

MIRAI MR10-01 Leg2 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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

Cruise ID: [MR10-01 Leg2](#)

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

Data Policy: [JAMSTEC](#)

Observation Items: Temperature, Salinity, Dissolved oxygen, Fluorescence, PAR, Chlorophyll, Silicate, Nitrate, Nitrite, Phosphate, Ammonia, CFC11, CFC12, CFC113, Total inorganic carbon, Alkalinity, pH, DOC, Potential temperature, Density

Science Keywords:

OCEANS > OCEAN CHEMISTRY	> AMMONIA
OCEANS > OCEAN CHEMISTRY	> DISSOLVED GASES
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 OPTICS	> PHOTOSYNTHETICALLY ACTIVE RADIATION
OCEANS > OCEAN CHEMISTRY	> ALKALINITY
OCEANS > OCEAN CHEMISTRY	> OCEAN TRACERS
OCEANS > OCEAN OPTICS	> FLUORESCENCE
OCEANS > OCEAN TEMPERATURE	> POTENTIAL TEMPERATURE

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR10-01_leg1-2_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)
 FLUOR : Masahide Wakita (JAMSTEC)
 PAR : Masahide Wakita (JAMSTEC)
 CHLORA : Kazuhiko Matsumoto(JAMSTEC)
 CHLWEL : Kazuhiko Matsumoto(JAMSTEC)
 SILCAT : Masahide Wakita (JAMSTEC)
 NITRAT : Masahide Wakita (JAMSTEC)
 NITRIT : Masahide Wakita (JAMSTEC)
 PHSPHT : Masahide Wakita (JAMSTEC)
 NH4 : Masahide Wakita (JAMSTEC)
 TCARBN : Masahide Wakita (JAMSTEC)
 ALKALI : Masahide Wakita (JAMSTEC)
 PH : Masahide Wakita (JAMSTEC)
 CFCs : Masahide Wakita (JAMSTEC)
 DOC : Masahide Wakita (JAMSTEC)

Use Constraints

See [Terms and Conditions](#) about constrain of use.

Data Citation

See [Terms and Conditions](#) about data citation.

Instrument

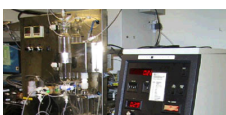
Instrument:

Gas chromatograph



Instrument:

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



Instrument:

Salinity measurement system



Instrument:

pH meter (MR02-K03 -)



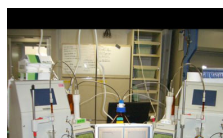
Instrument:

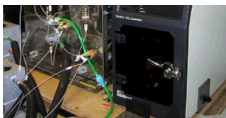
Nutrient analyzer(5ch) (MR09-02 -)



Instrument:

Titration for DO (- MR11-05 Leg2)





Instrument:
Fluorometer (TURNER DESIGNS)



Notice

- 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.
- 11 Jul. 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/cm^3 to mol/kg .
- 11 Jul. 2013 add "SBE35", "CTDOXY", "OPTOXY", "FLUOR" and "PAR" data were added.
- 28 Feb. 2014 Data of latitude and longitude are corrected. Because those columns are switched.

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: 120% of surface saturation
Accuracy: 2% of saturation
- (5) Optode oxygen sensor
Model: RINKO-III (Alec Eelectorronics Co. Ltd.)
- (6) Fluorometer
Model : Seapoint Sensors, Inc.
- (7) Deep Ocean Standards Thermometer
Model : SBE 35, Sea-Bird Electronics, Inc.
- (8) PAR
Model : Satlantic Inc.

Information on Chemical and Biological data

- 1.Dissolved Oxygen
 - (1)Instruments : Burette:APB-510 manufactured by Kyoto Electronic Co. Ltd. / 10 cm^3 of titration vessel
Detector and Software: Automatic photometric titrator manufactured by Kimoto Electronic Co. Ltd
 - (2)Methods : Winkler method/photometric methods
 - (3)Precision : $0.19\text{ }\mu\text{mol kg}^{-1}$
 - (4)Reference Material/Calibration : 0.001667M KIO_3 solution
- 2.Salinity
 - (1)Instruments : Autosol salinometer model 8400B(Guildline Instruments Ltd.)
 - (2)Methods : -
 - (3)Precision : 0.0001 PSU
 - (4)Reference Material/Calibration : IAPSO Standard Sea Water batch P151(Ocean Scientific International Ltd.)
- 3.Silicate
 - (1)Instruments : SEAL QuAAtro system
 - (2)Methods : Molybdenum blue method
 - (3)Precision : C.V. 0.11% ($170\mu\text{M}$)
 - (4)Reference Material/Calibration : RMNS (KANSO Co.,Ltd.) 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 : SEAL QuAAtro system
 - (2)Methods : Diazotization method (reduced to nitrite by Cd - Cu tube)
 - (3)Precision : C.V. 0.13% ($55.0\mu\text{M}$)
 - (4)Reference Material/Calibration : KNO_3 solution and RMNS (KANSO Co.,Ltd.)

5.Nitrite

- (1)Instruments : SEAL QuAAtro system
- (2)Methods : Diazotization method
- (3)Precision : C.V. 0.22% (1.18uM)
- (4)Reference Material/Calibration : NaNO₂ solution and RMNS (KANSO Co.,Ltd.)

6.Phosphate

- (1)Instruments : SEAL QuAAtro system
- (2)Methods : Molybdenum blue method
- (3)Precision : C.V. 0.21% (3.64uM)
- (4)Reference Material/Calibration : KH₂PO₄ solution and RMNS (KANSO Co.,Ltd.)

7.Ammonia

- (1)Instruments : SEAL QuAAtro system
- (2)Methods : Indophenol method/gas diffusion method(GDM)
- (3)Precision : C.V. 0.25% (6.0uM)
- (4)Reference Material/Calibration:(NH₄)₂SO₄ solution

8.Total inorganic carbon

- (1)Instruments : automated TCO₂ analyzer (Nippon ANS, Inc.) equipped with carbon coulometer 5012 (UIC Inc.)
- (2)Methods : coulometry
- (3)Precision : 0.7u^{mol} kg⁻¹
- (4)Reference Material/Calibration : -

9.Total Alkalinity

- (1)Instruments : Measurement of A_T was made based on spectrophotometry using a custom-made system(Nippon ANS, Inc.).
The system comprises of a water dispensing unit and a spectrophotometer (Cary 50 Scan, Varian)
- (2)Methods : single step acid addition procedure/spectrophotometry
- (3)Precision : 0.4 u^{mol} kg⁻¹
- (4)Reference Material/Calibration : -

10.pH

- (1)Instruments : a glass / reference electrode with a pH / Ion meter (Radiometer PHM240)
- (2)Methods : potentiometric methods at 25deg-C
- (3)Precision : 0.0007 pH unit
- (4)Reference Material/Calibration : total hydrogen ion scale

11.CFCs

- (1)Instruments : A custom made purging and trapping system was attached to gas chromatograph (GC-14B: Shimadzu Ltd.) having an electron capture detector (ECD-14: Shimadzu Ltd.).
- (2)Methods : see "Cruise report"
- (3)Precision : -
- (4)Reference Material/Calibration : -

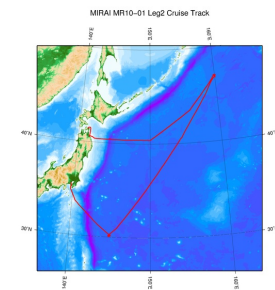
12. Chlorophyll a

- (1)Instruments : Fluorometer model 10-AU-005 (Turner design)
- (2)Methods : Extract in N,N-dimethylformamide / fluorometric determination (Non-acidification method and Acidification method)
- (3)Precision : -
- (4)Reference Material/Calibration : Pure chlorophyll a (Sigma chemical Co.)

13.DOC

- (1)Instruments : Shimadzu TOC-V (Shimadzu)
- (2)Methods : High temperature combustion method
- (3)Precision : -
- (4)Reference Material/Calibration : -

Related Information



[Enlarge Image](#)

MR10-01 Leg2

Ship Name: MIRAI
Period: 2010-02-07 - 2010-02-24
Chief Scientist: Kazuhiko Matsumoto (JAMSTEC)
Project Name: [Station K2, Station S1]
Proposal ▶ Change in material cycles and ecosystem by the climate change and its feed back
Title:

Update History

2017-07-28	An observation data was registerd.
2015-05-29	An observation data was registerd.
2015-03-04	An observation data was registerd.
2014-02-28	An observation data was registerd.
2013-08-29	An observation data was registerd.
2013-07-30	An observation data was registerd.
2012-11-30	An observation data was registerd.

