

MIRAI MR98-K02 Bottle Sampling Water Chemical Analysis

Last Modified: 2018-03-02

ReadMe Observation Data Data Format Quality Information

Cruise ID: **MR98-K02**

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

Data Policy: **JAMSTEC**

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

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR98-K02_all.pdf

For Using Data

Principal Investigator

CTDTMP : Takeshi Kawano (JAMSTEC)
CTDSAL : Takeshi Kawano (JAMSTEC)
SALNTY : Takeshi Kawano (JAMSTEC)
CTDOXY : Takeshi Kawano (JAMSTEC)
OXYGEN : Takeshi Kawano (JAMSTEC)
FLUOR : Takeshi Kawano (JAMSTEC)
CHLORA : Kazuhiko Matsumoto (JAMSTEC)
CHLWELSH : Kazuhiko Matsumoto (JAMSTEC)
PPHYTN : Kazuhiko Matsumoto (JAMSTEC)
XMISS : Takeshi Kawano (JAMSTEC)
SILCAT : Hirofumi Okano (JAMSTEC)
NITRAT : Hirofumi Okano (JAMSTEC)
NITRIT : Hirofumi Okano (JAMSTEC)
PHSPHT : Hirofumi Okano (JAMSTEC)
NH4 : Hirofumi Okano (JAMSTEC)
TCARBN : Masao Ishii (Meteorological Research Institute)
PH : Masao Ishii (Meteorological Research Institute)

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)



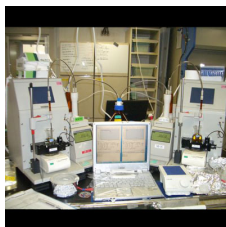
Instrument:
Total dissolved inorganic carbon measurement system (- MR11-E02)



Instrument:
pH meter (- MR03-K04 Leg6)



Instrument:
Titrator for DO (- MR11-05 Leg2)



Instrument:
Fluorometer (TURNER DESIGNS)



Notice

- Temperature data meserued by a mercury thermometer is listed in CTDTMP column at SAMPNO 0 which means sampled by bucket. Please notice that this data is different from other data in format (f9.1) and instrument.
- In many other cruises unit of CTDOXY and OXYGEN is umol/kg, however in this cruise they are measured in ml/l.
- Data flags of FLUOR and XMISS are Unknown (flag1) because of lack of the calibration.
- All of NH4 data flag ara Questionable(flag3). Because measurement precision was not good.
- In many other cruises unit of SILCAT, NITRAT, NITRIT, PHSPHT and NH4 is umol/kg, however in this cruise they are measured in umol/l.

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 : SBE13, Sea-Bird Electronics,Inc.
Measurement range : 0-15ml/l
Accuracy : 0.1ml/l
Resolution : 0.01ml/l

(5) Fluorometer

Model : Seapoint Sensors,Inc./ SEA TECH,Inc.

(6) Transmissometer

Model : WET Labs,Inc./SEA TECH,Inc.

Information on Chemical and Biological data

1. Dissolved Oxygen

- (1) Instruments:Titraror:Model 716 DMS Titrimo(Metrohm)
Detector:Pt electrode
- (2) Methods :Winkler method/potentiometric method
- (3) Precision : 0.004mL/L
- (4) Reference Material/Calibration:0.0100N KIO₃ solution/Comparison of each standards to CSK standard solution

2. Salinity

- (1) Instruments:Autosal salinometer model 8400B(Guildline Instruments Ltd.)
- (2) Methods :-
- (3) accuracy :0.0022PSU
- (4) Reference Material/Calibration:IAPSO Standard Sea Water batch P131(Ocean Scientific International Ltd.)

3. Silicate

- (1) Instruments:TRAACS800 (Bran+Luebbe)
- (2) Methods :Molybdenum blue method
- (3) Precision :see "Cruise Report"
- (4) Reference Material/Calibration:SiO₂ standard solution (J.T.Baker Chemical Co. LTD)/Comparison between working standard and CSK standard

4. Nitrate

- (1) Instruments:TRAACS800 (Bran+Luebbe)
- (2) Methods :Diazotization method
- (3) Precision :see "Cruise Report"
- (4) Reference Material/Calibration:KNO₃ solution/Comparison between working standard and CSK standard

5. Nitrite

- (1) Instruments:TRAACS800 (Bran+Luebbe)
- (2) Methods :Diazotization method (reduced to nitrite by Cd - Cu tube)
- (3) Precision :see "Cruise Report"
- (4) Reference Material/Calibration:NaNO₂ solution/Comparison between working standard and CSK standard

