

MIRAI MR18-04 Leg2 Bottle Sampling Water Chemical Analysis

Last Modified: 2020-10-01

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

Cruise ID: [MR18-04 Leg2](#)

Bottle Sampling Water Chemical Analysis: Processed (PI)

Data Policy: [JAMSTEC](#)

Observation Items: Pressure, Temperature, Sound velocity, Practical salinity, Dissolved oxygen, Potential temperature, Density, Transmittance, Turbidity, Fluorescence, PAR, Silicate, Nitrate, Nitrite, Phosphate, Chlorophyll, CDOM

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 > PHOTOSYNTHETICALLY ACTIVE RADIATION
OCEANS > OCEAN CHEMISTRY > SUSPENDED SOLIDS
OCEANS > OCEAN ACOUSTICS
OCEANS > OCEAN OPTICS > FLUORESCENCE
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR18-04_leg2_all.pdf

For Using Data

Principal Investigator

CTD/O2 : Masaki Katsumata (JAMSTEC)
SBE35, XMISS, FLUOR, PAR, TURB, CDOM : Masaki Katsumata (JAMSTEC)
SVEL : Hiroshi Uchida (JAMSTEC)
SALNTY, OXYGEN : Masaki Katsumata (JAMSTEC)
Nutrients : Masaki Katsumata (JAMSTEC)
CHLWEL : Masaki Katsumata (JAMSTEC)

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 : SBE03, Sea-Bird Electronics, Inc.
Measurement range : -5 to +35 °C
Accuracy : ± 0.001 °C
Resolution : 0.0002 °C

Deep Ocean Standards Thermometer

Model : SBE35, Sea-Bird Electronics, Inc.
Measurement range : -5 to +35 °C

Accuracy : 0.001 °C
Resolution : 0.000025 °C

Salinity sensor

Model : SBE04, 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 : ± 2% of saturation

DO sensor

Model : RINKO III, JFE Advantech Co. Ltd.
Measurement range : 0 to 200 %
Accuracy : ± 2 % FS, non linearity
Resolution : 0.01 to 0.04 %

Transmissometer

Model : C-Star, WET Labs, Inc.
Linearity : 99% R²

Fluorometer

Model : Seapoint Chlorophyll Fluorometer, Seapoint Sensors, Inc.
Measurement range : 0 - 15 µg/l
Resolution : 0.02 µg/l

PAR sensor

Model : PAR-Log ICSW, Satlantic, Inc.
Measurement range : 0 - 5000 µmol photons m⁻² s⁻¹

Turbidity

Model : Seapoint Turbidity Meter, Seapoint Sensors, Inc.
Measurement range : 0 to 25 FTU
Resolution : 0.006 FTU

CDOM sensor

Model : The Seapoint Ultraviolet Fluorometer (SUVF), Seapoint Sensors, Inc.
Measurement range : 0-50 QSU
Resolution : 0.02 QSU

Sound velocity

Model : miniSVS OEM, Valeport, Ltd.
Measurement range : 1375 to 1900m s⁻¹
Accuracy : ±0.019m s⁻¹
Resolution : 0.001m s⁻¹

Information on Chemical and Biological data

Salinity

Instruments : Autosal salinometer model 8400B (Guildline Instruments Ltd.)
Methods : -
Precision : average of absolute difference 0.0002 , standard deviation of absolute difference 0.0002 (11 pairs of replicate samples)
Reference Material/Calibration : IAPSO Standard Sea Water P160 (Ocean Scientific International Ltd.)

Dissolved Oxygen

Instruments : Burette: APB-510/APB-610/APB-620 manufactured by Kyoto Electronic Co. Ltd. /10 cm³ of titration vessel
Detector and Software: Automatic photometric titrator DOT-15X manufactured by Kimoto Electronic Co. Ltd
Methods : Winkler method/photometric methods
Precision : 0.09 µmol kg⁻¹(8 pairs of replicate samples)
Reference Material/Calibration : the standard potassium iodate (NMIJ CRM 3006-a No.061)

