

MIRAI MR03-K02 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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Cruise ID: **MR03-K02**

Bottle Sampling Water Chemical Analysis: Processed (PI)

Data Policy: **JAMSTEC**

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

Science Keywords:

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 > STABLE ISOTOPES
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR03-K02_all.pdf

For Using Data

Principal Investigator

CTDTMP : Hiroshi Uchida (JAMSTEC)
SBE35 : Hiroshi Uchida (JAMSTEC)
CTDSAL : Hiroshi Uchida (JAMSTEC)
SALNTY : Hiroshi Uchida (JAMSTEC)
CTDOXY : Hiroshi Uchida (JAMSTEC)
OXYGEN : Hiroshi Uchida (JAMSTEC)
DWNPRS : Hiroshi Uchida (JAMSTEC)
DWNNOXY : Hiroshi Uchida (JAMSTEC)
SILCAT : Akihiko Murata (JAMSTEC)
NITRAT : Akihiko Murata (JAMSTEC)
NITRIT : Akihiko Murata (JAMSTEC)
PHSPHT : Akihiko Murata (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:

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



Instrument:

Total dissolved inorganic carbon measurement system (- MR11-E02)



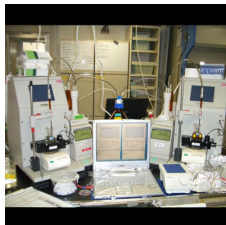
Instrument:

pH meter (- MR03-K04 Leg6)



Instrument:

Titration for DO (- MR11-05 Leg2)



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/(120% of surface saturation)
Accuracy : 0.1ml/(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 method
 - (3) Precision : 0.13 umol/kg
 - (4) Reference Material/Calibration: KIO₃ solution (0.001667M)
2. Salinity
 - (1) Instruments: Autosol salinometer model 8400B (Guildline Instruments Ltd.)
 - (2) Methods : -
 - (3) Precision : 0.0003 PSU
 - (4) Reference Material/Calibration: IAPSO Standard Sea Water batch P141 (Ocean Scientific International Ltd.)
3. Silicate
 - (1) Instruments: TRAACS800 (Bran+Luebbe)
 - (2) Methods : Molybdenum blue method
 - (3) Precision : C.V. 0.23 % (126.27 umol/kg)
 - (4) Reference Material/Calibration: RMNS [Aoyama et al., 2007] and Silicate standard solution, the silicate primary standard, is obtained from Kanto Chemical CO., Inc.

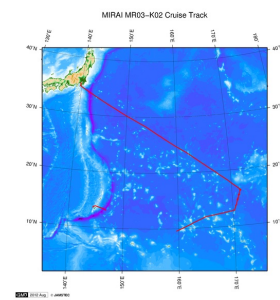
This standard solution is 1000 mg per liter with 0.5 M KOH and prepared for ICP analysis.
4. Nitrate
 - (1) Instruments: TRAACS800 (Bran+Luebbe)
 - (2) Methods : Diazotization method
 - (3) Precision : C.V. 0.39 % (33.16 umol/kg),
 - (4) Reference Material/Calibration: KNO₃ solution and RMNS [Aoyama et al., 2007]
5. Nitrite
 - (1) Instruments: TRAACS800 (Bran+Luebbe)
 - (2) Methods : Diazotization method (reduced to nitrite by Cd - Cu tube)
 - (3) Precision : C.V. 4.53 % (0.91 umol/kg),
 - (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. 0.36 % (2.27 umol/kg),
 - (4) Reference Material/Calibration: KH₂PO₄ solution and RMNS [Aoyama et al., 2007]
7. Total inorganic carbon
 - (1) Instruments: a PC control sampling system and a Model 5012 coulometer (Carbon Dioxide Coulometer, UIC Inc.)
 - (2) Methods : coulometry
 - (3) Precision : The standard deviation was 1.4 umol/kg
 - (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 Nihon ANS Ltd
 - (2) Methods : Modified Gran titration/Closed-cell/potentiometry
 - (3) Precision : The averaged differences and the standard deviation of TA1000-A were 2.38 and 2.09 umol/kg (n=24), respectively.
Those for TA1000-B were 3.75 and 3.31 umol/kg (n=12)
 - (4) Reference Material/Calibration: Na₂CO₃ solution
9. pH
 - (1) Instruments: a glass / reference electrode with a pH / Ion meter (Radiometer PHM95)
 - (2) Methods : potentiometric methods at 25 deg-C
 - (3) Precision : The precision and repeatability (1 std) were 0.004 and 0.004 units, respectively.

- (3) Precision : The average and repeatability (1 std) were 0.001 and 0.001pH unit, respectively.
(4) Reference Material/Calibration:total hydrogen ion scale

10. Carbon-14 and -13

- (1) Instruments: see "Cruise Report"
(2) Methods : see "Cruise Report"
(3) Precision : The results of replicate measurements suggested that "reproducibilities" of our $\delta^{13}\text{C}$ and $\Delta^{14}\text{C}$ measurements including errors due to the sample preparation were less than 0.02‰ and 3.5‰ respectively.
(4) Reference Material/Calibration:see "Cruise Report"

Related Information



[Enlarge Image](#)

MR03-K02

Ship Name: MIRAI
Period: 2003-05-21 - 2003-06-06
Chief Scientist: Hirofumi Yamamoto (JAMSTEC)

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.
2013-08-23	An observation data was registerd.
2012-12-25	An observation data was registerd.