6. Phosphate

- (1) Instruments:TRAACS800 (Bran+Luebbe)
- (2) Methods :Molybdenum blue method
- (3) Precision :see "Cruise Report"
- (4) Reference Material/Calibration:KH₂PO₄ solution/Comparison between working standard and CSK standard

7. Ammonia

- (1) Instruments:TRAACS800 (Bran+Luebbe)
- (2) Methods :Indophenol method
- (3) Precision :see "Cruise Report"
- (4) Reference Material/Calibration:(NH₄)₂SO₄ solution

8. total inorganic carbon

- (1) Instruments:MRI-automated TCO₂ extraction unit and a coulometer (UIC 5012)
- (2) Methods :coulometry
- (3) Precision :0.8 umol/kg
- (4) Reference Material/Calibration:Reference Seawaters which is traceable to the CRM provided by Dr. Dickson in Scripps Institute of Oceanography

9. pH

- (1) Instruments:UV-VIS spectrophotometer V-550 (JASCO)
- (2) Methods :spectrophotometry at 20 deg-C(using a dye(m-cresol purple))
- (3) Precision :Nine replicate measurements of the surface seawater gave an average of 8.076±0.003 pH unit (1sigma standard deviation)
- (4) Reference Material/Calibration:total hydrogen ion scale

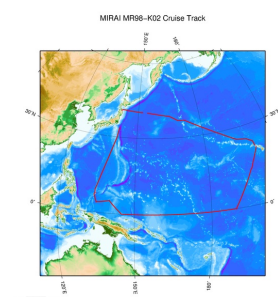
10. Chlorophyll-a

- (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:-

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:-

Related Information



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MR98-K02

Ship Name: MIRAI
Period: 1998-12-22 - 1999-01-31
Chief Scientist: Takeshi Kawano (JAMSTEC)

Update History

2018-03-02	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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[POWER GRAB SAMPLER \(CLOW\)](#)
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MIRAI MR98-K02 Bottle Sampling Water Chemical Analysis

Last Modified: 2018-03-02

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 Cruise ID: **MR98-K02**

Bottle Sampling Water Chemical Analysis: Processed (DMO/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	F8.4	LATITUDE
11	LONGITUDE	DEG	F9.4	LONGITUDE
12	DEPTH	M	I5	Reported depth to bottom.
13	CTDDPT	M	I9	Depth
14	CTDDPT_FLAG_W		I1	Quality flag for CTD data
15	CTDPRS	DBAR	I9	Pressure
16	CTDPRS_FLAG_W		I1	Quality flag for CTD data
17	CTDTMP	ITS-90	F9.3	Temperature
18	CTDTMP_FLAG_W		I1	Quality flag for CTD data
19	CTDSAL	PSS-78	F9.3	CTD Salinity sensor
20	CTDSAL_FLAG_W		I1	Quality flag for CTD data
21	SALNTY	PSS-78	F9.3	Salinity
22	SALNTY_FLAG_W		I1	Quality flags for water samples
23	CTDOXY	ML/L	F9.2	CTD Oxygen sensor
24	CTDOXY_FLAG_W		I1	Quality flag for CTD data
25	OXYGEN	ML/L	F9.2	Oxygen
26	OXYGEN_FLAG_W		I1	Quality flags for water samples
27	FLUOR	UG/L	F9.1	Fluorometer
28	FLUOR_FLAG_W		I1	Quality flag for CTD data
29	CHLORA	MG/CUM	F9.2	Chlorophyll a
30	CHLORA_FLAG_W		I1	Quality flags for water samples
31	CHLWELSH	MG/CUM	F9.2	Chlorophyll a (Welschmeyer method)
32	CHLWELSH_W		I1	Quality flags for water samples
33	PPHYTN	MG/CUM	F9.2	Phaeophytin
34	PPHYTN_FLAG_W		I1	Quality flags for water samples
35	XMISS	%TRANS	I9	Transmissometer
36	XMISS_FLAG_W		I1	Quality flag for CTD data
37	SILCAT	UMOL/L	F9.2	Silicate
38	SILCAT_FLAG_W		I1	Quality flags for water samples
39	NITRAT	UMOL/L	F9.2	Nitrate
40	NITRAT_FLAG_W		I1	Quality flags for water samples
41	NITRIT	UMOL/L	F9.2	Nitrite
42	NITRIT_FLAG_W		I1	Quality flags for water samples
43	PHSPHT	UMOL/L	F9.2	Phosphate
44	PHSPHT_FLAG_W		I1	Quality flags for water samples
45	NH4	UMOL/L	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	PH	-	F9.4	pH
50	PH_FLAG_W		I1	Quality flags for water samples
51	THETA	DEG C	F9.2	Potential temperature
52	SIG0	KG/CUM	F9.2	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)

