MIRAI MR02-K01 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2017-06-22

ReadMe | Observation Data | Data Format

Cruise ID: MR02-K01
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/MR02-K01_all.pdf

For Using Data

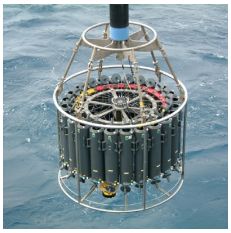
Principal Investigator
Data Management Office

Use Constraints
See Terms and Conditions about constrain of use.

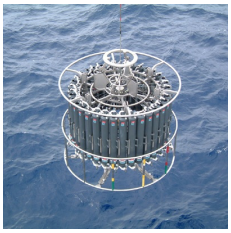
Data Citation
See Terms and Conditions about data citation.

Instrument

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

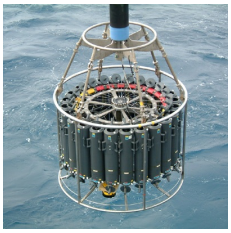


Instrument:
Water sampling system with CTD (12 litters * 36 bottles)



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 MR02-K01 cruise are presented in “System”.
The following software, developed and supplied by the Sea-Bird Electronics, Inc., was used in MR02-K01.
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
- 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 : 041202

Measurement range : 0.0 to 7 S/m

Accuracy : 0.0003 S/m

Resolution : 0.00004 S/m

• Salinity sensor

Model : SBE4, Sea-Bird Electronics,Inc.

Serial number : 041203

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 : 430069

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
A07s01	51190	032453	041202	-
014l01	51190	032453	041202	430069
014l02	51190	032453	041202	430069
014l03	51190	032453	041202	430069
014l04	51190	032453	041202	430069
013l01	51190	031359	041203	430069
012l01	51190	031359	041203	430069
012s01	51190	031359	041203	430069
012s02	51190	031359	041203	430069
012s03	51190	031359	041203	430069
011s01	51190	031359	041203	430069
011s02	51190	031359	041203	430069
010s01	51190	031359	041203	430069
010s02	51190	031359	041203	430069
009s01	51190	031359	041203	430069
009s02	51190	031359	041203	430069
009s03	51190	031359	041203	430069
008s01	51190	031359	041203	430069
008s02	51190	031359	041203	430069
007s01	51190	031359	041203	430069
007s02	51190	031359	041203	430069
006s01	51190	031359	041203	430069
006s02	51190	031359	041203	430069
006s03	51190	031359	041203	430069
005s01	51190	031359	041203	430069
005s02	51190	031359	041203	430069
004s01	51190	031359	041203	430069
004s02	51190	031359	041203	430069
003s01	51190	031359	041203	430069
003s02	51190	031359	041203	430069

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.
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

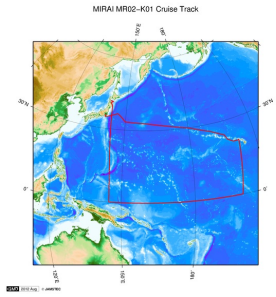
In addition, an abnormal value is identified by a visual check, and the data after visual QC is released.

Note

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

(2) In this cruise, there is extra data (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

MR02-K01
Ship Name: MIRAI
Period: 2002-01-07 - 2002-02-15
Chief Scientist: Takeshi Kawano (JAMSTEC)

Update History

2017-06-22	An observation data was registerd.
2014-07-18	An observation data was registerd.
2014-01-11	An observation data was registerd.
2013-03-27	An observation data was registerd.
2012-12-25	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	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'.

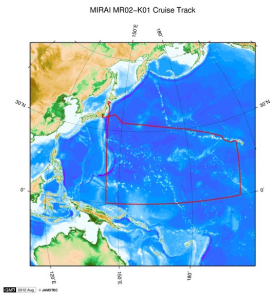
Definition of Quality Control Flags
1. Depth Flags
- 0 - accepted value
- 1 - error in recorded depth (same or less than previous depth)
- 2 - density inversion

