MIRAI MR19-02 Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2021-06-30

ReadMe | Observation Data | Data Format

Cruise ID: MR19-02
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/MR19-02_all.pdf

For Using Data

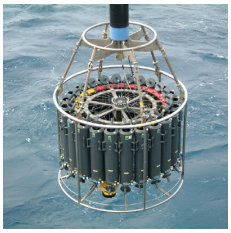
Principal Investigator
Data Management Office

Use Constraints
See Terms and Conditions about constrain of use.

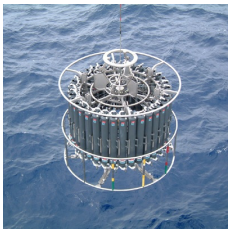
Data Citation
See Terms and Conditions about data citation.

Instrument

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

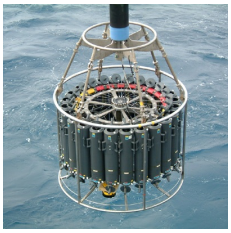


Instrument:
Water sampling system with CTD (12 litters * 36 bottles)



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 MR19-02 cruise are presented in “System”.
The following software, developed and supplied by the Sea-Bird Electronics, Inc., was used in MR19-02.
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, 79492, 94766
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 : 031524, 034421
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 : 041203, 043063
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 : 432471

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
A01M001	117457	031524	041203	432471
A01M002	117457	031524	041203	432471
A01M003	117457	031524	041203	432471
A01M004	117457	031524	041203	432471
A02M001	117457	031524	041203	432471
A03M001	117457	031524	041203	432471
A03M002	117457	031524	041203	432471
A03M003	117457	031524	041203	432471
A04M001	117457	031524	041203	432471
A07M001	117457	031524	041203	432471
A07M002	117457	031524	041203	432471
A07S003	79492	034421	043063	-
A07M004	117457	031524	041203	432471
A07M005	117457	031524	041203	432471
A10M001	117457	031524	041203	432471
A05M001	117457	031524	041203	432471
A05M002	117457	031524	041203	432471
A06M001	117457	031524	041203	432471
A07S006	79492	034421	043063	-
A07S007	79492	034421	043063	-
A07M008	117457	031524	041203	432471
A07M009	117457	031524	041203	432471
A07M010	117457	031524	041203	432471
A08M001	117457	031524	041203	432471
A11M001	117457	031524	041203	432471
A09M001	117457	031524	041203	432471
A09M002	117457	031524	041203	432471
A09M003	117457	031524	041203	432471
A09S004	94766	034421	043063	-

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.

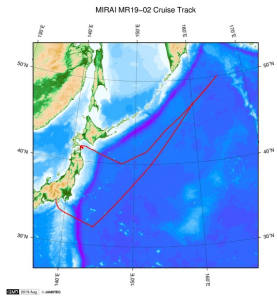
QUALITY CONTROL AND PROCESSING OF HISTORICAL OCEANOGRAPHIC TEMPERATURE, SALINITY, AND OXYGEN DATA

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



Enlarge Image

MR19-02
Ship Name: MIRAI
Period: 2019-05-24 - 2019-06-14
Chief Scientist: Tetsuichi Fujiki (JAMSTEC)
Project Name: [Station K2,Station KEO,Station KNOT]
Proposal Title: The observational study to construct and to extend the western Pacific super site network

Update History

2021-06-30	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'.

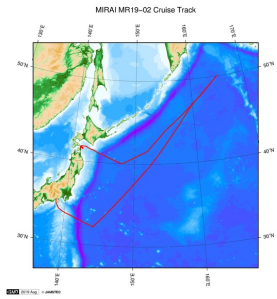
Definition of Quality Control Flags
1. Depth Flags
- 0 - accepted value
- 1 - error in recorded depth (same or less than previous depth)
- 2 - density inversion

