TEMPERATURE, SALINITY AND SIGMA-T ALONG THE STANDARD WHITE BAY TRANSECT

E. B. Colbourne, J. S. Kennedy and D. R. Senciall

Science Branch
Department of Fisheries and Oceans
P. O. Box 5667
St. John's, Newfoundland
Canada, A1C 5X1

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ABSTRACT

Colbourne, E. B.,J. S. Kennedy and D. R. Senciall.1999. Temperature, Salinity and Sigma-t Along the Standard White Bay Transect. Can. Tech. Rep. Hydrogr. Ocean Sci. No. 200: v + 257 p.

A review of the spatial and temporal distribution of the historical oceanographic data set on the Northeast Newfoundland Shelf along the standard White Bay transect is presented. A brief descriptive analysis of various indices describing the temperature field along the transect is presented, including a discussion of the 1977 to 1998 time series of the cross-sectional area of the Cold Intermediate Layer (CIL). Annual time-series of temperature, salinity and density (sigma-t) are presented for the White Bay, Northeast Newfoundland Shelf and the continental slope regions along the transect based on all data available from 1961 to 1990. In addition, the monthly averaged vertical cross-sections for the period 1977-1998 are presented, followed by monthly transects by year.

RÉSUMÉ

Colbourne, E. B.,J. S. Kennedy and D. R. Senciall.1999. Temperature, Salinity and Sigma-t Along the Standard White Bay Transect. Can. Tech. Rep. Hydrogr. Ocean Sci. No. 200: v + 257 p.

Le rapport présente un examen de la distribution spatiale et temporelle des données océanographiques historiques sur le plateau du nord-est de Terre-Neuve le long du transect standard de White Bay. Il offre aussi une brève analyse descriptive des divers indices qui décrivent le champ de la température le long du transect, y compris un traitement de la chronique de 1977 à 1998 des sections transversales de la couche intermédiaire froide. Des chroniques annuelles de la température, de la salinité et de la densité (sigma-t) préparées à partir de toutes les données disponibles de 1961 à 1990 sont présentées pour les régions de White Bay, du plateau du nord-est de Terre-Neuve et de l'escarpement continental le long du transect. De plus, le rapport offre les sections transversales verticales moyennes mensuelles pour la période de 1977 à 1998, suivies par les transects mensuels présentés par année.

1. INTRODUCTION

In 1976 the International Commission for the Northwest Atlantic Fisheries (ICNAF) adopted a suite of standard oceanographic stations along cross-shelf transects in the Northwest Atlantic Ocean from Cape Cod (USA) to Egedesminde (West Greenland) (Anon. 1978). During the early 1990s under the Northern Cod Science Program (NCSP) of the Department of Fisheries and Ocean's a considerable effort was made to make available historical data in a form where it could easily be examined and referenced by the science community. The first step in this task was to compile and present the historical data along the standard transects adopted by ICNAF. Several of these reports were published in the Canadian Technical Report of Hydrography and Ocean Sciences including the Bonavista transect (Colbourne and Senciall 1993), the Seal Island transect (Colbourne et al. 1995), the Flemish Cap transect (Colbourne and Senciall, 1996) and the Nain Bank transect (Colbourne and Foote 1997).

Previous studies of the oceanography on the continental shelf of Atlantic Canada have included analyses of temperature and salinity data at Station 27, located about 8.0 km east of St. John's Newfoundland (Colbourne and Fitzpatrick, 1994; Keeley, 1981a; Bailey, 1961; Huyer and Verney, 1975), The International Ice Patrol of the U.S. Coast Guard have also conducted studies concentrated mainly in the offshore branch of the Labrador Current along the southeast slopes of the Grand Bank (Kollmeyer et al. 1965). Additional studies have included extensive analysis of temperature and salinity variability along the east and northeast Newfoundland shelves (Petrie et al. 1991; Petrie et al. 1992; Petrie et al. 1988; Templeman, 1975). Drinkwater and Trites (1986) compiled monthly averaged temperature and salinity for standard areas over the entire Grand Bank and most of the northeast Newfoundland shelf up to 1982. Colbourne and Foote (1994) and deYoung et al. (1994) have presented analyses of the historical temperature and salinity data over wide areas of the Northwest Atlantic at monthly and seasonal time scales.

The present report focuses on the standard White Bay transect which crosses the relatively deeper portions of the Northeast Newfoundland Shelf. Regular observations along this transect did not start until 1974, although a considerable amount of data are available dating back as early as the 1930s. Data products presented here include the temporal and spatial distributions of the data along the transect, synoptic and monthly averages of temperature, salinity and density (sigma-t) and time series of monthly averages as functions of depth for selected positions along the transect. In addition, various indices calculated from the horizontal transects such as cross-sectional areas of the cold intermediate layer (CIL) defined by various temperature ranges and minimum core temperatures or CIL intensities are also presented.

2. DATA SOURCES

The results presented here are based on analyses of all available bottle, mechanical bathythermograph (MBT), and expendable bathythermograph (XBT) and conductivity-temperature-depth recorder (CTD) data. These data were collected along the standard White Bay transect from the early 1930s to 1998 within a box with boundaries at ±15 minutes of latitude of a line connecting the end points of the transect given in Table 1. The position and water depth of the standard stations are shown in Fig. 1 and listed in Table 1. The transect consists of 20 stations beginning near the coastline in White Bay in a water depth of about 300 m and ending about 560 km offshore on the Northeast Newfoundland Continental Slope in water depths of over 3000 m. In recent years extra stations were added to increase the spatial resolution particularly inshore and on the continental slope areas.

A considerable amount of oceanographic data dating back to 1923 is available for this area, including data from the standard stations as well as data from fisheries assessment surveys, particularly during autumn since the late 1970s. Most of these data were available from the Marine Environmental Data Service (MEDS) in Ottawa, Canada and from archives at the Northwest Atlantic Fisheries Center (NAFC) in St. John's, Newfoundland.

About 21 % of the data, mainly before the late 1970s, were collected at standard depths (0, 10, 20, 30, 50, 75, 100, 125, 150, 200, 250, 300 and 400 m) using water sampling bottles fitted with reversing thermometers. Since the 1960s and up to the present a considerable amount of data were collected using mechanical and electronic bathythermographs (42 %) and since the late 1970s conductivity-temperature-depth (CTD) recorders have become commonplace, accounting for 37 % of the data. The temperature data collected by these instruments have expected accuracies ranging from ± 0.2 °C for bathythermographs to ± 0.02 °C for reversing thermometers and ± 0.005 °C for CTDs. Accuracies in salinities range from ± 0.02 psu from bottle titrations to ± 0.005 psu from CTD measurements.

3. DATA ANALYSIS

The earliest known observation along the White Bay transect was made in September 1923. From 1931 to the late 1950s observations were very scattered and a complete synoptic transect was not made until August 1977. Since 1977 the transect has been occupied on a regular basis in July or August. Observations along the transect during other months, particularly the winter months (December to March), were irregular. The total number of profiles measured along the transect in the selected corridor from all sources for the years 1923 to 1997 are shown in Table 2 by month, these include duplicate profiles made during the same time with different instrumentation (bottle or MBT) for example. The transect has been occupied every summer during the period July-August from 1977 to 1998 comprising 524 temperature profiles (24 %) of a total of 2204 for all months. By contrast 408 salinity profiles (36 %) were available during the same time period out of a total of 1129 profiles for all months.

The seasonal distribution of data (Fig. 2a and 3a) show that most of the data were collected during summer and fall corresponding to the summer oceanographic surveys and the fall fisheries assessments. During the winter months (January, February and March) about 11 % of the temperature data and 3 % of the salinity data were collected, about 14.5 % and 15 % in the spring (April, May and June), about 33.5 % and 45 % during summer and about 41 % and 37 % during autumn (October, November and December).

The distribution of data collected among years indicate that about 1 % of the temperature and 1 % of the salinity data were collected from 1923 to 1950, 5 % and 3 % from 1951 to 1960, 8 % and 6 % from 1961 to 1970, 20 % and 14 % from 1971 to 1980, 37 % and 31 % from 1981 to 1990 and 29 % and 45 % from 1991 to 1997 (Fig. 2b and 3b). The large increase in data collection since the late 1970s were due mainly to the start-up of the NAFO division 3K fall groundfish survey and the establishment of the ICNAF White Bay transect in 1976.

Temporal biasing in the calculation of monthly averages occurs when there are variations in the amount of data collected from year to year and when the data for a particular month are not distributed evenly throughout the month. No attempts were made to adjust the data for the interannual variations in the sample distribution, hence the means calculated here will obviously be temporally biased towards later years of the time period, namely from 1977 to 1997.

Spatial biasing of the average water property distributions also occurs when there is a significant amount of data confined to a particular area along the transect. The spatial distributions of all observations within ±15 minutes of latitude of the standard transect over all years for each month are shown in Fig 4a and 4b. The symbols on these maps indicate a station occupation, either a standard bottle cast, BT or CTD; both temperature and salinity may not be available for each station. These results indicate a reasonably well distributed data set along the transect from June to December. During January to May the data is mainly restricted to the outer portions of the Northeast Newfoundland Shelf and the continental slope area due to the ice cover. Note the large spatial extent of the data in November corresponding to the fisheries assessment surveys where station locations are randomly selected as opposed to the standard locations occupied during the summer period.

The station positions of all observations in the corridor along the transect, for the purposes of the analysis, were assumed to lie along a straight line with offshore distance calculated from the shore. The data were quality controlled for obvious spikes and restricted in the range of -1.84 to 20.0 °C for temperature and from 29.0 to 36.0 psu for salinity. The profiles were not extrapolated beyond their depth range. Data profiles collected with the same instrument within one minute of latitude and within a 30-minute time interval were considered duplicates and only one was retained. In addition, in cases where a particular cast was repeated on the same station with a different instrument the duplicate data were also discarded, keeping CTD and bottle data over BTs. Densities are reported as sigma-t values calculated using the UNESCO equation of state for seawater (Millero et al. 1980). The data were linearly interpolated or decimated if necessary onto a 5.0 km horizontal by 5.0 m vertical grid and the arithmetic mean computed. In general there was a sufficient amount of data collected during each month to approximate the monthly means along the transect throughout the year. The plotting package used the averaged gridded data as input to a finite difference Laplacian interpolation contouring scheme.

4. DATA PRODUCTS

A dominant feature of the temperature structure on the continental shelf off Newfoundland and Labrador is the cold intermediate layer (CIL) (Petrie et al. 1988). The CIL is most apparent in summer when spring ice melt and seasonal heating increases the stratification in the upper layers to a point where heat transfer to the lower layers is inhibited. The result is a cold layer of water confined to the continental shelf with temperatures ranging from 0.0 to -1.8 °C sandwiched between the seasonally heated upper layer and warmer continental slope water near the bottom. In the winter months the intermediate layer effectively disappears as the upper layers cool down to between -1.0 and 0.0 °C from January to March due to winter cooling and mixing of surface water into the CIL. By late April and early May the warming of the surface layer commences and the cross-sectional area of water ≤ 0.0 °C decreases from the winter maximum to a minimum in the fall due to summer heating. The maximum (1990), minimum (1978) and average (July-August) areal extents of the CIL bounded by the 0.0 °C isotherm are shown in Fig. 5. On average, sub-zero °C water covers the inner Northeast Newfoundland Shelf below the upper layer during the summer reaching about 150 km offshore.

Time series of the CIL cross-sectional areas of water less than 1.0, 0.0 and -1.0 °C from 1977 to 1998 for the July-August period together with the mean (dashed line) are shown in Fig. 6 and listed in Table 3. In general, the time series for all temperatures shows large variations with generally warm conditions (below normal CIL) during the late 1970s and early 1980s. The time series is characterized by a major cold period beginning in the late 1980s, which continued to 1994. During the last four years from 1995 to 1998 the CIL has been below normal. The average cross-sectional area for water less than 1.0, 0.0, and -1.0 °C are 79, 60, and 32 km^2 with standard deviations of 13, 15 and 15 km^2 respectively. These areas are more than double the values along the Bonavista transect (Colbourne and Senciall 1993).

The bottom temperature across the inner Northeast Newfoundland Shelf ranges from sub-zero °C within White Bay out to about 150 km offshore in water depths from about 100 m to 250 m depth. Bottom temperatures over the outer shelf (200 to 450 km offshore) in water depths from 250 to 500 m range from 1.0 to 3.0 °C. Minimum temperatures at the core of the CIL (Fig. 7 and Table 3) range from -1.8 °C in a cold year (1974) to -1.2 °C in a warm year (1978) with an average of -1.64 °C and a standard deviation of 0.13 °C. The freezing point of seawater at salinities typically found on the continental shelf along this transect (ie. between 32.50 to 34.25) ranges from -1.78 to -1.88 °C. A summary of the various CIL summer indices discussed above are presented in Table 3.

Time series of the monthly mean temperature, salinity and density versus depth are shown in Appendix A for White Bay, the inner Northeast Newfoundland Shelf the offshore shelf and the shelf slope region (Fig. 1). These time series were formed by averaging all data for each month in a 5 km horizontal bin along the transect (centered at each offshore distance) over the time period f4rom 1961-1990. The plots show the seasonal variations in the CIL; its winter formation, spring capping, gradual decay over the summer and rapid erosion during the autumn.

Presented in Appendices B to D are the monthly average vertical distributions of temperature, salinity and density versus horizontal distance from shore to the edge of the shelf based on all available data for each month. Appendix E to G contain cross sections along the transect based on all available data in the selected corridor by month beginning in August 1931 to August 1998. Many of these sections are incomplete and may only contain one or two profiles, which are indicated by the symbol along the top of the plot.

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ICNAF #	Latitude	Longitude	Depth (m)
-	50 13.6	56 27.2	296
-	50 18.0	56 10.9	335
-	50 27.0	55 37.0	234
96	50 40.0	55 00.0	162
95	50 48.0	54 30.0	222
-	50 51.1	54 19.8	247
94	50 56.7	54 00.0	221
93	51 05.0	53 30.0	281
92	51 13.5	53 00.0	414
-	51 17.9	52 43.4	455
91	51 22.0	52 29.0	434
90	51 30.0	52 00.0	417
89	51 38.8	51 30.0	419
88	51 47.3	50 59.5	310
87	51 52.0	50 42.4	385
86	51 53.7	50 36.0	739
85	51 55.0	50 28.0	1444
84	51 59.6	50 15.0	2184
83	52 07.0	49 45.0	2837
-	52 15.5	49 15.0	3360

Table 1. The position and water depth of the standard ICNAF and NAFC oceanographic stations along the White Bay transect.

YEAR	MONTH											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1923	0	0	0	0	0	0	0	0	1	0	0	0
1924	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	0	0	0	0	0	0	0
1926	0	0	0	0	0	0	0	0	0	0	0	0
1927	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0	0	0	0	0	0
1929	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	0	0	0	0	0	0	0	0
1931	0	0	0	0	0	0	1	2	0	0	0	0
1932	0	0	0	0	0	1	0	0	0	0	0	0
1933	0	0	0	0	0	2	1	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	1	0	0	0
1935	0	0	0	0	0	0	1	0	1	0	0	0
1936	0	0	0	0	0	0	0	0	0	0	0	0
1937	0	0	0	0	0	0	0	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	0	0	0	0	0	0	0	0	0
1941	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	0	0	0	0
1945	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	0	1	0	0	0
1950	0	0	0	0	0	0	2	0	1	2	0	0
1951	0	0	0	0	0	0	2	2	1	1	0	0
1952	0	0	0	3	2	0	1	4	0	0	0	0
1953	0	3	4	0	3	5	0	1	2	1	0	0
1954	0	0	0	0	0	0	1	1	0	0	0	0
1955	0	0	0	2	1	10	0	0	8	0	0	1
1956	0	0	1	0	0	0	0	1	1	0	0	1
1957	1	0	0	0	0	0	3	0	0	0	1	1
1958	0	0	0	0	0	1	0	2	0	2	0	0
1959	2	0	0	0	1	1	1	2	0	10	2	0
1960	0	0	2	1	0	1	0	19	1	1	1	0
1961	0	0	0	0	1	0	2	0	7	0	0	0
1962	0	1	0	1	0	0	2	4	1	5	0	1
1963	0	0	0	0	11	0	0	0	2	1	7	0
1964	0	1	0	0	0	0	1	0	0	4	1	0
1965	0	1	0	0	0	0	1	0	0	1	2	0
1966	1	0	0	0	0	6	1	0	7	0	0	1
1967	0	0	1	1	0	1	3	0	1	2	34	0
1968	1	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	11	7	2	8	1	8	2	0
1970	0	0	0	0	20	0	0	1	1	1	0	0
1971	0	0	0	1	0	1	0	0	0	0	1	0
1972	0	0	0	0	0	0	0	0	3	0	1	0
1973	0	0	0	0	1	14	2	6	3	4	1	0
1974	1	0	0	0	0	1	1	13	0	3	1	0
1975	0	0	0	0	0	0	0	13	2	5	7	0
1976	1	0	0	0	0	0	1	14	0	4	0	0
1977	0	2	1	0	0	1	0	14	1	1	3	0
1978	0	0	0	0	0	7	16	20	1	10	5	2
1979	0	9	53	0	19	0	0	25	7	13	20	5
1980	0	0	7	0	13	7	0	4	1	30	21	11
1981	1	0	20	0	0	27	15	19	3	19	1	16
1982	0	0	16	0	0	5	0	0	0	6	0	0
1983	4	0	15	0	0	0	8	15	5	0	10	14
1984	2	0	0	1	0	5	29	0	2	1	24	12
1985	0	0	0	0	0	3	1	22	0	0	33	5
1986	0	5	1	0	1	30	1	22	0	1	3	21
1987	2	36	5	2	4	10	0	20	3	1	25	8
1988	2	0	1	6	20	8	4	25	1	3	9	18
1989	0	3	0	0	0	11	0	18	0	2	11	29
1990	0	0	0	0	0	11	26	1	6	0	15	15
1991	0	4	0	0	2	4	38	6	6	16	36	11
1992	2	3	0	2	5	0	21	0	11	28	60	40
1993	5	2	0	0	0	0	20	1	11	11	18	6
1994	10	0	2	0	0	0	18	5	3	13	9	29
1995	0	0	0	2	0	0	20	0	9	0	0	13
1996	5	1	0	0	0	0	22	6	3	0	36	0
1997	4	0	1	0	0	0	24	9	0	0	28	8
TOTAL	44	71	130	22	115	180	292	325	119	210	428	268

Table 2a. Summary of the total number of temperature profiles available along and near the White Bay transect from 1923 to 1997.

YEAR	MONTH											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1923	0	0	0	0	0	0	0	0	1	0	0	0
1924	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	0	0	0	0	0	0	0
1926	0	0	0	0	0	0	0	0	0	0	0	0
1927	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0	0	0	0	0	0	0	0
1929	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	0	0	0	0	0	0	0	0
1931	0	0	0	0	0	0	1	2	0	0	0	0
1932	0	0	0	0	0	1	0	0	0	0	0	0
1933	0	0	0	0	0	2	1	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	1	0	0	0
1935	0	0	0	0	0	0	1	0	1	0	0	0
1936	0	0	0	0	0	0	0	0	0	0	0	0
1937	0	0	0	0	0	0	0	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	0	0	0
1939	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	0	0	0	0	0	0	0	0	0
1941	0	0	0	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	0	0	0	0
1945	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	0	0	0	0	0
1950	0	0	0	0	0	0	1	0	1	2	0	0
1951	0	0	0	0	0	0	2	1	0	1	0	0
1952	0	0	0	3	0	0	1	4	0	0	0	0
1953	0	0	0	0	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	10	0	0	4	0	0	0
1956	0	0	0	0	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	1	0	0	0	0	0
1958	0	0	0	0	0	0	0	0	0	1	0	0
1959	0	0	0	0	0	0	0	1	0	0	1	0
1960	0	0	0	0	0	0	0	1	0	0	0	0
1961	0	0	0	0	0	0	0	0	4	0	0	0
1962	0	1	0	0	0	0	0	0	0	4	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	23	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	7	6	0	0	1	0	0	0
1970	0	0	0	0	15	0	0	0	0	0	0	0
1971	0	0	0	0	0	1	0	0	0	0	1	0
1972	0	0	0	0	0	0	0	0	0	0	1	0
1973	0	0	0	0	0	14	0	6	0	0	1	0
1974	0	0	0	0	0	0	0	9	0	0	0	0
1975	0	0	0	0	0	0	0	8	0	0	4	0
1976	0	0	0	0	0	0	0	10	0	0	0	0
1977	0	0	0	0	0	0	0	13	0	0	0	0
1978	0	0	0	0	0	0	4	13	0	0	4	1
1979	0	0	0	0	0	0	0	13	5	0	7	0
1980	0	0	0	0	13	7	0	4	0	14	5	3
1981	1	0	0	0	0	24	6	13	2	14	0	0
1982	0	0	0	0	0	5	0	0	0	3	0	0
1983	4	0	0	0	0	0	8	15	0	0	0	0
1984	2	0	0	0	0	5	28	0	0	0	0	4
1985	0	0	0	0	0	3	0	16	0	0	0	0
1986	0	0	0	0	1	8	0	17	0	0	2	0
1987	0	0	0	0	4	6	0	16	3	0	3	0
1988	0	0	0	2	11	0	0	17	0	0	0	0
1989	0	0	0	0	0	0	0	18	0	0	11	25
1990	0	0	0	0	0	9	25	0	0	0	10	14
1991	0	0	0	0	2	2	38	6	5	15	21	0
1992	2	0	0	0	5	0	21	0	11	21	32	22
1993	4	1	0	0	0	0	20	0	0	10	18	6
1994	10	0	0	0	0	0	18	5	3	0	9	29
1995	0	0	0	2	0	0	18	0	9	0	0	11
1996	5	0	0	0	0	0	20	6	3	0	34	0
1997	2	0	0	0	0	0	20	9	0	0	25	5
TOTAL	30	2	0	7	58	103	234	223	54	85	212	120

Table 2b. Summary of the total number of salinity profiles available along and near the White Bay transect from 1923 to 1997.

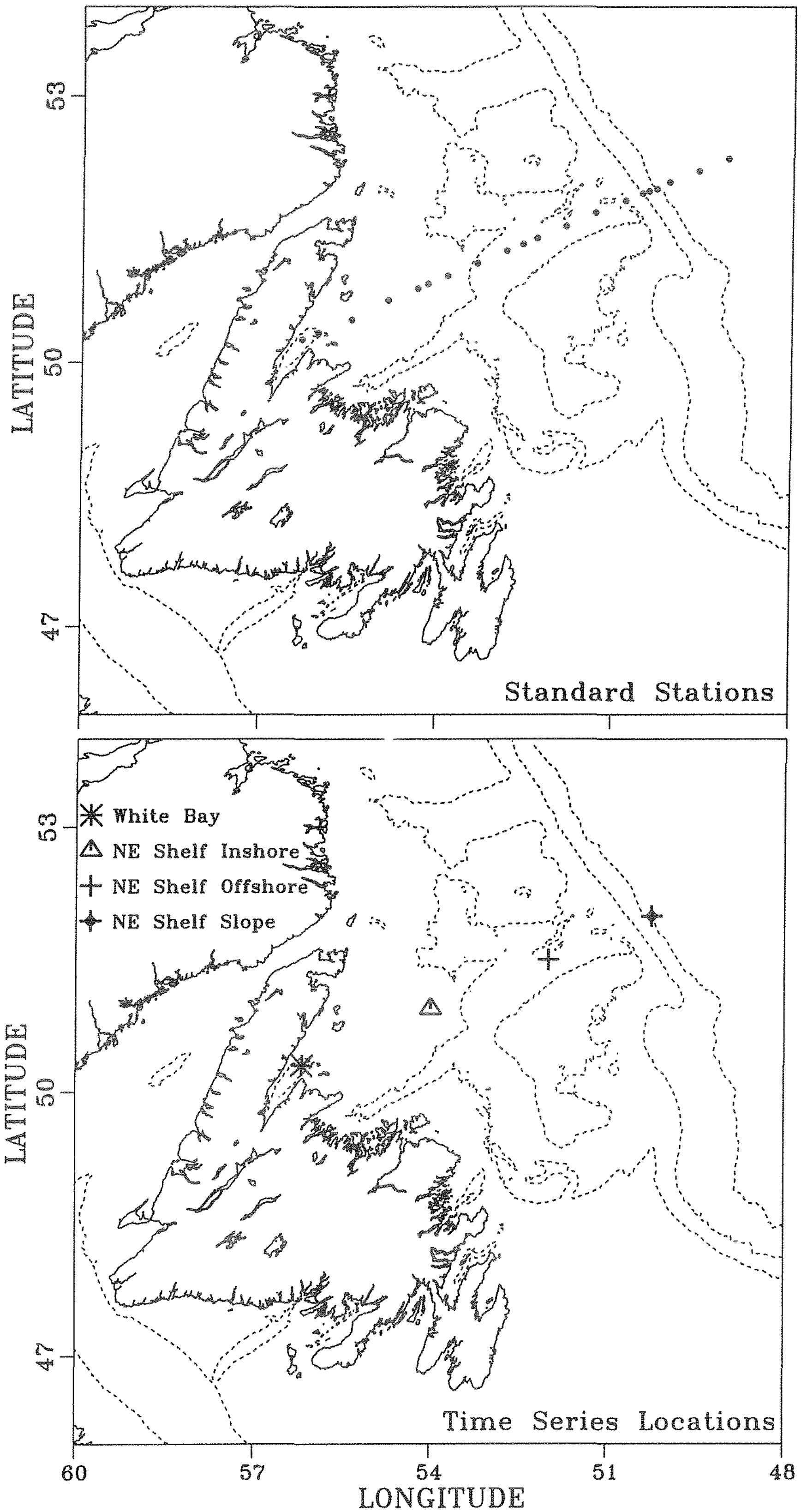


Figure 1. Location maps showing the positions of the standard stations and the locations where temperature, salinity and density annual time series were constructed along the White Bay transect. The bathymetry lines are 300, 1000, and 2000 m.

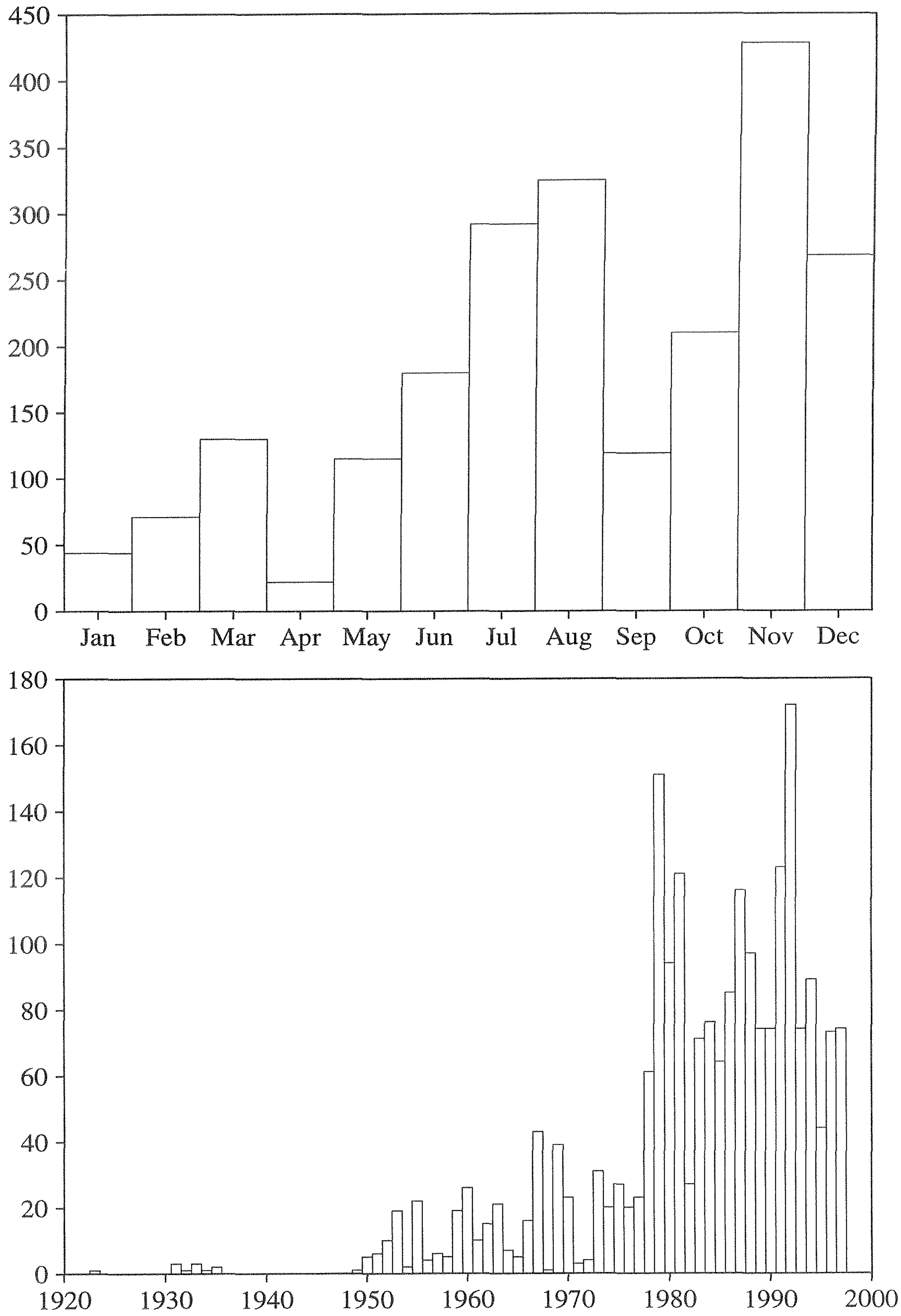


Figure 2. (a) The total number of temperature profiles by month and (b) by year, occupied along and near the White Bay transect since 1923.

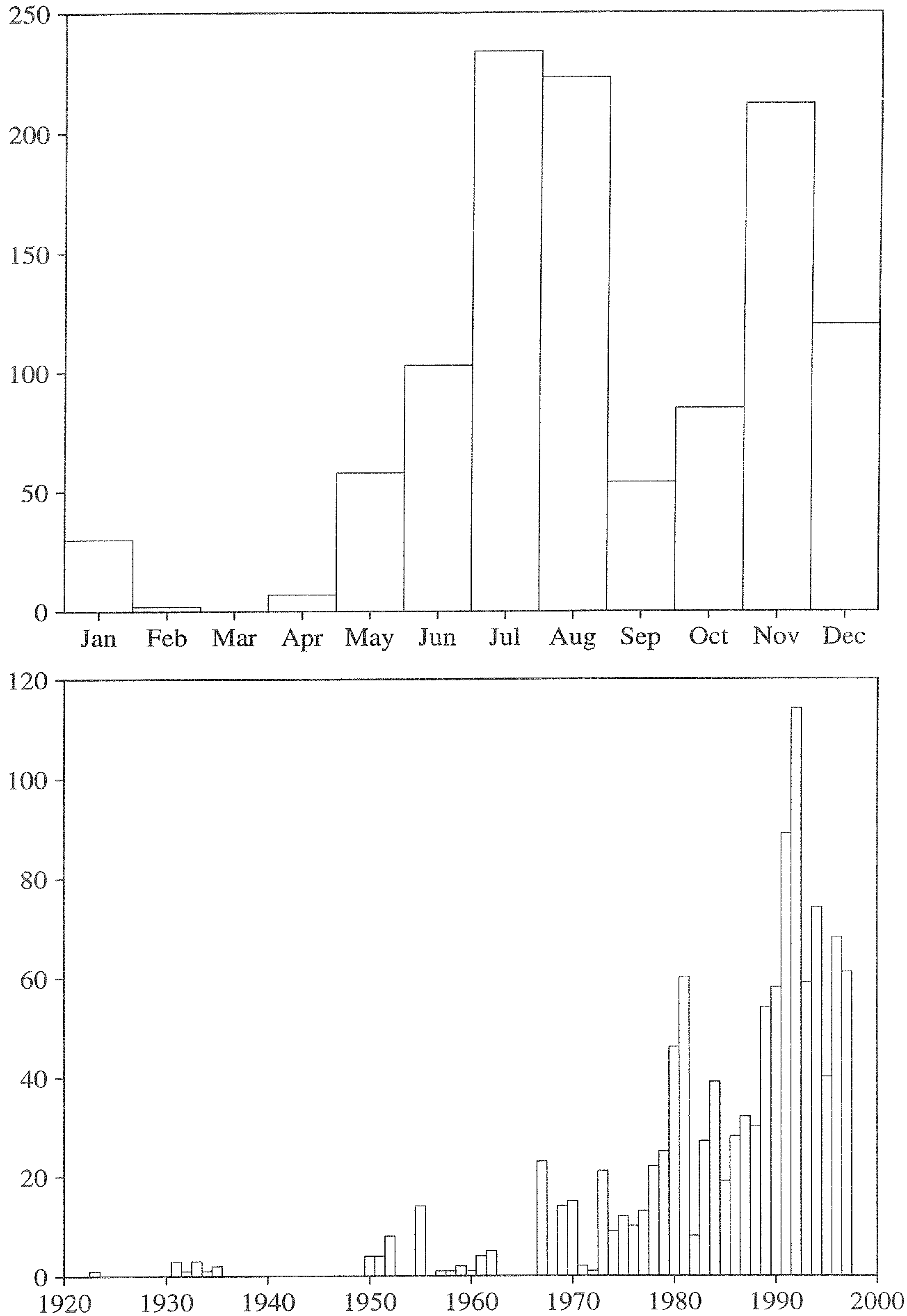


Figure 3. (a) The total number of salinity profiles by month and (b) by year, occupied along and near the White Bay transect since 1923.

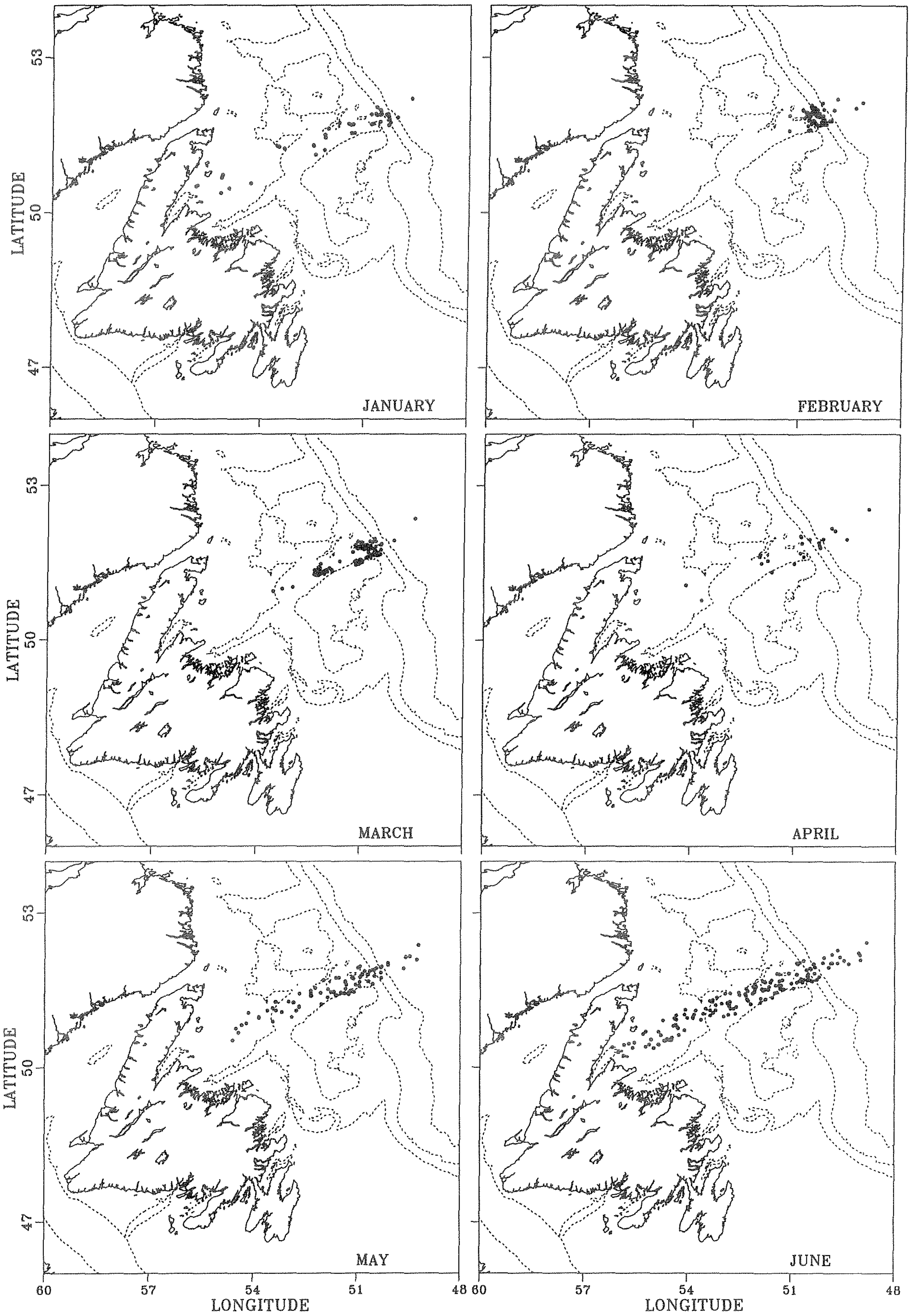


Figure 4a. Location maps showing the positions of all stations occupied along and near the White Bay transect since 1923 for January to June for which either temperature and/or salinity were available. The bathymetry lines are 300, 1000, and 2000 m.

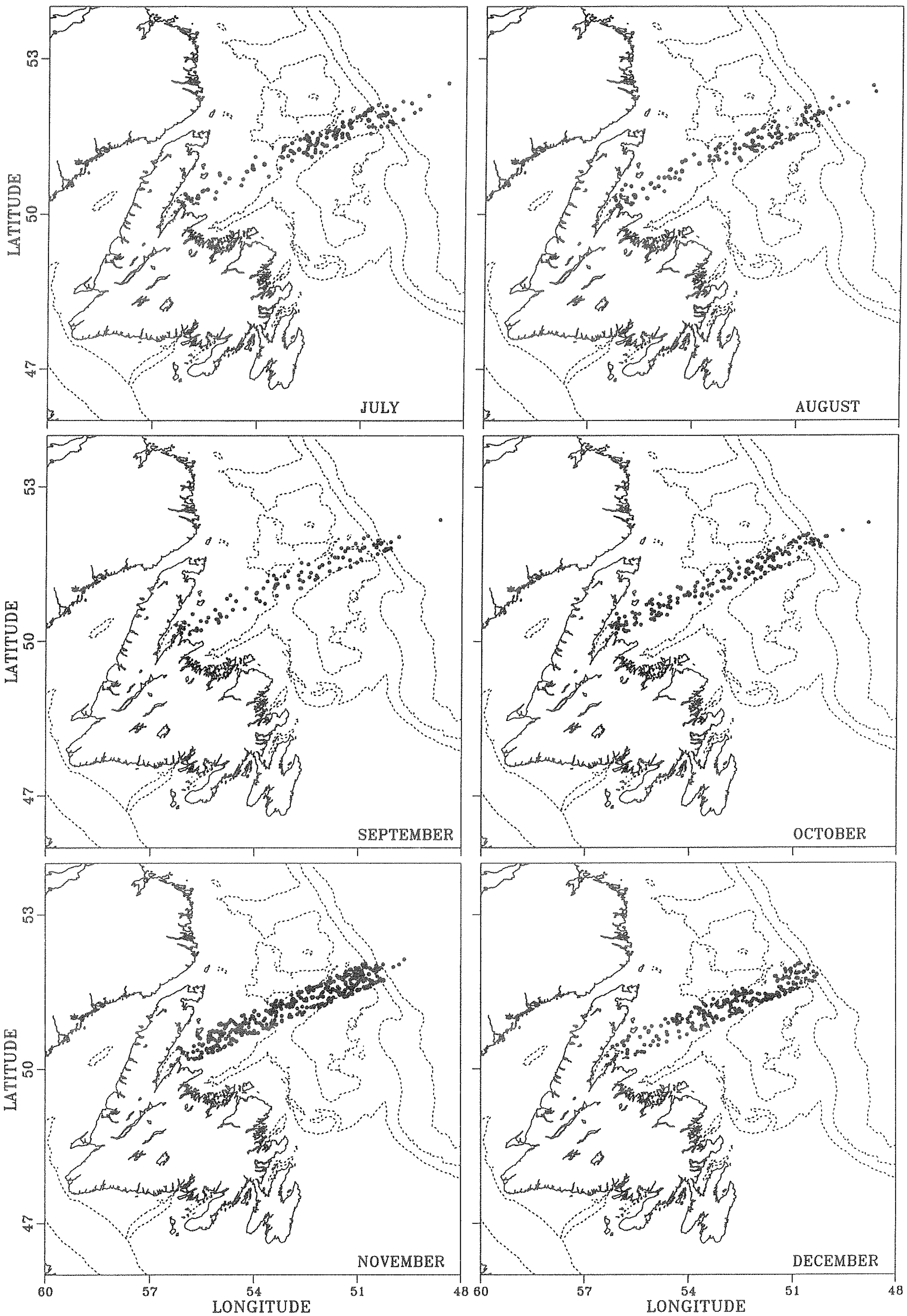


Figure 4b. Location maps showing the positions of all stations occupied along and near the White Bay Transect since 1923 for July to December for which either temperature and/or salinity were available. The bathymetry lines are 300, 1000, and 2000 m.

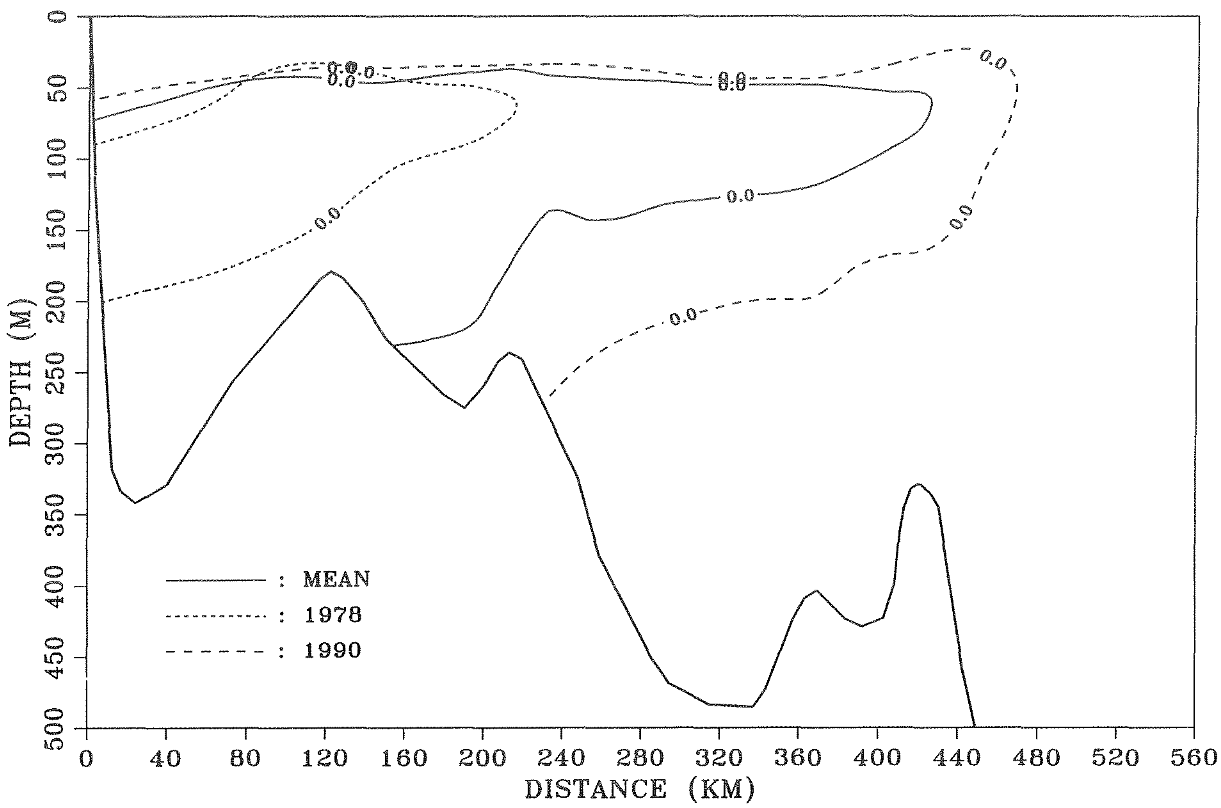


Figure 5. The geometry and extent of the CIL area less than 0.0 °C along the White Bay transect for 1977 to 1998.

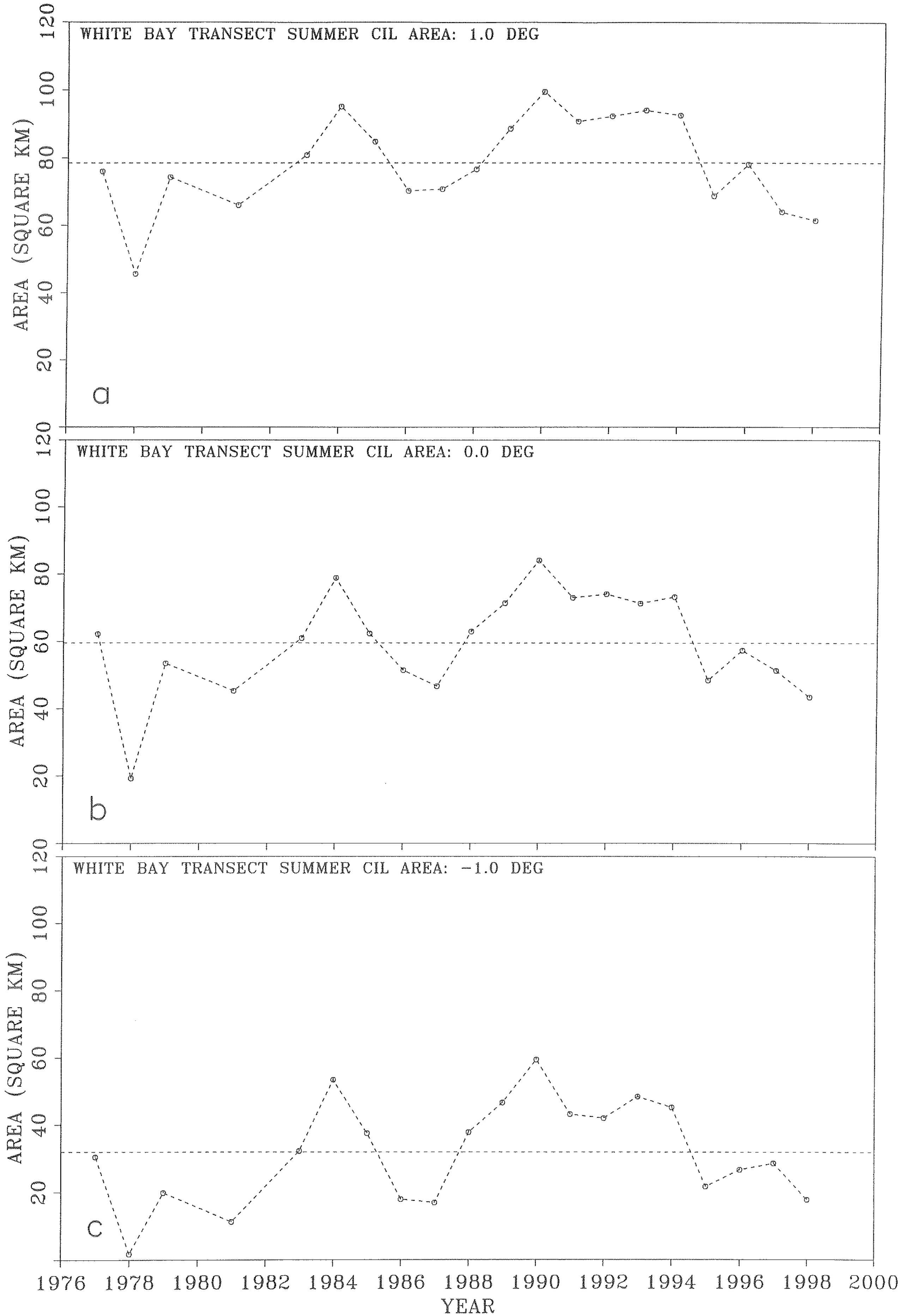


Figure 6. Time series of the White Bay transect CIL area in km^2 less than (a) 1.0 ^oC, (b) 0.0 ^oC and (c) -1.0 ^oC.

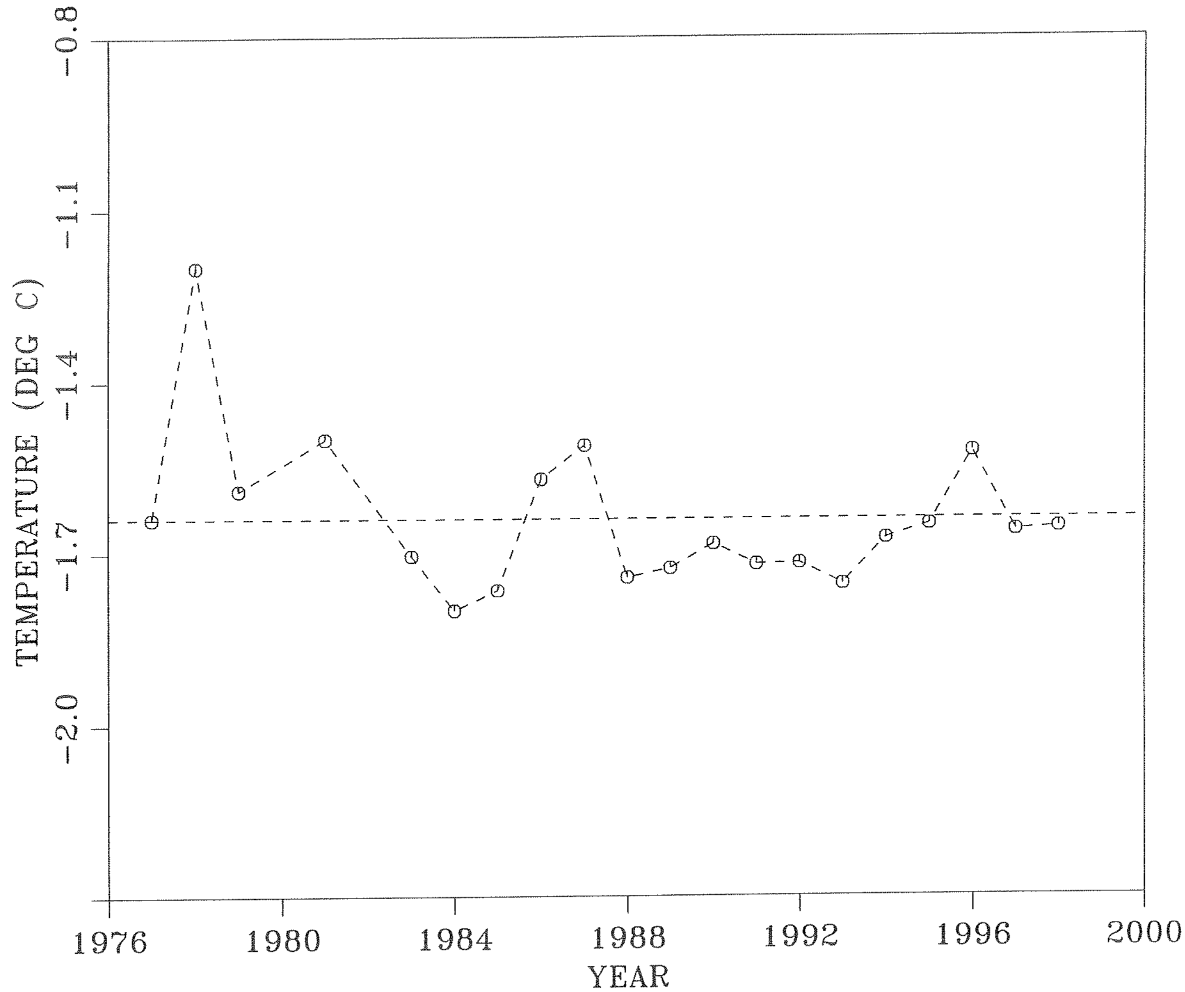
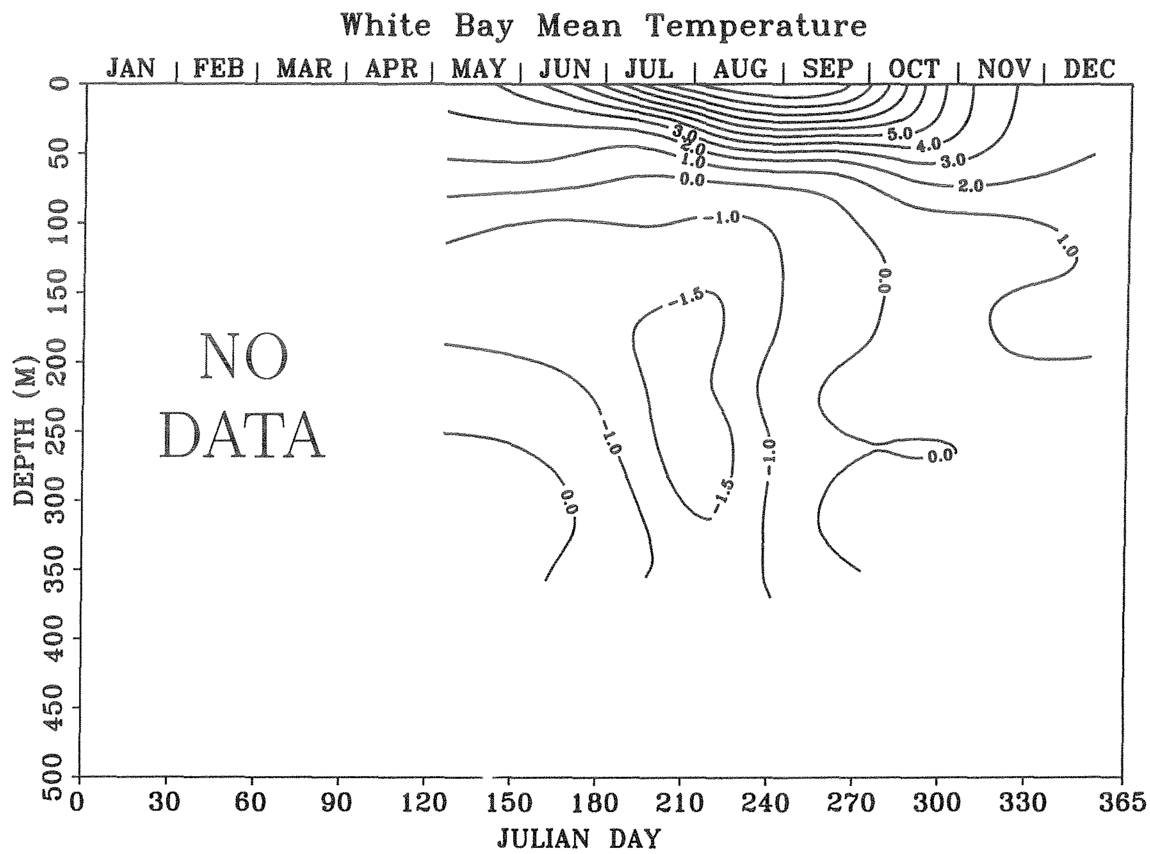


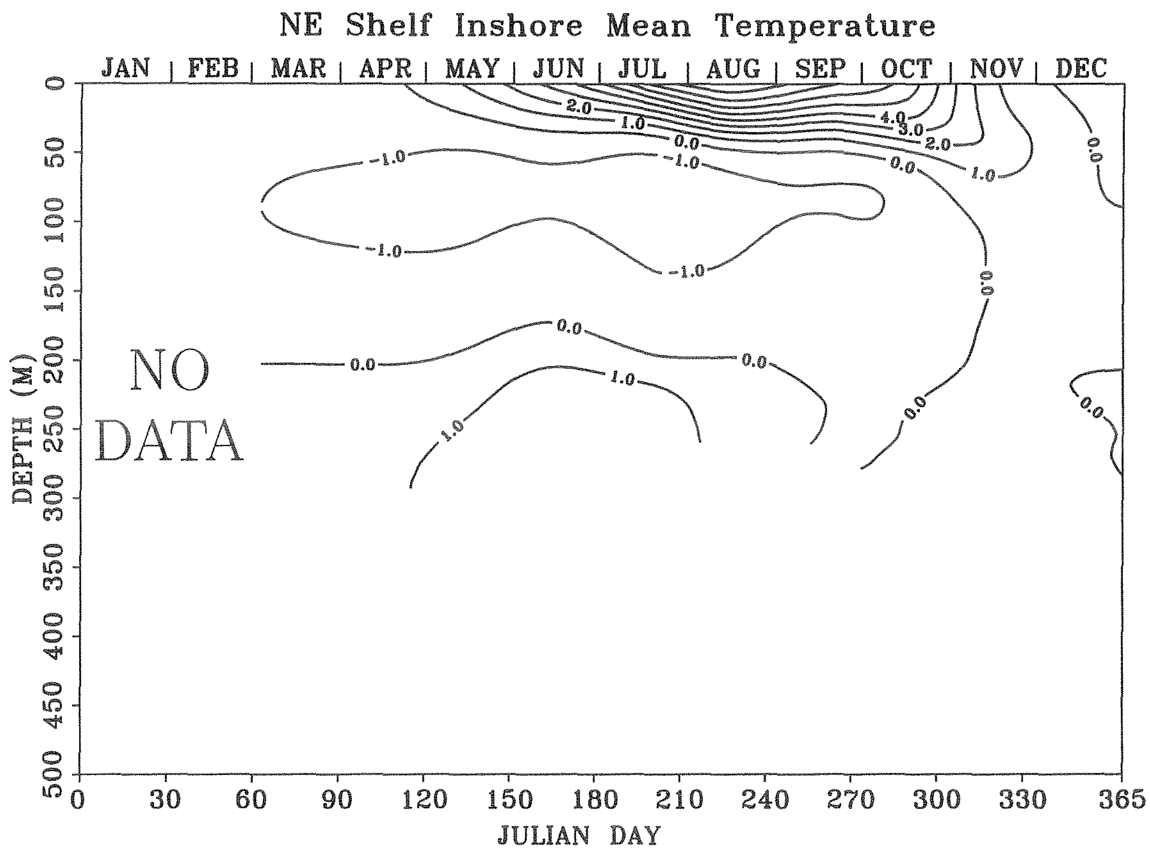
Figure 7. Time series of the summer cold intermediate layer (CIL) intensities or minimum core temperatures.

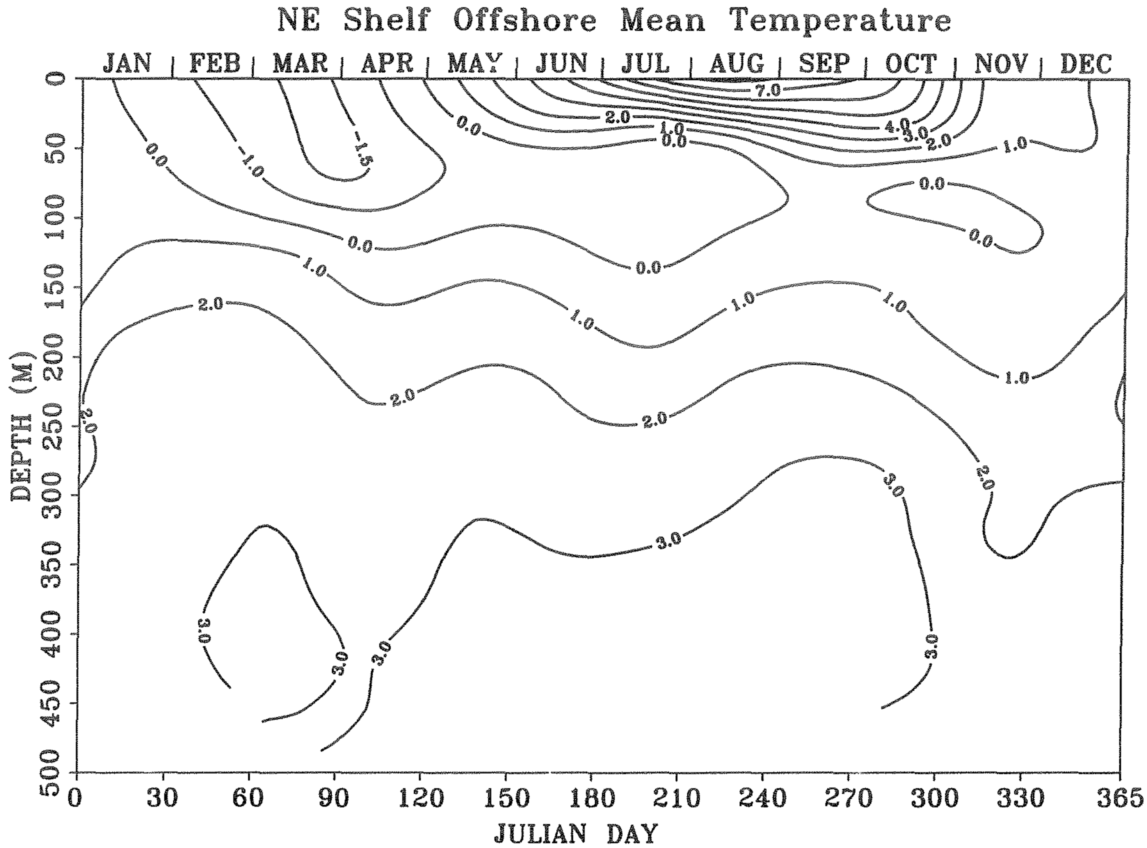
White Bay Transect Summer CIL Indices						
Month	Year	Cross Sectional Area (KM^2)				Min. Temp.
		1.0 ^oC	0.0 ^oC	-1.0 ^oC	-1.5 ^oC	(^oC)
August	1977	76.0	62.2	30.4	5.1	-1.640
August	1978	45.6	19.2	1.7	0.0	-1.200
August	1979	74.3	53.5	19.8	0.0	-1.590
August	1981	66.0	45.3	11.2	0.0	-1.500
August	1983	80.8	61.0	32.2	5.5	-1.705
July	1984	95.1	78.9	53.4	33.0	-1.800
August	1985	84.8	62.4	37.5	14.1	-1.765
August	1986	70.2	51.5	17.9	0.0	-1.570
August	1987	70.7	46.7	16.9	0.0	-1.511
August	1988	76.6	63.0	37.8	9.8	-1.743
August	1989	88.6	71.4	46.6	22.4	-1.727
July	1990	99.4	84.1	59.4	17.2	-1.684
July	1991	90.7	73.0	43.2	14.2	-1.720
July	1992	92.2	74.1	42.0	18.1	-1.718
July	1993	93.9	71.3	48.4	23.9	-1.755
July	1994	92.4	73.2	45.2	11.9	-1.675
July	1995	68.6	48.5	21.7	7.3	-1.651
July	1996	78.0	57.4	26.7	0.0	-1.523
July	1997	63.9	51.4	28.6	3.3	-1.662
July	1998	61.3	43.5	17.8	2.4	-1.657
MEAN		78.5	59.6	31.9	9.4	-1.640
STD. DEVIATION		13.8	15.2	15.3	9.7	0.135

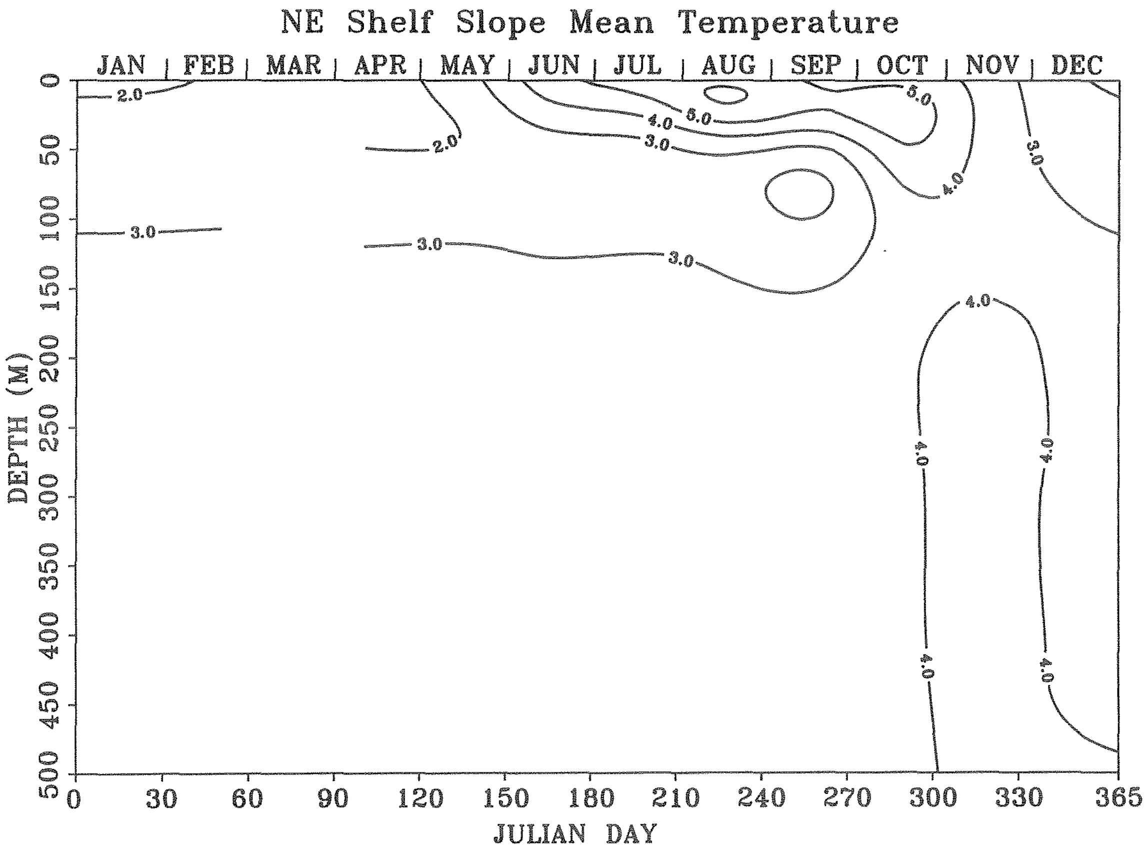
Table 3. Summary of the White Bay transect (July-August) CIL indices.

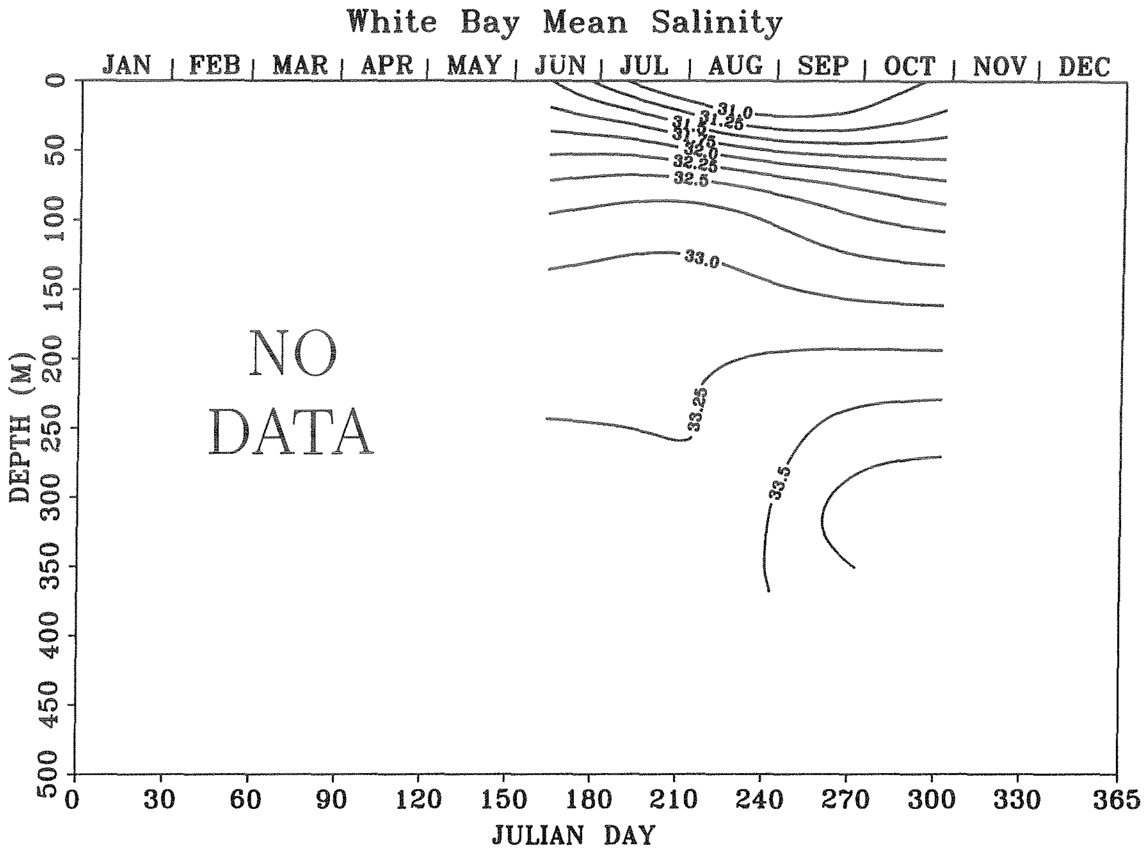
Appendix A. Time series of mean monthly temperature, salinity and density versus depth for White Bay, the NE Shelf Inshore, the NE Shelf Offshore and the NE Shelf Slope areas along the White Bay transect.

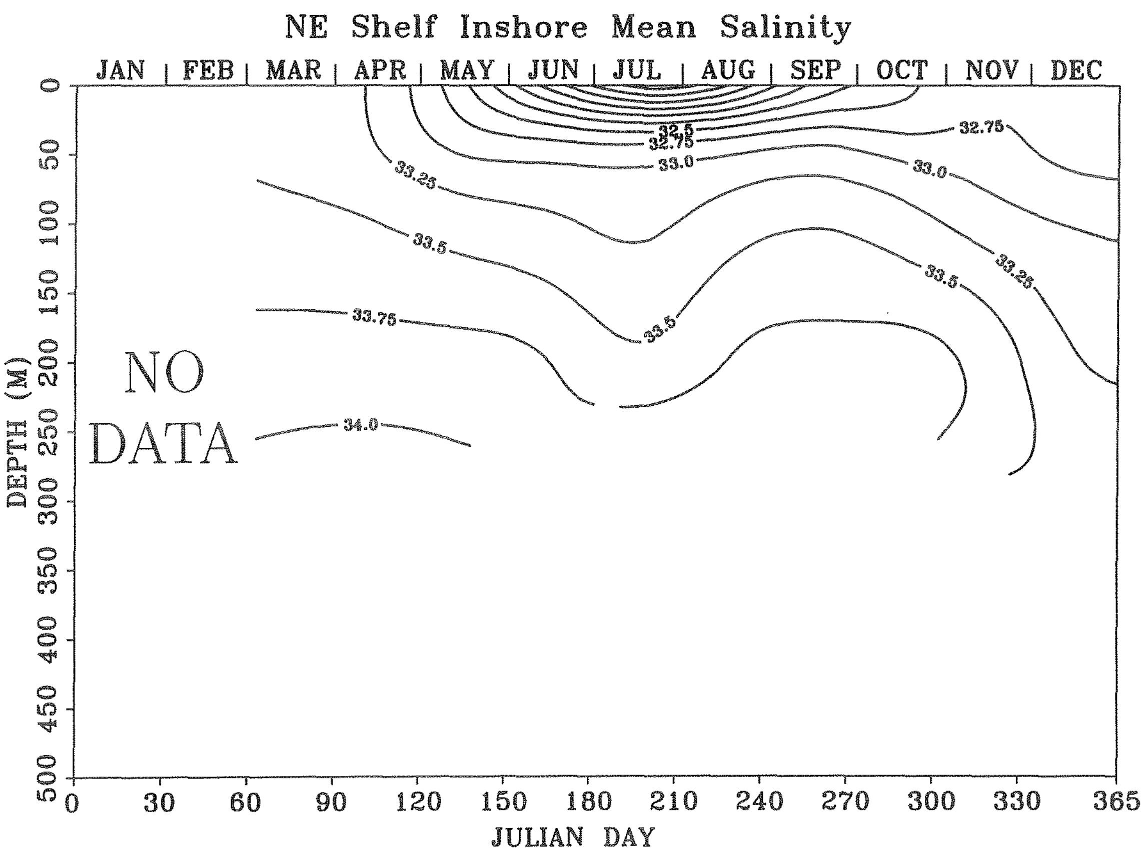

White Bay Mean Temperature
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
DEPTH (M)
JULIAN DAY
NO DATA
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-1.5

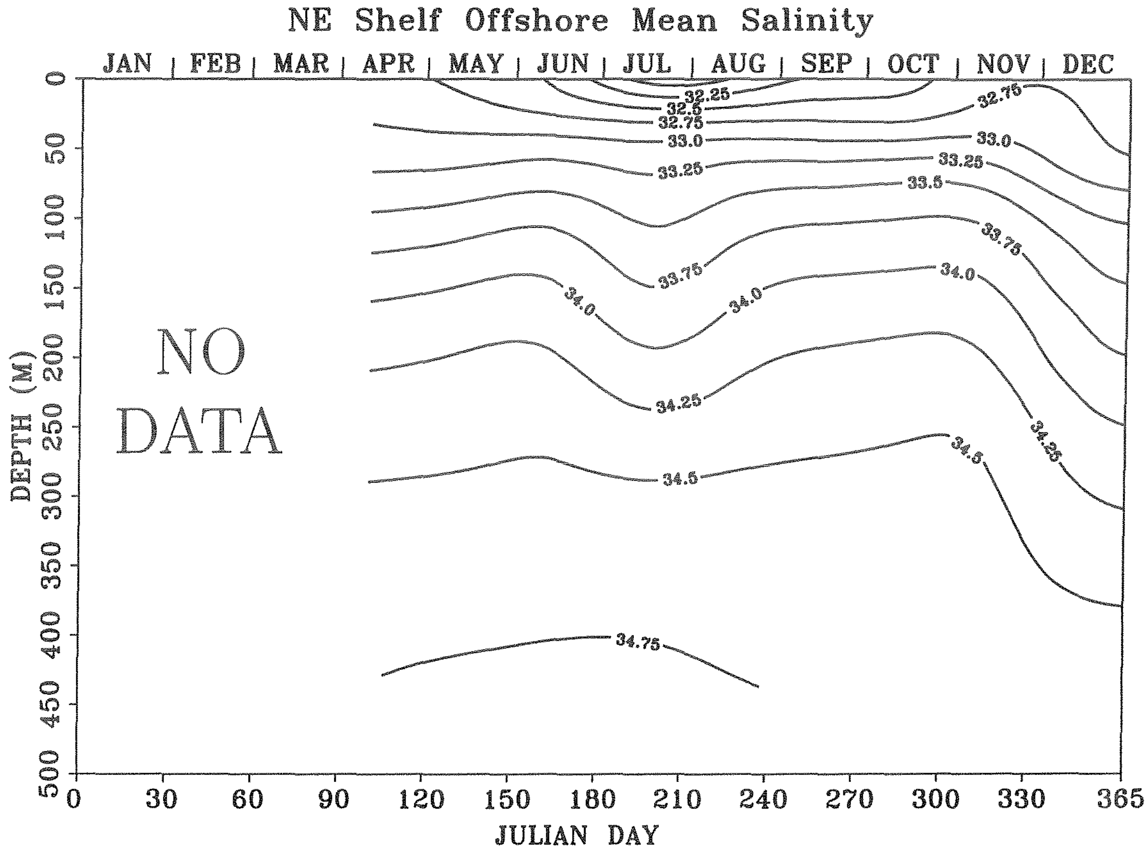

NE Shelf Inshore Mean Temperature
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
DEPTH (M)
JULIAN DAY
NO DATA
4.0
3.0
2.0
1.0
0.0
-1.0

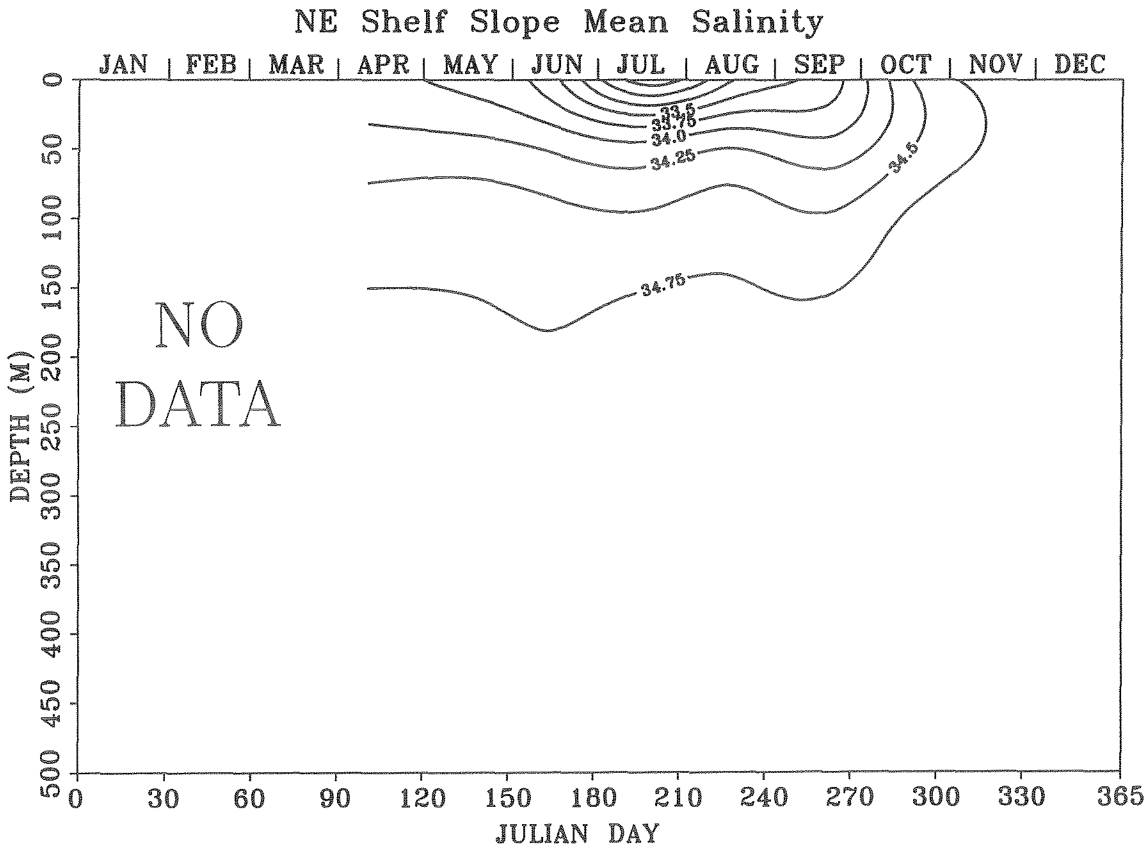

NE Shelf Offshore Mean Temperature
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
DEPTH (M)
JULIAN DAY

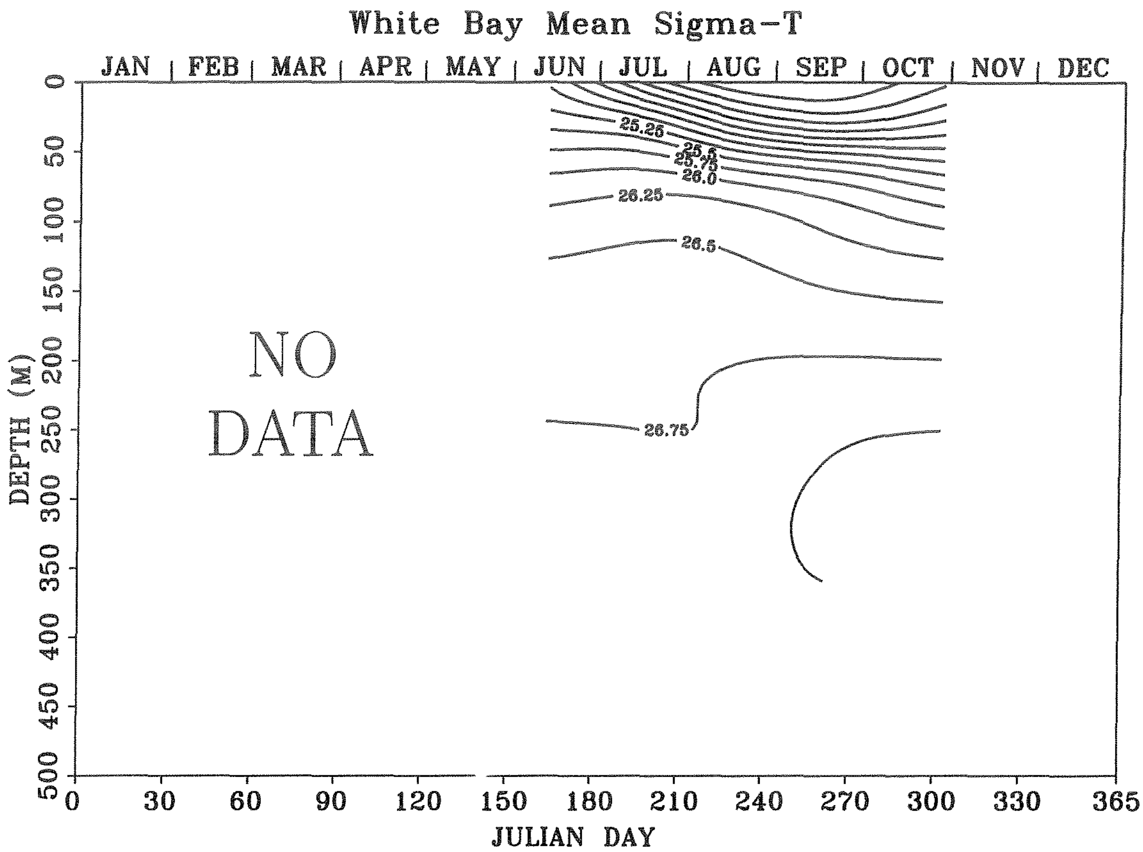

NE Shelf Slope Mean Temperature
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
DEPTH (M)
JULIAN DAY

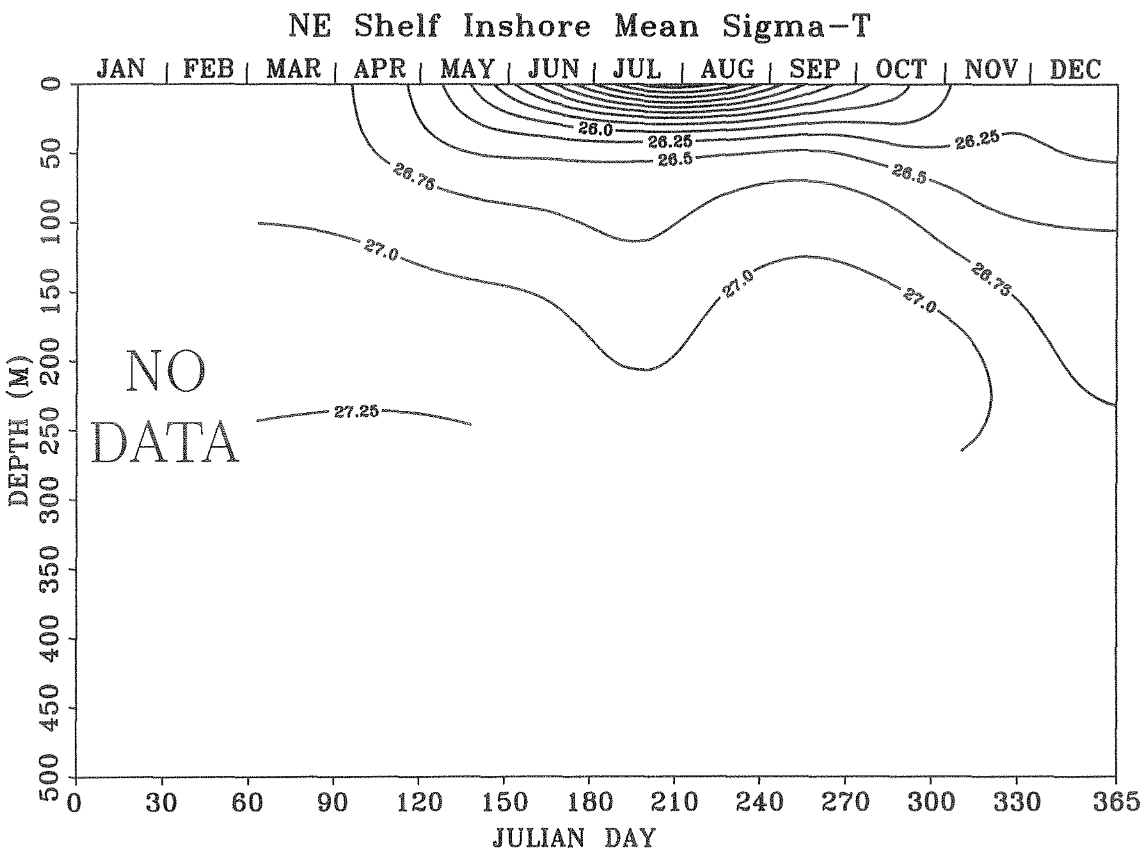

White Bay Mean Salinity
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
NO DATA
31.0
31.25
33.0
33.25
33.5
DEPTH (M)
0 50 100 150 200 250 300 350 400 450 500
0 30 60 90 120 150 180 210 240 270 300 330 365
JULIAN DAY

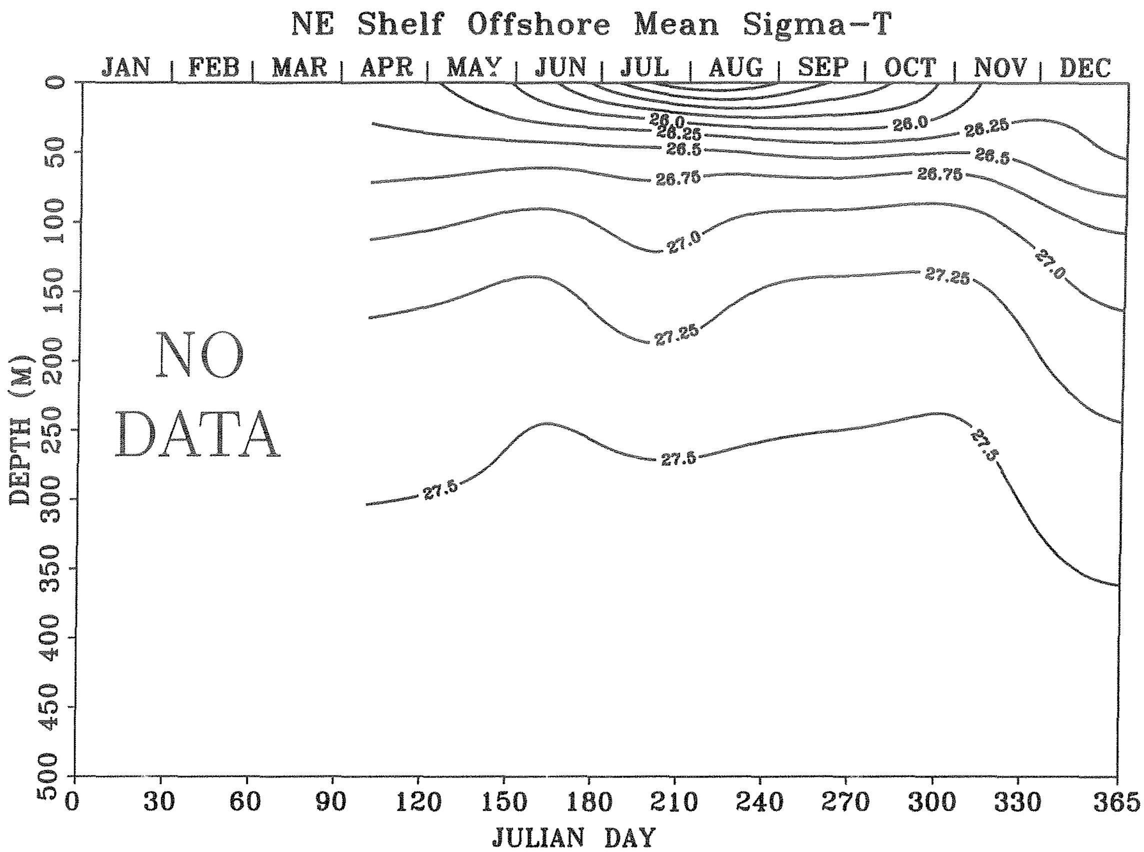

NE Shelf Inshore Mean Salinity
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
NO DATA
32.5
32.75
33.0
33.25
33.5
33.75
34.0
DEPTH (M)
0 50 100 150 200 250 300 350 400 450 500
0 30 60 90 120 150 180 210 240 270 300 330 365
JULIAN DAY

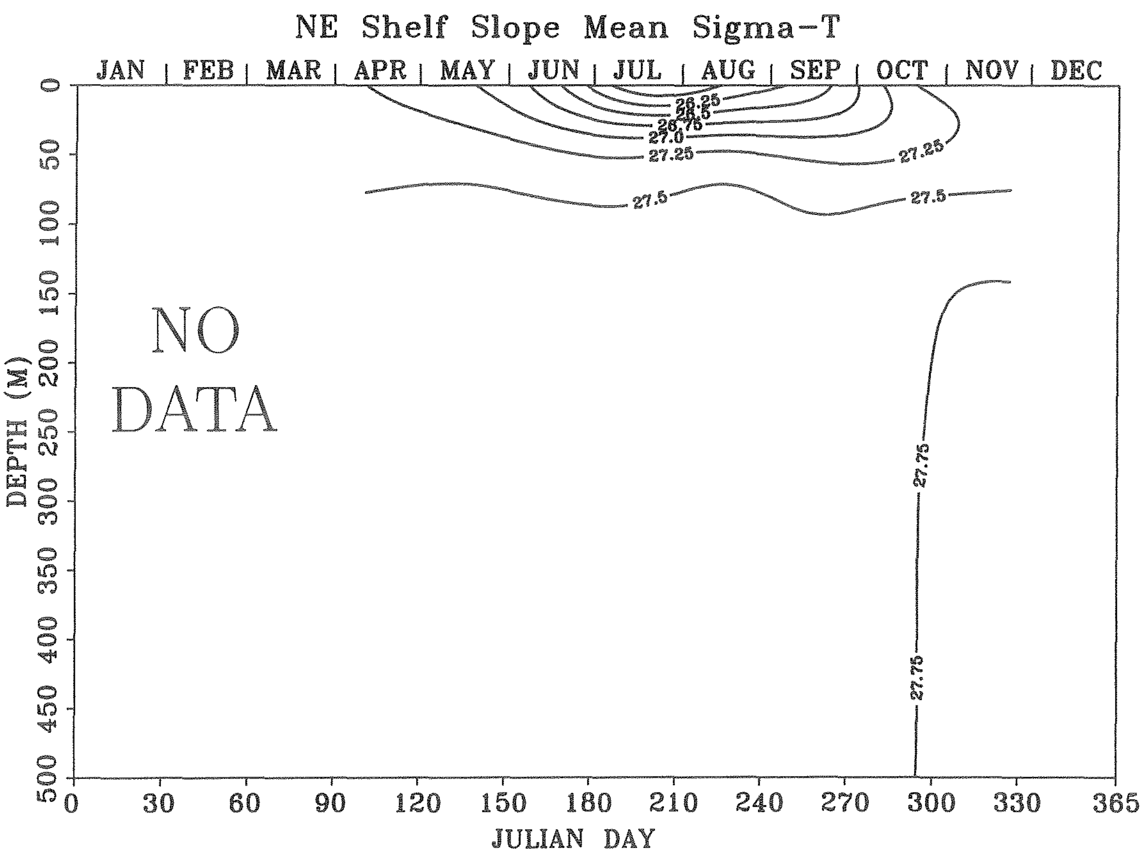

NE Shelf Offshore Mean Salinity
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
NO DATA
DEPTH (M)
JULIAN DAY
0 30 60 90 120 150 180 210 240 270 300 330 365
0 50 100 150 200 250 300 350 400 450 500
32.25
32.5
32.75
33.0
33.25
33.5
33.75
34.0
34.25
34.5
34.75


NE Shelf Slope Mean Salinity
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
NO DATA
DEPTH (M)
JULIAN DAY
0 30 60 90 120 150 180 210 240 270 300 330 365
0 50 100 150 200 250 300 350 400 450 500
33.5
33.75
34.0
34.25
34.5
34.75

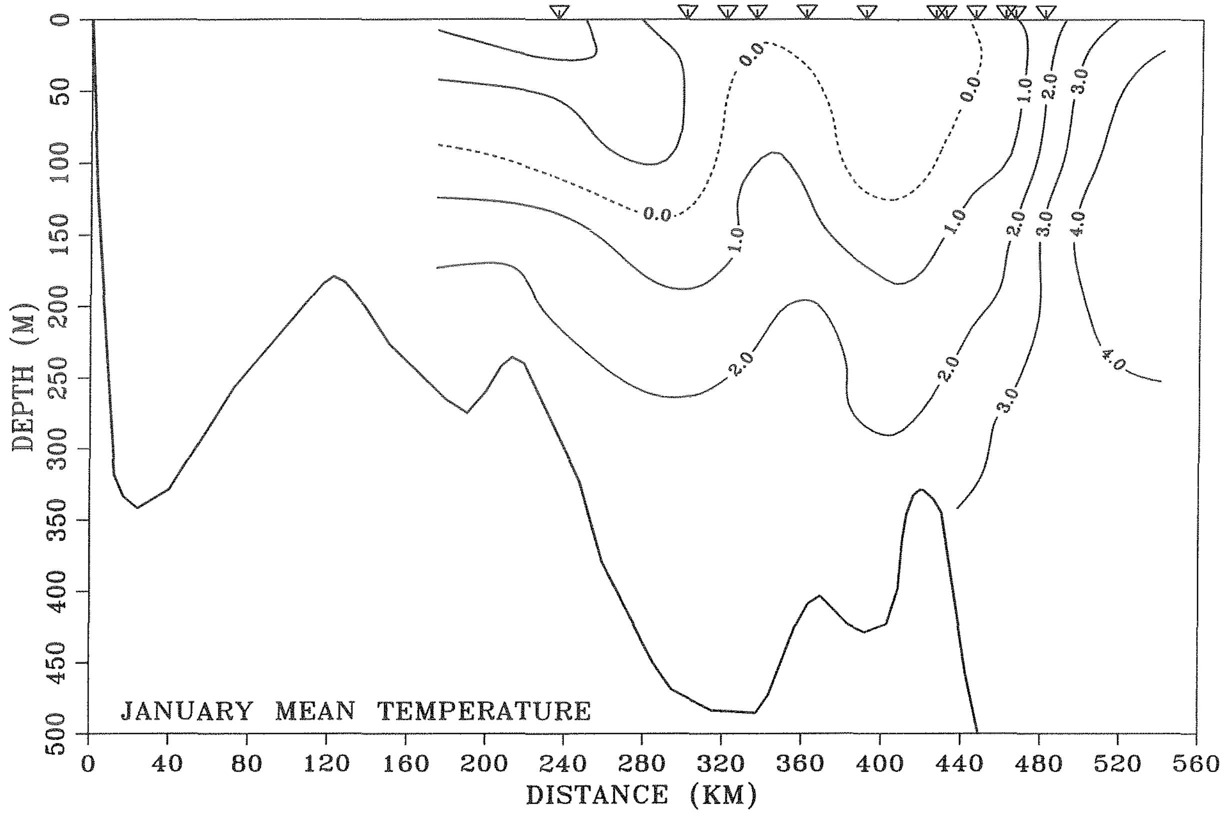

White Bay Mean Sigma-T
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
DEPTH (M)
JULIAN DAY
NO DATA
25.25
25.5
25.75
26.0
26.25
26.5
26.75

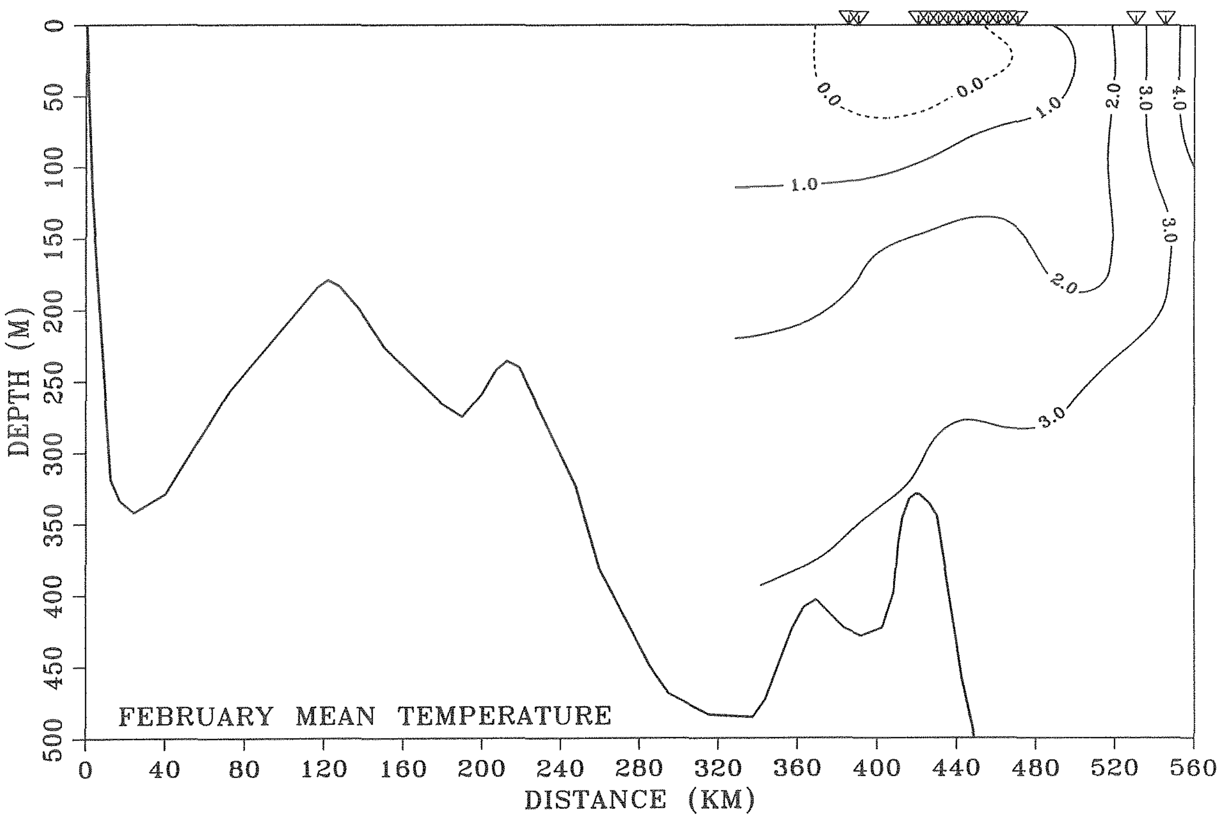

NE Shelf Inshore Mean Sigma-T
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
DEPTH (M)
JULIAN DAY
NO DATA
26.0
26.25
26.5
26.75
27.0
27.25

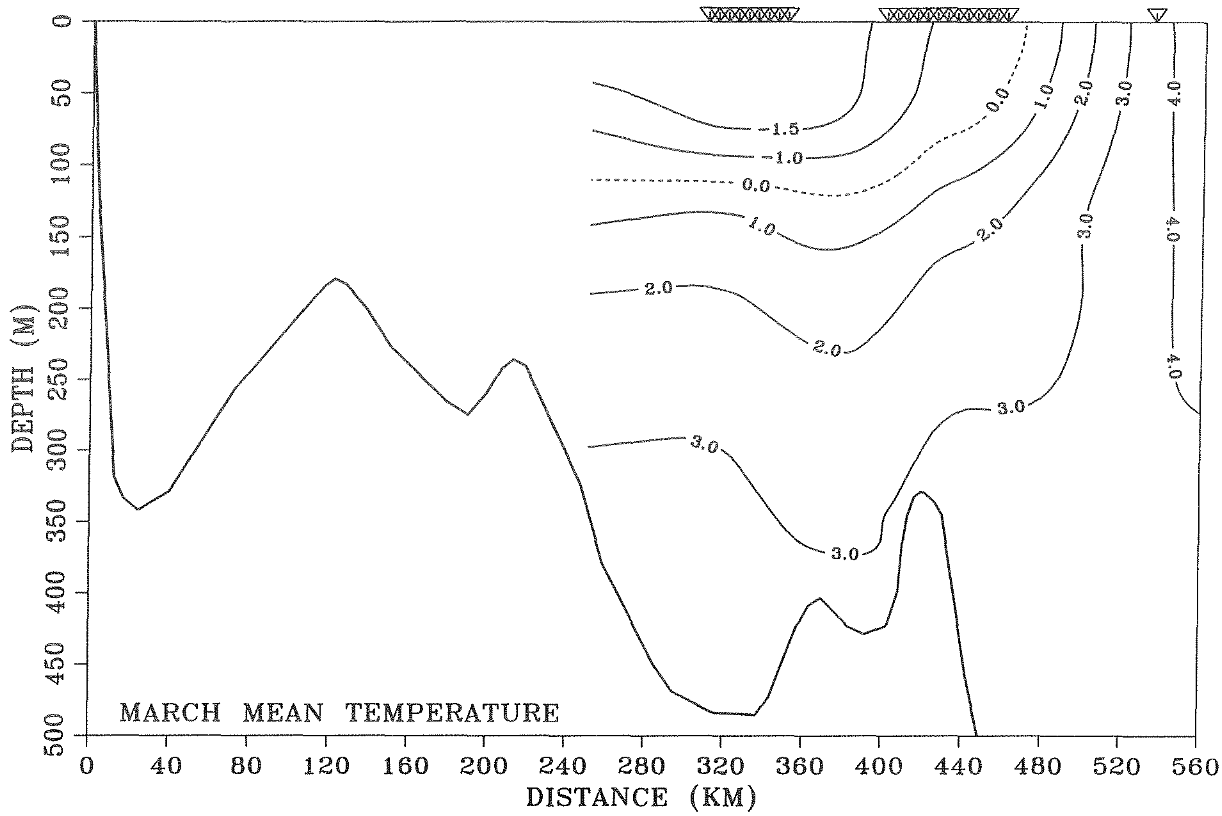

NE Shelf Offshore Mean Sigma-T
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
DEPTH (M)
JULIAN DAY
NO DATA
26.0
26.25
26.5
26.75
27.0
27.25
27.5


NE Shelf Slope Mean Sigma-T
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
DEPTH (M)
JULIAN DAY
NO DATA
26.25
26.5
26.75
27.0
27.25
27.5
27.75

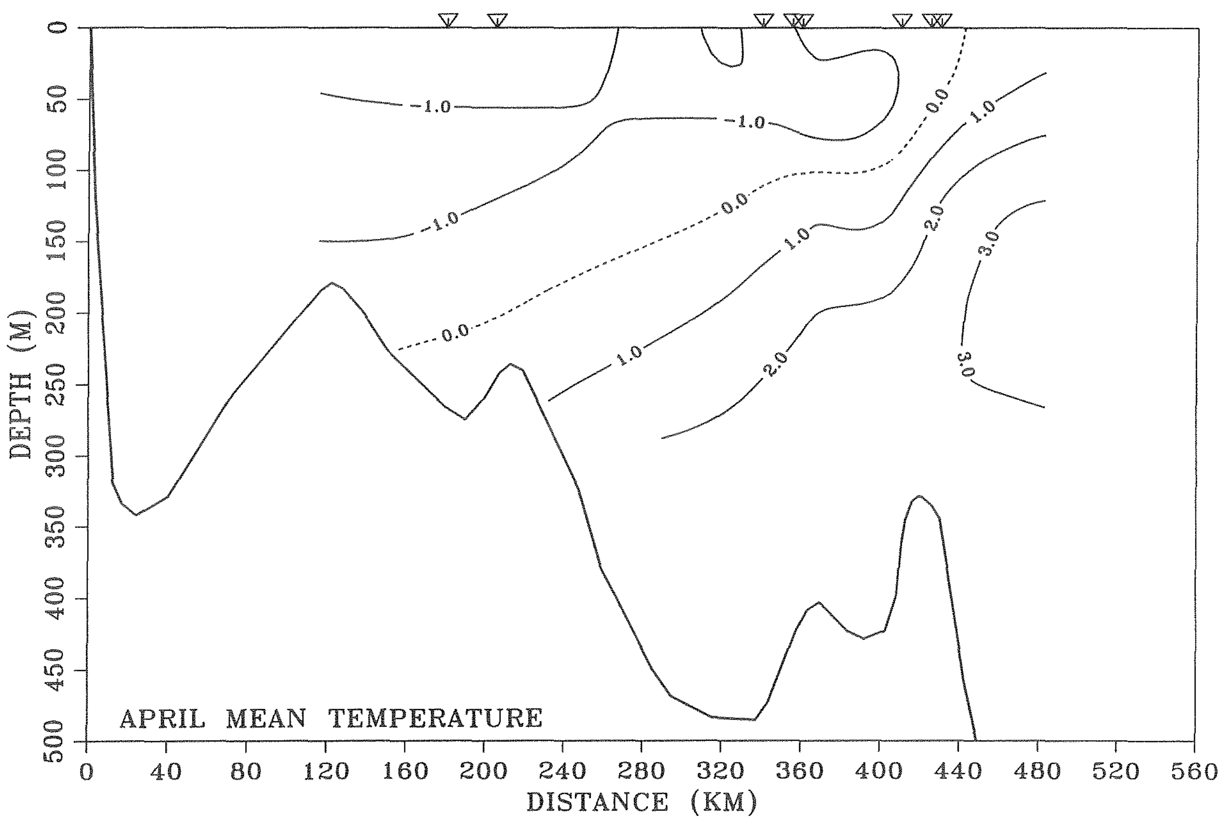
Appendix B. The monthly average vertical distrubutions of temperature.


JANUARY MEAN TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0.0
1.0
2.0
3.0
4.0
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560

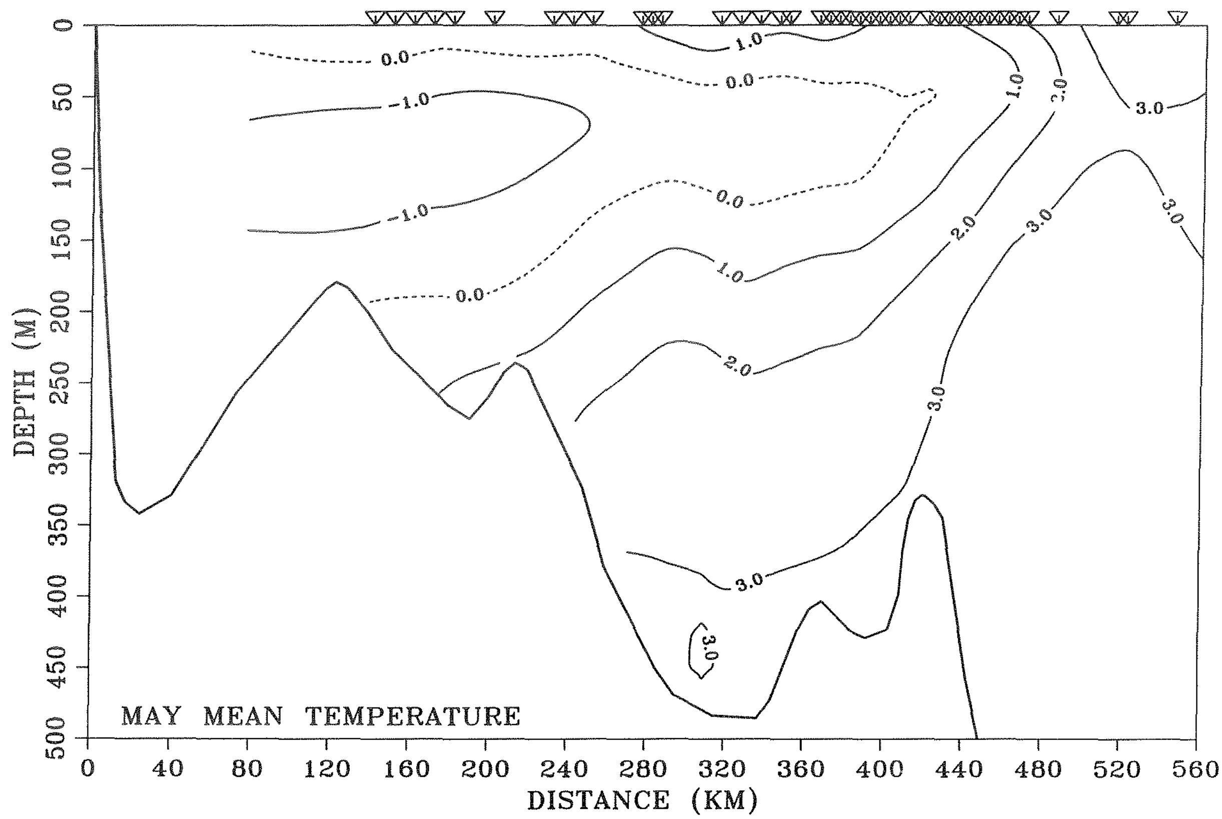

FEBRUARY MEAN TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0.0
1.0
2.0
3.0
4.0
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560

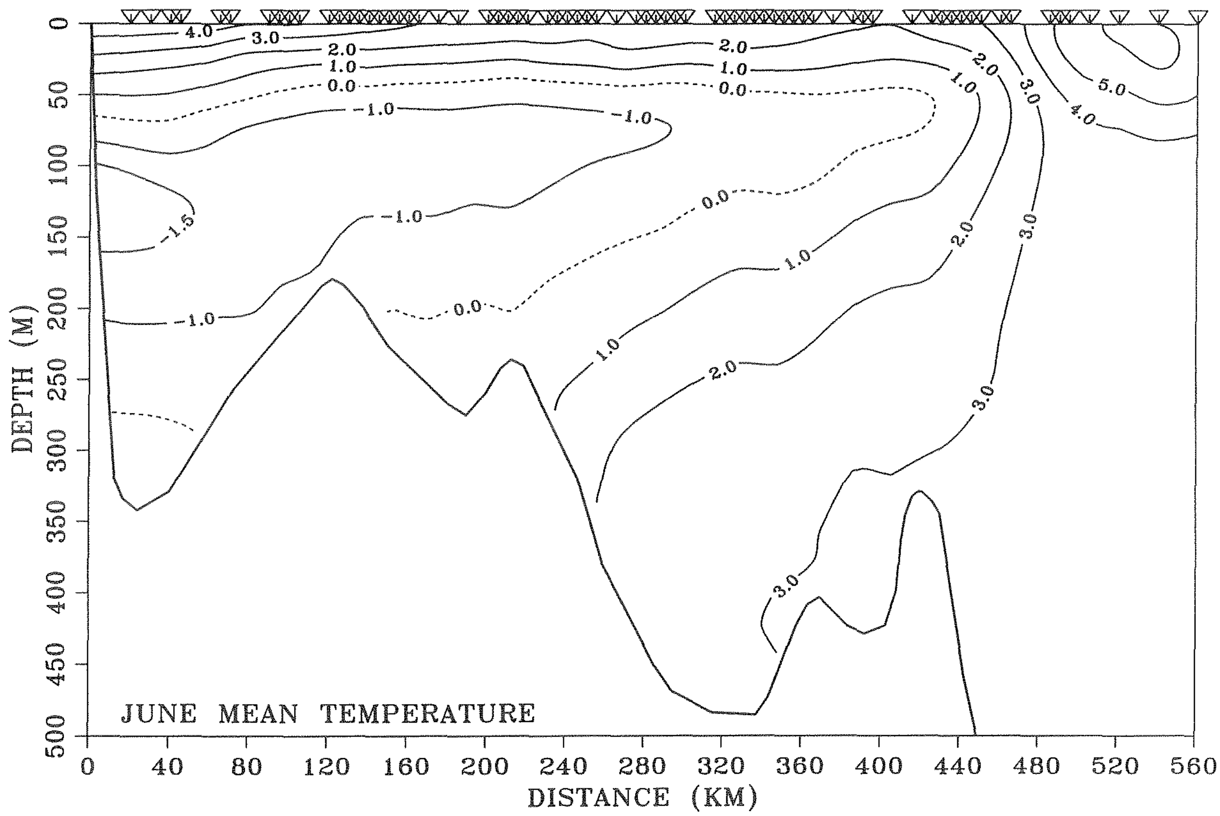


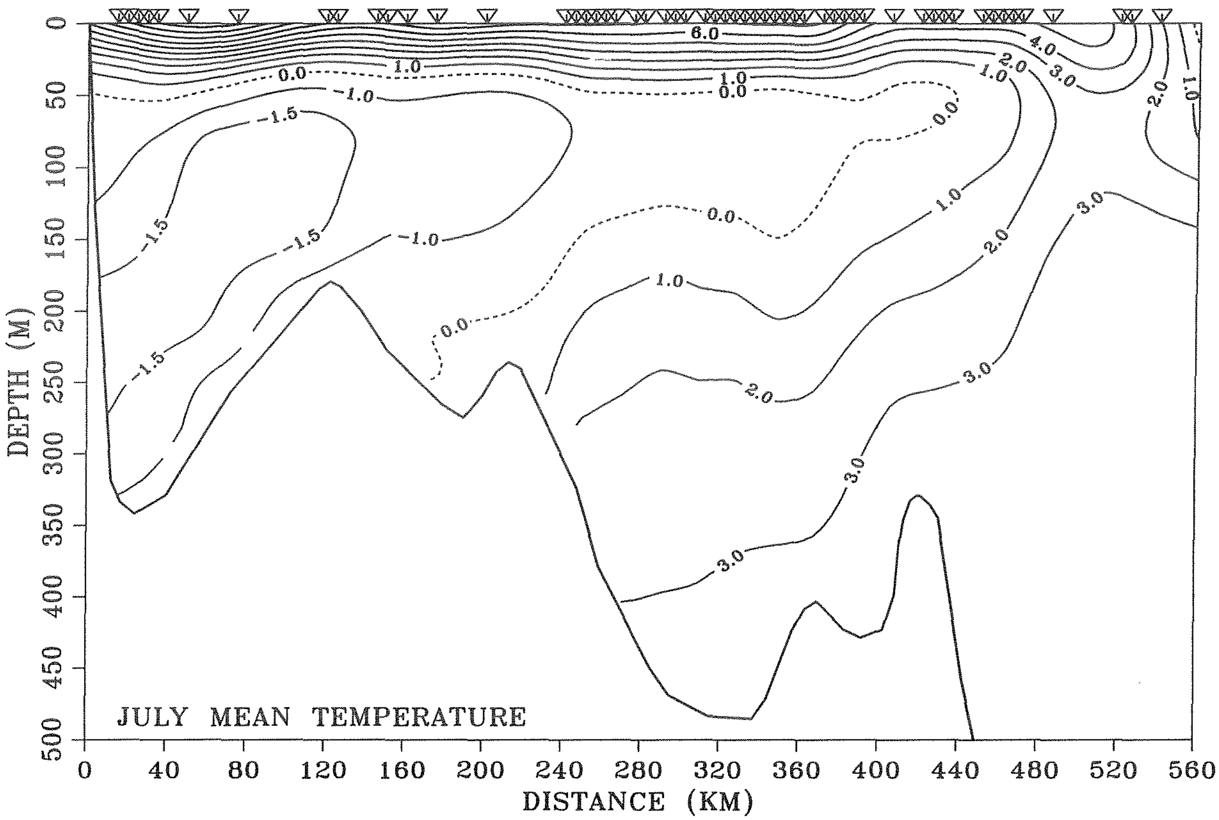
MARCH MEAN TEMPERATURE
DEPTH (M)
DISTANCE (KM)
-1.5
-1.0
0.0
1.0
2.0
3.0
4.0

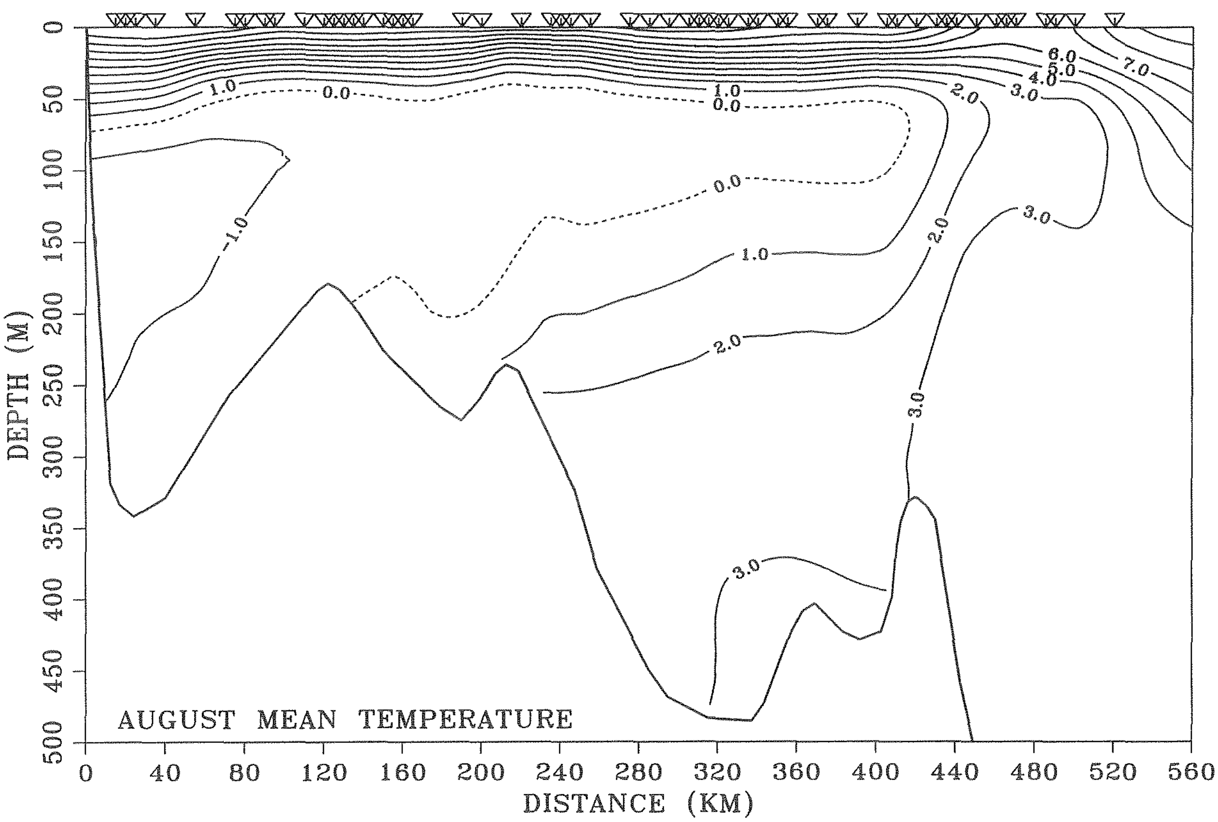


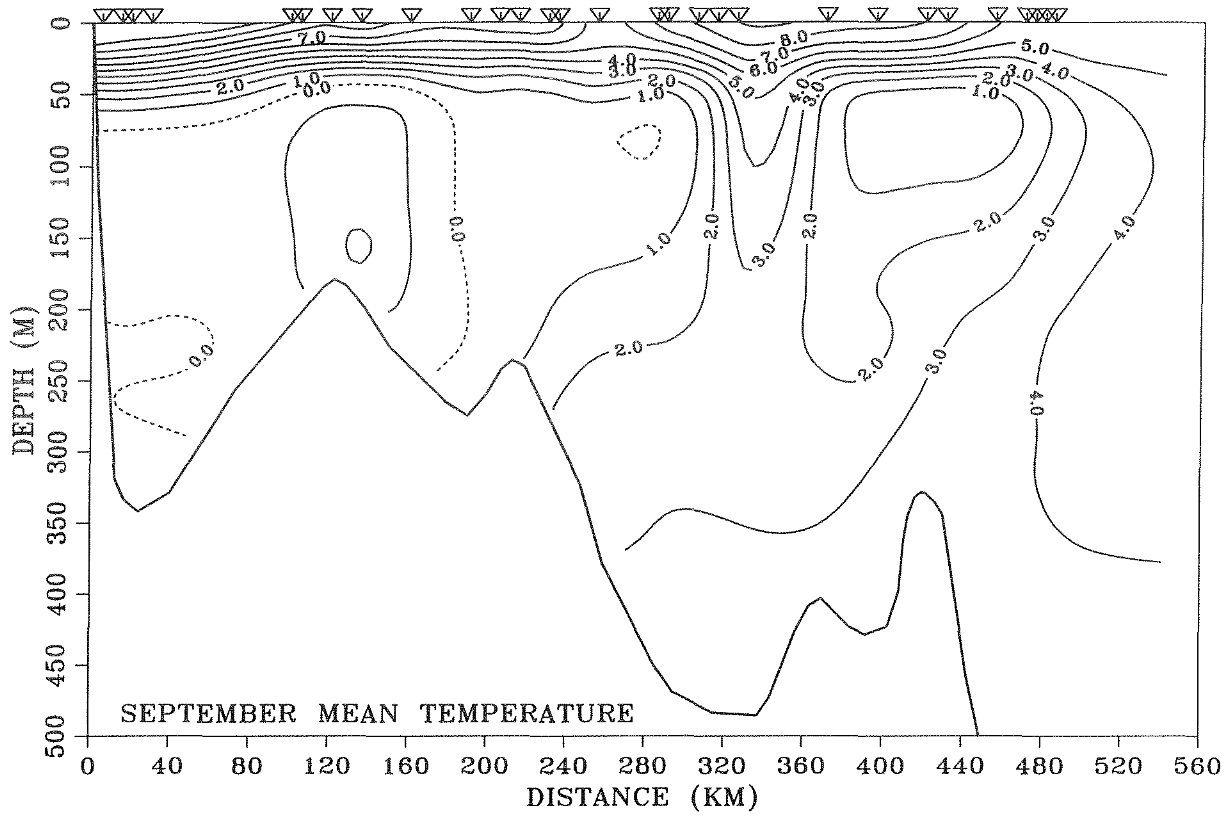
APRIL MEAN TEMPERATURE
DEPTH (M)
DISTANCE (KM)
-1.0
0.0
1.0
2.0
3.0

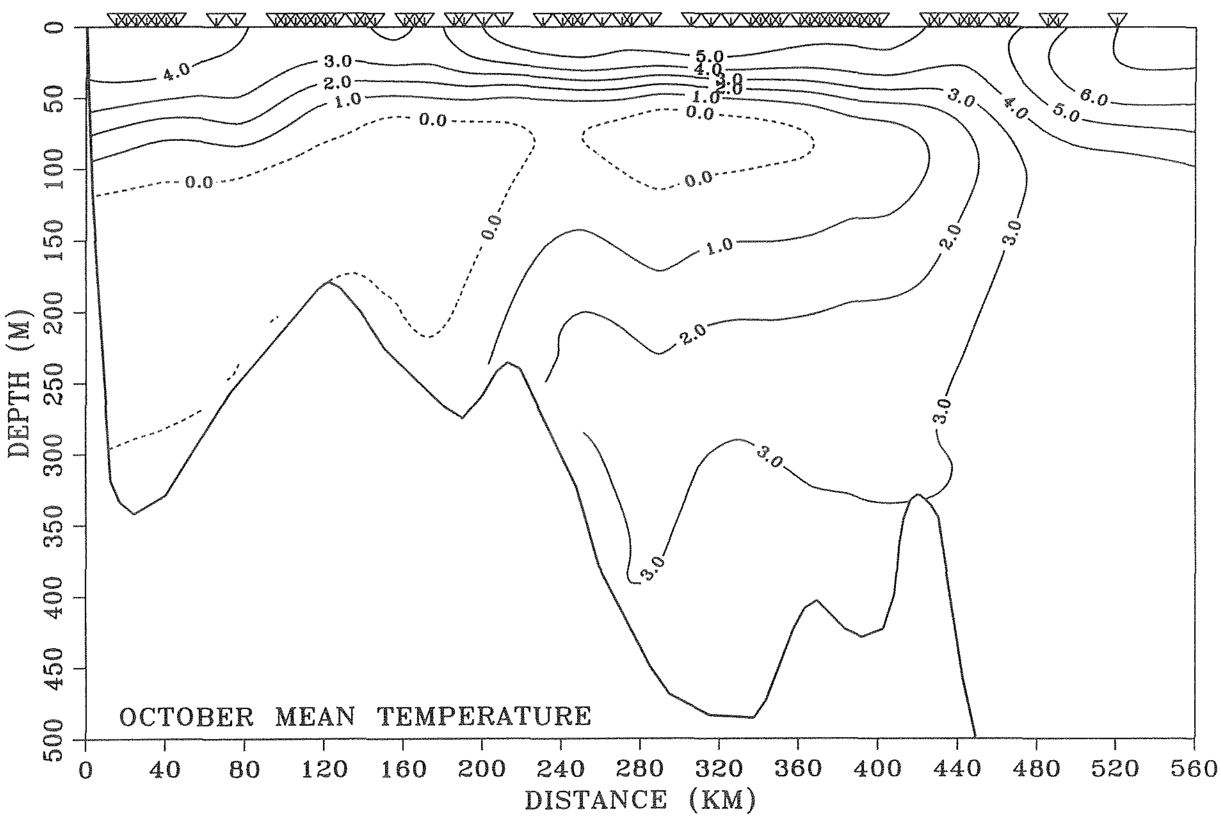

MAY MEAN TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0.0
1.0
-1.0
2.0
3.0
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560

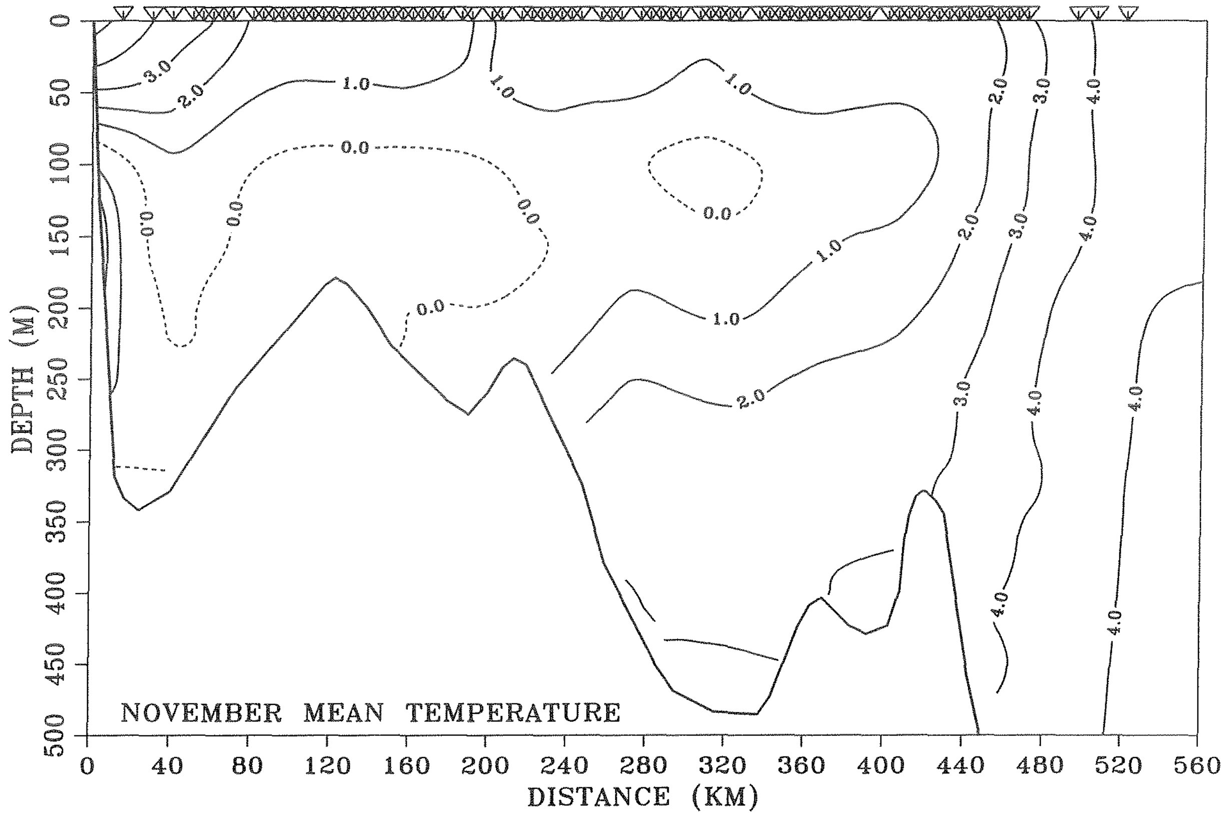

JUNE MEAN TEMPERATURE
DEPTH (M)
DISTANCE (KM)
4.0
3.0
2.0
1.0
0.0
-1.0
-1.5
5.0
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560


JULY MEAN TEMPERATURE
DEPTH (M)
DISTANCE (KM)
6.0
4.0
2.0
3.0
1.0
0.0
-1.0
-1.5
2.0
3.0

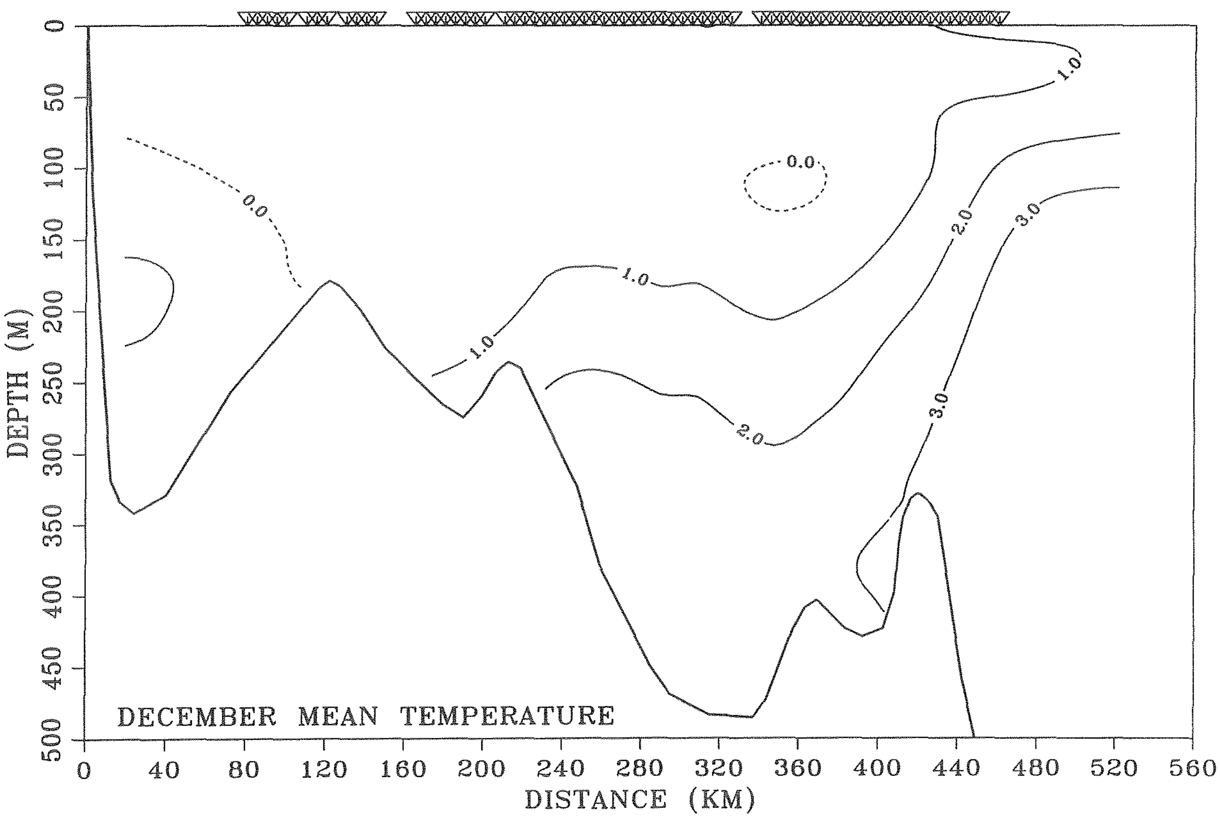

AUGUST MEAN TEMPERATURE
DEPTH (M)
DISTANCE (KM)
6.0
5.0
4.0
7.0
3.0
2.0
1.0
0.0
-1.0


SEPTEMBER MEAN TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
7.0
8.0
5.0
4.0
3.0
2.0
1.0
0.0
6.0


OCTOBER MEAN TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
4.0
3.0
2.0
1.0
0.0
5.0
6.0

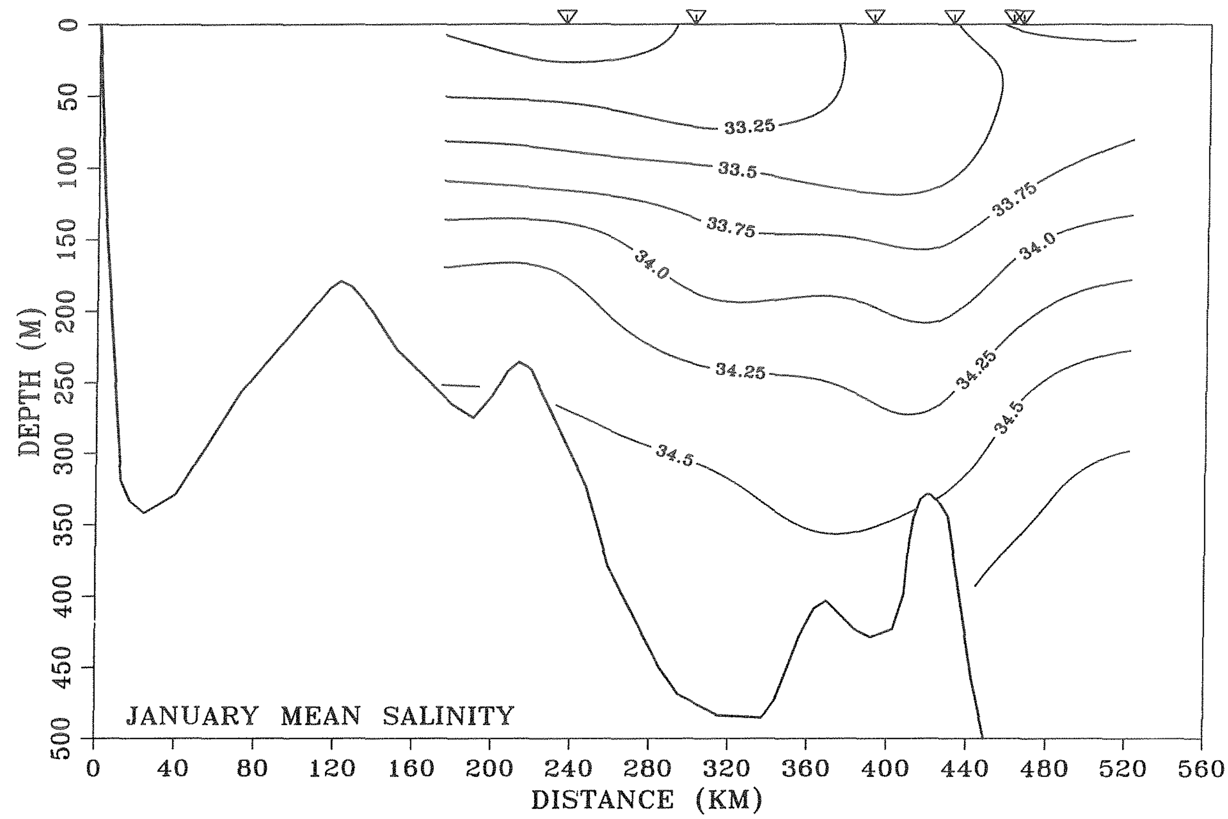


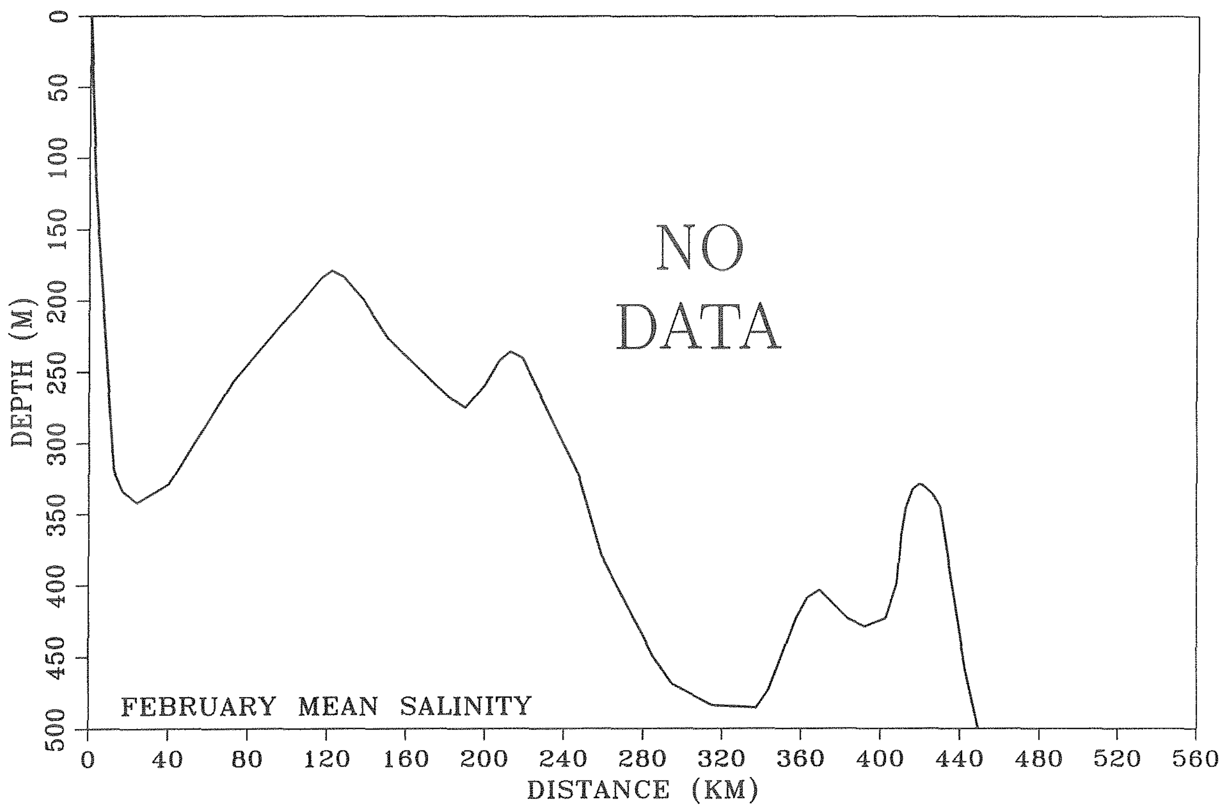
NOVEMBER MEAN TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
3.0
2.0
1.0
0.0
4.0

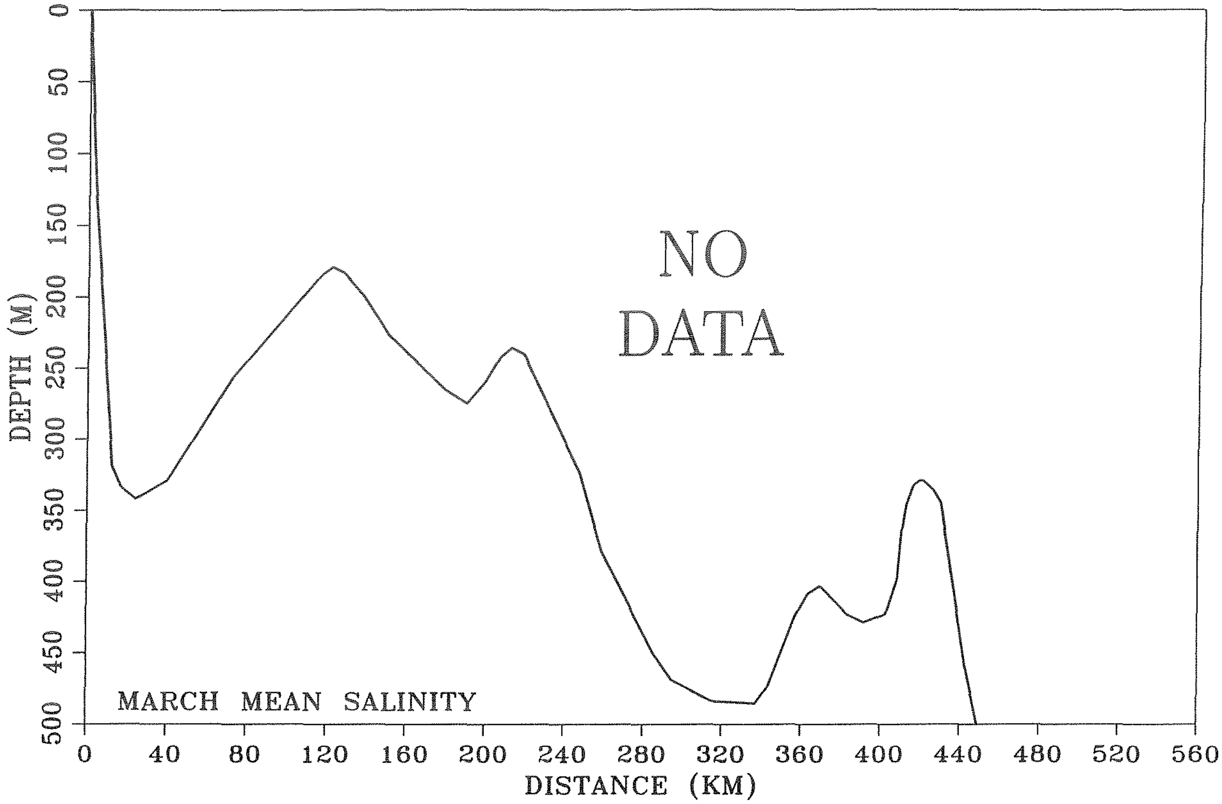


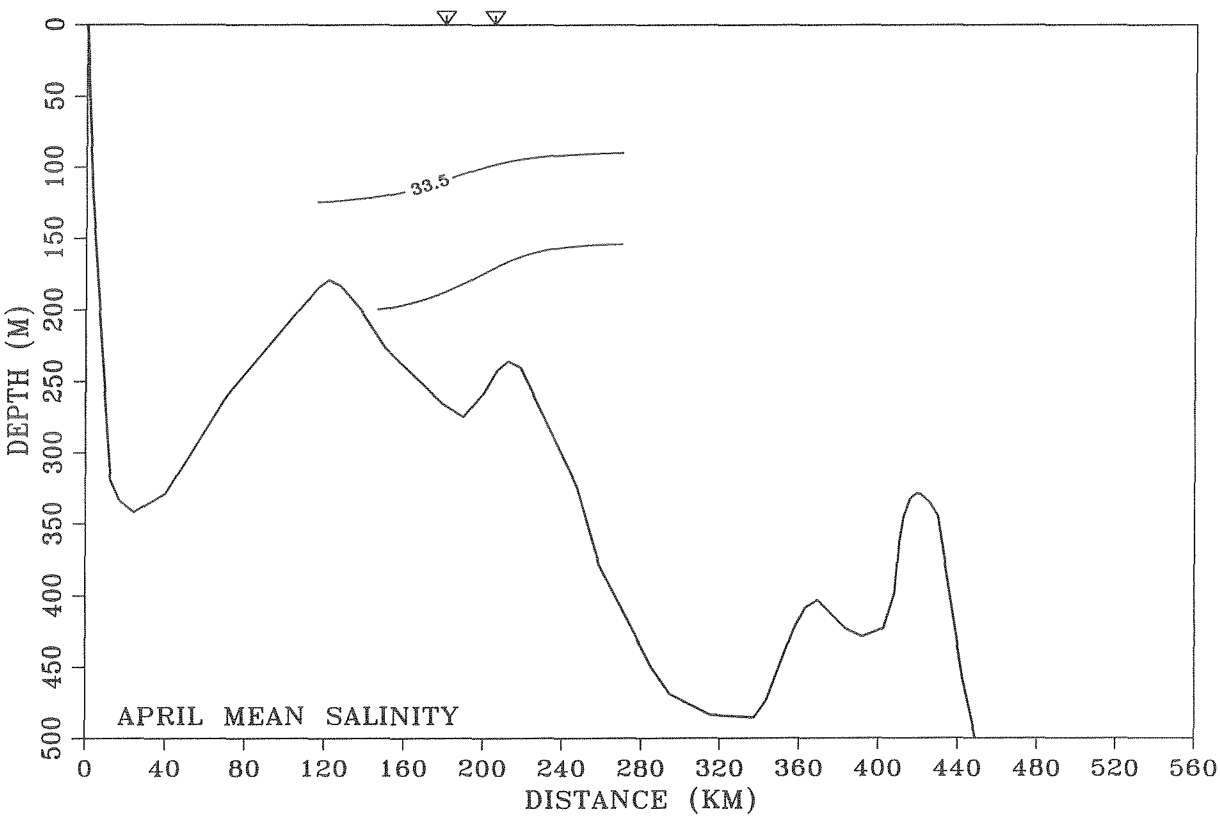
DECEMBER MEAN TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
0.0
1.0
2.0
3.0

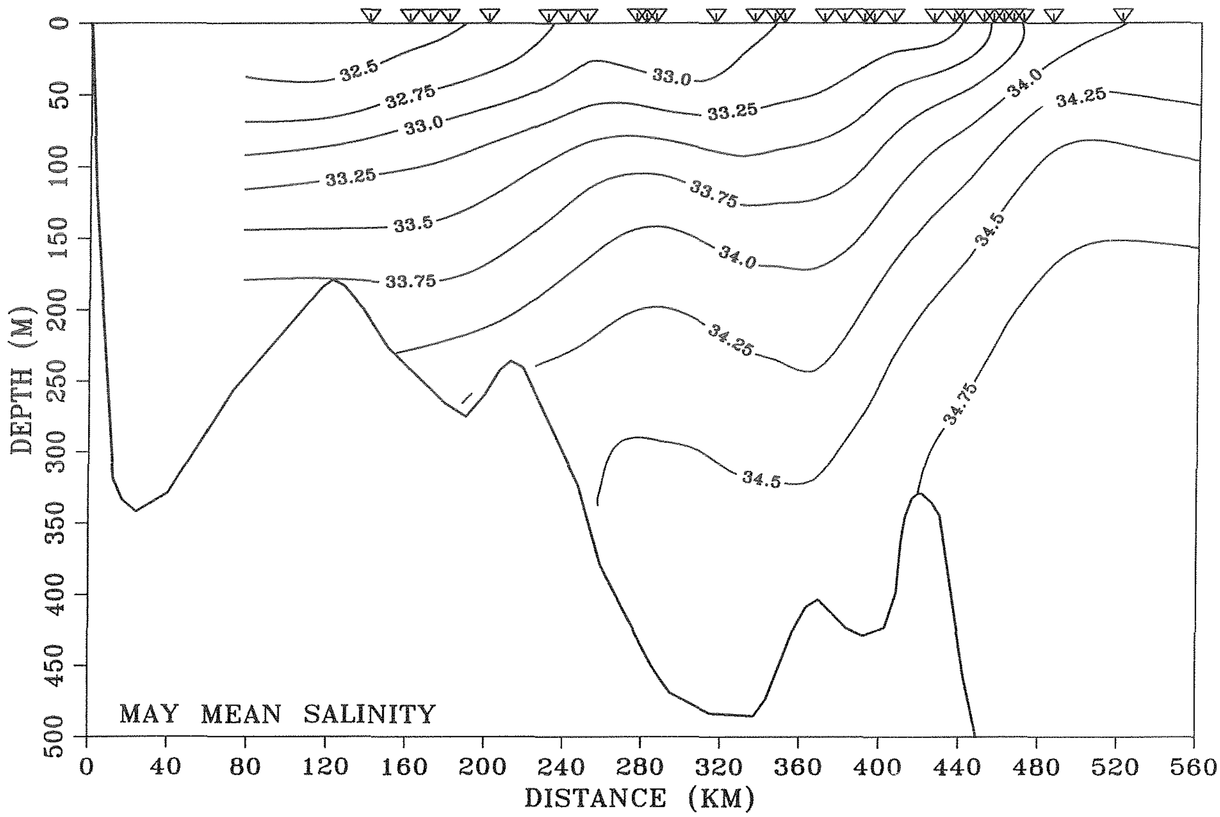
Appendix C. The monthly average vertical distrubutions of salinity.

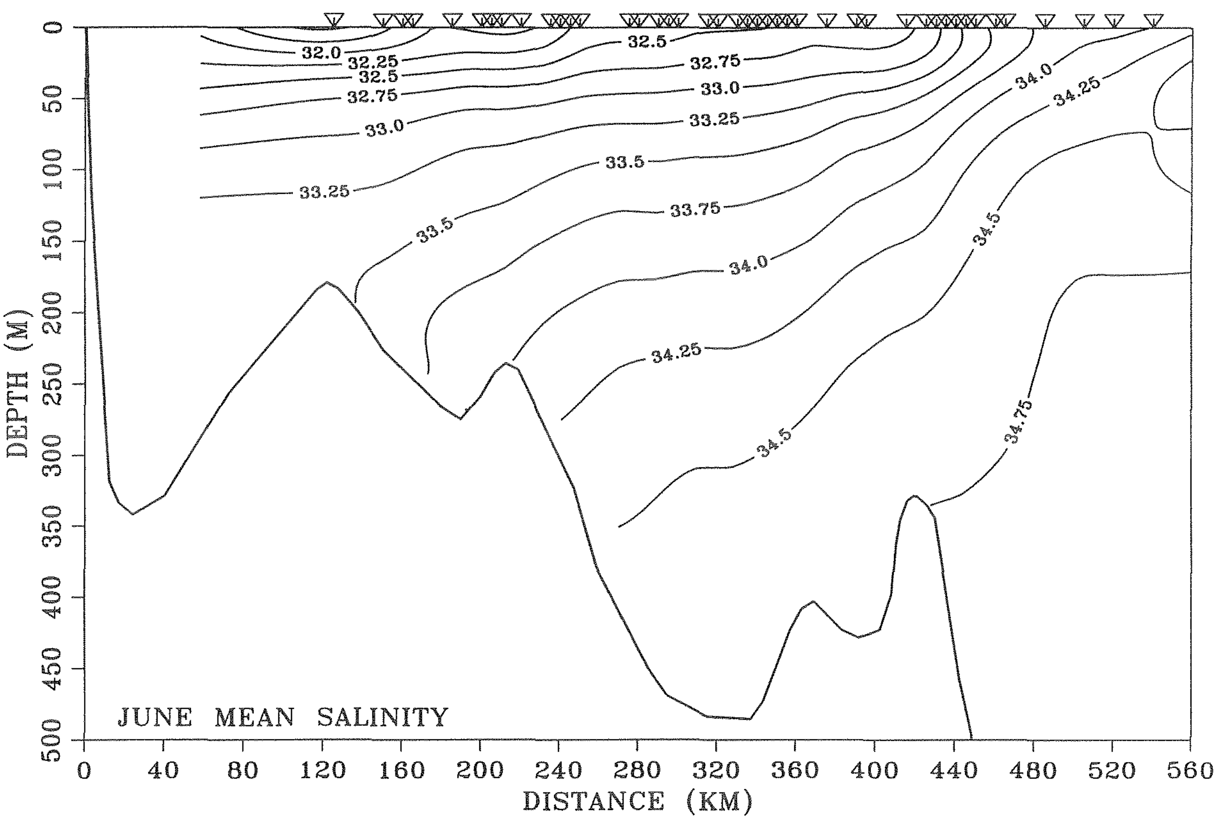

JANUARY MEAN SALINITY
DEPTH (M)
DISTANCE (KM)
33.25
33.5
33.75
34.0
34.25
34.5
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560

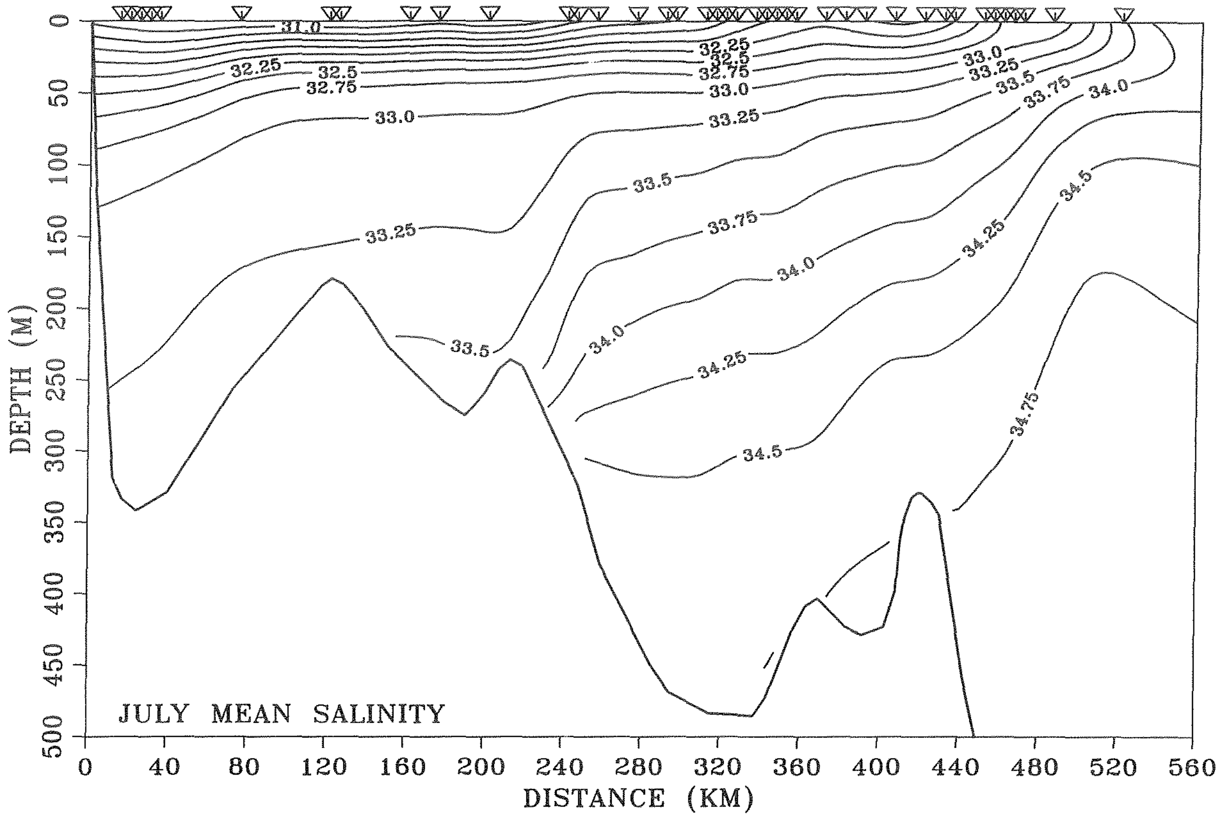

FEBRUARY MEAN SALINITY
NO DATA
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560

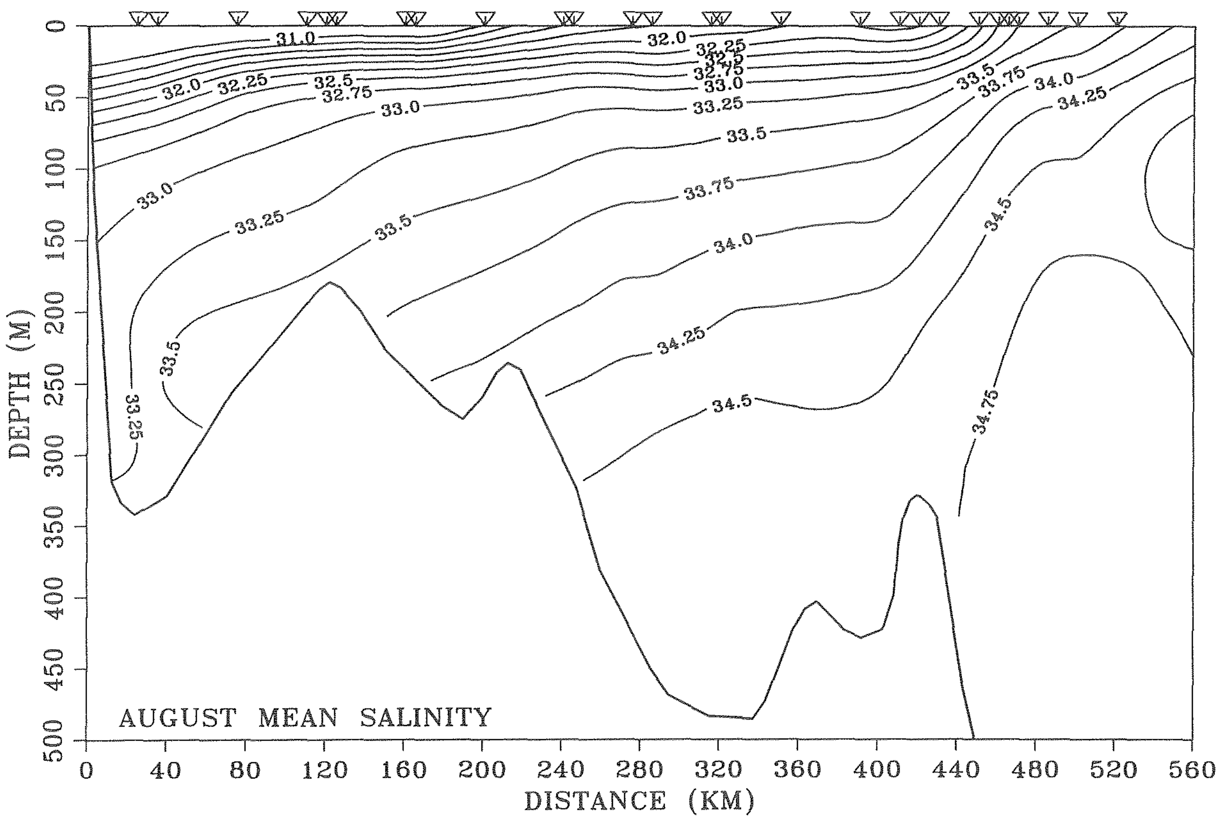

NO
DATA
MARCH MEAN SALINITY
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)

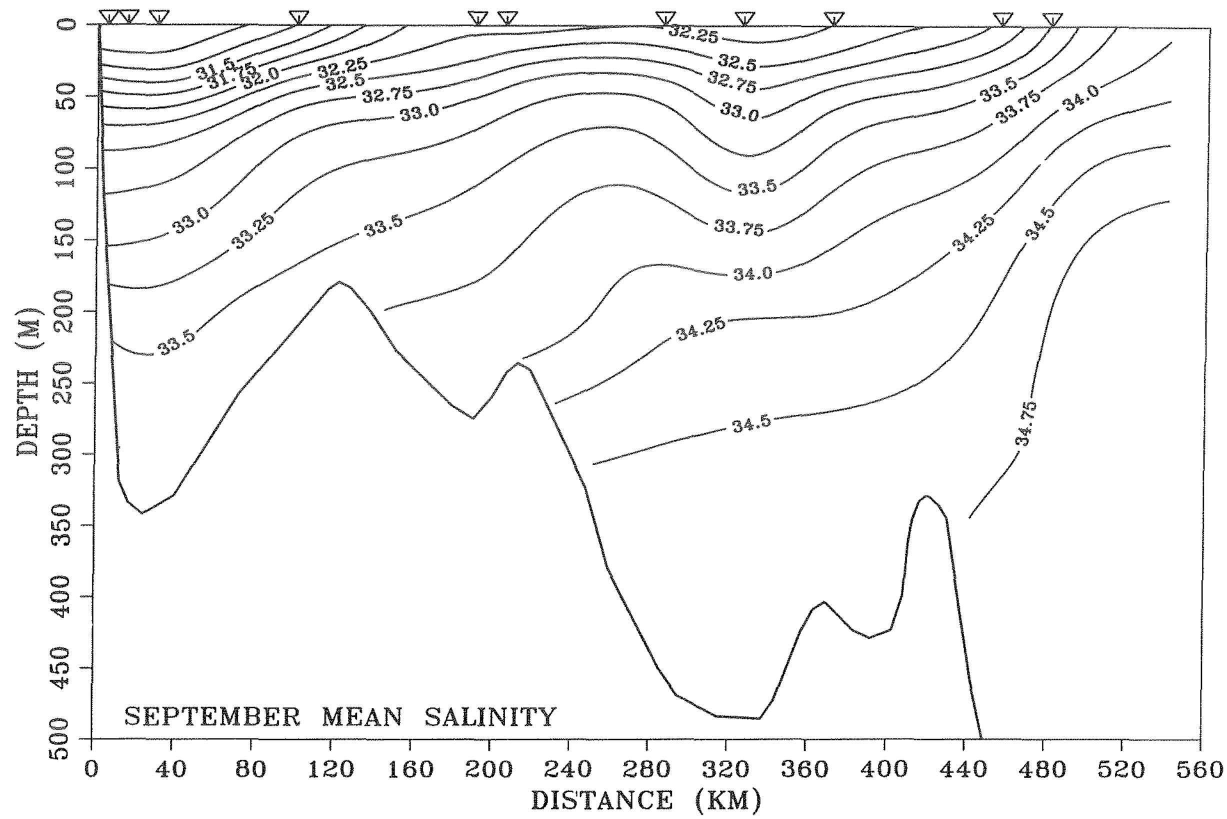

33.5
APRIL MEAN SALINITY
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)

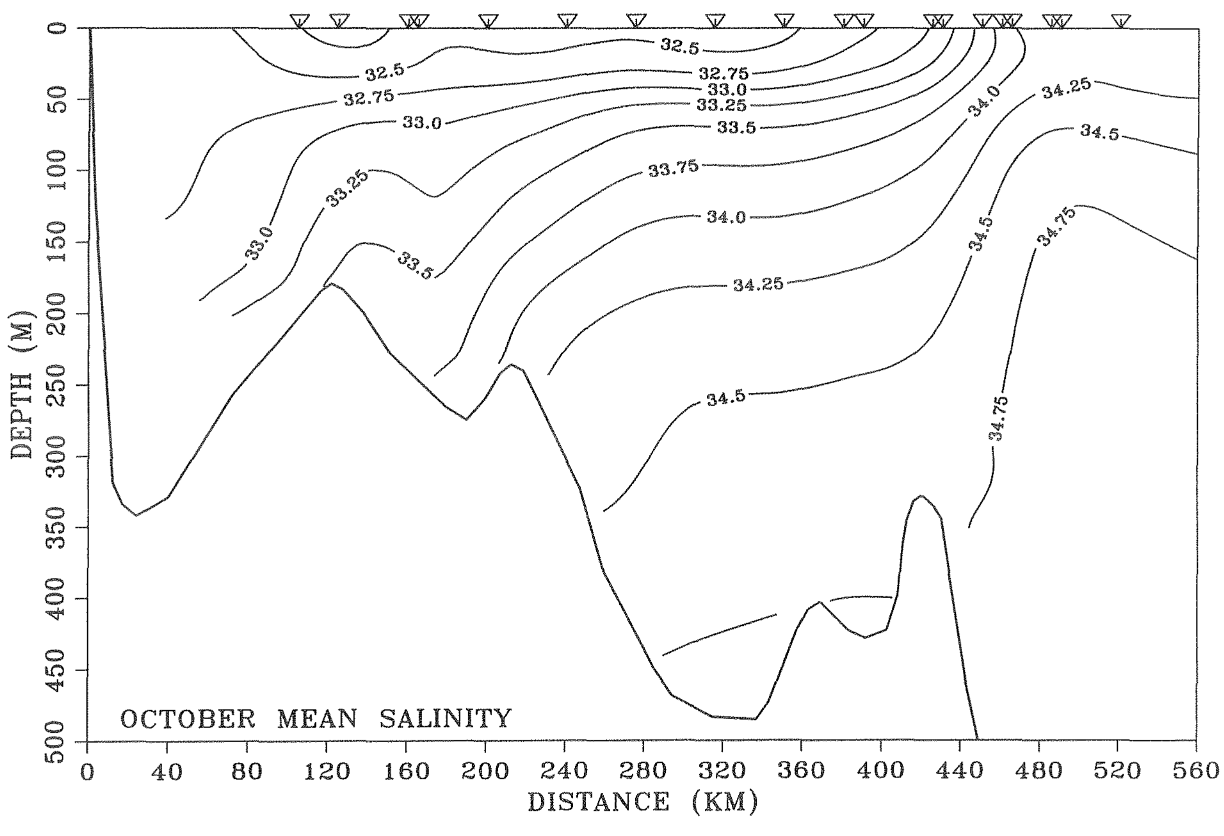

MAY MEAN SALINITY
DEPTH (M)
DISTANCE (KM)
32.5
32.75
33.0
33.25
33.5
33.75
34.0
34.25
34.5
34.75
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
0 50 100 150 200 250 300 350 400 450 500

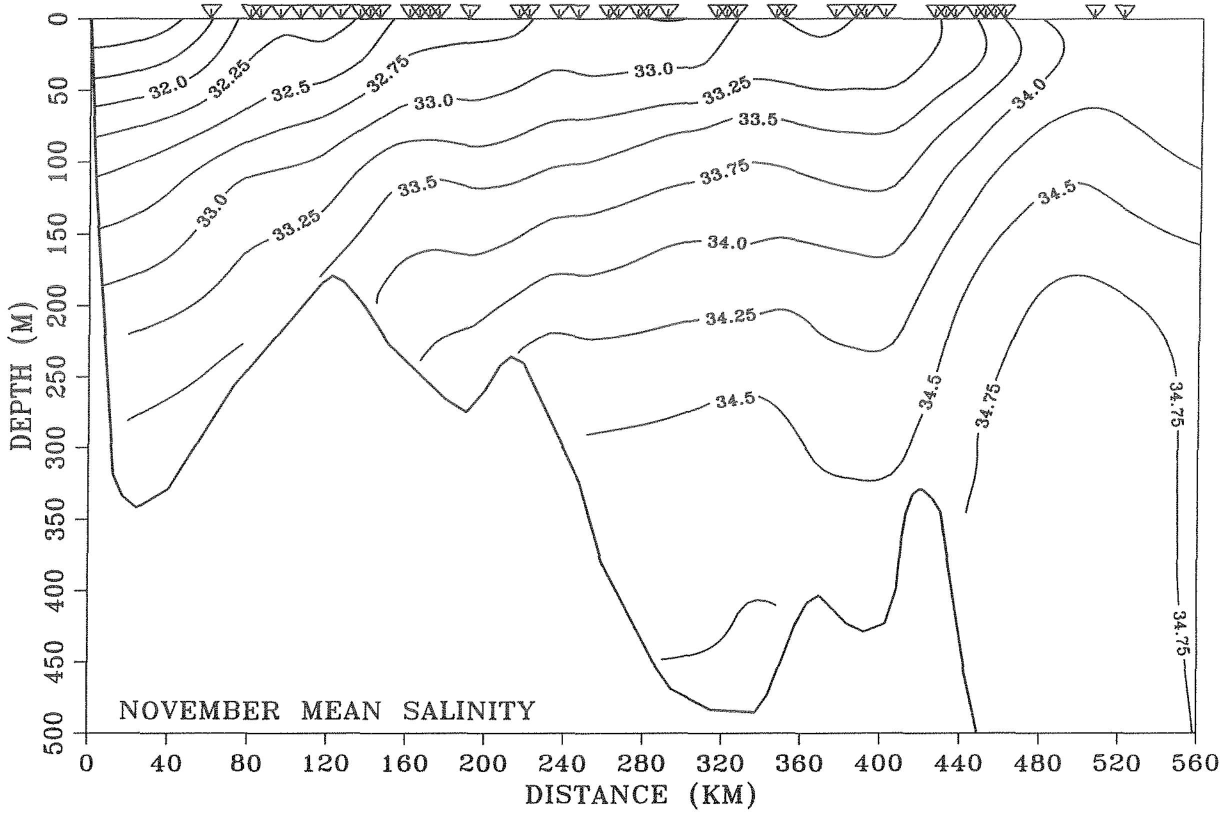

JUNE MEAN SALINITY
DEPTH (M)
DISTANCE (KM)
32.0
32.25
32.5
32.75
33.0
33.25
33.5
33.75
34.0
34.25
34.5
34.75
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
0 50 100 150 200 250 300 350 400 450 500

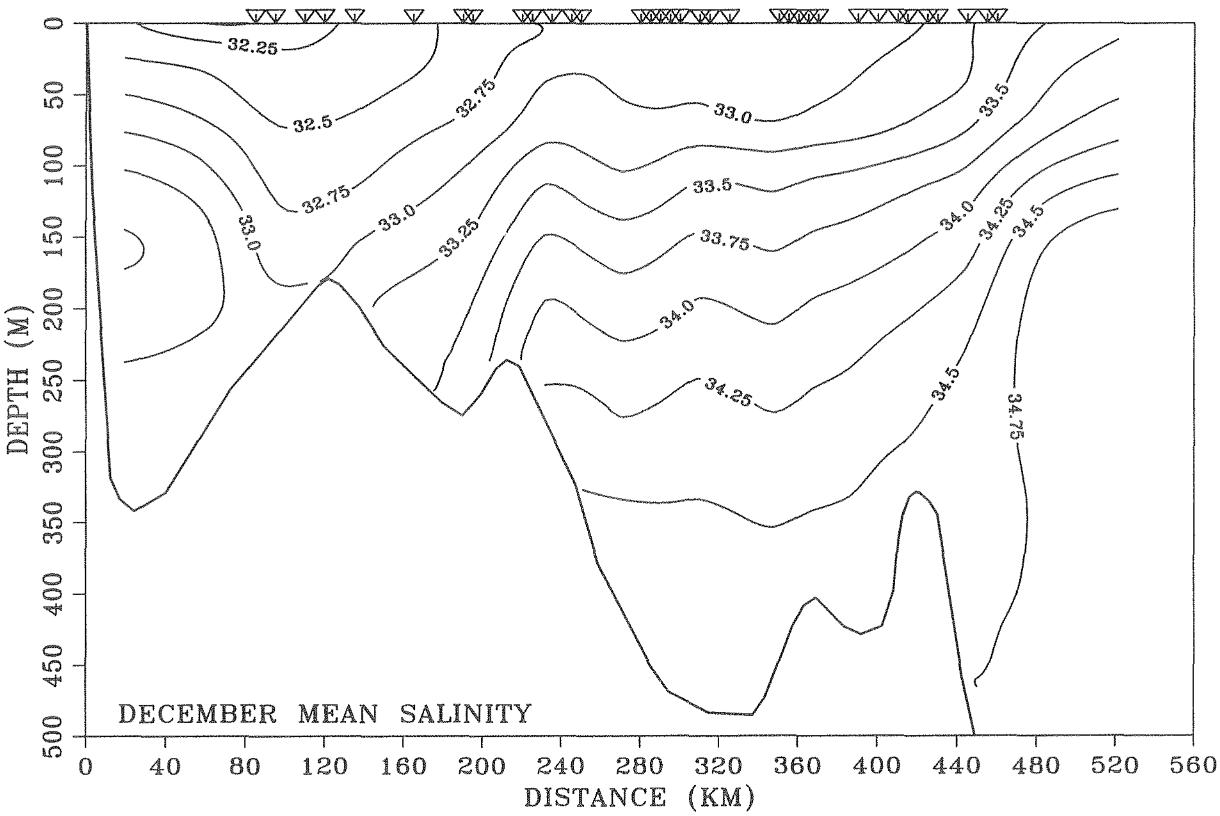

JULY MEAN SALINITY
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
31.0
32.25
32.5
32.75
33.0
33.25
33.5
33.75
34.0
34.25
34.5
34.75


AUGUST MEAN SALINITY
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
31.0
32.0
32.25
32.5
32.75
33.0
33.25
33.5
33.75
34.0
34.25
34.5
34.75

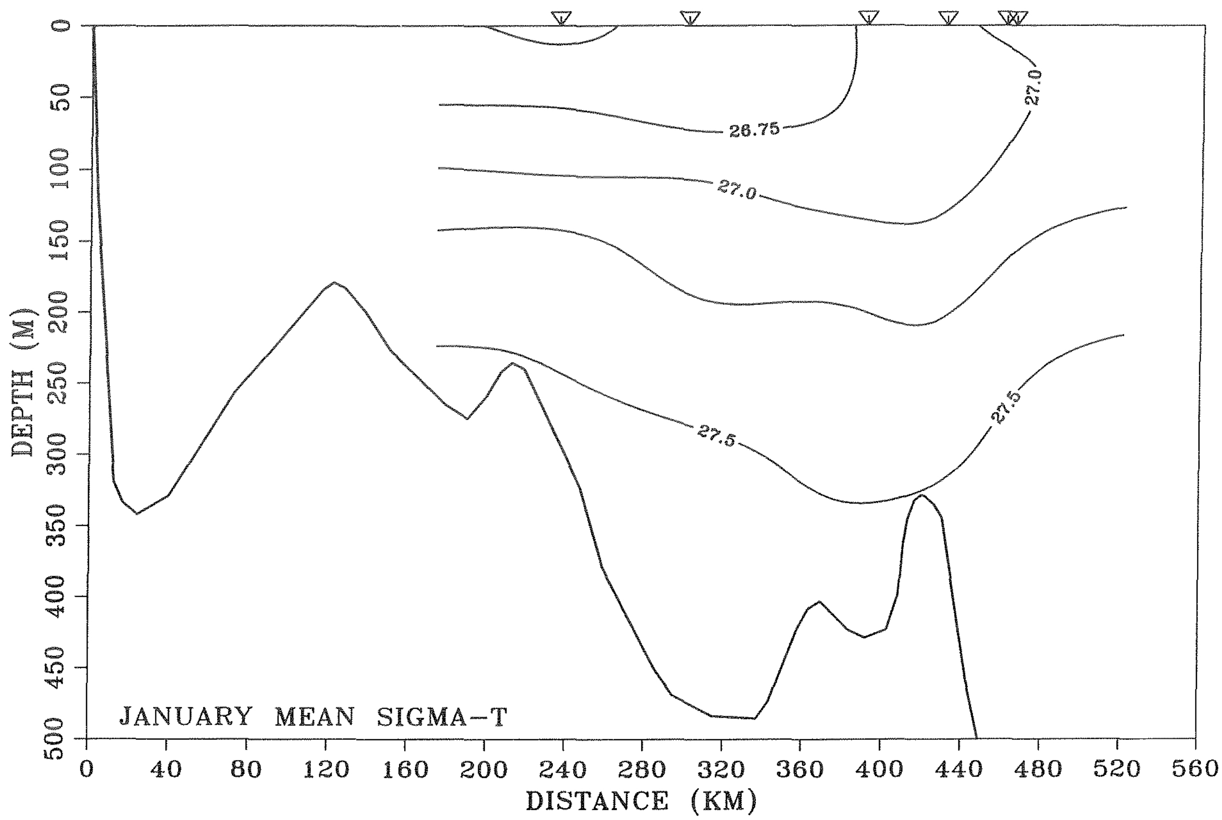

SEPTEMBER MEAN SALINITY
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
31.5
31.75
32.0
32.25
32.5
32.75
33.0
33.25
33.5
33.75
34.0
34.25
34.5
34.75


OCTOBER MEAN SALINITY
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
32.5
32.75
33.0
33.25
33.5
33.75
34.0
34.25
34.5
34.75

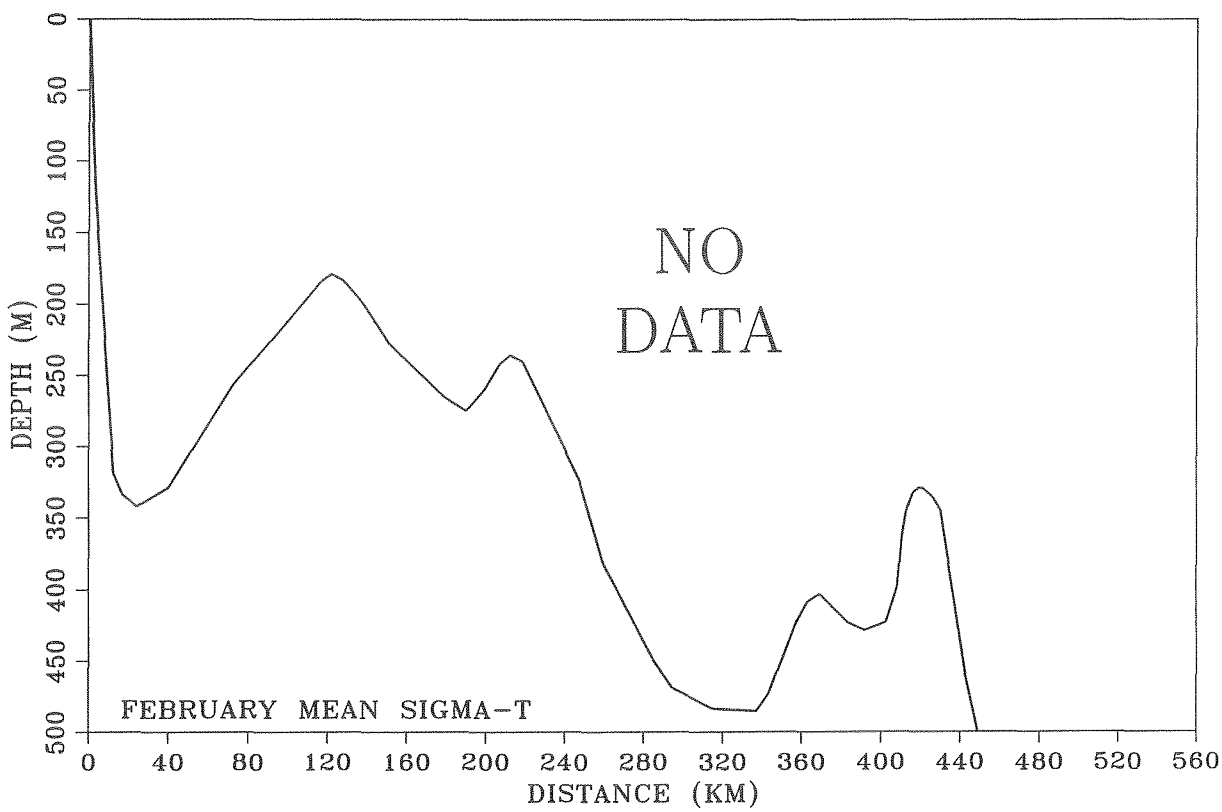

NOVEMBER MEAN SALINITY
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
32.0
32.25
32.5
32.75
33.0
33.0
33.25
33.5
33.75
34.0
34.25
34.5
34.75
33.0
33.25
33.5
34.0
34.5
34.5
34.75
34.75


DECEMBER MEAN SALINITY
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
32.25
32.5
32.75
32.75
33.0
33.0
33.0
33.25
33.5
33.5
33.75
34.0
34.0
34.25
34.25
34.5
34.5
34.75

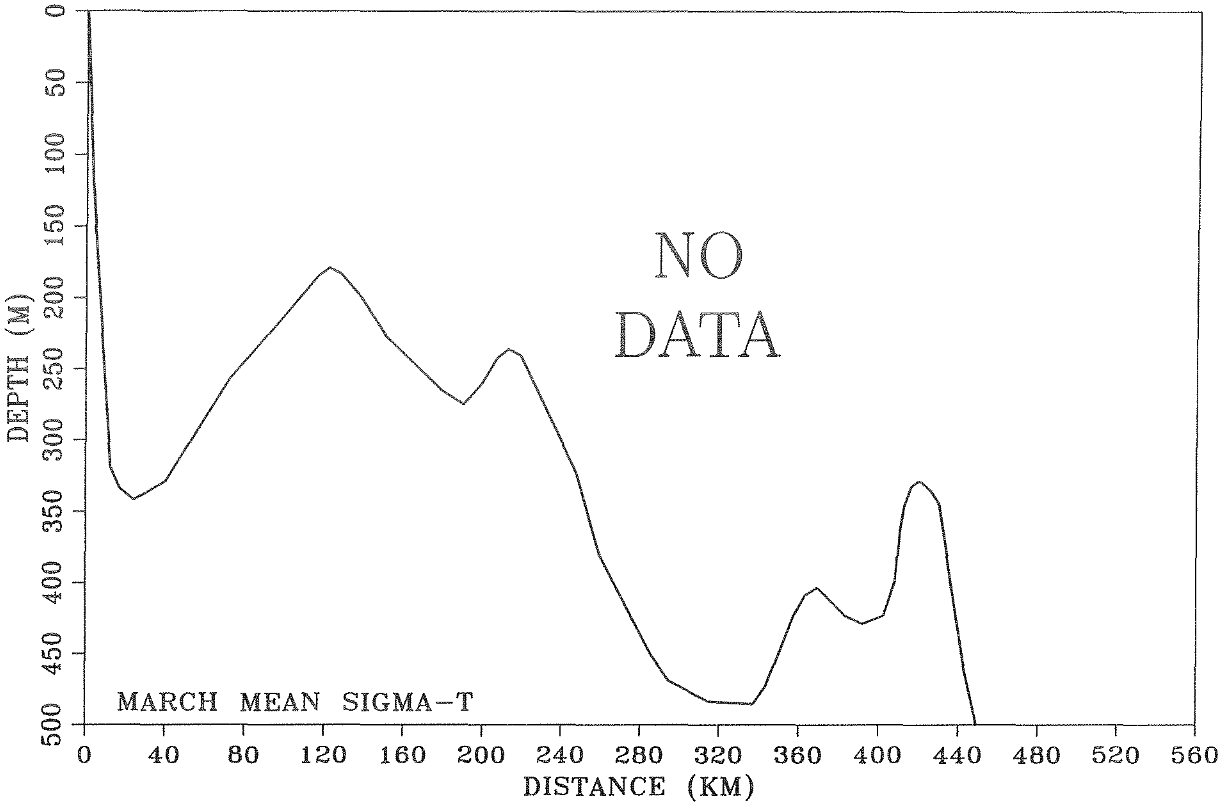
Appendix D. The monthly average vertical distrubutions of density.

