

AUSTRALIAN NATIONAL ANTARCTIC RESEARCH EXPEDITIONS

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N O T E S  
44

ADBEX I cruise to the Prydz Bay region, 1982:  
nutrient data

S.E. Humphries

ANTARCTIC DIVISION  
DEPARTMENT OF SCIENCE

ANARE RESEARCH NOTES (ISSN 0729-6533)

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Published February 1987  
ISBN: 0 7246 1510 5

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ANARE Research Note Numbers 43,  
44, 45, 46  
Erratum

All concentrations are in  
micro  $\mu\text{g} - \text{at } \text{L}^{-1}$ .

TABLE I

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TABLE II

Table with 4 columns and 5 rows of data. The text is extremely faint and illegible.

TABLE III

Table with 4 columns and 5 rows of data. The text is extremely faint and illegible.

ADBEX I CRUISE NUTRIENT DATA

by

S.E. Humphries

Antarctic Division  
Department of Science  
Kingston, Tasmania, Australia

ABSTRACT

Nitrate, phosphate and silicate concentrations obtained during the ADBEX I cruise to the Prydz Bay region in November and December 1982 are plotted with depth and the raw data are tabulated. Location of the sampling stations and the average concentration of each nutrient in the top 100 m of the water column is mapped.

MEMORANDUM FOR THE RECORD

DATE: 10/10/50  
TO: SAC, NEW YORK  
FROM: SAC, NEW YORK  
SUBJECT: [Illegible]

RE: [Illegible]

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## 1. INTRODUCTION

The ADBEX I (Antarctic Division BIOMASS Experiment) cruise is part of a long-term, national program of field surveys aimed at fulfilling the objectives of the BIOMASS (Biological Investigation of Marine Antarctic Systems and Stocks) program. The ADBEX I cruise on MV Nella Dan to the Prydz Bay region between 19 November and 17 December 1982, is the second Antarctic Division cruise to contribute to BIOMASS, the first being FIBEX (First International BIOMASS Experiment) in 1981.

Nutrient data were collected at twenty-eight of the seventy-nine hydrographic stations to provide information for the interpretation of phytoplankton distribution and abundance. The sampling locations and depths were not selected, therefore, on the basis of nutrient-related considerations.

The concentration of nitrate, phosphate and silicate is plotted to 600 m for each station and where casts were much deeper or much shallower, a second plot is shown. To show water column structure at the time of sampling, sigma-t values were also plotted, unless data for a cast were unavailable.

In addition to the depth profiles, the average concentration to 100 m of each nutrient species is mapped to give a first-order approximation of the horizontal pattern of nutrient distribution in the upper layers.

## 2. METHODS

Water samples were collected at the different depths using a rosette sampler with 5 L Niskin bottles in conjunction with the CTD unit. Sub-samples of 250 mL were filtered through GF/F glass fibre filters, transferred to whirlpacks and immediately frozen for analysis in Australia.

Analyses were carried out by the Australian Government Analytical Laboratories with the standard methods of Grasshoff, K., Ehrhardt, M., Kremling, K. (1976) Methods of Seawater Analysis; Verlag Chemie.

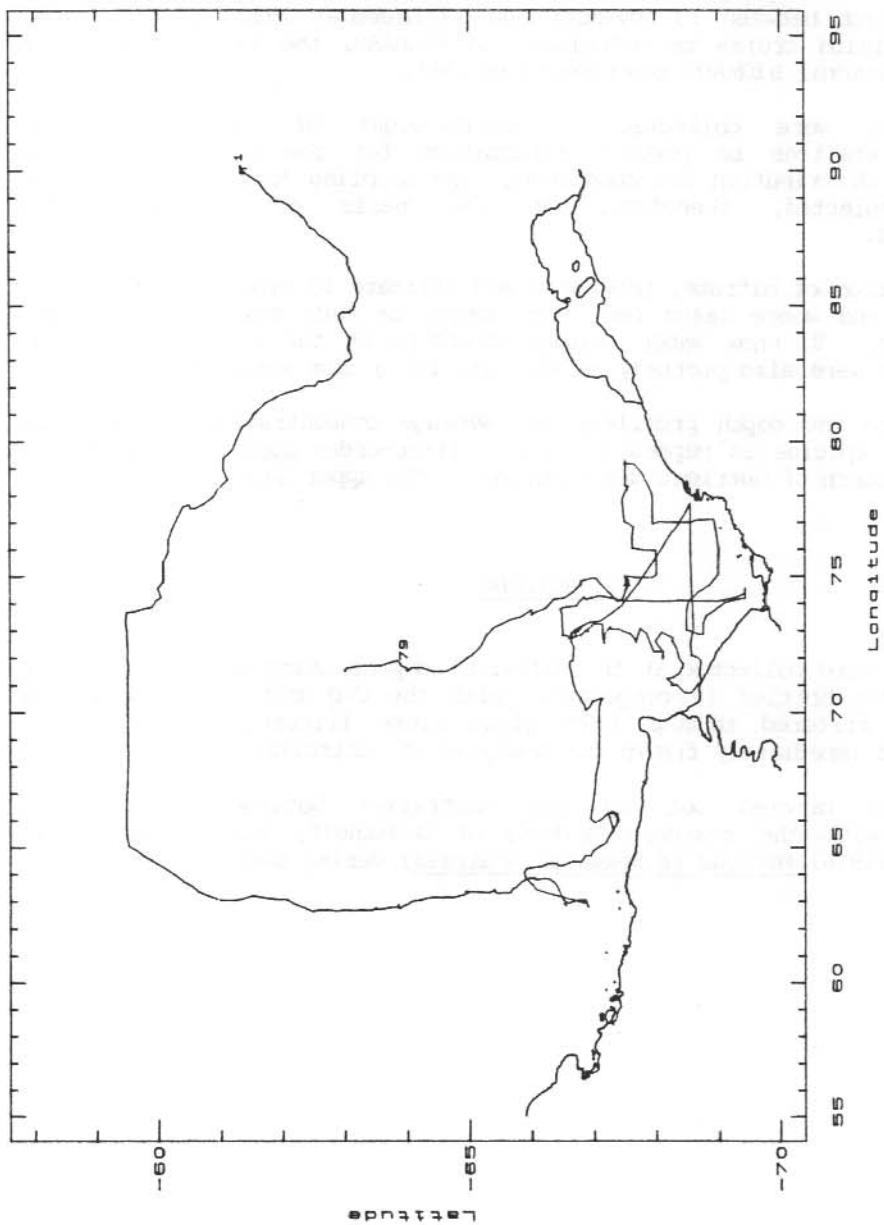


Figure 1. Cruise track of ADBEX I, 19 November to 17 December 1982.



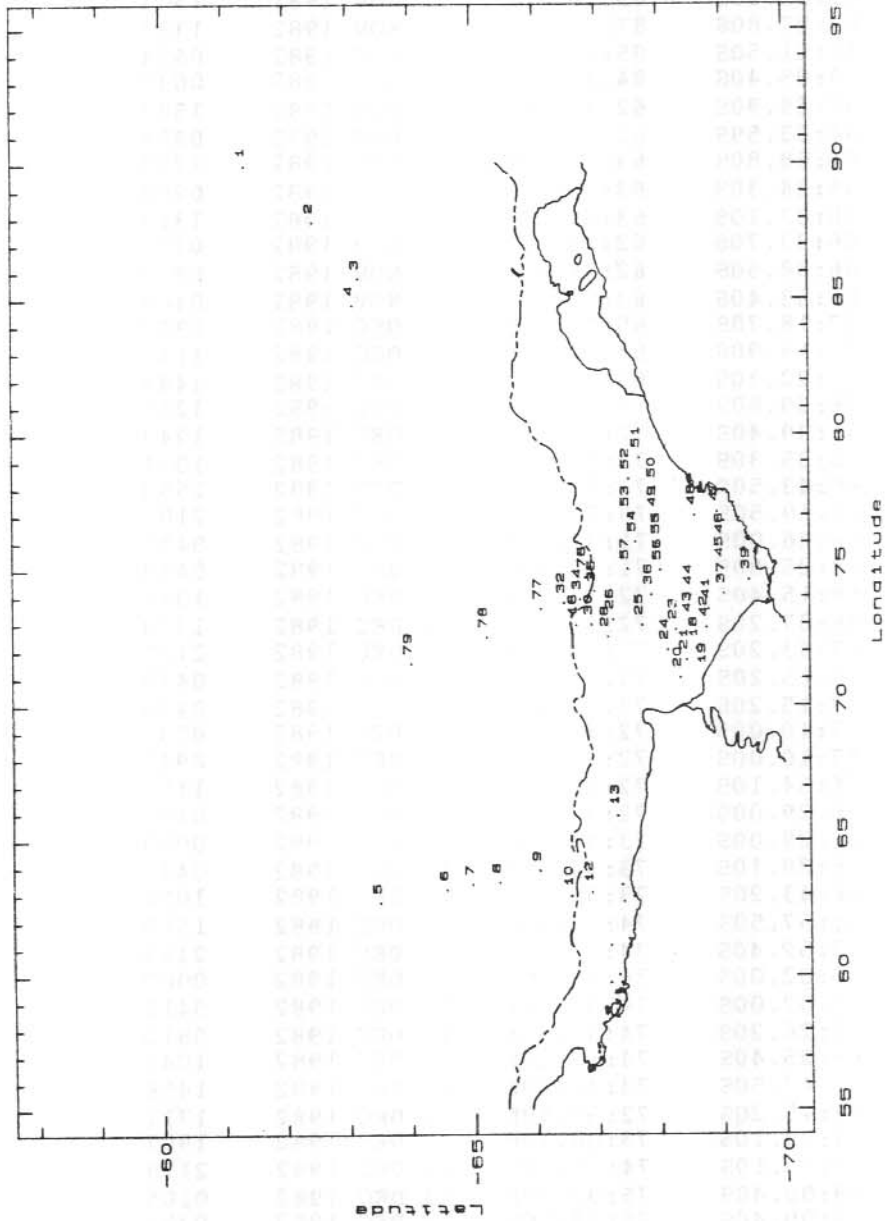


Figure 2. Location of CTD stations. Due to the proximity of some stations to each other, it was not possible to show some stations on the map, but their exact locations are given in Table 1. The station numbers of those missing are listed here, in brackets, following the number of the proximate mapped station: 10(11), 13(14, 15), 16(17), 26(27), 28(29), 32(33), 37(38), 39(40), 57(58-75). The dotted line marks the 1000 m contour.

Table 1. CTD station list for ADBEX I, 19 November to 17 December 1982. The stations at which nutrient samples were taken are marked with an asterisk.

CTD Station	Position		Date	Time (GMT)
* 1	61:22.20S	89:54.10E	19 NOV 1982	1503
* 2	62:27.80S	87:50.00E	20 NOV 1982	1327
* 3	63:11.50S	85:44.30E	21 NOV 1982	0624
* 4	63:05.40S	84:44.90E	22 NOV 1982	0030
* 5	63:29.90S	62:40.80E	26 NOV 1982	1507
* 6	64:33.59S	63:09.20E	27 NOV 1982	0856
* 7	64:58.80S	63:20.80E	27 NOV 1982	1710
* 8	65:24.30S	63:25.10E	28 NOV 1982	0208
* 9	66:03.10S	63:50.80E	28 NOV 1982	1313
* 10	66:33.70S	62:54.20E	29 NOV 1982	0101
* 11	66:38.50S	62:58.10E	29 NOV 1982	0840
12	66:53.40S	63:02.90E	30 NOV 1982	0409
13	67:18.70S	65:53.40E	03 DEC 1982	0948
* 14	67:18.90S	65:35.50E	03 DEC 1982	1142
* 15	67:22.30S	65:49.60E	03 DEC 1982	1444
* 16	66:39.00S	72:55.10E	05 DEC 1982	1210
* 17	66:39.40S	72:58.50E	05 DEC 1982	1243
18	68:35.30S	72:04.19E	08 DEC 1982	1034
* 19	68:43.50S	71:06.00E	08 DEC 1982	1550
20	68:19.50S	70:59.10E	09 DEC 1982	2106
21	68:26.00S	71:38.30E	09 DEC 1982	0435
* 22	68:25.00S	71:37.20E	09 DEC 1982	0449
23	68:15.40S	72:45.00E	09 DEC 1982	1034
* 24	68:07.20S	72:00.20E	09 DEC 1982	1520
25	67:43.20S	72:55.40E	09 DEC 1982	2123
26	67:15.20S	73:07.40E	10 DEC 1982	0438
* 27	67:15.20S	73:07.40E	10 DEC 1982	0438
28	67:10.00S	72:29.30E	10 DEC 1982	0733
* 29	67:10.00S	72:33.00E	10 DEC 1982	0945
* 30	66:54.10S	72:56.30E	10 DEC 1982	1457
31	66:29.00S	72:48.10E	10 DEC 1982	0156
32	66:28.00S	73:44.00E	11 DEC 1982	0000
* 33	66:28.10S	73:44.00E	11 DEC 1982	0445
34	66:43.20S	73:52.10E	11 DEC 1982	1014
* 35	66:57.50S	74:10.40E	11 DEC 1982	1519
36	67:52.40S	74:02.09E	11 DEC 1982	2113
37	69:02.00S	74:05.00E	12 DEC 1982	0000
* 38	69:02.00S	74:05.20E	12 DEC 1982	0412
39	69:26.20S	74:35.50E	12 DEC 1982	0810
40	69:25.40S	74:12.20E	12 DEC 1982	1041
* 41	68:47.50S	73:30.20E	12 DEC 1982	1458
42	68:45.20S	72:50.10E	12 DEC 1982	1711
43	68:29.10S	73:00.10E	12 DEC 1982	1907
44	68:30.10S	74:00.40E	12 DEC 1982	2128
45	69:00.40S	75:02.20E	13 DEC 1982	0105
* 46	69:00.40S	75:54.10E	13 DEC 1982	0357
47	68:55.50S	77:06.20E	13 DEC 1982	0709
* 48	68:34.00S	76:58.20E	13 DEC 1982	1015
49	67:56.50S	76:55.20E	13 DEC 1982	1400
50	67:56.30S	78:01.00E	13 DEC 1982	1748

51	67:41.10S	79:07.10E	13 DEC 1982	2159
52	67:30.50S	78:20.00E	14 DEC 1982	0249
53	67:30.10S	76:56.10E	14 DEC 1982	0707
54	67:37.00S	76:00.20E	14 DEC 1982	0942
55	68:00.20S	75:55.10E	14 DEC 1982	1204
56	68:01.20S	74:57.40E	14 DEC 1982	1415
* 57	67:29.50S	74:59.40E	14 DEC 1982	1721
58	67:30.40S	74:58.30E	14 DEC 1982	2107
59	67:32.30S	74:52.00E	15 DEC 1982	0151
60	67:32.20S	74:49.30E	15 DEC 1982	0616
61	67:33.30S	74:49.90E	15 DEC 1982	0902
62	67:35.00S	74:38.50E	15 DEC 1982	1332
63	67:33.50S	74:39.80E	15 DEC 1982	1711
64	67:30.60S	74:59.00E	15 DEC 1982	2210
65	67:32.40S	74:40.50E	16 DEC 1982	0008
66	67:35.00S	74:40.00E	16 DEC 1982	0034
67	67:35.00S	74:40.00E	16 DEC 1982	0058
68	67:35.00S	74:40.00E	16 DEC 1982	0214
69	67:35.00S	74:40.00E	16 DEC 1982	0242
70	67:35.00S	74:40.00E	16 DEC 1982	0218
71	67:35.00S	74:40.00E	16 DEC 1982	0230
72	67:35.00S	74:40.00E	16 DEC 1982	0249
73	67:35.00S	74:40.00E	16 DEC 1982	0335
74	67:35.00S	74:40.00E	16 DEC 1982	0000
75	67:35.00S	74:40.00E	16 DEC 1982	0000
76	66:48.00S	74:41.20E	16 DEC 1982	1741
77	66:05.00S	73:32.00E	17 DEC 1982	0306
78	65:12.70S	72:28.30E	17 DEC 1982	0000
79	64:00.10S	71:30.80E	17 DEC 1982	0000

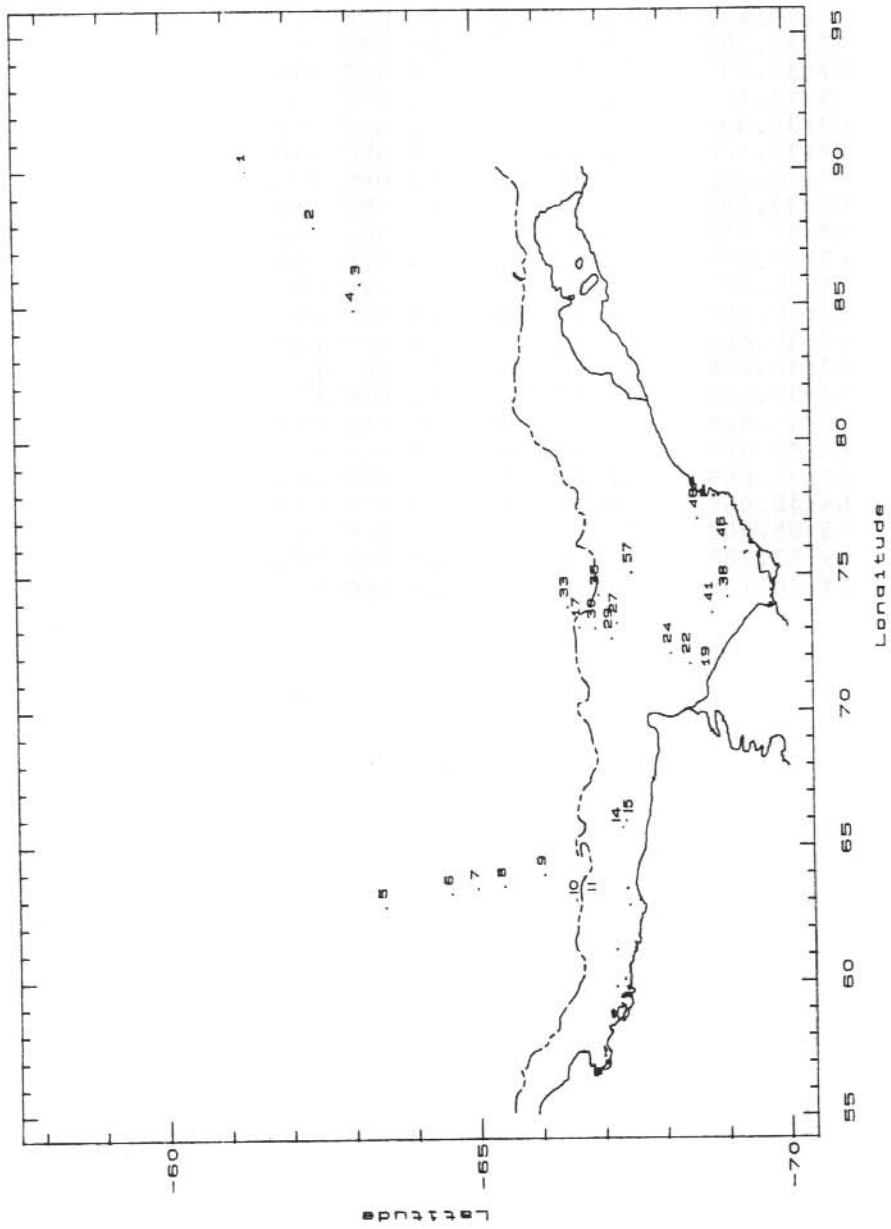


Figure 3. Location of CTD stations at which nutrient samples were taken.

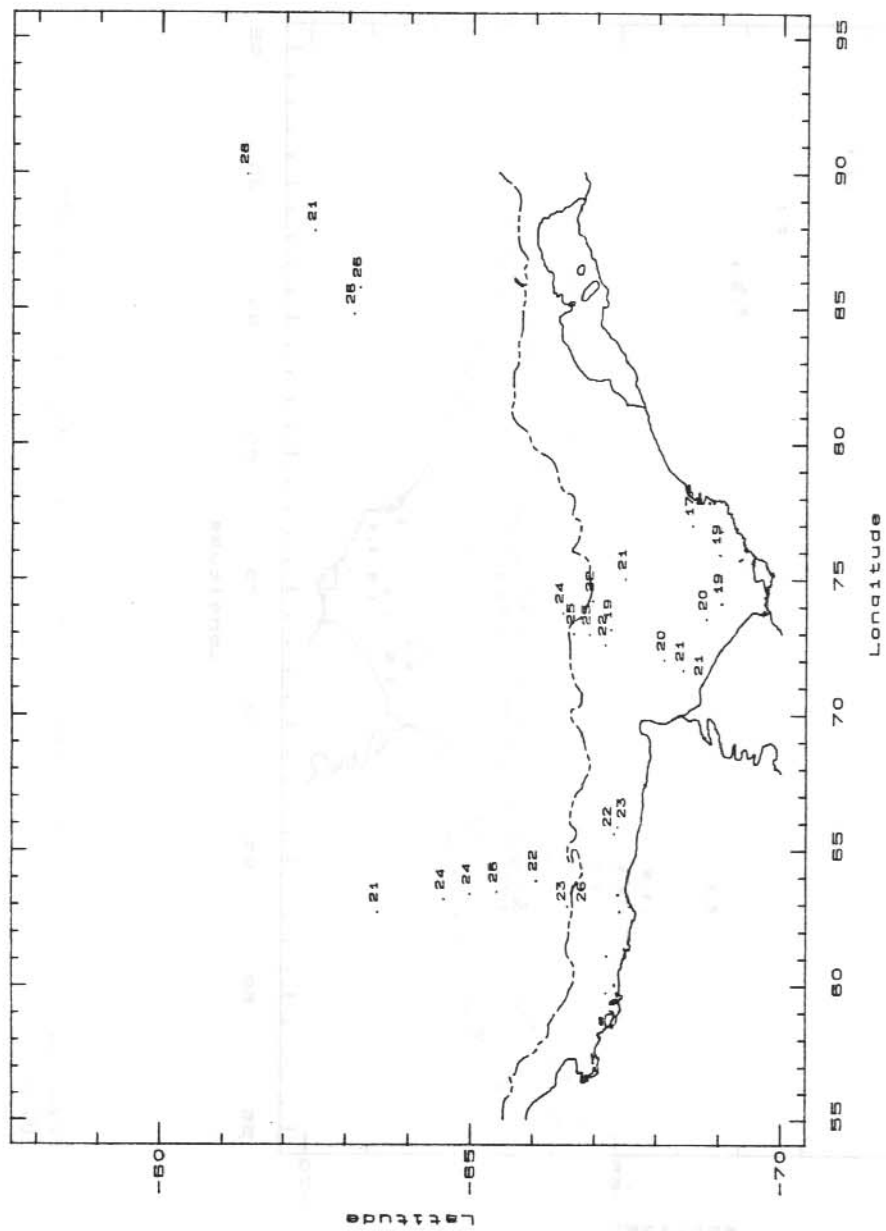


Figure 4. Average concentration at each station of  $\text{NO}_3\text{-N}$  between 0 and 100 m.

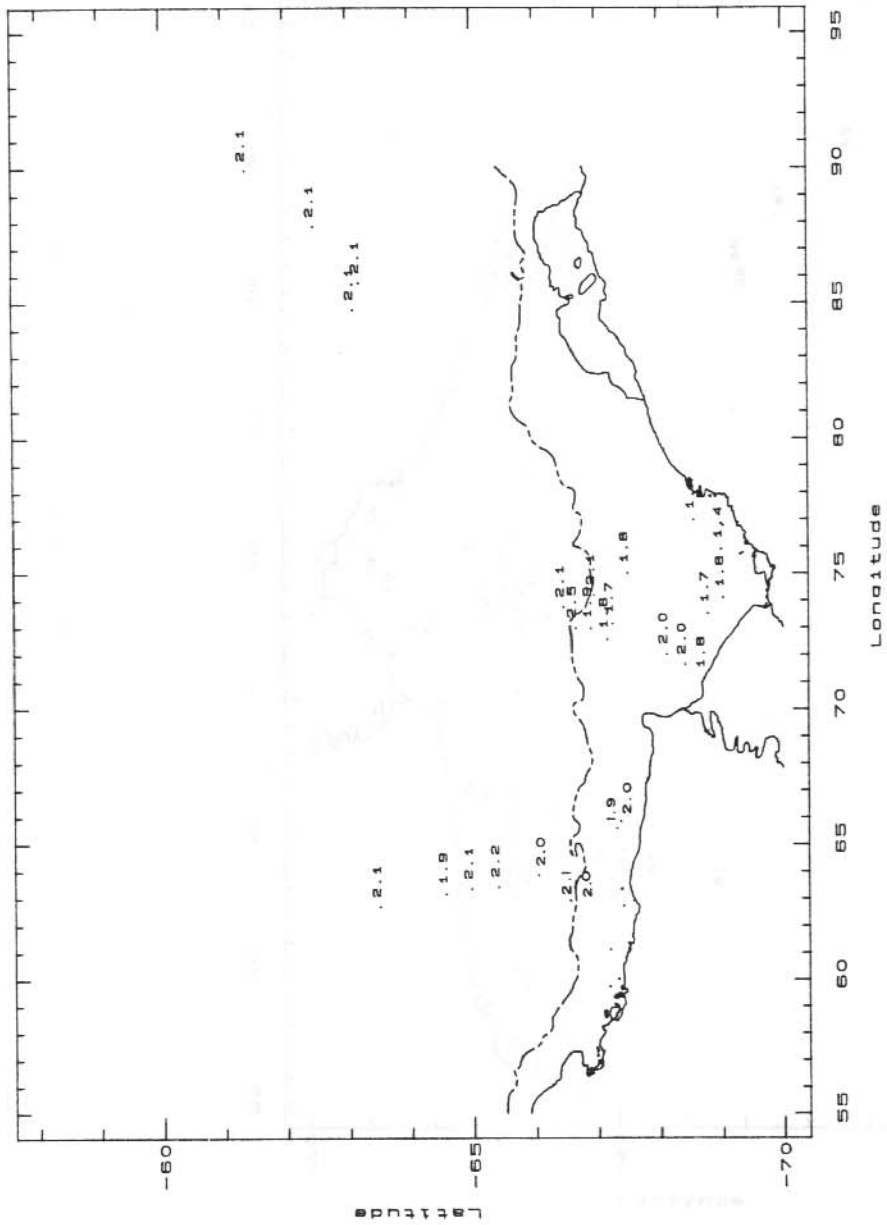


Figure 5. Average concentration at each station of FO<sub>4</sub>-P between 0 and 100 m.

