

MIRAI MR17-04 Leg2 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2019-08-31

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

Cruise ID: [MR17-04 Leg2](#)

Conductivity-Temperature-Depth Profiler (CTD): Processed (DMO/PI)

Data Policy: [JAMSTEC](#)

Observation Items: Pressure, Temperature, Salinity, Dissolved oxygen, PAR, Fluorescence

Science Keywords:

OCEANS > OCEAN CHEMISTRY > OXYGEN
OCEANS > OCEAN TEMPERATURE > WATER TEMPERATURE
OCEANS > SALINITY/DENSITY > SALINITY
OCEANS > OCEAN OPTICS > PHOTOSYNTHETICALLY ACTIVE RADIATION
OCEANS > OCEAN OPTICS > FLUORESCENCE

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR17-04_leg1-2_all.pdf

For Using Data

Principal Investigator

Yoshihiro Fujiwara (JAMSTEC)
Data Management Office

Use Constraints

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

Data Citation

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

Instrument

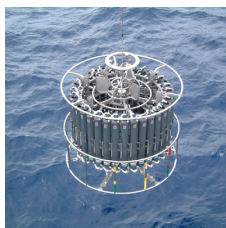
Instrument:

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



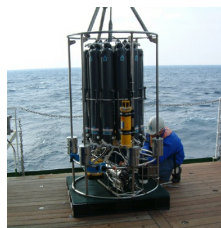
Instrument:

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 Leg2 cruise are presented in "System".

The following software, developed and supplied by the Sea-Bird Electronics, Inc., was used in MR17-04 Leg2.

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

(1) Pressure sensor

Model: SBE9plus, Sea-Bird Electronics, Inc.
Serial No.: 09P54451-1027(117457)
Measurement range: up to 10500m
Accuracy: 0.015%F.S.
Resolution: 0.001%F.S.
Last Calibration Date: 25-May-2017

(2) Temperature sensor

Model: SBE03-04/F, Sea-Bird Electronics, Inc.
Serial No.: 031525
Measurement range: -5.0 to +35degC
Accuracy: 0.001degC
Resolution: 0.0002degC
Last Calibration Date: 05-May-2017

- (3) Salinity sensor
Model: SBE04C, Sea-Bird Electronics,Inc.
Serial No.: 042435
Measurement range: 0.0 to 7S/m
Accuracy: 0.0003S/m
Resolution: 0.00004S/m
Last Calibration Date: 15-May-2017
- (4) Dissolved oxygen sensor
Model: RINKO III, JFE Advantech Co., Ltd.
Serial No.: 0278 (163010BA)
Measurement range: 0 to 200%
Accuracy: Non-Linear ±2%FS
Resolution: 0.01 to 0.04%
Last Calibration Date: 25-Oct-2016
- (5) Transmissometer
Model: C-Star, WET Labs,Inc.
Serial No.: CST-1363DR
Last Calibration Date: 04-Jan-2017
- (6) Fluorometer
Model: Seapoint Chlorophyll Fluorometer, Seapoint Sensors,Inc.
Serial No.: 3700
Measurement range: 0-15ug/l(Gain: 10X)
Resolution: 0.02ug/l
- (7) Turbidity Meter
Model: Seapoint Turbidity Meter, Seapoint Sensors,Inc.
Serial No.: 14953
Measurement range: 0-25FTU(Gain: 100X)
Resolution: 0.006FTU
- (8) PAR sensor
Model: PAR-Log ICSW, Satlantic Inc.
Serial No.: 1025
Measurement range: 0-5000 umol photons/m²/s
Last Calibration Date: 06-Jul-2015

Correction method

- Salinity

Coefficients of primary conductivity correction: correct_cnd_pri_MR1704_C2P2.txt

Coefficients of conductivity (Ccor), pressure (Pcor), pressure * conductivity (PCcor), pressure squared (P²cor), pressure squared * conductivity (P²Ccor), pressure squared * conductivity squared (P²C²cor) and Offset were calculated from the data.

It is not included Timecor calculated to be elapsed days from the time of the first observation.

$$\text{corCTDCND1} = \text{CTDCND1} - (\text{Ccor} * \text{CTDCND1} + \text{Pcor} * \text{CTDPRS} + \text{PCcor} * \text{CTDPRS} + \text{CTDCND1} + \text{P}^2\text{cor} * (\text{CTDPRS}^2) + \text{P}^2\text{Ccor} * (\text{CTDPRS}^2) * \text{CTDCND1} + \text{P}^2\text{C}^2\text{cor} * (\text{CTDPRS}^2) * (\text{CTDCND1}^2) + \text{Offset})$$

- Dissolved oxygen (RINKO III)

Coefficients of primary RINKO III correction: rinkooutconf_pri_rnkt_109_01.txt

Coefficients were calculated from data in which the standard deviation of the dissolved oxygen voltage of each bottle data is less than 0.01.

