

MIRAI MR98-K01 Expendable Bathythermograph (XBT)

Last Modified: 2019-09-28

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Cruise ID: [MR98-K01](#)

Expendable Bathythermograph (XBT): Processed (DMO)-QCed

Data Policy: [JAMSTEC](#)

Observation Items: Depth, Temperature

Science Keywords:

OCEANS > OCEAN TEMPERATURE > WATER TEMPERATURE

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR98-K01_all.pdf

For Using Data

Principal Investigator

Data Management Office

Use Constraints

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

Data Citation

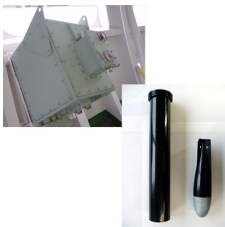
See [Terms and Conditions](#) about data citation.

Instrument

Instrument:

Expendable bathythermograph (XBT) (

- MR11-E02)



Overview

Using XBT (eXpendable Bathy Thermograph) system, the vertical distribution of water temperature is observed during free fall of its probe part in the seawater. On board, the analogue signal is converted to the temperature by data processor and the data is stored in PC. Depth data is calculated from the elapsed time.

System

(1) Launcher

Hand launcher

Manufacturer : Sippican, Inc.

Operation area : Rear upper deck

Automatic launcher

Manufacturer : Tsurumi Seiki Co., LTD.

Location : Port side of rear upper deck (4m from the sea level). The control panel is installed in the investigation room.

(2) Converter

Manufacturer : Tsurumi Seiki Co., LTD.

Location : Investigation room

Sampling rate : 50 msec

(3) XBT probe specifications

Probe Type	TSK T-5	TSK T-6	TSK T-7	TSK T-10
Temperature range [deg-C]	-2 to 35			
Temperature accuracy [deg-C]	+/- 0.2			
Temperature resolution [deg-C]	0.01			
Measurement depth [m]	1830	460	760	300
Depth accuracy [m]	5 or +/- 2% of depth; whichever is larger			
Maximum elapsed time [sec]	291	73	123	48
Rated ship speed [knot]	6	15	15	10

Since XBT carries no pressure sensor, we need to estimate depth from the elapsed time. The fall-rate equation is as follows.

$$Z = at + 10E^{-3} * bt^2$$

Where Z(m) is the depth and t(sec) is the elapsed time.

In addition, coefficients of the fall-rate equation are different by probe types.

Probe Type	TSK T-5	TSK T-6	TSK T-7	TSK T-10
Coefficient-a	6.828	6.691	6.691	6.301
Coefficient-b	-1.82	-2.25	-2.25	-2.16

* Coefficients listed above are supplied by Sippican, Inc. in USA

The list of an XBT type used in each cast is as follows.

Cast name	Probe Serial No.	Probe Type	Launcher	Converter
199811020312	-	T-7	-	MK-30N
199811020439	-	T-7	-	MK-30N
199811020605	-	T-7	-	MK-30N
199811020730	-	T-7	-	MK-30N
199811020902	-	T-7	-	MK-30N
199811021036	-	T-7	-	MK-30N
199811021209	-	T-7	-	MK-30N
199811021337	-	T-7	-	MK-30N
199811021507	-	T-7	-	MK-30N
199811021639	-	T-7	-	MK-30N
199811021806	-	T-7	-	MK-30N
199811021941	-	T-7	-	MK-30N
199811022130	-	T-7	-	MK-30N
199811022251	-	T-7	-	MK-30N
199811030023	-	T-7	-	MK-30N
199811030154	-	T-7	-	MK-30N
199811030324	-	T-7	-	MK-30N
199811030457	-	T-7	-	MK-30N
199811032305	-	T-7	-	MK-30N
199811040103	-	T-7	-	MK-30N
199811040305	-	T-7	-	MK-30N
199811040440	-	T-7	-	MK-30N
199811040613	-	T-7	-	MK-30N
199811040744	-	T-7	-	MK-30N
199811040914	-	T-7	-	MK-30N
199811041045	-	T-7	-	MK-30N
199811041214	-	T-7	-	MK-30N
199811041346	-	T-7	-	MK-30N
199811041512	-	T-7	-	MK-30N
199811051119	-	T-7	-	MK-30N
199811051857	-	T-7	-	MK-30N
199811060014	-	T-7	-	MK-30N
199811060832	-	T-7	-	MK-30N
199811061244	-	T-7	-	MK-30N
199811062028	-	T-7	-	MK-30N
199811091505	-	T-7	-	MK-30N
199811091659	-	T-7	-	MK-30N
199811091904	-	T-7	-	MK-30N
199811092108	-	T-7	-	MK-30N
199811092313	-	T-7	-	MK-30N
199811100119	-	T-7	-	MK-30N
199811100321	-	T-7	-	MK-30N
199811100544	-	T-7	-	MK-30N
199811120107	-	T-7	-	MK-30N
199811120259	-	T-7	-	MK-30N
199811120454	-	T-7	-	MK-30N
199811120651	-	T-7	-	MK-30N
199811120903	-	T-7	-	MK-30N
199811121127	-	T-7	-	MK-30N
199811121342	-	T-7	-	MK-30N
199811121610	-	T-7	-	MK-30N
199811121845	-	T-7	-	MK-30N
199811130025	-	T-7	-	MK-30N
199811130843	-	T-7	-	MK-30N
199811131133	-	T-7	-	MK-30N
199811131433	-	T-7	-	MK-30N
199811131725	-	T-7	-	MK-30N
199811132029	-	T-7	-	MK-30N
199811140058	-	T-7	-	MK-30N
199811140524	-	T-7	-	MK-30N
199811140840	-	T-7	-	MK-30N
199811141204	-	T-7	-	MK-30N
199811141527	-	T-7	-	MK-30N
199811141822	-	T-7	-	MK-30N
199811142118	-	T-7	-	MK-30N
199811150000	-	T-7	-	MK-30N
199811150635	-	T-7	-	MK-30N
199811150905	-	T-7	-	MK-30N
199811151135	-	T-7	-	MK-30N
199811151405	-	T-7	-	MK-30N
199811151626	-	T-7	-	MK-30N
199811151846	-	T-7	-	MK-30N
199811152150	-	T-7	-	MK-30N