Column No.	Column Heading [north]	Comments
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
18	QF	Quality flags for water samples
19	CTDOXY[ML/L]	CTD Oxygen sensor
20	QF	Quality flag for CTD data
21	OXYGEN[ML/L]	Oxygen
22	QF	Quality flags for water samples
23	FLUOR[UG/L]	Fluorometer
24	QF	Quality flag for CTD data
25	CHLORA[MG/CUM]	Chlorophyll a
26	QF	Quality flags for water samples
27	CHLWELSH[MG/CUM]	Chlorophyll a (Welschmeyer method)
28	QF	Quality flags for water samples
29	PPHYTN[MG/CUM]	Phaeophytin
30	QF	Quality flags for water samples
31	XMISS[%TRANS]	Transmissometer
32	QF	Quality flag for CTD data
33	SILCAT[UMOL/L]	Silicate
34	QF	Quality flags for water samples
35	NITRAT[UMOL/L]	Nitrate
36	QF	Quality flags for water samples
37	NITRIT[UMOL/L]	Nitrite
38	QF	Quality flags for water samples
39	PHSPHT[UMOL/L]	Phosphate
40	QF	Quality flags for water samples
41	NH4[UMOL/L]	Ammonium
42	QF	Quality flags for water samples
43	TCARBN[UMOL/KG]	Total carbon
44	QF	Quality flags for water samples
45	PH	pH
46	QF	Quality flags for water samples
47	THETA[DEG C]	Potential temperature
48	QF	Quality flag for CTD data
49	SIG0[KG/CUM]	Density
50	QF	Quality flag for CTD data
51	SAMPNO	Sample number
52	QF	Bottle quality flag

Related Information

MR98-K02
Ship Name: MIRAI
Period: 1998-12-22 - 1999-01-31
Chief Scientist: Takeshi Kawano (JAMSTEC)

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Update History

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 - SAMPLER (SHELL)
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 - SAMPLER (CLOW)
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MIRAI MR98-K02 Bottle Sampling Water Chemical Analysis

Last Modified: 2018-03-02

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Cruise ID: [MR98-K02](#)

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

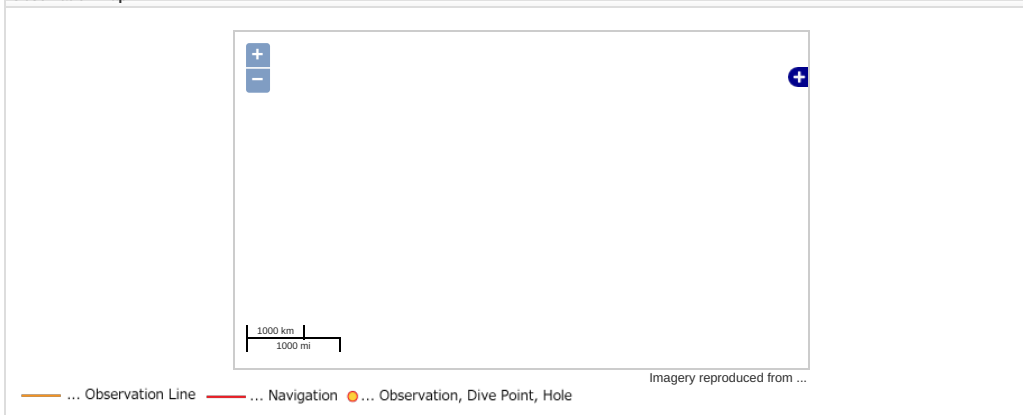
Data Policy: [JAMSTEC](#)

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Observation Map



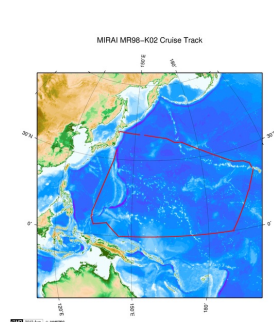
Data List

☐ File names

☐ MR98K0200_ex_bot.csv

☐ MR98K0200_odv_bot.txt

Related Information



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