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NYO-1918-148

NODC accession: 60000000
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WOODS HOLE OCEANOGRAPHIC INSTITUTION

REFERENCE NO. 67-27

BIOLOGICAL, CHEMICAL, AND RADIOCHEMICAL STUDIES
OF MARINE PLANKTON

(Appendix A & B)

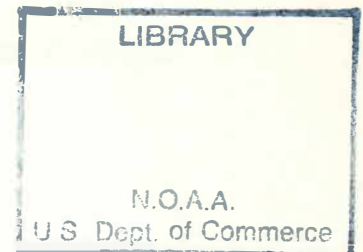
edited by

Bostwick H. Ketchum



WOODS HOLE, MASSACHUSETTS

NYO-1918-148



WOODS HOLE OCEANOGRAPHIC INSTITUTION
Woods Hole, Massachusetts

REFERENCE NO. 67-27

BIOLOGICAL, CHEMICAL, AND RADIOCHEMICAL STUDIES
OF MARINE PLANKTON

(Appendix A & B)

edited by

Bostwick H. Ketchum

May 1967

GC
57.2
.W6
no. 67-27
Appendix
A+B

PROGRESS REPORT

*Submitted to the U.S. Atomic Energy
Commission under Contract AT(30-1)1918
A.E.C. Report No. NYO-1918-148.*

*This is a progress report to the U.S.
Atomic Energy Commission and has received
only limited distribution. Therefore, in
citing this report in a bibliography, the
reference should be followed by the phrase
UNPUBLISHED MANUSCRIPT.*

Approved for Distribution

A handwritten signature in cursive script that reads "Paul M. Fye".

Paul M. Fye, Director

BIOLOGICAL, CHEMICAL, AND RADIOCHEMICAL STUDIES OF MARINE PLANKTON
Appendix A to Reference No. 67-27

Reduced Data Report

This reports in detail the chemical and physical data collected on *Atlantis II*, Cruise No. 26 in the Gulf of Maine 16 - 27 September 1966. The results are discussed in the text of this Progress Report. The methods used have been standard oceanographic procedures which have been published in the literature and described in our previous reports (NYO-1918-124 and 138). The method for particulate carbon is the only one changed since these reports were submitted. Water samples for particulate carbon were filtered using a silver filter of pore size 0.8μ . The carbon was determined in a Hewlett-Packard F & M carbon-Hydrogen-Nitrogen analyzer, Model 185.

Table I shows the mean value and standard deviation for variables measured during three diurnal series. The real variations of the variable in nature is combined with the analytical error in these standard deviations. Thus, the large deviations found for the data in the thermocline, for temperature for example, show that there is a large change in most of the properties between 20 and 50 meters. These data do, however, show the consistency in the various properties and, where the natural variation is not excessive, the reproducibility of the methods used.

31AN

Table I

Mean value and standard deviation for variables measured
in various depth ranges for all diurnal stations combined.

| <u>Variable</u> | | 0-20 m | Thermocline | 50-150 m | 160 m - Bottom |
|---|----------|---------|-------------|----------|----------------|
| Temperature °C | Mean | 14.7771 | 8.4618 | 4.1553 | 4.7223 |
| | Std.Dev. | 1.1876 | 2.5552 | 0.3756 | 0.1684 |
| Salinity ‰ | Mean | 31.9346 | 32.4351 | 32.9289 | 33.7147 |
| | Std.Dev. | 0.1053 | 0.1989 | 0.2213 | 0.1449 |
| Density (σ_t) | Mean | 23.6747 | 25.1837 | 26.1467 | 26.7100 |
| | Std.Dev. | 0.3238 | 0.5601 | 0.1821 | 0.0991 |
| Oxygen ml/l. | Mean | 6.1179 | 6.4222 | 5.8186 | 4.8155 |
| | Std.Dev. | 0.1160 | 0.2635 | 0.3485 | 0.2325 |
| Inorg. P $\mu\text{g-at./l}$ | Mean | 0.1908 | 0.5586 | 1.0051 | 1.2445 |
| | Std.Dev. | 0.0608 | 0.2041 | 0.1453 | 0.1025 |
| Part. P $\mu\text{g-at./l}$ | Mean | 0.1026 | 0.0622 | 0.0233 | 0.0300 |
| | Std.Dev. | 0.0274 | 0.0324 | 0.0095 | 0.0113 |
| Total P $\mu\text{g-at./l}$ | Mean | 0.4913 | 0.8110 | 1.2133 | 1.4540 |
| | Std.Dev. | 0.0637 | 0.1846 | 0.1527 | 0.1057 |
| Nitrite $\mu\text{g-at./l}$ | Mean | 0.0329 | 0.0702 | 0.0288 | 0.0300 |
| | Std.Dev. | 0.0320 | 0.0415 | 0.0084 | 0.0132 |
| Nitrate $\mu\text{g-at./l}$ | Mean | 0.1861 | 4.4647 | 11.4439 | 16.2606 |
| | Std.Dev. | 0.4834 | 3.0238 | 1.5851 | 1.6552 |
| Ammonia $\mu\text{g-at./l}$ | Mean | 1.0187 | 0.9367 | 0.7875 | 0.7923 |
| | Std.Dev. | 0.3614 | 0.4267 | 0.4337 | 0.4753 |
| Silicate $\mu\text{g-at./l}$ | Mean | 2.7142 | 5.3971 | 13.0210 | 20.7426 |
| | Std.Dev. | 0.7539 | 1.9165 | 3.4084 | 2.8925 |
| Chlorophyll a $\mu\text{g./l}$ | Mean | 3.9034 | 2.6565 | 0.1955 | 0.0932 |
| | Std.Dev. | 2.0442 | 1.8409 | 0.1411 | 0.0425 |
| Dissolved Org. P $\mu\text{g-at./l}$ | Mean | 0.1979 | 0.1902 | 0.1849 | 0.1794 |
| | Std.Dev. | 0.0520 | 0.0490 | 0.0806 | 0.0629 |
| Number of Samples | | 38 | 49 | 51 | 53 |

STATION NO. 979
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 15 Sept. 1966

REDUCED DATA

LAT. 42° 53.0" N.
 LONG. 69° 53" W.

DEPTH 258 M.
 TIME 0443 GMT - 0043 LT.
 WEATHER _____
 WIND 10 Knots
 ZOOPLANKTON VOL. _____ ml.

Diurnal I

| DEPTH | TEMP. | SAL.‰ | σ _t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000Lux |
|-------|-------|--------|----------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|-------------------|--------------------------|
| | | | | ml/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | | mg/m ³ | μg/L/hr. |
| 1 | 15.49 | 31.759 | 23.39 | 6.13 | 0.15 | 0.10 | 0.43 | 0.21? | 0.23 | 1.35 | 2.34 | 1 | 2.20 | 1.15 |
| 10 | 15.49 | 31.748 | 23.39 | 6.27 | 0.17 | 0.09 | 0.49 | 0.03 | 0.07 | 1.57 | 2.19 | 10 | 2.47 | 1.55 |
| 19 | 14.15 | 32.030 | 23.89 | 6.51 | 0.23 | 0.11 | 0.55 | 0.04 | 0.09 | 1.44 | 3.55 | 20 | 6.51 | 3.60 |
| 29 | 9.73 | 32.384 | 24.98 | 6.67 | 0.44 | 0.10 | 0.78 | 0.17 | 2.20 | 1.37 | 4.76 | 30 | 4.72 | 4.19 |
| 39 | 7.27 | 32.602 | 25.52 | 6.18 | 0.70 | 0.04 | 0.95 | 0.05 | 6.95 | 1.08 | 6.64 | 40 | 3.57 | 0.92 |
| 48 | 6.30 | 32.662 | 25.69 | 6.12 | 0.81 | 0.04 | 1.10 | 0.03 | 8.31 | 1.14 | 8.76 | 50 | 1.26 | 0.33 |
| 72 | 4.44 | 33.647 | 25.90 | 6.20 | 0.93 | 0.02 | 1.29 | 0.01 | 10.56 | 0.76 | 12.61 | 75 | .49 | |
| 96 | 4.12 | 32.817 | 26.06 | 5.87 | 1.02 | 0.02 | 1.25 | 0.03 | 11.57 | 1.05 | 13.36 | 100 | .27 | |
| 121 | 3.96 | 32.968 | 26.20 | 5.84 | 1.02 | 0.02 | 1.29 | 0.02 | 12.18 | 0.84 | 14.19 | 125 | .18 | |
| 145 | 4.06 | 33.310 | 26.46 | 5.15 | 1.19 | 0.04 | 1.57 | 0.03 | 15.13 | 1.12 | 20.08 | 150 | .08 | |
| 169 | 4.44 | 33.566 | 26.62 | 5.06 | 1.22 | 0.04 | 1.46 | 0.03 | - | 0.70 | 20.91 | 175 | .09 | |
| 193 | 4.62 | 33.663 | 26.68 | 4.90 | 1.19 | 0.04 | 1.40 | 0.02 | 15.20 | 0.56 | 19.10 | 200 | .08 | |
| 217* | 4.70 | 33.776 | 26.76 | 4.80 | 1.33 | 0.03 | 1.51 | 0.08 | 19.40 | 0.69 | 22.12 | 225 | .07 | |
| 241 | 4.82 | 33.877 | 26.83 | 5.06 | 1.28 | 0.05 | 1.45 | 0.03 | 20.53 | 0.60 | 20.16 | 250 | .10 | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | μg/L | μg/L |
| | | | | | | | | | | | | 1 | 261.1 | 17.6 |
| | | | | | | | | | | | | 10 | 144.2 | 9.1 |
| | | | | | | | | | | | | 19 | 162.9 | 10.3 |
| | | | | | | | | | | | | 29 | 170.8 | 6.5 |
| | | | | | | | | | | | | 39 | 45.8 | 1.9 |
| | | | | | | | | | | | | 48 | 60.4 | 1.9 |
| | | | | | | | | | | | | 72 | 75.4 | 0 |
| | | | | | | | | | | | | 96 | 114.6 | 1.3 |
| | | | | | | | | | | | | 121 | 58.8 | 2.4 |
| | | | | | | | | | | | | 169 | 47.8 | 0 |
| | | | | | | | | | | | | 193 | 57.9 | 0 |
| | | | | | | | | | | | | 217 | 96.4 | 1.3 |
| | | | | | | | | | | | | 241 | 117.1 | 2.7 |

* From BT and Plotted Temp. Graph

STATION NO. 980
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 15 Sept. 1966

REDUCED DATA

LAT. 42° 51.0" N.
 LONG. 69° 51.5" W.

DEPTH _____
 TIME 1049 GMT - 06.49 LT
 WEATHER _____
 WIND 16 Knots
 ZOOPLANKTON VOL. _____ ml.

Diurnal I

| DEPTH | TEMP | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -SiP | DEPTH | CHL. a | C ¹⁴ -7000LUX |
|-------|-------|--------|------------|----------------|--------------------|------------------|------------------|--------------------|--------------------|--------------------|-----------------------|-------|-------------------|--------------------------|
| | | | | ml/L | $\mu\text{gA/L}$ | $\mu\text{gA/L}$ | $\mu\text{gA/L}$ | $\mu\text{gA/L}$ | $\mu\text{gA/L}$ | $\mu\text{gA/L}$ | $\mu\text{gA/L}$ | | mg/m ³ | $\mu\text{g/L/hr.}$ |
| 1 | 15.88 | 31.844 | 23.37 | 6.06 | 0.17 | 0.11 | 0.48 | 0.01 | 0.24 | 0.93 | 2.57 | 1 | 2.41 | 2.16 |
| 9 | 15.81 | 31.839 | 23.38 | 6.10 | 0.16 | 0.09 | 0.42 | 0.01 | 0.14 | 0.76 | 2.19 | 10 | 2.10 | 2.17 |
| 18 | 15.54 | 31.770 | 23.39 | 6.15 | 0.17 | 0.10 | 0.39 | 0.02 | 0.09 | 0.80 | 1.96 | 20 | 3.46 | 2.89 |
| 28 | 12.28 | 32.167 | 24.36 | 6.68 | 0.24 | 0.09 | 0.50 | 0.04 | 0.42 | 0.75 | 2.72 | 30 | 6.40 | 5.36 |
| 37 | 7.66 | 32.584 | 25.45 | 6.23 | 0.60 | 0.04 | 0.84 | 0.07 | 6.21 | 0.66 | 5.89 | 40 | 2.20 | 0.85 |
| 46 | 6.41 | 32.676 | 25.69 | 6.10 | 0.67 | 0.03 | 0.89 | 0.03 | 8.05 | 0.84 | 6.64 | 50 | 1.15 | |
| 69 | 4.70 | 32.628 | 25.85 | 6.07 | 0.83 | 0.02 | 0.96 | 0.03 | 9.14 | 0.68 | 9.29 | 75 | .15 | |
| 92 | 4.36 | 32.820 | 26.04 | 5.95 | 0.97 | 0.02 | 1.14 | 0.03 | 10.72 | 0.48 | 12.38 | 100 | .14P | |
| 115 | 4.05 | 32.867 | 26.11 | 5.92 | 0.89 | 0.05 | 1.11 | 0.03 | 14.16 | 0.81 | 11.02 | 125 | .12P | |
| 139 | 3.88 | 32.997 | 26.23 | 5.73 | 0.97 | 0.02 | 1.18 | 0.04 | 12.52 | 0.55 | 13.36 | 150 | .09 | |
| 162 | 4.14 | 33.262 | 26.41 | 5.45 | 1.02 | 0.02 | 1.20 | 0.03 | 10.12 ⁷ | 0.56 | 14.19 | 175 | .10 | |
| 185 | 4.57 | 33.540 | 26.59 | 5.01 | 0.96 ⁷ | 0.01 | 1.40 | 0.03 | 16.00 | 0.44 | 19.63 | 200 | .06 | |
| 208* | 4.72 | 33.710 | 26.71 | 4.84 | 1.24 | 0.04 | 1.49 | 0.03 | 17.07 | 0.50 | 22.87 | 225 | .07 | |
| 231 | 4.78 | 33.831 | 26.80 | 4.84 | 1.07 | 0.03 | 1.29 | 0.03 | 17.97 | 0.62 | 18.35 | 250 | .08 | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | $\mu\text{g/L}$ | $\mu\text{g/L}$ |
| | | | | | | | | | | | | 1 | 100.2 | 6.6 |
| | | | | | | | | | | | | 9 | 148.8 | 6.8 |
| | | | | | | | | | | | | 18 | 186.1 | 4.8 |
| | | | | | | | | | | | | 28 | 187.5 | 13.2 |
| | | | | | | | | | | | | 37 | 110.6 | 3.1 |
| | | | | | | | | | | | | 46 | 100.9 | 2.6 |
| | | | | | | | | | | | | 69 | 59.6 | 0.6 |
| | | | | | | | | | | | | 92 | 69.2 | 2.5 |
| | | | | | | | | | | | | 115 | 8.2 | 0 |
| | | | | | | | | | | | | 139 | 229.1 | 0.6 |
| | | | | | | | | | | | | 162 | 11.1 | 0.6 |
| | | | | | | | | | | | | 185 | - | 0 |
| | | | | | | | | | | | | 208 | - | 0.6 |
| | | | | | | | | | | | | 231 | 91.0 | 0.6 |

* Snow Plotted Temp. Graph

STATION NO. 981
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 15 Sept. 1966

REDUCED DATA

LAT. 42° 52.0' N.
 LONG. 69° 48.5' W.

DEPTH 257 M.
 TIME 1623 GMT - 1223 LT.
 WEATHER Overcast
 WIND 30 K-nets
 ZOOPLANKTON VOL. _____ ml.

