MIRAI MR05-03 Leg1 Expendable Conductivity-Temperature-Depth Profiler (XCTD)

Last Modified: 2019-08-29

ReadMe | Observation Data | Data Format

Cruise ID: MR05-03 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/MR05-03_leg1-3_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
200507040155	04037335	XCTD-1	Auto	MK-100
200507040718	04037334	XCTD-1	Auto	MK-100
200507041239	04037333	XCTD-1	Auto	MK-100
200507041800	04037336	XCTD-1	Auto	MK-100
200507042319	04037338	XCTD-1	Auto	MK-100
200507070728	04109687	XCTD-1	Auto	MK-100
200507070818	04037337	XCTD-1	Auto	MK-100
200507071031	04109685	XCTD-1	Auto	MK-100
200507071239	04109683	XCTD-1	Auto	MK-100
200507071447	04109682	XCTD-1	Auto	MK-100
200507071654	04109684	XCTD-1	Auto	MK-100
200507090726	04109688	XCTD-1	Auto	MK-100
200507090856	04109694	XCTD-1	Auto	MK-100
200507091055	04109692	XCTD-1	Auto	MK-100
200507091256	04109693	XCTD-1	Auto	MK-100
200507091500	04109690	XCTD-1	Auto	MK-100
200507091702	04109689	XCTD-1	Auto	MK-100
200507110737	04100045	XCTD-1	Hand	MK-100
200507110940	04100038	XCTD-1	Auto	MK-100
200507111215	04100037	XCTD-1	Auto	MK-100
200507111416	04100039	XCTD-1	Auto	MK-100
200507130725	04100044	XCTD-1	Auto	MK-100
200507170803	04109691	XCTD-1	Hand	MK-100
200507170943	04100043	XCTD-1	Auto	MK-100
200507171125	04100042	XCTD-1	Auto	MK-100
200507171309	04100046	XCTD-1	Auto	MK-100
200507171456	04100041	XCTD-1	Auto	MK-130
200507171642	04100047	XCTD-1	Auto	MK-130
200507171823	04109977	XCTD-1	Auto	MK-130
200507171913	04100048	XCTD-1	Auto	MK-130
200507172004	04100040	XCTD-1	Auto	MK-130
200507172054	04109980	XCTD-1	Auto	MK-130
200507172143	04109974	XCTD-1	Auto	MK-130
200507172233	04109973	XCTD-1	Auto	MK-130
200507172322	04109970	XCTD-1	Auto	MK-130
200507180010	04109976	XCTD-1	Hand	MK-130
200507180057	04109979	XCTD-1	Hand	MK-130
200507180151	04109972	XCTD-1	Hand	MK-130
200507180249	04109951	XCTD-1	Hand	MK-130
200507180353	04109981	XCTD-1	Auto	MK-130
200507180456	04109971	XCTD-1	Auto	MK-130
200507180601	04109978	XCTD-1	Auto	MK-130
200507180704	04109975	XCTD-1	Auto	MK-130
200507180807	04109943	XCTD-1	Auto	MK-130
200507180908	04109942	XCTD-1	Auto	MK-130
200507181010	04109941	XCTD-1	Auto	MK-130
200507181112	04109946	XCTD-1	Auto	MK-130
200507181217	04109950	XCTD-1	Auto	MK-130
200507181402	04109953	XCTD-1	Auto	MK-130
200507181550	04109945	XCTD-1	Auto	MK-130
200507181737	04109955	XCTD-1	Auto	MK-130
200507181926	04109969	XCTD-1	Auto	MK-130
200507182117	04109967	XCTD-1	Auto	MK-130
200507182311	04109968	XCTD-1	Auto	MK-130
200507190134	04109947	XCTD-1	Auto	MK-130
200507190345	04109949	XCTD-1	Auto	MK-130
200507190524	04109944	XCTD-1	Auto	MK-130

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

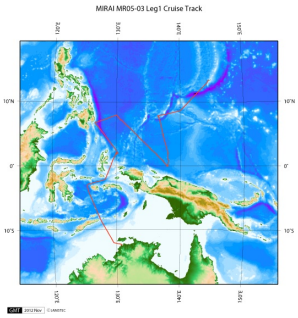
3) The broad range check set up at given ocean space and depth

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



Enlarge Image

MR05-03 Leg1
Ship Name: MIRAI
Period: 2005-07-03 - 2005-07-25
Chief Scientist: Kentaro Ando (JAMSTEC)
Project Name: [Tropical Ocean Climate Study (TOCS)]

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.
2014-07-26	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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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'.

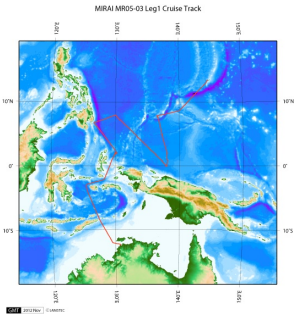
Definition of Quality Control Flags
1. Depth Flags
- 0 - accepted value
- 1 - error in recorded depth (same or less than previous depth)
- 2 - density inversion

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



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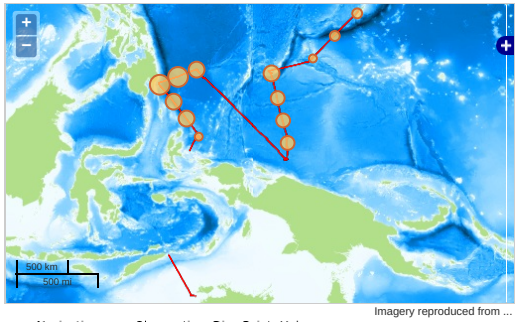
OCEANS	> OCEAN TEMPERATURE	> WATER TEMPERATURE
OCEANS	> SALINITY/DENSITY	> SALINITY

Observation Map

1. Clicking the icon displays a balloon with observation information.
2. Then click the observation name, figures will be displayed.

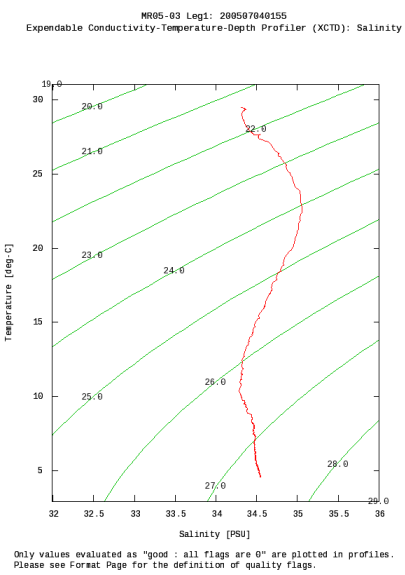


Imagery reproduced from ...

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

Figures

200507040155



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
200507040155.dat
200507040718.dat
200507041239.dat
200507041800.dat
200507042319.dat
200507070728.dat
200507070818.dat
200507071031.dat
200507071239.dat
200507071447.dat
200507071654.dat
200507090726.dat
200507090856.dat
200507091055.dat

File names

200507091256.dat
200507091500.dat
200507091702.dat
200507110737.dat
200507110940.dat
200507111215.dat
200507111416.dat
200507130725.dat
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200507170943.dat
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200507171823.dat
200507171913.dat
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200507180151.dat
200507180249.dat
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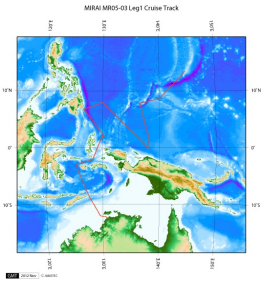
200507180456.dat
200507180601.dat
200507180704.dat
200507180807.dat
200507180908.dat
200507181010.dat
200507181112.dat
200507181217.dat
200507181402.dat
200507181550.dat
200507181737.dat
200507181926.dat
200507182117.dat
200507182311.dat
200507190134.dat
200507190345.dat
200507190524.dat
ex_read2.f (Sample Program)

