

MIRAI MR05-02 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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

Cruise ID: **MR05-02**

Bottle Sampling Water Chemical Analysis: Processed (PI)

Data Policy: **JAMSTEC**

Observation Items: Temperature, Salinity, Dissolved oxygen, Silicate, Nitrate, Nitrite, Phosphate, CFC11, CFC12, CFC113, Total inorganic carbon, Alkalinity, pH, Carbon14, Carbon13, Potential temperature, Density

Science Keywords:

OCEANS > OCEAN CHEMISTRY > DISSOLVED GASES
OCEANS > OCEAN CHEMISTRY > INORGANIC CARBON
OCEANS > OCEAN CHEMISTRY > NITRITE
OCEANS > OCEAN CHEMISTRY > NITRATE
OCEANS > OCEAN CHEMISTRY > NUTRIENTS
OCEANS > OCEAN CHEMISTRY > OXYGEN
OCEANS > OCEAN CHEMISTRY > pH
OCEANS > OCEAN CHEMISTRY > PHOSPHATE
OCEANS > OCEAN CHEMISTRY > RADIOCARBON
OCEANS > OCEAN CHEMISTRY > SILICATE
OCEANS > OCEAN CHEMISTRY > SALINITY
OCEANS > OCEAN TEMPERATURE > WATER TEMPERATURE
OCEANS > SALINITY/DENSITY > SALINITY
OCEANS > OCEAN CHEMISTRY > ALKALINITY
OCEANS > OCEAN CHEMISTRY > CARBON
OCEANS > OCEAN CHEMISTRY > OCEAN TRACERS
OCEANS > OCEAN CHEMISTRY > STABLE ISOTOPES
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR05-02_all.pdf

For Using Data

Principal Investigator

CTDTMP : Hiroshi Uchida (JAMSTEC)
SBE35 : Hiroshi Uchida (JAMSTEC)
CTDSAL : Hiroshi Uchida (JAMSTEC)
SALNTY : Takeshi Kawano (JAMSTEC)
CTDOXY : Hiroshi Uchida (JAMSTEC)
OXYGEN : Ikuo Kaneko (JAMSTEC)
DWNPRS : Hiroshi Uchida (JAMSTEC)
DWNNOXY : Hiroshi Uchida (JAMSTEC)
SILCAT : Michio Aoyama (Meteorological Research Institute)
NITRAT : Michio Aoyama (Meteorological Research Institute)
NITRIT : Michio Aoyama (Meteorological Research Institute)
PHSPHT : Michio Aoyama (Meteorological Research Institute)
CFC-11 : Kenichi Sasaki (JAMSTEC)
CFC-12 : Kenichi Sasaki (JAMSTEC)
CFC113 : Kenichi Sasaki (JAMSTEC)
TCARBN : Akihiko Murata (JAMSTEC)
ALKALI : Akihiko Murata (JAMSTEC)
PH : Akihiko Murata (JAMSTEC)
DELC14 : Yuichiro Kumamoto (JAMSTEC)
DELC13 : Yuichiro Kumamoto (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:

Gas chromatograph



Instrument:

Nutrient analyzer(4ch) (- MR09-01)



Overview

Please see the [Data book](#) for details of data.

Information on CTD data

(1) Temperature sensor

Model : SBE3, Sea-Bird Electronics, Inc.

Measurement range : -5.0 to +35degC

Accuracy : 0.001degC

Resolution : 0.0002degC

- (2) Salinity sensor
 Model : SBE4, Sea-Bird Electronics, Inc.
 Measurement range : 0.0 to 7S/m
 Accuracy : 0.0003S/m
 Resolution : 0.00004S/m
- (3) Pressure sensor
 Model : SBE9plus, Sea-Bird Electronics, Inc.
 Measurement range : up to 10500m
 Accuracy : 0.015%F.S.
 Resolution : 0.001%F.S.
- (4) DO sensor
 Model : SBE43, Sea-Bird Electronics, Inc.
 Measurement range : 0-15ml/l(120% of surface saturation)
 Accuracy : 0.1ml/l(2% of saturation)
 Resolution : 0.01ml/l
- (5) Deep Ocean Standards Thermometer
 Model : SBE 35, Sea-Bird Electronics, Inc.

