

## MIRAI MR07-05 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

[ReadMe](#) [Observation Data](#) [Data Format](#) [Quality Information](#)

Cruise ID: [MR07-05](#)

Bottle Sampling Water Chemical Analysis: Processed (PI)

Data Policy: [JAMSTEC](#)

Observation Items: Temperature, Salinity, Dissolved oxygen, Fluorescence, Transmittance, Silicate, Nitrate, Nitrite, Phosphate, Ammonia, Total inorganic carbon, Alkalinity, pH

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 TEMPERATURE > WATER TEMPERATURE  
OCEANS > SALINITY/DENSITY > SALINITY  
OCEANS > OCEAN CHEMISTRY > ALKALINITY  
OCEANS > OCEAN OPTICS > FLUORESCENCE  
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Cruise Report

[http://www.godac.jamstec.go.jp/catalog/data/doc\\_catalog/media/MR07-05\\_all.pdf](http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR07-05_all.pdf)

### For Using Data

#### Principal Investigator

CTDTMP : Masahide Wakita (JAMSTEC)  
SBE35 : Masahide Wakita (JAMSTEC)  
CTDSAL : Masahide Wakita (JAMSTEC)  
SALNTY : Masahide Wakita (JAMSTEC)  
CTDOXY : Masahide Wakita (JAMSTEC)  
OPTOXY : Masahide Wakita (JAMSTEC)  
OXYGEN : Masahide Wakita (JAMSTEC)  
DWNPRS : Masahide Wakita (JAMSTEC)  
DWNNOXY : Masahide Wakita (JAMSTEC)  
FLUOR : Masahide Wakita (JAMSTEC)  
XMISS : Masahide Wakita (JAMSTEC)  
SILCAT : Masahide Wakita (JAMSTEC)  
NITRAT : Masahide Wakita (JAMSTEC)  
NITRIT : Masahide Wakita (JAMSTEC)  
PHSPHT : Masahide Wakita (JAMSTEC)  
NH4 : Masahide Wakita (JAMSTEC)  
TCARBON : Masahide Wakita (JAMSTEC)  
ALKALI : Masahide Wakita (JAMSTEC)  
PH : Masahide Wakita (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 (MR02-K03 -)



Instrument:

Titration for DO ( - MR11-05 Leg2)



#### 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.

##### (7) Deep Ocean Standards Thermometer

Model : SBE 35, Sea-Bird Electronics, Inc.

##### (8) Oxygen Optode

Model : ALEC ELECTRONICS

#### Information on Chemical and Biological data

##### 1. Dissolved Oxygen

- (1) Instruments : Burette: APB-510 manufactured by Kyoto Electronic Co. Ltd. / 10 cm<sup>3</sup> of titration vessel  
Detector and Software: Automatic photometric titrator manufactured by Kimoto Electronic Co. Ltd  
(2) Methods : Winkler method/photometric methods  
(3) Precision : 0.10 umol kg<sup>-1</sup>  
(4) Reference Material/Calibration : 0.001667M KIO<sub>3</sub> solution

##### 2. Salinity

- (1) Instruments : Autosol salinometer model 8400B(Guildline Instruments Ltd.)  
(2) Methods : -  
(3) Precision : 0.0002 PSU  
(4) Reference Material/Calibration : IAPSO Standard Sea Water batch P148(Ocean Scientific International Ltd.)

##### 3. Silicate

- (1) Instruments : TRAACS800 (Bran+Luebbe)  
(2) Methods : Molybdenum blue method  
(3) Precision : C.V. 0.08% (171uM)  
(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. 0.07% (55uM)  
(4) Reference Material/Calibration : KNO<sub>3</sub> solution and RMNS [Aoyama et al., 2007]

##### 5. Nitrite

- (1) Instruments : TRAACS800 (Bran+Luebbe)  
(2) Methods : Diazotization method  
(3) Precision : C.V. 0.08% (1.2uM)  
(4) Reference Material/Calibration : NaNO<sub>2</sub> solution and RMNS [Aoyama et al., 2007]

##### 6. Phosphate

- (1) Instruments : TRAACS800 (Bran+Luebbe)  
(2) Methods : Molybdenum blue method  
(3) Precision : C.V. 0.11% (3.6uM)  
(4) Reference Material/Calibration : KH<sub>2</sub>PO<sub>4</sub> 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. 0.97% (4.0uM)  
(4) Reference Material/Calibration: (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> solution

##### 8. Total inorganic carbon

- (1) Instruments : the automated TCO<sub>2</sub> analyzer (Nippon ANS, Inc.) equipped with carbon coulometer 5012 (UIC Inc.)  
(2) Methods : coulometry  
(3) Precision : 0.7umol kg<sup>-1</sup>  
(4) Reference Material/Calibration : -

##### 9. Total Alkalinity

- (1) Instruments : spectrophotometric systems (Nippon ANS, Inc.)  
(2) Methods : Single step acid additional procedure/spectrophotometry  
(3) Precision : 0.5 umol kg<sup>-1</sup>

(3) Precision : 0.01 unit/kg

(4) Reference Material/Calibration : Na<sub>2</sub>CO<sub>3</sub> solution

#### 10. pH

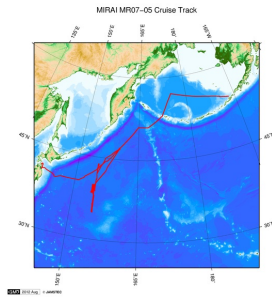
(1) Instruments : a glass / reference electrode with a pH / Ion meter (Radiometer PHM240)

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

(3) Precision : 0.001 pH unit

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

#### Related Information



[Enlarge Image](#)

#### MR07-05

Ship Name: MIRAI

Period: 2007-09-04 - 2007-10-02

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.
2013-08-29	An observation data was registerd.
2012-10-30	An observation data was registerd.
2012-10-26	An observation data was registerd.

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**JAMSTEC** 国立研究開発法人  
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JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY

## MIRAI MR07-05 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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Cruise ID: **MR07-05**

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	SBE35	ITS-90	F10.5	Temperature from Deep Ocean Standards Thermometer
20	SBE35_FLAG_W		I1	Quality flag for CTD data
21	CTDSAL	PSS-78	F9.4	CTD Salinity sensor
22	CTDSAL_FLAG_W		I1	Quality flag for CTD data
23	SALNTY	PSS-78	F9.4	Salinity
24	SALNTY_FLAG_W		I1	Quality flags for water samples
25	CTDOXY	UMOL/KG	F9.2	CTD Oxygen sensor
26	CTDOXY_FLAG_W		I1	Quality flag for CTD data
27	OPTOXY	UMOL/KG	F9.2	Optode oxygen
28	OPTOXY_FLAG_W		I1	Quality flag for CTD data
29	OXYGEN	UMOL/KG	F9.1	Oxygen
30	OXYGEN_FLAG_W		I1	Quality flags for water samples
31	DWNPRS	DBAR	F9.1	Down-cast pressure at the same density of the up-cast CTD data
32	DWNPRS_FLAG_W		I1	Quality flag for CTD data
33	DWNOXY	UMOL/KG	F9.2	Down-cast CTD oxygen at pressure of DWNPRS
34	DWNOXY_FLAG_W		I1	Quality flag for CTD data
35	FLUOR	UG/L	F9.2	Fluorometer
36	FLUOR_FLAG_W		I1	Quality flag for CTD data
37	XMISS	%TRANS	F9.1	Transmissometer
38	XMISS_FLAG_W		I1	Quality flag for CTD data
39	SILCAT	UMOL/KG	F9.1	Silicate
40	SILCAT_FLAG_W		I1	Quality flags for water samples
41	NITRAT	UMOL/KG	F9.1	Nitrate
42	NITRAT_FLAG_W		I1	Quality flags for water samples
43	NITRIT	UMOL/KG	F9.2	Nitrite
44	NITRIT_FLAG_W		I1	Quality flags for water samples
45	PHSPHT	UMOL/KG	F9.2	Phosphate
46	PHSPHT_FLAG_W		I1	Quality flags for water samples
47	NH4	UMOL/KG	F9.2	Ammonium
48	NH4_FLAG_W		I1	Quality flags for water samples
49	TCARBON	UMOL/KG	F9.1	Total carbon
50	TCARBON_FLAG_W		I1	Quality flags for water samples
51	ALKALI	UMOL/KG	F9.1	Total alkalinity
52	ALKALI_FLAG_W		I1	Quality flags for water samples
53	PH	-	F9.3	pH
54	PH_FLAG_W		I1	Quality flags for water samples

### ODV Format

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

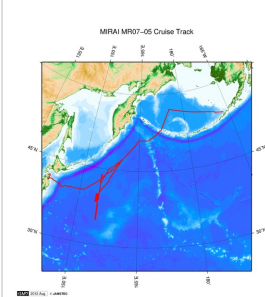
[Ocean Data View \(ODV\)](#)

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	Comments
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	SBE35[ITS-90]	Temperature from Deep Ocean Standards Thermometer
16	QF	Quality flag for CTD data
17	CTDSAL[PSS-78]	CTD Salinity sensor
18	QF	Quality flag for CTD data
19	SALNTY[PSS-78]	Salinity
20	QF	Quality flags for water samples
21	CTDOXY[UMOL/KG]	CTD Oxygen sensor
22	QF	Quality flag for CTD data
23	OPTOXY[UMOL/KG]	Optode oxygen
24	QF	Quality flag for CTD data
25	OXYGEN[UMOL/KG]	Oxygen
26	QF	Quality flags for water samples
27	DWNPRS[DBAR]	Down-cast pressure at the same density of the up-cast CTD data
28	QF	Quality flag for CTD data
29	DWNOXY[UMOL/KG]	Down-cast CTD oxygen at pressure of DWNPRS
30	QF	Quality flag for CTD data
31	FLUOR[UG/L]	Fluorometer
32	QF	Quality flag for CTD data
33	XMISS[%TRANS]	Transmissometer
34	QF	Quality flag for CTD data
35	SILCAT[UMOL/KG]	Silicate
36	QF	Quality flags for water samples
37	NITRAT[UMOL/KG]	Nitrate
38	QF	Quality flags for water samples
39	NITRIT[UMOL/KG]	Nitrite
40	QF	Quality flags for water samples
41	PHSPHT[UMOL/KG]	Phosphate
42	QF	Quality flags for water samples
43	NH4[UMOL/KG]	Ammonium
44	QF	Quality flags for water samples
45	TCARBN[UMOL/KG]	Total carbon
46	QF	Quality flags for water samples
47	ALKALI[UMOL/KG]	Total alkalinity
48	QF	Quality flags for water samples
49	PH	pH
50	QF	Quality flags for water samples
51	SAMPNO	Sample number
52	QF	Bottle quality flag

#### Related Information



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**MR07-05**  
Ship Name: MIRAI  
Period: 2007-09-04 - 2007-10-02  
Chief Scientist: Makio Honda (JAMSTEC)  
Project Name: [Station K2,Station KNOT]

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## MIRAI MR07-05 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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Cruise ID: [MR07-05](#)

Bottle Sampling Water Chemical Analysis: Processed (PI)

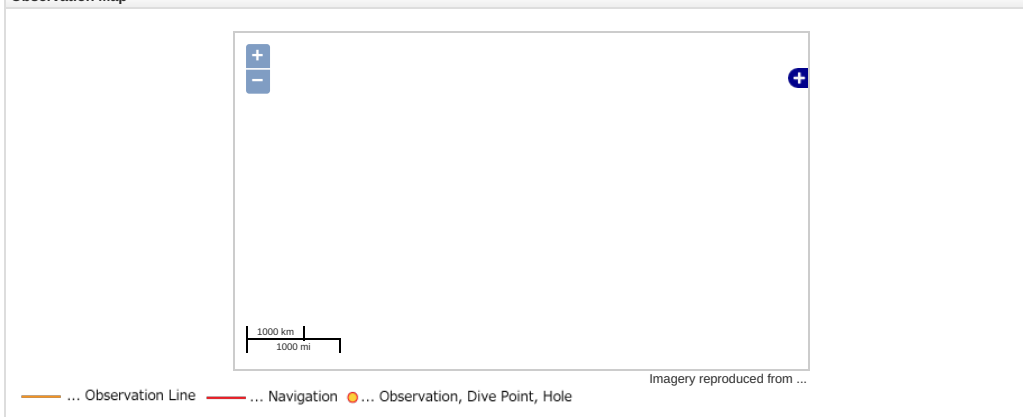
Data Policy: [JAMSTEC](#)

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

### Observation Map



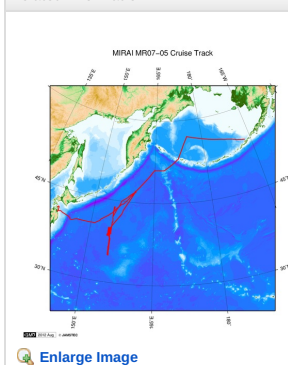
### Data List

☐ File names

☐ MR070500\_ex\_bot.csv

☐ MR070500\_odv\_bot.txt

### Related Information



#### MR07-05

Ship Name: MIRAI  
Period: 2007-09-04 - 2007-10-02  
Chief Scientist: Makio Honda (JAMSTEC)  
Project Name: [Station K2, Station KNOT]

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