Case Name	Probe Serial No.	Probe Type	Launcher	Converter
199811170424	-	T-7	-	MK-30N
199811170611	-	T-7	-	MK-30N
199811170755	-	T-7	-	MK-30N
199811170942	-	T-7	-	MK-30N
199811171132	-	T-7	-	MK-30N
199811171332	-	T-7	-	MK-30N
199811171540	-	T-7	-	MK-30N
199811171744	-	T-7	-	MK-30N
199811172005	-	T-7	-	MK-30N
199811172222	-	T-7	-	MK-30N
199811180036	-	T-7	-	MK-30N
199811180247	-	T-7	-	MK-30N
199811180500	-	T-7	-	MK-30N
199811180714	-	T-7	-	MK-30N
199811180928	-	T-7	-	MK-30N
199811181142	-	T-7	-	MK-30N
199811181350	-	T-7	-	MK-30N
199811181555	-	T-7	-	MK-30N
199811181811	-	T-7	-	MK-30N
199811182020	-	T-7	-	MK-30N
199811182226	-	T-7	-	MK-30N
199811190026	-	T-7	-	MK-30N
199811190214	-	T-7	-	MK-30N
199811190403	-	T-7	-	MK-30N
199811190552	-	T-7	-	MK-30N
199811190734	-	T-7	-	MK-30N
199811190915	-	T-7	-	MK-30N
199811191051	-	T-7	-	MK-30N
199811191226	-	T-7	-	MK-30N
199811191412	-	T-7	-	MK-30N
199811200444	-	T-7	-	MK-30N
199811200635	-	T-7	-	MK-30N
199811200826	-	T-7	-	MK-30N
199811201011	-	T-7	-	MK-30N
199811201201	-	T-7	-	MK-30N
199811210004	-	T-7	-	MK-30N
199811210218	-	T-7	-	MK-30N
199811210422	-	T-7	-	MK-30N
199811210626	-	T-7	-	MK-30N
199811210828	-	T-7	-	MK-30N
199811211033	-	T-7	-	MK-30N
199811211246	-	T-7	-	MK-30N
199811241223	-	T-7	-	MK-30N
199811241416	-	T-7	-	MK-30N
199811241612	-	T-7	-	MK-30N
199811241810	-	T-7	-	MK-30N
199811241958	-	T-7	-	MK-30N
199811242145	-	T-7	-	MK-30N
199811242333	-	T-7	-	MK-30N
199811250128	-	T-7	-	MK-30N
199811250320	-	T-7	-	MK-30N
199811250513	-	T-7	-	MK-30N
199811251621	-	T-7	-	MK-30N
199811251801	-	T-7	-	MK-30N
199811251953	-	T-7	-	MK-30N
199811252133	-	T-7	-	MK-30N
199811252306	-	T-7	-	MK-30N
199811260037	-	T-7	-	MK-30N
199811260213	-	T-7	-	MK-30N
199811260344	-	T-7	-	MK-30N
199811260519	-	T-7	-	MK-30N
199811262210	-	T-7	-	MK-30N
199811270023	-	T-7	-	MK-30N
199811270303	-	T-7	-	MK-30N
199811270508	-	T-7	-	MK-30N
199811272232	-	T-7	-	MK-30N
199811280222	-	T-7	-	MK-30N
199811280758	-	T-7	-	MK-30N
199811281420	-	T-7	-	MK-30N
199811291101	-	T-7	-	MK-30N
199811291237	-	T-7	-	MK-30N
199811291411	-	T-7	-	MK-30N
199811291544	-	T-7	-	MK-30N
199811291716	-	T-7	-	MK-30N
199811291847	-	T-7	-	MK-30N
199811292015	-	T-7	-	MK-30N

Cast name	Probe Serial No.	Probe Type	Launcher	Converter
199811292142	-	T-7	-	MK-30N
199811292312	-	T-7	-	MK-30N
199811300951	-	T-7	-	MK-30N
199811301149	-	T-7	-	MK-30N
199811301341	-	T-7	-	MK-30N
199811301551	-	T-7	-	MK-30N
199812010317	-	T-7	-	MK-30N
199812010521	-	T-7	-	MK-30N
199812010726	-	T-7	-	MK-30N
199812010933	-	T-7	-	MK-30N
199812012028	-	T-7	-	MK-30N
199812012218	-	T-7	-	MK-30N
199812020005	-	T-7	-	MK-30N
199812020150	-	T-7	-	MK-30N
199812020340	-	T-7	-	MK-30N
199812020531	-	T-7	-	MK-30N
199812020716	-	T-7	-	MK-30N
199812021020	-	T-7	-	MK-30N
199812021240	-	T-7	-	MK-30N
199812021453	-	T-7	-	MK-30N
199812021705	-	T-7	-	MK-30N
199812031134	-	T-7	-	MK-30N
199812031342	-	T-7	-	MK-30N
199812031543	-	T-7	-	MK-30N
199812031747	-	T-7	-	MK-30N
199812040400	-	T-7	-	MK-30N
199812040603	-	T-7	-	MK-30N
199812040807	-	T-7	-	MK-30N
199812041007	-	T-7	-	MK-30N
199812041210	-	T-7	-	MK-30N
199812041345	-	T-7	-	MK-30N
199812041518	-	T-7	-	MK-30N
199812041645	-	T-7	-	MK-30N
199812041815	-	T-7	-	MK-30N
199812041944	-	T-7	-	MK-30N
199812042115	-	T-7	-	MK-30N
199812042246	-	T-7	-	MK-30N
199812050018	-	T-7	-	MK-30N
199812050223	-	T-7	-	MK-30N
199812061805	-	T-7	-	MK-30N
199812081514	-	T-7	-	MK-30N
199812081851	-	T-7	-	MK-30N
199812082325	-	T-7	-	MK-30N
199812090336	-	T-7	-	MK-30N
199812091737	-	T-7	-	MK-30N
199812100544	-	T-7	-	MK-30N
199812100945	-	T-7	-	MK-30N
199812101359	-	T-7	-	MK-30N
199812101820	-	T-7	-	MK-30N
199812131022	-	T-7	-	MK-30N
199812131418	-	T-7	-	MK-30N
199812131812	-	T-7	-	MK-30N
199812132156	-	T-7	-	MK-30N
199812140159	-	T-7	-	MK-30N
199812140414	-	T-7	-	MK-30N
199812140808	-	T-7	-	MK-30N
199812141158	-	T-7	-	MK-30N
199812141844	-	T-7	-	MK-30N

