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Analyzing for Climatological Information in the Long Term Temperature Monitoring Program Sea Temperature Time Series

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Discovery Consultants Limited and B. Petrie

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ABSTRACT

R.H. Loucks Oceanology Limited, Discovery Consultants Limited and Brian Petrie. 1991. Analysing for climatological information in the long term temperature monitoring program sea temperature time series. Can. Tech. Rep. Hydrogr. Ocean Sci. No. 132: viii + 209 pp.

Motivated both by fisheries researchers and aquaculturists, the Long-Term Temperature Monitoring Program (LTTMP) has produced nearshore temperature time series from a variety of sites in Atlantic Canada since 1967. On the order of 100,000 instrument-days of data have been digitized at 4–hour intervals. In this study, these data were re-edited and summarized in time and space to monthly averages over 35 'Unit Areas' which correspond to inshore fishing zones from northern Newfoundland through the Gulf of St. Lawrence to the Bay of Fundy, each separated into shallow (depth < 12m) and deep (depth ≥ 12m) ranges. These time series of monthly temperatures have been used to derive monthly mean temperatures, variance and anomalies, to determine the correspondence with sea-surface temperature climatology from 'ship-of-opportunity' data, for patterns of variance, and for spatial scales of correlation.

In addition to the expected annual temperature variation, a consistent seasonal pattern appears in the monthly total variances. These are peaked in spring and autumn. The warming/cooling trends in spring/autumn months enhance the total variance and account for most but not all of the double-peak pattern.

Interannual variances, reflecting climatic trends, are significant in some of these time series. Spatial scales of variability are small (about 100 km) for the shallow depth ranges in the Gulf of St. Lawrence, on the east coast of Newfoundland and the Atlantic coast of Nova Scotia. Elsewhere, the spatial scales are less than the average station separation.

Although data coverage seems sparse, especially in winter, and although winter records tend to be most valuable for both aquacultural and climatological reasons, it is recommended that a sampling design analysis be made first to determine the cost/effectiveness of obtaining more winter data. A sampling design analysis could rationalize the program objectives, the space scales prevailing, and the budget so that the necessary number of winter sites could be identified.

Two final recommendations are that this data base be further analyzed using an empirical orthogonal function treatment for climatic patterns and using statistics of extremes for the return period of various extreme temperature episodes.

RÉSUMÉ

R.H. Loucks Oceanology Limited, Discovery Consultants Limited and Brian Petrie. 1991. Analysing for climatological information in the long term temperature monitoring program sea temperature time series. Can. Tech. Rep. Hydrogr. Ocean Sci. No. 132: viii + 209 pp.

Promu autant par des spécialistes des pêches que par des aquiculteurs, le Programme de contrôle de la température à long terme (PCTLT) a produit des séries chronologiques de températures littorales à partir de divers sites du littoral canadien de l'Atlantique depuis 1967. Environ 100 000 jours-instruments de données ont été numérisés à des intervalles de 4 h. Dans cette étude, ces données ont été remises en forme et ramenées à des moyennes mensuelles, dans le temps et dans d'espace, sur 35 "unités de superficie" qui correspondent à des zones de pêche côtière allant du nord de Terre-Neuve à la baie de Fundy en passant pas le golfe St-Laurent, chacune étant répartie selon que la profondeur est faible (<12 m) ou grande (≥ 12 m). Ces séries chronologiques de températures mensuelles ont été utilisées pour établir des températures moyennes, des variances et des anomalies mensuelles, pour déterminer la correspondance avec la climatologie basée sur des données de température de la surface de la mer provenant de "navires de passage", en ce qui a trait aux tendances des variances et aux échelles spatiales de corrélation.

Aux variations de température annuelles prévues semble s'ajouter un comportement saisonnier systématique des variances totales mensuelles, lesquelles atteignent des maximums au printemps et à l'automne. Les tendances au réchauffement/refroidissement durant les mois du printemps et de l'automne ajoutent à la variance totale et expliquent en grande partie le comportement à deux maximums.

Les variances interannuelles, à l'image des tendances climatiques, sont importantes dans certaines de ces séries chronologiques. Les échelles de variabilité sont faibles (environ 100 km) pour les faibles profondeurs dans le golfe St-Laurent, sur la côte est de Terre-Neuve et sur la côte de la Nouvelle-Écosse tournée vers l'Atlantique. Ailleurs, les échelles spatiales sont inférieures à l'espacement moyen des stations.

Même si la couverture des données semble éparse, surtout en hiver, et que les enregistrements d'hiver ont tendance à être des plus utiles pour des raisons tant aquicoles que climatologiques, il est recommandé de faire une analyse de plan d'échantillonnage pour déterminer s'il est rentable de recueillir plus de données l'hiver. Une telle analyse permettrait de rationaliser les objectifs du programme, les échelles spatiales retenues et le budget de manière à pouvoir identifier le nombre requis de sites d'hiver.

Deux recommendations finales proposent d'analyser davantage cette base de données pour déterminer les tendances climatiques au moyen d'un traitement empirique par fonctions orthogonales et la période de récurrence des divers épisodes de température extrêmes à l'aide de statistiques des extrêmes.

Introduction

Long-term sea temperature series have been seen by oceanographers as valuable climatic indicators and have been collected along the Atlantic Coast since early this century. First there was the network of lighthouses, lightships and research stations (parts of which remain active today) which measured sea temperatures daily from the Gulf of St. Lawrence to St. Andrews, New Brunswick. Off St. John's, Newfoundland temperature and salinity observations have been made at 'Station 27' for several decades. These data have yielded insights on climatic variability.

Complementing these nearshore measurements are ship observations of sea-surface temperature. Since the 1940's merchant ships' crewmen have voluntarily measured and reported sea surface temperature. Trites (1982) has prepared a decadal analysis of the ship-of-opportunity data for the period 1970–1979, and a year-by year interpretation annually through the mid-1980's (e.g. Trites and Drinkwater, 1983). Recently, these 'ship-of-opportunity' data (1950–1980) have been analyzed for the Canadian Atlantic Shelf by compiling monthly average temperatures for some twenty-four shelf and offshore regions. Thompson *et al.* (1988) have shown that winter sea surface temperature anomalies over the East Coast of Canada have spatial scales of order 1000 km and are related to anomalies of winter winds. Further it was found that summer sea surface temperatures over the shelf are related to those in the previous winter.

Since 1967, nearshore sea temperatures have been recorded in Atlantic Canada using Ryan Thermograph Recorders. In 1978, through the initiative of scientists at the St. Andrew's Biological Station, the effort to gather coastal temperature data was coordinated into the Long Term Temperature Monitoring Program (LTTMP). The opportunity now exists to process these baseline data for the following purposes:

a) To consolidate the T data from specified nearshore areas in order to obtain long time series;

b) To determine the annual cycles of T for the nearshore areas;

c) To determine the monthly standard deviations of T;

d) To produce monthly T anomaly time series;

e) To conduct a preliminary investigation of the spatial scales of the anomaly fields;

f) To attempt to relate these anomaly fields to other long time series such as the offshore temperature observations and river runoff; and, finally,

g) To make recommendations on the future directions of the program.

These time series and data products should prove useful for studies examining the climate of the coastal ocean, investigations of processes such as the response to low frequency meteorological forcing, the assessment of nearshore locations for aquaculture and the examination of long term fisheries changes.

Approach and Results

Thermograph records are grouped by NAFO fishing areas (Figure 1) and depth range order to compute statistical products such as averages, the components of variance, and correlations. The depth ranges are designated as shallow ($0 < z < 12$ m) and deep ($z \geq 12$ m), where z is the moored depth of the instrument.

Within each group, distinction is made between those records which resemble neighbouring records and those which are obviously disparate. Reasons underlying the occurrence of any disparate records are noted where possible, e.g., sited near a river mouth or in a shallow protected bay. An attempt was made to consolidate records with appeared to represent a broad area. These series — one from each Unit Area for each different depth range sampled over the long term — form the data base for subsequent analyses.

By rough estimate, some 100,000 – 200,000 instrument-days of temperature measurements have been processed, leading to some 70 (35 Unit Areas × 2 depth-ranges), multi-year (but gapped) time series of monthly average temperature. The instrument accuracy is 0.5°C (Walker *et al.*, 1987), though experience indicates that the error can be larger than this at subzero temperatures.

The procedure to create the consolidate time series was as follows:

A) Compiling spatial average temperature series at four-hour intervals over a Unit Area/depth range.

1. Existing Data Reports (Gregory and Dobson, 1978; Dobson, 1979; Dobson, *et al.*, 1981a, b, c; 1982; 1983 a, b; 1984 a, b; 1985 a, b; Walker *et al.* 1986; 1987) were used to identify those stations/depth ranges, from the total of approximately 200, which repeatedly produce disparate records, apparently due to strong, localized effects. Corresponding plots of neighbouring records from the Data Reports were compared and scrutinized. Those stations which were discarded for our present climatological purposes are noted in Table 1.

2. To facilitate data handling for this project, all of the data were transferred to one tape, LC0496. A procedure was run that produced a database of header information about each partition (file) on Tape LC0496. This consisted of name, Unit Area, position, date and time, depth and the number of the partition on the tape. This data base was then split into two parts – deep and shallow. The deep and shallow databases were then sorted on the primary key of Unit Area code, and secondary keys of name, date and time, and depth. Data that were rejected for reasons given above were deleted. The resulting deep (shallow) database contained 502 (813) instrument records (Appendix A). A common starting date for all records was taken as January 1, 1967, to include one exceptionally long record from Unit Area 3La and to align all data series for later analysis.

A single data file was created for every Unit Area in the databases using the following procedure. The data, which may exist in a number of different files, for each separately named location in each Unit Area were fitted into one 'channel' in a single file, resulting in a gapped time series over the total 21–year (1967–1987) period of analysis. All channels for the Unit Area/depth range were then aligned in time, producing a single multi-channel file of four-hour data for each Unit Area. These files are named according to the scheme, zMuuuu where z indicates the depth range, deep (D) or shallow (S), M signifies merged, and uuuu is the Unit Area code. For example, SM3La represents shallow, merged, UNIT AREA 3La.

In order to prepare plots of the average (across all channels) for each Unit Area/depth range, a program was written to average simultaneous data across the channels, and write a file consisting of two channels — one containing the average of all input channels at 4–hour intervals and the second, the number of channels included in the average. These files are named zAuuuu, e.g., SA3La contains the 4–hourly averages for Unit Area 3La, upper depth range.

3. Computer-plots for each of these Unit Area/depth range series (at 4–hour sampling interval) are given in Appendix B. A second trace is also plotted, the number of locations incorporated in the spatial average. In a very few cases, where many records from many instruments were available, the number of data channels was reduced to satisfy system limits by first averaging data from instruments within a particular cove or bay. Then the 'tally' channel provides a lower bound on the number of instruments averaged at any time. In the majority of cases the 'tally' channel indicates the actual number of instruments included in a spatial average.

These plots sometimes revealed errors in the archived data which were instrumental rather than site-related. These portions of data were also excluded. One error which was encountered more than once was excessively low (below freezing) water temperatures. Table 2 identifies records for which portions were deleted for these instrument-related reasons.

B. Temporally- and Spatially-Averaged Series

1. Monthly Averaging

Monthly averages were formed from Unit Area/depth range, 4 h time series. Averages were computed for all months in the period January, 1967 to December, 1987, subject to the condition that at least 120 4–hourly samples were available i.e. at least twenty full data days.

2. Monthly Anomalies

A second time-series of monthly anomalies was created for each Unit Area/depth range. The monthly anomalies are calculated as the difference between the average temperature for the particular month and the grand mean of all 4–hour observations from all years for the month/Unit Area/depth range.

Table 3 shows the number of months for which anomalies could be calculated, the maximum and minimum anomalies found, the mean anomaly, and the standard deviation of anomalies. For some locations (e.g. D4Tg) there were a number of partial records (less than 120 4h samples, see B1 above) which contributed to the overall monthly mean but which were too short to form a monthly anomaly. This can lead to cases where the mean anomaly is nonzero.

Each monthly anomaly receives equal weight in the calculation of the mean anomaly; each four-hourly observation receives equal weight in the calculation of the grand mean from which the monthly anomalies are calculated.

Plots are shown (Appendix C) for each of the Unit Area/depth range of the monthly average series, the monthly standard deviations, the monthly time series and the monthly anomaly series. A description of the LTTMP data products archived on magnetic tape is given in Appendix D.

3. Data Coverage

An indication of the data coverage can be obtained from Figures 2 to 5. Figures 2 and 3 show the number of February monthly averages available in upper and lower depth ranges respectively. Figures 4 and 5 show the number of August monthly averages available.

Analyses

A. Patterns of Variance

An example of the statistics that have been computed for the Unit Areas is given in Table 4 for S3La, one of the most sampled Unit Areas. The monthly means and total standard deviation from Table 4 are plotted in Appendix C; the total standard deviations as well as contributions due to within-month variance and between-monthly means are plotted in Figure 6. The within-month standard deviation (W) is made up of a contribution from high frequency oscillations and the low frequency, temperature trend ($\hat{t}$, see Fig. 6) during the month. The between-monthly means contribution (B) reflects interannual variability, i.e., the variance of the monthly means. The square of the total standard deviation (T) is the sum of the squares of the standard deviations within the month and of the monthly means.

The grand mean for January (Table 4), derived from 2,337 readings (at 4–hour intervals) during January in eight different years, is —0.27°C. The total standard deviation is 1.18°C.

The total standard deviation for January (Table 4) has a greater contribution from the set of monthly means (0.89°C) than from the within month component (0.77°C). Generally, though, the standard deviations of the monthly means are less than the within month standard deviation. The average ratio of these two

quantities (Table 4) for area S3La is 0.84. In August, for example, the interannual standard deviation of August means is 0.89°C, while the standard deviation within the month is 1.82°C.

Scanning the seasonal cycle for S3La, February and March grand mean temperatures (Table 4) are near the freezing point while the maximum monthly average is reached in August. The seasonal cycle of the trend contribution to within-month standard deviation (Table 4 and Figure 6) has peaks in the warming and cooling periods. The seasonal cycle of interannual, between-monthly-means standard deviation, is again high in spring but low in October and November although high in December. The total standard deviation is highest during the warming season and peaks again late in the year. This pattern is repeated in many Unit Areas.

The above results (Table 4 and Figure 6) do show, for Unit Area S3La, that ambient temperature variability from each of the within-month and between-monthly-means contributions is generally on the order of 1°C. This is larger than the instrumental uncertainty of 0.5°C and therefore likely real. However, successive gauges reading, respectively 0.5°C above and below the true temperature can give rise to low frequency variance of $0.25°C^2$, i.e., a standard deviation of 0.5°C.

B. Comparison of Unit Area/depth range monthly averages with ship-of-opportunity monthly averages for contiguous areas.

February

The February grand mean temperatures in the nearshore Unit Areas/upper depth range (Figure 7) are lowest in the Gulf of St. Lawrence, the eastern coast of Newfoundland and the Eastern Shore of Nova Scotia. The warmest nearsurface temperatures are found in the Bay of Fundy and Southwest Nova Scotia region. Comparison with the 1946–80 average February sea-surface temperatures from ship-of-opportunity observations (Loucks *et al.*, 1986) shows that the coastal temperatures are generally lower. This could arise from the different time periods covered by the two data sets or because these shallow, nearshore sites are the first marine areas exposed to the cold, continental winds resulting in large heat losses (Thompson *et al.*, 1988). The ship-of-opportunity areas include offshore regions where air-sea differences in temperature have more-nearly equilibrated.

On the other hand, the LTTMP results compare favourably with the long term average sea surface temperatures (SST) at coastal sites. Comparing the coastal monthly means to the ones in Fig. 7, we have for St. Andrews 1.0°C (SST) versus 0.1°C (LTTMP), Halifax 1.2°C and –0.6°C (average of 0.7 and –1.9°C), Entry Island –1.3 and –1.8, and St. John's –0.7 and –0.3.

Lower depth range February grand mean temperatures in the nearshore Unit Areas, though not available for as many areas as for the upper depth range, show a similar pattern (Figure 8).

August

The August mean temperatures from the shallow layer, nearshore gauges compare very well with the long term average sea surface temperatures from coastal sites. For St. Andrews we have 13.3°C (SST) compared to 14.2°C (LTTMP, Figure 9), at Halifax 14.9°C versus 13.9°C, at Entry Island 17.3°C and 17.5°C, at Port Borden 18.8°C and 17.7°C and at St. John's 13.0°C and 13.0°C. Nearshore temperatures in those Unit Areas which are southeast-facing are lower than in the larger, shelf-wide ship-of-opportunity areas (Loucks *et al.*, 1986) perhaps suggesting wind-driven coastal upwelling. Lower temperatures on the north shore of the Gulf of St. Lawrence also suggests the inflow of Labrador Shelf water through the Strait of Belle Isle.

Generally the lower depth range averages (Figure 10) show a pattern related to the upper depth range pattern modified by the stratification. Lower range averages are not directly comparable with ship-of-opportunity, surface averages. Unit Area 3KI actually exhibits a higher August average temperature in the lower than in the upper depth range! However, the upper layer estimate is based upon six August means

and almost 3000 data points, whereas the lower range average incorporates only one August and 183 data points. Thus, this inversion is probably a result of the difference in data availability.

C. Space scales of correlation within and between Unit Areas

The correlation matrix was calculated between all Unit Area/depth range monthly anomaly series. All correlations that have been computed between any two time series are based only on those months with contemporaneous anomalies. The full matrix may be obtained from D. Gregory, Physical and Chemical Sciences Branch, Department of Fisheries and Oceans, Dartmouth, Nova Scotia.

Significant low frequency variability at time scales of several years is apparent for the longest anomaly data series from the shallow depth in area 3La (Appendix C). This implies that even monthly anomalies may not be independent of one another and that the number of degrees of freedom is far fewer than the number of monthly averages. Petrie *et al.* (1990) estimated that this series of 117 monthly averages had only six degrees of freedom. Accurate estimation of the number of degrees of freedom for all other series is unlikely since they have fewer observations on which to base the calculation. Consequently, we expect that few of the correlations are significant at the 95% level. Though the significance of individual correlations may be in doubt, plotting all of the correlations possible from a broad area, such as the Newfoundland coast or the Gulf of St. Lawrence, as a function of separation may reveal a consistent pattern.

1. Correlations between shallow and deep time series within unit areas

Correlations have been calculated for the 23 shallow and deep time series which had sufficient contemporaneous data. The results are presented in Table 5 for the unit areas by region. Overall, the average absolute value of the correlation coefficient is 0.40 and the average number of data months, 26.5. Eight of the 23 correlations were significant at the 95% level if all of the monthly anomalies were assumed to be independent samples. Four of these 8 were from the Gulf of St. Lawrence. Eight of the 23 correlations were negative, 5 of these were from the Gulf of St. Lawrence along the mainland shore of the Magdalen Shallows from the Baie de Chaleur to Cape Breton, with a sixth negative value in Sydney Bight.

2. Correlations between unit areas by region

Correlations were calculated for time series between unit areas from the same depth layer (shallow and deep), and by region. The four regions were Newfoundland, the Gulf of St. Lawrence, Scotian Shelf and the Bay of Fundy. The correlation matrices for both layers are shown in Tables 6–9 and are plotted as a function of separation in Figures 11 – 14.

Several ways of attributing a length scale to the correlation functions were examined. Two forms will be considered in the following discussion: e^{-kx}, which describes a correlation function that is 1 for 0 km separation and goes to zero as x becomes large; and, $2e^{-kx}-1$, which is also 1 for 0 km separation but goes to –1 as x becomes large. The first form of the correlation function allows for in-phase variations over a region, while the second allows for in– and out of phase variations. In this respect, they correspond to modes 1 and 2 respectively of Thompson *et al.* (1988). The application of either or both of these will depend on the structure of the correlations as a function of separation.

a) Eastern and Southern Newfoundland

Shallow anomalies The average data span for the 44 correlations shown in Table 6a was 24 months. Twenty of 21 correlations for the east coast regions, 3Kd to 3Lj have positive correlation coefficients. Twelve of the 14 negative correlation coefficients are between south coast areas 3Lq and 3PSb and east coast areas. It appears then that along the east coast, temperature anomalies are positively correlated but are negatively correlated with the anomalies observed along the south coast. The exception is area 3PSc on the south coast which behaves as if it were an east coast station.

The structure of the correlations as a function of separation (Fig. 11) shows that as separation increases correlations decrease. The function $2e^{-kx}-1$ (Fig. 11) does a reasonable

job of fitting the data qualitatively. The standard deviation of the observed correlations from this line is 0.44, a value that the function reaches at distances of 200 km. Petrie *et al.* (1990) found a correlation of 0.43 for the 117 month T time series from Stock Cove (9 m) and Sta. 27 (0-20 m average) which are separated by 170 km on the east coast of Newfoundland. The function shown in Figure 11 gives 0.52 for the same separation, in good agreement. We have also fitted the function e^{-kx} to the 20 positive correlations for the east coast and find that $k=0.00321$ km^{-1}, corresponding to an e-folding scale of about 300 km.

Deep anomalies. The average data span for the 14 deep correlations is 8 months, considerably less than for the shallow layer observations. Moreover, there does not appear to be any dominant structure to the correlations (Table 6b, Fig. 11) as there was with the shallow correlation matrix. The least squares fit of $2e^{-kx}-1$ (Fig. 11, Table 10) does not model the observations very well. The correlations appear to be randomly distributed about 0 even at small distances.

b) Gulf of St. Lawrence

Shallow anomalies There are two areas of the Gulf, the Northeastern Gulf and the Magdalen Shallows, where there are sufficient data to examine the correlations more closely. The areas in the Northeastern Gulf, 4Rc, 4Rb and 4Sw, are positively correlated at about the 0.7 level (Table 7a). The correlations for the Magdalen Shallows areas, 4Tm-4Tf, and the Sydney Bight, 4Vn, (average data length, 15 months; Table 7a, Fig. 12) appear to decrease with increasing distance. The standard deviation of observed correlations from the function $2e^{-kx}-1$ (Fig. 12) is 0.36 (Table 10). The function has this value at 210 km.

Deep anomalies The average data span for the deep time series from the Shallows is only 8 months. Moreover, the correlations appear to be randomly distributed about zero (Fig. 12) for separations of from approximately 100 to 400 km. The functional fit (Fig. 12, Table 10) does not do a good job of fitting the correlations, which have a standard deviation from it of about 0.6. The spatial variability of the long period temperature anomalies are probably less than station separations.

c) Nova Scotia Atlantic Coast

Shallow anomalies The average data span for the 5 areas of the Atlantic coast of Nova Scotia is 26 months. The correlations (Table 8, Fig. 13) are all positive. Though the function $2e^{-kx}-1$ does a good job of fitting the data (Fig. 13, Table 10) with a residual standard deviation of 0.21, the function e^{-kx} does better, with a residual standard deviation of 0.14. The e-folding scale of the latter is 210 km.

Deep anomalies. On the other hand, the deeper layer correlations (Table 8, Fig. 13) have a mixture of positive and negative values apparently randomly scattered about zero. The spatial scale of these correlations, calculated from a data series of 21 months average duration, is probably smaller than the minimum separation of stations.

d) SW Nova Scotia — Bay of Fundy

Shallow anomalies These records have the shortest average data span, 7 months, of all the areas discussed. Moreover, the correlations (Table 9, Fig. 14) are too few and scattered for us to have confidence in their behaviour as a function of separation. The functional fit (Fig. 14, Table 10) is the poorest of all areas.

Deep anomalies The situation for the deep anomalies is much the same as for the shallow ones. The average length of the time series is 16 months, more than twice the length of the shallow series. However, the structure of the correlations (Table 9, Fig. 14) and the least squares fit are only marginally better.

Summary It appears that the spatial scales of T anomalies are greater than the minimum separations between stations only for the shallow observations from the eastern Newfoundland coast, the Northeastern Gulf of St. Lawrence, the Magdalen Shallows and the Atlantic coast of Nova Scotia. For none of these cases is a scale greater than about 200–300 km indicated. Correlations appeared to be randomly distributed about zero for the deeper levels in all regions. This may be due in part to gauges at these depth levels being

in the thermocline more frequently and thus subject to more data noise in the form of high frequency variability. There is some support for this as the overall ratio of temperature variance at the deeper level to that at the shallow level is 1.10. The ratio varies from a low of 0.81 in April from a total of 7 areas to 1.41 in September from a total of 27 areas.

D. Correlations with other time series.

In the Gulf of Saint Lawrence, shallow and deep temperature correlations with RIVSUM, were calculated. RIVSUM is the time series of composite discharge into the Gulf of Saint Lawrence. The average correlation of the 13 shallow series (average duration, 12 months) with RIVSUM was –0.03 (s.d. 0.36); for the 11 deep series (average duration, 12 months), the average correlation was –0.06 (s.d. = 0.34). The maximum (minimum) correlation was with the time series of area S4Tp (D4Sy) with a value of 0.66 (-0.62). Correlations of the deep and shallow time series from areas 4Xr, 4Xq and 4Xo with St. Andrew's sea surface T were also disappointing. The average correlation was 0.18 (s.d.=0.28) for a time series of average duration of 37 months.

Conclusions

A. Instrument Performance

There is concern that the thermographs may perform poorly at low temperatures. This difficulty becomes apparent in cases where temperatures below the freezing point of seawater are recorded.

B. Data Coverage

The data coverage, especially in winter, seems sparse. Winter temperatures are particularly significant for the survival of farmed fish and, at least on the open shelf (Thompson *et al.*, 1988), for predicting temperature regimes in subsequent seasons.

C. Climatic Averages

The Unit Area/depth range monthly grand averages correspond reasonably closely with long-term monthly averages from contiguous ship-of-opportunity areas (Loucks and Trites, 1985; Loucks *et al.*, 1986).

D. Space Scales

Our analyses suggest that establishing statistically significant correlations for one unit area versus another may require very long time series as the data appear to be strongly autocorrelated. However, for the eastern coast of Newfoundland, Nova Scotia and for the Magdalen Shallows and Northeastern Gulf of St. Lawrence, the distributions of correlations for the shallow depths have definite patterns. The correlations are generally positive at small separations and decrease with increasing distance. However useful correlations at about the 0.7 level will likely only be attained for separations less than 100 km. This scale is considerably smaller than the scale of order 1000 km found by Thompson *et al.* (1988). We do not think that this is due primarily to the shorter time series which we have analyzed. Rather a more likely conclusion is that spatial scales of variability are indeed smaller at the coast due to geography than they are in the open shelf areas considered by Thompson *et al.* This implies that some applications, e.g. aquaculture operations, may have to be dealt with on a site specific basis.

E. Seasonal Pattern of Total Variance

A consistent seasonal pattern appears in the monthly total variances (and standard deviations). Total variances are small in winter, then rise to a peak in the warming season, subside during summer, and rise to a secondary peak during the cooling season. The warming/cooling trends during spring/autumn months enhance the total variance through the within-month variance and explain much, but not all, of the double-peak pattern in total variance. Interannual variance is evident in these series.

Recommendations

As part of this project, the consulting firms were asked to make recommendations, independent of DFO. These recommendations are given below:

A) An improved model thermograph which is accurate at low temperatures is available. It is recommended that it be considered for purchase to replace the Ryan recorders.

B) Winter records are especially valuable, both for the aquaculturalist, because of the possible occurrence of lethal temperatures, and for the marine climatologist, because of the importance of winter cooling in establishing climate through the following summer. It is recommended that a sampling design study be made to determine the cost/effectiveness of obtaining more winter records.

The objectives of the LTTMP may be shifting from obtaining baseline data to detecting extremes and long-term trends. Sampling-design could guide the future of the LTTMP by integrating the shifting objectives, the space scales estimated above, and the budget. Millard and Lettenmaier (1986) provide a framework for the appropriate sampling design.

C) An analysis of autocorrelation functions and patterns of (corrected) variance components could distinguish the contributions to total variance from seasonal trends, long-term trends, within-month variance and interannual variance. For example, are there geographic patterns in between-year variance due to variability in the onset of spring warming, as contrasted with strong, within-month variance due to differential heating? It is recommended that an analysis of autocorrelation and variance proceed and feed into sampling design.

D) It is recommended that space scales be further analyzed employing an empirical orthogonal function analysis analogous to the treatment carried out by Thompson *et al.* (1988).

E) It is recommended that, for the aquaculturalist, this data base be used to estimate the return period for various extreme temperature episodes, their magnitude and duration.

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Table 1. Stations deleted for reasons of geographic location

Unit Area	Station	Data Report #	Reason
4Vn	Seal Island	35, 22, 10	Inlet
	Ingonish	35	Site
4Wd	Isle Madame	10	Site
4Wk	BIO Marina	53, *	Inlet
	Three Fathom Hbr.	49	Site
	Pleasant Point	49, 22, 10	Site
	Spanish Ship Bay	49, 22, 10	Site
	Navy Pool Jeddore	10	Site
	Orpheus Rock	10	Site
4Xo	Pubnico Point	53, 49, 35, 22, 10, *	Mud
	Shelburne Hbr.	53, *	Inlet
	Argyle Sound	22, 10	Inlet
4Xm	Mahone Bay	22	Inlet
4Xp	Crowell Basin	53, 49, 22	Offshore
	SW, SE Brown's Bk	49, 22, 10	Offshore
4Xr	Annapolis Royal	49	Inlet
	Sissiboo Head Pond	*	Inland
4Xs	Kennebecasis Bay	10, 6	Inlet
4Tf	Grand Entree	49, 35, 22	Site
	Havre aux Maisons	10, 6	Site
4Tg	St. Peter's Lake	53	Inlet
	Boughton River	*	River
	Cardigan	*	River
	Fortune River	*	River
	Murray River (Mimenegash)	*	River
4Th	Brookvale West River	35	River
	Toney River	*	Poor Data
	Dunk River	*	River
4Tj	P. Bells Hatchery	53, 49	Inlet
	Rustico	53, 49	Inlet
	Kensington	53, 49	Inlet
	Lennox Island	53, 49	Inlet
	Ellerslie	53, 49	Inlet
	Millvale	53, 49, 35	Inlet
	Bideford River	35	River
	Spring Valley	35	Inlet
	New London	35	Inlet
	New Glasgow Mills	35	Inlet
	Grand Tracadie Winter River	35	River
	March Water	*	
4Tk	All Stations		Offshore
4Tl	Foxley River	*	River
4Tp	Saguenay River	53	River

4Tq	R. Grande Trinity R. Petite Trinity R. Grand Calumet Riviere du Loup	35, 22 35, 22 35, 22 35, 22	River River River River
4Ujb	All Stations	53	James Bay
2G	Ikarut River	49, 34	River
2H	Tikkoatokak Bay	53, 49	Inlet
3Kh	Indian River	49, 34	River
3Ki	Bay of Exploits Salmon Brook Laurenceton	53, 49 49, 34 *	River River River
3La	Middle Brook Lr. Terra Nova R. Up. Terra Nova R.	53, 49 53, 49 53, 49, 34	River River River
3Lb	Spruce Pond Headwater	53, 49, 34, 11 53, 49, 34, 11	Pond Pond
3Lq	Biscay Bay R. Lr. Drook Brok Lr. Freshwater R. Up. Freshwater R. Holyrood Pond Lr. Northeast R. Up. Northeast R. NE Brook Trepassey Indian Pond	53, 34 53, 49 53, 49 53, 49 53 53 53 53, 49, 34 *	River River River River Inlet River River River River
3Nc	Grand Banks	*	Offshore
3PSa	Conne River	53	River
3PSb	Little Bay East Grand Bank Fishway	53 53	River River
3PSc	Northeast River	49, 34	River

* = Unpublished data from 1986, 87, 88.

Table 2. Segments deleted from records due to obviously erroneous data

Unit Area	Station	Instr. #	Date (Julian Day/Yr)	Depth (m)	Data Report
4Vn	Wreck Cove	63911	148-212/86	20	53
4Wd	New Harbour	62900	286/84-161/85	20	49
4Xm	Sambro	63826	90-110/86	10	53
4Xo	Cape Sable	60991	196-305/86	10	53
	Lockeport	61031	120-126/86	17	53
	Lower Argyle	63431	336/85-147/86	2	53
		61640	360-365/82	2	53
4Tf	Ile d'Entree	63825	304-/85 (approx.)	<12	53
4Th	Borden		1983, 84	<12	22, 35
	Temperatures <-2°C	Several			
4Tl	Miminegash	61524	120-/87	15	65
4Rb	Bonne Bay	62859	317-/86	10	65
	Temperatures <-2°				
3Kd	Westport, White Bay	62469	245-259/82	4	11
3Kh	Springdale	63437	349-/86	2	65
3Ki	Comfort Cove	61654	286-/84 (approx.)	<12	49
	Comfort Cove	64179	346-/86 (approx.)	9	65
3La	Stock Cove	5278	347-9/71	9	BI-D-81-5
3Lf	Holyrood	6136	279/83-34/84	10	34
	Logy Bay	63283	198-319/84	0	49
	(seawater tank)				
4Sw	Sept Iles	63435	148-/87	8	65
	Temperatures <2°C	Several	1986, 87	<12	
3PSc	Garden Cove	63305	250-283/86	10	53
		61690	293-/86	10	65
	Arnolds Cove	19406	191-335/77	<12	B-I-D-81-4
		63348	161-/87	9	65

*= Unpublished data from 1986, 87, 88.

Table 3. Statistics on monthly anomalies for each Unit Area/depth range. The number of months for which anomalies could be calculated, their extremes, their mean and standard deviation are given. Areas LABCST to SJTEM correspond to "ship of opportunity" areas of Thompson *et al.* (1988). Areas TEMSA and RIVSUM correspond to sea surface temperature at St. Andrews, N.B. and St. Lawrence River runoff.

D3KD	D3KH	D3KI	D3LA	D3LB	D3LF	D3LJ	D3LQ	D3PSC
6	10	5	40	18	15	36	5	39
-1.140	-1.310	0.000	-2.460	-6.110	-1.300	-4.120	0.000	-3.650
2.080	1.320	0.000	2.010	4.210	1.290	8.080	0.000	4.370
0.015	-0.000	0.000	0.040	-0.300	-0.022	0.150	0.000	-0.123
1.161	0.731	0.000	1.123	2.705	0.864	1.902	0.000	1.836
D3PSB	**D4RD**	**D4RC**	**D4RB**	**D4SW**	**D4SV**	**D4SX**	**D4SY**	**DRTN**
5	3	6	47	11	7	2	11	11
0.000	0.000	-1.310	-4.580	-2.770	-1.910	0.000	-1.620	-3.420
0.000	0.000	0.760	2.320	2.750	1.900	0.000	1.180	3.910
0.000	0.000	-0.097	0.126	-0.050	0.001	0.000	0.074	-0.022
0.000	0.000	0.837	1.346	1.315	1.110	0.000	0.905	2.147
D4TM	**D4TL**	**D4TJ**	**D4TH**	**D4TG**	**D4TF**	**D4VN**	**D4WD**	**D4WK**
11	22	8	27	25	22	25	58	13
-2.290	-5.390	-1.510	-7.730	-7.700	-2.570	-8.950	-4.040	-1.230
2.300	5.450	1.520	2.320	8.150	4.170	7.770	3.420	1.220
-0.012	0.060	0.001	-0.317	1.246	0.044	-0.184	-0.072	-0.001
1.517	2.598	0.848	2.212	4.096	1.487	3.424	1.492	0.628
D4XM	**D4XO**	**D4XQ**	**D4XR**	**D4XS**	**S2G**	**S2H**	**S2JM**	**S3KD**
46	90	34	42	12	4	2	4	31
-5.450	-2.590	-3.640	-2.640	-2.830	-0.870	0.000	0.000	-5.140
6.320	4.560	3.660	2.100	2.350	0.870	0.000	0.000	2.630
0.299	0.029	-0.059	-0.059	-0.037	0.065	0.000	0.000	0.013
2.360	1.177	1.380	0.935	1.410	0.880	0.000	0.000	1.463
S3KH	**S3KI**	**S3LA**	**S3LB**	**S3LF**	**S3LJ**	**S3LQ**	**S3PSC**	**S3PSB**
29	66	126	31	53	9	35	124	9
-3.820	-3.130	-3.620	-4.350	-7.960	-2.970	-2.940	-9.470	-0.880
3.380	2.020	3.180	3.660	2.450	0.990	1.830	5.510	0.880
-0.046	-0.141	0.172	0.112	-0.360	-0.208	-0.045	0.120	0.000
1.316	1.107	1.155	1.702	1.867	1.087	1.142	1.648	0.650
S3PSA	**S3PN**	**S4RC**	**S4RB**	**S4SW**	**S4SV**	**S4SY**	**S4TQ**	**S4TP**
5	8	29	21	12	3	11	2	23
0.000	0.000	-1.680	-1.870	-3.030	0.000	-2.480	0.000	-2.730
0000	0.000	1.640	1.880	3.030	0.000	2.410	0.000	1.190
0.000	0.000	0.007	0.007	0.357	0.000	0.075	0.000	-0.004
0.000	0.000	0.865	0.952	1.670	0.000	1.419	0.000	-0.868

S4TO	S4TN	S4TM	S4TL		S4TH	S4TG	S4TF	S4VN
15	19	25	19		43	30	36	30
-0.980	-2.320	-2.890	-6.540		-1.860	-5.900	-3.790	-3.490
1.940	2.020	2.200	4.450		1.950	7.920	8.250	3.180
0.000	-0.154	-0.150	0.162		0.171	0.345	-0.295	0.007
0.798	1.259	1.231	2.221		1.037	2.566	2.333	1.386

S4WD	S4WK	S4XM	S4XO	S4XQ	S4XR	S4XS	LABCST	ILABCU
46	34	107	45	14	31	16	153	156
-2.070	-1.490	-4.350	-4.220	-1.810	-1.450	-0.490	-3.320	-2.340
4.850	1.740	3.320	3.830	2.090	1.780	0.400	14.090	3.010
0.121	0.017	0.099	-0.035	0.006	-0.011	-0.004	0.000	0.001
1.506	0.784	1.275	1.552	1.257	0.780	0.208	1.816	1.065

4GRDB	STPIER	GOSL1	ESTSHO	SSHORE	YARMT	GOMAIN	SJT20	SJTEM
156	156	156	156	156	156	156	156	156
-2.890	-2.140	-2.050	-2.130	-2.400	-4.100	-3.120	-6.410	-3.950
2.320	2.370	3.090	2.450	2.590	3.550	8.950	4.780	3.250
0.002	-0.001	0.000	0.000	-0.001	0.002	-0.002	-0.001	-0.000
0.845	1.024	0.969	0.824	0.944	1.153	1.303	1.324	1.180

TEMSA	RIVSUM							
234	216							
-4.430	-37.950							
1.910	50.140							
0.001	0.000							
0.775	11.924							

Table 4. Statistics for Unit Area, S3La. For other Unit Areas, refer to plots in appendix C and archived material). The ratio shown is the s.d. of the monthly means divided by the within month s.d.

Month	Grand Mean (°C)	Number of		Standard Deviations				Ratio
		Obsvtns	Years	Total (°C)	Within months (°C)	from trend (°C)	of monthly means (°C)	
Jan	-.27	2337	8	1.18	.77	.37	.89	1.16
Feb	-1.10	2501	9	1.11	.64	.19	.90	1.41
Mar	-1.59	1583	6	.51	.48	.10	.19	.40
Apr	-.44	2212	10	1.32	.91	.51	.95	1.04
May	1.95	3418	17	1.77	1.35	.79	1.15	.85
Jun	5.05	4925	19	2.35	2.07	.97	1.13	.55
Jul	8.69	5005	12	2.87	2.43	.99	1.53	.63
Aug	11.9	4911	11	2.03	1.82	.36	.89	.49
Sep	11.2	4777	10	1.54	1.09	.49	1.08	.99
Oct	8.47	3495	9	1.50	1.33	.97	.69	.52
Nov	4.46	2488	7	1.52	1.35	1.01	.70	.52
Dec	1.48	2637	8	1.87	1.01	.68	1.57	1.55

Table 5. Correlations (r) between shallow and deep time series within unit areas. Number of monthly anomalies is indicated by the letter n.

Newfoundland Areas							
	3Kd	3Kh	3La	3Lb	3Lf	3Lj	3Psc*
r	0.90	0.10	-0.07	0.43	0.01	0.61	0.52
n	4	10	33	18	6	9	35

Gulf of St. Lawrence Areas									
	4Rb*	4Sw	4Sy*	4Tn	4Tm	4Tl	4Th	4Tg*	4Tf*
r	0.47	0.22	0.66	-0.05	-0.59	-0.23	-0.23	-0.58	0.84
n	47	11	11	11	11	22	27	25	22

Scotian Shelf Areas					
	4Vn	4Wd	4Wk	4Xm*	4Xo*
r	-0.11	0.20	-0.26	0.49	0.51
n	25	58	13	46	90

Bay of Fundy Areas		
	4Xq*	4Xr
r	0.73	0.29
n	34	42

*Significant at 95% <u>if</u> all monthly anomalies are taken as independent.

Table 6. Subsection of correlations matrix for estimating spatial scale — Eastern Newfoundland, (a) upper depth range, (b) lower depth range. The upper triangle shows the number of data pairs, the lower triangle, the correlations.

(a)	S3Kd	S3Kh	S3Ki	S4La	S3Lb	S3Lf	S3Lj	S3Lq	S3PSc	S3PSb
S3Kd		27	31	31	23	28	4	20	31	7
S3Kh	.77		29	29	22	25	4	20	29	7
S3Ki	.51	.61		58	31	45	9	35	66	9
S3La	.55	.69	.50		31	42	8	32	72	9
S3Lb	.59	.34	.37	.31		28	5	20	31	8
S3Lf	.30	.61	.35	.60	.28		4	25	51	8
S3Lj	.75	.56	.47	.45	.68	-.57		6	9	0
S3Lq	-.01	-.35	-.15	-.28	-.18	-.39	.44		35	9
S3PSc	.12	.26	.52	.38	.24	.55	.62	.12		9
S3PSb	-0.58	-.69	-.60	-.79	-.82	-.74	-	.79	-.06	
(b)	**D3Kd**	**D3Kh**	**D3Ki**	**D3La**	**D3Lb**	**D3Lf**	**D3Lj**	**D3Lq**	**D3PSc**	**D3PSb**
D3Kd		4	-	6	4	-	-	-	-	-
D3Kh	.06		-	7	7	-	-	-	-	-
D3Ki	-	-		-	-	-	-	-	-	-
D3La	.36	-.13	-		7	7	9	-	13	-
D3Lb	-.06	-.18	-	.13		3	10	-	-	-
D3Lf	-	-	-	-.29	-.56		11	-	10	-
D3Lj	-	-	-	-.42	.13	.60		-	14	-
D3Lq	-	-	-	-	-	-	-		-	-
D3PSc	-	-	-	-.73	-	.19	.36	-		-
D3PSb	-	-	-	-	-	-	-	-	-	

Table 7. Subsection of correlation matrix for estimating spatial scale — Gulf of Saint Lawrence, (a) upper range and (b) deeper range. The upper triangle shows the number of data pairs, the lower triangle, the correlations.

(a)	S4Rc	S4Rb	S4Sw	S4Sy	S4To	S4Tn	S4Tm	S4Tl	S4Th	S4Tg	S4Tf	S4Vn
S4Rc	-	18	9	7	5	9	14	5	16	12	18	20
S4Rb	.81	-	9	7	3	7	11	5	13	10	14	15
S4Sw	.63	.71	-	4	3	6	8	2	10	5	10	10
S4Sy	-.38	.06	-.75	-	7	10	10	6	11	5	6	10
S4To	.18	-.16	.99	-.32	-	14	14	7	13	5	8	11
S4Tn	.59	.62	.38	.12	-.53	-	19	7	17	7	10	14
S4Tm	-.14	-.08	-.13	.10	-.70	.55	-	10	23	11	15	19
S4Tl	.03	-.22	-	-.07	-.31	.47	.62	-	14	8	8	9
S4Th	.36	.18	.77	-.64	.52	-.13	-.16	.32	-	18	22	23
S4Tg	.38	.20	.77	-.32	-.02	.92	-.31	.38	.65	-	6	11
S4Tf	-.25	.09	.40	.07	-.54	.17	.50	.71	.27	-.29	-	22
S4Vn	.51	.16	.54	-.64	.27	.11	-.17	-.31	.49	.81	.17	-

(b)	D4Rc	D4Rb	D4Sw	D4Sy	D4Tn	D4Tm	D4Tl	D4Tj	D4Th	D4Tg	D4Tf	D4Vn
D4Rc		6	-	5	3	-	6	3	6	4	3	5
D4Rb	.53		9	11	10	11	12	6	16	20	11	22
D4Sw	-	.15		4	4	3	3	-	3	10	4	7
D4Sy	-.39	.60	-.37		3	-	7	3	7	8	4	9
D4Tn	.99	-.11	.99	-.90		5	6	-	5	7	-	8
D4Tm	-	.01	.68	-	.83		3	-	4	7	3	6
D4Tl	.48	-.28	.69	-.21	-.72	-.69		4	15	8	11	9
D4Tj	.02	.23	-	.05	-	-	-.09		7	6	5	5
D4Th	.55	.35	.87	-.82	.99	.66	-.16	-.51		12	16	14
D4Tg	.67	.06	.05	-.30	.70	-.04	.66	.23	.11		11	16
D4Tf	.76	-.24	.03	.31	-	-.49	.09	.52	-.58	.03		7
D4Vn	.71	.04	-.15	-.27	-.43	-.87	0.0	-.60	-.38	.47	.76	

Table 8. Subsection of correlation matrix for estimating spatial scale — Atlantic Coast of Nova Scotia, (a) upper range and (b) deeper range. The upper triangle shows the number of data pairs, the lower triangle, the correlations.

(a)	S4Vn	S4Wd	S4Wk	S4Xm	S4Xo
S4Vn	-	20	19	30	17
S4Wd	.35	-	18	41	26
S4Wk	.38	.45	-	34	22
S4Xm	.14	.34	.61	-	45
S4Xo	.07	.43	.01	.46	-

(b)	D4Vn	D4Wd	D4Wk	D4Xm	D4Xo
D4Vn		13	7	14	19
D4Wd	-.25		-	26	50
D4Wk	.15	-		12	8
D4Xm	-.26	.44	-.11		40
D4Xo	-.08	.36	-.23	.31	

Table 9. Subsection of correlation matrix for estimating spatial scale — Entrance to Bay of Fundy, (a) upper range and (b) deeper range. The upper triangle shows the number of data pairs, the lower triangle, the correlations.

(a)	S4Wd	S4Wk	S4Xm	S4Xo	S4Xq	S4Xr	S4Xs
S4Wd		18	41	26	4	14	4
S4Wk	.45		34	22	-	3	9
S4Xm	.34	.61		45	14	31	15
S4Xo	.43	.01	.46		4	12	10
S4Xq	.35	-	.70	-.06		5	-
S4Xr	.15	-.97	.01	-.03	-.37		4
S4Xs	.39	.07	23	.56	-	.73	

(b)	D4Wd	D4Wk	D4Xm	D4Xo	D4Xq	D4Xr	D4Xs
D4Wd		-	26	50	9	29	9
D4Wk	-		12	8	5	-	-
D4Xm	.44	-.11		40	11	14	-
D4Xo	.36	-.23	.31		26	36	8
D4Xq	-.11	.65	-.82	.48		13	4
D4Xr	.14	-	-.14	.34	.36		10
D4Xs	-.01	-	-	-.20	.91	-.33	

Table 10. Least squares fits of correlations (Fig. 11–14) as a function of separation by region by the expression $2e^{-kx}-1$. The standard deviations (s.d.) of the calculated correlations are given as well as the distance at which the function equals the s.d.

Area		Number of Correlations	$k(km^{-1})$	S.D.	Distance where fit = S.D. L=-ln ((r+1)/2)/k
Nfld	Shallow	44	.00163	0.44	200
	Deep	14	.00366	0.53	70
Gulf	Shallow	27	.00174	0.39	210
	Deep	24	.00294	0.59	80
Nova Scotia	Shallow	10	.00143	0.21	350
	Deep	9	.00216	0.44	150
Fundy	Shallow	5	.00297	0.65	60
	Deep	6	.00211	0.57	110

DEPARTMENT OF FISHERIES AND OCEANS
UNIT AREAS

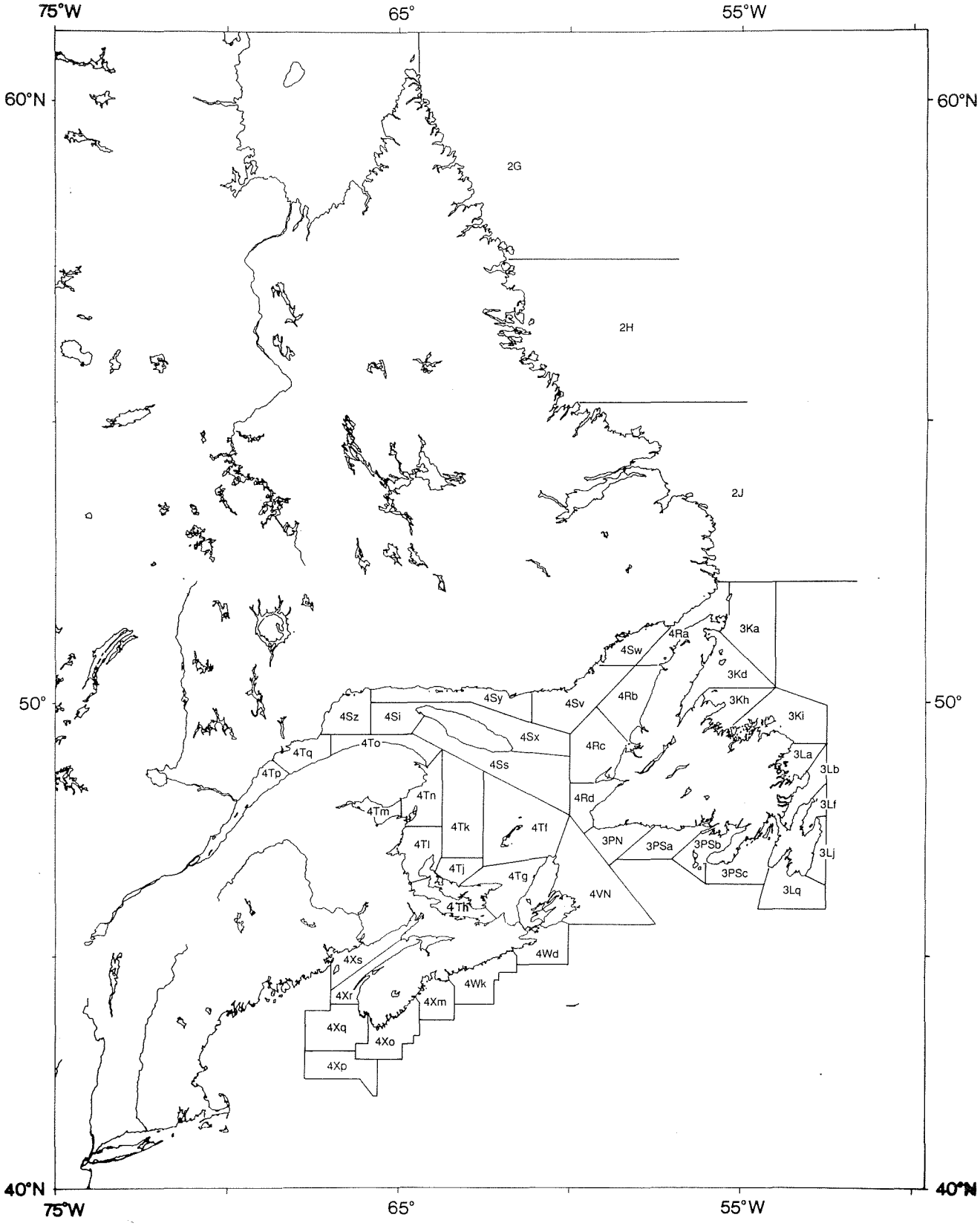


Figure 1. Chart of Unit Areas

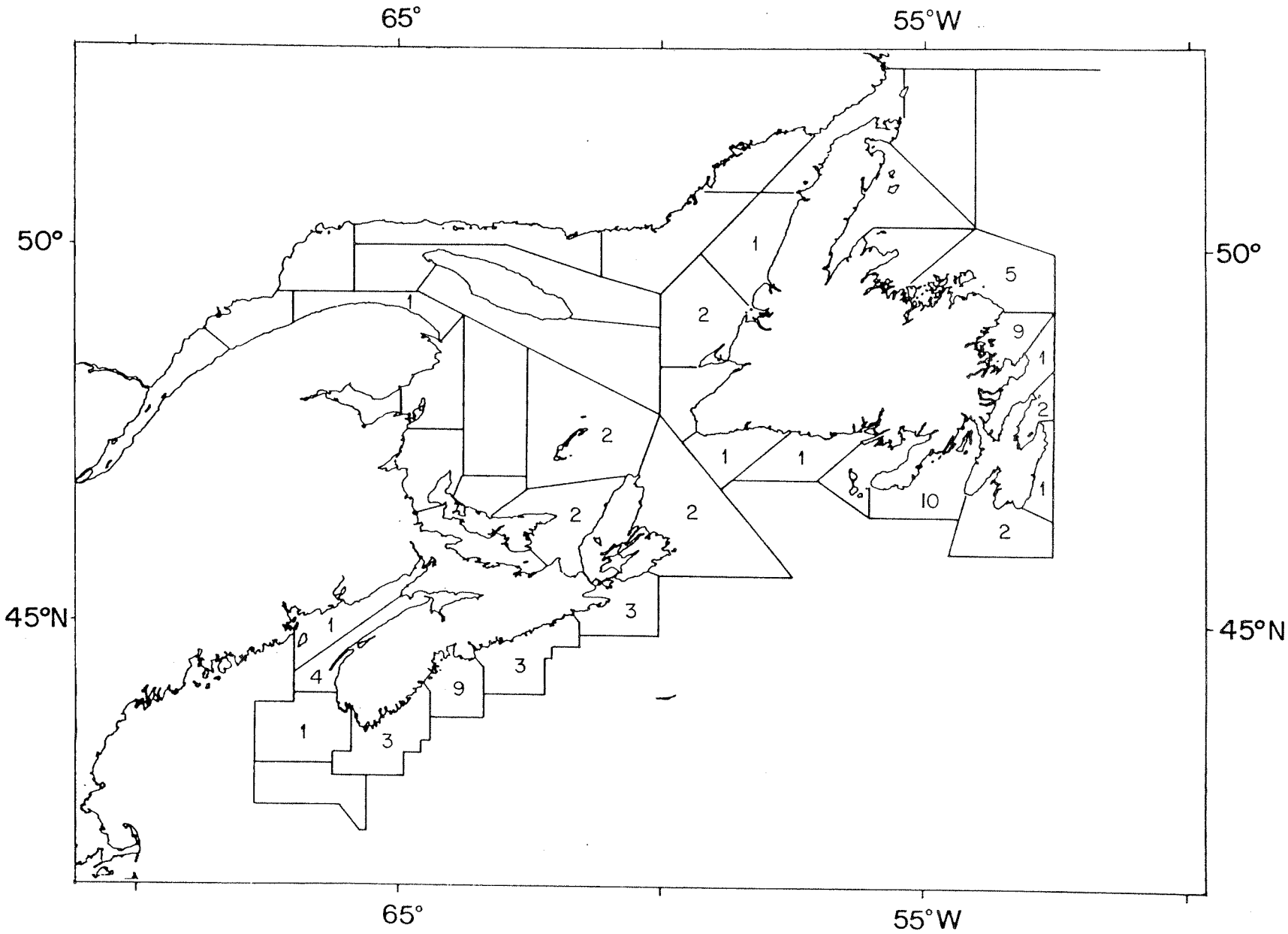


Figure 2. Chart showing the available number of February monthly averages by Unit Area (upper depth range). There are no monthly averages from areas 2G, H and J.

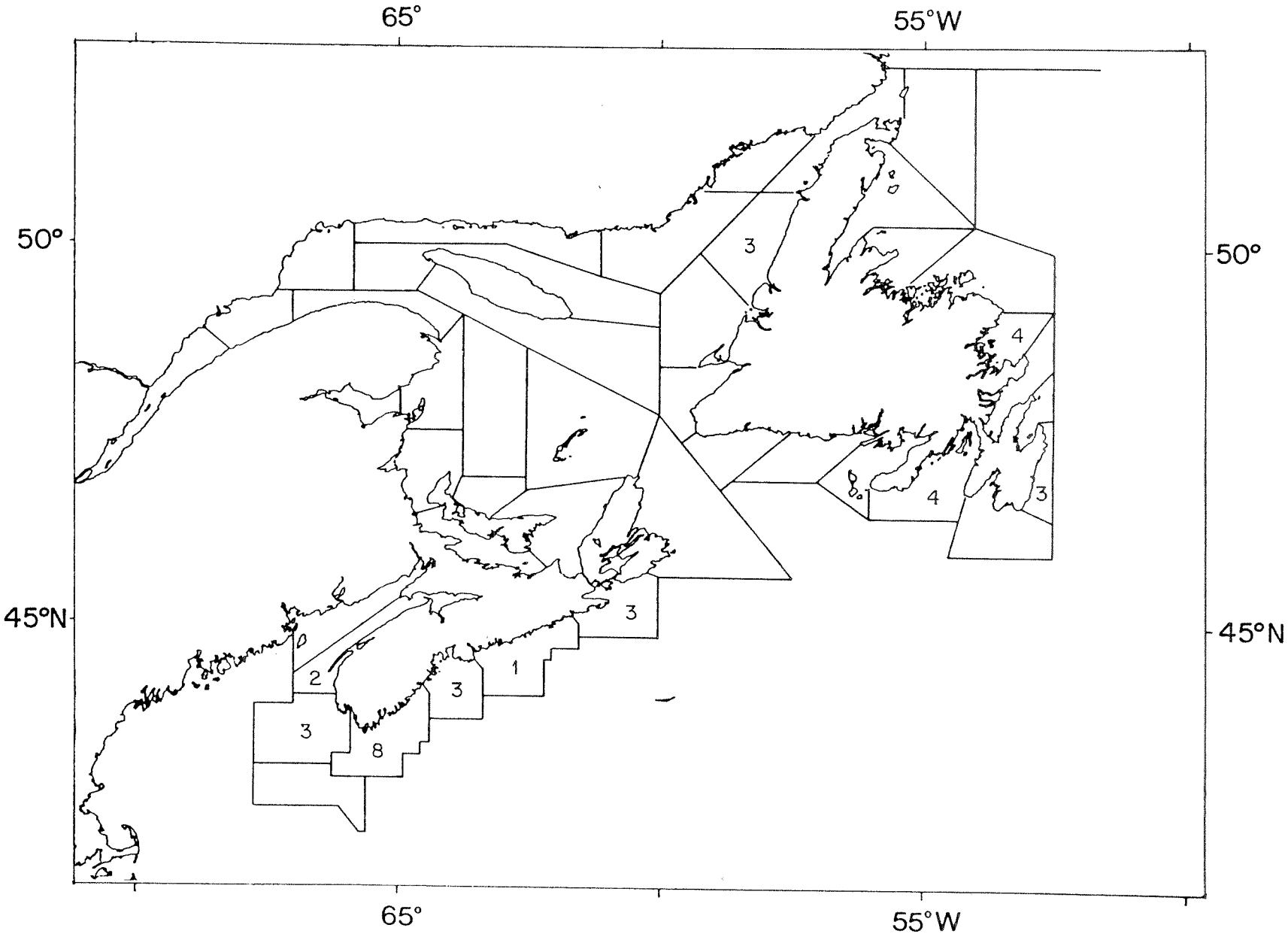


Figure 3. Chart showing available number of February monthly averages by Unit Area (lower depth range). There are no monthly averages from areas 2G, H and J.

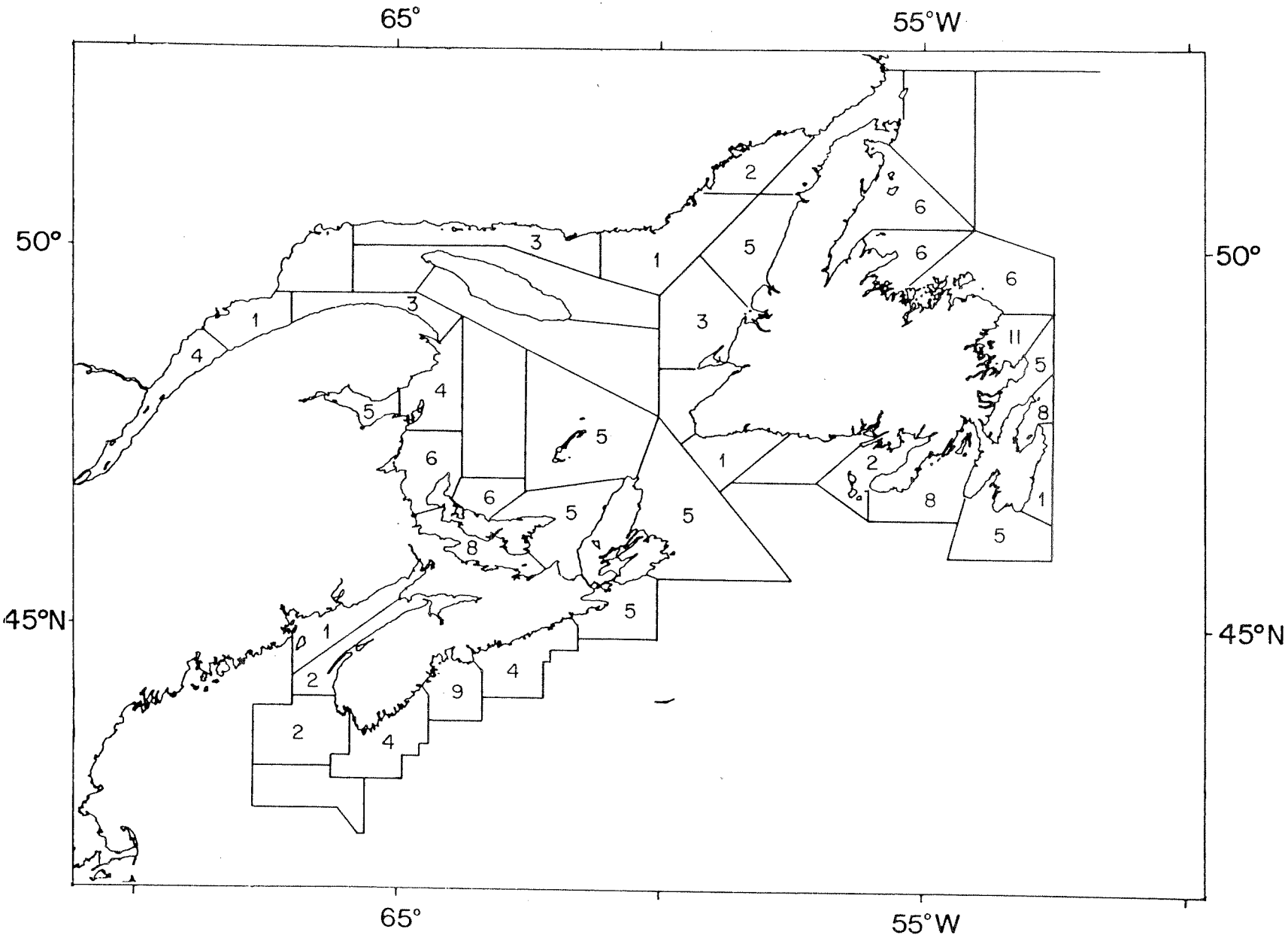


Figure 4. Chart showing available number of August monthly averages by Unit Area (upper depth range). One monthly average is available from areas 2H and 2J.

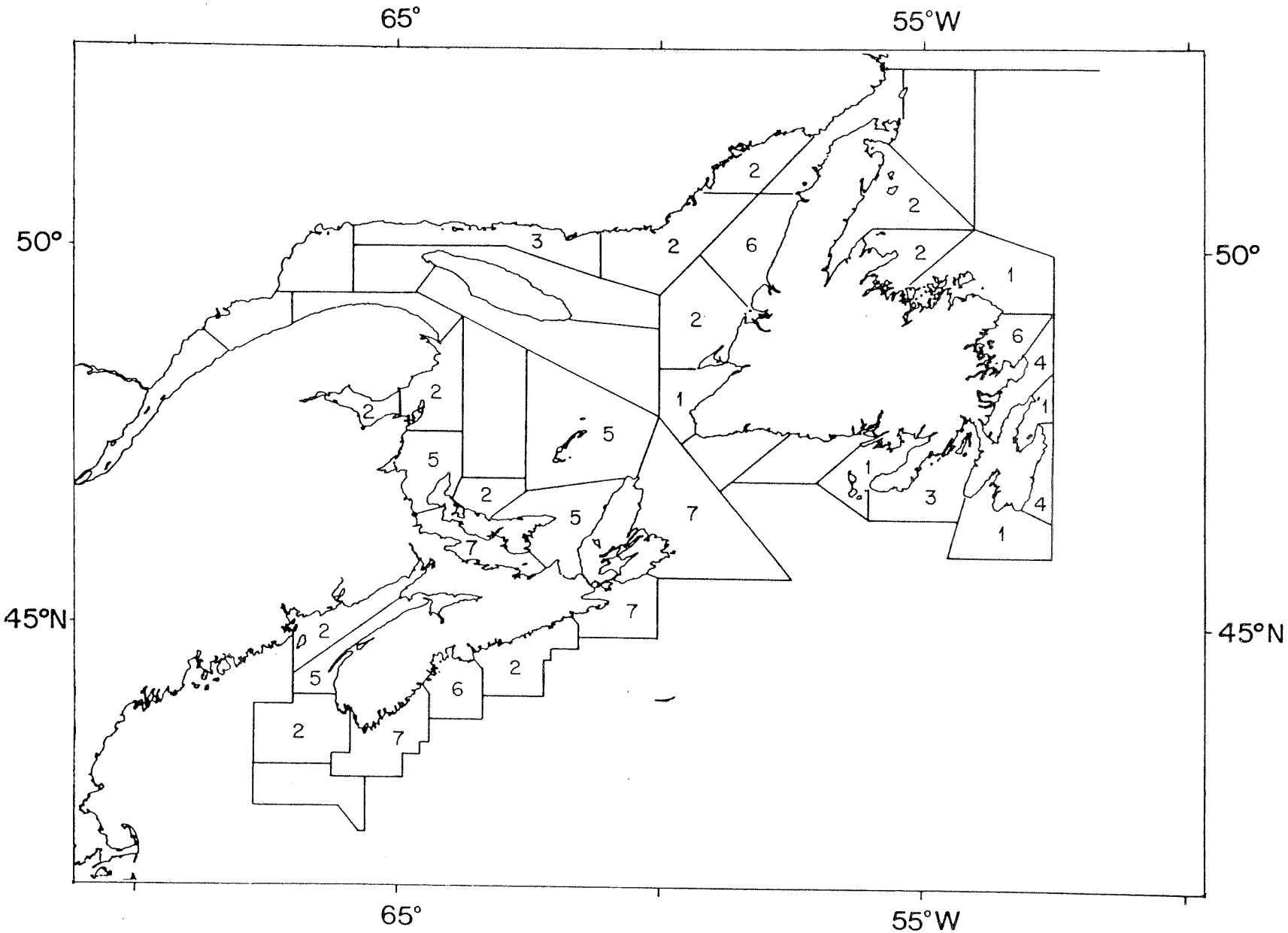


Figure 5. Chart showing available number of August monthly averages by Unit Area (lower depth range). There are no monthly averages from areas 2G, H and J.

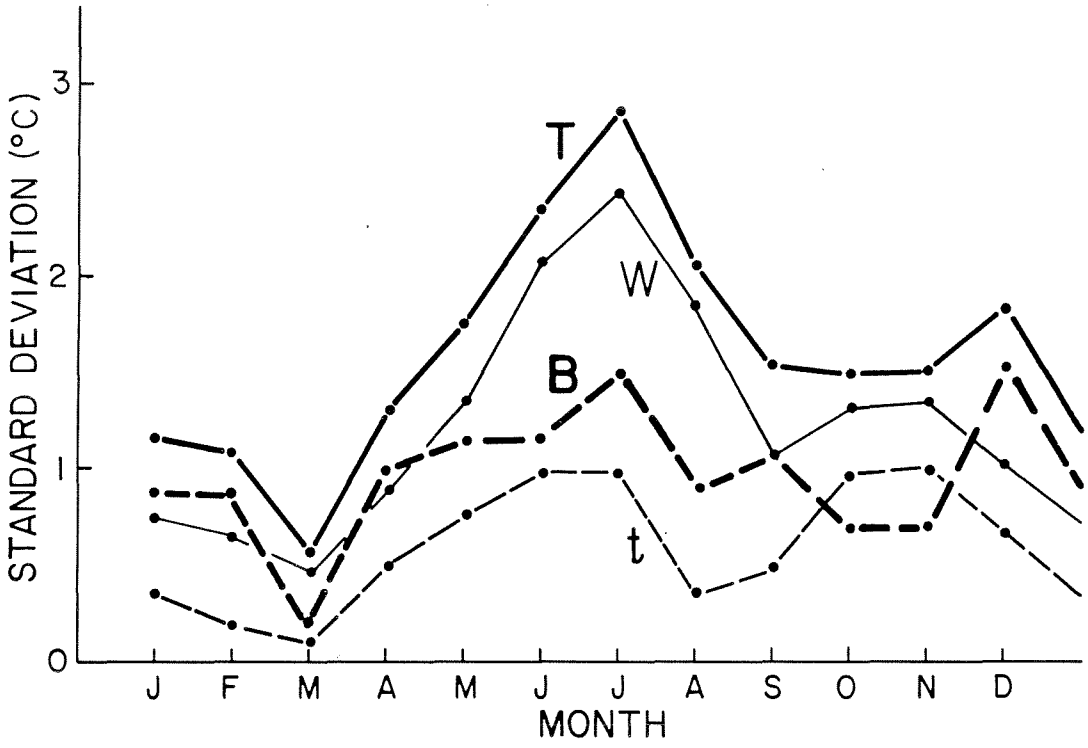


Figure 6. Seasonal cycle of components of standard deviation for the well-sampled Unit Area, S3La. The letter 't' identifies the contribution from seasonal trend; 'W', the within-month component; 'B', the interannual standard deviation of monthly means; and 'T', the total standard deviation.

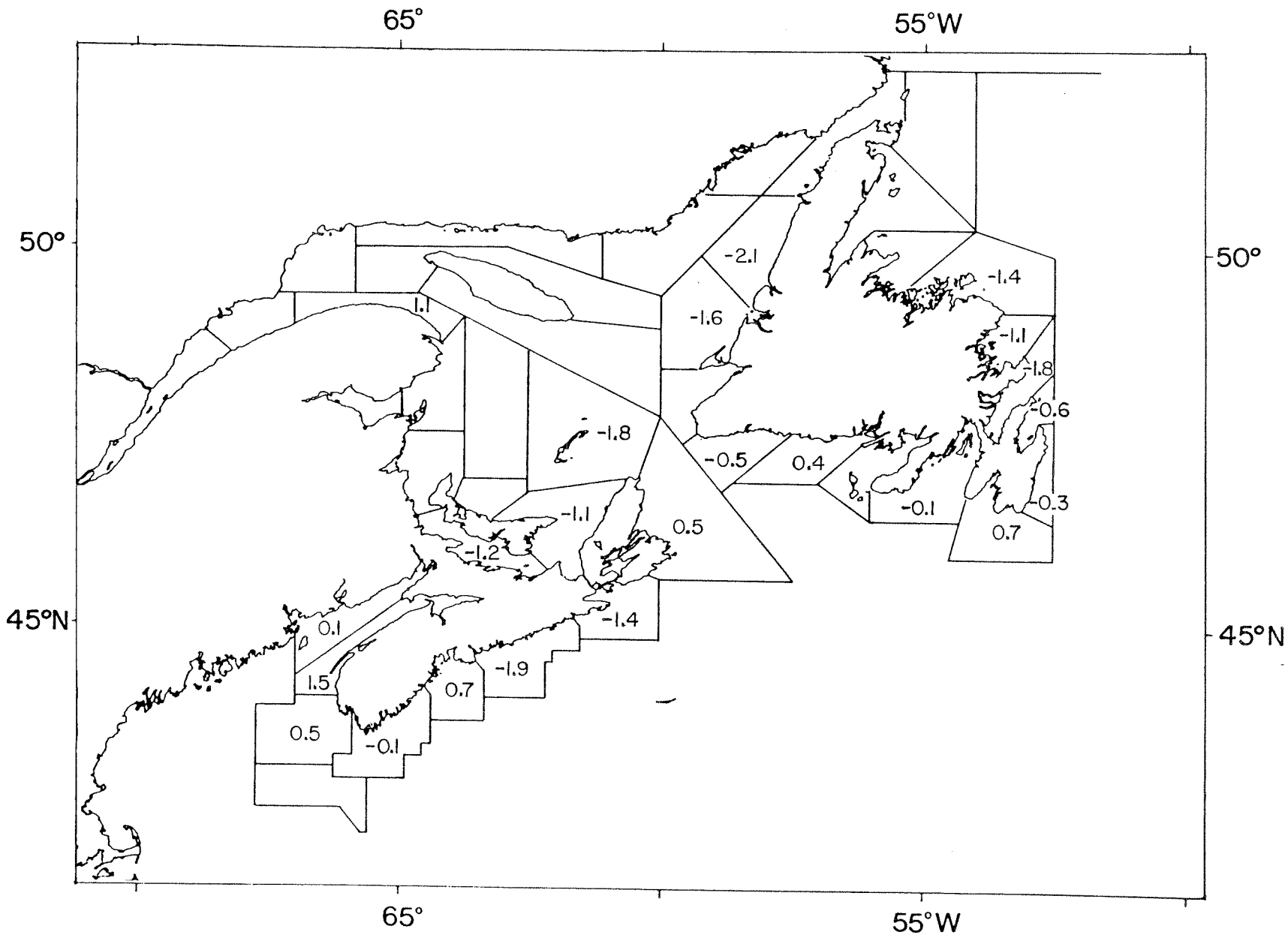


Figure 7. Chart showing grand mean February temperatures by Unit Area (upper depth range).

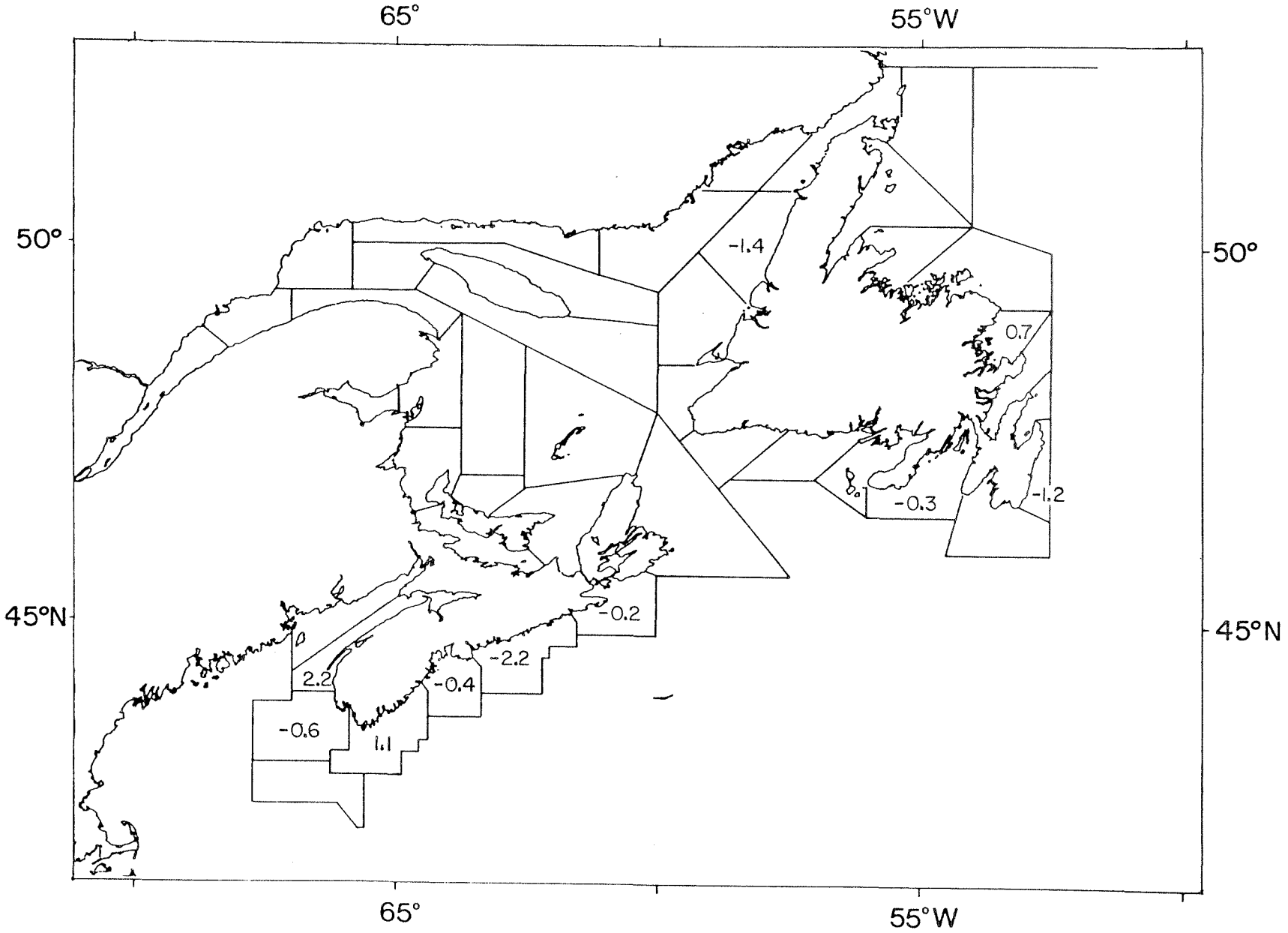


Figure 8. Chart showing grand mean February temperatures by Unit Area (lower depth range).

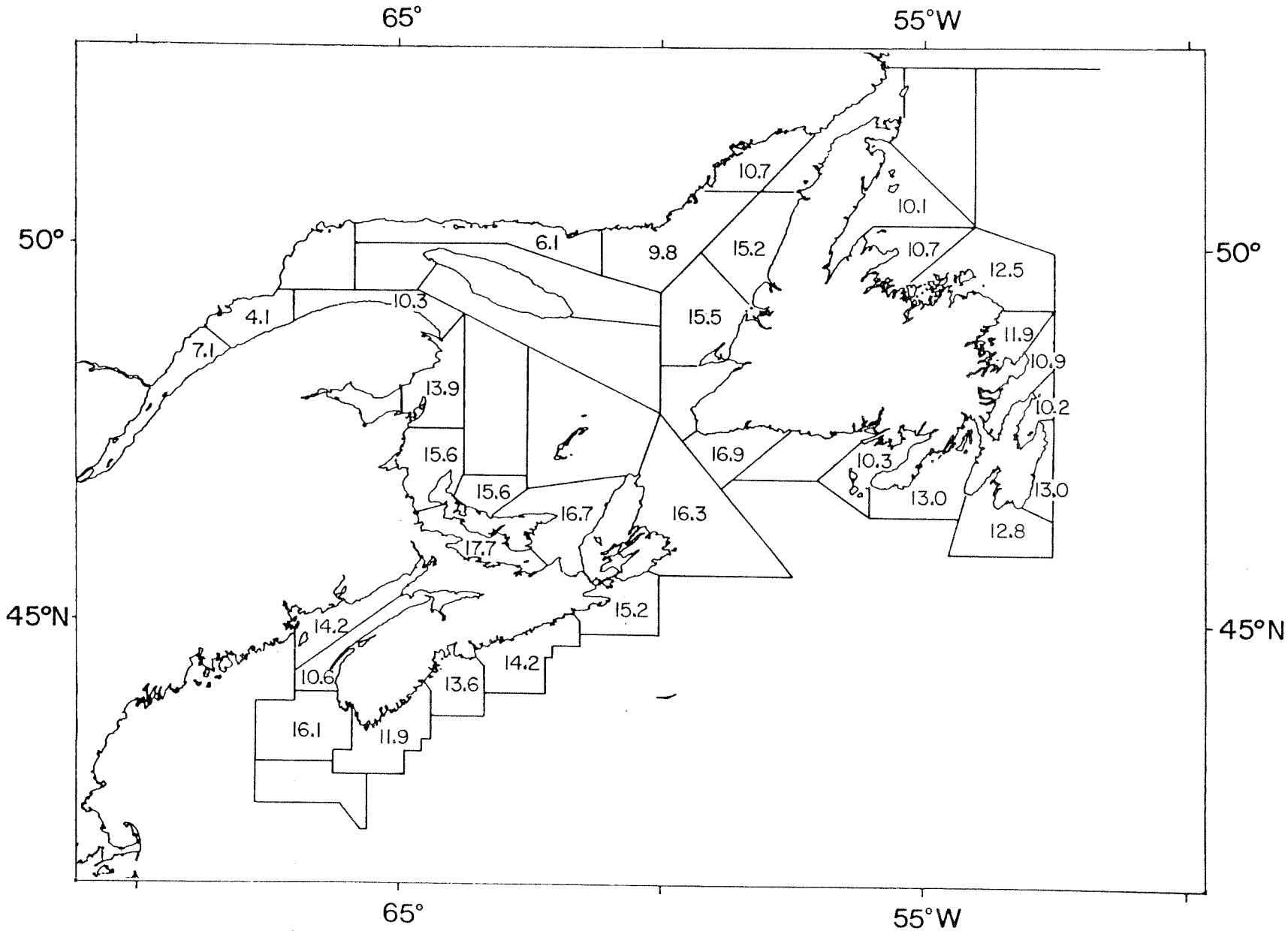


Figure 9. Chart showing grand mean August temperatures by Unit Area (upper depth range). The average temperature for area 2H is 6.5°C, for area 2J, 8.5°C.

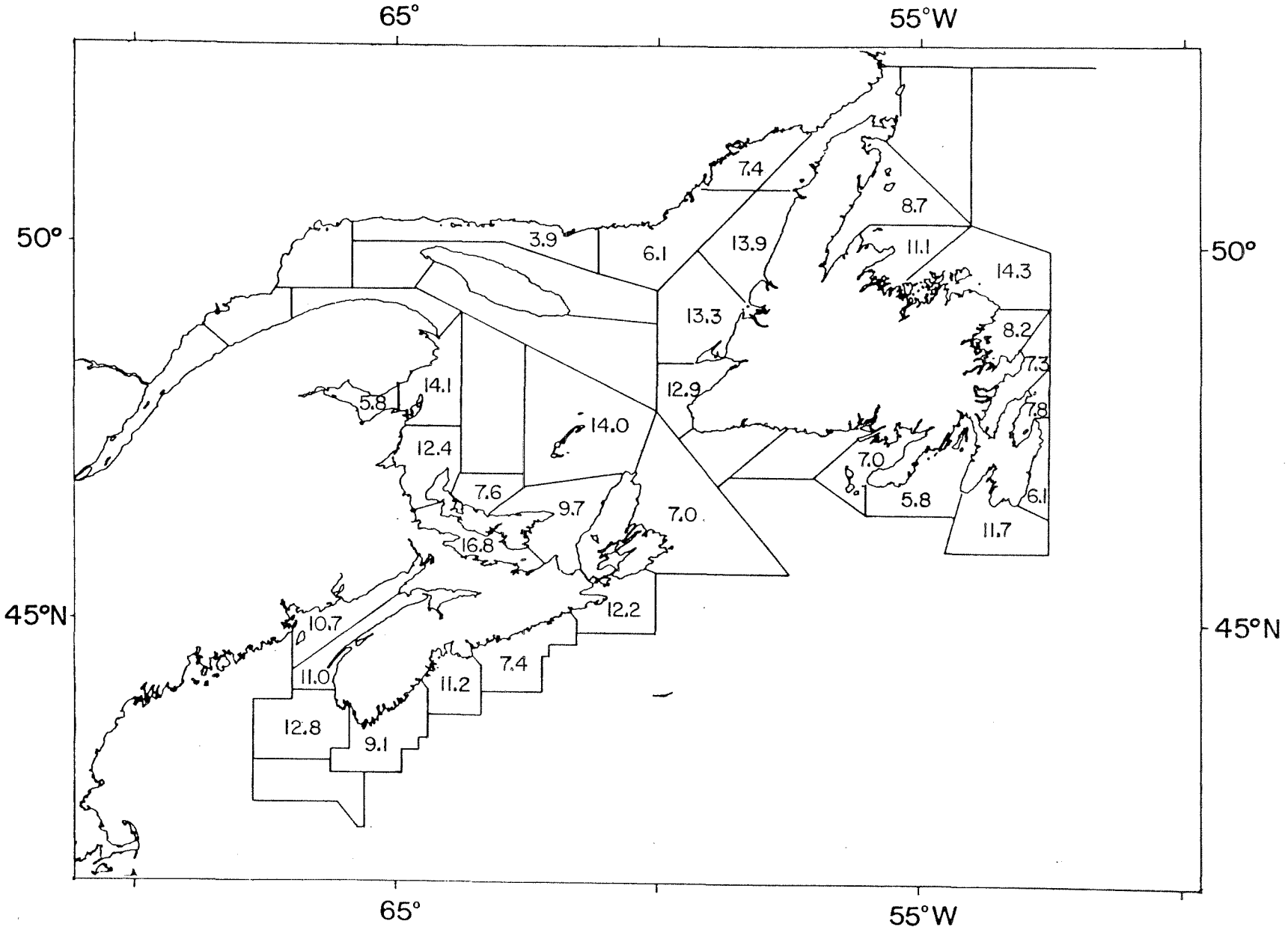
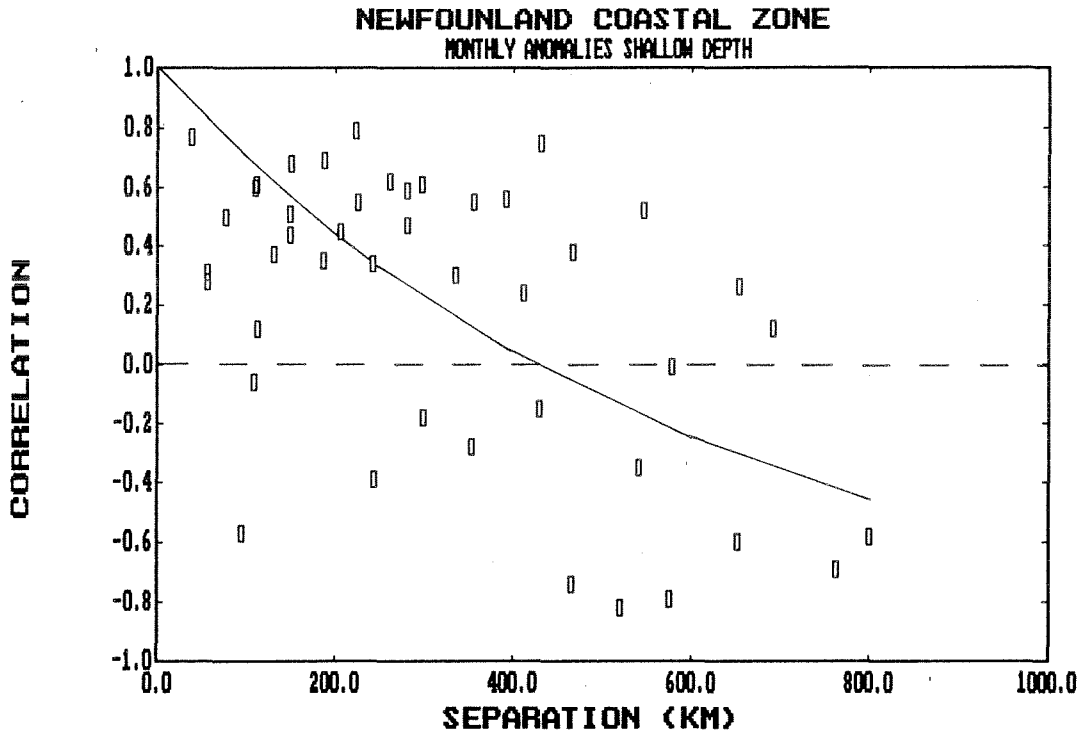


Figure 10. Chart showing grand mean August temperatures by Unit Area (lower depth range).



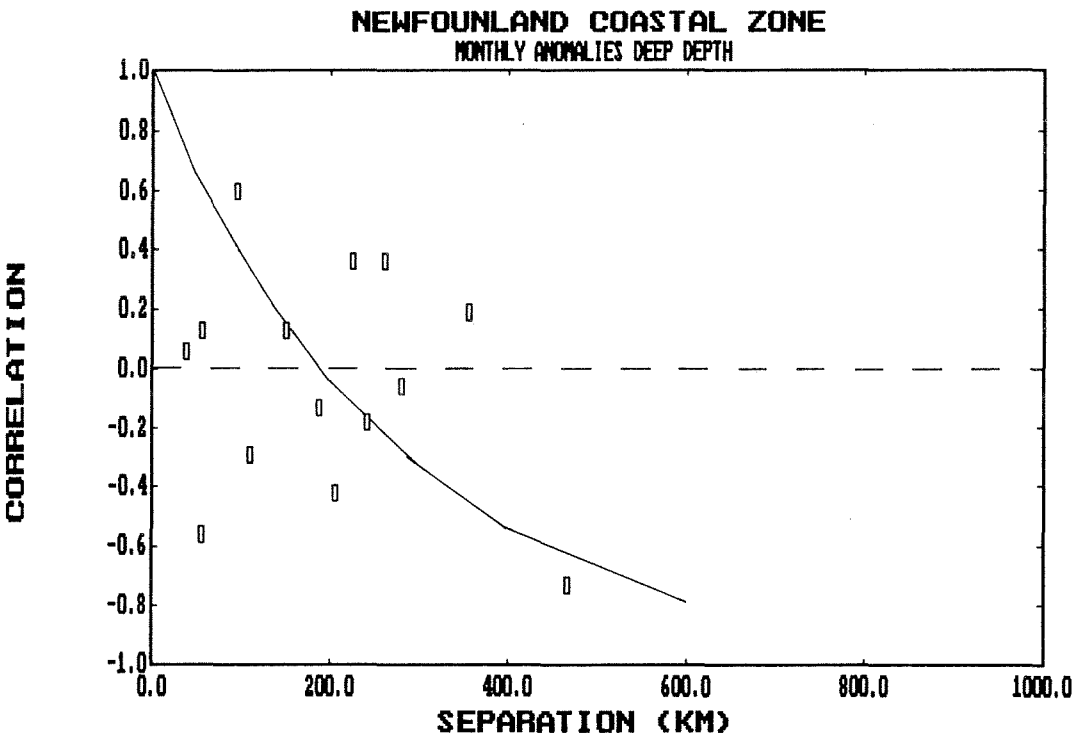
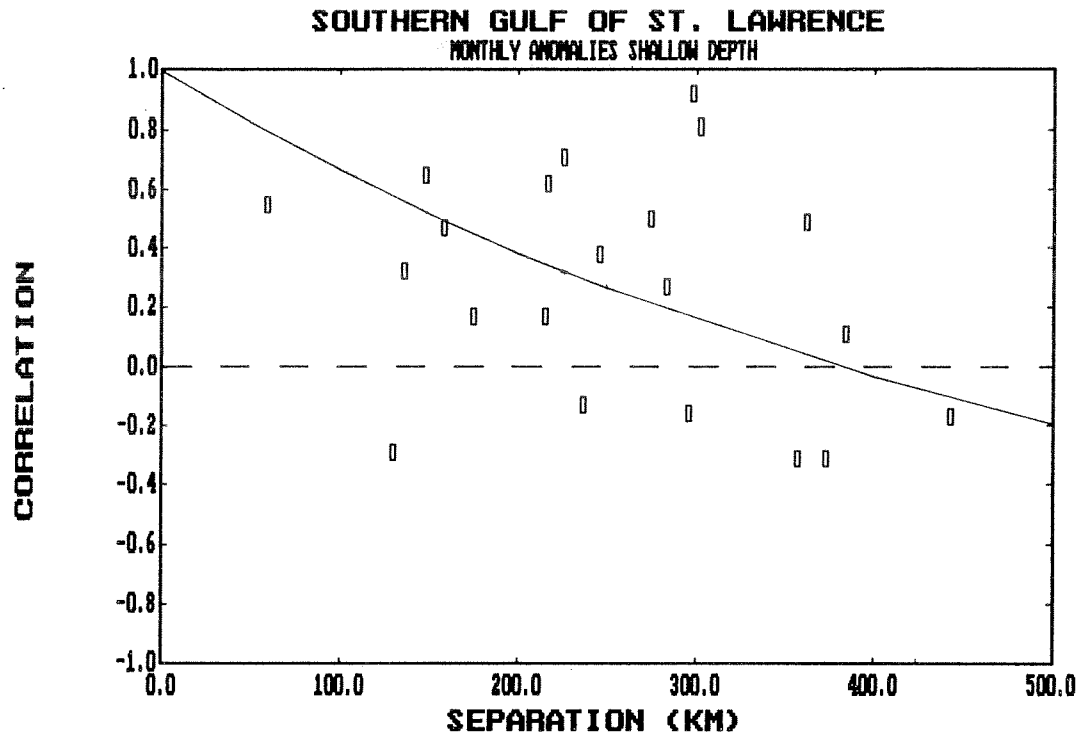


Figure 11. Correlations as a function of separation for the Newfoundland Coastal zone, shallow and deep layers. Correlations are based on monthly anomalies. The least squares fits of $2e^{-kx}-1$ are shown.



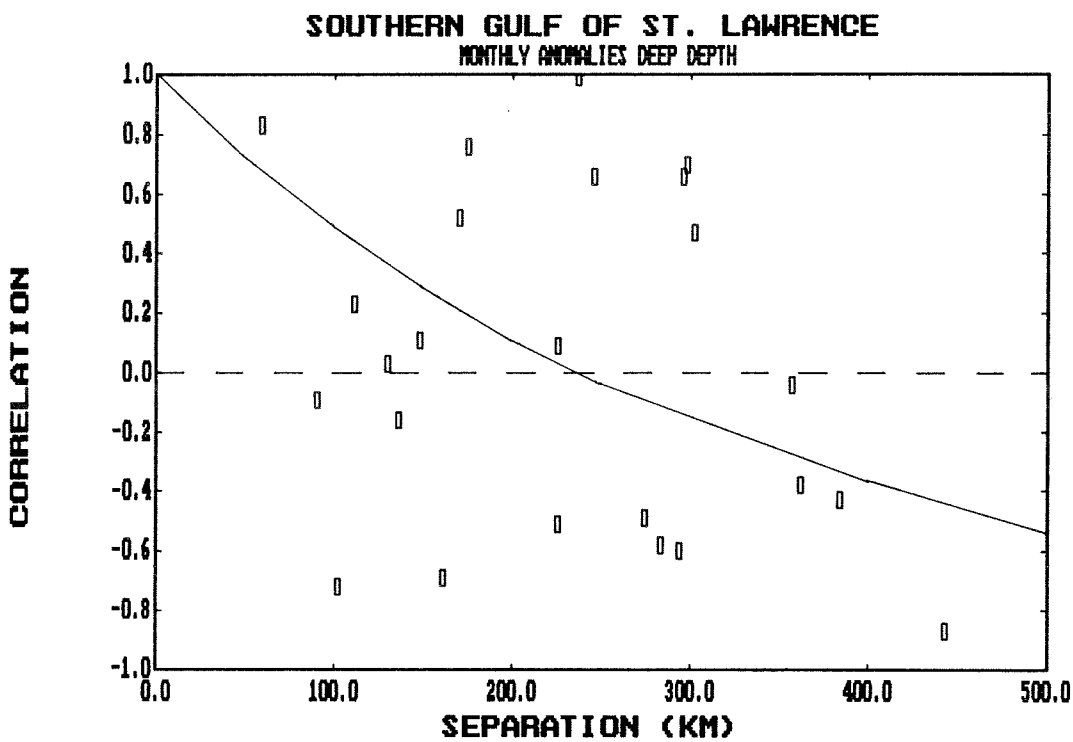
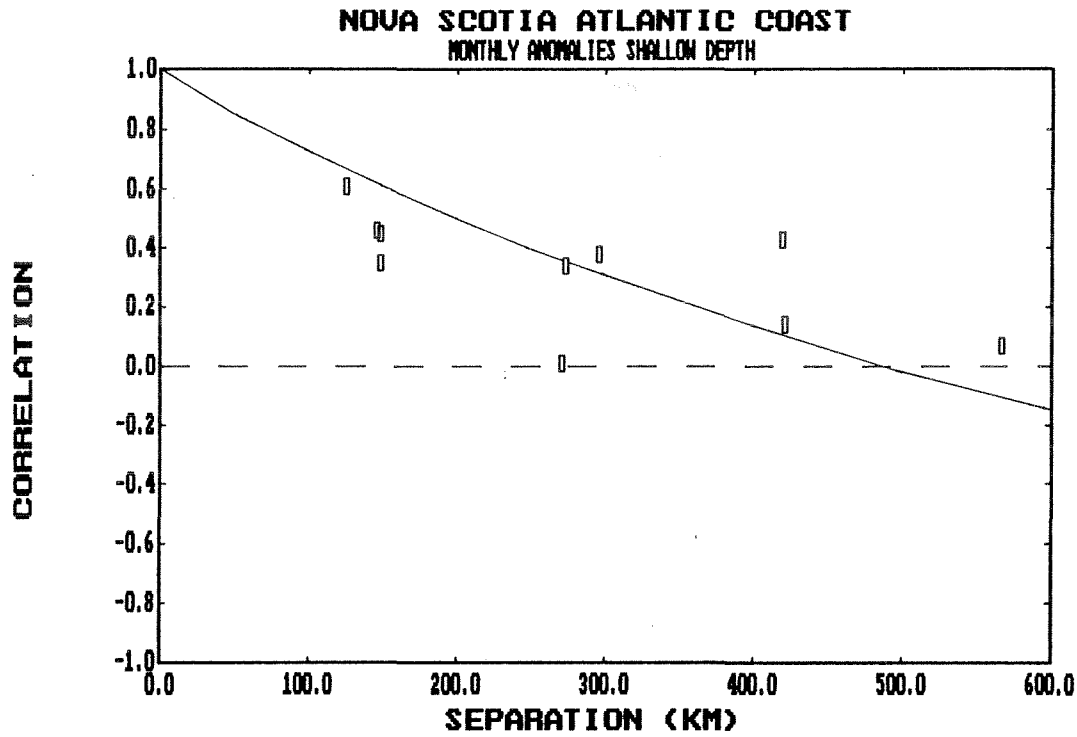


Figure 12. Correlations as a function of separation for the southern Gulf of St. Lawrence, shallow and deep layers. Correlations are based on monthly anomalies. The least squares fits of $2e^{-kx}-1$ are shown.



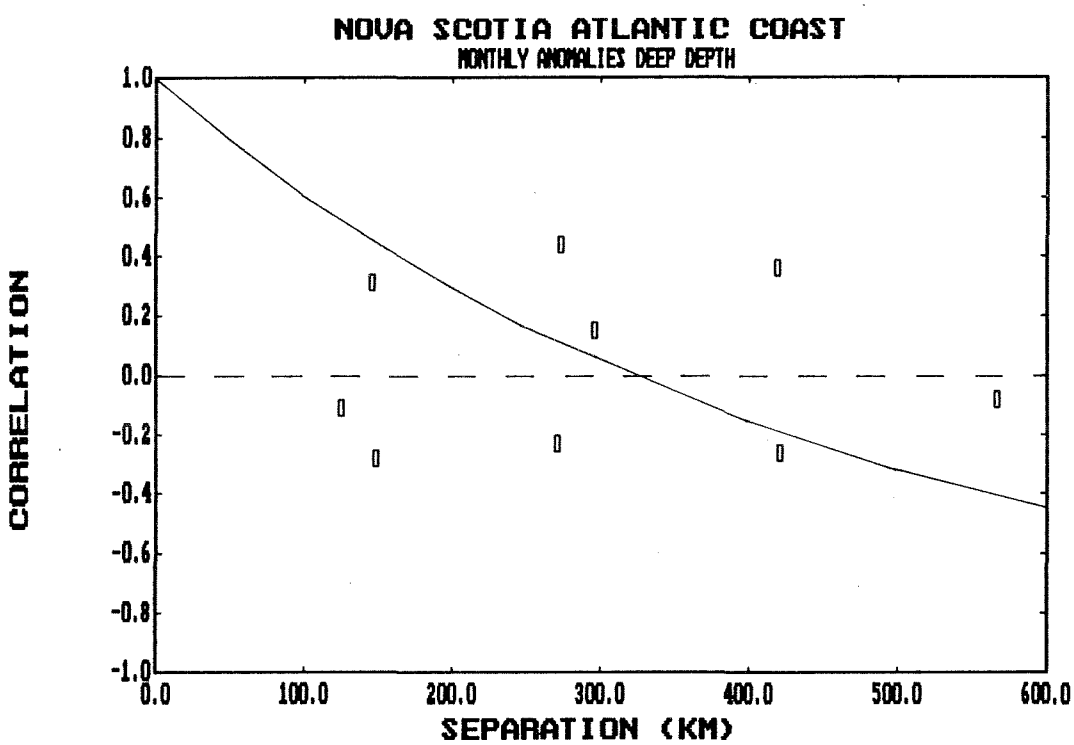
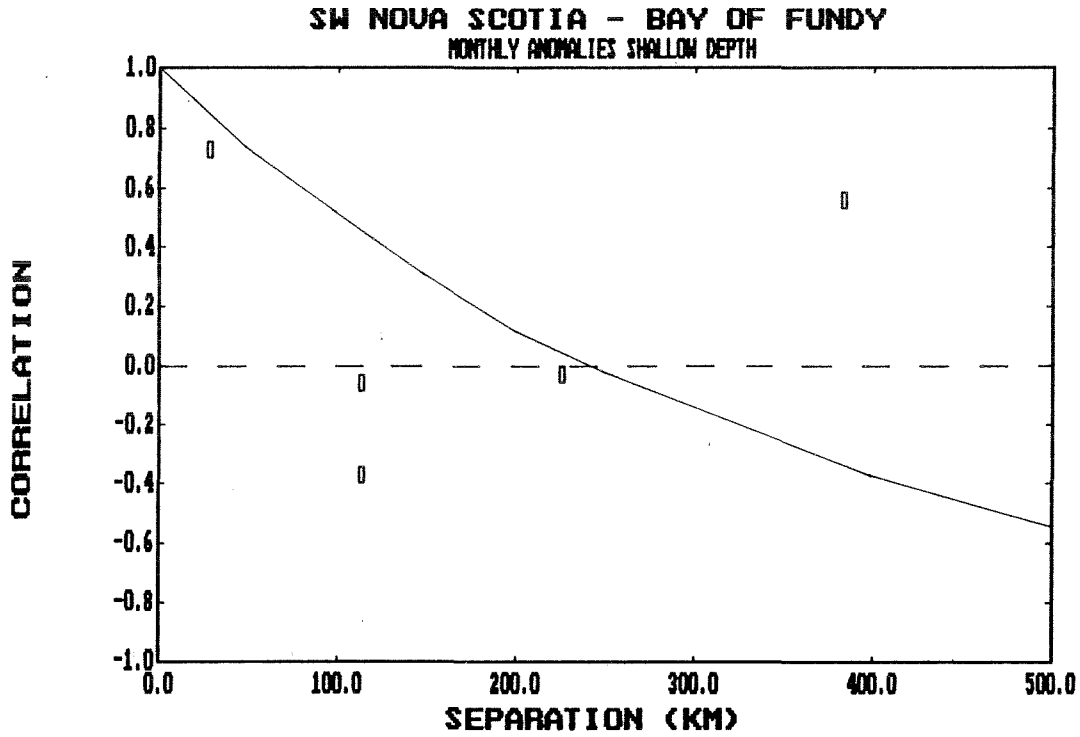


Figure 13. Correlations as a function of separation for the Atlantic coast of Nova Scotia, shallow and deep layers. Correlations are based on monthly anomalies. The least squares fits of $2e^{-kx}-1$ are shown.



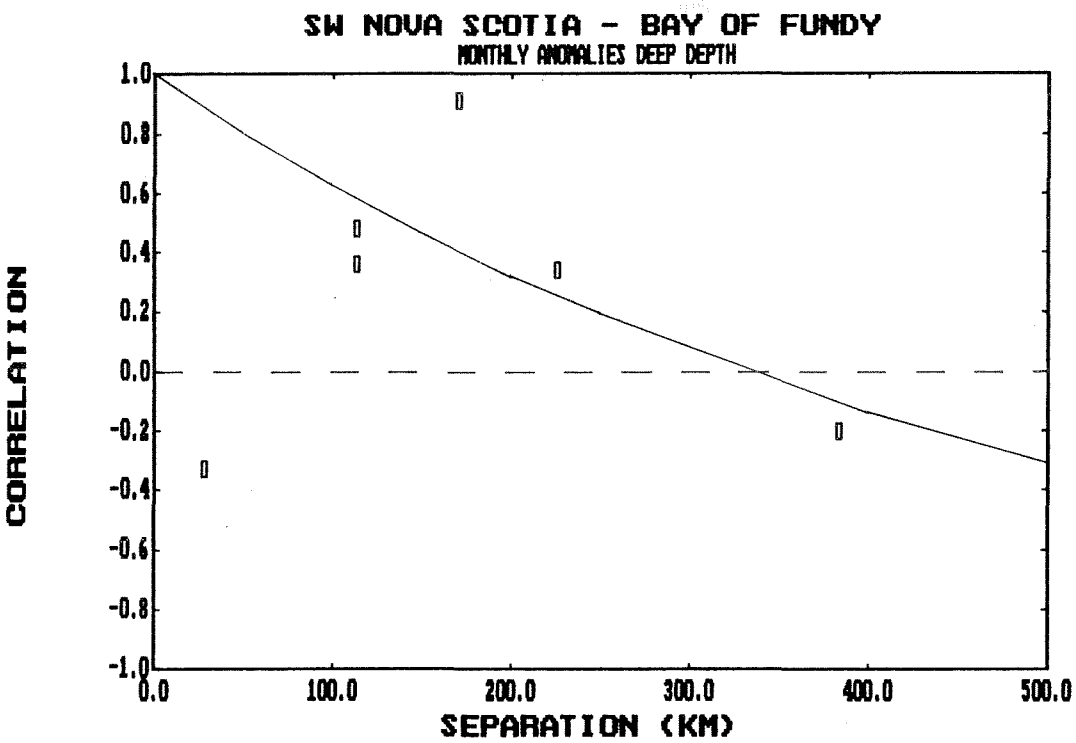


Figure 14. Correlations as a function of separation for the southwest Nova Scotia–Bay of Fundy, shallow and deep layers. Correlations are based on monthly anomalies. The least squares fits of $2e^{-kx}-1$ are shown.

Appendix A. List of thermograph moorings included in this data base, grouped into Unit Areas and depth ranges.

Appendix A. ID corresponds to instrument depth, BD to bottom depth and PART to partition number.

SHALLOW LOCATIONS - LESS THAN 12 METRES

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
2G	HEBRON LABRADOR	58.15	63.08	12: 0	12/ 8/1983	1	1	619
2G	HEBRON FIORD LABRADO	58.09	63.05	12: 0	24/ 8/1984	1	1	1192
2G	HEBRON FIORD LABRADO	58.09	63.05	0: 0	13/ 7/1984	3	3	1194
2H	ANAKTALIK BAY NFLD	56.45	62.05	24: 0	7/ 7/1985	1	10	1455
2H	HERRING RUN PT NFLD	56.58	61.42	20: 0	13/ 7/1985	1	1	1454
2H	NAIN (BALD COVE)	56.51	61.28	14: 0	22/ 7/1987	3	30	1714
2JM	FOX HARBOUR LABRADOR	52.35	55.70	16: 0	11/ 6/1984	3	3	1196
2JM	FOX HARBOUR LABRADOR	52.35	55.70	16: 0	11/ 6/1984	3	3	1197
2JM	SPOTTED ISLAND LABRA	53.51	55.86	16: 0	5/ 7/1984	2	2	1195
3KD	CROQUE HARBOUR NFLD	51.05	55.82	20: 0	14/ 7/1986	5	55	1024
3KD	CROQUE HBR	51.05	55.82	10: 0	17/ 7/1987	5	5	1664
3KD	WESTPORT WHITE BAY N	49.77	56.63	16: 0	17/10/1983	1	1	621
3KD	WESTPORT NFLD	49.77	56.63	16: 0	1/ 6/1984	1	1	1199
3KD	WESTPORT NFLD	50.12	56.60	20: 0	17/10/1984	1	11	1457
3KD	WESTPORT NFLD	49.77	56.63	20: 0	5/ 7/1985	1	1	1459
3KD	WESTPORT NFLD	49.77	56.63	12: 0	12/10/1985	1	20	1462
3KD	WESTPORT WHITE BAY N	50.12	56.60	13: 0	21/ 6/1982	4	4	481
3KD	WESTPORT WHITE BAY N	49.77	56.63	16: 0	25/ 5/1983	10	10	620
3KD	WESTPORT WHITE BAY N	49.77	56.63	16: 0	20/10/1983	10	10	622
3KD	WESTPORT NFLD	49.77	56.63	16: 0	1/ 6/1984	10	10	1198
3KD	WESTPORT NFLD	50.12	56.60	20: 0	17/10/1984	10	10	1458
3KD	WESTPORT NFLD	49.77	56.63	20: 0	5/ 7/1985	10	10	1460
3KD	WESTPORT NFLD	49.77	56.63	20: 0	12/10/1985	10	20	1461
3KD	WESTPORT WHITE BAY	49.77	56.63	16: 0	19/ 6/1986	10	10	1057
3KD	WESTPORT WHITE BAY	49.77	56.63	16: 0	19/ 6/1986	10	10	1058
3KD	WESTPORT WHITE BAY	49.77	56.63	22: 0	30/ 5/1987	10	30	1728
3KD	WESTPORT WHITE BAY	49.77	56.63	23: 0	30/ 5/1987	10	30	1729
3KH	HARRY'S HARBOUR NFLD	49.70	55.93	16: 0	18/10/1984	1	1	1202
3KH	HARRY'S HARBOUR NFLD	49.70	55.93	24: 0	1/ 7/1985	1	10	1463
3KH	HARRY'S HARBOUR NFLD	49.70	55.93	20: 0	10/10/1985	1	40	1465
3KH	HARRY'S HARBOUR NFLD	49.70	55.93	16: 0	3/10/1983	10	10	627
3KH	HARRY'S HARBOUR NFLD	49.70	55.93	24: 0	1/ 7/1985	10	40	1464
3KH	HARRY'S HBR NFLD	49.70	55.93	16: 0	21/ 6/1986	10	40	1059
3KH	HARRY'S HBR NFLD	49.70	55.93	16: 0	21/ 6/1986	10	40	1060
3KH	HARRY'S HBR	49.70	55.93	0: 0	4/ 6/1987	10	34	1677
3KH	HARRYS HARBOUR NFLD,	49.70	55.93	16: 0	8/ 6/1983	1	1	623
3KH	HARRYS HARBOUR NFLD.	49.70	55.93	16: 0	3/10/1983	1	1	626
3KH	HARRYS HARBOUR NFLD	49.70	55.93	24: 0	14/ 6/1984	1	1	1200
3KH	HARRYS HARBOUR NFLD	49.70	55.93	16: 0	18/10/1984	1	1	1201
3KH	HARRYS HARBOR GREEN	49.72	55.88	2: 0	25/ 5/1982	5	5	483
3KH	HARRYS HARBOUR NFLD.	49.70	55.93	4: 0	9/ 6/1983	10	10	624
3KH	HARRYS HARBOUR NFLD.	49.70	55.93	0: 0	28/ 7/1983	10	10	625
3KH	PACQUET	49.98	55.87	18: 0	1/ 7/1986	4	4	1699
3KH	PACQUET	49.98	55.87	17: 0	29/ 5/1987	4	4	1701
3KH	PACQUET	49.98	55.87	16: 0	25/ 8/1987	4	4	1704
3KH	SPRINGDALE	49.50	56.06	15: 0	24/11/1986	2	5	1712

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
3KI	COMFORT COVE NFLD, 1	49.41	54.83	13:50	17/11/1981	9	9	484
3KI	COMFORT COVE NFLD, 1	49.41	54.83	14:50	17/11/1981	9	9	485
3KI	COMFORT COVE NFLD, 2	49.41	54.83	12:30	29/ 4/1982	9	9	486
3KI	COMFORT COVE NFLD, 2	49.41	54.83	17:30	29/ 4/1982	9	9	487
3KI	COMFORT COVE NFLD, 9	49.41	54.83	12:30	9/ 9/1982	9	9	488
3KI	COMFORT COVE NFLD, 9	49.41	54.83	12:30	9/ 9/1982	9	9	489
3KI	COMFORT COVE NFLD,	49.41	54.83	16: 0	17/12/1982	9	9	628
3KI	COMFORT COVE NFLD.	49.41	54.83	16: 0	17/12/1982	9	9	629
3KI	COMFORT COVE NFLD	49.41	54.83	16: 0	12/ 5/1983	9	9	630
3KI	COMFORT COVE NFLD	49.41	54.83	16: 0	12/ 5/1983	9	9	631
3KI	COMFORT COVE NFLD	49.41	54.83	16: 0	18/ 8/1983	9	9	632
3KI	COMFORT COVE NFLD	49.41	54.83	16: 0	18/ 8/1983	9	9	633
3KI	COMFORT COVE NFLD	49.41	54.83	4: 0	4/12/1983	9	9	1204
3KI	COMFORT COVE NFLD	49.41	54.83	16: 0	7/12/1983	9	9	1205
3KI	COMFORT COVE NFLD	49.41	54.83	16: 0	16/ 5/1984	9	9	1206
3KI	COMFORT COVE NFLD	49.41	54.62	16: 0	18/ 9/1984	9	9	1468
3KI	COMFORT COVE NFLD	49.41	54.62	16: 0	18/ 9/1984	9	9	1469
3KI	COMFORT COVE NFLD	49.41	54.83	16: 0	31/ 1/1985	9	9	1470
3KI	COMFORT COVE NFLD	49.41	54.83	16: 0	31/ 1/1985	9	9	1471
3KI	COMFORT COVE NFLD	49.41	54.83	12: 0	8/ 6/1985	9	9	1472
3KI	COMFORT COVE NFLD	49.41	54.83	12: 0	8/ 6/1985	9	9	1473
3KI	COMFORT COVE NFLD	49.41	54.83	16: 0	19/11/1985	9	9	964
3KI	COMFORT COVE NFLD	49.41	54.83	16: 0	19/11/1985	9	9	965
3KI	COMFORT COVE NFLD	49.41	54.83	20: 0	24/ 4/1986	9	9	966
3KI	COMFORT COVE NFLD	49.41	54.83	20: 0	24/ 4/1986	9	9	967
3KI	COMFORT COVE NFLD	49.41	54.83	16: 0	10/ 7/1986	9	9	1038
3KI	COMFORT COVE NFLD	49.41	54.83	16: 0	10/ 7/1986	9	9	1039
3KI	COMFORT COVE	49.41	54.83	14: 0	30/ 5/1987	9	9	1659
3KI	COMFORT COVE	49.41	54.83	17:30	28/ 8/1987	9	9	1660
3KI	COMFORT COVE	49.41	54.83	20: 0	28/ 8/1987	9	9	1741
3KI	HERRING NECK NFLD	49.63	54.58	0: 0	13/ 6/1984	1	1	1209
3KI	HERRING NECK NFLD	49.63	54.58	20: 0	17/10/1984	1	1	1211
3KI	HERRING NECK NFLD	49.63	54.58	24: 0	13/ 6/1985	1	10	1474
3KI	HERRING NECK NFLD	49.63	54.58	16: 0	4/10/1985	1	10	1476
3KI	HERRING NECK	49.63	54.58	14: 0	8/ 5/1987	5	5	1649
3KI	HERRING NECK	49.63	54.58	16: 0	8/ 5/1987	5	5	1650
3KI	HERRING NECK NFLD	49.63	54.58	0: 0	13/ 6/1984	10	10	1210
3KI	HERRING NECK NFLD	49.63	54.58	20: 0	17/10/1984	10	10	1212
3KI	HERRING NECK NFLD	49.63	54.58	24: 0	13/ 6/1985	10	10	1475
3KI	HERRING NECK NFLD	49.63	54.58	12: 0	3/10/1985	10	10	1477
3KI	HILLGRADE NFLD.	49.57	54.70	12: 0	9/ 6/1983	1	1	635
3KI	HILLGRADE NFLD	49.57	54.70	16: 0	7/10/1983	1	1	1207
3KI	HILLGRADE NFLD	49.57	54.70	12: 0	9/ 6/1983	10	10	634
3KI	HILLGRADE NFLD	49.57	54.70	16: 0	7/10/1983	10	10	1208
3KI	LA SCIE NFLD	49.97	55.60	16: 0	26/ 6/1982	5	5	1456
3KI	LA SCIE	48.94	55.61	19: 0	20/ 6/1987	9	27	1687
3LA	CAPE BONAVISTA, BONA	48.70	53.09	20: 0	27/ 6/1986	5	15	1026
3LA	CAPE FREELS NFLD	49.25	53.45	20: 0	14/ 7/1985	1	10	1478
3LA	CAPE FREELS NFLD	49.25	53.45	16: 0	1/ 7/1986	5	12	1027
3LA	CAPE FREELS NFLD	49.25	53.45	20: 0	14/ 7/1985	10	10	1479
3LA	LIONS DEN CHANDLER	48.55	53.80	16: 0	21/ 6/1985	10	10	1492

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
3LA	LIONS DEN CHANDLER R	48.55	53.80	20: 0	21/11/1985	10	10	968
3LA	LITTLE COLDEAST NEWM	48.58	53.80	20: 0	21/ 6/1985	0	8	1490
3LA	LITTLE COLDEAST NEWM	48.58	53.80	16: 0	21/11/1985	8	8	978
3LA	SALVAGE BAY NFLD.	48.68	53.65	12: 0	1/ 6/1983	1	1	642
3LA	SALVAGE BAY NFLD.	48.68	53.65	16: 0	18/10/1983	1	1	644
3LA	SALVAGE BAY NFLD	48.68	53.65	16: 0	30/ 5/1984	1	1	1218
3LA	SALVAGE BAY NFLD	48.68	53.65	12: 0	4/ 6/1985	1	27	1485
3LA	SALVAGE BAY NFLD.	48.68	53.65	12: 0	1/ 6/1983	10	10	643
3LA	SALVAGE BAY NFLD.	48.68	53.65	16: 0	18/10/1983	10	10	645
3LA	SALVAGE BAY NFLD	48.68	53.65	12: 0	30/ 5/1984	10	10	1219
3LA	SALVAGE BAY NFLD	48.68	53.65	12: 0	4/ 6/1985	10	27	1486
3LA	SALVAGE BAY NFLD	46.68	53.65	12: 0	18/10/1985	10	18	1487
3LA	SALVAGE NFLD	48.68	53.65	16: 0	15/ 7/1986	10	30	1021
3LA	SALVAGE	48.68	53.65	12: 0	5/ 5/1987	10	30	1706
3LA	SALVAGE	48.68	53.65	12: 0	5/ 5/1987	10	30	1707
3LA	ST. CHADS NFLD., DEC	48.66	53.66	11:30	13/12/1967	0	0	201
3LA	ST. CHADS NFLD., DEC	48.66	53.66	11: 0	15/12/1967	0	0	200
3LA	ST. CHADS NFLD., JUL	48.66	53.66	10:30	25/ 7/1968	4	4	174
3LA	ST. CHADS NFLD., SEP	48.66	53.66	10:30	16/ 9/1969	4	4	121
3LA	ST. CHADS NFLD., DEC	48.66	53.66	10:30	15/12/1968	9	9	180
3LA	ST. CHADS NFLD., SEP	48.66	53.66	10:30	18/ 9/1969	9	9	124
3LA	ST. CHADS NFLD., APR	48.66	53.66	11: 0	6/ 4/1971	9	9	110
3LA	ST. CHADS NFLD., JUL	48.66	53.66	10: 0	6/ 7/1971	9	9	114
3LA	ST. CHADS NFLD., DEC	48.66	53.66	14:30	15/12/1971	9	9	101
3LA	ST. CHADS NFLD., JUN	48.66	53.66	13:30	27/ 6/1972	9	9	100
3LA	STOCK COVE NFLD., NO	48.71	53.76	18:30	23/11/1967	0	0	192
3LA	STOCK COVE NFLD., JA	48.71	53.76	13:30	24/ 1/1968	0	0	190
3LA	STOCK COVE NFLD., MA	48.71	53.76	17:30	12/ 3/1968	0	0	176
3LA	STOCK COVE NFLD., MA	48.71	53.76	10: 0	9/ 5/1968	4	4	164
3LA	STOCK COVE NFLD., JU	48.71	53.76	9:30	12/ 6/1968	4	4	169
3LA	STOCK COVE NFLD., JU	48.71	53.76	10: 0	28/ 6/1968	4	4	160
3LA	STOCK COVE NFLD., AU	48.71	53.76	9: 0	28/ 8/1968	4	4	172
3LA	STOCK COVE NFLD., OC	48.71	53.76	8:30	1/10/1968	4	4	165
3LA	STOCK COVE NFLD., AP	48.71	53.76	12: 0	12/ 4/1969	4	4	137
3LA	STOCK COVE NFLD., MA	48.71	53.76	10:30	13/ 5/1969	4	4	142
3LA	STOCK COVE NFLD., JU	48.71	53.76	10: 0	18/ 6/1969	4	4	133
3LA	STOCK COVE NFLD., JU	48.71	53.76	10:30	16/ 7/1969	4	4	129
3LA	STOCK COVE NFLD., AU	48.71	53.76	14: 0	20/ 8/1969	4	4	141
3LA	STOCK COVE NFLD., OC	48.71	53.76	10:30	15/10/1969	4	4	154
3LA	STOCK COVE NFLD., NO	48.71	53.76	11: 0	27/11/1969	4	4	152
3LA	STOCK COVE NFLD., DE	48.71	53.76	17:30	18/12/1969	4	4	146
3LA	STOCK COVE NFLD., JA	48.71	53.76	13: 0	21/ 1/1970	4	4	119
3LA	STOCK COVE NFLD., NO	48.71	53.76	16:15	15/11/1967	9	9	193
3LA	STOCK COVE NFLD., JA	48.71	53.76	13:30	25/ 1/1968	9	9	187
3LA	STOCK COVE NFLD., JU	48.71	53.76	10: 0	28/ 6/1968	9	9	186
3LA	STOCK COVE NFLD., JU	48.71	53.76	12:30	25/ 7/1968	9	9	184
3LA	STOCK COVE NFLD., AU	48.71	53.76	10: 0	28/ 8/1968	9	9	185
3LA	STOCK COVE NFLD., OC	48.71	53.76	9:30	1/10/1968	9	9	167
3LA	STOCK COVE NFLD., OC	48.71	53.76	11: 0	30/10/1968	9	9	181
3LA	STOCK COVE NFLD., AP	48.71	53.76	13: 0	12/ 3/1969	9	9	136
3LA	STOCK COVE NFLD., MA	48.71	53.76	10:30	13/ 5/1969	9	9	144
3LA	STOCK COVE NFLD., JU	48.71	53.76	15: 0	18/ 6/1969	9	9	125
3LA	STOCK COVE NFLD., JU	48.71	53.76	10:30	16/ 7/1969	9	9	127

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
3LA	STOCK COVE NFLD., AU	48.71	53.76	10: 0	20/ 8/1969	9	9	126
3LA	STOCK COVE NFLD., OC	48.71	53.76	9:30	15/10/1969	9	9	156
3LA	STOCK COVE NFLD., NO	48.71	53.76	11:30	27/11/1969	9	9	153
3LA	STOCK COVE NFLD., DE	48.71	53.76	18: 0	19/12/1969	9	9	147
3LA	STOCK COVE NFLD., JA	48.71	53.76	10:30	21/ 1/1970	9	9	116
3LA	STOCK COVE NFLD., AP	48.71	53.76	10: 0	28/ 4/1970	9	9	117
3LA	STOCK COVE NFLD., MA	48.71	53.76	12:30	27/ 5/1970	9	9	115
3LA	STOCK COVE NFLD., JU	48.71	53.76	12:30	26/ 6/1970	9	9	120
3LA	STOCK COVE NFLD., MA	48.71	53.76	10: 0	7/ 5/1971	9	9	107
3LA	STOCK COVE NFLD., JU	48.71	53.76	12:30	7/ 6/1971	9	9	109
3LA	STOCK COVE NFLD., AU	48.71	53.76	13:30	5/ 8/1971	9	9	111
3LA	STOCK COVE NFLD., AU	48.71	53.76	10:30	26/ 8/1971	9	9	112
3LA	STOCK COVE NFLD., OC	48.71	53.76	12: 0	26/10/1971	9	9	108
3LA	STOCK COVE NFLD., JA	48.71	53.76	12:30	13/ 1/1972	9	9	98
3LA	STOCK COVE NFLD., FE	48.71	53.76	11: 0	22/ 2/1972	9	9	103
3LA	STOCK COVE NFLD., MA	48.71	53.76	11:30	22/ 3/1972	9	9	99
3LA	STOCK COVE NFLD., JU	48.71	53.76	12:30	5/ 6/1972	9	9	102
3LA	STOCK COVE NFLD., JU	48.71	53.76	10: 0	25/ 7/1972	9	9	104
3LA	STOCK COVE NFLD., SE	48.71	53.76	10: 0	23/ 9/1972	9	9	105
3LA	STOCK COVE NFLD., JA	48.71	53.76	14:30	25/ 1/1973	9	9	95
3LA	STOCK COVE NFLD., MA	48.71	53.76	10:30	21/ 3/1973	9	9	94
3LA	STOCK COVE NFLD., AP	48.71	53.76	9: 0	25/ 4/1973	9	9	97
3LA	STOCK COVE NFLD., MA	48.71	53.76	9:30	22/ 5/1973	9	9	93
3LA	STOCK COVE NFLD., JU	48.71	53.76	15: 0	19/ 6/1973	9	9	96
3LA	STOCK COVE NFLD., AU	48.71	53.76	16:30	15/ 8/1973	9	9	92
3LA	STOCK COVE NFLD., MA	48.71	53.76	12:30	1/ 5/1974	9	9	90
3LA	STOCK COVE NFLD., MA	48.71	53.76	13: 0	9/ 5/1974	9	9	84
3LA	STOCK COVE NFLD., JU	48.71	53.76	12:30	5/ 6/1974	9	9	91
3LA	STOCK COVE NFLD., JU	48.71	53.76	10: 0	26/ 6/1974	9	9	85
3LA	STOCK COVE NFLD., JU	48.71	53.76	9:30	23/ 7/1974	9	9	86
3LA	STOCK COVE NFLD., AU	48.71	53.76	10:30	20/ 8/1974	9	9	89
3LA	STOCK COVE NFLD., SE	48.71	53.76	10: 0	11/ 9/1974	9	9	87
3LA	STOCK COVE NFLD., OC	48.71	53.76	11:30	8/10/1974	9	9	88
3LA	STOCK COVE NFLD., AP	48.71	53.76	12:30	16/ 4/1975	9	9	78
3LA	STOCK COVE NFLD., MA	48.71	53.76	13: 0	13/ 5/1975	9	9	83
3LA	STOCK COVE NFLD., JU	48.71	53.76	9:30	11/ 6/1975	9	9	81
3LA	STOCK COVE NFLD., JU	48.71	53.76	9: 0	7/ 7/1975	9	9	80
3LA	STOCK COVE NFLD., AU	48.71	53.76	10:30	6/ 8/1975	9	9	82
3LA	STOCK COVE NFLD., AU	48.71	53.76	13: 0	27/ 8/1975	9	9	77
3LA	STOCK COVE NFLD., SE	48.71	53.76	10:30	24/ 9/1975	9	9	79
3LA	STOCK COVE NFLD., AP	48.71	53.76	11:30	15/ 4/1976	9	9	73
3LA	STOCK COVE NFLD., MA	48.71	53.76	10:30	9/ 5/1976	9	9	75
3LA	STOCK COVE NFLD., JU	48.71	53.76	12:30	2/ 6/1976	9	9	76
3LA	STOCK COVE NFLD., JU	48.71	53.76	13: 0	23/ 6/1976	9	9	74
3LA	STOCK COVE NFLD., AP	48.71	53.76	11: 0	13/ 4/1977	9	9	42
3LA	STOCK COVE NFLD., MA	48.71	53.76	11:30	11/ 5/1977	9	9	44
3LA	STOCK COVE NFLD., JU	48.71	53.76	9:30	7/ 6/1977	9	9	45
3LA	STOCK COVE NFLD., JU	48.71	53.76	10:30	28/ 6/1977	9	9	43
3LA	STOCK COVE NFLD., AP	48.71	53.76	11: 0	11/ 4/1978	9	9	22
3LA	STOCK COVE NFLD., MA	48.71	53.76	11:30	3/ 5/1978	9	9	20
3LA	STOCK COVE NFLD., MA	48.71	53.76	11:30	24/ 5/1978	9	9	23
3LA	STOCK COVE NFLD., JU	48.71	53.76	11: 0	21/ 6/1978	9	9	21
3LA	STOCK COVE - NFLD.,	48.71	53.76	15:30	27/ 4/1979	9	9	241

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
3LA	STOCK COVE NFLD., AP	48.71	53.76	10:30	15/ 4/1980	9	9	301
3LA	STOCK COVE NFLD., AP	48.71	53.76	20: 0	15/ 4/1980	9	9	300
3LA	STOCK COVE NFLD, 18	48.71	53.76	12: 0	18/11/1981	9	9	493
3LA	STOCK COVE NFLD, 18	48.71	53.76	14:40	18/11/1981	9	9	492
3LA	STOCK COVE NFLD, 20	48.71	53.76	19:30	20/ 4/1982	9	9	495
3LA	STOCK COVE NFLD, 20	48.71	53.76	20:20	20/ 4/1982	9	9	494
3LA	STOCK COVE NFLD, 10	48.71	53.76	14:15	10/ 9/1982	9	9	496
3LA	STOCK COVE NFLD, 10	48.71	53.76	14:15	10/ 9/1982	9	9	497
3LA	STOCK COVE NFLD.	48.71	53.76	16: 0	16/12/1982	9	9	636
3LA	STOCK COVE NFLD.	48.71	53.76	16: 0	16/12/1982	9	9	637
3LA	STOCK COVE NFLD	48.71	53.76	0: 0	12/ 5/1983	9	9	638
3LA	STOCK COVE NFLD	48.71	53.76	0: 0	12/ 5/1983	9	9	639
3LA	STOCK COVE NFLD	48.71	53.76	14: 0	19/ 8/1983	9	9	640
3LA	STOCK COVE NFLD	48.71	53.76	14: 0	19/ 8/1983	9	9	641
3LA	STOCK COVE NFLD	48.71	53.76	20: 0	6/12/1983	9	9	1214
3LA	STOCK COVE NFLD	48.71	53.76	20: 0	6/12/1983	9	9	1215
3LA	STOCK COVE NFLD	48.71	53.76	20: 0	15/ 5/1984	9	9	1216
3LA	STOCK COVE NFLD	48.71	53.76	20: 0	15/ 5/1984	9	9	1217
3LA	STOCK COVE NFLD	48.71	53.76	20: 0	17/ 9/1984	9	9	1481
3LA	STOCK COVE NFLD	48.71	53.76	20: 0	17/ 9/1984	9	9	1482
3LA	STOCK COVE NFLD	48.71	53.76	20: 0	30/ 1/1985	9	9	1483
3LA	STOCK COVE NFLD	48.71	53.76	20: 0	3/ 6/1985	9	9	1484
3LA	STOCK COVE NFLD	48.71	53.76	10: 0	18/11/1985	9	9	979
3LA	STOCK COVE NFLD	48.71	53.76	20: 0	18/11/1985	9	9	982
3LA	STOCK COVE NFLD	48.71	53.76	16: 0	21/ 4/1986	9	9	980
3LA	STOCK COVE NFLD	48.71	53.76	20: 0	21/ 4/1986	9	9	981
3LA	STOCK COVE NFLD	48.71	53.76	12: 0	8/ 7/1986	9	9	1040
3LA	STOCK COVE	48.71	53.76	17: 0	10/12/1986	9	9	1718
3LA	STOCK COVE	48.71	53.76	17: 0	10/12/1986	9	9	1719
3LA	STOCK COVE	48.71	53.76	19: 0	24/ 5/1987	9	9	1720
3LA	STOCK COVE	48.71	53.76	19: 0	26/ 5/1987	9	9	1721
3LA	STOCK COVE	48.71	53.76	16: 0	24/ 8/1987	9	9	1742
3LA	STOCK COVE	48.71	53.76	18: 0	24/ 8/1987	9	9	1722
3LA	SWALE IS NEWMAN SOUN	48.58	53.75	16: 0	21/ 6/1985	10	10	1491
3LA	SWALE IS NEWMAN SOUN	48.58	53.75	20: 0	21/11/1985	10	10	984
3LA	SWALE IS NEWMAN SOUN	48.58	53.82	16: 0	9/ 7/1986	10	10	983
3LA	SWALE ISLAND	48.58	53.82	14: 0	13/11/1986	10	10	1723
3LA	SWALE ISLAND	48.58	53.82	19: 0	15/ 6/1987	10	10	1724
3LA	TERRA NOVA NATIONAL	48.47	53.93	16: 0	8/12/1982	10	10	646
3LA	TERRA NOVA NATIONAL	48.47	53.93	20: 0	4/ 5/1983	10	10	649
3LB	BELLEVUE TRINITY BAY	47.64	53.75	16: 0	25/ 5/1983	1	1	661
3LB	BELLEVUE BEACH NFLD	47.63	53.78	12: 0	7/ 6/1982	5	5	1564
3LB	CHANCE COVE NFLD	47.68	53.80	20: 0	14/ 6/1984	9	9	1226
3LB	CHANCE COVE NFLD	47.70	53.81	20: 0	28/ 5/1985	9	37	1497
3LB	GOOSEBERRY COVE NFLD	48.03	53.63	16: 0	4/ 6/1985	9	46	1557
3LB	GOOSEBERRY COVE NFLD	48.03	53.63	16: 0	4/ 6/1985	9	46	1558
3LB	HEART'S DESIRE	47.84	53.45	23:30	8/ 6/1987	9	18	1681
3LB	HEARTS DESIRE NFLD	47.84	53.45	24: 0	22/ 6/1984	9	9	1228
3LB	HEARTS DESIRE NFLD	47.84	53.45	24: 0	15/ 9/1984	9	9	1229
3LB	HEARTS DESIRE NFLD	47.84	53.45	24: 0	22/ 5/1985	9	42	1499
3LB	HEARTS DESIRE NFLD	47.84	53.45	12: 0	29/10/1985	9	46	1501
3LB	HEARTS DESIRE NFLD	47.84	53.45	20: 0	30/ 6/1986	9	42	1041

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
3LB	HORSE CHOPS NFLD	48.33	53.07	0: 1	28/ 5/1986	10	256	1033
3LB	LA MANCHE	47.67	53.92	20: 0	4/ 6/1987	9	37	1686
3LB	MELROSE NFLD	48.47	53.04	20: 0	6/ 9/1984	9	9	1220
3LB	MELROSE	48.47	53.04	18: 0	11/ 6/1987	9	27	1691
3LB	OLD BONAVENTURE	48.27	53.42	16: 0	10/ 6/1987	5	22	1696
3LB	OLD BONAVENTURE NFL	48.28	53.42	20: 0	17/ 5/1986	10	24	985
3LB	OLD PERLICAN NFLD	48.14	53.08	0: 1	27/ 5/1986	2	335	988
3LB	OLD PERLICAN NFLD	49.10	53.01	16: 0	9/ 6/1984	5	15	1504
3LB	OLD PERLICAN NFLD	48.10	53.01	16: 0	9/ 6/1984	5	15	1505
3LB	OLD PERLICAN NFLD	48.14	53.08	20: 0	27/ 5/1986	5	335	1029
3LB	OLD PERLICAN	48.14	53.08	10: 0	10/ 7/1987	9	33	1698
3LB	PORT AUX PORT NFLD	48.57	53.44	16: 0	27/11/1984	11	11	1636
3LB	PORT AUX PORT NFLD	48.57	53.44	16: 0	27/11/1984	11	11	1637
3LB	PORT AUX PORT NFLD	48.33	53.44	16: 0	2/ 5/1985	11	11	1638
3LB	PORT AUX PORT NFLD	48.33	53.44	16: 0	2/ 5/1985	11	11	1639
3LB	WINTERTON	47.98	53.21	11: 0	31/ 7/1987	0	15	1731
3LB	WINTERTON	47.98	53.21	15: 0	16/ 5/1987	9	15	1730
3LB	WINTERTON NFLD	47.98	53.33	20: 0	21/ 5/1986	10	24	987
3LF	BAY DE VERDE NFLD	48.08	52.90	12: 0	29/ 6/1985	1	10	1506
3LF	CONCEPTION BAY (MCGI	47.68	53.19	11: 0	12/ 6/1987	7	30	1738
3LF	CONCEPTION BAY (MCGI	47.68	53.19	15: 0	14/ 6/1987	7	90	1735
3LF	HARBOUR GRACE NFLD	47.68	53.24	20: 0	6/ 7/1983	6	6	662
3LF	HARBOUR GRACE NFLD	47.68	53.24	16: 0	13/12/1983	6	6	1232
3LF	HARBOUR GRACE NFLD	47.68	53.24	16: 0	31/ 5/1984	6	6	1233
3LF	HARBOUR GRACE NFLD	47.68	53.23	20: 0	6/12/1984	6	6	1507
3LF	HARBOUR GRACE NFLD	47.68	53.28	16: 0	4/ 6/1985	6	6	1508
3LF	HARBOUR GRACE NFLD	47.68	53.23	16: 0	13/11/1985	6	6	989
3LF	HARBOUR GRACE NFLD	47.68	53.23	16: 0	30/ 4/1986	6	6	1022
3LF	HARBOUR GRACE NFLD	47.41	53.16	12: 0	18/ 6/1986	10	12	990
3LF	HBR GRACE	47.70	53.18	12: 0	29/ 5/1987	9	16	1678
3LF	HBR GRACE	47.72	53.18	14: 0	29/ 7/1987	9	16	1733
3LF	HOLYROOD NFLD	47.42	53.17	20: 0	16/ 5/1980	0	0	664
3LF	HOLYROOD NFLD	47.42	53.17	20: 0	16/ 5/1980	0	0	665
3LF	HOLYROOD NFLD	47.42	53.17	16: 0	25/ 8/1984	6	6	1236
3LF	HOLYROOD	47.39	53.12	16: 0	3/ 6/1987	7	7	1682
3LF	HOLYROOD	47.39	53.12	16: 0	3/ 6/1987	7	7	1683
3LF	HOLYROOD NFLD	47.42	53.17	20: 0	22/ 5/1985	9	9	1511
3LF	HOLYROOD NFLD	47.42	53.17	20: 0	22/ 5/1985	9	9	1512
3LF	HOLYROOD NFLD	47.42	53.12	16: 0	8/ 9/1986	9	9	991
3LF	HOLYROOD NFLD, 4 JUN	47.42	53.17	2: 0	4/ 6/1981	10	10	509
3LF	HOLYROOD NFLD, 13 JU	47.42	53.17	18: 0	13/ 7/1982	10	10	512
3LF	HOLYROOD NFLD	47.42	53.17	16: 0	5/10/1983	10	10	1234
3LF	HOLYROOD NFLD	47.42	53.17	20: 0	25/ 5/1984	10	30	1509
3LF	HOLYROOD NFLD	47.42	53.17	20: 0	25/ 5/1984	10	30	1510
3LF	HOLYROOD NFLD	47.39	53.12	16: 0	28/ 5/1986	11	11	992
3LF	HOLYROOD NFLD	47.39	53.12	16: 0	28/ 5/1986	11	11	993
3LF	OFF KELLIGREWS CONCE	47.51	53.04	12: 0	28/ 5/1986	10	20	1009
3LF	PORTUGAL COVE NFLD	47.63	52.86	24: 0	16/ 5/1985	1	96	1514
3LF	UPPER GULLIES	47.51	53.01	12: 0	21/ 5/1987	9	20	1726
3LJ	BROAD COVE NFLD	47.62	52.88	16: 0	23/ 5/1984	6	6	1238
3LJ	LANCE COVE NFLD	47.08	52.89	16: 0	21/ 6/1984	10	10	1242

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
3LJ	LOGY BAY NFLD	47.58	52.67	16: 0	14/10/1982	8	8	1237
3LJ	WITLESS BAY NFLD	47.27	52.50	20: 0	30/ 5/1984	1	1	1241
3LJ	WITLESS BAY NFLD	47.27	52.83	20: 0	7/ 6/1982	5	5	1548
3LJ	WITLESS BAY NFLD	47.28	52.82	24: 0	30/ 5/1984	7	7	1239
3LJ	WITLESS BAY NFLD	47.26	52.77	16: 0	21/ 6/1984	8	8	1240
3LQ	ADMIRAL'S BEACH NFLD	47.00	53.65	20: 0	7/ 6/1982	5	5	1559
3LQ	BECKFORD HEAD ST. M	46.89	53.87	12: 0	21/ 6/1983	1	1	670
3LQ	COLINET NFLD	47.19	53.57	16: 0	5/ 6/1985	1	15	1555
3LQ	COLINET NFLD, 7 JUNE	47.15	53.57	16:20	7/ 6/1982	6	6	514
3LQ	COLINET NFLD, 14 OCT	47.15	53.57	14:45	14/10/1982	6	6	517
3LQ	COLINET NFLD.	47.19	53.58	16: 0	6/12/1982	6	6	667
3LQ	COLINET NFLD.	47.19	53.58	20: 0	6/ 5/1983	6	6	669
3LQ	COLINET NFLD	47.19	53.57	16: 0	5/ 6/1985	10	15	1556
3LQ	ST MARY'S NFLD	46.92	53.57	20: 0	5/11/1985	1	20	1014
3LQ	ST MARY'S NFLD	46.92	53.57	20: 0	5/11/1985	1	20	1015
3LQ	ST MARY'S NFLD	47.20	53.58	12: 0	16/ 5/1986	1	20	1044
3LQ	ST MARY'S NFLD	47.20	53.58	12: 0	16/ 5/1986	10	20	1045
3LQ	ST MARY'S	47.20	53.58	11: 0	9/ 5/1987	10	10	1716
3LQ	ST MARY'S	47.20	53.58	11: 0	9/ 5/1987	10	10	1717
3PN	DUBLIN COVE NFLD	47.63	58.65	20: 0	12/12/1985	6	17	1017
3PN	S.W. NFLD	47.81	58.92	18: 0	28/ 5/1987	2	6	1725
3PSA	FRANCOIS NFLD	47.57	56.74	20: 0	11/12/1985	5	22	1018
3PSA	GREY RIVER NFLD	47.60	57.09	16: 0	11/12/1985	6	14	1050
3PSA	ROTI BAY NFLD	47.79	55.76	16: 0	22/ 1/1986	5	18	1051
3PSB	FORTUNE BAY NFLD	47.62	55.12	16: 0	2/ 5/1986	9	36	1046
3PSB	LONG HBR FORTUNE BAY	47.73	53.80	20: 0	29/ 5/1985	1	14	1565
3PSB	LONG HBR FORTUNE BAY	47.73	53.80	20: 0	29/ 5/1985	10	14	1566
3PSB	LONG HARBOUR FORTUNE	47.62	55.12	20: 0	11/ 5/1987	10	36	1669
3PSB	LONG HARBOUR FORTUNE	47.62	55.12	20: 0	11/ 5/1987	10	36	1670
3PSC	ARNOLD'S COVE NFLD	47.75	54.98	12: 0	7/ 6/1982	5	5	1567
3PSC	ARNOLDS COVE NFLD.,	47.75	53.98	16:40	26/ 8/1981	9	9	392
3PSC	ARNOLDS COVE NFLD, 2	47.75	54.00	15:19	26/ 1/1982	9	9	529
3PSC	ARNOLDS COVE NFLD, 2	47.75	54.00	15:15	26/ 1/1982	9	9	530
3PSC	ARNOLDS COVE NFLD, 2	47.75	54.00	17:50	21/ 4/1982	9	9	531
3PSC	ARNOLDS COVE NFLD, 2	47.75	54.00	15: 0	22/ 4/1982	9	9	532
3PSC	ARNOLDS COVE NFLD.	47.75	54.00	16: 0	14/ 9/1982	9	9	681
3PSC	ARNOLDS COVE NFLD	47.75	54.00	0: 0	29/ 9/1982	9	9	680
3PSC	ARNOLDS COVE NFLD.	47.75	54.00	20: 0	1/ 2/1983	9	9	676
3PSC	ARNOLDS COVE NFLD.	47.75	54.00	20: 0	1/ 2/1983	9	9	677
3PSC	ARNOLDS COVE NFLD.	47.75	54.00	16: 0	1/ 6/1983	9	9	678
3PSC	ARNOLDS COVE NFLD.	47.75	54.00	16: 0	1/ 6/1983	9	9	679
3PSC	ARNOLDS COVE NFLD	47.75	54.00	16: 0	3/10/1983	9	9	1253
3PSC	ARNOLDS COVE NFLD	47.75	54.00	16: 0	3/10/1983	9	9	1254
3PSC	ARNOLDS COVE NFLD	47.75	54.00	16: 0	31/ 1/1984	9	9	1255
3PSC	ARNOLDS COVE NFLD	47.75	54.00	16: 0	31/ 1/1984	9	9	1256
3PSC	ARNOLDS COVE NFLD	47.75	54.00	16: 0	25/ 7/1984	9	9	1257
3PSC	ARNOLDS COVE NFLD	47.75	54.00	16: 0	25/ 7/1984	9	9	1258
3PSC	ARNOLD'S COVE NFLD	47.75	54.00	20: 0	1/11/1984	9	9	1568

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
3PSC	ARNOLD'S COVE NFLD	47.75	54.00	12: 0	29/ 3/1985	9	9	1569
3PSC	ARNOLD'S COVE NFLD	47.75	54.00	16: 0	29/ 3/1985	9	9	1570
3PSC	ARNOLD'S COVE NFLD	47.75	54.00	16: 0	16/ 9/1985	9	10	1054
3PSC	ARNOLD'S COVE NFLD	47.75	54.00	16: 0	16/ 9/1985	9	10	1055
3PSC	ARNOLD'S COVE NFLD	47.75	54.00	16: 0	22/ 1/1986	9	10	1056
3PSC	ARNOLD'S COVE NFLD	47.75	54.00	16: 0	21/ 7/1986	9	10	1640
3PSC	ARNOLD'S COVE	47.75	54.00	14: 0	22/ 1/1987	9	9	1652
3PSC	ARNOLD'S COVE	47.75	54.00	16: 0	22/ 1/1987	9	9	1651
3PSC	ARNOLD'S COVE	47.75	54.00	13: 0	10/ 6/1987	9	9	1653
3PSC	ARNOLD'S COVE	47.75	54.00	13: 0	10/ 6/1987	9	9	1654
3PSC	CORBIN NFLD	46.96	55.25	20: 0	18/ 6/1984	9	9	1263
3PSC	CORBIN NFLD	46.95	55.25	16: 0	17/10/1984	9	9	1577
3PSC	CORBIN NFLD	46.96	55.25	20: 0	7/ 5/1985	9	9	1578
3PSC	CORBIN NFLD	46.96	55.25	16: 0	5/11/1985	9	9	1061
3PSC	CORBIN NFLD	46.96	55.25	20: 0	5/ 5/1986	9	9	1019
3PSC	CORBIN	46.96	55.25	15: 0	21/10/1986	9	9	1663
3PSC	GARDEN COVE NFLD., M	47.90	54.21	16: 0	2/ 3/1976	0	0	72
3PSC	GARDEN COVE NFLD., A	47.90	54.21	16:30	27/ 4/1976	0	0	71
3PSC	GARDEN COVE NFLD., M	47.90	54.21	16: 4	27/ 5/1976	0	0	70
3PSC	GARDEN COVE NF	47.90	54.21	17:30	23/ 6/1976	0	0	68
3PSC	GARDEN COVE NF	47.90	54.21	17:30	30/ 6/1976	0	0	69
3PSC	GARDEN COVE NF	47.90	54.21	15:15	19/ 8/1976	0	0	66
3PSC	GARDEN COVE NF	47.90	54.21	15:15	19/ 8/1976	0	0	67
3PSC	GARDEN COVE NF	47.90	54.21	16:30	23/ 9/1976	0	0	64
3PSC	GARDEN COVE NF	47.90	54.21	16:30	23/ 9/1976	0	0	65
3PSC	GARDEN COVE NF	47.90	54.21	17: 0	25/10/1976	0	0	63
3PSC	GARDEN COVE NF	47.90	54.21	17: 0	25/10/1976	0	0	62
3PSC	GARDEN COVE	47.90	54.21	19: 0	18/11/1976	0	0	61
3PSC	GARDEN COVE NFLD	47.90	54.21	19: 0	18/11/1976	0	0	60
3PSC	GARDEN COVE NF	47.90	54.21	11:30	22/12/1976	0	0	29
3PSC	GARDEN COVE NF	47.90	54.21	12: 0	22/12/1976	0	0	28
3PSC	GARDEN COVE NF	47.90	54.21	13:30	22/ 1/1977	0	0	30
3PSC	GARDEN COVE NF	47.90	54.21	14:30	27/ 1/1977	0	0	31
3PSC	GARDEN COVE NF	47.90	54.21	15: 0	23/ 2/1977	0	0	34
3PSC	GARDEN COVE NF	47.90	54.21	15: 0	23/ 3/1977	0	0	32
3PSC	GARDEN COVE NF	47.90	54.21	16:30	23/ 3/1977	0	0	35
3PSC	GARDEN COVE NF	47.90	54.21	16: 0	20/ 4/1977	0	0	33
3PSC	GARDEN COVE NF	47.90	54.21	14:30	21/ 6/1977	0	0	36
3PSC	GARDEN COVE NF	47.90	54.21	13:30	10/ 9/1977	0	0	37
3PSC	GARDEN COVE NF	47.90	54.21	18:30	12/12/1977	0	0	16
3PSC	GARDEN COVE NF	47.90	54.21	18:30	15/12/1977	0	0	17
3PSC	GARDEN COVE NF	47.90	54.21	15:50	12/ 1/1978	0	0	14
3PSC	GARDEN COVE NF	47.90	54.21	15:50	12/ 1/1978	0	0	15
3PSC	GARDEN COVE NF	47.90	54.21	15:30	1/ 3/1978	0	0	10
3PSC	GARDEN COVE NF	47.90	54.21	15:30	1/ 3/1978	0	0	11
3PSC	GARDEN COVE NF	47.90	54.21	15:30	14/ 4/1978	0	0	12
3PSC	GARDEN COVE NF	47.90	54.21	15:30	14/ 4/1978	0	0	13
3PSC	GARDEN COVE NF	47.90	54.21	16:30	12/ 5/1978	0	0	9
3PSC	GARDEN COVE NF	47.90	54.21	17: 0	21/ 6/1978	0	0	7
3PSC	GARDEN COVE NF	47.90	54.21	17:30	21/ 6/1978	0	0	8
3PSC	GARDEN COVE NF	47.90	54.21	17: 0	1/ 8/1978	0	0	5
3PSC	GARDEN COVE NF	47.90	54.21	17: 0	1/ 8/1978	0	0	6
3PSC	GARDEN COVE NFLD.,	47.90	54.21	13:30	6/ 9/1978	0	0	3

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
3PSC	GARDEN COVE NFLD	47.90	54.21	13:30	6/ 9/1978	0	0	4
3PSC	GARDEN COVE NFLD.,	47.90	54.21	15: 0	23/10/1978	0	0	1
3PSC	GARDEN COVE NFLD	47.90	54.21	15:30	14/11/1978	0	0	2
3PSC	GARDEN COVE NF	47.90	54.21	13: 0	11/12/1978	0	0	249
3PSC	GARDEN COVE NF	47.90	54.21	13: 0	11/12/1978	0	0	248
3PSC	GARDEN COVE NF	47.90	54.21	18: 0	29/ 1/1979	0	0	247
3PSC	GARDEN COVE NF	47.90	54.21	18: 0	29/ 1/1979	0	0	246
3PSC	GARDEN COVE NF	47.90	54.21	17:30	21/ 3/1979	0	0	245
3PSC	GARDEN COVE NF	47.90	54.21	17:30	21/ 3/1979	0	0	244
3PSC	GARDEN COVE NF	47.90	54.21	17:30	19/ 4/1979	0	0	250
3PSC	GARDEN COVE NF	47.90	54.21	17:30	19/ 4/1979	0	0	251
3PSC	GARDEN COVE NFLD, 16	47.84	54.16	17:25	16/ 4/1982	10	10	533
3PSC	GARDEN COVE NFLD, 16	47.84	54.16	17:25	16/ 4/1982	10	10	534
3PSC	GARDEN COVE NFLD, 19	47.84	54.16	16:30	19/ 8/1982	10	10	535
3PSC	GARDEN COVE NFLD, 19	47.84	54.16	17:30	19/ 8/1982	10	10	536
3PSC	GARDEN COVE NFLD.	47.84	54.16	20: 0	16/12/1982	10	10	682
3PSC	GARDEN COVE NFLD.	47.84	54.16	20: 0	16/12/1982	10	10	683
3PSC	GARDEN COVE NFLD.	47.84	54.16	20: 0	10/ 5/1983	10	10	684
3PSC	GARDEN COVE NFLD.	47.84	54.16	20: 0	10/ 5/1983	10	10	685
3PSC	GARDEN COVE NFLD	47.84	54.16	16: 0	13/10/1983	10	10	1259
3PSC	GARDEN COVE NFLD	47.84	54.16	16: 0	13/10/1983	10	10	1260
3PSC	GARDEN COVE NFLD	47.84	54.16	20: 0	2/ 4/1984	10	10	1261
3PSC	GARDEN COVE NFLD	47.84	54.16	4: 0	3/ 4/1984	10	10	1262
3PSC	GARDEN COVE NFLD	47.84	54.16	20: 0	31/ 8/1984	10	10	1571
3PSC	GARDEN COVE NFLD	47.84	54.16	20: 0	31/ 8/1984	10	10	1572
3PSC	GARDEN COVE NFLD	47.82	54.16	20: 0	14/ 1/1985	10	10	1573
3PSC	GARDEN COVE NFLD	47.82	54.16	20: 0	14/ 1/1985	10	10	1574
3PSC	GARDEN COVE NFLD	47.84	54.16	20: 0	5/ 6/1985	10	10	1575
3PSC	GARDEN COVE NFLD	47.84	54.16	20: 0	5/ 6/1985	10	10	1576
3PSC	GARDEN COVE NFLD	47.84	54.16	20: 0	4/11/1985	10	10	971
3PSC	GARDEN COVE NFLD	47.84	54.16	20: 0	4/11/1985	10	10	972
3PSC	GARDEN COVE NFLD	47.84	54.16	20: 0	6/ 5/1986	10	10	973
3PSC	GARDEN COVE NFLD	47.84	54.16	20: 0	6/ 5/1986	10	10	974
3PSC	GARDEN COVE	47.84	54.16	20: 0	20/10/1986	10	10	1674
3PSC	GARDEN COVE	47.84	54.16	19: 0	28/10/1986	10	10	1673
3PSC	LITTLE BAY NFL	47.16	55.11	16:30	2/12/1975	0	0	55
3PSC	LITTLE BAY NFLD., AP	47.16	55.11	12:30	14/ 4/1976	0	0	47
3PSC	LITTLE BAY NFLD., JU	47.16	55.11	19: 0	4/ 6/1976	0	0	49
3PSC	LITTLE BAY NFLD., JU	47.16	55.11	12:30	23/ 7/1976	0	0	51
3PSC	LITTLE BAY NFL	47.16	55.11	12:30	19/ 8/1976	0	0	48
3PSC	LITTLE BAY NFL	47.16	55.11	13: 0	19/ 8/1976	0	0	52
3PSC	LITTLE BAY NFL	47.16	55.11	11:30	16/ 9/1976	0	0	53
3PSC	LITTLE BAY NFL	47.16	55.11	13: 0	16/ 9/1976	0	0	59
3PSC	LITTLE BAY NFL	47.16	55.11	12:30	21/10/1976	0	0	58
3PSC	LITTLE BAY NFL	47.16	55.11	13: 0	21/10/1976	0	0	54
3PSC	LITTLE BAY NFL	47.16	55.11	13:30	25/11/1976	0	0	50
3PSC	LITTLE BAY NFL	47.16	55.11	13: 0	25/11/1976	0	0	57
3PSC	LITTLE BAY NFL	47.16	55.11	16:30	21/12/1976	0	0	56
3PSC	LITTLE BAY NFL	47.16	55.11	15: 0	19/ 1/1977	0	0	41
3PSC	LITTLE BAY NFL	47.16	55.11	16:30	19/ 1/1977	0	0	38
3PSC	LITTLE BAY NFL	47.16	55.11	11:30	24/ 2/1977	0	0	26
3PSC	LITTLE BAY NFL	47.16	55.11	11:30	24/ 2/1977	0	0	27
3PSC	LITTLE BAY NFL	47.16	55.11	12: 0	24/ 3/1977	0	0	24

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
3PSC	LITTLE BAY NFL	47.16	55.11	12:30	24/ 3/1977	0	0	25
3PSC	LITTLE BAY MORTIER N	47.16	55.11	20: 0	31/ 8/1982	5	5	686
3PSC	LITTLE BAY MORTIER N	47.16	55.11	19:45	21/10/1980	6	6	342
3PSC	LITTLE BAY MORTIER	47.16	55.11	17:30	18/ 4/1981	6	6	387
3PSC	LITTLE BAY MORTIER N	47.16	55.11	12: 0	7/ 3/1982	6	6	537
3PSC	MOBILE NFLD	47.28	53.91	20: 0	11/12/1984	1	1	1549
3PSC	MOBILE NFLD	47.28	53.91	20: 0	11/12/1984	1	1	1550
3PSC	SHAG ROCKS - PLACENT	47.42	53.83	16:30	18/ 4/1979	6	6	518
3PSC	SHAG ROCKS - NFLD.,	47.42	53.83	17:30	18/ 4/1979	6	6	240
3PSC	SHAG ROCK NFLD., SEP	47.42	53.88	14:30	23/ 9/1980	6	6	302
3PSC	SHAG ROCKS NFLD., SE	47.42	53.83	18: 0	20/ 9/1978	9	9	18
3PSC	SHAG ROCK NFLD., SEP	47.42	53.83	9:30	15/ 9/1980	9	9	304
3PSC	SHAG ROCKS - PLACENT	47.42	53.83	17: 0	3/ 2/1982	9	9	521
3PSC	SHAG ROCKS - PLACENT	47.42	53.83	17: 0	3/ 2/1982	9	9	522
3PSC	SHAG ROCKS - PLACENT	47.42	53.83	14:30	16/ 7/1982	9	9	524
3PSC	SHAG ROCKS - PLACENT	47.42	53.83	15:30	16/ 7/1982	9	9	523
3PSC	SHAG ROCKS NFLD.	47.42	53.83	16: 0	23/11/1982	9	9	672
3PSC	SHAG ROCKS NFLD.	47.42	53.83	16: 0	23/11/1982	9	9	673
3PSC	SHAG ROCKS NFLD.	47.42	53.83	16: 0	22/ 4/1983	9	9	674
3PSC	SHAG ROCKS NFLD.	47.42	53.83	16: 0	22/ 4/1983	9	9	675
3PSC	SHAG ROCKS NFLD	47.42	53.83	16: 0	5/10/1983	9	9	1248
3PSC	SHAG ROCKS NFLD	47.42	53.83	20: 0	5/10/1983	9	9	1247
3PSC	SHAG ROCKS NFLD	47.42	53.83	16: 0	17/ 1/1984	9	9	1249
3PSC	SHAG ROCKS NFLD	47.42	53.83	20: 0	17/ 1/1984	9	9	1250
3PSC	SHAG ROCKS NFLD	47.42	53.83	16: 0	9/ 5/1984	9	9	1252
3PSC	SHAG ROCKS NFLD	47.42	53.83	20: 0	9/ 5/1984	9	9	1251
3PSC	SHAG ROCKS	47.42	53.80	12: 0	17/ 6/1987	9	9	1709
3PSC	SHAG ROCKS	47.42	53.80	15: 0	17/ 6/1987	9	9	1710
3PSC	SHAG ROCKS NFLD	47.42	53.83	20: 0	30/10/1984	10	10	1561
3PSC	SHAG ROCKS NFLD	47.42	53.83	20: 0	30/10/1984	10	10	1562
3PSC	SHAG ROCKS NFLD	47.42	53.80	20: 0	11/ 4/1985	10	11	1563
3PSC	SHAG ROCKS NFLD	47.42	53.80	12: 0	10/ 9/1985	10	10	1062
3PSC	SHAG ROCKS NFLD	47.42	53.80	12: 0	10/ 9/1985	10	10	1063
3PSC	SHAG ROCKS NFLD	47.42	53.80	20: 0	28/ 1/1986	10	10	1064
3PSC	SHAG ROCKS NFLD	47.42	53.80	20: 0	28/ 1/1986	10	11	1065
3PSC	SHAG ROCKS NFLD	47.42	53.80	16: 0	17/ 7/1986	10	11	1641
3PSC	SHAG ROCKS NFLD	47.42	53.80	16: 0	17/ 7/1986	10	11	1642
3PSC	SHAG ROCKS	47.72	53.80	16: 0	14/ 1/1987	10	10	1648
3PSC	SHAG ROCKS	47.42	53.80	17: 0	14/ 1/1987	10	10	1708
3PSC	SHAG ROCKS	47.42	53.80	15: 0	14/ 9/1987	10	10	1711
3PSC	SOUTH SIDE SHAG ROCK	47.42	53.83	20: 0	31/ 1/1980	6	6	298
3PSC	SPENCER'S COVE NFLD.	47.67	54.08	20:15	2/10/1980	9	9	343
3PSC	SPENCER'S COVE NFLD.	47.67	54.08	16:30	11/10/1980	9	9	344
3PSC	SPENCER'S COVE NFLD.	47.67	54.08	15:30	13/11/1980	9	9	345
3PSC	SPENCER'S COVE NFLD.	47.67	54.08	19: 0	13/11/1980	9	9	346
3PSC	SPENCERS COVE NFLD.	47.67	54.08	12:30	26/ 4/1981	9	9	388
3PSC	SPENCERS COVE NFLD.	47.67	54.08	12:30	26/ 4/1981	9	9	389
3PSC	SPENCER'S COVE NFLD.	47.67	54.08	14:30	18/ 9/1981	9	9	390
3PSC	SPENCER'S COVE NFLD.	47.67	54.08	14:30	18/ 9/1981	9	9	391
3PSC	SPENCERS COVE - PLAC	47.67	54.08	18: 0	18/11/1981	9	9	525
3PSC	SPENCERS COVE - PLAC	47.67	54.08	18: 0	18/11/1981	9	9	526
3PSC	SPENCERS COVE - PLAC	47.67	54.08	16:35	10/ 5/1982	9	9	528
3PSC	SPENCERS COVE - PLAC	47.67	54.08	16:35	11/ 5/1982	9	9	527

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
3PSC	ST. CROIX BAY NFLD,	47.42	53.83	4:30	25/ 7/1978	6	6	513
3PSC	ST. CROIX BAY NFLD.,	47.42	53.83	16:30	25/ 7/1978	6	6	19
3PSC	SUNNYSIDE NFLD, 2 MA	47.85	53.92	15:30	2/ 3/1982	10	10	502
3PSC	SUNNYSIDE NFLD, 22 J	47.85	53.92	17: 0	22/ 6/1982	10	10	503
3PSC	SUNNYSIDE NFLD.	47.85	53.92	16: 0	5/10/1982	10	10	652
3PSC	SUNNYSIDE NFLD.	47.85	53.92	20: 0	24/ 2/1983	10	10	655
3PSC	SUNNYSIDE NFLD	47.85	53.92	20: 0	18/ 7/1983	10	10	658
4RB	BELLBURNS NFLD	50.20	57.53	16: 0	28/ 6/1984	11	11	1190
4RB	BONNE BAY NFLD	49.60	57.92	20: 0	23/ 4/1986	10	10	908
4RB	BONNE BAY NFLD	49.59	57.92	16: 0	26/ 5/1986	10	10	936
4RB	BONNE BAY NFLD	49.59	57.92	12: 0	13/11/1986	10	10	1336
4RB	BONNE BAY NFLD	49.59	57.92	18: 0	5/ 5/1987	10	10	1339
4RB	BONNE BAY NFLD	49.59	57.92	15: 0	26/ 8/1987	10	10	1377
4RC	PORT AU PORT NFLD	48.57	58.75	12: 0	7/ 1/1986	10	11	910
4RC	PORT AU PORT NFLD	48.57	58.75	12: 0	7/ 1/1986	10	11	911
4RC	PORT AUX PORT	48.57	58.75	12: 0	24/ 6/1986	10	10	1401
4RC	PORT AU PORT NFLD	48.57	58.75	16: 0	24/ 6/1986	10	10	937
4RC	PORT AU PORT NFLD	48.57	58.75	8: 0	12/11/1986	10	11	1389
4RC	PORT AU PORT NFLD	48.57	58.73	14: 0	7/ 5/1987	10	10	1390
4RC	PORT AU PORT NFLD	48.57	58.75	14: 0	27/ 8/1987	10	10	1391
4RC	PORT AUX PORT	48.57	58.75	16: 0	27/ 8/1987	10	10	1403
4RC	PORT AU PORT BAY NFL	48.57	58.75	16: 0	13/ 2/1984	11	11	1184
4RC	PORT AU PORT NFLD	48.57	58.73	16: 0	26/ 6/1984	11	11	1185
4RC	PORT AU PORT NFLD	48.57	58.73	16: 0	26/ 6/1984	11	11	1186
4RC	PORT AU PORT NFLD	48.57	58.75	12: 0	27/ 8/1985	11	11	909
4RC	PORT AU PORT NFLD	48.57	58.75	12: 0	27/ 8/1985	11	11	961
4RC	PORT AU PORT NFLD	48.57	58.75	8: 0	12/11/1986	11	11	1397
4SV	WOLF BAY PQ	50.15	60.24	20: 0	4/ 7/1987	10	10	1357
4SW	BLANC SABLON PQ	51.42	57.15	24: 0	11/ 6/1985	6	6	1622
4SW	BLANC SABLON PQ	51.39	57.00	16: 0	13/ 6/1985	10	11	1623
4SW	BRADOR BAY P.Q.	51.46	57.25	16: 0	17/ 6/1985	10	10	1629
4SW	BRADOR BAY P.Q.	51.48	57.37	16: 0	18/ 6/1985	10	10	1630
4SW	ILE PERROQUET P.Q.	51.45	57.24	20: 0	17/ 6/1985	7	7	1628
4SW	LATABATIERE PQ	50.72	58.00	24: 0	25/ 6/1985	11	12	1619
4SW	LATABATIERE PQ	50.83	58.84	24: 0	25/ 6/1985	11	12	1620
4SW	PTE BELLE AMOUR NFL	51.44	57.44	20: 0	27/ 6/1985	8	9	1624
4SW	PTE BELLE AMOUR PQ	51.44	57.43	16: 0	16/ 6/1986	10	16	897
4SW	SEPT ILES PQ (INDIAN	51.01	58.82	18: 0	2/ 6/1987	4	5	1343
4SW	SEPT ILES PQ (PETIT	50.95	58.93	20: 0	2/ 6/1987	4	4	1346
4SW	SEPT ILES PQ (DUCK I	50.97	58.89	13: 0	2/ 9/1987	4	9	1341
4SW	SEPT ILES PQ (SCALLO	50.95	58.91	18: 0	28/ 5/1987	5	10	1347
4SW	SEPT ILES PQ (SCALLO	50.95	58.91	14: 0	28/ 9/1986	6	10	1323
4SW	SEPT ILES PQ (SCALLO	50.98	58.89	12: 8	20/ 8/1986	7	7	1320
4SW	SEPT ILES PQ (LA TAB	50.84	58.94	17: 0	27/ 5/1987	7	13	1345
4SW	SEPT ILES PQ (SCALLO	50.95	58.90	11:52	20/ 8/1986	8	8	1321
4SW	SEPT ILES PQ (LA TAB	50.84	58.98	17:40	20/ 8/1986	8	8	1324
4SW	SEPT ILES PQ (SCALLO	50.95	58.90	14: 0	28/ 9/1986	8	8	1322
4SW	SEPT ILES PQ (TRAINO	50.98	58.91	16: 0	28/ 5/1987	8	9	1349
4SW	SEPT ILES PQ (SCALLO	50.95	58.91	20: 0	28/ 5/1987	8	10	1348

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
4SW	SEPT ILES PQ (TRAINO	50.98	58.91	16: 0	28/ 9/1986	9	9	1326
4SW	SEPT ILES PQ (DUCK I	50.97	58.89	13: 0	2/ 9/1987	9	9	1342
4SW	WILD SALMON BAY PQ	51.25	57.36	20: 0	27/ 6/1985	11	12	1621
4SY	HAVRE ST PIERRE PQ	50.20	63.57	22: 0	8/ 6/1987	3	20	1398
4SY	HAVRE ST. PIERRE PQ	50.18	63.58	16: 0	10/ 6/1983	10	10	611
4SY	HAVRE ST PIERRE PQ	50.20	63.57	1: 0	9/ 6/1987	10	20	1399
4SY	MINGAN PQ	50.28	63.93	16: 0	22/ 6/1984	2	2	1179
4SZ	PORT CARTIER PQ	50.02	66.81	12: 0	12/ 9/1984	0	0	1177
4TF	BAIE CLARKE ILES DE	47.62	61.48	16: 0	13/ 6/1985	5	6	1592
4TF	DEMOISELLES ILES DE	47.24	61.86	20: 0	17/ 5/1985	7	7	1604
4TF	GROS CAP ILES DE LA	47.35	61.88	20: 0	17/ 5/1985	8	8	1601
4TF	GROS ILE ILES DE LA	47.62	61.52	16: 0	13/ 6/1985	5	6	1591
4TF	ILE D'ENTREE MAG PQ	47.27	61.70	16: 0	21/ 6/1983	0	0	597
4TF	ILE D'ENTREE MAGDALE	47.25	61.68	16: 0	14/ 8/1984	0	0	1156
4TF	ILE D'ENTREE ILES D	47.27	61.71	16: 0	4/ 5/1985	0	1	1603
4TF	ILE D'ENTREE ILES DE	47.27	61.70	16: 0	5/11/1985	0	1	912
4TF	ILE D'ENTREE ILES DE	47.27	61.70	0: 1	12/ 5/1986	0	1	942
4TF	ILE D'ENTREE	47.27	61.70	14: 0	8/11/1986	0	1	1373
4TF	ILE D'ENTREE	47.27	61.70	3: 0	9/ 4/1987	0	1	1365
4TF	ILES DE LA MADELEINE	47.38	61.86	13: 0	14/ 7/1987	0	1	1366
4TF	MAGDALEN ISLAND P.Q.	47.29	61.88	19:48	4/ 6/1980	8	8	292
4TF	MAGDALEN ISLANDS P.Q	47.47	61.65	7:59	27/ 8/1980	9	9	309
4TF	MILLERAND ILES DE L	47.20	62.03	16: 0	20/ 5/1985	9	9	1605
4TF	SEAL IS ILES DE LA	47.58	61.50	16: 0	4/ 6/1985	4	5	1593
4TF	SHAG ISLAND M.I. P	47.46	61.67	9:30	18/11/1980	0	0	341
4TG	BAYFIELD N.S., 3 JUN	45.68	61.75	16:30	3/ 6/1981	5	5	373
4TG	BEACH POINT MURRAY H	46.04	62.44	16:15	21/ 6/1979	10	10	233
4TG	BEACH POINT PEI, 26	46.04	62.48	15: 0	26/ 5/1982	10	10	472
4TG	BOUGHTON BAY PEI	46.27	62.46	16: 0	14/ 8/1986	6	6	943
4TG	CARDIGAN PEI (MC KEN	46.24	62.74	18: 0	11/ 6/1987	0	2	1388
4TG	CARDIGAN PEI (MC KEN	46.24	62.74	18: 0	11/ 6/1987	2	2	1381
4TG	FISHERMANS BANK PEI	45.98	62.20	16: 0	16/ 8/1986	2	26	898
4TG	FORTUNE RIVER PEI	46.33	62.41	16: 0	1/12/1983	1	1	1151
4TG	FORTUNE R PEI	46.33	62.41	16: 0	21/12/1984	2	5	1588
4TG	FORTUNE RIVER PEI	46.34	62.43	19: 0	5/12/1986	2	4	1362
4TG	FORTUNE RIVER PEI	46.34	62.43	20: 0	5/12/1986	2	4	1363
4TG	MIMINEGASH PEI (MURR	46.02	62.58	19: 0	4/ 6/1987	1	7	1334
4TG	MIMINEGASH PEI (ST P	46.43	62.77	16: 0	7/ 7/1987	3	5	1332
4TG	MIMINEGASH PEI (MURR	46.02	62.58	20: 0	4/ 6/1987	6	7	1333
4TG	MURRAY RIVER PEI	46.02	62.58	12: 0	24/ 5/1986	1	1	945
4TG	MURRAY RIVER PEI	46.00	62.58	12: 0	6/ 3/1984	2	2	1152
4TG	MURRAY R PEI	46.00	62.58	16: 0	12/ 6/1984	5	7	1589
4TG	MURRAY PT NS	46.33	60.42	20: 0	23/ 7/1984	9	9	1123
4TG	NORTH LAKE P.E.I., 2	46.50	62.08	15: 0	23/ 4/1981	5	5	380
4TG	NORTH LAKE P.E.I., 2	46.50	62.08	15: 0	23/ 4/1981	10	10	381
4TG	NORTH EAST RIVER	47.29	53.79	20: 0	30/ 6/1985	8	8	1560
4TG	REDHEAD PEI	46.46	62.85	16: 0	4/ 7/1986	10	10	947
4TG	REDHEAD PEI	46.46	62.85	11: 0	18/ 7/1987	10	10	1353
4TG	ROLLO BAY PEI	46.34	62.37	4: 0	26/ 5/1984	0	0	1150

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
4TH	BAIE TRINITE PQ	49.40	67.30	20: 0	3/ 9/1984	5	5	1172
4TH	BORDEN PEI	46.50	63.70	16: 0	23/ 6/1983	0	0	583
4TH	BORDEN PEI	46.32	63.73	16: 0	23/11/1983	0	0	1129
4TH	BORDEN PEI	46.32	63.73	8: 0	24/ 5/1984	0	0	1130
4TH	BORDEN PEI	46.25	63.69	24: 0	19/11/1984	0	2	1583
4TH	BORDEN PEI	46.32	63.73	12: 0	26/ 4/1985	0	2	1584
4TH	BORDEN PEI	46.32	63.73	20: 0	29/ 8/1986	0	2	949
4TH	BORDEN PEI	46.32	63.73	24: 0	14/ 5/1987	0	2	1364
4TH	BORDEN PEI	46.32	63.73	20: 0	26/ 9/1985	2	2	914
4TH	BORDEN PEI	46.32	63.73	0: 0	18/ 4/1986	2	2	915
4TH	PUGWASH N.S., JUNE 1	45.88	63.70	14: 0	19/ 6/1980	0	0	311
4TH	SKINNERS COVE, AUG	45.83	63.05	15:30	23/ 8/1979	0	0	221
4TH	SKINNERS COVE N.S.,	45.83	63.05	10:30	3/ 7/1981	11	11	375
4TH	TONEY RIVER NS	45.80	62.83	12: 0	30/ 6/1984	9	9	1126
4TH	TONEY R NS	45.79	62.84	20: 0	8/ 6/1985	10	10	1581
4TH	TORMENTINE NB	46.14	63.77	20: 0	6/ 6/1984	9	9	1133
4TH	TRACADIE HARBOUR NS	45.63	61.65	16: 0	4/ 7/1985	1	1	1450
4TH	VICTORIA P.E.I., JUN	46.18	63.48	13: 0	23/ 6/1980	0	0	310
4TH	VICTORIA PEI	46.18	63.93	12: 0	31/ 5/1985	10	10	1582
4TH	VICTORIA P.E.I., 13	46.18	63.48	15: 0	13/ 5/1981	11	11	377
4TH	VICTORIA PEI, 8 MAY	46.18	63.48	16: 0	8/ 5/1982	11	11	468
4TH	VICTORIA PEI	46.18	63.48	16: 0	28/ 4/1983	11	11	582
4TH	VICTORIA PEI	46.18	63.48	12: 0	8/ 6/1984	11	11	1128
4TJ	MIMINEGASH PEI (GRAN	46.52	63.85	20: 0	3/ 6/1987	3	5	1335
4TL	RICHIBUCTO N.B., AUG	46.68	64.68	6: 0	14/ 8/1980	0	0	305
4TL	POINT SAPIN NB	46.93	64.80	19: 0	23/ 7/1981	7	7	1380
4TL	TIGNISH P.E.I., AUG	47.23	63.83	13: 0	5/ 8/1980	10	10	308
4TL	TIGNISH PEI	46.93	63.93	8: 0	1/ 6/1984	10	10	1137
4TL	WEST POINT PEI	46.66	64.40	16: 0	14/ 6/1986	6	6	956
4TL	WEST PT PEI	46.66	64.40	16: 0	14/ 6/1986	10	10	916
4TL	WEST POINT PEI, 30 J	46.66	64.40	14:30	30/ 6/1982	11	11	470
4TL	WEST POINT PEI	46.66	64.40	20: 0	31/ 5/1983	11	11	586
4TL	WEST POINT PEI	46.66	64.40	12: 0	11/ 6/1984	11	11	1135
4TM	CARLETON PQ	48.10	66.15	8: 0	11/ 5/1984	4	4	1161
4TM	CARLETON PQ	48.08	66.12	16: 0	8/ 5/1985	5	14	1611
4TM	CARLETON PQ	48.08	66.17	4: 0	16/ 5/1985	5	14	1612
4TM	CARLETON PQ	48.08	66.17	16: 0	2/ 6/1986	5	12	1378
4TM	CARLETON PQ	48.10	66.18	16: 0	2/ 6/1986	5	8	1387
4TM	CARLETON P.Q.	48.08	66.12	12: 0	12/ 5/1983	7	7	598
4TM	CARLETON PQ	48.10	66.15	21: 0	29/ 6/1987	7	7	1379
4TM	CARLETON PQ	48.08	66.12	20: 0	9/ 5/1984	9	9	1162
4TM	PASPEBIAC PQ	48.02	65.25	8: 0	9/ 5/1984	8	8	1163
4TM	PASPEBIAC PQ	48.02	65.25	20: 0	8/ 5/1985	8	8	1613
4TM	PASPEBIAC PQ	48.02	65.25	23: 0	29/ 6/1987	8	8	1383
4TM	PASPEBIAC P.Q.	48.02	65.25	16: 0	12/ 5/1983	10	10	599
4TM	STONEHAVEN NB	47.70	65.37	20: 0	25/ 5/1985	10	10	922
4TM	STONEHAVEN NB	47.70	65.37	16: 0	28/ 4/1986	10	10	917
4TM	STONEHAVEN NB	47.77	65.37	13: 0	27/ 8/1987	10	10	1375

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
4TN	CARAQUET ISLE SITE 1	47.82	64.88	14:30	25/ 6/1987	3	5	1371
4TN	GRANDE GREVE PQ	48.82	64.32	22: 0	30/ 6/1987	5	5	1384
4TN	GRANDE-RIVIERE P.Q.	48.38	64.50	0: 0	13/ 5/1983	10	10	600
4TN	GRANDE RIVIERE PQ	48.38	64.50	24: 0	8/ 5/1984	10	10	1164
4TN	GRANDE R PQ	48.38	64.50	24: 0	8/ 5/1985	10	10	1614
4TO	MARSOUI PQ	49.22	66.06	16: 0	8/ 5/1984	8	8	1165
4TO	MARSOUI PQ	49.22	66.06	24: 0	10/ 5/1985	8	10	1615
4TO	MARSOUI P.Q.	49.22	66.06	20: 0	13/ 5/1983	9	9	601
4TO	ST JOACHIM PQ	49.17	66.40	20: 0	10/ 5/1985	10	10	1616
4TO	ST. ANNE DES MONTS P	49.15	66.50	24: 0	7/ 5/1984	10	10	1166
4TO	STE ANNE DES MONTS (	49.17	66.40	4: 0	1/ 7/1987	0	0	1355
4TP	LES ESCOUMINS PQ	48.32	69.42	16: 0	11/ 2/1986	3	3	959
4TP	LES ESCOUMINS PQ	48.32	69.42	20: 0	11/ 2/1986	3	3	921
4TP	LES ESCOUMINS PQ	48.32	69.42	16: 0	11/ 2/1986	9	9	958
4TP	POINT AU PERE PQ	48.52	68.47	19: 0	1/ 7/1987	8	8	1382
4TP	POINTE-AU-PERE P.Q.	48.52	68.47	20: 0	17/ 5/1983	8	8	602
4TP	POINTE-AU-PERE PQ	48.52	68.47	20: 0	10/ 5/1984	8	8	1167
4TP	POINTE AU PERE PQ	48.52	68.47	16: 0	13/ 5/1985	8	8	1617
4TQ	POINTE DES MONTS PQ	49.32	67.38	0: 0	13/ 6/1983	7	7	604
4TQ	POINTE-DES-MONTS PQ	49.32	67.38	24: 0	20/ 6/1984	7	7	1169
4VN	CHAPEL POINT SYNDEY	46.24	60.21	12: 0	21/ 5/1986	8	10	842
4VN	ENGLISHTOWN NS	46.31	60.51	12: 0	12/ 1/1986	2	2	888
4VN	ENGLISHTOWN NS	46.31	60.54	12: 0	23/12/1986	2	2	1282
4VN	ENGLISHTOWN NS	46.31	60.51	16: 0	28/11/1985	3	8	889
4VN	ENGLISHTOWN NS	46.30	60.36	0: 0	21/ 6/1983	11	11	580
4VN	GABARUS N.S., SEPT 1	45.85	60.13	18:30	11/ 9/1980	0	0	312
4VN	GABARUS NS	45.81	60.05	20: 0	5/ 6/1984	3	3	1119
4VN	GABARUS NS	45.81	60.05	20: 0	5/ 6/1984	3	3	1120
4VN	GABARUS NS	45.84	60.13	20: 0	20/ 5/1986	3	3	838
4VN	GABARUS NS	45.83	60.10	22: 0	22/ 5/1987	4	4	1311
4VN	GABARUS NS	45.81	60.12	20: 0	29/ 5/1985	7	7	1448
4VN	GABARUS NS	45.85	60.13	20: 0	20/ 5/1986	10	10	839
4VN	LOUISBOURG HARBOUR N	45.91	59.97	18: 0	7/ 9/1983	8	8	574
4WD	CANSO NS	45.30	60.99	16: 0	27/ 5/1984	4	4	1113
4WD	CANSO NS	45.37	60.99	0: 0	24/ 5/1985	4	5	1445
4WD	DORTS COVE N.S., SEP	45.35	61.43	13: 0	5/ 9/1980	11	11	270
4WD	DORTS COVE N.S. , 2	45.35	61.43	8: 0	2/ 3/1981	11	11	372
4WD	MAIN A DIEU NS	45.99	59.75	20: 0	25/ 5/1983	11	11	575
4WD	NEW HARBOUR, N.S. A	45.13	61.38	16:50	13/ 4/1978	9	0	315
4WD	NEW HARBOUR JULY 27	45.13	61.38	18:35	27/ 7/1978	9	0	323
4WD	NEW HARBOUR N.S.,	45.13	61.38	22:30	26/ 6/1978	10	10	231
4WD	NEW HARBOUR N.S., JU	45.13	61.38	20:30	3/ 7/1980	10	10	314
4WD	NEW HARBOUR NS	45.13	61.38	16: 0	13/10/1984	10	10	1439
4WD	NEW HARBOUR NS	45.13	61.38	12: 0	8/ 5/1985	10	10	1444
4WD	NEW HBR NS	45.13	61.38	20: 0	21/10/1985	10	10	846
4WD	PETIT DE GRAT NS	45.50	60.91	16: 0	29/11/1983	1	1	1116
4WD	PETIT DE GRAT NS	45.50	60.91	16: 0	20/ 5/1984	1	1	1115
4WD	PETIT DE GRAT NS	45.50	60.91	20: 0	15/12/1984	1	4	1447

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4WD	PETIT DE GRAT NS	45.50	60.91	15: 0	24/ 5/1985	3	4	837
4WD	PETIT DE GRAT NS	45.49	60.95	20: 0	23/ 5/1986	5	5	847
4WK	BEAVER HARBOUR NS, 1	44.87	62.40	18:45	1/ 1/1982	6	6	452
4WK	LAWLERS POINT NS	44.79	62.71	20: 0	16/ 1/1985	3	3	1438
4WK	LITTLE HARBOUR NS	44.69	62.85	16: 0	22/ 5/1984	3	3	1106
4WK	LITTLE HARBOUR NS	44.69	63.83	20: 0	2/ 5/1985	3	5	1430
4WK	PORT BICKERTON NS	45.03	61.71	12: 0	24/ 5/1985	3	6	853
4WK	PORT BICKERTON NS	45.06	61.74	12: 0	19/ 4/1986	3	3	849
4WK	PORT BICKERTON NS	45.05	61.75	14: 0	20/10/1986	3	3	1269
4WK	PORT BICKERTON NS	45.05	61.75	15: 0	17/ 4/1987	3	3	1288
4WK	PORT BICKERTON NS	45.03	62.71	20: 0	31/ 5/1984	4	4	1109
4WK	PORT BICKERTON NS	45.06	61.74	16: 0	19/ 4/1986	10	10	850
4WK	PORT BICKERTON NS	45.05	61.75	13: 0	20/10/1986	10	10	1268
4WK	PORT BICKERTON NS	45.05	61.75	16: 0	17/ 4/1987	10	10	1289
4XM	BOWENS IS NS (TUNS)	44.54	64.13	13: 0	2/10/1986	3	26	1299
4XM	BOWENS IS NS (TUNS)	44.55	64.13	14: 0	3/10/1986	3	35	1296
4XM	BOWENS IS NS (TUNS)	44.54	64.13	16: 0	2/10/1986	9	26	1298
4XM	BOWENS IS NS (TUNS)	44.55	64.13	13: 0	3/10/1986	9	35	1297
4XM	COIL COVE NS, 22 OCT	44.51	63.84	17:15	22/10/1981	7	7	448
4XM	EAST DOVER NS	44.55	63.83	16: 0	9/12/1983	2	2	1100
4XM	EAST DOVER NS	44.55	63.83	16: 0	9/12/1983	2	2	1102
4XM	EAST DOVER N.S., 26	44.50	63.85	17: 0	26/11/1980	7	7	336
4XM	EAST DOVER N.S., 15	44.50	63.85	16:30	15/ 5/1981	7	7	370
4XM	EAST DOVER NS, 20 AP	44.50	63.83	19: 0	20/ 4/1982	7	7	447
4XM	EAST DOVER NS	44.55	63.83	16: 0	9/12/1983	10	10	1101
4XM	FINK COVE NS	44.44	63.53	16: 0	5/ 1/1979	0	0	1105
4XM	FINK COVE NS	44.47	63.55	16: 0	5/ 7/1985	3	3	1435
4XM	FINK COVE NS	44.47	63.55	12: 0	3/ 7/1986	3	3	880
4XM	FINK COVE NS	44.47	63.55	16: 0	17/12/1986	3	3	1295
4XM	FINK COVE NS	44.47	63.55	16: 0	9/ 1/1986	5	5	854
4XM	FINK COVE NS	44.47	63.55	15: 0	19/ 6/1987	6	6	1308
4XM	FINK COVE NS	44.47	63.55	20: 0	24/ 1/1985	8	8	1434
4XM	GLEN MARGARET NS	44.59	63.96	16: 0	7/ 6/1984	2	2	1099
4XM	GRAVES ISLAND NS	44.58	64.20	20: 0	6/11/1984	8	8	1429
4XM	GRAVES IS. HUBBARDS	44.58	64.20	16: 0	2/ 2/1984	9	9	1095
4XM	HORSESHOE BUOY NS	44.31	63.99	16: 0	28/ 6/1984	2	2	1098
4XM	MAHONE BAY NS	44.52	64.20	18: 0	10/ 1/1987	7	24	1274
4XM	MAHONE BAY NS	44.52	64.20	18: 0	10/ 1/1987	7	24	1275
4XM	NORTH WEST COVE NS	44.54	63.96	16: 0	10/ 1/1986	10	10	855
4XM	NORTHWEST COVE NS	44.54	64.00	16: 0	7/ 6/1984	1	1	1097
4XM	SAMBRO NS	44.48	63.60	20: 0	21/11/1984	10	10	1431
4XM	SAMBRO NS	44.48	63.61	20: 0	13/ 5/1985	10	10	1433
4XM	SAMBRO NS	44.41	63.57	20: 0	31/10/1985	10	10	875
4XM	SLAUGHENWHITE LEDGE	44.61	64.04	20: 0	8/ 7/1984	2	2	1096
4XM	ST MARGARETS BAY NS,	44.51	63.92	21:30	18/ 6/1981	1	1	446
4XM	ST MARGARETS BAY N.S	44.64	63.97	15: 0	9/ 7/1980	6	6	286
4XM	STONEHURST N.S., APR	44.37	64.19	19: 0	18/ 4/1980	0	0	258
4XM	STONEHURST N.S., NOV	44.37	64.19	15: 0	27/11/1981	11	11	369
4XM	STONEHURST NS	44.37	64.19	16: 0	1/ 4/1983	11	11	563
4XM	STONEHURST NS	44.37	64.19	12: 0	10/ 5/1984	11	11	1093

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
4XO	ARGYLE NS	43.73	65.83	16: 0	30/ 3/1982	2	4	859
4XO	ARGYLE NS	43.73	65.83	16: 0	12/ 7/1985	2	4	860
4XO	CAPE SABLE NS, 28 JU	43.38	65.63	11: 0	28/ 7/1982	0	0	438
4XO	CAPE SABLE ISLAND NS	43.44	65.50	16: 0	6/11/1984	10	10	1414
4XO	CAPE SABLE ISLAND NS	43.44	65.50	20: 0	24/ 3/1985	10	10	1417
4XO	CAPE SABLE ISLAND N	43.44	65.50	0: 1	31/ 8/1985	10	10	861
4XO	CAPE SABLE ISLAND N	43.44	65.50	20: 0	17/ 2/1986	10	10	878
4XO	CAPE SABLE IS NS	43.44	65.50	19: 0	10/ 1/1987	10	10	1286
4XO	CAPE SABLE IS NS	43.44	65.50	4: 0	4/ 4/1987	10	10	1287
4XO	CHARLESVILLE NS	43.40	65.70	20: 0	23/ 2/1984	11	11	1074
4XO	CHARLESVILLE NS	43.40	65.70	20: 0	28/11/1984	11	11	1411
4XO	CHARLESVILLE NS	43.40	65.70	16: 0	1/ 4/1985	11	11	1412
4XO	CHARLESVILLE NS	43.40	65.70	16: 0	29/ 9/1985	11	11	864
4XO	CHARLESVILLE NS	43.40	65.70	16: 0	8/ 5/1986	11	11	883
4XO	CHARLESVILLE NS	43.63	65.78	12: 0	13/11/1986	11	11	1303
4XO	LOCKEPORT N.S. (WEST	43.64	65.15	16: 0	9/ 9/1980	0	0	297
4XO	MUD ISLAND N.S., MA	43.50	65.97	9:15	28/ 5/1979	0	0	202
4XO	PORT LATOUR N.S., AU	43.49	65.43	19: 0	11/ 8/1980	10	10	296
4XO	PORT MOUTON N.S. *,2	43.90	64.85	10: 0	21/ 5/1980	0	0	334
4XO	PORT MOUTON NS	43.92	64.83	16: 0	12/11/1982	3	3	561
4XO	PORT MOUTON N.S., AP	43.95	64.94	9:30	21/ 4/1980	6	6	307
4XO	PORT MOUTON NS	43.90	64.73	12: 0	26/ 4/1986	10	10	870
4XO	WHALE ISLAND N.S., A	43.52	65.78	14: 7	13/ 8/1980	7	7	291
4XQ	GANNET ROCK N.S., 25	43.65	66.14	15: 0	25/ 7/1981	11	11	363
4XQ	SCHOOL POINT LOBSTER	43.72	65.84	16:28	8/ 8/1980	2	2	290
4XQ	SCHOOL POINT LOBSTER	43.72	65.84	16:32	8/ 8/1980	8	8	289
4XQ	SCHOOL POINT LOBSTER	43.71	65.83	19:52	21/10/1980	8	8	335
4XQ	WHALE ISLAND NS, 22	43.72	65.84	13:37	22/10/1980	7	7	434
4XQ	YARMOUTH FERRY TRACK	43.78	66.27	16: 0	12/ 5/1979	0	0	215
4XQ	YARMOUTH FERRY N.S.,	43.76	66.27	1: 0	7/12/1979	0	0	238
4XR	DELAPS COVE N.S. *,1	44.80	65.65	12: 0	12/ 6/1980	0	0	329
4XR	DELAPS COVE N.S., AU	44.78	65.63	17:30	8/ 8/1980	0	0	313
4XR	DELAPS COVE NS.	44.78	65.63	16: 0	26/ 4/1983	0	0	542
4XR	FREEPORT NS	44.26	66.35	20: 0	12/12/1984	1	1	1405
4XR	PORT MAITLAND, DEC	44.00	66.20	10: 0	16/12/1978	0	0	206
4XR	PORT MAITLAND, FEB.	43.99	66.16	14: 0	1/ 2/1979	0	0	208
4XR	PORT MAITLAND, APRI	43.99	66.16	7:45	2/ 4/1979	0	0	209
4XR	PORT MAITLAND PIER N	43.99	66.17	21: 0	1/ 5/1980	0	0	269
4XR	PORT MAITLAND NS *,	43.96	66.18	16: 0	23/ 4/1982	0	0	423
4XR	PORT MAITLAND PIER,	43.98	66.15	16: 0	10/ 9/1979	5	5	235
4XR	PORT MAITLAND PIER N	43.98	66.15	17: 0	3/ 6/1980	7	7	330
4XR	PORT MAITLAND PIER N	43.98	66.15	8: 0	6/ 2/1980	10	10	255
4XR	PORT MAITLAND FAIRWA	44.99	63.18	23: 0	2/ 3/1981	11	11	360
4XR	WESTPORT NS	44.27	66.33	8: 0	6/ 2/1986	3	4	873
4XS	ALMA DEEP N.B., MAY	45.60	64.95	14:30	7/ 5/1980	0	0	259
4XS	ALMA DEEP N.B., JUNE	45.59	64.89	12:20	9/ 6/1980	0	0	264
4XS	ALMA DEEP N.B., AUG	45.59	64.94	11:45	14/ 8/1980	0	0	262
4XS	ALMA N.B., JULY 8 TO	45.58	64.94	8:15	8/ 7/1980	0	0	306
4XS	ALMA SHALLOW N.B., J	45.60	64.95	10:45	5/ 6/1980	0	0	265
4XS	ALMA SHALLOW N.B., J	45.59	64.94	15:45	5/ 7/1980	0	0	261
4XS	ALMA SHALLOW N.B., A	45.59	64.94	11: 0	19/ 8/1980	0	0	263

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
4XS	CHANCE HARBOUR N.B.	45.10	66.30	12: 0	24/ 9/1980	0	0	328
4XS	ST ANDREWS NB	45.08	67.03	16: 0	12/ 8/1986	0	8	1267
4XS	ST ANDREWS NB	45.08	67.03	18: 0	15/ 1/1987	0	8	1283
4XS	ST ANDREWS NB	45.08	67.03	20: 0	24/ 6/1987	0	8	1307
4XS	ST ANDREWS NB	45.08	67.03	13: 0	6/11/1987	0	8	1313

