MIRAI **MR16-09 Leg3 Bottle Sampling Water Chemical Analysis**

Last Modified: 2023/09/06

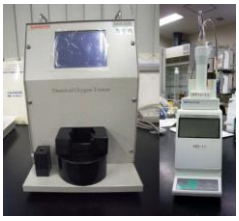
For Using Data	
Data Policy	JAMSTEC
Principal Investigator	See "Quality information"
Use Constraints	See Terms and Conditions about constrain of use.
Data Citation	See Terms and Conditions about data citation.

Quality PI-Processed

Instrument

Salinity measurement system

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



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

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

Titrator for total alkalinity (MR14-03 -)

Fluorometer (TURNER DESIGNS)

Gas chromatograph

Quality information

Quality control was carried out by ;

DATA_ID	Name
CTD/O2	Hiroshi Uchida (JAMSTEC)
SBE35, XMISS, FLUOR, PAR, TURB, CDOM	Hiroshi Uchida (JAMSTEC)
DNSSAL, SVLSAL, SALNTY	Hiroshi Uchida (JAMSTEC)
OXYGEN	Yuichiro Kumamoto (JAMSTEC)
Nutrients	Michio Aoyama (Fukushima University / JAMSTEC)
TCARBON, ALKALI	Akihiko Murata (JAMSTEC)
Chlorophyll-a, CDOM(Spectrophotometer)	Kosei Sasaoka (JAMSTEC)
DOC	Masahito Shigemitsu (JAMSTEC)
CFCs, SF6, N2O	Kenichi Sasaki (JAMSTEC)
DELC13, DELC14, Beryllium Isotopes	Yuichiro Kumamoto (JAMSTEC)
Calcium	Etsuro Ono (JAMSTEC)
POC/HPLC	Susan Becker (SIO)
pH	Andrew Dickson (SIO)

Data Citation

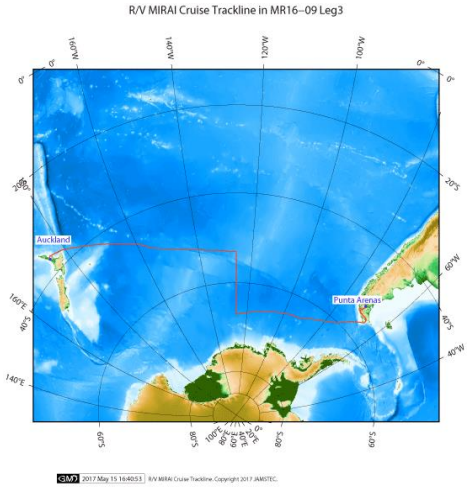
Refer WHP P17E Revisit in 2017 Data Book (doi: 10.17596/0000003) .

About this data

For details about observation, please refer to the Data book "WHP P17E Revisit in 2017 Data Book " (doi: 10.17596/0000003) .

2023/09/04 Updated N2O data flags.

Related Information



MR16-09 Leg3

Ship Name:	MIRAI
Period:	2017/02/08 - 2017/03/04
Chief Scientist:	Hiroshi Uchida (JAMSTEC)
Proposal:	Ship-borne measurements of aerosols in the marine atmosphere: Investigation of potential influence of marine aerosol particles on the climate

The monitoring of ocean climate change from surface to deep layer in the Southern Ocean by using Argo-type floats

Geochemical and microbiological processes throughout water column of the Southern Ocean in the eastern Pacific sector

Regional distribution of seafloor displacement caused by the 2011 Tohoku-oki earthquake: What happened in the northern Japan Trench?

Cumulus-scale air-sea interaction study by shipboard in-situ observations

Geochemical and microbiological investigation for sea surface to sea bottom along Chile margin

Aerosol optical characteristics measured by Ship-borne Sky radiometer

Cessation of active spreading axes at trenches

Trans Pacific Project: Ocean Acidification, Marine Biodiversity, Pacific Meridional Overturning Circulation, Crustal Evolution

Bottle Sampling Water Chemical Analysis (Exchange Format)

Provided in the Exchange Format of CCHDO (CLIVAR and Carbon Hydrographic Data Office). Please see the following url for details of Exchange Format.
* https://cchdo.ucsd.edu/formats

Exchange Format

No.	Content	Unit	Remarks
1	EXPOCODE		ExpoCode
2	SECT		Section ID
3	STNNBR		Station Number
4	CASTNO		Cast Number
5	SAMPNO		Sample Number
6	BTLNBR		Bottle Number (S/N fixed to the sampling device)
7	BTLNBR_FLAG_W		Bottle quality flags for water bottles
8	DATE		Cast date
9	TIME	UTC	Cast time
10	LATITUDE	DEG	Latitude
11	LONGITUDE	DEG	Longitude
12	DEPTH	METERS	Bottom depth
13	CTDPRS	DBAR	Pressure
14	CTDPRS_FLAG_W		Data quality flag
15	CTDTMP	ITS-90	Temperature
16	CTDTMP_FLAG_W		Data quality flag
17	SBE35	ITS-90	Temperature from Deep Ocean Standards Thermometer
18	SBE35_FLAG_W		Data quality flag
19	CTDSAL	PSS-78	Salinity
20	CTDSAL_FLAG_W		Data quality flag
21	SALNTY	PSS-78	Salinity measured by the AUTOSAL salinometer
22	SALNTY_FLAG_W		Data quality flag
23	DNSSAL	G/KG	Absolute Salinity measured by the density meter
24	DNSSAL_FLAG_W		Data quality flag
25	SVLSAL	G/KG	Absolute Salinity estimated from the sound velocity sensor
26	SVLSAL_FLAG_W		Data quality flag
27	CTDOXY	UMOL/KG	Oxygen measured by the RINKO
28	CTDOXY_FLAG_W		Data quality flag
29	OXYGEN	UMOL/KG	Oxygen measured by the dissolved oxygen titrator
30	OXYGEN_FLAG_W		Data quality flag
31	XMISS	%TRANS	Transmission measured by the Transmissometer
32	XMISSCP	/METER	Beam attenuation coefficient measured by the Transmissometer
33	XMISS_FLAG_W		Data quality flag
34	FLUOR	MG/CUM	Chlorophyll-a measured by the Fluorometer
35	FLUOR_FLAG_W		Data quality flag
36	CHLORA	MG/CUM	Chlorophyll a
37	CHLORA_FLAG_W		Data quality flag
38	TURB	FTU	Turbidity
39	TURB_FLAG_W		Data quality flag
40	CDOM	MG/CUM	Colored Dissolved Organic Matter measured by the CDOM sensor
41	CDOM_FLAG_W		Data quality flag
42	PAR	UE/SQM/S	Photosynthetically Active Radiation measured by the PAR sensor
43	PAR_FLAG_W		Data quality flag
44	SILCAT	UMOL/KG	Silicate
45	SILCAT_FLAG_W		Data quality flag
46	SILUNC	UMOL/KG	Uncertainty of Silicate data

