

## MIRAI MR04-05 Expendable Conductivity-Temperature-Depth Profiler (XCTD)

Last Modified: 2018-12-20

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

Cruise ID: [MR04-05](#)

Expendable Conductivity-Temperature-Depth Profiler (XCTD): Processed (PI)

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/MR04-05\\_all.pdf](http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR04-05_all.pdf)

### For Using Data

#### Principal Investigator

Koji Shimada (JAMSTEC)

#### 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

CitationShimada, K. 2004, R/V Mirai Cruise Report MR04-05, edited by K. Shimada, S. Nishino, and M. Itoh, 110pp., JAMSTEC, Yokosuka, Japan.

Upon consultation in advance with the chief of investigation and the person(s) in charge of research issues who gathered that data, we request that the text of the results material contain a statement to the effect that it was obtained during the R/V Mirai cruise of MR04-05 Leg1 under the project of JWACS 2004, the Chief Scientist, Koji Shimada (JAMSTEC), and the following Principal Investigators (PI) for gathering the data.

Chief Scientist

Koji Shimada (JAMSTEC)

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PI for XCTD

Koji Shimada (JAMSTEC)

Collaborators:

Motoyo Itoh (JAMSTEC)

Eddy Carmack (Institute of Ocean Sciences)

### Data processing

XCTD Salinity Calibration Note

The accuracy of the salinity data from the XCTD probes is about  $\pm 0.04$  psu as stated in the manufacturer's report of Tsurumi-Seiki (XCTD maker). This is not good enough to detect the variability of Atlantic Water. In the Canada Basin, water properties are relatively uniform below the Atlantic layer. Therefore we correct the XCTD salinity data by using the neighboring CTD data.

**Figure 1** Figure 1 show Temperature Salinity diagram of CTD and XCTD data of Mirai 2004 Arctic cruise. Blue dots show CTD data and green dots show XCTD data. The XCTD data scatters due to the salinity bias of the XCTD probe.

**Figure 2** We calculate the salinity bias  $\text{delS}$  of each XCTD probe by comparing it with the neighboring CTD data on 0.3, 0.2, 0.1 and 0.0 °C.

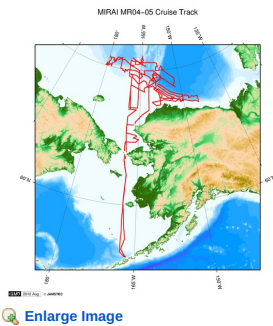
The salinity of XCTD was corrected using the following formula.

$$\text{Corrected XCTD S} = \text{XCTD S} + \text{delS}$$

The last column of the **XCTD log** shows  $\text{delS}$ . **Figure 3** is same as Figure 1, except that corrected salinities were used for the XCTD data. **Figure 4** show distribution of salinity of both CTD and corrected XCTD where where temperature is 0.3, 0.2, 0.1 and 0.0 °C. The accuracy of the corrected XCTD salinities is about  $\pm 0.01$  psu.

However, we can not correct the XCTD salinity data in shallow water regions using our method. The column that is named "flag" of the XCTD log shows either 0 if the salinity is corrected or 1 if the salinity is not corrected.

### Related Information



#### MR04-05

Ship Name: MIRAI

Period: 2004-09-01 - 2004-10-13

Chief Scientist: Koji Shimada (JAMSTEC)

Project Name: [Arctic Ocean Climate System Reaserch]

#### Update History

2018-12-20	An observation data was registerd.
2012-12-08	An observation data was registerd.
2012-11-25	An observation data was registerd.

#### JAMSTEC

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HAKUHO MARU

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6K Camera DEEP TOW

6K Sonar DEEP TOW

KM-ROV

POWER GRAB SAMPLER

(SHELL)

POWER GRAB SAMPLER

(CLOW)

BMS

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Cruise ID:

#### Go to a Dive Information

Dive ID:

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### XCTD PI (MR04-05)

Each data file contains one line header (meta data) followed by data lines for each cast.

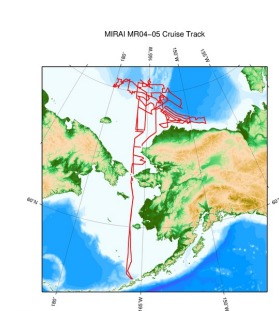
Header part

No.	Column	Content	Format	Remarks
1	1 - 8	Date	i2,a1,i2,a1,i2	YY/MM/DD (UTC)
2	10 - 17	Time	i2,a1,i2,a1,i2	hh:mm:ss (UTC)
3	19 - 26	Longitude	f8.3	DDD.ddd DDD are degrees, and ddd are decimal degrees.
4	29 - 35	Latitude	f7.3	SDD.ddd "S" is sign (blank or missing is positive), DD are degrees, and ddd are decimal degrees. Sign is positive in northern hemisphere, negative in southern hemisphere.

Data part

No.	Column	Content	Unit	Format	Remarks
1	1 - 11	Depth	m	f11.6	
2	13 - 23	Temperature	deg-C	f11.6	ITS-90
3	25 - 35	Conductivity	mS/cm	f11.6	
4	37 - 47	Pressure	dbar	f11.6	
5	49 - 59	Salinity	PSU	f11.6	

### Related Information



[Enlarge Image](#)

#### MR04-05

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> OCEAN

TEMPERATURE

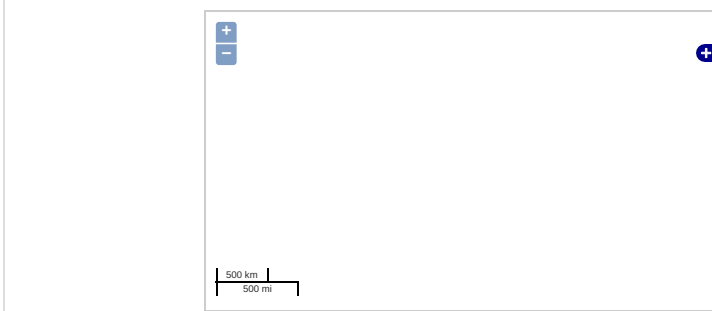
> SALINITY/DENSITY

> WATER

TEMPERATURE

> SALINITY

Observation Map













































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

Imagery reproduced from ...

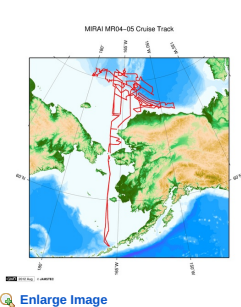
Data List

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File names
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008.ctd
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