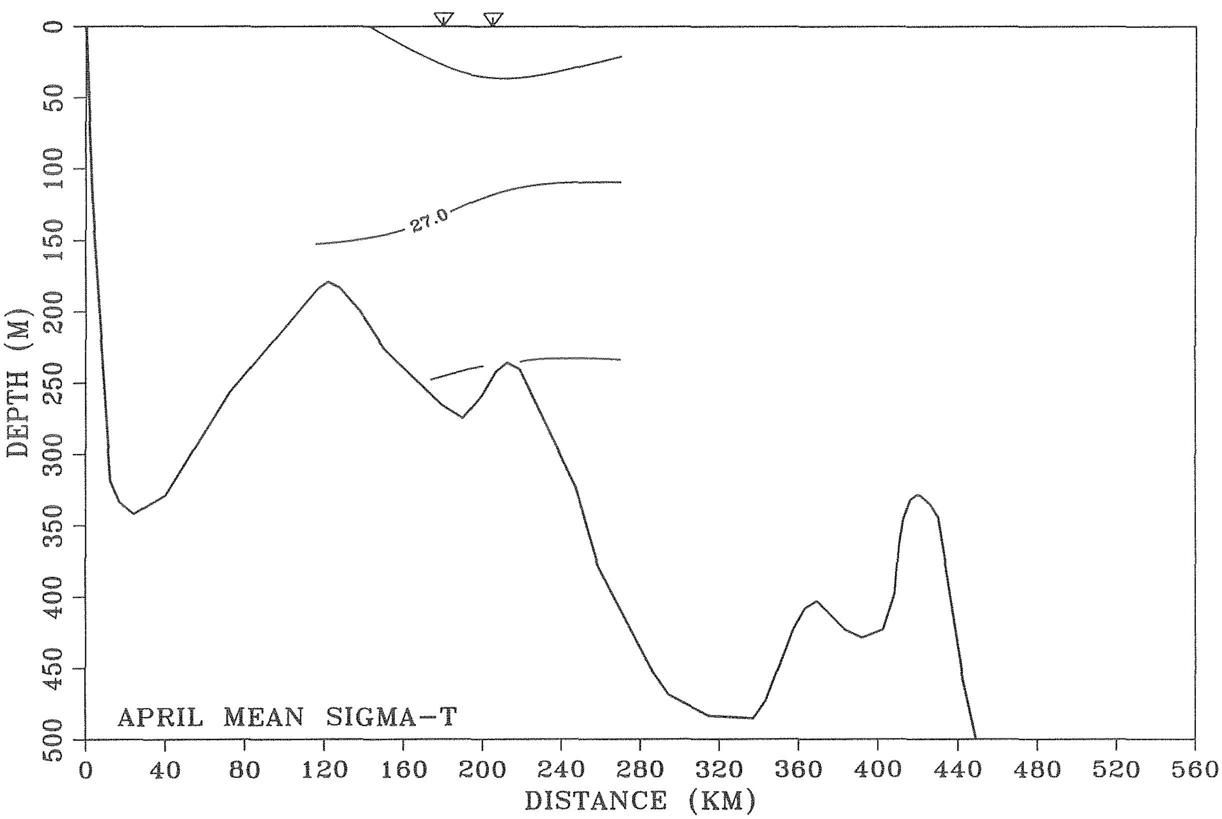


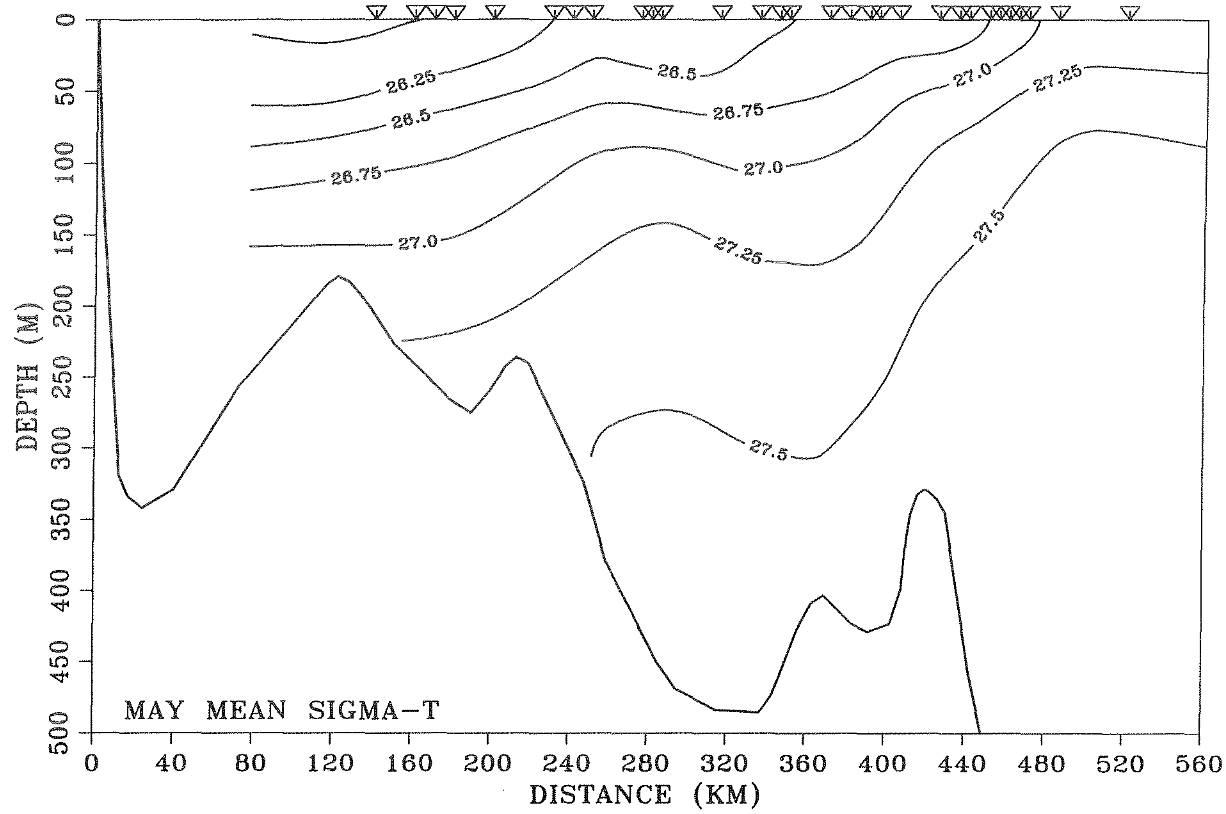
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
26.75
27.0
27.0
27.5
27.5
JANUARY MEAN SIGMA-T
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)



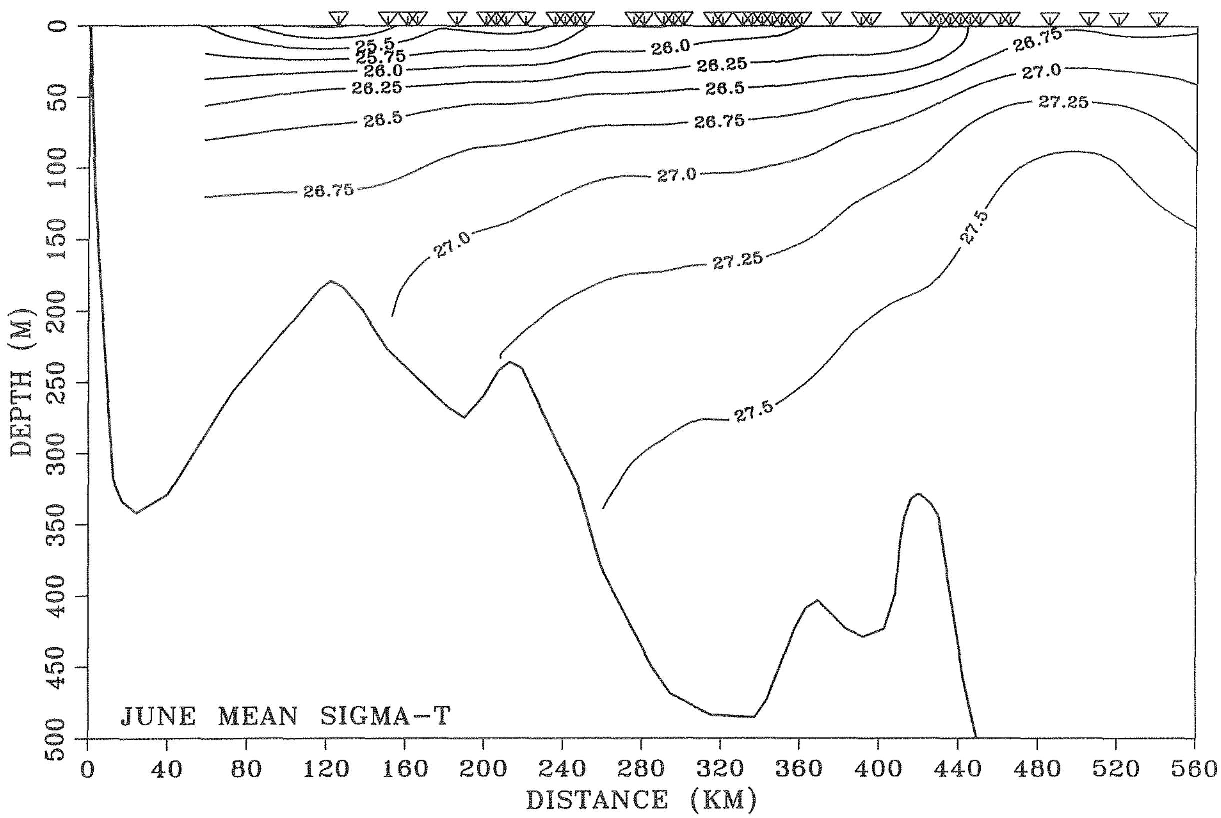
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
NO DATA
FEBRUARY MEAN SIGMA-T
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)


NO
DATA
MARCH MEAN SIGMA-T
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560

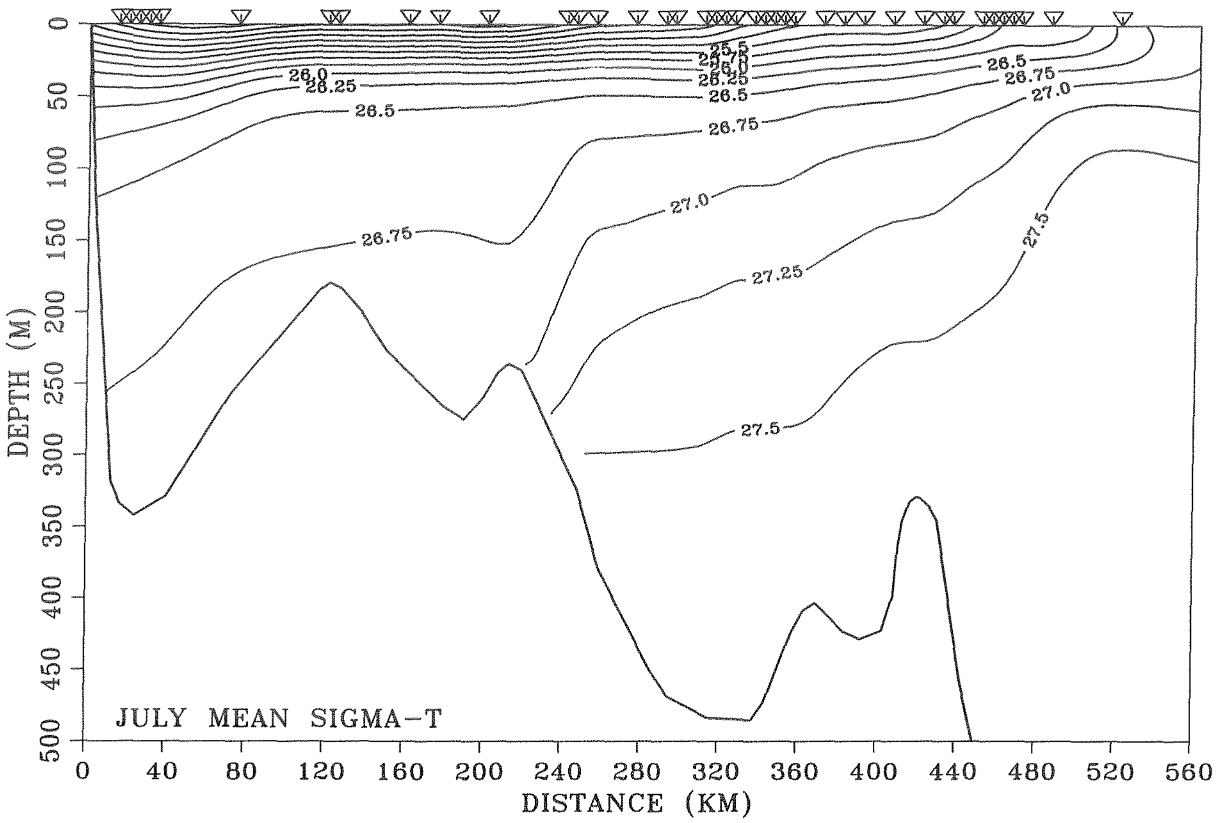

27.0
APRIL MEAN SIGMA-T
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560

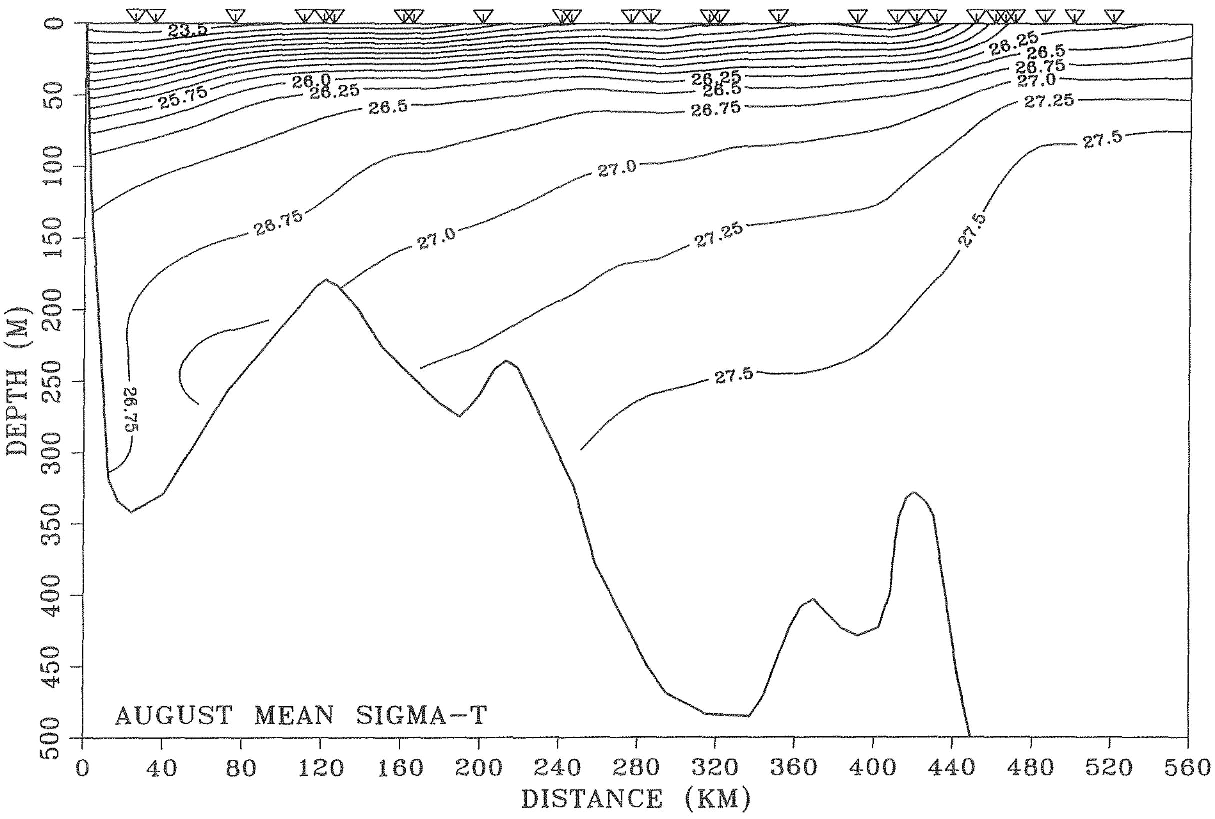


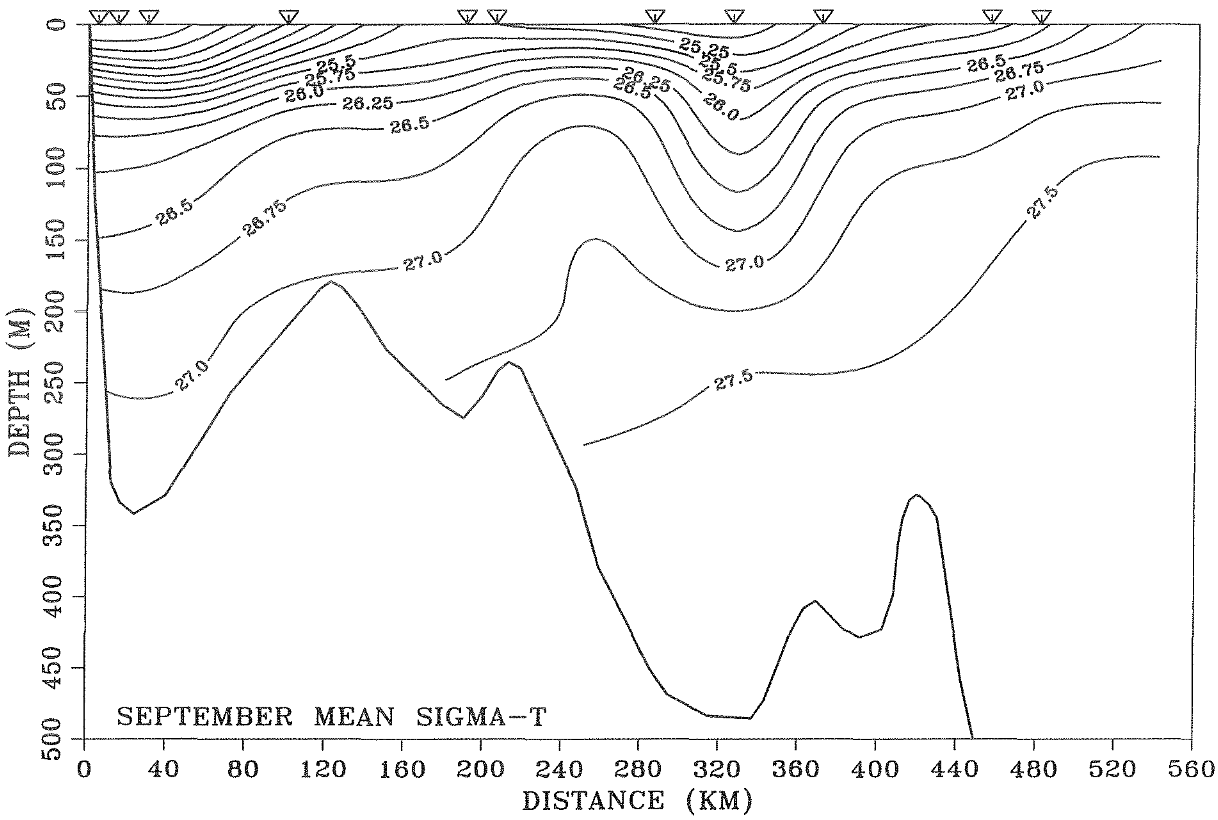
MAY MEAN SIGMA-T
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
26.25
26.5
26.75
27.0
27.25
27.5

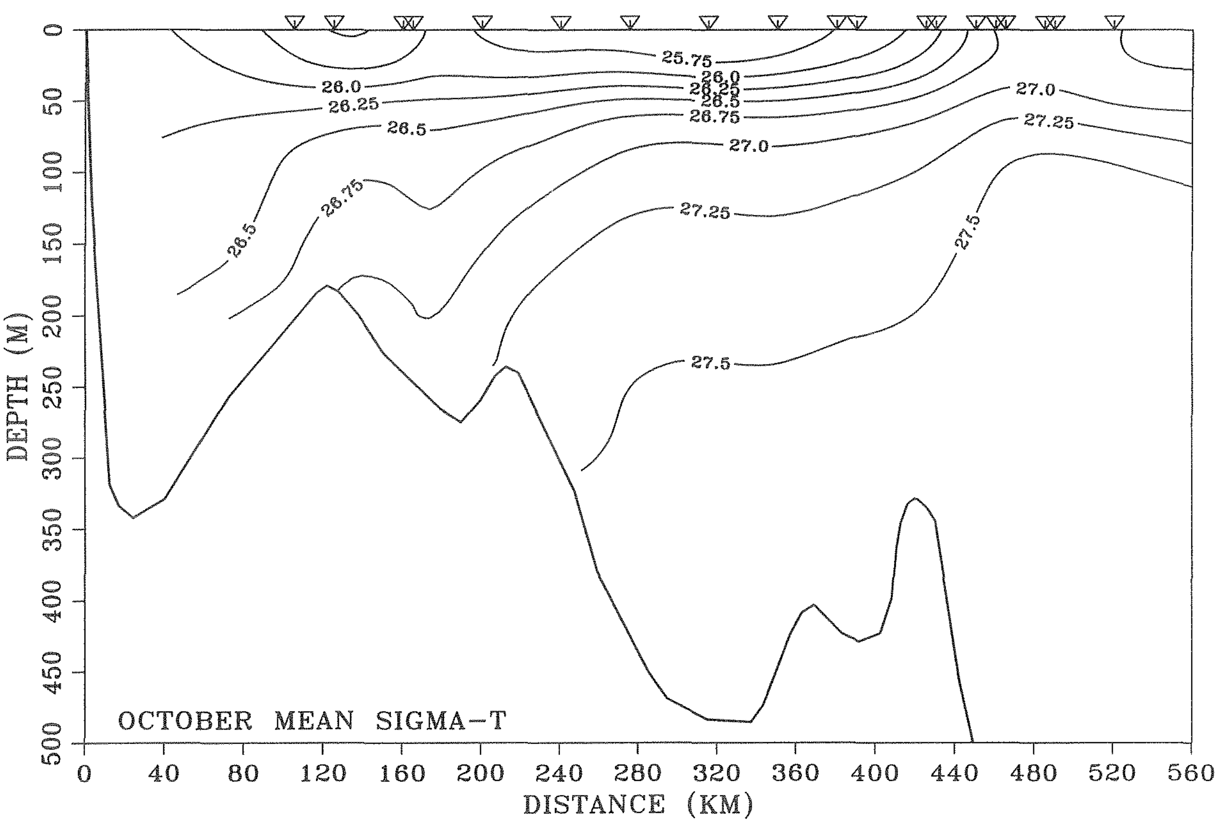


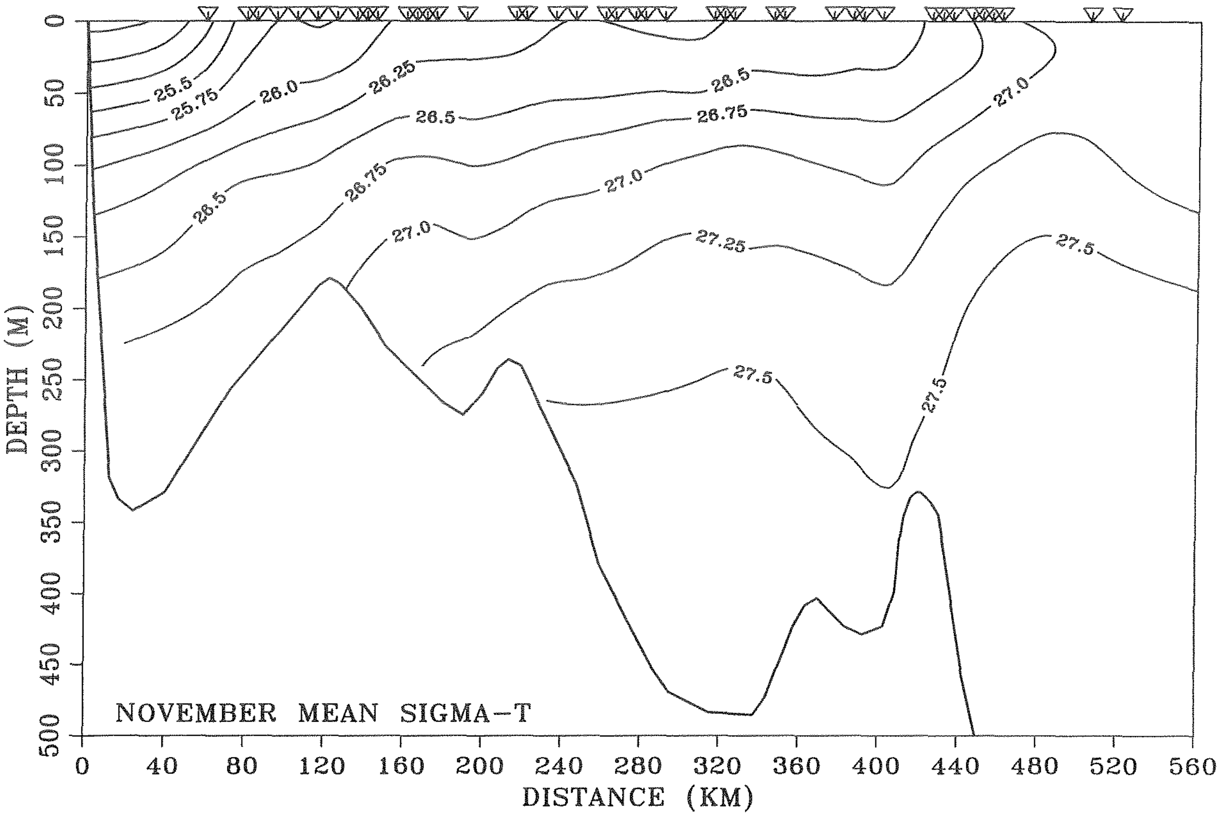
JUNE MEAN SIGMA-T
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
25.5
25.75
26.0
26.25
26.5
26.75
27.0
27.25
27.5

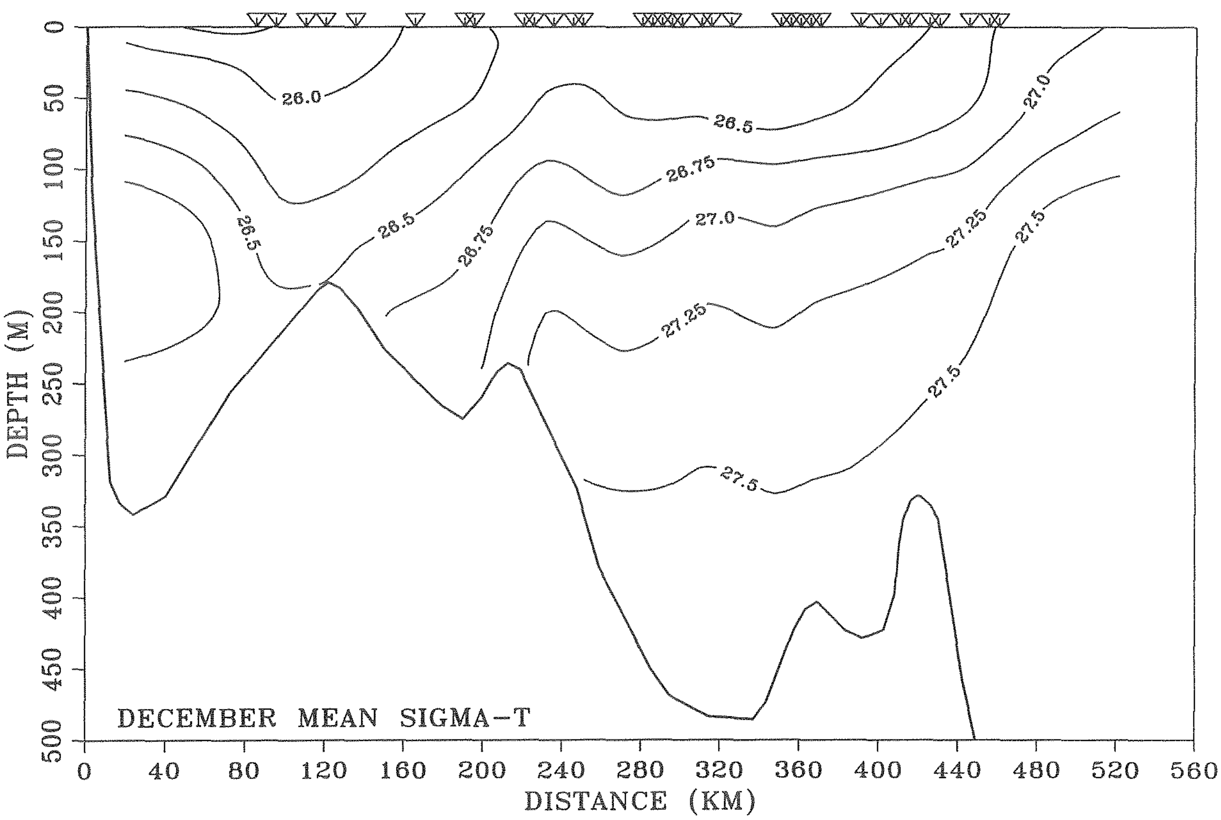

JULY MEAN SIGMA-T
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
25.5
26.0
26.25
26.5
26.75
27.0
27.25
27.5


AUGUST MEAN SIGMA-T
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
23.5
25.75
26.0
26.25
26.5
26.75
27.0
27.25
27.5

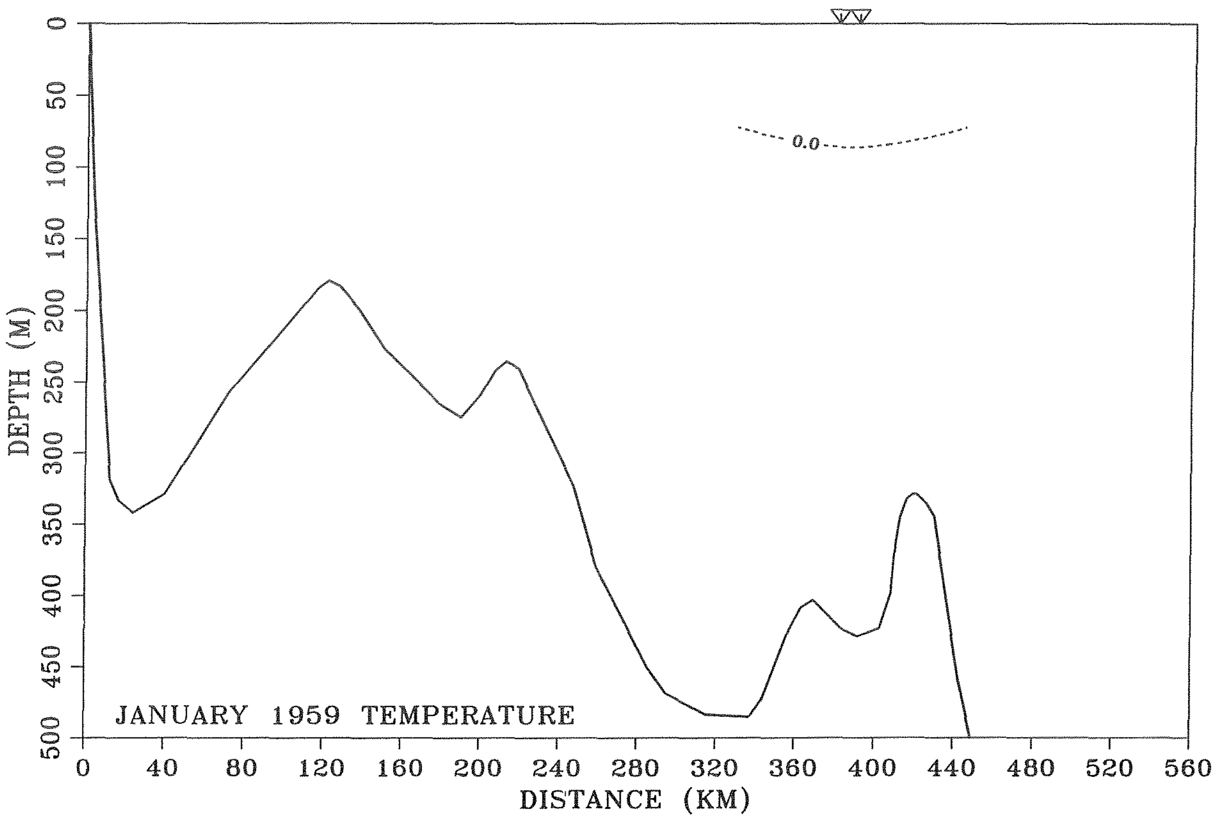

SEPTEMBER MEAN SIGMA-T
DEPTH (M)
DISTANCE (KM)
25.25
25.5
25.75
26.0
26.25
26.5
26.75
27.0
27.5


OCTOBER MEAN SIGMA-T
DEPTH (M)
DISTANCE (KM)
25.75
26.0
26.25
26.5
26.75
27.0
27.25
27.5

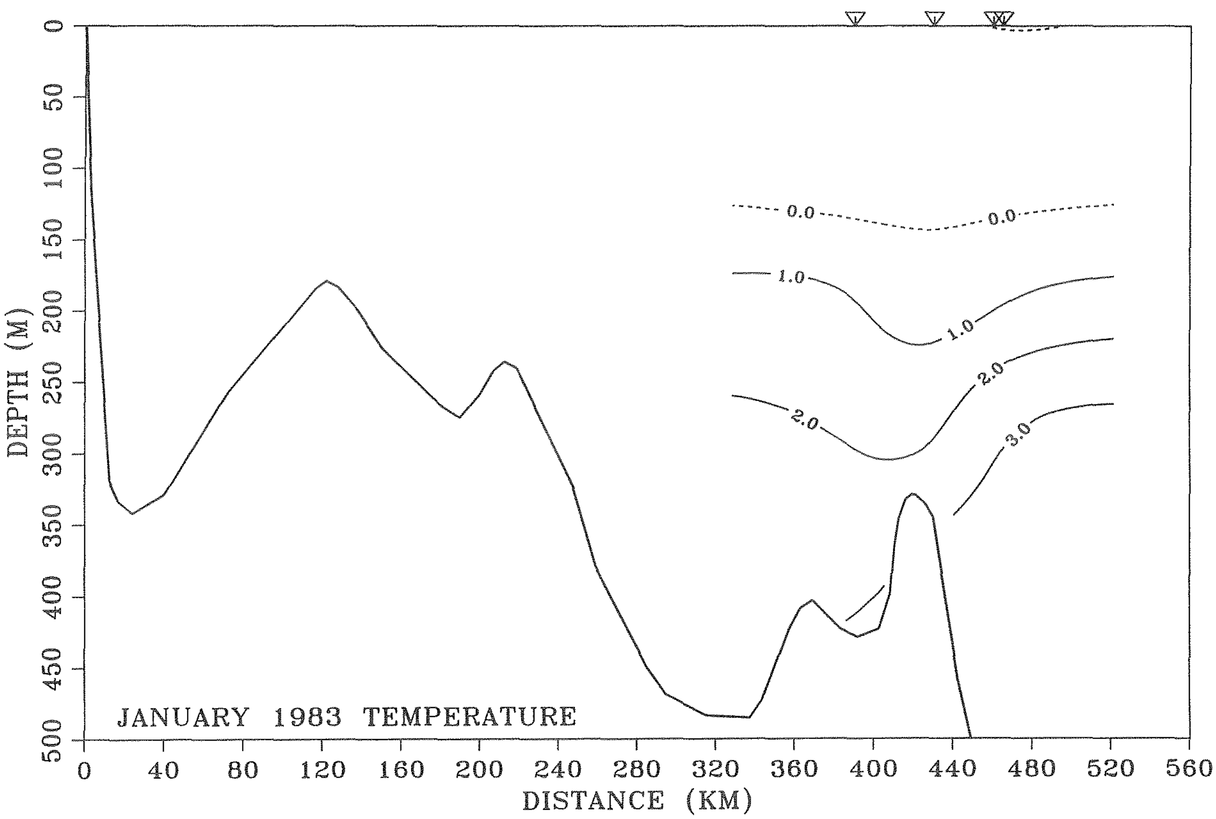

NOVEMBER MEAN SIGMA-T
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
25.5
25.75
26.0
26.25
26.5
26.75
27.0
27.25
27.5
26.5
26.75
27.0
26.5
26.75
27.0
27.25
27.5
27.5


DECEMBER MEAN SIGMA-T
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
26.0
26.5
26.5
26.5
26.75
26.75
27.0
27.0
27.25
27.25
27.5
27.5
27.5

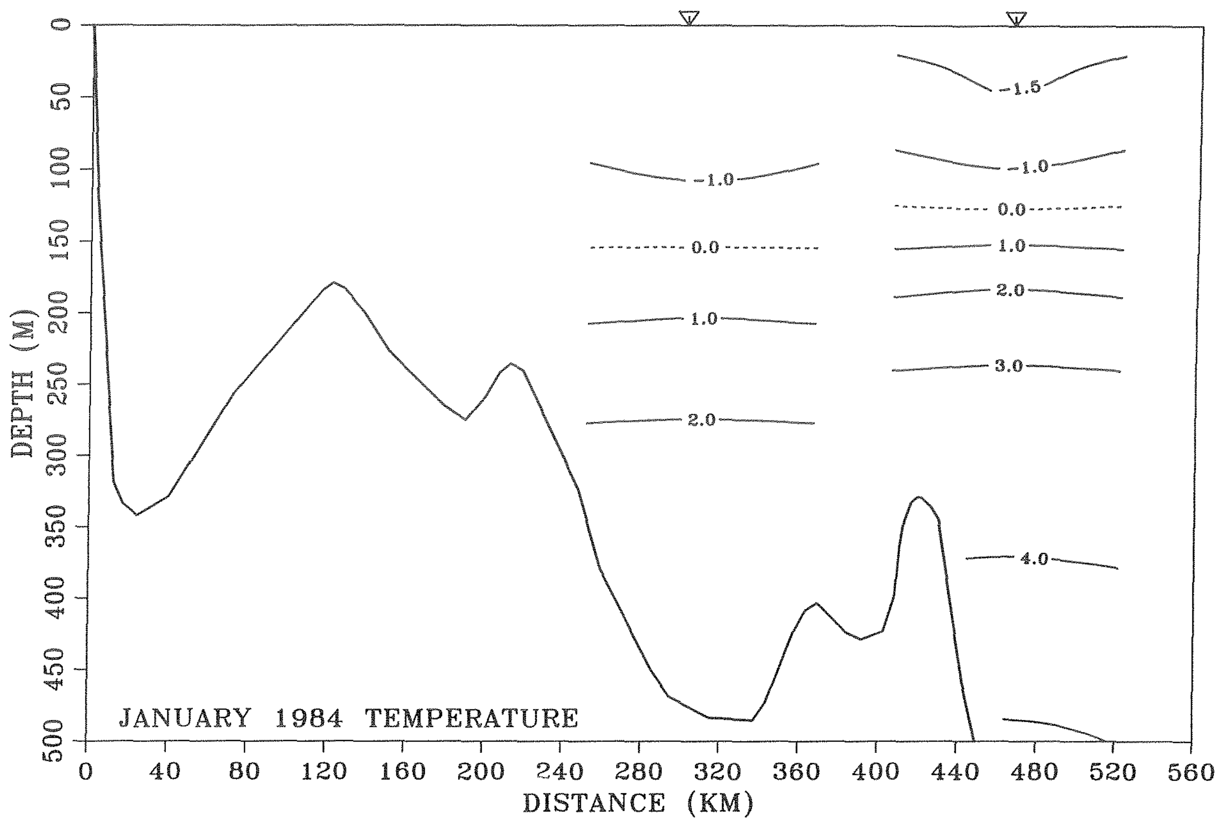
Appendix E. White Bay Annual Temperature Transects.

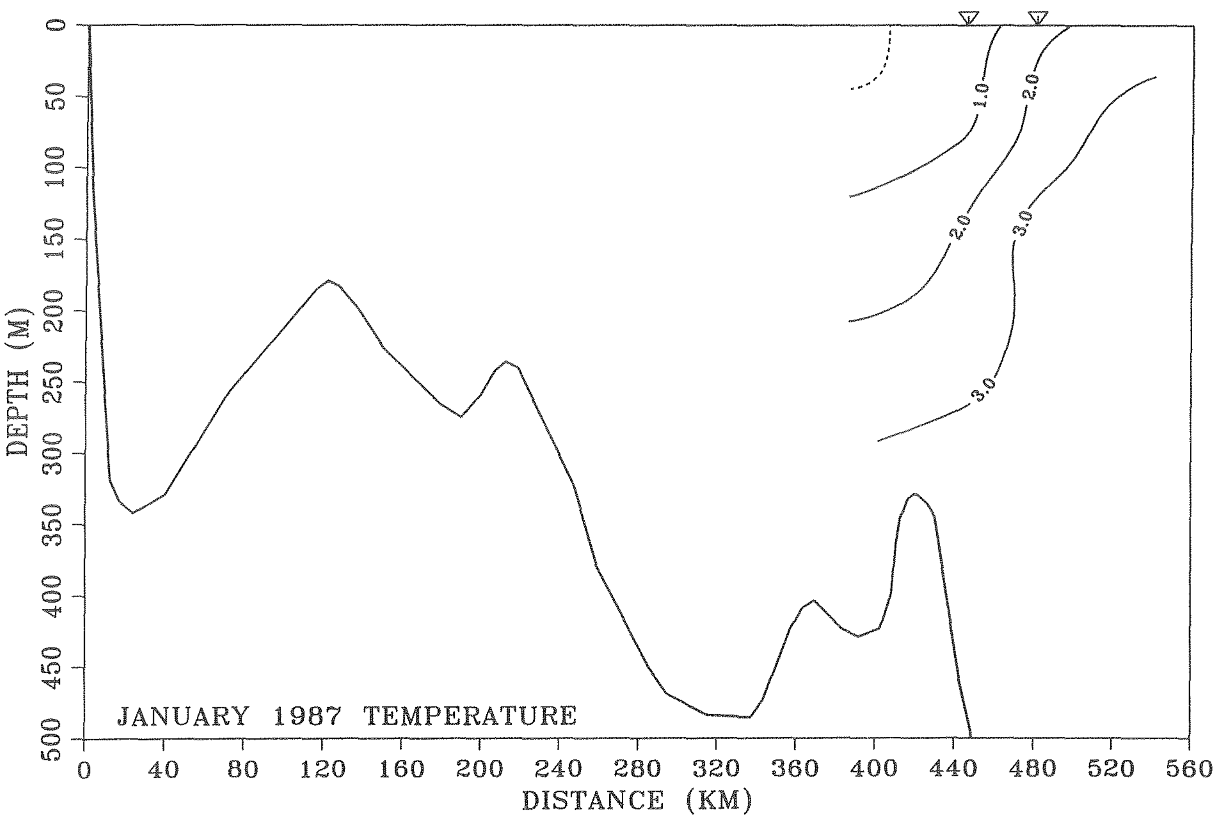


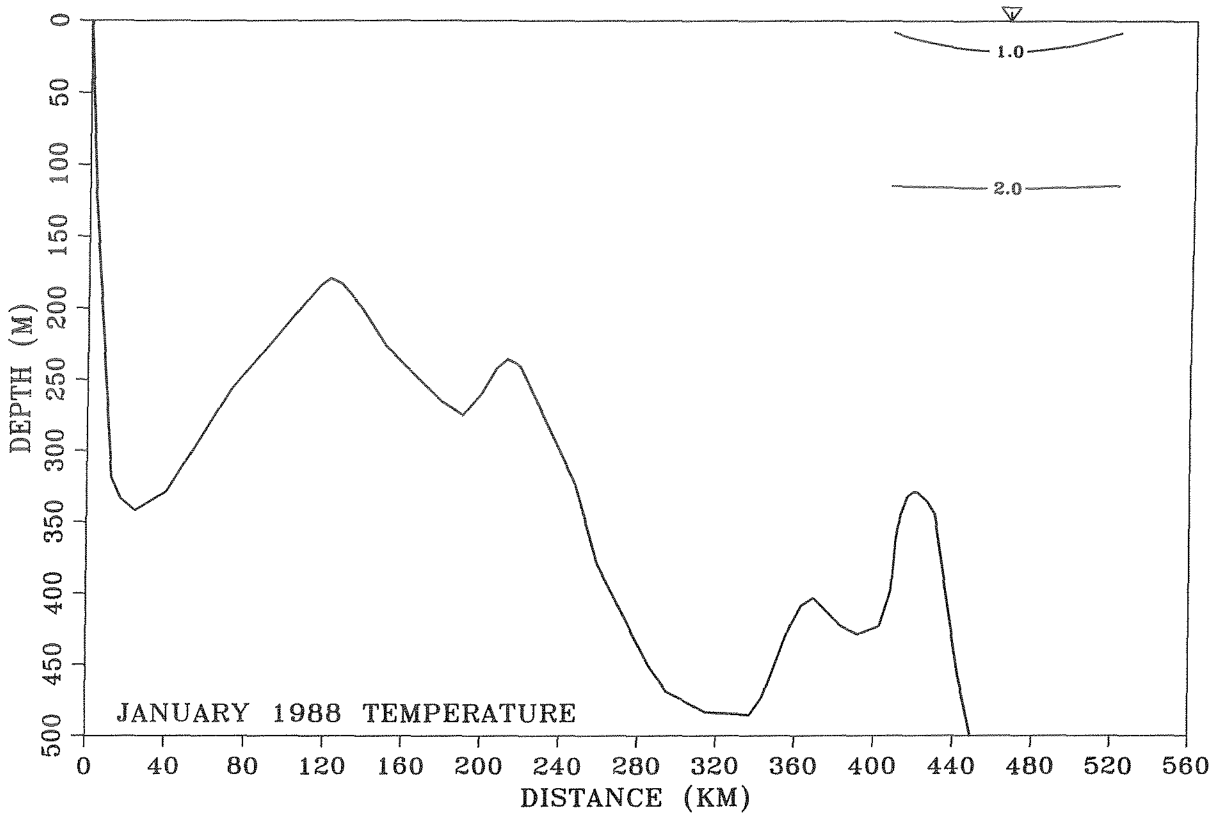
0.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
JANUARY 1959 TEMPERATURE
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)

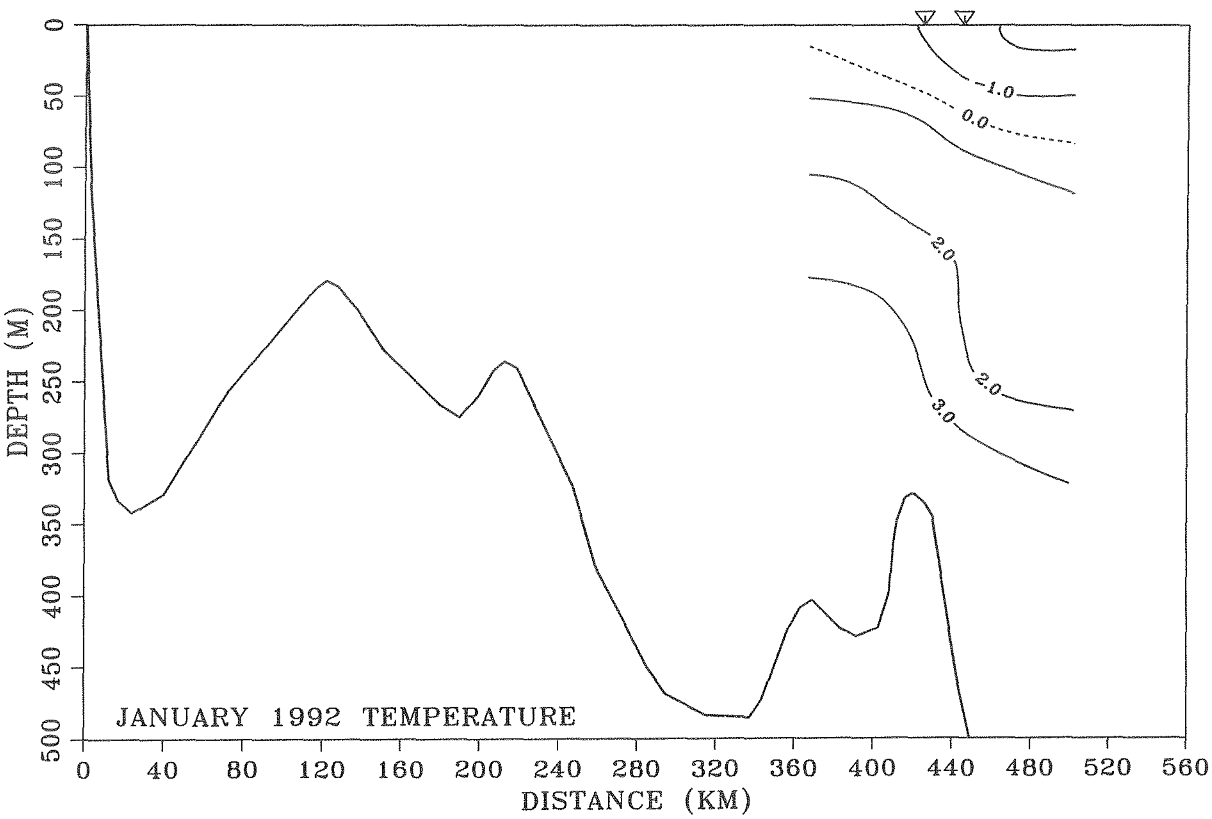


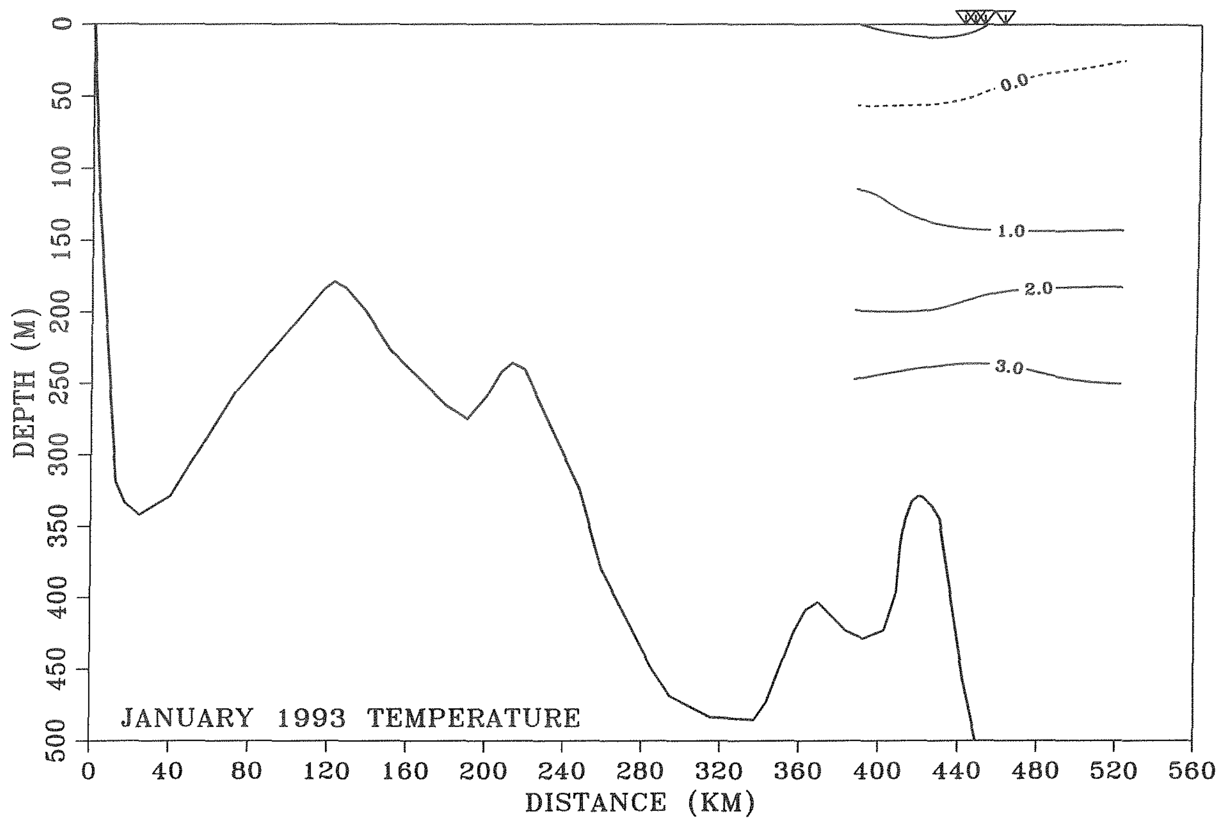
0.0
0.0
1.0
1.0
2.0
2.0
3.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
JANUARY 1983 TEMPERATURE
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)


JANUARY 1984 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
-1.5
-1.0
0.0
1.0
2.0
3.0
4.0

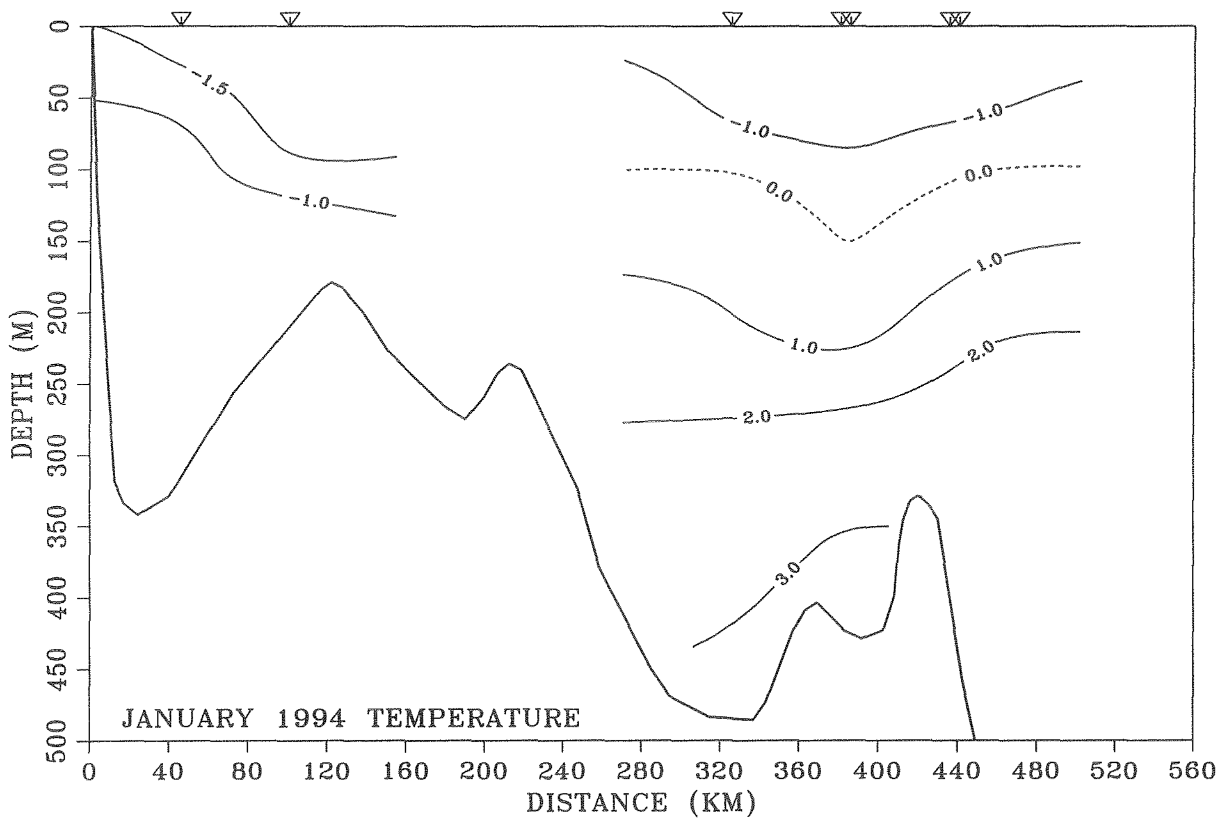

JANUARY 1987 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
1.0
2.0
3.0


JANUARY 1988 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
1.0
2.0
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560

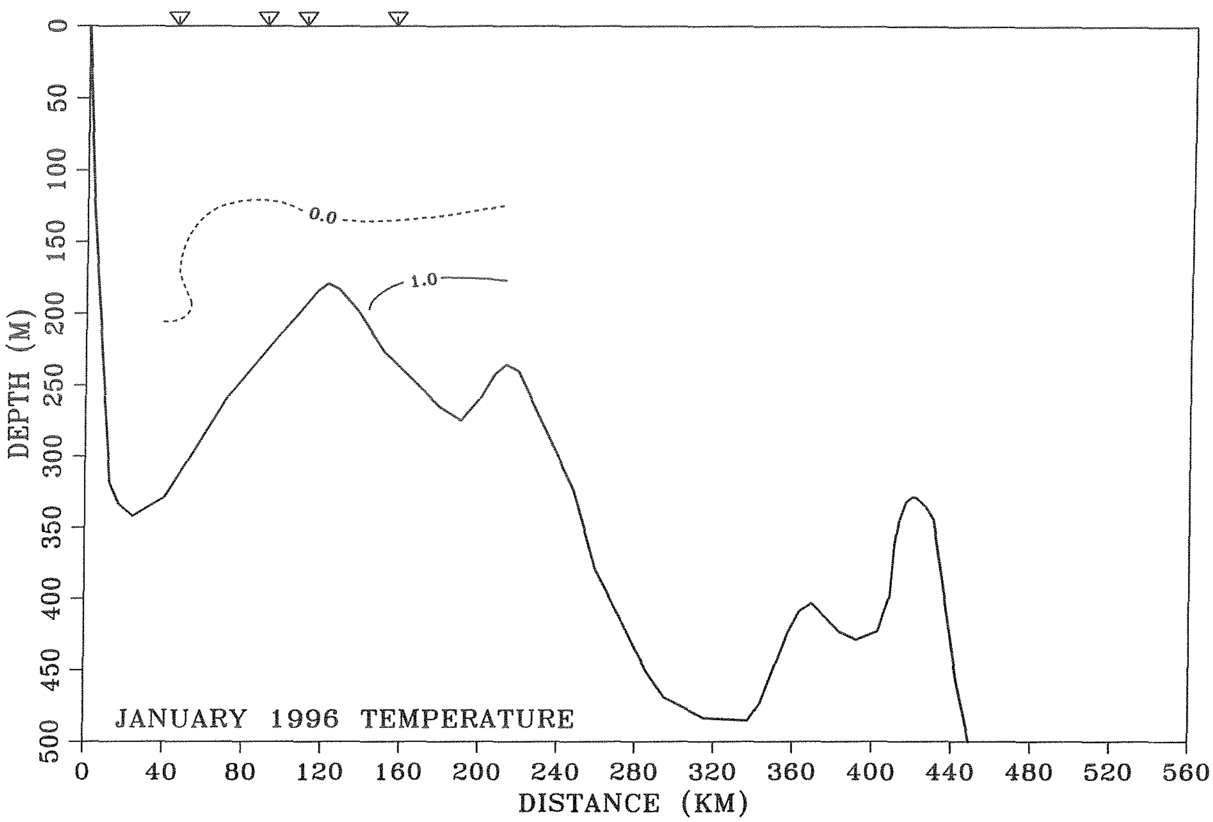

JANUARY 1992 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
-1.0
0.0
2.0
2.0
3.0
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560



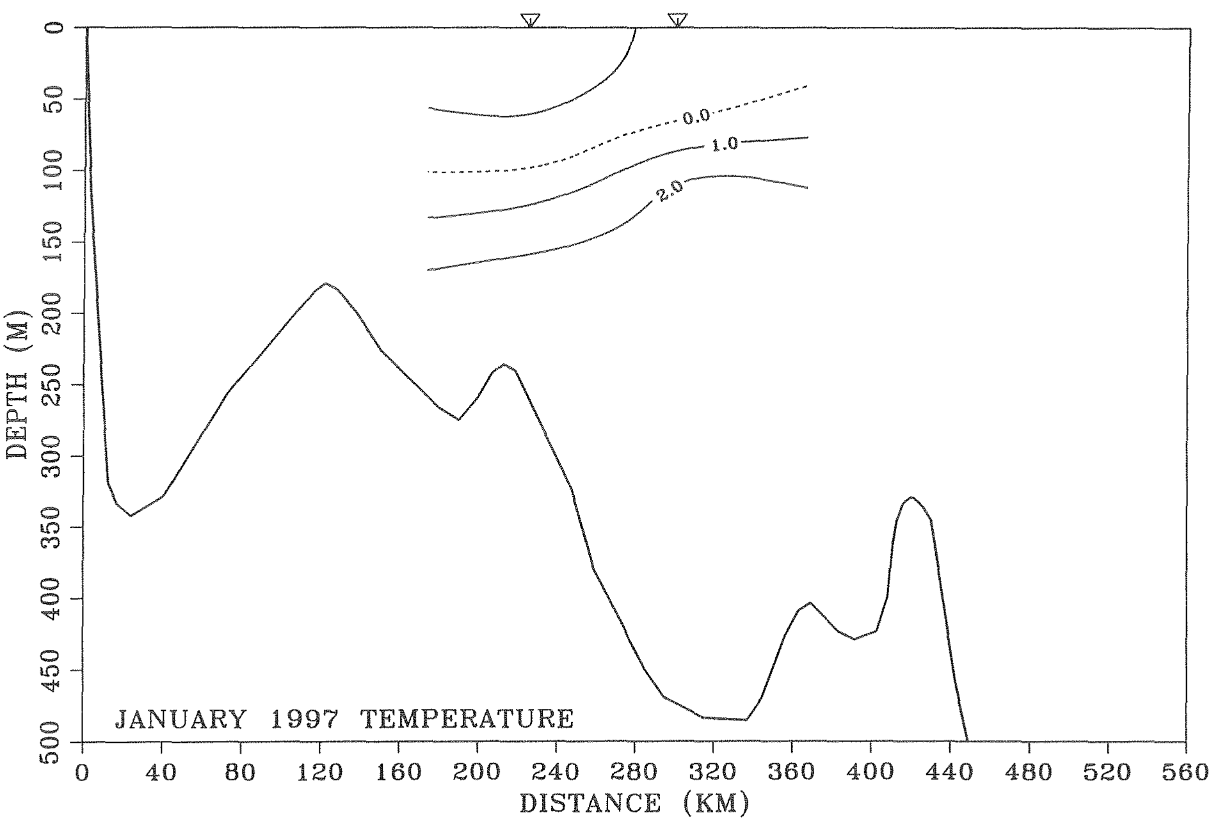
0.0
1.0
2.0
3.0
JANUARY 1993 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560



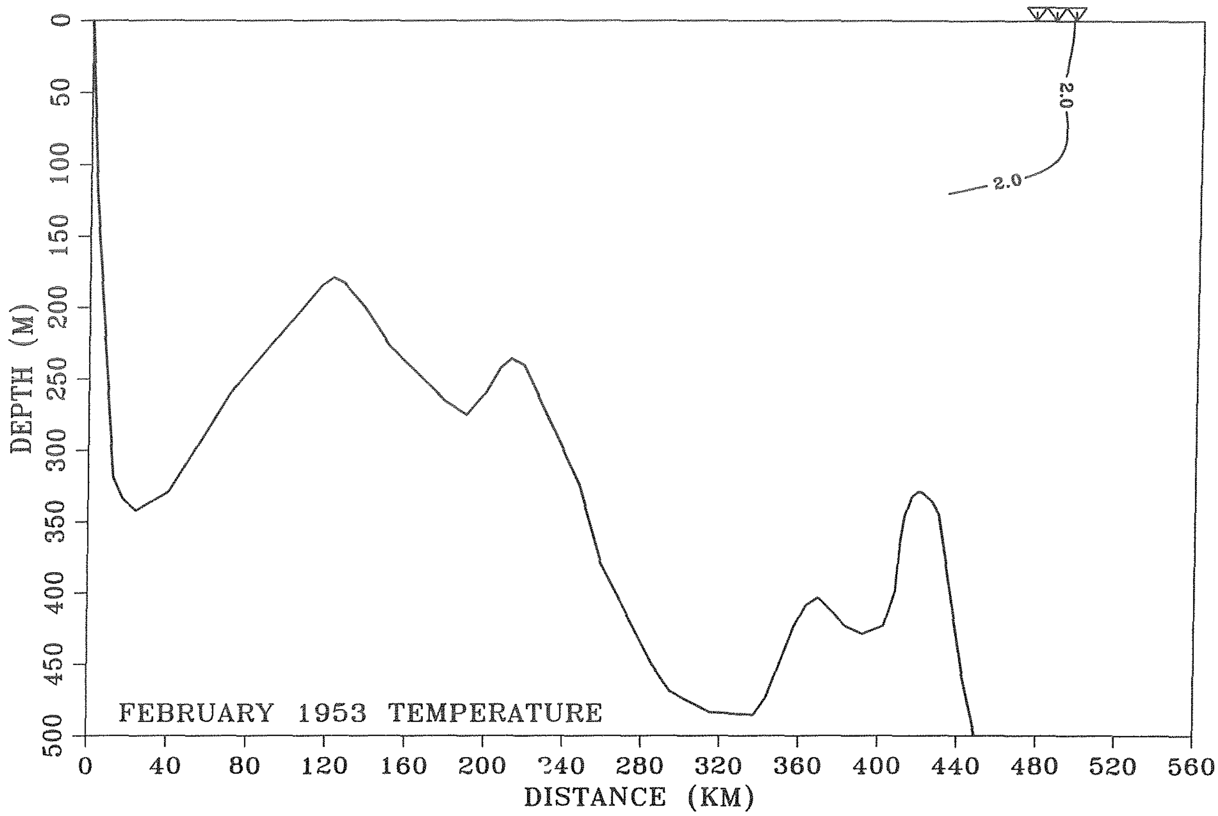
-1.5
-1.0
-1.0
-1.0
0.0
0.0
1.0
1.0
2.0
2.0
3.0
JANUARY 1994 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560

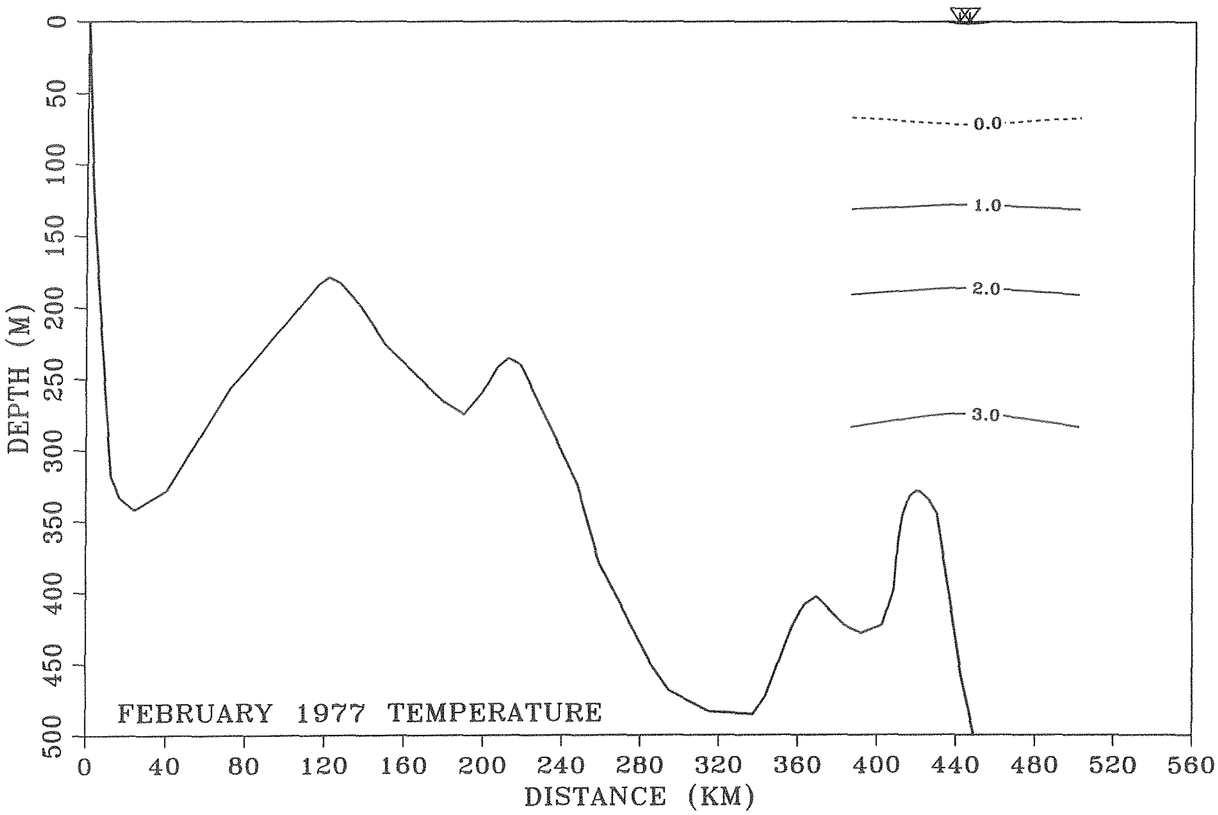


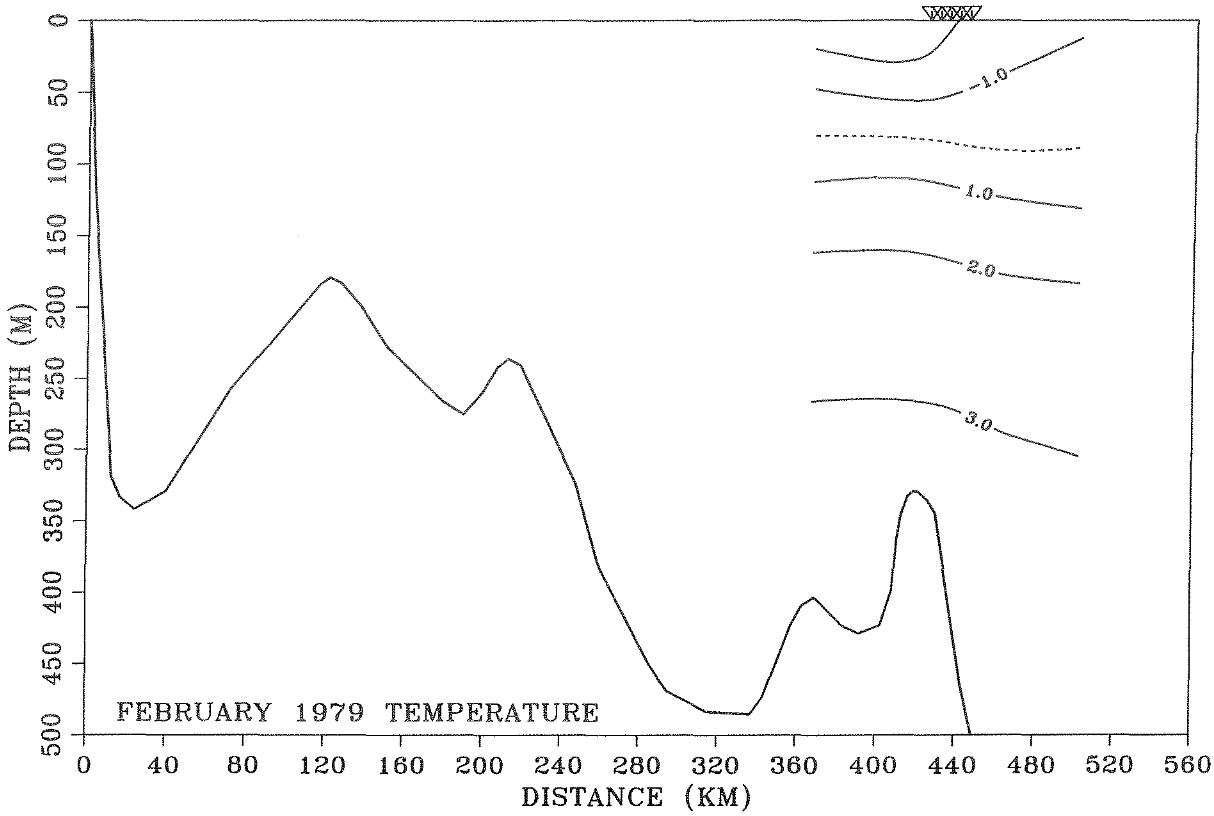
0.0
1.0
JANUARY 1996 TEMPERATURE
DEPTH (M)
DISTANCE (KM)



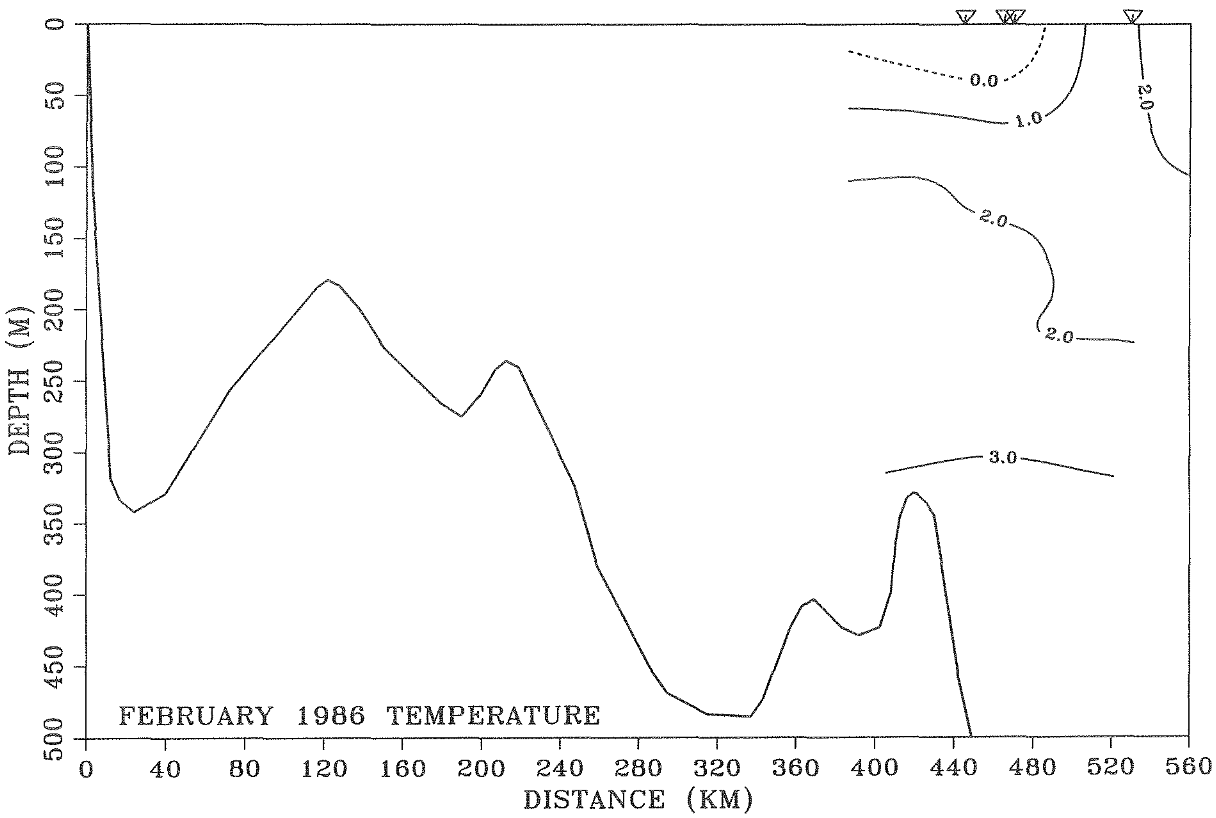
0.0
1.0
2.0
JANUARY 1997 TEMPERATURE
DEPTH (M)
DISTANCE (KM)


2.0
2.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
FEBRUARY 1953 TEMPERATURE
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)

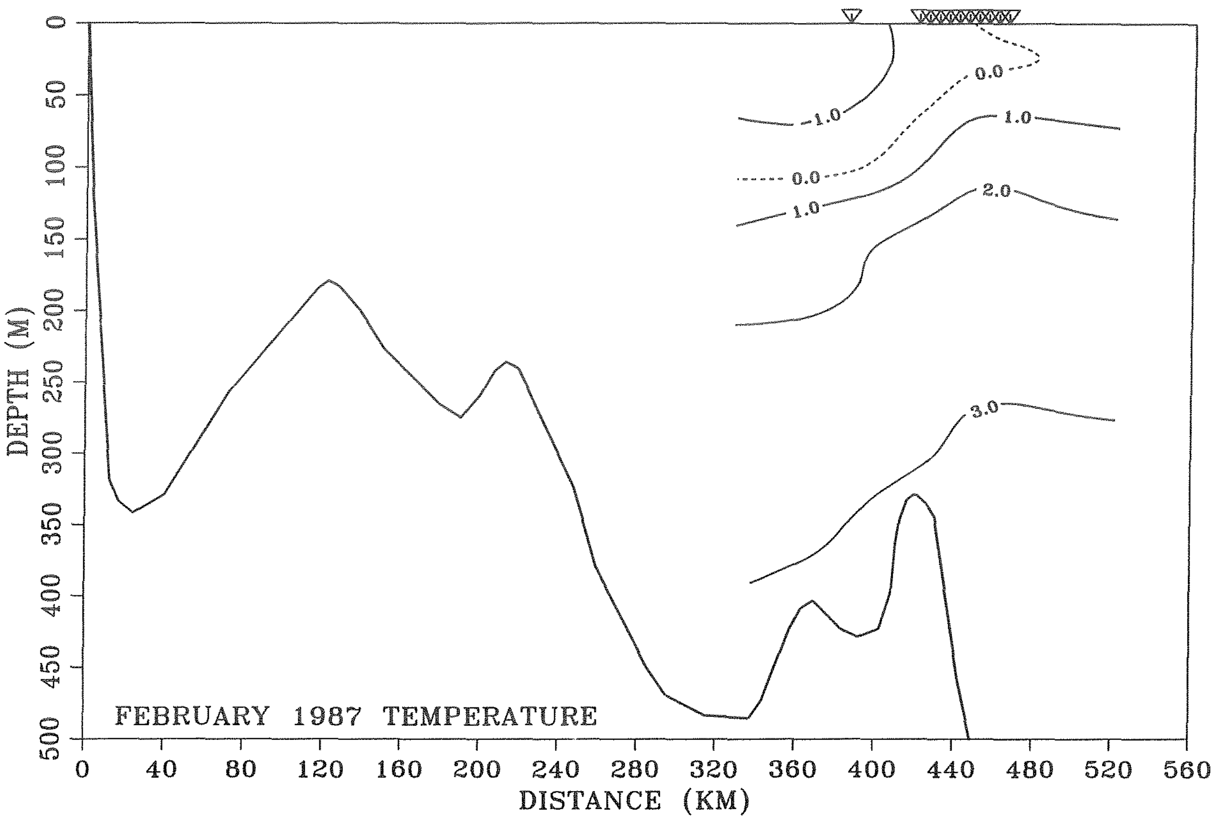

0.0
1.0
2.0
3.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
FEBRUARY 1977 TEMPERATURE
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)



DEPTH (M)
DISTANCE (KM)
FEBRUARY 1979 TEMPERATURE
-1.0
1.0
2.0
3.0



DEPTH (M)
DISTANCE (KM)
FEBRUARY 1986 TEMPERATURE
0.0
1.0
2.0
2.0
2.0
3.0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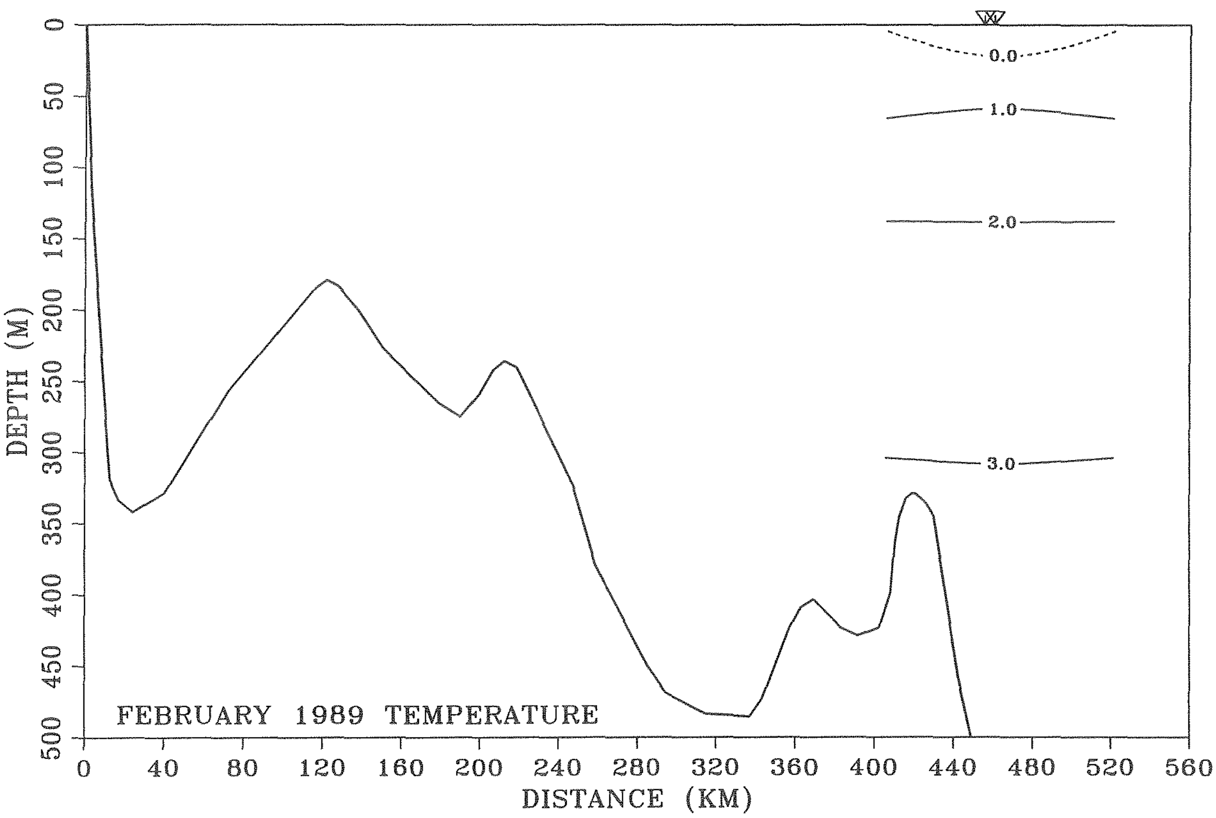
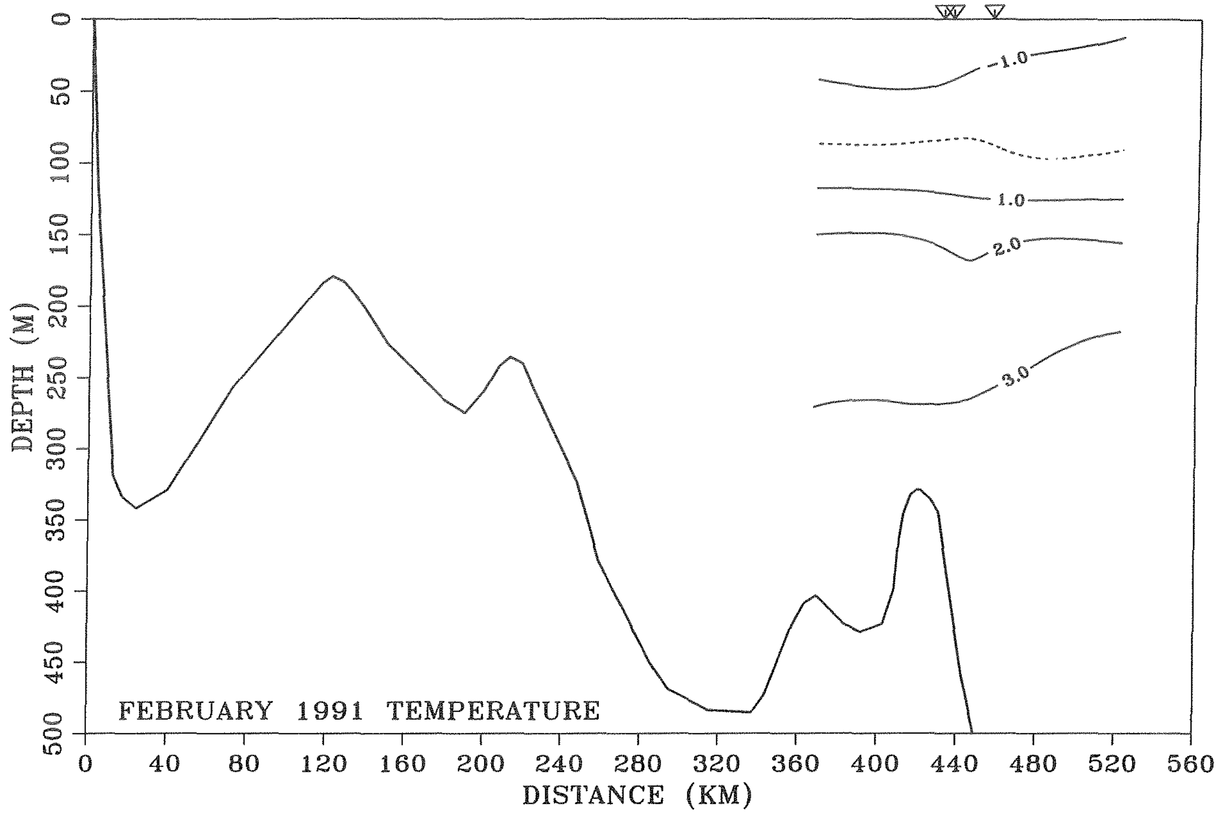
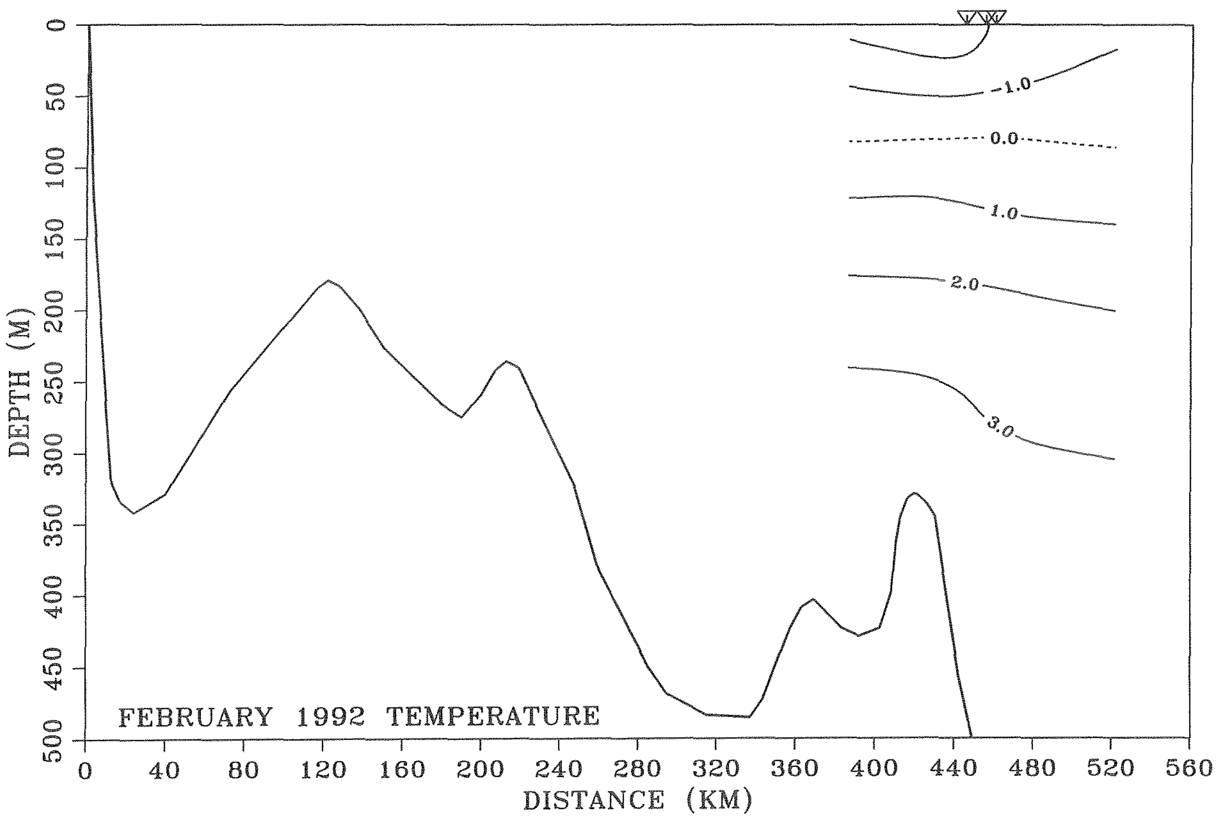
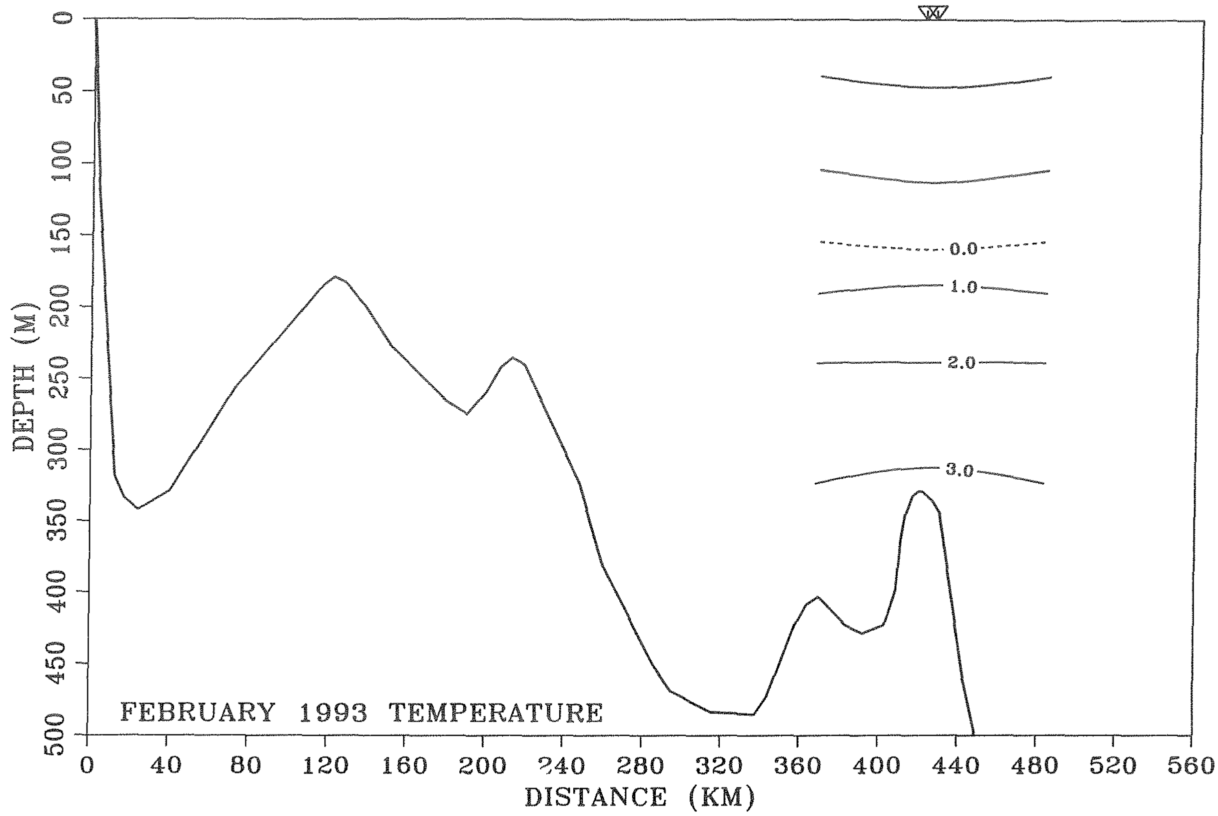
0.0
1.0
1.0
2.0
3.0
FEBRUARY 1987 TEMPERATURE
DEPTH (M)
DISTANCE (KM)

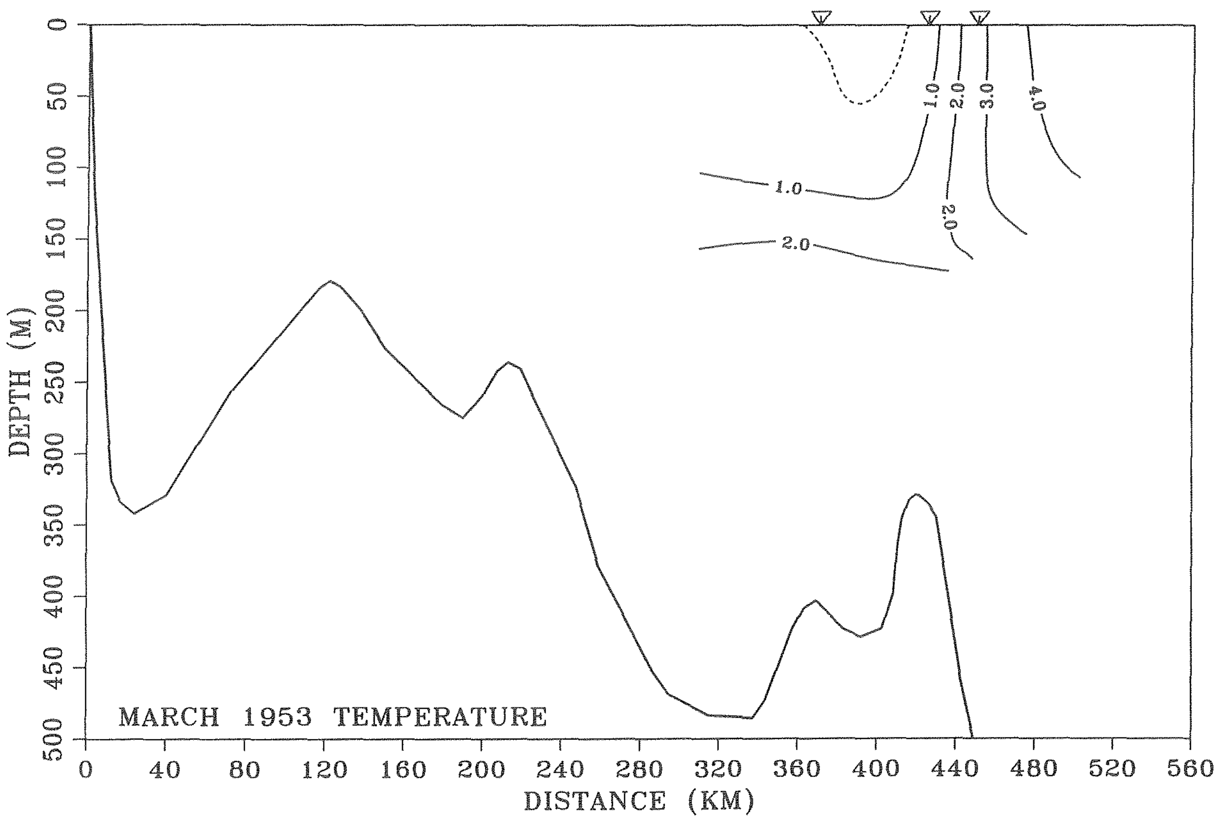

0.0
1.0
2.0
3.0
FEBRUARY 1989 TEMPERATURE
DEPTH (M)
DISTANCE (KM)


FEBRUARY 1991 TEMPERATURE
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
DISTANCE (KM)
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
-1.0
1.0
2.0
3.0

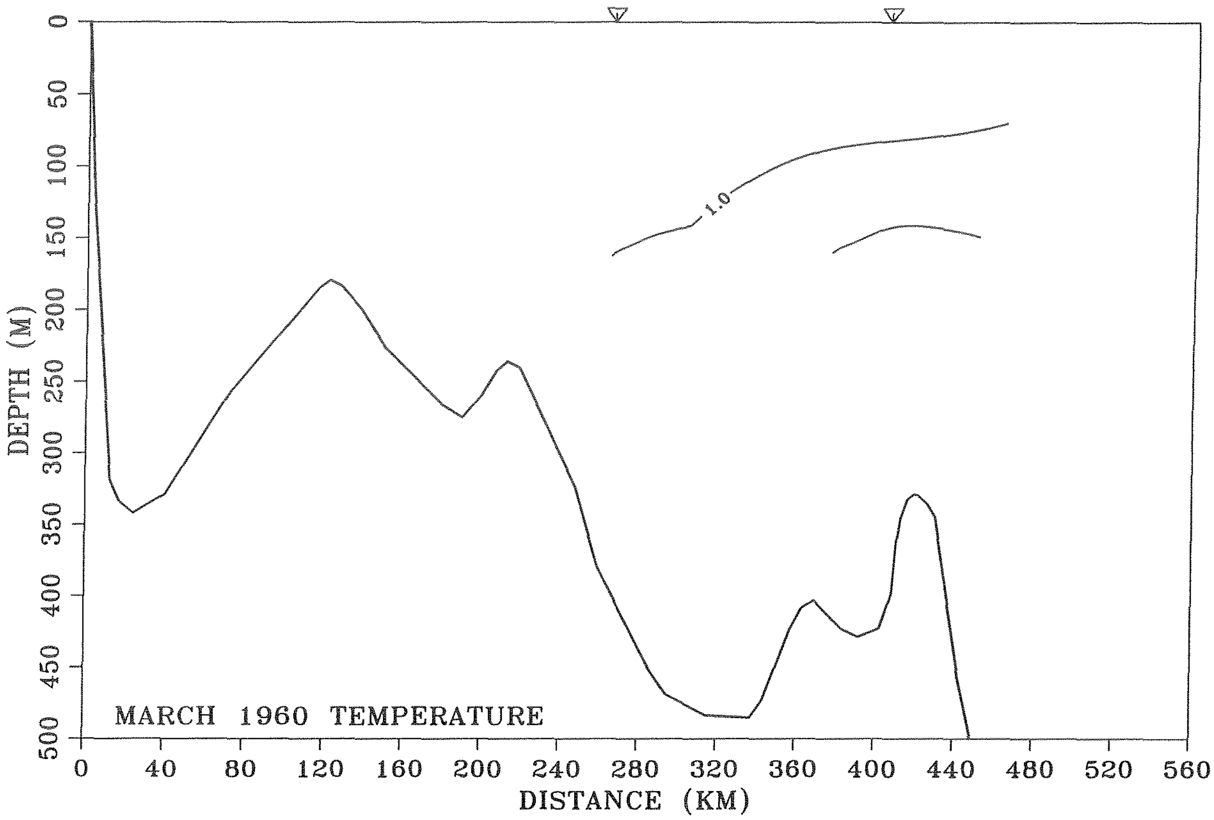

FEBRUARY 1992 TEMPERATURE
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
DISTANCE (KM)
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
-1.0
0.0
1.0
2.0
3.0



0
50
100
150
200
250
300
350
400
450
500
DEPTH (M)
0.0
1.0
2.0
3.0
FEBRUARY 1993 TEMPERATURE
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)



0
50
100
150
200
250
300
350
400
450
500
DEPTH (M)
1.0
2.0
3.0
4.0
1.0
2.0
2.0
MARCH 1953 TEMPERATURE
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)


DEPTH (M)
DISTANCE (KM)
MARCH 1960 TEMPERATURE
1.0
0
50
100
150
200
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300
350
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500
0
40
80
120
160
200
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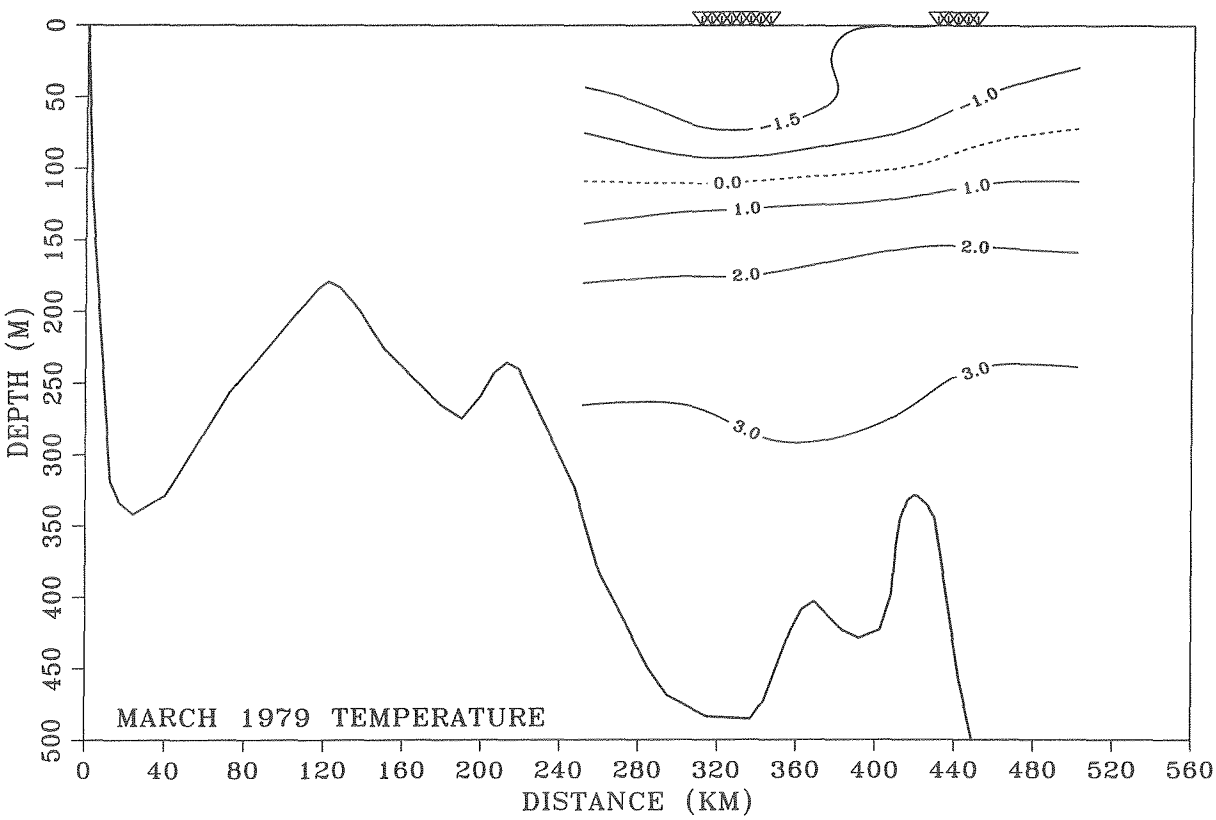
280
320
360
400
440
480
520
560


DEPTH (M)
DISTANCE (KM)
MARCH 1979 TEMPERATURE
-1.5
-1.0
0.0
1.0
1.0
2.0
2.0
3.0
3.0
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
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280
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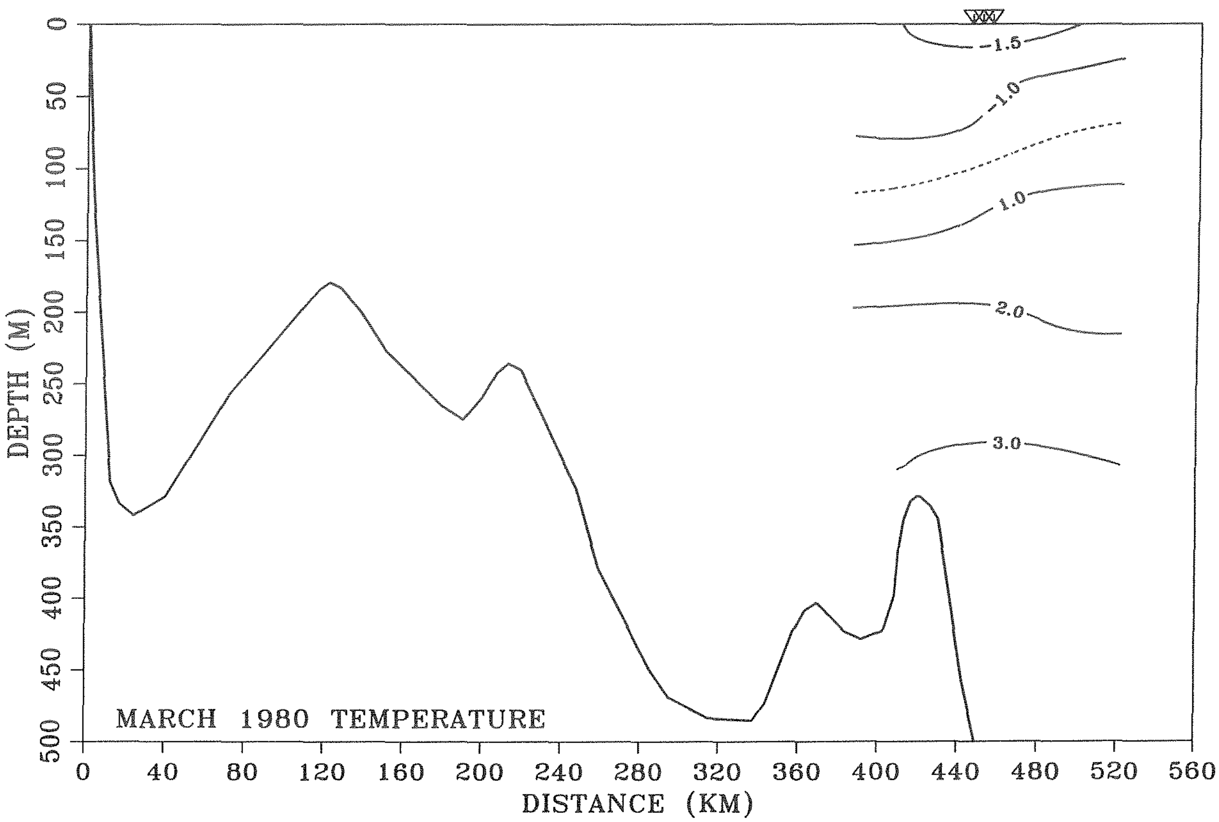
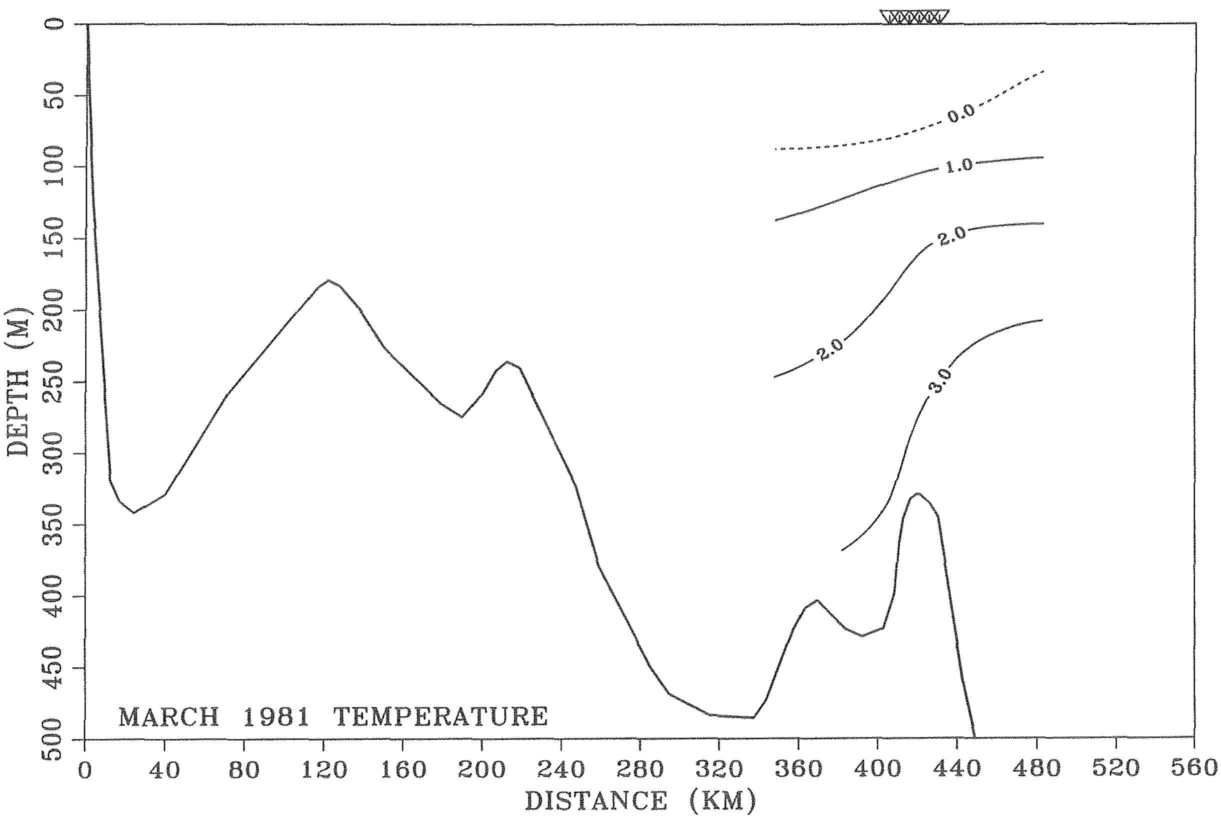
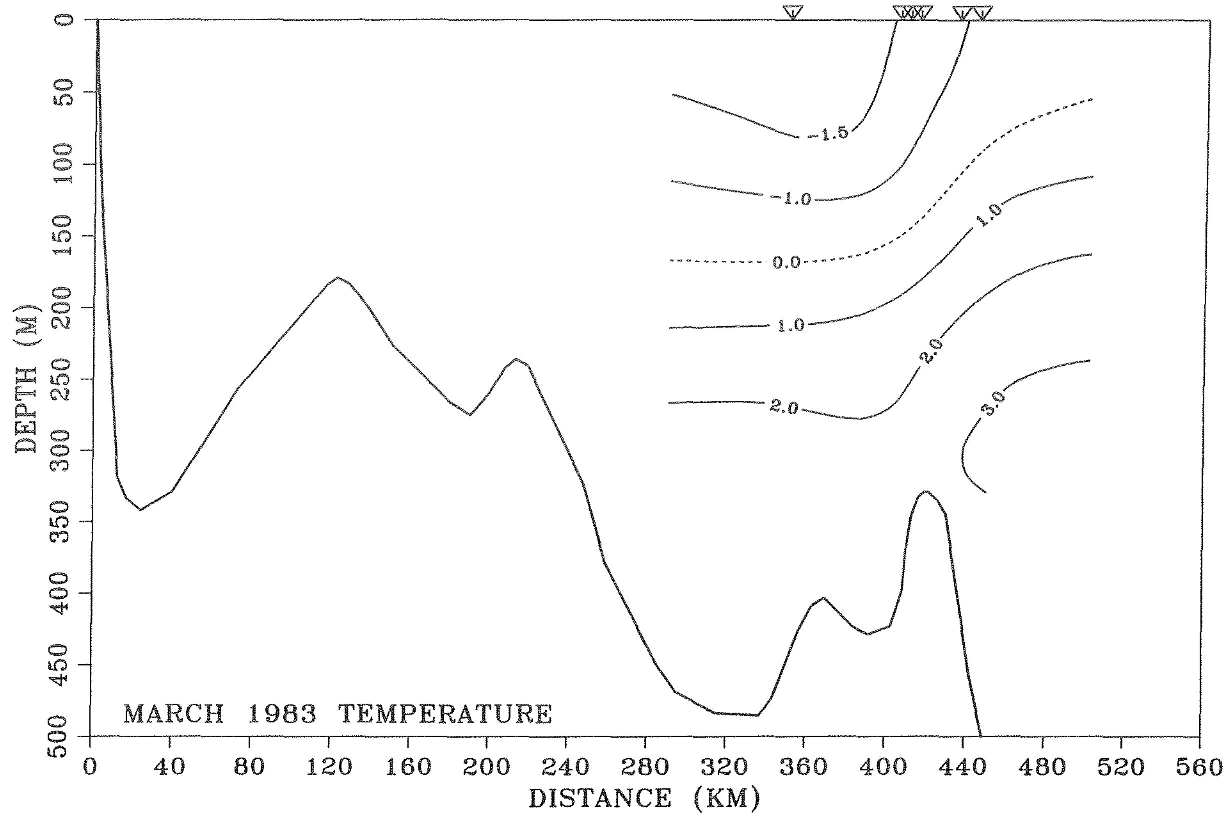
440
480
520
560


MARCH 1980 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
-1.5
-1.0
1.0
2.0
3.0


MARCH 1981 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0.0
1.0
2.0
2.0
3.0



DEPTH (M)
DISTANCE (KM)
MARCH 1983 TEMPERATURE
-1.5
-1.0
0.0
1.0
2.0
3.0
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
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520
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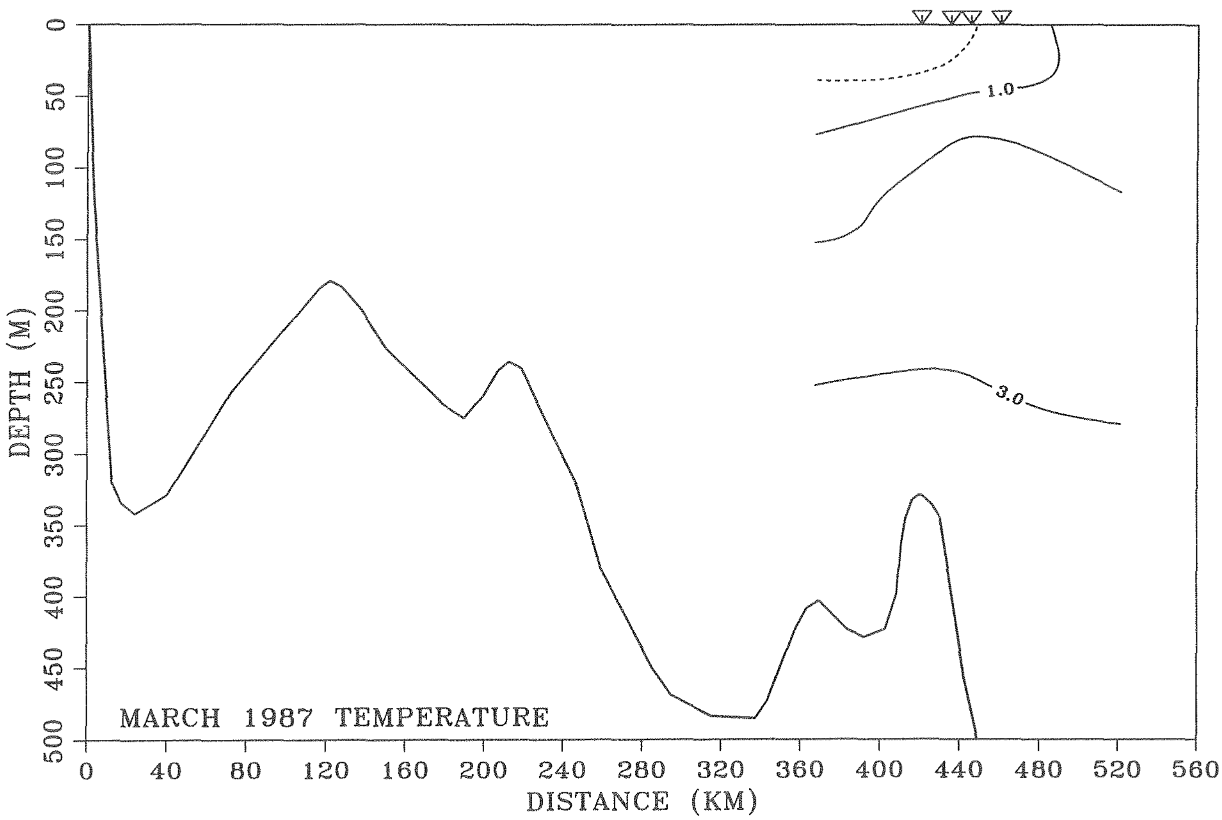

DEPTH (M)
DISTANCE (KM)
MARCH 1987 TEMPERATURE
1.0
3.0
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
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440
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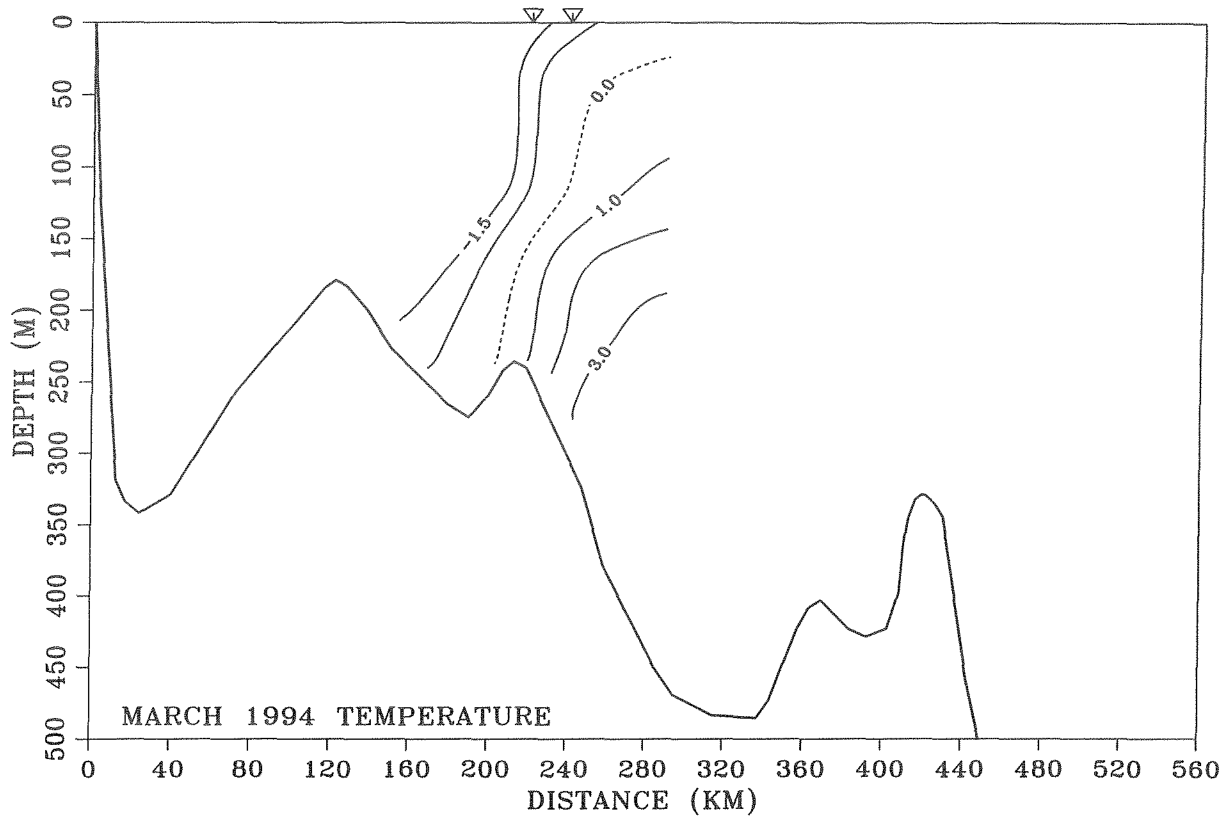
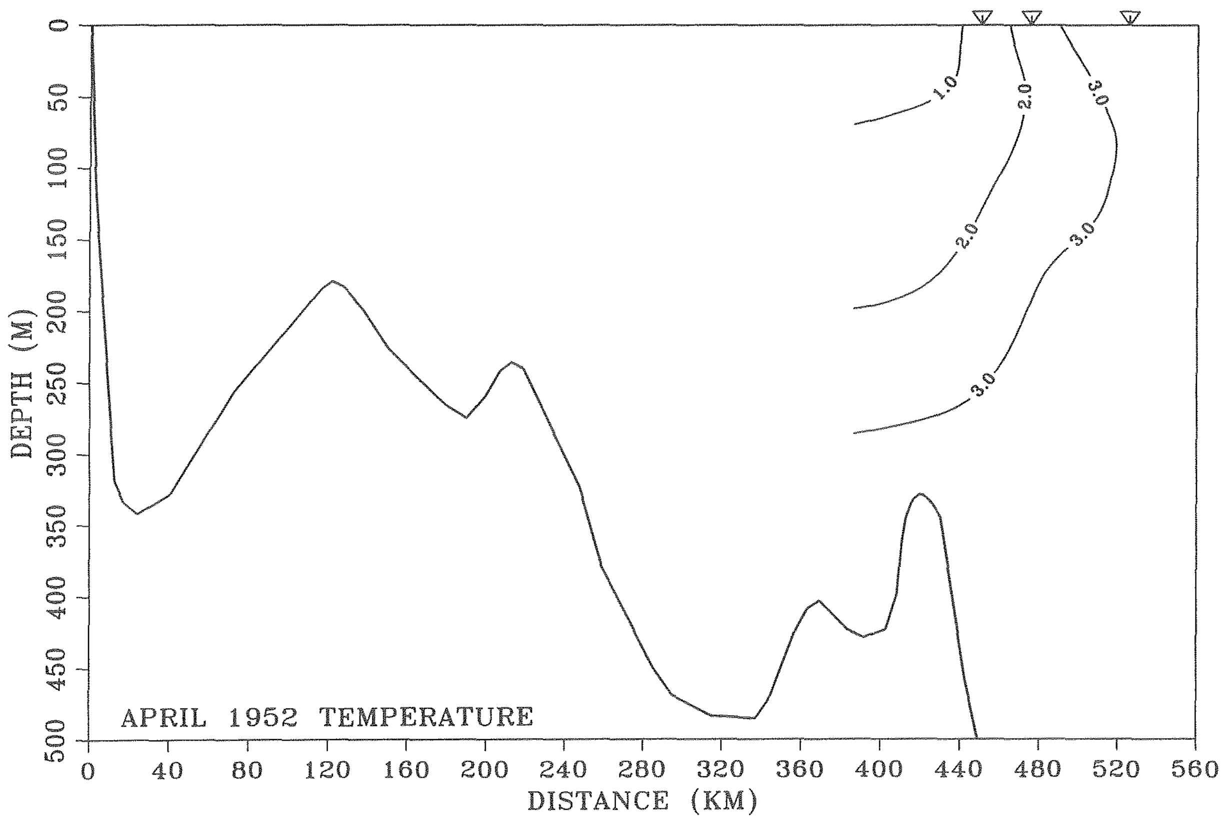
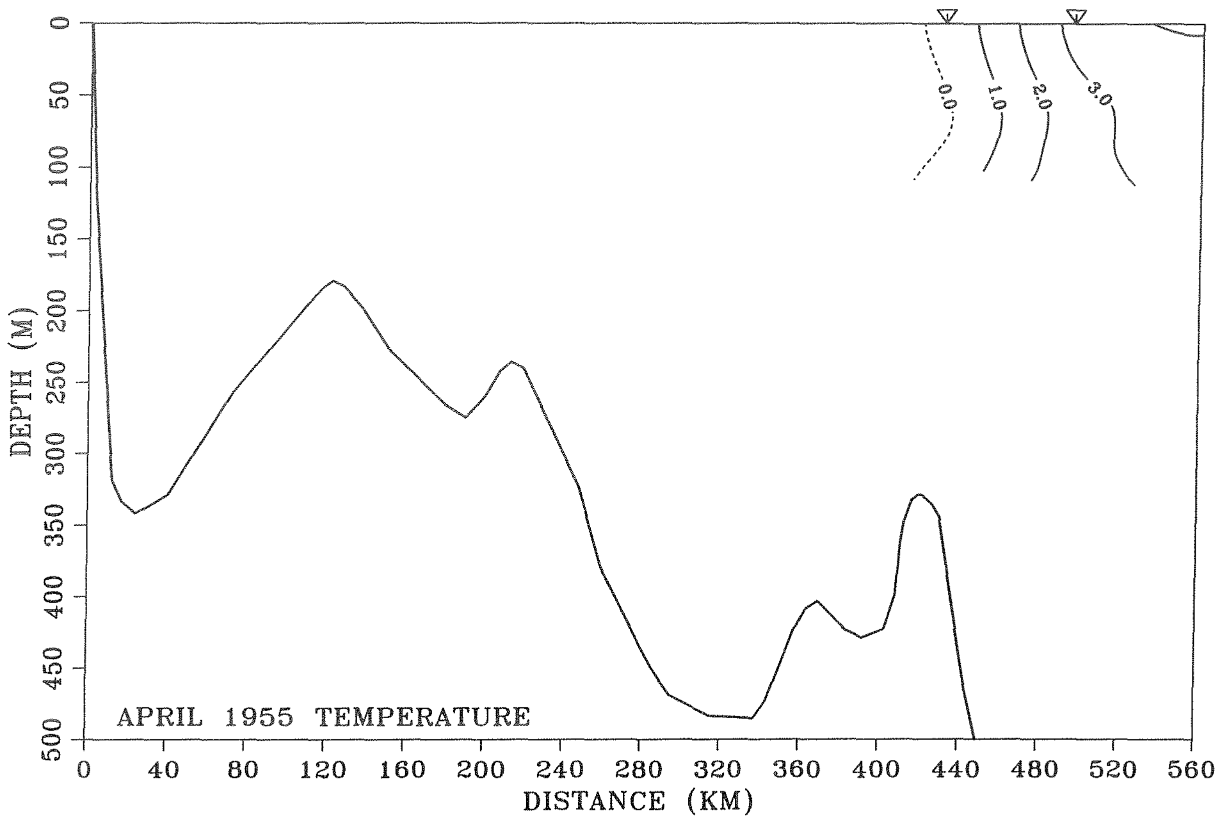
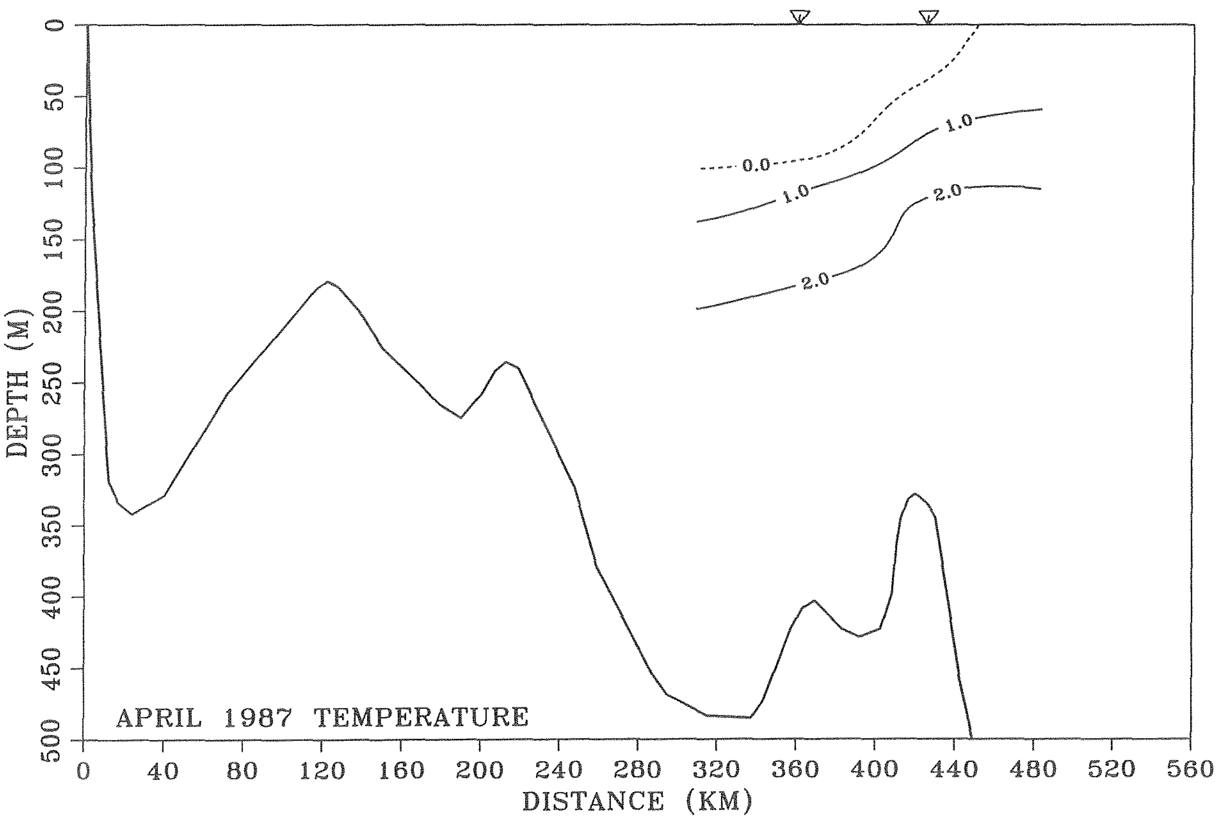
520
560


DEPTH (M)
DISTANCE (KM)
MARCH 1994 TEMPERATURE
-1.5
0.0
1.0
3.0

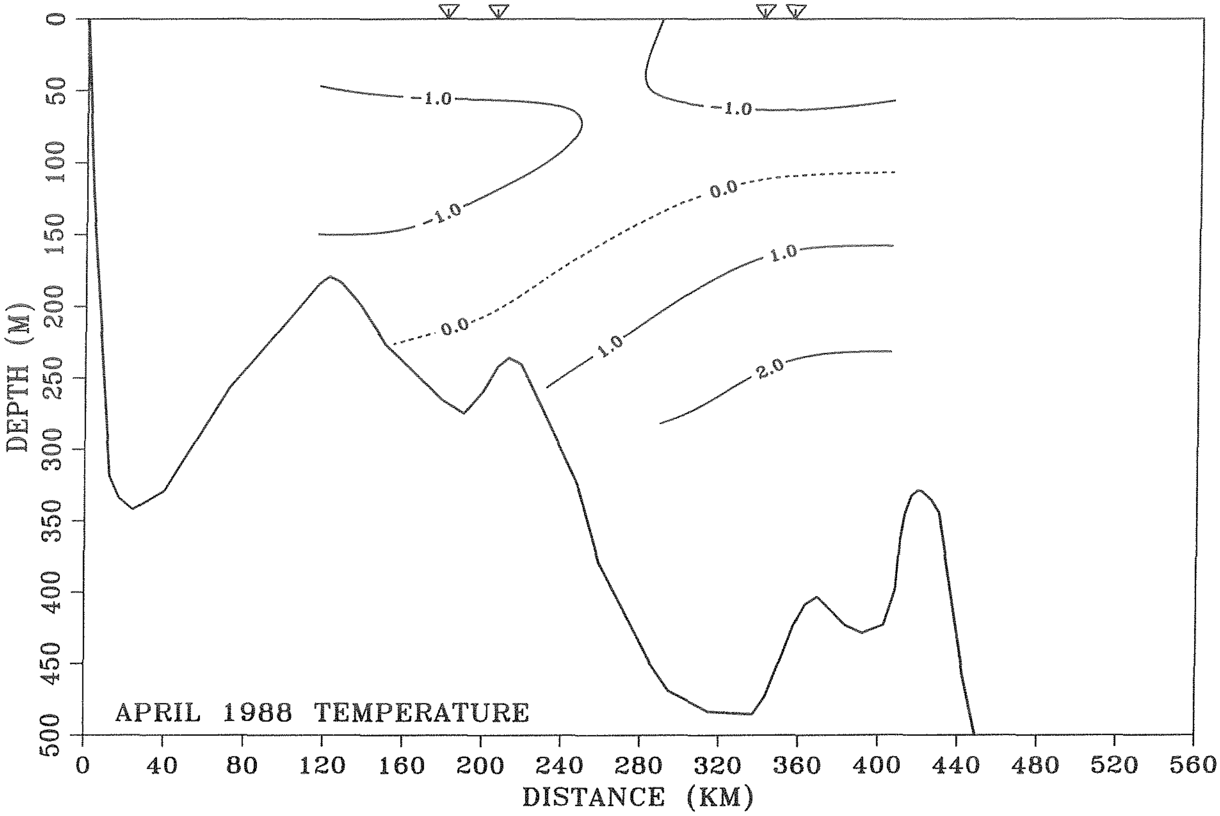

DEPTH (M)
DISTANCE (KM)
APRIL 1952 TEMPERATURE
1.0
2.0
3.0



0.0
1.0
2.0
3.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
APRIL 1955 TEMPERATURE
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)



0.0
1.0
1.0
2.0
2.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
APRIL 1987 TEMPERATURE
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)


APRIL 1988 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
-1.0
-1.0
-1.0
0.0
0.0
1.0
1.0
2.0
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
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280
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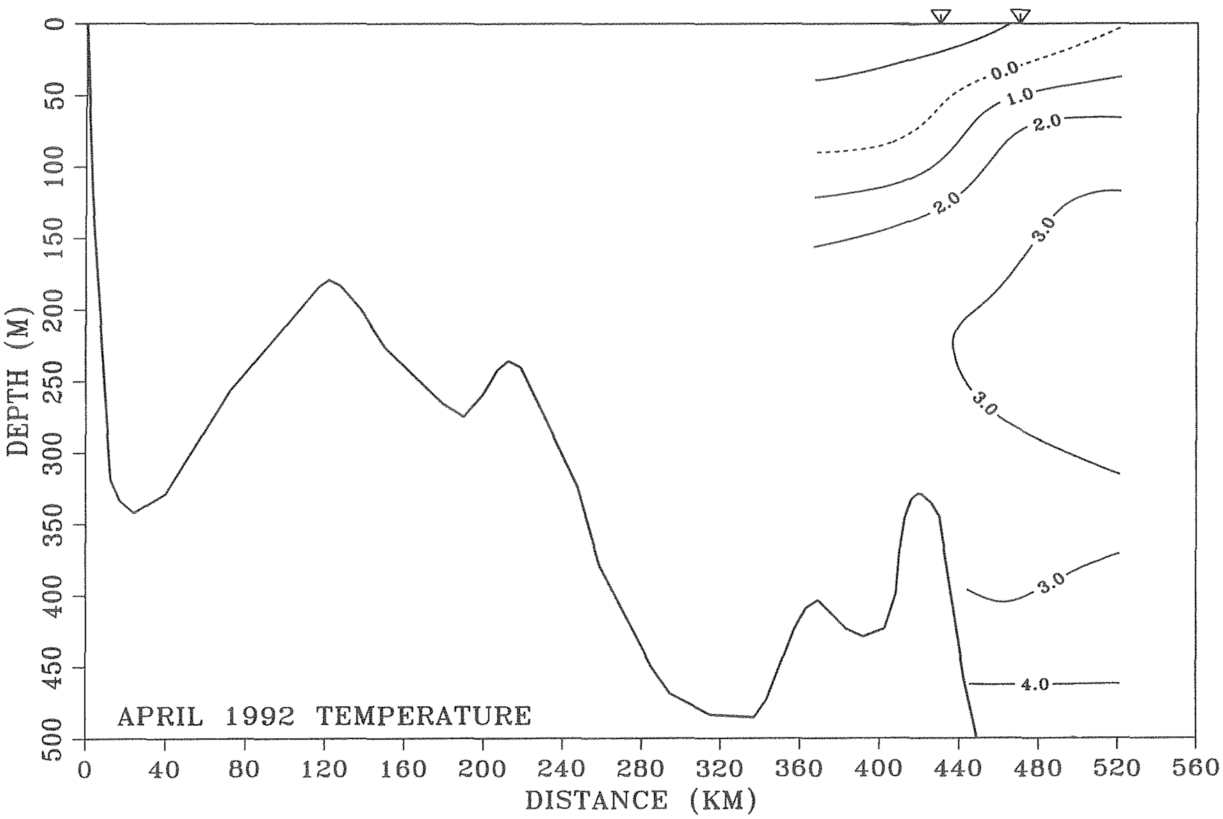
APRIL 1992 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0.0
1.0
2.0
2.0
3.0
3.0
3.0
4.0
0
50
100
150
200
250
300
350
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500
0
40
80
120
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200
240
280
320
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440
480
520
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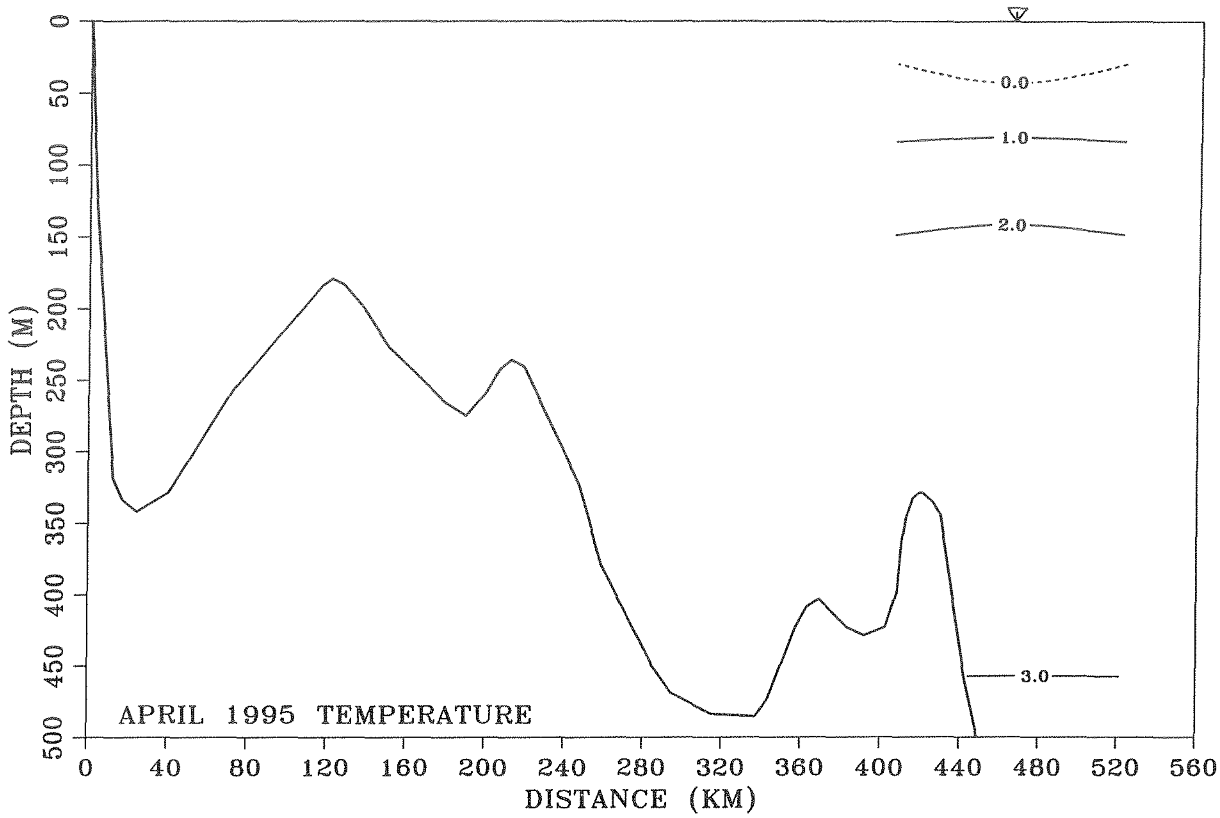
APRIL 1995 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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2.0
3.0
0
50
100
150
200
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500
0
40
80
120
160
200
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280
320
360
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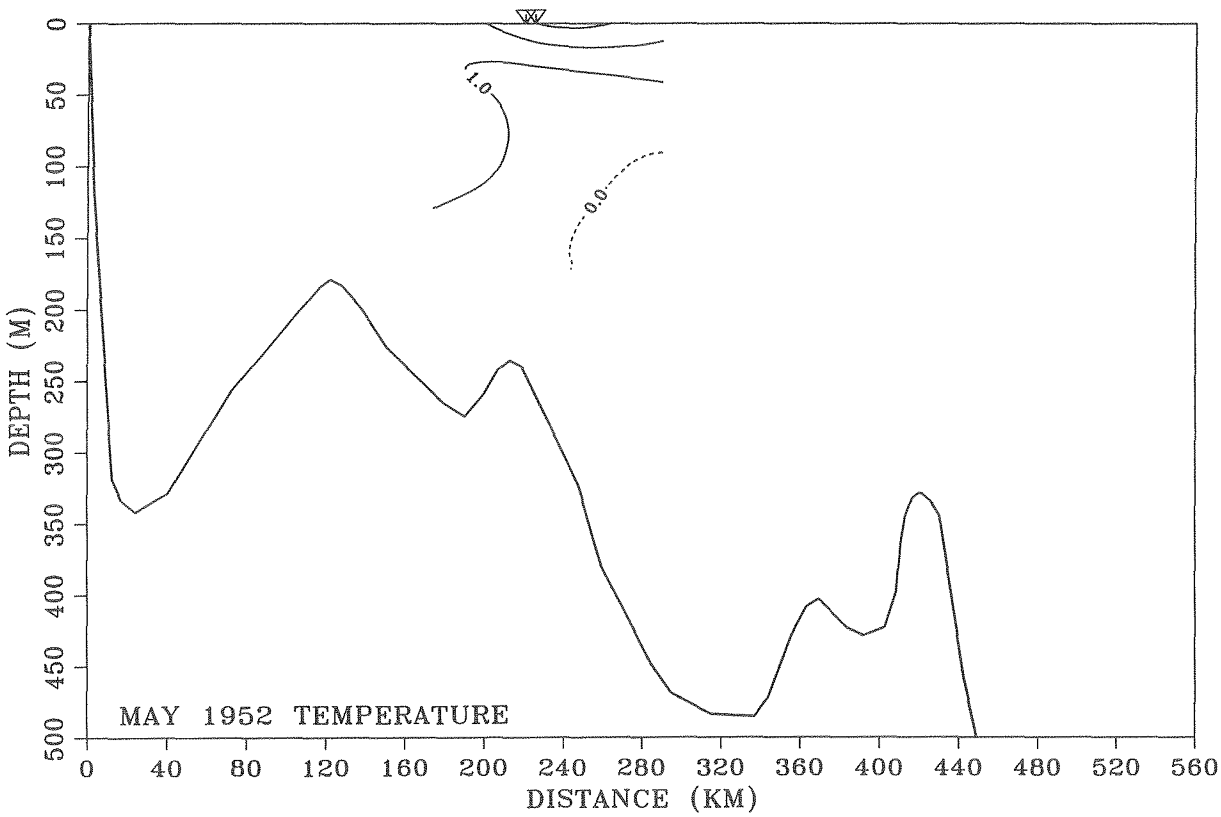
440
480
520
560


MAY 1952 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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0
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100
150
200
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500
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120
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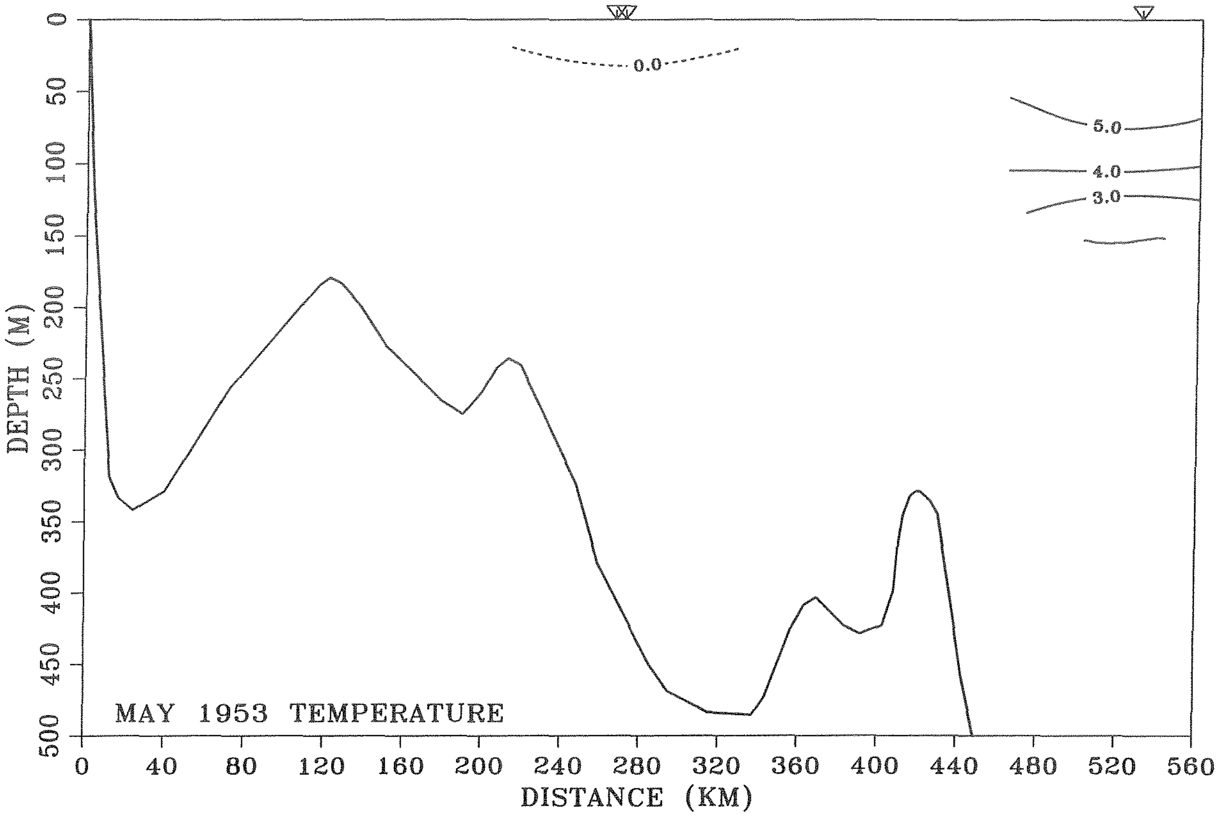
0.0
5.0
4.0
3.0
MAY 1953 TEMPERATURE
DEPTH (M)
0
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100
150
200
250
300
350
400
450
500
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40
80
120
160
200
240
280
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360
400
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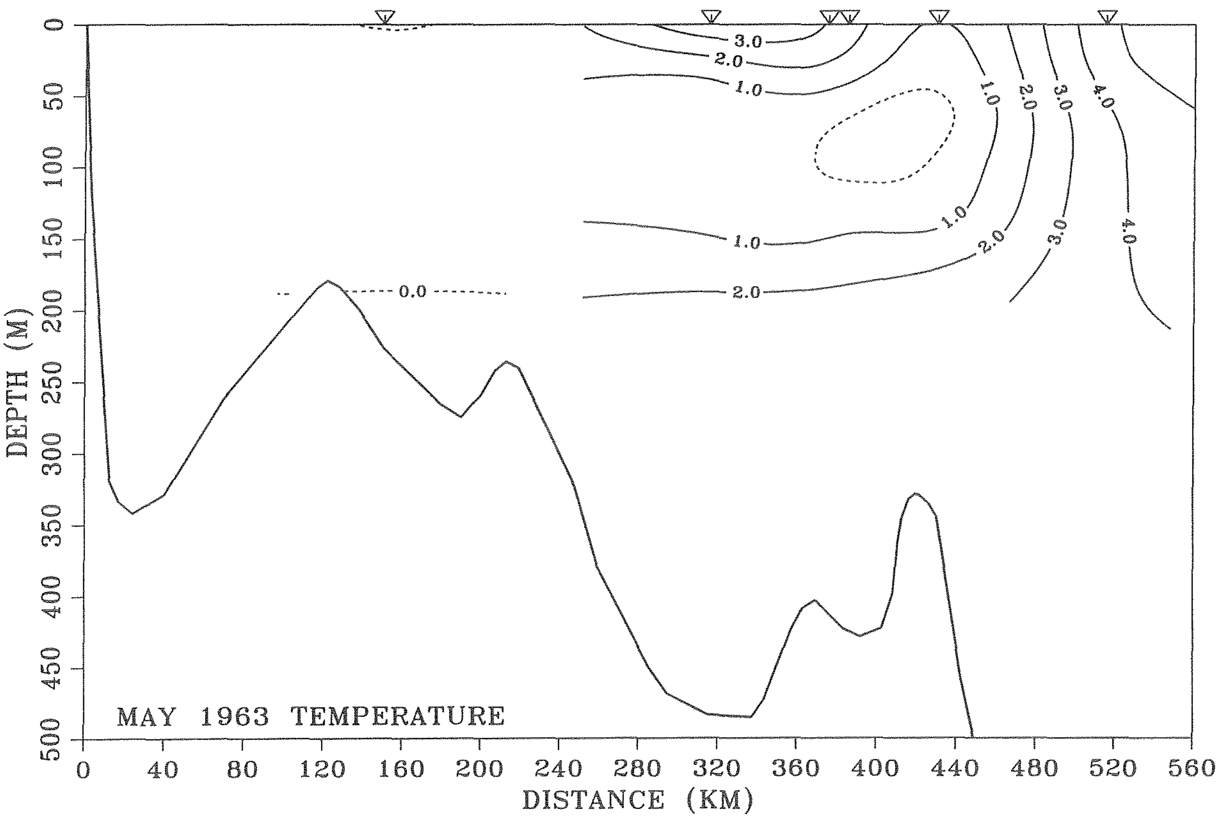
480
520
560
DISTANCE (KM)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1.0
2.0
3.0
4.0
1.0
2.0
3.0
4.0
1.0
0.0
2.0
MAY 1963 TEMPERATURE
DEPTH (M)
0
50
100
150
200
250
300
350
400
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500
0
40
80
120
160
200
240
280
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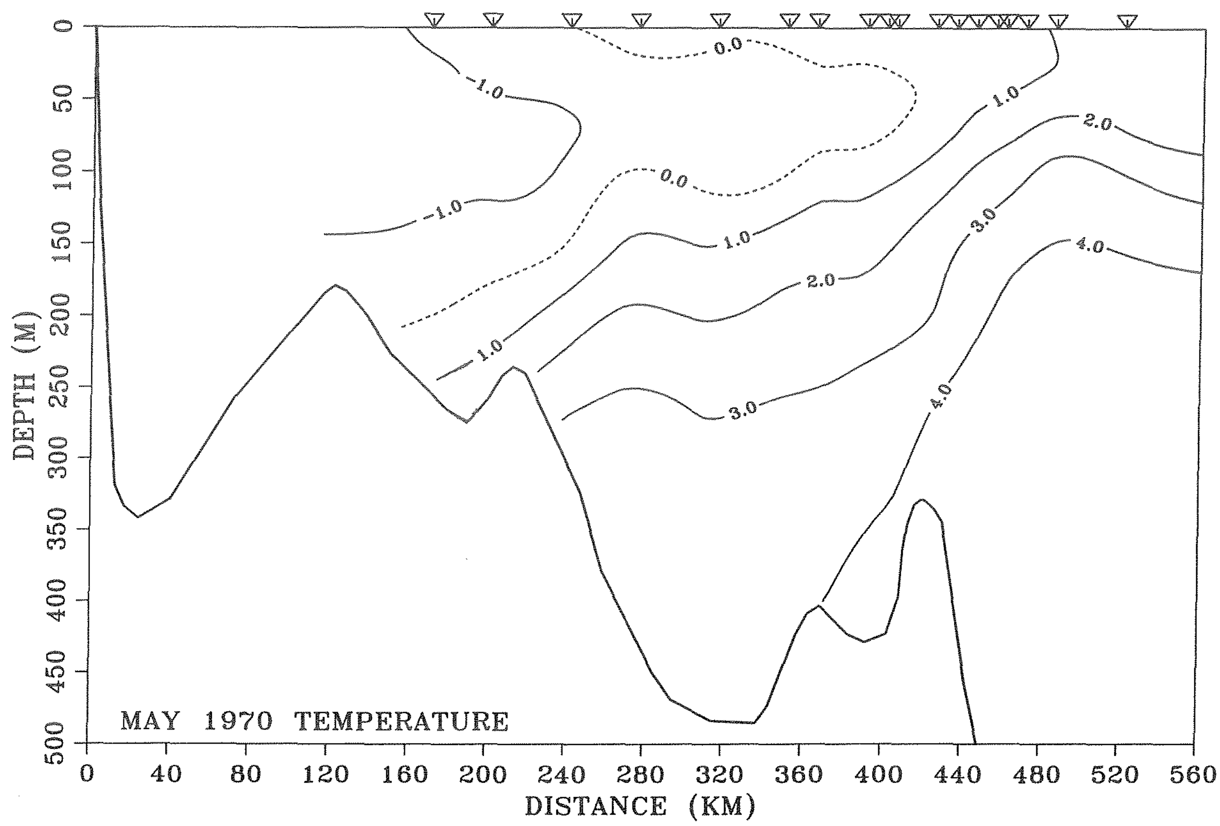
360
400
440
480
520
560
DISTANCE (KM)


MAY 1970 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0.0
1.0
-1.0
2.0
3.0
4.0
0
50
100
150
200
250
300
350
400
450
500
40
80
120
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440
480
520
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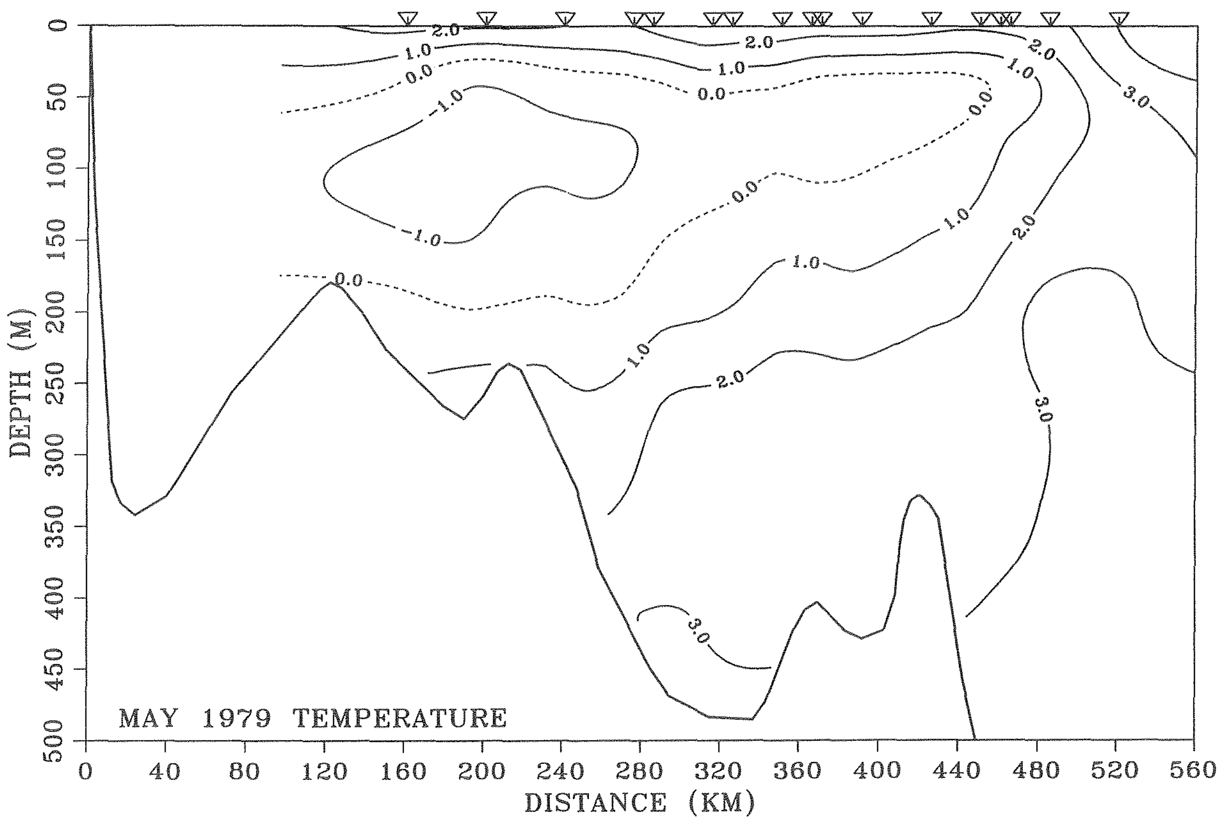
MAY 1979 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
2.0
1.0
0.0
-1.0
3.0
0
50
100
150
200
250
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450
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120
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200
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440
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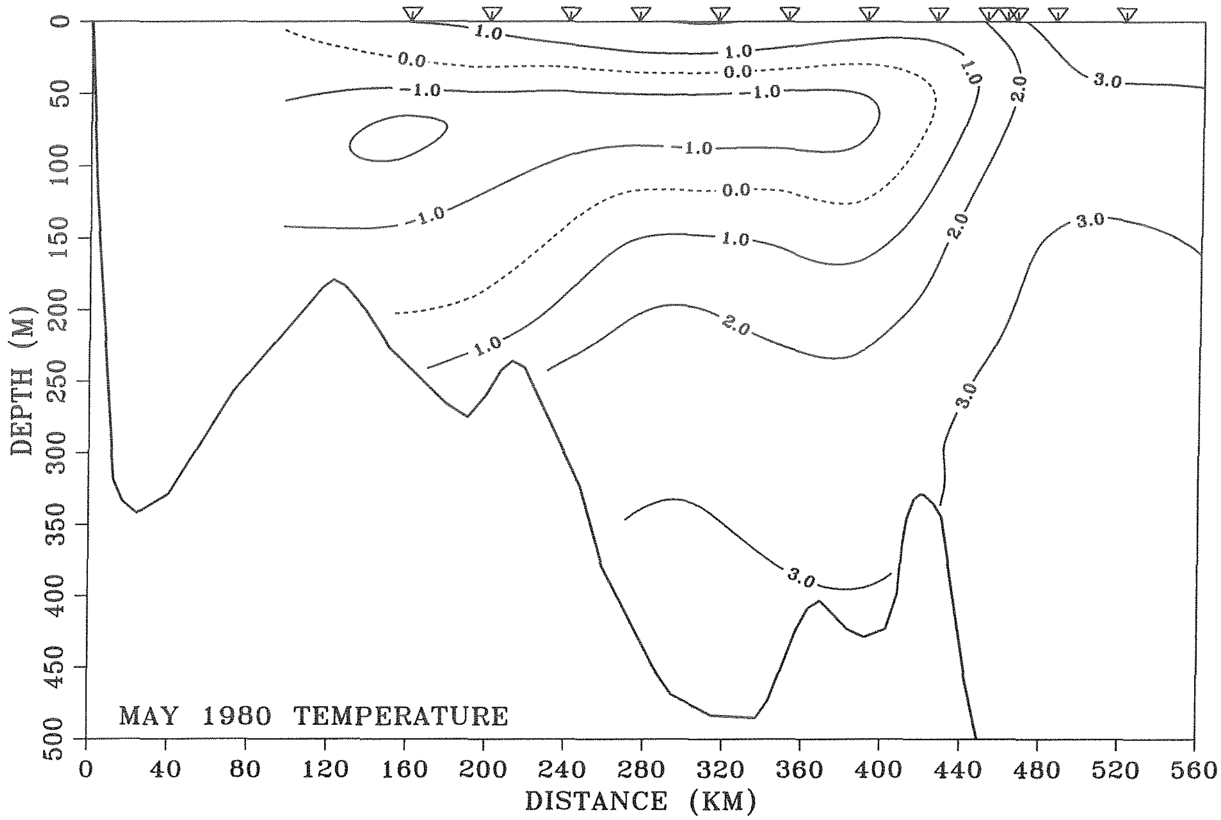
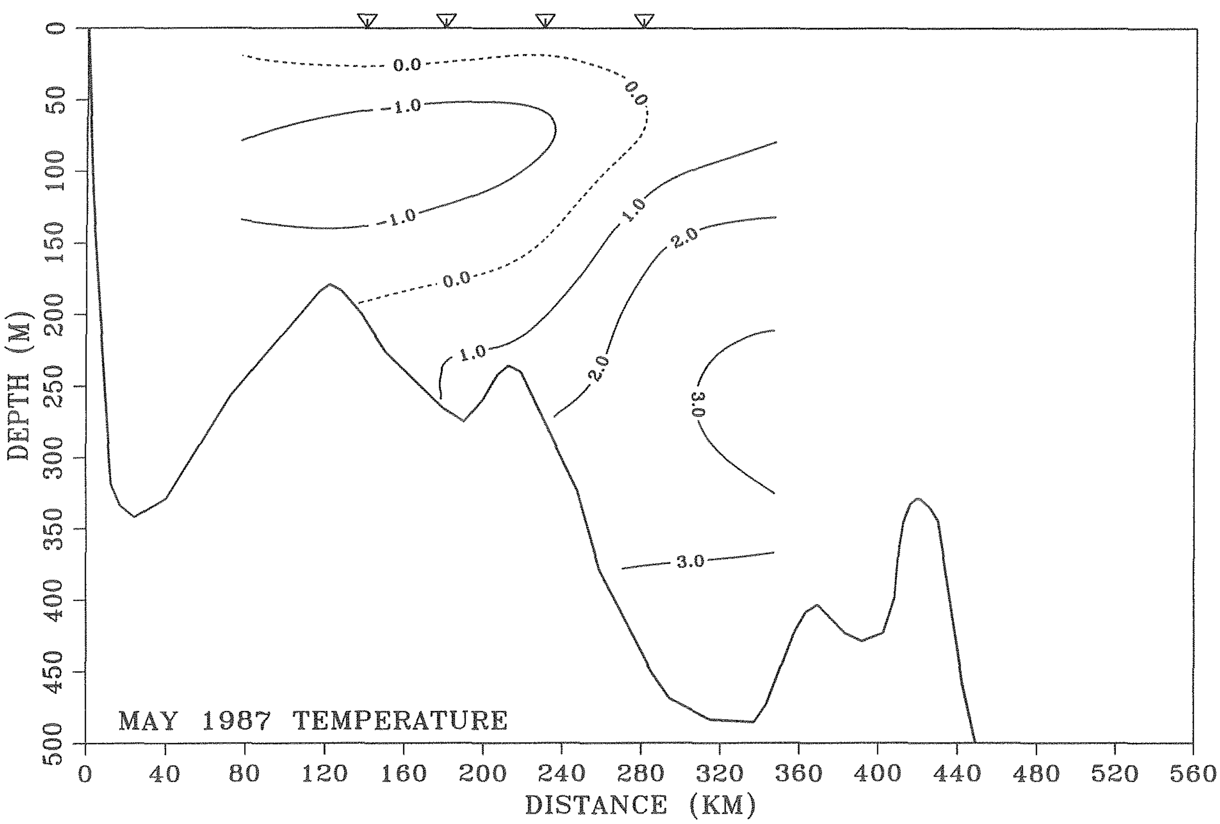
520
560


MAY 1980 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
1.0
0.0
-1.0
2.0
3.0


MAY 1987 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
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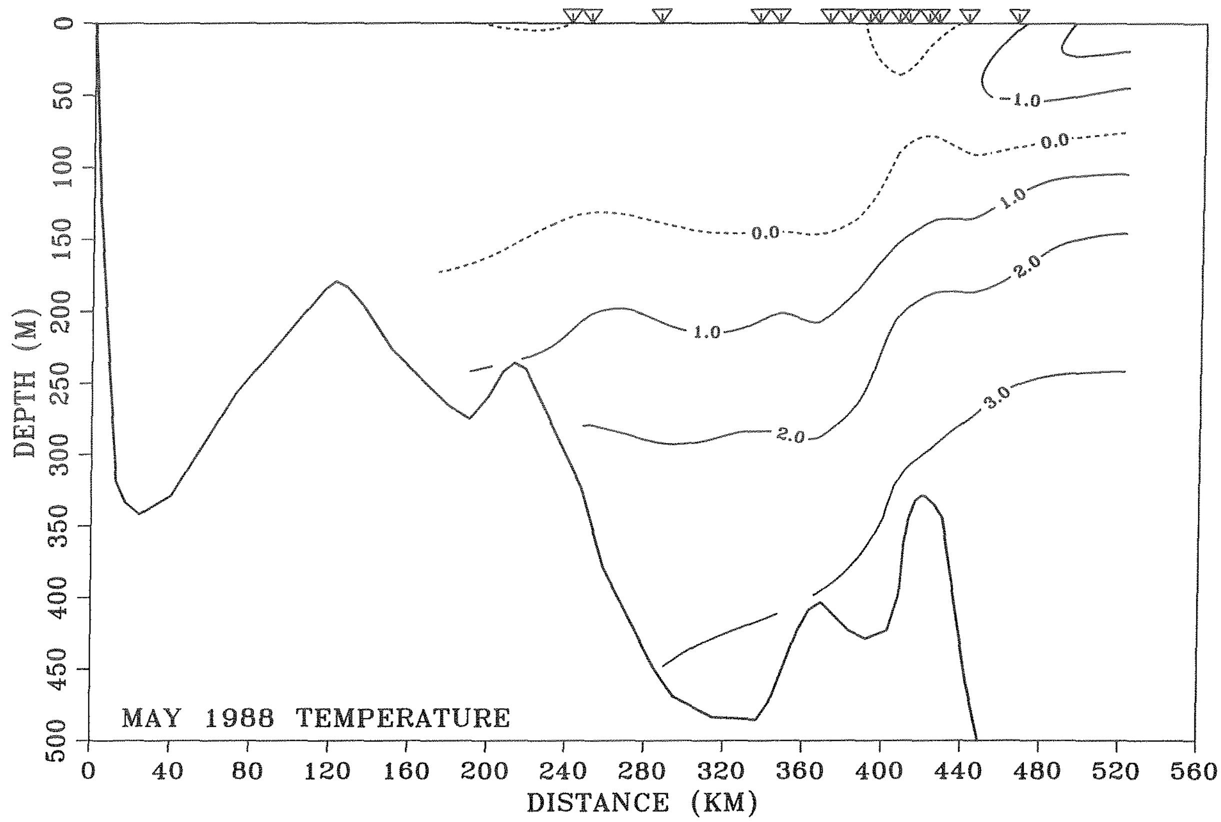
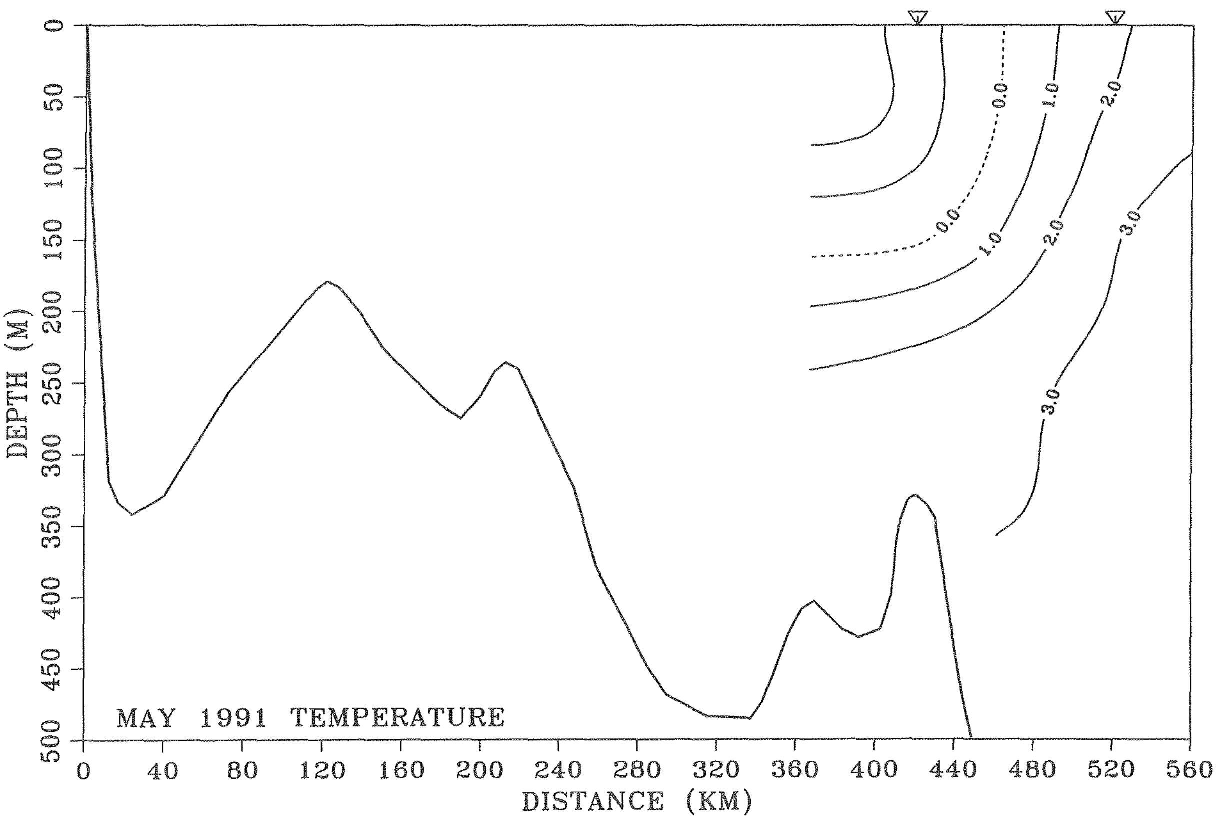
200
240
280
320
360
400
440
480
520
560
0.0
-1.0
1.0
2.0
3.0


0
50
100
150
200
250
300
350
400
450
500
DEPTH (M)
-1.0
0.0
1.0
2.0
0.0
1.0
2.0
3.0
MAY 1988 TEMPERATURE
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)


0
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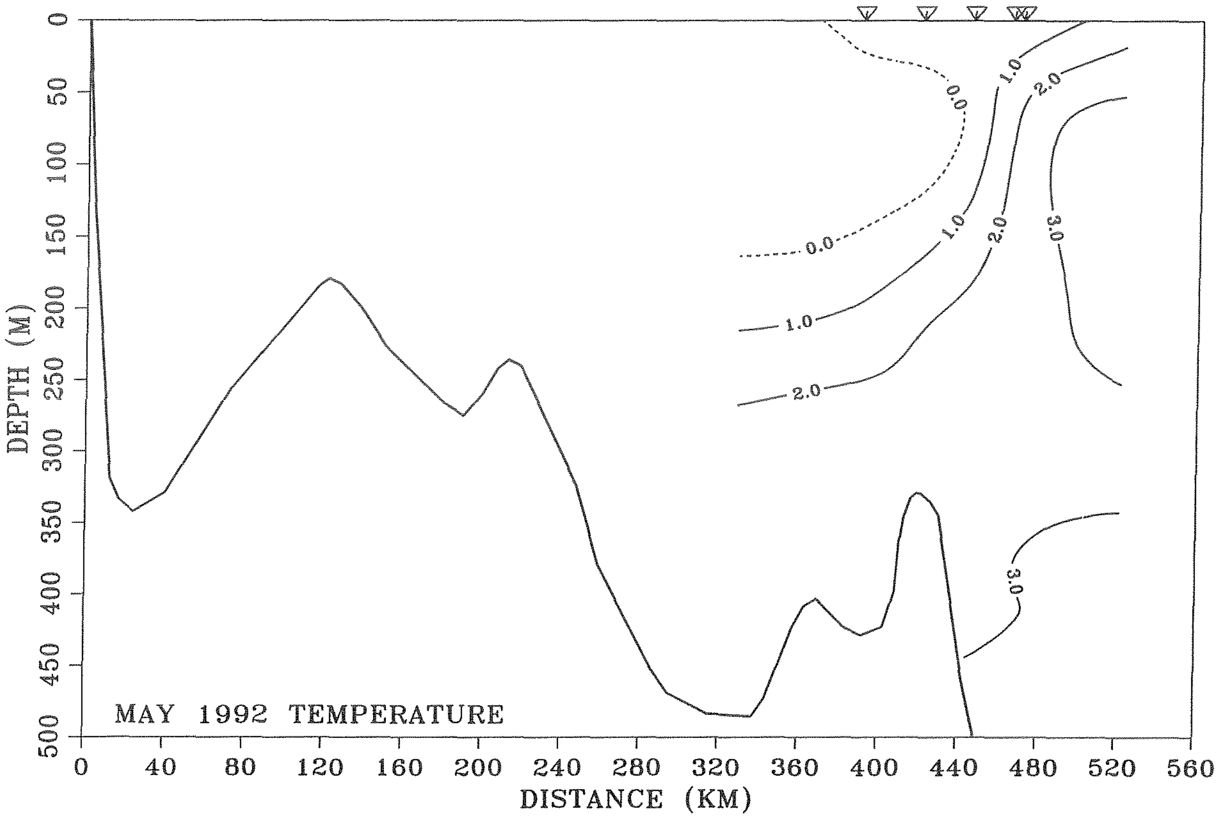
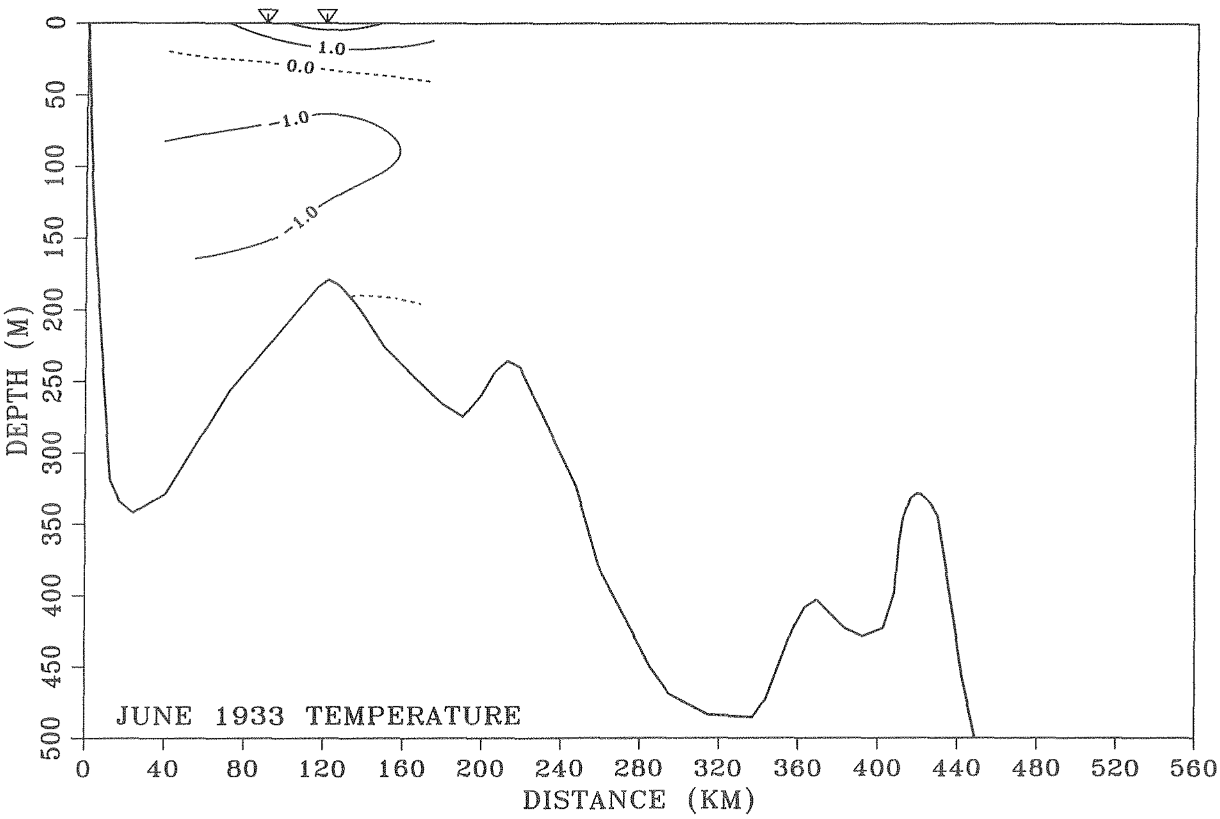
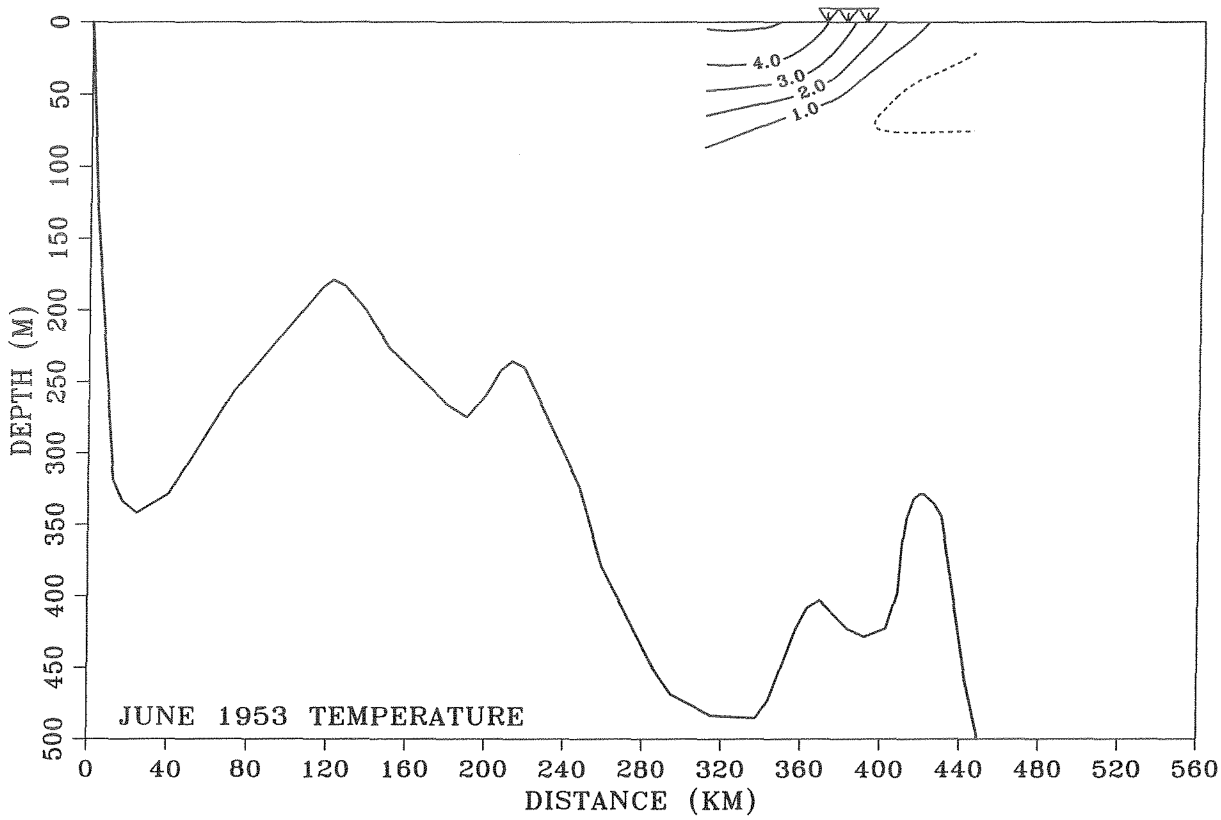
100
150
200
250
300
350
400
450
500
DEPTH (M)
0.0
1.0
2.0
0.0
1.0
2.0
3.0
3.0
MAY 1991 TEMPERATURE
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)



DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)
MAY 1992 TEMPERATURE
0.0
1.0
2.0
3.0



DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)
JUNE 1933 TEMPERATURE
1.0
0.0
-1.0


JUNE 1953 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
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100
150
200
250
300
350
400
450
500
0
40
80
120
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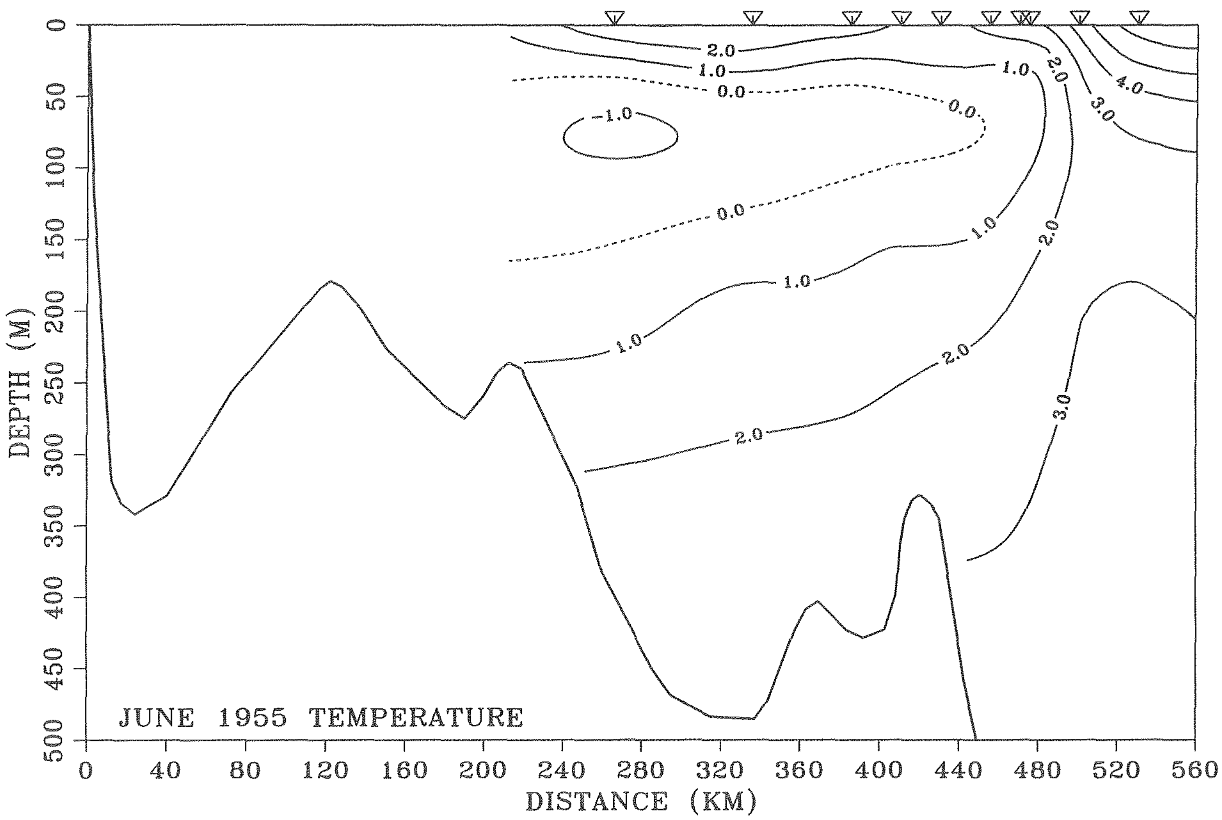
200
240
280
320
360
400
440
480
520
560
4.0
3.0
2.0
1.0


JUNE 1955 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
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100
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200
250
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350
400
450
500
0
40
80
120
160
200
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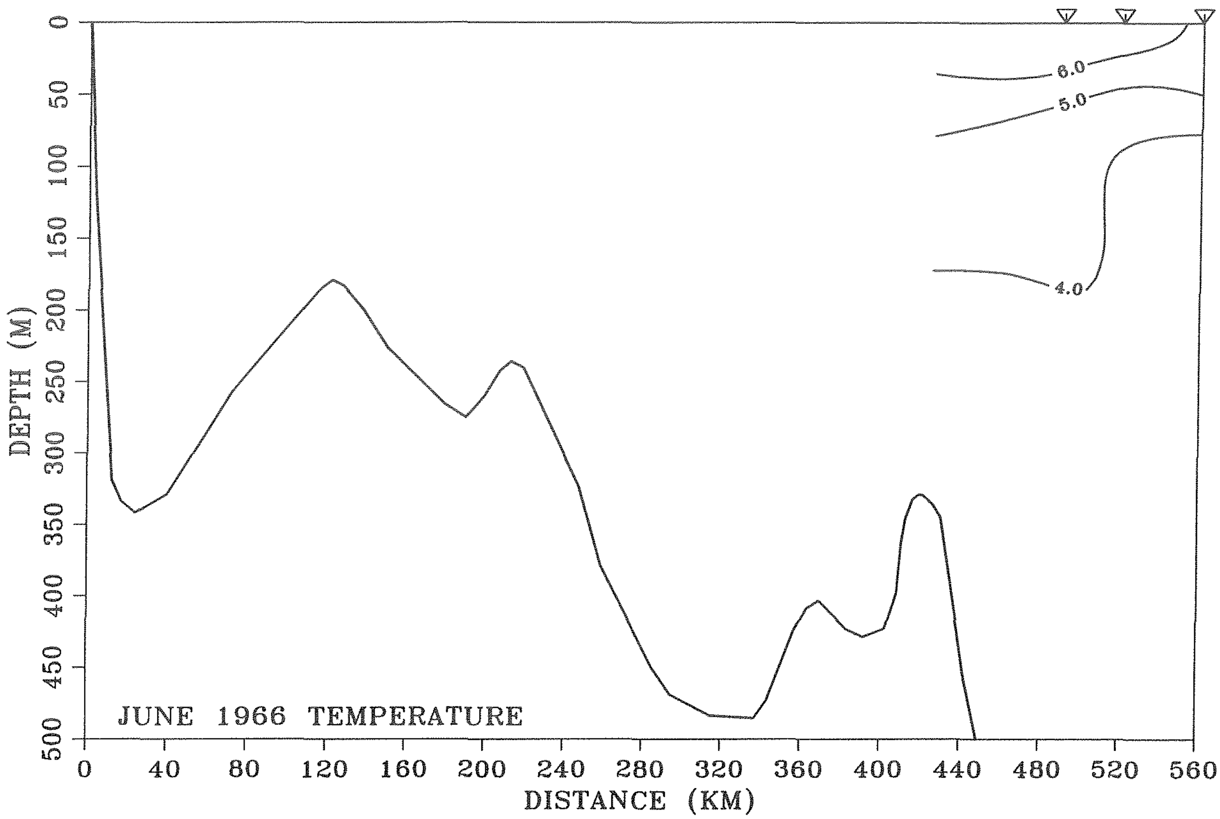
280
320
360
400
440
480
520
560
2.0
1.0
0.0
-1.0
4.0
3.0


6.0
5.0
4.0
DEPTH (M)
0
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100
150
200
250
300
350
400
450
500
JUNE 1966 TEMPERATURE
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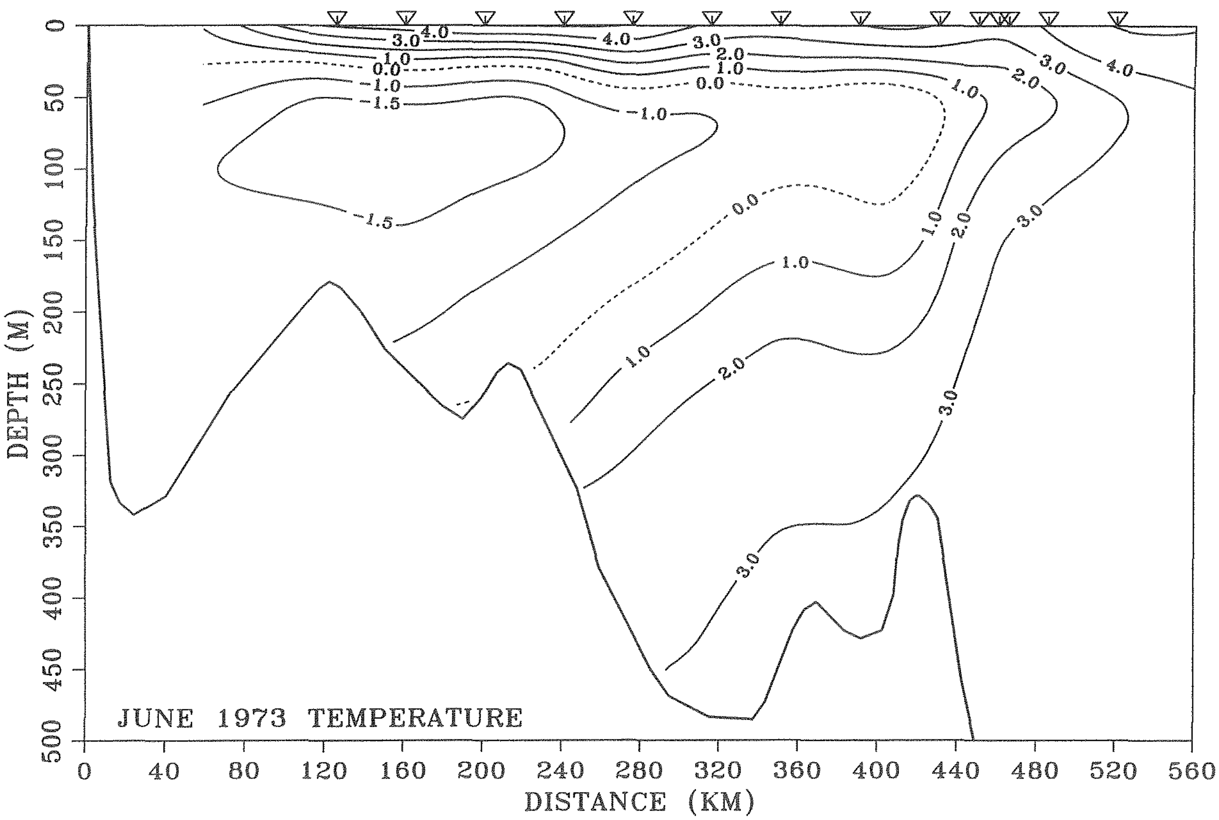
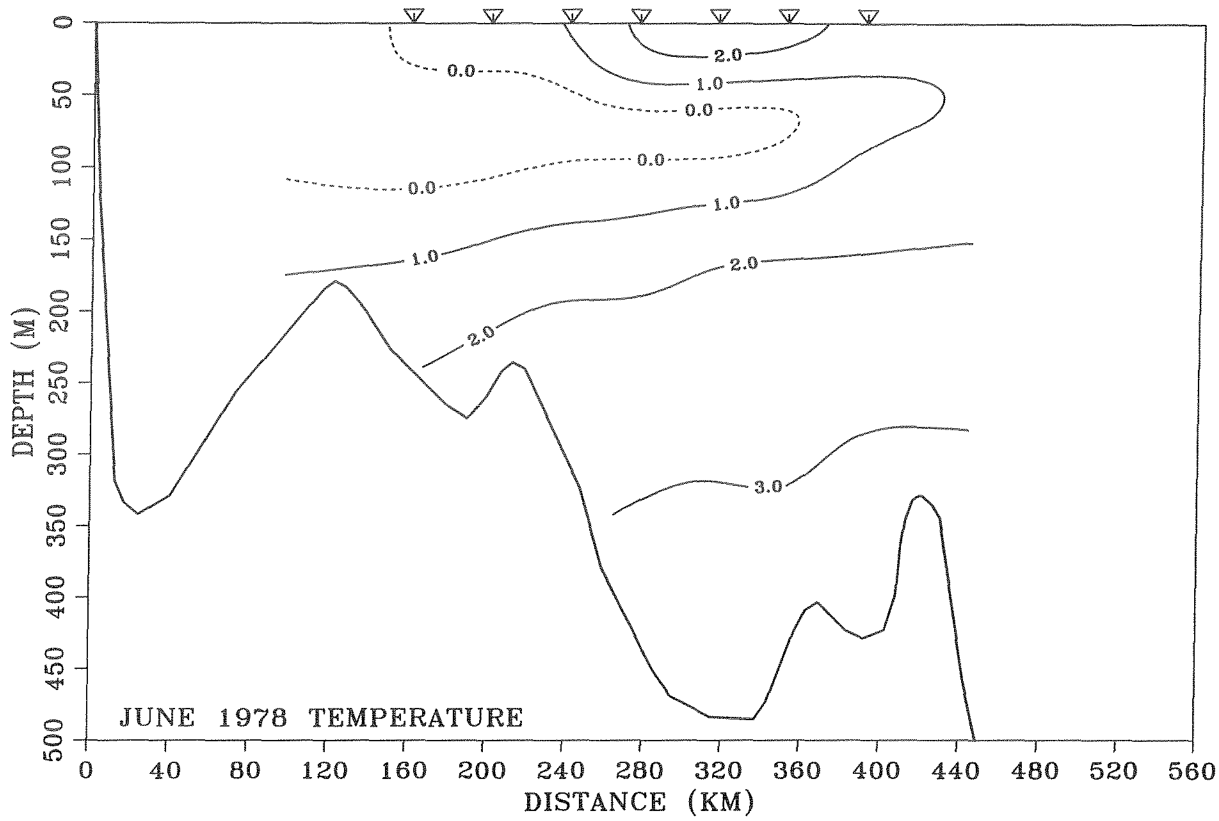
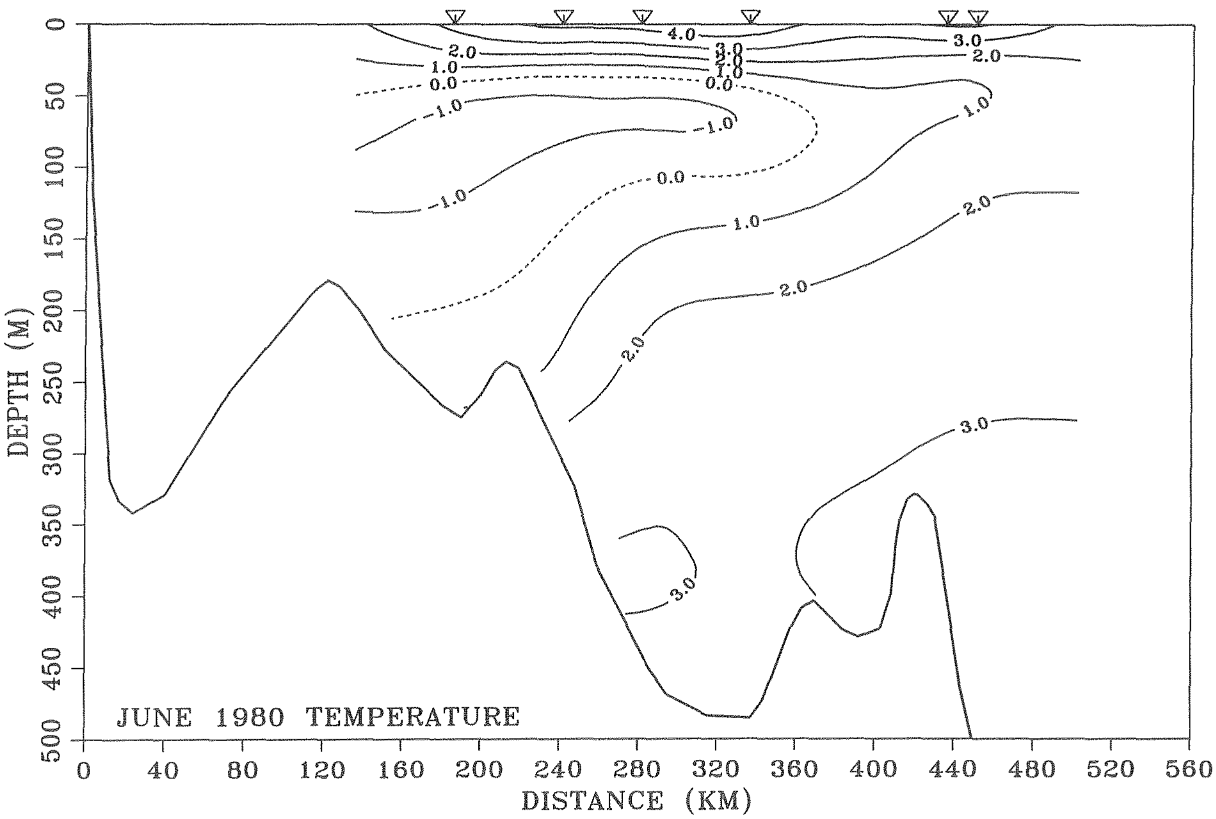
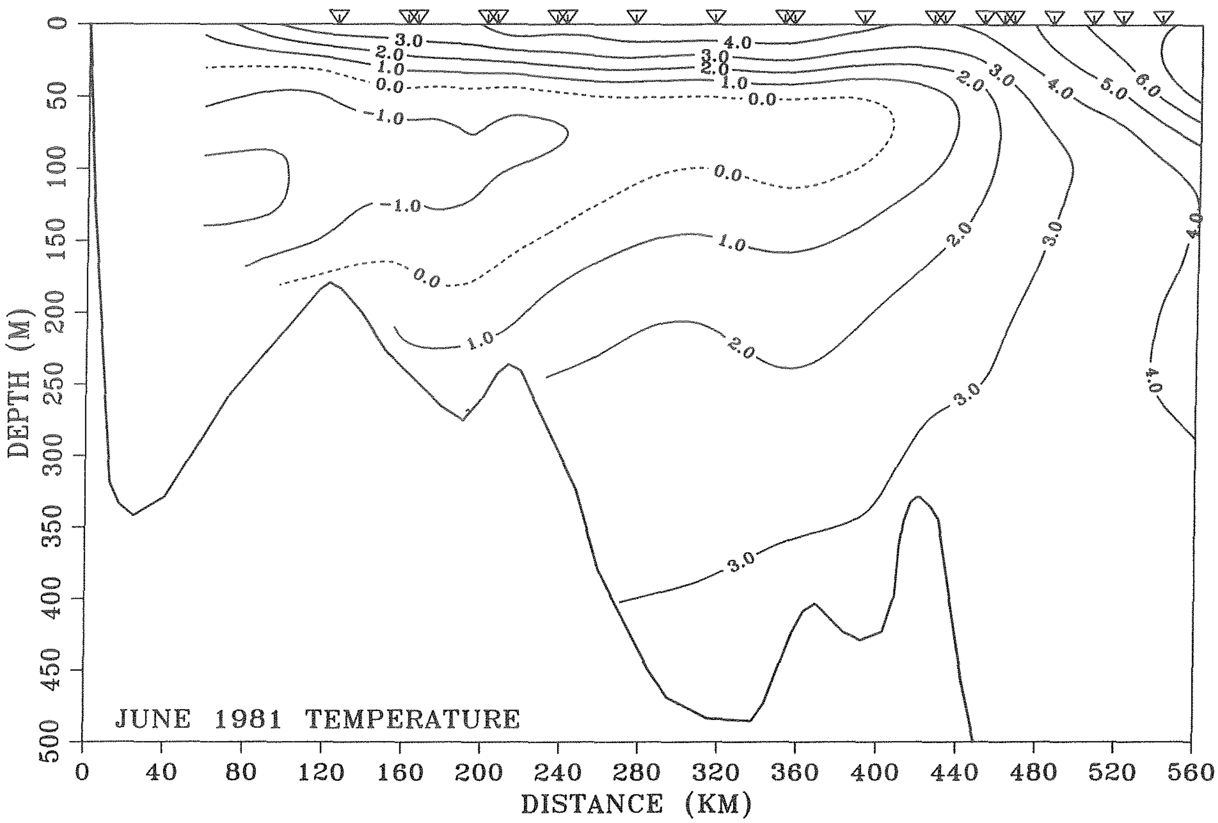
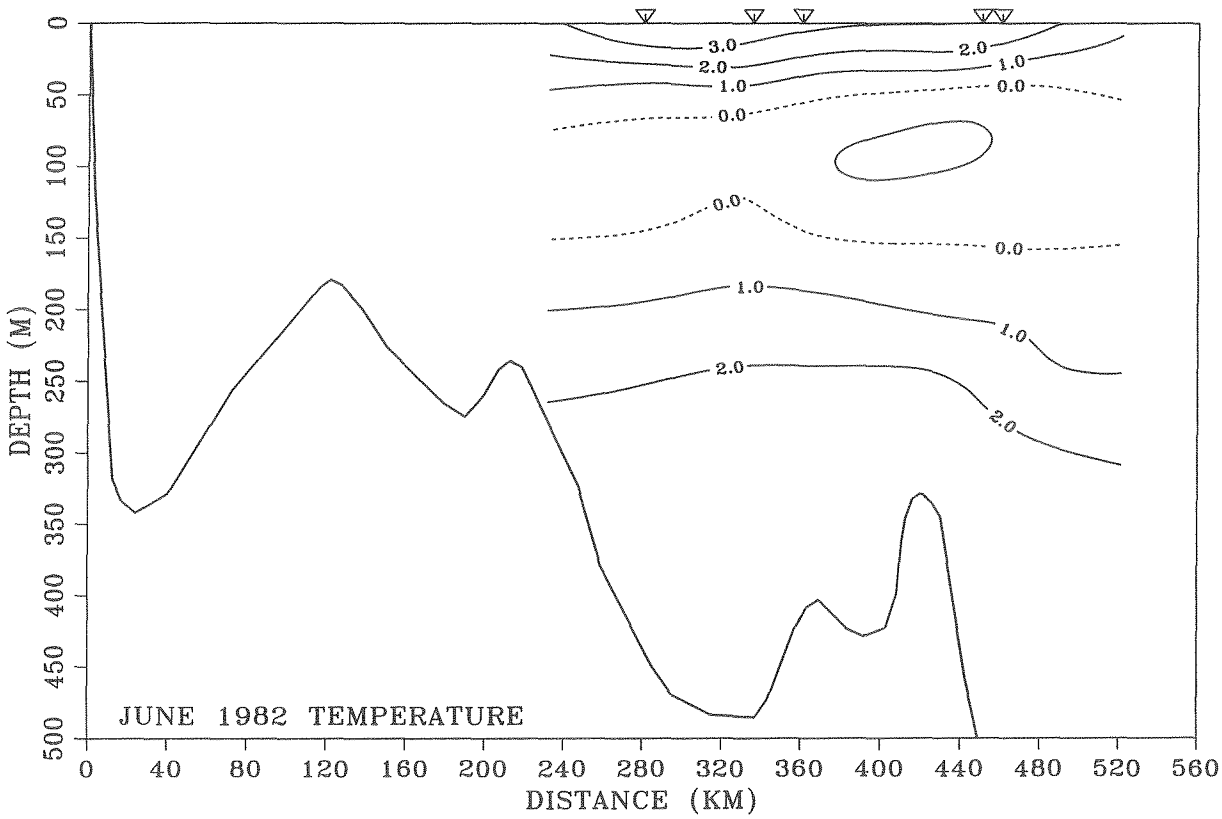
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)

