

KAIREI KR16-05 Leg2 Expendable Conductivity-Temperature-Depth Profiler (XCTD)

Last Modified: 2019-09-06

ReadMe Observation Data Data Format

Cruise ID: [KR16-05 Leg2](#)

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/KR16-05_leg1-3_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-201604022241	15021259	XCTD-2	Hand	MK-130
XCTD-201604081201	10100525	XCTD-2	Hand	MK-130
XCTD-201604150228	12026353	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.

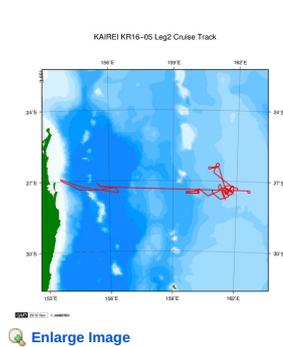
- 1) The gradient check of adjacent depth data
- 2) The density inversion check
- 3) The broad range check set up at given ocean space and depth

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



KR16-05 Leg2

Ship Name: KAIREI

Period: 2016-04-02 - 2016-04-20

Chief Scientist: Gou Fujie (JAMSTEC)

Proposal IODP related site survey study : 1. Lord Howe Rise project

Title:

[Enlarge Image](#)

Update History

2019-09-06	An observation data was registered.
2018-04-30	An observation data was registered.

JAMSTEC

[Site Policy](#)
[Privacy Policy](#)
[Application for Data and Samples](#)
[Data Policy](#)

[What's New](#)
[Update History](#)
[Feeds](#)

[Lists](#)
[Publication List](#)
[Amount of Public Info.](#)

[Data](#)
[Map Search](#)
[Data Tree](#)
[Detailed Search](#)

Information of the Ships

NATSUSHIMA
KAIYO
YOKOSUKA
MIRAI
KAIREI
CHIKYU
KAIMEI
SHINSEI MARU
HAKUHO MARU

Information of the Submersibles

KAIKO
SHINKAI 2000
SHINKAI 6500
DEEP TOW
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

Go to a Cruise Information

Cruise ID:

Go to a Dive Information

Dive ID:



KAIREI KR16-05 Leg2 Expendable Conductivity-Temperature-Depth Profiler (XCTD)

Last Modified: 2019-09-06

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

Cruise ID: [KR16-05 Leg2](#)
Expendable Conductivity-Temperature-Depth Profiler (XCTD): Processed (DMO)-QCed
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](#)

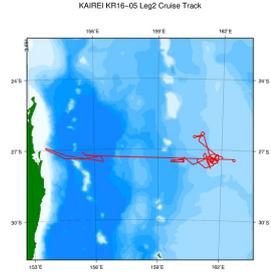
Sample Program

[ex_read2.f](#)

Related Information

--

KR16-05 Leg2
 Ship Name: KAIREI
 Period: 2016-04-02 - 2016-04-20
 Chief Scientist: Gou Fujie (JAMSTEC)
 Proposal IODP related site survey study : 1. Lord Howe Rise project
 Title:



[Enlarge Image](#)

Update History	
2019-09-06	An observation data was registerd.
2018-04-30	An observation data was registerd.

<p>JAMSTEC Site Policy Privacy Policy Application for Data and Samples Data Policy</p> <p>What's New Update History Feeds</p>	<p>Lists Publication List Amount of Public Info.</p> <p>Data Map Search Data Tree Detailed Search</p>	<p>Information of the Ships NATSUSHIMA KAIYO YOKOSUKA MIRAI KAIREI CHIKYU KAIMEI SHINSEI MARU HAKUHO MARU</p>	<p>Information of the Submersibles KAIKO SHINKAI 2000 SHINKAI 6500 DEEP TOW 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</p>	<p>Go to a Cruise Information Cruise ID: <input type="text"/> <input type="button" value="Go"/></p> <p>Go to a Dive Information Dive ID: <input type="text"/> <input type="button" value="Go"/></p>
---	--	---	---	---

Copyright 2011 Japan Agency for Marine-Earth Science and Technology



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

KAIREI KR16-05 Leg2 Expendable Conductivity-Temperature-Depth Profiler (XCTD)

