

MIRAI MR06-05 Leg3 Expendable Conductivity-Temperature-Depth Profiler (XCTD)

Last Modified: 2019-08-29

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

Cruise ID: [MR06-05 Leg3](#)

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/MR06-05_leg3_all.pdf

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
200612202236	05022159	XCTD-1	Auto	MK-100
200612202342	05022151	XCTD-1	Auto	MK-100
200612210059	05022152	XCTD-1	Auto	MK-100
200612210347	05022155	XCTD-1	Auto	MK-100
200612210607	05022148	XCTD-1	Auto	MK-100
200612211028	05126226	XCTD-1	Auto	MK-100
200612211437	05126231	XCTD-1	Auto	MK-100
200612211845	05022154	XCTD-1	Auto	MK-100
200612212248	05022153	XCTD-1	Auto	MK-100
200612220258	05126234	XCTD-1	Auto	MK-100
200612220654	05022156	XCTD-1	Auto	MK-100
200612220702	05022158	XCTD-1	Auto	MK-100
200612220957	05022157	XCTD-1	Auto	MK-100
200612221235	05126227	XCTD-1	Auto	MK-100
200612221635	05126230	XCTD-1	Auto	MK-100
200612222033	05126233	XCTD-1	Auto	MK-100
200612230032	05126229	XCTD-1	Auto	MK-100
200612230428	05126237	XCTD-1	Auto	MK-100
200612230833	05126236	XCTD-1	Auto	MK-100
200612231231	05126247	XCTD-1	Auto	MK-100
200612231625	05126232	XCTD-1	Auto	MK-100
200612232017	05126235	XCTD-1	Auto	MK-100
200612250439	05126244	XCTD-1	Auto	MK-100
200612261005	05126245	XCTD-1	Auto	MK-100
200612261428	05126248	XCTD-1	Auto	MK-100
200612261654	05126246	XCTD-1	Auto	MK-100
200612261915	05126243	XCTD-1	Auto	MK-100
200612262008	05126241	XCTD-1	Auto	MK-100
200612270211	05126239	XCTD-1	Auto	MK-100
200612270309	05126255	XCTD-1	Auto	MK-100
200612270514	05126249	XCTD-1	Auto	MK-100
200612270721	05126251	XCTD-1	Auto	MK-100
200612271133	05126254	XCTD-1	Auto	MK-100
200612271544	05126253	XCTD-1	Auto	MK-100
200612271939	05126252	XCTD-1	Auto	MK-100
200612280053	05126257	XCTD-1	Auto	MK-100
200612280459	05126250	XCTD-1	Auto	MK-100
200612280910	05126256	XCTD-1	Auto	MK-100
200612300341	05126258	XCTD-1	Auto	MK-100
200701030219	06079198	XCTD-1	Auto	MK-100
200701030413	05126261	XCTD-1	Auto	MK-100
200701030624	05126260	XCTD-1	Auto	MK-100
200701030832	05126259	XCTD-1	Auto	MK-100
200701050349	06079196	XCTD-1	Auto	MK-100
200701050626	06079190	XCTD-1	Auto	MK-100
200701050844	06079195	XCTD-1	Auto	MK-100
200701051103	06079194	XCTD-1	Auto	MK-100
200701051324	06079197	XCTD-1	Auto	MK-100
200701051541	06079193	XCTD-1	Auto	MK-100
200701060212	06079191	XCTD-1	Auto	MK-100
200701070712	06079192	XCTD-1	Auto	MK-100
200701071103	06079188	XCTD-1	Auto	MK-100
200701090352	06079187	XCTD-1	Auto	MK-100
200701090921	06079186	XCTD-1	Auto	MK-100
200701091346	06079179	XCTD-1	Auto	MK-100
200701091810	06079176	XCTD-1	Auto	MK-100
200701092239	06079183	XCTD-1	Auto	MK-100
200701100328	06079180	XCTD-1	Auto	MK-100
200701100757	06079178	XCTD-1	Auto	MK-100
200701101422	06079177	XCTD-1	Auto	MK-100
200701101845	06079181	XCTD-1	Auto	MK-100
200701102313	06079175	XCTD-1	Auto	MK-100
200701110331	06079182	XCTD-1	Auto	MK-100
200701110800	06079184	XCTD-1	Auto	MK-100
200701111211	06079185	XCTD-1	Auto	MK-100

Cast name	Probe Serial No.	Probe Type	Launcher	Converter
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

MR06-05 Leg3
 Ship Name: MIRAI
 Period: 2006-12-14 - 2007-01-19
 Chief Scientist: Yuji Kashino (JAMSTEC)
 Project Name: [Tropical Ocean Climate Study (TOCS)]

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Update History	
2019-08-29	An observation data was registerd.
2017-06-14	An observation data was registerd.
2016-04-07	An observation data was registerd.
2014-07-30	An observation data was registerd.
2014-02-18	An observation data was registerd.
2012-11-25	An observation data was registerd.

