

## \*データのご利用にあたって

- ・データポリシー JAMSTEC
- ・データ責任者 横井 覚（海洋研究開発機構）
- ・データの利用制限 データ利用の制限については 注意事項 をご参照ください。
- ・引用方法 データの引用については 注意事項 をご参照ください。

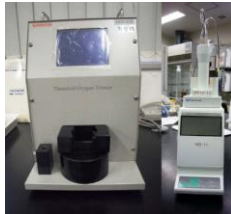
## 品質

Processed (PI)

## 観測機器

機器名

塩分測定装置（オートサル）

溶存酸素測定用滴定装置  
(MR11-06 - )

クロロフィル測定用蛍光光度計



## Information on CTD data

## Pressure sensor

Manufacturer : Sea-Bird Scientific  
Type : SBE9plus  
Measurement range : 0 to 10500 m  
Accuracy : +/-0.015% F.S.  
Resolution : 0.001% F.S.

## Temperature sensor

Manufacturer : Sea-Bird Scientific  
Type : SBE3  
Measurement range : -5 to +35 deg-C  
Accuracy : +/-0.001 deg-C  
Resolution : 0.0003 deg-C

## Salinity sensor

Manufacturer : Sea-Bird Scientific  
Type : SBE4  
Measurement range : 0.0 to 7.0 S/m  
Accuracy : +/-0.0003 S/m  
Resolution : 0.00004 S/m

## DO sensor (primary)

Manufacturer : JFE Advantech Co. Ltd.  
Type : RINKO III  
Measurement range : 0 to 200 %  
Accuracy : +/-2 % F.S. non linearity  
Resolution : 0.01%

## DO sensor (secondary)

Manufacturer : Sea-Bird Scientific  
Type : SBE43  
Measurement range : 120% of surface saturation  
Accuracy : 2% of saturation

## Fluorometer

Manufacturer : Seapoint Sensors, Inc.  
Type : Seapoint Chlorophyll Fluorometer  
Measurement range : 0 to 5  $\mu\text{g/l}$  at Gain 30 $\times$   
Resolution : 0.02  $\mu\text{g/l}$

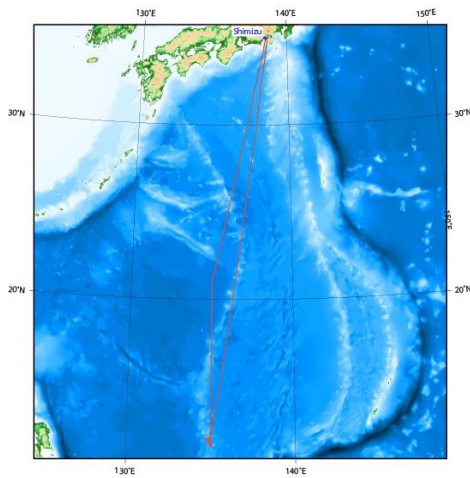
PAR sensor	
Manufacturer :	Sea-Bird Scientific (former Satlantic Inc)
Type :	PAR-Log ICSW
Measurement range :	0 to 5000 $\mu\text{mol photons m}^{-2} \text{s}^{-1}$

#### Information on Chemical and Biological data

Salinity	
Manufacturer :	Guildline Instruments Ltd.
Type :	Autosal salinometer model 8400B
Precision :	Average of absolute difference 0.00060 , standard deviation of absolute difference 0.00059 (33 pairs of replicate samples)
Reference Material/Calibration :	IAPSO Standard Sea Water P163 (Ocean Scientific International Ltd.)
Dissolved Oxygen	
Burette :	
Manufacturer :	Kyoto Electronic Co. Ltd.
Type :	APB-620
Detector and Software :	
Manufacturer :	Kimoto Electronic Co. Ltd
Type :	Automatic photometric titrator DOT-15X
Methods :	Winkler method/photometric methods
Precision :	0.10 $\mu\text{mol kg}^{-1}$ (58 pairs of replicate samples)
Reference Material/Calibration :	The standard potassium iodate (NMIJ CRM 3006-a No.074)
Chlorophyll a	
Manufacturer :	Turner Designs, Inc
Type :	Fluorophotometer model 10-AU-005
Methods :	Extract in N, N-dimethylformamide /fluorometric determination (Welschmeyer non-acidification method)
Precision :	Standard deviation of the differences 0.01 $\mu\text{g L}^{-1}$ (28 pairs of replicate samples)
Reference Material/Calibration :	Pure chlorophyll a (Sigma-Aldrich Co., LLC)

## 関連情報

R/V MIRAI Cruise Trackline in MR20-E01



© 2020 Oct 27 10:58:48 R/V MIRAI Cruise Trackline. Copyright 2020 JAMSTEC.