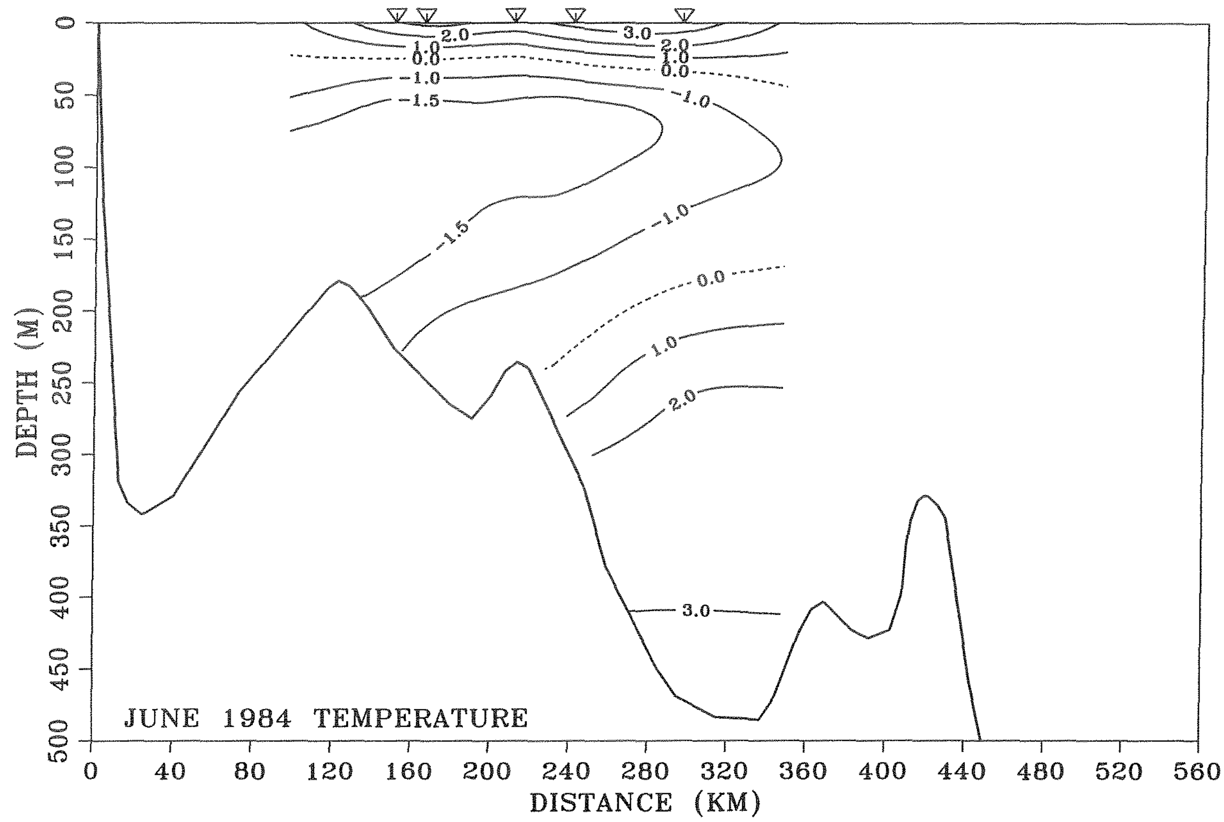

4.0
3.0
2.0
1.0
0.0
-1.0
-1.5
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
JUNE 1973 TEMPERATURE
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)


JUNE 1978 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
2.0
1.0
0.0
0.0
0.0
1.0
1.0
2.0
2.0
3.0

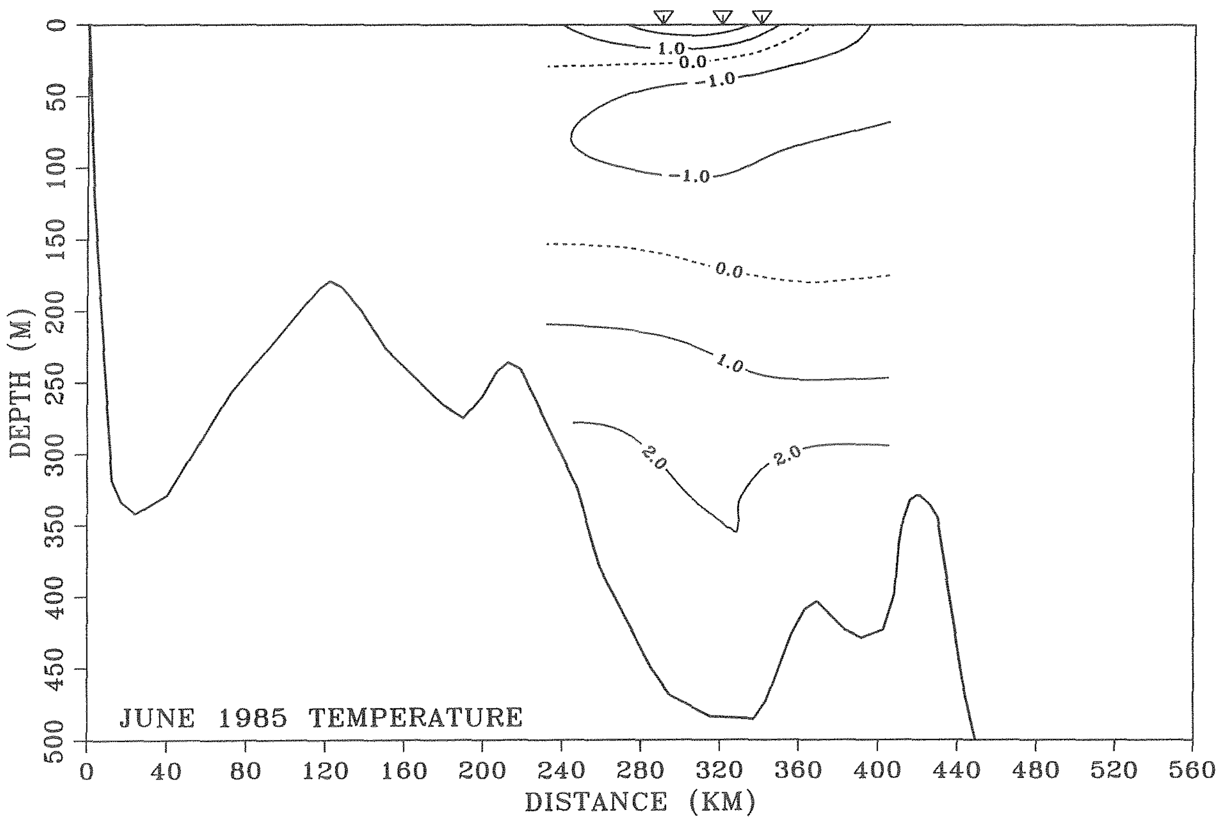

JUNE 1980 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
4.0
3.0
2.0
2.0
1.0
1.0
0.0
0.0
-1.0
-1.0
-1.0
0.0
1.0
1.0
2.0
2.0
2.0
3.0
3.0


JUNE 1981 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
3.0
2.0
1.0
0.0
-1.0
4.0
5.0
6.0

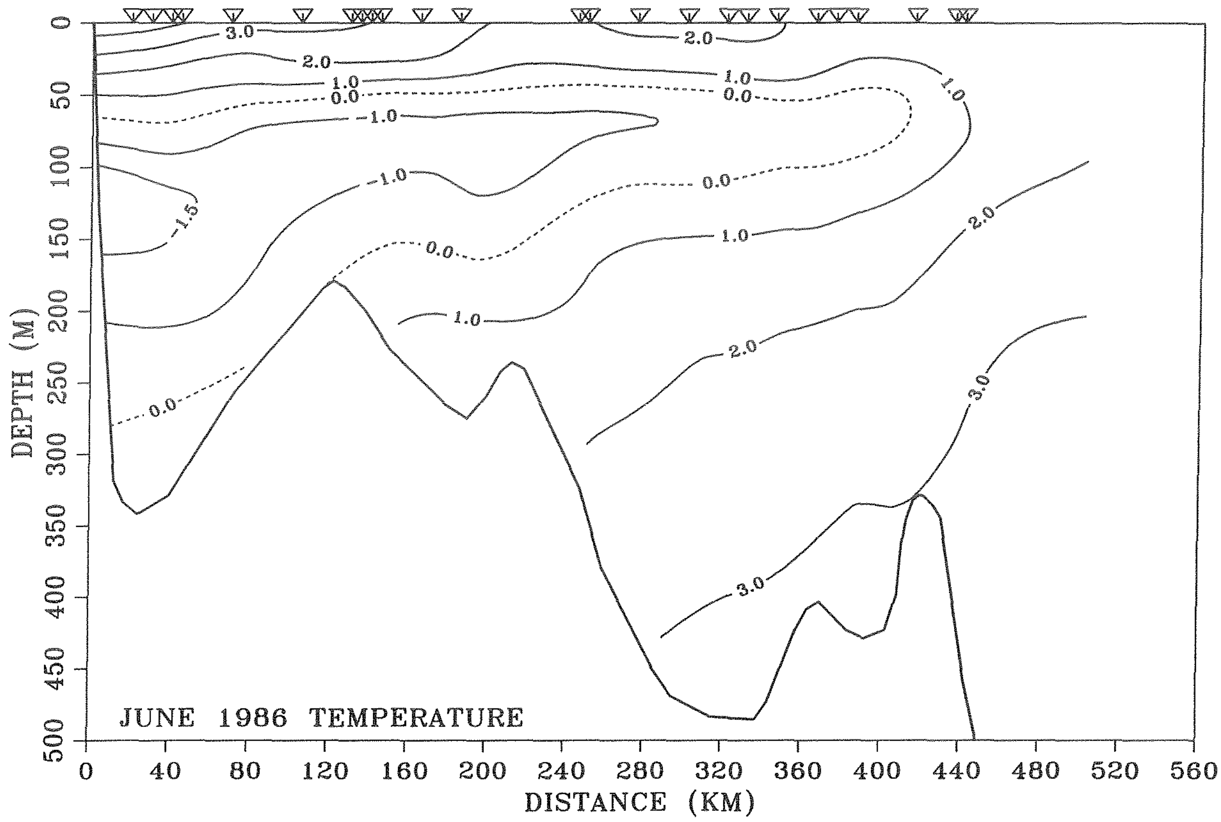

JUNE 1982 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
3.0
2.0
1.0
0.0

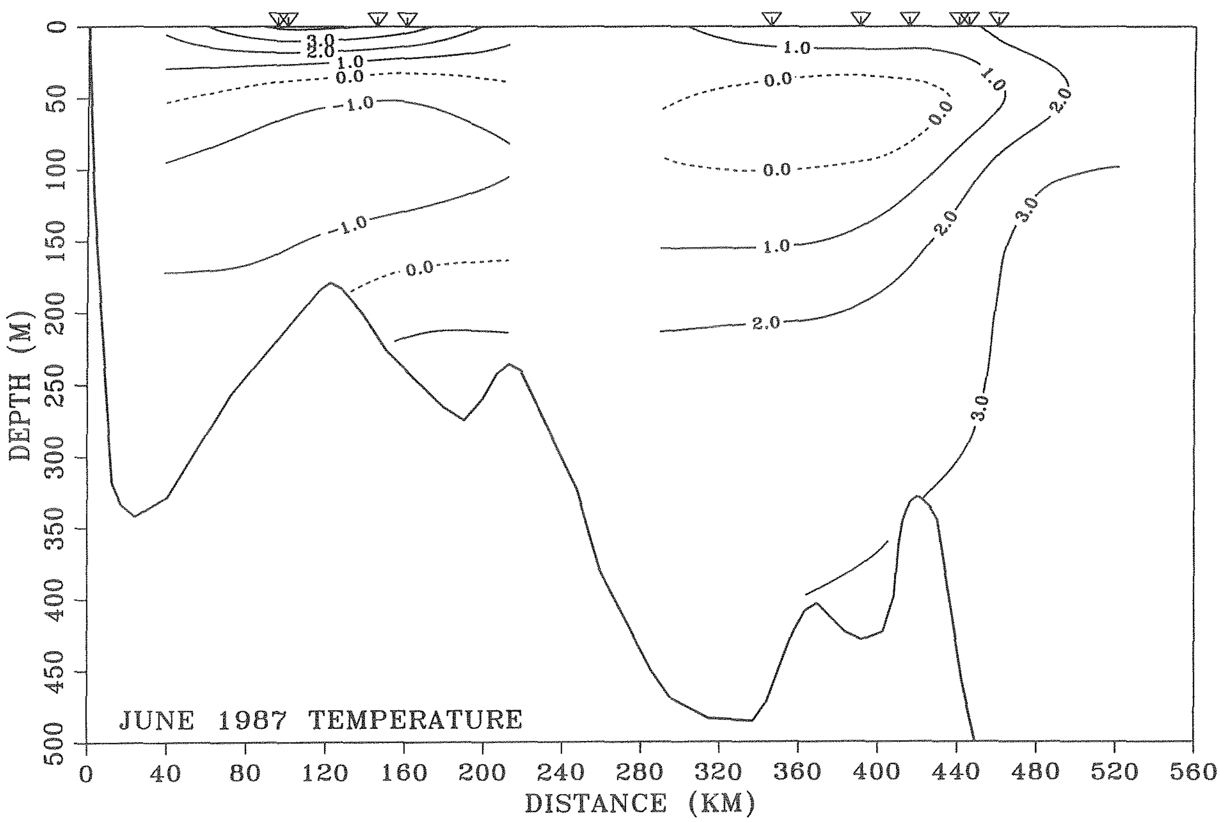


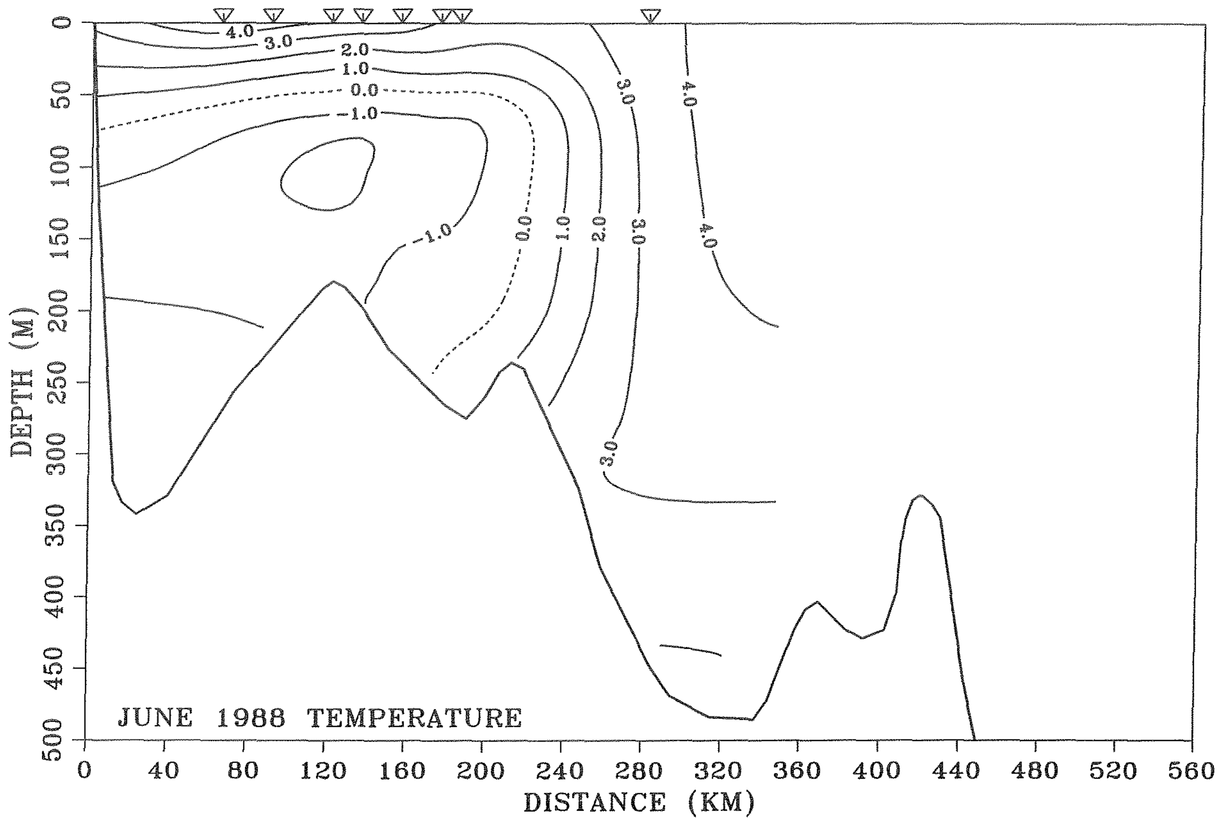
JUNE 1984 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
3.0
2.0
1.0
0.0
-1.0
-1.5

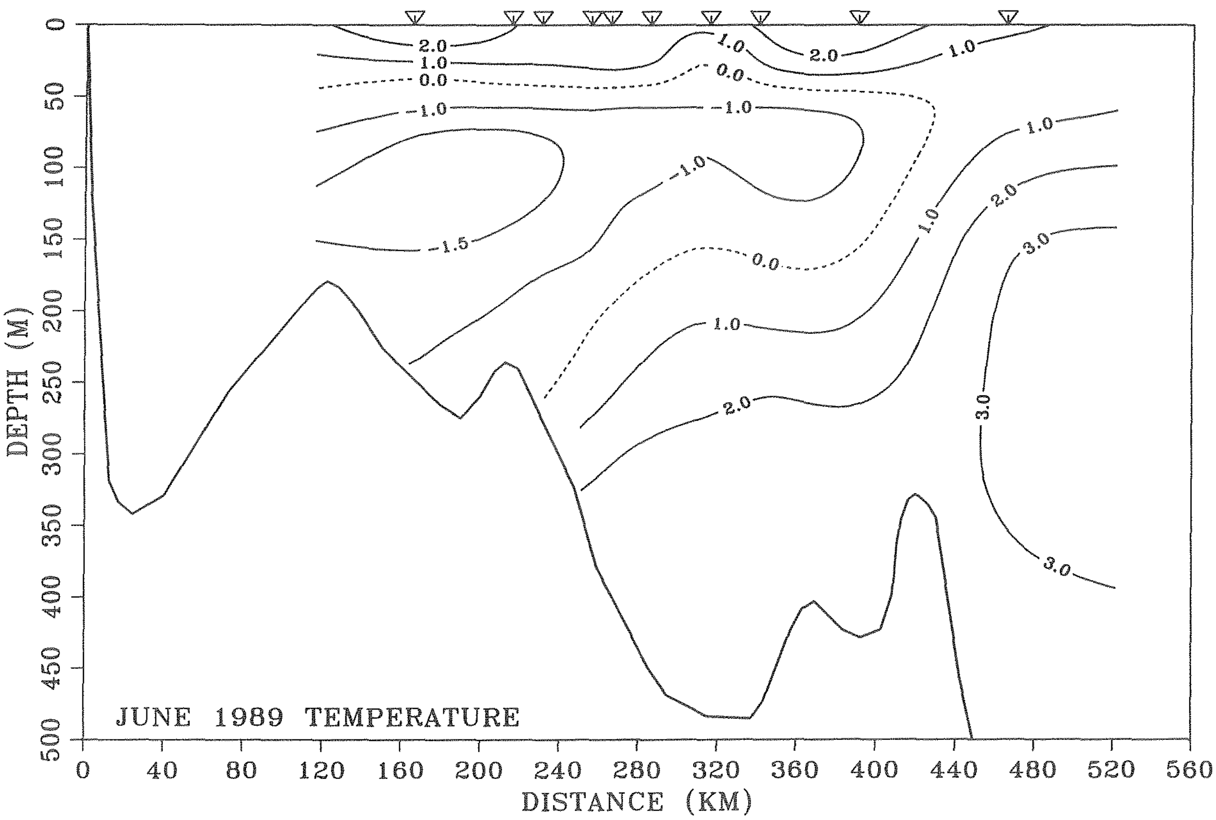


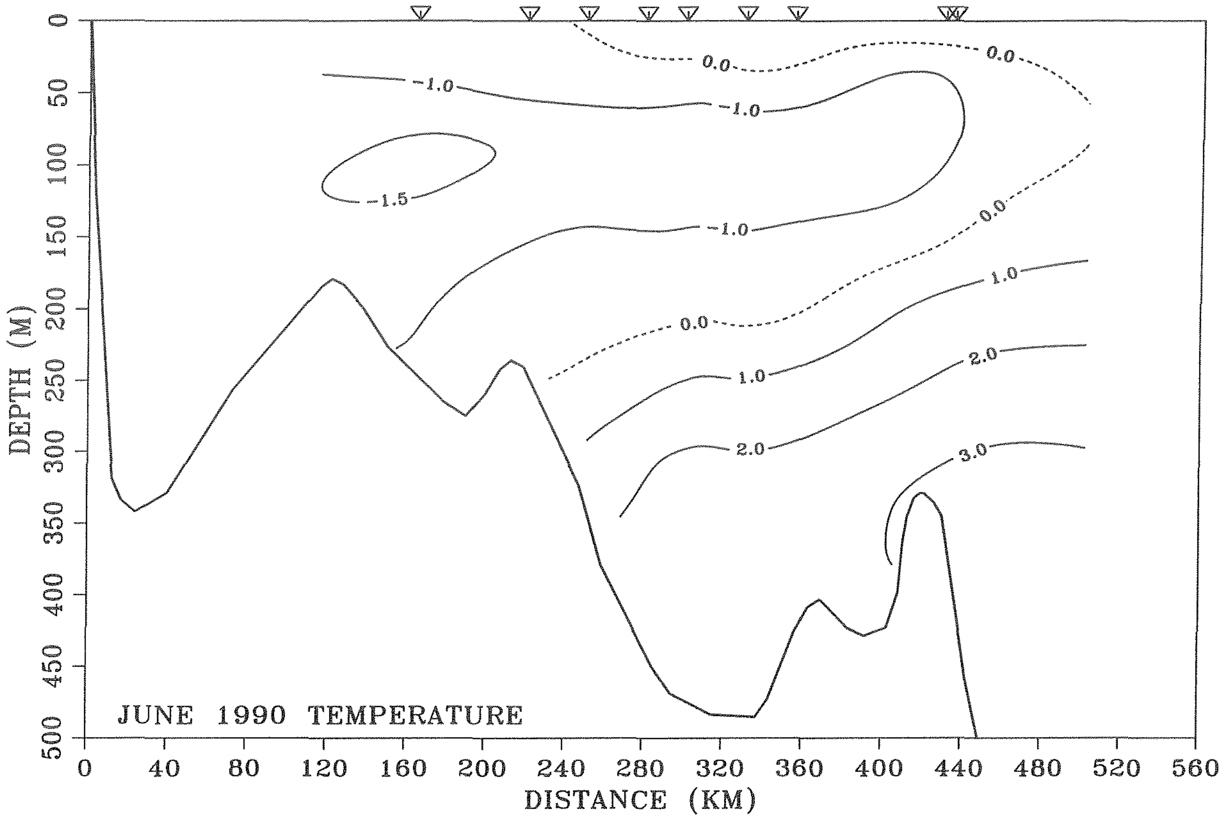
JUNE 1985 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
1.0
0.0
-1.0
2.0


JUNE 1986 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
3.0
2.0
1.0
0.0
-1.0
-1.5
2.0
1.0
0.0
1.0
0.0
2.0
1.0
0.0
-1.0
1.0
2.0
0.0
3.0
3.0

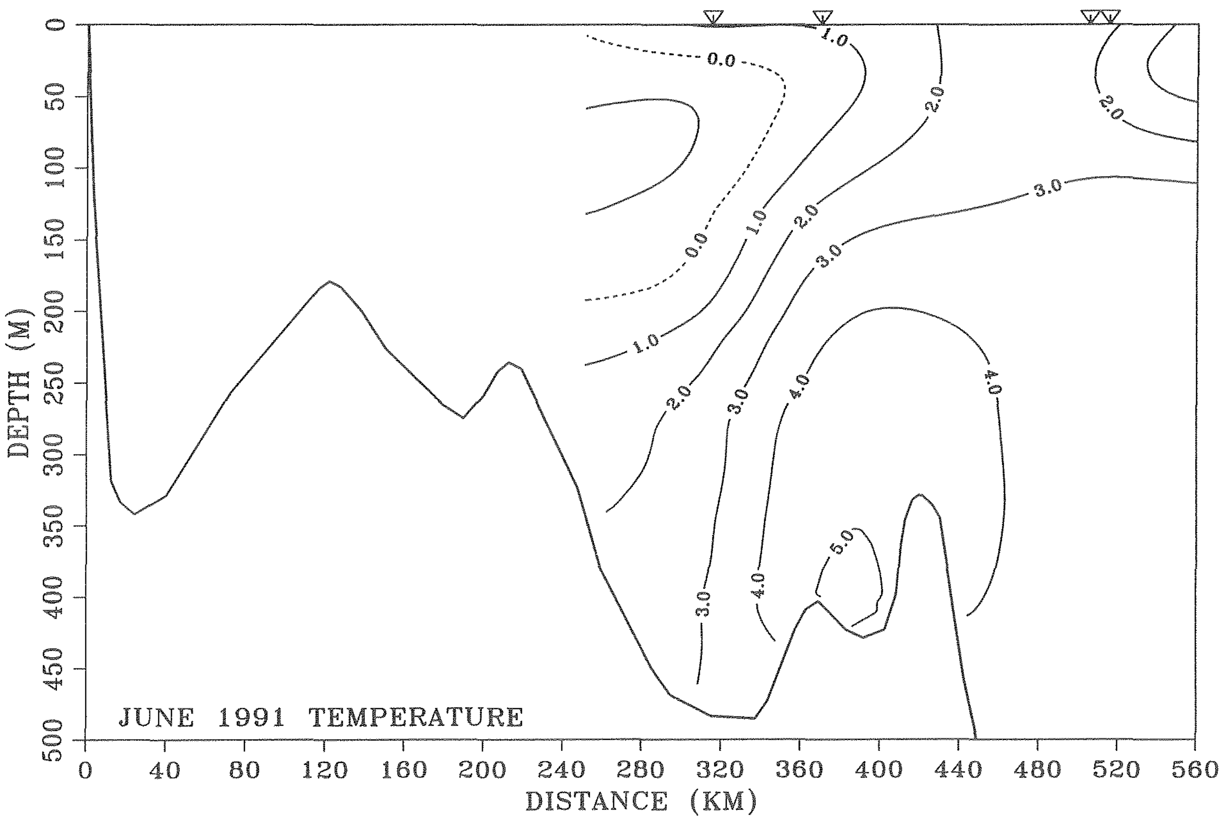

JUNE 1987 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
3.0
2.0
1.0
0.0
-1.0
-1.0
0.0
1.0
0.0
0.0
1.0
2.0
0.0
1.0
2.0
2.0
3.0
3.0


JUNE 1988 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
4.0
3.0
2.0
1.0
0.0
-1.0

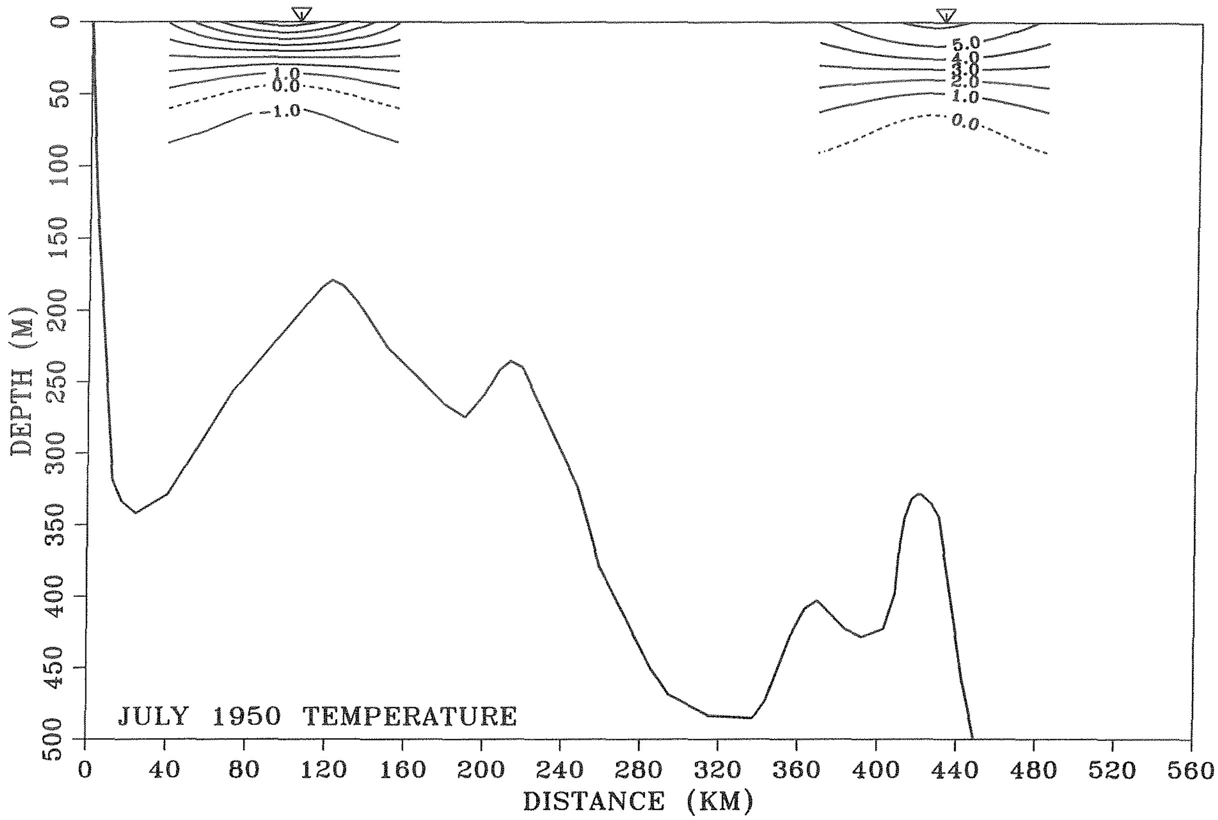

JUNE 1989 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
3.0
2.0
1.0
0.0
-1.0
-1.5

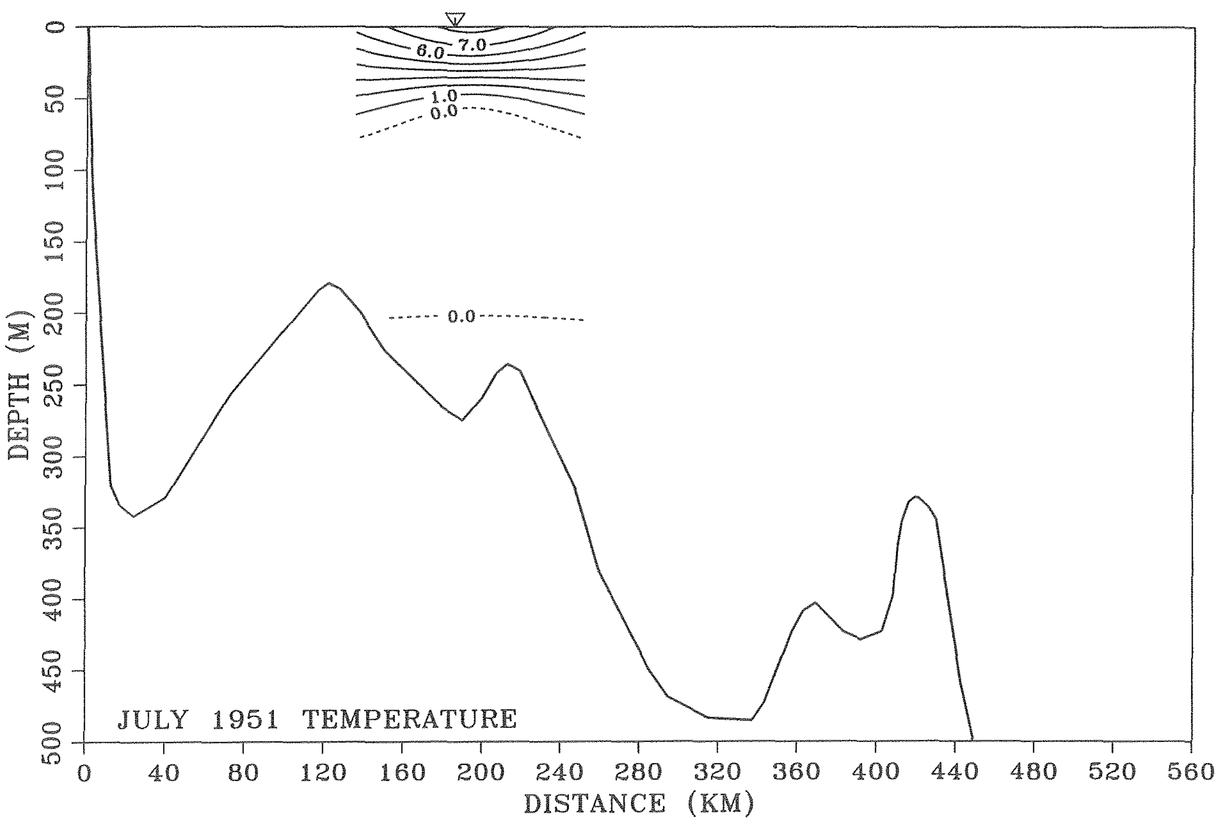


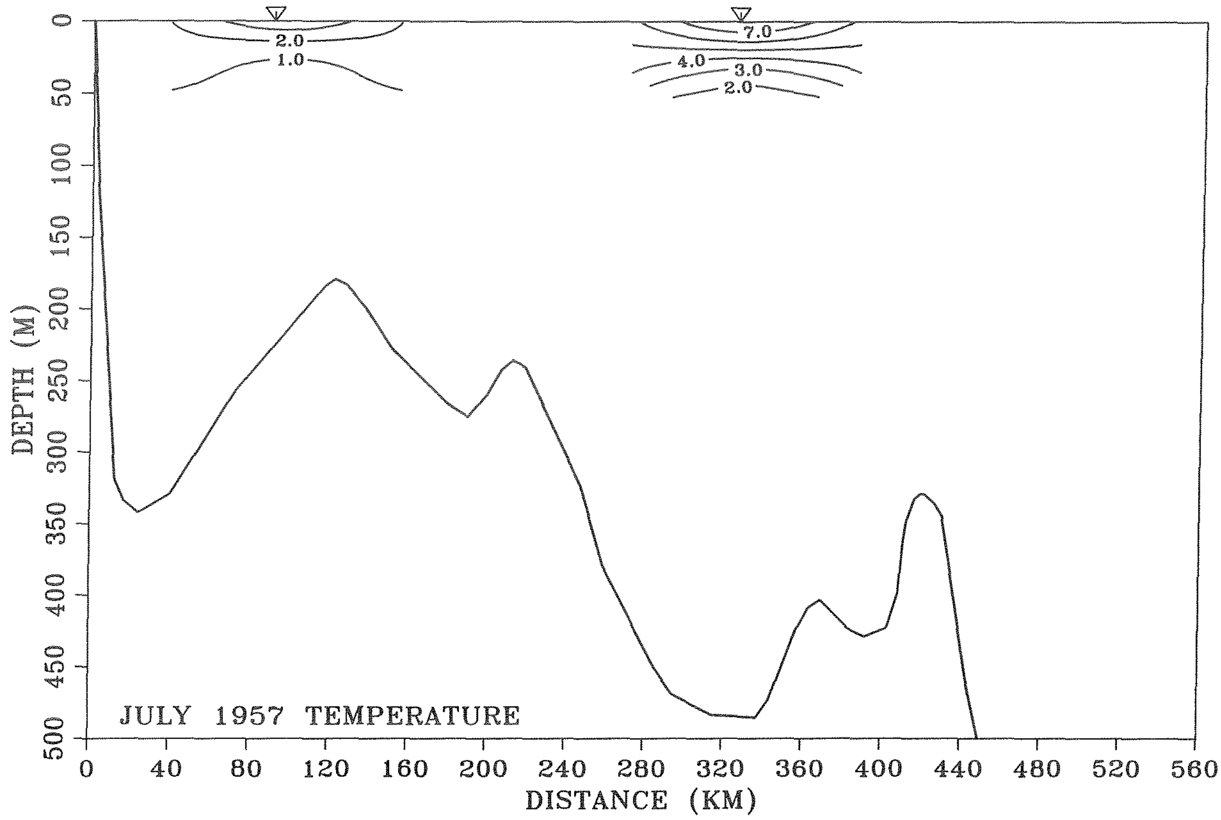
0.0
0.0
-1.0
-1.0
-1.5
-1.0
0.0
1.0
0.0
2.0
1.0
2.0
3.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)
JUNE 1990 TEMPERATURE

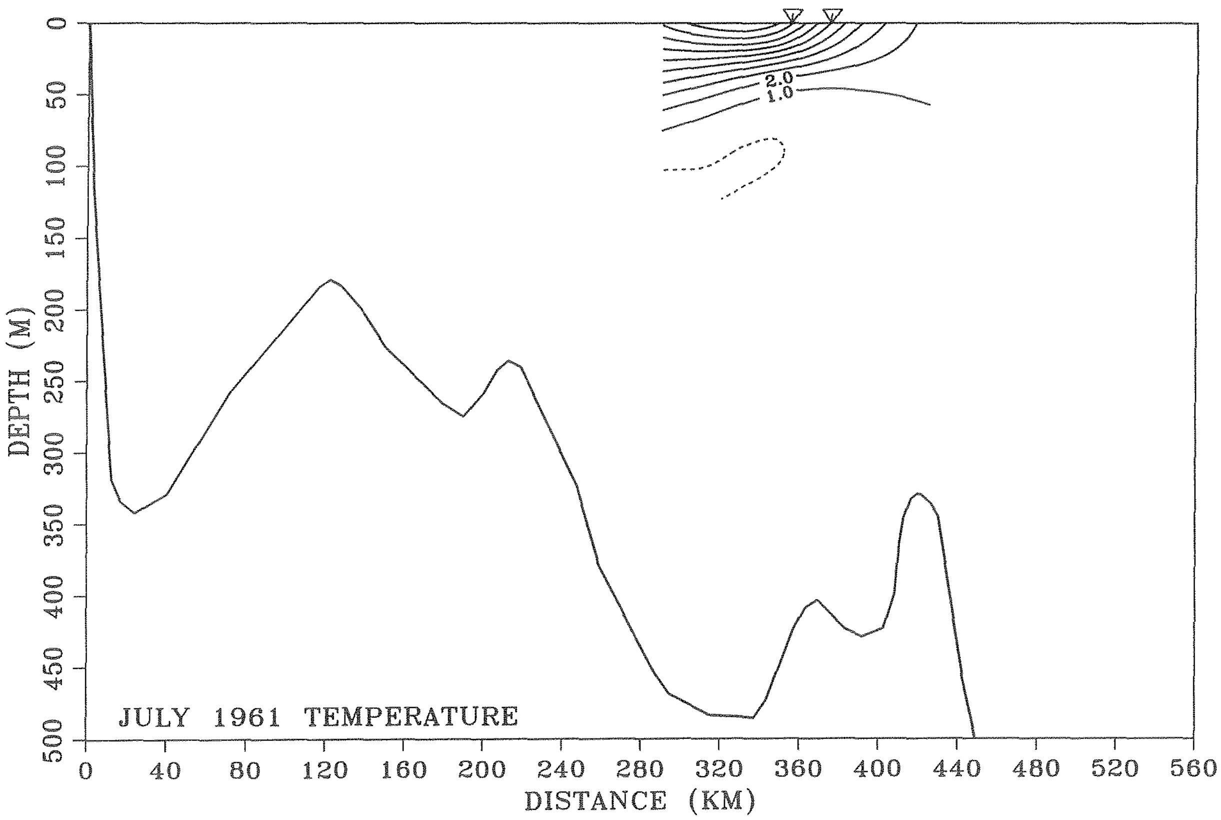


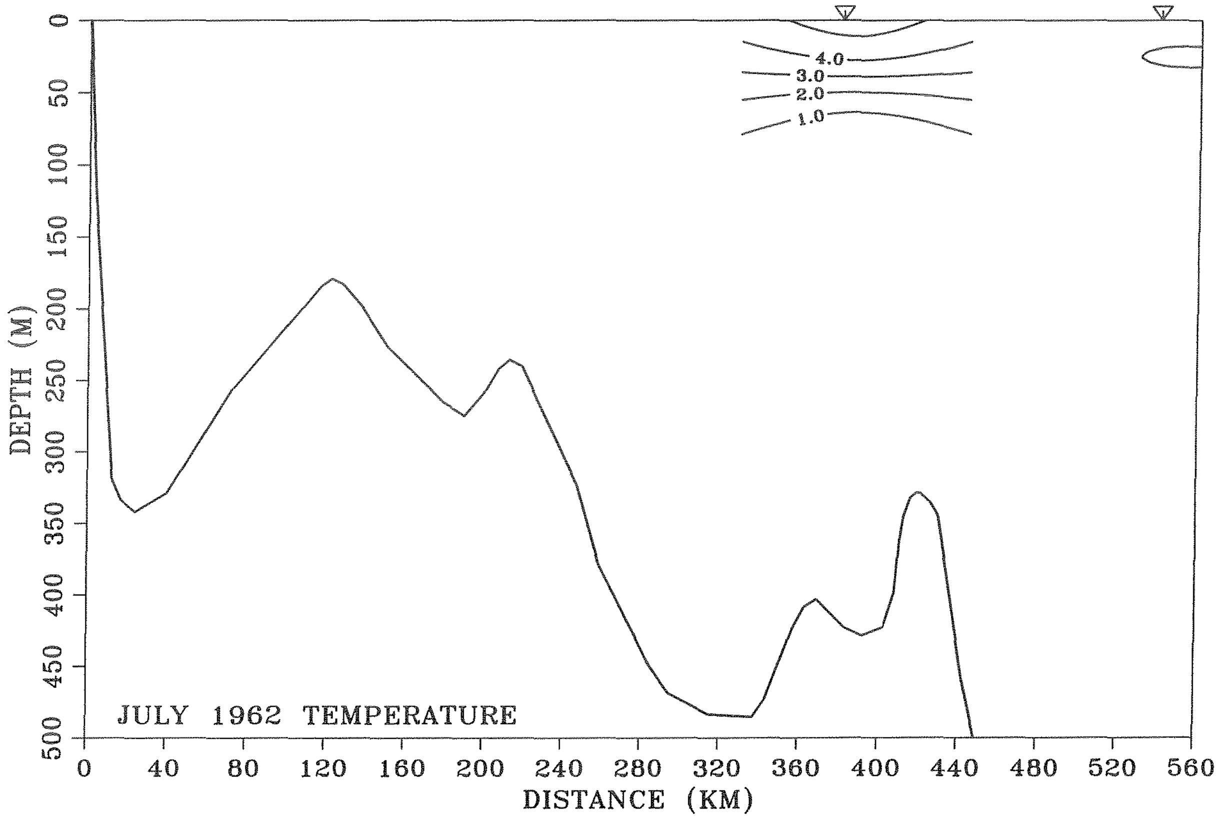
1.0
0.0
2.0
2.0
3.0
1.0
2.0
0.0
3.0
1.0
2.0
3.0
4.0
4.0
5.0
3.0
4.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)
JUNE 1991 TEMPERATURE


JULY 1950 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
1.0
0.0
-1.0
5.0
4.0
3.0
2.0
1.0
0.0
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560

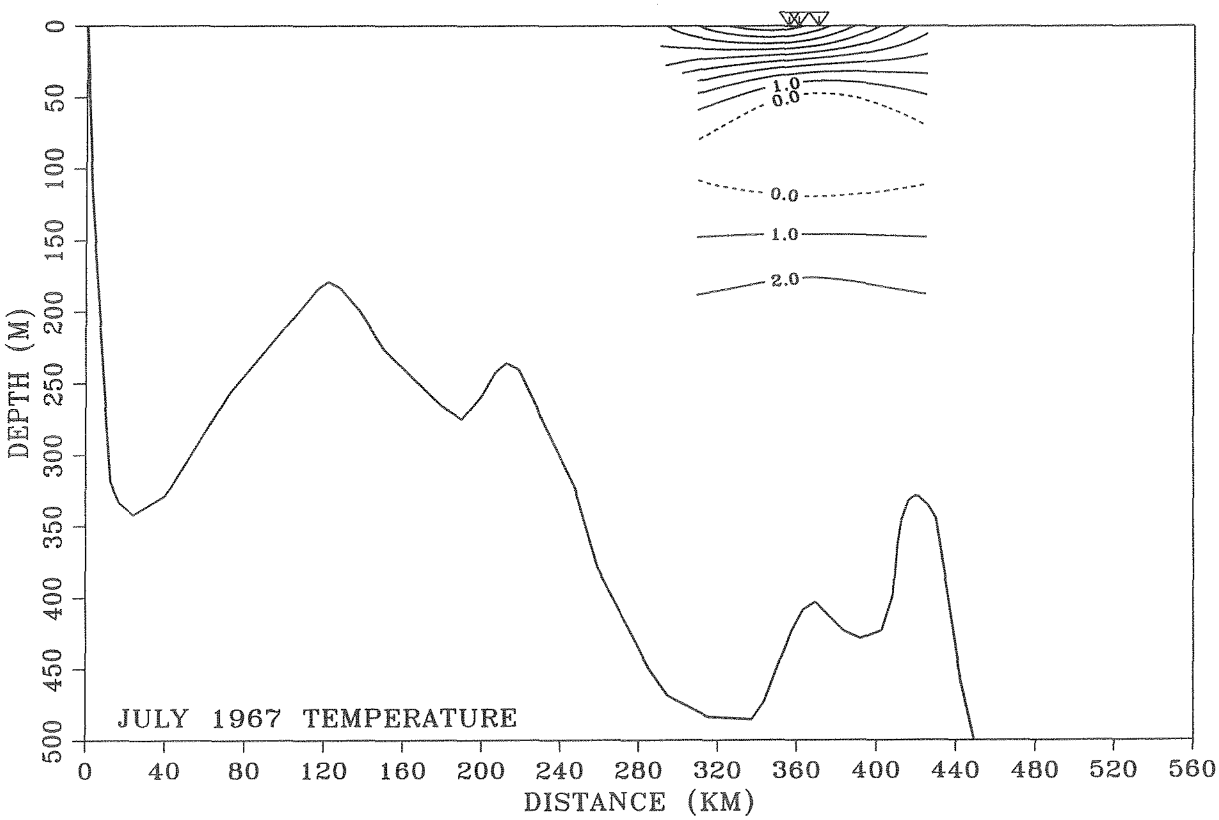

JULY 1951 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
7.0
6.0
1.0
0.0
0.0
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560


2.0
1.0
7.0
4.0
3.0
2.0
0
50
100
150
200
250
300
350
400
450
500
DEPTH (M)
JULY 1957 TEMPERATURE
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)

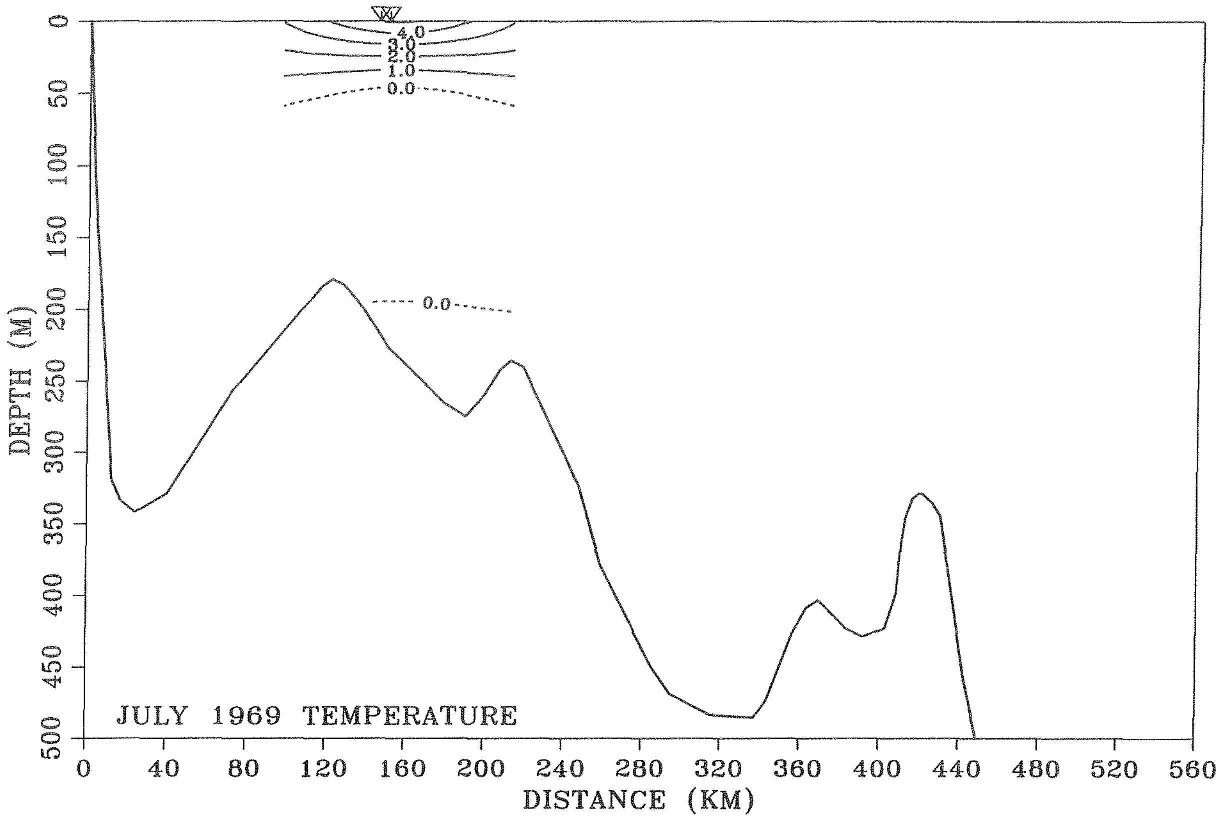

2.0
1.0
0
50
100
150
200
250
300
350
400
450
500
DEPTH (M)
JULY 1961 TEMPERATURE
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)



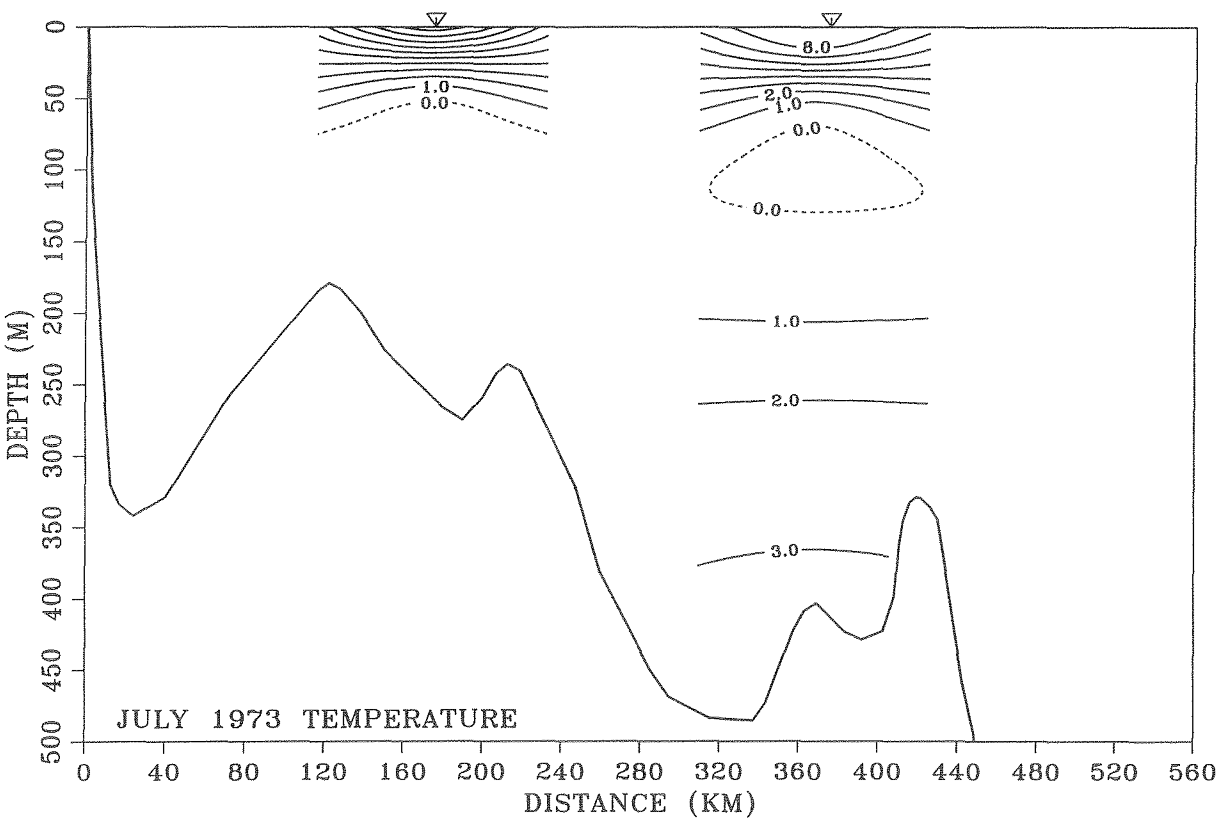
4.0
3.0
2.0
1.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
JULY 1962 TEMPERATURE
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)



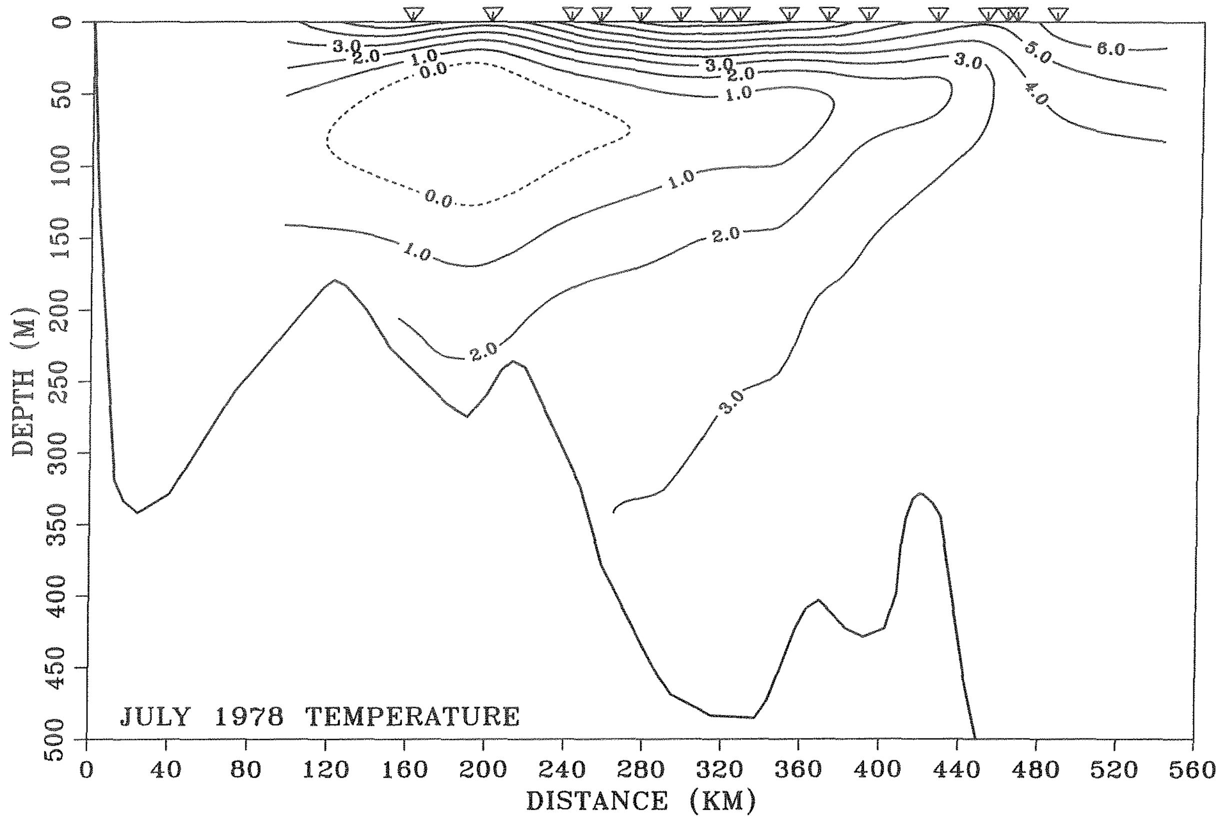
1.0
0.0
0.0
1.0
2.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
JULY 1967 TEMPERATURE
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)

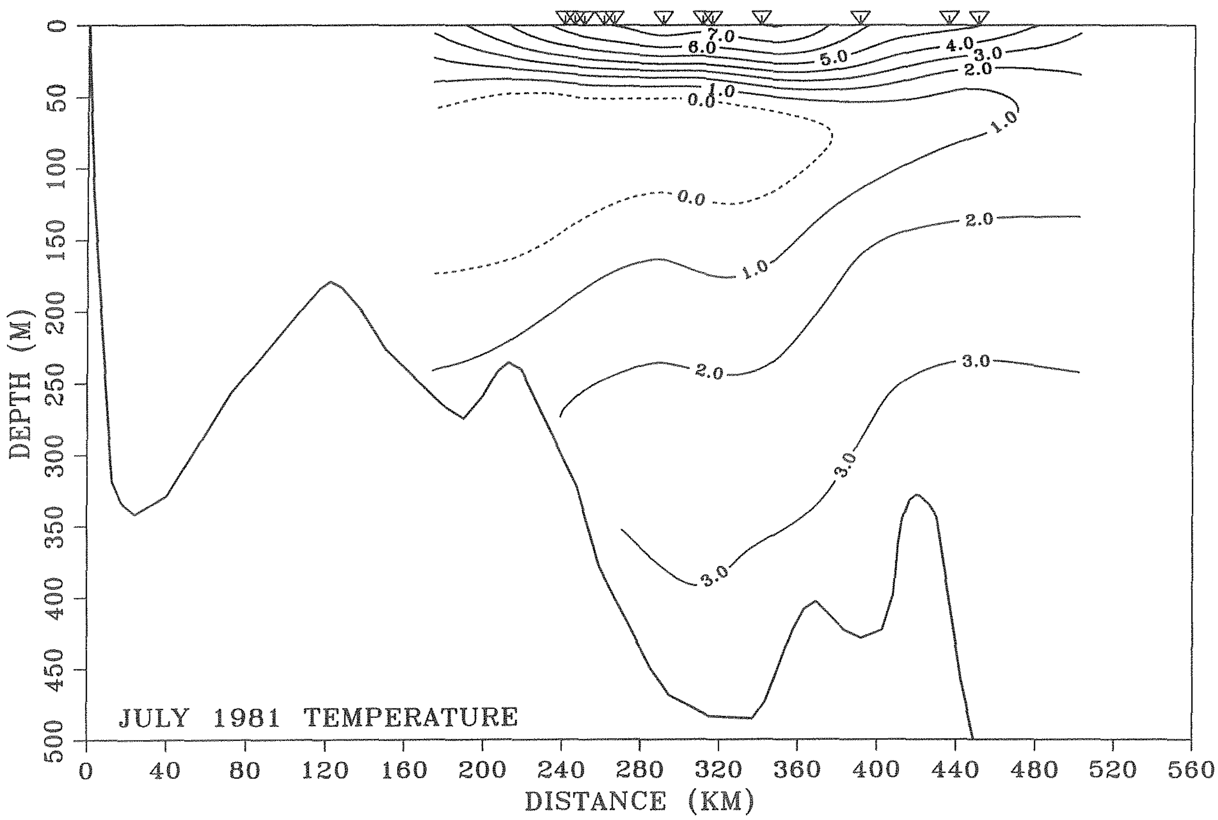


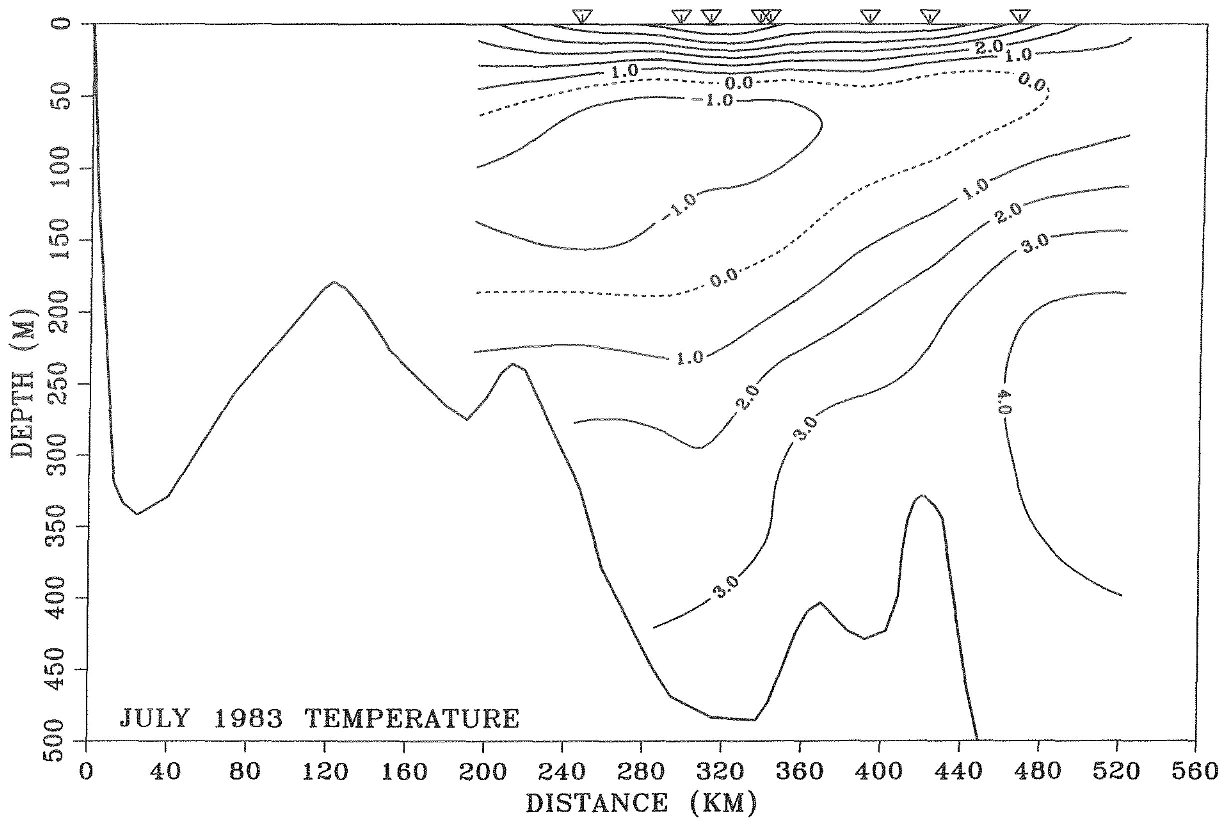
4.0
3.0
2.0
1.0
0.0
0.0
JULY 1969 TEMPERATURE
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)

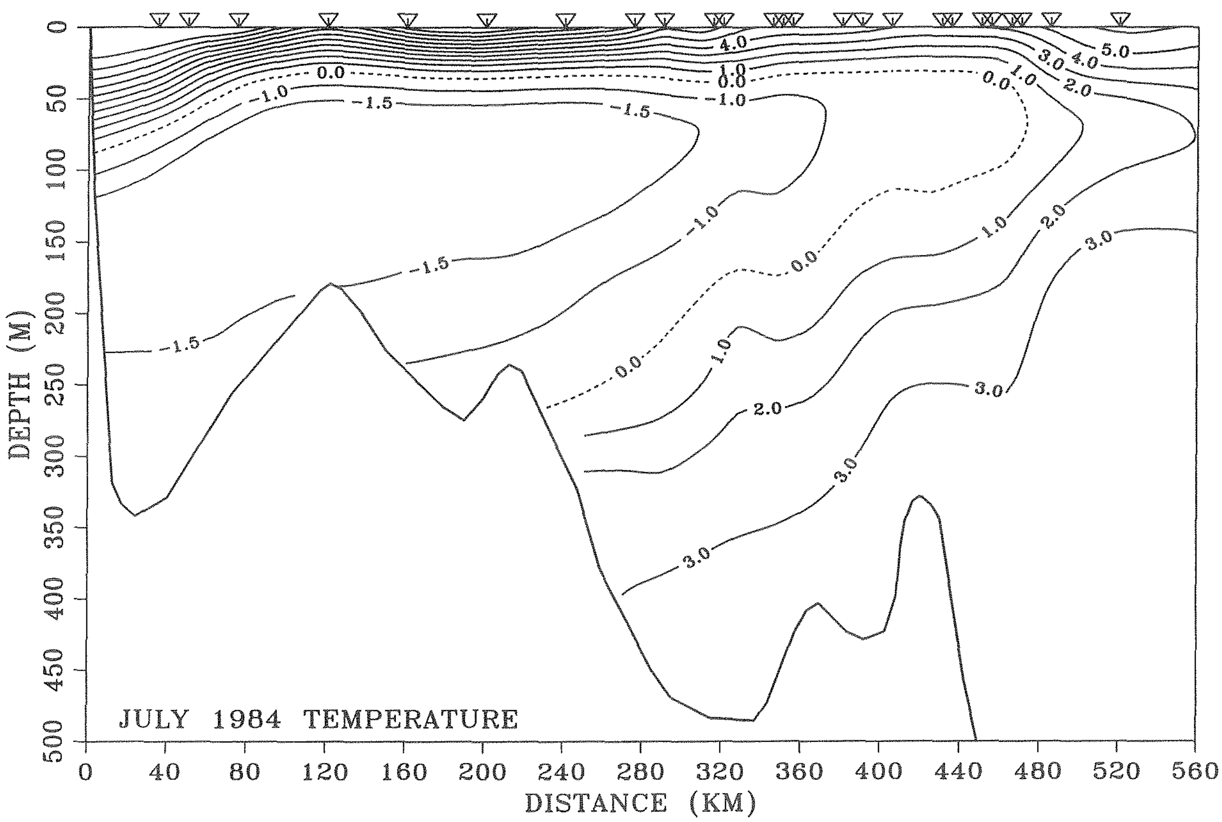


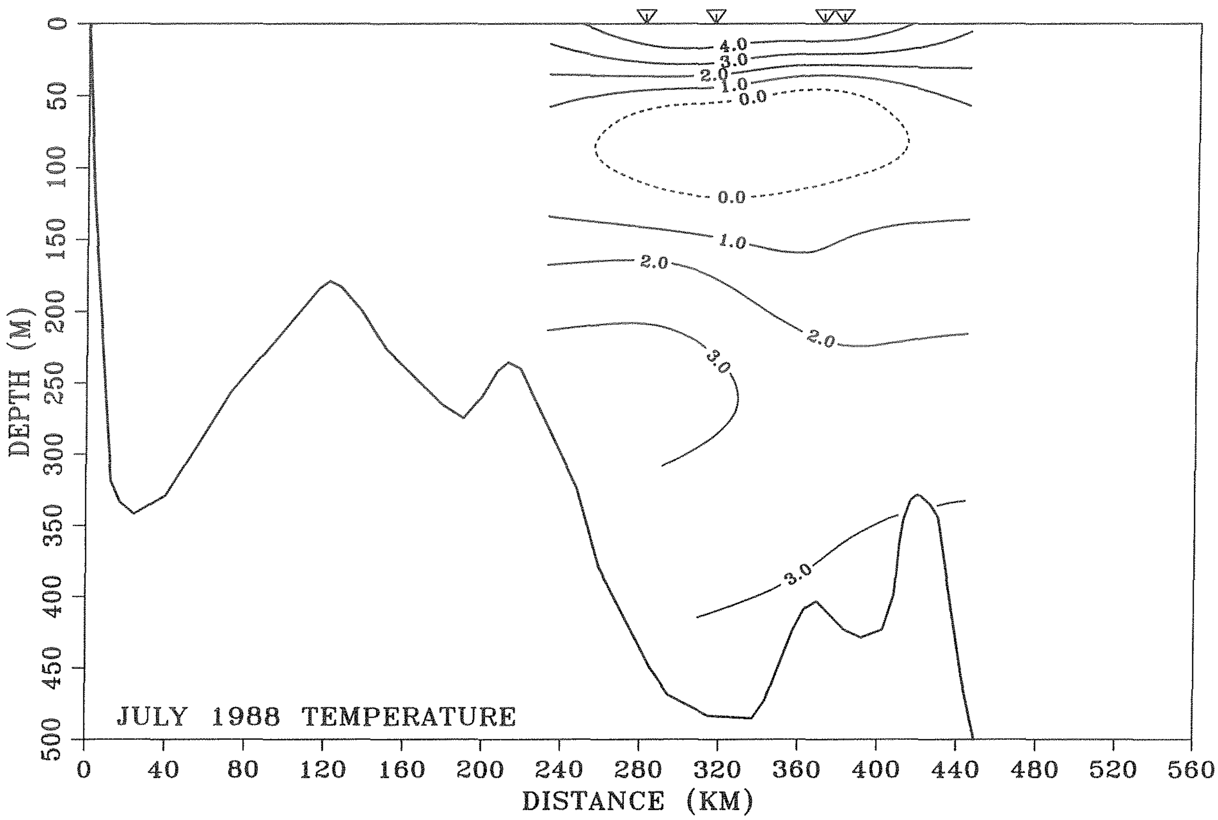
1.0
0.0
8.0
2.0
1.0
0.0
0.0
1.0
2.0
3.0
JULY 1973 TEMPERATURE
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)

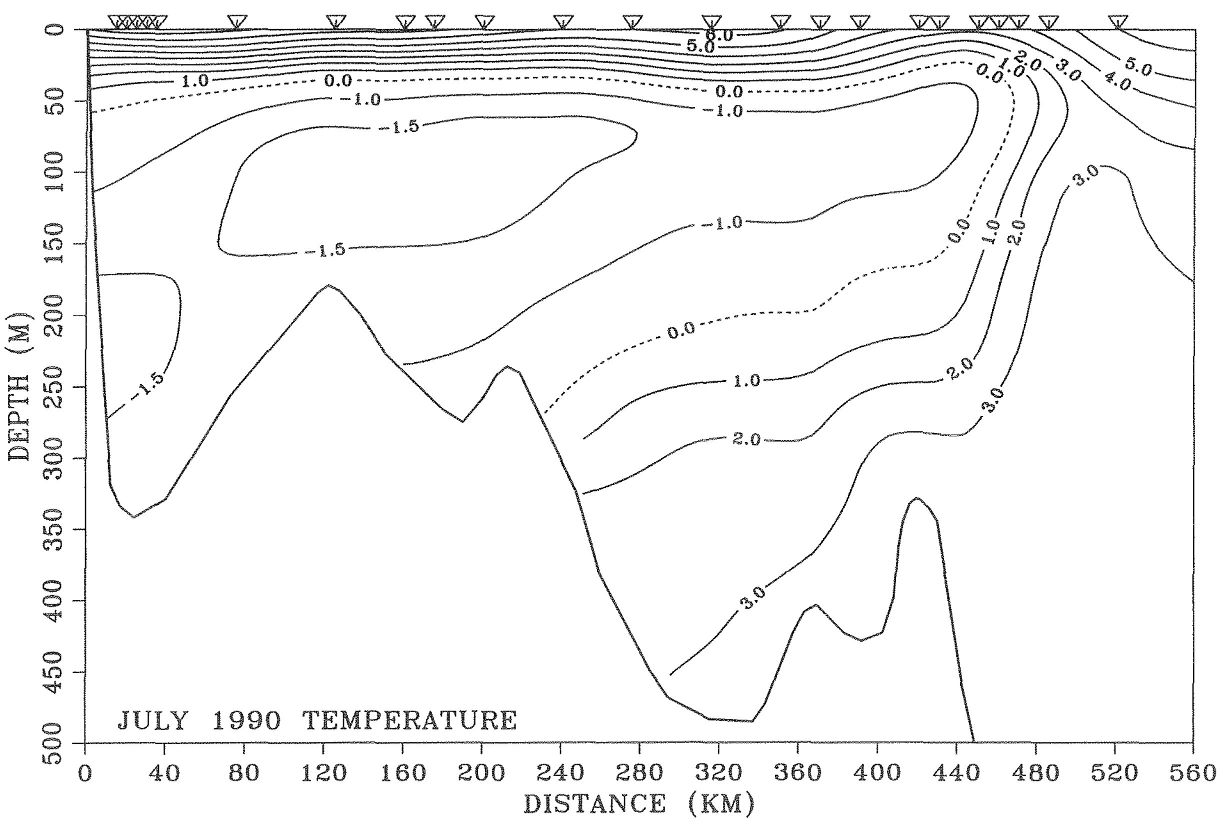

JULY 1978 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
3.0
2.0
1.0
0.0
6.0
5.0
4.0

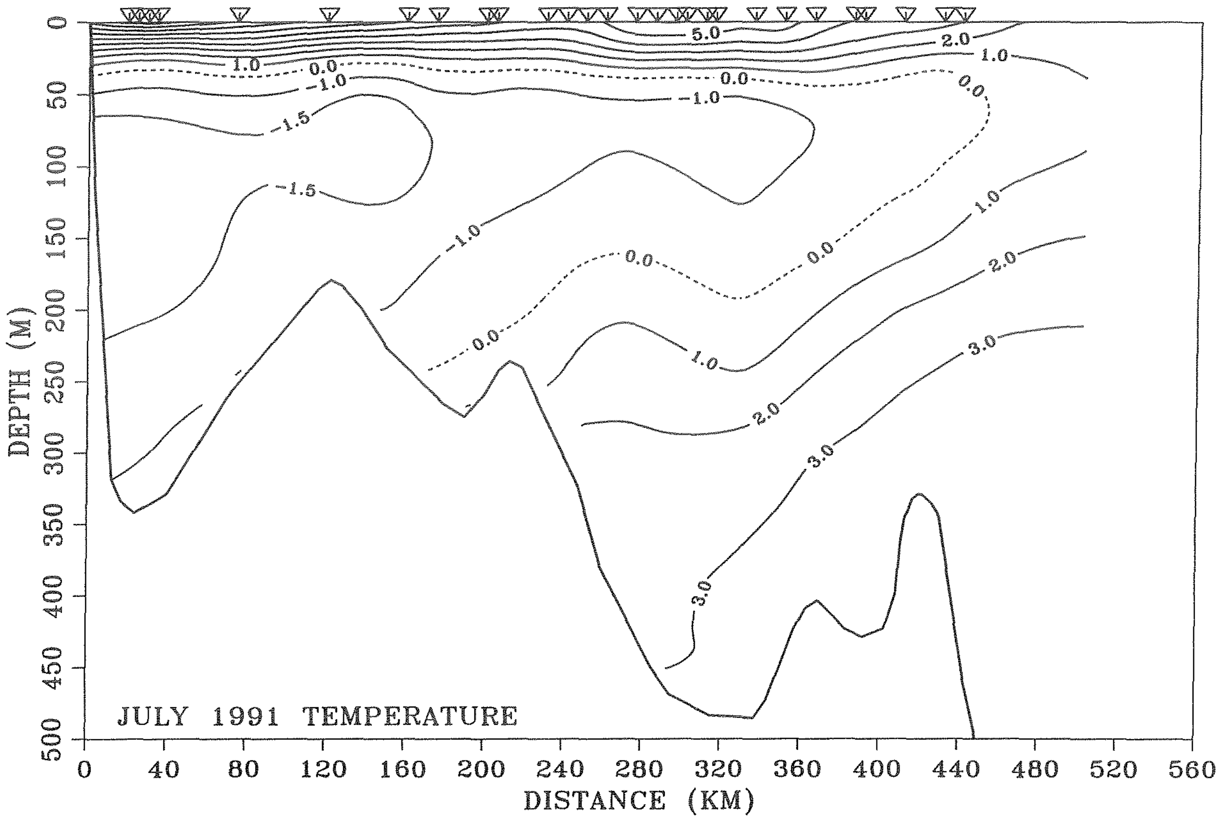

JULY 1981 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0


JULY 1983 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
2.0
1.0
0.0
-1.0
3.0
4.0

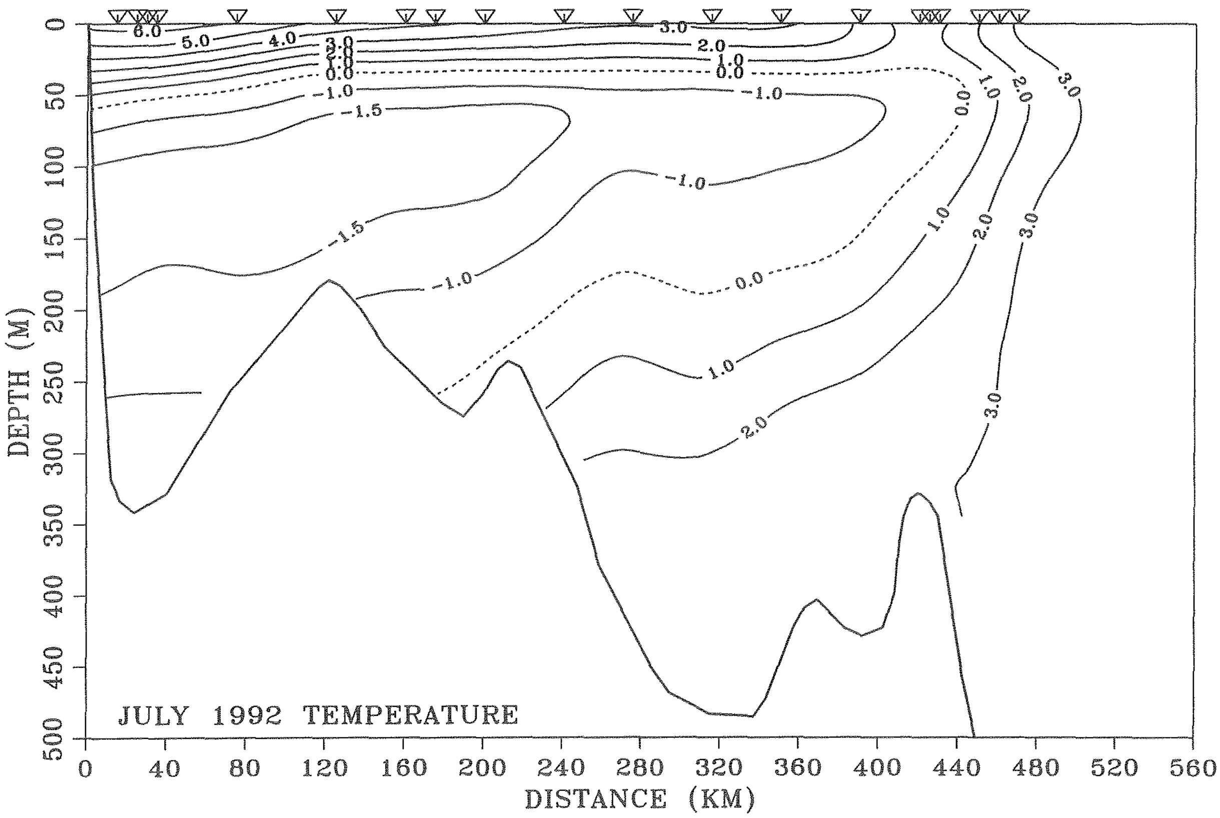

JULY 1984 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-1.5


JULY 1988 TEMPERATURE
DEPTH (M)
DISTANCE (KM)

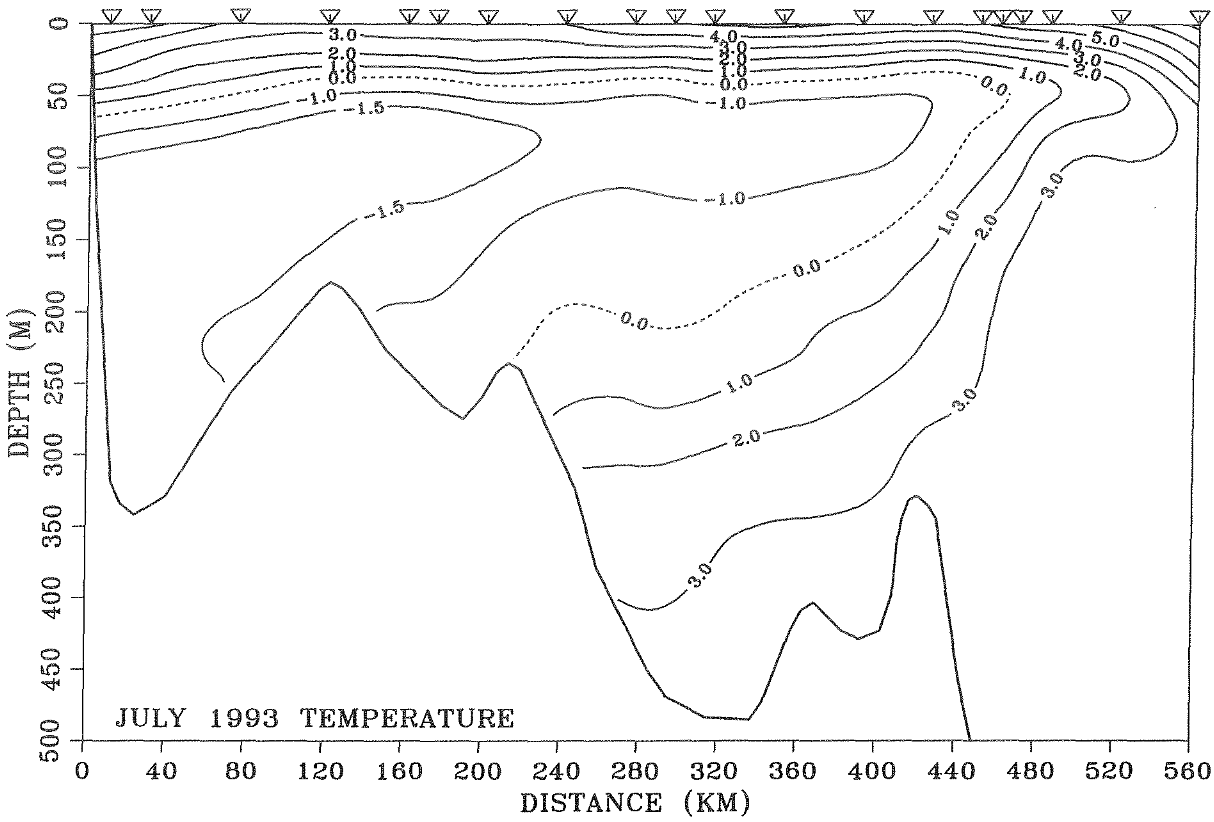

JULY 1990 TEMPERATURE
DEPTH (M)
DISTANCE (KM)

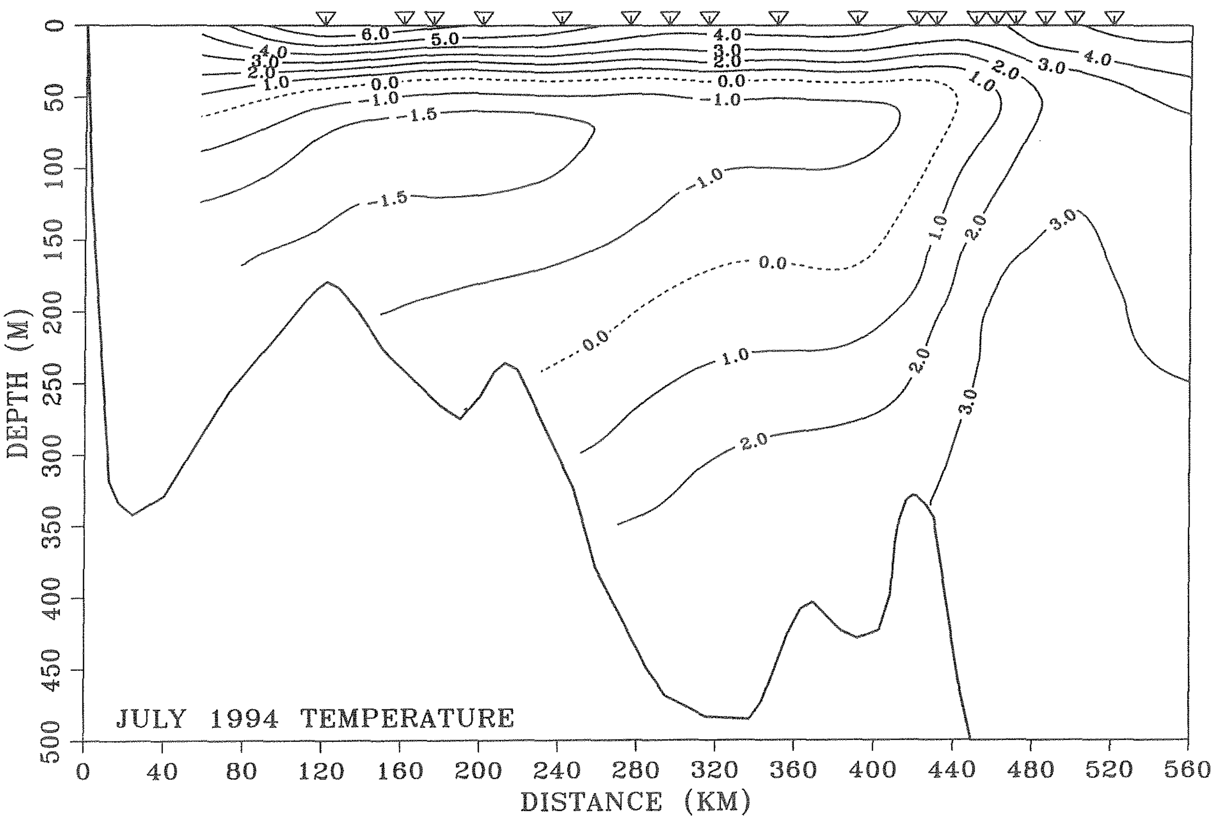


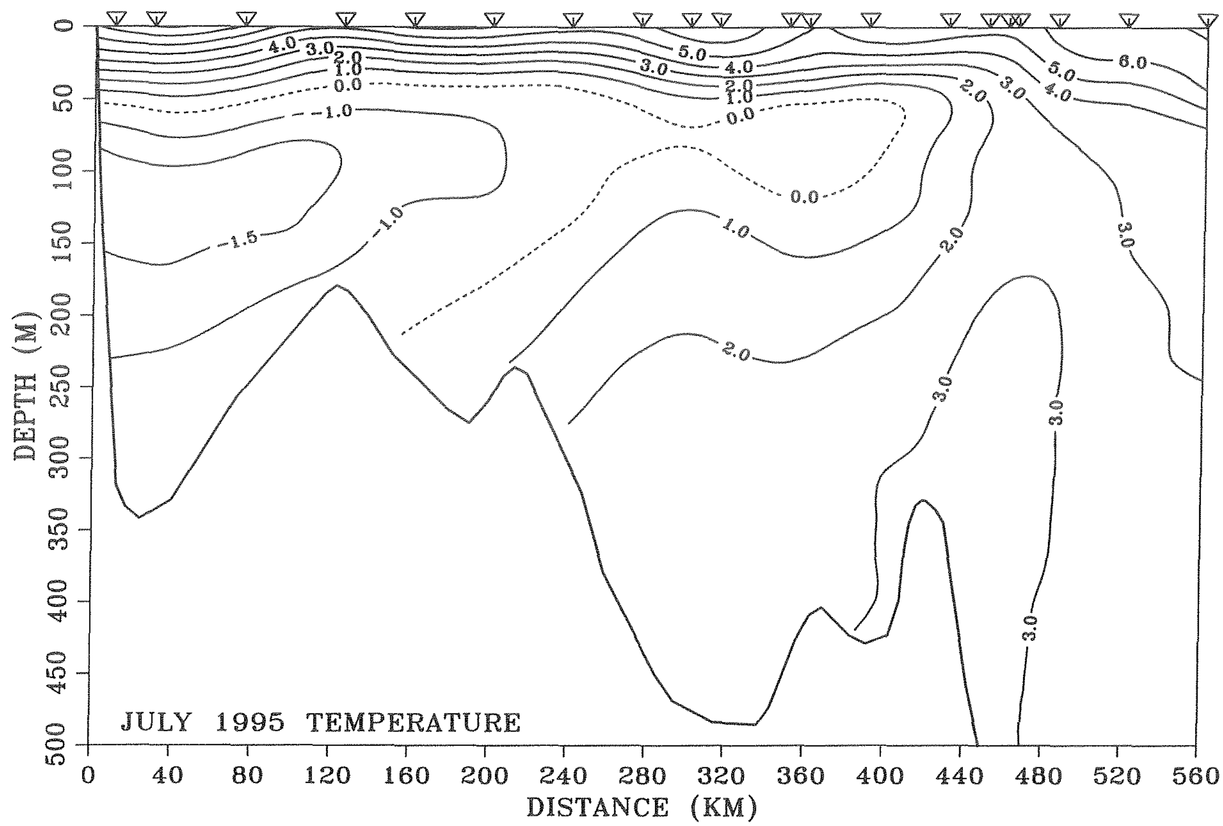
JULY 1991 TEMPERATURE
DEPTH (M)
DISTANCE (KM)



JULY 1992 TEMPERATURE
DEPTH (M)
DISTANCE (KM)


JULY 1993 TEMPERATURE
DEPTH (M)
DISTANCE (KM)


JULY 1994 TEMPERATURE
DEPTH (M)
DISTANCE (KM)


JULY 1995 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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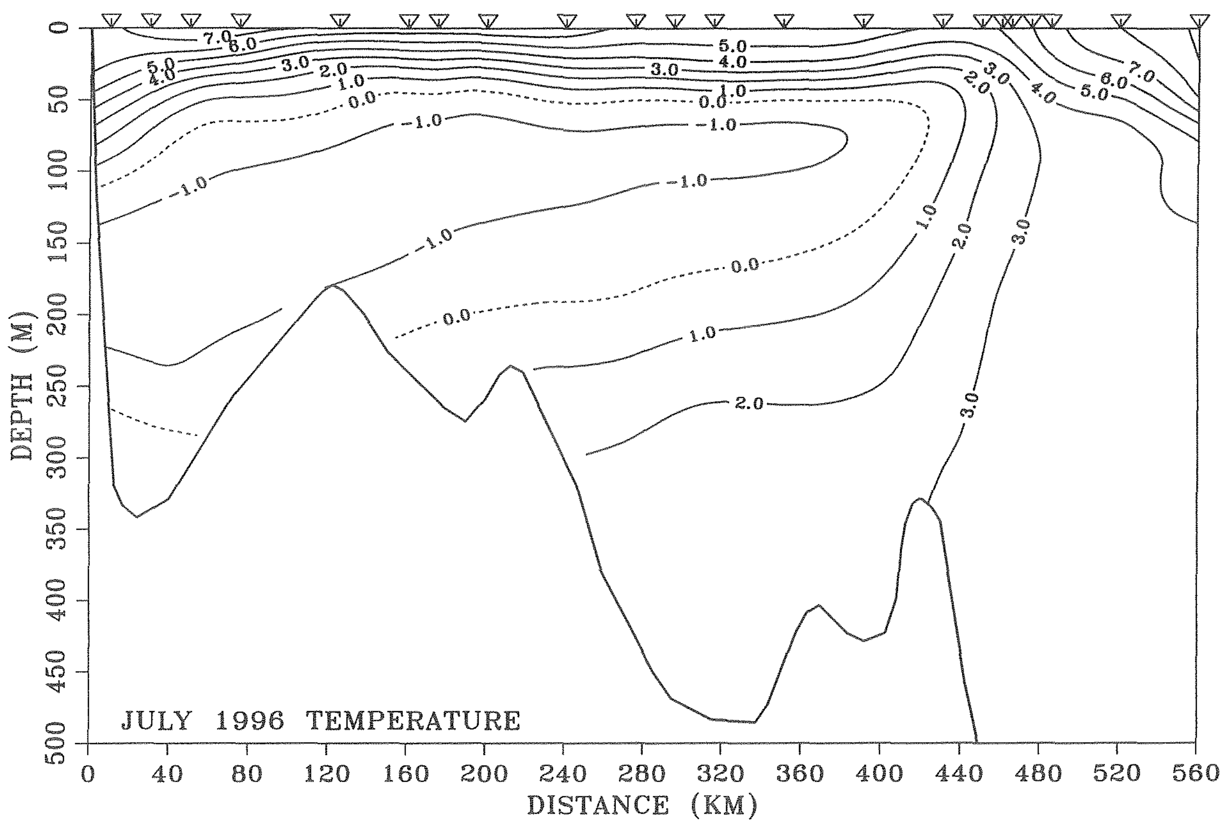
100
150
200
250
300
350
400
450
500
40
80
120
160
200
240
280
320
360
400
440
480
520
560
4.0
3.0
2.0
1.0
0.0
-1.0
-1.5
5.0
6.0


JULY 1996 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
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100
150
200
250
300
350
400
450
500
40
80
120
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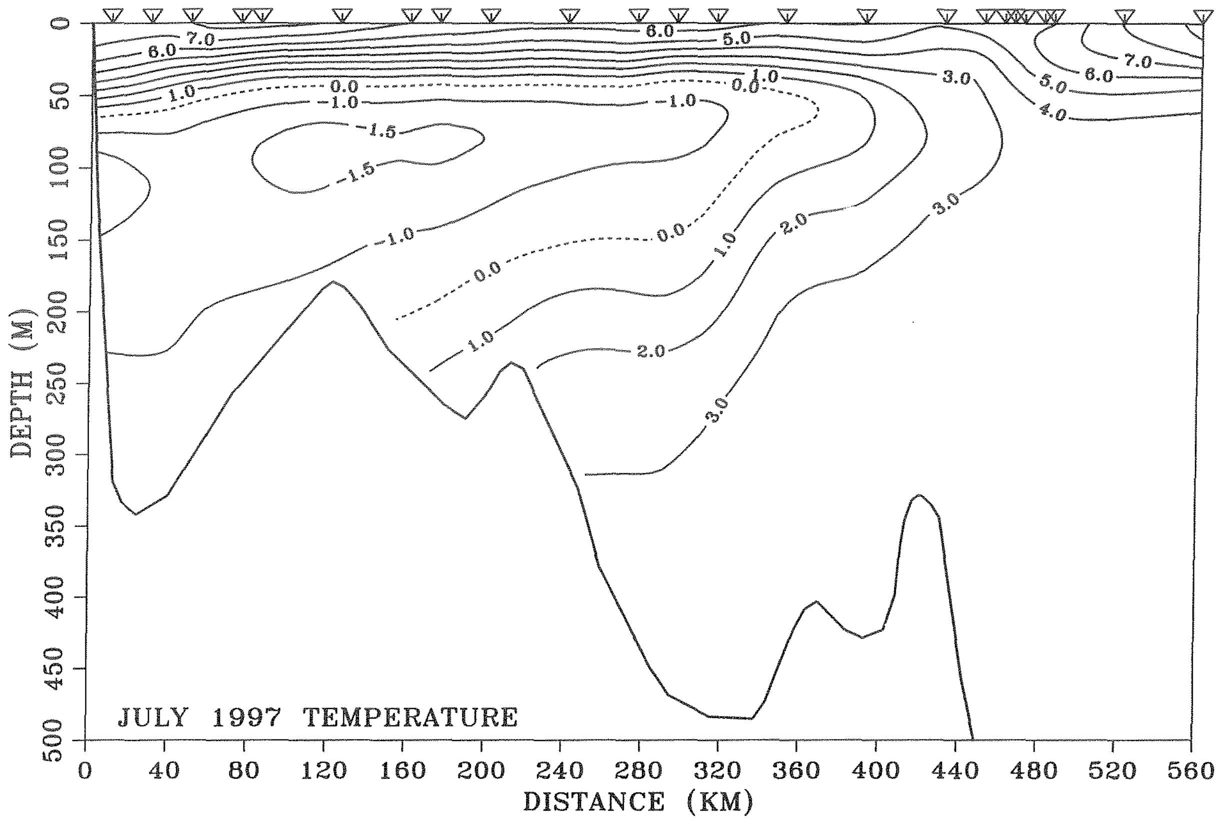
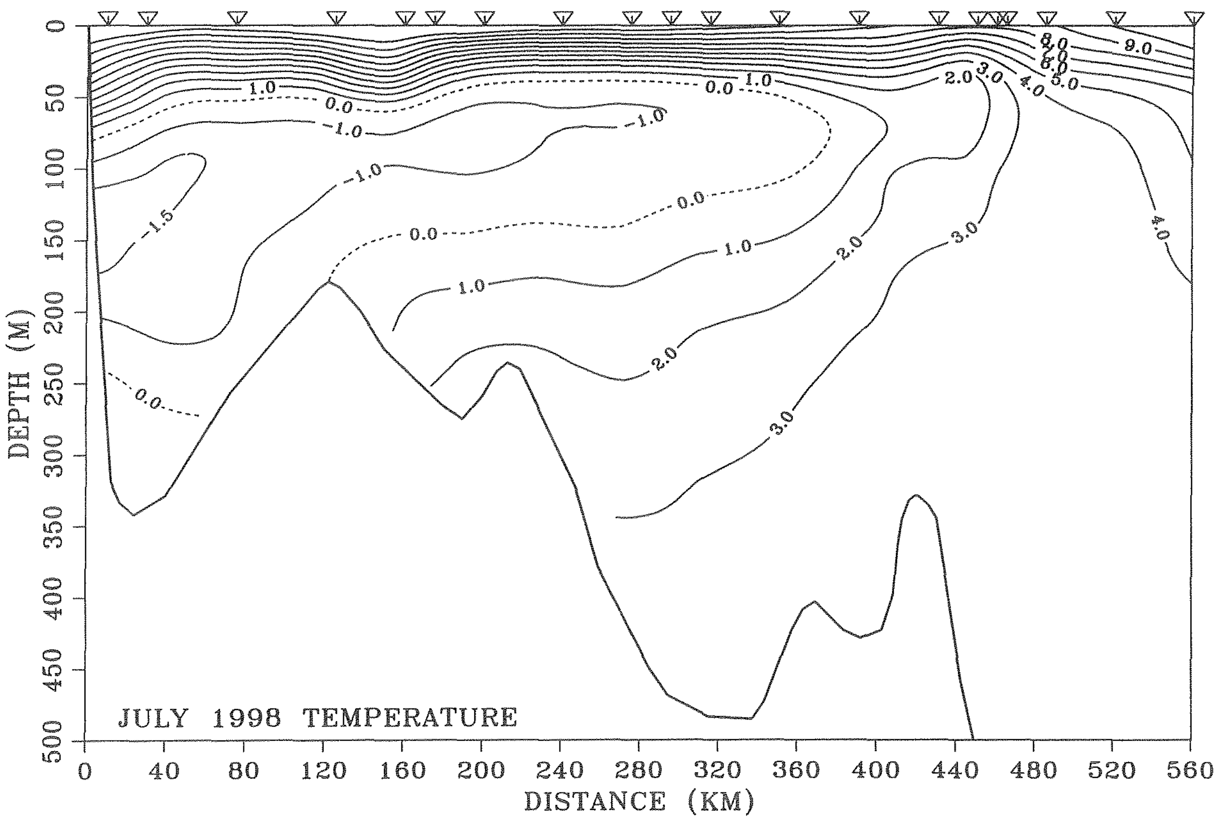
200
240
280
320
360
400
440
480
520
560
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0


JULY 1997 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-1.5


JULY 1998 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
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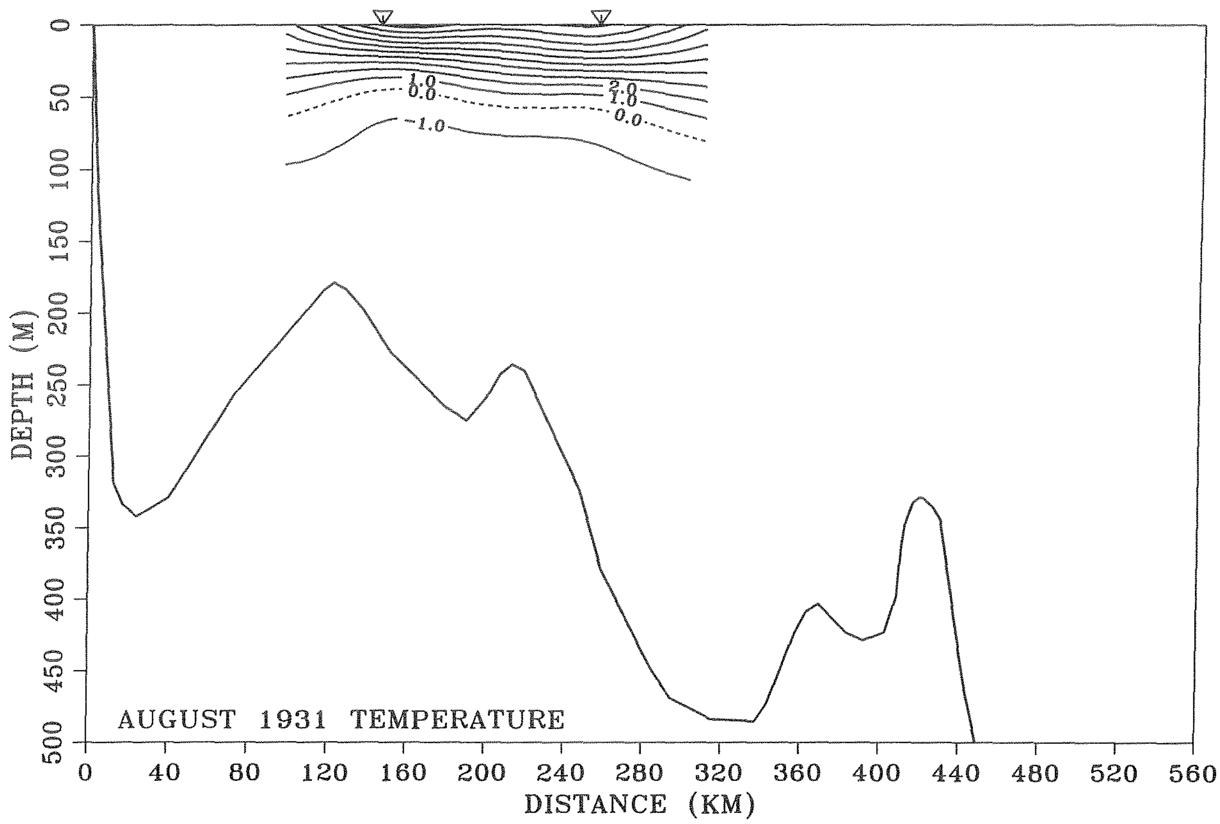
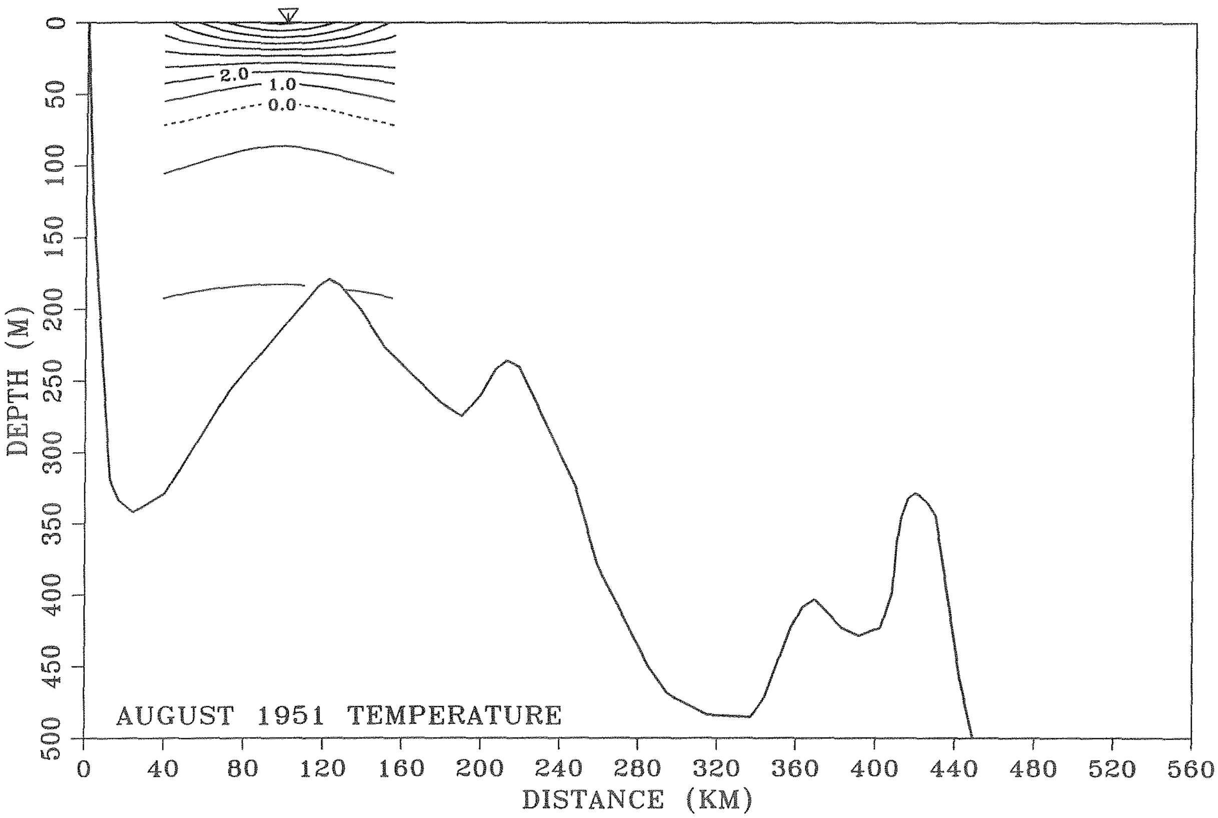
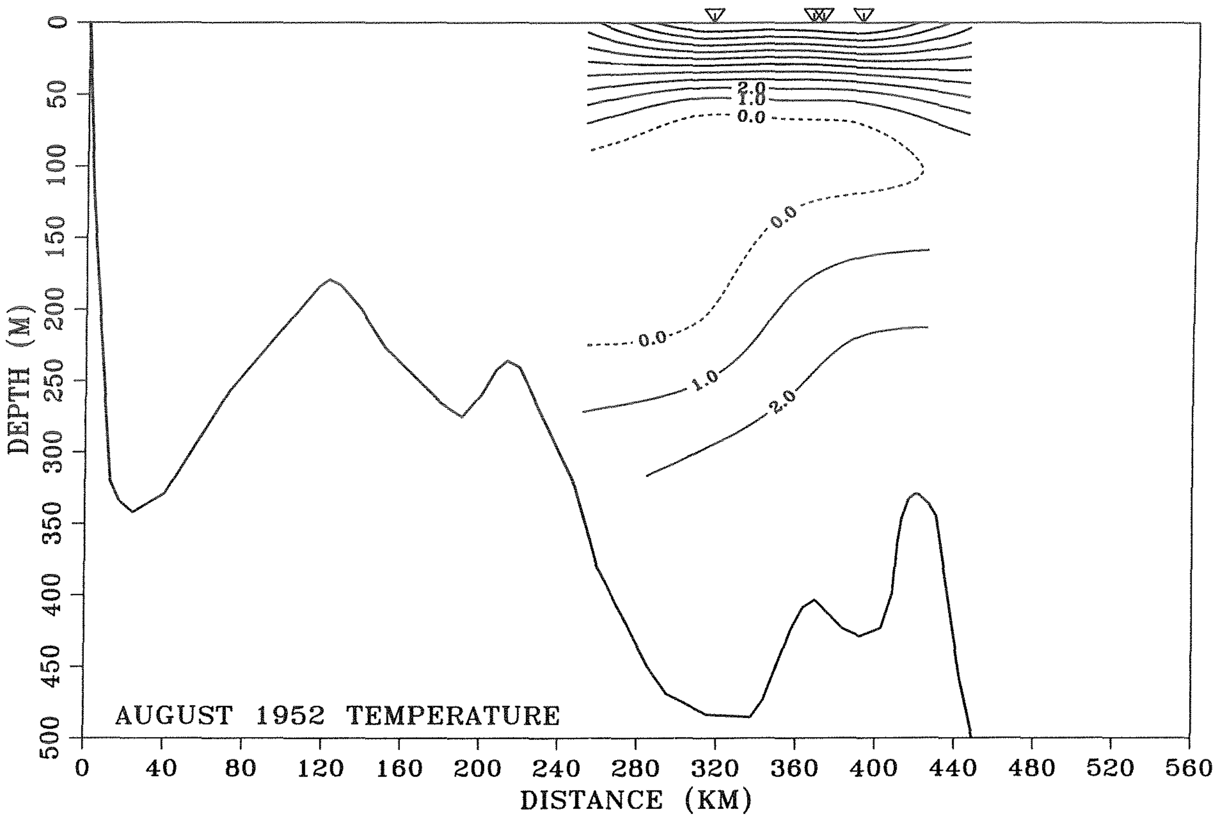
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-1.5

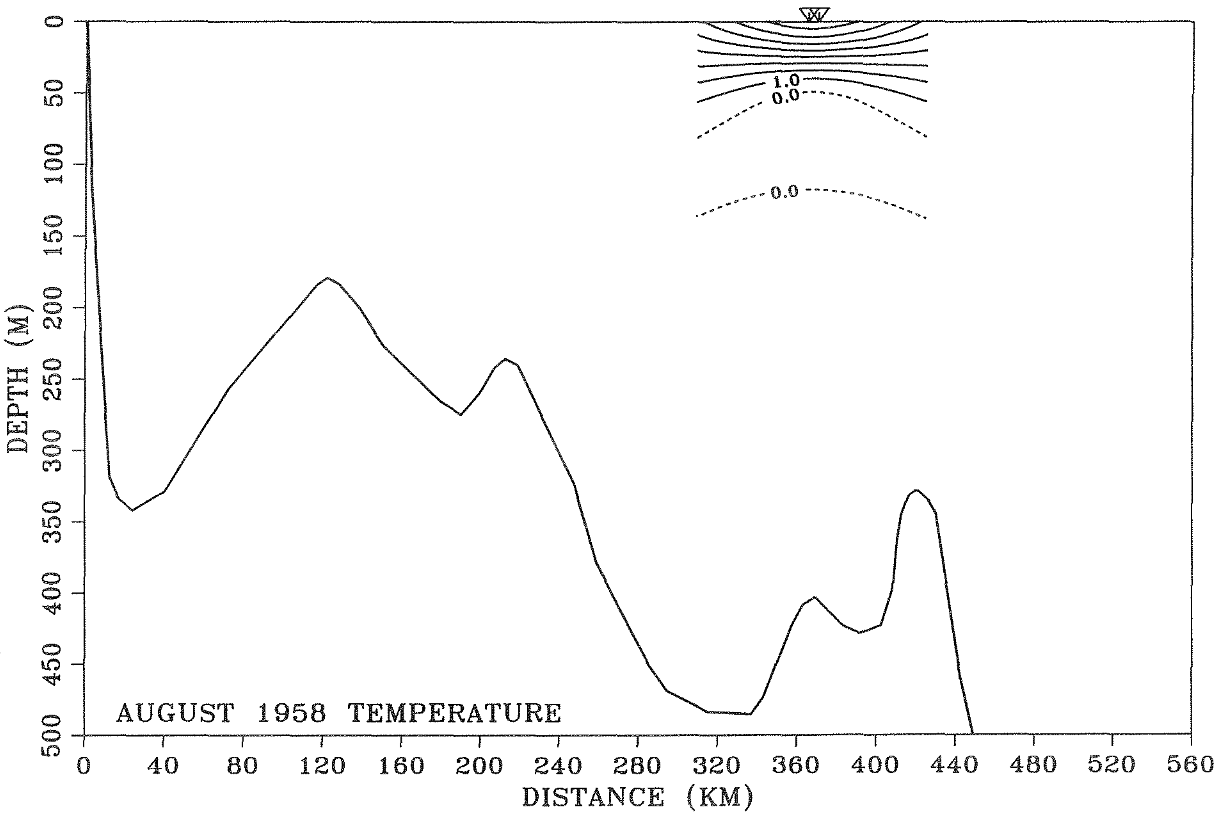


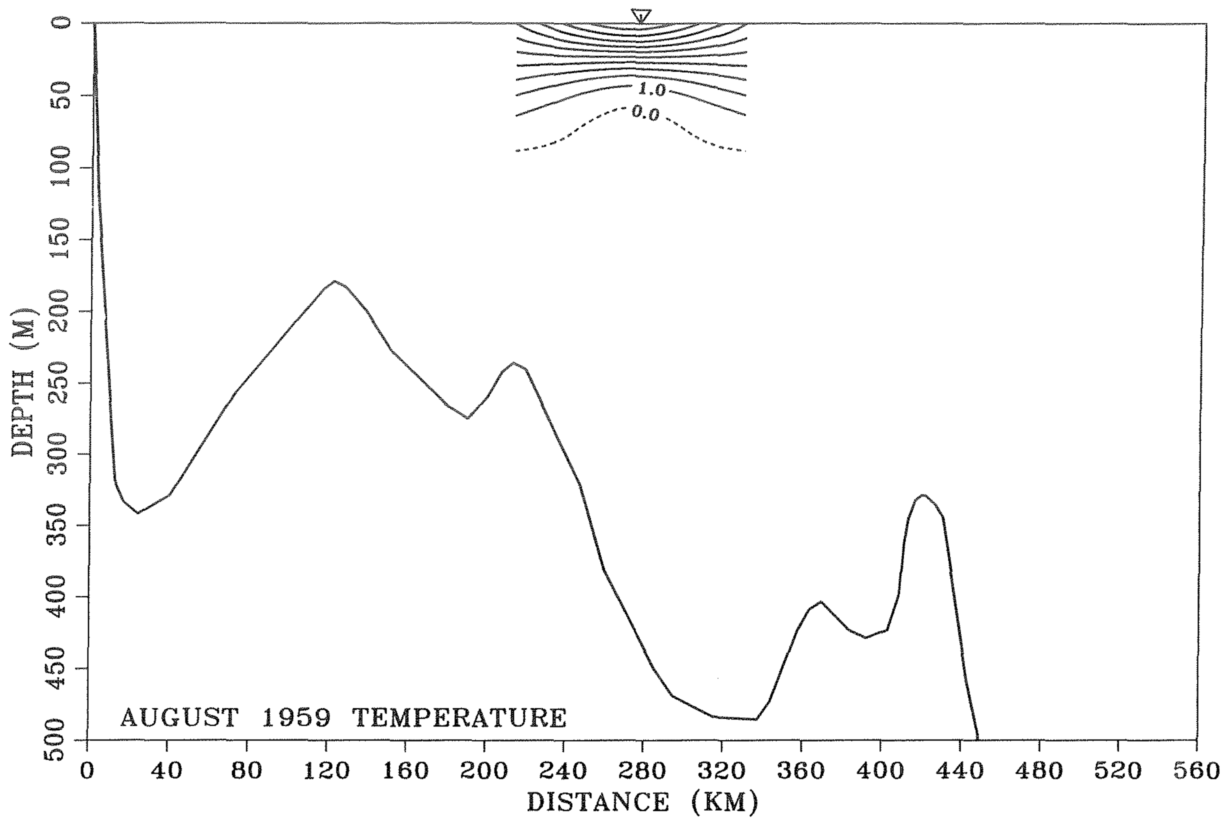
AUGUST 1931 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
1.0
0.0
-1.0
2.0
1.0
0.0
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560



AUGUST 1951 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
2.0
1.0
0.0
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560


AUGUST 1952 TEMPERATURE
2.0
1.0
0.0
0.0
0.0
1.0
2.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
DISTANCE (KM)
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560


AUGUST 1958 TEMPERATURE
1.0
0.0
0.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
DISTANCE (KM)
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560



1.0
0.0
AUGUST 1959 TEMPERATURE
DEPTH (M)
0
50
100
150
200
250
300
350
400
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40
80
120
160
200
240
280
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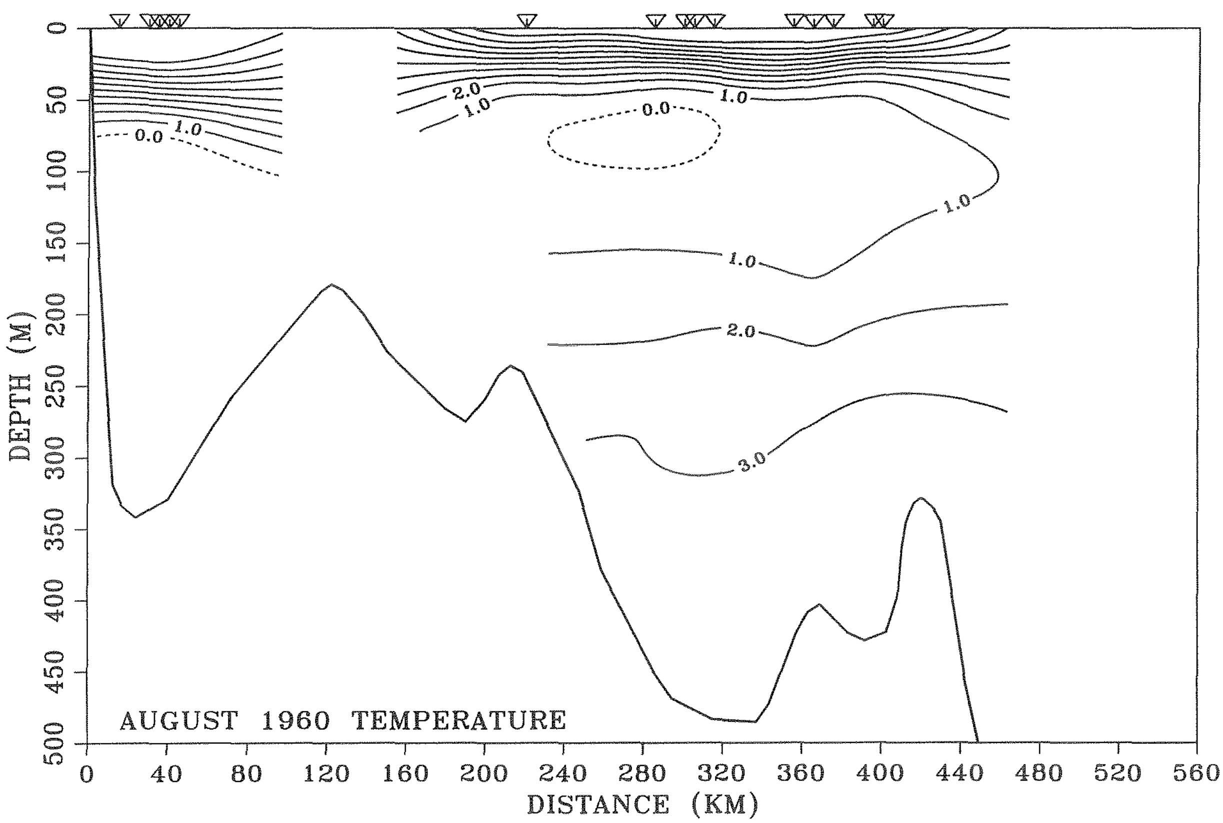
360
400
440
480
520
560
DISTANCE (KM)



0.0
1.0
2.0
1.0
0.0
1.0
1.0
1.0
2.0
3.0
AUGUST 1960 TEMPERATURE
DEPTH (M)
0
50
100
150
200
250
300
350
400
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500
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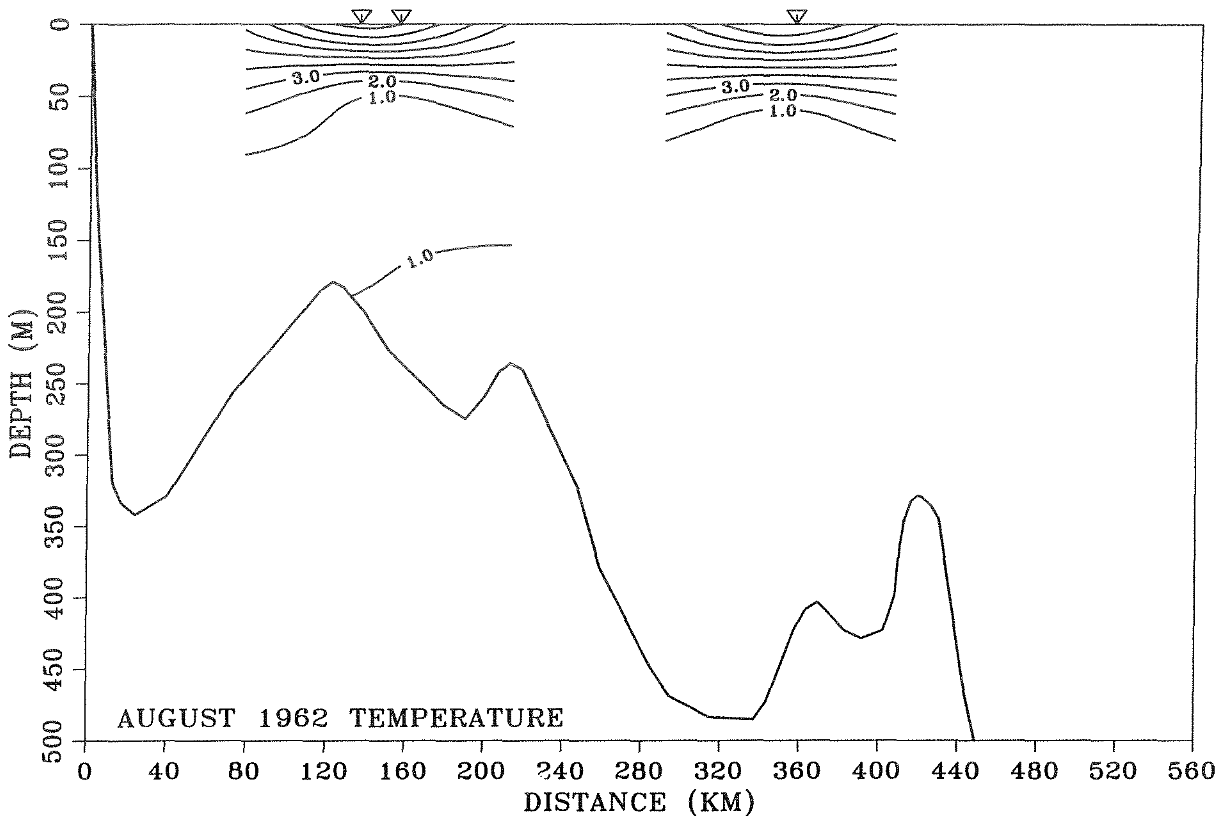
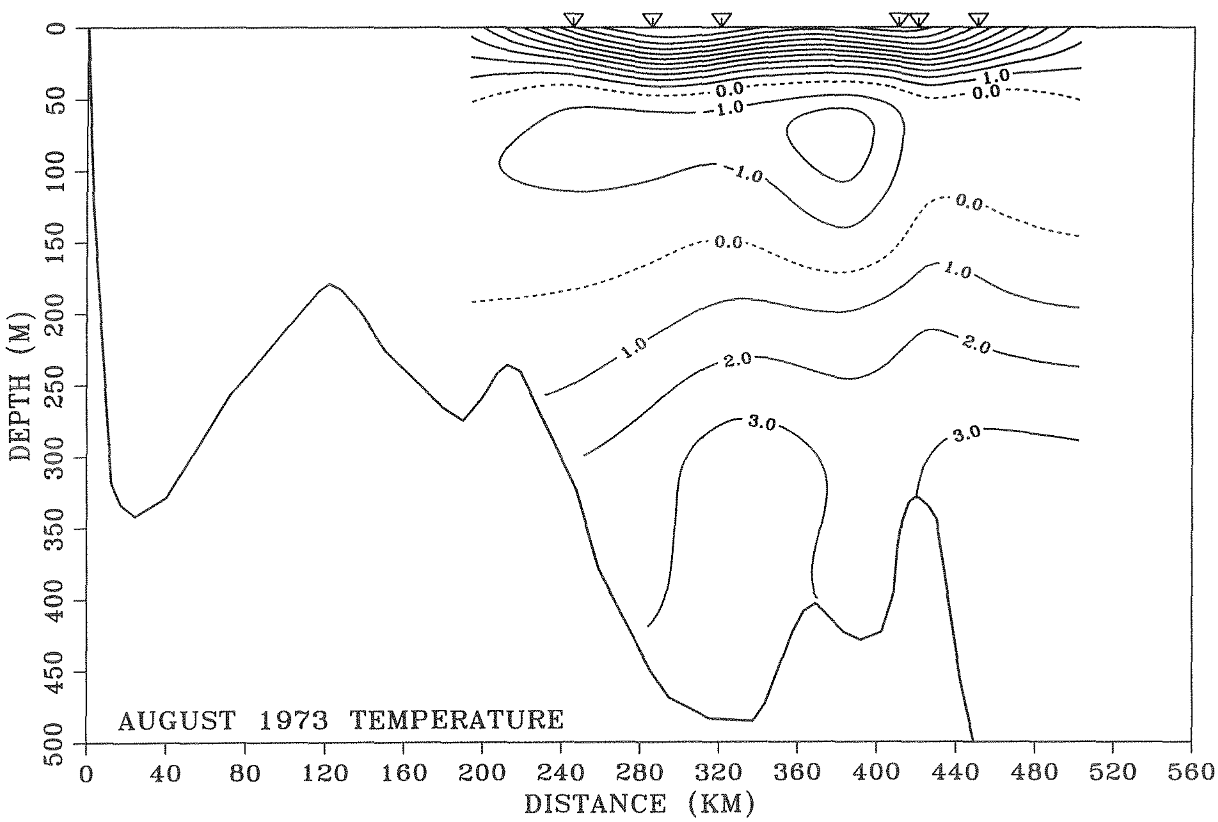
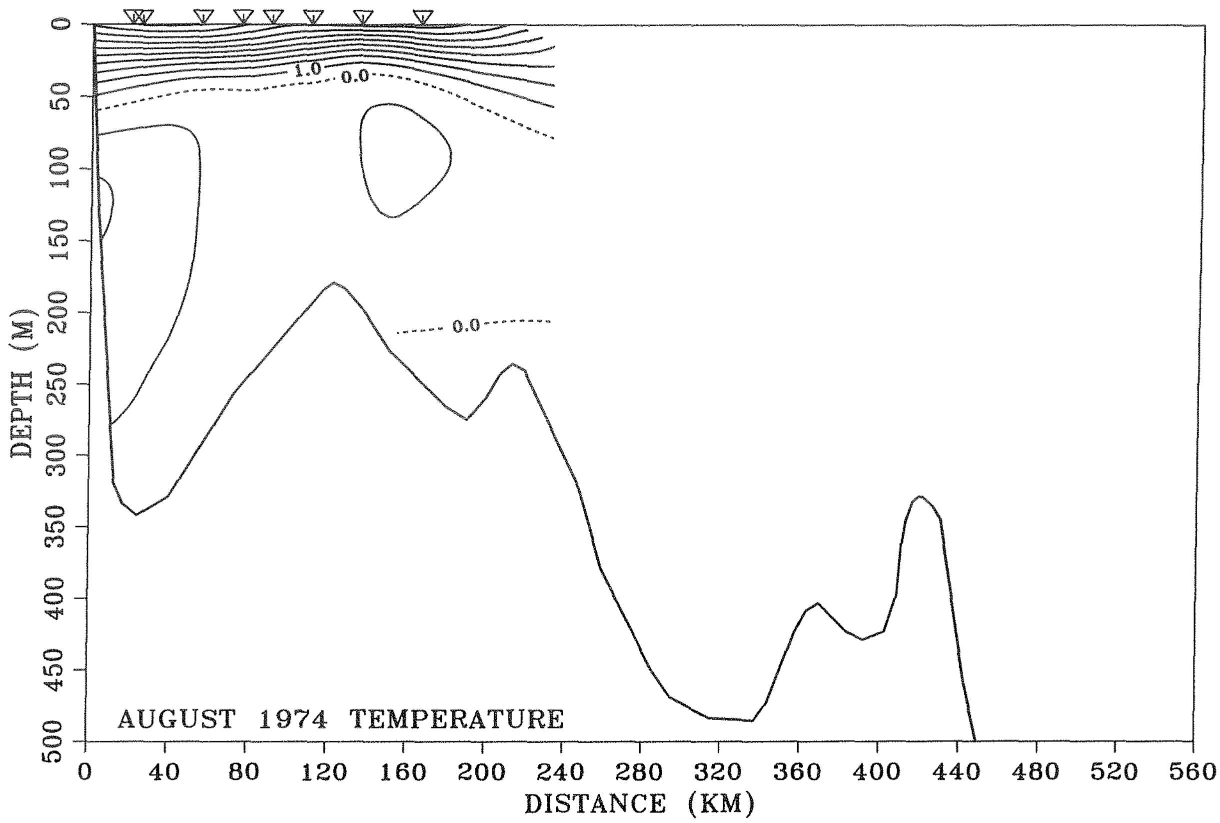
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)



DEPTH (M)
DISTANCE (KM)
AUGUST 1962 TEMPERATURE
3.0
2.0
1.0



DEPTH (M)
DISTANCE (KM)
AUGUST 1973 TEMPERATURE
0.0
-1.0
1.0
2.0
3.0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0.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
DISTANCE (KM)
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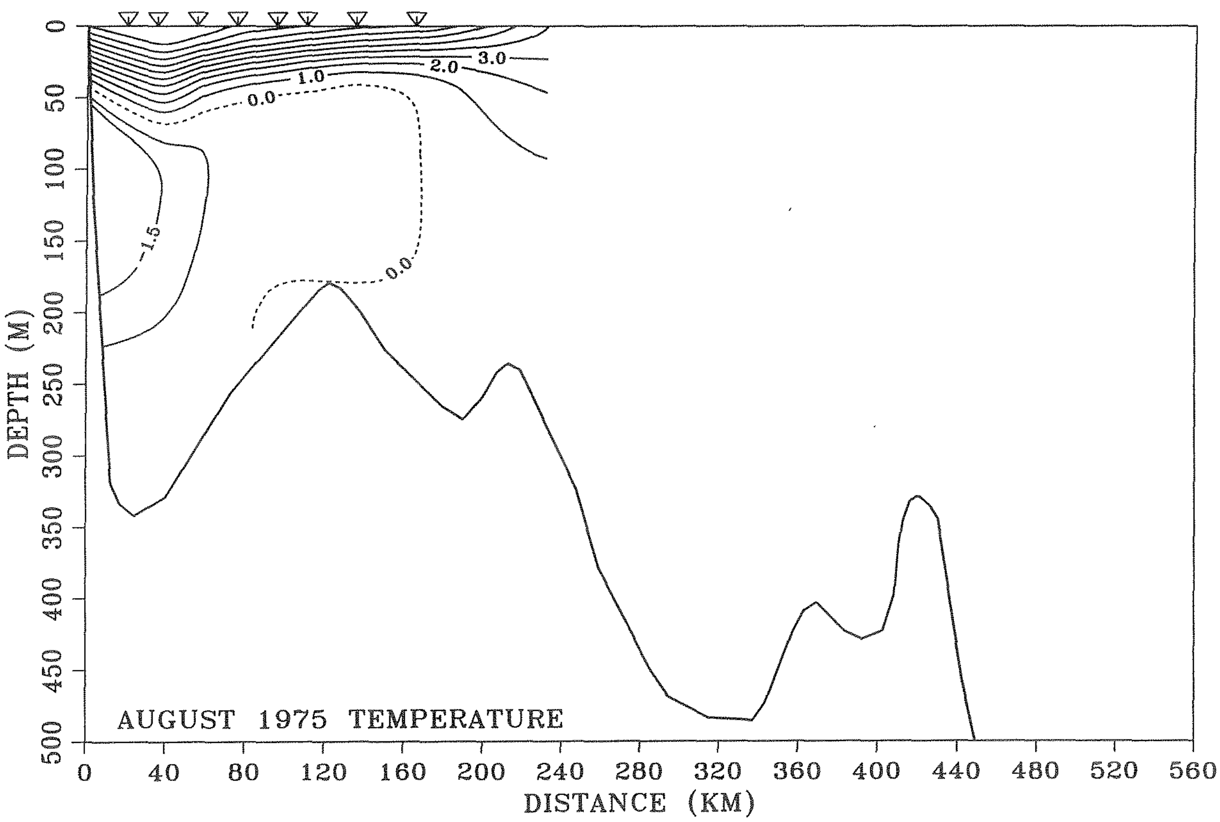
80
120
160
200
240
280
320
360
400
440
480
520
560
AUGUST 1974 TEMPERATURE


3.0
2.0
1.0
0.0
-1.5
0.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
DISTANCE (KM)
0
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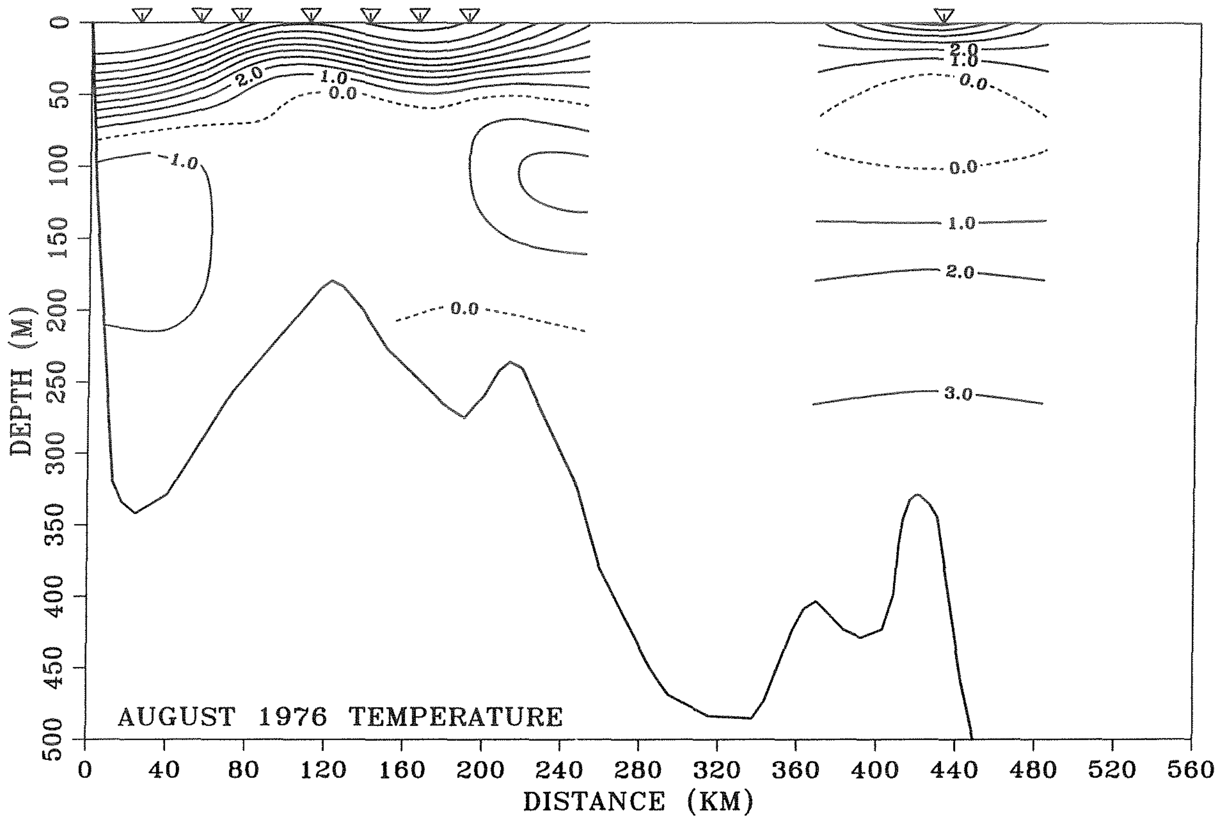
80
120
160
200
240
280
320
360
400
440
480
520
560
AUGUST 1975 TEMPERATURE


AUGUST 1976 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
2.0
1.0
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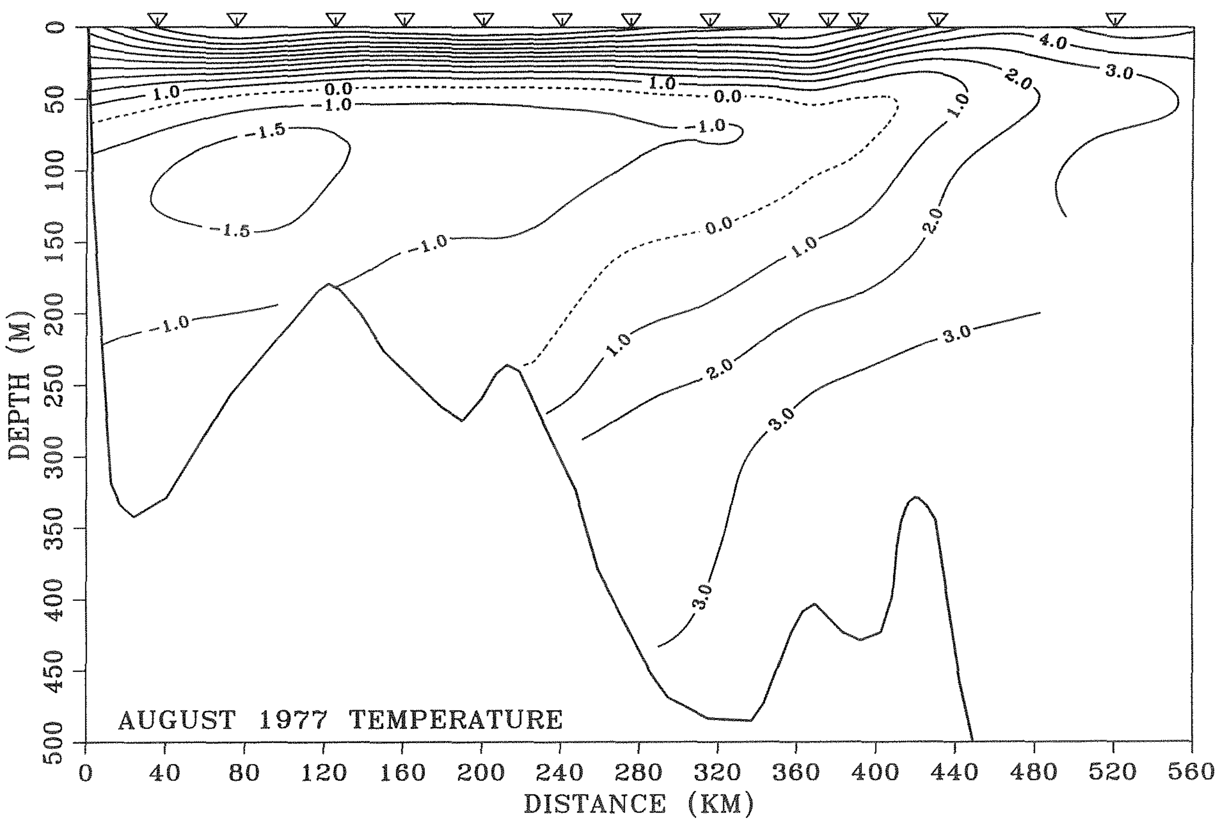
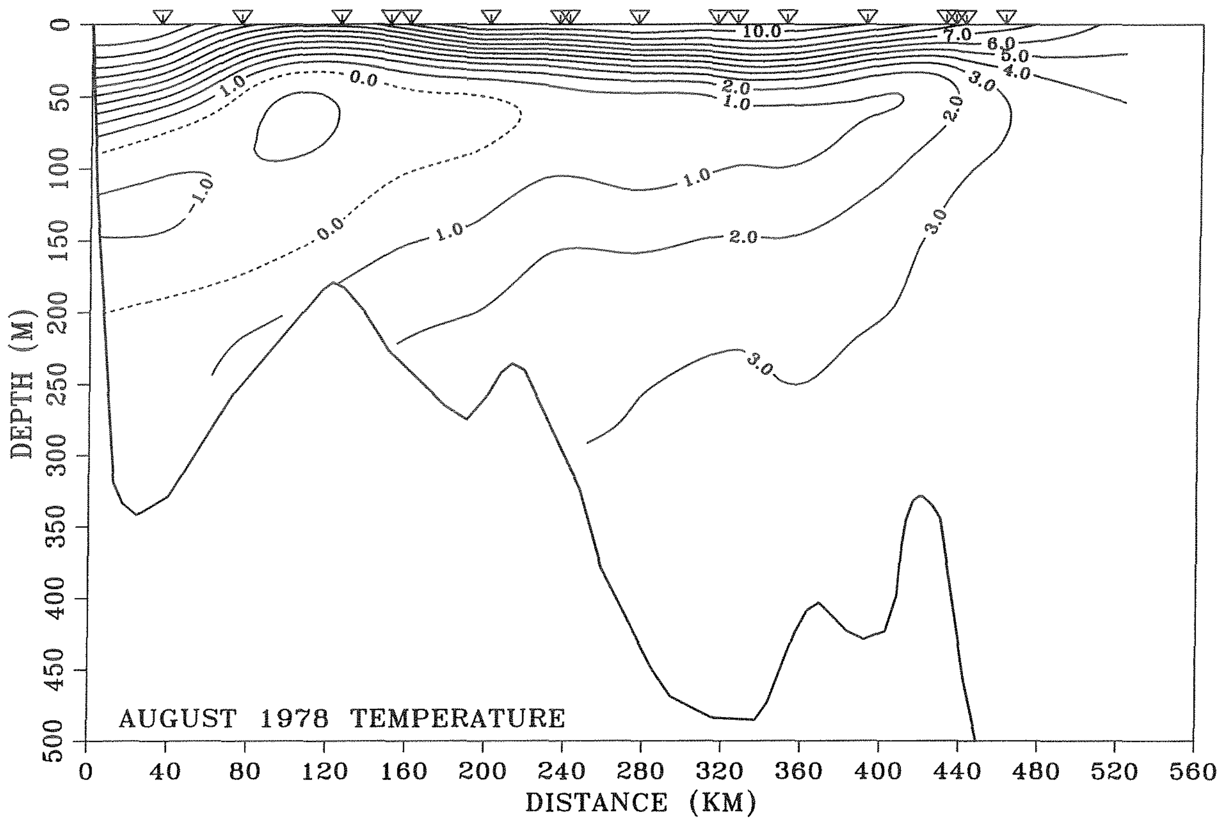
-1.0
3.0


AUGUST 1977 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
4.0
3.0
2.0
1.0
0.0
-1.0
-1.5


AUGUST 1978 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
10.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
0
50
100
150
200
250
300
350
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450
500
0
40
80
120
160
200
240
280
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440
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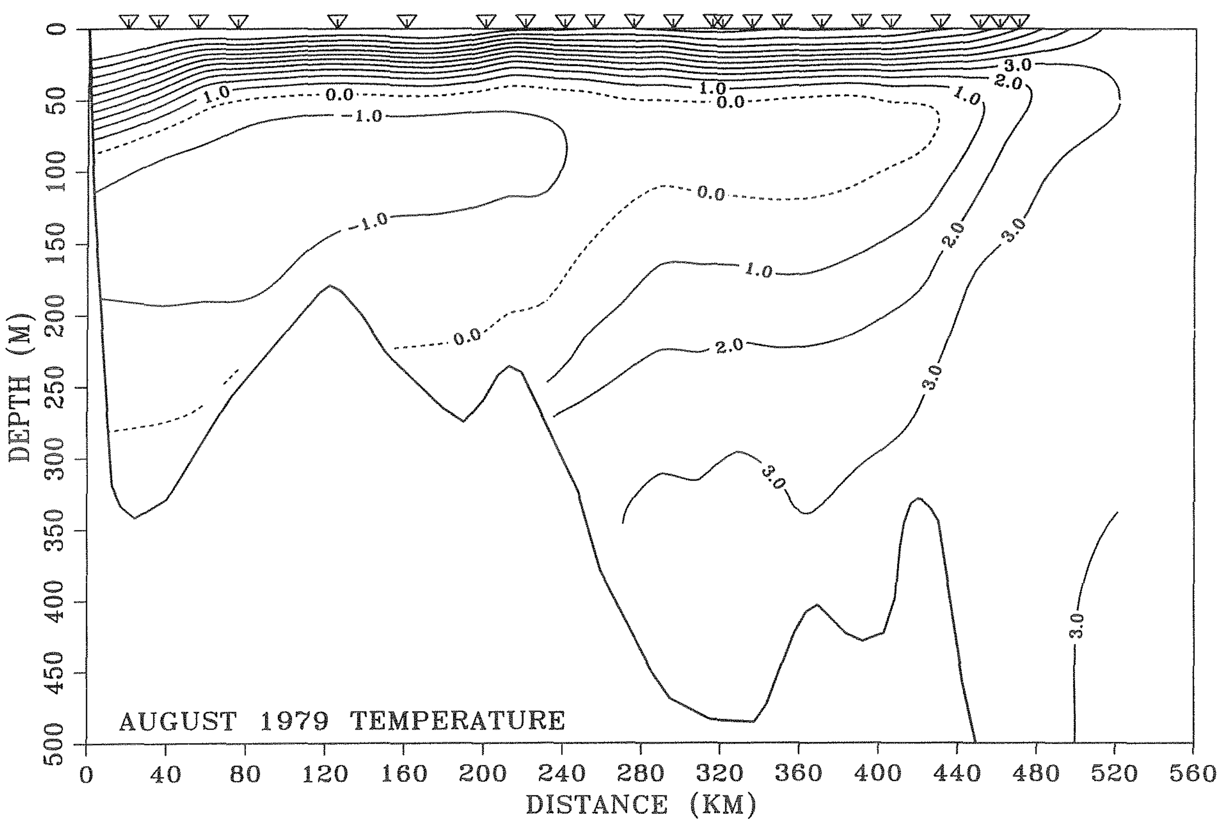
520
560


AUGUST 1979 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
3.0
2.0
1.0
0.0
-1.0
0
50
100
150
200
250
300
350
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500
0
40
80
120
160
200
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280
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360
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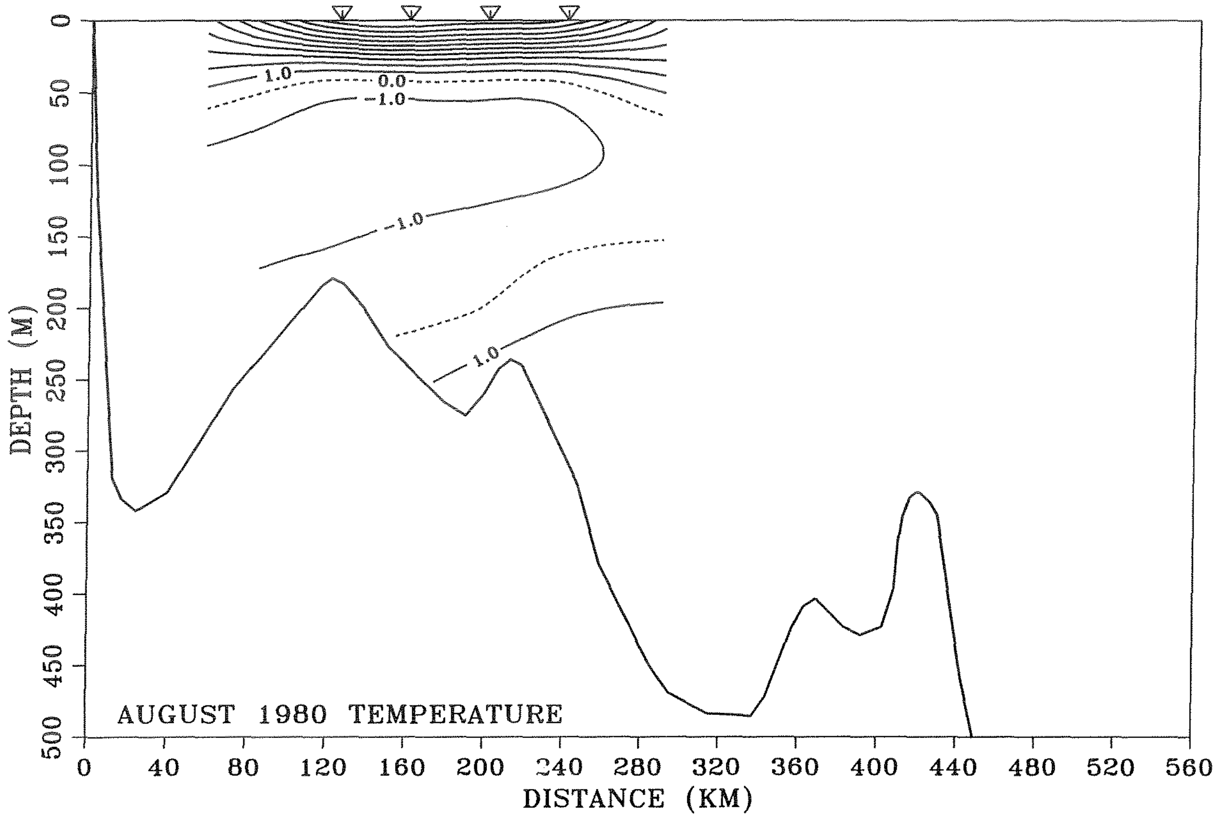
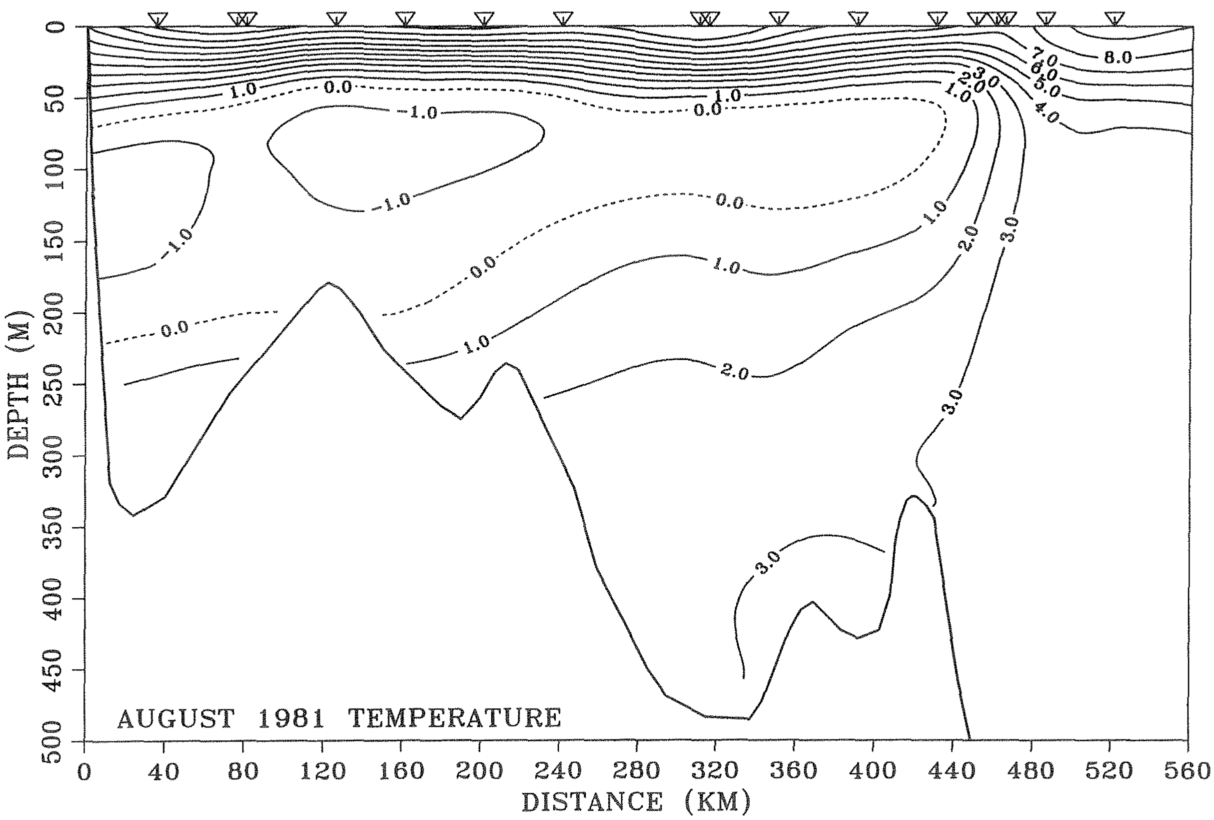
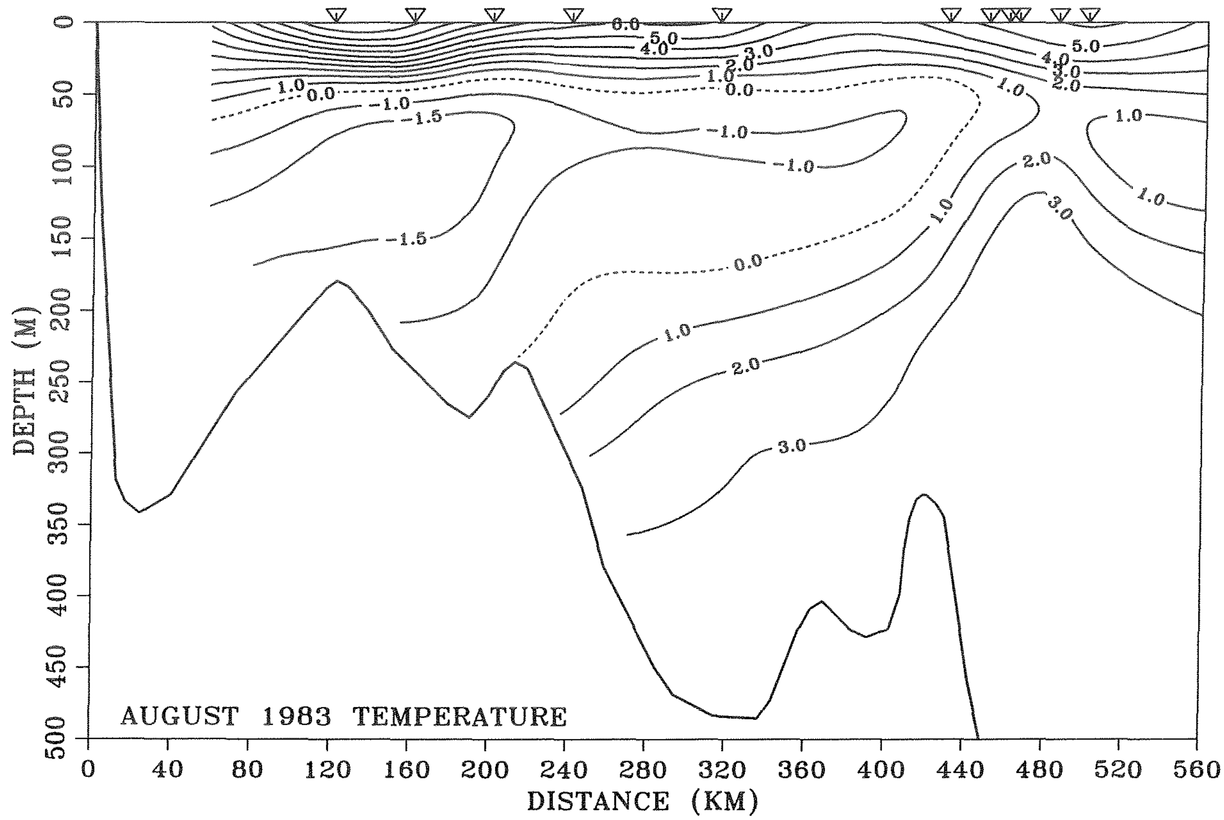
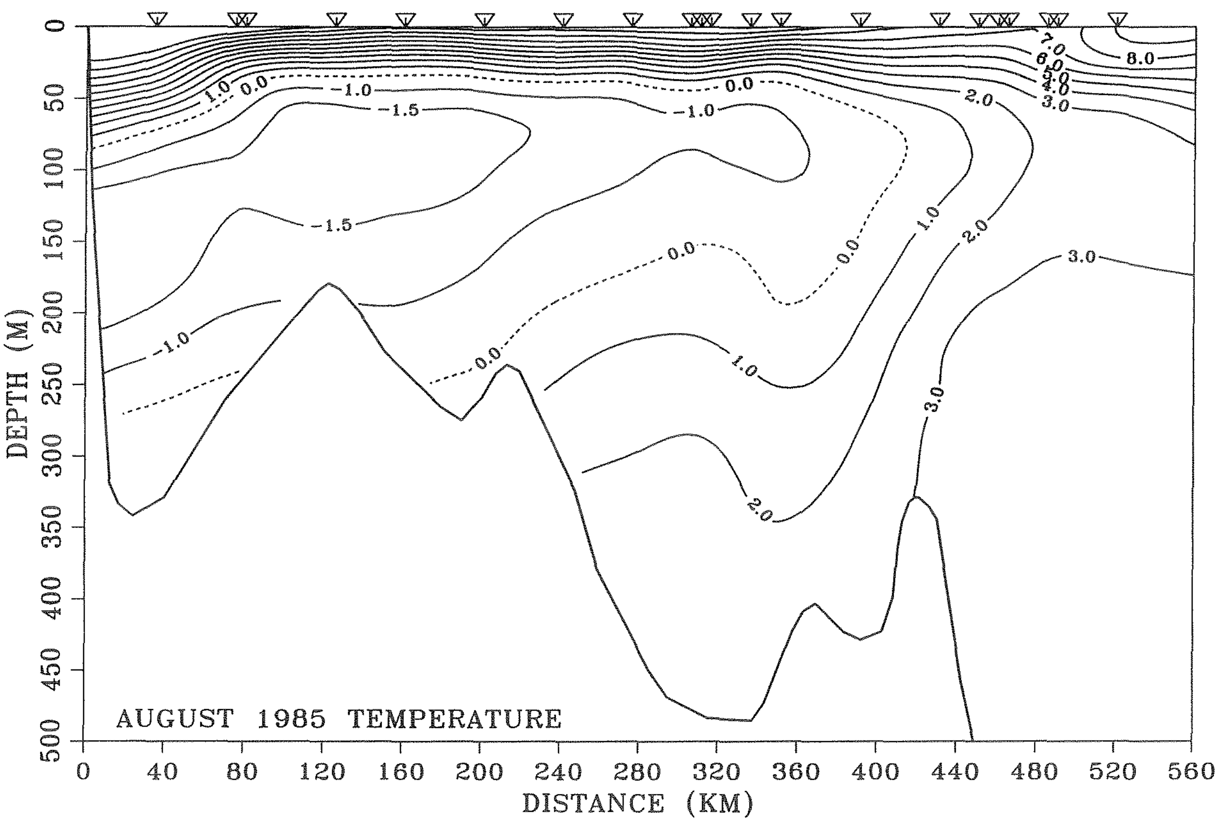
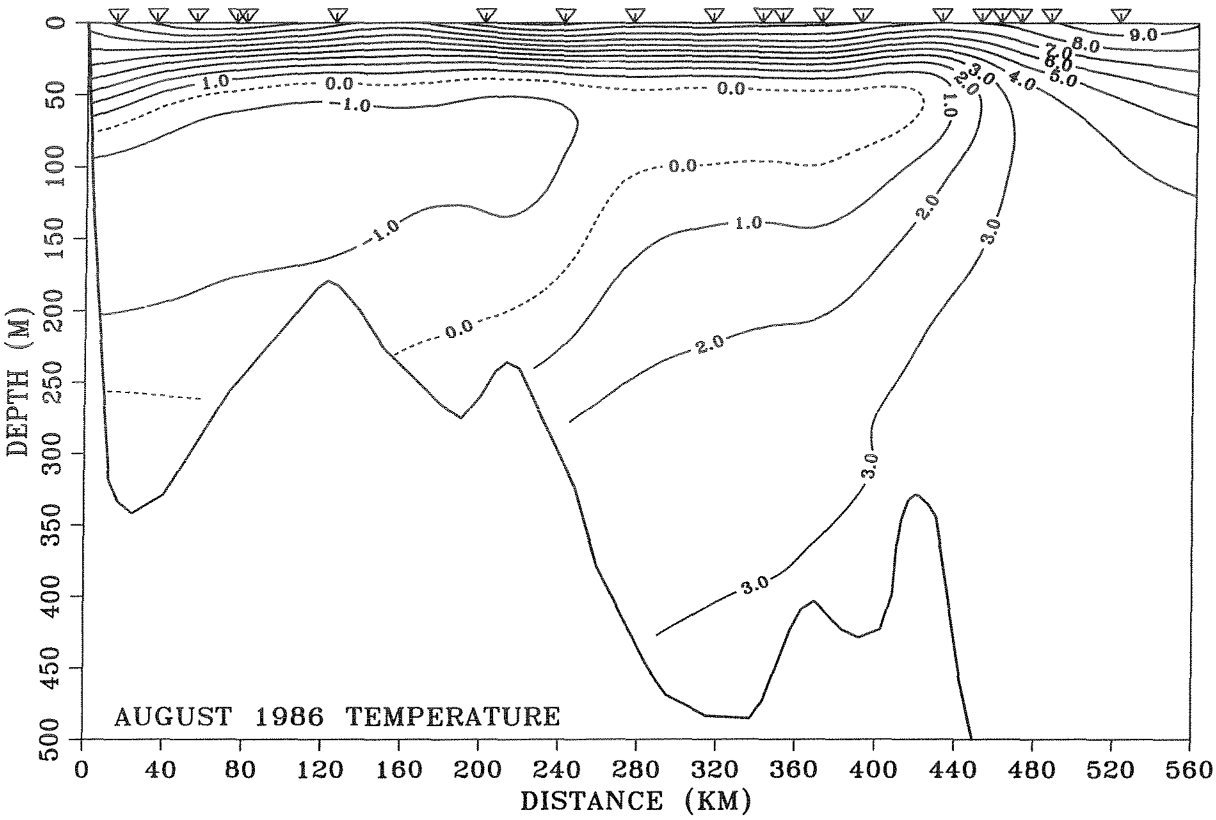
440
480
520
560


AUGUST 1980 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
1.0
0.0
-1.0
-1.0
1.0


AUGUST 1981 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
2.0
3.0


AUGUST 1983 TEMPERATURE
DEPTH (M)
DISTANCE (KM)


AUGUST 1985 TEMPERATURE
DEPTH (M)
DISTANCE (KM)


AUGUST 1986 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
9.0
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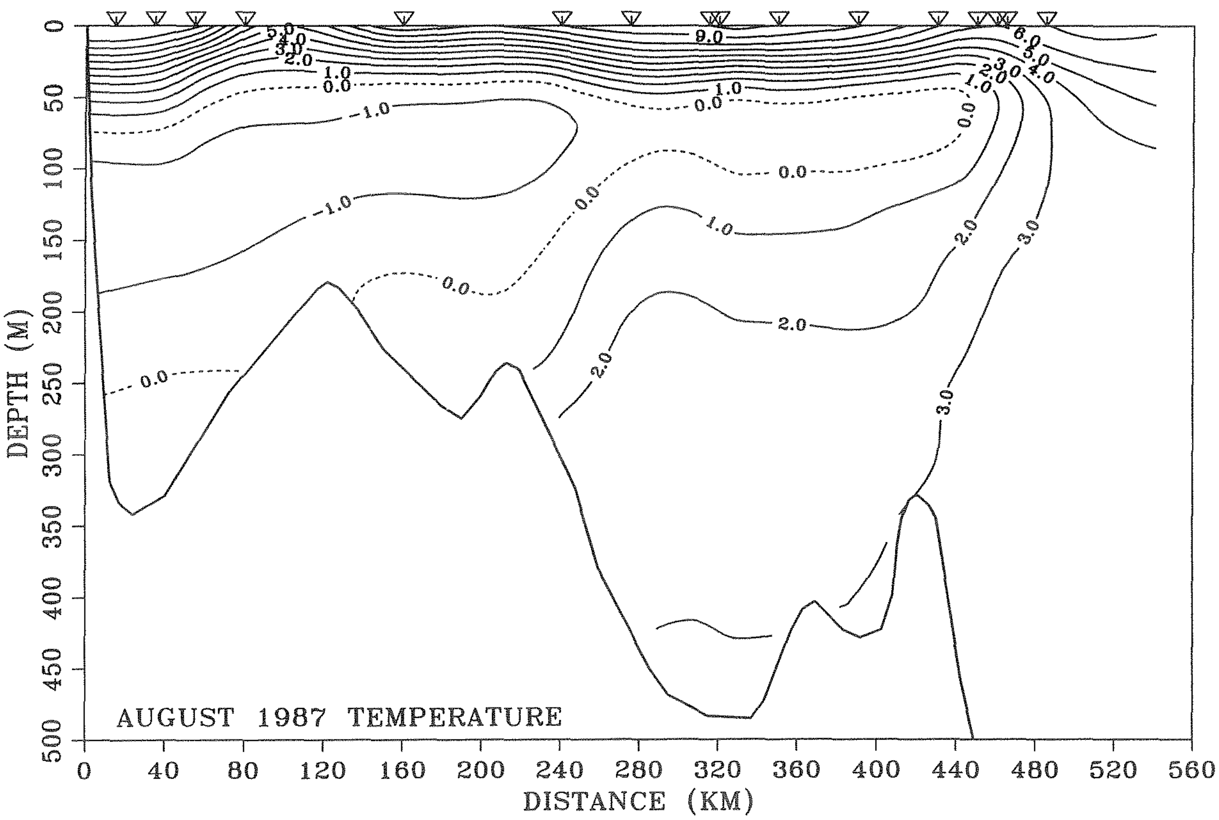
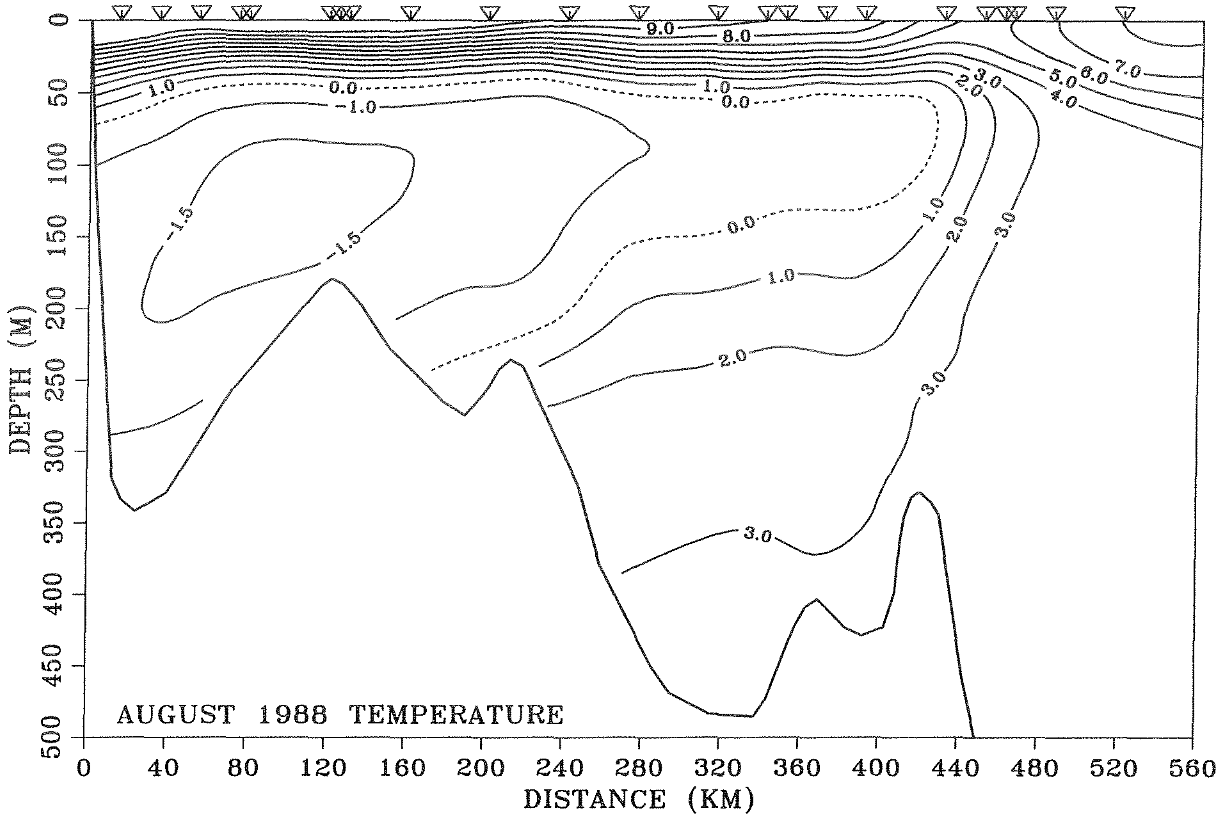
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0


AUGUST 1987 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
9.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0


AUGUST 1988 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
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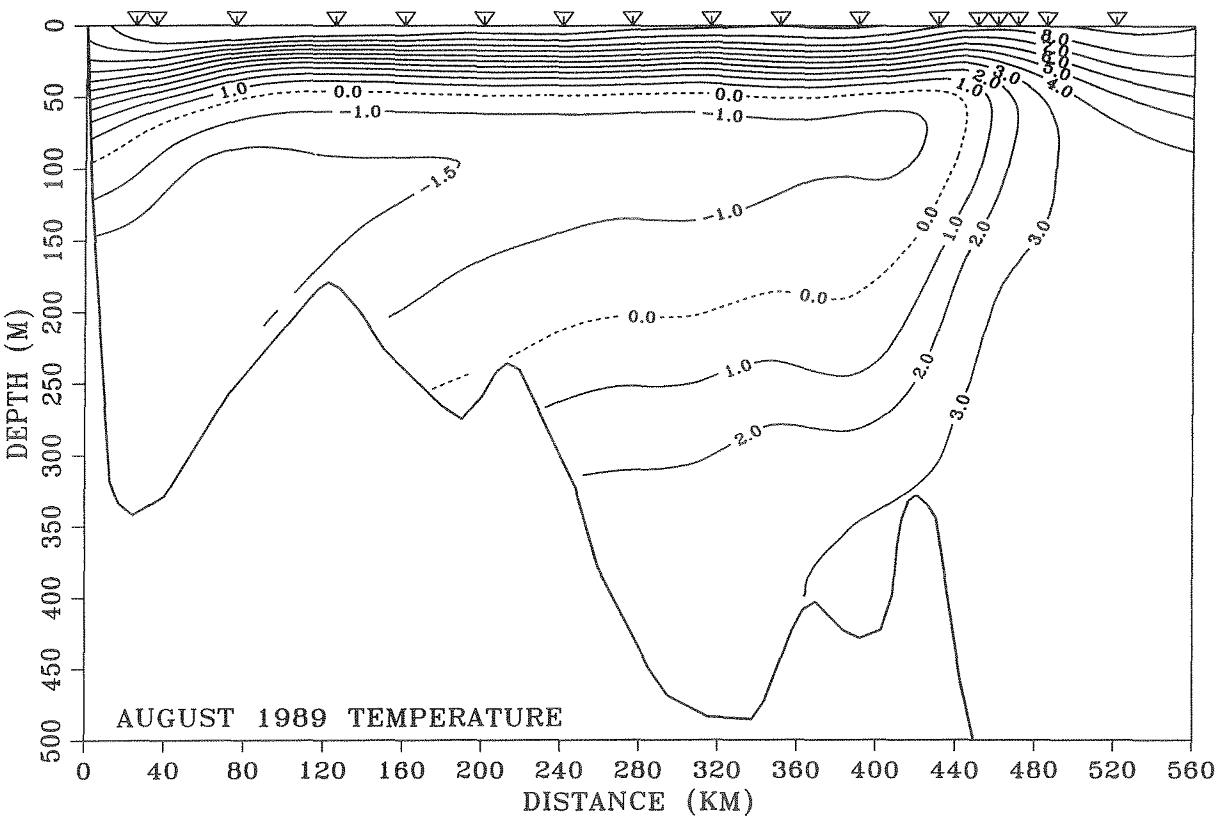
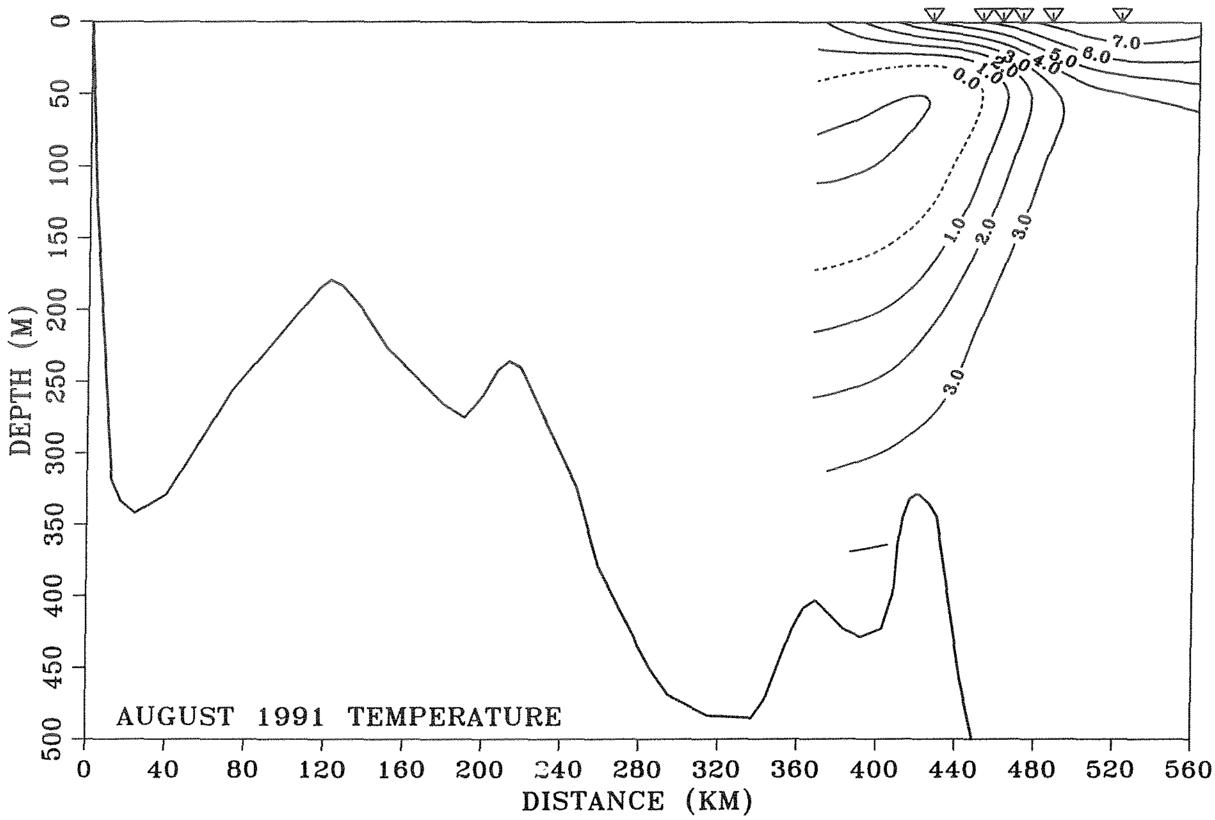
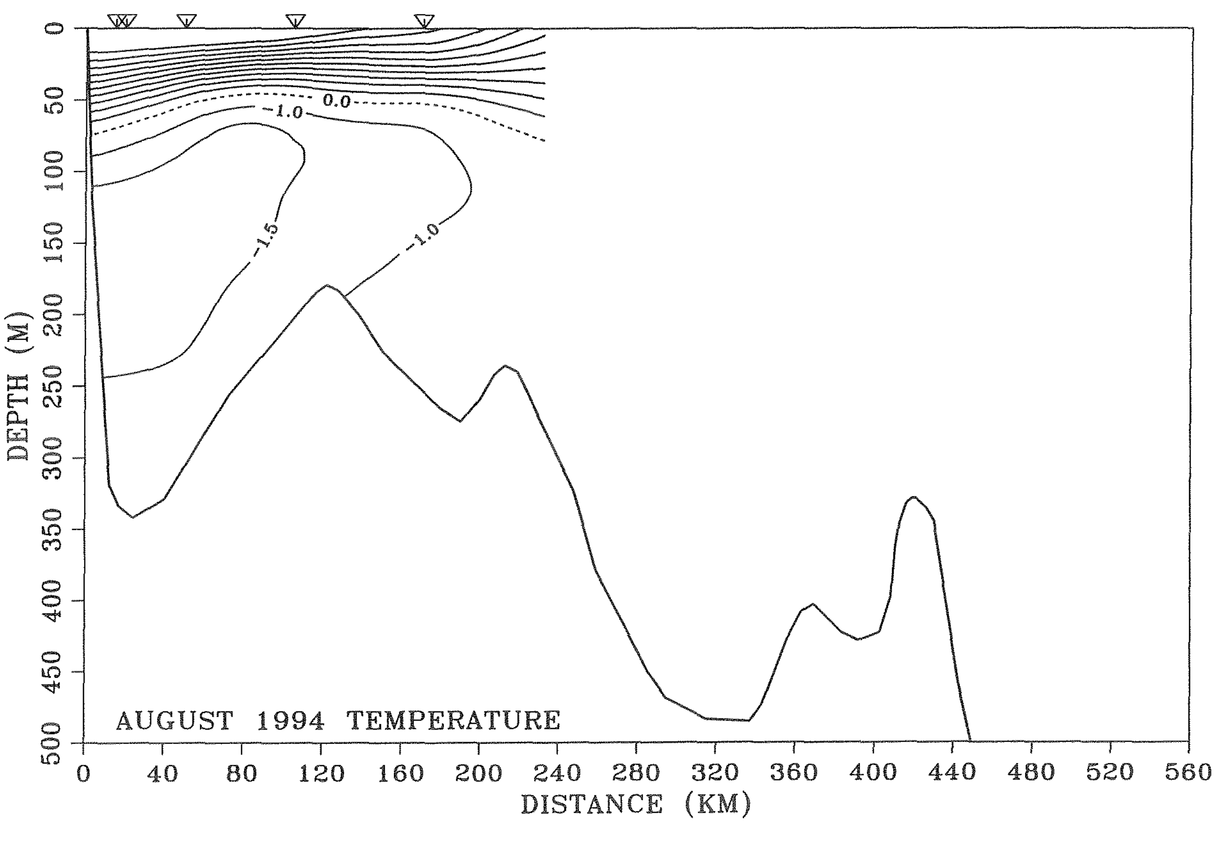
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-1.5

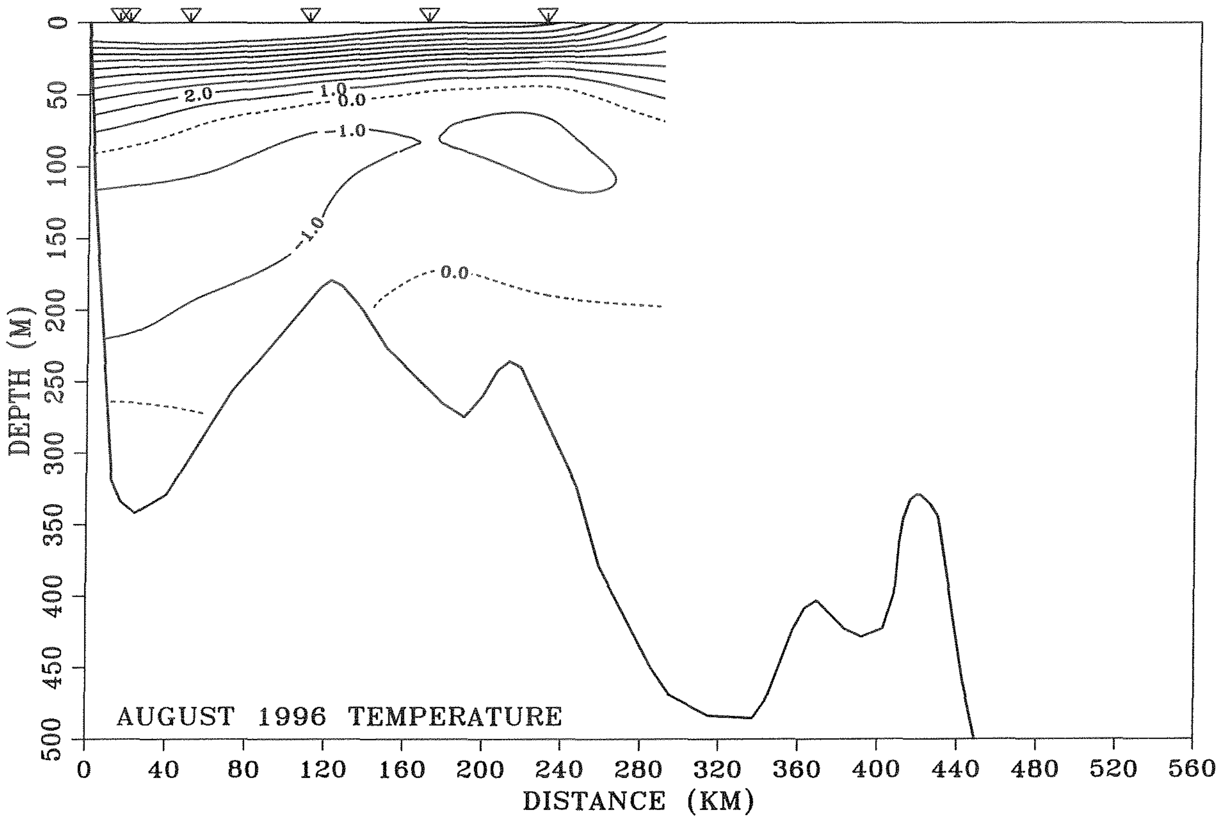

AUGUST 1989 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
8.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-1.5



