

MIRAI MR17-04 Leg1 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2019-08-31

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

Cruise ID: [MR17-04 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/MR17-04_leg1-2_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 MR17-04_leg1 cruise are presented in "System".

The following software, developed and supplied by the Sea-Bird Electronics, Inc., was used in MR17-04_leg1.

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 : 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 : 430330

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
K02M001	117457	031525	042435	430330
K02M002	117457	031525	042435	430330
K02M003	117457	031525	042435	430330
K02M004	117457	031525	042435	430330
K02M005	117457	031525	042435	430330
K02M006	117457	031525	042435	430330
K02M007	117457	031525	042435	430330
K02M008	117457	031525	042435	430330
K02M009	117457	031525	042435	430330
K02M010	117457	031525	042435	430330
K02M011	117457	031525	042435	430330
K02M012	117457	031525	042435	430330
K02M013	117457	031525	042435	430330
U01M001	117457	031525	042435	430330
U01M002	117457	031525	042435	430330
U02M001	117457	031525	042435	430330
U03M001	117457	031525	042435	430330
U03M002	117457	031525	042435	430330
U04M001	117457	031525	042435	430330
U04M002	117457	031525	042435	430330
U04M003	117457	031525	042435	430330
U05M001	117457	031525	042435	430330
U05M002	117457	031525	042435	430330

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.

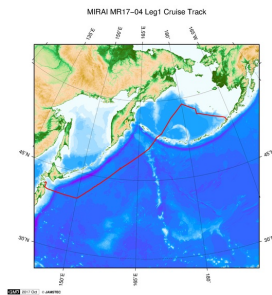
[QUALITY CONTROL AND PROCESSING OF HISTORICAL OCEANOGRAPHIC TEMPERATURE, SALINITY, AND OXYGEN DATA](#)

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 III 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](#)

MR17-04 Leg1

Ship Name: MIRAI

Period: 2017-07-10 - 2017-08-02

Chief Scientist: Tetsuichi Fujiki (JAMSTEC)

Project Name: [Station K2]

Proposal ▶ Collaborative experiment on Biogeochemical and Ecosystem Studies for sub-Arctic sea

Title:

Update History

2019-08-31	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

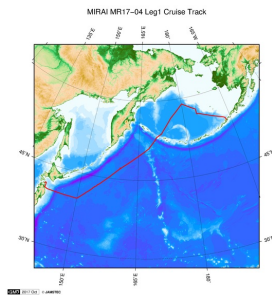
QCed data were added flag according to the NODC (National Oceanographic Data Center) quality control procedure, additionally visually checked. Please see the site of NODC of the following link for quality control procedure.

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

Sample Program

[ex_read2.f](#)

Related Information



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MR17-04 Leg1

Ship Name: MIRAI

Period: 2017-07-10 - 2017-08-02

Chief Scientist: Tetsuichi Fujiki (JAMSTEC)

Project Name: [Station K2]

Proposal ▶ Collaborative experiment on Biogeochemical and Ecosystem Studies for sub-Arctic sea

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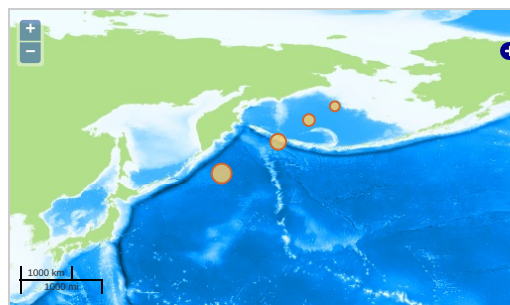
Observation Items: Pressure, Temperature, Salinity, Dissolved oxygen

Science Keywords:

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

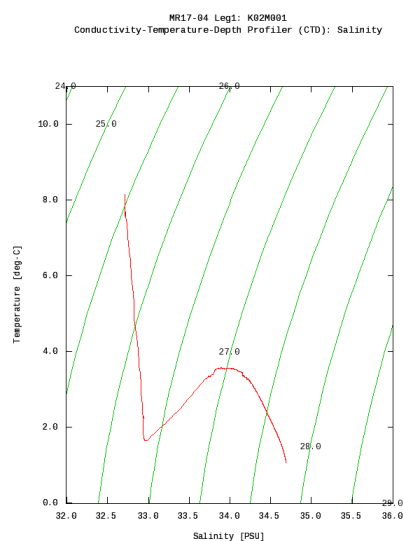
Observation Map

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



Figures

K02M001














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

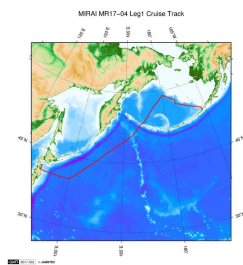
<input type="checkbox"/>	K02M001.dat
<input type="checkbox"/>	K02M002.dat
<input type="checkbox"/>	K02M003.dat
<input type="checkbox"/>	K02M004.dat
<input type="checkbox"/>	K02M005.dat
<input type="checkbox"/>	K02M006.dat
<input type="checkbox"/>	K02M007.dat
<input type="checkbox"/>	K02M008.dat
<input type="checkbox"/>	K02M009.dat
<input type="checkbox"/>	K02M010.dat
<input type="checkbox"/>	K02M011.dat
<input type="checkbox"/>	K02M012.dat
<input type="checkbox"/>	K02M013.dat

-  File Manager
-  U01M002.dat
-  U02M001.dat
-  U03M001.dat
-  U03M002.dat
-  U04M001.dat
-  U04M002.dat
-  U04M003.dat
-  U05M001.dat
-  U05M002.dat
-  ex_read2.f (Sample Program)

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

Observation	Time and Date	Lat. [°]	Lon. [°]
K02M001	2017-07-14 21:00	46.9993	159.9990
K02M002	2017-07-16 05:14	47.0005	159.9983
K02M003	2017-07-17 15:24	46.9851	160.0145
K02M004	2017-07-17 20:00	47.0000	160.0048
K02M005	2017-07-17 23:53	46.9988	160.0000
K02M006	2017-07-18 01:42	47.0023	160.0003
K02M007	2017-07-18 22:39	47.0056	160.0100
K02M008	2017-07-19 15:25	47.0015	159.9995
K02M009	2017-07-19 19:55	47.0018	160.0013
K02M010	2017-07-20 02:05	47.0046	160.0043
K02M011	2017-07-21 15:24	46.9991	159.9991
K02M012	2017-07-21 17:37	46.9990	159.9975
K02M013	2017-07-23 19:01	47.0001	160.0004
U01M001	2017-07-26 02:53	52.6408	170.0485
U01M002	2017-07-26 14:23	52.6410	170.0525
U02M001	2017-07-26 21:03	53.1343	170.5513
U03M001	2017-07-27 05:58	53.7011	171.9915
U03M002	2017-07-27 07:39	53.6971	172.0026
U04M001	2017-07-28 05:58	56.4983	175.5036
U04M002	2017-07-28 14:25	56.4998	175.5006
U04M003	2017-07-28 16:52	56.4991	175.4991
U05M001	2017-07-29 18:51	58.9378	-179.9021
U05M002	2017-07-29 20:41	58.9378	-179.9078

Related Information



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MR17-04 Leg1

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Period: 2017-07-10 - 2017-08-02
Chief Scientist: Tetsuichi Fujiki (JAMSTEC)
Project Name: [Station K2]
Proposal: ▶ Collaborative experiment on Biogeochemical and Ecosystem Studies for sub-Arctic sea
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