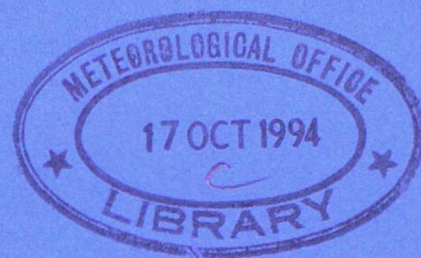


DUPLICATE



**REPORT ON  
THE QUALITY OF MARINE  
SURFACE OBSERVATIONS  
FOR THE PERIOD  
JULY TO DECEMBER 1993.**

**REPORT NO. 10**

**CENTRAL FORECASTING DIVISION,  
METEOROLOGICAL OFFICE,  
BRACKNELL.**

**Headquarters, Bracknell**

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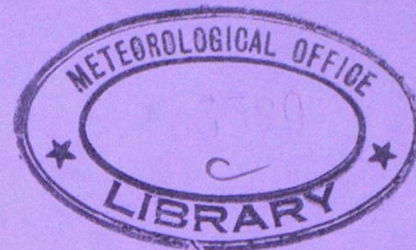
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# REPORT ON THE QUALITY OF MARINE SURFACE OBSERVATIONS:

JULY TO DECEMBER 1993

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# REPORT ON THE QUALITY OF MARINE SURFACE OBSERVATIONS:

JULY TO DECEMBER 1993

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2. Monitoring methods
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# REPORT ON THE QUALITY OF MARINE SURFACE OBSERVATIONS:

JULY TO DECEMBER 1993

## 1. INTRODUCTION

In 1985, the Commission for Basic Systems agreed that there was a need for GDPS/ Global NWP centres to monitor the quality of observations available on the GTS and to exchange monthly lists of those stations providing observations which seem in error. In 1988 three lead centres were nominated which would have a co-ordinating role of producing, at six-monthly intervals, consolidated lists of suspect stations for given data types together with information on the nature of the error. RSMC Bracknell was allocated the role as lead centre for marine surface observations which encompasses observations from ships, drifting buoys, moored buoys and other fixed marine platforms. This is the tenth such report and covers the period July to December 1993. The report covering the period January to June 1994 will appear in autumn (fall) 1994.

Following the CBS recommendations, four centres have been active in exchanging monitoring information each month; RSMC Bracknell since August 1987, ECMWF since August 1988, RSMC Tokyo since September 1988 and NMC Washington since August 1989. At first, the only monitoring information exchanged on marine surface observations was related to pressure, and the first two WMO reports were restricted to that parameter alone. All four centres now regularly monitor wind observations and results are contained in this report. In addition, the report contains monitoring results for sea-surface temperature (SST). For each marine observing platform identified as suspect, values are supplied for the number of observations received at each centre, the number of observations with gross errors, and the mean and rms differences from the background values used by the numerical data assimilation system.

## 2. MONITORING METHODS

Errors in observations may arise from a number of sources: the instrument may be malfunctioning, figures may be mistaken while being transferred manually, or there may be corruption of data during transmission. Errors can also arise in the pressure report if the adjustment to sea level is made incorrectly or not at all, and a poorly-sighted anemometer can result in errors in the observations of wind. For SST observations, the depth at which the observation is made can be crucial. "Surface" observations from buoys are usually made at a depth of around 0.5m, whereas ships may take a measurement between a depth of 10m and the surface, depending on the method used. At present, there is no indication given within the report of the observation's depth, so it is not possible to determine the significance of this factor. By contrast, satellites measure the temperature of the ocean's "skin" which is generally slightly cooler than the temperature immediately beneath, by several tenths of a °C, as a result of evaporative cooling and other surface processes. Some of these errors can be detected by applying checks on the code format and the internal consistency of the report (for example: are the position and pressure consistent with a report 6 hours earlier?). Checks on spatial consistency may be made if there are other nearby observations. However, such quality checks are unable to identify errors on all occasions and it is recognised that the numerical data assimilation systems in use today can provide global reference values which have a valuable application in the area of observation monitoring. The background field, or the short-term forecast from the previous numerical analysis, provides perhaps the most useful information on observation quality, as it represents an accurate and spatially consistent estimate of the observed value which is independent of the observation itself. Observation-minus-background (hereafter referred to as O-B) differences are at the centre of all monitoring work by GDPS centres. For sea-surface temperature, it is not possible to use a



background field with which to compare the observed value, as for wind and pressure observations, because no forecast of SST is performed. Instead, the analysis field is used. SST changes only slowly relative to parameters above the surface, thus this is a good enough approximation. Analyses are performed daily at RSMC Bracknell from an assimilation of both surface and satellite observations. There is one drawback in using the analysis field as an alternative: it is not independent of the observations themselves. This is a major limitation when it comes to assessing observation quality since the results are not straightforward to interpret.

Taking all marine surface observations together, the values of O-B have distinct characteristics. The vast majority of the observations show quite small departures from background and the distribution of O-B is nearly Gaussian, with little or no bias. The errors in the background field probably contribute most to the values of O-B for these observations. There is, however, often a smaller group of observations departing much more from background, for which observation error is the only reasonable explanation for the large values of O-B. Studies of the distribution of O-B and its variation at different points around the globe enable reasonably accurate estimates of background error to be made, and this provides the basis for the monitoring methods described here. Those marine observing platforms for which, in a sufficiently large sample, the observed values of pressure or wind differ from the background by an amount significantly in excess of the estimate of background error, may be labelled as suspect with a high degree of confidence. The limits used here to identify suspect observing platforms have been set sufficiently stringent to preclude much likelihood of the background, rather than the observations, being in error.

Each monitoring centre produces a monthly list of the identifiers of marine observing platforms considered suspect according to the departure from the centre's background values. All observations, both synoptic and asynoptic, are assimilated. At Bracknell, Tokyo and Washington, the corresponding background value used is that valid at the nearest main synoptic hour. At ECMWF, however, interpolation in time is performed.

Given that the number of observations made during the month is greater than or equal to 20, then the condition used by all centres for obtaining platforms for the suspect lists is that at least one of the following criteria are satisfied:

#### Pressure

1. the | mean of O-B |  $\geq 4.0 \text{ hPa}$
2. the standard deviation of O-B  $\geq 6.0 \text{ hPa}$
3. the percentage of gross errors  $\geq 25$

#### Wind \*

1. the | mean of O-B |  $\geq 5.0 \text{ ms}^{-1}$  (Speed)  
 $\geq 30^\circ$  (Direction)
2. the standard deviation of O-B  $\geq 80^\circ$  (Direction)
3. the percentage of gross errors  $\geq 25$

\* For Washington, these criteria apply from September 1993 only

A gross error is defined as an observation which departs from the background by more than  $15 \text{ hPa}$  (Pressure) or  $25 \text{ ms}^{-1}$  (Vector Wind). The mean and standard deviation of the samples are evaluated excluding gross errors and in this way occasional "wild" values resulting from, for example, corruption during transmission, do not influence the sample characteristics. Direction statistics are also calculated excluding values in light winds, where either the observed or background speed is less than  $5 \text{ ms}^{-1}$ .

No information is exchanged between centres on a regular monthly basis for SST.



The monthly results for pressure from all four monitoring centres show considerable agreement, both on the observing platforms listed as suspect and the values of the mean and rms difference from each centre's background. Differences between the monthly suspect lists are usually due to the different numbers of observations available at each centre. The cut-off varies between 6 and 24 hours. There are also some unexplained variations in the data receipt between the centres, which may be due to problems in the GTS or in the local procedures for handling the data. Monitoring information for wind speed is regularly exchanged between ECMWF, RSMC Tokyo and RSMC Bracknell, with reasonable agreement on the mean and standard deviation from each centre's background; there is less agreement as to which platforms are listed, reflecting the greater uncertainty when monitoring wind speed. NMC have also played a part in the exchange of wind statistics; different criteria were used until August 1993 however and so it was impossible to make a comparison with other centres before that time.

This report draws together all the monthly monitoring results exchanged on marine surface data and identifies a list of observing platforms which have provided observations of poor quality over the six-month period. In drawing-up this list, there have been a number of guiding principles:

1. As with the monthly lists, accuracy is assessed relative to background values.
2. Only those observing platforms are listed for which there is a very high degree of confidence that the observations rather than the background values are in error.
3. At least 40 reports are required over the period in which the observations are considered suspect.
4. The perceived accuracy over the last part of the six-month period is of greatest importance; observing platforms will not be listed if there has been recent improvement and their reports are at present without major error.
5. Given that the number of observations made during the period is greater than or equal to 40, then the condition for listing a platform as suspect in this report is that at least one of the following criteria are satisfied:

#### Pressure

1. the | mean of O-B |  $\geq 3.5 \text{ hPa}$
2. the standard deviation of O-B  $\geq 5.0 \text{ hPa}$
3. the percentage of gross errors  $\geq 25$

#### Wind

1. the | mean of O-B |  $\geq 5.0 \text{ ms}^{-1}$  (Speed)  
 $\geq 30^\circ$  (Direction)
2. the standard deviation of O-B  $\geq 6.0 \text{ ms}^{-1}$  (Speed)  
 $\geq 60^\circ$  (Direction)
3. the percentage of gross errors  $\geq 25$

#### SST

1. the RMS of O-A  $\geq 2.5^\circ \text{C}$
2. the percentage of gross errors  $\geq 25$

The same gross error limits apply in this report as for the monthly lists, with the limit for SST being set at  $5^\circ \text{C}$ . All observations having gross errors are excluded from the calculation of the mean and standard deviation of O-B and O-A.

The limits set on the bias and standard deviation of O-B are slightly less stringent than those for the monthly lists because the sample sizes are larger. They are only applied over the last part of the period if there has been a recent deterioration in quality. It is possible that there are a few



observing platforms listed in this report which have not appeared on any of the monthly lists. This can occur if they report infrequently and only produce a large enough sample over a period of several months. The six-month list is longer than most of the monthly lists because many ships cease reporting for variable periods of time, presumably in most cases while they are in port or out of service. Only over a relatively long period, probably more than six months, is a representative sample obtained from all those ships providing observations.

### 3. MONITORING RESULTS

The monitoring results presented in this report only relate to data exchanged over the GTS. Observations from marine platforms are transmitted in one of two formats: the SHIP code, used for most observations from ships, moored buoys and other fixed platforms, and the DRIFTR code, used mostly for observations from drifting buoys. In this report the term "ship observations" refers to those received in the SHIP code and the "drifting buoy observations" to those received in DRIFTR code. The SHIP code indicates whether the observation was made manually or by an automatic system and accordingly the sub-divisions "manual ship" and "automatic ship" will be defined.

#### 3.1 Pressure

In the six-month period July to December 1993, 752993 observations of pressure were monitored at Bracknell from 6662 manual ships, 320 drifting buoys, and 547 automatic ships. The number of reports received from individual ships varies greatly as Table 1 demonstrates. Apparently, a very large percentage only report once. The reason for this is unclear but it may be a result of errors in the part of the message giving the ship identifier.

TABLE 1: FREQUENCY DISTRIBUTION OF THE NUMBER OF REPORTS OF PRESSURE, WIND AND SEA SURFACE TEMPERATURE FROM INDIVIDUAL IDENTIFIERS AVAILABLE FOR MONITORING AT BRACKNELL, JULY TO DECEMBER 1993.

Number of reports	Number of manual ships reporting			Number of drifting buoys reporting			Number of automatic ships reporting		
	Press	Wind	SST	Press	Wind	SST	Press	Wind	SST*
1	2395	2062	2510	18	18	0	135	124	8
2-10	1044	1013	1112	25	19	27	68	175	120
11-20	387	447	373	4	4	10	22	17	12
21-40	622	646	543	11	4	30	29	42	14
41-100	1003	931	957	26	21	78	52	105	5
101-200	711	617	641	41	12	93	105	131	1
201-500	480	346	402	63	48	325	44	36	10
501-1000	20	12	44	54	11	203	92	44	9
1001-1500	0	0	6	51	8	85	0	0	21
1501 +	0	0	2	27	1	36	0	0	73
Total	6662	6074	6590	320	146	887	547	574	274

\* numbers are for automatic (fixed) buoys only

Table 2 shows the number of observations of pressure that have been received over the GTS at Bracknell for past six-month periods. Due to changes in data storage methods at Bracknell in May 1991, report number 5 covered the period January to May 1991 only, thence figures for January-June 1991 have been scaled-up in order to make a fair comparison with other six-month periods; this may not be entirely accurate. Further changes in November 1993 for drifting buoys & automatic ships for pressure & winds, may have allowed duplication of a few identifiers in Table



1, as reclassification from one observation type to another occurred; this duplication is obviously temporary. The observation distribution shown in Table 2 will also have been affected in the long term with a slight shift towards drifting buoys; no duplication of observations occurred however. SST observations were not affected by the November 1993 change.

# NUMBER OF OBSERVATIONS OF PRESSURE RECEIVED AT BRACKNELL ON THE GTS FOR EACH OF THE SIX-MONTH PERIODS COVERED BY THE WMO REPORTS ON THE QUALITY OF MARINE OBSERVATIONS

TABLE 2:

Period	WMO report number	Number of Observations			Total
		Manual ships	Drifting buoys	Automatic ships	
Jan-Jun 1989	1	424087	174971	40082	639140
Jul-Dec 1989	2	421315	151972	58016	631303
Jan-Jun 1990	3	424335	177927	63847	666109
Jul-Dec 1990	4	412430	205488	71146	689064
Jan-Jun 1991	5	364760	177069	64401	606230
Jul-Dec 1991	6	348710	148604	68456	565770
Jan-Jun 1992	7	332443	216872	73893	623208
Jul-Dec 1992	8	336958	247873	80862	665693
Jan-Jun 1993	9	340293	288208	77317	705818
Jul-Dec 1993	10	348082	316261	88650	752993

FIGURE 1:

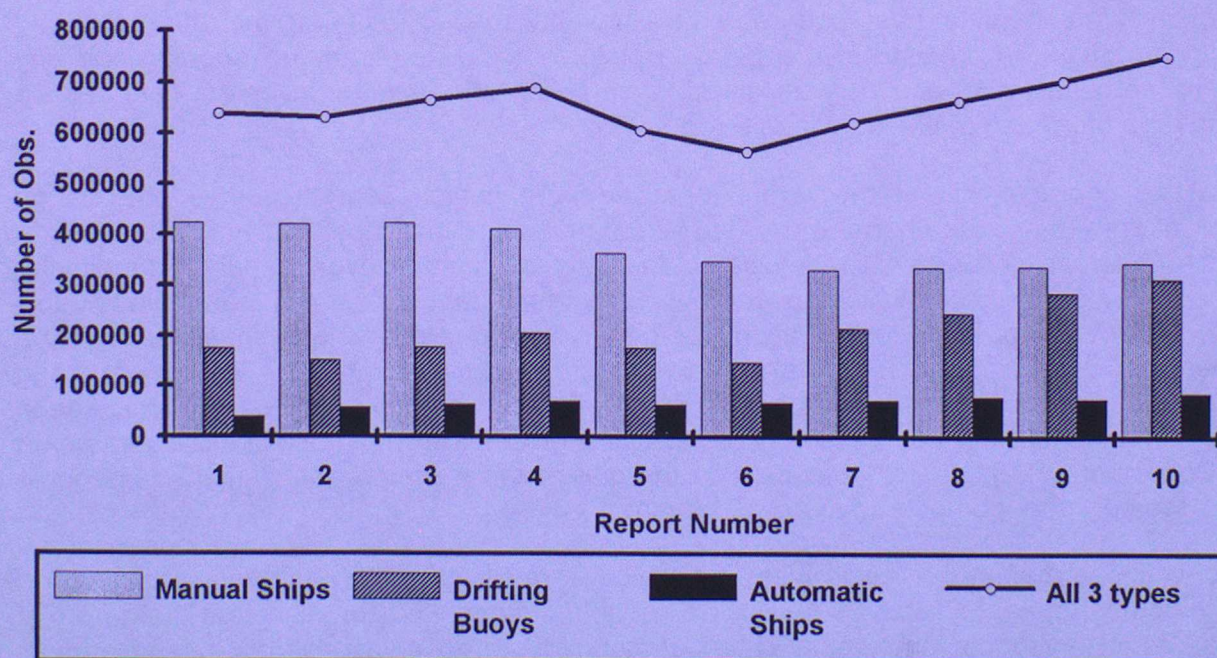


Figure 1 shows the information presented in Table 2 more clearly. It can be seen that the total number of observations rose somewhat to begin with, but was followed by a notable decline. Since report number 6 (covering the period July to December 1991) however, there has been a recovery in the total, with the latter half of 1993 showing the greatest number of all. At first the



increase was mainly due to an increase in the number of drifting buoys reporting; more recently however, the number of buoys has stabilised to some extent, but a marked increase in the number of reports from each buoy continues, as reliability improves. The total number of reports from ships has shown a slight increase in the past six months, with a slight shift towards automatic ships; the number of ships continues to decline however, again with a shift towards automation.

A histogram of O-B differences for all ship pressure reports in the period July to December 1993 is shown in Figure 2a, together with the Gaussian distribution with the same mean and standard deviation. Although almost all values fall within the range +5 to -5 hPa, a small number of very large values, presumably resulting from erroneous observations, contribute to the large standard deviation of the population. The distribution for all those observations which fail the automatic quality-control checks is broad and bimodal (Figure 2b). The remaining 95 per cent of the observations which pass the quality checks show a distribution of O-B which is very close to Gaussian (Figure 2c) with mean -0.1 hPa and standard deviation 1.4 hPa; the principal contribution to the standard deviation is assumed to be from background errors.

A global estimate of the background error, such as is provided above, will conceal large variations which may occur from place to place. Background values will be more accurate in data-rich areas (eg: in the North Sea or Mediterranean) or where the meteorological variability is low (eg: the tropics). The geographical distributions of the mean and standard deviation of the values of O-B from all ship observations which pass the quality-control checks, have been calculated for 10-degree latitude-longitude boxes and are plotted in Figures 3 and 4. In almost all areas the magnitude of the mean is less than 1.0 hPa, the exceptions being generally only where the sample size is small; in fact, with these exceptions plus the Pacific Ocean, many areas show a magnitude of less than 0.5hPa. The standard deviation in the tropics is 1.0 to 1.5 hPa, in northern latitudes 1.5 to 2.0 hPa, and in the Southern Ocean 2.0 to 3.0 hPa. The number of ship pressure reports accepted by the model quality control in each 10-degree box is shown in Figure 5.

