

KAIREI KR11-05 Leg1 Expendable Conductivity-Temperature-Depth Profiler (XCTD)

Last Modified: 2019-09-06

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

Cruise ID: [KR11-05 Leg1](#)

Expendable Conductivity-Temperature-Depth Profiler (XCTD): Processed (DMO)-QCed

Data Policy: [JAMSTEC](#)

Observation Items: Depth, Temperature, Salinity

Science Keywords:

OCEANS > OCEAN TEMPERATURE > WATER TEMPERATURE

OCEANS > SALINITY/DENSITY > SALINITY

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/KR11-05_leg1_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:

XBT/XCTD



Overview

Using XCTD (eXpendable Conductivity Temperature Depth profiler) system, the vertical distribution of water temperature and salinity are observed during free fall of its probe part in the seawater. Observed temperature and conductivity are transmitted to the data processor on board by the digital signal. The digital signal is converted to the temperature, conductivity and depth by data processor as binary data. Binary data is transmitted from data processor to PC. The PC calculates salinity from temperature, conductivity and depth, and those properties are recorded in PC as the ASCII files.

System

(1) Launcher

Hand launcher

Manufacturer : Sippican, Inc.

Operation area : Rear upper deck

(2) Converter

Manufacturer : Tsurumi Seiki Co., LTD.

Location : Investigation room

Sampling rate : 40 msec

(3) XCTD probe specifications

Probe Type	TSK XCTD-1	TSK XCTD-2	TSK XCTD-3	TSK XCTD-4
Temperature range [deg-C]	-2 to 35			
Temperature accuracy [deg-C]	+/- 0.02			
Temperature resolution [deg-C]	0.01			
Conductivity range [mS/cm]	0 to 60			
Conductivity accuracy [mS/cm]	+/- 0.03			
Conductivity resolution [mS/cm]	0.015			
Measurement depth [m]	1000	1850	1000	1850
Depth accuracy [m]	5 or +/- 2% of depth; whichever is larger			
Maximum elapsed time [sec]	300	600	200	502
Rated ship speed [knot]	12	3.5	20	6

Since XCTD carries no pressure sensor, we need to estimate depth from the elapsed time. The fall-rate equation is as follows.

$$Z = at + 10E^{-3} * bt^2$$

Where Z(m) is the depth and t(sec) is the elapsed time.

In addition, coefficients of the fall-rate equation are different by probe types.

Probe Type	TSK XCTD-1	TSK XCTD-2	TSK XCTD-3	TSK XCTD-4
Coefficient-a	3.42543	3.43898	5.07598	3.68081
Coefficient-b	-0.47	-0.31	-0.72	-0.47

* Coefficients listed above are supplied by Sippican, Inc., in USA.

The list of an XCTD type used in each cast is as follows.

Cast name	Probe Serial No.	Probe Type	Launcher	Converter
XCTD-002720110304	-	XCTD-2	Hand	MK-130
XCTD-002820110304	-	XCTD-2	Hand	MK-130
XCTD-002920110304	-	XCTD-2	Hand	MK-130
XCTD-003020110304	-	XCTD-2	Hand	MK-130
XCTD-003120110304	-	XCTD-2	Hand	MK-130
XCTD-003220110304	-	XCTD-2	Hand	MK-130
XCTD-003320110304	-	XCTD-2	Hand	MK-130
XCTD-003420110305	-	XCTD-2	Hand	MK-130
XCTD-003520110305	-	XCTD-2	Hand	MK-130
XCTD-003620110305	-	XCTD-2	Hand	MK-130
XCTD-003720110305	-	XCTD-2	Hand	MK-130
XCTD-003820110305	-	XCTD-2	Hand	MK-130
XCTD-003920110305	-	XCTD-2	Hand	MK-130
XCTD-004020110305	-	XCTD-2	Hand	MK-130
XCTD-004120110305	-	XCTD-2	Hand	MK-130
XCTD-004220110305	-	XCTD-2	Hand	MK-130
XCTD-004320110305	-	XCTD-2	Hand	MK-130
XCTD-004420110305	-	XCTD-2	Hand	MK-130
XCTD-004520110305	-	XCTD-2	Hand	MK-130
XCTD-004620110305	-	XCTD-2	Hand	MK-130
XCTD-004720110306	-	XCTD-2	Hand	MK-130
XCTD-004820110306	-	XCTD-2	Hand	MK-130
XCTD-004920110306	-	XCTD-2	Hand	MK-130