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



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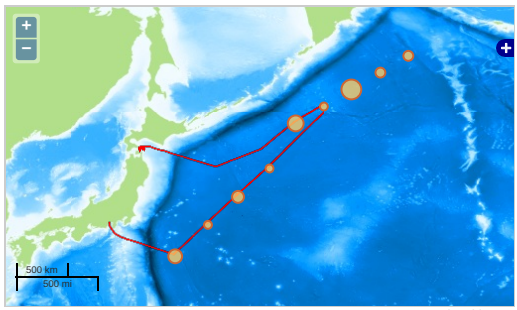
OCEANS	> SALINITY/DENSITY	> SALINITY

Observation Map

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

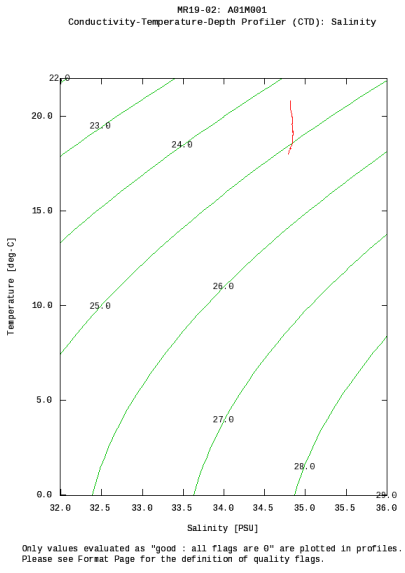


Imagery reproduced from ...

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

Figures

A01M001



Data List

Add to Basket

File names
A01M001.dat
A01M002.dat
A01M003.dat
A01M004.dat
A02M001.dat
A03M001.dat
A03M002.dat
A03M003.dat
A04M001.dat
A05M001.dat
A05M002.dat
A06M001.dat
A07M001.dat

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A07M002.dat
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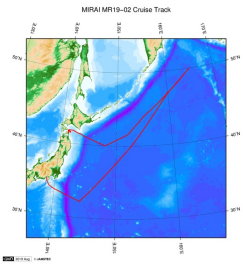
A07M009.dat
A07M010.dat
A07S003.dat
A07S006.dat
A07S007.dat
A08M001.dat
A09M001.dat
A09M002.dat
A09M003.dat
A09S004.dat
A10M001.dat
A11M001.dat
ex_read2.f (Sample Program)

- Observation List

The list of observation is shown as follows.

Observation	Time and Date	Lat. [°]	Lon. [°]
A01M001	2019-05-25 05:29	32.2006	144.2993
A01M002	2019-05-25 06:48	32.2015	144.2986
A01M003	2019-05-25 17:01	32.2005	144.3015
A01M004	2019-05-26 02:52	32.1816	144.2970
A02M001	2019-05-27 02:48	34.9940	147.2106
A03M001	2019-05-28 02:48	37.4803	149.8791
A03M002	2019-05-28 05:25	37.5026	149.8855
A03M003	2019-05-28 16:58	37.4983	149.9001
A04M001	2019-05-29 09:32	39.9981	152.6758
A05M001	2019-06-03 14:52	49.9995	164.9988
A05M002	2019-06-03 16:49	50.0001	164.9995
A06M001	2019-06-04 08:42	48.5110	162.5200
A07M001	2019-05-31 23:23	47.0138	159.9420
A07M002	2019-06-01 15:23	47.0081	159.9731
A07M004	2019-06-02 02:12	47.0681	159.9940
A07M005	2019-06-02 05:17	47.0070	159.9733
A07M008	2019-06-07 04:57	47.0271	160.0031
A07M009	2019-06-07 15:23	47.0255	159.9533
A07M010	2019-06-07 17:48	47.0260	159.9506
A07S003	2019-06-01 23:51	47.0533	159.9795
A07S006	2019-06-05 01:55	47.0071	159.9725
A07S007	2019-06-06 17:57	46.9900	160.0181
A08M001	2019-06-08 13:52	45.5011	157.5000
A09M001	2019-06-09 15:16	44.0010	155.0013
A09M002	2019-06-09 18:56	43.9995	155.0066
A09M003	2019-06-10 01:52	44.0003	154.9998
A09S004	2019-06-10 03:49	43.9895	154.9980
A10M001	2019-06-03 02:52	48.9148	163.1503
A11M001	2019-06-09 02:53	44.4546	155.7388

Related Information



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