Stern-Volmer equation

$$\text{ksv} = \text{c0} + (\text{c1} * \text{CTDTMP1}) + (\text{c2} * \text{CTDTMP1}^2)$$
$$\text{tau0} = 1 + (\text{c3} * \text{CTDTMP1})$$
$$\text{tau} = \text{c4} + (\text{c5} * \text{CTDOXV1})$$
$$\text{rinoxy} = ((\text{tau0} / \text{tau})^{\text{conf}} - 1) / \text{ksv}$$

pressure compensate

$$\text{ox} = (1 + \text{cp} * \text{CTDPRS} / 1000) * \text{rinoxy}$$

Calculation of the oxygen solubility was used coefficients calculated by Uchida (2016) from the data of Benson and Krause (1992) by Garcia and Gordon (1984).

$$\text{B0} = -6.24523\text{e-}3$$
$$\text{B1} = -7.37614\text{e-}3$$
$$\text{B2} = -1.03410\text{e-}2$$
$$\text{B3} = -8.17083\text{e-}3$$
$$\text{C0} = -4.88682\text{e-}7$$
$$\text{factt} = \exp(s * (\text{B0} + \text{B1} * \text{ts} + \text{B2} * \text{ts}^2 + \text{B3} * \text{ts}^3) + \text{C0} * \text{CTDSAL1}^2);$$

Garcia and Gordon (1992)

$$\text{ox} = \text{ox} * \text{factt};$$

- Light transmission

$$\text{Vdark} = 0.0012$$
$$\text{Vref} = 4.3590$$
$$\text{corCTDXMISS} = ((\text{CTDXMISSV} - \text{Vdark}) / (\text{Vref} - \text{Vdark})) * 100$$

- Fluorescence

Coefficients of fluorescence correction: FI_pri_MR1704_w1.txt

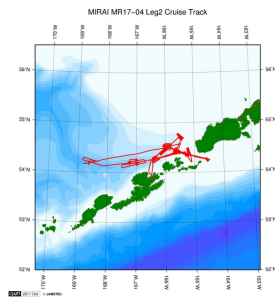
$$\text{corrCTDFL} = \text{slope} * \text{CTDFL} + \text{offset}$$

- PAR

Coefficients of PAR: offset = -0.1040

Related Information

- ☒Cruise Data
- ☐Dive Data



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MR17-04 Leg2

Ship Name: MIRAI

Period: 2017-08-05 - 2017-08-21

Chief Scientist: Yoshihiro Fujiwara (JAMSTEC)

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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Go to a Dive Information

Dive ID:

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Format Description for the Processed (DMO/PI) 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](#)

Output items are as follows.

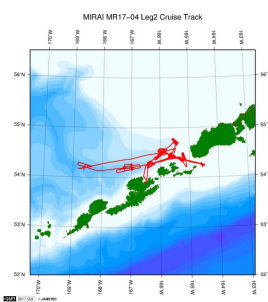
- CTDP RS (Pressure)
- CTDD EP (Depth)
- CTDT MP (Temperature)
- CTDS AL (Salinity)
- CTDO XY (Dissolved oxygen)
- XMISS (Light transmission)
- XMISS CP (Coefficient of beam attenuation)
- FLUOR (Fluorescence)
- TURB (Turbidity)
- PAR (PAR)

The Data flags are as follows.

- 1: Not calibrated
- 2: Acceptable measurement
- 3: questionable measurement
- 4: bad measurement
- 6: Interpolated over > 1 dbar interval

Related Information

☒ Cruise Data ☐ Dive Data



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Observation Map

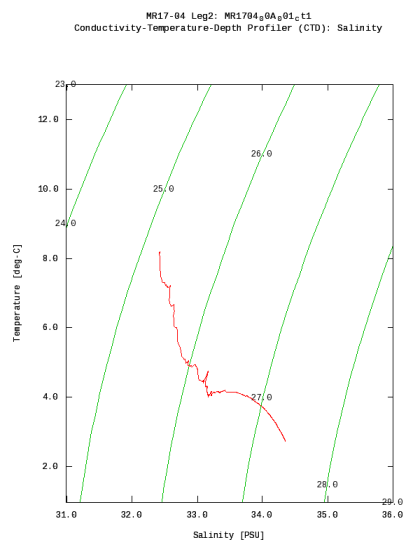
- Clicking the icon displays a balloon with observation information.
- Then click the observation name, figures will be displayed.