Data processing

(1) For sensor's stability, values of less than 1 m for temperature are replaced by missing values, respectively, based on manufacturer's recommendation.

(2) Quality control

QCed data were added flag according to the NODC (National Oceanographic Data Center) quality control procedure.

- 1) The gradient check of adjacent depth data
- 2) The broad range check set up at given ocean space and depth

Please see the site of NODC of the following link for quality control procedure in detail.

[QUALITY CONTROL AND PROCESSING OF HISTORICAL OCEANOGRAPHIC TEMPERATURE, SALINITY, AND OXYGEN DATA](#)

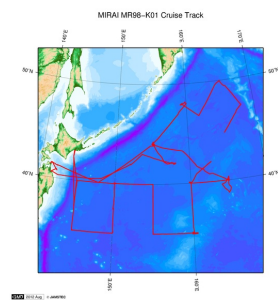
In addition, an abnormal value is identified by a visual check, and the data after visual QC is released.

Note

(1) It is reported that T-5 probes produced by Tsurumi Seiki Co. Ltd. (TSK T-5 probes) have a fall-rate bias. Please see the following about publication policy of XBT fall-rate bias correction data.

[Publication policy of XBT fall-rate bias correction data](#)

Related Information



MR98-K01

Ship Name: MIRAI
Period: 1998-10-30 - 1998-12-15
Chief Scientist: Masashi Kusakabe (JAMSTEC)
Project Name: [Station KNOT]

Update History

2019-09-28	An observation data was registerd.
2017-06-29	An observation data was registerd.
2014-07-12	An observation data was registerd.
2014-02-20	An observation data was registerd.
2013-01-25	An observation data was registerd.

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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:

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国立研究開発法人
海洋研究開発機構

MIRAI MR98-K01 Expendable Bathythermograph (XBT)

Last Modified: 2019-09-28

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Expendable Bathythermograph (XBT): Processed (DMO)-QCed

Data Policy: [JAMSTEC](#)

XBT DMO

Each data file contains one line header (meta data) followed by data lines for each cast.

The number of data lines are recorded in the header.

Header part

No.	Column	Content	Format	Remarks
1	1	Header ID	a1	fixed as '#'
2	3 - 6	Data ID	a4	XBT
3	8 - 22	Cruise ID	a15	
4	33 - 40	Date	i8	YYYYMMDD (UTC)
5	42 - 45	Time	i4	hhmm (UTC)
6	47 - 55	Latitude	i2,a1,f5.2,a1	dd-mm.mmN(S)
7	57 - 66	Longitude	i3,a1,f5.2,a1	ddd-mm.mmE(W)
8	68 - 71	Number of data lines	i4	
9	72 - 73	Terminator	-	CR+LF

Data part

No.	Column	Content	Unit	Format	Remarks
1	1 - 11	Depth	m	f11.1	
2	12 - 22	Temperature	deg-C	f11.2	ITS-90
3	45 - 55	Flag	-	i11	1 - 7 : space 8 : flag of depth 9 : flag of temperature 10 - 11 : space * reference : Definition of Quality Control Flags
4	56 - 57	Terminator	-	-	CR+LF

Each contents of the data part is stored in 11 bytes.

Missing value is presented by '-5', and error value is presented by '-9'.

