

MIRAI MR06-04 Leg1 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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Cruise ID: [MR06-04 Leg1](#)

Bottle Sampling Water Chemical Analysis: Processed (PI)

Data Policy: [JAMSTEC](#)

Observation Items: Temperature, Salinity, Dissolved oxygen, Fluorescence, Silicate, Nitrate, Nitrite, Phosphate, Ammonia, Total inorganic carbon, Alkalinity, pH, 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 OPTICS > FLUORESCENCE
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR06-04_leg1-2_all.pdf

For Using Data

Principal Investigator

CTDTMP : Naomi Harada (JAMSTEC)
CTDSAL : Naomi Harada (JAMSTEC)
SALNTY : Naomi Harada (JAMSTEC)
CTDOXY : Naomi Harada (JAMSTEC)
OXYGEN : Naomi Harada (JAMSTEC)
FLUOR : Naomi Harada (JAMSTEC)
SILCAT : Naomi Harada (JAMSTEC)
NITRAT : Naomi Harada (JAMSTEC)
NITRIT : Naomi Harada (JAMSTEC)
PHSPHT : Naomi Harada (JAMSTEC)
NH4 : Naomi Harada (JAMSTEC)
TCARBN : Naomi Harada (JAMSTEC)
ALKALI : Naomi Harada (JAMSTEC)
PH : Naomi Harada (JAMSTEC)

Use Constraints

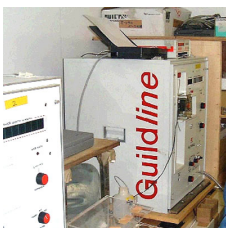
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Data Citation

See [Terms and Conditions](#) about data citation.

Instrument

Instrument:
Salinity measurement system



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



Instrument:
pH meter (MR02-K03 -)



Instrument:
Titrator for total alkalinity (- MR14-02)



Notice

・ Data flags of FLUOR 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(120% of surface saturation)
Accuracy : 0.1ml/l(2% of saturation)
Resolution : 0.01ml/l

(5) Fluorometer

Model : Seapoint Sensors, Inc.
Measurement range : 0-5ug/l
Accuracy : 0.02ug/l

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 : 0.162 umol 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 : 0.00015 PSU
(4) Reference Material/Calibration: IAPSO Standard Sea Water batch P147 (Ocean Scientific International Ltd.)

3. Silicate

- (1) Instruments: TRAACS800 (Bran+Luebbe)
(2) Methods : Molybdenum blue method
(3) Precision : C.V. 0.04% (171 uM)
(4) Reference Material/Calibration: RMNS [Aoyama et al., 2007] and Silicate standard solution, the silicate primary standard, was obtained from Merck, Ltd.
This standard solution, traceable to SRM from NIST was 1000 mg per liter.

4. Nitrate

- (1) Instruments: TRAACS800 (Bran+Luebbe)
(2) Methods : Diazotization method
(3) Precision : C.V. 0.05% (55 uM)
(4) Reference Material/Calibration: KNO₃ solution and RMNS [Aoyama et al., 2007]

5. Nitrite

- (1) Instruments: TRAACS800 (Bran+Luebbe)
(2) Methods : Diazotization method (reduced to nitrite by Cd - Cu tube)
(3) Precision : 0.07% (1.2 uM)
(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. 0.09% (3.6 uM)
(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. 0.27% (4.0 uM)
(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 : 0.9 umol kg⁻¹
(4) Reference Material/Calibration: Na₂CO₃ solution and the CRM provided by Dr. Dickson in Scripps Institute of Oceanography

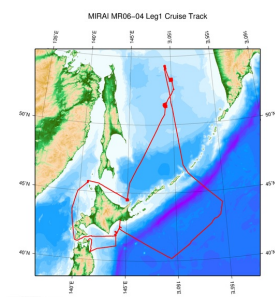
9. Total Alkalinity

- (1) Instruments: auto-burette (Radiometer, ABU901), a pH glass electrode (Radiometer, pHG201), a reference electrode (Radiometer, REF201)
(2) Methods : Modified Gran titration/Open-cell
(3) Precision : 0.8 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(Radiometer pHG201) / reference(Radiometer REF201) electrode with a pH / Ion meter (Radiometer PHM240)
- (2) Methods :potentiometric methods at 25deg-C
- (3) Precision :0.001 pH unit
- (4) Reference Material/Calibration:total hydrogen ion scale

Related Information



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MR06-04 Leg1

Ship Name: MIRAI
Period: 2006-07-31 - 2006-08-19
Chief Scientist: Naomi Harada (JAMSTEC)
Project Name: [Paleoceanography Research]

Update History

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

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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	F8.4	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	F9.1	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	FLUOR	UG/L	F9.4	Fluorometer
26	FLUOR_FLAG_W		I1	Quality flag for CTD data
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	F9.3	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	-	F9.4	pH
42	PH_FLAG_W		I1	Quality flags for water samples
43	SIG0	KG/CUM	F9.4	Density

ODV Format

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

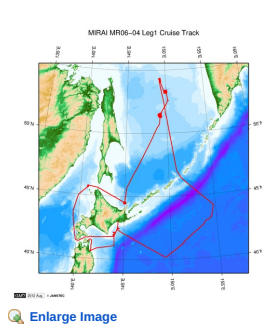
[Ocean Data View \(ODV\)](#)

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
16	QF	Quality flag for CTD data

Column No.	Column Heading	Comments
17	SALINITY[PS-S-79]	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	SILCAT[UMOL/KG]	Silicate
26	QF	Quality flags for water samples
27	NITRAT[UMOL/KG]	Nitrate
28	QF	Quality flags for water samples
29	NITRIT[UMOL/KG]	Nitrite
30	QF	Quality flags for water samples
31	PHSPHT[UMOL/KG]	Phosphate
32	QF	Quality flags for water samples
33	NH4[UMOL/KG]	Ammonium
34	QF	Quality flags for water samples
35	TCARB[UMOL/KG]	Total carbon
36	QF	Quality flags for water samples
37	ALKALI[UMOL/KG]	Total alkalinity
38	QF	Quality flags for water samples
39	PH	pH
40	QF	Quality flags for water samples
41	SIG0[KG/CUM]	Density
42	QF	Quality flag for CTD data
43	SAMPNO	Sample number
44	QF	Bottle quality flag

Related Information



MR06-04 Leg1
Ship Name: MIRAI
Period: 2006-07-31 - 2006-08-19
Chief Scientist: Naomi Harada (JAMSTEC)
Project Name: [Paleoceanography Research]

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Observation Map



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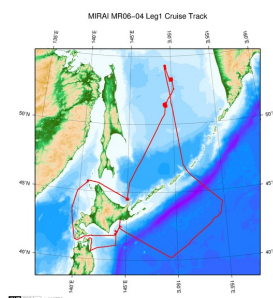
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☐ File names

☐ MR060401_ex_bot.csv

☐ MR060401_odv_bot.txt

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Period: 2006-07-31 - 2006-08-19

Chief Scientist: Naomi Harada (JAMSTEC)

Project Name: [Paleoceanography Research]

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