Table 3 contains a list of those ships and drifting buoys considered to have produced suspect observations of pressure in the period July to December 1993. Values over the six-month period are given for the number of observations of pressure available for the Bracknell global model runs, the number of observations differing from the background value by more than 15 hPa (gross errors), and the mean and standard deviation of O-B using the Bracknell global model. The number of times the identifier has appeared on the monthly suspect lists from the four monitoring centres is also given. In order to give a detailed picture of the frequency of reporting and any changes in the observation accuracy, six-month time-series of O-B differences are given at the end of the report for each of the identifiers listed.

An interesting characteristic of the errors identified here, which soon becomes obvious on inspection of the time-series charts at the end of this report, is that most can be attributed to a bias in the observed pressure. In many cases the bias is constant over the whole monitoring period. There are some values which appear to depart greatly from the sample mean, presumably due to some gross error in the observation, but generally they are isolated instances. In only a few cases are there regular large random departures from background. Those observing platforms listed in Table 3 which appeared in the ninth report ( January to June 1993 ) have been indicated with an asterisk. A comparison of the statistics given here with those in the eighth report (July to December 1992), clearly indicates that the bias in the pressure observations from some ships has scarcely changed over the past 12 months.

Statistics for those marine observing platforms which were listed in the ninth six-monthly report and which do not appear in Table 3b, are given in Table 4 along with comments on the quality of their pressure observations. Time-series charts of the pressure observations from these platforms are not given. Less than 40 reports have been received in the latest six-month period for a majority of the ships on this list; several show some improvement in the quality of observations, however.



### 3.2 Wind

The monitoring of observations of wind, presents more problems than for pressure. On the majority of observing platforms, wind is measured using anemometers. The reported speed will be dependent on the averaging period and the height of the instrument above sea level, which will vary a great deal from platform to platform. The wind flow is distorted by a large structure and factors affecting the wind measurement will also include the siting of the anemometer and the bearing of the wind with respect to the structure. Not all winds are measured by anemometers; observations from some ships are based on visual estimates of the sea state and in these cases the factors outlined above do not apply.

In the monitoring results presented here, the background winds are valid at a height of 10 metres above mean sea-level, a little lower than the average height of a ship anemometer. Where the anemometer height is much different from the reference height a significant O-B speed bias may be introduced. This will be the case, for example, for observations from oil rigs or tankers with an anemometer height of 50m or more, or from buoys where the anemometer can be as low as 2m.

In the period July to December 1993, 395644 observations of wind were available for monitoring at Bracknell from 6074 manual ships, 146 drifting buoys, and 574 automatic ships. A more detailed breakdown is given in Table 1. Histograms of O-B differences for ship observations of wind speed are presented in Figures 2d to 2f and of wind direction in Figures 2g to 2j. As with observations of pressure, those wind observations which fail the quality-control checks differ most from background, some by as much as  $50\text{ms}^{-1}$ , and they make a large contribution to the variance of O-B. The distributions of O-B wind speed and direction for the remaining 93 per cent of the observations are nearly Gaussian. There is a speed bias of  $1.3\text{ms}^{-1}$  relative to background, with a direction bias of just  $-1.5^\circ$ .

Figures 6 and 7 show the geographical distributions over the six-month period of the mean and standard deviation of O-B for ship observations of wind speed which pass the quality-control checks. The numbers of wind reports used to generate these statistics are presented in Figure 8. The standard deviation of O-B wind speed is typically  $3$  to  $4\text{ms}^{-1}$  in middle latitudes and less than  $3\text{ms}^{-1}$  in the tropics. The bias is generally around  $+1\text{ms}^{-1}$ , but exceeds  $+2\text{ms}^{-1}$  in a few places. Similar distributions of the mean and standard deviation of O-B wind direction are shown in Figures 9 and 10. Only reports where both the observed and background wind speeds are greater than  $5\text{ms}^{-1}$  were used to obtain these values. The magnitude of the bias is less than 10 degrees in most places. The standard deviation is generally between 20 and 30 degrees globally, but in some areas, notably tropical parts of the Indian and Pacific Oceans & in data-sparse areas of the southern hemisphere, it is as large as 40 to 60 degrees. The numbers of reports of wind direction used to generate these statistics are presented in Figure 11.

Figures 6-11 provide reference values against which the characteristics of O-B for different marine observing platforms may be compared. Table 5 contains a list of those ships and drifting buoys considered to have produced suspect observations of wind speed in the period July to December 1993, and in Table 7 a similar list is provided for wind direction. Values are given for the number of observations of wind received at Bracknell, the number of observations having a vector difference from background of more than  $25\text{ms}^{-1}$  (gross errors), & the mean and standard deviation of O-B. Time-series of O-B for each identifier listed are given at the end of the report. In most cases of suspect speed observations, a constant bias is clearly evident. Errors in observations of direction are more random in nature. Tables 6 & 8 contain statistics for platforms which are not included in Tables 5 & 7 but that were listed in the previous six-month report, for wind speed & direction respectively. Time-series plots for these identifiers are not included in this report.

### 3.3 Sea-surface temperature

In the six-month period, July to December 1993, a total of 1080169 observations of SST were monitored at RSMC Bracknell. Of these, 330174 were from ships, 286703 from fixed buoys and 453845 from drifting buoys. This is an increase of 118342 compared with the six-month period



January to June 1993. The increase is due to a further large increase in the number of observations from drifting buoys & a smaller increase in those from fixed buoys, but is offset by a slight fall in reports from ships. The number of ships reporting SST has decreased by around 10% compared with the previous six months but the number of drifting buoys reporting has again increased; the number of fixed buoys reporting has also increased slightly. Table 1 gives the number of reports received from individual identifiers in frequency categories and shows that a large number of ships and fixed buoys reported only once during the six-month period. Errors in reporting the station's identifier could make a significant contribution to these totals. Despite there being a relatively small number of buoys, they constitute a substantial percentage of the total number of observations received. This is due to the frequency at which the observations are made: ships usually report only at the main synoptic hours, or less frequently, whereas some buoys report as often as every hour.

Figures 12a, 12b and 12c show the number of observations, mean O-A and standard deviation of O-A for each of the 3 observation types, for both the northern and the southern hemispheres. Only observations passing quality control checks have been used. Figure 12b shows that the overall bias of each observation type is small ( $< 0.1^{\circ}\text{C}$ ), with ship observations having a slightly positive bias and fixed and drifting buoys a slightly negative bias. Figure 12c shows that ship observations are substantially more erratic, with standard deviations approximately twice those of fixed and drifting buoys. This is partly due to the fact that buoys report frequently and at a quasi-constant location which effectively gives them increased weight in the analysed field.

Figures 13, 14 and 15 respectively show the global distribution of the bias and standard deviation of O-A and the numbers of observations, for ships. The largest biases occur at high latitudes, which is most likely a result of the small number of observations available and hence the decreased reliability of the analysis in these areas, particularly in the southern hemisphere. Figures 16 and 17 show the global distribution of fixed and drifting buoy SST reports. The coverage provided by drifting buoys is extensive with particularly good coverage in the Pacific Ocean. Only a limited number of platforms report in the Indian Ocean and tropical parts of the Atlantic Ocean. Fixed buoys are largely concentrated in coastal regions, with particularly high observation densities around the UK and the USA. A number of  $10^{\circ} \times 10^{\circ}$  grid boxes contain less than 5 reports; this situation may have arisen from reports containing erroneous positions.

Table 9 contains a list of the ships and drifting buoys considered to have produced suspect observations over the six-month period. The comments given in each case provide an indication of the main reason for the station to be listed as suspect. Table 10 gives details of the performance over the latest six-month period of ships which were considered suspect in the previous six-month period but which don't appear in Table 9. A significant number of the ships included in Table 10 have shown an improvement in the accuracy of SST measurements during the last six months of 1993. No time-series charts have been plotted for SST so the comments are based on a comparison of the magnitudes of the mean, root-mean-square error and standard deviation of O-A. A large number of the identifiers appearing on the list do so as a result of a persistent bias. A high percentage of those listed due to the number of gross errors, also show a large bias.

#### 4. SUMMARY

71 marine observing platforms are listed as producing suspect observations of pressure over the period July to December 1993, 21 as producing suspect wind observations and 124 as producing suspect SST observations. The first report issued by RSMC Bracknell for the period January to June 1989, listed 150 marine platforms producing suspect observations of pressure. The selection criteria have remained unchanged, and the reduction in the number of platforms listed seems to reflect a genuine improvement in quality over the period.



The most common characteristic of the pressure errors found here is a bias in the reported pressure which may remain constant for many months. The majority of platforms listed as producing suspect wind observations show a bias in the reported wind speed, while a few show a large standard deviation in wind direction. For sea-surface temperature observations, the presence of a persistent bias is again found to be the most common cause of error.

The selection criteria have been set sufficiently stringent to ensure that only those are listed for which there is a high degree of confidence in there being large observation errors. There are a great many others, not listed here, for which there must be considerable doubt over the quality of the observations. A wider range of monitoring results are available from Bracknell on request.



TABLE 3: LIST OF MARINE OBSERVING PLATFORMS REPORTING SUSPECT PRESSURE OBSERVATIONS OVER THE PERIOD JULY TO DECEMBER 1993.

- Column 1 Call sign or identifier.  
 Column 2 Number of pressure observations available for monitoring over the 6-month period, excluding duplicates, but including any observations with gross errors.  
 Column 3 Number of pressure observations differing by more than 15 hPa from background (gross error).  
 Column 4 Standard deviation of observation-minus-background differences excluding cases of gross error.  
 Column 5 Mean of observation-minus-background differences (bias) excluding cases of gross error.  
 Columns 6-9 Number of times observing platform has appeared on suspect lists. B=Bracknell, E=ECMWF, T=Tokyo, W=Washington.  
 Column 10 Comments on quality of pressure observations.

- Notes: 1. Units are hPa.  
 2. Observing platforms marked with an asterisk were listed in the previous report (January to June 1993)

Table 3a: Platforms reporting in DRIFTR code

i): Platforms **non-operational** at the end of the reporting period

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
12501	876	486	1.4	2.1	3	3	2	2	Bias +25hPa from Oct
17584	332	273	2.4	10.0	2	2	2	2	Gross errors
23507	319	0	1.9	2.3	0	1	0	1	Bias +5hPa from Oct
44614	952	171	6.3	3.3	1	1	1	1	Erratic
44616	1728	143	5.1	-2.2	1	1	1	1	Erratic
48566	76	28	3.3	-7.5	1	1	0	1	Erratic
53503	608	0	2.2	-2.5	1	1	1	1	Erratic from Dec
63161	353	353	****	****	2	0	1	2	Gross errors

ii): Platforms **operational** at the end of the reporting period

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
13491	131	131	****	****	1	1	1	1	Gross errors
71003 *	3222	3222	****	****	6	4	6	6	Gross errors
74002 *	2897	868	3.1	-10.3	6	0	6	6	Bias +40hPa & -10hPa !!?



Table 3b: Platforms reporting in SHIP code

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
ATRK	41	0	2.6	5.7	1	1	1	1	Bias +5hPa from Dec
CGBR	104	0	2.2	3.4	0	0	0	1	Near constant bias
CG2844	108	0	1.7	4.4	3	3	3	3	Constant bias
C6BT8	241	1	1.6	4.7	5	5	5	5	Constant bias
DCKF	71	1	1.1	-4.3	1	1	0	0	Constant bias
DGBN	77	0	1.2	-3.8	0	0	0	0	Constant bias
DMZL	121	0	2.6	-6.2	2	2	2	2	Constant bias
DZSB	120	1	1.8	-3.7	1	2	0	0	Constant bias
ELAD7	44	35	1.2	-13.7	1	0	0	0	Gross errors
ELEL2	76	0	1.1	-3.7	0	0	0	0	Constant bias
ELFN7	199	0	1.7	4.1	3	5	3	4	Constant bias
EOGP	51	0	2.2	9.3	1	1	0	1	Constant bias
ESAX	75	0	2.4	3.6	0	0	0	0	Near constant bias
ESBI	72	0	1.7	6.2	1	1	1	1	Constant bias
ESCA	89	0	2.1	10.2	2	2	2	2	Constant bias
ESXD	44	1	1.8	11.7	1	0	1	1	Constant bias
FNVA	49	1	1.9	-5.1	1	0	1	1	Constant bias
JMQY	327	1	1.3	-3.6	0	0	0	0	Constant bias
KRHZ	48	0	1.8	-10.5	0	0	0	0	Constant bias
OWOG2	251	0	1.5	3.9	1	3	1	2	Constant bias
UBFE	67	1	3.9	3.1	0	1	0	0	Slightly erratic; bias +4hPa
UFAA	137	0	1.5	3.7	1	2	0	2	Constant bias
UFOJ	64	2	2.0	-3.7	0	1	0	0	Constant bias
UGPA	117	17	6.4	2.7	2	1	2	0	Erratic
UHUN	72	1	1.7	4.9	2	2	0	1	Constant bias
UHVW	58	0	1.8	3.7	1	1	0	0	Constant bias
UIIG	136	0	1.9	-4.3	2	2	0	1	Near constant bias
UKTV	64	0	2.2	5.0	1	0	0	0	Constant bias
ULDZ	71	0	1.6	8.6	1	1	0	1	Bias +10hPa from Oct
UNJN	59	0	3.1	2.6	0	0	0	0	Bias +5hPa from Aug
UOVE	72	57	1.1	13.9	1	0	1	0	Gross errors
UQJK	74	1	3.9	3.1	0	1	1	0	Bias +8hPa from Nov
UQRA	72	0	3.3	6.5	2	2	2	1	Near constant bias
URPR	40	1	0.9	-3.6	0	0	0	0	Constant bias
USCC	53	1	3.5	6.0	0	1	0	0	Near constant bias
USZQ	215	8	2.8	-4.6	3	3	3	3	Constant bias
UUJV	197	10	1.6	-6.4	4	4	4	4	Constant bias
UUDOD	41	1	2.6	5.4	1	1	0	1	Constant bias
UYDW	55	0	2.8	6.3	1	1	0	1	Constant bias
UYJL	83	1	2.1	-4.4	1	2	0	1	Constant bias
UYTA	99	0	1.2	-3.7	0	0	0	0	Constant bias
VC6749	62	0	2.4	-5.1	2	2	2	2	Constant bias

Continued ⇨



Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
VTCN	79	1	2.8	3.1	1	1	0	0	Near constant bias
VVGC	98	0	2.7	3.9	1	1	1	1	Near constant bias
VVKK	57	0	3.2	6.8	1	1	1	1	Bias +6hPa, +9hPa in Dec
V2SM	56	0	2.6	-5.7	1	1	1	1	Bias -5hPa, larger in Dec
WCYR	68	0	1.5	3.6	0	2	0	1	Constant bias
WCZB *	149	5	1.6	7.0	4	4	4	4	Near constant bias
WC5932	188	1	3.5	-3.5	2	2	1	0	Constant bias; slightly erratic
WE3806	296	4	2.4	-4.2	3	3	3	3	Bias drift
WE4805	52	51	0.0	14.3	1	1	1	2	Gross errors
WE4879	262	5	2.9	-2.5	3	3	3	2	Bias -4hPa from Sep
WPPO	61	2	2.0	3.5	0	0	1	1	Constant bias
WTC9408	101	2	2.4	4.3	3	2	2	5	Near constant bias
WZE4928 *	283	278	9.1	2.3	6	6	6	6	Gross errors
ZBWP	131	0	1.3	4.0	1	2	0	2	Constant bias
ZCAM9 *	302	1	2.8	4.9	4	6	4	5	Bias +7hPa, then +4hPa
ZSBK *	99	8	3.7	-7.8	1	1	1	0	Slightly erratic
ZTCD	94	2	2.4	-5.7	0	0	3	0	Slight bias drift
ZTFM	57	0	2.5	-4.2	1	0	1	0	Near constant bias
ZTHG	107	0	1.7	3.1	0	0	2	0	Bias +5hPa from Oct
3EAY5	63	0	1.2	-4.4	1	1	1	2	Constant bias
3FGH3	106	0	2.3	-4.3	3	3	0	1	Constant bias
3FJJ3	71	1	2.4	-11.0	3	2	2	0	Constant bias
3FLS2	121	0	2.2	-4.4	2	2	2	2	Near constant bias



TABLE 4: LIST OF PLATFORMS REPORTING IN SHIP CODE NOT APPEARING IN TABLE 3 BUT LISTED AS SUSPECT OVER THE PERIOD JANUARY TO JUNE 1993.

- Column 1 Call sign or identifier.  
Column 2 Number of pressure observations available for monitoring over the 6-month period, excluding duplicates, but including any observations with gross errors.  
Column 3 Number of pressure observations differing by more than 15 hPa from background (gross error).  
Column 4 Standard deviation of observation-minus-background differences excluding cases of gross error.  
Column 5 Mean of observation-minus-background differences (bias) excluding cases of gross error.  
Column 6 Comments on quality of pressure observations.

Notes: 1. Units are hPa.

Ident.	N Obs.	NGE	SD	Bias	Comments
C6GR	0				No reports
C6LK7	151	1	2.8	-2.8	Bias reduced
DEDS	0				No reports
D5NE	30	0	1.2	6.4	Less than 40 reports; bias persists
EKWG	0				No reports
ELGI2	139	0	1.8	1.0	Bias acceptable
EMON	0				No reports
ESDO	18	0	2.0	-0.9	Less than 40 reports; bias acceptable
ESDR	6	0	1.5	4.3	Few reports
EUXZ	19	2	1.5	5.0	Less than 40 reports; bias persists
EWVJ	0				No reports
EWVW	63	4	3.4	-0.8	Bias acceptable
LAI4	264	0	2.0	-1.0	Bias acceptable
MPXK3	0				No reports
NFMK	118	3	3.4	1.3	Bias acceptable
NIKL	45	5	3.6	0.7	Few gross errors
UDYG	5	0	2.1	3.8	Few reports
UDYN	0				No reports
UEEQ	28	0	2.5	7.3	Less than 40 reports; bias persists
UETZ	0				No reports
UFHZ	13	5	4.8	12.5	Less than 40 reports; bias persists
UFJN	43	1	3.0	-2.6	Bias reduced
UFKA	36	0	1.5	-6.3	Less than 40 reports; bias persists
UHKP	25	0	3.0	0.7	Less than 40 reports; bias acceptable
UHLE	0				No reports
UHLW	35	0	1.2	-12.5	Less than 40 reports; bias persists
UIVF	1	0	0.0	-0.7	Single report
UJDE	39	0	1.9	-4.6	Less than 40 reports; bias persists
UKTU	21	0	1.8	2.9	Less than 40 reports; bias reduced

Continued ⇨



Ident.	N Obs.	NGE	SD	Bias	Comments
ULYT	6	1	8.6	0.4	Few reports
UOOO	1	0	0.0	14.1	Single report
UORF	25	0	1.7	3.7	Less than 40 reports; bias persists
URFB	2	0	0.1	-4.1	Few reports
UTNG	38	6	5.3	-3.9	Less than 40 reports; erratic
UVLX	22	1	1.3	-4.5	Less than 40 reports; bias persists
UWVZ	119	1	2.4	3.1	Bias reduced
UYHW	6	0	3.1	1.5	Few reports
VVDV	0				No reports
WQZ9670	225	2	3.1	0.3	Bias acceptable
WWDY	9	0	4.7	-4.8	Few reports
WXY6216	37	0	2.5	-4.9	Less than 40 reports; bias persists
3FBK	0				No reports

TABLE 5: LIST OF MARINE OBSERVING PLATFORMS REPORTING SUSPECT WIND SPEED OBSERVATIONS OVER THE PERIOD JULY TO DECEMBER 1993.