### MR20-E01

船舶名： みらい  
期間： 2020/08/01 - 2020/09/13  
主席/首席： 横井 覚（海洋研究開発機構）  
課題名： 夏季北進季節内振動に係る大気海洋相互作用研究

MJO に伴う降水及び水蒸気同位体比変動に関する観測研究

漂流ブイを用いた海洋極表層の水溫塩分観測

海洋上の大気エアロゾル観測

大気中の二酸化炭素カラム（気柱）濃度の計測

マイクロ波放射計を用いた可降水量連続観測

エアロゾルの降水・発雷への影響の解明

北進季節内変動に伴う積雲集団の組織化機構の解明

西部熱帯太平洋における海洋鉛直微細構造の解析

## ボトル採水化学分析 (Exchange Format フォーマット)

このデータはCCHDO (CLIVAR and Carbon Hydrographic Data Office) のExchange Formatに準拠しています。Exchange FormatについてはCCHDOのサイトをご覧下さい。

\* <https://cchdo.ucsd.edu/formats>

### Exchange Format

No.	項目	表示書式	単位	備考
1	EXPOCODE	A14		ExpoCode
2	SECT_ID	A6		Section ID
3	STNNBR	A6		Station Number
4	TYPE	A4		Type
5	CASTNO	I3		Cast Number
6	SAMPNO	A7		Sample Number
7	BTLNBR	A7		Bottle Number (S/N fixed to the sampling device)
8	BTLNBR_FLAG_W	I1		Bottle quality flags
9	DATE	I8		Cast date
10	TIME	A4	UTC	Cast time
11	LATITUDE	F8.4	DEG	Latitude
12	LONGITUDE	F9.4	DEG	Longitude
13	DEPTH	I5	METERS	Bottom depth
14	CTDDPT	F9.1	METERS	Depth
15	CTDDPT_FLAG_W	I1		Quality flags for CTD data
16	CTDPRS	F9.1	DBAR	Pressure
17	CTDPRS_FLAG_W	I1		Quality flags for CTD data
18	CTDTMP	F9.4	ITS-90	Temperature (primary sensor)
19	CTDTMP_FLAG_W	I1		Quality flags for CTD data
20	CTDTMP_1	F9.4	ITS-90	Temperature (secondary sensor)
21	CTDTMP_1_FLAG_W	I1		Quality flags for CTD data
22	CTDSAL	F9.4	PSS-78	Salinity (primary sensor)
23	CTDSAL_FLAG_W	I1		Quality flags for CTD data
24	CTDSAL_1	F9.4	PSS-78	Salinity (secondary sensor)
25	CTDSAL_1_FLAG_W	I1		Quality flags for CTD data
26	CTDCND	F11.6	S/M	Conductivity (primary sensor)
27	CTDCND_FLAG_W	I1		Quality flags for CTD data
28	CTDCND_1	F11.6	S/M	Conductivity (secondary sensor)
29	CTDCND_1_FLAG_W	I1		Quality flags for CTD data
30	CTDOXY	F9.2	UMOL/KG	CTD-oxygen (RINKO III sensor using primary T and S)
31	CTDOXY_FLAG_W	I1		Quality flags for CTD data
32	CTDOXY_s	F9.2	UMOL/KG	CTD-oxygen (RINKO III sensor using secondary T and S)
33	CTDOXY_s_FLAG_W	I1		Quality flags for CTD data
34	CTDOXY_3	F9.2	UMOL/KG	CTD-oxygen (SBE43)
35	CTDOXY_3_FLAG_W	I1		Quality flags for CTD data
36	CTDOXY_4	F9.2	UMOL/KG	CTD-oxygen (SBE43)
37	CTDOXY_4_FLAG_W	I1		Quality flags for CTD data
38	CTDOXV	F9.4	V	CTD-oxygen voltage (RINKO III)
39	CTDOXV_FLAG_W	I1		Quality flags for CTD data
40	CTDOXV_3	F9.4	V	CTD-oxygen voltage (SBE43)
41	CTDOXV_3_FLAG_W	I1		Quality flags for CTD data
42	CTDOXV_4	F9.4	V	CTD-oxygen voltage (SBE43)
43	CTDOXV_4_FLAG_W	I1		Quality flags for CTD data
44	THETA	F9.4	DEG C	Potential temperature (primary sensor)
45	THETA_FLAG_W	I1		Quality flags for CTD data
46	THETA_1	F9.4	DEG C	Potential temperature (secondary sensor)