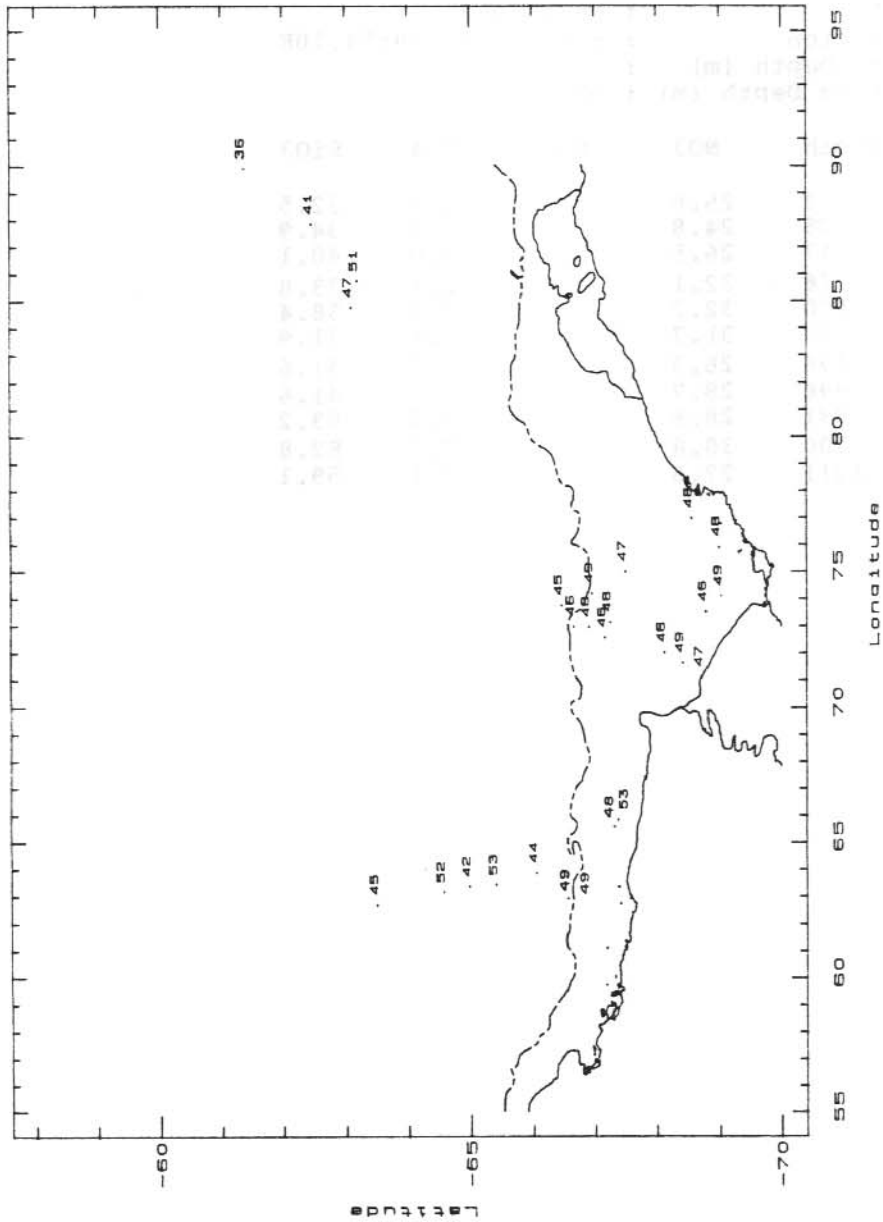


Figure 6. Average concentration at each station of  $\text{SiO}_3\text{-Si}$  between 0 and 100 m.

### 3. NUTRIENT DATA

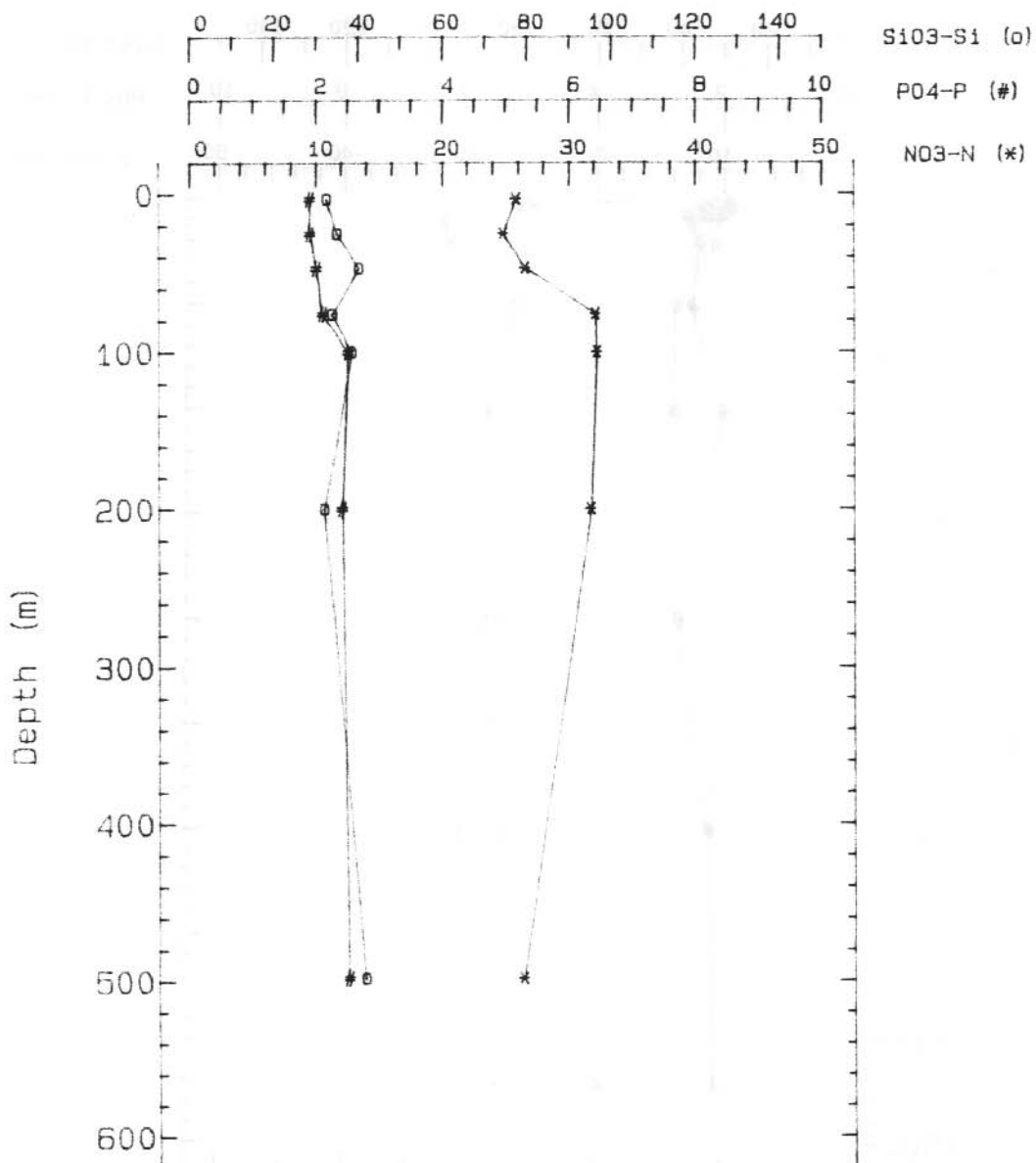
Cruise : ADBEX1  
Station number : 1  
Date : 19-NOV-1982 (DAY NUMBER 323)  
Start Time : 1503 GMT  
Ship : NELLA DAN  
Position : 61:22.20S 89:54.10E  
Cast Depth (m) : 3200  
Bottom Depth (m) : 4221

Depth	NO3	NO2	PO4	SiO3
3	25.8		1.9	32.5
25	24.8		1.9	34.9
47	26.5		2.0	40.1
76	32.1		2.1	33.8
100	32.2		2.5	38.4
200	31.7		2.4	31.9
498	26.3		2.5	41.6
996	28.7		2.0	41.6
1991	28.8		2.7	83.2
3000	30.8		2.2	82.8
4211	27.8		2.1	59.1



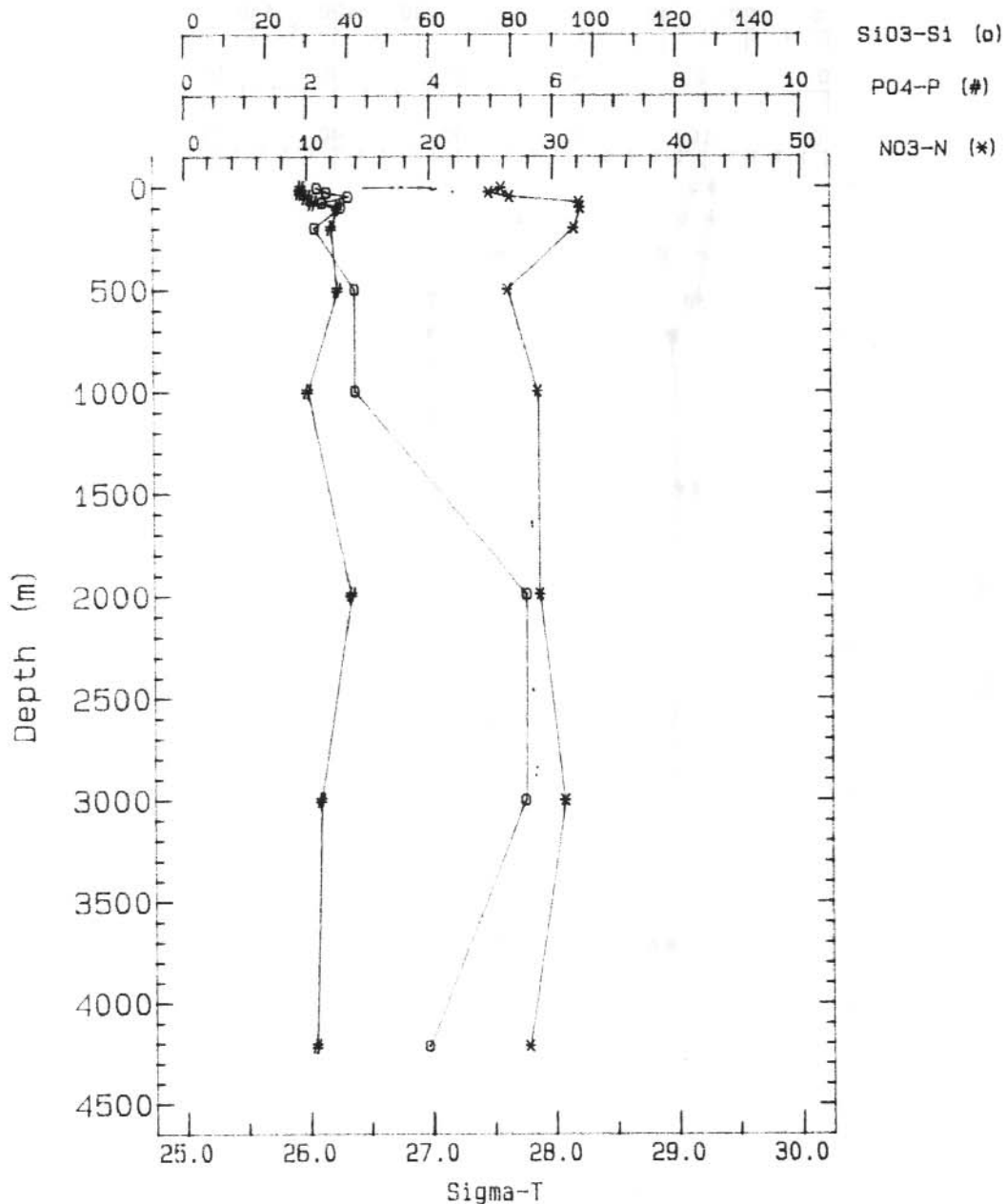
# ADBEX1 - NUTRIENTS

Cruise : ADBEX1 Station 1  
 19-NOV-1982 1503 GMT  
 Lat 61: 22.20S Lon 89: 54.10E  
 Depth: CTD 3200 m Bottom 4221 m



# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 1  
 19-NOV-1982 1503 GMT  
 Lat 61:22.20S Lon 89:54.10E  
 Depth: CTD 3200 m Bottom 4221 m

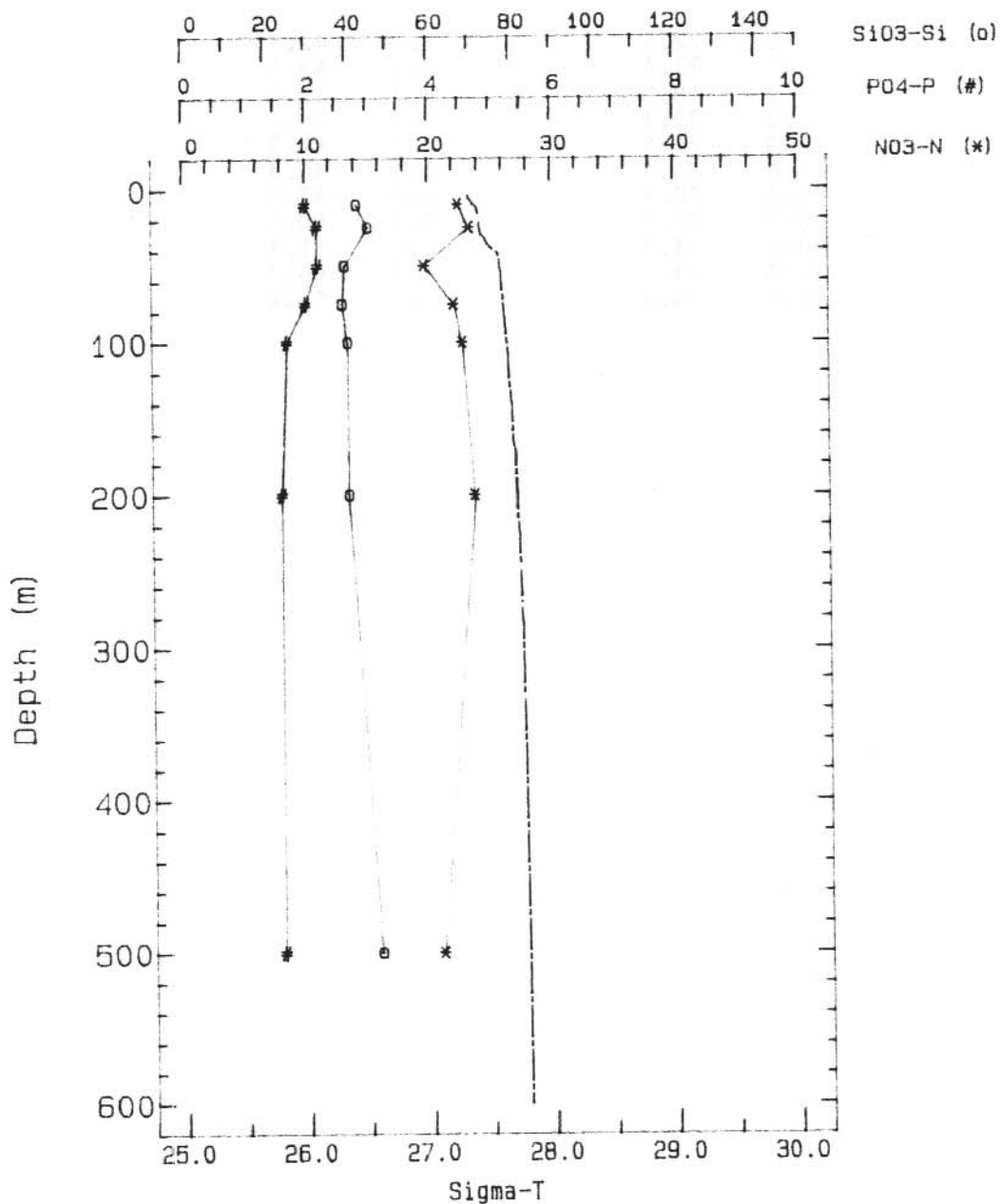


Cruise : ADBEX1  
 Station number : 2  
 Date : 20-NOV-1982 (DAY NUMBER 324)  
 Start Time : 1327 GMT  
 Ship : NELLA DAN  
 Position : 62:27.80S 87:50.00E  
 Cast Depth (m) : 3200  
 Bottom Depth (m) : 3838

Depth	NO3	NO2	PO4	SiO3
10	22.5		2.0	42.7
25	23.4		2.2	45.5
50	19.7		2.2	39.7
75	22.1		2.0	39.1
100	22.8		1.7	40.3
200	23.7		1.6	40.4
500	20.9		1.6	47.7
1000	21.4		1.8	60.5
2000	24.3		1.5	85.1
3000	24.5		2.2	65.3
3833	26.4		2.1	61.4

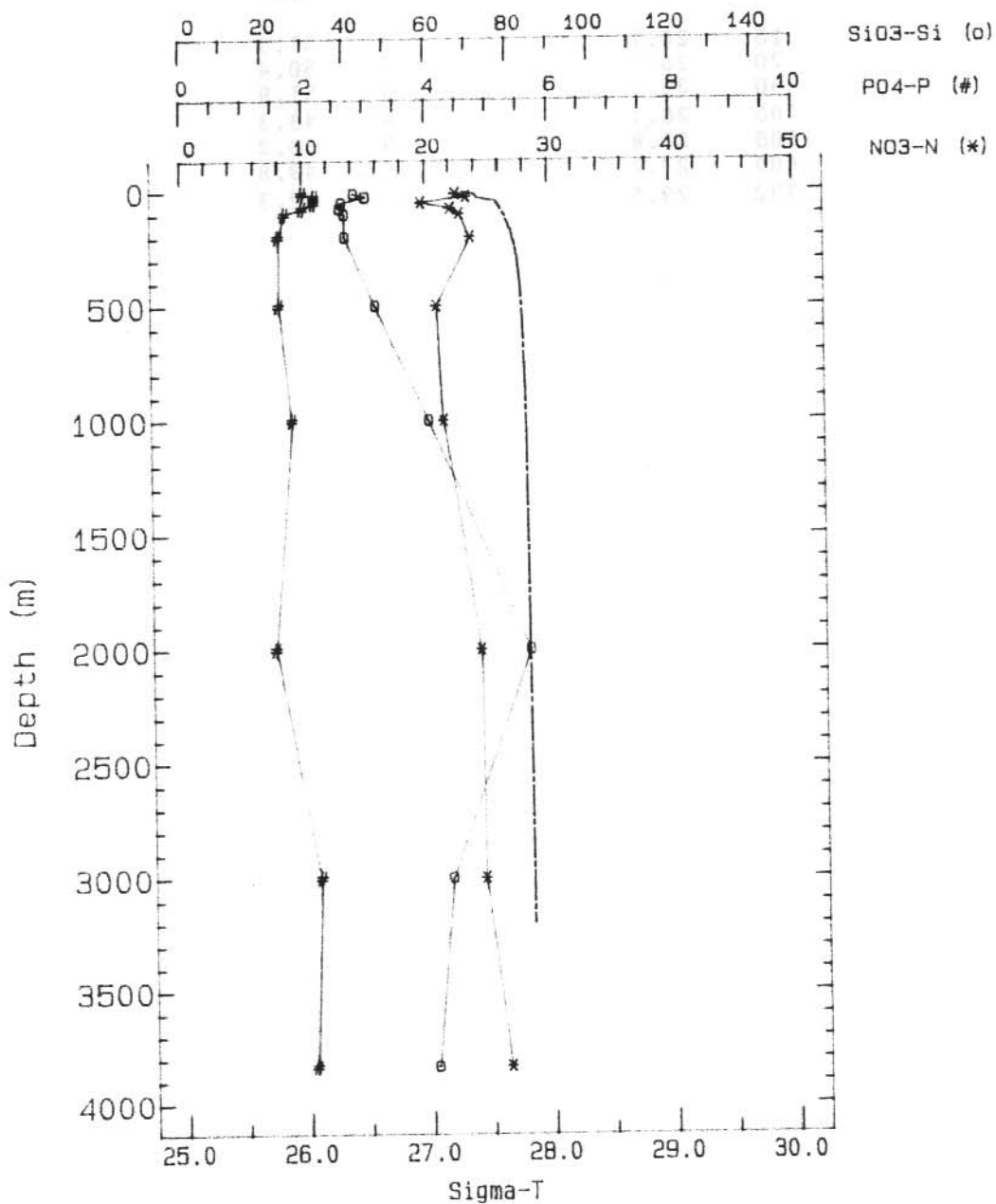
# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 2  
 20-NOV-1982 1327 GMT  
 Lat 62: 27.80S Lon 87: 50.00E  
 Depth: CTD 3200 m Bottom 3838 m



# ADBEX1 NUTRIENTS -- SIGMA-T

Cruise : ADBEX1 Station 2  
 20-NOV-1982 1327 GMT  
 Lat 62: 27.80S Lon 87: 50.00E  
 Depth: CTD 3200 m Bottom 3838 m

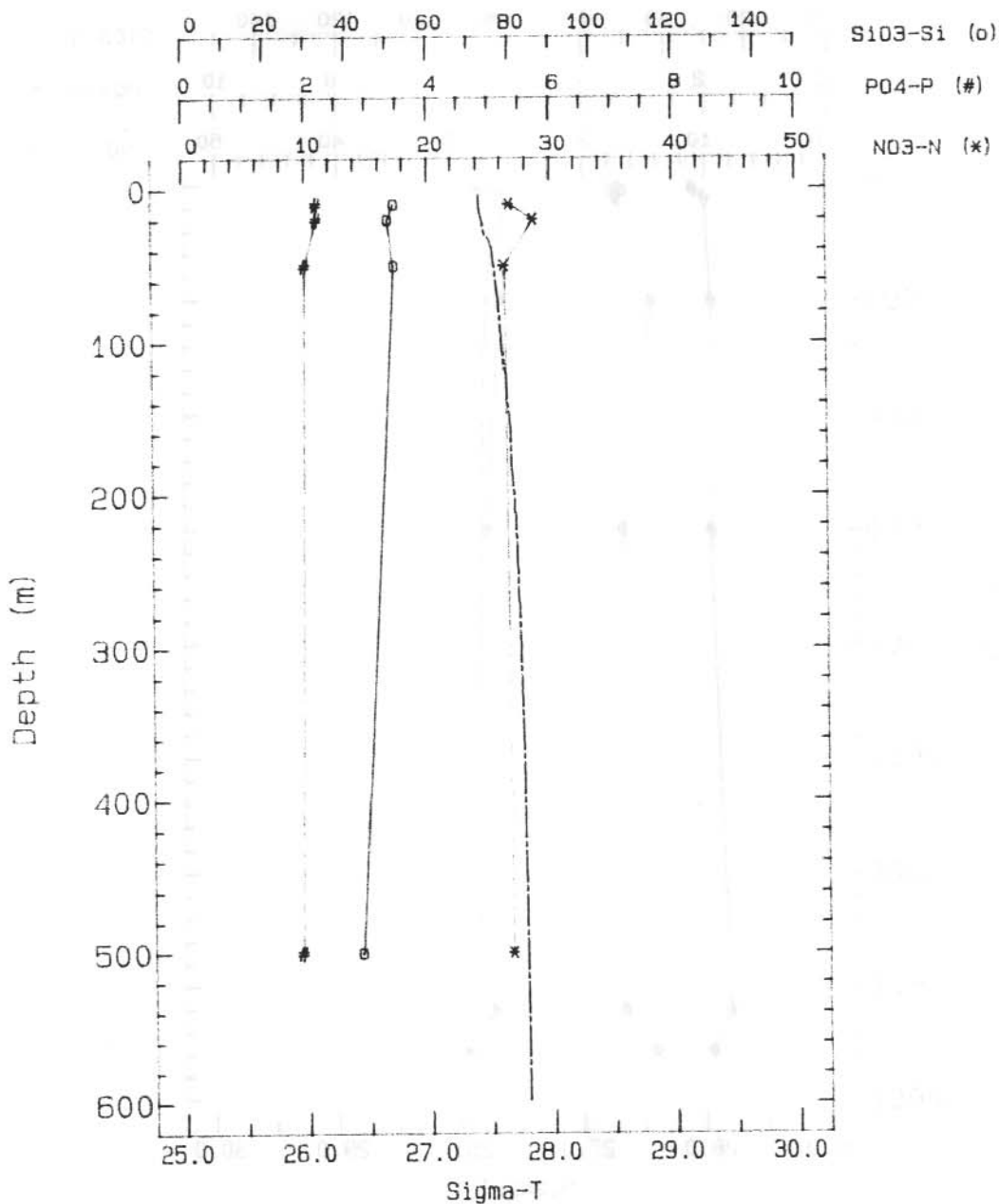


Cruise : ADBEX1  
Station number : 3  
Date : 21-NOV-1982 (DAY NUMBER 325)  
Start Time : 0624 GMT  
Ship : NELLA DAN  
Position : 63:11.50S 85:44.30E  
Cast Depth (m) : 3200  
Bottom Depth (m) : 3792

Depth	NO3	NO2	PO4	SiO3
10	26.7		2.2	51.9
20	28.7		2.2	50.4
50	26.3		2.0	51.9
500	26.7		1.9	43.3
1500	27.8		1.9	50.2
3600	27.2		1.6	49.8
3782	29.5		1.9	42.3

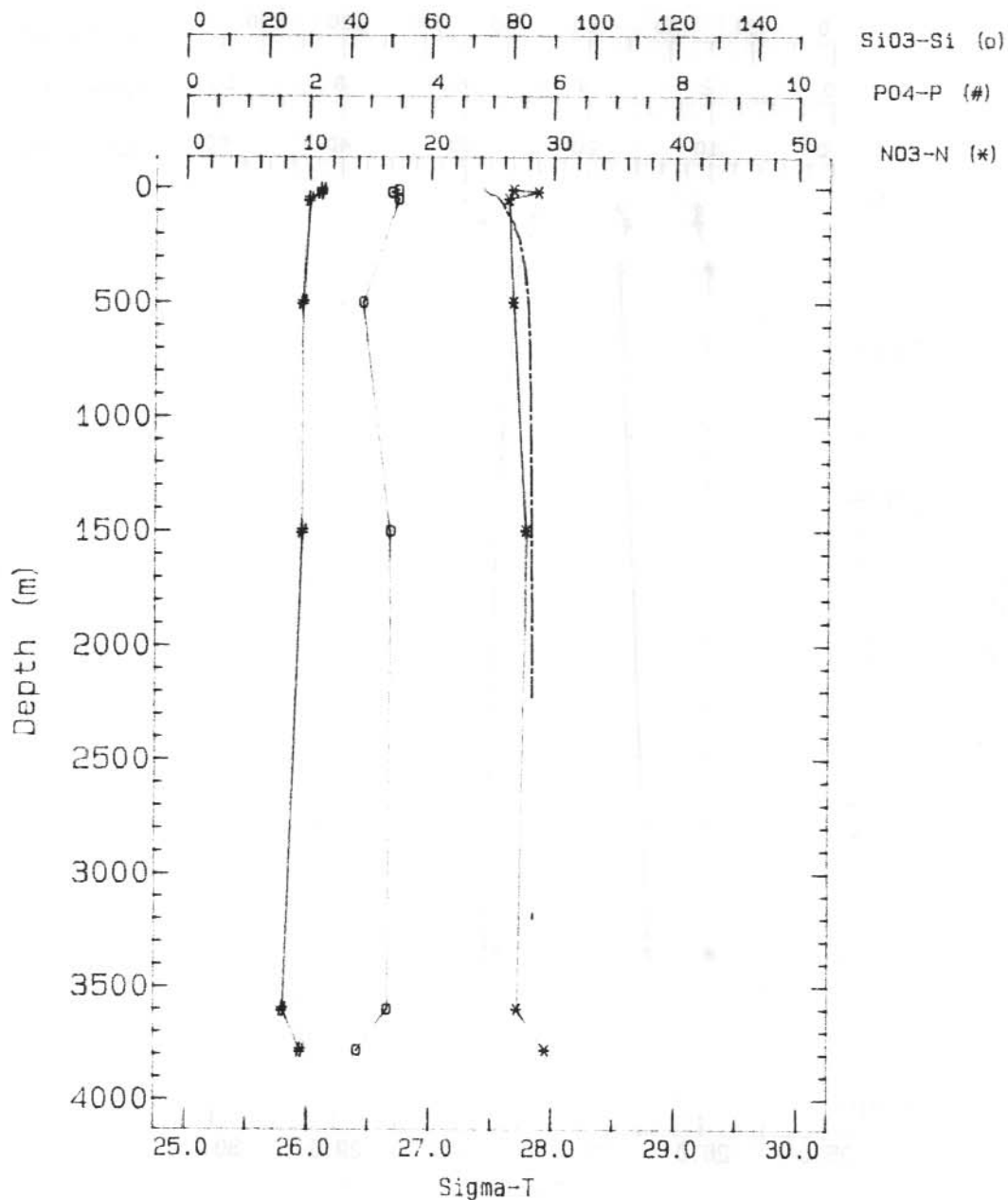
# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 3  
 21-NOV-1982 0624 GMT  
 Lat 63: 11.50S Lon 85: 44.30E  
 Depth: CTD 3200 m Bottom 3792 m



ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 3  
 21-NOV-1982 0624 GMT  
 Lat 63: 11.50S Lon 85: 44.30E  
 Depth: CTD 3200 m Bottom 3792 m





Cruise : ADBEX1  
Station number : 4  
Date : 22-NOV-1982 (DAY NUMBER 326)  
Start Time : 0030 GMT  
Ship : NELLA DAN  
Position : 63:05.40S 84:44.90E  
Cast Depth (m) : 2886  
Bottom Depth (m) : 2886

Depth	NO3	NO2	PO4	SiO3
25	26.8		2.0	47.0
50	26.8		2.2	47.5
100	23.5		2.0	46.6
100	26.3		2.0	48.2
100	24.3		2.1	49.4
1500	23.2		1.9	74.7
2885	23.8		2.2	87.1