Silicate

Instruments : BL TEC K.K QuAAtro 2-HR
Methods : Molybdenum blue method
Precision : C.V. 0.09% (standard solution)
Reference Material/Calibration : KANSO CRMs (KANSO Co., Ltd.) and 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. 0.11% (standard solution)
Reference Material/Calibration : KANSO CRMs (KANSO Co., Ltd.) and potassium nitrate 99.995 suprapur® (Merck KGaA)

Nitrite

Instruments : BL TEC K.K QuAAtro 2-HR
Methods : Diazotization method
Precision : C.V. 0.06% (standard solution)
Reference Material/Calibration : KANSO CRMs (KANSO Co., Ltd.) and nitrite ion standard solution (Wako Pure Chemical Industries, Ltd.)

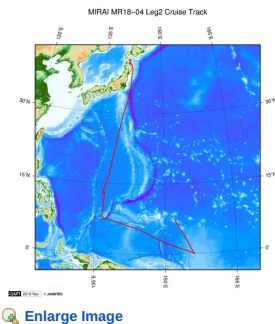
Phosphate

Instruments : BL TEC K.K QuAAtro 2-HR
Methods : Molybdenum blue method
Precision : C.V. 0.06% (standard solution)
Reference Material/Calibration : KANSO CRMs (KANSO Co., Ltd.) and 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 : the relative error 1.0% (4 pairs of replicate samples)
Reference Material/Calibration : Pure chlorophyll a (Sigma-Aldrich Co., LLC)

Related Information



MR18-04 Leg2

Ship Name: MIRAI

Period: 2018-08-12 - 2018-09-06

Chief Scientist: Masaki Katsumata (JAMSTEC)

Proposal The observational study to construct and extend the "western Pacific super site network"

Title:

Update History

2020-10-01	An observation data was registerd.
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Site Policy

Privacy Policy

Application for Data and

Samples

Data Policy

What's New

Update History

Feeds

Lists

Publication List

Amount of Public Info.

Data

Map Search

Data Tree

Detailed Search

Information of the Ships

NATSUSHIMA

KAIYO

YOKOSUKA

MIRAI

KAIREI

CHIKYU

KAIMEI

SHINSEI MARU

HAKUHO MARU

Information of the Submersibles

KAIKO

SHINKAI 2000

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)

BMS

Go to a Cruise Information

Cruise ID:

Go to a Dive Information

Dive ID:

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海洋研究開発機構
JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY

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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 FORTRAN Format	Comments
1	EXPCODE		A14	ExpoCode
2	SECT_ID		A6	Section ID
3	STNNBR		A6	Station Number
4	TYPE		A4	Type
5	CASTNO		I3	Cast Number
6	SAMPNO		A7	Sample Number
7	BTLNBR		A7	Bottle Number (S/N fixed to the sampling device)
8	BTLNBR_FLAG_W		I1	Bottle quality flags
9	DATE		I8	Cast date
10	TIME	UTC	A4	Cast time
11	LATITUDE	DEG	F8.4	Latitude
12	LONGITUDE	DEG	F9.4	Longitude
13	DEPTH	METERS	I5	Bottom depth
14	CTDDPT	METERS	F9.1	Depth
15	CTDDPT_FLAG_W		I1	Quality flags for CTD data
16	CTDPRS	DBAR	F9.1	Pressure
17	CTDPRS_FLAG_W		I1	Quality flags for CTD data
18	CTDTMP	ITS-90	F9.4	Temperature (primary sensor)
19	CTDTMP_FLAG_W		I1	Quality flags for CTD data
20	SBE35	ITS-90	F10.5	Temperature from Deep Ocean Standards Thermometer
21	SBE35_FLAG_W		I1	Quality flags for CTD data
22	SVEL	M/S	F9.3	Sound velocity
23	SVEL_FLAG_W		I1	Quality flags for CTD data
24	CTDSAL	PSS-78	F9.4	Salinity (primary sensor)
25	CTDSAL_FLAG_W		I1	Quality flags for CTD data
26	CTDCND	S/M	F11.6	Conductivity (primary sensor)
27	CTDCND_FLAG_W		I1	Quality flags for CTD data
28	CTDOXY	UMOL/KG	F9.2	CTD-oxygen (primary sensor)
29	CTDOXY_FLAG_W		I1	Quality flags for CTD data
30	CTDOXV	V	F9.4	CTD-oxygen voltage (primary sensor)
31	CTDOXV_FLAG_W		I1	Quality flags for CTD data
32	THETA	DEG C	F9.4	Potential temperature (primary sensor)
33	THETA_FLAG_W		I1	Quality flags for CTD data
34	SIG0	KG/CUM	F9.4	Density (primary sensor)
35	SIG0_FLAG_W		I1	Quality flags for CTD data
36	XMISS	%TRANS	F9.3	Transmissometer
37	XMISS_FLAG_W		I1	Quality flags for CTD data
38	XMISSCP	/METER	F9.4	Beam attenuation coefficient
39	XMISSCP_FLAG_W		I1	Quality flags for CTD data
40	XMISSV	V	F9.4	Transmissometer voltage
41	XMISSV_FLAG_W		I1	Quality flags for CTD data
42	FLUOR	MG/CUM	F9.3	Fluorescence
43	FLUOR_FLAG_W		I1	Quality flags for CTD data
44	PAR	UE/SQM/S	F9.3	PAR
45	PAR_FLAG_W		I1	Quality flags for CTD data
46	TURB	FTU	F9.3	Turbidity
47	TURB_FLAG_W		I1	Quality flags for CTD data
48	CTDCDOM	QSU	F9.1	CDOM (Colored dissolved organic matter) sensor
49	CTDCDOM_FLAG_W		I1	Quality flags for water samples
50	SALNTY	PSS-78	F9.4	Bottle Salinity
51	SALNTY_FLAG_W		I1	Quality flags for water samples
52	SALNTY_1	PSS-78	F9.4	Bottle Salinity (replicate)
53	SALNTY_1_FLAG_W		I1	Quality flags for water samples
54	OXYGEN	UMOL/KG	F9.2	Bottle Oxygen
55	OXYGEN_FLAG_W		I1	Quality flags for water samples
56	OXYGEN_1	UMOL/KG	F9.2	Bottle Oxygen (replicate)
57	OXYGEN_1_FLAG_W		I1	Quality flags for water samples
58	SILCAT	UMOL/KG	F9.2	Silicate (Mean of replicate measurements)
59	SILCAT_FLAG_W		I1	Quality flags for water samples
60	SILCAT1	UMOL/KG	F9.2	Silicate
61	SILCAT1_FLAG_W		I1	Quality flags for water samples
62	SILCAT2	UMOL/KG	F9.2	Silicate (replicate)
63	SILCAT2_FLAG_W		I1	Quality flags for water samples

Column No.	Column Heading Mnemonic	Units/KG Mnemonic	Reporting Precision Format	Comments
	NITRAT1_FLAG_W			Nitrate (Mean of replicate measurements)
				Quality flags for water samples
66	NITRAT1	UMOL/KG	F9.2	Nitrate
67	NITRAT1_FLAG_W		I1	Quality flags for water samples
68	NITRAT2	UMOL/KG	F9.2	Nitrate (replicate)
69	NITRAT2_FLAG_W		I1	Quality flags for water samples
70	NITRIT	UMOL/KG	F9.2	Nitrite (Mean of replicate measurements)
71	NITRIT_FLAG_W		I1	Quality flags for water samples
72	NITRIT1	UMOL/KG	F9.2	Nitrite
73	NITRIT1_FLAG_W		I1	Quality flags for water samples
74	NITRIT2	UMOL/KG	F9.2	Nitrite (replicate)
75	NITRIT2_FLAG_W		I1	Quality flags for water samples
76	PHSPHT	UMOL/KG	F9.3	Phosphate (Mean of replicate measurements)
77	PHSPHT_FLAG_W		I1	Quality flags for water samples
78	PHSPHT1	UMOL/KG	F9.3	Phosphate
79	PHSPHT1_FLAG_W		I1	Quality flags for water samples
80	PHSPHT2	UMOL/KG	F9.3	Phosphate (replicate)
81	PHSPHT2_FLAG_W		I1	Quality flags for water samples
82	CHLWEL	MG/CUM	F9.2	Chlorophyll a
83	CHLWEL_FLAG_W		I1	Quality flags for water samples
84	CHLWEL_1	MG/CUM	F9.2	Chlorophyll a (replicate)
85	CHLWEL_1_FLAG_W		I1	Quality flags for water samples

ODV Format

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

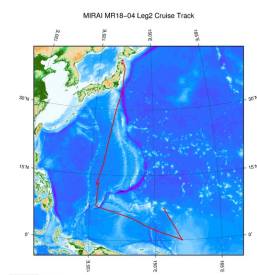
[Ocean Data View \(ODV\)](#)

Format Information

Column No.	Column Heading	Comments
1	EXPCODE	Cruise Label
2	Cruise	Cruise
3	Station	Station number_Cast number
4	Type	Station type
5	mon/day/yr	Cast date
6	hh:mm	Cast time
7	Latitude[degrees_north]	Latitude
8	Longitude[degrees_east]	Longitude
9	Bot. Depth[METERS]	Bottom depth
10	CTDDPT[METERS]	Depth
11	QF	Quality flags for CTD data
12	CTDPRS[DBAR]	Pressure
13	QF	Quality flags for CTD data
14	CTDTMP[ITS-90]	Temperature (primary sensor)
15	QF	Quality flags for CTD data
16	SBE35[ITS-90]	Temperature from Deep Ocean Standards Thermometer
17	QF	Quality flags for CTD data
18	SVEL[M/S]	Sound velocity
19	QF	Quality flags for CTD data
20	CTDSAL[PSS-78]	Salinity (primary sensor)
21	QF	Quality flags for CTD data
22	CTDCND[S/M]	Conductivity (primary sensor)
23	QF	Quality flags for CTD data
24	CTDOXY[UMOL/KG]	CTD-oxygen (primary sensor)
25	QF	Quality flags for CTD data
26	CTDOXV[V]	CTD-oxygen voltage (primary sensor)
27	QF	Quality flags for CTD data
28	THETA[DEG C]	Potential temperature (primary sensor)
29	QF	Quality flags for CTD data
30	SIG0[KG/CUM]	Density (primary sensor)
31	QF	Quality flags for CTD data
32	XMISS[%TRANS]	Transmissometer
33	QF	Quality flags for CTD data
34	XMISSCP[METER]	Beam attenuation coefficient
35	QF	Quality flags for CTD data
36	XMISSV[V]	Transmissometer voltage
37	QF	Quality flags for CTD data
38	FLUOR[MG/CUM]	Fluorescence
39	QF	Quality flags for CTD data
40	PAR[UE/SQM/S]	PAR
41	QF	Quality flags for CTD data
42	TURB[FTU]	Turbidity
43	QF	Quality flags for CTD data
44	CTDCDOM[QSU]	CDOM (Colored dissolved organic matter) sensor
45	QF	Quality flags for water samples
46	SALNTY[PSS-78]	Bottle Salinity
47	QF	Quality flags for water samples
48	SALNTY_1[PSS-78]	Bottle Salinity (replicate)
49	QF	Quality flags for water samples
50	OXYGEN[UMOL/KG]	Bottle Oxygen
51	QF	Quality flags for water samples
52	OXYGEN_1[UMOL/KG]	Bottle Oxygen (replicate)
53	QF	Quality flags for water samples
54	SILCAT[UMOL/KG]	Silicate (Mean of replicate measurements)

Column No.	Column Heading	Comments
56	SILCAT1[UMOL/KG]	Silicate for water samples
57	QF	Silicate
58	QF	Quality flags for water samples
59	SILCAT2[UMOL/KG]	Silicate (replicate)
60	QF	Quality flags for water samples
61	NITRAT[UMOL/KG]	Nitrate (Mean of replicate measurements)
62	QF	Quality flags for water samples
63	NITRAT1[UMOL/KG]	Nitrate
64	QF	Quality flags for water samples
65	NITRAT2[UMOL/KG]	Nitrate (replicate)
66	QF	Quality flags for water samples
67	NITRIT[UMOL/KG]	Nitrite (Mean of replicate measurements)
68	QF	Quality flags for water samples
69	NITRIT1[UMOL/KG]	Nitrite
70	QF	Quality flags for water samples
71	NITRIT2[UMOL/KG]	Nitrite (replicate)
72	QF	Quality flags for water samples
73	PHSPHT[UMOL/KG]	Phosphate (Mean of replicate measurements)
74	QF	Quality flags for water samples
75	PHSPHT1[UMOL/KG]	Phosphate
76	QF	Quality flags for water samples
77	PHSPHT2[UMOL/KG]	Phosphate (replicate)
78	QF	Quality flags for water samples
79	CHLWEL[MG/CUM]	Chlorophyll a
80	QF	Quality flags for water samples
81	CHLWEL_1[MG/CUM]	Chlorophyll a (replicate)
82	QF	Quality flags for water samples
83	SAMPNO	Sample Number
	QF	Bottle quality flags

Related Information



[Enlarge Image](#)

MR18-04 Leg2

Ship Name: MIRAI
Period: 2018-08-12 - 2018-09-06
Chief Scientist: Masaki Katsumata (JAMSTEC)
Proposal Title: The observational study to construct and extend the "western Pacific super site network"

Update History

2020-10-01 An observation data was registered.

JAMSTEC
Site Policy
Privacy Policy
Application for Data and Samples
Data Policy
What's New
Update History
Feeds

Lists
Publication List
Amount of Public Info.
Data
Map Search
Data Tree
Detailed Search

Information of the Ships
NATSUSHIMA
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YOKOSUKA
MIRAI
KAIREI
CHIKYU
KAIMEI
SHINSEI MARU
HAKUHO MARU

Information of the Submersibles
KAIKO
SHINKAI 2000
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)
BMS

Go to a Cruise Information

Cruise ID:

Go to a Dive Information

Dive ID:

MIRAI MR18-04 Leg2 Bottle Sampling Water Chemical Analysis

Last Modified: 2020-10-01

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Cruise ID: [MR18-04 Leg2](#)

Bottle Sampling Water Chemical Analysis: Processed (PI)

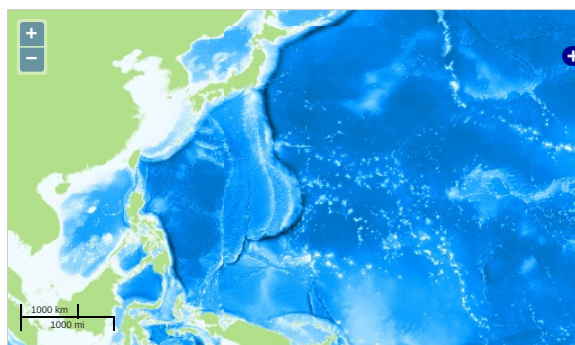
Data Policy: [JAMSTEC](#)

Observation Items: Pressure, Temperature, Sound velocity, Practical salinity, Dissolved oxygen, Potential temperature, Density, Transmittance, Turbidity, Fluorescence, PAR, Silicate, Nitrate, Nitrite, Phosphate, Chlorophyll, CDOM

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OCEANS > OCEAN CHEMISTRY > SUSPENDED SOLIDS
OCEANS > OCEAN ACOUSTICS
OCEANS > OCEAN OPTICS > FLUORESCENCE
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Observation Map



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

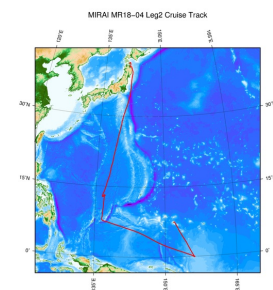
Data List

☐ **File names**

☐ MR180402_ex_bot.csv

☐ MR180402_odv_bot.txt

Related Information



[Enlarge Image](#)

MR18-04 Leg2

Ship Name: MIRAI

Period: 2018-08-12 - 2018-09-06

Chief Scientist: Masaki Katsumata (JAMSTEC)

Proposal: The observational study to construct and extend the "western Pacific super site network"

Title:

Update History

2020-10-01 An observation data was registered.

[Update History](#)
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KAIMEI
SHINSEI MARU
HAKUHO MARU

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

Dive ID:

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