MIRAI MR00-K07 Leg2 Expendable Conductivity-Temperature-Depth Profiler (XCTD)

Last Modified: 2019-08-28

ReadMe Observation Data Data Format

Cruise ID: **MR00-K07 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/MR00-K07_leg1-2_all.pdf

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ⓘ **For Using Data**

Principal Investigator
  Data Management Office

  JAMSTEC / BPPT joint cruise in the Indonesian waters.

Use Constraints
  See **Terms and Conditions** about constrain of use.

Data Citation
  See **Terms and Conditions** about data citation.

Instrument
Instrument:
Expendable conductivity temperature
depth measurements (XCTD) (-
MR11-E02)

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

    Automatic launcher
        Manufacturer : Tsurumi Seiki Co., LTD.
        Location : Port side of rear upper deck (4m from the sea level). The control panel is installed in the investigation room.

  (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			
Measurment 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
200011101800	00092685	XCTD-1	Auto	MK-100
200011101813	00092688	XCTD-1	Auto	MK-100
200011101951	00092689	XCTD-1	Auto	MK-100
200011102147	00092684	XCTD-1	Auto	MK-100
200011110009	00092686	XCTD-1	Hand	MK-100
200011110242	00092744	XCTD-1	Hand	MK-100
200011110517	00092741	XCTD-1	Hand	MK-100
200011110742	00092739	XCTD-1	Hand	MK-100
200011111015	00092734	XCTD-1	Hand	MK-100
200011111250	00092736	XCTD-1	Auto	MK-100
200011111522	00092738	XCTD-1	Auto	MK-100
200011111757	00092740	XCTD-1	Auto	MK-100
200011112009	00092733	XCTD-1	Hand	MK-100
200011112212	00092732	XCTD-1	Hand	MK-100
200011120018	00092731	XCTD-1	Hand	MK-100
200011120221	00061831	XCTD-1	Hand	MK-100
200011120427	00061830	XCTD-1	Hand	MK-100
200011120631	00061829	XCTD-1	Hand	MK-100
200011120834	00092735	XCTD-1	Hand	MK-100
200011121038	00092737	XCTD-1	Hand	MK-100
200011121250	99120563	XCTD-1	Hand	MK-100
200011121507	00061828	XCTD-1	Hand	MK-100
200011121513	00061827	XCTD-1	Hand	MK-100
200011121523	00061826	XCTD-1	-	MK-100
200011121536	99120558	XCTD-1	Hand	MK-100
200011121837	00061823	XCTD-1	Hand	MK-100
200011130055	00061824	XCTD-1	Hand	MK-100
200011130648	00061820	XCTD-1	Hand	MK-100
200011131237	00061821	XCTD-1	Hand	MK-100
200011131824	00061822	XCTD-1	Hand	MK-100
200011140854	00061825	XCTD-1	Hand	MK-100
200011140908	00010620	XCTD-1	Hand	MK-100
200011141224	00061859	XCTD-1	Hand	MK-100
200011141827	00061858	XCTD-1	Hand	MK-100
200011150046	00061857	XCTD-1	Hand	MK-100
200011150625	00061860	XCTD-1	Hand	MK-100
200011151235	00061861	XCTD-1	Hand	MK-100
200011151510	00061863	XCTD-1	Hand	MK-100
200011151524	99063617	XCTD-1	Hand	MK-100
200011151538	00061862	XCTD-1	Hand	MK-100
200011151822	00061864	XCTD-1	Hand	MK-100
200011160028	00061865	XCTD-1	Hand	MK-100
200011160621	00061866	XCTD-1	Hand	MK-100
200011161215	00061867	XCTD-1	Hand	MK-100
200011161803	00061868	XCTD-1	Hand	MK-100
200011170611	00061832	XCTD-1	Hand	MK-100
200011180021	00061844	XCTD-1	Hand	MK-100
200011180239	00061843	XCTD-1	Hand	MK-100
200011180456	00061833	XCTD-1	Hand	MK-100
200011180715	00061841	XCTD-1	Hand	MK-100
200011180930	00061813	XCTD-1	Hand	MK-100
200011181149	00061839	XCTD-1	Auto	MK-100
200011181402	00061838	XCTD-1	Auto	MK-100
200011181612	00061835	XCTD-1	Auto	MK-100
200011181822	00061836	XCTD-1	Auto	MK-100
200011182033	00061837	XCTD-1	Auto	MK-100
200011182240	00061834	XCTD-1	Auto	MK-100
200011190051	00061816	XCTD-1	Hand	MK-100
200011190307	00061809	XCTD-1	Hand	MK-100
200011190523	00061808	XCTD-1	Hand	MK-100
200011190733	00061812	XCTD-1	Hand	MK-100
200011190942	00061811	XCTD-1	Hand	MK-100
200011191147	00061818	XCTD-1	Hand	MK-100
200011191357	00061840	XCTD-1	Auto	MK-100
200011191605	00061810	XCTD-1	Auto	MK-100