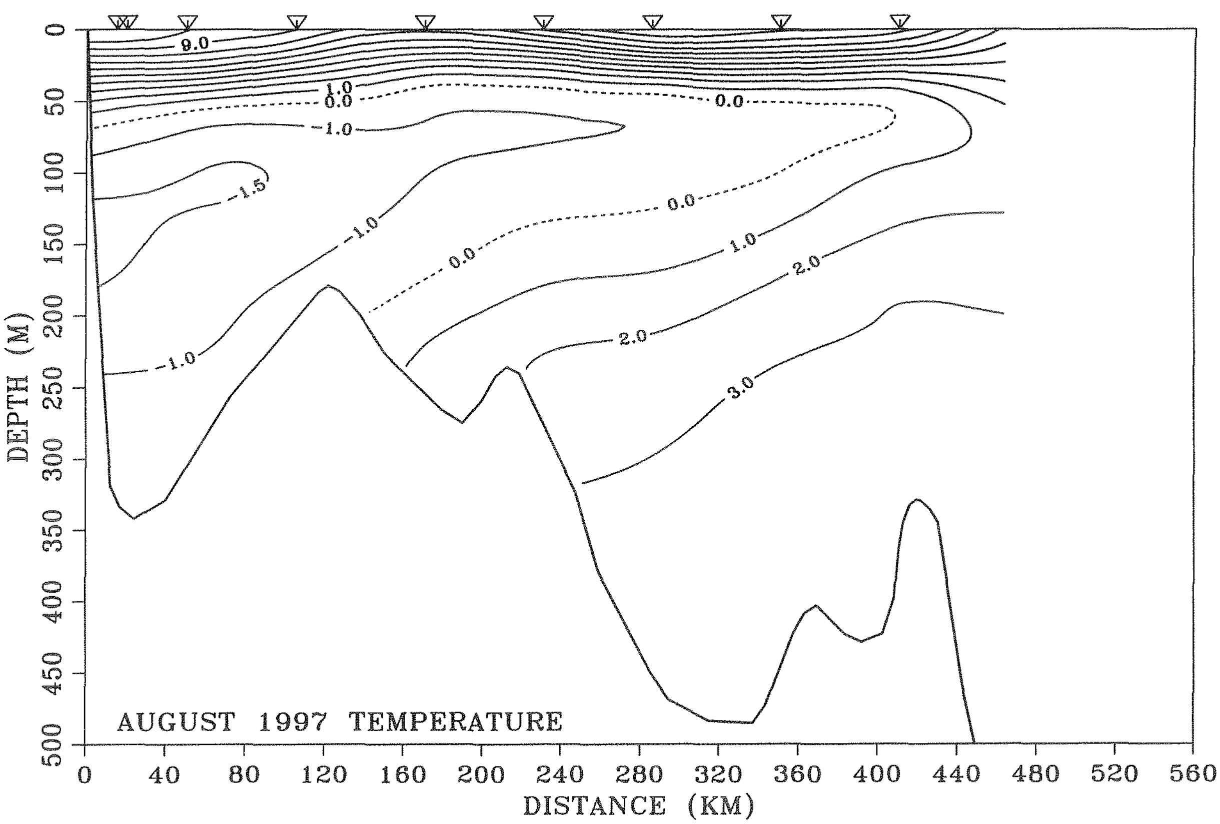
DEPTH (M)
DISTANCE (KM)
AUGUST 1991 TEMPERATURE



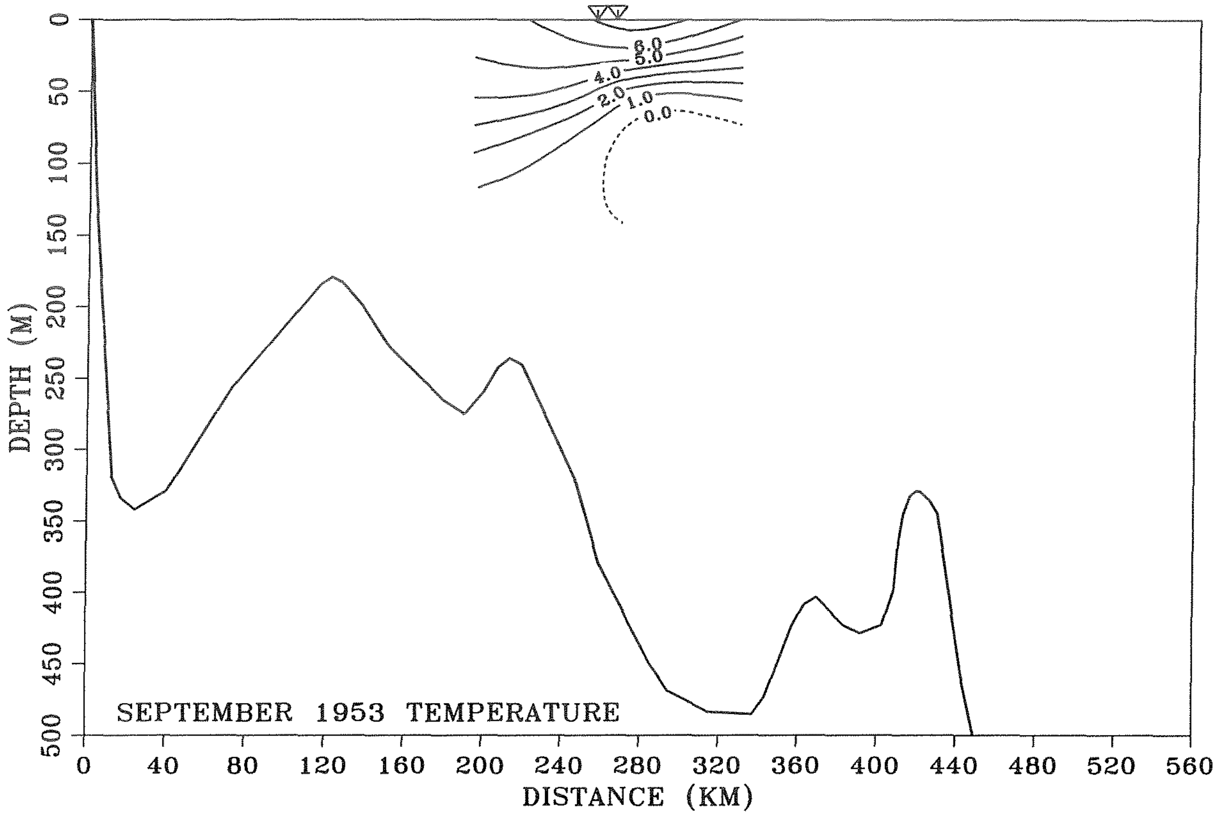
DEPTH (M)
DISTANCE (KM)
AUGUST 1994 TEMPERATURE



AUGUST 1996 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
0 50 100 150 200 250 300 350 400 450 500
2.0
1.0
0.0
-1.0
-1.0
0.0



AUGUST 1997 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
0 50 100 150 200 250 300 350 400 450 500
9.0
1.0
0.0
-1.0
-1.5
-1.0
0.0
0.0
1.0
2.0
2.0
3.0
-1.0


6.0
5.0
4.0
2.0
1.0
0.0
DEPTH (M)
0
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100
150
200
250
300
350
400
450
500
SEPTEMBER 1953 TEMPERATURE
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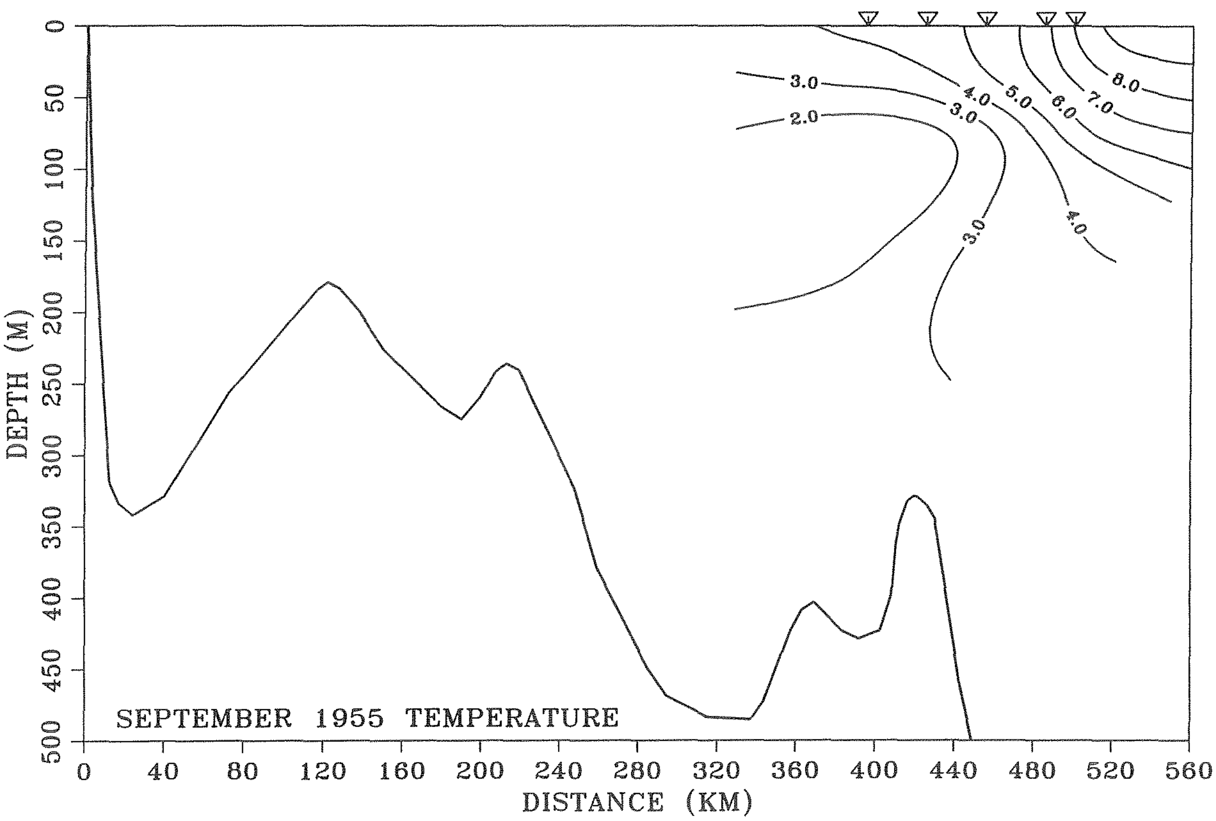
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)


3.0
2.0
4.0
3.0
5.0
6.0
7.0
8.0
3.0
4.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
SEPTEMBER 1955 TEMPERATURE
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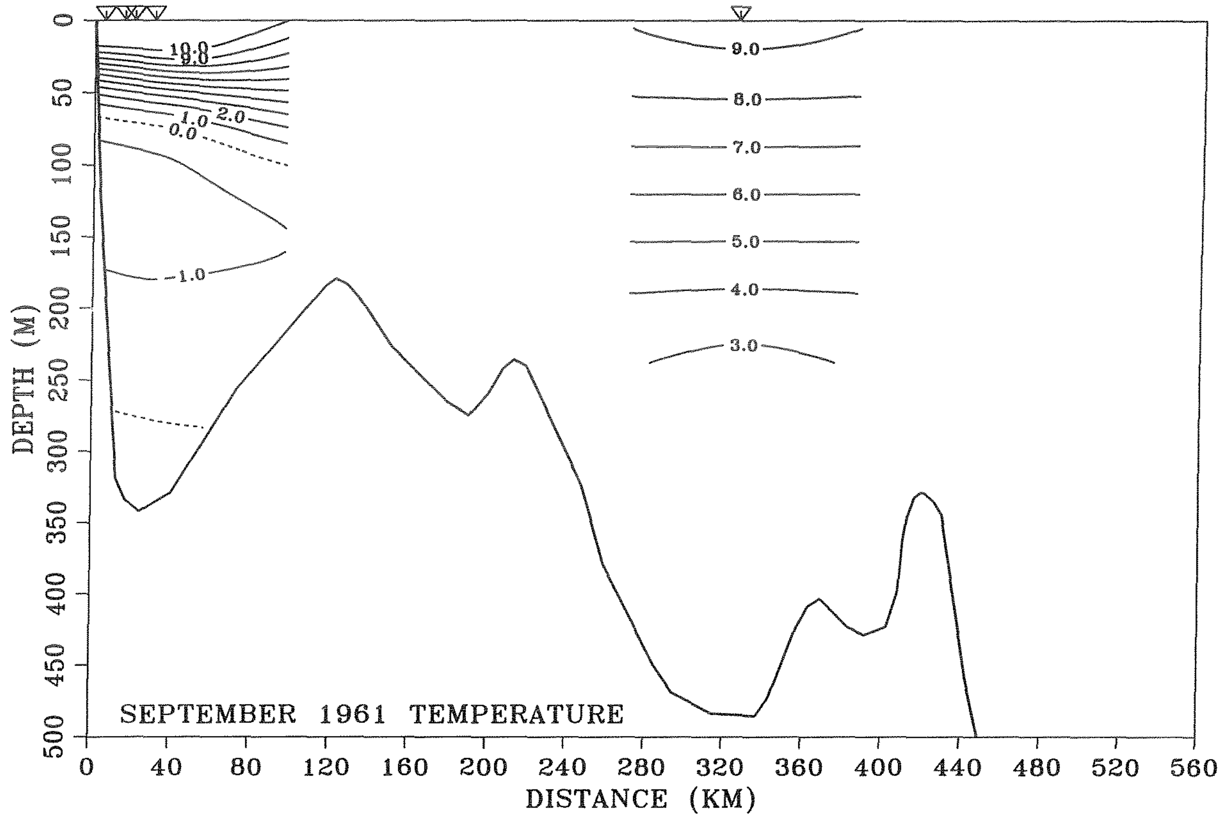
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)



10.0
9.0
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2.0
0.0
1.0
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6.0
5.0
4.0
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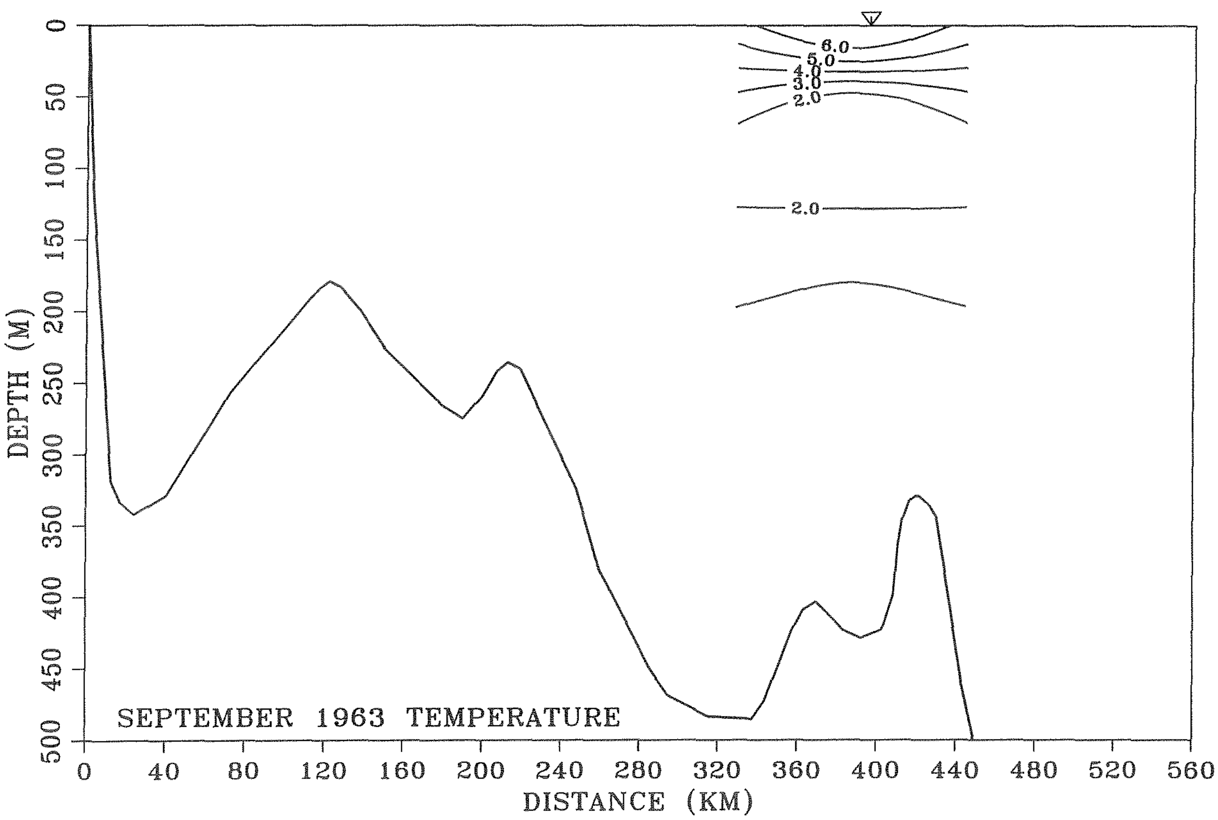
SEPTEMBER 1961 TEMPERATURE
DEPTH (M)
DISTANCE (KM)



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3.0
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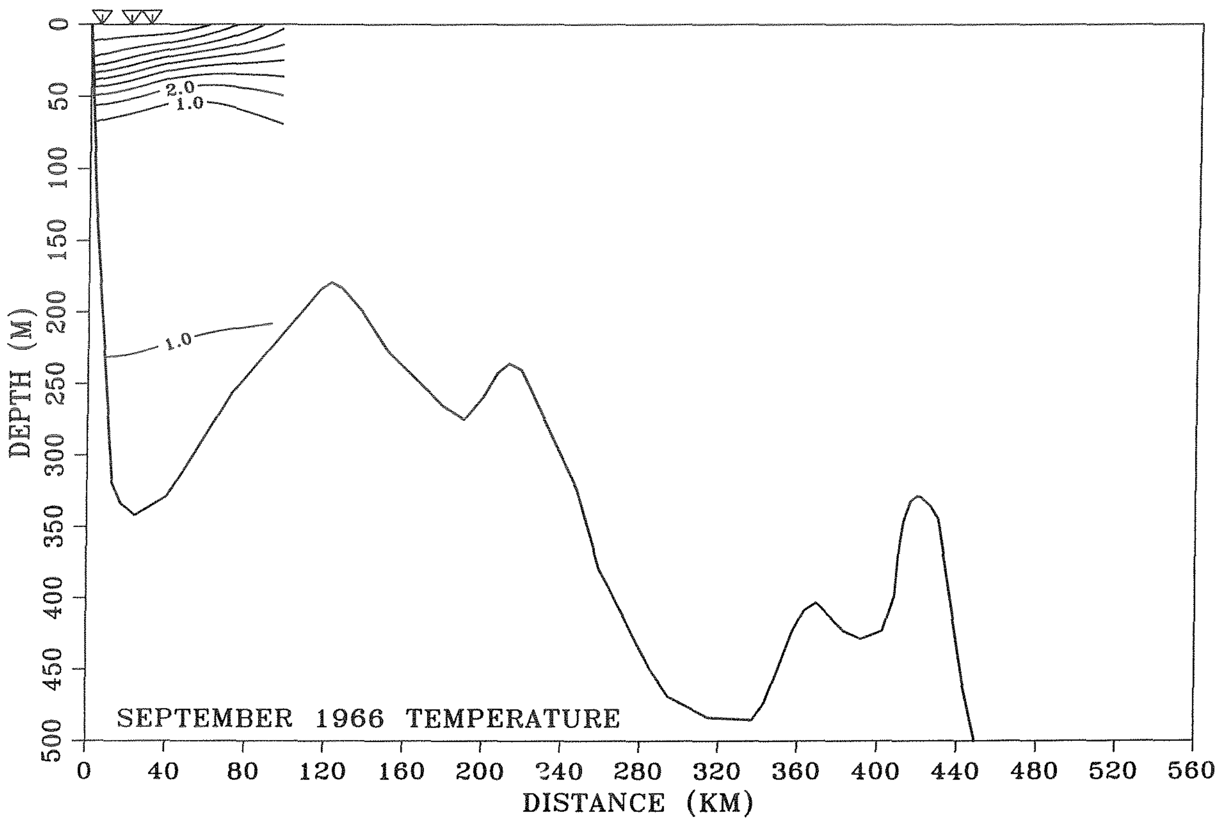
2.0
SEPTEMBER 1963 TEMPERATURE
DEPTH (M)
DISTANCE (KM)



DEPTH (M)
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100
150
200
250
300
350
400
450
500
2.0
1.0
1.0
SEPTEMBER 1966 TEMPERATURE
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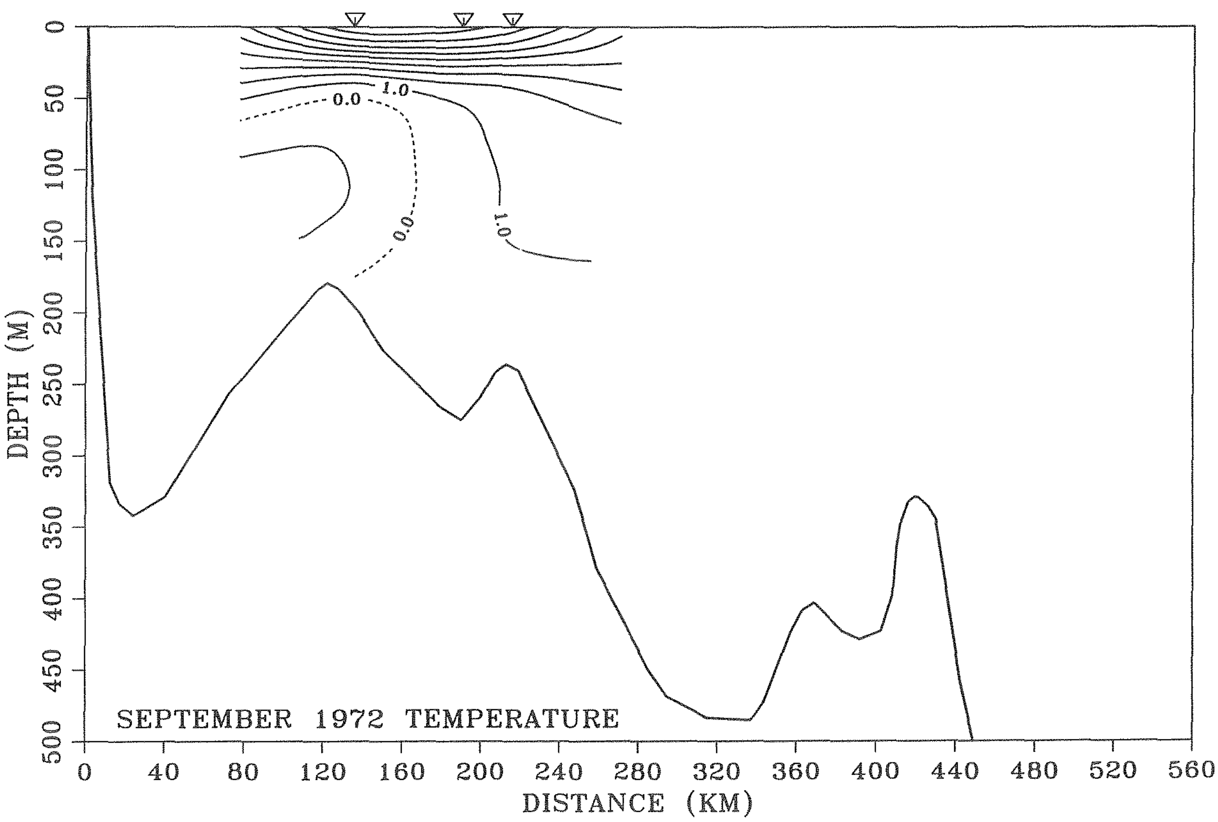
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)



DEPTH (M)
0
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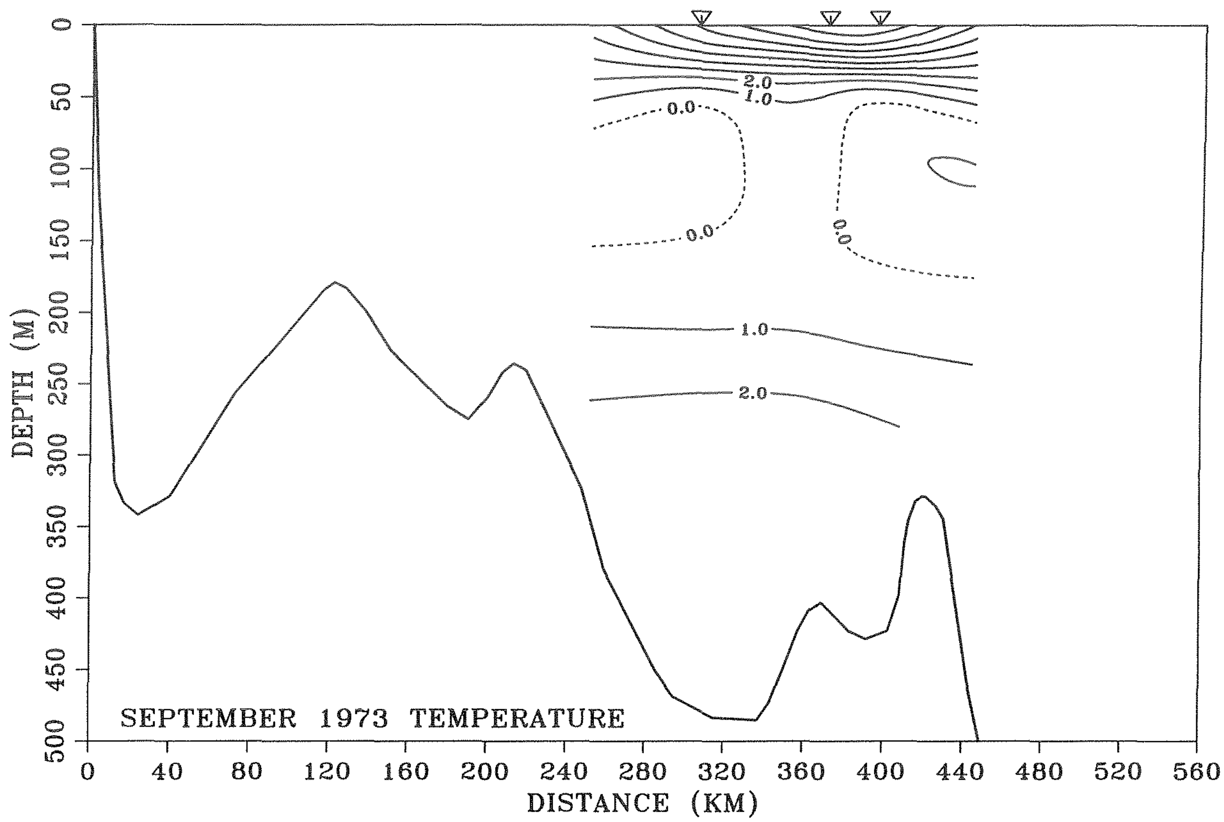
100
150
200
250
300
350
400
450
500
1.0
0.0
0.0
1.0
SEPTEMBER 1972 TEMPERATURE
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)


SEPTEMBER 1973 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
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100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
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320
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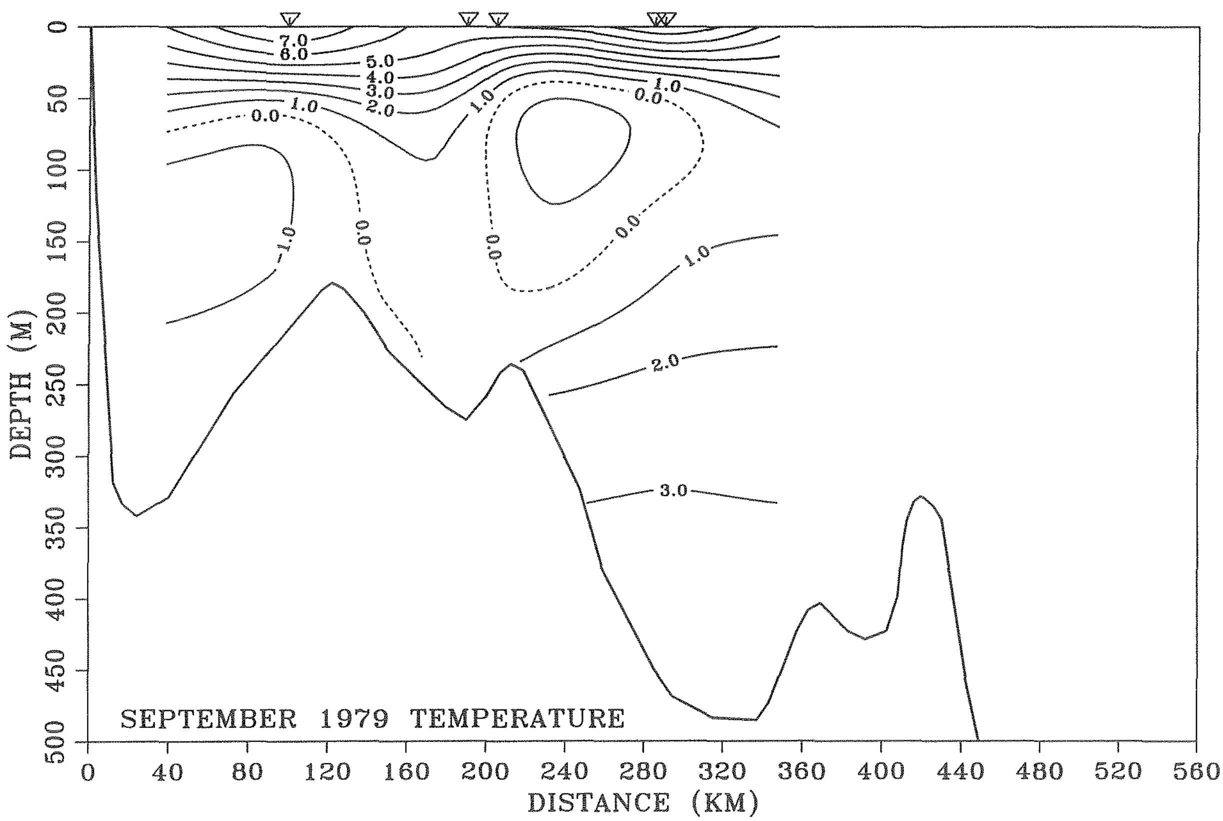
400
440
480
520
560
2.0
1.0
0.0
0.0
0.0
1.0
2.0


SEPTEMBER 1979 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
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100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
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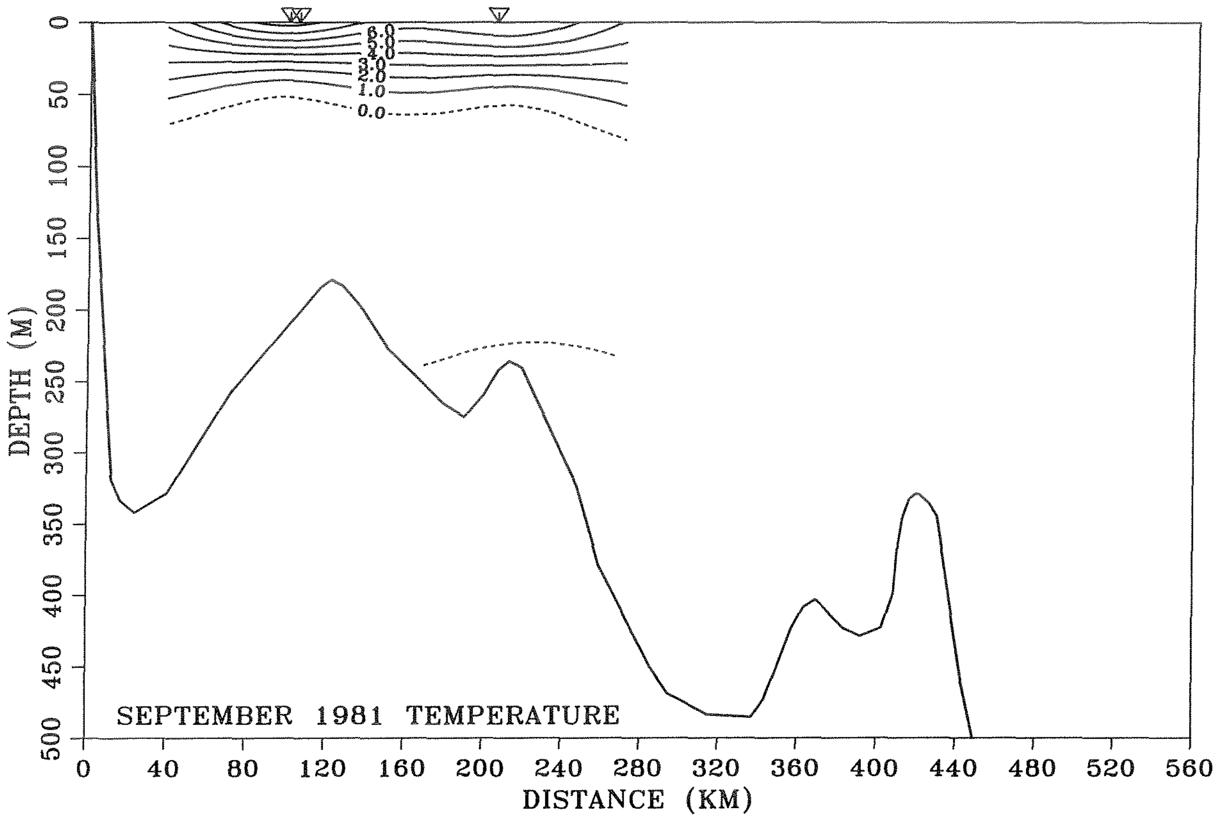
1.0
0.0
-1.0
0.0
0.0
0.0
1.0
2.0
3.0



DEPTH (M)
0
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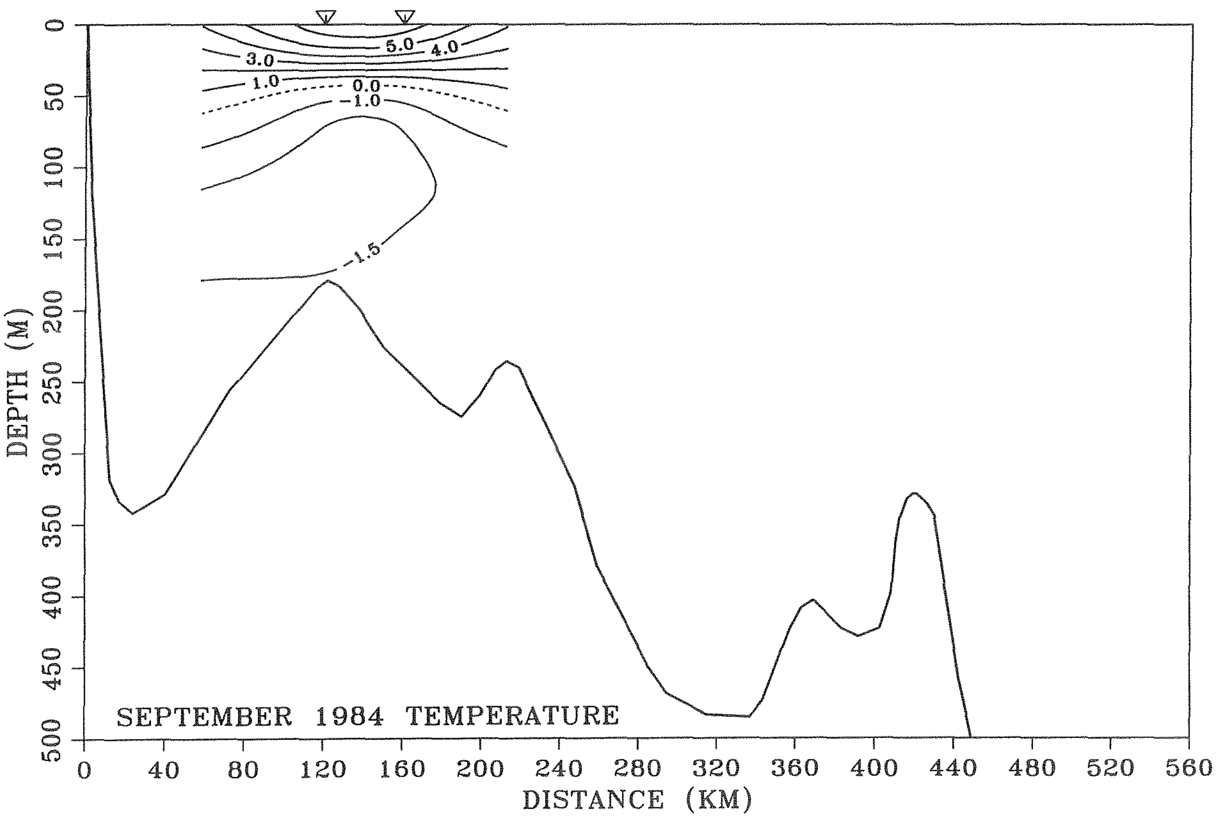
100
150
200
250
300
350
400
450
500
6.0
5.0
4.0
3.0
2.0
1.0
0.0
SEPTEMBER 1981 TEMPERATURE
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)



DEPTH (M)
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100
150
200
250
300
350
400
450
500
5.0
4.0
3.0
1.0
0.0
-1.0
-1.5
SEPTEMBER 1984 TEMPERATURE
0
40
80
120
160
200
240
280
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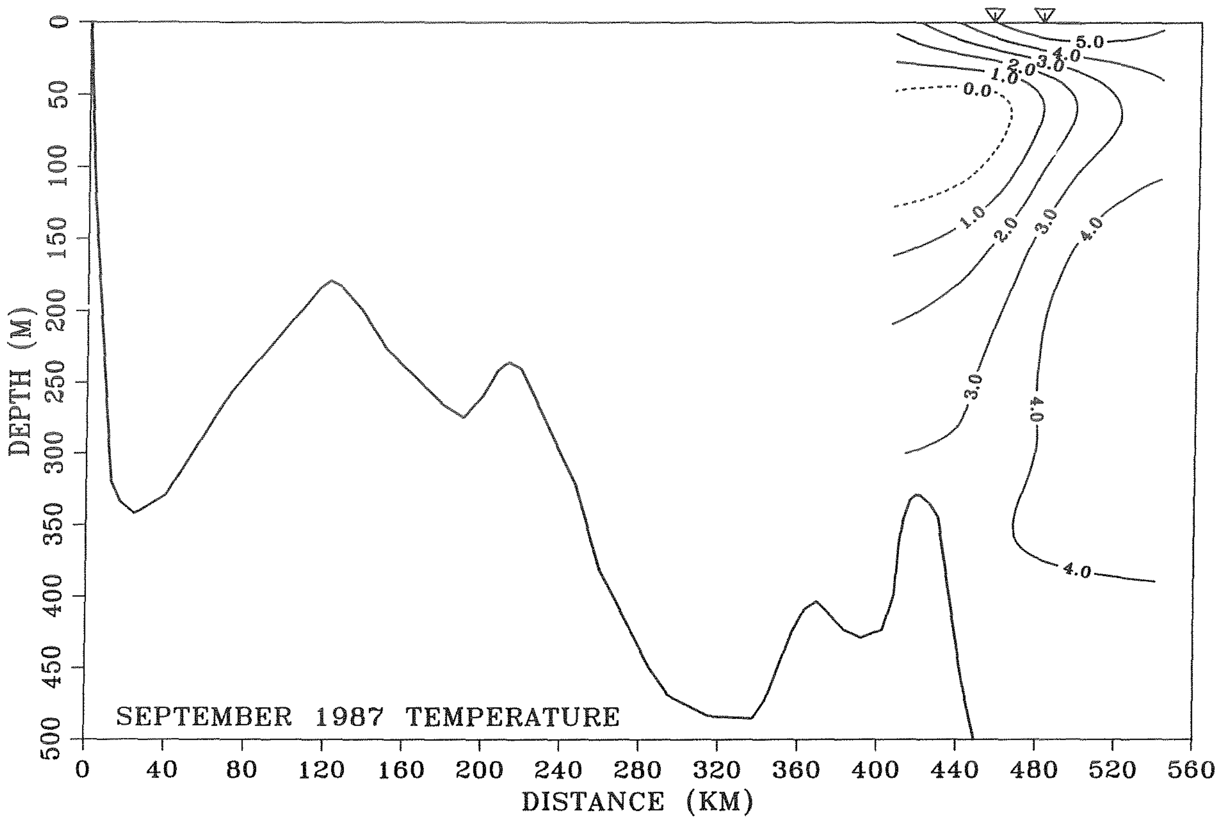
360
400
440
480
520
560
DISTANCE (KM)


SEPTEMBER 1987 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
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100
150
200
250
300
350
400
450
500
0
40
80
120
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240
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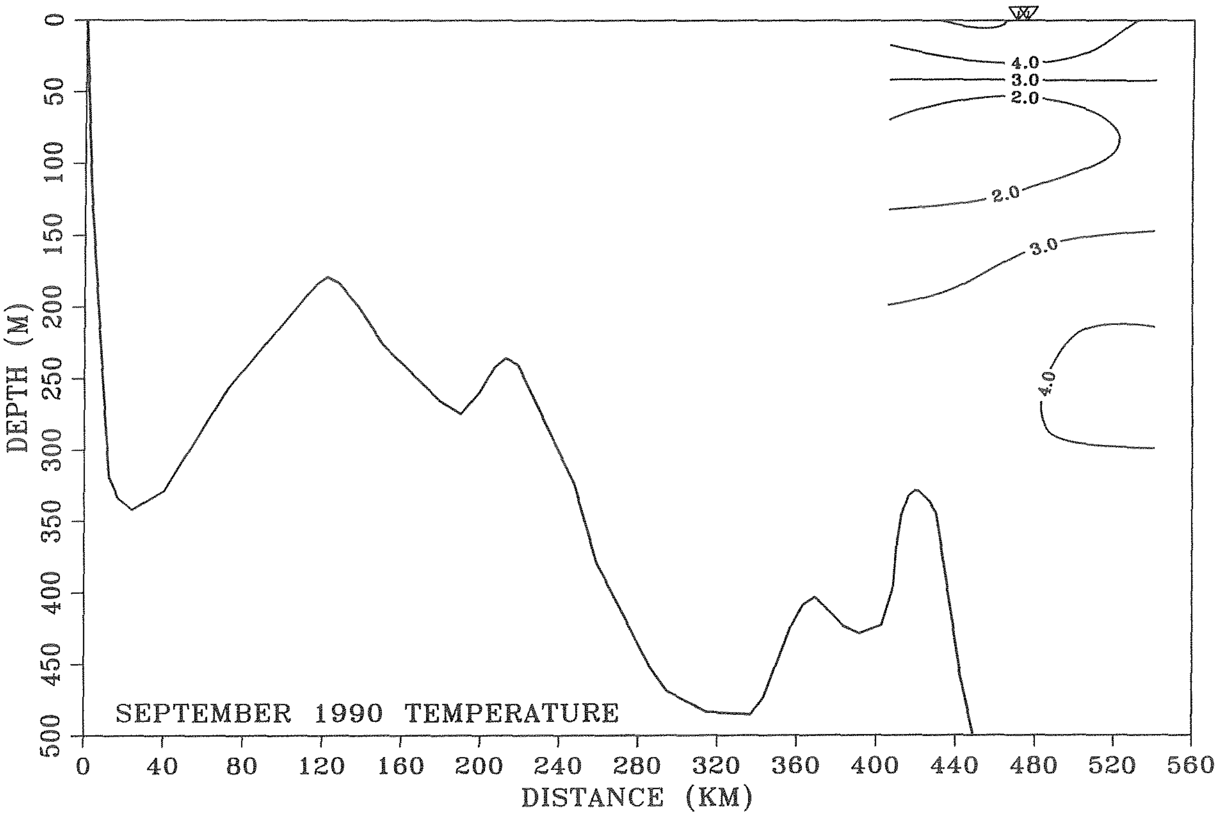
360
400
440
480
520
560
5.0
4.0
3.0
2.0
1.0
0.0


SEPTEMBER 1990 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
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100
150
200
250
300
350
400
450
500
0
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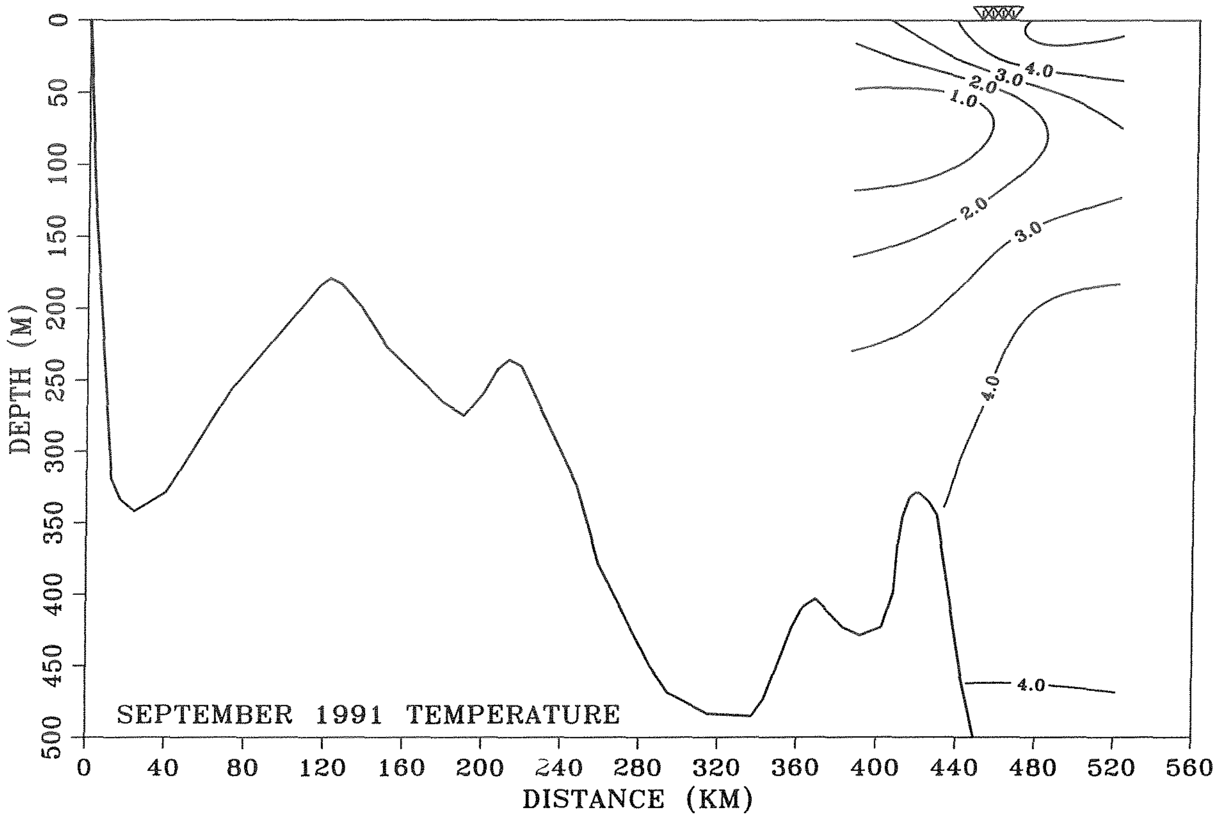
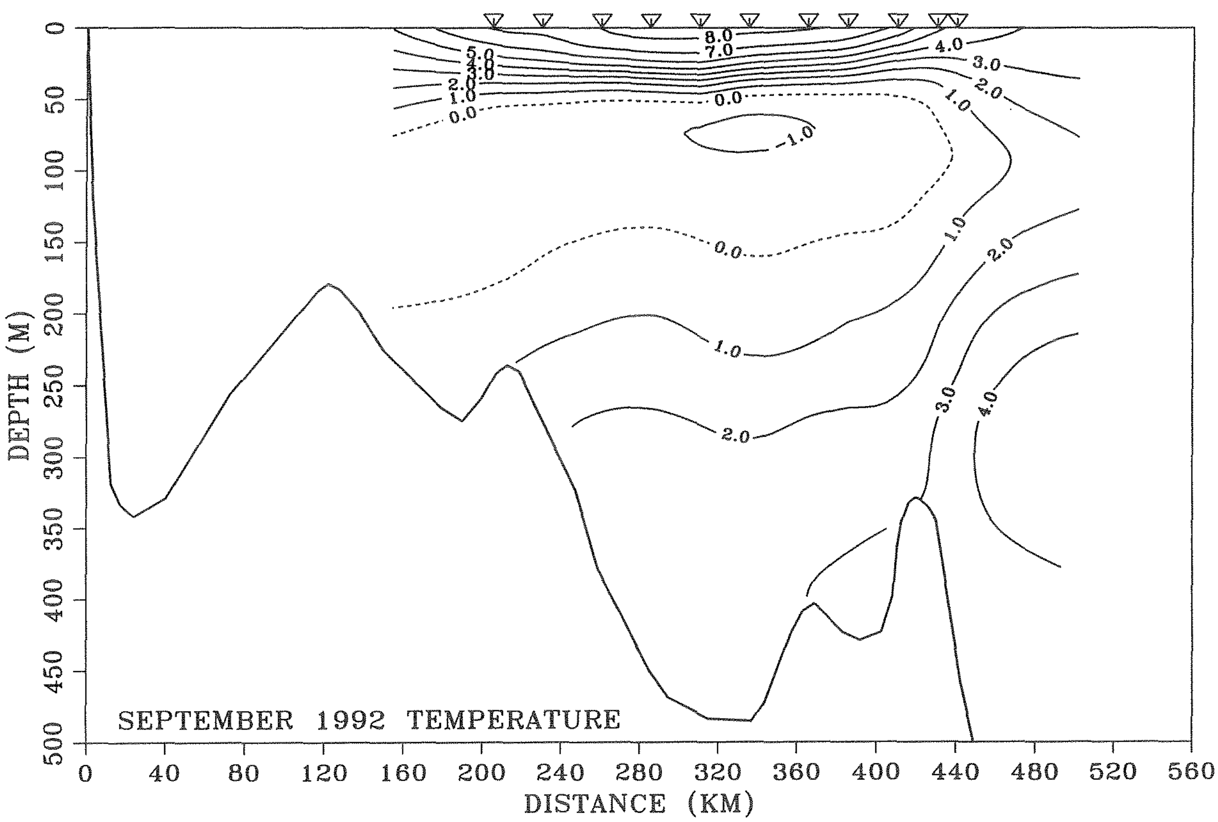
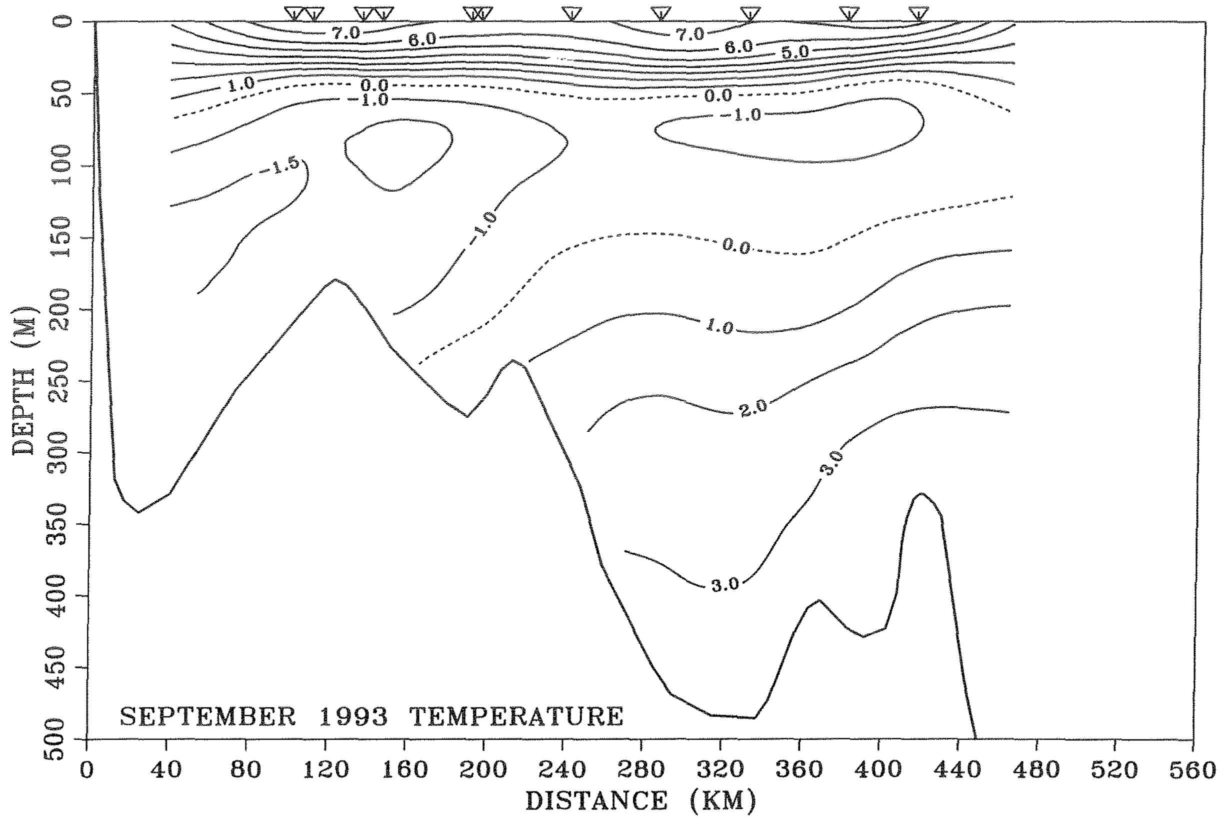
120
160
200
240
280
320
360
400
440
480
520
560
4.0
3.0
2.0



DEPTH (M)
DISTANCE (KM)
SEPTEMBER 1991 TEMPERATURE



DEPTH (M)
DISTANCE (KM)
SEPTEMBER 1992 TEMPERATURE


SEPTEMBER 1993 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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5.0
1.0
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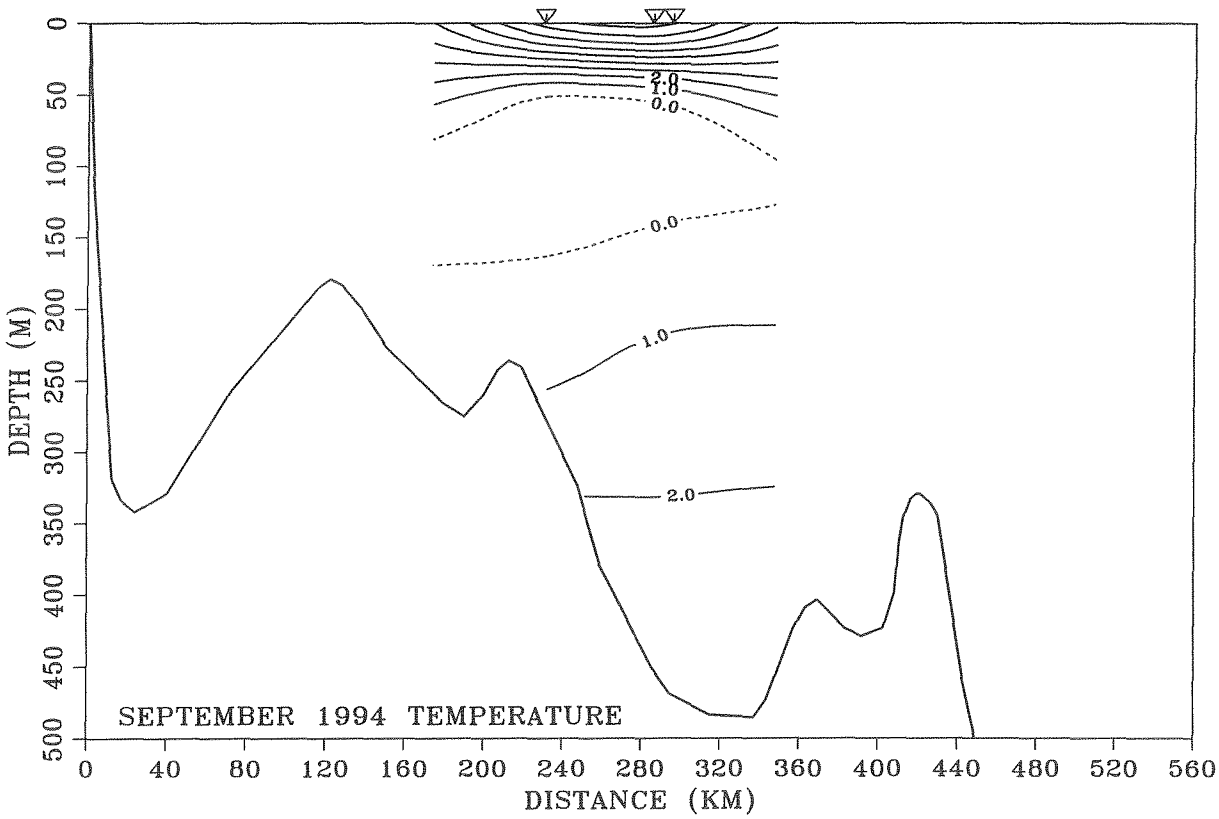
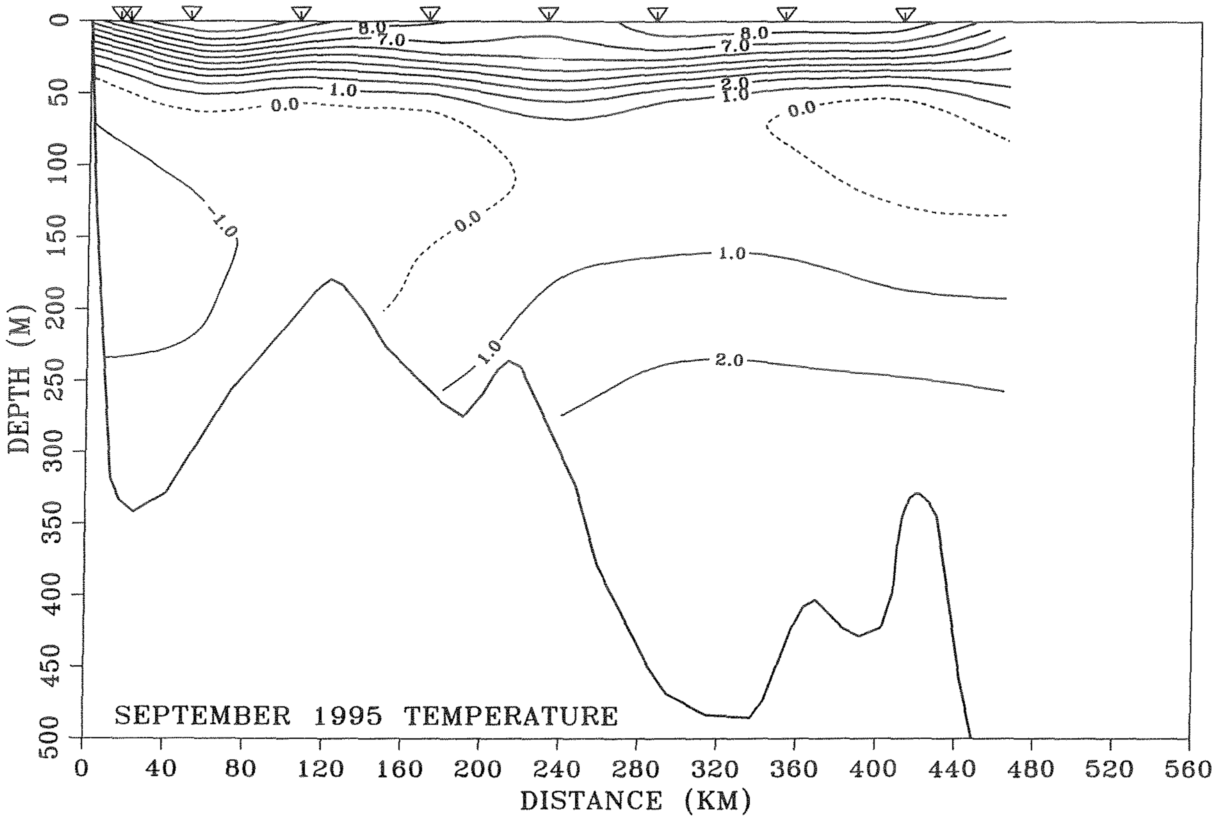
-1.0
-1.5
2.0
3.0


SEPTEMBER 1994 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
2.0
1.0
0.0



SEPTEMBER 1995 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
8.0
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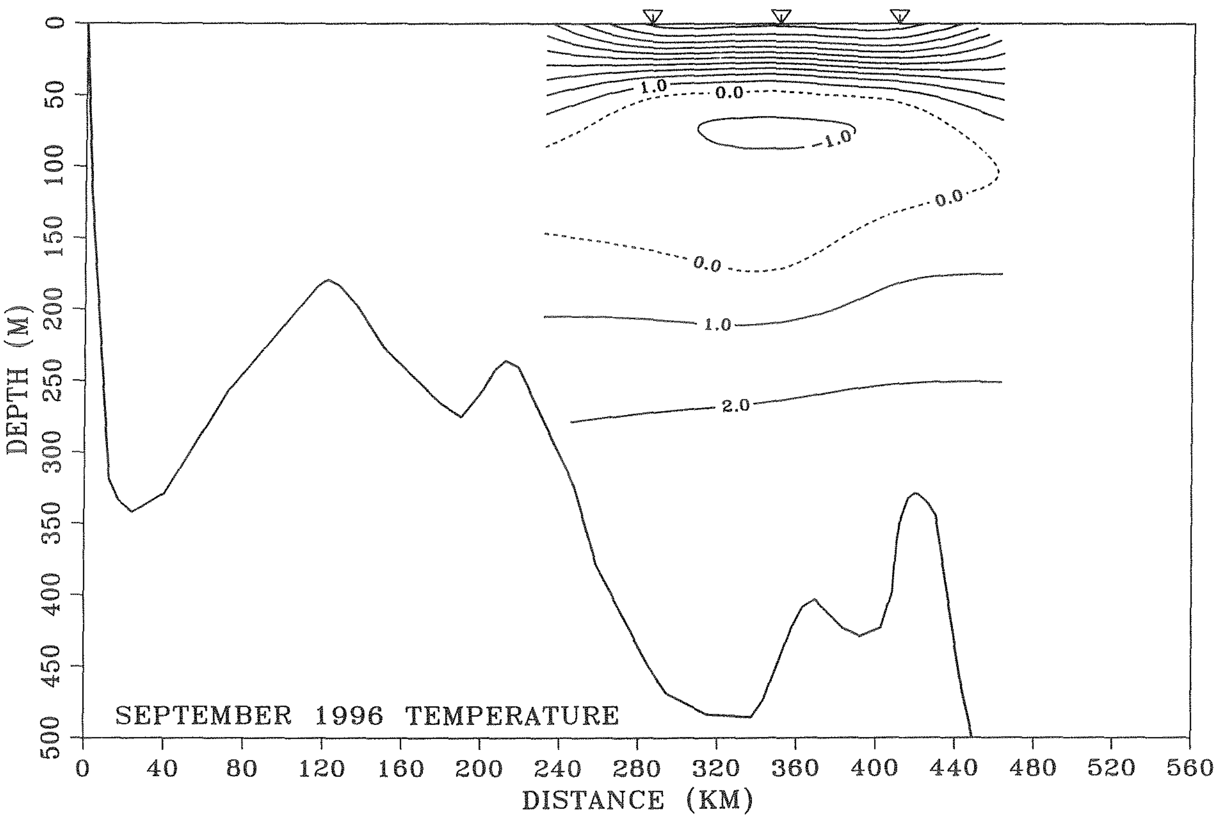
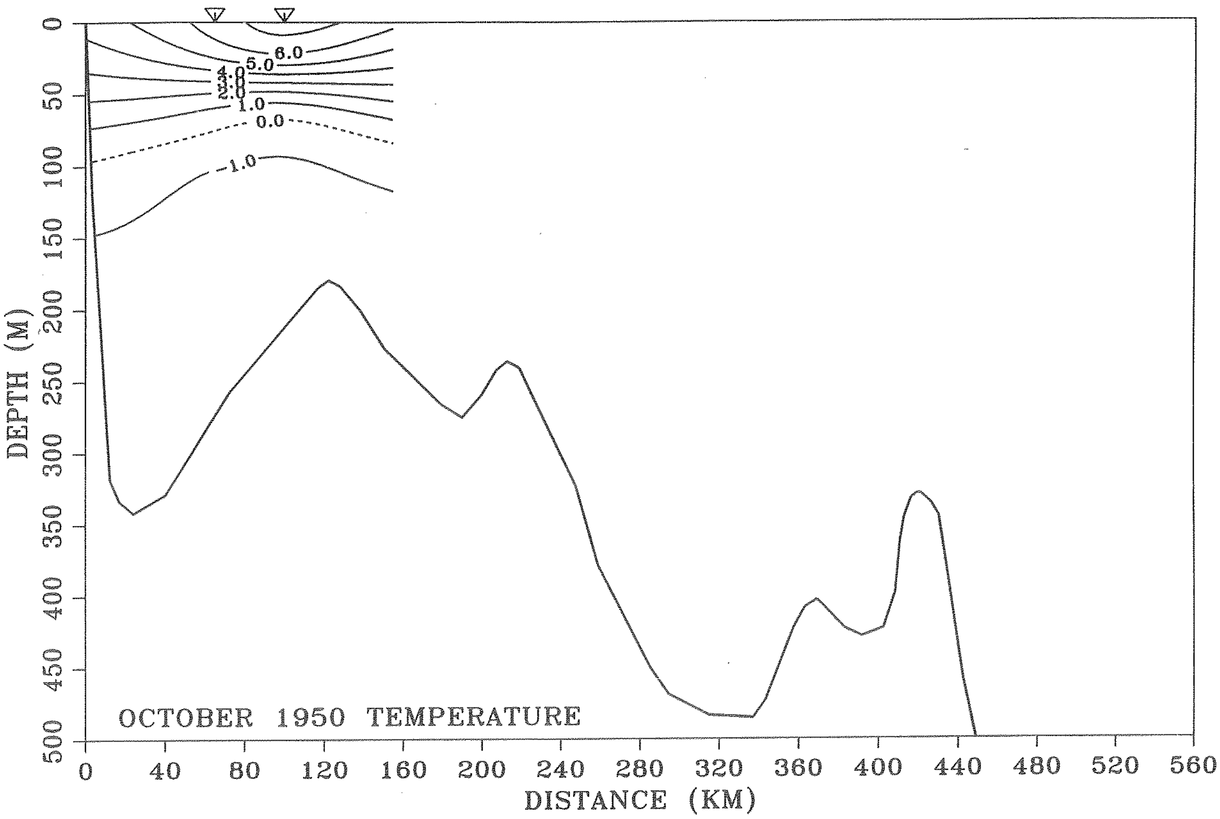
2.0
1.0
0.0
-1.0



SEPTEMBER 1996 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
1.0
0.0
-1.0
2.0



0
50
100
150
200
250
300
350
400
450
500
DEPTH (M)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
OCTOBER 1950 TEMPERATURE
0
40
80
120
160
200
240
280
320
360
400
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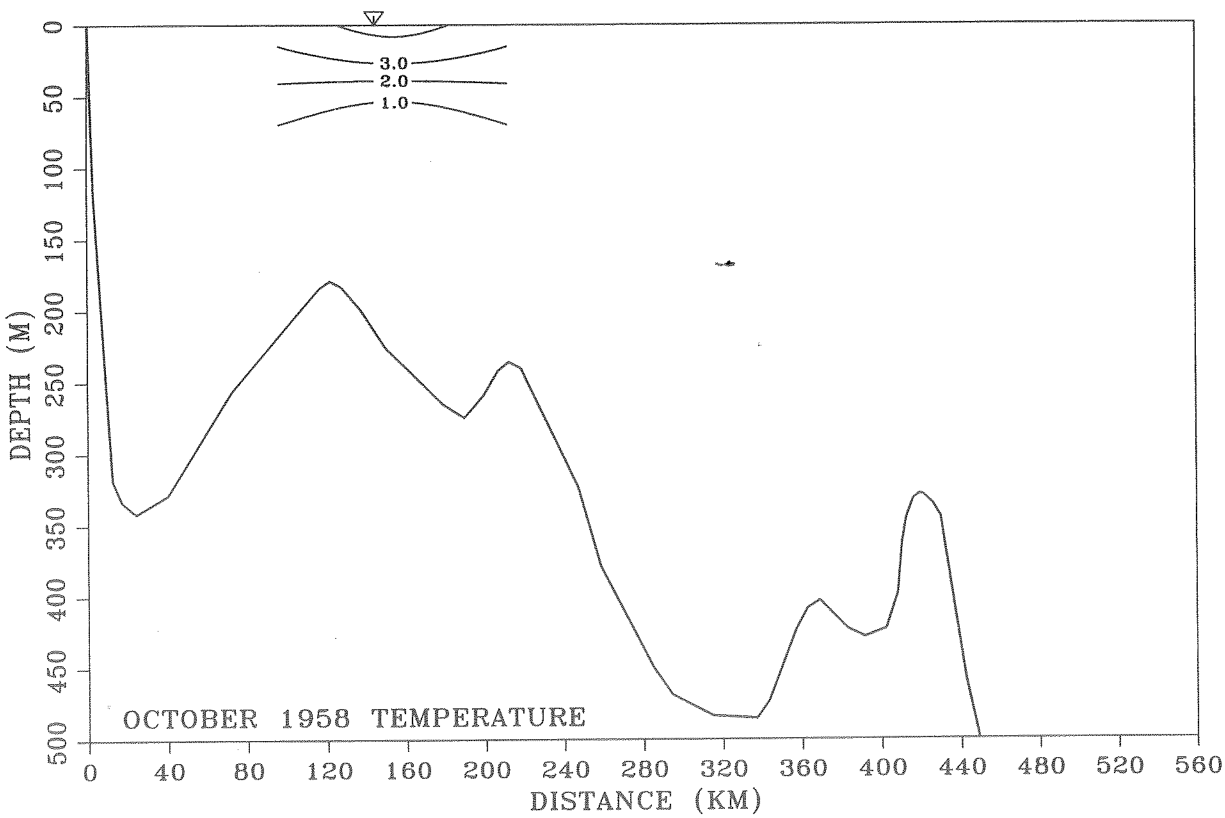
480
520
560
DISTANCE (KM)



0
50
100
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200
250
300
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400
450
500
DEPTH (M)
3.0
2.0
1.0
OCTOBER 1958 TEMPERATURE
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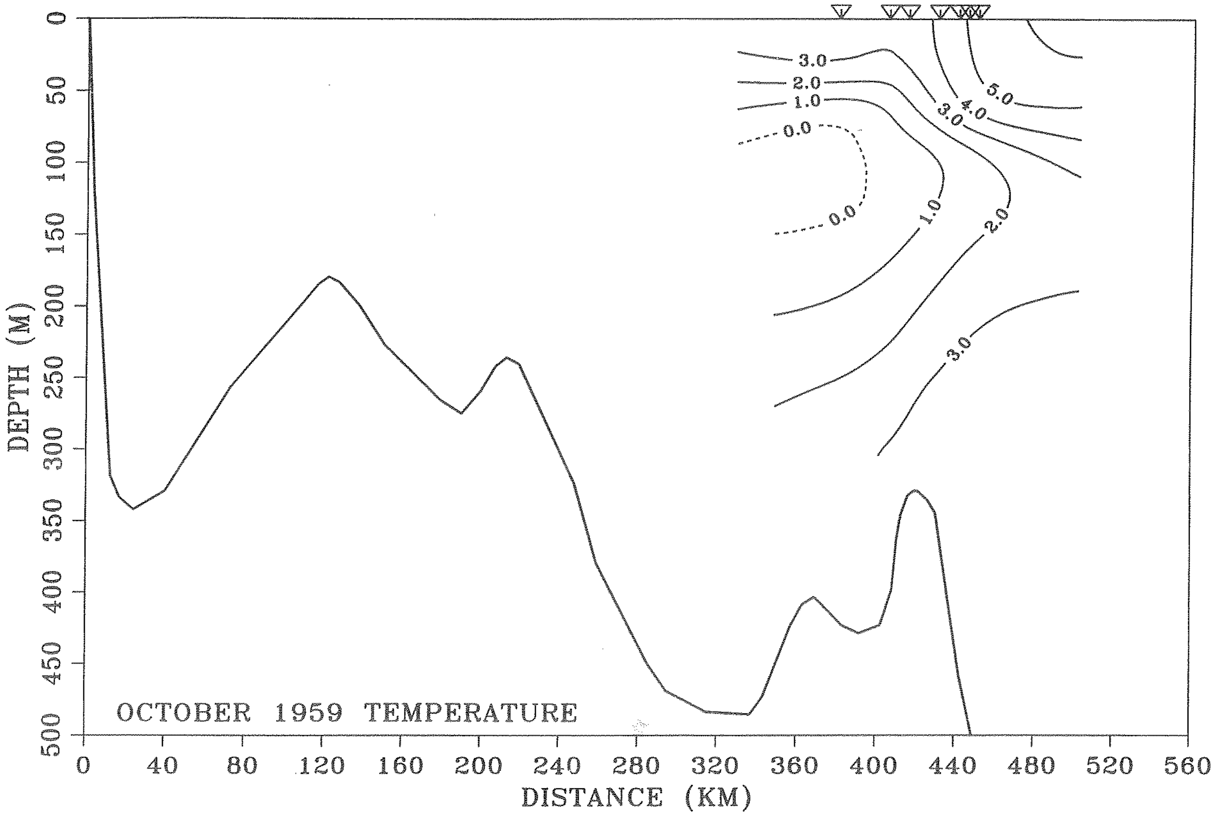
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)


OCTOBER 1959 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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100
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200
250
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350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
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1.0
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4.0
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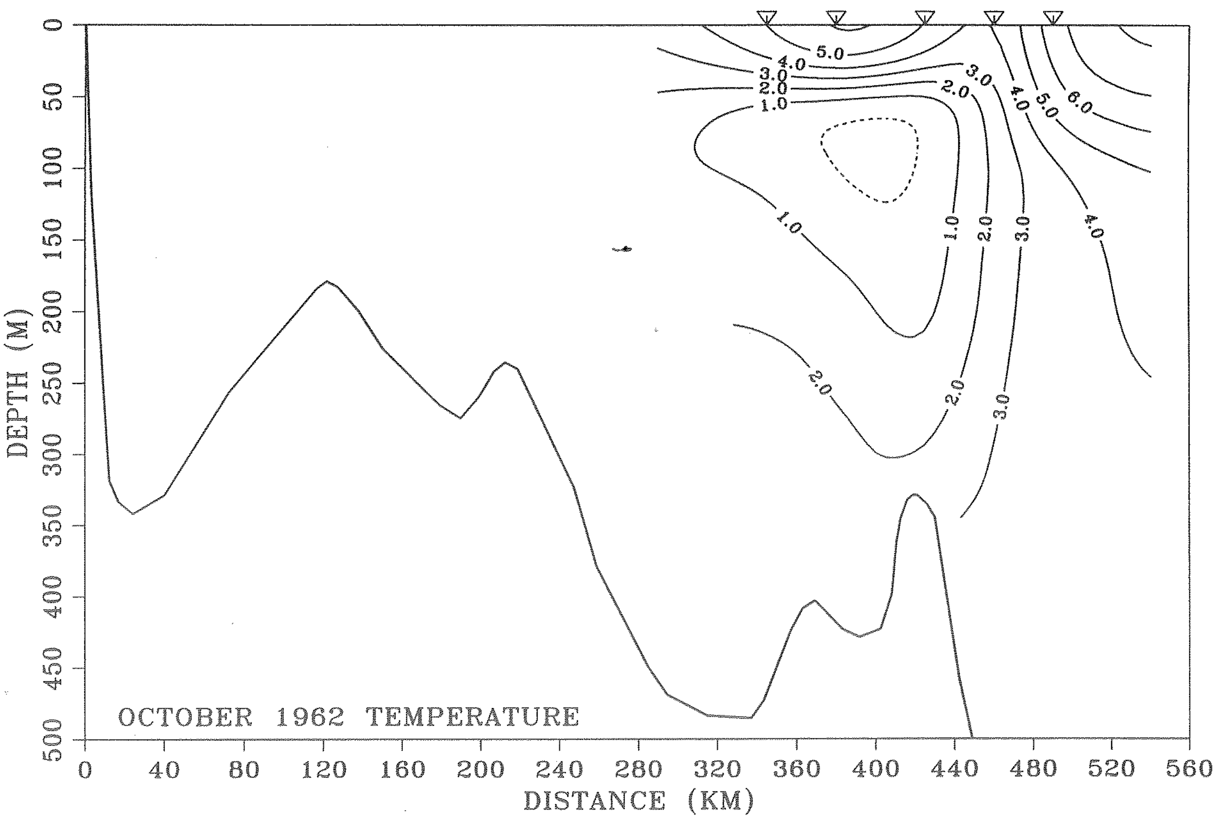
1.0
2.0
3.0


OCTOBER 1962 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
5.0
4.0
3.0
2.0
1.0
3.0
2.0
4.0
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6.0
1.0
1.0
2.0
3.0
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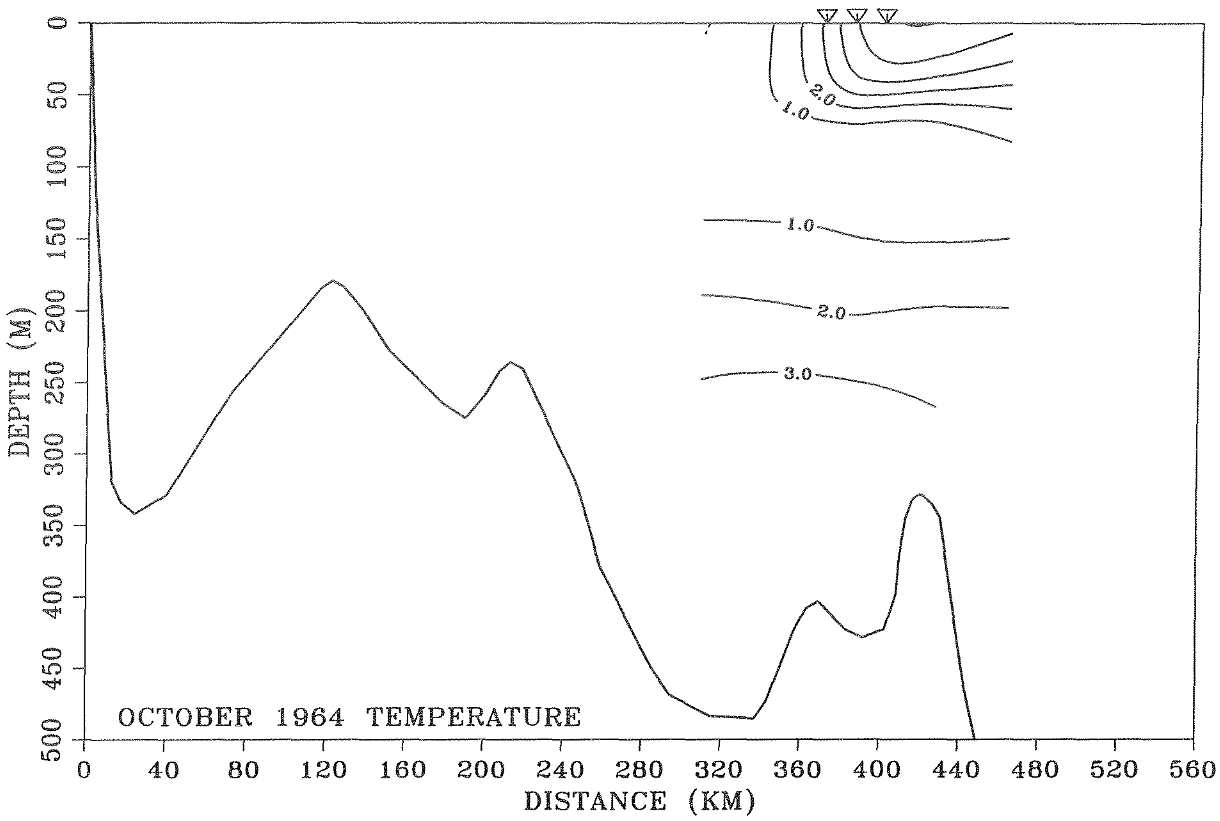
2.0
2.0
3.0



0
50
100
150
200
250
300
350
400
450
500
DEPTH (M)
2.0
1.0
1.0
2.0
3.0
OCTOBER 1964 TEMPERATURE
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80
120
160
200
240
280
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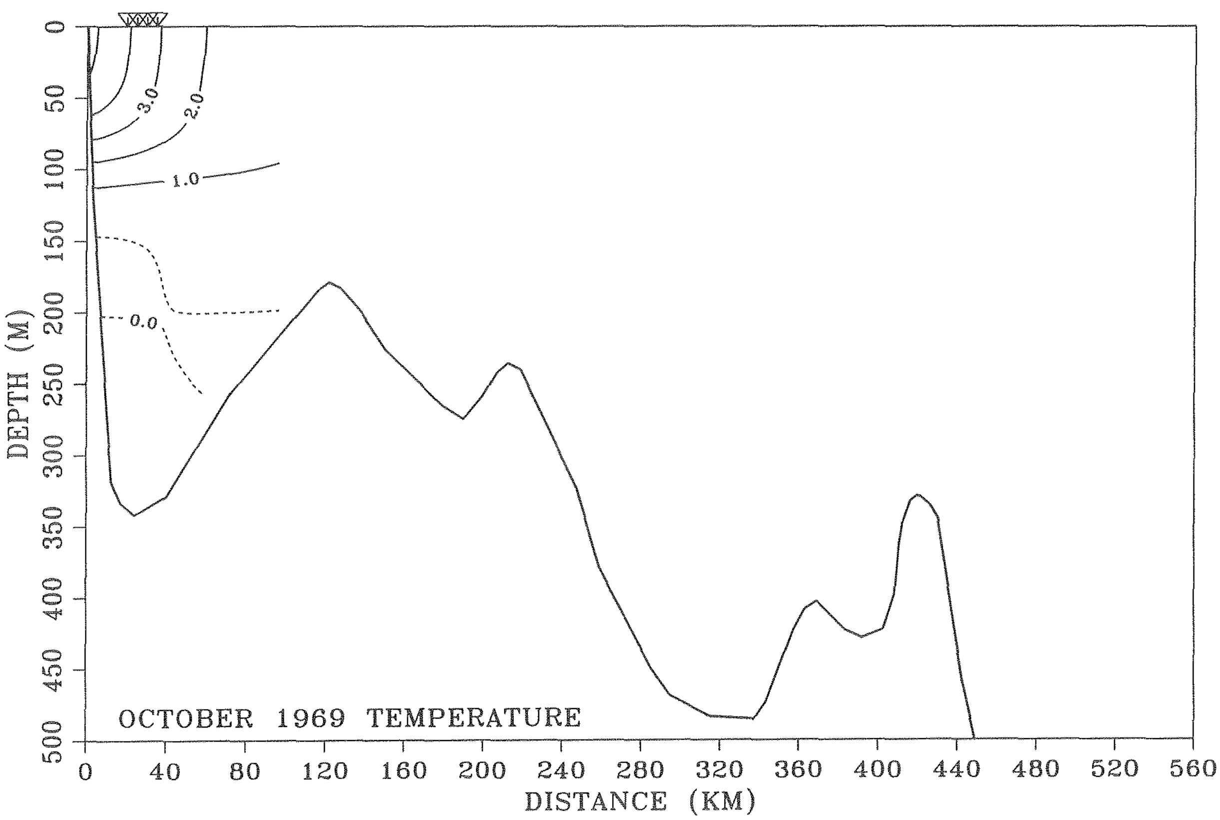
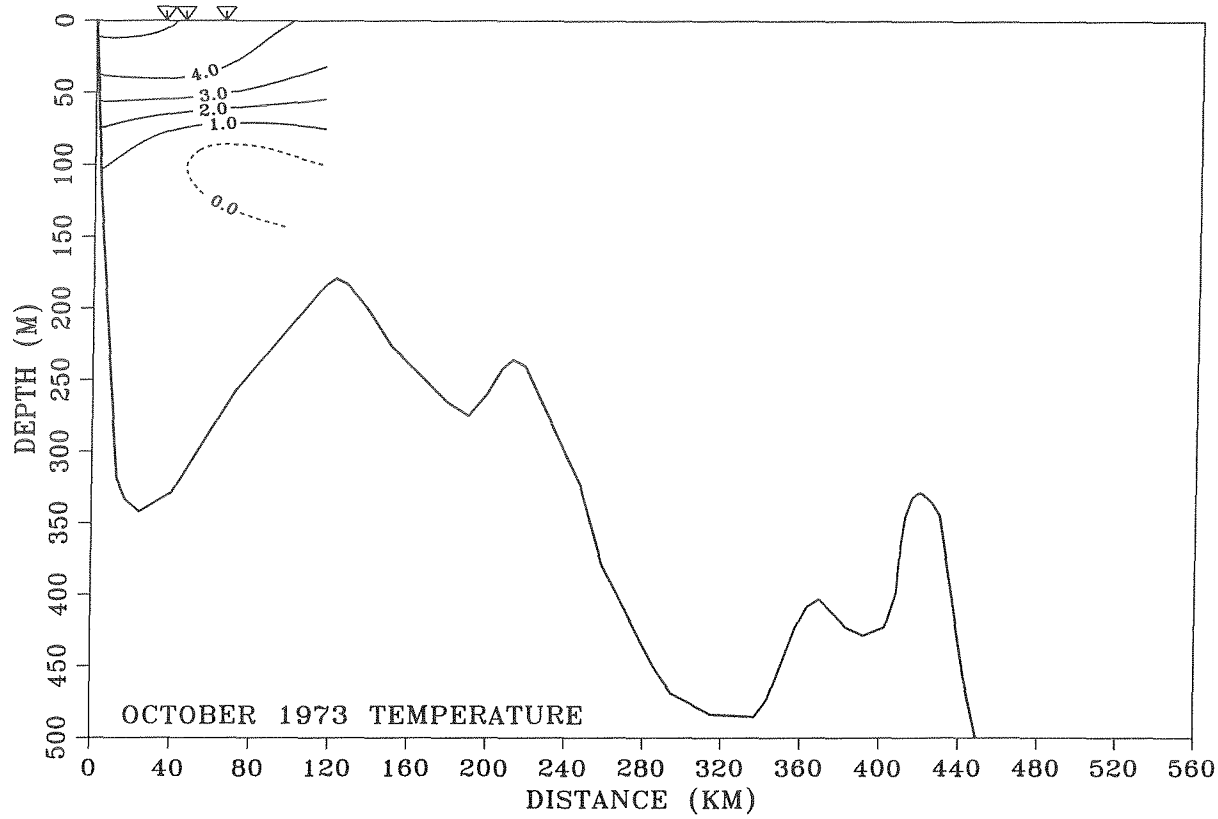
360
400
440
480
520
560
DISTANCE (KM)



0
50
100
150
200
250
300
350
400
450
500
DEPTH (M)
3.0
2.0
1.0
0.0
OCTOBER 1969 TEMPERATURE
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)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1.0
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DEPTH (M)
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300
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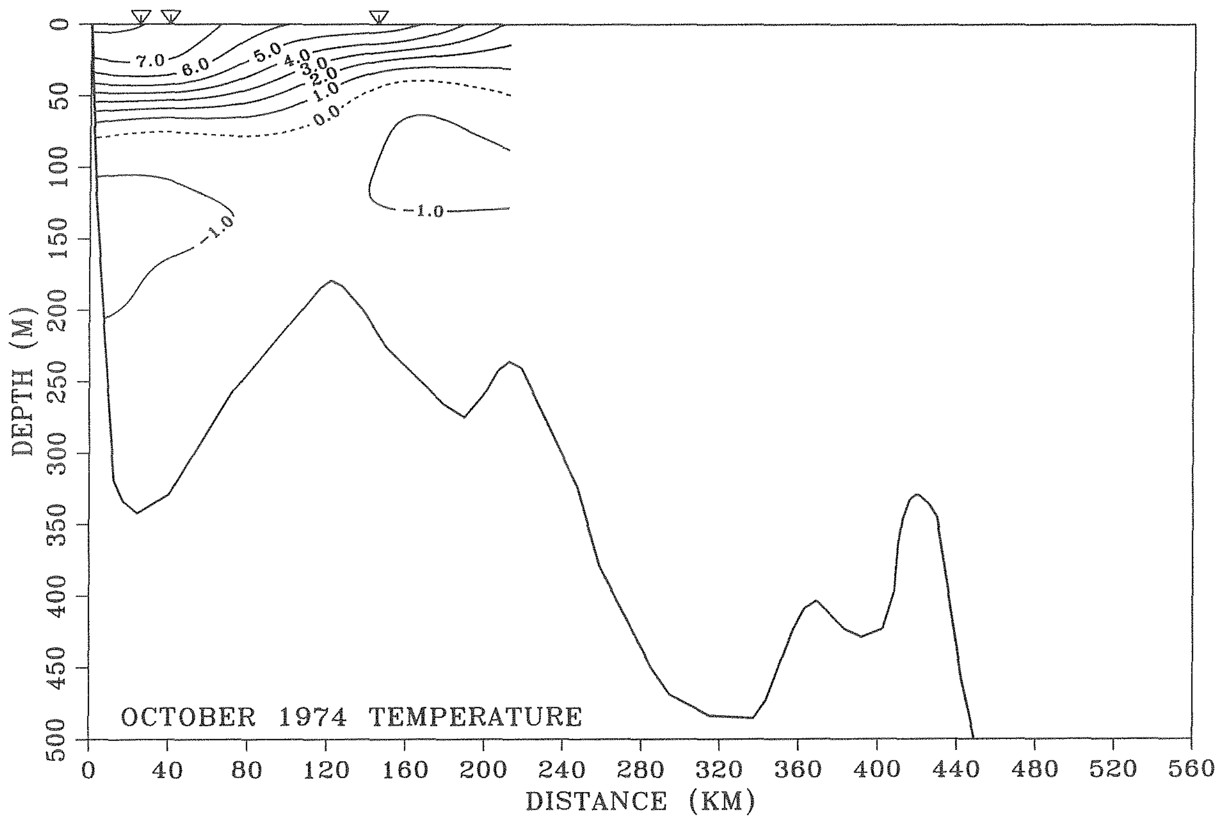
450
500
OCTOBER 1973 TEMPERATURE
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)


7.0
6.0
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4.0
3.0
2.0
1.0
0.0
-1.0
-1.0
DEPTH (M)
0
50
100
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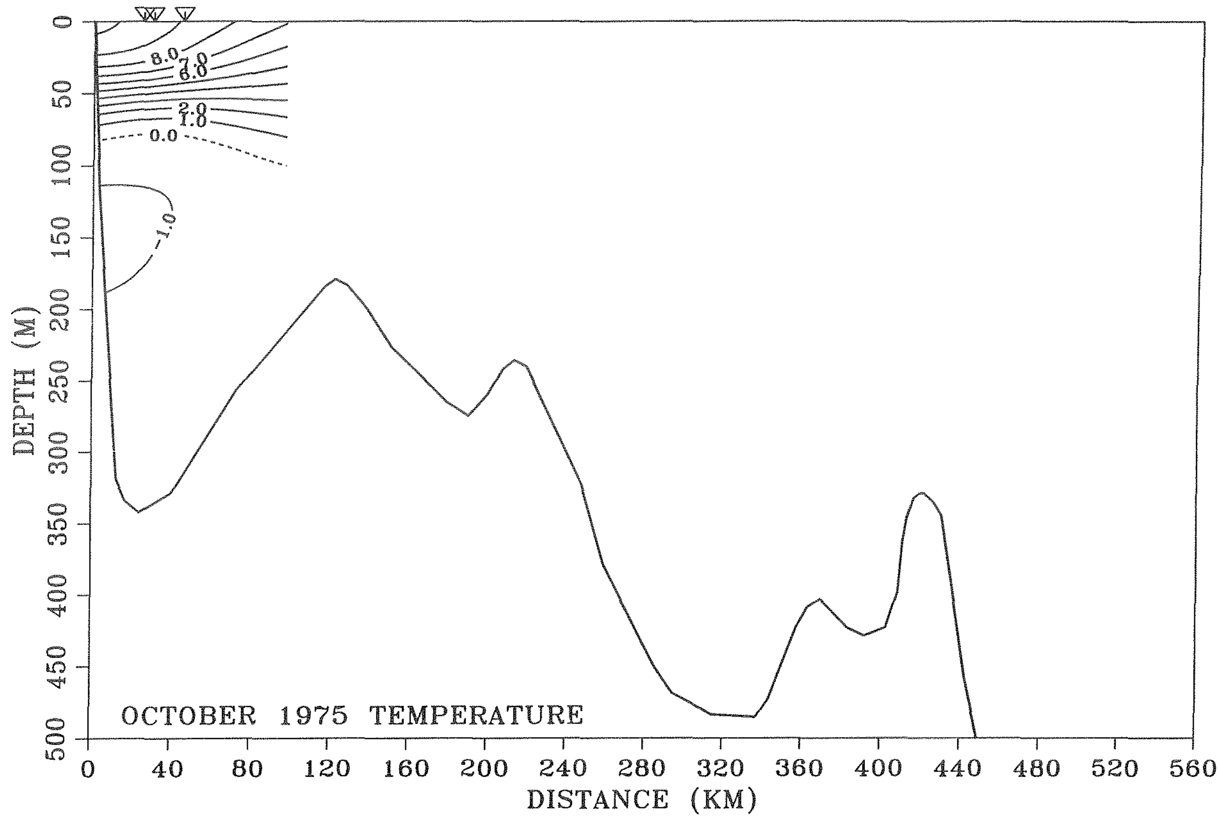
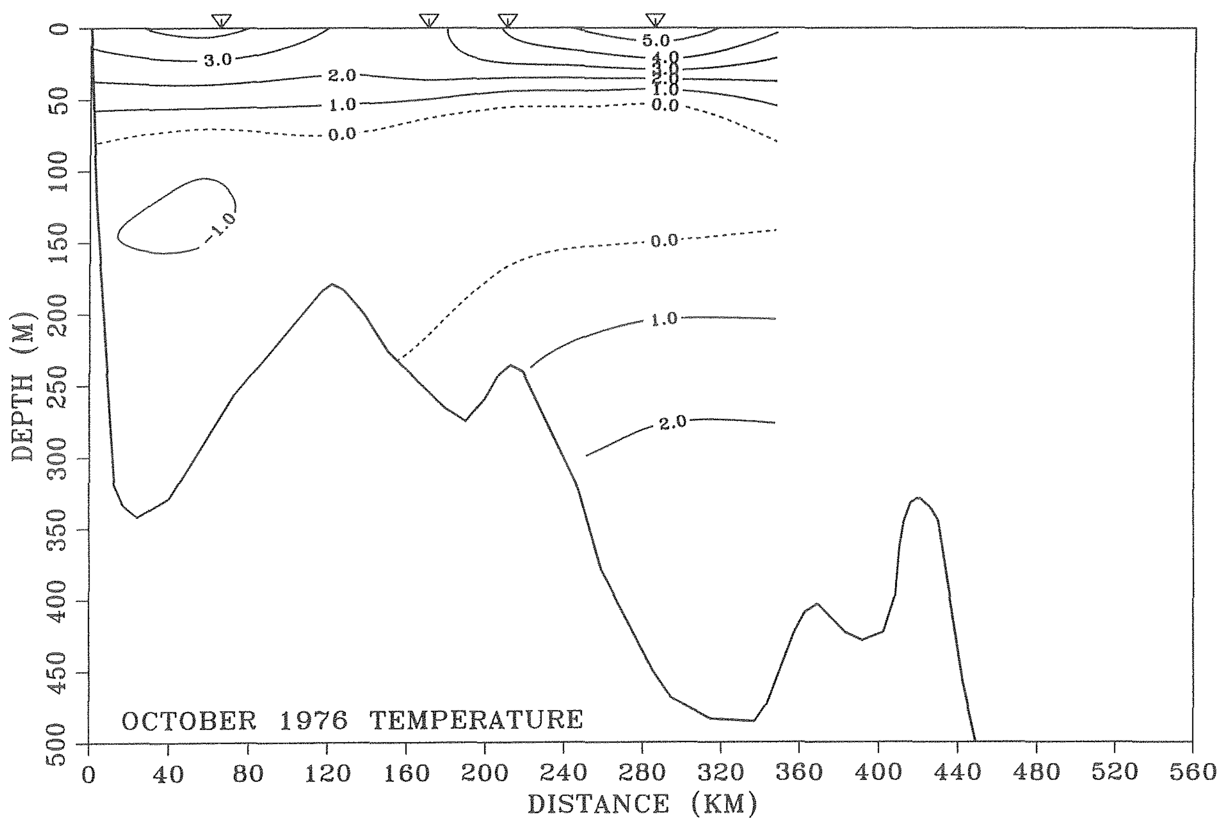
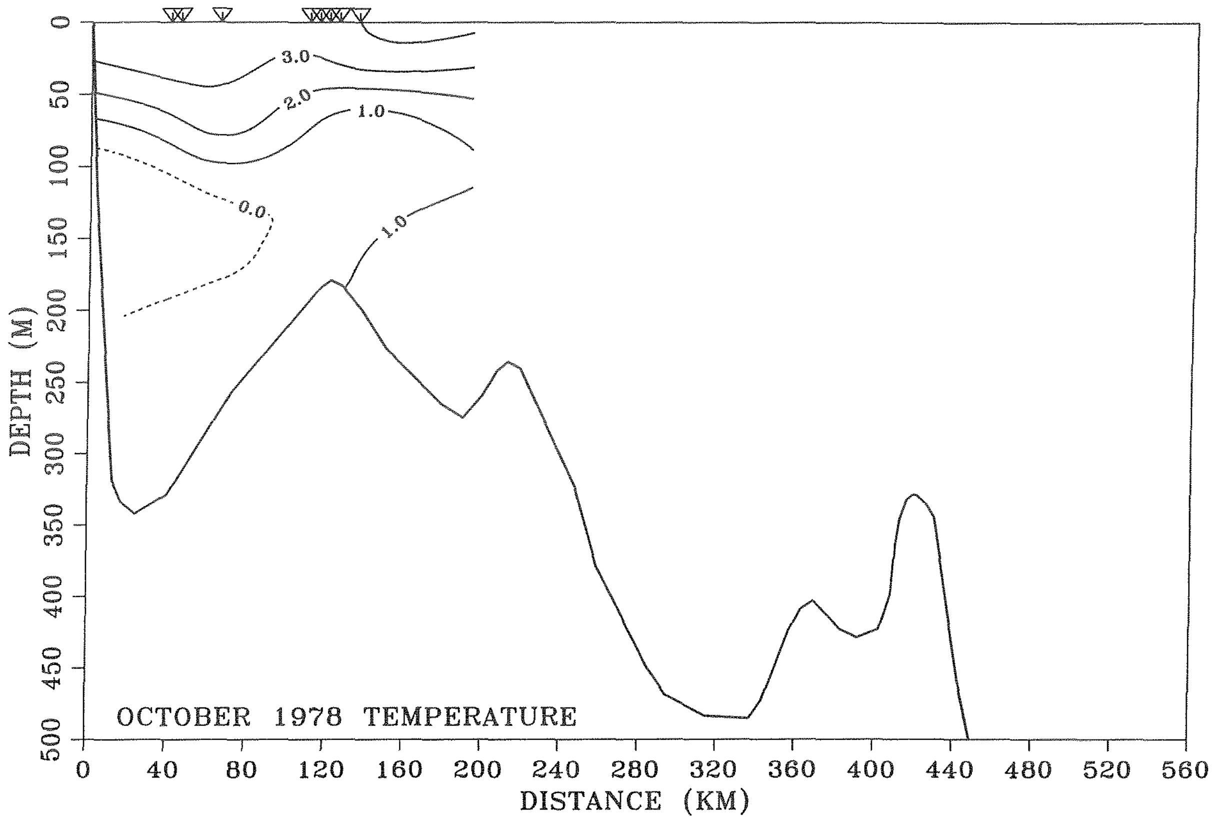
200
250
300
350
400
450
500
OCTOBER 1974 TEMPERATURE
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)



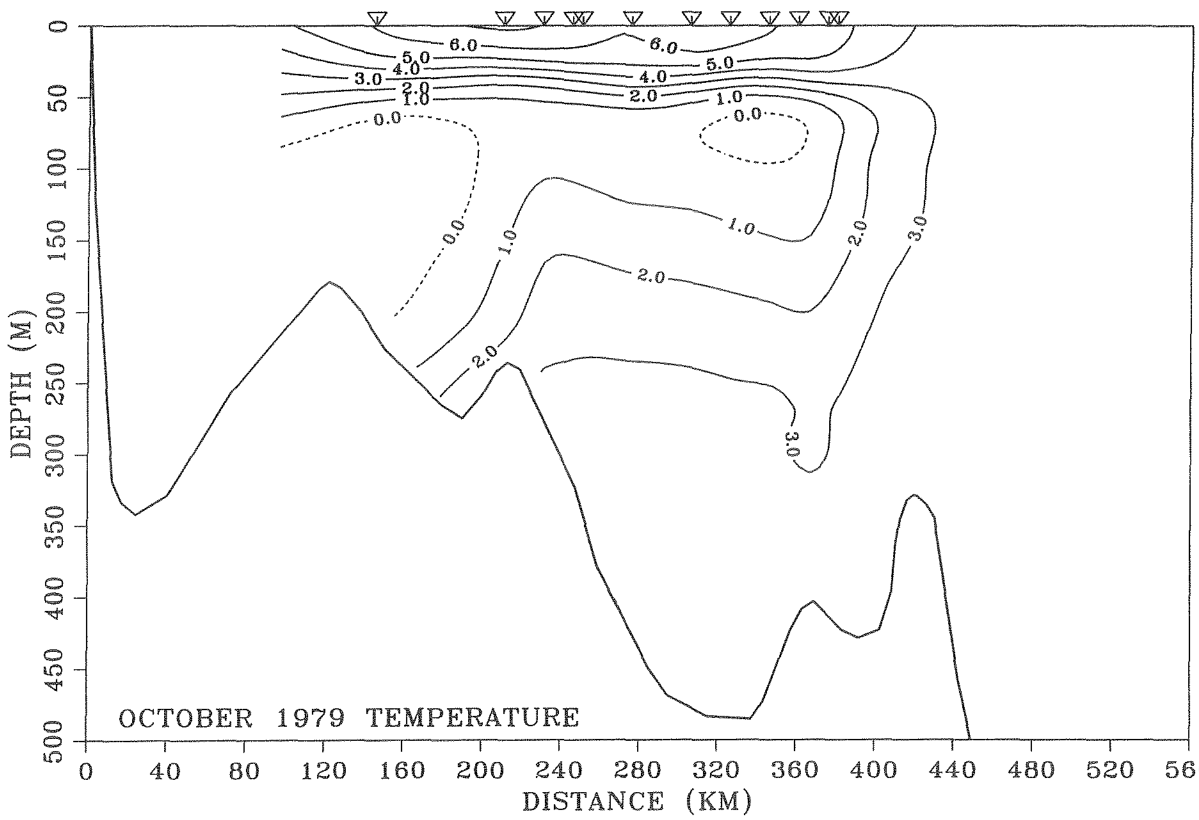
DEPTH (M)
DISTANCE (KM)
OCTOBER 1975 TEMPERATURE
8.0
7.0
6.0
2.0
1.0
0.0
-1.0



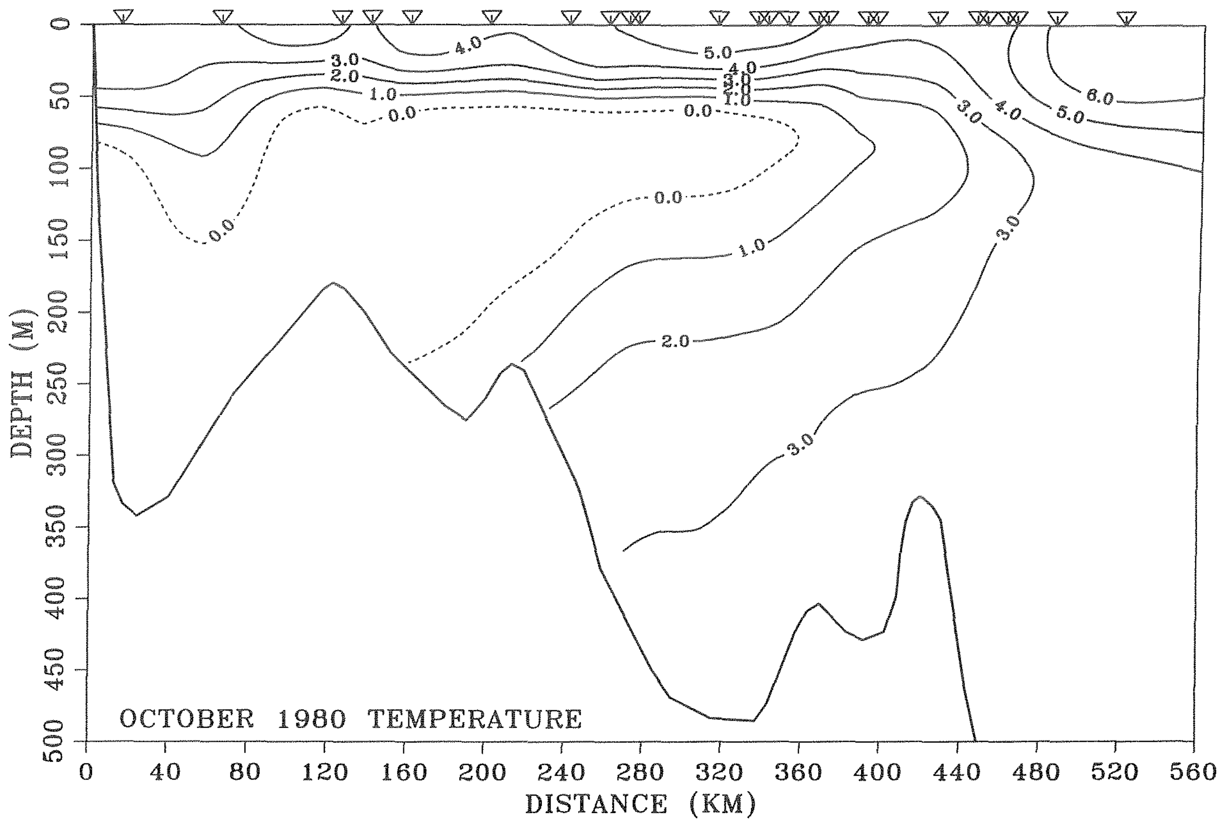
DEPTH (M)
DISTANCE (KM)
OCTOBER 1976 TEMPERATURE
5.0
4.0
3.0
2.0
1.0
0.0
-1.0



DEPTH (M)
DISTANCE (KM)
OCTOBER 1978 TEMPERATURE
3.0
2.0
1.0
0.0
1.0



DEPTH (M)
DISTANCE (KM)
OCTOBER 1979 TEMPERATURE
6.0
5.0
4.0
3.0
2.0
1.0
0.0


OCTOBER 1980 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
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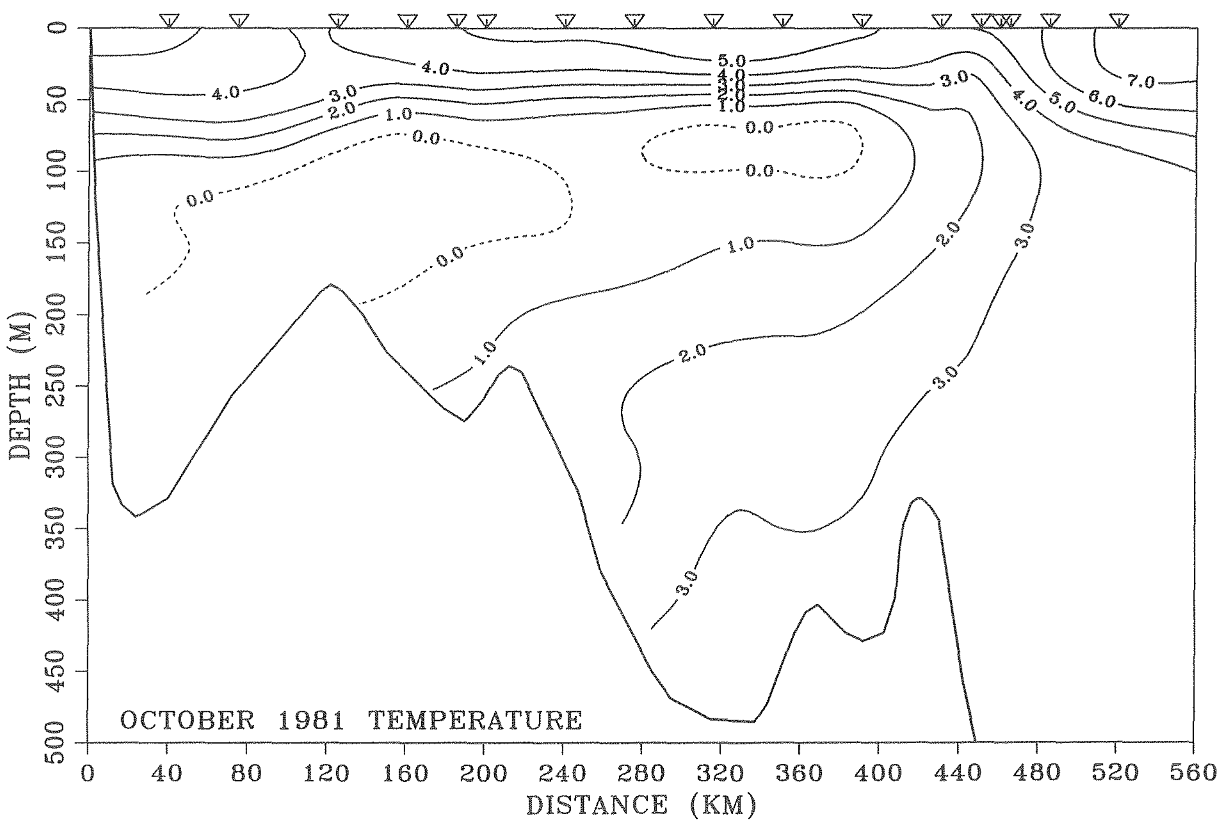
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
0.0
1.0
2.0
3.0
4.0
5.0
6.0


OCTOBER 1981 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
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100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
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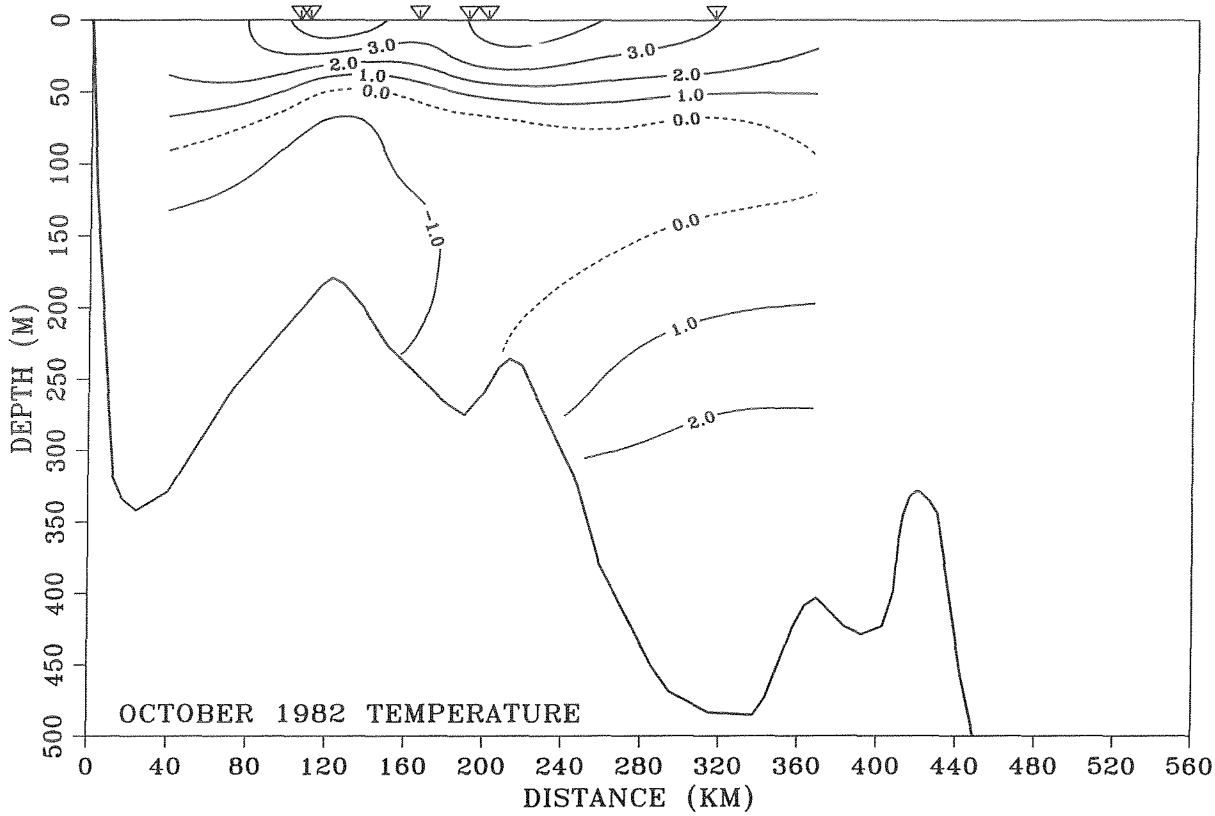
480
520
560
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0


OCTOBER 1982 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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100
150
200
250
300
350
400
450
500
0
40
80
120
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200
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320
360
400
440
480
520
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3.0
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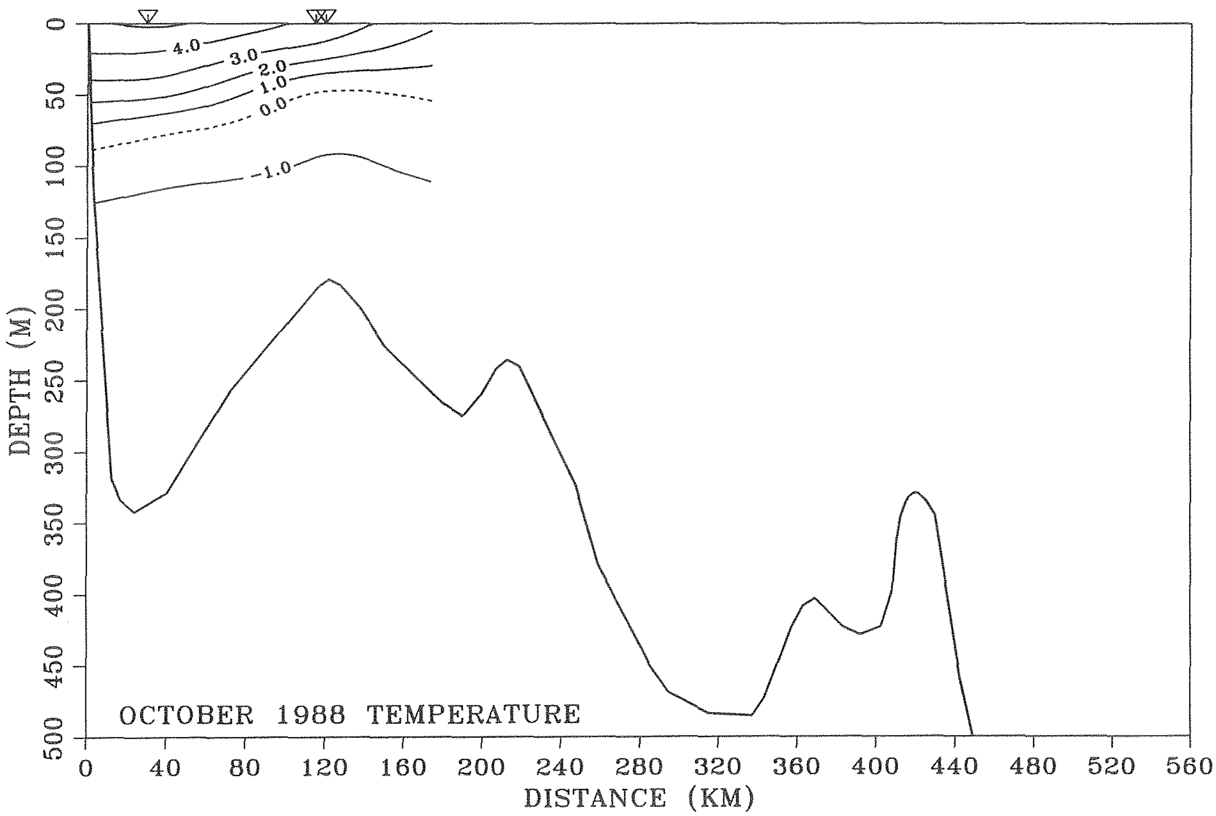
1.0
0.0
-1.0


OCTOBER 1988 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
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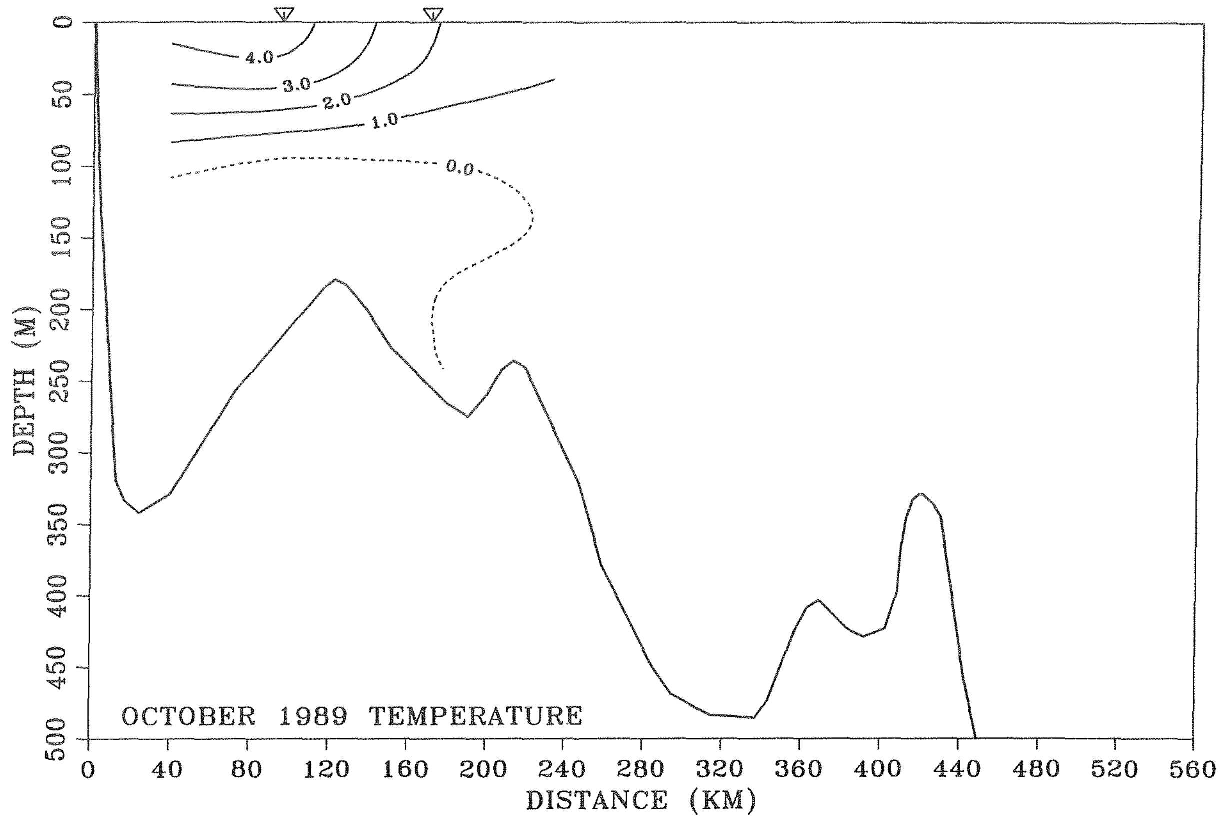
320
360
400
440
480
520
560
4.0
3.0
2.0
1.0
0.0
-1.0


4.0
3.0
2.0
1.0
0.0
DEPTH (M)
DISTANCE (KM)
OCTOBER 1989 TEMPERATURE
0
50
100
150
200
250
300
350
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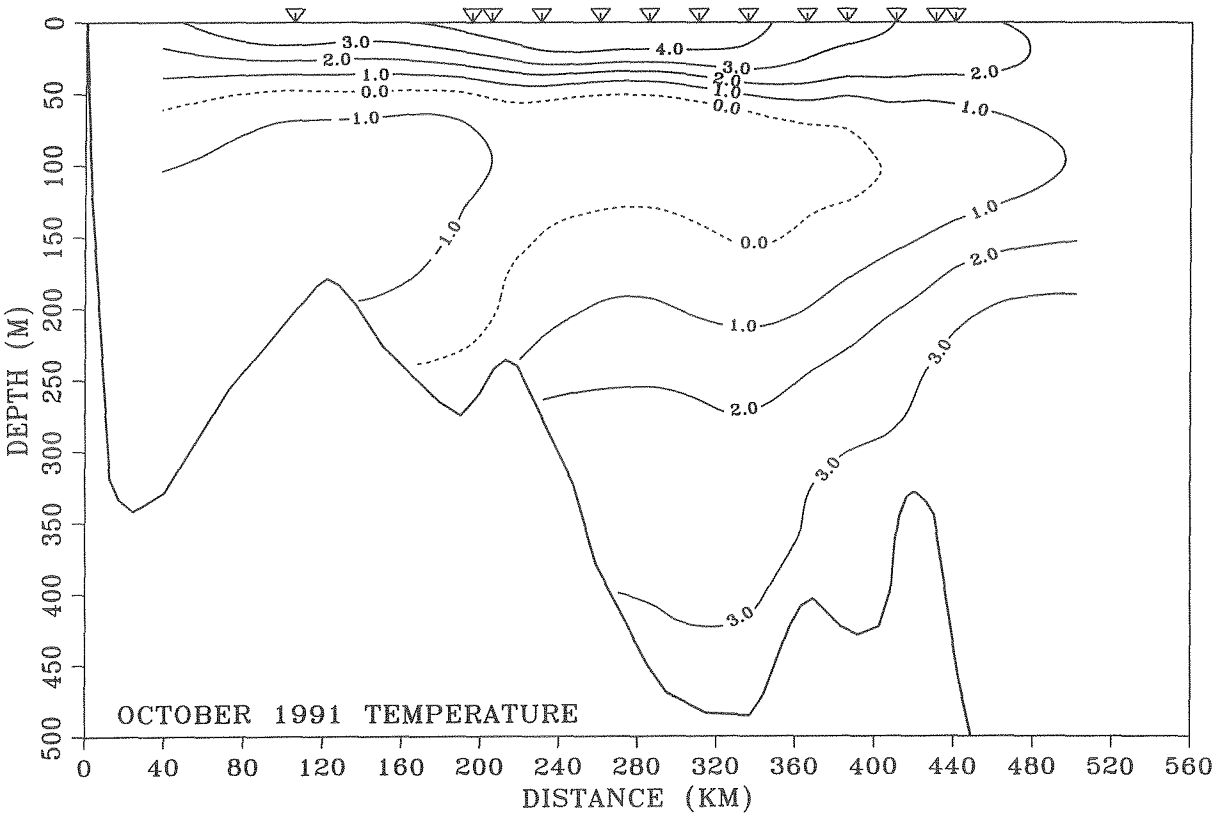
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560


4.0
3.0
2.0
1.0
0.0
-1.0
DEPTH (M)
DISTANCE (KM)
OCTOBER 1991 TEMPERATURE
0
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100
150
200
250
300
350
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450
500
0
40
80
120
160
200
240
280
320
360
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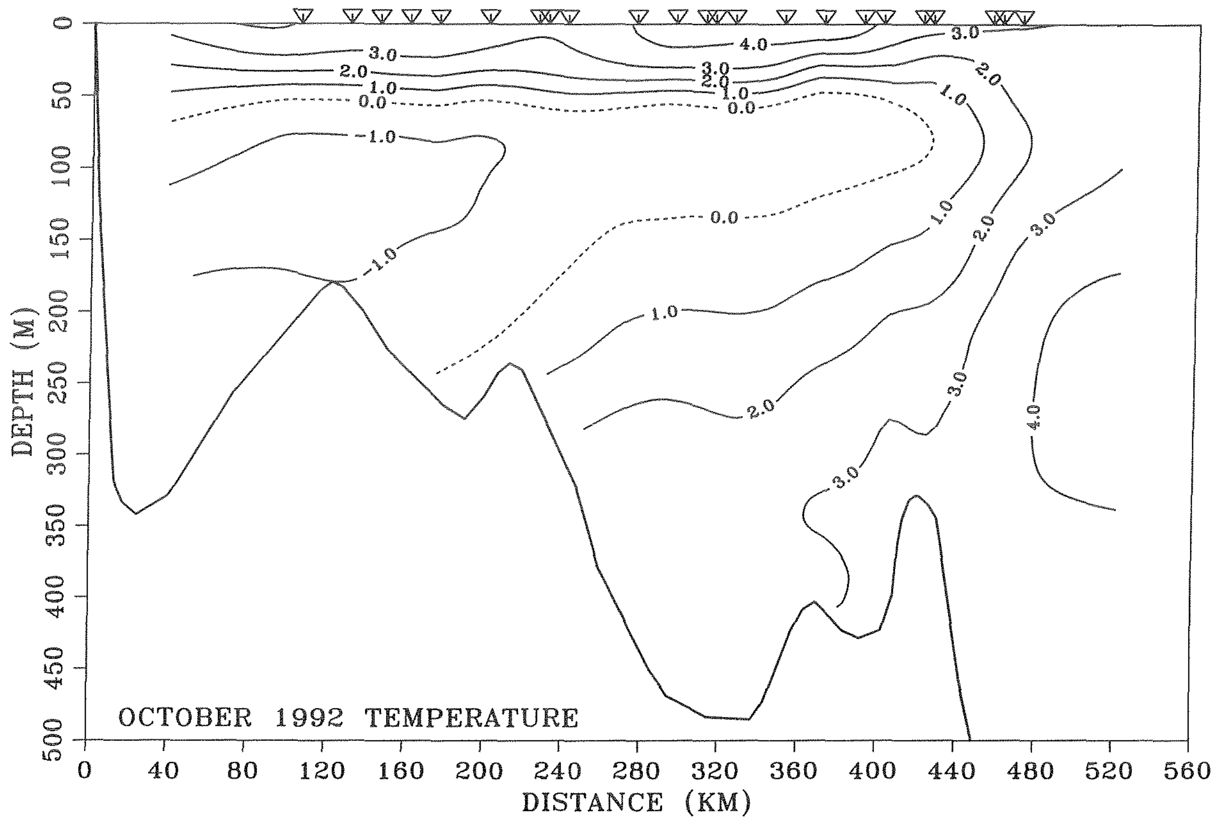
440
480
520
560


OCTOBER 1992 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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100
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200
250
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350
400
450
500
0
40
80
120
160
200
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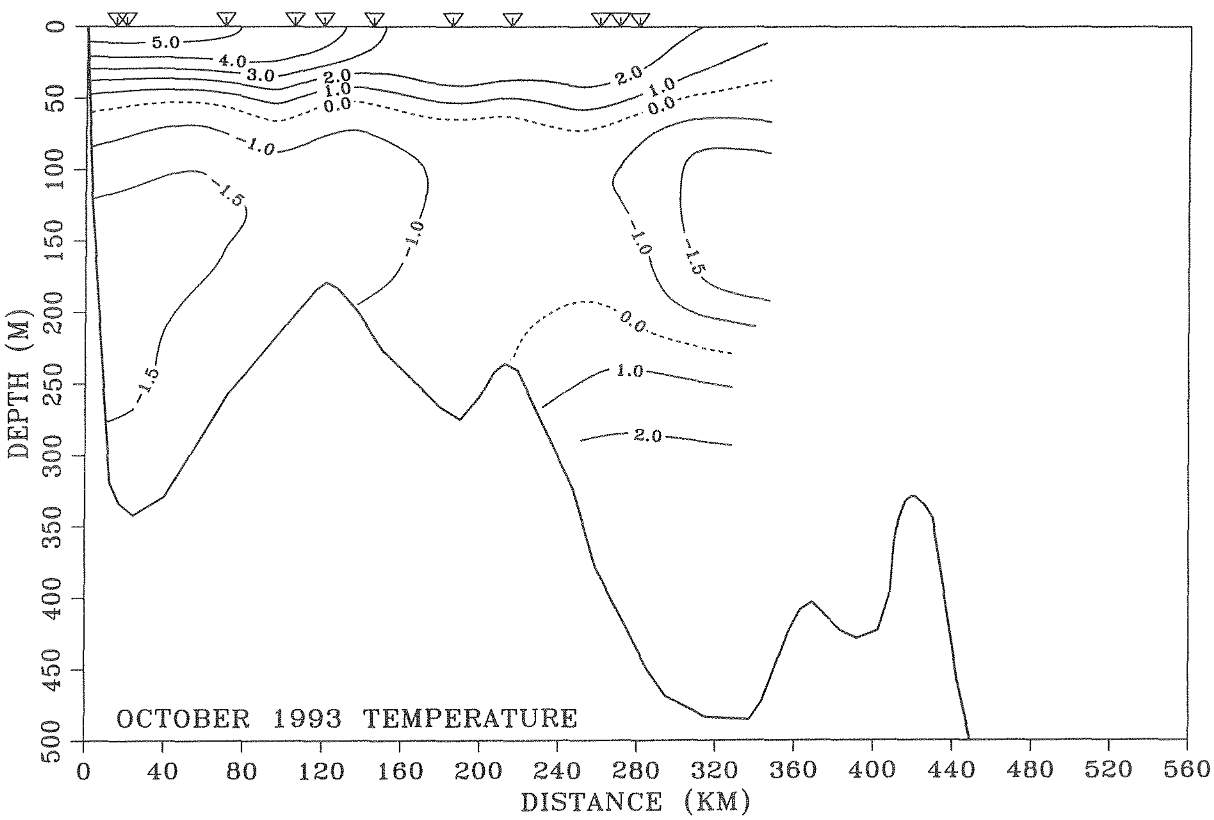
360
400
440
480
520
560
4.0
3.0
2.0
1.0
0.0
-1.0


OCTOBER 1993 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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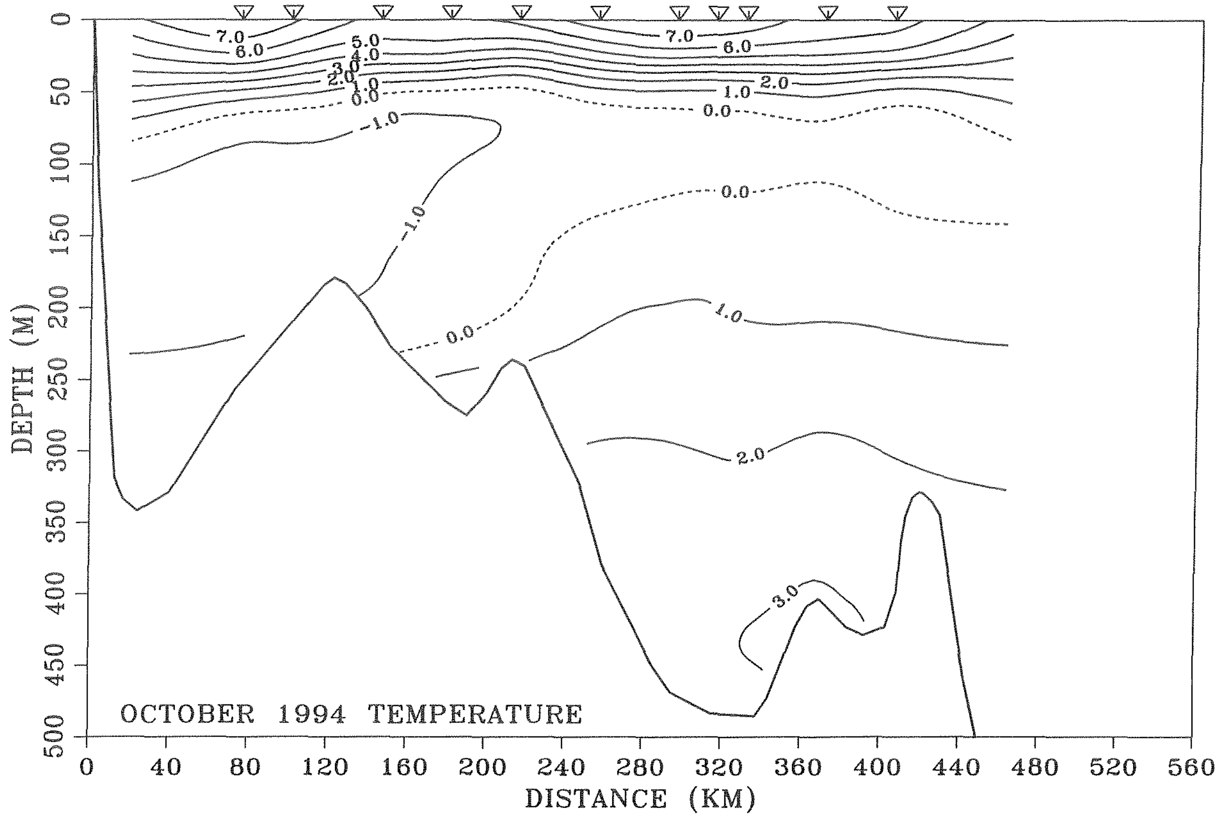
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-1.5


OCTOBER 1994 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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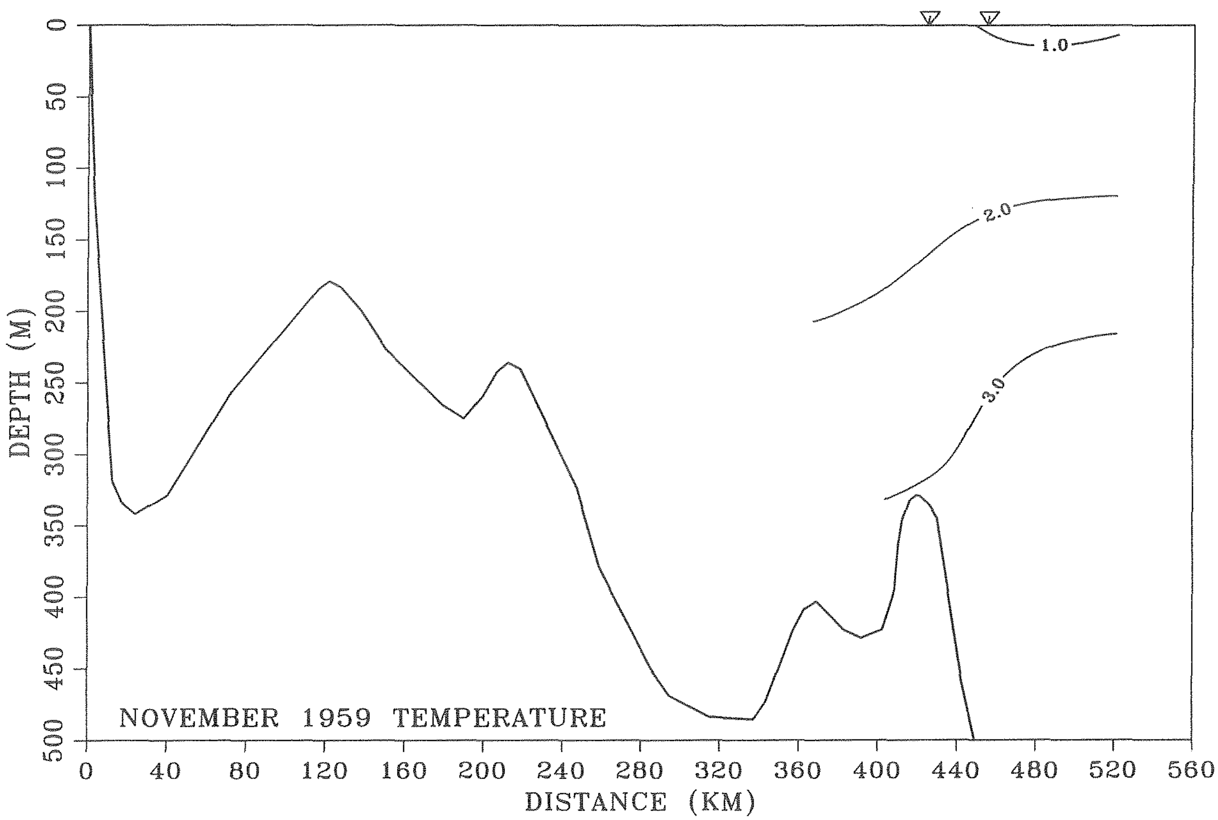
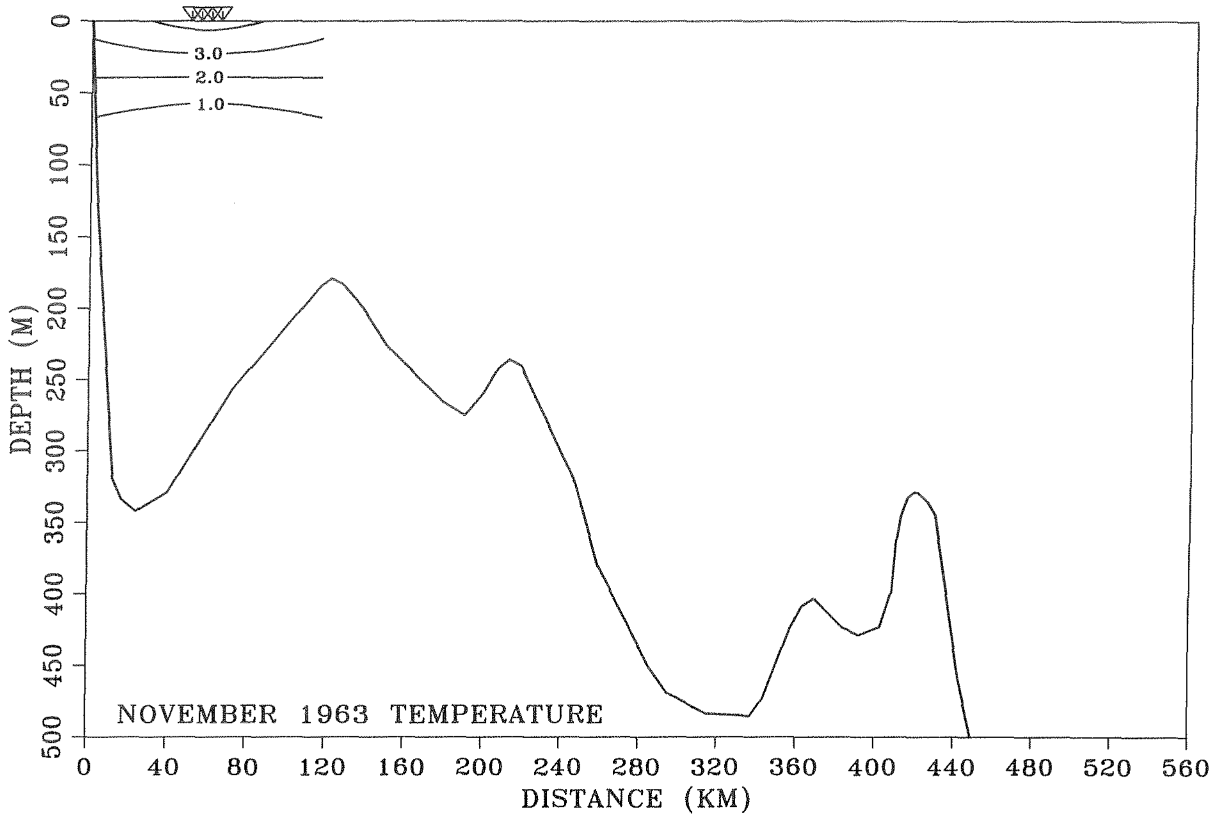
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
3.0


NOVEMBER 1959 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
1.0
2.0
3.0


NOVEMBER 1963 TEMPERATURE
3.0
2.0
1.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
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500
DISTANCE (KM)
0
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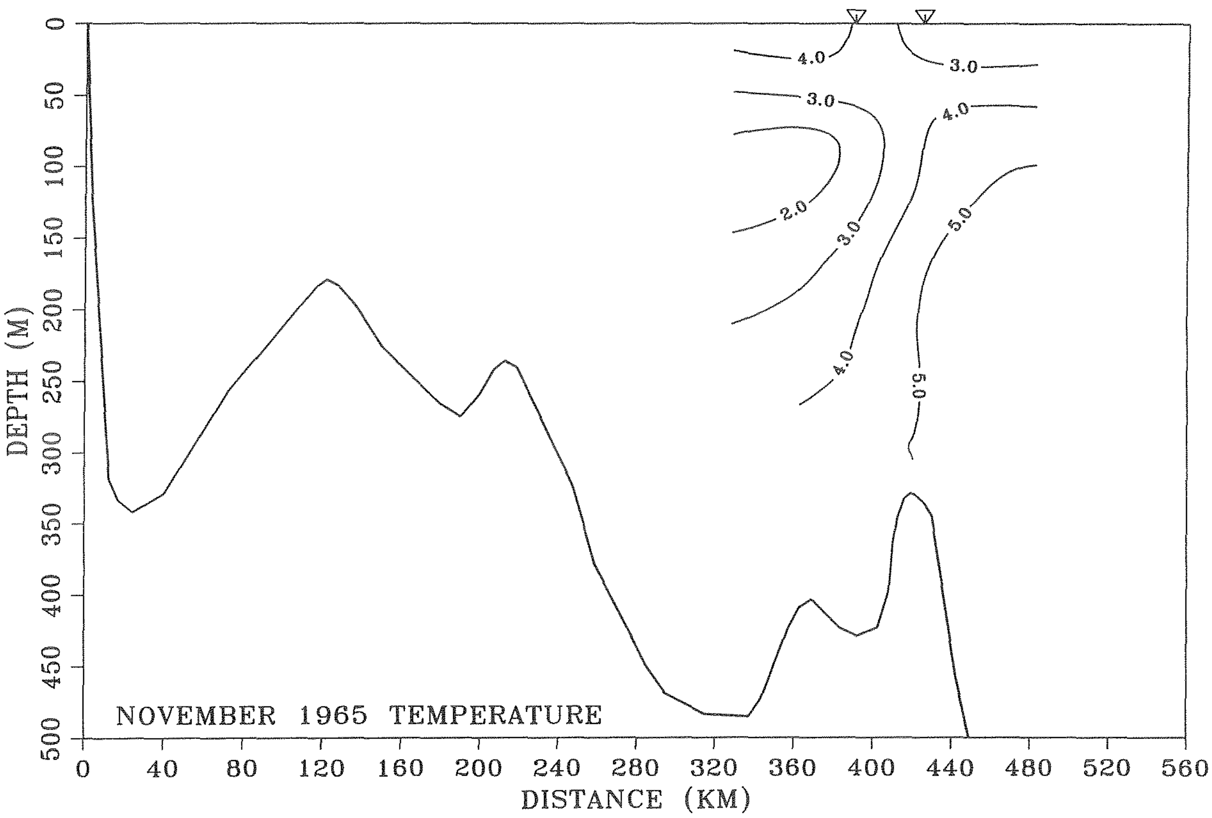
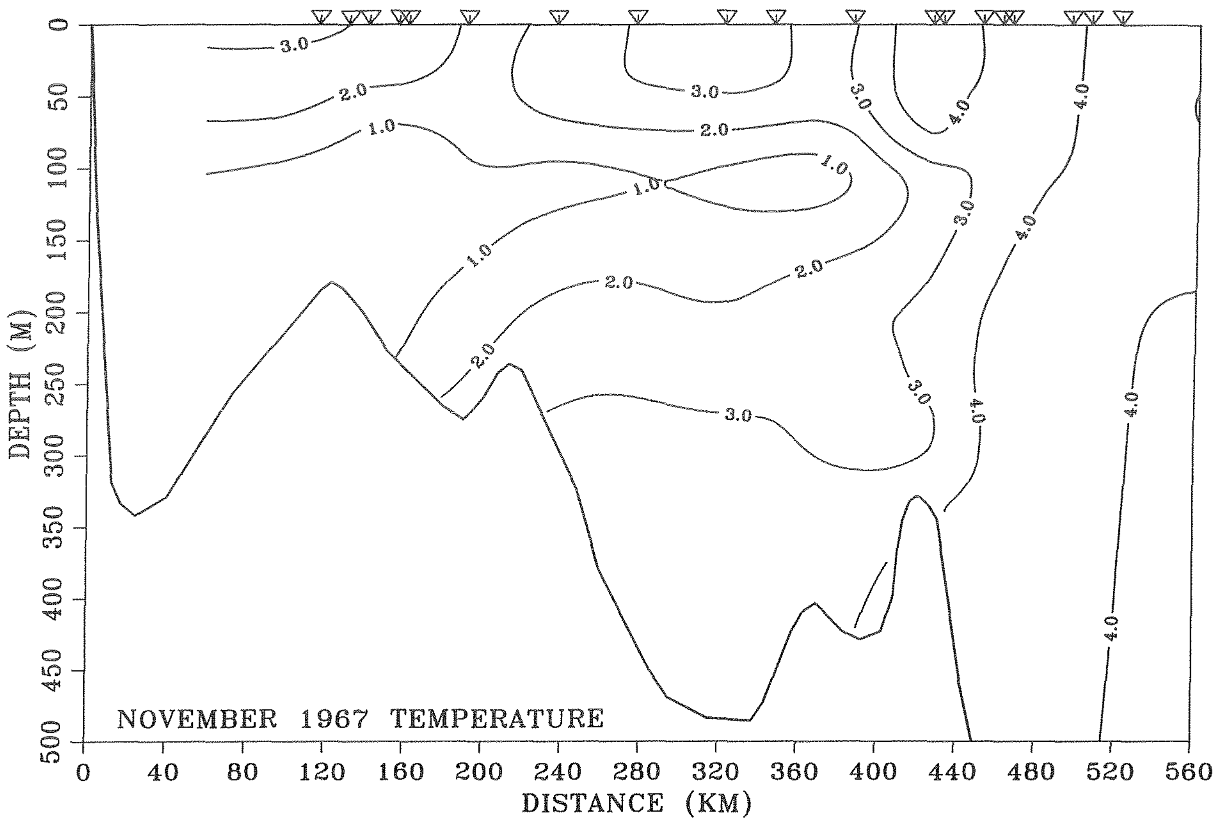
80
120
160
200
240
280
320
360
400
440
480
520
560


NOVEMBER 1965 TEMPERATURE
4.0
3.0
3.0
4.0
2.0
3.0
5.0
4.0
5.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
DISTANCE (KM)
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560



NOVEMBER 1967 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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100
150
200
250
300
350
400
450
500
0
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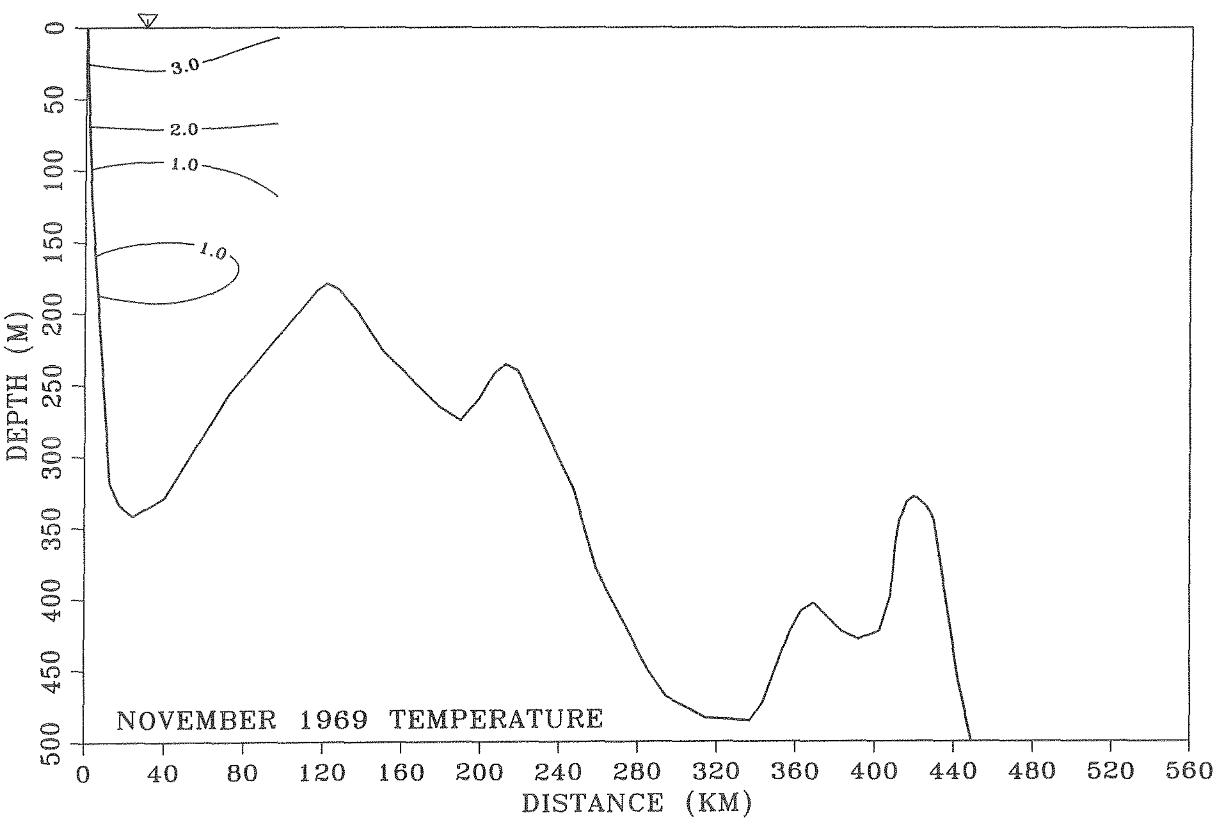
240
280
320
360
400
440
480
520
560
3.0
2.0
1.0
4.0



NOVEMBER 1969 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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100
150
200
250
300
350
400
450
500
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160
200
240
280
320
360
400
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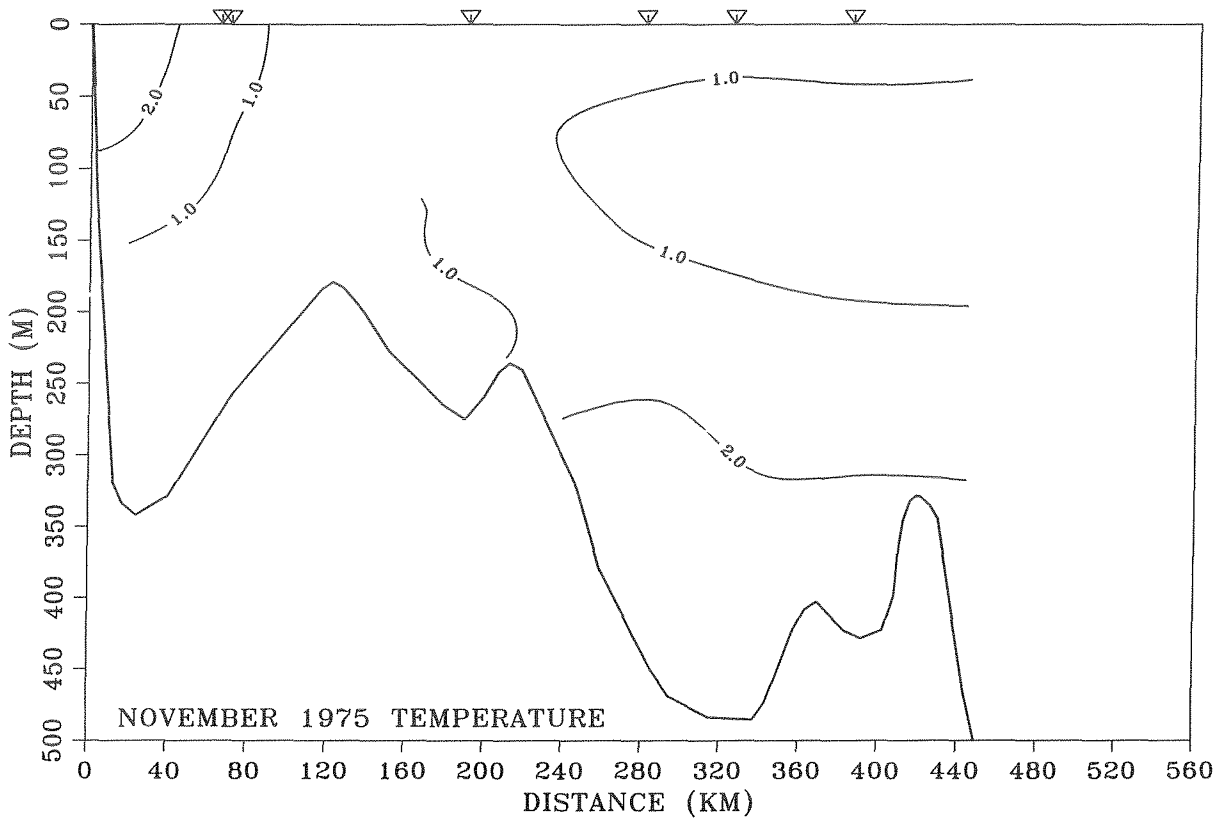
480
520
560
3.0
2.0
1.0



NOVEMBER 1975 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
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100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
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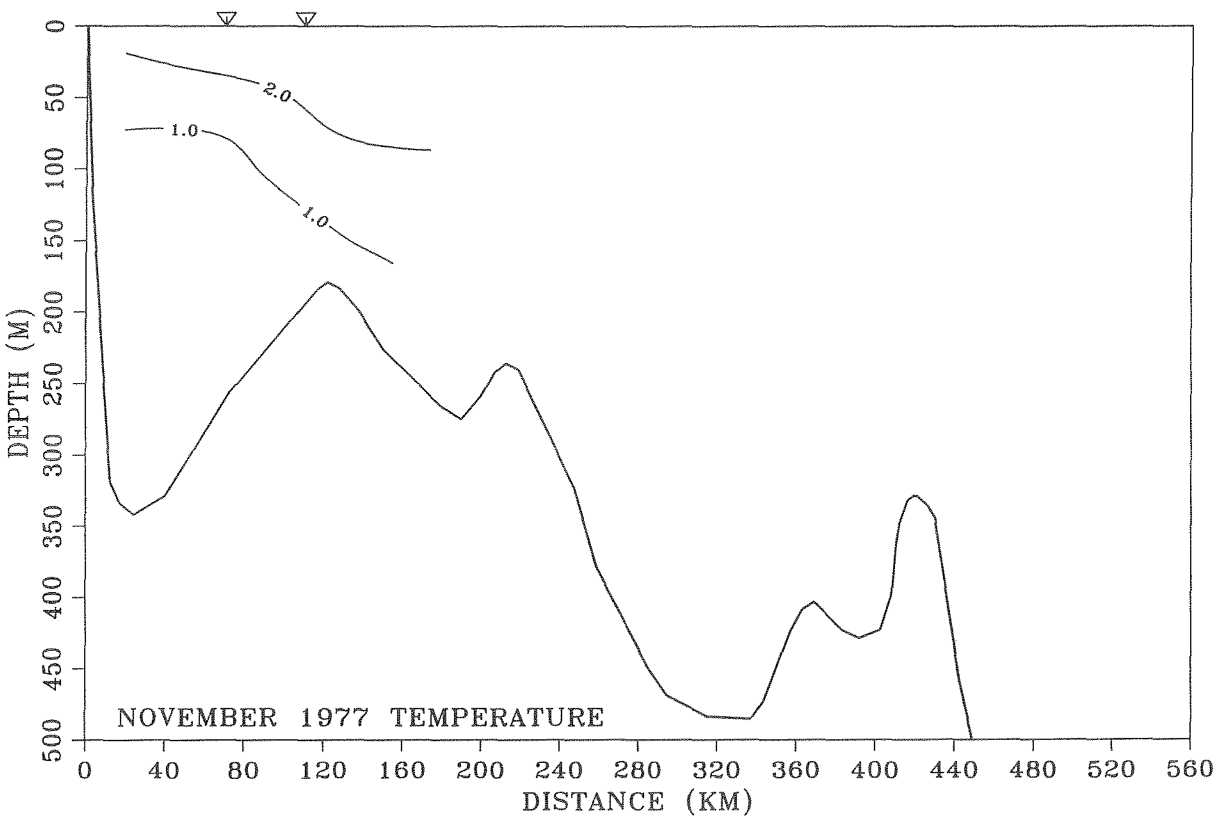
400
440
480
520
560
2.0
1.0
1.0
1.0
1.0
1.0
2.0



NOVEMBER 1977 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
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100
150
200
250
300
350
400
450
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0
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160
200
240
280
320
360
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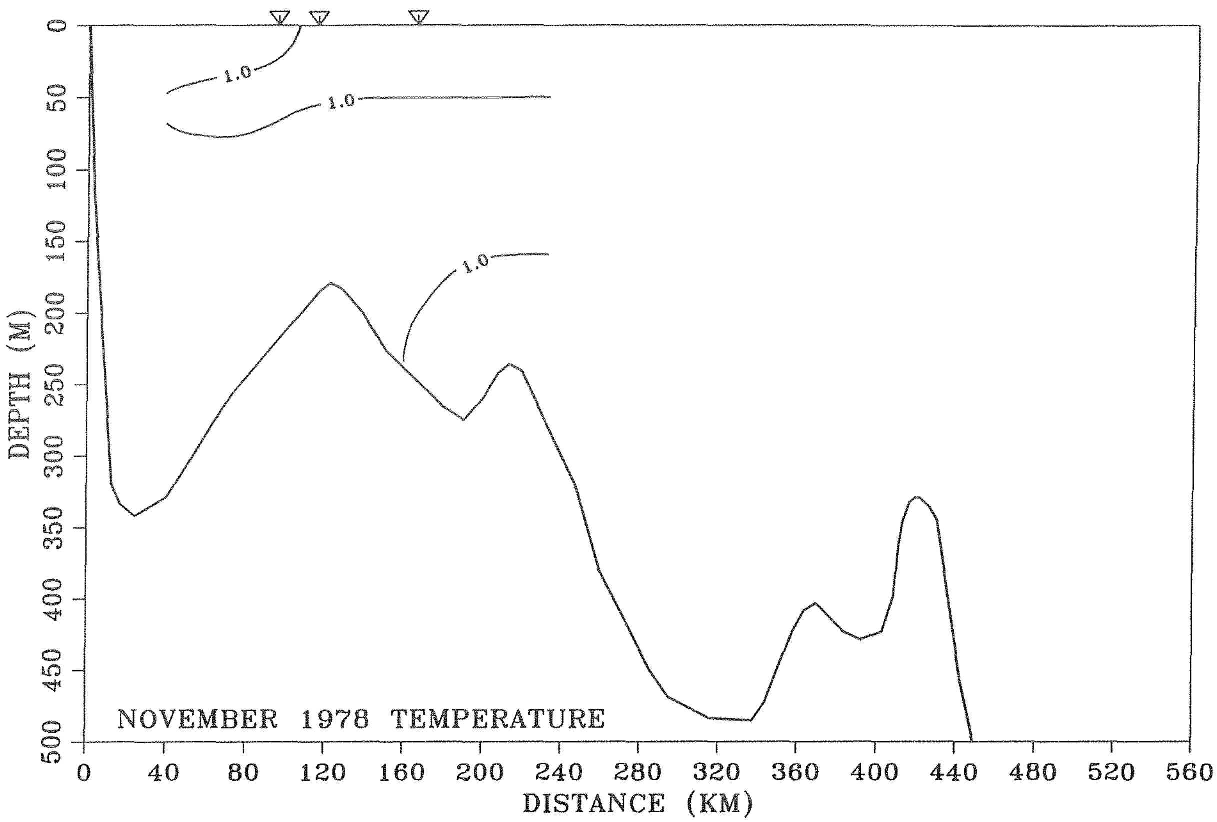
480
520
560
2.0
1.0
1.0



DEPTH (M)
DISTANCE (KM)
NOVEMBER 1978 TEMPERATURE
1.0
1.0
1.0
0
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100
150
200
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500
0
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80
120
160
200
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280
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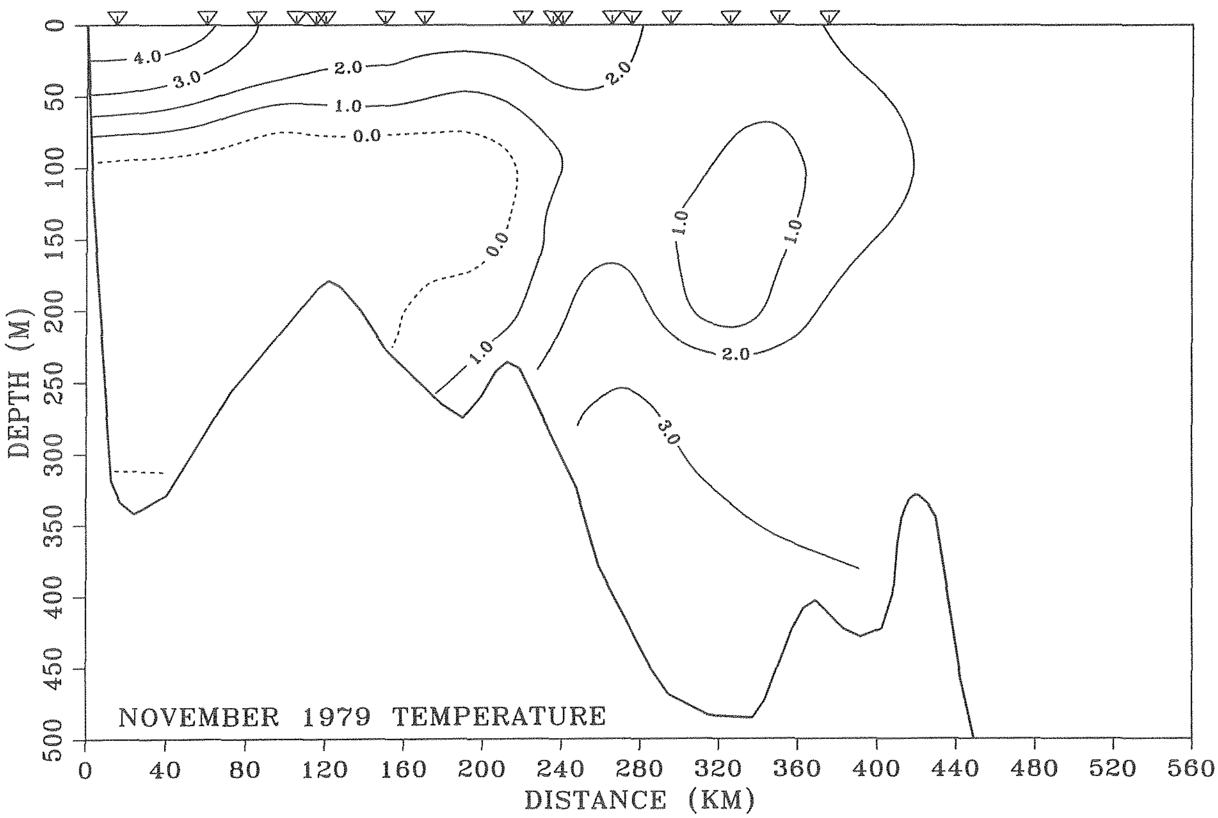
520
560



DEPTH (M)
DISTANCE (KM)
NOVEMBER 1979 TEMPERATURE
4.0
3.0
2.0
2.0
1.0
0.0
0.0
1.0
1.0
1.0
2.0
3.0
0
50
100
150
200
250
300
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400
450
500
0
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80
120
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200
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280
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520
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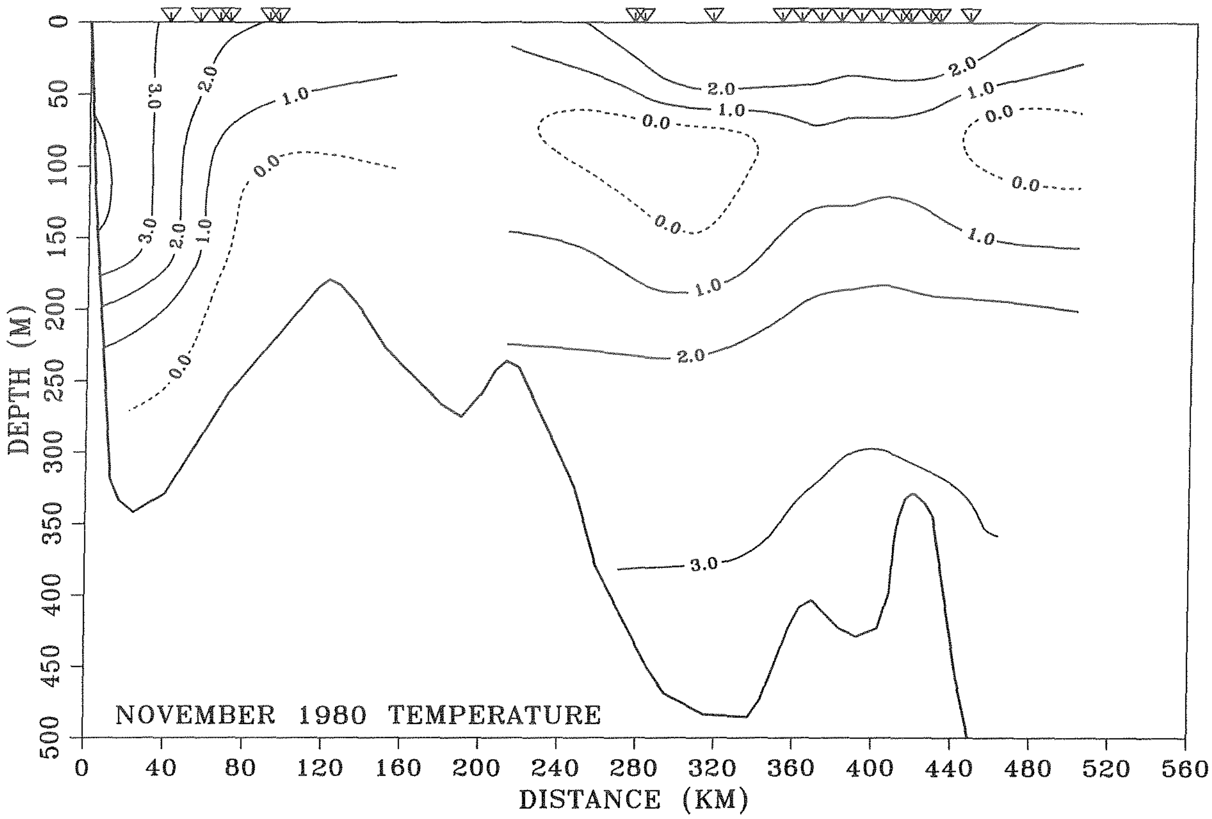
DEPTH (M)
DISTANCE (KM)
NOVEMBER 1980 TEMPERATURE
0
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100
150
200
250
300
350
400
450
500
0
40
80
120
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320
360
400
440
480
520
560
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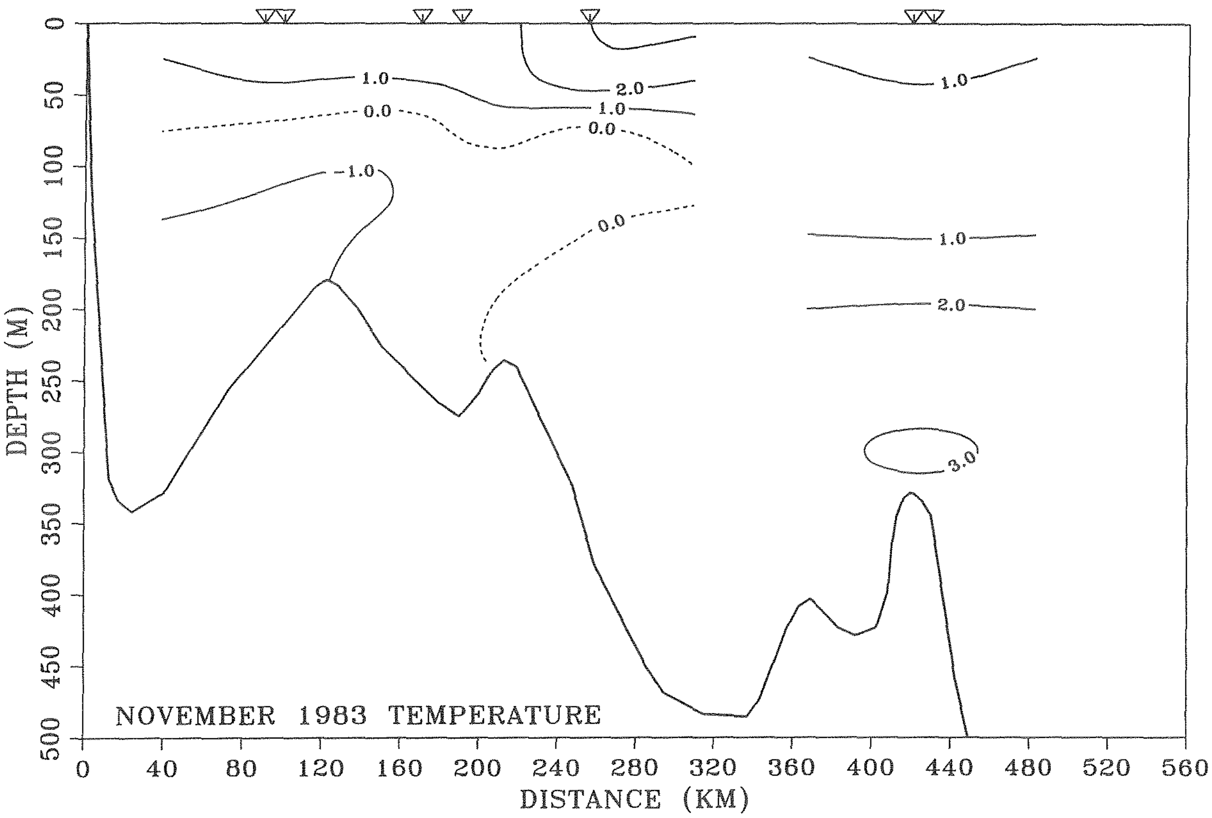
1.0
0.0
-1.0


DEPTH (M)
DISTANCE (KM)
NOVEMBER 1983 TEMPERATURE
0
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100
150
200
250
300
350
400
450
500
0
40
80
120
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200
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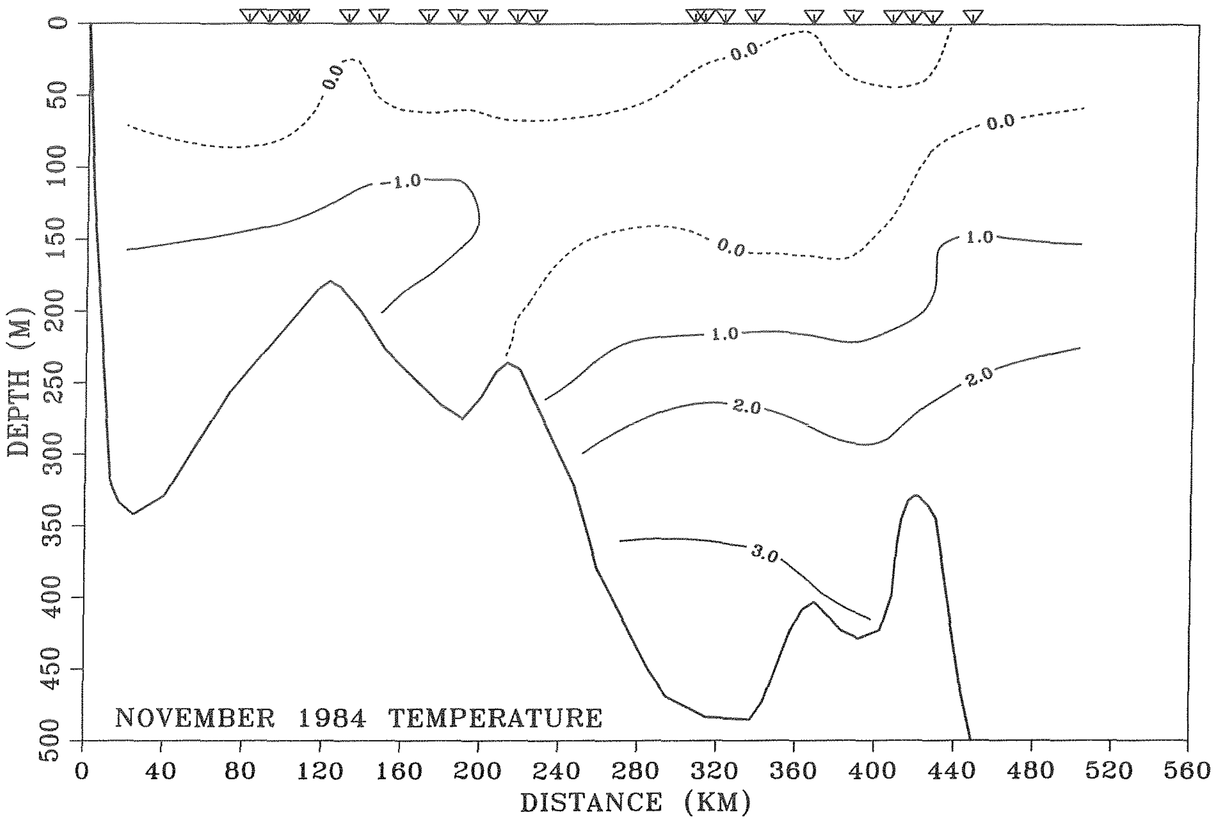
280
320
360
400
440
480
520
560
1.0
2.0
0.0
-1.0
3.0


NOVEMBER 1984 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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-1.0
1.0
2.0
3.0
0
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100
150
200
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300
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500
0
40
80
120
160
200
240
280
320
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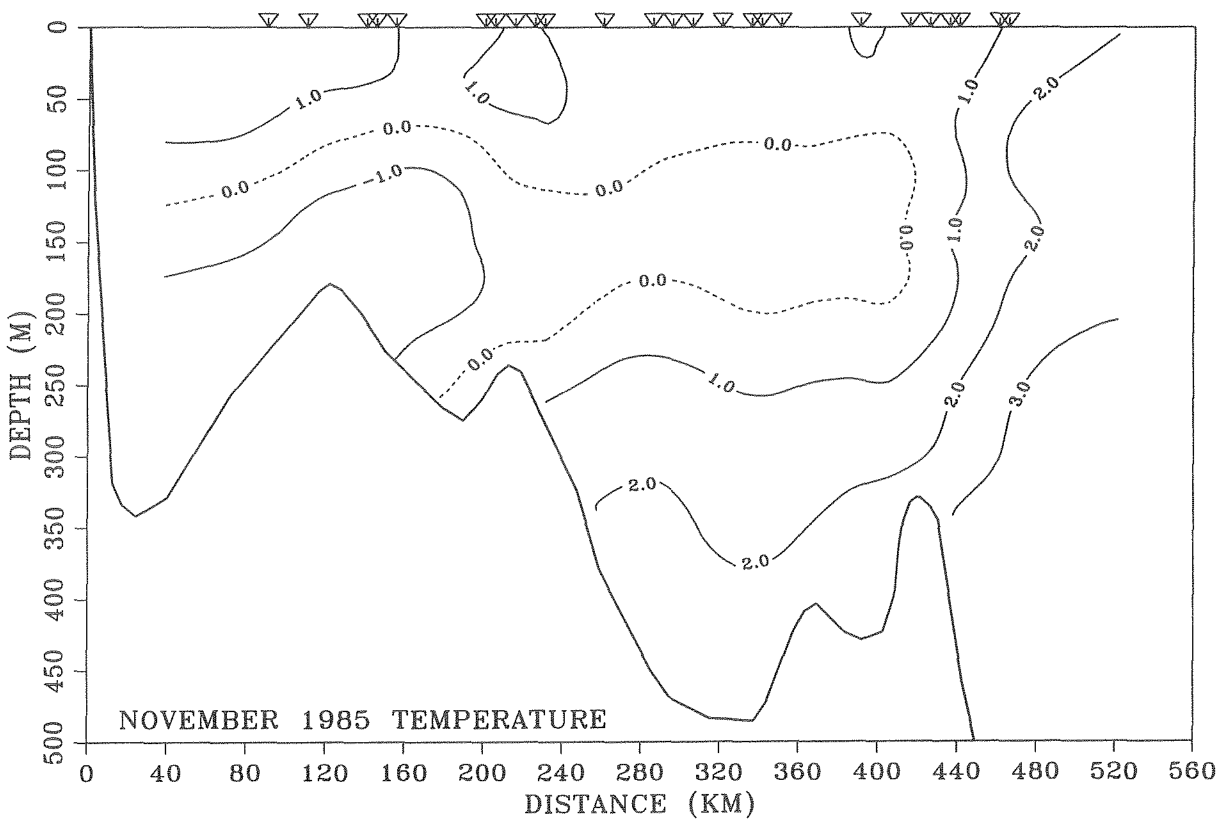
440
480
520
560


NOVEMBER 1985 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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0.0
-1.0
2.0
3.0
0
50
100
150
200
250
300
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500
0
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80
120
160
200
240
280
320
360
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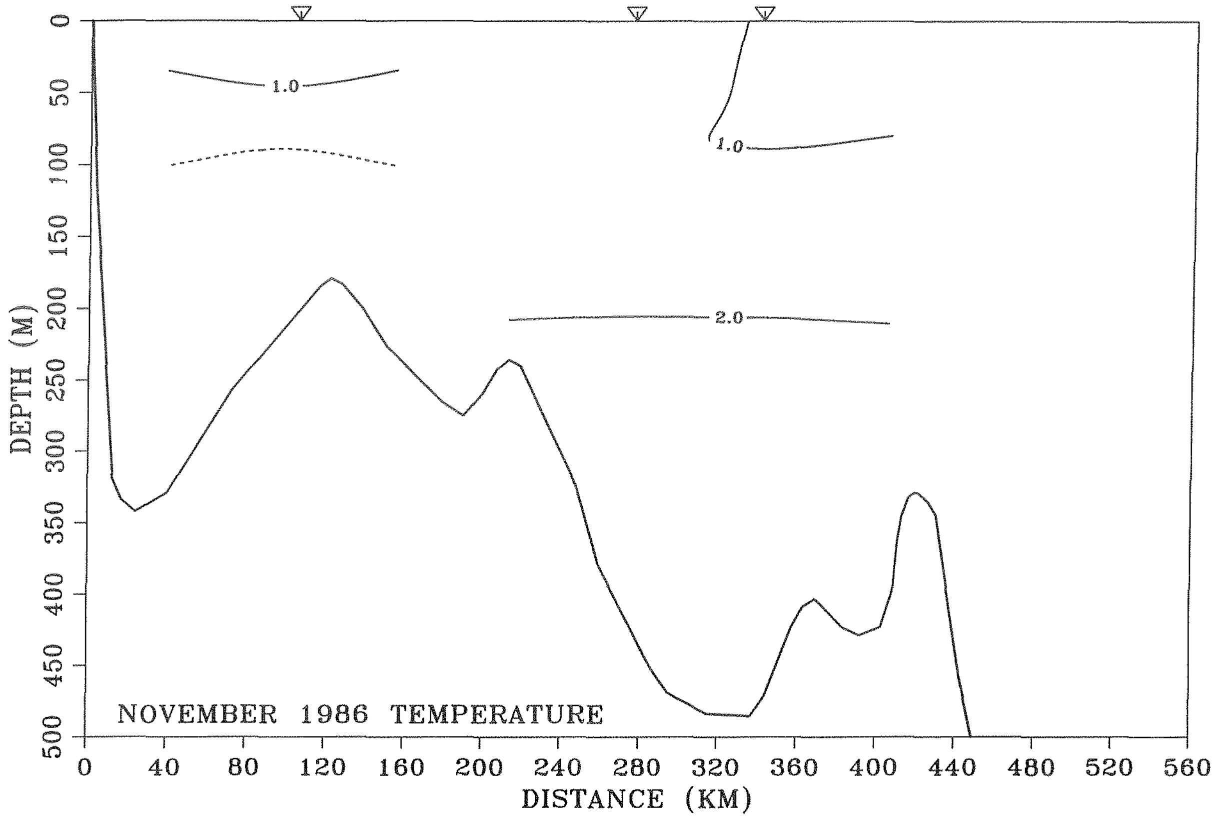
440
480
520
560



1.0
1.0
2.0
DEPTH (M)
0
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100
150
200
250
300
350
400
450
500
NOVEMBER 1986 TEMPERATURE
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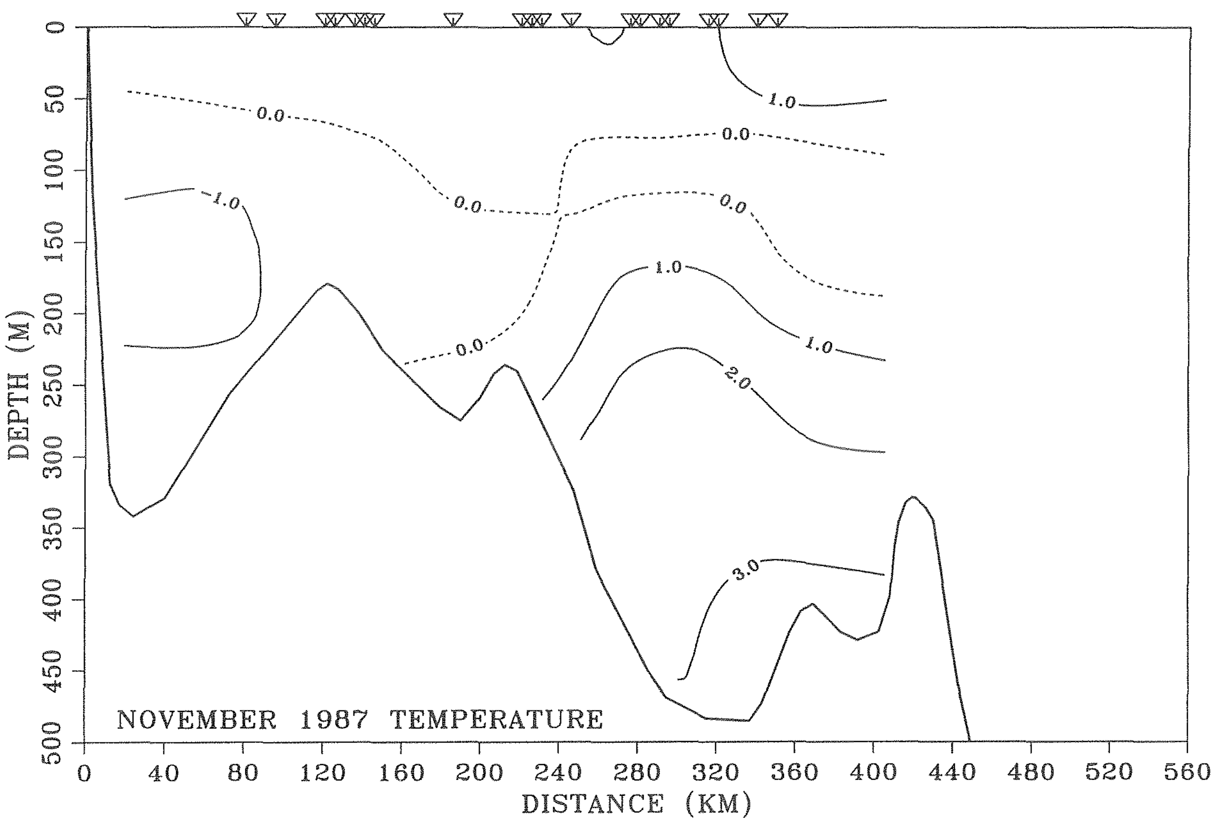
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)



1.0
0.0
0.0
0.0
-1.0
0.0
1.0
1.0
0.0
2.0
3.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
NOVEMBER 1987 TEMPERATURE
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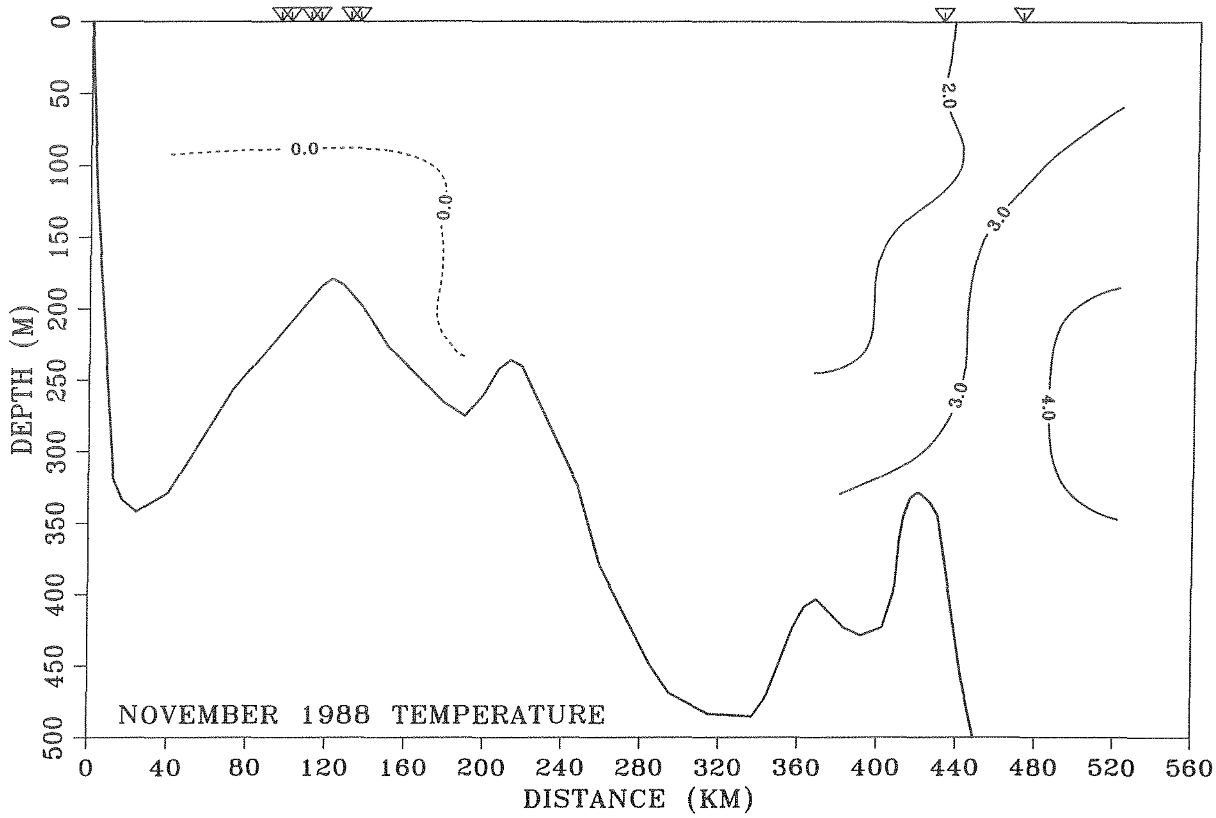
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)


NOVEMBER 1988 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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2.0
3.0
4.0
0
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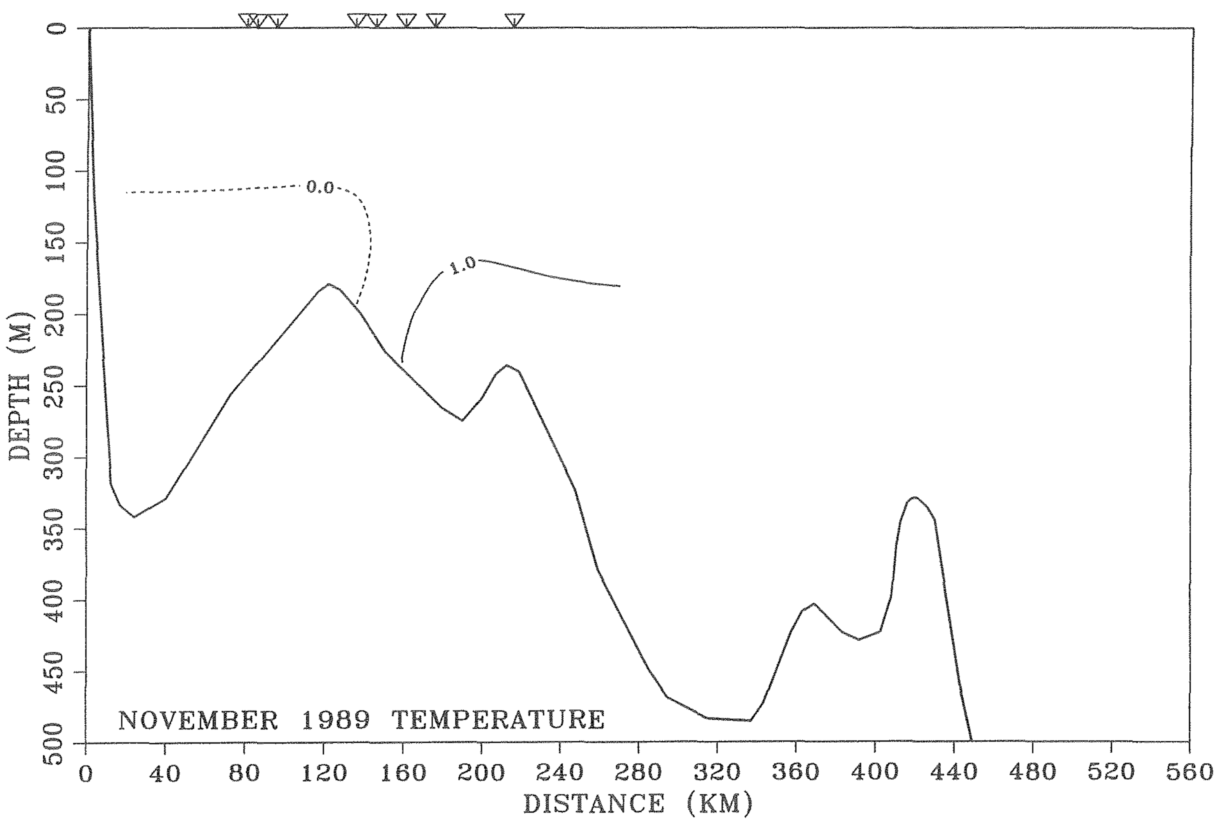
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560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DISTANCE (KM)
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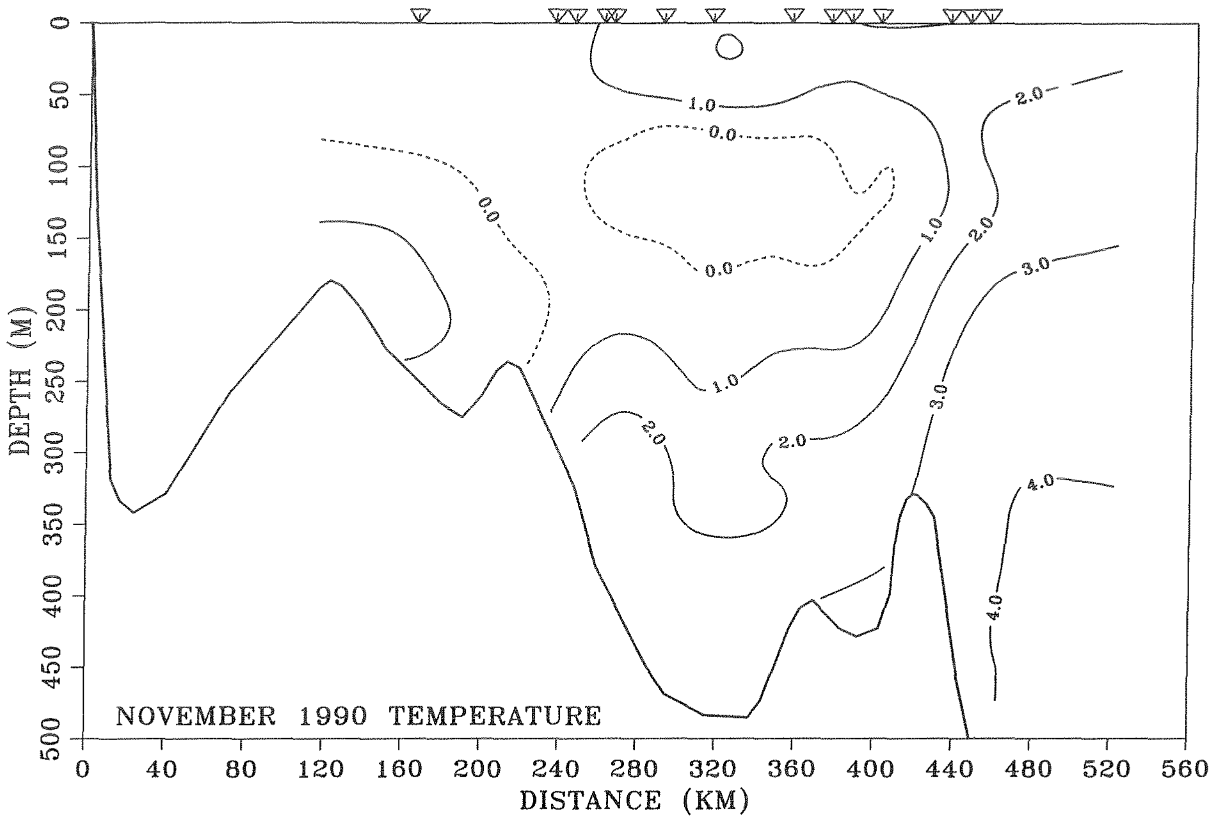
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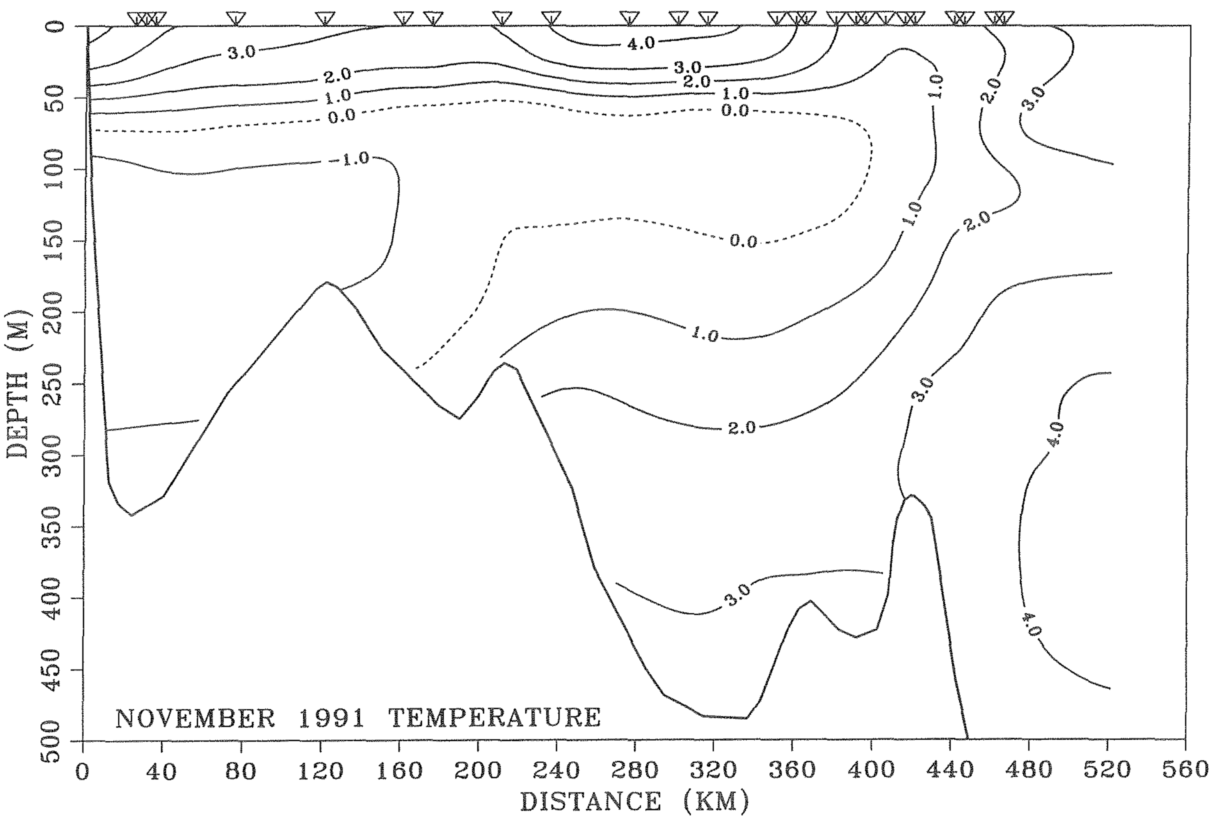
4.0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160
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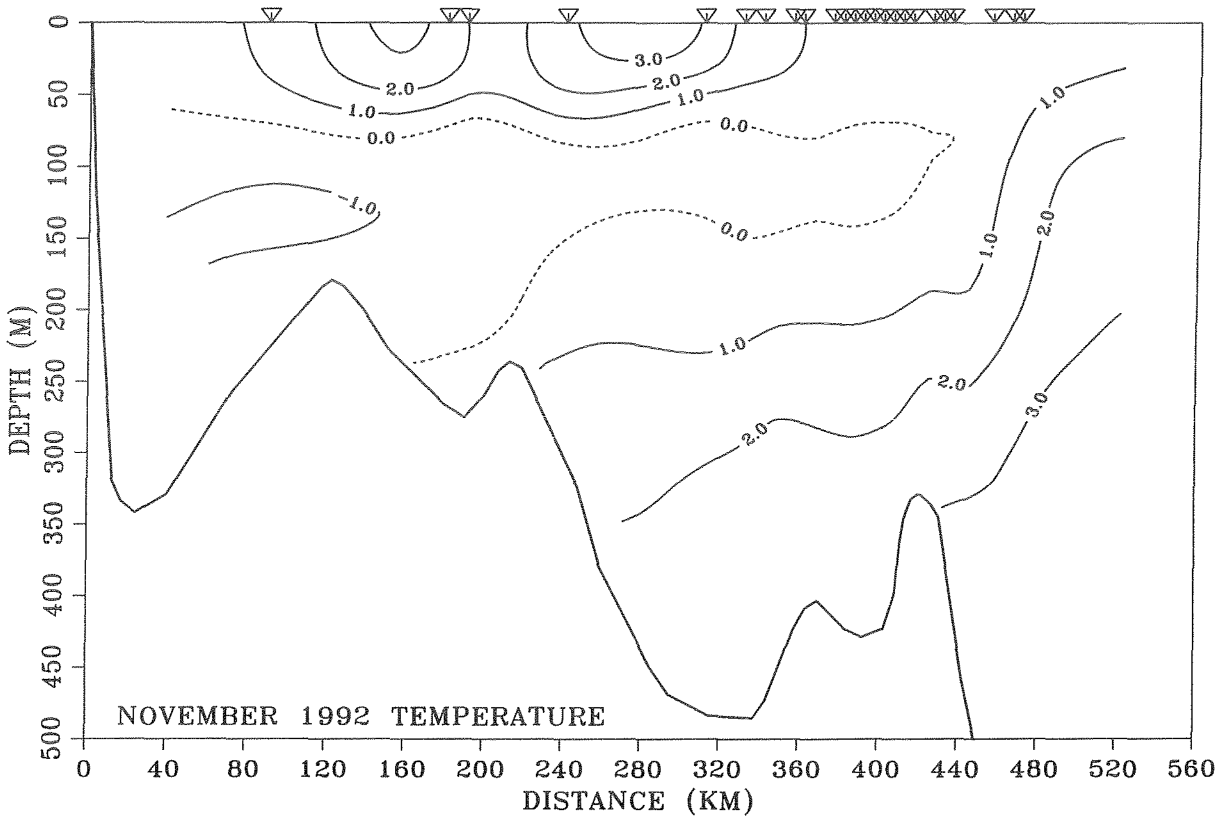
3.0
4.0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80
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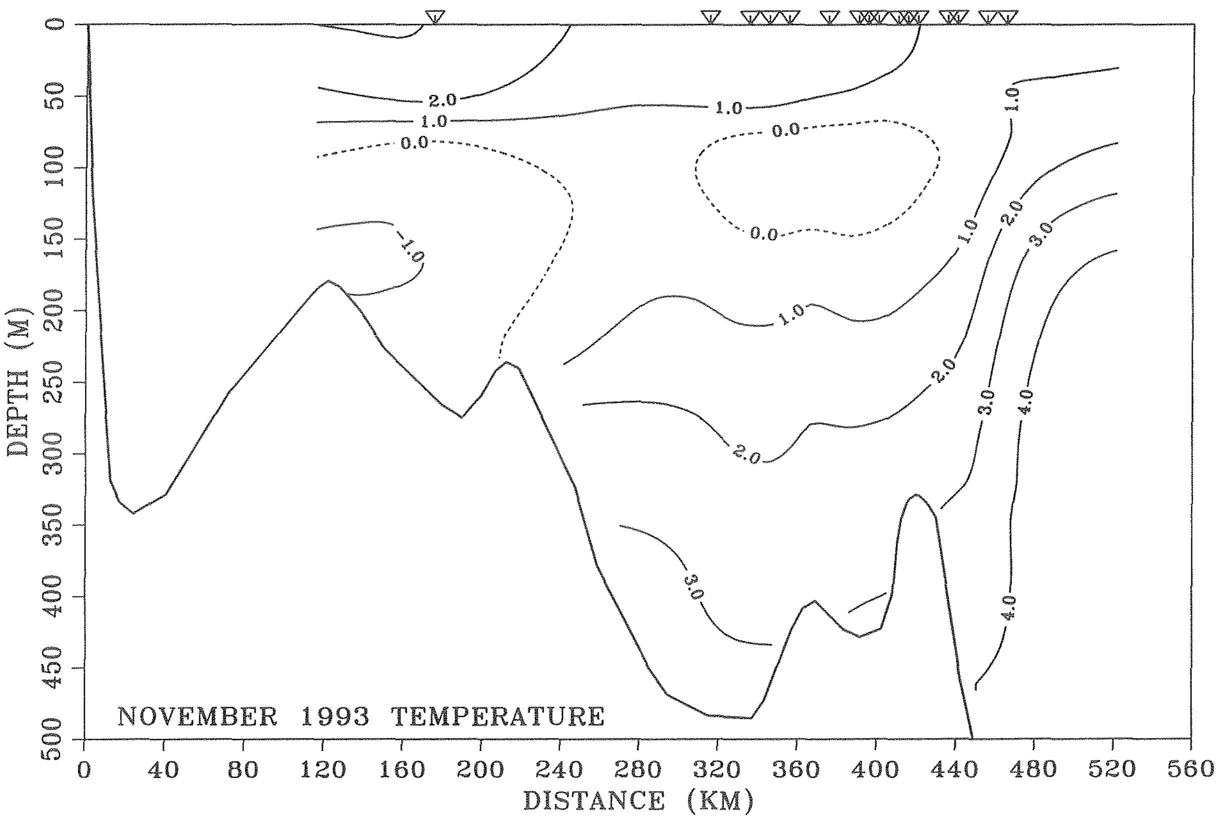
-1.0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DISTANCE (KM)
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500
0
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80
120
160
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1.0
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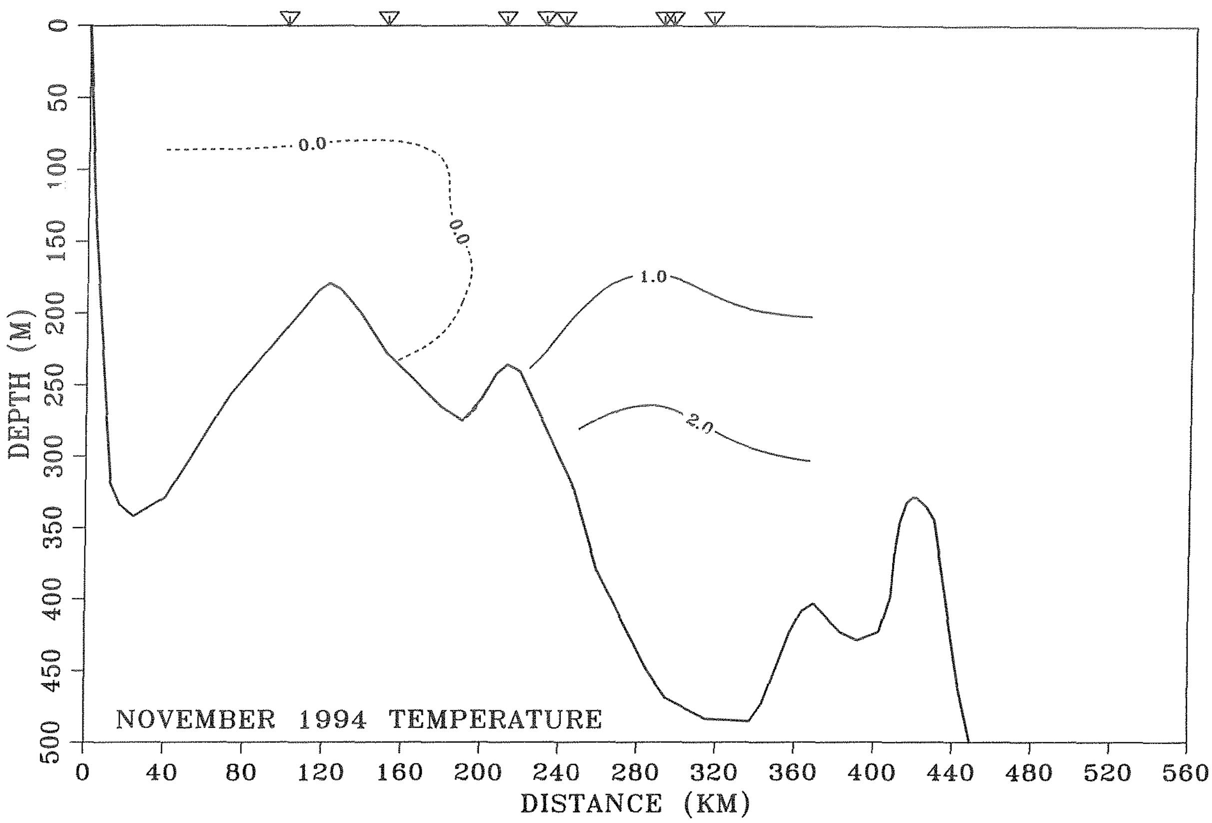
-1.0
3.0
4.0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DISTANCE (KM)
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500
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280
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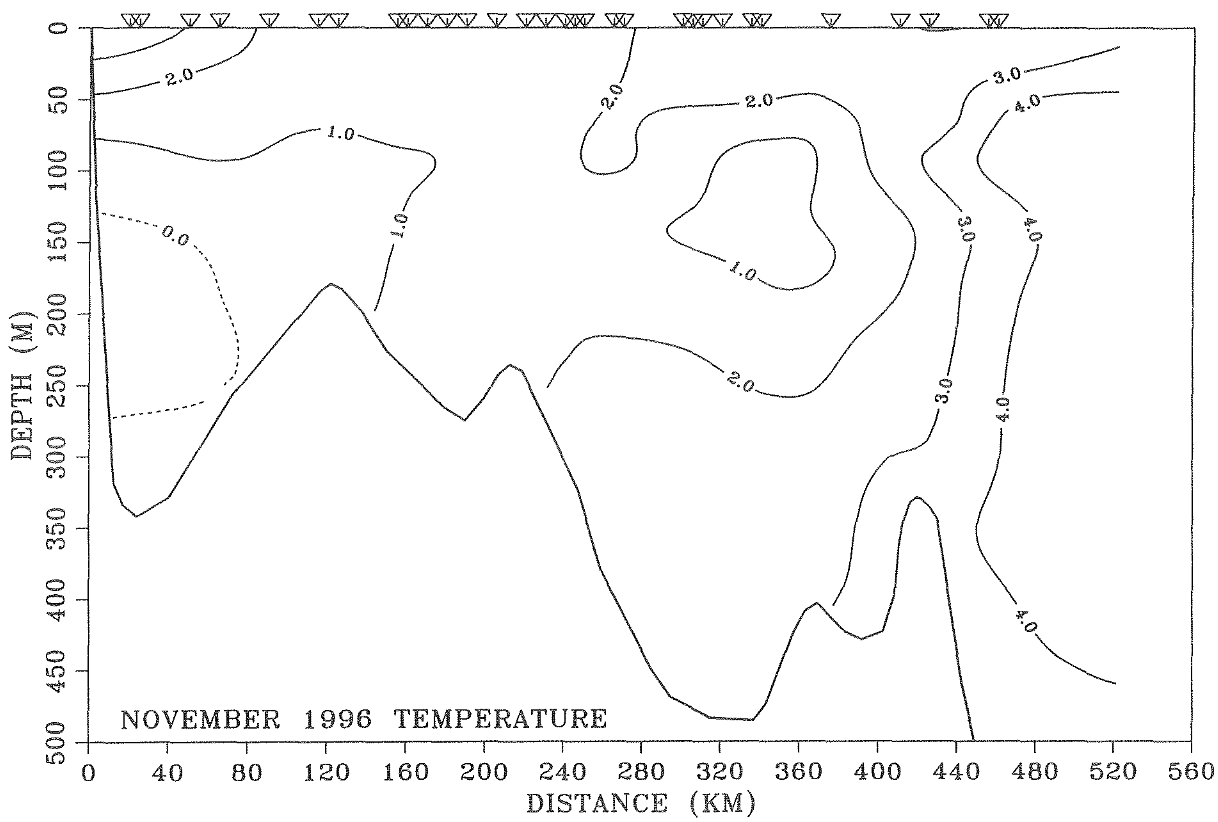
2.0


NOVEMBER 1996 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
2.0
2.0
2.0
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1.0
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3.0
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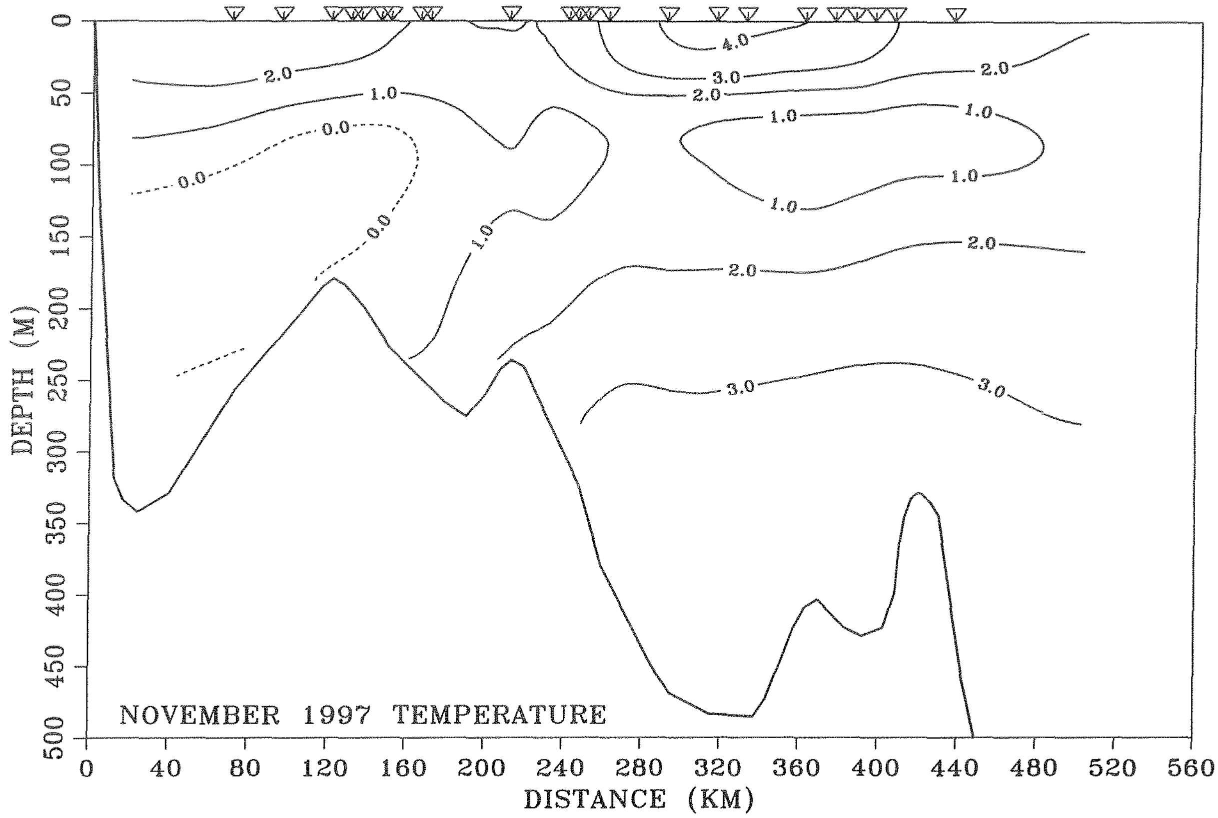
4.0



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450
500
DEPTH (M)
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3.0
2.0
1.0
0.0
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160
200
240
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360
400
440
480
520
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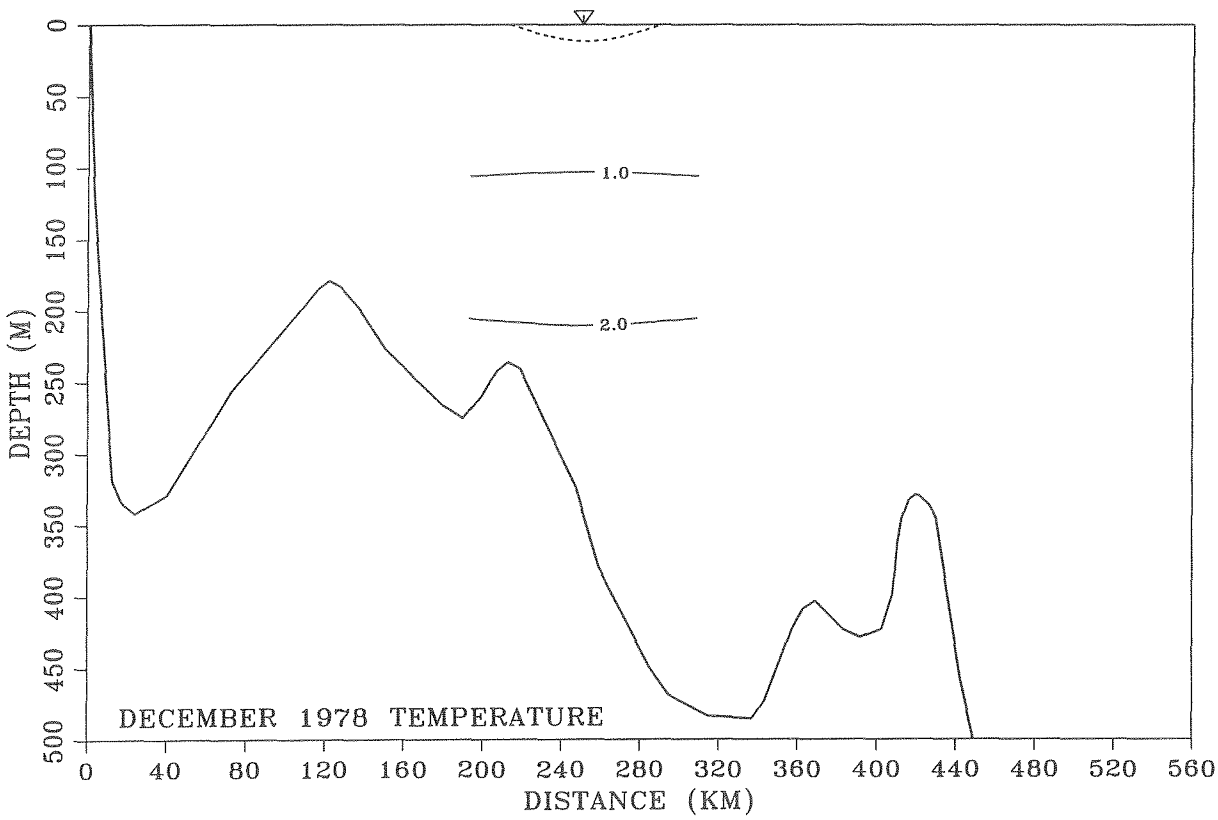
DISTANCE (KM)



0
50
100
150
200
250
300
350
400
450
500
DEPTH (M)
1.0
2.0
DECEMBER 1978 TEMPERATURE
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80
120
160
200
240
280
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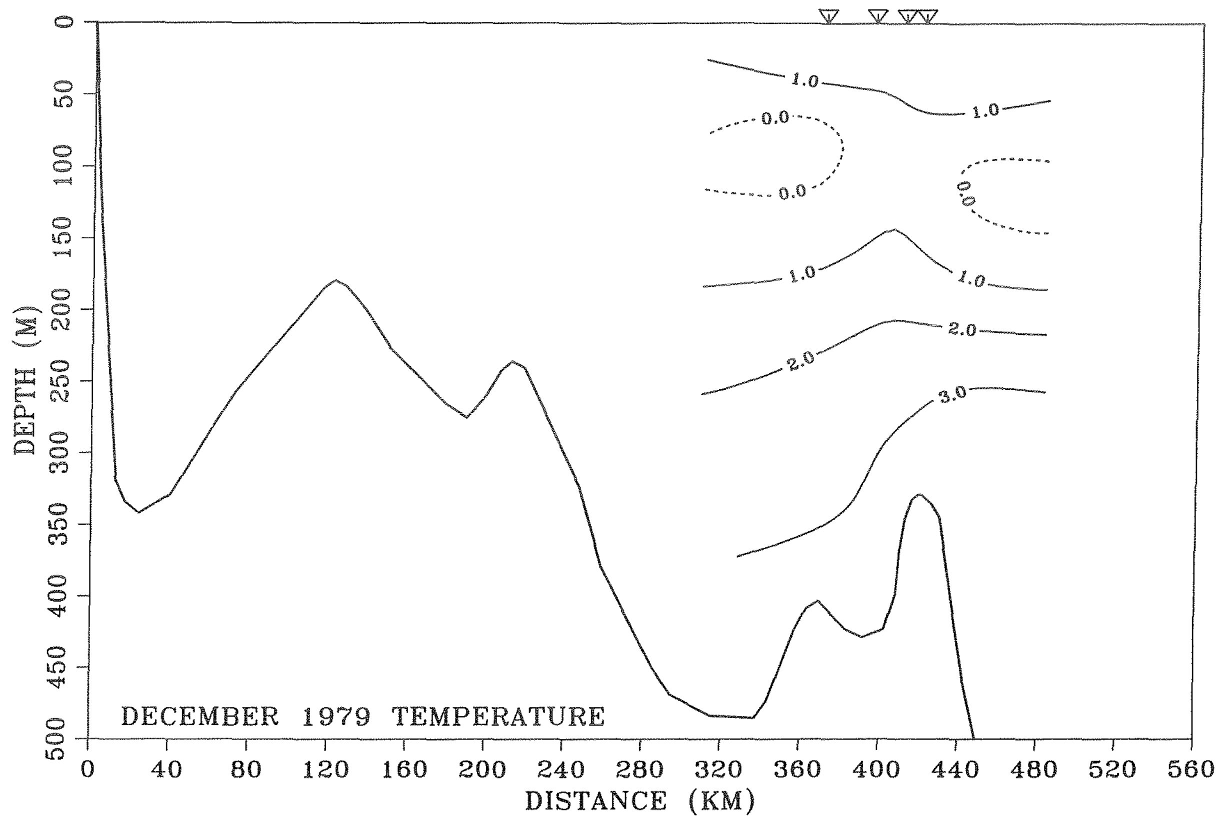
360
400
440
480
520
560
DISTANCE (KM)


DECEMBER 1979 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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2.0
3.0
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100
150
200
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450
500
0
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80
120
160
200
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280
320
360
400
440
480
520
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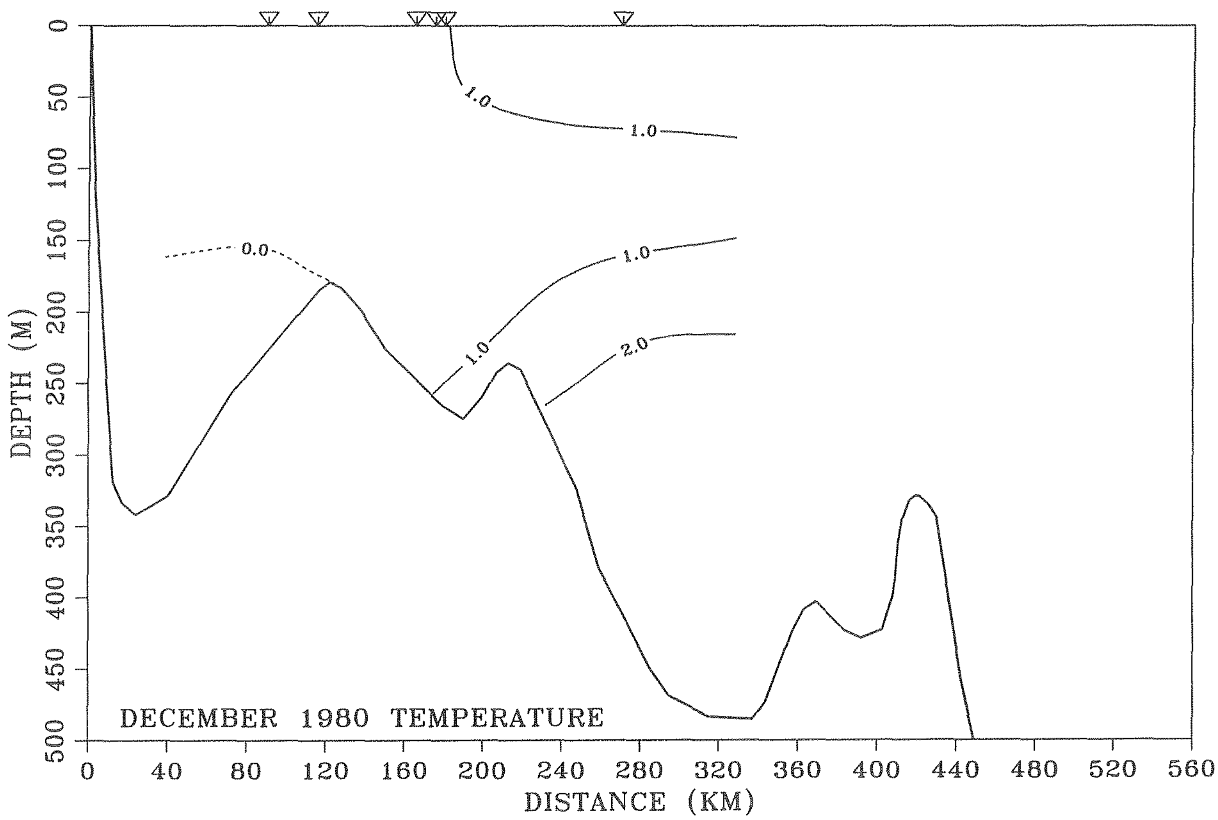
DECEMBER 1980 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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0.0
2.0
0
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100
150
200
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350
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500
0
40
80
120
160
200
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280
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360
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440
480
520
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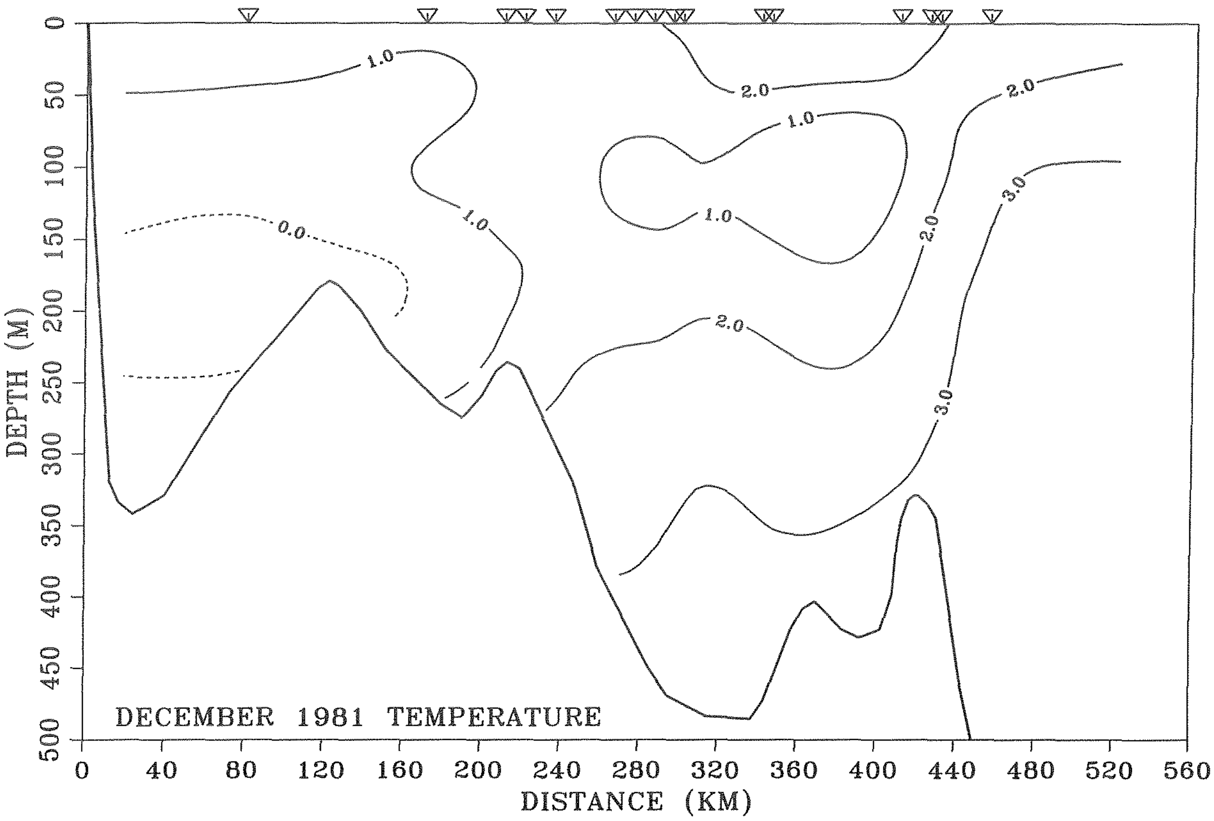
DECEMBER 1981 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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100
150
200
250
300
350
400
450
500
0
40
80
120
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200
240
280
320
360
400
440
480
520
560
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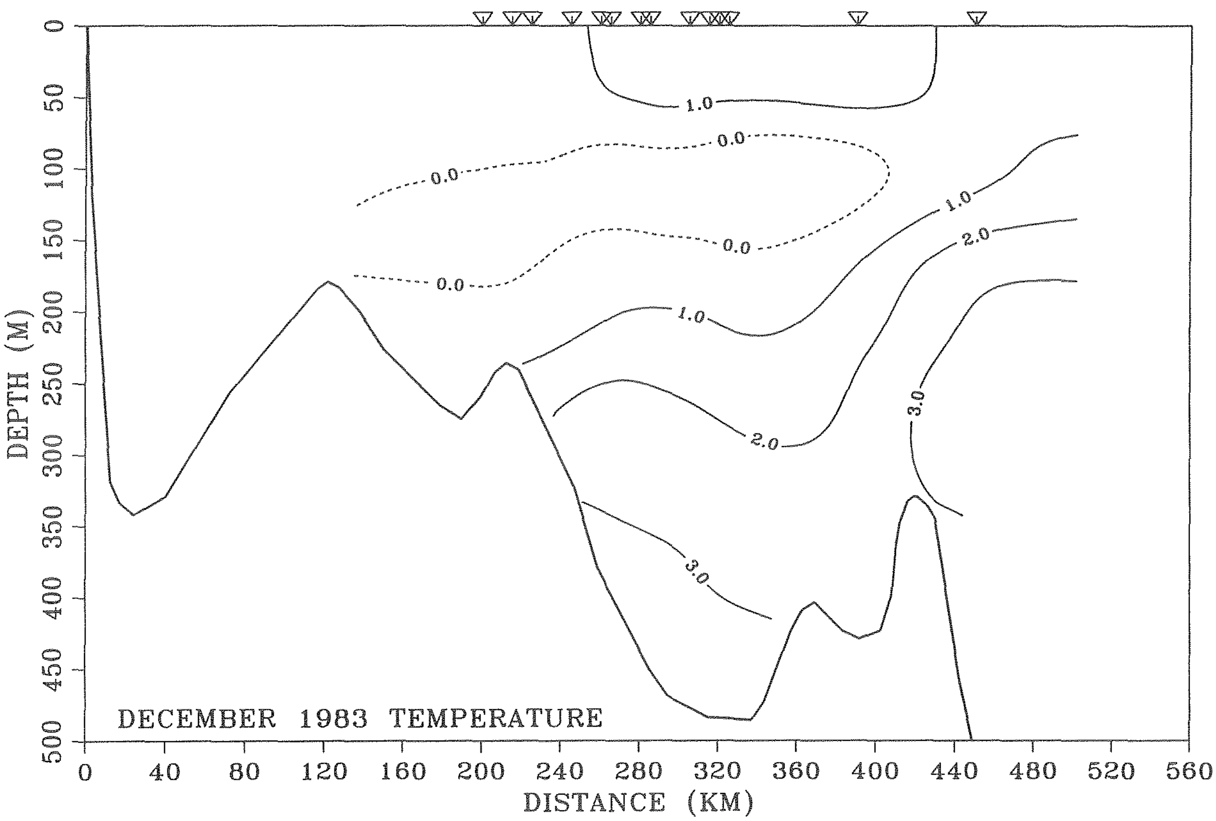
0.0
2.0
3.0


DECEMBER 1983 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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100
150
200
250
300
350
400
450
500
0
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80
120
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200
240
280
320
360
400
440
480
520
560
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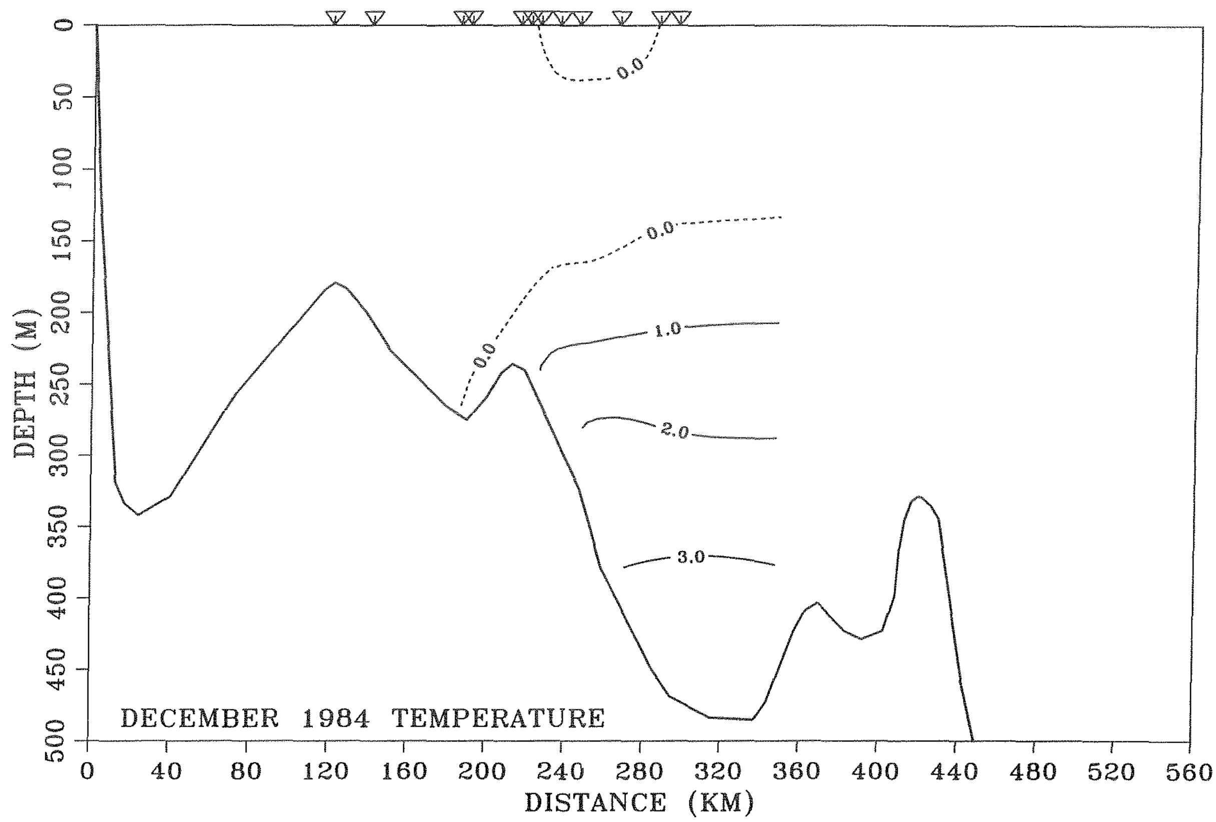
0.0
2.0
3.0


0.0
0.0
0.0
1.0
2.0
3.0
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
DECEMBER 1984 TEMPERATURE
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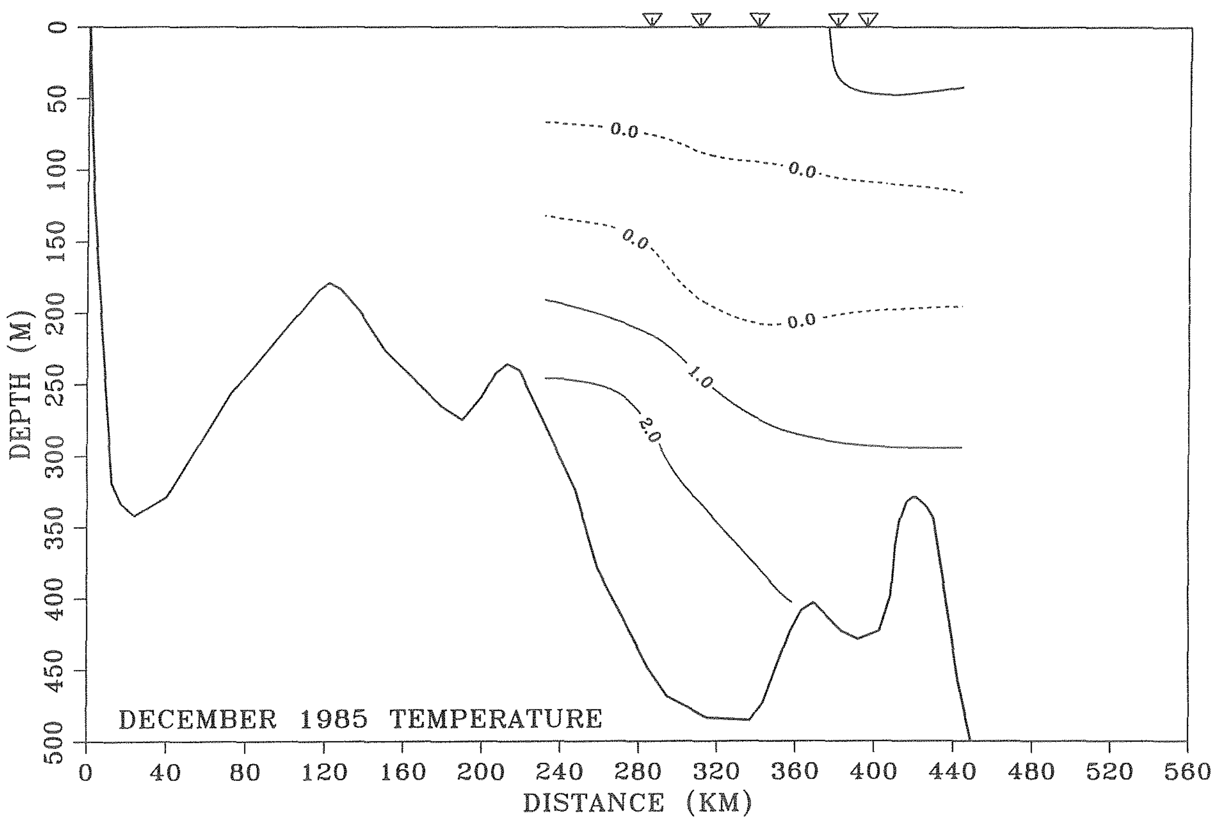
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)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0.0
0.0
1.0
2.0
DEPTH (M)
0
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100
150
200
250
300
350
400
450
500
DECEMBER 1985 TEMPERATURE
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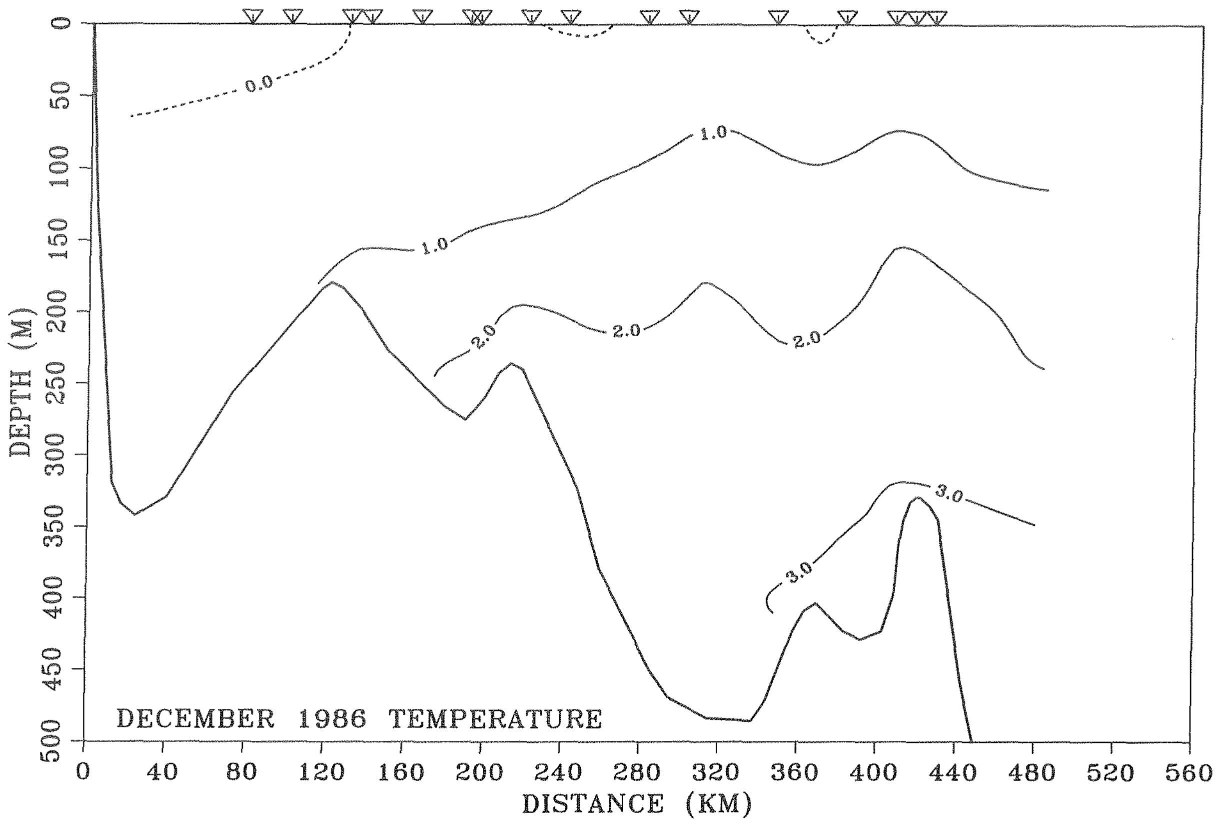
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)


DECEMBER 1986 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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1.0
2.0
3.0
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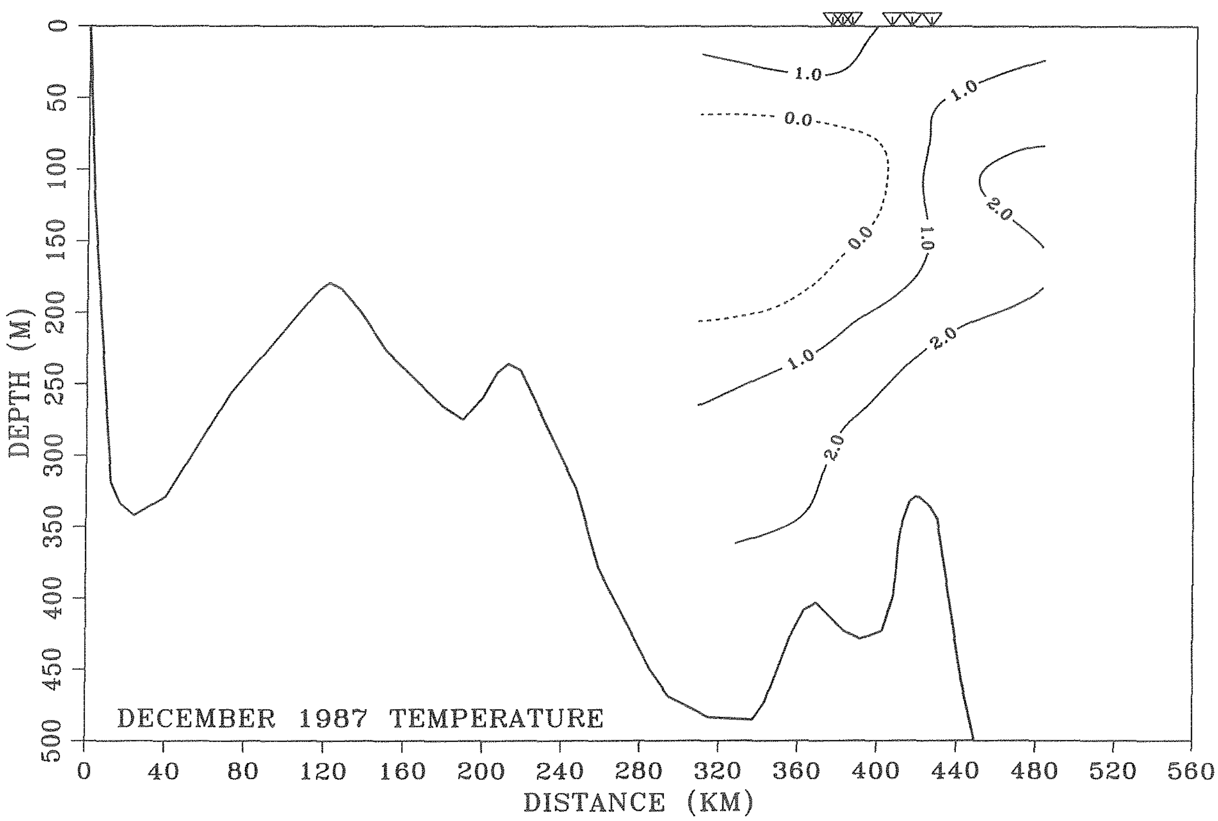
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560


DECEMBER 1987 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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1.0
2.0
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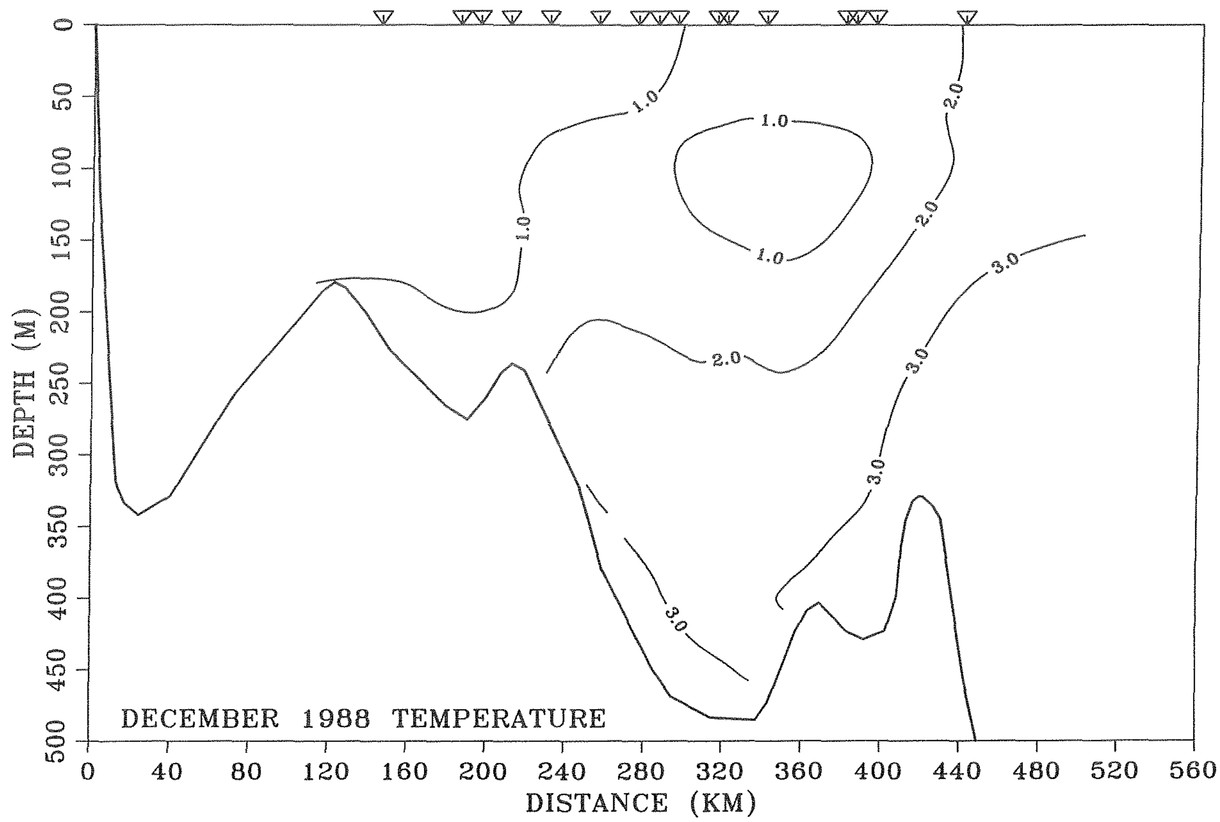
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560



DECEMBER 1988 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
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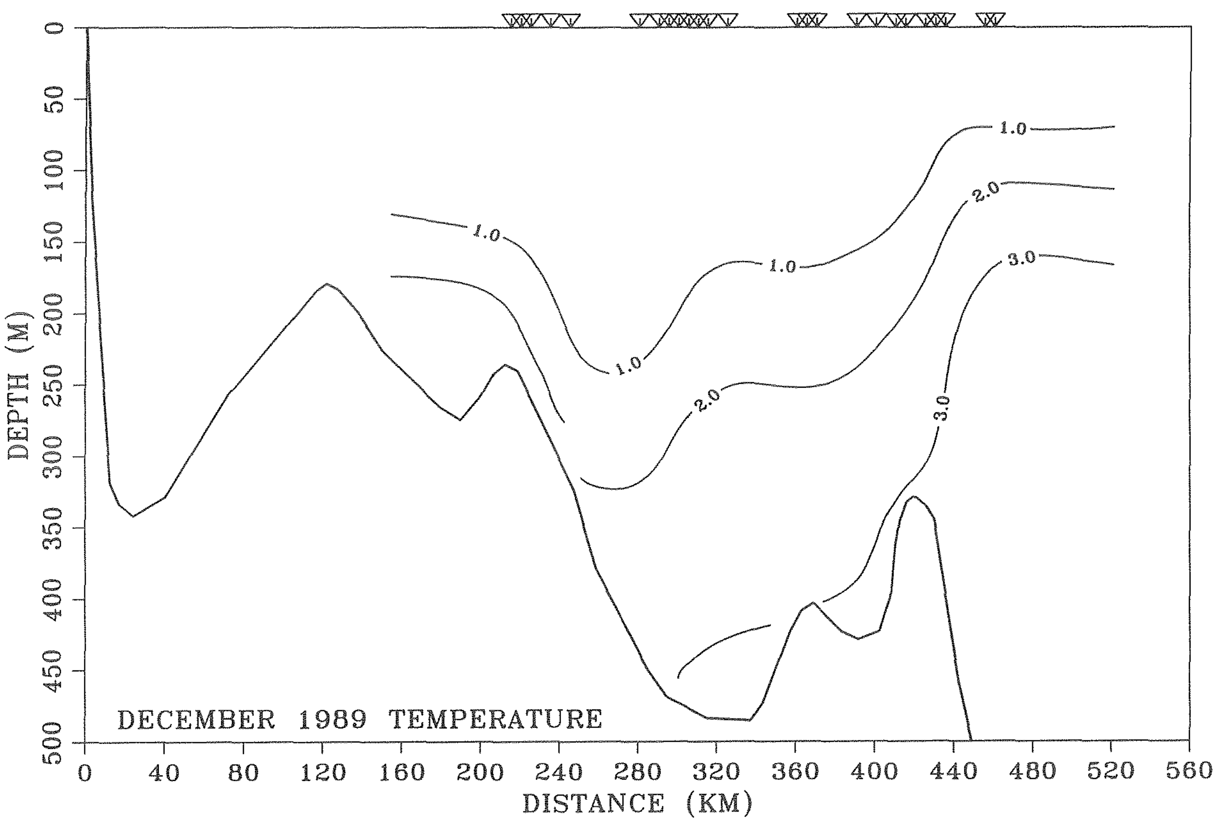
100
150
200
250
300
350
400
450
500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
1.0
2.0
3.0



DECEMBER 1989 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0
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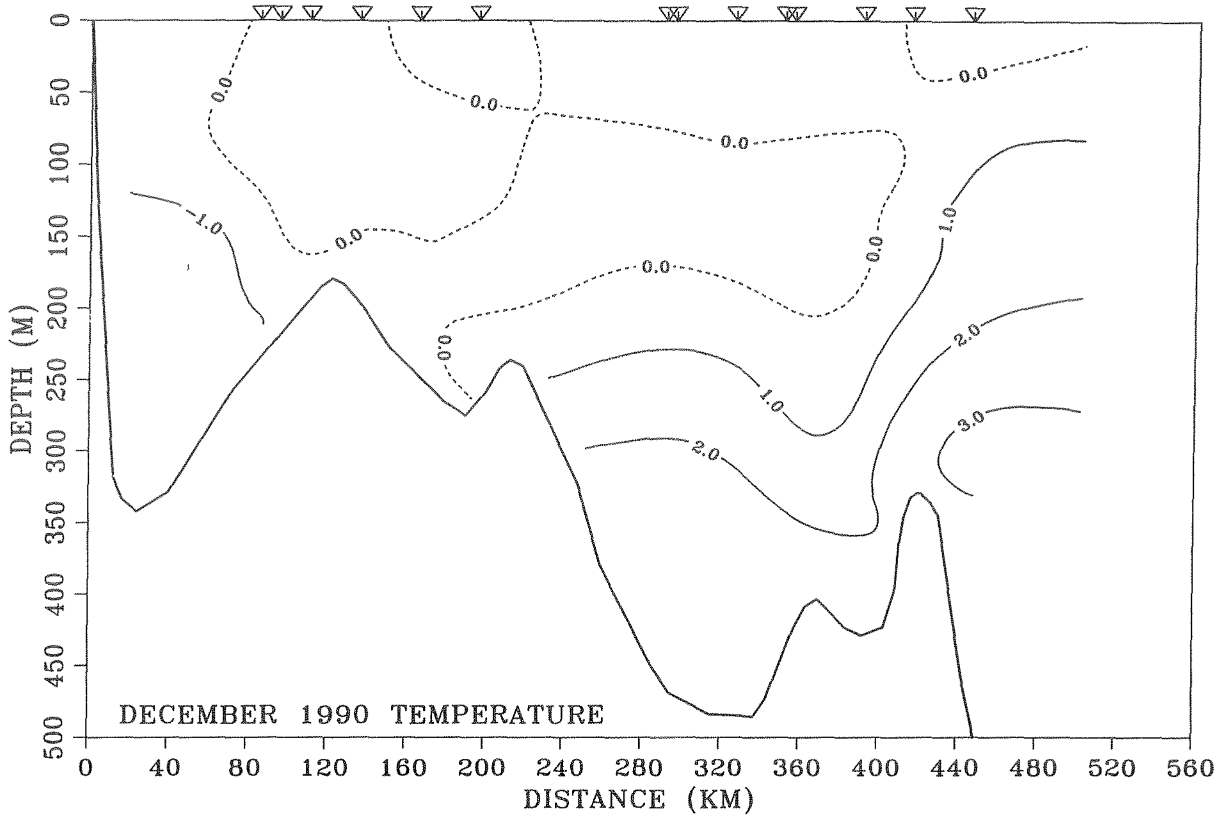
100
150
200
250
300
350
400
450
500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
1.0
2.0
3.0


DECEMBER 1990 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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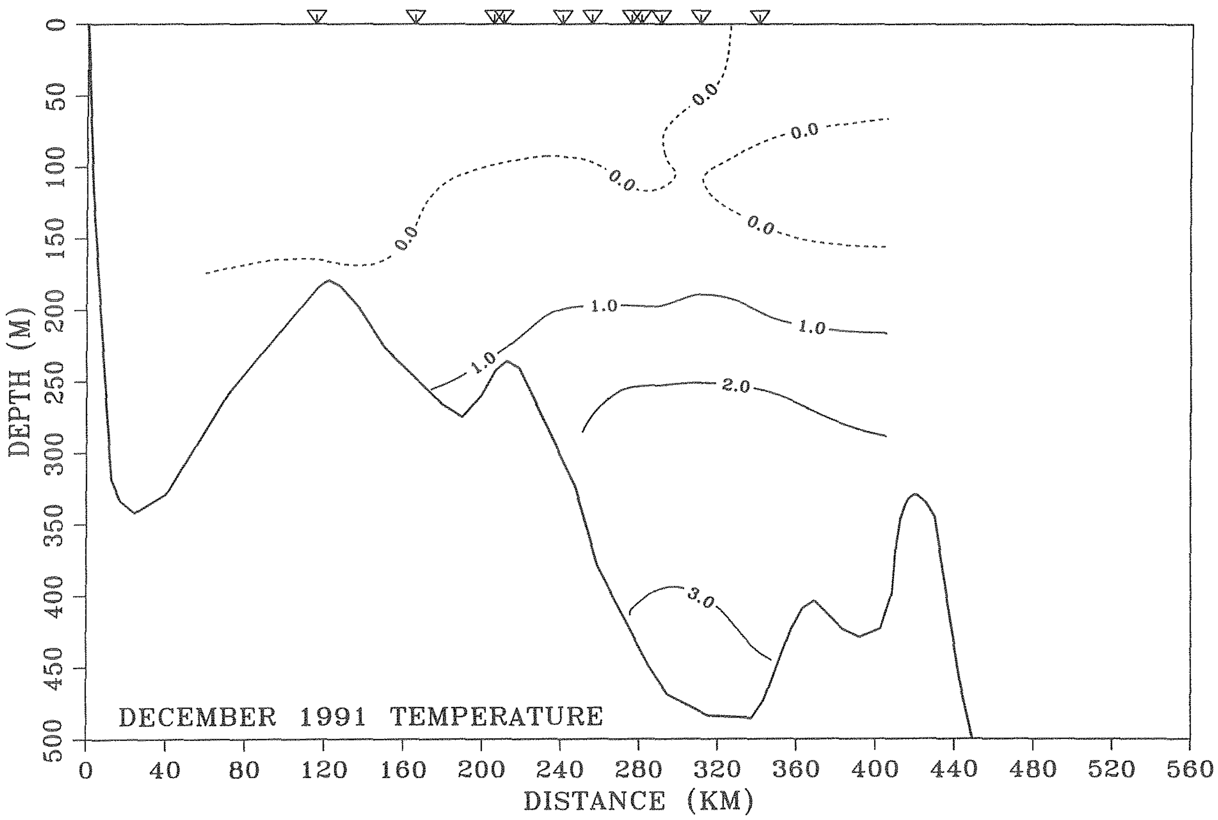
1.0
2.0
3.0


DECEMBER 1991 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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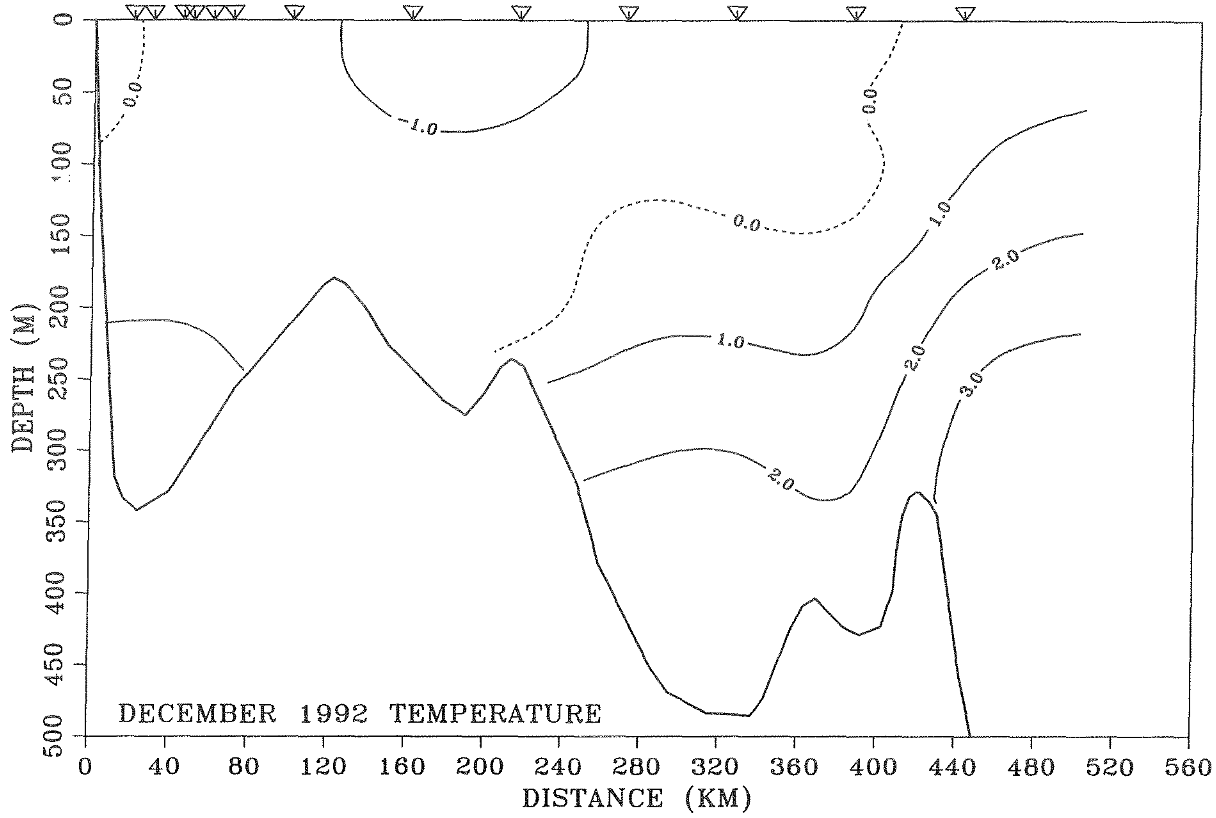
1.0
2.0
3.0


DECEMBER 1992 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
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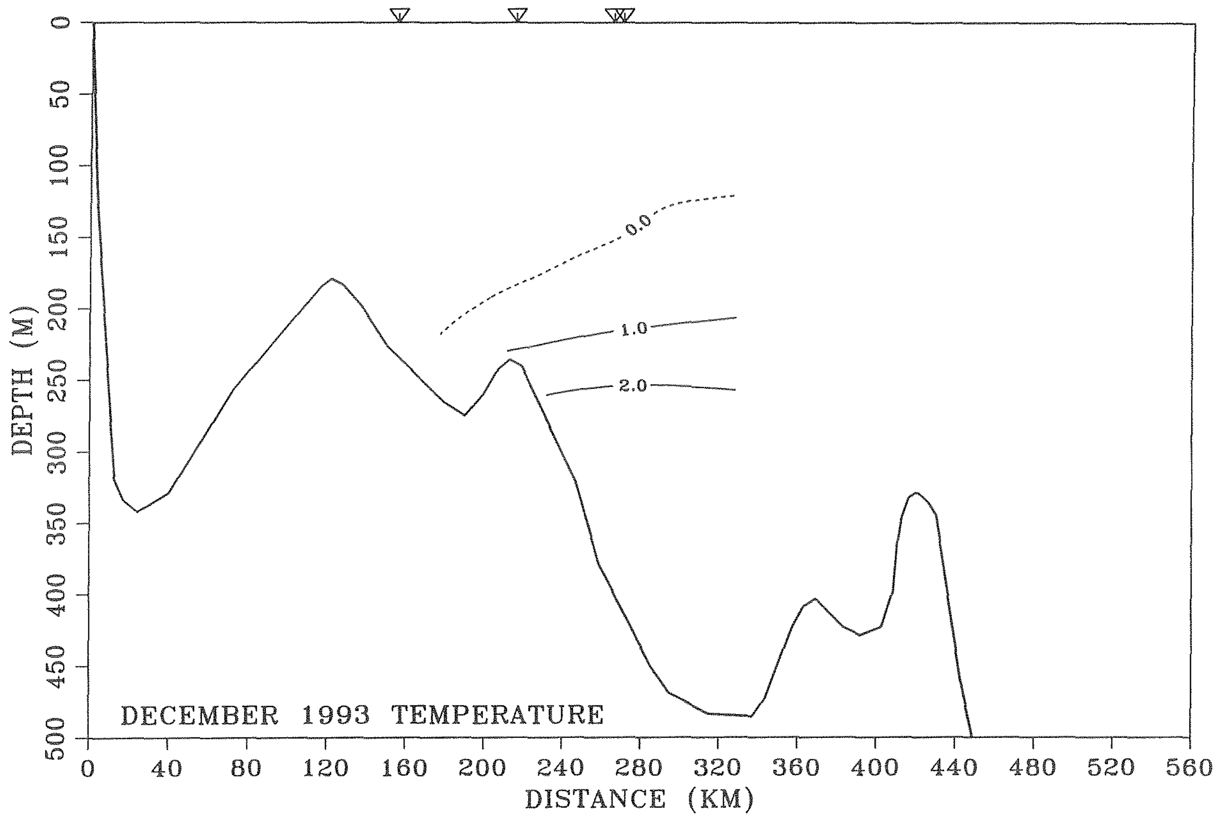
-1.0
0.0
0.0
1.0
2.0
1.0
2.0
3.0
2.0


DECEMBER 1993 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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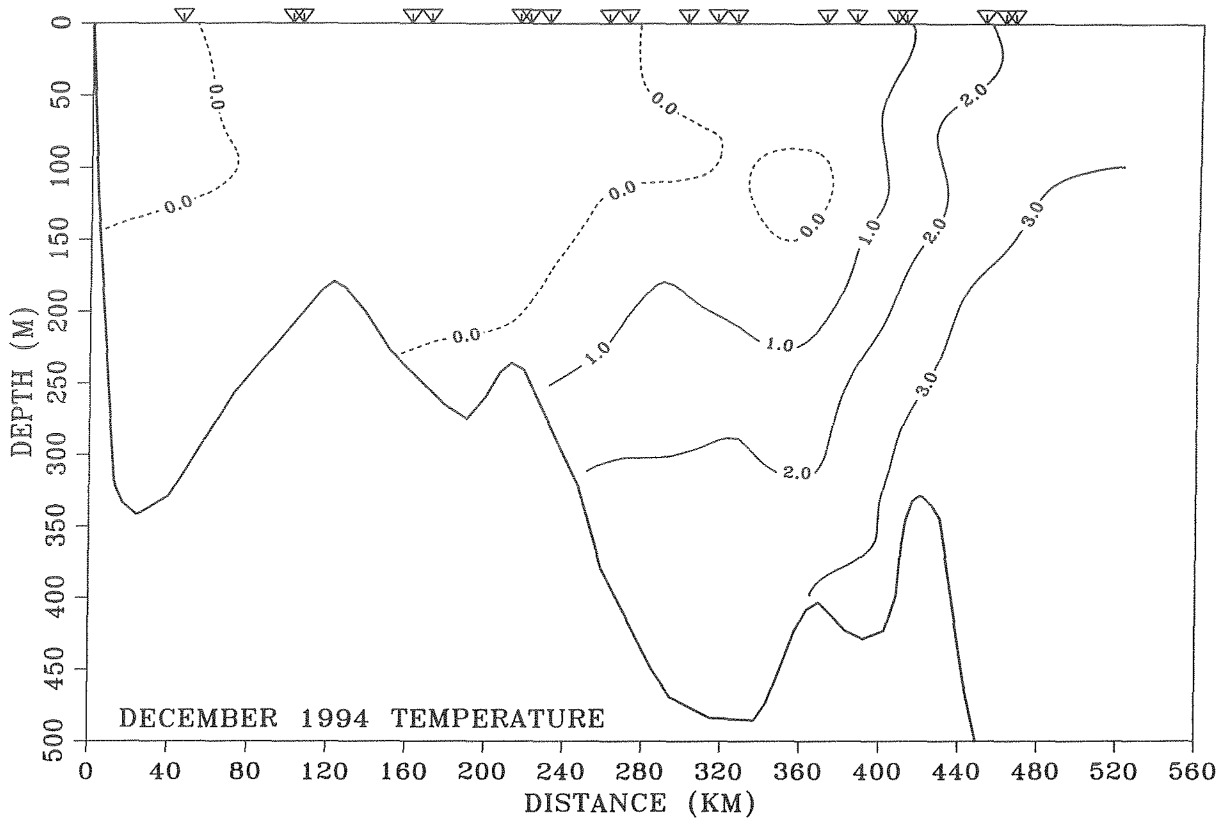
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
0.0
1.0
2.0


DECEMBER 1994 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
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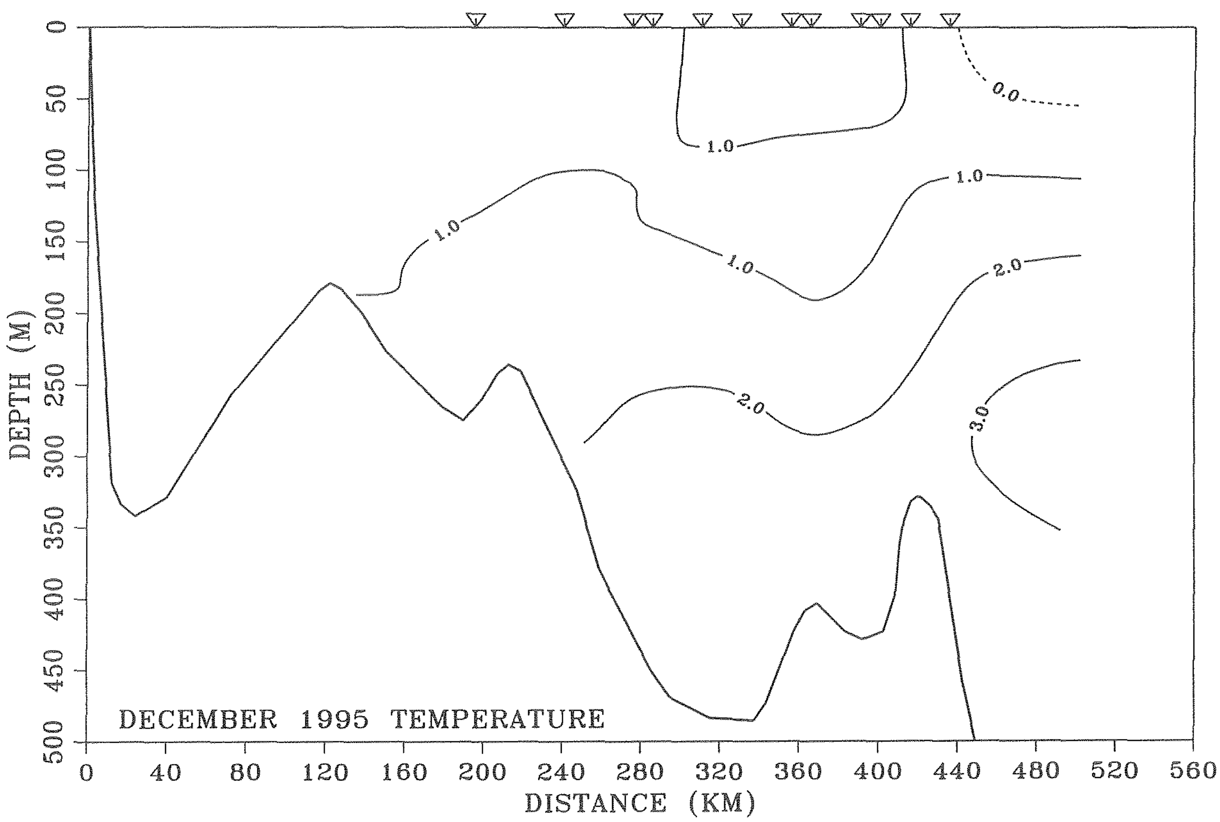
1.0
2.0
3.0


DECEMBER 1995 TEMPERATURE
DEPTH (M)
DISTANCE (KM)
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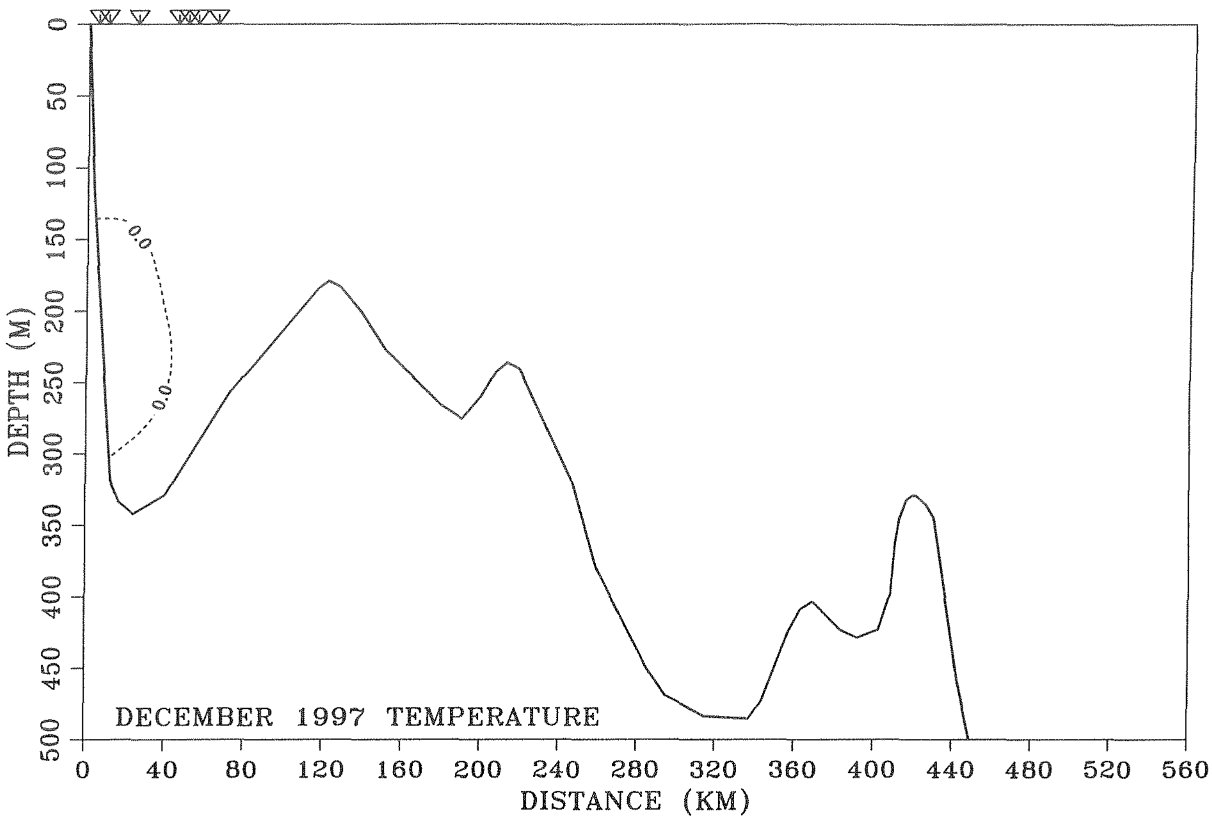
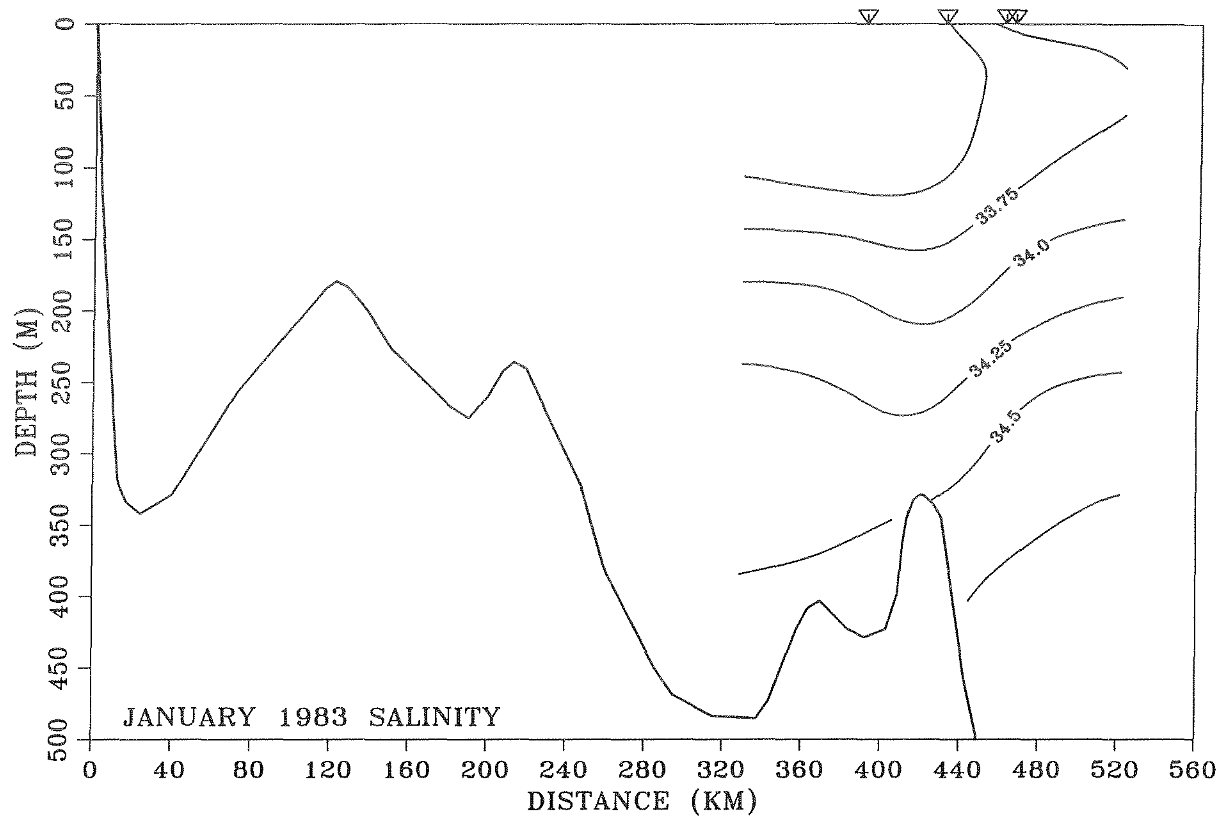
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
0.0
1.0
2.0
3.0


DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
0.0
0.0
DECEMBER 1997 TEMPERATURE
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)

Appendix F. White Bay Annual Salinity Transects.


JANUARY 1983 SALINITY
DEPTH (M)
DISTANCE (KM)
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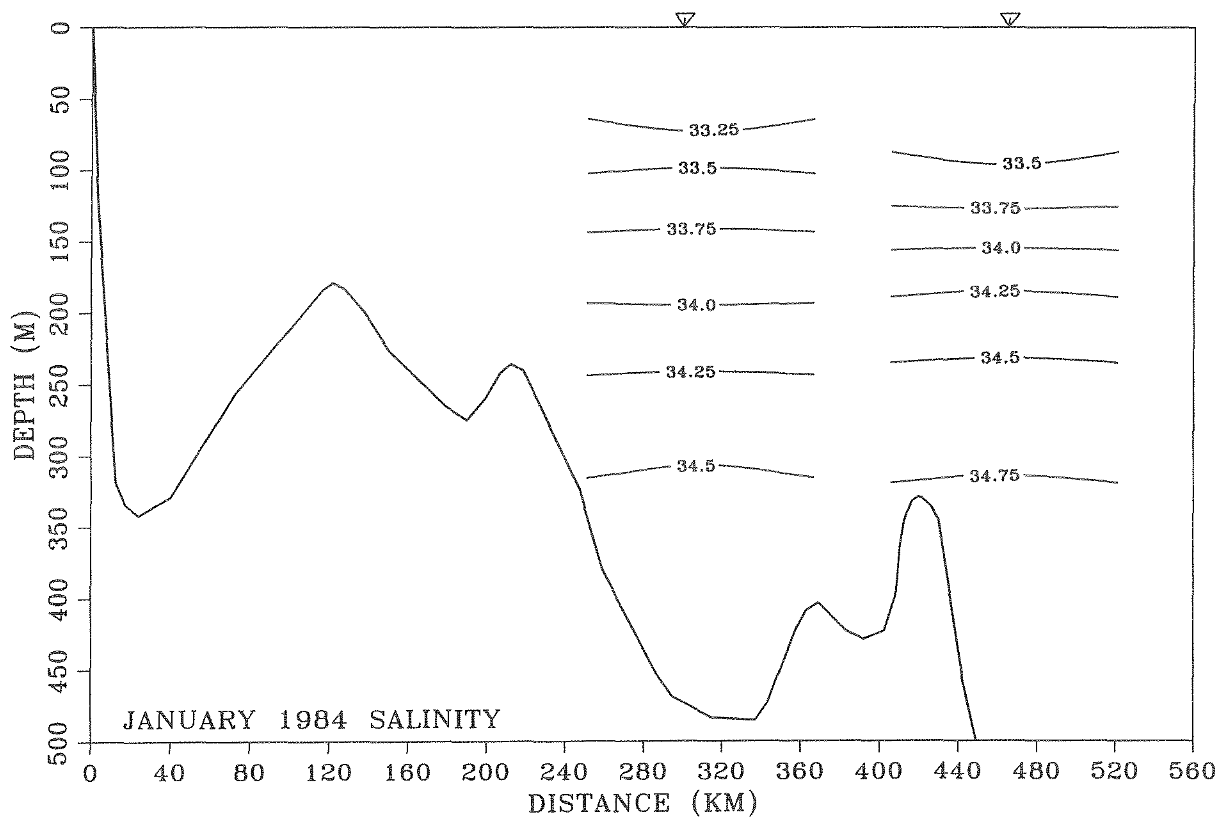
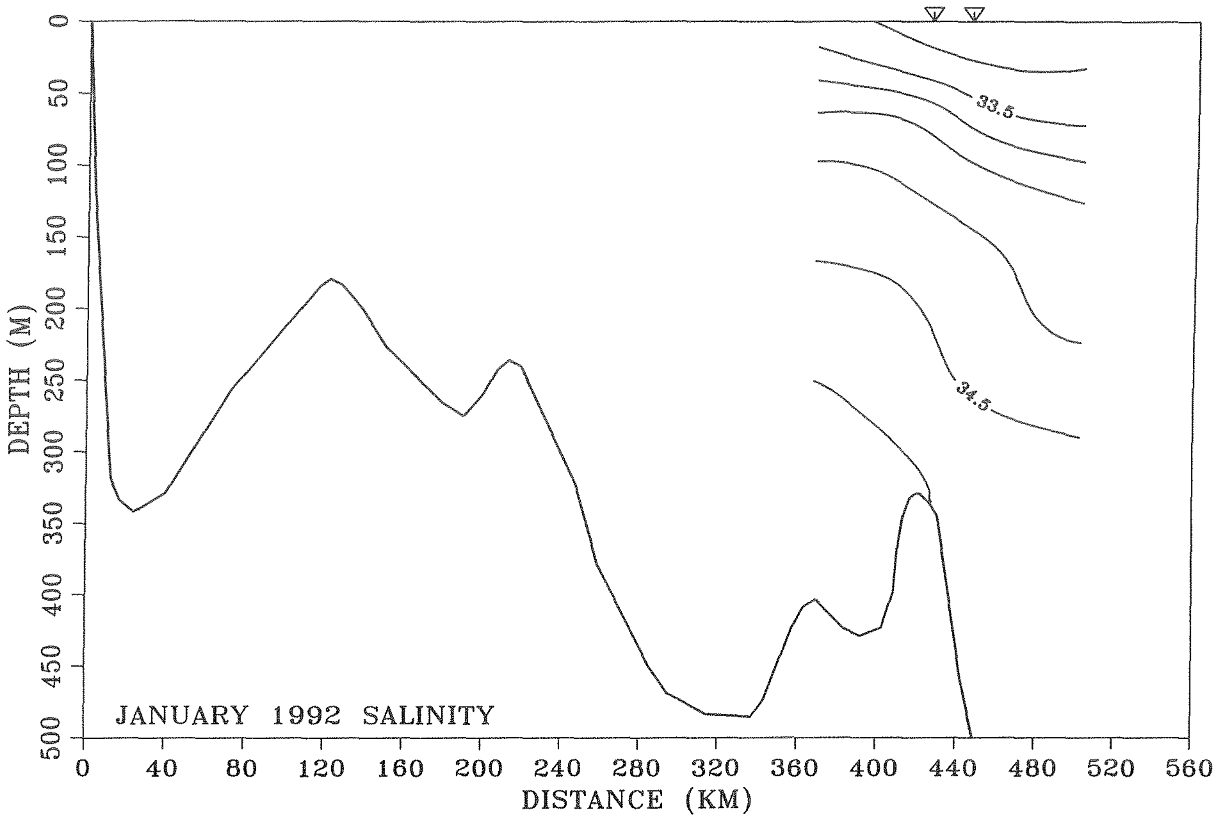
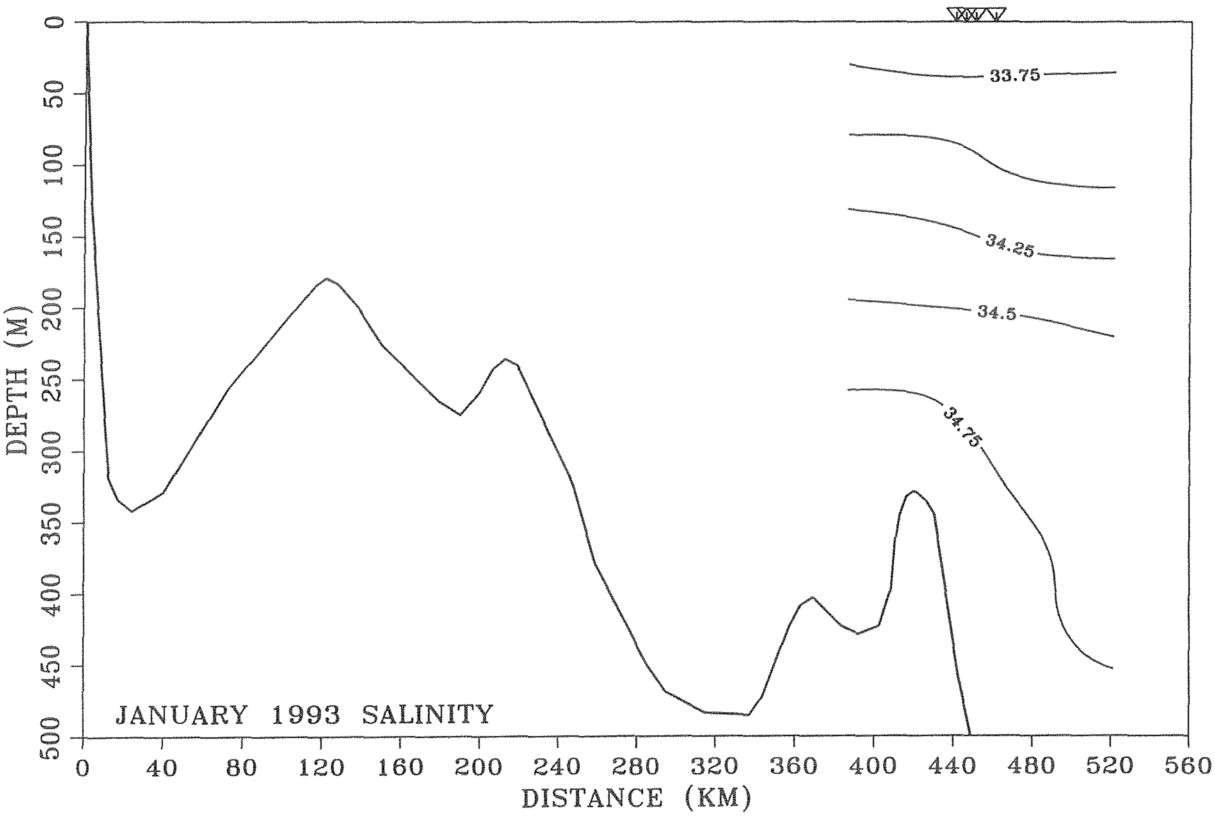
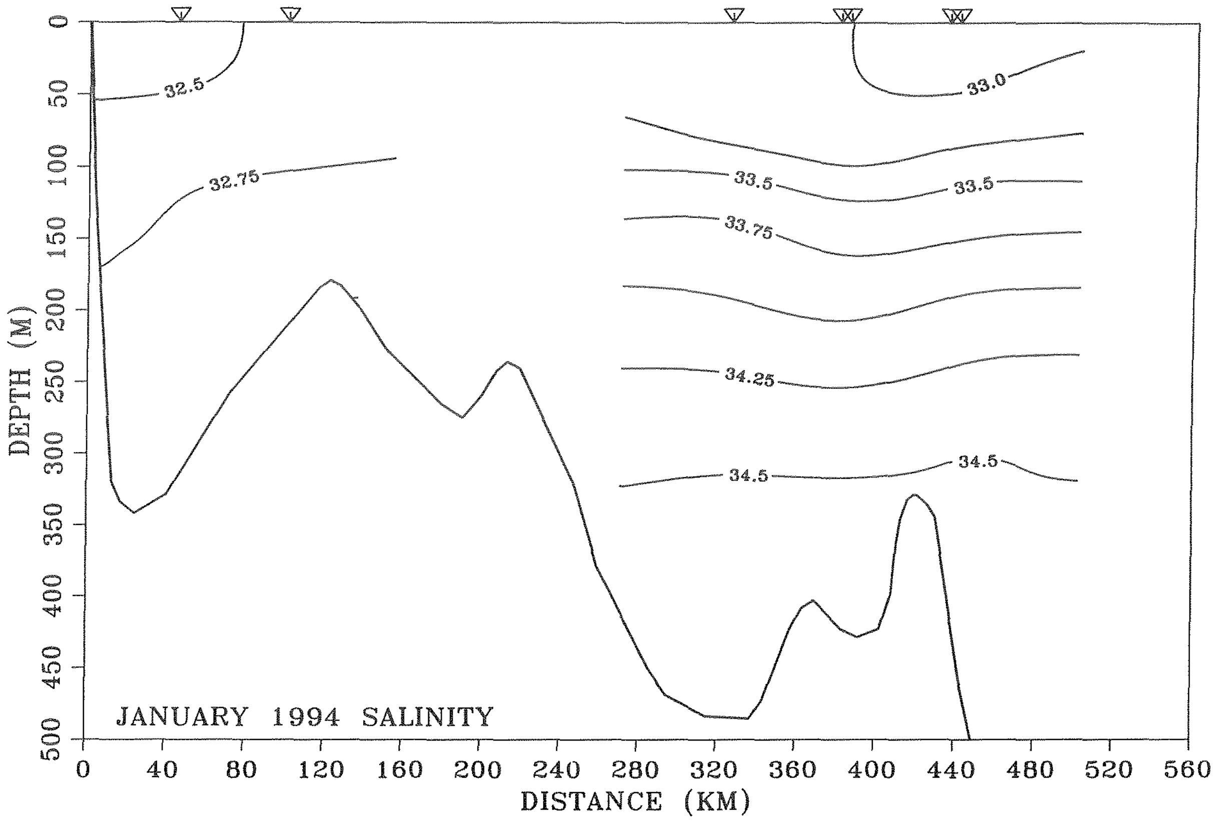
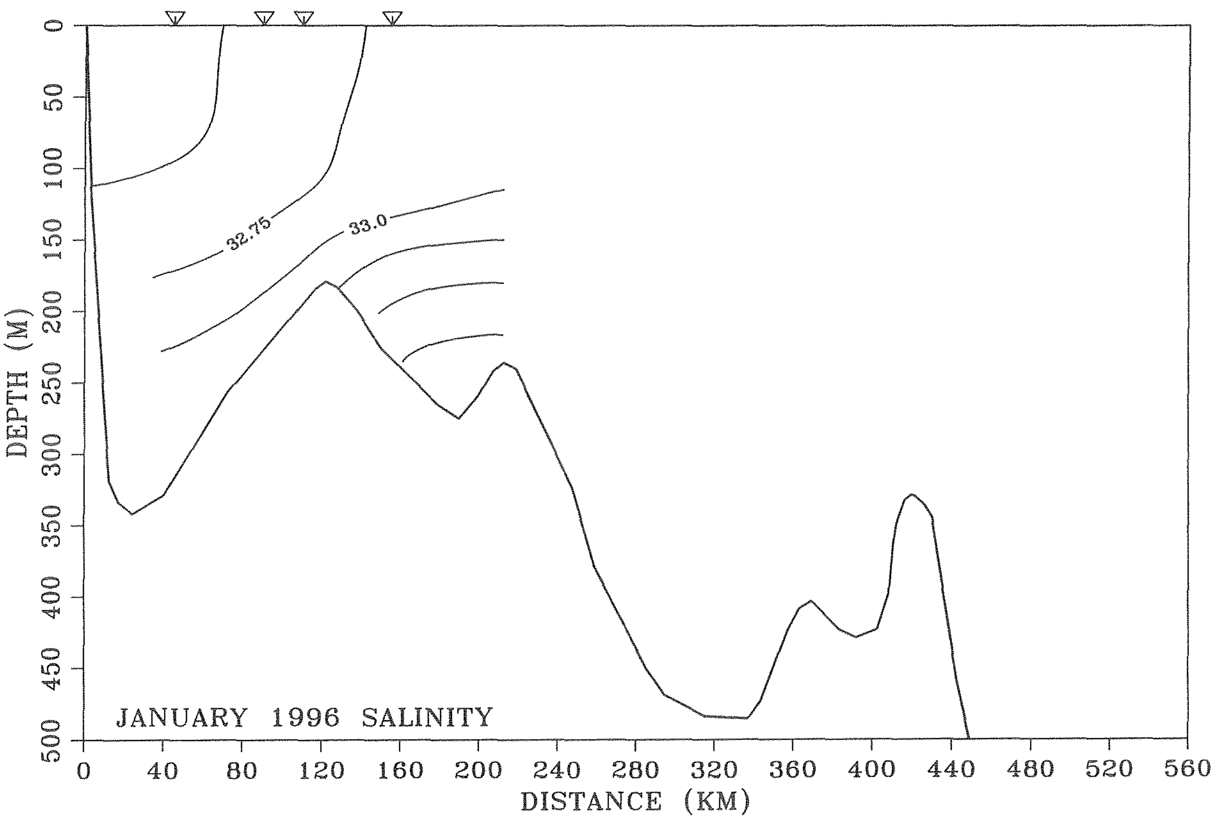
34.0
34.25
34.5
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560

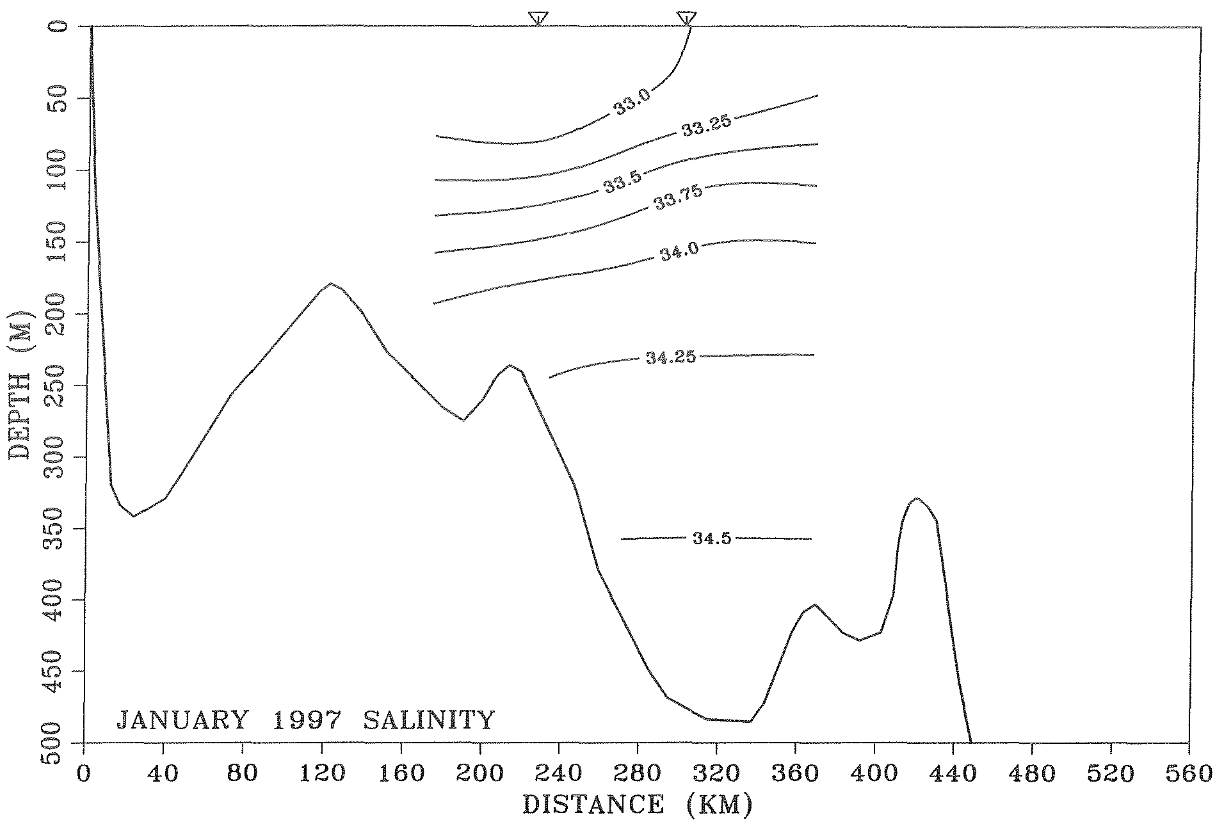

JANUARY 1984 SALINITY
DEPTH (M)
DISTANCE (KM)
33.25
33.5
33.75
34.0
34.25
34.5
33.5
33.75
34.0
34.25
34.5
34.75
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560

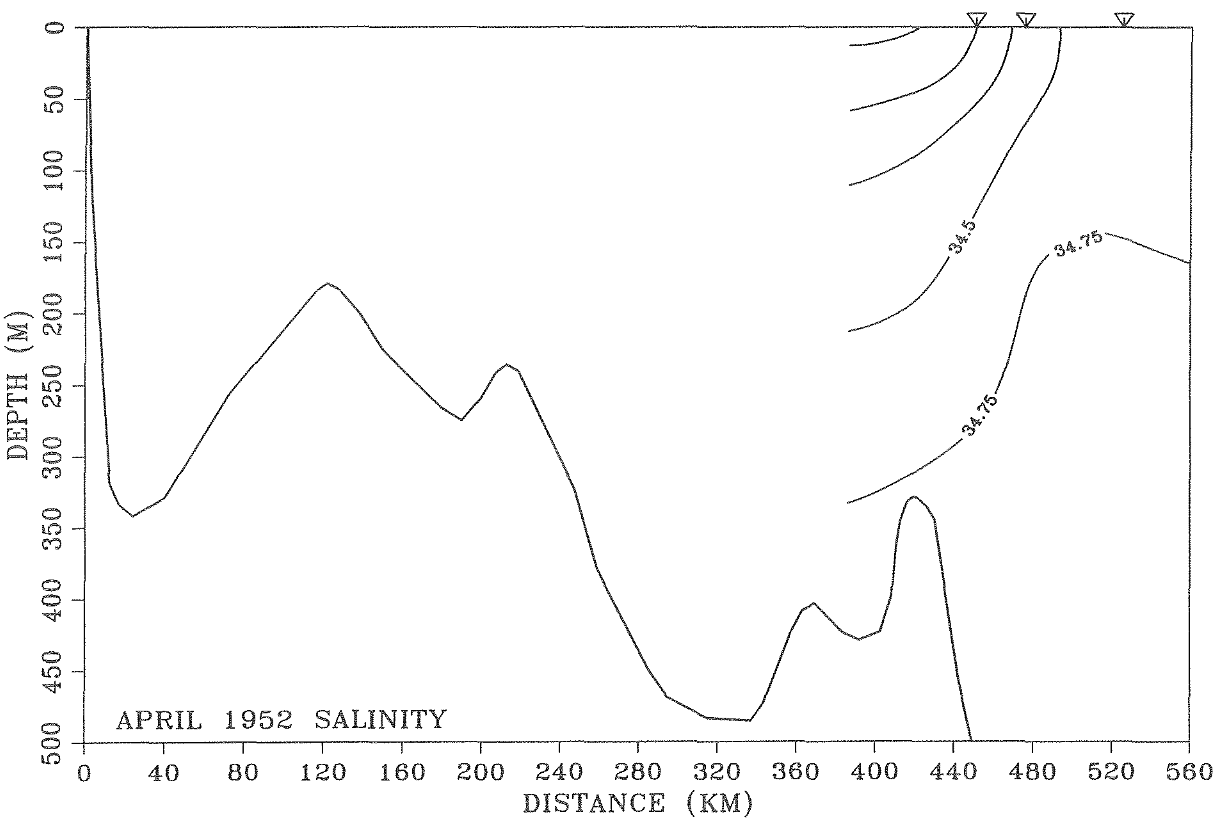

DEPTH (M)
DISTANCE (KM)
JANUARY 1992 SALINITY
33.5
34.5
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560

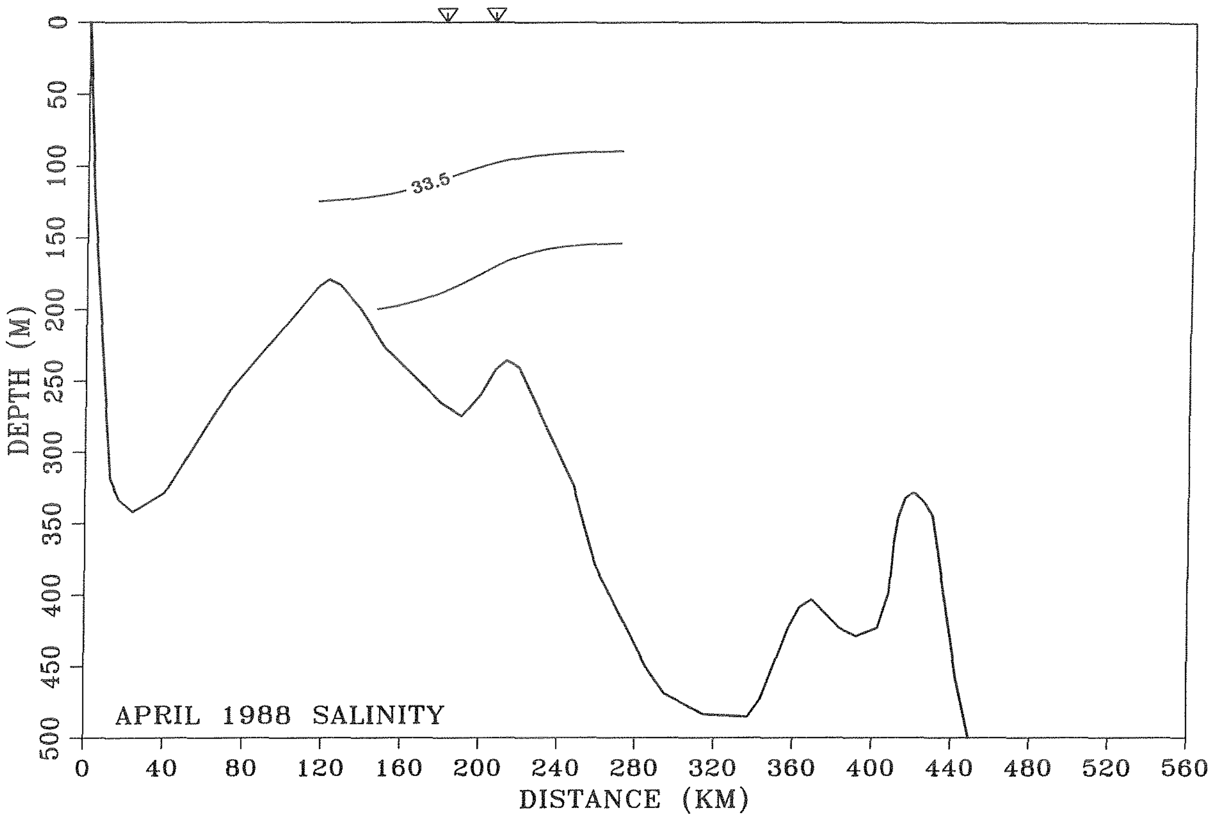

DEPTH (M)
DISTANCE (KM)
JANUARY 1993 SALINITY
33.75
34.25
34.5
34.75
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560

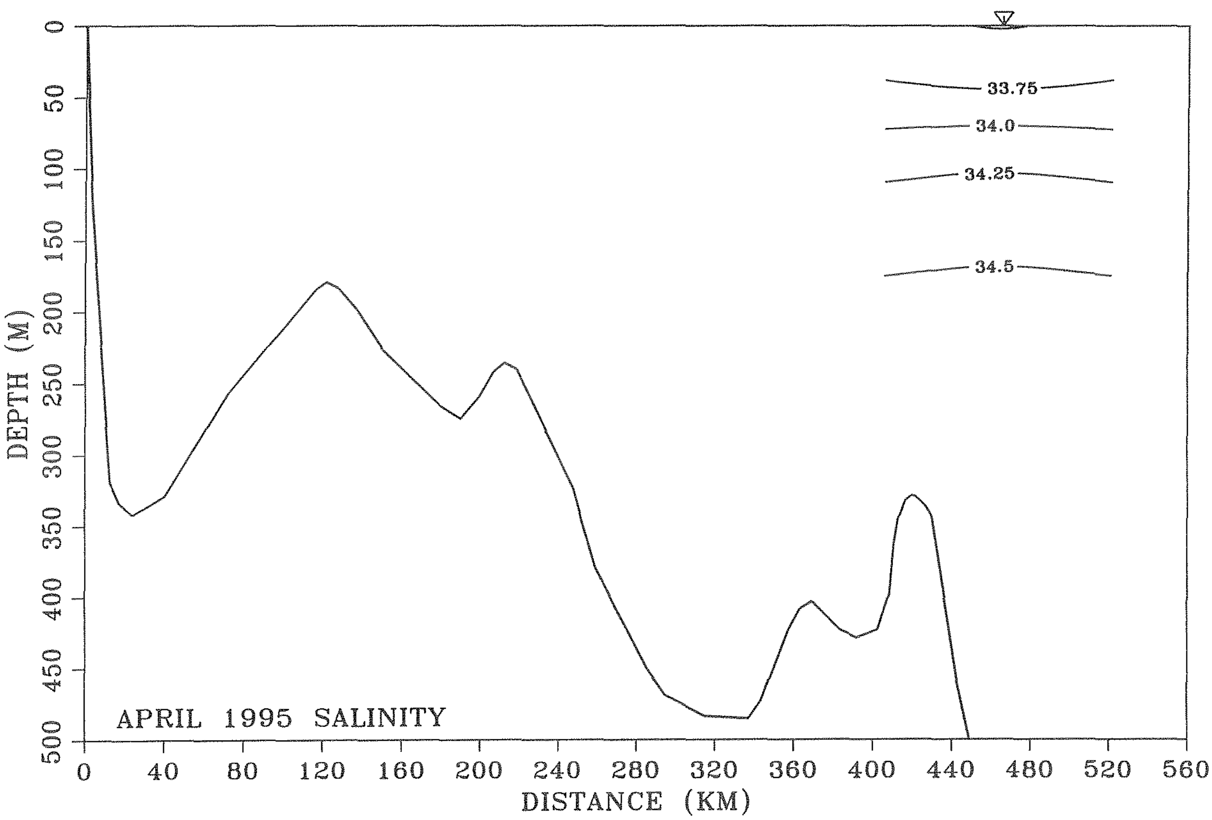

0
50
100
150
200
250
300
350
400
450
500
DEPTH (M)
32.5
33.0
32.75
33.5
33.5
33.75
34.25
34.5
34.5
JANUARY 1994 SALINITY
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)

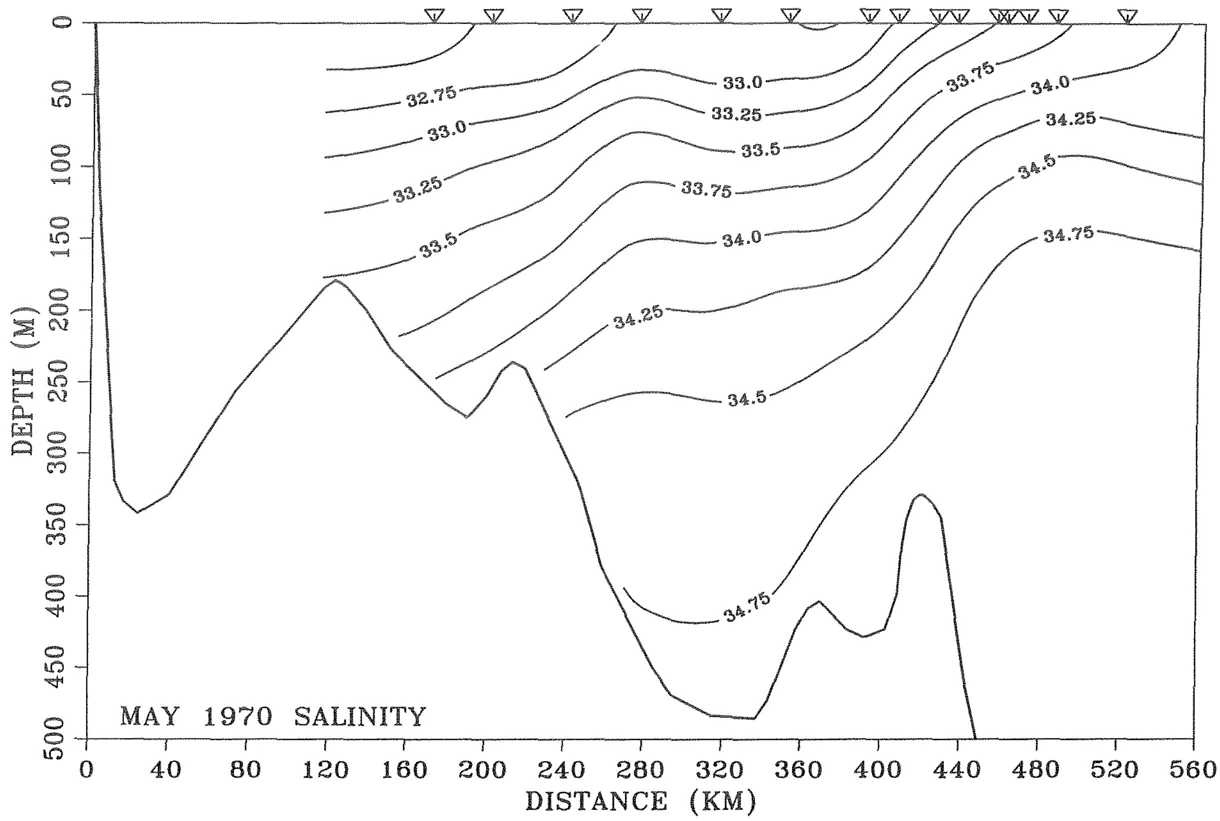

0
50
100
150
200
250
300
350
400
450
500
DEPTH (M)
32.75
33.0
JANUARY 1996 SALINITY
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)


33.0
33.25
33.5
33.75
34.0
34.25
34.5
JANUARY 1997 SALINITY
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)


34.5
34.75
34.75
APRIL 1952 SALINITY
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)


33.5
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
APRIL 1988 SALINITY
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)


33.75
34.0
34.25
34.5
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
APRIL 1995 SALINITY
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)


MAY 1970 SALINITY
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
32.75
33.0
33.25
33.5
33.75
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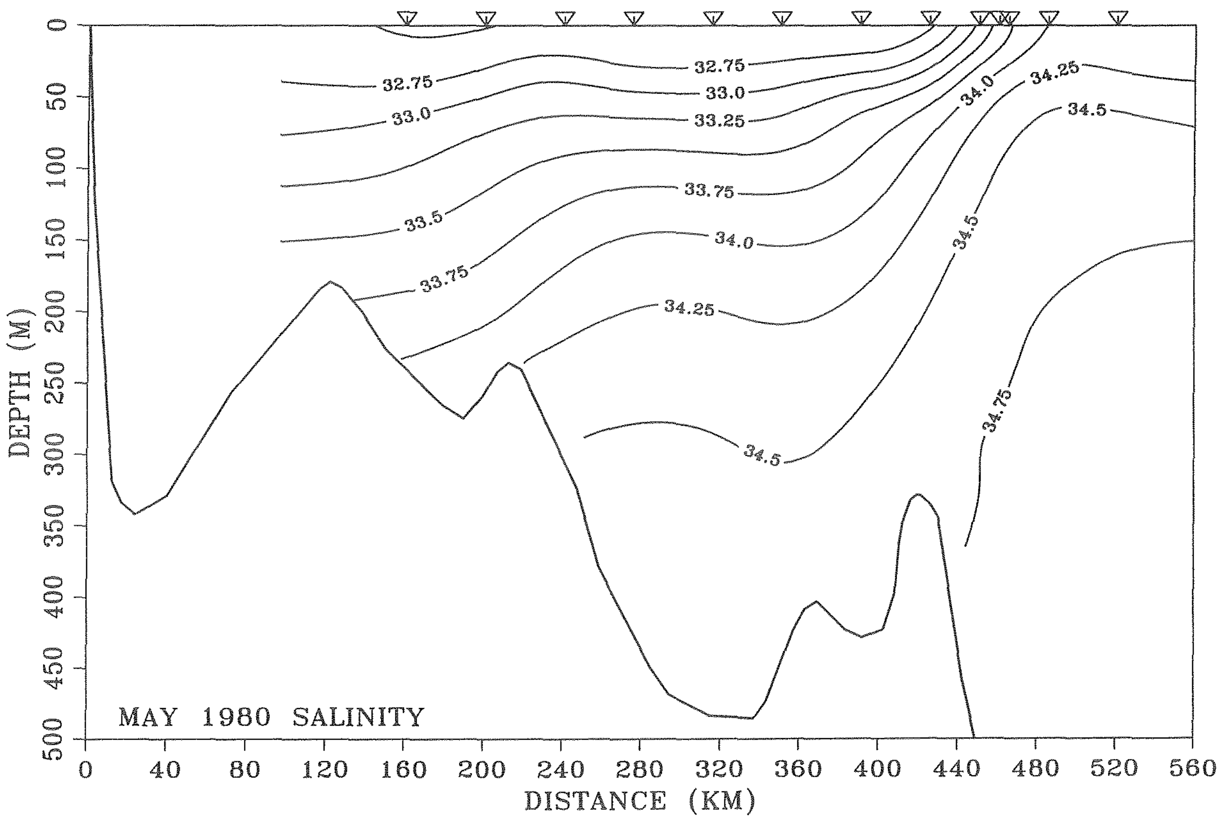
34.25
34.5
34.75


MAY 1980 SALINITY
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
32.75
33.0
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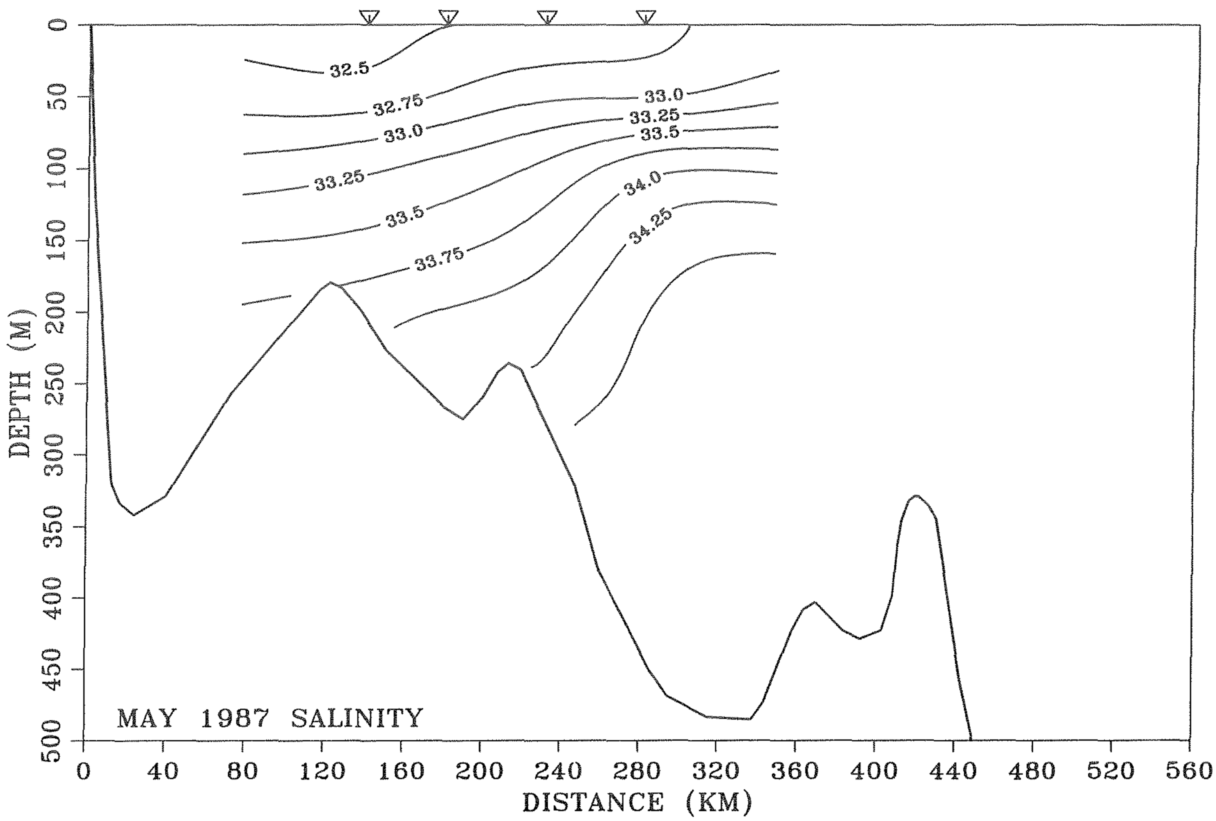
34.75


MAY 1987 SALINITY
DEPTH (M)
DISTANCE (KM)
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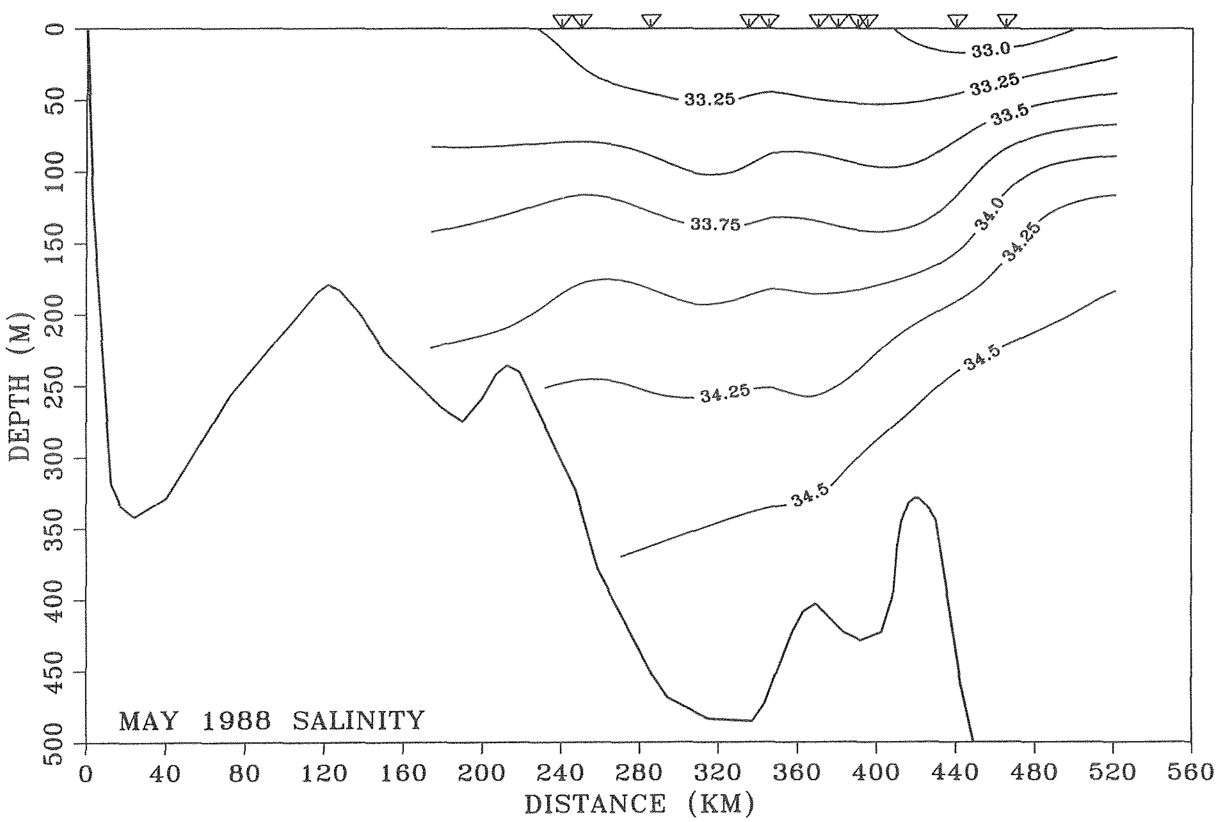
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560


MAY 1988 SALINITY
DEPTH (M)
DISTANCE (KM)
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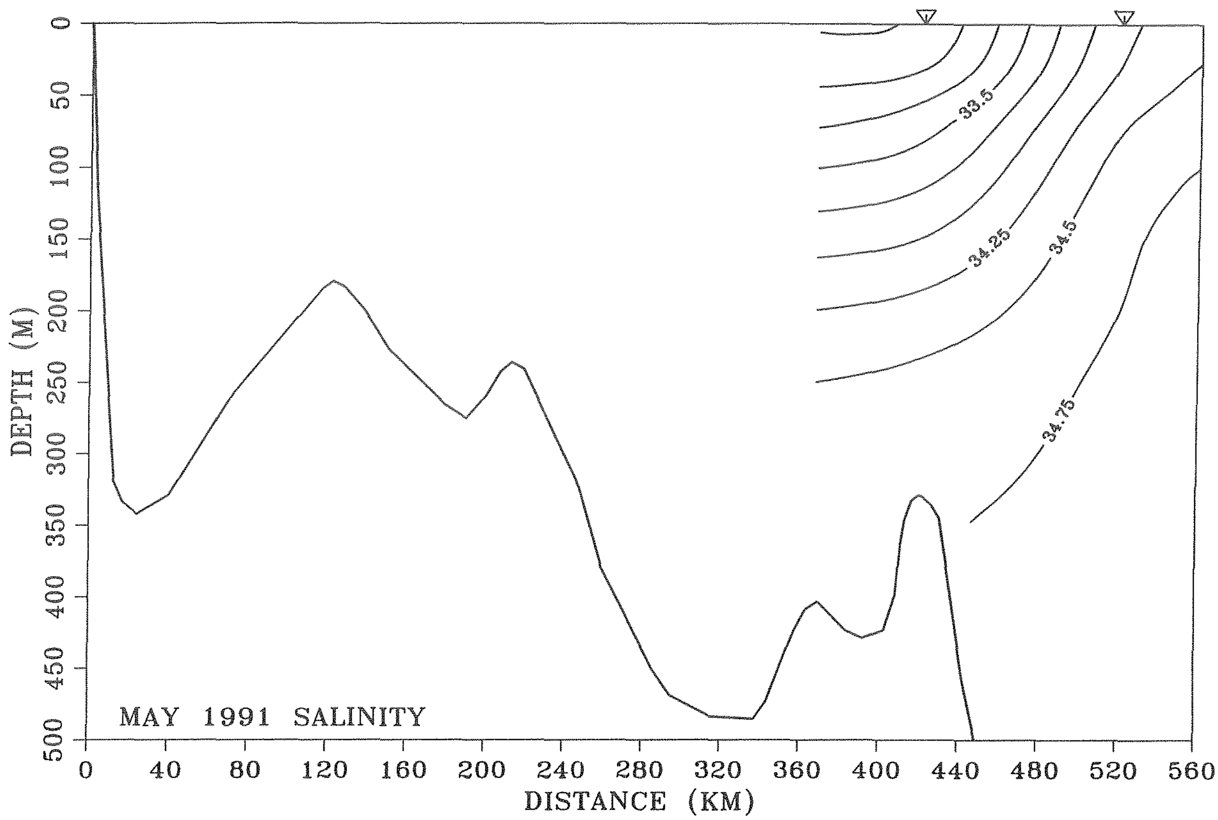
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DEPTH (M)
DISTANCE (KM)
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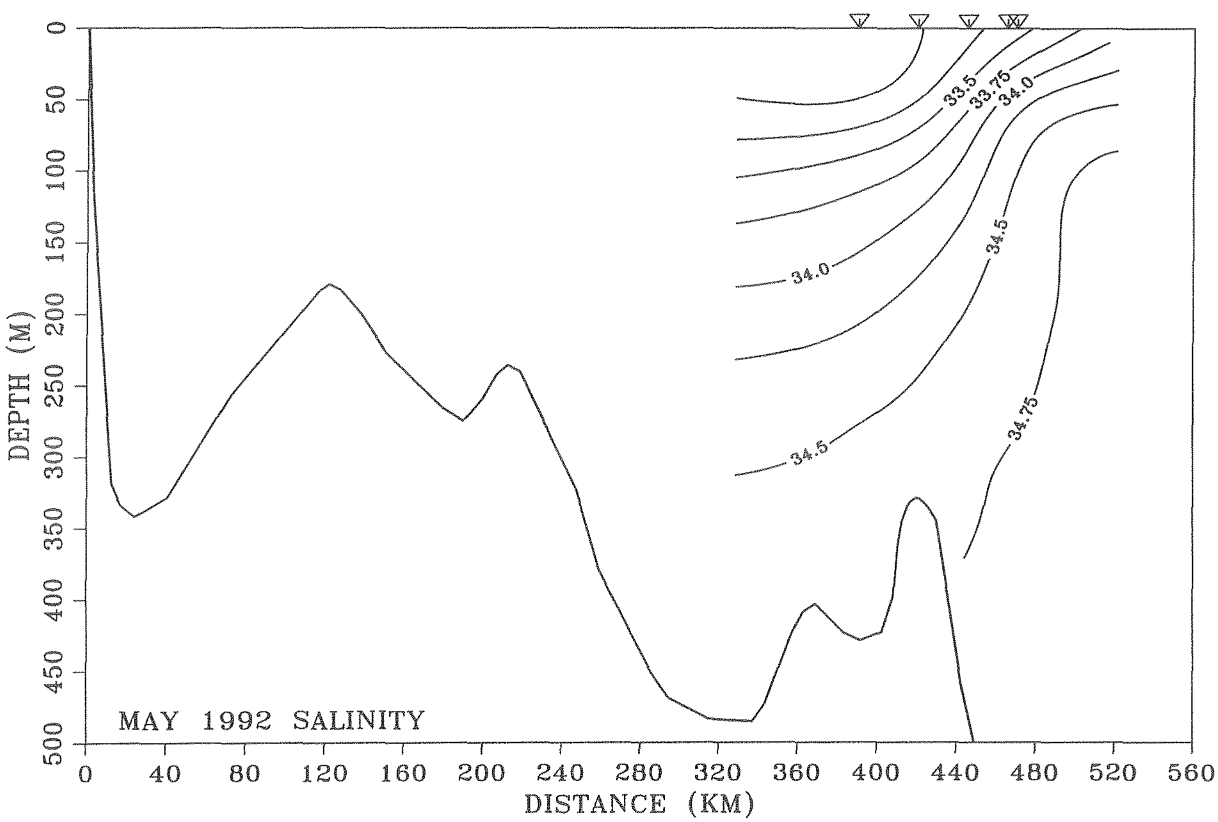
MAY 1992 SALINITY
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DISTANCE (KM)
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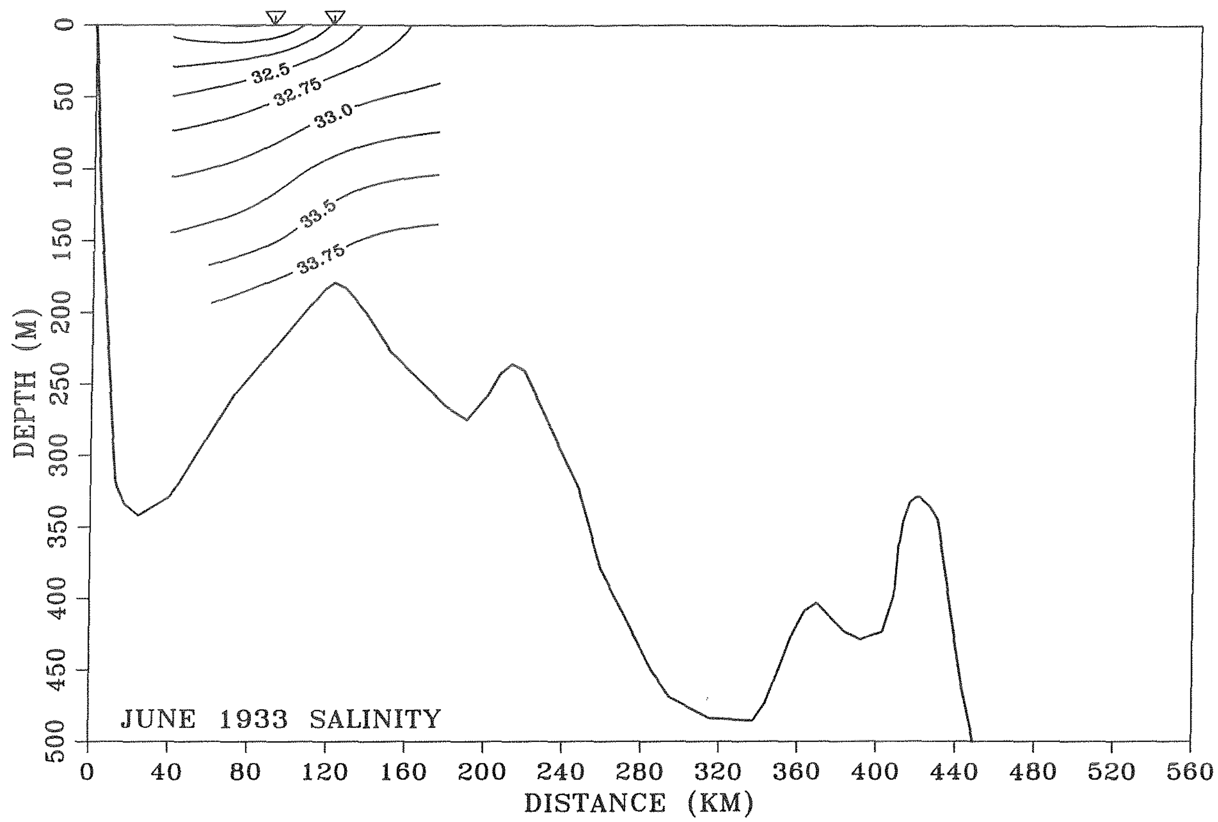
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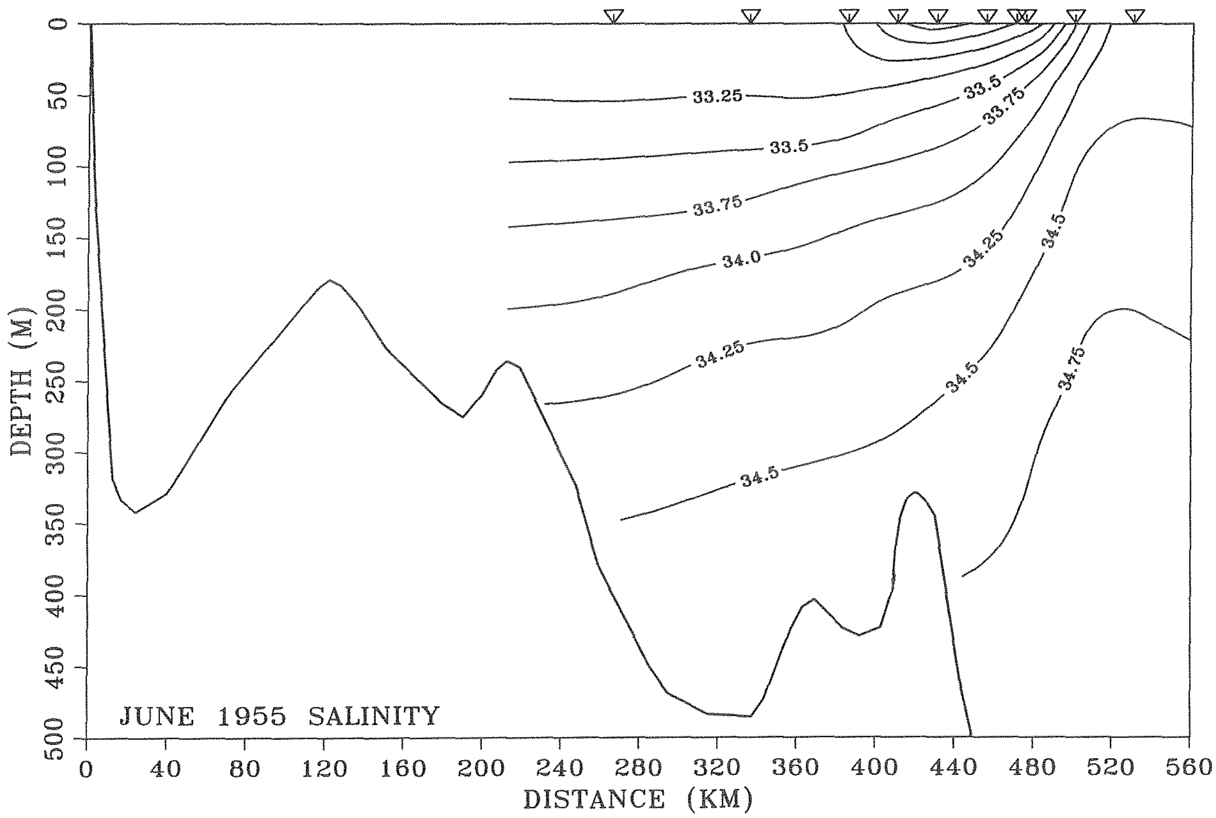
DEPTH (M)
JUNE 1933 SALINITY
DISTANCE (KM)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DEPTH (M)
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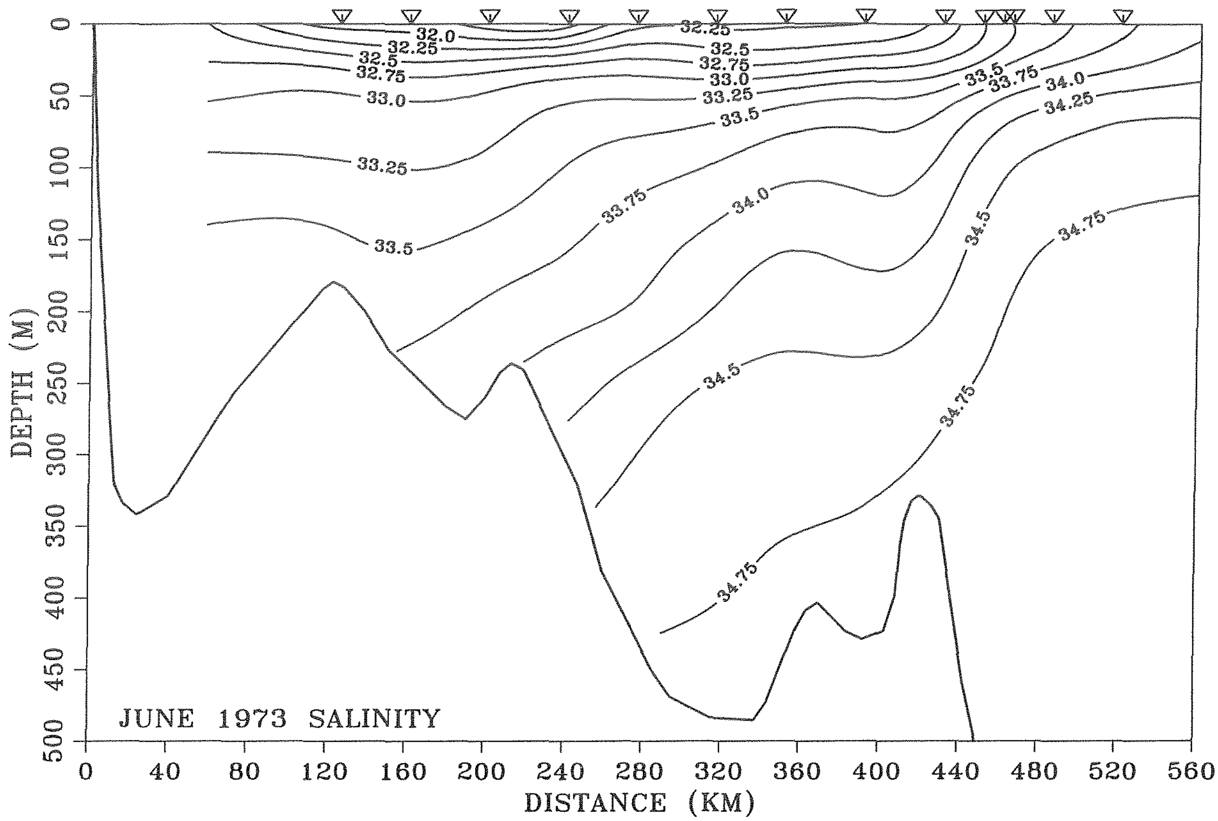
DISTANCE (KM)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DISTANCE (KM)
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34.5
34.75
0
50
100
150
200
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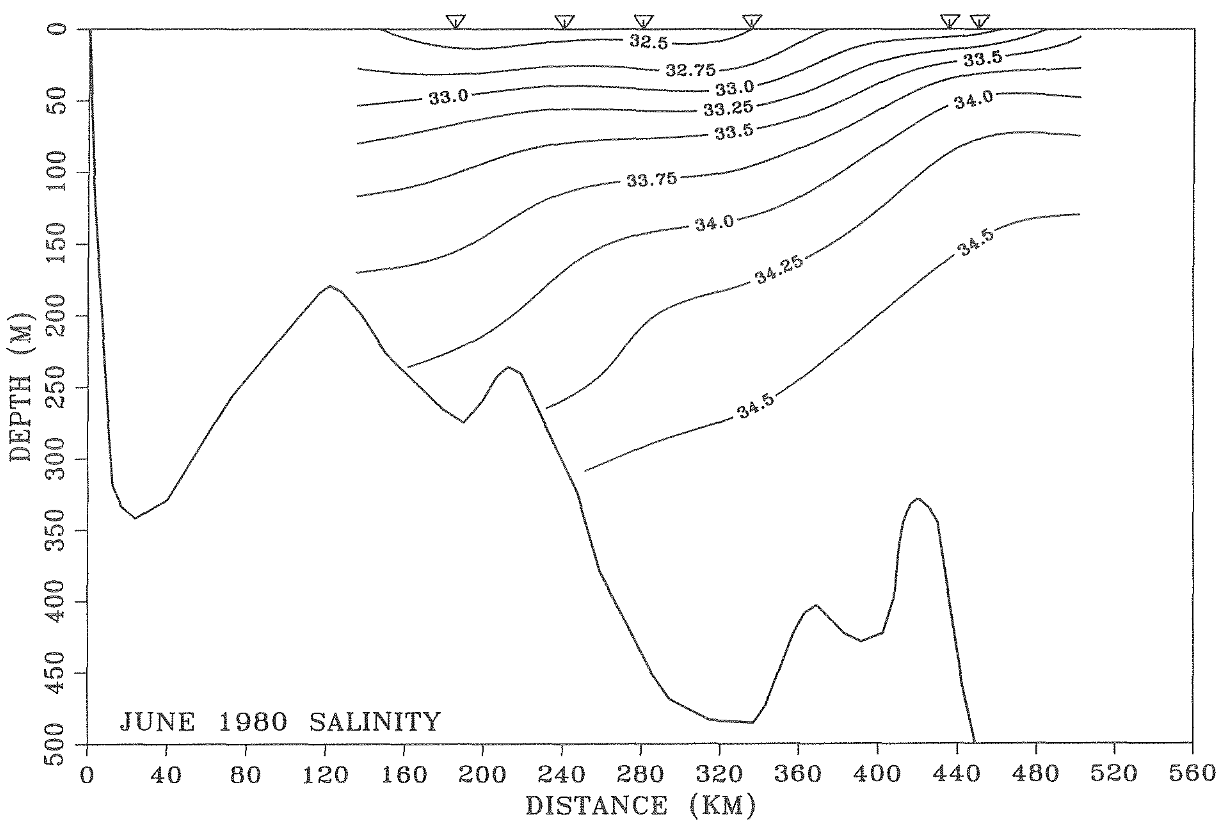
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DEPTH (M)
DISTANCE (KM)
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34.5
0
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100
150
200
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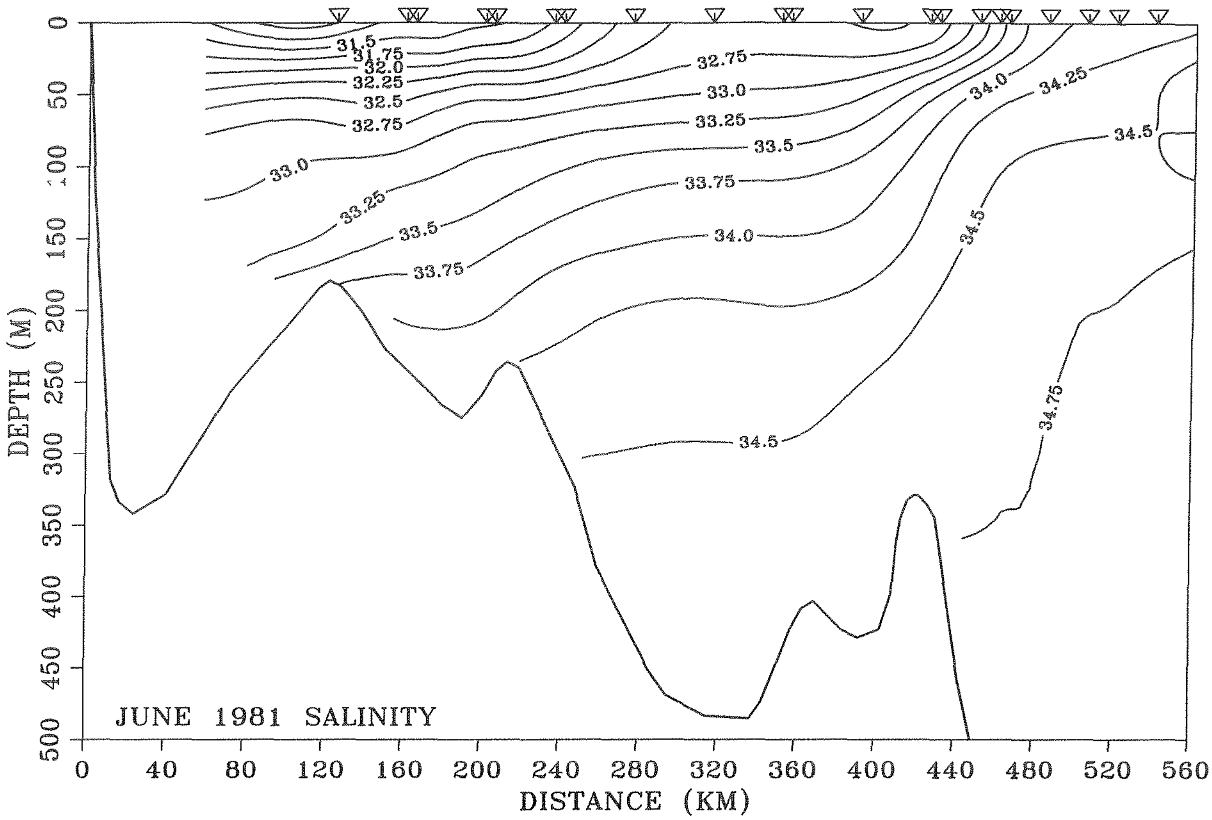
JUNE 1981 SALINITY
DEPTH (M)
DISTANCE (KM)
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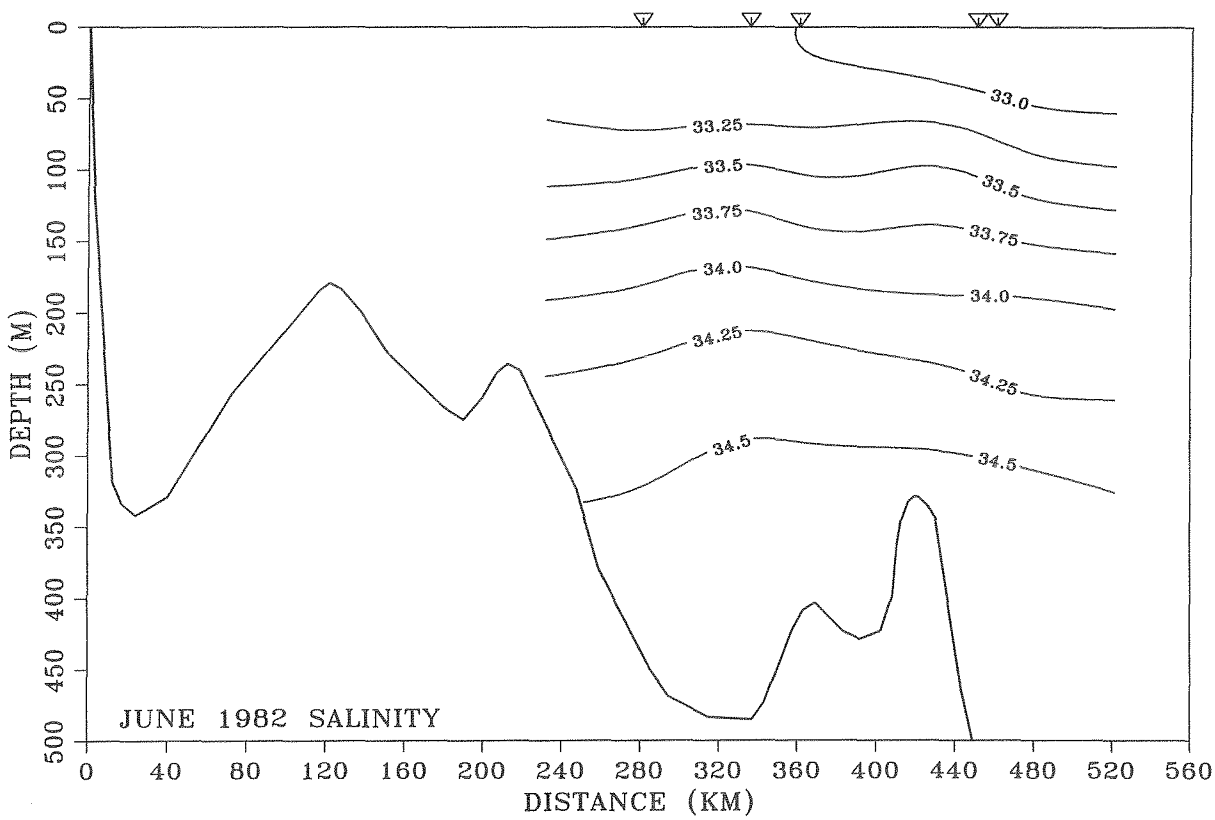
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DEPTH (M)
DISTANCE (KM)
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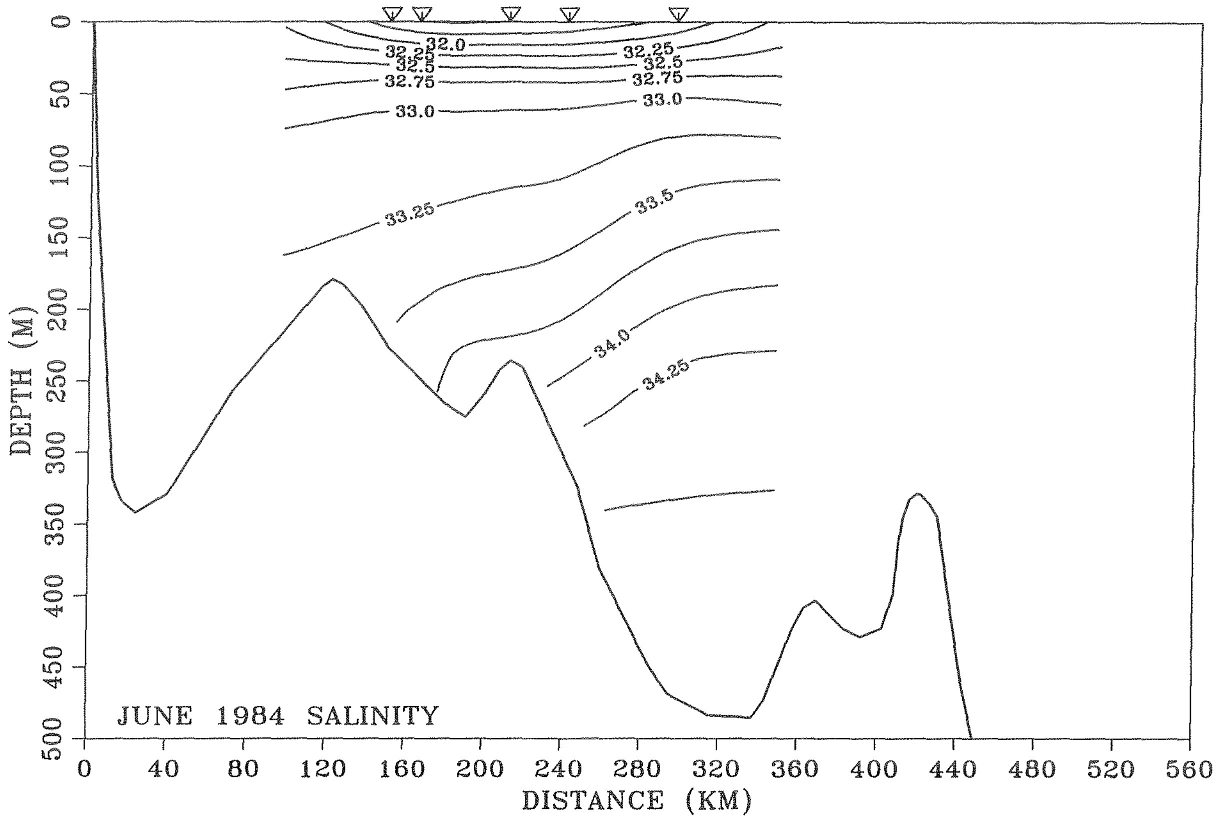
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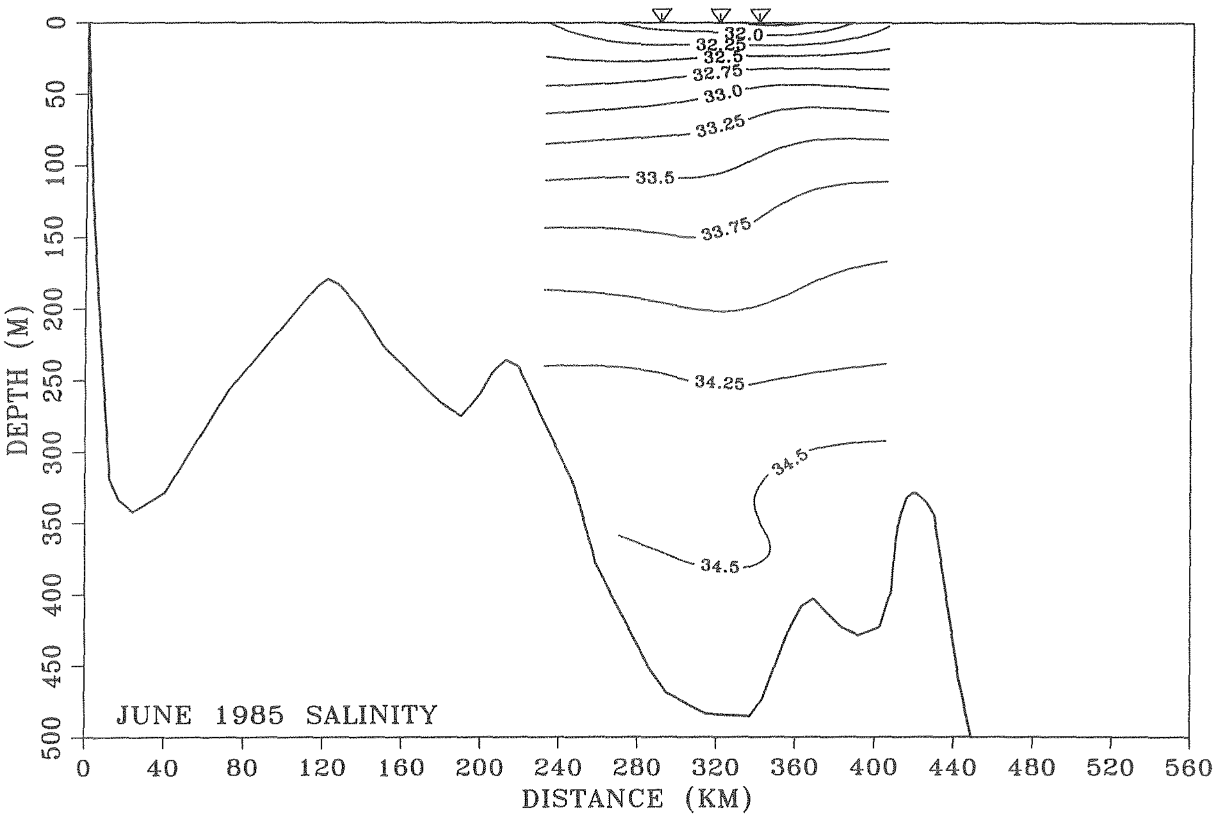
34.0
34.25
DEPTH (M)
DISTANCE (KM)
JUNE 1984 SALINITY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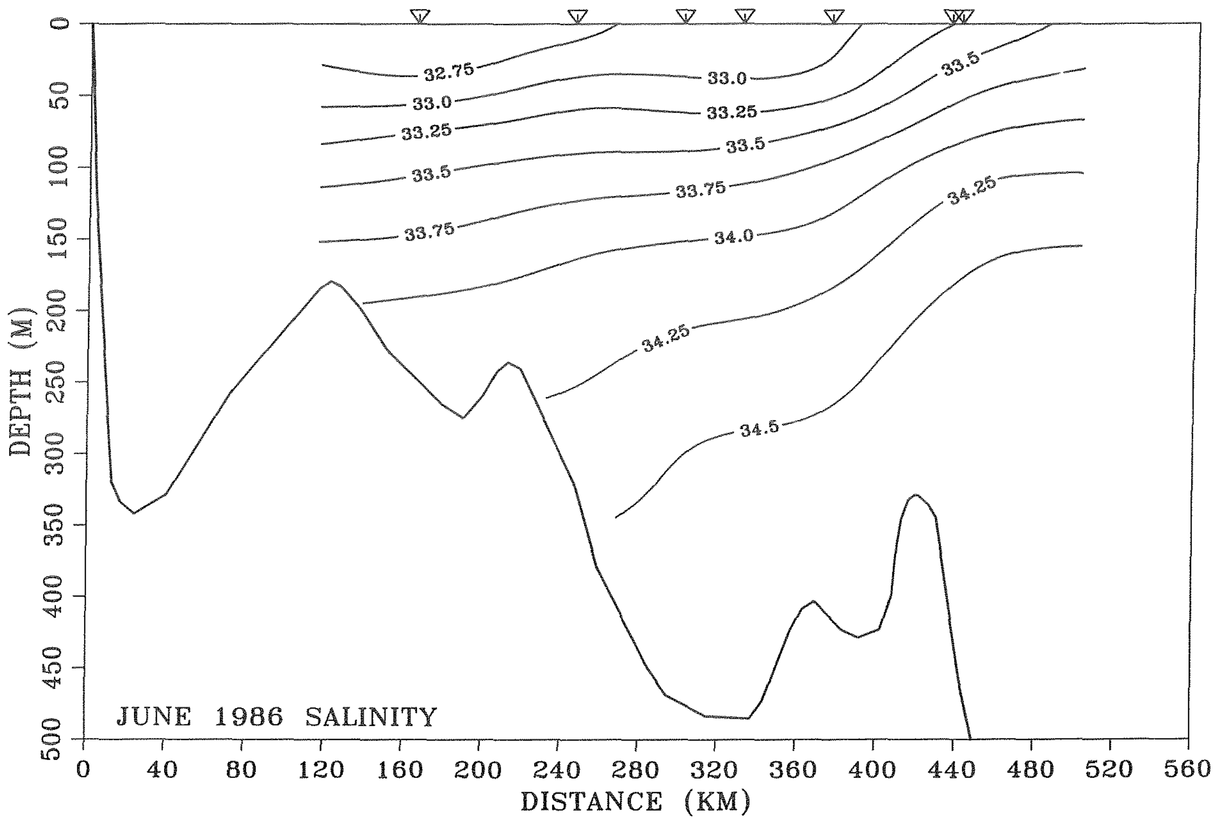
34.5
DEPTH (M)
DISTANCE (KM)
JUNE 1985 SALINITY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34.5
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DEPTH (M)
DISTANCE (KM)
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50
100
150
200
250
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500
0
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80
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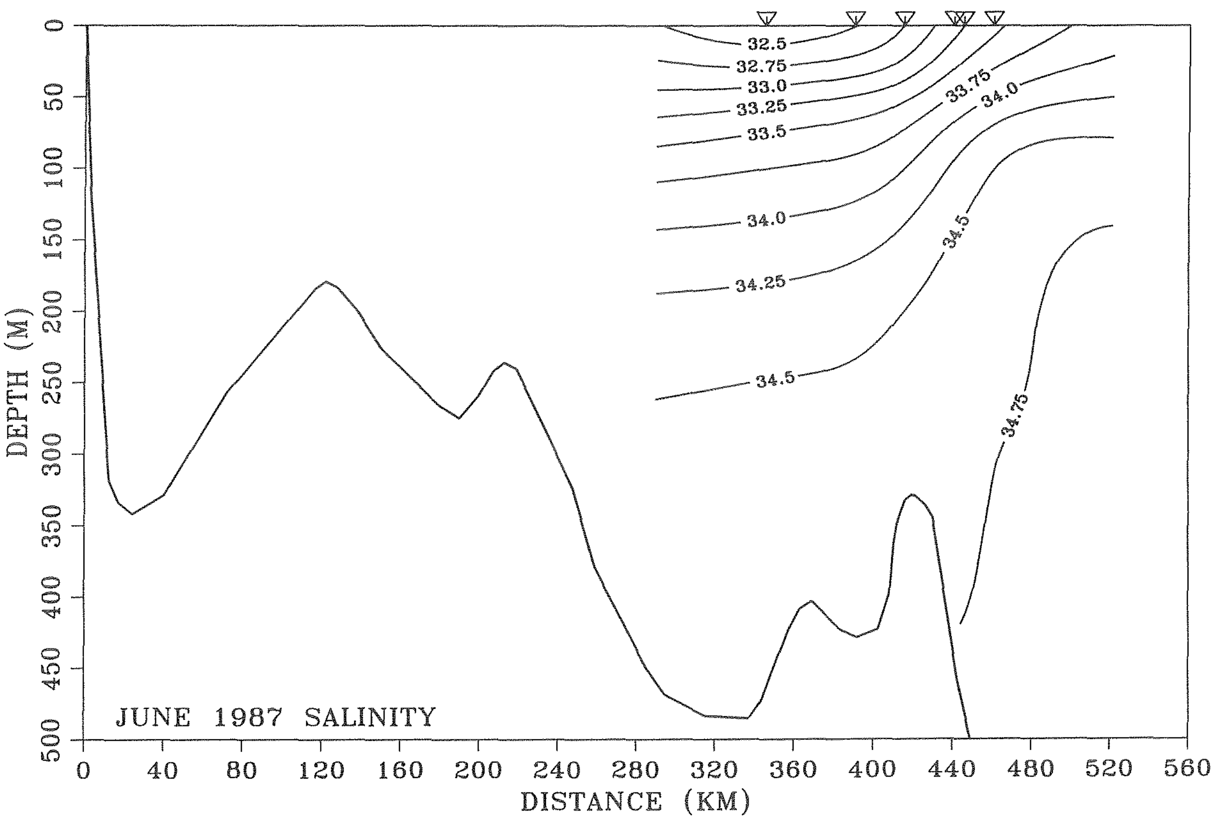
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33.75
34.0
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34.75
JUNE 1987 SALINITY
DEPTH (M)
DISTANCE (KM)
0
50
100
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200
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0
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80
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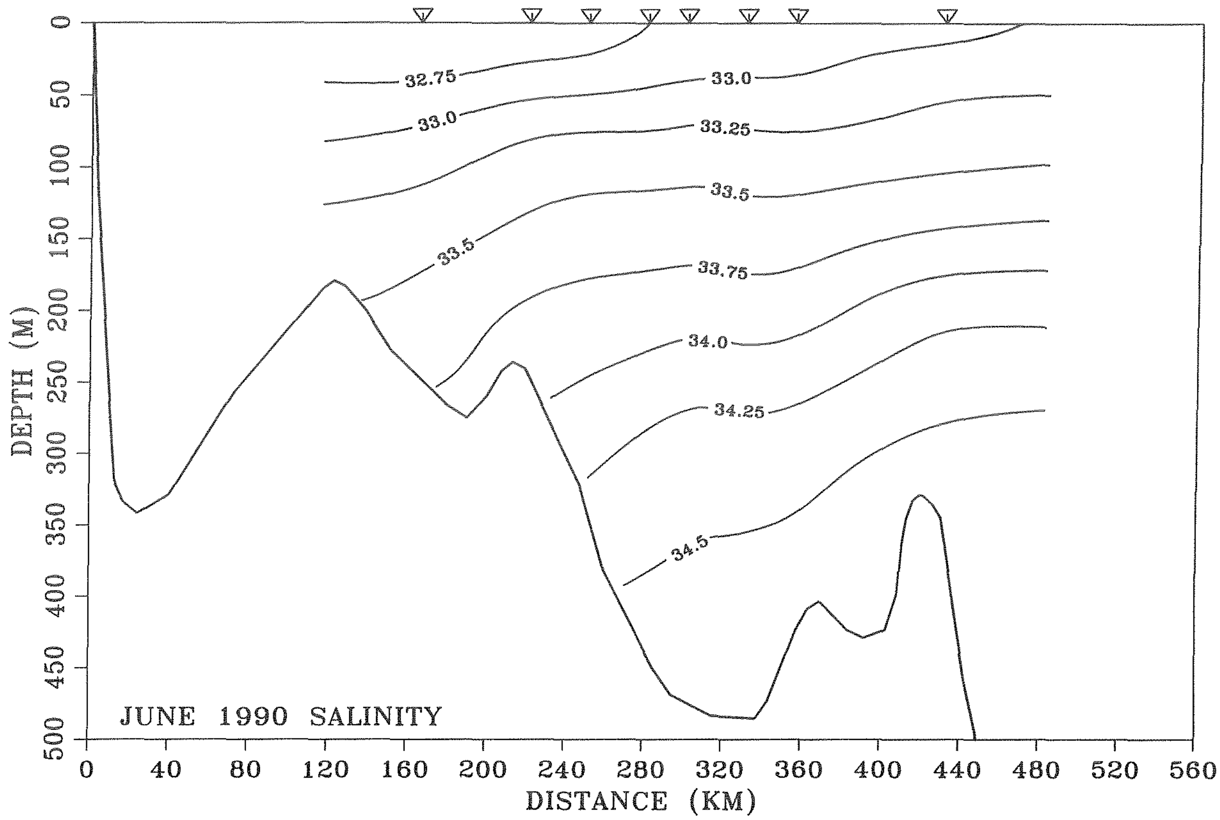
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33.75
34.0
34.25
34.5
DEPTH (M)
0
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100
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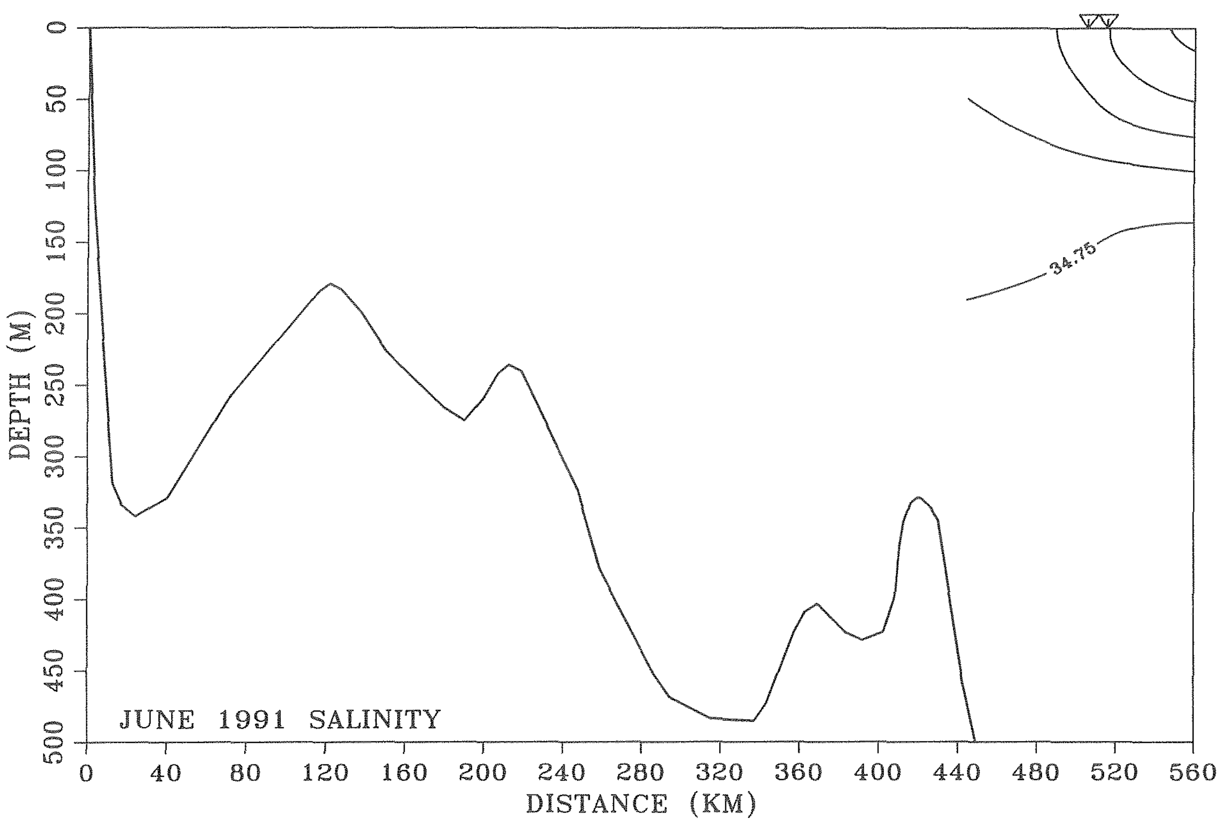
300
350
400
450
500
JUNE 1990 SALINITY
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)


34.75
DEPTH (M)
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300
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400
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500
JUNE 1991 SALINITY
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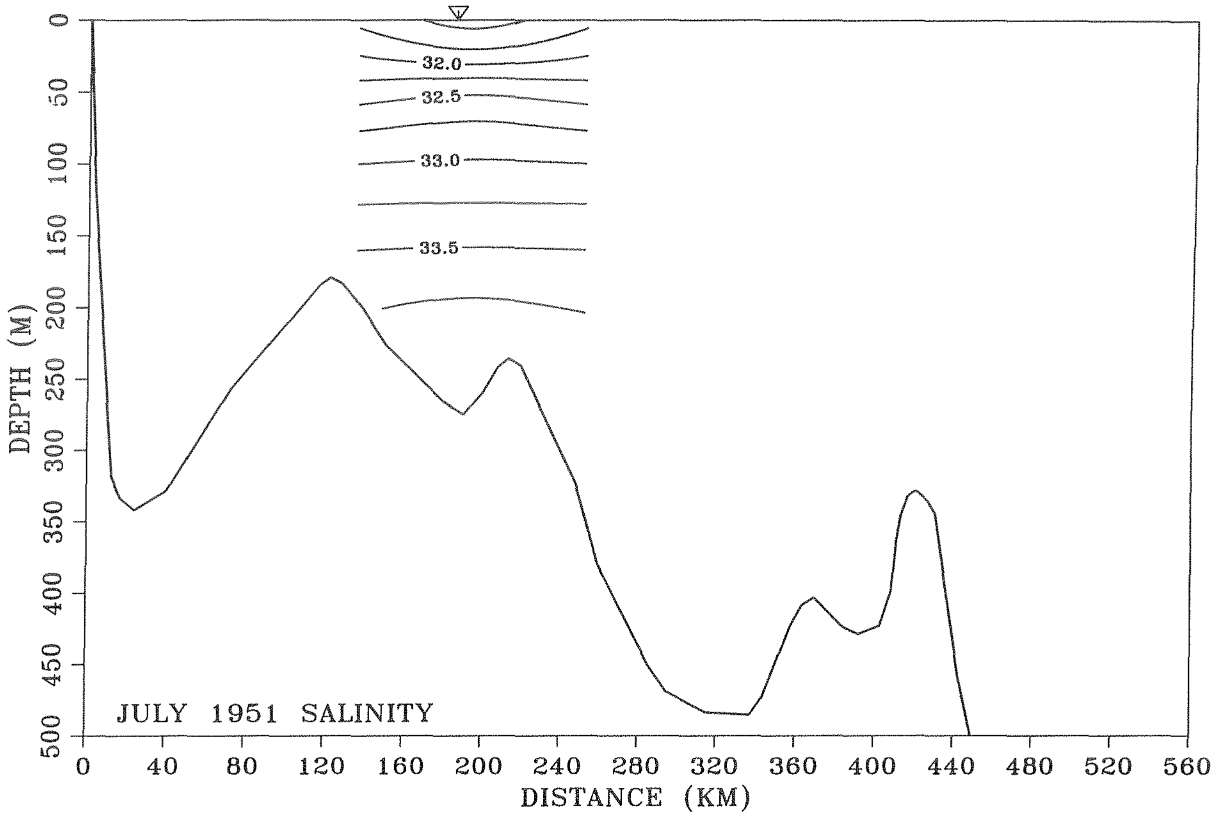
DISTANCE (KM)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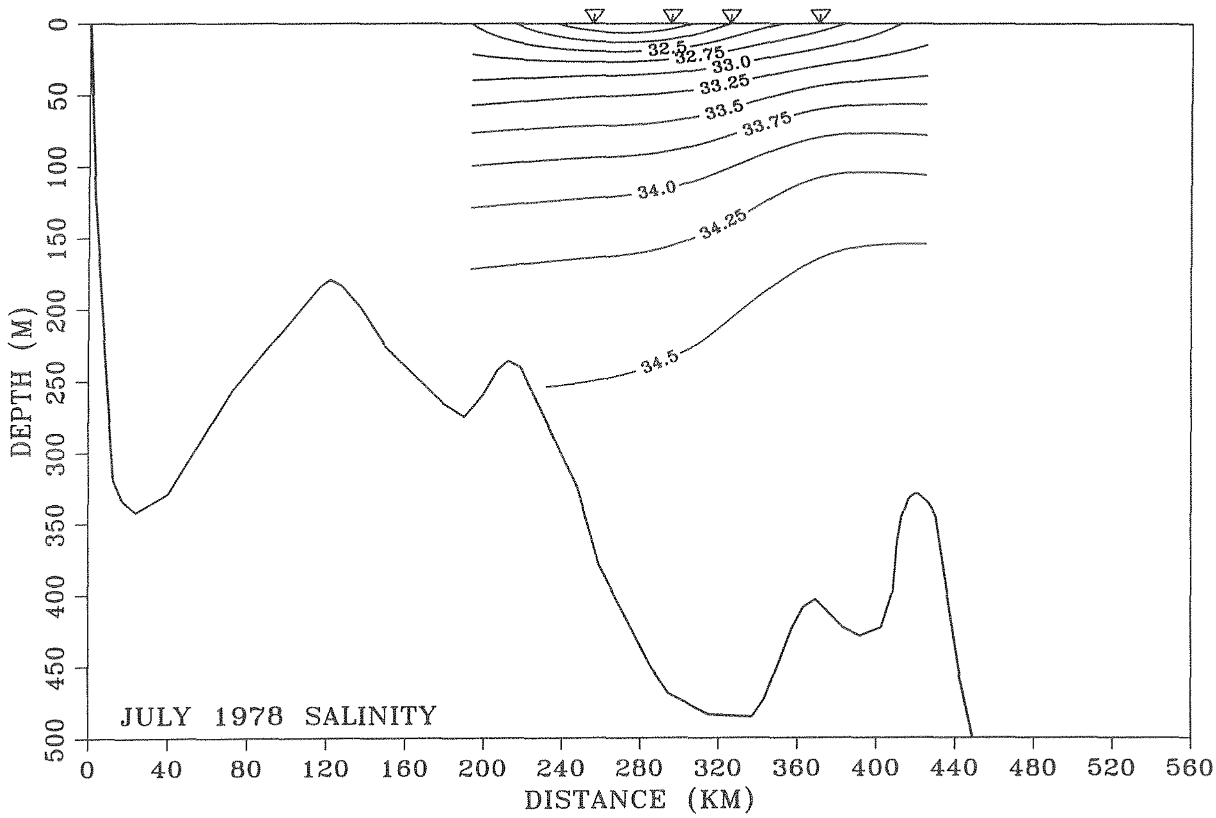
JULY 1978 SALINITY
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DEPTH (M)
DISTANCE (KM)
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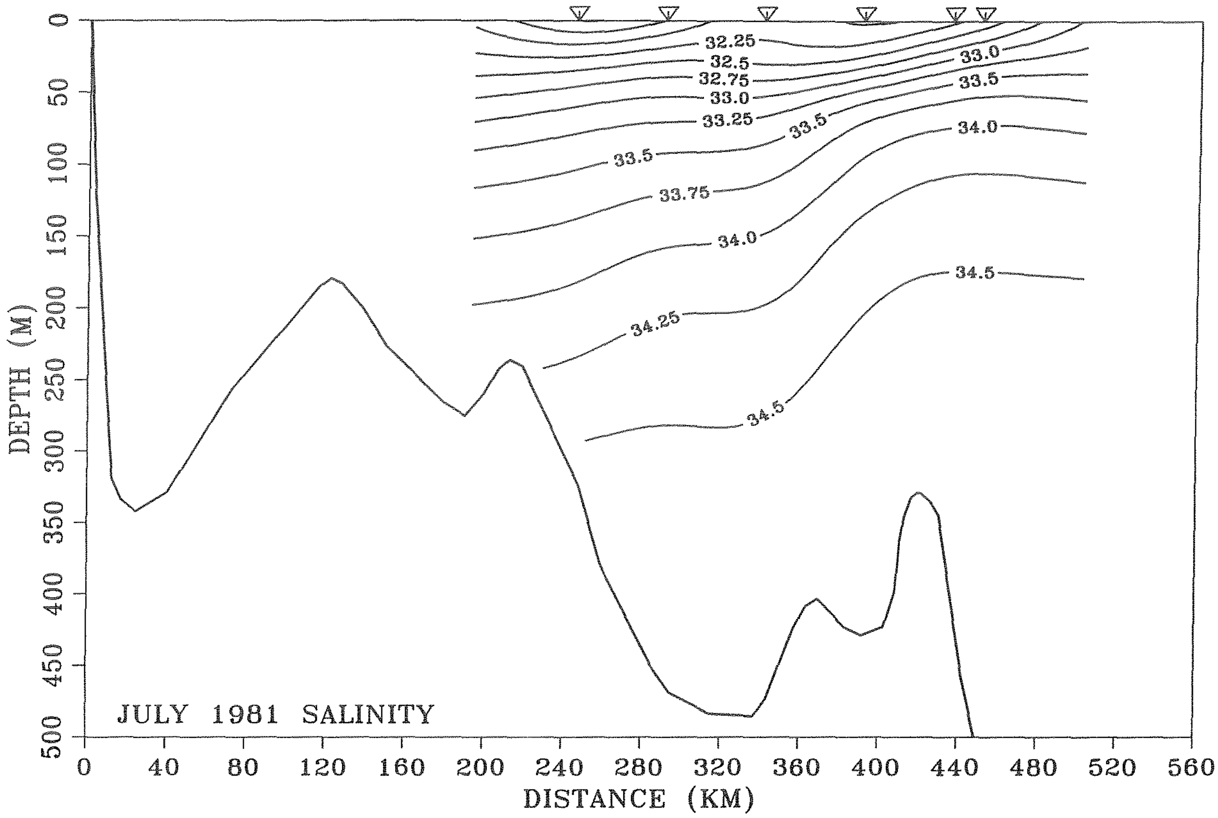

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DEPTH (M)
DISTANCE (KM)
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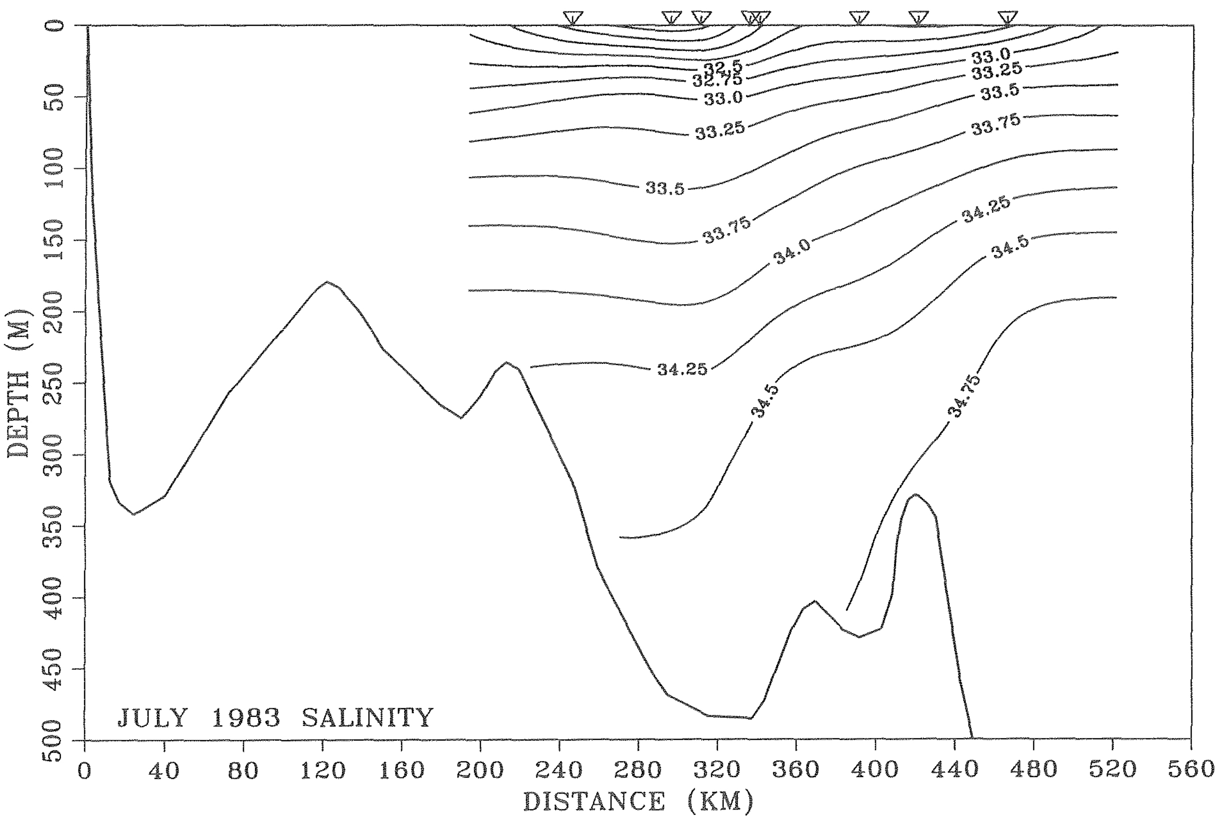

