

SHINKAI 6500 6K 01371 Submersible Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2016-02-26

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

Dive No.: [6K 01371](#)

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

Data Policy: [JAMSTEC](#)

Observation Items: Depth/Pressure, Temperature, Salinity, Dissolved oxygen

Science Keywords:

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

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/YK13-10_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/DO measurement system
equipped on the deep submergence
research vehicle "SHINKAI 6500"



Position of the CTD system

Overview

The CTDO system mounted on the submersible research vehicle "SHINKAI 6500" is mainly composed of four instruments: a CTDO primary detection element, a current meter/CTDO processing part, a current meter/CTDO display part, and a control PC.

The CTDO primary detection element is consisted of SBE-19 SEACAT PROFILER CTD and SBE43 DO of Sea-Bird Electronics, Inc. The primary detection element is installed vertically on the port side of the submersible vehicles hatch. Its withstand depth is 10050m and its maximum depth of use is 6500m. Each parameter of conductivity, water temperature, pressure, and dissolved oxygen (DO) can be measured in 2Hz and is transmitted to the CTDO processing part. In the processing part, ASCII conversions and data corrections are conducted. The control PC can set up data management in the primary detecting element and control time and other environmental settings, via the display and processing parts.

Specifications

SBE-19 SEACAT PROFILER CTD and SBE43 DO, Sea-Bird Electronics, Inc.

| Sensor | Measurement range | Accuracy | Model | S/N |
|------------------|----------------------------|--------------------------|-----------|--------------|
| Temperature | -5 to +35 deg-C | 0.01 deg-C | SBE 19-04 | 1921545-2861 |
| Conductivity | 0 to 7 S/m | 0.001 S/m | | 1921545-2862 |
| Pressure | 0 to 15000 psia | 0.02% of full scale rang | | |
| Dissolved oxygen | 120% of surface saturation | 2% of saturation | SBE 43 | 0697, 0736 |

Data collection and situations

The data collection in each dive starts from, the moment before it submerges and ends immediately after it comes up to the sea surface.

Because of the installed position of the primary detecting element, actual observation depth of the CTDO will be approximately 3m higher than the depth of the sea bottom even when the submersible vehicle is on the seabed.

Temperature data while descending is tended to be influenced by the heating from the withstand pressure hull of the submersible vehicle, so the temperature data while ascending is recommended to use.

The internal clock of CTD is synchronized, in each dive, with the clock inside the submersible vehicle which is also synchronized with the management system of its sound navigation device.

Data processing

After the submersible vehicle comes up to the sea surface, the hexadecimal form HEX file data recorded in the processing part is copied to a PC to be edited. Calculations of sound velocity and salinity, data edits, and proofreading are conducted by SEASOFT software which makes two types of data in ASCII format: 1-dbar pressure bin data and 1-sec time interval data.

Data processing sequence for SEASOFT used for the CTD data correction is as follows.

| Module | Function |
|-----------------|--|
| DATA CONVERSION | Converts raw data to pressure, temperature, conductivity, and oxygen. |
| FILTER | Performs a low pass filter on conductivity. |
| ALIGNCTD | Converts the time-sequence of conductivity and oxygen sensor outputs into pressure sequence. |
| DERIVE | Computes salinity, density (σ_θ), and sound velocity. |
| ASCII OUT | Divides data into the data part and the header part and reads out on ASCII format. |

Note

The abnormal value of the salinity data was substituted with missing value '-999'.

Data available here

The data available on this web site is 10-sec mean CTDO data integrated with SHINKAI 6500 (hereafter, the submersible vehicle) positioning data in latitude and

The data available on the web site is 10-sec mean CTDO data integrated with CTDO data (pressure), the submersible's velocity, positioning data in latitude and longitude. The SSBL (Super Short Base Line) method is used to measure the submersible vehicle's position, which requires transponder mounted on the submersible vehicle and an array of transducers equipped on the bottom of the mother ship. The position is measured by both phase lag measured from angles of received sound waves and distance calculated from travelling period of them. Because the baseline length (i.e., a distance between transducers and the transponder) is short, a horizontal error is about 1.5% of slant range (i.e., a distance between the submersible vehicle and the mother ship). The SSBL method has a characteristic that it is a little less accurate but easier to operate than the LBL (Long Base Line) method because it doesn't need to deploy sea-bed mounted transponder(s). Vertical profile of sound velocity is needed to calculate accurate distance from the travelling period. Therefore, the temperature measurement using XBT etc. of each sea area is executed.

The submersible vehicle positioning data was calculated by adding the relative distance to the mother ship's position. The simplified equation with the area-dependent coefficients every 30 degrees in latitude and longitude was applied to the distance (XY) to Lon/Lat conversion, which provided by Japan Coast Guard. The 10-sec mean CTDO data is composed by the 1-sec time interval data mentioned above. The noises remaining in the position data are manually eliminated and linearly interpolated when the speed calculated from adjacent two position data is greater than 2.5 knot which is the maximum operation speed of the submersible vehicle. Moreover, noises remained in the depth, temperature, salinity, and oxygen data are visually checked and replaced to missing values only when the data seemed to be obviously abnormal.

The CTDO system was installed as one of the navigation equipment to monitor the ambient environmental conditions of the submersible vehicle, whose sensor calibration is normally executed about every two years.

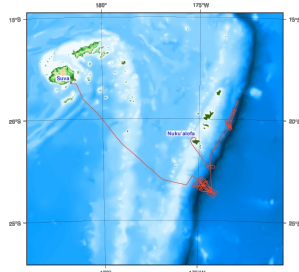
After considering the accuracy of the sensors, the significant digit of data was changed as in the following list.

| Data | Raw | On this web site |
|------------------|----------------|------------------|
| Pressure | 0.001 [dbar] | 0.1 [dbar] |
| Temperature | 0.0001 [deg-C] | 0.01 [deg-C] |
| Salinity | 0.0001 [PSU] | 0.01 [PSU] |
| Dissolved oxygen | 0.00001 [ml/l] | 0.1 [ml/l] |

Related Information

☒ Cruise Data ☐ Dive Data

S/V YOKOSUKA Cruise Trackline in YK13-10



Copyright 2011 Japan Agency for Marine-Earth Science and Technology

[Enlarge Image](#)

YK13-10

Ship Name: YOKOSUKA
 Period: 2013-10-05 - 2013-10-20
 Chief Scientist: Hiroshi Kitasato (JAMSTEC)
 Project Name: ['QUELLE2013']
 Proposal ▶ Survey of Biological diversity of hadal deep at Trench:Trench Biology Part3
 Title:

Update History

2016-02-26 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

SHINKAI 6500 6K 01371 Submersible Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2016-02-26

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

Dive No.: **6K 01371**

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

Data Policy: [JAMSTEC](#)

Submersible CTD Qced (6K)_1sec

Header part

| No. | Column | Item | Format | Remarks |
|-----|---------|---------------------|--------|----------------|
| 1 | 1 | Header ID | a1 | fixed as '#' |
| 2 | 3 - 37 | Submersible vehicle | a35 | SHINKAI-6500 |
| 3 | 39 - 48 | Data ID | a10 | CTD |
| 4 | 50 - 70 | Cruise ID | a21 | YKYY-XX(_legx) |
| 5 | 78 - 81 | Dive number | a4 | |

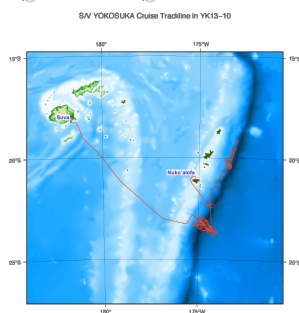
Data part

| 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 | Sound velocity | m/s | f10.1 | |
| 10 | 94 - 103 | Altitude | m | i10 | |
| 11 | 105 - 114 | Roll | degree | f10.1 | |
| 12 | 116 - 125 | Pitch | degree | f10.1 | |
| 13 | 127 - 136 | Vehicle heading | degree | f10.1 | |
| 14 | 138 - 147 | Current direction | degree | f10.1 | |
| 15 | 149 - 158 | Current velocity | cm/s | f10.1 | |
| 16 | 160 - 169 | Depth | m | f10.1 | |

Missing value is presented by '-999'.

Related Information

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



[Enlarge Image](#)

YK13-10

Ship Name: YOKOSUKA
Period: 2013-10-05 - 2013-10-20
Chief Scientist: Hiroshi Kitasato (JAMSTEC)
Project Name: ['QUELLE2013']
Proposal ▶ Survey of Biological diversity of hadal deep at Trench:Trench Biology Part3
Title:

Update History

2016-02-26 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:

SHINKAI 6500 6K 01371 Submersible Conductivity-Temperature-Depth Profiler (CTD)

Last Modified: 2016-02-26

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

Dive No.: **6K 01371**

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

Data Policy: [JAMSTEC](#)

Observation Items: Depth/Pressure, Temperature, Salinity, Dissolved oxygen

Science Keywords:

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

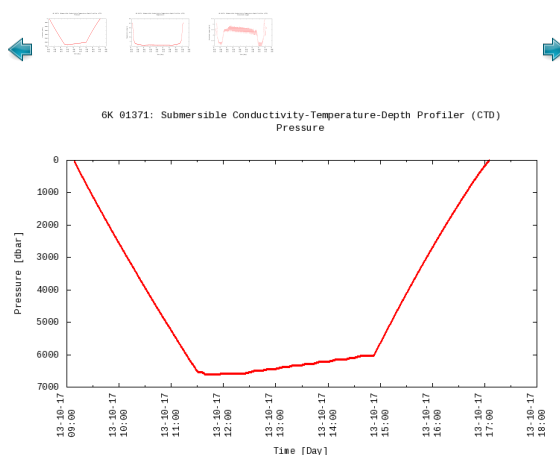
Observation Map



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

Imagery reproduced from ...

Figures



Data List

[Add to Basket](#)

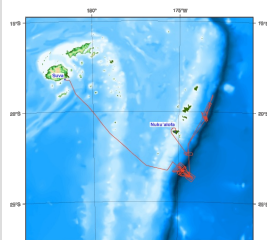
☐ File names

☐ 6K1371_0.event

☐ 6K_01371.txt

Related Information

[Cruise Data](#) [Dive Data](#)
S/V YOKOSUKA Cruise Trackline in YK13-10



[Enlarge Image](#)

YK13-10

Ship Name: YOKOSUKA

Period: 2013-10-05 - 2013-10-20

Chief Scientist: Hiroshi Kitasato (JAMSTEC)

Project Name: [QUELLE2013]

Proposal ▶ Survey of Biological diversity of hadal deep at Trench:Trench Biology Part3

Title:

Update History

2016-02-26

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:

