

MIRAI MR04-06 Bottle Sampling Water Chemical Analysis

Last Modified: 2015-05-29

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Cruise ID: [MR04-06](#)

Bottle Sampling Water Chemical Analysis: Processed (DMO/PI)

Data Policy: [JAMSTEC](#)

Observation Items: Temperature, Salinity, Dissolved oxygen, Fluorescence, Chlorophyll, Transmittance, 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 CHEMISTRY	> CHLOROPHYLL
OCEANS > OCEAN TEMPERATURE	> WATER TEMPERATURE
OCEANS > SALINITY/DENSITY	> SALINITY
OCEANS > OCEAN CHEMISTRY	> ALKALINITY
OCEANS > OCEAN CHEMISTRY	> CARBON
OCEANS > OCEAN OPTICS	> FLUORESCENCE
OCEANS > OCEAN TEMPERATURE	> POTENTIAL TEMPERATURE

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR04-06_all.pdf

For Using Data

Principal Investigator

CTDTMP : Makio Honda (JAMSTEC)
SBE35 : Makio Honda (JAMSTEC)
CTDSAL : Makio Honda (JAMSTEC)
SALNTY : Makio Honda (JAMSTEC)
CTDOXY : Makio Honda (JAMSTEC)
OXYGEN : Makio Honda (JAMSTEC)
FLUOR : Makio Honda (JAMSTEC)
CHLORA : Makio Honda (JAMSTEC)
XMISS : Makio Honda (JAMSTEC)
SILCAT : Makio Honda (JAMSTEC)
NITRAT : Makio Honda (JAMSTEC)
NITRIT : Makio Honda (JAMSTEC)
PHSPHT : Makio Honda (JAMSTEC)
TCARBN : Makio Honda (JAMSTEC)
ALKALI : Makio Honda (JAMSTEC)
PH : Makio Honda (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



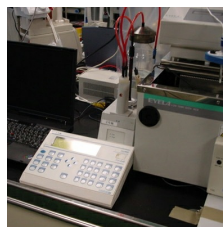
Instrument:

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



Instrument:

Titration for total alkalinity (- MR14-02)



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"](#). (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 +35degC
Accuracy: 0.001degC
Resolution: 0.0002degC

(2) Salinity sensor

Model: SBE4, Sea-Bird Electronics, Inc.
Measurement range: 0.0 to 75/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
Accuracy: 0.1ml/l
Resolution: 0.01ml/l

(5) Fluorometer
Model: Seapoint Sensors, Inc.

(6) Transmissometer
Model: WET Labs, 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: 0.08 umol 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: 0.0003 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. 0.16% (172uM)
- (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. 0.16% (55uM)
- (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. 0.13% (1.2uM)
- (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. 0.22% (3.6uM)
- (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: 1.0umol 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: auto-burette (Radiometer, ABU901), a pH glass electrode (Radiometer, pHG201-7), a reference electrode(Radiometer, REF201)
- (2) Methods: Modified Gran titration/Closed-cell/potentiometry
- (3) Precision: 1.28 umol kg⁻¹
- (4) Reference Material/Calibration: Na₂CO₃ solution and the CRM provided by Dr. Dickson in Scripps Institute of Oceanography

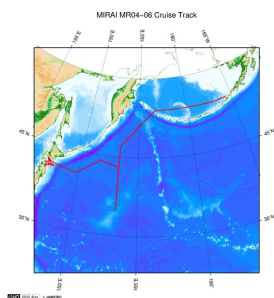
9. pH

- (1) Instruments: a glass/reference electrode with a pH/Ion meter (Radiometer PHM95)
- (2) Methods: potentiometric methods at 25deg-C
- (3) Precision: 0.003 pH unit
- (4) Reference Material/Calibration: total hydrogen ion scale

10. Chlorophyll-a

- (1) Instruments: Fluorophotometer model 10-AU-005 (Turner design)
- (2) Methods: extract in N,N-dimethylformamide/fluorometric determination (acidification method)
- (3) Precision: -
- (4) Reference Material/Calibration: -

Related Information



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MR04-06

Ship Name: MIRAI
Period: 2004-10-14 - 2004-11-09
Chief Scientist: Makio Honda (JAMSTEC)
Project Name: [Station K2, Station KNOT]

Update History

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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[6K Sonar DEEP TOW](#)
[KM-ROV](#)
[POWER GRAB SAMPLER \(SHELL\)](#)
[POWER GRAB SAMPLER \(CLOW\)](#)
[BMS](#)

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Cruise ID:

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Dive 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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Cruise ID: [MR04-06](#)

Bottle Sampling Water Chemical Analysis: Processed (DMO/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	F8.3	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	SBE35	ITS-90	F10.5	Temperature from Deep Ocean Standards Thermometer
20	SBE35_FLAG_W		I1	Quality flag for CTD data
21	CTDSAL	PSS-78	F9.4	CTD Salinity sensor
22	CTDSAL_FLAG_W		I1	Quality flag for CTD data
23	SALNTY	PSS-78	F9.4	Salinity
24	SALNTY_FLAG_W		I1	Quality flags for water samples
25	CTDOXY	UMOL/KG	F9.2	CTD Oxygen sensor
26	CTDOXY_FLAG_W		I1	Quality flag for CTD data
27	OXYGEN	UMOL/KG	F9.2	Oxygen
28	OXYGEN_FLAG_W		I1	Quality flags for water samples
29	FLUOR	UG/L	F9.2	Fluorometer
30	FLUOR_FLAG_W		I1	Quality flag for CTD data
31	CHLORA	MG/CUM	F9.2	Chlorophyll a
32	CHLORA_FLAG_W		I1	Quality flags for water samples
33	XMISS	%TRANS	F9.1	Transmissometer
34	XMISS_FLAG_W		I1	Quality flag for CTD data
35	SILCAT	UMOL/KG	F9.2	Silicate
36	SILCAT_FLAG_W		I1	Quality flags for water samples
37	NITRAT	UMOL/KG	F9.2	Nitrate
38	NITRAT_FLAG_W		I1	Quality flags for water samples
39	NITRIT	UMOL/KG	F9.2	Nitrite
40	NITRIT_FLAG_W		I1	Quality flags for water samples
41	PHSPHT	UMOL/KG	F9.2	Phosphate
42	PHSPHT_FLAG_W		I1	Quality flags for water samples
43	TCARBN	UMOL/KG	F9.1	Total carbon
44	TCARBN_FLAG_W		I1	Quality flags for water samples
45	ALKALI	UMOL/KG	F9.1	Total alkalinity
46	ALKALI_FLAG_W		I1	Quality flags for water samples
47	PH	-	F9.3	pH
48	PH_FLAG_W		I1	Quality flags for water samples
49	THETA	DEG C	F9.4	Potential temperature
50	SIG0	KG/CUM	F9.4	Density

ODV Format

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

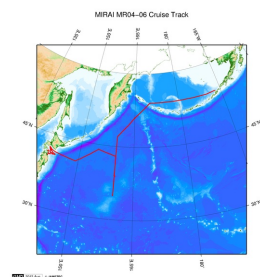
[Ocean Data View \(ODV\)](#)

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

Column No.	Column Heading	Required depth to bottom.
8	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	FLUOR[UG/L]	Fluorometer
26	QF	Quality flag for CTD data
27	CHLORA[MG/CUM]	Chlorophyll a
28	QF	Quality flags for water samples
29	XMISS[%TRANS]	Transmissometer
30	QF	Quality flag for CTD data
31	SILCAT[UMOL/KG]	Silicate
32	QF	Quality flags for water samples
33	NITRAT[UMOL/KG]	Nitrate
34	QF	Quality flags for water samples
35	NITRIT[UMOL/KG]	Nitrite
36	QF	Quality flags for water samples
37	PHSPHT[UMOL/KG]	Phosphate
38	QF	Quality flags for water samples
39	TCARB[UMOL/KG]	Total carbon
40	QF	Quality flags for water samples
41	ALKAL[UMOL/KG]	Total alkalinity
42	QF	Quality flags for water samples
43	PH	pH
44	QF	Quality flags for water samples
45	THETA[DEG C]	Potential temperature
46	QF	Quality flag for CTD data
47	SIG0[KG/CUM]	Density
48	QF	Quality flag for CTD data
49	SAMPNO	Sample number
50	QF	Bottle quality flag

Related Information



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POWER GRAB
SAMPLER (SHELL)
POWER GRAB
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MIRAI MR04-06 Bottle Sampling Water Chemical Analysis

Last Modified: 2015-05-29

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Bottle Sampling Water Chemical Analysis: Processed (DMO/PI)

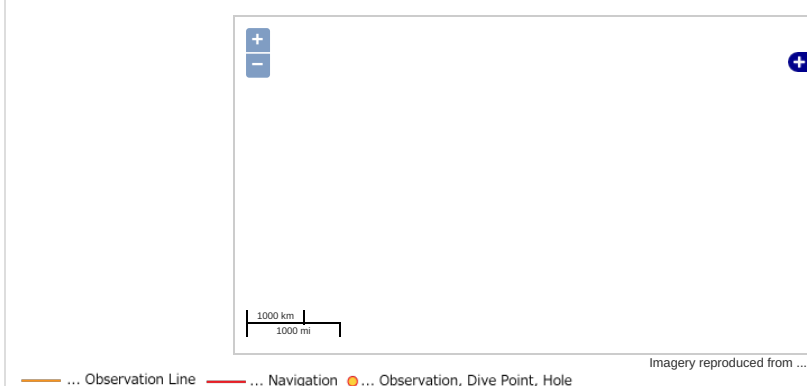
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OCEANS > OCEAN CHEMISTRY > OXYGEN
OCEANS > OCEAN CHEMISTRY > pH
OCEANS > OCEAN CHEMISTRY > PHOSPHATE
OCEANS > OCEAN CHEMISTRY > SILICATE
OCEANS > OCEAN CHEMISTRY > SALINITY
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OCEANS > SALINITY/DENSITY > SALINITY
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OCEANS > OCEAN CHEMISTRY > CARBON
OCEANS > OCEAN OPTICS > FLUORESCENCE
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Observation Map



Data List

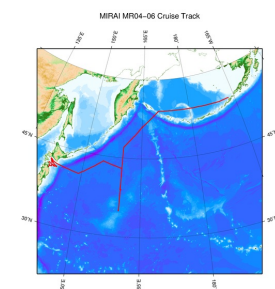
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☐ **File names**

☐ MR040600_ex_bot.csv

☐ MR040600_odv_bot.txt

Related Information



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