

## MIRAI MR02-K06 Leg2 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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Cruise ID: [MR02-K06 Leg2](#)

Bottle Sampling Water Chemical Analysis: Processed (PI)

Data Policy: [JAMSTEC](#)

Observation Items: Temperature, Salinity, Fluorescence, Chlorophyll, Silicate, Nitrate, Nitrite, Phosphate, Total inorganic carbon, 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 > 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/MR02-K06\\_leg2\\_all.pdf](http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR02-K06_leg2_all.pdf)

### For Using Data

#### Principal Investigator

CTDTMP : Kentaro Ando (JAMSTEC)  
CTDSAL : Kentaro Ando (JAMSTEC)  
FLUOR : Kentaro Ando (JAMSTEC)  
CHLORA : Kazuhiko Matsumoto (JAMSTEC)  
CHLWELSH : Kazuhiko Matsumoto (JAMSTEC)  
SILCAT : Kazuhiko Matsumoto (JAMSTEC)  
NITRAT : Kazuhiko Matsumoto (JAMSTEC)  
NITRIT : Kazuhiko Matsumoto (JAMSTEC)  
PHSPHT : Kazuhiko Matsumoto (JAMSTEC)  
TCARBN : 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:

Nutrient analyzer(4ch) ( - MR09-01)



Instrument:

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



Instrument:

Fluorometer (TURNER DESIGNS)



### Notice

- 25 Dec., 2012 : The "FLUOR", "CHLORA", "CHLWELSH", "SILCAT", "NITRAT", "NITRIT", and "PHSPHT" data were added.

- Temperature data measured 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.

### 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) Fluorometer

Model : Seapoint Sensors, Inc.

#### Information on Chemical and Biological data

##### 1.Silicate

- (1)Instruments : TRAACS800 (Bran+Luebbe)
- (2)Methods : Molybdenum blue method
- (3)Precision : 0.16 (average of difference between the duplicate samples)
- (4)Reference Material/Calibration : Silicate standard solution (Kanto Chemical CO., Inc.)

##### 2.Nitrate

- (1)Instruments : TRAACS800 (Bran+Luebbe)
- (2)Methods : Diazotization method (reduced to nitrite by Cd - Cu tube)
- (3)Precision : 0.03(average of difference between the duplicate samples)
- (4)Reference Material/Calibration : KNO<sub>3</sub> solution(Wako Pure Chemical Industries, Ltd.)

##### 3.Nitrite

- (1)Instruments : TRAACS800 (Bran+Luebbe)
- (2)Methods : Diazotization method
- (3)Precision : 0.00(average of difference between the duplicate samples)
- (4)Reference Material/Calibration : NaNO<sub>2</sub> solution(Wako Pure Chemical Industries, Ltd.)

##### 4.Phosphate

- (1)Instruments : TRAACS800 (Bran+Luebbe)
- (2)Methods : Molybdenum blue method
- (3)Precision : 0.01(average of difference between the duplicate samples)
- (4)Reference Material/Calibration : KH<sub>2</sub>PO<sub>4</sub> solution(Wako Pure Chemical Industries, Ltd.)

##### 5.Total inorganic carbon

- (1)Instruments: automated TCO<sub>2</sub> analyzer (Nippon ANS, Co., Inc.) equipped with carbon coulometer 5012 (UIC Inc.)
- (2)Methods : coulometry
- (3)Precision : -
- (4)Reference Material/Calibration : the CRM provided by Dr. Dickson in Scripps Institute of Oceanography

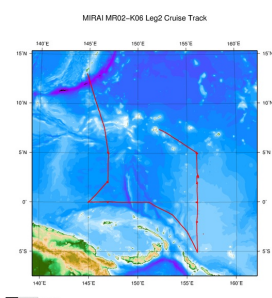
##### 6.Chlorophyll-a

- (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.)

