

For Using Data

Data Policy	JURCAOS-JAMSTEC
Principal Investigator	Data Management Office
Use Constraints	See Terms and Conditions about constrain of use.
Data Citation	See Terms and Conditions about data citation.

Quality

DMO-Processed

Instrument

CTD (Conductivity-Temperature-Depth profiler)



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 this cruise are presented in "Measurement System".

The following software, developed and supplied by the Sea-Bird Scientific, was used in this cruise.

SEASAVE(ver 7.21f) for data acquisition

SBEDataProcessing(ver 7.21i) for data processing

Data presented on this website is averaged over 1db.

Measurement System

1) Pressure sensor

Manufacturer :	Sea-Bird Scientific
Type :	SBE9plus
Serial No. :	127419
Measurement range :	up ~ 10500 m
Accuracy :	+/- 0.015% of full scale range
Resolution :	0.001% of full scale range

2) Temperature sensor

Manufacturer :	Sea-Bird Scientific
Type :	SBE3
Serial No. :	035760
Measurement range :	-5 ~ +35 °C
Accuracy :	+/- 0.001 °C
Resolution :	0.0002 °C

3) Conductivity sensor (Salinity sensor)

Manufacturer :	Sea-Bird Scientific
Type :	SBE4
Serial No. :	044205
Measurement range :	0 ~ 7 S/m
Accuracy :	+/- 0.0003 S/m
Resolution :	0.00004 S/m

4) Dissolved Oxygen sensor

Manufacturer :	Sea-Bird Scientific
Type :	SBE43
Serial No. :	432525
Accuracy :	120% of surface saturation
Resolution :	+/- 2% of saturation

Calibration Information

1) Pressure sensor

Serial No.	Calibration date	Institution	slope	offset (dbar)
127419	26-Dec-2017	-	1.00003	-1.1487

The observed value is computed as

Observed value [dbar] = slope * computed pressure[dbar] + offset[dbar]

2) Temperature sensor

Serial No.	Calibration date	Institution
035760	27-Nov-2018	Sea-Bird Scientific

3) Conductivity sensor (Salinity sensor)

Serial No.	Calibration date	Institution
044205	13-Dec-2018	Sea-Bird Scientific

4) Dissolved Oxygen sensor

Serial No.	Calibration date	Institution
432525	11-Dec-2018	Sea-Bird Scientific

Use sensors

Sensors used in each cast is as follows.

Cast name	Pressure	Temperature	Salinity	Dissolved Oxygen
YR09_01	127419	035760	044205	432525
YR08_01	127419	035760	044205	432525
YR07_01	127419	035760	044205	432525
YR06_01	127419	035760	044205	432525
YR05_01	127419	035760	044205	432525
YR04_01	127419	035760	044205	432525
YR03_01	127419	035760	044205	432525
YR02_01	127419	035760	044205	432525
YR01_01	127419	035760	044205	432525
YR10_01	127419	035760	044205	432525
YR11_01	127419	035760	044205	432525
E09_01	127419	035760	044205	432525
E08_01	127419	035760	044205	432525
E07_01	127419	035760	044205	432525
E06_01	127419	035760	044205	432525
E05_01	127419	035760	044205	432525
E04_01	127419	035760	044205	432525
E03_01	127419	035760	044205	432525
E02_01	127419	035760	044205	432525
E01_01	127419	035760	044205	432525
SI06_01	127419	035760	044205	432525
SI05_01	127419	035760	044205	432525
SI04_01	127419	035760	044205	432525
SI03_01	127419	035760	044205	432525
SI02_01	127419	035760	044205	432525
SI01_01	127419	035760	044205	432525
FATO_01	127419	035760	044205	432525
FATO_02	127419	035760	044205	432525

Data processing

1) Data processing sequence for SBEDDataProcessing is as follows;

Modules	Function
Data Conversion	Convert raw data to engineering units, and store converted data in file.
Wild Edit	Mark a data value with badflag to eliminate wild points.
Filter	Low-pass filter columns of data.
wfilter	Median filter removes spikes such as fluorometer, turbidimeter, transmissometer, nitrate and PAR data.
Align CTD	Align data relative to pressure(typically used for conductivity, temperature, and oxygen)
Cell Thermal Mass	Perform conductivity thermal mass correction.
Loop Edit	Mark a scan with badflag if scan fails pressure reversal or minimum velocity tests.
Derive	Calculate salinity, density, oxygen, etc.
Bin Average	Average data. Bins can be based on pressure, depth, scan number, or time ranges.
Split	Split data in file into upcast and downcast files.
Bottle Summary	Summarize data from water sampler bottle .ros file, storing results in .btl file.

2) Quality control

QCed data were added flag according to the NODC (National Oceanographic Data Center) quality control procedure.

- i. The gradient check of adjacent depth data
- ii. The density inversion check
- iii. The broad range check set up at given ocean space and depth

Please see the paper for quality control procedure in detail.

Quality control and processing of historical oceanographic temperature, salinity, and oxygen data.

P. Boyer and Levitus, 1994. NOAA technical report NESDIS ; 81

* <https://repository.library.noaa.gov/view/noaa/13443>

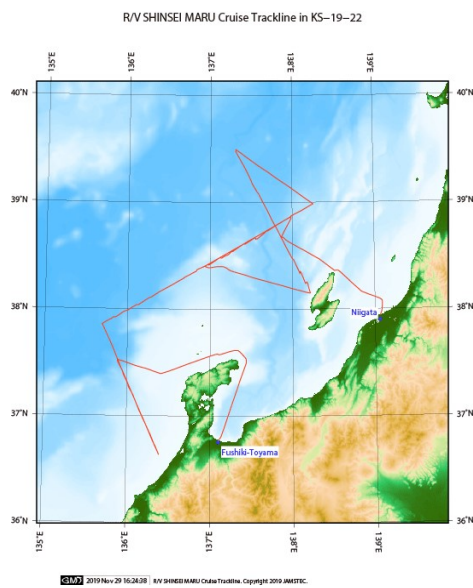
In addition, an abnormal value is identified by a visual check, and the data after visual QC is released.

Note

In this cruise, there is extra data (fluorescence intensity, turbidity, light transmission, PAR and distance to bottom) in addition to temperature, salinity and dissolved oxygen that has been opened to the public.

If you would like the raw data set, please contact DMO at "dmo@jamstec.go.jp".

Related Information



KS-19-22

Ship Name: SHINSEI MARU
Period: 2019/10/25 - 2019/10/31
Chief Scientist: Yusuke Kawaguchi (The University of Tokyo)
Proposal: Interaction between TWC front and internal gravity waves in the central Japan Sea: Observations of turbulent mixing and primary production

Format Description for CTD DMO

Format Description for the DMO-Processed 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	
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	a2	[CR][LF]

Data part

No.	Column	Content	Format	Unit	Remarks
1	1 - 11	Pressure	f11.3	dbar	
2	12 - 22	Temperature	f11.4	deg-C	ITS-90
3	23 - 33	Salinity	f11.4	PSU	PSS-78
4	34 - 44	Dissolved oxygen	f11.3	μ mol/kg	
5	45 - 55	Quality control flag	i11		45 - 51 : space 52 : flag of pressure 53 : flag of temperature 54: flag of salinity 55 : flag of dissolved oxygen
6	56 - 57	Terminator	a2		[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