[Application for Data and Samples](#)
[Data Policy](#)

What's New
[Update History](#)
[Feeds](#)

Data
[Map Search](#)
[Data Tree](#)
[Detailed Search](#)

[YOKOSUKA](#)
[MIRAI](#)
[KAIREI](#)
[CHIKYU](#)
[KAIMEI](#)
[SHINSEI MARU](#)
[HAKUHO MARU](#)

[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](#)

Cruise ID:

Go to a Dive Information

Dive ID:

Copyright 2011 Japan Agency for Marine-Earth Science and Technology



JAMSTEC 国立研究開発法人
海洋研究開発機構
JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY

MIRAI MR10-01 Leg2 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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

Cruise ID: [MR10-01 Leg2](#)

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	F8.3	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	F9.4	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	F9.2	Oxygen
30	OXYGEN_FLAG_W		I1	Quality flags for water samples
31	FLUOR	UG/L	F9.2	Fluorometer
32	FLUOR_FLAG_W		I1	Quality flag for CTD data
33	EDPAR	UMOL-PHOTONS/M2/S	F9.2	Ed PAR
34	EDPAR_FLAG_W		I1	Quality flag for CTD data
35	CHLORA	MG/CUM	F9.2	Chlorophyll a
36	CHLORA_FLAG_W		I1	Quality flags for water samples
37	CHLWELSH	MG/CUM	F9.2	Chlorophyll a (Welschmeyer method)
38	CHLWELSH_W		I1	Quality flags for water samples
39	SILCAT	UMOL/KG	F9.2	Silicate
40	SILCAT_FLAG_W		I1	Quality flags for water samples
41	NITRAT	UMOL/KG	F9.2	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	F9.3	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	CFC-11	PMOL/KG	F9.3	Freon-11
50	CFC-11_FLAG_W		I1	Quality flags for water samples
51	CFC-12	PMOL/KG	F9.3	Freon-12
52	CFC-12_FLAG_W		I1	Quality flags for water samples
53	CFC113	PMOL/KG	F9.3	Freon-113
54	CFC113_FLAG_W		I1	Quality flags for water samples
55	TCARBN	UMOL/KG	F9.1	Total carbon
56	TCARBN_FLAG_W		I1	Quality flags for water samples
57	ALKALI	UMOL/KG	F9.1	Total alkalinity
58	ALKALI_FLAG_W		I1	Quality flags for water samples
59	PH	-	F9.3	pH
60	PH_FLAG_W		I1	Quality flags for water samples
61	DOC	UMOL/KG	F9.1	Dissolved organic carbon
62	DOC_FLAG_W		I1	Quality flags for water samples
63	TEMP	DEG C	F9.4	Potential temperature

Column No.	Column Heading Mnemonic	Units Mnemonic	Reporting Precision Format	FORTRAN Format	Comments
------------	-------------------------	----------------	----------------------------	----------------	----------

ODV Format

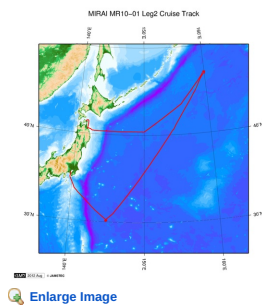
Please see the following link for details of ODV Format and ODV Software.

[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
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	FLUOR[UG/L]	Fluorometer
28	QF	Quality flag for CTD data
29	EDPAR[UMOL-PHOTONS/M2/S]	Ed PAR
30	QF	Quality flag for CTD data
31	CHLORA[MG/CUM]	Chlorophyll a
32	QF	Quality flags for water samples
33	CHLWELSH[MG/CUM]	Chlorophyll a (Welschmeyer method)
34	QF	Quality flags for water samples
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	CFC-11[PMOL/KG]	Freon-11
46	QF	Quality flags for water samples
47	CFC-12[PMOL/KG]	Freon-12
48	QF	Quality flags for water samples
49	CFC113[PMOL/KG]	Freon-113
50	QF	Quality flags for water samples
51	TCARBN[UMOL/KG]	Total carbon
52	QF	Quality flags for water samples
53	ALKAL[UMOL/KG]	Total alkalinity
54	QF	Quality flags for water samples
55	PH	pH
56	QF	Quality flags for water samples
57	DOC[UMOL/KG]	Dissolved organic carbon
58	QF	Quality flags for water samples
59	THETA[DEG C]	Potential temperature
60	QF	Quality flag for CTD data
61	SIG0[KG/CUM]	Density
62	QF	Quality flag for CTD data
63	SAMPNO	Sample number
64	QF	Bottle quality flag

Related Information



MR10-01 Leg2

Ship Name: MIRAI

Period: 2010-02-07 - 2010-02-24

Chief Scientist: Kazuhiko Matsumoto (JAMSTEC)

Project Name: [Station K2, Station S1]

Proposal ▶ Change in material cycles and ecosystem by the climate change and its feed back

Title:

Update History

2017-07-28	An observation data was registerd.
2015-05-29	An observation data was registerd.
2015-03-04	An observation data was registerd.
2014-02-28	An observation data was registerd.
2013-08-29	An observation data was registerd.
2013-07-30	An observation data was registerd.
2012-11-30	An observation data was registerd.