47	NITRAT	UMOL/KG	Nitrate
48	NITRAT_FLAG_W		Data quality flag
49	NRAUNC	UMOL/KG	Uncertainty of Nitrate data
50	NITRIT	UMOL/KG	Nitrite
51	NITRIT_FLAG_W		Data quality flag
52	NRIUNC	UMOL/KG	Uncertainty of Nitrite data
53	PHSPHT	UMOL/KG	Phosphate
54	PHSPHT_FLAG_W		Data quality flag
55	PHPUNC	UMOL/KG	Uncertainty of Phosphate data
56	AMMONIA	UMOL/KG	Ammonium
57	AMMONIA_FLAG_W		Data quality flag
58	NH4UNC	UMOL/KG	Uncertainty of Ammonium data
59	CFC-11	PMOL/KG	Chlorofluorocarbon CFC-11 measured by the gas chromatography
60	CFC-11_FLAG_W		Data quality flag
61	CFC-12	PMOL/KG	Chlorofluorocarbon CFC-12 measured by the gas chromatography
62	CFC-12_FLAG_W		Data quality flag
63	CFC113	PMOL/KG	Chlorofluorocarbon CFC-113 measured by the gas chromatography
64	CFC113_FLAG_W		Data quality flag
65	SF6	FMOL/KG	Sulfur hexafluoride measured by the gas chromatography
66	SF6_FLAG_W		Data quality flag
67	N2O	NMOL/KG	Nitrous oxide measured by the gas chromatography
68	N2O_FLAG_W		Data quality flag
69	TCARBN	UMOL/KG	Dissolved inorganic carbon measured by the CO2 measuring system
70	TCARBN_FLAG_W		Data quality flag
71	ALKALI	UMOL/KG	Total alkalinity measured by the total alkalinity measuring system
72	ALKALI_FLAG_W		Data quality flag
73	PH_TOT		pH expressed on the total hydrogen scale
74	PH_TMP	DEG C	Temperature at which pH was determined
75	PH_TOT_FLAG_W		Data quality flag
76	CALCIUM	MMOL/KG	Calcium measured by the modified dissolved oxygen titrator
77	CALCIUM_FLAG_W		Data quality flag
78	DOC	UMOL/KG	Dissolved organic carbon measured by the TOC analyzer
79	DOC_FLAG_W		Data quality flag
80	DELC13	/MILLE	The ratio of the carbon isotopes 13C:12C
81	DELC13_FLAG_W		Data quality flag
82	C13ERR	/MILLE	DELC13 data uncertainty
83	DELC14	/MILLE	The ratio of the carbon isotopes 14C:12C
84	DELC14_FLAG_W		Data quality flag
85	C14ERR	/MILLE	DELC14 data uncertainty
86	BERYL7	-	Beryllium-7
87	BERYL7_FLAG_W		Data quality flag
88	BERYL10	-	Beryllium-10
89	BERYL10_FLAG_W		Data quality flag
90	POC	UMOL/KG	Particulate organic carbon
91	POC_FLAG_W		Data quality flag
92	HPLC	UG/L	Chlorophyll-a analyzed by HPLC
93	HPLC_FLAG_W		Data quality flag
94	CDOM-325	/METER	Absorption coefficient of CDOM at 325 nm
95	CDOM-325_FLAG_W		Data quality flag
96	CDOM-370	/METER	Absorption coefficient of CDOM at 370 nm
97	CDOM-370_FLAG_W		Data quality flag
98	CDOM-443	/METER	Absorption coefficient of CDOM at 443 nm
99	CDOM-443_FLAG_W		Data quality flag

Definition of Quality Control Flags for Bottle Data

1. Quality flag for water bottles

1 = Bottle information unavailable.
2 = No problems noted.
3 = Leaking.
4 = Did not trip correctly.
5 = Not reported.
6 = Significant discrepancy in measured values between Gerard and Niskin bottles.
7 = Unknown problem.
8 = Pair did not trip correctly.
9 = Samples not drawn from this bottle.

2. Data quality flag

1 = Not calibrated (post-cruise calibration)
2 = Acceptable measurement.
3 = Questionable measurement.
4 = Bad measurement.
5 = Not reported.
6 = Interpolated.
7 = Despiked
8 = Low-pass filtered.
9 = Not sampled.