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

Observation	Time and Date	Lat. [°]	Lon. [°]
200507040155	2005-07-04 01:50	13.0001	144.2428
200507040718	2005-07-04 07:13	11.9998	143.2360
200507041239	2005-07-04 12:34	10.9991	142.2536
200507041800	2005-07-04 17:55	9.9996	141.2833
200507042319	2005-07-04 23:14	8.9996	140.3108
200507070728	2005-07-07 07:23	7.6748	136.6363
200507070818	2005-07-07 08:13	7.4991	136.6788
200507071031	2005-07-07 10:26	6.9995	136.8428
200507071239	2005-07-07 12:34	6.4995	136.9515
200507071447	2005-07-07 14:42	6.0005	137.0681
200507071654	2005-07-07 16:49	5.4838	137.1836
200507090726	2005-07-09 07:21	4.8596	137.3080
200507090856	2005-07-09 08:51	4.4998	137.3951
200507091055	2005-07-09 10:50	4.0001	137.5135
200507091256	2005-07-09 12:51	3.5001	137.6665
200507091500	2005-07-09 14:55	3.0000	137.8098
200507091702	2005-07-09 16:57	2.4945	137.9495
200507110737	2005-07-11 07:31	1.9895	138.0563
200507110940	2005-07-11 09:35	1.4996	138.0633
200507111215	2005-07-11 12:10	0.9996	138.1146
200507111416	2005-07-11 14:11	0.5000	138.1078
200507130725	2005-07-13 07:20	-0.0005	137.9803
200507170803	2005-07-17 07:58	8.0093	129.9824
200507170943	2005-07-17 09:38	7.8896	129.6663
200507171125	2005-07-17 11:20	7.7690	129.3338
200507171309	2005-07-17 13:04	7.6420	129.0003
200507171456	2005-07-17 14:51	7.5056	128.6691
200507171642	2005-07-17 16:37	7.3608	128.3333
200507171823	2005-07-17 18:18	7.2571	127.9996
200507171913	2005-07-17 19:08	7.2103	127.8331
200507172004	2005-07-17 19:58	7.1523	127.6663
200507172054	2005-07-17 20:49	7.0986	127.5000
200507172143	2005-07-17 21:38	7.0445	127.3331
200507172233	2005-07-17 22:28	6.9850	127.1666
200507172322	2005-07-17 23:17	6.9286	126.9988

Observation	Time and Date	Lat. [°]	Lon. [°]
200507180010	2005-07-18 00:05	6.8329	126.8838
200507180057	2005-07-18 00:52	6.8331	126.6675
200507180151	2005-07-18 01:46	6.6670	126.7151
200507180249	2005-07-18 02:44	6.5003	126.8415
200507180353	2005-07-18 03:48	6.3270	126.9900
200507180456	2005-07-18 04:51	6.1681	127.1413
200507180601	2005-07-18 05:56	5.9996	127.2826
200507180704	2005-07-18 06:59	5.8333	127.4126
200507180807	2005-07-18 08:02	5.6668	127.5575
200507180908	2005-07-18 09:03	5.5001	127.6896
200507181010	2005-07-18 10:05	5.3335	127.8198
200507181112	2005-07-18 11:07	5.1671	127.9451
200507181217	2005-07-18 12:12	5.0001	128.0746
200507181402	2005-07-18 13:57	4.6671	128.3315
200507181550	2005-07-18 15:45	4.3335	128.5893
200507181737	2005-07-18 17:31	4.0000	128.8370
200507181926	2005-07-18 19:21	3.6666	129.0906
200507182117	2005-07-18 21:12	3.3335	129.3385
200507182311	2005-07-18 23:06	3.0000	129.5958
200507190134	2005-07-19 01:29	2.6668	129.8388
200507190345	2005-07-19 03:40	2.3330	130.0385
200507190524	2005-07-19 05:18	2.0563	130.1723

Related Information



Enlarge Image

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