- Column 1 Call sign or identifier.
- Column 2 Number of wind speed observations available for monitoring over the 6-month period, excluding duplicates, but including any observations with gross errors.
- Column 3 Number of wind observations with vector difference from background of more than  $25\text{ms}^{-1}$  (gross error).
- Column 4 Standard deviation of observation-minus-background differences excluding cases of gross error.
- Column 5 Mean of observation-minus-background differences (bias) excluding cases of gross error.
- Columns 6-9 Number of times observing platform has appeared on suspect lists. B=Bracknell, E=ECMWF, T=Tokyo, W=Washington.
- Column 10 Comments on quality of wind speed observations.

- Notes:
1. Units are  $\text{ms}^{-1}$ .
  2. Observing platforms marked with an asterisk were listed in the previous report (January to June 1993)
  3. Figures in column 9 refer to the period September to December 1993 only

Table 5a: Platforms reporting in DRIFTR code

*i): Platforms non-operational at the end of the reporting period*

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
44513	1323	3	3.1	-5.1	2	2	1	3	Slightly erratic
56513	842	0	2.3	-6.5	4	4	2	3	Near constant bias



ii): Platforms *operational* at the end of the reporting period

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
55583	2394	0	2.8	-4.3	3	0	0	4	Bias -5ms <sup>-1</sup> from Oct

Identifiers 44614, 44616, 44777, 44778, 44779 have **not** been included here as the buoys never actually observed wind; occasionally reports were coded as calm instead of missing

Table 5b: Platforms reporting in SHIP code

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
DFCG	42	0	5.4	8.1	1	1	1	1	Erratic
ELDU4	108	0	4.2	5.3	2	2	2	1	Bias +6ms <sup>-1</sup> from Nov
ELLE9	392	1	4.5	3.7	1	0	2	1	Bias +8ms <sup>-1</sup> & erratic from Nov
P3LE5	46	0	2.6	-7.3	1	2	2	2	Constant bias
UTNT	80	0	3.9	-6.1	2	2	0	2	Constant bias
VJBE	82	1	4.0	4.5	1	1	4	0	Near constant bias
VMAL	161	0	5.8	4.3	3	2	4	0	Rather erratic from Oct
VOXG	48	0	3.3	-5.5	0	1	0	1	Constant bias
VRSM	157	0	5.4	6.5	2	2	2	2	Bias +8ms <sup>-1</sup> & erratic from Sep
3EZH7	420	0	2.8	3.3	1	2	2	0	Bias +6ms <sup>-1</sup> from Nov
3FCN3	77	1	5.7	6.6	1	1	2	0	Large bias & SD from Nov



TABLE 6: LIST OF PLATFORMS REPORTING IN SHIP CODE NOT APPEARING IN TABLE 5 BUT LISTED AS SUSPECT OVER THE PERIOD JANUARY TO JUNE 1993.

- Column 1 Call sign or identifier.
- Column 2 Number of wind speed observations available for monitoring over the 6-month period, excluding duplicates, but including any observations with gross errors.
- Column 3 Number of wind observations with vector difference from background of more than  $25\text{ms}^{-1}$  (gross error).
- Column 4 Standard deviation of observation-minus-background differences excluding cases of gross error.
- Column 5 Mean of observation-minus-background differences (bias) excluding cases of gross error.
- Column 6 Comments on quality of wind speed observations.

Notes: 1. Units are  $\text{ms}^{-1}$ .

Ident.	N Obs.	NGE	SD	Bias	Comments
BROE	117	2	3.0	2.0	SD acceptable
DQFU	180	1	3.8	0.4	Bias acceptable
DZXF	0				No reports
ELJJ7	12	0	2.4	5.4	Less than 40 reports; bias persists
GOSP	5	0	2.9	-1.4	Few reports
MNKN2	27	0	3.0	1.1	Less than 40 reports; bias acceptable
VPGM	86	0	3.8	3.7	Bias reduced
XYKM	26	0	2.5	4.3	Less than 40 reports; bias reduced
Y5LD	0				No reports



**TABLE 7: LIST OF MARINE OBSERVING PLATFORMS PRODUCING SUSPECT WIND DIRECTION OBSERVATIONS OVER THE PERIOD JULY TO DECEMBER 1993.**

- Column 1 Call sign or identifier.  
 Column 2 Number of wind direction observations available for monitoring over the 6-month period, excluding duplicates, but including any observations with gross errors.  
 Column 3 Number of wind observations with vector difference from background of more than  $25\text{ms}^{-1}$  (gross error).  
 Column 4 Standard deviation of observation-minus-background differences excluding cases of gross error.  
 Column 5 Mean of observation-minus-background differences (bias) excluding cases of gross error.  
 Columns 6-9 Number of times observing platform has appeared on suspect lists. B=Bracknell, E=ECMWF, T=Tokyo, W=Washington.  
 Column 10 Comments on quality of wind direction observations.

- Notes:*
1. Units are degrees ( $^{\circ}$ ).
  2. Observing platforms marked  $\blacklozenge$  had a negative speed bias and the statistics and their plots refer to direction reports associated with background wind speeds greater than  $5\text{ms}^{-1}$ . If no significant speed bias was present the statistics and plots refer to direction reports with an observed speed greater than  $5\text{ms}^{-1}$ .
  3. Observing platforms marked with an asterisk were listed in the previous report (January to June 1993)
  4. Figures in column 9 refer to the period September to December 1993 only

**Table 7a: Platforms reporting in DRIFTR code**

*i): Platforms non-operational at the end of the reporting period*

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
21528 $\blacklozenge$	132	0	81.8	73.7	1	1	1	1	Erratic
44513 $\blacklozenge$	1088	0	108.1	-24.5	3	4	3	2	Bias $\pm 180^{\circ}$ ; $+30^{\circ}$ from Oct
55589 $\blacklozenge^*$	677	0	33.8	-58.7	5	5	5	1	Bias $\sim 60^{\circ}$ from Aug
56513 $\blacklozenge$	756	0	66.9	-49.2	3	1	0	1	Periodic bias $\sim 130^{\circ}$

*ii): Platforms operational at the end of the reporting period*

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
52004	234	0	79.6	-7.7	2	4	3	0	Erratic
52006	229	0	33.6	-35.3	4	4	2	3	Constant bias
52521 $\blacklozenge$	628	0	88.0	50.5	3	4	3	3	Bias $\sim +140^{\circ}$ from Oct
55583 $\blacklozenge$	1543	0	75.3	9.4	1	2	0	3	Erratic from Oct

**Table 7b: Platforms reporting in SHIP code**

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
DCG2959D	174	0	79.3	-3.9	2	1	2	0	Erratic



**TABLE 8: LIST OF PLATFORMS REPORTING IN SHIP CODE NOT APPEARING IN TABLE 7 BUT LISTED AS SUSPECT OVER THE PERIOD JANUARY TO JUNE 1993.**

- Column 1 Call sign or identifier.
- Column 2 Number of wind direction observations available for monitoring over the 6-month period, excluding duplicates, but including any observations with gross errors.
- Column 3 Number of wind observations with vector difference from background of more than  $25\text{ms}^{-1}$  (gross error).
- Column 4 Standard deviation of observation-minus-background differences excluding cases of gross error.
- Column 5 Mean of observation-minus-background differences (bias) excluding cases of gross error.
- Column 6 Comments on quality of wind direction observations.

*Notes:* 1. Units are degrees ( $^{\circ}$ ).

Ident.	N Obs.	NGE	SD	Bias	Comments
PSSC1	0				No reports
ZTHP	61	0	31.2	26.3	Bias reduced
22001	553	0	27.7	7.5	Bias acceptable



TABLE 9: LIST OF MARINE OBSERVING PLATFORMS REPORTING SUSPECT SEA-SURFACE TEMPERATURE OBSERVATIONS OVER THE PERIOD JULY TO DECEMBER 1993.

Column 1	Call sign or identifier
Column 2	Number of sea-surface temperature observations available for monitoring over the 6-month period, including any observations with gross errors.
Column 3	Number of sea surface temperature observations differing by more than 5°C from the analysis (gross errors).
Column 4	Standard deviation of observation-minus-analysis differences excluding cases of gross error.
Column 5	Mean of observation-minus-analysis differences excluding cases of gross error.
Column 6	Comments on quality of sea surface temperature observations.

- Notes:
1. Units are °C.
  2. Observing platforms marked with an asterisk were listed in the previous report (January to June 1993)

Table 9a: Platforms reporting in DRIFTR code

*i): Platforms non-operational at the end of the reporting period*

Ident.	N Obs.	NGE	SD	Bias	Comments
12503	334	189	2.4	1.4	Gross errors; erratic
17550	142	0	1.4	-2.2	Biased
32532	284	71	0.2	0.3	Gross errors
32542	181	71	0.5	0.0	Gross errors
32548	171	70	0.2	0.1	Gross errors
44513	1292	0	1.3	-3.6	Large bias
52871	106	46	0.2	0.2	Gross errors
54838	64	28	1.4	3.0	Gross errors; large bias
64924	112	99	0.2	-0.1	Gross errors

*ii): Platforms operational at the end of the reporting period*

Ident.	N Obs.	NGE	SD	Bias	Comments
17584	559	67	2.0	1.9	Erratic; slight bias
21528	307	86	1.4	2.3	Gross errors; biased
21924	353	124	1.2	-0.4	Gross errors
23503	303	139	2.0	-0.7	Gross errors; erratic
23506	259	68	1.8	-1.5	Gross errors
32918	330	224	0.2	0.3	Gross errors
32919	393	103	0.8	-1.3	Gross errors
52811	98	56	0.1	-0.2	Gross errors



Table 9b: Platforms reporting in SHIP code

Ident.	N Obs.	NGE	SD	Bias	Comments
A8LL	41	7	0.7	3.9	Large bias
BHFR *	84	6	1.0	3.3	Large bias
BROE *	192	99	1.3	-3.3	Gross errors; large bias
CGDT	74	14	1.4	2.2	Biased
CG2240	45	4	0.9	-2.9	Biased
CG2568 *	124	6	1.5	2.1	Biased
C6JY7 *	385	1	0.8	-2.4	Biased
C6KM	135	1	0.7	-2.5	Biased
C6LU3	57	33	1.0	-3.6	Gross errors; large bias
DDRL	143	5	1.3	-2.3	Biased
DUNV *	155	3	1.0	3.0	Large bias
DVPV	82	2	0.9	2.4	Biased
DVXE *	92	6	0.6	-3.9	Large bias
DZBD *	68	56	0.3	4.2	Gross errors; large bias
D5ND	122	75	1.4	-0.3	Gross errors
ELBG9 *	144	2	0.8	-2.7	Biased
ELDB7	53	15	2.1	-2.8	Gross errors; erratic; biased
ELFQ7	252	38	1.5	-2.1	Biased
ELJO4	61	21	1.9	0.1	Gross errors
ELJS5 *	150	4	1.1	2.7	Biased
ELKM7	73	5	1.3	2.2	Biased
EWYZ	89	11	1.0	-2.6	Biased
GYYP *	53	3	1.0	3.0	Large bias
JKHH	44	11	1.4	2.8	Gross errors ;biased
KCBK	47	13	0.4	0.1	Gross errors
KNJN	79	12	1.1	-3.2	Large bias
LADR4 *	122	7	0.8	3.1	Large bias
LXCH	111	1	1.0	2.5	Biased
MNKN	63	1	1.3	-2.2	Biased
NGDF	43	3	1.3	2.7	Biased
NICB	109	35	1.4	-0.5	Gross errors
OUGV	114	30	1.2	2.2	Gross errors; biased
PJYG	180	12	1.2	-3.0	Large bias
P3NP4	83	3	0.9	3.0	Large bias
TSLN	477	43	1.0	-3.0	Large bias
U/JK	63	1	1.7	-2.0	Biased
UBLH	52	7	1.8	2.1	Biased
UELJ *	74	14	1.6	3.0	Large bias
UEVS	45	4	1.1	2.3	Biased
UFJN	64	16	1.2	-2.4	Gross errors; biased
UGTY	73	6	2.5	-1.7	Erratic
UJDR	76	17	1.9	-2.5	Biased

Continued ⇨



Ident.	N Obs.	NGE	SD	Bias	Comments
UJEJ	66	25	1.6	-0.9	Gross errors
UJGD *	209	187	0.8	0.3	Gross errors
UJIB	198	9	1.2	2.8	Biased
UJKW	90	4	1.5	2.6	Biased
UKDN	89	19	2.6	-0.7	Erratic
UKPG	66	33	1.2	-2.6	Gross errors; biased
UNGP	82	16	1.6	-2.0	Biased
UNSX	118	32	2.2	-0.4	Gross errors; erratic
UNWB	152	9	1.5	-2.7	Biased
UNWZ *	176	42	2.4	1.5	Erratic
UONV *	46	31	2.2	3.5	Gross errors; erratic; large bias
UPGQ *	65	5	1.3	-2.4	Biased
UQUC	96	25	3.0	-0.1	Gross errors; erratic
URWG	48	5	1.8	-1.8	Slightly erratic; slight bias
USNN	136	12	1.7	-2.2	Biased
USVO	131	22	2.1	-1.8	Erratic
UTCP	63	18	1.7	0.3	Gross errors
UTFY	113	3	1.8	-1.8	Slightly erratic; slight bias
UTOE	58	18	1.5	0.6	Gross errors
UULU	121	27	1.2	-2.5	Biased
UUST	184	29	2.5	2.0	Erratic; biased
UWEE	101	17	0.9	-2.4	Biased
UYDD	121	34	1.9	-2.1	Gross errors; biased
UYUG	198	58	1.8	-2.5	Gross errors; biased
UYUS	84	56	2.1	-1.7	Gross errors; erratic
UZPQ	61	3	1.9	-1.6	Slightly erratic; slight bias
VA4786 *	52	3	2.1	1.5	Erratic
VB5327	289	163	3.0	0.5	Gross errors; erratic
VJIK *	103	9	0.9	-2.7	Biased
VROC	153	36	0.8	-4.0	Large bias
VRQY *	104	25	0.7	2.8	Biased
VRUH6	78	43	1.5	-3.0	Gross errors; large bias
VY8884	292	62	2.5	-0.8	Erratic
WB4520	104	41	1.5	-0.4	Gross errors
WHDI	56	3	0.9	-3.3	Large bias
WHEJ	63	19	1.8	1.2	Gross errors
WJBG	59	0	0.8	-3.0	Large bias
WLCV *	65	19	1.1	-4.1	Gross errors; large bias
WL3108 *	104	16	1.8	2.1	Biased
WPKB	131	7	0.8	-2.6	Biased
WPVF	102	29	1.2	-2.7	Gross errors; biased
WRYL *	46	7	1.5	2.7	Biased
WR3225	152	61	1.0	3.7	Gross errors; large bias
WTM9012	116	3	1.6	2.1	Biased

Continued ⇨



Ident.	N Obs.	NGE	SD	Bias	Comments
WVHS *	114	11	1.1	-2.5	Biased
WXQ4511 *	513	47	1.3	2.4	Biased
WZ2056	58	20	1.3	2.8	Gross errors; biased
XYKH *	75	11	1.6	-2.4	Biased
Y4HM	49	1	0.9	2.5	Biased
Y5OW	93	3	1.3	2.3	Biased
3EAG4	80	57	1.7	0.9	Gross errors
3EDD8	136	3	0.9	2.4	Biased
3EEZ7	141	53	0.8	3.9	Gross errors; biased
3EJT9	86	3	1.3	-2.8	Biased
3ELE9	119	117	0.0	-1.9	Gross errors
3EZK9	64	4	0.8	3.0	Large bias
3FDY3	62	31	1.6	3.4	Gross errors; large bias
3FJH3	92	8	1.8	2.4	Biased
44011	2130	10	1.9	-1.8	Slightly erratic; slight bias
45139	3400	574	1.5	-2.1	Biased
46030	1483	60	0.8	-2.4	Biased
7LHH *	163	17	0.7	3.7	Large bias
8KVT *	107	8	2.4	-0.9	Erratic
9MBG3	76	6	1.3	2.2	Biased
9MWH	69	5	2.2	-1.7	Erratic

**TABLE 10: LIST OF PLATFORMS REPORTING IN SHIP CODE NOT APPEARING IN TABLE 9 BUT LISTED AS SUSPECT OVER THE PERIOD JANUARY TO JUNE 1993.**

- Column 1 Call sign or identifier
- Column 2 Number of sea-surface temperature observations available for monitoring over the 6-month period, including any observations with gross errors.
- Column 3 Number of sea surface temperature observations differing by more than 5°C from the analysis (gross errors).
- Column 4 Standard deviation of observation-minus-analysis differences excluding cases of gross error.
- Column 5 Mean of observation-minus-analysis differences excluding cases of gross error.
- Column 6 Comments on quality of sea surface temperature observations.

Notes: 1. Units are °C.