47	THETA_1_FLAG_W	I1		Quality flags for CTD data
48	SIG0	F9.4	KG/CUM	Density (primary sensor)
49	SIG0_FLAG_W	I1		Quality flags for CTD data
50	SIG0_1	F9.4	KG/CUM	Density (secondary sensor)
51	SIG0_1_FLAG_W	I1		Quality flags for CTD data
52	FLUOR	F9.3	MG/CUM	Fluorescence
53	FLUOR_FLAG_W	I1		Quality flags for CTD data
54	PAR	F9.3	UE/SQM/S	PAR
55	PAR_FLAG_W	I1		Quality flags for CTD data
56	SALNTY	F9.4	PSS-78	Bottle Salinity
57	SALNTY_FLAG_W	I1		Quality flags for water samples
58	SALNTY_1	F9.4	PSS-78	Bottle Salinity (replicate)
59	SALNTY_1_FLAG_W	I1		Quality flags for water samples
60	OXYGEN	F9.2	UMOL/KG	Bottle Oxygen
61	OXYGEN_FLAG_W	I1		Quality flags for water samples
62	OXYGEN_1	F9.2	UMOL/KG	Bottle Oxygen (replicate)
63	OXYGEN_1_FLAG_W	I1		Quality flags for water samples
64	CHLWEL	F9.2	MG/CUM	Chlorophyll a
65	CHLWEL_FLAG_W	I1		Quality flags for water samples
66	CHLWEL_1	F9.2	MG/CUM	Chlorophyll a (replicate)
67	CHLWEL_1_FLAG_W	I1		Quality flags for water samples

## ボトル採水化学分析（Ocean Data Viewフォーマット）

このデータはOcean Data View (ODV) 対応のODV spreadsheet format (タブ区切り、拡張子.txt) に準拠しています。

ODVは、海洋学などの連続データ、もしくはグリッドデータを可視化するソフトウェアです。

ODVおよびODV spreadsheet formatの詳細についてはODVのサイト\*をご覧ください。

\* <https://odv.awi.de/>

### ODV Format

No.	項目	備考
1	EXPOCODE	Cruise Label
2	Cruise	Cruise
3	Station	Station number_Cast number
4	Type	Station type
5	mon/day/yr	Cast date
6	hh:mm	Cast time
7	Latitude[degrees_north]	Latitude
8	Longitude[degrees_east]	Longitude
9	Bot. Depth[METERS]	Bottom depth
10	CTDDPT[METERS]	Depth
11	QF	Quality flags for CTD data
12	CTDPRS[DBAR]	Pressure
13	QF	Quality flags for CTD data
14	CTDTMP[ITS-90]	Temperature (primary sensor)
15	QF	Quality flags for CTD data
16	CTDTMP_1[ITS-90]	Temperature (secondary sensor)
17	QF	Quality flags for CTD data
18	CTDSAL[PSS-78]	Salinity (primary sensor)
19	QF	Quality flags for CTD data
20	CTDSAL_1[PSS-78]	Salinity (secondary sensor)
21	QF	Quality flags for CTD data
22	CTDCND[S/M]	Conductivity (primary sensor)
23	QF	Quality flags for CTD data
24	CTDCND_1[S/M]	Conductivity (secondary sensor)
25	QF	Quality flags for CTD data
26	CTDOXY[UMOL/KG]	CTD-oxygen (RINKO III sensor using primary T and S)
27	QF	Quality flags for CTD data
28	CTDOXY_s[UMOL/KG]	CTD-oxygen (RINKO III sensor using secondary T and S)
29	QF	Quality flags for CTD data
30	CTDOXY_3[UMOL/KG]	CTD-oxygen (SBE43)
31	QF	Quality flags for CTD data
32	CTDOXY_4[UMOL/KG]	CTD-oxygen (SBE43)
33	QF	Quality flags for CTD data
34	CTDOXV[V]	CTD-oxygen voltage (RINKO III)
35	QF	Quality flags for CTD data
36	CTDOXV_3[V]	CTD-oxygen voltage (SBE43)
37	QF	Quality flags for CTD data
38	CTDOXV_4[V]	CTD-oxygen voltage (SBE43)
39	QF	Quality flags for CTD data
40	THETA[DEG C]	Potential temperature (primary sensor)
41	QF	Quality flags for CTD data
42	THETA_1[DEG C]	Potential temperature (secondary sensor)
43	QF	Quality flags for CTD data
44	SIG0[KG/CUM]	Density (primary sensor)