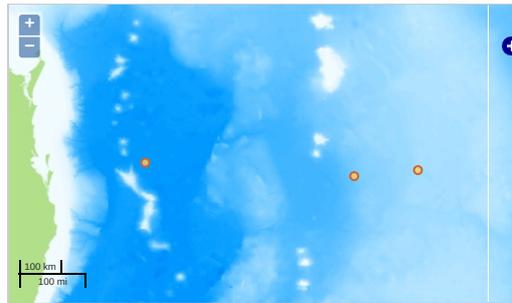
Last Modified: 2019-09-06

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

Cruise ID: **KR16-05 Leg2**
 Expendable Conductivity-Temperature-Depth Profiler (XCTD): Processed (DMO)-QCed
 Data Policy: **JAMSTEC**
 Observation Items: Depth, Temperature, Salinity
 Science Keywords:
 OCEANS > OCEAN > WATER
 TEMPERATURE 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.



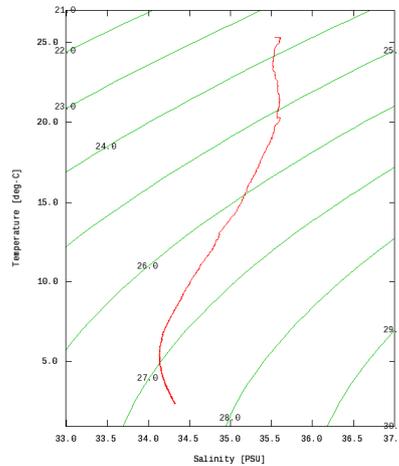
— ... Observation Line — ... Navigation ● ... Observation, Dive Point, Hole

Figures

XCTD-201604022241



KR16-05 Leg2: XCTD-201604022241
 Expendable Conductivity-Temperature-Depth Profiler (XCTD): Salinity



Only values evaluated as "good" : all flags are 0" are plotted in profiles.
 Please see Forast Page for the definition of quality flags.

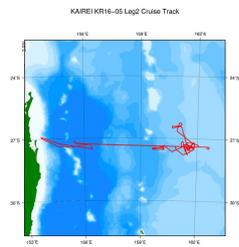
Data List

- File names**
- XCTD-201604022241.dat
 - XCTD-201604081201.dat
 - XCTD-201604150228.dat
 - ex_read2.f (Sample Program)

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

Observation	Time and Date	Lat. [°]	Lon. [°]
XCTD-201604022241	2016-04-02 22:41	-27.2180	155.5575
XCTD-201604081201	2016-04-08 12:03	-27.3846	161.5748
XCTD-201604150228	2016-04-15 02:29	-27.5186	160.1691

KR16-05 Leg2
 Ship Name: KAIREI
 Period: 2016-04-02 - 2016-04-20
 Chief Scientist: Gou Fujie (JAMSTEC)
 Proposal: IODP related site survey study : 1. Lord Howe Rise project
 Title:



KAIREI KR16-05 Leg2 Cruise Track

[Enlarge Image](#)

Update History	
2019-09-06	An observation data was registered.
2018-04-30	An observation data was registered.

<p>JAMSTEC Site Policy Privacy Policy Application for Data and Samples Data Policy</p> <p>What's New Update History Feeds</p>	<p>Lists Publication List Amount of Public Info.</p> <p>Data Map Search Data Tree Detailed Search</p>	<p>Information of the Ships NATSUSHIMA KAIYO YOKOSUKA MIRAI KAIREI CHIKYU KAIMEI SHINSEI MARU HAKUHO MARU</p>	<p>Information of the Submersibles KAIKO SHINKAI 2000 SHINKAI 6500 DEEP TOW HYPER-DOLPHIN URASHIMA YOKOSUKA DEEP TOW BK Camera DEEP TOW BK Sonar DEEP TOW KM-ROV POWER GRAB SAMPLER (SHELL) POWER GRAB SAMPLER (CLOW) BMS</p>	<p>Go to a Cruise Information Cruise ID: <input type="text"/> <input type="button" value="Go"/></p> <p>Go to a Dive Information Dive ID: <input type="text"/> <input type="button" value="Go"/></p>
---	--	---	---	---

Copyright 2011 Japan Agency for Marine-Earth Science and Technology



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