Ident.	N Obs.	NGE	SD	Bias	Comments
CG2564	123	0	0.8	1.2	Gross errors ceased; bias acceptable
CG2960	667	48	1.5	-0.1	Gross errors ceased

Continued ⇨



Ident.	N Obs.	NGE	SD	Bias	Comments
C6DB8	0				No reports
C6DK	29	0	0.7	2.8	Less than 40 reports; bias persists
C6DY8	226	1	0.6	1.8	Bias reduced
C6HJ5	42	0	0.6	0.2	Gross errors ceased
C6IE7	248	7	0.9	-1.4	Bias acceptable
C6JJ8	0				No reports
C6KB4	55	9	1.8	0.5	Gross errors ceased; Less erratic
DGSM	122	1	1.2	-0.1	Bias acceptable
DUGZ	2	1	0.0	-1.3	Few reports
DULV	36	18	1.1	1.3	Less than 40 reports; gross errors persist
DUMO	15	2	2.1	0.5	Less than 40 reports; gross errors ceased
DVSP	28	22	0.6	4.2	Less than 40 reports; g.errors & bias persist
DZLI	0				No reports
DZXF	0				No reports
D5NZ	268	3	1.3	1.0	Bias acceptable
EKNF	16	6	1.6	-1.2	Less than 40 reports; bias acceptable
ELEI7	226	15	1.8	-0.2	Gross errors ceased; less erratic
ELEM3	148	2	1.9	0.2	Gross error ceased
ELHL5	0				No reports
ELHY2	244	6	0.9	0.6	Gross errors ceased
ELJP3	67	1	1.6	-1.7	Less erratic; bias reduced
ELNR9	0				No reports
ELNV7	48	5	1.8	-0.1	Gross errors ceased; less erratic
ELOF7	69	4	1.8	-0.2	Gross errors ceased
ENUN	0				No reports
EOCQ	2	0	0.0	4.2	Few reports
EUPM	54	1	1.6	-0.4	Less erratic; bias acceptable
EVRP	0				No reports
EWAG	60	2	1.8	-1.0	Gross errors ceased; bias acceptable
EWVW	68	11	1.7	-1.1	Less erratic
FNDE	185	1	0.8	-0.6	Gross errors ceased
GQHC	410	10	1.1	1.9	Bias reduced
JCCN	0				No reports
JNXT	0				No reports
KHJB	177	6	1.0	0.4	Less erratic
KHLN	15	0	0.6	-2.4	Less than 40 reports; bias persists
KRBS	0				No reports
KRJL	77	8	1.6	-1.0	Gross errors ceased; bias acceptable
LACN4	0				No reports
LADB2	295	4	1.2	1.2	Bias acceptable
LAWR2	8	1	0.6	3.3	Few reports
NQST	0				No reports
PCOL	29	0	0.5	-2.8	Less than 40 reports; bias persists
P3XZ3	26	1	1.7	0.1	Less than 40 reports; gross errors ceased
SVKF	123	0	1.0	1.9	Bias acceptable

Continued ⇨



Ident.	N Obs.	NGE	SD	Bias	Comments
SWJR	53	4	2.0	-1.1	Bias acceptable
SWYG	90	4	1.7	1.4	Bias acceptable
SYVY	30	0	0.8	1.0	Less than 40 reports; gross errors ceased
UBAW	18	2	0.9	-0.6	Less than 40 reports; gross errors ceased
UBHT	30	0	1.2	-2.4	Less than 40 reports; gross errors ceased
UBOW	14	0	1.6	2.2	Less than 40 reports; bias persists
UEBT	68	12	1.7	0.6	Less erratic
UEVG	0				No reports
UEXX	44	2	2.1	-1.1	Bias acceptable
UFJQ	10	0	0.5	0.9	Less than 40 reports; gross errors ceased
UFPL	74	7	1.6	1.8	Less erratic
UHLA	32	0	1.6	-1.0	Less than 40 reports; gross errors ceased
UHLE	0				No reports
UHLW	0				No reports
UIEC	10	0	1.5	0.9	Less than 40 reports; less erratic
UJLR	20	0	1.0	-1.1	Less than 40 reports; gross errors ceased
ULEL	148	6	1.4	1.5	Bias reduced
ULPH	1	0	0.0	-3.3	Few reports
UMVO	0				No reports
UNUE	51	3	2.0	0.0	Gross errors ceased
UOFY	0				No reports
UOLC	0				No reports
UOVE	74	7	2.0	1.4	Bias acceptable
UOXG	33	5	1.2	1.6	Less than 40 reports; gross errors ceased
UPSF	67	4	1.7	-0.9	Gross errors ceased
UQPS	58	2	1.7	-0.1	Less erratic
UQUN	68	8	1.4	0.9	Gross errors ceased
URBX	80	7	1.3	-1.5	Gross errors ceased; bias reduced
URHJ	112	11	1.5	-1.7	Gross errors ceased
USZN	0				No reports
UTOG	20	4	1.9	0.1	Less than 40 reports; less erratic
UTTM	93	2	1.5	-0.5	Gross errors ceased; less erratic
UAAF	33	0	1.0	-1.4	Less than 40 reports; gross errors ceased
UUBU	24	0	0.5	-0.6	Less than 40 reports; gross errors ceased
UUQR	77	1	1.5	1.2	Gross errors ceased; bias acceptable
UVDJ	57	6	1.6	0.8	Less erratic
UVHA	6	0	1.0	-1.3	Few reports
UVWU	11	1	1.1	1.0	Less than 40 reports; bias acceptable
UVXB	4	0	3.4	1.5	Few reports
UWSB	127	4	0.9	-1.5	Bias reduced
UYDW	38	36	0.0	-4.0	Less than 40 reports; gross errors persist
UZCT	124	1	1.0	2.0	Bias reduced
VCDT	133	5	1.2	0.8	Gross errors ceased; bias acceptable
VCJM	107	3	2.0	0.1	Less erratic
VOSR	158	25	1.1	2.2	Gross errors reduced

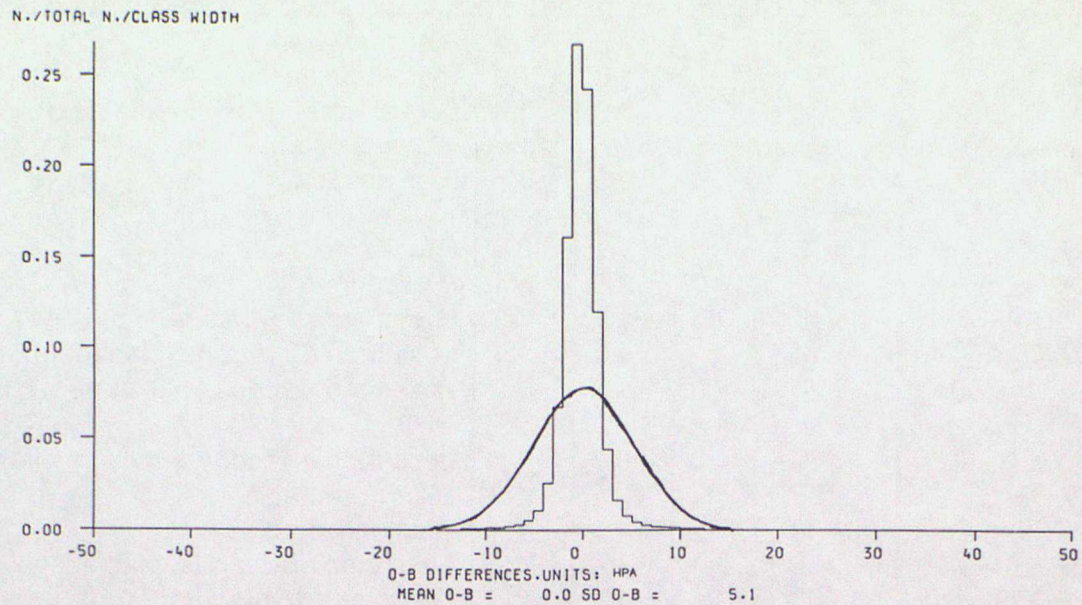
Continued ⇨



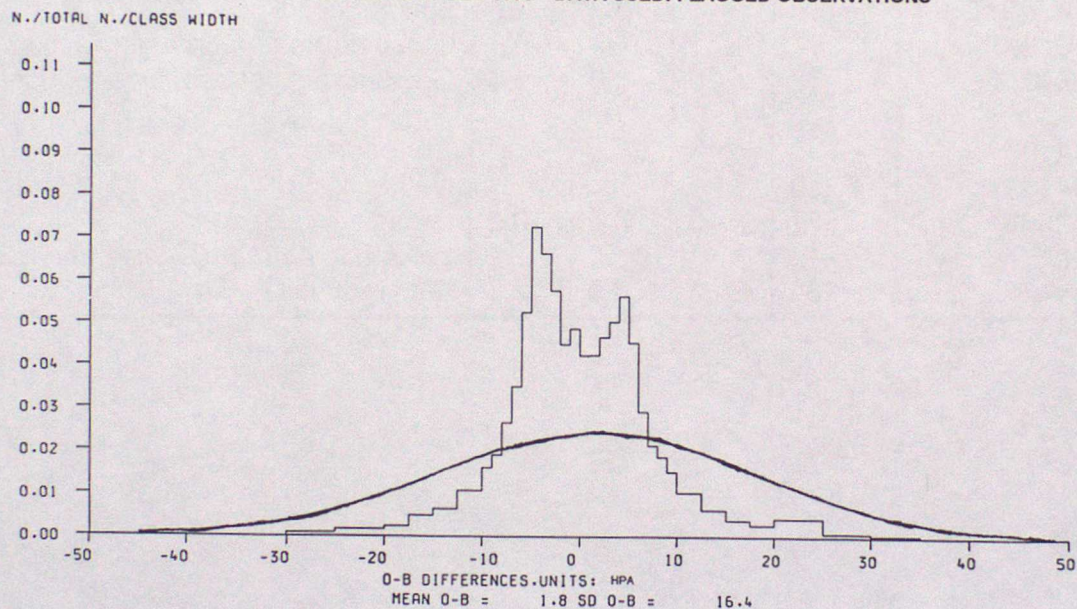
Ident.	N Obs.	NGE	SD	Bias	Comments
VRKB	64	12	1.3	-1.1	Bias acceptable
VROV	80	1	1.6	1.9	Bias reduced
VX5808	73	2	1.6	1.6	Gross errors ceased; bias reduced
VYNG	160	8	1.5	1.2	Bias acceptable
WCHF	356	4	0.9	-0.5	Bias acceptable
WCIO	53	1	1.1	-0.8	Gross errors ceased
WRJF	2	0	0.5	2.1	Few reports
WTP4965	245	15	1.7	1.6	Gross errors + bias reduced
WWDY	14	1	1.4	1.7	Less than 40 reports; bias reduced
WYQ4356	28	9	1.6	1.0	Less than 40 reports; less erratic
XYER	36	23	0.7	4.1	Less than 40 reports; bias persists
ZFCB	182	1	0.7	1.2	Bias acceptable
ZTCD	89	2	1.3	-1.4	Bias acceptable
3EBR6	38	1	1.4	-1.4	Less than 40 reports; bias acceptable
3EDF9	108	21	1.2	0.4	Gross errors reduced
3EDP3	0				No reports
3EIM3	116	2	1.4	-1.7	Bias reduced
3EJB9	136	3	0.9	2.0	Bias reduced
3EUU6	187	41	1.1	-0.6	Gross errors reduced; bias acceptable
3EXN9	82	0	0.9	-1.6	Gross errors ceased; bias reduced
44131	0				No reports
44141	0				No reports
62303	2527	3	0.4	0.2	Gross errors ceased
9MSI	11	1	1.0	2.4	Less than 40 reports; bias persists
9VYK	239	3	0.9	-2.3	Bias reduced



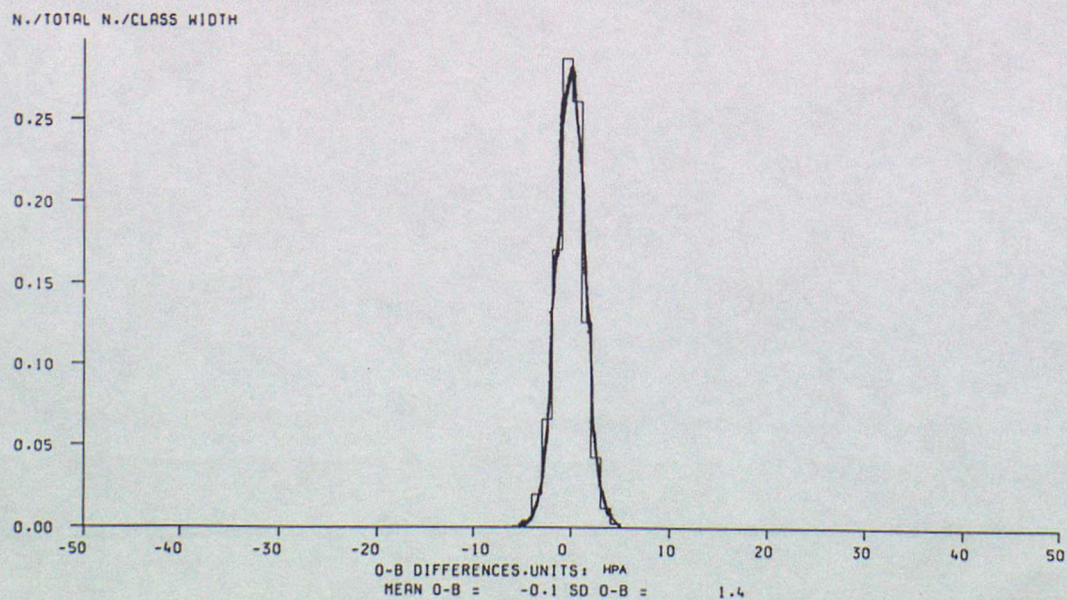
**FIG 1A:**  
 DISTRIBUTION OF O-B SHIP PRESSURE DIFFERENCES UNITS: HPA  
 PERIOD OF DATA: 1 JUL 1993 TO 31 DEC 1993 DATA USED: ALL OBSERVATIONS



**FIG 1B:**  
 DISTRIBUTION OF O-B SHIP PRESSURE DIFFERENCES UNITS: HPA  
 PERIOD OF DATA: 1 JUL 1993 TO 31 DEC 1993 DATA USED: FLAGGED OBSERVATIONS

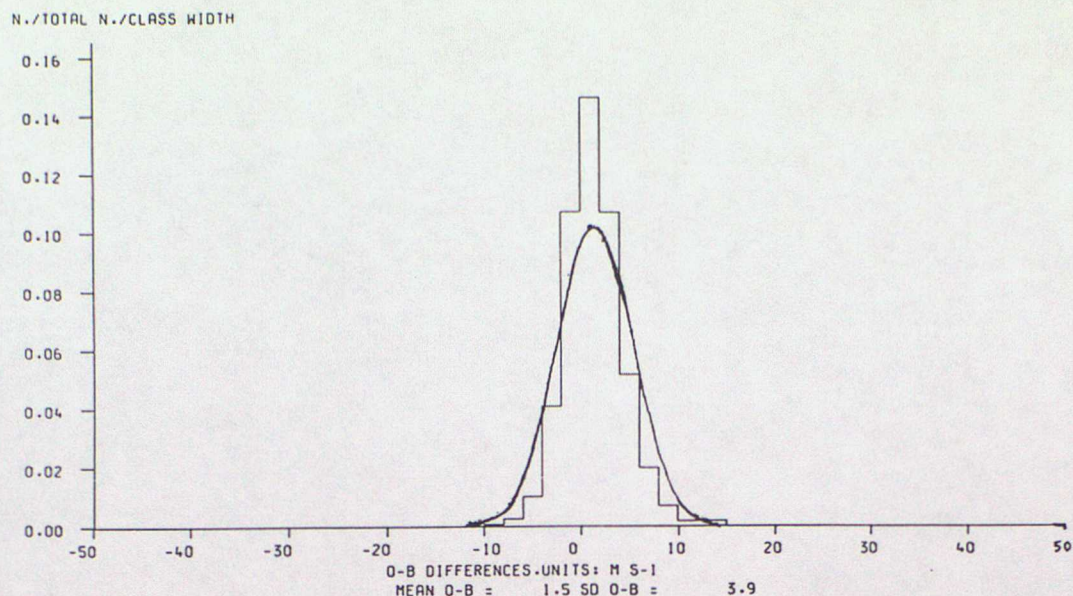


**FIG 1C:**  
 DISTRIBUTION OF O-B SHIP PRESSURE DIFFERENCES UNITS: HPA  
 PERIOD OF DATA: 1 JUL 1993 TO 31 DEC 1993 DATA USED: UNFLAGGED OBSERVATIONS

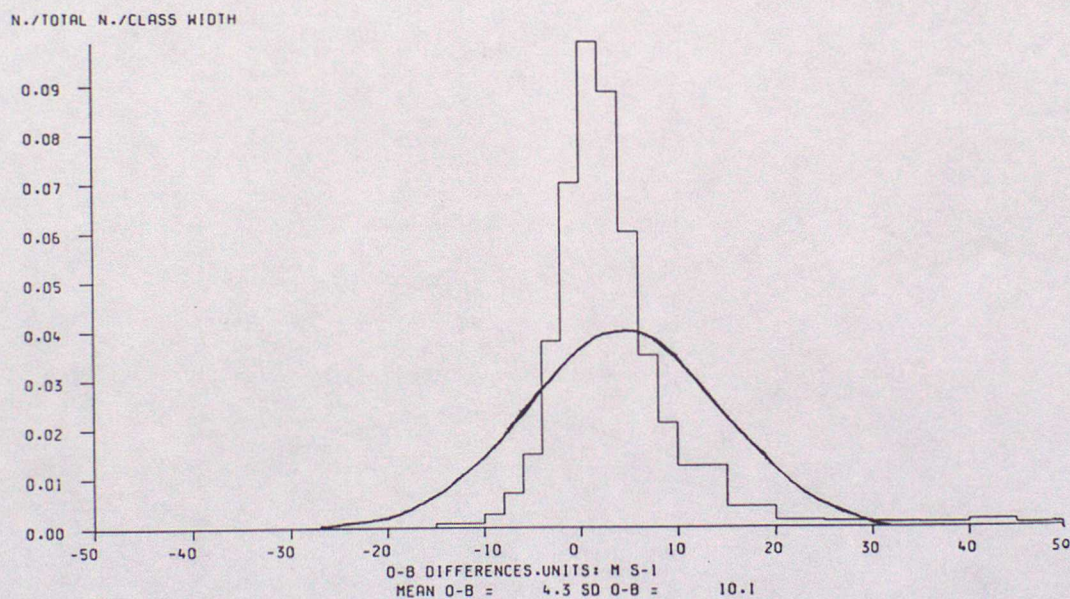




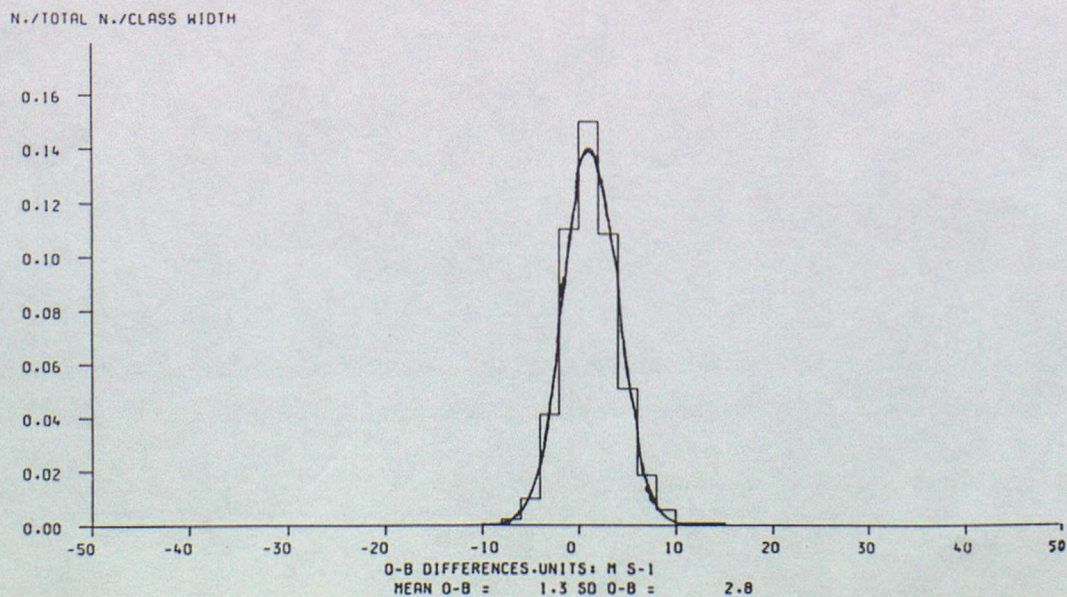
**FIG 2D:**  
 DISTRIBUTION OF O-B SHIP SPEED DIFFERENCES UNITS: MS<sup>-1</sup>  
 PERIOD OF DATA: 1 JUL 1993 TO 31 DEC 1993 DATA USED: ALL OBSERVATIONS