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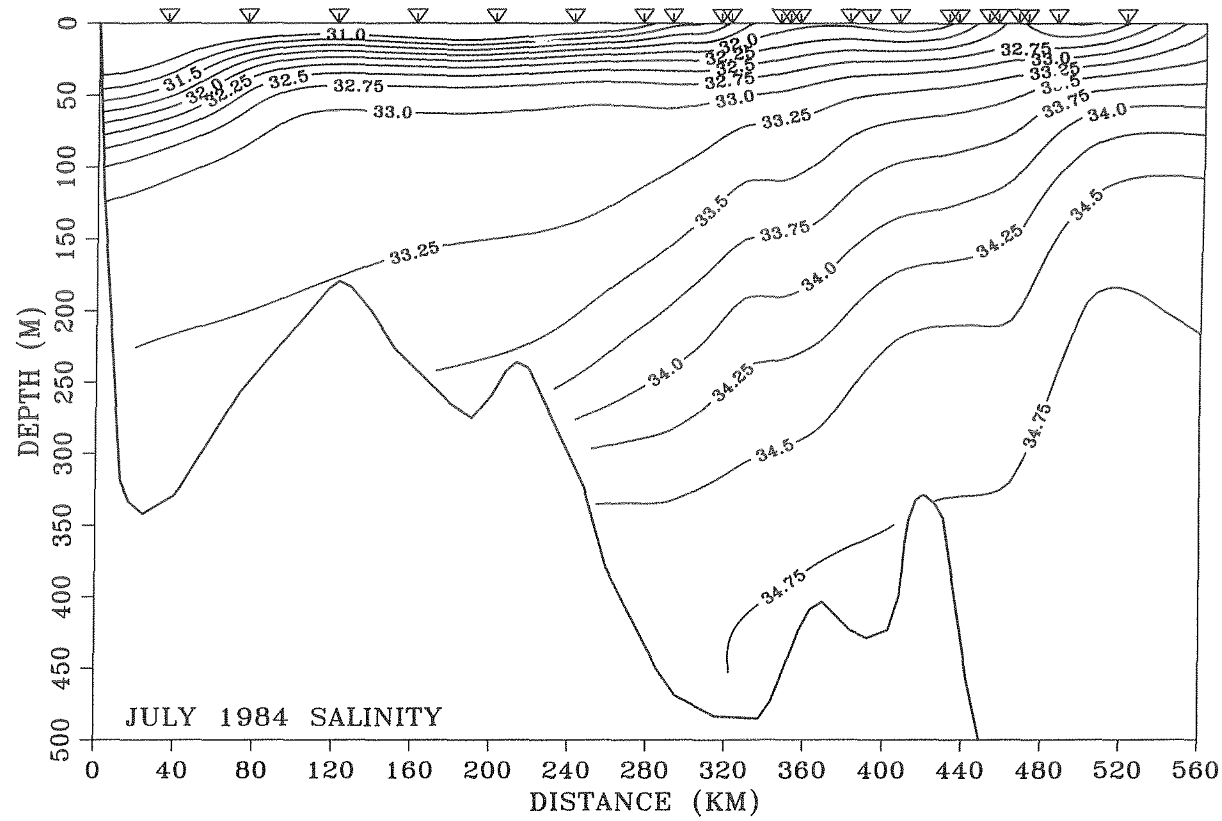

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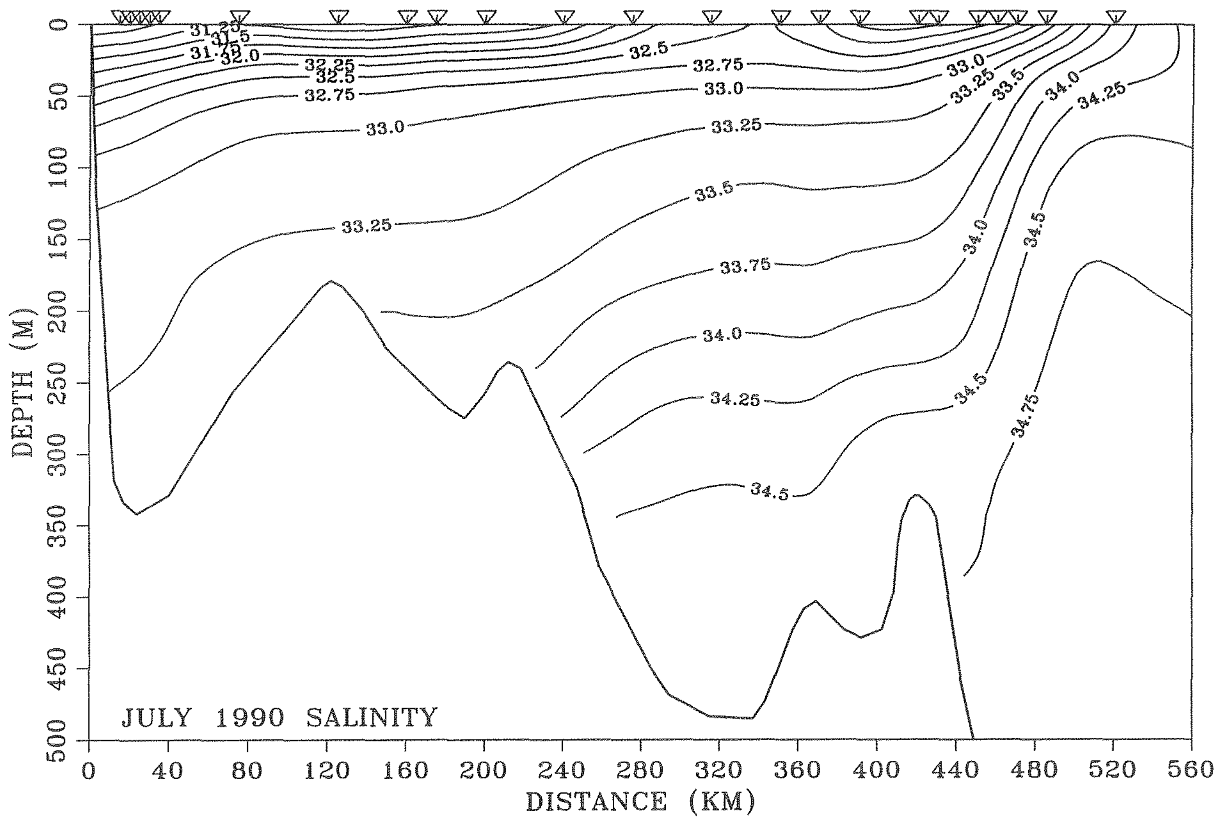

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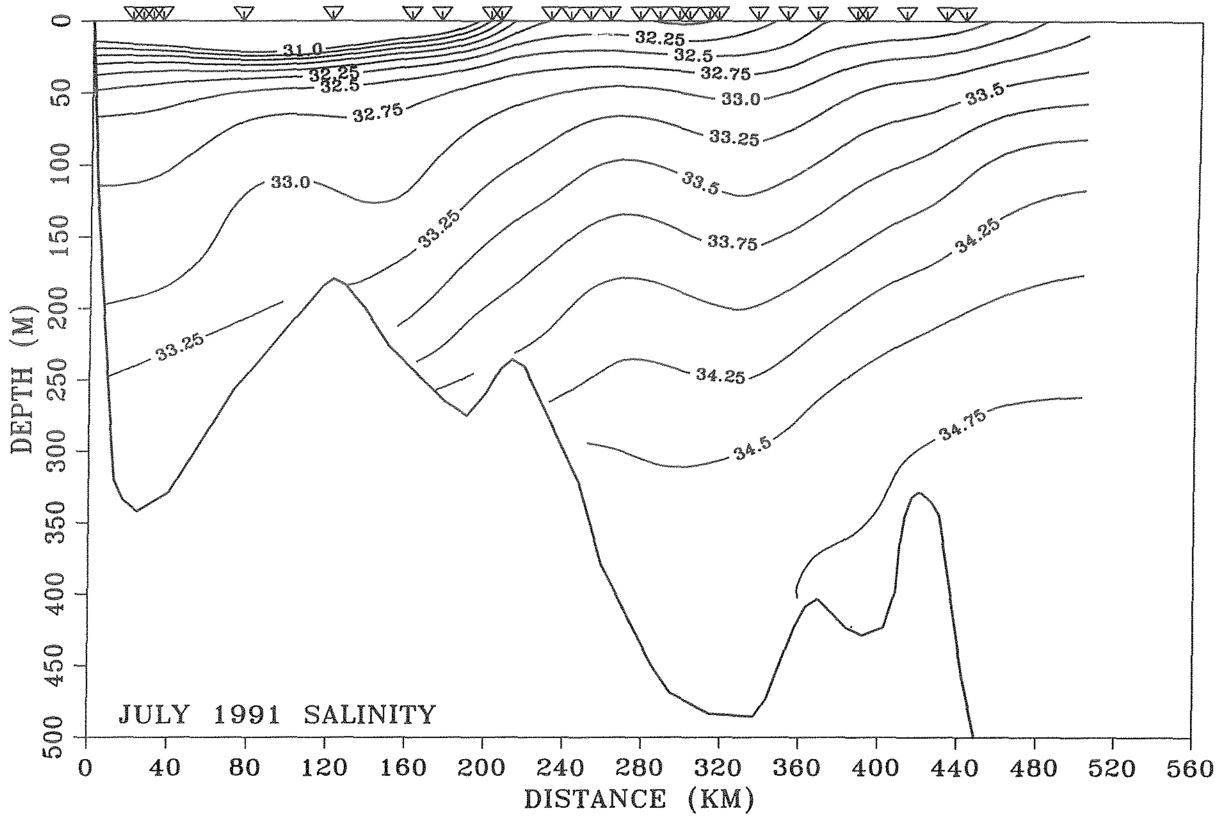
DISTANCE (KM)


JULY 1991 SALINITY
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80
120
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200
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400
440
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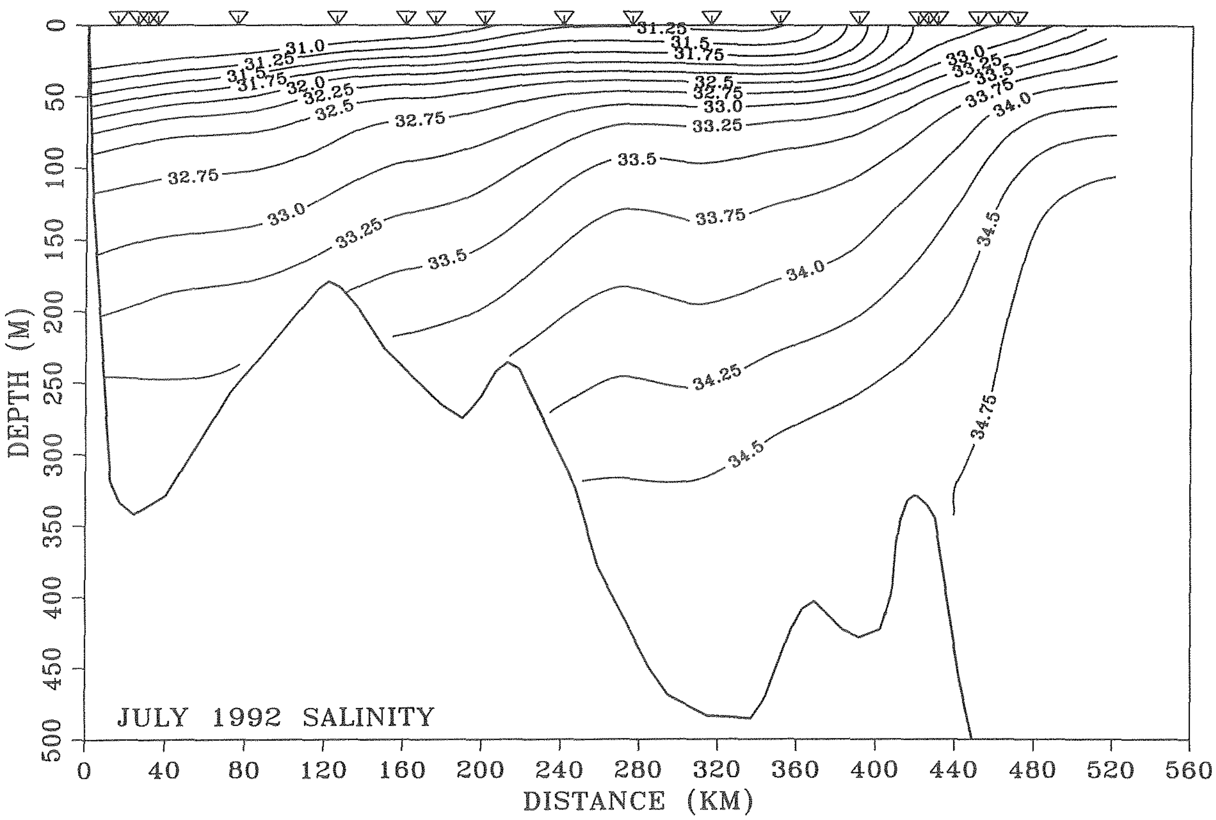
JULY 1992 SALINITY
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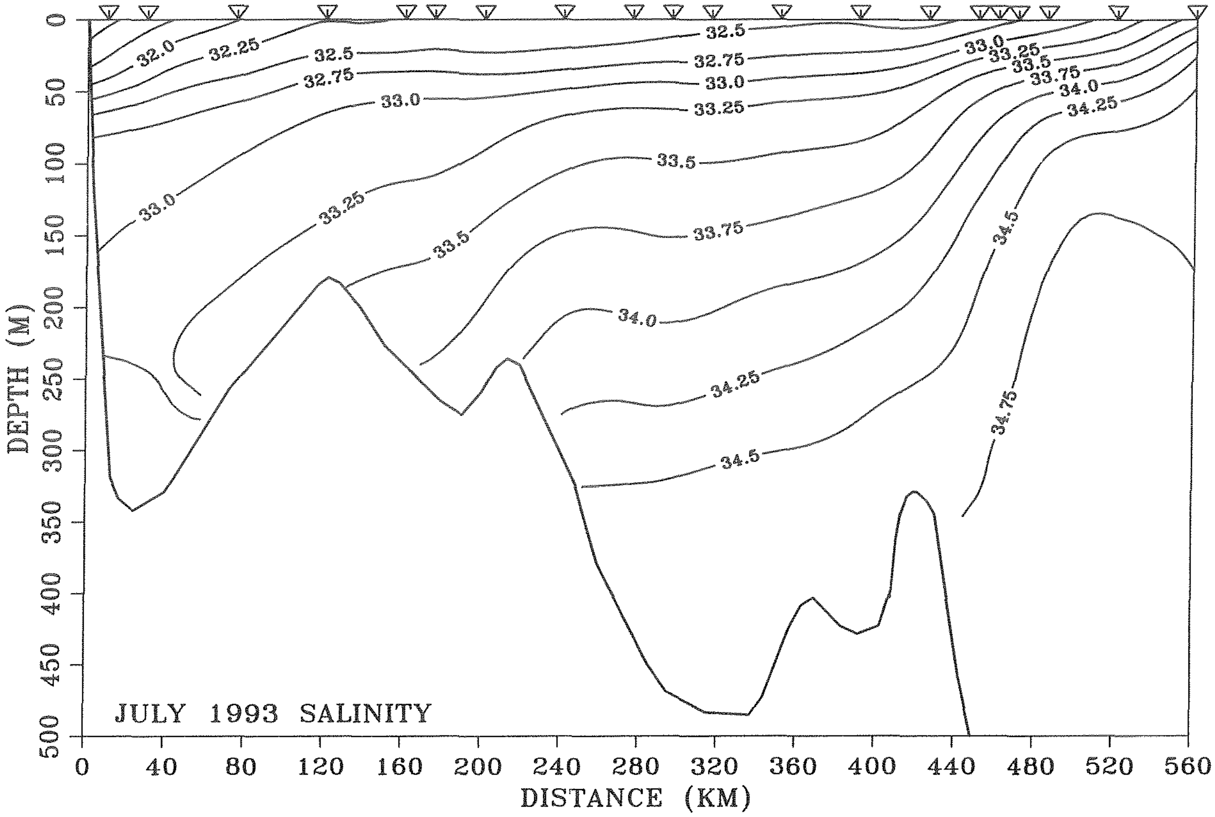
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DISTANCE (KM)
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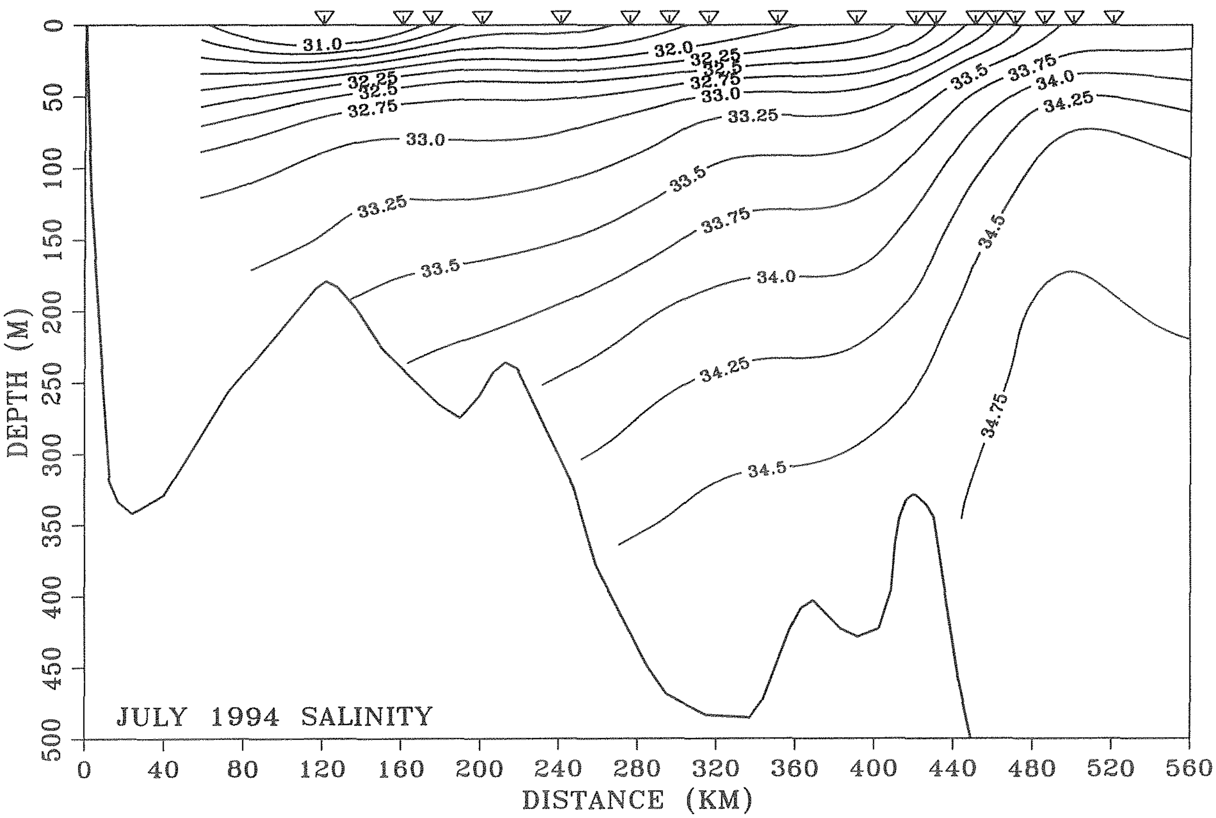
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DISTANCE (KM)
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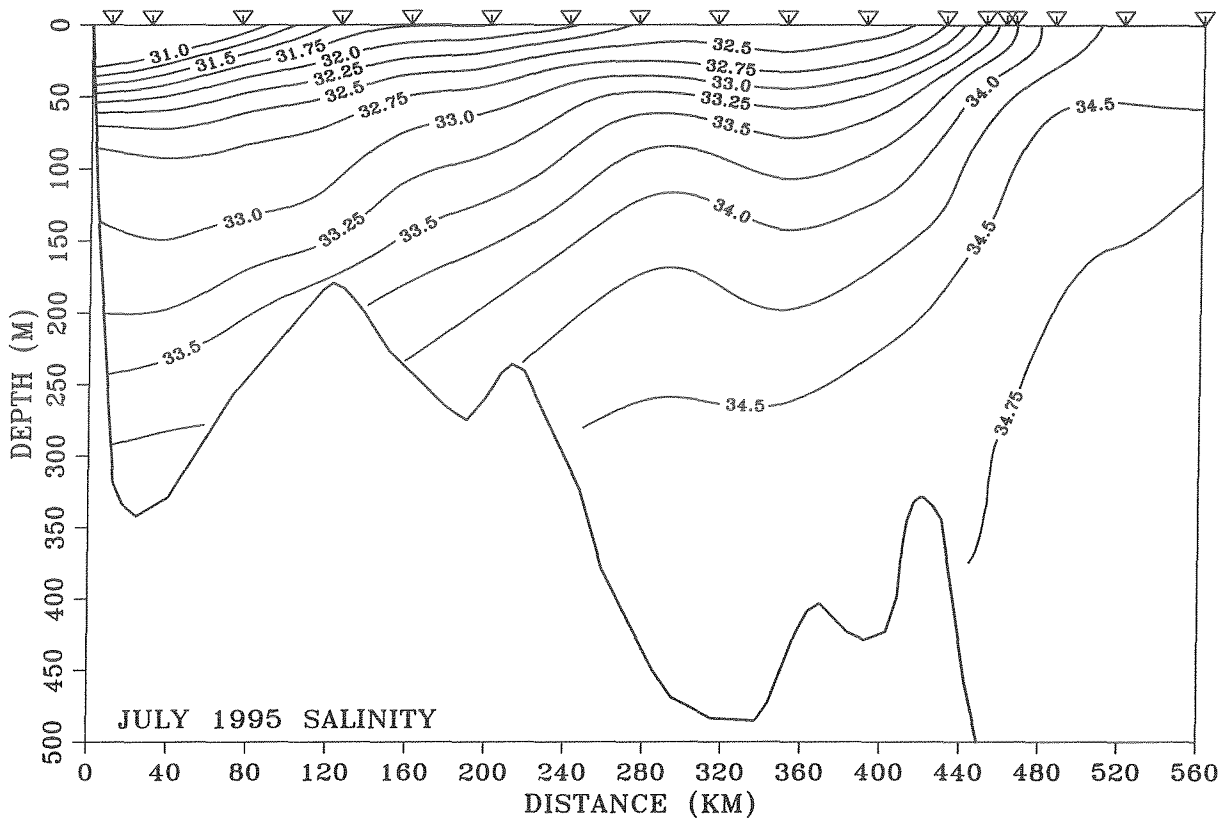
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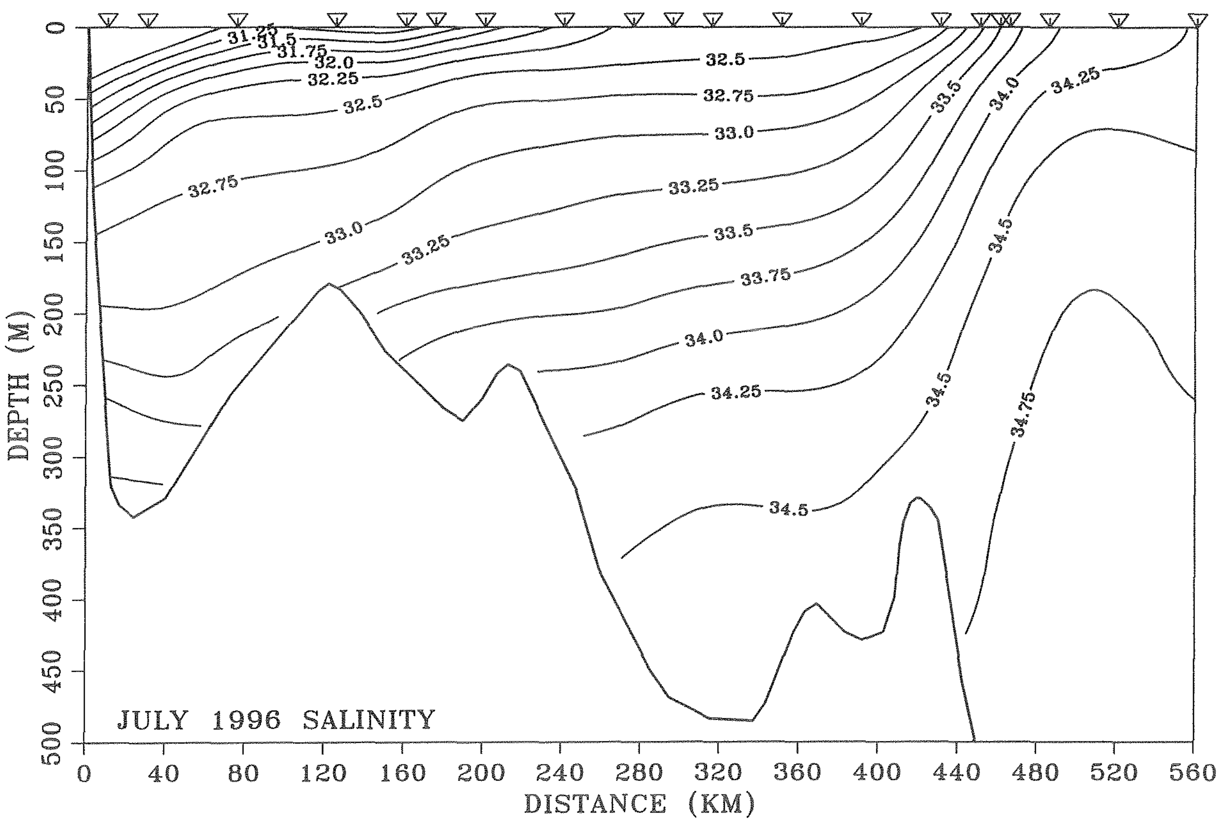
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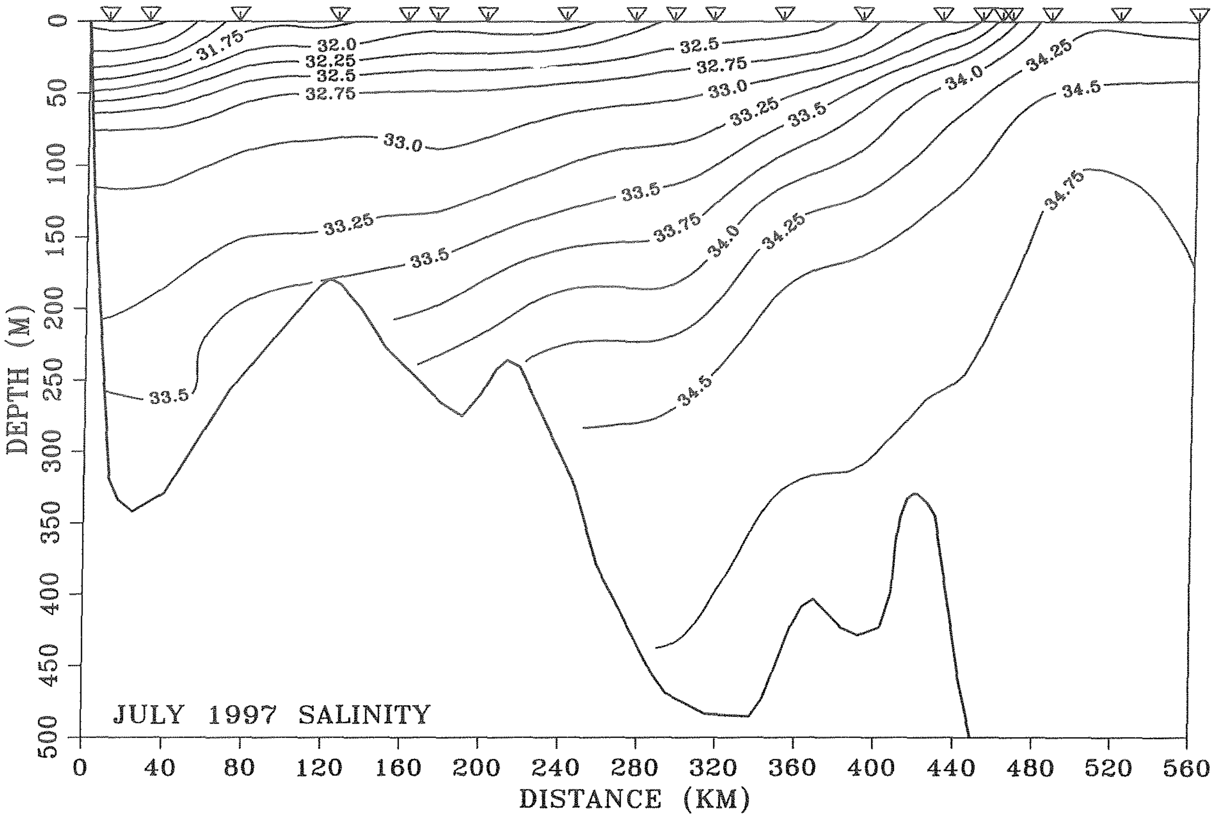

JULY 1997 SALINITY
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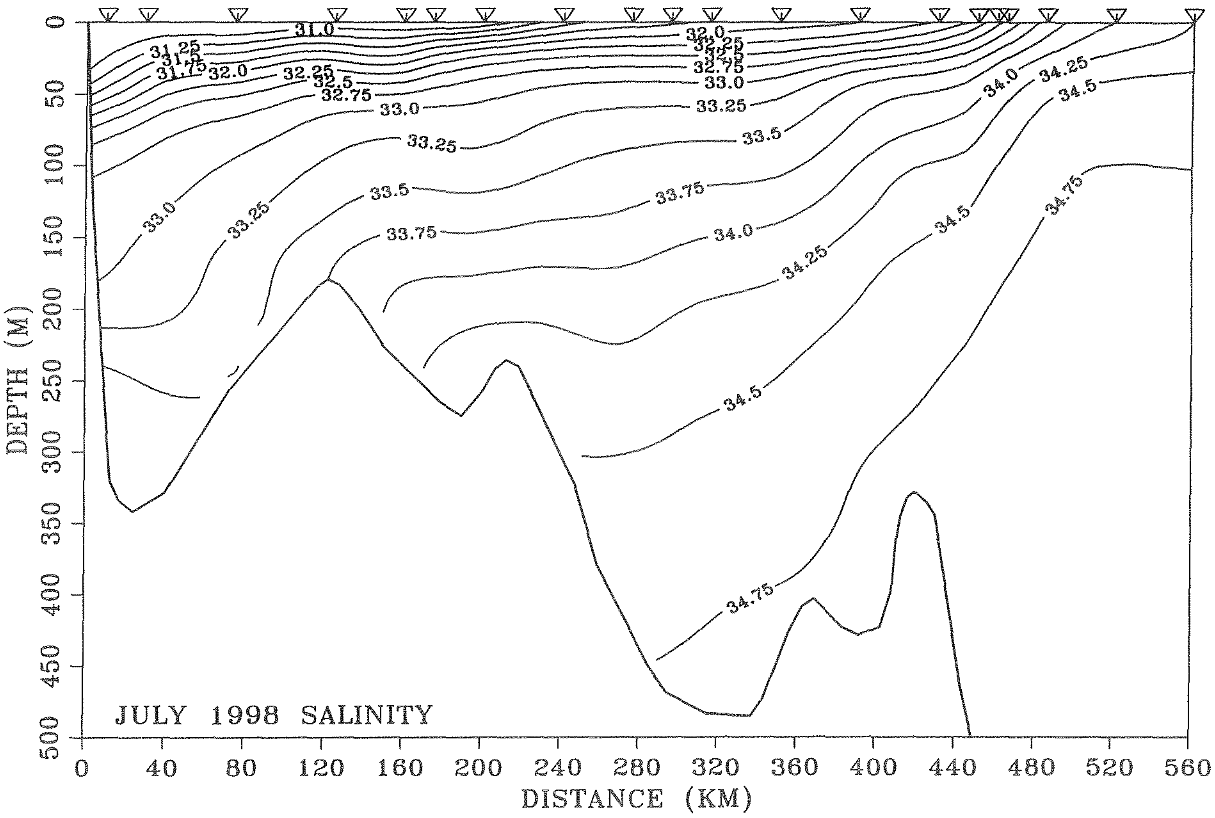
DISTANCE (KM)



JULY 1998 SALINITY
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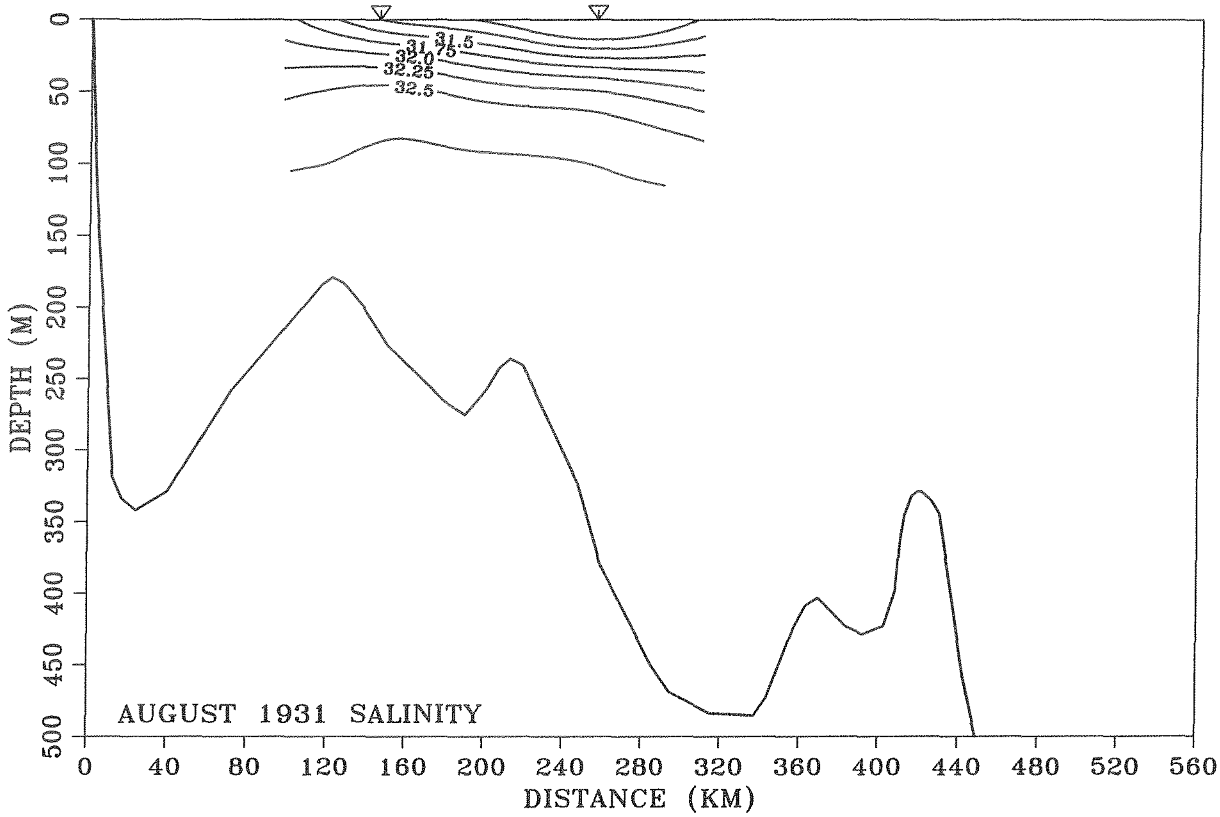
DISTANCE (KM)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DEPTH (M)
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400
450
500
AUGUST 1931 SALINITY
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120
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200
240
280
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360
400
440
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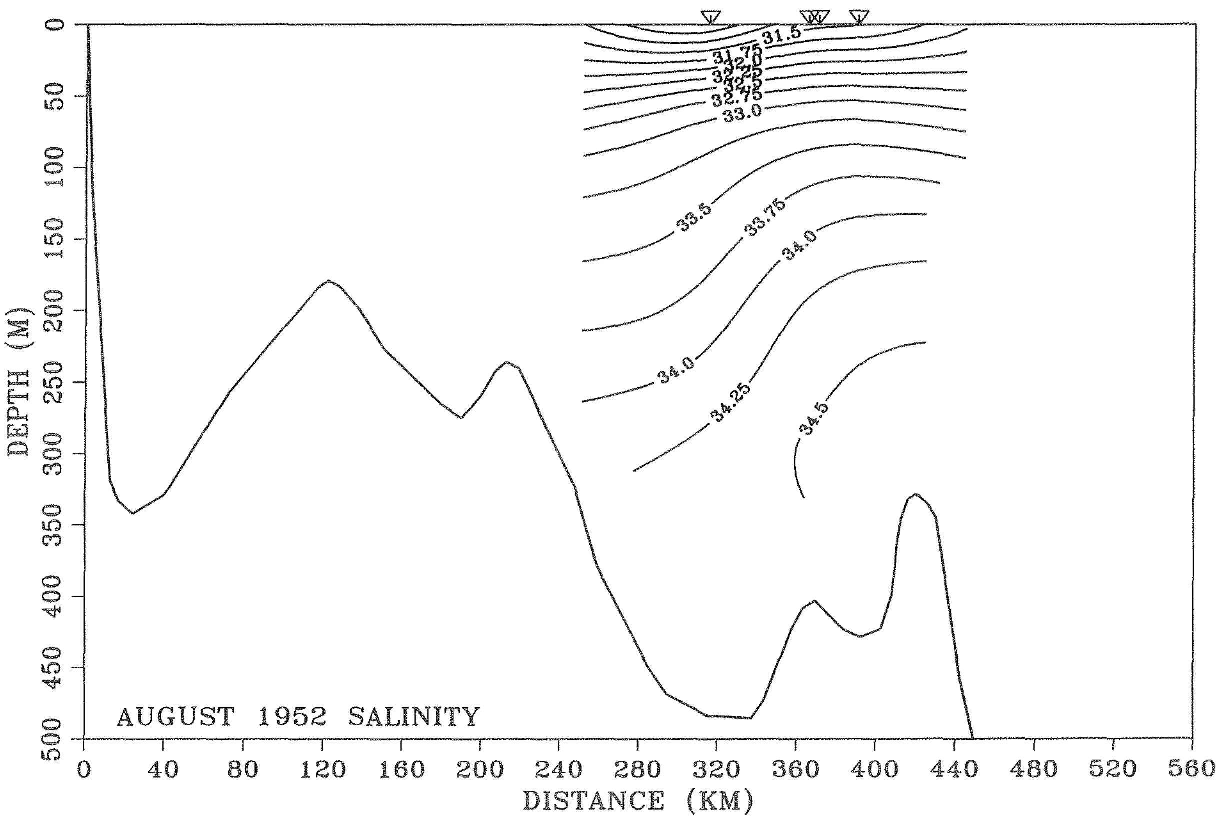
520
560
DISTANCE (KM)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DEPTH (M)
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100
150
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300
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400
450
500
AUGUST 1952 SALINITY
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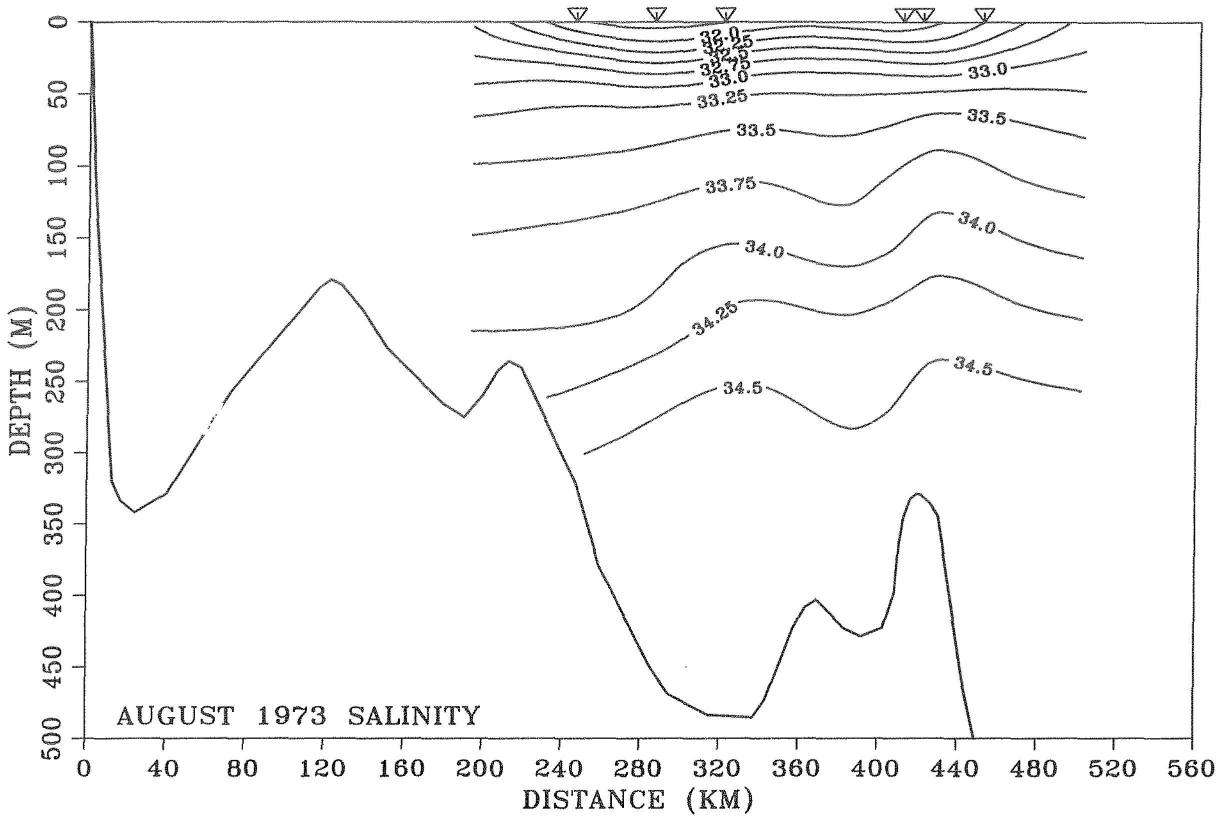
DISTANCE (KM)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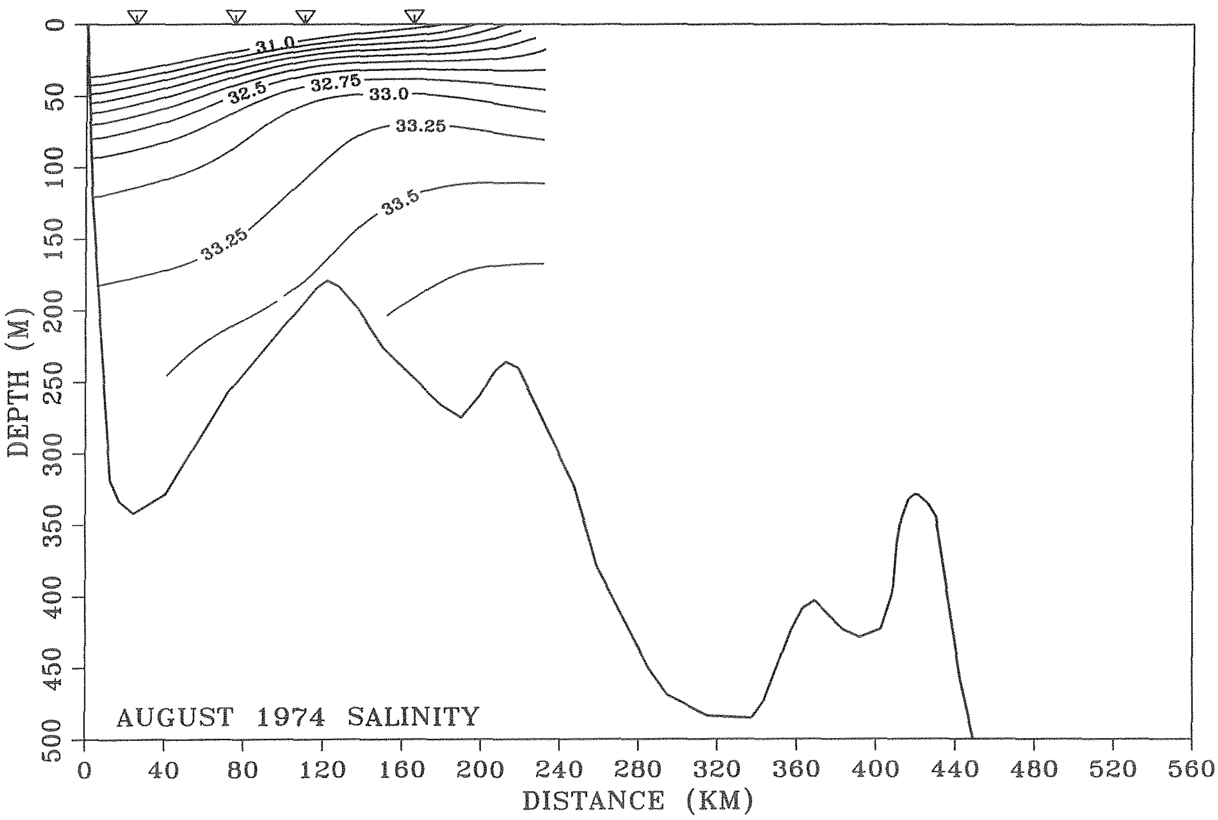
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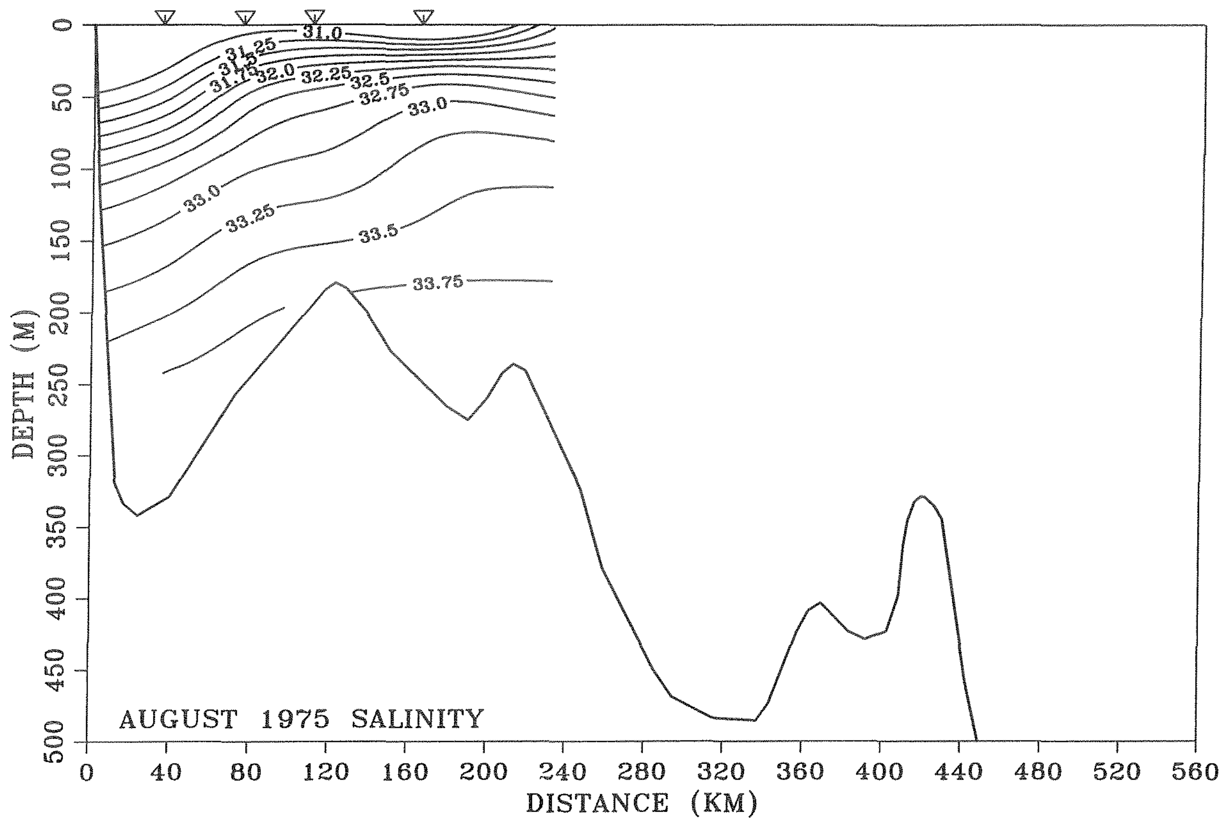
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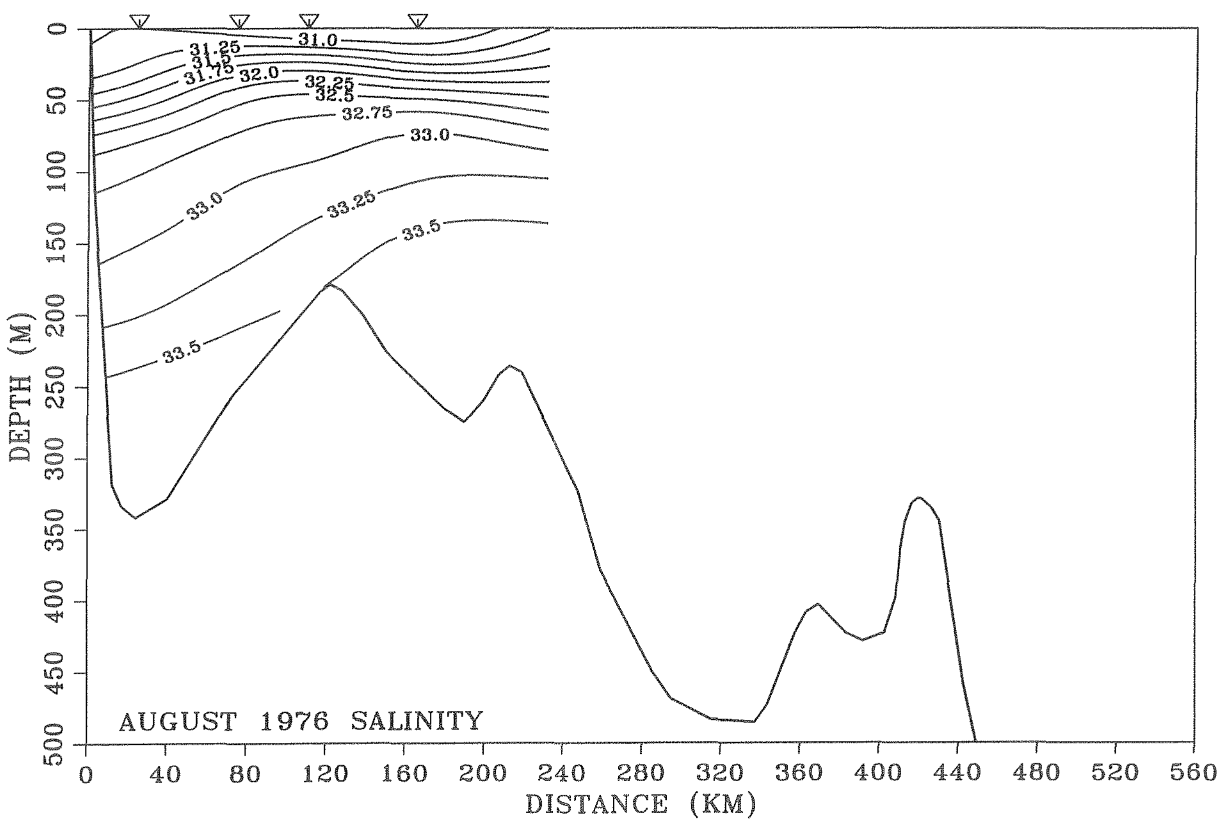
DEPTH (M)
DISTANCE (KM)
AUGUST 1975 SALINITY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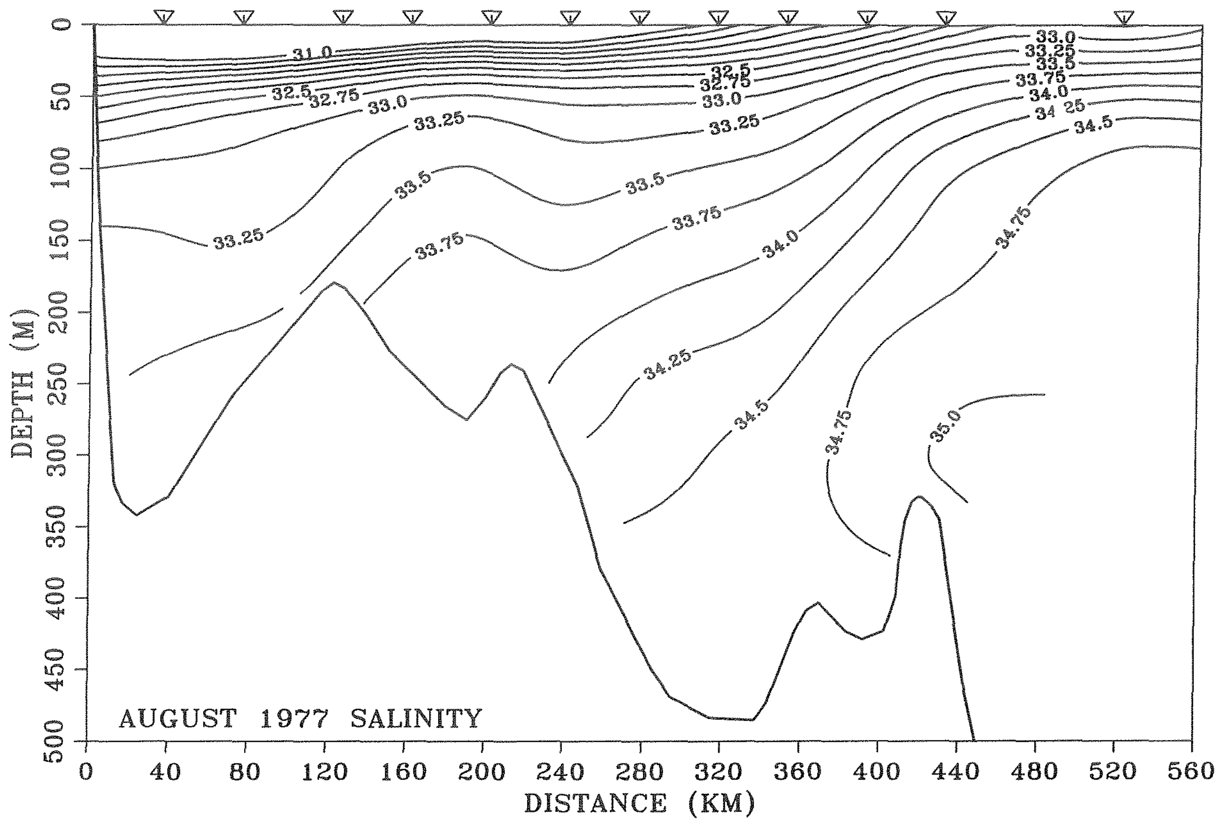
DEPTH (M)
DISTANCE (KM)
AUGUST 1976 SALINITY


AUGUST 1977 SALINITY
DEPTH (M)
DISTANCE (KM)
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200
250
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350
400
450
500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
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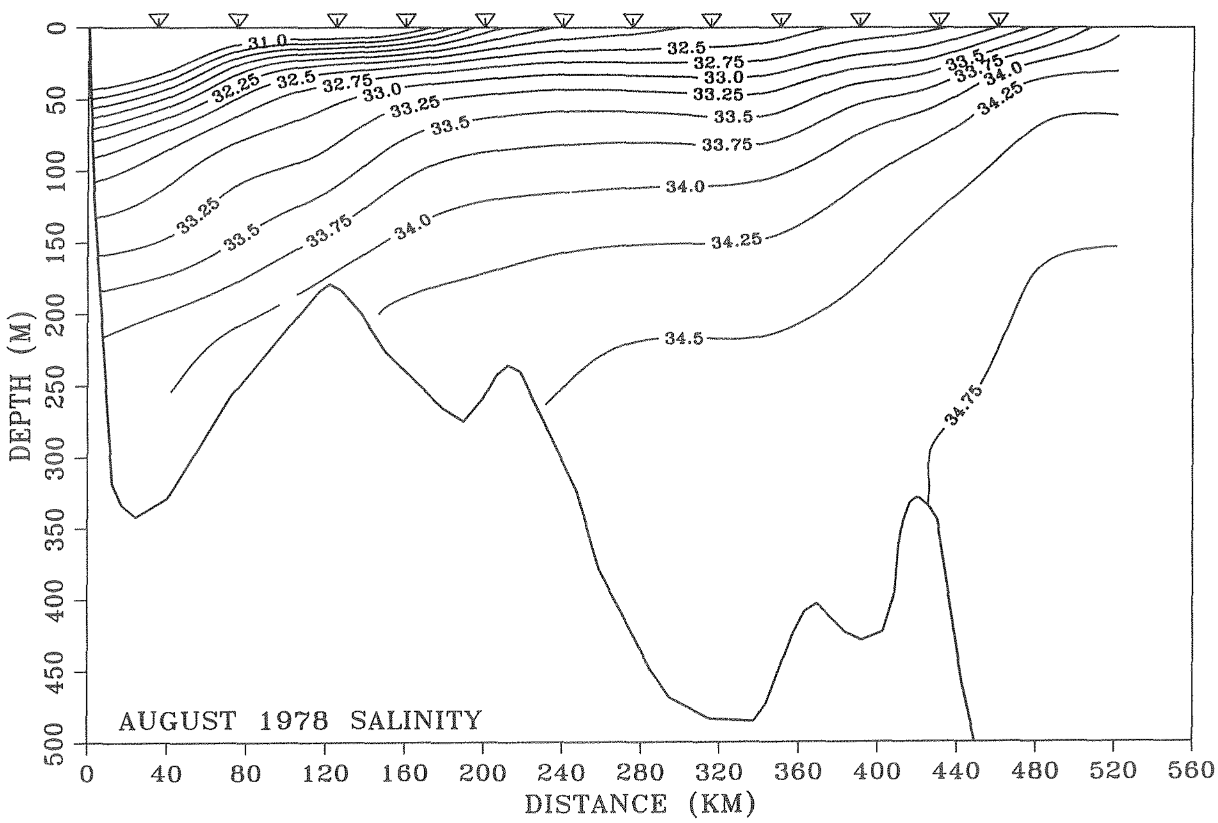
AUGUST 1978 SALINITY
DEPTH (M)
DISTANCE (KM)
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400
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500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
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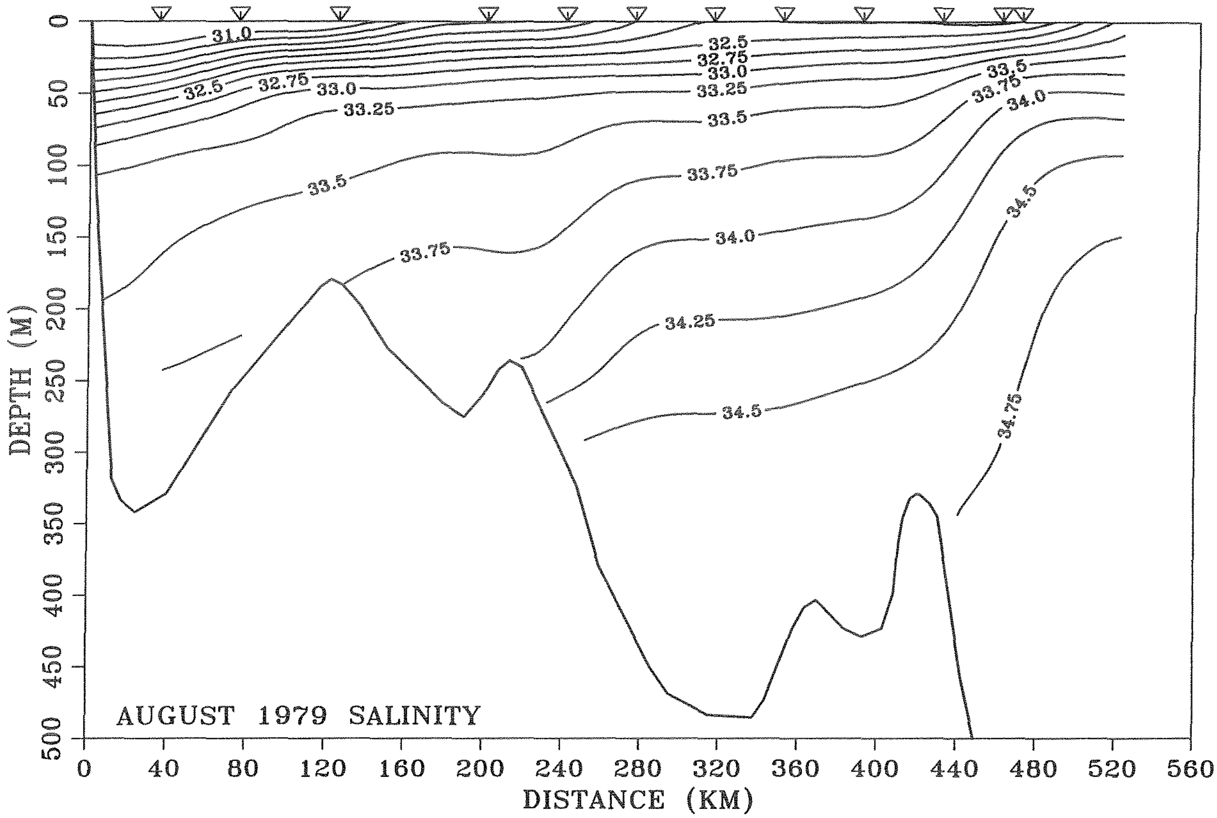

AUGUST 1979 SALINITY
DEPTH (M)
DISTANCE (KM)
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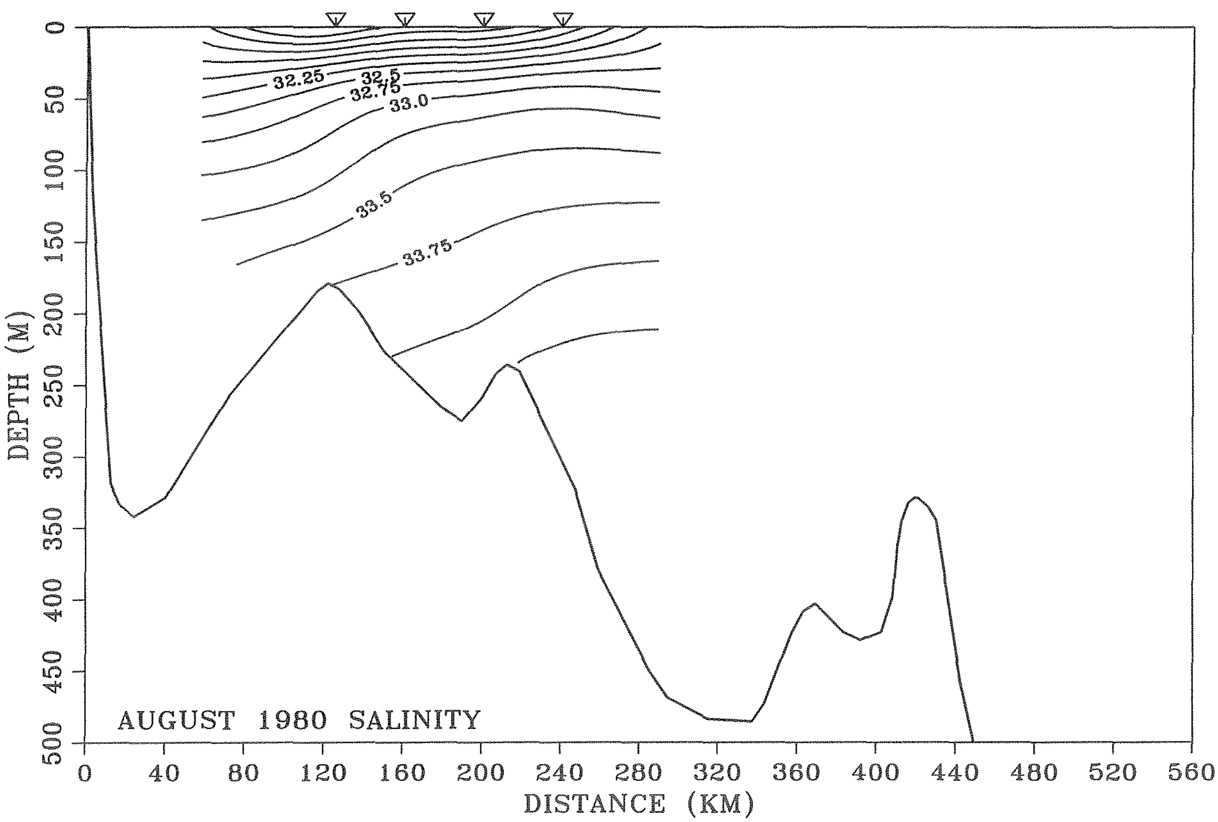

AUGUST 1980 SALINITY
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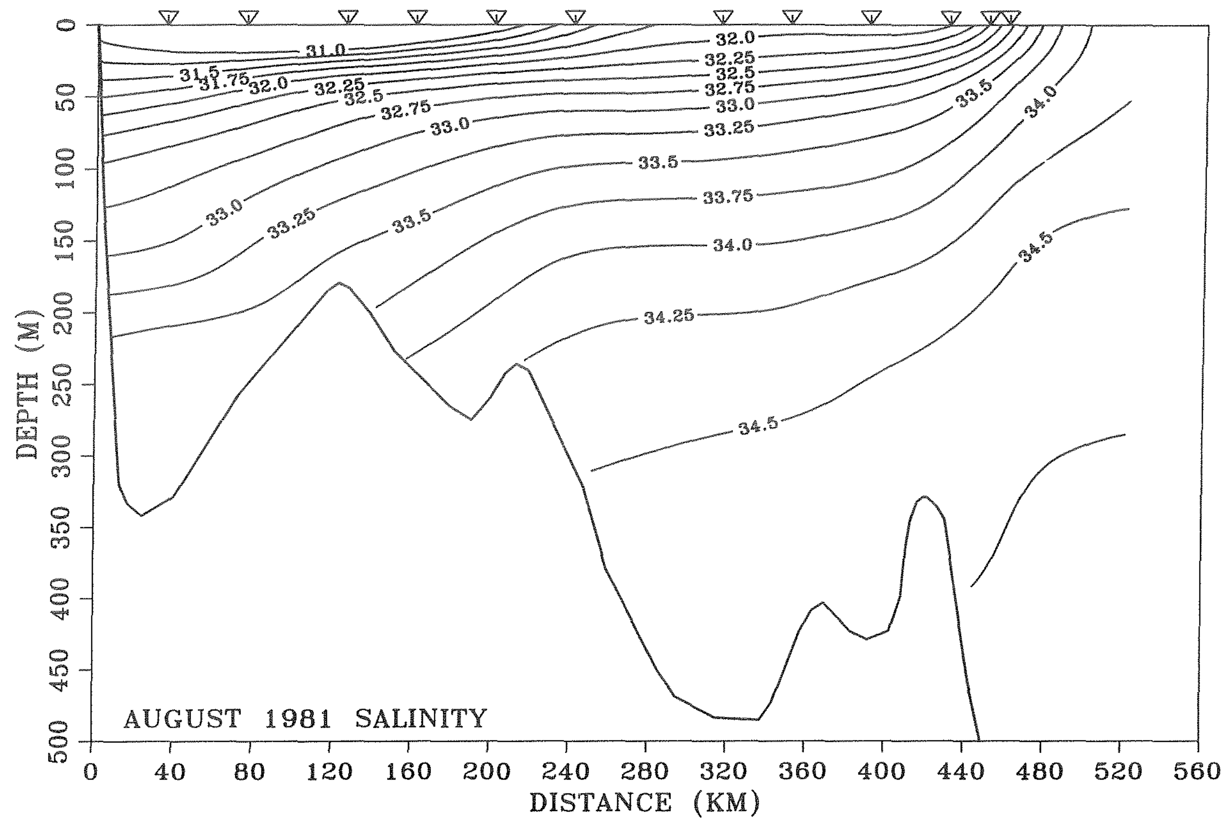
AUGUST 1981 SALINITY
DEPTH (M)
DISTANCE (KM)
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
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31.5
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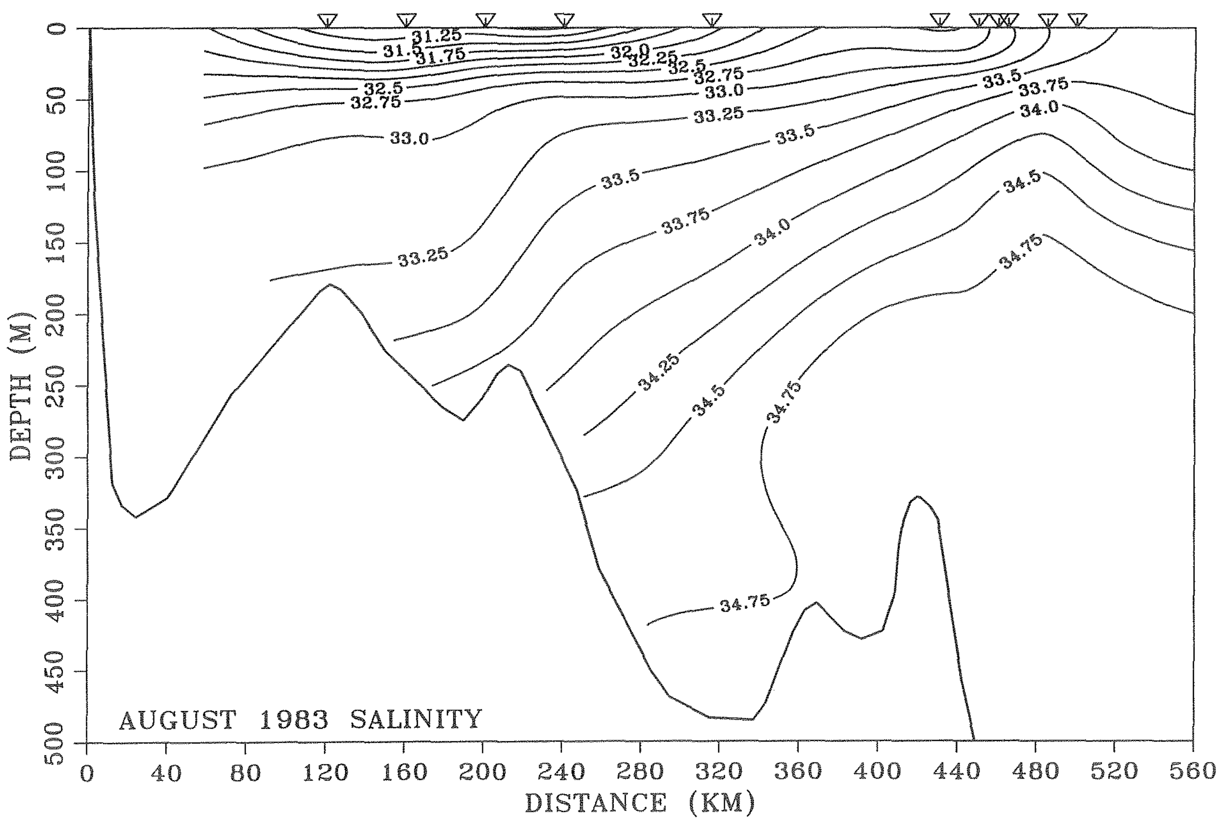
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DEPTH (M)
DISTANCE (KM)
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0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
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31.75
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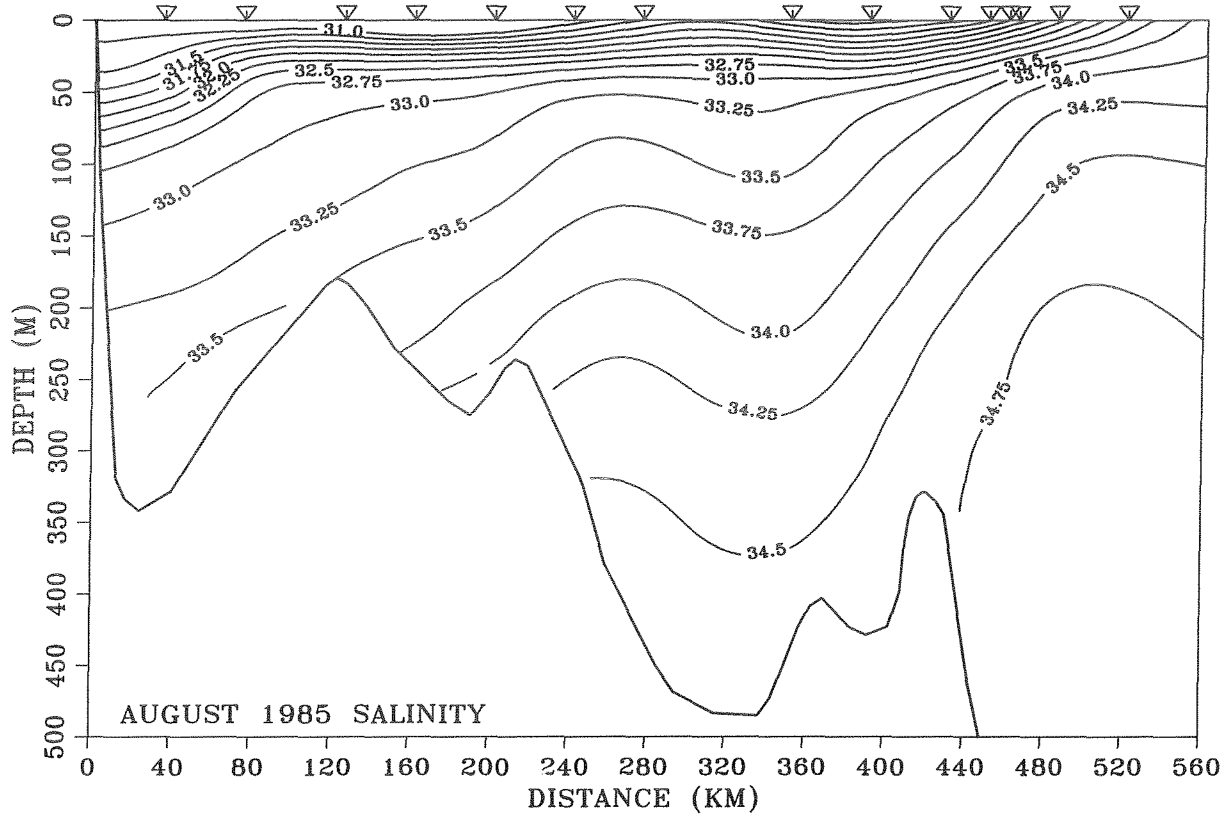
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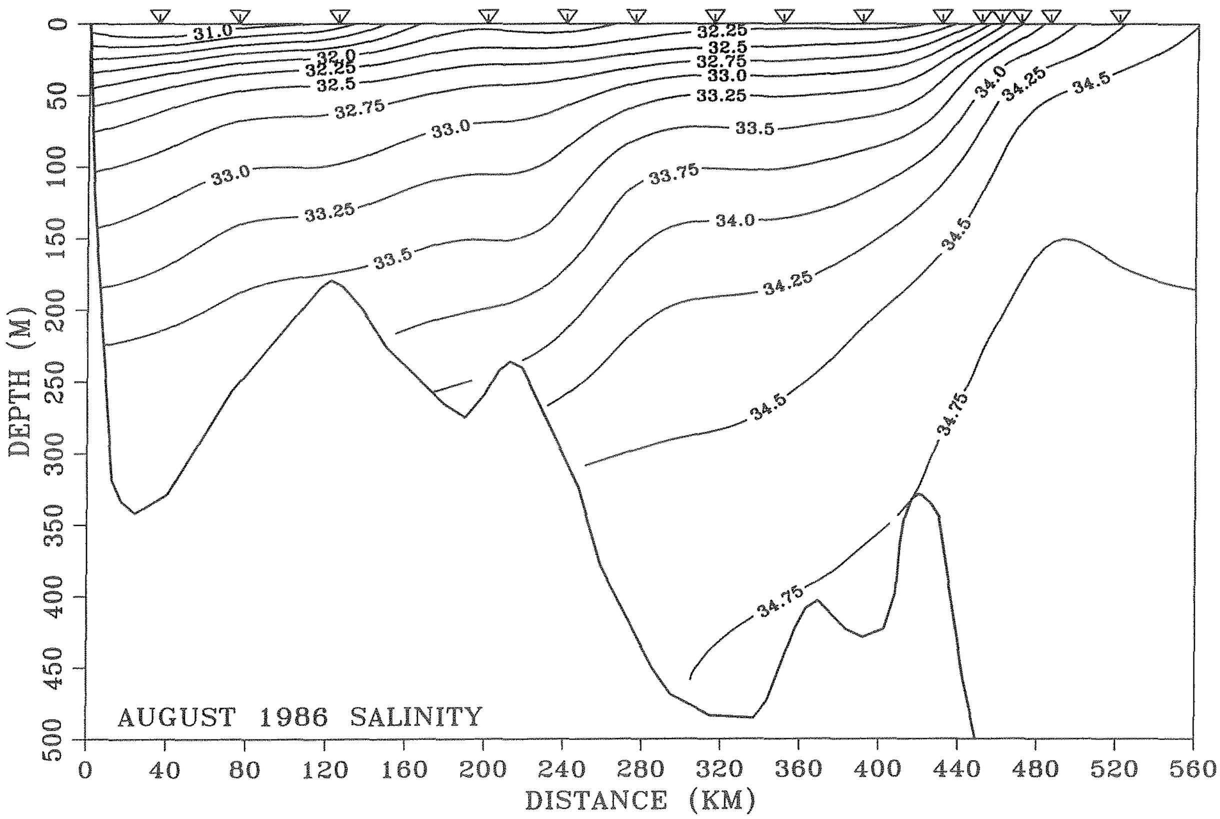
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DEPTH (M)
DISTANCE (KM)
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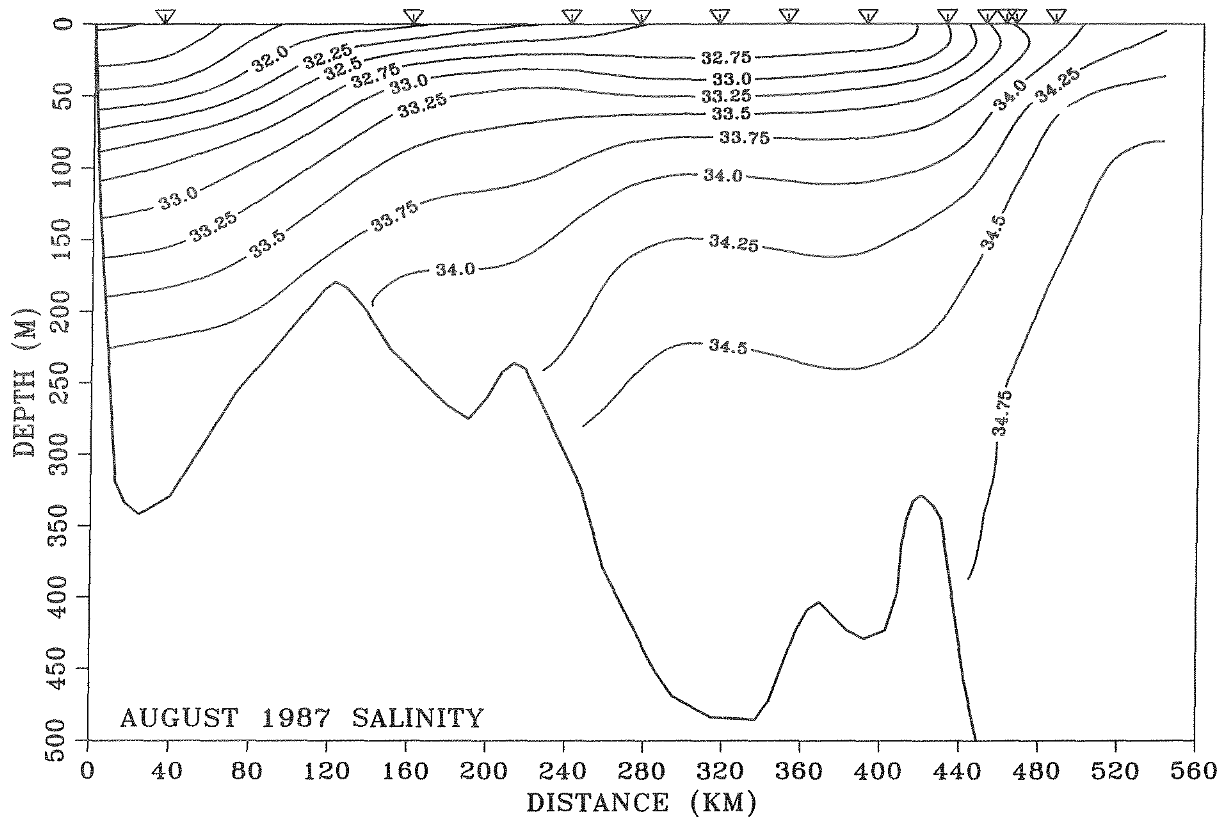
0 50 100 150 200 250 300 350 400 450 500



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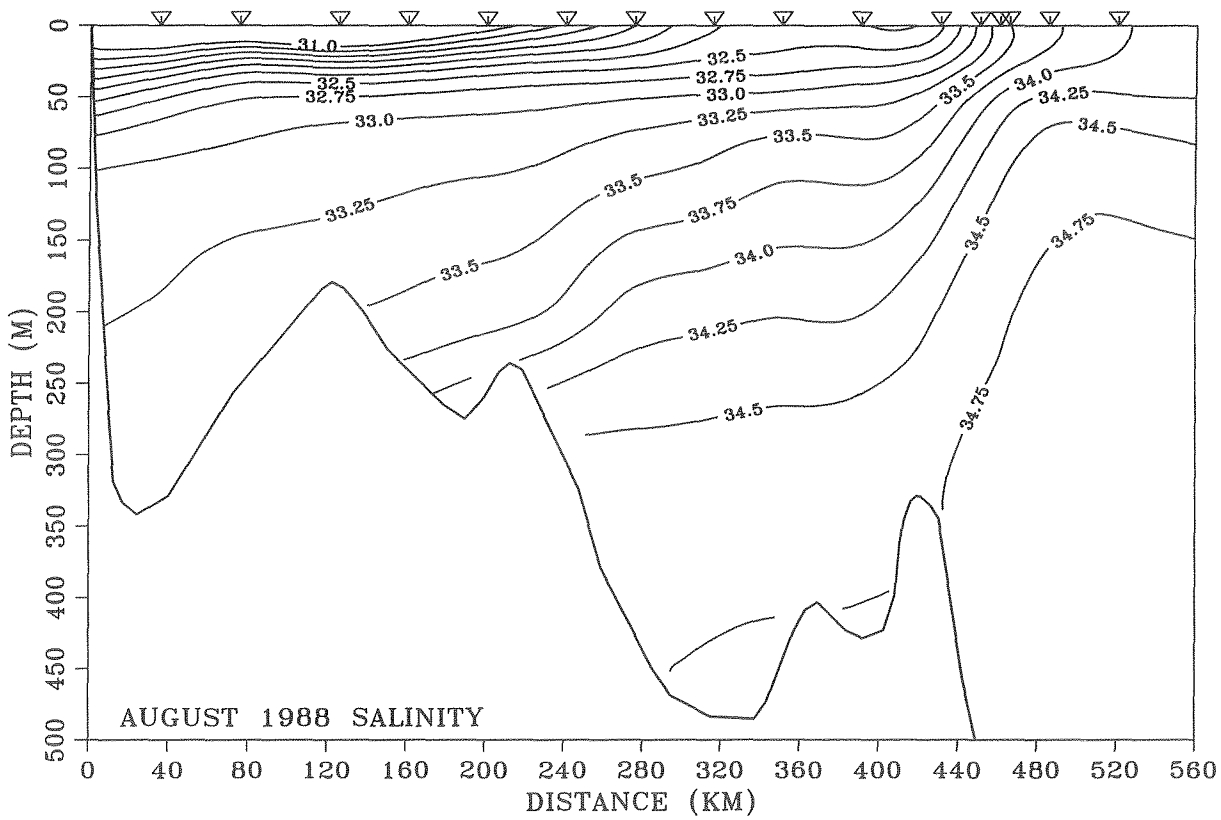
DISTANCE (KM)



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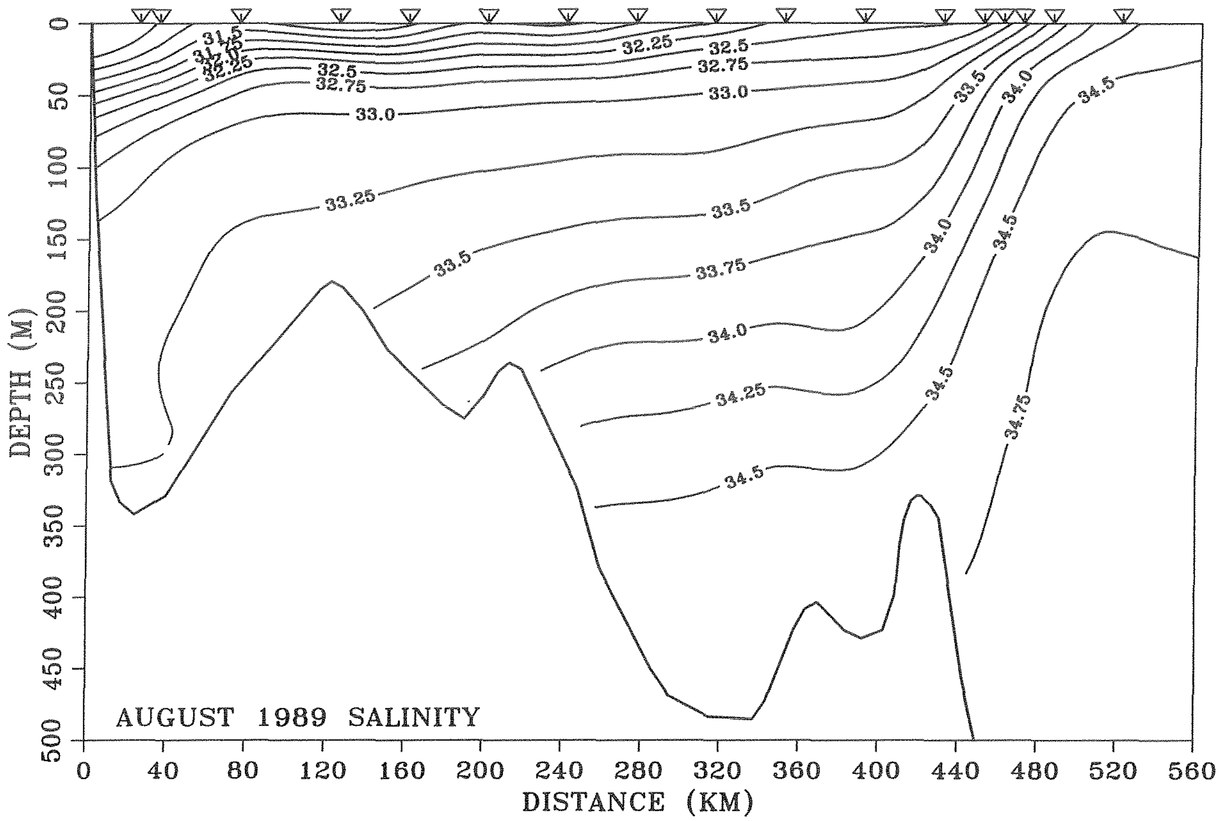

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DISTANCE (KM)
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400
440
480
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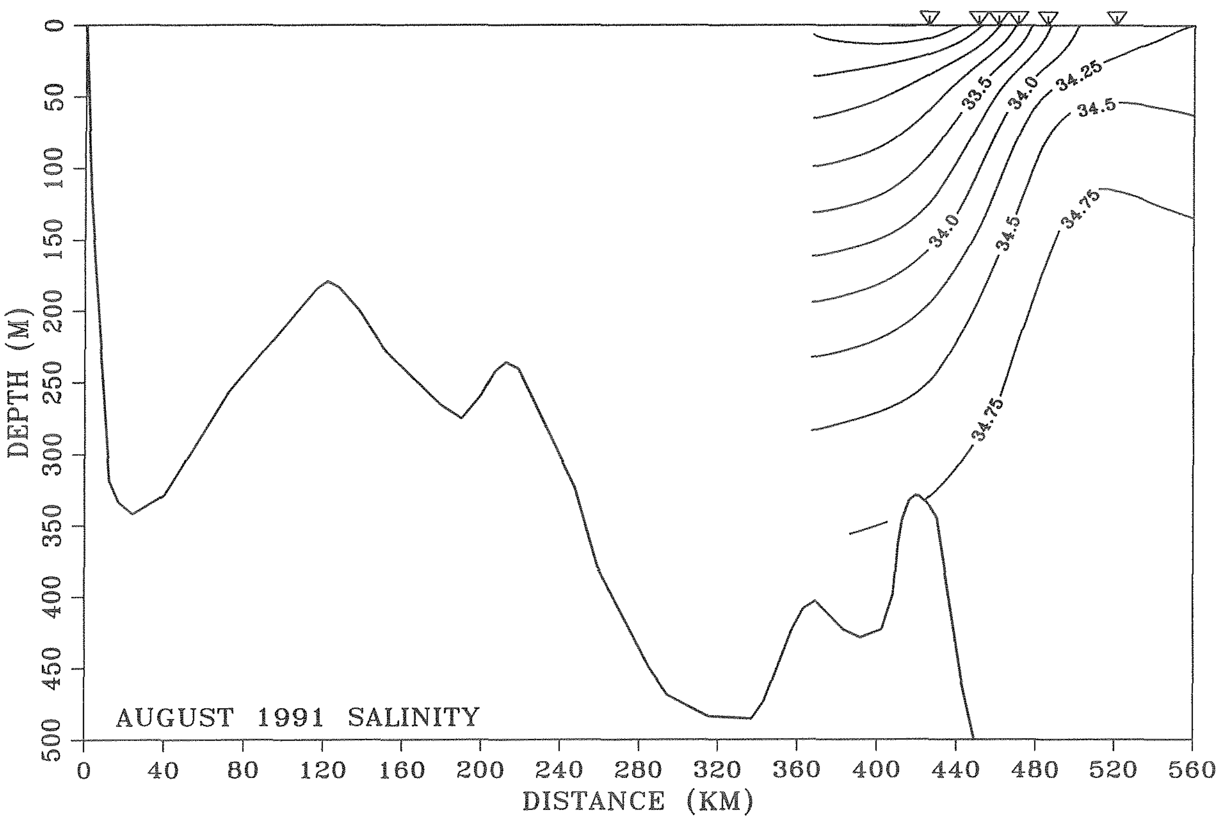

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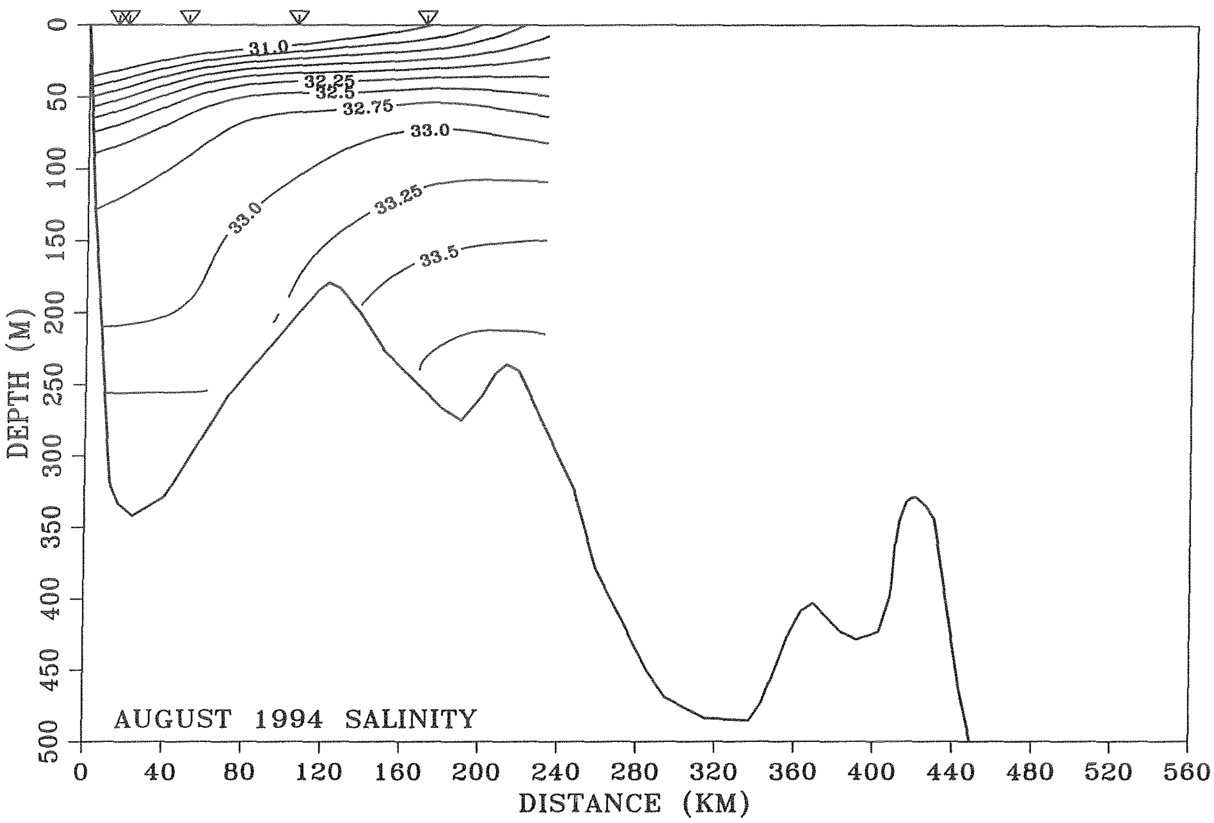
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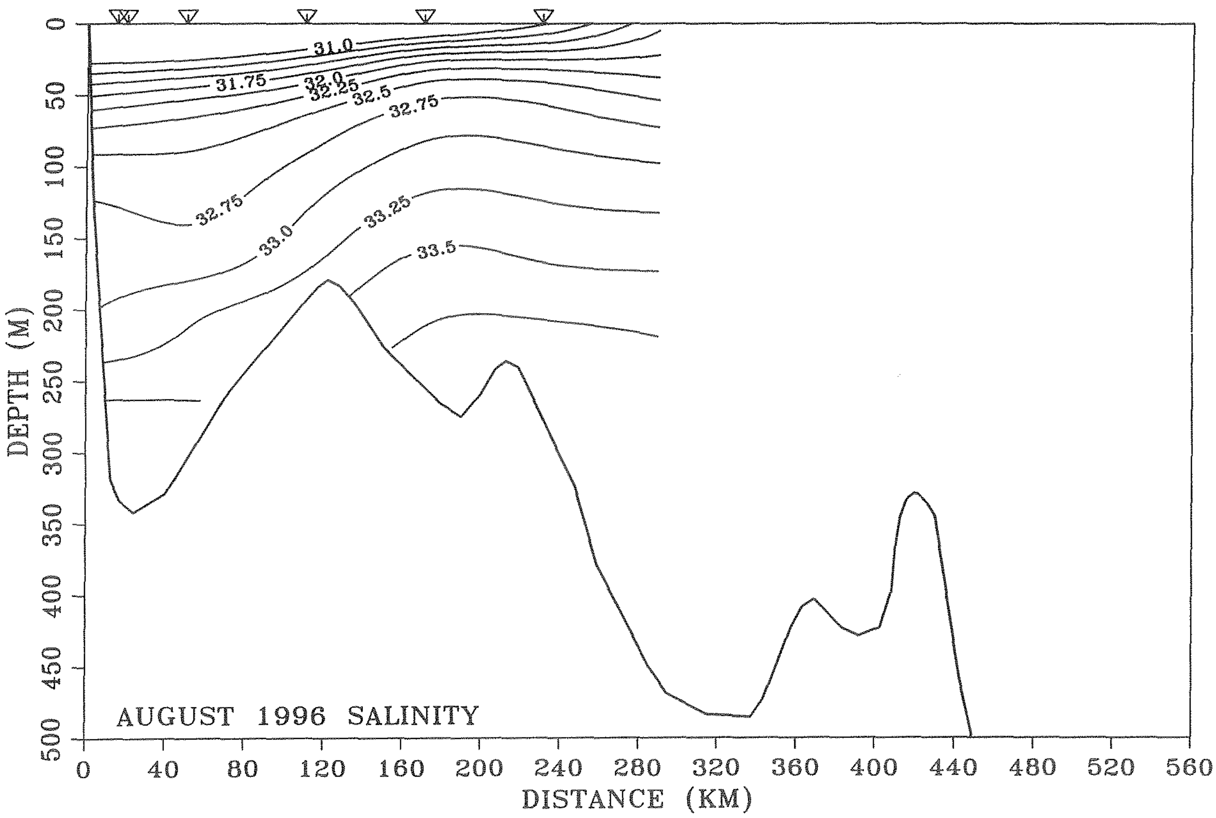
DISTANCE (KM)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DEPTH (M)
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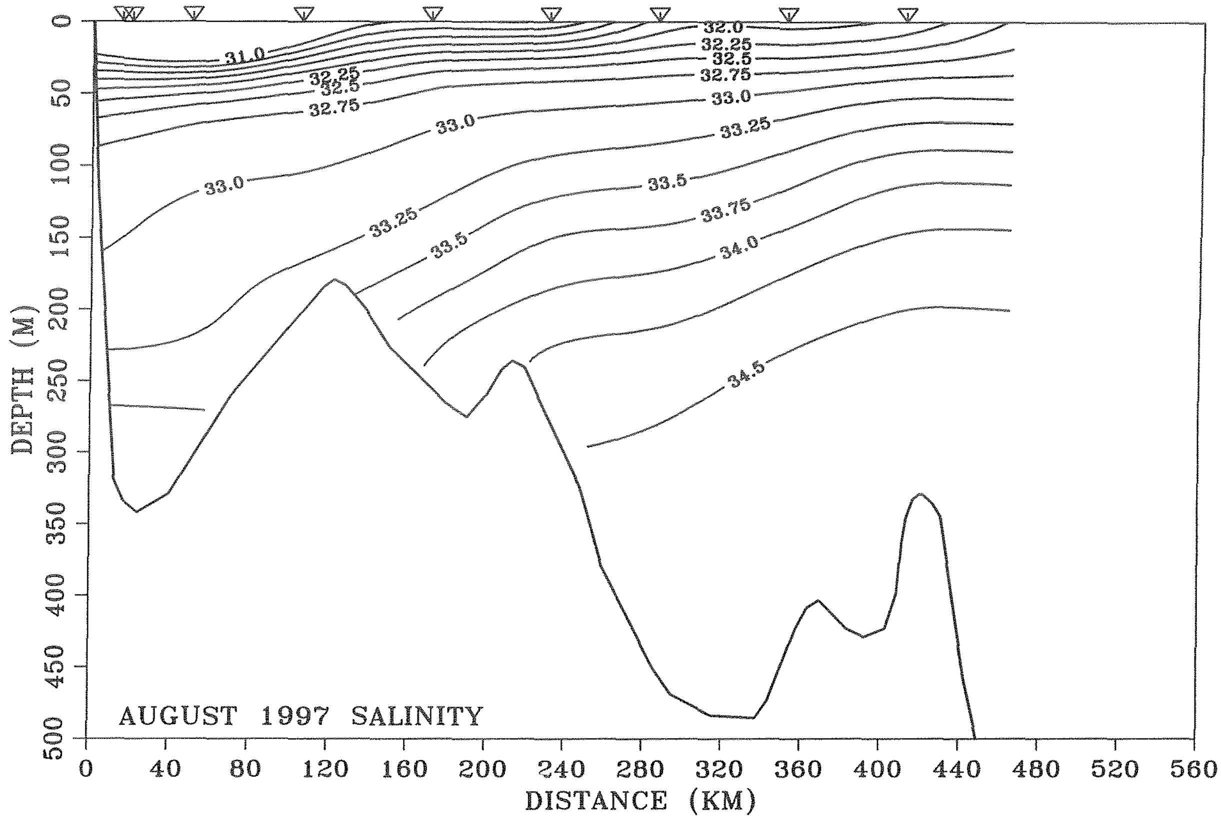
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DISTANCE (KM)
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34.5
0
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100
150
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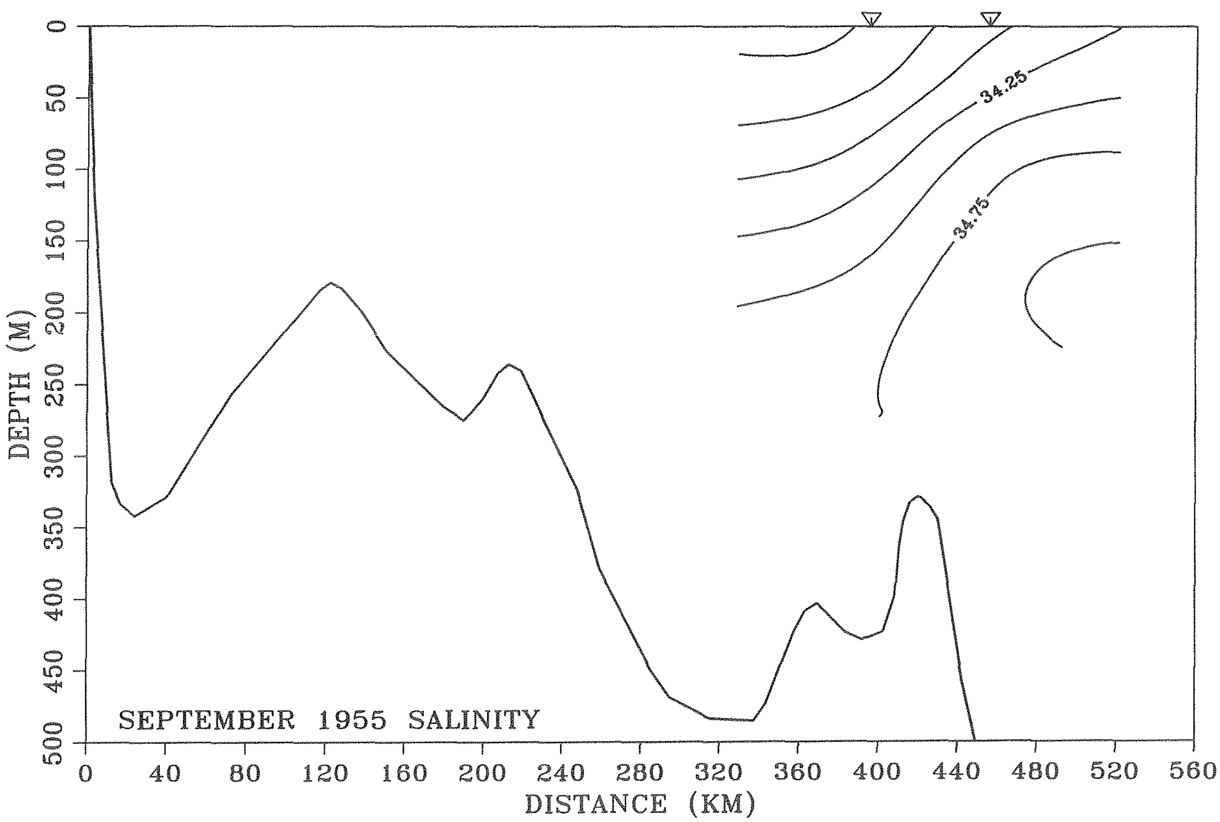
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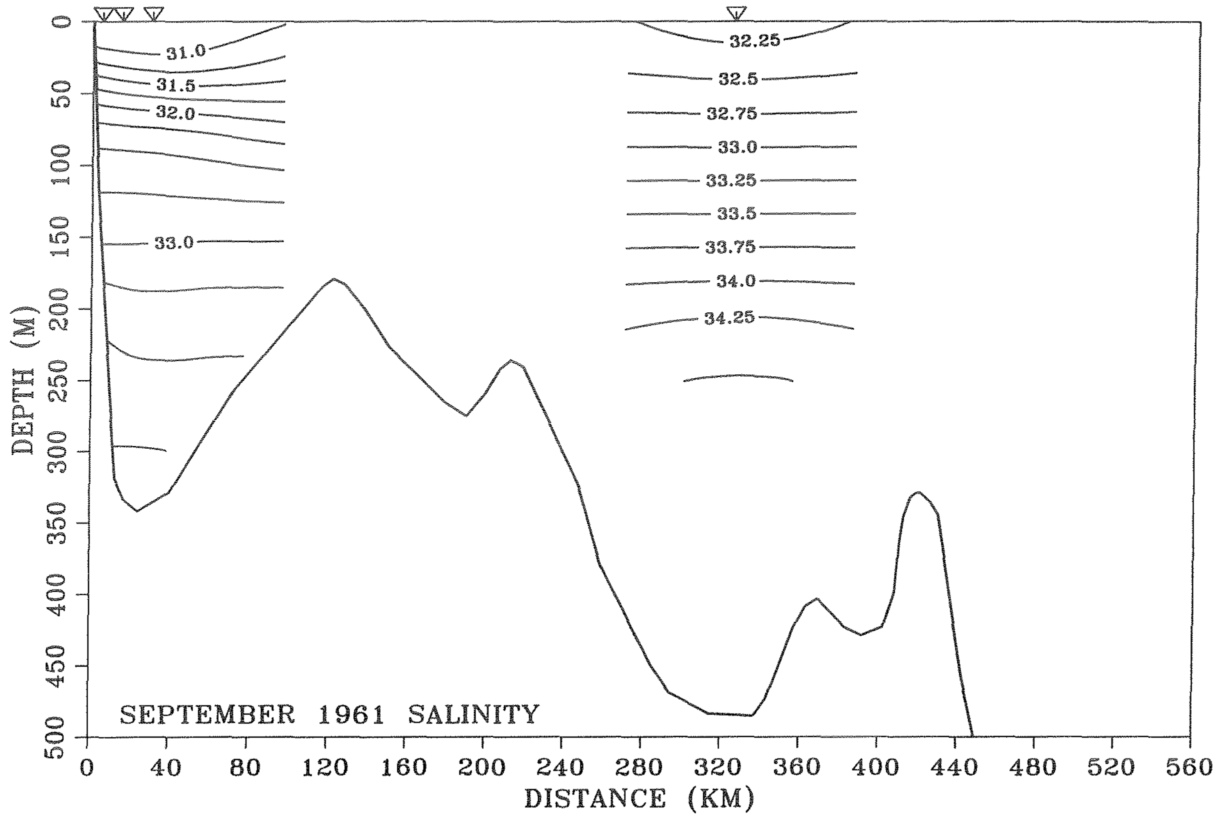
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33.75
34.0
34.25
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DEPTH (M)
DISTANCE (KM)
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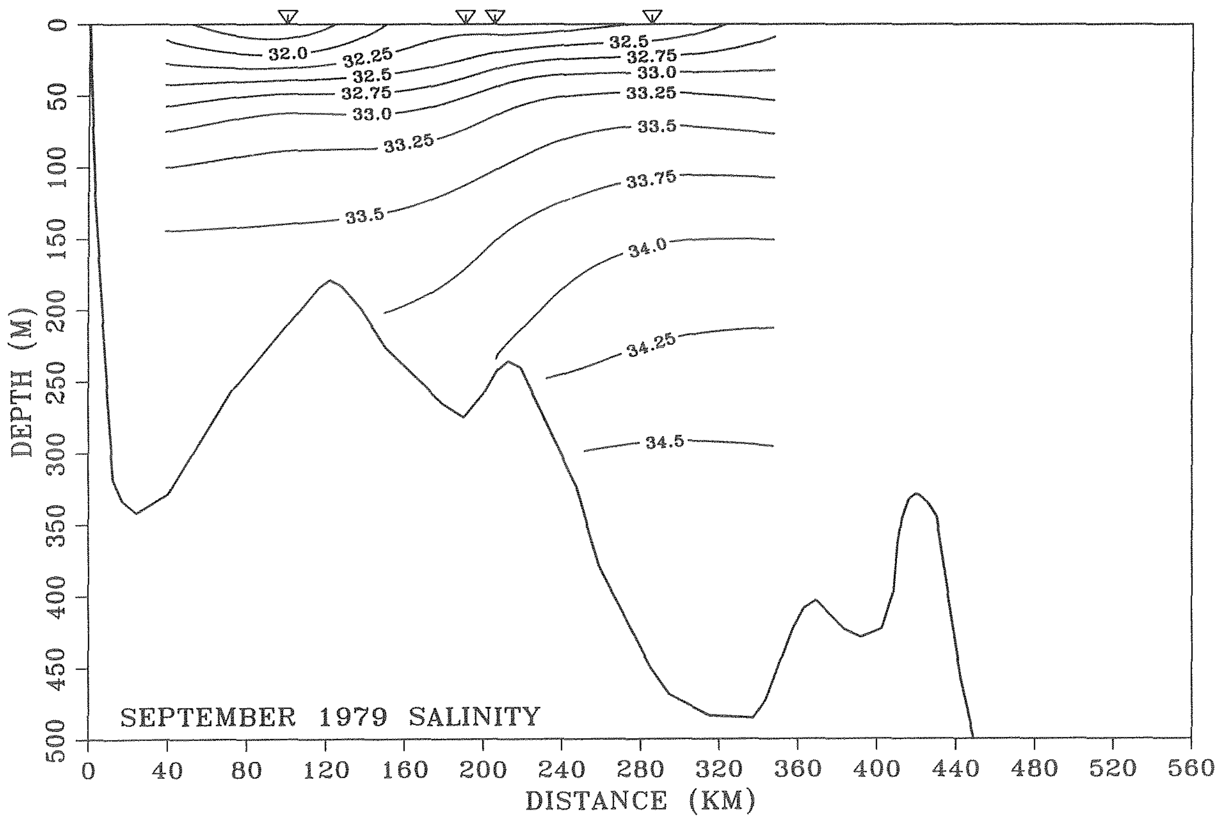
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33.75
34.0
34.25
34.5
SEPTEMBER 1979 SALINITY
DEPTH (M)
DISTANCE (KM)
0
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100
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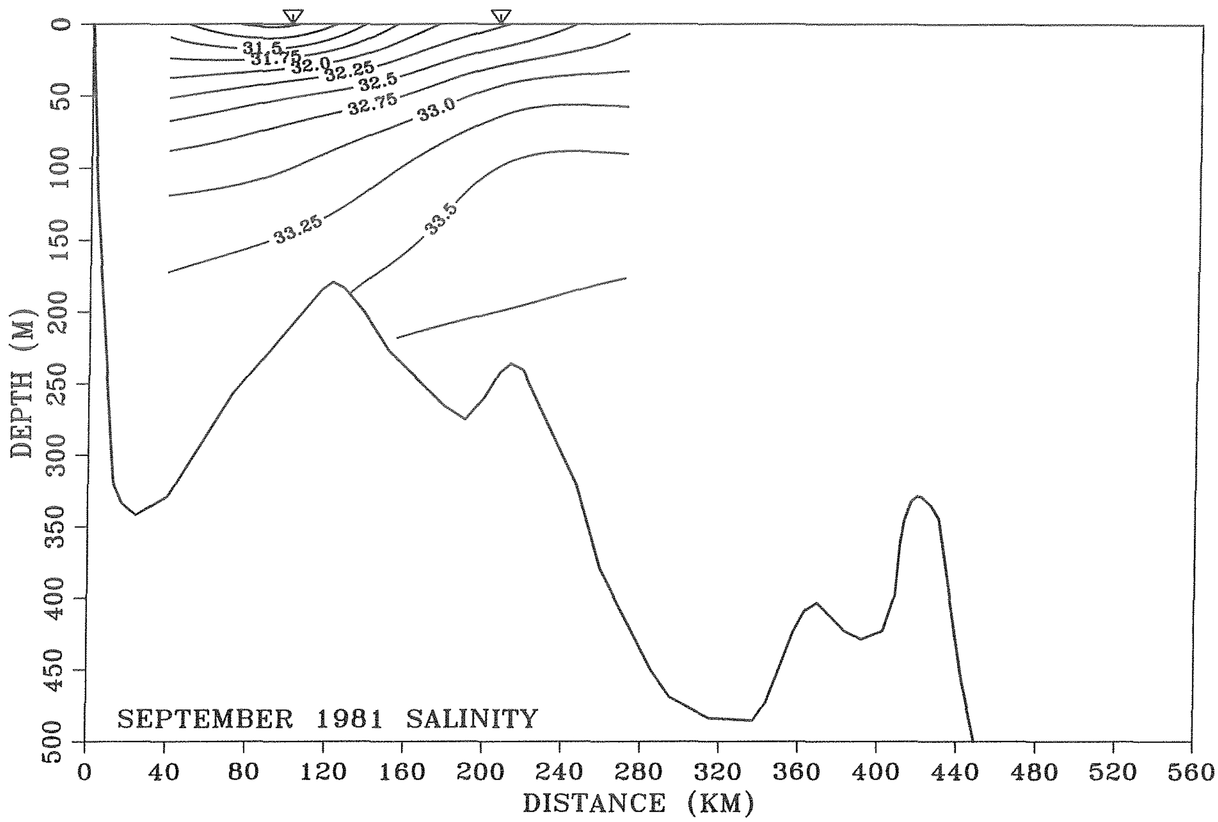
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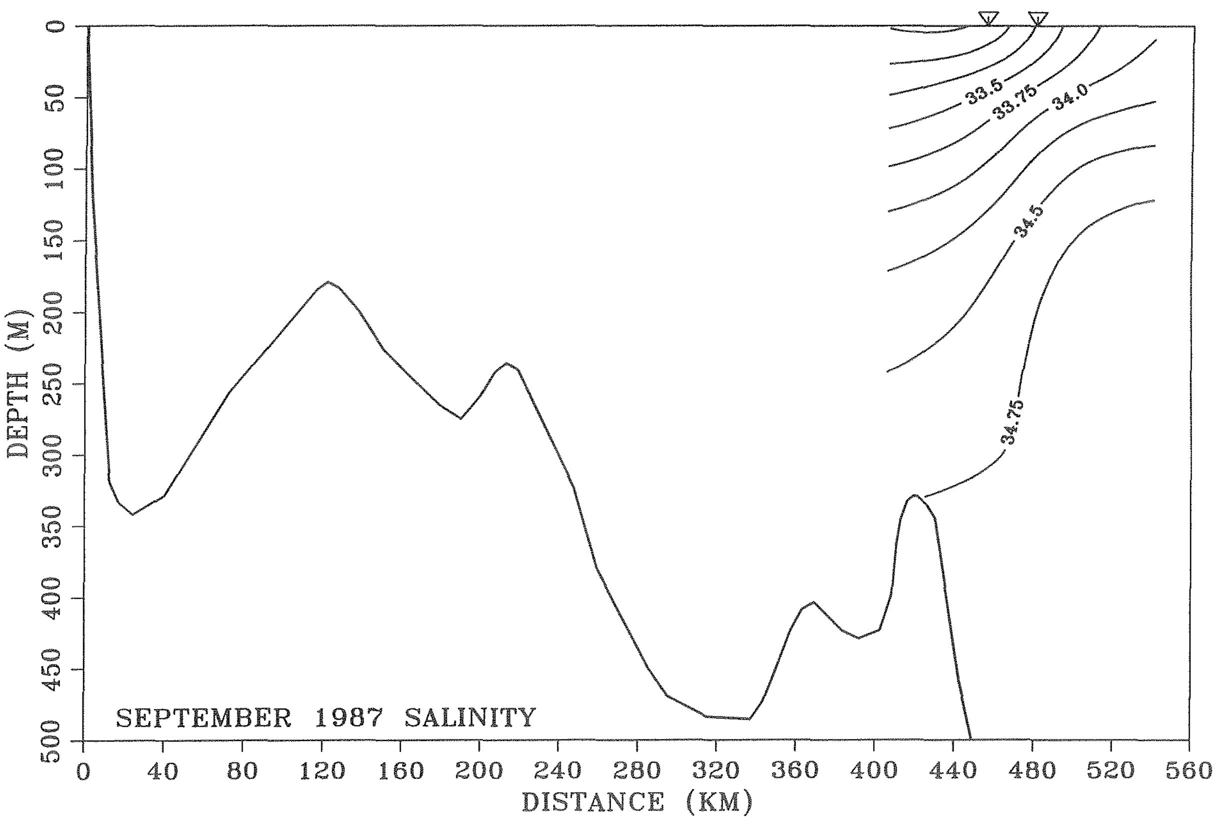
33.5
DEPTH (M)
SEPTEMBER 1981 SALINITY
DISTANCE (KM)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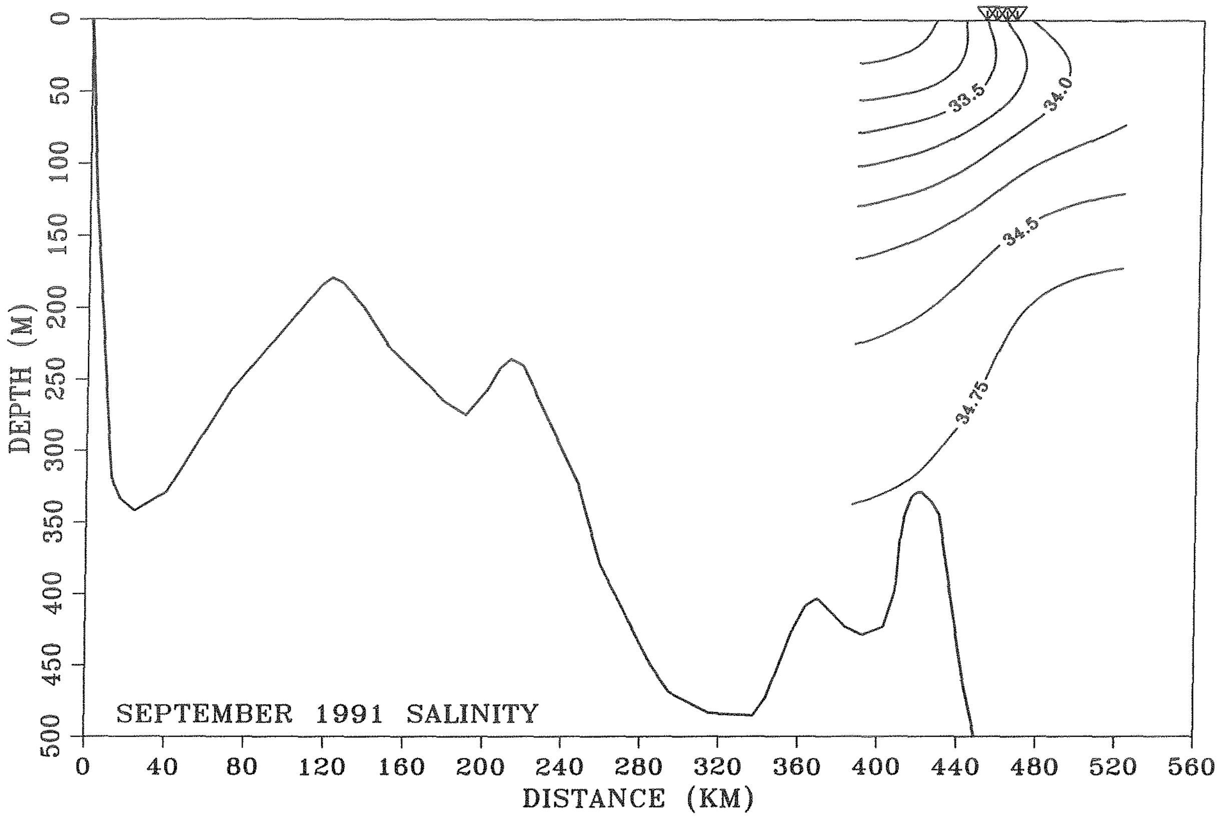
DEPTH (M)
SEPTEMBER 1987 SALINITY
DISTANCE (KM)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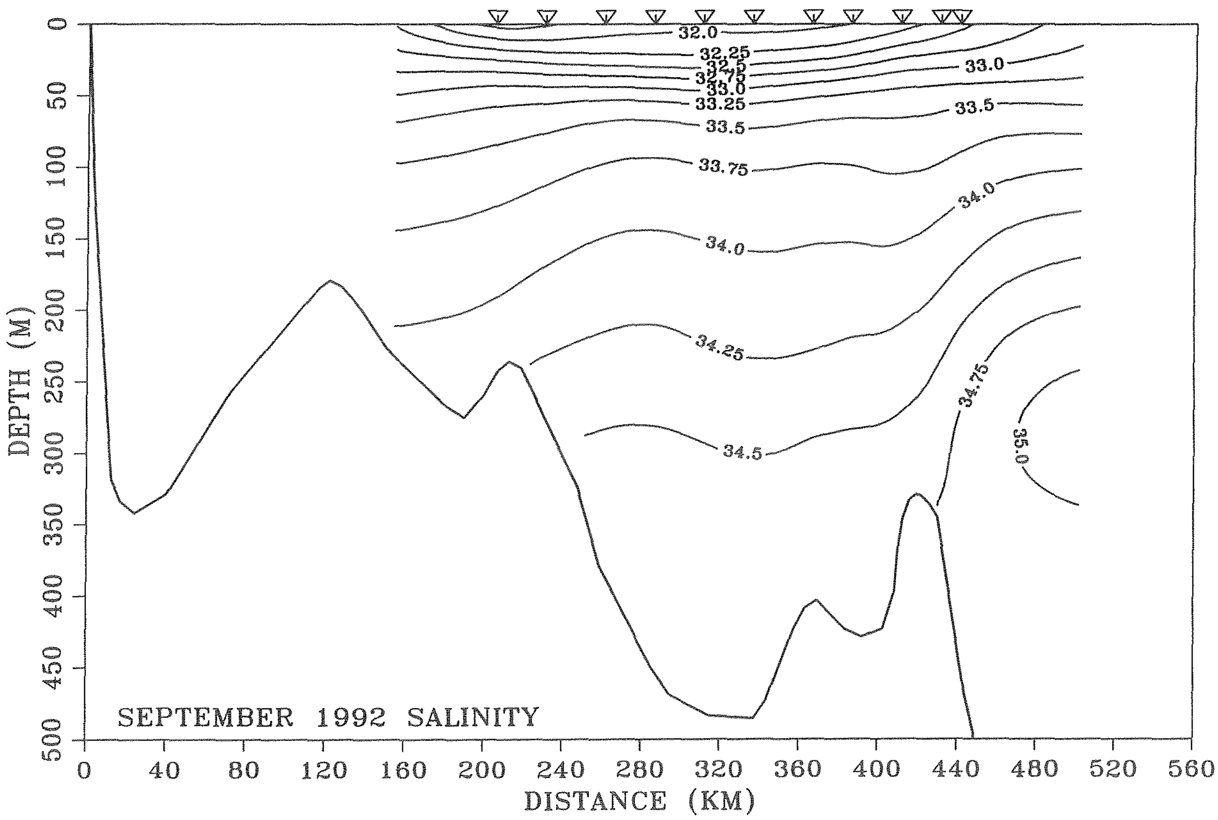
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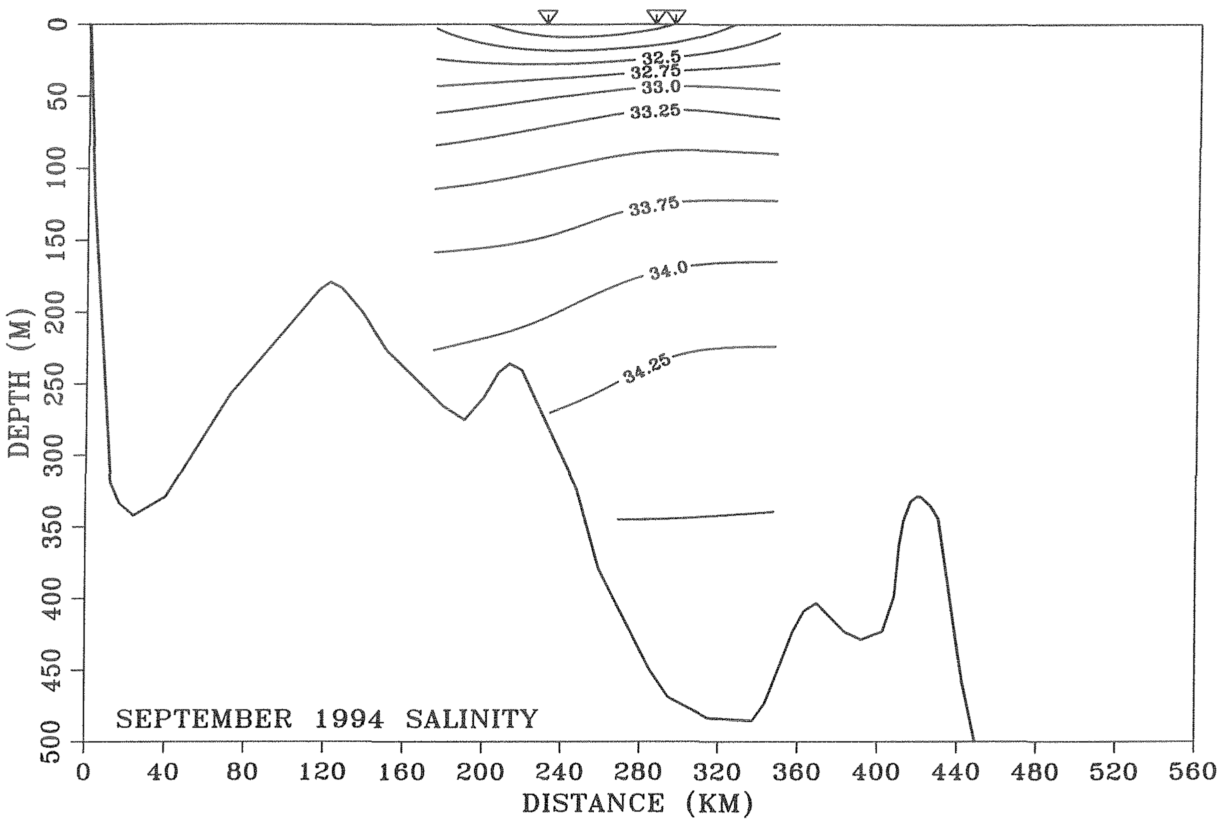
SEPTEMBER 1994 SALINITY
DEPTH (M)
DISTANCE (KM)
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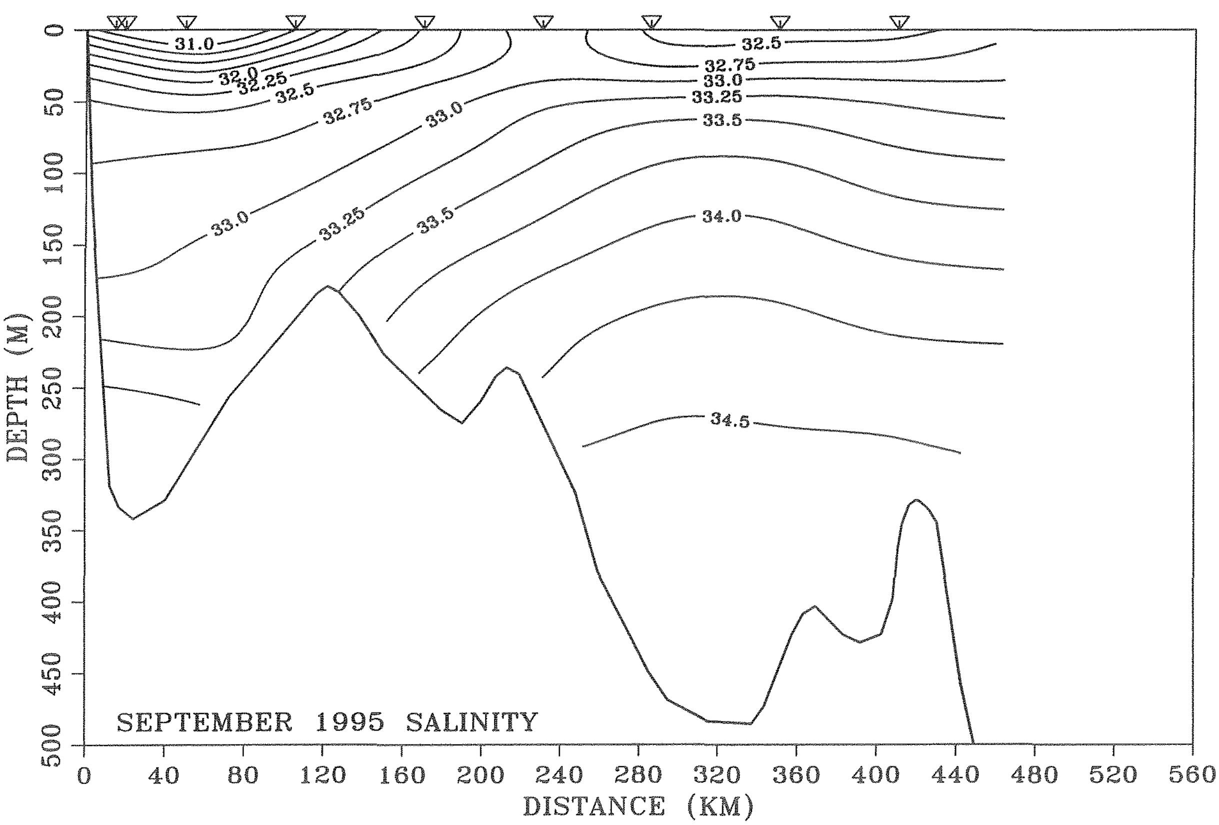
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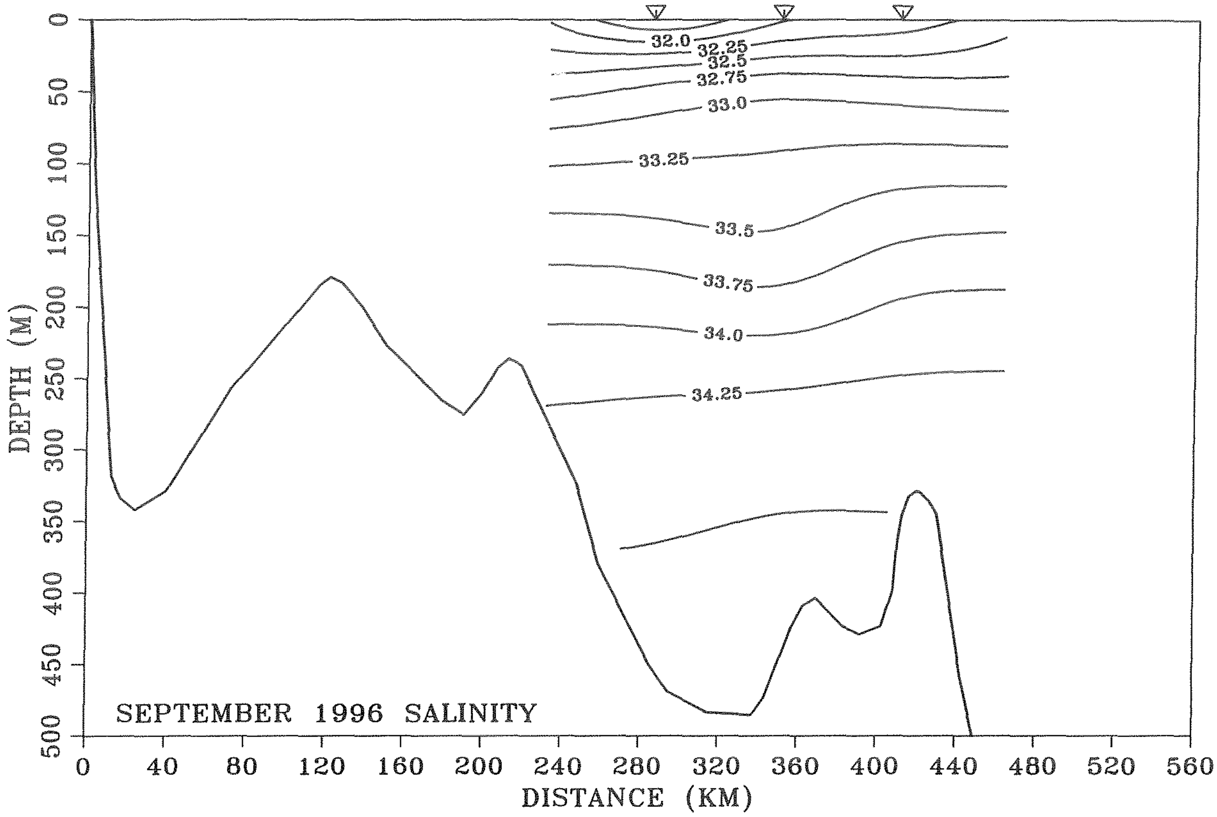
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DEPTH (M)
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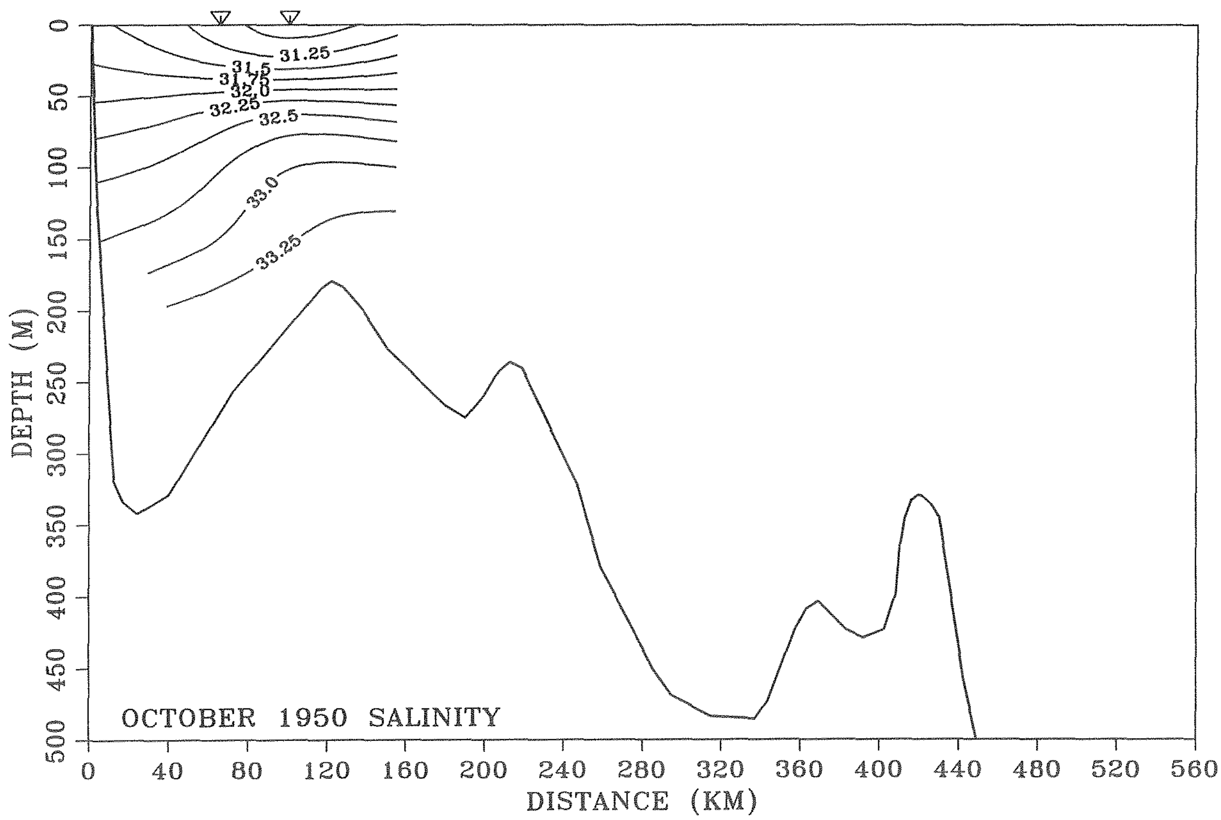
DISTANCE (KM)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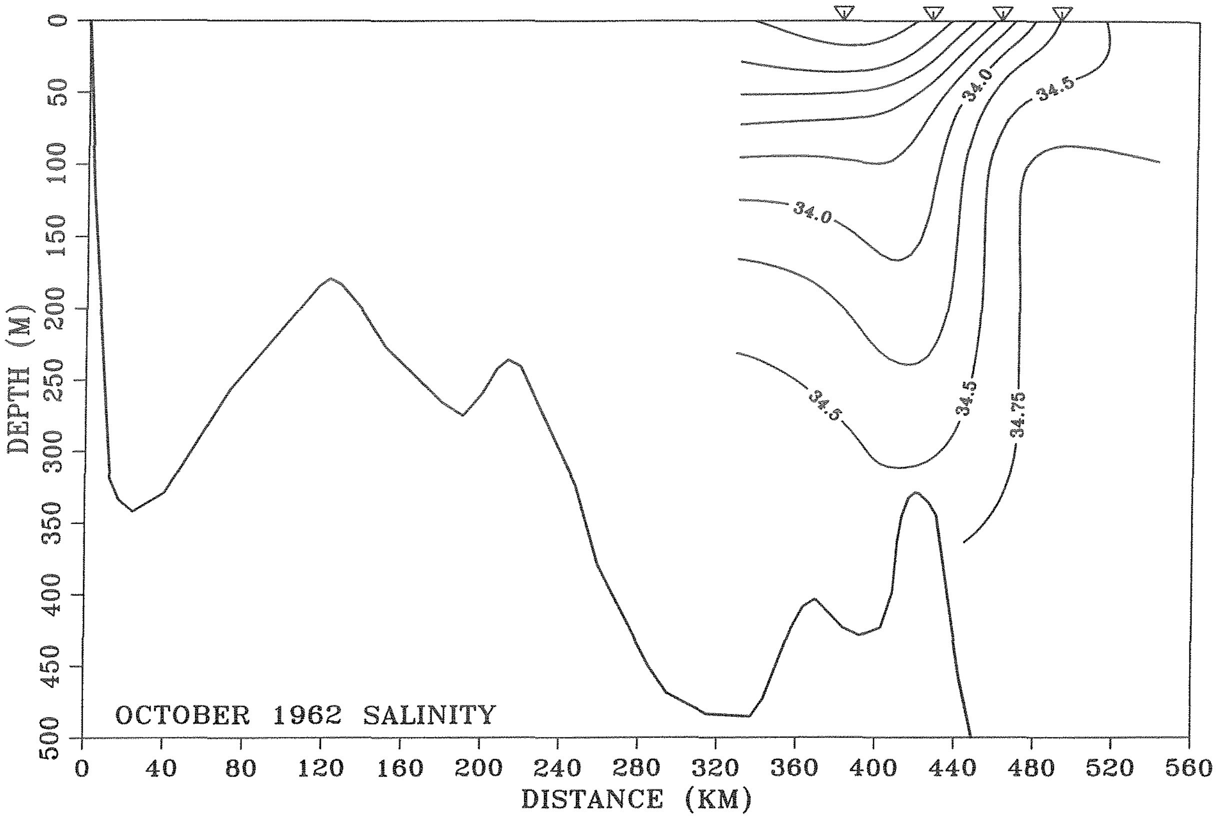
DISTANCE (KM)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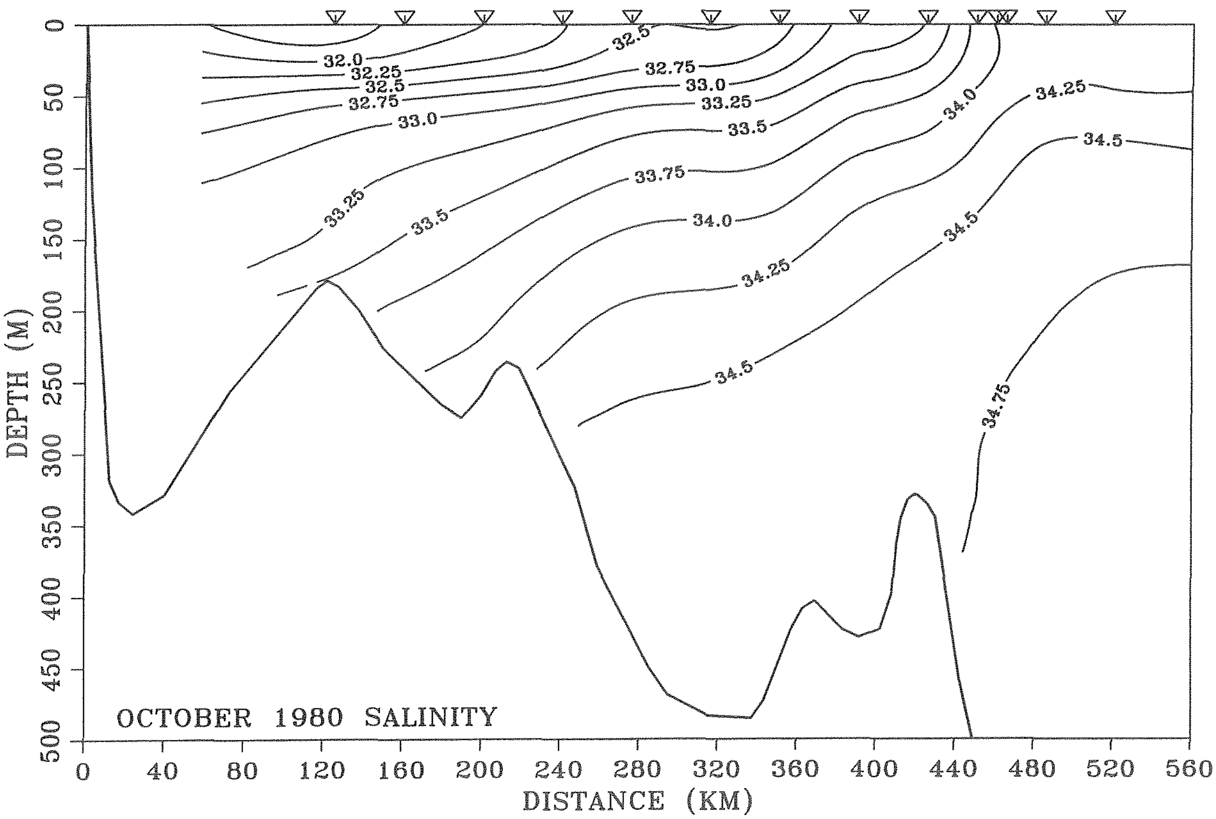
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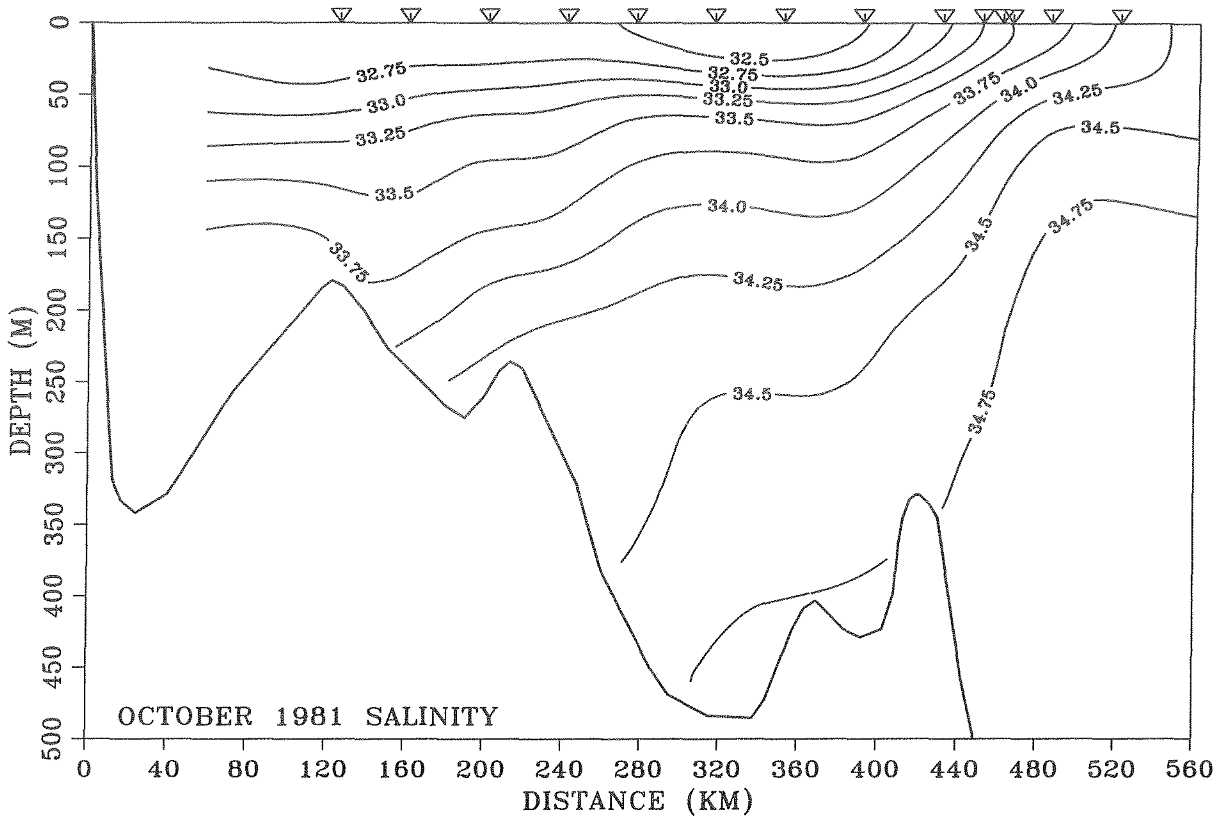
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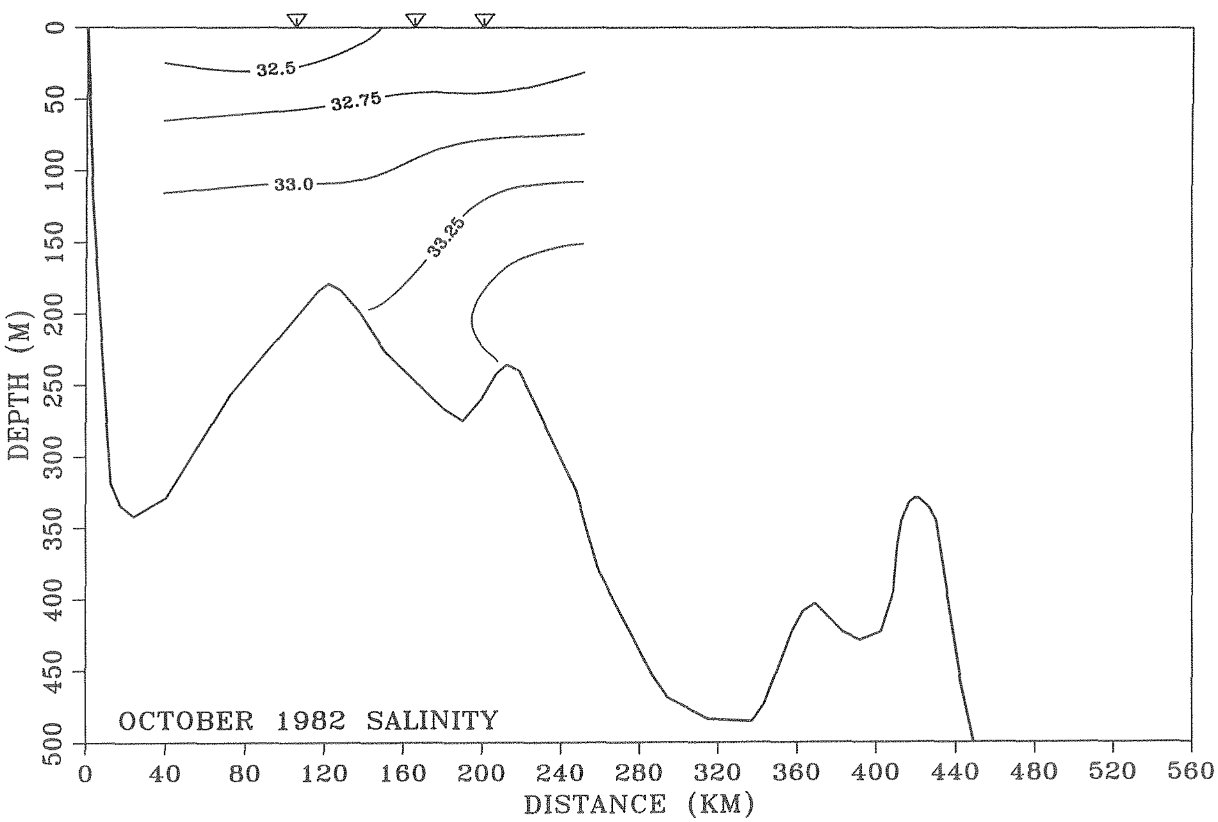
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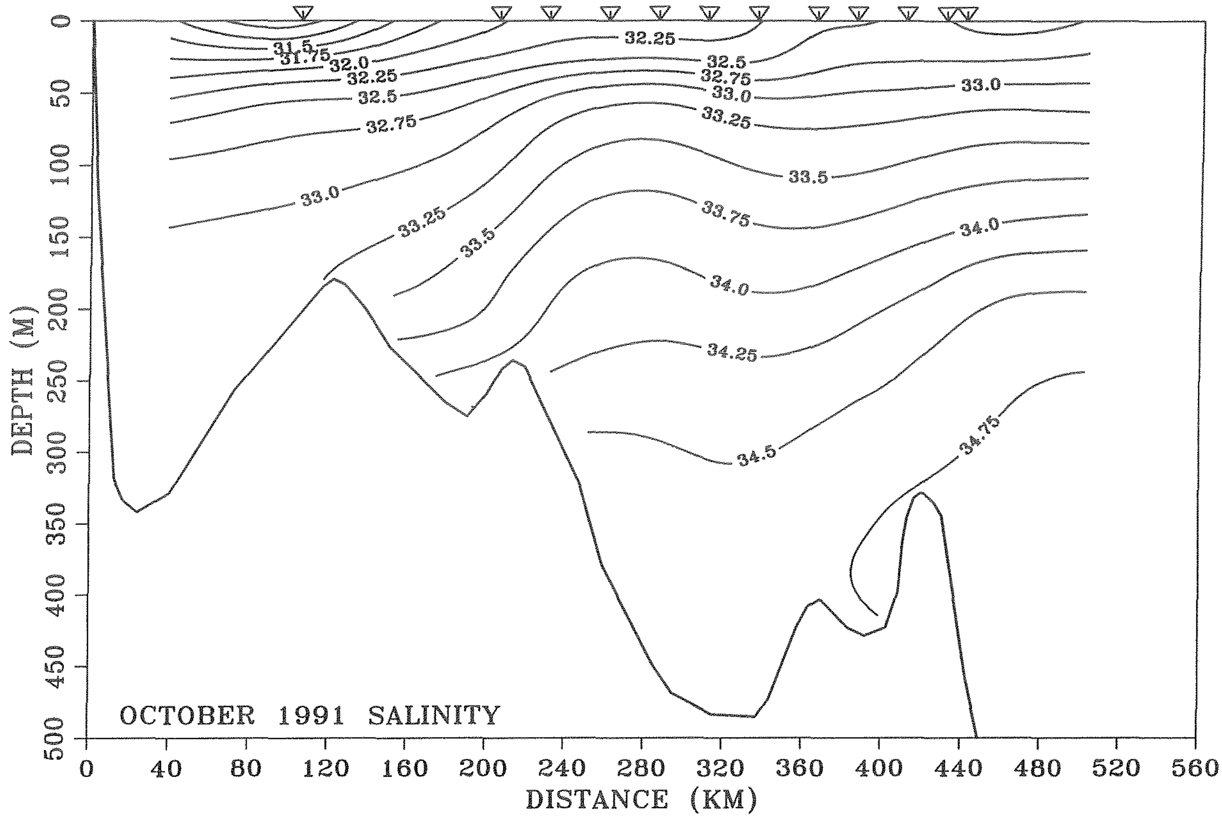
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DEPTH (M)
DISTANCE (KM)
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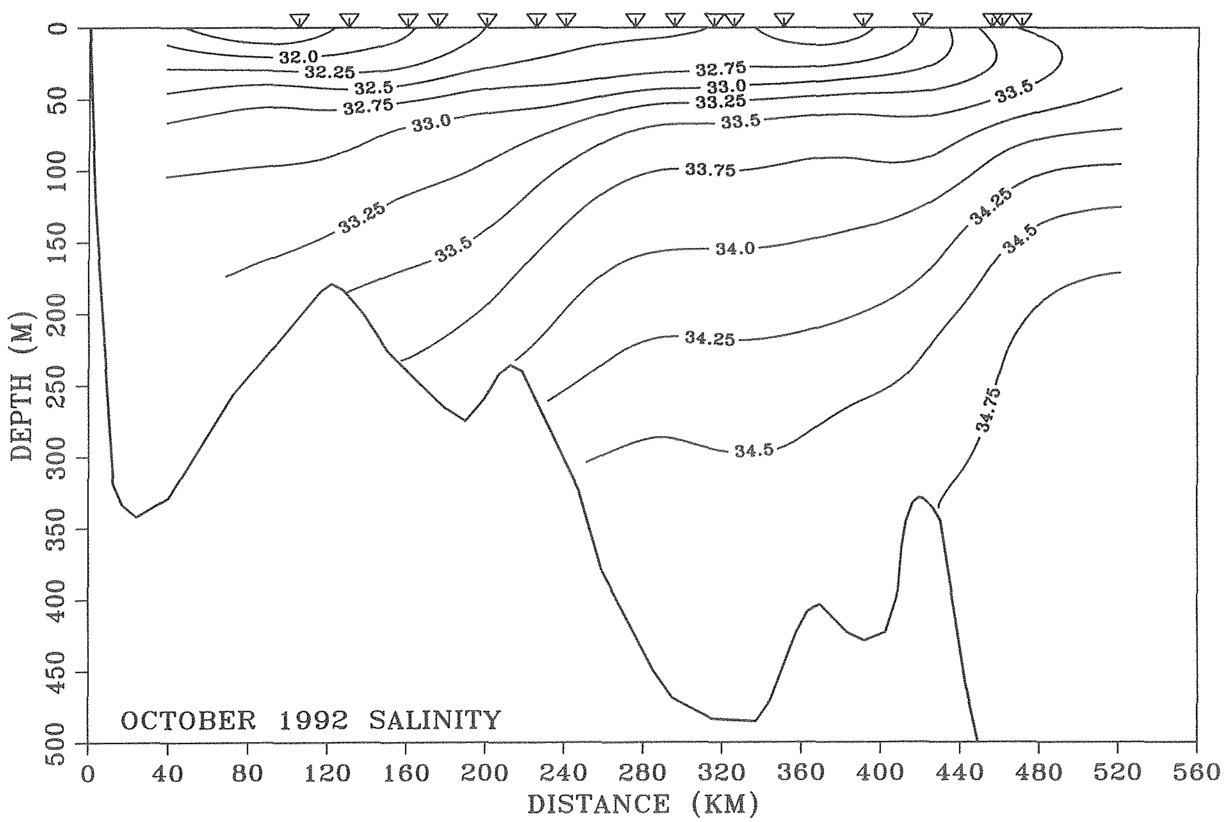
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DEPTH (M)
DISTANCE (KM)
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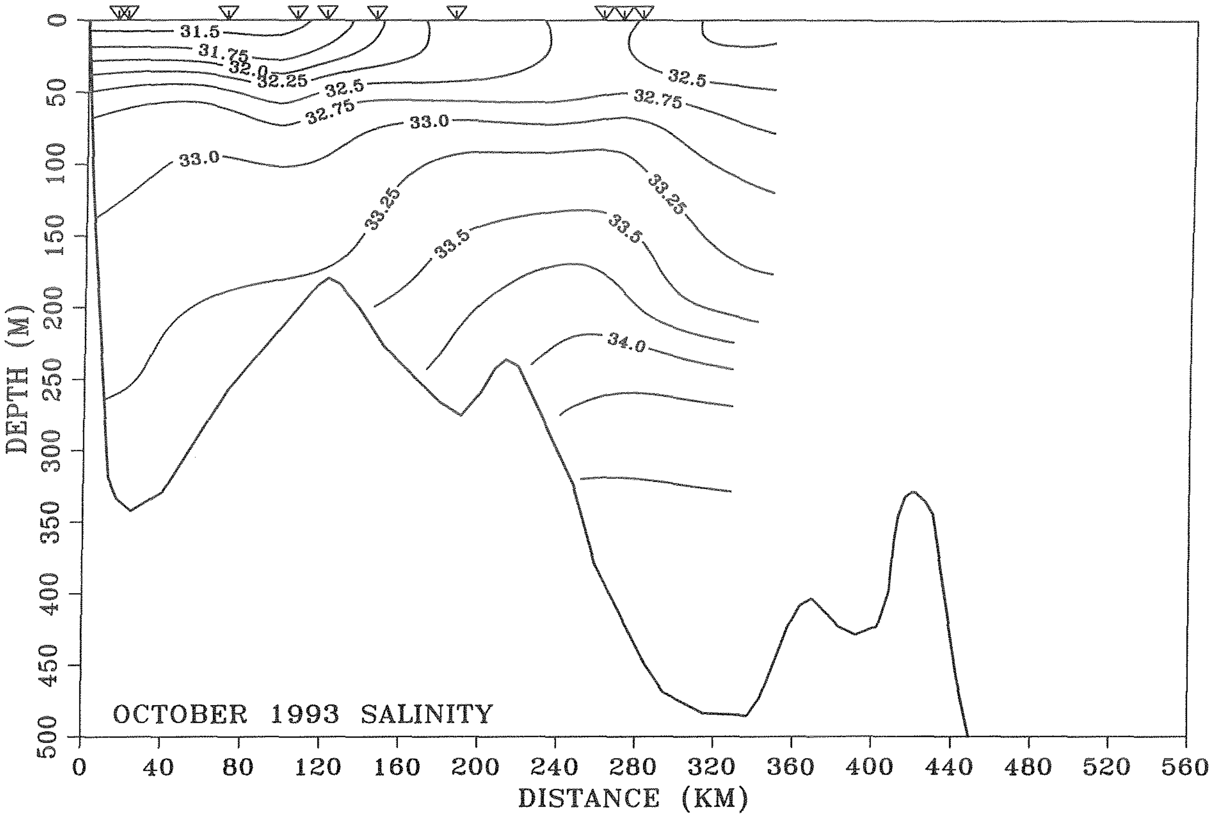
OCTOBER 1993 SALINITY
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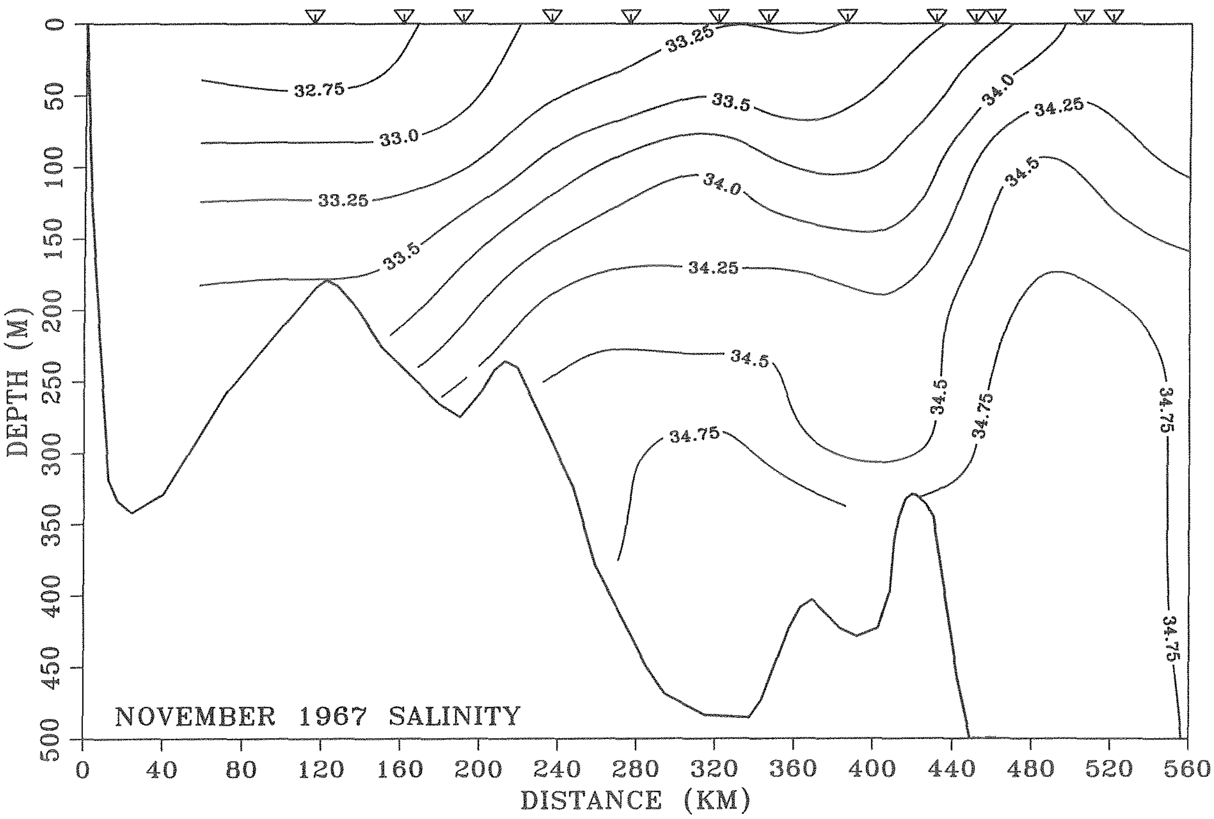
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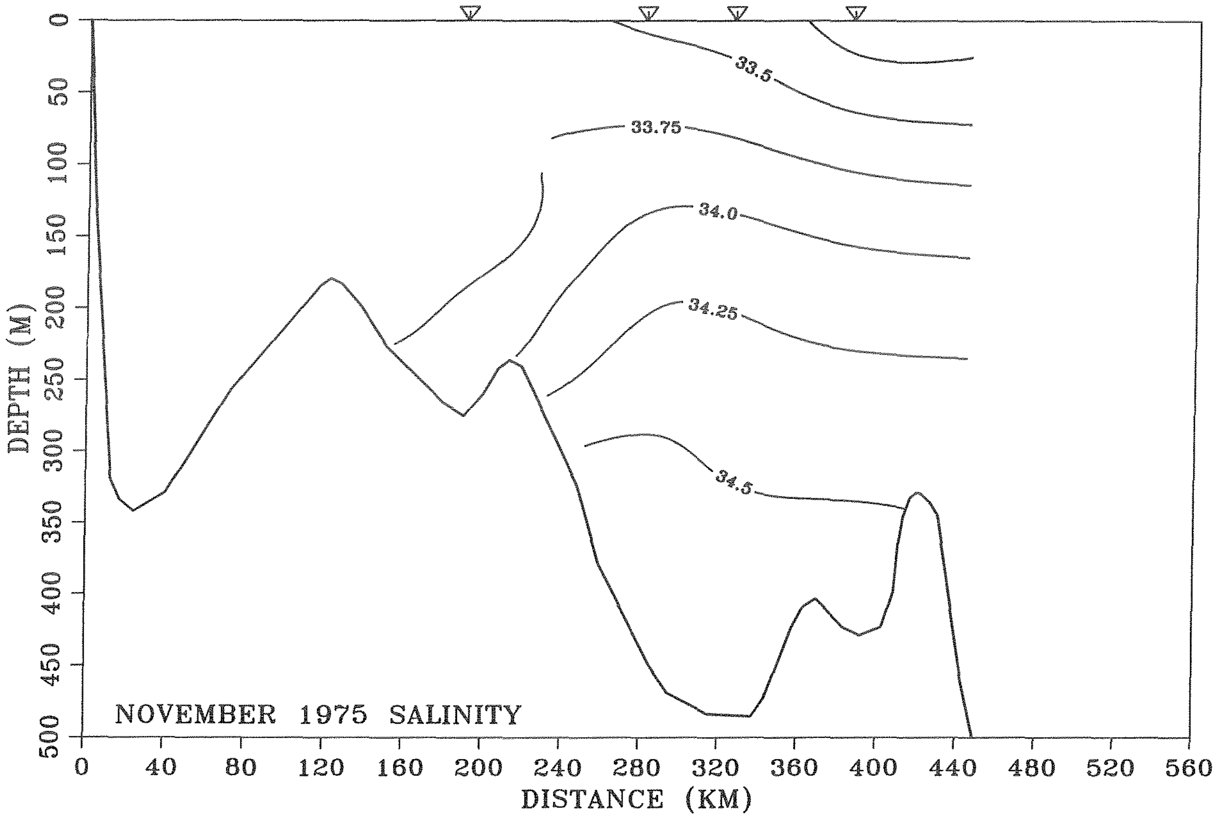
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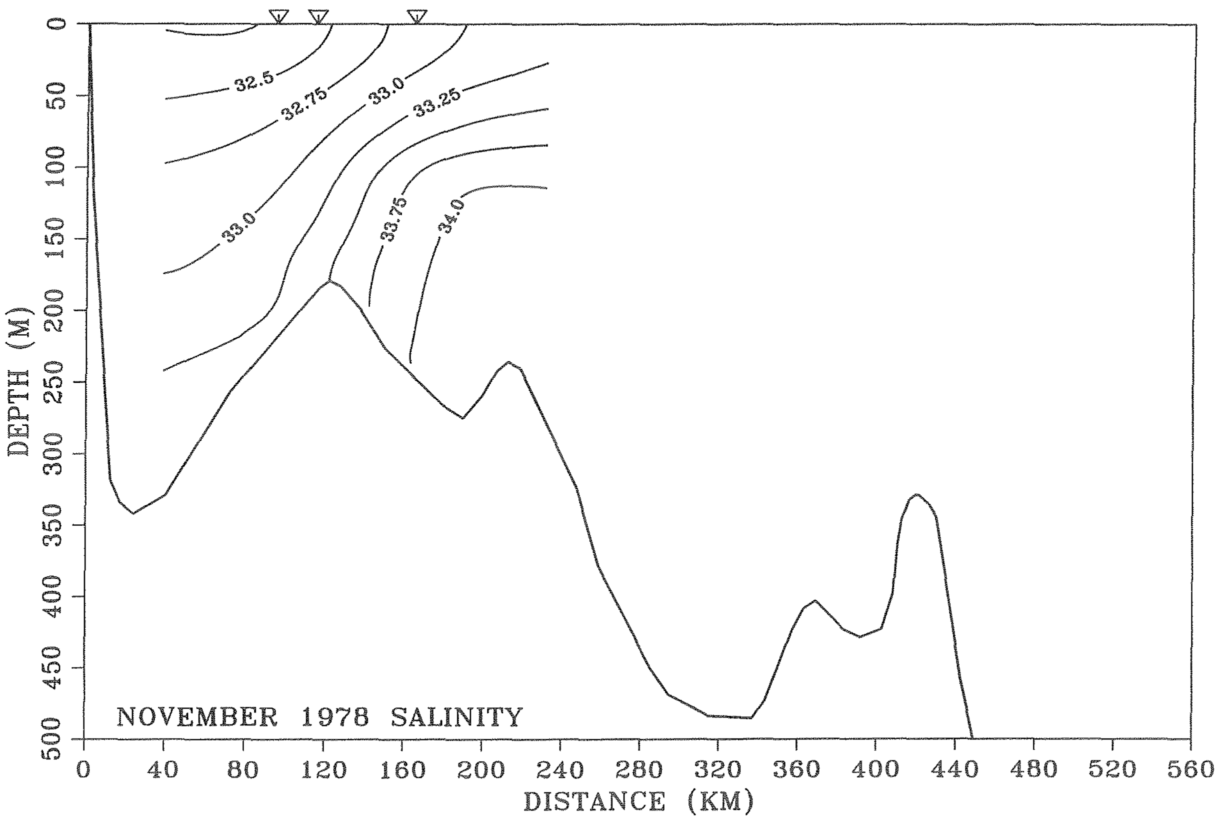
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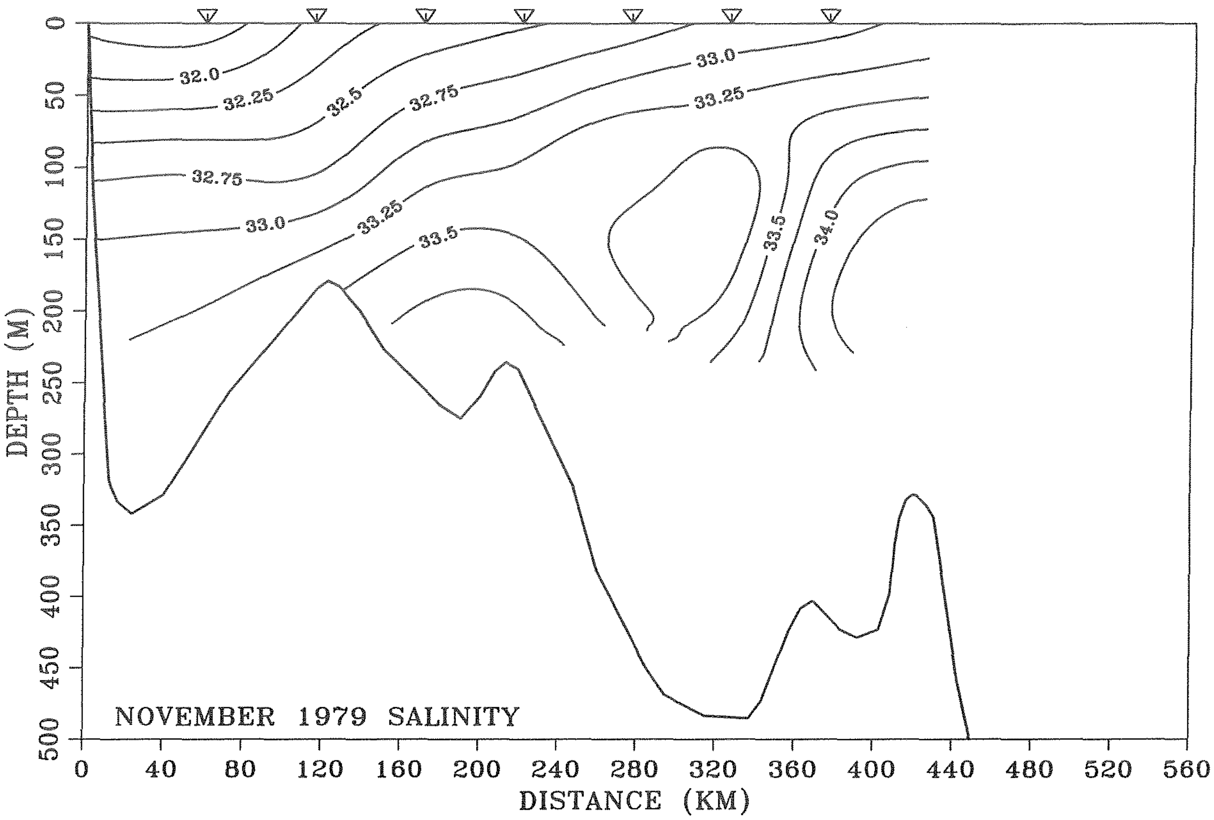
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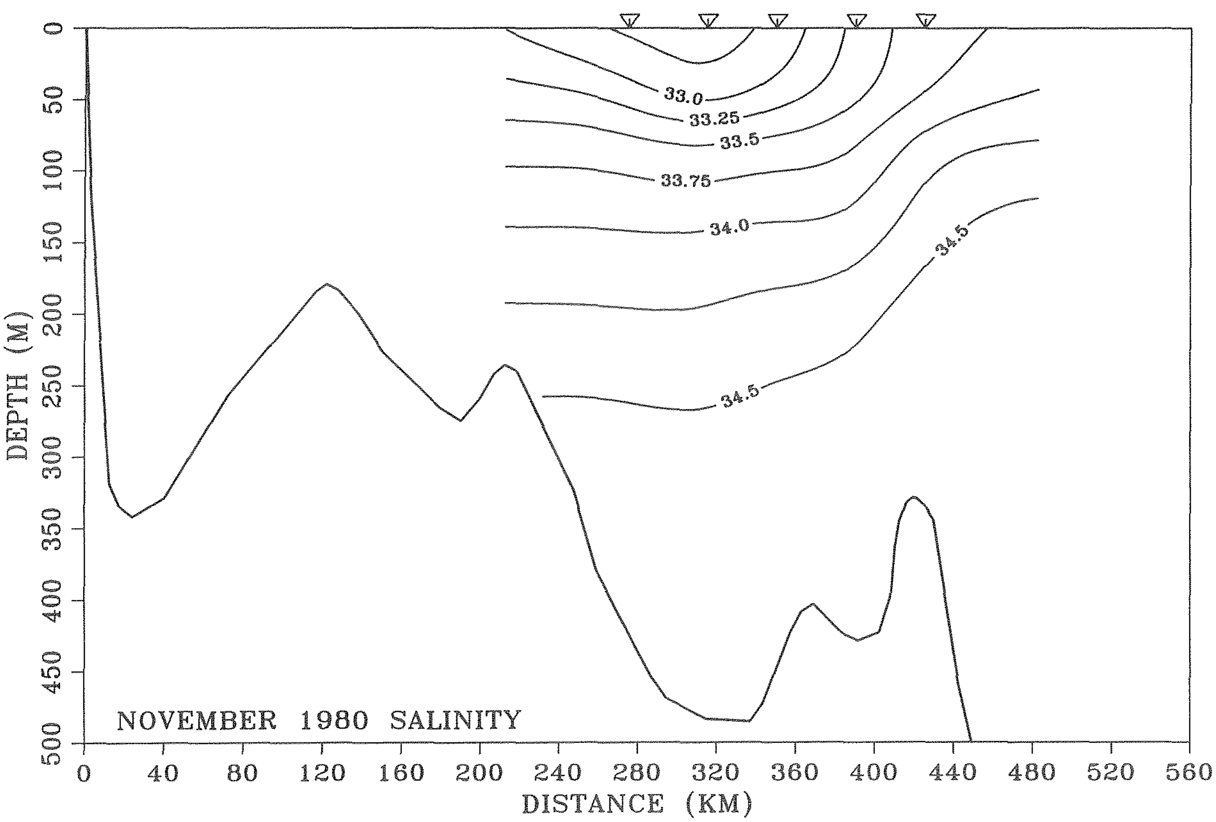
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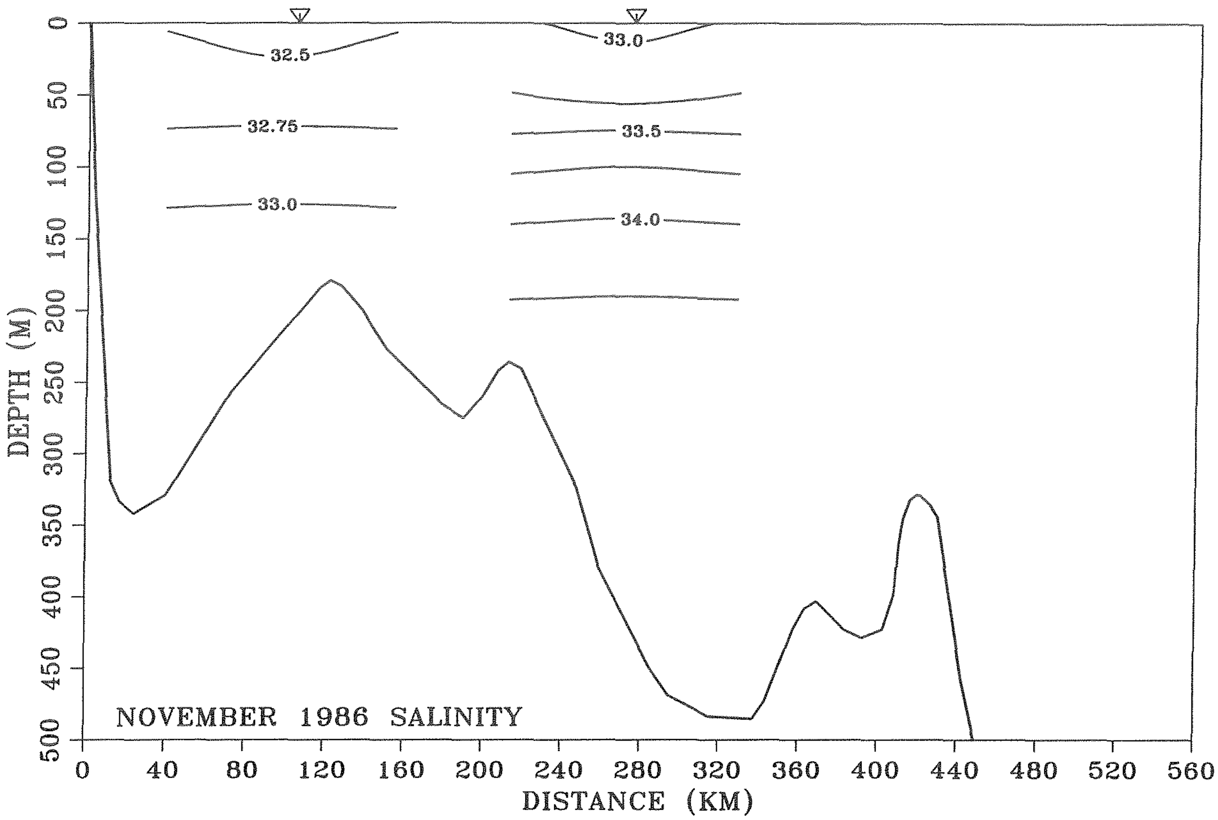

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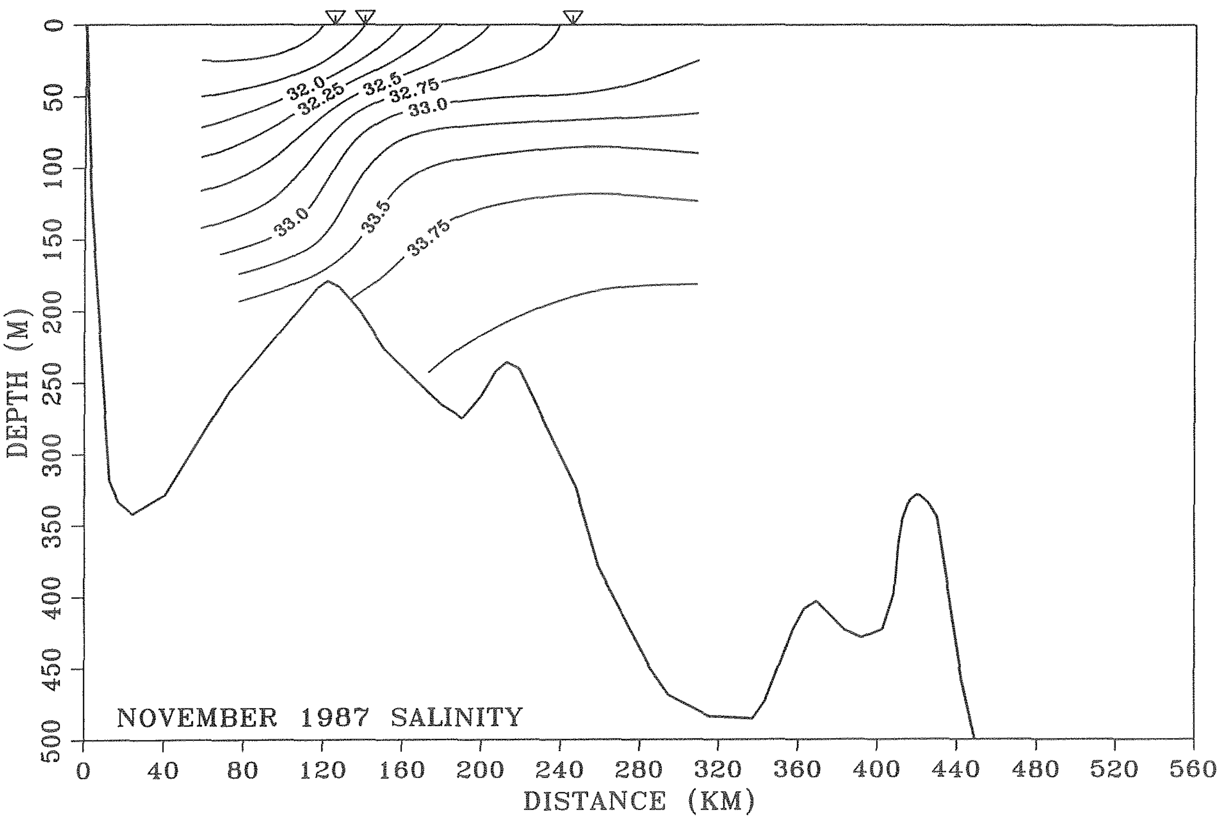
DISTANCE (KM)



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DEPTH (M)
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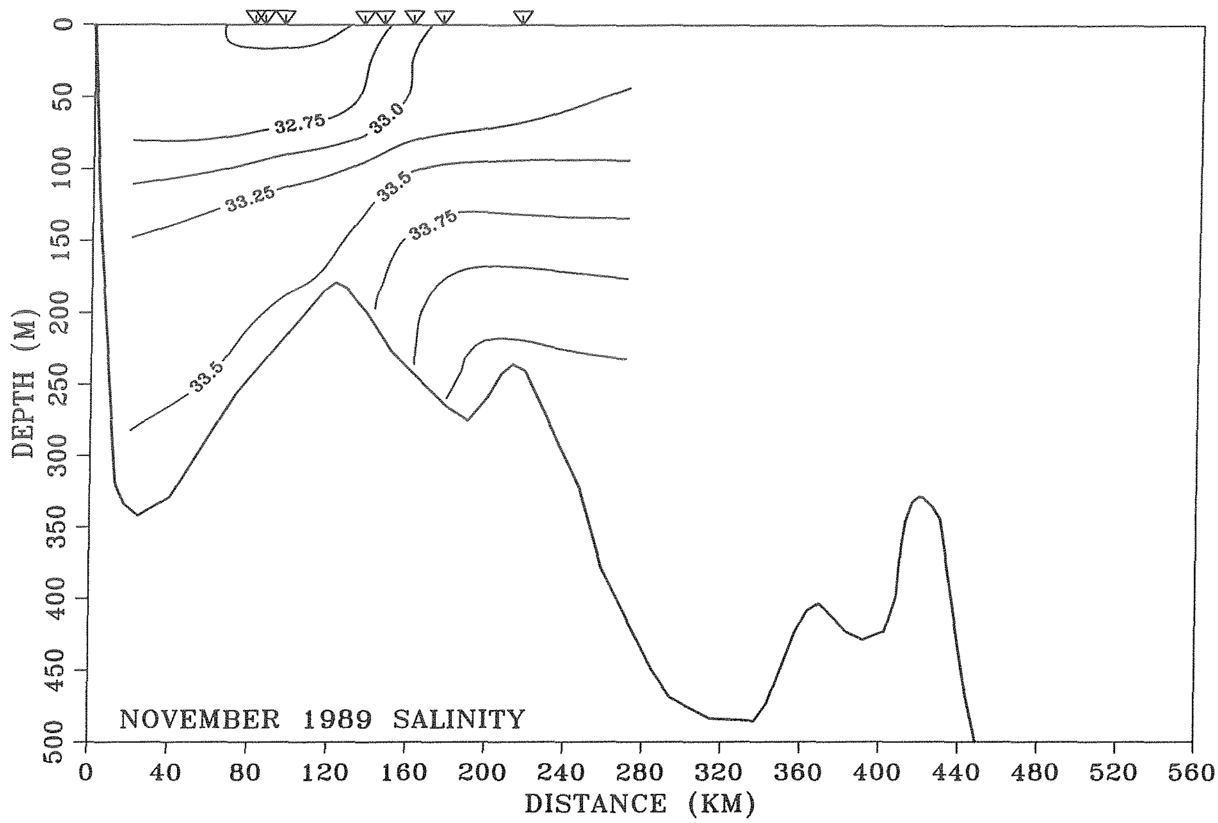
DISTANCE (KM)



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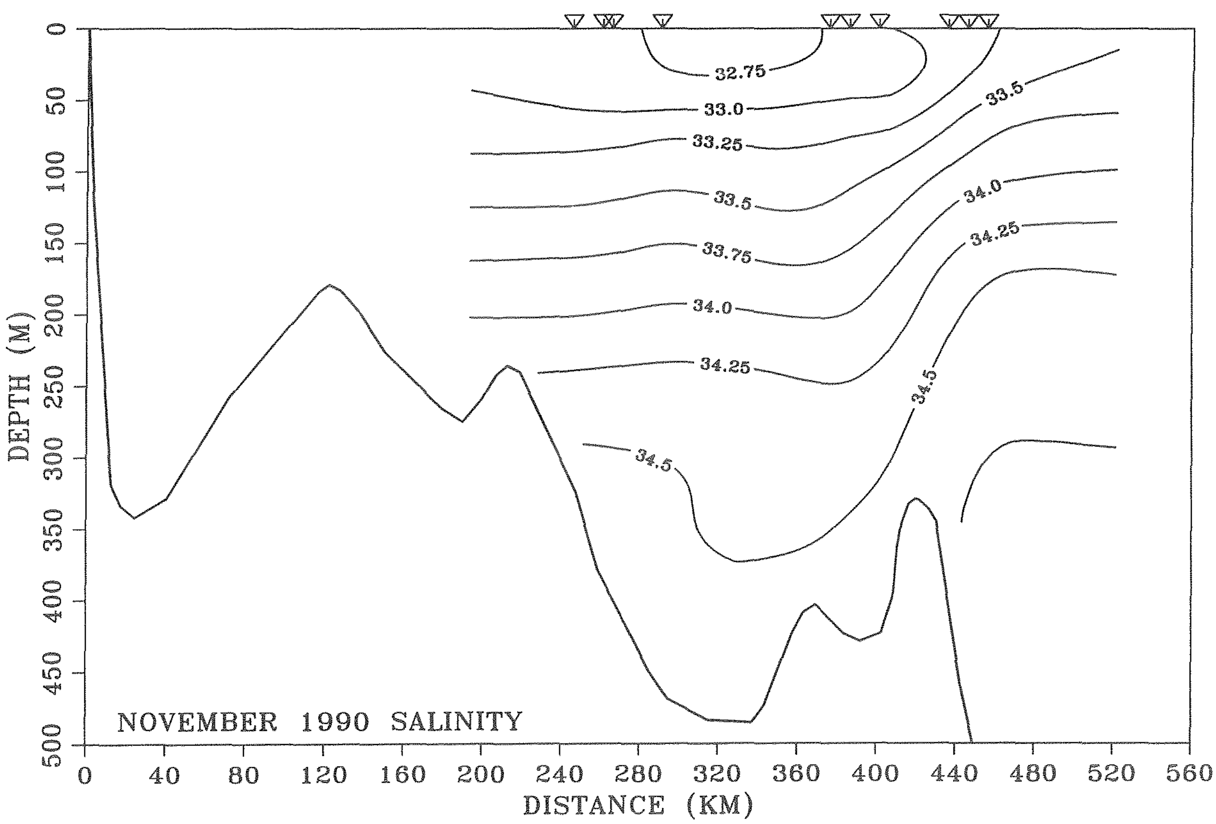

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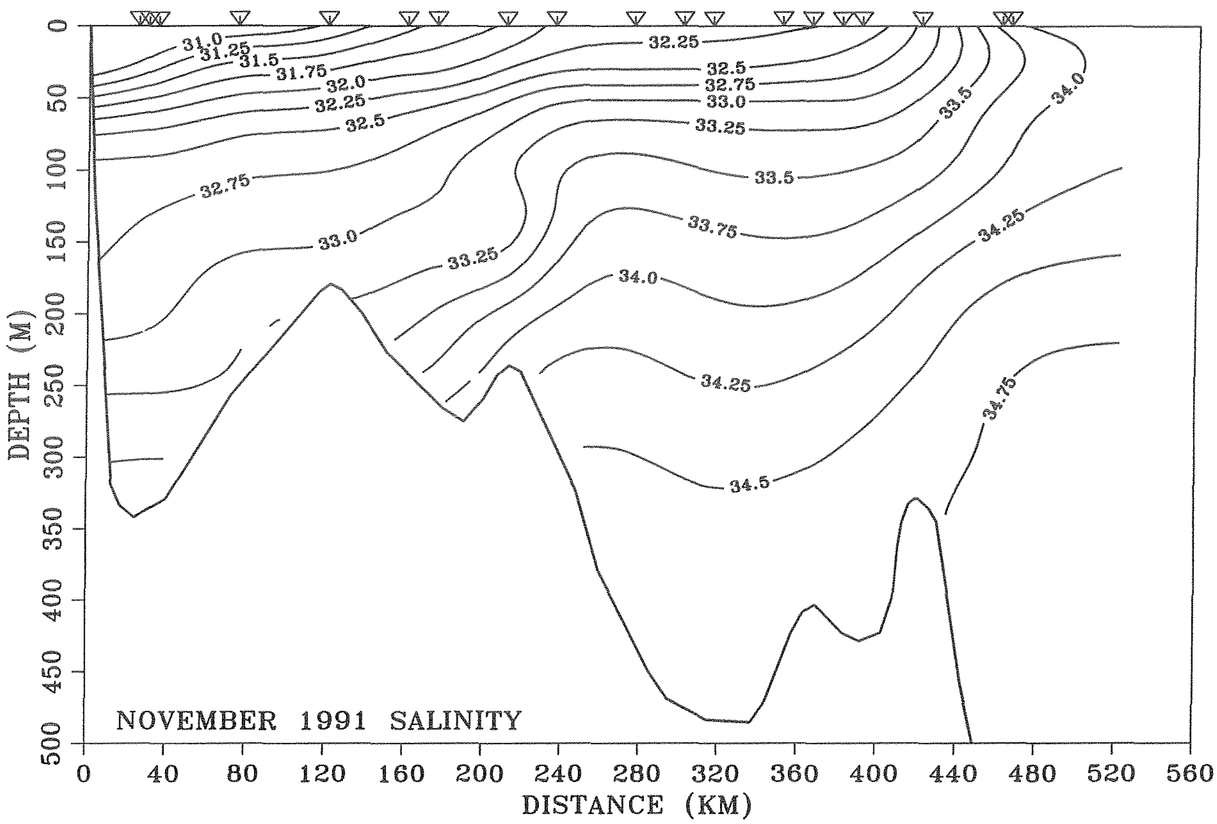