##### 7.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](#)

##### MR02-K06 Leg2

Ship Name: MIRAI  
Period: 2002-12-17 - 2003-01-12  
Chief Scientist: Kentaro Ando (JAMSTEC)  
Project Name: [Tropical Ocean Climate Study (TOCS)]

#### Update History

2017-07-28	An observation data was registered.
2015-05-29	An observation data was registered.
2013-08-23	An observation data was registered.
2012-12-28	An observation data was registered.
2012-12-26	An observation data was registered.

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YOKOSUKA  
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KAIREI  
CHIKYU  
KAIMEI  
SHINSEI MARU  
HAKUHO MARU

#### Information of the Submersibles

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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

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## MIRAI MR02-K06 Leg2 Bottle Sampling Water Chemical Analysis

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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	FLUOR	UG/L	F9.3	Fluorometer
22	FLUOR_FLAG_W		I1	Quality flag for CTD data
23	CHLORA	UG/L	F9.2	Chlorophyll a
24	CHLORA_FLAG_W		I1	Quality flags for water samples
25	CHLWELSH	UG/L	F9.2	Chlorophyll a (Welschmeyer method)
26	CHLWELSH_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	THETA	DEG C	F9.4	Potential temperature
38	SIG0	KG/CUM	F9.4	Density

### ODV Format

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

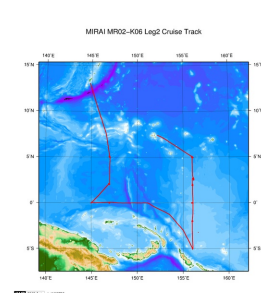
[Ocean Data View \(ODV\)](#)

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	FLUOR[UG/L]	Fluorometer
18	QF	Quality flag for CTD data
19	CHLORA[UG/L]	Chlorophyll a
20	QF	Quality flags for water samples
21	CHLWELSH[UG/L]	Chlorophyll a (Welschmeyer method)

Column No.	Column Heading	Comments
22	QF	Quality flags for water samples
23	SILCAT[UMOL/KG]	Silicate
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	TCARBN[UMOL/KG]	Total carbon
32	QF	Quality flags for water samples
33	THETA[DEG C]	Potential temperature
34	QF	Quality flag for CTD data
35	SIG0[KG/CUM]	Density
36	QF	Quality flag for CTD data
37	SAMPNO	Sample number
38	QF	Bottle quality flag

#### Related Information



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#### MR02-K06 Leg2

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Period: 2002-12-17 - 2003-01-12  
Chief Scientist: Kentaro Ando (JAMSTEC)  
Project Name: [Tropical Ocean Climate Study (TOCS)]

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POWER GRAB  
SAMPLER (SHELL)  
POWER GRAB  
SAMPLER (CLOW)  
BMS

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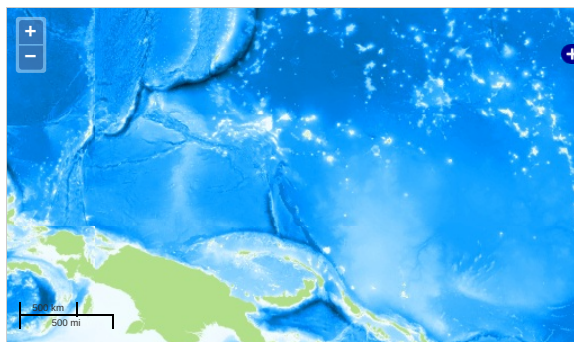
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Observation Items: Temperature, Salinity, Fluorescence, Chlorophyll, Silicate, Nitrate, Nitrite, Phosphate, Total inorganic carbon, Potential temperature, Density

Science Keywords:

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

### Observation Map



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

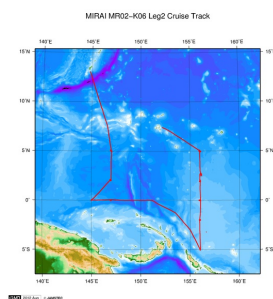
### Data List

☐ File names

☐ MR02K0602\_ex\_bot.csv

☐ MR02K0602\_odv\_bot.txt

### Related Information



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Chief Scientist: Kentaro Ando (JAMSTEC)

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