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6K Camera DEEP TOW
6K Sonar DEEP TOW
KM-ROV
POWER GRAB SAMPLER (SHELL)
POWER GRAB SAMPLER (CLOW)
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MIRAI MR03-K02 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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Cruise ID: **MR03-K02**

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	NITRAT	UMOL/KG	F9.2	Nitrate
34	NITRAT_FLAG_W		I1	Quality flags for water samples
35	NITRIT	UMOL/KG	F9.2	Nitrite
36	NITRIT_FLAG_W		I1	Quality flags for water samples
37	PHSPHT	UMOL/KG	F9.2	Phosphate
38	PHSPHT_FLAG_W		I1	Quality flags for water samples
39	TCARBN	UMOL/KG	F9.1	Total carbon
40	TCARBN_FLAG_W		I1	Quality flags for water samples
41	ALKALI	UMOL/KG	F9.1	Total alkalinity
42	ALKALI_FLAG_W		I1	Quality flags for water samples
43	PH	-	F9.3	pH
44	PH_FLAG_W		I1	Quality flags for water samples
45	DELC14	/MILLE	F9.1	14Carbon
46	DELC14_FLAG_W		I1	Quality flags for water samples
47	C14ERR	/MILLE	F9.1	Expected error
48	DELC13	/MILLE	F9.3	13Carbon
49	DELC13_FLAG_W		I1	Quality flags for water samples
50	C13ERR	/MILLE	F9.3	Expected error
51	THETA	DEG C	F9.4	Potential temperature
52	SIG0	KG/CUM	F9.4	Density

ODV Format

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

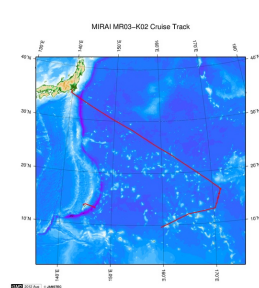
[Ocean Data View \(ODV\)](#)

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

Column No.	Latitude [degrees_north] Column Heading	LATITUDE Comments
7	Longitude [degrees_east]	LONGITUDE
8	Bot. Depth [m]	Reported depth to bottom.
9	CTDDPT[M]	Depth(Calculate from CTDPRS and LATITUDE)
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	NITRAT[UMOL/KG]	Nitrate
32	QF	Quality flags for water samples
33	NITRIT[UMOL/KG]	Nitrite
34	QF	Quality flags for water samples
35	PHSPHT[UMOL/KG]	Phosphate
36	QF	Quality flags for water samples
37	TCARBN[UMOL/KG]	Total carbon
38	QF	Quality flags for water samples
39	ALKALI[UMOL/KG]	Total alkalinity
40	QF	Quality flags for water samples
41	PH	pH
42	QF	Quality flags for water samples
43	DELC14[MILLE]	14Carbon
44	QF	Quality flags for water samples
45	C14ERR	Expected error
46	QF	Quality flags for water samples
47	DELC13[MILLE]	13Carbon
48	QF	Quality flags for water samples
49	C13ERR	Expected error
50	QF	Quality flags for water samples
51	THETA[DEG C]	Potential temperature
52	QF	Quality flag for CTD data
53	SIG0[KG/CUM]	Density
54	QF	Quality flag for CTD data
55	SAMPNO	Sample number
56	QF	Bottle quality flag

Related Information



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MR03-K02

Ship Name: MIRAI
Period: 2003-05-21 - 2003-06-06
Chief Scientist: Hirofumi Yamamoto (JAMSTEC)

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6K Sonar DEEP TOW

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Dive ID:

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POWER GRAB
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MIRAI MR03-K02 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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Cruise ID: [MR03-K02](#)

Bottle Sampling Water Chemical Analysis: Processed (PI)

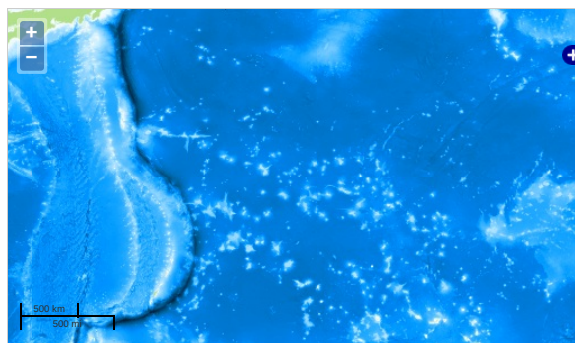
Data Policy: [JAMSTEC](#)

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OCEANS > OCEAN CHEMISTRY > CARBON
OCEANS > OCEAN CHEMISTRY > STABLE ISOTOPES
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Observation Map



... Observation Line ... Navigation ... Observation, Dive Point, Hole Imagery reproduced from ...

Data List

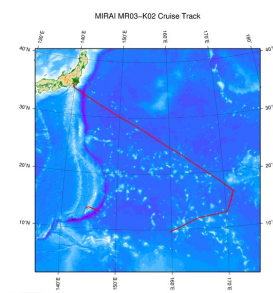
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☐ File names

☐ MR03K0200_ex_bot.csv

☐ MR03K0200_odv_bot.txt

Related Information



MR03-K02

Ship Name: MIRAI

Period: 2003-05-21 - 2003-06-06

Chief Scientist: Hirofumi Yamamoto (JAMSTEC)

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