

MIRAI MR14-05 Bottle Sampling Water Chemical Analysis

Last Modified: 2018-01-25

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

Cruise ID: [MR14-05](#)

Bottle Sampling Water Chemical Analysis: Processed (PI)

Data Policy: [JAMSTEC](#)

Observation Items: Temperature, Salinity, Dissolved oxygen, Fluorescence, PAR, Chlorophyll, Transmittance, Silicate, Nitrate, Nitrite, Phosphate, Ammonia, Total inorganic carbon, Alkalinity, 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	> PHOSPHATE
OCEANS > OCEAN CHEMISTRY	> SILICATE
OCEANS > OCEAN CHEMISTRY	> SALINITY
OCEANS > OCEAN CHEMISTRY	> CHLOROPHYLL
OCEANS > OCEAN TEMPERATURE	> WATER TEMPERATURE
OCEANS > SALINITY/DENSITY	> SALINITY
OCEANS > OCEAN OPTICS	> PHOTOSYNTHETICALLY ACTIVE RADIATION
OCEANS > OCEAN CHEMISTRY	> ALKALINITY
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/MR14-05_all.pdf

For Using Data

Principal Investigator

CTDTMP : Shigeto Nishino(JAMSTEC)
SBE35 : Shigeto Nishino(JAMSTEC)
CTDSAL : Shigeto Nishino(JAMSTEC)
SALNTY : Shigeto Nishino(JAMSTEC)
CTDOXY : Shigeto Nishino(JAMSTEC)
OXYGEN : Shigeto Nishino(JAMSTEC)
XMISS : Shigeto Nishino(JAMSTEC)
FLUOR : Shigeto Nishino(JAMSTEC)
PAR : Shigeto Nishino(JAMSTEC)
SILCAT : Shigeto Nishino(JAMSTEC)
NITRAT : Shigeto Nishino(JAMSTEC)
NITRIT : Shigeto Nishino(JAMSTEC)
PHSPHT : Shigeto Nishino(JAMSTEC)
AMMONIA : Shigeto Nishino(JAMSTEC)
TCARBN : Shigeto Nishino(JAMSTEC)
ALKALI : Shigeto Nishino(JAMSTEC)
CHLWEL : Shigeto Nishino(JAMSTEC)
SIZECHL : Shigeto Nishino(JAMSTEC)

Use Constraints

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

Data Citation

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

Instrument

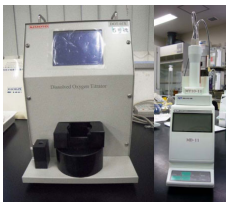
Instrument:

Salinity measurement system



Instrument:

Titration for DO Dissolved oxygen titration equipment (MR11-06 -)



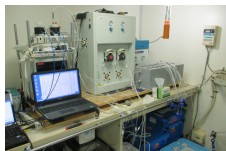
Instrument:

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



Instrument:

Titration for total alkalinity (MR14-03 -)



Instrument:

Total dissolved inorganic carbon measurement system (MR11-05 Leg1 -)



Instrument:

Fluorometer (TURNER DESIGNS)



Data Citation

Inoue, J., 2014, R/V Mirai Cruise Report MR14-05, edited by J. Inoue, 273pp., JAMSTEC, Yokosuka, Japan.

Upon consultation in advance with the chief of investigation and the person(s) in charge of research issues who gathered that data, we request that the text of the results material contain a statement to the effect that it was obtained during the R/V Mirai cruise of MR14-05, the Chief Scientist, Jun Inoue (National Institute of Polar Research), and the following Principal Investigators (PIs) for gathering the data.

Chief Scientist

Jun Inoue

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PI for Bottle Data

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2-15 Natsushima, Yokosuka, Kanagawa 237-0061, Japan

Tel: +81-46-867-9487

E-mail: nishinos @ jamstec.go.jp

Information on CTD data

Temperature sensor

Model : SBE3, Sea-Bird Electronics, Inc.

Measurement range : -5 to +35 °C

Accuracy : ± 0.001 °C

Resolution : 0.0002 °C

Salinity sensor

Model : SBE4, Sea-Bird Electronics, Inc.

Measurement range : 0 to 7 S/m

Accuracy : ± 0.0003 S/m

Resolution : 0.00004 S/m

Pressure sensor

Model : SBE9plus, Sea-Bird Electronics, Inc.

Measurement range : 0 to 10500 m

Accuracy : ± 0.015% of full scale range

Resolution : 0.001% of full scale

DO sensor (RINKO)

Model : RINKOIII, JFE Advantech Co., Ltd.

