

## MIRAI MR01-K03 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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

Cruise ID: [MR01-K03](#)

Bottle Sampling Water Chemical Analysis: Processed (PI)

Data Policy: [JAMSTEC](#)

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

Science Keywords:

OCEANS > OCEAN CHEMISTRY > AMMONIA  
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 > SILICATE  
OCEANS > OCEAN CHEMISTRY > SALINITY  
OCEANS > OCEAN TEMPERATURE > WATER TEMPERATURE  
OCEANS > SALINITY/DENSITY > SALINITY  
OCEANS > OCEAN CHEMISTRY > ALKALINITY  
OCEANS > OCEAN CHEMISTRY > CARBON  
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Cruise Report

[http://www.godac.jamstec.go.jp/catalog/data/doc\\_catalog/media/MR01-K03\\_all.pdf](http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR01-K03_all.pdf)

### For Using Data

#### Principal Investigator

CTDTMP : Shuichi Watanabe (JAMSTEC)  
CTDSAL : Shuichi Watanabe (JAMSTEC)  
SALNTY : Shuichi Watanabe (JAMSTEC)  
CTDOXY : Shuichi Watanabe (JAMSTEC)  
OXYGEN : Shuichi Watanabe (JAMSTEC)  
SILCAT : Shuichi Watanabe (JAMSTEC)  
NITRAT : Shuichi Watanabe (JAMSTEC)  
NITRIT : Shuichi Watanabe (JAMSTEC)  
PHSPHT : Shuichi Watanabe (JAMSTEC)  
NH4 : Shuichi Watanabe (JAMSTEC)  
TCARBN : Shuichi Watanabe (JAMSTEC)  
ALKALI : Shuichi Watanabe (JAMSTEC)  
PH : Shuichi Watanabe (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)



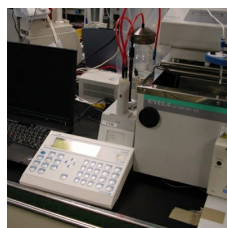
Instrument:

pH meter (MR02-K03 -)



Instrument:

Titration for total alkalinity ( - MR14-02)



### Notice

The values of silicate and nitrate have systematic errors among cruises, because the analytical methods used for these determinations, and the precision and standards for analysis varied slightly from cruise to cruise. The dataset posted here is "corrected" in a cruise. If you need the corrected data for systematic errors among cruises, please see ["Hydrographic Data at Station K2 and KNOT"](#) . (Available data are station K2 and KNOT data only.)

#### Information on CTD data

(1) Temperature sensor

Model: SBE3, Sea-Bird Electronics, Inc.  
Measurement range: -5.0 to +35 deg C  
Accuracy: 0.001 deg C  
Resolution: 0.0002 deg C

(2) Salinity sensor

Model: SBE4, Sea-Bird Electronics, Inc.  
Measurement range: 0.0 to 7 S/m  
Accuracy: 0.0003 S/m  
Resolution: 0.00004 S/m

(3) Pressure sensor

Model: SBE9plus, Sea-Bird Electronics, Inc.  
Measurement range: up to 10500 m  
Accuracy: 0.015% F.S.  
Resolution: 0.001% F.S.

(4) DO sensor

Model : SBE13, Sea-Bird Electronics, Inc.  
Measurement range : 0-15ml/(120% of surface saturation)  
Accuracy : 0.1ml/(2% of saturation)  
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: -  
(4) Reference Material/Calibration: -

2. Salinity

- (1) Instruments: Autosol salinometer model 8400B (Guildline Instruments Ltd.)  
(2) Methods: -  
(3) Precision: 0.0013 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: At this repeat analysis range of CV (concentration average to standard deviation) was 0.02 to 0.95% except for nitrite and ammonia.  
(4) Reference Material/Calibration: -

4. Nitrate

- (1) Instruments: TRAACS800 (Bran+Luebbe)  
(2) Methods: Diazotization method (reduced to nitrite by Cd - Cu tube)  
(3) Precision: At this repeat analysis range of CV (concentration average to standard deviation) was 0.02 to 0.95% except for nitrite and ammonia.  
(4) Reference Material/Calibration: -