DEEP LOCATIONS - 12 METRES OR MORE

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
3KD	CROQUE HARBOUR NFLD	51.05	55.82	20: 0	14/ 7/1986	15	55	1025
3KD	CROQUE HBR	51.05	55.82	10: 0	17/ 7/1987	15	55	1665
3KD	WESTPORT WHITE BAY N	49.75	56.63	19: 0	2/ 9/1982	35	35	482
3KH	PACQUET	49.98	55.87	13: 0	1/ 7/1986	14	14	1700
3KH	PACQUET	49.98	55.87	16:30	29/ 5/1987	14	14	1702
3KH	PACQUET	49.98	55.87	16: 0	25/ 8/1987	14	14	1703
3KI	HILLGRADE NFLD, 25 M	49.58	54.70	16: 0	29/ 5/1982	23	23	490
3KI	HILLGRADE NFLD, 14 S	49.58	54.70	13:30	14/ 9/1982	23	23	491
3LA	CAPE FREELS NFLD	49.25	53.45	16: 0	1/ 7/1986	15	15	1028
3LA	CAPE FREELS	49.25	53.45	18: 0	9/ 6/1987	15	18	1655
3LA	SALVAGE BAY NFLD, 31	48.63	53.63	10:30	31/ 8/1982	16	16	499
3LA	SALVAGE BAY NFLD, 4	48.38	53.33	10:30	4/ 6/1982	36	36	498
3LA	SALVAGE BAY NFLD	48.68	53.65	12: 0	18/10/1985	36	36	1488
3LA	ST. CHADS NFLD., MAR	48.66	53.66	14: 0	13/ 3/1969	18	18	132
3LA	ST. CHADS NFLD., SEP	48.66	53.66	15:30	6/ 9/1969	27	27	123
3LA	STOCK COVE NFLD., NO	48.71	53.76	16:30	15/11/1967	18	18	194
3LA	STOCK COVE NFLD., JA	48.71	53.76	13:30	24/ 1/1968	18	18	189
3LA	STOCK COVE NFLD., MA	48.71	53.76	9: 0	12/ 3/1968	18	18	177
3LA	STOCK COVE NFLD., JU	48.71	53.76	10: 0	28/ 6/1968	18	18	159
3LA	STOCK COVE NFLD., JU	48.71	53.76	10:30	25/ 7/1968	18	18	173
3LA	STOCK COVE NFLD., AU	48.71	53.76	9: 0	28/ 8/1968	18	18	170
3LA	STOCK COVE NFLD., OC	48.71	53.76	9:30	1/10/1968	18	18	168
3LA	STOCK COVE NFLD., OC	48.71	53.76	10: 0	30/10/1968	18	18	182
3LA	STOCK COVE NFLD., DE	48.71	53.76	11: 0	15/12/1968	18	18	178
3LA	STOCK COVE NFLD., FE	48.71	53.76	12:30	11/ 2/1969	18	18	128
3LA	STOCK COVE NFLD., MA	48.71	53.76	10: 0	13/ 5/1969	18	18	143
3LA	STOCK COVE NFLD., JU	48.71	53.76	11: 0	18/ 6/1969	18	18	134
3LA	STOCK COVE NFLD., JU	48.71	53.76	10:30	16/ 7/1969	18	18	130
3LA	STOCK COVE NFLD., AU	48.71	53.76	11:30	20/ 8/1969	18	18	139
3LA	STOCK COVE NFLD., SE	48.71	53.76	15:30	16/ 9/1969	18	18	122
3LA	STOCK COVE NFLD., OC	48.71	53.76	10:30	15/10/1969	18	18	155
3LA	STOCK COVE NFLD., NO	48.71	53.76	11: 0	27/11/1969	18	18	151
3LA	STOCK COVE NFLD., DE	48.71	53.76	20: 0	19/12/1969	18	18	148
3LA	STOCK COVE NFLD., NO	48.71	53.76	18:30	23/11/1967	27	27	191
3LA	STOCK COVE NFLD., DE	48.71	53.76	11:30	13/12/1967	27	27	199
3LA	STOCK COVE NFLD., JA	48.71	53.76	13:30	25/ 1/1968	27	27	188
3LA	STOCK COVE NFLD., JU	48.71	53.76	10: 0	28/ 6/1968	27	27	158
3LA	STOCK COVE NFLD., JU	48.71	53.76	11:30	25/ 7/1968	27	27	175
3LA	STOCK COVE NFLD., AU	48.71	53.76	10: 0	28/ 8/1968	27	27	171
3LA	STOCK COVE NFLD., OC	48.71	53.76	9:30	1/10/1968	27	27	166
3LA	STOCK COVE NFLD., OC	48.71	53.76	10:30	30/10/1968	27	27	183
3LA	STOCK COVE NFLD., DE	48.71	53.76	11: 0	15/12/1968	27	27	179
3LA	STOCK COVE NFLD., JA	48.71	53.76	11: 0	15/ 1/1969	27	27	138
3LA	STOCK COVE NFLD., MA	48.71	53.76	10: 0	13/ 5/1969	27	27	145
3LA	STOCK COVE NFLD., JU	48.71	53.76	10: 0	18/ 6/1969	27	27	135
3LA	STOCK COVE NFLD., JU	48.71	53.76	10: 0	16/ 7/1969	27	27	131

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
3LA	STOCK COVE NFLD., AU	48.71	53.76	10: 0	20/ 8/1969	27	27	140
3LA	STOCK COVE NFLD., OC	48.71	53.76	10: 0	15/10/1969	27	27	157
3LA	STOCK COVE NFLD., NO	48.71	53.76	11:30	27/11/1969	27	27	150
3LA	STOCK COVE NFLD., DE	48.71	53.76	15:30	18/12/1969	27	27	149
3LA	STOCK COVE NFLD., JA	48.71	53.76	11:30	21/ 1/1970	27	27	118
3LA	TERRA NOVA NATIONAL	48.47	53.93	18: 0	10/ 8/1982	20	20	651
3LA	TERRA NOVA N. PARK N	48.47	53.93	16: 0	8/12/1982	20	20	647
3LA	TERRA NOVA NATIONAL	48.47	53.93	16: 0	4/ 5/1983	20	20	650
3LA	TERRA NOVA NATIONAL	48.47	53.93	16: 0	17/11/1982	33	33	648
3LA	TERRA NOVA NAT. PARK	48.47	53.93	13: 0	10/ 8/1982	36	36	500
3LB	CHANCE COVE NFLD	47.70	53.82	20: 0	18/ 5/1984	27	27	1227
3LB	CHANCE COVE NFLD	47.70	53.81	20: 0	28/ 5/1985	27	27	1498
3LB	DEER HARBOUR NFLD	47.94	53.67	16: 0	9/ 6/1984	18	18	1224
3LB	DEER HBR	47.88	53.72	22: 0	25/ 5/1987	18	18	1666
3LB	DEER HARBOUR NFLD	47.94	53.67	16: 0	9/ 6/1984	27	27	1225
3LB	GOOSEBERRY COVE NFLD	48.00	53.60	16: 0	9/ 6/1984	18	18	1222
3LB	GOOSEBERRY COVE NFLD	48.00	53.60	16: 0	9/ 6/1984	27	27	1223
3LB	GRATES COVE NFLD	48.17	52.93	16: 0	3/ 6/1985	27	51	1502
3LB	GRATES COVE NFLD	48.17	52.93	16: 0	6/ 6/1985	27	51	1503
3LB	HEART'S DESIRE	47.84	53.45	23:30	8/ 6/1987	18	18	1680
3LB	HEARTS DESIRE NFLD	47.84	53.45	24: 0	21/ 6/1984	27	27	1230
3LB	HEARTS DESIRE NFLD	47.84	53.45	24: 0	15/ 9/1984	27	27	1231
3LB	HEARTS DESIRE NFLD	47.84	53.45	24: 0	22/ 5/1985	27	42	1500
3LB	HEARTS DESIRE NFLD	47.84	53.45	20: 0	30/ 6/1986	27	42	1042
3LB	MELROSE	48.47	53.04	18: 0	11/ 6/1987	18	27	1690
3LB	MELROSE NFLD	48.47	53.04	20: 0	6/ 9/1984	27	27	1221
3LB	MELROSE NFLD	48.47	53.04	20: 0	4/ 6/1985	27	40	1496
3LB	MELROSE NFLD	48.47	53.04	20: 0	4/ 6/1985	27	40	1495
3LB	OLD PERLICAN	48.14	53.08	8: 0	10/ 7/1987	18	33	1697
3LB	OLD PERLICAN NFLD	48.14	53.08	20: 0	27/ 5/1986	32	335	1030
3LB	OLD PERLICAN NFLD	48.14	53.08	20: 0	27/ 5/1986	139	335	1032
3LB	OLD PERLICAN NFLD	48.14	53.08	20: 0	27/ 5/1986	85	335	1031
3LF	CONCEPTION BAY (MCGI	47.68	53.19	11: 0	12/ 6/1987	25	30	1736
3LF	CONCEPTION BAY (MCGI	47.68	53.19	14: 0	14/ 6/1987	25	90	1737
3LF	HIBBS COVE NFLD.	47.53	53.25	16: 0	9/ 6/1983	19	19	663
3LF	HOLYROOD NFLD, 30 NO	47.42	53.17	19: 0	30/11/1980	12	12	508
3LF	HOLYROOD NFLD, 7 SEP	47.42	53.17	13: 0	7/ 9/1981	12	12	510
3LF	HOLYROOD NFLD	47.42	53.17	16: 0	3/ 9/1985	14	15	1513
3LF	HOLYROOD NFLD, 20 MA	47.42	53.17	17:30	20/ 5/1982	30	30	511
3LJ	LOGY BAY M1 50'	47.62	52.65	16: 0	5/ 6/1984	15	15	1515
3LJ	LOGY BAY M1 50'	47.62	52.65	12: 0	18/ 7/1984	15	15	1516
3LJ	LOGY BAY M2 50'	47.62	52.65	16: 0	18/ 7/1984	15	40	1518
3LJ	LOGY BAY M3 50'	47.62	52.65	16: 0	18/ 7/1984	15	60	1519
3LJ	LOGY BAY M1 50'	47.62	52.65	16: 0	13/11/1984	15	15	1527
3LJ	LOGY BAY M1 50'	47.62	52.66	16: 0	13/11/1984	15	15	1528
3LJ	LOGY BAY M2 50'	47.62	52.66	16: 0	19/11/1984	15	37	1530
3LJ	LOGY BAY M3 50'	47.62	52.65	16: 0	21/11/1984	15	56	1533
3LJ	LOGY BAY M1 50'	47.62	52.65	16: 0	27/ 3/1985	15	16	1540
3LJ	LOGY BAY M1 50'	47.62	52.65	16: 0	27/ 3/1985	15	15	1539
3LJ	LOGY BAY M2 50'	47.62	52.65	16: 0	28/ 3/1985	15	37	1541

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
3LJ	LOGY BAY M3 50'	48.68	52.65	12: 0	10/ 5/1985	15	55	1546
3LJ	LOGY BAY M2 50' NFL	47.62	52.65	16: 0	17/ 9/1985	15	37	994
3LJ	LOGY BAY M3 50' NFL	47.62	52.65	16: 0	17/ 9/1985	15	55	998
3LJ	LOGY BAY M2 77'	47.62	52.65	12: 0	18/ 7/1984	22	40	1517
3LJ	LOGY BAY M3 77'	47.62	52.65	16: 0	18/ 7/1984	22	60	1520
3LJ	LOGY BAY M2 77'	47.62	52.65	24: 0	16/11/1984	22	37	1529
3LJ	LOGY BAY M3 77'	47.62	52.65	16: 0	21/11/1984	22	56	1534
3LJ	LOGY BAY M2 77'	47.62	52.65	16: 0	28/ 3/1985	22	37	1542
3LJ	LOGY BAY M3 77'	47.62	52.65	12: 0	10/ 4/1985	22	55	1544
3LJ	LOGY BAY M2 77' NFL	47.62	52.65	16: 0	17/ 9/1985	22	37	995
3LJ	LOGY BAY M3 77' NFL	47.62	52.65	16: 0	17/ 9/1985	22	55	999
3LJ	LOGY BAY	47.58	52.67	16: 0	18/10/1982	34	34	666
3LJ	LOGY BAY NFLD., 18JU	47.58	52.67	0: 0	19/ 7/1980	35	35	347
3LJ	LOGY BAY NFLD, 30 AU	47.58	52.67	13: 0	30/ 8/1981	35	35	506
3LJ	LOGY BAY NFLD, 27 MA	47.58	52.67	0: 0	27/ 5/1982	35	35	507
3LJ	LOGY BAY NFLD	47.62	52.65	16: 0	18/ 7/1984	35	35	1521
3LJ	LOGY BAY M2 123'	47.62	52.65	16: 0	18/ 7/1984	37	40	1522
3LJ	LOGY BAY M2 123'	47.62	52.65	16: 0	18/ 7/1984	37	40	1523
3LJ	LOGY BAY M2 123'	47.62	52.66	16: 0	19/11/1984	37	37	1531
3LJ	LOGY BAY M2 123'	47.62	52.65	20: 0	19/11/1984	37	37	1532
3LJ	LOGY BAY M3 123'	47.62	52.65	16: 0	21/11/1984	37	56	1535
3LJ	LOGY BAY M2 123'	47.62	52.65	16: 0	22/ 3/1985	37	37	1538
3LJ	LOGY BAY M2 123'	47.62	52.65	16: 0	28/ 3/1985	37	37	1543
3LJ	LOGY BAY M3 123'	47.62	52.65	12: 0	10/ 5/1985	37	55	1547
3LJ	LOGY BAY M2 123' NF	47.62	52.65	16: 0	17/ 9/1985	37	37	997
3LJ	LOGY BAY M2 123' NF	47.62	52.65	16: 0	17/ 9/1985	37	37	996
3LJ	LOGY BAY M3 123' NFL	47.62	52.65	16: 0	17/ 9/1985	37	55	1000
3LJ	LOGY BAY M3 185'	47.62	52.65	16: 0	18/ 7/1984	55	60	1524
3LJ	LOGY BAY M3 185'	47.62	52.65	16: 0	18/ 7/1984	55	60	1525
3LJ	LOGY BAY M3 185'	47.62	52.65	16: 0	12/12/1984	55	55	1536
3LJ	LOGY BAY M3 185'	47.62	52.65	16: 0	12/12/1984	55	56	1537
3LJ	LOGY BAY M3 185'	47.62	52.65	12: 0	10/ 5/1985	55	55	1545
3LJ	LOGY BAY M3 185' NF	47.62	52.65	16: 0	17/ 9/1985	55	55	1001
3LJ	LOGY BAY M3 185' NF	47.62	52.65	16: 0	17/ 9/1985	55	55	1002
3LQ	COLINET NFLD, 7 JUNE	47.15	53.57	15:20	7/ 6/1982	16	16	515
3LQ	COLINET NFLD, 14 OCT	47.15	53.57	15: 0	14/10/1982	16	16	516
3LQ	COLINET NFLD.	47.19	53.58	20: 0	26/ 5/1983	16	16	668
3PSB	FORTUNE BAY NFLD	47.62	55.12	16: 0	2/ 5/1986	22	36	1047
3PSC	LOGY BAY NFLD., 30DE	47.58	54.30	15:30	30/12/1980	35	35	348
3PSC	NORTH SHORE SHAG ROC	47.42	53.83	13:30	5/ 2/1980	12	12	299
3PSC	SHAG ROCKS - PLACENT	47.42	53.83	15:50	10/ 5/1979	12	12	519
3PSC	SHAG ROCKS NFLD., MA	47.42	53.83	16:30	10/ 5/1979	12	12	243
3PSC	SHAG ROCKS - PLACENT	47.42	53.83	15: 0	5/ 9/1979	12	12	520
3PSC	SHAG ROCKS NFLD., SE	47.42	53.83	16:30	5/ 9/1979	12	12	242
3PSC	SHAG ROCKS NFLD.	47.42	53.83	0: 0	16/ 4/1981	14	14	671
3PSC	SUNNYSIDE NFLD, 22 J	47.85	53.92	16:45	22/ 6/1982	20	20	504
3PSC	SUNNYSIDE NFLD.	47.85	53.92	16: 0	5/10/1982	20	20	653
3PSC	SUNNYSIDE NFLD.	47.85	53.92	20: 0	24/ 2/1983	20	20	656
3PSC	SUNNYSIDE NFLD	47.85	53.92	16: 0	17/ 8/1983	20	20	659
3PSC	SUNNYSIDE NFLD, 1 OC	47.85	53.92	17:45	1/10/1981	33	33	501

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
3PSC	SUNNYSIDE NFLD, 22 J	47.85	53.92	16:30	22/ 6/1982	33	33	505
3PSC	SUNNYSIDE NFLD.	47.85	53.92	20: 0	6/10/1982	33	33	654
3PSC	SUNNYSIDE NFLD.	47.85	53.92	20: 0	24/ 2/1983	33	33	657
3PSC	SUNNYSIDE NFLD	47.85	53.92	16: 0	19/ 7/1983	33	33	660
4RB	BELLBURNS NFLD	50.20	57.53	16: 0	21/ 3/1984	12	12	1188
4RB	BELLBURNS NFLD	50.20	57.53	16: 0	21/ 3/1984	12	12	1189
4RB	BELLBURNS NFLD	50.20	57.53	16: 0	28/ 6/1984	12	12	1191
4RB	BELLBURNS NFLD	50.20	57.53	16: 0	30/ 4/1985	12	15	1633
4RB	BELLBURNS NFLD	50.20	57.53	4: 0	29/11/1984	16	16	1631
4RB	BELLBURNS NFLD	50.20	57.53	12: 0	29/11/1984	16	16	1632
4RB	BELLBURNS NFLD	50.20	57.53	16: 0	30/ 4/1985	16	16	1634
4RB	BELLBURNS NFLD	50.20	57.53	16: 0	29/ 8/1985	16	16	902
4RB	BELLBURNS NFLD	50.20	57.53	20: 0	22/ 4/1986	16	16	901
4RB	BELLBURNS NFLD	50.20	57.53	20: 0	22/ 4/1986	16	16	929
4RB	BELLBURNS NFLD	50.20	57.53	16: 0	30/ 7/1986	18	18	930
4RB	BELLBURNS NFLD	50.20	57.53	16: 0	30/ 7/1986	18	18	931
4RB	BONNE BAY NFLD	49.50	57.89	20: 0	9/ 6/1983	19	19	615
4RB	BONNE BAY NFLD	49.59	57.92	16: 0	21/ 5/1986	20	20	934
4RB	BONNE BAY, PINNACLE	49.59	57.92	16: 0	26/ 5/1986	20	20	928
4RB	BONNE BAY NFLD	49.60	57.92	10: 0	13/11/1986	20	20	1392
4RB	BONNE BAY NFLD	49.59	57.92	12: 0	13/11/1986	20	20	1337
4RB	BONNE BAY NFLD	49.59	57.92	18: 0	5/ 5/1987	20	20	1394
4RB	BONNE BAY NFLD	49.59	57.92	18: 0	5/ 5/1987	20	21	1393
4RB	BONNE BAY NFLD	49.60	57.92	16: 0	26/ 8/1987	20	20	1396
4RB	BONNE BAY NFLD	49.60	57.92	17: 0	26/ 8/1987	20	20	1395
4RB	BONNE BAY NFLD	49.50	57.89	16: 0	26/ 4/1984	21	21	1183
4RB	BONNE BAY NFLD	49.60	57.92	16: 0	28/11/1984	21	21	905
4RB	BONNE BAY NFLD	49.60	57.92	16: 0	28/11/1984	21	21	906
4RB	BONNE BAY NFLD	49.60	57.92	16: 0	28/ 8/1985	21	21	933
4RB	BONNE BAY NFLD	49.60	57.92	16: 0	28/ 8/1985	21	21	932
4RB	BONNE BAY NFLD	49.60	57.92	16: 0	8/ 1/1986	21	21	903
4RB	BONNE BAY NFLD	49.60	57.92	16: 0	8/ 1/1986	21	22	904
4RB	BONNE BAY NFLD	49.59	57.75	20: 0	1/ 5/1985	22	22	1635
4RB	BONNE BAY NFLD, 11 M	49.60	57.92	13: 0	11/ 5/1982	34	34	479
4RB	BONNE BAY NFLD	49.59	57.92	12: 0	13/11/1986	36	40	1338
4RB	BONNE BAY	49.59	57.92	16: 0	26/ 8/1987	36	36	1402
4RB	BONNE BAY NFLD	49.60	57.92	20: 0	23/ 4/1986	40	41	907
4RB	BONNE BAY NFLD	49.59	57.92	16: 0	26/ 5/1986	40	40	935
4RB	BONNE BAY NFLD	49.59	57.92	18: 0	5/ 5/1987	40	40	1340
4RB	PARSONS POND NFLD	49.88	57.75	12: 0	13/ 5/1983	19	19	614
4RB	PARSONS POND NFLD, 7	50.00	57.72	18:30	7/ 6/1982	22	22	480
4RC	LARK HARBOUR NFLD	49.12	58.35	12: 0	10/ 6/1983	19	19	616
4RC	PORT AU PORT NFLD	48.57	58.73	16: 0	29/ 5/1984	18	18	1187
4RC	PORT AU PORT BAY NFL	48.57	58.73	12: 0	17/ 5/1983	19	19	617
4RD	ST. GEORGES BAY NFLD	48.47	58.47	20: 0	16/ 5/1983	19	19	618
4SV	WOLF BAY PQ	50.15	60.24	8: 0	5/ 7/1987	20	20	1356
4SV	WOLF COVE PQ	50.15	60.24	12: 0	1/ 6/1986	40	40	962
4SW	BLANC SABLON PQ	51.42	57.22	16: 0	27/ 7/1983	16	16	613

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4SW	BLANC SABLON PQ	51.42	57.25	4: 0	22/ 6/1986	50	50	891
4SW	BONNE ESPERANCE PQ	51.37	57.66	16: 0	18/ 6/1985	12	12	1626
4SW	BRADOR BAY PQ	51.46	57.17	0: 0	15/ 6/1986	13	14	892
4SW	ILE AUX BOIS PQ	51.38	57.12	16: 0	14/ 6/1986	12	12	939
4SW	ILE AUX BOIS PQ	51.38	57.12	12: 0	14/ 6/1986	20	20	938
4SW	ILE MACKINNON PQ	50.83	58.84	16: 0	2/ 7/1986	21	21	893
4SW	ILE MACKINNON PQ	50.83	58.84	16: 0	6/ 8/1986	21	21	940
4SW	ILE PERROQUET P.Q.	51.45	57.23	16: 0	17/ 6/1985	14	15	1627
4SW	MUTTON BAY PQ	50.73	58.98	16: 0	30/ 6/1986	12	12	894
4SW	PTE BELLE AMOUR PQ	51.44	57.43	16: 0	16/ 6/1986	16	16	896
4SW	PTE BELLE AMOUR NFL	51.44	57.44	24: 0	27/ 6/1985	20	20	1625
4SW	PTE BELLE AMOUR PQ	51.44	57.43	16: 0	23/ 6/1986	30	31	895
4SW	SEPT ILES PQ (LA TAB	50.84	58.94	17: 0	27/ 5/1987	12	13	1344
4SW	SEPT ILES PQ (LA TAB	50.84	58.98	17:40	20/ 8/1986	14	14	1325
4SX	ANTICOSTI PQ	49.70	61.75	24: 0	30/ 5/1984	38	38	1182
4SX	EAST ANTICOSTI PQ	49.32	61.67	12: 0	25/ 5/1985	68	68	1618
4SX	NORTH ANTICOSTI PQ	49.35	62.00	20: 0	26/ 6/1986	20	20	941
4SY	HAVRE ST PIERRE PQ	50.20	63.57	16: 0	14/ 6/1984	12	12	1181
4SY	HAVRE ST PIERRE PQ	50.20	63.57	22: 0	8/ 6/1987	20	20	1400
4SY	HAVRE ST. PIERRE PQ	50.20	63.57	16: 0	10/ 6/1983	36	36	612
4SY	HAVRE ST PIERRE PQ	50.20	63.57	16: 0	14/ 6/1984	40	40	1180
4SY	MINGAN PQ	50.28	63.93	16: 0	22/ 6/1984	15	15	1178
4TF	GROSSE ILE MAGDALENE	47.63	61.67	16: 0	10/ 6/1983	17	17	1157
4TF	ILE SHAG ILES DE LA	47.48	61.68	20: 0	17/ 5/1985	12	12	1595
4TF	MAGDALEN ISLAND P.Q.	47.47	61.67	12: 0	6/ 6/1980	17	17	295
4TF	MAGDALEN ISLAND P.Q.	47.23	62.05	13:20	6/ 6/1980	17	17	294
4TF	MAGDALEN ISLAND P.Q.	47.21	62.10	17:20	12/ 6/1980	17	17	293
4TF	MAGDALEN ISLANDS - S	47.47	61.65	1:30	12/ 9/1981	18	18	478
4TF	MAGDALEN ISLANDS - D	47.53	61.67	16: 0	3/ 5/1982	18	18	476
4TF	MAGDALEN ISLANDS - D	47.52	61.57	10: 0	20/ 5/1982	26	26	477
4TF	SHAG ISLAND M.I. P	47.46	61.67	22:30	30/ 7/1981	12	12	385
4TF	SHAG ISLAND M.I. P	47.47	61.65	15:10	18/11/1980	18	18	340
4TF	SHAG ISLAND M.I. P.	47.46	61.67	7:30	9/ 9/1981	20	20	386
4TF	WEST ILES DE LA MAD	47.52	62.23	24: 0	21/ 5/1985	59	59	1606
4TG	BEACH POINT PEI	45.54	61.35	20: 0	9/ 6/1983	14	14	591
4TG	BEACH POINT P.E.I.,	45.13	61.38	13: 0	30/ 4/1980	20	20	267
4TG	CHETICAMP N.S., AU	46.68	61.07	17: 0	22/ 8/1979	21	21	223
4TG	FISHERMANS BANK PEI	45.98	62.20	16: 0	16/ 8/1986	12	26	899
4TG	FISHERMANS BANK PEI	45.98	62.20	16: 0	16/ 8/1986	25	26	923
4TG	FISHERMANS BANK PEI	45.98	62.20	16: 0	16/ 8/1986	26	26	900
4TG	GEORGES BAY 3 NS	45.68	61.77	16: 0	8/ 6/1987	18	18	1352
4TG	GEORGES BAY 2 NS	45.83	61.67	18: 0	6/ 6/1987	28	28	1351
4TG	GEORGES BAY 1 NS	45.93	61.86	16: 0	6/ 6/1987	40	40	1350
4TG	MARGAREE HARBOUR NS	45.54	61.35	20: 0	6/ 6/1983	20	20	593
4TG	MARGAREE NS	46.50	61.21	20: 0	27/ 6/1985	60	60	913
4TG	MARGAREE NS	46.67	61.68	20: 0	12/ 8/1984	70	70	1153
4TG	MURRAY HARBOUR FAIRW	46.04	62.44	14:10	30/ 5/1978	13	0	317
4TG	MURRAY HARBOUR FAIRW	46.03	62.43	12:25	6/ 7/1978	13	0	322
4TG	NORTH LAKE P.E.I., 1	46.50	62.08	18:50	17/ 6/1981	15	15	383

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
4TG	NORTH LAKE P.E.I., 2	46.50	62.08	15: 0	23/ 4/1981	20	20	382
4TG	PLEASANT BAY CB NS,	46.85	60.81	3:30	6/ 6/1982	18	18	473
4TG	PLEASANT BAY NS	46.84	60.83	8: 0	28/ 5/1983	21	21	592
4TG	REDHEAD PEI	46.48	62.85	12: 0	4/ 7/1986	20	20	946
4TG	REDHEAD PEI	46.51	62.85	12: 0	18/ 7/1987	40	40	1354
4TG	SOURIS PEI	46.35	62.23	20: 0	5/ 6/1983	19	19	590
4TG	SOURIS PEI	46.35	62.23	20: 0	19/ 5/1984	19	19	1149
4TG	SOURIS PEI	46.35	62.23	16: 0	5/ 6/1985	19	19	1587
4TG	SOURIS PEI	46.30	62.22	20: 0	16/ 5/1986	19	19	924
4TH	BAYFIELD N.B., AUG	46.14	63.08	8:15	28/ 8/1979	14	14	227
4TH	BAYFIELD N.B., MAY 2	46.20	63.80	10: 0	28/ 5/1980	14	14	257
4TH	CAPE EGMONT PEI, 26	46.38	64.13	15: 0	26/ 6/1982	12	12	469
4TH	CAPE EGMONT PEI	46.39	64.18	24: 0	3/ 6/1984	12	12	1131
4TH	CAPE EGMONT P.E.I.,	46.42	64.38	12: 0	13/ 6/1981	16	16	378
4TH	CAPE EGMONT P.E.I.,	46.38	64.13	19: 0	26/ 6/1980	20	20	284
4TH	EGMONT BAY PEI	46.38	64.13	12: 0	18/ 5/1983	12	12	584
4TH	EGMONT BAY PEI	46.38	64.13	12: 0	3/ 6/1984	12	12	1132
4TH	PICTOU ISLAND N.S.,	46.81	62.45	17:30	22/ 7/1979	19	19	218
4TH	PICTOU ISLAND P.E.I.	46.81	62.45	9:45	4/ 6/1980	19	19	285
4TH	PICTOU ISLAND NS, 30	45.81	62.45	18: 0	30/ 7/1982	19	19	465
4TH	PICTOU ISLAND NS	45.81	62.45	8: 0	20/ 5/1983	19	19	581
4TH	PUGWASH N.S., 29 JUN	45.86	63.70	11: 0	29/ 6/1981	12	12	376
4TH	PUGWASH NS, 23 APRIL	45.90	63.68	21: 0	23/ 4/1982	17	17	467
4TH	SHEDIAC NB	46.39	64.32	20: 0	18/ 5/1983	19	19	585
4TH	SHEDIAC NB	46.39	64.51	24: 0	9/ 7/1984	19	19	1134
4TH	SKINNERS COVE, JUL	45.50	63.05	13:30	27/ 7/1979	13	13	219
4TH	SKINNERS COVE, AUG	45.83	63.05	19:30	23/ 8/1979	13	13	220
4TH	SKINNERS COVE NS, 1	45.83	63.05	15: 0	1/ 6/1982	13	13	466
4TH	TONEY RIVER N.S., 4	45.80	62.83	13:30	4/ 6/1981	19	19	374
4TH	WOOD IS PEI	45.97	62.53	16: 0	3/ 7/1985	20	20	1590
4TJ	NORTH RUSTICO PEI	46.55	63.27	4: 0	30/ 6/1983	18	18	589
4TJ	NORTH RUSTICO PEI	46.55	63.27	20: 0	27/ 5/1984	18	18	1146
4TJ	RUSTICO PEI, 13 JUNE	46.55	63.27	16: 0	13/ 6/1982	18	18	471
4TK	NEAR BRADELLE BANK P	48.83	63.35	19:30	6/10/1981	74	74	398
4TK	NEAR BRADELLE BANK P	47.77	63.40	17: 0	7/10/1981	76	76	399
4TK	NEAR ORPHAN BANK P.Q	48.18	63.55	18: 0	14/10/1981	95	95	401
4TK	ORPHAN BANK P.Q.	48.12	63.63	19: 0	5/ 6/1981	102	102	397
4TK	ORPHAN BANK P.Q.	48.10	63.50	17:40	13/10/1981	94	94	400
4TK	WESTERN BRADELLE VAL	47.73	63.42	22: 0	2/ 6/1981	80	80	394
4TK	WESTERN BRADELLE VAL	46.77	63.35	19: 0	3/ 6/1981	82	82	395
4TK	WESTERN BRADELLE VAL	47.72	63.28	22:30	4/ 6/1981	82	82	396
4TL	ESCUMINAC NB	47.09	64.88	16: 0	14/ 5/1984	20	20	1158
4TL	MIMINEGASH P.E.I., J	46.90	64.38	18:10	20/ 6/1980	21	21	273
4TL	MIMINEGASH PEI	46.91	64.33	20: 0	25/ 7/1980	23	23	586
4TL	MIMINEGASH P.E.I.,	46.09	64.38	17:30	4/ 7/1979	32	32	222
4TL	RICHIBUCTO N.B., 24	46.80	64.67	11:30	24/ 8/1981	14	14	379
4TL	RICHIBUCTO NB	46.80	64.67	8: 0	30/ 4/1985	18	18	1585
4TL	RICHIBUCTO NB	46.80	64.67	12: 0	16/ 5/1983	19	19	587
4TL	RICHIBUCTO NB	46.80	64.67	4: 0	22/ 5/1984	19	19	1136

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
4TL	RICHIBUCTO N.B., JUN	46.80	63.57	11: 0	19/ 6/1980	22	22	274
4TL	TIGNISH PEI	46.93	63.93	4: 0	6/ 6/1984	30	30	1138
4TL	VAL COMEAU NB	47.32	64.78	16: 0	3/ 6/1985	18	18	1607
4TM	STONEHAVEN NB	47.77	65.37	20: 0	25/ 5/1985	20	20	1609
4TM	STONEHAVEN NB	47.74	65.37	16: 0	28/ 4/1986	20	20	957
4TM	STONEHAVEN NB	47.77	65.37	12: 0	27/ 8/1987	20	20	1374
4TM	STONEHAVEN NB	47.74	65.37	20: 0	25/ 5/1985	40	40	1608
4TM	STONEHAVEN NB	47.77	65.37	16: 0	28/ 4/1986	40	40	918
4TM	STONEHAVEN NB	47.77	65.37	18: 0	27/ 8/1987	40	40	1376
4TN	CARAQUET NB	47.99	65.00	16: 0	17/ 6/1984	73	73	1160
4TN	CHALEUR BAY P.Q.	48.20	64.55	20:30	16/10/1981	94	94	402
4TN	CHALEUR BAY P.Q.	48.22	64.53	19:20	1/ 6/1981	95	95	393
4TN	PIGEON HILL NB	47.75	64.30	12: 0	3/ 6/1985	20	20	1610
4TN	PIGEON HILL NB	47.75	64.30	12: 0	14/ 5/1986	30	30	919
4TN	SHIPPEGAN NB	47.69	64.60	16: 0	29/ 5/1984	20	20	1159
4TQ	RIVIERE PETITE TRINI	49.32	67.38	20: 0	17/ 6/1983	13	13	606
4VN	FOURCHU NS,	45.69	60.20	15: 0	13/ 5/1982	22	22	458
4VN	FOURCHU NS	45.69	60.20	16: 0	2/ 5/1983	22	22	572
4VN	FOURCHU NS	45.69	60.20	20: 0	11/ 5/1984	22	22	1117
4VN	FOURCHU NS, 28 JULY	45.64	59.93	18: 0	28/ 7/1982	129	129	459
4VN	GABARUS NS	45.81	60.05	16: 0	17/ 7/1985	18	18	1449
4VN	GABARUS NS	45.83	60.10	20: 0	20/ 5/1986	20	20	840
4VN	GABARUS NS, 22 MAY 8	45.78	60.11	10: 0	22/ 5/1982	23	23	460
4VN	GABARUS NS	45.81	60.05	8: 0	1/ 8/1983	36	36	573
4VN	GABARUS NS	45.81	60.05	12: 0	12/ 5/1984	36	36	1118
4VN	GABARUS NS	45.85	60.10	20: 0	20/ 5/1986	40	40	841
4VN	GABARUS NS	45.83	60.10	22: 0	22/ 5/1987	40	40	1312
4VN	GABARUS NS, 17 AUG 8	45.81	60.05	14:30	17/ 8/1982	76	76	461
4VN	WRECK COVE N.S., 15	46.50	60.33	14: 0	15/ 7/1980	15	15	339
4VN	WRECK COVE NS	46.50	60.35	12: 0	30/ 6/1984	19	19	1124
4VN	WRECK COVE NS	46.50	60.35	12: 0	28/ 5/1986	20	20	843
4VN	WRECK COVE NS	46.50	60.35	12: 0	28/ 5/1986	40	40	1294
4WD	DORTS COVE N.S.,8 OC	45.35	61.43	12: 0	8/10/1980	15	15	338
4WD	DORTS COVE NS	45.36	61.43	20: 0	4/ 5/1984	15	15	1112
4WD	DORTS COVE NS	45.35	61.43	0: 0	12/ 7/1985	15	15	1446
4WD	DORTS COVE NS, 5 APR	45.36	61.28	12: 0	19/ 4/1982	19	19	455
4WD	DORTS COVE NS	45.36	61.43	12: 0	28/ 5/1983	19	19	570
4WD	ILE MADAME NS	45.60	60.95	12: 0	17/ 5/1984	18	18	1114
4WD	MAIN-A DIEU NS	45.99	59.75	16: 0	4/ 7/1984	18	18	1121
4WD	NEW HARBOUR N.S., 18	45.13	61.38	12:10	18/11/1980	14	14	337
4WD	NEW HARBOUR N.S., 22	45.13	61.38	8: 0	22/ 4/1981	14	14	371
4WD	NEW HARBOUR N.S., AP	45.13	61.38	7: 0	30/ 4/1980	18	18	266
4WD	NEW HARBOUR NS	45.13	61.38	20: 0	21/ 4/1983	19	19	568
4WD	NEW HARBOUR N.S., JU	43.13	61.38	12:35	20/ 6/1979	20	20	239
4WD	NEW HARBOUR NS	45.13	61.38	16: 0	25/ 8/1983	20	20	569
4WD	NEW HARBOUR NS	45.13	61.38	16: 0	27/10/1983	20	20	1110
4WD	NEW HARBOUR NS	45.13	61.38	24: 0	19/ 4/1984	20	20	1111
4WD	NEW HARBOUR NS	45.10	61.34	16: 0	19/ 4/1985	20	20	1442

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4WD	NEW HARBOUR, N.S. A	45.13	61.38	16:30	13/ 4/1978	27	0	316
4WD	NEW HARBOUR JUNE 26	45.13	61.38	20:45	26/ 6/1978	28	0	324
4WD	NEW HARBOUR SEPT 28	45.13	61.38	14:40	28/ 9/1978	28	0	325
4WD	NEW HARBOUR N.S.,	45.13	61.38	18:45	25/ 4/1979	30	30	228
4WD	NEW HARBOUR NS	45.13	61.38	16: 0	13/10/1984	40	40	1441
4WD	NEW HARBOUR NS	45.02	61.36	16: 0	19/ 4/1985	40	40	1443
4WD	NEW HBR NS	45.13	61.38	20: 0	21/10/1985	20	20	845
4WD	NEW HBR NS	45.13	61.38	12: 0	22/10/1985	40	40	844
4WK	INDIAN ROCKS MAY 30	45.09	62.08	16:30	30/ 5/1978	18	0	320
4WK	PORT BICKERTON NS	45.05	61.75	16: 0	23/ 4/1986	20	20	851
4WK	PORT BICKERTON NS	45.05	61.75	16: 0	20/10/1986	20	20	1273
4WK	PORT BICKERTON NS	45.05	61.75	16: 0	17/ 4/1987	20	20	1291
4WK	PORT BICKERTON NS	45.05	61.75	16: 0	23/ 4/1986	40	40	852
4WK	PORT BICKERTON NS	45.05	61.75	16: 0	20/10/1986	40	40	1272
4WK	PORT BICKERTON NS	45.05	61.75	18: 0	17/ 4/1987	40	40	1290
4XM	BLANDFORD NS	44.45	64.09	16: 0	15/ 4/1986	12	14	857
4XM	BLANDFORD NS	44.50	64.10	16: 0	17/ 1/1986	13	13	879
4XM	EAST DOVER NS	44.55	63.83	16: 0	9/12/1983	20	20	1103
4XM	LIVERPOOL NS	44.00	64.63	18: 0	9/ 4/1987	40	40	1315
4XM	MAHONE BAY NS	44.50	64.16	16: 0	28/ 7/1983	15	15	1094
4XM	MC GRATH COVE NS NSF	44.49	63.84	20: 0	10/ 9/1986	12	12	1278
4XM	MC GRATH COVE NS NSF	44.49	63.84	20: 0	10/ 9/1986	18	18	1279
4XM	MOUTH OF ST MARGARET	44.50	63.96	15: 0	16/ 6/1981	20	20	445
4XM	NORTH WEST COVE NS	44.54	63.96	12: 0	10/ 1/1986	20	20	856
4XM	NORTH WEST COVE NS	44.54	63.96	0: 0	11/ 6/1986	20	20	1310
4XM	SAMBRO NS	44.48	63.60	16: 0	27/ 7/1984	12	12	1104
4XM	SAMBRO NS	44.48	63.60	20: 0	30/12/1984	12	12	1432
4XM	SAMBRO NS	44.46	63.60	12: 0	12/ 5/1985	20	20	887
4XM	SAMBRO NS	44.41	63.57	16: 0	12/ 5/1985	40	40	1306
4XM	STONEHURST NS	44.37	64.19	20: 0	5/12/1984	18	19	1427
4XM	STONEHURST NS	44.37	64.19	12: 0	25/ 4/1985	18	18	1428
4XM	STONEHURST NS	44.27	64.19	20: 0	21/11/1985	18	18	858
4XO	CAPE SABLE NS, 22 FE	43.36	65.63	20: 0	22/ 2/1982	17	17	437
4XO	CAPE SABLE ISLAND NS	43.41	65.55	16: 0	6/11/1984	20	20	1415
4XO	CAPE SABLE ISLAND NS	43.25	65.65	20: 0	24/ 3/1985	20	40	1418
4XO	CAPE SABLE ISLAND NS	43.42	65.55	20: 0	24/ 3/1985	20	20	1419
4XO	CAPE SABLE ISLAND N	43.42	65.55	0: 1	25/ 8/1985	20	20	862
4XO	CAPE SABLE ISLAND N	43.42	65.55	20: 0	15/ 7/1986	20	20	877
4XO	CAPE SABLE IS NS	43.42	65.55	16: 0	10/ 1/1987	20	20	1285
4XO	CAPE SABLE N.S., MA	43.36	65.63	13: 0	16/ 5/1979	24	24	216
4XO	CAPE SABLE N.S., FEB	43.36	65.63	7: 0	2/ 2/1980	24	24	252
4XO	CAPE SABLE N.S., MAY	43.36	65.63	10: 0	29/ 5/1980	24	24	303
4XO	CAPE SABLE N.S., 24	43.36	65.63	6: 0	24/ 4/1981	24	24	365
4XO	CAPE SABLE NS, 22 SE	43.38	65.63	18:30	22/ 9/1981	24	24	436
4XO	CAPE SABLE NS	43.36	65.63	16: 0	10/12/1982	24	24	548
4XO	CAPE SABLE NS	43.36	65.63	20: 0	21/ 5/1983	24	24	549
4XO	CAPE SABLE NS	43.36	65.63	24: 0	13/12/1983	24	24	1076
4XO	CAPE SABLE ISLAND NS	43.36	65.63	20: 0	23/ 7/1984	24	24	1413
4XO	CAPE SABLE, SEPT.	43.36	65.63	10: 0	5/ 9/1979	28	28	234
4XO	CAPE SABLE ISLAND NS	43.22	65.58	16: 0	6/11/1984	40	40	1416

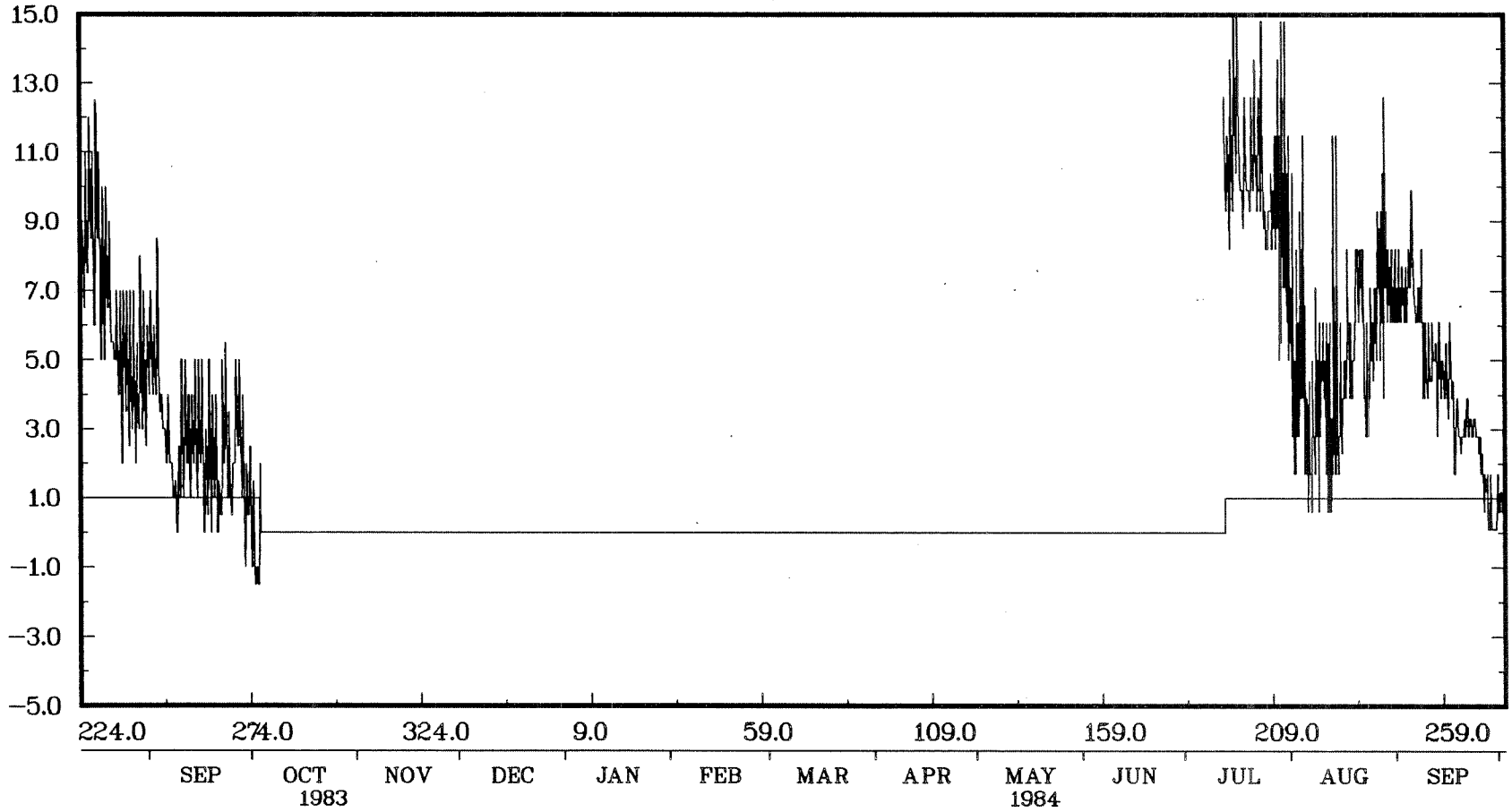
AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
4X0	CAPE SABLE ISLAND N	43.22	65.58	0: 1	25/ 8/1985	40	40	863
4X0	CAPE SABLE IS NS	43.22	65.58	20: 0	15/ 7/1986	40	40	882
4X0	CAPE SABLE IS NS	43.22	65.58	18: 0	10/ 1/1987	40	40	1284
4X0	CHARLESVILLE NS	43.60	65.70	20: 0	26/ 9/1984	24	24	1075
4X0	CULLODEN N.S., APRIL	44.67	65.83	16: 0	11/ 4/1980	19	19	280
4X0	CULLODEN N.S., AUGUS	44.67	65.83	14:30	8/ 8/1980	19	19	279
4X0	INGOMAR NS	43.53	65.31	16: 0	24/ 4/1985	20	20	1422
4X0	INGOMAR NS	43.53	65.31	20: 0	21/ 2/1985	21	21	1421
4X0	INGOMAR NS	43.53	65.31	0: 0	13/ 7/1985	21	22	1423
4X0	INGOMAR N.S., 1 FEB	43.53	65.31	18: 0	1/ 2/1981	22	22	367
4X0	INGOMAR NS	43.53	65.31	16: 0	11/12/1985	22	22	865
4X0	INGOMAR N.S., MARCH	43.52	65.30	19: 0	25/ 3/1980	40	40	282
4X0	INGOMAR N.S., 10 AUG	43.53	65.31	10:30	10/ 8/1980	40	40	333
4X0	INGOMAR NS, 30 JAN 8	43.53	65.31	17: 0	30/ 1/1982	40	40	444
4X0	INGOMAR NS	43.53	65.31	20: 0	26/ 4/1983	40	40	558
4X0	INGOMAR NS	43.53	65.31	16: 0	20/10/1983	40	40	1087
4X0	LOCKEPORT NS	43.64	65.12	20: 0	23/ 8/1983	12	12	1089
4X0	LOCKEPORT N.S., MAY	43.64	65.13	17:50	19/ 5/1979	17	17	203
4X0	LOCKEPORT N.S., JUN	43.64	65.13	12: 0	13/ 6/1979	17	17	212
4X0	LOCKEPORT N.S., JAN	43.64	65.13	14: 0	16/ 2/1980	17	17	256
4X0	LOCKEPORT N.S., JUNE	43.64	65.13	15: 0	11/ 6/1980	17	17	277
4X0	LOCKEPORT N.S., JULY	43.64	65.13	12:50	4/ 7/1980	17	17	278
4X0	LOCKEPORT N.S., 9 MA	43.64	65.12	13:30	9/ 5/1981	17	17	368
4X0	LOCKEPORT NS	43.64	65.12	20: 0	28/10/1982	17	17	559
4X0	LOCKEPORT NS	43.64	65.12	16: 0	15/ 3/1983	17	17	560
4X0	LOCKEPORT NS	43.64	65.12	20: 0	30/ 1/1984	17	17	1088
4X0	LOCKEPORT NS	43.64	65.12	16: 0	19/ 2/1985	17	17	1316
4X0	LOCKEPORT NS	43.64	65.12	20: 0	12/ 8/1985	17	17	866
4X0	LOCKEPORT NS	43.64	65.12	16: 0	11/ 2/1986	17	17	867
4X0	LOCKEPORT, N.S., A	43.64	65.13	12: 0	27/ 8/1979	35	35	217
4X0	LOCKPORT NS	43.64	65.12	20: 0	14/ 7/1984	17	17	1424
4X0	LOWER WEST PUBNICO,	43.62	65.78	15: 0	3/12/1979	15	15	230
4X0	LOWER W PUBNICO N.S.	43.62	65.78	13: 0	1/ 5/1980	30	30	268
4X0	MUD ISLAND N.S., APR	43.48	65.93	17: 0	7/ 4/1980	24	24	281
4X0	MUD ISLAND N.S.,MAY1	43.48	65.93	15: 0	14/ 5/1981	24	24	364
4X0	MUD ISLAND NS	43.48	65.93	16: 0	12/ 8/1982	24	24	1069
4X0	PORT LATOUR N.S.,	43.45	65.47	13: 0	29/11/1979	12	12	229
4X0	PORT LATOUR N.S.,15	43.49	65.43	8: 0	15/ 7/1981	12	12	366
4X0	PORT LATOUR NS	43.49	65.43	8: 0	30/11/1985	12	12	869
4X0	PORT LATOUR NS, 5 DE	43.49	65.43	15: 0	5/12/1981	21	21	443
4X0	PORT LATOUR NS	43.49	65.43	16: 0	18/ 3/1983	21	21	557
4X0	PORT LATOUR N.S., MA	43.49	66.43	18:30	20/ 3/1980	26	26	288
4X0	PORT LATOUR NS	43.49	65.43	16: 0	25/ 4/1985	27	27	1420
4X0	PORT LATOUR HARBOUR,	43.46	65.42	13: 0	12/ 4/1979	28	28	204
4X0	PORT MOUTON N.S., AP	43.95	64.73	11: 0	30/ 4/1980	18	18	271
4X0	PORT MOUTON NS	43.90	64.85	20: 0	21/12/1982	18	18	562
4X0	PORT MOUTON NS	43.90	64.85	16: 0	14/12/1983	18	18	1090
4X0	PORT MOUTON NS	43.95	64.73	20: 0	18/12/1984	18	18	1425
4X0	PORT MOUTON NS	43.90	64.85	20: 0	23/ 4/1984	20	20	1091
4X0	PORT MOUTON NS	43.90	64.73	20: 0	28/ 4/1985	20	20	1426
4X0	PORT MOUTON NS	43.90	64.85	12: 0	20/11/1985	20	20	886
4X0	PORT MOUTON NS	43.90	64.85	12: 0	7/ 5/1984	25	25	1092
4X0	PUBNICO N.S. *, 10 D	43.60	65.80	15: 0	10/12/1980	28	28	332

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
4XO	ST. JOHNS LEDGE, MA	43.50	65.82	17: 0	20/ 5/1979	22	22	210
4XO	ST. JOHN'S LEDGE,	43.58	65.82	20: 0	4/ 9/1979	22	22	226
4XQ	GANNET ROCK NS, 30 M	43.65	66.14	23: 0	30/ 5/1982	13	13	424
4XQ	GANNET ROCK N.S., JU	43.65	66.14	15: 0	25/ 7/1981	22	22	362
4XQ	GANNET ROCK NS, 31 M	43.65	66.14	0: 0	31/ 5/1982	22	22	425
4XQ	GANNET ROCK, MAY 17	43.63	66.14	4: 0	17/ 5/1979	25	25	224
4XQ	GANNET ROCK, SEPT.1	43.63	66.14	16: 0	15/ 9/1979	25	25	225
4XQ	GREEN ISLAND NS	43.75	66.15	12: 0	13/ 5/1985	12	18	1407
4XQ	GREEN ISLAND NS	43.75	66.10	20: 0	24/ 7/1984	18	18	1068
4XQ	LURCHER SHOAL N.S.,	43.86	66.50	17:30	29/ 3/1980	36	36	276
4XQ	LURCHER SHOAL N.S.,	43.86	66.50	22:30	14/ 5/1980	36	36	331
4XQ	PEASE ISLAND JUNE	43.62	66.02	20:40	29/ 6/1978	13	0	321
4XQ	SANDFORD NS	43.93	66.18	12: 0	13/11/1986	20	20	1281
4XQ	SANDFORD NS	43.93	66.18	12: 0	27/ 4/1987	20	20	1302
4XQ	SANDFORD NS	43.93	66.18	20: 0	10/ 9/1987	20	20	1317
4XQ	TRINITY LEDGE PORT M	43.10	66.03	14: 5	18/ 5/1978	14	0	319
4XQ	TRINITY LEDGE, FEB.	43.98	66.31	14: 0	1/ 2/1979	20	20	207
4XQ	TRINITY LEDGE N.S.,	43.97	66.34	11: 0	25/ 3/1980	30	30	253
4XQ	TUSKET ISLAND NS	43.63	66.00	16: 0	31/ 1/1985	17	19	1408
4XQ	YARMOUTH FERRY TRACK	43.76	66.27	20: 0	24/12/1981	18	18	543
4XQ	YARMOUTH FERRY TRACK	43.76	66.27	8: 0	27/ 3/1980	25	25	287
4XR	DELAPS COVE N.S., 31	44.78	65.63	15:30	31/ 5/1981	17	17	358
4XR	DELAPS COVE NS, 1 SE	44.78	65.63	11: 0	1/ 9/1982	17	17	421
4XR	DELAPS COVE NS	44.78	65.63	0: 0	14/ 9/1983	18	18	1066
4XR	DELAPS COVE NS	44.78	65.63	16: 0	28/ 5/1984	18	18	1067
4XR	DELAPS COVE NS	44.78	65.63	12: 0	25/ 4/1987	18	18	1304
4XR	DELAPS COVE N.S., MA	44.78	65.63	14:30	14/ 5/1980	20	20	283
4XR	DELAPS COVE, AUG. 1	44.76	65.68	12: 0	1/ 8/1979	28	28	213
4XR	DELAPS COVE NS, 1 SE	44.76	65.68	19: 0	1/ 9/1981	28	28	420
4XR	DELAPS COVE NS, 20 A	44.78	65.63	16: 0	20/ 4/1982	28	28	419
4XR	PORT MAITLAND FAIRWA	43.99	66.18	6:30	1/ 1/1981	14	14	359
4XR	PORT MAITLAND FAIRWA	44.99	66.18	22:30	8/ 6/1981	14	14	361
4XR	PORT MAITLAND FAIRWA	43.99	66.18	12: 0	15/ 3/1983	17	18	874
4XR	PORT MAITLAND FAIRWA	43.99	66.18	16: 0	11/12/1984	17	18	1406
4XR	PORT MAITLAND FAIRWA	43.99	66.17	20: 0	22/ 1/1900	18	0	326
4XR	PORT MAITLAND FAIRWA	43.99	66.18	11:30	25/ 3/1980	18	18	254
4XR	PORT MAITLAND NS, 18	43.99	66.18	20: 0	18/11/1981	18	18	422
4XR	PORT MAITLAND N.S.,	43.99	66.16	14: 0	14/11/1979	22	22	232
4XR	PORT MAITLAND FAIRWA	43.99	66.17	18: 0	16/ 5/1980	22	22	275
4XR	PORT MAITLAND, JAN.	43.98	66.22	23:30	13/ 1/1979	30	30	211
4XR	PORT MAITLAND, APRI	43.97	66.22	12: 0	30/ 4/1979	30	30	205
4XR	PRIM POINT - DIGBY	44.07	65.08	11: 0	16/ 5/1978	39	0	318
4XS	ALMA DEEP N.B. *,20	45.60	64.95	15:30	20/10/1980	20	20	327
4XS	ALMA DEEP N.B. *,30	45.60	64.95	17: 0	30/ 5/1981	20	20	349
4XS	ALMA DEEP N.B. *,8 J	45.60	64.95	12:30	8/ 7/1981	20	20	352
4XS	ALMA N.B., AUG. 21	45.60	64.95	2: 0	21/ 8/1979	20	20	236
4XS	ALMA N.B.	45.60	64.95	12: 0	2/ 6/1982	30	30	541
4XS	ALMA NB *, 2 JUNE 82	45.60	64.95	14: 0	2/ 6/1982	30	30	417
4XS	ALMA NB *, 29 JUNE 8	45.60	64.95	0:50	30/ 6/1982	30	30	418
4XS	ALMA SHALLOW N.B. *,	45.60	64.95	21:30	11/ 6/1981	12	12	350

AREA	NAME	LAT	LONG	TIME	DATE	ID	BD	PART.
4XS	ALMA SHALLOW N.B. *,	45.60	64.95	8:30	7/ 7/1981	12	12	351
4XS	ALMA SHALLOW N.B., M	45.59	64.94	13: 5	7/ 5/1980	16	16	260
4XS	CHANCE HARBOUR N.B.,	45.11	66.34	18: 0	17/ 6/1980	18	18	272
4XS	CHANCE HARBOUR N.B.,	45.11	66.35	14: 0	23/ 7/1979	20	20	237
4XS	GRAND MANAN - LONG I	44.75	66.75	11: 0	20/ 7/1982	25	25	403
4XS	GRAND MANAN - LONG I	44.75	66.75	18: 0	9/ 8/1982	25	25	404
4XS	GRAND MANAN - LONG I	44.75	66.75	11:30	2/ 9/1982	25	25	405
4XS	GRAND MANAN - LONG I	44.75	66.75	13:40	30/ 9/1982	25	25	406
4XS	ST. MARTINS RIVER S	45.35	66.52	15: 0	25/ 7/1979	18	18	214

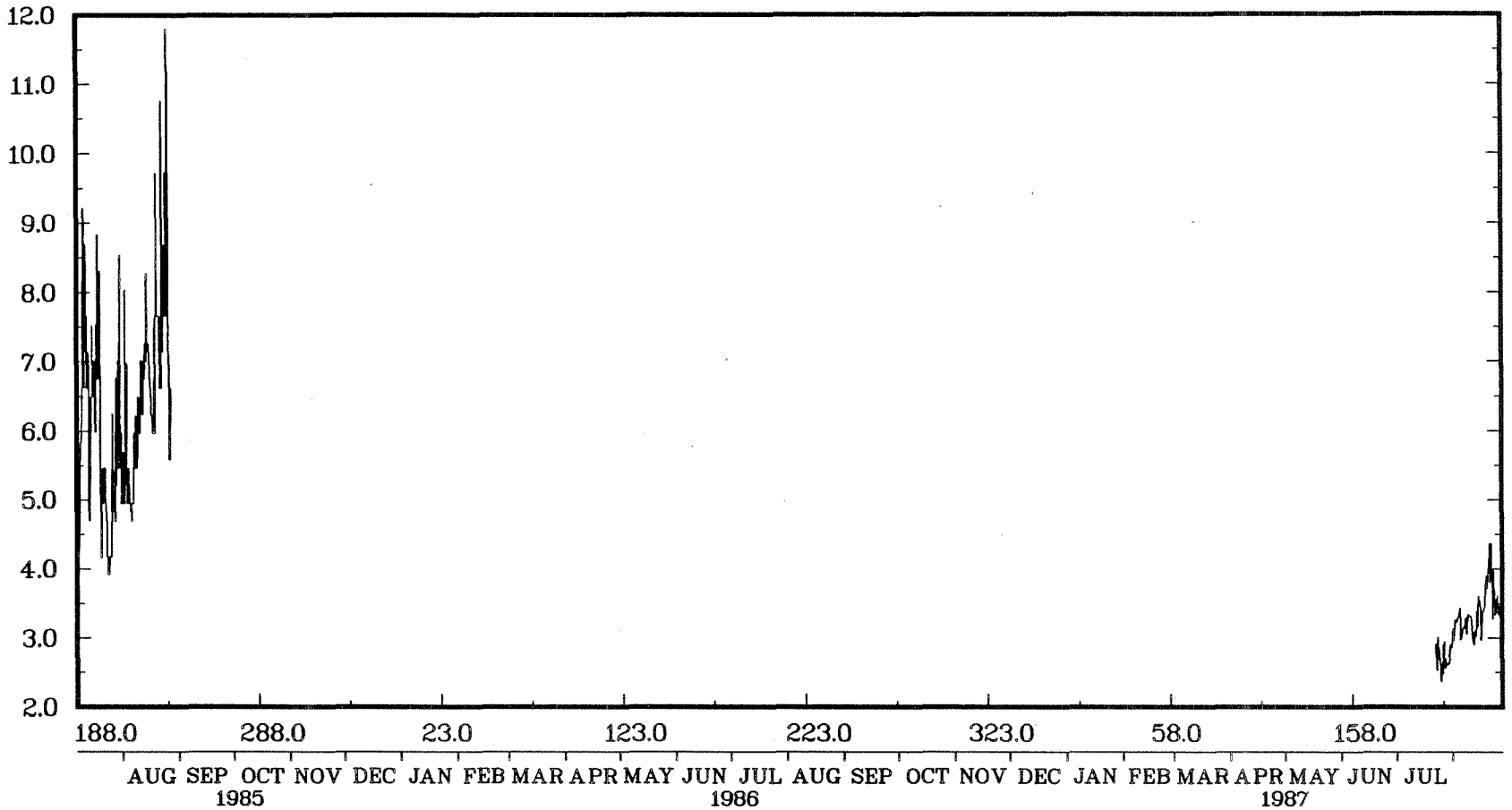
Appendix B. Plots of spatially-averaged Unit Area/depth range series at four-hour intervals.