Measurement range : 0 to 200% of surface saturation

Accuracy : Non-linearity ±2%F.S.

Resolution : 0.001 to 0.04%

DO sensor (SBE43)

Model : SBE43, Sea-Bird Electronics, Inc.

Measurement range : 120% of surface saturation

Accuracy : ± 2% of saturation

Fluorometer

Model : Seapoint Sensors, Inc.

Measurement range : 0 - 5 µg/l

Resolution : 0.02 µg/l

PAR sensor

Model : Satlantic, Inc.

Measurement range : 0 - 5000 µmol photons m⁻² s⁻¹

Accuracy : 5%

Transmissometer

Model : C-Star, WET Labs, Inc.

Measurement range : 0 - 100%

Linearity : 99% R²

Deep Ocean Standards Thermometer

Model : SBE35, Sea-Bird Electronics, Inc.

Measurement range : -5 to +35 °C

Accuracy : 0.001 °C

Resolution : 0.000025 °C

Information on Chemical and Biological data

Dissolved Oxygen

Instruments : Burette: APB-510/APB-620 manufactured by Kyoto Electronic Co. Ltd. /10 cm³ of titration vessel

Detector: Automatic photometric titrator DOT-01X manufactured by Kimoto Electronic Co. Ltd

Software: DOT_Terminal Ver. 1.2.0

Methods : Winkler method/photometric methods

Precision : 0.23 µmol kg⁻¹

Reference Material/Calibration : 0.001667M KIO₃ solution

Salinity

Instruments : Autosal salinometer model 8400B (Guildline Instruments Ltd.)

Methods : -

Precision : The average and the standard deviation of absolute difference among 127 pairs of replicate samples were 0.0027 and 0.0101 in salinity

Reference Material/Calibration : IAPSO Standard Sea Water batch P156 (Ocean Scientific International Ltd.)

Silicate

Instruments : QuAAtro (BL TEC K.K.)

Methods : Molybdenum blue method

Precision : C.V. 0.11%

Reference Material/Calibration : RMNS [Aoyama and Hydes, 2010; Sato et al., 2010], 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.

Nitrate

Instruments : QuAAtro (BL TEC K.K.)

Methods : Diazotization method (reduced to nitrite by Cd - Cu tube)
Precision : C.V. 0.08%
Reference Material/Calibration : KNO₃ solution and RMNS [Aoyama and Hydes, 2010; Sato et al., 2010]

Nitrite

Instruments : QuAAtro (BL TEC K.K.)
Methods : Diazotization method
Precision : C.V. 0.14%
Reference Material/Calibration : NaNO₂ solution and RMNS [Aoyama and Hydes, 2010; Sato et al., 2010]

Phosphate

Instruments : QuAAtro (BL TEC K.K.)
Methods : Modified molybdenum blue method
Precision : C.V. 0.14%
Reference Material/Calibration : KH₂PO₄ solution and RMNS [Aoyama and Hydes, 2010; Sato et al., 2010]

Ammonia

Instruments : QuAAtro (BL TEC K.K.)
Methods : Indophenol method / gas diffusion method (GDM)
Precision : C.V. 0.19%
Reference Material/Calibration : (NH₄)₂SO₄ solution

Total alkalinity

Instruments : Spectrophotometric system(Nippon ANS, Inc.).
Methods : Scheme of Yao and Byrne [1998]
Precision : The average of the difference of replicate samples was 2.54 μmol kg⁻¹ (n = 129) with its standard deviation of 2.37 μmol kg⁻¹
Reference Material/Calibration : The CRM provided by Dr. Dickson in Scripps Institute of Oceanography

Total inorganic carbon

Instruments : Total TCO₂ measuring system (System D; Nippon ANS, Inc.).The system comprises of seawater dispensing system, a CO₂ extraction system and a coulometer (Model 3000, Nippon ANS, Inc.).
Methods : coulometry
Precision : The average of the difference of replicate samples was 0.95 μmol kg⁻¹ (n = 131), and the standard deviation was 1.00 μmol kg⁻¹ (n = 131).
Reference Material/Calibration : The CRM provided by Dr. Dickson in Scripps Institute of Oceanography

Chlorophyll a (Welschmeyer method)

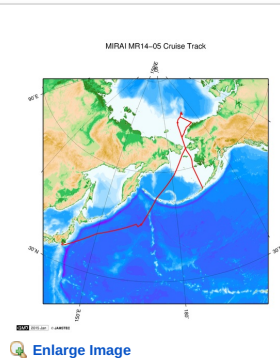
Instruments : Fluorophotometer model 10-AU-005 (Turner design).
Methods : Extract in N,N-dimethylformamide /fluorometric determination (Welschmeyer non-acidification method)
Precision : -
Reference Material/Calibration : Pure chlorophyll a (Sigma chemical Co.)