Data processing

(1) For sensor's stability, values of less than 1 m for temperature and less than 3 m for salinity are replaced by missing values, respectively, based on manufacturer's recommendation.

(2) Quality control

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

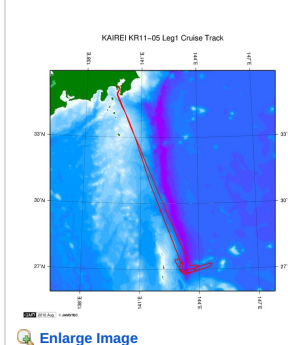
- 1) The gradient check of adjacent depth data
- 2) The density inversion check
- 3) The broad range check set up at given ocean space and depth

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.

Related Information



KR11-05 Leg1

Ship Name: KAIKEI
Period: 2011-03-03 - 2011-03-14
Chief Scientist: Yuka Kaiho (JAMSTEC)
Project Name: [Seismic study]
Proposal High-resolution structure study in the Izu-Ogasawara region
Title:

Update History

2019-09-06	An observation data was registered.
2017-06-14	An observation data was registered.
2016-09-30	An observation data was registered.

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HAKUHO MARU

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SHINKAI 6500
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HYPER-DOLPHIN
URASHIMA
YOKOSUKA DEEP TOW
6K Camera DEEP TOW
6K Sonar DEEP TOW
KM-ROV
POWER GRAB SAMPLER (SHELL)
POWER GRAB SAMPLER (CLOW)
BMS

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Data Policy: [JAMSTEC](#)

XCTD 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	XCTD
3	8 - 22	Cruise ID	a15	
4	33 - 40	Date	i8	YYYYMMDD (UTC)
5	42 - 45	Time	i4	hhmm (UTC)
6	47 - 55	Latitude	i2,a1,f5.2,a1	dd-mm.mmN(S)
7	57 - 66	Longitude	i3,a1,f5.2,a1	ddd-mm.mmE(W)
8	68 - 71	Number of data lines	i4	
9	72 - 73	Terminator	-	CR+LF

Data part

No.	Column	Content	Unit	Format	Remarks
1	1 - 11	Depth	m	f11.1	
2	12 - 22	Temperature	deg-C	f11.2	ITS-90
3	23 - 33	Salinity	PSU	f11.3	PSS-78
4	45 - 55	Flag	-	i11	1 - 7 : space 8 : flag of depth 9 : flag of temperature 10 : flag of salinity 11 : space * reference : Definition of Quality Control Flags
5	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

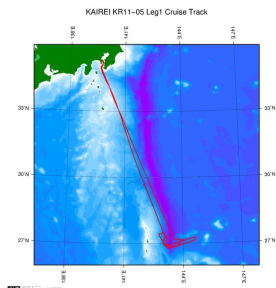
QCed data were added flag according to the NODC (National Oceanographic Data Center) quality control procedure, additionally visually checked. Please see the site of NODC of the following link for quality control procedure.

[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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JAPAN AGENCY FOR MARINE EARTH SCIENCE AND TECHNOLOGY

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Data Policy: **JAMSTEC**

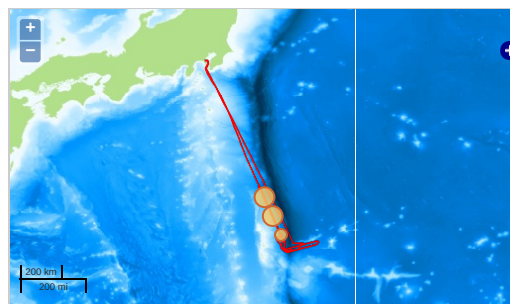
Observation Items: Depth, Temperature, Salinity

Science Keywords:

OCEANS > OCEAN > 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.