45	QF	Quality flags for CTD data
46	SIG0_1[KG/CUM]	Density (secondary sensor)
47	QF	Quality flags for CTD data
48	FLUOR[MG/CUM]	Fluorescence
49	QF	Quality flags for CTD data
50	PAR[UE/SQM/S]	PAR
51	QF	Quality flags for CTD data
52	SALNTY[PSS-78]	Bottle Salinity
53	QF	Quality flags for water samples
54	SALNTY_1[PSS-78]	Bottle Salinity (replicate)
55	QF	Quality flags for water samples
56	OXYGEN[UMOL/KG]	Bottle Oxygen
57	QF	Quality flags for water samples
58	OXYGEN_1[UMOL/KG]	Bottle Oxygen (replicate)
59	QF	Quality flags for water samples
60	CHLWEL[MG/CUM]	Chlorophyll a
61	QF	Quality flags for water samples
62	CHLWEL_1[MG/CUM]	Chlorophyll a (replicate)
63	QF	Quality flags for water samples
64	SAMPNO	Sample Number
65	QF	Bottle quality flags

ボトルデータでは Exchange フォーマットを基にODV (Ocean Data View) フォーマットに変換し、Exchange フォーマットのフラグに対応するODVのフラグを付与しています。

ODV flagging schemes Version 1.0 : 「みらい」の MR14-06 Leg3 以前のボトルデータ、「かいよう」のボトルデータ

ODV flagging schemes Version 1.4 : 「みらい」の MR15-02 以降のボトルデータ (2015年7月以降のボトルデータ)

### 1. Bottle quality flags

Exchange フォーマット	ODV Version: 1.0	ODV Version: 1.4
1 = Bottle information unavailable.	1 : unknown	1 : unknown quality
2 = No problems noted.	0 : good	0 : good quality
3 = Leaking.	4 : questionable	4 : questionable quality
4 = Did not trip correctly.	8 : bad	8 : bad quality
5 = Not reported.	8 : bad	1 : unknown quality
7 = Unknown problem.	1 : unknown	4 : questionable quality
9 = Samples not drawn from this bottle.	no data	1 : unknown quality

### 2. Quality flags for water samples

Exchange フォーマット	ODV Version: 1.0	ODV Version: 1.4
1 = Sample for this measurement was drawn from water bottle but analysis not received.	1 : unknown	1 : unknown quality
2 = Acceptable measurement.	0 : good	0 : good quality
3 = Questionable measurement.	4 : questionable	4 : questionable quality
4 = Bad measurement.	8 : bad	8 : bad quality
5 = Not reported.	8 : bad	1 : unknown quality
6 = Mean of replicate measurements.	0 : good	1 : unknown quality
9 = Sample not drawn for this measurement from this bottle.	no data	1 : unknown quality

### 3. Quality flags definitions for CTD data

Exchange フォーマット	ODV Version: 1.0	ODV Version: 1.4
1 = Not calibrated.	1 : unknown	1 : unknown quality
2 = Acceptable measurement.	0 : good	0 : good quality
3 = Questionable measurement.	4 : questionable	4 : questionable quality
4 = Bad measurement.	8 : bad	8 : bad quality
5 = Not reported.	8 : bad	1 : unknown quality
6 = Interpolated over >1 dbar interval.	1 : unknown	
6 = Interpolated over >2 dbar interval.		1 : unknown quality
7 = Despiked.	1 : unknown	1 : unknown quality
9 = Not sampled.	no data	1 : unknown quality