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 6K Sonar DEEP TOW
 KM-ROV
 POWER GRAB SAMPLER (SHELL)
 POWER GRAB SAMPLER (CLOW)
 BMS

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Last Modified: 2019-08-29

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Cruise ID: [MR06-05 Leg3](#)

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

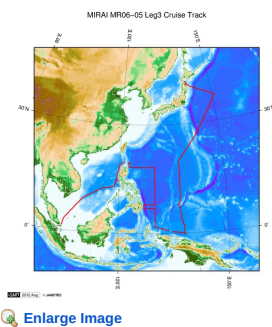
QCed data were added flag according to the NODC (National Oceanographic Data Center) quality control procedure, additionally visually checked. Please see the site of NODC of the following link for quality control procedure.

[QUALITY CONTROL AND PROCESSING OF HISTORICAL OCEANOGRAPHIC TEMPERATURE, SALINITY, AND OXYGEN DATA](#)

Sample Program

[ex_read2.f](#)

Related Information



MR06-05 Leg3

Ship Name: MIRAI

Period: 2006-12-14 - 2007-01-19

Chief Scientist: Yuji Kashino (JAMSTEC)

Project Name: [Tropical Ocean Climate Study (TOCS)]

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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

Go to a Cruise Information

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Go to a Dive Information

Dive ID:

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

Data Policy: [JAMSTEC](#)

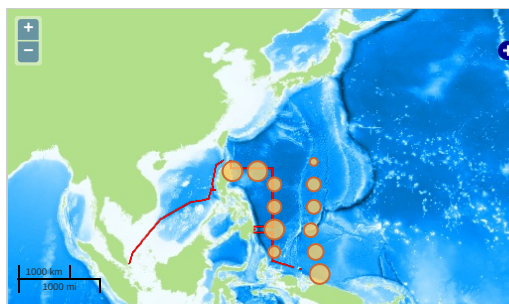
Observation Items: Depth, Temperature, Salinity

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

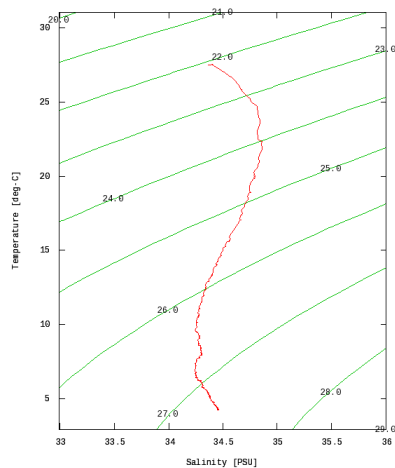
Imagery reproduced from ...

Figures

200612202236



MR06-05 Leg3: 200612202236
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"/>	200612202236.dat
<input type="checkbox"/>	200612202342.dat
<input type="checkbox"/>	200612210059.dat
<input type="checkbox"/>	200612210347.dat
<input type="checkbox"/>	200612210607.dat
<input type="checkbox"/>	200612211028.dat
<input type="checkbox"/>	200612211437.dat
<input type="checkbox"/>	200612211845.dat
<input type="checkbox"/>	200612212248.dat
<input type="checkbox"/>	200612220258.dat
<input type="checkbox"/>	200612220654.dat
<input type="checkbox"/>	200612220702.dat
<input type="checkbox"/>	200612220957.dat
<input type="checkbox"/>	200612221235.dat

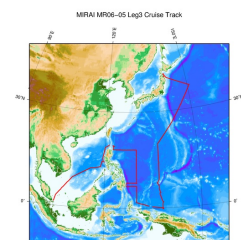
 20061222035.dat
 200612222033.dat
 200612230032.dat
 200612230428.dat
 200612230833.dat
 200612231231.dat
 200612231625.dat
 200612232017.dat
 200612250439.dat
 200612261005.dat
 200612261428.dat
 200612261654.dat
 200612261915.dat
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 200612270211.dat
 200612270309.dat
 200612270514.dat
 200612270721.dat
 200612271133.dat
 200612271544.dat
 200612271939.dat
 200612280053.dat
 200612280459.dat
 200612280910.dat
 2006122300341.dat
 200701030219.dat
 200701030413.dat
 200701030624.dat
 200701030832.dat
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 200701070712.dat
 200701071103.dat
 200701090352.dat
 200701090921.dat
 200701091346.dat
 200701091810.dat
 200701092239.dat
 200701100328.dat
 200701100757.dat
 200701101422.dat
 200701101845.dat
 200701102313.dat
 200701110331.dat
 200701110800.dat
 200701111211.dat
 ex_read2.f (Sample Program)