About this data

There are some description error for nutrient data of this cruise.
Please refer to the errata of the cruise report.



Related Information



MR14-05

Ship Name: MIRAI
Period: 2014-08-31 - 2014-10-10
Chief Scientist: Jun Inoue (JAMSTEC)
Project Name: [Arctic Ocean Climate System Reaserch]
Proposal ▶ Predictability study of Arctic cyclones
Title:

Update History

2018-01-25	An observation data was registerd.
2017-07-29	An observation data was registerd.
2016-10-21	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: <input type="text"/> <input type="button" value="Go"/> Go to a Dive Information Dive ID: <input type="text"/> <input type="button" value="Go"/>
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MIRAI MR14-05 Bottle Sampling Water Chemical Analysis

Last Modified: 2018-01-25

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 Cruise ID: [MR14-05](#)

Bottle Sampling Water Chemical Analysis: Processed (PI)

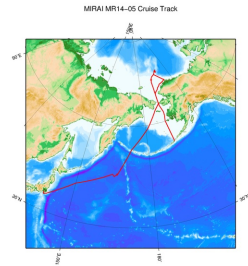
 Data Policy: [JAMSTEC](#)

Data Format

Column No.	Column Heading Mnemonic	Units Mnemonic	Comments
1	EXPCODE	-	Exploration code
2	STNNBR	-	Station number
3	CASTNO	-	Cast number
4	SAMPNO	-	Sample number
5	BTLNBR	-	Bottle number
6	BTLNBR_FLAG_W	-	Bottle quality flags
7	DATE	UTC	Date [MM/DD/YYYY]
8	TIME	UTC	Time [HH:MM]
9	LATITUDE	DEG	Latitude [N]
10	LONGITUDE	DEG	Longitude [E]
11	DEPTH	M	Bottom depth
12	CTDPRS	DBAR	CTD-pressure
13	CTDPRS_FLAG_W	-	Quality flags for CTD data
14	CTDDPT	M	CTD-depth
15	CTDDPT_FLAG_W	-	Quality flags for CTD data
16	CTDTMP	ITS-90	CTD-temperature (primary sensor)
17	CTDTMP_FLAG_W	-	Quality flags for CTD data
18	CTDTMP_1	ITS-90	CTD-temperature (secondary sensor)
19	CTDTMP_1_FLAG_W	-	Quality flags for CTD data
20	CTDSAL	PSS-78	CTD-salinity (primary sensor)
21	CTDSAL_FLAG_W	-	Quality flags for CTD data
22	CTDSAL_1	PSS-78	CTD-salinity (secondary sensor)
23	CTDSAL_1_FLAG_W	-	Quality flags for CTD data
24	CTDCND	S/m	CTD-conductivity (primary sensor)
25	CTDCND_FLAG_W	-	Quality flags for CTD data
26	CTDCND_1	S/m	CTD-conductivity (secondary sensor)
27	CTDCND_1_FLAG_W	-	Quality flags for CTD data
28	CTDOXY	UMOL/KG	CTD-oxygen (primary sensor of RINKO)
29	CTDOXY_FLAG_W	-	Quality flags for CTD data
30	CTDOXY_s	UMOL/KG	CTD-oxygen (primary sensor of RINKO using secondary T and S)
31	CTDOXY_s_FLAG_W	-	Quality flags for CTD data
32	CTDOXY_1	UMOL/KG	CTD-oxygen (secondary sensor of RINKO)
33	CTDOXY_1_FLAG_W	-	Quality flags for CTD data
34	CTDOXY_1_s	UMOL/KG	CTD-oxygen (secondary sensor of RINKO using secondary T and S)
35	CTDOXY_1_s_FLAG_W	-	Quality flags for CTD data
36	CTDOXY_2	UMOL/KG	CTD-oxygen (primary sensor of SBE43)
37	CTDOXY_2_FLAG_W	-	Quality flags for CTD data
38	CTDOXV	V	CTD-oxygen voltage (primary sensor of RINKO)
39	CTDOXV_FLAG_W	-	Quality flags for CTD data
40	CTDOXV_1	V	CTD-oxygen voltage (secondary sensor of RINKO)
41	CTDOXV_1_FLAG_W	-	Quality flags for CTD data
42	CTDOXV_2	V	CTD-oxygen voltage (primary sensor of SBE43)
43	CTDOXV_2_FLAG_W	-	Quality flags for CTD data
44	THETA	DEG C	CTD-theta (primary sensor)
45	THETA_FLAG_W	-	Quality flags for CTD data
46	THETA_1	DEG C	CTD-theta (secondary sensor)
47	THETA_1_FLAG_W	-	Quality flags for CTD data
48	SIG0	KG/CUM	CTD-sigma 0 (primary sensor)
49	SIG0_FLAG_W	-	Quality flags for CTD data
50	SIG0_1	KG/CUM	CTD-sigma 0 (secondary sensor)
51	SIG0_1_FLAG_W	-	Quality flags for CTD data
52	XMISS	%TRANSE	CTD-transmission
53	XMISS_FLAG_W	-	Quality flags for CTD data
54	XMISSCP	1/M	Beam attenuation coefficient
55	XMISSCP_FLAG_W	-	Quality flags for CTD data
56	XMISSV	V	CTD-transmission voltage
57	XMISSV_FLAG_W	-	Quality flags for CTD data
58	FLUOR	UG/L	CTD-fluorescence (primary sensor)
59	FLUOR_FLAG_W	-	Quality flags for CTD data
60	FLUOR_1	UG/L	CTD-fluorescence (secondary sensor)
61	FLUOR_1_FLAG_W	-	Quality flags for CTD data
62	PAR	UMOL PHOTONS/M^2/S	CTD-PAR
63	PAR_FLAG_W	-	Quality flags for CTD data
64	SBE35	ITS-90	CTD-SBE35
65	SBE35_FLAG_W	-	Quality flags for CTD data
66	SALNTY	PSS-78	Bottle salinity
67	SALNTY_FLAG_W	-	Quality flags for water samples
68	SALNTY_1	PSS-78	Bottle salinity (replicate)