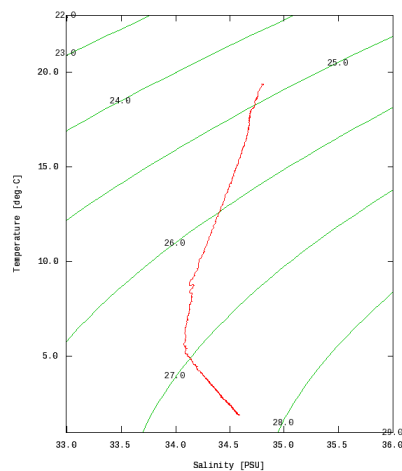
— ... Observation Line — ... Navigation ● ... Observation, Dive Point, Hole

Figures

XCTD-002720110304



KR11-05 Leg1: XCTD-002720110304
Expendable Conductivity-Temperature-Depth Profiler (XCTD): 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

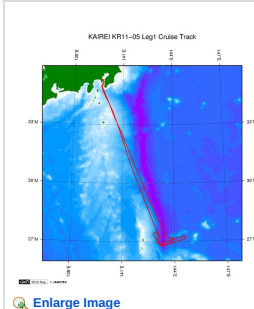
<input type="checkbox"/>	XCTD-002720110304.dat
<input type="checkbox"/>	XCTD-002820110304.dat
<input type="checkbox"/>	XCTD-002920110304.dat
<input type="checkbox"/>	XCTD-003020110304.dat
<input type="checkbox"/>	XCTD-003120110304.dat
<input type="checkbox"/>	XCTD-003220110304.dat
<input type="checkbox"/>	XCTD-003320110304.dat
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 Rider names 20110305.dat
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 XCTD-004820110306.dat
 XCTD-004920110306.dat
 ex_read2.f (Sample Program)

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

Observation	Time and Date	Lat. [°]	Lon. [°]
XCTD-002720110304	2011-03-04 04:16	29.3211	142.2080
XCTD-002820110304	2011-03-04 06:57	29.2378	142.2451
XCTD-002920110304	2011-03-04 09:37	29.1586	142.2785
XCTD-003020110304	2011-03-04 11:51	29.0685	142.3098
XCTD-003120110304	2011-03-04 13:57	28.9843	142.3521
XCTD-003220110304	2011-03-04 16:03	28.9000	142.3878
XCTD-003320110304	2011-03-04 22:08	28.8340	142.4199
XCTD-003420110305	2011-03-05 00:33	28.7468	142.4591
XCTD-003520110305	2011-03-05 02:58	28.6666	142.4985
XCTD-003620110305	2011-03-05 05:04	28.5821	142.5355
XCTD-003720110305	2011-03-05 07:09	28.4813	142.5748
XCTD-003820110305	2011-03-05 08:38	28.3985	142.6131
XCTD-003920110305	2011-03-05 10:10	28.3143	142.6495
XCTD-004020110305	2011-03-05 11:44	28.2308	142.6858
XCTD-004120110305	2011-03-05 13:22	28.1461	142.7221
XCTD-004220110305	2011-03-05 15:00	28.0628	142.7589
XCTD-004320110305	2011-03-05 16:46	27.9783	142.7951
XCTD-004420110305	2011-03-05 18:38	27.8943	142.8315
XCTD-004520110305	2011-03-05 20:20	27.8125	142.8670
XCTD-004620110305	2011-03-05 22:11	27.7271	142.9031
XCTD-004720110306	2011-03-06 00:18	27.6446	142.9396
XCTD-004820110306	2011-03-06 02:36	27.5663	142.9726
XCTD-004920110306	2011-03-06 04:08	27.4851	143.0076

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Project Name: [Seismic study]
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