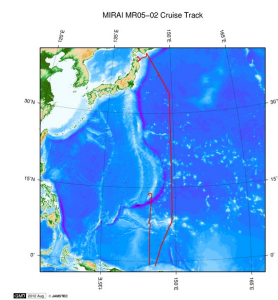
Information on Chemical and Biological data

1. Dissolved Oxygen
 - (1) Instruments :Burette:APB-510 manufactured by Kyoto Electronic Co. Ltd. / 10 cm³ of titration vessel
 Detector and Software: Automatic photometric titrator manufactured by Kimoto Electronic Co. Ltd
 - (2) Methods :Winkler method/photometric methods
 - (3) Precision :0.11umol kg⁻¹
 - (4) Reference Material/Calibration:0.001667M KIO₃ solution/compared standard to CSK standard solution (Wako pure chemical industries, Ltd.)
2. Salinity
 - (1) Instruments:Autosal salinometer model 8400B(Guildline Instruments Ltd.)
 - (2) Methods :-
 - (3) Precision : 0.0002 PSU
 - (4) Reference Material/Calibration:IAPSO Standard Sea Water batch P145(Ocean Scientific International Ltd.)
3. Silicate
 - (1) Instruments:TRAACS800 (Bran+Luebbe)
 - (2) Methods :Molybdenum blue method
 - (3) Precision :C.V. 0.07% (median)
 - (4) Reference Material/Calibration:RMNS [Aoyama et al., 2007] and commercial available silicon standard solution for atomic absorption spectrometry
4. Nitrate
 - (1) Instruments:TRAACS800 (Bran+Luebbe)
 - (2) Methods :Diazotization method
 - (3) Precision : C.V. 0.09% (median),
 - (4) Reference Material/Calibration:KNO₃ solution and RMNS [Aoyama et al., 2007]
5. Nitrite
 - (1) Instruments:TRAACS800 (Bran+Luebbe)
 - (2) Methods :Diazotization method (reduced to nitrite by Cd - Cu tube)
 - (3) Precision :-
 - (4) Reference Material/Calibration:NaNO₂ solution and RMNS [Aoyama et al., 2007]
6. Phosphate
 - (1) Instruments:TRAACS800 (Bran+Luebbe)
 - (2) Methods :Molybdenum blue method
 - (3) Precision :C.V. 0.11% (median),
 - (4) Reference Material/Calibration:KH₂PO₄ solution and RMNS [Aoyama et al., 2007]
7. Total inorganic carbon
 - (1) Instruments:the automated TCO₂ analyzer (Nippon ANS , Inc.) equipped with carbon coulometer 5012 (UIC , Inc.)
 - (2) Methods :coulometry
 - (3) Precision :1.1 umol kg⁻¹
 - (4) Reference Material/Calibration:Na₂CO₃ solution and the CRM provided by Dr. Dickson in Scripps Institute of Oceanography
8. Total Alkalinity
 - (1) Instruments:TAlk measuring systems (TA-1000), which were made by Nippon ANS , Inc.
 - (2) Methods :Modified Gran titration/Closed-cell/potentiometry
 - (3) Precision :1.6 umol kg⁻¹ (repeatabilities)
 - (4) Reference Material/Calibration:Na₂CO₃ solution and the CRM provided by Dr. Dickson in Scripps Institute of Oceanography
9. pH
 - (1) Instruments:Measurement of pH was made by a pH measuring system (Nippon ANS, Inc.), which adopts a method of the spectrophotometric determination.
 The measuring system comprises of a water dispensing unit with an auto-sampler and a spectrophotometer (Carry 50 Scan, Varian).
 - (2) Methods :spectrophotometric method
 - (3) Precision :0.0006 pH unit
 - (4) Reference Material/Calibration: -
10. CFCs
 - (1) Instruments:A custom made purging and trapping system was attached to gas chromatograph (GC-14B: Shimadzu Ltd) having an electron capture detector (ECD-14: Shimadzu Ltd).
 - (2) Methods :see "DATA BOOK"
 - (3) Precision :CFC-11 0.008pmol kg⁻¹;CFC-12 0.006pmol kg⁻¹;CFC-113 0.005pmol kg⁻¹
 - (4) Reference Material/Calibration:see "DATA BOOK"

