

MIRAI MR01-K04 Leg1 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

ReadMe Observation Data Data Format Quality Information

Cruise ID: [MR01-K04 Leg1](#)

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/MR01-K04_leg1_all.pdf

For Using Data

Principal Investigator

CTDTMP : Hiroshi Uchida (JAMSTEC)
 CTDSAL : Hiroshi Uchida (JAMSTEC)
 SALNTY : Takeshi Kawano (JAMSTEC)
 CTDOXY : Hiroshi Uchida (JAMSTEC)
 OXYGEN : Masao Fukasawa (JAMSTEC)
 SILCAT : Shuichi Watanabe (JAMSTEC)
 NITRAT : Shuichi Watanabe (JAMSTEC)
 NITRIT : Shuichi Watanabe (JAMSTEC)
 PHSPHT : Shuichi Watanabe (JAMSTEC)
 CFC-11 : Shuichi Watanabe (JAMSTEC)
 CFC-12 : Shuichi Watanabe (JAMSTEC)
 CFC113 : Shuichi Watanabe (JAMSTEC)
 TCARBN : Akihiko Murata (JAMSTEC)
 ALKALI : Akihiko Murata (JAMSTEC)
 PH : Andray Andreev (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:

pH meter (- MR03-K04 Leg6)



Instrument:

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



Instrument:

Titration for total alkalinity (- MR14-02)



Instrument:

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





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 : SBE13, SBE43, Sea-Bird Electronics, Inc.
Measurement range : 0-15ml/l
Accuracy : 0.1ml/l
Resolution : 0.01ml/l

Information on Chemical and Biological data

1. Dissolved Oxygen

- (1) Instruments : Titrator: Model 716 DMS Titrino (Metrohm)
Detector: Pt electrode
(2) Methods : Winkler method/potentiometric method
(3) Precision : 0.22umol/kg
(4) Reference Material/Calibration:-

2. Salinity

- (1) Instruments: Autosal salinometer model 8400B (Guildline Instruments Ltd.)
(2) Methods : -
(3) Precision : 0.00014 PSU
(4) Reference Material/Calibration: IAPSO Standard Sea Water batch P139 (Ocean Scientific International Ltd.)

3. Silicate

- (1) Instruments: TRAACS800 (Bran+Luebbe)
(2) Methods : Molybdenum blue method
(3) Precision : 0.43umol/kg
(4) Reference Material/Calibration: 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 : 0.22umol/kg
(4) Reference Material/Calibration: KNO₃ solution

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

6. Phosphate

- (1) Instruments: TRAACS800 (Bran+Luebbe)
(2) Methods : Molybdenum blue method
(3) Precision : 0.01umol/kg
(4) Reference Material/Calibration: KH₂PO₄ solution

7. Total inorganic carbon

- (1) Instruments: the automated TCO₂ analyzer (Nippon ANS Co., Ltd.) equipped with carbon coulometer 5012 (UIC Co., Ltd.)
(2) Methods : coulometry
(3) Precision : The average difference of field replicate analyses was calculated to be $1.5 \pm 1.4 \mu\text{mol kg}^{-1}$ (n = 183).
(4) Reference Material/Calibration: Na₂CO₃ solution and the CRM provided by Dr. Dickson in Scripps Institute of Oceanography

8. Total Alkalinity

- (1) Instruments: auto-burette (Radiometer, ABU901), a pH glass electrode (Radiometer, pHG201), a reference electrode (Radiometer, REF201)
(2) Methods : Modified Gran titration/Closed-cell/potentiometry
(3) Precision : The average difference of field replicate analyses was calculated to be $2.6 \pm 2.6 \mu\text{mol kg}^{-1}$ (n = 181).
(4) Reference Material/Calibration: Na₂CO₃ solution and the CRM provided by Dr. Dickson in Scripps Institute of Oceanography

9. pH

- (1) Instruments: a glass / reference electrode with a pH / Ion meter (Radiometer PHM95)
(2) Methods : potentiometric methods at 25deg-C
(3) Precision : The average difference was calculated to be 0.003 ± 0.003 pH unit.

