

YOKOSUKA DEEP TOW YKDT 00149 Submersible Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2021-06-30

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

Dive No.: **YKDT 00149**

Submersible Conductivity-Temperature-Depth Profiler (CTD): Processed (DMO)-QCed

Data Policy: [JAMSTEC](#)

Observation Items: Pressure, Temperature, Salinity

Science Keywords:

OCEANS > OCEAN TEMPERATURE > WATER TEMPERATURE

OCEANS > SALINITY/DENSITY > SALINITY

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/YK12-12_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:

CTD measurement system equipped

on the Deep Ocean Floor Survey

System "YOKOSUKA DEEP TOW"



Overview

Deep Ocean Floor Survey System *YOKOSUKA DEEP TOW* is supported by *R/V YOKOSUKA* as the mother ship. *YOKOSUKA DEEP TOW* is designed to operate to a maximum depth of 6000 meters.

YOKOSUKA DEEP TOW measures pressure, water temperature and conductivity at 1Hz by an SBE 49 FastCAT CTD sensor manufactured by Sea-Bird Electronics, Inc. SBE 49 FastCAT CTD sensor facing horizontal leftward is installed on the left side of *YOKOSUKA DEEP TOW*, and its seawater intake is positioned approximately 1.2m above the bottom of *YOKOSUKA DEEP TOW*. This CTD sensor is used for monitoring the depth of *YOKOSUKA DEEP TOW*. The CTD sensor has not been calibrated after the installation on *YOKOSUKA DEEP TOW*.

The internal clock of the CTD sensor is synchronized with the clock of control PC before the dive. The clock of control PC is synchronized with the NTP (Network Time Protocol) server on the mother ship.

Specifications

| Model | Sensor | Measurement range | Accuracy | Stability per year | Resolution |
|----------------|--------------|-------------------|-------------|--------------------|-------------|
| SBE 49 FastCAT | Temperature | -5 ~ +35 °C | ±0.002 °C | ±0.0024 °C | 0.0001 °C |
| | Conductivity | 0 ~ 9 S/m | ±0.0003 S/m | ±0.0036 S/m | 0.00005 S/m |
| | Pressure | 0 ~ 7000 m | ±7 m | ±3.5 m | 0.14 m |

Submersible vehicle positioning data

The position of the submersible vehicle relative to that of the mother ship is determined by SSBL (Super Short Base Line) method of the acoustic underwater positioning which consists of the transponder mounted on the submersible vehicle and the receiver array mounted on the bottom of the mother ship.

In SSBL method, the position of the submersible vehicle relative to that of the mother ship is determined by the combination of the direction obtained from the phase difference measured from the angle of received acoustic waves at the receiver array and the distance calculated from the time of the acoustic wave propagation. The positioning accuracy relies on the line of sight distance and angle between the mother ship and the submersible vehicle, and rolling and pitching of the mother ship, etc. SSBL method is easy to operate because of no requirement to deploy seafloor baseline transponder(s) although the positioning accuracy of SSBL method is a little lower than that of LBL (Long Base Line) method.

Vertical sound velocity profile is required for the accurate distance to calculate from the time of the acoustic wave propagation. Therefore, the vertical temperature profiles of every sea regions were measured by using XBT etc.

The position of the submersible vehicle is determined by adding the relative distance between the mother ship and the submersible vehicle to GPS position of the mother ship. The conversion of the relative distance between the mother ship and the submersible vehicle to the coordinates of latitude and longitude uses the simplified formula with the area-dependent coefficients of every 30 degrees of latitude and longitude provided by Hydrographic and Oceanographic Department, Japan Coast Guard.

Published data

The data available on this web site are CTD data, latitude, longitude and roll-pitch-heading angles obtained by *YOKOSUKA DEEP TOW* every second.

The data of pressure, temperature, and salinity is visually checked to find noises, and the noise is replaced with missing values if it obviously seems abnormal.

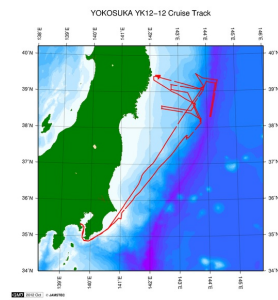
The positioning data of *YOKOSUKA DEEP TOW* is manually eliminated the noise of the moving at higher speed than 1 knot, which is the maximum operation speed of *YOKOSUKA DEEP TOW*, and is compensated by linear interpolation.

