

MIRAI MR09-04 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2017-06-22

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Cruise ID: [MR09-04](#)

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/MR09-04_all.pdf

For Using Data

Principal Investigator

Data Management Office

Use Constraints

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

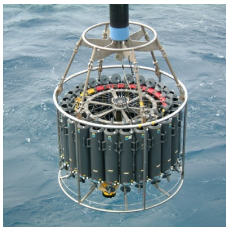
Data Citation

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

Instrument

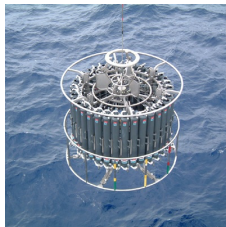
Instrument:

Water sampling system with CTD (30
litters * 24 bottles)



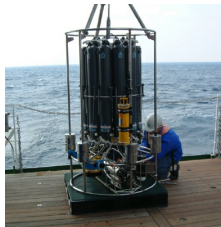
Instrument:

Water sampling system with CTD (12
litters * 36 bottles)



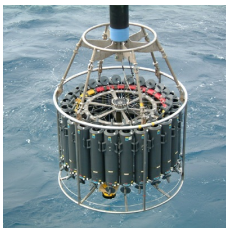
Instrument:

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 MR09-04 cruise are presented in "System".

The following software, developed and supplied by the Sea-Bird Electronics, Inc., was used in MR09-04.

SEASAVE(ver 7.17a) for data acquisition

SEASOFT(ver 7.17a) for data processing

Data presented on this website is averaged over 1db.

System

• Pressure sensor

Model : SBE9plus, Sea-Bird Electronics, Inc.

Serial number : 42423

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 : 043036

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 : 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
C01M01	42423	031359	043036	430949
C02M01	42423	031359	043036	430949
C03M01	42423	031359	043036	430949
C04M01	42423	031359	043036	430949
C04M02	42423	031359	043036	430949
C05M01	42423	031359	043036	430949
C05M02	42423	031359	043036	430949
C06M01	42423	031359	043036	430949
C07M01	42423	031359	043036	430949
C08M01	42423	031359	043036	430949
C09M01	42423	031359	043036	430949
C10M01	42423	031359	043036	430949
C11M01	42423	031359	043036	430949
C11M02	42423	031359	043036	430949
C12M01	42423	031359	043036	430949
C13M01	42423	031359	043036	430949
C14M01	42423	031359	043036	430949
C15M01	42423	031359	043036	430949
C15M02	42423	031359	043036	430949
C16M01	42423	031359	043036	430949
C17M01	42423	031359	043036	430949
C18M01	42423	031359	043036	430949
C19M01	42423	031359	043036	430949
C20M01	42423	031359	043036	430949
C21M01	42423	031359	043036	430949
C25M01	42423	031359	043036	430949
C24M01	42423	031359	043036	430949
C23M01	42423	031359	043036	430949
C22M01	42423	031359	043036	430949
C26M01	42423	031359	043036	430949
C26M02	42423	031359	043036	430949
C27M01	42423	031359	043036	430949
C28M01	42423	031359	043036	430949
C29M01	42423	031359	043036	430949
C30M01	42423	031359	043036	430949
C30M02	42423	031359	043036	430949
C31M01	42423	031359	043036	430949
C32M01	42423	031359	043036	430949
C33M01	42423	031359	043036	430949
C34M01	42423	031359	043036	430949
C35M01	42423	031359	043036	430949
C36M01	42423	031359	043036	430949
C36M02	42423	031359	043036	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.
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.
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.

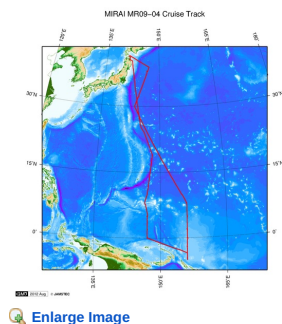
QUALITY CONTROL AND PROCESSING OF HISTORICAL OCEANOGRAPHIC TEMPERATURE, SALINITY, AND OXYGEN DATA

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, 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



MR09-04

Ship Name: MIRAI
Period: 2009-11-03 - 2009-12-12
Chief Scientist: Yuji Kashino (JAMSTEC)
Project Name: [Tropical Ocean Climate Study (TOCS), Station KEO]
Proposal ▶ Tropical Ocean Climate Study
Title:

Update History

2017-06-22	An observation data was registerd.
2014-08-06	An observation data was registerd.
2014-02-13	An observation data was registerd.
2013-03-27	An observation data was registerd.
2013-03-26	An observation data was registerd.
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HYPER-DOLPHIN
URASHIMA
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6K Camera DEEP TOW
6K Sonar DEEP TOW
KM-ROV
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MIRAI MR09-04 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2017-06-22

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Cruise ID: [MR09-04](#)

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 : 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

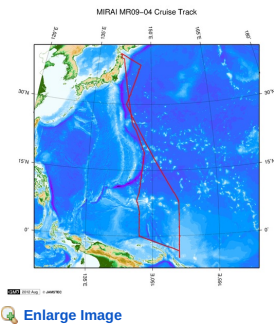
QCed data were added flag according to the NODC (National Oceanographic Data Center) quality control procedure, additionally visually checked. Please see the site of NODC of the following link for quality control procedure.

