

MIRAI MR99-K02 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

ReadMe Observation Data Data Format Quality Information

Cruise ID: **MR99-K02**

Bottle Sampling Water Chemical Analysis: Processed (DMO)-QCed

Data Policy: **JAMSTEC**

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

Science Keywords:

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 TEMPERATURE > POTENTIAL TEMPERATURE

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR99-K02_all.pdf

For Using Data

Principal Investigator

CTDTMP : Chizuru Saitoh (JAMSTEC)
CTDSAL : Chizuru Saitoh (JAMSTEC)
SALNTY : Chizuru Saitoh (JAMSTEC)
CTDOXY : Chizuru Saitoh (JAMSTEC)
OXYGEN : Chizuru Saitoh (JAMSTEC)
CHLORA : Kosei Sasaoka (Hokkaido University)
SILCAT : Chizuru Saitoh (JAMSTEC)
NITRAT : Chizuru Saitoh (JAMSTEC)
NITRIT : Chizuru Saitoh (JAMSTEC)
PHSPHT : Chizuru Saitoh (JAMSTEC)
TCARBN : Yuichiro Kumamoto (JAMSTEC)
ALKALI : Akihiko Murata (JAMSTEC)
PH : Andrey Andreev (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:

pH meter (- MR03-K04 Leg6)



Instrument:

Titration for total alkalinity (- MR14-02)



Instrument:

Fluorometer (TURNER DESIGNS)



Notice

- The values of nutrients (silicate, phosphate, and nitrate) 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 KNOT

data only.)

Information on CTD data

(1) Temperature sensor

Model: SBE3, Sea-Bird Electronics, Inc.
Measurement range: -5.0 to +35 deg C
Accuracy: 0.001 deg C
Resolution: 0.0002 deg C

(2) Salinity sensor

Model: SBE4, Sea-Bird Electronics, Inc.
Measurement range: 0.0 to 7 S/m
Accuracy: 0.0003 S/m
Resolution: 0.00004 S/m

(3) Pressure sensor

Model: SBE9plus, Sea-Bird Electronics, Inc.
Measurement range: up to 10500 m
Accuracy: 0.015% F.S.
Resolution: 0.001% F.S.

(4) DO sensor

Model : SBE13, Sea-Bird Electronics, Inc.
Measurement range : 0-15ml/l(120% of surface saturation)
Accuracy : 0.1ml/l(2% of saturation)
Resolution : 0.01ml/l

Information on Chemical and Biological data

1. Dissolved Oxygen

(1) Instruments: Titrator: Model 716 DMS Titrino (Metrohm)
Detector: Pt electrode

(2) Methods: Winkler method/potentiometric method

(3) Precision: 0.44umol/kg

(4) Reference Material/Calibration: 0.0100N KIO₃ solution

2. Salinity

(1) Instruments: Autosol salinometer model 8400B (Guildline Instruments Ltd.)

(2) Methods: -

(3) Precision: -

(4) Reference Material/Calibration: IAPSO Standard Sea Water batch P134 (Ocean Scientific International Ltd.)

3. Silicate

(1) Instruments: TRAACS800 (Bran+Luebbe)

(2) Methods: Molybdenum blue method

(3) Precision: From 0.03 to 2.6% except nitrite (CV%)

(4) Reference Material/Calibration: -

4. Nitrate

(1) Instruments: TRAACS800 (Bran+Luebbe)

(2) Methods: Diazotization method (reduced to nitrite by Cd - Cu tube)

(3) Precision: From 0.03 to 2.6% except nitrite (CV%)

(4) Reference Material/Calibration: -

5. Nitrite

(1) Instruments: TRAACS800 (Bran+Luebbe)

(2) Methods: Diazotization method

(3) Precision: -

(4) Reference Material/Calibration: -

6. Phosphate

(1) Instruments: TRAACS800 (Bran+Luebbe)

(2) Methods: Molybdenum blue method

(3) Precision: From 0.03 to 2.6% except nitrite (CV%)

(4) Reference Material/Calibration: -

7. Total inorganic carbon

(1) Instruments: automated TCO₂ sampling system (Nippon ANS Inc.) equipped with carbon coulometer 5012 (UIC Inc.)

(2) Methods: coulometry

(3) Precision: less than 0.1%

(4) Reference Material/Calibration: Na₂CO₃ solution and the CRM provided by Dr. Dickson in Scripps Institute of Oceanography

8. Total Alkalinity

(1) Instruments: auto-burette (Radiometer, ABU901), a pH glass electrode (Radiometer), a reference electrode (Radiometer)

(2) Methods: Modified Gran titration/Open-cell/potentiometry

(3) Precision: 0.15% on average

(4) Reference Material/Calibration: the CRM provided by Dr. Dickson in Scripps Institute of Oceanography

9. pH

(1) Instruments: a glass/reference electrode with a pH/Ion meter (Radiometer PHM95)

(2) Methods: potentiometric methods at 25deg-C

(3) Precision: -

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

10. Chlorophyll-a

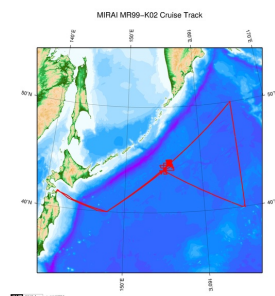
(1) Instruments: Fluorophotometer model 10-AU (Turner design)

(2) Methods: extract in N,N-dimethylformamide/fluorometric determination (Parsons et al., 1984)

(3) Precision: -

(4) Reference Material/Calibration: -

Related Information



[Enlarge Image](#)

MR99-K02

Ship Name: MIRAI
Period: 1999-05-07 - 1999-05-30
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.
2013-08-09	An observation data was registerd.
2013-01-25	An observation data was registerd.