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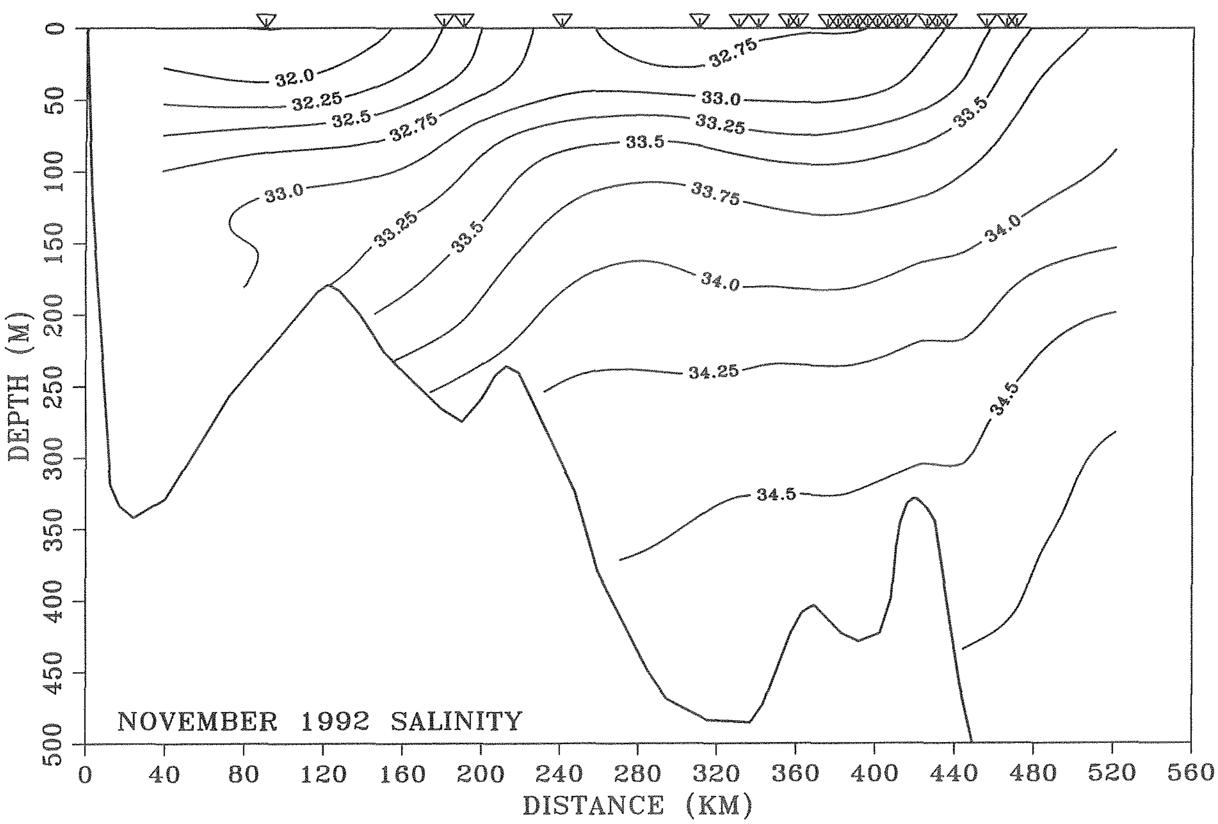
34.75



NOVEMBER 1992 SALINITY
DEPTH (M)
DISTANCE (KM)
32.0
32.25
32.5
32.75
33.0
33.25
33.5
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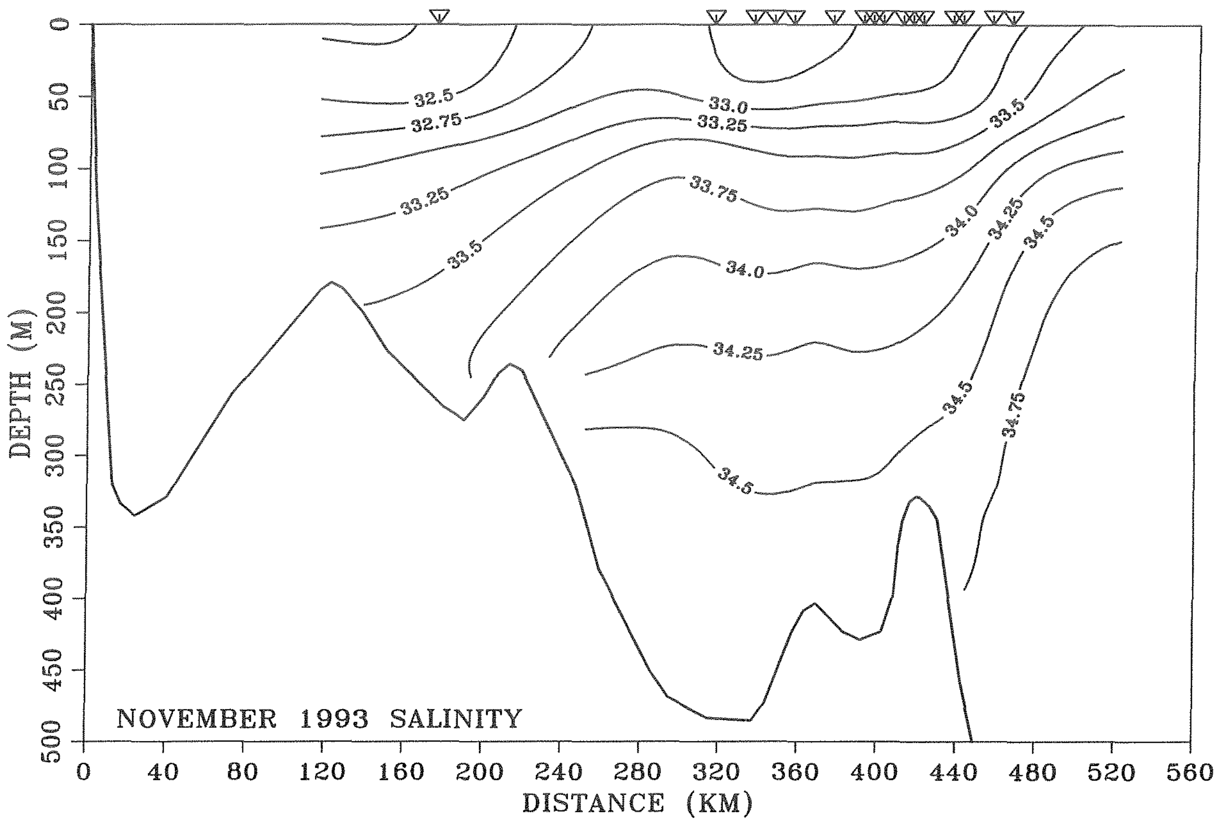
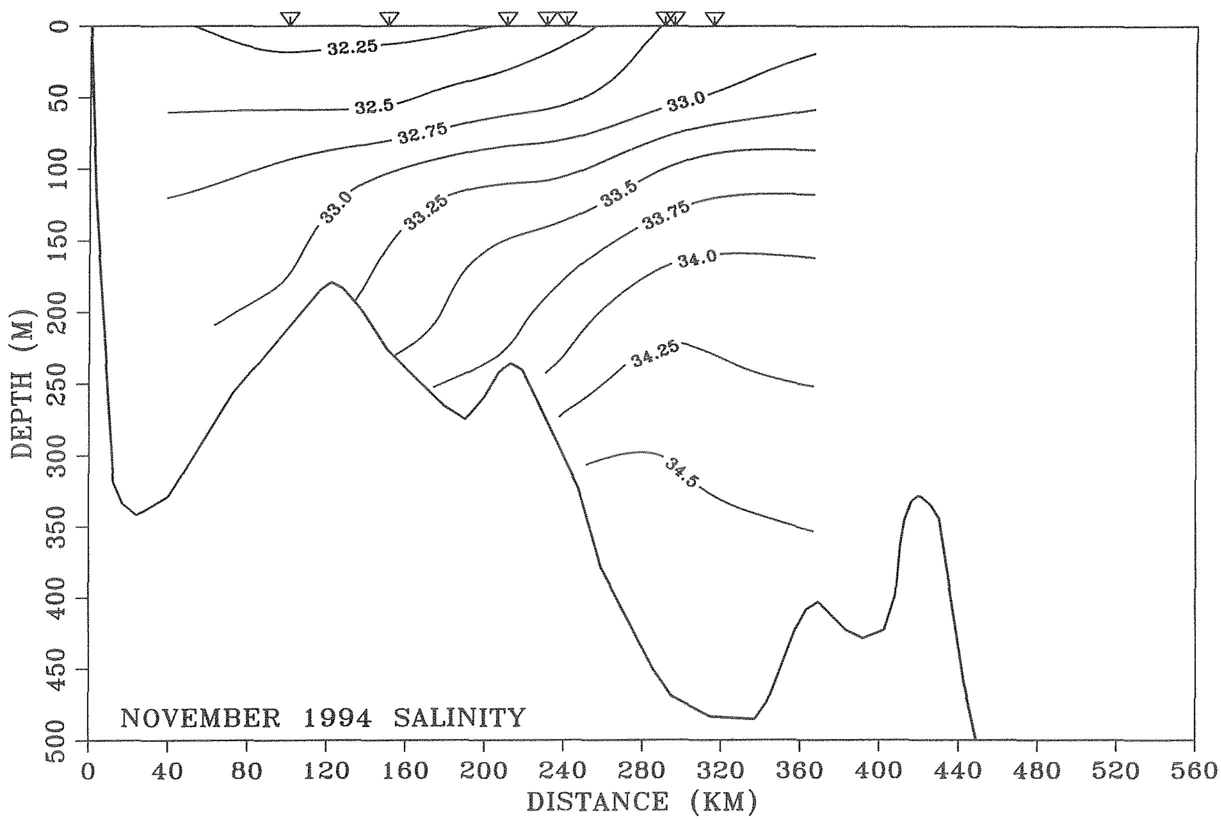
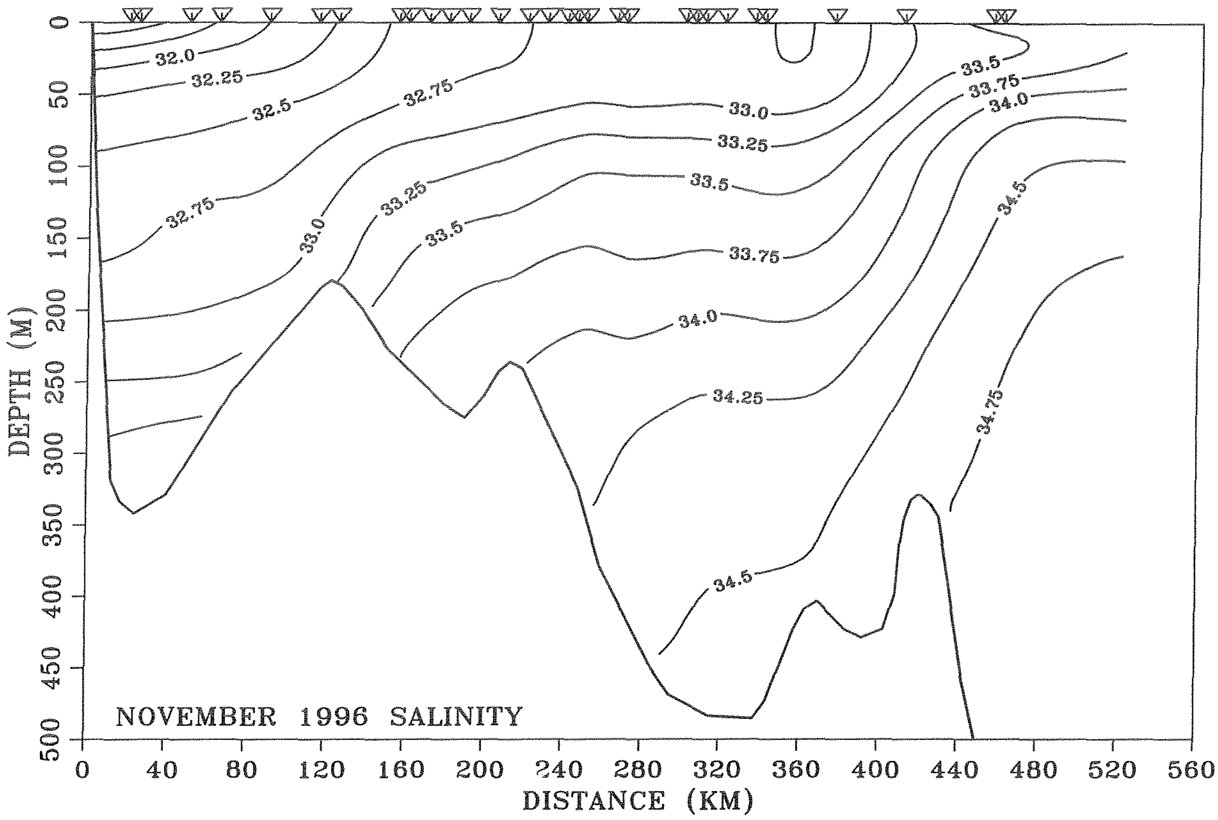
34.0
34.25
34.5


NOVEMBER 1993 SALINITY
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
32.5
32.75
33.0
33.25
33.25
33.5
33.5
33.75
34.0
34.0
34.25
34.25
34.5
34.5
34.5
34.75


NOVEMBER 1994 SALINITY
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
32.25
32.5
32.75
33.0
33.0
33.25
33.5
33.75
34.0
34.25
34.5


NOVEMBER 1996 SALINITY
DEPTH (M)
DISTANCE (KM)
32.0
32.25
32.5
32.75
33.0
33.25
33.5
33.75
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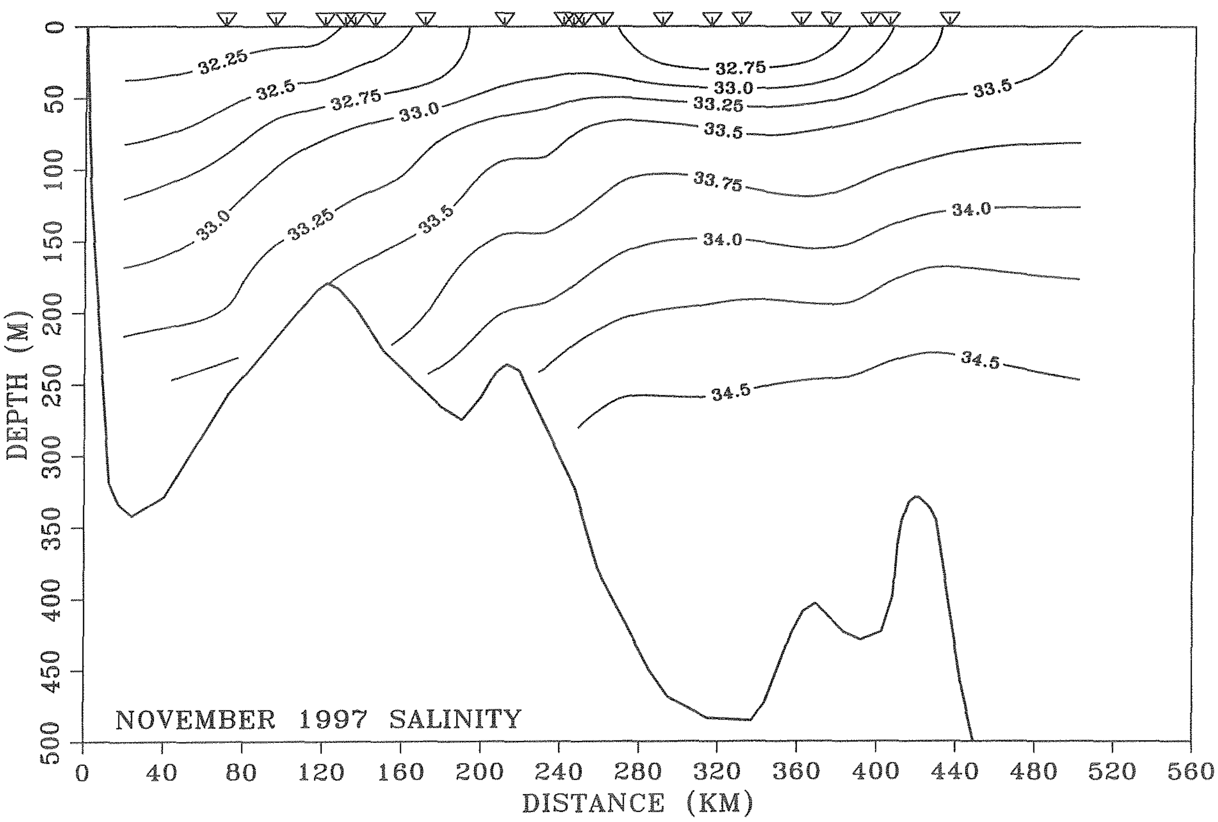
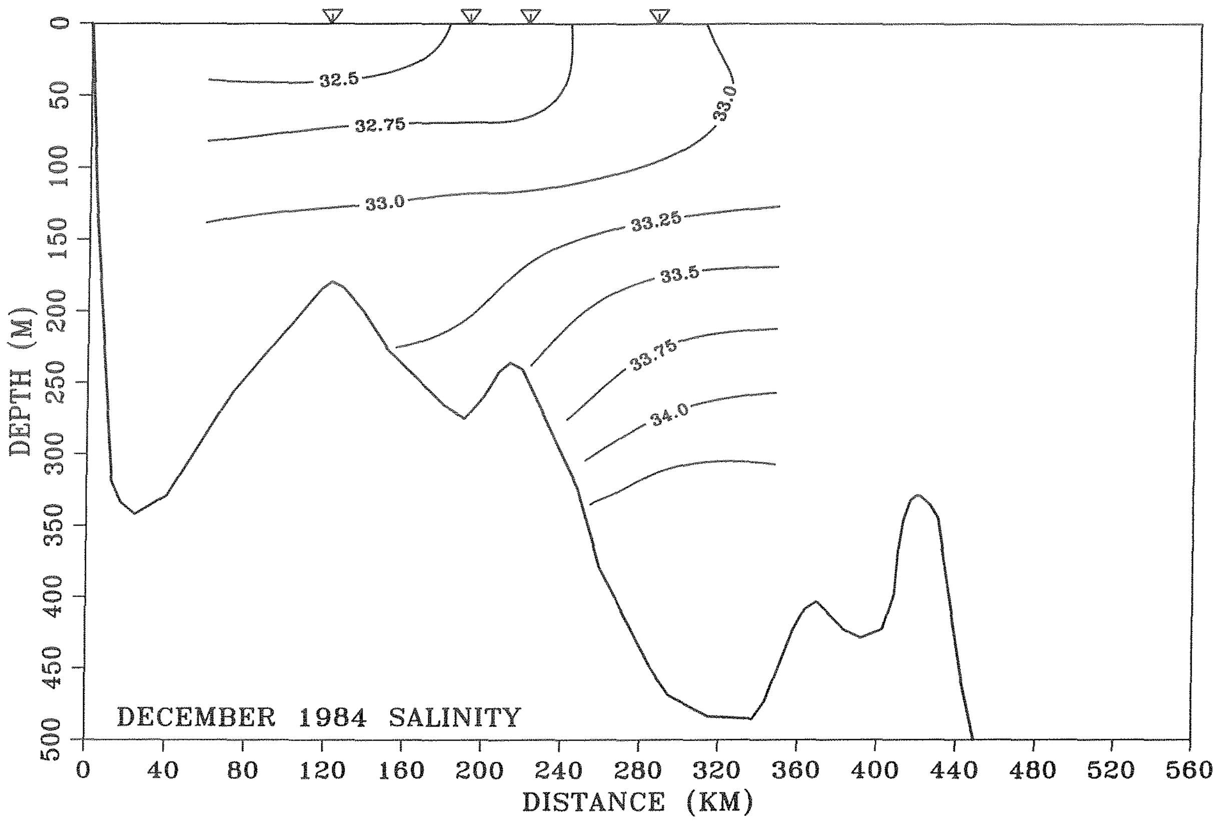
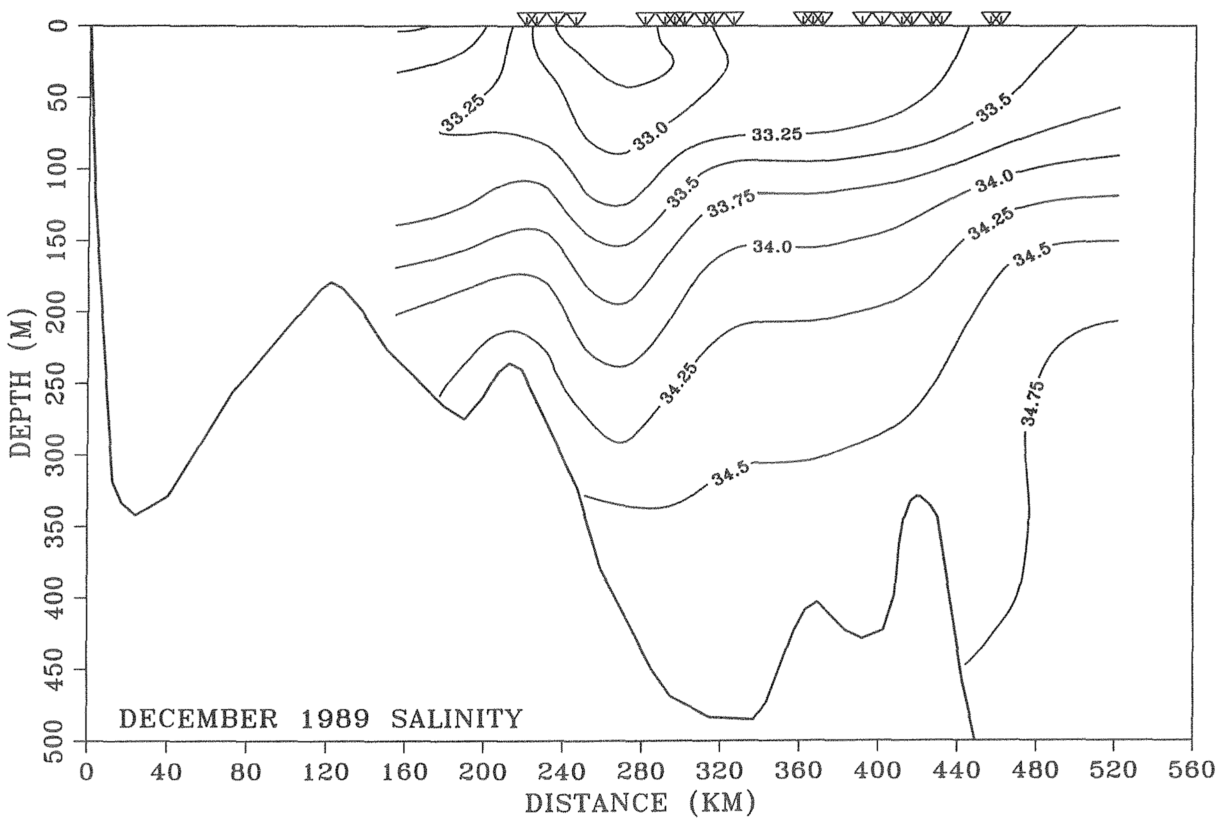
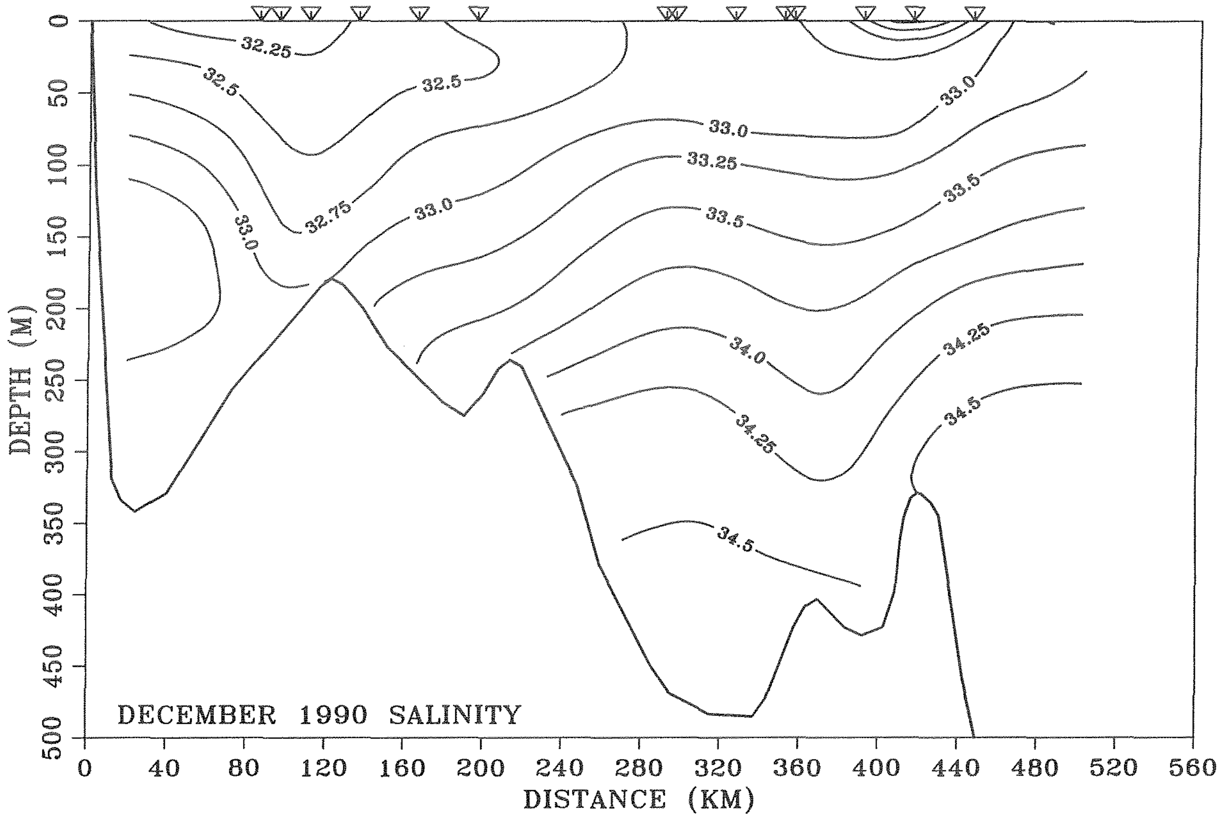
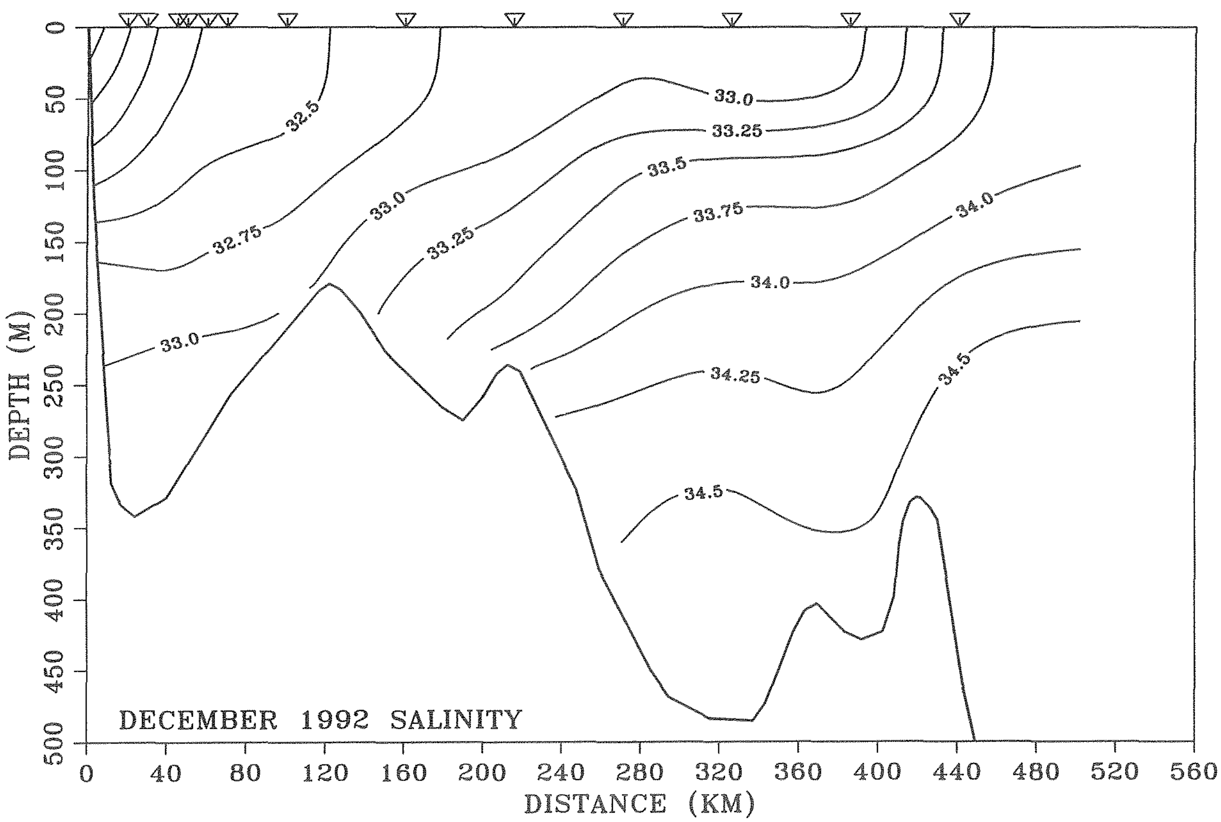
34.25
34.5
34.75

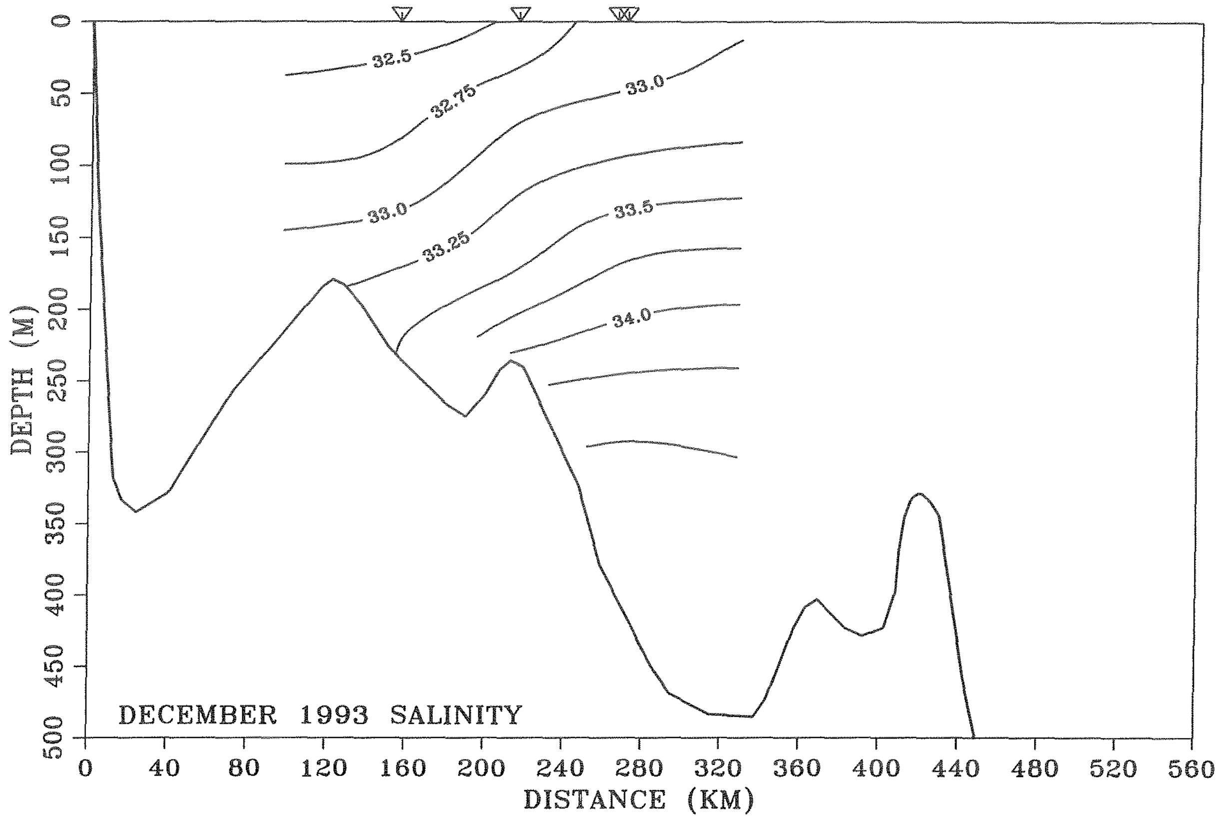

NOVEMBER 1997 SALINITY
DEPTH (M)
DISTANCE (KM)
32.25
32.5
32.75
33.0
33.25
33.5
33.75
34.0
34.5

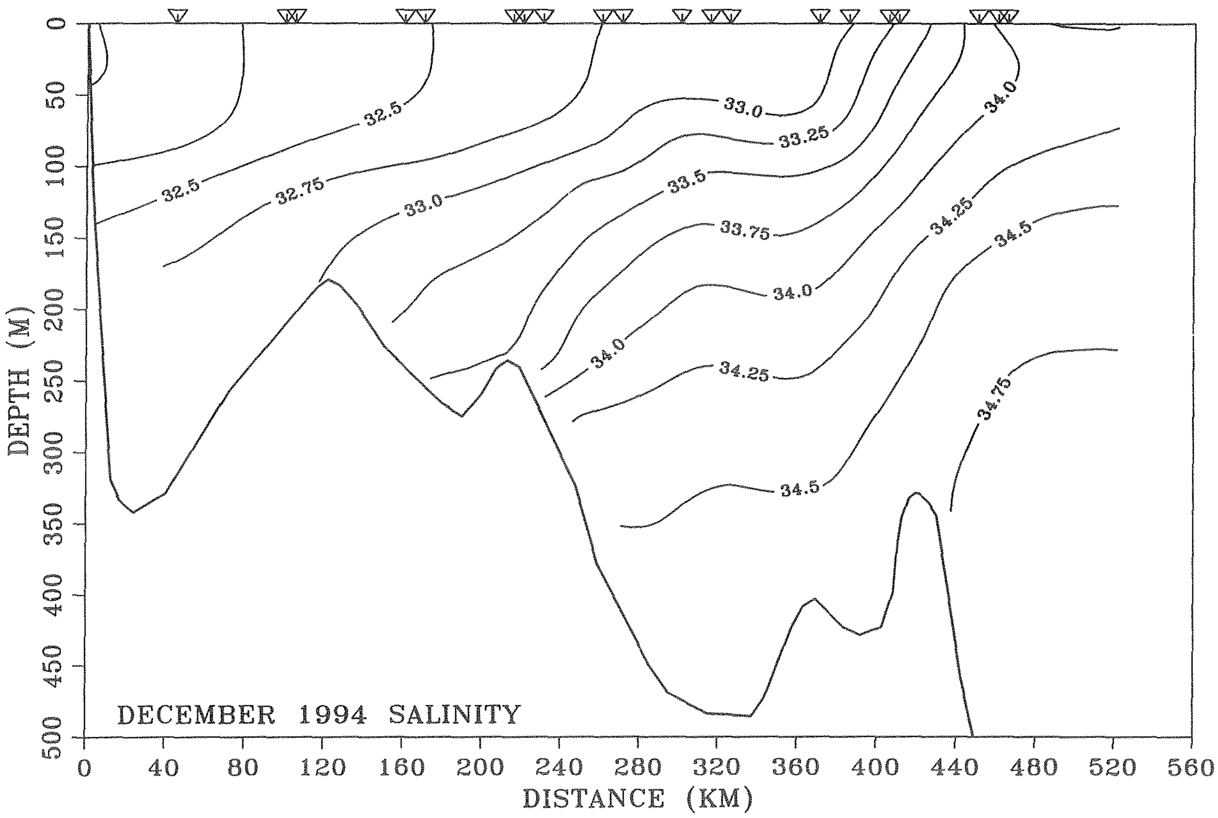

DEPTH (M)
DISTANCE (KM)
DECEMBER 1984 SALINITY
32.5
32.75
33.0
33.25
33.5
33.75
34.0
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
0 50 100 150 200 250 300 350 400 450 500

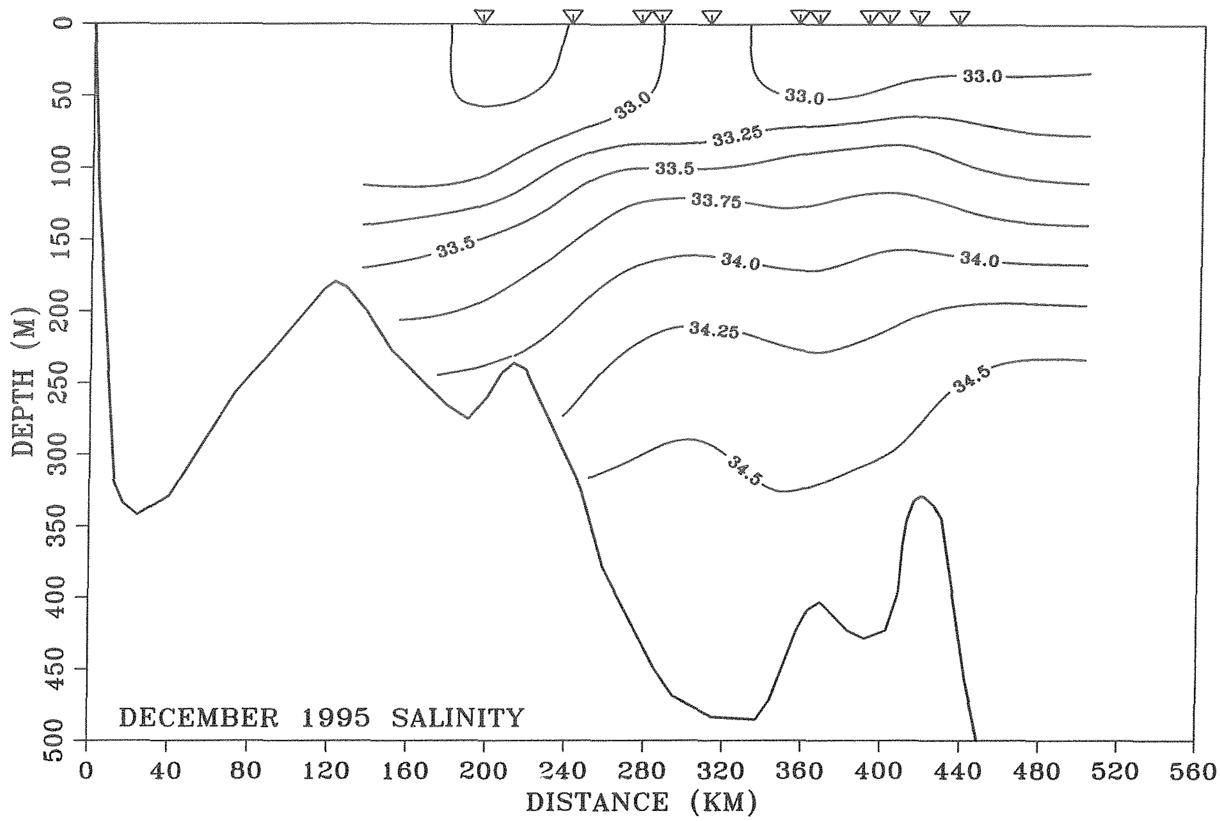

DEPTH (M)
DISTANCE (KM)
DECEMBER 1989 SALINITY
33.25
33.0
33.5
33.75
34.0
34.25
34.5
34.75
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
0 50 100 150 200 250 300 350 400 450 500

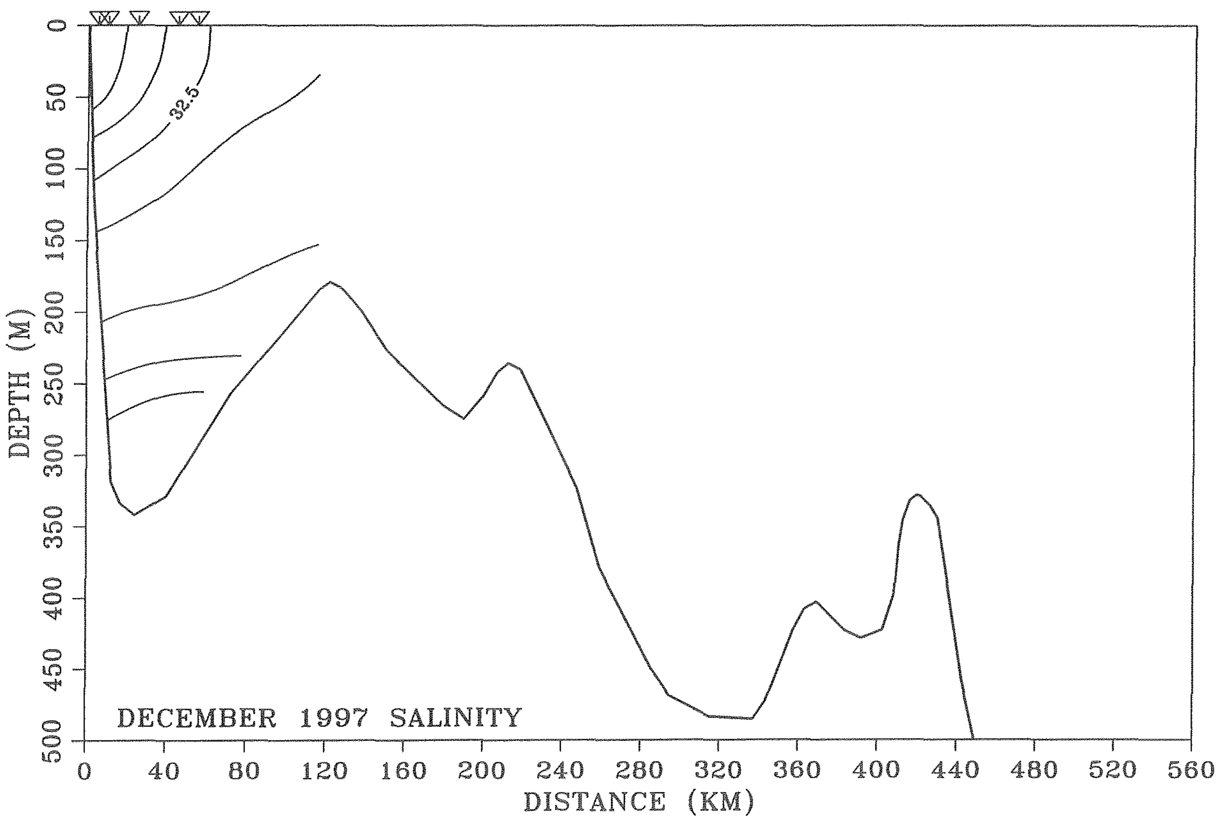

DECEMBER 1990 SALINITY
DEPTH (M)
DISTANCE (KM)
32.25
32.5
32.5
32.75
33.0
33.0
33.0
33.0
33.25
33.5
33.5
34.0
34.25
34.25
34.5
34.5
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
0 50 100 150 200 250 300 350 400 450 500


DECEMBER 1992 SALINITY
DEPTH (M)
DISTANCE (KM)
32.5
32.75
33.0
33.0
33.0
33.25
33.25
33.5
33.75
34.0
34.0
34.25
34.5
34.5
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
0 50 100 150 200 250 300 350 400 450 500

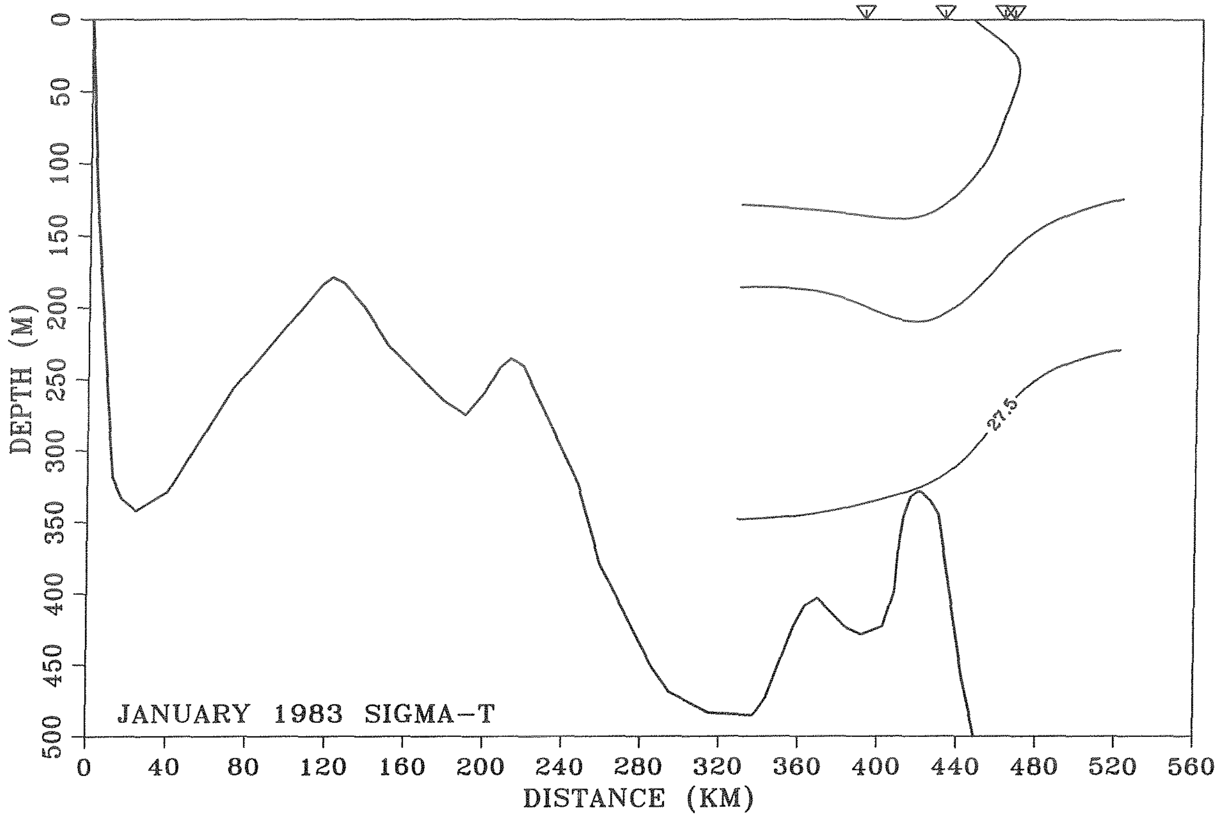

DECEMBER 1993 SALINITY
DEPTH (M)
DISTANCE (KM)
32.5
32.75
33.0
33.0
33.25
33.5
34.0
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560


DECEMBER 1994 SALINITY
DEPTH (M)
DISTANCE (KM)
32.5
32.5
32.75
33.0
33.0
33.25
33.5
33.75
34.0
34.0
34.0
34.25
34.25
34.5
34.5
34.75
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560

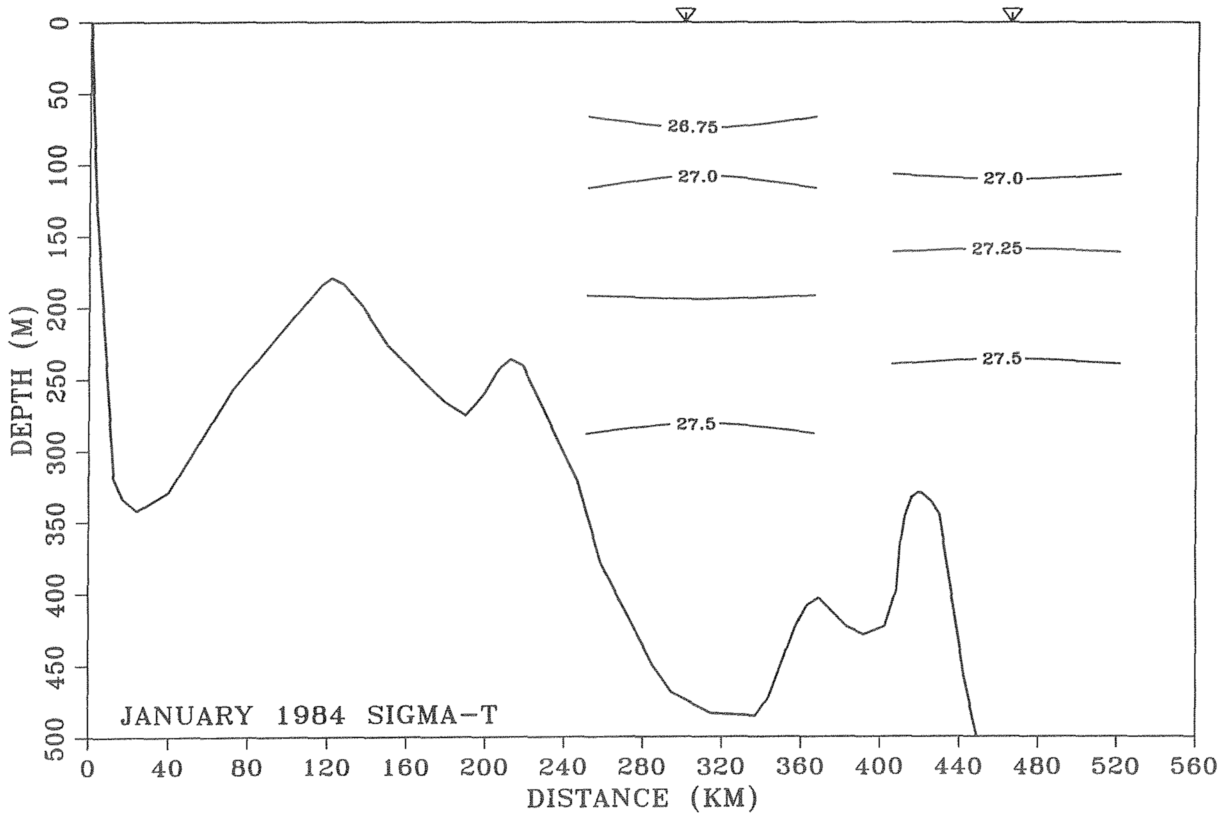

DECEMBER 1995 SALINITY
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
33.0
33.0
33.0
33.25
33.5
33.75
33.5
34.0
34.0
34.25
34.5
34.5


DECEMBER 1997 SALINITY
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
32.5

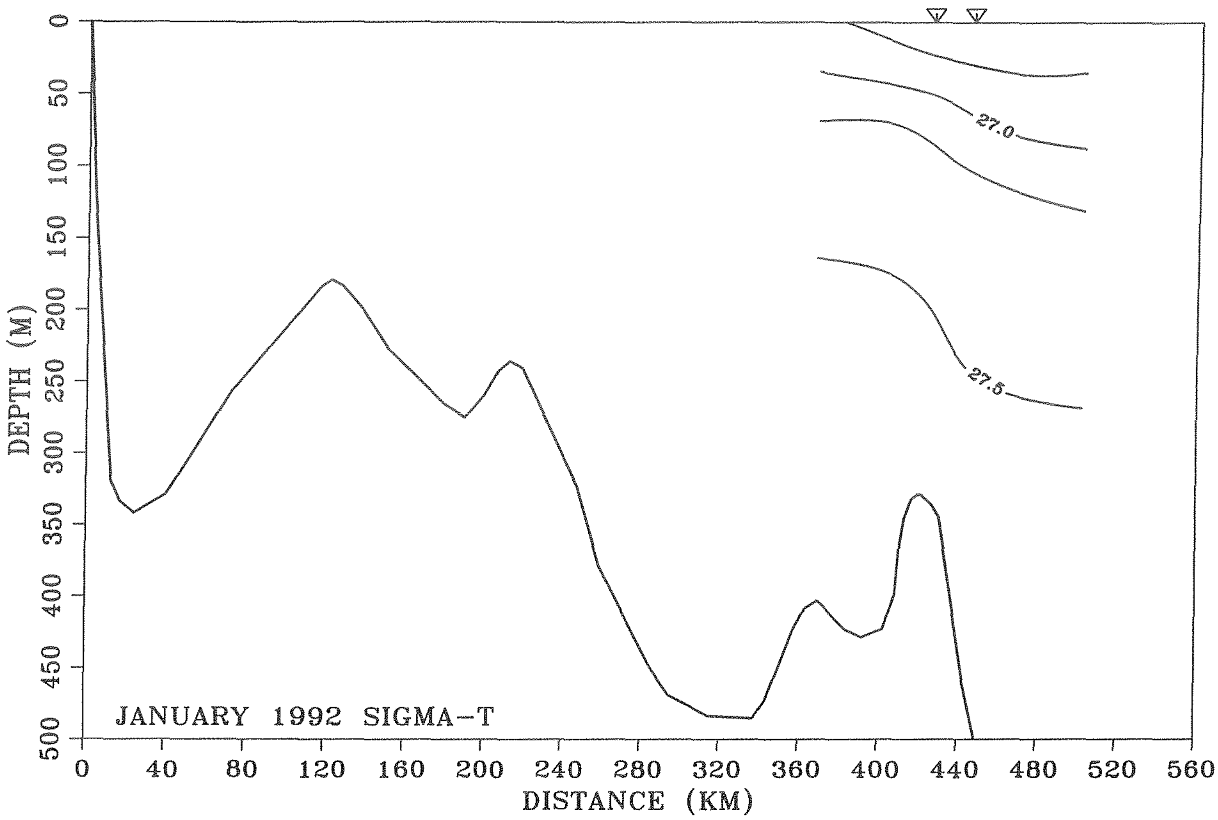
Appendix G. White Bay Annual Sigma-t Transects.



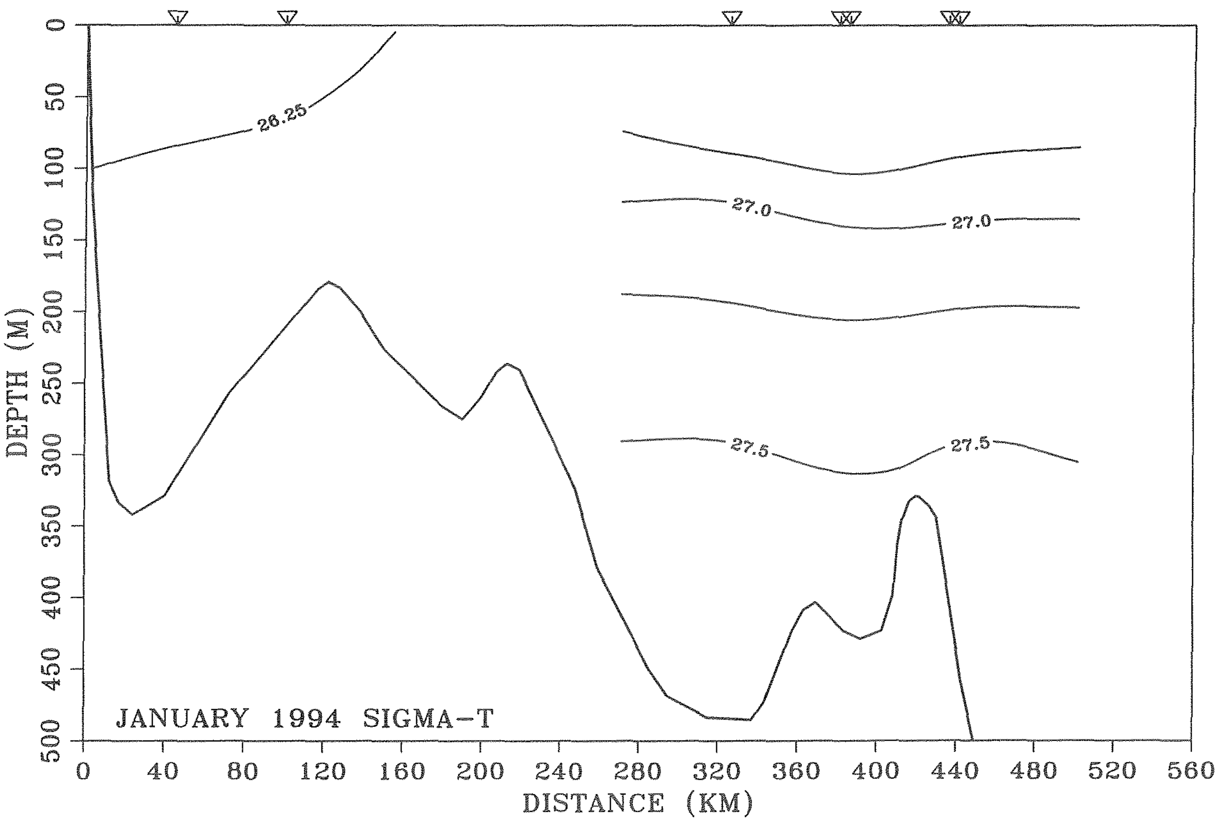
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
27.5
JANUARY 1983 SIGMA-T
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)



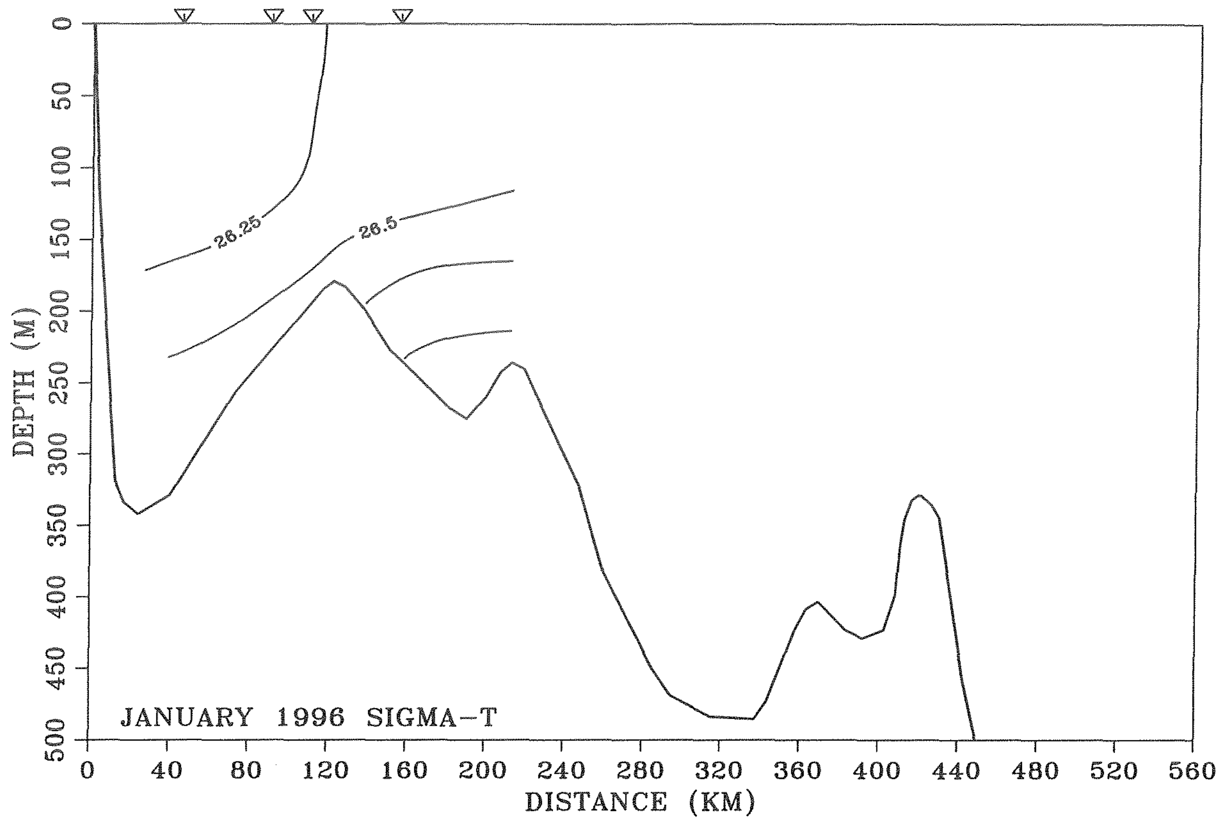
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
26.75
27.0
27.0
27.25
27.5
27.5
JANUARY 1984 SIGMA-T
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)



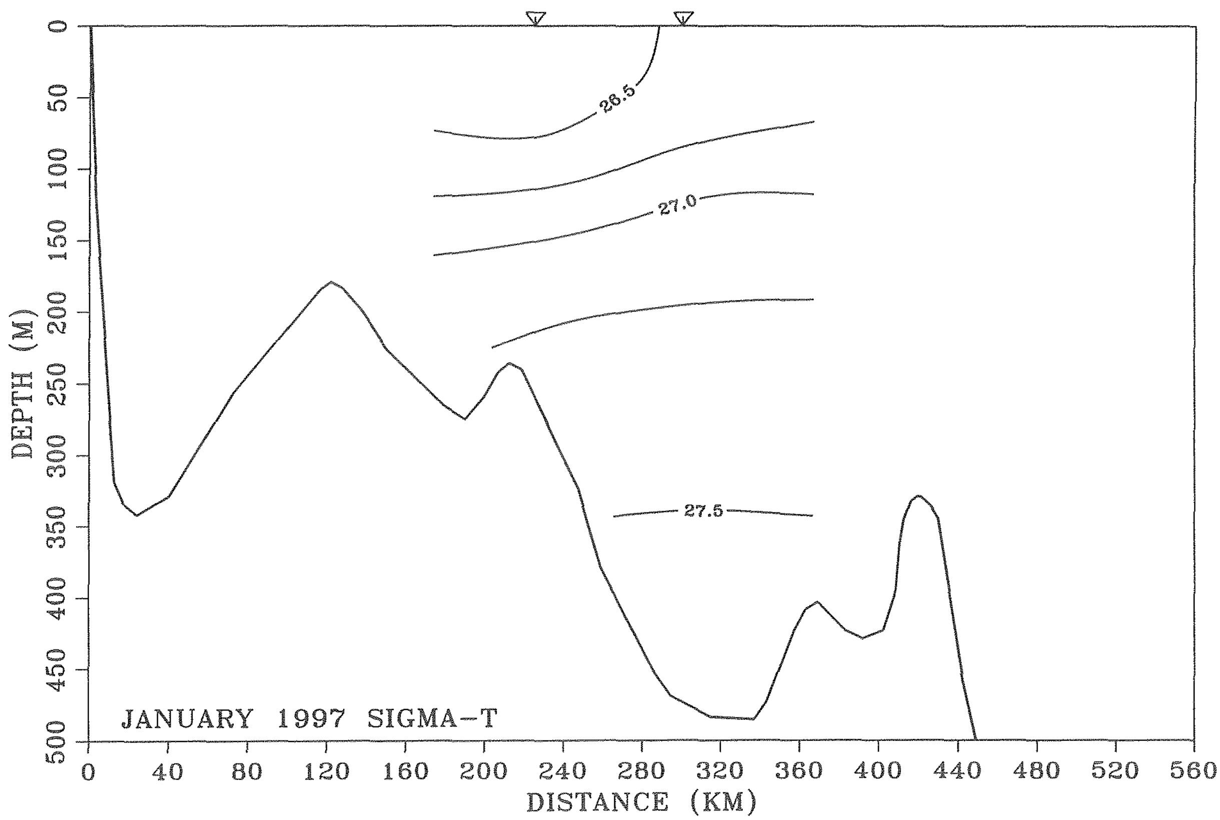
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
27.0
27.5
JANUARY 1992 SIGMA-T
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)



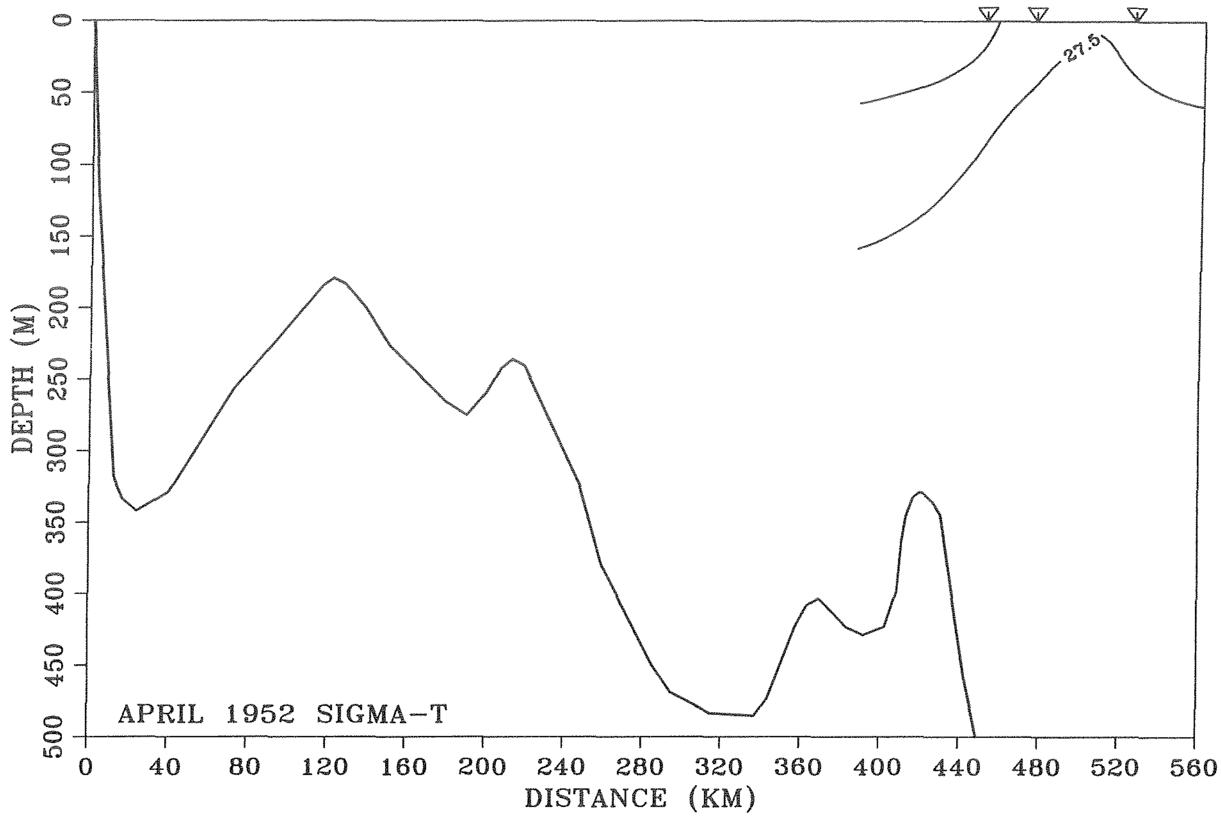
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
26.25
27.0
27.0
27.5
27.5
JANUARY 1994 SIGMA-T
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)



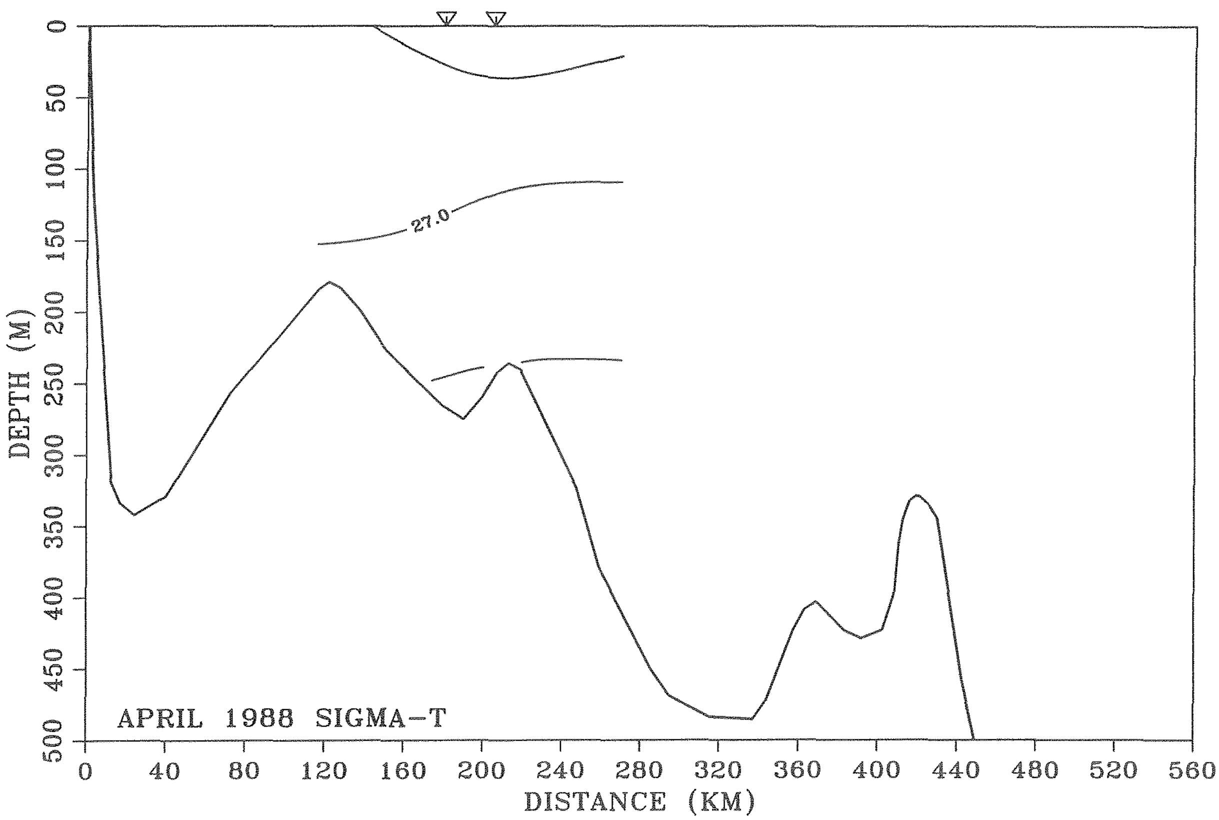
DEPTH (M)
DISTANCE (KM)
JANUARY 1996 SIGMA-T
26.25
26.5



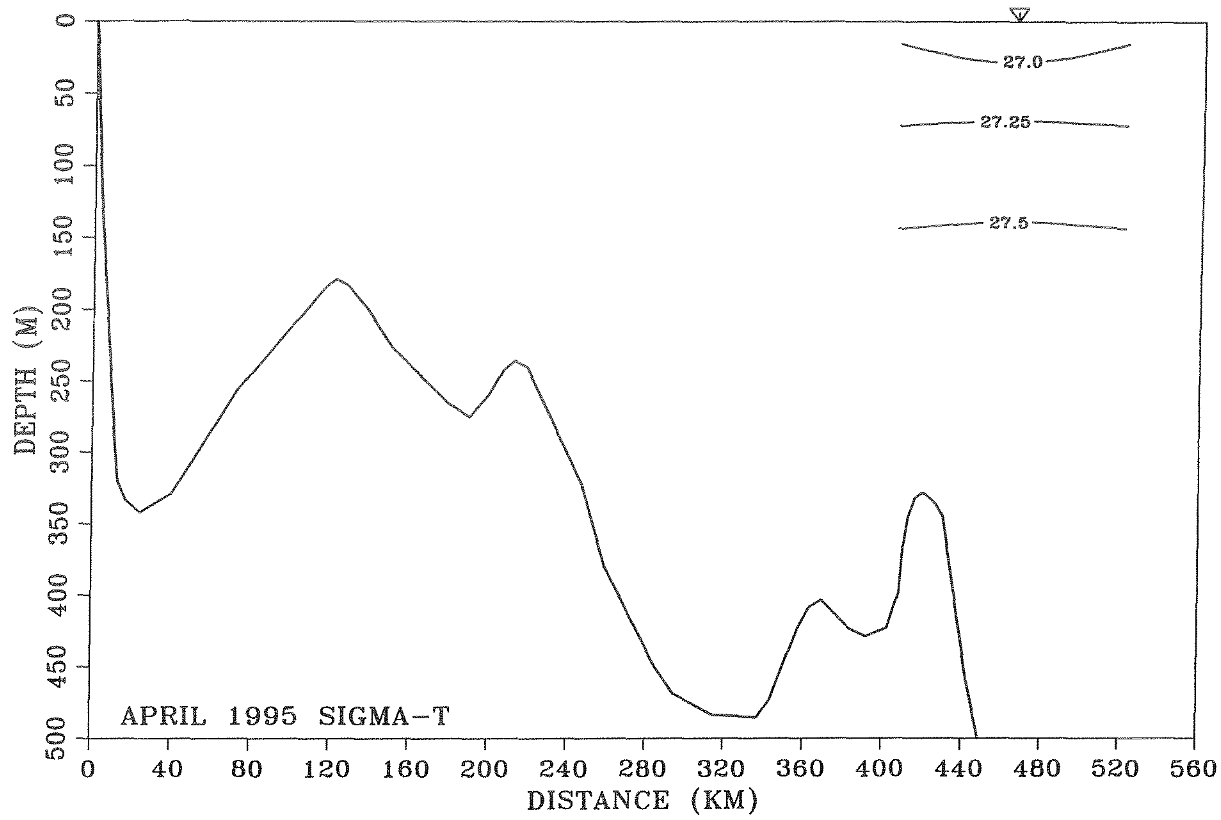
DEPTH (M)
DISTANCE (KM)
JANUARY 1997 SIGMA-T
26.5
27.0
27.5



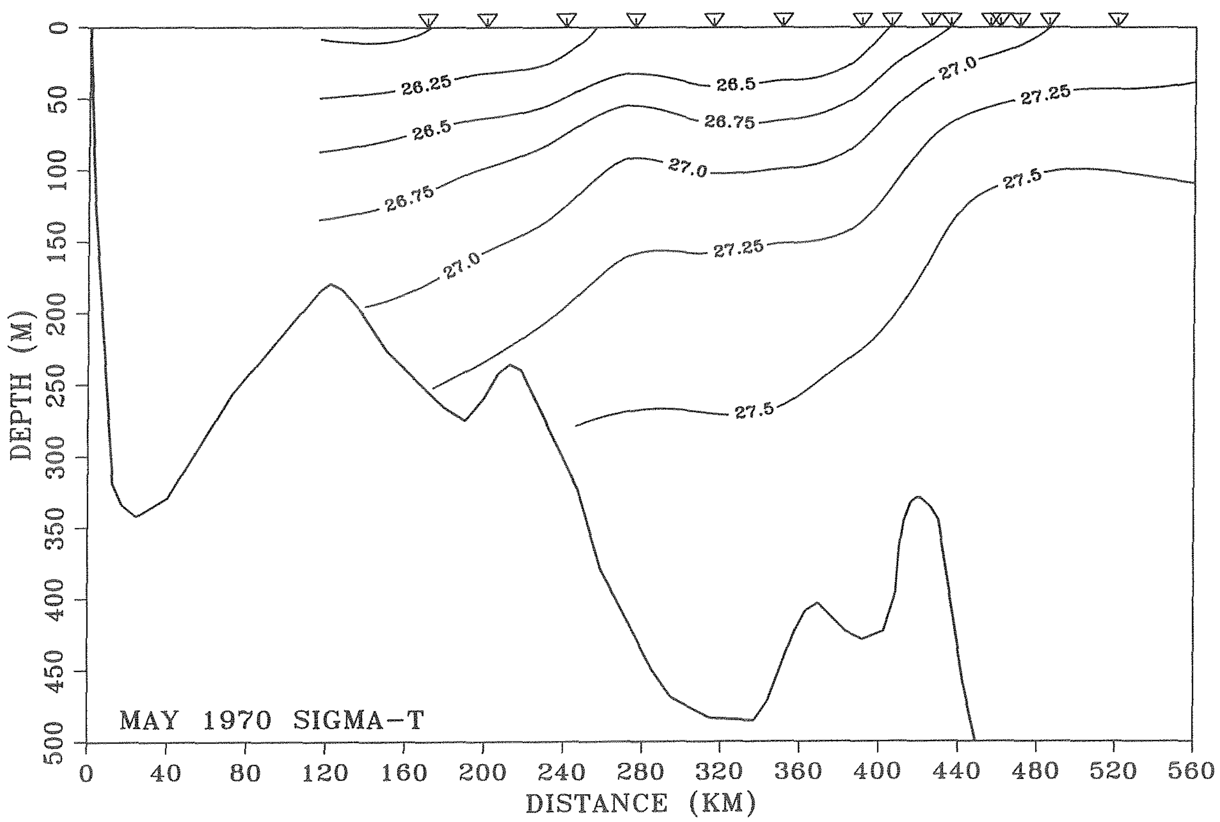
DEPTH (M)
DISTANCE (KM)
APRIL 1952 SIGMA-T
27.5
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560



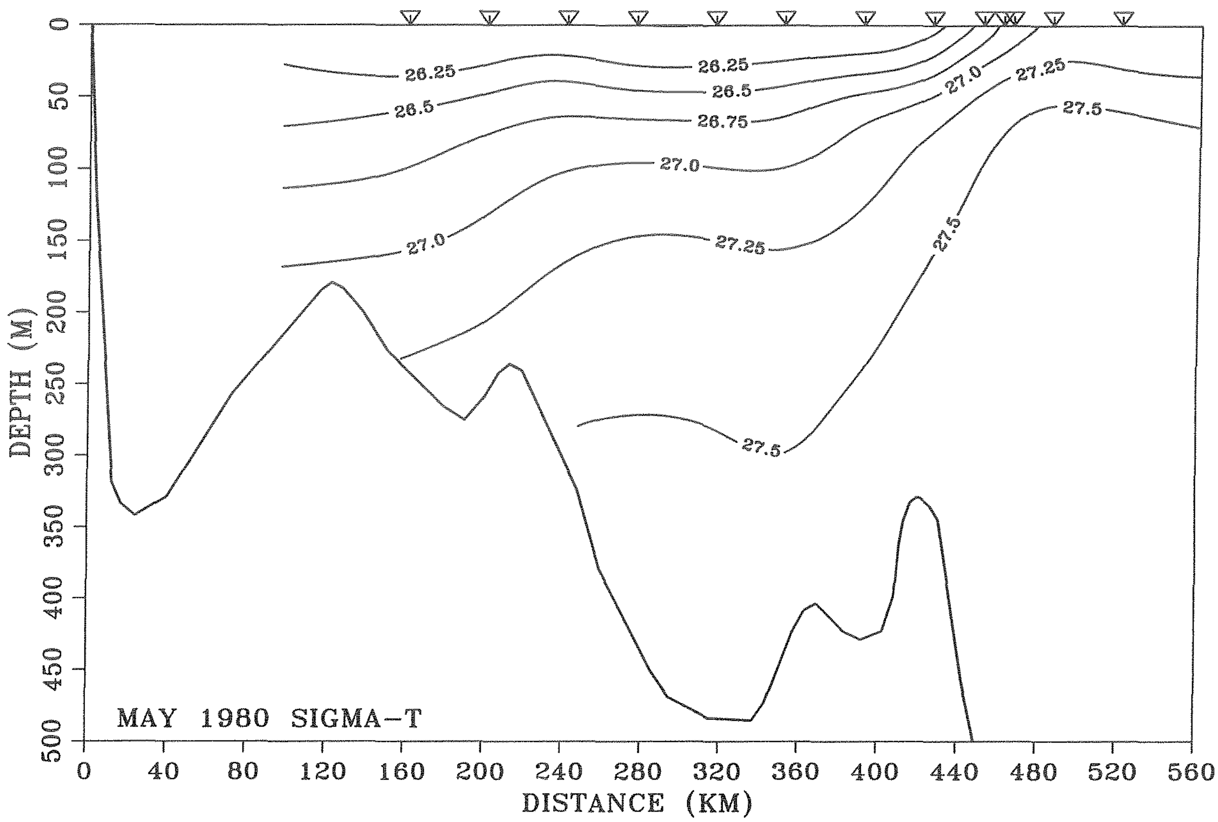
DEPTH (M)
DISTANCE (KM)
APRIL 1988 SIGMA-T
27.0
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560

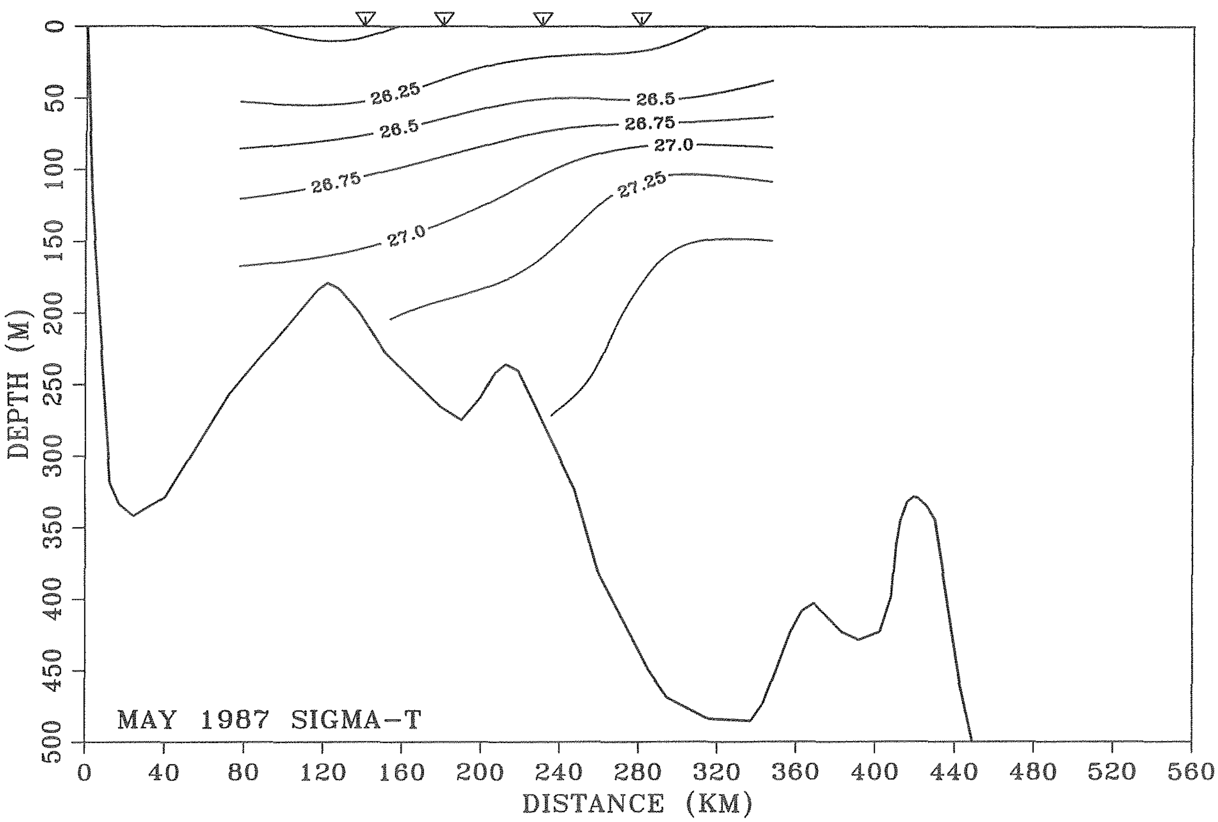


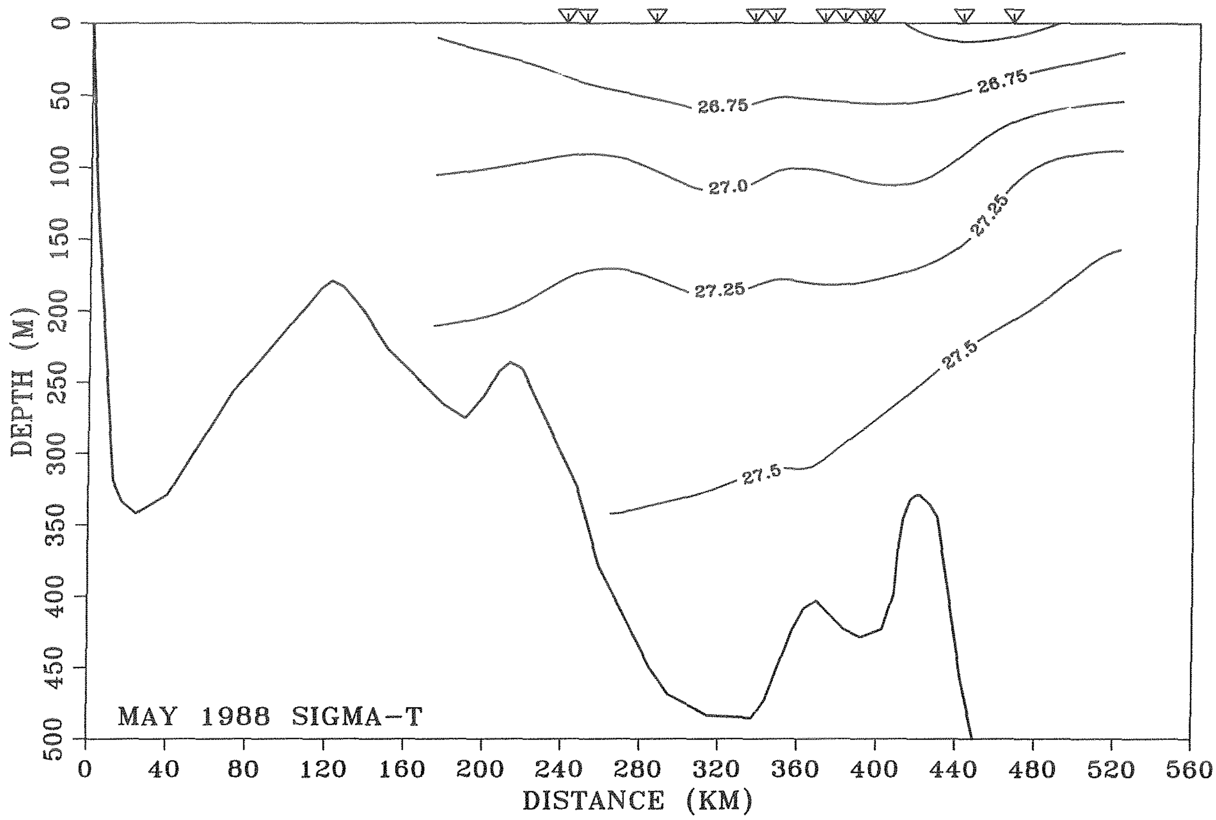
DEPTH (M)
DISTANCE (KM)
APRIL 1995 SIGMA-T
27.0
27.25
27.5
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560



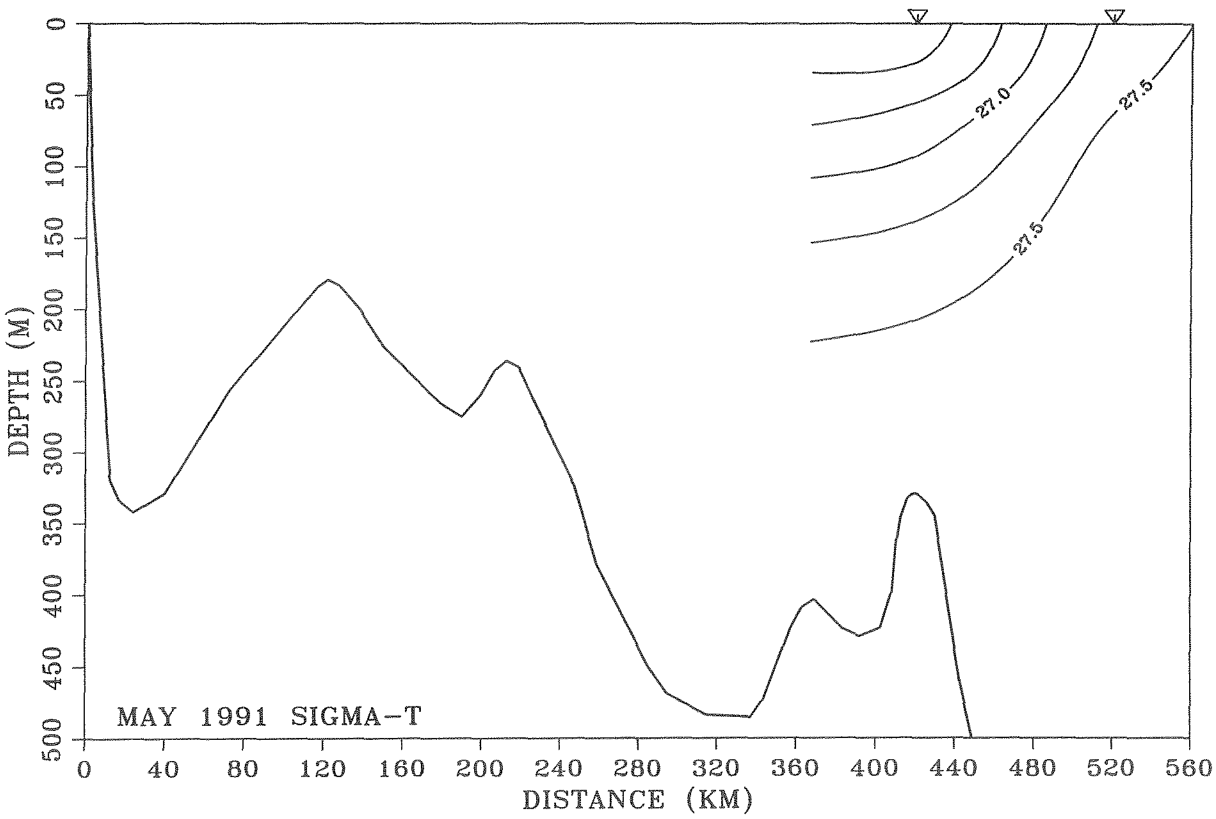
DEPTH (M)
DISTANCE (KM)
MAY 1970 SIGMA-T
26.25
26.5
26.5
26.75
26.75
27.0
27.0
27.0
27.25
27.25
27.5
27.5
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560


MAY 1980 SIGMA-T
DEPTH (M)
DISTANCE (KM)
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
26.25
26.5
26.75
27.0
27.25
27.5

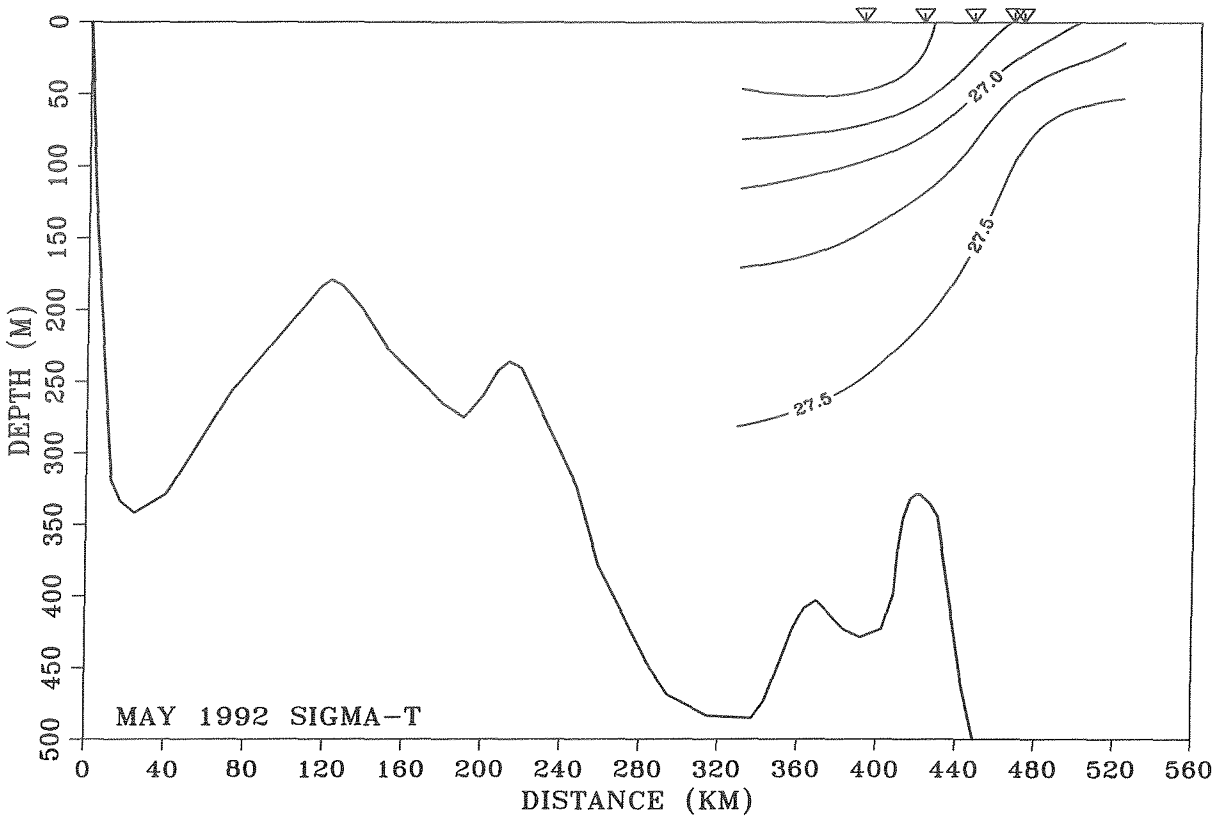

MAY 1987 SIGMA-T
DEPTH (M)
DISTANCE (KM)
0 50 100 150 200 250 300 350 400 450 500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
26.25
26.5
26.75
27.0
27.25



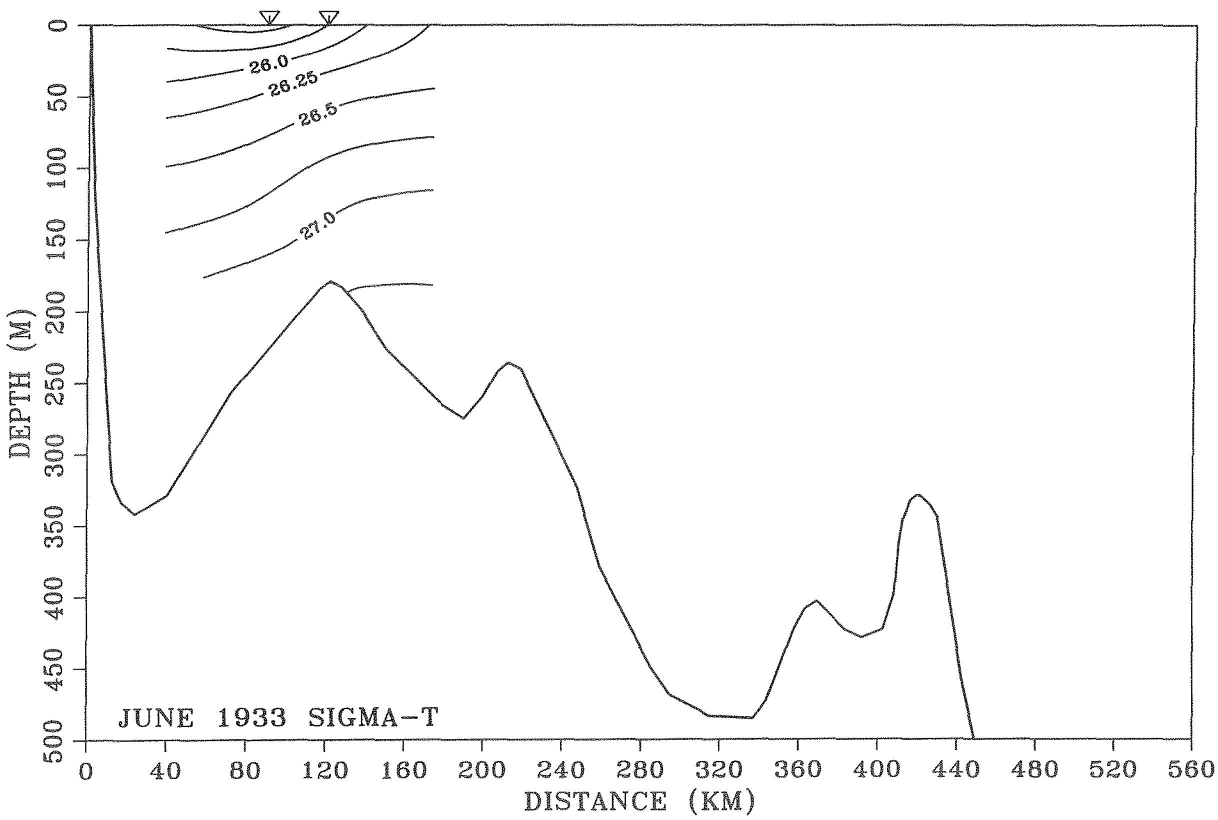
0
50
100
150
200
250
300
350
400
450
500
DEPTH (M)
26.75
26.75
27.0
27.25
27.25
27.5
27.5
MAY 1988 SIGMA-T
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)



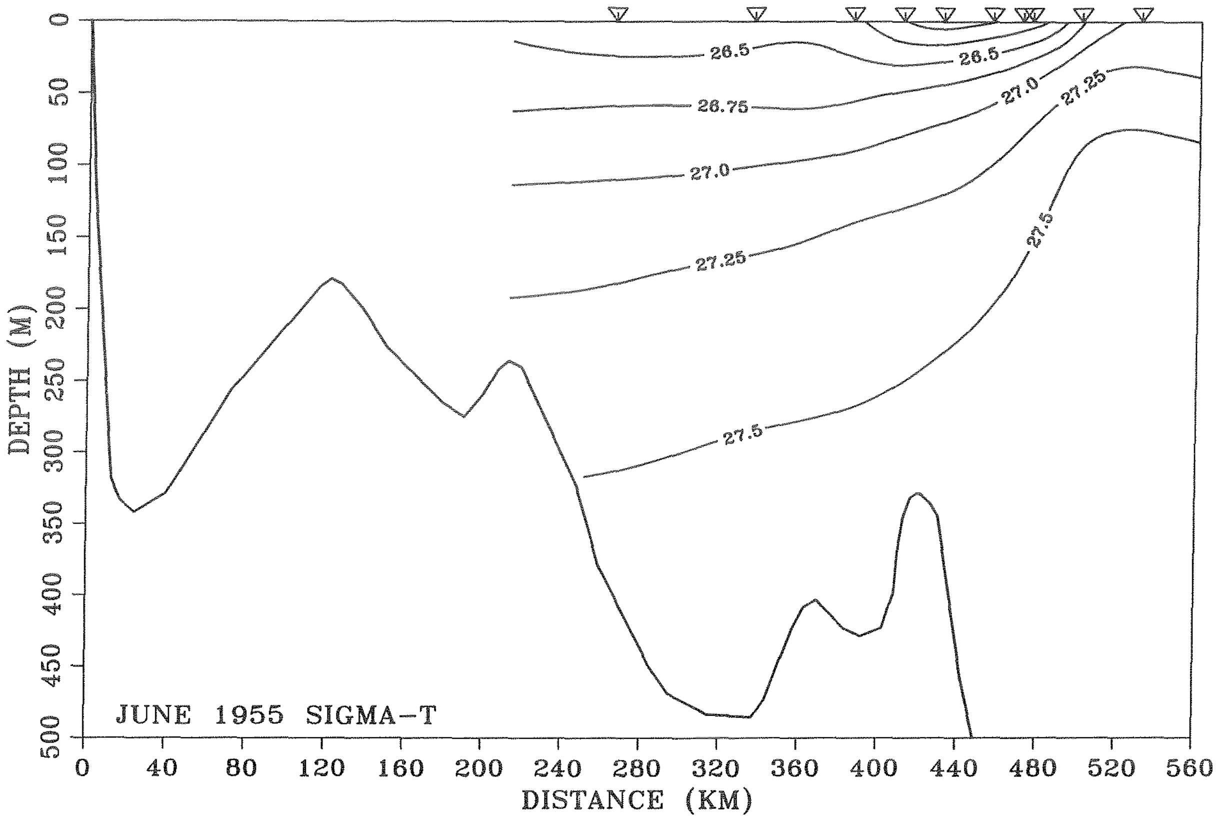
0
50
100
150
200
250
300
350
400
450
500
DEPTH (M)
27.0
27.5
27.5
MAY 1991 SIGMA-T
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)

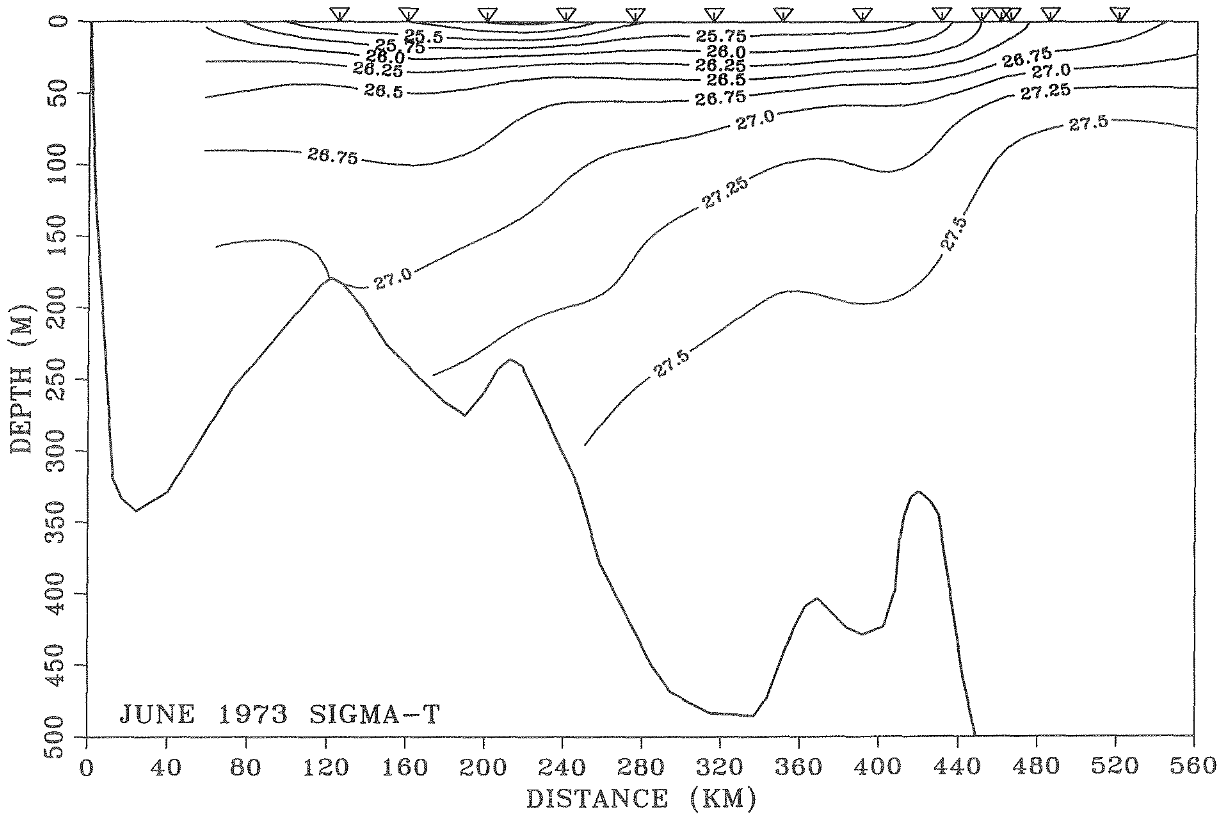


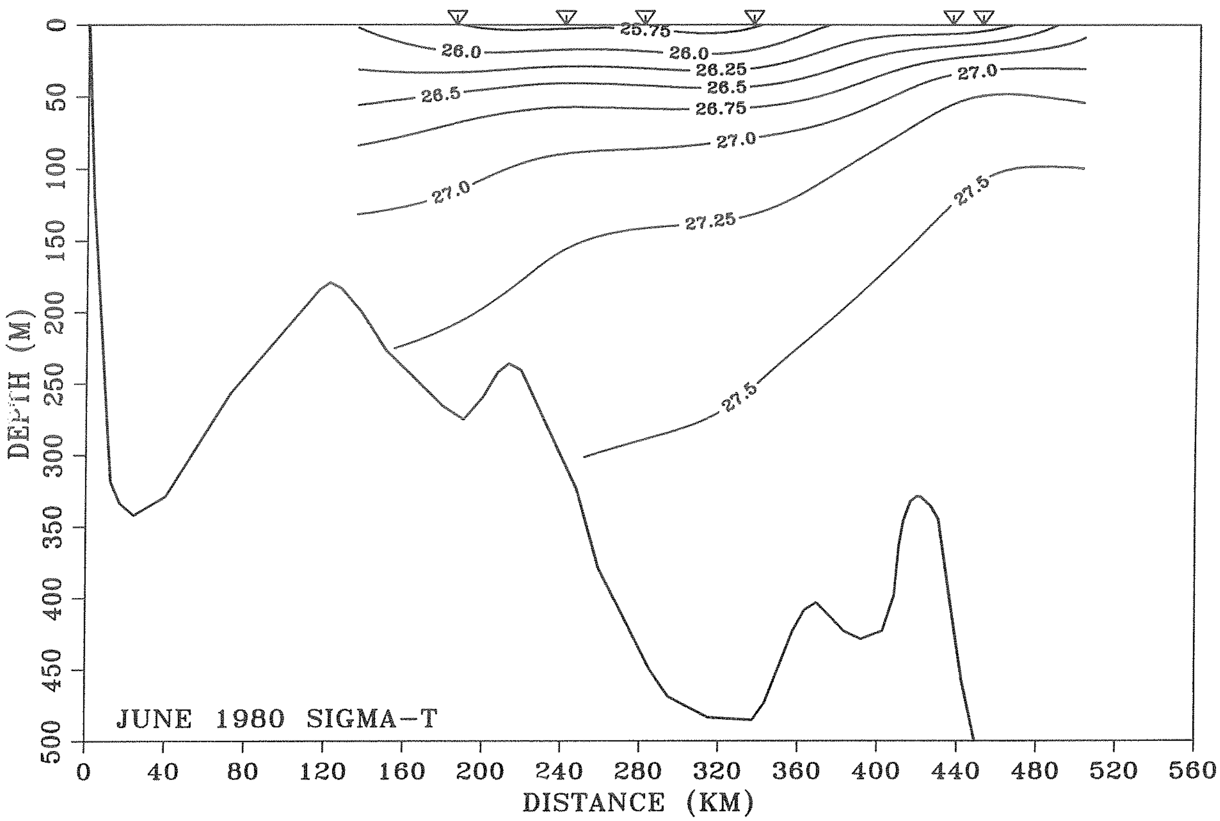
DEPTH (M)
DISTANCE (KM)
MAY 1992 SIGMA-T
27.0
27.5
27.5

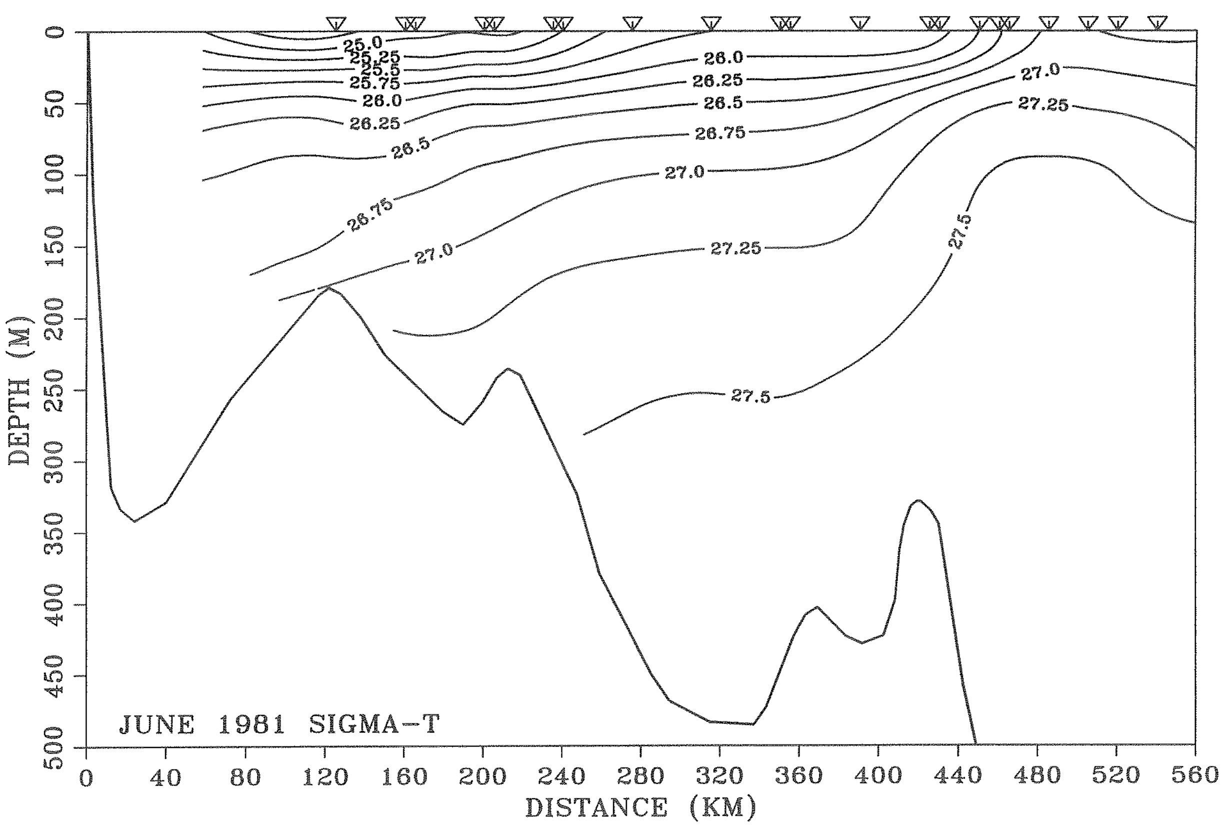


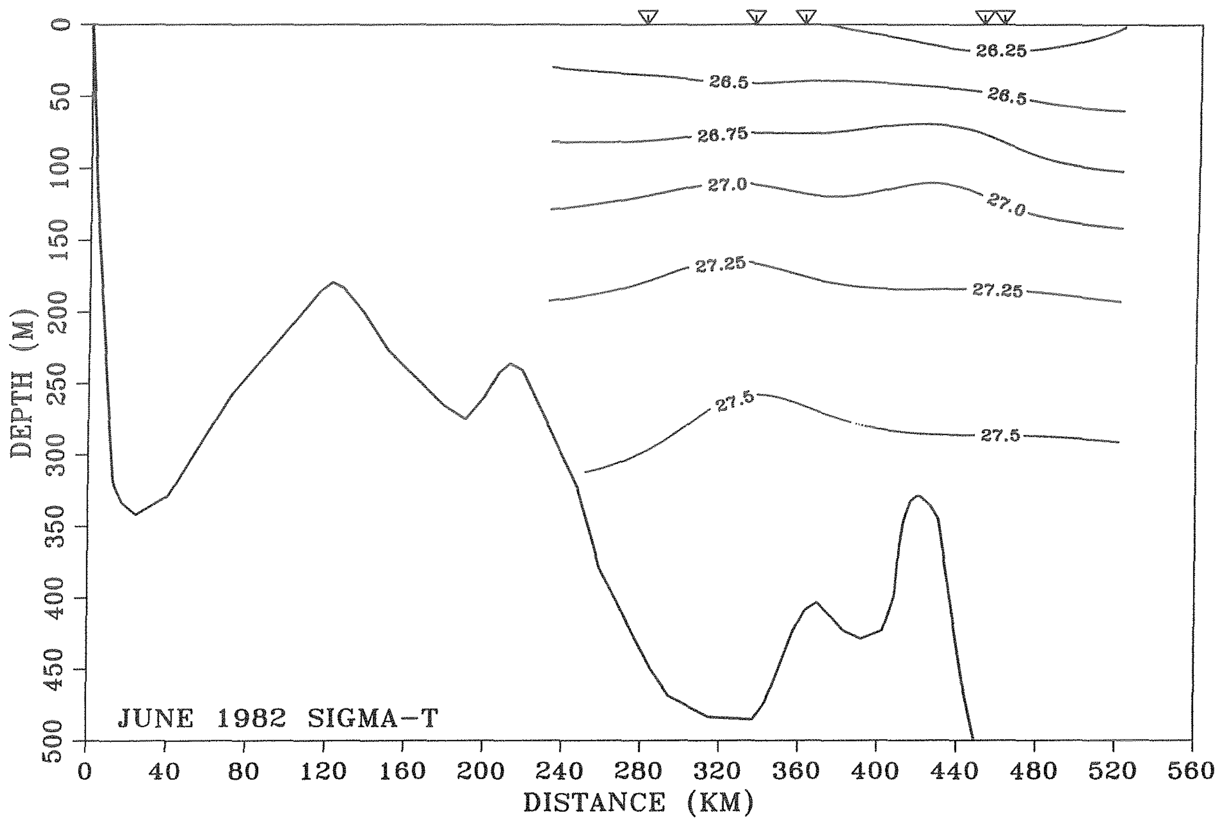
DEPTH (M)
DISTANCE (KM)
JUNE 1933 SIGMA-T
26.0
26.25
26.5
27.0

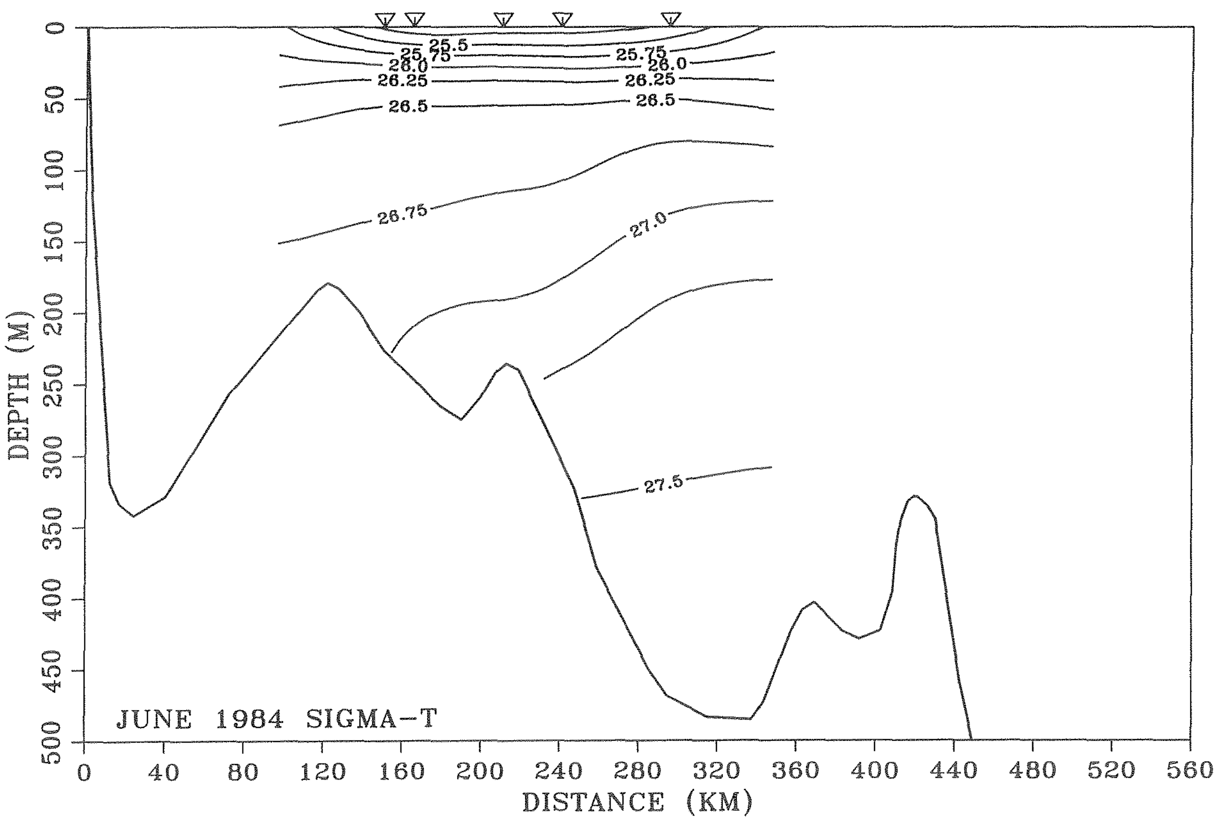

JUNE 1955 SIGMA-T
DEPTH (M)
DISTANCE (KM)
26.5
26.75
27.0
27.25
27.5
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
0 50 100 150 200 250 300 350 400 450 500

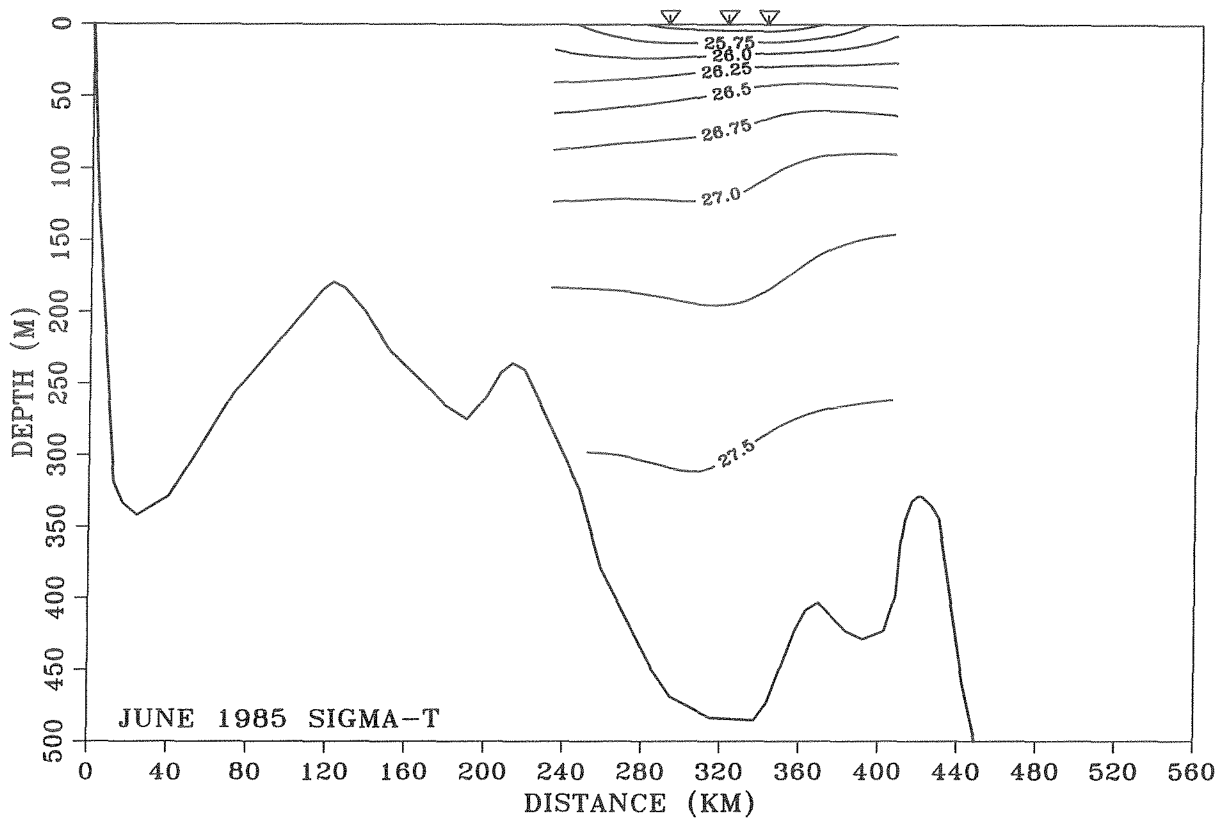

JUNE 1973 SIGMA-T
DEPTH (M)
DISTANCE (KM)
25.5
25.75
26.0
26.25
26.5
26.75
27.0
27.25
27.5
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
0 50 100 150 200 250 300 350 400 450 500

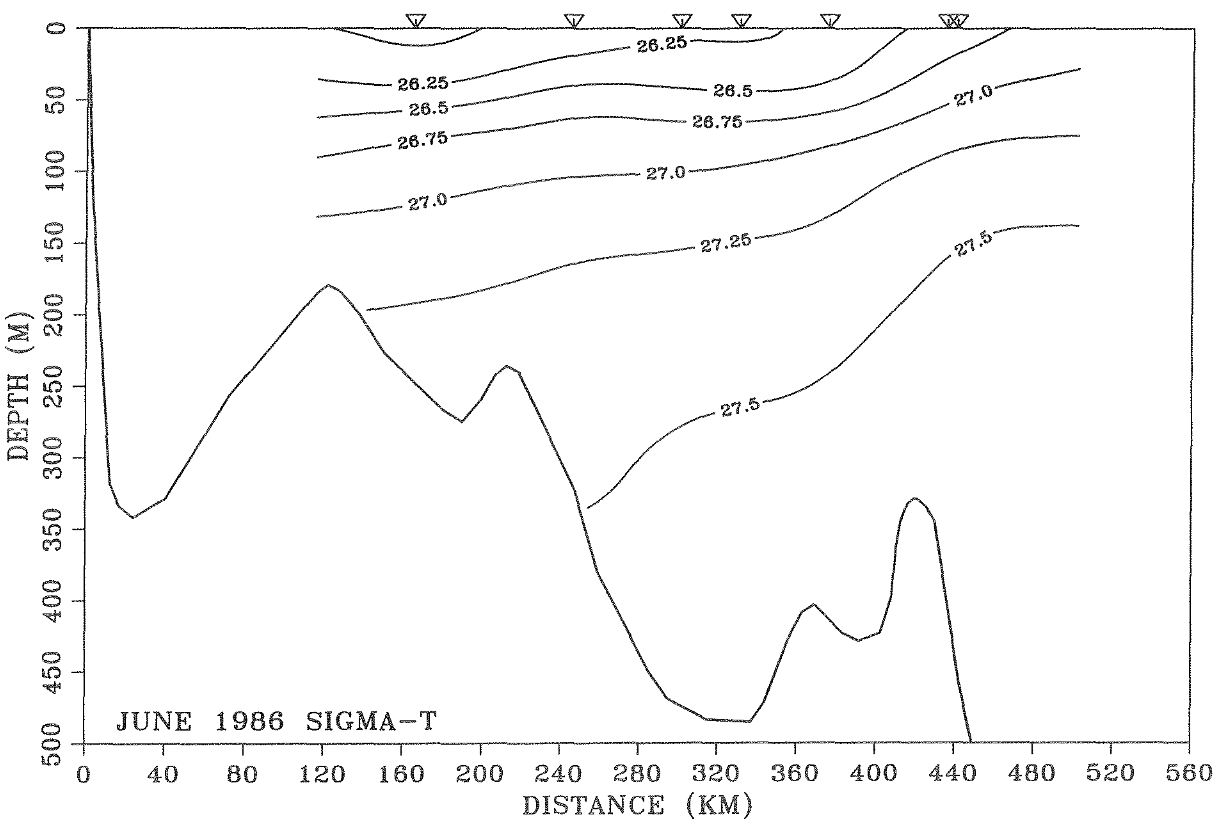

JUNE 1980 SIGMA-T
DEPTH (M)
DISTANCE (KM)
25.75
26.0
26.25
26.5
26.75
27.0
27.25
27.5
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560

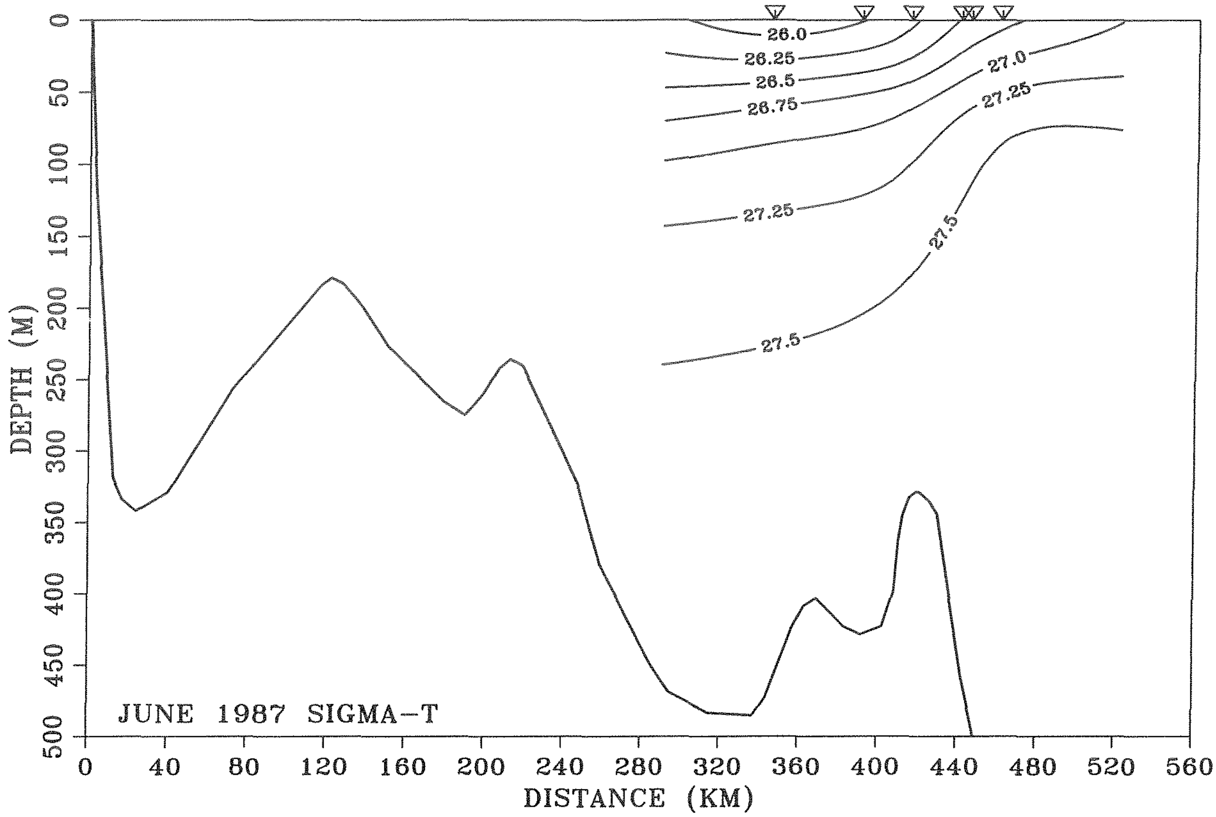

JUNE 1981 SIGMA-T
DEPTH (M)
DISTANCE (KM)
25.0
25.25
25.5
25.75
26.0
26.25
26.5
26.75
27.0
27.25
27.5
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560


26.25
26.5
26.5
26.75
27.0
27.0
27.25
27.25
27.5
27.5
JUNE 1982 SIGMA-T
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560


25.5
25.75
25.75
26.0
26.0
26.25
26.25
26.5
26.5
26.75
27.0
27.5
JUNE 1984 SIGMA-T
DEPTH (M)
DISTANCE (KM)
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560


JUNE 1985 SIGMA-T
DEPTH (M)
DISTANCE (KM)
25.75
26.0
26.25
26.5
26.75
27.0
27.5
0
50
100
150
200
250
300
350
400
450
500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560


JUNE 1986 SIGMA-T
DEPTH (M)
DISTANCE (KM)
26.25
26.25
26.5
26.5
26.75
26.75
27.0
27.0
27.0
27.25
27.5
27.5
0
50
100
150
200
250
300
350
400
450
500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560


DEPTH (M)
DISTANCE (KM)
JUNE 1987 SIGMA-T
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26.25
26.5
26.75
27.0
27.25
27.25
27.5
27.5
0
50
100
150
200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
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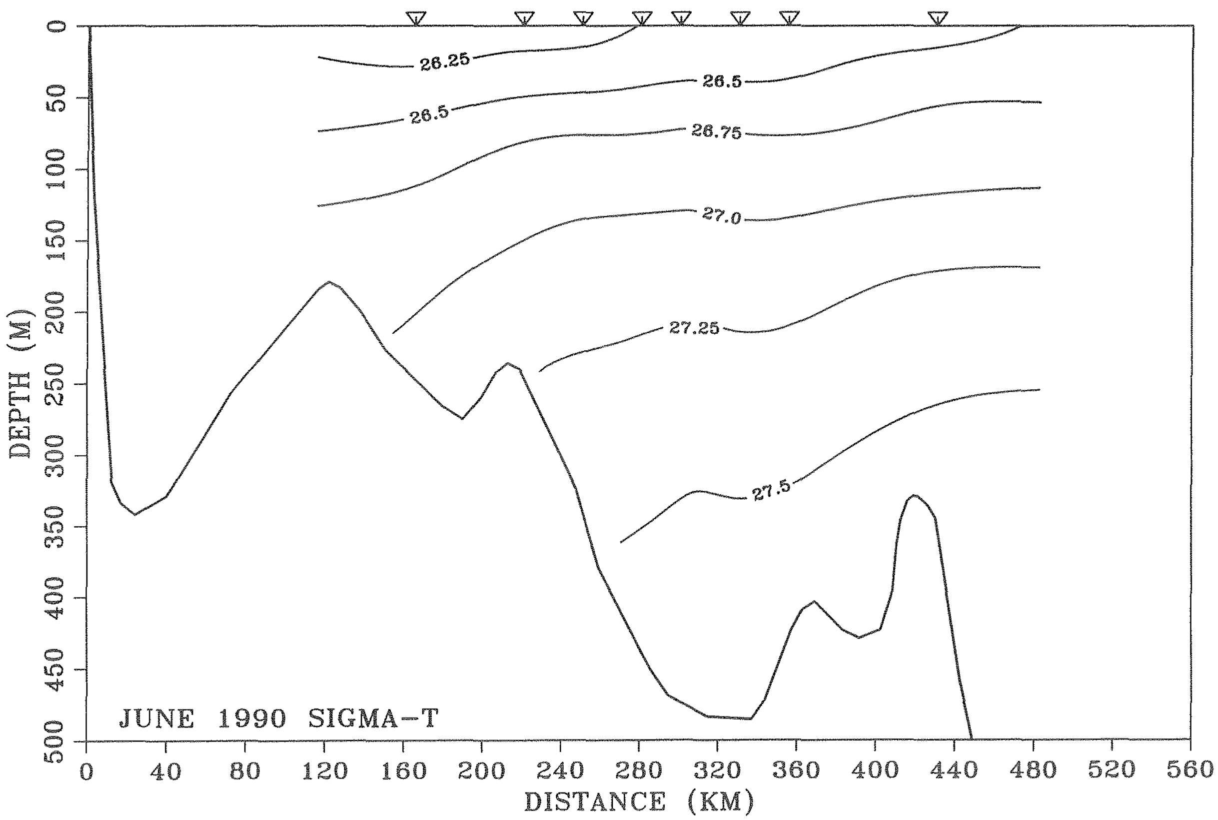
440
480
520
560


DEPTH (M)
DISTANCE (KM)
JUNE 1990 SIGMA-T
26.25
26.5
26.5
26.75
27.0
27.25
27.5
0
50
100
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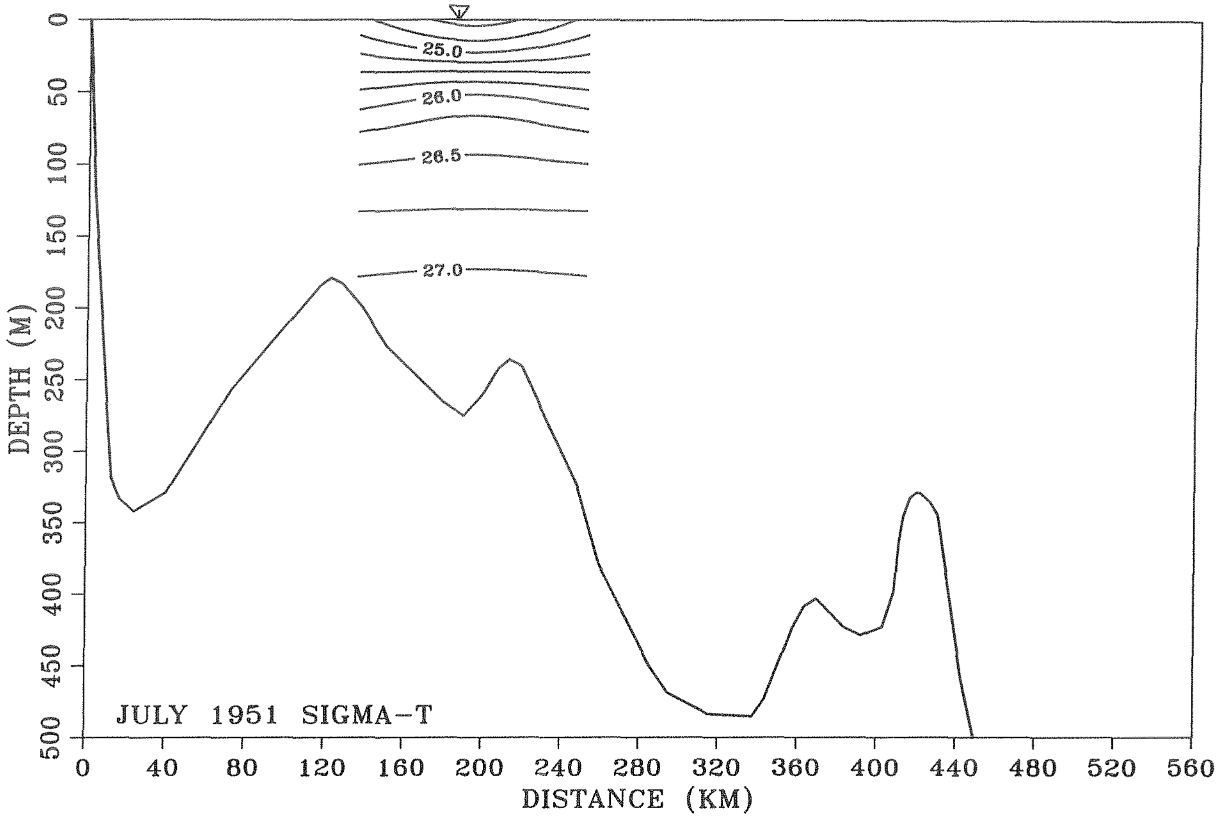
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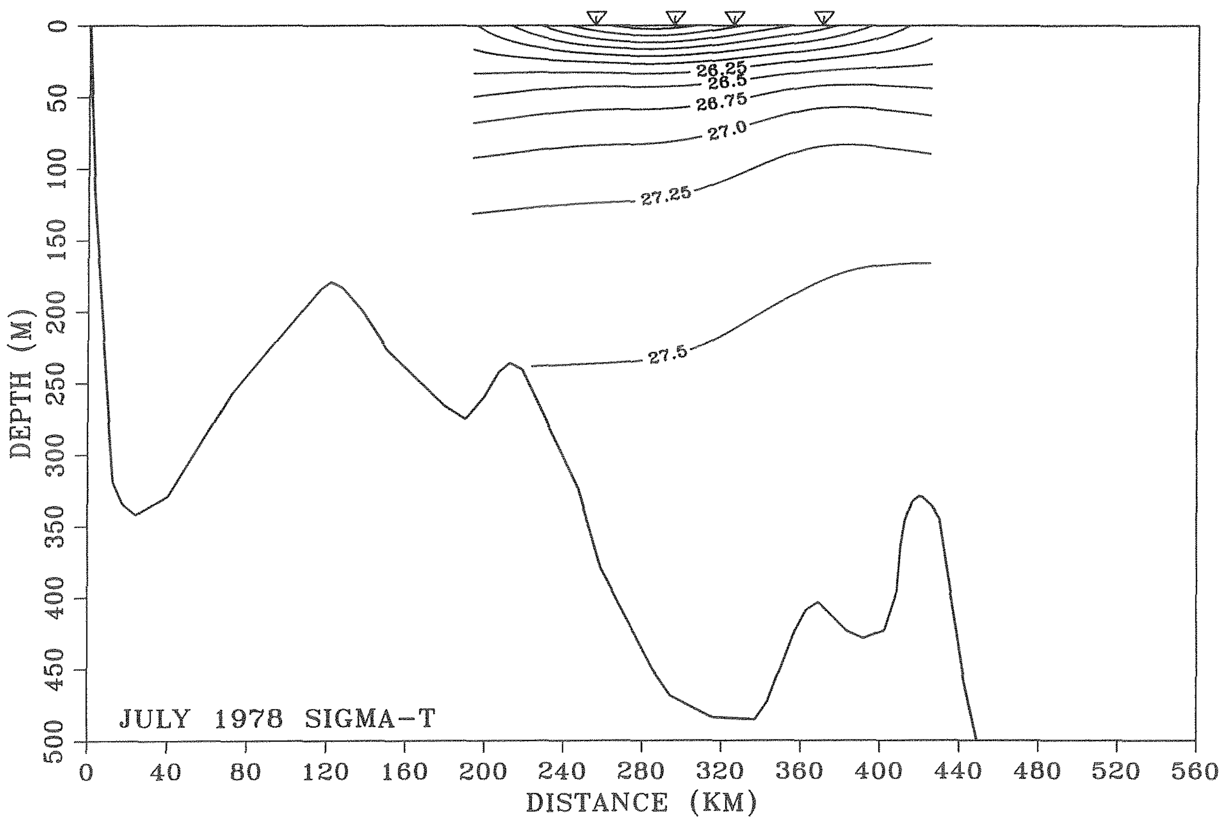
JULY 1951 SIGMA-T
DEPTH (M)
DISTANCE (KM)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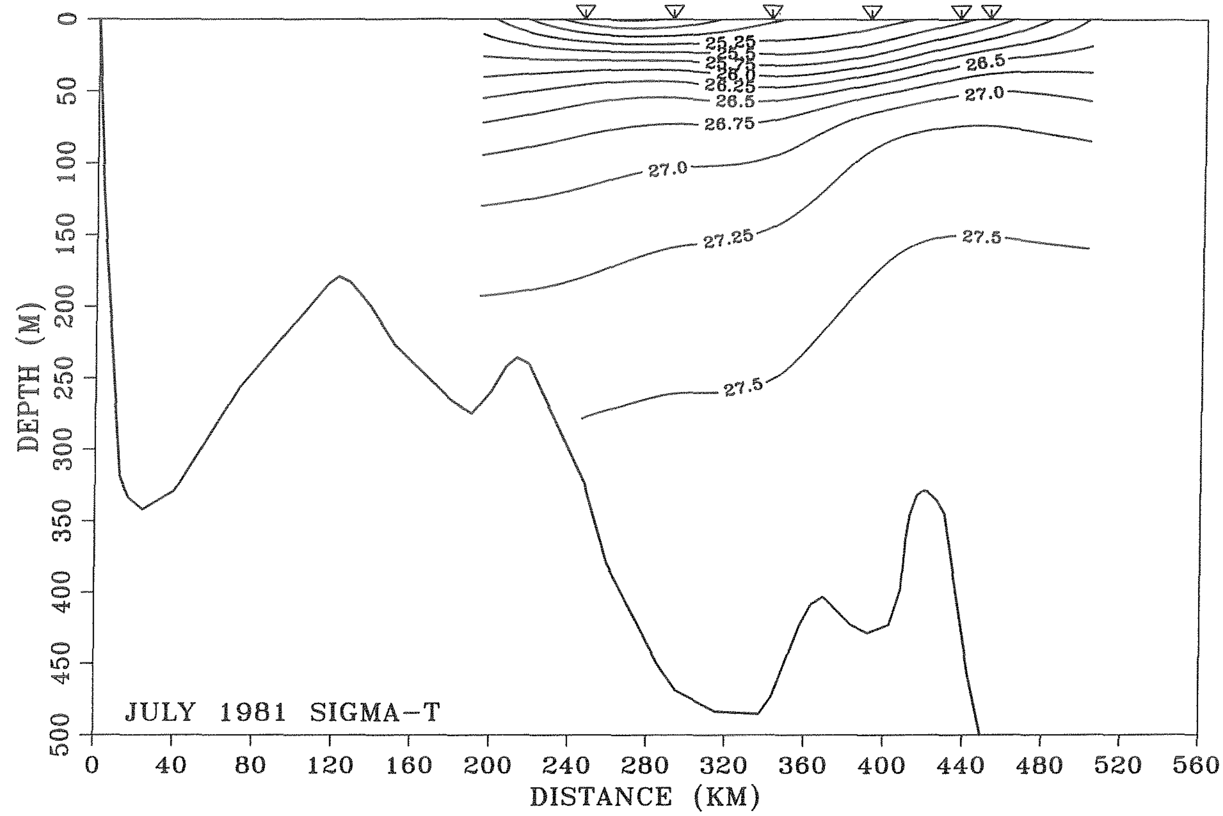
27.5
JULY 1978 SIGMA-T
DEPTH (M)
DISTANCE (KM)


JULY 1981 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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400
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500
0
40
80
120
160
200
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440
480
520
560
25.25
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26.5
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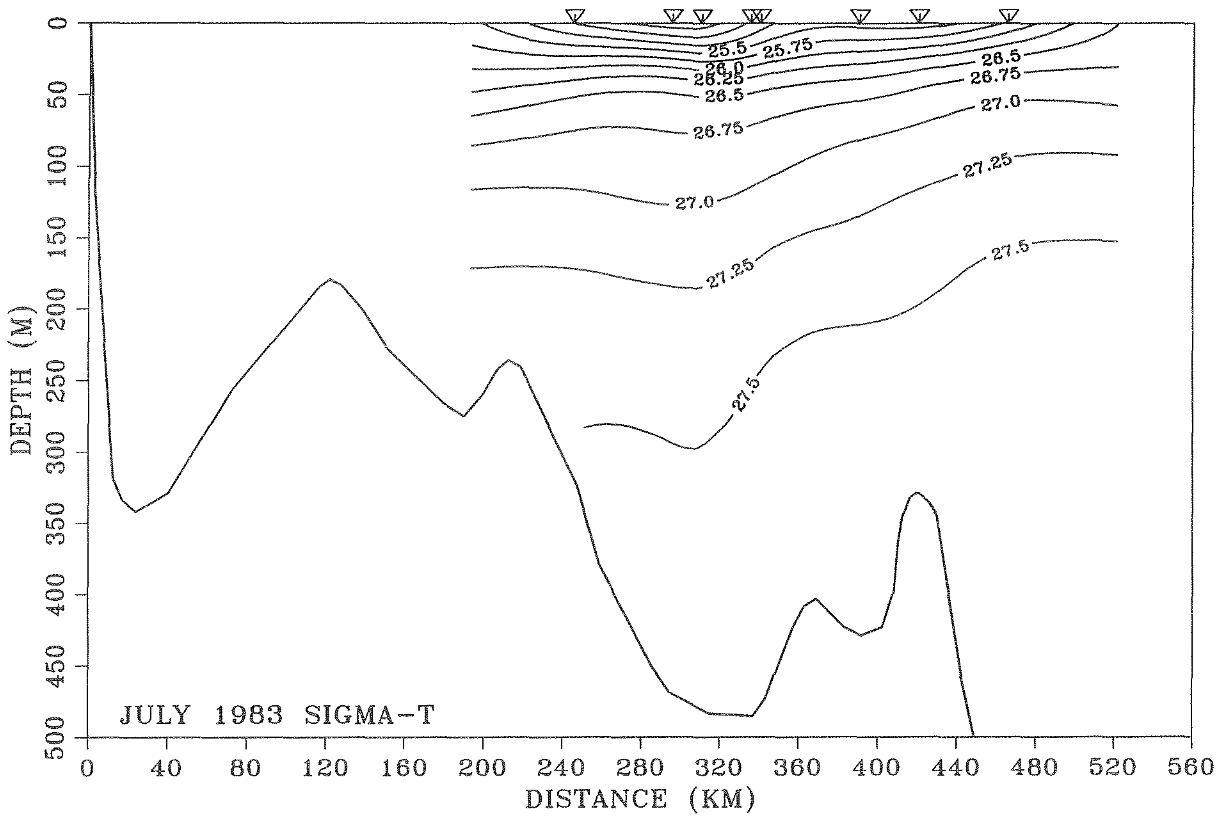
27.25
27.5


JULY 1983 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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80
120
160
200
240
280
320
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560
25.5
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26.5
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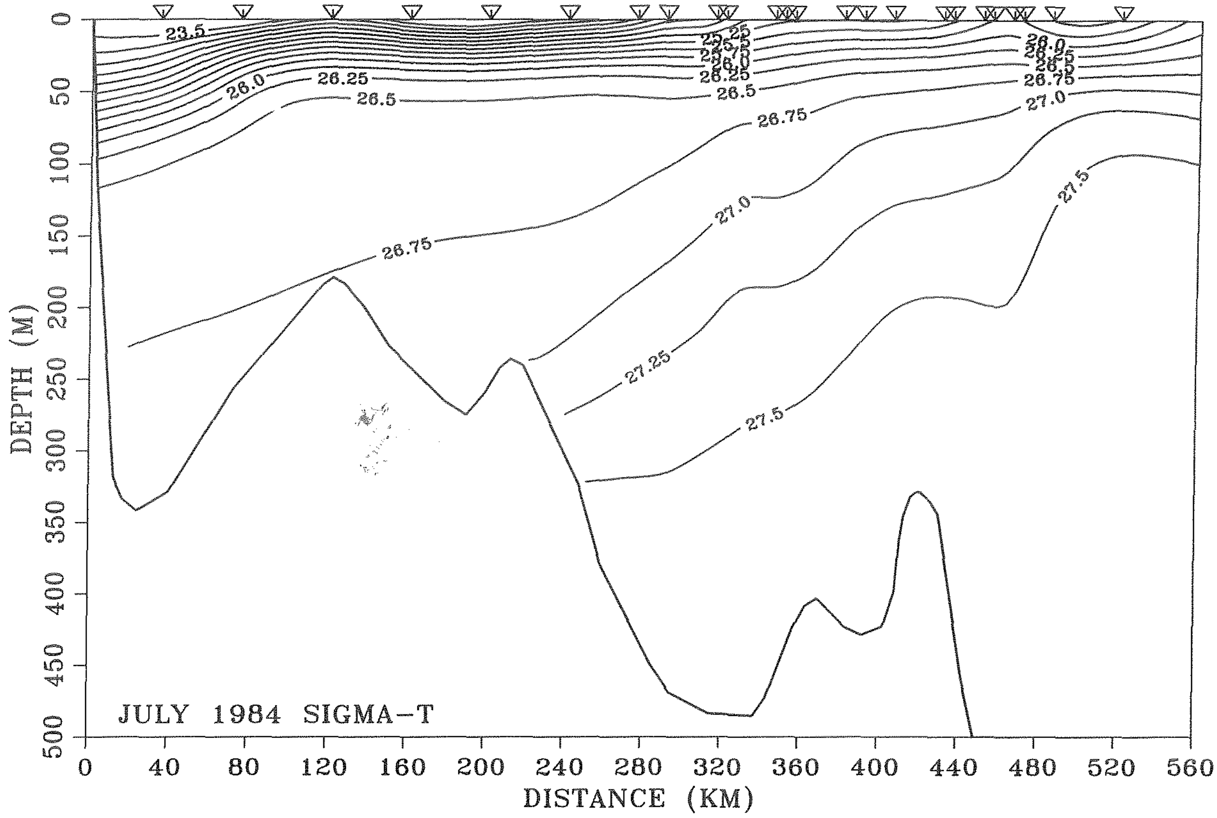
27.25
27.5



JULY 1984 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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26.25
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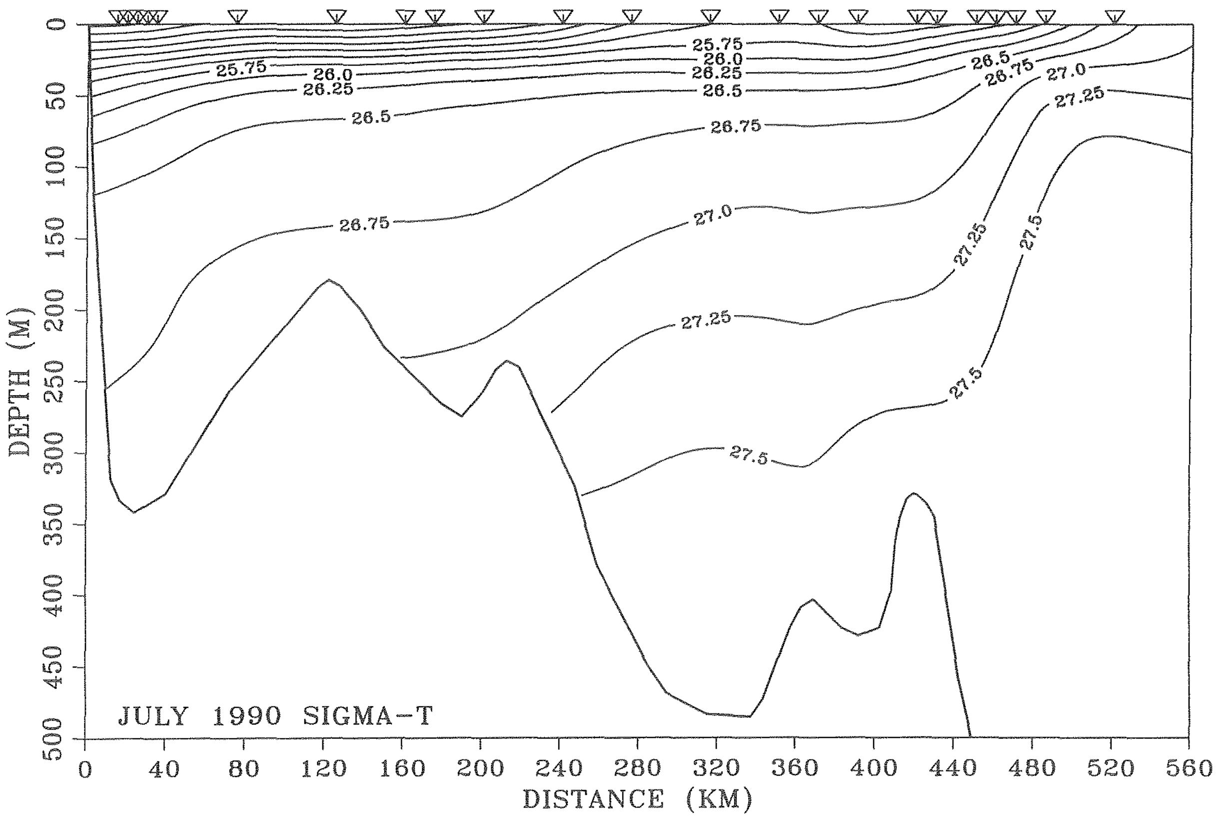

JULY 1990 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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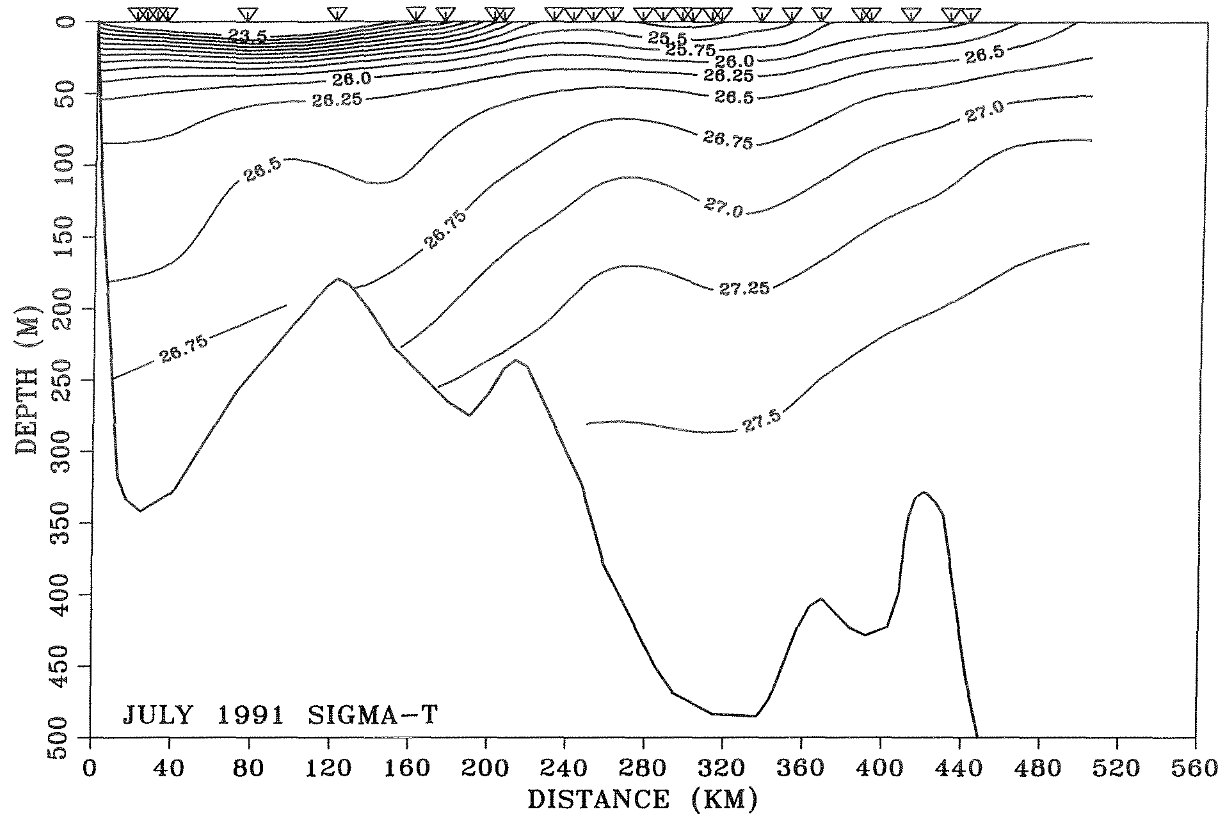
27.5


JULY 1991 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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27.0
27.25
27.5
0
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100
150
200
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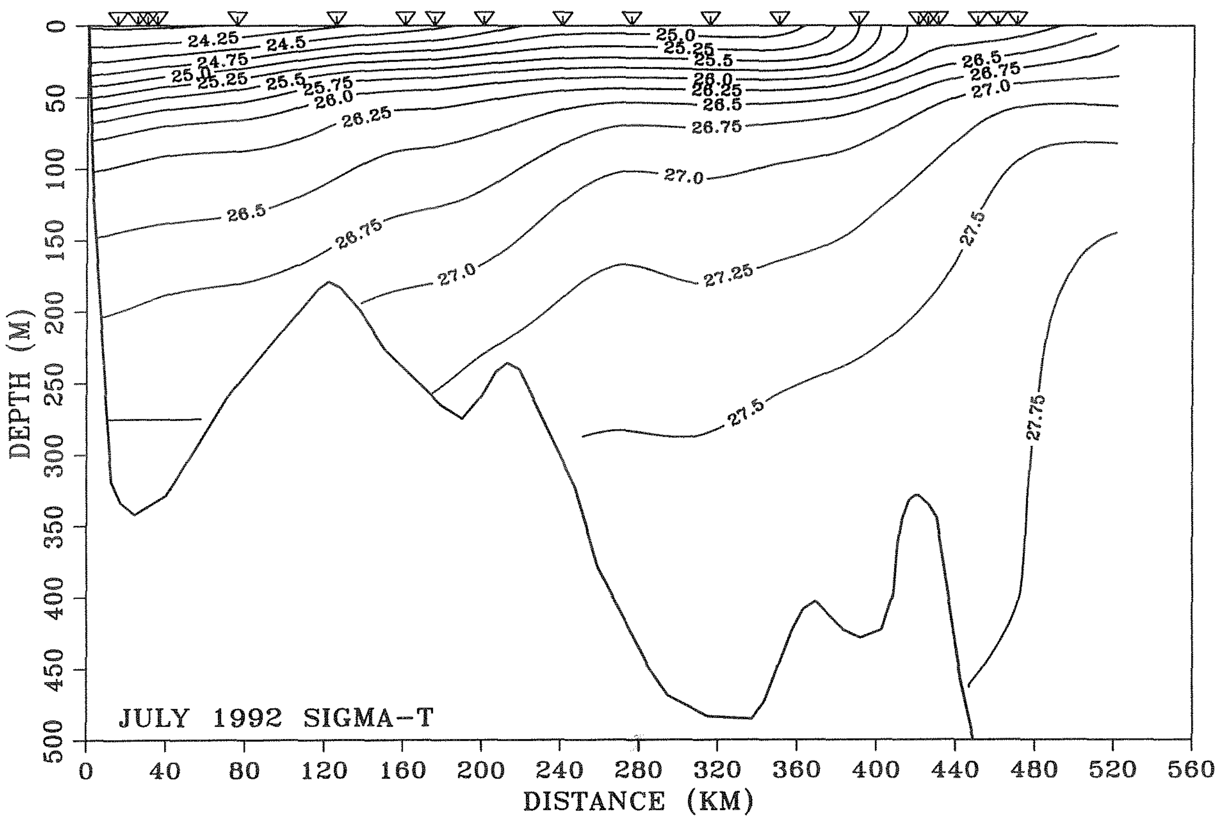
JULY 1992 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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26.0
26.25
26.5
26.75
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27.25
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27.75
0
50
100
150
200
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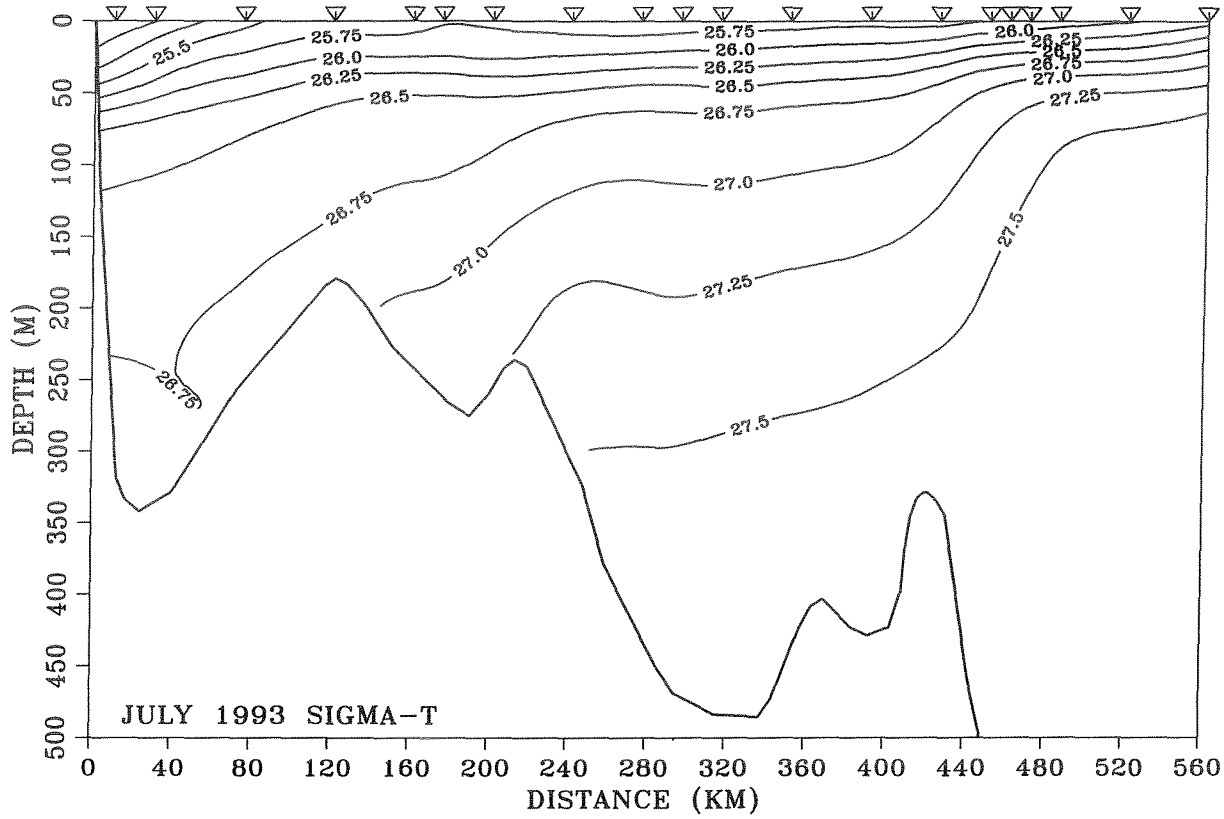
DEPTH (M)
DISTANCE (KM)
JULY 1993 SIGMA-T
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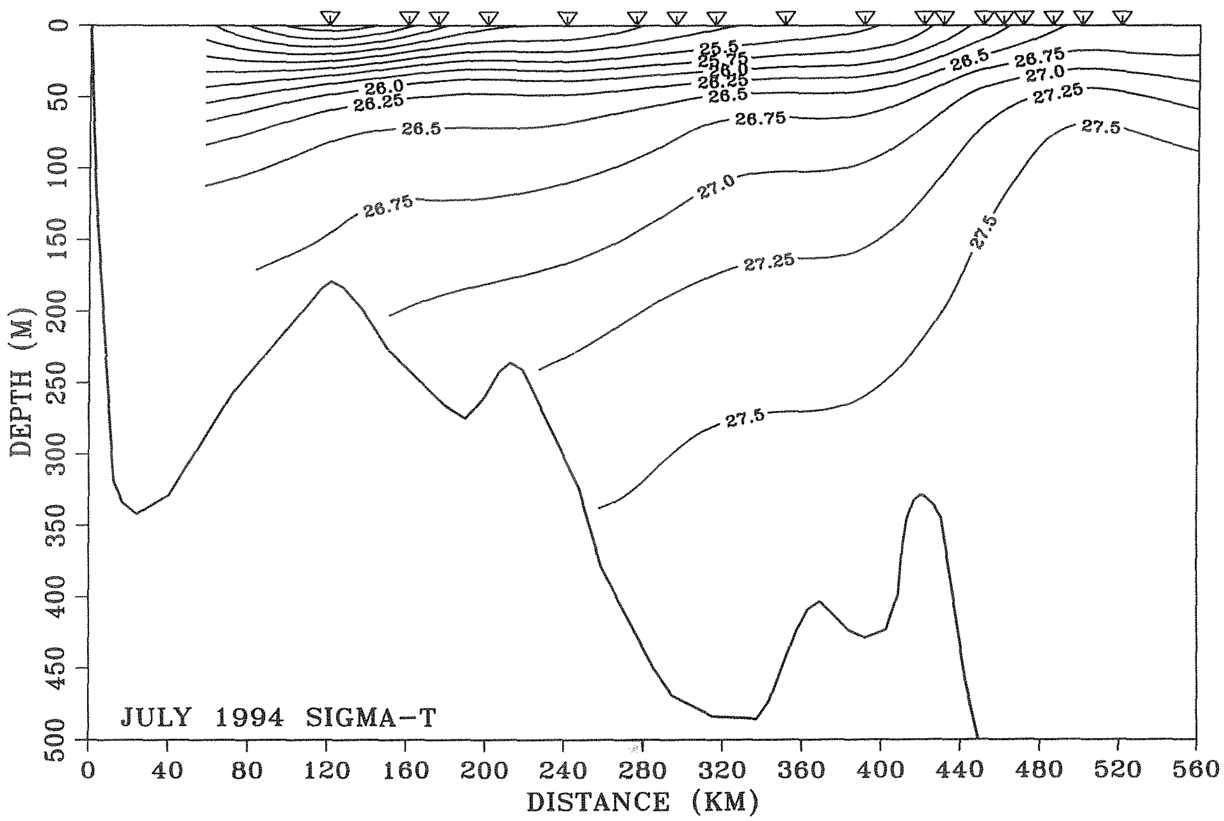
27.25
27.5


DEPTH (M)
DISTANCE (KM)
JULY 1994 SIGMA-T
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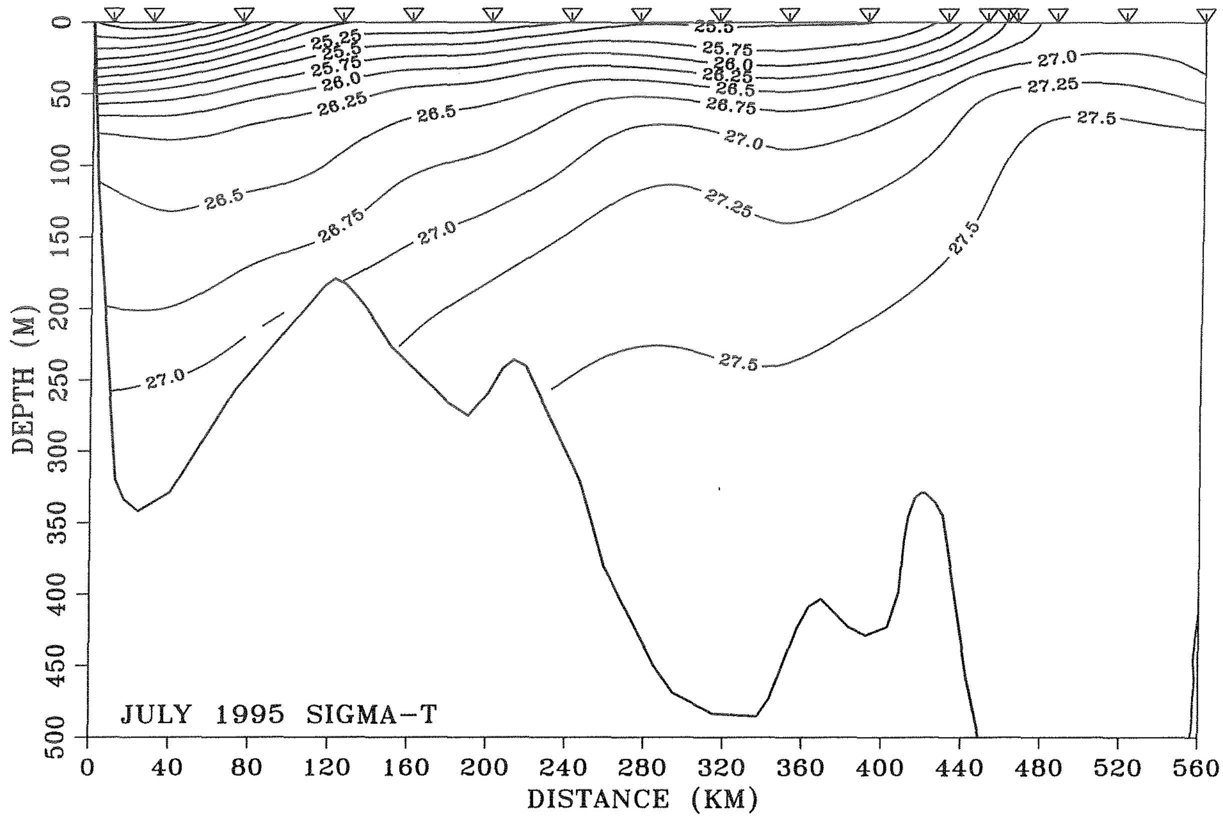
27.25
27.5


JULY 1995 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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200
250
300
350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
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520
560
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25.5
25.75
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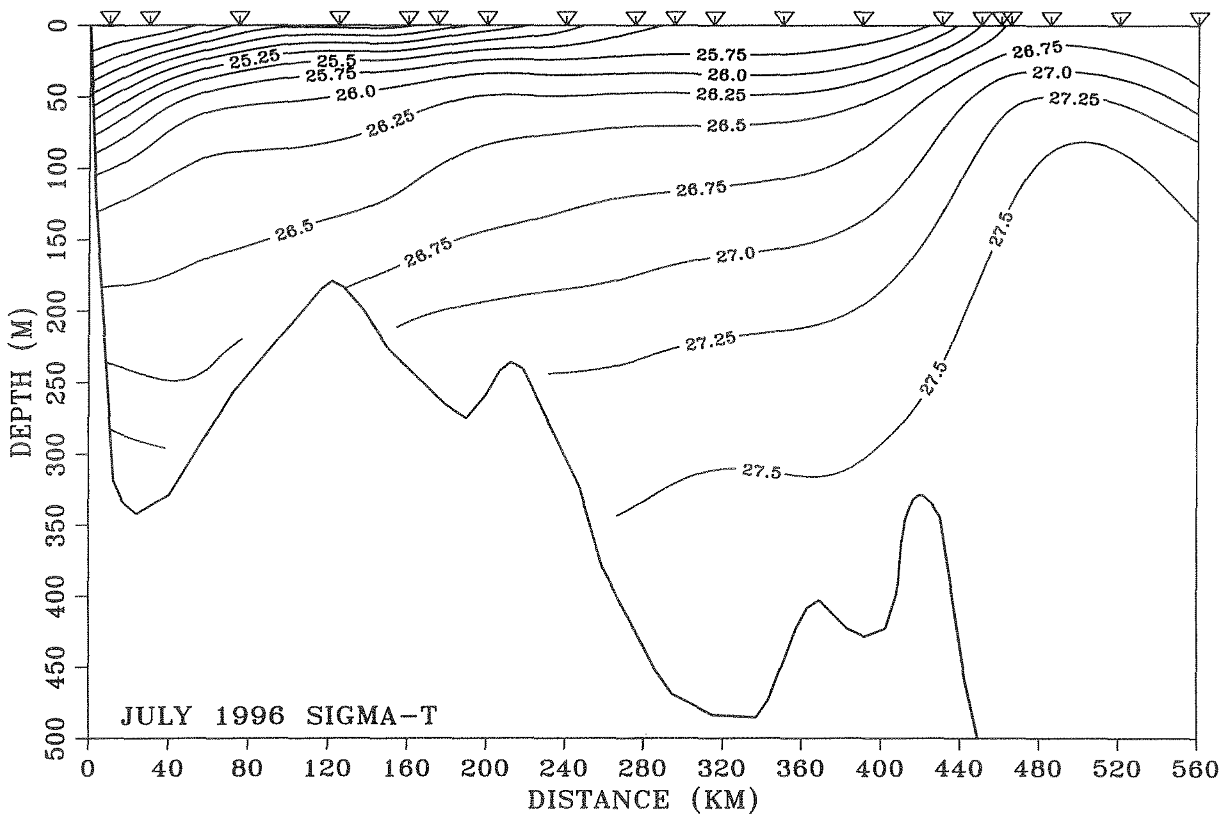
26.25
26.5
26.75
27.0
27.25
27.5


JULY 1996 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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200
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350
400
450
500
0
40
80
120
160
200
240
280
320
360
400
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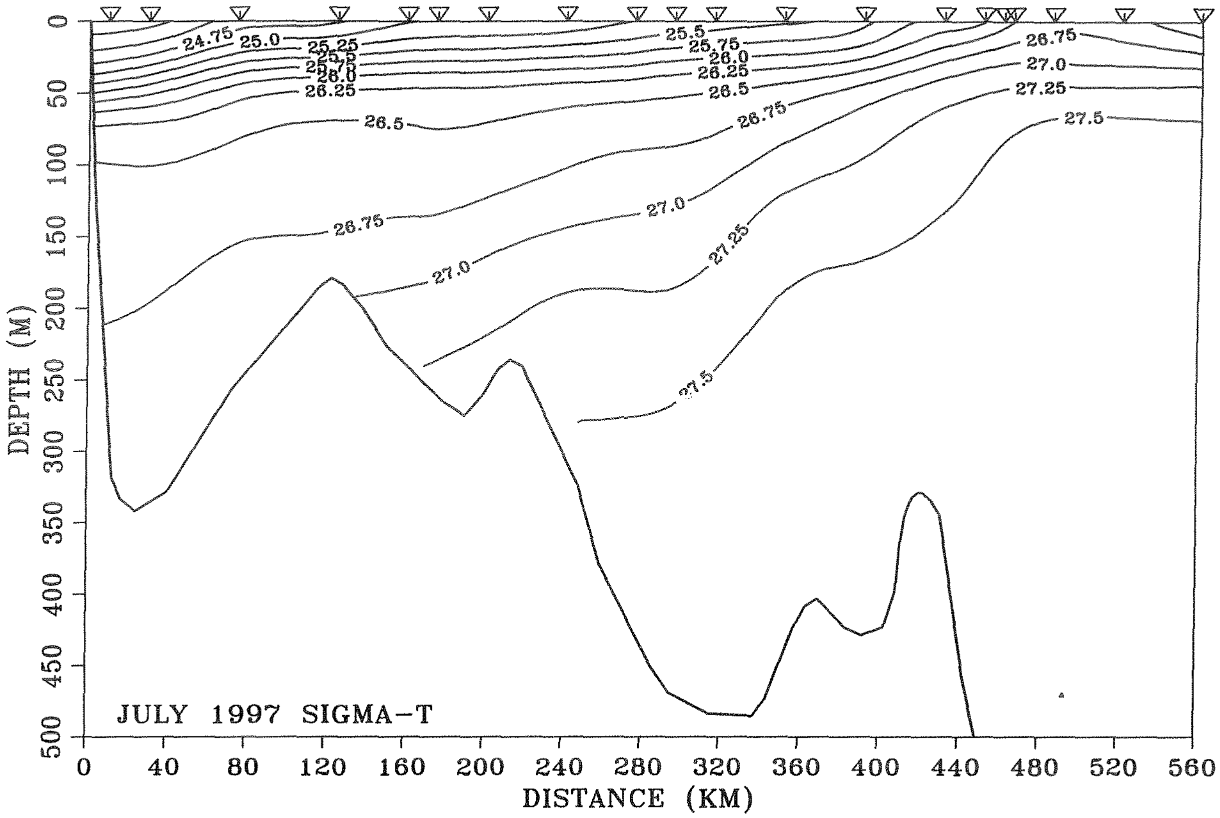
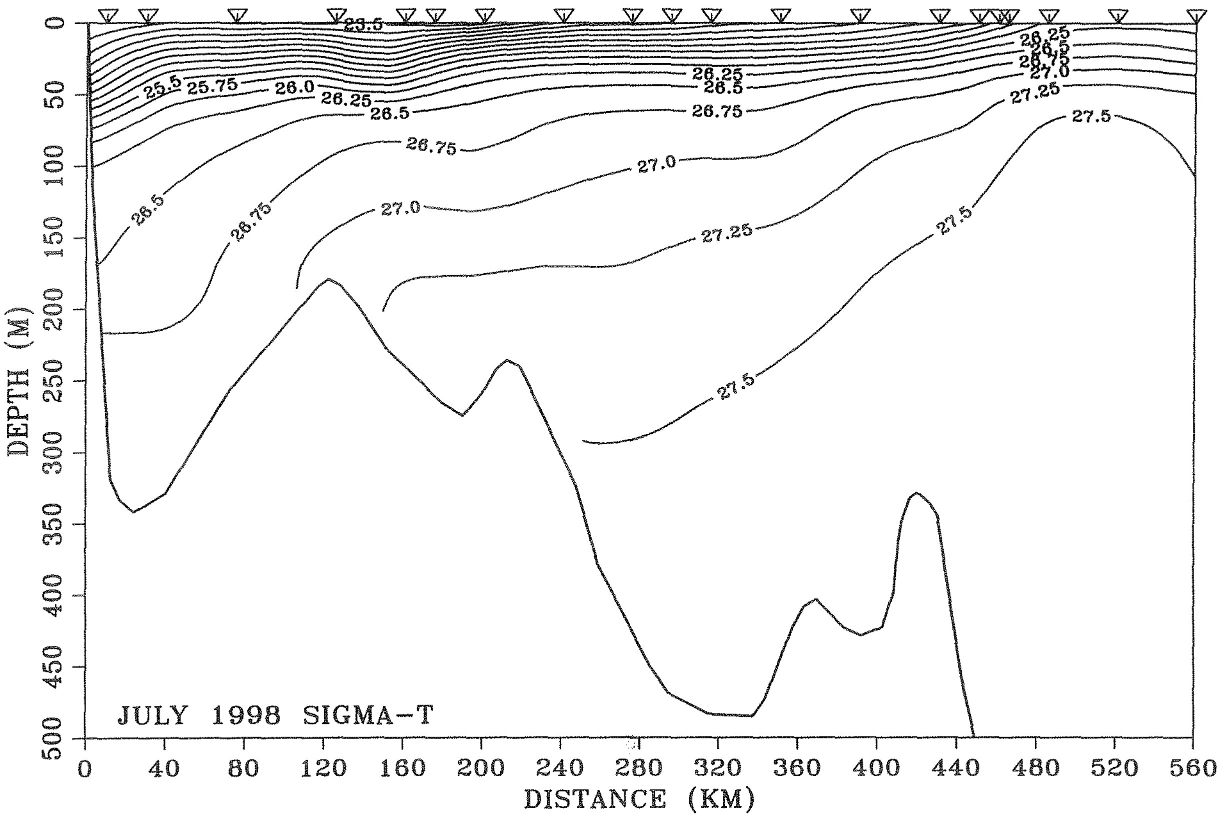
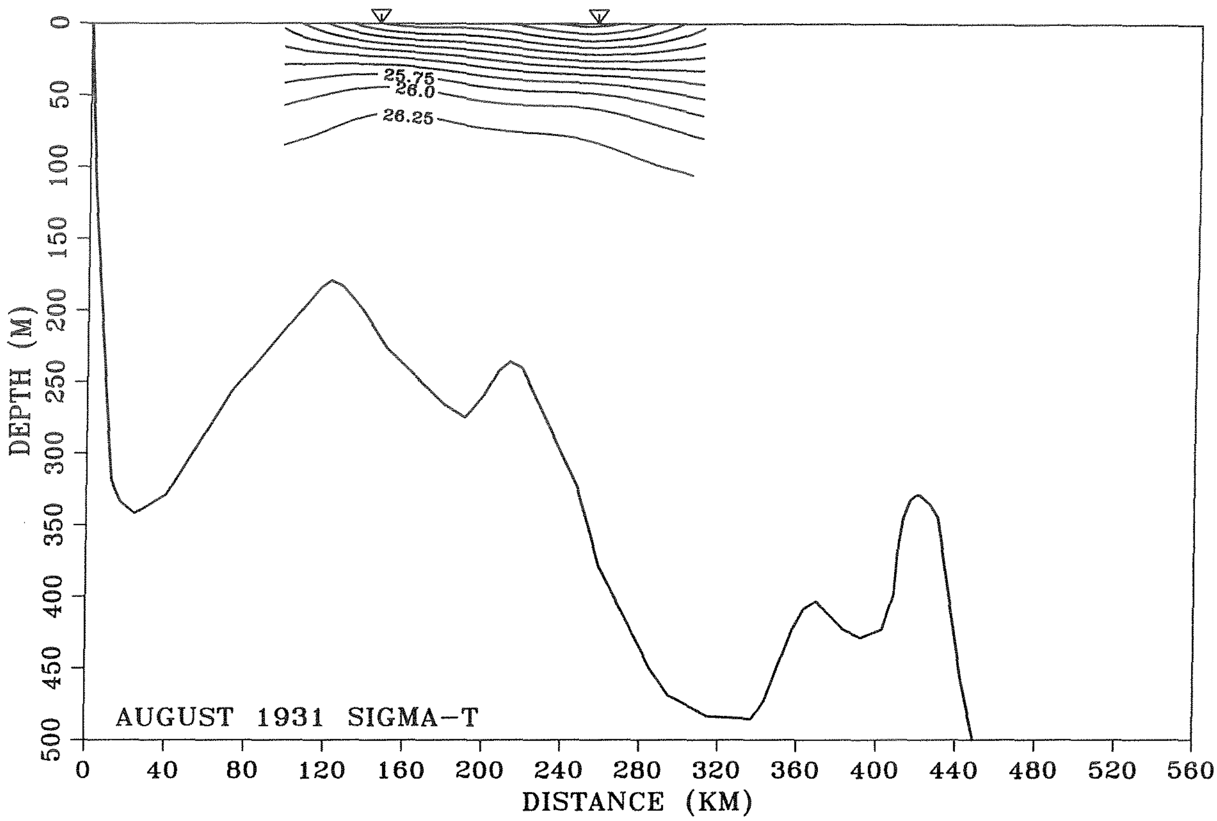
25.5
25.75
26.0
26.25
26.5
26.75
27.0
27.25
27.5


JULY 1997 SIGMA-T
DEPTH (M)
DISTANCE (KM)


JULY 1998 SIGMA-T
DEPTH (M)
DISTANCE (KM)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26.0
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DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
AUGUST 1931 SIGMA-T
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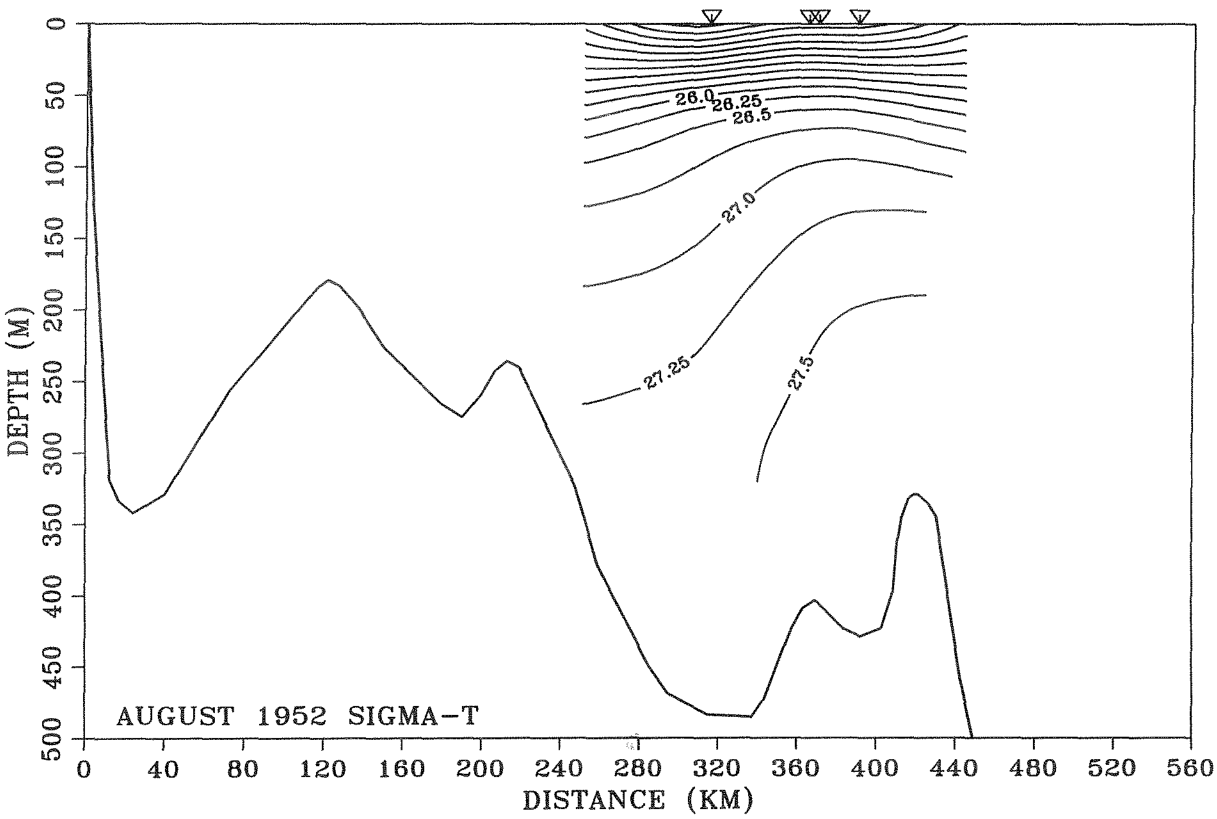
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)


26.0
26.25
26.5
27.0
27.25
27.5
DEPTH (M)
0
50
100
150
200
250
300
350
400
450
500
AUGUST 1952 SIGMA-T
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80
120
160
200
240
280
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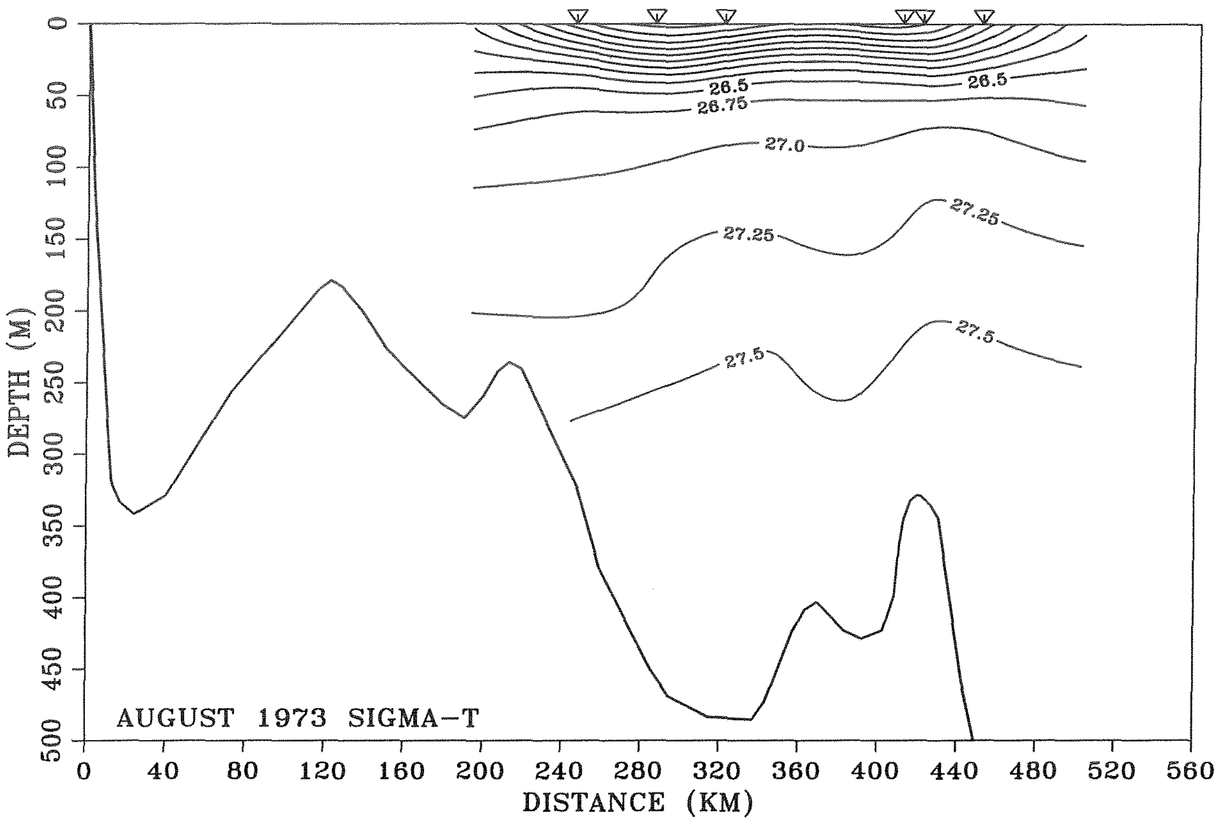
360
400
440
480
520
560
DISTANCE (KM)



AUGUST 1973 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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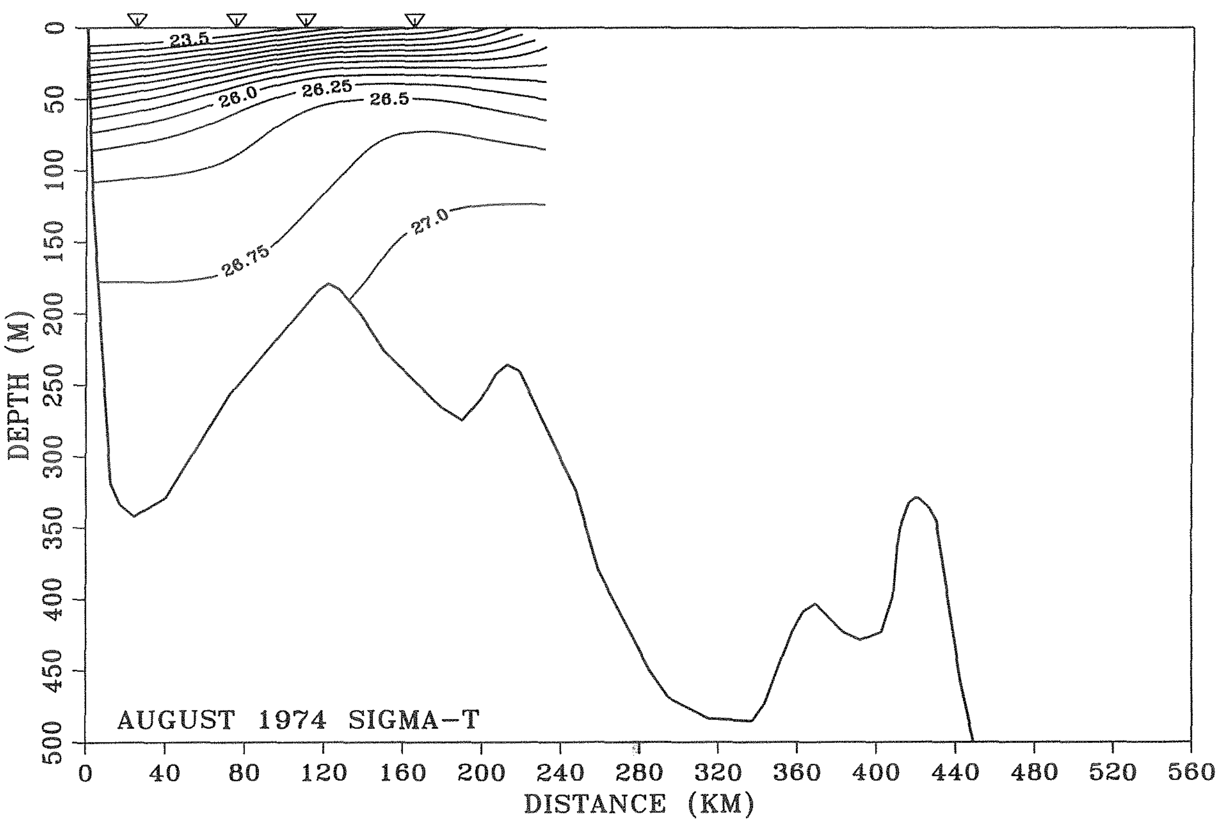
27.5