Column No.	Column Heading	Units Mnemonic	Comments
70	OXYGEN	UMOL/KG	Bottle oxygen
71	OXYGEN_FLAG_W	-	Quality flags for water samples
72	OXYGEN_1	UMOL/KG	Bottle oxygen (replicate)
73	OXYGEN_2_FLAG_W	-	Quality flags for water samples
74	TCARBN	UMOL/KG	Total inorganic carbon
75	TCARBN_FLAG_W	-	Quality flags for water samples
76	TCARBN_1	UMOL/KG	Total inorganic carbon (replicate)
77	TCARBN_2_FLAG_W	-	Quality flags for water samples
78	ALKALI	UMOL/KG	Total alkalinity
79	ALKALI_FLAG_W	-	Quality flags for water samples
80	ALKALI_1	UMOL/KG	Total alkalinity (replicate)
81	ALKALI_2_FLAG_W	-	Quality flags for water samples
82	NITRAT	UMOL/KG	Nitrate
83	NITRAT_FLAG_W	-	Quality flags for water samples
84	NITRIT	UMOL/KG	Nitrite
85	NITRIT_FLAG_W	-	Quality flags for water samples
86	SILCAT	UMOL/KG	Silicate
87	SILCAT_FLAG_W	-	Quality flags for water samples
88	PHSPHT	UMOL/KG	Phosphate
89	PHSPHT_FLAG_W	-	Quality flags for water samples
90	AMMONIA	UMOL/KG	Ammonium
91	AMMONIA_FLAG_W	-	Quality flags for water samples
92	NITRAT2	UMOL/KG	Nitrate (replicate)
93	NITRAT2_FLAG_W	-	Quality flags for water samples
94	NITRIT2	UMOL/KG	Nitrite (replicate)
95	NITRIT2_FLAG_W	-	Quality flags for water samples
96	SILCAT2	UMOL/KG	Silicate (replicate)
97	SILCAT2_FLAG_W	-	Quality flags for water samples
98	PHSPHT2	UMOL/KG	Phosphate (replicate)
99	PHSPHT2_FLAG_W	-	Quality flags for water samples
100	AMMONIA2	UMOL/KG	Ammonium (replicate)
101	AMMONIA2_FLAG_W	-	Quality flags for water samples
102	NITRAT_AVE	UMOL/KG	Nitrate (average)
103	NITRAT_AVE_FLAG_W	-	Quality flags for water samples
104	NITRIT_AVE	UMOL/KG	Nitrite (average)
105	NITRIT_AVE_FLAG_W	-	Quality flags for water samples
106	SILCAT_AVE	UMOL/KG	Silicate (average)
107	SILCAT_AVE_FLAG_W	-	Quality flags for water samples
108	PHSPHT_AVE	UMOL/KG	Phosphate (average)
109	PHSPHT_AVE_FLAG_W	-	Quality flags for water samples
110	AMMONIA_AVE	UMOL/KG	Ammonium (average)
111	AMMONIA_AVE_FLAG_W	-	Quality flags for water samples
112	NRAUNC	UMOL/KG	Nitrate (uncertainty)
113	NRIUNC	UMOL/KG	Nitrite (uncertainty)
114	SILUNC	UMOL/KG	Silicate (uncertainty)
115	PHPUNC	UMOL/KG	Phosphate (uncertainty)
116	NH4UNC	UMOL/KG	Ammonium (uncertainty)
117	CHLWEL	UG/L	Total Chlorophyll a
118	CHLWEL_FLAG_W	-	Quality flags for water samples
119	CHLWEL_1	UG/L	Total Chlorophyll a (replicate)
120	CHLWEL_1_FLAG_W	-	Quality flags for water samples
121	SIZECHL>20µm	UG/L	20µm< Chlorophyll a
122	SIZECHL>20µm_FLAG_W	-	Quality flags for water samples
123	SIZECHL10-20µm	UG/L	10 to 20µm Chlorophyll a
124	SIZECHL10-20µm_FLAG_W	-	Quality flags for water samples
125	SIZECHL2-10µm	UG/L	2 to 10µm Chlorophyll a
126	SIZECHL2-10µm_FLAG_W	-	Quality flags for water samples
127	SIZECHL<2µm	UG/L	2µm> Chlorophyll a
128	SIZECHL<2µm_FLAG_W	-	Quality flags for water samples

