

MIRAI MR14-02 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2017-06-22

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Cruise ID: [MR14-02](#)

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/MR14-02_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)



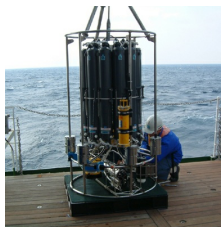
Instrument:

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 MR14-02 cruise are presented in "System".

The following software, developed and supplied by the Sea-Bird Electronics, Inc., was used in MR14-02.

SEASAVE(ver 7.22.5) for data acquisition

SEASOFT(ver 7.22.5a) for data processing

Data presented on this website is averaged over 1db.

System

· Pressure sensor

Model : SBE9plus, Sea-Bird Electronics, Inc.

Serial number : 94766

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 : 031464

Measurement range : -5.0 to +35degC

Accuracy : 0.001degC

Resolution : 0.0002degC

· Salinity sensor

Model : SBE4, Sea-Bird Electronics, Inc.

Serial number : 041203

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 : 432036
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	94766	031464	041203	432036
C02M01	94766	031464	041203	432036
C03M01	94766	031464	041203	432036
C04M01	94766	031464	041203	432036
C05M01	94766	031464	041203	432036
C06M01	94766	031464	041203	432036
C07M01	94766	031464	041203	432036
C07M02	94766	031464	041203	432036
C08M01	94766	031464	041203	432036
C09M01	94766	031464	041203	432036
C10M01	94766	031464	041203	432036
C11M01	94766	031464	041203	432036
C12M01	94766	031464	041203	432036
C13M01	94766	031464	041203	432036
C14M01	94766	031464	041203	432036
C15M01	94766	031464	041203	432036
C16M01	94766	031464	041203	432036
C17M01	94766	031464	041203	432036
C18M01	94766	031464	041203	432036
C19M01	94766	031464	041203	432036
C20M01	94766	031464	041203	432036
C21M01	94766	031464	041203	432036
C22M01	94766	031464	041203	432036
C23M01	94766	031464	041203	432036
C24M01	94766	031464	041203	432036
C25M01	94766	031464	041203	432036
C26M01	94766	031464	041203	432036
C27M01	94766	031464	041203	432036
C28M01	94766	031464	041203	432036
C29M01	94766	031464	041203	432036
C30M01	94766	031464	041203	432036
C31M01	94766	031464	041203	432036
C32M01	94766	031464	041203	432036
C33M01	94766	031464	041203	432036
C34M01	94766	031464	041203	432036
C35M01	94766	031464	041203	432036
C36M01	94766	031464	041203	432036
C37M01	94766	031464	041203	432036

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.
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.
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](#)

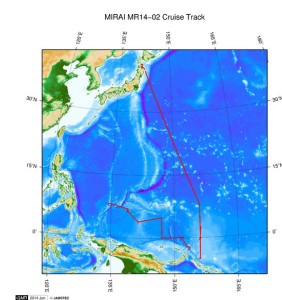
In addition, an abnormal value is identified by a visual check, and the data after visual QC is released.

Note

(1) In this cruise, there is extra data (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.

to the public. Please contact us from [Contact Us](#) above if necessary.

Related Information



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MR14-02

Ship Name: MIRAI
Period: 2014-02-15 - 2014-03-23
Chief Scientist: Takuya Hasegawa (JAMSTEC)
Project Name: [Tropical Ocean Climate Study (TOCS)]
Proposal ▶ Tropical Ocean Climate Study
Title:

Update History

2017-06-22	An observation data was registerd.
2016-03-31	An observation data was registerd.

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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

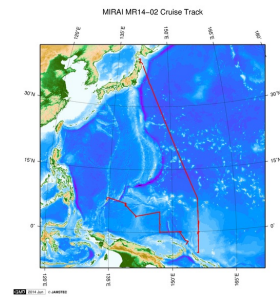
QCed data were added flag according to the NODC (National Oceanographic Data Center) quality control procedure, additionally visually checked. Please see the site of NODC of the following link for quality control procedure.

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

Sample Program

[ex_read2.f](#)

Related Information



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Period: 2014-02-15 - 2014-03-23
Chief Scientist: Takuya Hasegawa (JAMSTEC)
Project Name: [Tropical Ocean Climate Study (TOCS)]
Proposal ▶ Tropical Ocean Climate Study
Title:

Update History

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Data Policy: **JAMSTEC**

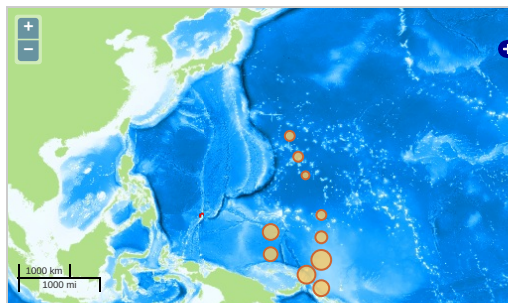
Observation Items: Pressure, Temperature, Salinity, Dissolved oxygen

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.