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MIRAI
KAIREI
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HAKUHO MARU

Information of the Submersibles

KAIKO
SHINKAI 2000
SHINKAI 6500
DEEP TOW
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

Go to a Cruise Information

Cruise ID:

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Dive ID:

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Last Modified: 2017-07-28

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Cruise ID: [MR99-K02](#)

Bottle Sampling Water Chemical Analysis: Processed (DMO)-QCed

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	CTDPRS	DBAR	F9.1	Pressure
14	CTDPRS_FLAG_W		I1	Quality flag for CTD data
15	CTDTMP	ITS-90	F9.3	Temperature
16	CTDTMP_FLAG_W		I1	Quality flag for CTD data
17	CTDSAL	PSS-78	F9.3	CTD Salinity sensor
18	CTDSAL_FLAG_W		I1	Quality flag for CTD data
19	SALNTY	PSS-78	F9.3	Salinity
20	SALNTY_FLAG_W		I1	Quality flags for water samples
21	CTDOXY	ML/L	F9.3	CTD Oxygen sensor
22	CTDOXY_FLAG_W		I1	Quality flag for CTD data
23	OXYGEN	UMOL/KG	F9.1	Oxygen
24	OXYGEN_FLAG_W		I1	Quality flags for water samples
25	CHLORA	MG/CUM	F9.3	Chlorophyll a
26	CHLORA_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	F9.2	Phosphate
34	PHSPHT_FLAG_W		I1	Quality flags for water samples
35	TCARBN	UMOL/KG	F9.1	Total carbon
36	TCARBN_FLAG_W		I1	Quality flags for water samples
37	ALKALI	UMOL/KG	F9.1	Total alkalinity
38	ALKALI_FLAG_W		I1	Quality flags for water samples
39	PH	-	F9.3	pH
40	PH_FLAG_W		I1	Quality flags for water samples
41	THETA	DEG C	F9.3	Potential temperature
42	SIG0	KG/CUM	F9.3	Density

ODV Format

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

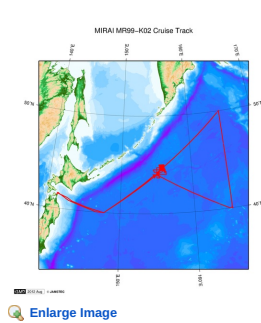
[Ocean Data View \(ODV\)](#)

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(Calculate from CTDPRS and LATITUDE)
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

Column No.	Column Heading	Comments
18	QF	Quality flags for water samples
19	CTDOXY[ML/L]	CTD Oxygen sensor
20	QF	Quality flag for CTD data
21	OXYGEN[UMOL/KG]	Oxygen
22	QF	Quality flags for water samples
23	CHLORA[MG/CUM]	Chlorophyll a
24	QF	Quality flags for water samples
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	TCARBN[UMOL/KG]	Total carbon
34	QF	Quality flags for water samples
35	ALKAL[UMOL/KG]	Total alkalinity
36	QF	Quality flags for water samples
37	PH	pH
38	QF	Quality flags for water samples
39	THETA[DEG C]	Potential temperature
40	QF	Quality flag for CTD data
41	SIG0[KG/CUM]	Density
42	QF	Quality flag for CTD data
43	SAMPNO	Sample number
44	QF	Bottle quality flag

Related Information



MR99-K02
Ship Name: MIRAI
Period: 1999-05-07 - 1999-05-30
Chief Scientist: Makio Honda (JAMSTEC)
Project Name: [Station K2, Station KNOT]

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POWER GRAB
SAMPLER (CLOW)
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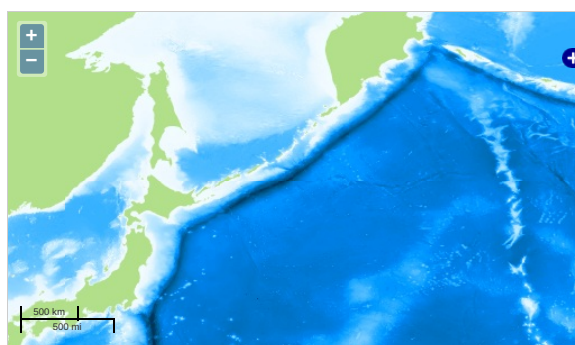
Data Policy: [JAMSTEC](#)

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

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OCEANS > OCEAN CHEMISTRY > CARBON
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Observation Map



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

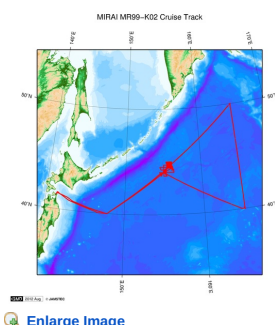
Data List

☐ File names

☐ MR99K0200_ex_bot.csv

☐ MR99K0200_odv_bot.txt

Related Information



MR99-K02

Ship Name: MIRAI
Period: 1999-05-07 - 1999-05-30
Chief Scientist: Makio Honda (JAMSTEC)
Project Name: [Station K2, Station KNOT]

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JAMSTEC
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