

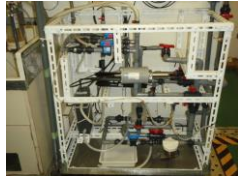
For Using Data

Data Policy	JAMSTEC
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.

Quality DMO-Processed

Instrument

Continuous sea surface water monitoring system (MR14-03 -)

**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 analyzer.

The flow rate of this system is controlled.

Measurement System

1) Temperature

Manufacturer :	Sea-Bird Scientific
Type :	SBE38
Serial No.	3852788-0457
Calibration date	2017/04/28
Measurement range :	-5 ~ 35 deg-C (ITS-90)
Accuracy :	+/-0.001 deg-C
Resolution :	0.00025 deg-C
Location :	Bow thruster room

2) Salinity (temperature/conductivity)

Manufacturer :	Sea-Bird Scientific
Type :	SBE45
Serial No.	4552788-0264
Calibration date	2017/05/04
Measurement range :	[temperature] -5 ~ 35 deg-C (ITS-90)
	[conductivity] 0 ~ 7 S/m
Accuracy :	[temperature] +/- 0.002 deg-C
	[conductivity] +/- 0.0003 S/m
Resolution :	[temperature] 0.0001deg-C
	[conductivity] 0.00001 S/m
Location :	Sea surface monitoring laboratory

3) Dissolved oxygen

Manufacturer :	JFE Advantech Co., Ltd.
Type :	RINKO II ARO-CAR
Serial No.	0013
Measurement range :	0 ~ 200%
Accuracy :	+/- 2% F.S. (non-linear)
Resolution :	0.001mgL ⁻¹ to 0.004mg L ⁻¹
Location :	Sea surface monitoring laboratory

4) Fluorescence and Turbidity

Manufacturer :	Turner Designs	
Type :	C3	
Serial No.	2300384	
Measurement range :	[chlorophyll in vivo]	0 ~ 500 $\mu\text{g L}^{-1}$
	[turbidity]	0 ~ 1500 NTU
Minimum detection limit :	[chlorophyll in vivo]	0.03 $\mu\text{g L}^{-1}$
	[turbidity]	0.05NTU
Location :	Sea surface monitoring laboratory	

5) Total dissolved gas pressure

Manufacturer :	Pro-Oceanus Systems Inc.	
Type :	HGTD-Pro, model 0-30 PSI	
Serial No.	37-394-10	
Accuracy :	0.01%	
Resolution :	0.0001%	
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.

Item	Raw data	On this data
Temperature	0.0001[deg-C]	0.001 [deg-C]
Salinity	0.0001 [PSU]	0.001 [PSU]
Dissolved oxygen	0.01 [$\mu\text{mol/kg}$]	0.1 [$\mu\text{mol/kg}$]

* The unit of the dissolved oxygen was changed from ml/l into $\mu\text{mol/kg}$ since MR10-04.

Data missing period

2017/11/12 23:32 - 2017/11/22 07:29
 2017/12/06 08:18 - 2017/12/06 09:58
 2017/12/23 14:01 - 2017/12/23 15:24

Calibration Information

1) Salinity

Comparison between salinity data measured with TSG and that measured with salinometer is presented in the following data and figure. Water for salinometer is sampled from bypass line of TSG. Salinometer used for this analysis is Autosal model 8400B manufactured by Guildline Instruments Inc.

Refer to 'Fig. MR17-08 Leg1_tsg_btl_sal' and 'MR17-08 Leg1_tsg_btl_sal.txt'.

2) Dissolved Oxygen

Comparison between DO data measured with TSG and that measured by Winkler method is presented in the following table and figure.

Refer to 'Fig. MR17-08 Leg1_tsg_btl_do' and 'MR17-08 Leg1_tsg_btl_do.txt'.