**FIG 2E:**  
 DISTRIBUTION OF O-B SHIP SPEED DIFFERENCES UNITS: MS<sup>-1</sup>  
 PERIOD OF DATA: 1 JUL 1993 TO 31 DEC 1993 DATA USED: FLAGGED OBSERVATIONS

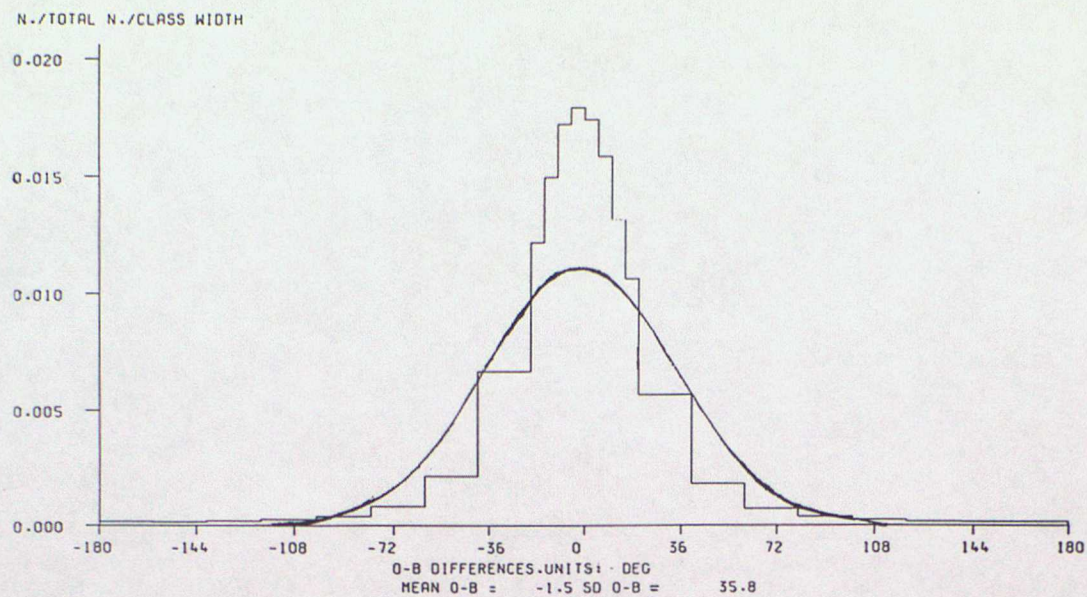


**FIG 2F:**  
 DISTRIBUTION OF O-B SHIP SPEED DIFFERENCES UNITS: MS<sup>-1</sup>  
 PERIOD OF DATA: 1 JUL 1993 TO 31 DEC 1993 DATA USED: UNFLAGGED OBSERVATIONS

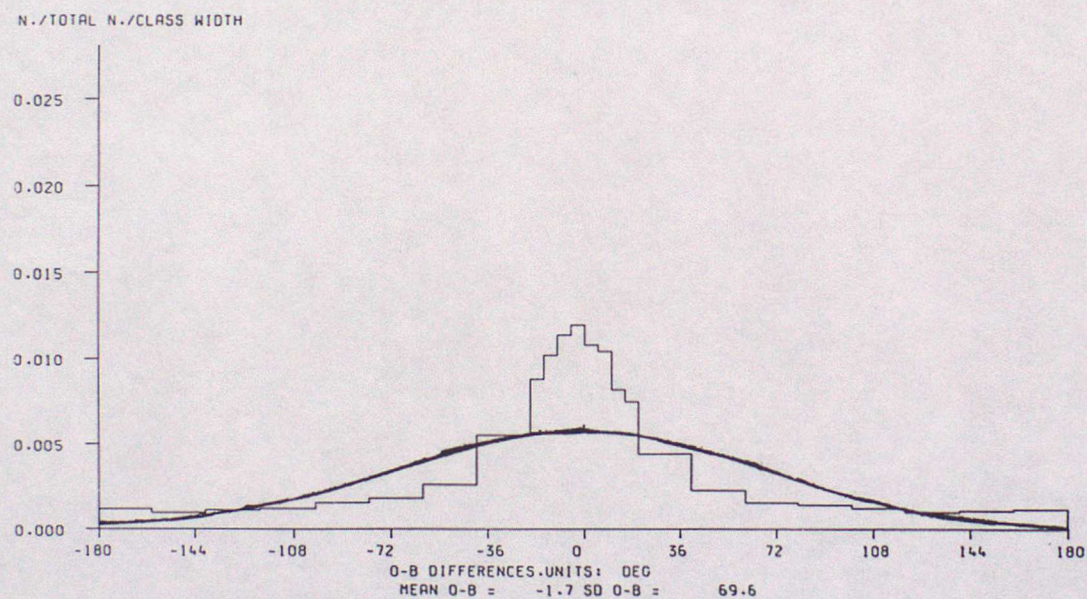




**FIG 1G:**  
 DISTRIBUTION OF O-B SHIP DIRECTION DIFFERENCES UNITS: DEGREES  
 PERIOD OF DATA: 1 JUL 1993 TO 31 DEC 1993 DATA USED: ALL OBSERVATIONS



**FIG 1H:**  
 DISTRIBUTION OF O-B SHIP DIRECTION DIFFERENCES UNITS: DEGREES  
 PERIOD OF DATA: 1 JUL 1993 TO 31 DEC 1993 DATA USED: FLAGGED OBSERVATIONS



**FIG 1J:**  
 DISTRIBUTION OF O-B SHIP DIRECTION DIFFERENCES UNITS: DEGREES  
 PERIOD OF DATA: 1 JUL 1993 TO 31 DEC 1993 DATA USED: UNFLAGGED OBSERVATIONS

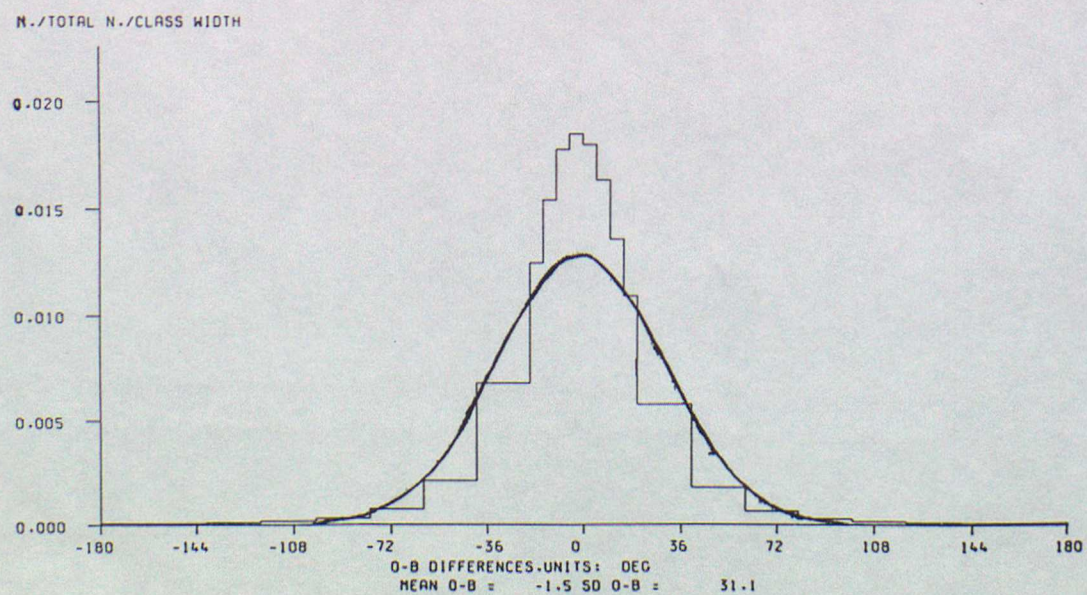




FIG 3: BIAS OF SHIP PRESSURE 0-B. PERIOD: JUL TO DEC 1993  
 ONLY OBSERVATIONS PASSING QUALITY CONTROL USED IN STATISTICS  
 CONTOURS DRAWN TO 10 DEGREE BOXES IF N. OF OBS > 10  
 AREAS SHADED HAVE BIAS OF MAGNITUDE GREATER THAN 0.5 HPA

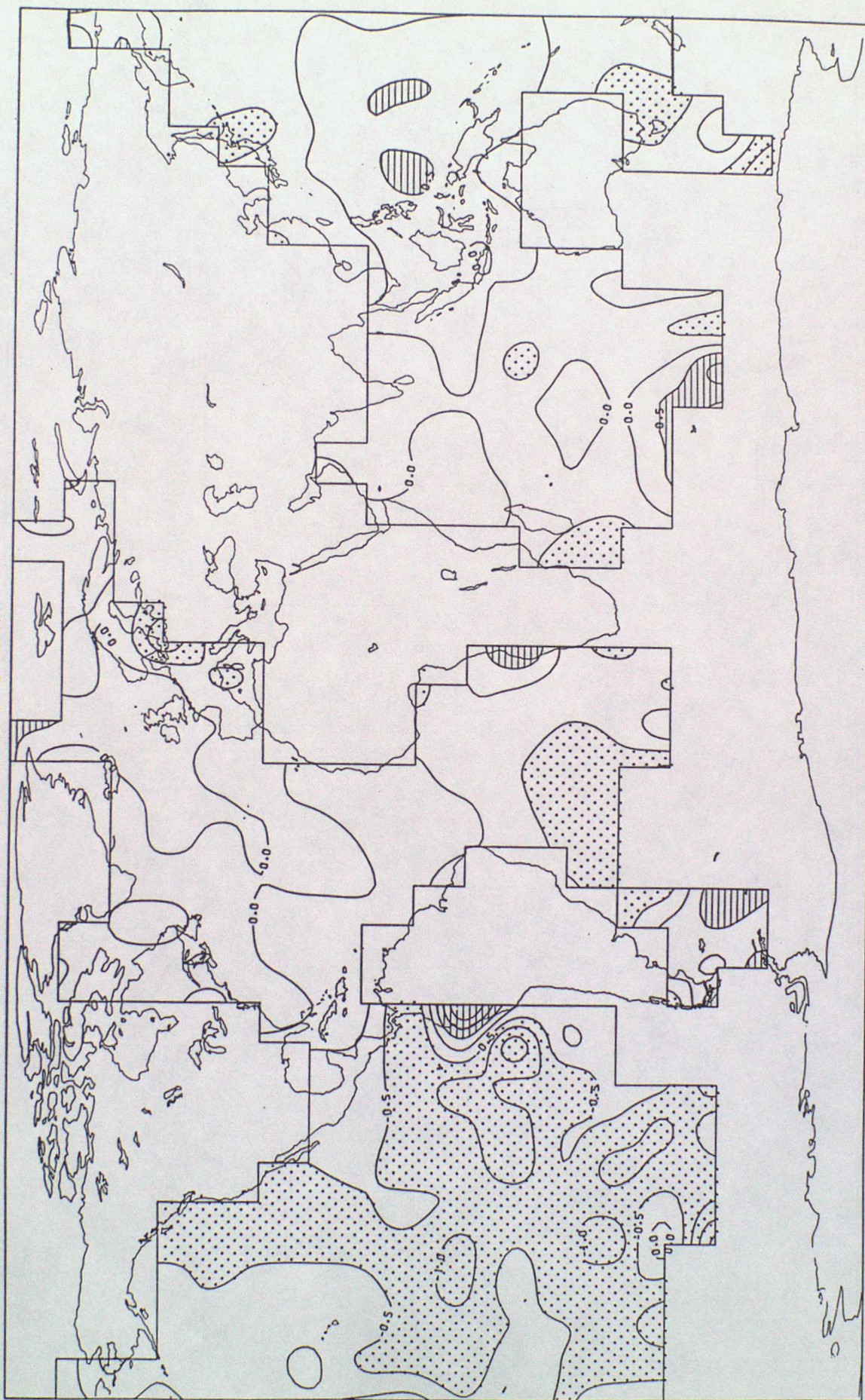




FIG 4: S.D. OF SHIP PRESSURE O-B. PERIOD: JUL TO DEC 1993  
 ONLY OBSERVATIONS PASSING QUALITY CONTROL USED IN STATISTICS  
 CONTOURS DRAWN TO 10 DEGREE BOXES IF N. OF OBS > 10  
 AREAS SHADED HAVE STANDARD DEVIATION GREATER THAN 2.0HPA

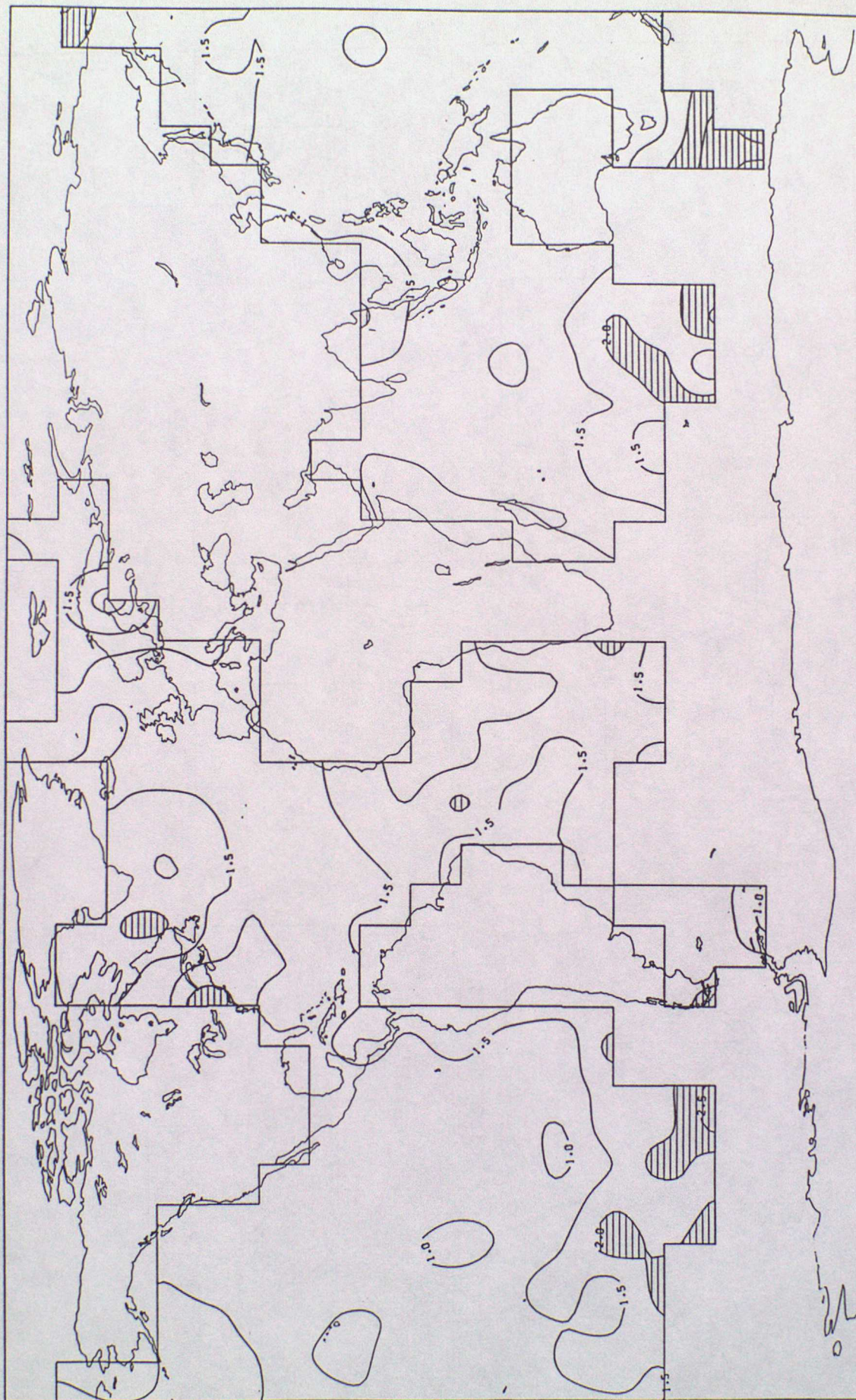




FIG 5:  
PLOT OF NUMBER OF SHIP PRESSURE OBS. PERIOD: JUL TO DEC 1993  
ONLY OBSERVATIONS PASSING QUALITY CONTROL INCLUDED

