

MIRAI MR08-06 Leg2 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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Cruise ID: [MR08-06 Leg2](#)

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

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR08-06_leg2-3_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)
 DWNPRS : Naomi Harada (JAMSTEC)
 DWNOXY : Naomi Harada (JAMSTEC)
 FLUOR : Naomi Harada (JAMSTEC)
 CHLWELSH : Naomi Harada (JAMSTEC)
 XMISS : 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

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)



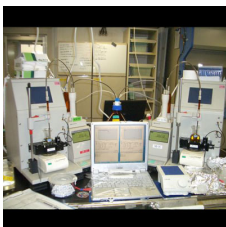
Instrument:

pH meter (MR02-K03 -)



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.

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: 0.17 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: 0.0001 PSU
- (4) Reference Material/Calibration: IAPSO Standard Sea Water batch P150 (Ocean Scientific International Ltd.)

3. Silicate

- (1) Instruments: TRAACS800 (Bran+Luebbe)
- (2) Methods: Molybdenum blue method
- (3) Precision: C.V. 0.08% (70uM)
- (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. 0.12% (46uM)
- (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% (1.0uM)
- (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. 0.10% (3.0uM)
- (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. 0.21% (4.0uM)
- (4) Reference Material/Calibration: (NH4)2SO4 solution

8. Total inorganic carbon

- (1) Instruments: automated TCO2 analyzer (systems C; Nippon ANS, Inc.) equipped with coulometer (systems N2; Nippon ANS, Inc.)
- (2) Methods: coulometry
- (3) Precision: 1.5umol 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: 0.54 umol kg-1
- (4) Reference Material/Calibration: -

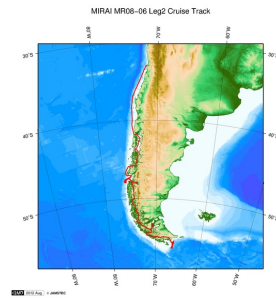
10. pH

- (1) Instruments: a glass / reference 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

11. 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](#)

MR08-06 Leg2

Ship Name: MIRAI
Period: 2009-03-14 - 2009-03-30
Chief Scientist: Naomi Harada (JAMSTEC)
Project Name: [Paleoceanography Research, South Pacific Ocean Research Activity 2009]

Update History

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

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YOKOSUKA DEEP TOW

6K Camera DEEP TOW

6K Sonar DEEP TOW

KM-ROV

POWER GRAB SAMPLER (SHELL)

POWER GRAB SAMPLER (CLOW)

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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	DWNPRS	DBAR	F9.1	Down-cast pressure at the same density of the up-cast CTD data
28	DWNPRS_FLAG_W		I1	Quality flag for CTD data
29	DWNOXY	UMOL/KG	F9.2	Down-cast CTD oxygen at pressure of DWNPRS
30	DWNOXY_FLAG_W		I1	Quality flag for CTD data
31	FLUOR	UG/L	F9.2	Fluorometer
32	FLUOR_FLAG_W		I1	Quality flag for CTD data
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.

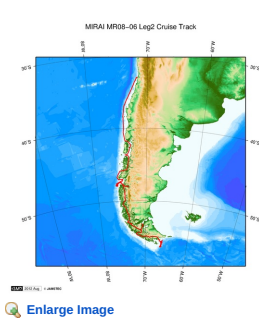
[Ocean Data View \(ODV\)](#)

Format Information

Column No.	Column Heading	Comments
1	Cruise	Cruise Label
2	Station	Station number_Cast number
3	Type	Station type
4	Cast 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	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	DWNPRS[DBAR]	Down-cast pressure at the same density of the up-cast CTD data
24	QF	Quality flag for CTD data
25	DWNOXY[UMOL/KG]	Down-cast CTD oxygen at pressure of DWNPRS
26	QF	Quality flag for CTD data
27	FLUOR[UG/L]	Fluorometer
28	QF	Quality flag for CTD data
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	ALKALI[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



MR08-06 Leg2
Ship Name: MIRAI
Period: 2009-03-14 - 2009-03-30
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Project Name: [Paleoceanography Research,South Pacific Ocean Research Activity 2009]

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KM-ROV
POWER GRAB
SAMPLER (SHELL)
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Cruise ID: [MR08-06 Leg2](#)

Bottle Sampling Water Chemical Analysis: Processed (PI)

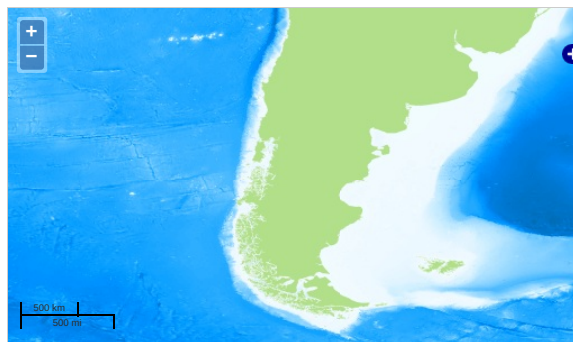
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OCEANS > OCEAN OPTICS > FLUORESCENCE
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Observation Map



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

Imagery reproduced from ...

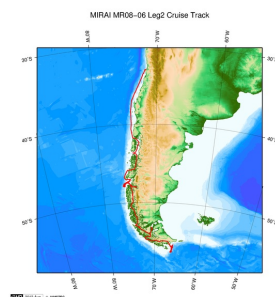
Data List

☐ File names

☐ MR080602_ex_bot.csv

☐ MR080602_odv_bot.txt

Related Information



[Enlarge Image](#)

MR08-06 Leg2

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Period: 2009-03-14 - 2009-03-30

Chief Scientist: Naomi Harada (JAMSTEC)

Project Name: [Paleoceanography Research, South Pacific Ocean Research Activity 2009]

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