

## MIRAI MR13-01 Underway Thermosalinograph

Last Modified: 2017-06-29

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Cruise ID: [MR13-01](#)

Underway Thermosalinograph: Processed (DMO)-QCed

Data Policy: [JAMSTEC](#)

Observation Items: Temperature, Salinity, Dissolved oxygen

Science Keywords:

OCEANS > OCEAN CHEMISTRY > OXYGEN  
OCEANS > SALINITY/DENSITY > SALINITY  
OCEANS > OCEAN > SEA SURFACE  
OCEANS TEMPERATURE TEMPERATURE

Cruise Report

[http://www.godac.jamstec.go.jp/catalog/data/doc\\_catalog/media/MR13-01\\_all.pdf](http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR13-01_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:

Continuous sea surface water  
monitoring system (MR10-04 Leg1 -  
MR14-02 )



### Overview

Thermosalinograph measures the following surface parameters continuously.

- temperature
- salinity
- dissolved oxygen

Sea surface water is continuously pumped up at 4.5 meters depth to the sea surface monitoring laboratory and then flowed into each analysis equipment through a steel pipe and a vinyl-chloride pipe.

The flow rate of this system is controlled by some valves. Data are recorded in the personal computer.

### System

- Temperature sensor  
Model : SBE-38, Sea-Bird Electronics, Inc.  
Serial number : 3852788-0457  
Measurement range : -5 to 35 deg-C (ITS-90)  
Sensor location : Bow thruster room
- Salinity sensor  
MicroTSG (Thermosalinograph)  
Model : SBE-45, Sea-Bird Electronics, Inc.  
Serial number : 4552788-0264  
Measurement range : [temperature] -5 to +35 deg-C (ITS-90), [conductivity] 0 to 7 S/m  
Sensor location : Sea surface monitoring laboratory
- DO sensor  
Model : OPTODE 3835, AANDERAA Instruments.  
Serial number : 1233  
Measurement range : 0 to 500 µmol dcum  
Sensor location : Sea surface monitoring laboratory

### Number of significant figures of data

After considering the accuracy of the sensors, the significant digit of data was changed as in the following list.

Data	Raw (ASCII data)	On this web site
Temperature	0.0001 [deg-C]	0.001 [deg-C]
Salinity	0.0001 [PSU]	0.001 [PSU]
Dissolved oxygen	0.01 [µmol/kg]	0.1 [µmol/kg]

\* The unit of the dissolved oxygen was changed from ml/l into µmol/kg since MR10-04.

### Data acquisition

Date/Time (UTC)	Start/Stop	Remarks
2013-02-26, 07:15	start	02-57.36N, 128-28.49E
2013-03-13, 02:50	stop	02-59.97N, 130-00.03E
2013-03-13, 03:32	start	02-59.84N, 129-59.83E
2013-03-25, 09:00	stop	39-03.87N, 143-16.47E

#### Calibration Information

Calibration Information is as follows.

##### [Calibration Information](#)

#### Data processing

##### (1) 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

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.

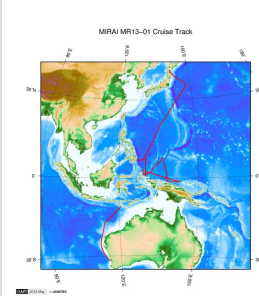
#### Note

(1) The drift that exceeded the sensor specification (0.003PSU/month) turned out from the comparison between analysis data and the sensor data about the salinity data. Please see calibration information for details.

##### [Calibration Information](#)

Figure: The comparison between analysis data and the sensor data

#### Related Information



##### MR13-01

Ship Name: MIRAI

Period: 2013-02-18 - 2013-03-28

Chief Scientist: Yuji Kashino (JAMSTEC)

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

[Enlarge Image](#)

#### Update History

2017-06-29	An observation data was registered.
2016-04-07	An observation data was registered.
2015-06-04	An observation data was registered.
2014-03-12	An observation data was registered.
2013-10-25	An observation data was registered.

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JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY

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### TSG DMO

#### Format Description for the QCed Data

Each data file contains one line header and daily observation data.

