R/V Shumpu Maru Cruise SU9302

1 Cruise Narrative

1.1 Highlights

Expedition Designation
Shumpu Maru Cruise SU9302

Chief Scientists
Leg 2:Nobuo SATO, Kobe Marine Observatory(KMO)

Ship
R/V Shumpu Maru

Ports of Call
Leg 2:Hososima to Kochi

Cruise Dates
Leg 2:February 12 to February 17,1993

1.2 Cruise Summary

The cruise track and station locations of leg 2 are shown in Figure 1.
The ship departed Hososima on February 12,1993, and made 6 CTD/rosette stations of a section PR17. 4 XBT stations were made between CTD/rosette stations. To first CTD/rosette station the ship reached at 2246 UTC on February 12, from last station departed at 0433 UTC on February 14.

The CTD is EG&G NBIS Mark III B(6500 db type, no oxygen sensor). Water samples
were collected from 1.7 liter Niskin bottles mounted on the General Oceanics Rosette multisampler. However, surface water samples were collected by a bucket.

1.3 List of Principal Investigators

The principal investigators for all the parameters measured on the cruise are listed in Table 1.

Table 1: Principal Investigators for All Measurements

Name	Responsibility	Affiliation
Sukeyoshi TAKATANI	Oxygen, Nutrients	KMO
Yasushi TAKATHUKI	CTD, S	KMO

1.4 List of Cruise Participants

The cruise participants for leg 2 are listed in Table 2.

Table 2: Cruise Participants for leg 2

Name	Responsibility	Affiliation
Nobuo SATO	Chief Scientist Oxygen, Nutrients	KMO
Yasushi TAKATHUKI	CTD Hardware	KMO
Sukeyoshi TAKATANI	Oxygen, Nutrients	KMO
Syunta NAITOO	CTD Software	KMO
Ichirou TERASHIMA	Oxygen, Nutrients	KMO
Keiichi SATO	Watch Stander	KMO
Atushi OBATA	Watch Stander	KMO
Hayato WAKIMOTO	Watch Stander	KMO
Hiroki SUZUKI	Oxygen, Nutrients	KMO

2 Measurement Techniques and Calibrations

2.1 CTD

The CTD is EG&G NBIS Mark III B(6500 db type, no oxygen sensor).
A HP 9000 Series 300 model 330(Hewlett Packard) with a 4 MByte of memory was used as the primary data collection device.

The temperature and pressure sensor were calibrated at the calibration facility of S¥E¥A CO., LTD before the cruise. The results are shown in Table 3.
Temperature and pressure(increasing) calibration values are used to correct CTD data, by linear interpolation inside the calibrated regime. CTD data outside of the regime is corrected by the calibration values on the boundary, at the each side.

Notice that the upcast pressure data is corrected by Pressure(increasing), not Pressure(decreasing) in Table 3.

Table 3: The temperature and pressure sensor calibration values

Temperature(Caliblated on January 8, pre-cruise)

Standard Temperature	CTD Temperature	Difference
0.9780	1.0005	-0.0226
1.9783	1.9998	-0.0215
5.0641	5.0858	-0.0216
7.5101	7.5325	-0.0224
10.2024	10.2261	-0.0237
12.5013	12.5257	-0.0244
15.0366	15.0631	-0.0265
20.0372	20.0648	-0.0276
25.0080	25.0375	-0.0296
30.0841	30.1176	-0.0335

Pressure(increasing, Caliblated on January 1, pre-cruise)

Standard Pressure	CTD Pressure	Difference
0.0	0.2	-0.2
98.0	97.4	0.6
293.9	292.5	1.5
489.9	489.7	0.2
979.8	982.9	-3.1
1959.6	1963.7	-4.1
2939.5	2941.2	-1.7
3919.3	3918.6	0.7
4899.1	4897.1	2.0
5878.9	5877.3	1.6

Pressure(decreasing, calibiated on January 1, pre-cruise)

Standard Pressure	CTD Pressure	Difference
0.0	1.6	-1.6
98.0	101.4	-3.4
293.9	298.6	-4.7
489.9	496.3	-6.4
979.8	988.2	-8.4
1959.6	1965.9	-6.3
2939.5	2941.9	-2.4
3919.3	3918.6	0.7
4899.1	4897.0	2.1
5878.9	5877.3	1.6

The conductivity sensor were calibrated at sea using data from the analyses of salinity collected at 5 stations. The salinometer is AUTOSAL 8400B(Guildline)

for the analyses of salinity of the water samples. The results are shown in Table 4.
The calibration constant is determined assuming that the bias 0.

Table 4: The conductivity sensor calibration constants

Bias	Slope
0	1.00010

The temperature of "SU9302.SEA" and "SU9302.CTD" files is decribed with the international temperature scale of 1990, ITS-90.

2.2 Oxygen Measurements

The determination of dissolved oxygen was done by the modified version of the Winkler method described in "Kaiyo Kansoku Shishin (Manual of Oceanographic Observation)" published by the Oceanographical Society of Japan(1970).
No estimation of accuracy and precision and reagent blank has been done.

2.3 Nutrients Analyses

The nutrients analyses were done by the Technicon Auto Analyzer II described in "Kaiyo Kansoku Shishin (Manual of Oceanographic Observation)" published by the Oceanographical Society of Japan(1970). No estimation of accuracy and precision has been done.