Related Information



[Enlarge Image](#)

MR14-05

Ship Name: MIRAI
Period: 2014-08-31 - 2014-10-10
Chief Scientist: Jun Inoue (JAMSTEC)
Project Name: [Arctic Ocean Climate System Reaserch]
Proposal ▶ Predictability study of Arctic cyclones
Title:

Update History

2018-01-25	An observation data was registerd.
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JAMSTEC

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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:

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国立研究開発法人
海洋研究開発機構

MIRAI MR14-05 Bottle Sampling Water Chemical Analysis

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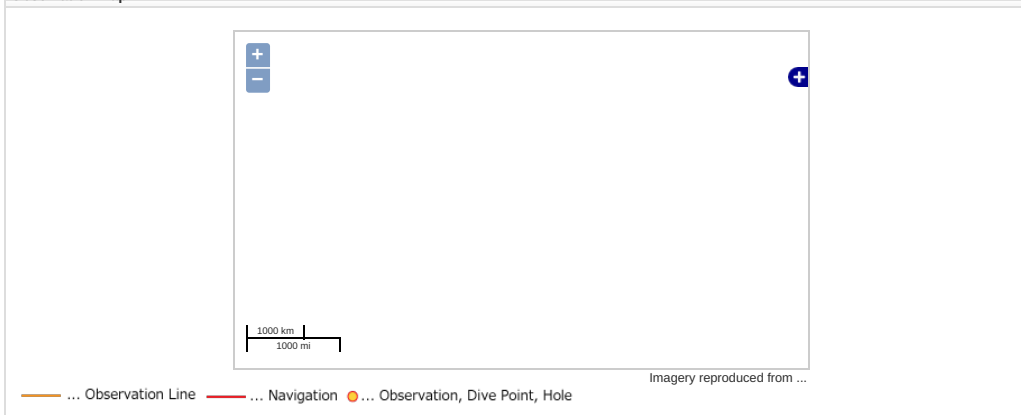
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Observation Map

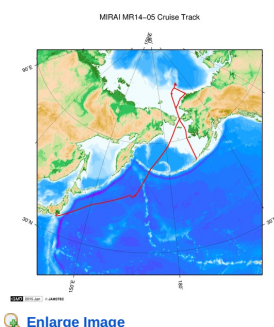


Data List

File names

☐ MR14050020141201062544_ver2.xlsx

Related Information



MR14-05

Ship Name: MIRAI
Period: 2014-08-31 - 2014-10-10
Chief Scientist: Jun Inoue (JAMSTEC)
Project Name: [Arctic Ocean Climate System Research]
Proposal ▶ Predictability study of Arctic cyclones
Title:

[Enlarge Image](#)

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Samples
Data Policy

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Detailed Search

YOKOSUKA
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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

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