#### Header part

No.	Column	Content	Format	Remarks
1	1	Header ID	a1	fixed as '#'
2	3 - 6	Data ID	a4	TSG
3	8 - 22	Cruise ID	a15	e.g. MRYX-XX_legx
4	68 - 71	Number of data lines	i4	
5	72 - 73	Terminator	-	CR+LF

#### Data part

No.	Column	Content	Unit	Format	Remarks
1	1 - 8	Date	-	i8	YYYYMMDD (UTC)
2	10 - 13	Time	-	i4	hhmm (UTC)
3	15 - 23	Latitude	-	i2,a1,f5.2,a1	dd-mm.mmN(S)
4	25 - 34	Longitude	-	i3,a1,f5.2,a1	ddd-mm.mmE(W)
5	35 - 45	Temperature	deg-C	f11.3	ITS-90
6	46 - 56	Salinity	PSU	f11.3	PSS-78
7	57 - 67	Dissolved oxygen	μmol/kg	f11.1	
8	68 - 78	Flag	-	i11	1 - 6 : space 7 : flag of date/time 8 : flag of latitude/longitude 9 : flag of temperature 10 : flag of salinity 11 : flag of dissolved oxygen
9	79 - 80	Terminator	-	-	CR+LF

\* This format has been applied since MR10-04 cruise of R/V Mirai.

\* Temperature, Salinity, Dissolved oxygen: Missing value is presented by '-5', and error value is presented by '-9'.

#### Definition of Quality Control Flags

##### 1. Observed Level Flags

- 0 - accepted value
- 1 - range outlier ( outside of broad range check )
- A - doubtful value
- N - missing value

##### 2. Date and time flag (Thermosalinograph only)

- 0 - accepted data and time
- 1 - failed duplicate/missing/incorrect date and time

##### 3. Position flag (Thermosalinograph only)

- 0 - accepted position
- 1 - failed estimated ship speed check including missing/incorrect position

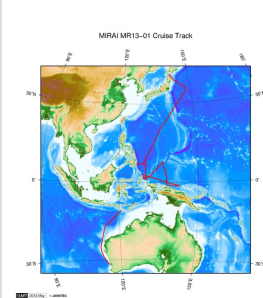
For details about range set of temperature, salinity and oxygen data, please refer the web site of NODC (National Oceanographic Data Center) from the following link for quality control procedure.

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

#### Sample Program

[ex\\_read2.f](#)

### Related Information



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#### MR13-01

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Period: 2013-02-18 - 2013-03-28  
Chief Scientist: Yuji Kashino (JAMSTEC)  
Project Name: [Tropical Ocean Climate Study (TOCS)]

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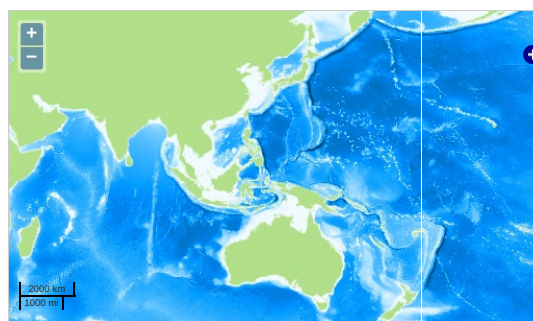
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### Observation Map

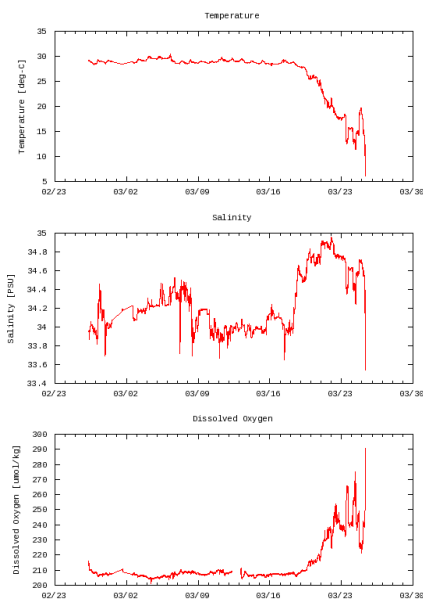


— ... Observation Line — ... Navigation ● ... Observation, Dive Point, Hole

Imagery reproduced from ...

### Figures

MR13-01: Underway Thermosalino Graph



### Data List

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☐ File names

☐ 20130226.dat

☐ 20130227.dat

☐ 20130228.dat

☐ 20130301.dat

☐ 20130302.dat

☐ 20130303.dat

☐ 20130304.dat

☐ 20130305.dat

☐ 20130306.dat

☐ 20130307.dat

☐ 20130308.dat

☐ 20130309.dat

☐ 20130310.dat

☐ 20130311.dat

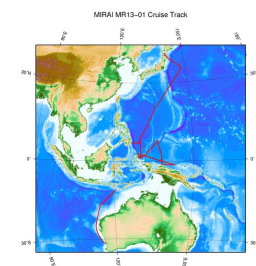
☐ 20130312.dat

☐ 20130313.dat

☐ 20130314.dat

File names
20130315.dat
20130316.dat
20130317.dat
20130318.dat
20130319.dat
20130320.dat
20130321.dat
20130322.dat
20130323.dat
20130324.dat
20130325.dat
ex_read2.f (Sample Program)

#### Related Information



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