

Oceanographic Data of the 12th Japanese Antarctic Research Expedition 1970–1971

Syuji NAKABAYASHI* and Yoshio SETO*

第12次南極地域観測隊海洋部門報告

中 林 修 二*・脊 戸 義 郎*

要旨：第12次南極地域観測において、定常観測（1970～1971）として行なった表面観測、バシサーモグラム観測、温度—塩分—深度記録計による観測、および鉛直（各層採水）観測の結果を報告する。

This report deals with the data of the oceanographic observations made on board the icebreaker FUJI during the summer mission of the 12th Japanese Antarctic Research Expedition in 1970–1971. The track chart of the cruise is shown in Fig. 1. The locations of the Salinity-Temperature-Depth (STD) recorder observation stations, vertical (serial) observation stations and the bathythermograph (BT) observation stations in the Southern Ocean are given Fig. 2.

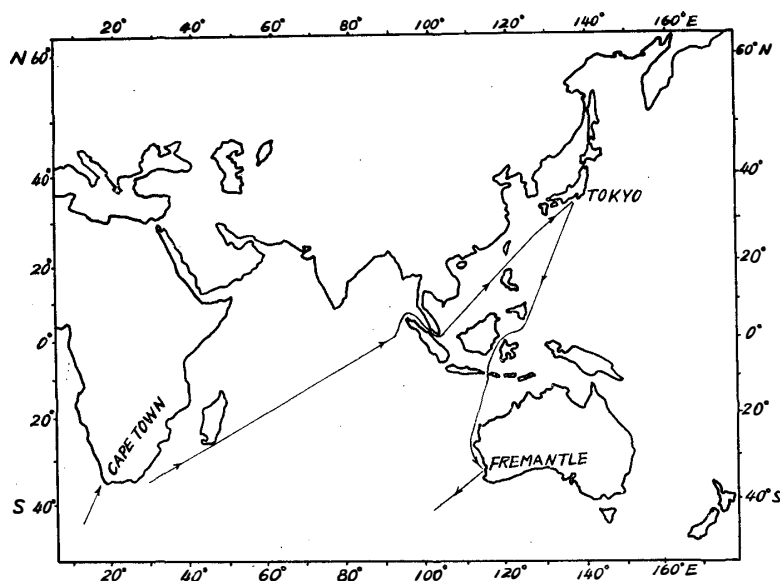


Fig. 1. Track of JARE-12 cruise 1970–1971.

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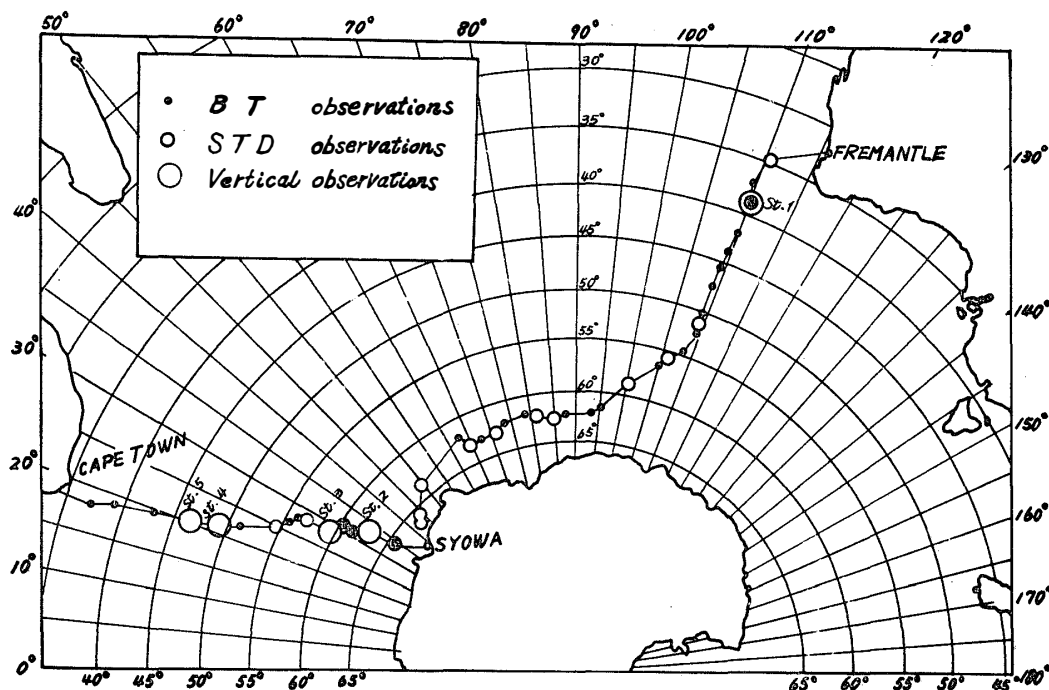


Fig. 2. Track of JARE-12 cruise and oceanographic station.

Surface observation: Surface temperature measurements and surface water sampling for chemical analysis were made three times a day during the cruise from Fremantle to Syowa Station and twice a day for the rest of the cruise so far as the circumstances permitted. The results are given in Table 1.

Current measurement: Measurements of surface current were made by GEK once a day except in the magnetic equator region and in the pack ice area. The results are also shown in Table 1.

Bathythermograph observation: Water temperature in the upper layer (surface to about 250 meters depth) was measured with bathythermograph (BT) at almost the same frequency as the surface observations. The results are given in Table 2.

Salinity temperature depth recorder observation: The vertical distribution of temperature and salinity was measured at 17 stations in the Southern Ocean along the track from Fremantle to Cape Town through Syowa Station by a Salinity-Temperature-Depth recorder. The records are shown in Fig. 3.

Vertical (serial) observation: The observations were made at 5 stations in the Southern Ocean along the cruise from Fremantle to Cape Town (Fig. 2).

The observed data are shown in Table 3 with relevant meteorological data. The interpolated and computed values (temperature, salinity, sigma- t and dynamic depth anomalies) at standard depths are also included in Table 3. These values were calculated by the electric computer available at the Japanese Oceanographic

Data Center of the Hydrographic Division.

Chemical analysis of sea water: The followings are the elements and the methods (or instrument) of analysis. The results are also presented in Table 3.

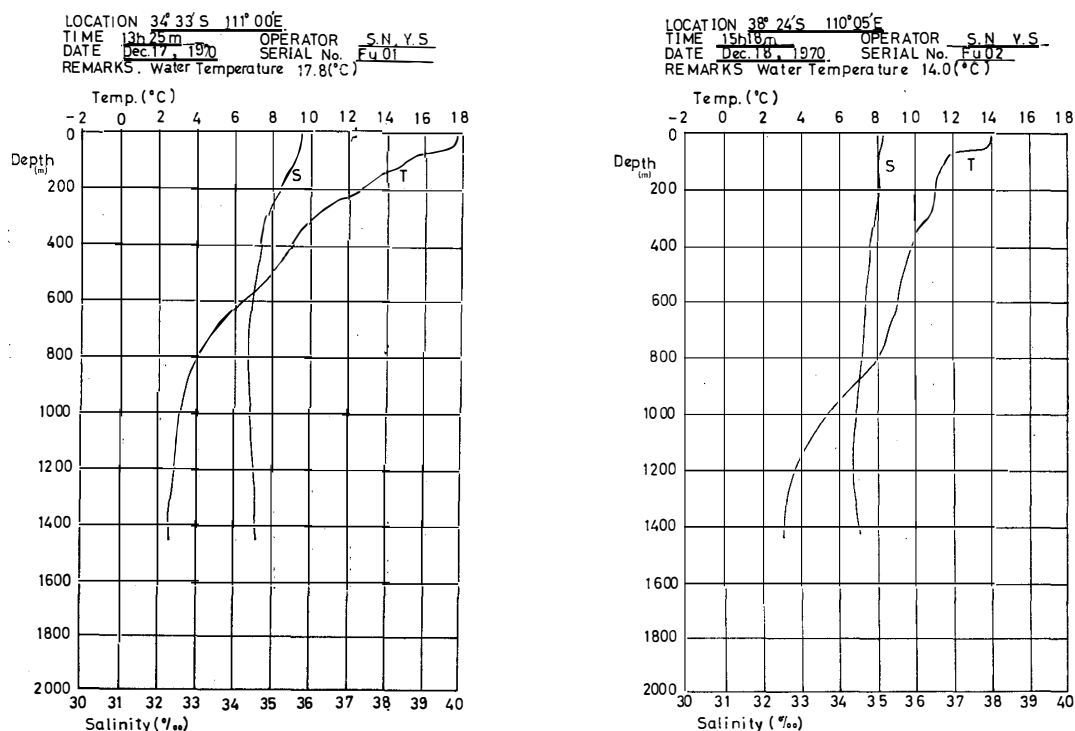
| | |
|----------------------|--|
| Salinity | Inductive salinometer (Auto-Lab Model 401 MK III) |
| pH | pH meter (KPH-51 B Yokogawa Electric Works Inc.) |
| Dissolved oxygen | Winkler's Method |
| Phosphate-P | Molybdenum blue method* |
| Reactive silicate-Si | Molybdenum yellow method* |
| Nitrate-N | Modified Morris and Riley method* |
| Nitrite-N | Sulphanilamide and N-(1-naphthyl)-ethylene-diamine 2 HCl were used as reagent*. |
| Alkalinity | After 15.00 ml of N/100 HCl was added to 50.0 ml sample, pH of the sample was measured and alkalinity was calculated by Strickland's table*. |

Acknowledgements

The authors are indebted to Captain M. OMORI of the icebreaker FUJI and his officers and crew for their co-operation which made these observations possible.

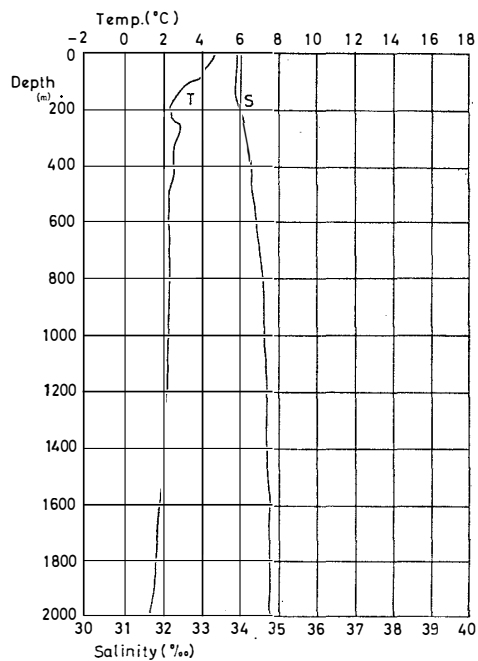
(Received June 30, 1971)

Fig. 3. The results of STD observations.

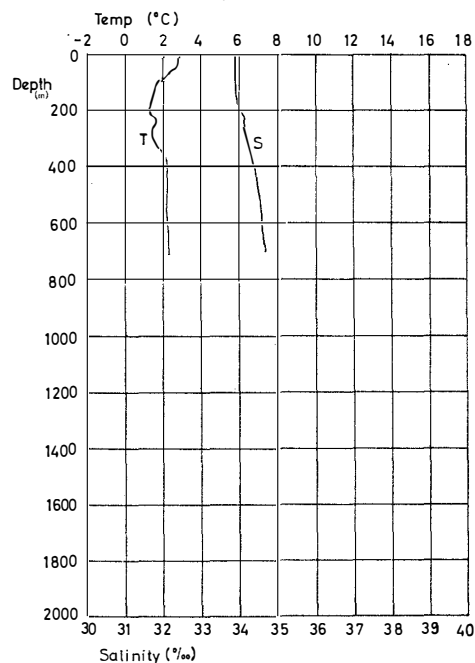


* J. D. H. Strickland and T. R. Parsons, Manual of Sea Water Analysis (Fisheries Research Board of Canada).

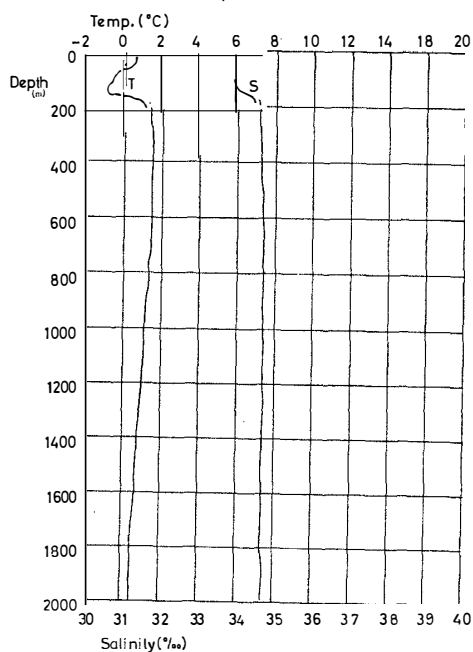
LOCATION 50° 54'S 110° 01'E
 TIME 13h48m OPERATOR S.N.Y.S.
 DATE Dec. 21, 1970 SERIAL No. Fu03
 REMARKS Water Temperature 4.6(°C)



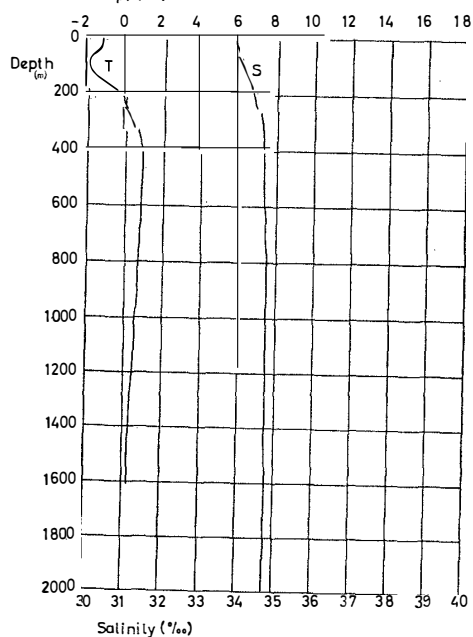
LOCATION 54° 58'S 107° 05'E
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 DATE Dec. 22, 1970 SERIAL No. Fu04
 REMARKS Water Temperature 2.8(°C)

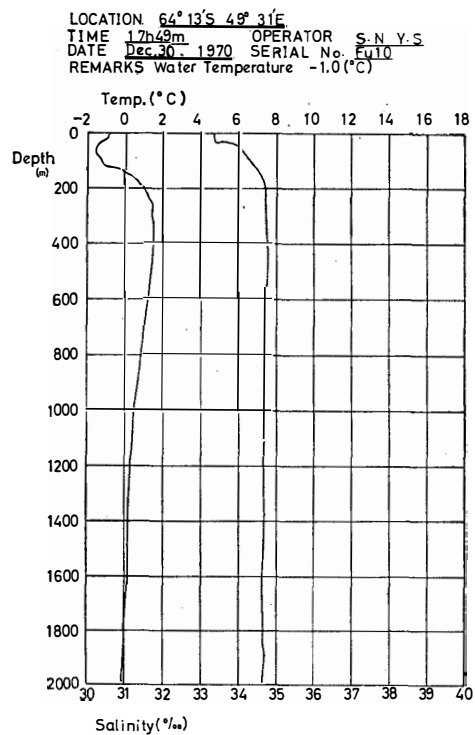
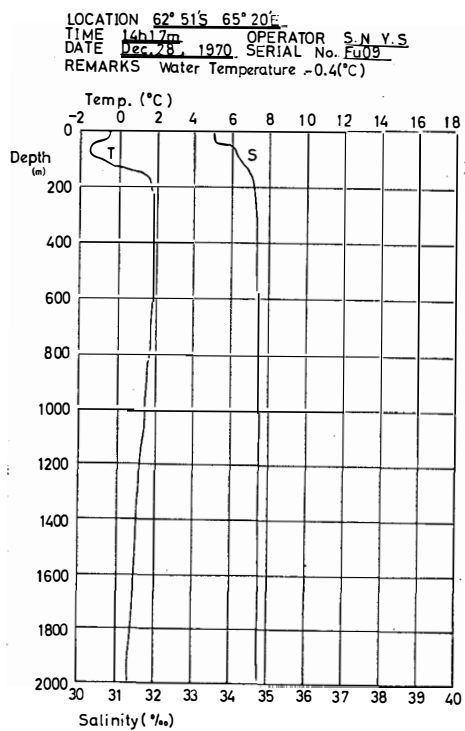
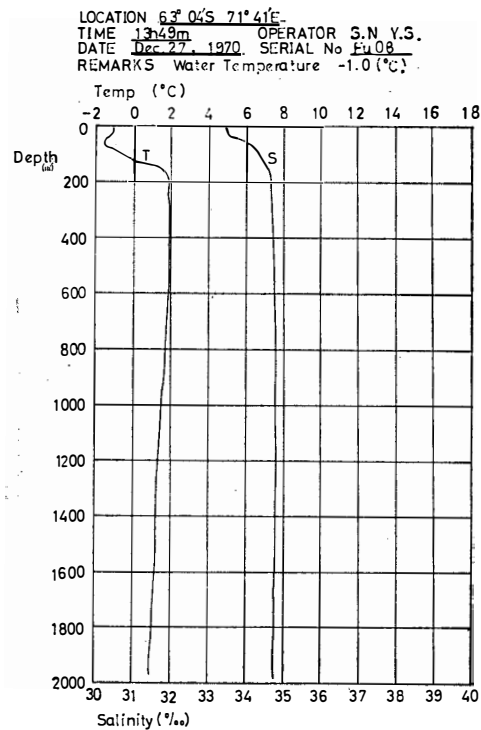
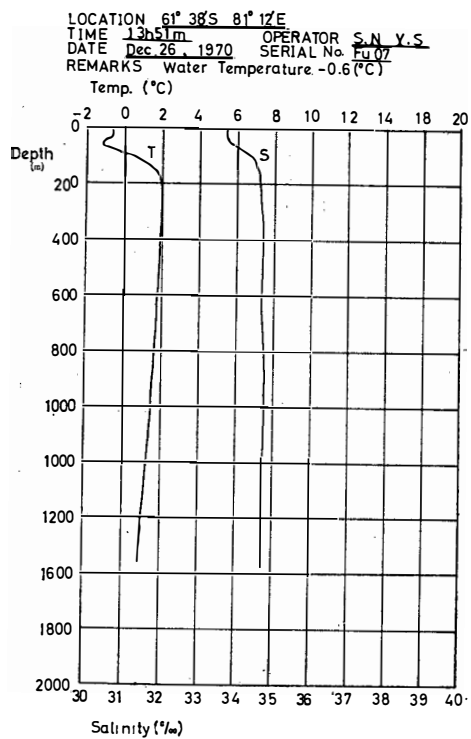


LOCATION 58° 26'S 101° 13'E
 TIME 13h50m OPERATOR S.N.Y.S.
 DATE Dec. 23, 1970 SERIAL No. Fu05
 REMARKS Water Temperature 0.8(°C)

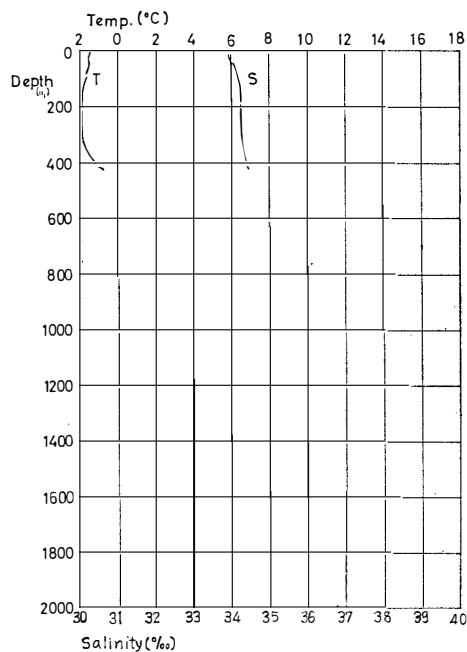


LOCATION 62° 36'S 85° 26'E
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 DATE Dec. 25, 1970 SERIAL No. Fu06
 REMARKS Water Temperature -1.0(°C)

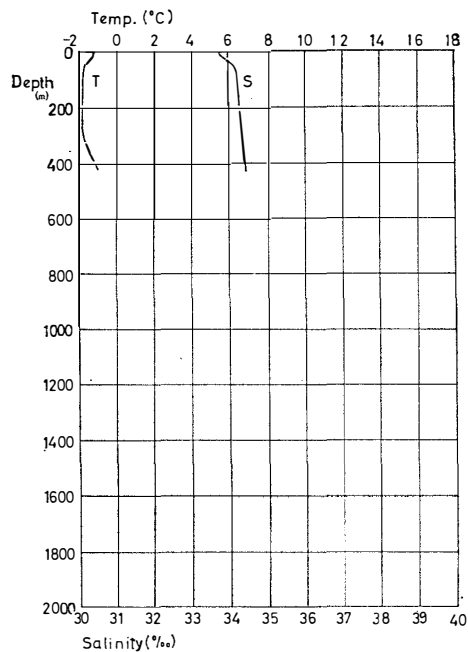




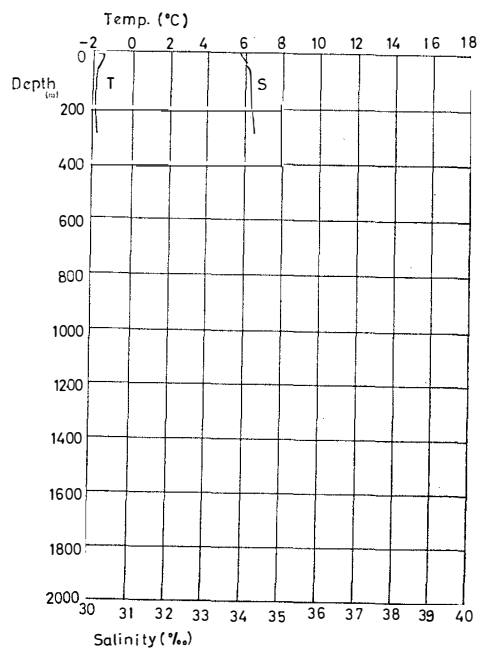
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 TIME 22h18m OPERATOR S.N.Y.S.
 DATE Jan. 2, 1971 SERIAL No. Fu11
 REMARKS Water Temperature -1.2(°C)



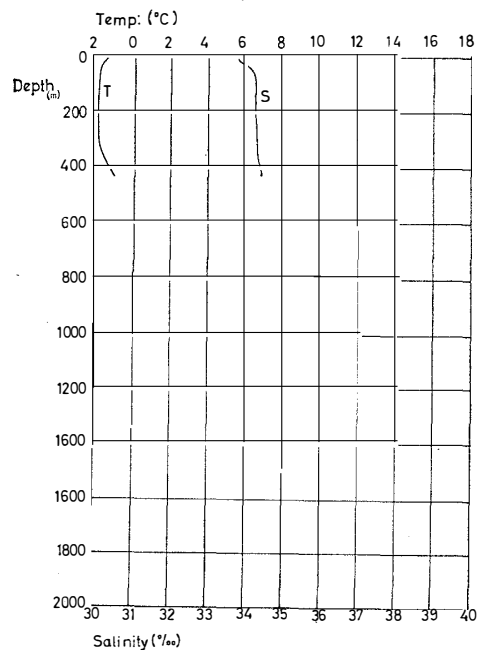
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 TIME 12h59m OPERATOR S.N.Y.S.
 DATE Jan 5, 1971 SERIAL No. Fu12
 REMARKS Water Temperature -1.4(°C)



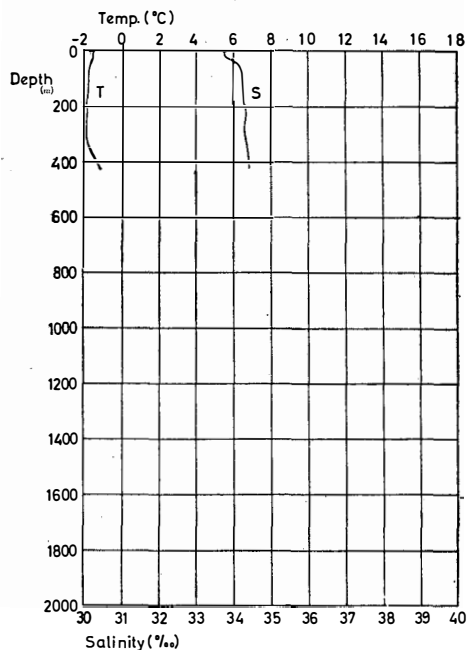
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 TIME 16h48m OPERATOR S.N.Y.S.
 DATE Jan 5, 1971 SERIAL No. Fu13
 REMARKS Water Temperature -1.4(°C)



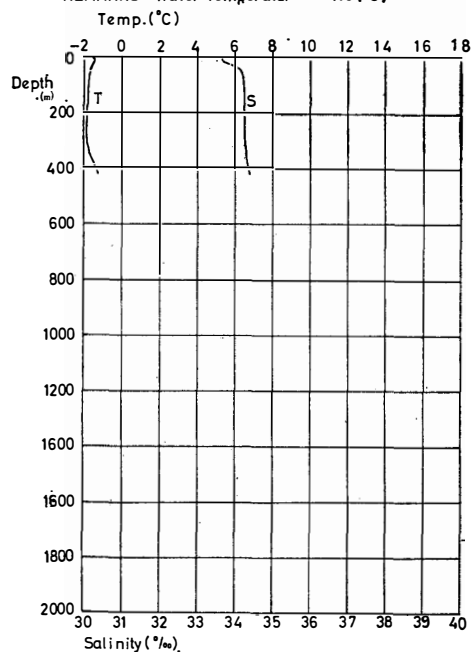
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 TIME 19h47m OPERATOR S.N.Y.S.
 DATE Jan 5, 1971 SERIAL No. Fu14
 REMARKS Water Temperature -1.4



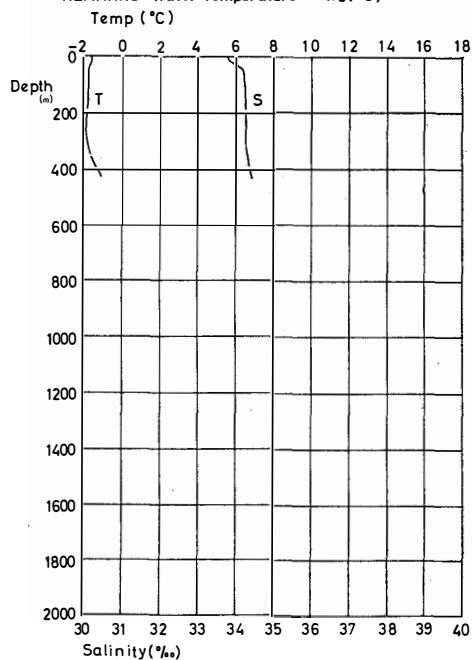
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TIME 22h48m OPERATOR S.N.Y.S.
DATE Jan 5, 1971 SERIAL No. Fu15
REMARKS Water Temperature $-1.5(^{\circ}C)$



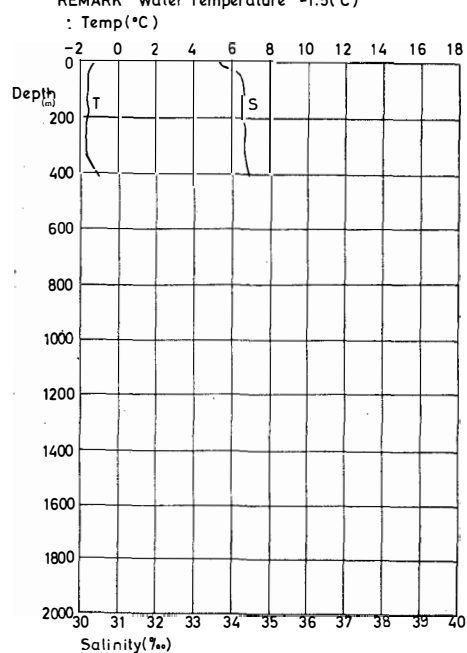
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TIME 01h46m OPERATOR S.N.Y.S.
DATE Jan 6, 1971 SERIAL No. Fu16
REMARKS Water Temperature $-1.5(^{\circ}C)$

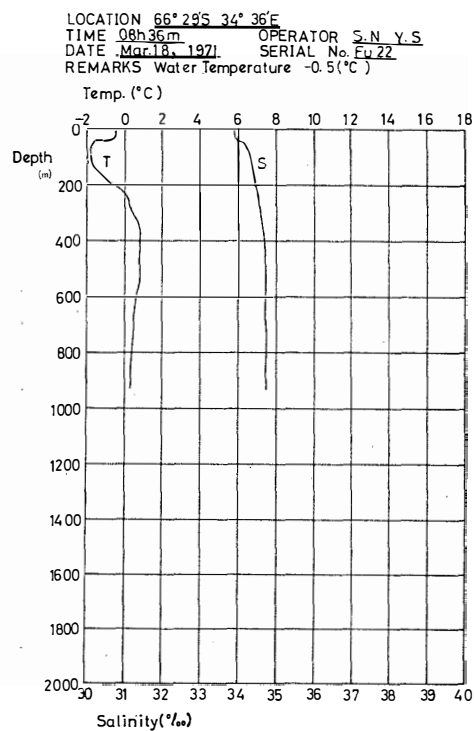
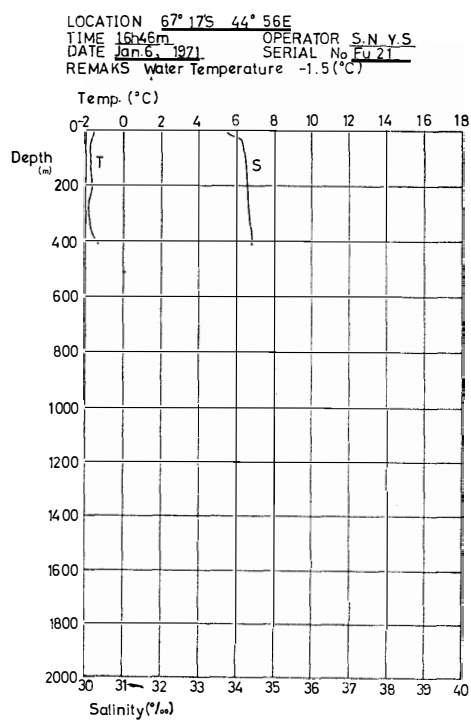
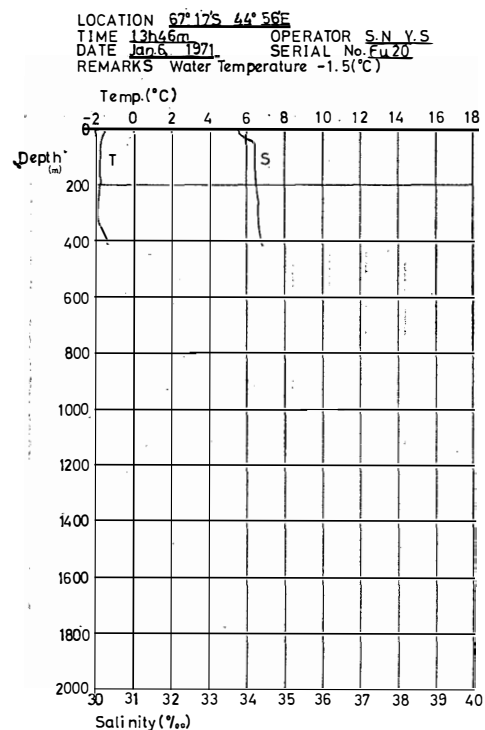
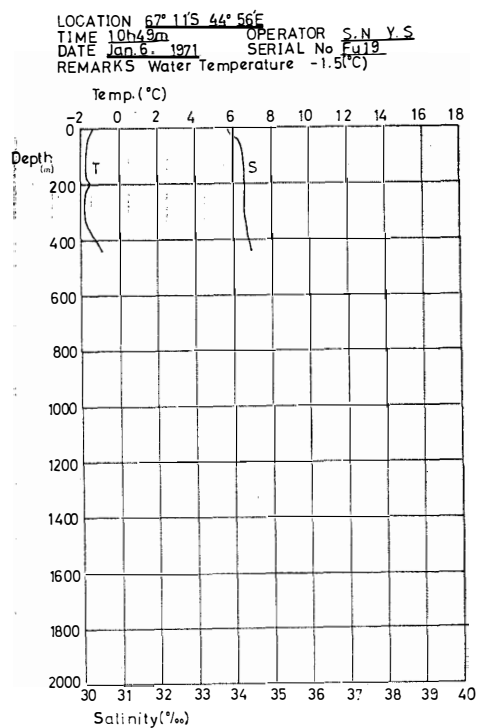


LOCATION $67^{\circ}17'S$ $44^{\circ}56'E$
TIME 04h58m OPERATOR S.N.Y.S.
DATE Jan 6, 1971 SERIAL No. Fu17
REMARKS Water Temperature $-1.5(^{\circ}C)$

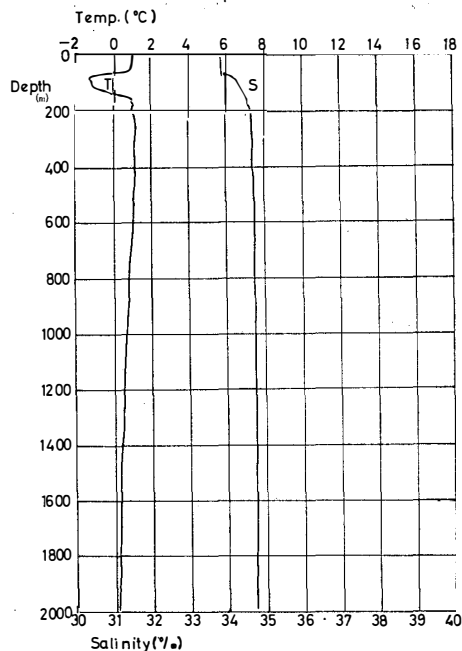


LOCATION $67^{\circ}17'S$ $44^{\circ}56'E$
TIME 07h51m OPERATOR S.N.Y.S.
DATE Jan 6, 1971 SERIAL No. Fu18
REMARKS Water Temperature $-1.5(^{\circ}C)$

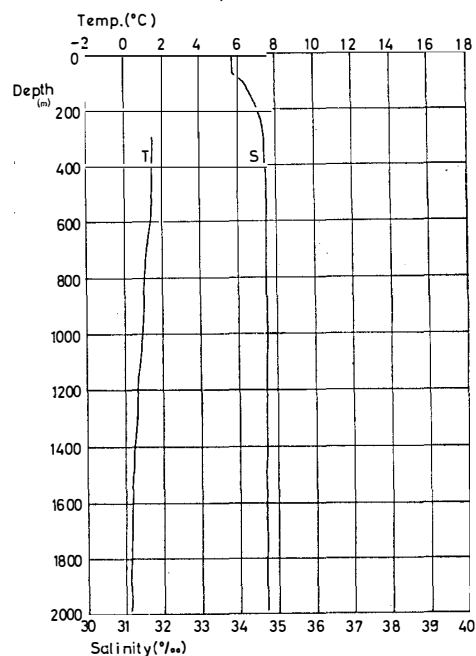




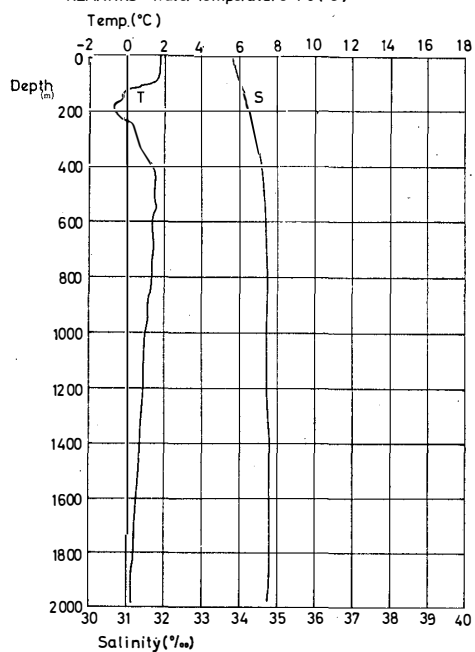
LOCATION 62°14'S 31°42'E
 TIME 11h33m OPERATOR S.N.Y.S.
 DATE Mar. 19, 1971 SERIAL No. Fu23
 REMARKS Water Temperature 0.7(°C)



LOCATION 61°1'S 30°34'E
 TIME 20h25m OPERATOR S.N.Y.S.
 DATE Mar. 19, 1971 SERIAL No. Fu24
 REMARKS Water Temperature 1.1(°C)



LOCATION 57°25'S 28°05'E
 TIME 08h15m OPERATOR S.N.Y.S.
 DATE Mar. 21, 1971 SERIAL No. Fu25
 REMARKS Water Temperature 1.6(°C)



LOCATION 54°53'S 24°53'E
 TIME 18h04m OPERATOR S.N.Y.S.
 DATE Mar. 22, 1971 SERIAL No. Fu26
 REMARKS Water Temperature 1.5(°C)

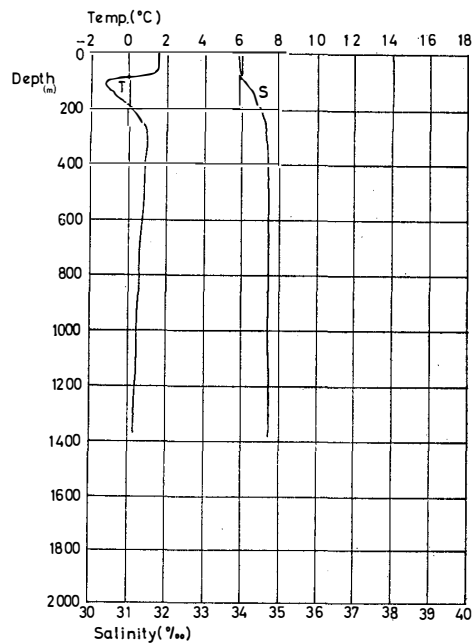


Table 1. Surface observation data.

| Date | Time | | Position | | Air temp. | Water temp. | S | pH | O ₂ | Phos-phate-P | Sili-cate-Si | Ni-trite-N | Ni-trate-N | Ammono-N | Alkalinity | Current | |
|---------|-------|------|---------------------|----------|-----------|-------------|--------|------|----------------|--------------|--------------|------------|------------|----------|------------|---------|------------|
| | GMT | LMT | Lat. | Long. | °C | | ‰ | | cc/L | μg-atoms/L | | | | | | Dir. | Speed (kt) |
| 1970 | | | | | | | | | | | | | | | | | |
| Nov. 26 | 2300* | 0800 | 31-43N | 137-46 E | 19.7 | 22.4 | 34.702 | | 4.99 | | | | | | | | |
| | 0900 | 1800 | 30-03 | 136-47 | 21.9 | 22.6 | 34.631 | | 5.06 | 0.00 | 2 | | | | | | |
| 27 | 2300* | 0800 | 27-28 | 135-31 | 23.8 | 23.3 | 34.683 | | 4.94 | 0.06 | 0 | | | | | | |
| | 0900 | 1800 | 25-33 | 134-38 | 24.7 | 24.9 | 34.740 | 8.33 | 4.93 | 0.04 | 0 | | | | | | |
| 28 | 2300* | 0800 | 22-50 | 133-20 | 26.5 | 26.5 | 34.471 | 8.33 | 4.68 | 0.06 | 1 | 0.02 | | | | | |
| | 0900 | 1800 | 20-57 | 132-23 | 26.1 | 26.5 | 34.489 | 8.32 | 4.69 | 0.00 | 1 | 0.04 | | | | | |
| 29 | 2300* | 0800 | 18-17 | 131-13 | 27.4 | 28.1 | 34.386 | 8.34 | 4.57 | 0.02 | 0 | 0.00 | | | | | |
| | 0900 | 1800 | 16-24 | 130-32 | 26.1 | 28.3 | 34.424 | 8.33 | 4.54 | 0.00 | 3 | 0.00 | 0.1 | | | | |
| 30 | 2300* | 0800 | 13-32 | 129-09 | 28.6 | 28.6 | 34.331 | 8.36 | 4.54 | 0.11 | 0 | 0.05 | 0.0 | | | | |
| | 0900 | 1700 | 11-33 | 128-17 | 28.2 | 28.8 | 34.195 | 8.31 | 4.55 | 0.08 | 0 | 0.00 | 0.1 | 0.3 | | | |
| Dec. 1 | 2300* | 0800 | 8-17 | 127-09 | 27.9 | 28.7 | 34.054 | 8.38 | 4.09 | 0.23 | 0 | 0.02 | 0.1 | 0.7 | 2.22 | | |
| | 0900 | 1800 | 5-48 | 126-08 | 25.1 | 28.2 | 32.942 | 8.34 | | 0.02 | 0 | 0.03 | 0.2 | | | | |
| 5 | 1000 | 1800 | 10-35S | 115-13 | 28.0 | 28.9 | 34.431 | 8.27 | 4.56 | 0.11 | 2 | 0.07 | 0.1 | | 2.32 | | |
| 6 | 0000 | 0800 | 13-21 | 114-42 | 27.3 | 28.2 | 34.435 | 8.35 | 4.58 | 0.04 | 1 | 0.02 | 0.1 | 0.0 | 2.31 | | |
| | 1000 | 1800 | 15-17 | 114-33 | 27.5 | 28.7 | 34.472 | 8.34 | 4.59 | 0.00 | 1 | 0.03 | 0.0 | 0.0 | 2.41 | | |
| 7 | 0000 | 0800 | 18-21 | 113-56 | 25.3 | 26.5 | 34.483 | 8.34 | 4.64 | 0.13 | 1 | 0.01 | 0.0 | 0.2 | 2.37 | 354 | 0.9 |
| | 1000 | 1800 | 20-21 | 113-43 | 25.0 | 25.1 | 35.063 | 8.29 | 4.73 | 0.11 | 1 | 0.00 | 0.1 | 0.0 | 2.34 | | |
| 8 | 0000 | 0800 | 23-12 | 113-14 | 22.9 | 22.7 | 35.165 | 8.34 | 4.75 | 0.11 | 2 | 0.00 | 0.1 | 0.0 | 2.43 | 314 | 0.3 |
| | 1000 | 1800 | 25-18 | 112-40 | 21.6 | 22.4 | 35.381 | 8.29 | 4.92 | 0.13 | 3 | 0.02 | 0.0 | | 2.36 | | |
| 10 | | | Arrive in Fremantle | | | | | | | | | | | | | | |
| 16 | | | Leave Fremantle | | | | | | | | | | | | | | |
| 17 | 0000 | 0800 | 33-53 | 111-57 | 15.6 | 18.1 | 35.815 | 8.25 | 5.35 | 0.11 | 2 | 0.04 | 0.1 | 0.3 | 2.53 | | |
| | 0600 | 1400 | 34-33 | 111-00 | 16.0 | 17.8 | 35.785 | 8.15 | 5.39 | 0.11 | 0 | 0.02 | 0.1 | 0.1 | 2.42 | 207 | 0.1 |
| | 1000 | 1800 | 34-52 | 110-26 | 15.4 | 17.9 | 35.860 | 8.16 | 5.61 | 0.13 | 2 | 0.00 | 0.1 | 0.1 | 2.36 | | |
| 18 | 0000 | 0800 | 37-18 | 110-00 | 13.0 | 14.0 | 35.072 | 8.09 | 5.56 | 0.70 | 0 | 0.11 | 6.1 | 0.0 | 2.43 | 33 | 0.4 |
| | 0600 | 1400 | 38-24 | 110-05 | 14.0 | 14.0 | 35.107 | | | | | | | | | | |
| 19 | 0100 | 0900 | 41-37 | 110-03 | 10.1 | 11.2 | 34.732 | 8.19 | 6.33 | 0.83 | 0 | 0.19 | 6.8 | 0.4 | 2.44 | 315 | 0.6 |
| | 1000 | 1800 | 43-01 | 109-59 | 9.6 | 10.3 | 34.634 | 8.09 | 6.46 | 0.91 | 2 | 0.16 | 8.1 | 0.3 | 2.45 | | |
| 20 | 0000 | 0800 | 45-02 | 109-23 | 9.0 | 10.0 | 34.528 | 8.03 | 6.43 | 1.00 | 3 | 0.27 | 7.9 | | | | |
| | 1000 | 1800 | 46-56 | 109-20 | 9.2 | 7.5 | 34.186 | 8.01 | 6.75 | 1.14 | 0 | 0.11 | 11 | 0.2 | 2.29 | | |
| 21 | 0000 | 0800 | 49-46 | 109-20 | 3.9 | 5.4 | 34.004 | | 7.11 | 1.57 | 2 | 0.21 | 19 | 0.7 | 2.49 | 330 | 0.4 |

| Date | Time | | Position | | Air temp. | Water temp. | S | pH | O ₂ | Phos- phate-P | Sili- cate-Si | Ni- trite-N | Ni- trate-N | Ammo- nia-N | Alkalin- ity | Current | |
|----------------|------|------|----------|---------|-----------|-------------|--------|------|----------------|------------------|------------------|----------------|----------------|----------------|-----------------|---------|---------------|
| | GMT | LMT | Lat. | Long. | °C | | ‰ | | | μg-atoms/L | | | | | | Dir. | Speed (kt) |
| 22 | 0600 | 1400 | 50-54S | 110-01E | 4.6 | 4.6 | 33.953 | 8.02 | 7.36 | 1.48 | 0 | 0.24 | 19 | 0.1 | 2.34 | 45 | 0.1 |
| | 1000 | 1800 | 51-29 | 109-47 | 4.0 | 4.0 | 33.973 | 8.00 | 7.74 | 1.42 | 1 | 0.27 | 19 | 0.2 | 2.34 | | |
| | 0030 | 0830 | 54-16 | 108-19 | 4.1 | 2.6 | 34.006 | 8.00 | 7.90 | 1.59 | 3 | 0.34 | 21 | 0.2 | 2.48 | | |
| | 0600 | 1400 | 54-58 | 107-05 | 3.5 | 2.8 | 33.966 | 8.01 | 7.80 | 1.51 | 2 | 0.27 | 20 | 0.1 | 2.44 | | |
| | 1000 | 1800 | 55-26 | 106-18 | 2.6 | 2.8 | 33.962 | 8.02 | 7.78 | 1.55 | 1 | 0.26 | 21 | 0.3 | 2.39 | | |
| 23 | 0100 | 0800 | 57-41 | 102-14 | 0.6 | 1.4 | 34.059 | 8.03 | 7.99 | 1.65 | 21 | 0.30 | 23 | 0.4 | 2.38 | 262 | 0.3 |
| | 0700 | 1400 | 58-26 | 101-13 | 1.0 | 0.8 | 34.066 | 8.03 | 8.09 | 1.91 | 37 | 0.31 | 23 | 0.3 | 2.37 | | |
| | 1100 | 1800 | 58-52 | 100-19 | 0.7 | 0.8 | 34.049 | 8.04 | 8.04 | 1.93 | 39 | 0.30 | 24 | 0.5 | 2.32 | | |
| 24 | 0100 | 0800 | 60-54 | 96-17 | 0.1 | -0.3 | 33.994 | 8.04 | 8.19 | 1.89 | 43 | 0.28 | 20 | 0.2 | 2.35 | 79 | 0.2 |
| | 0700 | 1400 | 61-44 | 94-34 | 0.0 | -0.4 | 33.937 | 8.01 | 8.15 | 1.97 | 52 | 0.27 | 25 | 0.2 | 2.37 | | |
| 25 | 1100 | 1800 | 62-07 | 93-48 | 0.2 | -0.4 | 33.974 | 8.01 | 7.95 | 1.91 | 48 | 0.21 | 24 | 0.2 | 2.22 | 341 | 0.4 |
| | 0200 | 0800 | 62-19 | 87-48 | -0.3 | -0.9 | 34.030 | 8.01 | 7.98 | 2.01 | 62 | 0.19 | 26 | 0.2 | 2.37 | | |
| | 0800 | 1400 | 62-36 | 85-26 | -0.1 | -1.0 | 34.020 | 8.04 | 7.96 | 1.89 | 63 | 0.13 | 27 | 0.3 | 2.38 | | |
| | 1200 | 1800 | 62-34 | 84-23 | -0.2 | -0.8 | 33.687 | 8.03 | 8.24 | 1.61 | 38 | 0.20 | 21 | 0.3 | 2.41 | | |
| 26 | 0200 | 0800 | 61-33 | 83-34 | -0.6 | -1.4 | 33.421 | 8.06 | 8.29 | 1.71 | 33 | 0.23 | 22 | 0.0 | 2.34 | | |
| 27 | 0800 | 1400 | 61-38 | 81-12 | -0.1 | -0.6 | 33.794 | 8.08 | 8.07 | 1.55 | 36 | 0.29 | 22 | 0.1 | 2.41 | 290 | 0.6 |
| | 1200 | 1800 | 61-53 | 80-02 | -0.2 | -0.8 | 33.893 | 8.07 | 8.00 | 1.80 | 37 | 0.30 | 22 | 0.4 | 2.39 | | |
| | 0300 | 0800 | 62-39 | 73-35 | -0.8 | -0.6 | 33.834 | 8.11 | 8.15 | 1.70 | 32 | 0.24 | 25 | 0.4 | 2.34 | | |
| 28 | 0900 | 1400 | 63-04 | 71-41 | 0.7 | -1.0 | 33.503 | 8.09 | 8.09 | 1.89 | 50 | 0.22 | 27 | 0.6 | 2.42 | 290 | 0.6 |
| | 0300 | 0800 | 63-04 | 67-13 | -1.0 | -0.8 | 33.563 | 8.02 | 8.05 | 1.99 | 47 | 0.28 | 28 | 0.5 | 2.29 | | |
| 29 | 0910 | 1410 | 62-51 | 65-20 | -0.5 | -0.4 | 33.502 | 8.02 | 8.00 | 2.01 | 45 | 0.35 | 25 | 0.6 | | 2.3 | 2.34 |
| | 1300 | 1800 | 62-43 | 64-16 | -0.4 | -0.8 | 33.436 | 8.04 | 8.06 | 1.87 | 47 | 0.25 | 24 | 0.6 | | | |
| | 0400 | 0800 | 63-26 | 58-54 | -0.8 | -1.4 | 33.284 | 8.05 | 8.01 | 2.01 | 54 | 0.29 | 23 | | | | |
| | 1400 | 1800 | 64-14 | 55-17 | -0.7 | -1.2 | 33.381 | 8.09 | 8.28 | 1.95 | 51 | 0.19 | 22 | 0.3 | 2.39 | | |
| 30 | 1400 | 1800 | 67-10 | 45-07 | -0.1 | -1.0 | 33.360 | 8.07 | 8.04 | 1.93 | 56 | 0.26 | 24 | | 2.39 | | |
| 1971 Jan. 2 | 1930 | 2230 | 67-10 | 45-07 | -1.0 | -1.2 | 33.916 | | | | | | | | | | |
| Mar. 18 | 0500 | 0800 | 66-38 | 34-57 | -0.6 | -0.6 | 34.398 | 8.15 | 7.91 | 1.52 | 56 | 0.14 | 22 | 3.9 | | 55 | 0.4 |
| | 1430 | 1730 | 65-26 | 33-50 | -0.3 | 0.4 | 33.945 | 8.17 | 7.64 | 1.75 | 48 | 0.17 | 27 | 2.7 | 2.54 | | |
| 19 | 1430 | 1730 | 61-35 | 31-11 | 0.2 | 1.0 | 33.921 | 8.11 | 7.61 | 0.75 | 42 | 0.24 | 30 | 0.7 | 2.16 | | |
| | 1830 | 2030 | 61-11 | 30-34 | 0.3 | 1.1 | 33.884 | | | | | | | | | | |
| 21 | 0600 | 0800 | 57-25 | 28-09 | 2.4 | 1.6 | 33.866 | 8.10 | 7.56 | 1.66 | 44 | 0.35 | 32 | 0.4 | | | |

| Date | Time | | Position | | Air temp. | Water temp. | S | pH | O ₂ | Phos-phate-P | Sili-cate-Si | Ni-trite-N | Ni-trate-N | Ammo-nia-N | Alkalin-ity | Current | |
|---------|---------------------|------|----------|--------|-----------|-------------|--------|--------|----------------|--------------|--------------|------------|------------|------------|-------------|---------|------------|
| | GMT | LMT | Lat. | Long. | °C | | ‰ | | | | | | | | | cc/L | μg-atoms/L |
| Apr. 22 | 1700 | 1900 | 56-35S | 27-10E | 2.1 | 2.2 | 33.989 | 8.11 | 7.70 | 1.21 | 38 | 0.33 | 29 | 0.4 | 330 | 0.6 | |
| | 0600 | 0800 | 55-45 | 24-56 | 0.9 | 1.8 | 33.997 | | 7.58 | | | | | | | | |
| | 1600 | 1800 | 54-53 | 24-53 | 1.7 | 1.5 | 33.942 | 8.13 | 7.69 | 1.58 | 50 | 0.25 | 28 | 0.5 | | | |
| | 0700 | 0900 | 53-07 | 23-12 | 2.8 | 1.7 | 34.070 | 8.09 | 7.65 | 1.73 | 51 | 0.29 | 30 | 0.4 | | | |
| | 1630 | 1830 | 51-41 | 23-30 | 2.3 | 2.0 | 34.032 | 8.08 | 7.59 | 1.68 | 45 | 0.24 | 30 | 0.8 | | | |
| | 1700 | 1900 | 48-21 | 21-32 | 6.0 | 5.4 | 33.857 | 8.16 | 7.10 | 1.29 | 0 | 0.20 | 25 | 0.4 | | | |
| | 0600 | 0800 | 45-37 | 19-22 | 4.8 | 8.2 | 34.017 | 8.10 | 6.62 | 1.35 | 4 | 0.26 | 20 | 0.5 | | | |
| | 1615 | 1815 | 43-00 | 19-41 | 9.2 | 14.7 | 35.128 | 8.24 | 5.61 | 0.33 | 4 | 0.04 | 4.9 | 0.3 | | | |
| | 0600 | 0800 | 39-37 | 18-58 | 15.0 | 16.3 | 35.071 | 8.22 | 5.57 | 0.25 | 0 | 0.13 | 1.5 | 0.1 | | | |
| | 1700 | 1900 | 37-37 | 18-34 | 17.9 | 20.3 | 35.471 | 8.27 | 5.14 | 0.21 | 2 | 0.07 | 0.6 | 0.1 | | | |
| | 0600 | 0800 | 34-52 | 18-06 | 12.7 | 19.3 | 35.512 | 8.22 | 5.30 | 0.25 | 1 | 0.08 | 0.5 | | | | |
| | Arrive in Cape Town | | | | | | | | | | | | | | | | |
| | Leave Cape Town | | | | | | | | | | | | | | | | |
| | 0600 | 0800 | 35-01 | 21-56 | 16.5 | 19.2 | 35.292 | 8.26 | 5.27 | 0.21 | 1 | 0.07 | 0.5 | 0.3 | | | |
| | 1600 | 1800 | 34-45 | 23-28 | 17.5 | 19.0 | 35.241 | 8.24 | 5.21 | 0.25 | 3 | 0.25 | 2.4 | 0.1 | | | |
| | 6 | 1600 | 1800 | 31-57 | 31-06 | 21.2 | 23.1 | 35.585 | 8.27 | 5.00 | 0.13 | 0 | 0.03 | 0.2 | | | |
| | 7 | 0600 | 0800 | 30-34 | 34-27 | 23.3 | 25.5 | 35.347 | 8.30 | 4.72 | 0.00 | 1 | 0.04 | 0.1 | | | 0.1 |
| | 1600 | 1800 | 29-27 | 36-54 | 23.8 | 25.4 | 35.441 | 8.29 | 5.33 | 0.06 | 1 | 0.02 | 0.3 | 0.7 | | | |
| | 8 | 0600 | 0800 | 28-00 | 40-25 | 25.3 | 26.1 | 35.117 | 8.31 | 4.69 | 0.06 | 2 | 0.07 | 0.1 | | | 0.3 |
| | 1600 | 1800 | 27-08 | 42-24 | 25.9 | 26.7 | 34.952 | 8.32 | 4.65 | 0.02 | 0 | 0.06 | 0.1 | 1.2 | | | |
| | 9 | 0500 | 0800 | 25-58 | 45-21 | 25.7 | 24.9 | 35.102 | 8.31 | 4.77 | 0.04 | 2 | 0.08 | 0.2 | | | 0.2 |
| | 1500 | 1800 | 25-12 | 47-45 | 27.5 | 27.5 | 34.739 | 8.28 | 4.62 | 0.12 | 1 | 0.04 | 0.1 | | | | |
| | 10 | 0500 | 0800 | 24-00 | 50-24 | 26.3 | 27.1 | 35.177 | 8.31 | 4.60 | 0.12 | 1 | | 0.1 | | | |
| | 11 | 1500 | 1800 | 23-12 | 52-35 | 26.4 | 26.7 | 35.096 | 8.27 | 4.61 | 0.08 | 1 | 0.04 | 0.1 | | | 0.4 |
| | | 0400 | 0800 | 22-00 | 55-05 | 26.9 | 26.4 | 35.202 | 8.31 | 4.67 | 0.15 | 3 | 0.00 | 0.1 | | | 0.4 |
| | | 1400 | 1800 | 21-06 | 57-07 | 26.4 | 26.8 | 34.925 | 8.29 | 4.65 | 0.10 | 1 | 0.03 | 0.1 | | | 0.0 |
| | 12 | 0400 | 0800 | 19-25 | 59-20 | 26.3 | 26.6 | 34.872 | 8.28 | 4.72 | 0.08 | 3 | 0.03 | 0.0 | | | 0.7 |
| | | 1400 | 1800 | 18-04 | 60-51 | 26.7 | 26.7 | 34.814 | 8.30 | 4.70 | 0.04 | 0 | 0.04 | 0.1 | | | 0.3 |
| 13 | 0400 | 0800 | 16-30 | 63-08 | 26.8 | 27.2 | 34.768 | 8.33 | 4.63 | 0.12 | 4 | 0.07 | 0.1 | 0.1 | | | |
| | 1400 | 1800 | 15-25 | 64-47 | 24.5 | 27.5 | 34.652 | 8.31 | 4.63 | 0.12 | 1 | 0.06 | 0.1 | 0.3 | | | |
| 14 | 0400 | 0800 | 13-34 | 66-40 | 27.1 | 27.5 | 34.475 | | 4.60 | | 3 | | | | | | |
| | 1300 | 1800 | 12-30 | 68-21 | 27.4 | 27.7 | 34.638 | 8.33 | 4.66 | 0.02 | | 0.05 | 0.3 | 0.0 | 2.33 | | |

| Date | Time | | Position | | Air temp. | Water temp. | S | pH | O ₂ | Phosphate-P | Silicate-Si | Nitrite-N | Nitrate-N | Ammonia-N | Alkalinity | Current | |
|--------|----------|------|----------|--------|-----------|-------------|--------|------|----------------|-------------|-------------|-----------|-----------|-----------|------------|---------|------------|
| | GMT | LMT | Lat. | Long. | °C | | ‰ | | cc/L | μg-atoms/L | | | | | | Dir. | Speed (kt) |
| May. 1 | 15 0300 | 0800 | 11-05S | 70-07E | 27.2 | 27.7 | 34.376 | 8.28 | 4.65 | 0.12 | 1 | 0.05 | 0.1 | 0.0 | 2.26 | | |
| | 1300 | 1800 | 9-40 | 73-00 | 27.7 | 29.1 | 34.416 | 8.26 | 4.58 | 0.04 | 0 | 0.04 | 0.1 | 0.0 | 2.27 | | |
| | 16 0300 | 0800 | 7-38 | 75-48 | 28.2 | 28.4 | 34.591 | 8.25 | 4.57 | 0.16 | 0 | 0.03 | 0.1 | 0.0 | | | |
| | 1300 | 1800 | 6-19 | 77-33 | 28.5 | 29.3 | 34.651 | 8.25 | 4.54 | 0.12 | 1 | 0.08 | 0.1 | 0.1 | 2.24 | | |
| | 17 0300 | 0800 | 4-14 | 80-17 | 27.2 | 29.2 | 34.702 | 8.24 | 4.50 | 0.06 | 1 | 0.00 | 0.1 | 0.0 | 2.26 | | |
| | 1300 | 1800 | 2-53 | 82-09 | 27.6 | 29.1 | 34.635 | 8.25 | 4.53 | 0.15 | 0 | 0.07 | 0.1 | 0.1 | 2.24 | | |
| | 18 0200 | 0800 | 1-02 | 84-47 | 25.2 | 29.1 | 34.625 | | 4.52 | | | | | | | | |
| | 1200 | 1800 | 0-15 N | 86-32 | 26.9 | 29.3 | 34.594 | | 4.51 | | | | | | | | |
| | 19 0200 | 0800 | 2-02 | 89-05 | 28.2 | 29.4 | 34.447 | 8.25 | 4.51 | 0.08 | 1 | 0.04 | 0.2 | 0.8 | 2.20 | | |
| | 1210 | 1810 | 3-02 | 90-42 | 28.3 | 29.5 | 34.152 | 8.27 | 4.53 | 0.11 | 2 | 0.00 | 0.0 | 2.9 | 2.26 | | |
| | 20 0200 | 0800 | 4-46 | 92-57 | 28.5 | 29.4 | 33.953 | 8.27 | 4.56 | 0.68 | 1 | 0.03 | 0.1 | 0.1 | | | |
| | 1200 | 1800 | 5-54 | 94-27 | 28.9 | 29.9 | 34.001 | 8.27 | 4.52 | 0.19 | 7 | 0.06 | 0.2 | 1.1 | 2.19 | | |
| | 24 0100 | 0800 | 4-33 | 106-28 | 27.5 | 28.5 | 33.446 | 8.26 | 4.63 | | | | | | | | |
| | 1100 | 1800 | 6-07 | 107-49 | 28.3 | 29.8 | 33.250 | | 4.62 | 0.11 | 2 | 0.07 | 0.3 | 0.0 | 2.09 | | |
| | 25 0100 | 0800 | 8-25 | 109-43 | 28.0 | 28.2 | 33.341 | 8.28 | 4.65 | 0.08 | 2 | 0.06 | 0.2 | 0.0 | 2.18 | | |
| | 1100 | 1800 | 10-16 | 111-19 | 28.6 | 28.3 | 33.387 | 8.26 | 4.78 | 0.04 | 0 | 0.05 | 0.2 | 0.0 | 2.19 | | |
| | 26 0100 | 0800 | 12-49 | 111-40 | 27.6 | 28.1 | 33.348 | | 4.69 | | | | | | | | |
| | 1100 | 1800 | 14-25 | 115-28 | 27.6 | 28.1 | 33.436 | 8.26 | 4.65 | 0.06 | 1 | 0.07 | 0.2 | 0.1 | 2.15 | | |
| | 27 0000 | 0800 | 16-30 | 117-55 | 27.0 | 26.4 | 33.953 | 8.29 | 4.76 | 0.15 | 4 | 0.03 | 0.2 | 0.0 | 2.24 | | |
| | 1000 | 1800 | 17-56 | 119-28 | 27.0 | 26.5 | 34.157 | | 4.74 | 0.00 | 1 | 0.06 | 0.2 | 0.5 | | | |
| May. 1 | 28 0000 | 0800 | 19-59 | 121-39 | 26.8 | 26.4 | 34.546 | | 4.81 | 0.00 | 0 | 0.07 | 0.2 | 0.6 | | | |
| | 1000 | 1800 | 21-22 | 123-26 | 26.0 | 26.1 | 34.643 | 8.23 | 4.76 | 0.15 | 0 | 0.02 | 0.2 | 2.0 | 2.26 | | |
| | 29 0000 | 0800 | 23-20 | 125-39 | 23.9 | 24.1 | 34.759 | 8.23 | 4.99 | 0.11 | 1 | 0.02 | 0.1 | 0.1 | 2.29 | 135 | 0.9 |
| | 1000 | 1800 | 24-43 | 126-52 | 23.1 | 23.4 | 34.992 | 8.26 | 4.96 | 0.04 | 1 | 0.02 | 0.2 | 0.2 | 2.24 | | |
| | 30 2300* | 0800 | 26-42 | 128-54 | 18.5 | 22.3 | 34.739 | 8.28 | 5.03 | | | | | | | | |
| | 0900 | 1800 | 28-14 | 130-29 | 20.3 | 21.7 | 34.760 | 8.28 | 5.08 | 0.11 | 3 | 0.03 | 0.2 | 0.0 | 2.29 | 112 | 1.0 |
| May. 1 | 2300* | 0800 | 30-24 | 132-19 | 18.5 | 21.9 | 34.732 | 8.27 | 5.13 | 0.02 | 4 | 0.05 | 0.2 | | 2.31 | 4 | 1.1 |
| | 0900 | 1800 | 31-29 | 133-09 | 18.0 | 20.3 | 34.851 | | 5.30 | | | | | | | | |

* The time of the date of the preceding day.

Table 2. Bathythermograph observation data.

| St. No. | Date | | | Time | | Position | | Temperature (°C) at indicated depth (m) | | | | | | | | | | |
|---------|------|-------|------|-------|------|----------|---------|---|------|------|------|------|------|------|------|------|------|------|
| | Day | Month | Year | GMT | LMT | Lat. | Long. | 0 | 10 | 20 | 30 | 50 | 75 | 100 | 125 | 150 | 200 | 250 |
| 1 | 26 | Nov. | 1970 | 2300* | 0800 | 31-43N | 137-46E | 22.4 | 22.4 | 22.4 | 22.4 | 22.4 | 22.4 | 22.3 | 20.6 | 19.2 | 18.3 | 18.0 |
| 2 | 26 | | | 0900 | 1800 | 30-03 | 136-47 | 22.6 | 22.6 | 22.6 | 22.6 | 22.6 | 22.6 | 21.5 | 20.5 | 19.6 | 18.3 | 17.6 |
| 3 | 27 | | | 0900 | 1800 | 25-33 | 134-38 | 24.9 | 25.0 | 24.9 | 24.9 | 24.6 | 24.5 | 22.2 | 19.9 | 18.7 | 17.8 | 17.1 |
| 4 | 28 | | | 2300* | 0800 | 22-50 | 133-20 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 24.9 | 21.8 | 20.2 | 19.4 | | |
| 5 | 28 | | | 0900 | 1800 | 20-57 | 132-23 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 22.7 | 21.0 | 19.6 | 19.0 | 17.5 | 16.6 |
| 6 | 29 | | | 2300* | 0800 | 18-17 | 131-13 | 28.1 | 28.1 | 28.1 | 28.1 | 28.0 | 28.0 | 27.4 | 25.7 | 24.3 | | |
| 7 | 29 | | | 0900 | 1800 | 16-24 | 130-32 | 28.3 | 28.3 | 28.3 | 28.2 | 28.2 | 28.2 | 26.9 | 26.1 | 24.5 | 19.6 | 18.2 |
| 8 | 30 | | | 2300* | 0800 | 13-32 | 129-09 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 27.4 | 25.3 | 23.6 | 17.9 | 15.6 |
| 9 | 30 | | | 0800 | 1700 | 11-33 | 128-17 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.1 | 27.4 | 24.6 | 16.7 | 11.9 |
| 10 | 1 | Dec. | | 2300* | 0800 | 8-17 | 127-09 | 28.7 | 28.8 | 28.9 | 28.9 | 28.9 | 28.3 | 27.2 | 24.9 | 20.1 | 14.2 | 11.1 |
| 11 | 1 | | | 0900 | 1800 | 5-48 | 126-08 | 28.2 | 28.2 | 28.2 | 28.3 | 27.3 | 25.2 | 22.2 | 19.4 | 17.5 | 15.1 | 12.6 |
| 12 | 5 | | | 1000 | 1800 | 10-35S | 115-13 | 28.9 | 28.9 | 28.8 | 27.5 | 25.5 | 24.5 | 23.6 | 21.7 | 20.3 | 16.4 | 14.1 |
| 13 | 6 | | | 0000 | 0800 | 13-21 | 114-42 | 28.2 | 28.2 | 28.2 | 26.8 | 25.0 | 23.9 | 22.5 | 19.7 | 17.7 | 14.1 | |
| 14 | 6 | | | 1000 | 1800 | 15-17 | 114-33 | 28.7 | 28.5 | 28.4 | 28.3 | 26.6 | 24.3 | 22.0 | 20.6 | 19.1 | 15.0 | 13.3 |
| 15 | 7 | | | 0000 | 0800 | 18-21 | 113-56 | 26.5 | 26.5 | 26.5 | 26.5 | 25.2 | 24.3 | 23.7 | 22.3 | 20.9 | 18.9 | |
| 16 | 7 | | | 1000 | 1800 | 20-21 | 113-43 | 25.1 | 25.0 | 24.8 | 24.6 | 23.3 | 22.3 | 21.6 | 20.6 | 19.8 | 17.1 | |
| 17 | 17 | | | 0000 | 0800 | 33-53 | 111-57 | 18.1 | 18.1 | 18.0 | 18.0 | 16.4 | 15.7 | 14.9 | 14.1 | 13.6 | 12.6 | 12.0 |
| 18 | 17 | | | 1000 | 1800 | 34-52 | 110-26 | 17.9 | 17.9 | 17.6 | 17.6 | 17.3 | 15.9 | 15.0 | 14.7 | 14.0 | 13.1 | 12.4 |
| 19 | 18 | | | 0000 | 0800 | 37-18 | 110-00 | 14.0 | 14.1 | 14.1 | 14.1 | 12.4 | 11.8 | 11.8 | 11.8 | 11.7 | 11.5 | |
| 20 | 18 | | | 1000 | 1800 | 38-46 | 110-04 | 13.4 | 13.4 | 13.4 | 13.3 | 13.0 | 12.5 | 11.1 | 10.9 | 10.8 | 11.0 | 10.5 |
| 21 | 19 | | | 0100 | 0900 | 41-37 | 110-03 | 11.2 | 11.2 | 11.2 | 11.2 | 11.2 | 10.8 | 10.6 | 10.2 | 10.2 | 10.2 | |
| 22 | 19 | | | 1000 | 1800 | 43-01 | 109-59 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 9.9 | 9.7 | 9.7 | 9.5 | 9.4 | 9.2 |
| 23 | 20 | | | 2330* | 0730 | 45-02 | 109-23 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.7 | 9.8 | 9.8 | 9.8 | 5.6 |
| 24 | 20 | | | 1000 | 1800 | 46-56 | 109-20 | 7.5 | 7.5 | 7.5 | 7.5 | 7.4 | 7.4 | 7.3 | 6.7 | 6.6 | | |
| 25 | 21 | | | 0100 | 0900 | 49-57 | 109-20 | 5.3 | 5.3 | 5.3 | 5.3 | 5.2 | 5.2 | 4.8 | 4.0 | 4.0 | 3.8 | |
| 26 | 21 | | | 1000 | 1800 | 51-29 | 109-47 | 4.0 | 4.0 | 3.7 | 3.6 | 3.4 | 2.4 | 2.1 | 1.8 | 1.7 | 1.8 | |

| St. No. | Date | | | Time | | Position | | Temperature (°C) at indicated depth (m) | | | | | | | | | | |
|---------|------|-------|------|------|------|----------|---------|---|------|------|------|------|------|------|------|------|------|------|
| | Day | Month | Year | GMT | LMT | Lat. | Long. | 0 | 10 | 20 | 30 | 50 | 75 | 100 | 125 | 150 | 200 | 250 |
| 27 | 22 | Dec. | 1970 | 0100 | 0900 | 54-16S | 108-19E | 2.6 | 2.6 | 2.6 | 2.6 | 1.8 | 1.2 | 0.9 | 0.9 | 0.8 | 1.0 | |
| 28 | 22 | | | 1000 | 1800 | 55-26 | 106-18 | 2.8 | 2.8 | 2.8 | 2.8 | 2.7 | 2.2 | 1.8 | 1.7 | 1.7 | 1.6 | |
| 29 | 23 | | | 0100 | 0800 | 57-41 | 102-14 | 1.4 | 1.5 | 1.5 | 1.5 | 1.2 | 0.4 | 0.0 | -0.2 | 0.4 | 1.8 | |
| 30 | 23 | | | 1100 | 1800 | 58-52 | 100-19 | 0.8 | 0.8 | 0.9 | 0.8 | -0.3 | -0.3 | -0.6 | -0.6 | 0.8 | 1.7 | 1.8 |
| 31 | 24 | | | 0100 | 0800 | 60-54 | 96-17 | -0.3 | -0.2 | -0.2 | -0.3 | -0.5 | -1.2 | -1.0 | -0.1 | 0.9 | 1.5 | 1.5 |
| 32 | 24 | | | 1100 | 1800 | 62-07 | 93-48 | -0.4 | -0.4 | -0.4 | -0.4 | -0.6 | -1.4 | -1.0 | 0.1 | 0.9 | 1.3 | |
| 33 | 25 | | | 0200 | 0800 | 62-19 | 87-48 | -0.9 | -0.9 | -0.9 | -0.9 | -0.9 | -1.1 | -0.9 | -0.6 | 0.3 | 1.3 | |
| 34 | 26 | | | 1200 | 1800 | 61-53 | 80-02 | -0.8 | -0.8 | -0.8 | -0.8 | -1.3 | -1.6 | -0.6 | 0.7 | 1.2 | 1.9 | 2.1 |
| 35 | 27 | | | 0300 | 0800 | 62-39 | 73-35 | -0.6 | -0.6 | -0.6 | -0.6 | -1.3 | -1.2 | -0.1 | 1.4 | 1.8 | 2.1 | 2.2 |
| 36 | 28 | | | 0300 | 0800 | 63-04 | 67-13 | -0.8 | -0.8 | -1.0 | -1.1 | -1.5 | -1.5 | -1.4 | -0.1 | 0.7 | 1.8 | |
| 37 | 28 | | | 1300 | 1800 | 62-43 | 64-16 | -0.8 | -0.8 | -0.9 | -0.7 | -1.4 | -1.4 | -1.0 | -0.2 | 1.0 | 2.0 | |
| 38 | 18 | Mar. | 1971 | 0500 | 0800 | 66-38 | 34-57 | -0.6 | -0.6 | -0.6 | -0.6 | -1.5 | -1.6 | -1.6 | -1.6 | -1.2 | | |
| 39 | 19 | | | 0445 | 0745 | 63-10 | 32-49 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | -1.5 | -1.2 | -0.2 | 0.9 | 1.3 | |
| 40 | 19 | | | 1415 | 1715 | 61-35 | 31-11 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.4 | -1.3 | -1.3 | -0.8 | 0.7 | |
| 41 | 20 | | | 0600 | 0800 | 59-42 | 28-24 | 1.5 | 1.5 | 1.5 | 1.5 | 1.6 | 1.7 | 0.2 | 0.3 | 0.5 | 1.1 | 1.4 |
| 42 | 21 | | | 0600 | 0800 | 57-25 | 28-09 | 1.6 | 1.6 | 1.6 | 1.7 | 1.8 | 1.9 | 1.6 | 0.6 | -0.3 | -0.4 | 0.4 |
| 43 | 21 | | | 1700 | 1900 | 56-35 | 27-10 | 2.2 | 2.2 | 2.2 | 2.2 | 2.4 | 2.1 | 0.4 | 0.4 | 0.8 | 1.3 | 1.9 |
| 44 | 23 | | | 1630 | 1830 | 51-41 | 23-30 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.4 | 0.1 | 0.2 | 0.9 | |
| 45 | 26 | | | 1615 | 1815 | 43-00 | 19-41 | 14.7 | 14.7 | 14.7 | 14.7 | 14.7 | 11.6 | 11.5 | 11.1 | 10.5 | 9.3 | |
| 46 | 27 | | | 0600 | 0800 | 39-37 | 18-58 | 16.3 | 16.3 | 16.3 | 16.3 | 16.2 | 14.5 | 12.7 | 12.6 | 11.8 | 11.1 | 11.7 |
| 47 | 27 | | | 1700 | 1900 | 37-37 | 18-34 | 20.3 | 20.4 | 20.3 | 20.3 | 20.2 | 18.6 | 17.5 | 17.0 | 16.9 | 15.3 | |
| 48 | 7 | Apr. | | 0600 | 0800 | 30-34 | 34-27 | 25.5 | 25.5 | 25.4 | 25.4 | 25.4 | 23.1 | 21.1 | 19.8 | 18.7 | 17.0 | |
| 49 | 8 | | | 0600 | 0800 | 28-00 | 40-25 | 26.1 | 26.1 | 25.9 | 25.5 | 25.1 | 23.7 | 21.6 | 20.6 | 19.4 | 17.1 | |
| 50 | 10 | | | 0500 | 0800 | 24-00 | 50-24 | 27.1 | 27.1 | 27.1 | 27.1 | 26.3 | 23.7 | 22.5 | 21.5 | 20.2 | 18.0 | |
| 51 | 10 | | | 1500 | 1800 | 23-12 | 52-35 | 26.7 | 26.7 | 26.6 | 26.6 | 26.5 | 24.8 | 23.3 | 22.7 | 21.9 | 20.2 | |
| 52 | 11 | | | 0400 | 0800 | 22-00 | 55-05 | 26.4 | 26.4 | 26.3 | 26.3 | 26.3 | 23.1 | 21.6 | 20.8 | 20.3 | 18.6 | |
| 53 | 11 | | | 1400 | 1800 | 21-09 | 57-01 | 26.8 | 26.8 | 26.8 | 26.7 | 26.7 | 24.6 | 22.9 | 21.9 | 21.4 | 20.2 | |

No. 42, 1971]

Oceanographic Data of the 12th JAR E

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| St. No. | Date | | | Time | | Position | | Temperature (°C) at indicated depth (m) | | | | | | | | | | |
|---------|------|-------|------|-------|------|----------|--------|---|------|------|------|------|------|------|------|------|------|------|
| | Day | Month | Year | GMT | LMT | Lat. | Long. | 0 | 10 | 20 | 30 | 50 | 75 | 100 | 125 | 150 | 200 | 250 |
| 54 | 12 | May. | | 0400 | 1800 | 19-25S | 59-20E | 26.6 | 26.5 | 26.5 | 26.5 | 26.1 | 25.6 | 23.4 | 22.1 | 21.2 | 18.3 | 17.4 |
| 55 | 12 | | | 1400 | 1800 | 18-06 | 60-56 | 26.7 | 26.7 | 26.7 | 26.7 | 26.1 | 24.6 | 22.8 | 21.9 | 21.2 | 19.4 | |
| 56 | 13 | | | 0400 | 0800 | 16-30 | 63-08 | 27.2 | 27.2 | 27.2 | 27.2 | 27.1 | 24.8 | 23.4 | 21.3 | 20.6 | 18.9 | |
| 57 | 13 | | | 1400 | 1800 | 15-25 | 64-42 | 27.5 | 27.5 | 27.6 | 27.6 | 27.4 | 24.0 | 22.1 | 20.5 | 19.4 | 16.5 | |
| 58 | 14 | | | 0400 | 0800 | 13-34 | 66-40 | 27.5 | 27.5 | 27.5 | 27.5 | 23.6 | 19.4 | 18.0 | 16.4 | 15.2 | 13.8 | |
| 59 | 19 | | | 0200 | 0800 | 2-02 N | 89-05 | 29.4 | 29.4 | 29.4 | 29.2 | 28.8 | 28.5 | 24.5 | 17.4 | 14.8 | 12.7 | |
| 60 | 19 | | | 1200 | 1800 | 3-02 | 90-42 | 29.5 | 29.5 | 29.5 | 29.0 | 28.7 | 28.0 | 24.8 | 16.0 | 13.6 | | |
| 61 | 20 | | | 0200 | 0800 | 4-46 | 92-56 | 29.4 | 29.4 | 29.4 | 29.1 | 28.7 | 27.0 | 24.5 | 18.9 | 14.3 | 12.8 | 17.8 |
| 62 | 20 | | | 1200 | 1800 | 5-54 | 94-27 | 29.9 | 29.9 | 29.9 | 29.8 | 28.6 | 25.6 | 20.3 | 18.3 | 16.7 | 13.3 | |
| 63 | 27 | | | 1000 | 1800 | 17-56 | 119-28 | 26.5 | 25.8 | 25.2 | 25.0 | 21.1 | 19.1 | 17.7 | 16.3 | 15.3 | 13.7 | |
| 64 | 28 | | | 0000 | 0800 | 19-59 | 121-39 | 26.4 | 26.4 | 26.0 | 25.8 | 25.0 | 24.6 | 23.9 | 22.7 | 22.1 | 20.9 | |
| 65 | 28 | | | 1000 | 1800 | 21-22 | 123-26 | 26.1 | 25.9 | 25.6 | 25.4 | 24.9 | 24.1 | 23.2 | 22.2 | 21.5 | 19.3 | |
| 66 | 29 | | | 0000 | 0800 | 23-20 | 125-39 | 24.1 | 24.0 | 23.5 | 23.2 | 22.1 | 21.8 | 21.5 | 21.4 | 21.4 | 20.1 | |
| 67 | 29 | | | 1000 | 1800 | 24-43 | 126-52 | 23.4 | 23.3 | 22.4 | 20.2 | 21.7 | 21.2 | 20.4 | 19.5 | 18.7 | 16.8 | |
| 68 | 30 | | | 0900 | 1800 | 28-14 | 130-29 | 21.7 | 21.7 | 21.7 | 21.7 | 21.5 | 21.3 | 20.9 | 20.6 | 20.2 | 19.7 | |
| 69 | 1 | | | 2300* | 0800 | 30-24 | 132-19 | 21.9 | 21.9 | 21.9 | 21.9 | 21.5 | 21.0 | 20.6 | 20.2 | 19.9 | 19.0 | |
| 70 | 1 | | | 0900 | 1800 | 31-29 | 133-09 | 20.3 | 19.7 | 19.6 | 19.6 | 19.1 | 18.4 | 18.1 | 17.9 | 17.9 | 17.6 | |

Table 3. Vertical observation data.

St. 1

Date : Dec. 18, 1970
 Time(GMT): 0600-0715
 (LMT): 1400-1515
 Lat. : 38-24S
 Long. : 110-05E

Meteorological observation

Time(GMT): 0600 Wind dir.: W
 (LMT): 1400 vel.: 14 kt
 Weather : Cloudy (broken) Humidity : 85%
 Air temp. : 14.0°C Sea : 4
 Atm. press.: 1015.3 mb Swell : SW/4

| Observed | | | | | | | | | | | Interpolated | | | | |
|--------------|-------|--------|------|--------------------------|--------------------|----------------------|--------------------|--------------------|--------------------|------------|--------------|-------|--------|------------|------------|
| Depth (m) | T(°C) | S(‰) | pH | O ₂ (cc/L) | PO ₄ -P | SiO ₃ -Si | NO ₂ -N | NO ₃ -N | NH ₄ -N | Alkalinity | Depth (m) | T(°C) | S(‰) | σ_t | ΔD |
| 0 | 14.0 | 35.107 | 8.21 | 6.02 | | | | | | | 0 | 14.0 | 35.107 | 26.29 | 0.000 |
| 63 | 11.84 | 34.957 | 8.21 | 6.44 | | | | | | | 100 | 11.48 | 35.001 | 26.71 | 0.156 |
| 138 | 11.42 | 35.067 | 8.17 | 6.01 | | | | | | | 200 | 11.20 | 35.040 | 26.79 | 0.290 |
| 212 | 11.16 | 35.028 | 8.18 | 6.05 | | | | | | | 250 | 11.06 | 35.006 | 26.79 | 0.356 |
| 285 | 10.90 | 34.973 | 8.16 | 5.91 | | | | | | | 300 | 10.76 | 34.944 | 26.80 | 0.423 |
| 357 | 10.16 | 34.831 | 8.13 | 5.84 | | | | | | | 400 | 9.83 | 34.780 | 26.83 | 0.555 |
| 429 | 9.64 | 34.755 | 8.11 | 5.80 | | | | | | | 500 | 9.35 | 34.717 | 26.86 | 0.685 |
| 568 | 9.13 | 34.691 | 8.09 | 5.67 | | | | | | | 600 | 9.01 | 34.671 | 26.88 | 0.815 |
| 776 | 8.06 | 34.558 | 8.04 | 5.33 | | | | | | | 800 | 7.79 | 34.540 | 26.96 | 1.070 |
| 1122 | 4.24 | 34.371 | 7.88 | 4.63 | | | | | | | 1000 | 5.57 | 34.419 | 27.17 | 1.298 |
| 1569 | 2.88 | 34.525 | 7.84 | 3.84 | | | | | | | 1200 | 3.68 | 34.366 | 27.34 | 1.486 |
| | | | | | | | | | | | 1500 | 2.82 | 34.472 | 27.50 | 1.719 |

St. 2

120

Meteorological observation

Date : Mar. 19, 1971
 Time(GMT): 0600-0930
 (LMT): 0800-1130
 Lat. : 62-42S
 Long. : 32-16E

Time(GMT): 0900
 (LMT): 1100
 Wind dir.: W
 vel.: 16 kt
 Weather : Cloudy (broken)
 Humidity: 60%
 Air temp. : -0.2°C
 Sea : 3
 Atm. press. : 996.2
 Swell : SW 3

| Observed | | | | | | | | | | | Interpolated | | | | |
|--------------|-------|--------|------|--------------------------|--------------------|----------------------|--------------------|--------------------|--------------------|------------|--------------|-------|--------|------------|------------|
| Depth (m) | T(°C) | S(‰) | pH | O ₂ (cc/L) | PO ₄ -P | SiO ₃ -Si | NO ₂ -N | NO ₃ -N | NH ₄ -N | Alkalinity | Depth (m) | T(°C) | S(‰) | σ_t | ΔD |
| 0 | 0.7 | 33.911 | 8.17 | 7.59 | 1.71 | 41 | 0.26 | | 0.7 | 2.49 | 0 | 0.7 | 33.911 | 27.21 | 0.000 |
| 9 | 0.69 | 34.895 | 8.24 | 7.63 | 1.68 | 44 | 0.30 | | 0.7 | 2.44 | 10 | 0.69 | 33.895 | 27.20 | 0.009 |
| 18 | 0.69 | 33.901 | 8.22 | 7.63 | 1.79 | 40 | 0.29 | | 1.0 | 2.39 | 20 | 0.69 | 33.901 | 27.20 | 0.018 |
| 27 | 0.69 | 33.898 | 8.23 | 7.63 | 1.73 | 40 | 0.27 | | 0.6 | 2.32 | 30 | 0.75 | 33.889 | 27.19 | 0.026 |
| 45 | 0.70 | 33.897 | 8.24 | 7.57 | 1.77 | 41 | 0.28 | | 0.6 | 2.22 | 50 | 0.21 | 33.971 | 27.29 | 0.043 |
| 67 | -1.47 | 34.240 | 8.14 | 7.40 | 2.04 | 56 | 0.22 | | 0.1 | 2.32 | 75 | -1.61 | 34.276 | 27.61 | 0.059 |
| 88 | -1.43 | 34.300 | 8.10 | 7.03 | 2.10 | 59 | 0.19 | | 0.2 | 2.33 | 100 | -0.96 | 34.362 | 27.65 | 0.071 |
| 130 | 0.42 | 34.517 | 8.00 | 5.08 | 2.37 | 82 | 0.04 | | 2.4 | 2.33 | 125 | 0.17 | 34.491 | 27.71 | 0.082 |
| 170 | 1.06 | 34.609 | 8.01 | 4.56 | 2.35 | 87 | 0.02 | | 0.0 | 2.33 | 150 | 0.82 | 34.572 | 27.73 | 0.092 |
| 348 | 1.24 | 34.679 | 8.00 | 4.51 | 2.31 | 97 | 0.02 | | | 2.35 | 200 | 1.25 | 34.642 | 27.76 | 0.110 |
| 438 | 1.22 | 34.699 | 8.00 | 4.56 | 2.29 | 100 | 0.02 | | 1.0 | 2.34 | 250 | 1.43 | 34.677 | 27.78 | 0.128 |
| 529 | 1.09 | 34.705 | 8.00 | 4.60 | 2.33 | 101 | 0.29 | | 0.3 | 2.34 | 300 | 1.42 | 34.689 | 27.79 | 0.144 |
| 622 | 1.00 | 34.703 | 8.00 | 4.65 | 2.33 | 104 | 0.04 | | 0.0 | 2.35 | 400 | 1.24 | 34.692 | 27.80 | 0.177 |
| 718 | 0.89 | 34.700 | 8.01 | 4.62 | 2.29 | 112 | 0.02 | | | 2.31 | 500 | 1.14 | 34.704 | 27.82 | 0.208 |
| 804 | 0.79 | 34.689 | 8.02 | 4.66 | 2.35 | 112 | 0.06 | | 0.1 | 2.35 | 600 | 1.02 | 34.704 | 27.83 | 0.239 |
| 976 | 0.69 | 34.689 | 7.98 | 4.68 | 2.45 | 111 | 0.03 | | | 2.36 | 700 | 0.91 | 34.701 | 27.83 | 0.269 |
| 1231 | 0.53 | 34.690 | 7.97 | 4.74 | 2.33 | 115 | 0.02 | | 0.1 | 2.35 | 800 | 0.79 | 34.690 | 27.83 | 0.299 |
| 1658 | 0.33 | 34.680 | 7.97 | 4.83 | 2.35 | 123 | 0.02 | | 0.1 | 2.36 | 1000 | 0.67 | 34.689 | 27.84 | 0.358 |
| 2101 | 0.16 | 34.669 | 7.96 | 5.04 | 2.39 | 121 | 0.02 | | 0.1 | 2.35 | 1200 | 0.55 | 34.690 | 27.85 | 0.414 |
| 2552 | -0.01 | 34.663 | 7.98 | 5.80 | 2.37 | 122 | 0.00 | | | 2.35 | 1500 | 0.40 | 34.685 | 27.85 | 0.495 |
| 3012 | -0.15 | 34.661 | 7.96 | 5.37 | 2.35 | 122 | 0.02 | | 0.1 | 2.35 | 2000 | 0.20 | 34.671 | 27.85 | 0.626 |
| 3541 | -0.22 | 34.652 | 7.95 | 5.49 | 2.35 | 120 | 0.01 | | 0.2 | 2.35 | 2500 | 0.01 | 34.663 | 27.85 | 0.752 |
| 3944 | -0.29 | | 7.99 | 5.56 | | | | | | | 3000 | -0.15 | 34.661 | 27.86 | 0.875 |
| 4416 | -0.31 | 34.649 | 7.99 | 5.64 | 2.35 | 122 | 0.00 | | | | 3500 | -0.22 | 34.653 | 27.86 | 0.990 |
| | | | | | | | | | | | 4000 | -0.30 | 34.649 | 27.86 | 1.097 |

Syuji NAKAYASHI and Yoshio SERO

[南極資料]

St. 3

Date : Mar. 20, 1971
 Time(GMT): 0620-0950
 (LMT): 0820-1150
 Lat. : 59-41S
 Long. : 28-23E

Meteorological observation

Time(GMT): 0900 Wind dir.: NNW
 (LMT): 1100 vel.: 25 kt
 Weather : Cloudy (broken) Humidity: 73%
 Air temp. : 1.2°C Sea : 3
 Atm. press. : 1001.5 mb Swell : NW 3

No. 42, 1971]

Oceanographic Data of the 12th JARE

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| Observed | | | | | | | | | | | Interpolated | | | | |
|--------------|-------|--------|------|--------------------------|--------------------|----------------------|--------------------|--------------------|--------------------|----------|--------------|-------|--------|----------------|-------|
| Depth (m) | T(°C) | S(‰) | pH | O ₂ (cc/L) | PO ₄ -P | SiO ₃ -Si | NO ₂ -N | NO ₃ -N | NH ₄ -N | Alkalin- | Depth (m) | T(°C) | S(‰) | σ _t | ΔD |
| | | | | | μg-atoms/L | | | | | | | | | | |
| 0 | 1.5 | 33.887 | 8.11 | 7.64 | 1.79 | 43 | 0.39 | 27 | 0.1 | 2.31 | 0 | 1.5 | 33.887 | 27.14 | 0.000 |
| 9 | 1.49 | 33.876 | 8.14 | 7.66 | 1.81 | 41 | 0.38 | 26 | 0.3 | 2.35 | 10 | 1.49 | 33.876 | 27.13 | 0.009 |
| 18 | 1.49 | 33.880 | 8.14 | 7.62 | 1.81 | 43 | 0.38 | 28 | 0.4 | 2.27 | 20 | 1.49 | 33.880 | 27.13 | 0.019 |
| 26 | 1.51 | 33.878 | 8.15 | 7.65 | 1.77 | 43 | 0.38 | 28 | 0.2 | 2.26 | 30 | 1.52 | 33.878 | 27.13 | 0.028 |
| 43 | 1.52 | 33.879 | 8.15 | 7.61 | 1.81 | 43 | 0.38 | 29 | 0.2 | 2.26 | 50 | 1.59 | 33.862 | 27.11 | 0.048 |
| 64 | 1.51 | 33.876 | 8.15 | 7.10 | 1.77 | 43 | 0.39 | 29 | 0.2 | 2.27 | 75 | 0.85 | 34.015 | 27.29 | 0.070 |
| 84 | 0.27 | 34.142 | 8.09 | 7.16 | 2.10 | 58 | 0.23 | 31 | 0.2 | 2.29 | 100 | 0.05 | 34.214 | 27.49 | 0.087 |
| 124 | 0.24 | 34.230 | 8.06 | 6.55 | 2.20 | 65 | 0.09 | 32 | 0.1 | 2.29 | 125 | 0.25 | 34.232 | 27.50 | 0.103 |
| 166 | 0.49 | 34.307 | 8.06 | 6.25 | 2.25 | 71 | 0.06 | 34 | 0.0 | 2.29 | 150 | 0.37 | 34.278 | 27.53 | 0.117 |
| 252 | 1.33 | 34.479 | 7.96 | 4.87 | 2.41 | 81 | 0.04 | 35 | 0.4 | 2.30 | 200 | 0.83 | 34.378 | 27.58 | 0.144 |
| 340 | 1.63 | 34.590 | 7.94 | 4.35 | 2.41 | 87 | 0.04 | 37 | 0.2 | 2.31 | 250 | 1.31 | 34.475 | 27.62 | 0.170 |
| 430 | 1.89 | 34.666 | 7.97 | 4.23 | 2.31 | 89 | 0.05 | 38 | | 2.31 | 300 | 1.53 | 34.546 | 27.67 | 0.193 |
| 520 | 1.70 | 34.672 | 7.96 | 4.25 | 2.31 | 91 | 0.04 | 34 | 0.1 | 2.21 | 400 | 1.83 | 34.647 | 27.72 | 0.236 |
| 613 | 1.75 | 34.703 | 7.97 | 4.43 | 2.29 | 92 | 0.05 | 34 | 0.1 | 2.18 | 500 | 1.75 | 34.673 | 27.75 | 0.276 |
| 707 | 1.66 | 34.692 | 7.96 | 4.44 | 2.29 | 91 | 0.04 | 35 | | 2.33 | 600 | 1.74 | 34.699 | 27.77 | 0.313 |
| 891 | 1.45 | 34.714 | 7.97 | 4.59 | 2.23 | 97 | 0.05 | 35 | | 2.36 | 700 | 1.67 | 34.693 | 27.77 | 0.350 |
| 1351 | 1.01 | 34.712 | 7.98 | 4.66 | 2.23 | 107 | 0.04 | 36 | | 2.36 | 800 | 1.56 | 34.700 | 27.79 | 0.386 |
| 1804 | 0.66 | 34.693 | 7.98 | 4.69 | 2.27 | 123 | 0.06 | | | 2.36 | 1000 | 1.34 | 34.718 | 27.82 | 0.454 |
| 2260 | 0.41 | 34.681 | 7.95 | 4.82 | 2.31 | 124 | 0.04 | 37 | | 2.36 | 1200 | 1.14 | 34.718 | 27.83 | 0.517 |
| 2716 | 0.20 | 34.672 | 7.95 | 4.99 | 2.35 | 127 | 0.04 | 38 | | 2.34 | 1500 | 0.88 | 34.706 | 27.84 | 0.606 |
| 3173 | 0.03 | 34.649 | 7.93 | 5.18 | 2.37 | 126 | 0.07 | 38 | | 2.34 | 2000 | 0.54 | 34.687 | 27.84 | 0.751 |
| 3688 | -0.13 | 34.658 | 7.93 | 5.38 | 2.37 | 129 | 0.04 | 36 | | 2.34 | 2500 | 0.29 | 34.677 | 27.85 | 0.888 |
| 4095 | -0.21 | 34.655 | 7.92 | 5.44 | 2.35 | 129 | 0.03 | 36 | | 2.34 | 3000 | 0.09 | 34.657 | 27.85 | 1.021 |
| 4560 | -0.26 | 34.651 | 7.97 | 5.51 | 2.33 | 129 | 0.03 | 35 | | | 3500 | -0.08 | 34.653 | 27.85 | 1.143 |
| | | | | | | | | | | | 4000 | -0.19 | 34.656 | 27.86 | 1.256 |
| | | | | | | | | | | | 4500 | -0.26 | 34.652 | 27.86 | 1.363 |

St. 4

122

Meteorological observation

Date : Mar. 24, 1971

Time(GMT): 0900

Wind dir. : N.

Time(GMT): 0600-0933

(LMT): 1100

vel. : 23 kt

(LMT): 0800-1133

Weather : Cloudy (broken)

Humidity : 89 %

Lat. : 49-06S

Air temp. : 7.0°C

Sea : 4

Long. : 21-45E

Atm. press. : 1003.2 mb

Swell : NNW 3

| Observed | | | | | | | | | | | Interpolated | | | | |
|--------------|-------|--------|------|--------------------------|-----------------------|----------------------|--------------------|--------------------|--------------------|------------|--------------|-------|--------|------------|------------|
| Depth (m) | T(°C) | S(‰) | pH | O ₂ (cc/L) | PO ₄ -P | SiO ₃ -Si | NO ₂ -N | NO ₃ -N | NH ₄ -N | Alkalinity | Depth (m) | T(°C) | S(‰) | σ_t | ΔD |
| | | | | | $\mu\text{g-atoms/L}$ | | | | | | | | | | |
| 0 | 3.6 | 33.885 | 8.13 | 7.33 | 1.44 | 12 | 0.29 | 25 | 0.2 | 2.31 | 0 | 3.6 | 33.885 | 26.96 | 0.000 |
| 8 | 3.63 | 33.863 | 8.16 | 7.42 | 1.62 | 13 | 0.33 | 24 | 0.1 | 2.27 | 10 | 3.62 | 33.863 | 26.94 | 0.011 |
| 16 | 3.60 | 33.866 | 8.17 | 7.22 | 1.50 | 10 | 0.34 | 28 | 0.4 | 2.26 | 20 | 3.59 | 33.866 | 26.95 | 0.022 |
| 24 | 3.58 | 33.865 | 8.17 | 7.40 | 1.50 | 11 | 0.32 | 25 | 0.1 | 2.27 | 30 | 3.56 | 33.865 | 26.95 | 0.034 |
| 40 | 3.58 | 33.864 | 8.19 | 6.75 | 1.54 | 13 | 0.31 | 25 | 0.2 | 2.27 | 50 | 3.49 | 33.863 | 26.96 | 0.056 |
| 58 | 3.46 | 33.862 | 8.18 | 7.43 | 1.50 | 11 | 0.32 | 24 | 0.1 | 2.28 | 75 | 3.46 | 33.862 | 26.96 | 0.084 |
| 76 | 3.46 | 33.863 | 8.17 | 7.46 | 1.56 | 11 | 0.31 | 23 | 0.2 | 2.31 | 100 | 3.23 | 33.932 | 27.40 | 0.111 |
| 112 | 3.01 | 33.970 | 8.10 | 6.85 | 1.71 | 15 | 0.35 | 24 | 0.2 | 2.31 | 125 | 2.63 | 33.973 | 27.12 | 0.136 |
| 148 | 1.95 | 33.972 | 8.11 | 6.64 | 1.96 | 25 | 0.22 | 26 | 0.2 | 2.31 | 150 | 1.92 | 33.977 | 27.18 | 0.159 |
| 224 | 1.54 | 34.206 | 8.00 | 5.69 | 2.31 | 46 | 0.07 | 32 | 0.0 | 2.33 | 200 | 1.50 | 34.122 | 27.33 | 0.201 |
| 301 | 1.72 | 34.316 | 7.96 | 5.07 | 2.41 | 58 | 0.02 | 35 | 0.1 | 2.33 | 250 | 1.57 | 34.251 | 27.43 | 0.237 |
| 378 | 1.93 | 34.415 | 7.93 | 4.35 | 2.39 | 69 | 0.04 | | 0.0 | 2.31 | 300 | 1.72 | 34.315 | 27.47 | 0.270 |
| 460 | 2.09 | 34.486 | 7.94 | 4.21 | 2.39 | 73 | 0.05 | 35 | 0.0 | 2.31 | 400 | 1.98 | 34.437 | 27.54 | 0.330 |
| 549 | 2.17 | 34.543 | 7.92 | 4.06 | 2.41 | 81 | 0.03 | 34 | 0.1 | 2.31 | 500 | 2.14 | 34.511 | 27.59 | 0.386 |
| 571 | 2.18 | 34.563 | 7.94 | 4.09 | 2.35 | 75 | 0.06 | 37 | 0.1 | 2.30 | 600 | 2.17 | 34.579 | 27.64 | 0.438 |
| 644 | 2.15 | 34.596 | 7.92 | 4.01 | 2.37 | 80 | 0.03 | 36 | 0.1 | 2.31 | 700 | 2.18 | 34.620 | 27.67 | 0.486 |
| 693 | 2.18 | 34.617 | 7.94 | 4.03 | 2.31 | 79 | 0.10 | 37 | 0.2 | 2.32 | 800 | 2.17 | 34.653 | 27.70 | 0.533 |
| 877 | 2.14 | 34.673 | 7.98 | 4.09 | 2.12 | 81 | 0.03 | 39 | 0.1 | 2.35 | 1000 | 2.10 | 34.696 | 27.74 | 0.620 |
| 1192 | 2.00 | 34.717 | 7.96 | 4.37 | 2.12 | 85 | 0.03 | 39 | 0.1 | 2.32 | 1200 | 1.99 | 34.718 | 27.77 | 0.701 |
| 1519 | 1.66 | 34.737 | 7.97 | 4.56 | 2.12 | 92 | 0.03 | 33 | 0.2 | 2.32 | 1500 | 1.68 | 34.737 | 27.81 | 0.812 |
| 1874 | 1.32 | 34.717 | 7.96 | 4.69 | 2.12 | 102 | 0.06 | 37 | 0.1 | 2.38 | 2000 | 1.22 | 34.717 | 27.82 | 0.983 |
| 2322 | 1.00 | 34.717 | 7.95 | 4.76 | 2.20 | 108 | 0.05 | 36 | 0.2 | 2.34 | 2500 | 0.86 | 34.707 | 27.84 | 1.144 |
| 2677 | 0.74 | 34.690 | 7.93 | 4.78 | 2.25 | 119 | 0.06 | 35 | 0.2 | 2.34 | 3000 | 0.59 | 34.688 | 27.84 | 1.297 |
| 3092 | 0.56 | 34.688 | 7.95 | 4.83 | 2.18 | 126 | 0.02 | 35 | 0.3 | 2.36 | | | | | |

Syuji Nakabayashi and Yoshio Sato

[南緯資料]

St. 5

Date : Mar. 25, 1971
 Time(GMT): 0600-0913
 (LMT): 0800-1113.
 Lat. : 46-31S
 Long. : 21-06E

Meteorological observation

Time(GMT): 0900 Wind dir. : W
 (LMT): 1100 vel. : 23 kt
 Weather : Cloudy (broken) Humidity : 79 %
 Air temp. : 6.0°C Sea : 4
 Atm. press. : 980.2 mb Swell : NW 6

| Observed | | | | | | | | | | | Interpolated | | | | |
|----------|-------|--------|------|----------------|--------------------|----------------------|--------------------|--------------------|--------------------|------------|--------------|-------|--------|----------------|-------|
| Depth | T(°C) | S(‰) | pH | O ₂ | PO ₄ -P | SiO ₃ -Si | NO ₂ -N | NO ₃ -N | NH ₄ -N | Alkalinity | Depth | T(°C) | S(‰) | σ _t | ΔD |
| (m) | | | | (cc/L) | μg-atoms/L | | | | | | (m) | | | | |
| 0 | 7.3 | 33.832 | 8.15 | 6.77 | 1.31 | 10 | 0.31 | 21 | 0.4 | 2.26 | 0 | 7.3 | 33.832 | 26.48 | 0.000 |
| 8 | 7.37 | 33.818 | 8.16 | 6.80 | 1.48 | 10 | 0.35 | 22 | 0.1 | 2.24 | 10 | 7.37 | 33.818 | 26.46 | 0.016 |
| 15 | 7.37 | 33.823 | 8.16 | 6.80 | 1.48 | 14 | 0.38 | | 0.0 | 2.23 | 20 | 7.36 | 33.831 | 26.47 | 0.031 |
| 22 | 7.35 | 33.834 | 8.17 | 6.82 | 1.50 | 6 | 0.32 | 19 | 0.1 | 2.23 | 30 | 7.34 | 33.838 | 26.48 | 0.047 |
| 37 | 7.33 | 33.838 | 8.17 | 6.79 | 1.54 | 6 | 0.37 | 18 | 0.1 | 2.30 | 50 | 7.32 | 33.839 | 26.48 | 0.078 |
| 55 | 7.32 | 33.839 | 8.16 | 6.82 | 1.48 | 6 | 0.37 | 21 | | 2.22 | 75 | 7.26 | 33.844 | 26.50 | 0.117 |
| 74 | 7.30 | 33.842 | 8.17 | 6.81 | 1.48 | 8 | 0.35 | 19 | 0.1 | 2.23 | 100 | 5.96 | 33.898 | 26.71 | 0.154 |
| 110 | 5.32 | 33.922 | 8.16 | 6.97 | 1.62 | 9 | 0.47 | 21 | 0.3 | 2.23 | 125 | 4.73 | 33.937 | 26.89 | 0.186 |
| 141 | 4.27 | 33.947 | 8.15 | 7.00 | 1.66 | 11 | 0.29 | 22 | 0.0 | 2.24 | 150 | 4.15 | 33.951 | 26.96 | 0.214 |
| 192 | 4.00 | 33.979 | 8.13 | 6.96 | 1.71 | 20 | 0.06 | 29 | 0.0 | 2.22 | 200 | 3.98 | 33.996 | 27.01 | 0.270 |
| 254 | 3.84 | 34.111 | 8.08 | 6.37 | 1.87 | 20 | 0.06 | 29 | 0.0 | 2.22 | 250 | 3.85 | 34.102 | 27.11 | 0.321 |
| 331 | 3.40 | 34.159 | 8.06 | 6.11 | 2.04 | 22 | 0.07 | 30 | 0.0 | 2.24 | 300 | 3.59 | 34.149 | 27.17 | 0.370 |
| 413 | 3.07 | 34.172 | 8.03 | 5.97 | 1.98 | 30 | 0.07 | 30 | 0.1 | 2.21 | 400 | 3.12 | 34.171 | 27.24 | 0.460 |
| 499 | 2.78 | 34.203 | 8.01 | 5.66 | 2.23 | 35 | 0.02 | 35 | 0.0 | 2.21 | 500 | 2.78 | 34.203 | 27.29 | 0.544 |
| 576 | 2.59 | 34.232 | 8.00 | 5.43 | 2.25 | 36 | 0.01 | 34 | 0.0 | 2.27 | 600 | 2.52 | 34.246 | 27.35 | 0.624 |
| 596 | 2.53 | 34.244 | 7.99 | 5.41 | 2.27 | 41 | 0.03 | 37 | 0.0 | 2.26 | 700 | 2.44 | 34.294 | 27.40 | 0.699 |
| 702 | 2.44 | 34.298 | 7.99 | 5.01 | 2.20 | 45 | 0.01 | 34 | 0.0 | 2.29 | 800 | 2.43 | 34.366 | 27.45 | 0.769 |
| 889 | 2.45 | 34.430 | 7.95 | 4.42 | 2.47 | 59 | 0.00 | 36 | 0.2 | 2.28 | 1000 | 2.47 | 34.499 | 27.55 | 0.897 |
| 1207 | 2.50 | 34.604 | 7.91 | 4.14 | 2.29 | 70 | 0.00 | 31 | 0.1 | 2.30 | 1200 | 2.50 | 34.601 | 27.63 | 1.011 |
| 1549 | 2.47 | 34.708 | 8.05 | 4.35 | 2.12 | 71 | 0.00 | 29 | 0.0 | 2.33 | 1500 | 2.48 | 34.697 | 27.71 | 1.164 |
| 1936 | 2.33 | 34.771 | 7.98 | 4.69 | 1.96 | 70 | 0.07 | 30 | 0.0 | 2.32 | 2000 | 2.29 | 34.776 | 27.79 | 1.386 |
| 2325 | 2.06 | 34.780 | 7.98 | 4.72 | 1.66 | 74 | 0.00 | 27 | 0.2 | 2.32 | | | | | |

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Oceanographic Data of the 12th JARE

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