Definition of Quality Control Flags

1. Depth Flags

- 0 - accepted value
- 1 - error in recorded depth (same or less than previous depth)
- 2 - density inversion

2. Observed Level Flags

- N - missing value
- 0 - accepted value
- 1 - range outlier (outside of broad range check)
- 2 - failed inversion check
- 3 - failed gradient check
- 4 - zero anomaly
- 5 - failed combined gradient and inversion checks
- 6 - failed range and inversion checks
- 7 - failed range and gradient checks
- 8 - failed range and zero anomaly checks
- 9 - failed range and combined gradient and inversion checks
- A - failed visual check

* Range and gradient check is performed to XBT data.

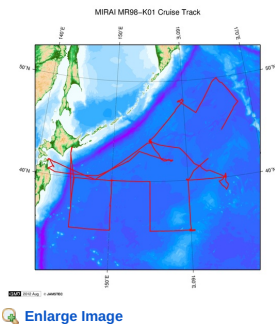
QCed data were added flag according to the NODC (National Oceanographic Data Center) quality control procedure, additionally visually checked. Please see the site of NODC of the following link for quality control procedure.

[QUALITY CONTROL AND PROCESSING OF HISTORICAL OCEANOGRAPHIC TEMPERATURE, SALINITY, AND OXYGEN DATA](#)

Sample Program

[ex_read2.f](#)

Related Information



MR98-K01
 Ship Name: MIRAI
 Period: 1998-10-30 - 1998-12-15
 Chief Scientist: Masashi Kusakabe (JAMSTEC)
 Project Name: [Station KNOT]

Update History

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 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:

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JAMSTEC 国立研究開発法人
 海洋研究開発機構
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Data Policy: **JAMSTEC**

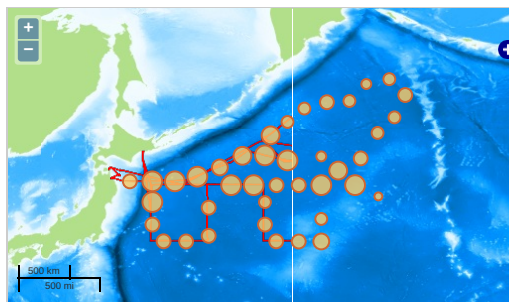
Observation Items: Depth, Temperature

Science Keywords:

OCEANS > OCEAN TEMPERATURE > WATER TEMPERATURE

Observation Map

1. Clicking the icon displays a balloon with observation information.
2. Then click the observation name, figures will be displayed.

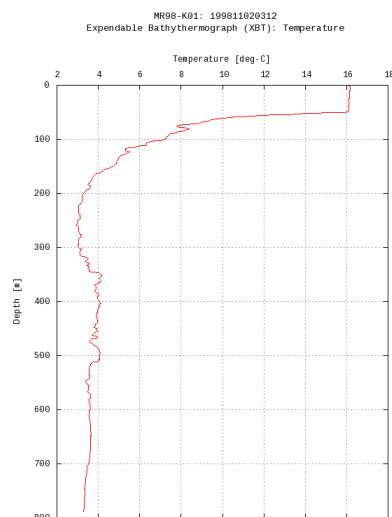


— ... Observation Line — ... Navigation ● ... Observation, Dive Point, Hole

Imagery reproduced from ...

Figures

199811020312


















Only values evaluated as "good" : all flags are 0" are plotted in profiles.
Please see Format Page for the definition of quality flags.












































































Data List









[Add to Basket](#)

File names

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<input type="checkbox"/>	199811020439.dat
<input type="checkbox"/>	199811020605.dat
<input type="checkbox"/>	199811020730.dat
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<input type="checkbox"/>	199811032305.dat

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	199811040305.dat
	199811040440.dat
	199811040613.dat
	199811040744.dat
	199811040914.dat
	199811041045.dat
	199811041214.dat
	199811041346.dat
	199811041512.dat
	199811051119.dat
	199811051857.dat
	199811060014.dat
	199811060832.dat
	199811061244.dat
	199811062028.dat
	199811091505.dat
	199811091659.dat
	199811091904.dat
	199811092108.dat
	199811092313.dat
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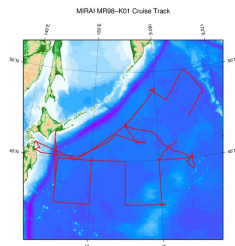
- Observation List
- The list of observation is shown as follows.

