

## YOKOSUKA YK11-E04 Leg1 Expendable Bathythermograph (XBT)

Last Modified: 2019-10-08

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

Cruise ID: [YK11-E04 Leg1](#)

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/YK11-E04\\_leg1\\_all.pdf](http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/YK11-E04_leg1_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:

XBT/XCTD



### 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

#### (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                                      |         |         |          |
| Measurment 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 |
|-----------------|------------------|------------|----------|-----------|
| BT 016420110503 |                  | T-5        | Hand     | MK 2001   |

| Cast name       | Probe Serial No. | Probe Type | Relay Launcher | Relay Converter |
|-----------------|------------------|------------|----------------|-----------------|
| BT-016520110605 | -                | T-5        | Hand           | MK-30N          |
| BT-016620110610 | -                | T-5        | Hand           | MK-30N          |
| BT-016720110610 | -                | T-5        | Hand           | 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.

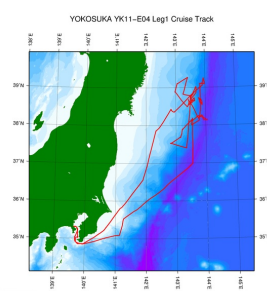
#### Note

(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

☒ Cruise Data ☐ Dive Data



[Enlarge Image](#)

#### YK11-E04 Leg1

Ship Name: YOKOSUKA

Period: 2011-06-02 - 2011-06-12

Chief Scientist: Katsunori Fujikura (JAMSTEC)

Proposal Impact by the huge earthquake on marine ecosystem including environment, chemical, geology and geophysics in Off Sanriku area

#### Update History

|            |                                     |
|------------|-------------------------------------|
| 2019-10-08 | An observation data was registered. |
| 2017-06-29 | An observation data was registered. |
| 2014-09-12 | An observation data was registered. |
| 2014-03-18 | An observation data was registered. |
| 2013-07-10 | An observation data was registered. |

#### 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**

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

## YOKOSUKA YK11-E04 Leg1 Expendable Bathythermograph (XBT)

Last Modified: 2019-10-08

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

Cruise ID: [YK11-E04 Leg1](#)

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<br>8 : flag of depth<br>9 : flag of temperature<br>10 - 11 : space<br>* reference : <a href="#">Definition of Quality Control Flags</a> |
| 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.

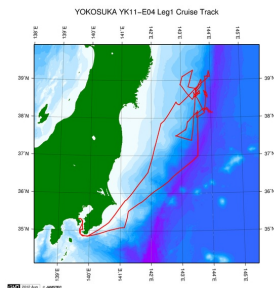
[QUALITY CONTROL AND PROCESSING OF HISTORICAL OCEANOGRAPHIC TEMPERATURE, SALINITY, AND OXYGEN DATA](#)

#### Sample Program

[ex\\_read2.f](#)

#### Related Information

☒ Cruise Data ☐ Dive Data



 [Enlarge Image](#)

#### YK11-E04 Leg1

Ship Name: YOKOSUKA

Period: 2011-06-02 - 2011-06-12

Chief Scientist: Katsunori Fujikura (JAMSTEC)

Proposal Impact by the huge earthquake on marine ecosystem including environment, chemical,  
Title: geology and geophysics in Off Sanriku area

#### Update History

|            |                                    |
|------------|------------------------------------|
| 2019-10-08 | An observation data was registerd. |
| 2017-06-29 | An observation data was registerd. |
| 2014-09-12 | An observation data was registerd. |
| 2014-03-18 | An observation data was registerd. |
| 2013-07-10 | 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**

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

## YOKOSUKA YK11-E04 Leg1 Expendable Bathythermograph (XBT)

Last Modified: 2019-10-08

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

Cruise ID: **YK11-E04 Leg1**

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

Data Policy: **JAMSTEC**

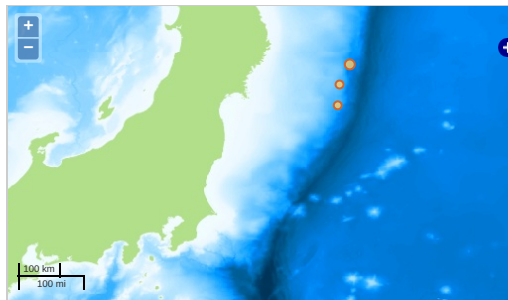
Observation Items: Depth, Temperature

Science Keywords:

OCEANS > OCEAN TEMPERATURE > WATER TEMPERATURE

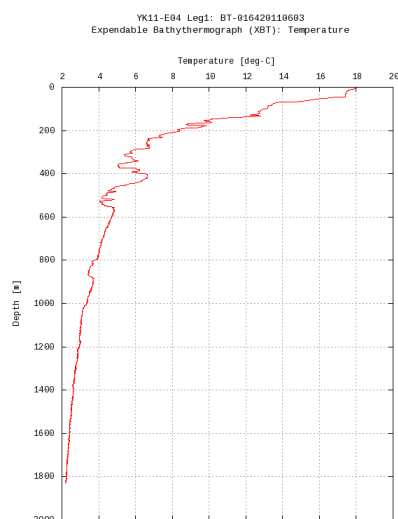
### Observation Map

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



### Figures

BT-016420110603



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

☐ BT-016420110603.dat  
☐ BT-016520110605.dat  
☐ BT-016620110610.dat  
☐ BT-016720110610.dat  
☐ ex\_read2.f (Sample Program)

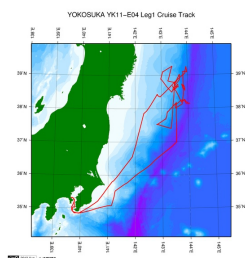
#### Observation List

The list of observation is shown as follows.

| Observation     | Time and Date    | Lat. [°] | Lon. [°] |
|-----------------|------------------|----------|----------|
| BT-016420110603 | 2011-06-03 22:51 | 38.1750  | 143.5533 |
| BT-016520110605 | 2011-06-05 22:27 | 38.6375  | 143.5930 |
| BT-016620110610 | 2011-06-10 08:55 | 39.0831  | 143.8201 |
| BT-016720110610 | 2011-06-10 09:00 | 39.0890  | 143.8193 |

### Related Information

[Cruise Data](#) [Dive Data](#)



[Enlarge Image](#)

#### YK11-E04 Leg1

Ship Name: YOKOSUKA

Period: 2011-06-02 - 2011-06-12

Chief Scientist: Katsunori Fujikura (JAMSTEC)

Proposal Impact by the huge earthquake on marine ecosystem including environment, chemical, geology and geophysics in Off Sanriku area

#### Update History

|            |                                     |
|------------|-------------------------------------|
| 2019-10-08 | An observation data was registered. |
| 2017-06-29 | An observation data was registered. |
| 2014-09-12 | An observation data was registered. |
| 2014-03-18 | An observation data was registered. |
| 2013-07-10 | An observation data was registered. |

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