

## MIRAI MR01-K05 Leg4 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2017-06-22

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

Cruise ID: [MR01-K05 Leg4](#)

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/MR01-K05\\_leg3-4\\_all.pdf](http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR01-K05_leg3-4_all.pdf)

### For Using Data

#### Principal Investigator

Data Management Office

#### Use Constraints

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

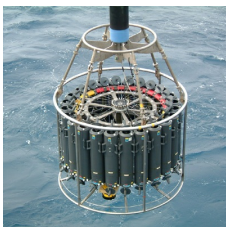
#### Data Citation

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

### Instrument

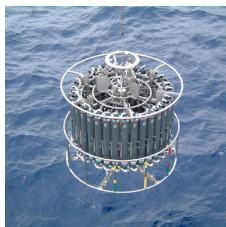
Instrument:

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



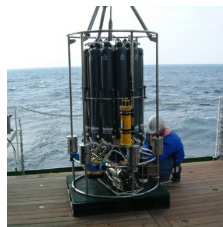
Instrument:

Water sampling system with CTD (12  
litters \* 36 bottles)



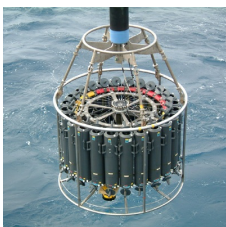
Instrument:

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 MR01-K05 Leg3-4 cruise are presented in "System".

The following software, developed and supplied by the Sea-Bird Electronics, Inc., was used in MR01-K05 Leg3-4.

SEASAVE(ver 5.27b) for data acquisition

SEASOFT(ver 5.27b) for data processing

Data presented on this website is averaged over 1db.

### System

#### • Pressure sensor

Model : SBE9plus, Sea-Bird Electronics,Inc.

Serial number : 51190

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 : 032453

Measurement range : -5.0 to +35degC

Accuracy : 0.001degC

Resolution : 0.0002degC

#### • Salinity sensor

Model : SBE4, Sea-Bird Electronics,Inc.

Serial number : 042240

Measurement range : 0.0 to 7 S/m

Accuracy : 0.0003 S/m

- Resolution : 0.00004 S/m
- DO sensor  
Model : SBE13, Sea-Bird Electronics, Inc.  
Serial number : 130575  
Measurement range : 0 to 15ml/l  
Accuracy : 0.1ml/l  
Resolution : 0.01ml/l
  - DO sensor  
Model : SBE13, Sea-Bird Electronics, Inc.  
Serial number : 130540  
Measurement range : 0 to 15ml/l  
Accuracy : 0.1ml/l  
Resolution : 0.01ml/l

Sensors used in each cast is as follows.

| Cast name | Serial number of sensor |             |          |                  |
|-----------|-------------------------|-------------|----------|------------------|
|           | Pressure                | Temperature | Salinity | Dissolved Oxygen |
| K54S01    | 51190                   | 032453      | 042240   | 130575           |
| K54S02    | 51190                   | 032453      | 042240   | 130575           |

#### Calibration Information

Calibration Information is as follows.

[Calibration Information](#)

#### Data processing

(1) Data processing sequence for SEASOFT is as follows;

| command  | function  |
|----------|---|
| datcnv   | Convert raw data to engineering units, and store converted data in file.                    |
| section  | Extract rows of data from 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.  |
| 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.                   |
| 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.

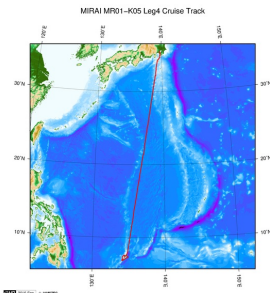
[QUALITY CONTROL AND PROCESSING OF HISTORICAL OCEANOGRAPHIC TEMPERATURE, SALINITY, AND OXYGEN DATA](#)

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

#### Note

- (1) Water temperature data of this cruise was corrected since it had pressure dependency. Please refer to ["data correction"](#) in detail.