(4) Reference Material/Calibration:total hydrogen ion scale

10. CFCs

(1) Instruments:see "DATA BOOK"

(2) Methods :see "DATA BOOK"

(3) Precision :-

(4) Reference Material/Calibration:see "DATA BOOK"

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

(1) Instruments: $\delta^{13}\text{C}$ of the sample CO_2 gas was measured using Finnigan MAT252 mass spectrometer.

The $\Delta^{14}\text{C}$ in the graphite sample was measured by AMS facilities at National Institute for

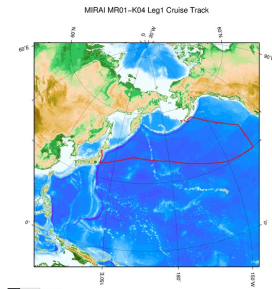
Environmental Studies in Tsukuba, Japan (Tanaka et al.2000) and Institute of Accelerator Analysis Ltd in Shirakawa, Japan

(2) Methods : see "DATA BOOK"

(3) Precision :see "DATA BOOK"

(4) Reference Material/Calibration: see "DATA BOOK"

Related Information



MR01-K04 Leg1

Ship Name: MIRAI

Period: 2001-07-23 - 2001-08-27

Chief Scientist: Masao Fukasawa (JAMSTEC)

Project Name: [POST-WOCE Hydrography]

 [Enlarge Image](#)

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.
2013-08-22	An observation data was registerd.
2012-12-25	An observation data was registerd.

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](#)
[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:

Copyright 2011 Japan Agency for Marine-Earth Science and Technology



JAMSTEC 国立研究開発法人
海洋研究開発機構
JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY

MIRAI MR01-K04 Leg1 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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

Cruise ID: [MR01-K04 Leg1](#)

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	CTDSAL	PSS-78	F9.4	CTD Salinity sensor
18	CTDSAL_FLAG_W		I1	Quality flag for CTD data
19	SALNTY	PSS-78	F9.4	Salinity
20	SALNTY_FLAG_W		I1	Quality flags for water samples
21	CTDOXY	UMOL/KG	F9.2	CTD Oxygen sensor
22	CTDOXY_FLAG_W		I1	Quality flag for CTD data
23	OXYGEN	UMOL/KG	F9.2	Oxygen
24	OXYGEN_FLAG_W		I1	Quality flags for water samples
25	SILCAT	UMOL/KG	F9.2	Silicate
26	SILCAT_FLAG_W		I1	Quality flags for water samples
27	NITRAT	UMOL/KG	F9.2	Nitrate
28	NITRAT_FLAG_W		I1	Quality flags for water samples
29	NITRIT	UMOL/KG	F9.2	Nitrite
30	NITRIT_FLAG_W		I1	Quality flags for water samples
31	PHSPHT	UMOL/KG	F9.2	Phosphate
32	PHSPHT_FLAG_W		I1	Quality flags for water samples
33	CFC-11	PMOL/KG	F9.3	Freon-11
34	CFC-11_FLAG_W		I1	Quality flags for water samples
35	CFC-12	PMOL/KG	F9.3	Freon-12
36	CFC-12_FLAG_W		I1	Quality flags for water samples
37	CFC113	PMOL/KG	F9.3	Freon-113
38	CFC113_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	-	F9.4	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.

