

MIRAI MR09-04 Bottle Sampling Water Chemical Analysis

Last Modified: 2018-01-25

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Cruise ID: **MR09-04**

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

Data Policy: **JAMSTEC**

Observation Items: Temperature, Salinity, Dissolved oxygen, Silicate, Nitrate, Nitrite, Phosphate, Potential temperature, Density

Science Keywords:

OCEANS > OCEAN CHEMISTRY > NITRITE
OCEANS > OCEAN CHEMISTRY > NITRATE
OCEANS > OCEAN CHEMISTRY > NUTRIENTS
OCEANS > OCEAN CHEMISTRY > OXYGEN
OCEANS > OCEAN CHEMISTRY > PHOSPHATE
OCEANS > OCEAN CHEMISTRY > SILICATE
OCEANS > OCEAN CHEMISTRY > SALINITY
OCEANS > OCEAN TEMPERATURE > WATER TEMPERATURE
OCEANS > SALINITY/DENSITY > SALINITY
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR09-04_all.pdf

For Using Data

Principal Investigator

CTDTMP : Yuji Kashino (JAMSTEC)
CTDSAL : Yuji Kashino (JAMSTEC)
SALNTY : Yuji Kashino (JAMSTEC)
CTDOXY : Yuji Kashino (JAMSTEC)
OXYGEN : Yuji Kashino (JAMSTEC)
SILCAT : Yasuroh KURUSU (Ibaraki University)
NITRAT : Yasuroh KURUSU (Ibaraki University)
NITRIT : Yasuroh KURUSU (Ibaraki University)
PHSPHT : Yasuroh KURUSU (Ibaraki University)

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(5ch) (MR09-02 -)



Instrument:

Titration for DO (- MR11-05 Leg2)



Notice

・ 13 Sep. 2013 The nutrients concentration data are changed.

The concentration of nutrients was calculated to correct the overestimate within 0.7%. It was caused for several calculation steps. First, the temperature used for density calculation was the laboratory ambient temperature (20 - 27 degrees C) instead of 20 degrees C. Then, the density was used for converting from mol/cm3 to mol/kg.

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

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 (DOT-01) manufactured by Kimoto Electronic Co. Ltd
- (2) Methods : Winkler method/photometric methods
- (3) Precision : 0.11 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 : The average and the standard deviation of absolute difference were 0.0003 and 0.0002 in salinity
- (4) Reference Material/Calibration : IAPSO Standard Sea Water batch P150

3. Silicate

- (1) Instruments : SEAL QuAAtro system
- (2) Methods : Molybdenum blue method
- (3) Precision : C.V. 0.09% (170.8uM)
- (4) Reference Material/Calibration : silicon standard solution SiO₂ in NaOH 0.5 mol/l CertiPUR® (Merck) and RMNS (KANSO Co., Ltd., lot AX)

4. Nitrate

- (1) Instruments : SEAL QuAAtro system
- (2) Methods : Diazotization method (reduced to nitrite by Cd - Cu tube)
- (3) Precision : C.V. 0.10% (55.1uM)
- (4) Reference Material/Calibration : potassium nitrate 99.995 Suprapur® (Merck) and RMNS (KANSO Co., Ltd., lot AX)

5. Nitrite

- (1) Instruments : SEAL QuAAtro system
- (2) Methods : Diazotization method
- (3) Precision : C.V. 0.14% (1.2uM)
- (4) Reference Material/Calibration : sodium nitrite (Wako chemical Co.) and RMNS (KANSO Co., Ltd., lot AX)

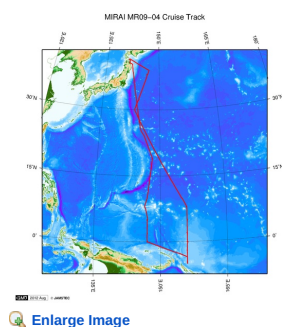
6. Phosphate

- (1) Instruments : SEAL QuAAtro system
- (2) Methods : Molybdenum blue method
- (3) Precision : C.V. 0.15% (3.6uM)
- (4) Reference Material/Calibration : potassium dihydrogen phosphate anhydrous 99.995 Suprapur® (Merck) and RMNS (KANSO Co., Ltd., lot AX)

About this data

There are some description error for nutrient data of this cruise.
Please refer to the errata of the cruise report.

Related Information



MR09-04

Ship Name: MIRAI
Period: 2009-11-03 - 2009-12-12
Chief Scientist: Yuji Kashino (JAMSTEC)
Project Name: [Tropical Ocean Climate Study (TOCS), Station KEO]
Proposal ▶ Tropical Ocean Climate Study
Title:

Update History

2018-01-25	An observation data was registered.
2017-07-28	An observation data was registered.
2015-05-29	An observation data was registered.
2013-09-12	An observation data was registered.
2013-08-29	An observation data was registered.
2012-10-27	An observation data was registered.
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SHINSEI MARU
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)
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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	FORTTRAN 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	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	THETA	DEG C	F9.4		Potential temperature
36	SIG0	KG/CUM	F9.4		Density

ODV Format

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

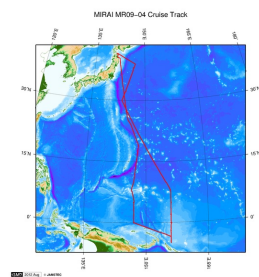
[Ocean Data View \(ODV\)](#)
[Ocean Data View \(ODV\) User's Guide](#)

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
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

Column No.	Column Heading	Comments
24	QF	Quality flags for water samples
25	NITRAT[UMOL/KG]	Nitrate
26	QF	Quality flags for water samples
27	NITRIT[UMOL/KG]	Nitrite
28	QF	Quality flags for water samples
29	PHSPHT[UMOL/KG]	Phosphate
30	QF	Quality flags for water samples
31	THETA[DEG C]	Potential temperature
32	QF	Quality flag for CTD data
33	SIG0[KG/CUM]	Density
34	QF	Quality flag for CTD data
35	SAMPNO	Sample number
36	QF	Bottle quality flag

Related Information



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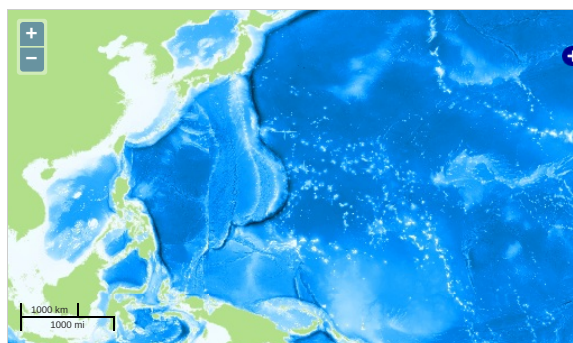
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Science Keywords:

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OCEANS > OCEAN TEMPERATURE > WATER TEMPERATURE
OCEANS > SALINITY/DENSITY > SALINITY
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Observation Map



Imagery reproduced from ...

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

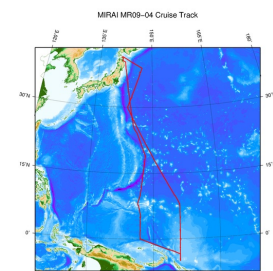
Data List

☐ File names

☐ MR090400_ex_bot.csv

☐ MR090400_odv_bot.txt

Related Information



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POWER GRAB SAMPLER
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