11. $\delta^{13}C$ and $\Delta^{14}C$ of Dissolved Inorganic Carbon

- (1) Instruments: see "Cruise Report"
- (2) Methods : see "Cruise Report"
- (3) Precision : see "Cruise Report"
- (4) Reference Material/Calibration: see "Cruise Report"

Related Information



[Enlarge Image](#)

MR05-02

Ship Name: MIRAI
Period: 2005-05-25 - 2005-07-01
Chief Scientist: Takeshi Kawano (JAMSTEC)
Project Name: [POST-WOCE Hydrography]

Update History

2017-07-28	An observation data was registerd.
2017-04-11	An observation data was registerd.
2015-05-29	An observation data was registerd.
2013-08-24	An observation data was registerd.
2012-11-25	An observation data was registerd.

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Data

[Map Search](#)
[Data Tree](#)
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[NATSUSHIMA](#)
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[POWER GRAB SAMPLER \(CLOW\)](#)
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Go to a Cruise Information

Cruise ID:

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国立研究開発法人
海洋研究開発機構

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Last Modified: 2017-07-28

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Cruise ID: **MR05-02**

Bottle Sampling Water Chemical Analysis: Processed (PI)

Data Policy: **JAMSTEC**

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	Expedition code
2	SECT		A6	For WOCE data the WHP section identifier
3	STNNBR		A6	Station number
4	CASTNO		I3	Cast number
5	SAMPNO		A7	Sample number
6	BTLNBR		A7	Bottle identification number
7	BTLNBR_FLAG_W		I1	Bottle quality flag
8	DATE		I8	Cast date(UTC)
9	TIME	UTC	I4	Cast time (UTC)
10	LATITUDE	DEG	F8.4	LATITUDE
11	LONGITUDE	DEG	F9.4	LONGITUDE
12	DEPTH	M	I5	Reported depth to bottom.
13	CTDPRS	DBAR	F9.1	Pressure
14	CTDPRS_FLAG_W		I1	Quality flag for CTD data
15	CTDTMP	ITS-90	F9.4	Temperature
16	CTDTMP_FLAG_W		I1	Quality flag for CTD data
17	SBE35	ITS-90	F10.5	Temperature from Deep Ocean Standards Thermometer
18	SBE35_FLAG_W		I1	Quality flag for CTD data
19	CTDSAL	PSS-78	F9.4	CTD Salinity sensor
20	CTDSAL_FLAG_W		I1	Quality flag for CTD data
21	SALNTY	PSS-78	F9.4	Salinity
22	SALNTY_FLAG_W		I1	Quality flags for water samples
23	CTDOXY	UMOL/KG	F9.2	CTD Oxygen sensor
24	CTDOXY_FLAG_W		I1	Quality flag for CTD data
25	OXYGEN	UMOL/KG	F9.2	Oxygen
26	OXYGEN_FLAG_W		I1	Quality flags for water samples
27	DWNPRS	DBAR	F9.1	Down-cast pressure at the same density of the up-cast CTD data
28	DWNPRS_FLAG_W		I1	Quality flag for CTD data
29	DWNOXY	UMOL/KG	F9.2	Down-cast CTD oxygen at pressure of DWNPRS
30	DWNOXY_FLAG_W		I1	Quality flag for CTD data
31	SILCAT	UMOL/KG	F9.2	Silicate
32	SILCAT_FLAG_W		I1	Quality flags for water samples
33	SILUNC	UMOL/KG	F9.2	Uncertainty of Silicate data
34	NITRAT	UMOL/KG	F9.2	Nitrate
35	NITRAT_FLAG_W		I1	Quality flags for water samples
36	NRAUNC	UMOL/KG	F9.2	Uncertainty of Nitrate data
37	NITRIT	UMOL/KG	F9.2	Nitrite
38	NITRIT_FLAG_W		I1	Quality flags for water samples
39	NRIUNC	UMOL/KG	F9.2	Uncertainty of Nitrite data
40	PHSPHT	UMOL/KG	F9.3	Phosphate
41	PHSPHT_FLAG_W		I1	Quality flags for water samples
42	PHPUNC	UMOL/KG	F9.3	Uncertainty of Phosphate data
43	CFC-11	PMOL/KG	F9.3	Freon-11
44	CFC-11_FLAG_W		I1	Quality flags for water samples
45	CFC-12	PMOL/KG	F9.3	Freon-12
46	CFC-12_FLAG_W		I1	Quality flags for water samples
47	CFC113	PMOL/KG	F9.3	Freon-113
48	CFC113_FLAG_W		I1	Quality flags for water samples
49	TCARBN	UMOL/KG	F9.1	Total carbon
50	TCARBN_FLAG_W		I1	Quality flags for water samples
51	ALKALI	UMOL/KG	F9.1	Total alkalinity
52	ALKALI_FLAG_W		I1	Quality flags for water samples
53	PH	-	F9.4	pH
54	PH_FLAG_W		I1	Quality flags for water samples
55	DELC14	/MILLE	F9.1	14Carbon
56	DELC14_FLAG_W		I1	Quality flags for water samples
57	C14ERR	/MILLE	F9.1	Expected error
58	DELC13	/MILLE	F9.3	13Carbon
59	DELC13_FLAG_W		I1	Quality flags for water samples
60	C13ERR	/MILLE	F9.3	Expected error
61	THETA	DEG C	F9.4	Potential temperature
62	SIG0	KG/CUM	F9.4	Density

