC)
Project Name: [Tropical Ocean Climate Study (TOCS)]
Proposal ▶ Tropical Ocean Climate Study/Operation of TRITON Buoy
Title:

Update History

2018-12-29 An observation data was registered.

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DEEP TOW
HYPER-DOLPHIN
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6K Camera DEEP TOW
6K Sonar DEEP TOW
KM-ROV
POWER GRAB SAMPLER
(SHELL)
POWER GRAB SAMPLER
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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 : Definition of Quality Control Flags
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

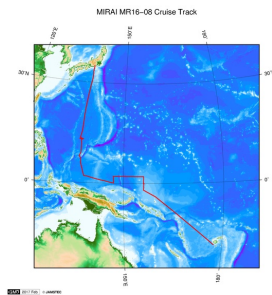
QCed data were added flag according to the NODC (National Oceanographic Data Center) quality control procedure, additionally visually checked. Please see the site of NODC of the following link for quality control procedure.

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

Sample Program

[ex_read2.f](#)

Related Information



[Enlarge Image](#)

MR16-08

Ship Name: MIRAI

Period: 2016-11-27 - 2016-12-23

Chief Scientist: Iwao Ueki (JAMSTEC)

Project Name: [Tropical Ocean Climate Study (TOCS)]

Proposal ▶ Tropical Ocean Climate Study/Operation of TRITON Buoy

Title:

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2018-12-29	An observation data was registerd.
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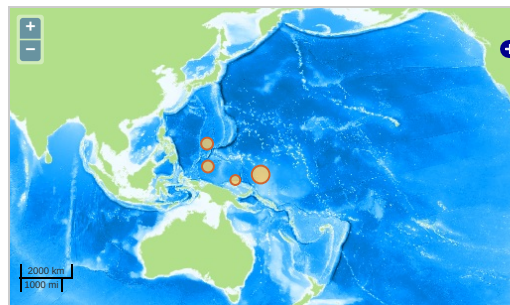
Observation Items: Pressure, Temperature, Salinity, Dissolved oxygen

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.

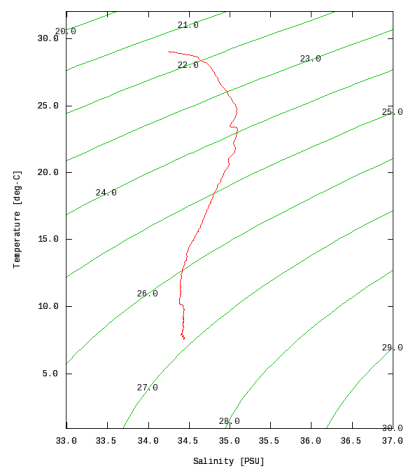


Figures

C01M01



MR16-08: C01M01
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

[Add to Basket](#)

File names

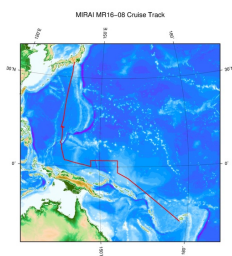
<input type="checkbox"/>	C01M01.dat
<input type="checkbox"/>	C02M01.dat
<input type="checkbox"/>	C03M01.dat
<input type="checkbox"/>	C04M01.dat
<input type="checkbox"/>	C05M01.dat
<input type="checkbox"/>	C06M01.dat
<input type="checkbox"/>	C07M01.dat
<input type="checkbox"/>	C08M01.dat
<input type="checkbox"/>	C09M01.dat
<input type="checkbox"/>	C10M01.dat
<input type="checkbox"/>	C11M01.dat
<input type="checkbox"/>	C12M01.dat
<input type="checkbox"/>	C13M01.dat

File Manager
ex_read2.f (Sample Program)

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

Observation	Time and Date	Lat. [°]	Lon. [°]
C01M01	2016-12-02 03:28	12.9976	137.0004
C02M01	2016-12-03 06:07	12.8983	136.8963
C03M01	2016-12-05 06:55	7.6685	136.7148
C04M01	2016-12-06 20:51	4.8715	137.2871
C05M01	2016-12-07 04:22	4.8583	137.2645
C06M01	2016-12-07 23:10	2.0601	138.1031
C07M01	2016-12-10 00:25	0.0626	147.0245
C08M01	2016-12-10 19:53	2.0915	146.9485
C09M01	2016-12-12 21:54	2.0225	156.0183
C10M01	2016-12-13 03:21	2.0383	156.0196
C11M01	2016-12-14 02:52	-0.0240	155.9813
C12M01	2016-12-14 04:52	0.0093	156.0616
C13M01	2016-12-16 18:54	-2.0310	155.9775
C14M01	2016-12-17 01:52	-2.0168	155.9581

Related Information



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