BT data

1 File Name

yybblll.BT

where, yy: Year (last 2 digits)
bb: BT Code for XBT-DBT data [listed in Table 1]
lll: Station number (3 digits) for XBT-DBT data

2 File Format

XBT-DBT data files consist of ASCII records of variable length. Each element is separated by the character ',' (comma, ASCII code 2Ch), and the column of the element that was not observed is filled with '-9'.

BT data files consist of header part (first 11 records) and data part. The following elements are separated by comma in each record. An example of BT data file is shown in page 5.

(a) Header part

Record information

Record No.	Element
Rec-1	Ship name (listed in Table 1), cruise number and format code. Cruise number is identified with the year and the month. Format code is 'V3.x'.
Rec-2	Station number. Station number is given by the BT code (listed in Table 1) suffixed with three digits consecutive numbers.
Rec-3	The number of data records.
Rec-4	Date (year/month/day) and time at the beginning of the bathythermograph (BT) observation in the Japan Standard Time (JST), which is nine hours ahead of the coordinated Universal Time (UTC).
Rec-5	Latitude and longitude at the beginning of the bathythermograph (BT) observation with degrees, '-', minutes, '.', hundredth part of minutes.
Rec-6	Water depth at the beginning of the bathythermograph (BT) observation and sounding flag (listed in Table 2).
Rec-7	Corresponding station number of the subsurface current data and sub-station number.
Rec-8	Sea surface temperature and salinity.
Rec-9	Type of "bathythermograph (BT)" ; (X-BT: expendable BT, D-BT: Digital BT.).
Rec-10 for X-BT	Probe type, serial number, code(listed in Table 3) and instrument type, code(listed in Table 4).
Rec-11 for X-BT	Coefficients of the depth-time equation (listed in Table 3).
Rec-10, Rec-11 for D-BT	Headers for data columns.
Rec-12, Rec-13 for X-BT	Headers for data columns.

(b) Data part

Data are described at every 1 meter. The meaning of attached flags is shown in Table 5.

Record information

Record No.	Elements
below Rec-12 (Rec-14 for X-BT)	Depth, Temperature and flag of temperature (listed in Table 5).

Table 1: Ship codes.

Ship Name	Hydrographic	BT	Subsurface current
Ryofu Maru	RF	TF	AF
Keifu Maru	KS	TS	AS

Table 2: Sounding flag of water depth in CTD, XCTD and BT data.

Flag No.	Definition
1	Sounding by echo-sounder (not corrected)
2	Sounding by echo-sounder (corrected)
5	Water depth measured by CTD and altimeter
6	Water depth measured by BT or XCTD submersible
9	No sounding

Table 3: Probe code and coefficients of the depth-time equation in Subsurface temperature data. The depth-time equation is of the form:

$$z_m = a_m * t + b_m * t^2$$

where z_m is the depth and t is the elapsed time in seconds starting when the probe hits the surface; a_m and b_m are constants.

			coefficients	
Code	Manufacturer	Probe Type	a_m	b_m
212	Tsurumi Seiki Co.	T-6	6.691	-0.00225
222	Tsurumi Seiki Co.	T-7	6.691	-0.00225
231	Tsurumi Seiki Co.	T-5	6.828	-0.00182
252	Tsurumi Seiki Co.	Deep Blue	6.691	-0.00225

Table 4: Instrument codes for observation using expendable probe in Subsurface temperature data.

Code	Instrument
32	Murayama Denki Z-60-16-III
33	Murayama Denki Z-60-16-II
45	Tsurumi Seiki Co. MK-100
46	Tsurumi Seiki Co. MK-130 Compatible recorder

Table 5: Data flag in CTD, XCTD and BT data.

Flag No.	Definition
2	Acceptable measurement.
3	Questionable measurement.
4	Bad measurement.
6	Interpolated over $> 2 \times 10^4$Pa interval.
7	Despiked.
9	Not sampled.

Ship, R/V Ryofu Maru, Cruise number, 10-01, Format, V3.1
Station, TF-001
No.of Records, 246
Date , 2010/02/01, Time(JST), 0143
Lat. , 31-00.06 N, Lon. , 135-30.05 E
Depth , 4083 Meters, Depth Flg, 1
ACMstn., AF-055, Substn. , PT-10
SurfT , 20.5 DEG-C, SurfS , 34.685
Type , X-BT
Probe , TSK T-6 , S/N, 251402,(WMO Code: 212),Recorder , TSK MK-130 Comp.,(WMO Code: 46)
Coef. , a=6.691, b=-0.00225

DEPTH, METERS,	TEMP, DEG-C,	F
0,	19.66,	4
1,	20.66,	4
2,	20.56,	4
3,	20.42,	4
4,	20.32,	2
5,	20.20,	2