JAMSTEC

Site Policy
Privacy Policy
Application for Data and Samples
Data Policy

What's New
Update History
Feeds

Lists

Publication List
Amount of Public Info.

Data
Map Search
Data Tree
Detailed Search

Information of the Ships

NATSUSHIMA
KAIYO
YOKOSUKA
MIRAI
KAIREI
CHIKYU
KAIMEI
SHINSEI MARU
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:

Go to a Dive Information

Dive ID:

Copyright 2011 Japan Agency for Marine-Earth Science and Technology



JAMSTEC
JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY

国立研究開発法人
海洋研究開発機構

MIRAI MR10-01 Leg2 Bottle Sampling Water Chemical Analysis

Last Modified: 2017-07-28

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

Cruise ID: [MR10-01 Leg2](#)

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

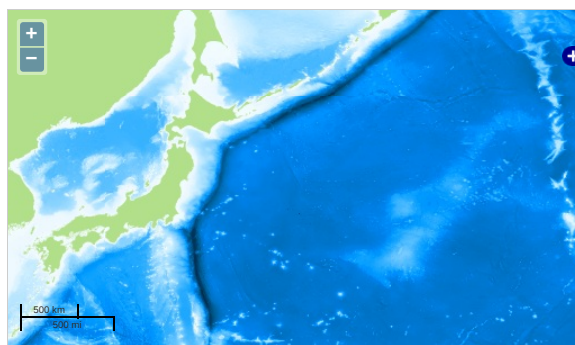
Data Policy: [JAMSTEC](#)

Observation Items: Temperature, Salinity, Dissolved oxygen, Fluorescence, PAR, Chlorophyll, Silicate, Nitrate, Nitrite, Phosphate, Ammonia, CFC11, CFC12, CFC113, Total inorganic carbon, Alkalinity, pH, DOC, Potential temperature, Density

Science Keywords:

OCEANS > OCEAN CHEMISTRY > AMMONIA
OCEANS > OCEAN CHEMISTRY > DISSOLVED GASES
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 OPTICS > PHOTOSYNTHETICALLY ACTIVE RADIATION
OCEANS > OCEAN CHEMISTRY > ALKALINITY
OCEANS > OCEAN CHEMISTRY > OCEAN TRACERS
OCEANS > OCEAN OPTICS > FLUORESCENCE
OCEANS > OCEAN TEMPERATURE > POTENTIAL TEMPERATURE

Observation Map



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

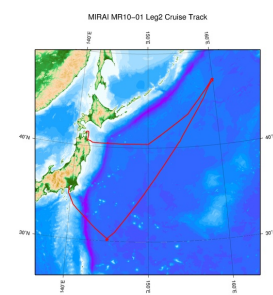
Imagery reproduced from ...

Data List

[Add to Basket](#)

☐ **File names**
☐ MR100102_ex_bot.csv
☐ MR100102_odv_bot.txt

Related Information



[Enlarge Image](#)

MR10-01 Leg2

Ship Name: MIRAI

Period: 2010-02-07 - 2010-02-24

Chief Scientist: Kazuhiko Matsumoto (JAMSTEC)

Project Name: [Station K2, Station S1]

Proposal ▶ Change in material cycles and ecosystem by the climate change and its feed back

Title:

Update History

2017-07-28	An observation data was registerd.
2015-05-29	An observation data was registerd.
2015-03-04	An observation data was registerd.
2014-02-28	An observation data was registerd.
2013-08-29	An observation data was registerd.
2013-07-30	An observation data was registerd.

2012-11-30

An observation data was registerd.

JAMSTEC

[Site Policy](#)
[Privacy Policy](#)
[Application for Data and Samples](#)
[Data Policy](#)

What's New

[Update History](#)
[Feeds](#)

Lists

[Publication List](#)
[Amount of Public Info.](#)

Data

[Map Search](#)
[Data Tree](#)
[Detailed Search](#)

Information of the Ships

[NATSUSHIMA](#)
[KAIYO](#)
[YOKOSUKA](#)
[MIRAI](#)
[KAIREI](#)
[CHIKYU](#)
[KAIMEI](#)
[SHINSEI MARU](#)
[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:

Go to a Dive Information

Dive ID:

Copyright 2011 Japan Agency for Marine-Earth Science and Technology



JAMSTEC
JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY

国立研究開発法人
海洋研究開発機構