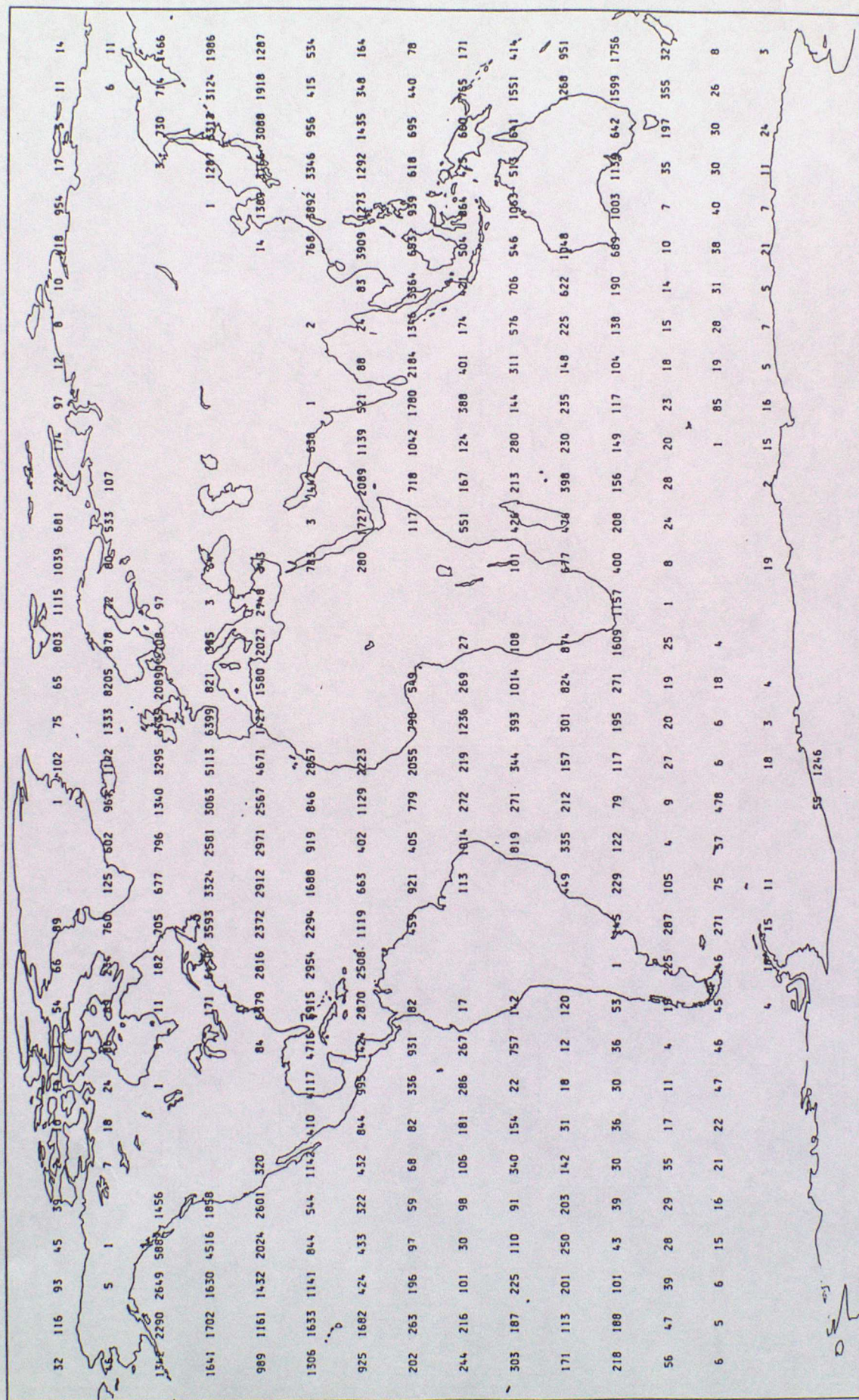




FIG 6: BIAS OF SHIP O-B WIND SPEED IN MS-1. PERIOD: JUL TO DEC 1993  
ONLY OBSERVATIONS PASSING QUALITY CONTROL USED IN STATISTICS  
CONTOURS DRAWN TO 10 DEGREE BOXES IF N. OF OBS > 10  
AREAS SHADED HAVE BIAS OF MAGNITUDE GREATER THAN 2.0MS-1

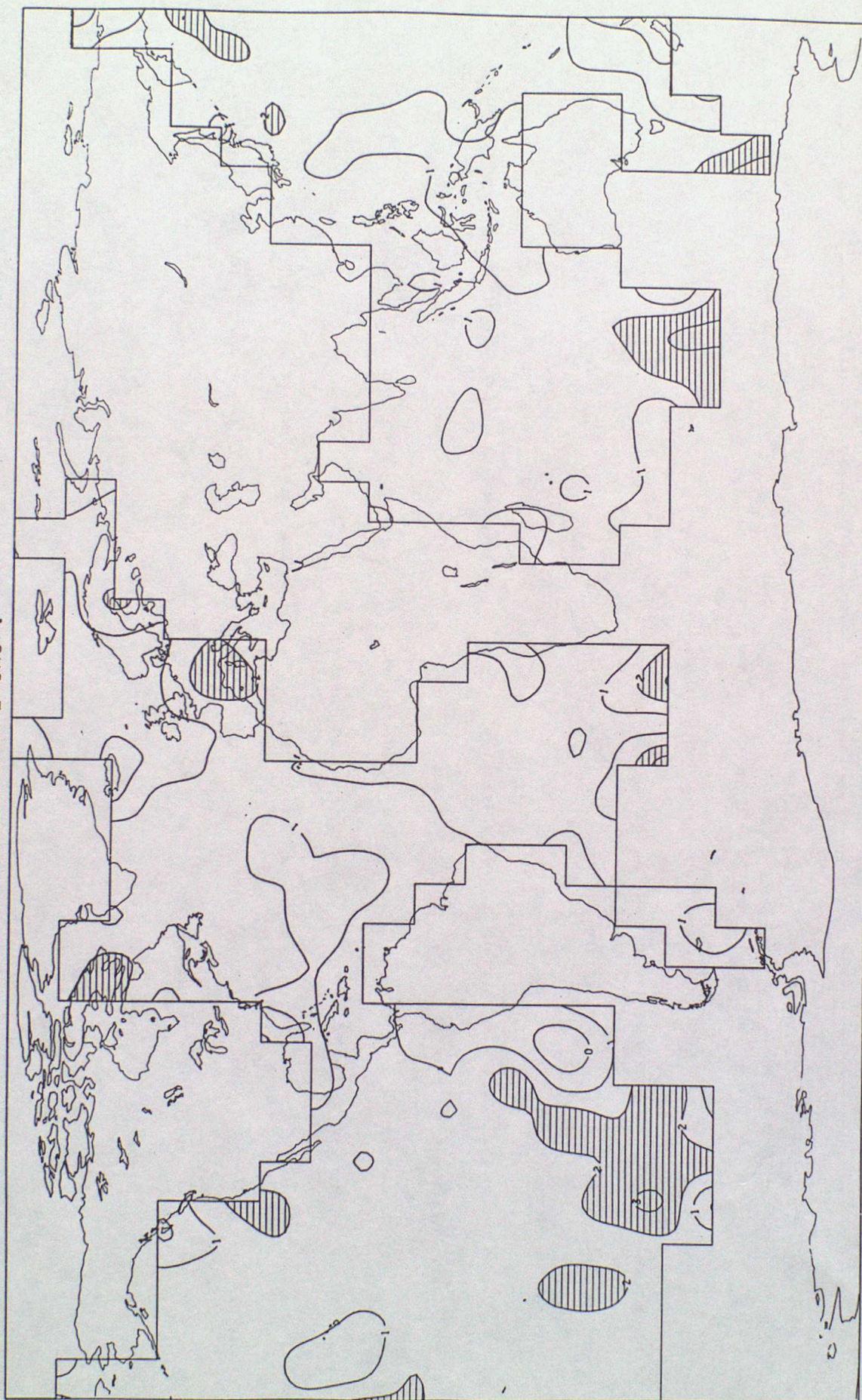




FIG 7: S.D. OF SHIP O-B WIND SPEED IN MS-1. PERIOD: JUL TO DEC 1993  
 ONLY OBSERVATIONS PASSING QUALITY CONTROL USED IN STATISTICS  
 CONTOURS DRAWN TO 10 DEGREE BOXES IF N. OF OBS > 10  
 AREAS SHADED HAVE STANDARD DEVIATION GREATER THAN 4.0 MS-1

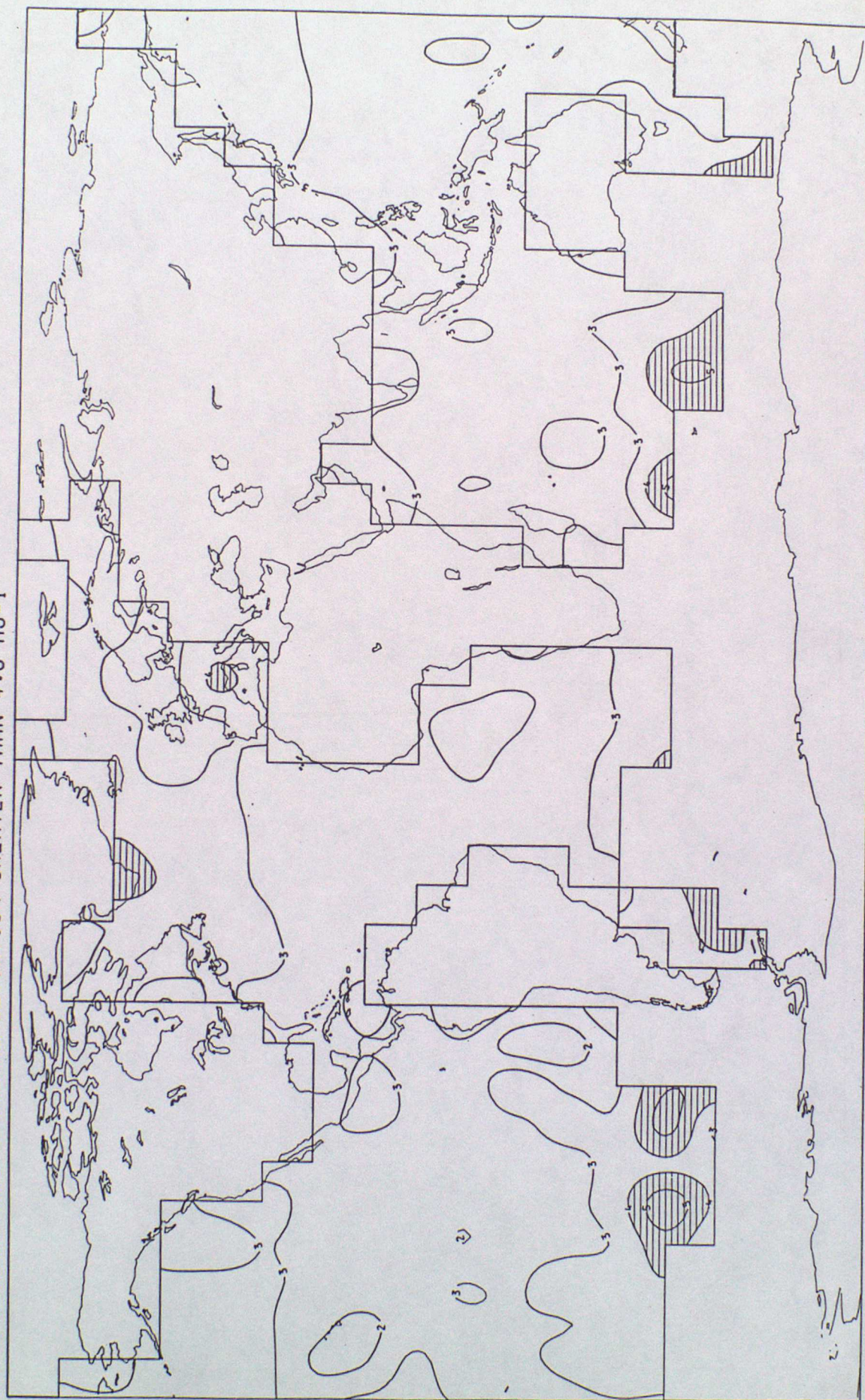




FIG 8:  
PLOT OF NUMBER OF SHIP WIND SPEED OBS. PERIOD: JUL TO DEC 1993  
ONLY OBSERVATIONS PASSING QUALITY CONTROL INCLUDED

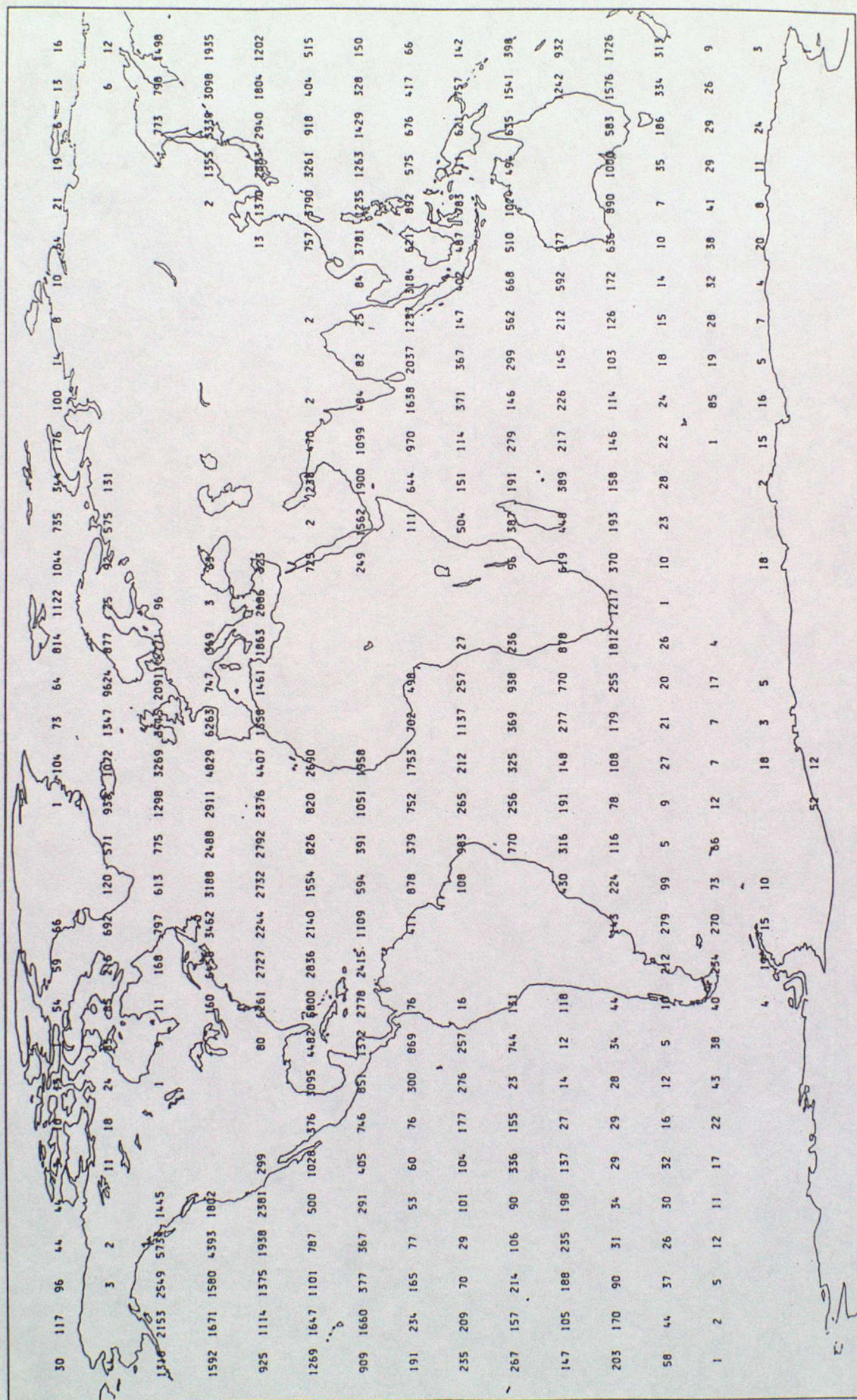




FIG 9: BIAS OF SHIP O-B WIND DIRECTION IN DEG. PERIOD: JUL TO DEC 1993  
 ONLY OBSERVATIONS PASSING QUALITY CONTROL USED IN STATISTICS  
 CONTOURS DRAWN TO 10 DEGREE BOXES IF N. OF OBS > 10  
 AREAS SHADED HAVE BIAS OF MAGNITUDE GREATER THAN 10 DEG