Diurnal I

| DEPTH | TEMP | SAL.‰ | σ _t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000LUX |
|-------|-------|--------|----------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|--------|--------------------------|
| | | | | ml/L | | | | | | | | | μg A/L | μg A/L |
| 1 | 16.32 | 31.869 | 23.29 | 5.97 | 0.14 | 0.08 | 0.44 | 0.05 | 0.12 | 0.74 | 2.79 | 1 | 2.99 | 2.87 |
| 10 | 16.13 | 31.873 | 23.34 | 6.01 | 0.14 | 0.08 | 0.43 | 0.02 | 0.11 | 0.92 | 2.72 | 10 | 2.45 | 2.42 |
| 20 | 11.76 | 32.205 | 24.49 | 6.70 | 0.32 | 0.10 | 0.62 | 0.09 | 0.51 | 0.87 | 4.15 | 20 | 4.30 | 6.33 |
| 40 | 6.77 | 32.494 | 25.50 | 6.33 | 0.67 ⁷ | 0.05 | 0.84 | 0.07 | 5.97 | 0.75 | 5.51 | 30 | 4.20 | 2.35 |
| 50 | 5.57 | 32.569 | 25.71 | 6.16 | 0.61 | 0.03 | 0.94 | 0.05 | 8.91 | 0.60 | 8.23 | 40 | .88 | 0.07 |
| 74 | 4.82 | 32.683 | 25.88 | 6.05 | 0.79 | 0.03 | 1.01 | 0.03 | 10.69 | 0.59 | 9.59 | 50 | .59 | |
| 99 | 3.96 | 32.771 | 26.04 | 5.91 | 0.97 | 0.02 | 1.11 | 0.03 | 11.32 | 0.58 | 13.51 | 75 | .32 | |
| 124 | 3.97 | 32.922 | 26.16 | 5.78 | 0.98 | 0.03 | 1.13 | 0.02 | 12.48 | 0.57 | 12.91 | 100 | .15 | |
| 149 | 4.31 | 33.000 | 26.19 | 5.11 | 1.25 | 0.04 | 1.50 | 0.03 | 14.95 | 0.55 | 21.06 | 125 | .13 | |
| 174 | 4.61 | 33.597 | 26.63 | 4.83 | 1.30 | 0.03 | 1.52 | 0.03 | 15.58 | 0.65 | 22.73 | 150 | .10 | |
| 198 | 4.75 | 33.754 | 26.74 | 4.80 | 1.23 | 0.04 | 1.49 | 0.02 | 15.86 | 0.54 | 22.57 | 125 | .07 | |
| 223 | 4.80 | 33.824 | 26.79 | 4.82 | 1.23 | 0.01 | 1.46 | 0.03 | 17.08 | 0.48 | 21.14 | 200 | .07 | |
| 248 | 4.82 | 33.873 | 26.82 | 4.95 | 1.20 | 0.04 | 1.49 | 0.04 | 17.48 | 0.53 | 20.39 | 223 | .06 | |
| | | | | | | | | | | | | 248 | .05 | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | μg/L | μg/L |
| | | | | | | | | | | | | 1 | 144.9 | 2.2 |
| | | | | | | | | | | | | 10 | 103.0 | 1.4 |
| | | | | | | | | | | | | 20 | 152.2 | 7.6 |
| | | | | | | | | | | | | 40 | 0 | 0 |
| | | | | | | | | | | | | 50 | 79.3 | 0.8 |
| | | | | | | | | | | | | 74 | 0 | 0 |
| | | | | | | | | | | | | 99 | 49.3 | 0.7 |
| | | | | | | | | | | | | 124 | 37.8 | 1.1 |
| | | | | | | | | | | | | 149 | 65.1 | 0 |
| | | | | | | | | | | | | 174 | 22.9 | 2.4 |
| | | | | | | | | | | | | 198 | - | 0 |
| | | | | | | | | | | | | 223 | 74.9 | 1.9 |
| | | | | | | | | | | | | 248 | 83.5 | 1.4 |

STATION NO. 982
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 15 Sept. 1966

REDUCED DATA

LAT. 42° 49.2" N.
 LONG. 69° 53.8" W

DEPTH 223 M.
 TIME 2323 GMT-1923 LT
 WEATHER _____
 WIND _____
 ZOOPLANKTON VOL. _____ ml.

Diurnal I

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000LUX |
|-------|-------|--------|------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|-------------------|--------------------------|
| | | | | ml/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | | mg/m ³ | μg/L/hr. |
| 1 | 16.34 | 31.886 | 23.30 | 5.98 | 0.17 | 0.15 | 0.53 | 0.04 | 0.04 | 0.89 | 4.15 | 1 | 2.78 | 1.59 |
| 10 | 16.34 | 31.915 | 23.32 | 6.00 | 0.15 | 0.05 | 0.39 | 0.02 | 0.04 | 0.68 | 3.02 | 10 | 2.62 | 2.29 |
| 20 | 15.38 | 31.957 | 23.57 | 6.23 | 0.16 | 0.07 | 0.46 | 0.03 | 0.03 | 0.72 | 3.02 | 20 | 2.41 | 1.61 |
| 30 | 9.79 | 32.290 | 24.89 | 6.62 | 0.37 | 0.07 | 0.65 | 0.14 | 2.10 | 0.79 | 3.62 | 30 | 3.15 | 2.86 |
| 40 | 8.12 | 32.545 | 25.35 | 6.35 | 0.61 | 0.04 | 0.85 | 0.17 | 5.00 | 0.73 | 5.89 | 40 | 3.57 | 2.09 |
| 50 | 6.74 | 32.628 | 25.61 | 6.12 | 0.66 | 0.02 | 0.91 | 0.05 | 7.05 | 0.69 | 7.17 | 50 | 2.52 | |
| 75 | 4.67 | 32.667 | 25.89 | 6.14 | 0.82 | 0.02 | 0.98 | 0.03 | 8.67 | 0.50 | 8.91 | 75 | .69 | |
| 100 | 4.38 | 32.865 | 26.07 | 5.96 | 0.85 | 0.01 | 1.20 | 0.02 | 11.21 | 0.57 | 12.15 | 100 | .13 | |
| 125 | 4.01 | 32.948 | 26.18 | 5.87 | 1.07 | 0.02 | 1.20 | 0.03 | 11.57 | 0.45 | 12.53 | 125 | .11 | |
| 150 | 4.08 | 33.121 | 26.31 | 5.53 | 1.19 | 0.02 | 1.32 | 0.03 | 12.17 | 0.58 | 15.70 | 150 | .09 | |
| 175 | 4.36 | 33.455 | 26.54 | 5.22 | 1.30 | 0.03 | 1.49 | 0.03 | 13.13 | 0.40 | 18.87 | 175 | .09 | |
| 200 | 4.76 | 33.725 | 26.71 | 4.75 | 1.44 | 0.02 | 1.57 | 0.04 | 15.56 | 0.35 | 23.71 | 200 | .06 | |
| 210 | 4.77 | 33.726 | 26.71 | 4.72 | 1.42 | 0.03 | 1.57 | 0.05 | 15.53 | 0.52 | 23.63 | 210 | .11 | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | μg/L | μg/L |
| | | | | | | | | | | | | 1 | - | 11.6 |
| | | | | | | | | | | | | 10 | - | 12.8 |
| | | | | | | | | | | | | 20 | 117.3 | 9.3 |
| | | | | | | | | | | | | 30 | 123.8 | 13.2 |
| | | | | | | | | | | | | 40 | - | 5.5 |
| | | | | | | | | | | | | 50 | 129.9 | 4.0 |
| | | | | | | | | | | | | 75 | - | 4.9 |
| | | | | | | | | | | | | 100 | 88.9 | 1.3 |
| | | | | | | | | | | | | 125 | 84.2 | 3.3 |
| | | | | | | | | | | | | 150 | 53.8 | 3.5 |
| | | | | | | | | | | | | 175 | 88.8 | 4.3 |
| | | | | | | | | | | | | 200 | 68.9 | 4.7 |
| | | | | | | | | | | | | 210 | 48.7 | 3.8 |

* From Plotted Sal. Graph

STATION NO. 983
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 16 Sept., 1966

REDUCED DATA

LAT. 42° 50" N.
 LONG. 69° 51.0" W

DEPTH 233 M.
 TIME 0432 GMT - 0032 LT.
 WEATHER _____
 WIND 25 Knots
 ZOOPLANKTON VOL. _____ ml.

Diurnal I

| DEPTH | TEMP | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000LUX |
|-------|--------------------|--------|------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|-------------------|--------------------------|
| | | | | ml/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | | mg/m ³ | μg/L/hr. |
| 1 | 16.03 ⁷ | 31.878 | 23.37 | 5.99 | 0.18 | 0.08 | 0.42 | 0.02 | 0.18 | 0.79 | 2.34 | 1 | 4.88 | 1.34 |
| 10 | 16.08 ⁷ | 31.912 | 23.38 | 5.98 | 0.15 | 0.10 | 0.43 | 0.02 | 0.02 | 0.69 | 2.19 | 10 | 4.04 | 1.03 |
| 19 | 13.80 | 31.937 | 23.89 | 6.45 | 0.25 | 0.12 | 0.58 | 0.02 | 0.03 | 0.82 | 2.72 | 20 | 4.25 | 0.95 |
| 29 | 9.92 | 32.284 | 24.87 | 7.07 | 0.40 | 0.12 | 0.73 | 0.06 | 0.41 | 1.00 | 3.25 | 30 | 3.36 | 1.77 |
| 39 | 7.00 | 32.671 | 25.61 | 6.18 | 0.80 | 0.03 | 0.96 | 0.05 | 7.26 | 0.58 | 7.25 | 40 | 1.83 | 0.11 |
| 48 | 6.33 | 32.696 | 25.72 | 6.10 | 0.87 | 0.06 | 1.07 | 0.04 | 7.99 | 0.70 | 8.23 | 50 | .69 | 0.09 |
| 73 | 4.82 | 32.734 | 25.92 | 6.04 | 0.87 | 0.03 | 0.99 | 0.03 | 10.33 | 0.66 | 8.23 | 75 | .19 | |
| 97 | 4.57 | 32.860 | 26.05 | 5.83 | 1.01 | 0.02 | 1.16 | 0.03 | 10.72 | 0.58 | 11.10 | 100 | .11 | |
| 121 | 4.25 | 32.972 | 26.17 | 5.68 | 1.15 | 0.03 | 1.30 | 0.03 | 11.93 | 0.53 | 14.42 | 125 | .12 | |
| 145 | 4.13 | 33.172 | 26.34 | 5.55 | 1.21 | 0.02 | 1.35 | 0.03 | 14.10 | 0.58 | 15.85 | 150 | .10 | |
| 169 | 4.34 | 33.422 | 26.52 | 5.19 | 1.28 | 0.03 | 1.42 | 0.04 | 14.14 | 0.60 | 17.82 | 175 | .08 | |
| 194 | 4.76 | 33.731 | 26.72 | 4.66 | 1.42 | 0.04 | 1.57 | 0.04 | 17.37 | 0.52 | 23.93 | 200 | .09 | |
| 218 | 4.79 | 33.825 | 26.79 | 4.77 | 1.39 | 0.04 | 1.59 | 0.05 | 18.26 | 0.50 | 23.93 | 225 | .07 | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N. |
| | | | | | | | | | | | | | μg/L | μg/L |
| | | | | | | | | | | | | 1 | 137.0 | 5.8 |
| | | | | | | | | | | | | 10 | 112.9 | 10.5 |
| | | | | | | | | | | | | 19 | 160.9 | 13.6 |
| | | | | | | | | | | | | 29 | 103.8 | 8.2 |
| | | | | | | | | | | | | 39 | 80.6 | 2.2 |
| | | | | | | | | | | | | 48 | 113.8 | 3.0 |
| | | | | | | | | | | | | 73 | 81.2 | 4.6 |
| | | | | | | | | | | | | 97 | - | 5.2 |
| | | | | | | | | | | | | 121 | 43.2 | 0 |
| | | | | | | | | | | | | 145 | 69.6 | 2.2 |
| | | | | | | | | | | | | 169 | 72.6 | 3.4 |
| | | | | | | | | | | | | 194 | 76.2 | 3.6 |
| | | | | | | | | | | | | 218 | 98.9 | 5.5 |

STATION NO. 984CRUISE NO. 26VESSEL Atlantia IIDATE 17 Sept. 1966

REDUCED DATA

LAT. 42° 49.0" N.LONG. 69° 57.5" W.

DEPTH _____

TIME 1831 GMT - 1431 LT

WEATHER _____

WIND _____

ZOOPLANKTON VOL. _____ ml.

Grid I at Buoy

| DEPTH | TEMP | SAL.‰ | σ_t | O ₂ ml/L | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ .7000Lux |
|-------|-------|--------|------------|------------------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|-------------------|--------------------------|
| | | | | | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | | mg/m ³ | μg/L/hr. |
| 1 | 16.46 | 31.887 | 23.28 | | 0.14 | 0.09 | 0.43 | 0.05 | - | 1.66 | 2.27 | | | |
| 10 | 16.30 | 31.881 | 23.31 | | 0.15 | 0.07 | 0.43 | 0.03 | 0 | 1.90 | 2.72 | | | |
| 20 | 14.87 | 31.936 | 23.66 | | 0.21 | 0.10 | 0.50 | 0.06 | 0 | 1.70 | 4.38 | | | |
| 30 | 8.89 | 32.432 | 25.15 | | 0.52 | 0.11 | 0.84 | 0.15 | 2.89 | 1.55 | 4.76 | | | |
| 40 | 7.21 | 32.496 | 25.44 | | 0.73 | 0.14 | 1.07 | 0.08 | 5.54 | 1.38 | 8.38 | | | |
| 50 | 6.44 | 32.574 | 25.61 | | 0.73 | 0.03 | 0.94 | 0.04 | 6.12 | 1.16 | 8.23 | | | |
| 74 | 5.39 | 32.708 | 25.84 | | 0.88 | 0.02 | 1.11 | 0.04 | 9.33 | 2.10 | 10.57 | | | |
| 99 | 4.17 | 32.766 | 26.02 | | 0.92 | - | | 0.04 | 9.44 | 2.10 | 11.63 | | | |
| 124 | 3.97 | 32.907 | 26.15 | | 0.93 | 0.38? | 1.47? | 0.03 | 10.05 | 0.97 | 12.99 | | | |
| 149 | 4.25 | 33.251 | 26.39 | | 1.21 | 0.03 | 1.43 | 0.08 | 11.88 | 1.12 | 19.86 | | | |
| 173 | 4.42 | 33.518 | 26.58 | | 1.16 | 0.32? | 1.66? | 0.03 | 14.20 | 1.35 | 18.80 | | | |
| 198 | 4.77 | 33.711 | 26.70 | | 1.32 | 0.04 | 1.52 | 0.03 | 15.81 | 1.15 | 24.92 | | | |
| 223 | 4.78 | 33.796 | 26.77 | | 1.31 | 0.04 | 1.50 | 0.10? | 18.22 | 1.15 | 23.03 | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | μg/L | μg/L | |

STATION NO. 985
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 17 Sept. 1966

REDUCED DATA

LAT. 42° 58.7" N.
 LONG. 69° 53.8" W.

DEPTH _____
 TIME 2041 GMT - 1641 LT.
 WEATHER _____
 WIND _____
 ZOOPLANKTON VOL. _____ ml.