Observation	Time and Date	Lat. [°]	Lon. [°]
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199811020439	1998-11-02 04:36	40.3256	143.5028
199811020605	1998-11-02 06:03	40.3268	144.0103
199811020730	1998-11-02 07:28	40.3316	144.4993
199811020902	1998-11-02 09:00	40.3366	144.9998
199811021036	1998-11-02 10:33	40.3268	145.4955
199811021209	1998-11-02 12:06	40.3296	146.0068
199811021337	1998-11-02 13:35	40.3276	146.5015
199811021507	1998-11-02 15:05	40.3405	146.9985
199811021639	1998-11-02 16:34	40.3658	147.4963
199811021806	1998-11-02 18:03	40.4000	147.9951
199811021941	1998-11-02 19:39	40.5505	148.5055
199811022130	1998-11-02 21:12	40.7523	148.9991
199811022251	1998-11-02 22:48	40.9573	149.4998
199811030023	1998-11-03 00:21	41.1681	149.9975
199811030154	1998-11-03 01:51	41.3721	150.5018
199811030324	1998-11-03 03:22	41.5725	150.9971
199811030457	1998-11-03 04:54	41.7638	151.4966
199811032305	1998-11-03 23:03	42.2531	152.4993
199811040103	1998-11-04 01:01	42.6030	152.9998
199811040305	1998-11-04 03:03	42.9640	153.4998
199811040440	1998-11-04 04:38	42.8980	154.0000
199811040613	1998-11-04 06:10	42.7806	154.5120
199811040744	1998-11-04 07:41	42.6448	155.0001
199811040914	1998-11-04 09:12	42.5319	155.5015
199811041045	1998-11-04 10:42	42.4084	156.0001
199811041214	1998-11-04 12:12	42.2885	156.5004
199811041346	1998-11-04 13:40	42.1961	157.0000
199811041512	1998-11-04 15:09	42.0853	157.4996
199811051119	1998-11-05 11:16	42.1629	157.4985
199811051857	1998-11-05 18:53	42.0431	157.0016
199811060014	1998-11-06 00:12	42.2828	156.4993
199811060832	1998-11-06 08:29	42.9055	156.0018
199811061244	1998-11-06 12:42	43.4030	155.5000
199811062028	1998-11-06 20:25	44.0085	154.9903
199811091505	1998-11-09 15:03	44.4213	155.4998
199811091659	1998-11-09 16:56	44.7948	155.9978
199811091904	1998-11-09 19:02	45.2085	156.5000
199811092108	1998-11-09 21:05	45.6064	157.0006
199811092313	1998-11-09 23:10	45.9991	157.4995
199811100119	1998-11-10 01:17	46.4053	158.0026
199811100321	1998-11-10 03:19	46.7983	158.4991
199811100544	1998-11-10 05:42	47.2693	159.0003
199811120107	1998-11-12 01:05	47.6228	160.0010
199811120259	1998-11-12 02:57	47.3615	160.5033
199811120454	1998-11-12 04:51	47.1025	161.0033
199811120651	1998-11-12 06:48	46.8381	161.5046
199811120903	1998-11-12 09:01	46.9581	161.9990
199811121127	1998-11-12 11:24	47.4678	162.4995
199811121342	1998-11-12 13:39	47.9421	163.0023
199811121610	1998-11-12 16:07	48.4641	163.5028
199811121845	1998-11-12 18:43	48.9780	163.9986
199811130025	1998-11-13 00:23	49.8743	165.0008