2G SHALLOW



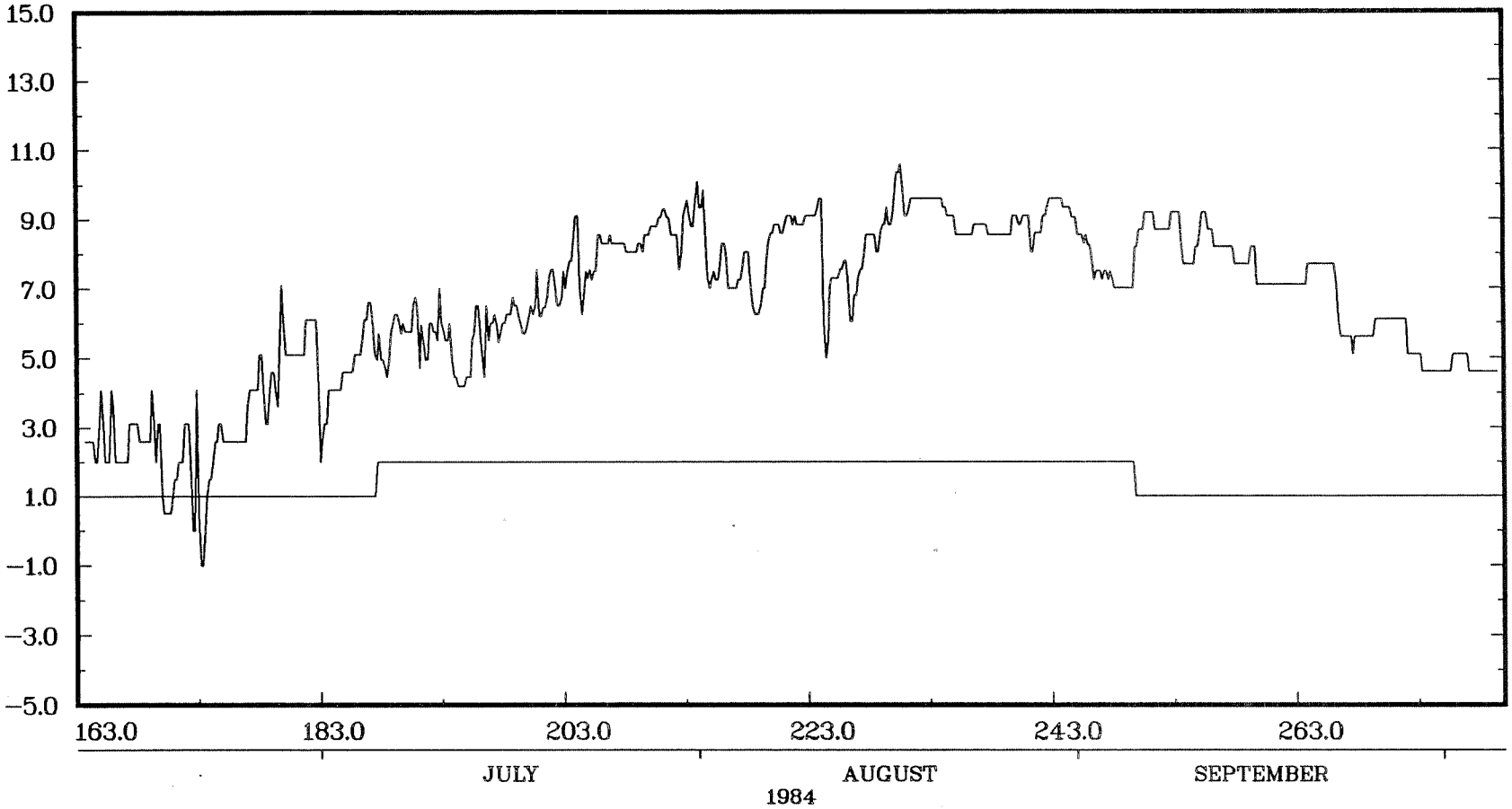
LAT. 58 09.0N – LONG. 63 04.8W

2H SHALLOW



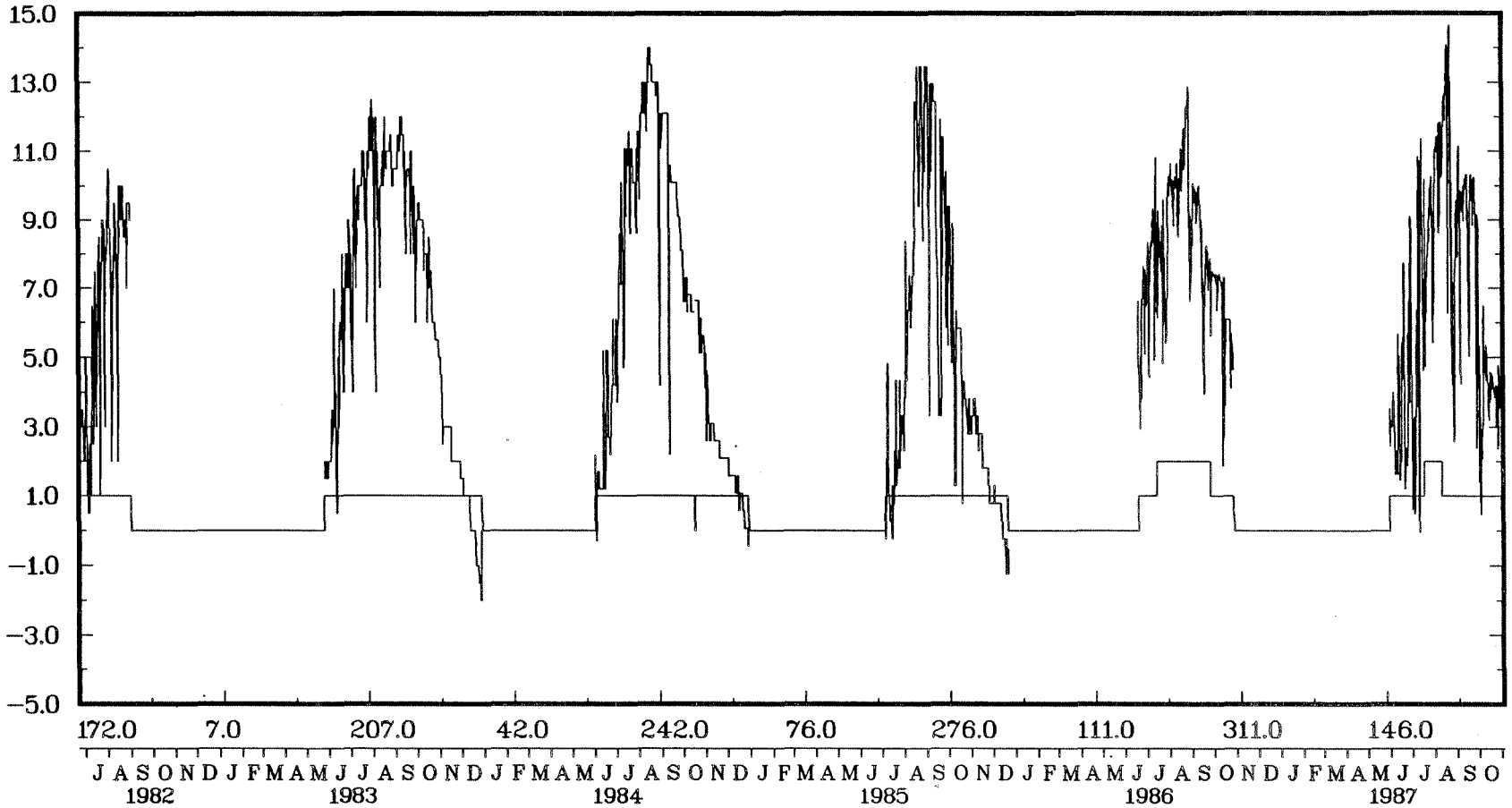
LAT. 56 34.8N – LONG. 61 25.2W

2JM SHALLOW



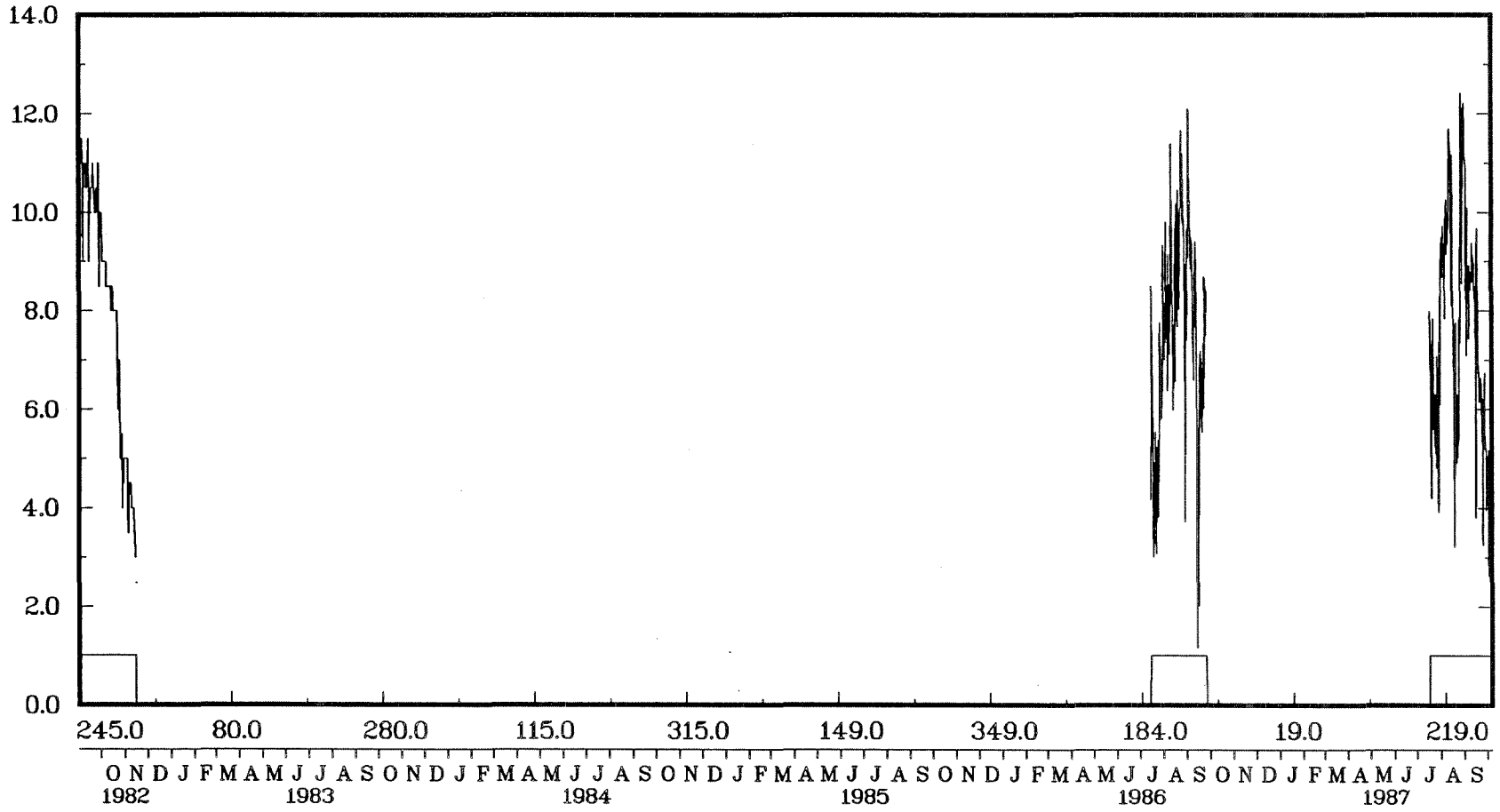
LAT. 52 21.0N – LONG. 55 42.0W

3KD SHALLOW



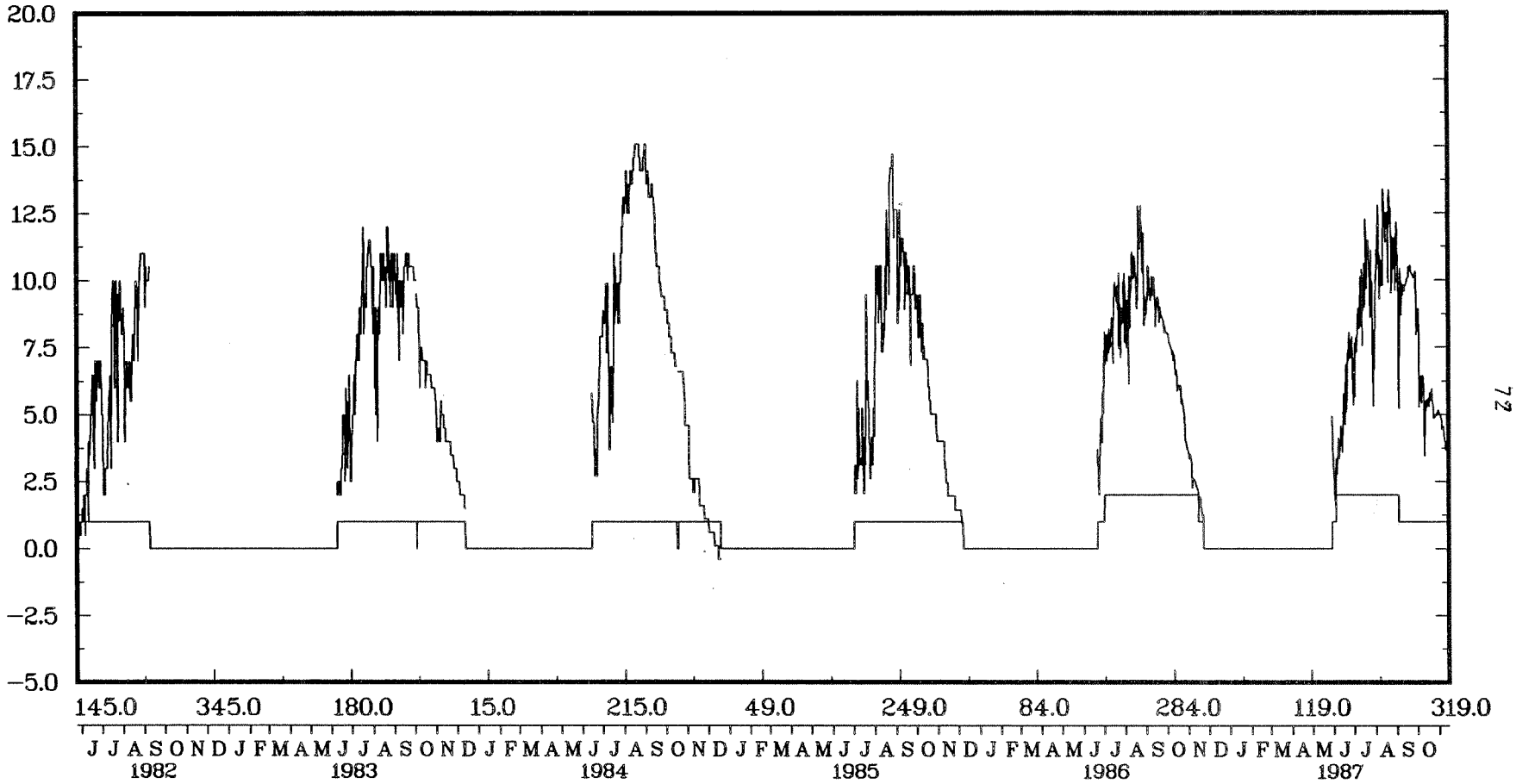
LAT. 51 3.0N – LONG. 55 49.2W

3KD DEEP



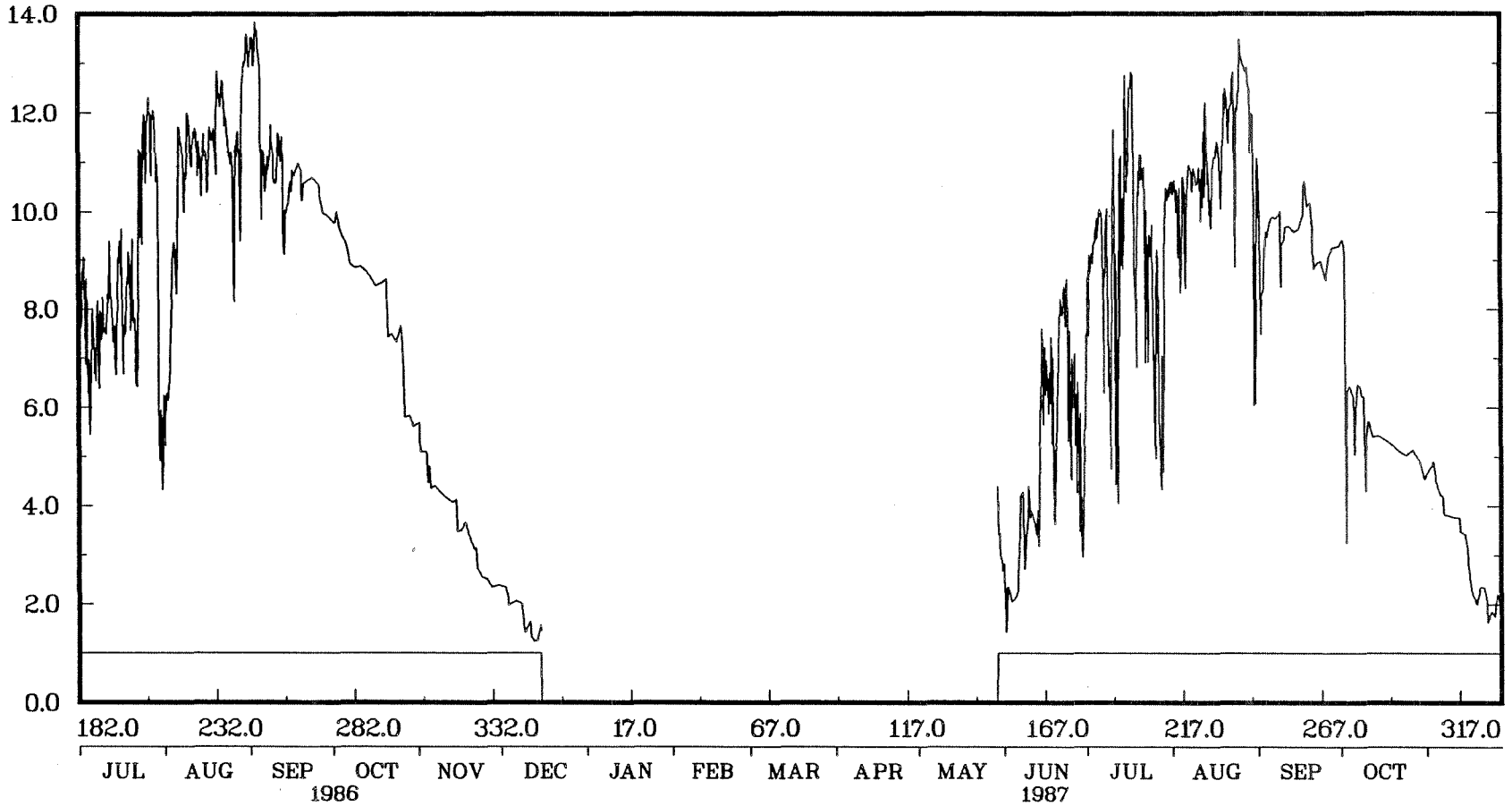
LAT. 51 3.0N – LONG. 55 49.2W

3KH SHALLOW



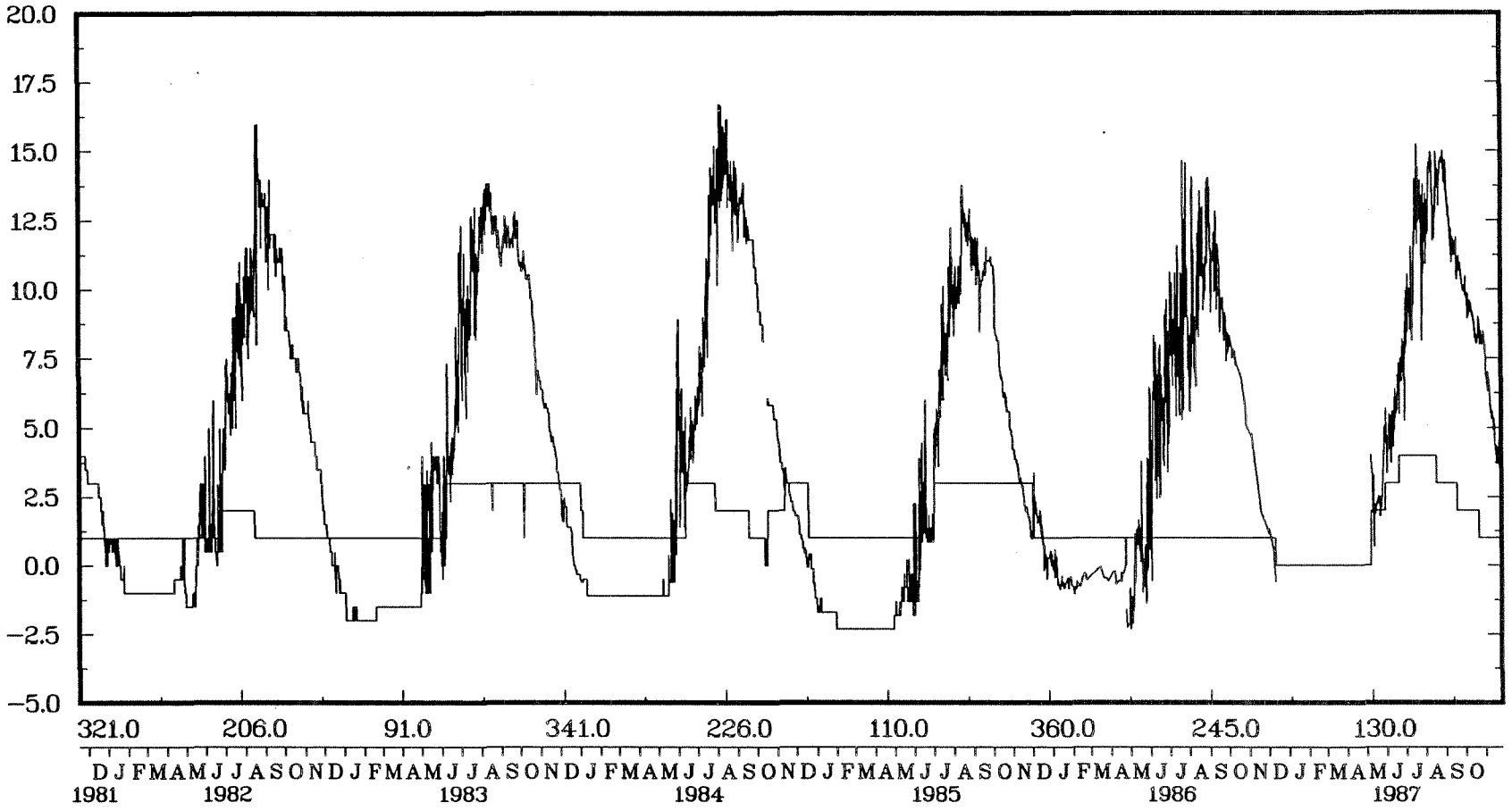
LAT. 49 42.0N – LONG. 55 55.8W

3KH DEEP



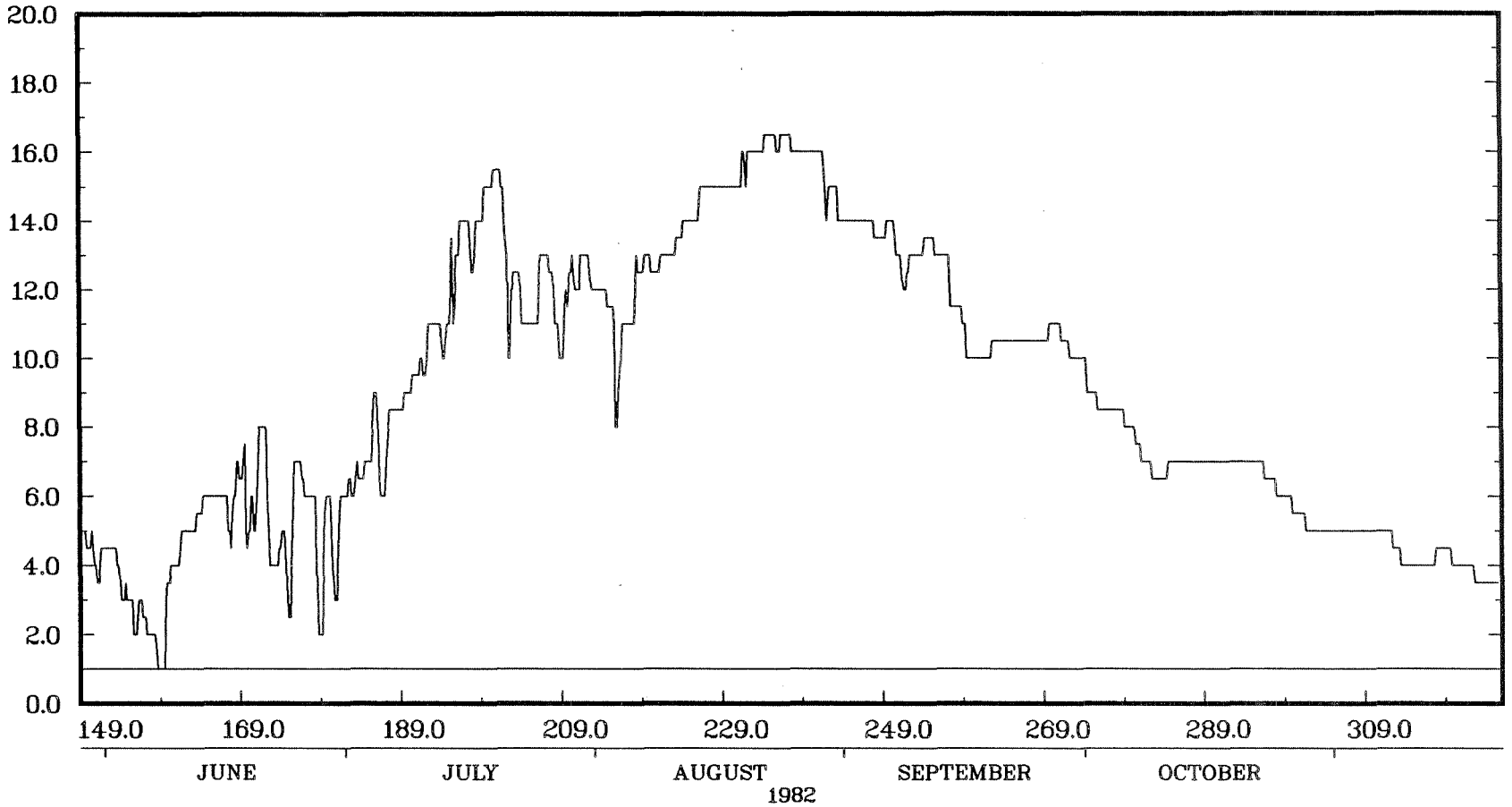
LAT. 49 58.8N – LONG. 55 52.2W

3KI SHALLOW



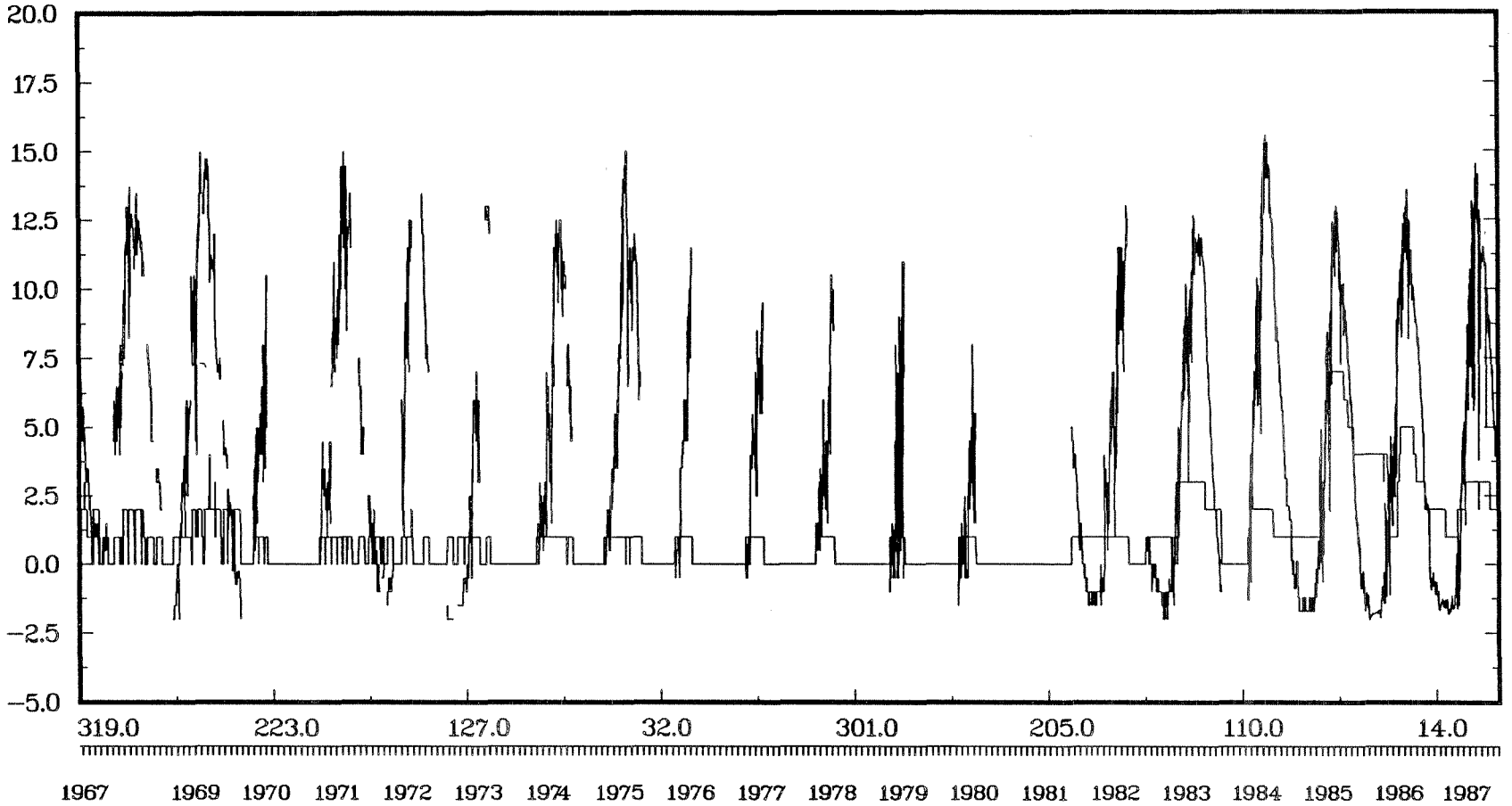
LAT. 49 24.6N – LONG. 54 49.8W

3KI DEEP



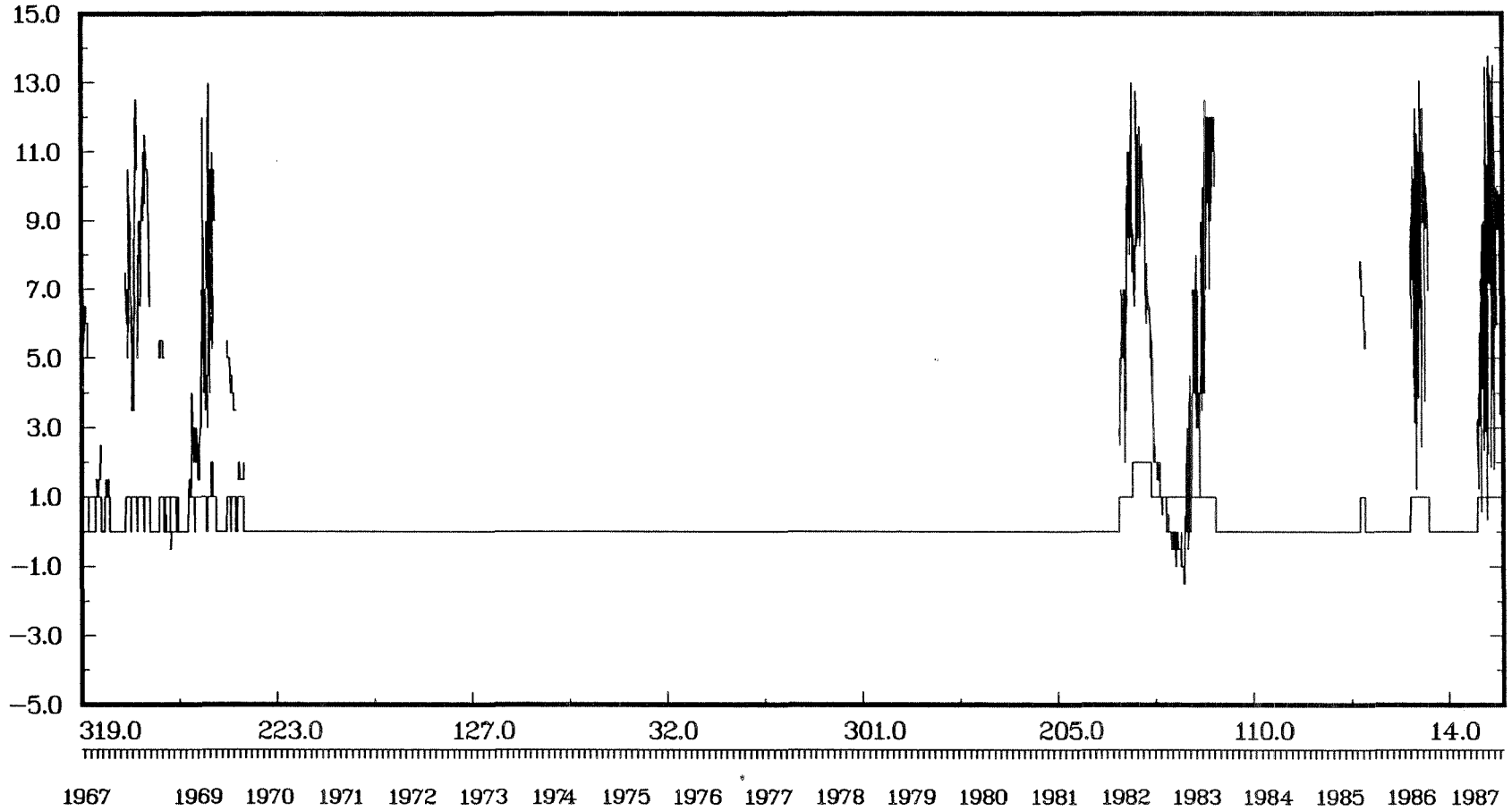
LAT. 49 34.8N – LONG. 54 42.0W

3LA SHALLOW



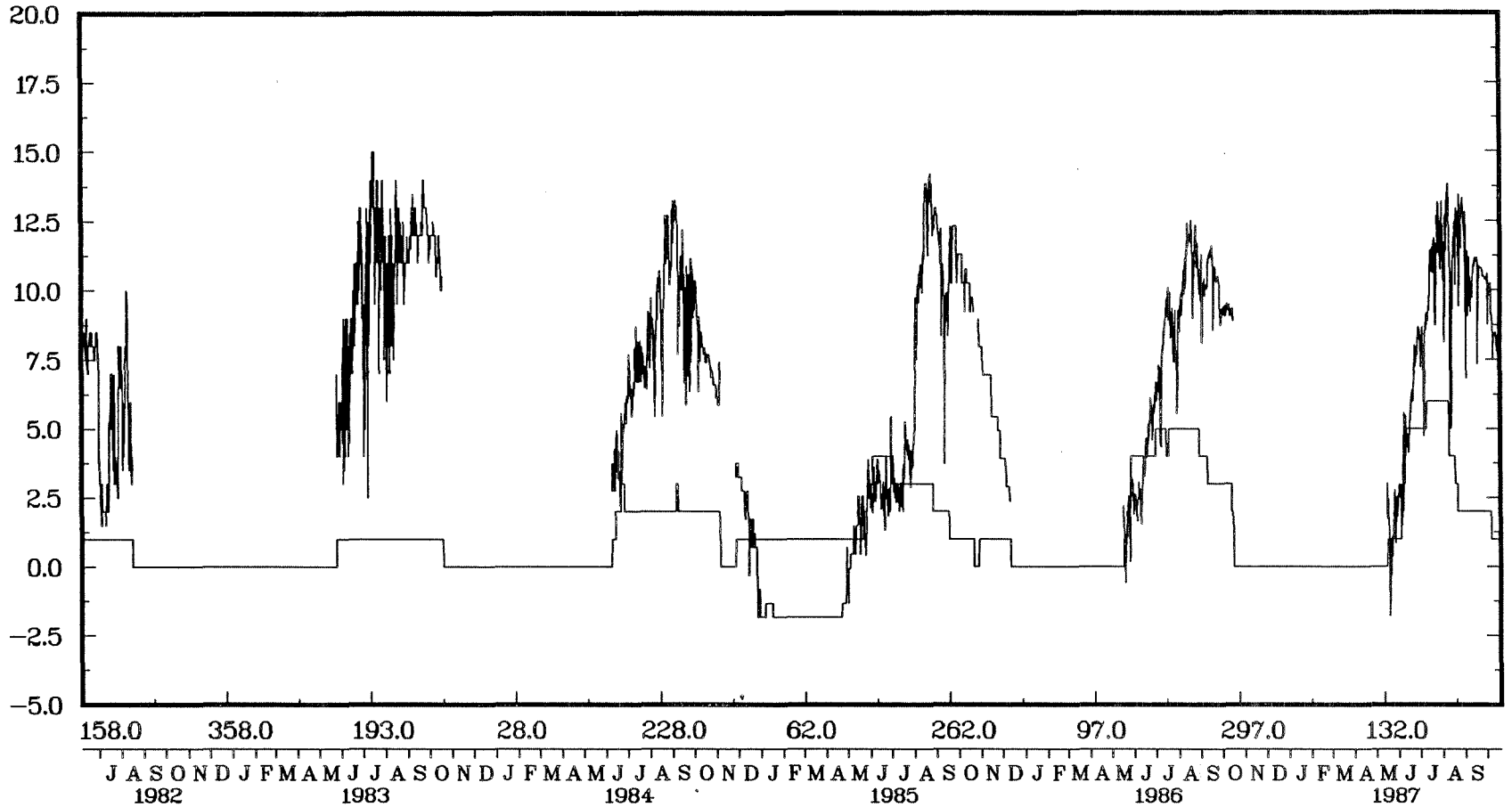
LAT. 48 42.0N − LONG. 53 5.4W

3LA DEEP



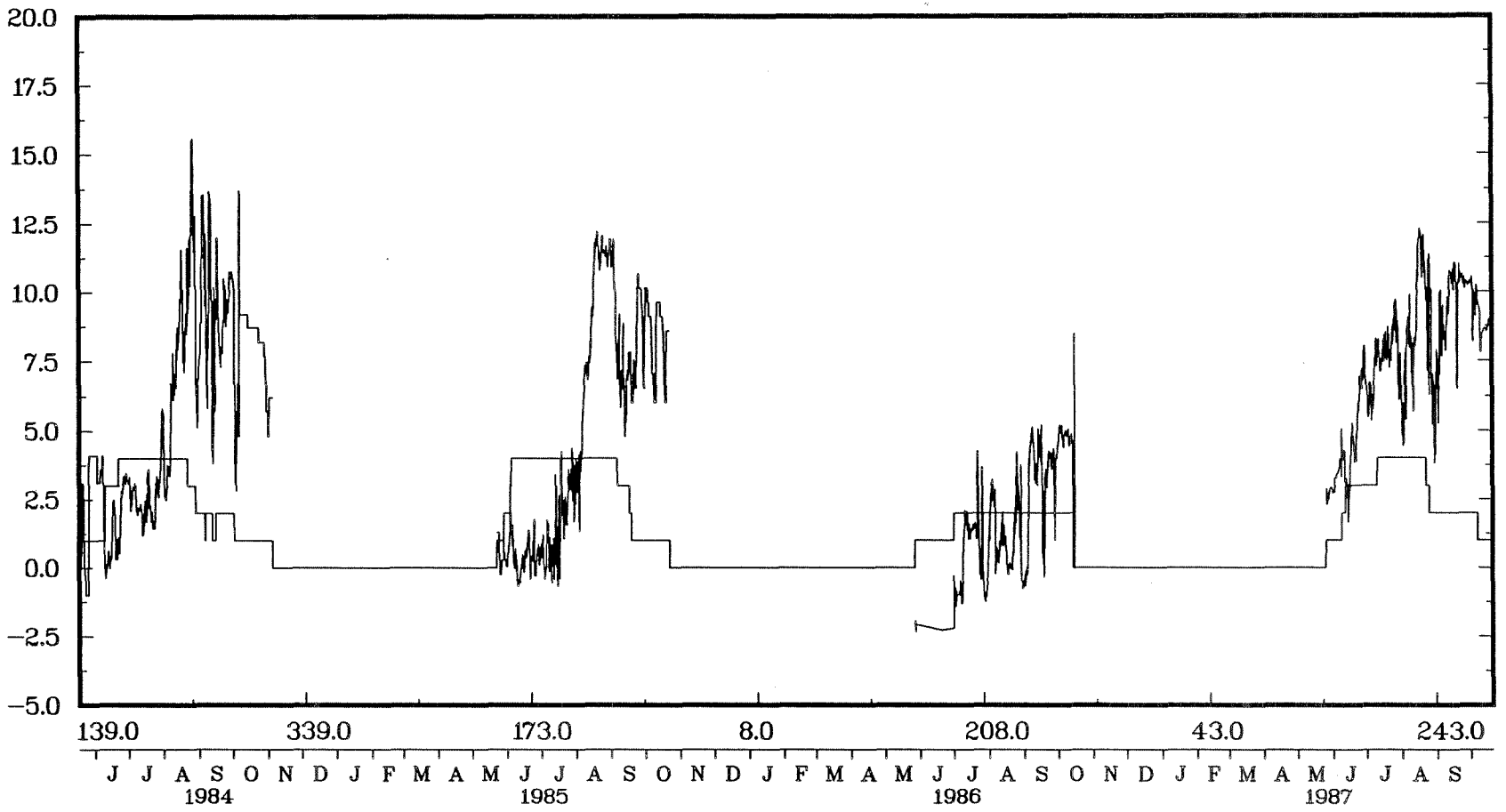
LAT. 49 15.0N – LONG. 53 27.0W

3LB SHALLOW



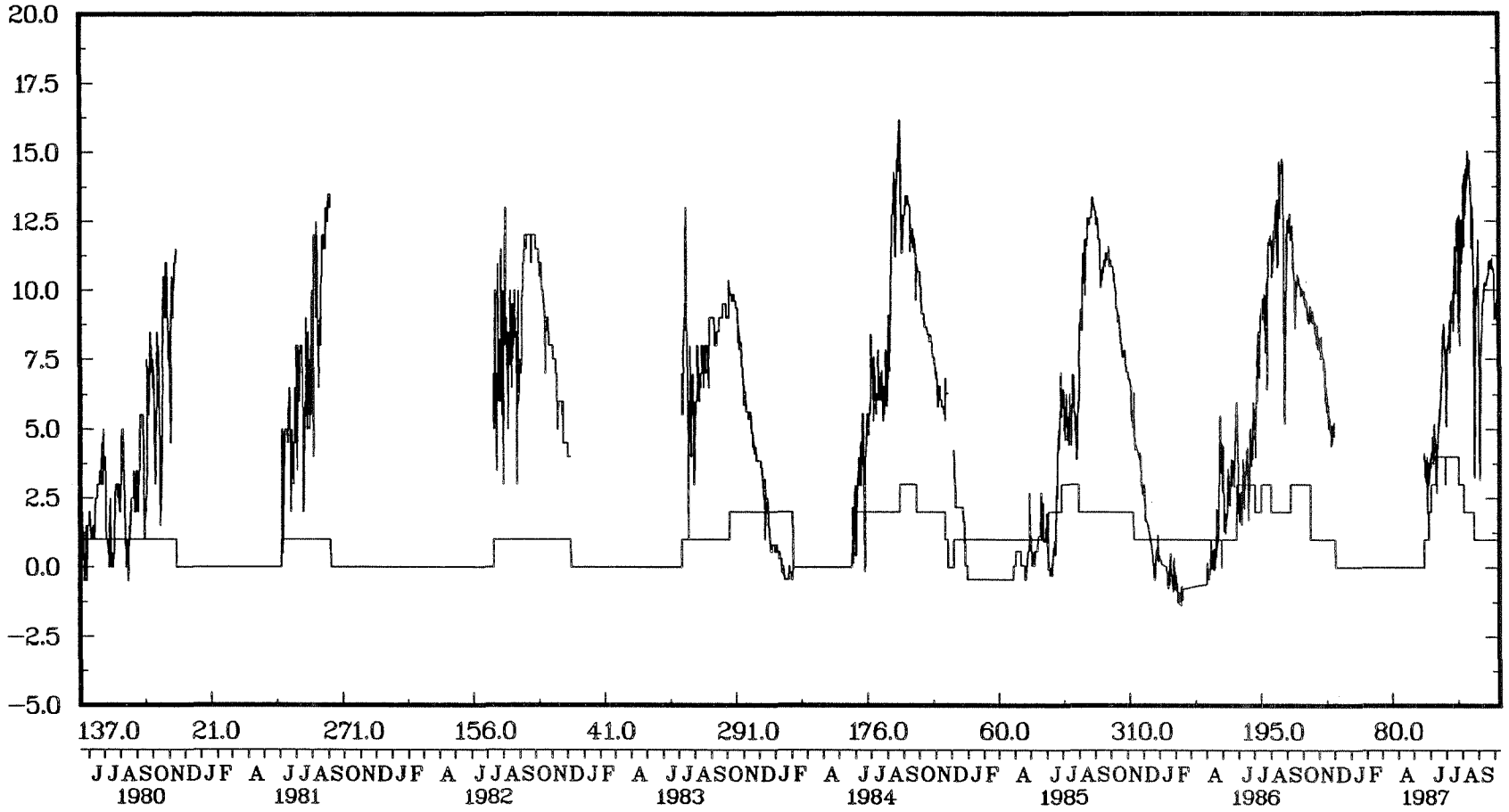
LAT. 47 37.8N – LONG. 53 46.8W

3LB DEEP



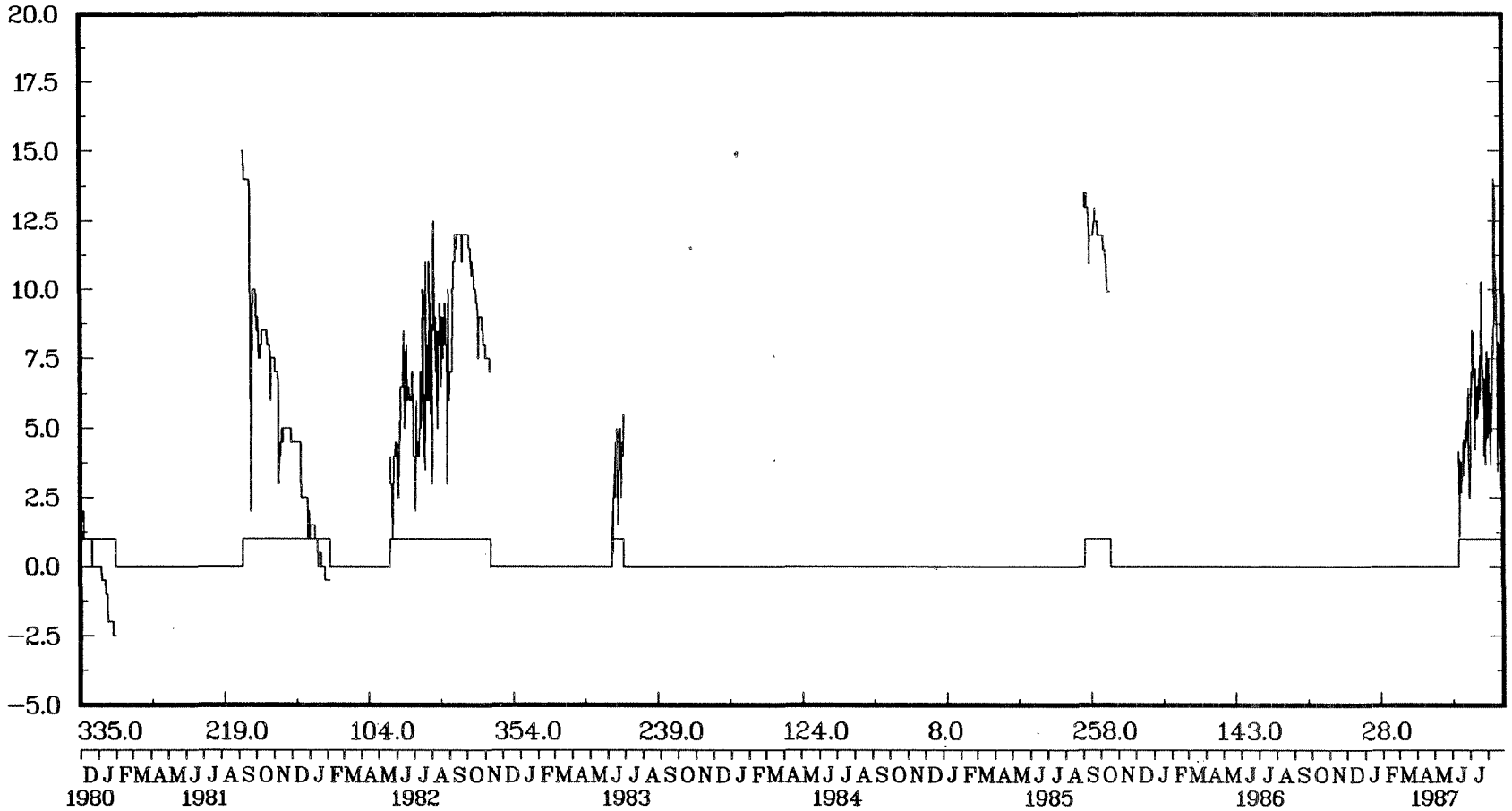
LAT. 48 8.4N – LONG. 53 4.8W

3LF SHALLOW



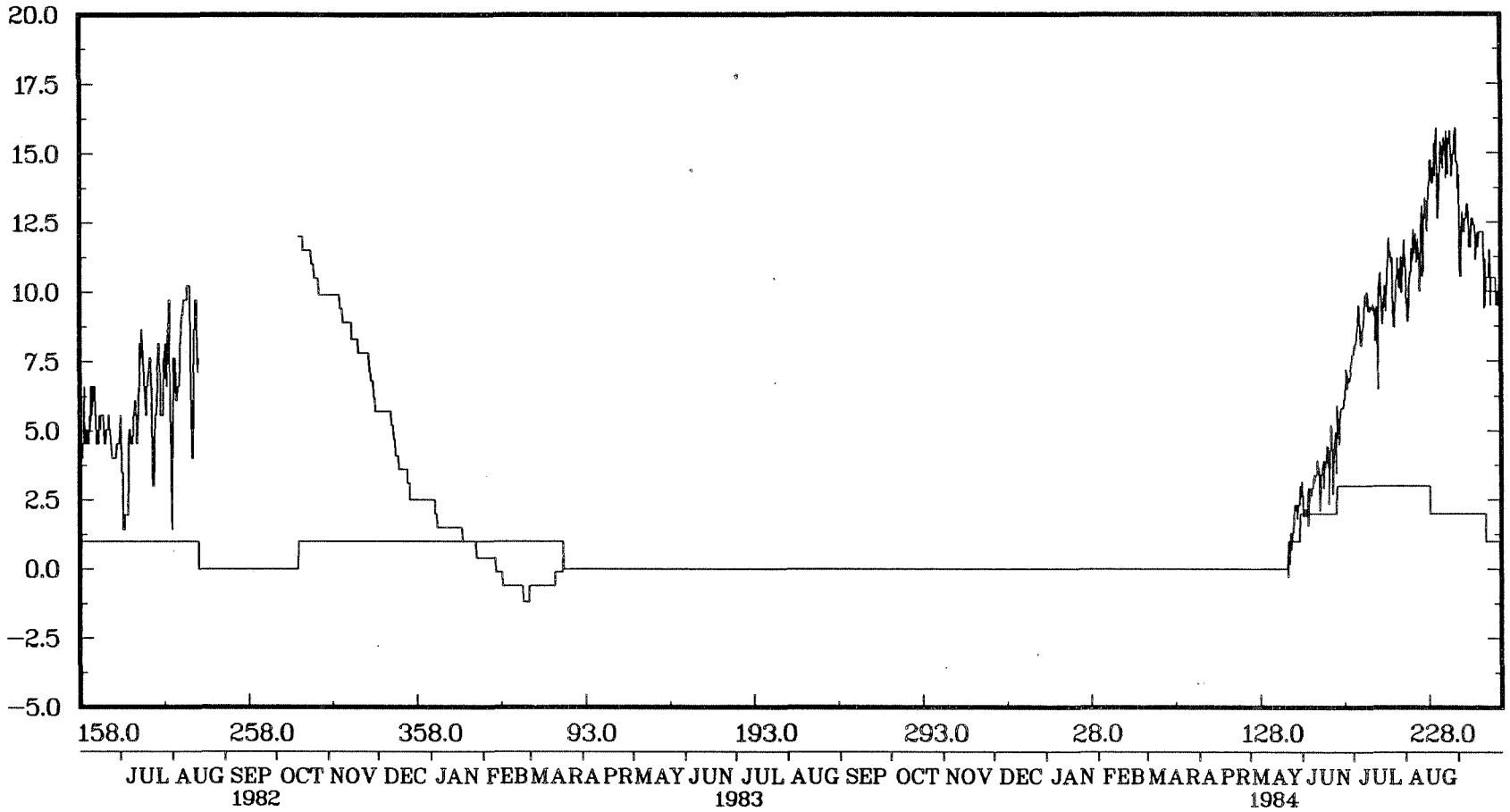
LAT. 48 4.8N − LONG. 52 54.0W

3LF DEEP



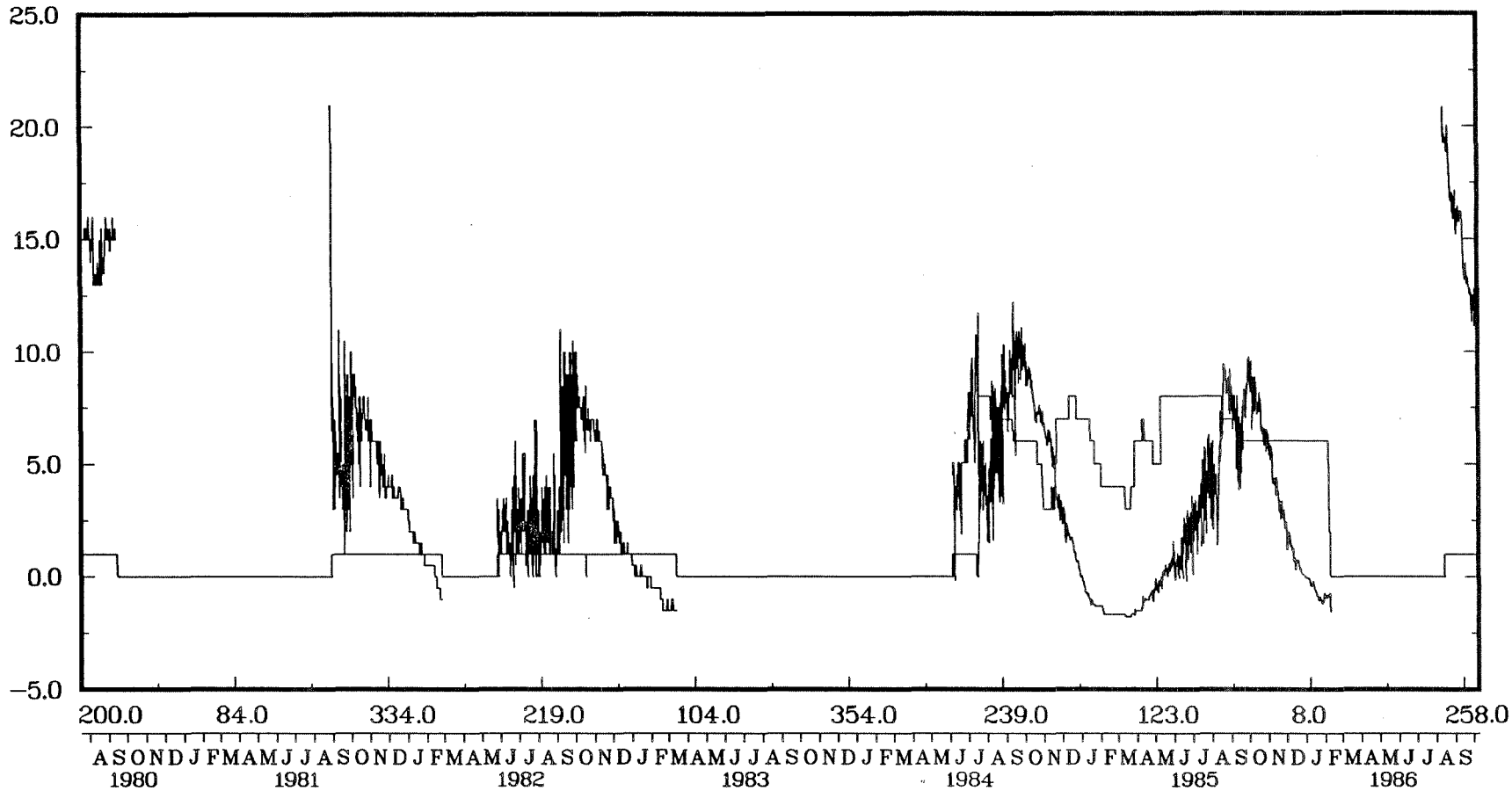
LAT. 47 40.8N – LONG. 53 11.4W

3LJ SHALLOW



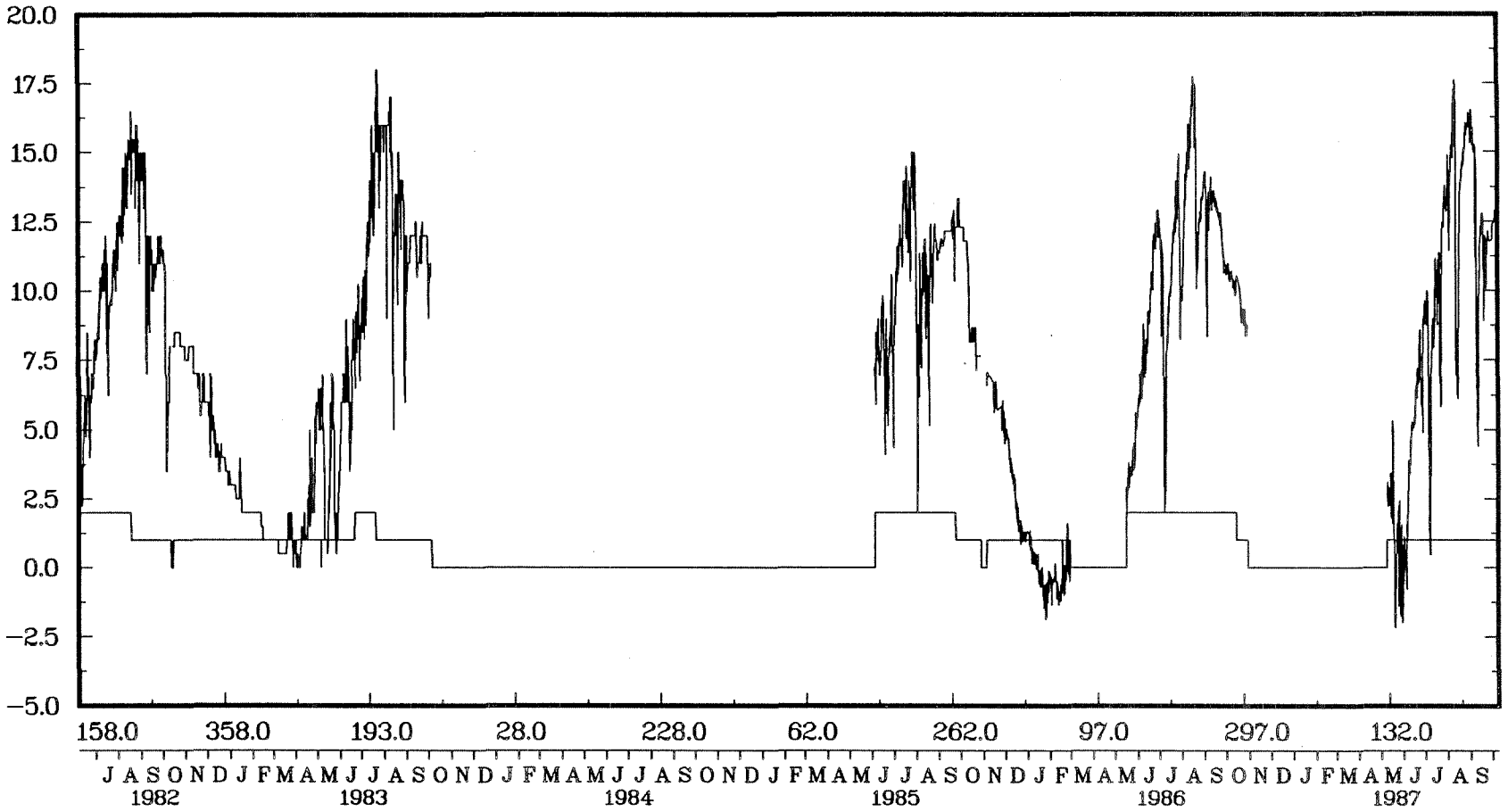
LAT. 47 37.2N – LONG. 52 52.8W

3LJ DEEP



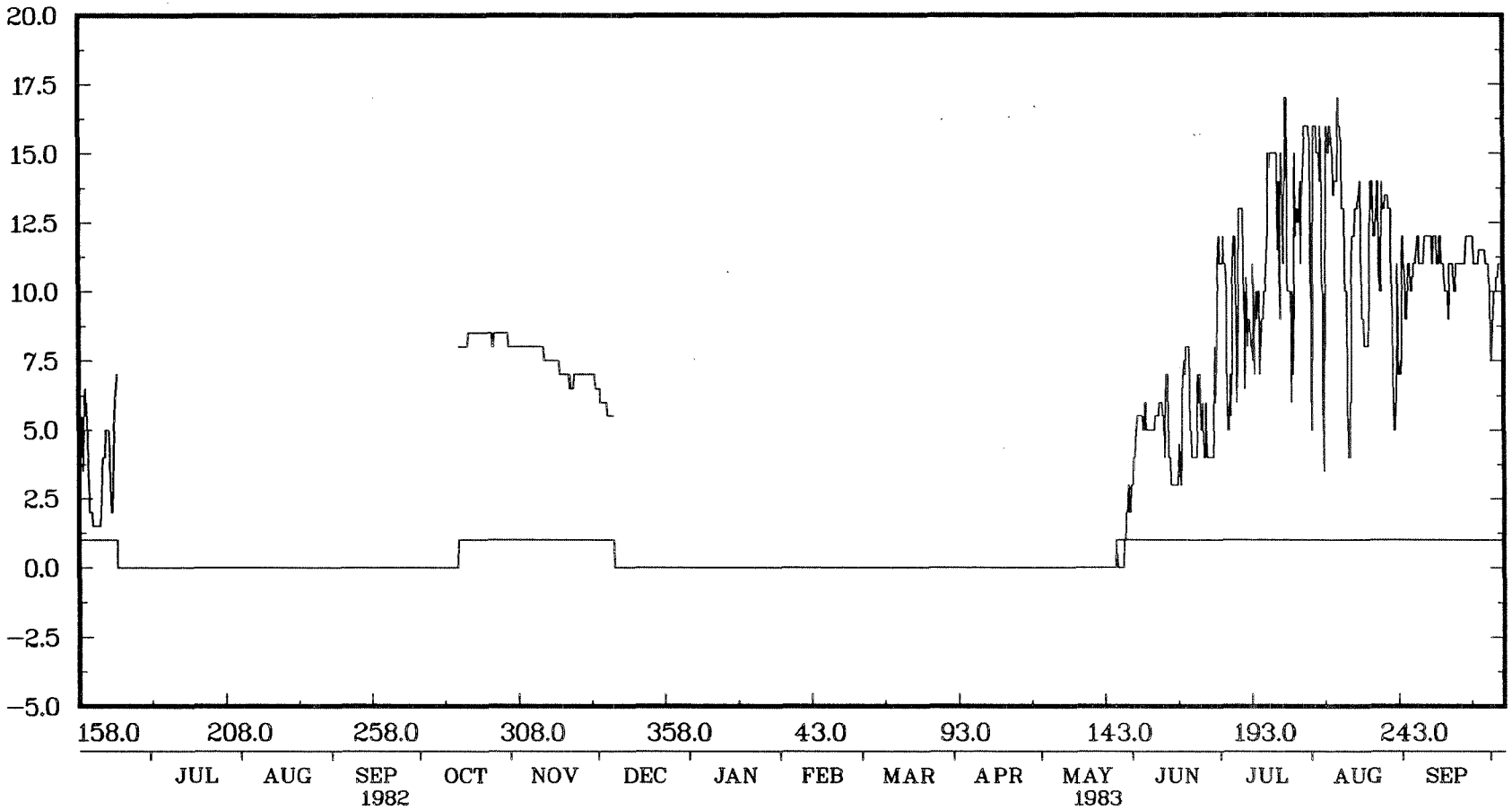
LAT. 47 37.2N – LONG. 52 39.0W

3LQ SHALLOW



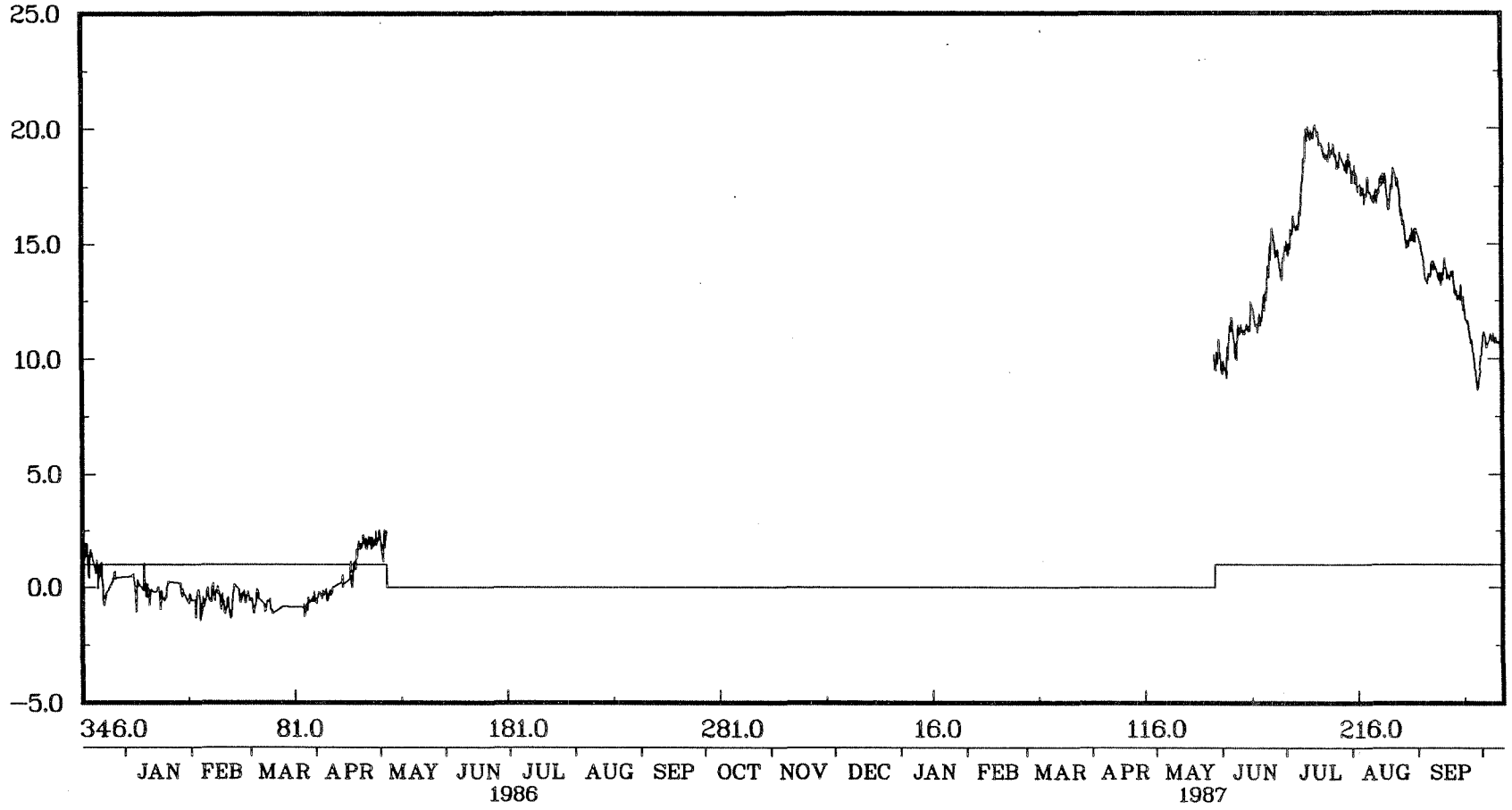
LAT. 47 0.0N – LONG. 53 39.0W

3LQ DEEP



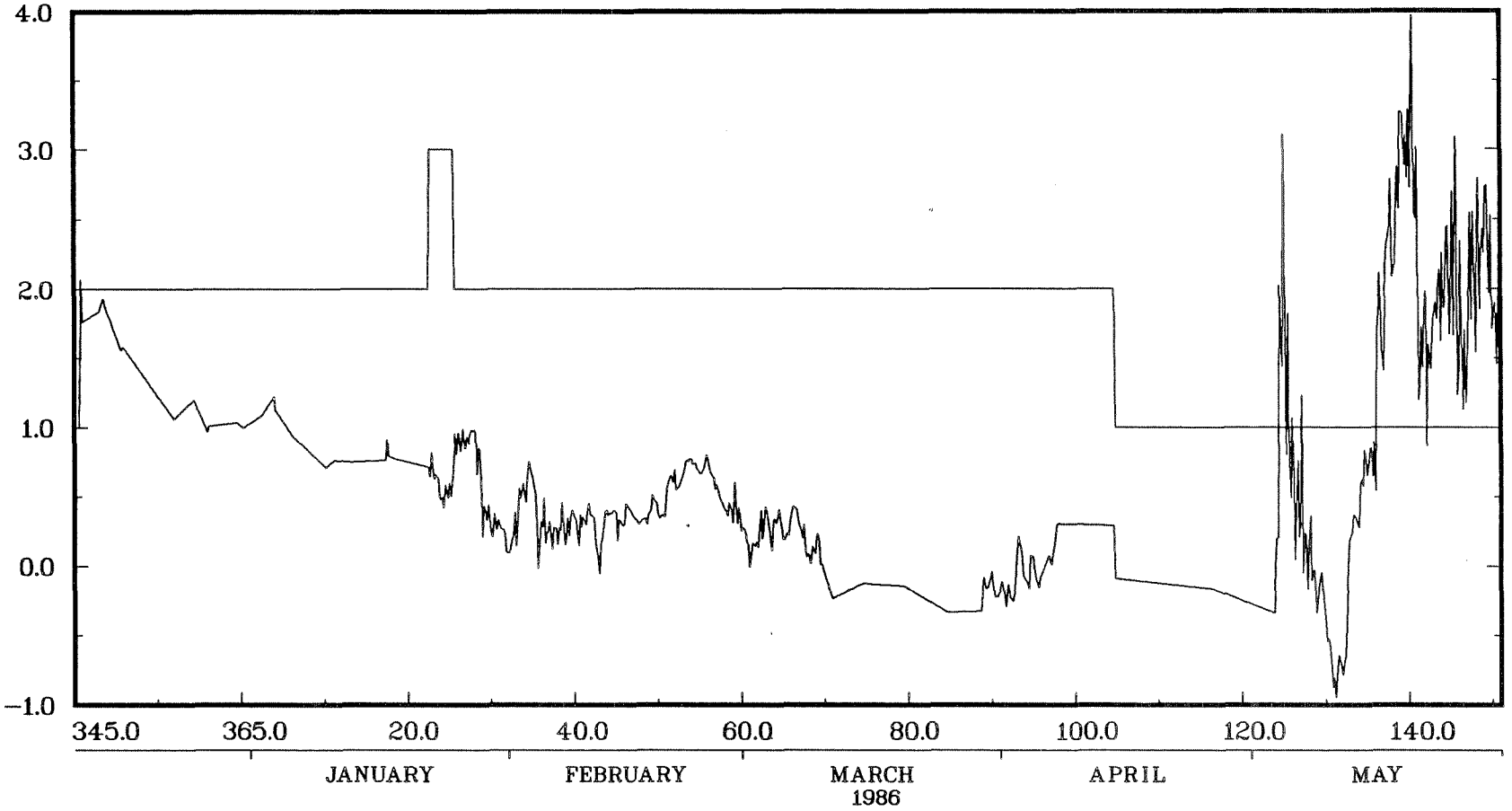
LAT. 47 9.0N – LONG. 53 34.2W

3PN SHALLOW



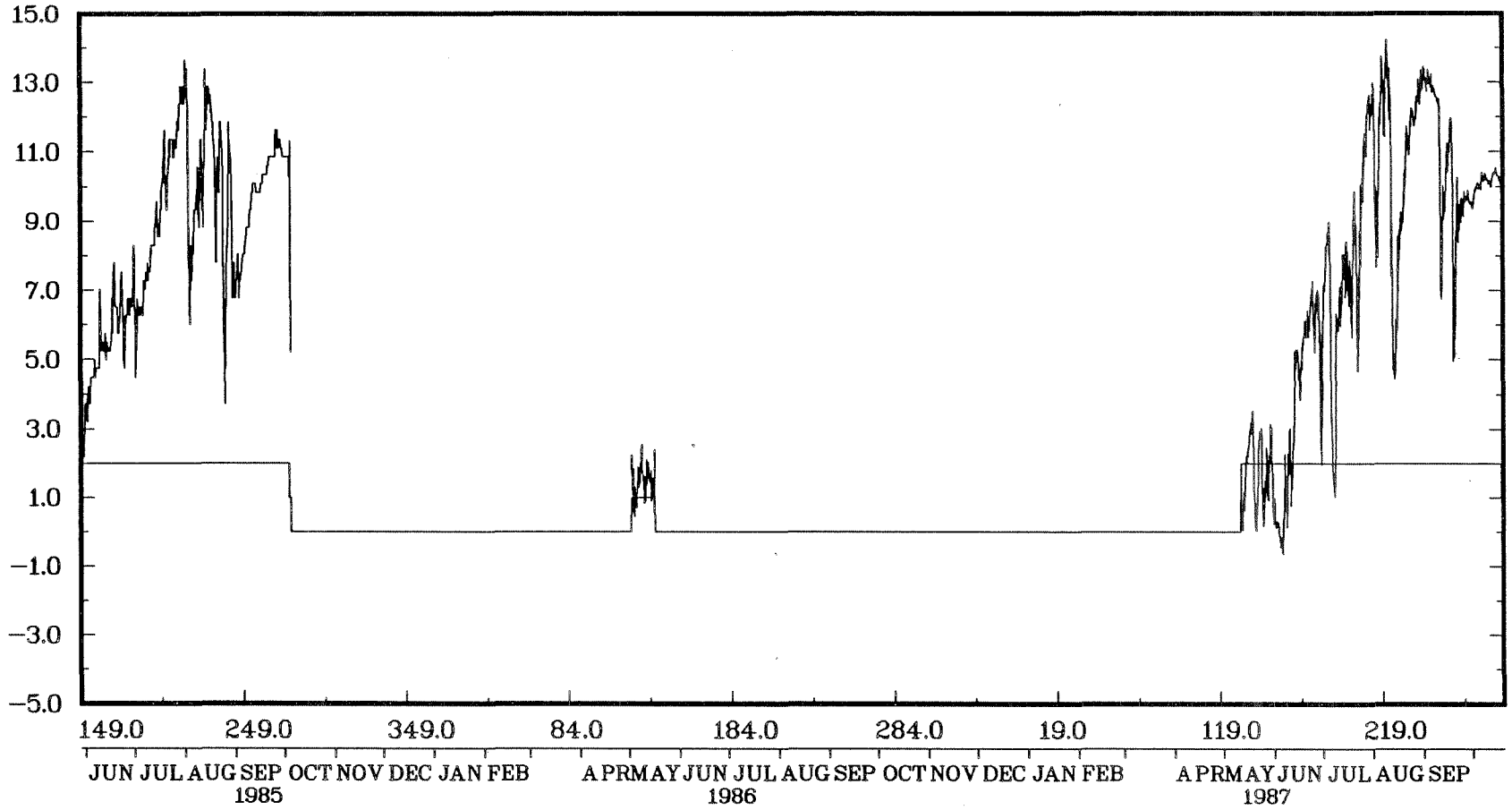
LAT. 47 37.8N – LONG. 58 39.0W

3PSA SHALLOW



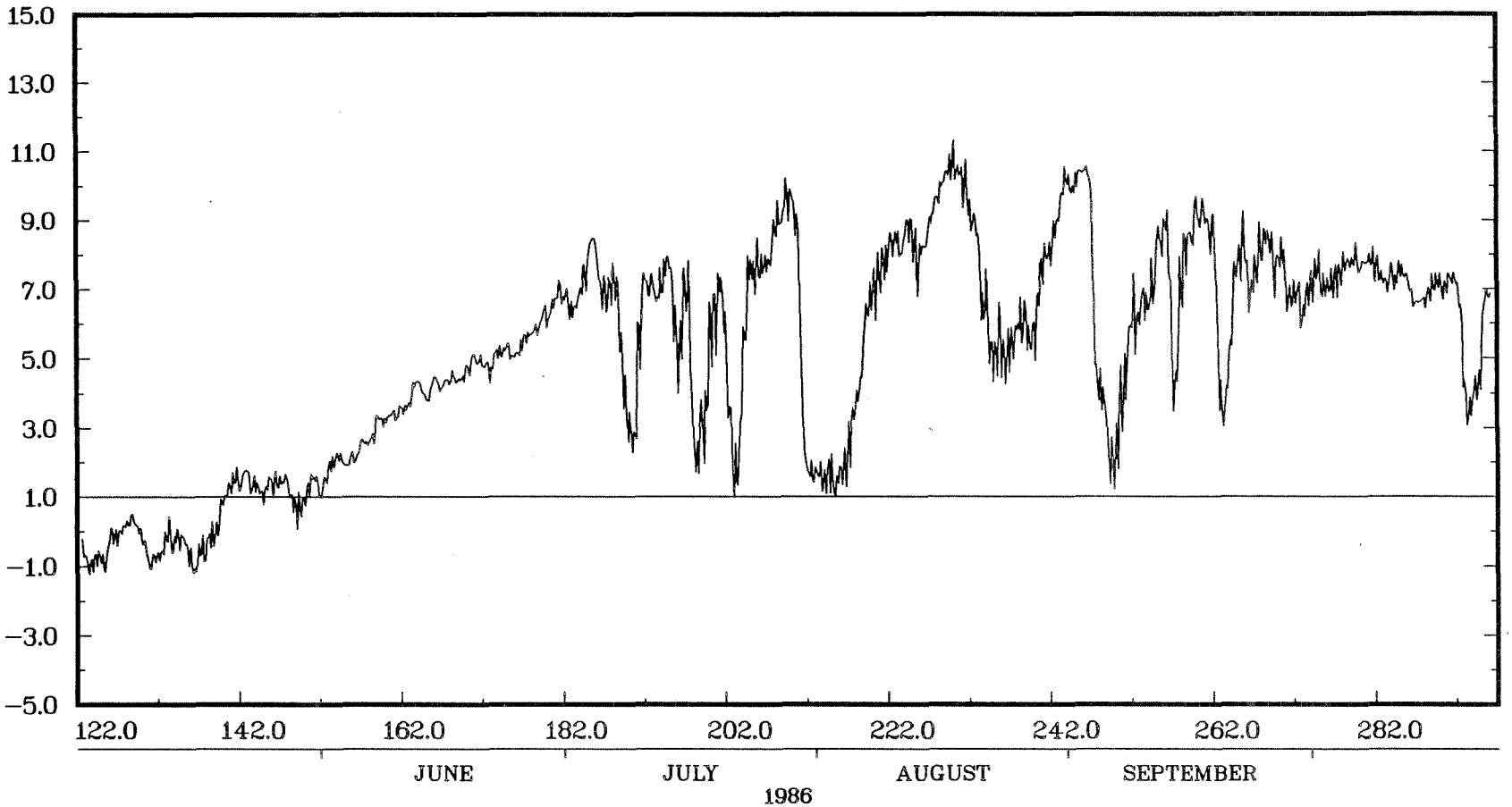
LAT. 47 34.2N – LONG. 56 44.4W

3PSB SHALLOW



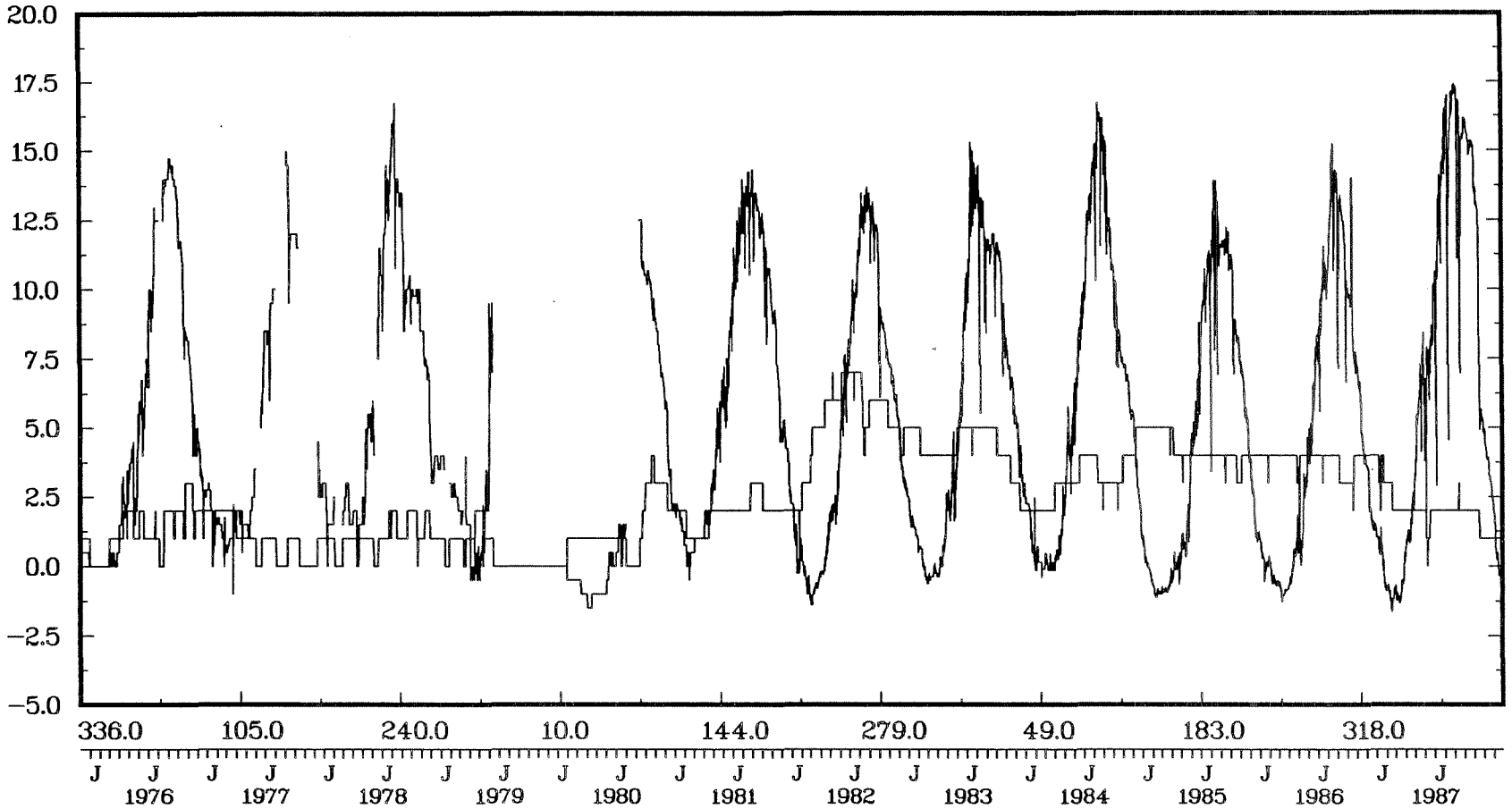
LAT. 47 37.2N – LONG. 55 7.2W

3PSB DEEP



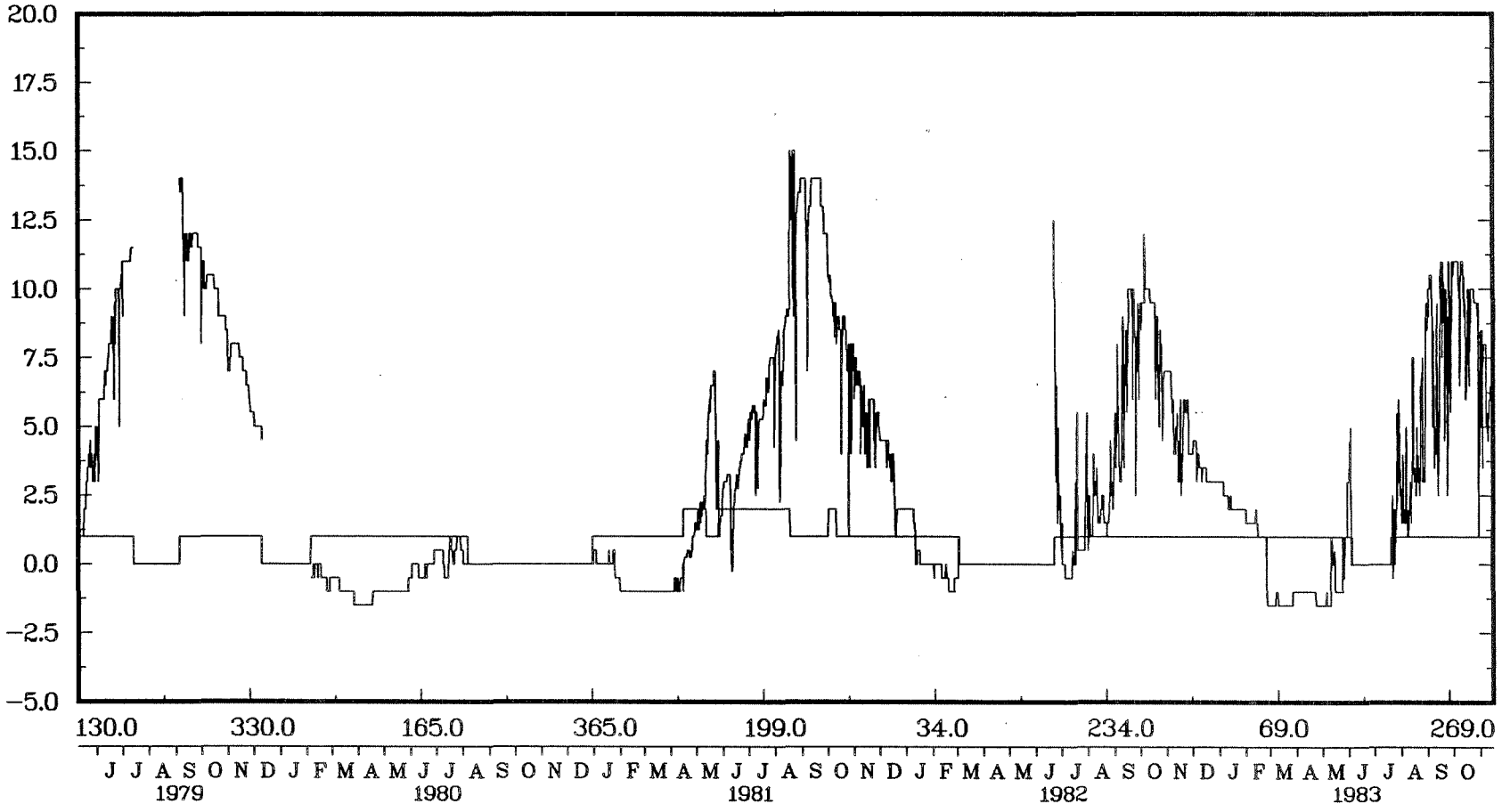
LAT. 47 37.2N – LONG. 55 7.2W

3PSC SHALLOW



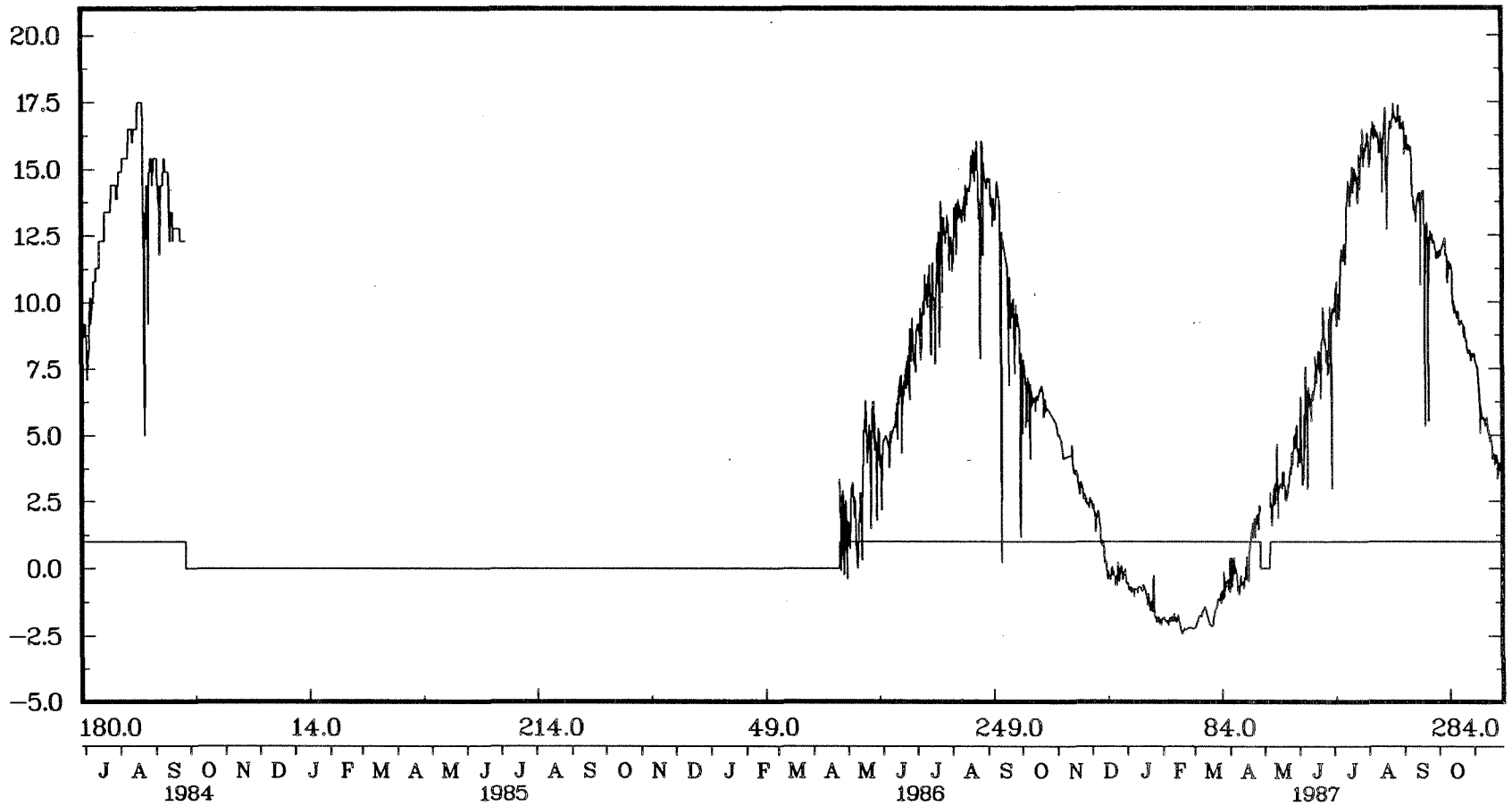
LAT. 47 45.0N – LONG. 54 58.8W

3PSC DEEP



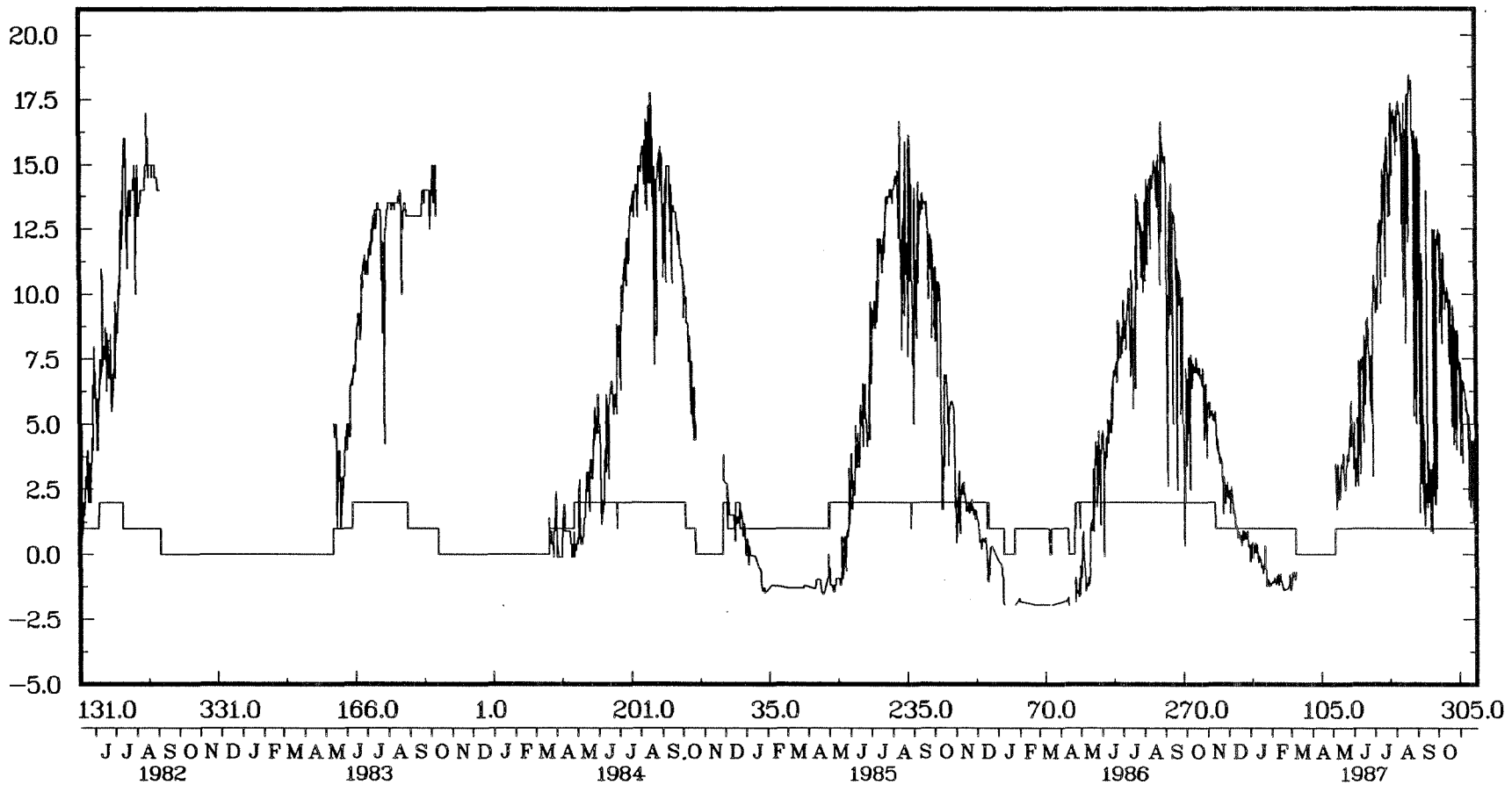
LAT. 47 25.2N – LONG. 53 49.8W

4RB SHALLOW



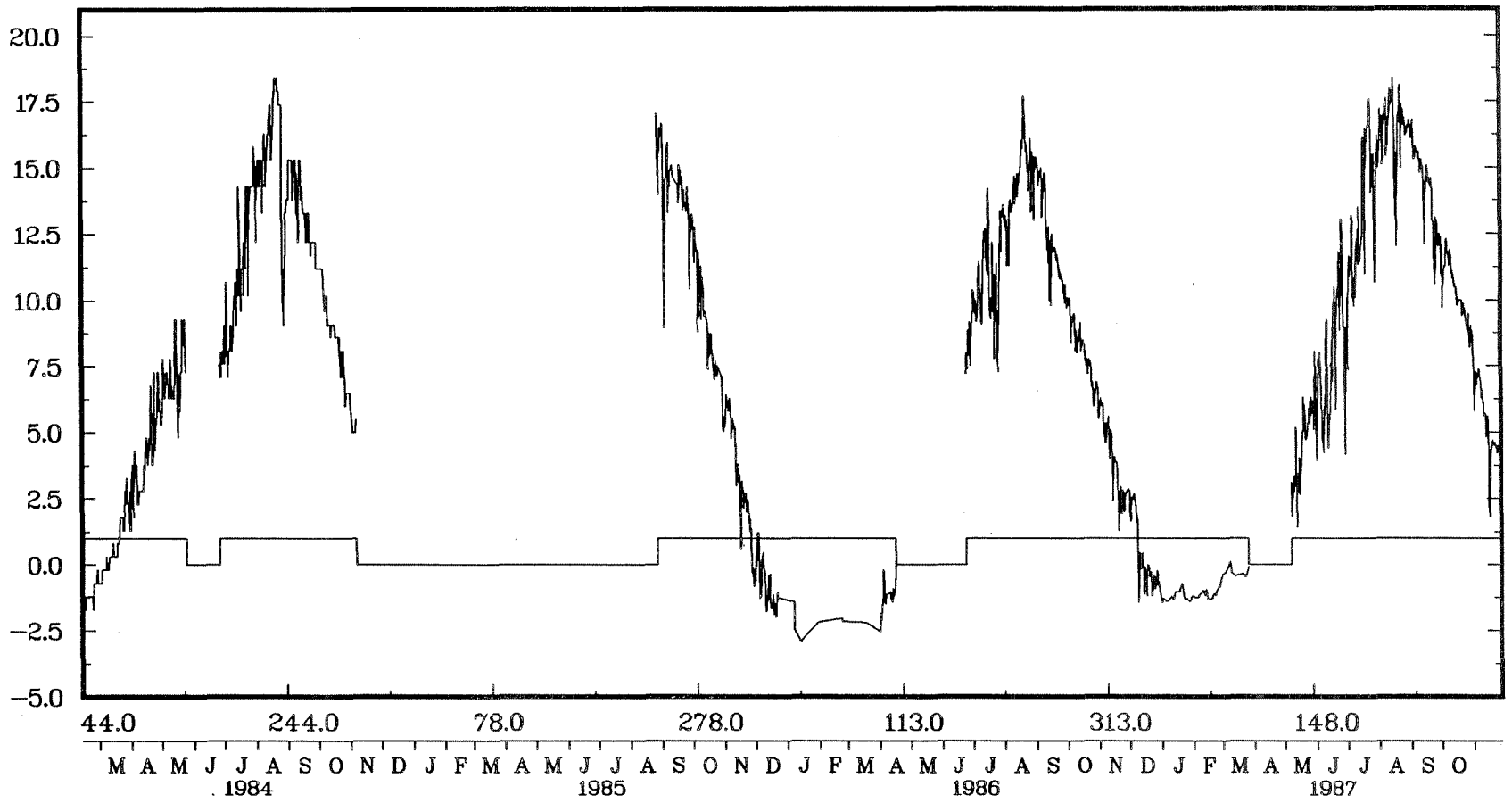
LAT. 50 12.0N – LONG. 57 31.8W

4RB DEEP



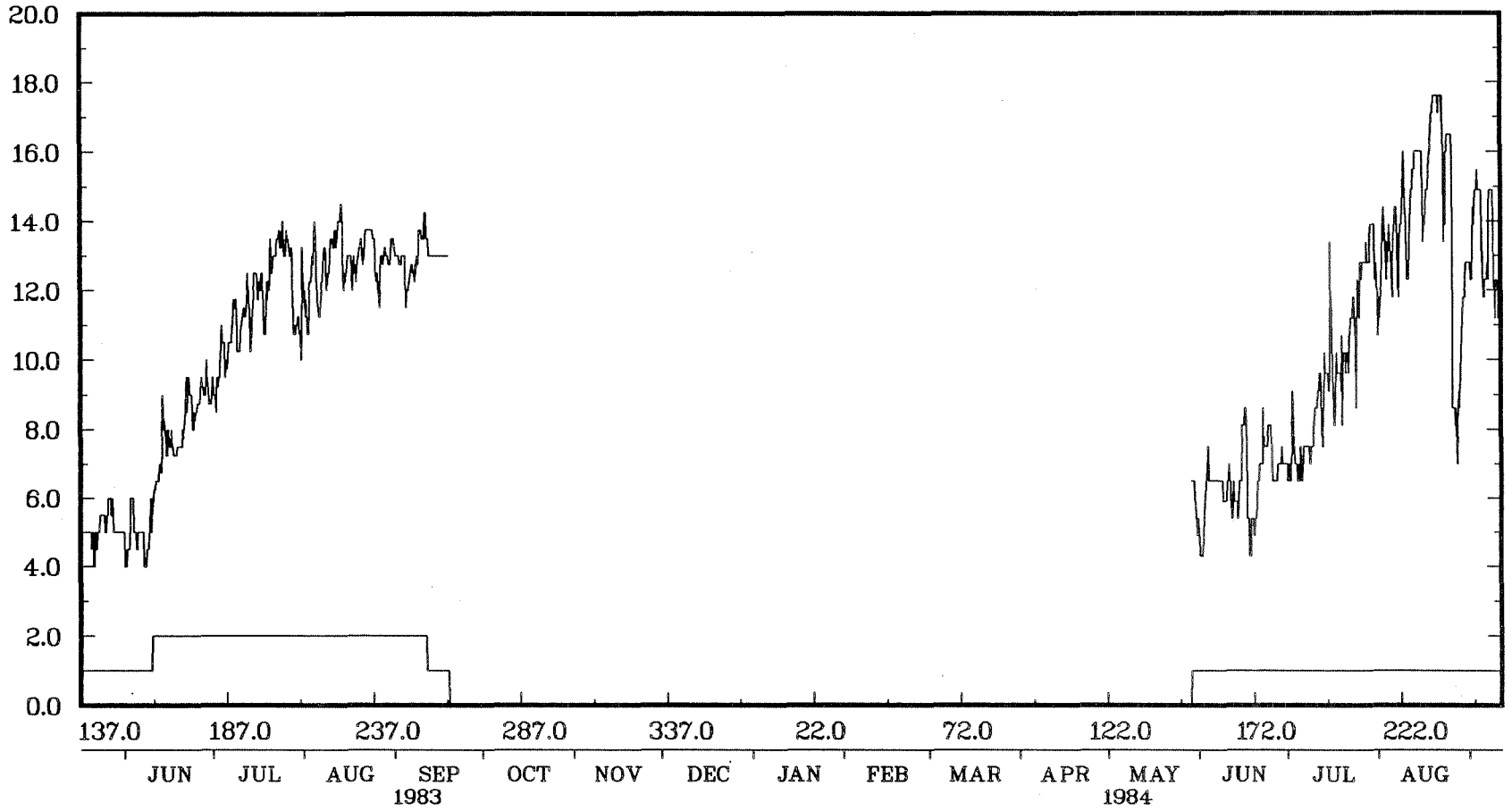
LAT. 50 12.0N – LONG. 57 31.8W

4RC SHALLOW



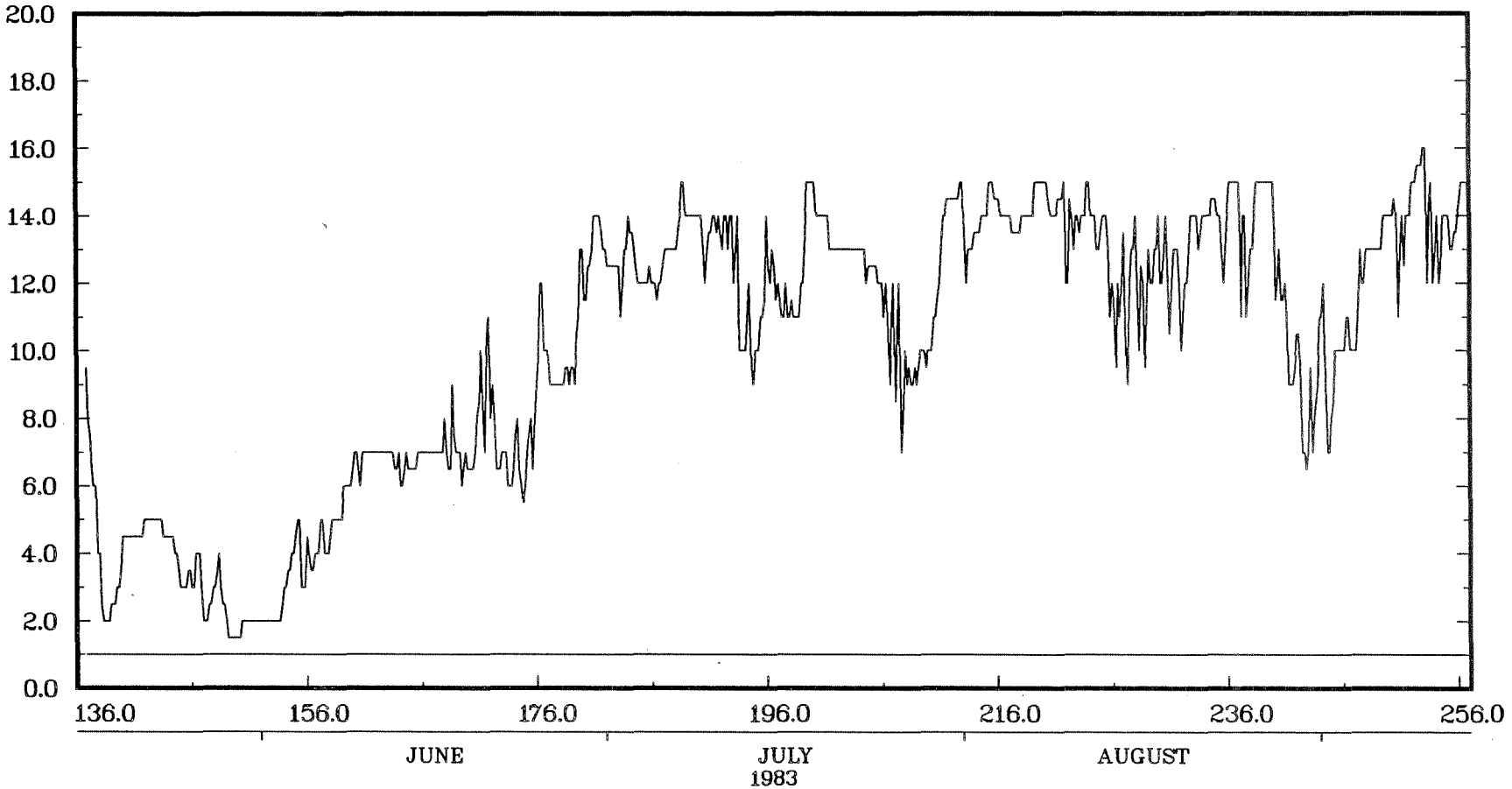
LAT. 48 34.2N – LONG. 58 45.0W

4RC DEEP



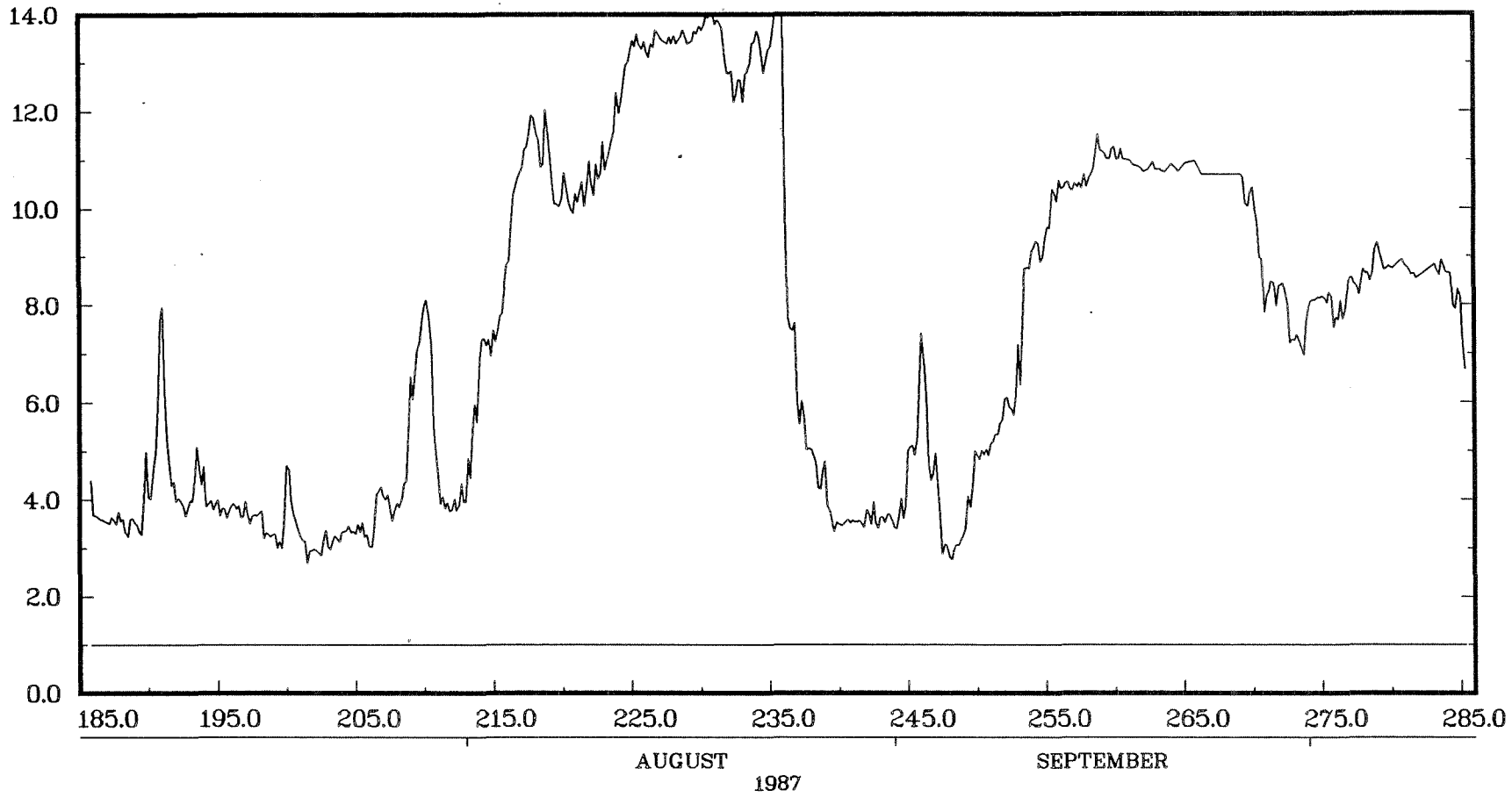
LAT. 49 7.2N – LONG. 58 21.0W

4RD DEEP



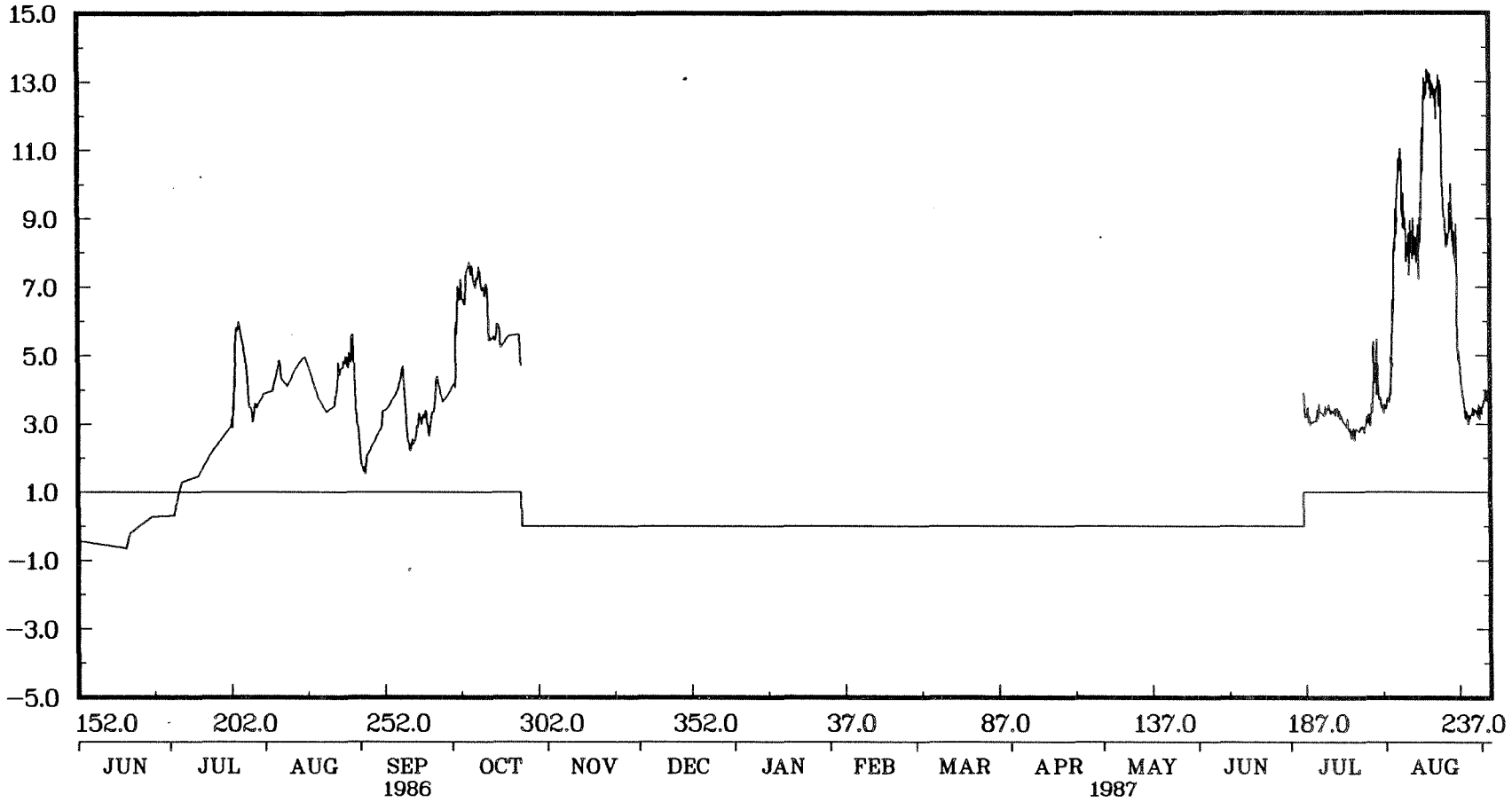