Grid. I - "A"

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ .7000LUX |
|-------|-------|--------|------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|--------|--------------------------|
| | | | | ml/L | | | | | | | | | μg A/L | μg A/L |
| | | | | | | | | | | | | | Frozen | |
| 0 | 16.86 | 31.743 | 23.07 | | 0.16 | 0.11 | 0.48 | 0.02 | 0 | 1.67 | 2.72 | 1 | 2.39 | |
| 10 | 15.32 | 31.702 | 23.39 | | 0.13 | 0.10 | 0.46 | 0.18? | 0 | 1.10 | 2.87 | 10 | 3.06 | |
| 20 | 12.70 | 32.067 | 24.20 | | 0.22 | 0.11 | 0.55 | 0.05 | 0 | 1.20 | 2.72 | 20 | 3.00 | |
| 30 | 8.04 | 32.410 | 25.26 | | 0.48 | 0.05 | 0.77 | 0.14 | 2.14 | 1.56 | 4.38 | 30 | 2.39 | |
| 39 | 6.95 | 32.525 | 25.50 | | 0.67 | 0.04 | 0.92 | 0.06 | 6.23 | 1.21 | 5.89 | 40 | 2.23 | |
| 49 | 5.90 | 32.569 | 25.67 | | 0.80 | 0.02 | 1.01 | 0.04 | 7.73 | 1.10 | 7.78 | 50 | 0.44 | |
| 74 | 4.21 | 32.640 | 25.91 | | 0.96 | 0.03 | 1.18 | 0.03 | 9.86 | 1.19 | 11.93 | | | |
| 99 | 3.77 | 32.714 | 26.02 | | 1.03 | 0.03 | 1.27 | 0.03 | 10.36 | 1.23 | 14.04 | | | |
| 124 | 3.66 | 32.760 | 26.06 | | 1.09 | 0.01 | 1.24 | 0.19 | 11.08 | 0.83 | 14.65 | | | |
| 148 | 3.89 | 33.028 | 26.25 | | 1.09 | 0.00 | 1.24 | 0.08 | 11.76 | 0.82 | 15.10 | | | |
| 173 | 4.11 | 33.226 | 26.39 | | 1.04 | 0.02 | 1.20 | 0.05 | 15.10 | 0.77 | 20.31 | | | |
| 198 | 4.64 | 33.608 | 26.63 | | 1.26 | 0.03 | 1.47 | 0.03 | 16.62 | 1.25 | 14.42 | | | |
| 222 | 4.78 | 33.776 | 26.75 | | 1.21 | 0.05 | 1.44 | 0.04 | 14.70 | 0.90 | 21.37 | | | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | μg/L | μg/L |

STATION NO. B89CRUISE NO. 26VESSEL Atlantis IIDATE 18 Sept. 1966Grid I - E

REDUCED DATA

LAT. 42° 37' N.LONG. 69° 41.0 W.

DEPTH _____

TIME 0522 GMT 0122 LT

WEATHER _____

WIND 9 Knots

ZOOPLANKTON VOL. _____ ml.

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000LUX |
|-------|-------|--------|------------|----------------|--------------------|-------------|-------------|--------------------|--------------------|--------------------|----------------------|-------|-------------------|--------------------------|
| | | | | ml/L | μ g A/L | μ g A/L | μ g A/L | μ g A/L | μ g A/L | μ g A/L | μ g A/L | | mg/m ³ | μ g/L/hr. |
| 0 | 15.93 | 31.943 | 23.44 | | 0.16 | 0.08 | 0.48 | 0.04 | 0 | 0.54 | 2.57 | 1 | .89 | |
| 10 | 15.79 | 31.944 | 23.47 | | 0.21 | 0.09 | 0.53 | 0.04 | 0 | 0.57 | 2.57 | 10 | .90 | |
| 20 | 12.60 | 31.946 | 24.13 | | 0.20 | 0.11 | 0.50 | 0.03 | 0 | 0.46 | 2.49 | 20 | 2.55 | |
| 30 | 9.45 | 32.410 | 25.04 | | 0.47 | 0.06 | 0.74 | 0.16 | 2.80 | 0.42 | 5.21 | 30 | 1.62 | |
| 39 | 7.37 | 32.565 | 25.47 | | 0.55 | 0.03 | 0.75 | 0.08 | 2.56 | 0.72 | 5.51 | 40 | .86 | |
| 49 | 5.08 | 32.483 | 25.70 | | 0.74 | 0.02 | 1.00 | 0.04 | 6.18 | 0.31 | 7.17 | 50 | .72 | |
| 74 | 3.44 | 32.575 | 25.94 | | 0.89 | 0.01 | 1.10 | 0.06 | 10.04 | 0.58 | 8.00 | | | |
| 99 | 3.66 | 32.845 | 26.13 | | 0.99 | 0.02 | 1.24 | 0.05 | 11.12 | 0.57 | 12.15 | | | |
| 123 | 4.04 | 33.157 | 26.34 | | 1.10 | 0.02 | 1.32 | 0.06 | 11.48 | 0.97 | 15.25 | | | |
| 148 | 4.37 | 33.456 | 26.54 | | 1.17 | 0.02 | 1.38 | 0.04 | 14.25 | 0.61 | 17.36 | | | |
| 173 | 4.70 | 33.697 | 26.70 | | 1.23 | 0.02 | 1.47 | 0.06 | 15.44 | 0.78 | 20.16 | | | |
| 197 | 4.79 | 33.843 | 26.80 | | 1.05 | 0.02 | 1.37 | 0.04 | 15.51 | 0.75 | 16.99 | | | |
| 222 | 4.83 | 33.887 | 26.83 | | 1.13 | 0.04 | 1.42 | 0.03 | 18.28 | 0.54 | 18.72 | DEPTH | PART-C | PART-N |
| 247 | 4.91 | 33.964 | 26.89 | | 1.14 | 0.04 | - | 0.04 | 19.48 | 1.27 | 18.65 | | μ g/L | μ g/L |

STATION NO. 990
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 18 Sept. 1966

REDUCED DATA

LAT. 42° 42" N.
 LONG. 69° 25.0" W.

DEPTH 214 M.
 TIME 0715 GMT - 0315 LT.
 WEATHER _____
 WIND _____
 ZOOPLANKTON VOL. _____ ml.

Grid I-F

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000LUX | |
|-------|-------|--------|------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|--------|--------------------------|--------|
| | | | | ml/L | | | | | | | | | μg A/L | μg A/L | μg A/L |
| | | | | | | | | | | | | | Frozen | | |
| 1 | 15.52 | 32.014 | 23.58 | | 0.16 | 0.11 | 0.45 | 0.04 | 0.04 | 1.30 | 2.11 | 1 | .92 | | |
| 10 | 15.43 | 32.017 | 23.60 | | 0.15 | 0.09 | 0.43 | 0.03 | 0.03 | 1.05 | 2.26 | 10 | 1.37 | | |
| 20 | 13.84 | 32.112 | 24.01 | | 0.22 | 0.11 | 0.60 | 0.06 | 0.21 | 0.89 | 4.76 | 20 | 3.40 | | |
| 30 | 9.75 | 32.403 | 24.99 | | 0.46 | 0.08 | 0.84 | 0.12 | 3.60 | 0.99 | 5.21 | 30 | 2.25 | | |
| 40 | 7.23 | 32.514 | 25.45 | | 0.65 | 0.05 | 0.94 | 0.10 | 9.99 | 1.26 | 7.10 | 40 | 1.14 | | |
| 50 | 6.60 | 32.637 | 25.63 | | 0.76 | 0.03 | 1.07 | 0.07 | 12.36 | 1.88 | 7.70 | 50 | .68 | | |
| 75 | 5.66 | 32.828 | 25.90 | | 0.70 | 0.03 | 0.96 | 0.06 | 8.38 | 2.16 | 7.47 | | | | |
| 100 | 4.99 | 32.968 | 26.09 | | 0.84 | 0.02 | 1.10 | 0.04 | 9.80 | 0.99 | 10.42 | | | | |
| 124 | 3.93 | 33.086 | 26.29 | | 0.98 | 0.01 | 1.19 | 0.05 | 11.49 | 1.42 | 12.97 | | | | |
| 149 | 4.47 | 33.455 | 26.53 | | 1.14 | 0.02 | 1.39 | 0.04 | 12.58 | 1.06 | 17.14 | | | | |
| 174 | 4.58 | 33.649 | 26.67 | | 1.07 | 0.02 | 1.29 | 0.04 | 13.47 | 1.63 | 15.85 | | | | |
| 199 | 4.88 | 33.885 | 26.83 | | 1.21 | 0.05 | 1.53 | 0.07 | 14.62 | 1.75 | 20.31 | | | | |
| | | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | | μg/L | μg/L |

STATION NO. 993
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 18 Sept. 1966

REDUCED DATA

LAT. 42° 48.5" N.
 LONG. 69° 49.6" W.

DEPTH 265 m.
 TIME 0242 GMT - 2242 LT
 WEATHER _____
 WIND 7 knots
 ZOOPLANKTON VOL. _____ ml.

Grid I at Buoy

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ ml/L | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000Lux |
|-------|-------|--------|------------|------------------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|-------------------|--------------------------|
| | | | | | μg A/L | μg A/L | μg A/L | μg A/L | μg A/L | μg A/L | μg A/L | | mg/m ³ | μg/L/hr. |
| | | | | | | | | | | | | | <i>Frozen</i> | |
| 1 | 16.23 | 31.786 | 23.25 | | 0.20 | 0.09 | 0.54 | 0.07 | 0 | 1.28 | 3.55 | 1 | .77 | |
| 10 | 15.91 | 31.795 | 23.32 | | 0.17 | 0.08 | 0.51 | 0.04 | 0 | 1.22 | 4.00 | 10 | .84 | |
| 20 | 15.81 | 31.910 | 23.44 | | 0.16 | 0.07 | 0.51 | — | 0 | — | 3.10 | 20 | 1.21 | |
| 30 | 9.56 | 32.320 | 24.96 | | 0.47 | 0.09 | 0.86 | 0.16 | 1.87 | 1.62 | 5.74 | 30 | 2.03 | |
| 39 | 6.93 | 32.609 | 25.57 | | 0.72 | 0.05 | 1.09 | 0.08 | 6.87 | 1.11 | 8.91 | 40 | .82 | |
| 49 | 6.30 | 32.625 | 25.66 | | 0.81 | 0.02 | 1.12 | 0.09 | 7.11 | 1.32 | 9.29 | 50 | .46 | |
| 74 | 4.66 | 32.675 | 25.89 | | 0.92 | 0.03 | 1.30 | 0.06 | 9.00 | 1.34 | 10.80 | | | |
| 98 | 4.52 | 32.892 | 26.08 | | N.G. | N.G. | — | N.G. | 10.45 | 4.23 | N.G. | | | |
| 123 | 4.28 | 32.979 | 26.17 | | 0.96 | 0.02 | 1.33 | 0.06 | 10.39 | 0.80 | 12.76 | | | |
| 148 | 4.29 | 33.317 | 26.44 | | 1.10 | 0.03 | 1.50 | 0.06 | 13.65 | 0.71 | 17.59 | | | |
| 172 | 4.57 | 33.616 | 26.65 | | 1.21 | 0.03 | 1.65 | 0.05 | 13.57 | 1.59 | 19.55 | | | |
| 197 | 4.71 | 33.748 | 26.74 | | 1.11 | 0.09 | 1.55 | 0.06 | 15.44 | 1.48 | 17.74 | | | |
| 221 | 4.76 | 33.831 | 26.80 | | 1.07 | 0.03 | 1.45 | 0.04 | 17.31 | 1.15 | 16.69 | DEPTH | PART-C | PART-N |
| 246 | 4.85 | 33.918 | 26.86 | | 1.15 | 0.03 | 1.56 | 0.04 | 18.46 | 1.68 | 17.29 | | μg/L | μg/L |

STATION NO. 994
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 19 Sept. 1966

REDUCED DATA

LAT. 42° 12.0" N.
 LONG. 67° 55.8" W.

DEPTH 241 m.
 TIME 1223 GMT - 0823 LT.
 WEATHER Hazy
 WIND 5 knots
 ZOOPLANKTON VOL. _____ ml.

| DEPTH | TEMP | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000LUX |
|-------|-------|--------|------------|----------------|--------------------|-------------------|-------------------|--------------------|--------------------|--------------------|----------------------|-------|-------------------|--------------------------|
| | | | | ml/L | $\mu\text{g A/L}$ | $\mu\text{g A/L}$ | $\mu\text{g A/L}$ | $\mu\text{g A/L}$ | $\mu\text{g A/L}$ | $\mu\text{g A/L}$ | $\mu\text{g A/L}$ | | mg/m ³ | $\mu\text{g/L/hr.}$ |
| 1 | 15.61 | 31.947 | 23.51 | 6.07 | 0.19 | 0.10 | 0.57 | 0.03 | 0.44 | 1.46 | 3.47 | 1 | 5.82 | |
| 10 | 15.57 | 31.948 | 23.52 | 6.10 | 0.27 | 0.08 | 0.70 | 0.05 | 0.14 | 1.20 | 4.98 | 10 | 4.62 | |
| 20 | 14.59 | 32.026 | 23.79 | 6.33 | 0.21 | 0.13 | 0.70 | 0.02 | 0.06 | 0.98 | 4.83 | 20 | 5.61 | |
| 30 | 13.94 | 32.048 | 23.94 | 6.38 | 0.24 | 0.14 | 0.73 | 0.03 | 0.08 | 1.80 | 4.53 | 30 | 5.35 | |
| 40 | 9.99 | 32.174 | 24.77 | 6.39 | 0.49 | 0.07 | 0.91 | 0.15 | 2.57 | 1.25 | 6.49 | 40 | 1.92 | |
| 50 | 6.87 | 32.303 | 25.34 | 6.39 | 0.71 | 0.03 | 1.12 | 0.13 | 5.88 | 0.89 | 8.46 | 50 | 1.33 | |
| 75 | 3.86 | 32.151 | 25.56 | 6.45 | 0.93 | 0.02 | 1.27 | 0.05 | 10.57 | 0.71 | 9.14 | | | |
| 100 | 3.68 | 32.788 | 26.08 | 6.04 | 1.03 | 0.02 | 1.46 | 0.03 | 13.50 | 0.57 | 12.84 | | | |
| 125 | 4.00 | 33.138 | 26.33 | 5.70 | 0.90 | 0.02 | 1.24 | 0.04 | 9.80? | 0.62 | 10.95 | | | |
| 150 | 5.10 | 33.759 | 26.70 | 5.47 | 0.89 | 0.02 | 1.23 | 0.04 | 13.25 | 0.69 | 10.49 | | | |
| 175 | 5.57 | 34.087 | 26.91 | 5.18 | 0.97 | 0.02 | 1.24 | 0.05 | 14.54 | 0.64 | 11.17 | | | |
| 200 | 6.28 | 34.524 | 27.16 | 4.93 | 1.07 | 0.02 | 1.47 | 0.06 | 16.97 | 0.51 | 12.91 | | | |
| 225 | 6.39 | 34.562 | 27.18 | 4.90 | 1.01 | 0.03 | 1.34 | 0.06 | 17.38 | 0.52 | 11.48 | | | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | $\mu\text{g/L}$ | $\mu\text{g/L}$ |
| | | | | | | | | | | | | 1 | 101.6 | 7.8 |
| | | | | | | | | | | | | 10 | 113.3 | 12.4 |
| | | | | | | | | | | | | 20 | 150.7 | 11.6 |
| | | | | | | | | | | | | 30 | 173.6 | 7.8 |
| | | | | | | | | | | | | 40 | 73.2 | 4.5 |
| | | | | | | | | | | | | 50 | 76.3 | 2.4 |
| | | | | | | | | | | | | 75 | 21.5 | 0.4 |
| | | | | | | | | | | | | 100 | 27.2 | 1.7 |
| | | | | | | | | | | | | 125 | 28.6 | 0 |
| | | | | | | | | | | | | 150 | 55.9 | 4.5 |
| | | | | | | | | | | | | 175 | 40.2 | 2.6 |
| | | | | | | | | | | | | 200 | - | 3.6 |
| | | | | | | | | | | | | 225 | 52.9 | 5.5 |

STATION NO. 995
 CRUISE NO. 26
 VESSEL Atlantic II
 DATE 19 Sept. 1966

REDUCED DATA

LAT. 42° 26.7" N.
 LONG. 66° 47.8" W.