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

Observation	Time and Date	Lat. [°]	Lon. [°]
200612202236	2006-12-20 22:31	18.3325	122.5665
200612202342	2006-12-20 23:37	18.3321	122.7505
200612210059	2006-12-21 00:54	18.3348	123.0006
200612210347	2006-12-21 03:42	18.3335	123.5005
200612210607	2006-12-21 06:02	18.3329	124.0006
200612211028	2006-12-21 10:23	18.3340	125.0001
200612211437	2006-12-21 14:32	18.3318	126.0003
200612211845	2006-12-21 18:40	18.3336	127.0000
200612212248	2006-12-21 22:43	18.3331	128.0003
200612220258	2006-12-22 02:53	18.3284	129.0003
200612220654	2006-12-22 06:51	18.3331	130.0001
200612220702	2006-12-22 06:57	18.3335	130.0088
200612220957	2006-12-22 09:52	17.6653	130.0000
200612221235	2006-12-22 12:30	17.0000	130.0001
200612221635	2006-12-22 16:30	15.9998	129.9996
200612222033	2006-12-22 20:28	14.9998	129.9988
200612230032	2006-12-23 00:27	13.9998	130.0016
200612230428	2006-12-23 04:23	13.0000	129.9993
200612230833	2006-12-23 08:28	11.9998	130.0000
200612231231	2006-12-23 12:26	10.9998	130.0023
200612231625	2006-12-23 16:20	9.9993	130.0000
200612232017	2006-12-23 20:12	8.9998	130.0010
200612250439	2006-12-25 04:34	7.9878	129.9998
200612261005	2006-12-26 10:00	8.0003	128.9998
200612261428	2006-12-26 14:23	8.0026	127.9998
200612261654	2006-12-26 16:49	8.0001	127.4998
200612261915	2006-12-26 19:10	7.9990	126.9998

Observation	Time and Date	Lat (°N)	Long (°E)
200612202008	2006-12-20 20:08	7.9993	126.9311
200612270211	2006-12-27 02:06	6.9895	126.8001
200612270309	2006-12-27 03:04	6.9925	127.0001
200612270514	2006-12-27 05:09	7.0003	127.5001
200612270721	2006-12-27 07:16	6.9988	128.0001
200612271133	2006-12-27 11:28	6.9996	129.0001
200612271544	2006-12-27 15:39	6.9995	130.0001
200612271939	2006-12-27 19:34	5.9998	130.0013
200612280053	2006-12-28 00:48	4.9998	130.0008
200612280459	2006-12-28 04:54	3.9996	129.9995
200612280910	2006-12-28 09:05	2.9998	129.9996
200612300341	2006-12-30 03:36	1.9643	129.9471
200701030219	2007-01-03 02:14	0.0888	138.0533
200701030413	2007-01-03 04:08	0.5003	138.0000
200701030624	2007-01-03 06:19	1.0001	137.9998
200701030832	2007-01-03 08:27	1.5000	138.0015
200701050349	2007-01-05 03:45	1.9923	138.1143
200701050626	2007-01-05 06:21	2.5001	137.8333
200701050844	2007-01-05 08:39	3.0001	137.6666
200701051103	2007-01-05 10:58	3.5000	137.5001
200701051324	2007-01-05 13:19	4.0001	137.3340
200701051541	2007-01-05 15:36	4.5001	137.1668
200701060212	2007-01-06 02:07	4.8650	137.2798
200701070712	2007-01-07 07:07	6.0238	136.9998
200701071103	2007-01-07 10:58	7.0003	136.9998
200701090352	2007-01-09 03:47	7.8700	136.4715
200701090921	2007-01-09 09:16	9.0000	137.0000
200701091346	2007-01-09 13:41	10.0001	137.0071
200701091810	2007-01-09 18:05	11.0001	137.0004
200701092239	2007-01-09 22:34	12.0001	136.9998
200701100328	2007-01-10 03:23	13.0026	137.0004
200701100757	2007-01-10 07:52	14.0140	137.0001
200701101422	2007-01-10 14:17	15.0001	136.9990
200701101845	2007-01-10 18:40	16.0000	137.0001
200701102313	2007-01-10 23:08	17.0001	136.9993
200701110331	2007-01-11 03:26	18.0000	137.0000
200701110800	2007-01-11 07:55	19.0003	137.0000
200701111211	2007-01-11 12:05	20.0001	137.0018

Related Information



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MR06-05 Leg3

Ship Name: MIRAI

Period: 2006-12-14 - 2007-01-19

Chief Scientist: Yuji Kashino (JAMSTEC)

Project Name: [Tropical Ocean Climate Study (TOCS)]

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