

MIRAI MR08-05 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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

Cruise ID: [MR08-05](#)

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 TEMPERATURE	> SEA SURFACE TEMPERATURE
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/MR08-05_all.pdf

For Using Data

Principal Investigator

CTDTMP : Masahide Wakita (JAMSTEC)
 SBE35 : Masahide Wakita (JAMSTEC)
 CTDSAL : Masahide Wakita (JAMSTEC)
 SALNTY : Masahide Wakita (JAMSTEC)
 CTDOXY : Masahide Wakita (JAMSTEC)
 OXYGEN : Masahide Wakita (JAMSTEC)
 FLUOR : Masahide Wakita (JAMSTEC)
 CHLORA : Kazuhiko Matsumoto (JAMSTEC)
 CHLWELSH : Kazuhiko Matsumoto (JAMSTEC)
 XMISS : Masahide Wakita (JAMSTEC)
 SILCAT : Masahide Wakita (JAMSTEC)
 NITRAT : Masahide Wakita (JAMSTEC)
 NITRIT : Masahide Wakita (JAMSTEC)
 PHSPHT : Masahide Wakita (JAMSTEC)
 NH4 : Masahide Wakita (JAMSTEC)
 TCARBN : Masahide Wakita (JAMSTEC)
 ALKALI : Masahide Wakita (JAMSTEC)
 PH : Masahide Wakita (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)



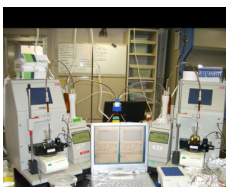
Instrument:

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



Instrument:

Titration for DO (- MR11-05 Leg2)



Instrument:

Fluorometer (TURNER DESIGNS)





Notice

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.

(7) 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 : 0.09 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 : 0.0002 PSU
(4) Reference Material/Calibration : IAPSO Standard Sea Water batch P148(Ocean Scientific International Ltd.)

3. Silicate

- (1) Instruments : TRAACS800 (Bran+Luebbe)
(2) Methods : Molybdenum blue method
(3) Precision : C.V. 0.07% (170uM)
(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 (reduced to nitrite by Cd - Cu tube)
(3) Precision : C.V. 0.07% (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% (1.17uM)
(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. 0.13% (3.63uM)
(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. 0.36% (4.0uM)
(4) Reference Material/Calibration:(NH4)2SO4 solution

8. Total inorganic carbon

- (1) Instruments : 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 : -

9. Total Alkalinity

- (1) Instruments : Measurement of AT was made based on spectrophotometry using a custom-made system(Nippon ANS, Inc.).

The system comprises of a water dispensing unit and a spectrophotometer (Cary 50 Scan, Varian)

(2) Methods : single step acid addition procedure/spectrophotometry

(3) Precision : 0.4 $\mu\text{mol kg}^{-1}$

(4) Reference Material/Calibration : Na_2CO_3 solution

10. pH

(1) Instruments : Measurement of pH was made by a pH measuring system (Nippon ANS, Inc.), which adopts a method of the spectrophotometric determination.

The measuring system comprises of a water dispensing unit with an auto-sampler and a spectrophotometer (Cary 50 Scan, Varian).

(2) Methods : spectrophotometric method at 25deg-C

(3) Precision : 0.0010 pH unit

(4) Reference Material/Calibration : total hydrogen ion scale

11. 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 : pure chlorophyll a (Sigma chemical Co.)

12. Chlorophyll-a(Welschmeyer method)

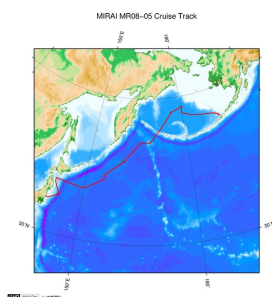
(1) Instruments : Fluorophotometer model 10-AU-005 (Turner design)

(2) Methods : extract in N,N-dimethylformamide /fluorometric determination (Welschmeyer non-acidification method)

(3) Precision : -

(4) Reference Material/Calibration : pure chlorophyll a (Sigma chemical Co.)

Related Information



[Enlarge Image](#)

MR08-05

Ship Name: MIRAI

Period: 2008-10-11 - 2008-11-07

Chief Scientist: Makio Honda (JAMSTEC)

Project Name: [Station K2, Station KNOT]

Proposal ▶ The study of ecosystem and materials' cycle in the North Pacific

Title:

Update History

2017-07-28	An observation data was registerd.
2015-05-29	An observation data was registerd.
2013-08-29	An observation data was registerd.
2012-10-30	An observation data was registerd.
2012-10-26	An observation data was registerd.

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[Publication List](#)

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Data

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[Data Tree](#)

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[HYPER-DOLPHIN](#)

[URASHIMA](#)

[YOKOSUKA DEEP TOW](#)

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

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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	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	CHLWELSH	MG/CUM	F9.2	Chlorophyll a (Welschmeyer method)
34	CHLWELSH_W		I1	Quality flags for water samples
35	XMISS	%TRANS	F9.1	Transmissometer
36	XMISS_FLAG_W		I1	Quality flag for CTD data
37	SILCAT	UMOL/KG	F9.2	Silicate
38	SILCAT_FLAG_W		I1	Quality flags for water samples
39	NITRAT	UMOL/KG	F9.2	Nitrate
40	NITRAT_FLAG_W		I1	Quality flags for water samples
41	NITRIT	UMOL/KG	F9.2	Nitrite
42	NITRIT_FLAG_W		I1	Quality flags for water samples
43	PHSPHT	UMOL/KG	F9.3	Phosphate
44	PHSPHT_FLAG_W		I1	Quality flags for water samples
45	NH4	UMOL/KG	F9.2	Ammonium
46	NH4_FLAG_W		I1	Quality flags for water samples
47	TCARBN	UMOL/KG	F9.1	Total carbon
48	TCARBN_FLAG_W		I1	Quality flags for water samples
49	ALKALI	UMOL/KG	F9.1	Total alkalinity
50	ALKALI_FLAG_W		I1	Quality flags for water samples
51	PH	-	F9.3	pH
52	PH_FLAG_W		I1	Quality flags for water samples
53	THETA	DEG C	F9.4	Potential temperature
54	SIG0	KG/CUM	F9.4	Density

ODV Format

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

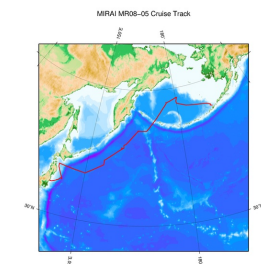
[Ocean Data View \(ODV\)](#)

Format Information

Column No.	Column Heading	Comments
1	Cruise	Cruise Label
2	Station	Station number_Cast number
3	Type	Station type
4	Sample date	Cast date(UTC)

Column No.	Column Heading	Cast Data (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	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	CHLWELSH[MG/CUM]	Chlorophyll a (Welschmeyer method)
30	QF	Quality flags for water samples
31	XMISS[%TRANS]	Transmissometer
32	QF	Quality flag for CTD data
33	SILCAT[UMOL/KG]	Silicate
34	QF	Quality flags for water samples
35	NITRAT[UMOL/KG]	Nitrate
36	QF	Quality flags for water samples
37	NITRIT[UMOL/KG]	Nitrite
38	QF	Quality flags for water samples
39	PHSPHT[UMOL/KG]	Phosphate
40	QF	Quality flags for water samples
41	NH4[UMOL/KG]	Ammonium
42	QF	Quality flags for water samples
43	TCARBN[UMOL/KG]	Total carbon
44	QF	Quality flags for water samples
45	ALKAL[UMOL/KG]	Total alkalinity
46	QF	Quality flags for water samples
47	PH	pH
48	QF	Quality flags for water samples
49	THETA[DEG C]	Potential temperature
50	QF	Quality flag for CTD data
51	SIG0[KG/CUM]	Density
52	QF	Quality flag for CTD data
53	SAMPNO	Sample number
54	QF	Bottle quality flag

Related Information



[Enlarge Image](#)

MR08-05

Ship Name: MIRAI
Period: 2008-10-11 - 2008-11-07
Chief Scientist: Makio Honda (JAMSTEC)
Project Name: [Station K2, Station KNOT]
Proposal ▶ The study of ecosystem and materials' cycle in the North Pacific
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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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MIRAI MR08-05 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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Bottle Sampling Water Chemical Analysis: Processed (PI)

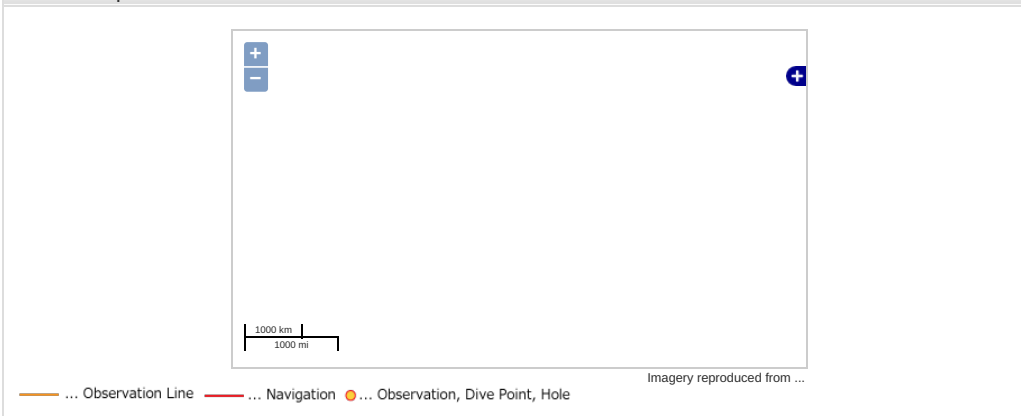
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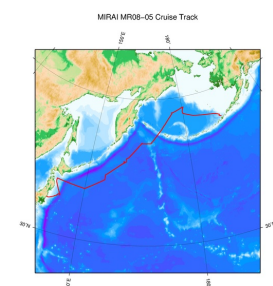
Observation Map



Data List

☐ **File names**
☐ MR080500_ex_bot.csv
☐ MR080500_odv_bot.txt

Related Information



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MR08-05

Ship Name: MIRAI
Period: 2008-10-11 - 2008-11-07
Chief Scientist: Makio Honda (JAMSTEC)
Project Name: [Station K2, Station KNOT]
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