DEPTH 350 m.
 TIME 2134 GMT - 1734 LT
 WEATHER Foggy
 WIND 3 Kts
 ZOOPLANKTON VOL. _____ ml.

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000Lux |
|-------|-------|--------|------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|-------------------|--------------------------|
| | | | | ml/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | | mg/m ³ | μg/L/hr. |
| 1 | 13.92 | 32.182 | 24.05 | 6.47 | 0.22 | 0.11 | 0.67 | 0.04 | 0.30 | 0.73 | 3.78 | 1 | 4.09 | |
| 10 | 13.32 | 32.174 | 24.17 | 6.54 | 0.22 | 0.17 | 0.67 | 0.03 | 0.03 | 0.71 | 3.02 | 10 | 3.36 | |
| 20 | 12.91 | 32.192 | 24.26 | 6.59 | 0.28 | 0.07 | 0.69 | 0.03 | 0.11 | 0.85 | 4.15 | 20 | 4.25 | |
| 30 | 11.60 | 32.097 | 24.43 | 6.66 | 0.32 | 0.05 | 0.66 | 0.09 | 0.95 | 0.83 | 3.47 | 30 | 2.67 | |
| 40 | 10.39 | 32.443 | 24.91 | 6.56 | 0.42 | 0.04 | 0.78 | 0.12 | 2.11 | 0.91 | 4.76 | 40 | 1.49 | |
| 50 | 9.81 | 32.477 | 25.04 | 6.52 | 0.43 | 0.03 | 0.83 | 0.13 | 2.46 | 0.76 | 5.21 | 50 | 1.40 | |
| 75 | 8.19 | 32.690 | 25.46 | 6.56 | 0.44 | 0.03 | 0.73 | 0.17 | 4.28 | 0.69 | 3.62 | | | |
| 100 | 5.90 | 33.321 | 26.26 | 6.16 | 0.75 | 0.01 | 0.96 | 0.04 | 8.90 | 0.70 | 7.85 | | | |
| 125 | 6.93 | 34.417 | 26.99 | 5.12 | 0.86 | 0.01 | 1.02 | - | - | 0.51 | 8.23 | | | |
| 150 | 7.33 | 34.621 | 27.09 | 4.84 | 1.06 | 0.01 | 1.23 | 0.04 | 12.22 | 0.40 | 11.25 | | | |
| 175 | 6.53 | 34.727 | 27.29 | 4.82 | 1.09 | 0.01 | 1.28 | 0.04 | 17.66 | 0.43 | 11.85 | | | |
| 200 | 6.28 | 34.765 | 27.35 | 4.89 | 1.15 | 0.01 | 1.34 | 0.05 | 17.85 | 0.40 | 13.51 | | | |
| 225 | 6.16 | 34.776 | 27.38 | 4.88 | 1.17 | 0.02 | 1.38 | 0.07 | 17.82 | 0.49 | 13.51 | DEPTH | PART-C | PART-N |
| 250 | 6.16 | 34.803 | 27.40 | 4.84 | 1.20 | 0.05 | 1.42 | 0.06 | 18.97 | 0.39 | 13.97 | | μg/L | μg/L |
| 300 | 6.16 | 34.775 | 27.38 | 4.86 | 1.15 | 0.05 | 1.40 | 0.06 | 18.96 | 0.39 | 11.85 | 1 | 161.7 | 9.5 |
| | | | | | | | | | | | | 10 | 105.1 | 14.5 |
| | | | | | | | | | | | | 20 | 115.7 | 13.1 |
| | | | | | | | | | | | | 30 | 83.8 | 11.1 |
| | | | | | | | | | | | | 40 | 103.1 | 7.8 |
| | | | | | | | | | | | | 50 | 81.4 | 7.2 |
| | | | | | | | | | | | | 75 | 83.3 | 6.4 |
| | | | | | | | | | | | | 100 | 36.3 | 3.5 |
| | | | | | | | | | | | | 125 | 35.6 | 2.3 |
| | | | | | | | | | | | | 150 | 26.1 | 2.3 |
| | | | | | | | | | | | | 175 | 26.5 | 1.6 |
| | | | | | | | | | | | | 200 | 88.5 | 4.7 |
| | | | | | | | | | | | | 230 | 27.6 | 2.2 |
| | | | | | | | | | | | | 300 | 36.7 | 0.5 |

STATION NO. 996
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 19 Sept. 1966
20 Sept. 1966

REDUCED DATA

LAT. 42° 50.7" N.
 LONG 67° 23.5" W.

DEPTH 222 M.
 TIME 0241^{GMT} 2241 LT
 WEATHER _____
 WIND 10 Knots
 ZOOPLANKTON VOL. _____ ml.

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000Lux |
|-------|-------|--------|------------|----------------|--------------------|------------|------------|--------------------|--------------------|--------------------|----------------------|-------|-------------------|--------------------------|
| | | | | ml/L | μ gA/L | μ gA/L | μ gA/L | μ gA/L | μ gA/L | μ gA/L | μ gA/L | | mg/m ³ | μ g/L/hr. |
| 1 | 11.55 | 32.447 | 24.71 | 6.61 | 0.35 | 0.15 | 0.79 | 0.05 | 1.05 | 1.03 | 4.91 | 1 | 5.82 | |
| 10 | 11.43 | 32.449 | 24.74 | 6.65 | 0.35 | 0.13 | 0.71 | 0.06 | 0.83 | 1.10 | - | 10 | 6.24 | |
| 20 | 10.74 | 32.532 | 24.92 | 6.50 | 0.39 | 0.11 | 0.75 | 0.09 | 1.79 | 0.75 | 4.53 | 20 | 3.62 | |
| 30 | 9.90 | 32.570 | 25.09 | 6.42 | 0.45 | 0.08 | 0.73 | 0.12 | 2.12 | 0.65 | 4.81 | 30 | 1.78 | |
| 40 | 8.98 | 32.640 | 25.30 | 6.38 | 0.50 | 0.05 | 0.78 | 0.12 | 5.01 | 0.93 | 5.89 | 40 | 1.07 | |
| 50 | 7.48 | 32.995 | 25.80 | 6.29 | 0.60 | 0.03 | 0.84 | 0.12 | 5.73 | 0.78 | 6.27 | 50 | 1.11 | |
| 75 | 6.54 | 33.258 | 26.13 | 6.05 | 0.74 | 0.02 | 0.96 | 0.10 | 7.88 | 0.66 | 7.10 | | | |
| 99 | 5.67 | 33.678 | 26.57 | 5.51 | 0.90 | 0.01 | 1.11 | 0.04 | 12.88 | 0.58 | 10.12 | | | |
| 124 | 5.78 | 33.964 | 26.78 | 5.30 | 0.99 | 0.01 | 1.25 | 0.04 | 13.25 | 0.44 | 12.16 | | | |
| 149 | 5.92 | 34.142 | 26.91 | 5.24 | 0.97 | 0.01 | 1.19 | 0.05 | 14.32 | 0.74 | 11.63 | | | |
| 174 | 6.23 | 34.349 | 27.03 | 5.11 | 1.01 | 0.02 | 1.26 | 0.05 | 14.28 | 0.52 | 12.31 | | | |
| 199 | 6.36 | 34.423 | 27.07 | 5.05 | 1.07 | 0.02 | 1.32 | 0.05 | 15.02 | 0.55 | 12.91 | | | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | μ g/L | μ g/L |
| | | | | | | | | | | | | 1 | 188.0 | 22.2 |
| | | | | | | | | | | | | 20 | 1362 | 16.2 |
| | | | | | | | | | | | | 30 | 108.0 | 13.2 |
| | | | | | | | | | | | | 40 | 95.4 | 9.2 |
| | | | | | | | | | | | | 50 | 117.4 | 11.5 |
| | | | | | | | | | | | | 75 | 75.8 | 3.1 |
| | | | | | | | | | | | | 99 | 43.7 | 1.2 |
| | | | | | | | | | | | | 124 | 21.3 | 0.7 |
| | | | | | | | | | | | | 149 | 23.9 | 2.8 |
| | | | | | | | | | | | | 174 | 35.5 | 1.9 |
| | | | | | | | | | | | | 199 | 36.7 | 1.9 |

STATION NO. 998
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 20 Sept. 1966

REDUCED DATA

LAT. 42° 45.0" N.
 LONG. 69° 53.5" W.

DEPTH 261 M.
 TIME 2220 GMT - 1820 LT
 WEATHER _____
 WIND 16 Knots
 ZOOPLANKTON VOL. _____ ml.

Diurnal II

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000LUX |
|-------|-------|--------|------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|------------------|--------------------------|
| | | | | ml/L | | | | | | | | | $\mu\text{gA/L}$ | $\mu\text{gA/L}$ |
| 1 | 15.78 | 31.867 | 23.41 | 6.00 | 0.17 | 0.09 | 0.49 | 0.03 | 0.04 | 0.85 | 2.72 | 1 | 4.46 | 2.90 |
| 10 | 15.75 | 31.862 | 23.42 | 5.98 | 0.14 | 0.08 | 0.46 | 0.03 | 0.00 | 0.77 | 0.00 | 10 | 4.04 | 2.30 |
| 20 | 10.56 | 32.210 | 24.70 | 6.79 | 0.34 | 0.11 | 0.70 | 0.09 | 0.52 | 0.74 | 3.78 | 20 | 6.24 | 4.22 |
| 30 | 7.79 | 32.437 | 25.32 | 6.74 | 0.64 | 0.05 | 1.03 | 0.12 | 3.01 | 0.65 | 6.19 | 30 | 3.36 | 1.79 |
| 40 | 6.70 | 32.580 | 25.58 | 6.21 | 0.74 | 0.02 | 0.99 | 0.05 | 5.87 | 0.77 | 7.47 | 40 | 1.07 | 0.35 |
| 50 | 6.12 | 32.632 | 25.69 | 6.05 | 0.80 | 0.03 | 1.05 | 0.04 | 7.52 | 0.86 | 8.61 | 50 | .45 | 0.32 |
| 75 | 4.74 | 32.656 | 25.87 | 5.97 | 0.94 | 0.02 | 1.19 | 0.03 | 9.34 | 0.70 | 11.25 | 75 | - | |
| 100 | 4.10 | 32.738 | 26.00 | 5.96 | 0.97 | 0.02 | 1.24 | 0.03 | 10.30 | 0.61 | 11.85 | 100 | .17 | |
| 125 | 4.02 | 32.945 | 26.17 | 5.77 | 1.03 | 0.02 | 1.32 | 0.04 | 10.46 | 0.61 | 14.50 | 125 | .16 | |
| 150 | 4.42 | 33.424 | 26.51 | 4.99 | 1.26 | 0.03 | 1.54 | 0.03 | 12.53 | 0.51 | 20.54 | 150 | .08 | |
| 175 | 4.58 | 33.635 | 26.66 | 4.95 | 1.20 | 0.02 | 1.54 | 0.03 | 14.78 | 0.62 | 20.84 | 175 | .08 | |
| 200 | 4.74 | 33.747 | 26.73 | 4.82 | 1.09 | 0.03 | 1.34 | 0.03 | 14.66 | 0.61 | 17.29 | 200 | .09 | |
| 225 | 4.75 | 33.769 | 26.75 | 4.81 | 1.10 | 0.04 | 1.34 | 0.04 | 15.62 | 0.60 | 18.20 | 225 | .07 | |
| 250 | 4.74 | 33.792 | 26.77 | 4.83 | 1.26 | 0.04 | 1.59 | 0.04 | 16.09 | 0.46 | 23.18 | 250 | .09 | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | $\mu\text{g/L}$ | $\mu\text{g/L}$ |
| | | | | | | | | | | | | 1 | 120.4 | 10.0 |
| | | | | | | | | | | | | 10 | 46.7 | 12.3 |
| | | | | | | | | | | | | 20 | 158.8 | 17.7 |
| | | | | | | | | | | | | 30 | 101.2 | 5.2 |
| | | | | | | | | | | | | 40 | 41.8 | 2.2 |
| | | | | | | | | | | | | 50 | 50.4 | 2.2 |
| | | | | | | | | | | | | 100 | 64.3 | 1.3 |
| | | | | | | | | | | | | 175 | 35.0 | 0.6 |
| | | | | | | | | | | | | 200 | 90.5 | 2.9 |
| | | | | | | | | | | | | 225 | 66.1 | 3.1 |
| | | | | | | | | | | | | 250 | 97.6 | 3.1 |

STATION NO. 999
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 21 Sept. 1966

REDUCED DATA

LAT. 42° 45.0" N.
 LONG. 69° 51.0" W.

DEPTH 237 M.
 TIME 0416 GMT - 0016 LT.
 WEATHER _____
 WIND 10 K nots
 ZOOPLANKTON VOL. _____ ml.

Diurnal II

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000LUX |
|-------|-------|--------|------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|----------------|--------------------------|
| | | | | ml/L | | | | | | | | | μgA/L | μgA/L |
| | | | | | | | | | | | | | <i>7000LUX</i> | |
| 1 | 15.54 | 31.846 | 23.45 | 5.99 | 0.17 | 0.08 | 0.49 | 0.04 | 0.07 | 0.74 | 2.72 | 0 | 1.62 | |
| 10 | 15.53 | 31.850 | 23.45 | 6.04 | 0.17 | 0.07 | 0.48 | 0.03 | 0.07 | 0.70 | 2.94 | 10 | 1.71 | |
| 20 | 15.44 | 31.842 | 23.47 | 6.04 | 0.17 | 0.08 | 0.46 | 0.03 | 0.18 | 0.80 | 2.19 | 20 | 1.80 | |
| 30 | 9.00 | 32.336 | 25.06 | 6.79 | 0.49 | 0.07 | 0.78 | 0.12 | 1.35 | 0.62 | 4.83 | 30 | 2.34 | |
| 39 | 7.28 | 32.466 | 25.41 | 6.54 | 0.57 | 0.04 | 0.89 | 0.08 | 4.14 | 0.98 | 6.27 | 40 | 1.17 | |
| 49 | 5.93 | 32.608 | 25.70 | 6.06 | 0.81 | 0.03 | 1.00 | 0.04 | 7.78 | 0.56 | 8.98 | 50 | 0.57 | |
| 74 | 4.81 | 32.715 | 25.91 | 5.75 | 0.92 | 0.03 | 1.06 | 0.03 | 10.43 | 0.52 | 10.80 | 75 | 0.34 | |
| 99 | 4.23 | 32.722 | 25.98 | 5.88 | 0.90 | 0.03 | 1.04 | 0.04 | 11.49 | 0.65 | 10.12 | 100 | 0.24 | |
| 123 | 4.09 | 32.895 | 26.13 | 5.83 | 0.97 | 0.03 | 1.12 | 0.05 | 10.40 | 0.93 | 10.95 | 125 | 0.20 | |
| 148 | 4.11 | 33.137 | 26.32 | 5.66 | 1.15 | 0.04 | 1.37 | 0.04 | 12.58 | 0.49 | 16.00 | 150 | 0.05 | |
| 173 | 4.49 | 33.501 | 26.57 | 4.90 | 1.15 | 0.03 | 1.36 | 0.04 | 15.46 | 1.14? | 17.59 | 175 | 0.14 | |
| 197 | 4.65 | 33.661 | 26.68 | 4.92 | 1.25 | 0.02 | 1.44 | 0.03 | 16.04 | 0.65 | 19.40 | 200 | 0.15 | |
| 222 | 4.75 | 33.780 | 26.76 | 4.85 | 1.34 | 0.05 | 1.57 | 0.04 | - | 0.62 | 23.03 | 225 | 0.17 | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | μg/L | μg/L |
| | | | | | | | | | | | | 1 | 107.8 | 10.3 |
| | | | | | | | | | | | | 10 | 126.1 | 8.4 |
| | | | | | | | | | | | | 20 | 91.9 | 9.2 |
| | | | | | | | | | | | | 30 | 100.0 | 9.2 |
| | | | | | | | | | | | | 39 | 60.4 | 7.1 |
| | | | | | | | | | | | | 49 | 68.8 | 4.4 |
| | | | | | | | | | | | | 74 | 144.2 | 4.2 |
| | | | | | | | | | | | | 99 | 56.3 | 3.9 |
| | | | | | | | | | | | | 123 | 83.6 | 8.6 |
| | | | | | | | | | | | | 148 | 49.5 | 1.2 |
| | | | | | | | | | | | | 173 | 37.3 | 0 |
| | | | | | | | | | | | | 197 | 40.0 | 0.5 |
| | | | | | | | | | | | | 222 | 32.8 | 0 |

STATION NO. 1000
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 21 Sept. 1966

REDUCED DATA

LAT. 42° 45" N.
 LONG. 69° 54" W.

DEPTH 250 M.
 TIME 1024 GMT - 0624 LT
 WEATHER _____
 WIND 10 Knots
 ZOOPLANKTON VOL. _____ ml.

Diurnal II

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000Lux |
|-------|-------------------|--------|------------|----------------|--------------------|-------------------|-------------------|--------------------|--------------------|--------------------|----------------------|-------|-------------------|--------------------------|
| | | | | ml/L | $\mu\text{g A/L}$ | $\mu\text{g A/L}$ | $\mu\text{g A/L}$ | $\mu\text{g A/L}$ | $\mu\text{g A/L}$ | $\mu\text{g A/L}$ | $\mu\text{g A/L}$ | | $\mu\text{g A/L}$ | mg/m ³ |
| 1 | 15.45 | 31.875 | 23.49 | 5.97 | 0.22 | 0.07 | 0.47 | 0.01 | 0.09 | 1.35 | 3.17 | 1 | 3.04 | 7.76 |
| 10 | 15.40 | 31.876 | 23.50 | 6.05 | 0.18 | 0.14 | 0.48 | 0.03 | 0.05 | 0.88 | 2.27 | 10 | 1.75 | 4.10 |
| 20 | 12.38 | 32.095 | 24.29 | 6.64 | 0.30 | 0.10 | 0.56 | 0.13 | 0.03 | - | 2.57 | 20 | 2.38 | 4.40 |
| 30 | 8.13 | 32.414 | 25.25 | 6.81 | 0.50 | 0.06 | 0.73 | 0.05 | 2.17 | 0.62 | 4.15 | 30 | 1.44 | 1.26 |
| 40 | 6.71 | 32.566 | 25.56 | 6.36 | 0.64 | 0.03 | 0.86 | 0.03 | 6.05 | 0.53 | 5.13 | 40 | .64 | 0.78 |
| 50 | 6.75 ⁷ | 32.734 | 25.69 | 6.00 | 0.82 | 0.02 | 1.05 | 0.04 | 7.26 | 1.14 | 8.68 | 50 | .47 | 0.28 |
| 75 | 5.55 | 32.852 | 25.93 | 5.98 | 0.84 | 0.02 | 1.03 | 0.02 | 9.92 | 0.97 | 8.53 | 75 | .17 | |
| 100 | 4.02 | 32.836 | 26.09 | 5.92 | 0.89 | 0.01 | 1.09 | 0.02 | 11.27 | 0.59 | 9.36 | 100 | .11 | |
| 125 | 4.13 | 33.026 | 26.23 | 5.67 | 0.93 | 0.03 | 1.13 | 0.02 | 12.67 | 0.64 | 12.46 | 125 | .09 | |
| 150 | 4.23 | 33.296 | 26.43 | 5.28 | 1.18 | 0.02 | 1.14 | 0.02 | 12.84 | 0.80 | 18.88 | 150 | .08 | |
| 175 | 4.46 | 33.576 | 26.63 | 5.08 | 1.17 | 0.03 | 1.39 | 0.02 | 15.13 | 1.38 ⁷ | 17.67 | 175 | .07 | |
| 200 | 4.74 | 33.794 | 26.77 | 4.83 | 1.28 | 0.02 | 1.45 | 0.02 | 16.13 | 0.71 | 20.84 | 200 | .03 | |
| 225 | 4.75 | 33.843 | 26.81 | 4.82 | 1.24 | 0.03 | 1.55 | 0.02 | 15.73 | 0.52 | 22.80 | 225 | .07 | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | $\mu\text{g/L}$ | $\mu\text{g/L}$ |
| | | | | | | | | | | | | 1 | 99.2 | 3.7 |
| | | | | | | | | | | | | 10 | 76.1 | 5.7 |
| | | | | | | | | | | | | 20 | 125.1 | 3.8 |
| | | | | | | | | | | | | 30 | 70.2 | 3.0 |
| | | | | | | | | | | | | 40 | 39.0 | 0.4 |
| | | | | | | | | | | | | 50 | 57.0 | 2.2 |
| | | | | | | | | | | | | 75 | 80.6 | 1.1 |
| | | | | | | | | | | | | 100 | 28.4 | 1.3 |
| | | | | | | | | | | | | 125 | 25.1 | 2.3 |
| | | | | | | | | | | | | 150 | 44.9 | 2.9 |
| | | | | | | | | | | | | 175 | 63.9 | 0.8 |
| | | | | | | | | | | | | 200 | 79.3 | 1.9 |
| | | | | | | | | | | | | 225 | 54.9 | 4.2 |

STATION NO. 1000
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 21 Sept. 1966

REDUCED DATA

LAT. 42° 45" N.
 LONG. 69° 54" W.

DEPTH 250 M.
 TIME 1024 GMT - 0624 LT
 WEATHER _____
 WIND 10 Knots
 ZOOPLANKTON VOL. _____ ml.

Diurnal II

| DEPTH | TEMP | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | chl ⁴ -7000Lux |
|-------|-------------------|--------|------------|----------------|--------------------|-------------|-------------|--------------------|--------------------|--------------------|----------------------|-------|-------------------|---------------------------|
| | | | | ml/L | μ g A/L | μ g A/L | μ g A/L | μ g A/L | μ g A/L | μ g A/L | μ g A/L | | mg/m ³ | μ g/L/hr. |
| 1 | 15.45 | 31.875 | 23.49 | 5.97 | 0.22 | 0.07 | 0.47 | 0.01 | 0.09 | 1.35 | 3.17 | 1 | 3.04 | 7.76 |
| 10 | 15.40 | 31.876 | 23.50 | 6.05 | 0.18 | 0.14 | 0.48 | 0.03 | 0.05 | 0.88 | 2.27 | 10 | 1.75 | 4.10 |
| 20 | 12.38 | 32.095 | 24.29 | 6.64 | 0.30 | 0.10 | 0.56 | 0.13 | 0.03 | - | 2.57 | 20 | 2.38 | 4.40 |
| 30 | 8.13 | 32.414 | 25.25 | 6.81 | 0.50 | 0.06 | 0.73 | 0.05 | 2.17 | 0.62 | 4.15 | 30 | 1.44 | 1.26 |
| 40 | 6.71 | 32.566 | 25.56 | 6.36 | 0.64 | 0.03 | 0.86 | 0.05 | 6.05 | 0.53 | 5.13 | 40 | .64 | 0.78 |
| 50 | 6.75 ⁷ | 32.734 | 25.69 | 6.00 | 0.82 | 0.02 | 1.05 | 0.04 | 7.26 | 1.14 | 8.68 | 50 | .47 | 0.28 |
| 75 | 5.55 | 32.852 | 25.93 | 5.98 | 0.84 | 0.02 | 1.03 | 0.02 | 9.92 | 0.97 | 8.53 | 75 | .17 | |
| 100 | 4.02 | 32.836 | 26.09 | 5.92 | 0.89 | 0.01 | 1.09 | 0.02 | 11.27 | 0.59 | 9.36 | 100 | .11 | |
| 125 | 4.13 | 33.026 | 26.23 | 5.67 | 0.93 | 0.03 | 1.13 | 0.02 | 12.67 | 0.64 | 12.46 | 125 | .09 | |
| 150 | 4.23 | 33.296 | 26.43 | 5.28 | 1.18 | 0.02 | 1.14 | 0.02 | 12.84 | 0.80 | 18.88 | 150 | .08 | |
| 175 | 4.46 | 33.576 | 26.63 | 5.08 | 1.17 | 0.03 | 1.39 | 0.02 | 15.13 | 1.38 ⁷ | 17.67 | 175 | .07 | |
| 200 | 4.74 | 33.794 | 26.77 | 4.83 | 1.28 | 0.02 | 1.45 | 0.02 | 16.13 | 0.71 | 20.84 | 200 | .05 | |
| 225 | 4.75 | 33.843 | 26.81 | 4.82 | 1.24 | 0.03 | 1.55 | 0.02 | 15.73 | 0.52 | 22.80 | 225 | .07 | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | μ g/L | μ g/L |
| | | | | | | | | | | | | 1 | 99.2 | 3.7 |
| | | | | | | | | | | | | 10 | 76.1 | 5.7 |
| | | | | | | | | | | | | 20 | 125.1 | 3.8 |
| | | | | | | | | | | | | 30 | 70.2 | 3.0 |
| | | | | | | | | | | | | 40 | 39.0 | 0.4 |
| | | | | | | | | | | | | 50 | 57.0 | 2.2 |
| | | | | | | | | | | | | 75 | 80.6 | 1.1 |
| | | | | | | | | | | | | 100 | 28.4 | 1.3 |
| | | | | | | | | | | | | 125 | 25.1 | 2.3 |
| | | | | | | | | | | | | 150 | 44.9 | 2.9 |
| | | | | | | | | | | | | 175 | 63.9 | 0.8 |
| | | | | | | | | | | | | 200 | 79.3 | 1.9 |
| | | | | | | | | | | | | 225 | 54.9 | 4.2 |

STATION NO. 1001
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 21 Sept. 1966

REDUCED DATA

LAT. 42° 45' 0" N.
 LONG. 69° 54' W.

DEPTH 240 M.
 TIME 1622 GMT-1222 LT.
 WEATHER _____
 WIND 10 Knots
 ZOOPLANKTON VOL. _____ ml.

Diurnal II

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000LUX |
|-------|-------|--------|------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|-------------------|--------------------------|
| | | | | ml/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | | mg/m ³ | μg/L/hr. |
| 1 | 15.42 | 31.914 | 23.53 | 6.04 | 0.15 | 0.08 | 0.48 | 0.03 | 0.17 | 0.90 | 2.57 | 1 | 3.57 | 4.33 |
| 10 | 15.40 | 31.914 | 23.53 | 6.05 | 0.13 | 0.06 | 0.38 | 0.02 | 0.04 | 0.75 | 1.89 | 10 | 2.33 | 4.41 |
| 20 | 15.32 | 31.842 | 23.49 | 6.10 | - | 0.07 | 0.43 | 0.02 | 0.05 | 1.02 | 1.96 | 20 | 2.54 | 5.47 |
| 30 | 10.55 | 32.296 | 24.77 | 6.73 | 0.32 | 0.07 | 0.58 | 0.06 | 1.20 | 0.96 | 2.87 | 30 | 2.73 | 4.00 |
| 40 | 7.70 | 32.500 | 25.38 | 6.34 | 0.57 | 0.05 | 0.84 | 0.13 | 5.37 | 1.10 | 4.76 | 40 | 1.44 | 1.97 |
| 50 | 6.98 | 32.554 | 25.52 | 5.85 | 0.81 | 0.03 | 1.07 | 0.05 | 7.36 | 0.68 | 8.00 | 50 | 1.36 | 0.43 |
| 75 | 5.28 | 32.600 | 25.77 | 5.85 | 0.84 | 0.03 | 1.08 | 0.03 | 8.21 | 0.85 | 9.21 | | | |
| 100 | 4.73 | 32.672 | 25.88 | 5.82 | 0.99 | 0.03 | 1.27 | 0.03 | 9.57 | 1.06 | 13.06 | | | |
| 125 | 3.73 | 32.703 | 26.01 | 5.92 | 0.91 | 0.04 | 1.14 | 0.03 | 9.21 | 0.90 | 10.19 | | | |
| 150 | 4.12 | 32.970 | 26.18 | 5.77 | 0.94 | 0.01 | 1.15 | 0.03 | 11.69 | 0.90 | 11.93 | | | |
| 175 | 4.40 | 33.404 | 26.50 | 5.05 | 1.18 | 0.03 | 1.45 | 0.03 | 13.38 | 0.63 | 18.88 | | | |
| 200 | 4.71 | 33.679 | 26.68 | 4.85 | 1.25 | 0.04 | 1.56 | 0.04 | 16.13 | 0.50 | 22.27 | | | |
| 225 | 4.75 | 33.763 | 26.75 | 4.82 | 1.27 | 0.05 | 1.56 | 0.04 | 16.90 | 0.59 | 22.12 | | | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | μg/L | μg/L |
| | | | | | | | | | | | | 1 | 82.7 | 5.9 |
| | | | | | | | | | | | | 10 | 94.5 | 6.2 |
| | | | | | | | | | | | | 20 | 78.3 | 6.5 |
| | | | | | | | | | | | | 30 | 140.2 | 24.6 |
| | | | | | | | | | | | | 40 | 106.1 | 12.8 |
| | | | | | | | | | | | | 50 | 77.3 | 8.6 |
| | | | | | | | | | | | | 75 | 62.5 | 6.3 |
| | | | | | | | | | | | | 100 | - | 2.3 |
| | | | | | | | | | | | | 125 | 82.8 | 4.6 |
| | | | | | | | | | | | | 150 | 73.7 | 6.9 |
| | | | | | | | | | | | | 175 | 61.7 | 4.8 |
| | | | | | | | | | | | | 225 | 80.6 | 7.5 |

STATION NO. 100.2
 CRUISE NO. 26 26
 VESSEL Atlantichthonis
 DATE 21 Sept. 1966

REDUCED DATA

LAT. 42° 47.0" N.
 LONG. 69° 54.0" W.

DEPTH 232 M.
 TIME 2220 GMT - 1820 LT
 WEATHER _____
 WIND 21 Knots
 ZOOPLANKTON VOL. _____ ml.