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

Figures

MR1704_00A_001_ct1



Data List

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☐ File names

☐ FI_pri_MR1704_w1.txt

☐ MR1704_00A_001_ct1.csv

☐ MR1704_00B_001_ct1.csv

☐ MR1704_00B_002_ct1.csv

☐ MR1704_00B_003_ct1.csv

☐ MR1704_00C_001_ct1.csv

☐ MR1704_00C_002_ct1.csv

☐ MR1704_00D_001_ct1.csv

☐ MR1704_00E_001_ct1.csv

☐ MR1704_00G_001_ct1.csv

☐ MR1704_00G_002_ct1.csv

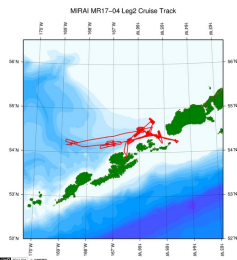
File names
MR1704_00G_003_ct1.csv
MR1704_00H_001_ct1.csv
MR1704_00M_001_ct1.csv
MR1704_00M_002_ct1.csv
MR1704_00M_003_ct1.csv
MR1704_00N_001_ct1.csv
MR1704_00N_002_ct1.csv
MR1704_00P_001_ct1.csv
MR1704_00P_002_ct1.csv
MR1704_00Q_001_ct1.csv
MR1704_00Q_002_ct1.csv
MR1704_00R_001_ct1.csv
MR1704_00R_002_ct1.csv
MR1704_00S_001_ct1.csv
MR1704_00S_002_ct1.csv
MR1704_00T_001_ct1.csv
MR1704_00U_001_ct1.csv
MR1704_0E2_001_ct1.csv
MR1704_0E2_002_ct1.csv
MR1704_0M2_001_ct1.csv
correct_cnd_pri_MR1704_C2P2.txt
rinkooutconf_pri_rnkt_109_01.txt

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

Observation	Time and Date	Lat. [°]	Lon. [°]
MR1704_00A_001_ct1	2017-08-06 10:39	54.2950	-166.3980
MR1704_00B_001_ct1	2017-08-07 01:57	54.4745	-166.0257
MR1704_00B_002_ct1	2017-08-13 11:46	54.5131	-165.9376
MR1704_00B_003_ct1	2017-08-18 05:13	54.5125	-165.9373
MR1704_00C_001_ct1	2017-08-08 00:47	54.7250	-165.5053
MR1704_00C_002_ct1	2017-08-08 10:11	54.7109	-165.4508
MR1704_00D_001_ct1	2017-08-10 00:12	54.4308	-165.5839
MR1704_00E_001_ct1	2017-08-11 23:27	54.4017	-165.3383
MR1704_00G_001_ct1	2017-08-14 22:35	54.2050	-166.9775
MR1704_00G_002_ct1	2017-08-15 10:04	54.1949	-166.9723
MR1704_00G_003_ct1	2017-08-15 14:38	54.1833	-166.9750
MR1704_00H_001_ct1	2017-08-17 02:38	54.1734	-168.7014
MR1704_00M_001_ct1	2017-08-10 10:16	54.4311	-165.5867
MR1704_00M_002_ct1	2017-08-11 00:27	54.4293	-165.5853
MR1704_00M_003_ct1	2017-08-18 07:16	54.4305	-165.5778
MR1704_00N_001_ct1	2017-08-13 09:42	54.4698	-165.7319
MR1704_00N_002_ct1	2017-08-18 06:24	54.4684	-165.7313
MR1704_00P_001_ct1	2017-08-14 16:29	54.3865	-165.4250
MR1704_00P_002_ct1	2017-08-18 08:13	54.3846	-165.4161
MR1704_00Q_001_ct1	2017-08-14 09:08	54.2523	-164.4829
MR1704_00Q_002_ct1	2017-08-18 12:41	54.2491	-164.4855
MR1704_00R_001_ct1	2017-08-14 12:20	54.2943	-164.7649
MR1704_00R_002_ct1	2017-08-18 11:23	54.2966	-164.7686
MR1704_00S_001_ct1	2017-08-14 14:10	54.3349	-165.0262
MR1704_00S_002_ct1	2017-08-18 10:14	54.3357	-165.0249
MR1704_00T_001_ct1	2017-08-13 16:03	54.5854	-165.4780
MR1704_00U_001_ct1	2017-08-13 18:29	54.3701	-165.7373
MR1704_0E2_001_ct1	2017-08-12 10:12	54.3428	-165.2726
MR1704_0E2_002_ct1	2017-08-18 09:05	54.3425	-165.2737
MR1704_0M2_001_ct1	2017-08-13 22:59	54.4062	-165.5950

Related Information

 Cruise Data  Dive Data



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