5. Nitrite

- (1) Instruments: TRAACS800 (Bran+Luebbe)  
(2) Methods: Diazotization method  
(3) Precision: -  
(4) Reference Material/Calibration: -

6. Phosphate

- (1) Instruments: TRAACS800 (Bran+Luebbe)  
(2) Methods: Molybdenum blue method  
(3) Precision: At this repeat analysis range of CV (concentration average to standard deviation) was 0.02 to 0.95% except for nitrite and ammonia.  
(4) Reference Material/Calibration: -

7. Ammonia

- (1) Instruments: TRAACS800 (Bran+Luebbe)  
(2) Methods: Indophenol method  
(3) Precision: -  
(4) Reference Material/Calibration: -

8. Total inorganic carbon

- (1) Instruments: automated TCO<sub>2</sub> sampling system (Nippon ANS Inc.) equipped with carbon coulometer 5012 (UIC Inc.)  
(2) Methods: coulometry  
(3) Precision: less than 0.1%  
(4) Reference Material/Calibration: Na<sub>2</sub>CO<sub>3</sub> solution and the CRM provided by Dr. Dickson in Scripps Institute of Oceanography

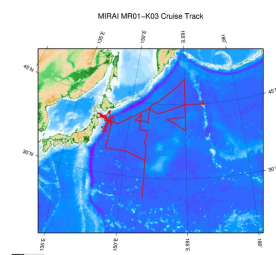
9. Total Alkalinity

- (1) Instruments: auto-burette (Radiometer, ABU901), a pH glass electrode (Radiometer, pHG201-7), a reference electrode (Radiometer, REF201)  
(2) Methods: Modified Gran titration/Open-cell/potentiometry  
(3) Precision: 1.9 umol/kg  
(4) Reference Material/Calibration: the CRM provided by Dr. Dickson in Scripps Institute of Oceanography

10. pH

- (1) Instruments: a glass/reference electrode with a pH/Ion meter (Radiometer PHM95)  
(2) Methods: potentiometric methods at 25deg-C  
(3) Precision: 0.0017 pH unit  
(4) Reference Material/Calibration: total hydrogen ion scale

## Related Information



[Enlarge Image](#)

### MR01-K03

Ship Name: MIRAI  
Period: 2001-06-04 - 2001-07-18  
Chief Scientist: Shuichi Watanabe (JAMSTEC)  
Project Name: [Station K2, Station KNOT]

## Update History

2017-07-28	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.

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[KM-ROV](#)  
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Cruise ID:

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Dive ID:

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JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY

国立研究開発法人  
海洋研究開発機構

## MIRAI MR01-K03 Bottle Sampling Water Chemical Analysis

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[Quality Information](#)

Cruise ID: **MR01-K03**

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		A18	Station number
4	CASTNO		A3	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	F8.3	LATITUDE
11	LONGITUDE	DEG	F9.3	LONGITUDE
12	DEPTH	M	I5	Reported depth to bottom.
13	CTDDPT	M	F9.1	Depth
14	CTDDPT_FLAG_W		I1	Quality flag for CTD data
15	CTDPRS	DBAR	F9.1	Pressure
16	CTDPRS_FLAG_W		I1	Quality flag for CTD data
17	CTDTMP	ITS-90	F9.4	Temperature
18	CTDTMP_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	F9.1	CTD Oxygen sensor
24	CTDOXY_FLAG_W		I1	Quality flag for CTD data
25	OXYGEN	UMOL/KG	F9.1	Oxygen
26	OXYGEN_FLAG_W		I1	Quality flags for water samples
27	SILCAT	UMOL/KG	F9.2	Silicate
28	SILCAT_FLAG_W		I1	Quality flags for water samples
29	NITRAT	UMOL/KG	F9.2	Nitrate
30	NITRAT_FLAG_W		I1	Quality flags for water samples
31	NITRIT	UMOL/KG	F9.2	Nitrite
32	NITRIT_FLAG_W		I1	Quality flags for water samples
33	PHSPHT	UMOL/KG	F9.2	Phosphate
34	PHSPHT_FLAG_W		I1	Quality flags for water samples
35	NH4	UMOL/KG	F9.2	Ammonium
36	NH4_FLAG_W		I1	Quality flags for water samples
37	TCARBN	UMOL/KG	F9.1	Total carbon
38	TCARBN_FLAG_W		I1	Quality flags for water samples
39	ALKALI	UMOL/KG	F9.1	Total alkalinity
40	ALKALI_FLAG_W		I1	Quality flags for water samples
41	PH	-	F9.3	pH
42	PH_FLAG_W		I1	Quality flags for water samples
43	THETA	DEG C	F9.4	Potential temperature
44	SIG0	KG/CUM	F9.4	Density

### ODV Format

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

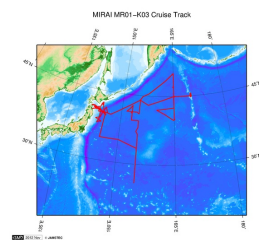
[Ocean Data View \(ODV\)](#)

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	CTDSAL[PSS-78]	CTD Salinity sensor

Column No.	Column Heading	Comments
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	NH4[UMOL/KG]	Ammonium
32	QF	Quality flags for water samples
33	TCARBN[UMOL/KG]	Total carbon
34	QF	Quality flags for water samples
35	ALKALI[UMOL/KG]	Total alkalinity
36	QF	Quality flags for water samples
37	PH	pH
38	QF	Quality flags for water samples
39	THETA[DEG C]	Potential temperature
40	QF	Quality flag for CTD data
41	SIG0[KG/CUM]	Density
42	QF	Quality flag for CTD data
43	SAMPNO	Sample number
44	QF	Bottle quality flag

#### Related Information



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#### MR01-K03

Ship Name: MIRAI  
Period: 2001-06-04 - 2001-07-18  
Chief Scientist: Shuichi Watanabe (JAMSTEC)  
Project Name: [Station K2, Station KNOT]

#### Update History

2017-07-28	An observation data was registered.
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## MIRAI MR01-K03 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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Cruise ID: [MR01-K03](#)

Bottle Sampling Water Chemical Analysis: Processed (PI)

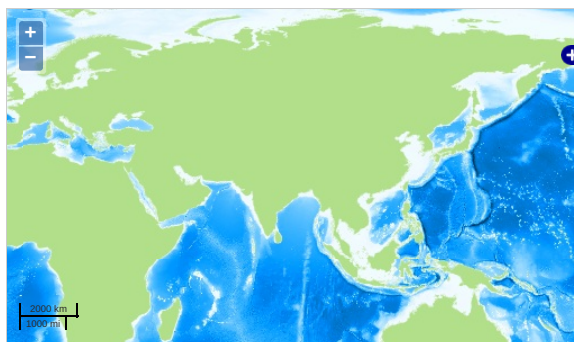
Data Policy: [JAMSTEC](#)

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

Science Keywords:

OCEANS > OCEAN CHEMISTRY > AMMONIA  
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OCEANS > OCEAN CHEMISTRY > OXYGEN  
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OCEANS > SALINITY/DENSITY > SALINITY  
OCEANS > OCEAN CHEMISTRY > ALKALINITY  
OCEANS > OCEAN CHEMISTRY > CARBON  
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

### Observation Map



Imagery reproduced from ...

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

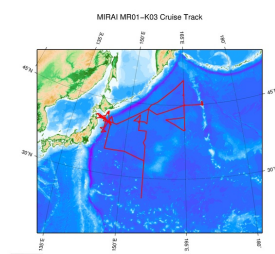
### Data List

☐ File names

☐ MR01K0300\_ex\_bot.csv

☐ MR01K0300\_odv\_bot.txt

### Related Information



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#### MR01-K03

Ship Name: MIRAI

Period: 2001-06-04 - 2001-07-18

Chief Scientist: Shuichi Watanabe (JAMSTEC)

Project Name: [Station K2, Station KNOT]

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