Diurnal II

| DEPTH | TEMP | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000LUX |
|-------|-------|--------|------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|--------|--------------------------|
| | | | | ml/L | | | | | | | | | μg A/L | μg A/L |
| 1 | 15.30 | 31.852 | 23.51 | 6.05 | 0.15 | 0.10 | 0.46 | 0.01 | 0.15 | 1.08 | 2.27 | 1 | 2.70 | 1.42 |
| 10 | 15.26 | 31.849 | 23.51 | 6.08 | 0.17 | 0.09 | 0.43 | 0.07 | 0.02 | 1.74 | 2.11 | 10 | 1.99 | 1.93 |
| 20 | 11.59 | 32.213 | 24.52 | 6.69 | 0.27 | 0.11 | 0.57 | 0.06 | 0.29 ⁷ | 1.31 | 2.49 | 20 | 3.12 | 4.37 |
| *30 | 9.00 | 32.470 | 25.16 | 6.87 | 0.16 | 0.09 | 0.40 | 0.03 | 0.09 | 1.17 | 2.11 | 30 | 2.88 | 1.86 |
| 39 | 6.52 | 32.567 | 25.59 | 6.67 | 0.59 | 0.09 | 0.83 | 0.03 | 7.64 | 1.04 | 4.53 | 40 | 1.28 | 0.89 |
| 49 | 5.57 | 32.580 | 25.72 | 6.15 | 0.68 | 0.04 | 0.87 | 0.03 | 7.64 | 0.91 | 5.13 | 50 | .47 | 0.29 |
| 74 | 4.39 | 32.652 | 25.90 | 6.03 | 0.56 | 0.05 | 1.04 | 0.03 | 9.71 | 0.83 | 9.06 | 75 | .21 | |
| 99 | 3.81 | 32.729 | 26.02 | 5.93 | 0.94 | 0.03 | 1.19 | 0.03 | 10.72 | 0.88 | 11.48 | 100 | .11 | |
| 123 | 3.99 | 32.900 | 26.14 | 5.87 | 0.79 | 0.04 | 1.00 | 0.03 | 10.90 | 0.88 | 7.63 | 125 | .09 | |
| 148 | 4.10 | 33.174 | 26.35 | 5.52 | 0.93 | 0.02 | 1.11 | 0.04 | 12.89 | 0.94 | 10.04 | 150 | .08 | |
| 172 | 4.46 | 33.543 | 26.60 | 5.58 | 1.04 | 0.03 | 1.16 | 0.03 | 14.56 | 0.67 | 12.91 | 175 | .06 | |
| 197 | 4.70 | 33.702 | 26.70 | 4.88 | 1.13 | 0.04 | 1.22 | 0.00 | 16.07 | 0.61 | 12.91 | 200 | .07 | |
| 222 | 4.77 | 33.769 | 26.75 | 4.84 | 1.23 | 0.05 | 1.39 | 0.00 | 17.82 | 0.73 | 19.10 | 222 | .07 | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | μg/L | μg/L |
| | | | | | | | | | | | | 1 | 147.8 | 19.8 |
| | | | | | | | | | | | | 10 | 117.8 | 12.5 |
| | | | | | | | | | | | | 20 | 111.4 | 18.8 |
| | | | | | | | | | | | | 39 | 72.0 | 9.7 |
| | | | | | | | | | | | | 49 | 63.1 | 7.3 |
| | | | | | | | | | | | | 74 | - | 13.8 |
| | | | | | | | | | | | | 99 | 102.9 | 13.1 |
| | | | | | | | | | | | | 123 | 74.6 | 10.5 |
| | | | | | | | | | | | | 148 | 58.7 | 4.5 |
| | | | | | | | | | | | | 172 | 27.5 | 3.1 |
| | | | | | | | | | | | | 197 | 100.4 | 4.9 |
| | | | | | | | | | | | | 222 | 81.6 | 4.1 |

* Temp from BT, Sal. from Plotted Graph

STATION NO. 1004
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 24 Sept. 1966

REDUCED DATA

LAT. 42° 37.3" N.
 LONG. 69° 40.1" W.

DEPTH 259 M.
 TIME 1524 GMT - 1124 LT
 WEATHER _____
 WIND 18 Knots
 ZOOPLANKTON VOL. _____ ml.

Tried II - E

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000Lux |
|-------|-------|--------|------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|-------------|--------------------------|
| | | | | ml/L | | | | | | | | | μg A/L | μg A/L |
| | | | | | | | | | | | | | <u>7000</u> | |
| 1 | 14.11 | 32.018 | 23.89 | | 0.25 | 0.12 | 0.56 | 0.04 | 0.32 | 1.62 | 3.78 | 1 | 8.53 | |
| 10 | 14.07 | 32.017 | 23.89 | | 0.26 | 0.14 | 0.59 | 0.03 | 0.36 | 3.35 | 3.32 | 10 | 9.00 | |
| 20 | 14.11 | 32.019 | 23.89 | | 0.25 | 0.13 | 0.56 | 0.03 | 0.26 | 1.89 | 3.02 | 20 | 4.96 | |
| 30 | 14.10 | 32.017 | 23.89 | | 0.25 | 0.13 | 0.57 | 0.03 | 0.28 | 2.68 | 3.25 | 30 | 3.02 | |
| 40 | 6.74 | 32.663 | 25.64 | | 0.78 | 0.05 | 1.02 | 0.05 | 7.95 | 1.51 | 7.93 | 40 | 1.45 | |
| 50 | 5.06 | 32.053 | 25.36 | | 0.83 | 0.04 | 1.05 | 0.04 | 7.46 | 1.31 | 8.15 | 50 | .97 | |
| 75 | 4.17 | 32.738 | 25.99 | | 0.87 | 0.03 | 1.00 | 0.03 | 8.37 | 1.14 | 8.53 | | | |
| 100 | 4.38 | 33.043 | 26.22 | | 0.96 | 0.03 | 1.15 | 0.01 | 9.94 | 0.90 | 10.80 | | | |
| 125 | 4.16 | 33.290 | 26.43 | | 1.15 | 0.04 | 1.39 | 0.03 | 13.96 | 1.58 | 17.21 | | | |
| 150 | 4.46 | 33.509 | 26.58 | | 1.19 | 0.04 | 1.45 | 0.02 | 15.47 | 0.90 | 19.03 | | | |
| 175 | 4.68 | 33.725 | 26.72 | | 1.30 | 0.04 | 1.56 | 0.02 | 16.79 | 1.13 | 22.05 | | | |
| 200 | 4.82 | 33.823 | 26.79 | | 1.35 | 0.04 | 1.56 | 0.03 | 16.78 | - | 23.93 | | | |
| 225 | 4.82 | 33.866 | 26.82 | | 1.27 | 0.05 | 1.57 | 0.03 | 16.87 | 1.86 | 23.56 | DEPTH | PART-C | PART-N |
| 250 | 4.97 | - | - | | 1.24 | 0.04 | 1.52 | 0.03 | 16.78 | 1.27 | 20.84 | | μg/L | μg/L |

STATION NO. 1005
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 24 Sept. 1966

REDUCED DATA

LAT. 42° 41.0" N.
 LONG. 69° 29.5" W.

DEPTH 225 M.
 TIME 1708 GMT - 1308 LT
 WEATHER _____
 WIND 20 Knots
 ZOOPLANKTON VOL. _____ ml.

Grid II - F

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ .7000Lux |
|-------|-------|--------|------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|----------------|--------------------------|
| | | | | ml/L | | | | | | | | | μg A/L | μg A/L |
| | | | | | | | | | | | | | <u>7.02 μg</u> | |
| 1 | 13.71 | 32.103 | 24.03 | | 0.28 | 0.12 | 0.68 | 0.03 | 0.25 | 2.81 | 4.00 | 1 | 3.44 | |
| 10 | 13.71 | 32.095 | 24.03 | | 0.26 | 0.13 | 0.66 | 0.04 | 0.20 | 2.02 | 4.00 | 10 | 2.86 | |
| 20 | 13.52 | 32.104 | 24.07 | | 0.28 | 0.12 | 0.60 | 0.03 | 0.26 | 0.94 | 3.25 | 20 | 3.13 | |
| 30 | 6.77 | 32.284 | 25.33 | | 0.64 | 0.09 | 0.97 | 0.13 | 3.83 | 1.28 | 5.51 | 30 | 2.06 | |
| 40 | 5.52 | 32.436 | 25.61 | | 0.79 | 0.04 | 1.08 | 0.06 | 7.33 | 1.11 | 7.17 | 40 | 1.34 | |
| 50 | 4.31 | 32.478 | 25.77 | | 0.81 | 0.04 | 1.02 | 0.03 | 7.08 | 1.19 | 6.95 | 50 | 1.09 | |
| 75 | 3.64 | 32.676 | 26.00 | | 0.99 | 0.03 | 1.24 | 0.00 | 10.82 | 1.01 | 10.80 | | | |
| 100 | 3.71 | 32.985 | 26.24 | | 1.07 | 0.03 | 1.30 | 0.02 | 11.99 | 0.74 | 13.82 | | | |
| 125 | 4.34 | 33.394 | 26.50 | | 1.23 | 0.03 | 1.48 | 0.03 | 16.01 | 0.64 | 18.57 | | | |
| 150 | 4.59 | 33.553 | 26.60 | | 1.19 | 0.03 | 1.45 | 0.03 | 15.49 | 0.68 | 17.82 | | | |
| 175 | 4.72 | 33.739 | 26.73 | | 1.26 | 0.04 | 1.51 | 0.03 | 15.71 | 0.67 | 19.63 | | | |
| 200 | 4.89 | 33.857 | 26.80 | | 1.25 | 0.05 | 1.54 | 0.04 | 17.16 | 0.71 | 19.93 | | | |
| 220 | 4.91 | 33.873 | 26.81 | | 1.28 | 0.05 | 1.55 | 0.06 | 16.18 | 0.74 | 20.23 | | | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | μg/L | μg/L |

STATION NO. 1009
CRUISE NO. 26
VESSEL Atlantis II
DATE 25 Sept. 1966

REDUCED DATA

LAT. 43° 04.5" N.
LONG. 69° 38.0" W.

DEPTH 112 M
TIME 0654 GMT - 0254 LT
WEATHER Clear
WIND 30 Knots
ZOOPLANKTON VOL. _____ ml.

Trip II H

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000LUX | |
|-----------|--------|--------|------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|----------------|--------------------------|--------|
| | | | | ml/L | | | | | | | | | μg A/L | μg A/L | μg A/L |
| | | | | | | | | | | | | | <i>Frozen!</i> | | |
| 1 | 13.18 | 32.114 | 24.15 | | 0.23 | 0.12 | 0.55 | 0.02 | 0.47 | 1.04 | 2.79 | 1 | 2.92 | | |
| 10 | 13.15 | 32.100 | 24.14 | | 0.23 | 0.14 | 0.61 | 0.04 | 0.41 | 1.35 | 3.02 | 10 | 2.60 | | |
| 20 | 10.68? | 32.378 | 24.81 | | 0.45 | 0.08 | 0.77 | 0.21 | 3.14 | 4.50 | 4.53 | 20 | 1.85 | | |
| * 30 | 13.19 | 32.349 | 24.33 | | 0.42 | 0.06 | 0.71 | 0.12 | 2.41 | 1.27 | 4.00 | 30 | 2.39 | | |
| 40 | 6.78 | 32.707 | 25.67 | | 0.72 | 0.01 | 0.95 | 0.02 | 6.93 | 0.83 | 6.95 | 40 | .97 | | |
| 50 | 6.48 | 32.757 | 25.74 | | 0.75 | 0.00 | 0.98 | 0.06 | 7.36 | 0.60 | 7.47 | 50 | .78 | | |
| 75 | 5.43 | 32.929 | 26.01 | | 0.83 | 0.02 | 1.12 | 0.03 | 8.07 | 0.61 | 9.59 | | | | |
| 100 | 5.00 | 32.987 | 26.10 | | 0.89 | 0.03 | 1.18 | 0.03 | 5.16 | 0.64 | 11.70 | | | | |
| * Pretrip | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | μg/L | μg/L | |

STATION NO. 1011
 CRUISE NO. 26
 VESSEL Albatross II
 DATE 23 Sept 1966

REDUCED DATA

LAT. 42° 30.0' N.
 LONG. 69° 42.9' W.

DEPTH 274 M.
 TIME 2302 GMT - 1902 LT.
 WEATHER _____
 WIND _____
 ZOOPLANKTON VOL. _____ ml.

Diurnal III

| DEPTH | TEMP | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000LUX |
|-------|-------|--------|------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|-------------------|--------------------------|
| | | | | ml/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | | mg/m ³ | μg/L/hr. |
| 1 | 13.50 | 32.055 | 24.04 | 6.16 | 0.20 | 0.11 | 0.51 | 0.03 | 0.23 | 1.44 | 2.27 | 1 | 6.72 | 4.60 |
| 10 | 13.48 | 32.048 | 24.04 | 6.23 | 0.18 | 0.13 | 0.57 | 0.03 | 0.35 | 1.34 | 3.02 | 10 | 7.87 | 2.33 |
| 20 | 13.38 | 32.050 | 24.06 | 6.31 | 0.17 | 0.11 | 0.53 | 0.04 | 3.05 | 1.56 | 3.02 | 20 | 8.19 | 3.62 |
| 30 | 8.41 | 32.453 | 25.24 | 6.53 | 0.52 | 0.07 | 0.87 | 0.15 | 6.22 | 1.47 | 5.21 | 30 | 3.72 | 0.33 |
| 40 | 7.03 | 32.584 | 25.54 | 6.28 | 0.58 | 0.03 | 0.75 | 0.06 | 8.72 | 1.95 | 4.76 | 40 | .92 | 0.08 |
| 50 | 6.16 | 32.659 | 25.71 | 6.15 | 0.71 | 0.03 | 0.97 | 0.05 | - | 2.50 | 7.02 | 50 | .74 | 0 |
| 75 | 3.89 | 32.700 | 25.99 | 6.36 | 0.97 | 0.01 | 1.24 | 0.03 | 8.76 | 1.16 | 10.27 | 75 | .46 | |
| 100 | 3.77 | 32.912 | 26.17 | 6.06 | 1.03 | 0.01 | 1.27 | 0.04 | 10.13 | 0.98 | 13.06 | 100 | .13 | |
| 125 | 4.08 | 33.227 | 26.39 | 5.54 | 1.16 | 0.02 | 1.45 | 0.03 | 11.90 | 0.81 | 16.31 | 125 | .15 | |
| 150 | 4.63 | 33.535 | 26.58 | 4.92 | 1.24 | 0.01 | 1.55 | 0.04 | 14.47 | 0.76 | 20.23 | 150 | .11 | |
| 175 | 4.76 | 33.672 | 26.67 | 4.68 | 1.32 | 0.02 | 1.50 | 0.05 | 15.66 | 0.87 | 22.65 | 175 | .12 | |
| 200 | 4.92 | 33.796 | 26.75 | 4.48 | 1.27 | 0.02 | 1.42 | 0.04 | 17.17 | 0.78 | 22.65 | 200 | .11 | |
| 225 | 4.88 | 33.825 | 26.78 | 4.54 | 1.31 | 0.04 | 1.46 | 0.05 | 17.11 | 1.43 | 22.88 | 225 | .08 | |
| 250 | 4.84 | 33.832 | 26.77 | 4.61 | 1.28 | 0.05 | 1.55 | 0.04 | 17.57 | 1.08 | 24.92 | 250 | .08 | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | μg/L | μg/L |
| | | | | | | | | | | | | 1 | 158.4 | 17.2 |
| | | | | | | | | | | | | 10 | 253.8 | 25.6 |
| | | | | | | | | | | | | 20 | 155.3 | 21.3 |
| | | | | | | | | | | | | 30 | 111.8 | 11.8 |
| | | | | | | | | | | | | 40 | 86.1 | 7.7 |
| | | | | | | | | | | | | 50 | 145.7 | 10.0 |
| | | | | | | | | | | | | 75 | 107.4 | 6.6 |
| | | | | | | | | | | | | 100 | 182.7 | 17.6 |
| | | | | | | | | | | | | 125 | 94.5 | 4.5 |
| | | | | | | | | | | | | 150 | 127.6 | 6.2 |
| | | | | | | | | | | | | 175 | 79.2 | 6.7 |
| | | | | | | | | | | | | 200 | 141.3 | 11.4 |
| | | | | | | | | | | | | 225 | 123.9 | 9.7 |
| | | | | | | | | | | | | 250 | 246.6 | 11.8 |

STATION NO. 1012
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 26 Sept. 1966

REDUCED DATA

LAT. 42° 30.5" N.
 LONG. 69° 41.2" W.