LAT. 48 28.2N – LONG. 58 28.2W

4SV SHALLOW



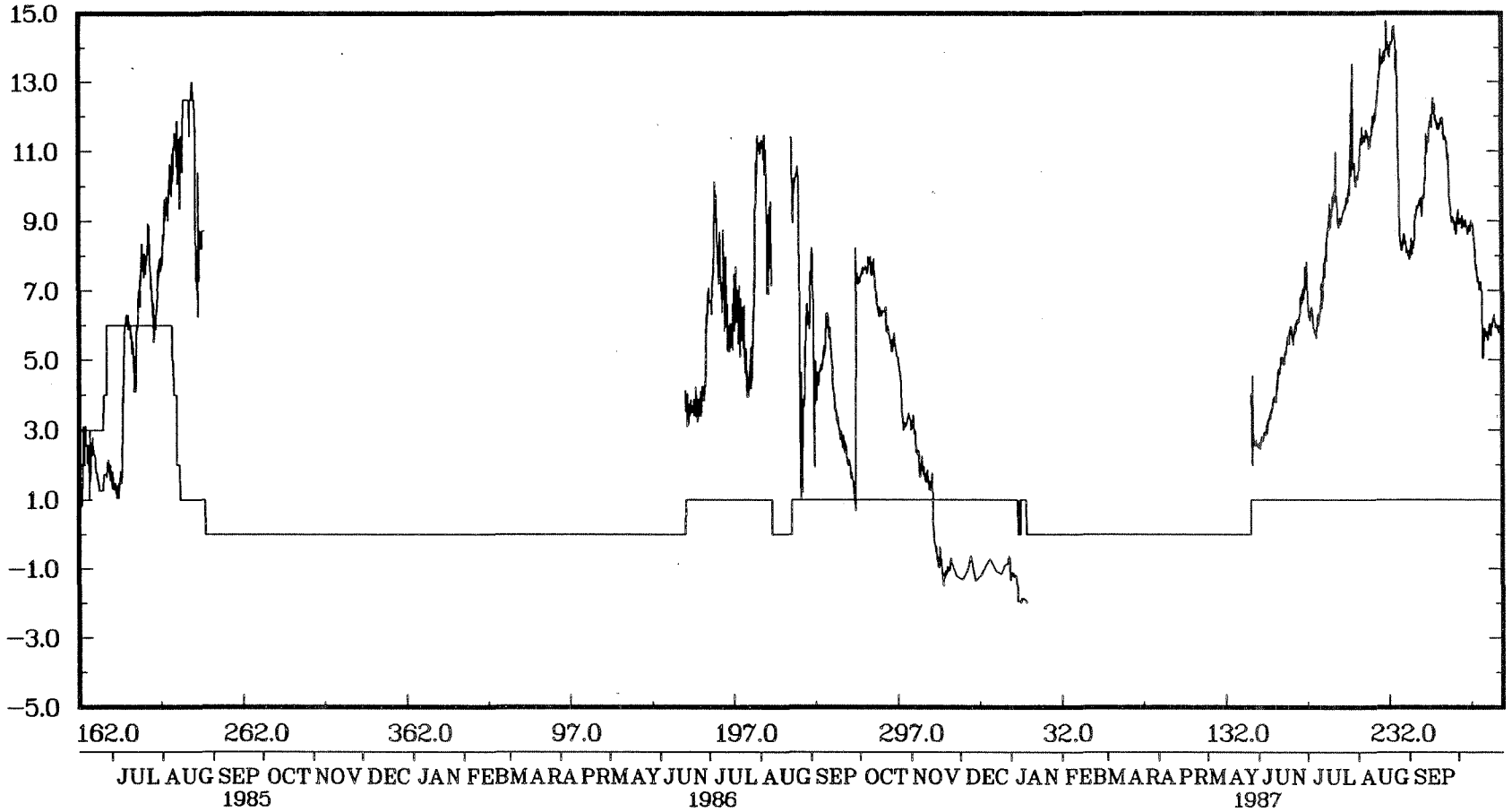
LAT. 50 9.0N – LONG. 60 14.4W

4SV DEEP



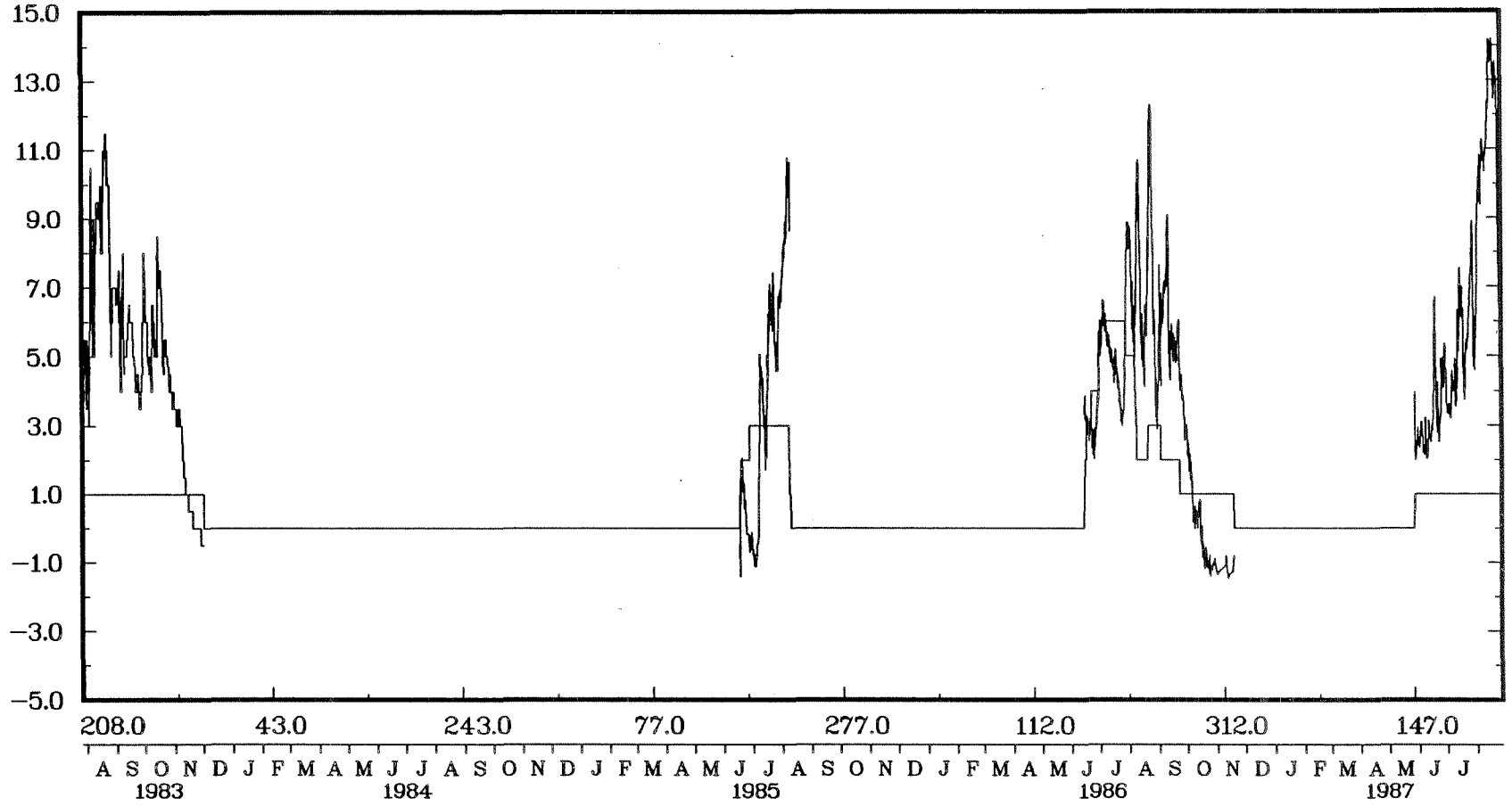
LAT. 50 9.0N – LONG. 60 14.4W

4SW SHALLOW



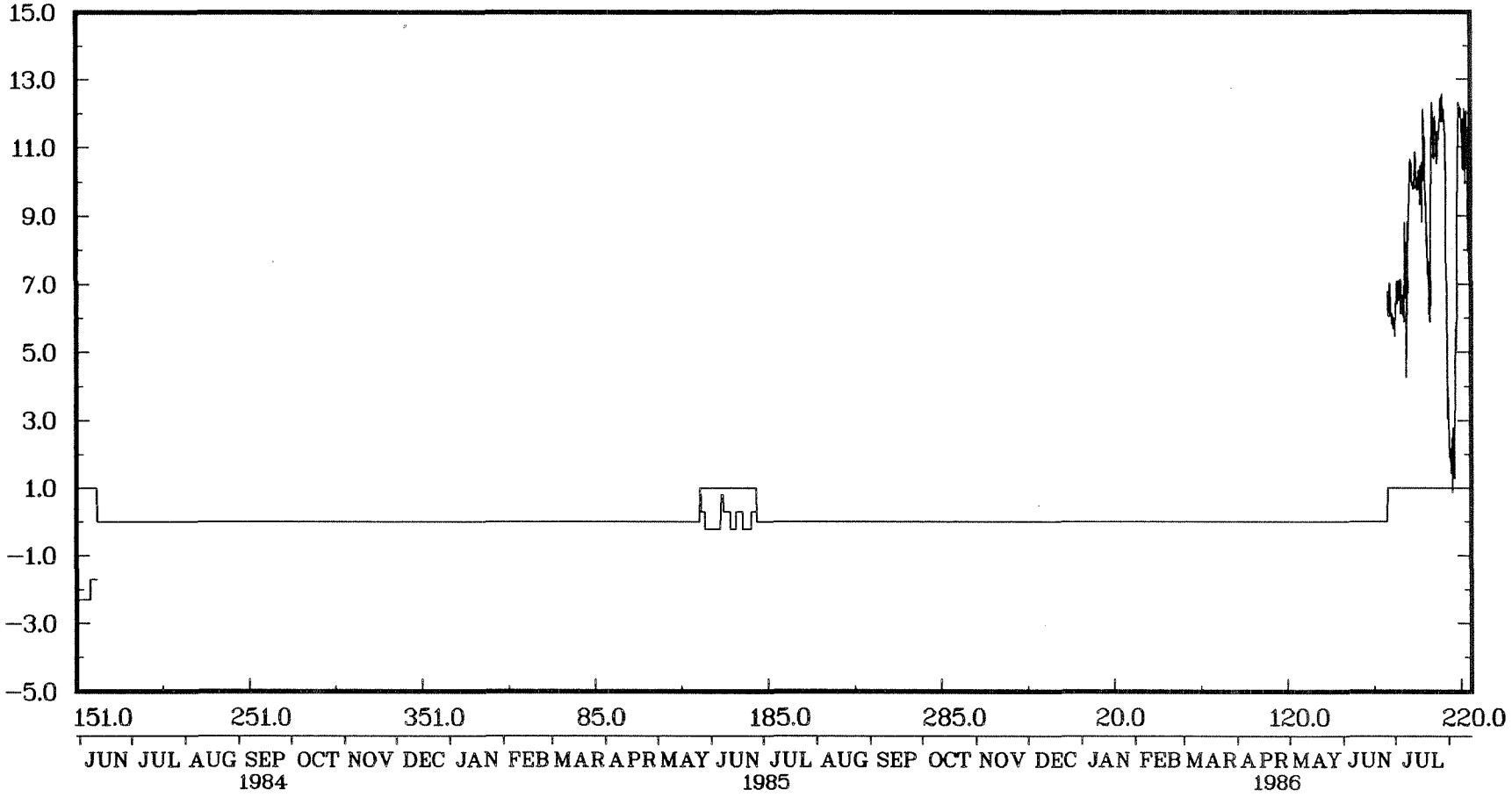
LAT. 51 25.2N – LONG. 57 9.0W

4SW DEEP



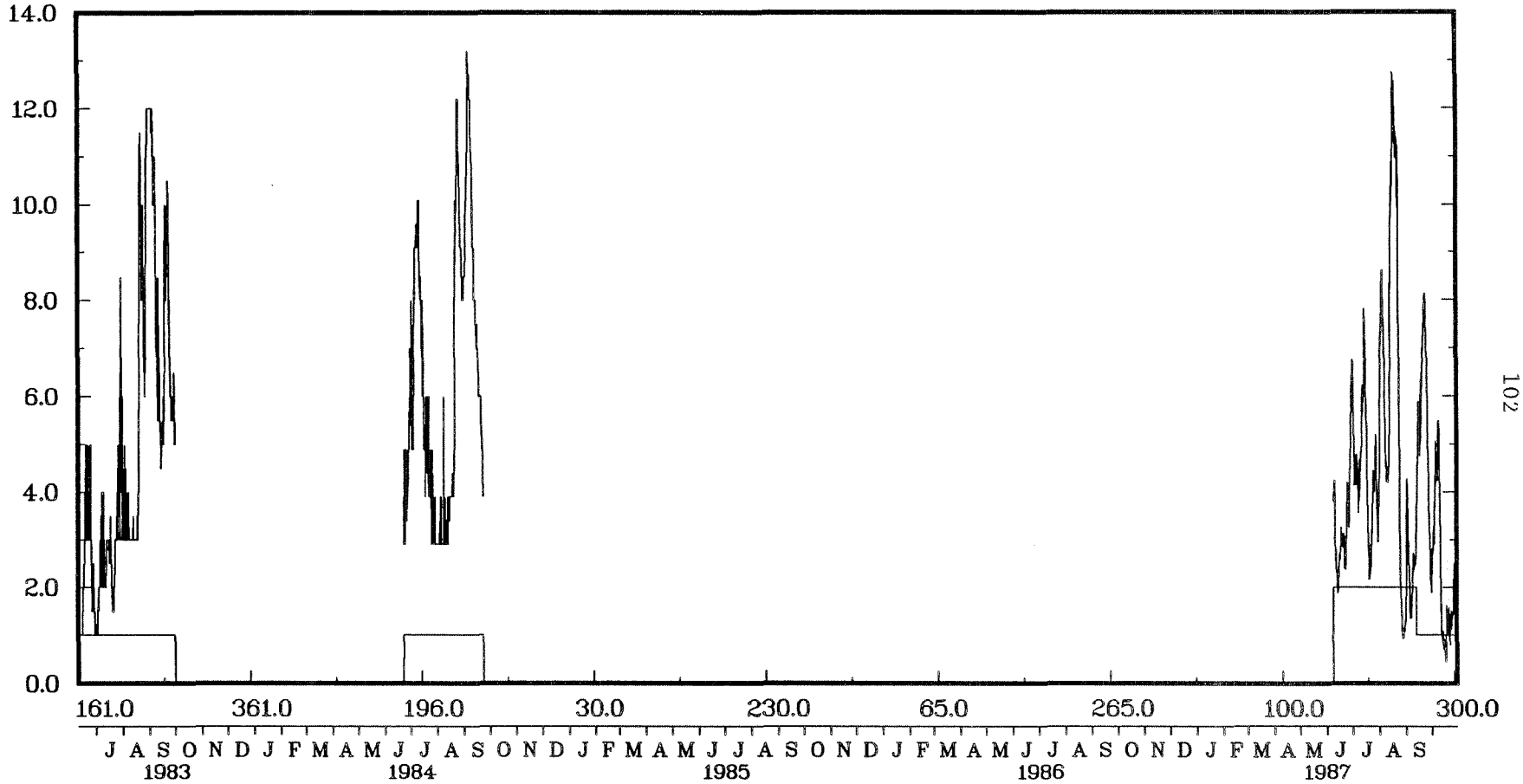
LAT. 51 25.2N – LONG. 57 13.2W

4SX DEEP



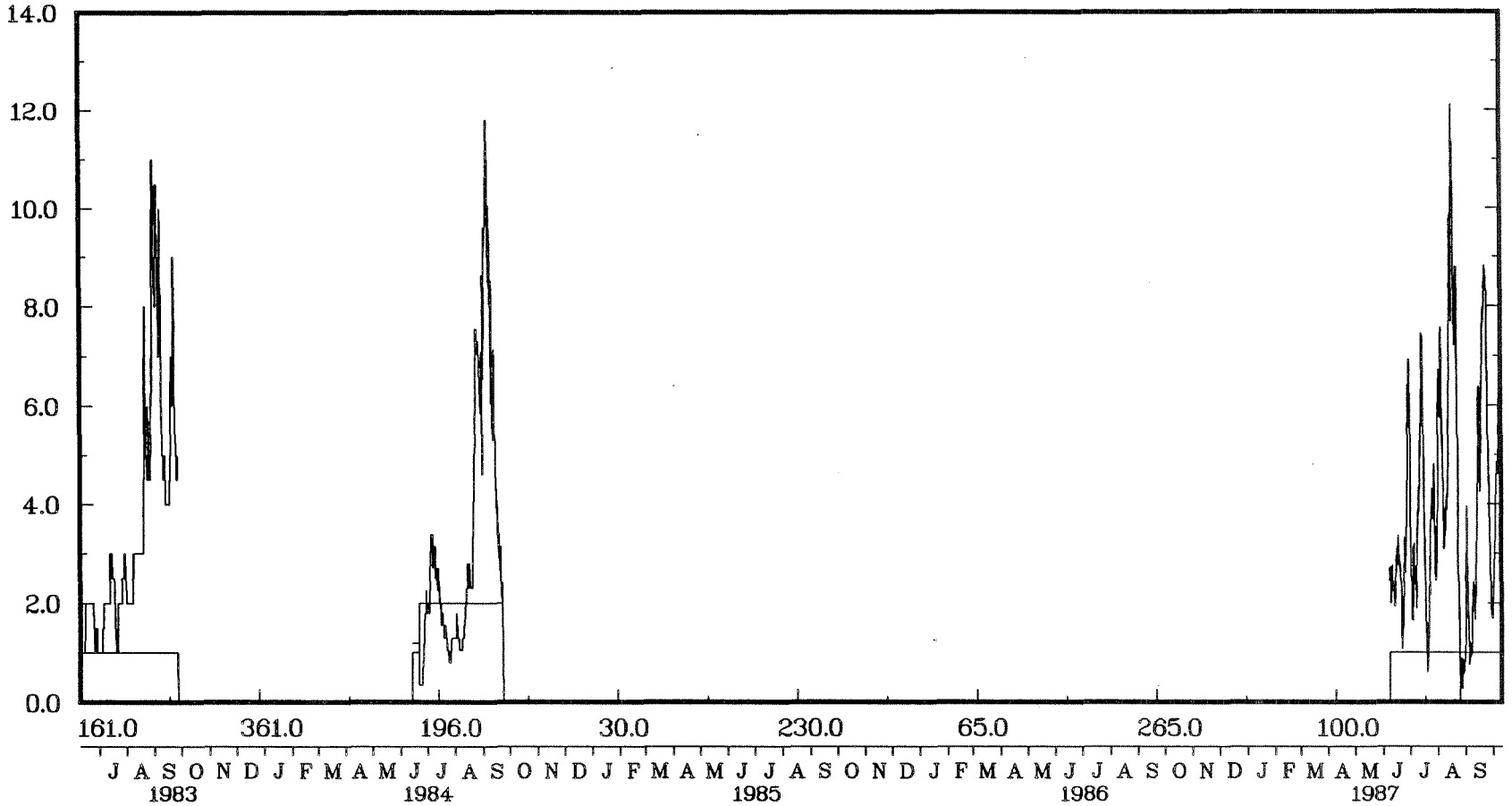
LAT. 49 42.0N – LONG. 61 45.0W

4SY SHALLOW



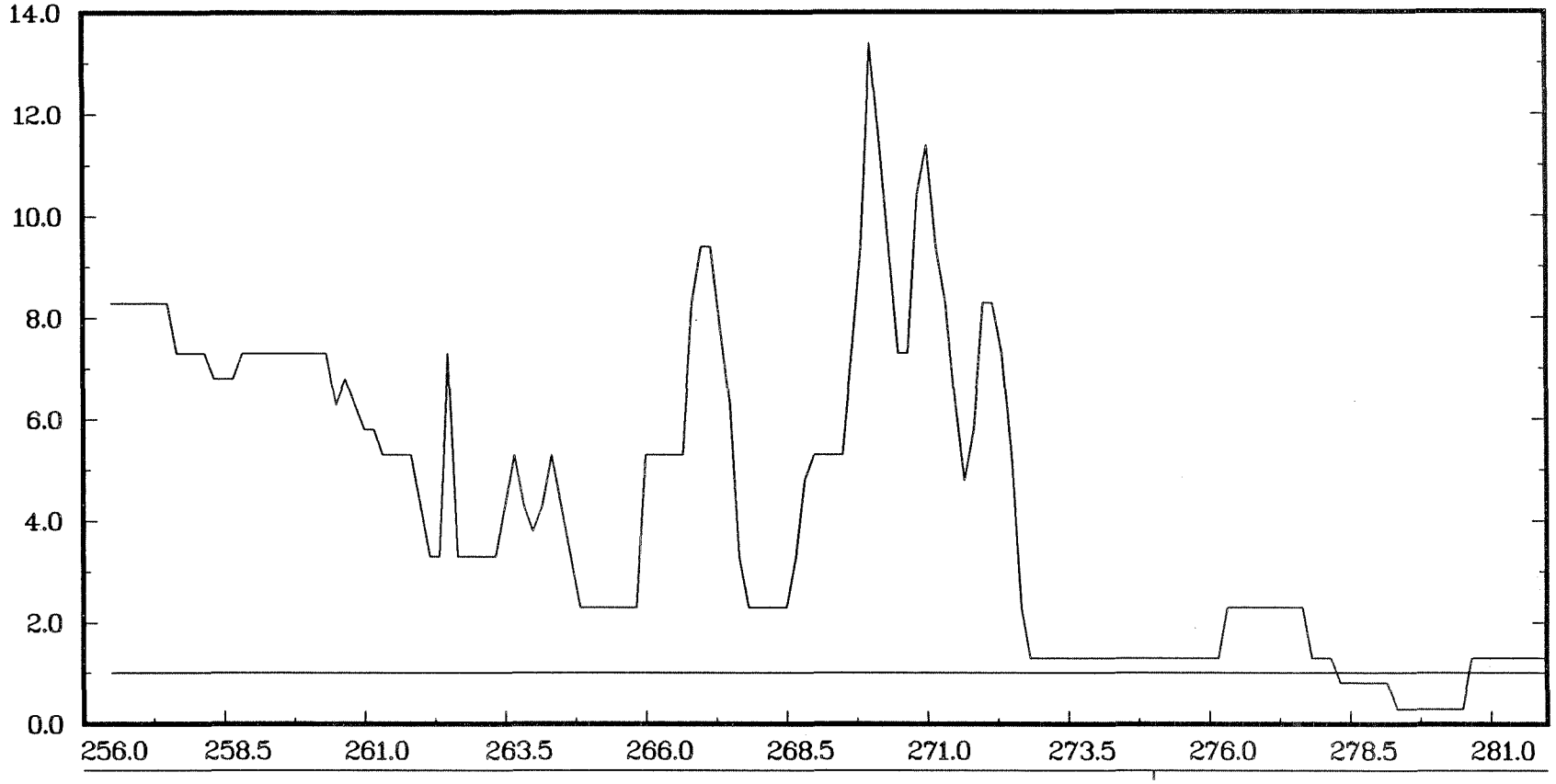
LAT. 50 12.0N – LONG. 63 34.2W

4SY DEEP



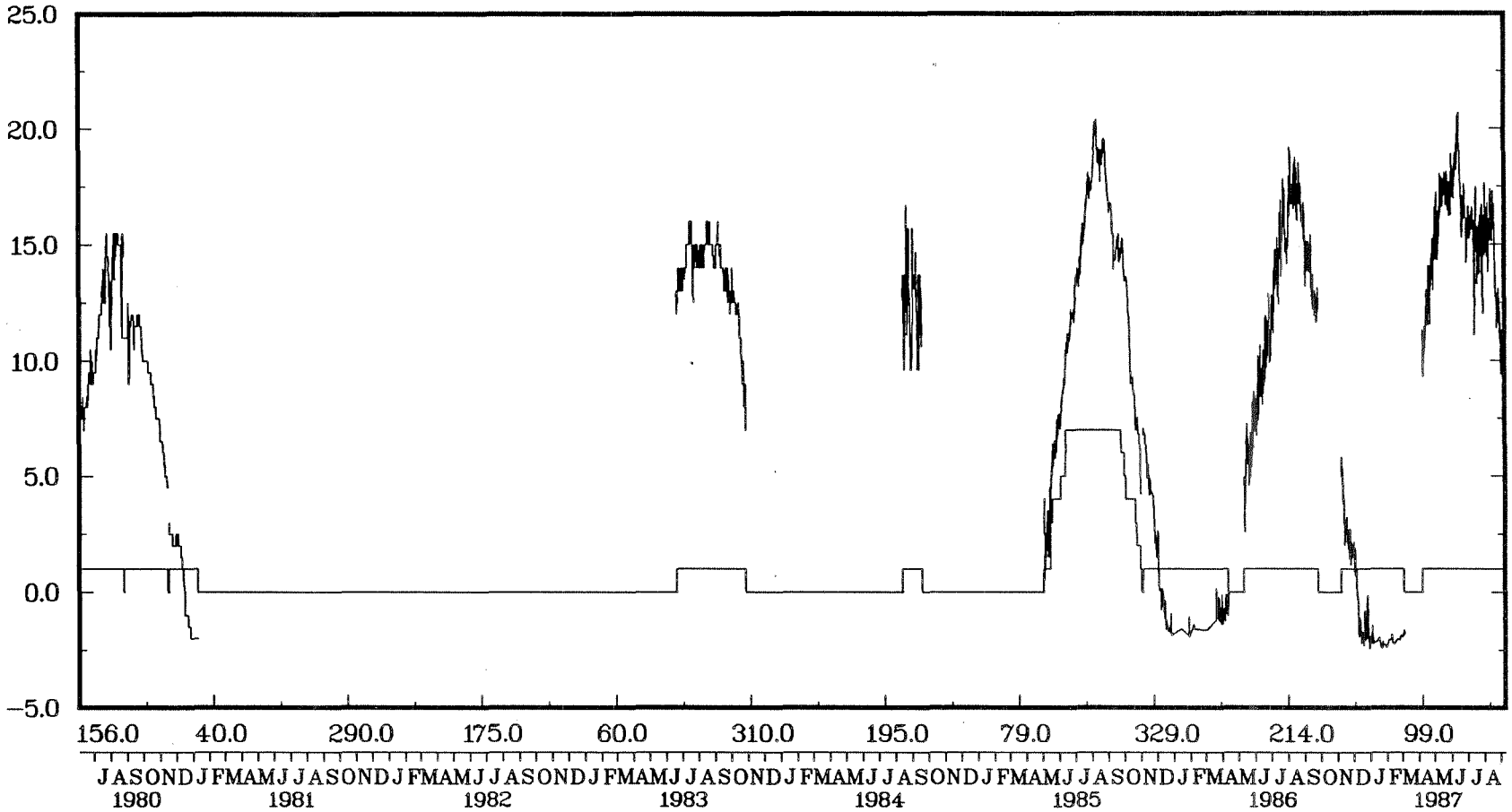
LAT. 50 12.0N – LONG. 63 34.2W

4SZ SHALLOW



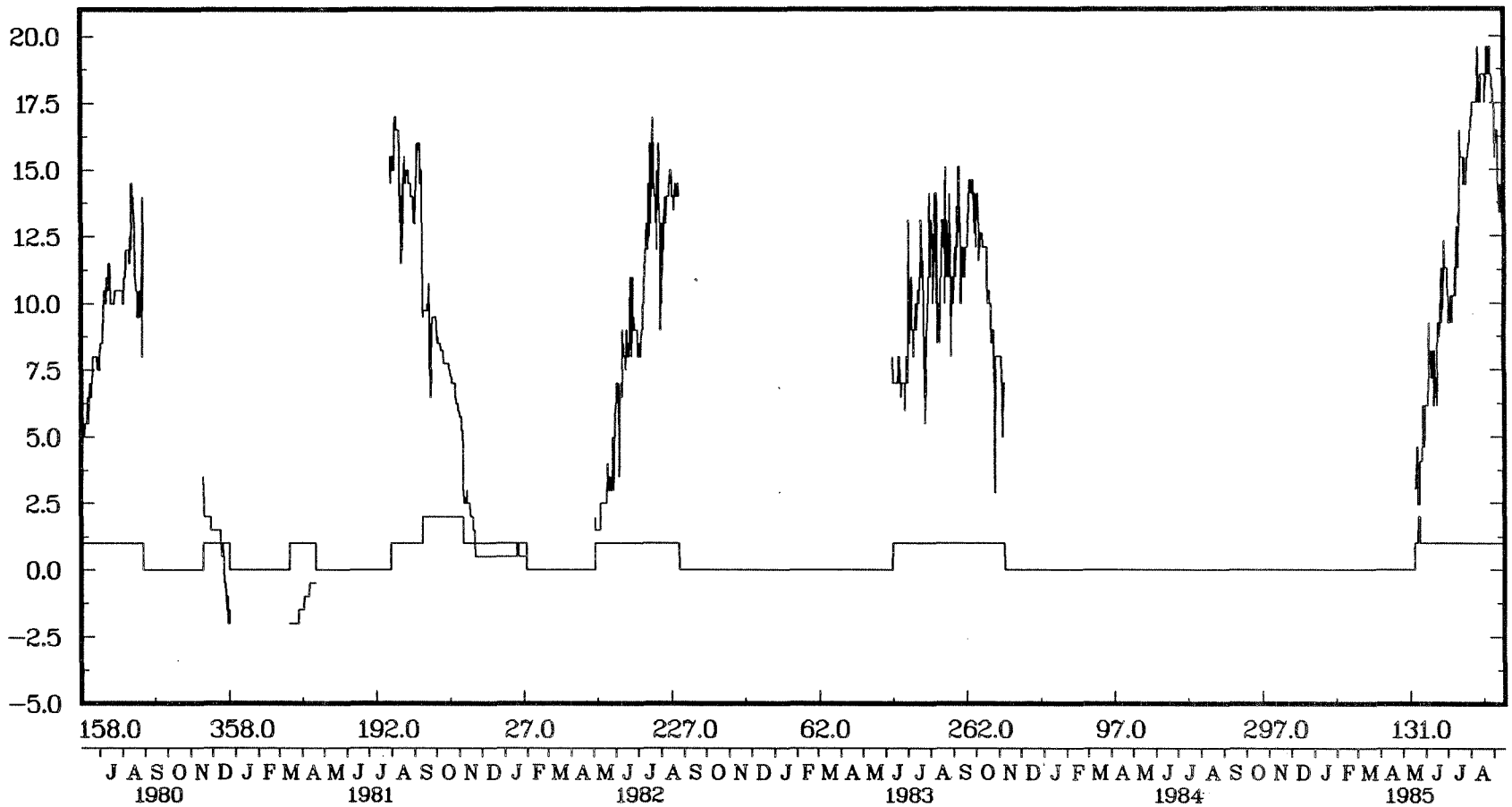
LAT. 50 12.0N – LONG. 66 48.6W

4TF SHALLOW



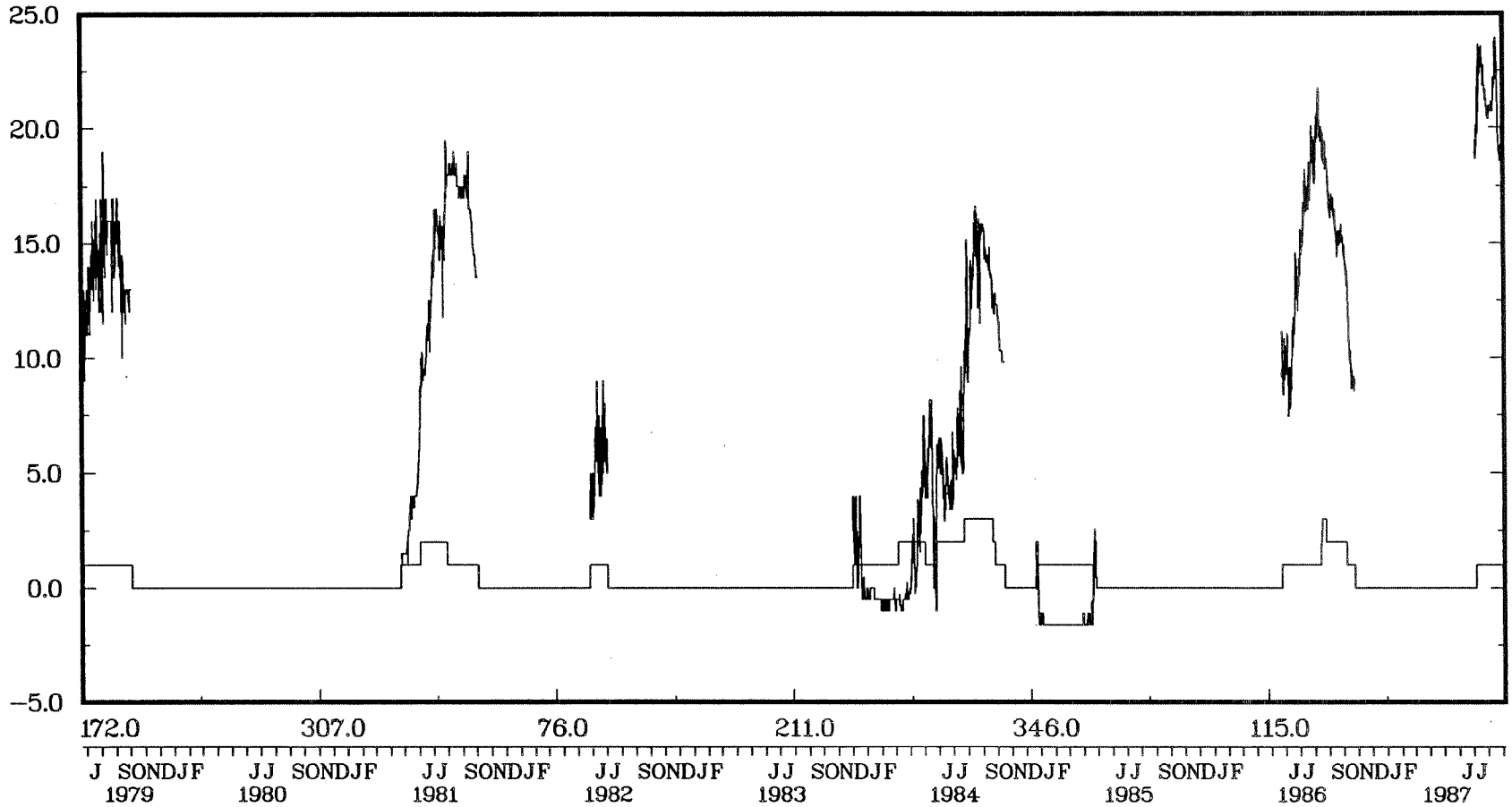
LAT. 47 37.2N – LONG. 61 28.8W

4TF DEEP



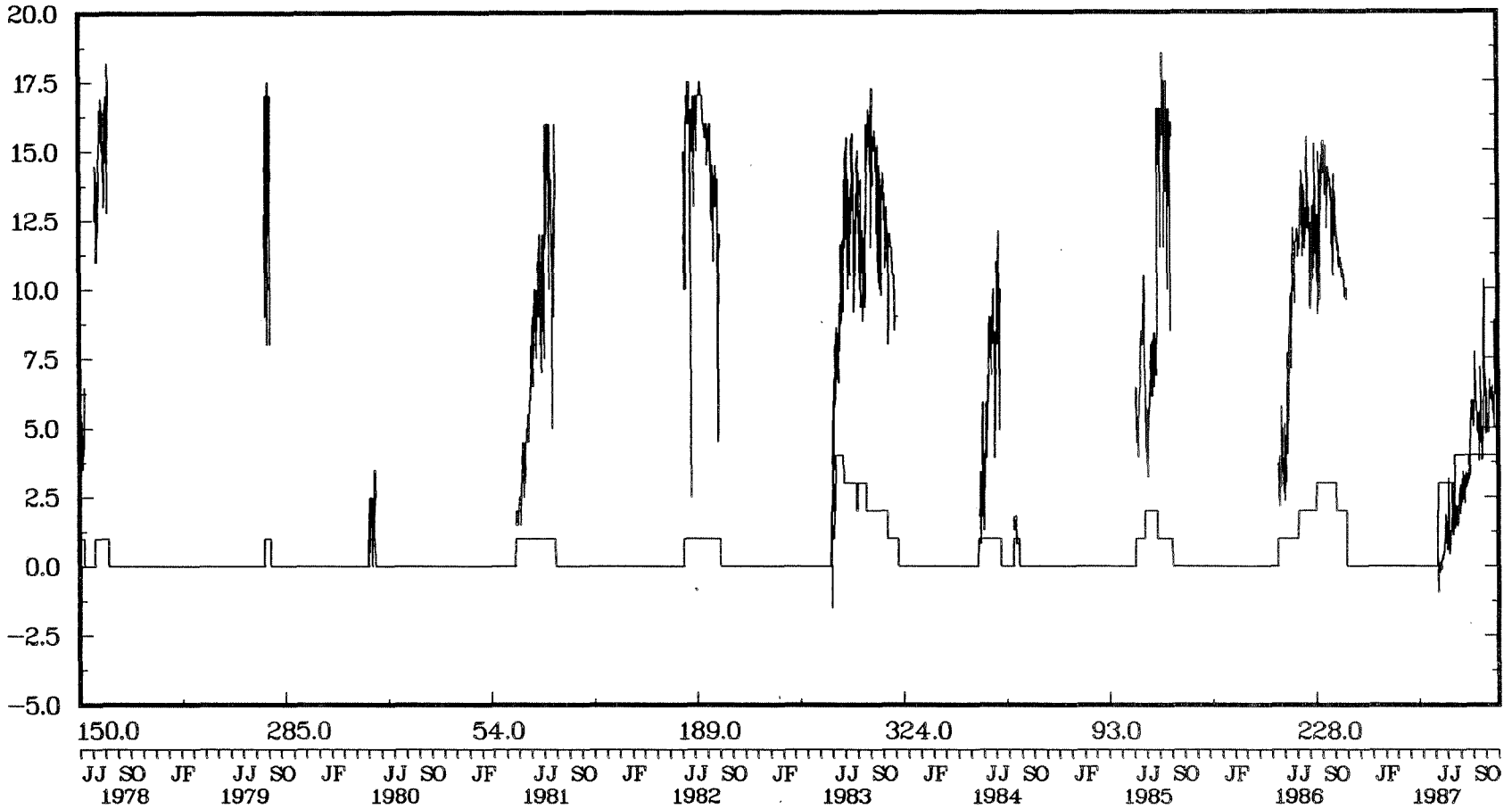
LAT. 47 37.8N – LONG. 61 40.2W

4TG SHALLOW



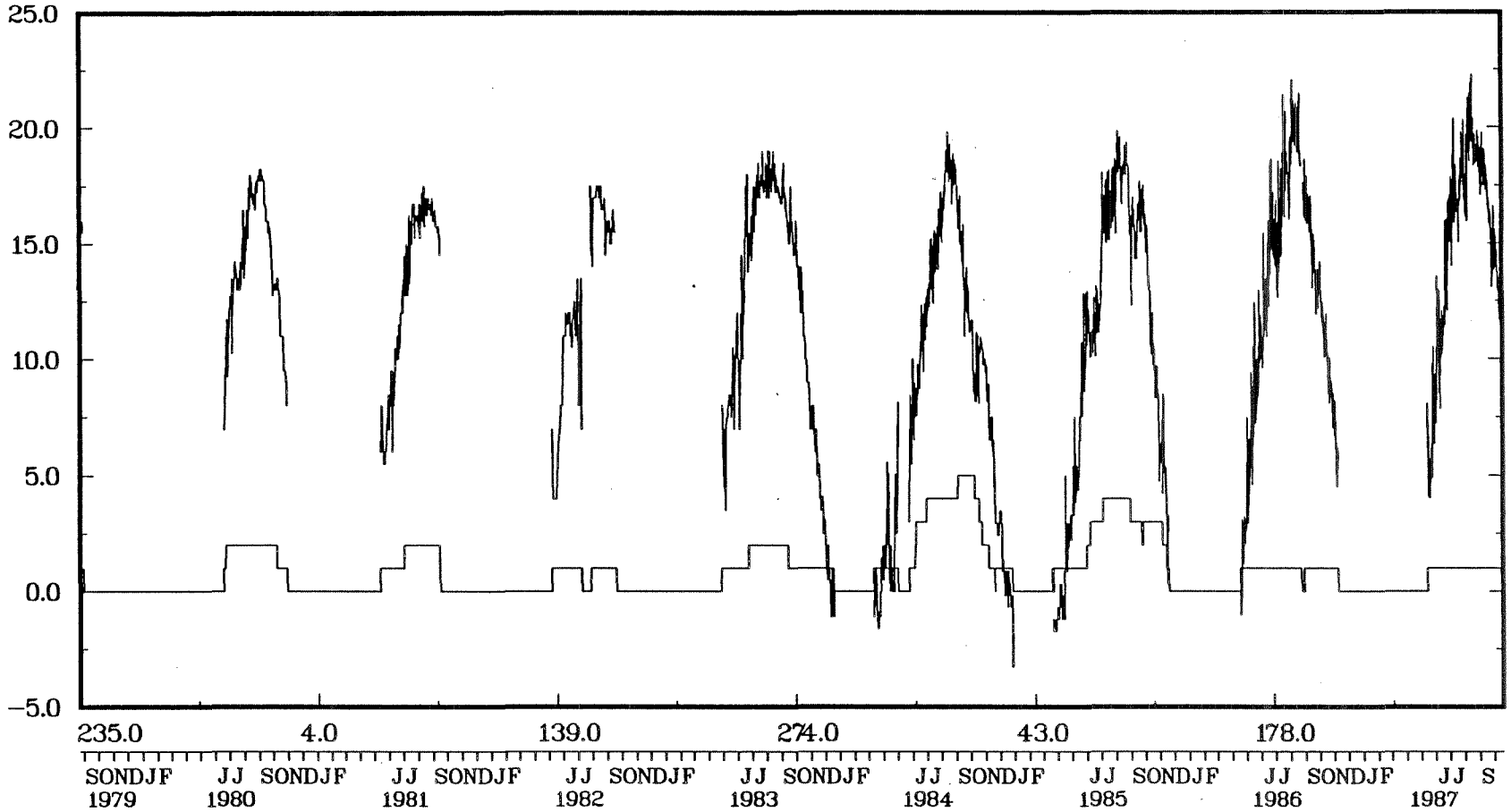
LAT. 45 40.8N – LONG. 61 45.0W

4TG DEEP



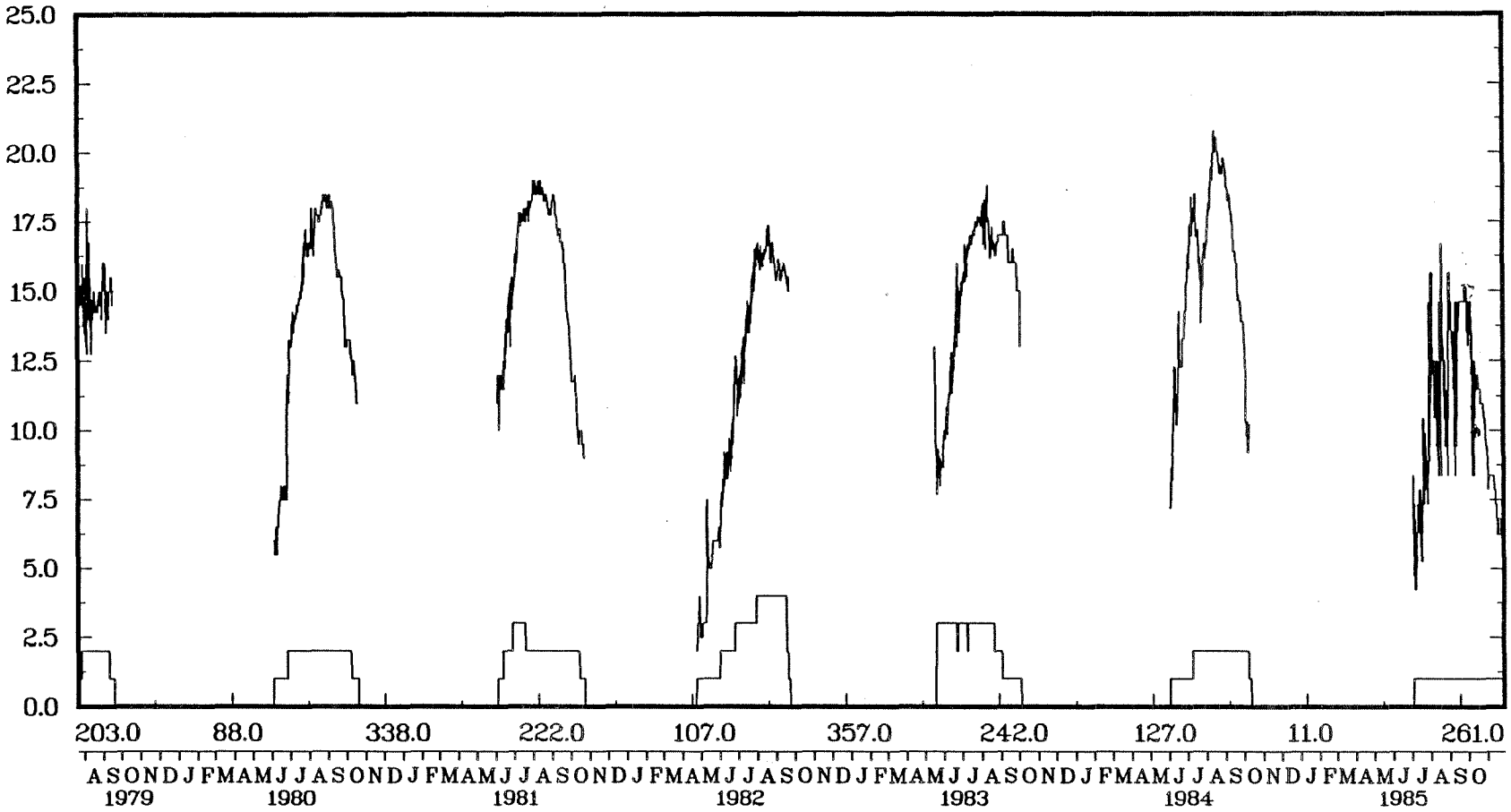
LAT. 45 7.8N – LONG. 61 22.8W

4TH SHALLOW



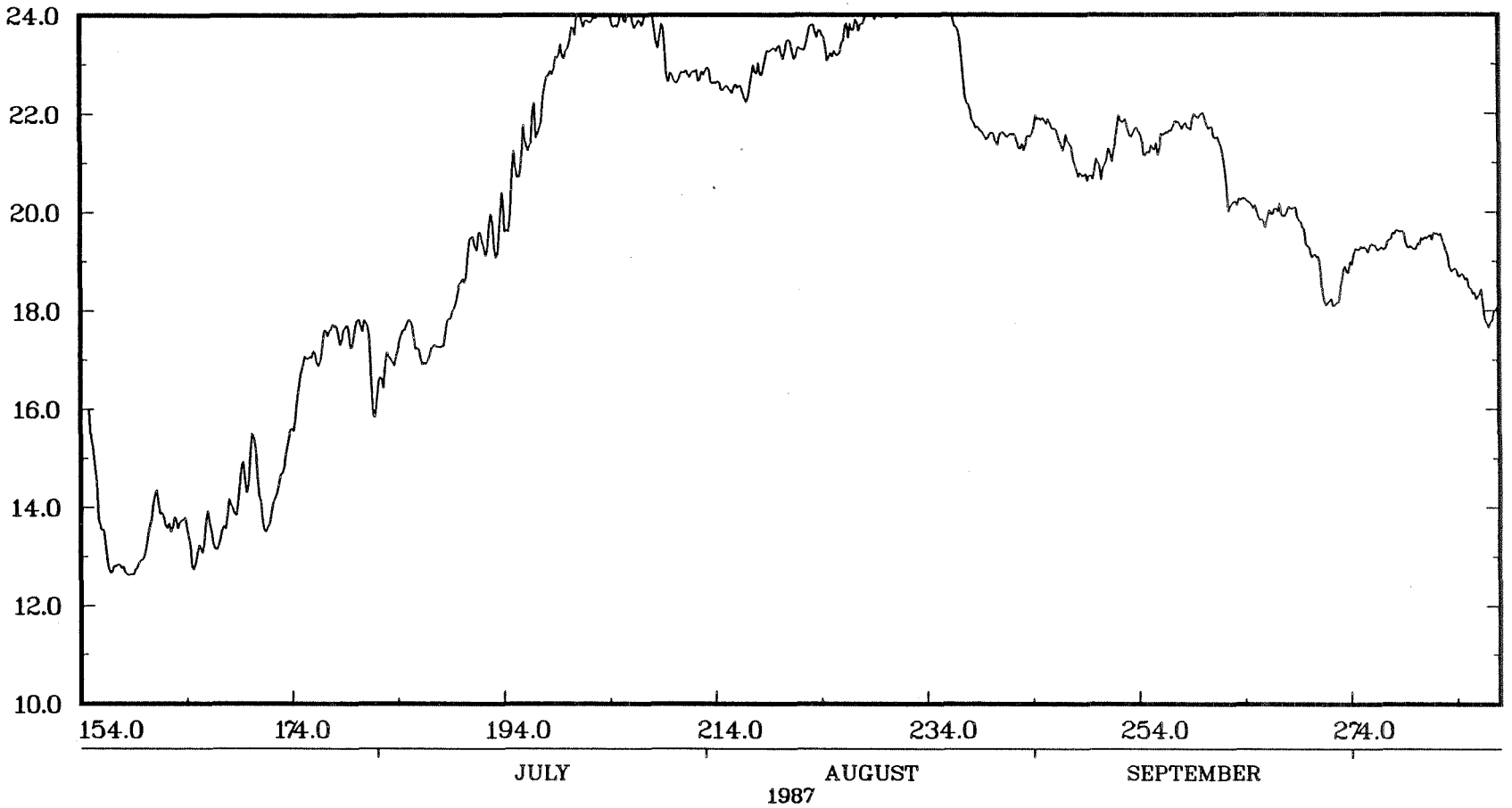
LAT. 49 24.0N – LONG. 67 18.0W

4TH DEEP



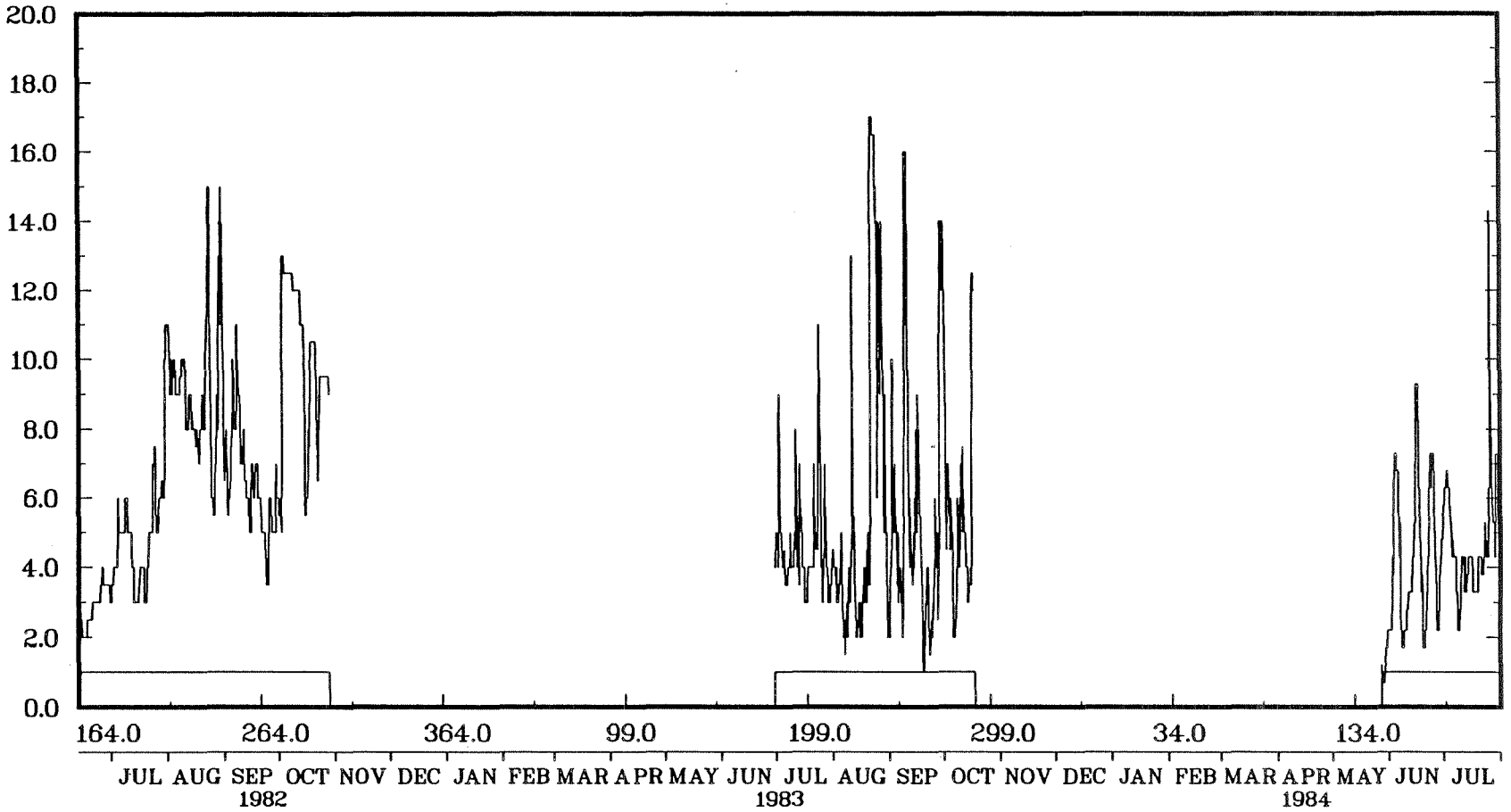
LAT. 46 22.8N – LONG. 64 7.8W

4TJ SHALLOW



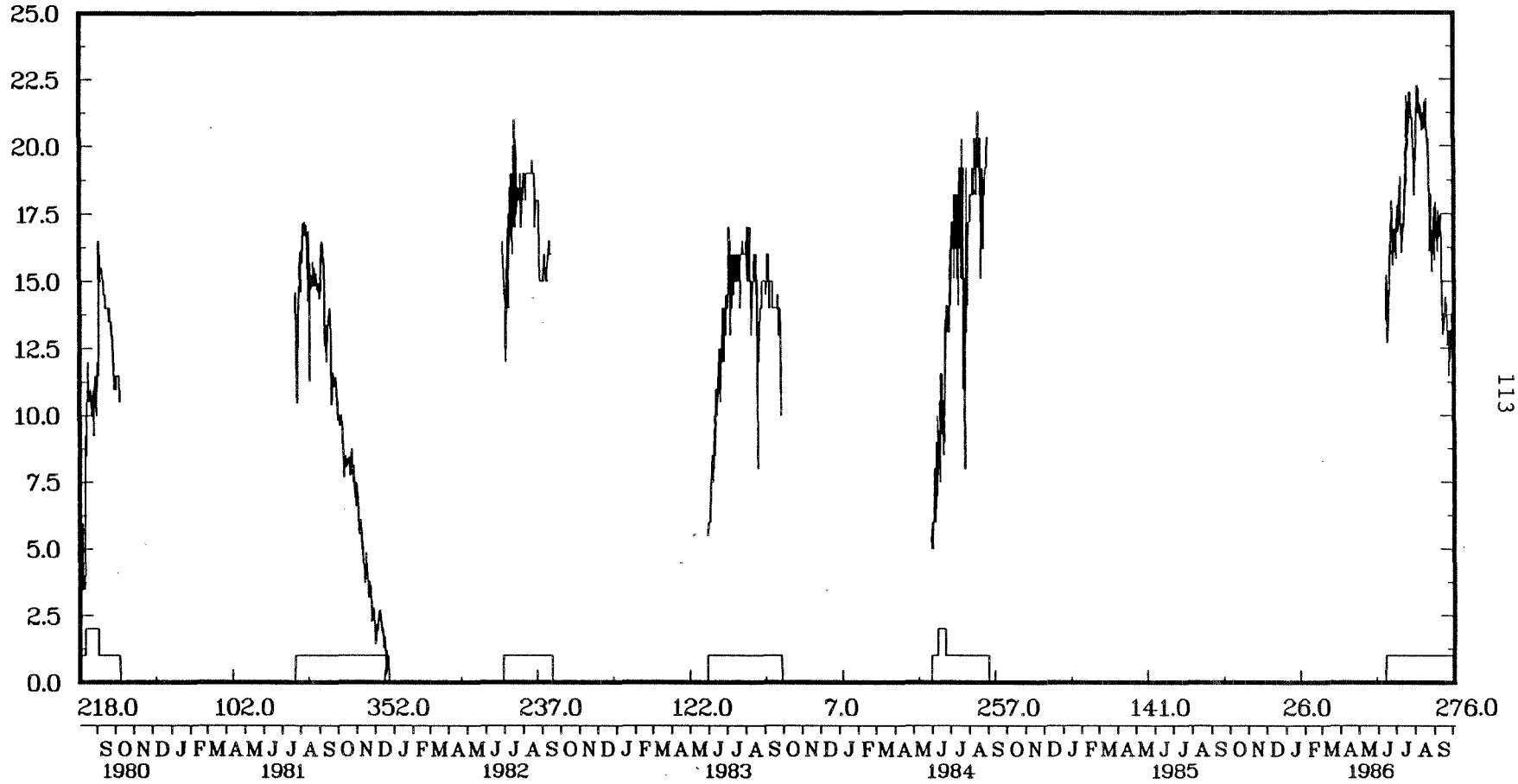
LAT. 46 31.2N – LONG. 63 51.0W

4TJ DEEP



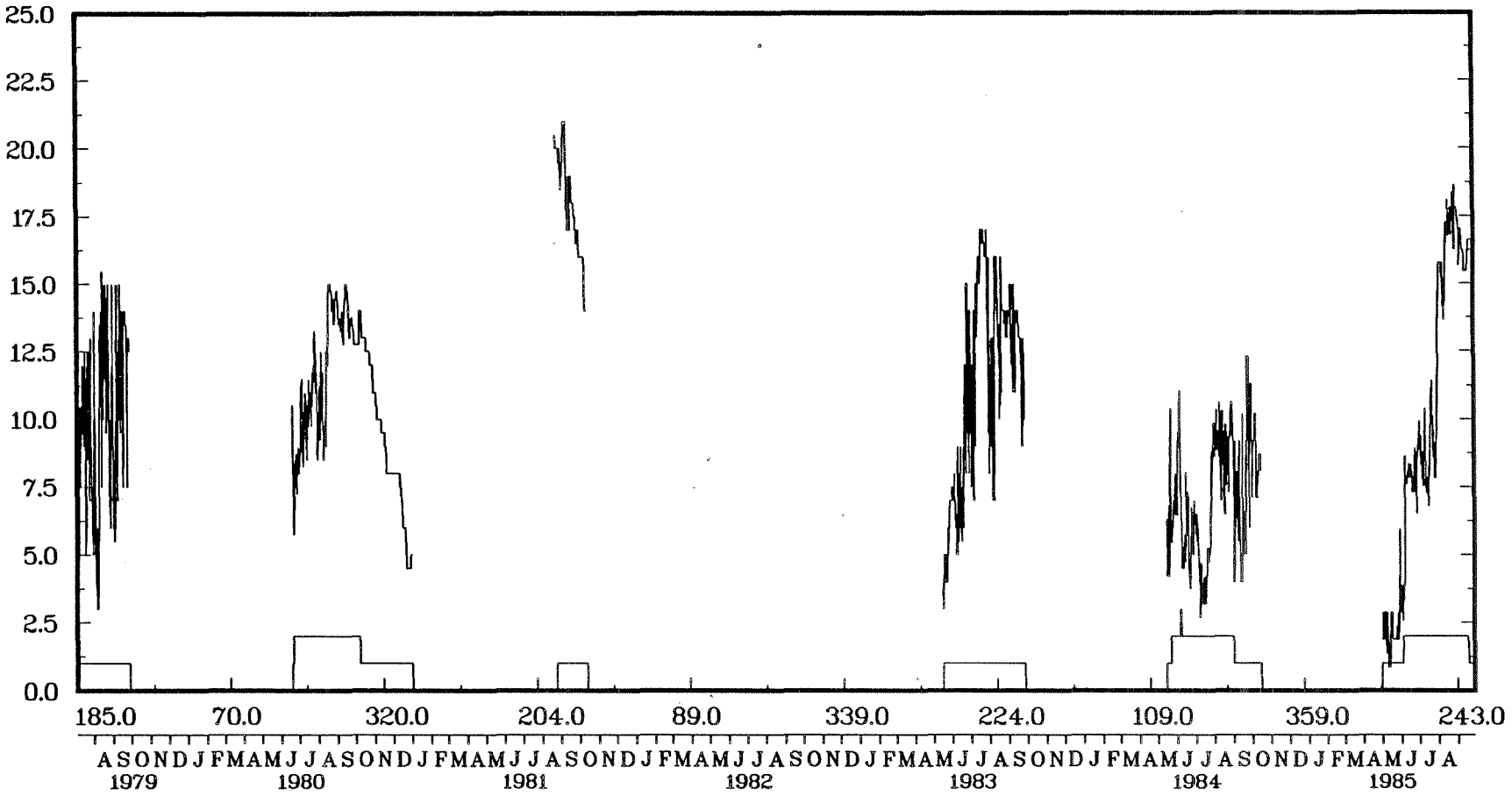
LAT. 46 33.0N – LONG. 63 16.2W

4TL SHALLOW



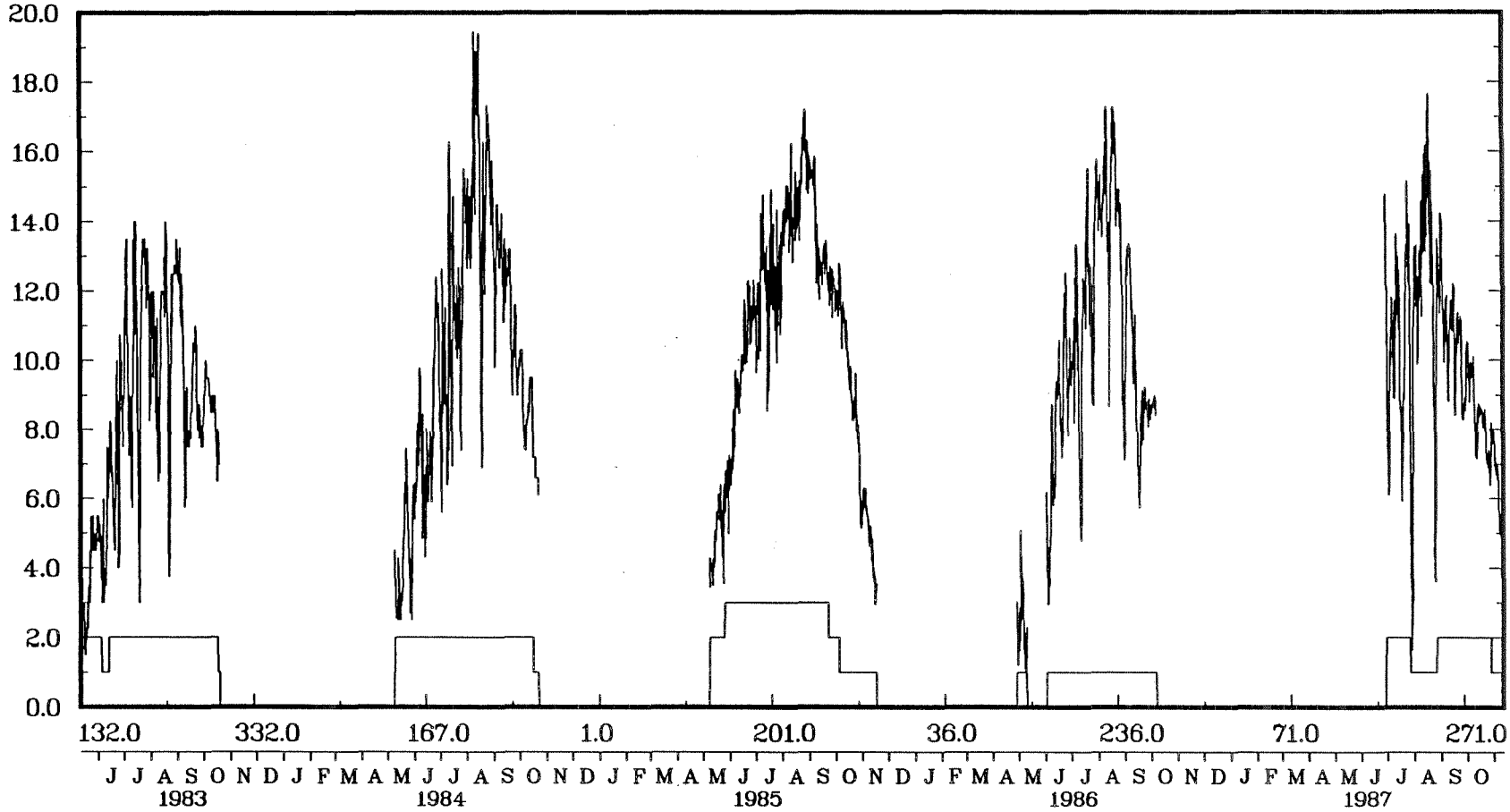
LAT. 46 55.8N – LONG. 64 48.0W

4TL DEEP



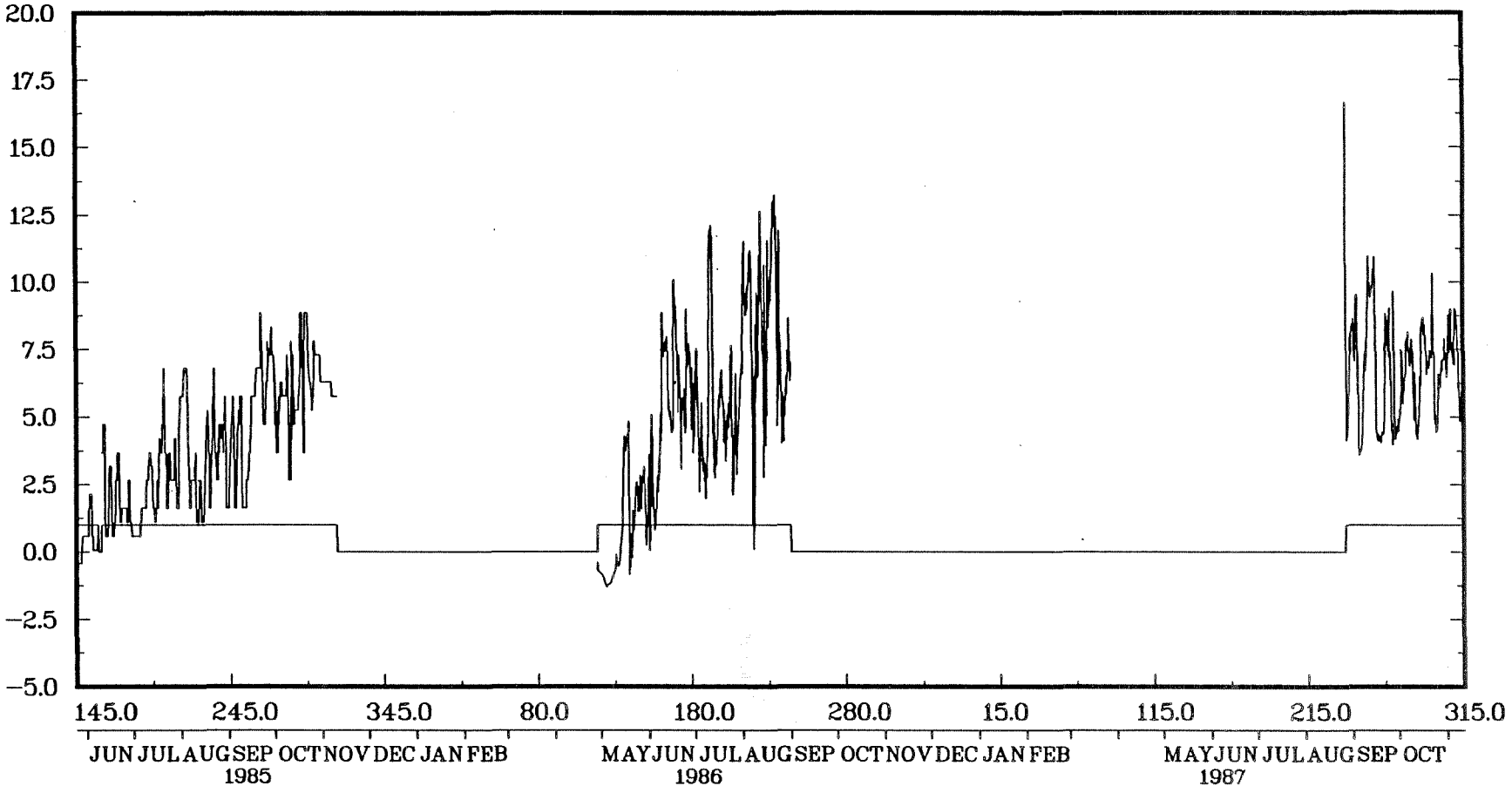
LAT. 47 5.4N – LONG. 64 52.8W

4TM SHALLOW



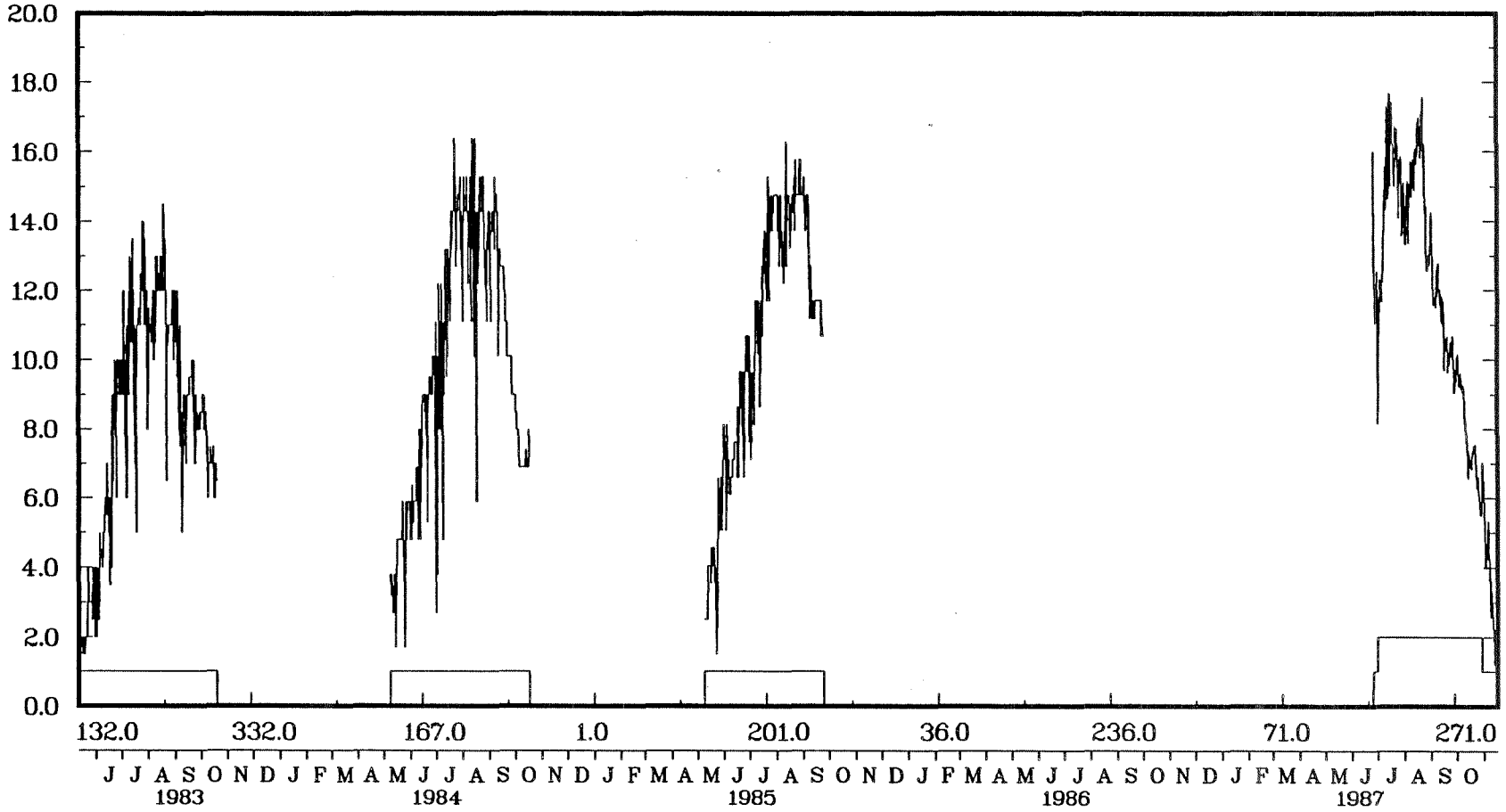
LAT. 48 4.8N – LONG. 66 7.2W

4TM DEEP



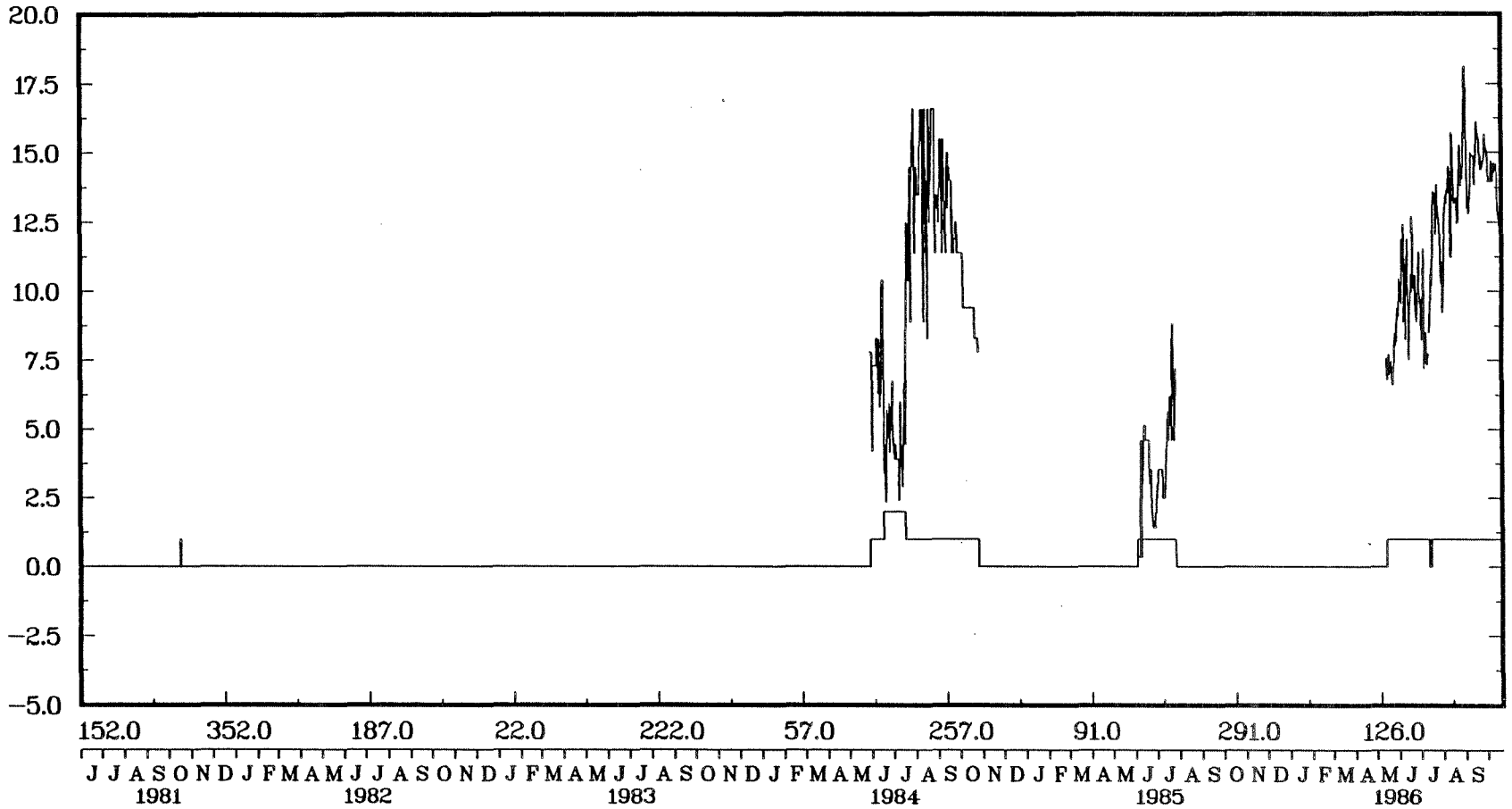
LAT. 47 46.2N – LONG. 65 22.2W

4TN SHALLOW



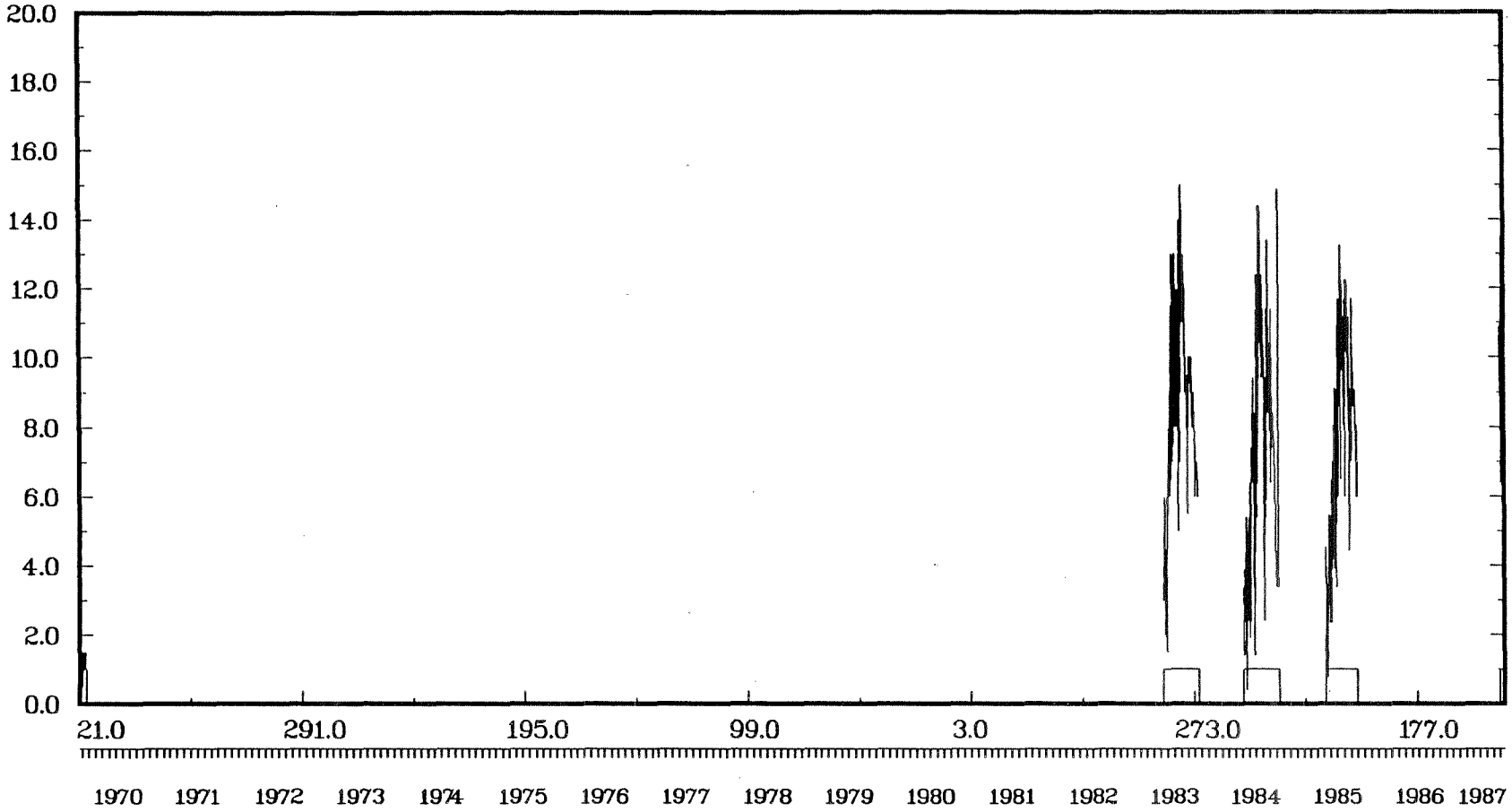
LAT. 47 49.2N – LONG. 64 52.8W

4TN DEEP



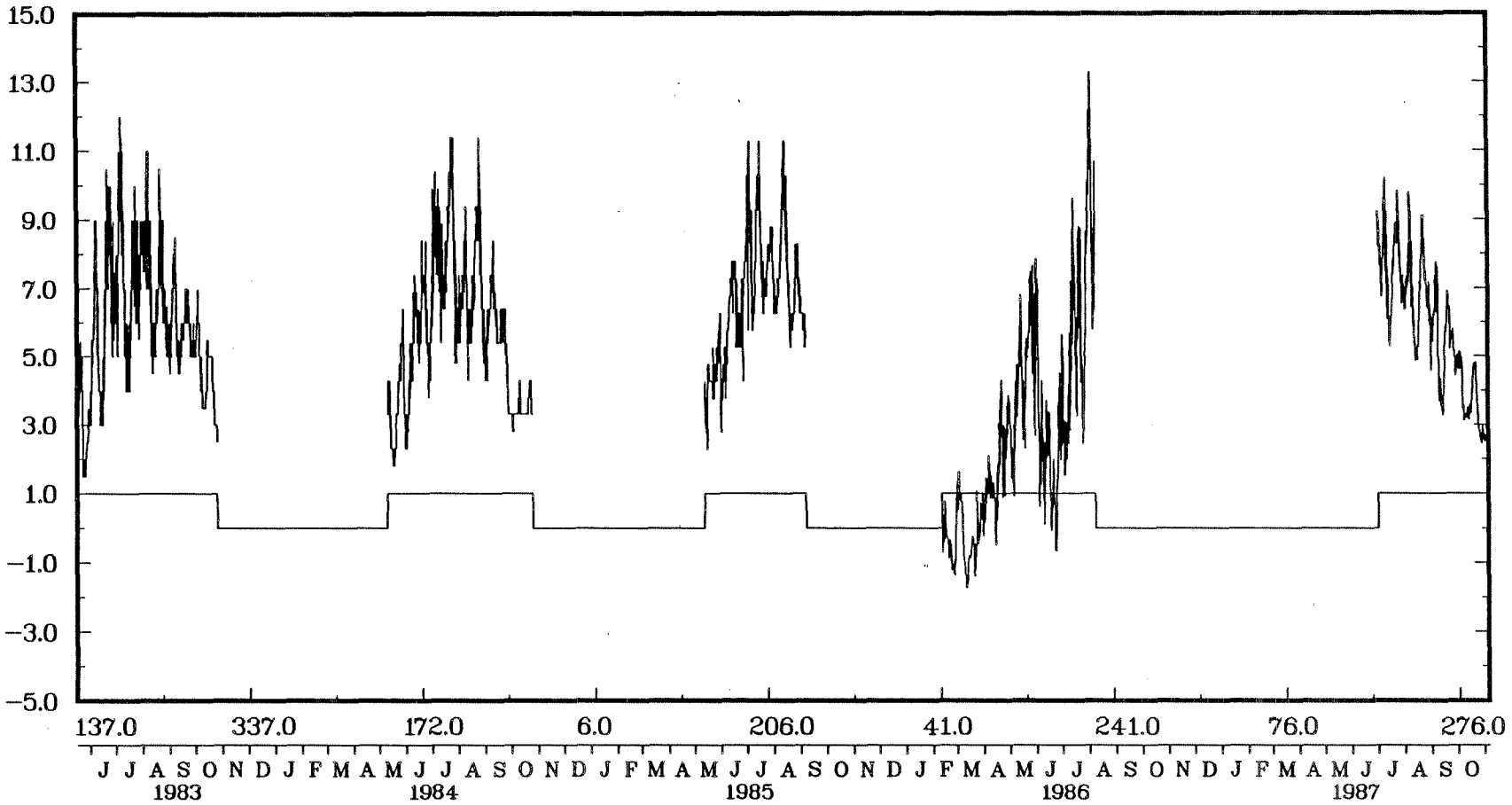
LAT. 47 59.4N – LONG. 65 0.0W

4TO SHALLOW



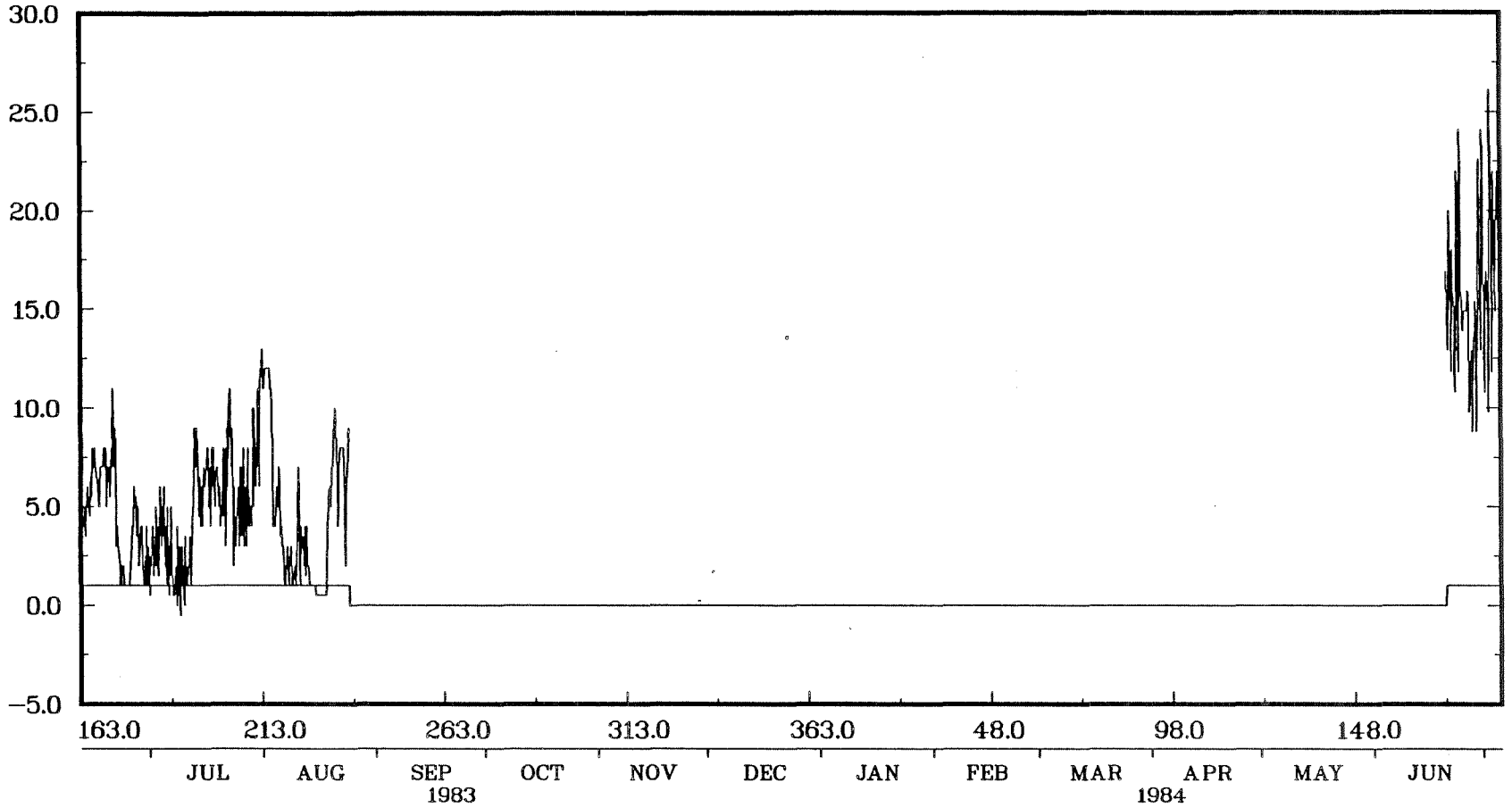
LAT. 49 13.2N – LONG. 66 3.6W

4TP SHALLOW



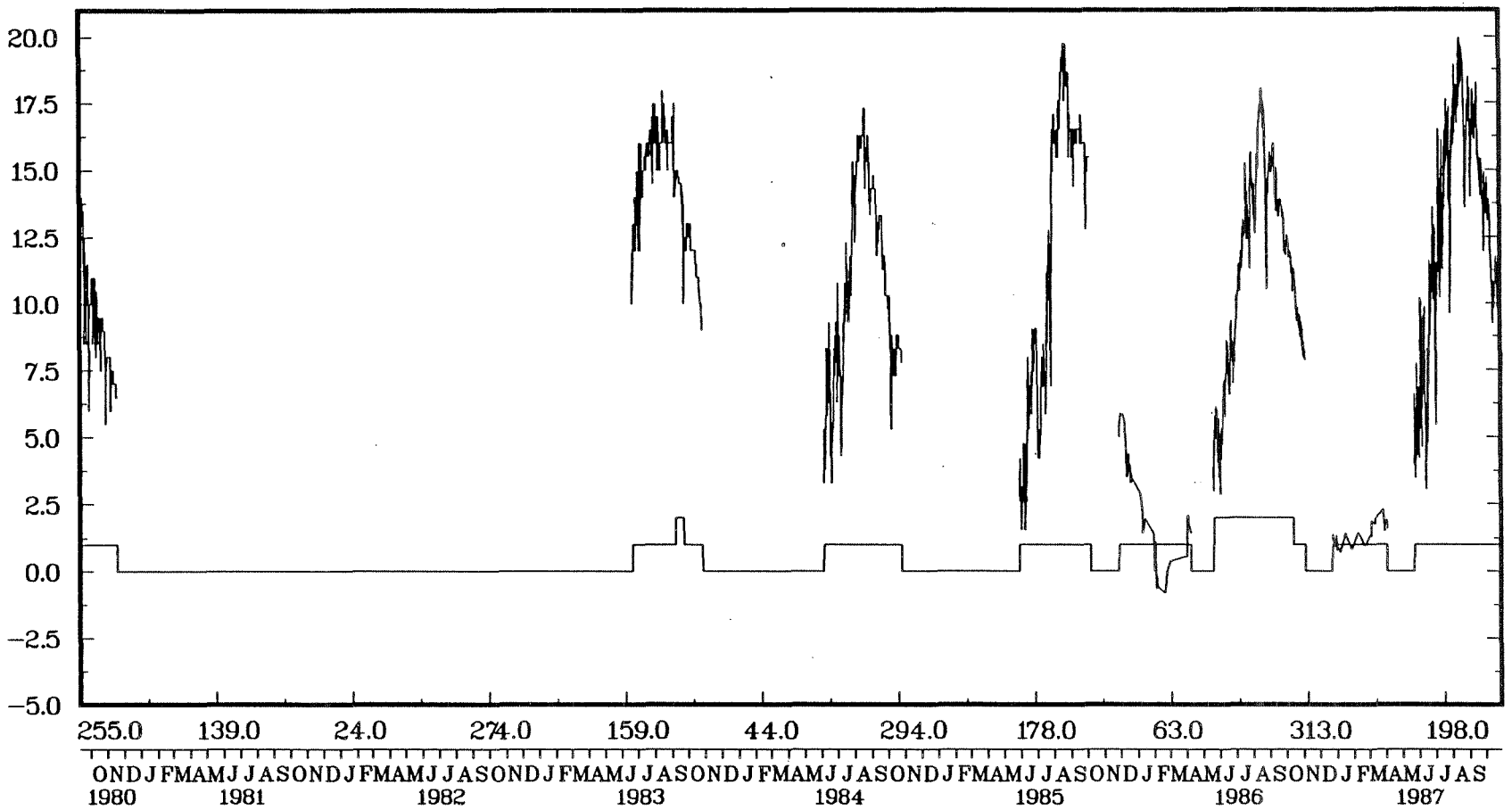
LAT. 48 31.2N – LONG. 68 28.2W

4TQ SHALLOW



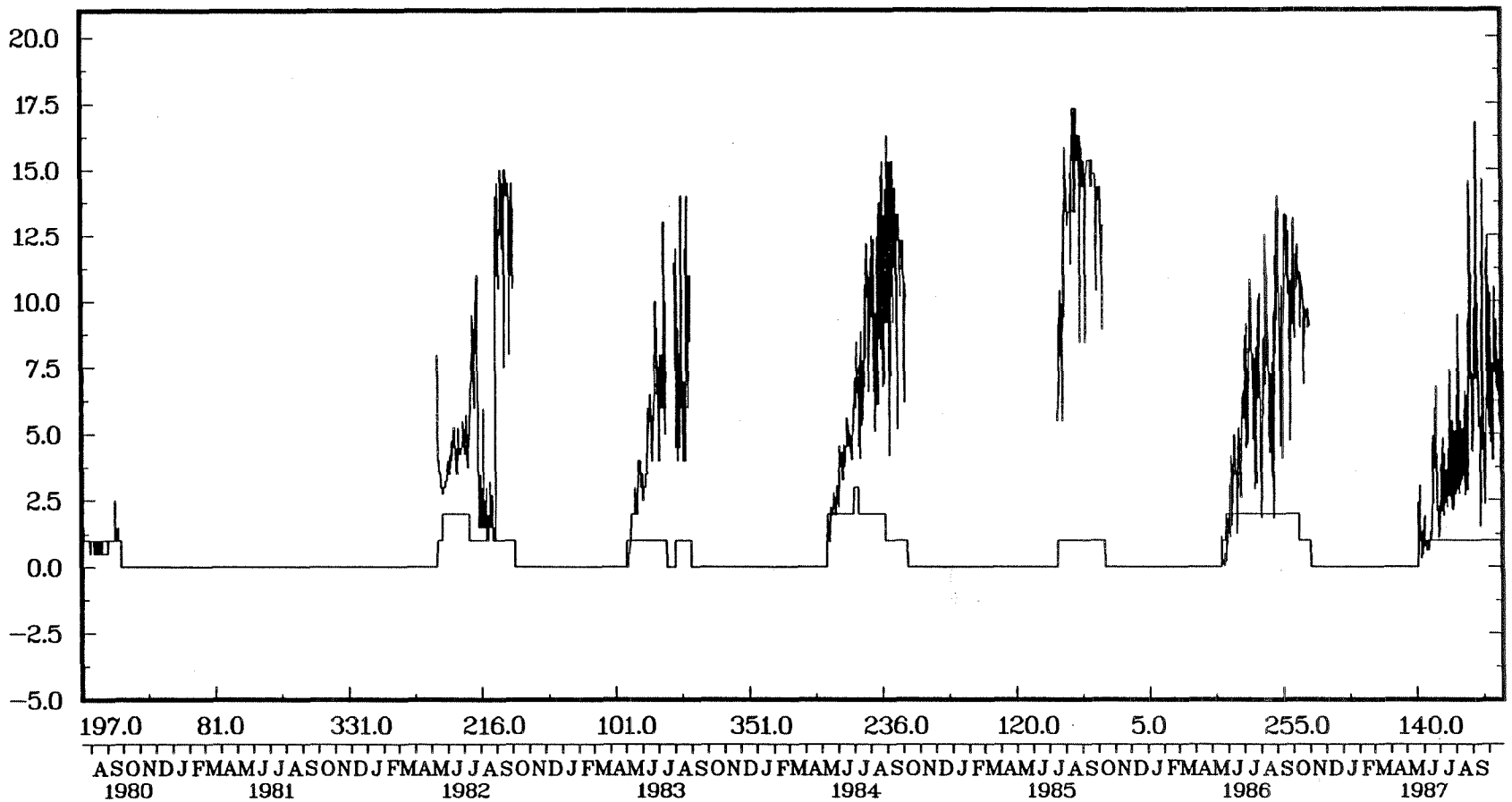
LAT. 49 19.2N – LONG. 67 22.8W

4VN SHALLOW



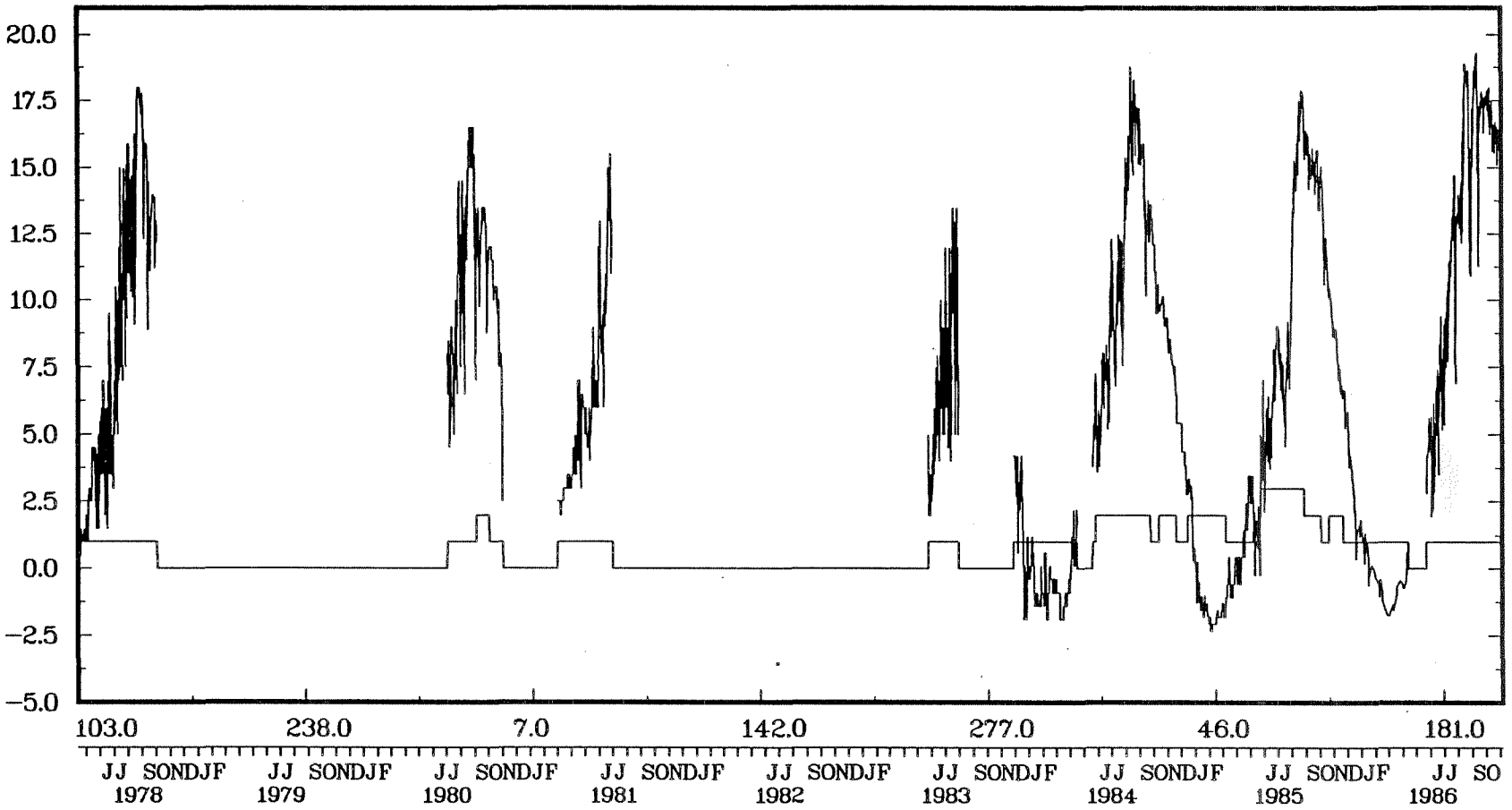
LAT. 46 14.4N – LONG. 60 12.6W

4VN DEEP



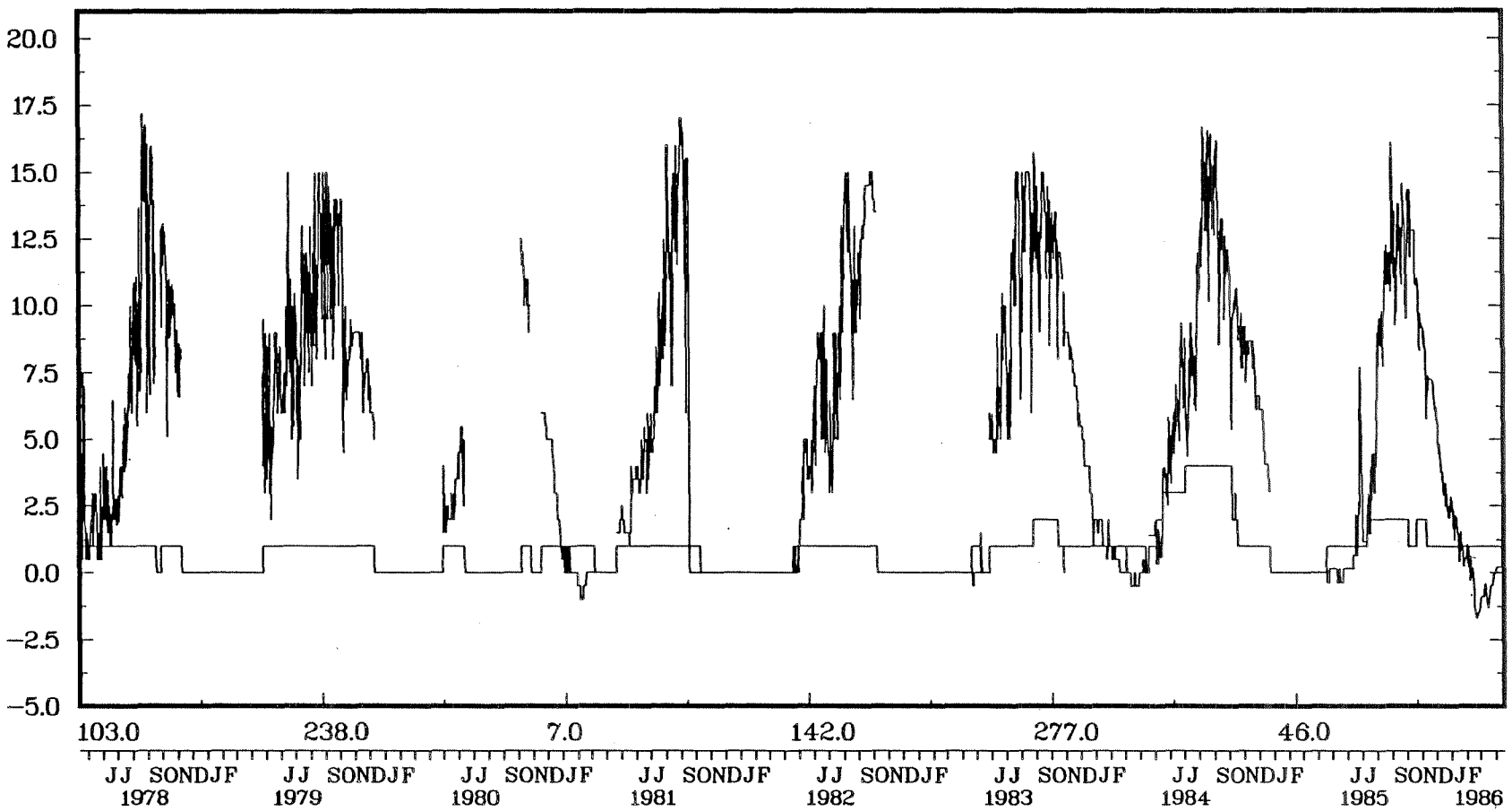
LAT. 45 41.4N − LONG. 60 12.0W

4WD SHALLOW



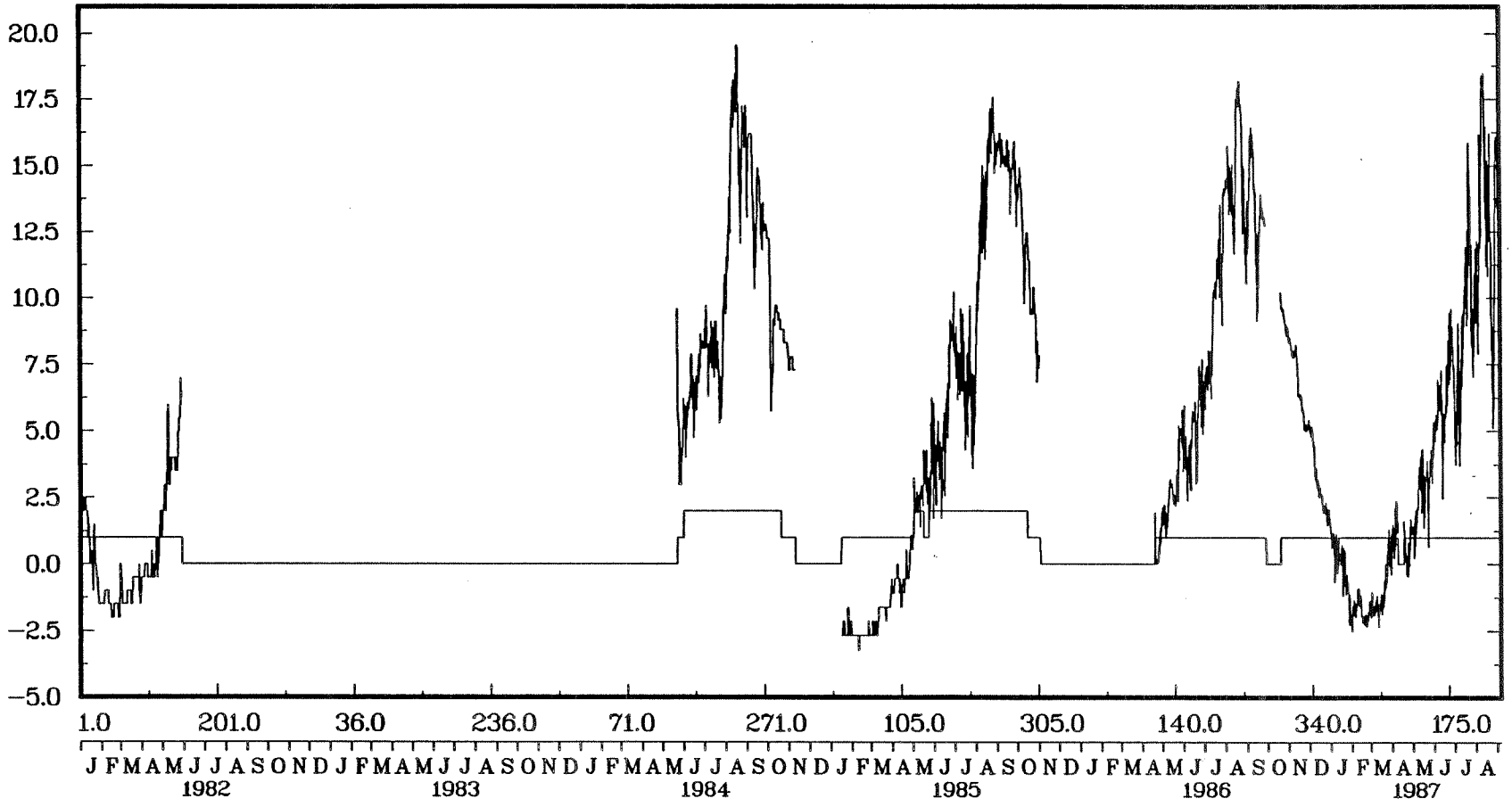
LAT. 45 18.0N – LONG. 60 59.4W

4WD DEEP



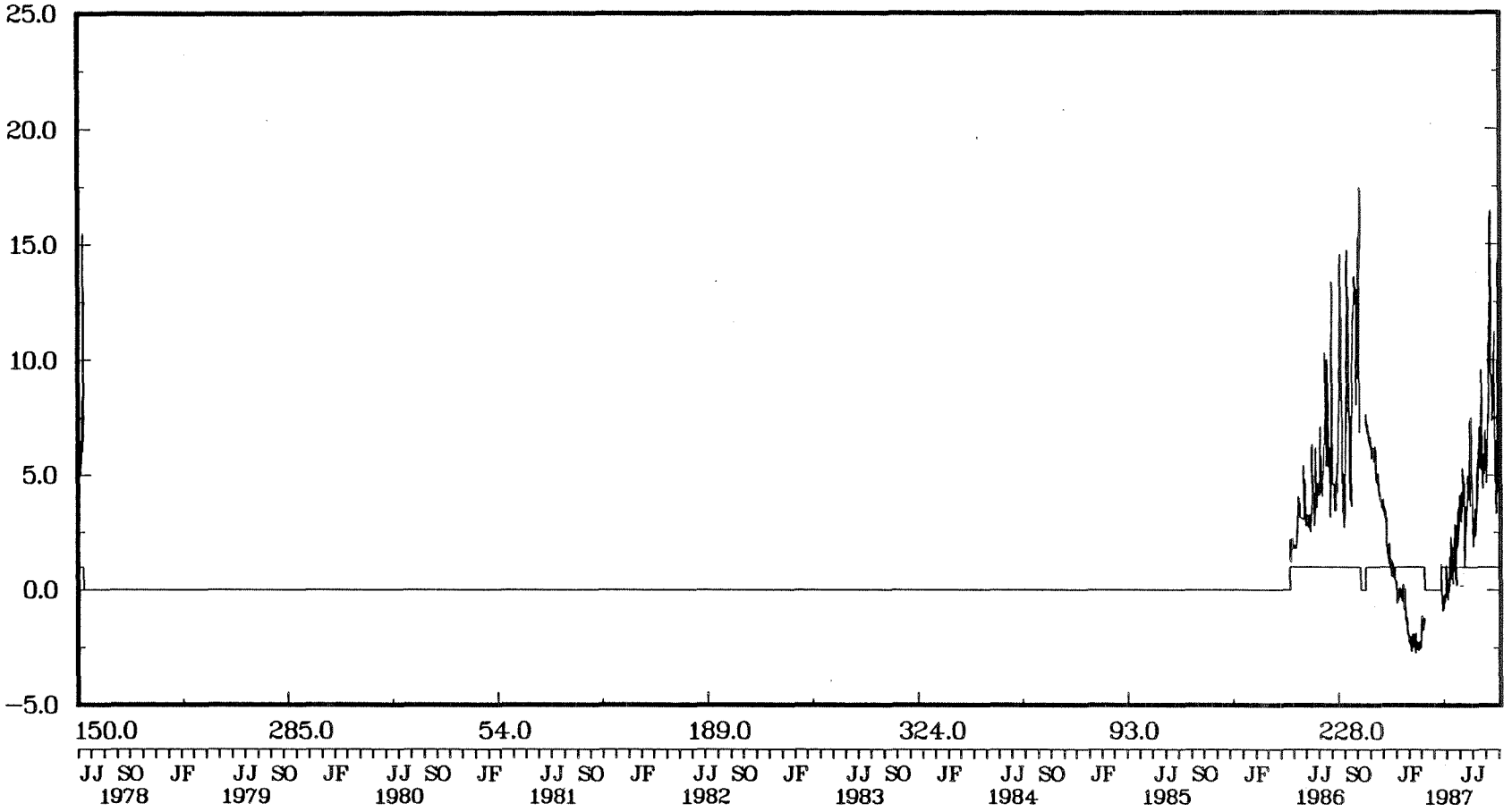
LAT. 45 21.0N – LONG. 61 25.4W

4WK SHALLOW



