

MIRAI MR13-06 Leg2 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2017-06-22

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

Cruise ID: [MR13-06 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/MR13-06_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 MR13-06_leg2 cruise are presented in "System".

The following software, developed and supplied by the Sea-Bird Electronics, Inc., was used in MR13-06_leg2.

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 : 17457

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 : 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 : 430575
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 |
| 087M001 | 117457 | 031359 | 042435 | 430575 |
| 087M002 | 117457 | 031359 | 042435 | 430575 |

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. |
| 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.

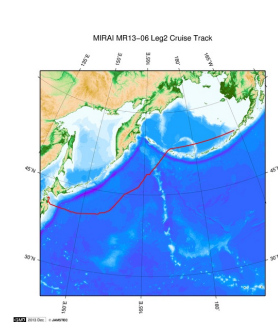
[QUALITY CONTROL AND PROCESSING OF HISTORICAL OCEANOGRAPHIC TEMPERATURE, SALINITY, AND OXYGEN DATA](#)

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,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](#)

MR13-06 Leg2

Ship Name: MIRAI
Period: 2013-10-09 - 2013-10-20
Chief Scientist: Shigeto Nishino (JAMSTEC)
Project Name: [Arctic Ocean Climate System Reaserch]
Proposal ▶ Study on environmental changes in the sea-ice reduction regions of the Arctic Ocean
Title:

Update History

| | |
|------------|------------------------------------|
| 2017-06-22 | An observation data was registerd. |
| 2015-10-31 | 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

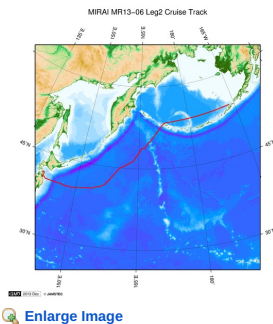
QCed data were added flag according to the NODC (National Oceanographic Data Center) quality control procedure, additionally visually checked. Please see the site of NODC of the following link for quality control procedure.

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

Sample Program

[ex_read2.f](#)

Related Information



MR13-06 Leg2

Ship Name: MIRAI

Period: 2013-10-09 - 2013-10-20

Chief Scientist: Shigeto Nishino (JAMSTEC)

Project Name: [Arctic Ocean Climate System Research]

Proposal ▶ Study on environmental changes in the sea-ice reduction regions of the Arctic Ocean

Title:

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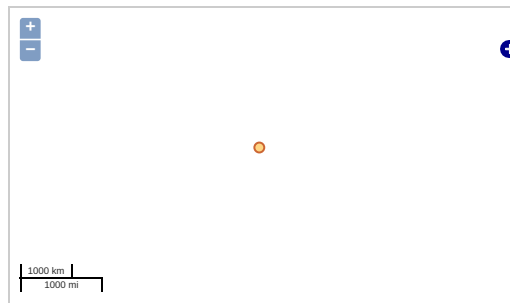
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OCEANS > OCEAN > WATER
TEMPERATURE TEMPERATURE
OCEANS > SALINITY/DENSITY > SALINITY

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

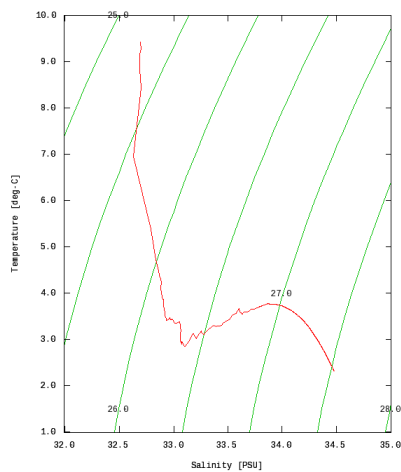
Imagery reproduced from ...

Figures

087M001



MR13-06 Leg2: 087M001
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

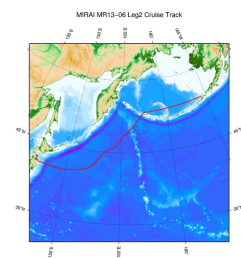
[Add to Basket](#)

- ☐ File names
- ☐ 087M001.dat
- ☐ 087M002.dat
- ☐ ex_read2.f (Sample Program)

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

| Observation | Time and Date | Lat. [°] | Lon. [°] |
|-------------|------------------|----------|----------|
| 087M001 | 2013-10-13 19:53 | 48.8770 | 166.6091 |
| 087M002 | 2013-10-13 22:55 | 48.8661 | 166.5843 |

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