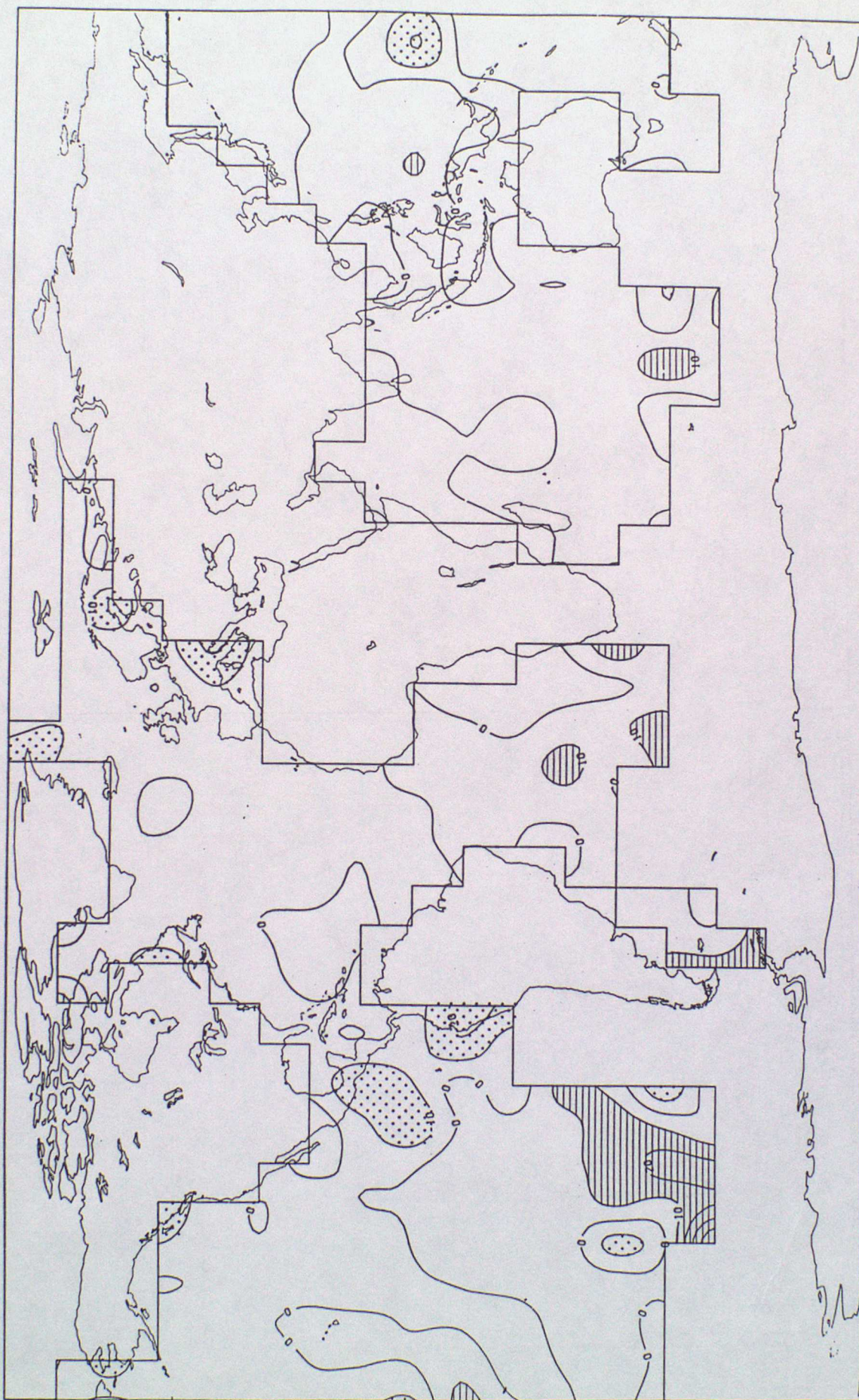
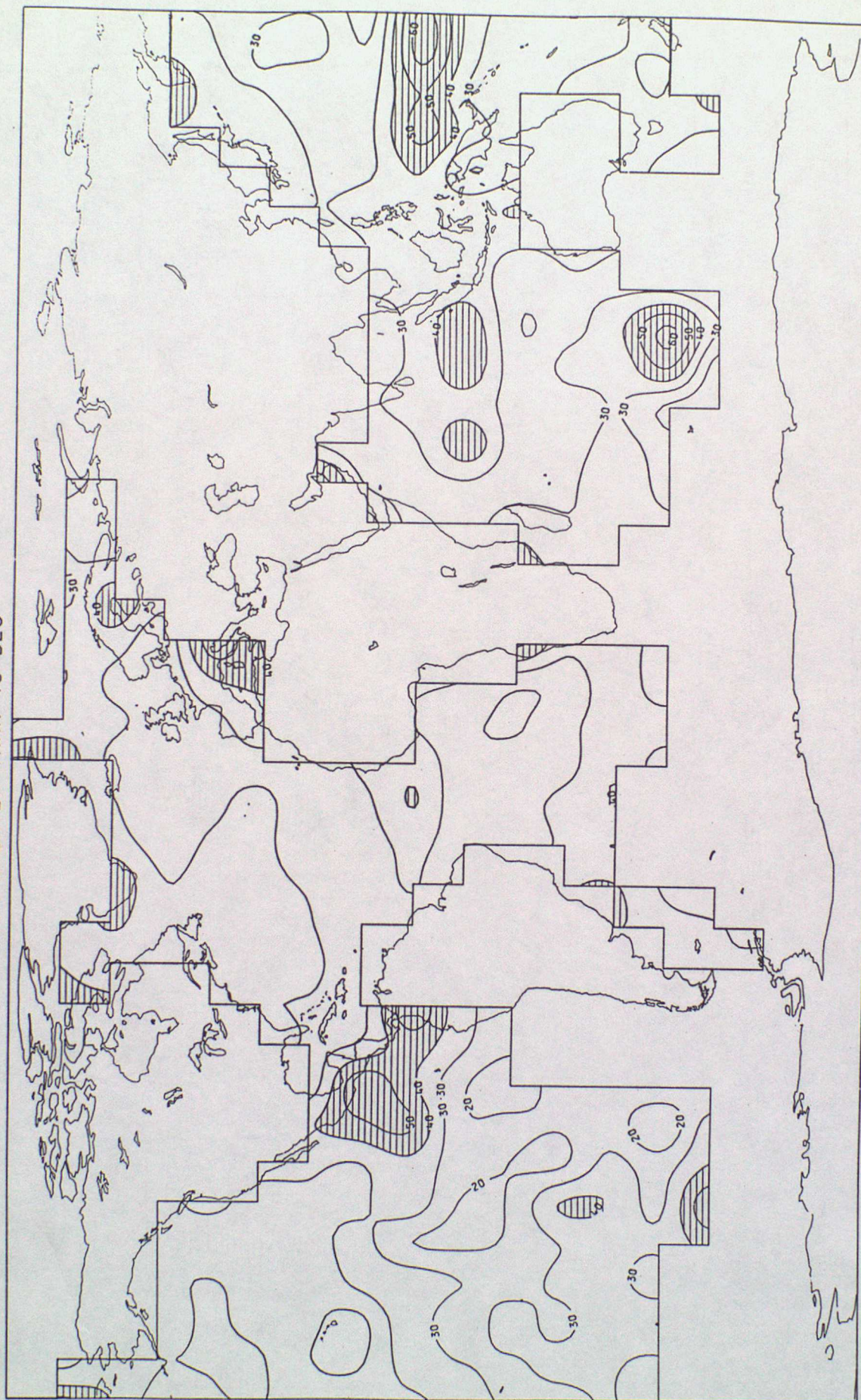




FIG 10: S.D. OF SHIP O-B WIND DIRECTION IN DEG. PERIOD: JUL TO DEC 1993  
 ONLY OBSERVATIONS PASSING QUALITY CONTROL USED IN STATISTICS  
 CONTOURS DRAWN TO 10 DEGREE BOXES IF N. OF OBS > 10  
 AREAS SHADED HAVE STANDARD DEVIATION GREATER THAN 40 DEG









# SEA SURFACE TEMPERATURE STATISTICS FOR EACH OBSERVATION TYPE, FOR NORTHERN AND SOUTHERN HEMISPHERES, JULY TO DECEMBER 1993

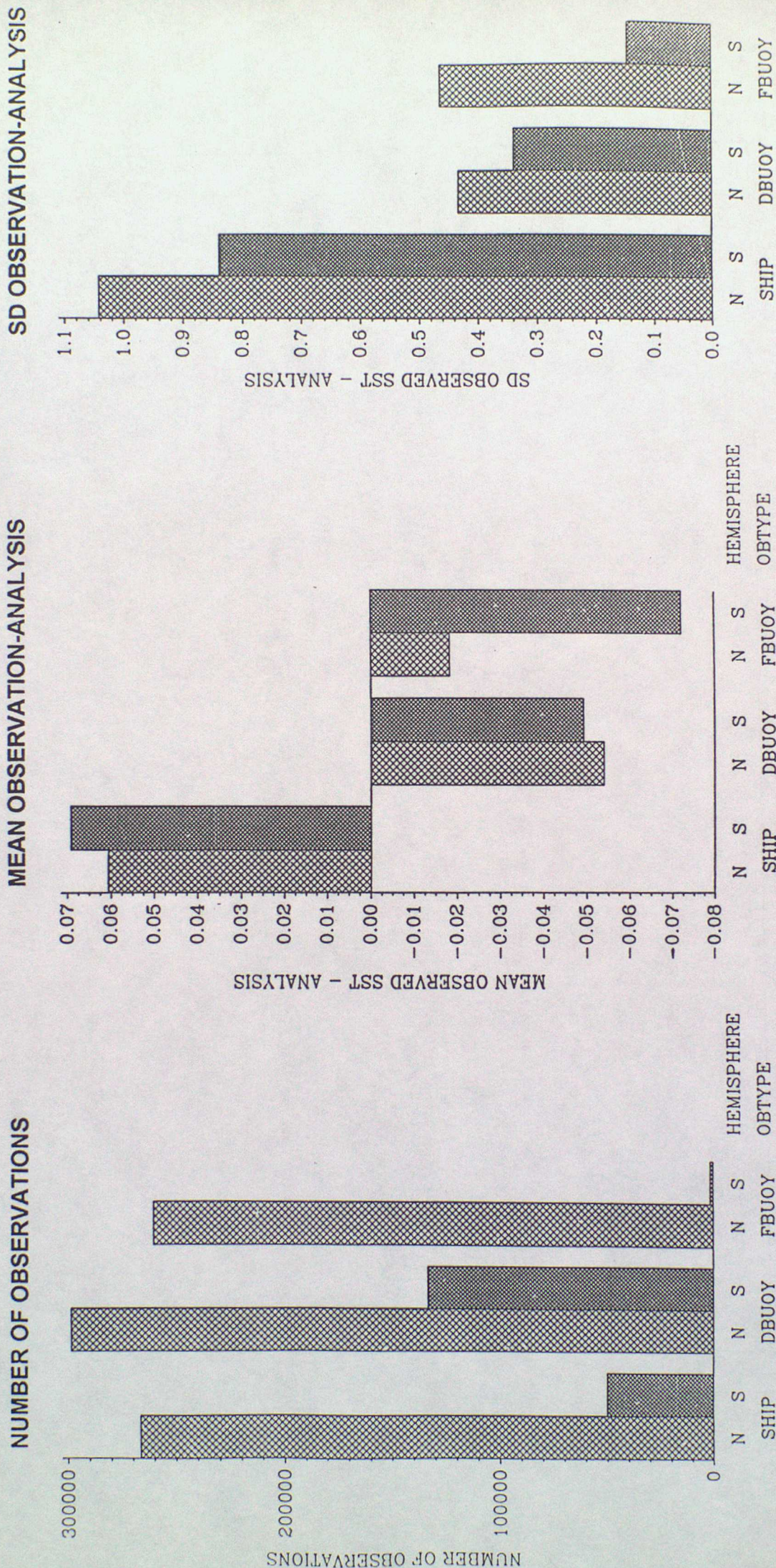


FIGURE 12(A)

FIGURE 12(B)

FIGURE 12(C)



FIG 13: BIAS OF SHIP SEA SURFACE TEMPERATURES (O-A) IN DEG C  
 DATES: JULY - DECEMBER 1993  
 ONLY OBSERVATIONS PASSING QUALITY CONTROL USED IN STATISTICS  
 CONTOURS PLOTTED AT INTERVALS OF 0.2 DEG C

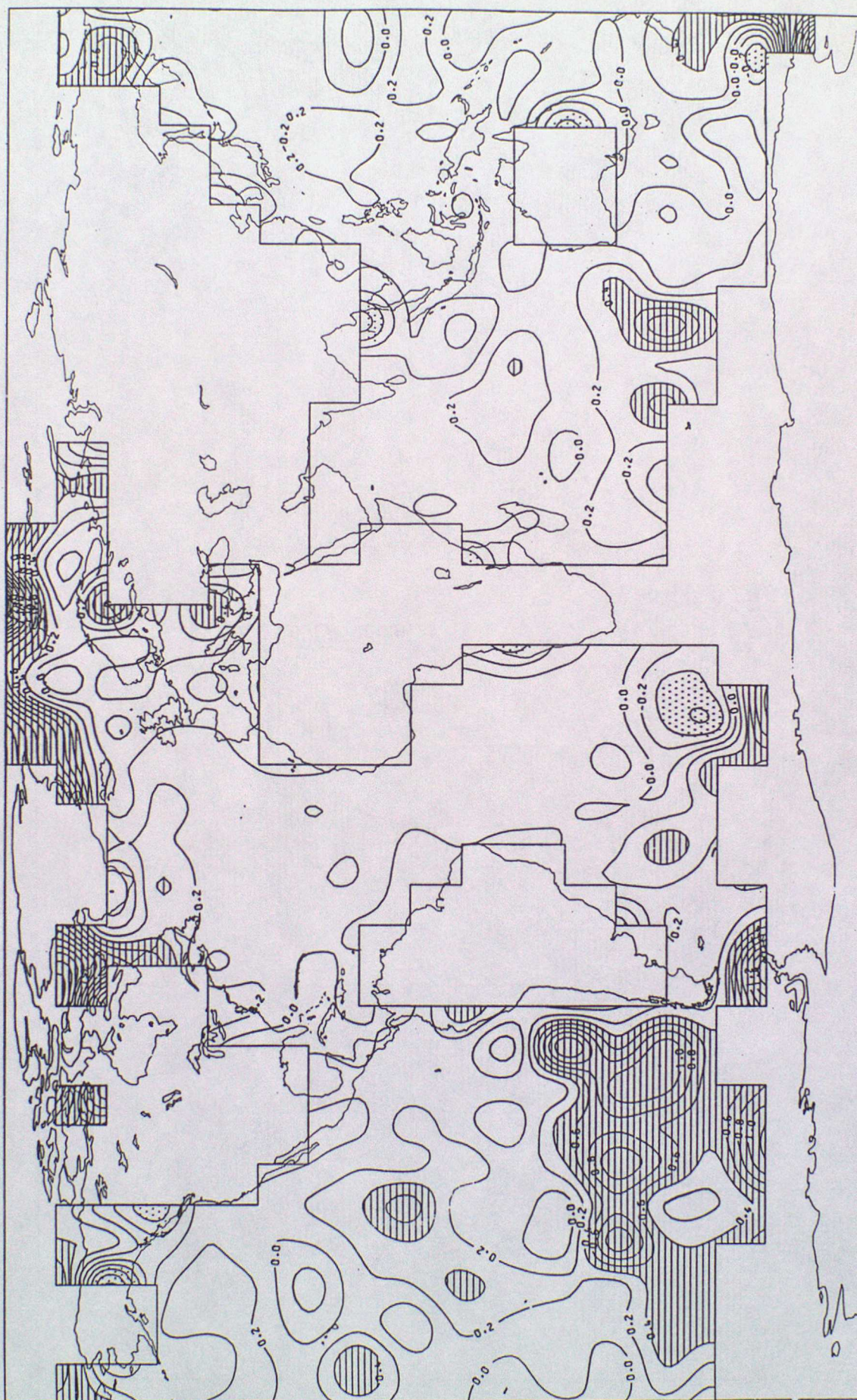
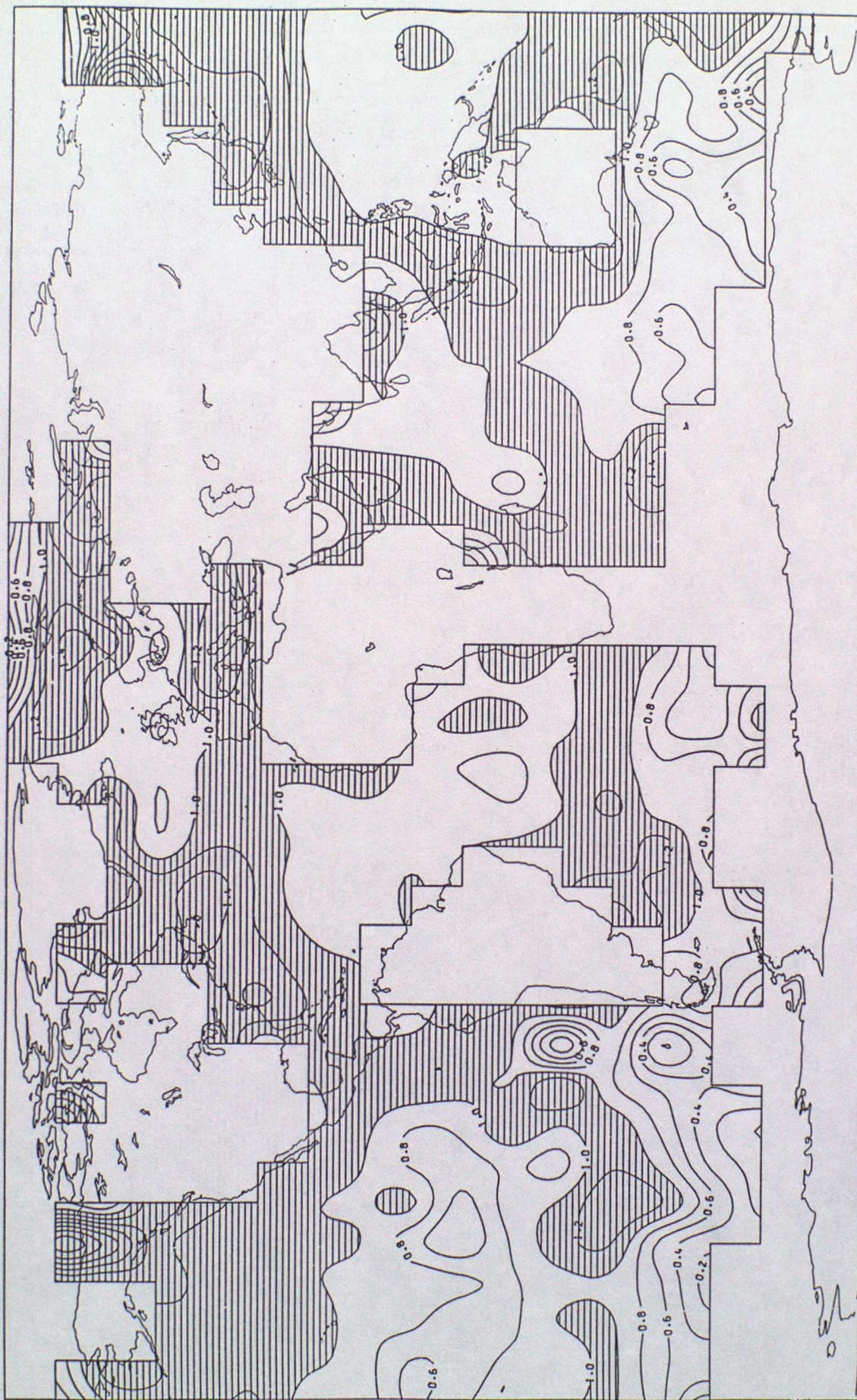




FIG 14: S.D. OF SHIP SEA SURFACE TEMPERATURES (O-A) IN DEG C  
 DATES: JULY - DECEMBER 1993  
 ONLY OBSERVATIONS PASSING QUALITY CONTROL USED IN STATISTICS  
 CONTOURS PLOTTED AT INTERVALS OF 0.2 DEG C