# ADBEX1 NUTRIENTS - SIGMA-T

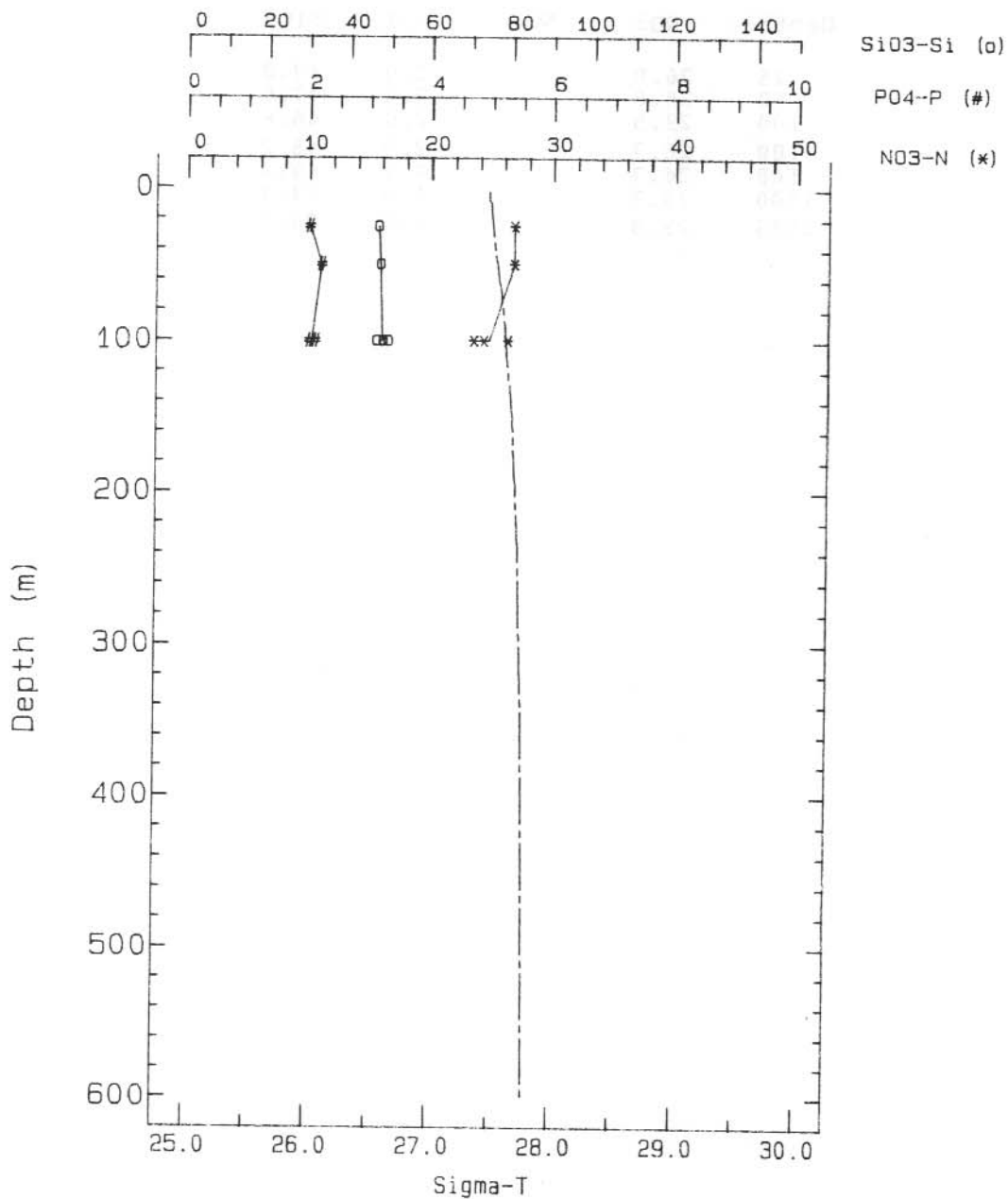
Cruise: ADBEX1 Station: 4

22 NOV 1982 0030 GMT

Latitude : 63:05.40S

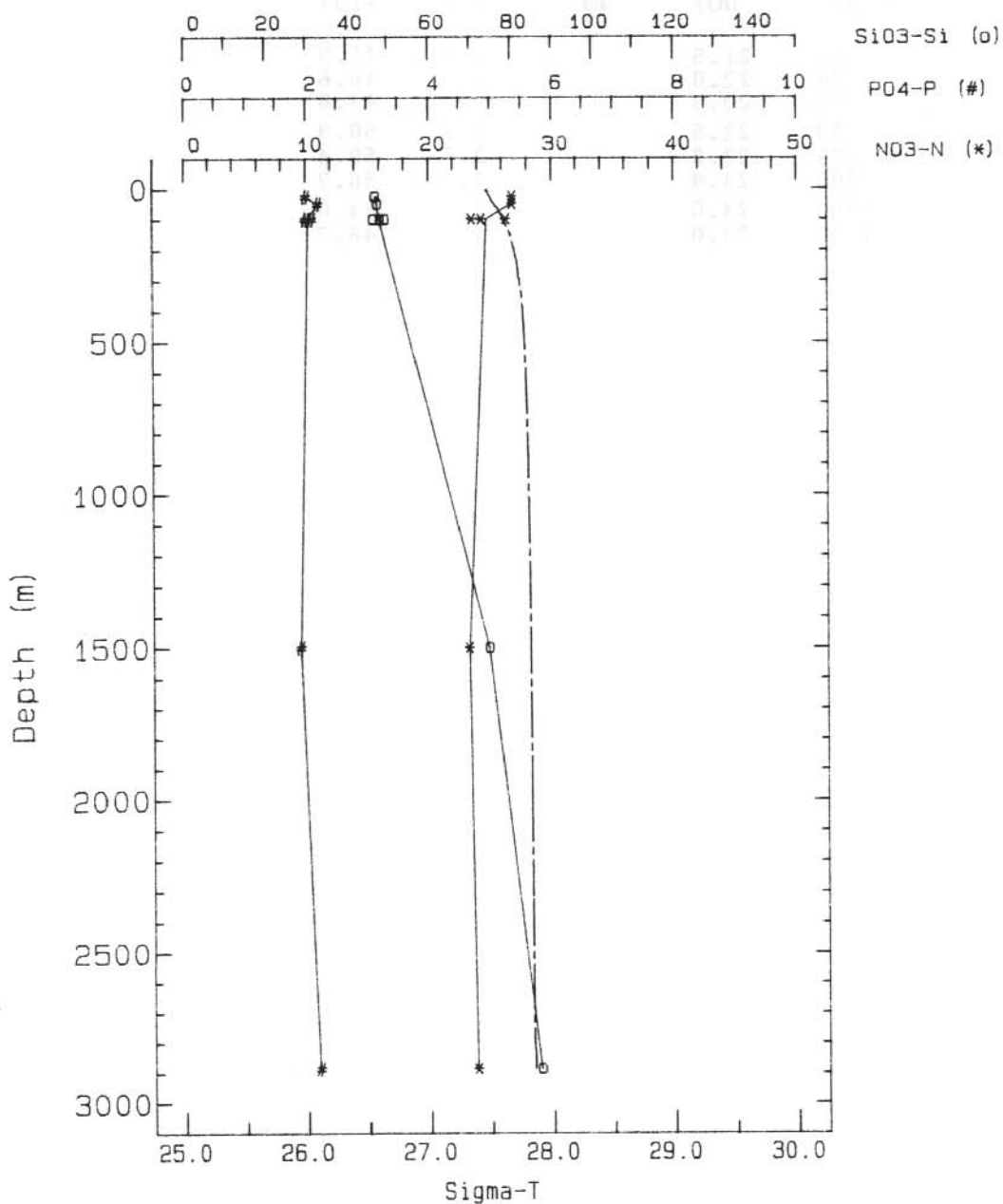
Longitude: 84:44.90E

Depth: CTD 2886 m Bottom 2886 m



# ADBEX1 NUTRIENTS - SIGMA-T

Cruise: ADBEX1 Station: 4  
 22 NOV 1982 0030 GMT  
 Latitude : 63:05.40S  
 Longitude: 84:44.90E  
 Depth: CTD 2886 m Bottom 2886 m

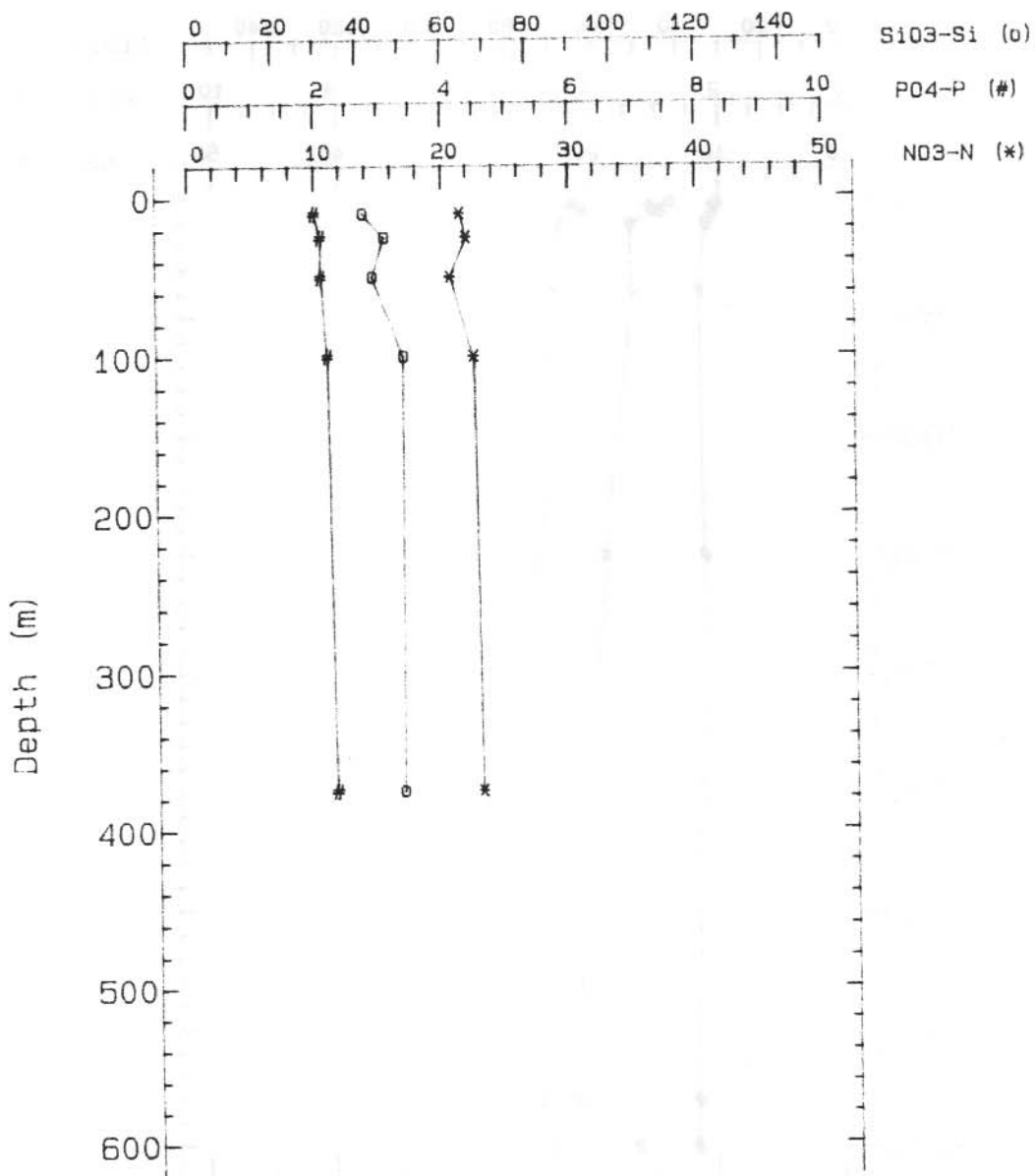


Cruise : ADBEX1  
Station number : 5  
Date : 26-NOV-1982 (DAY NUMBER 330)  
Start Time : 1507 GMT  
Ship : NELLA DAN  
Position : 63:29.90S 62:40.80E  
Cast Depth (m) : 3200  
Bottom Depth (m) : 4096

Depth	NO3	NO2	PO4	SiO3
10	21.5		2.0	41.5
25	22.0		2.1	46.6
50	20.7		2.1	43.8
100	22.5		2.2	50.9
375	23.0		2.3	50.4
1500	23.9		2.2	56.7
3800	24.0		2.3	64.0
4000	23.0		2.3	48.7

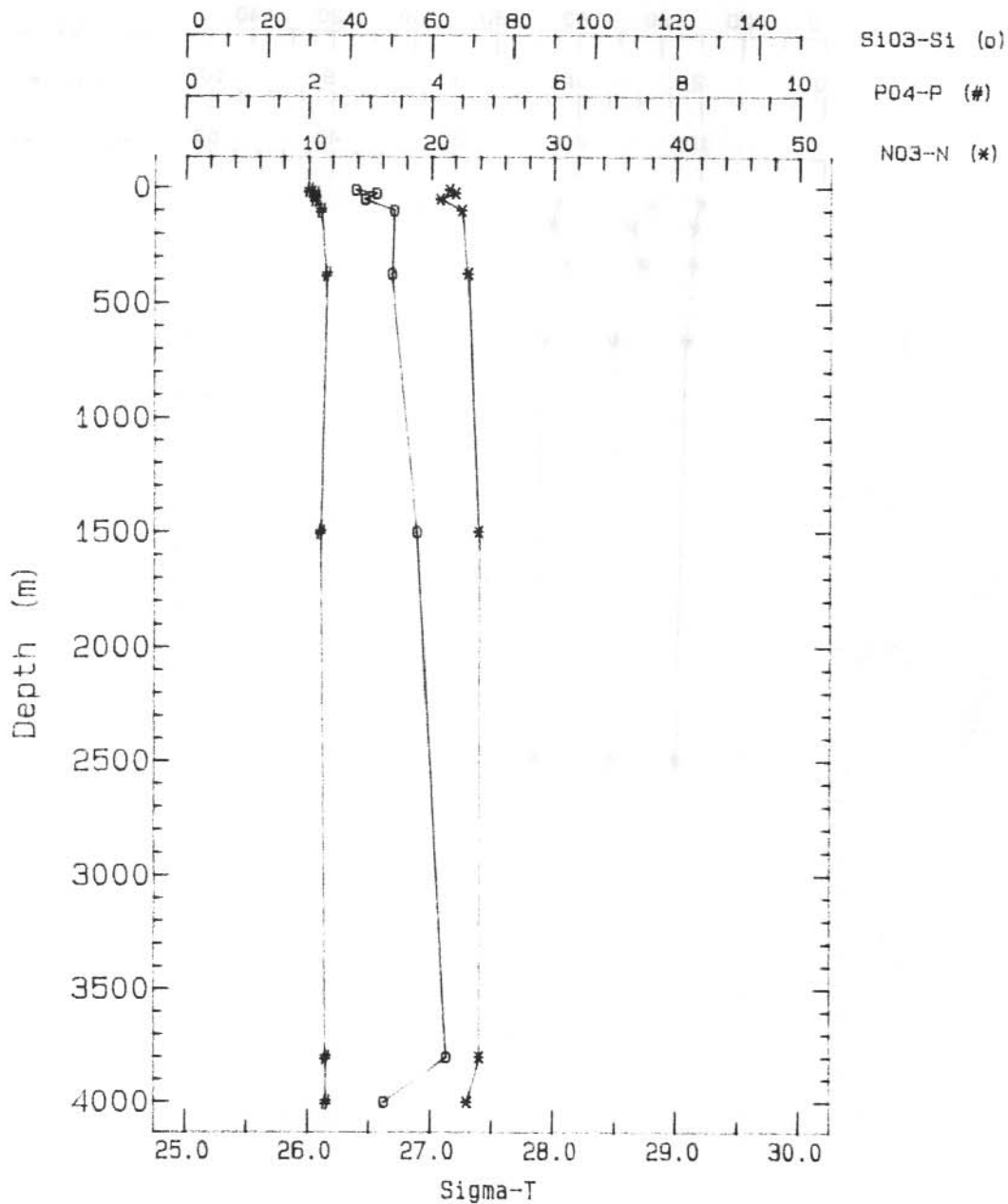
# ADBEX1 NUTRIENTS

Cruise : ADBEX1 Station 5  
 26-NOV-1982 1507 GMT  
 Lat 63: 29.90S Lon 62: 40.80E  
 Depth: CTD 3200 m Bottom 4096 m



# ADBEX1 NUTRIENTS

Cruise : ADBEX1 Station 05  
 26-NOV-1982 1507 GMT  
 Lat 63: 29.90S Lon 62: 40.80E  
 Depth: CTD 3200 m Bottom 4096 m

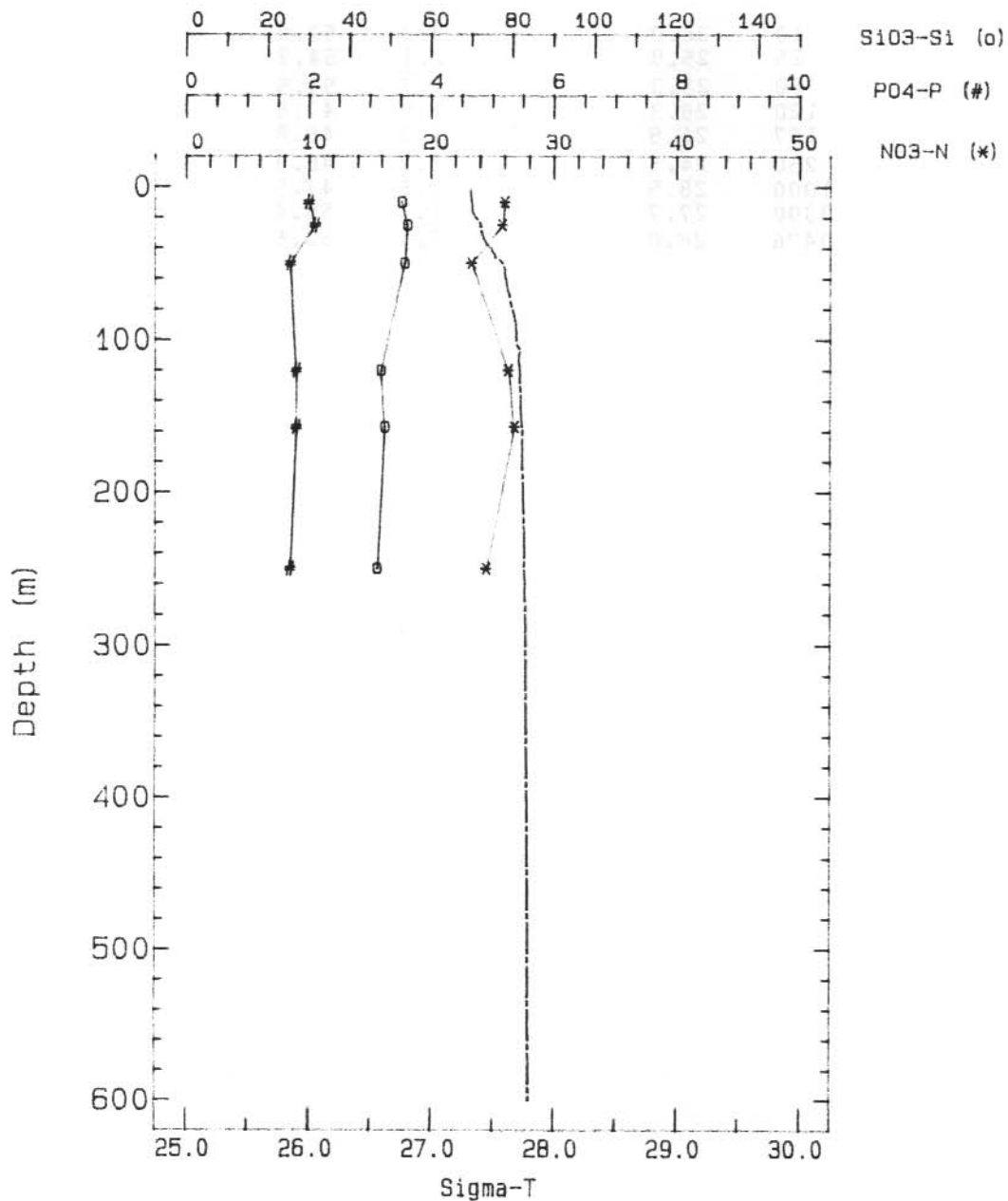


Cruise : ADBEX1  
Station number : 6  
Date : 27-NOV-1982 (DAY NUMBER 331)  
Start Time : 0856 GMT  
Ship : NELLA DAN  
Position : 64:33.59S 63:09.20E  
Cast Depth (m) : 3200  
Bottom Depth (m) : 3481

Depth	NO3	NO2	PO4	SiO3
10	26.0		2.0	52.8
25	25.8		2.1	54.2
50	23.3		1.7	53.5
120	26.3		1.8	47.8
157	26.8		1.8	48.8
250	24.5		1.7	46.9
1000	28.5		1.6	47.5
3300	27.7		1.7	55.4
3476	28.0		2.1	50.6

# ADBEX1 NUTRIENTS - SIGMA-T

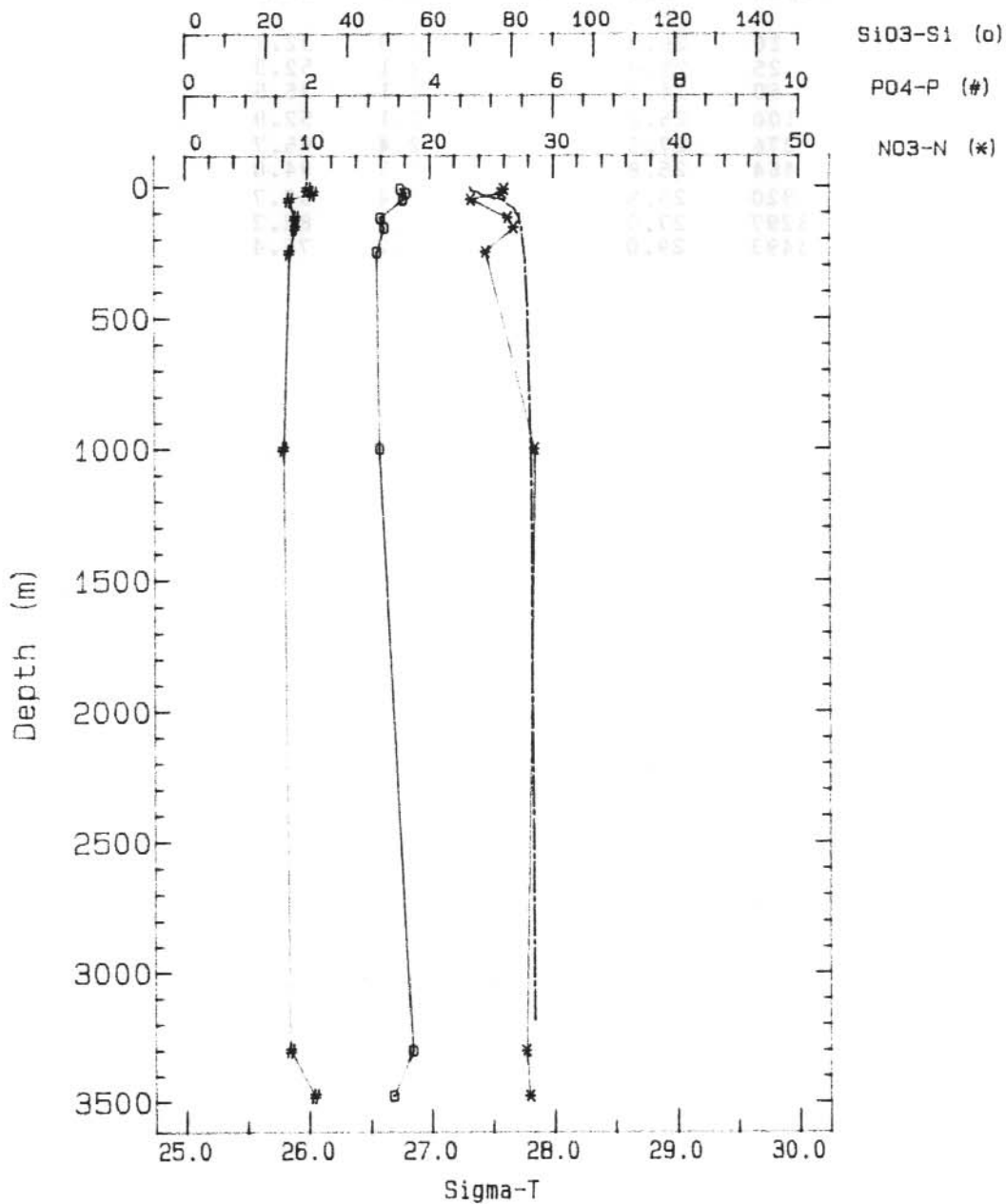
Cruise : ADBEX1 Station 6  
 27-NOV-1982 0856 GMT  
 Lat 64: 33.59S Lon 63: 09.20E  
 Depth: CTD 3200 m Bottom 3481 m





# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 6  
 27-NOV-1982 0856 GMT  
 Lat 64: 33.59S Lon 63: 09.20E  
 Depth: CTD 3200 m Bottom 3481 m

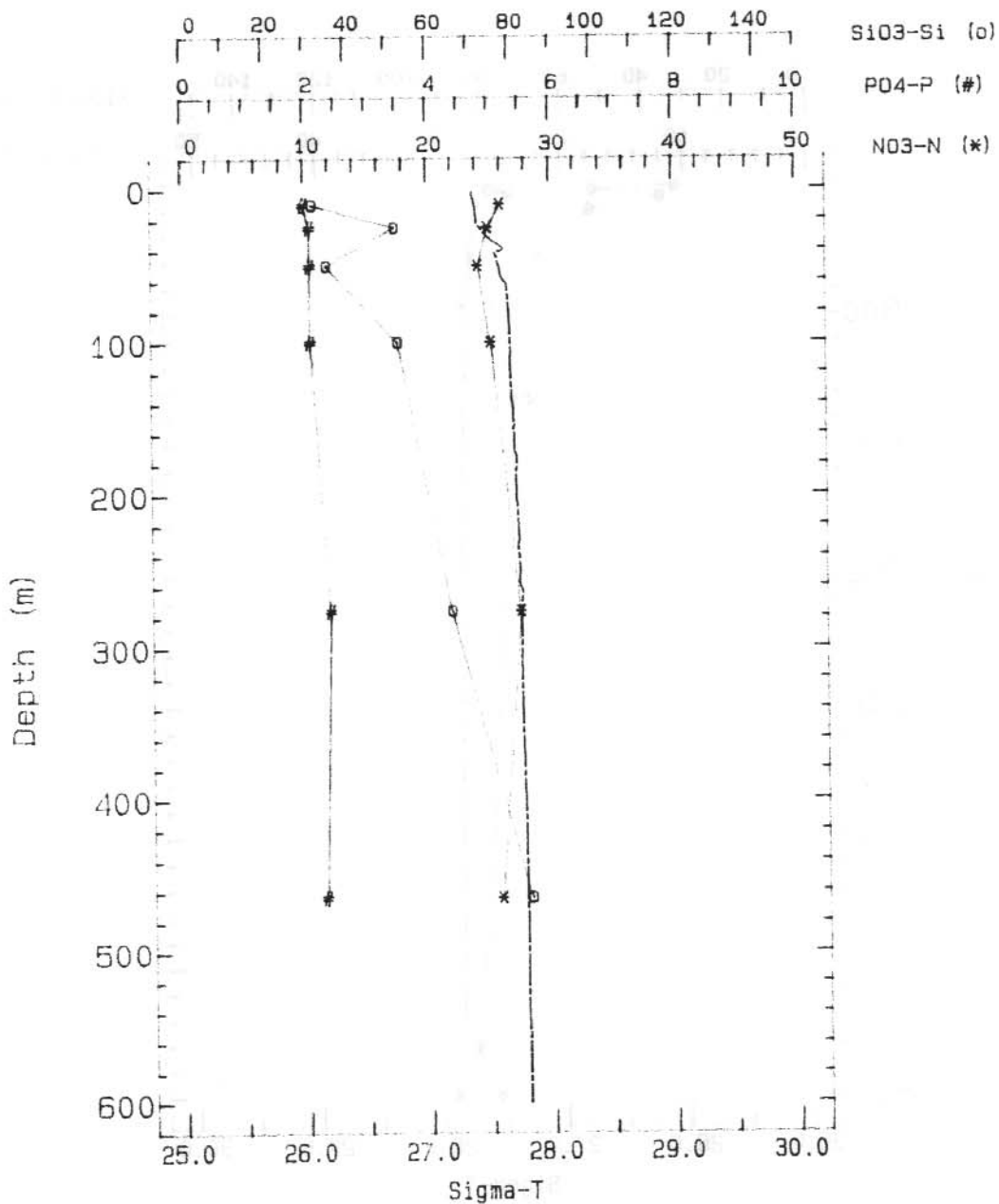


Cruise : ADBEX1  
Station number : 7  
Date : 27-NOV-1982 (DAY NUMBER 331)  
Start Time : 1710 GMT  
Ship : NELLA DAN  
Position : 64:58.80S 63:20.80E  
Cast Depth (m) : 3200  
Bottom Depth (m) : 3498

Depth	NO3	NO2	PO4	SiO3
10	26.0		2.0	32.1
25	25.0		2.1	52.3
50	24.2		2.1	35.5
100	25.2		2.1	52.9
276	27.5		2.4	65.7
464	25.8		2.3	84.8
820	23.8		2.4	67.7
3297	27.0		2.4	82.2
3493	29.0		2.2	76.4

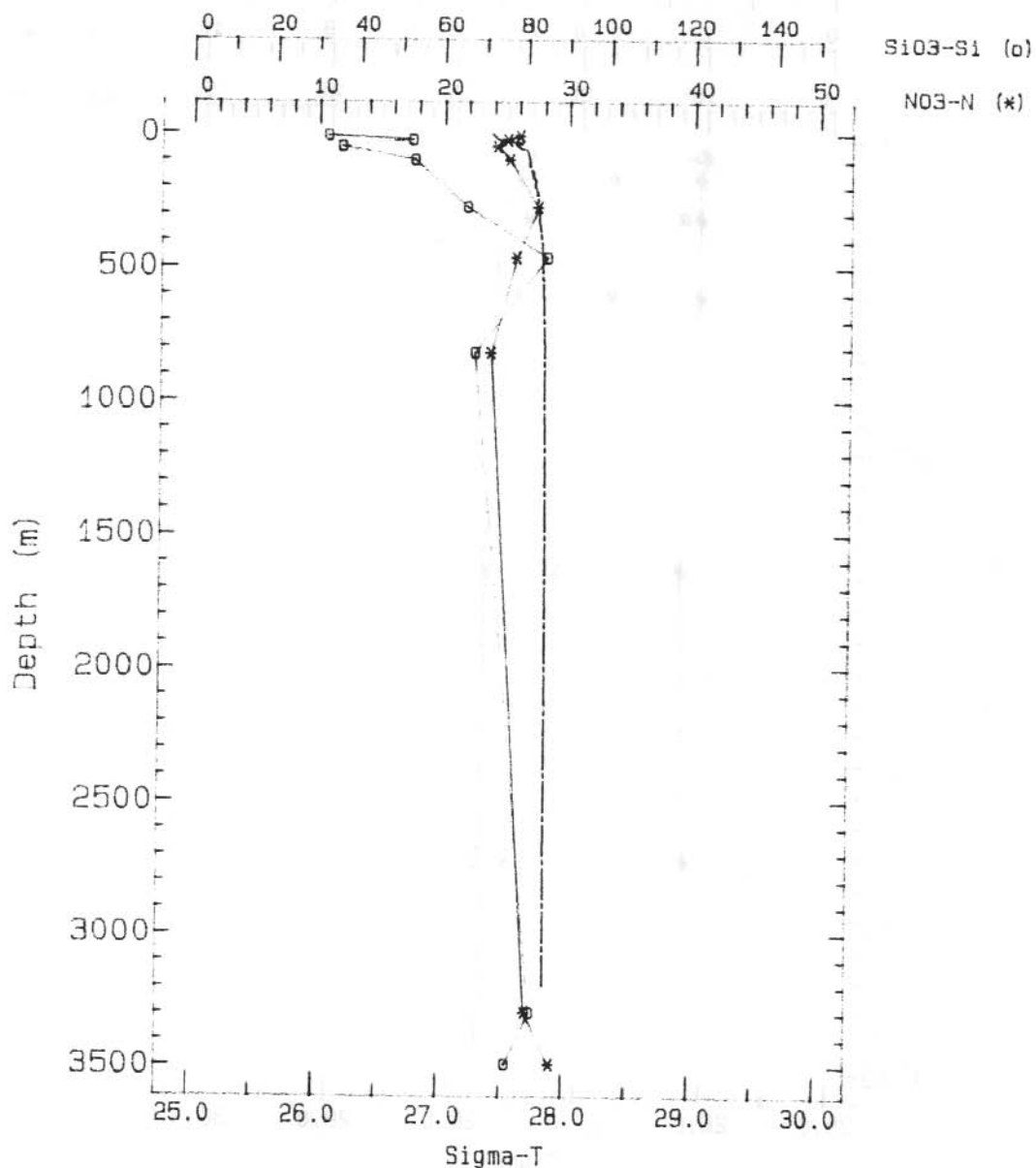
# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 7  
 27-NOV-1982 1710 GMT  
 Lat 64: 58.80S Lon 63: 20.80E  
 Depth: CTD 3200 m Bottom 3498 m



# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 7  
 27-NOV-1982 1710 GMT  
 Lat 64: 58.80S Lon 63: 20.80E  
 Depth: CTD 3200 m Bottom 3498 m

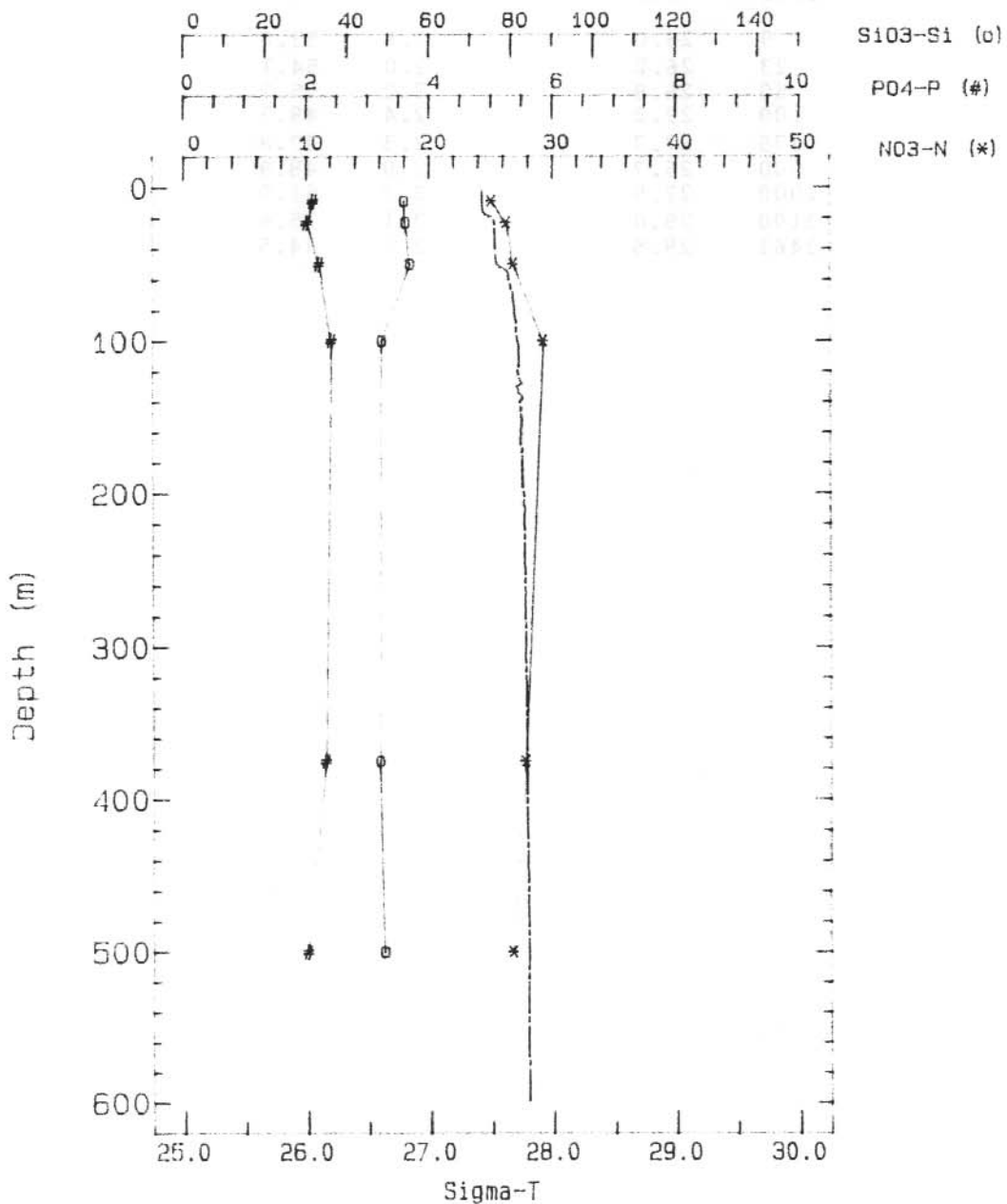


Cruise : ADBEX1  
Station number : 8  
Date : 28-NOV-1982 (DAY NUMBER 332)  
Start Time : 0208 GMT  
Ship : NELLA DAN  
Position : 65:24.30S 63:25.10E  
Cast Depth (m) : 3200  
Bottom Depth (m) : 3466

Depth	NO3	NO2	PO4	SiO3
9	25.0		2.1	53.8
23	26.2		2.0	54.1
50	26.8		2.2	55.2
100	29.2		2.4	48.3
375	27.7		2.3	47.8
500	26.7		2.0	48.9
1000	27.5		2.2	61.0
3100	29.0		2.1	75.6
3461	29.5		2.1	44.5

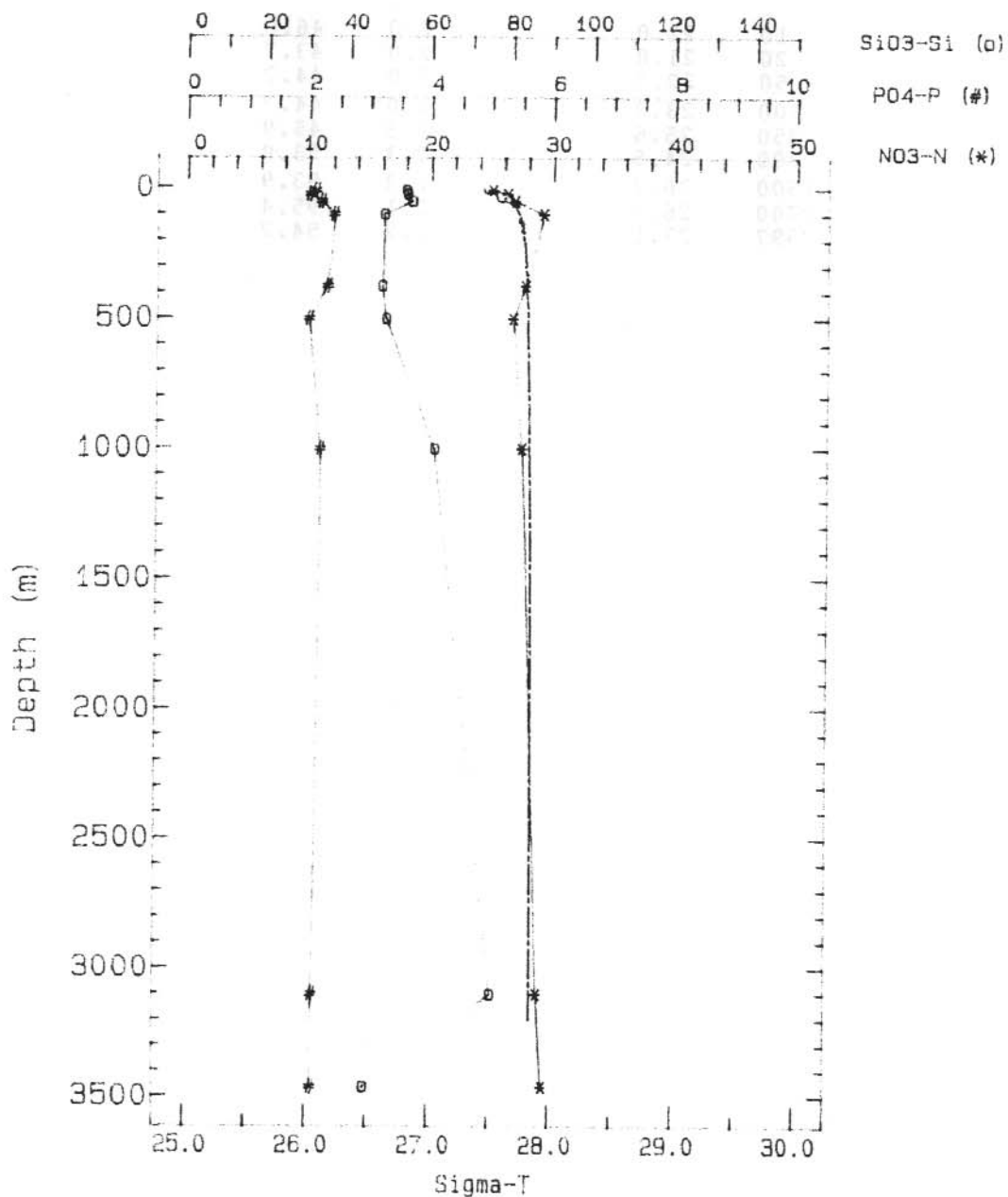
# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 8  
 28-NOV-1982 0208 GMT  
 Lat 65: 24.30S Lon 63: 25.10E  
 Depth: CTD 3200 m Bottom 3466 m



# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 6  
 28-NOV-1982 0208 GMT  
 Lat 65: 24.30S Lon 63: 25.10E  
 Depth: CTD 3200 m Bottom 3466 m



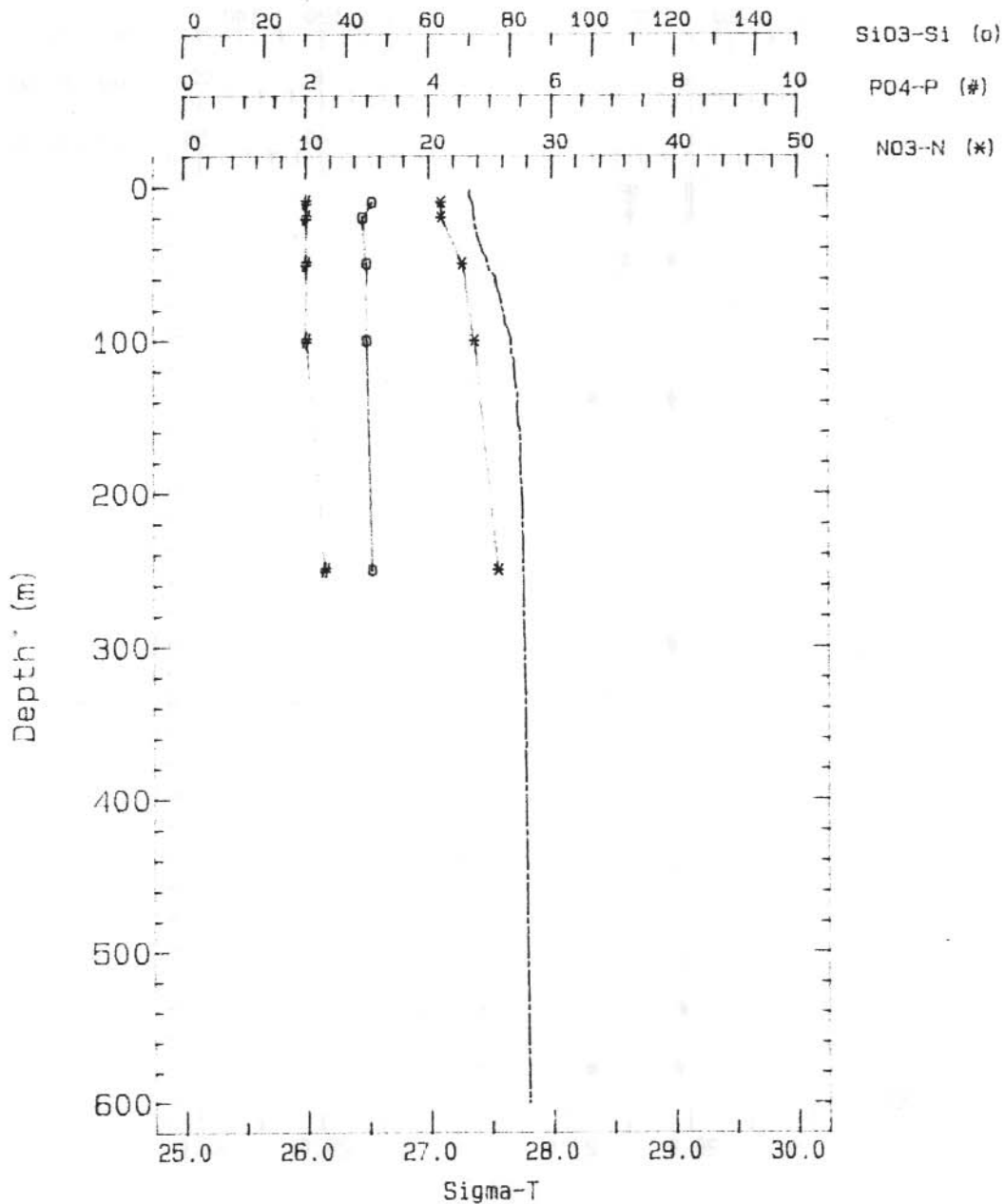
Cruise : ADBEX1  
 Station number : 9  
 Date : 28-NOV-1982 (DAY NUMBER 332)  
 Start Time : 1313 GMT  
 Ship : NELLA DAN  
 Position : 66:03.10S 63:50.80E  
 Cast Depth (m) : 2898  
 Bottom Depth (m) : 2902

Depth	NO3	NO2	PO4	SiO3
10	21.0		2.0	46.0
20	21.0		2.0	43.7
50	22.7		2.0	44.7
100	23.7		2.0	44.7
250	25.6		2.3	45.9
700	24.5		2.3	53.8
1500	26.2		2.3	93.9
2700	26.9		2.1	95.4
2897	27.1		2.2	54.2



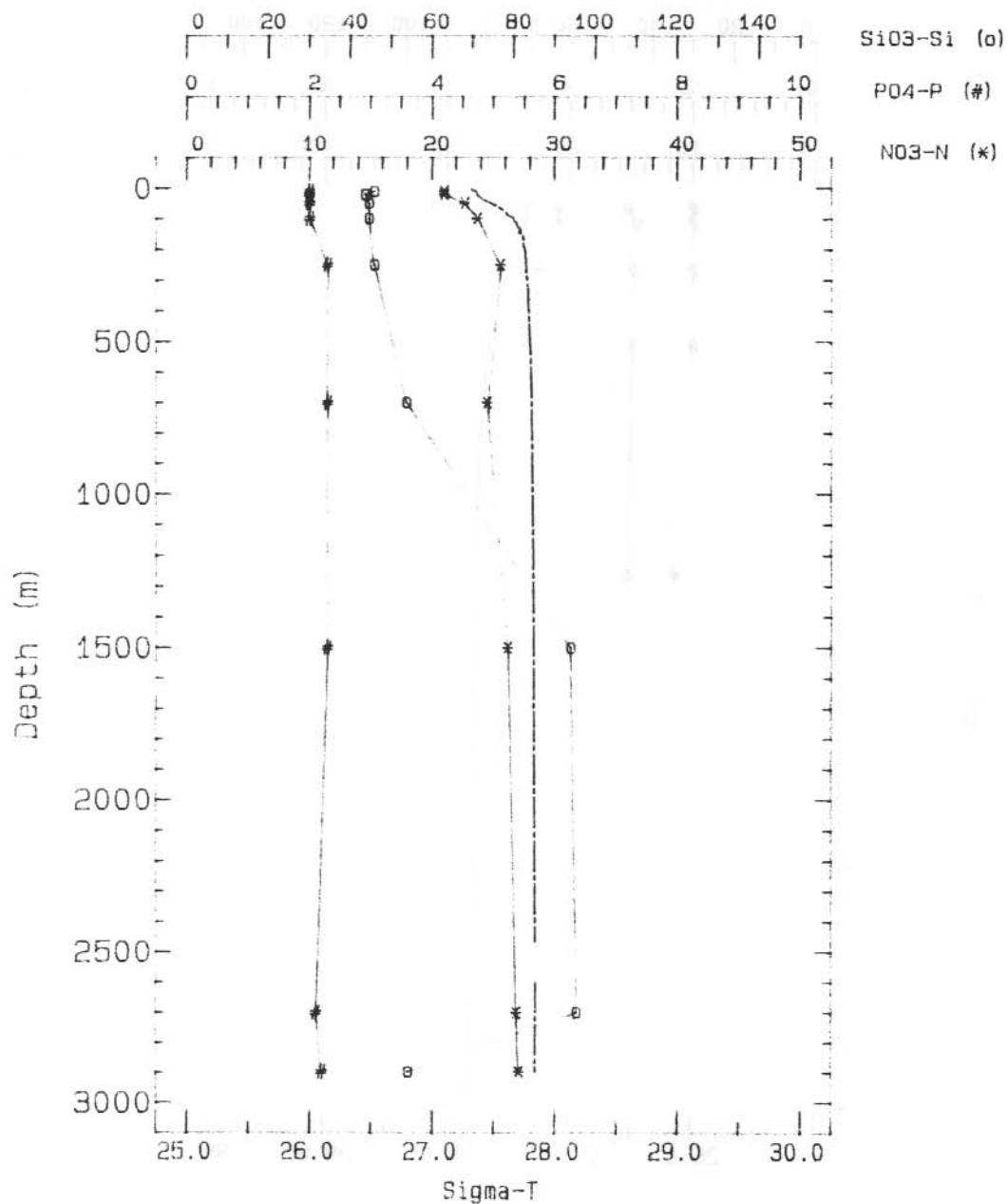
# ADBEX1 NUTRIENTS -- SIGMA-T

Cruise : ADBEX1 Station : 9  
 28-NOV-1982 1313 GMT  
 Lat 66:03.10S Lon 63:50.80E  
 Depth: CTD 2898 m Bottom 2902 m



# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 9  
 28-NOV-1982 1313 GMT  
 Lat 66: 03.10S Lon 63: 50.80E  
 Depth: CTD 2898 m Bottom 2902 m

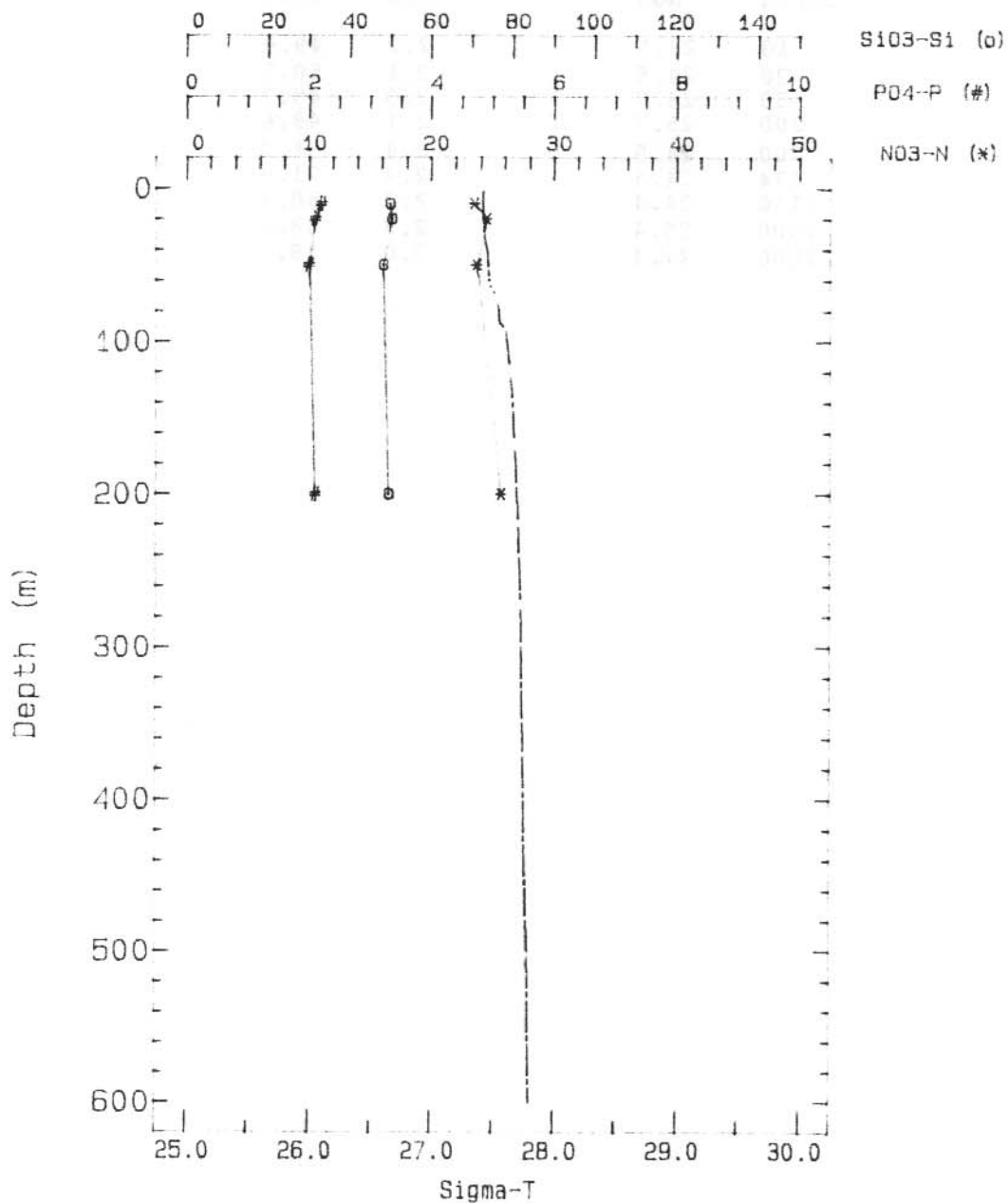


Cruise : ADBEX1  
Station number : 10  
Date : 29-NOV-1982 (DAY NUMBER 333)  
Start Time : 0101 GMT  
Ship : NELLA DAN  
Position : 66:33.70S 62:54.20E  
Cast Depth (m) : 2000  
Bottom Depth (m) : 2003

Depth	NO3	NO2	PO4	SiO3
10	23.5		2.2	49.9
20	24.5		2.1	50.3
50	23.7		2.0	48.3
200	25.7		2.1	49.6
700	24.5		2.4	51.7
874	24.5		2.4	71.9
1150	24.4		2.3	50.3
1900	25.4		2.3	48.8
2000	27.4		2.0	48.2

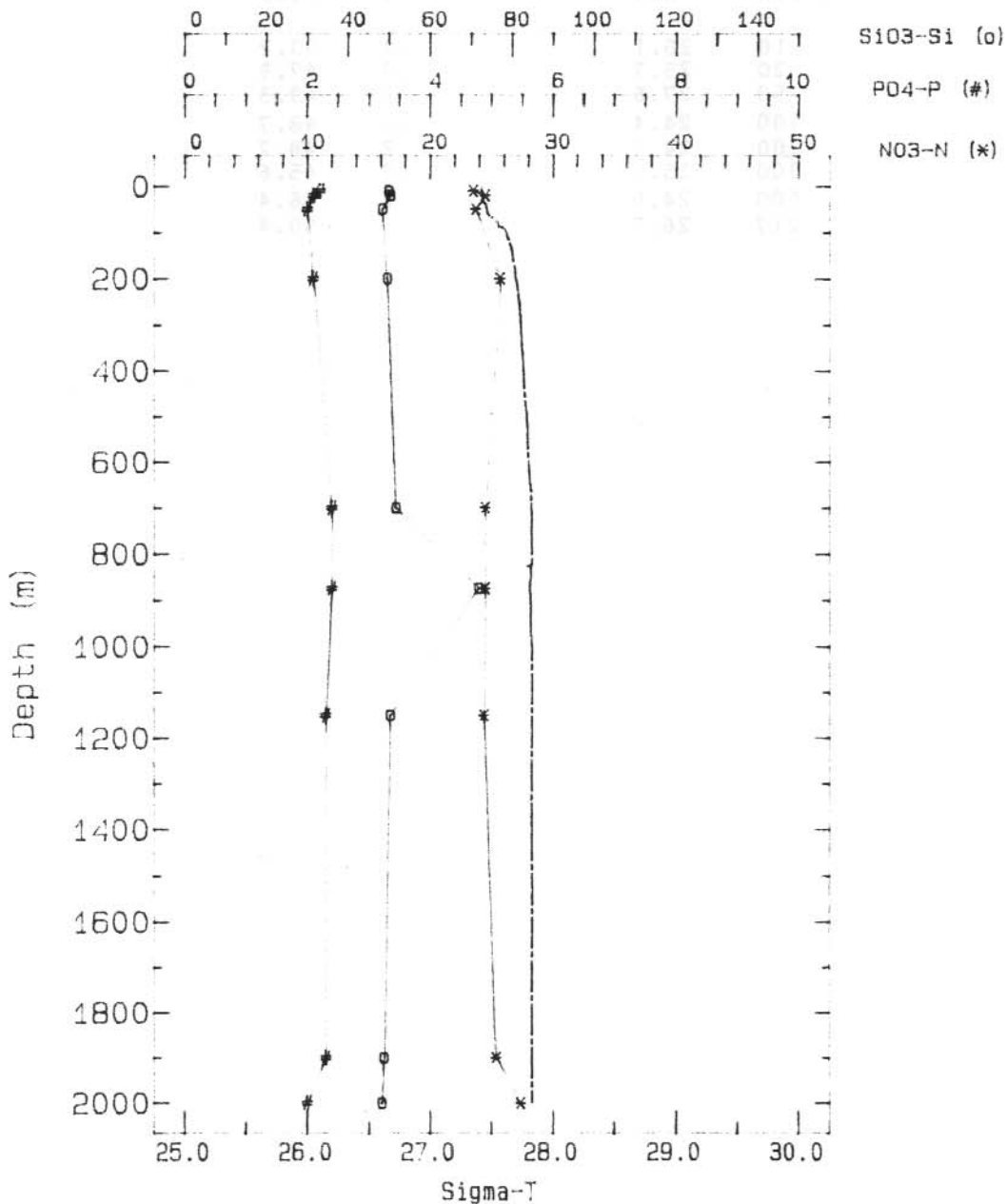
# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 10  
 29-NOV-1982 0101 GMT  
 Lat 66: 33.70S Lon 62: 54.20E  
 Depth: CTD 2000 m Bottom 2003 m



# ADBEX 1 NUTRIENTS -- SIGMA-T

Cruise : ADBEX1 Station 10  
 29-NOV-1982 0101 GMT  
 Lat 66: 33.70S Lon 62: 54.20E  
 Depth: CTD 2000 m Bottom 2003 m

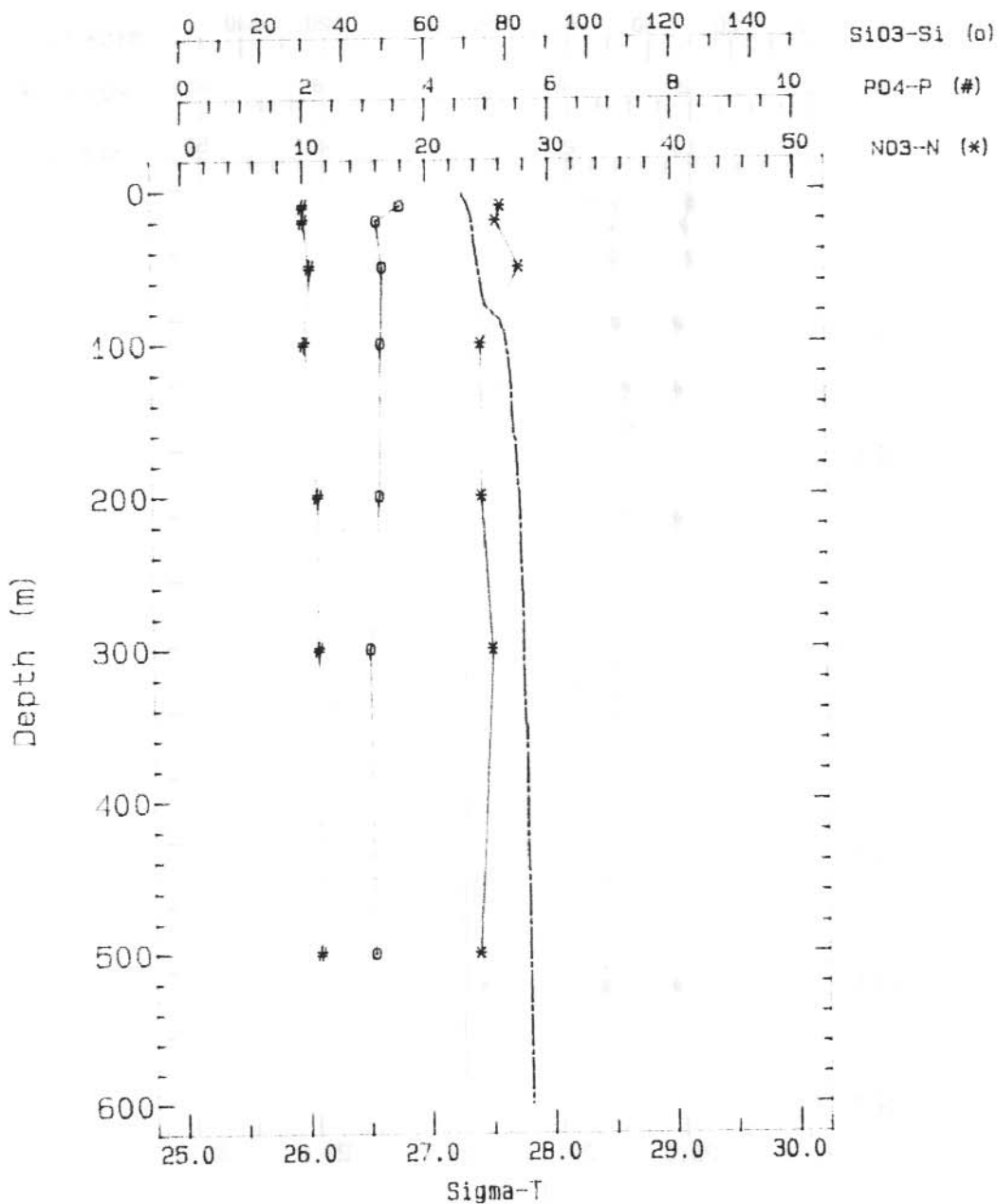


Cruise : ADBEX1  
Station number : 11  
Date : 29-NOV-1982 (DAY NUMBER 333)  
Start Time : 0840 GMT  
Ship : NELLA DAN  
Position : 66:38.50S 62:58.10E  
Cast Depth (m) : 1446  
Bottom Depth (m) : 1448

Depth	NO3	NO2	PO4	SiO3
10	26.1		2.0	53.7
20	25.7		2.0	47.9
50	27.6		2.1	49.3
100	24.4		2.0	48.7
200	24.4		2.2	48.2
300	25.2		2.2	45.6
500	24.0		2.2	46.4
1217	26.7		2.2	50.4

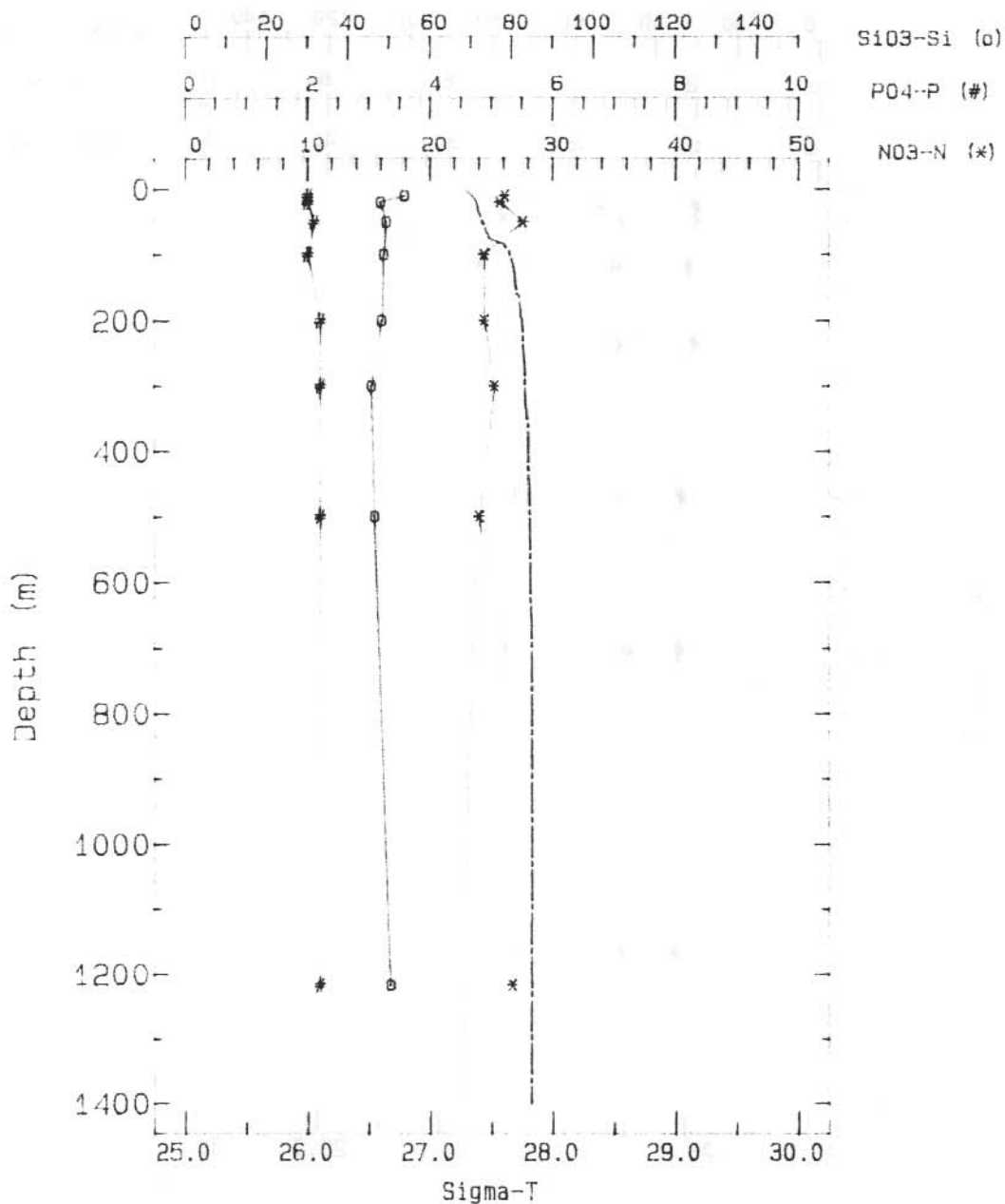
# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 11  
 29-NOV-1982 0840 GMT  
 Lat 66:38.50S Lon 62:58.10E  
 Depth: CTD 1446 m Bottom 1448 m



# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 11  
 29-NOV-1982 0840 GMT  
 Lat 66:38.50S Lon 62:58.10E  
 Depth: CTD 1446 m Bottom 1448 m



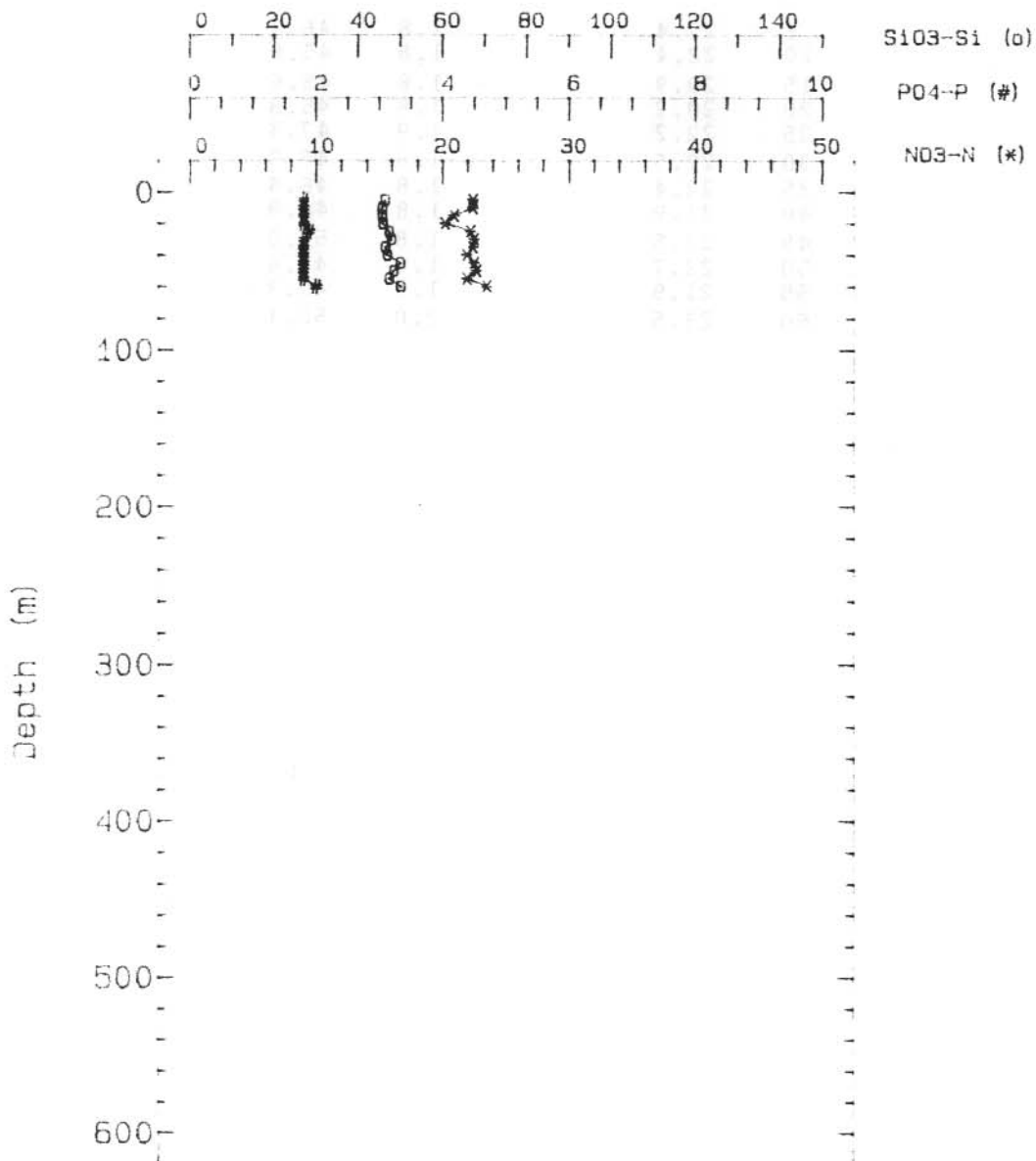


Cruise : ADBEX1  
Station number : 14  
Date : 03-DEC-1982 (DAY NUMBER 337)  
Start Time : 1142 GMT  
Ship : NELLA DAN  
Position : 67:18.90S 65:35.50E  
Cast Depth (m) : 116  
Bottom Depth (m) : 118

Depth	NO3	NO2	PO4	SiO3
5	22.4		1.8	46.3
10	22.4		1.8	45.6
15	20.9		1.8	45.6
20	20.2		1.8	45.8
25	22.2		1.9	47.3
30	22.5		1.8	47.9
35	22.4		1.8	46.4
40	21.9		1.8	46.9
45	22.5		1.8	50.0
50	22.7		1.8	48.4
55	21.9		1.8	47.3
60	23.5		2.0	50.1

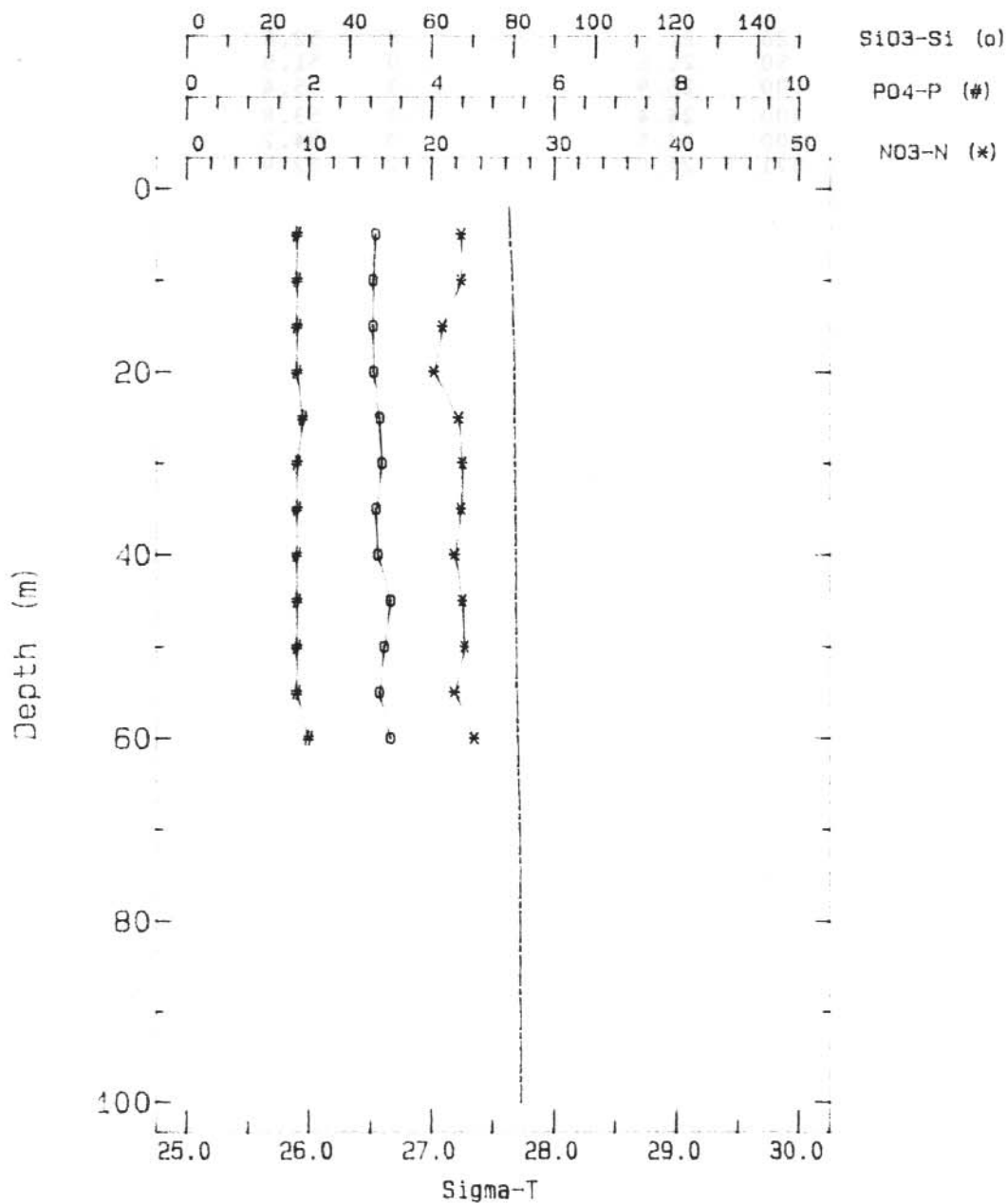
# ADBEX1 NUTRIENTS -- SIGMA-T

Cruise : ADBEX1 Station 14  
 03-DEC-1982 1142 GMT  
 Lat 67: 18.90S Lon 65: 35.50E  
 Depth: CTD 116 m Bottom 118 m



# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 14  
 03-DEC-1982 1142 GMT  
 Lat 67: 18.90S Lon 65: 35.50E  
 Depth: CTD 116 m Bottom 118 m

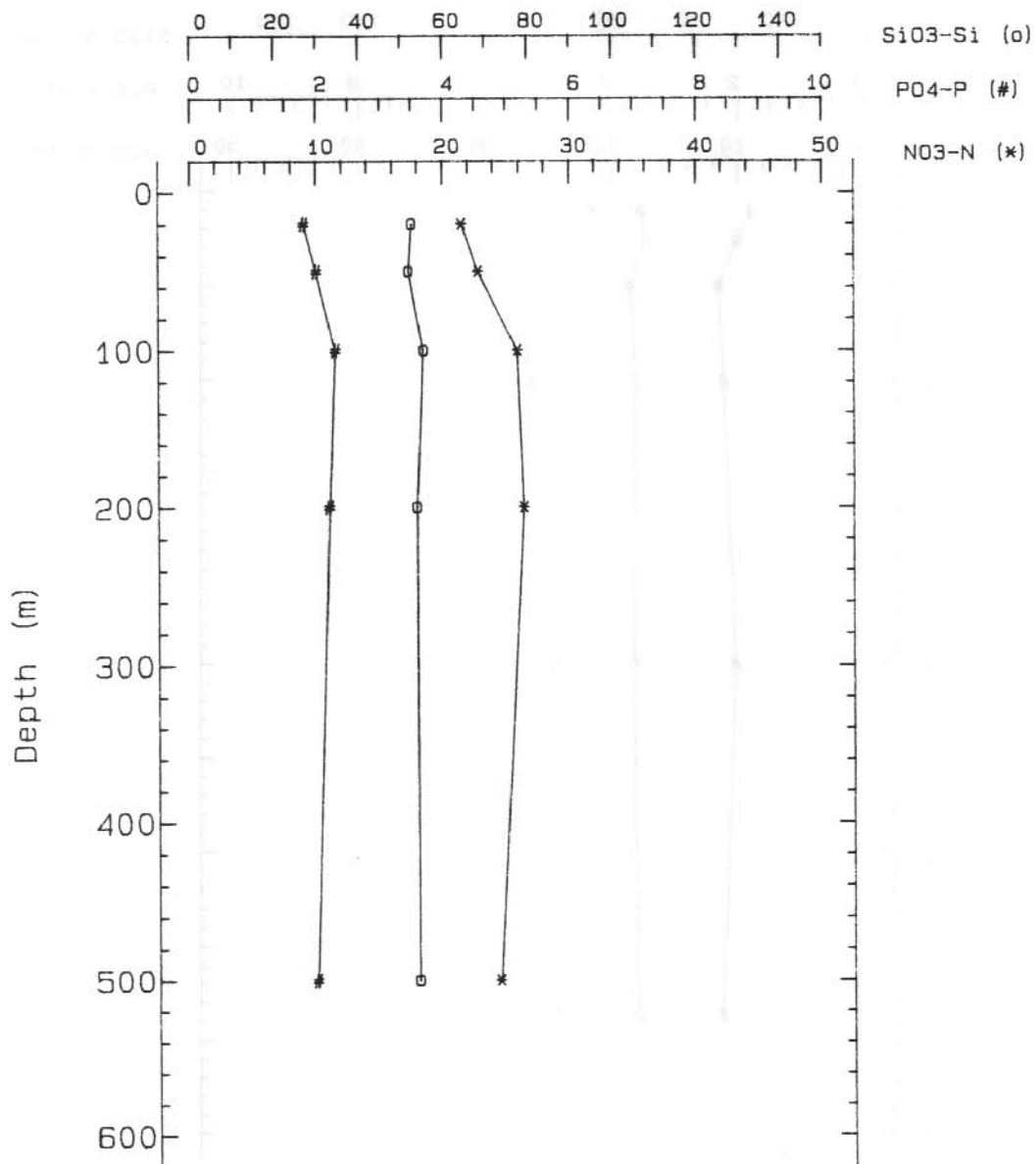


Cruise : ADBEX1  
Station number : 15  
Date : 03-DEC-1982 (DAY NUMBER 337)  
Start Time : 1444 GMT  
Ship : NELLA DAN  
Position : 67:22.30S 65:49.60E  
Cast Depth (m) : 872  
Bottom Depth (m) : 890

Depth	NO3	NO2	PO4	SiO3
20	21.5		1.8	52.6
50	22.8		2.0	51.9
100	25.9		2.3	55.4
200	26.4		2.2	53.8
500	24.5		2.0	54.2
871	24.0		2.2	52.9

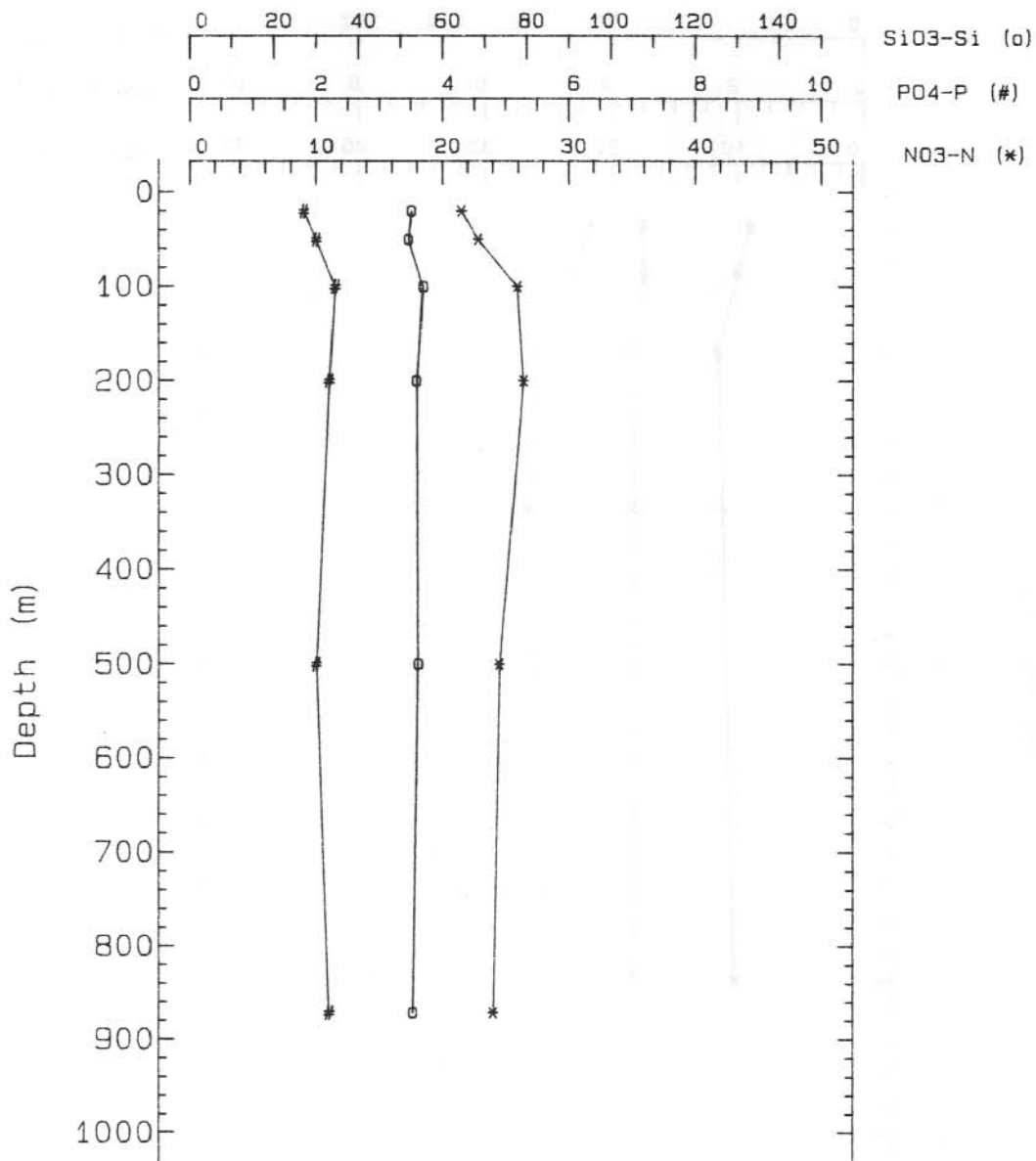
# ADBEX1 NUTRIENTS - SIGMA-T

Cruise: ADBEX1 Station: 15  
 03 DEC 1982 1444 GMT  
 Latitude : 67: 22.30S  
 Longitude: 65: 49.60E  
 Depth: CTD 872 m Bottom 890 m



# ADBEX1 NUTRIENTS - SIGMA-T

Cruise: ADBEX1 Station: 15  
 03 DEC 1982 1444 GMT  
 Latitude : 67: 22.30S  
 Longitude: 65: 49.60E  
 Depth: CTD 872 m Bottom 890 m



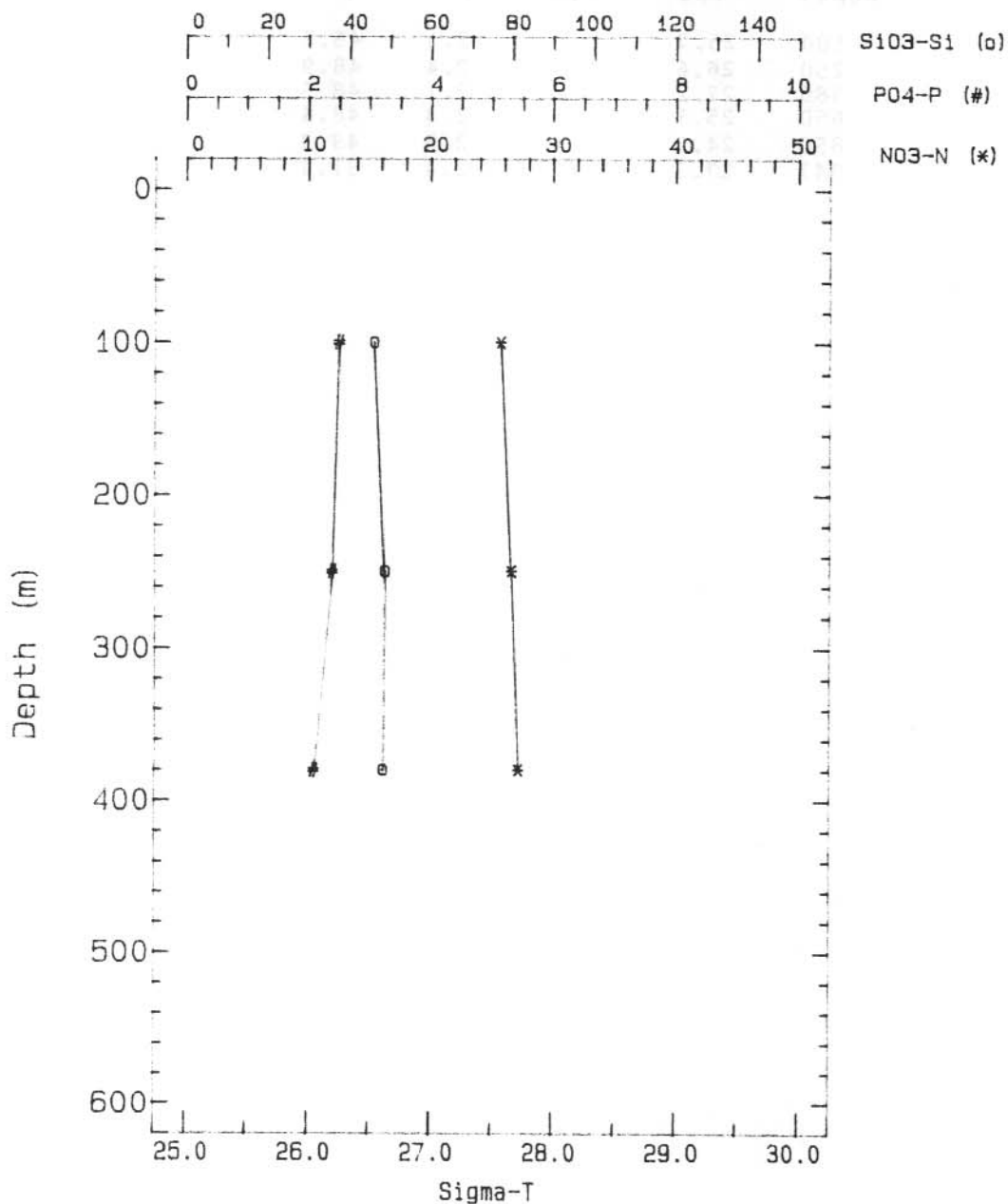
Cruise : ADBEX1  
 Station number : 17  
 Date : 05-DEC-1982 (DAY NUMBER 339)  
 Start Time : 1243 GMT  
 Ship : NELLA DAN  
 Position : 66:39.40S 72:58.50E  
 Cast Depth (m) : 954  
 Bottom Depth (m) : 957

Depth	NO3	NO2	PO4	SiO3
100	25.7		2.5	46.2
250	26.6		2.4	48.9
380	27.2		2.1	48.5
650	25.1		2.3	48.4
850	24.5		2.5	49.3
947	27.2		2.4	61.4



# ADBEX1 NUTRIENTS

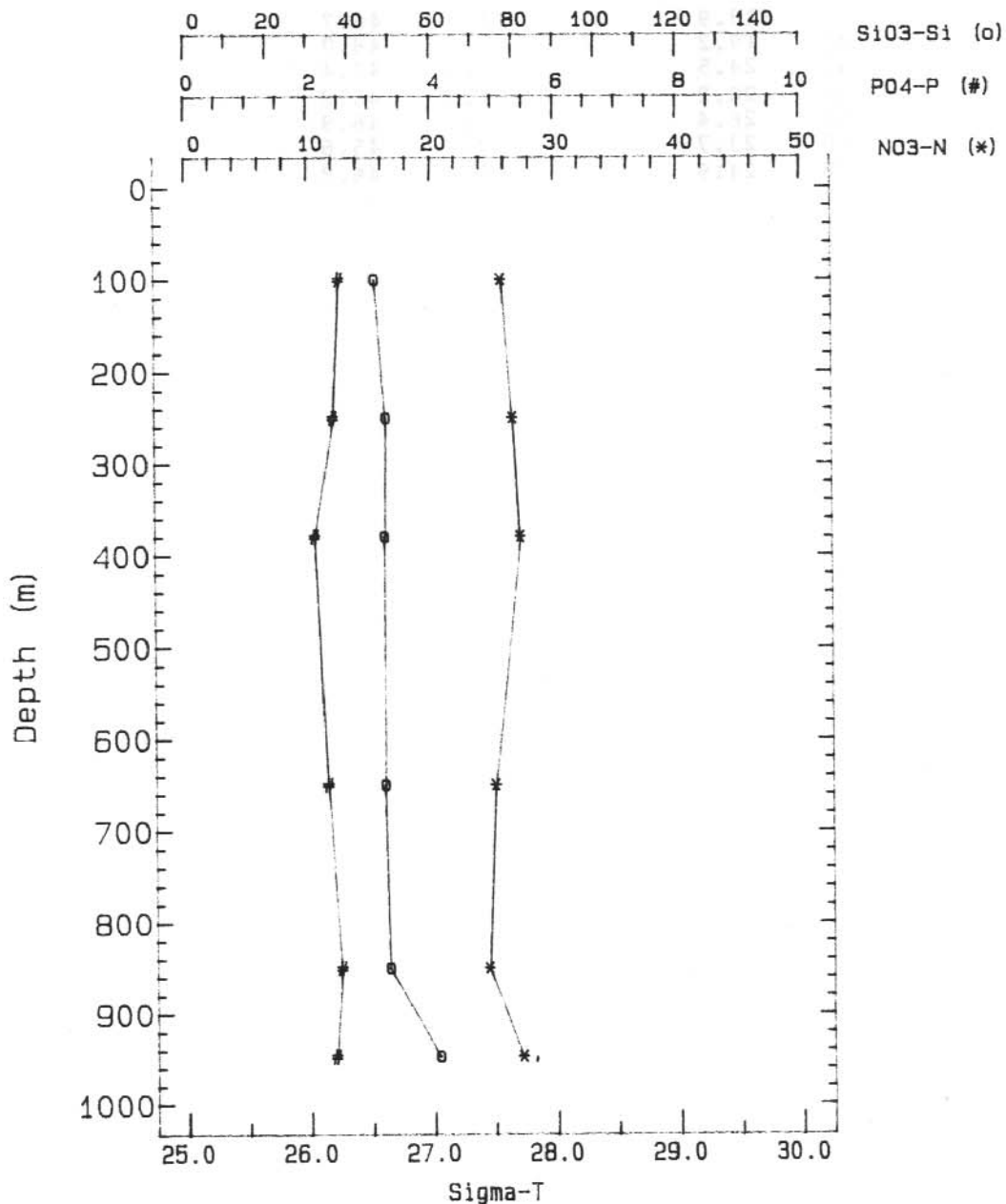
Cruise : ADBEX1 Station 17  
 05-DEC-1982 1243 GMT  
 Lat 66: 39.40S Lon 72: 58.50E  
 Depth: CTD 954 m Bottom 957 m





# ADBEX1 NUTRIENTS

Cruise : ADBEX1 Station 17  
 05-DEC-1982 1243 GMT  
 Lat 66: 39.40S Lon 72: 58.50E  
 Depth: CTD 954 m Bottom 957 m

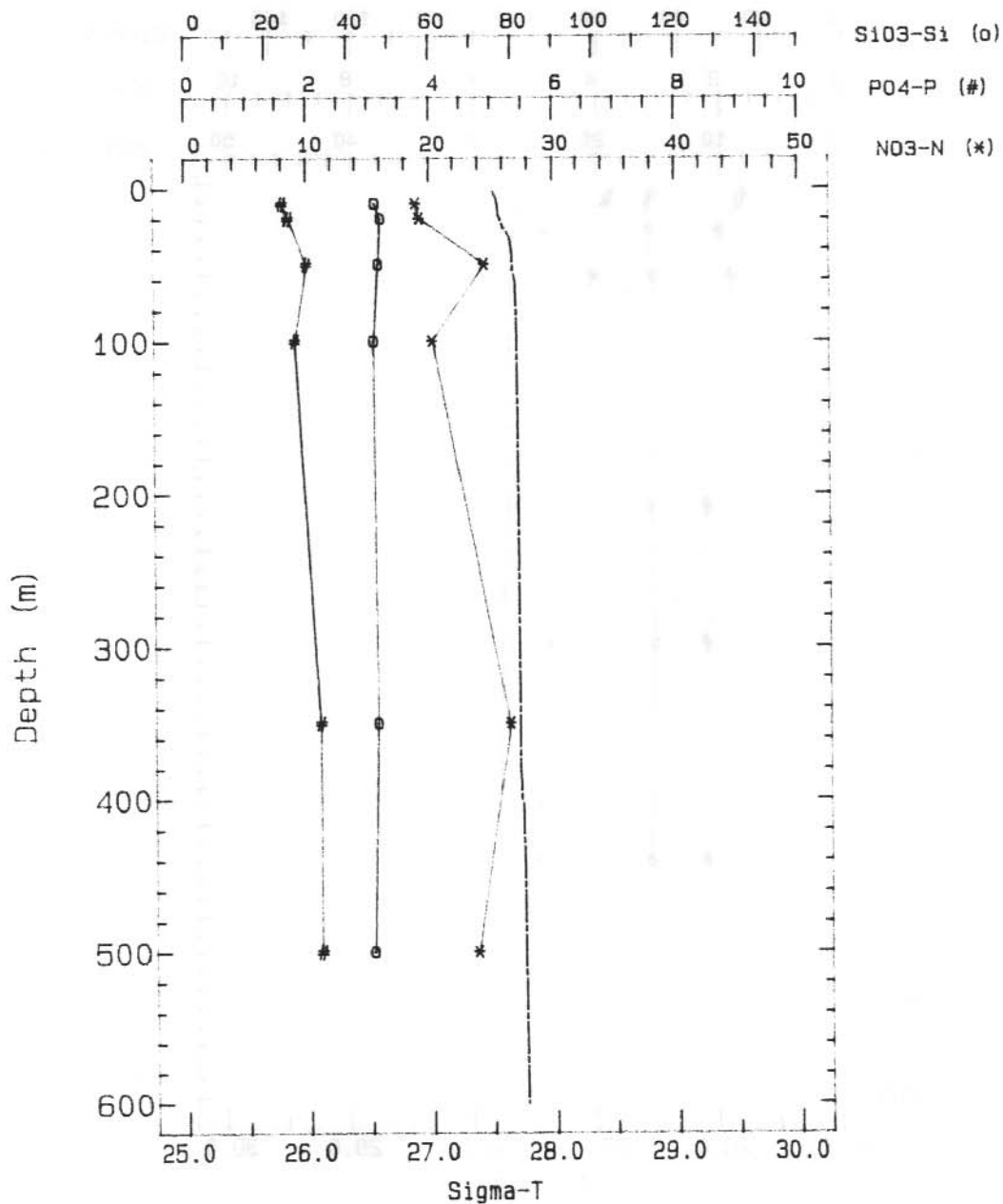


Cruise : ADBEX1  
Station number : 19  
Date : 08-DEC-1982 (DAY NUMBER 342)  
Start Time : 1550 GMT  
Ship : NELLA DAN  
Position : 68:43.50S 71:06.00E  
Cast Depth (m) : 740  
Bottom Depth (m) : 748

Depth	NO3	NO2	PO4	SiO3
10	18.9		1.6	46.7
20	19.2		1.7	48.0
50	24.5		2.0	47.4
100	20.2		1.8	46.2
350	26.4		2.2	46.9
500	23.7		2.2	45.6
738	24.9		2.2	46.8

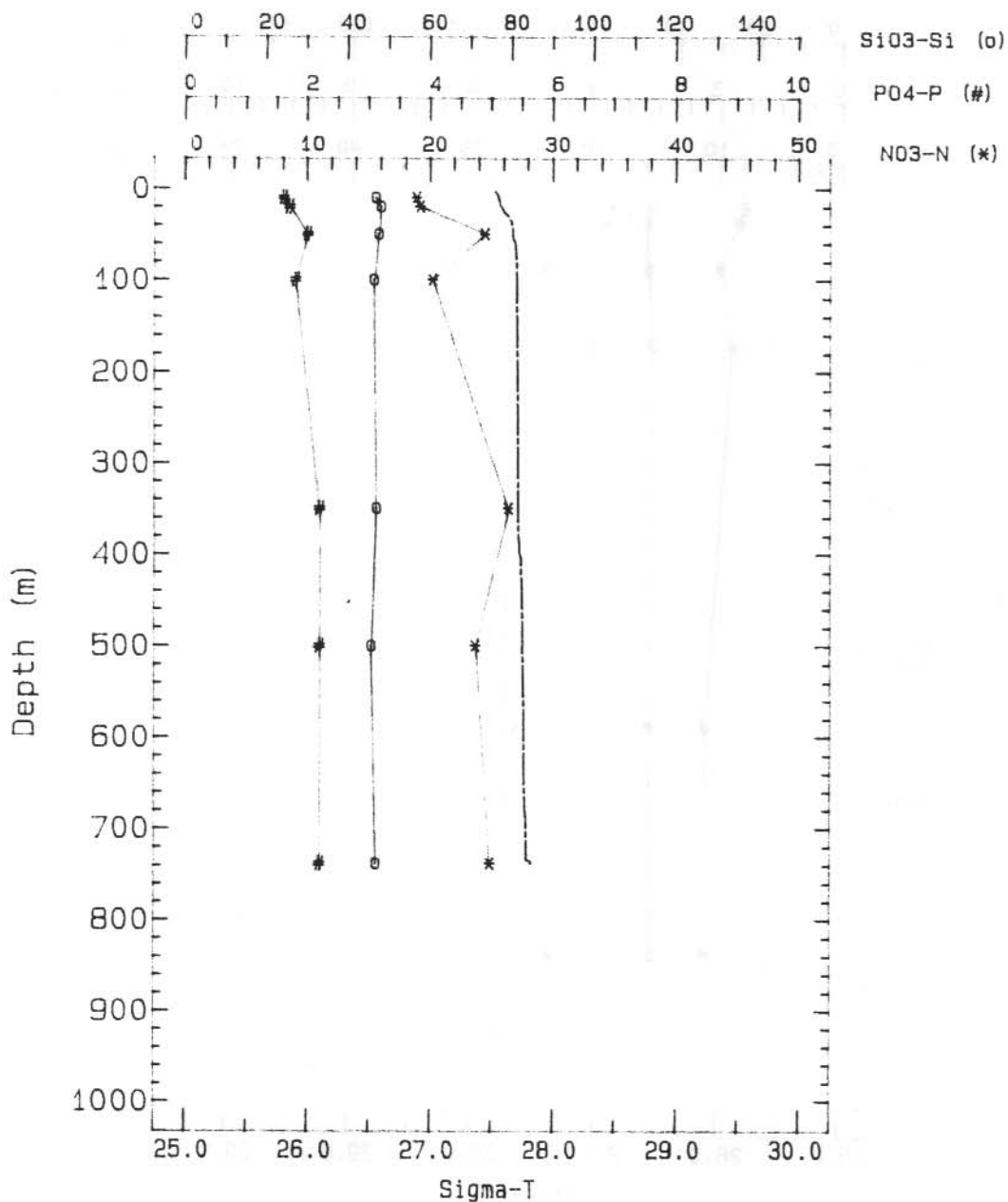
# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 19  
 08-DEC-1982 1550 GMT  
 Lat 68: 43.50S Lon 71: 06.00E  
 Depth: CTD 740 m Bottom 748 m



ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 19  
 08-DEC-1982 1550 GMT  
 Lat 68:43.50S Lon 71:06.00E  
 Depth: CTD 740 m Bottom 748 m

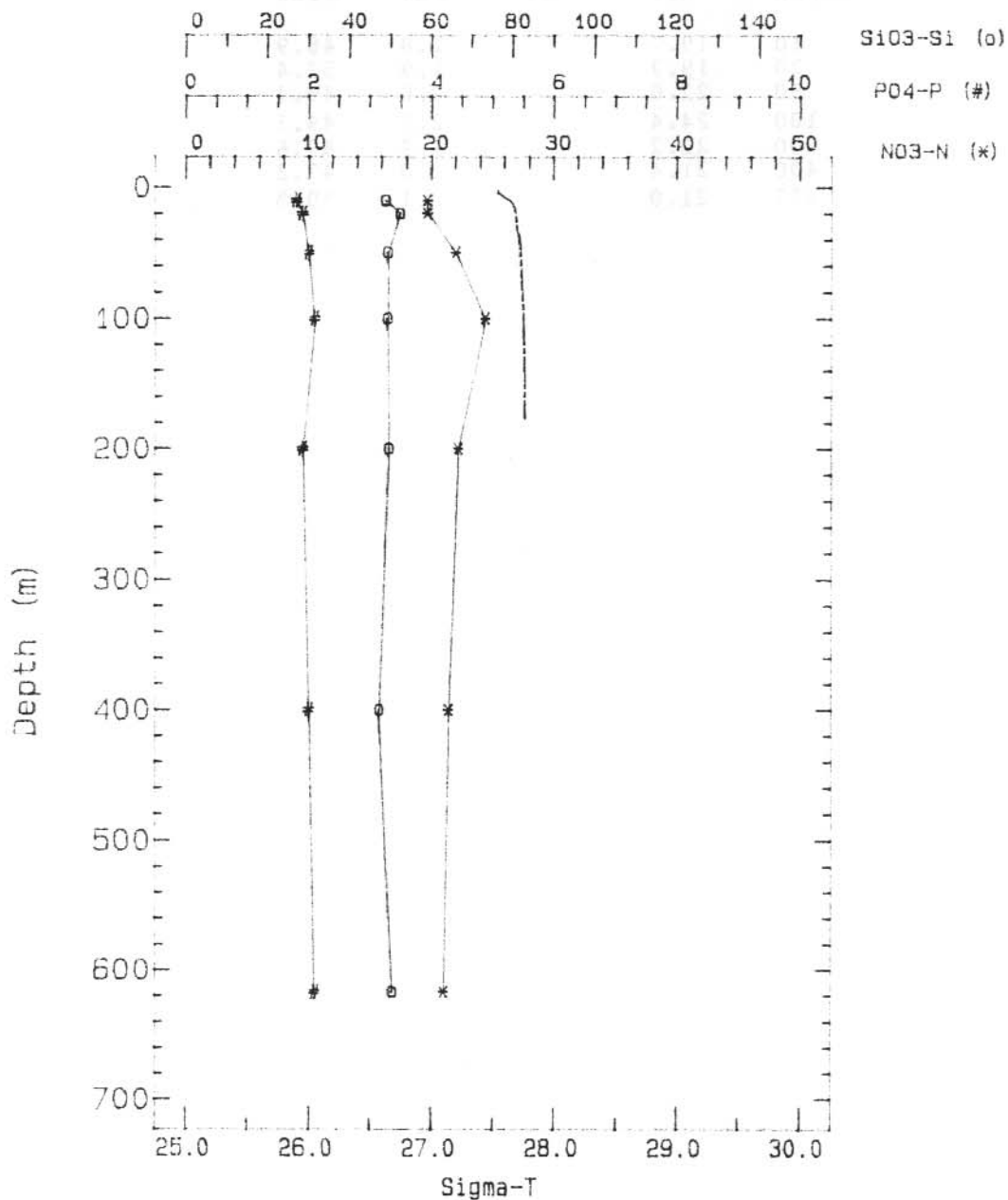


Cruise : ADBEX1  
Station number : 22  
Date : 09-DEC-1982 (DAY NUMBER 343)  
Start Time : 0449 GMT  
Ship : NELLA DAN  
Position : 68:25.00S 71:37.20E  
Cast Depth (m) : 178  
Bottom Depth (m) : 627

Depth	NO3	NO2	PO4	SiO3
10	19.7		1.8	48.9
20	19.7		1.9	52.4
50	22.0		2.0	49.4
100	24.4		2.1	49.3
200	22.2		1.9	49.6
400	21.4		2.0	47.3
617	21.0		2.1	50.5

# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 22  
 09-DEC-1982 0449 GMT  
 Lat 68: 25.00S Lon 71: 37.20E  
 Depth: CTD 178 m Bottom 627 m

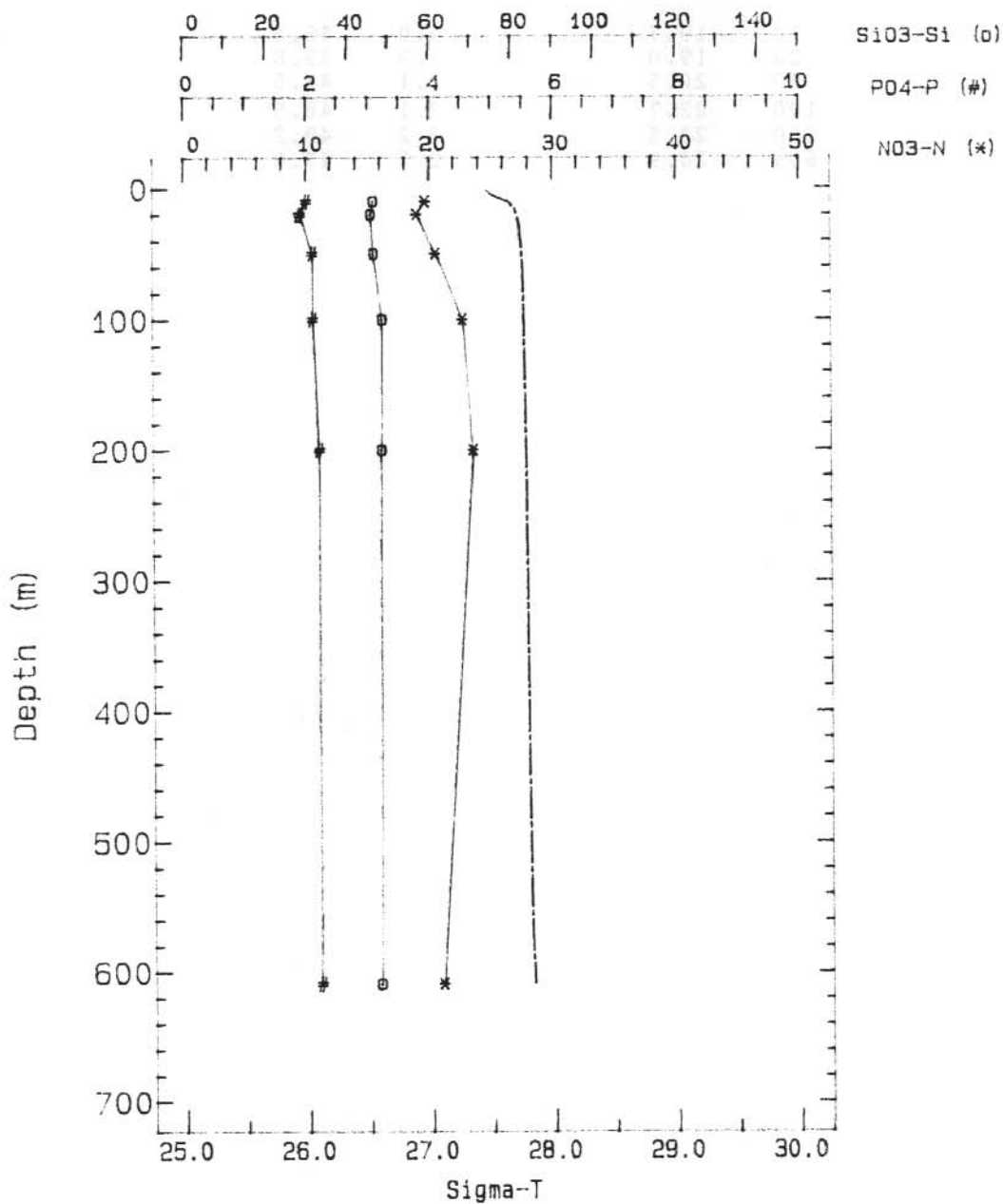


Cruise : ADBEX1  
Station number : 24  
Date : 09-DEC-1982 (DAY NUMBER 343)  
Start Time : 1520 GMT  
Ship : NELLA DAN  
Position : 68:07.20S 72:00.20E  
Cast Depth (m) : 610  
Bottom Depth (m) : 618

Depth	NO3	NO2	PO4	SiO3
10	19.7		2.0	46.4
20	19.0		1.9	45.8
50	20.5		2.1	46.5
100	22.7		2.1	48.5
200	23.5		2.2	48.2
609	20.9		2.2	47.6

# ADBEX1 NUTRIENTS -- SIGMA-T

Cruise : ADBEX1 Station 24  
 09-DEC-1982 1520 GMT  
 Lat 68:07.20S Lon 72:00.20E  
 Depth: CTD 610 m Bottom 618 m



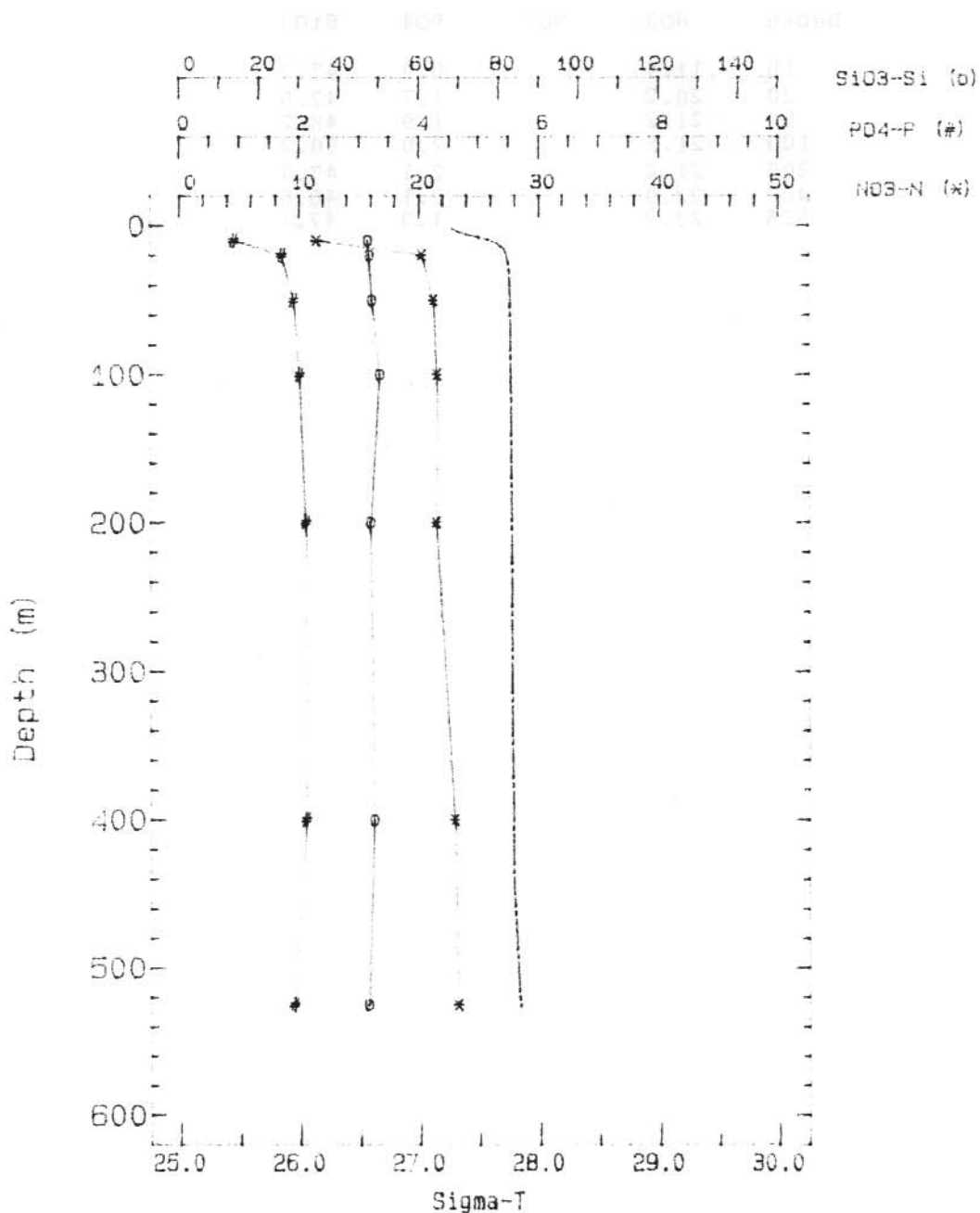


Cruise : ADBEX1  
Station number : 27  
Date : 10-DEC-1982 (DAY NUMBER 344)  
Start Time : 0438 GMT  
Ship : NELLA DAN  
Position : 67:15.20S 73:07.40E  
Cast Depth (m) : 528  
Bottom Depth (m) : 539

Depth	NO3	NO2	PO4	SiO3
10	11.4		0.9	47.2
20	20.2		1.7	47.5
50	21.2		1.9	48.2
100	21.5		2.0	50.2
200	21.4		2.1	47.7
400	22.9		2.1	48.6
525	23.2		1.9	47.1

# ADBEX1 NUTRIENTS -- SIGMA-T

Cruise : ADBEX1 Station 27  
 10-DEC-1982 0438 GMT  
 Lat 67: 15.20S Lon 73: 07.40E  
 Depth: CTD 528 m Bottom 539 m

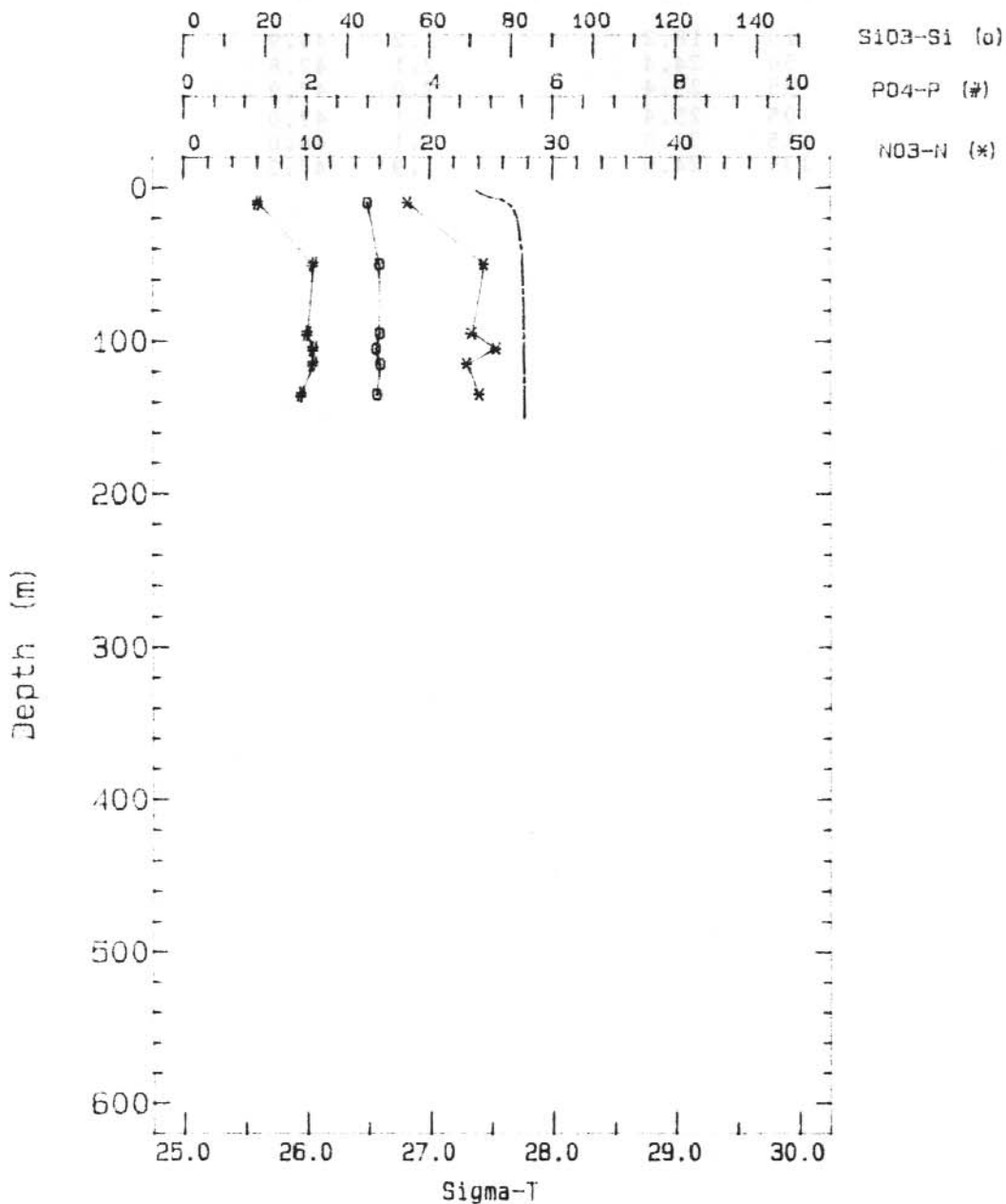


Cruise : ADBEX1  
Station number : 29  
Date : 10-DEC-1982 (DAY NUMBER 344)  
Start Time : 0945 GMT  
Ship : NELLA DAN  
Position : 67:10.00S 72:33.00E  
Cast Depth (m) : 154  
Bottom Depth (m) : 470

Depth	NO3	NO2	PO4	SiO3
10	18.2		1.2	44.9
50	24.4		2.1	47.8
95	23.4		2.0	47.9
105	25.4		2.1	47.0
115	23.0		2.1	48.0
135	24.0		1.9	47.2

# ADBEX1 NUTRIENTS -- SIGMA-T

Cruise : ADBEX1 Station 29  
 10-DEC-1982 0945 GMT  
 Lat 67: 10.00S Lon 72: 33.00E  
 Depth: CTD 154 m Bottom 470 m

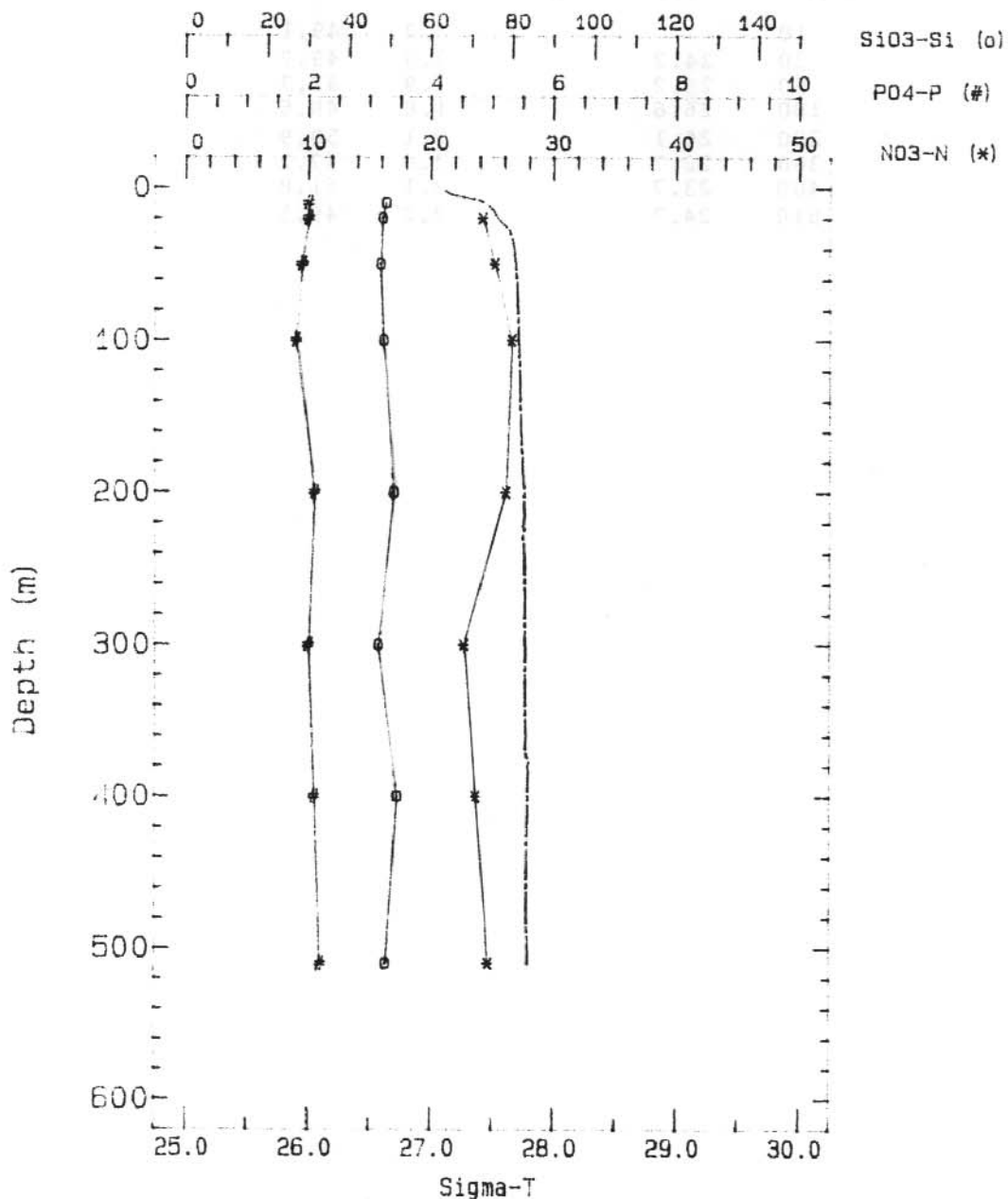


Cruise : ADBEX1  
Station number : 30  
Date : 10-DEC-1982 (DAY NUMBER 344)  
Start Time : 1457 GMT  
Ship : NELLA DAN  
Position : 66:54.10S 72:56.30E  
Cast Depth (m) : 512  
Bottom Depth (m) : Not Recorded

Depth	NO3	NO2	PO4	SiO3
10			2.0	49.1
20	24.2		2.0	48.2
50	25.2		1.9	47.7
100	26.6		1.8	48.5
200	26.1		2.1	50.9
300	22.7		2.0	47.2
400	23.7		2.1	51.8
510	24.7		2.2	49.1

# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 30  
 10-DEC-1982 1457 GMT  
 Lat 66: 54.10S Lon 72: 56.30E  
 Depth: CTD 512 m Bottom 0 m

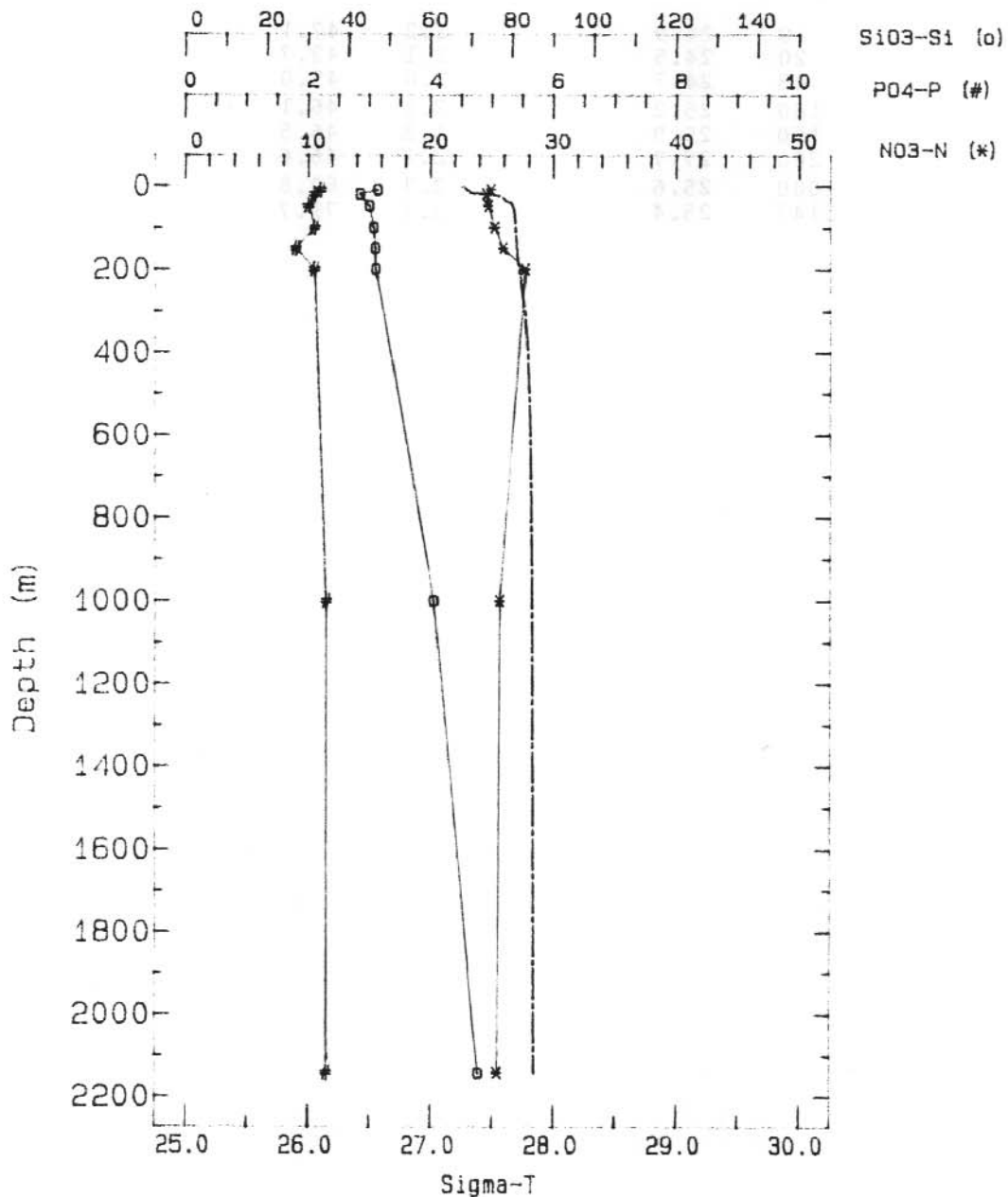


Cruise : ADBEX1  
 Station number : 33  
 Date : 11-DEC-1982 (DAY NUMBER 345)  
 Start Time : 0445 GMT  
 Ship : NELLA DAN  
 Position : 66:28.10S 73:44.00E  
 Cast Depth (m) : 2144  
 Bottom Depth (m) : Not Recorded

Depth	NO3	NO2	PO4	SiO3
10	24.9		2.2	47.1
20	24.5		2.1	42.7
48	24.7		2.0	45.0
100	25.2		2.1	46.1
150	25.9		1.8	46.5
200	27.7		2.1	46.6
1000	25.6		2.3	60.8
2142	25.4		2.3	71.7

# ADBEX1 NUTRIENTS - SIGMA-T

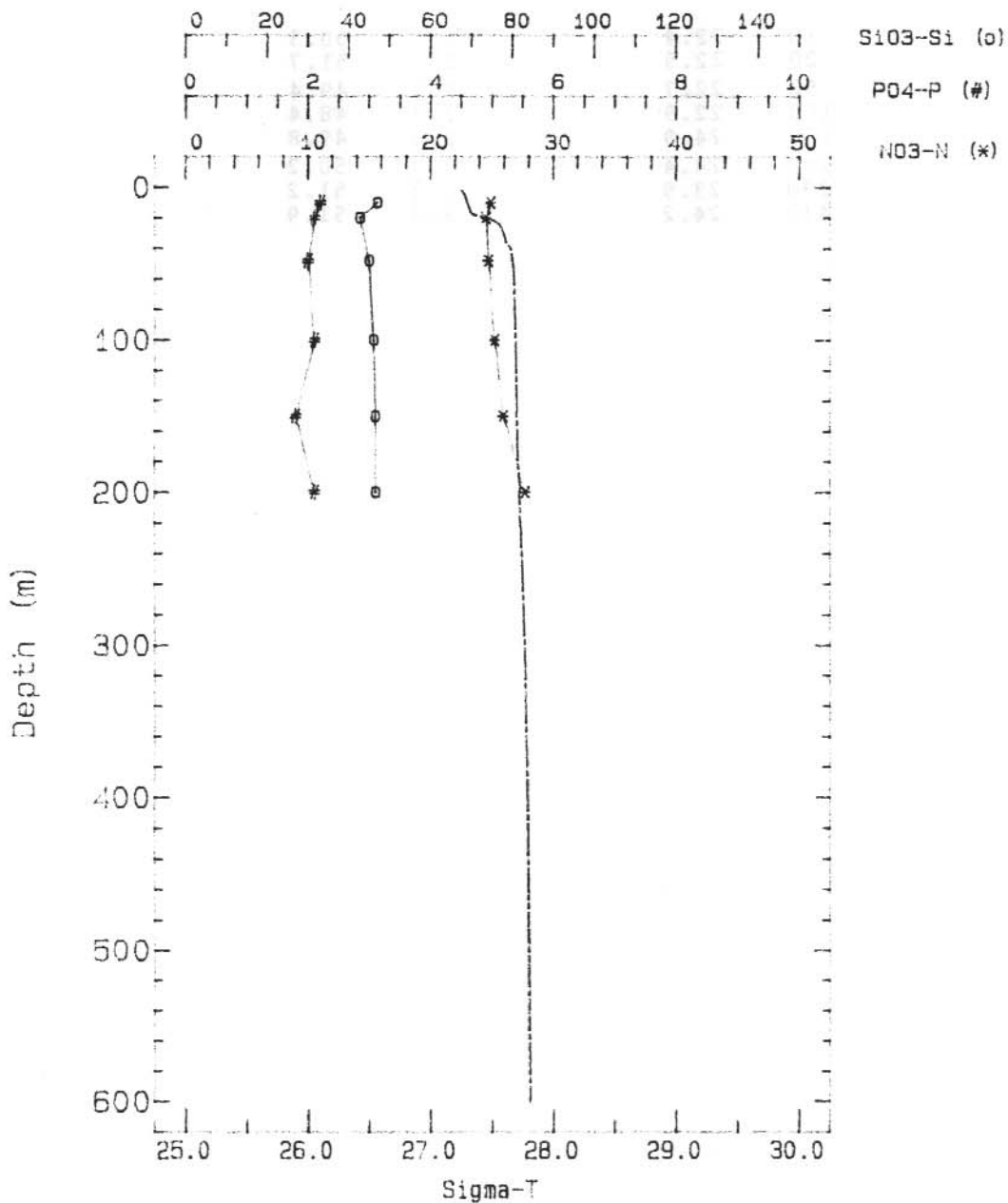
Cruise : ADBEX1 Station 33  
 11-DEC-1982 0445 GMT  
 Lat 66: 28.10S Lon 73: 44.00E  
 Depth: CTD 2144 m Bottom 0 m





# ADBEX1 NURIENTS - SIGMA-T

Cruise : ADBEX1 Station 33  
 11-DEC-1982 0445 GMT  
 Lat 66: 28.10S Lon 73: 44.00E  
 Depth: CTD 2144 m Bottom 0 m

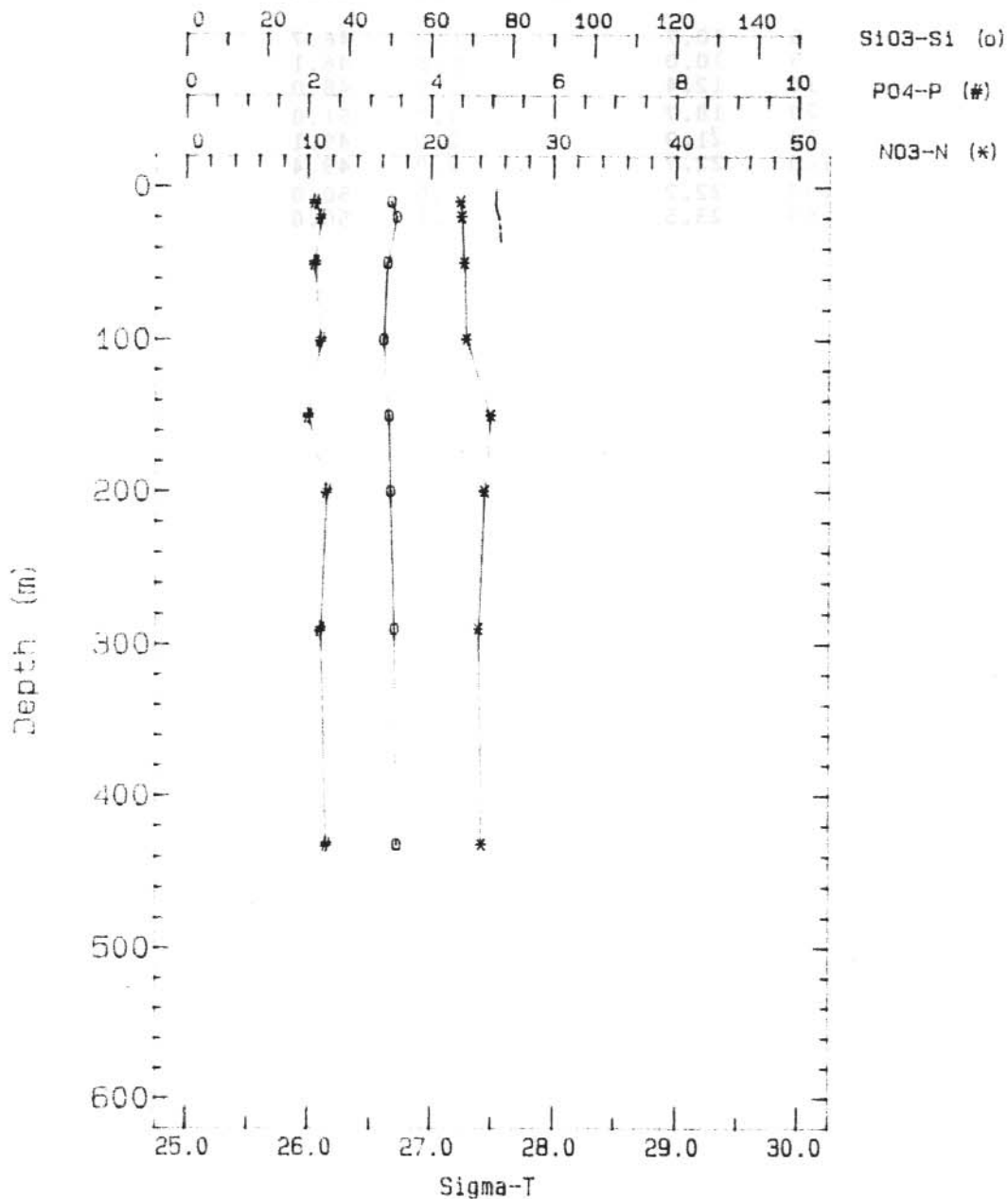


Cruise : ADBEX1  
Station number : 35  
Date : 11-DEC-1982 (DAY NUMBER 345)  
Start Time : 1519 GMT  
Ship : NELLA DAN  
Position : 66:57.50S 74:10.40E  
Cast Depth (m) : 438  
Bottom Depth (m) : 438

Depth	NO3	NO2	PO4	SiO3
10	22.4		2.1	50.3
20	22.5		2.2	51.7
50	22.7		2.1	49.4
100	22.9		2.2	48.4
150	24.9		2.0	49.8
200	24.4		2.3	50.2
290	23.9		2.2	51.2
432	24.2		2.3	51.9

# ADBEX1 NUTRIENTS -- SIGMA-T

Cruise : ADBEX1 Station 35  
 11-DEC-1982 1519 GMT  
 Lat 66: 57.50S Lon 74: 10.40E  
 Depth: CTD 38 m Bottom 438 m

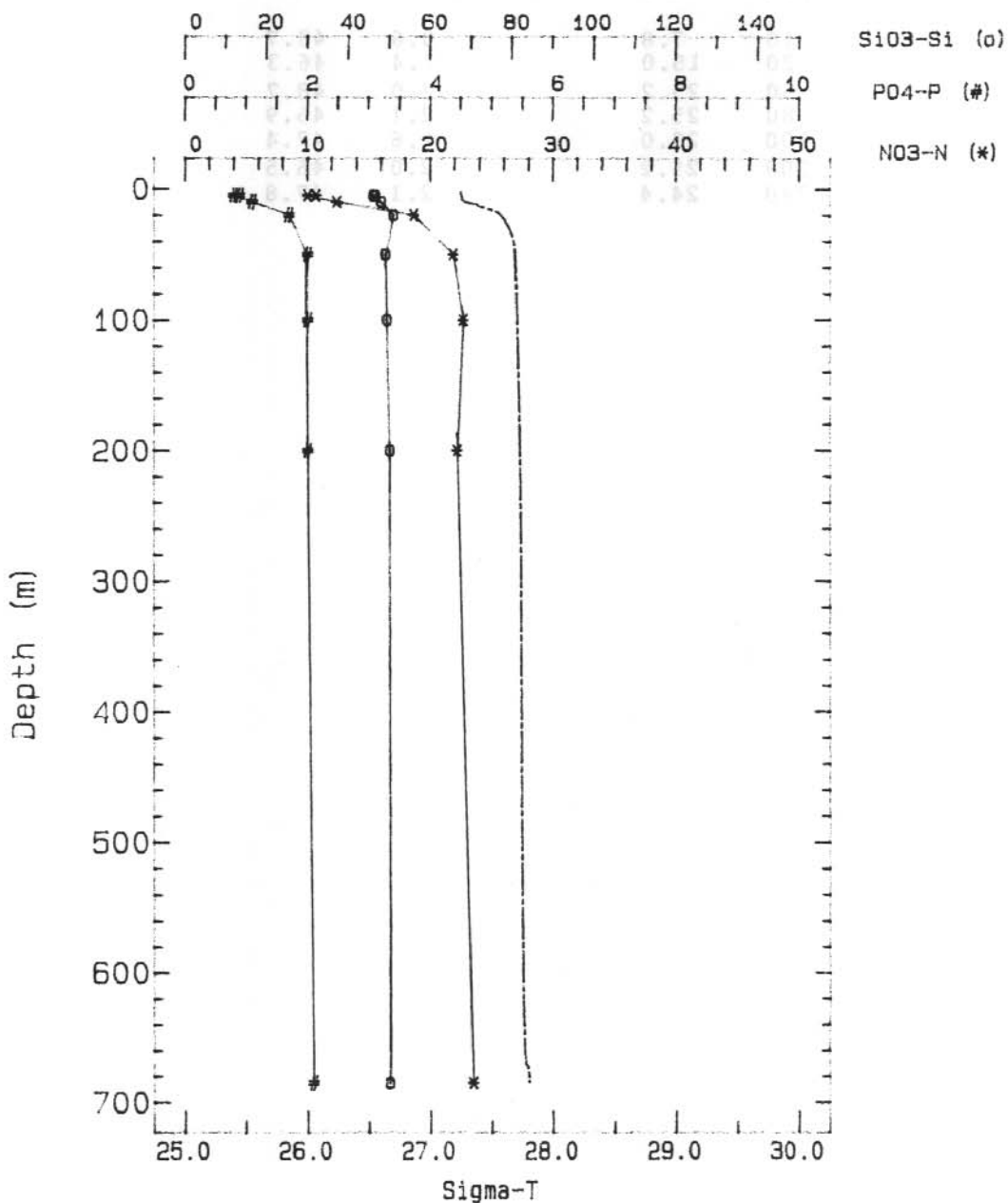


Cruise : ADBEX1  
Station number : 38  
Date : 12-DEC-1982 (DAY NUMBER 346)  
Start Time : 0412 GMT  
Ship : NELLA DAN  
Position : 69:02.00S 74:05.20E  
Cast Depth (m) : 686  
Bottom Depth (m) : 692

Depth	NO3	NO2	PO4	SiO3
5	10.7		0.9	46.7
5	10.0		0.8	46.1
10	12.4		1.1	48.0
20	18.7		1.7	51.0
50	21.9		2.0	49.1
100	22.7		2.0	49.4
200	22.2		2.0	50.0
685	23.5		2.1	50.0

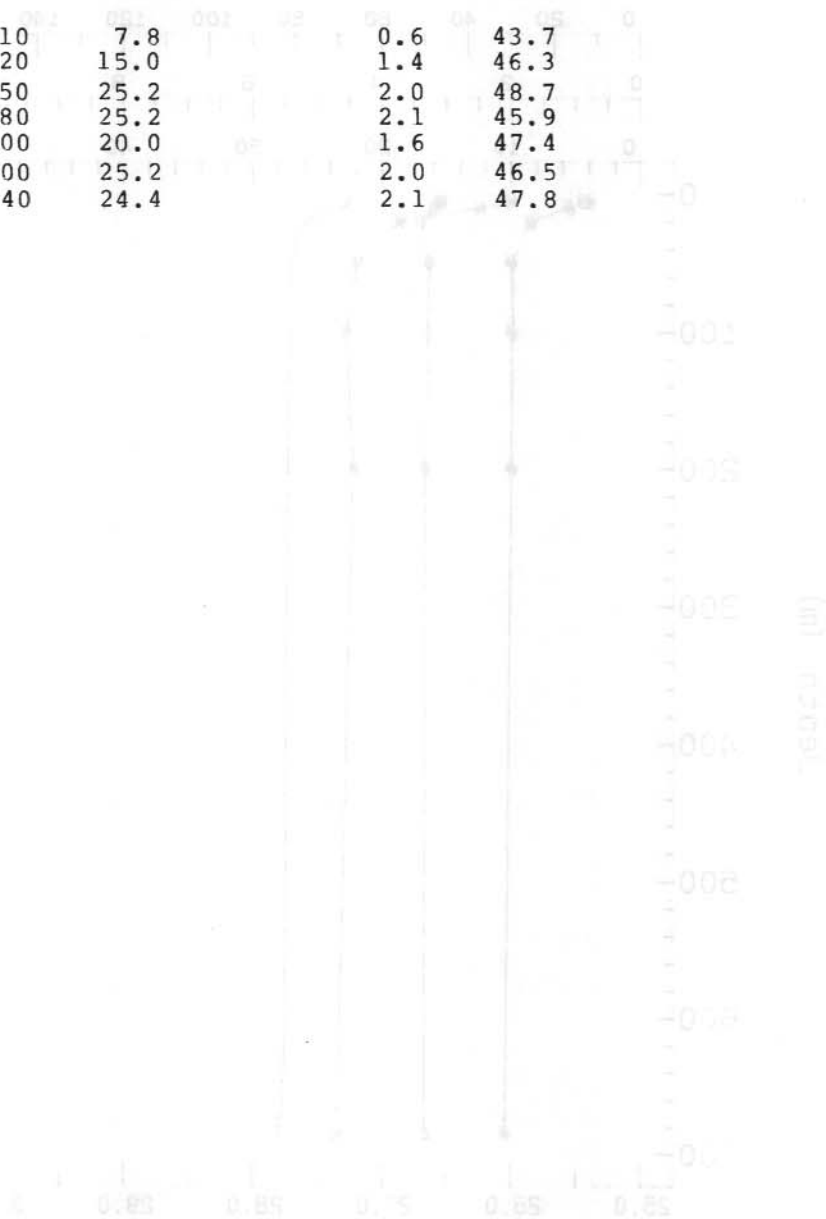
# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 38  
 12-DEC-1982 0412 GMT  
 Lat 69: 02.00S Lon 74: 05.20E  
 Depth: CTD 686 m Bottom 692 m



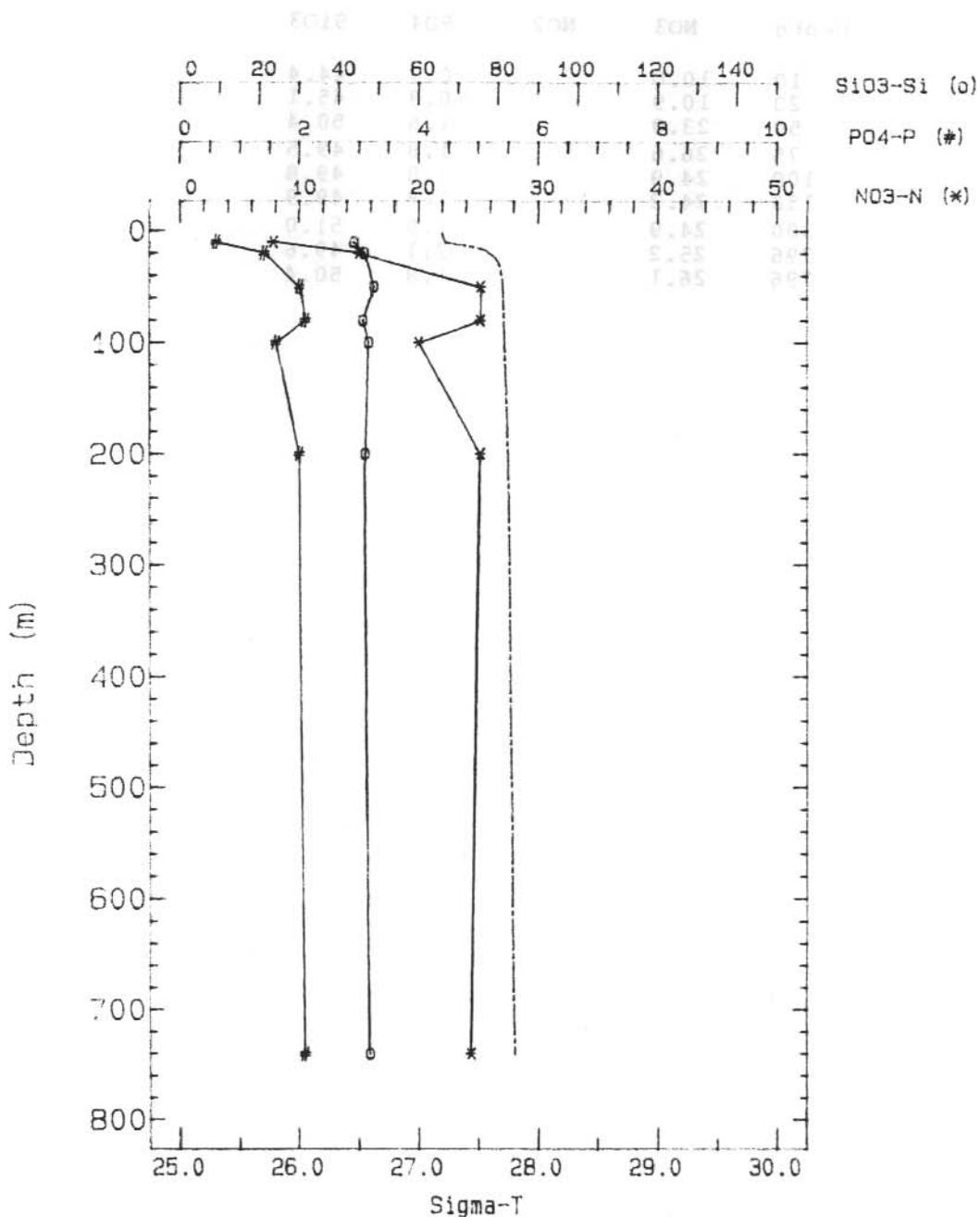
Cruise : ADBEX1  
 Station number : 41  
 Date : 12-DEC-1982 (DAY NUMBER 346)  
 Start Time : 1458 GMT  
 Ship : NELLA DAN  
 Position : 68:47.50S 73:30.20E  
 Cast Depth (m) : 742  
 Bottom Depth (m) : 751

Depth	NO3	NO2	PO4	SiO3
10	7.8		0.6	43.7
20	15.0		1.4	46.3
50	25.2		2.0	48.7
80	25.2		2.1	45.9
100	20.0		1.6	47.4
200	25.2		2.0	46.5
740	24.4		2.1	47.8



# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station : 41  
 12-DEC-1982 1458 GMT  
 Lat 62: 47.50S Lon 73: 30.20E  
 Depth: CTD 742 m Bottom 751 m



Cruise : ADBEX1  
 Station number : 46  
 Date : 13-DEC-1982 (DAY NUMBER 347)  
 Start Time : 0357 GMT  
 Ship : NELLA DAN  
 Position : 69:00.40S 75:54.10E  
 Cast Depth (m) : 800  
 Bottom Depth (m) : 802

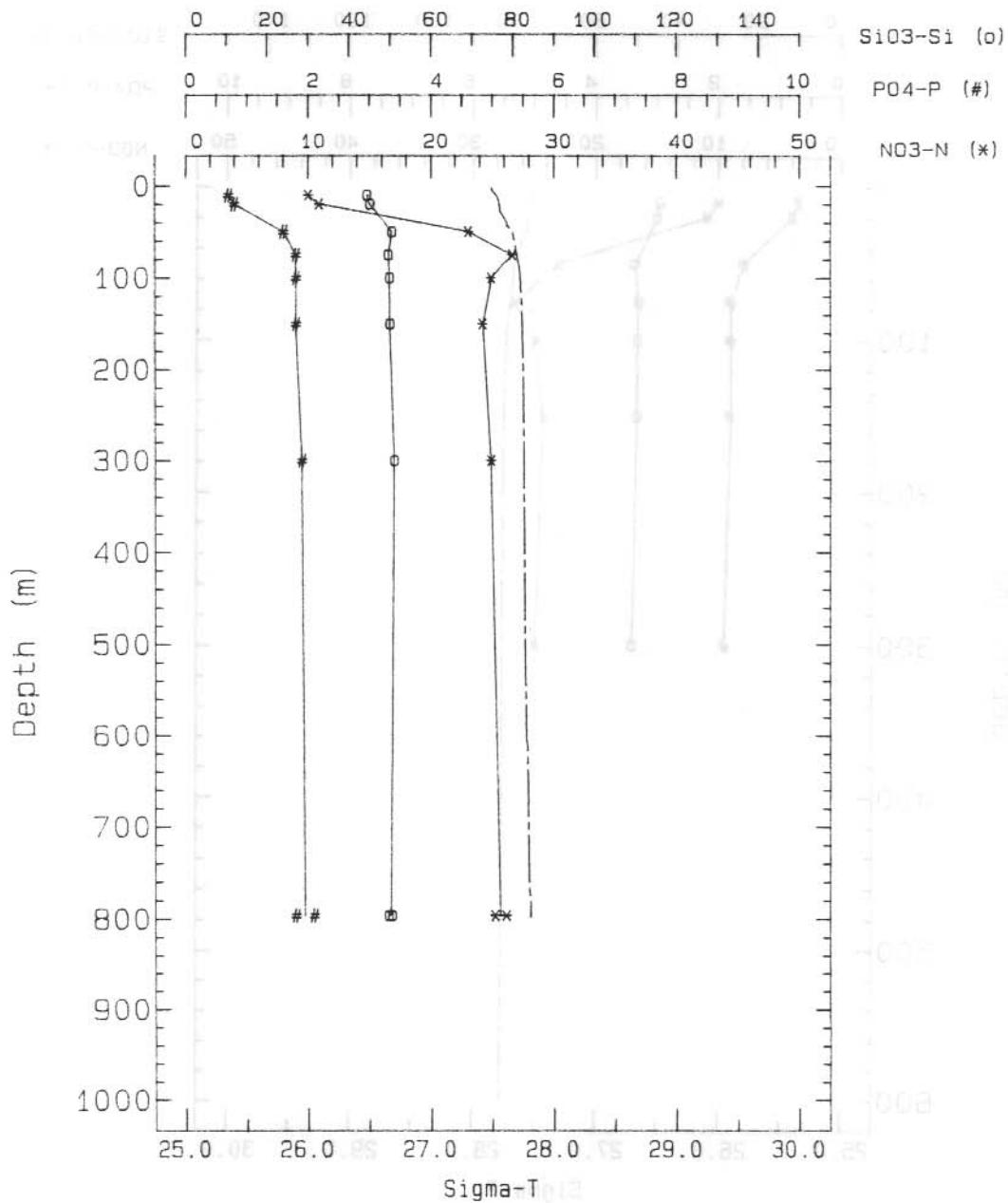
Depth	NO3	NO2	PO4	SiO3
10	10.0		0.7	44.4
20	10.9		0.8	45.1
50	23.0		1.6	50.4
75	26.6		1.8	49.5
100	24.9		1.8	49.8
150	24.2		1.8	49.9
300	24.9		1.9	51.0
796	25.2		2.1	49.6
796	26.1		1.8	50.4

0E 0.25 0.45 0.75 0.85 0.95



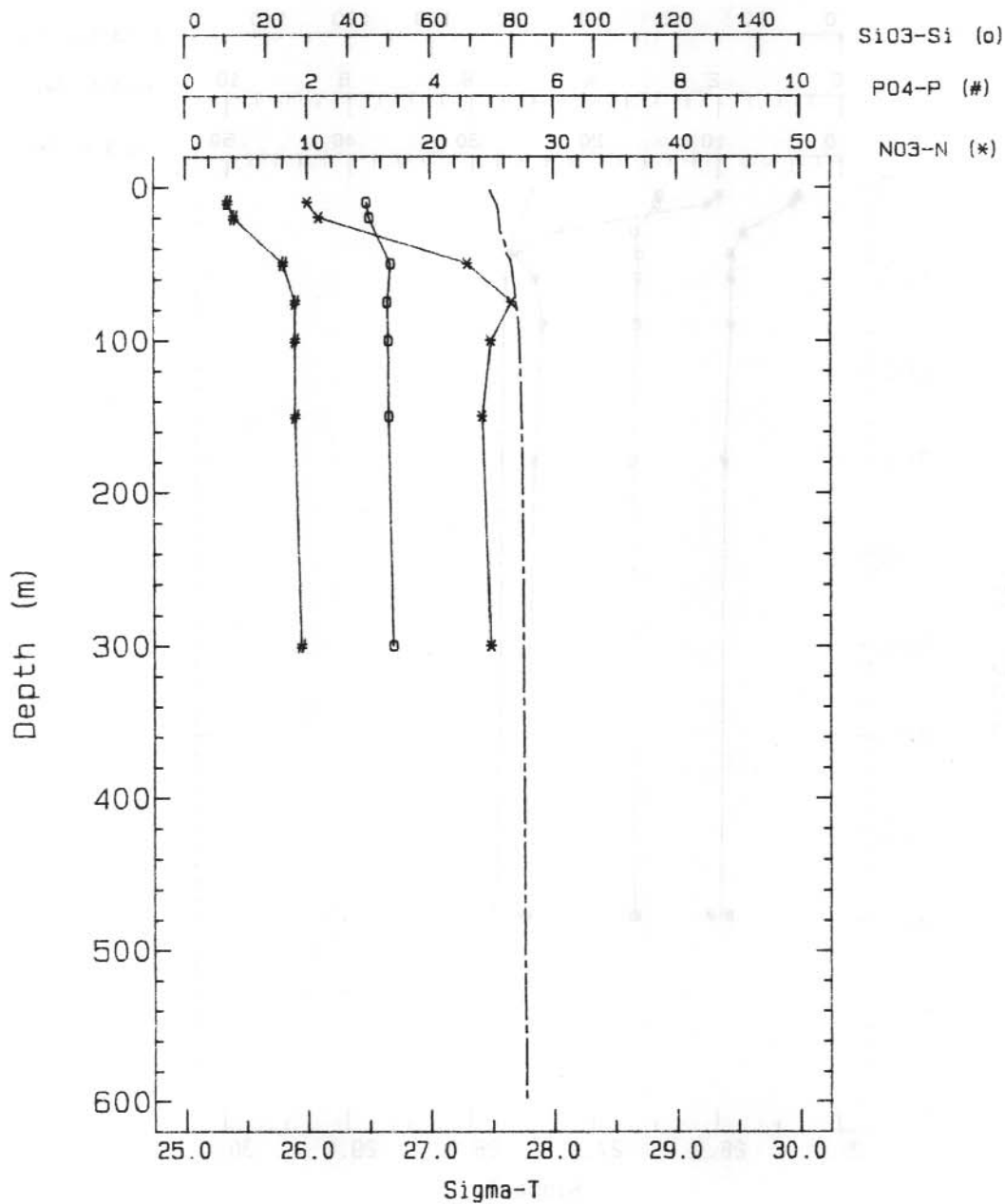
# ADBEX1 NUTRIENTS - SIGMA-T

Cruise: Station: 46  
 13 DEC 1982 0357 GMT  
 Latitude : 69:00.40S  
 Longitude: 75:54.10E  
 Depth: CTD 800 m Bottom: 800 m



# ADBEX1 NUTRIENTS - SIGMA-T

Cruise: ADBEX1 Station: 46  
 13 DEC 1982 0357 GMT  
 Latitude : 69:00.40S  
 Longitude: 75:54.10E  
 Depth: CTD 800 m Bottom 802 m



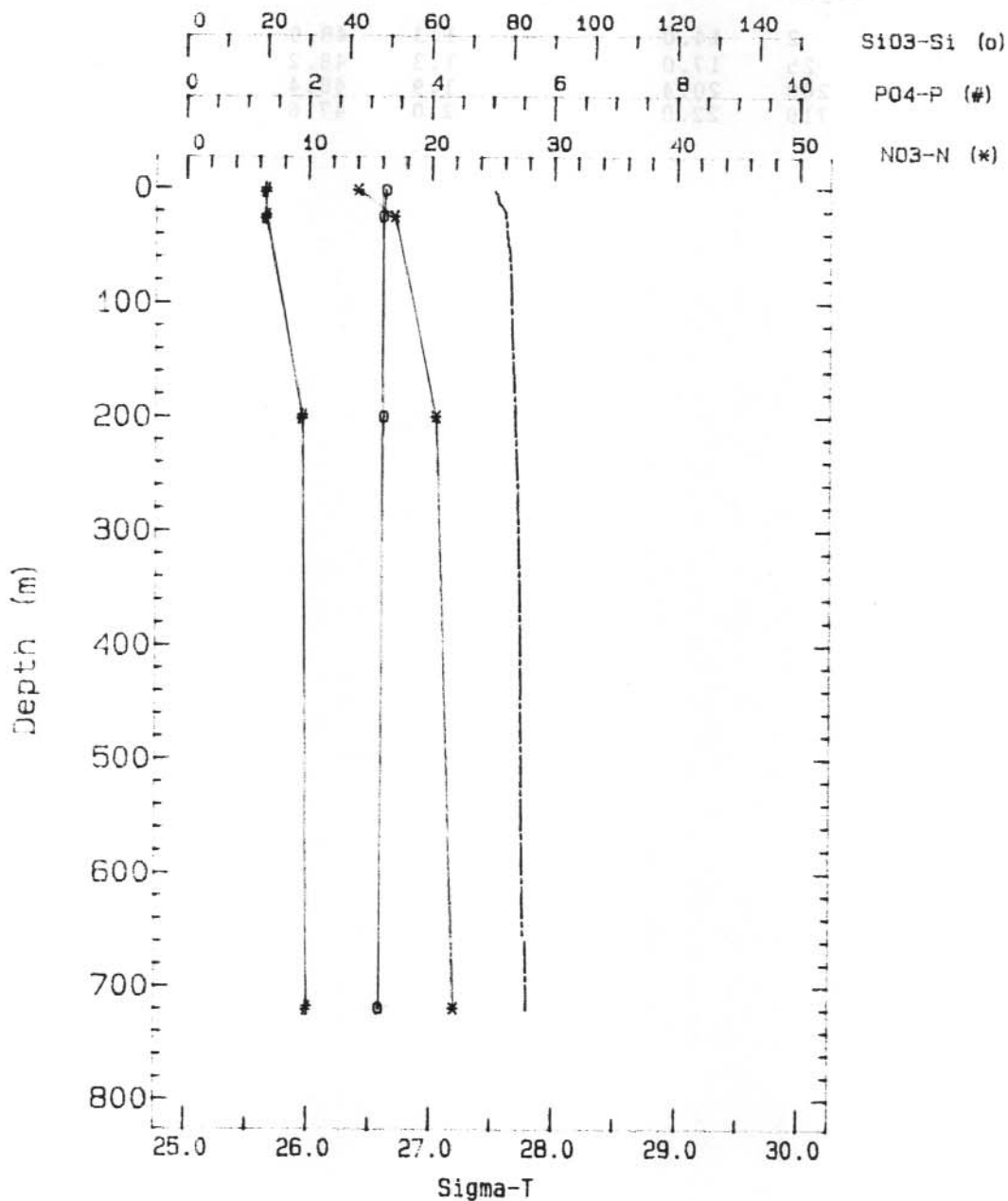
Cruise : ADBEX1  
 Station number : 48  
 Date : 13-DEC-1982 (DAY NUMBER 347)  
 Start Time : 1015 GMT  
 Ship : NELLA DAN  
 Position : 68:34.00S 76:58.20E  
 Cast Depth (m) : 722  
 Bottom Depth (m) : 729

Depth	NO3	NO2	PO4	SiO3
2	14.0		1.3	48.9
25	17.0		1.3	48.2
200	20.4		1.9	48.4
719	22.0		2.0	47.6



# ADBEX1 NUTRIENTS - SIGMA-T

Cruise : ADBEX1 Station 48  
 13-DEC-1982 1015 GMT  
 Lat 68:34.00S Lon 76:58.20E  
 Depth: CTD 722 m Bottom 729 m



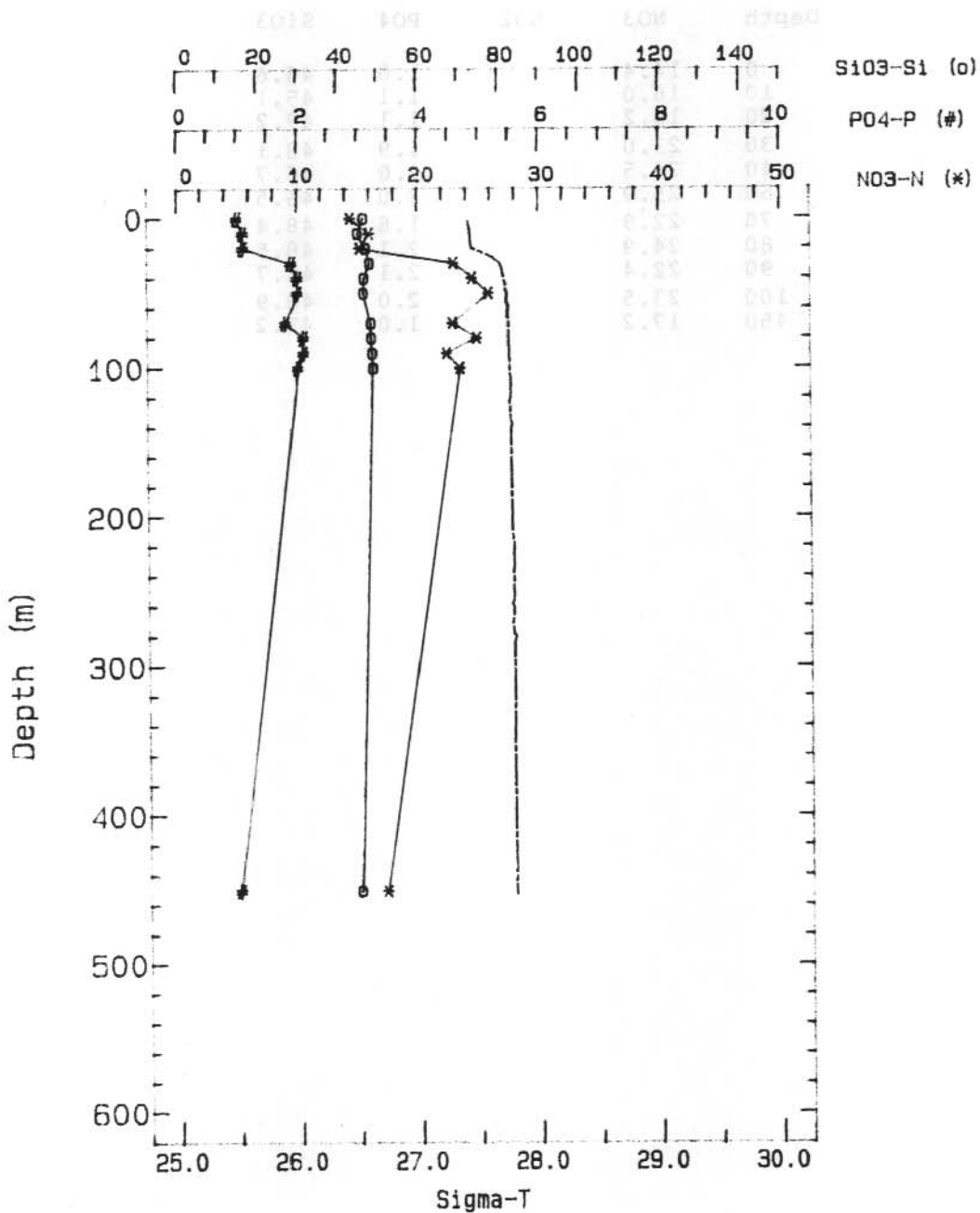
Cruise : ADBEX1  
 Station number : 57  
 Date : 14-DEC-1982 (DAY NUMBER 348)  
 Start Time : 1721 GMT  
 Ship : NELLA DAN  
 Position : 67:29.50S 74:59.40E  
 Cast Depth (m) : 454  
 Bottom Depth (m) : 457

Depth	NO3	NO2	PO4	SiO3
0	14.4		1.0	46.6
10	16.0		1.1	45.1
20	15.2		1.1	47.2
30	23.0		1.9	48.1
40	24.5		2.0	46.7
50	25.9		2.0	46.5
70	22.9		1.8	48.4
80	24.9		2.1	48.5
90	22.4		2.1	48.7
100	23.5		2.0	48.9
450	17.2		1.0	45.2



# ADBEX1 NUTRIENTS -- SIGMA-T

Cruise : ADBEX1 Station 57  
 14-DEC-1982 1721 GMT  
 Lat 67: 29.50S Lon 74: 59.40E  
 Depth: CTD 454 m Bottom 457 m



#### ACKNOWLEDGMENTS

The water samples were collected by Dr Harvey Marchant, John Shearer, Dr Sue Blackburn and Dr Simon Wright. Eric Woehler processed the CTD data. Dr David Watts developed the plotting software.