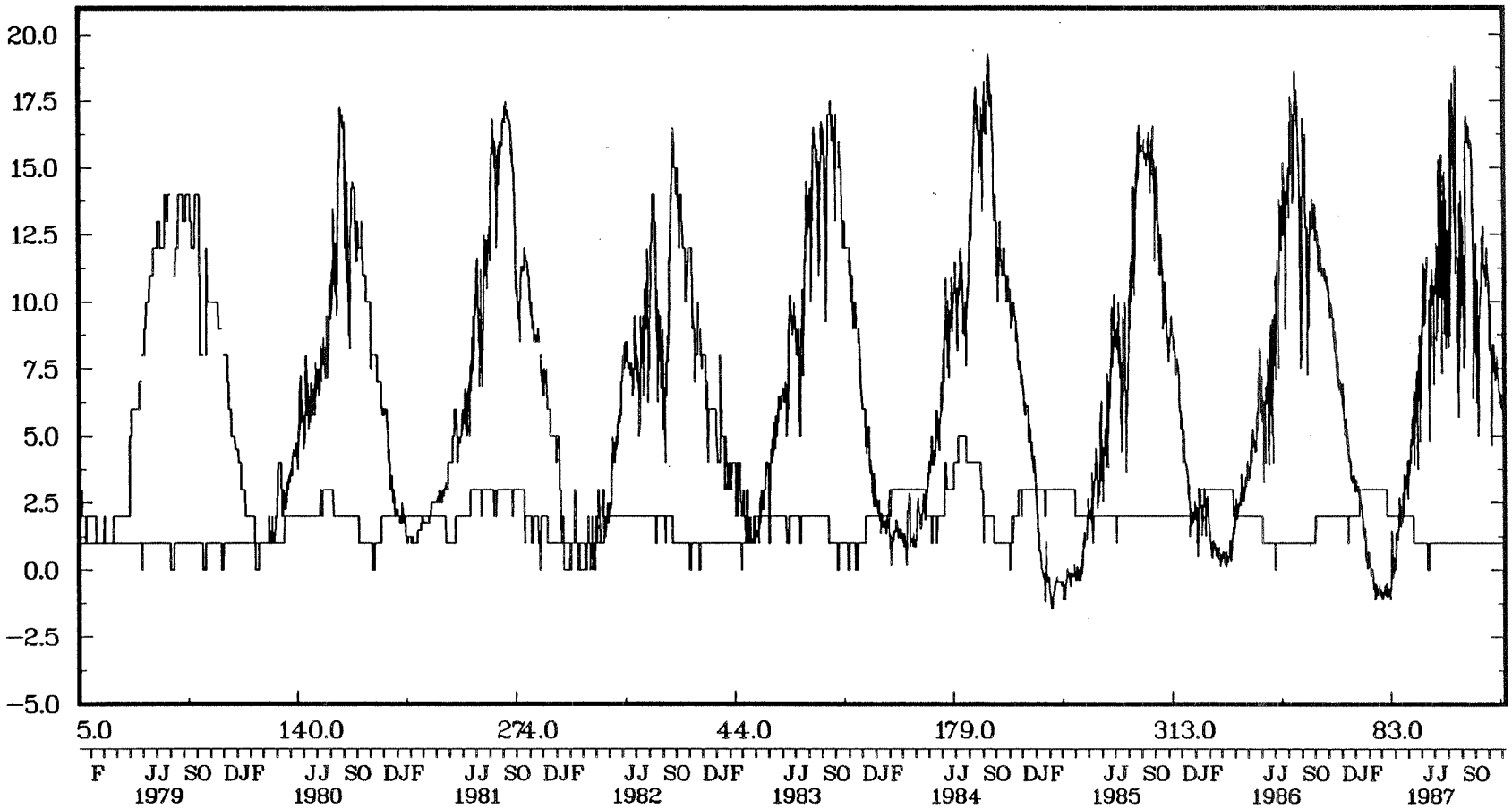
LAT. 44 52.2N – LONG. 62 24.0W

4WK DEEP



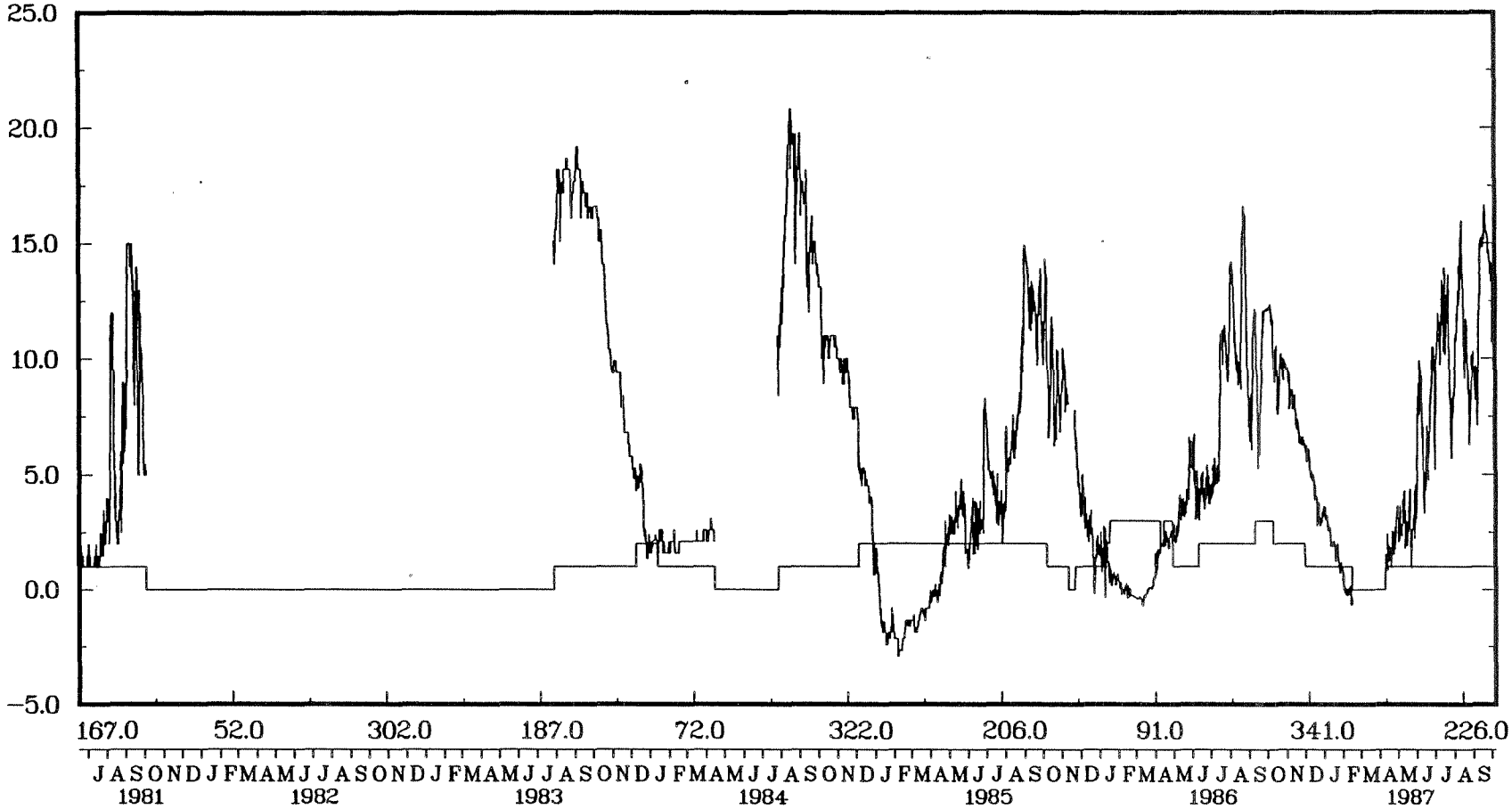
LAT. 45 5.4N − LONG. 62 4.9W

4XM SHALLOW



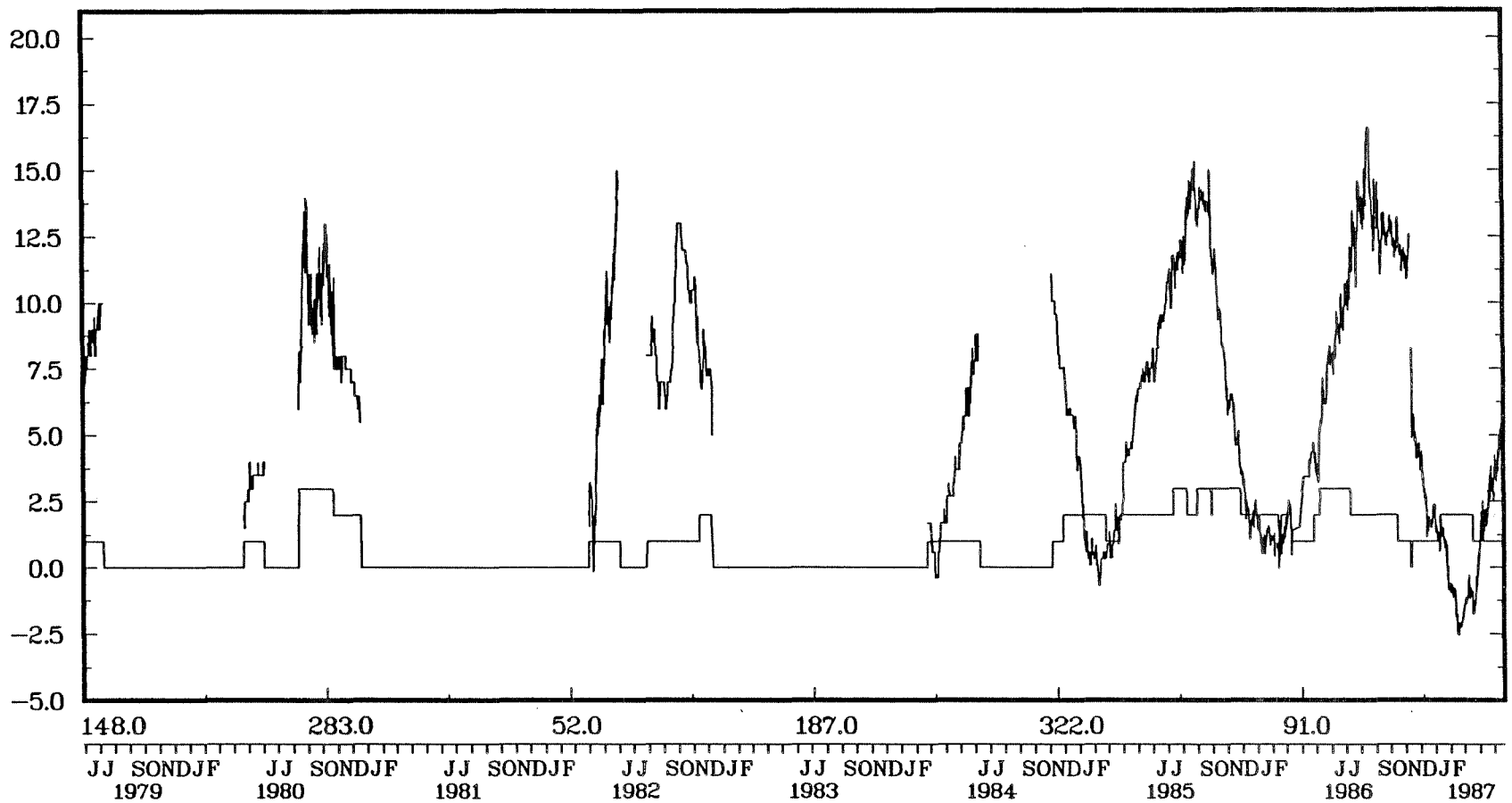
LAT. 44 32.4N – LONG. 64 7.8W

4XM DEEP



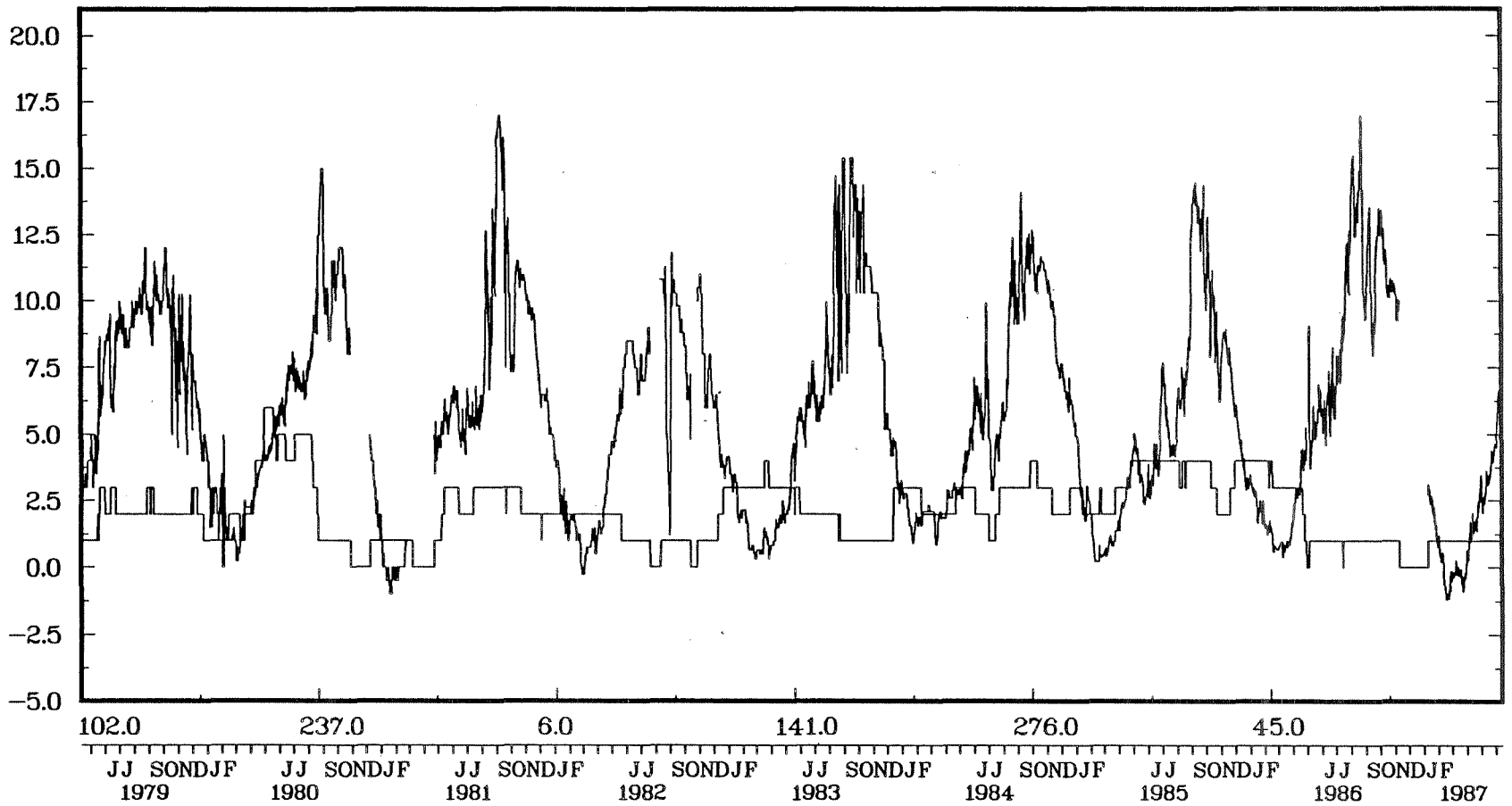
LAT. 44 30.0N – LONG. 64 6.0W

4XO SHALLOW



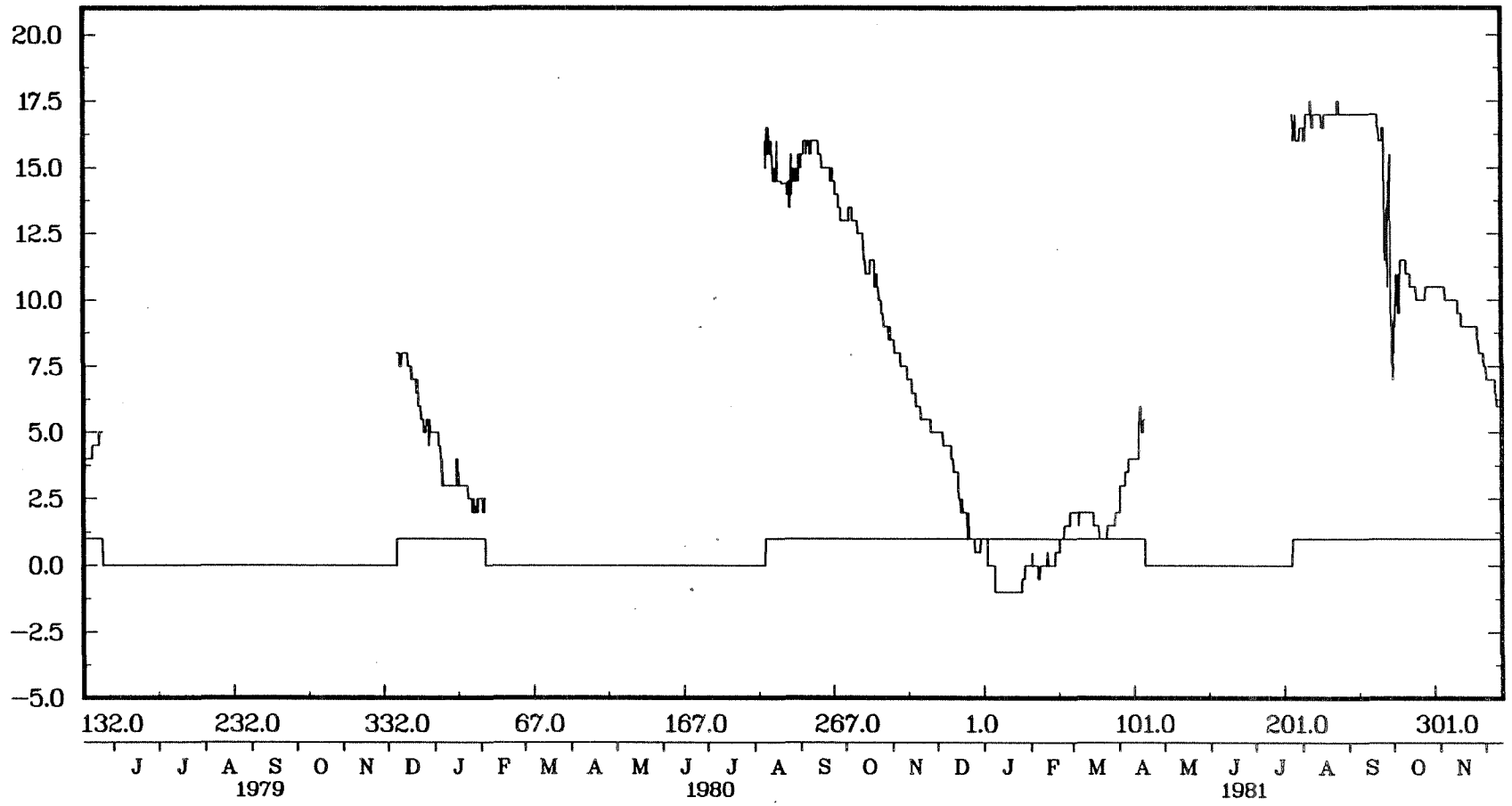
LAT. 43 43.8N – LONG. 65 49.8W

4XO DEEP



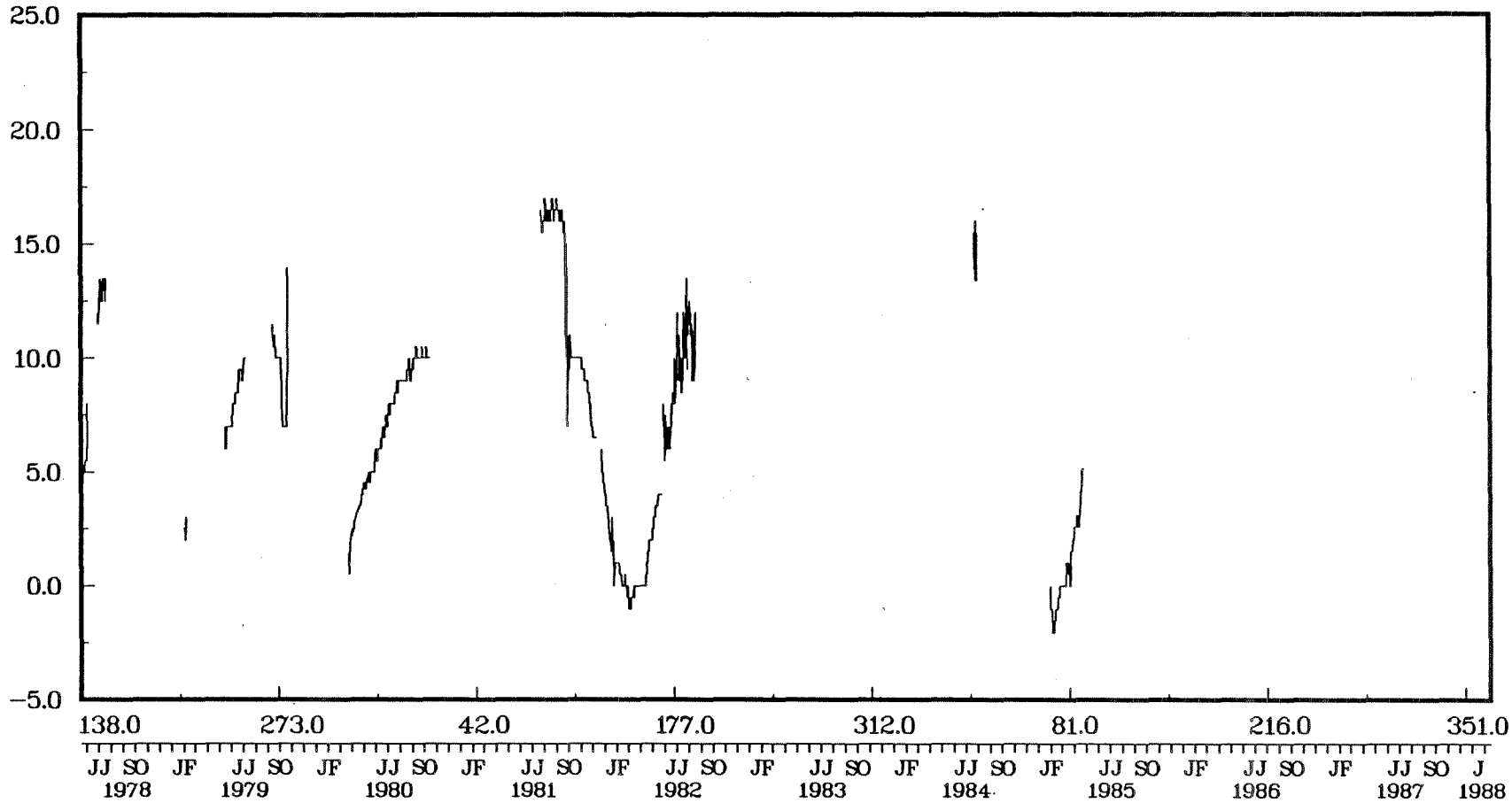
LAT. 43 21.6N – LONG. 65 37.8W

4XQ SHALLOW



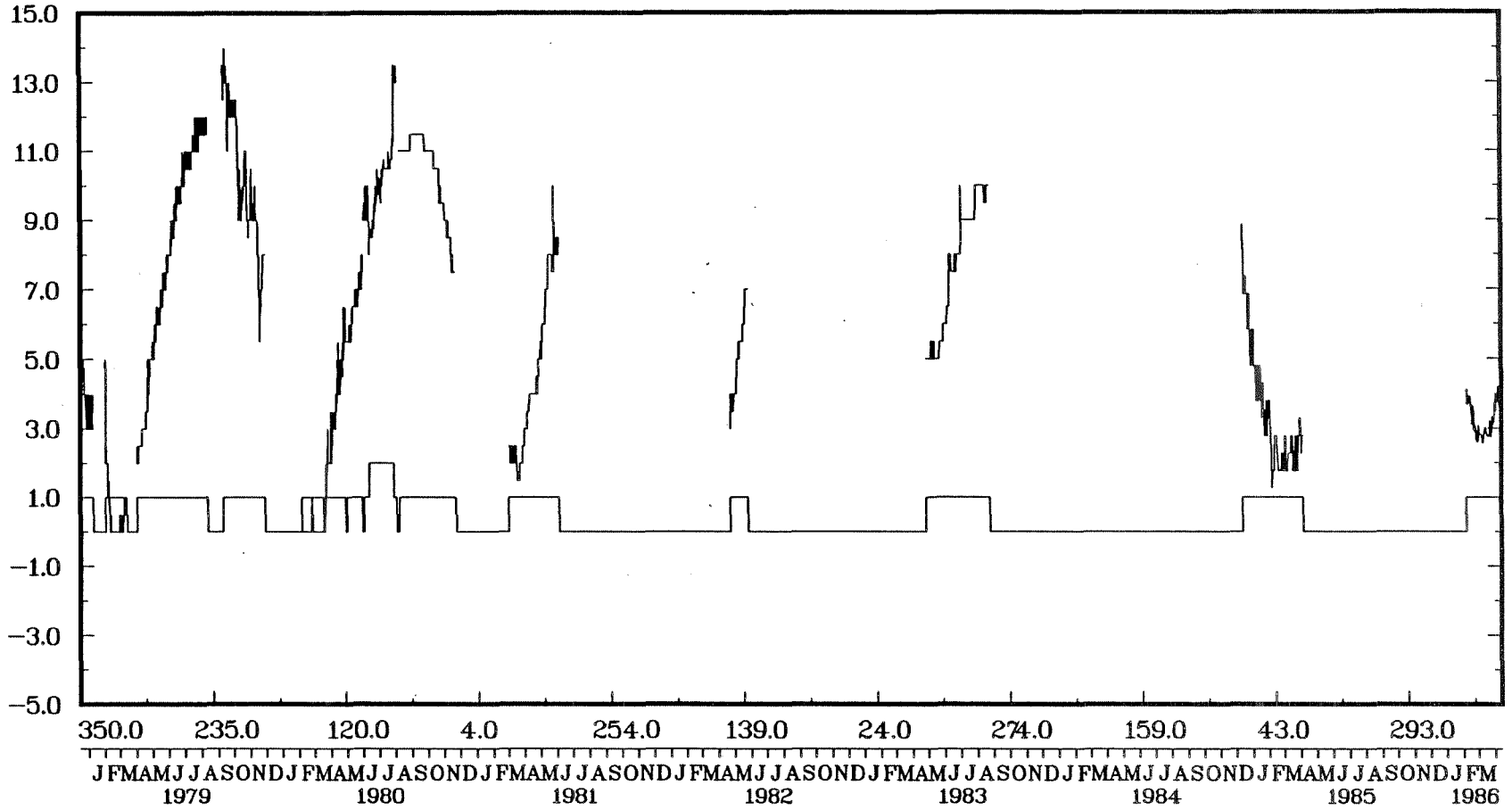
LAT. 43 39.0N – LONG. 66 8.4W

4XQ DEEP



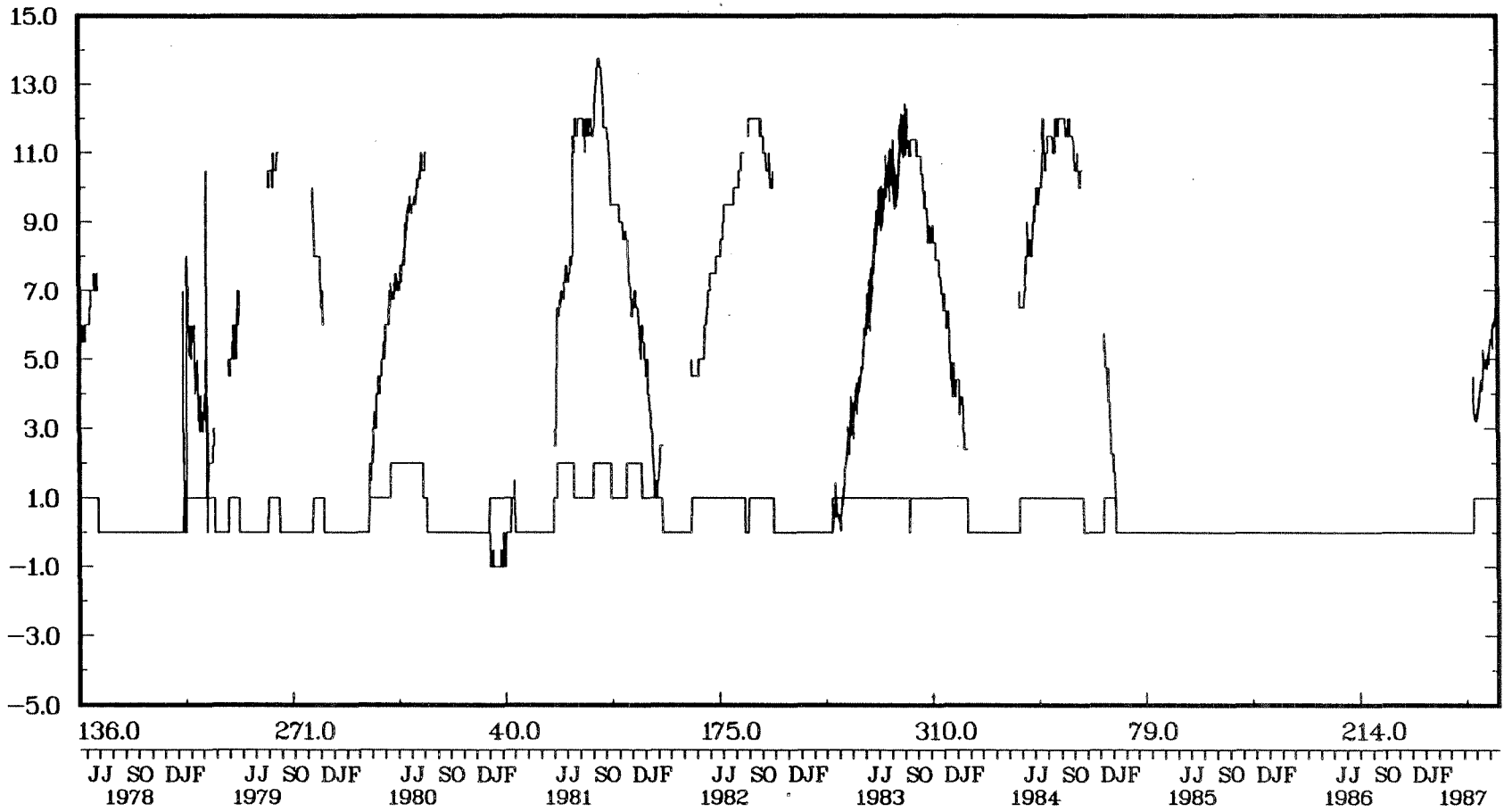
LAT. 43 37.8N − LONG. 66 8.4W

4XR SHALLOW



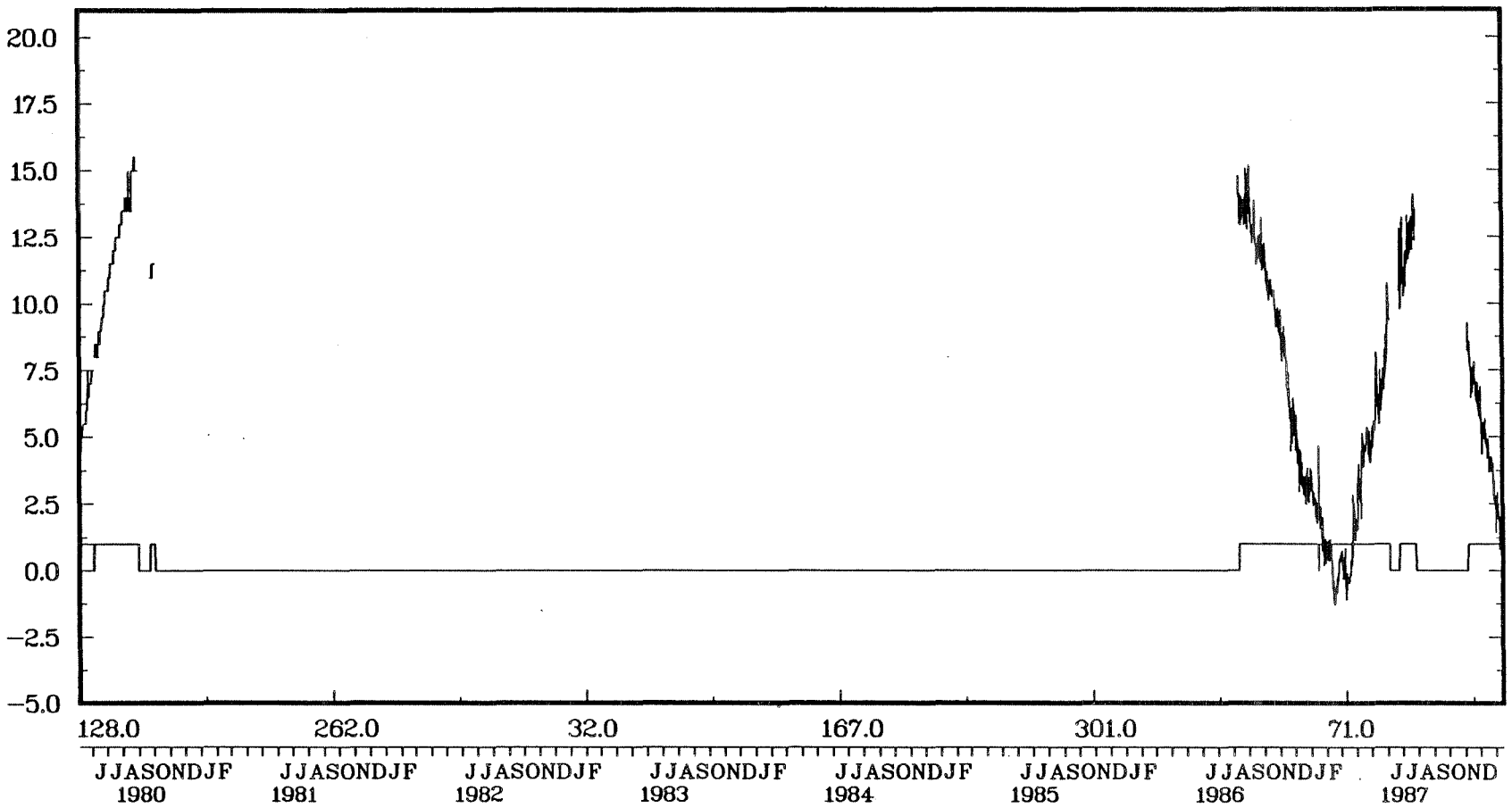
LAT. 44 48.0N – LONG. 65 39.0W

4XR DEEP



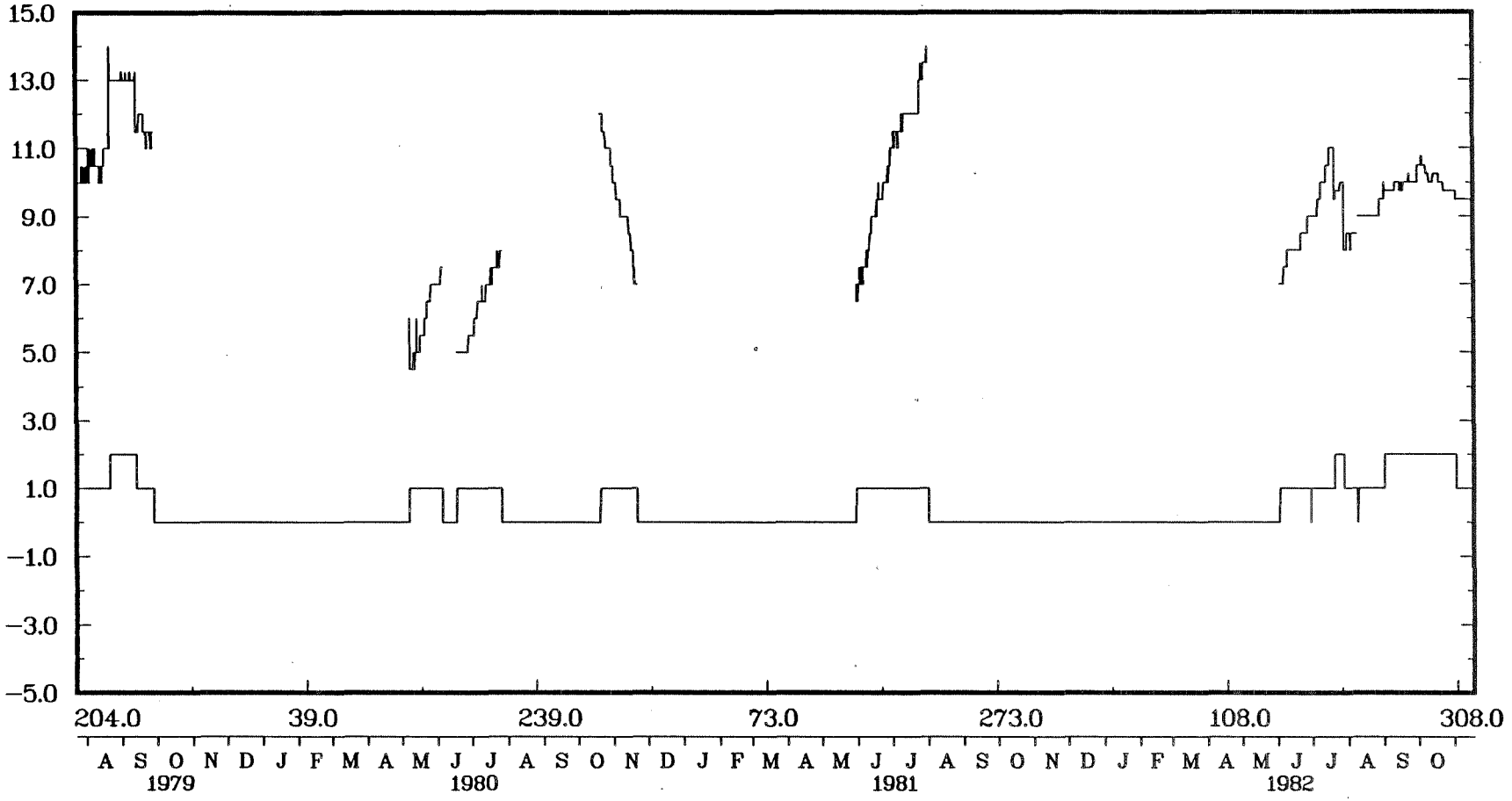
LAT. 44 45.6N – LONG. 65 40.8W

4XS SHALLOW



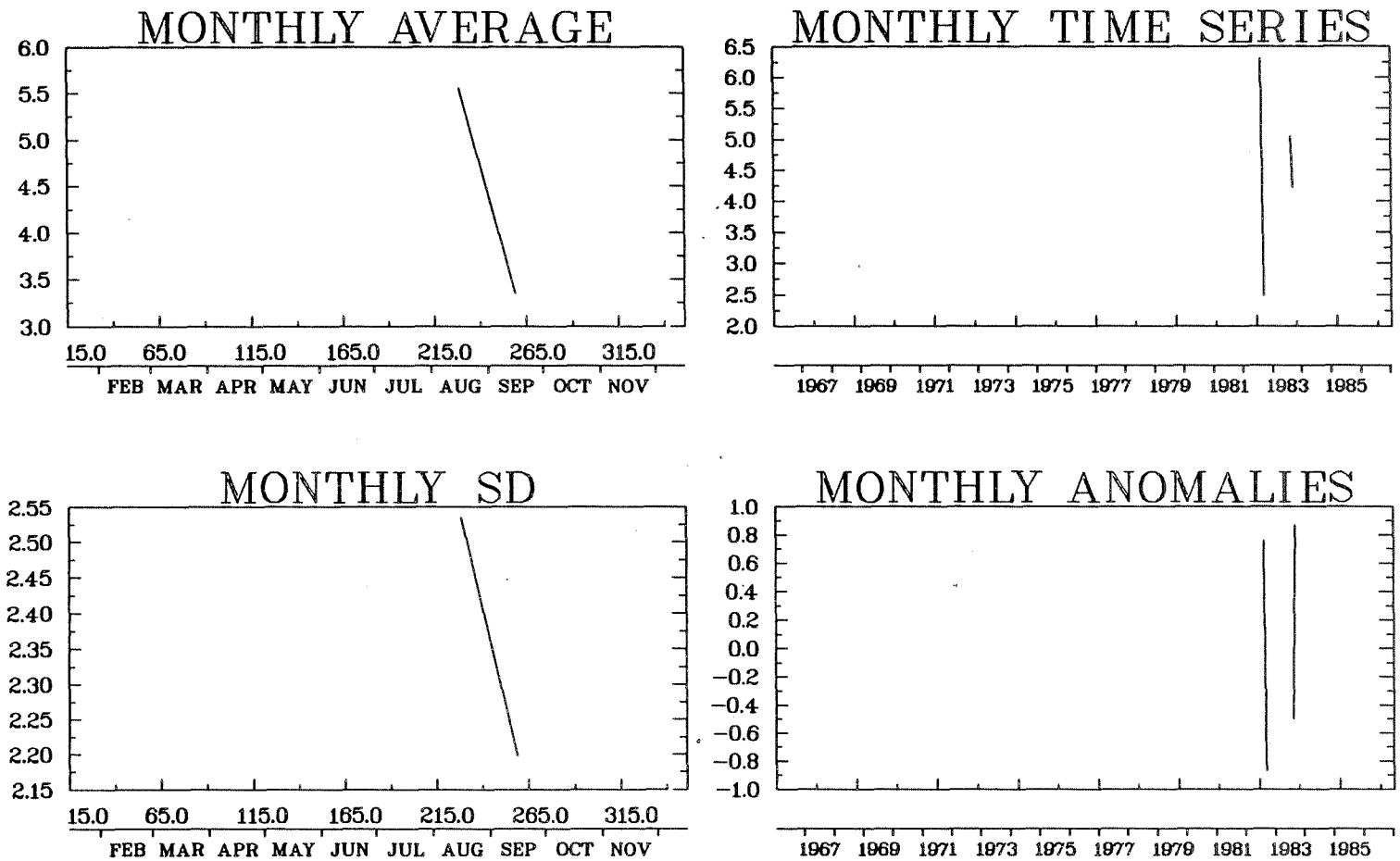
LAT. 45 36.0N – LONG. 64 57.0W

4XS DEEP

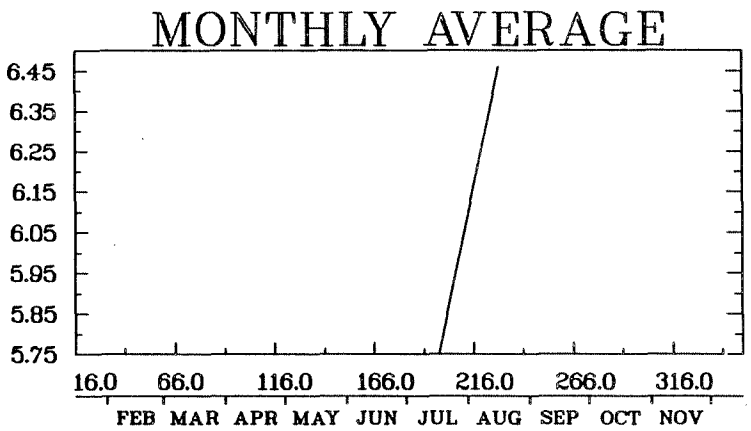


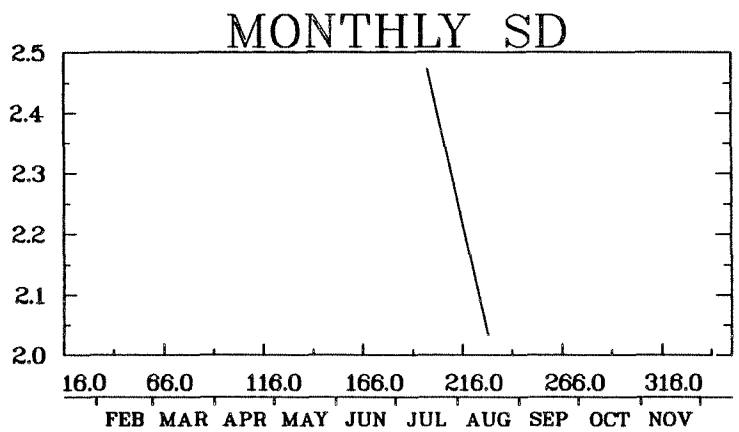
LAT. 49 42.0N – LONG. 61 45.0W

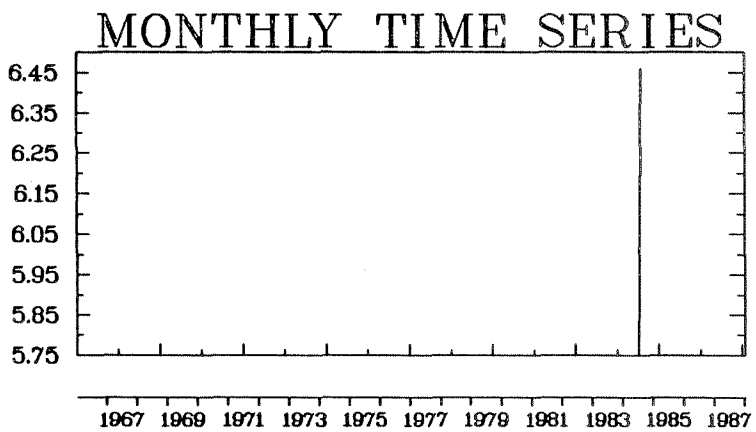
Appendix C. Plots of spatially- and monthly-averaged Unit Area/depth range series, monthly anomalies from the grand monthly mean, the grand monthly means, and the total monthly standard deviation.



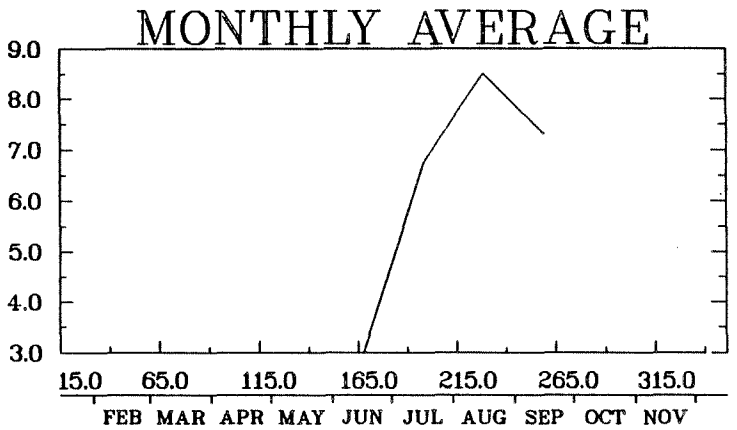
SHALLOW – 2G TEMPERATURE

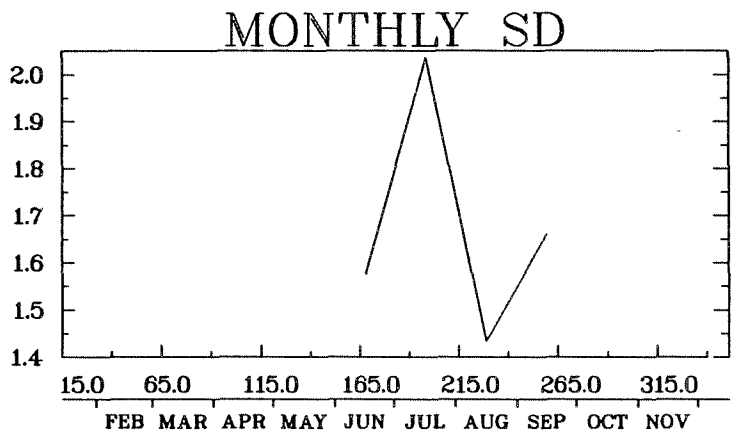


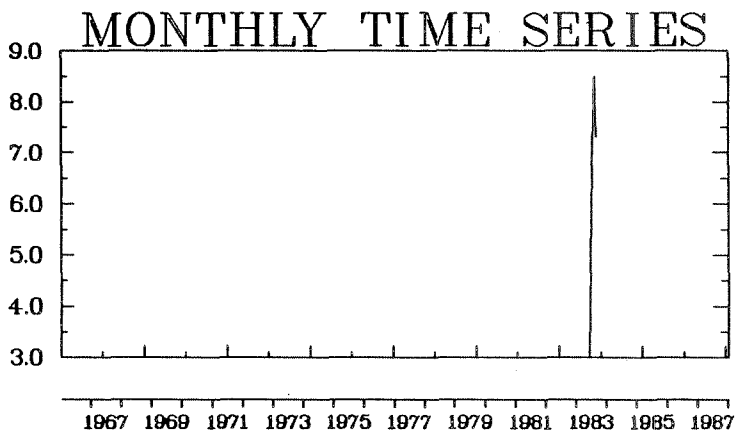




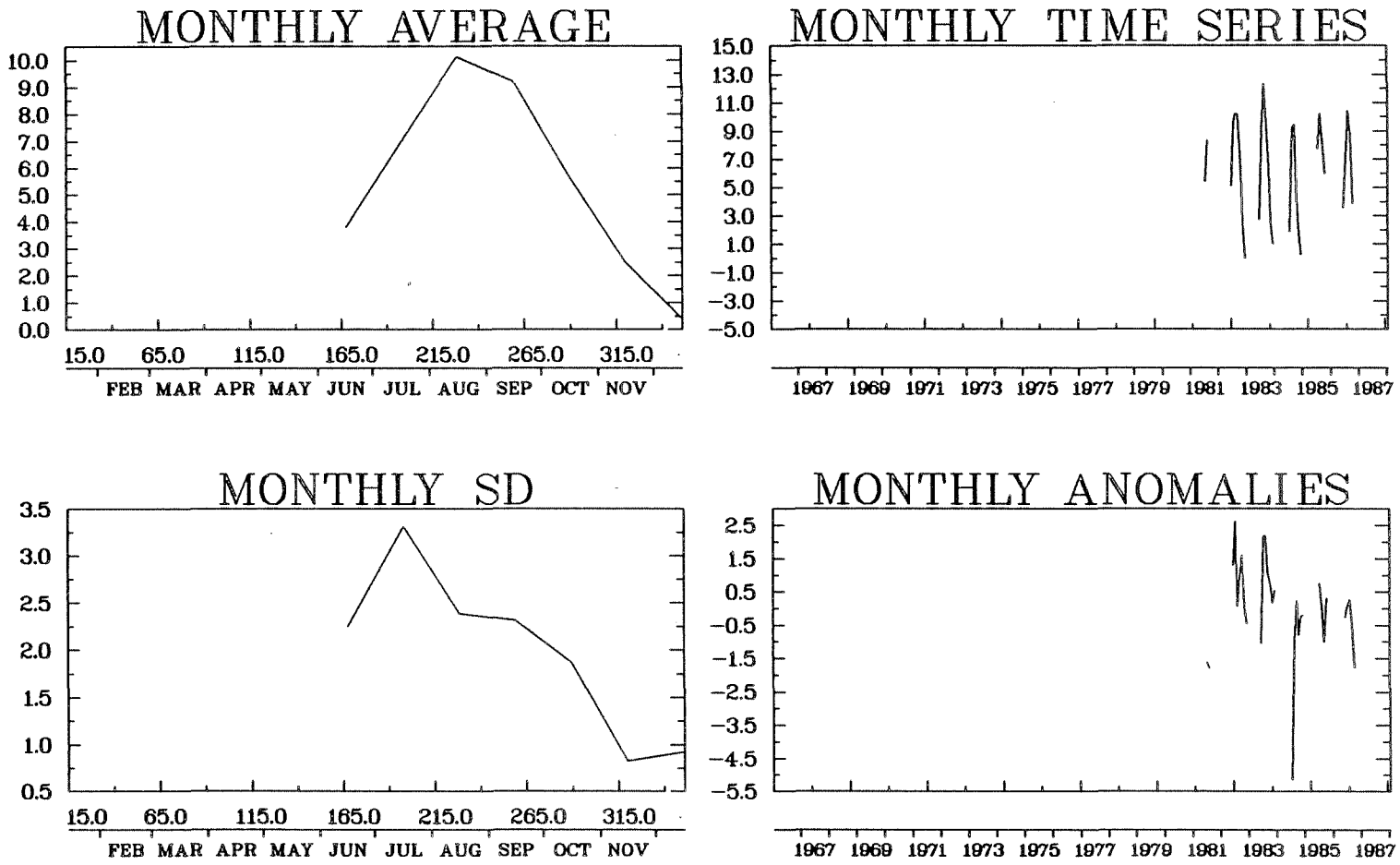
SHALLOW – 2H TEMPERATURE



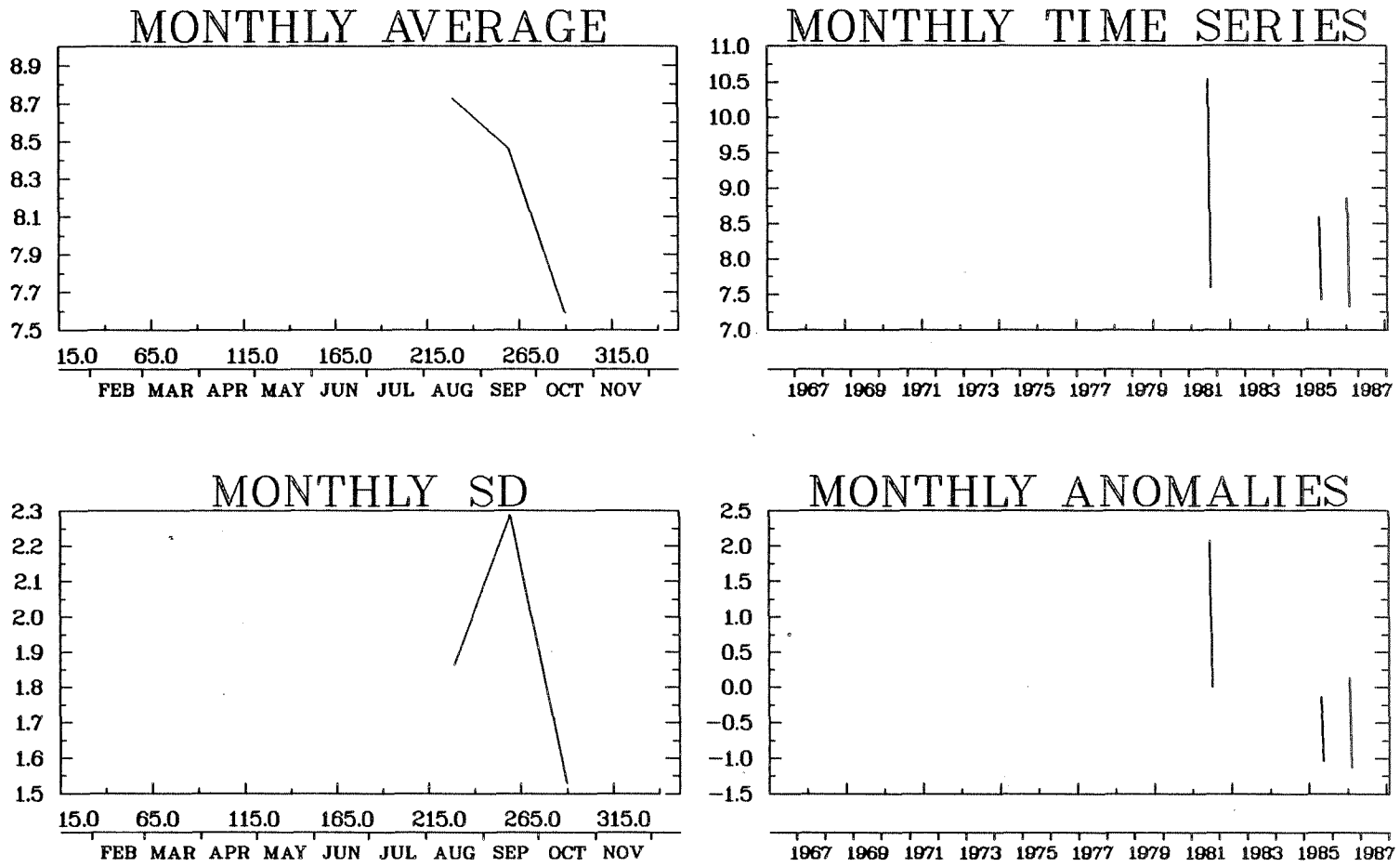




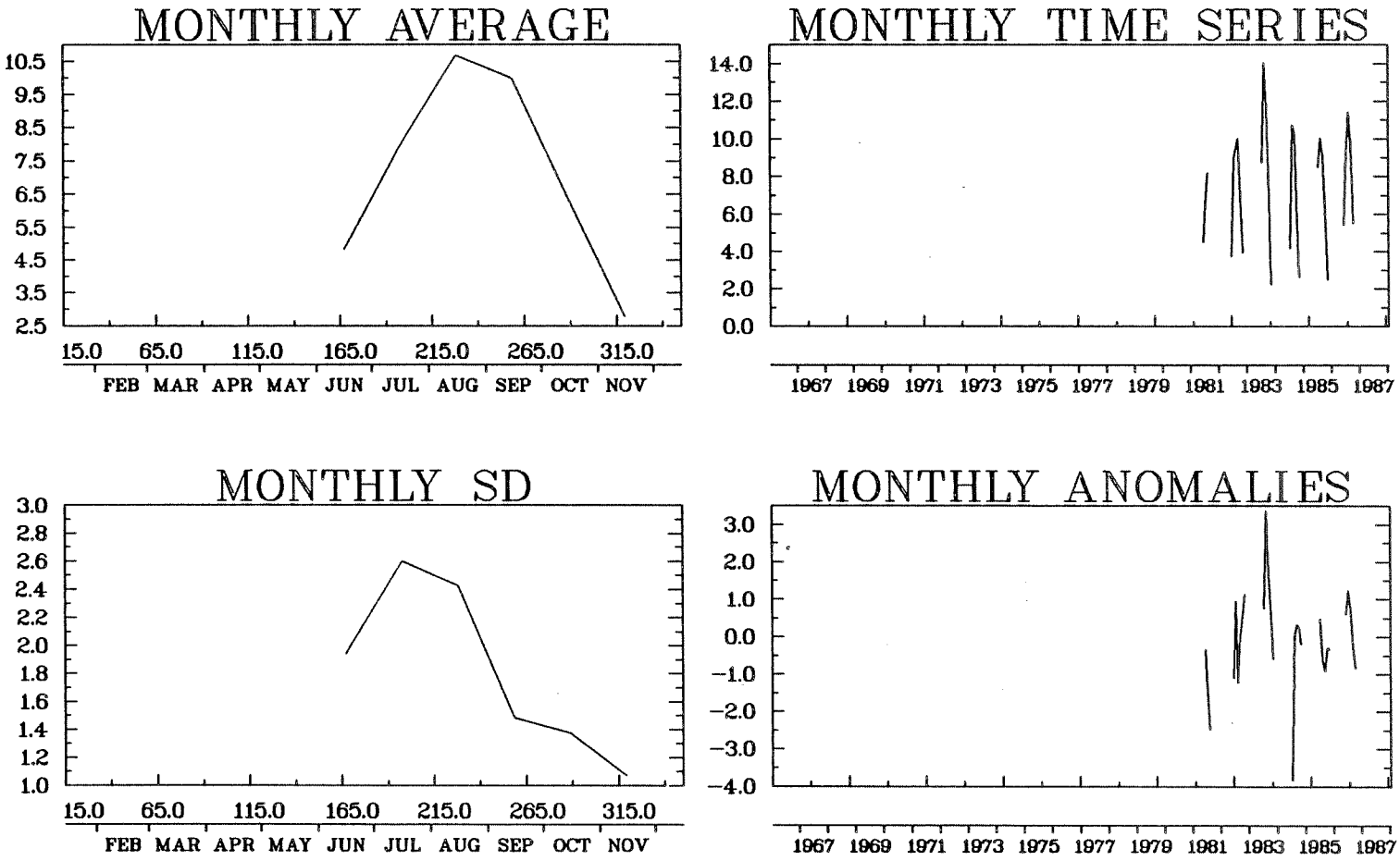
SHALLOW – 2J TEMPERATURE



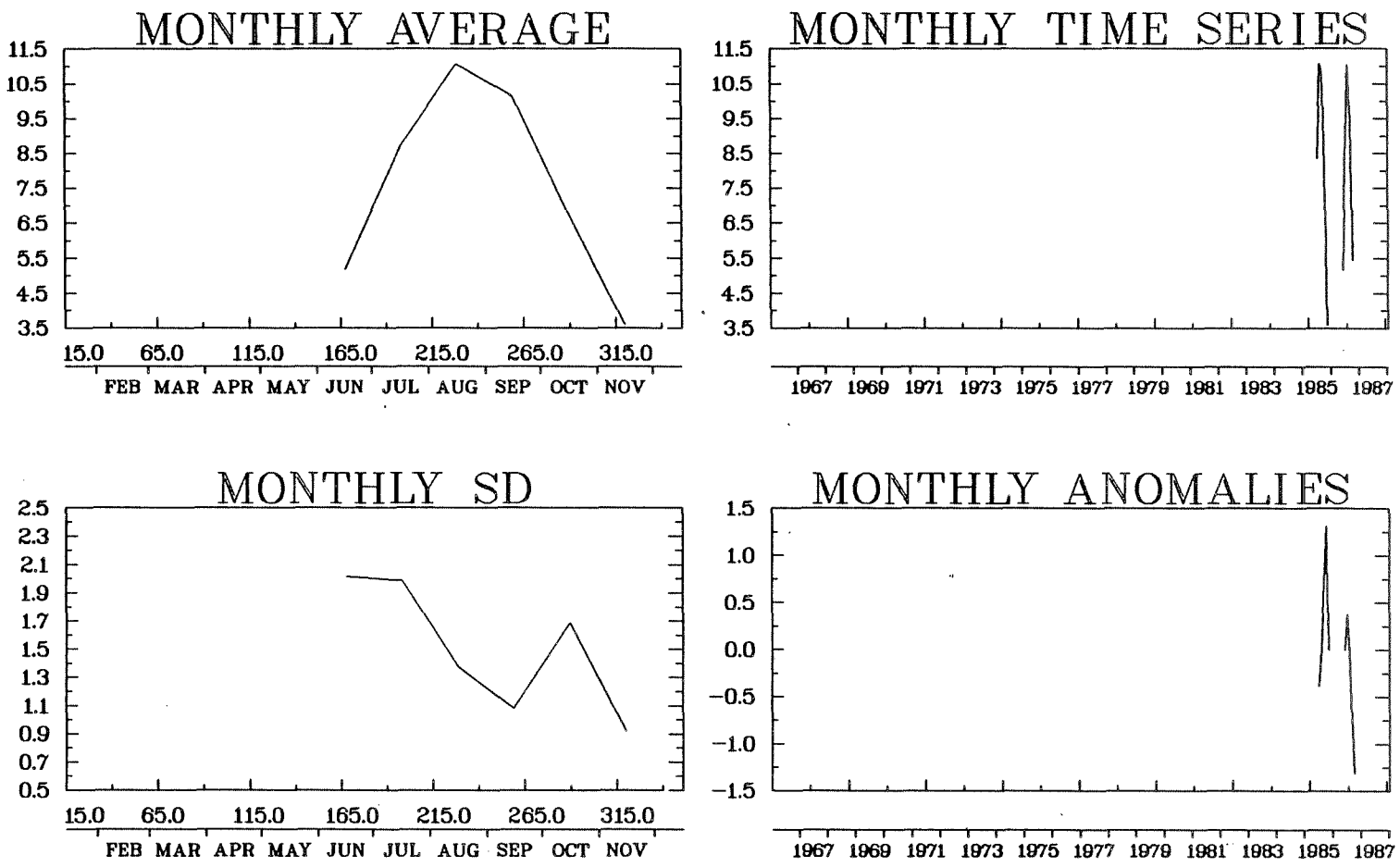
SHALLOW – 3KD TEMPERATURE



DEEP – 3KD TEMPERATURE



SHALLOW – 3KH TEMPERATURE



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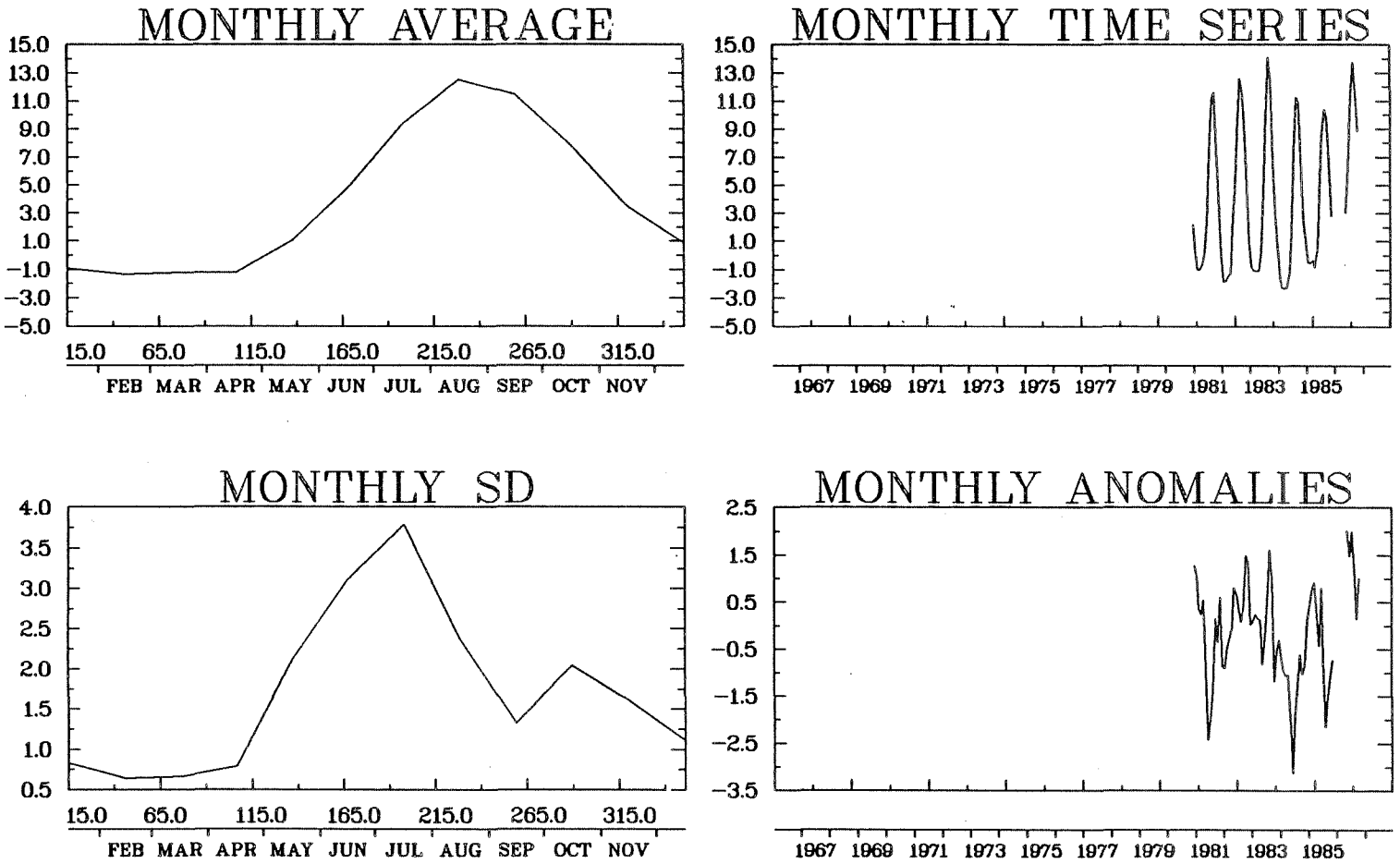
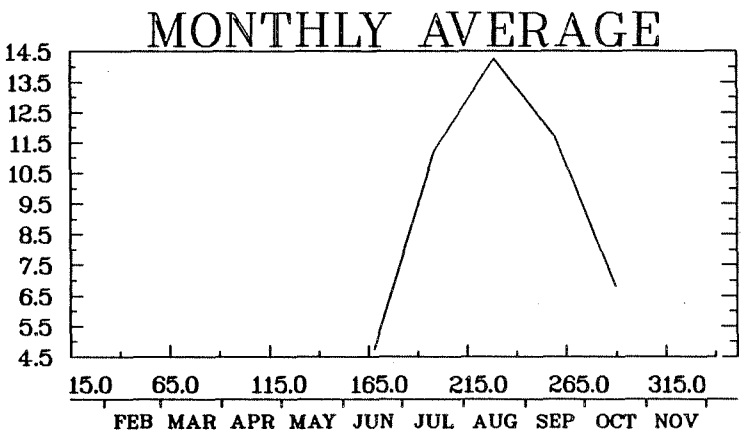
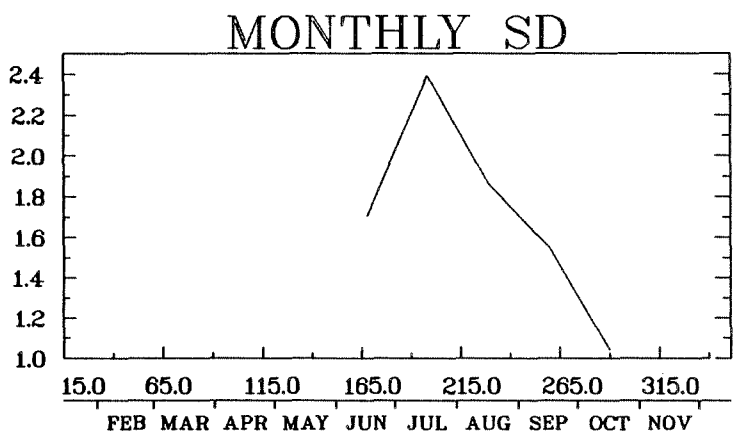
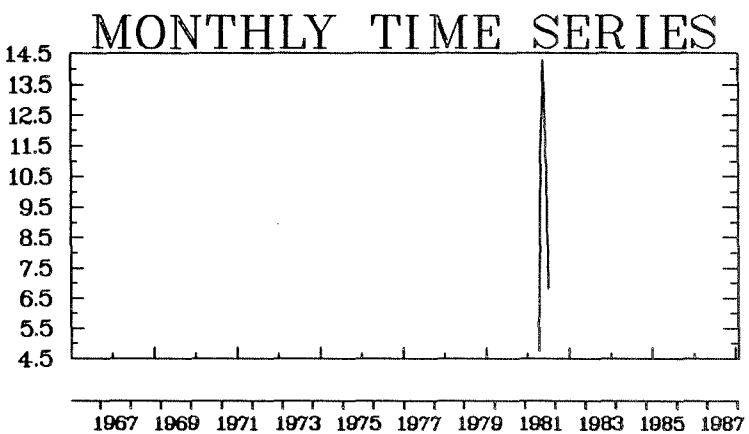


SHALLOW − 3KI TEMPERATURE







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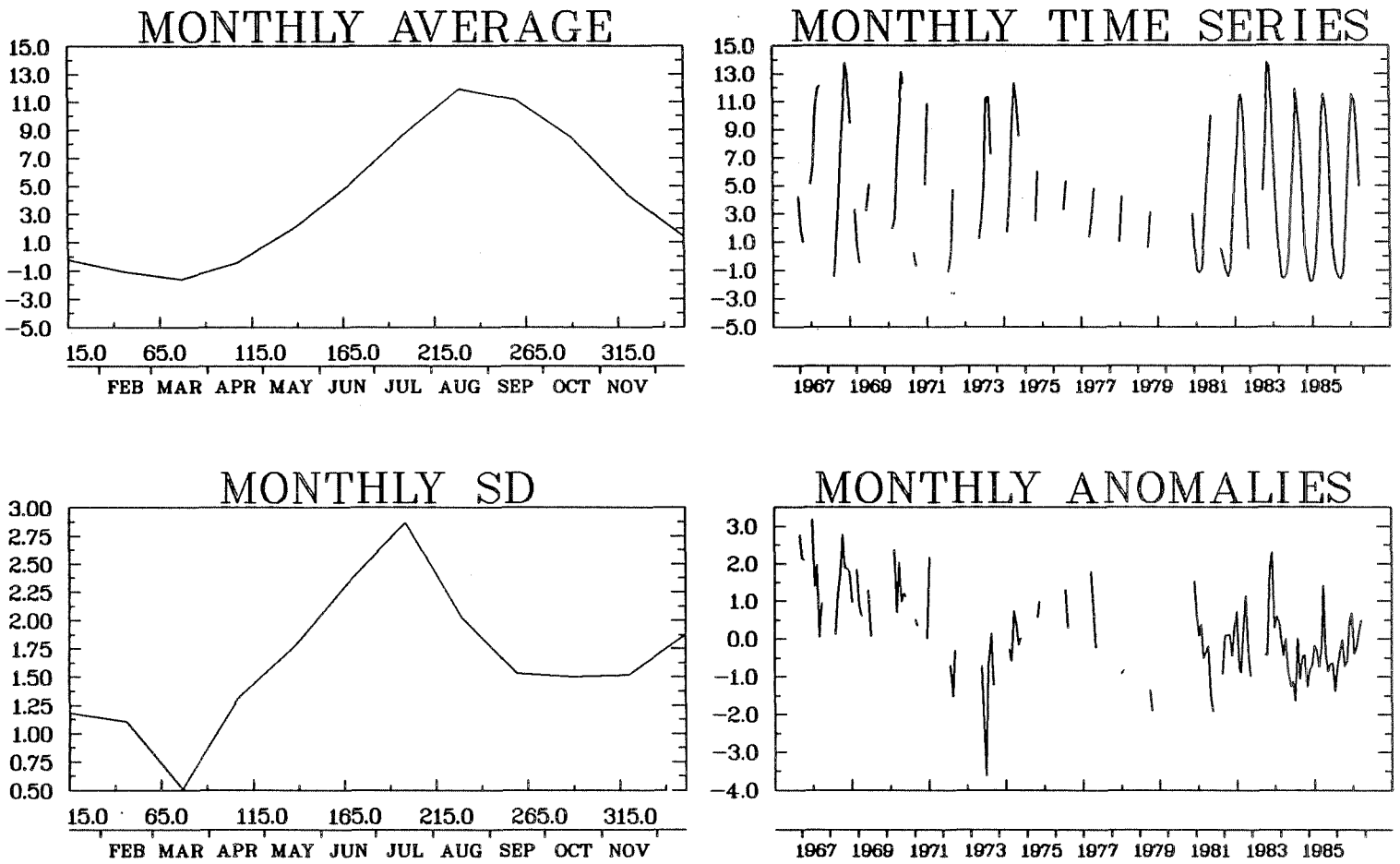
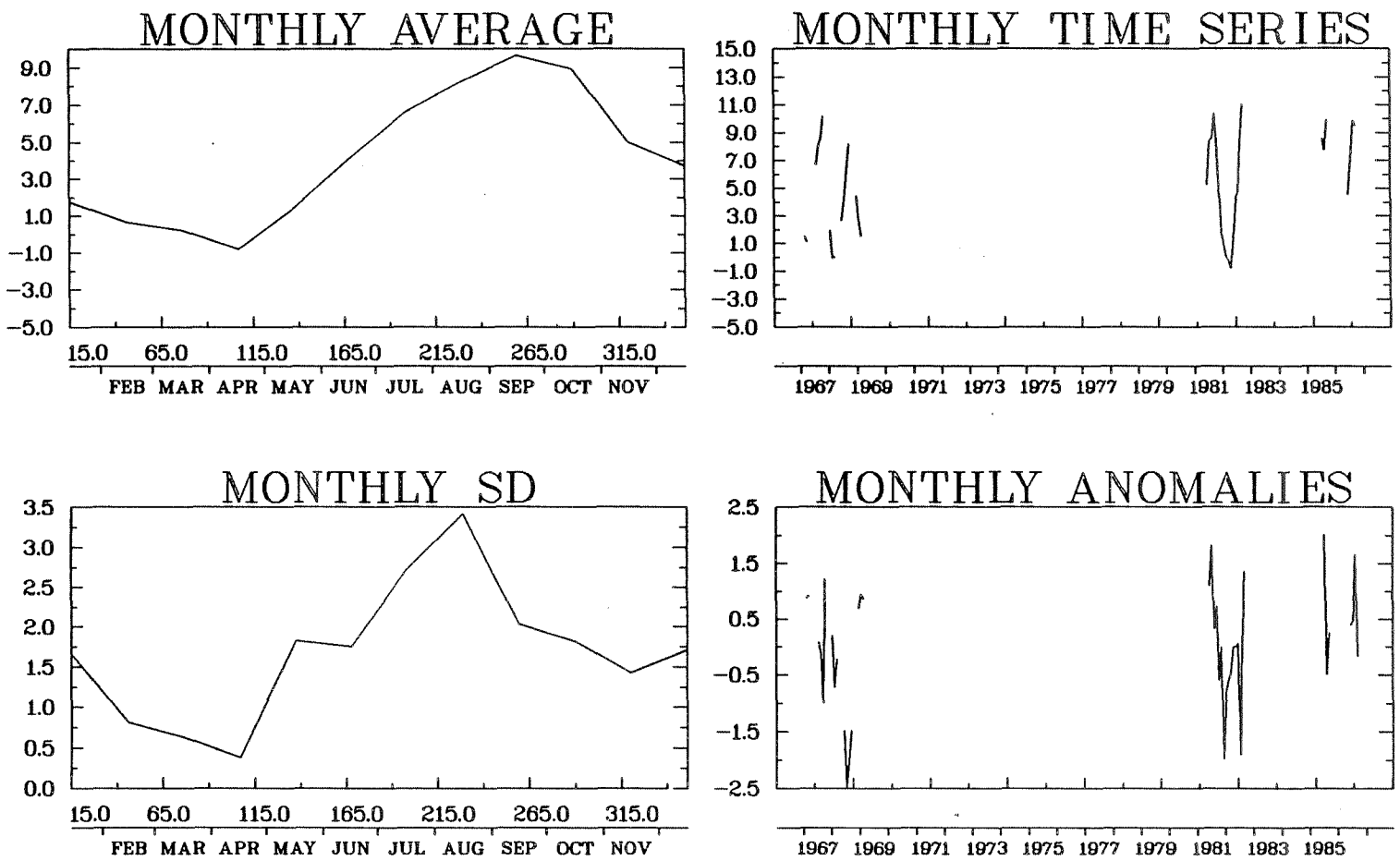


SHALLOW – 3LA TEMPERATURE



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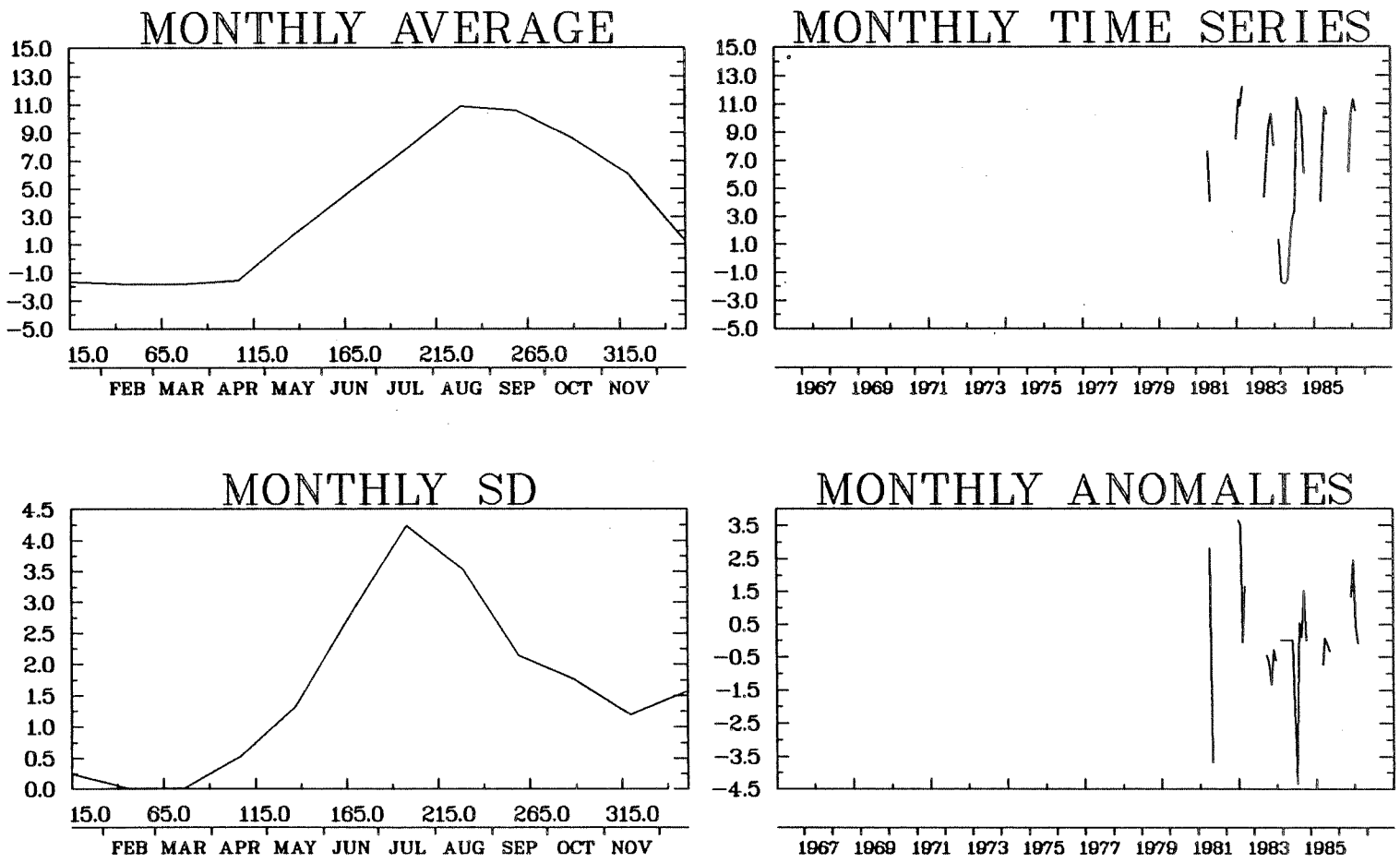
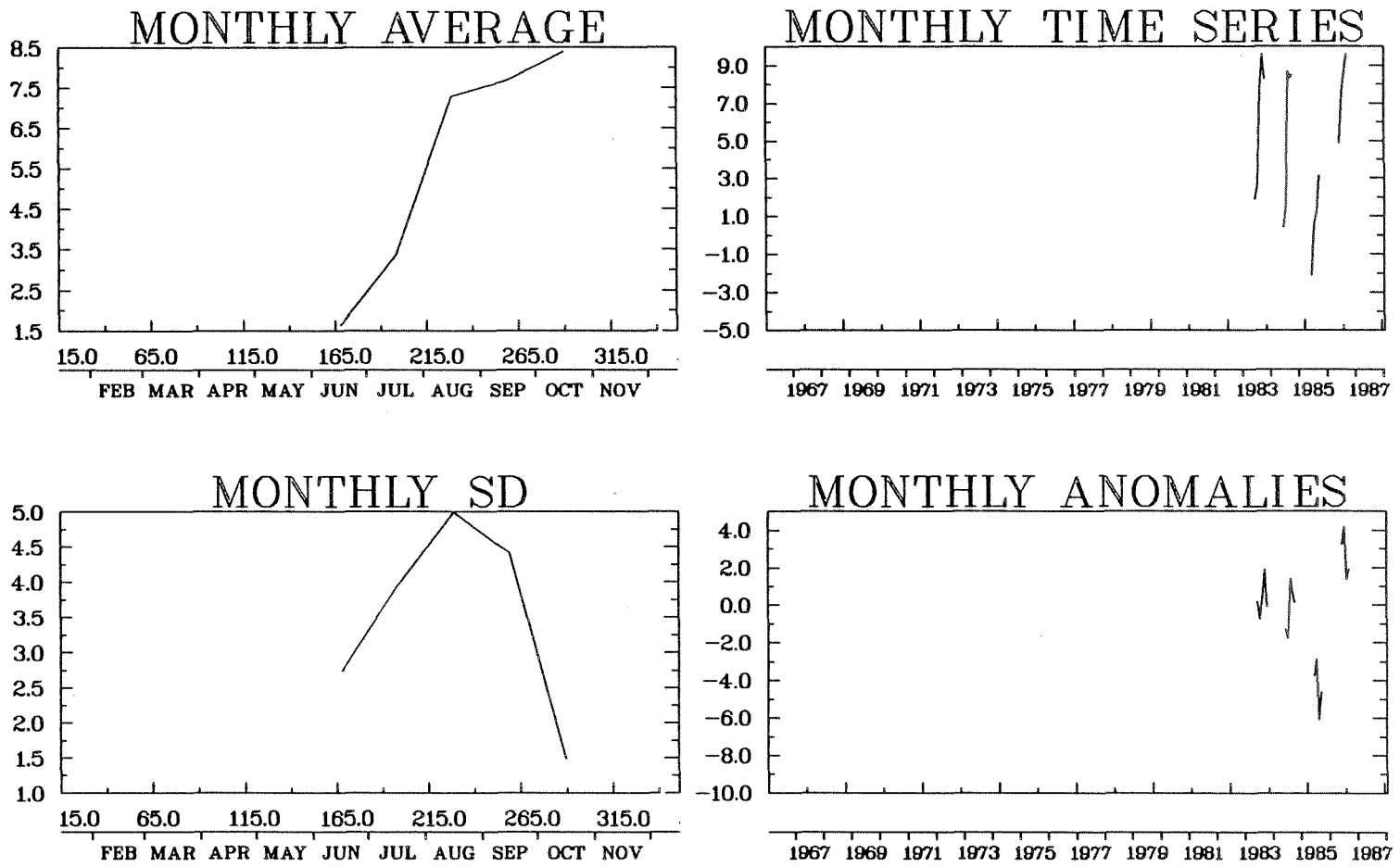


SHALLOW – 3LB TEMPERATURE



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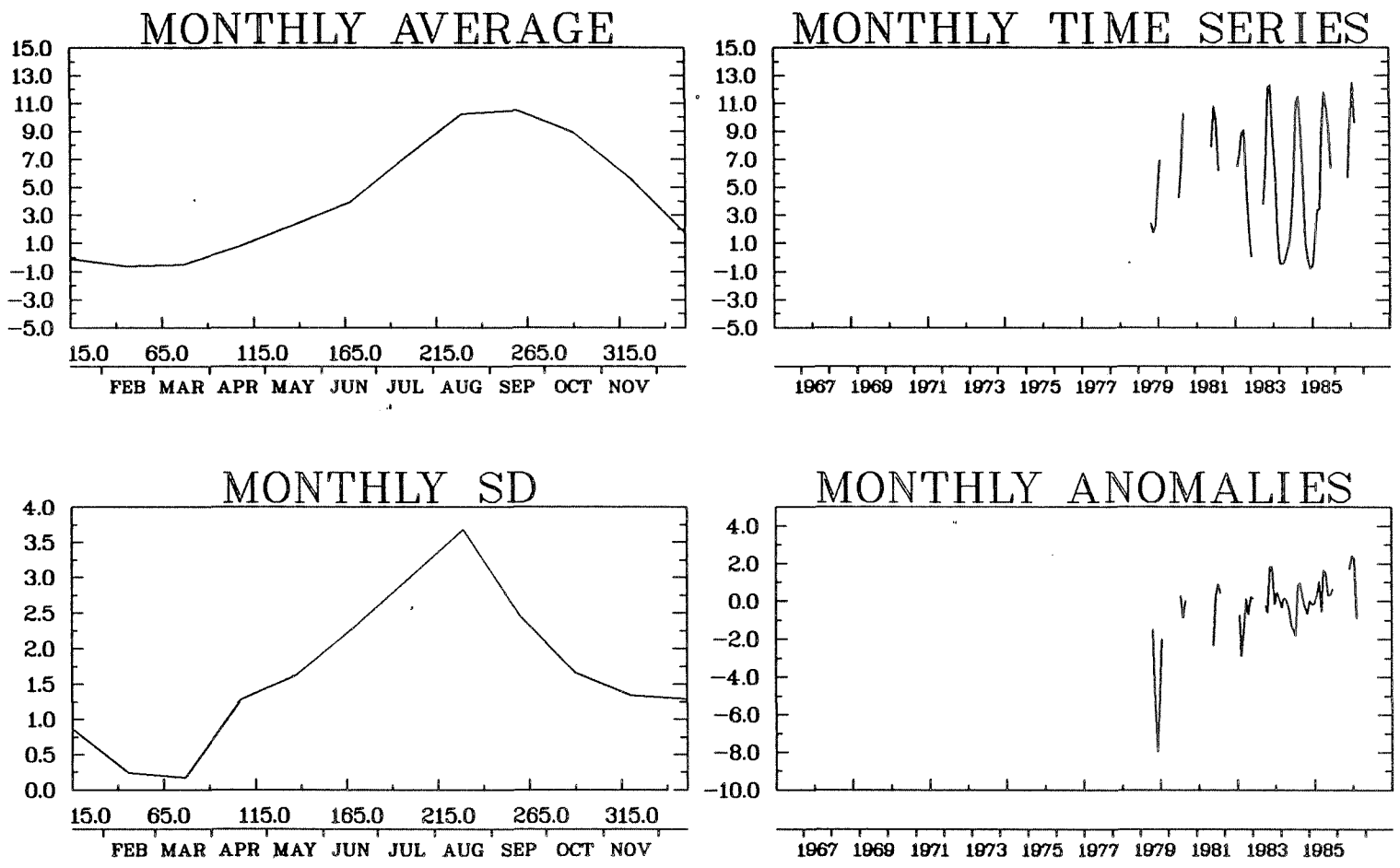
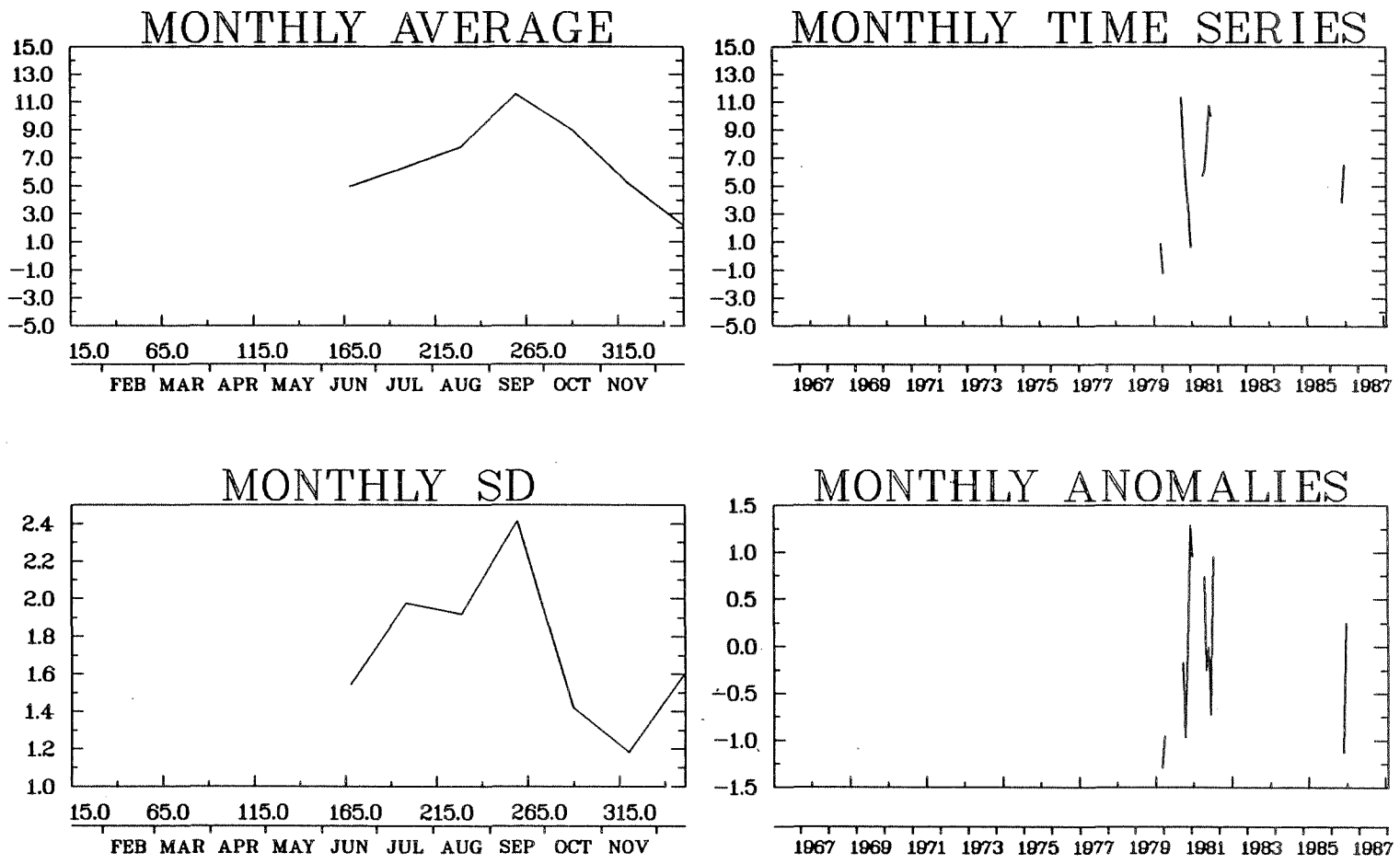
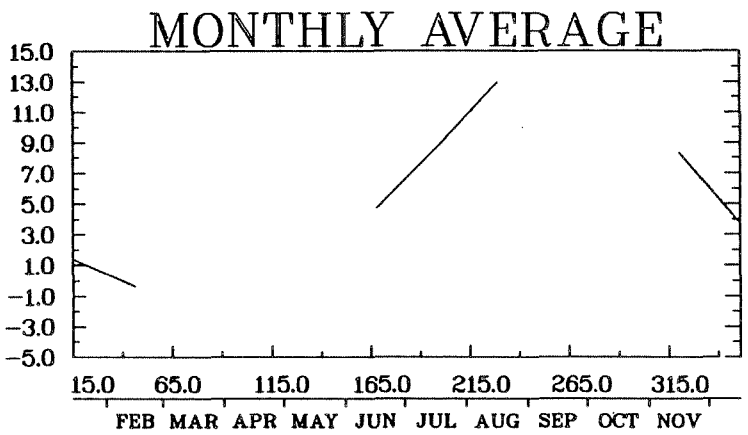
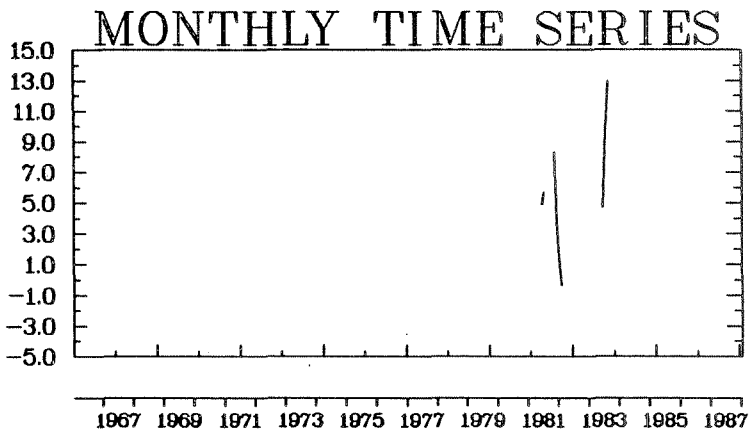