DEPTH 265 M.
 TIME 0422 GMT - 0022 LT
 WEATHER _____
 WIND _____
 ZOOPLANKTON VOL. _____ ml.

Diurnal III

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000LUX |
|-------|-------|--------|------------|----------------|--------------------|------------------|------------------|--------------------|--------------------|--------------------|----------------------|-------|-------------------|--------------------------|
| | | | | ml/L | $\mu\text{gA/L}$ | $\mu\text{gA/L}$ | $\mu\text{gA/L}$ | $\mu\text{gA/L}$ | $\mu\text{gA/L}$ | $\mu\text{gA/L}$ | $\mu\text{gA/L}$ | | mg/m ³ | $\mu\text{g/L/hr.}$ |
| 1 | 13.36 | 32.036 | 24.05 | 6.20 | 0.31 | 0.12 | 0.49 | 0.03 | 0.17 | 1.63 | 4.00 | 0 | 3.33 | 3.90 |
| 10 | 13.34 | 32.034 | 24.05 | 6.22 | 0.28 | 0.14 | 0.65 | 0.02 | 0.16 | 2.04 | 4.00 | 10 | 2.61 | 2.87 |
| 20 | 13.33 | 32.041 | 24.06 | 6.27 | 0.28 | 0.11 | 0.58 | 0.02 | 0.16 | 1.66 | 3.55 | 20 | 2.61 | 2.04 |
| 29 | 9.39 | 32.440 | 25.08 | 6.43 | 0.55 | 0.06 | 0.79 | 0.13 | 3.70 | 2.74 | 5.44 | 30 | 1.08 | 0.71 |
| 39 | 7.31 | 32.524 | 25.45 | 6.37 | 0.70 | 0.04 | 0.92 | 0.07 | 5.27 | 1.28 | 6.80 | 40 | 0.75 | 0.49 |
| 49 | 5.26 | 32.458 | 25.66 | 6.52 | 0.80 | 0.12* | 1.10 | 0.04 | 7.28 | 1.34 | 7.25 | 50 | 0.32 | 0.27 |
| 74 | 4.14 | 32.739 | 26.00 | 6.31 | 0.95 | 0.02 | 1.17 | 0.02 | 8.78 | 2.85 | 10.42 | 75 | 0.39 | |
| 98 | 3.63 | 32.879 | 26.16 | 6.17 | 1.03 | 0.01 | 1.22 | 0.02 | 9.97 | 2.15 | 13.06 | 100 | 0.29 | |
| 122 | 3.96 | 33.141 | 26.34 | 5.61 | 1.12 | 0.02 | 1.32 | 0.01 | 11.98 | 1.72 | 16.08 | 125 | 0.23 | |
| 147 | 4.48 | 33.497 | 26.56 | 5.20 | 1.14 | 0.02 | 1.30 | 0.03 | 14.00 | 1.71 | 16.46 | 150 | 0.26 | |
| 172 | 4.71 | 33.672 | 26.68 | 4.77 | 1.30 | 0.02 | 1.49 | 0.03 | 15.06 | 1.26 | 21.29 | 175 | 0.15 | |
| 196 | 4.89 | 33.728 | 26.73 | 4.60 | 1.33 | 0.02 | 1.56 | 0.03 | 16.51 | 3.21 | 23.63 | 200 | 0.17 | |
| 221 | 4.88 | 33.822 | 26.78 | 4.58 | 1.24 | 0.02 | 1.41 | 0.03 | 17.75 | 2.09 | 20.91 | 225 | 0.24 | |
| 245 | 4.82 | 33.863 | 26.82 | 4.70 | 1.21 | 0.04 | 1.43 | 0.02 | 17.41 | 0.96 | 20.61 | 250 | 0.15 | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | $\mu\text{g/L}$ | $\mu\text{g/L}$ |
| | | | | | | | | | | | | 10 | 174.4 | 18.6 |
| | | | | | | | | | | | | 20 | 153.9 | 17.1 |
| | | | | | | | | | | | | 29 | 159.6 | 17.8 |
| | | | | | | | | | | | | 39 | 115.8 | 6.9 |
| | | | | | | | | | | | | 49 | 99.6 | 8.5 |
| | | | | | | | | | | | | 74 | 122.8 | 5.8 |
| | | | | | | | | | | | | 98 | 85.6 | 3.5 |
| | | | | | | | | | | | | 122 | 121.3 | 4.4 |
| | | | | | | | | | | | | 147 | 75.4 | 7.3 |
| | | | | | | | | | | | | 172 | 95.2 | 3.8 |
| | | | | | | | | | | | | 196 | 75.4 | 4.1 |
| | | | | | | | | | | | | 221 | 235.4 | 7.1 |
| | | | | | | | | | | | | 245 | 143.5 | 6.9 |

* Coprepade unfiltered

STATION NO. 1013
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 26 Sept. 1966

REDUCED DATA

LAT. 42° 26.4" N.
 LONG. 69° 33.7" W.

DEPTH 263 M.
 TIME 1023 GMT - 0623 LT
 WEATHER _____
 WIND _____
 ZOOPLANKTON VOL. _____ ml.

Diurnal III

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ .7000Lux |
|-------|-------|--------|------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|--------|--------------------------|
| | | | | ml/L | | | | | | | | | µg A/L | µg A/L |
| 1 | 13.31 | 32.057 | 24.08 | 6.05 | 0.24 | 0.12 | 0.53 | 0.04 | 0.07 | 0.73 | 2.27 | 1 | 4.04 | 6.07 |
| 10 | 13.29 | 32.059 | 24.08 | 6.16 | 0.31 | 0.09 | 0.56 | 0.04 | 0.02 | 0.73 | 3.55 | 10 | 3.57 | 6.45 |
| 20 | 13.29 | 32.043 | 24.07 | 6.19 | 0.24 | 0.11 | 0.57 | 0.05 | 0.01 | 0.71 | 3.55 | 20 | 3.72 | 5.92 |
| 30 | 12.60 | 32.132 | 24.27 | 6.29 | 0.26 | 0.12 | 0.53 | 0.08 | 0.57 | 1.67 | 2.64 | 30 | 5.19 | 3.59 |
| 40 | 7.73 | 32.496 | 25.37 | 6.40 | 0.62 | 0.04 | 0.83 | 0.10 | 5.37 | 0.77 | 5.66 | 40 | 4.25 | 0.75 |
| 50 | 5.76 | 32.490 | 25.62 | 6.49 | 0.74 | 0.04 | 0.95 | 0.04 | 6.55 | 0.54 | 6.42 | 50 | 1.62 | 0.33 |
| 74 | 3.69 | 32.663 | 25.98 | 6.36 | 0.98 | 0.02 | 1.19 | 0.03 | 9.58 | 0.56 | 10.72 | 75 | .48 | |
| 99 | 3.78 | 32.890 | 26.15 | 6.08 | 1.01 | 0.02 | 1.24 | 0.03 | 10.26 | 0.62 | 13.06 | 100 | .13 | |
| 124 | 4.00 | 33.087 | 26.29 | 5.50 | 1.14 | 0.02 | 1.36 | 0.03 | 12.29 | 0.74 | 16.76 | 125 | .14 | |
| 149 | 4.52 | 33.409 | 26.49 | 5.02 | 1.24 | 0.02 | 1.45 | 0.03 | 14.32 | 0.46 | 19.48 | 150 | .11 | |
| 174 | 4.77 | 33.609 | 26.62 | 4.66 | 1.31 | 0.02 | 1.52 | 0.03 | 15.86 | 0.66 | 22.50 | 175 | .09 | |
| 198 | 4.96 | 33.830 | 26.78 | 4.43 | 1.39 | 0.02 | 1.62 | 0.02 | 15.98 | 0.74 | 24.92 | 200 | .08 | |
| 223 | 4.86 | 33.823 | 26.78 | 4.62 | 1.31 | 0.02 | 1.54 | 0.03 | 17.69 | 0.60 | 24.54 | 225 | .08 | |
| 248 | 4.78 | 33.873 | 26.83 | 4.76 | 1.28 | 0.04 | 1.52 | 0.03 | 17.69 | 0.74 | 23.93 | 250 | .10 | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | µg/L | µg/L |
| | | | | | | | | | | | | 1 | 103.8 | 12.4 |
| | | | | | | | | | | | | 10 | 147.8 | 18.4 |
| | | | | | | | | | | | | 20 | 162.2 | 20.9 |
| | | | | | | | | | | | | 30 | 167.7 | 15.1 |
| | | | | | | | | | | | | 40 | 128.8 | 8.0 |
| | | | | | | | | | | | | 50 | 121.5 | 3.7 |
| | | | | | | | | | | | | 74 | 77.4 | 3.6 |
| | | | | | | | | | | | | 99 | 59.8 | 3.8 |
| | | | | | | | | | | | | 124 | 84.7 | 4.5 |
| | | | | | | | | | | | | 149 | 58.6 | 2.5 |
| | | | | | | | | | | | | 174 | 131.2 | 8.5 |
| | | | | | | | | | | | | 198 | 94.0 | 4.2 |
| | | | | | | | | | | | | 223 | 62.2 | 4.4 |
| | | | | | | | | | | | | 248 | 166.1 | 8.1 |

STATION NO. 1014
 CRUISE NO. 26
 VESSEL Atlantic II
 DATE 26 Sept. 1966

REDUCED DATA

LAT. 42° 26.1" N.
 LONG. 69° 38.0" W.

DEPTH _____
 TIME 1624 GMT - 1224 LT
 WEATHER _____
 WIND _____
 ZOOPLANKTON VOL. _____ ml.

Diurnal III

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ .7000LUX |
|-------|-------|--------|------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|--------|--------------------------|
| | | | | ml/L | | | | | | | | | μg A/L | μg A/L |
| 1 | 13.41 | 32.063 | 24.06 | 6.22 | 0.23 | 0.13 | 0.59 | 0.02 | 0.15 | 0.84 | 3.55 | 1 | 6.30 | 7.70 |
| 9 | 13.35 | 32.059 | 24.07 | 6.26 | 0.24 | 0.11 | 0.53 | 0.02 | 0.12 | 0.84 | 3.17 | 10 | 6.56 | 7.92 |
| 19 | 13.38 | 32.067 | 24.07 | 6.26 | 0.24 | 0.13 | 0.53 | 0.02 | 0.05 | 0.73 | 3.17 | 20 | 7.77 | 7.47 |
| 29 | 10.51 | 32.305 | 24.79 | 6.43 | 0.42 | 0.08 | 0.68 | 0.14 | 2.10 | 0.88 | 4.15 | 30 | 3.51 | 0.90 |
| 39 | 7.02 | 32.624 | 25.57 | 6.17 | 0.72 | 0.03 | 0.92 | 0.04 | 7.02 | 0.71 | 6.34 | 40 | 1.72 | 0.31 |
| 49 | 4.61 | 32.508 | 25.77 | 6.50 | 0.86 | 0.03 | 1.08 | 0.03 | 8.10 | 0.57 | 8.08 | 50 | .75 | 0.15 |
| 73 | 3.55 | 32.658 | 25.99 | 6.46 | 0.85 | 0.02 | 1.03 | 0.03 | 9.72 | 0.91 | 8.46 | 75 | .18 | |
| 97 | 3.72 | 32.960 | 26.22 | 5.99 | 0.93 | 0.02 | 1.13 | 0.02 | 11.36 | 0.60 | 11.70 | 100 | .16 | |
| 122 | 4.09 | 33.239 | 26.40 | 5.47 | 1.12 | 0.01 | 1.35 | 0.02 | 13.32 | 0.58 | 14.87 | 125 | .13 | |
| 146 | 4.62 | 33.548 | 26.59 | 4.92 | 1.21 | 0.01 | 1.44 | 0.02 | 14.79 | 0.46 | 19.33 | 150 | .11 | |
| 170 | 4.79 | 33.720 | 26.71 | 4.66 | 1.11 | 0.01 | 1.31 | 0.02 | 14.86 | 1.01 | 17.52 | 175 | .09 | |
| 194 | 4.90 | 33.803 | 26.76 | 4.53 | 1.36 | 0.02 | 1.60 | 0.02 | 17.23 | 0.74 | 24.46 | 200 | .10 | |
| 219 | 4.90 | 33.823 | 26.78 | 4.51 | 1.32 | 0.04 | 1.58 | 0.02 | 17.56 | 0.83 | 23.41 | 225 | .12 | |
| 243 | 4.90 | 33.831 | 26.78 | 4.55 | 1.25 | 0.05 | 1.48 | - | 17.53 | 0.54 | 21.90 | 250 | .10 | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | μg/L | μg/L |
| | | | | | | | | | | | | 1 | 129.3 | 9.8 |
| | | | | | | | | | | | | 9 | 151.3 | 7.3 |
| | | | | | | | | | | | | 19 | 123.8 | 14.7 |
| | | | | | | | | | | | | 29 | 119.6 | 9.1 |
| | | | | | | | | | | | | 39 | 76.5 | 4.5 |
| | | | | | | | | | | | | 49 | 129.9 | 2.4 |
| | | | | | | | | | | | | 73 | 107.8 | 3.7 |
| | | | | | | | | | | | | 97 | 77.6 | 0.4 |
| | | | | | | | | | | | | 122 | 33.4 | 1.2 |
| | | | | | | | | | | | | 146 | 71.6 | 1.4 |
| | | | | | | | | | | | | 170 | 33.9 | 0.7 |
| | | | | | | | | | | | | 194 | 108.4 | 2.3 |
| | | | | | | | | | | | | 219 | 170.1 | 4.0 |
| | | | | | | | | | | | | 243 | 137.2 | 3.5 |

** Unconverted*

STATION NO. 1015
 CRUISE NO. 26
 VESSEL Albatross II
 DATE 26 Sept. 1966

REDUCED DATA

LAT. 42° 25.2" N.
 LONG. 69° 33.0" W.

DEPTH 265 m.
 TIME 2222 GMT - 1822 LT
 WEATHER _____
 WIND 5 Knots
 ZOOPLANKTON VOL. _____ ml.