ODV Format

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

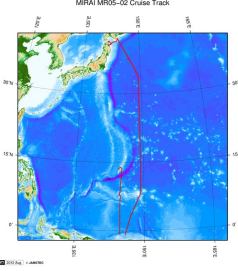
[Ocean Data View \(ODV\)](#)

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(UTC)
5	hh:mm	Cast time (UTC)
6	Latitude [degrees_north]	LATITUDE
7	Longitude [degrees_east]	LONGITUDE
8	Bot. Depth [m]	Reported depth to bottom.
9	CTDDPT[M]	Depth
10	QF	Quality flag for CTD data
11	CTDPRS[DBAR]	Pressure
12	QF	Quality flag for CTD data
13	CTDTMP[ITS-90]	Temperature
14	QF	Quality flag for CTD data
15	SBE35[ITS-90]	Temperature from Deep Ocean Standards Thermometer
16	QF	Quality flag for CTD data
17	CTDSAL[PSS-78]	CTD Salinity sensor
18	QF	Quality flag for CTD data
19	SALNTY[PSS-78]	Salinity
20	QF	Quality flags for water samples
21	CTDOXY[UMOL/KG]	CTD Oxygen sensor
22	QF	Quality flag for CTD data
23	OXYGEN[UMOL/KG]	Oxygen
24	QF	Quality flags for water samples
25	DWNPRS[DBAR]	Down-cast pressure at the same density of the up-cast CTD data
26	QF	Quality flag for CTD data
27	DWNOXY[UMOL/KG]	Down-cast CTD oxygen at pressure of DWNPRS
28	QF	Quality flag for CTD data
29	SILCAT[UMOL/KG]	Silicate
30	QF	Quality flags for water samples
31	SILUNC	Uncertainty of Silicate data
32	QF	Quality flags for water samples
33	NITRAT[UMOL/KG]	Nitrate
34	QF	Quality flags for water samples
35	NRAUNC	Uncertainty of Nitrate data
36	QF	Quality flags for water samples
37	NITRIT[UMOL/KG]	Nitrite
38	QF	Quality flags for water samples
39	NRIUNC	Uncertainty of Nitrite data
40	QF	Quality flags for water samples
41	PHSPHT[UMOL/KG]	Phosphate
42	QF	Quality flags for water samples
43	PHPUNC	Uncertainty of Phosphate data
44	QF	Quality flags for water samples
45	CFC-11[PMOL/KG]	Freon-11
46	QF	Quality flags for water samples
47	CFC-12[PMOL/KG]	Freon-12
48	QF	Quality flags for water samples
49	CFC113[PMOL/KG]	Freon-113
50	QF	Quality flags for water samples
51	TCARBN[UMOL/KG]	Total carbon
52	QF	Quality flags for water samples
53	ALKALI[UMOL/KG]	Total alkalinity
54	QF	Quality flags for water samples
55	PH	pH
56	QF	Quality flags for water samples
57	DELC14[MILLE]	14Carbon
58	QF	Quality flags for water samples
59	C14ERR	Expected error
60	QF	Quality flags for water samples
61	DELC13[MILLE]	13Carbon
62	QF	Quality flags for water samples
63	C13ERR	Expected error
64	QF	Quality flags for water samples
65	THETA[DEG C]	Potential temperature
66	QF	Quality flag for CTD data
67	SIG0[KG/CUM]	Density
68	QF	Quality flag for CTD data
69	SAMPNO	Sample number
70	QF	Bottle quality flag

Related Information

MIRAI MR05-02 Cruise Track



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MR05-02

Ship Name: MIRAI

Period: 2005-05-25 - 2005-07-01

Chief Scientist: Takeshi Kawano (JAMSTEC)

Project Name: [POST-WOCE Hydrography]

Update History	
2017-07-28	An observation data was registerd.
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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

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CHIKYU

KAIIMEI

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

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MIRAI MR05-02 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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Cruise ID: [MR05-02](#)

Bottle Sampling Water Chemical Analysis: Processed (PI)

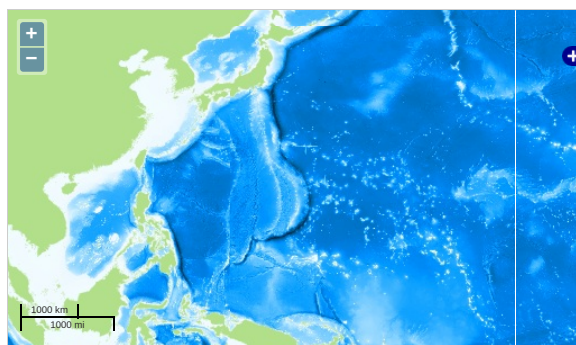
Data Policy: [JAMSTEC](#)

Observation Items: Temperature, Salinity, Dissolved oxygen, Silicate, Nitrate, Nitrite, Phosphate, CFC11, CFC12, CFC113, Total inorganic carbon, Alkalinity, pH, Carbon14, Carbon13, Potential temperature, Density

Science Keywords:

OCEANS > OCEAN CHEMISTRY > DISSOLVED GASES
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OCEANS > SALINITY/DENSITY > SALINITY
OCEANS > OCEAN CHEMISTRY > ALKALINITY
OCEANS > OCEAN CHEMISTRY > CARBON
OCEANS > OCEAN CHEMISTRY > OCEAN TRACERS
OCEANS > OCEAN CHEMISTRY > STABLE ISOTOPES
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Observation Map



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

Data List

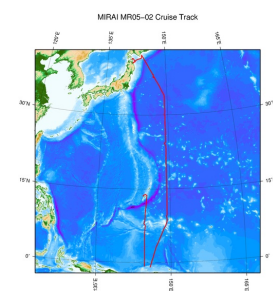
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☐ File names

☐ MR050200_ex_bot.csv

☐ MR050200_odv_bot.txt

Related Information



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MR05-02

Ship Name: MIRAI

Period: 2005-05-25 - 2005-07-01

Chief Scientist: Takeshi Kawano (JAMSTEC)

Project Name: [POST-WOCE Hydrography]

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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
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