AUGUST 1974 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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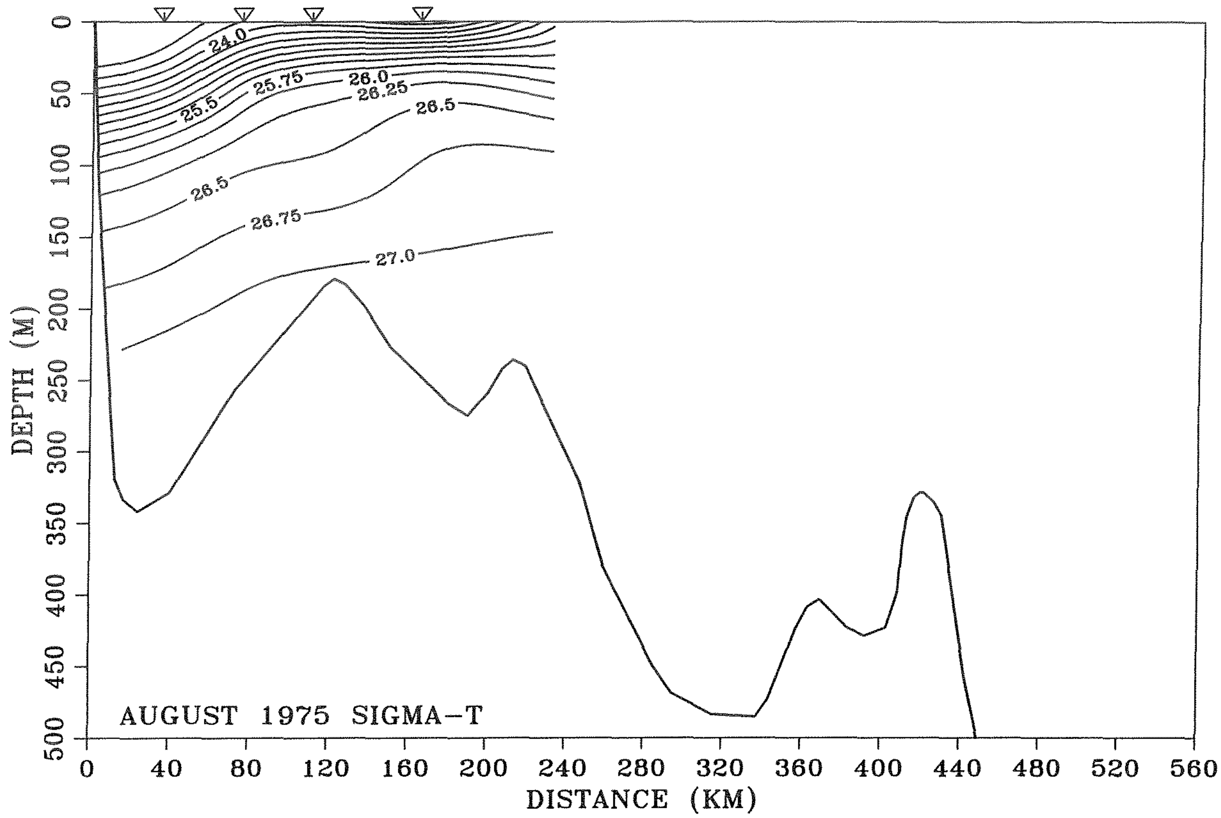
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DEPTH (M)
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250
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400
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500
AUGUST 1975 SIGMA-T
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80
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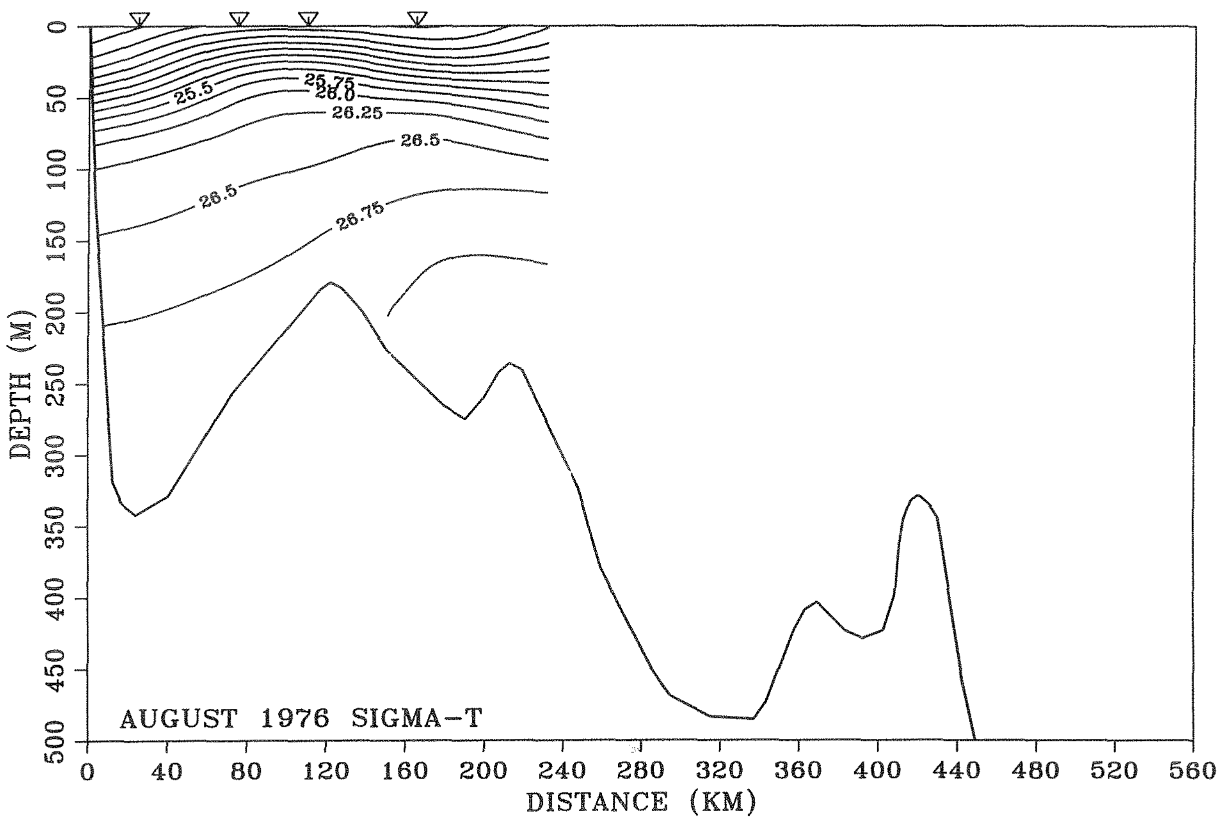
DISTANCE (KM)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DEPTH (M)
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400
450
500
AUGUST 1976 SIGMA-T
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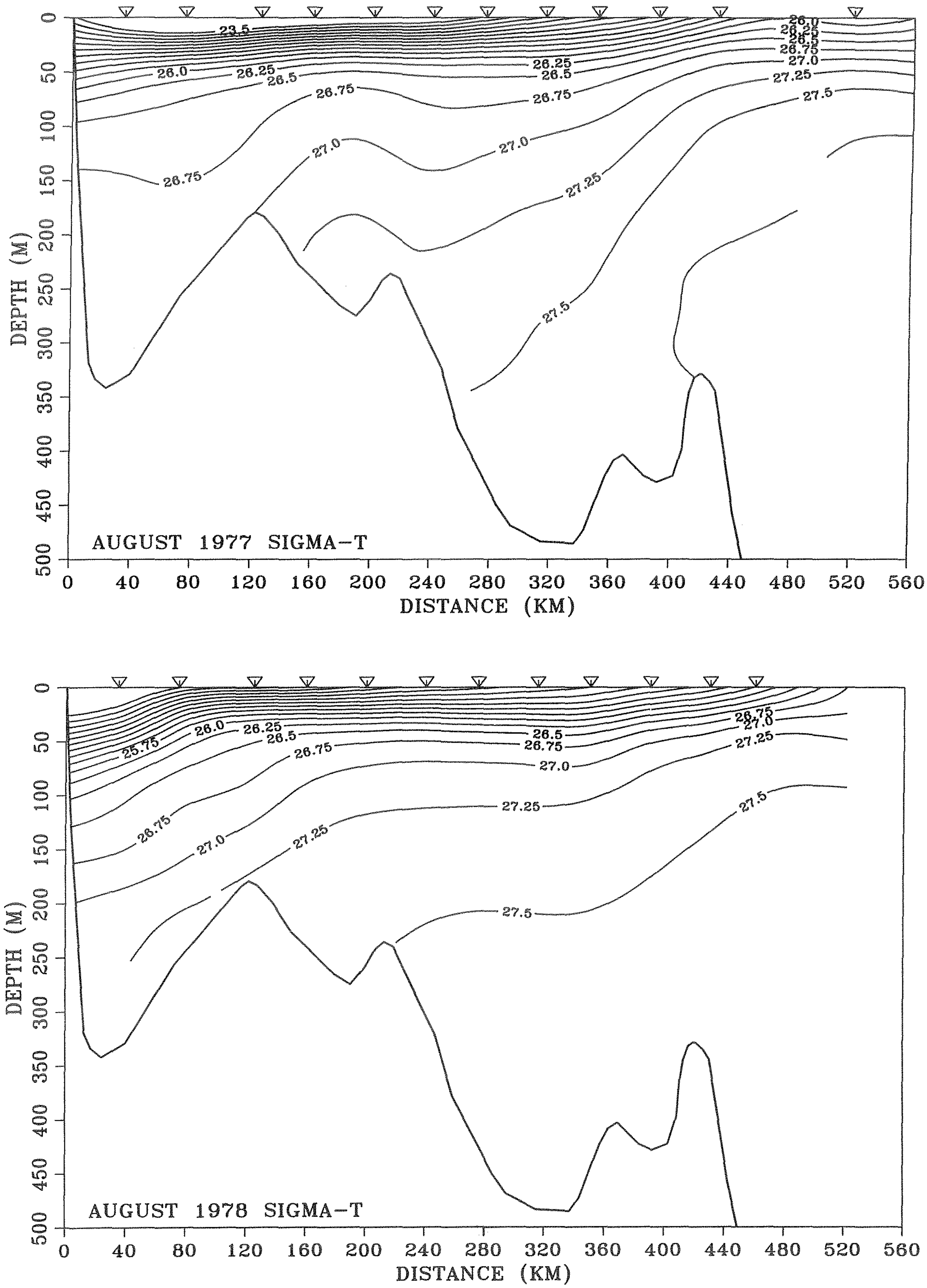
DISTANCE (KM)


AUGUST 1977 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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27.0
27.25
27.5
AUGUST 1978 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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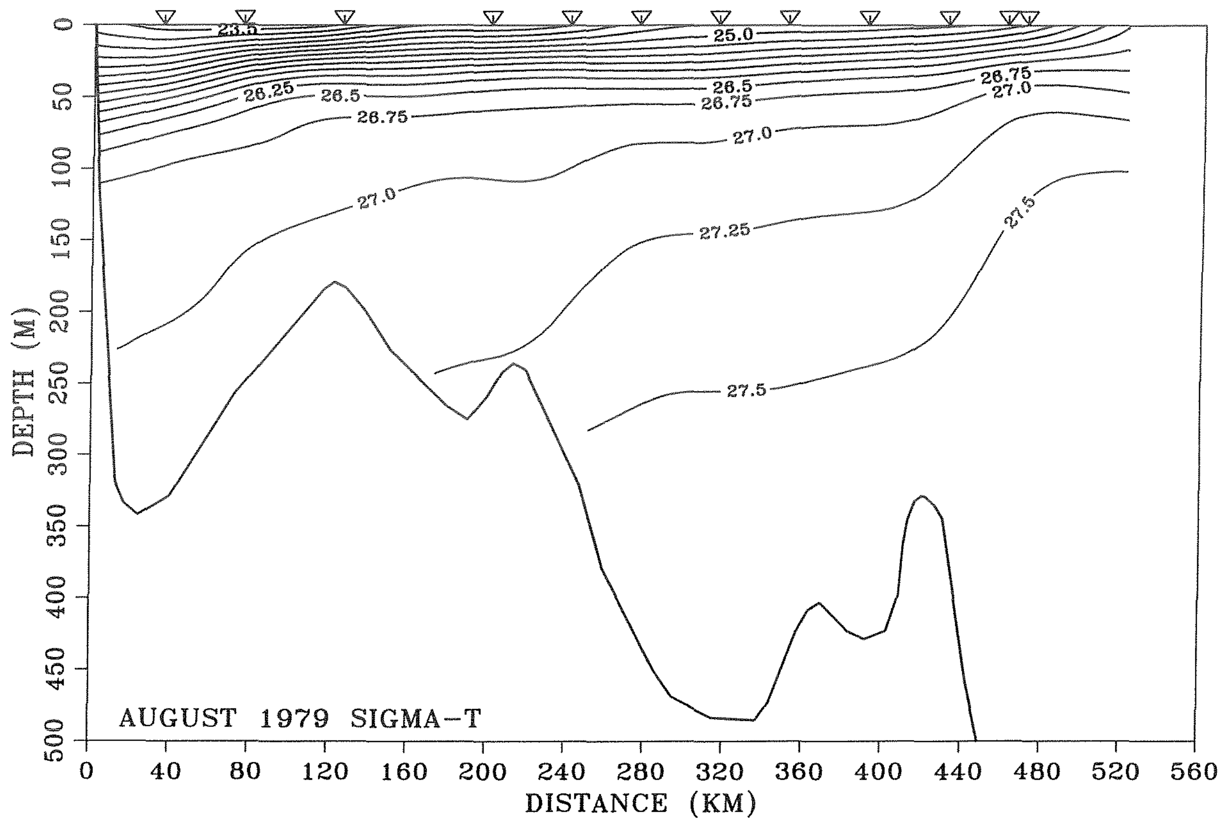
26.0
26.25
26.5
26.75
27.0
27.25
27.5



23.5
25.0
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26.5
26.75
27.0
27.25
27.5
AUGUST 1979 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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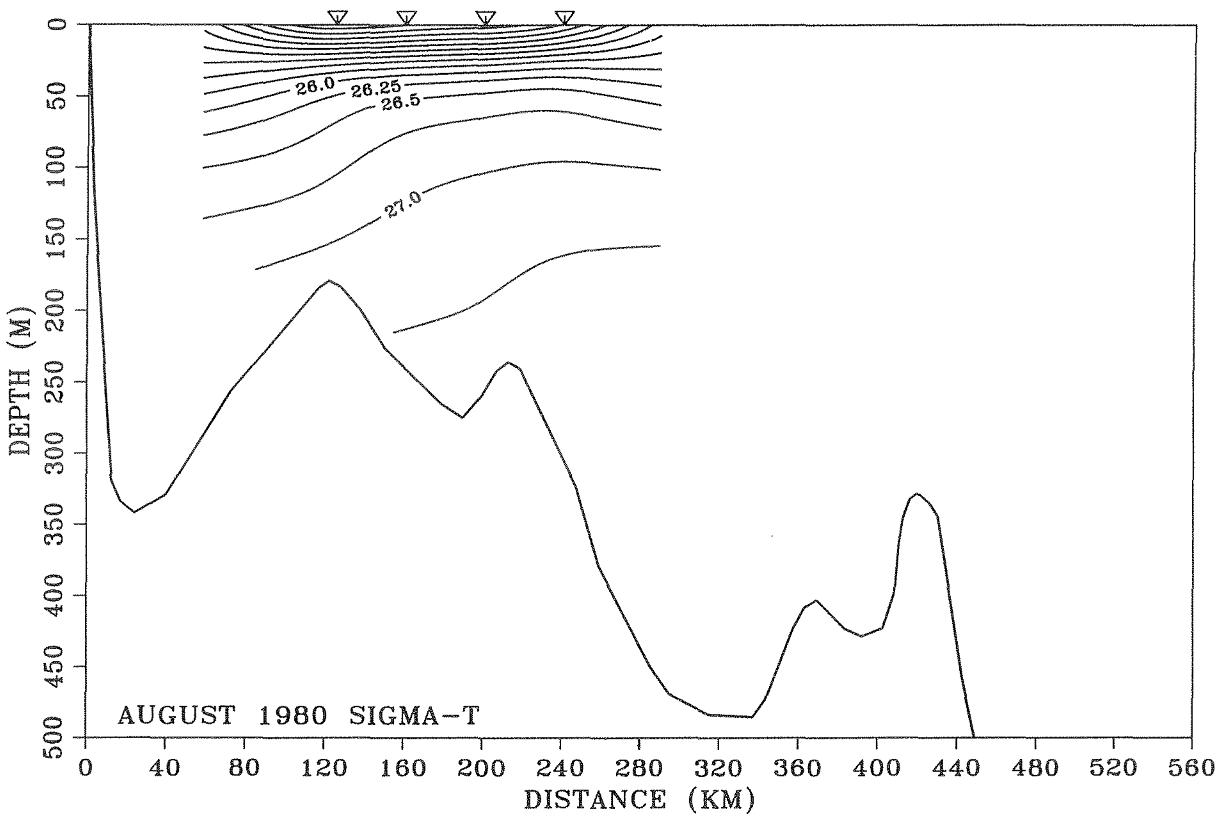
0 50 100 150 200 250 300 350 400 450 500



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DEPTH (M)
DISTANCE (KM)
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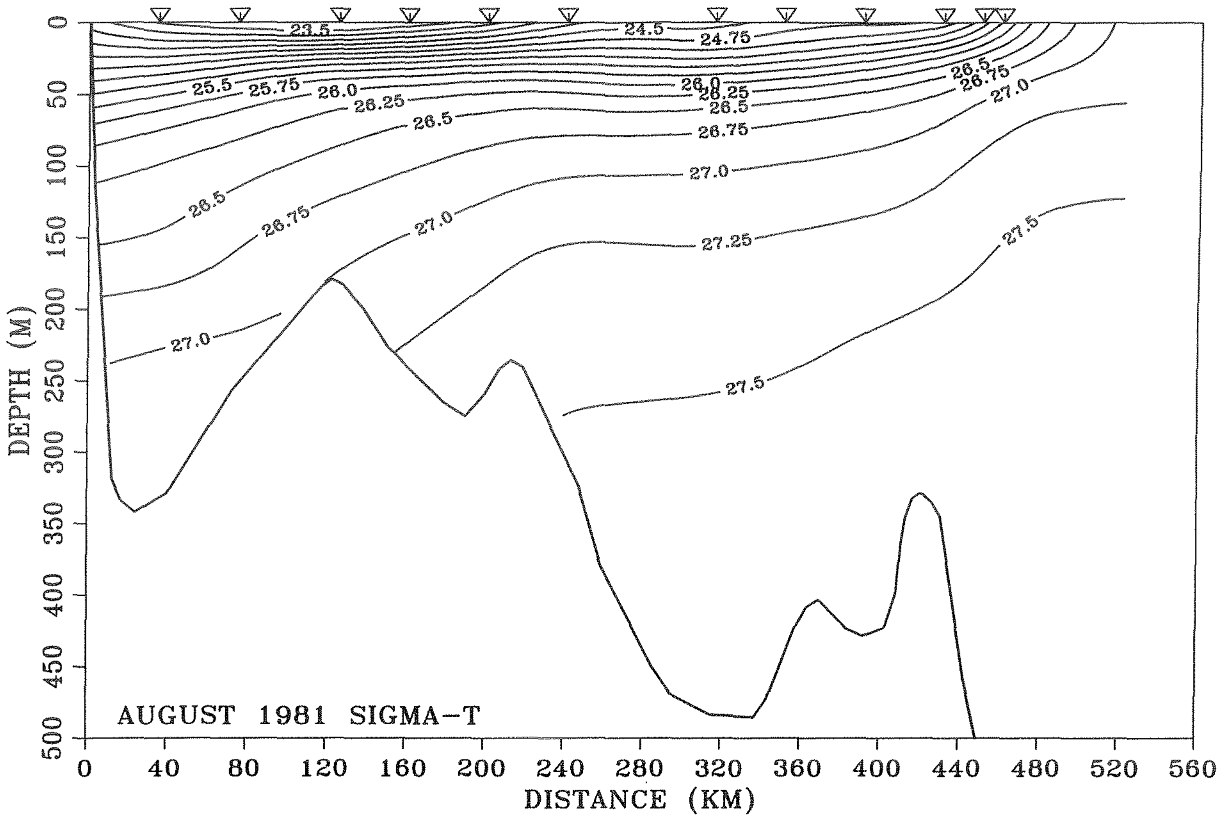
0 50 100 150 200 250 300 350 400 450 500


AUGUST 1981 SIGMA-T
DEPTH (M)
DISTANCE (KM)
0
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100
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0
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120
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520
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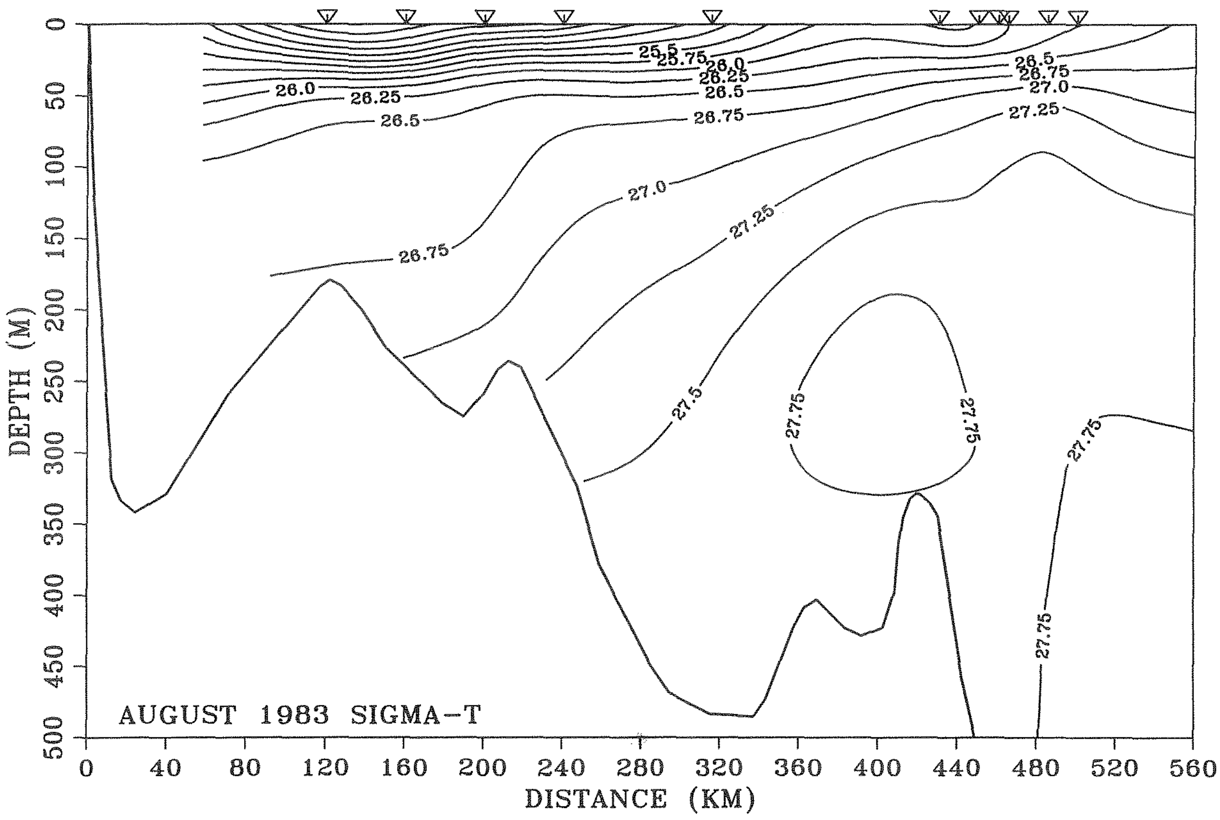
AUGUST 1983 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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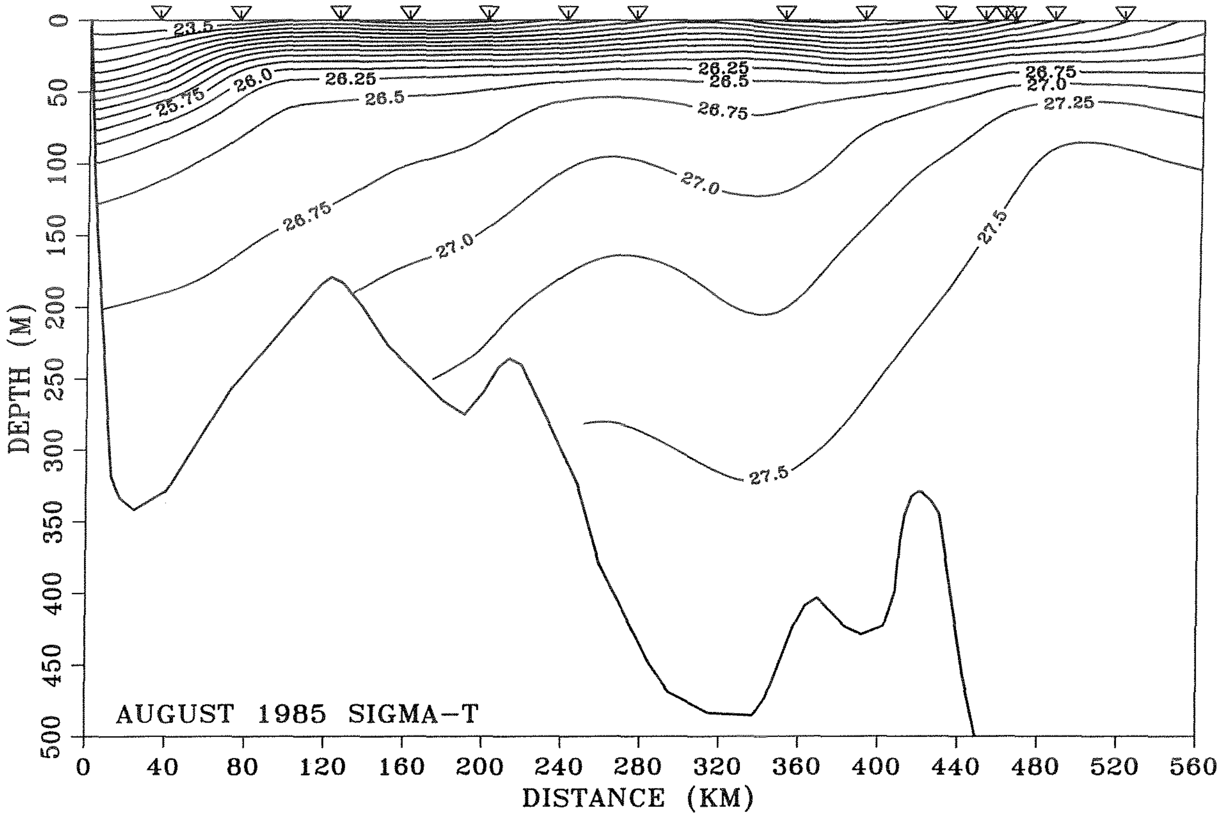

AUGUST 1985 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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26.5
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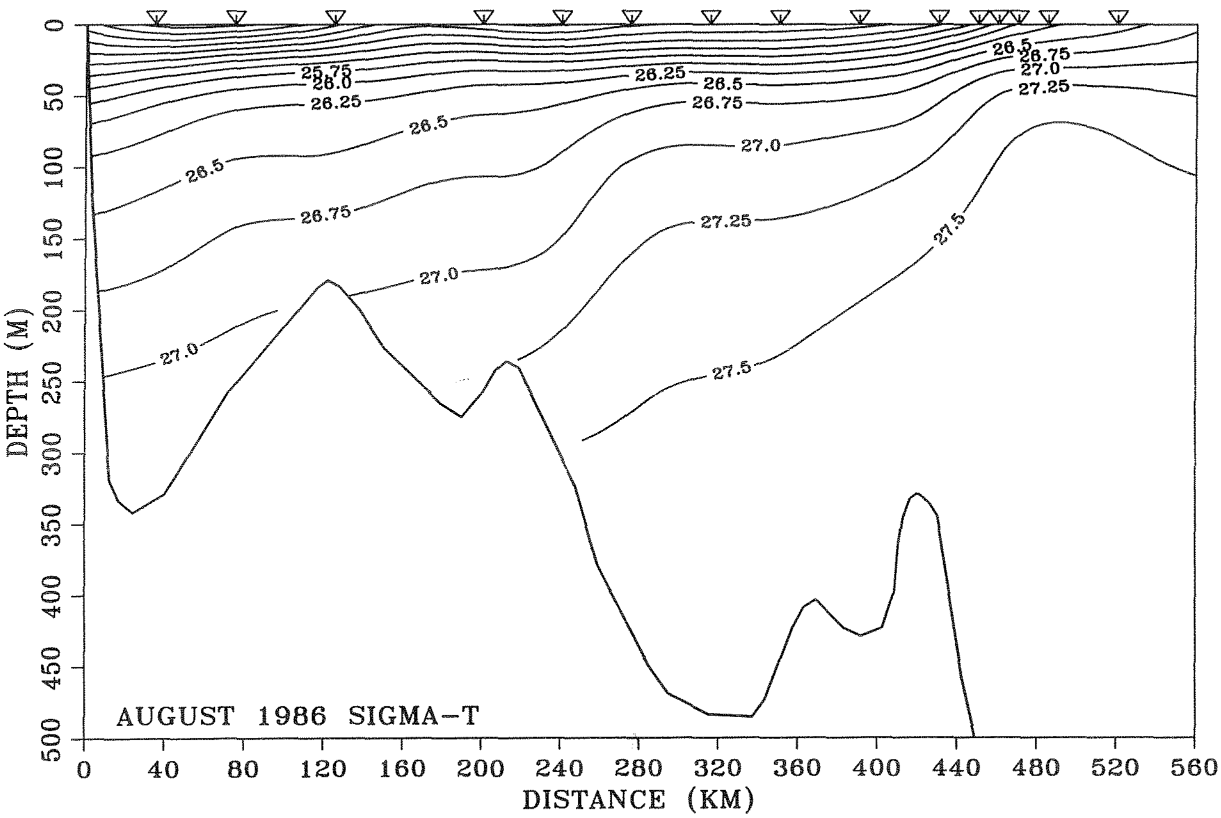
27.5



AUGUST 1986 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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400
450
500
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80
120
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200
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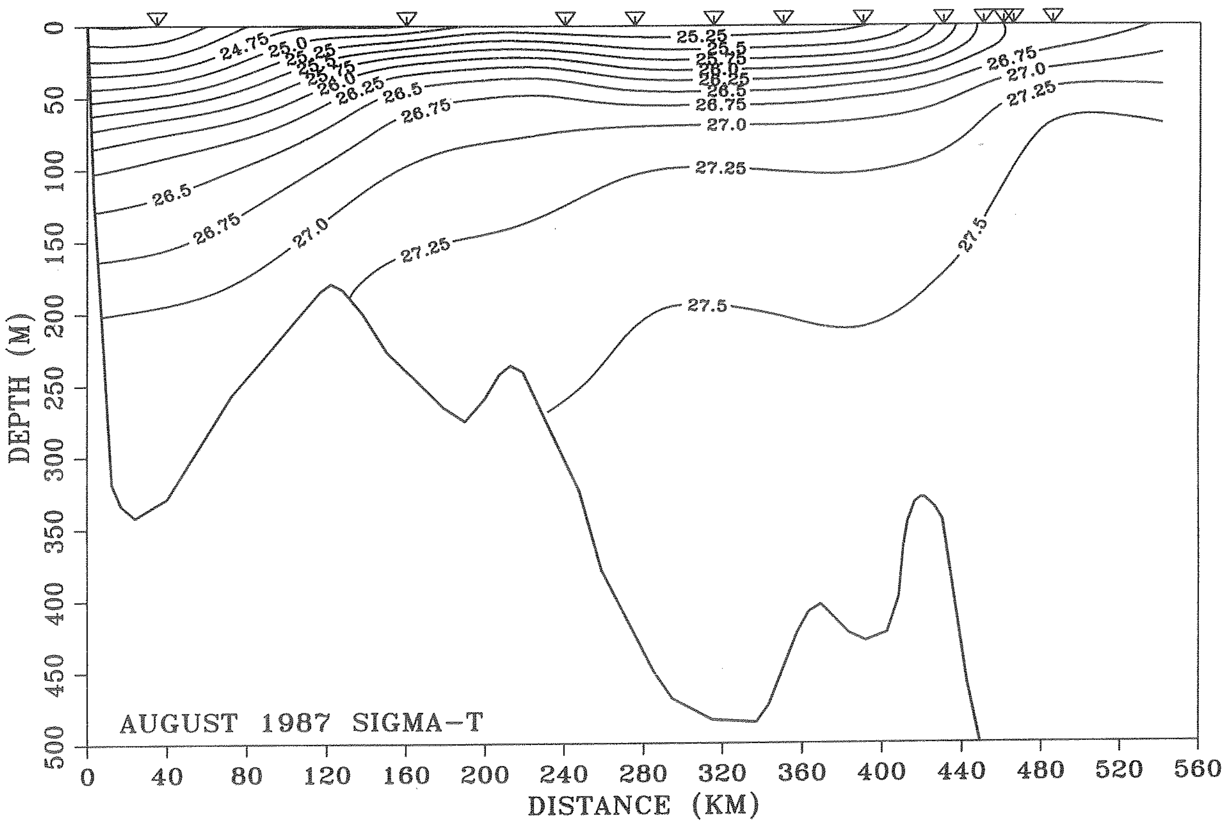
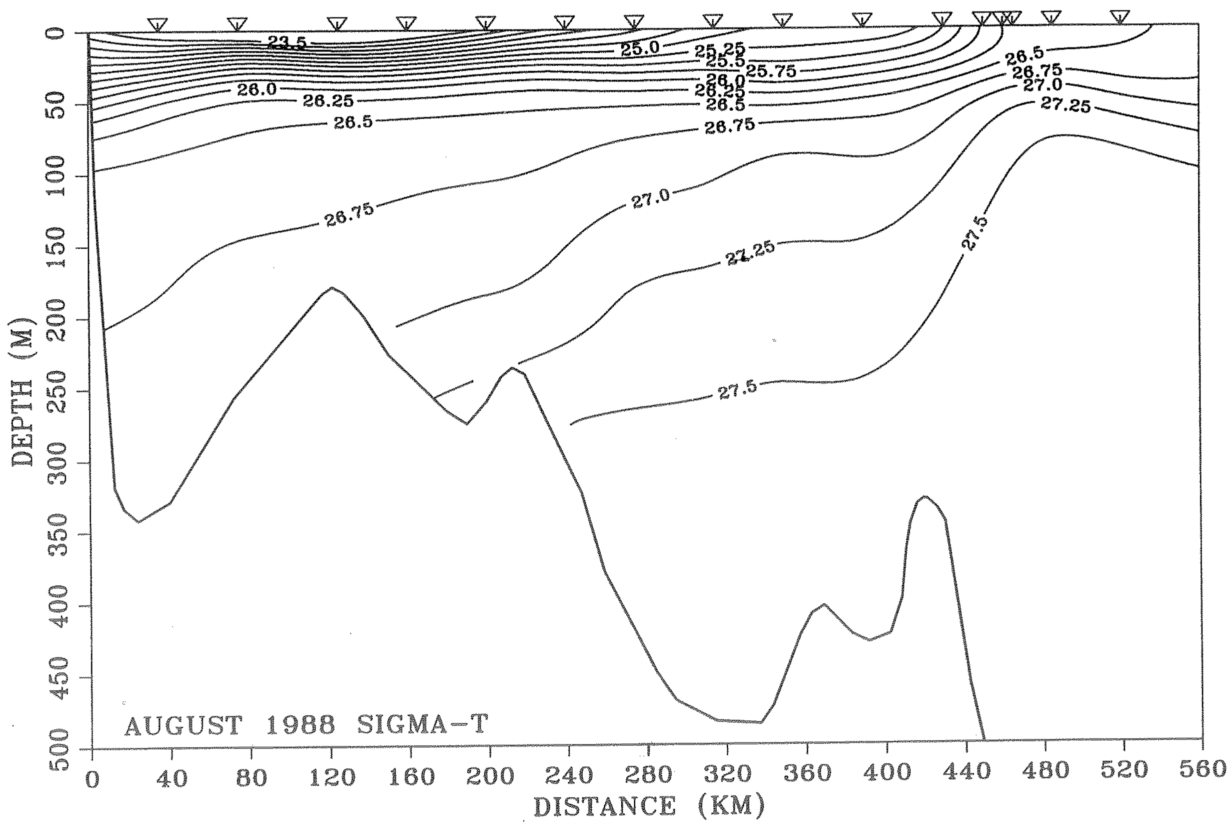
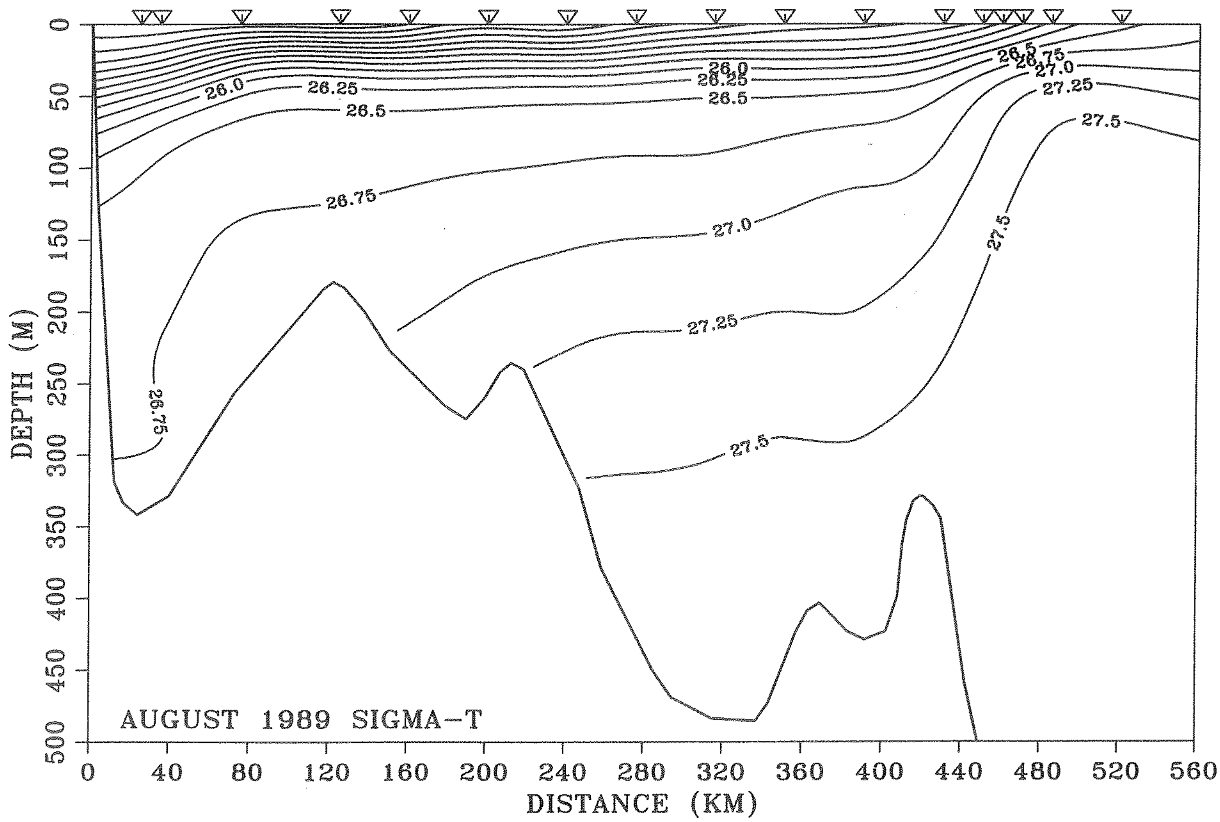
27.5


AUGUST 1987 SIGMA-T
DEPTH (M)
DISTANCE (KM)


AUGUST 1988 SIGMA-T
DEPTH (M)
DISTANCE (KM)


AUGUST 1989 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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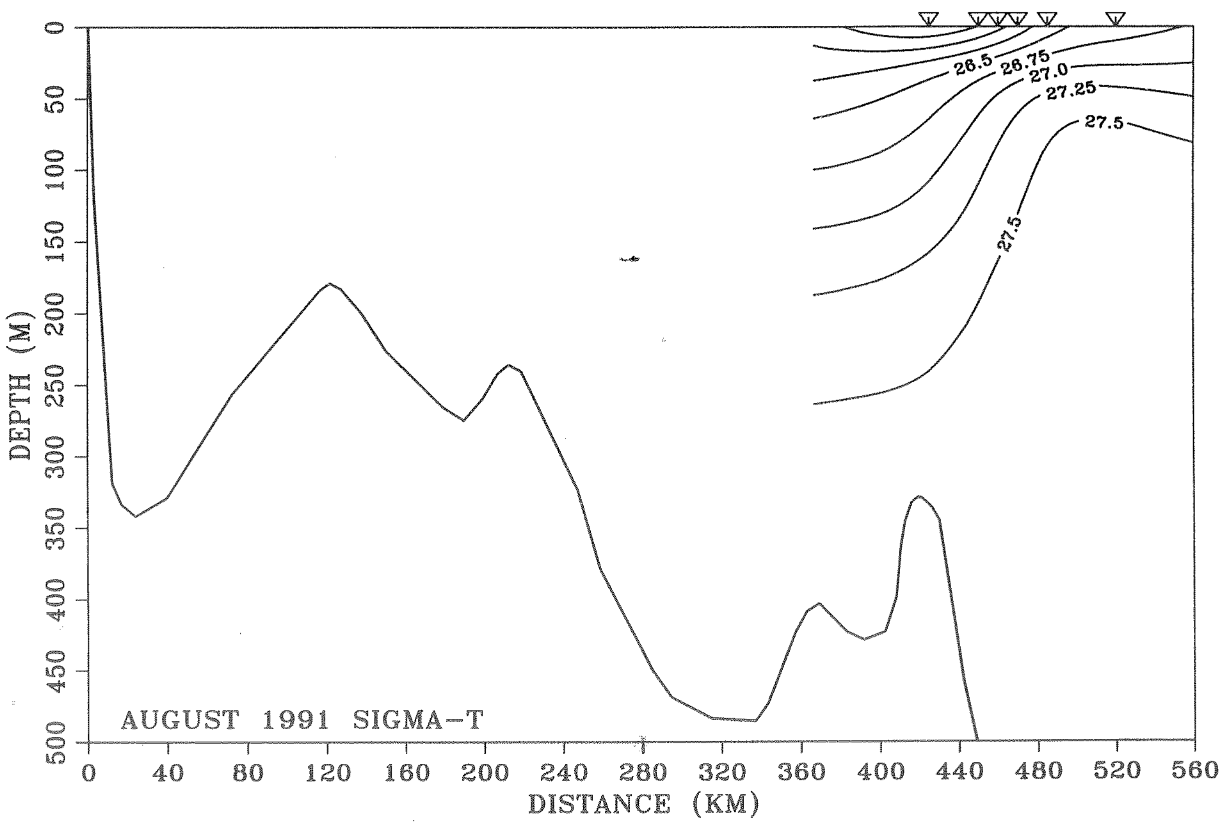
27.25
27.5


AUGUST 1991 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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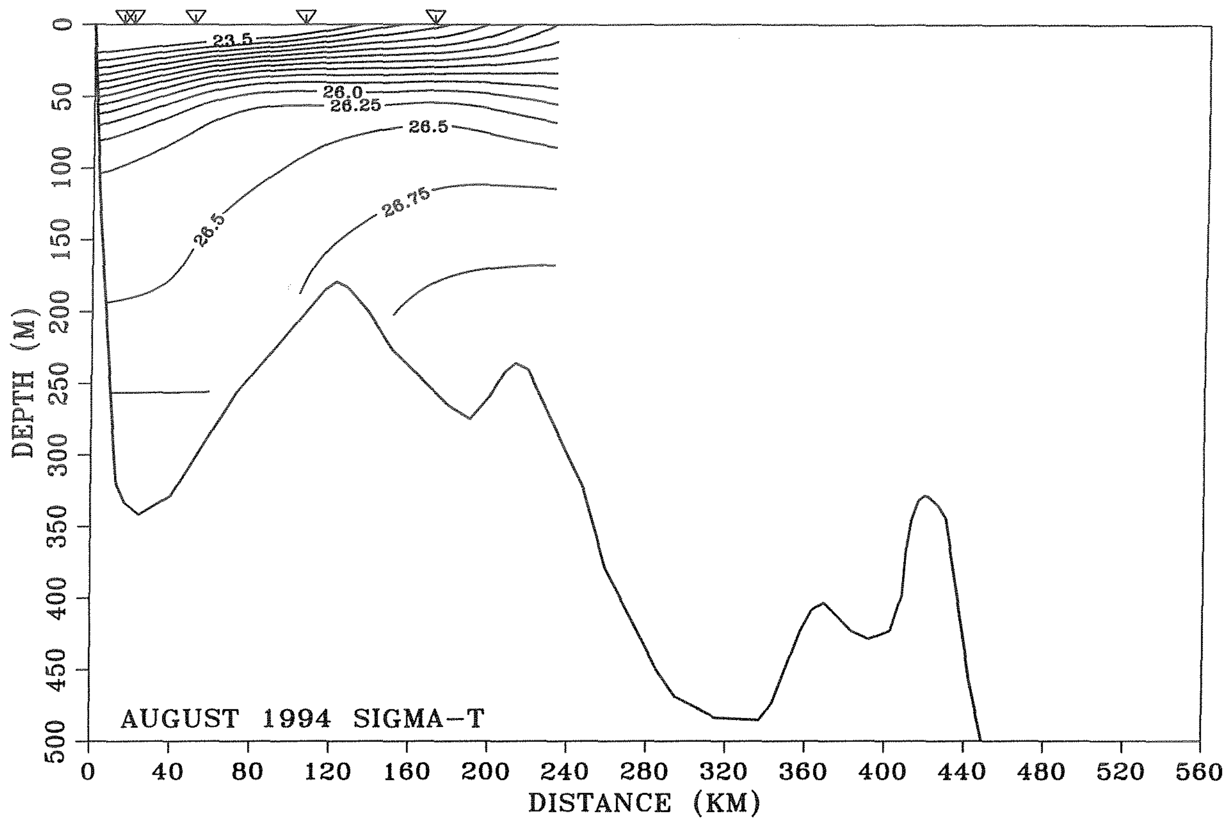
27.5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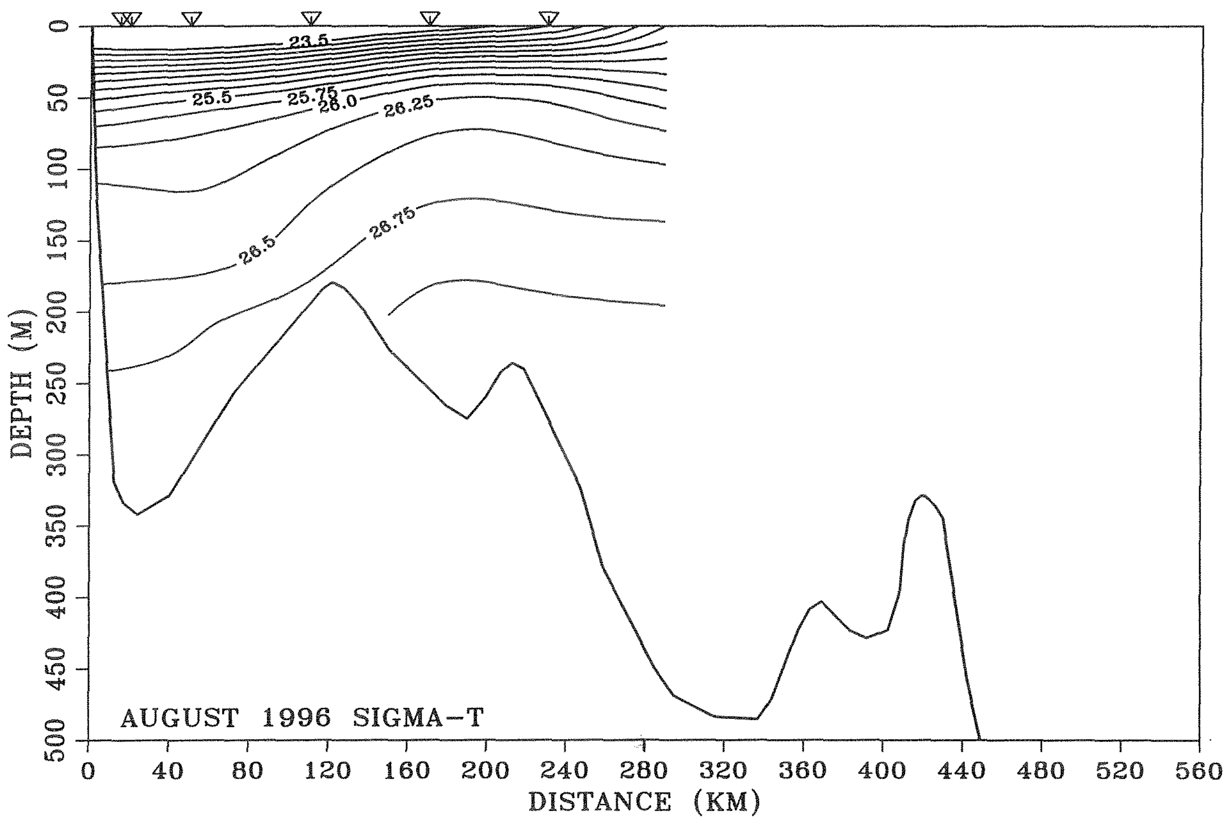
AUGUST 1994 SIGMA-T
DEPTH (M)
DISTANCE (KM)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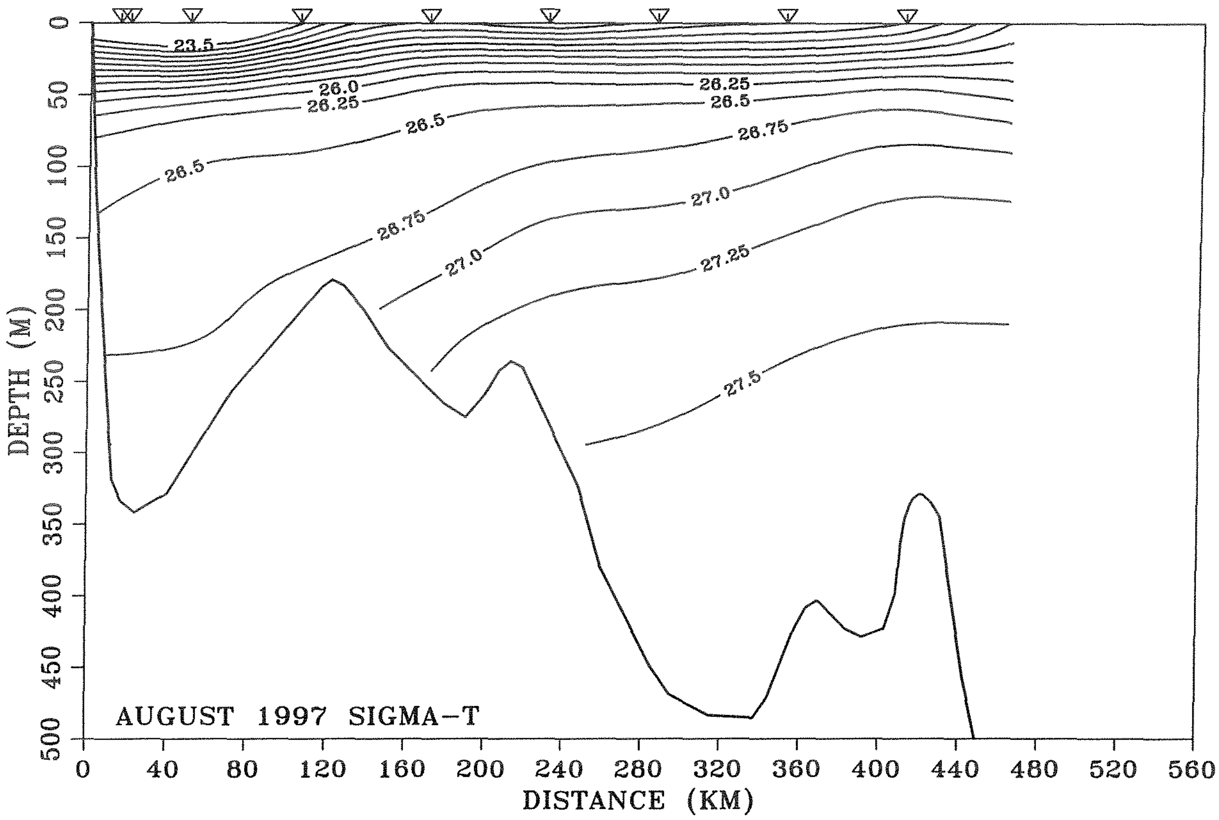
26.5
AUGUST 1996 SIGMA-T
DEPTH (M)
DISTANCE (KM)



AUGUST 1997 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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26.25
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27.5
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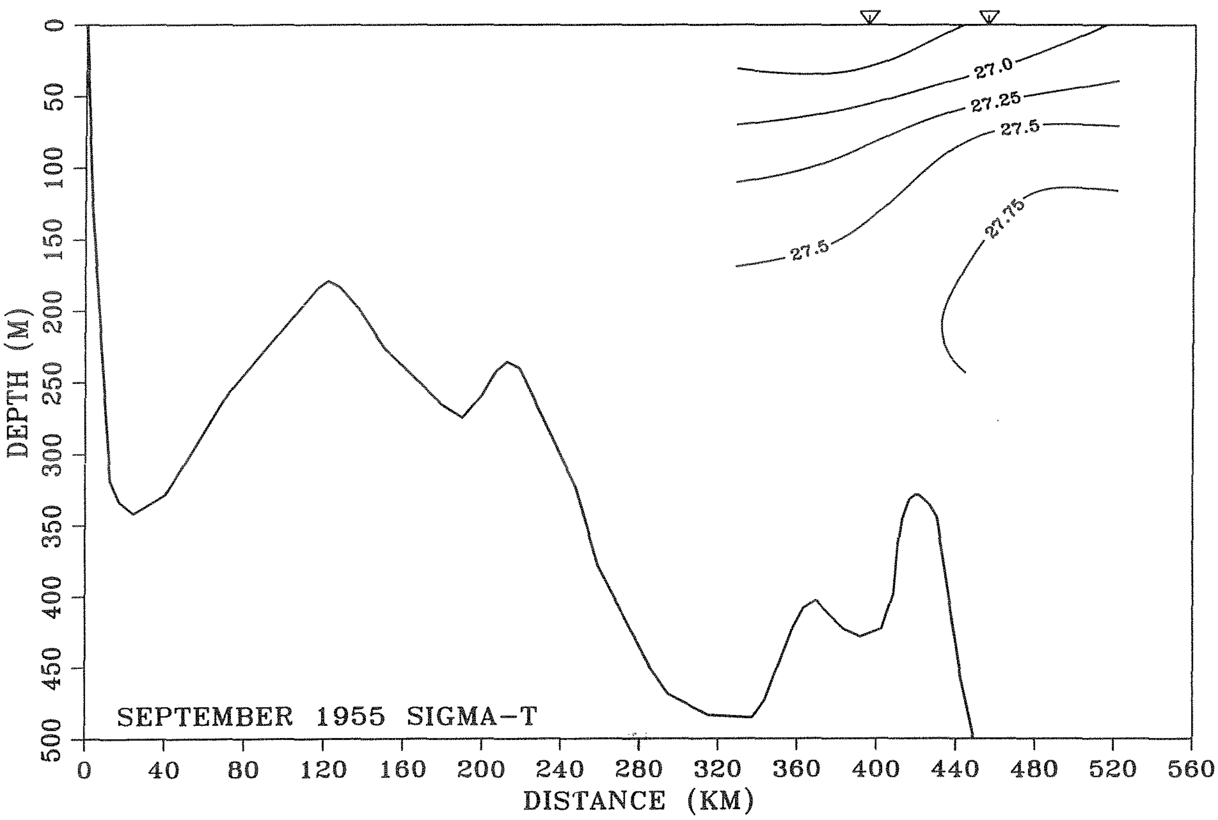

SEPTEMBER 1955 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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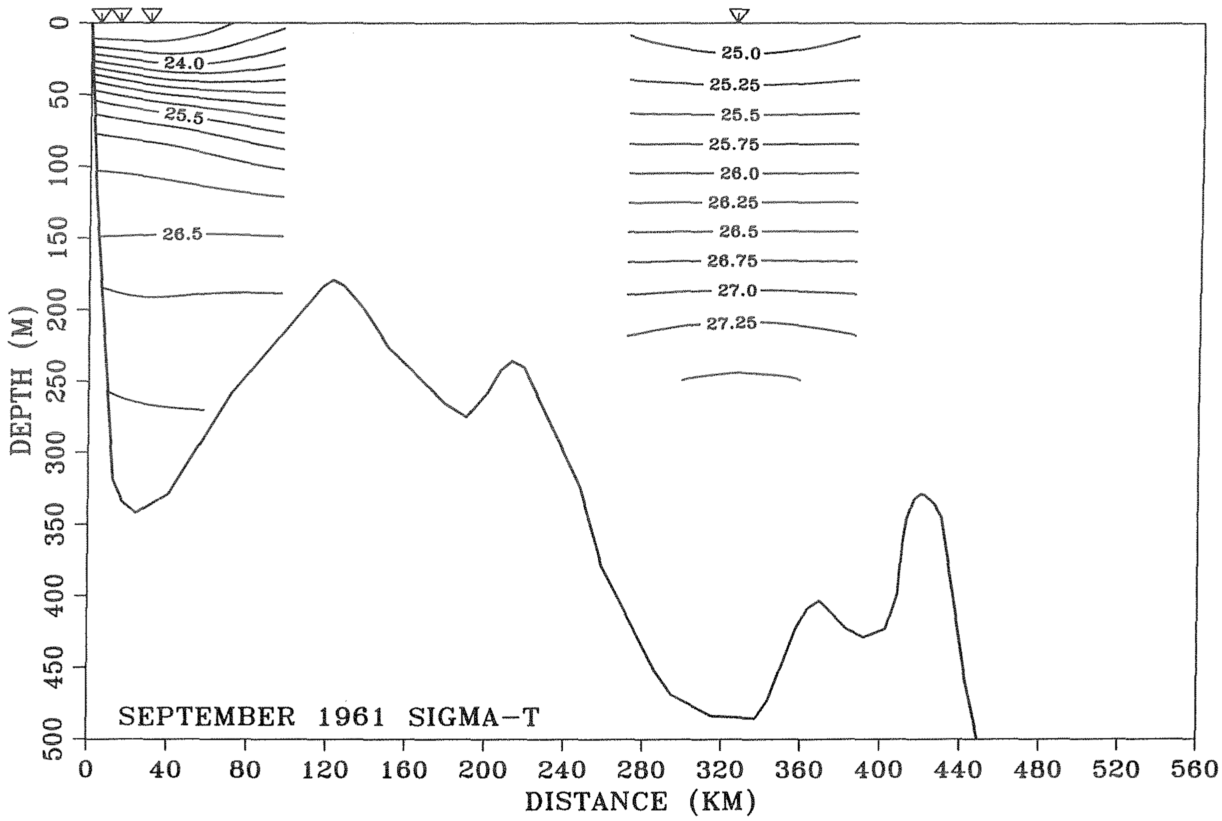
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25.5
25.75
26.0
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26.5
26.75
27.0
27.25
DEPTH (M)
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50
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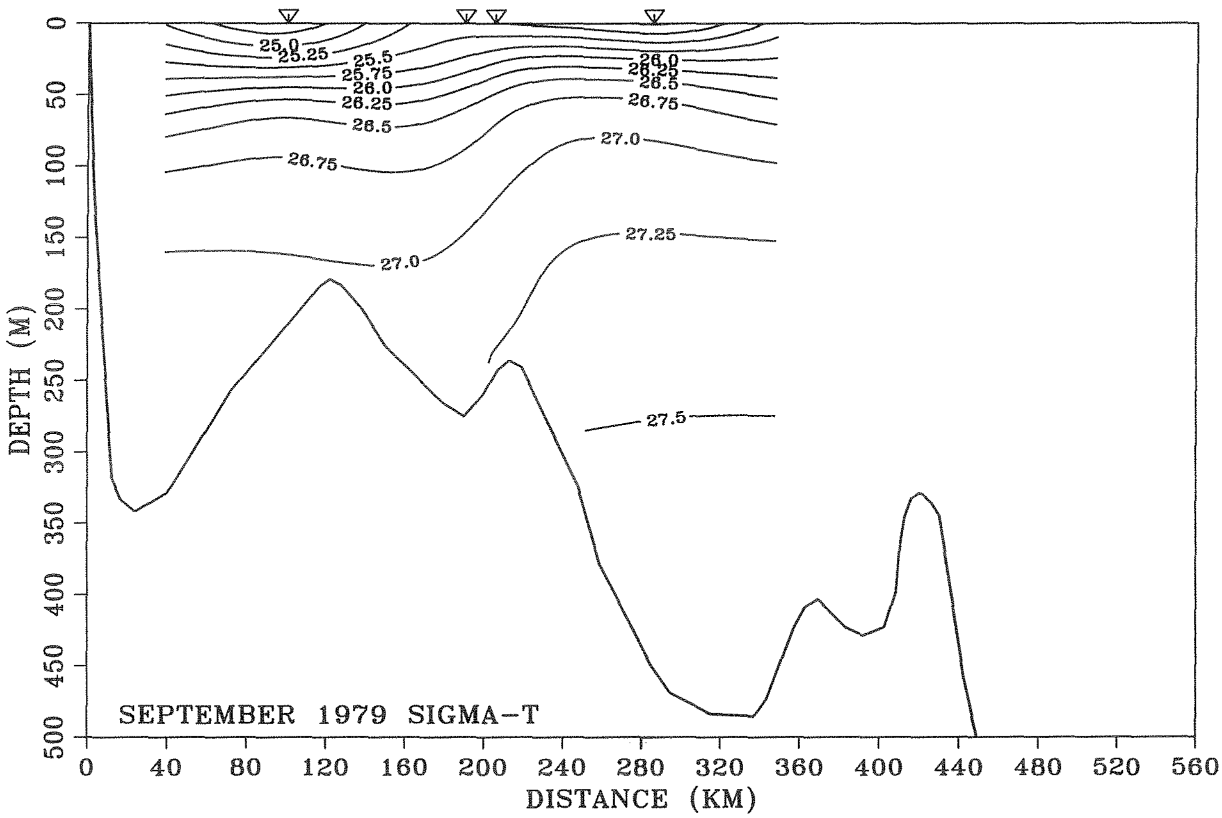
300
350
400
450
500
SEPTEMBER 1961 SIGMA-T
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)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26.75
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26.5
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27.0
26.75
27.25
27.0
27.5
DEPTH (M)
0
50
100
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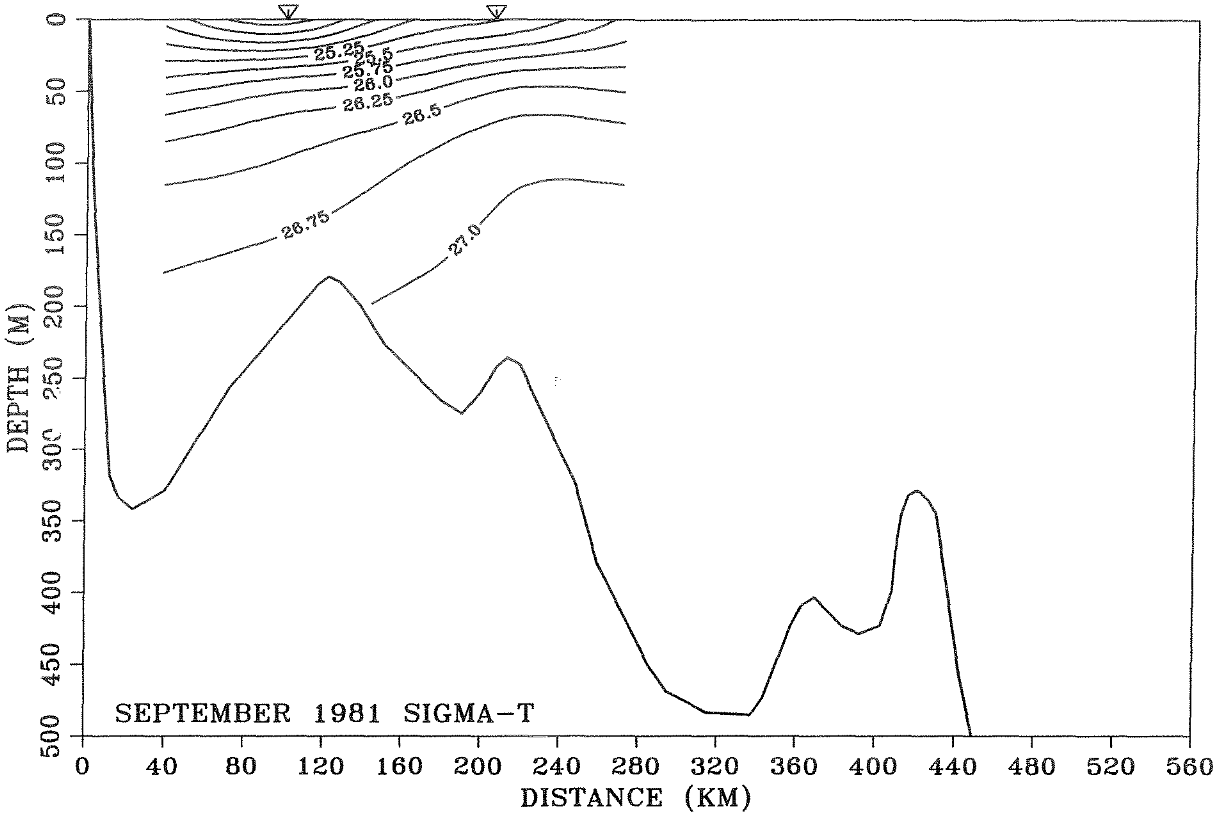
350
400
450
500
SEPTEMBER 1979 SIGMA-T
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)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25.5
25.75
26.0
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26.75
27.0
DEPTH (M)
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100
150
200
250
300
350
400
450
500
SEPTEMBER 1981 SIGMA-T
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120
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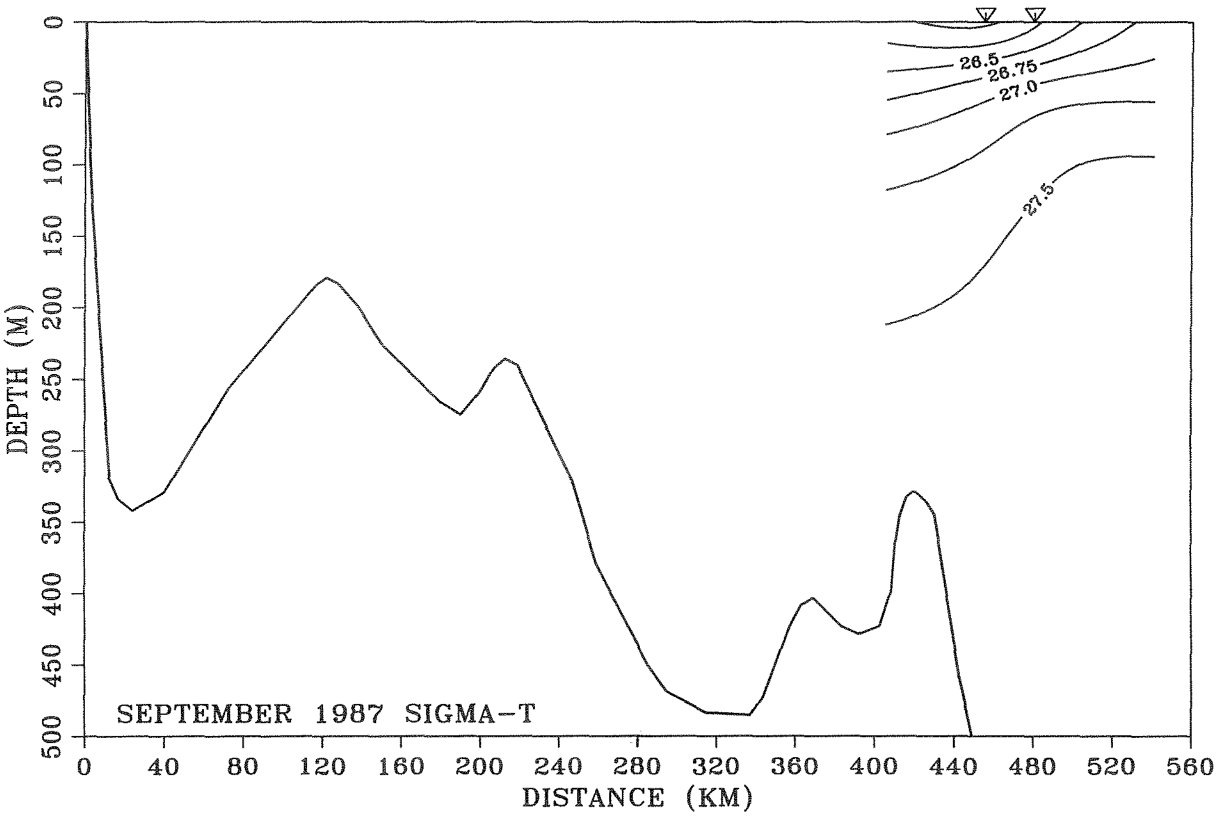
360
400
440
480
520
560
DISTANCE (KM)


26.5
26.75
27.0
27.5
DEPTH (M)
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100
150
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300
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400
450
500
SEPTEMBER 1987 SIGMA-T
0
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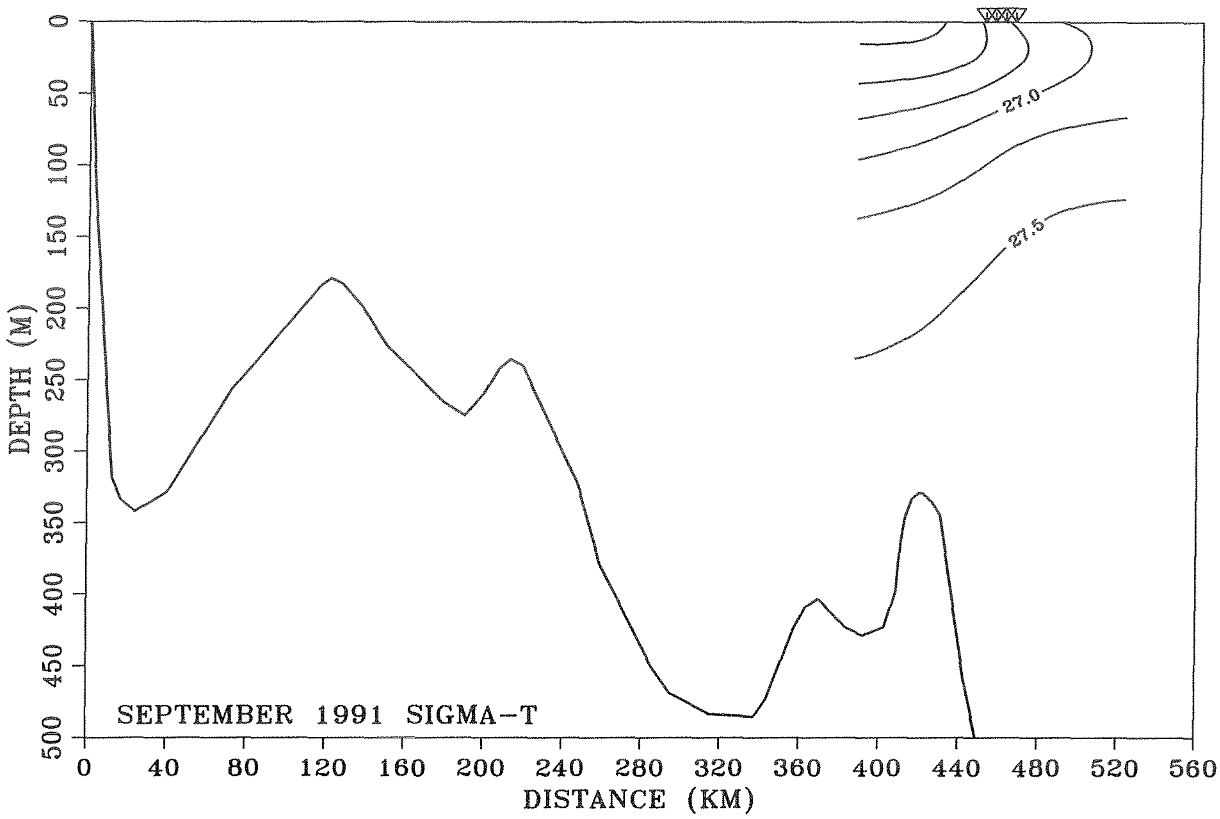
80
120
160
200
240
280
320
360
400
440
480
520
560
DISTANCE (KM)



27.0
27.5
SEPTEMBER 1991 SIGMA-T
DEPTH (M)
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200
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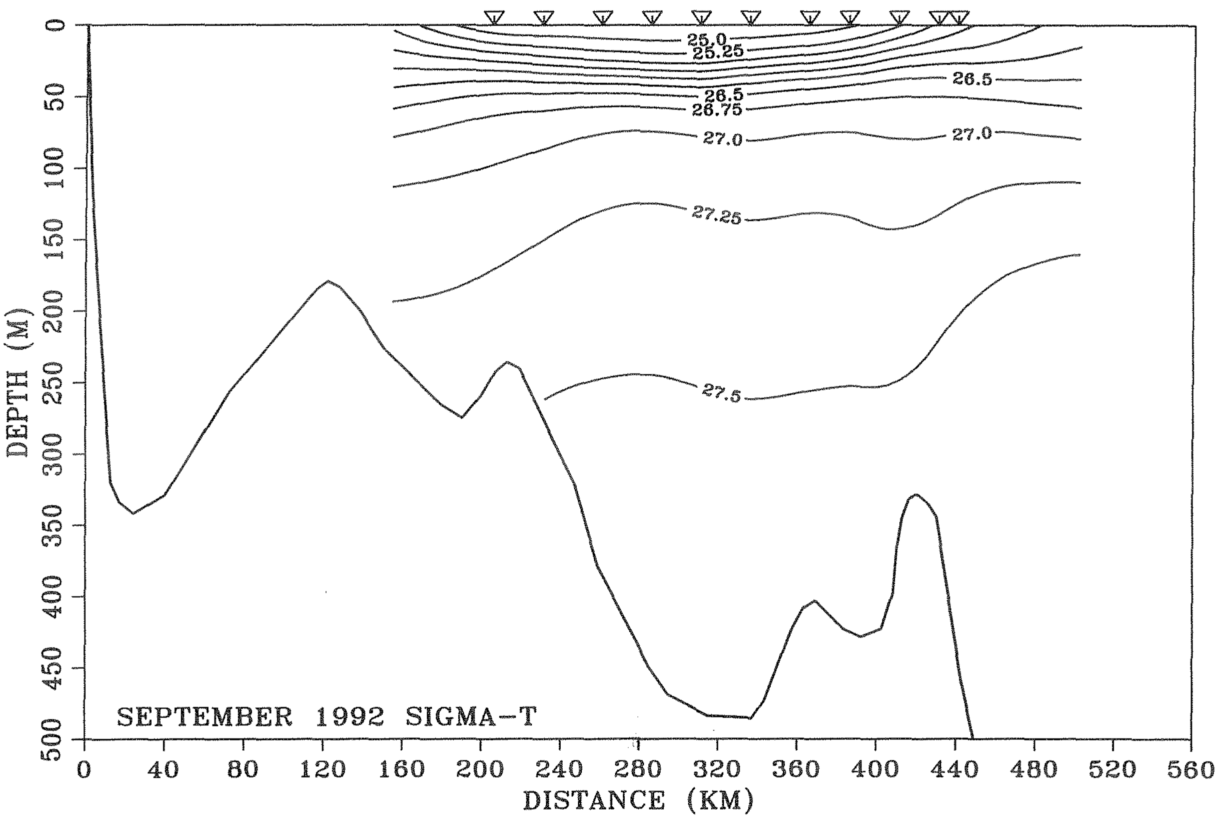
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)



25.0
25.25
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26.75
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27.0
27.0
27.25
27.5
SEPTEMBER 1992 SIGMA-T
DEPTH (M)
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200
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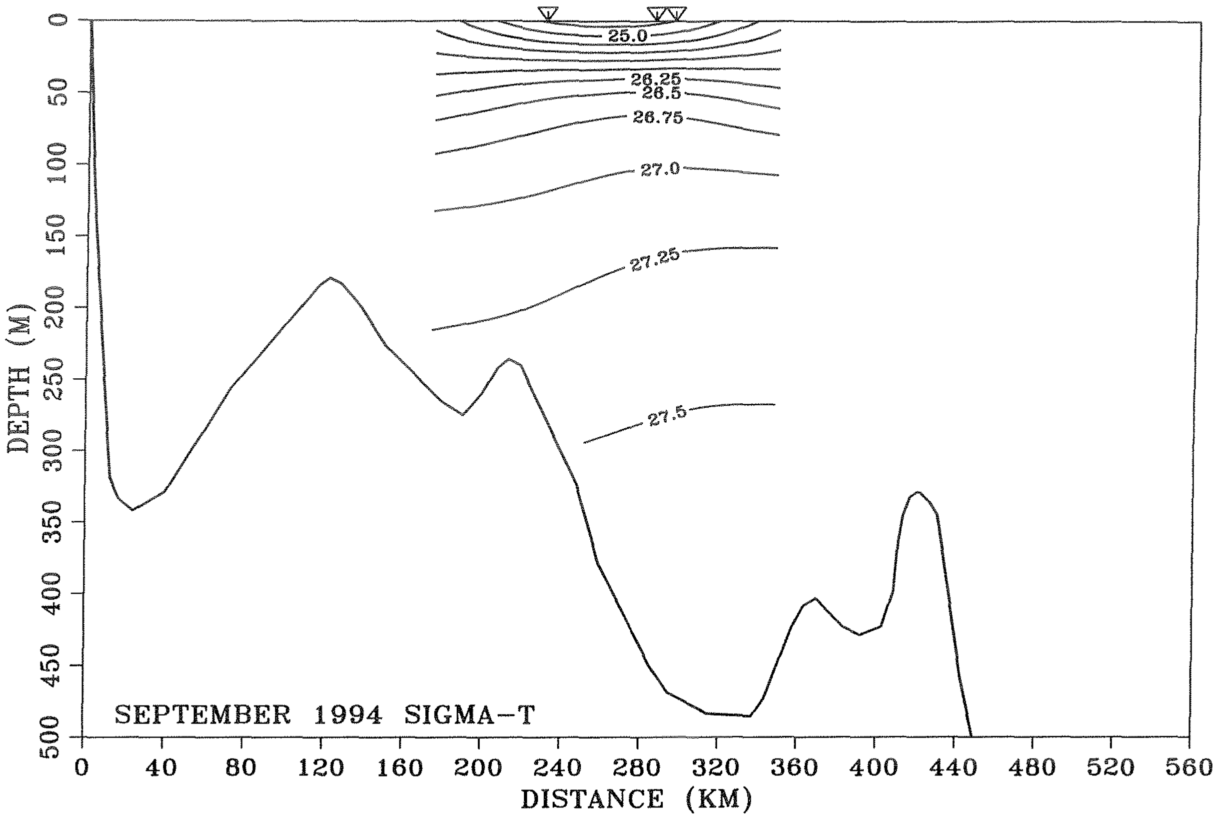
300
350
400
450
500
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)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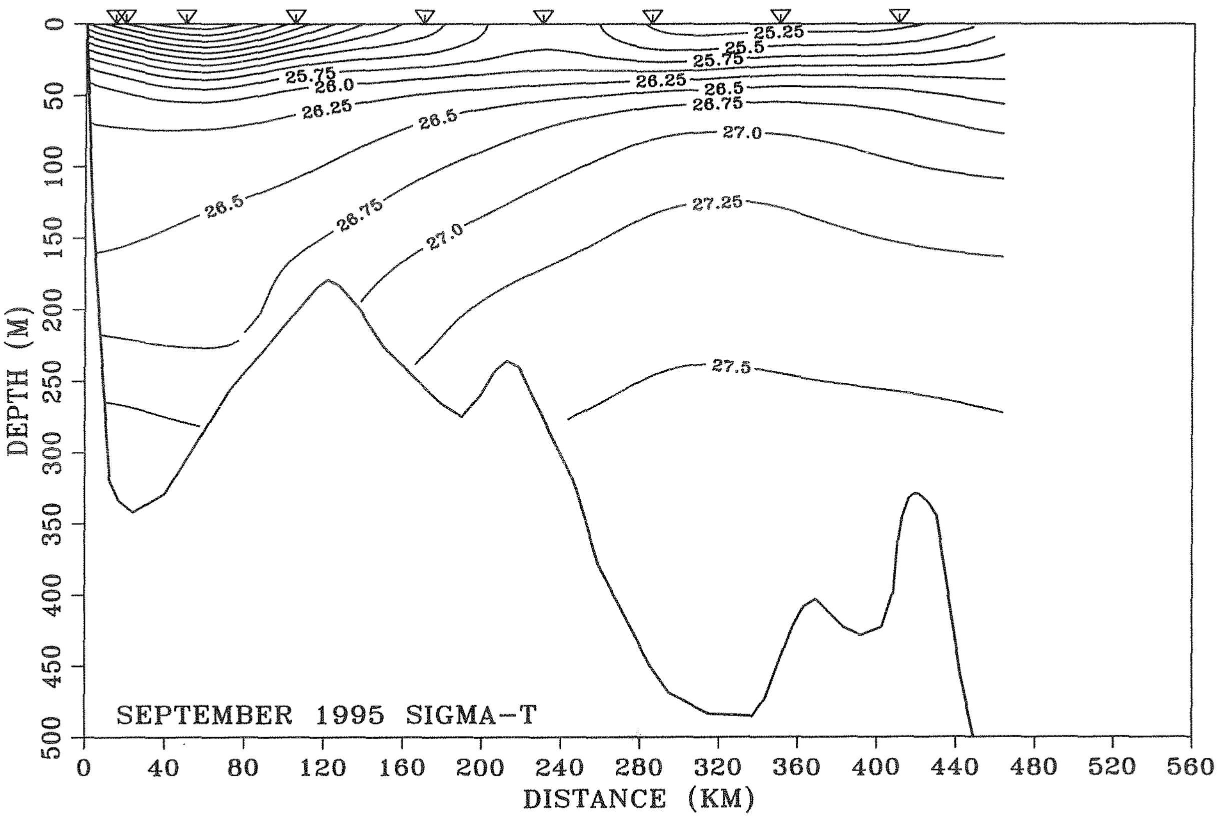
27.25
27.5
DEPTH (M)
DISTANCE (KM)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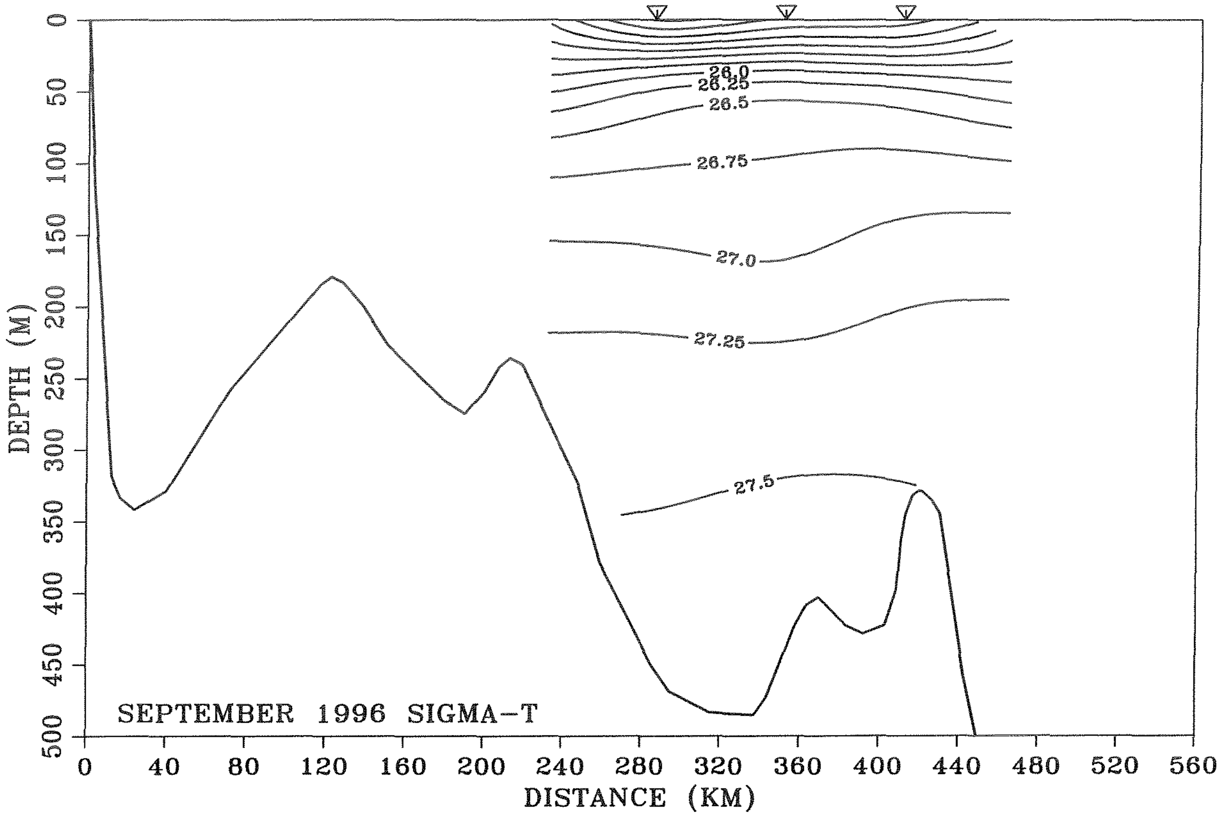
DEPTH (M)
DISTANCE (KM)



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27.25
27.5
DEPTH (M)
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400
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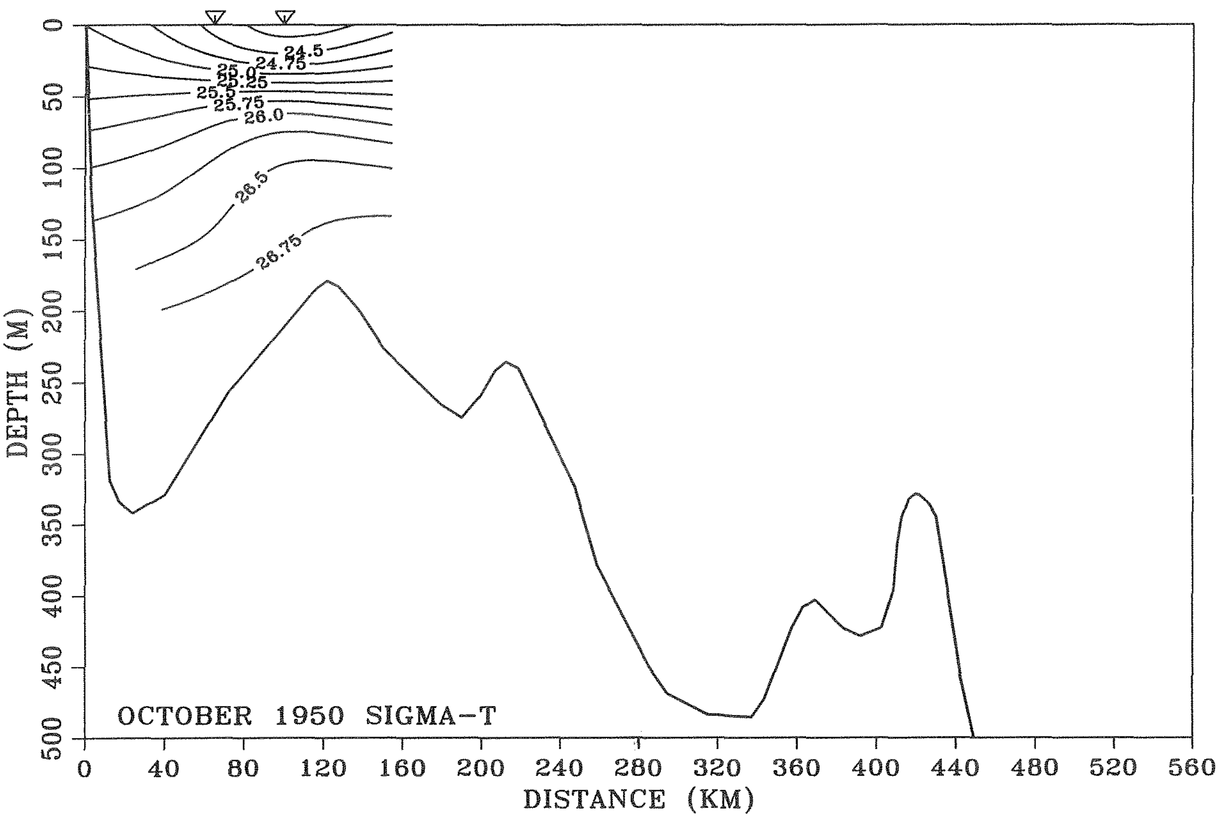
500
SEPTEMBER 1996 SIGMA-T
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
DISTANCE (KM)



24.5
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25.75
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26.75
DEPTH (M)
0
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OCTOBER 1950 SIGMA-T
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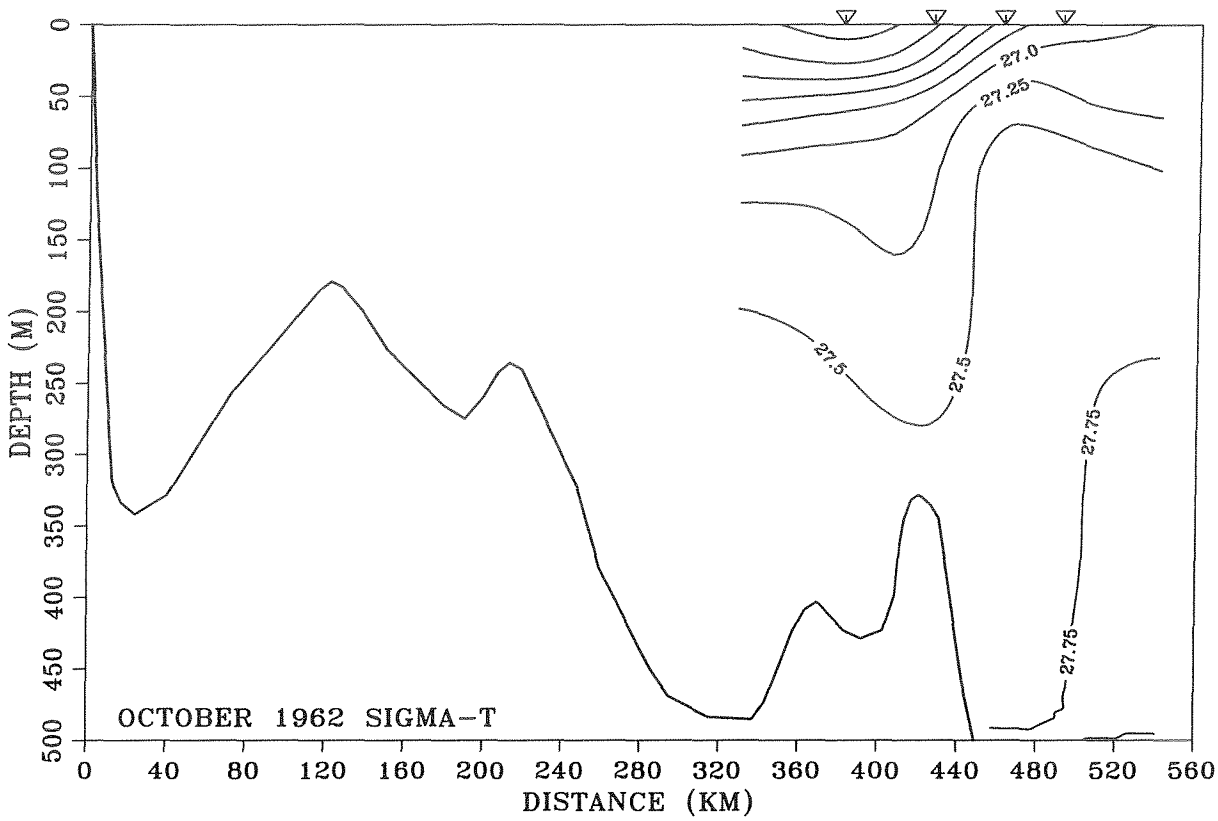
DISTANCE (KM)



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80
120
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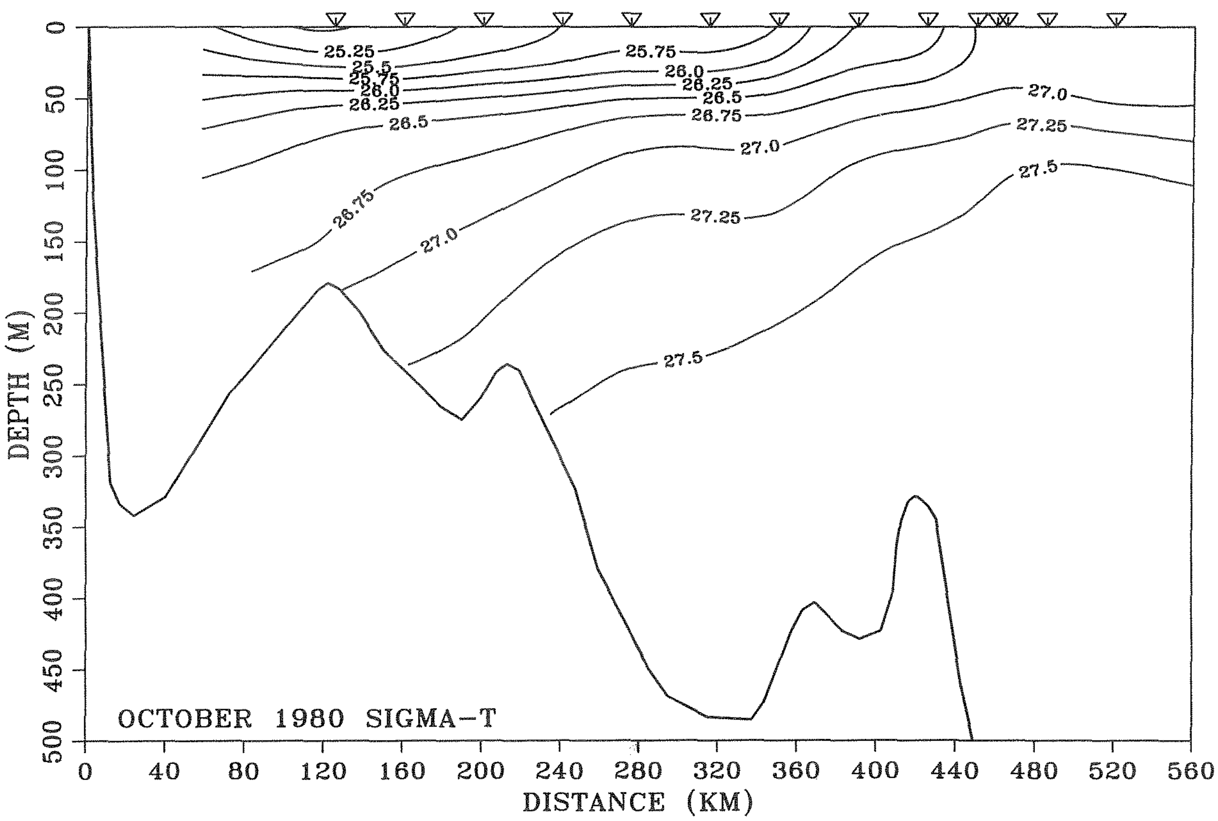
27.25
27.5
27.5
27.75
27.75



OCTOBER 1980 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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400
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0
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80
120
160
200
240
280
320
360
400
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25.5
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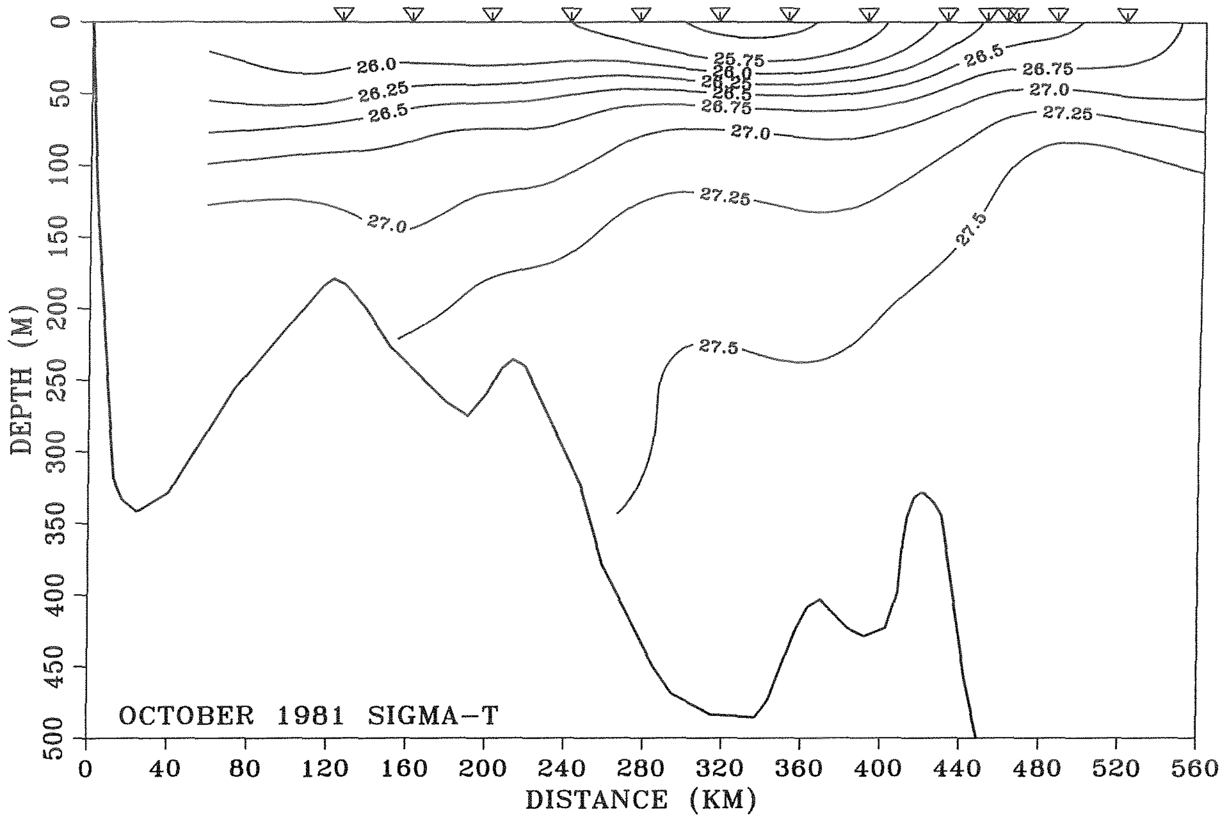
27.25
27.5


OCTOBER 1981 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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26.75
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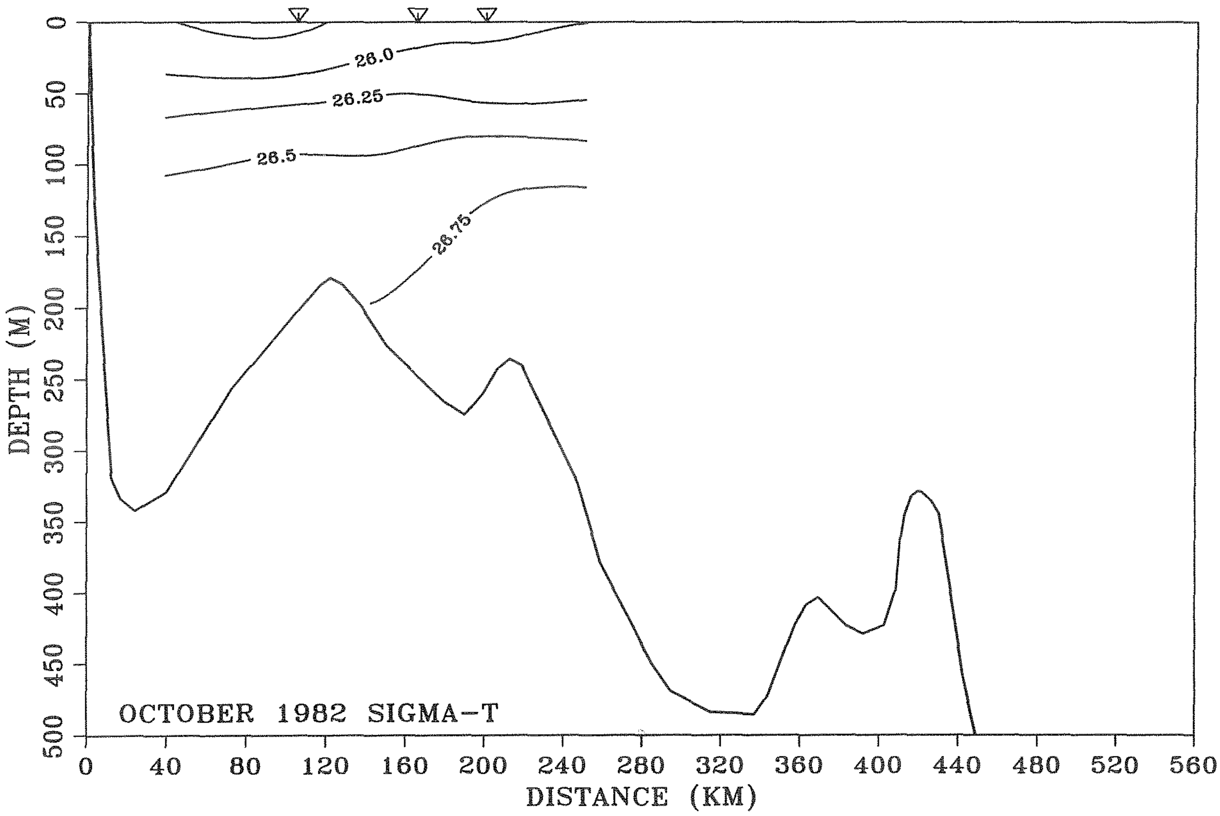
OCTOBER 1982 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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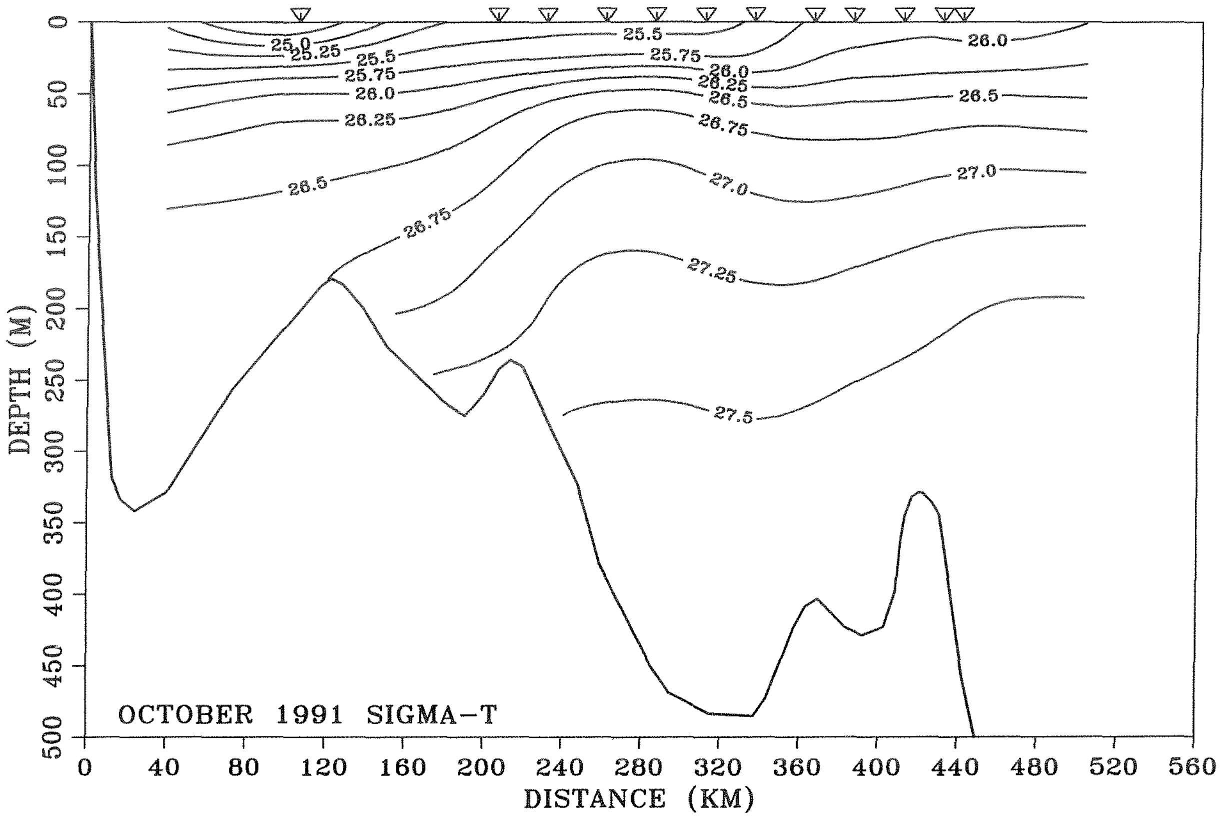

OCTOBER 1991 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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25.5
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26.5
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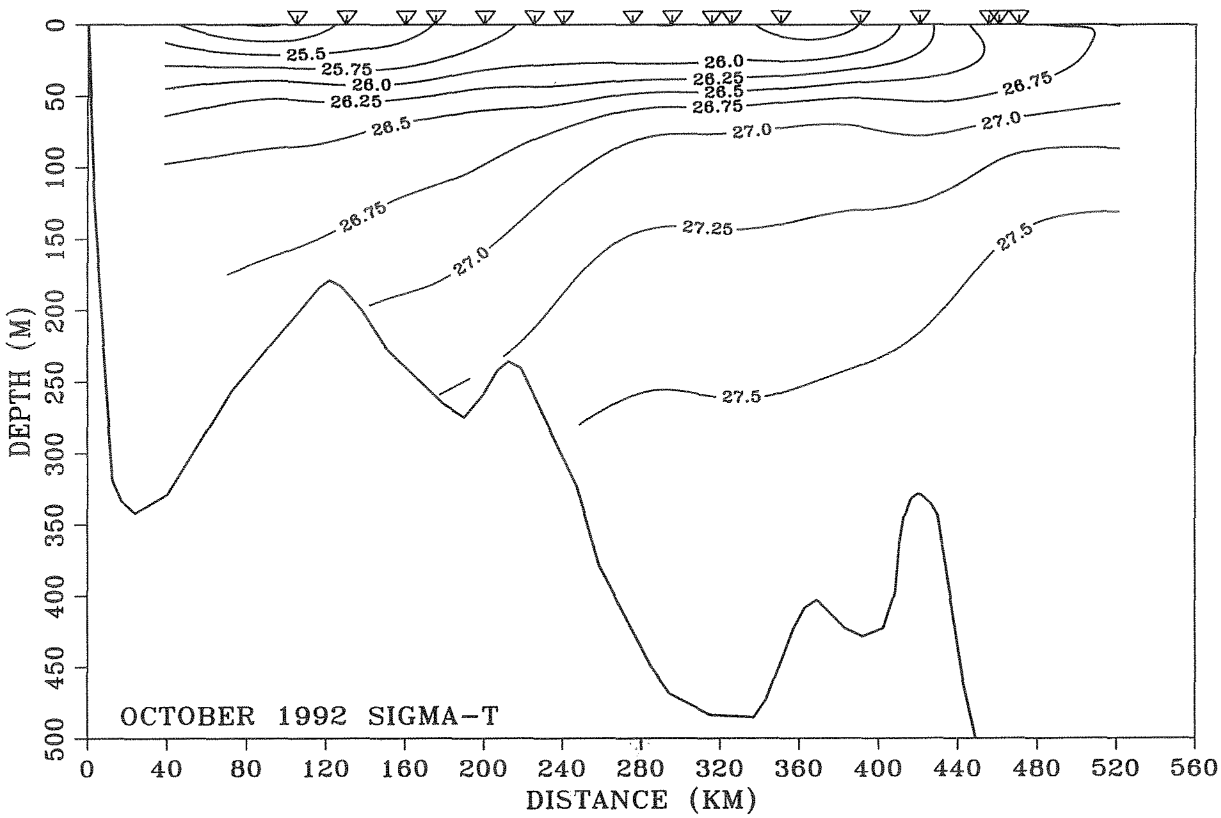
27.25
27.5



OCTOBER 1992 SIGMA-T
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DISTANCE (KM)
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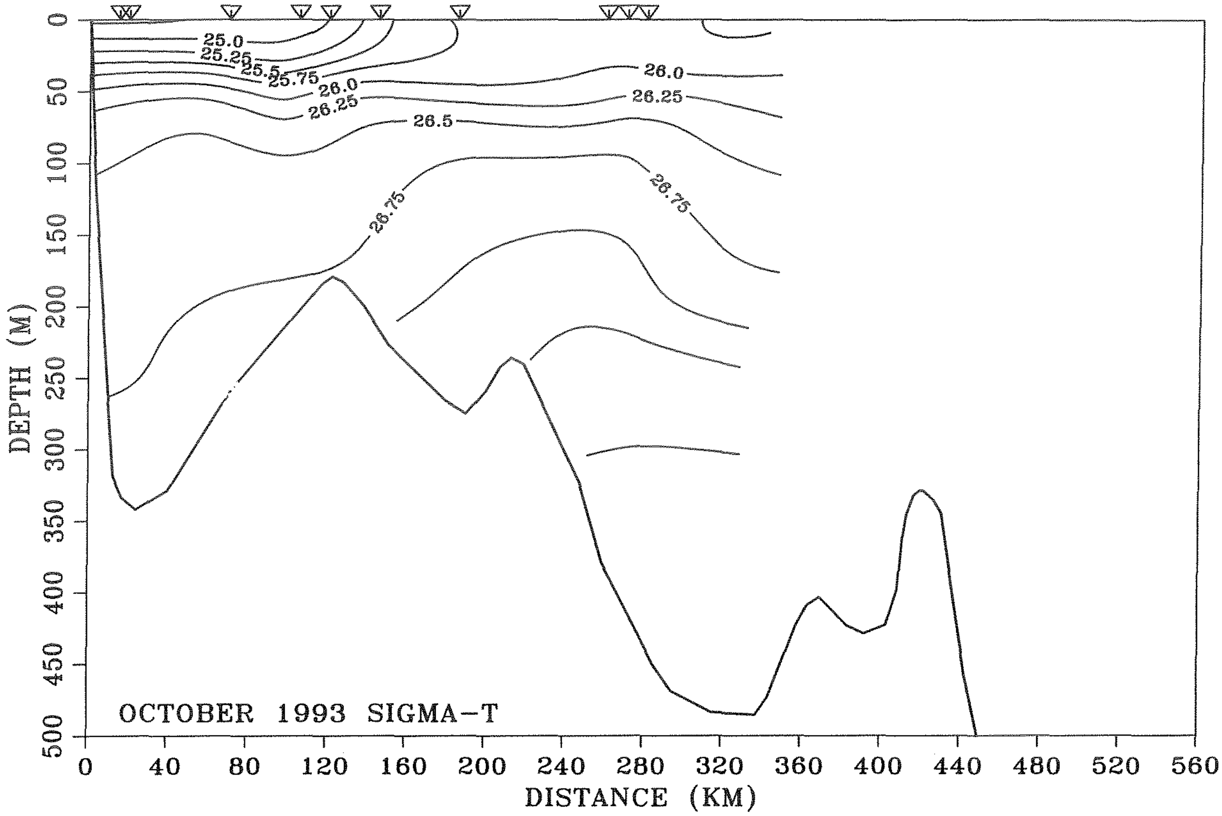
26.0
26.25
26.5
26.75
27.0
27.25
27.5



OCTOBER 1993 SIGMA-T
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DISTANCE (KM)
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25.5
25.75
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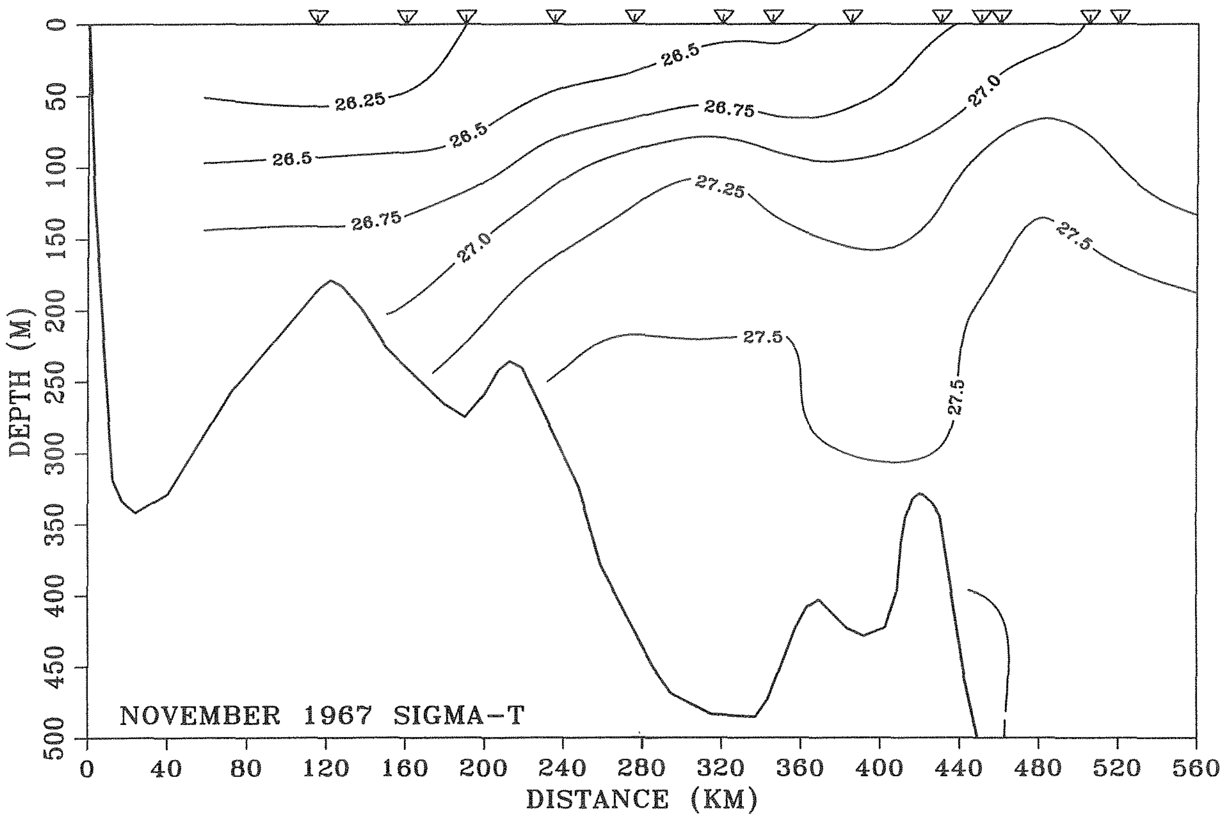
26.25
26.5
26.75



NOVEMBER 1967 SIGMA-T
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DISTANCE (KM)
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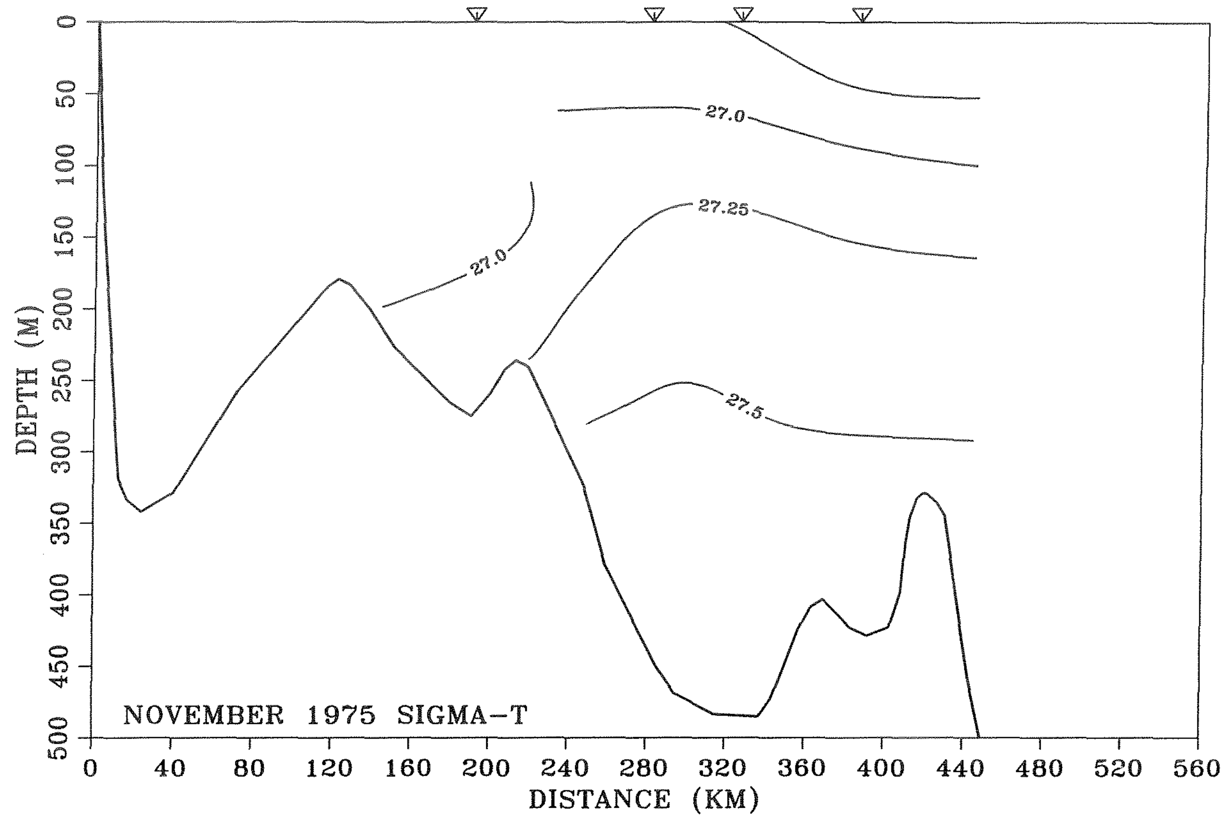
27.5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DISTANCE (KM)
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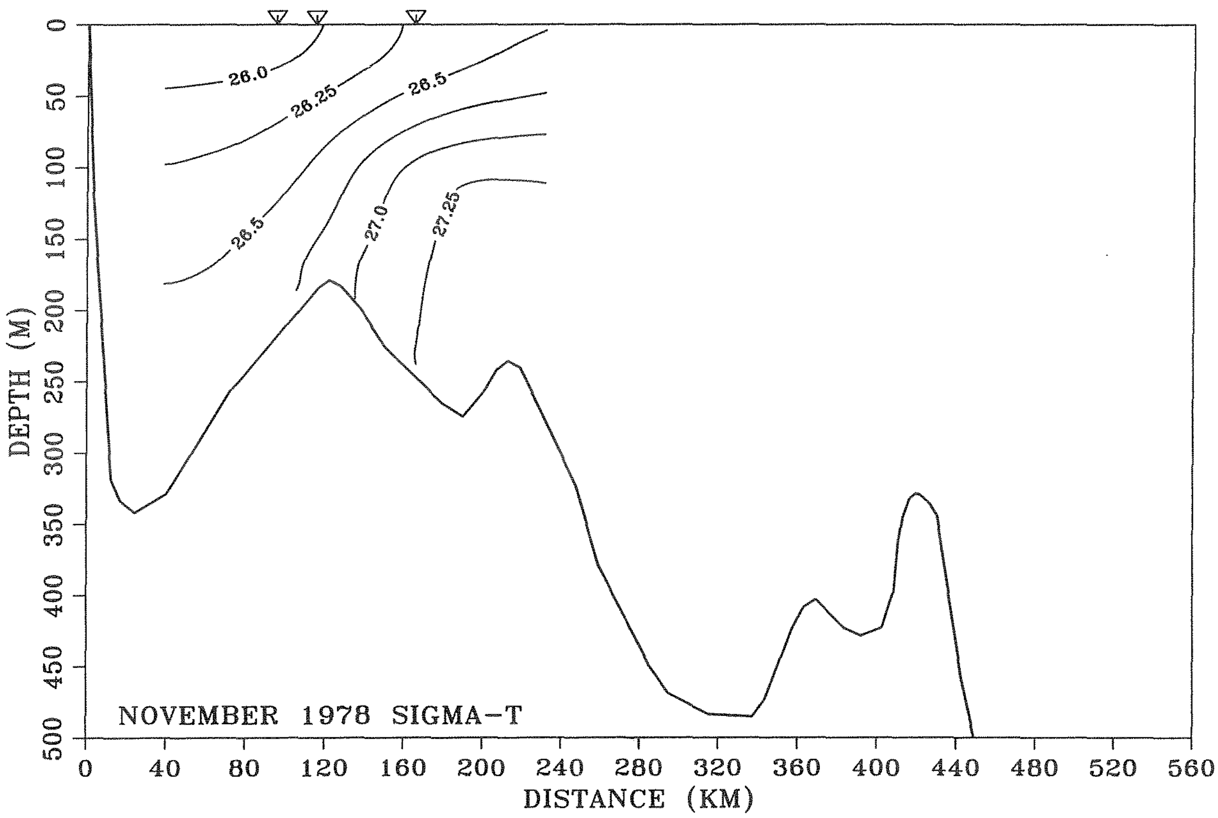
DEPTH (M)
DISTANCE (KM)
NOVEMBER 1978 SIGMA-T
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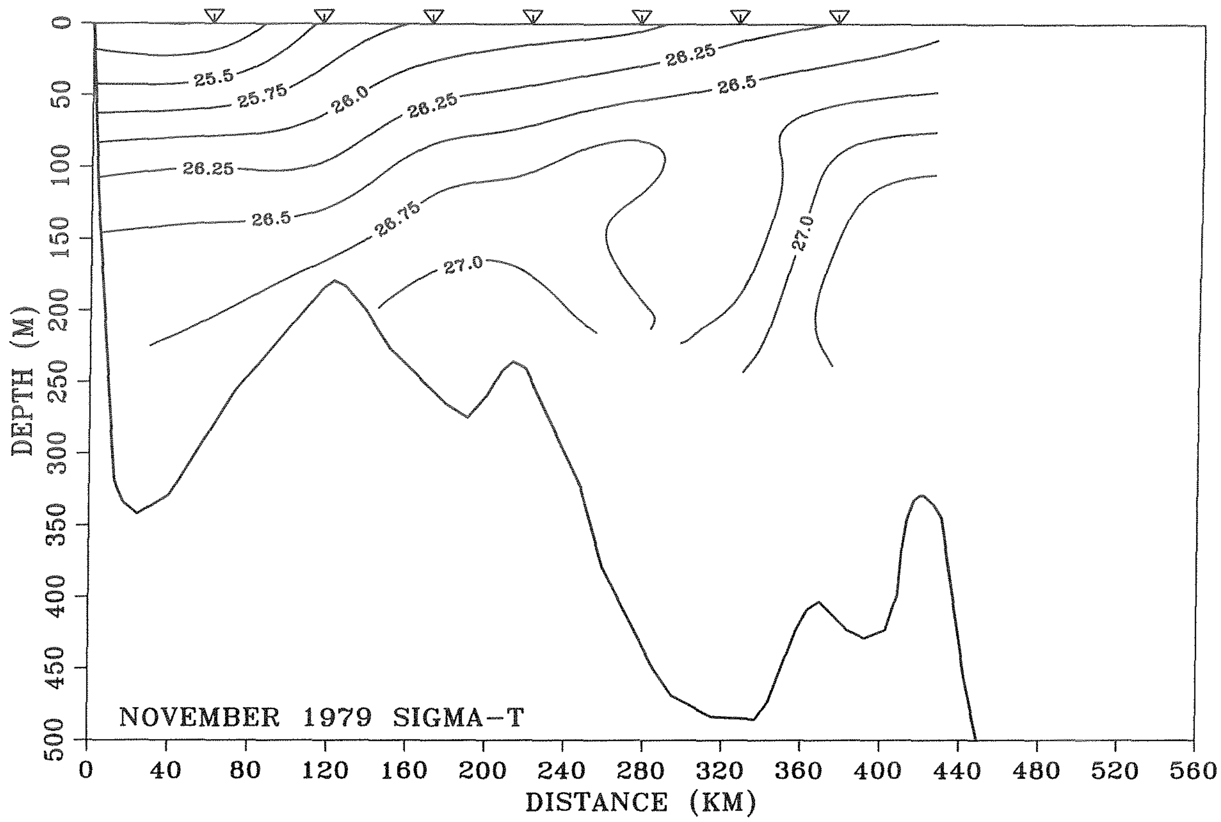
27.25



DEPTH (M)
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0
40
80
120
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200
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280
320
360
400
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DISTANCE (KM)
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25.75
26.0
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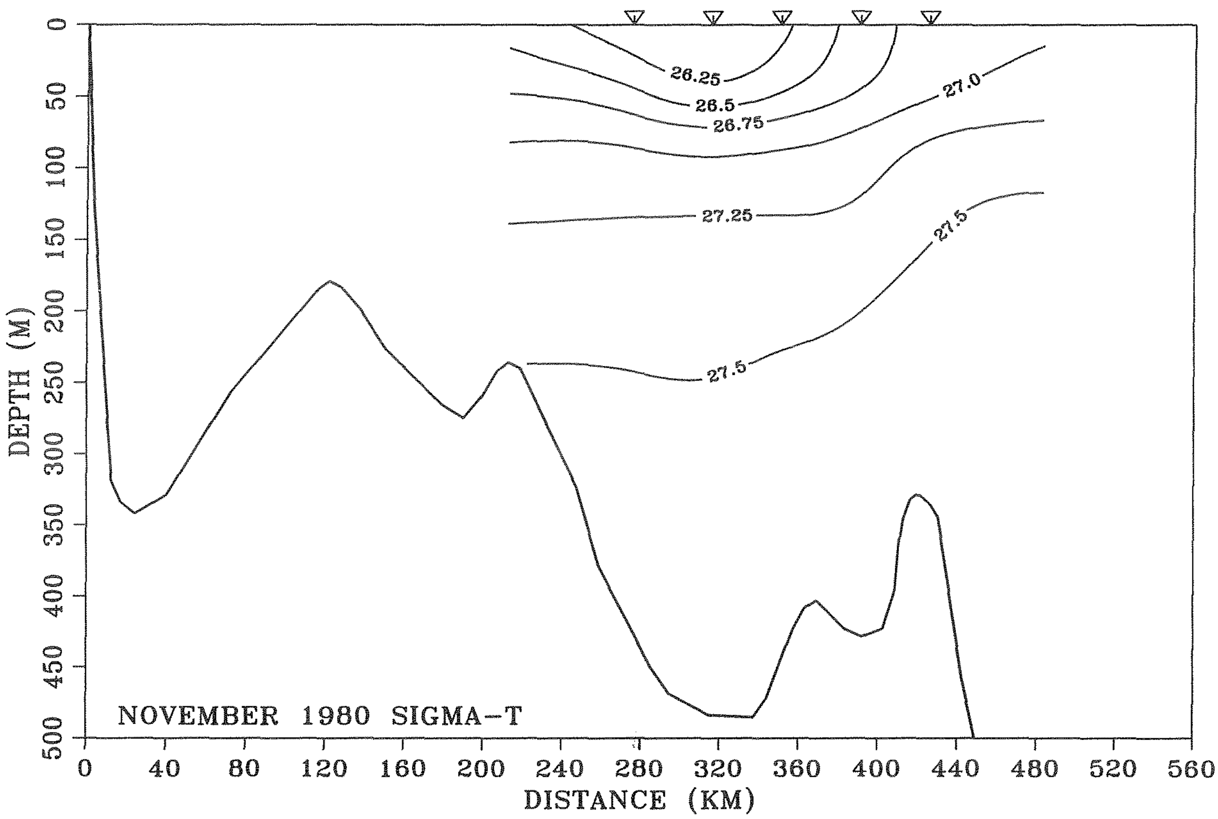
26.5
26.75
27.0
NOVEMBER 1979 SIGMA-T



DEPTH (M)
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DISTANCE (KM)
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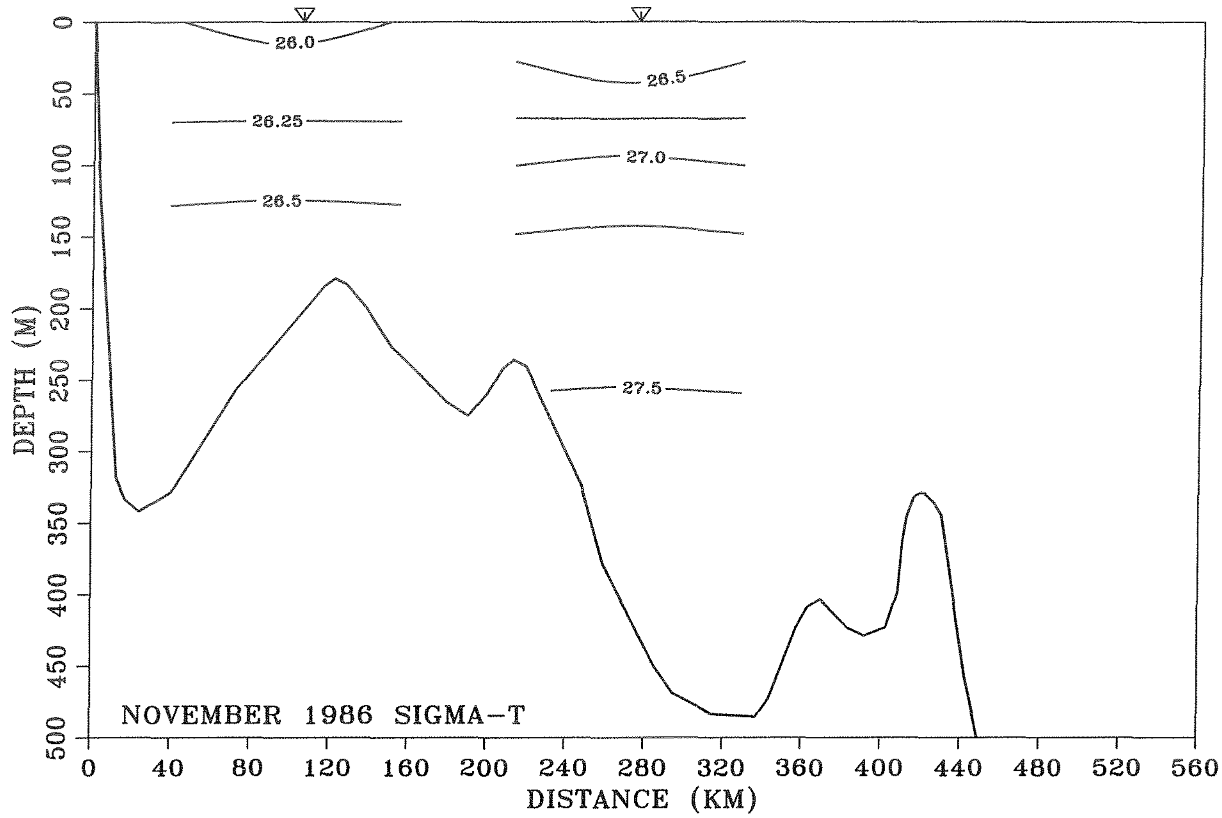
27.5
NOVEMBER 1980 SIGMA-T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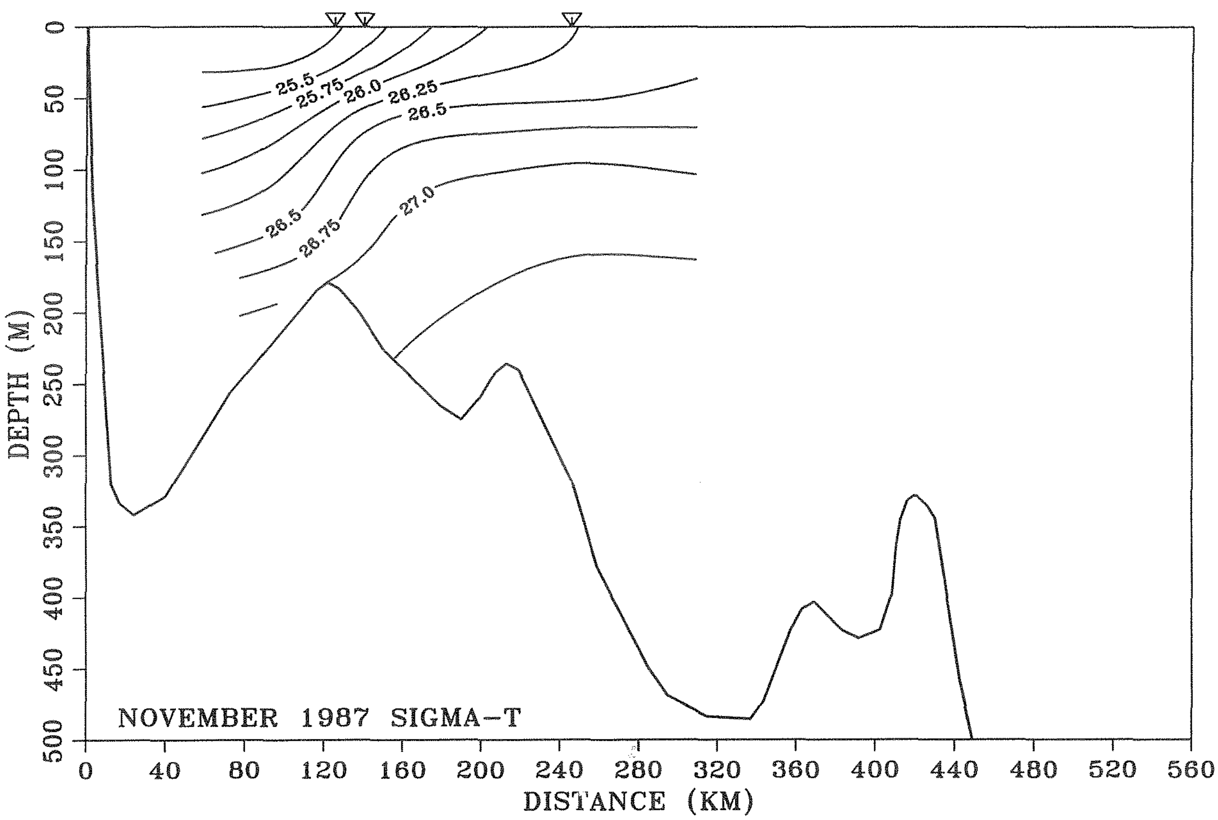
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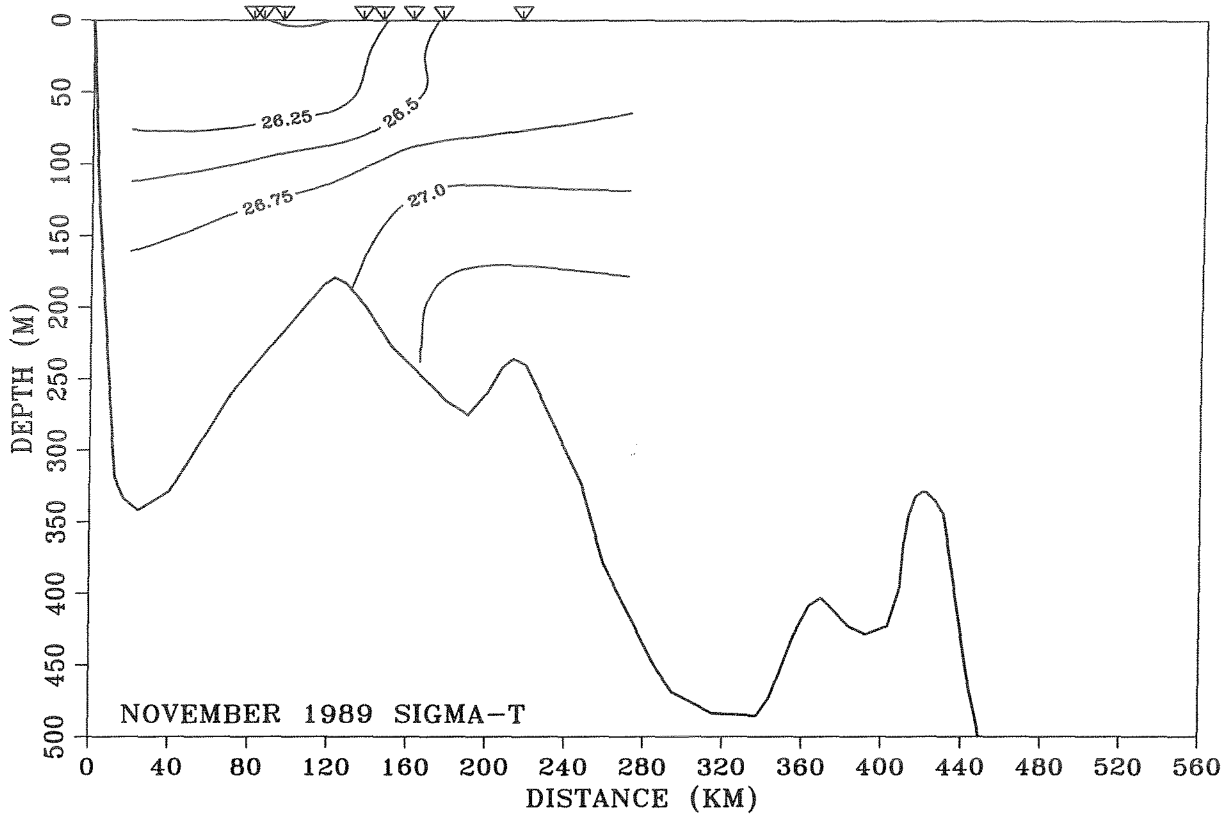
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DISTANCE (KM)
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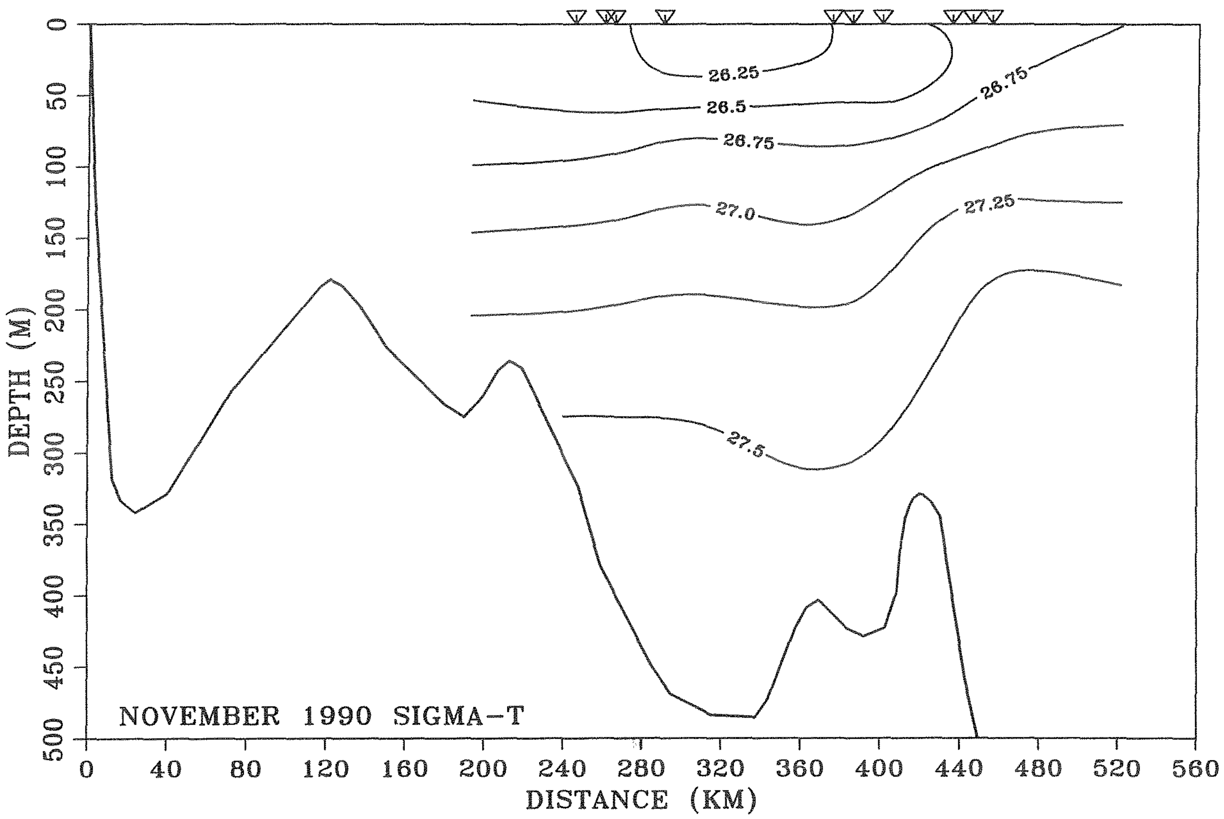
NOVEMBER 1990 SIGMA-T
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DEPTH (M)
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DISTANCE (KM)
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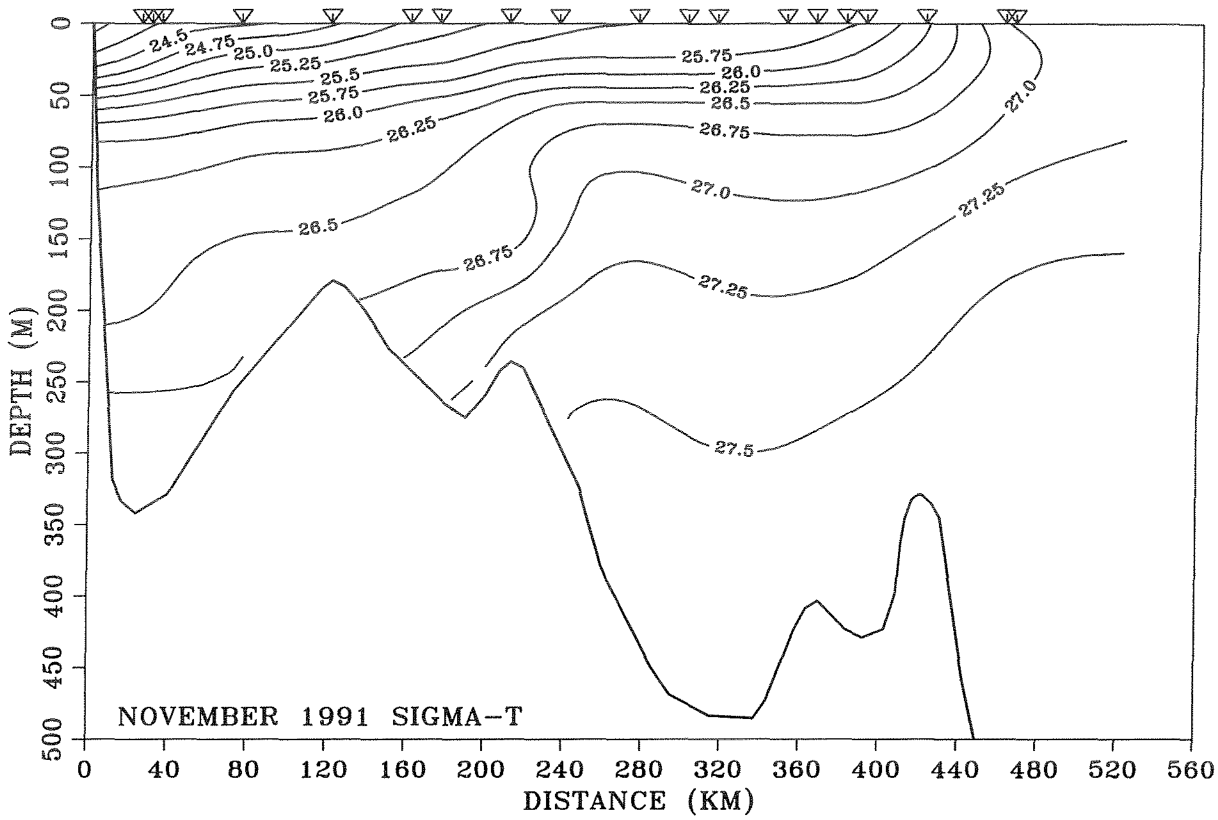
NOVEMBER 1991 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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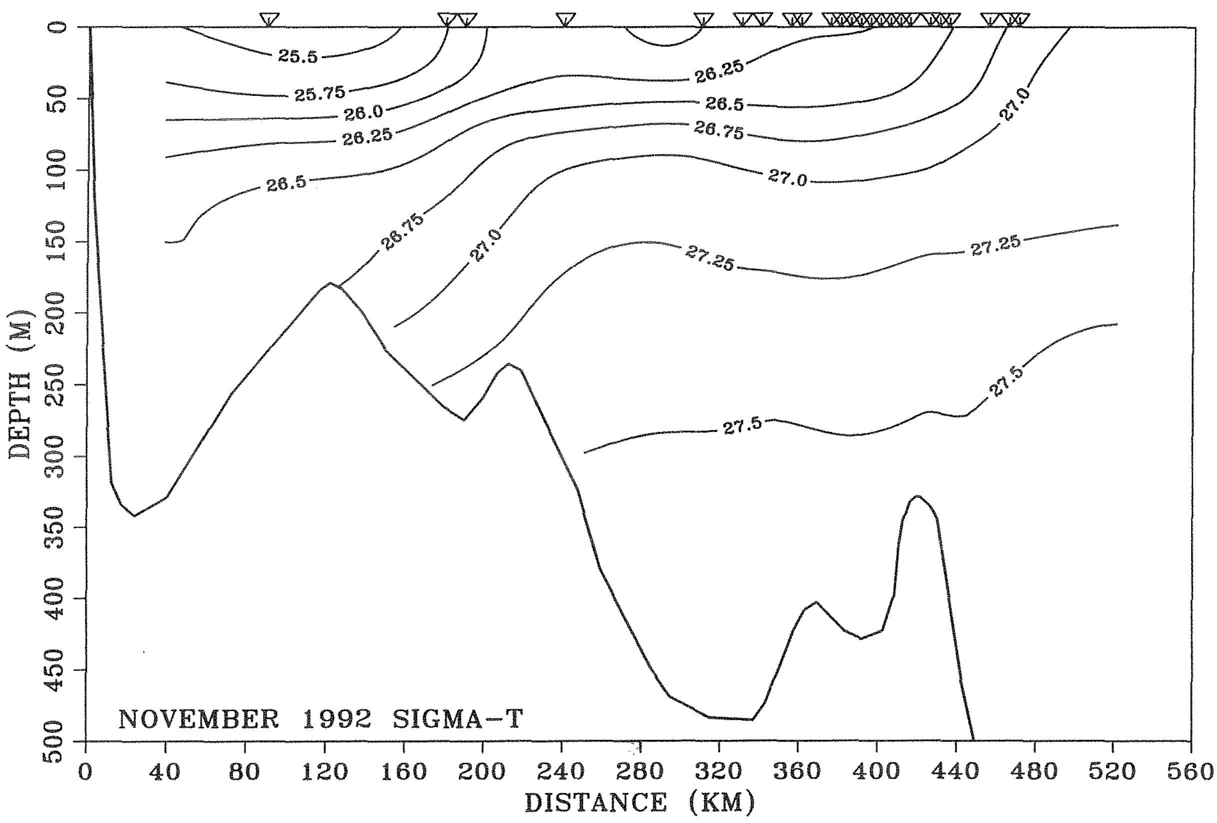
NOVEMBER 1992 SIGMA-T
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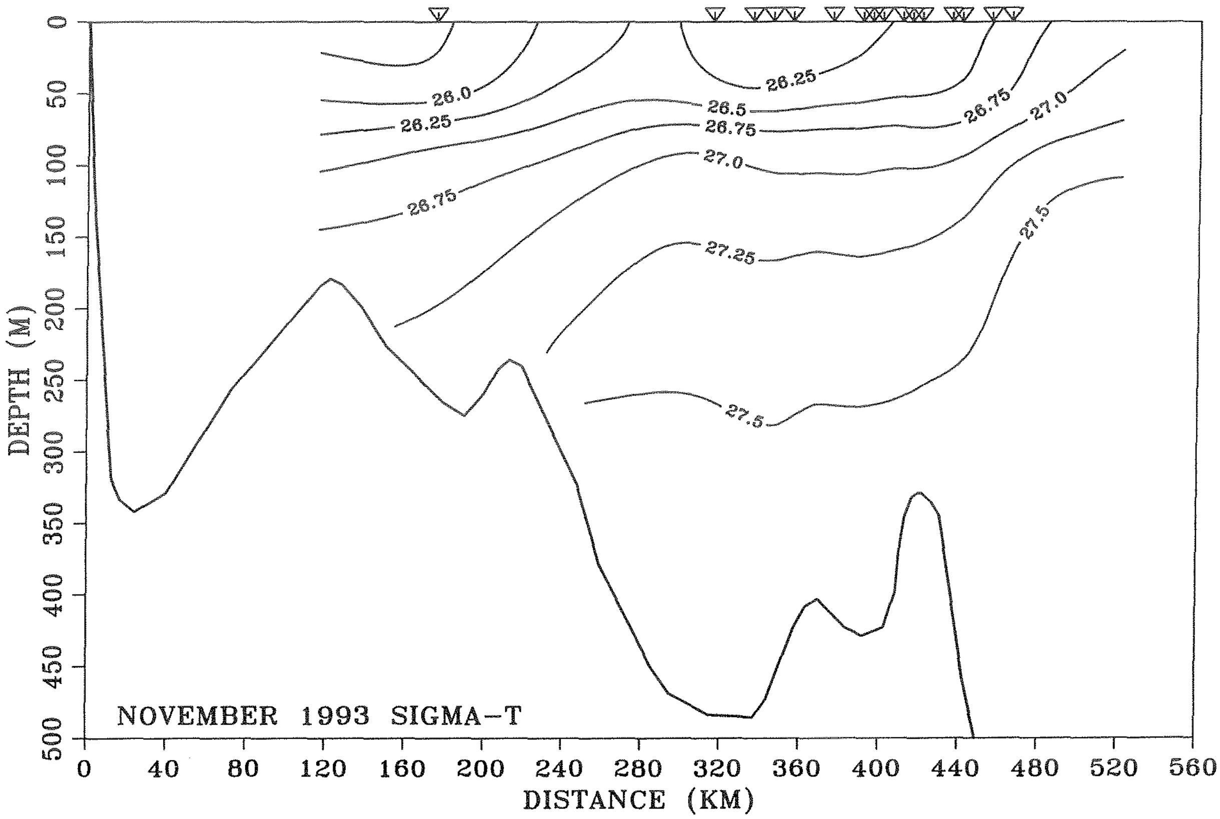
NOVEMBER 1993 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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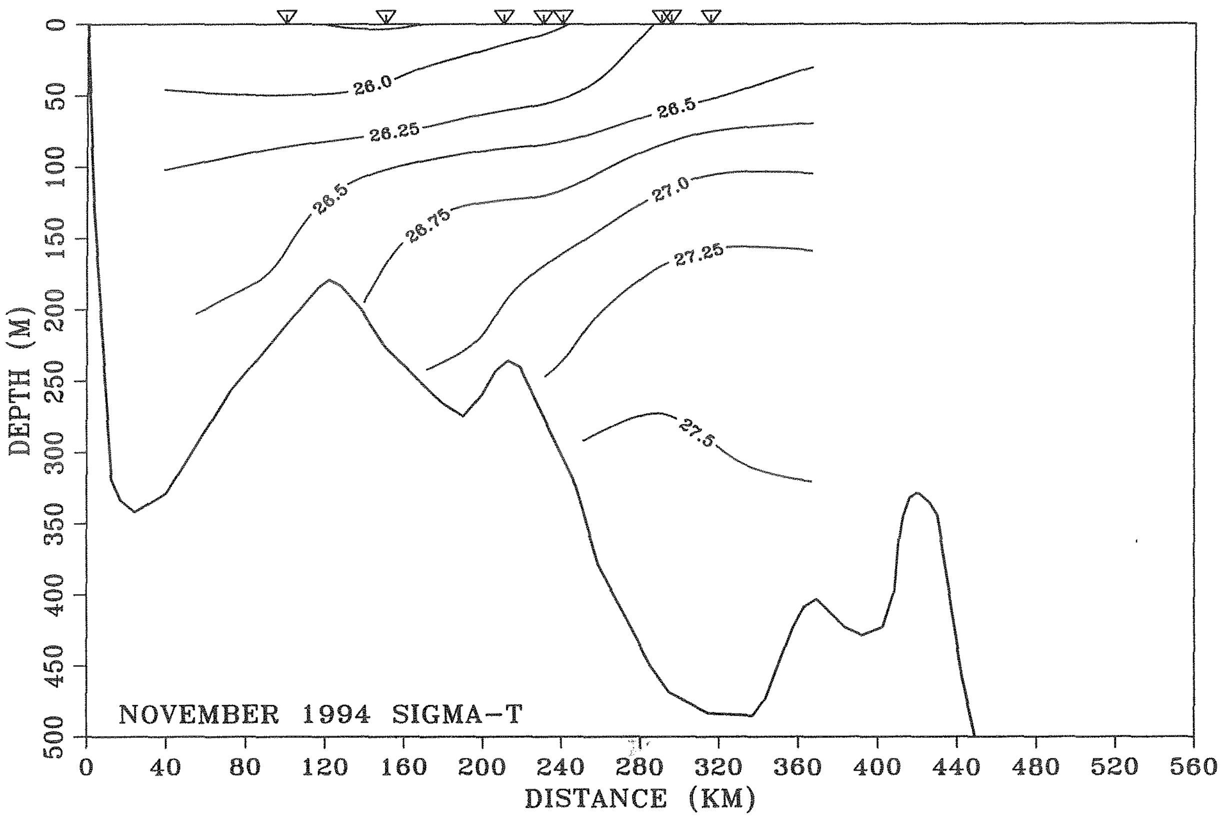
NOVEMBER 1994 SIGMA-T
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DISTANCE (KM)
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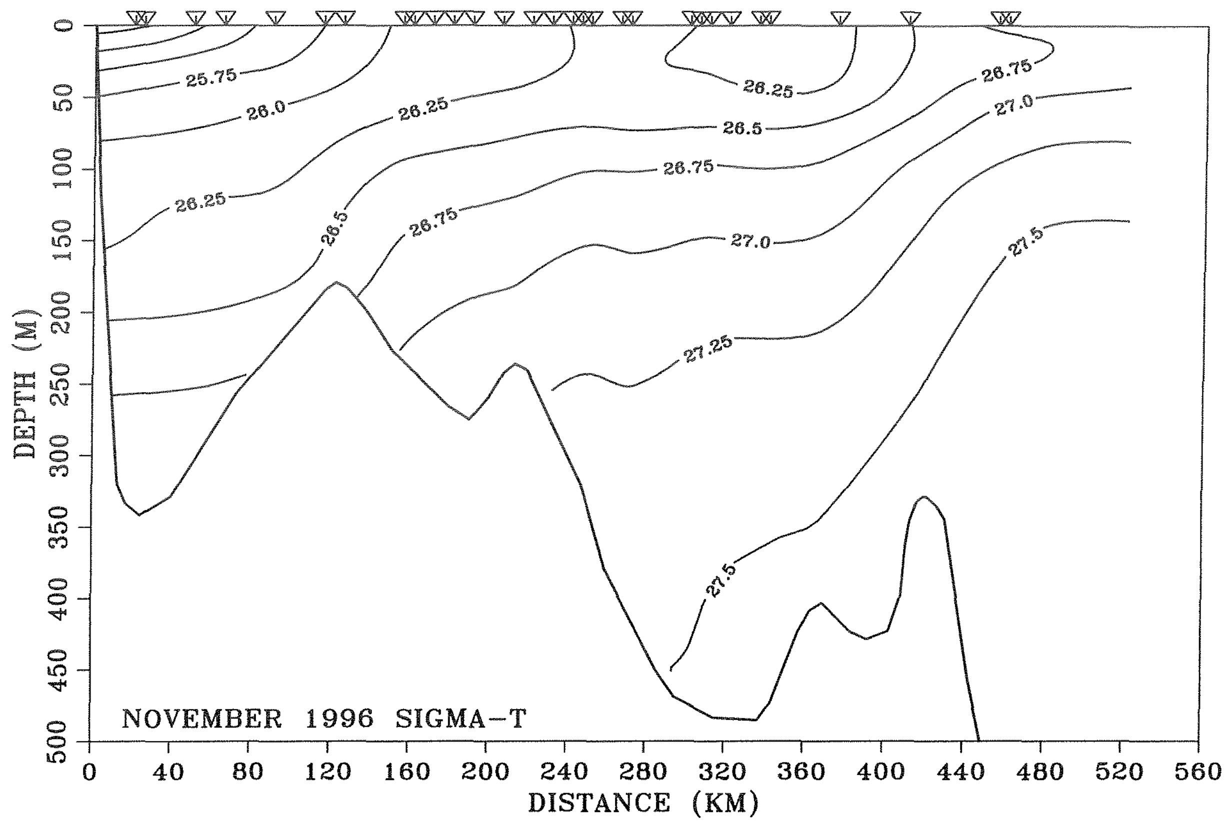
NOVEMBER 1996 SIGMA-T
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80
120
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25.75
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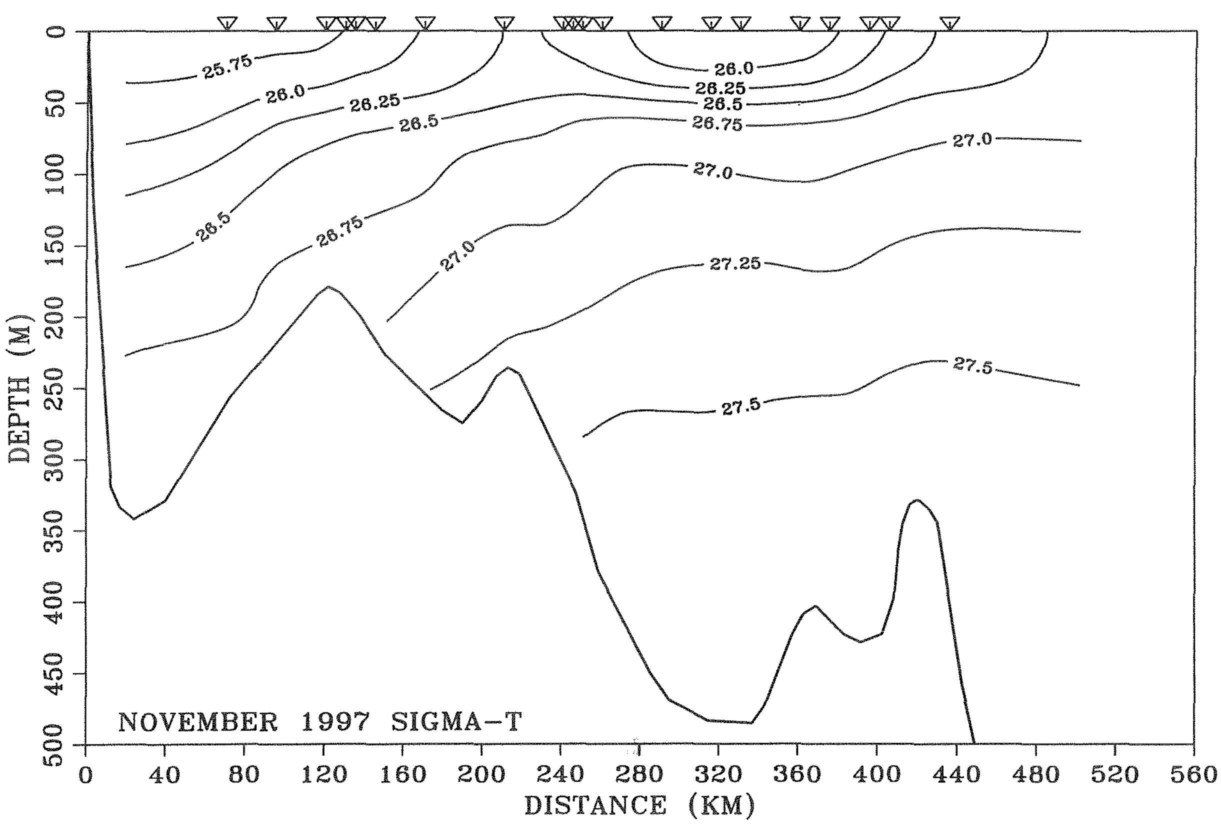
NOVEMBER 1997 SIGMA-T
DEPTH (M)
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80
120
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520
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25.75
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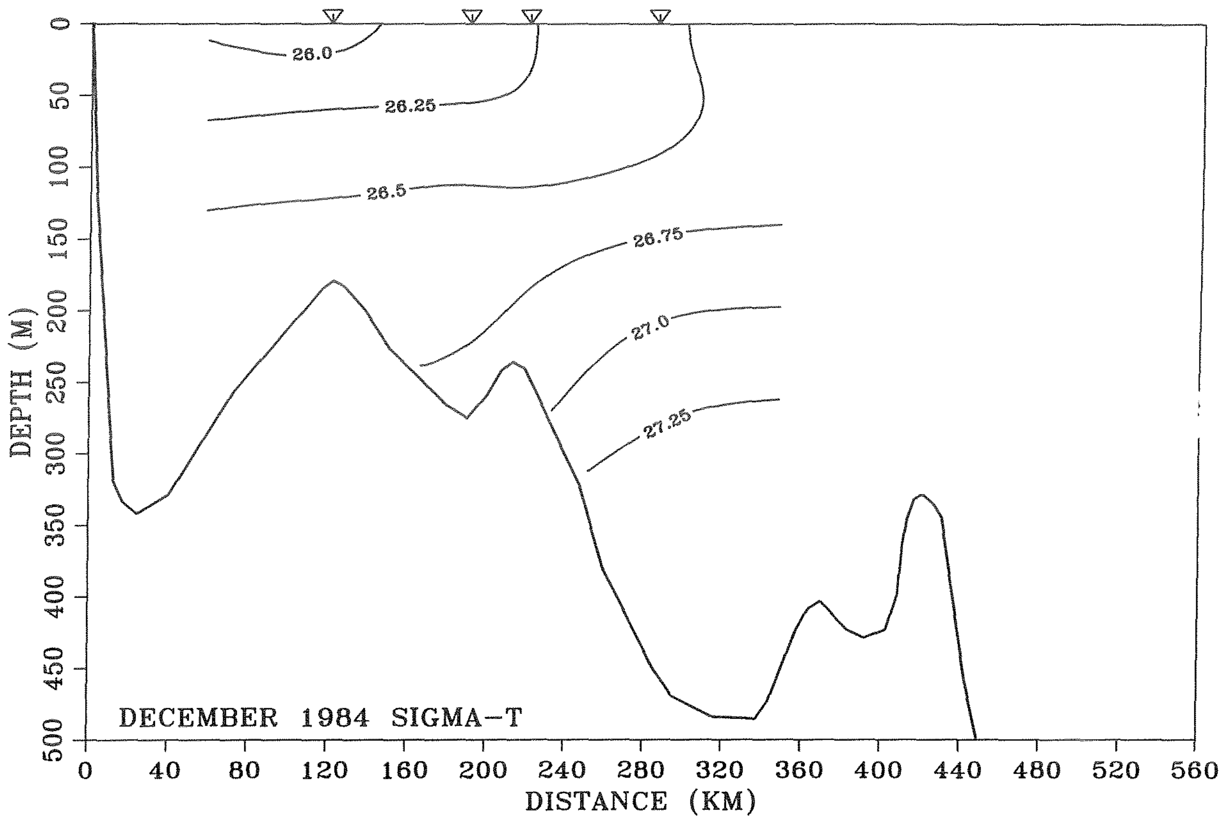
DECEMBER 1984 SIGMA-T
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DEPTH (M)
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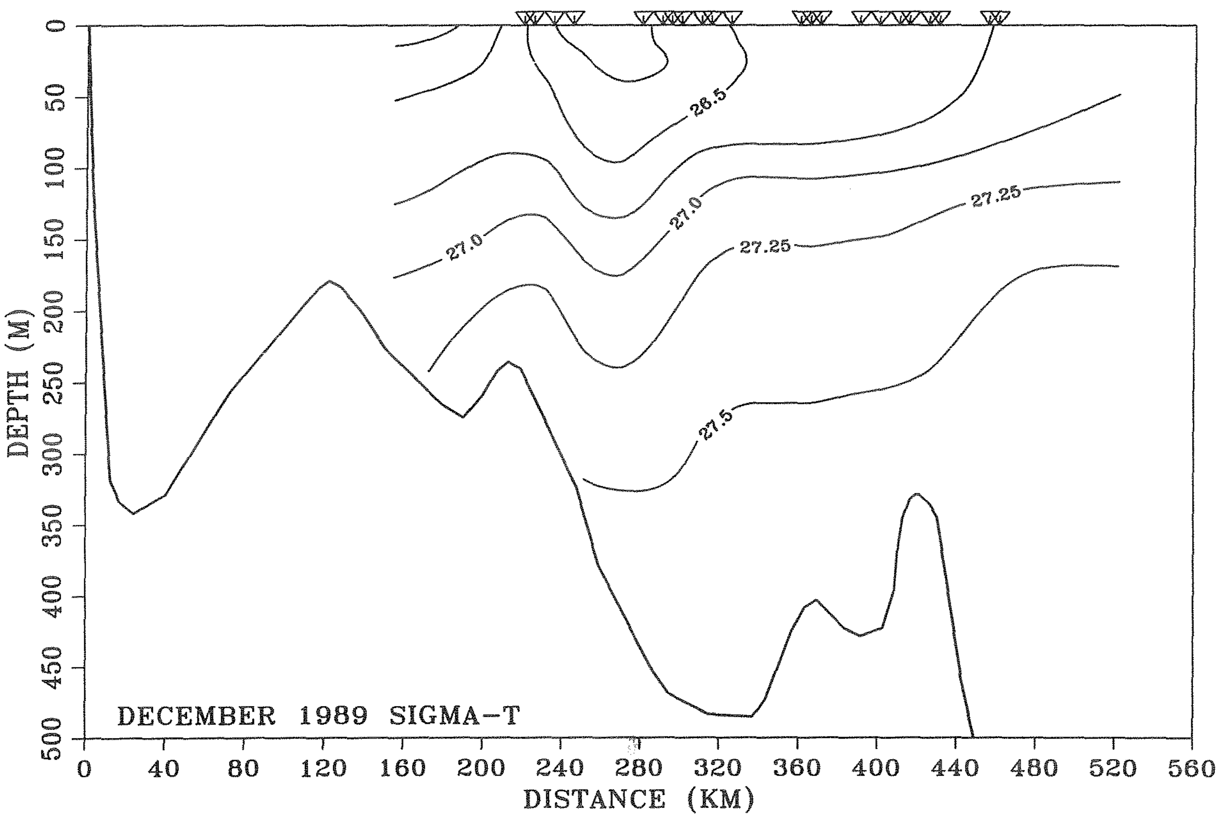
520
560
DISTANCE (KM)


DECEMBER 1989 SIGMA-T
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27.5
DEPTH (M)
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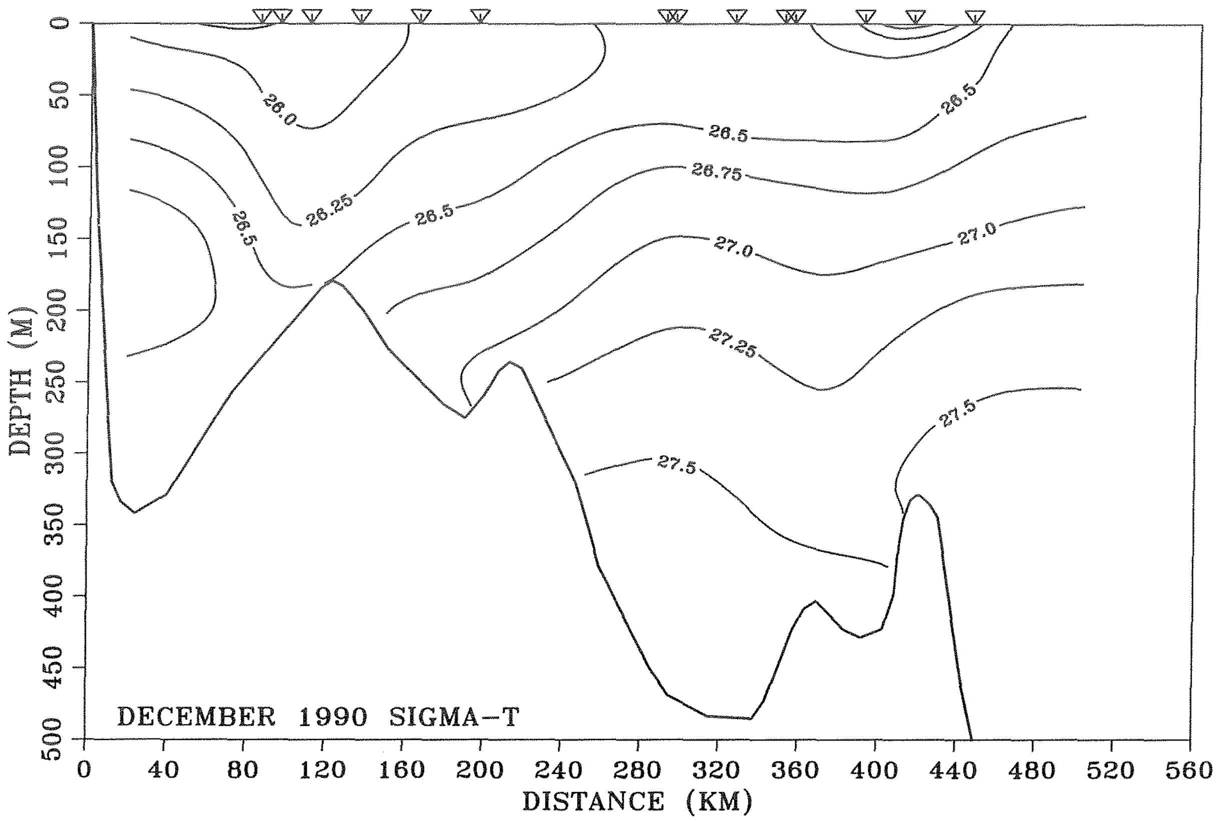
DISTANCE (KM)


DECEMBER 1990 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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0 40 80 120 160 200 240 280 320 360 400 440 480 520 560
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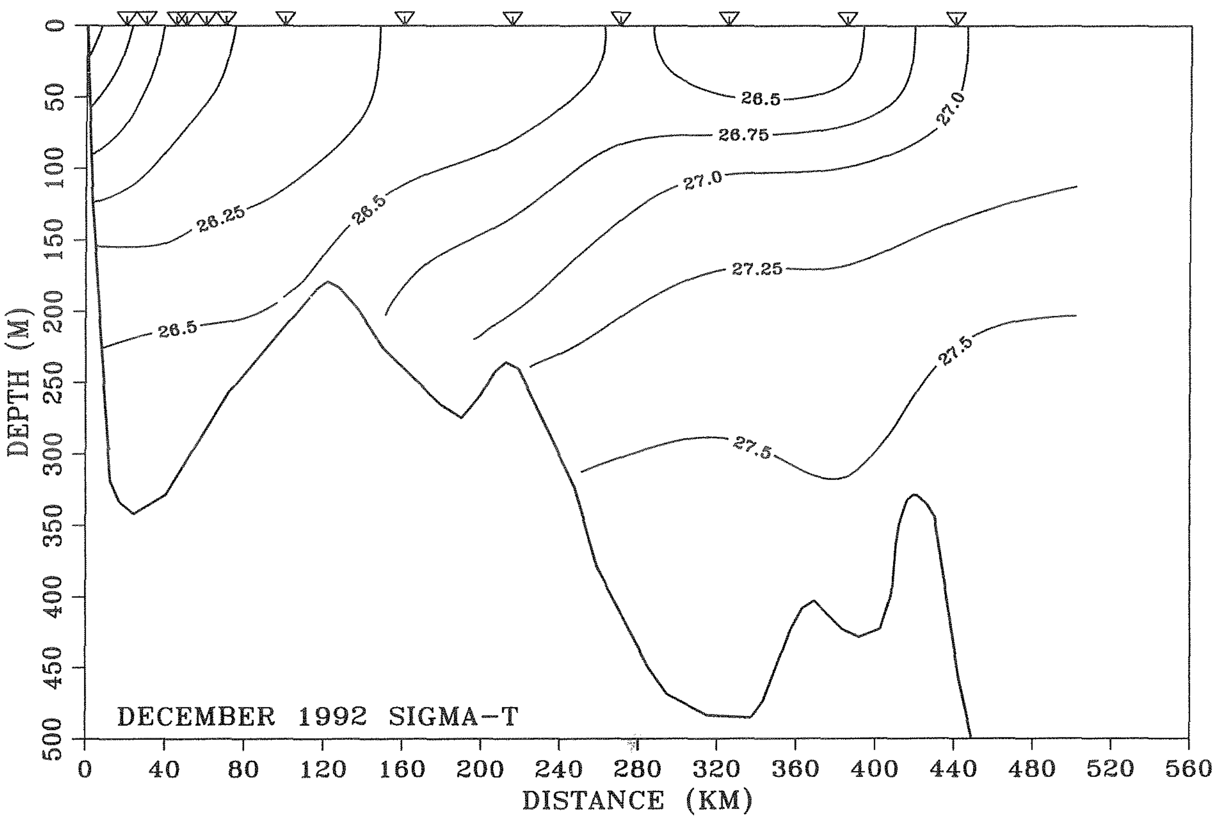
DECEMBER 1992 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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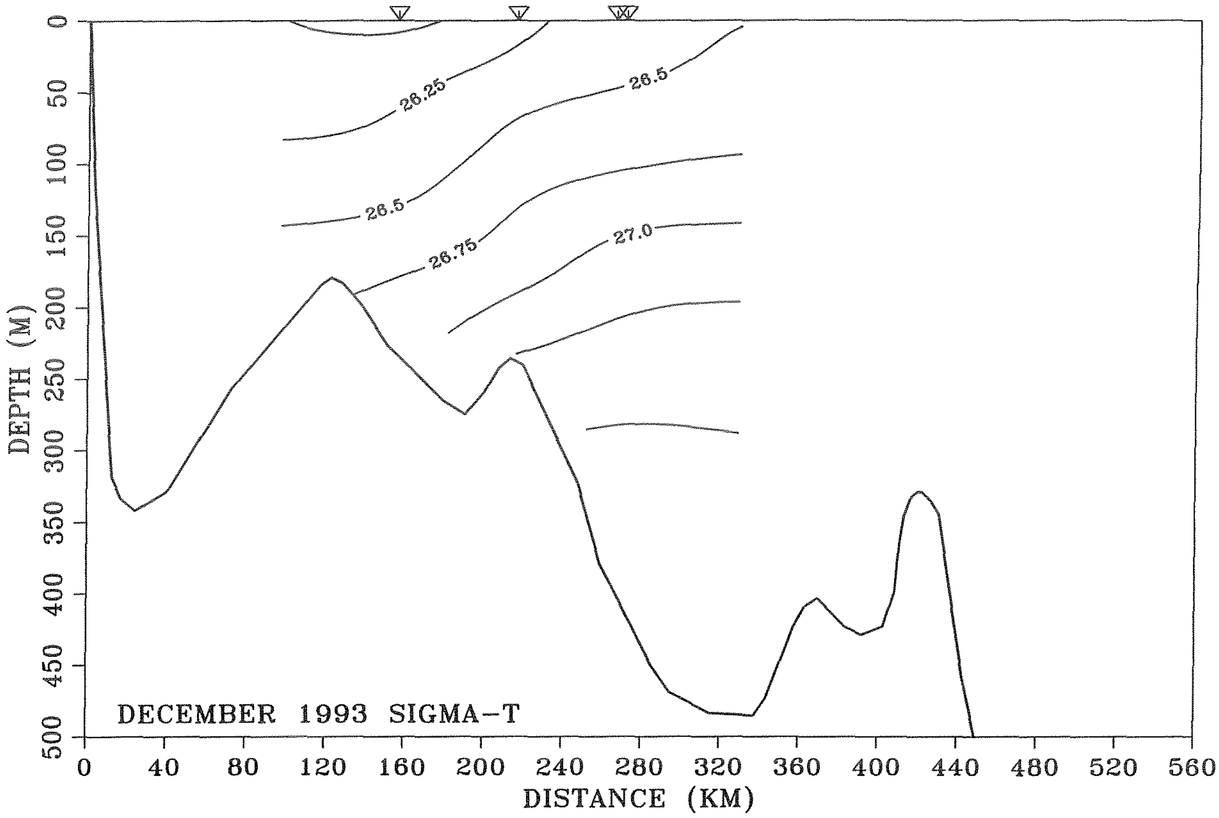
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DECEMBER 1993 SIGMA-T
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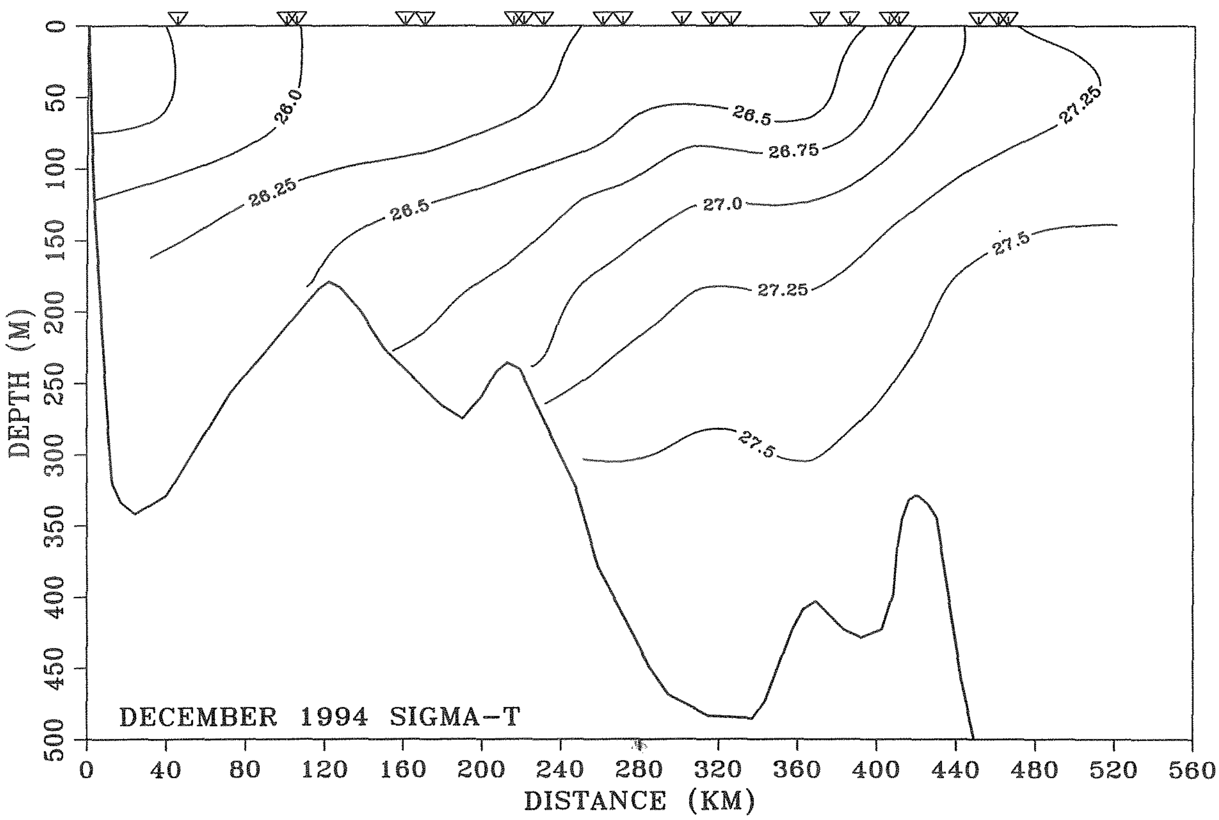
DISTANCE (KM)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DECEMBER 1994 SIGMA-T
DEPTH (M)
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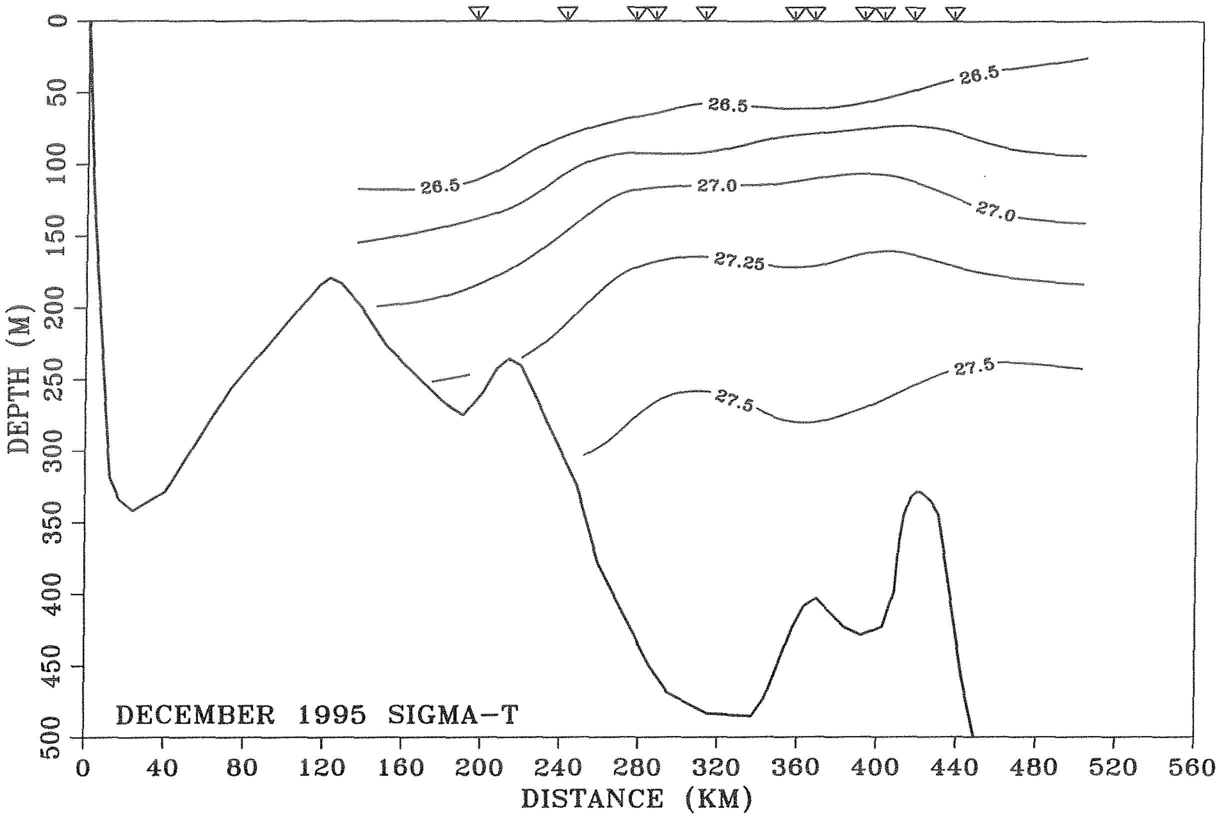
DISTANCE (KM)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27.5
DECEMBER 1995 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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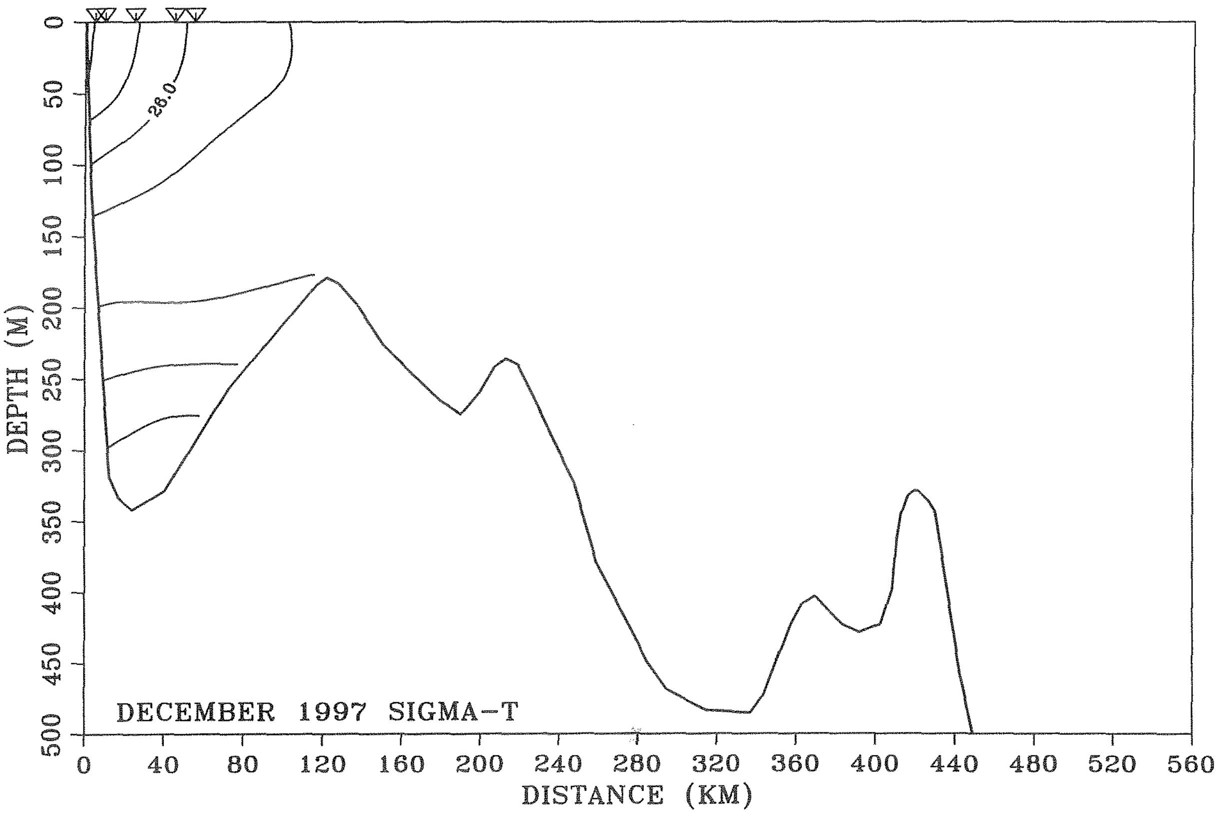
26.0
DECEMBER 1997 SIGMA-T
DEPTH (M)
DISTANCE (KM)
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