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

Sample Program

[ex_read2.f](#)

Related Information



MR09-04

Ship Name: MIRAI

Period: 2009-11-03 - 2009-12-12

Chief Scientist: Yuji Kashino (JAMSTEC)

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

Proposal ▶ Tropical Ocean Climate Study

Title:

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Last Modified: 2017-06-22

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Cruise ID: **MR09-04**

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Data Policy: **JAMSTEC**

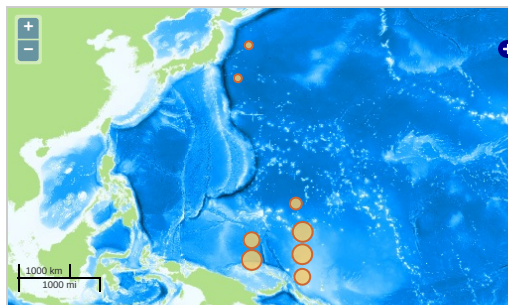
Observation Items: Pressure, Temperature, Salinity, Dissolved oxygen

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.

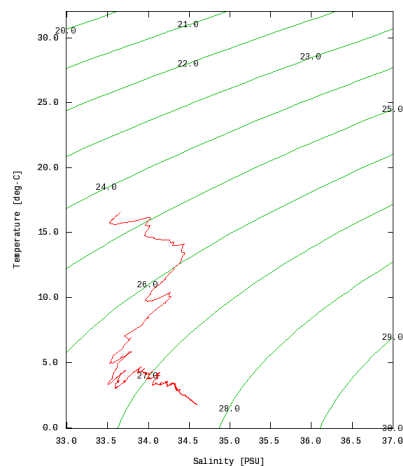


Figures

C01M01



MR09-04: 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"/>	C04M02.dat
<input type="checkbox"/>	C05M01.dat
<input type="checkbox"/>	C05M02.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

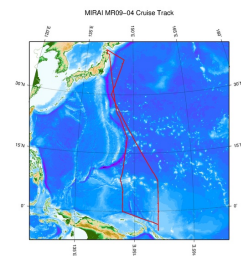
File Manager

C12M01.dat
C13M01.dat
C14M01.dat
C15M01.dat
C15M02.dat
C16M01.dat
C17M01.dat
C18M01.dat
C19M01.dat
C20M01.dat
C21M01.dat
C22M01.dat
C23M01.dat
C24M01.dat
C25M01.dat
C26M01.dat
C26M02.dat
C27M01.dat
C28M01.dat
C29M01.dat
C30M01.dat
C30M02.dat
C31M01.dat
C32M01.dat
C33M01.dat
C34M01.dat
C35M01.dat
C36M01.dat
C36M02.dat
ex_read2.f (Sample Program)

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

Observation	Time and Date	Lat. [°]	Lon. [°]
C01M01	2009-11-05 06:54	38.1051	146.4923
C02M01	2009-11-06 19:22	32.2540	144.5591
C03M01	2009-11-12 02:13	9.9998	154.8578
C04M01	2009-11-12 19:05	8.0168	155.9318
C04M02	2009-11-13 02:03	8.0406	155.8650
C05M01	2009-11-14 18:32	4.9715	156.0595
C05M02	2009-11-15 02:03	4.9495	156.1008
C06M01	2009-11-16 02:40	4.5003	156.0003
C07M01	2009-11-16 06:30	4.0015	155.9998
C08M01	2009-11-16 10:00	3.5013	156.0004
C09M01	2009-11-16 17:59	3.0023	156.0018
C10M01	2009-11-16 21:41	2.5011	155.9996
C11M01	2009-11-17 06:26	2.0086	155.9263
C11M02	2009-11-17 17:58	1.9570	155.9930
C12M01	2009-11-18 02:25	1.5003	156.0015
C13M01	2009-11-18 06:29	1.0001	155.9998
C14M01	2009-11-18 09:55	0.5003	156.0000
C15M01	2009-11-18 18:11	0.0293	156.0388
C15M02	2009-11-19 04:29	-0.0276	155.9803
C16M01	2009-11-20 06:25	-0.5021	155.9985
C17M01	2009-11-20 09:42	-0.9985	155.9990
C18M01	2009-11-20 20:59	-1.5001	155.9991
C19M01	2009-11-21 04:57	-1.9831	155.9960
C20M01	2009-11-22 06:30	-2.5006	155.9988
C21M01	2009-11-22 09:50	-3.0001	156.0003
C22M01	2009-11-24 05:25	-3.4998	156.0008
C23M01	2009-11-23 07:53	-3.9985	156.0003
C24M01	2009-11-23 04:39	-4.4981	155.9990
C25M01	2009-11-23 01:24	-4.9641	156.0331
C26M01	2009-11-25 22:28	-0.0181	147.0263
C26M02	2009-11-26 07:30	0.0748	147.0225
C27M01	2009-11-28 02:45	0.4996	147.0003
C28M01	2009-11-28 06:08	1.0001	146.9995
C29M01	2009-11-28 09:30	1.4998	146.9995
C30M01	2009-11-28 19:10	1.9790	147.0303
C30M02	2009-11-29 03:00	1.9813	147.0346
C31M01	2009-11-30 04:46	2.4998	147.0016
C32M01	2009-11-30 19:38	2.9933	147.0145
C33M01	2009-11-30 23:13	3.4981	147.0006
C34M01	2009-12-01 02:46	3.9988	146.9981
C35M01	2009-12-01 06:15	4.4991	147.0003
C36M01	2009-12-02 02:58	5.0390	146.9736
C36M02	2009-12-03 02:59	4.9671	147.0569

Related Information



[Enlarge Image](#)

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Period: 2009-11-03 - 2009-12-12
Chief Scientist: Yuji Kashino (JAMSTEC)
Project Name: [Tropical Ocean Climate Study (TOCS), Station KEO]
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