MIRAI MR18-04 Leg2 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2020-09-30

ReadMe Observation Data Data Format

Cruise ID: **MR18-04 Leg2**
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/MR18-04_leg2_all.pdf

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ⓘ **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)
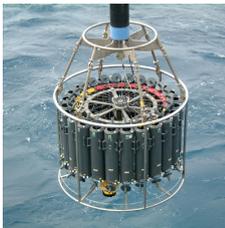
Instrument:
Water sampling system with CTD (12 litters * 36 bottles)
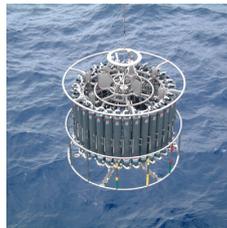
Instrument:
Water sampling system with CTD (12 litters * 12 bottles)
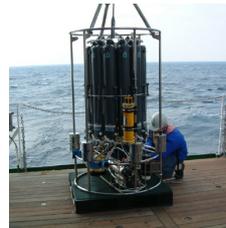
Instrument:
Conductivity temperature depth measurements (CTD)
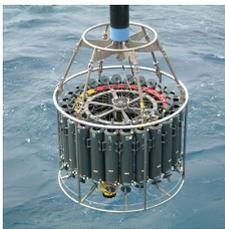
Overview

   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 MR18-04 Leg2 cruise are presented in "System".
   The following software, developed and supplied by the Sea-Bird Electronics, Inc., was used in MR18-04 Leg2.
      SEASAVE(ver 7.23.2) for data acquisition
      SEASOFT(ver 7.26.7.114) 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 10500 m
      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 +35 degC
      Accuracy : 0.001 degC
      Resolution : 0.0002 degC
   ・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 : 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
C01M001	117457	031525	042435	432211
C02M001	117457	031525	042435	432211
C03M001	117457	031525	042435	432211
C04M001	117457	031525	042435	432211
C05M001	117457	031525	042435	432211
STNM001	117457	031525	042435	432211
STNM002	117457	031525	042435	432211
STNM003	117457	031525	042435	432211
STNM004	117457	031525	042435	432211
STNM005	117457	031525	042435	432211
STNM006	117457	031525	042435	432211
STNM007	117457	031525	042435	432211
STNM008	117457	031525	042435	432211
STNM009	117457	031525	042435	432211
STNM010	117457	031525	042435	432211
STNM011	117457	031525	042435	432211
STNM012	117457	031525	042435	432211
STNM013	117457	031525	042435	432211
STNM014	117457	031525	042435	432211
STNM015	117457	031525	042435	432211
STNM016	117457	031525	042435	432211
STNM017	117457	031525	042435	432211

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
datcnv	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 (RINKO III), fluorescence intensity, turbidity, light transmission, 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

MIRAI MR18-04 Leg2 Cruise Track

Enlarge Image

MR18-04 Leg2
Ship Name: MIRAI
Period: 2018-08-12 - 2018-09-06
Chief Scientist: Masaki Katsumata (JAMSTEC)
Proposal   The observational study to construct and extend the "western Pacific super site network"
Title:

Update History

2020-09-30	An observation data was registerd.

MIRAI MR18-04 Leg2 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2020-09-30

ReadMe | Observation Data | **Data Format**

Cruise ID: **MR18-04 Leg2**
Conductivity-Temperature-Depth Profiler (CTD): Processed (DMO)-QCed
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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	MRYY-(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

MR18-04 Leg2
Ship Name: MIRAI
Period: 2018-08-12 - 2018-09-06
Chief Scientist: Masaki Katsumata (JAMSTEC)
Proposal   The observational study to construct and extend the "western Pacific super site network"
Title:

MIRAI MR18-04 Leg2 Cruise Track

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Update History

2020-09-30	An observation data was registerd.

JAMSTEC 国立研究開発法人
海洋研究開発機構
JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY

DARWIN ⁺ Data and Sample Research System
for Whole Cruise Information in JAMSTEC

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| ReadMe | Observation Data | Data Format |

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OCEANS	> OCEAN TEMPERATURE	> WATER 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.

1000 km
1000 mi

Imagery reproduced from ...
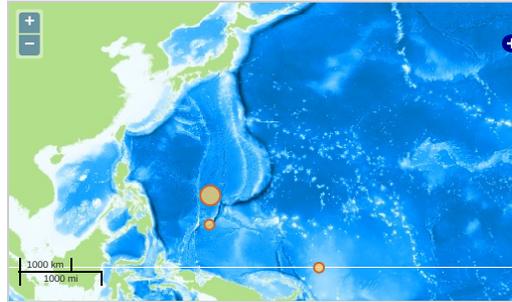
▬ ... Observation Line   ▬ ... Navigation   ⊙ ... Observation, Dive Point, Hole

Figures
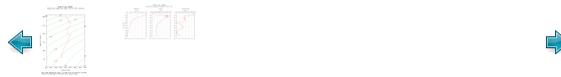
C01M001

MR18-04 Leg2: C01M001
Conductivity-Temperature-Depth Profiler (CTD): Salinity
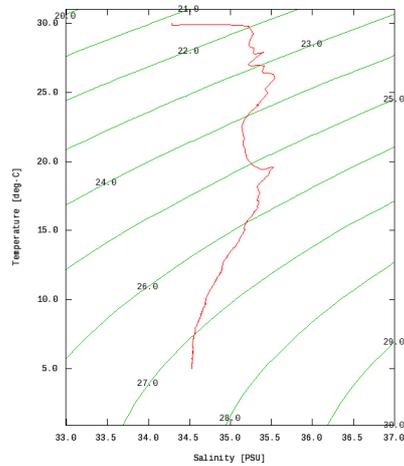
Only values evaluated as "good : all flags are 0" are plotted in profiles.
Please see Format Page for the definition of quality flags.

Data List

[Add to Basket]

☐	**File names**
☐	C01M001.dat
☐	C02M001.dat
☐	C03M001.dat
☐	C04M001.dat
☐	C05M001.dat
☐	STNM001.dat
☐	STNM002.dat
☐	STNM003.dat
☐	STNM004.dat
☐	STNM005.dat
☐	STNM006.dat
☐	STNM007.dat
☐	STNM008.dat

STNM009.dat
File Names

☐	STNM010.dat
☐	STNM011.dat
☐	STNM012.dat
☐	STNM013.dat
☐	STNM014.dat
☐	STNM015.dat
☐	STNM016.dat
☐	STNM017.dat
☐	ex_read2.f (Sample Program)

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

Observation	Time and Date	Lat. [°]	Lon. [°]
C01M001	2018-08-15 03:02	0.0073	156.0555
C02M001	2018-08-15 19:54	-0.0305	155.9600
C03M001	2018-08-22 03:52	7.6496	136.7123
C04M001	2018-08-22 20:52	7.8491	136.5028
C05M001	2018-08-24 06:10	12.8636	136.8553
STNM001	2018-08-25 05:54	13.1415	136.8888
STNM002	2018-08-25 14:54	13.0061	136.6851
STNM003	2018-08-25 17:55	12.9960	136.6865
STNM004	2018-08-25 20:57	12.9985	136.7028
STNM005	2018-08-25 23:56	13.0048	136.7078
STNM006	2018-08-26 02:58	13.0066	136.7110
STNM007	2018-08-26 05:54	12.9855	136.6995
STNM008	2018-08-26 08:50	12.9885	136.7060
STNM009	2018-08-26 11:50	12.9883	136.7088
STNM010	2018-08-26 14:55	12.9988	136.6973
STNM011	2018-08-26 17:54	12.9949	136.6881
STNM012	2018-08-26 20:55	13.0018	136.6953
STNM013	2018-08-26 23:55	13.0096	136.7093
STNM014	2018-08-27 02:53	13.0033	136.7176
STNM015	2018-08-27 05:54	13.0101	136.7071
STNM016	2018-08-27 08:53	13.0073	136.7050
STNM017	2018-08-27 11:53	12.9921	136.7151

Related Information
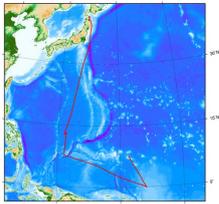
MIRAI MR18-04 Leg2 Cruise Track

MR18-04 Leg2
Ship Name: MIRAI
Period: 2018-08-12 - 2018-09-06
Chief Scientist: Masaki Katsumata (JAMSTEC)
Proposal The observational study to construct and extend the "western Pacific super site network"
Title:

🔍 **Enlarge Image**

Update History

2020-09-30	An observation data was registerd.

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Data Policy

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Detailed Search

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YOKOSUKA
MIRAI
KAIREI
CHIKYU
KAIMEI
SHINSEI MARU
HAKUHO MARU

Information of the Submersibles
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SHINKAI 2000
SHINKAI 6500
DEEP TOW
HYPER-DOLPHIN
URASHIMA
YOKOSUKA DEEP TOW
6K Camera DEEP TOW
6K Sonar DEEP TOW
KM-ROV
POWER GRAB SAMPLER (SHELL)
POWER GRAB SAMPLER (CLOW)
BMS

Go to a Cruise Information
Cruise ID: [   ] [Go]

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Dive ID: [---- ▼] [   ] [Go]