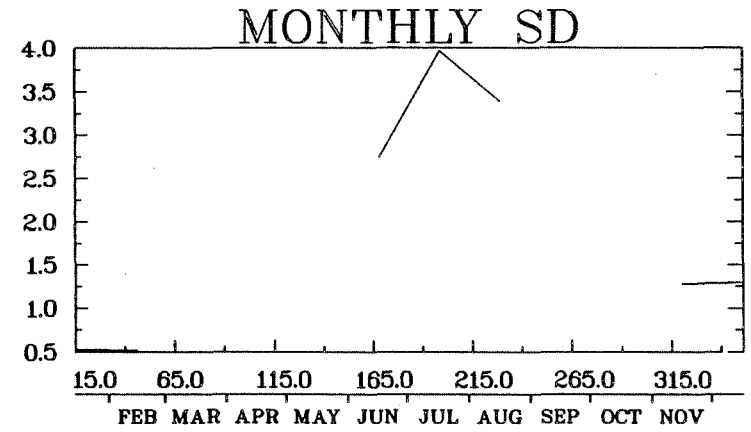
SHALLOW − 3LF TEMPERATURE

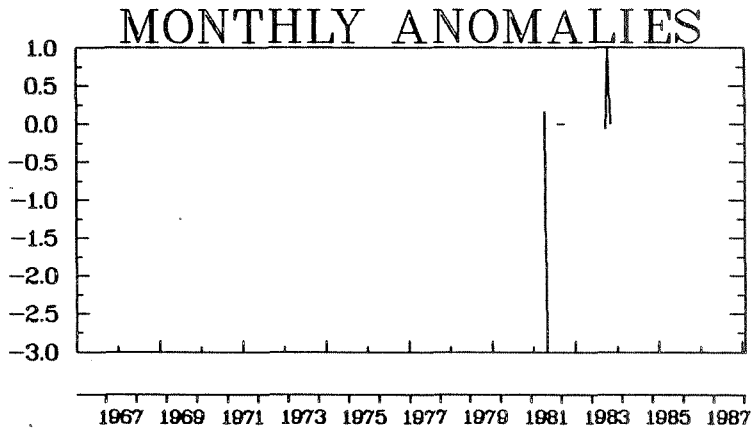


DEEP – 3LF TEMPERATURE

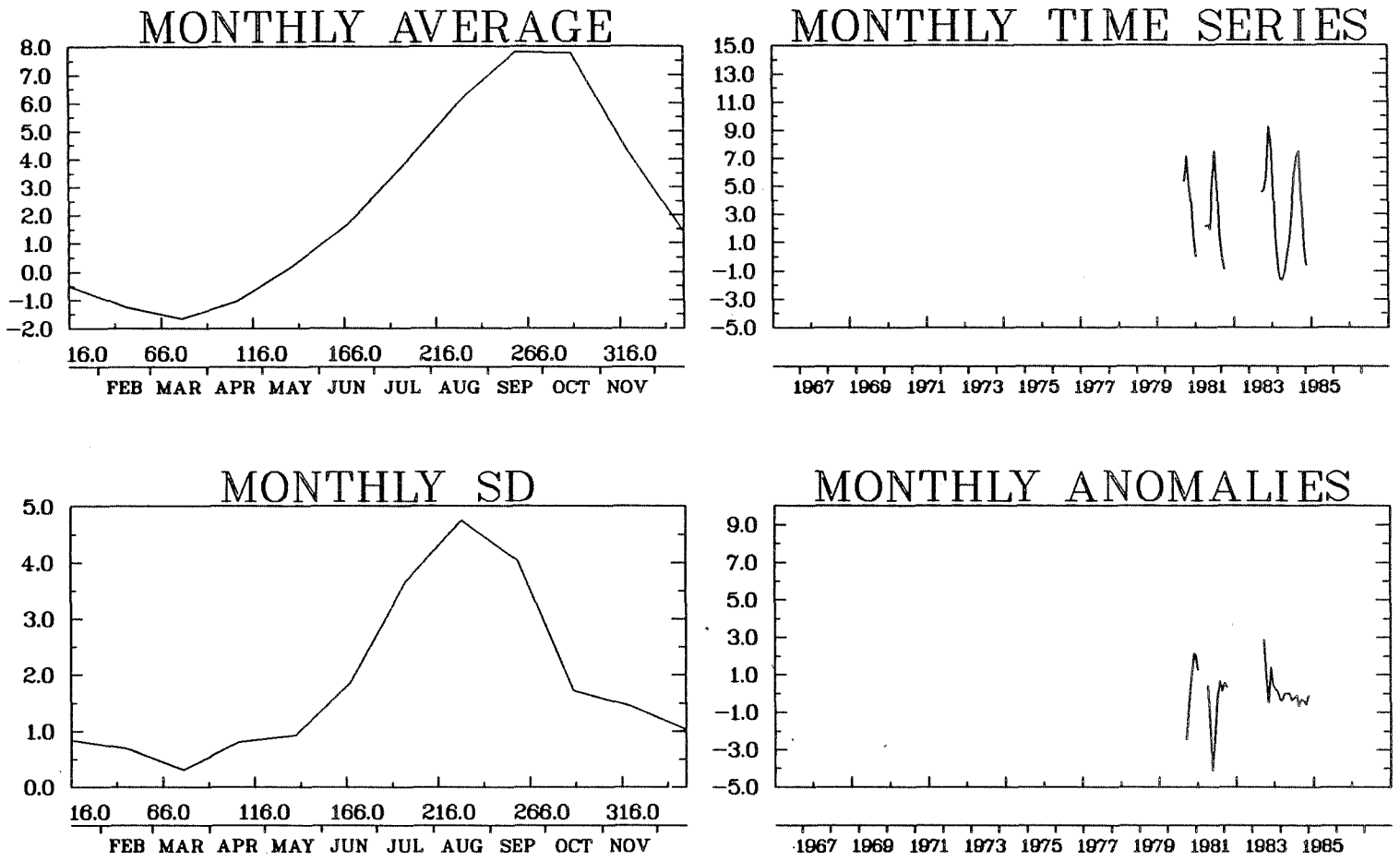




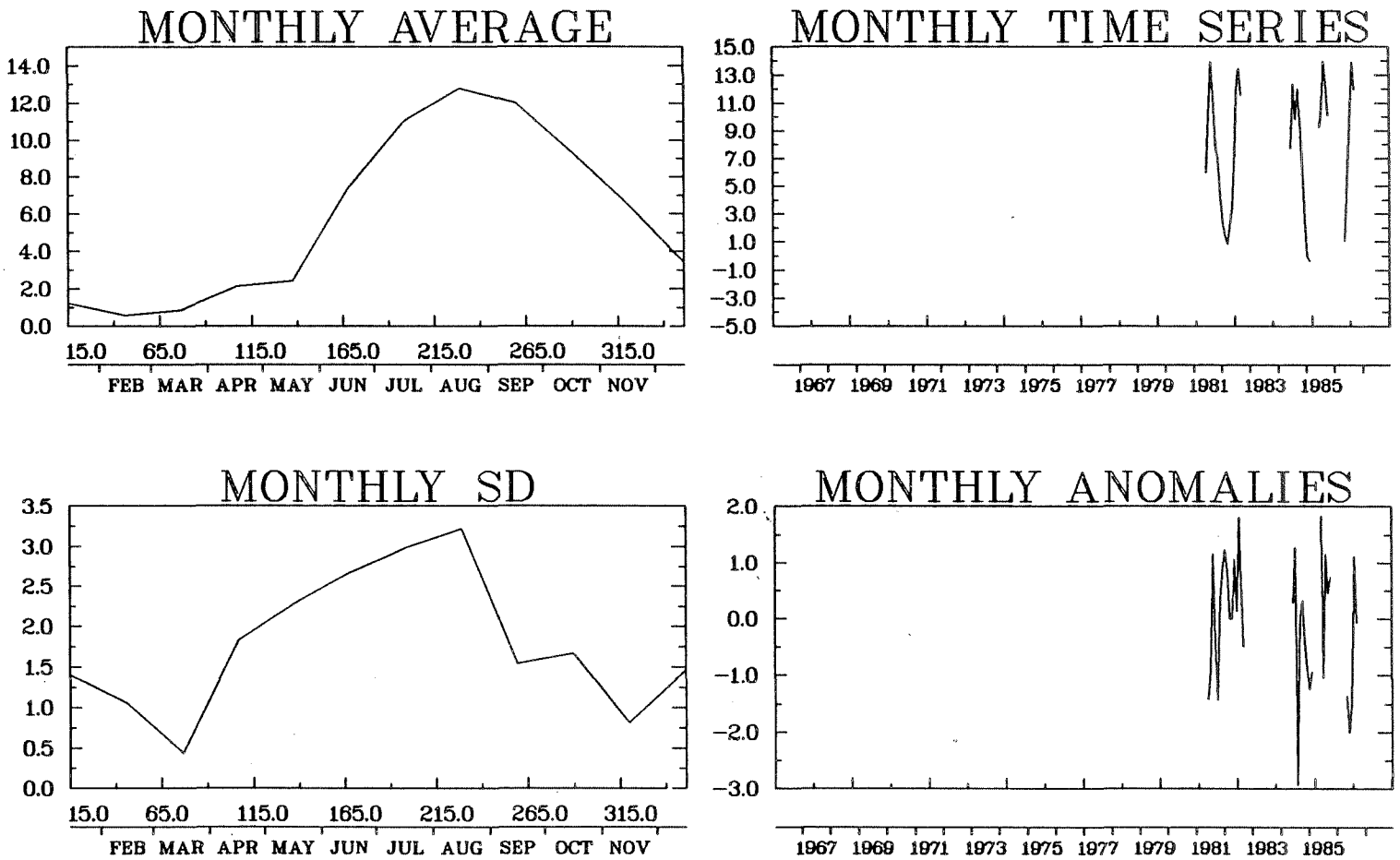




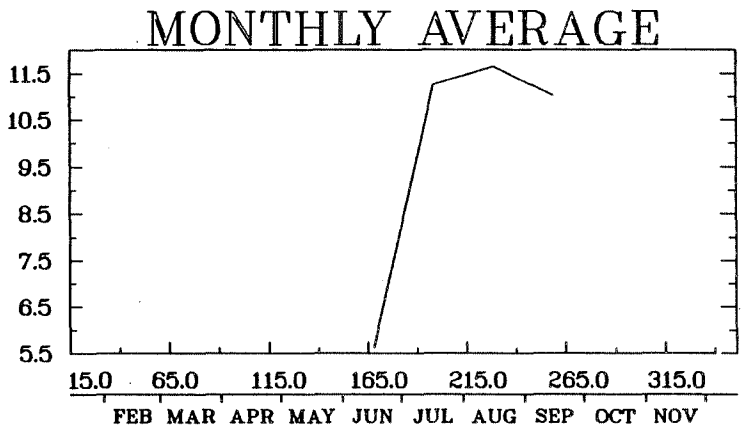
SHALLOW − 3LJ TEMPERATURE

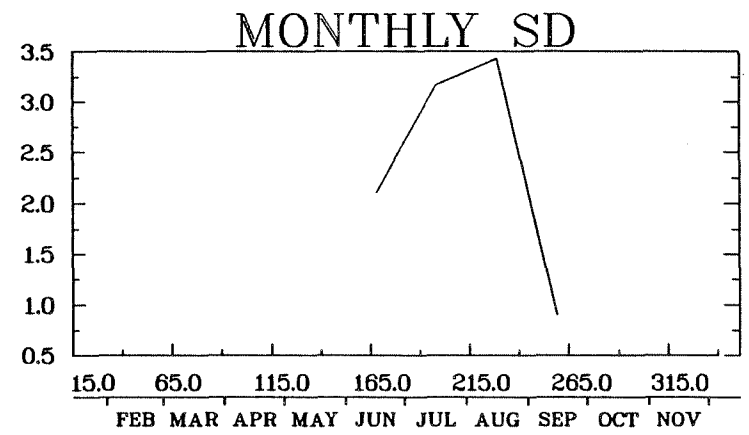


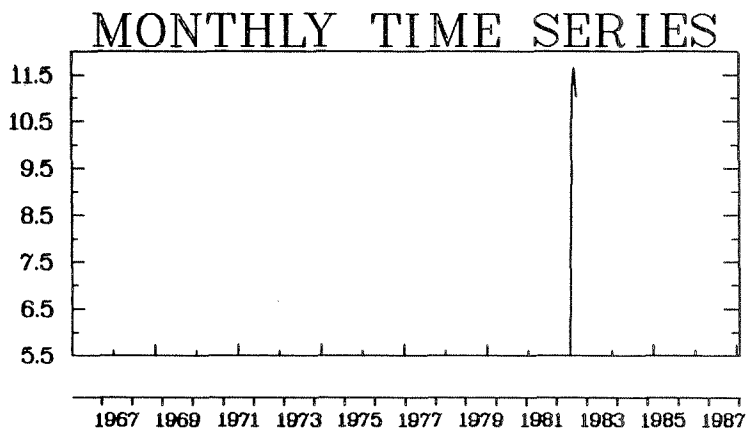
DEEP – 3LJ TEMPERATURE



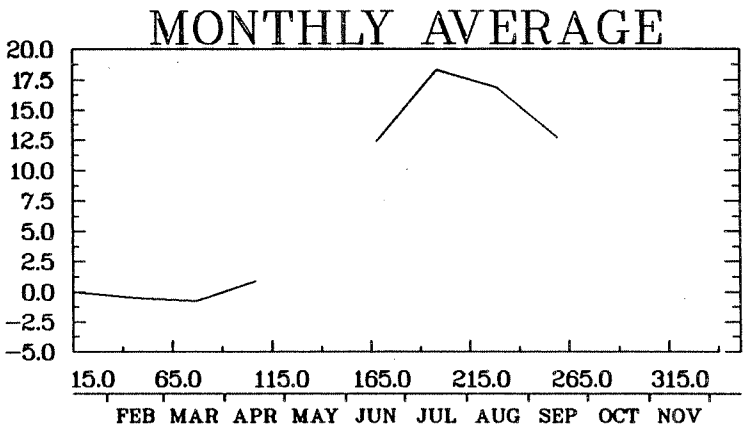
SHALLOW – 3LQ TEMPERATURE

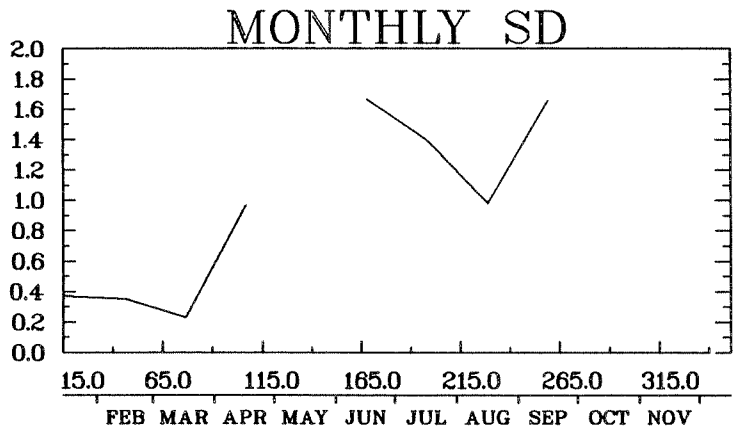


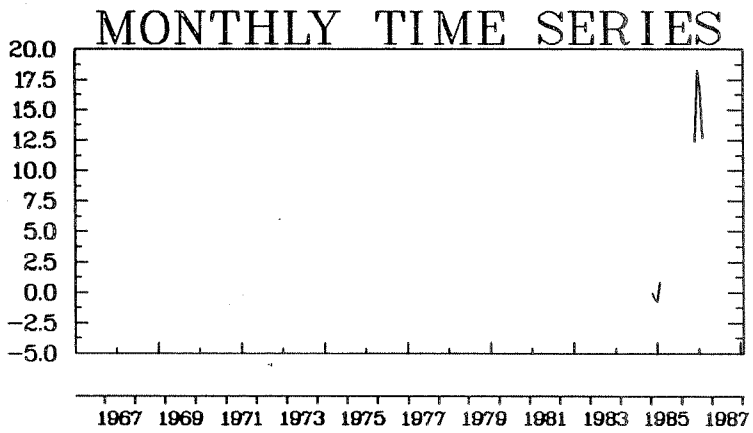




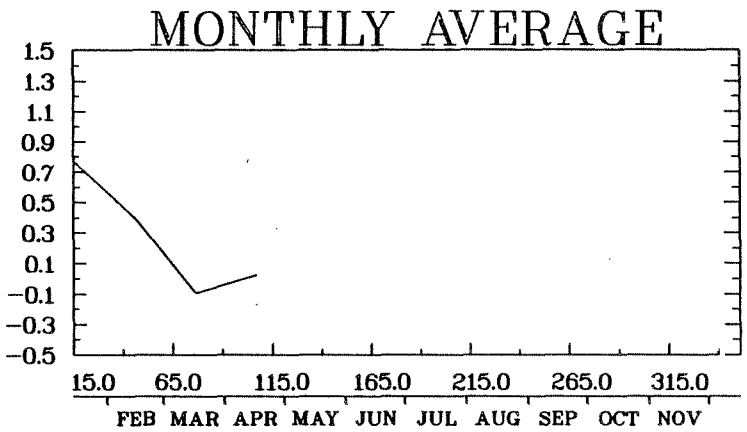
DEEP – 3LQ TEMPERATURE

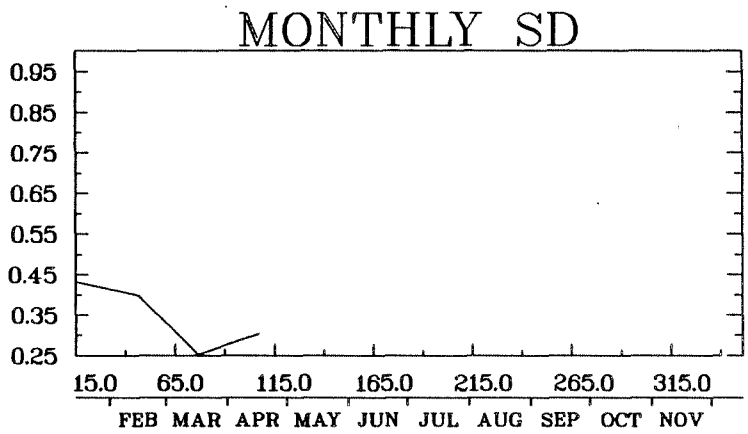


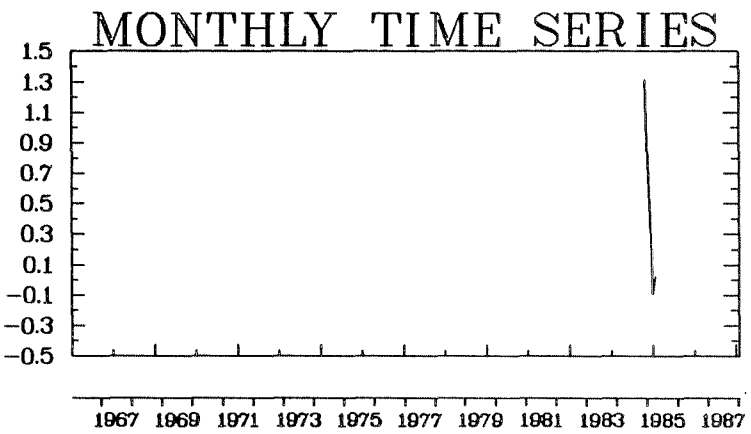




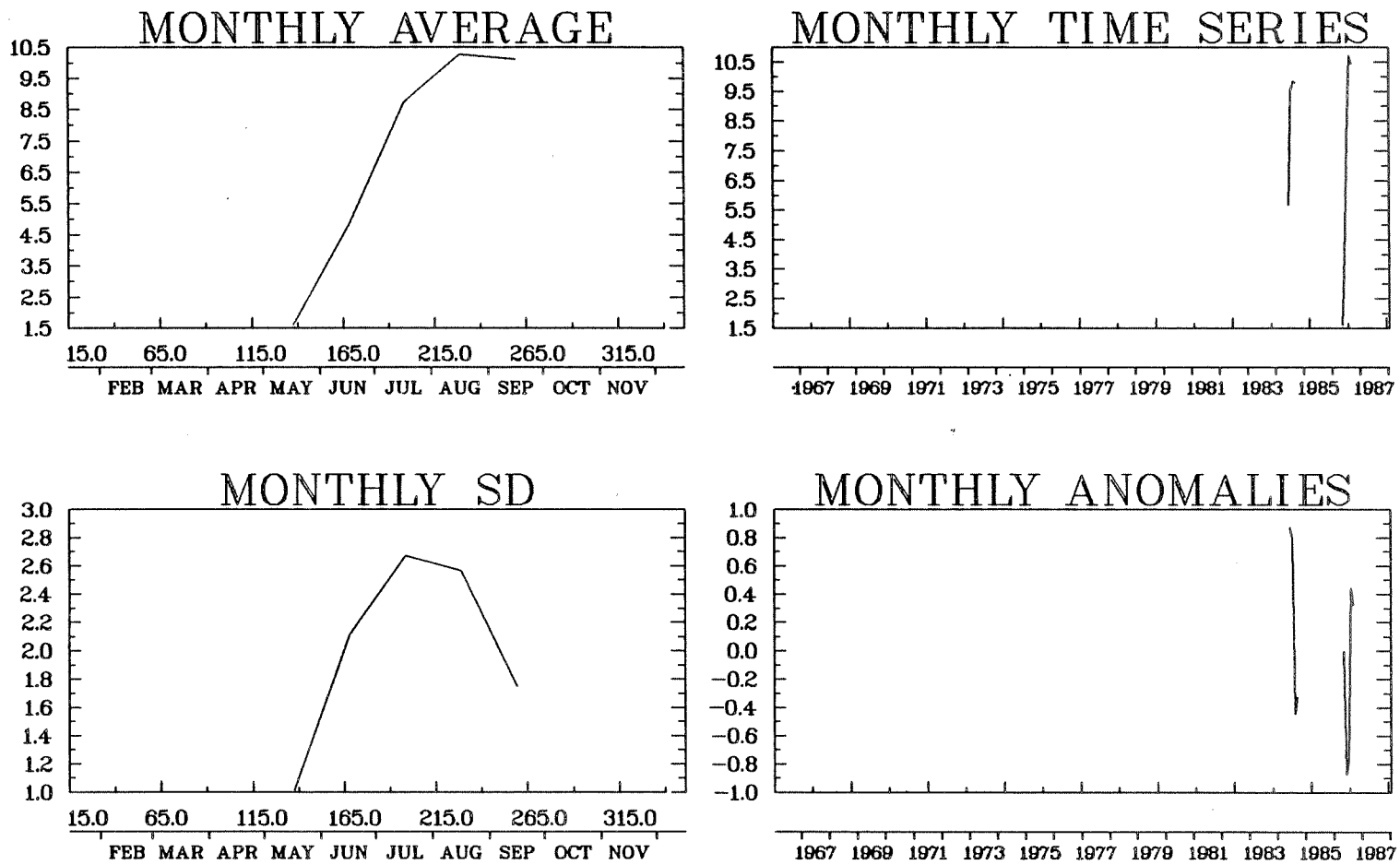
SHALLOW – 3PN TEMPERATURE



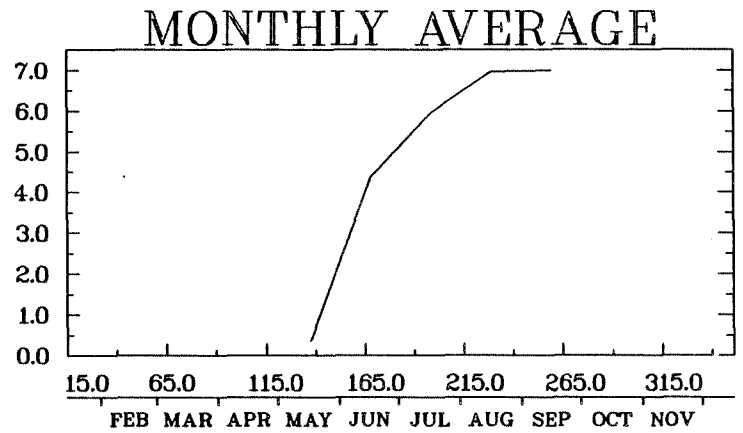


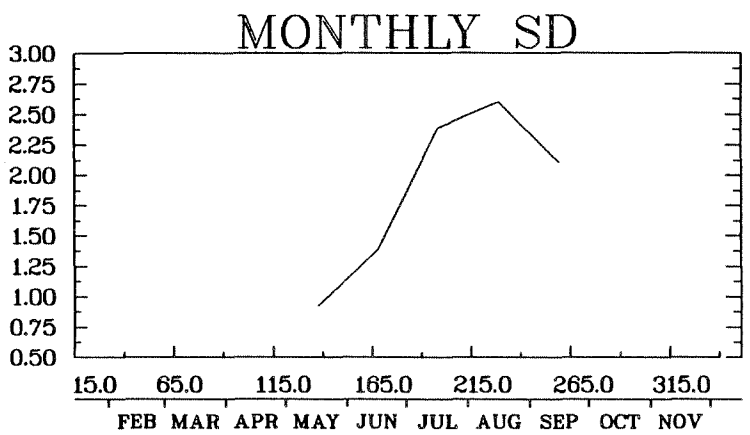


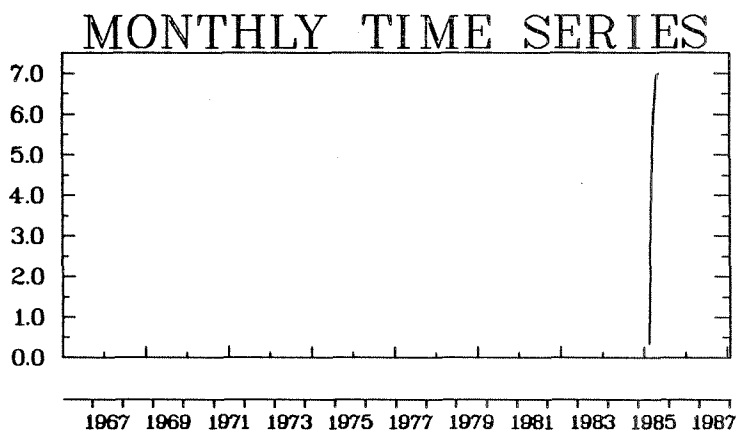
SHALLOW − 3PSA TEMPERATURE



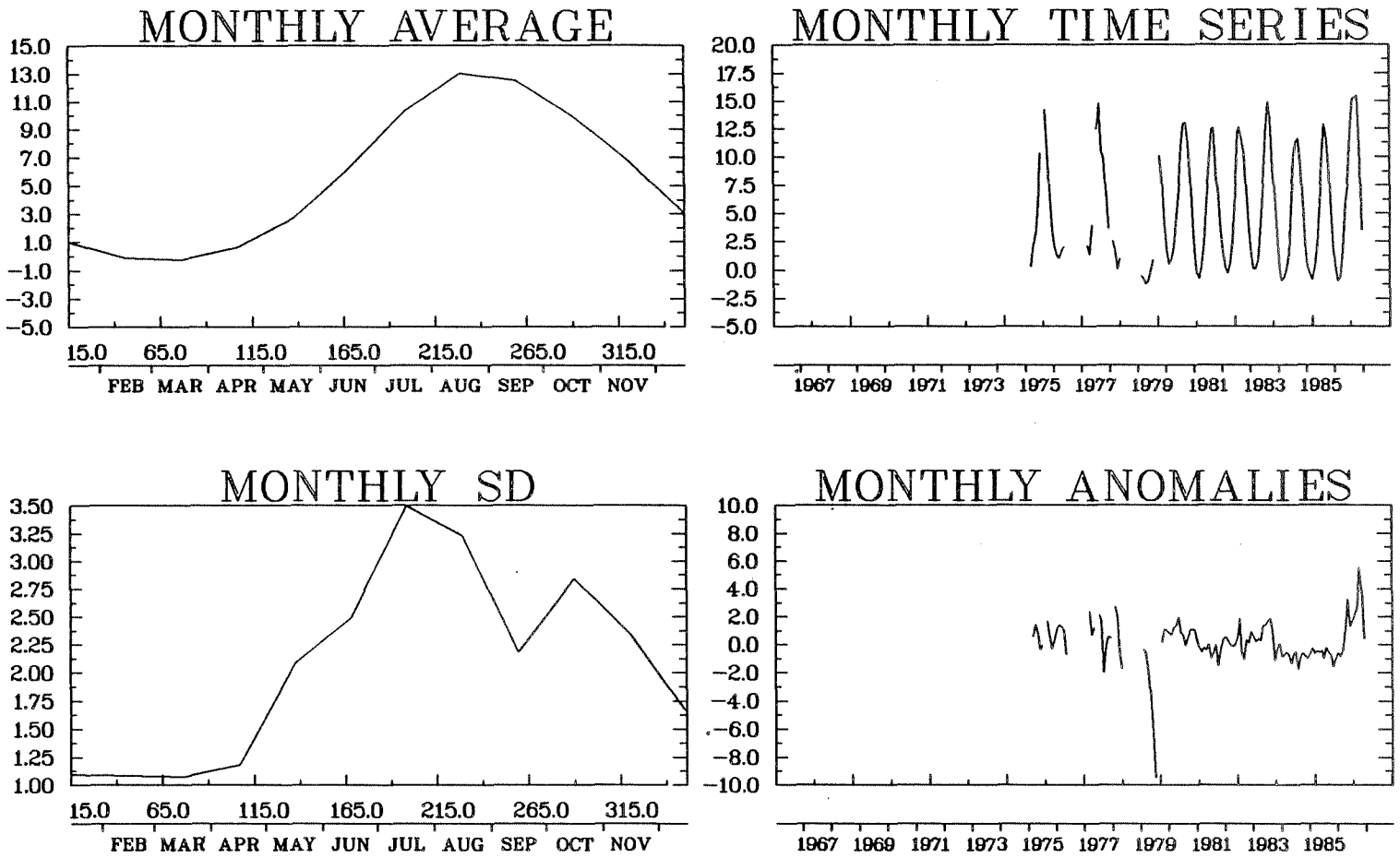
SHALLOW – 3PSB TEMPERATURE



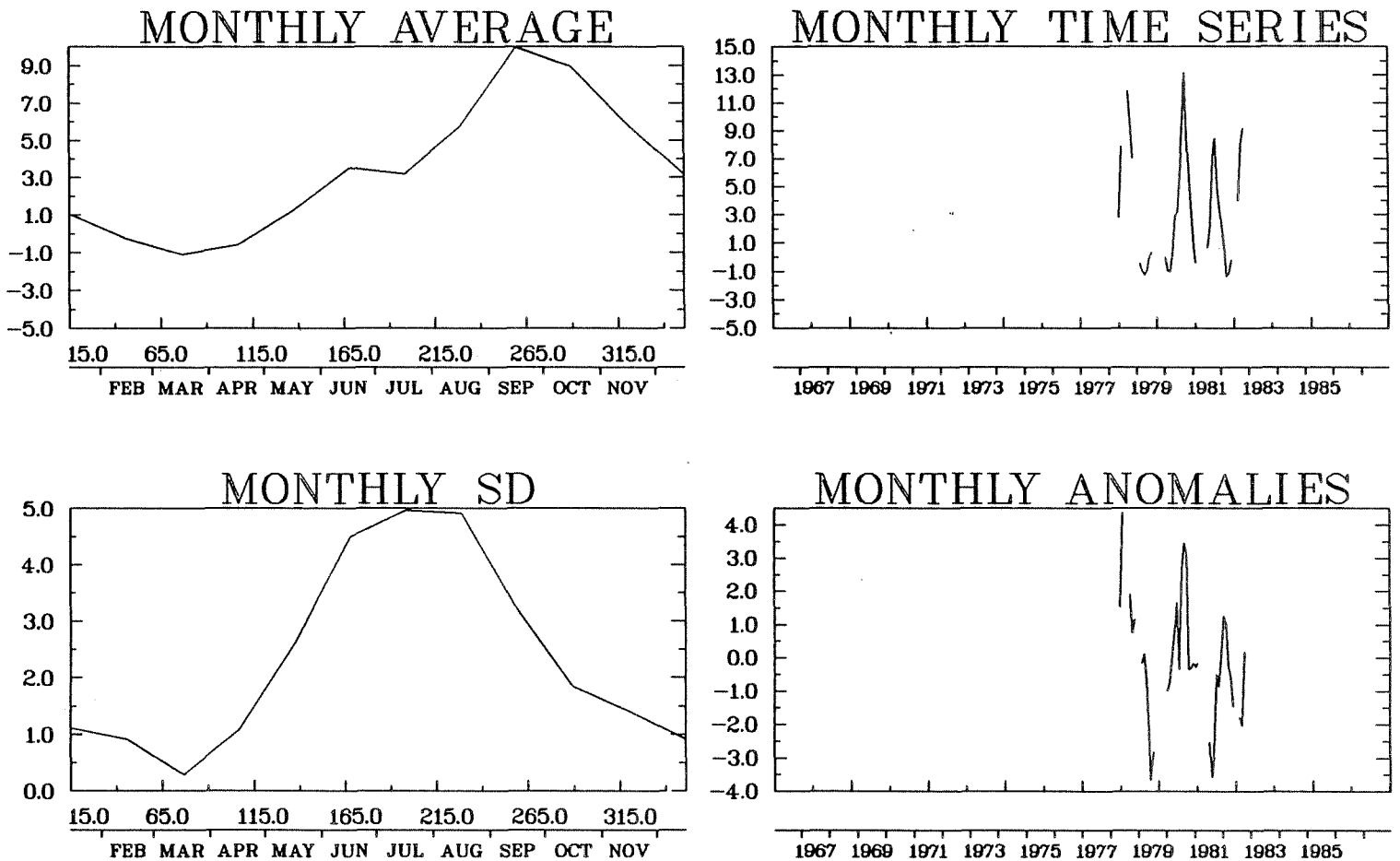




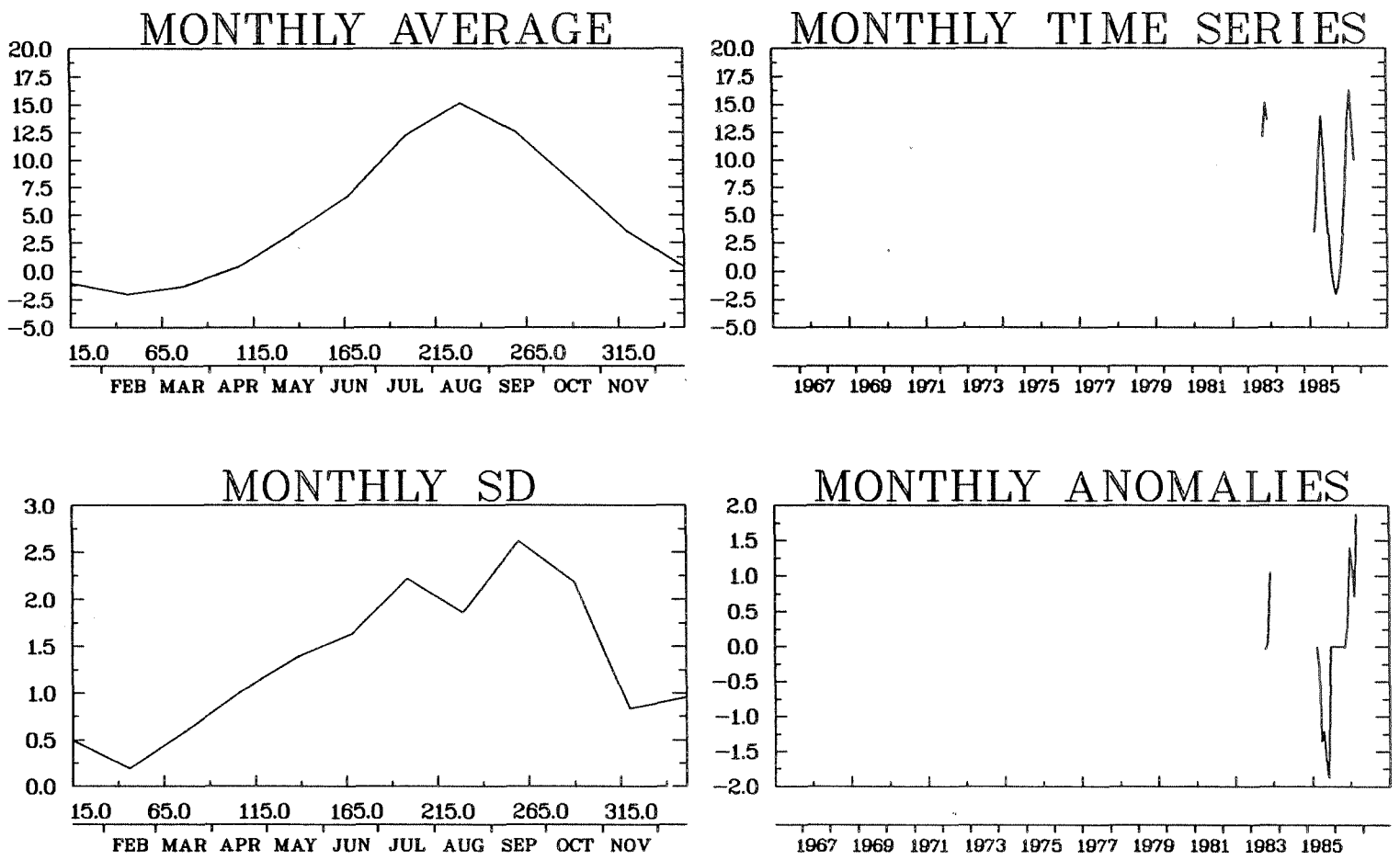
DEEP – 3PSB TEMPERATURE



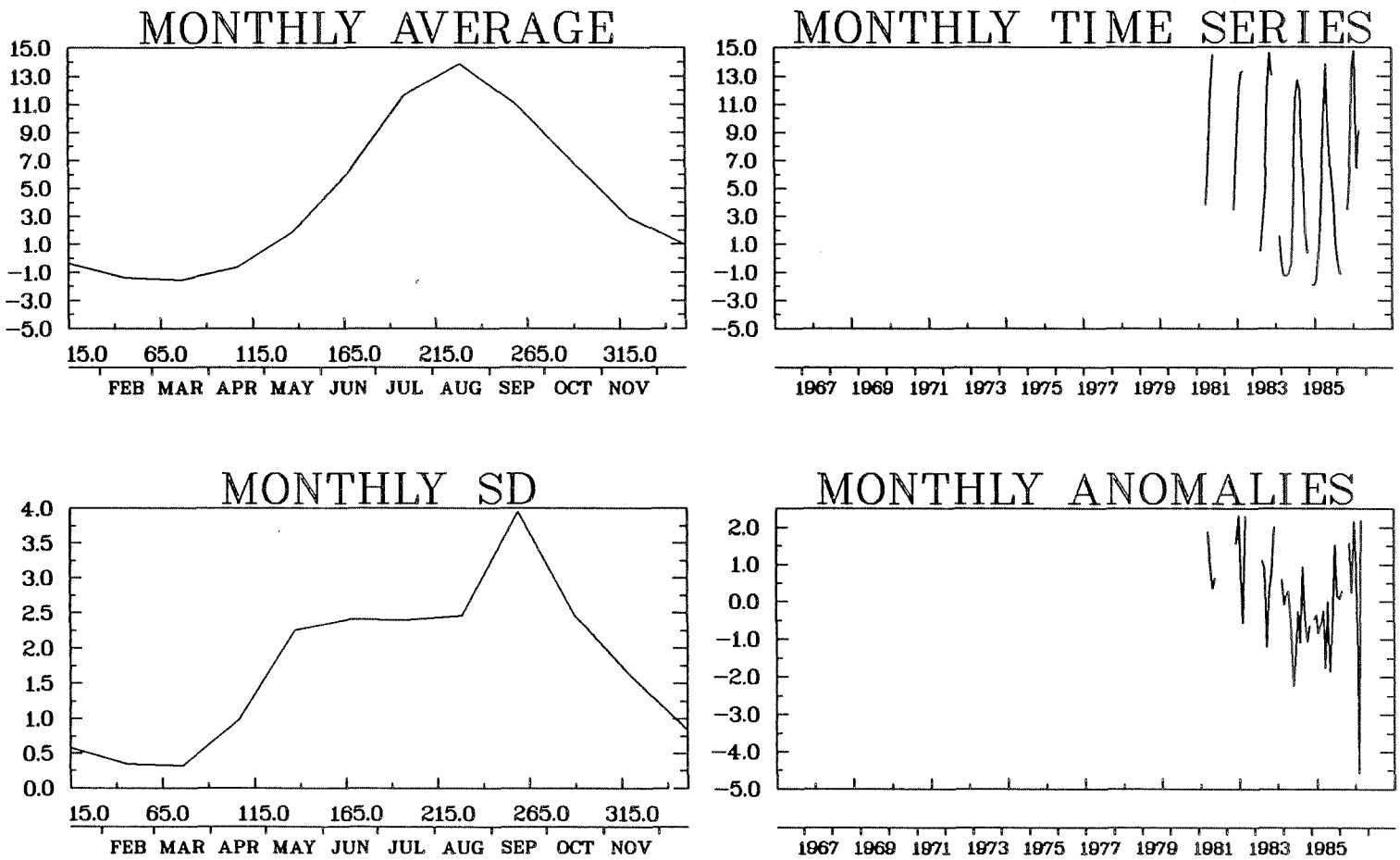
SHALLOW – 3PSC TEMPERATURE



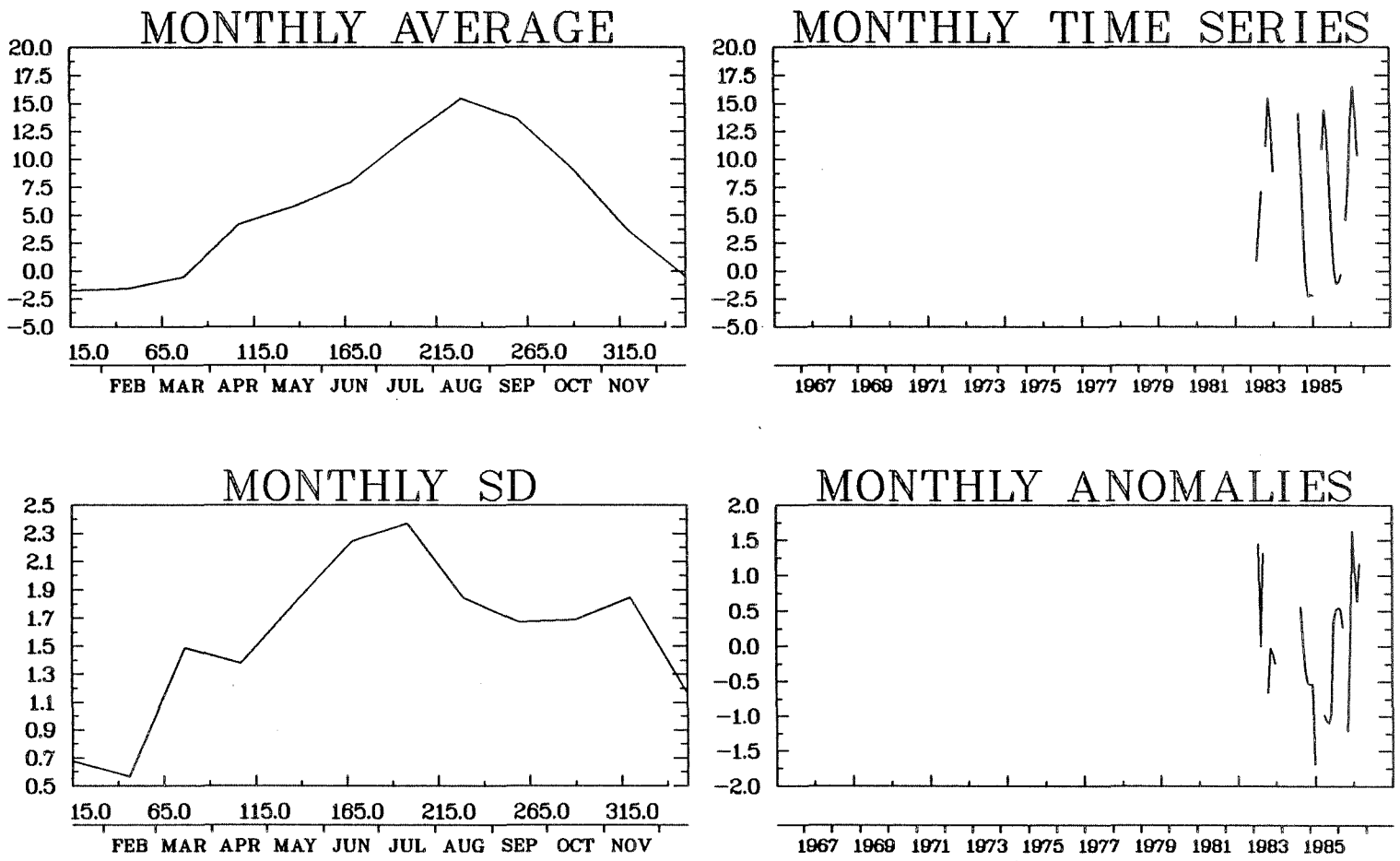
DEEP – 3PSC TEMPERATURE



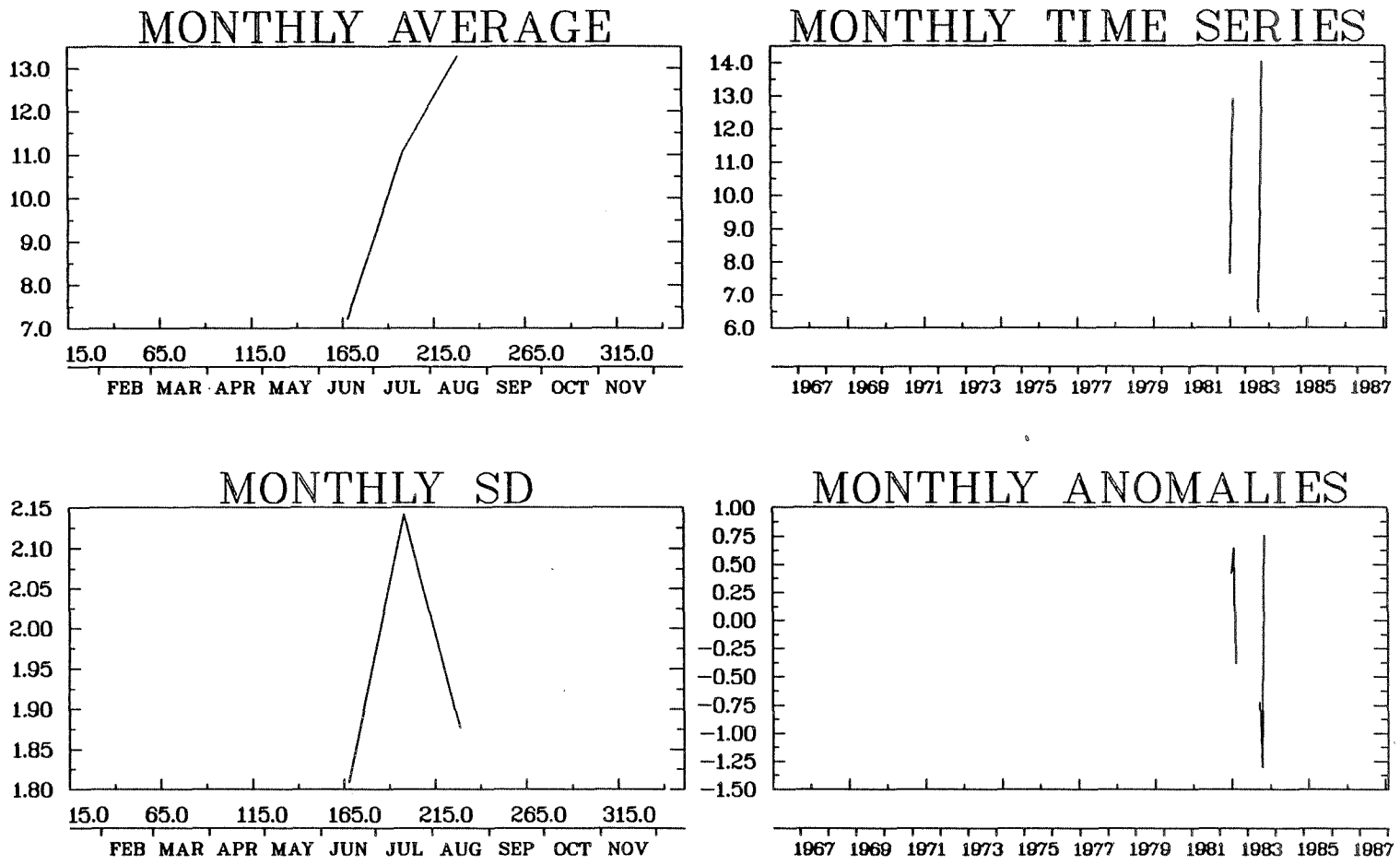
SHALLOW – 4RB TEMPERATURE



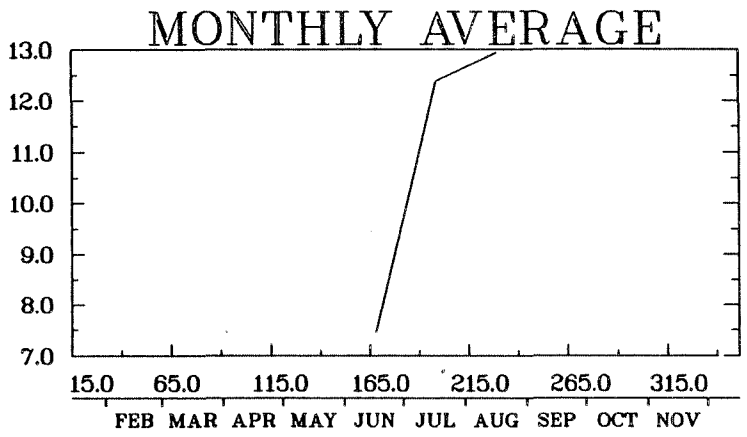
DEEP – 4RB TEMPERATURE

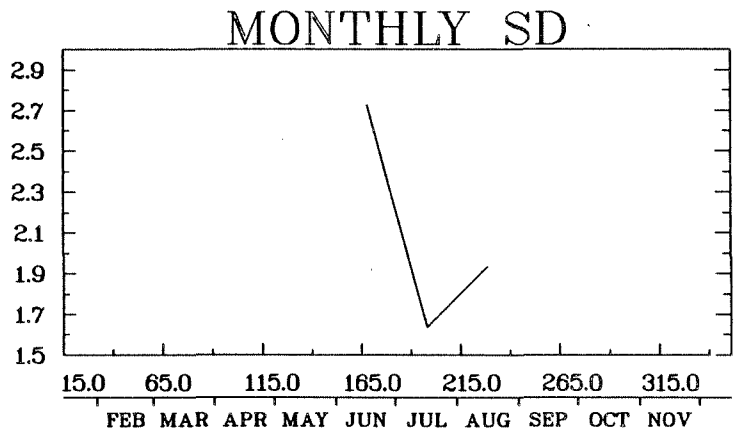


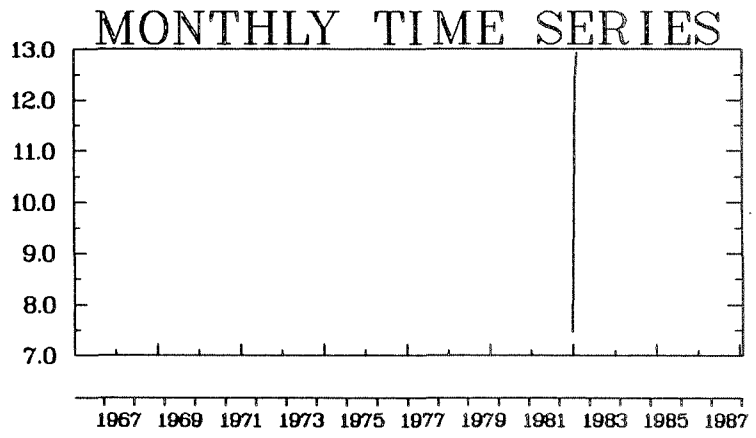
SHALLOW − 4RC TEMPERATURE



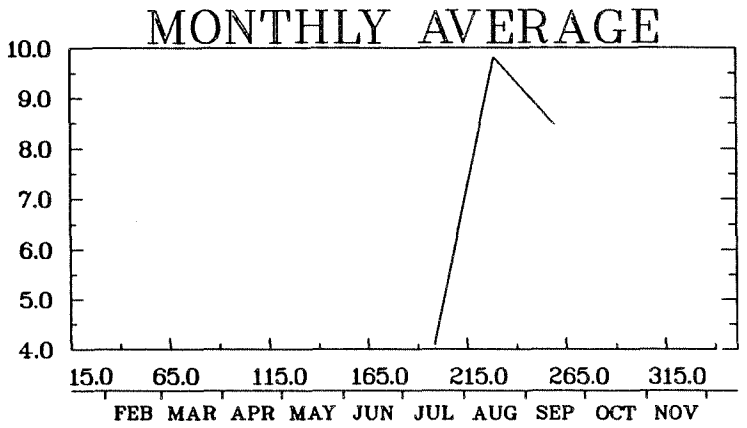
DEEP – 4RC TEMPERATURE

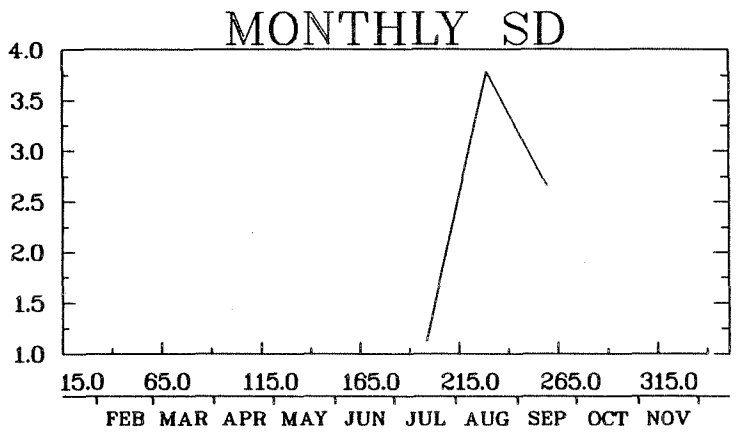


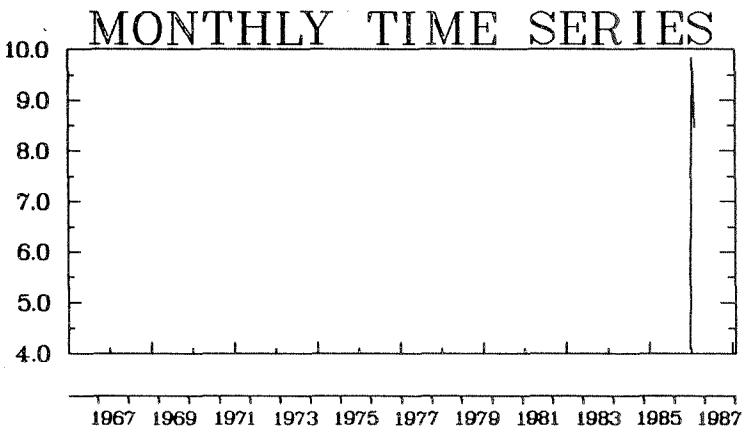




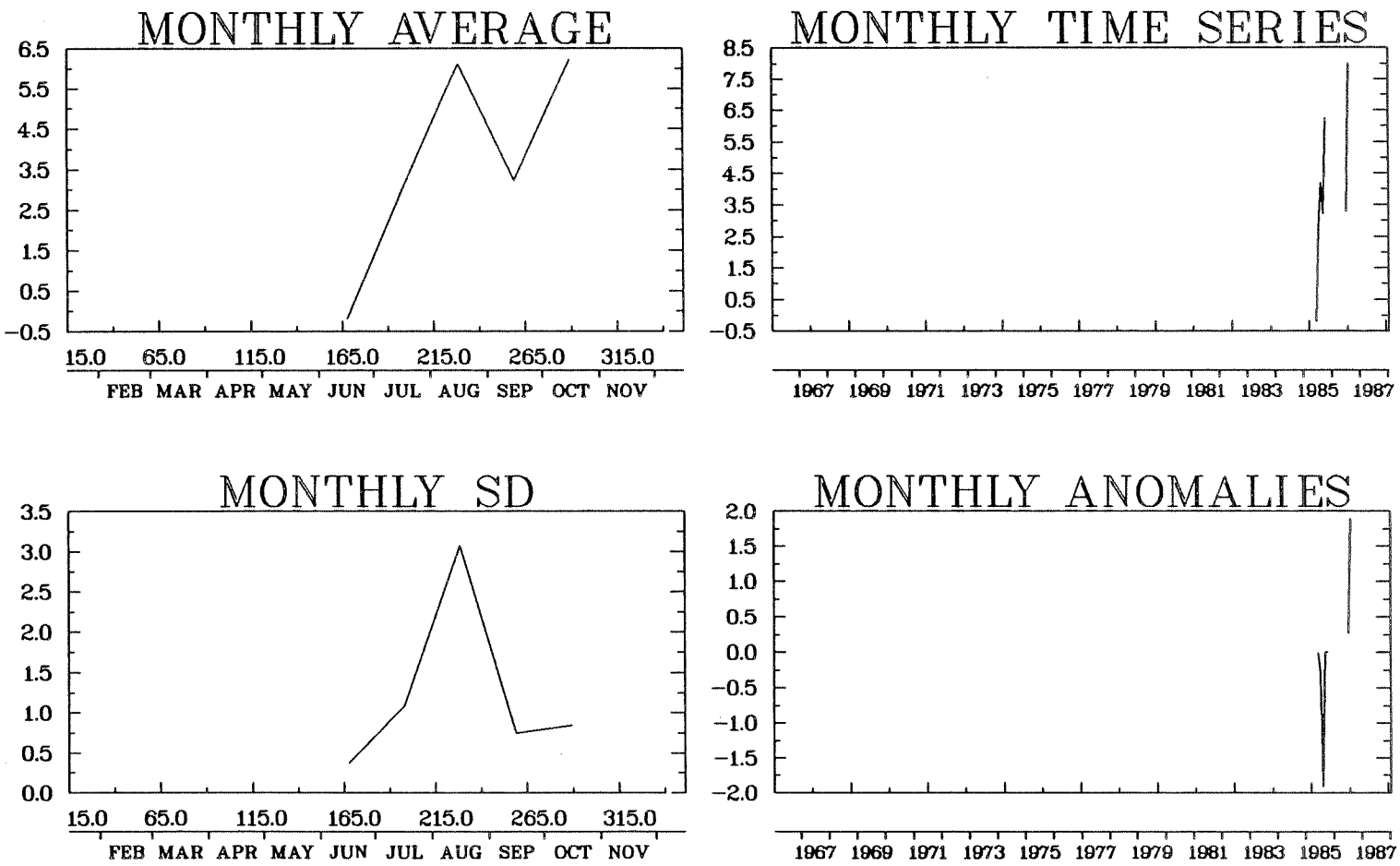
DEEP – 4RD TEMPERATURE



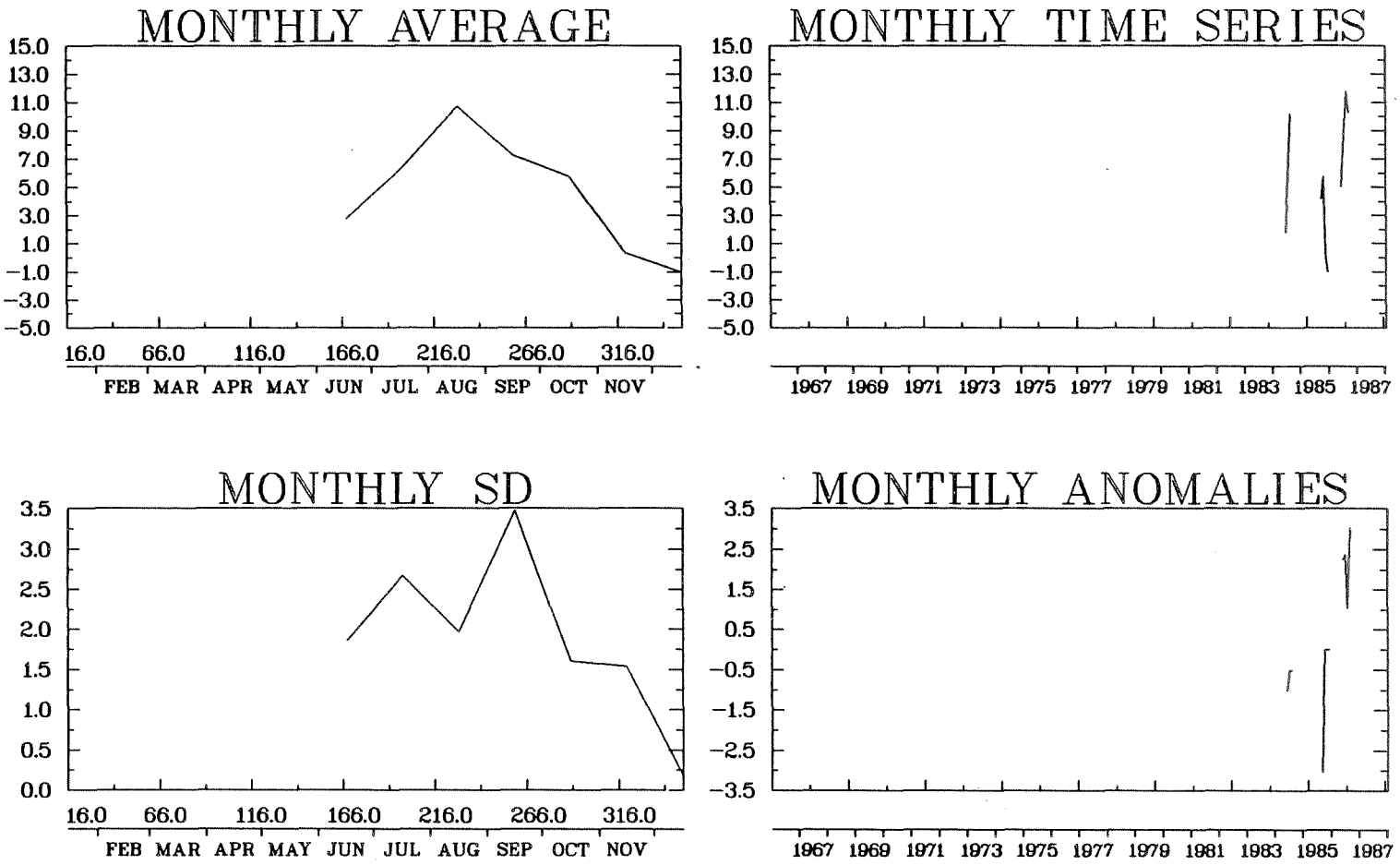




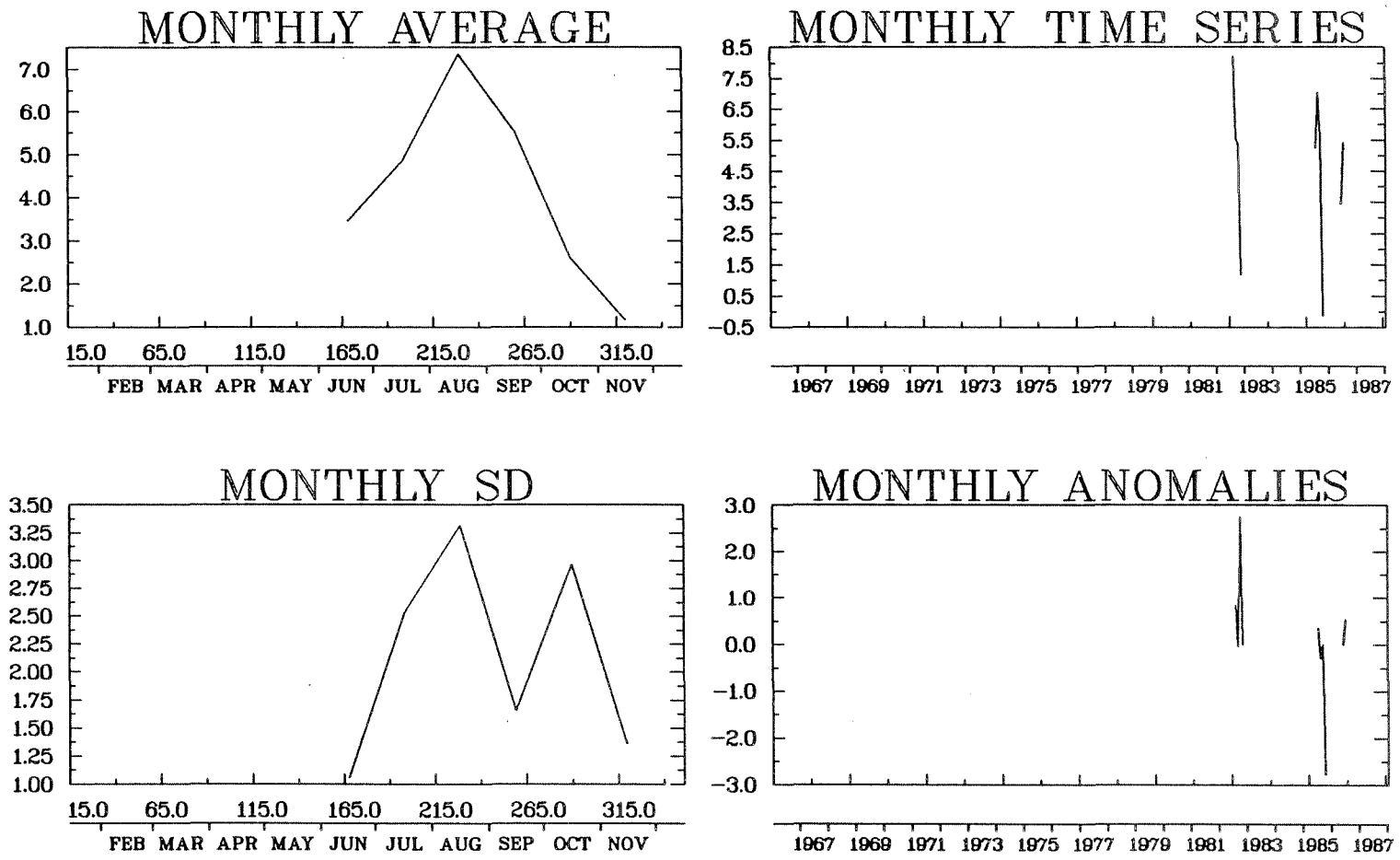
SHALLOW – 4SV TEMPERATURE



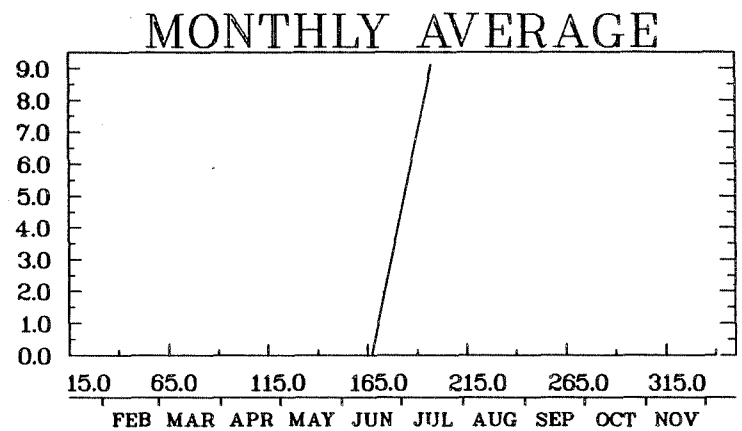
DEEP − 4SV TEMPERATURE

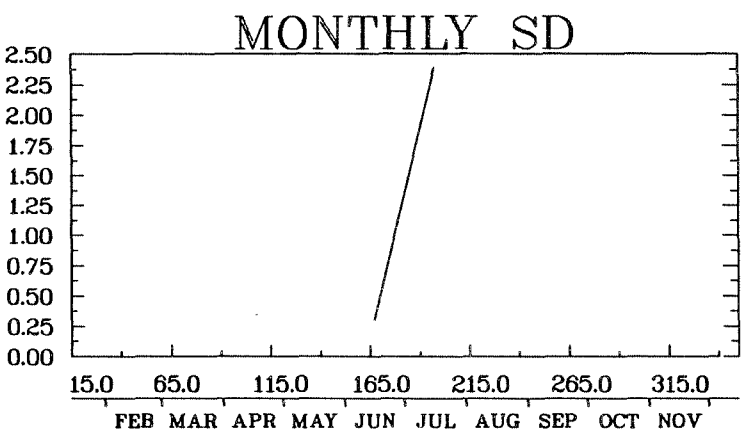


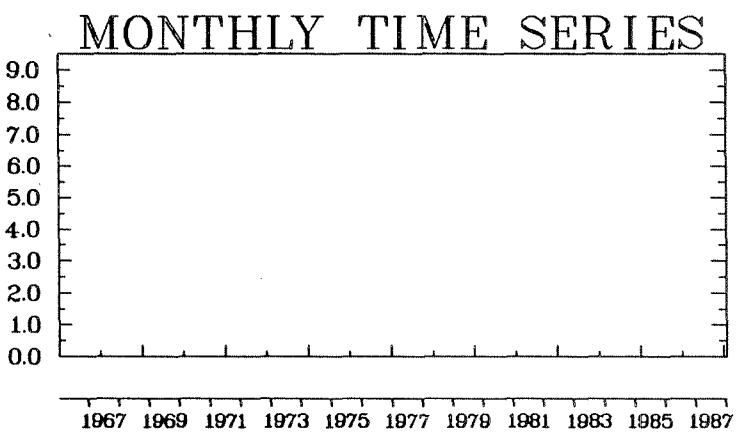
SHALLOW – 4SW TEMPERATURE



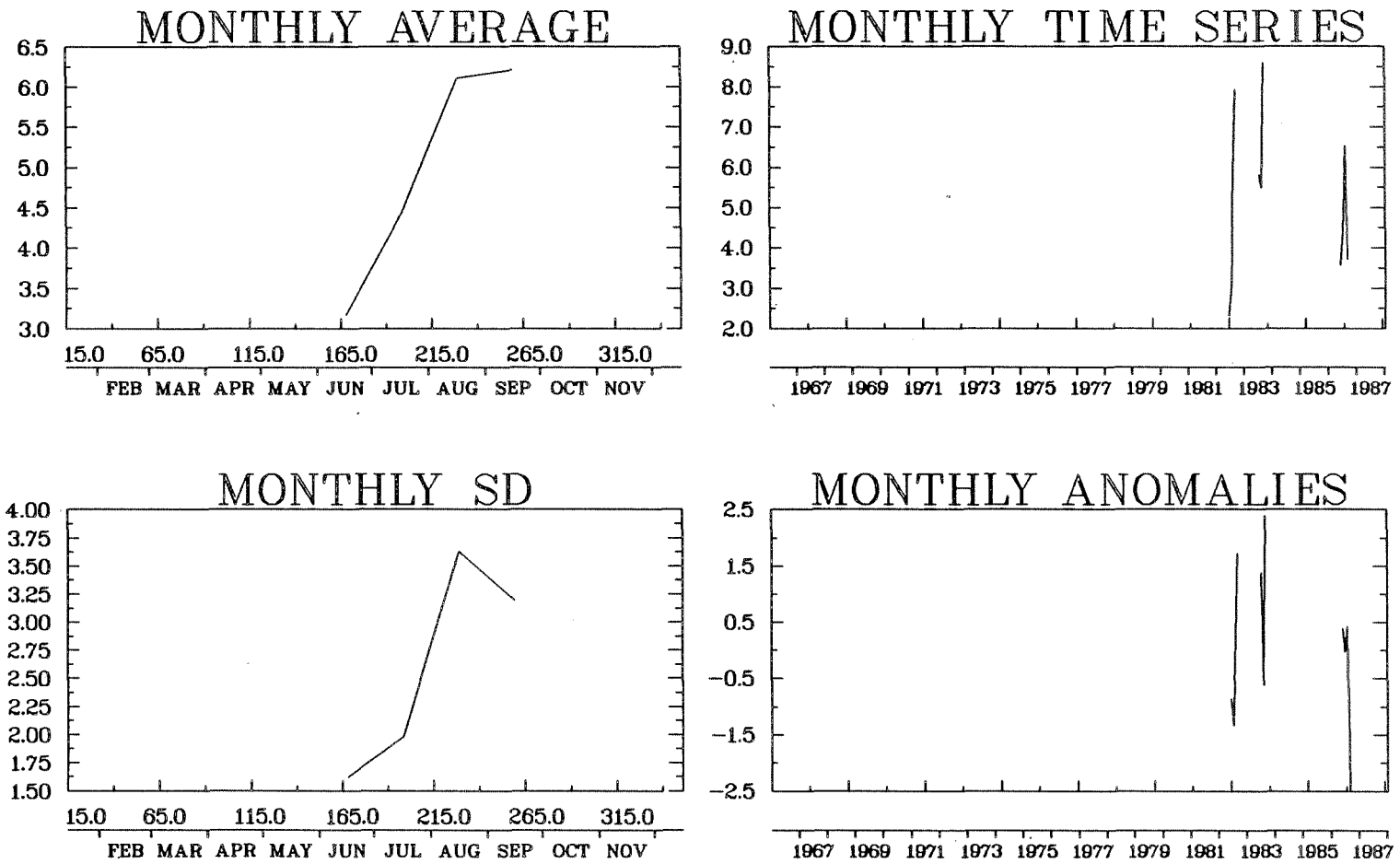
DEEP – 4SW TEMPERATURE



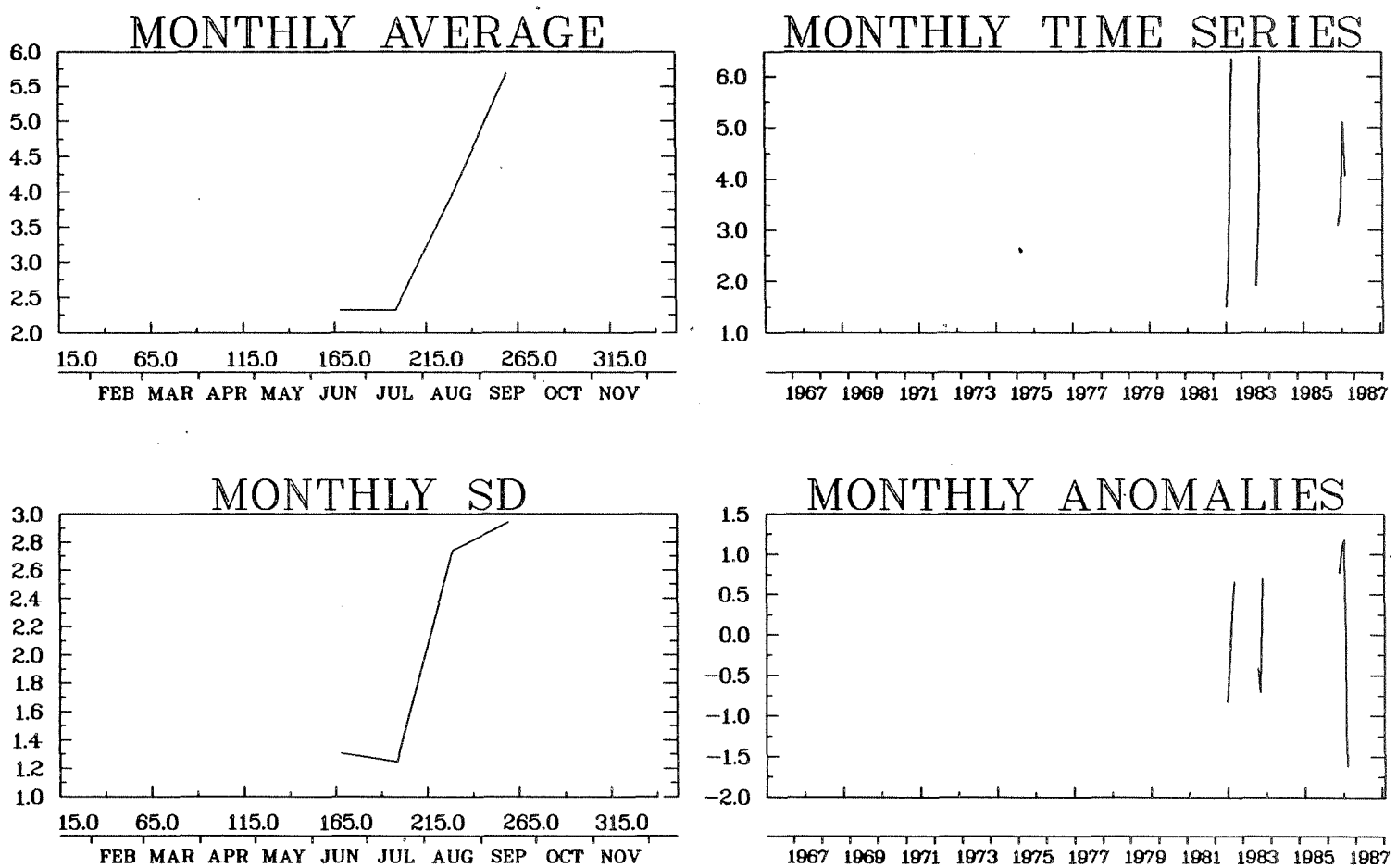




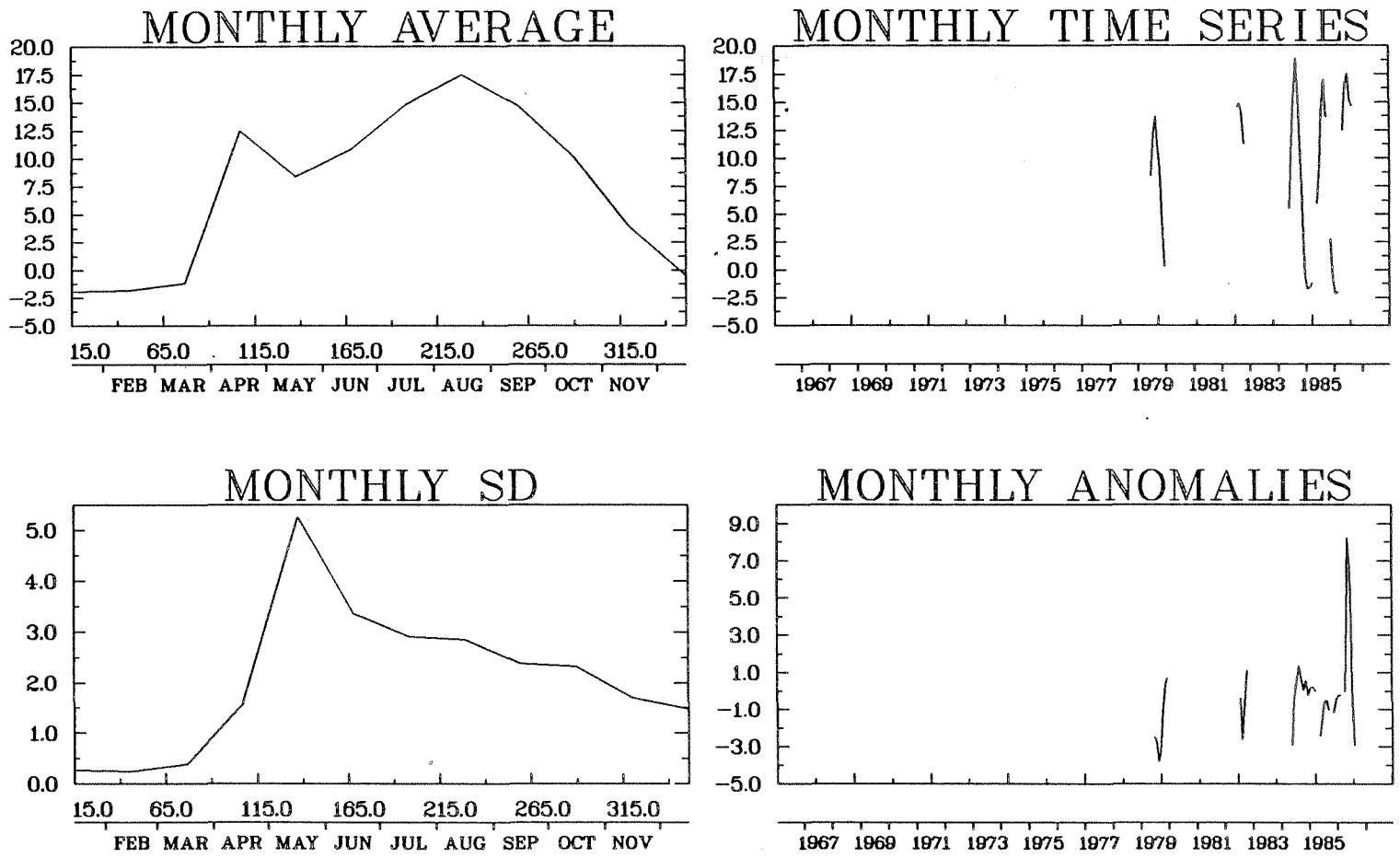
DEEP – 4SX TEMPERATURE



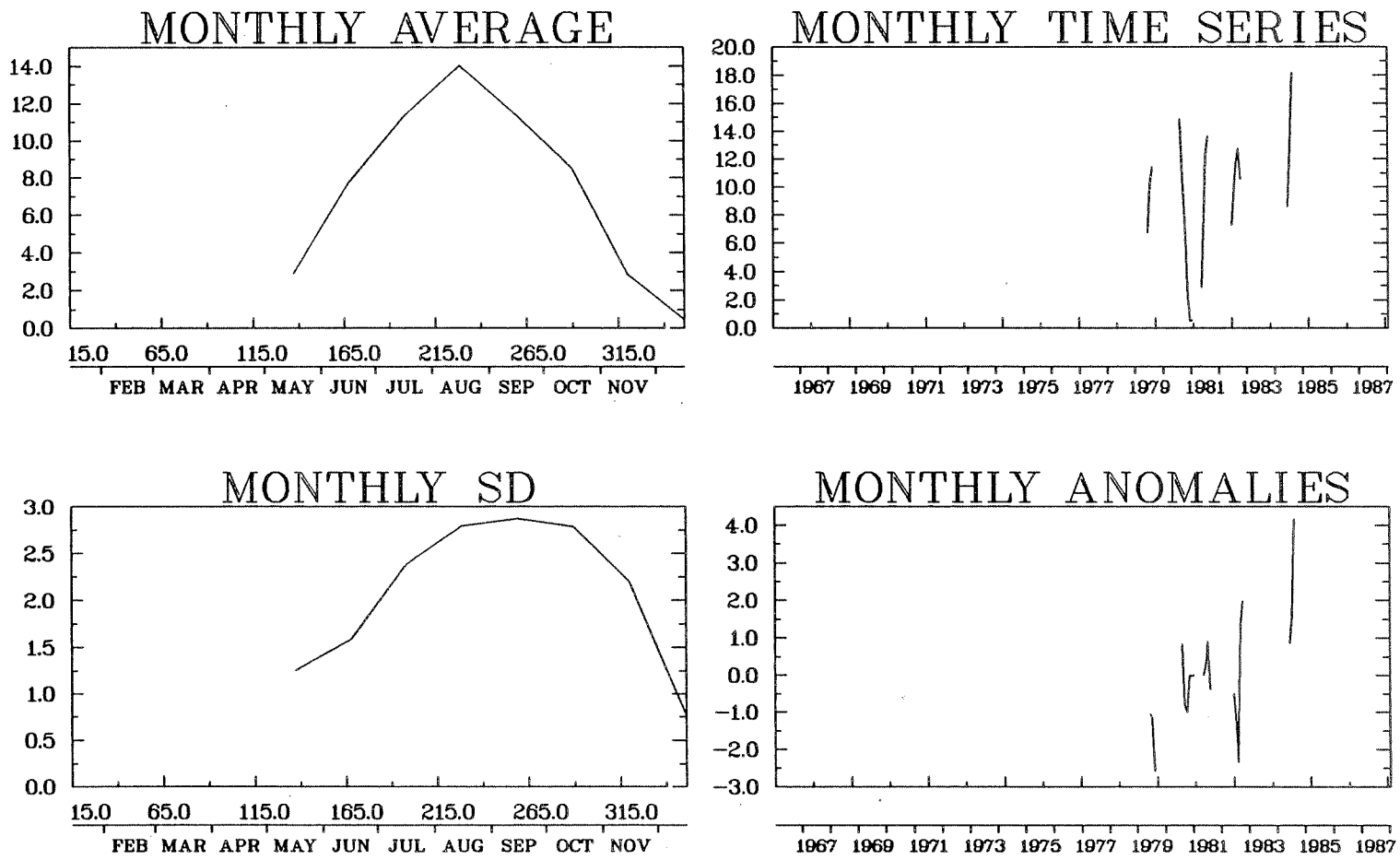
SHALLOW – 4SY TEMPERATURE



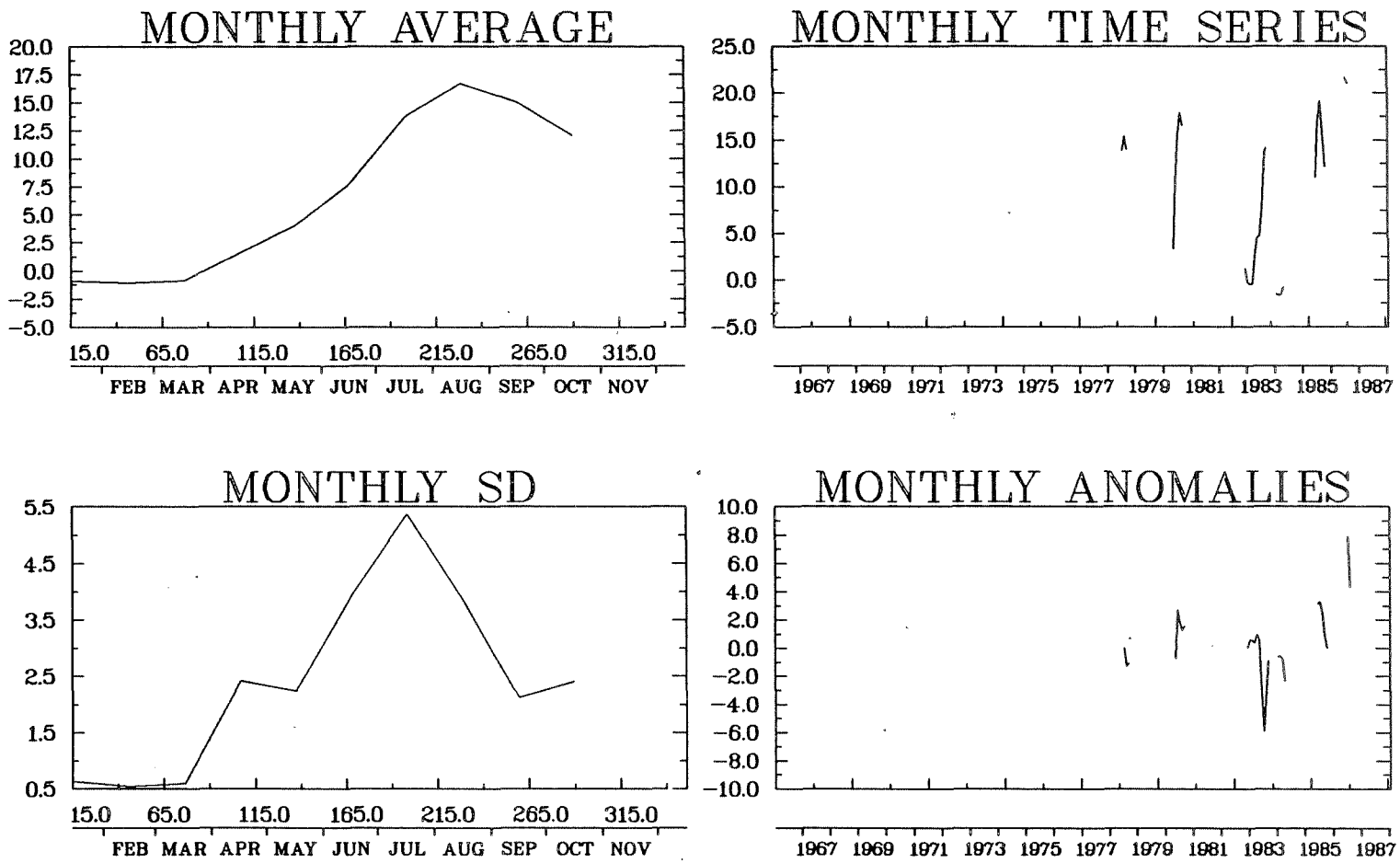
DEEP – 4SY TEMPERATURE



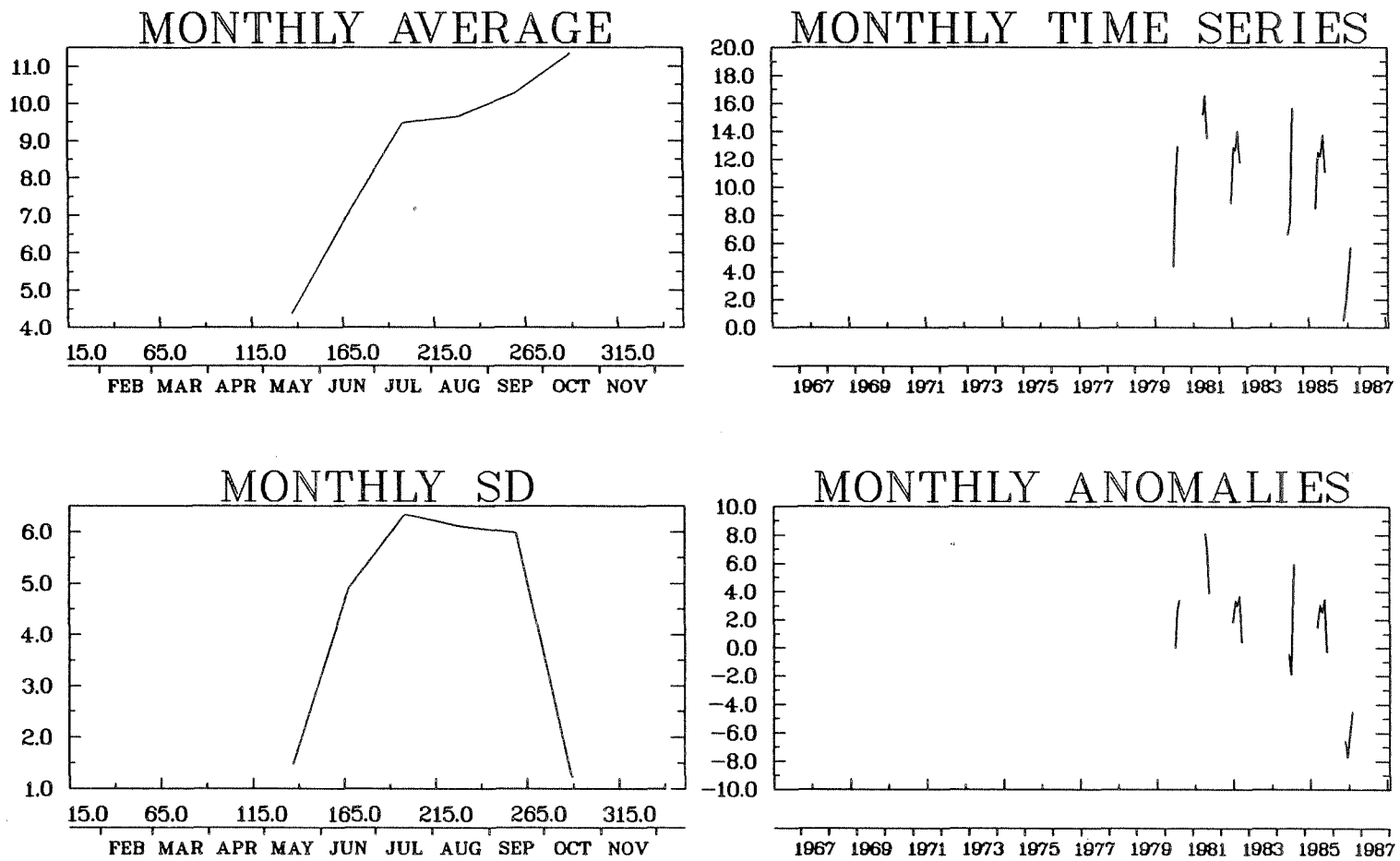
SHALLOW − 4TF TEMPERATURE



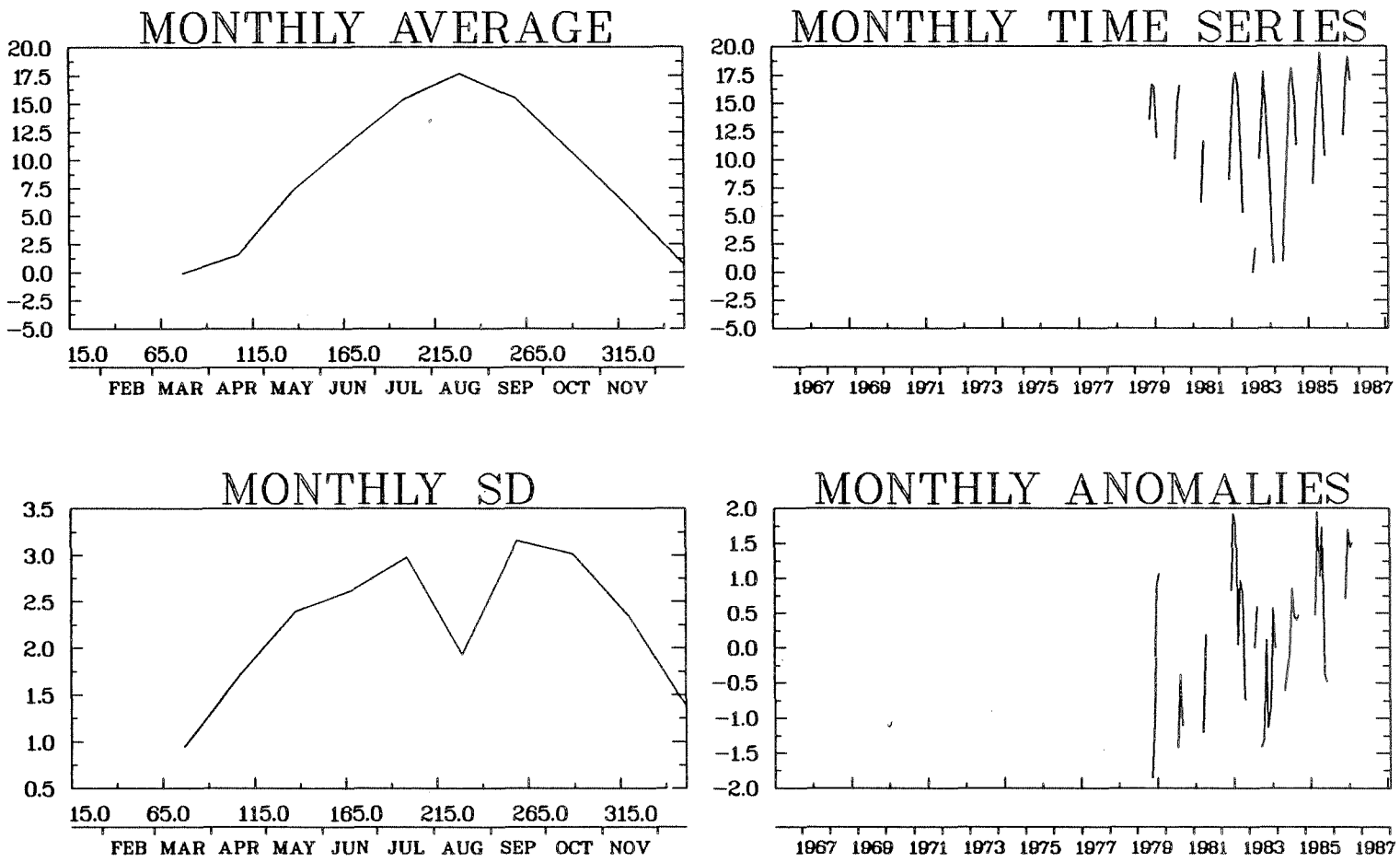
DEEP – 4TF TEMPERATURE



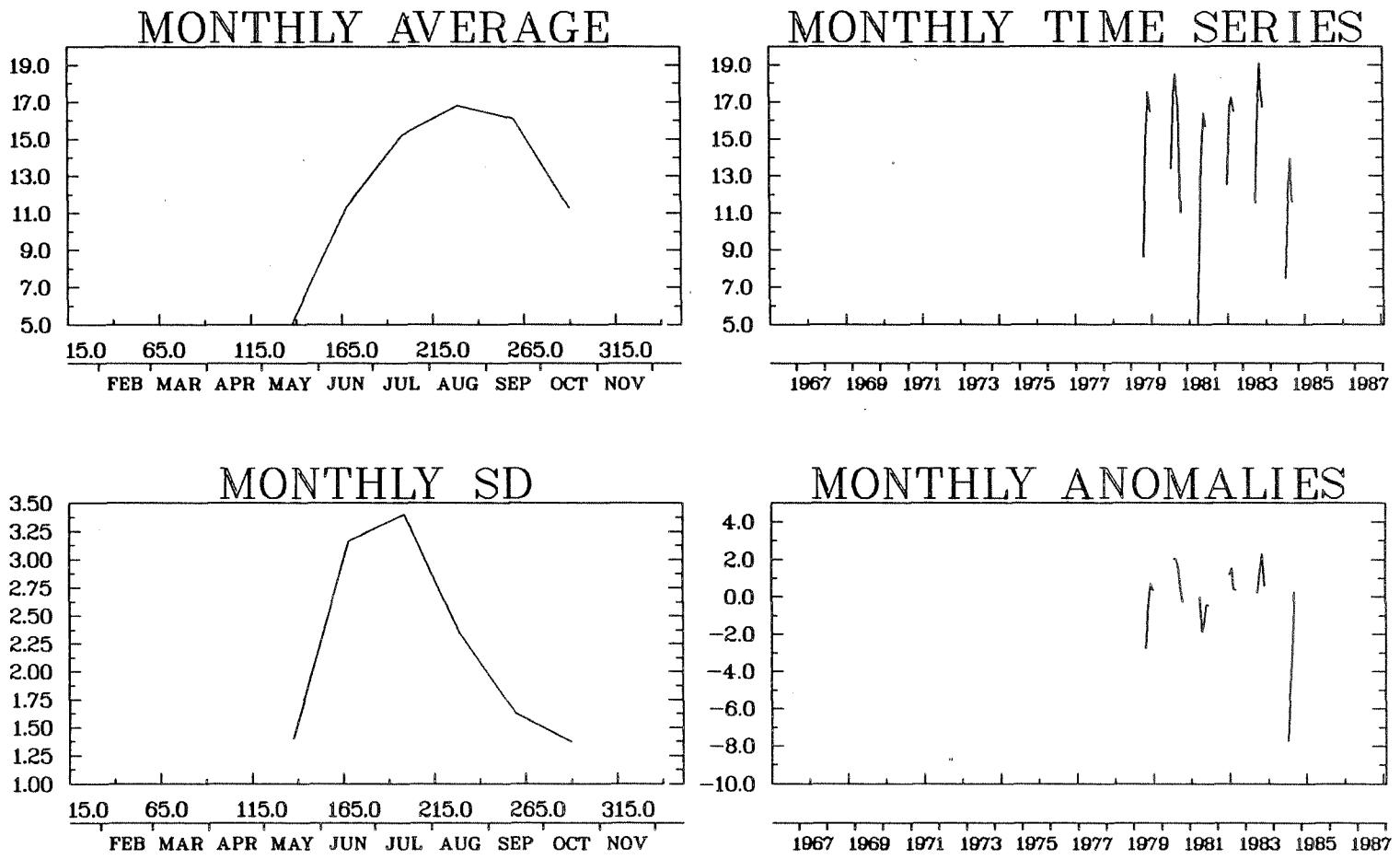
SHALLOW – 4TG TEMPERATURE



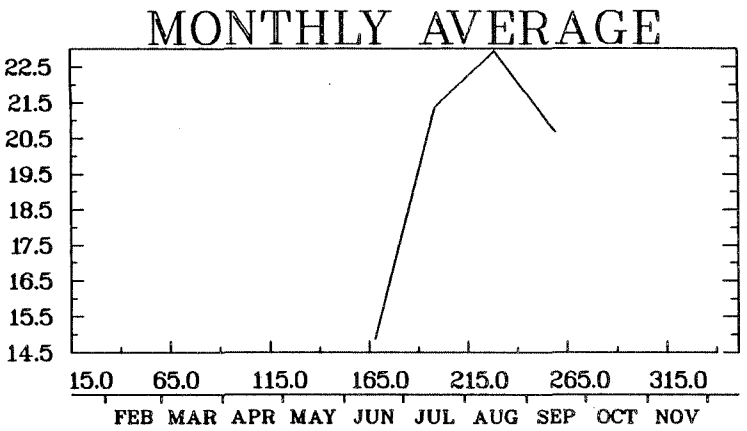
DEEP – 4TG TEMPERATURE

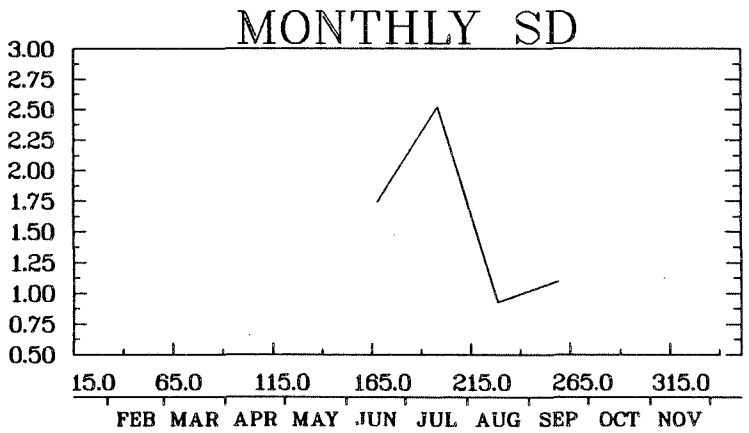


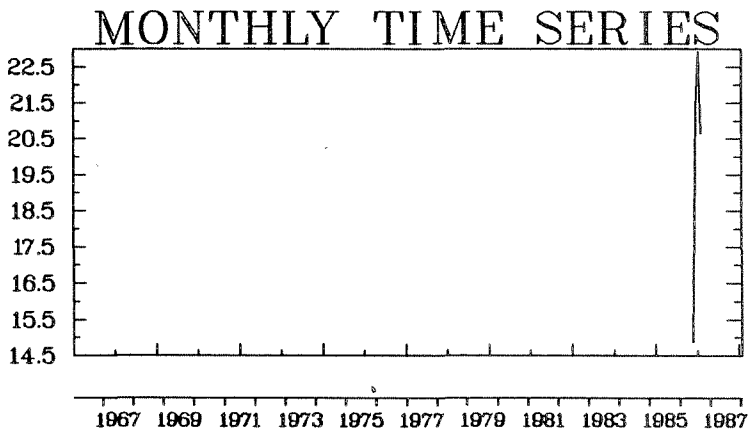
SHALLOW – 4TH TEMPERATURE



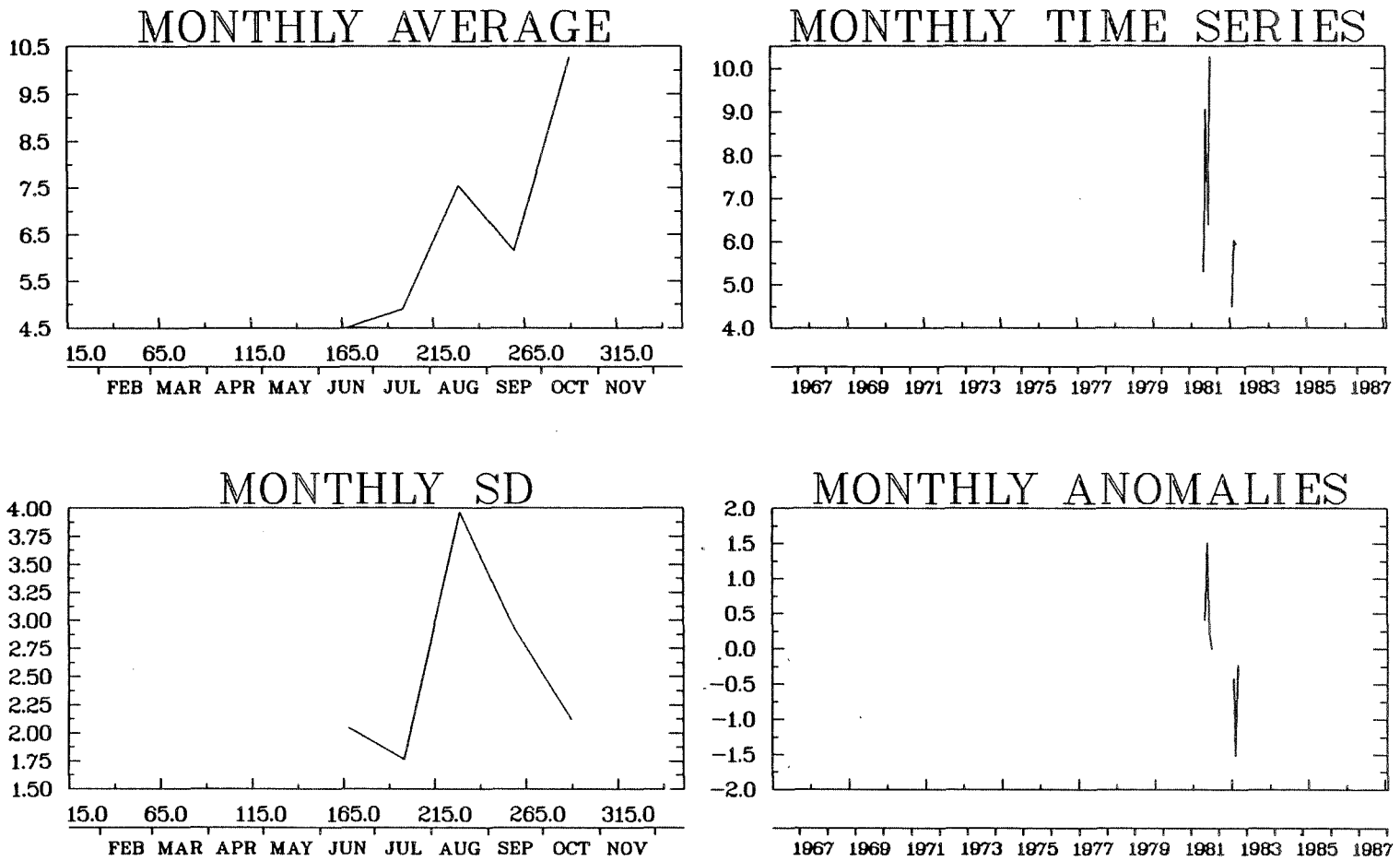
DEEP – 4TH TEMPERATURE