Observation	Time and Date	Lat. [°]	Lon. [°]
199811130843	1998-11-13 08:39	49.4101	166.0428
199811131133	1998-11-13 11:30	48.9920	166.5498
199811131433	1998-11-13 14:31	48.4970	167.0333
199811131725	1998-11-13 17:22	47.9995	167.4560
199811132029	1998-11-13 20:27	47.5020	167.8908
199811140058	1998-11-14 00:56	47.0006	167.5891
199811140524	1998-11-14 05:21	46.4711	167.0003
199811140840	1998-11-14 08:38	46.0155	166.4973
199811141204	1998-11-14 12:02	45.5626	165.9996
199811141527	1998-11-14 15:24	45.0921	165.4973
199811141822	1998-11-14 18:19	44.6366	165.0011
199811142118	1998-11-14 21:16	44.1650	164.5003
199811150000	1998-11-14 23:57	43.7041	164.0011
199811150635	1998-11-15 06:32	42.3750	163.5011
199811150905	1998-11-15 09:03	42.0991	163.0010
199811151135	1998-11-15 11:32	41.8401	162.5008
199811151405	1998-11-15 14:02	41.5575	162.0001
199811151626	1998-11-15 16:23	41.2945	161.5053
199811151846	1998-11-15 18:44	41.0086	160.9960
199811152150	1998-11-15 21:48	40.5095	160.4971
199811160446	1998-11-16 04:44	40.0013	160.0023
199811170424	1998-11-17 04:21	40.0161	159.5001
199811170611	1998-11-17 06:08	40.0015	158.9981
199811170755	1998-11-17 07:53	40.0005	158.5021
199811170942	1998-11-17 09:40	40.0015	158.0010
199811171132	1998-11-17 11:29	40.0060	157.5006
199811171332	1998-11-17 13:30	40.0071	157.0006
199811171540	1998-11-17 15:37	40.0065	156.4985
199811171744	1998-11-17 17:41	39.9960	156.0295
199811172005	1998-11-17 20:03	40.0008	155.5026
199811172222	1998-11-17 22:20	40.0006	155.0013
199811180036	1998-11-18 00:34	39.9963	154.5001
199811180247	1998-11-18 02:44	39.9996	154.0004
199811180500	1998-11-18 04:58	39.9973	153.5006
199811180714	1998-11-18 07:11	40.0016	153.0006
199811180928	1998-11-18 09:26	39.9970	152.4981
199811181142	1998-11-18 11:40	39.9993	151.9980
199811181350	1998-11-18 13:47	40.0083	151.4976
199811181555	1998-11-18 15:52	40.0030	151.0073
199811181811	1998-11-18 18:07	40.0043	150.4955
199811182020	1998-11-18 20:17	39.9901	149.9978
199811182226	1998-11-18 22:24	39.9925	149.4988
199811190026	1998-11-19 00:24	40.0020	149.0001
199811190214	1998-11-19 02:12	40.0023	148.4933
199811190403	1998-11-19 04:00	40.0045	147.9920
199811190552	1998-11-19 05:49	39.9963	147.4966
199811190734	1998-11-19 07:32	40.0030	146.9981
199811190915	1998-11-19 09:12	40.0061	146.4988
199811191051	1998-11-19 10:48	40.0058	145.9981
199811191226	1998-11-19 12:22	40.0028	145.4996
199811191412	1998-11-19 14:09	39.9993	145.0016
199811200444	1998-11-20 04:42	39.4986	145.0528
199811200635	1998-11-20 06:33	38.9985	145.0171
199811200826	1998-11-20 08:23	38.5023	145.0026
199811201011	1998-11-20 10:09	38.0026	144.9961
199811201201	1998-11-20 11:58	37.5000	144.9996
199811210004	1998-11-21 00:01	38.0001	144.9225
199811210218	1998-11-21 02:15	38.4998	144.8535
199811210422	1998-11-21 04:20	39.0000	144.7740
199811210626	1998-11-21 06:23	39.5018	144.6976
199811210828	1998-11-21 08:25	39.9975	144.6165
199811211033	1998-11-21 10:31	40.5011	144.5486
199811211246	1998-11-21 12:43	41.0221	144.4648
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199811242145	1998-11-24 21:42	37.4990	144.9990
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199811252306	1998-11-25 23:04	34.9966	147.5000
199811260037	1998-11-26 00:35	35.0005	147.9988
199811260213	1998-11-26 02:11	34.9973	148.5041
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Observation	Time and Date	Lat. (°)	Lon. (°)