The number of significant digits of data is determined as the following list, by considering the accuracy of the sensors.

| Data | Raw | On this web site |
|-------------|--------------|------------------|
| Pressure | 0.001 [dbar] | 0.1 [dbar] |
| Temperature | 0.0001 [°C] | 0.01 [°C] |
| Salinity | 0.0001 [PSU] | 0.01 [PSU] |

Related Information

☒ Cruise Data ☐ Dive Data



[Enlarge Image](#)

YK12-12

Ship Name: YOKOSUKA

Period: 2012-07-30 - 2012-08-08

Chief Scientist: Katsunori Fujikura (JAMSTEC)

Project Name: ['Tohoku Ecosystem-Associated Marine Sciences (TEAMS)']

Update History

| | |
|------------|-------------------------------------|
| 2021-06-30 | An observation data was registered. |
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Submersible CTD Qced

Header part

| No. | Column | Item | Format | Remarks |
|-----|---------|---------------------|--------|---------------------------------|
| 1 | 1 | Header ID | a1 | fixed as '#' |
| 2 | 3 - 37 | Submersible vehicle | a35 | e.g. YOKOSUKA-DEEP-TOW / KM-ROV |
| 3 | 39 - 48 | Data ID | a10 | CTD |
| 4 | 50 - 70 | Cruise ID | a21 | e.g. MRYX-XX(_legx) |
| 5 | 78 - 81 | Dive number | a4 | |

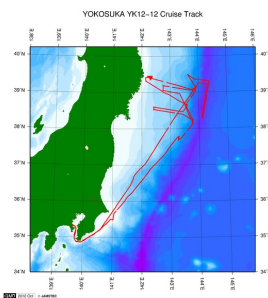
Data part

| No. | Column | Item | Unit | Format | Remarks |
|-----|-----------|------------------|--------|--------|---|
| 1 | 1 - 8 | Date | - | i8 | YYYYMMDD (LST) |
| 2 | 10 - 15 | Time | - | i6 | hhmmss (LST) |
| 3 | 17 - 26 | Latitude | degree | f10.5 | No sign for the northern hemisphere. Negative for the southern hemisphere. |
| 4 | 28 - 37 | Longitude | degree | f10.5 | No sign for the eastern hemisphere. Negative for the western hemisphere. |
| 5 | 39 - 48 | Pressure | dbar | f10.1 | |
| 6 | 50 - 59 | Temperature | deg-C | f10.2 | ITS-90 |
| 7 | 61 - 70 | Salinity | PSU | f10.2 | PSS-78 |
| 8 | 72 - 81 | Dissolved oxygen | ml/l | f10.1 | |
| 9 | 83 - 92 | Altitude | m | f10.1 | |
| 10 | 94 - 103 | Vehicle roll | degree | f10.1 | |
| 11 | 105 - 114 | Vehicle pitch | degree | f10.1 | |
| 12 | 116 - 125 | Vehicle heading | degree | f10.1 | |

Missing value is presented by '-999'.

Related Information

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



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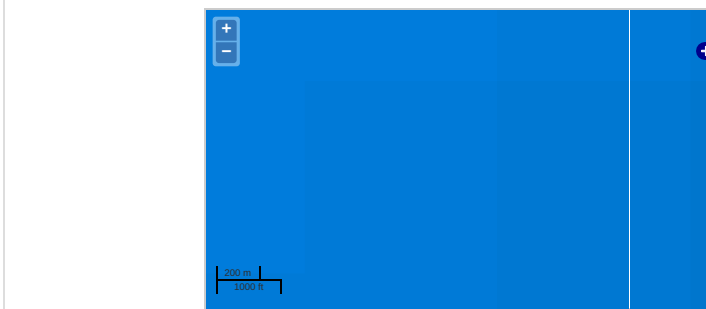
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Science Keywords:

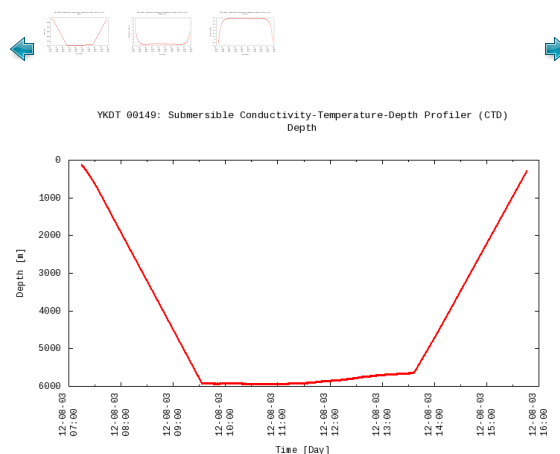
OCEANS > OCEAN > WATER
TEMPERATURE
OCEANS > SALINITY/DENSITY > SALINITY

Observation Map



Imagery reproduced from ...

Figures



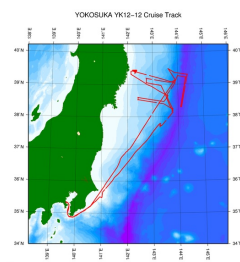
Data List

File names

☐ YKDT_00149.txt

Related Information

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



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