Diurnal III

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ :7000Lux |
|-------|-------|--------|------------|----------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|--------|--------------------------|
| | | | | ml/L | | | | | | | | | μg A/L | μg A/L |
| 1 | 13.51 | 32.080 | 24.05 | 6.27 | 0.21 | 0.14 | 0.58 | 0.04 | 0.18 | 0.86 | 2.79 | 1 | 6.98 | 8.87 |
| 10 | 13.33 | 32.072 | 24.08 | 6.34 | 0.32 | 0.17 | 0.56 | 0.03 | 0.08 | 0.86 | 3.02 | 10 | 5.56 | 1.66 |
| 20 | 13.23 | 32.067 | 24.10 | 6.31 | 0.23 | 0.14 | 0.53 | 0.02 | 0.06 | 1.04 | 2.94 | 20 | 8.55 | 2.20 |
| 30 | 11.45 | 32.217 | 24.55 | 6.46 | 0.41 | 0.10 | 0.62 | 0.02 | 1.40 | 0.88 | 3.62 | 30 | 7.50 | 2.47 |
| 40 | 6.71 | 32.463 | 25.48 | 6.51 | 0.65 | 0.09 | 0.81 | 0.10 | 5.55 | 0.73 | 5.96 | 40 | 4.67 | 1.59 |
| 50 | 6.17 | 32.554 | 25.62 | 6.38 | 0.69 | 0.03 | 0.81 | 0.09 | 7.05 | 0.80 | 5.81 | 50 | 4.67 | 0.33 |
| 74 | 3.51 | 32.693 | 26.02 | 6.40 | 1.09 | 0.02 | 1.31 | 0.05 | 10.41 | 0.73 | 11.85 | 75 | .37 | |
| 99 | 3.75 | 32.956 | 26.21 | 5.93 | 1.17 | 0.02 | 1.38 | 0.02 | 11.72 | 0.79 | 14.65 | 100 | .11 | |
| 124 | 4.19 | 33.285 | 26.43 | 5.37 | 1.23 | 0.02 | 1.41 | 0.02 | 13.76 | 0.52 | 18.12 | 125 | .08 | |
| 149 | 4.65 | 33.564 | 26.60 | 4.89 | 1.31 | 0.04 | 1.53 | 0.02 | 16.39 | 0.75 | 21.29 | 150 | .06 | |
| 174 | 4.82 | 33.725 | 26.71 | 4.65 | 1.33 | 0.03 | 1.53 | 0.02 | 17.59 | 1.04 | 21.59 | 175 | .05 | |
| 198 | 4.98 | 33.831 | 26.77 | 4.43 | 1.31 | 0.03 | 1.46 | 0.03 | 17.37 | 0.79 | 21.82 | 200 | .05 | |
| 223 | 4.83 | 33.865 | 26.82 | 4.71 | 1.19 | 0.03 | 1.33 | 0.02 | 17.80 | 0.93 | 19.40 | 225 | .04 | |
| 248 | 4.88 | 33.953 | 26.88 | 4.85 | 1.20 | 0.05 | 1.35 | 0.03 | 16.64 | 0.55 | 19.40 | 250 | .04 | |
| | | | | | | | | | | | | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | μg/L | μg/L |
| | | | | | | | | | | | | 1 | 158.7 | 14.4 |
| | | | | | | | | | | | | 10 | 201.7 | 20.0 |
| | | | | | | | | | | | | 20 | 129.2 | 20.6 |
| | | | | | | | | | | | | 30 | 131.5 | 21.9 |
| | | | | | | | | | | | | 40 | 96.4 | 10.5 |
| | | | | | | | | | | | | 50 | - | 7.1 |
| | | | | | | | | | | | | 74 | 75.4 | 4.8 |
| | | | | | | | | | | | | 99 | 96.9 | 4.4 |
| | | | | | | | | | | | | 124 | 122.1 | 6.5 |
| | | | | | | | | | | | | 149 | 79.7 | 6.6 |
| | | | | | | | | | | | | 174 | 78.7 | 4.6 |
| | | | | | | | | | | | | 198 | 87.8 | 6.7 |
| | | | | | | | | | | | | 223 | 88.3 | 5.8 |
| | | | | | | | | | | | | 248 | 62.0 | 8.7 |

STATION NO. 1016
 CRUISE NO. 26
 VESSEL Atlantis II
 DATE 27 Sept. 1966

REDUCED DATA

LAT. 42° 13' N.
 LONG. 69° 33' W.

DEPTH _____
 TIME 1947 GMT - 1547 LT.
 WEATHER _____
 WIND _____
 ZOOPLANKTON VOL. _____ ml.

| DEPTH | TEMP. | SAL.‰ | σ_t | O ₂ ml/L | PO ₄ -P | PART-P | TOTAL-P | NO ₂ -N | NO ₃ -N | NH ₄ -N | SiO ₃ -Si | DEPTH | CHL. a | C ¹⁴ -7000Lux |
|-------|-------|--------|------------|------------------------|--------------------|--------|---------|--------------------|--------------------|--------------------|----------------------|-------|-------------------|--------------------------|
| | | | | | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | μgA/L | | mg/m ³ | μg/L/hr. |
| 1 | 14.28 | 32.068 | 23.89 | 6.09 | 0.28 | 0.09 | 0.44 | 0.03 | 0.17 | 0.84 | 2.57 | | | |
| 10 | 14.26 | 32.071 | 23.89 | 6.20 | 0.27 | 0.12 | 0.51 | 0.04 | 0.07 | 0.84 | 2.79 | | | |
| 20 | 14.20 | 32.067 | 23.90 | 6.23 | 0.21 | 0.17 | 0.51 | 0.02 | 0.10 | 0.91 | 2.27 | | | |
| 30 | 13.99 | 32.064 | 23.95 | 6.32 | 0.22 | 0.10 | 0.43 | 0.03 | 0.12 | 0.82 | 2.04 | | | |
| 40 | 6.56 | 32.320 | 25.39 | 6.95 | 0.59 | 0.07 | 0.82 | 0.03 | 2.85 | 0.70 | 4.23 | | | |
| 50 | 4.37 | 32.464 | 25.76 | 6.59 | 0.73 | 0.04 | 0.91 | 0.16 | 7.13 | 0.66 | 6.12 | | | |
| 76 | 3.56 | 32.716 | 26.04 | 6.40 | 0.88 | 0.02 | 1.06 | 0.05 | 10.46 | 0.58 | 9.14 | | | |
| 101 | 3.90 | 33.063 | 26.28 | 5.70 | 1.13 | 0.03 | 1.33 | 0.03 | 12.70 | 0.68 | 16.08 | | | |
| 126 | 4.18 | 33.339 | 26.47 | 5.40 | 1.16 | 0.01 | 1.34 | 0.03 | 12.93 | 0.46 | 17.06 | | | |
| 151 | 4.55 | 33.583 | 26.62 | 5.01 | 1.26 | 0.02 | 1.46 | 0.03 | 12.51 | 0.95 | 20.54 | | | |
| 177 | 4.86 | 33.747 | 26.72 | 4.53 | 1.33 | - | 1.48 | 0.03 | 17.02 | 0.43 | 23.48 | | | |
| 202 | 4.91 | 33.864 | 26.81 | 4.55 | 1.35 | 0.05 | 1.63 | 0.03 | 16.38 | 0.42 | 25.44 | | | |
| 227 | 4.92 | 33.869 | 26.81 | 4.51 | 1.38 | 0.06 | 1.62 | 0.04 | 16.87 | 0.50 | 25.67 | DEPTH | PART-C | PART-N |
| | | | | | | | | | | | | | μg/L | μg/L |
| | | | | | | | | | | | | 1 | 147.7 | 12.7 |
| | | | | | | | | | | | | 10 | 146.7 | 17.2 |
| | | | | | | | | | | | | 20 | 145.1 | 15.1 |
| | | | | | | | | | | | | 30 | 197.6 | 11.7 |
| | | | | | | | | | | | | 40 | 105.9 | 10.8 |
| | | | | | | | | | | | | 50 | 120.5 | 4.4 |
| | | | | | | | | | | | | 76 | 74.1 | 4.3 |
| | | | | | | | | | | | | 101 | 94.9 | 4.1 |
| | | | | | | | | | | | | 126 | 78.4 | 4.3 |
| | | | | | | | | | | | | 151 | 88.0 | 4.3 |
| | | | | | | | | | | | | 177 | 77.7 | 4.1 |
| | | | | | | | | | | | | 202 | 43.3 | 2.3 |
| | | | | | | | | | | | | 227 | 65.5 | 0.6 |

APPENDIX B

COMPUTER PROGRAM FOR MULTIPLE FACTOR ANALYSIS

The routine described here gives the mathematical derivation of the oblimin rotation procedure that has been added to the previous Principal Components and Varimax rotation Program discussed by Spencer (1966a).

Mathematics of the Oblimin rotation

The general oblimin criterion seeks to minimize a parameter that is related to the covariance between the factors. If b_{ip} is the factor loading of the i 'th variable on the p 'th factor, h_i^2 is the sum of squares of the factor loadings for the i 'th variable then for n factors and m variables.

$$V = \sum_{p < q = 1}^n \left[\sum_{i=1}^n (b_{ip}^2/h_i^2) (b_{iq}^2/h_i^2) - \gamma \sum_{j=i}^n b_{ip}^2 \sum_{j=i}^n b_{iq}^2/h_i^2 \right] = \text{minimum}$$

For the parameter $\gamma = 1$ the minimization of B yields the covarimin solution for $\gamma = 0$, the quartimin solution and for $\gamma = 0.5$ the biquartimin solution of Carroll (1957). Both Carroll (1958) and Kaiser (1958) have found that the covarimin and quartimin solutions are less satisfactory than the biquartimin solution. Application of the biquartimin criterion appears to give the best approach to the "simple structure" concepts of Thurstone (1947).

In order to simplify the discussion the development given below is in terms of the quartimin solution. The biquartimin procedure is essentially similar.

The problem is, for a principal factor matrix A, to devise a transformation matrix Λ such that

$$B = A \Lambda$$

and the elements of B satisfy the criterion that V is a minimum where

$$V = \sum_{p < q=1}^n \sum_{i=1}^n (b_{ip}^2/h_i^2) (b_{iq}^2/h_i^2) \quad (1)$$

without loss of generality the constant normalizing factor h_i^2 can be dropped from the expression.

If the elements of B are expressed in terms of the original factor matrix

$$\text{i.e. } b_{ip} = \sum_{k=1}^n a_{ik} \lambda_{kp}$$

then equation (1) may be expressed as

$$V = \sum_{p < q=1}^n \sum_{i=1}^n \left(\sum_{k=1}^n a_{ik} \lambda_{kp} \right)^2 \left(\sum_{k=1}^n a_{ik} \lambda_{kq} \right)^2 \quad (2)$$

Although it is possible by conventional calculus methods to find values of λ such that V is a minimum, the resulting equations are so complex that they are somewhat intractable. Instead Carroll (1958) has suggested a solution whereby the values in one column of Λ are permitted to vary while the remaining columns are fixed. If the column vector of Λ that varies is designated Λ_x then the criterion V when it changes as a function of Λ_x may be designated V_x where

$$V_x = \sum_{i=1}^n b_{ix}^2 \sum_{p=1}^m \left[b_{ip}^2 \right] \quad p \neq x \quad (3)$$

For any variable i the sum of squares of the factor values independent of x may be given by

$$w_i = \sum_{p=1}^m b_{ip}^2 \quad (4)$$

so that equation (3) becomes

$$V_x = \sum_{i=1}^n w_i b_{ix}^2 \quad (5)$$

Going now to matrix representation, the column vector B_x of the rotated factor matrix B which results from a change in Λ_x is

$$B_x = A \Lambda_x \quad (6)$$

Hence corresponding to the sum of squared factor values is

$$V_x^1 V_x = \Lambda_x^1 A^1 A \Lambda_x \quad (7)$$

and the entire expression (3) becomes

$$V_x = \Lambda_x^1 A^1 W A \Lambda_x \quad (8)$$

where W is the diagonal matrix of n scalars w_i .

Define a new matrix

$$C = A^1 W A$$

then (8) may be written

$$V_x = \Lambda_x^1 C \Lambda_x \quad (9)$$

and the problem is to minimize (9) under the condition that

$$\Lambda_x^1 \Lambda_x = 1 \quad (10)$$

Kaiser (1956) indicates that this may be accomplished by the method of Lagrange's multipliers. The resulting condition is the characteristic equation of C i.e.

$$|C - V_x I| = 0 \quad (11)$$

Any eigenvalue of C will make the determinant vanish and in order to minimize V_x the smallest eigenvalue is selected. The elements of the

eigenvector associated with this smallest eigenvalue are the desired solutions λp_x . Applying the condition (10) to the eigenvector, the direction cosines for the new axis are obtained which will make the criterion V_x a minimum.

In the computer program the operation described above is called a "minor cycle". A set of m minor cycles, one for each of the m columns of B , is called a "major cycle".

The iterative process is continued, taking successive major cycles, until the value of the criterion V converges to satisfactory limits.

The program provides options to rotate normalized factor matrices (by applying the parameter h_i^2) to select any value of γ (between 0 and 1) and to select the degree of convergence of successive values of V . It has been found by experience that if this degree of convergence is set at 0.01 a satisfactory solution results. As the convergence procedure is relatively slow, lower values mean an excessively large amount of computer time is used.

Computer Program for Multiple Regression and Canonical Correlation

Multiple regression provides an analysis of the relations among a single criterion variable and two or more predictor variables. The mathematics of multiple regression is reasonably well known and will not be given here. The program calculates the multiple correlation coefficient, gives an F test of the significance of this coefficient and computes both the standardized partial regression coefficients and the raw regression coefficients for up to 35 predictor variables.

The interrelations between two sets of variables taken from the same samples can be studied by canonical correlation methods. The canonical correlation, originally developed by Hotelling (1935) and recently extended by Horst (1961), is the maximum correlation between linear functions of the two sets of variables. Several linear combinations of the two sets are frequently possible and each pair of functions is so determined as to maximize the linear correlation between the new pair of canonical variates, subject to the restriction that they be independent of previously derived linear combinations.

If x_1, x_2, \dots, x_p and y_1, y_2, \dots, y_q represent two sets of p and q variables then we can represent the linear functions of x and y as

$$\hat{x}_1 = a_1 x_{11} + a_2 x_{12} + \dots + a_p x_{1p} \quad ; \quad b_1 y_{11} + b_2 y_{12} + \dots + b_q y_{1q} = \hat{y}_1$$

$$\hat{x}_2 = a_1 x_{21} + a_2 x_{22} + \dots + a_p x_{2p} \quad ; \quad b_1 y_{21} + b_2 y_{22} + \dots + b_q y_{2q} = \hat{y}_2$$

$$\hat{x}_N = a_1 x_{N1} + a_2 x_{N2} + \dots + a_p x_{Np} \quad ; \quad b_1 y_{N1} + b_2 y_{N2} + \dots + b_q y_{Nq} = \hat{y}_N$$

The problem is to find two sets of weights, a and b , that maximize the correlation between \hat{x} and \hat{y} , the derived canonical variates. For the special case $q=1$ and $p>1$ the problem is one of multiple regression. In canonical correlation both multiple criterion and multiple predictor variables are involved. The number of possible pairs of linear combinations is p or q , whichever is smaller. Each pair of canonical variates \hat{x}_i and \hat{y}_i is maximally correlated, subject to the restriction that each canonical variate be orthogonal to all other canonical variates ($\hat{x}_j, \hat{y}_j, j_i$).

The analysis involves the partitioning of R , the correlation matrix between the $p+q$ variables, into four submatrices:

- R_{11} = Intercorrelations among the p predictors.
- R_{22} = Intercorrelations among the q criteria.
- R_{12} = Intercorrelations of predictors with criteria.
- R_{21} = Transpose of R_{12} .

i.e.
$$R = \begin{bmatrix} R_{11} & | & R_{12} \\ \hline R_{21} & | & R_{22} \end{bmatrix}$$

The partitioned portions of R are then substituted into the following canonical equation (Anderson (1958) gives the derivation of the equation)

$$\begin{pmatrix} R_{22}^{-1} & R_{21} & R_{11}^{-1} & R_{12} & - & \lambda & | & 1 \end{pmatrix} b_i = 0$$

The solution involves finding the eigenvalues λ for which

$$\begin{vmatrix} R_{22}^{-1} & R_{21} & R_{11}^{-1} & R_{12} & - & \lambda & | & 1 \end{vmatrix} = 0$$

The square roots of the eigenvalues are the canonical correlations and the eigenvectors b_i are the weights required to calculate the canonical variate

\hat{y}_i . The weights required to calculate \hat{x}_i are

$$a_i = (R_{11}^{-1} R_{12} b_i) / \sqrt{\lambda_i}$$

The program that has been written will calculate the canonical correlations for $p+q \leq 35$ variables and give the a and b weights required to calculate the canonical variates. Bartlett's test (1947) of the significance of the canonical correlations is also given.

It appears, intuitively, that the maximization of the correlations between different subsets of variables should be a useful technique in understanding the relationship between say chemical and biological parameters in the ocean or between chemical and mineralogical determinations in sediments. We have not yet had sufficient experience in applications to know whether or not the procedure will live up to its promise.

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3. Nutrient Chemistry

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