#### Related Information



**MIRAI MR01-K05 Leg4 Cruise Track**

**MR01-K05 Leg4**  
Ship Name: MIRAI  
Period: 2001-12-13 - 2001-12-19  
Chief Scientist: Kunio Yoneyama (JAMSTEC)

[Enlarge Image](#)

#### Update History

|            |                                     |
|------------|-------------------------------------|
| 2017-06-22 | An observation data was registered. |
| 2016-10-11 | An observation data was registered. |

POWER GRAB SAMPLER  
(CLOW)  
BMS

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## MIRAI MR01-K05 Leg4 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2017-06-22

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

 Cruise ID: [MR01-K05 Leg4](#)

Conductivity-Temperature-Depth Profiler (CTD): Processed (DMO)-QCed

 Data Policy: [JAMSTEC](#)

### 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<br>8 : flag of pressure<br>9 : flag of temperature<br>10 : flag of salinity<br>11 : flag of dissolved oxygen<br>* reference : <a href="#">Definition of Quality Control Flags</a> |
| 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

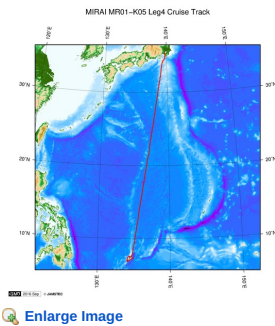
QCed data were added flag according to the NODC (National Oceanographic Data Center) quality control procedure, additionally visually checked. Please see the site of NODC of the following link for quality control procedure.

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

#### Sample Program

[ex\\_read2.f](#)

#### Related Information



#### MR01-K05 Leg4

Ship Name: MIRAI

Period: 2001-12-13 - 2001-12-19

Chief Scientist: Kunio Yoneyama (JAMSTEC)

#### Update History

|            |                                    |
|------------|------------------------------------|
| 2017-06-22 | An observation data was registerd. |
| 2016-10-11 | An observation data was registerd. |

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#### Information of the Submersibles

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[6K Sonar DEEP TOW](#)  
[KM-ROV](#)  
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#### Go to a Cruise Information

Cruise ID:

#### Go to a Dive Information

Dive ID:

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Data Policy: [JAMSTEC](#)

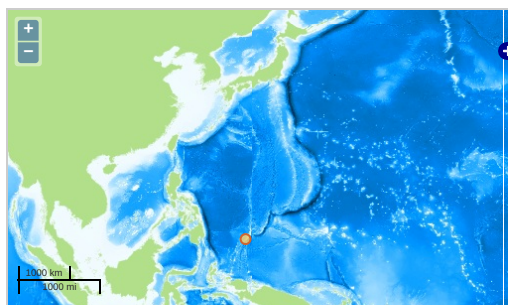
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TEMPERATURE TEMPERATURE  
OCEANS > SALINITY/DENSITY > SALINITY

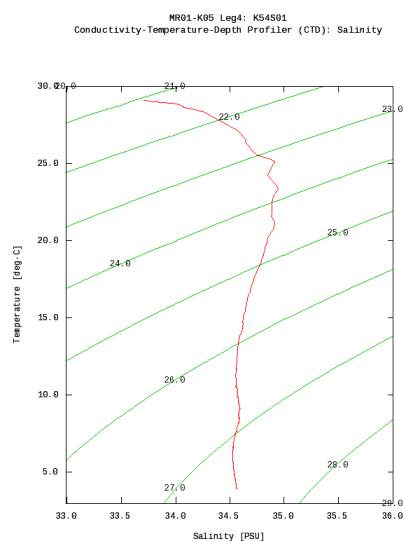
### Observation Map

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



### Figures

K54S01



### Data List

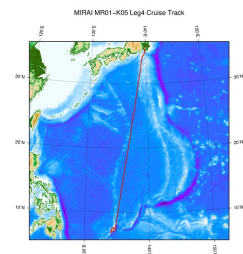
[Add to Basket](#)

- ☐ File names
- ☐ K54S01.dat
- ☐ K54S02.dat
- ☐ ex\_read2.f (Sample Program)

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

| Observation | Time and Date    | Lat. [°] | Lon. [°] |
|-------------|------------------|----------|----------|
| K54S01      | 2001-12-13 05:58 | 6.9458   | 134.1360 |
| K54S02      | 2001-12-13 21:51 | 7.5013   | 134.6693 |

### Related Information



[Enlarge Image](#)

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Ship Name: MIRAI  
Period: 2001-12-13 - 2001-12-19  
Chief Scientist: Kunio Yoneyama (JAMSTEC)

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