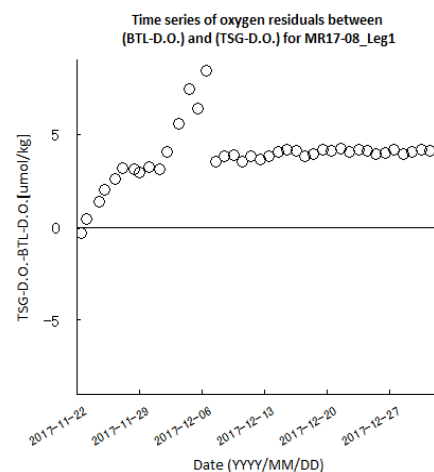
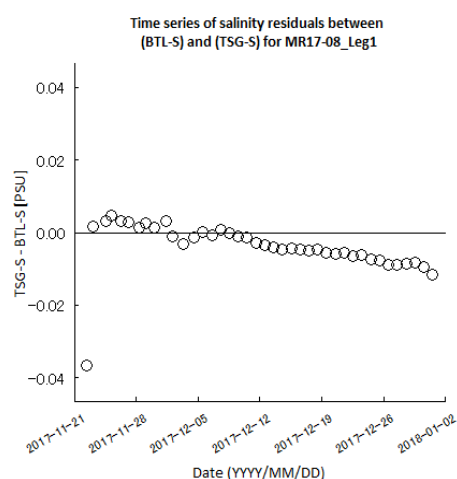
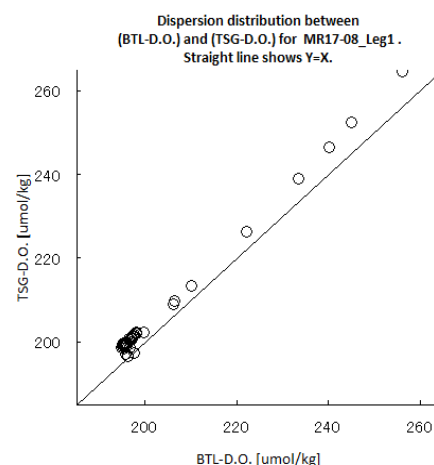
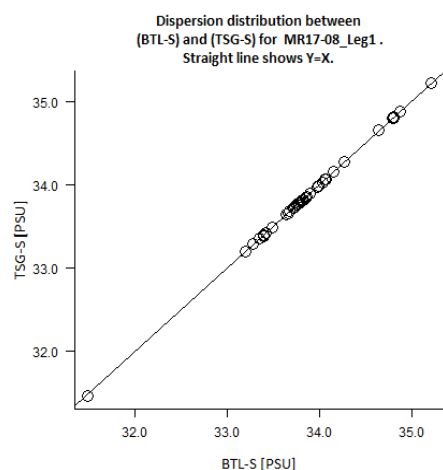


Fig. MR17-08 Leg1_tsg_btl_sal

Fig. MR17-08 Leg1_tsg_btl_do

Data processing

DMO-Processed data are flagged after the data check process shown below:

1) Range check

For details about range set of temperature, salinity and oxygen data, please see the following reference of NODC (National Oceanographic Data Center) .

Quality control and processing of historical oceanographic temperature, salinity, and oxygen data. P. Boyer and Levitus, 1994. NOAA technical report NESDIS ; 81

* <https://repository.library.noaa.gov/view/noaa/13443>

2) Visual check

If an value were extremely out from time-series plot of each variable or were affected by ambient air due to unstable flow of sampled water, it may be put flag "A" which means doubtful value.

About this data

1) This cruise obtained data of fluorescence, turbidity, and total dissolved gas pressure in addition to data of temperature, salinity and dissolved oxygen.

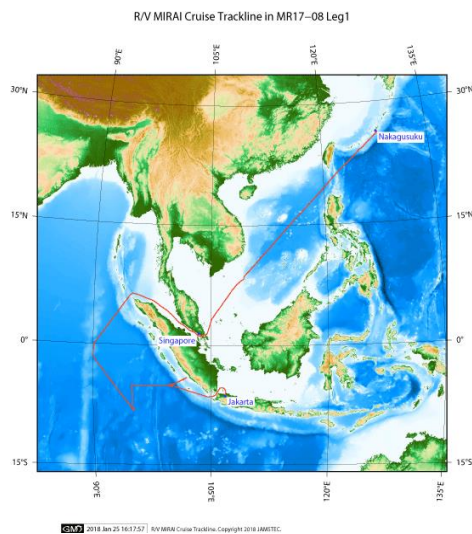
Detailed results of sensor calibration are also stored.

If you would like these data set, please contact DMO at "dmo@jamstec.go.jp".

2) During the following period, dissolved oxygen data are flagged A due to the air contamination in some of the seawater lines. Also, dissolved oxygen correction samples taken during this period were bad. Please use with caution.

2017/12/01 09:23 - 2017/12/07 05:24

Related Information



MR17-08 Leg1

Ship Name: MIRAI
Period: 2017/11/11 -2018/01/04
Chief Scientist: Satoru Yokoi (JAMSTEC)
Proposal: Study on air-sea interaction over upwelling region in the eastern Indian Ocean

The monitoring of ocean climate change from surface to deep layer in the Indian Ocean by using Argo-type floats

Aerosol optical characteristics measured by ship-borne sky radiometer

Observational study on clouds and mixed layer depths over the tropical ocean

On variations of precipitation and vapor isotope ratio associated with Madden Julian Oscillation

Researches on the organized precipitating systems and their accompanying cold pools in the maritime continents region

A study on the mechanisms for convective clustering from thermally induced local circulations over the Maritime Continent

Format Description for TSG DMO

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	a2	[CR][LF]

Data part

No.	Column	Content	Format	Unit	Remarks
1	1 - 8	Date	i4,i2,i2		YYYYMMDD (UTC)
2	10 - 13	Time	i2,i2		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	f11.3	deg-C	ITS-90
6	46 - 56	Salinity	f11.3	PSU	PSS-78
7	57 - 67	Dissolved oxygen	f11.1	μ mol/kg	
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	a2		[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

- Observed Level Flags
 - 0 - accepted value
 - 1 - range outlier (outside of broad range check)
 - A - doubtful value
 - N - missing value
- Date and time flag (Thermosalinograph only)
 - 0 - accepted data and time
 - 1 - failed duplicate/missing/incorrect date and time
- Position flag (Thermosalinograph only)
 - 0 - accepted position
 - 1 - failed estimated ship speed check including missing/incorrect position