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



Enlarge Image

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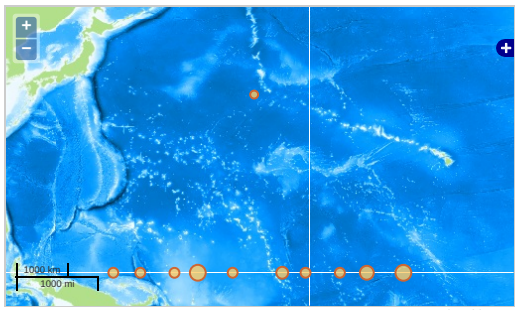
OCEANS	> OCEAN TEMPERATURE	> WATER TEMPERATURE
OCEANS	> SALINITY/DENSITY	> SALINITY

Observation Map

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

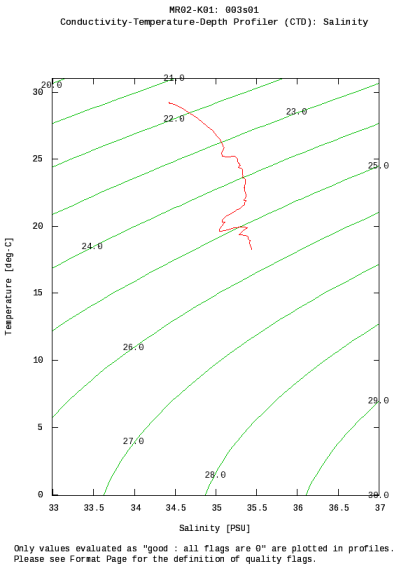


Imagery reproduced from ...

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

Figures

003s01



Data List

Add to Basket

File names
003s01.dat
003s02.dat
004s01.dat
004s02.dat
005s01.dat
005s02.dat
006s01.dat
006s02.dat
006s03.dat
007s01.dat
007s02.dat
008s01.dat
008s02.dat

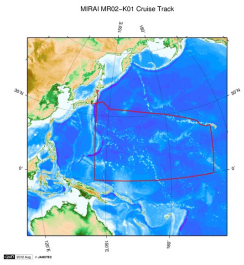
File names
009s01.dat
009s02.dat
009s03.dat
010s01.dat
010s02.dat
011s01.dat
011s02.dat
012l01.dat
012s01.dat
012s02.dat
012s03.dat
013l01.dat
014l01.dat
014l02.dat
014l03.dat
014l04.dat
A07s01.dat
ex_read2.f (Sample Program)

- Observation List

The list of observation is shown as follows.

Observation	Time and Date	Lat. [°]	Lon. [°]
003s01	2002-02-06 00:49	0.0008	145.0000
003s02	2002-02-06 02:51	0.0055	144.9988
004s01	2002-02-05 00:50	0.0010	149.7913
004s02	2002-02-05 02:47	-0.0081	149.7513
005s01	2002-02-03 23:51	-0.0091	155.8540
005s02	2002-02-04 01:53	0.0048	155.8375
006s01	2002-02-02 17:21	0.0008	159.9988
006s02	2002-02-02 23:51	0.0120	159.9671
006s03	2002-02-03 05:07	-0.0173	159.9944
007s01	2002-02-01 23:51	0.0031	161.4841
007s02	2002-02-02 01:50	-0.0076	161.4621
008s01	2002-01-31 23:51	0.0025	166.1881
008s02	2002-02-01 01:50	-0.0081	166.1738
009s01	2002-01-29 16:21	-0.0026	174.9944
009s02	2002-01-29 22:52	0.0000	174.9728
009s03	2002-01-30 03:51	0.0260	174.9443
010s01	2002-01-28 22:50	0.0013	179.1271
010s02	2002-01-29 00:19	0.0156	179.1236
011s01	2002-01-27 21:54	-0.0001	-174.7711
011s02	2002-01-27 23:52	-0.0040	-174.7818
012l01	2002-01-26 00:25	-0.0010	-169.9905
012s01	2002-01-26 15:00	0.0001	-170.0004
012s02	2002-01-26 21:57	-0.0158	-170.0900
012s03	2002-01-27 02:51	-0.0155	-170.0695
013l01	2002-01-25 00:01	-0.0068	-163.4978
014l01	2002-01-23 15:00	-0.0006	-160.0021
014l02	2002-01-23 21:54	-0.0001	-160.0000
014l03	2002-01-24 03:59	-0.0393	-160.0126
014l04	2002-01-24 06:26	0.0185	-159.9983
A07s01	2002-01-11 19:42	31.6343	170.0023

Related Information



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KM-ROV
POWER GRAB SAMPLER (SHELL)
POWER GRAB SAMPLER (CLOW)
BMS

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