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

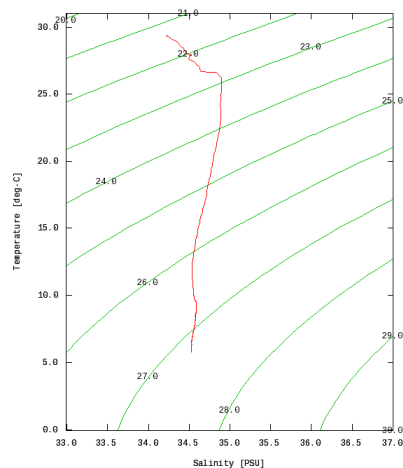
Imagery reproduced from ...

Figures

C01M01



MR14-02: 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

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File names

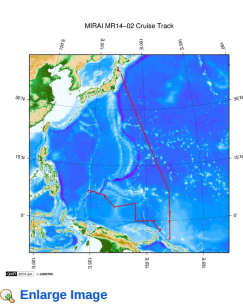
<input type="checkbox"/>	C01M01.dat
<input type="checkbox"/>	C02M01.dat
<input type="checkbox"/>	C03M01.dat
<input type="checkbox"/>	C04M01.dat
<input type="checkbox"/>	C05M01.dat
<input type="checkbox"/>	C06M01.dat
<input type="checkbox"/>	C07M01.dat
<input type="checkbox"/>	C07M02.dat
<input type="checkbox"/>	C08M01.dat
<input type="checkbox"/>	C09M01.dat
<input type="checkbox"/>	C10M01.dat
<input type="checkbox"/>	C11M01.dat
<input type="checkbox"/>	C12M01.dat

 File Manager
 C14M01.dat
 C15M01.dat
 C16M01.dat
 C17M01.dat
 C18M01.dat
 C19M01.dat
 C20M01.dat
 C21M01.dat
 C22M01.dat
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 C26M01.dat
 C27M01.dat
 C28M01.dat
 C29M01.dat
 C30M01.dat
 C31M01.dat
 C32M01.dat
 C33M01.dat
 C34M01.dat
 C35M01.dat
 C36M01.dat
 C37M01.dat
 ex_read2.f (Sample Program)

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

Observation	Time and Date	Lat. [°]	Lon. [°]
C01M01	2014-02-19 00:03	4.9398	147.0130
C02M01	2014-02-19 20:23	2.0615	146.9828
C03M01	2014-02-20 04:33	2.4945	147.0011
C04M01	2014-02-20 07:19	2.9960	147.0028
C05M01	2014-02-21 05:44	1.5013	147.0031
C06M01	2014-02-21 09:34	1.0009	147.0029
C07M01	2014-02-21 20:27	0.0645	147.0351
C07M02	2014-02-22 04:27	0.0660	147.0356
C08M01	2014-02-22 06:56	0.4978	147.0013
C09M01	2014-02-24 21:56	-2.6398	153.3743
C10M01	2014-02-25 03:16	-2.8015	153.2371
C11M01	2014-02-27 05:25	-4.5023	156.0000
C12M01	2014-02-27 08:08	-4.0041	156.0006
C13M01	2014-02-27 19:26	-5.0366	155.9995
C14M01	2014-02-28 08:10	-3.4990	155.9980
C15M01	2014-03-01 03:54	-2.4985	156.0031
C16M01	2014-03-01 07:56	-2.9939	156.0026
C17M01	2014-03-01 19:24	-1.9998	155.9695
C18M01	2014-03-02 03:07	-1.5028	156.0028
C19M01	2014-03-02 06:43	-1.0015	156.0031
C20M01	2014-03-03 02:56	-0.0130	155.9946
C21M01	2014-03-03 07:15	-0.4990	156.0004
C22M01	2014-03-04 02:55	0.0001	156.0168
C23M01	2014-03-06 02:56	0.5020	156.0028
C24M01	2014-03-07 03:31	1.4980	156.0026
C25M01	2014-03-07 06:46	0.9946	156.0075
C26M01	2014-03-08 03:50	2.0521	156.0428
C27M01	2014-03-09 06:04	3.0106	156.0025
C28M01	2014-03-10 06:12	4.0045	156.0071
C29M01	2014-03-10 19:58	5.0356	155.9566
C30M01	2014-03-11 02:57	5.0023	156.0000
C31M01	2014-03-11 19:55	7.9608	156.0123
C32M01	2014-03-12 11:53	10.0000	155.1986
C33M01	2014-03-13 21:51	15.0016	153.1980
C34M01	2014-03-14 19:52	18.3001	151.9008
C35M01	2014-03-15 09:24	20.6661	150.9496
C36M01	2014-03-15 21:56	22.0015	150.3995
C37M01	2014-03-16 19:54	24.9990	149.1981

Related Information



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