Cast name	Probe Serial No.	Probe Type	Launcher	Converter

Data processing

(1) For sensor's stablility, 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.
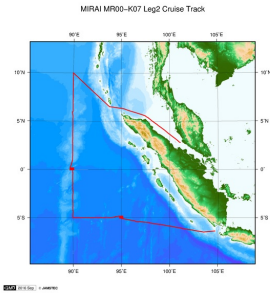
1) The gradient check of adjacent depth data

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

MIRAI MR00-K07 Leg2 Cruise Track

MR00-K07 Leg2
Ship Name: MIRAI
Period: 2000-11-09 - 2000-11-20
Chief Scientist: Keisuke Mizuno (JAMSTEC)
Project Name: [Tropical Ocean Climate Study (TOCS)]

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Update History

2019-08-28	An observation data was registerd.
2017-06-14	An observation data was registerd.
2016-10-11	An observation data was registerd.

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MIRAI MR00-K07 Leg2 Expendable Conductivity-Temperature-Depth Profiler (XCTD)

Last Modified: 2019-08-28

| ReadMe | Observation Data | **Data Format** |

Cruise ID: **MR00-K07 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
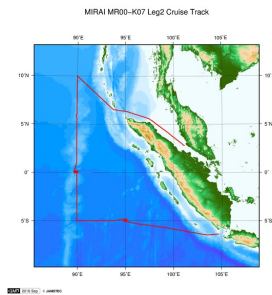   A - failed visual check

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

MIRAI MR00-K07 Leg2 Cruise Track

MR00-K07 Leg2
Ship Name: MIRAI
Period: 2000-11-09 - 2000-11-20
Chief Scientist: Keisuke Mizuno (JAMSTEC)
Project Name: [Tropical Ocean Climate Study (TOCS)]

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Update History

2019-08-28	An observation data was registerd.
2017-06-14	An observation data was registerd.
2016-10-11	An observation data was registerd.

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CHIKYU
KAIMEI
SHINSEI MARU
HAKUHO MARU

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SHINKAI 6500
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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

Go to a Dive Information
Dive ID: [----▼] [   ] Go

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海洋研究開発機構
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MIRAI MR00-K07 Leg2 Expendable Conductivity-Temperature-Depth Profiler (XCTD)

Last Modified: 2019-08-28

ReadMe	Observation Data	Data Format

Cruise ID: **MR00-K07 Leg2**
Expendable Conductivity-Temperature-Depth Profiler (XCTD): Processed (DMO)-QCed
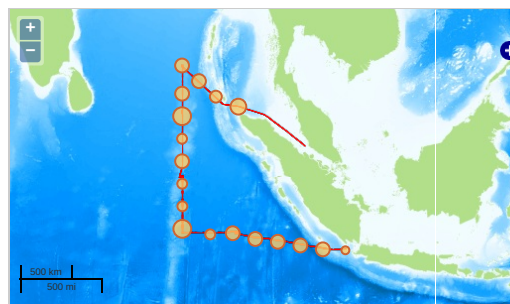**Data Policy**: **JAMSTEC**
Observation Items: Depth, Temperature, Salinity
Science Keywords:

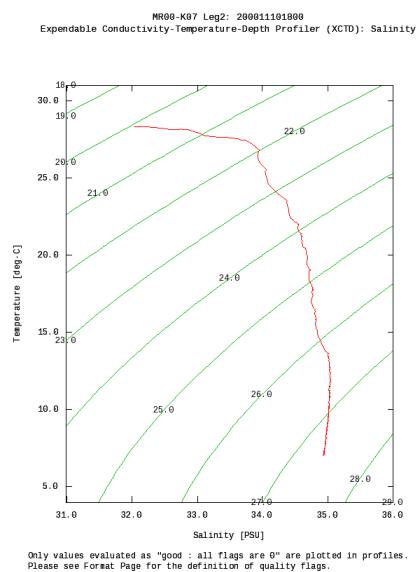| OCEANS	> OCEAN TEMPERATURE	> WATER TEMPERATURE
OCEANS	> SALINITY/DENSITY	> SALINITY

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

200011101800

MR00-K07 Leg2: 200011101800
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
☐	200011101800.dat
☐	200011101813.dat
☐	200011101951.dat
☐	200011102147.dat
☐	200011110009.dat
☐	200011110242.dat
☐	200011110517.dat
☐	200011110742.dat
☐	200011111015.dat
☐	200011111250.dat
☐	200011111522.dat
☐	200011111757.dat
☐	200011112009.dat
☐	200011112212.dat

- 200011120018.dat
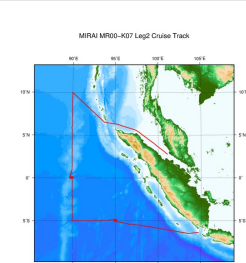- 200011120221.dat
- 200011120427.dat
- 200011120631.dat
- 200011120834.dat
- 200011121038.dat
- 200011121250.dat
- 200011121507.dat
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- 200011130055.dat
- 200011130648.dat
- 200011131237.dat
- 200011131824.dat
- 200011140854.dat
- 200011140908.dat
- 200011141224.dat
- 200011141827.dat
- 200011150046.dat
- 200011150625.dat
- 200011151235.dat
- 200011151510.dat
- 200011151524.dat
- 200011151538.dat
- 200011151822.dat
- 200011160028.dat
- 200011160621.dat
- 200011161215.dat
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- 200011170611.dat
- 200011180021.dat
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- 200011180930.dat
- 200011181149.dat
- 200011181402.dat
- 200011181612.dat
- 200011181822.dat
- 200011182033.dat
- 200011182240.dat
- 200011190051.dat
- 200011190307.dat
- 200011190523.dat
- 200011190733.dat
- 200011190942.dat
- 200011191147.dat
- 200011191357.dat
- 200011191605.dat
- ex_read2.f (Sample Program)

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

Observation	Time and Date	Lat. [°]	Lon. [°]
200011101800	2000-11-10 17:55	6.3468	94.9988
200011101813	2000-11-10 18:07	6.3530	94.9533
200011101951	2000-11-10 19:46	6.4151	94.4990
200011102147	2000-11-10 21:42	6.4848	94.0000
200011110009	2000-11-11 00:04	6.7720	93.5000
200011110242	2000-11-11 02:36	7.2336	92.9998
200011110517	2000-11-11 05:11	7.7016	92.4998
200011110742	2000-11-11 07:37	8.1581	91.9996
200011111015	2000-11-11 10:09	8.6120	91.4995
200011111250	2000-11-11 12:45	9.0873	90.9968
200011111522	2000-11-11 15:17	9.5463	90.4991
200011111757	2000-11-11 17:51	9.9991	89.9991
200011112009	2000-11-11 20:03	9.5001	90.0006
200011112212	2000-11-11 22:06	9.0000	90.0036
200011120018	2000-11-12 00:12	8.4998	90.0014
200011120221	2000-11-12 02:15	7.9996	89.9981
200011120427	2000-11-12 04:22	7.4996	90.0036
200011120631	2000-11-12 06:26	7.0000	89.9968
200011120834	2000-11-12 08:29	6.4998	90.0040
200011121038	2000-11-12 10:33	5.9986	89.9993
200011121250	2000-11-12 12:45	5.5001	90.0018
200011121507	2000-11-12 15:07	5.0018	89.9995
200011121513	2000-11-12 15:12	5.0020	89.9996
200011121523	2000-11-12 15:17	5.0018	89.9998
200011121536	2000-11-12 15:31	5.0018	89.9980
200011121837	2000-11-12 18:32	4.4993	90.0026
200011130055	2000-11-13 00:50	3.4998	89.9985

Observation	Time and Date	Lat. [°]	Lon. [°]
200011130948	2000-11-13 09:42	2.4998	89.9976
200011131237	2000-11-13 12:32	1.4998	90.0011
200011131824	2000-11-13 18:19	0.4998	89.8481
200011140854	2000-11-14 08:49	0.0023	89.9961
200011140908	2000-11-14 09:03	0.0028	89.9965
200011141224	2000-11-14 12:18	-0.4978	90.0143
200011141827	2000-11-14 18:22	-1.5001	90.0125
200011150046	2000-11-15 00:41	-2.5000	90.0268
200011150625	2000-11-15 06:20	-3.5001	90.0150
200011151235	2000-11-15 12:29	-4.5003	90.0215
200011151510	2000-11-15 15:05	-4.9983	90.0043
200011151524	2000-11-15 15:19	-4.9985	90.0066
200011151538	2000-11-15 15:32	-4.9990	90.0091
200011151822	2000-11-15 18:17	-4.9998	90.5000
200011160028	2000-11-16 00:22	-4.9993	91.5006
200011160621	2000-11-16 06:15	-4.9923	92.5000
200011161215	2000-11-16 12:10	-4.9826	93.5005
200011161803	2000-11-16 17:57	-4.8916	94.5001
200011170611	2000-11-17 06:05	-4.9983	95.0018
200011180021	2000-11-18 00:15	-5.1766	95.5003
200011180239	2000-11-18 02:34	-5.2805	96.0003
200011180456	2000-11-18 04:50	-5.4003	96.5001
200011180715	2000-11-18 07:09	-5.4271	97.0000
200011180930	2000-11-18 09:25	-5.4795	97.5010
200011181149	2000-11-18 11:44	-5.5649	97.9990
200011181402	2000-11-18 13:57	-5.6496	98.5013
200011181612	2000-11-18 16:06	-5.7153	99.0001
200011181822	2000-11-18 18:17	-5.7956	99.5010
200011182033	2000-11-18 20:28	-5.8836	100.0008
200011182240	2000-11-18 22:35	-5.9751	100.5008
200011190051	2000-11-19 00:46	-6.0610	101.0003
200011190307	2000-11-19 03:02	-6.1703	101.5003
200011190523	2000-11-19 05:18	-6.2356	102.0001
200011190733	2000-11-19 07:28	-6.3223	102.5001
200011190942	2000-11-19 09:36	-6.4115	103.0003
200011191147	2000-11-19 11:42	-6.5001	103.5003
200011191357	2000-11-19 13:52	-6.4494	104.0008
200011191605	2000-11-19 16:00	-6.4038	104.5005

Related Information

MR00-K07 Leg2
Ship Name: MIRAI
Period: 2000-11-09 - 2000-11-20
Chief Scientist: Keisuke Mizuno (JAMSTEC)
Project Name: [Tropical Ocean Climate Study (TOCS)]

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Update History

2019-08-28	An observation data was registerd.
2017-06-14	An observation data was registerd.
2016-10-11	An observation data was registerd.

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KAIMEI
SHINSEI MARU
HAKUHO MARU

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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

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Dive ID: [----▼] [_____] Go

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