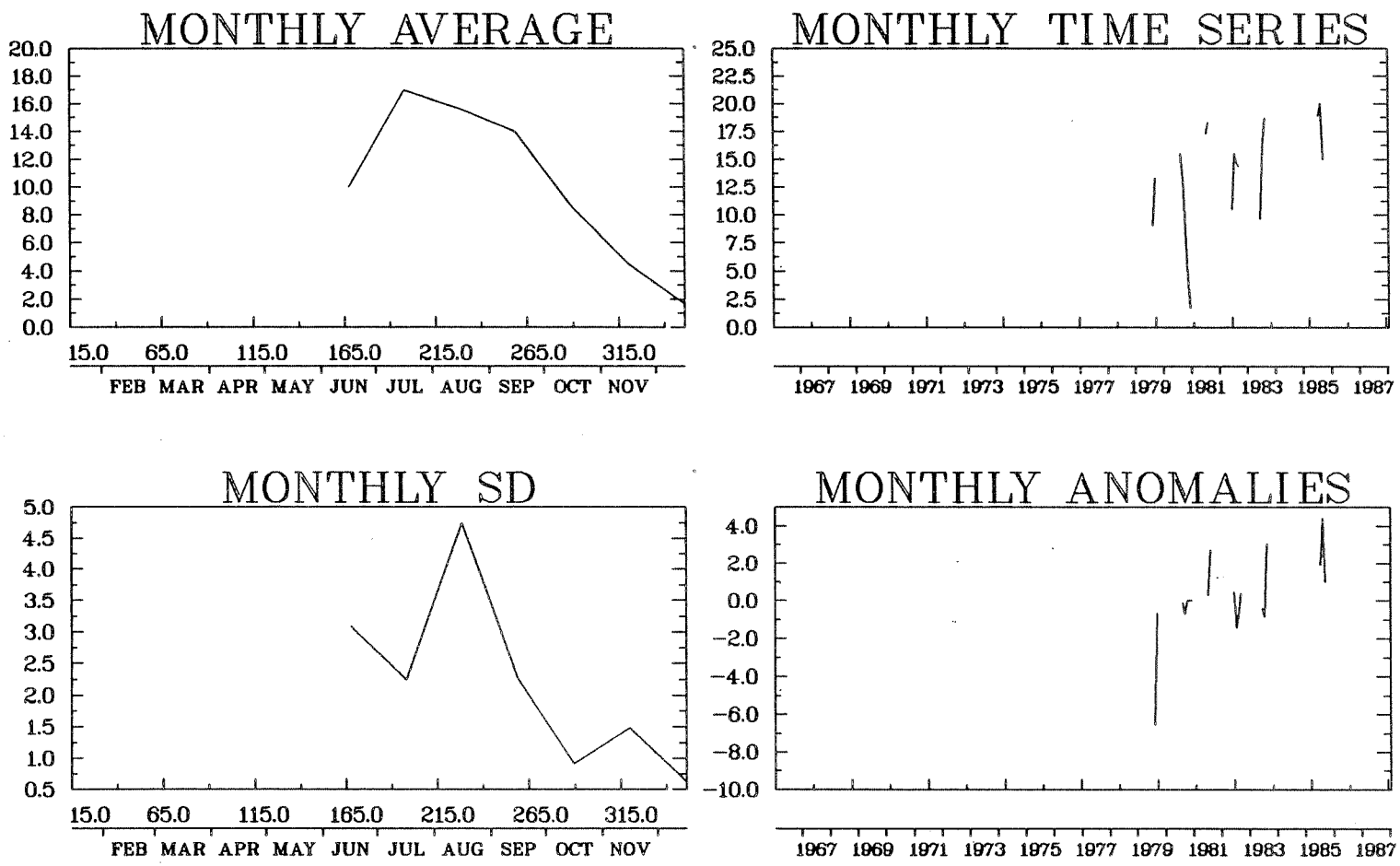




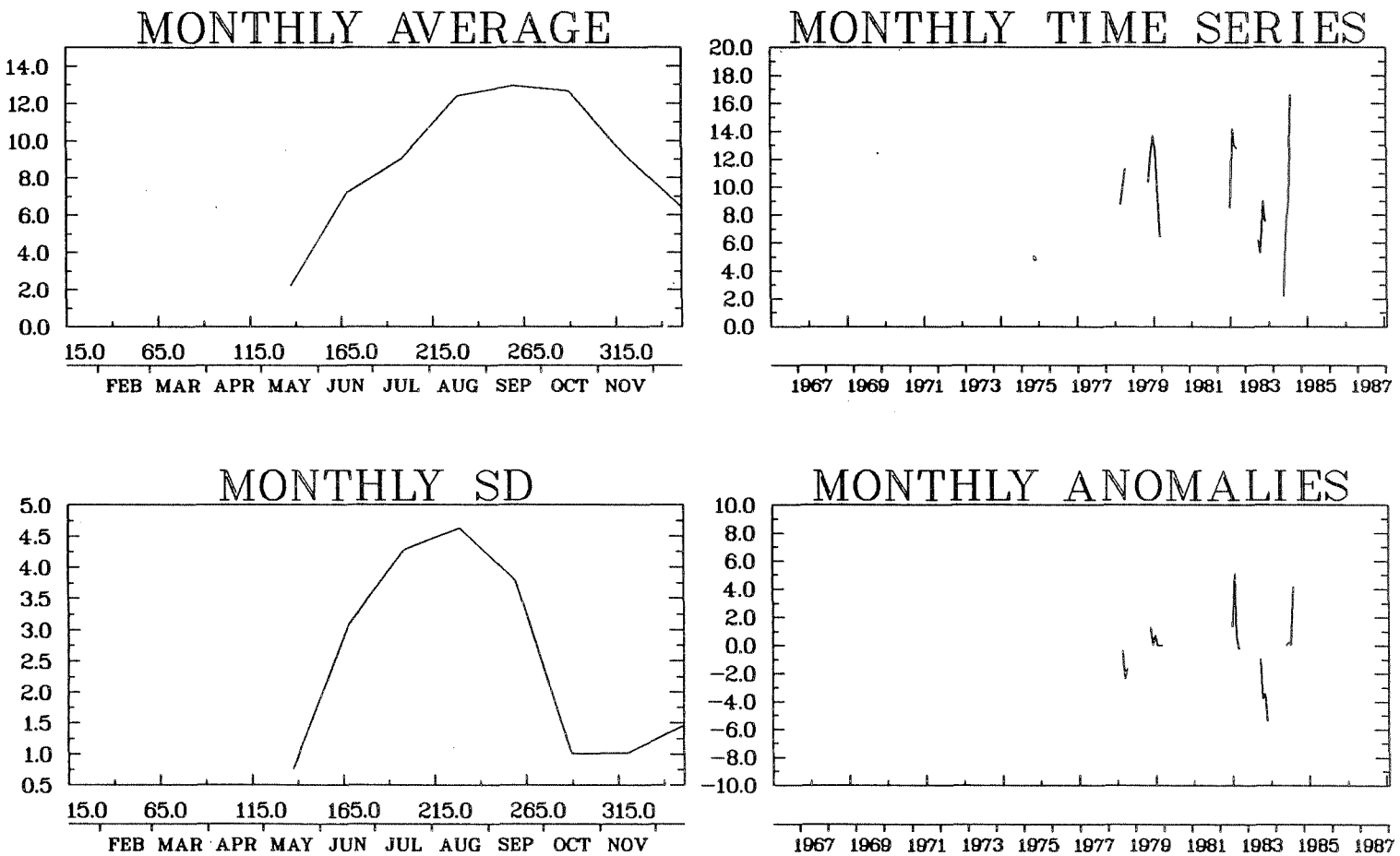
SHALLOW – 4TJ TEMPERATURE



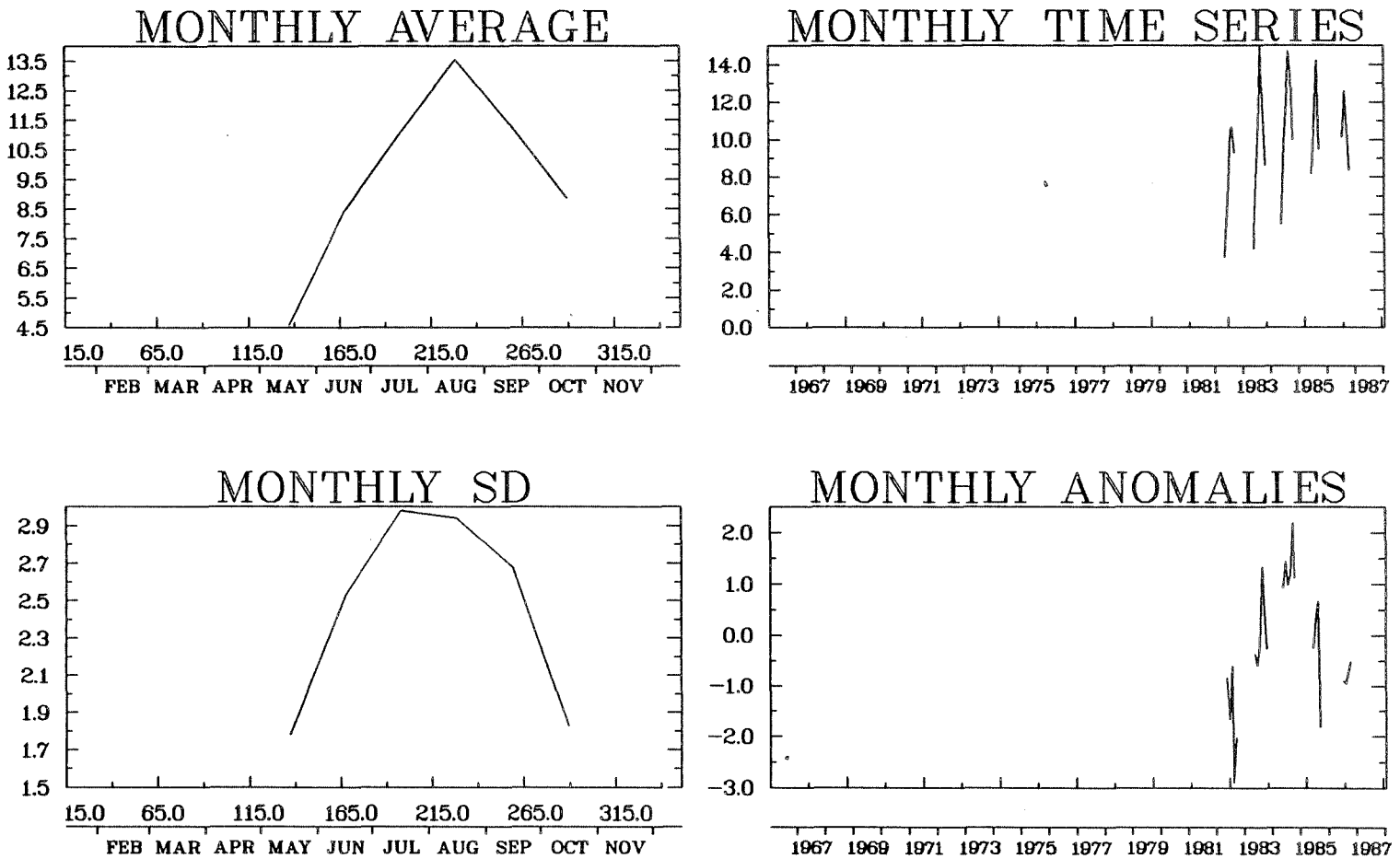
DEEP – 4TJ TEMPERATURE



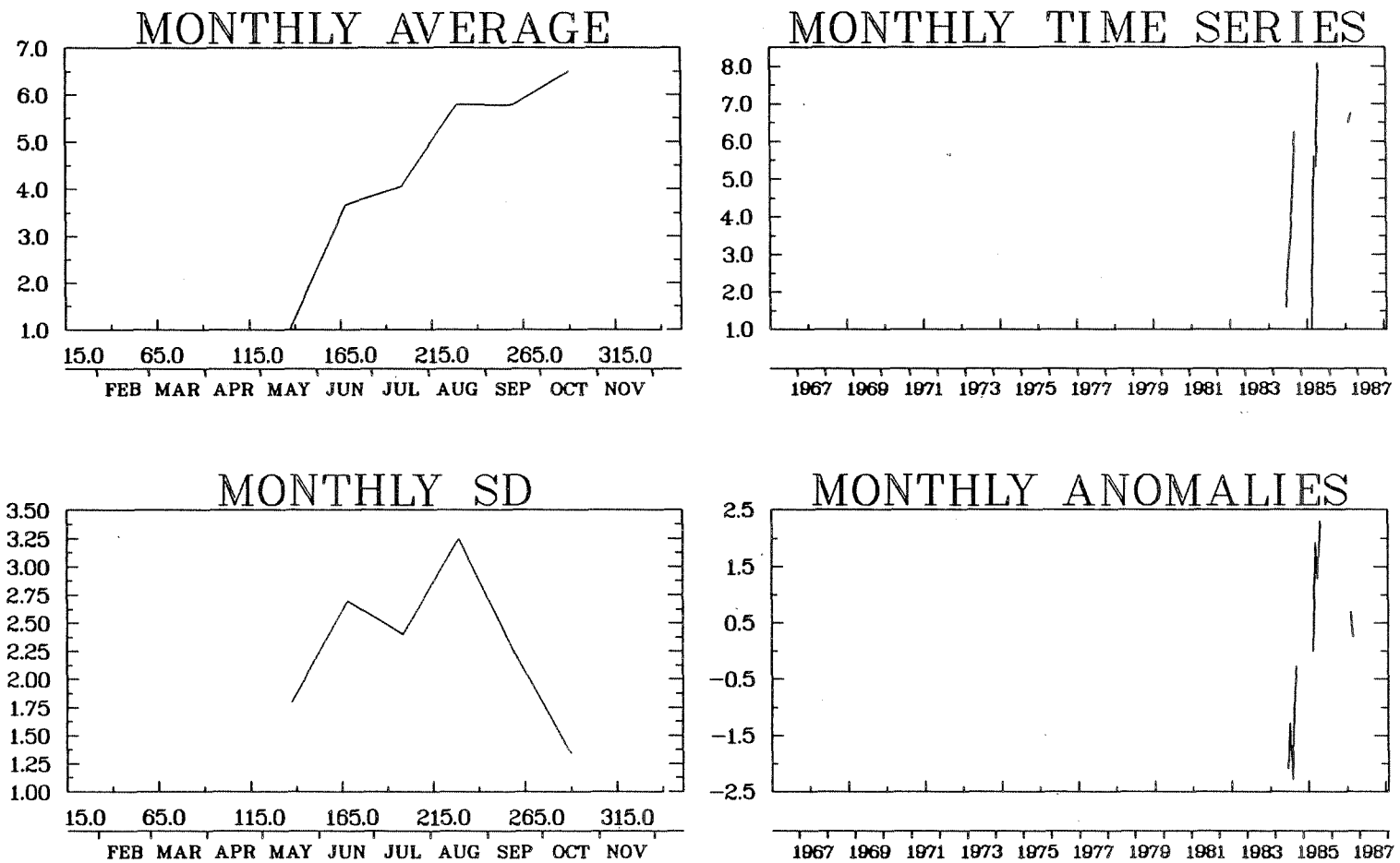
SHALLOW – 4TL TEMPERATURE



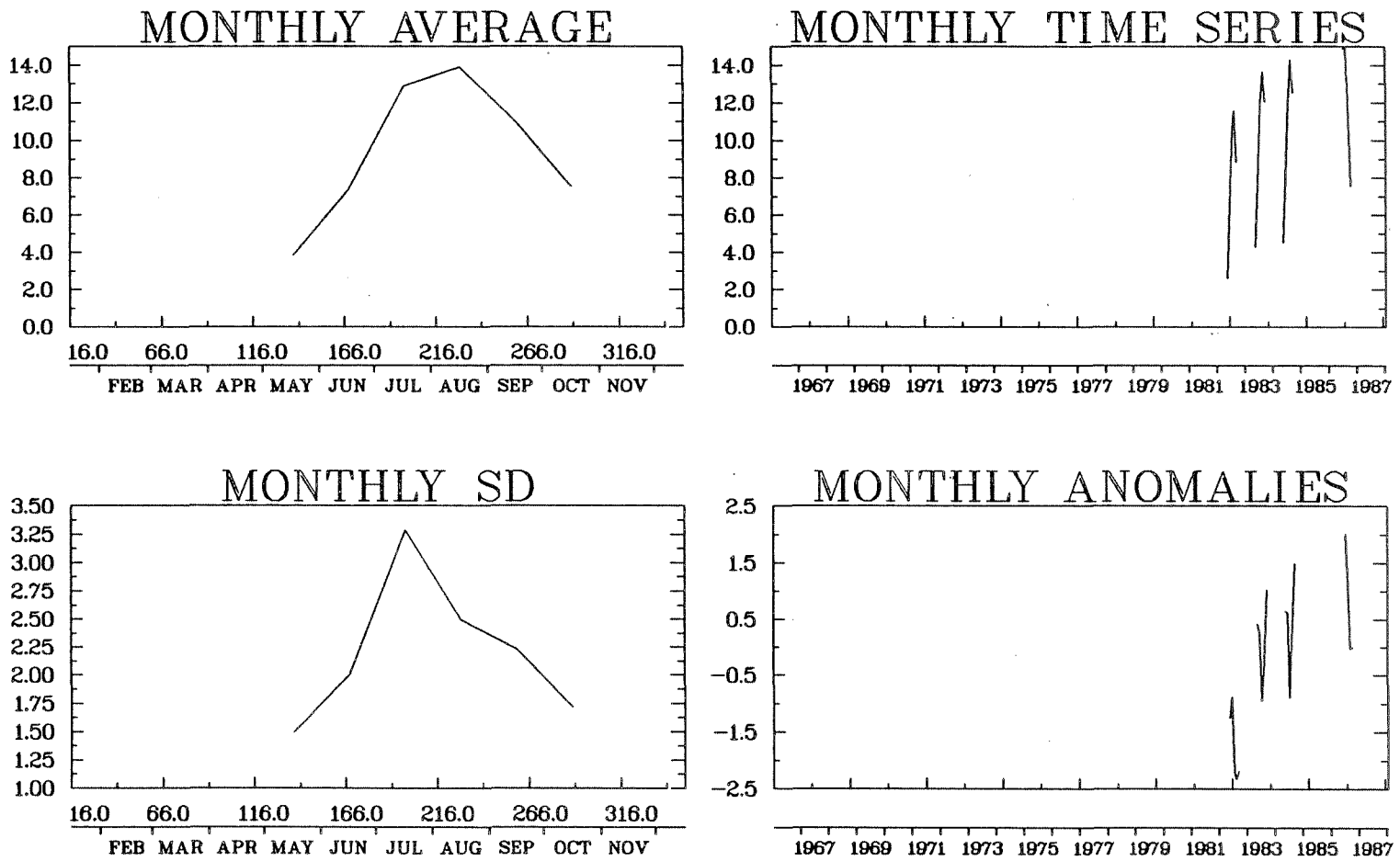
DEEP – 4TL TEMPERATURE



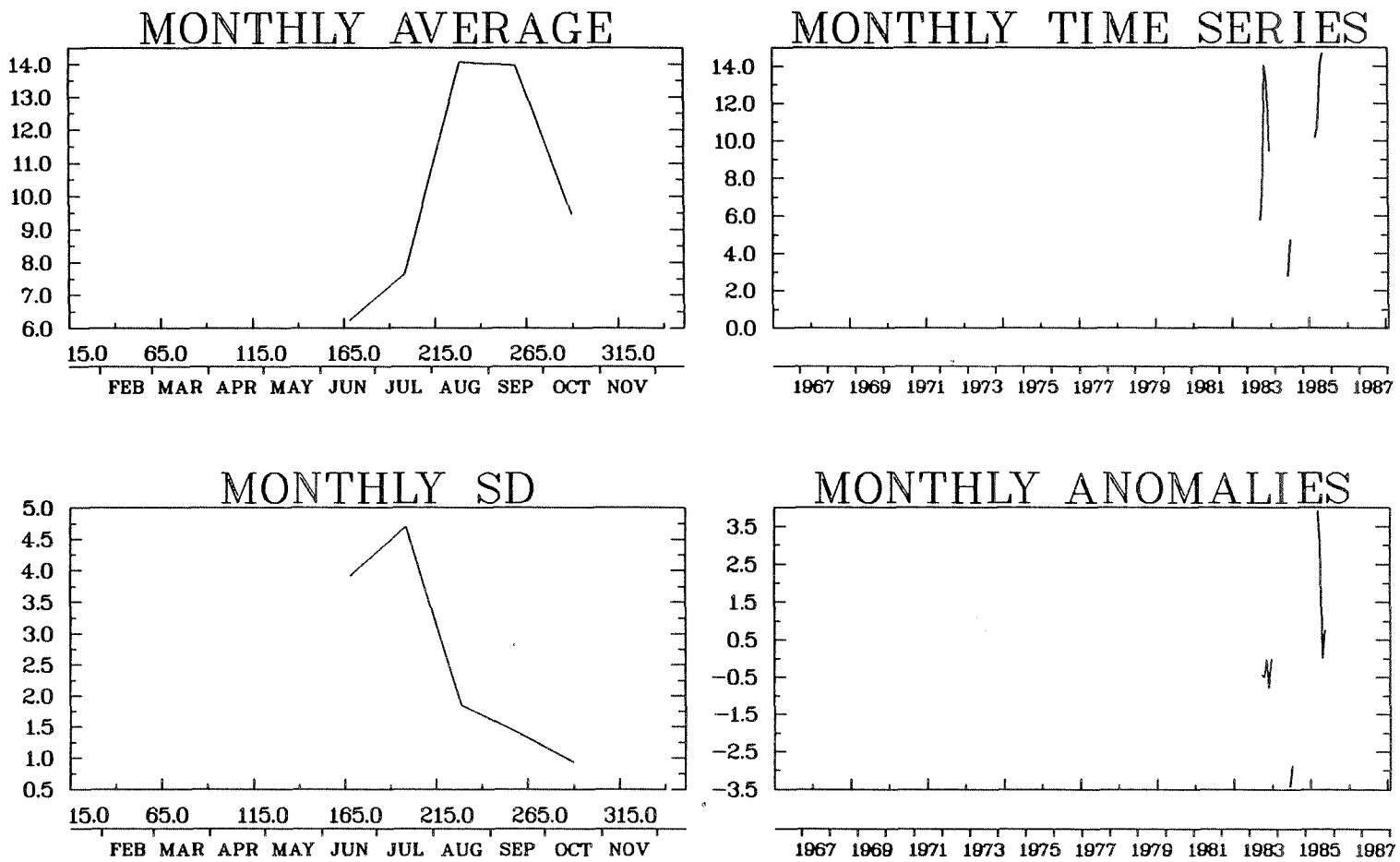
SHALLOW – 4TM TEMPERATURE



DEEP – 4TM TEMPERATURE



SHALLOW – 4TN TEMPERATURE



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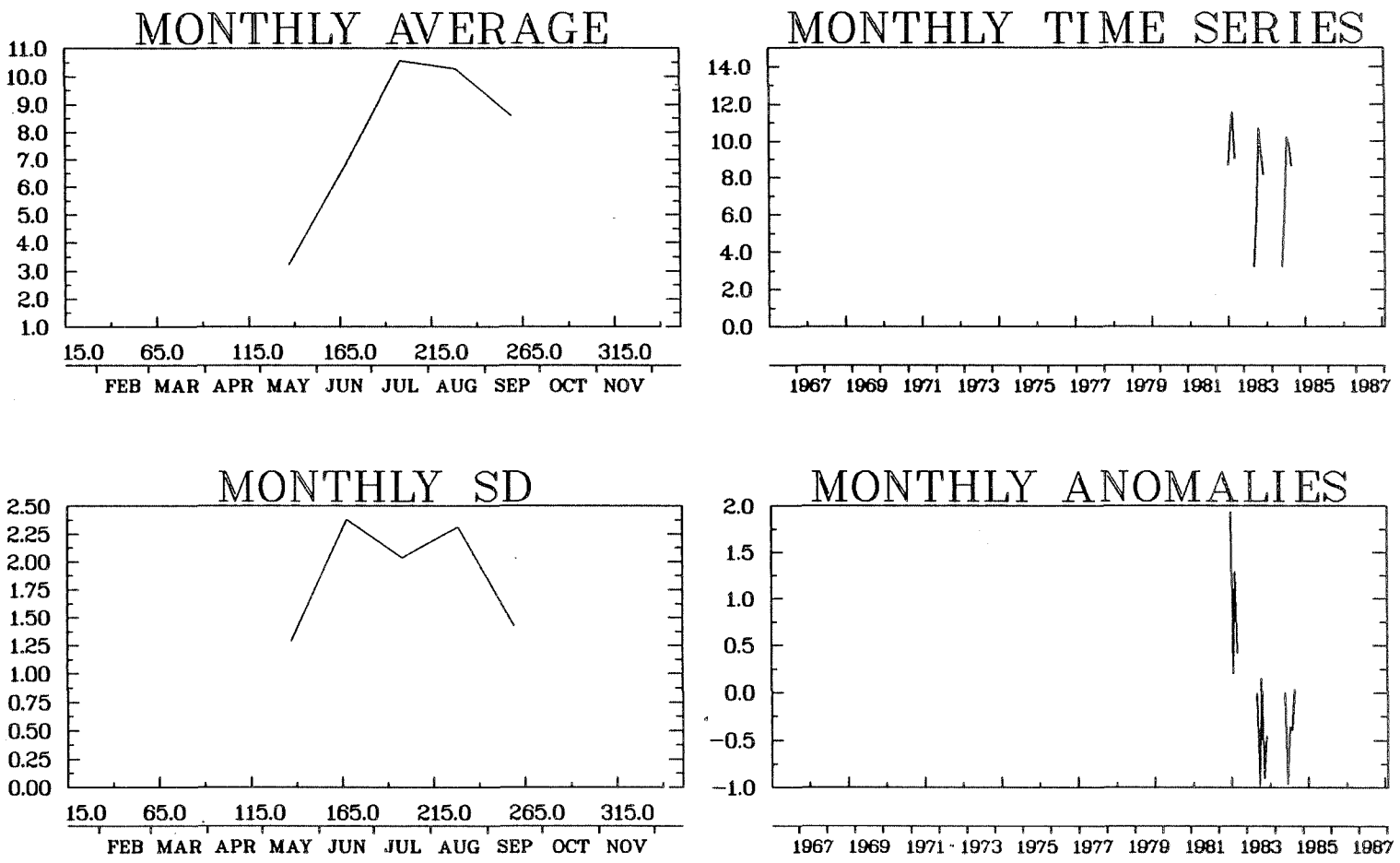
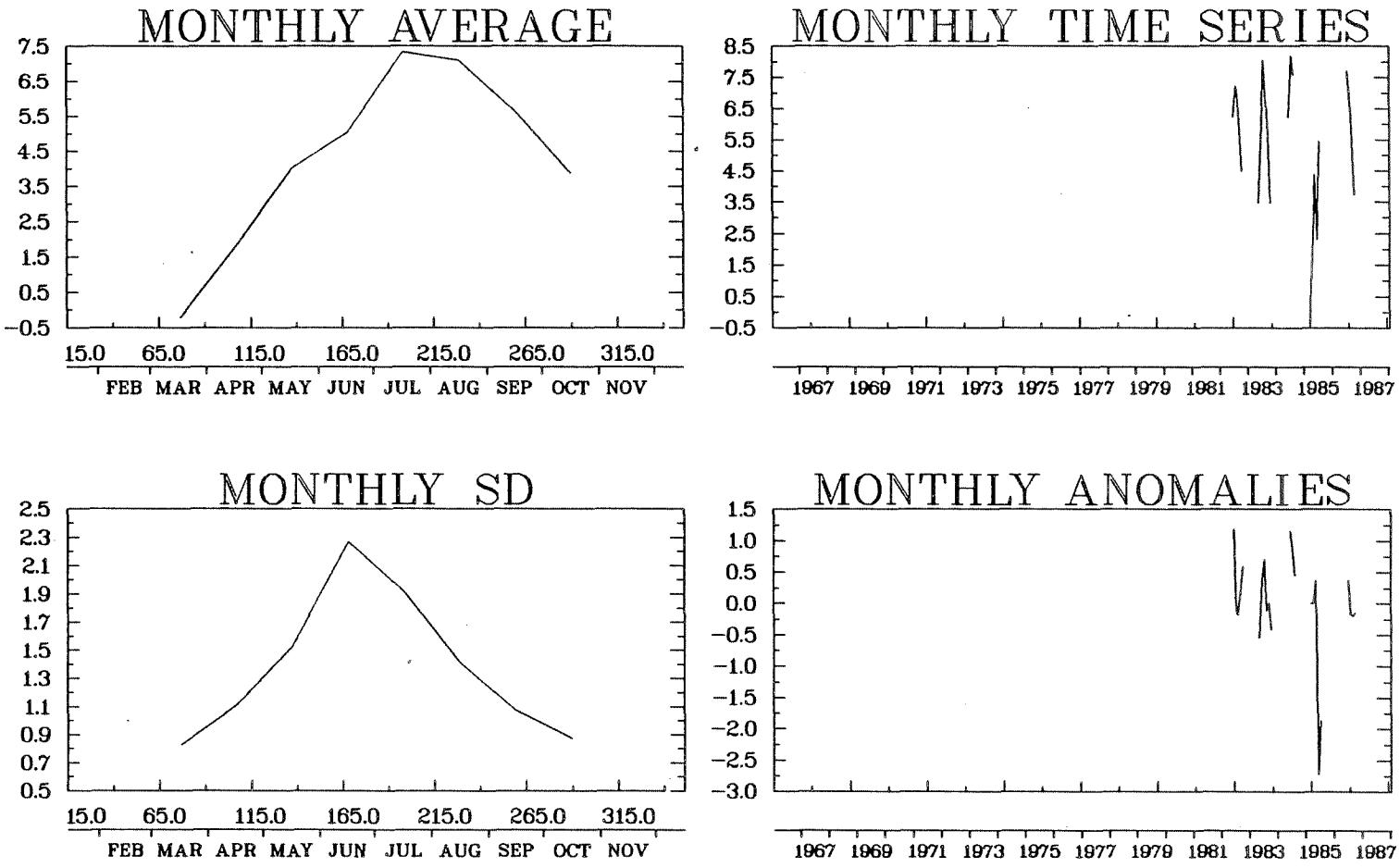
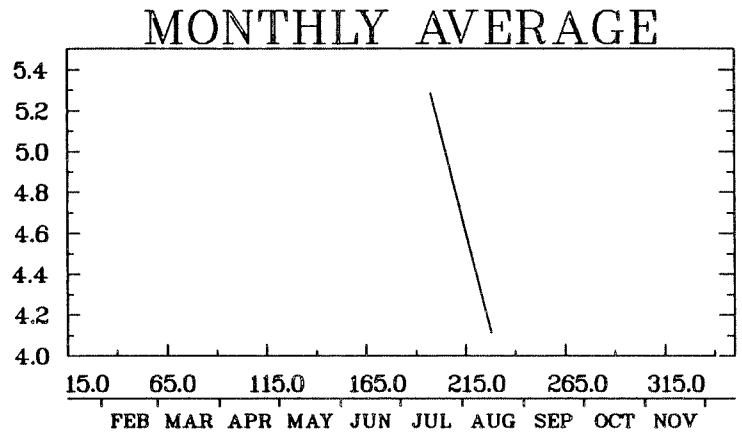
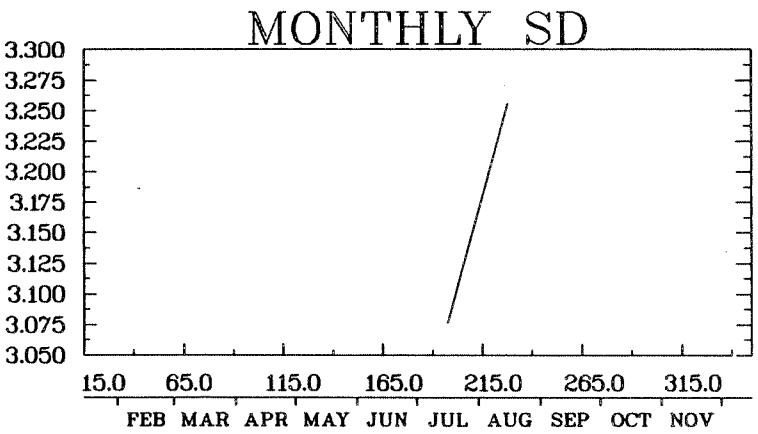


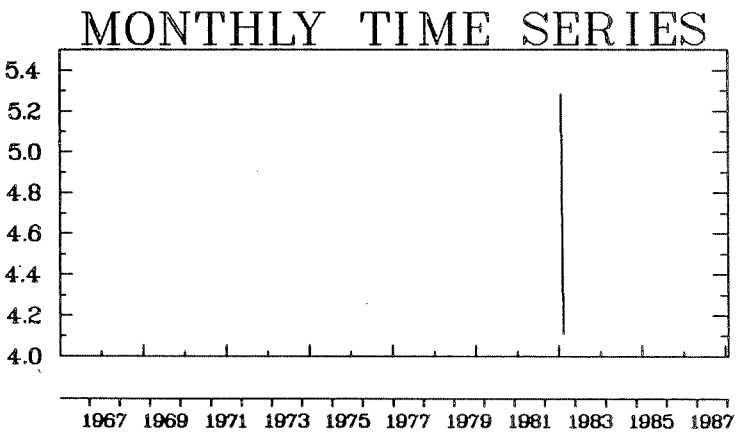
SHALLOW – 4TO TEMPERATURE



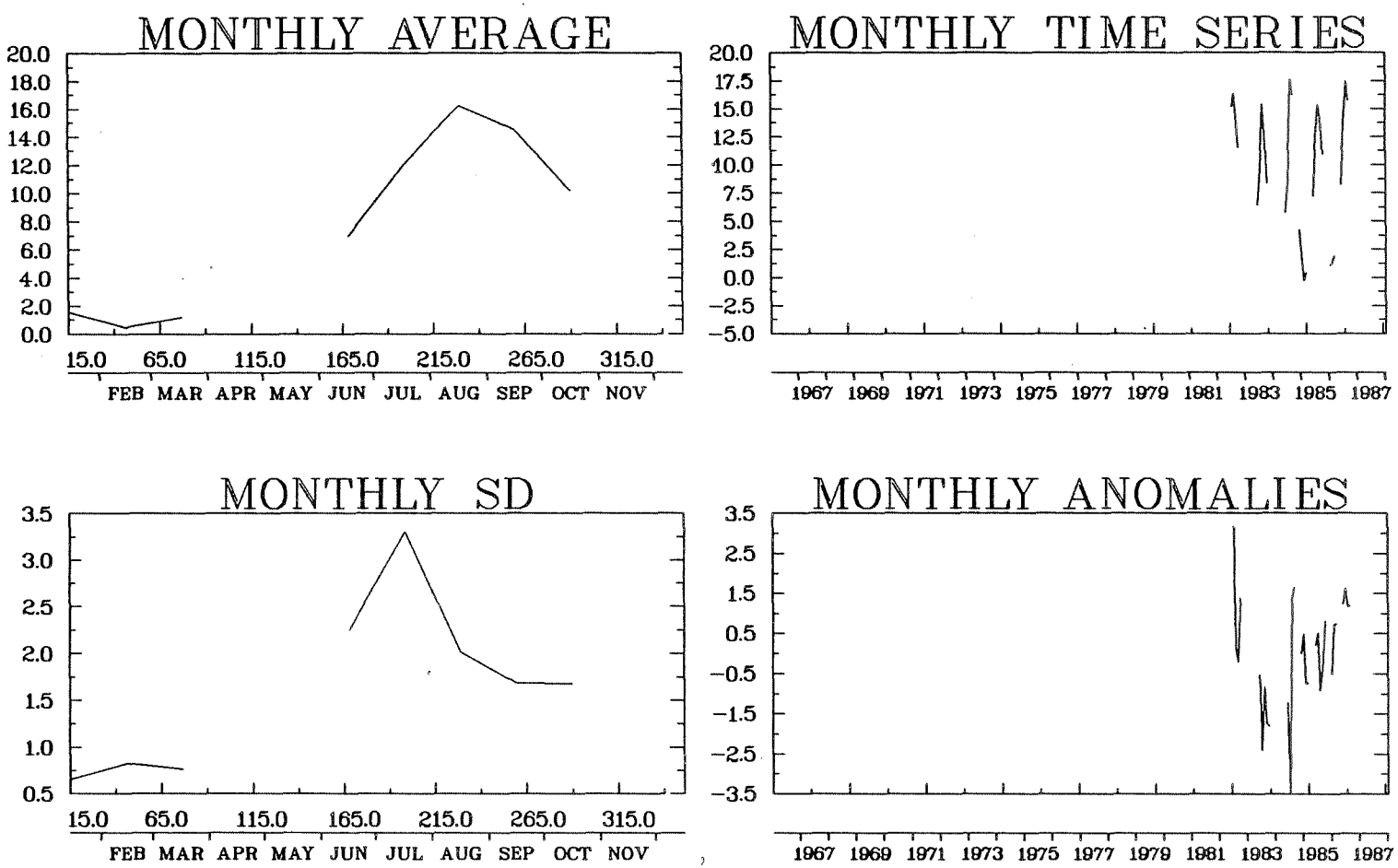
SHALLOW – 4TP TEMPERATURE



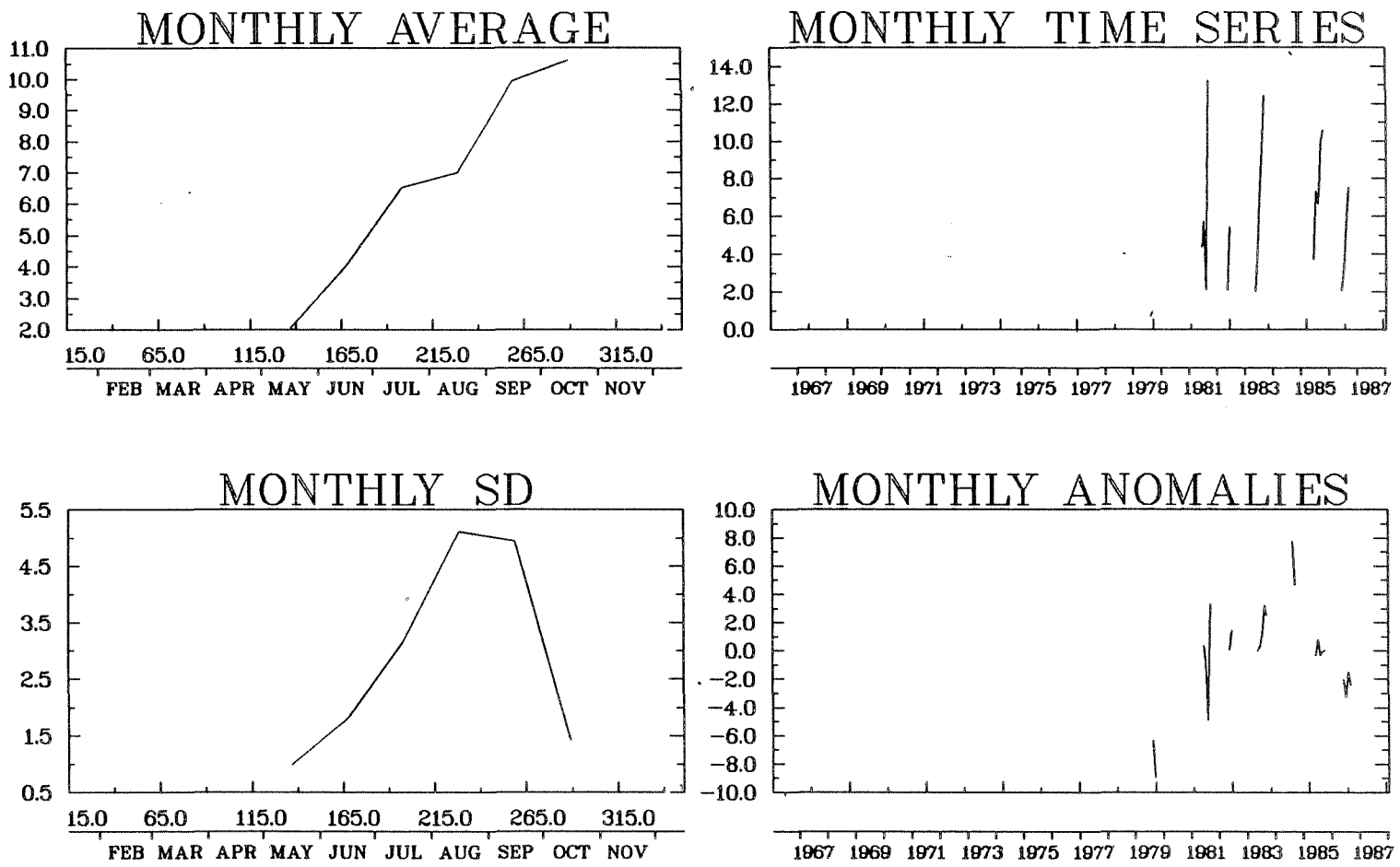




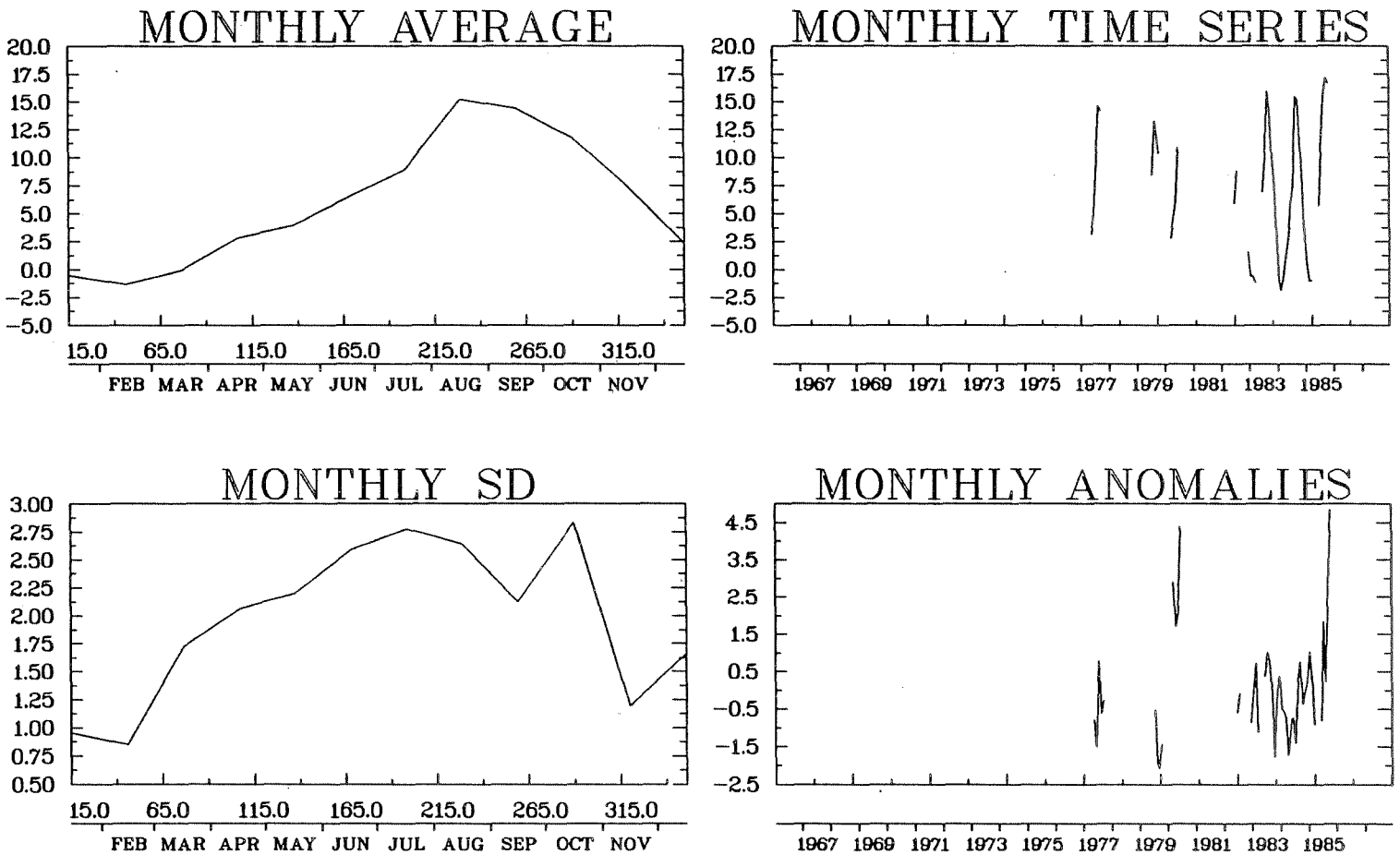
SHALLOW – 4TQ TEMPERATURE



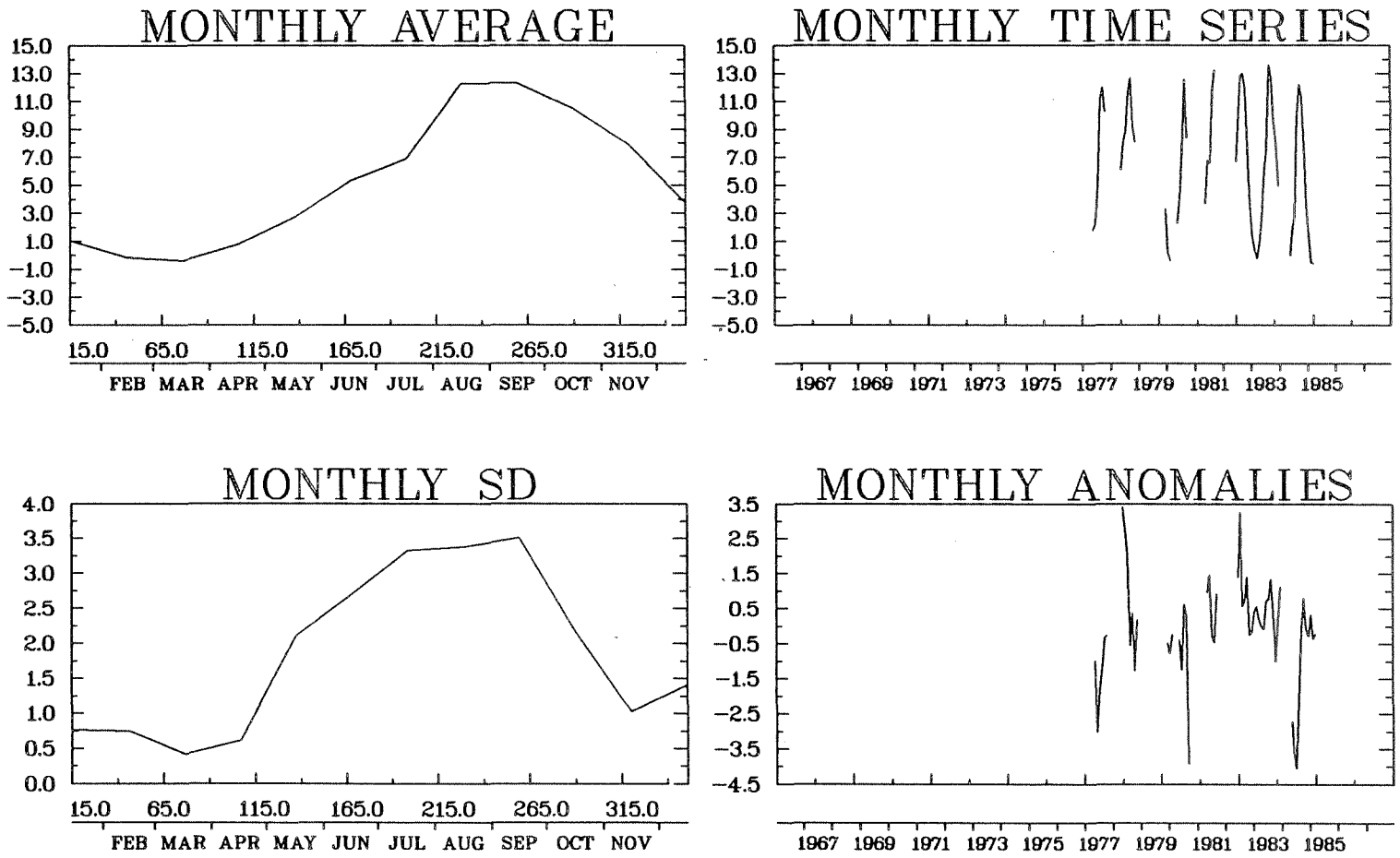
SHALLOW – 4VN TEMPERATURE



DEEP – 4VN TEMPERATURE



SHALLOW – 4WD TEMPERATURE



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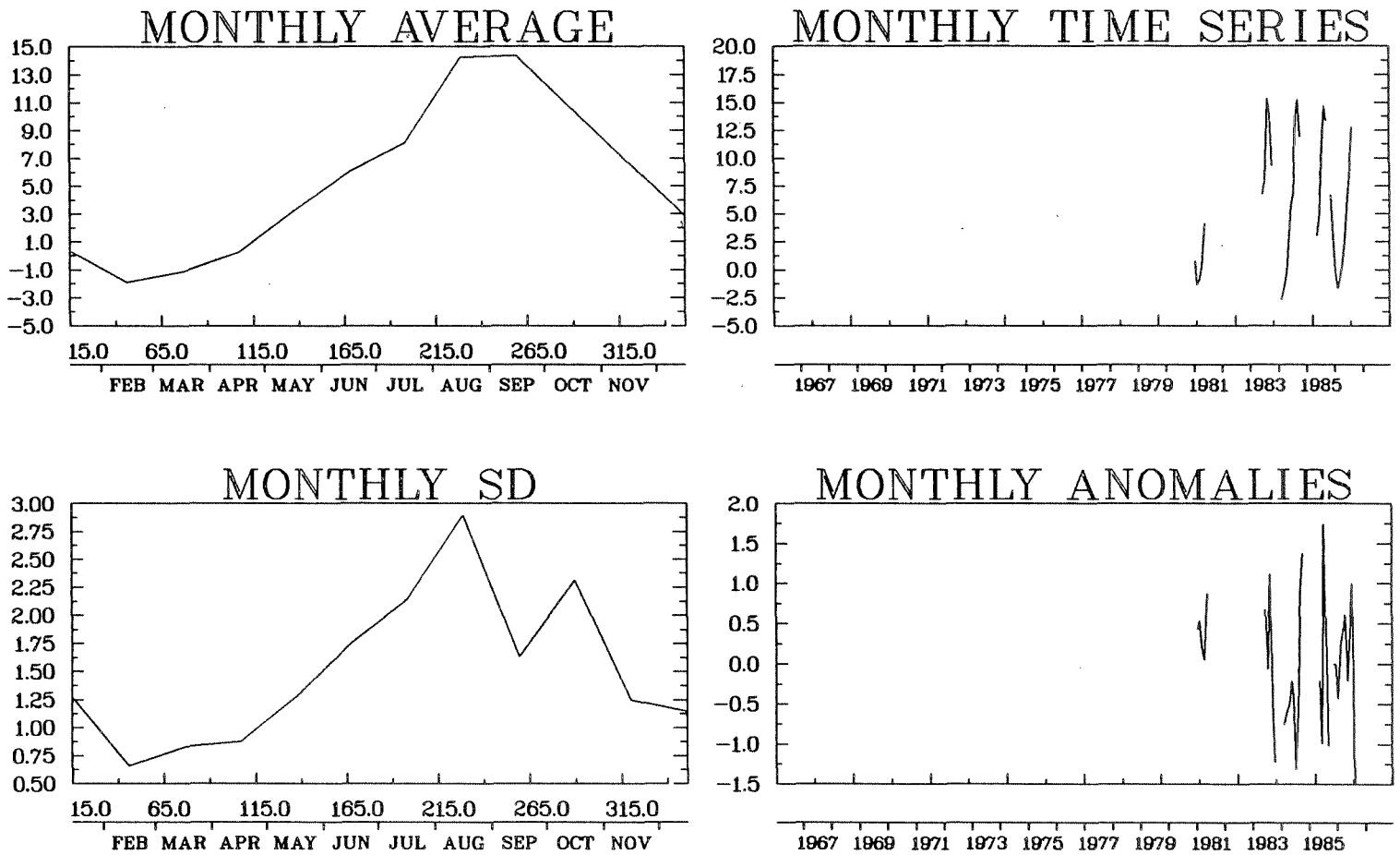
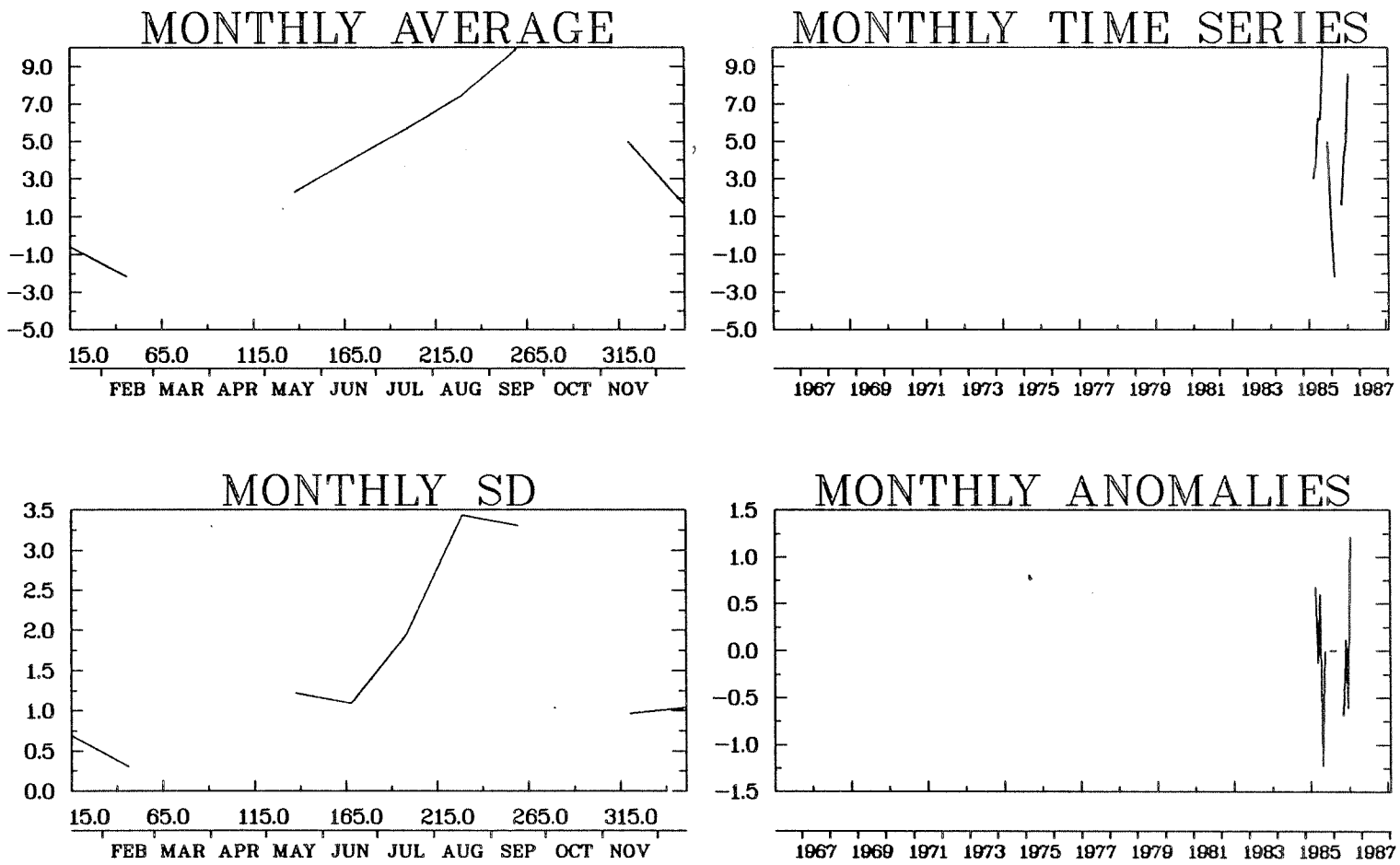
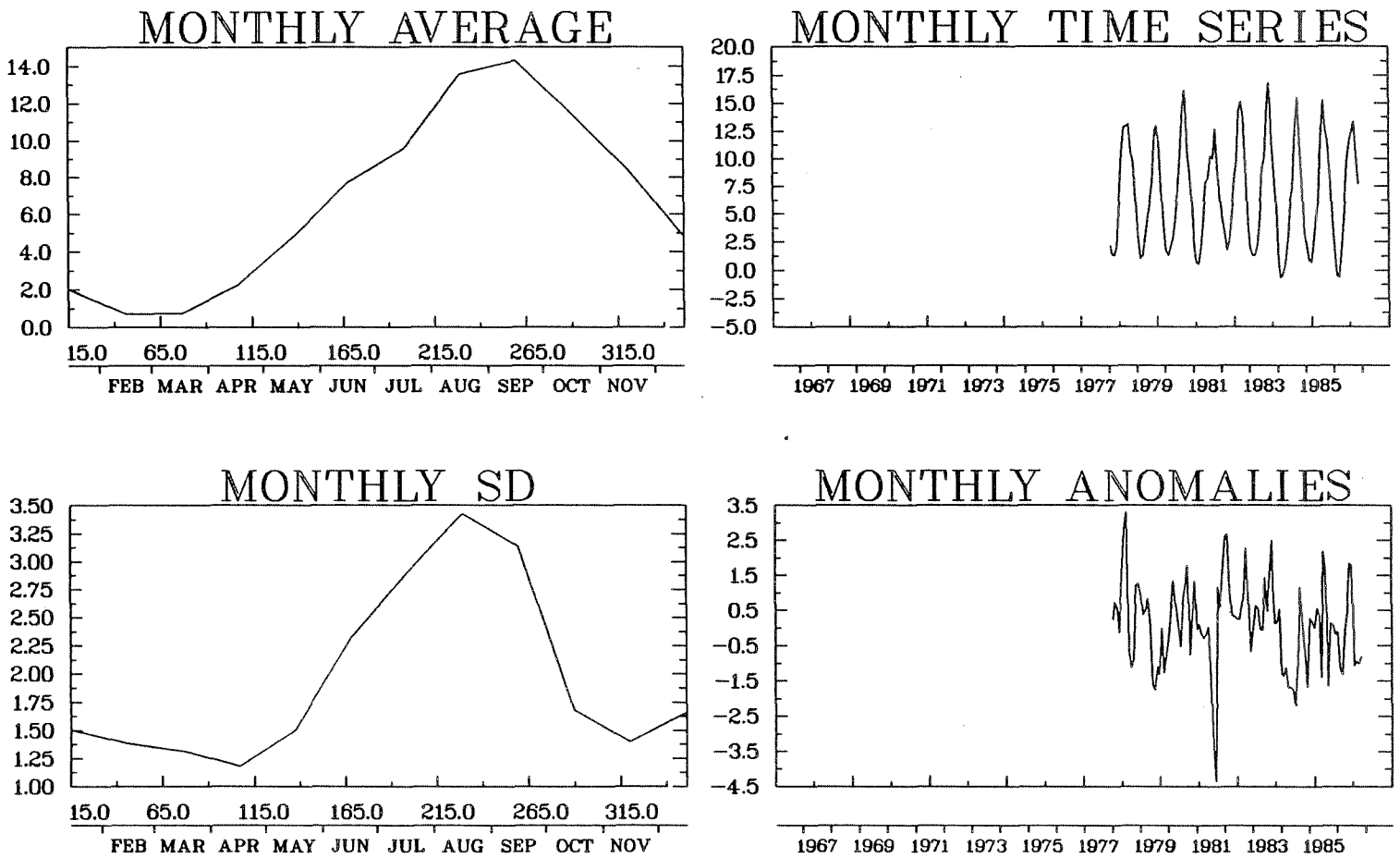


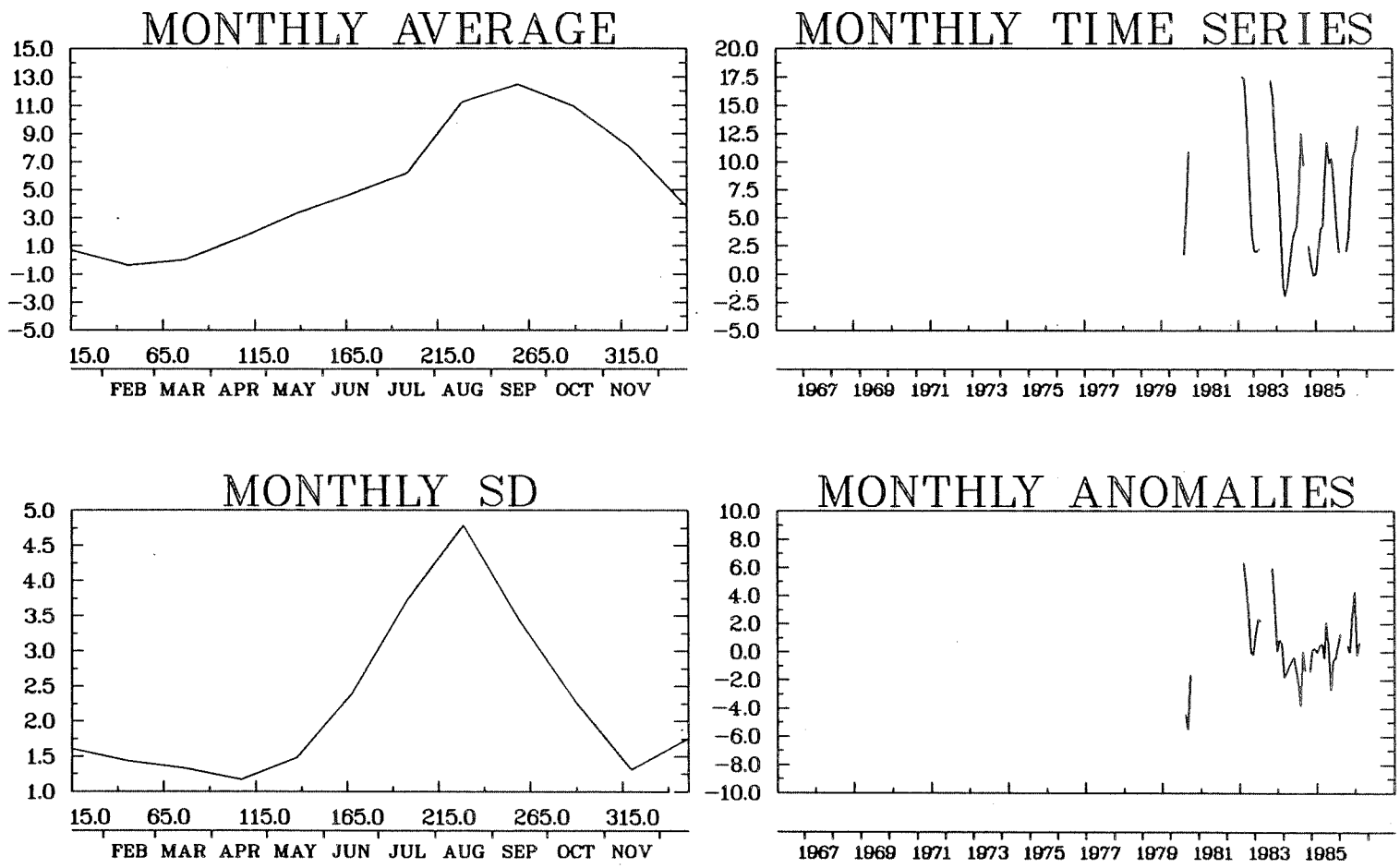
SHALLOW – 4WK TEMPERATURE



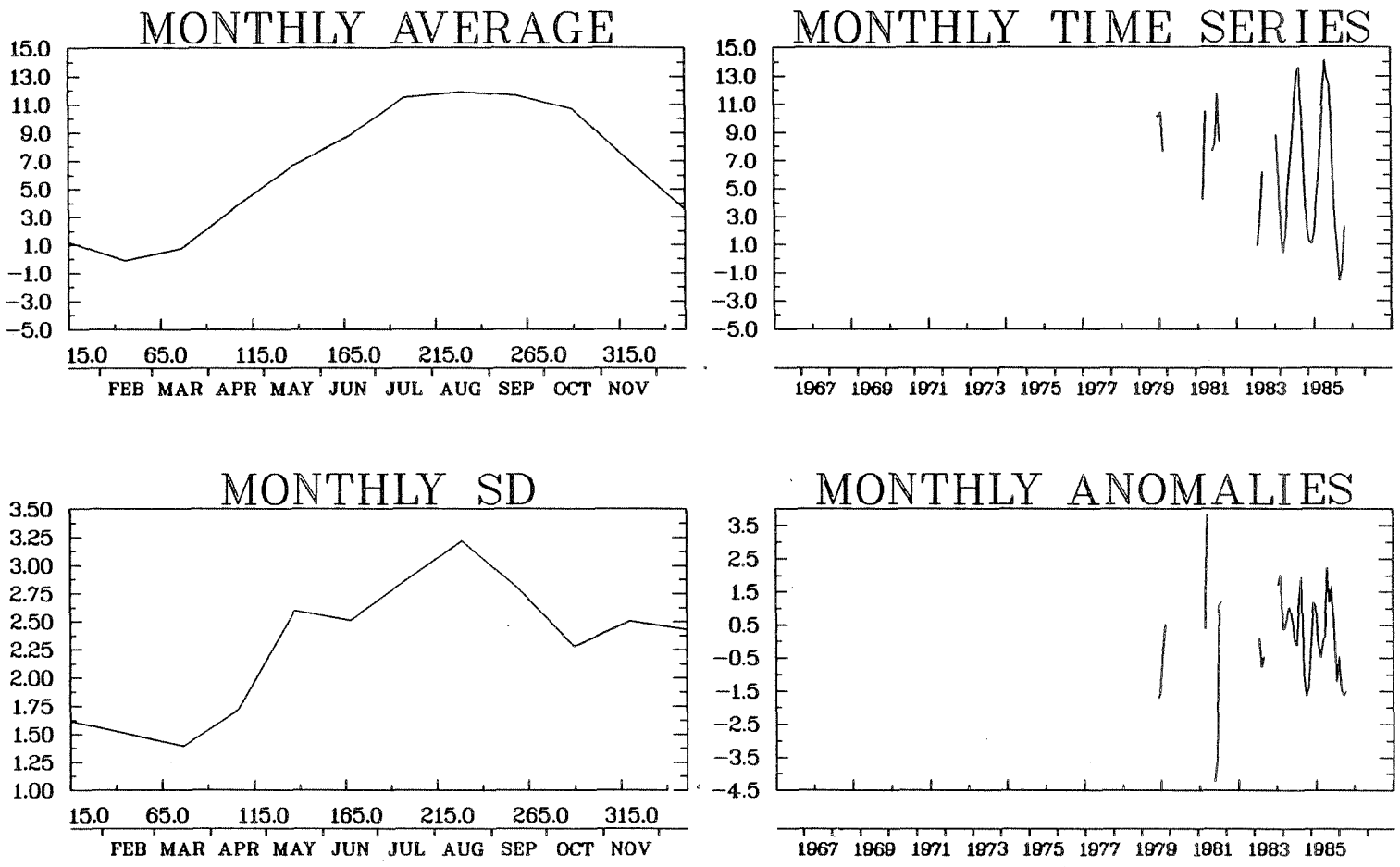
DEEP − 4WK TEMPERATURE



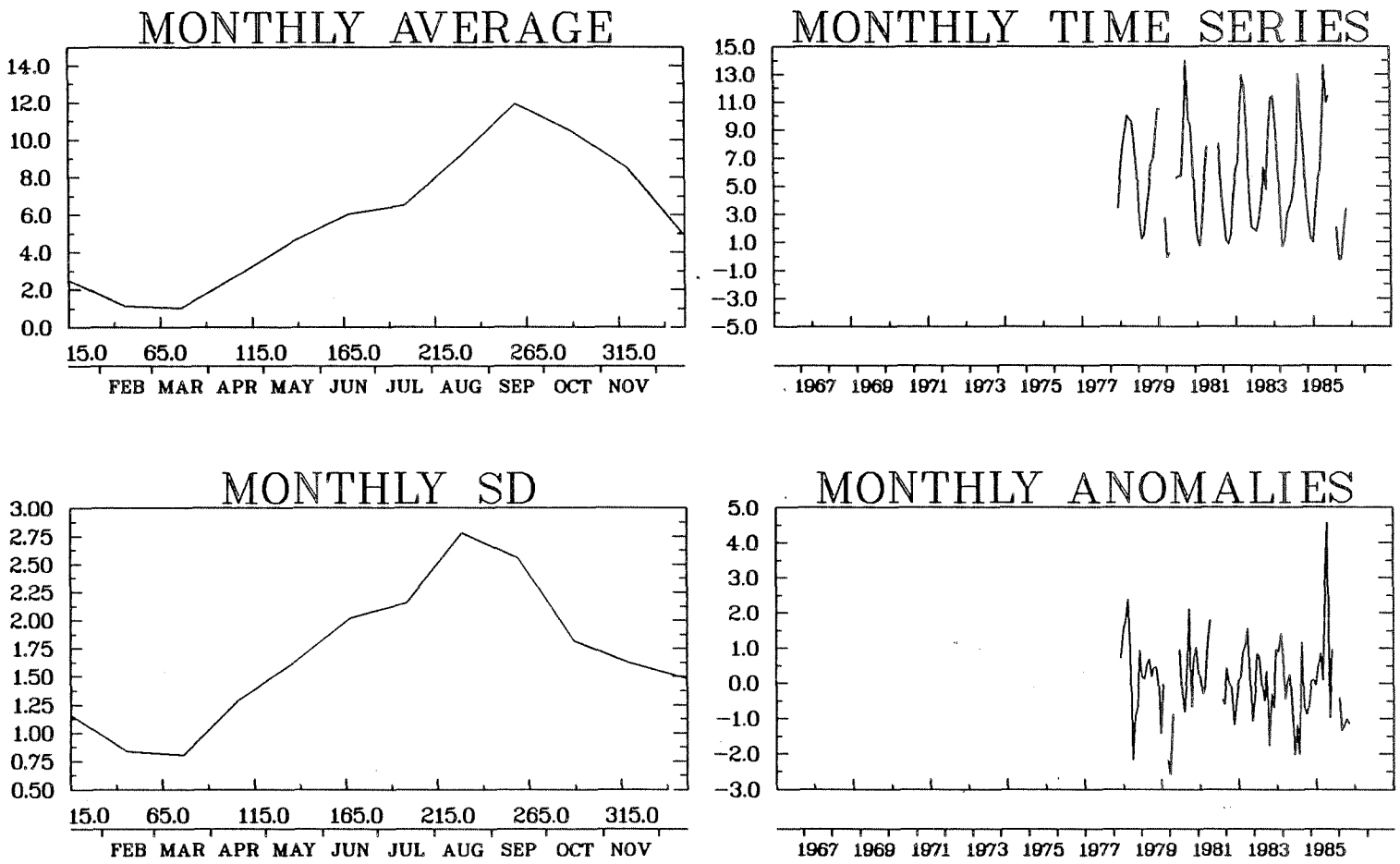
SHALLOW – 4XM TEMPERATURE



DEEP − 4XM TEMPERATURE



SHALLOW – 4XO TEMPERATURE



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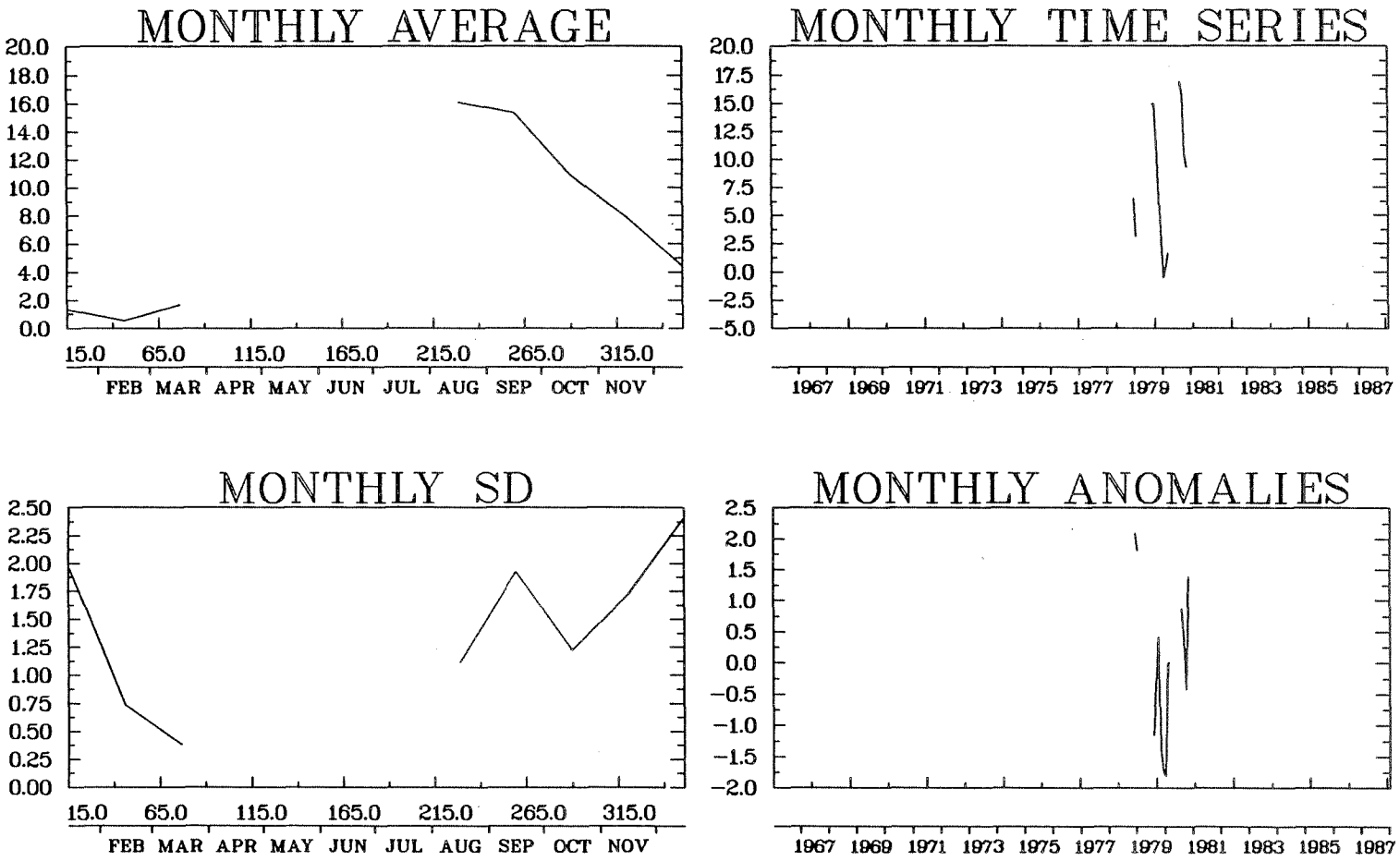
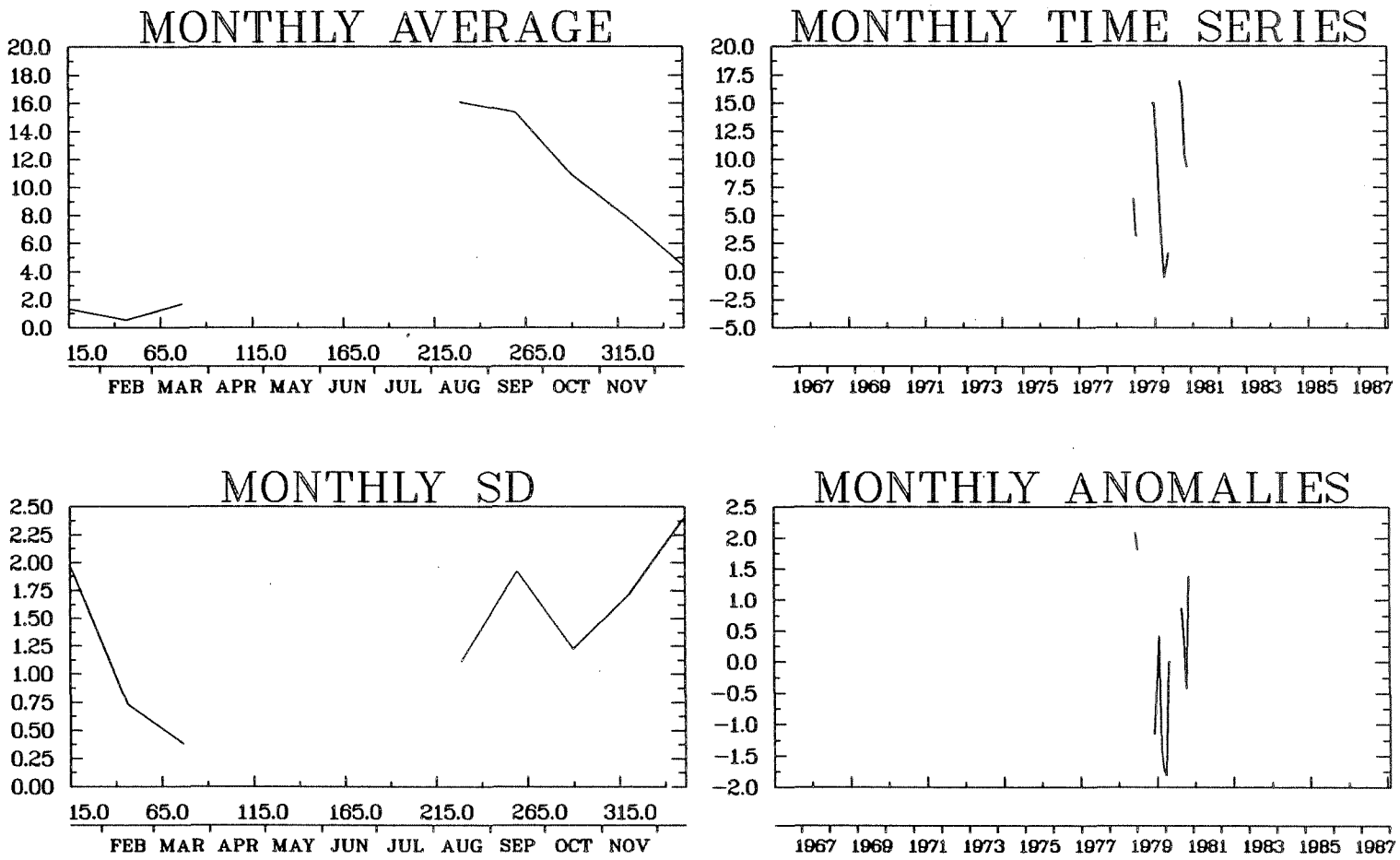
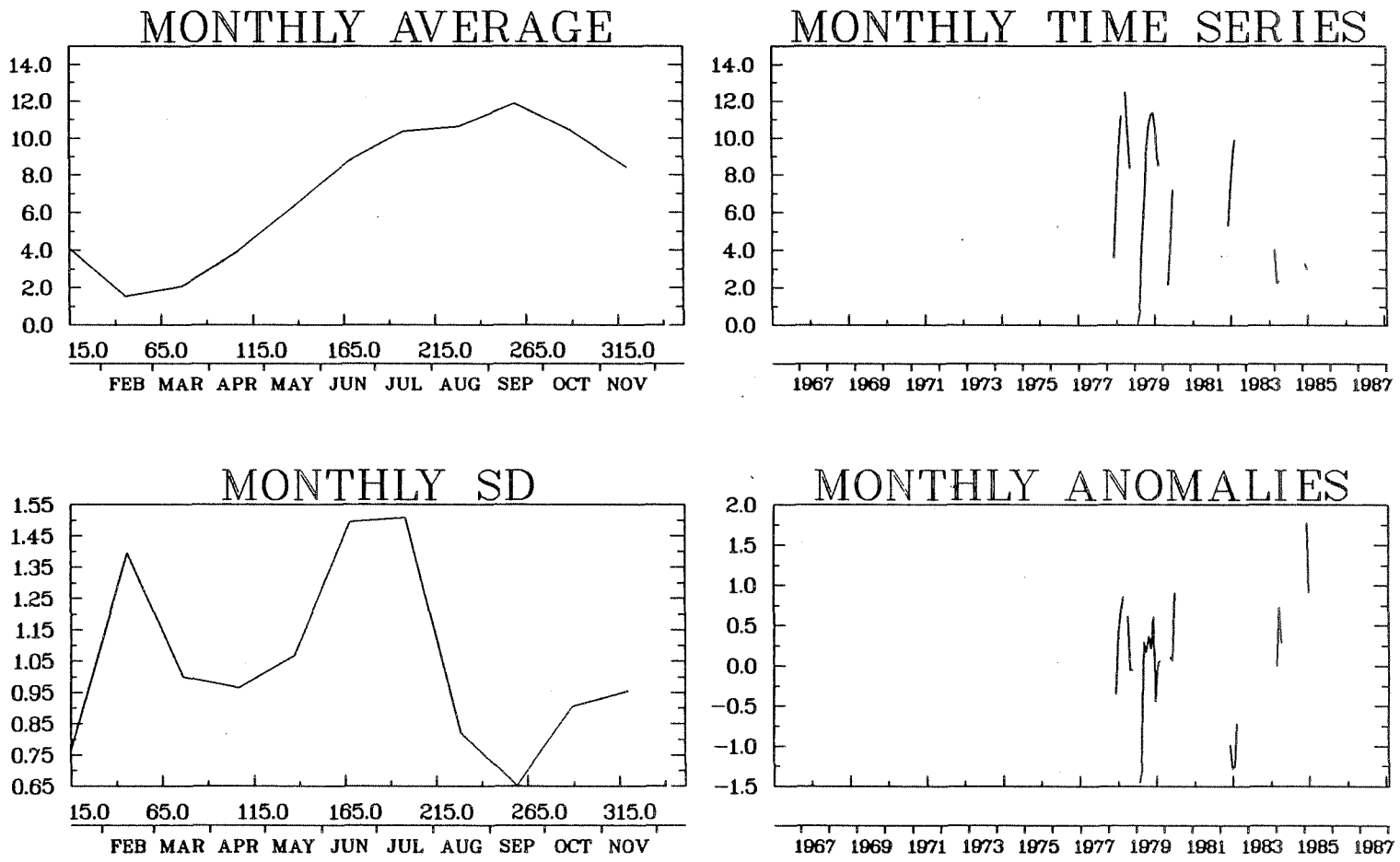


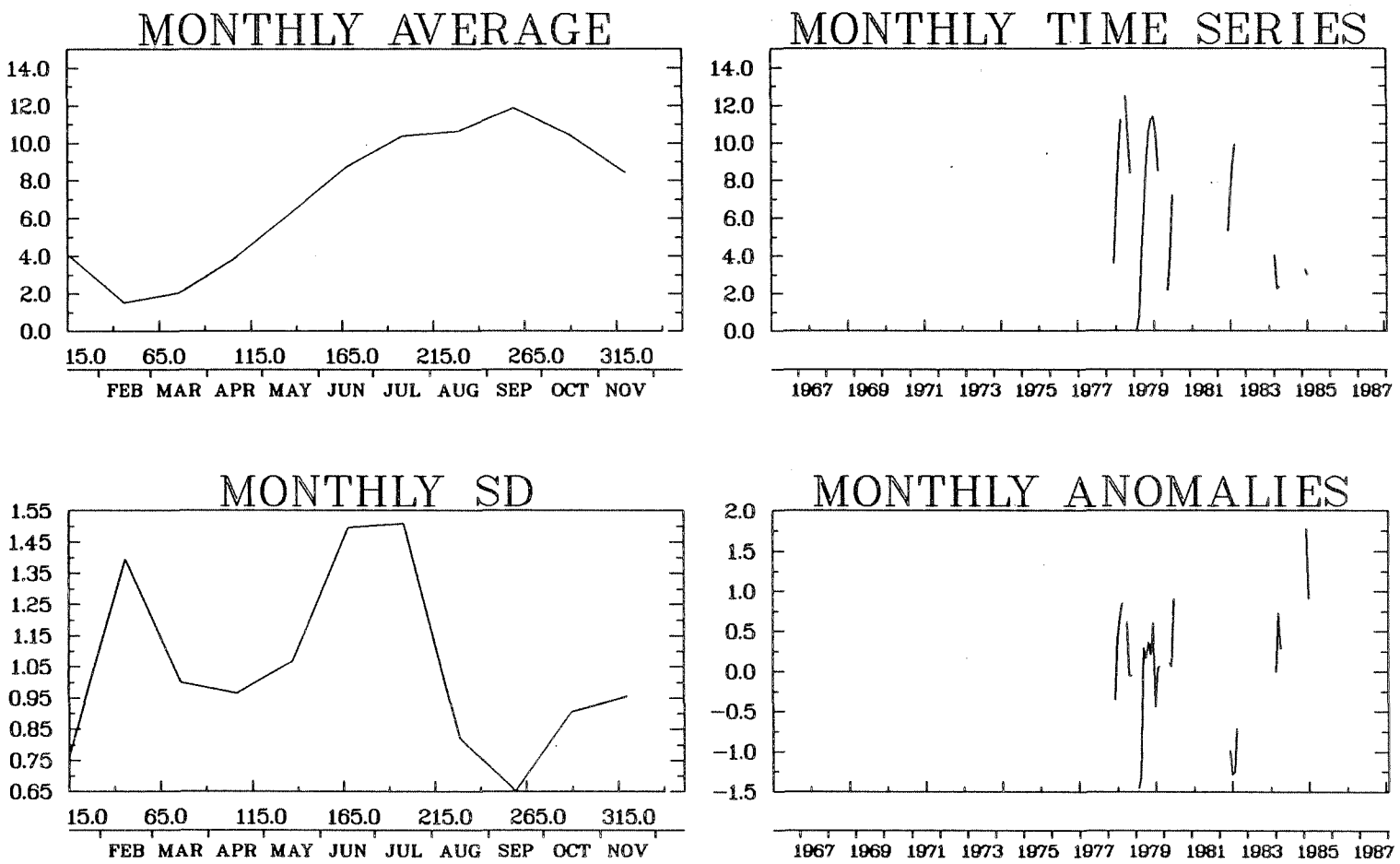
SHALLOW – 4XQ TEMPERATURE



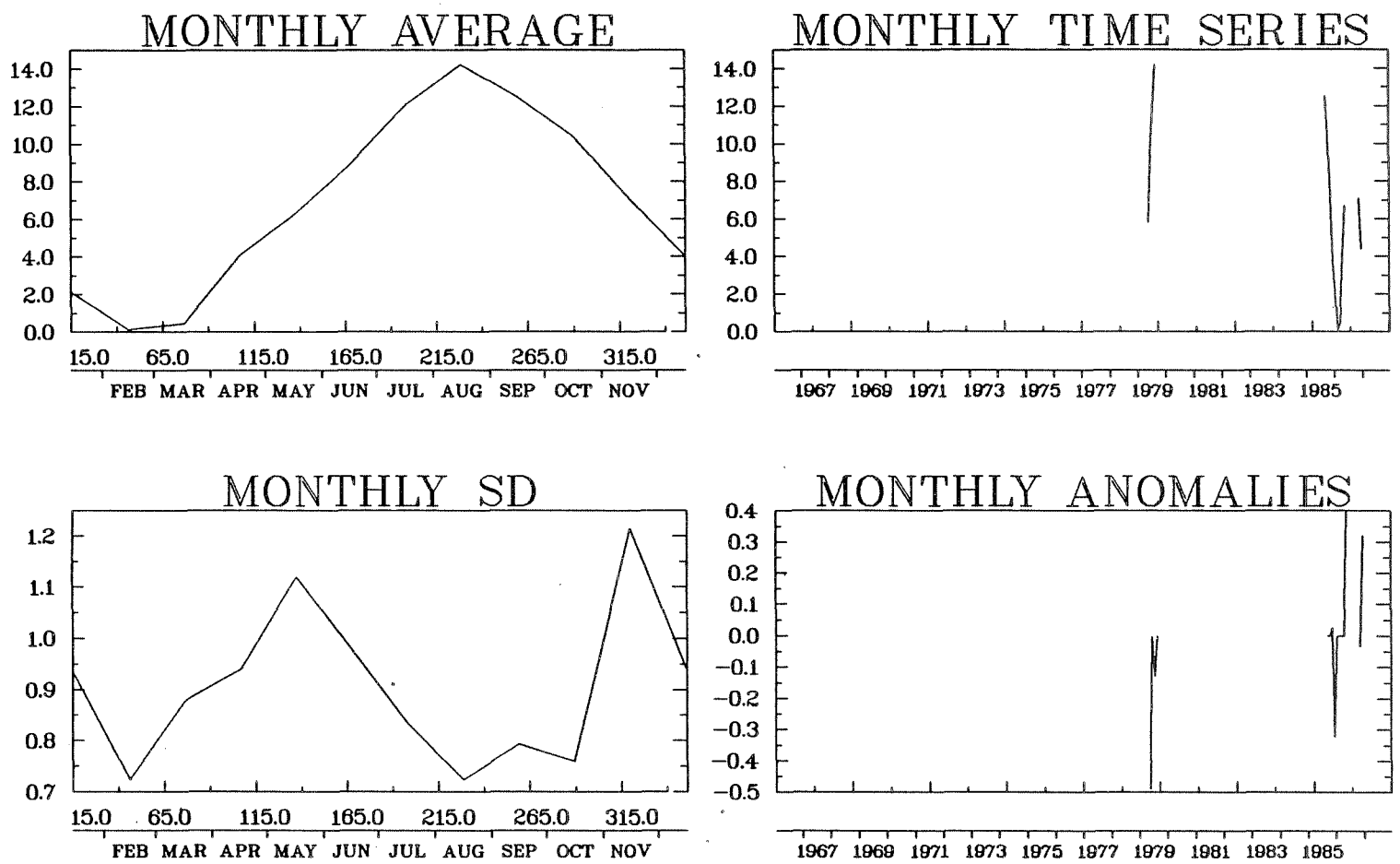
DEEP – 4XQ TEMPERATURE



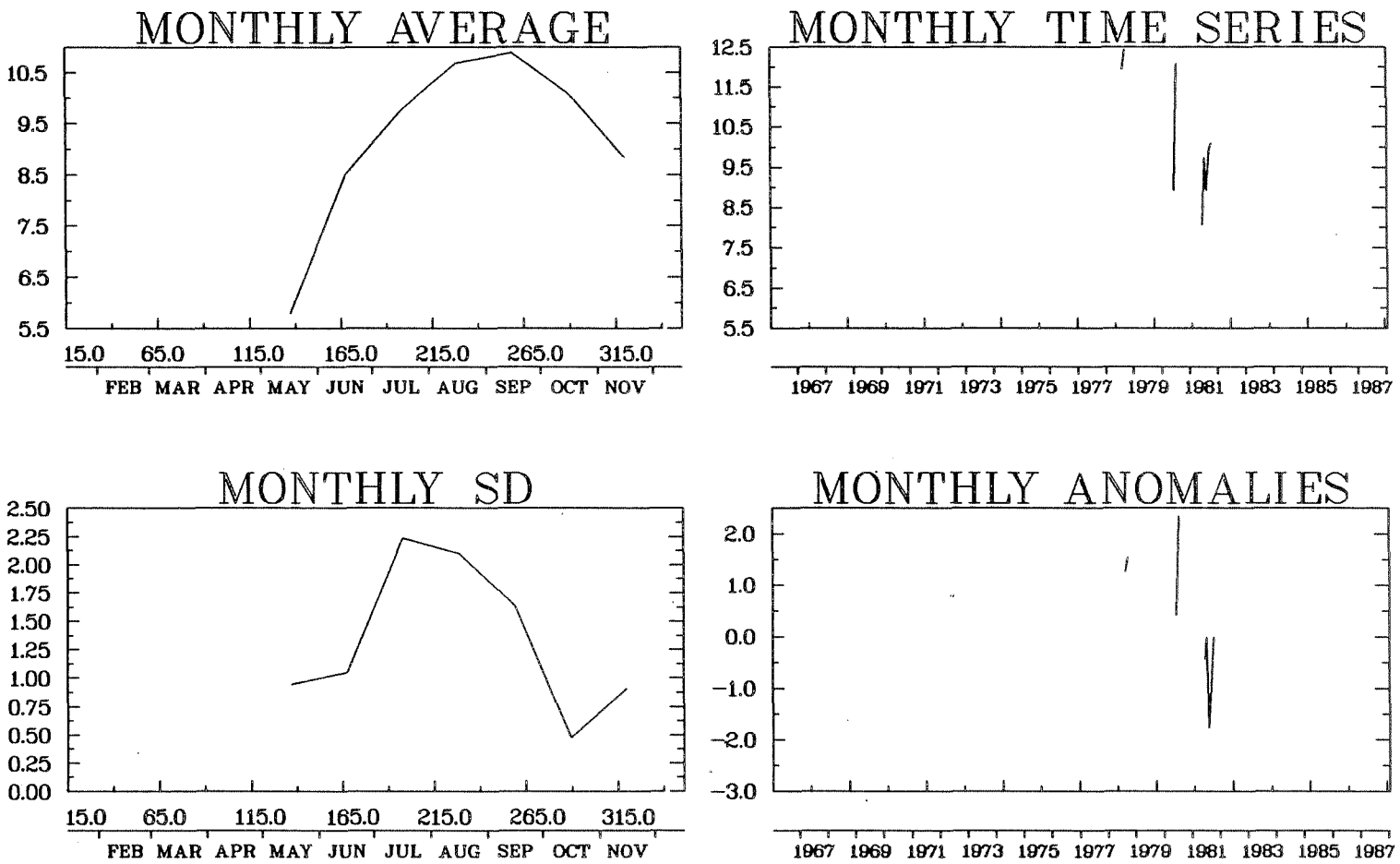
SHALLOW – 4XR TEMPERATURE



DEEP – 4XR TEMPERATURE



SHALLOW – 4XS TEMPERATURE



DEEP – 4XS TEMPERATURE

Appendix D. Description of the LTTM data products archived on magnetic tape.

On magnetic tape archived in the Bedford Institute Computer Centre and available through Doug Gregory, Physical and Chemical Sciences Branch, Department of Fisheries and Oceans, Dartmouth, Nova Scotia, are stored copies of key programs used, actual four-hourly time series (inputs), monthly time series (outputs), both monthly averages and monthly anomalies, together with statistical products. The statistical products include the number of 4-hour observations by month, the long-term grand monthly means, and standard deviations, within months, within a particular month, between months, and in total.

Also archived with Doug Gregory at Bedford Institute are listings of the above statistical products as well as of the correlation matrices.