199811260519	1998-11-26 05:16	35.0045	149.5080
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199811270303	1998-11-27 03:01	36.4995	149.9993
199811270508	1998-11-27 05:06	37.0001	149.9968
199811272232	1998-11-27 22:29	37.9976	150.0031
199811280222	1998-11-28 02:19	38.4996	150.0155
199811280758	1998-11-28 07:55	38.9991	150.0193
199811281420	1998-11-28 14:17	39.4993	149.9841
199811291101	1998-11-29 10:59	40.0018	150.5004
199811291237	1998-11-29 12:34	39.9968	151.0001
199811291411	1998-11-29 14:08	39.9953	151.5000
199811291544	1998-11-29 15:41	39.9983	152.0011
199811291716	1998-11-29 17:13	40.0061	152.5010
199811291847	1998-11-29 18:43	40.0000	152.9986
199811292015	1998-11-29 20:13	40.0035	153.5016
199811292142	1998-11-29 21:40	40.0021	154.0013
199811292312	1998-11-29 23:08	40.0025	154.5038
199811300951	1998-11-30 09:48	39.4945	155.0008
199811301149	1998-11-30 11:44	38.9976	154.9958
199811301341	1998-11-30 13:38	38.4973	154.9996
199811301551	1998-11-30 15:47	37.9981	155.0055
199812010317	1998-12-01 03:14	37.0001	154.9995
199812010521	1998-12-01 05:19	36.4995	155.0018
199812010726	1998-12-01 07:24	36.0035	154.9983
199812010933	1998-12-01 09:31	35.5020	154.9981
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199812020005	1998-12-02 00:02	35.0053	156.5101
199812020150	1998-12-02 01:47	35.0033	156.9986
199812020340	1998-12-02 03:38	34.9950	157.5001
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199812031543	1998-12-03 15:41	36.5006	160.0004
199812031747	1998-12-03 17:44	36.9998	159.9998
199812040400	1998-12-04 03:58	38.0000	159.9978
199812040603	1998-12-04 06:01	38.4998	160.0011
199812040807	1998-12-04 08:04	38.9998	159.9983
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199812041518	1998-12-04 15:11	39.9963	161.0003
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199812042246	1998-12-04 22:44	40.0015	163.4995
199812050018	1998-12-05 00:15	40.0016	164.0004
199812050223	1998-12-05 02:20	39.9988	164.5004
199812061805	1998-12-06 18:02	39.0010	165.0725
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199812081851	1998-12-08 18:49	40.7991	162.9998
199812082325	1998-12-08 23:23	41.0748	162.0006
199812090336	1998-12-09 03:34	41.6070	161.0003
199812091737	1998-12-09 17:34	42.5548	160.0008
199812100544	1998-12-10 05:42	43.3525	158.4993
199812100945	1998-12-10 09:43	43.4913	157.4991
199812101359	1998-12-10 13:56	43.6308	156.5043
199812101820	1998-12-10 18:18	43.8720	155.5006
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199812131418	1998-12-13 14:16	43.1941	153.4988
199812131812	1998-12-13 18:09	42.6258	152.4965
199812132156	1998-12-13 21:53	42.0691	151.5081
199812140159	1998-12-14 01:57	41.4946	150.4931
199812140414	1998-12-14 04:01	41.2160	149.9980
199812140808	1998-12-14 08:06	40.6545	149.0045
199812141158	1998-12-14 11:56	40.0845	147.9941
199812141844	1998-12-14 18:40	40.4316	146.0003

Related Information



[Enlarge Image](#)

MR98-K01

Ship Name: MIRAI

Period: 1998-10-30 - 1998-12-15

Chief Scientist: Masashi Kusakabe (JAMSTEC)

Project Name: [Station KNOT]

Update History

2019-09-28	An observation data was registerd.
2017-06-29	An observation data was registerd.
2014-07-12	An observation data was registerd.
2014-02-20	An observation data was registerd.
2013-01-25	An observation data was registerd.

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[POWER GRAB SAMPLER \(CLOW\)](#)

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