

MIRAI MR04-07 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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Cruise ID: [MR04-07](#)

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, 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 > 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/MR04-07_all.pdf

For Using Data

Principal Investigator

CTDTMP : Shuichi Watanabe (JAMSTEC)
SBE35 : Shuichi Watanabe (JAMSTEC)
CTDSAL : Shuichi Watanabe (JAMSTEC)
SALNTY : Shuichi Watanabe (JAMSTEC)
OXYGEN : Shuichi Watanabe (JAMSTEC)
SILCAT : Shuichi Watanabe (JAMSTEC)
NITRAT : Shuichi Watanabe (JAMSTEC)
NITRIT : Shuichi Watanabe (JAMSTEC)
PHSPHT : 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)



Notice

The values of silicate 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](#)" for the correction.

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) 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: 0.07 $\mu\text{mol kg}^{-1}$
(4) Reference Material/Calibration: 0.001667M KIO₃ solution

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 P144 (Ocean Scientific International Ltd.)

3. Silicate

- (1) Instruments: TRAACS800 (Bran+Luebbe)
(2) Methods: Molybdenum blue method
(3) Precision: C.V. 0.18% (172 μM)
(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 (reduced to nitrite by Cd - Cu tube)
(3) Precision: C.V. 0.19% (55 μM)
(4) Reference Material/Calibration: KNO₃ solution and RMNS [Aoyama et al., 2007]

5. Nitrite

- (1) Instruments: TRAACS800 (Bran+Luebbe)
(2) Methods: Diazotization method
(3) Precision: C.V. 0.21% (1.2 μM)
(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. 0.24% (3.7 μM)
(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: 1.3 $\mu\text{mol kg}^{-1}$
(4) Reference Material/Calibration: Na₂CO₃ solution and the CRM provided by Dr. Dickson in Scripps Institute of Oceanography

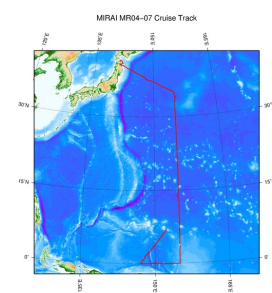
8. Total Alkalinity

- (1) Instruments: TAlk measuring systems (TA-1000), which were made by Nippon ANS Inc.
(2) Methods: Modified Gran titration/Closed-cell/potentiometry
(3) Precision: 1.4 $\mu\text{mol kg}^{-1}$
(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: 0.002 pH unit
(4) Reference Material/Calibration: total hydrogen ion scale

Related Information



MR04-07

Ship Name: MIRAI
Period: 2004-11-17 - 2004-12-09
Chief Scientist: Shuichi Watanabe (JAMSTEC)

[Enlarge Image](#)

Update History

2017-07-28	An observation data was registerd.
2015-05-29	An observation data was registerd.
2013-08-23	An observation data was registerd.
2012-11-25	An observation data was registerd.

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国立研究開発法人
海洋研究開発機構

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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	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	F8.3	LATITUDE
11	LONGITUDE	DEG	F9.3	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	OXYGEN	UMOL/KG	F9.1	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	TCARBN	UMOL/KG	F9.1	Total carbon
34	TCARBN_FLAG_W		I1	Quality flags for water samples
35	ALKALI	UMOL/KG	F9.1	Total alkalinity
36	ALKALI_FLAG_W		I1	Quality flags for water samples
37	PH	-	F9.3	pH
38	PH_FLAG_W		I1	Quality flags for water samples
39	THETA	DEG C	F9.4	Potential temperature
40	SIG0	KG/CUM	F9.4	Density

ODV Format

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

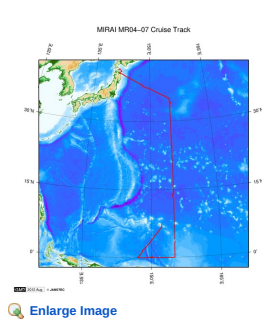
[Ocean Data View \(ODV\)](#)

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(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

Column No.	Column Heading	Comments
19	SALNTY[PSS-78]	Salinity
20	QF	Quality flags for water samples
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	TCARBN[UMOL/KG]	Total carbon
32	QF	Quality flags for water samples
33	ALKAL[UMOL/KG]	Total alkalinity
34	QF	Quality flags for water samples
35	PH	pH
36	QF	Quality flags for water samples
37	THETA[DEG C]	Potential temperature
38	QF	Quality flag for CTD data
39	SIG0[KG/CUM]	Density
40	QF	Quality flag for CTD data
41	SAMPNO	Sample number
42	QF	Bottle quality flag

Related Information



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Chief Scientist: Shuichi Watanabe (JAMSTEC)

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6K Sonar DEEP TOW
KM-ROV
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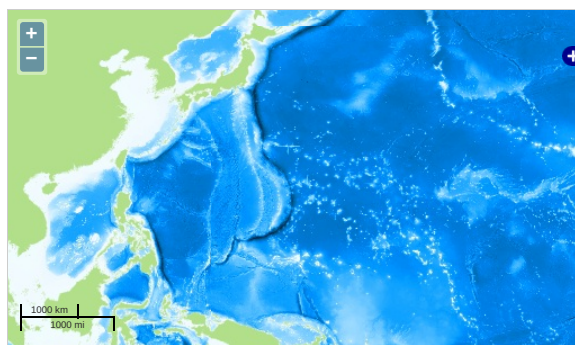
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Science Keywords:

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OCEANS > OCEAN CHEMISTRY > ALKALINITY
OCEANS > OCEAN CHEMISTRY > CARBON
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Observation Map



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

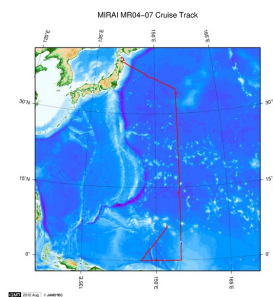
Data List

☐ File names

☐ MR040700_ex_bot.csv

☐ MR040700_odv_bot.txt

Related Information



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