

MIRAI MR14-02 Bottle Sampling Water Chemical Analysis

Last Modified: 2018-05-08

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Cruise ID: [MR14-02](#)

Bottle Sampling Water Chemical Analysis: Processed (PI)

Data Policy: [JAMSTEC](#)

Observation Items: Temperature, Salinity, Dissolved oxygen, Fluorescence, Silicate, Nitrate, Nitrite, Phosphate, Chlorophyll, Potential temperature, Density

Science Keywords:

OCEANS > OCEAN CHEMISTRY > NITRATE
OCEANS > OCEAN CHEMISTRY > NUTRIENTS
OCEANS > OCEAN CHEMISTRY > OXYGEN
OCEANS > OCEAN CHEMISTRY > PHOSPHATE
OCEANS > OCEAN CHEMISTRY > SILICATE
OCEANS > OCEAN CHEMISTRY > SALINITY
OCEANS > OCEAN CHEMISTRY > CHLOROPHYLL
OCEANS > OCEAN TEMPERATURE > WATER TEMPERATURE
OCEANS > SALINITY/DENSITY > SALINITY
OCEANS > OCEAN OPTICS > FLUORESCENCE
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR14-02_all.pdf

For Using Data

Principal Investigator

Osamu Abe (Nagoya University)

Use Constraints

See [Terms and Conditions](#) about constrain of use.

Data Citation

See [Terms and Conditions](#) about data citation.

Instrument

Instrument:

Salinity measurement system



Instrument:

Nutrient analyzer(5ch) (MR09-02 -)



Instrument:

Titration for DO Dissolved oxygen titration equipment (MR11-06 -)



Instrument:

Fluorometer (TURNER DESIGNS)



Information on CTD data

Pressure sensor

Model : SBE9plus, Sea-Bird Electronics, Inc.
Measurement range : 0 to 10500 m
Accuracy : $\pm 0.015\%$ of full scale range
Resolution : 0.001% of full scale

Temperature sensor

Model : SBE3, Sea-Bird Electronics, Inc.
Measurement range : -5 to +35 °C
Accuracy : ± 0.001 °C
Resolution : 0.0002 °C

Salinity sensor

Model : SBE4, Sea-Bird Electronics, Inc.
Measurement range : 0 to 7 S/m
Accuracy : ± 0.0003 S/m
Resolution : 0.00004 S/m

DO sensor

Model : SBE43, Sea-Bird Electronics, Inc.
Measurement range : 120% of surface saturation
Accuracy : $\pm 2\%$ of saturation

Fluorometer

Model : Seapoint Sensors, Inc.
Measurement range : 0 - 5 $\mu\text{g/l}$

Resolution : 0.02 µg/l

Information on Chemical and Biological data

Salinity

Instruments : Autosal salinometer model 8400B (Guildline Instruments Ltd.)
Methods : -
Precision : see cruise report
Reference Material/Calibration : IAPSO Standard Sea Water batch P156 (Ocean Scientific International Ltd.)

Dissolved Oxygen

Instruments : Burette: APB-510/APB-620 manufactured by Kyoto Electronic Co. Ltd. /10 cm³ of titration vessel
Detector and Software: Automatic photometric titrator DOT-01X manufactured by Kimoto Electronic Co. Ltd.
Methods : Winkler method/photometric methods
Precision : 0.11 µmol kg⁻¹
Reference Material/Calibration : CSK standard of potassium iodate Lot DCE2131 (Wako Pure Chemical Industries Ltd.)

Silicate

Instruments : BL TEC K.K. QuAAtro 2-HR
Methods : Molybdenum blue method
Precision : C.V. 0.11%
Reference Material/Calibration : RMNS, Silicon standard solution SiO₂ in NaOH 0.5 mol/L CertiPUR® (Merck KGaA)

Nitrate

Instruments : BL TEC K.K. QuAAtro 2-HR
Methods : Diazotization method (reduced to nitrite by Cd - Cu tube)
Precision : C.V. 0.09%
Reference Material/Calibration : RMNS, potassium nitrate 99.995 suprapur® (Merck KGaA)

Nitrite

Instruments : BL TEC K.K. QuAAtro 2-HR
Methods : Diazotization method
Precision : C.V. 0.08%
Reference Material/Calibration : RMNS, sodium nitrite (Wako Pure Chemical Industries, Ltd.)

Phosphate

Instruments : BL TEC K.K. QuAAtro 2-HR
Methods : Molybdenum blue method
Precision : C.V. 0.07%
Reference Material/Calibration : RMNS, potassium dihydrogen phosphate anhydrous 99.995 suprapur® (Merck KGaA)

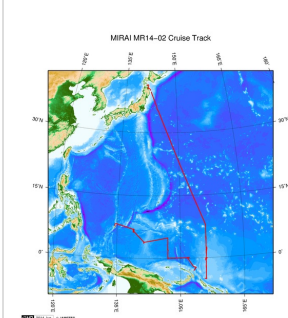
Chlorophyll a

Instruments : Fluorophotometer model 10-AU-005 (Turner design)
Methods : Extract in N, N-dimethylformamide //fluorometric determination (Welschmeyer non-acidification method)
Precision : -
Reference Material/Calibration : Pure chlorophyll a (Sigma-chemical Co.)

About this data

There are some description error for nutrient data of this cruise.
Please refer to the errata of the cruise report.

Related Information



[Enlarge Image](#)

MR14-02

Ship Name: MIRAI
Period: 2014-02-15 - 2014-03-23
Chief Scientist: Takuya Hasegawa (JAMSTEC)
Project Name: [Tropical Ocean Climate Study (TOCS)]
Proposal ▶ Tropical Ocean Climate Study
Title:

Update History

2018-05-08	An observation data was registered.
2018-01-25	An observation data was registered.
2017-07-28	An observation data was registered.
2016-03-30	An observation data was registered.

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Bottle Sampling Water Chemical Analysis: Processed (PI)

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Exchange Format

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](#)

Format Information

Column No.	Column Heading Mnemonic	Units Mnemonic	Reporting Precision	FORTTRAN Format	Comments
1	EXPOCODE		A14		ExpoCode
2	STNNBR		A6		Station Number
3	CASTNO		I3		Cast Number
4	SAMPNO		A7		Sample Number
5	BTLNBR		A7		Bottle Number
6	BTLNBR_FLAG_W		I1		Bottle quality flags
7	DATE		I8		Cast date
8	TIME	UTC	A4		Cast time
9	LATITUDE	DEG	F8.4		-
10	LONGITUDE	DEG	F9.4		-
11	DEPTH	METERS	I5		Bottom depth
12	CTDDPT	METERS	F9.1		Depth
13	CTDDPT_FLAG_W		I1		Quality flags for CTD data
14	CTDPRS	DBAR	F9.1		Pressure
15	CTDPRS_FLAG_W		I1		Quality flags for CTD data
16	CTDTMP	ITS-90	F9.4		Temperature
17	CTDTMP_FLAG_W		I1		Quality flags for CTD data
18	CTDTMP_1	ITS-90	F9.4		Temperature (secondary sensor)
19	CTDTMP_1_FLAG_W		I1		Quality flags for CTD data
20	CTDSAL	PSS-78	F9.4		Salinity
21	CTDSAL_FLAG_W		I1		Quality flags for CTD data
22	CTDSAL_1	PSS-78	F9.4		Salinity (secondary sensor)
23	CTDSAL_1_FLAG_W		I1		Quality flags for CTD data
24	CTDCND	S/M	F11.6		Conductivity (primary sensor)
25	CTDCND_1	S/M	F11.6		Conductivity (secondary sensor)
26	SALNTY	PSS-78	F9.4		Bottle Salinity
27	SALNTY_FLAG_W		I1		Quality flags for water samples
28	SALNTY_1	PSS-78	F9.4		Bottle Salinity (duplicate)
29	SALNTY_1_FLAG_W		I1		Quality flags for water samples
30	CTDOXY	UMOL/KG	F9.2		Oxygen_CTD
31	CTDOXY_FLAG_W		I1		Quality flags for CTD data
32	CTDOXY_1	UMOL/KG	F9.2		Oxygen_CTD (secondary sensor)
33	CTDOXY_1_FLAG_W		I1		Quality flags for CTD data
34	CTDOXV	V	F9.4		Oxygen_CTD voltage (primary sensor)
35	CTDOXV_1	V	F9.4		Oxygen_CTD voltage (secondary sensor)
36	OXYGEN	UMOL/KG	F9.2		Oxygen
37	OXYGEN_FLAG_W		I1		Quality flags for water samples
38	OXYGEN_1	UMOL/KG	F9.2		Oxygen (replicate)
39	OXYGEN_1_FLAG_W		I1		Quality flags for water samples
40	FLUOR	MG/CUM	F9.3		Fluorescence
41	FLUOR_FLAG_W		I1		Quality flags for CTD data
42	SILCAT1	UMOL/L	F9.2		Silicate
43	SILCAT1_FLAG_W		I1		Quality flags for water samples
44	SILCAT2	UMOL/L	F9.2		Silicate (replicate)
45	SILCAT2_FLAG_W		I1		Quality flags for water samples
46	SILCAT_AVE	UMOL/L	F9.2		Silicate (average)
47	SILCAT_AVE_FLAG_W		I1		Quality flags for water samples
48	NITRAT1	UMOL/L	F9.2		Nitrate
49	NITRAT1_FLAG_W		I1		Quality flags for water samples
50	NITRAT2	UMOL/L	F9.2		Nitrate (replicate)
51	NITRAT2_FLAG_W		I1		Quality flags for water samples
52	NITRAT_AVE	UMOL/L	F9.2		Nitrate (average)
53	NITRAT_AVE_FLAG_W		I1		Quality flags for water samples
54	NITRIT1	UMOL/L	F9.2		Nitrite
55	NITRIT1_FLAG_W		I1		Quality flags for water samples
56	NITRIT2	UMOL/L	F9.2		Nitrite (replicate)
57	NITRIT2_FLAG_W		I1		Quality flags for water samples
58	NITRIT_AVE	UMOL/L	F9.2		Nitrite (average)
59	NITRIT_AVE_FLAG_W		I1		Quality flags for water samples
60	PHSPHT1	UMOL/L	F9.3		Phosphate
61	PHSPHT1_FLAG_W		I1		Quality flags for water samples
62	PHSPHT2	UMOL/L	F9.3		Phosphate (replicate)
63	PHSPHT2_FLAG_W		I1		Quality flags for water samples
64	PHSPHT_AVE	UMOL/L	F9.3		Phosphate (average)
65	PHSPHT_AVE_FLAG_W		I1		Quality flags for water samples

Column No.	Column Heading Mnemonic	Units Mnemonic	Reporting Precision	FORTTRAN Format	Comments
66	CHLWEL	UG/L	F9.2		Chlorophyll a
67	CHLWEL_FLAG_W		I1		Quality flags for water samples
68	CHLWEL_1	UG/L	F9.2		Chlorophyll a (replicate)
69	CHLWEL_1_FLAG_W		I1		Quality flags for water samples
70	THETA	DEG C	F9.4		Potential temperature
71	THETA_1	DEG C	F9.4		Potential temperature (secondary sensor)
72	SIG0	KG/CUM	F9.4		Density
73	SIG0_1	KG/CUM	F9.4		Density (secondary sensor)

ODV Format

Please see the following link for details of ODV Format and ODV Software.

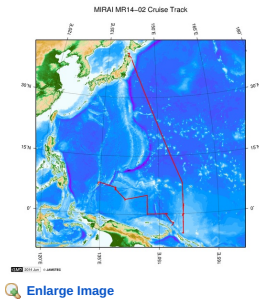
[Ocean Data View \(ODV\)](#)

Format Information

Column No.	Column Heading	Comments
1	Cruise	Cruise Label
2	Station	Station number_Cast number
3	Type	Station type
4	mon/day/yr	Cast date
5	hh:mm	Cast time
6	Latitude [degrees_north]	-
7	Longitude [degrees_east]	-
8	Bot. Depth [METERS]	Bottom depth
9	CTDDPT[METERS]	Depth
10	QF	Quality flags for CTD data
11	CTDPRS[DBAR]	Pressure
12	QF	Quality flags for CTD data
13	CTDTMP[ITS-90]	Temperature
14	QF	Quality flags for CTD data
15	CTDTMP_1[ITS-90]	Temperature (secondary sensor)
16	QF	Quality flags for CTD data
17	CTDSAL[PSS-78]	Salinity
18	QF	Quality flags for CTD data
19	CTDSAL_1[PSS-78]	Salinity (secondary sensor)
20	QF	Quality flags for CTD data
21	CTDCND[S/M]	Conductivity (primary sensor)
22	QF	Quality flags for CTD data
23	CTDCND_1[S/M]	Conductivity (secondary sensor)
24	QF	Quality flags for CTD data
25	SALNTY[PSS-78]	Bottle Salinity
26	QF	Quality flags for water samples
27	SALNTY_1[PSS-78]	Bottle Salinity (duplicate)
28	QF	Quality flags for water samples
29	CTDOXY[UMOL/KG]	Oxygen_CTD
30	QF	Quality flags for CTD data
31	CTDOXY_1[UMOL/KG]	Oxygen_CTD (secondary sensor)
32	QF	Quality flags for CTD data
33	CTDOXV[V]	Oxygen_CTD voltage (primary sensor)
34	QF	Quality flags for CTD data
35	CTDOXV_1[V]	Oxygen_CTD voltage (secondary sensor)
36	QF	Quality flags for CTD data
37	OXYGEN[UMOL/KG]	Oxygen
38	QF	Quality flags for water samples
39	OXYGEN_1[UMOL/KG]	Oxygen (replicate)
40	QF	Quality flags for water samples
41	FLUOR[MG/CUM]	Fluorescence
42	QF	Quality flags for CTD data
43	SILCAT1[UMOL/L]	Silicate
44	QF	Quality flags for water samples
45	SILCAT2[UMOL/L]	Silicate (replicate)
46	QF	Quality flags for water samples
47	SILCAT_AVE[UMOL/L]	Silicate (average)
48	QF	Quality flags for water samples
49	NITRAT1[UMOL/L]	Nitrate
50	QF	Quality flags for water samples
51	NITRAT2[UMOL/L]	Nitrate (replicate)
52	QF	Quality flags for water samples
53	NITRAT_AVE[UMOL/L]	Nitrate (average)
54	QF	Quality flags for water samples
55	NITRIT1[UMOL/L]	Nitrite
56	QF	Quality flags for water samples
57	NITRIT2[UMOL/L]	Nitrite (replicate)
58	QF	Quality flags for water samples
59	NITRIT_AVE[UMOL/L]	Nitrite (average)
60	QF	Quality flags for water samples
61	PHSPHT1[UMOL/L]	Phosphate
62	QF	Quality flags for water samples
63	PHSPHT2[UMOL/L]	Phosphate (replicate)
64	QF	Quality flags for water samples
65	PHSPHT_AVE[UMOL/L]	Phosphate (average)
66	QF	Quality flags for water samples
67	CHLWEL[UG/L]	Chlorophyll a
68	QF	Quality flags for water samples

Column No.	Column Heading	Comments
69	CHLWEL_1[UG/L]	Chlorophyll a (replicate)
70	QF	Quality flags for water samples
71	THETA[DEG C]	Potential temperature
72	QF	Quality flags for CTD data
73	THETA_1[DEG C]	Potential temperature (secondary sensor)
74	QF	Quality flags for CTD data
75	SIG0[KG/CUM]	Density
76	QF	Quality flags for CTD data
77	SIG0_1[KG/CUM]	Density (secondary sensor)
78	QF	Quality flags for CTD data
79	SAMPNO	Sample Number
80	QF	Bottle quality flags

Related Information



[Enlarge Image](#)

MR14-02

Ship Name: MIRAI
Period: 2014-02-15 - 2014-03-23
Chief Scientist: Takuya Hasegawa (JAMSTEC)
Project Name: [Tropical Ocean Climate Study (TOCS)]
Proposal ▶ Tropical Ocean Climate Study
Title:

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SHINKAI 6500
DEEP TOW
HYPER-DOLPHIN
URASHIMA
YOKOSUKA DEEP TOW
6K Camera DEEP TOW
6K Sonar DEEP TOW
KM-ROV
POWER GRAB
SAMPLER (SHELL)
POWER GRAB
SAMPLER (CLOW)
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Go to a Dive Information

Dive ID:

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Cruise ID: [MR14-02](#)

Bottle Sampling Water Chemical Analysis: Processed (PI)

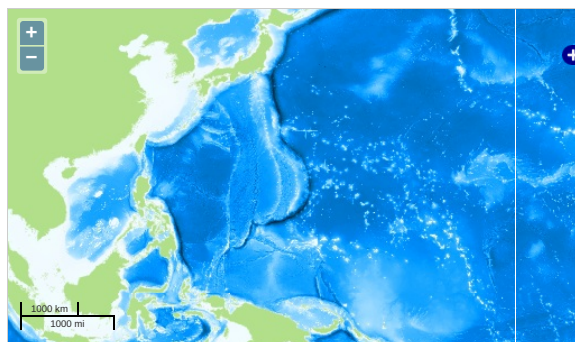
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Observation Items: Temperature, Salinity, Dissolved oxygen, Fluorescence, Silicate, Nitrate, Nitrite, Phosphate, Chlorophyll, Potential temperature, Density

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OCEANS > OCEAN TEMPERATURE > WATER TEMPERATURE
OCEANS > SALINITY/DENSITY > SALINITY
OCEANS > OCEAN OPTICS > FLUORESCENCE
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Observation Map



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

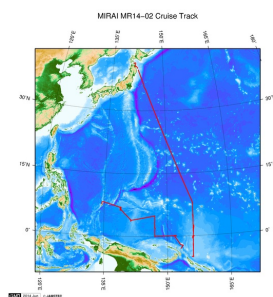
Data List

☐ File names

☐ MR140200_ex_bot.csv

☐ MR140200_odv_bot.txt

Related Information



[Enlarge Image](#)

MR14-02

Ship Name: MIRAI

Period: 2014-02-15 - 2014-03-23

Chief Scientist: Takuya Hasegawa (JAMSTEC)

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

Proposal ▶ Tropical Ocean Climate Study

Title:

Update History

2018-05-08	An observation data was registered.
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HAKUHO MARU

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

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