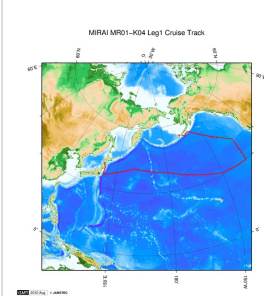
[Ocean Data View \(ODV\)](#)

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
7	Longitude [degrees_east]	LONGITUDE

Column No.	Column Heading	Comments
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	CTDSAL[PSS-78]	CTD Salinity sensor
16	QF	Quality flag for CTD data
17	SALNTY[PSS-78]	Salinity
18	QF	Quality flags for water samples
19	CTDOXY[UMOL/KG]	CTD Oxygen sensor
20	QF	Quality flag for CTD data
21	OXYGEN[UMOL/KG]	Oxygen
22	QF	Quality flags for water samples
23	SILCAT[UMOL/KG]	Silicate
24	QF	Quality flags for water samples
25	NITRAT[UMOL/KG]	Nitrate
26	QF	Quality flags for water samples
27	NITRIT[UMOL/KG]	Nitrite
28	QF	Quality flags for water samples
29	PHSPHT[UMOL/KG]	Phosphate
30	QF	Quality flags for water samples
31	CFC-11[PMOL/KG]	Freon-11
32	QF	Quality flags for water samples
33	CFC-12[PMOL/KG]	Freon-12
34	QF	Quality flags for water samples
35	CFC113[PMOL/KG]	Freon-113
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



[Enlarge Image](#)

MR01-K04 Leg1

Ship Name: MIRAI
Period: 2001-07-23 - 2001-08-27
Chief Scientist: Masao Fukasawa (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.
2013-08-22	An observation data was registerd.
2012-12-25	An observation data was registerd.

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
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)

Go to a Cruise Information

Cruise ID:

Go to a Dive Information

Dive ID:



MIRAI MR01-K04 Leg1 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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

Cruise ID: [MR01-K04 Leg1](#)

Bottle Sampling Water Chemical Analysis: Processed (PI)

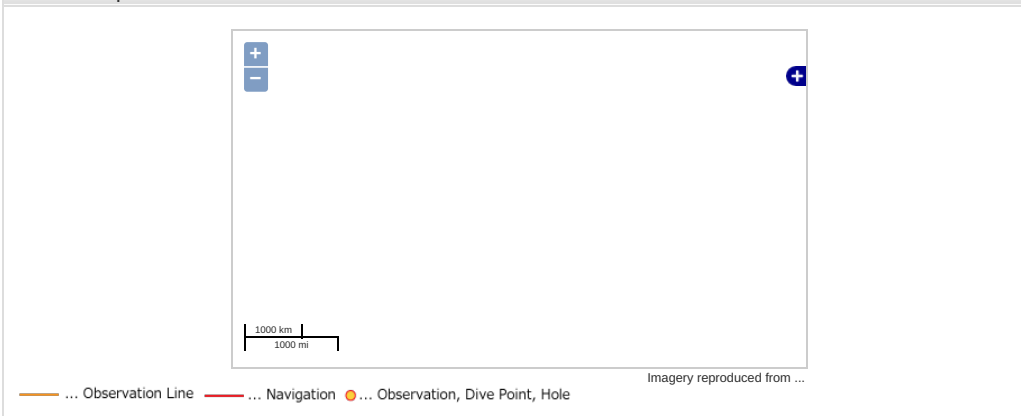
Data Policy: [JAMSTEC](#)

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

Observation Map

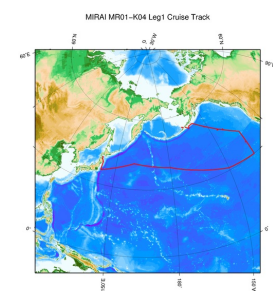


Data List

[Add to Basket](#)

☐ **File names**
☐ MR01K0401_ex_bot.csv
☐ MR01K0401_odv_bot.txt

Related Information



[Enlarge Image](#)

MR01-K04 Leg1

Ship Name: MIRAI
Period: 2001-07-23 - 2001-08-27
Chief Scientist: Masao Fukasawa (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.
2013-08-22	An observation data was registerd.
2012-12-25	An observation data was registerd.

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
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:

Copyright 2011 Japan Agency for Marine-Earth Science and
Technology



JAMSTEC 国立研究開発法人
海洋研究開発機構
JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY