

MIRAI MR05-04 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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

Cruise ID: **MR05-04**

Bottle Sampling Water Chemical Analysis: Processed (PI)

Data Policy: **JAMSTEC**

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

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR05-04_all.pdf

For Using Data

Principal Investigator

CTDTMP : Makio Honda (JAMSTEC)
CTDSAL : Makio Honda (JAMSTEC)
SALNTY : Makio Honda (JAMSTEC)
CTDOXY : Makio Honda (JAMSTEC)
OXYGEN : Makio Honda (JAMSTEC)
FLUOR : Makio Honda (JAMSTEC)
CHLORA : Kazuhiko Matsumoto (JAMSTEC)
CHLWELSH : Kazuhiko Matsumoto (JAMSTEC)
XMISS : Makio Honda (JAMSTEC)
SILCAT : Makio Honda (JAMSTEC)
NITRAT : Makio Honda (JAMSTEC)
NITRIT : Makio Honda (JAMSTEC)
PHSPHT : Makio Honda (JAMSTEC)
NH4 : 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)



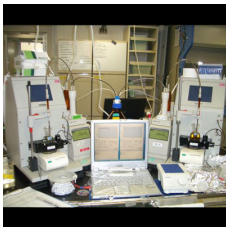
Instrument:

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



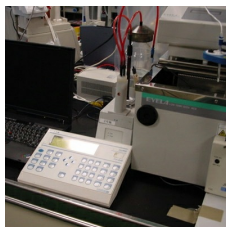
Instrument:

Titration for DO (- MR11-05 Leg2)



Instrument:

Titration for total alkalinity (- MR14-02)



Notice

- The values of TA and 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.)
- Data flags of FLUOR and XMISS are Unknown (flag1) because of lack of the calibration.

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/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: 0.135 umol kg⁻¹
 - (4) Reference Material/Calibration: 0.001667M KIO₃ solution
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 P145(Ocean Scientific International Ltd.)
3. Silicate
 - (1) Instruments: TRAACS800 (Bran+Luebbe)
 - (2) Methods: Molybdenum blue method
 - (3) Precision: C.V. 0.08% (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. 0.12% (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. 0.09% (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. 0.12% (3.6uM)
 - (4) Reference Material/Calibration: KH₂PO₄ solution and RMNS [Aoyama et al., 2007]
7. Ammonia
 - (1) Instruments: TRAACS800 (Bran+Luebbe)
 - (2) Methods: Indophenol method/gas diffusion method (GDM)
 - (3) Precision: C.V. 0.29% (4.0uM)
 - (4) Reference Material/Calibration: (NH₄)₂SO₄ solution

8. Total inorganic carbon

- (1) Instruments: the automated TCO₂ analyzer (Nippon ANS Inc.) equipped with carbon coulometer 5012 (UIC Inc.)
- (2) Methods: coulometry
- (3) Precision: 0.9umol kg⁻¹
- (4) Reference Material/Calibration: Na₂CO₃ 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/Closed-cell/Potentiometry
- (3) Precision: 1.05 umol kg⁻¹
- (4) Reference Material/Calibration: Na₂CO₃ solution and 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: 0.001 pH unit
- (4) Reference Material/Calibration: total hydrogen ion scale

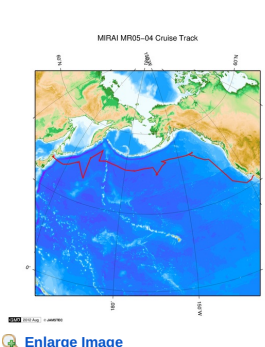
11. Chlorophyll-a (Holm-Hansen method)

- (1) Instruments: Fluorophotometer model 10-AU-005 (Turner design)
- (2) Methods: extract in N,N-dimethylformamide/fluorometric determination (Holm-Hansen acidification method)
- (3) Precision: -
- (4) Reference Material/Calibration: pure chlorophyll a standard (Sigma chemical Co.)

12. Chlorophyll-a (Welschmeyer method)

- (1) Instruments: Fluorophotometer model 10-AU-005 (Turner design)
- (2) Methods: extract in N,N-dimethylformamide/fluorometric determination (Welschmeyer non-acidification method)
- (3) Precision: -
- (4) Reference Material/Calibration: pure chlorophyll a standard (Sigma chemical Co.)

Related Information



MR05-04

Ship Name: MIRAI
Period: 2005-09-13 - 2005-10-27
Chief Scientist: Makio Honda (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.
2013-08-24	An observation data was registerd.
2012-11-25	An observation data was registerd.

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Privacy Policy
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Data Policy
What's New
Update History
Feeds

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Publication List
Amount of Public Info.
Data
Map Search
Data Tree
Detailed Search

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HAKUHO MARU

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SHINKAI 6500
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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

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Cruise ID:

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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	F8.3	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	F9.2	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	FLUOR	UG/L	F9.2	Fluorometer
28	FLUOR_FLAG_W		I1	Quality flag for CTD data
29	CHLORA	MG/CUM	F9.2	Chlorophyll a
30	CHLORA_FLAG_W		I1	Quality flags for water samples
31	CHLWELSH	MG/CUM	F9.2	Chlorophyll a (Welschmeyer method)
32	CHLWELSH_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	NH4	UMOL/KG	F9.2	Ammonium
44	NH4_FLAG_W		I1	Quality flags for water samples
45	TCARBN	UMOL/KG	F9.1	Total carbon
46	TCARBN_FLAG_W		I1	Quality flags for water samples
47	ALKALI	UMOL/KG	F9.1	Total alkalinity
48	ALKALI_FLAG_W		I1	Quality flags for water samples
49	PH	-	F9.3	pH
50	PH_FLAG_W		I1	Quality flags for water samples
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.

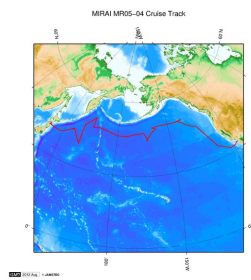
[Ocean Data View \(ODV\)](#)

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	CTDDPT[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
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	FLUOR[UG/L]	Fluorometer
24	QF	Quality flag for CTD data
25	CHLORA[MG/CUM]	Chlorophyll a
26	QF	Quality flags for water samples
27	CHLWELSH[MG/CUM]	Chlorophyll a (Weismeyer method)
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	NH4[UMOL/KG]	Ammonium
40	QF	Quality flags for water samples
41	TCARB[UMOL/KG]	Total carbon
42	QF	Quality flags for water samples
43	ALKAL[UMOL/KG]	Total alkalinity
44	QF	Quality flags for water samples
45	PH	pH
46	QF	Quality flags for water samples
47	THETA[DEG C]	Potential temperature
48	QF	Quality flag for CTD data
49	SIG0[KG/CUM]	Density
50	QF	Quality flag for CTD data
51	SAMPNO	Sample number
52	QF	Bottle quality flag

Related Information



[Enlarge Image](#)

MR05-04

Ship Name: MIRAI
Period: 2005-09-13 - 2005-10-27
Chief Scientist: Makio Honda (JAMSTEC)
Project Name: [Station K2, Station KNOT]

Update History

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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

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6K Sonar DEEP TOW
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POWER GRAB
SAMPLER (CLOW)
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Cruise ID:

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MIRAI MR05-04 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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Cruise ID: [MR05-04](#)

Bottle Sampling Water Chemical Analysis: Processed (PI)

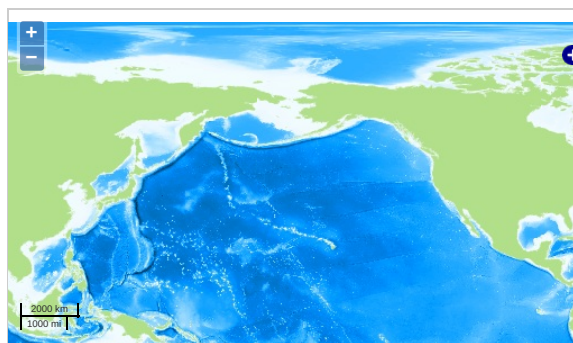
Data Policy: [JAMSTEC](#)

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

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OCEANS > OCEAN CHEMISTRY > ALKALINITY
OCEANS > OCEAN OPTICS > FLUORESCENCE
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Observation Map



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

Imagery reproduced from ...

Data List

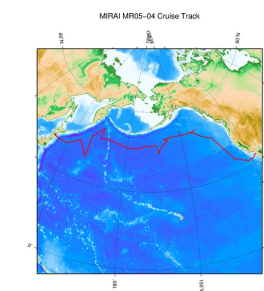
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☐ File names

☐ MR050400_ex_bot.csv

☐ MR050400_odv_bot.txt

Related Information



MR05-04

Ship Name: MIRAI
Period: 2005-09-13 - 2005-10-27
Chief Scientist: Makio Honda (JAMSTEC)
Project Name: [Station K2, Station KNOT]

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[Update History](#)
[Feeds](#)

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