ONLY OBSERVATIONS PASSING QUALITY CONTROL ARE INCLUDED

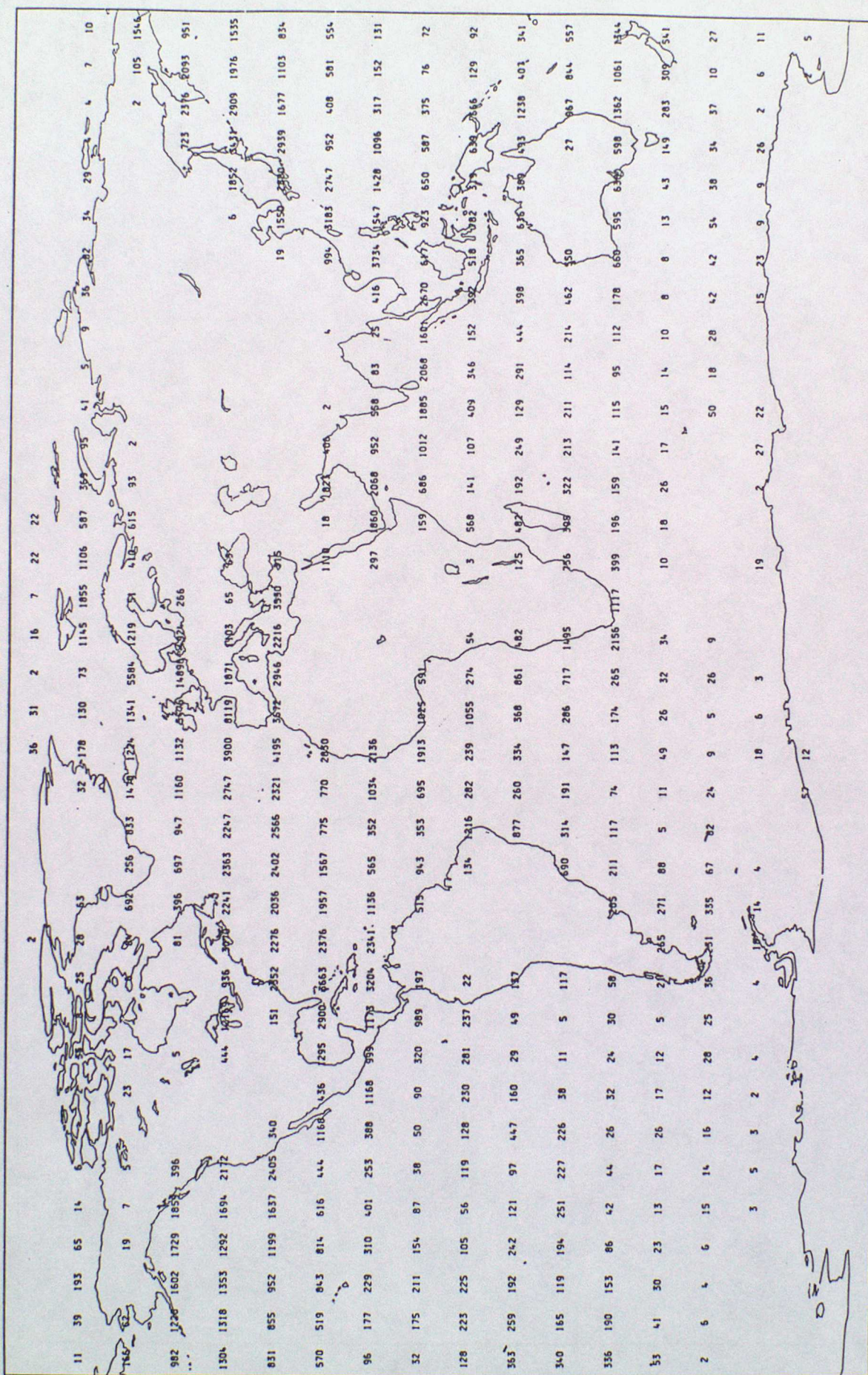






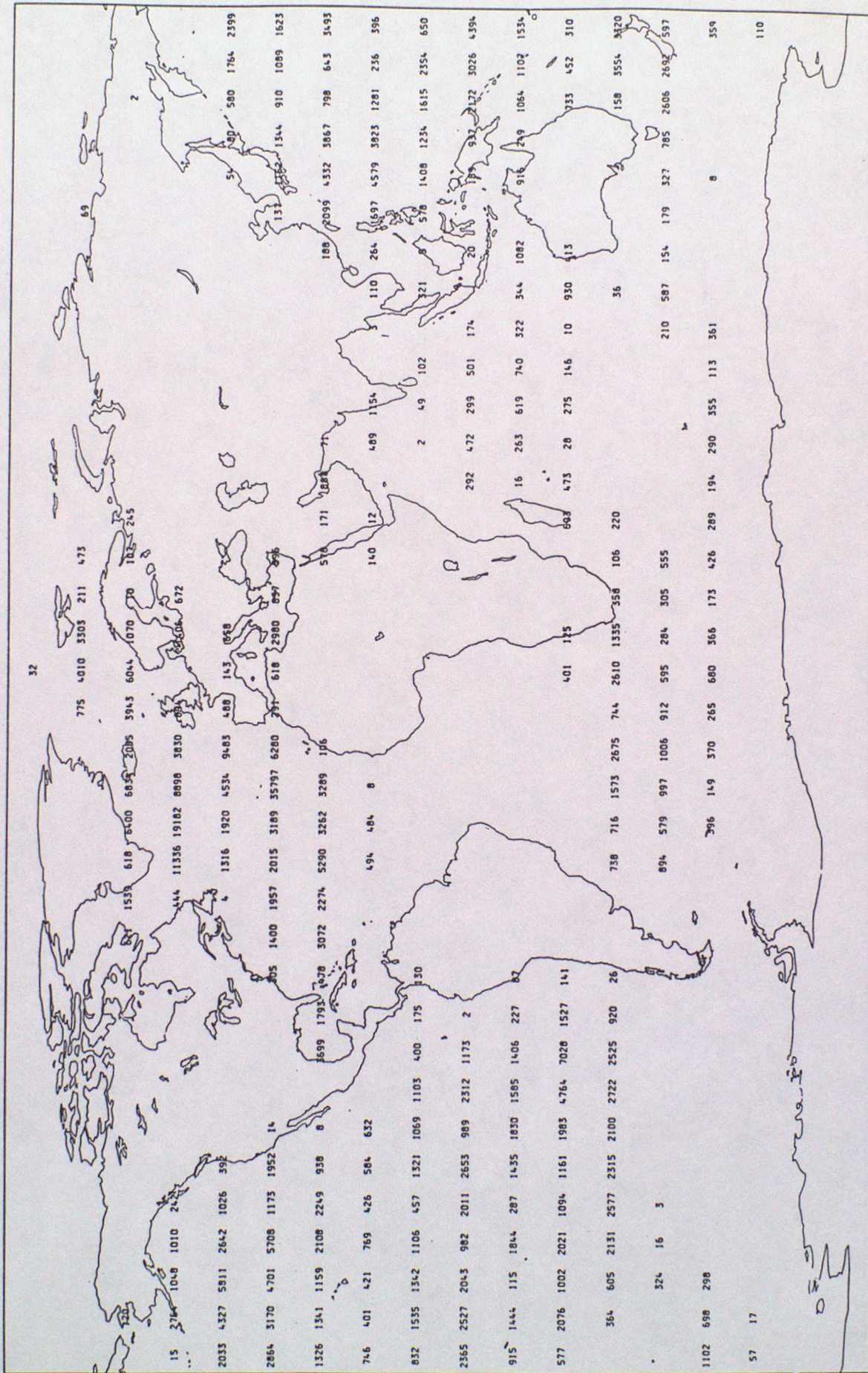


FIG 17:

NUMBER OF DRIFTING BUOY SEA-SURFACE TEMPERATURE OBSERVATIONS

DATE: JULY - DECEMBER 1993

ONLY OBSERVATIONS PASSING QUALITY CONTROL ARE INCLUDED





# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

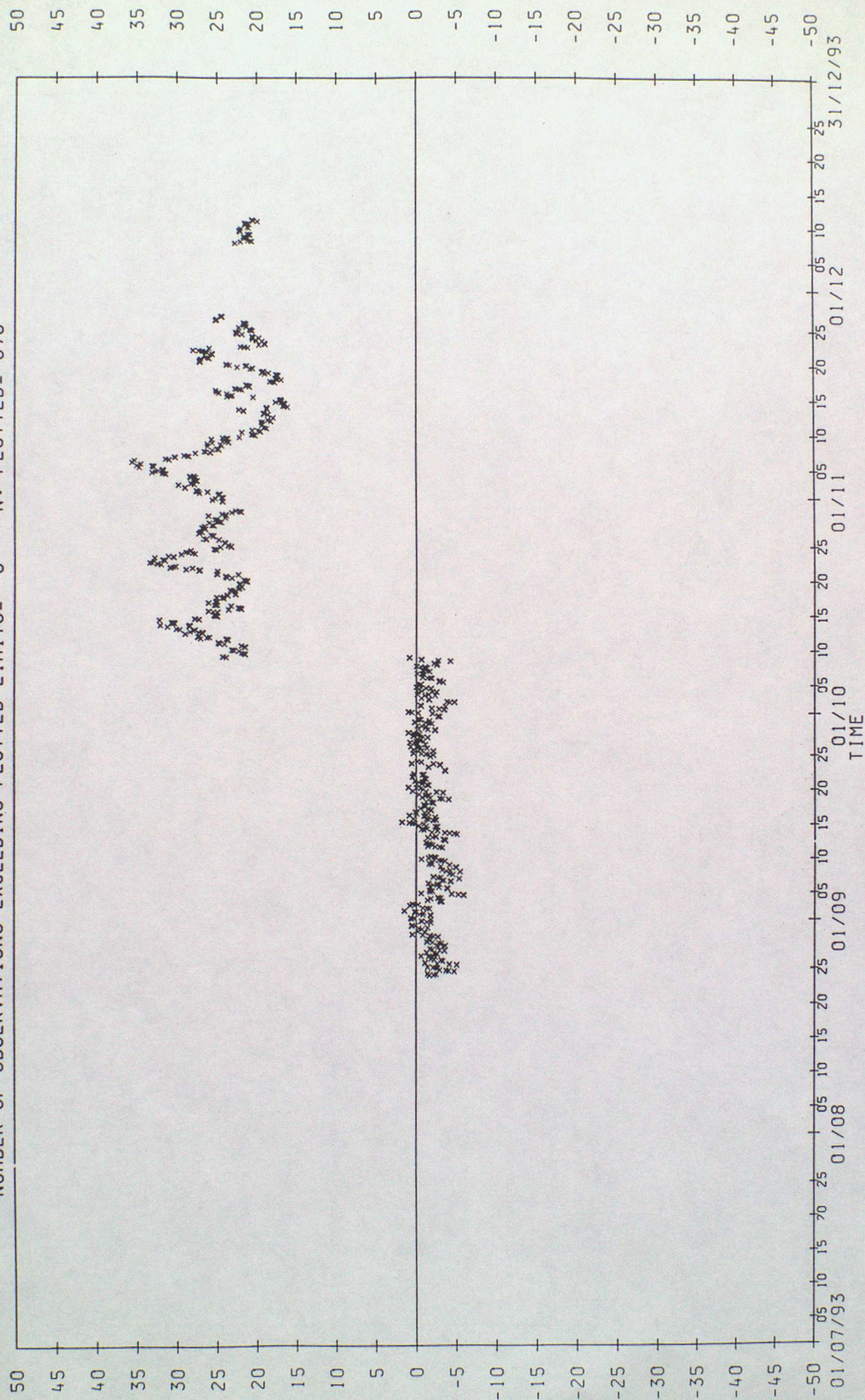
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 12501

VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 876

0-B

0-B

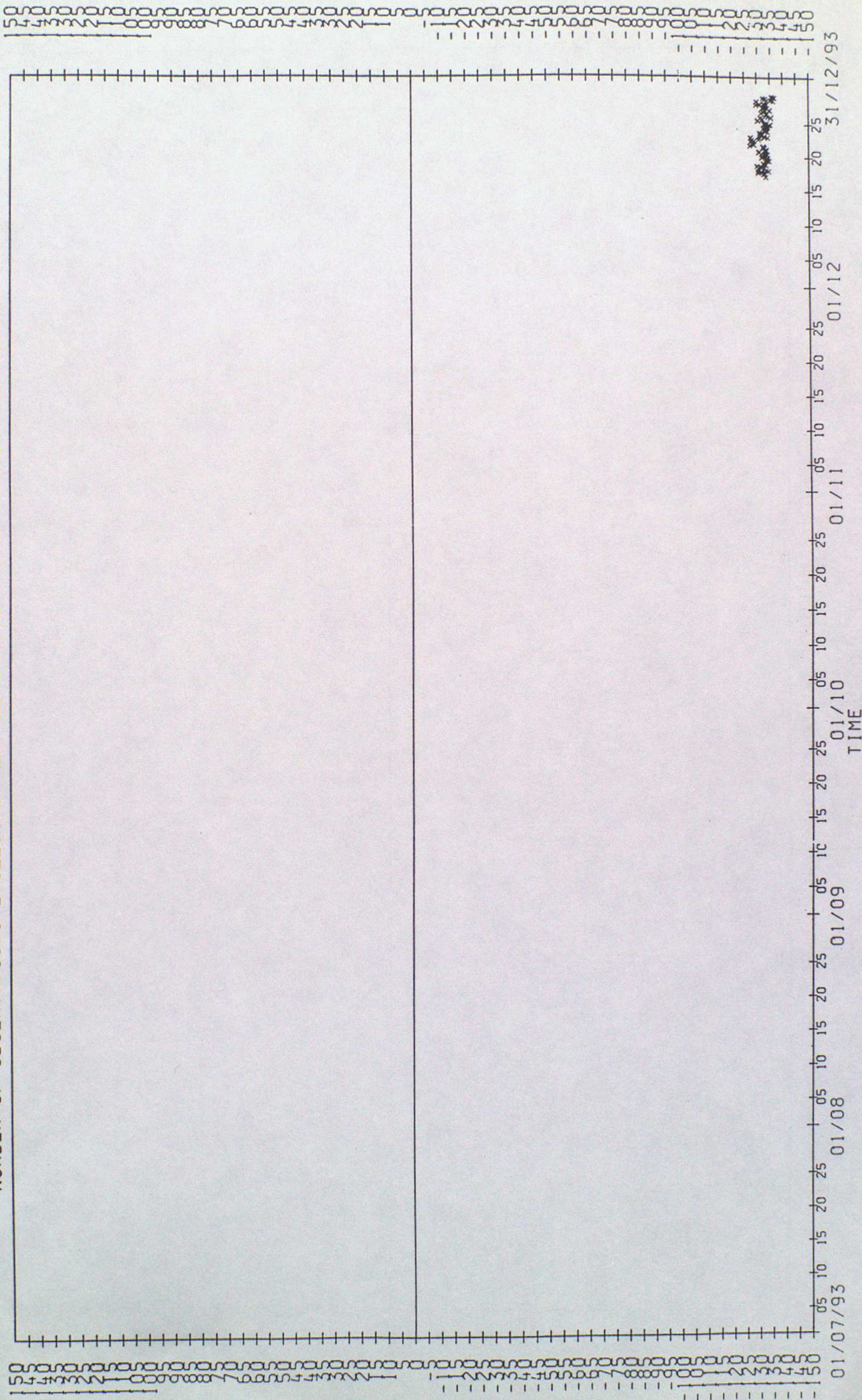




BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
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VARIABLE : MSLP IN UNITS OF HPA  
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 131

0-B

0-B





# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

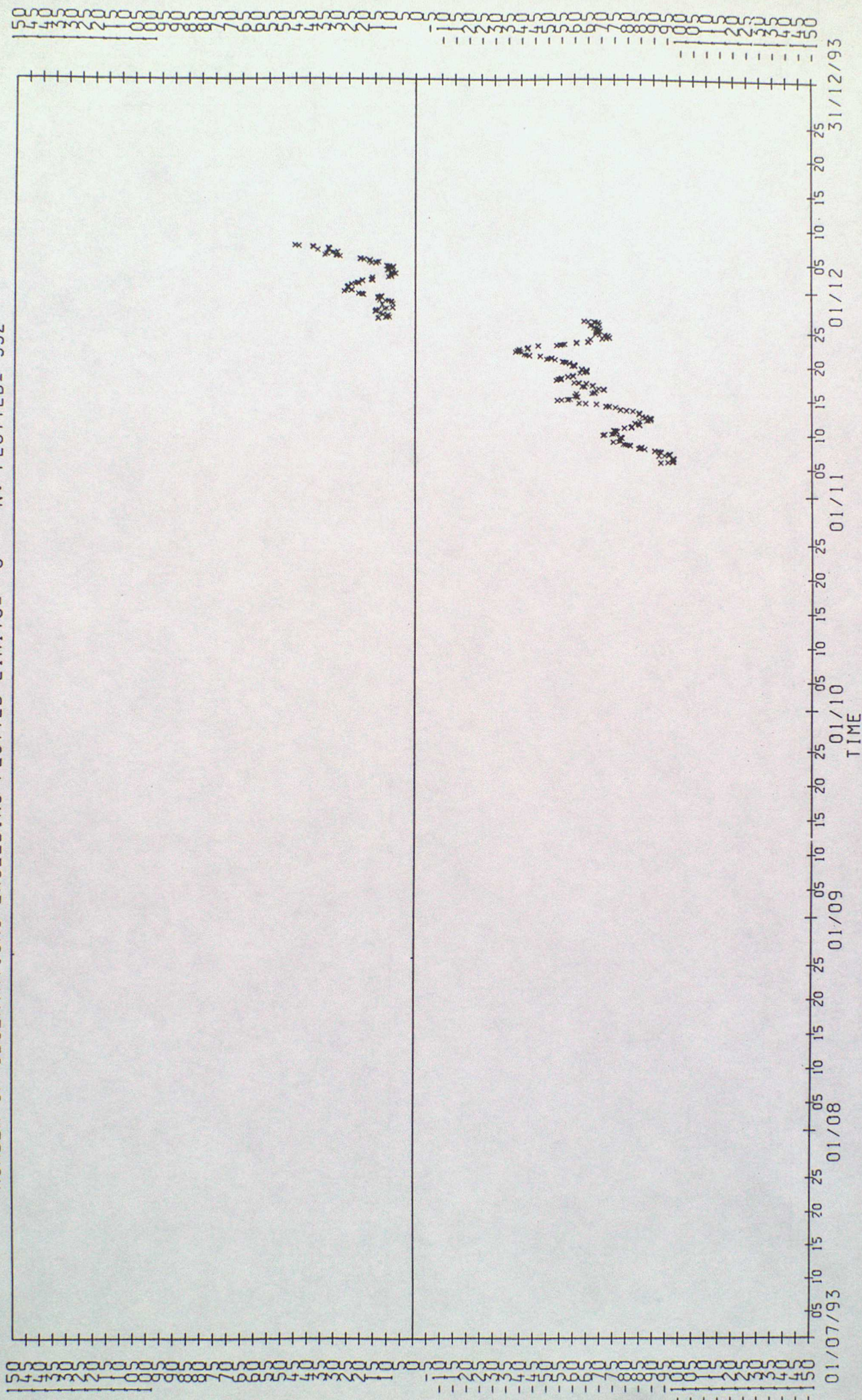
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0-B

VARIABLE : MSLP IN UNITS OF HPA

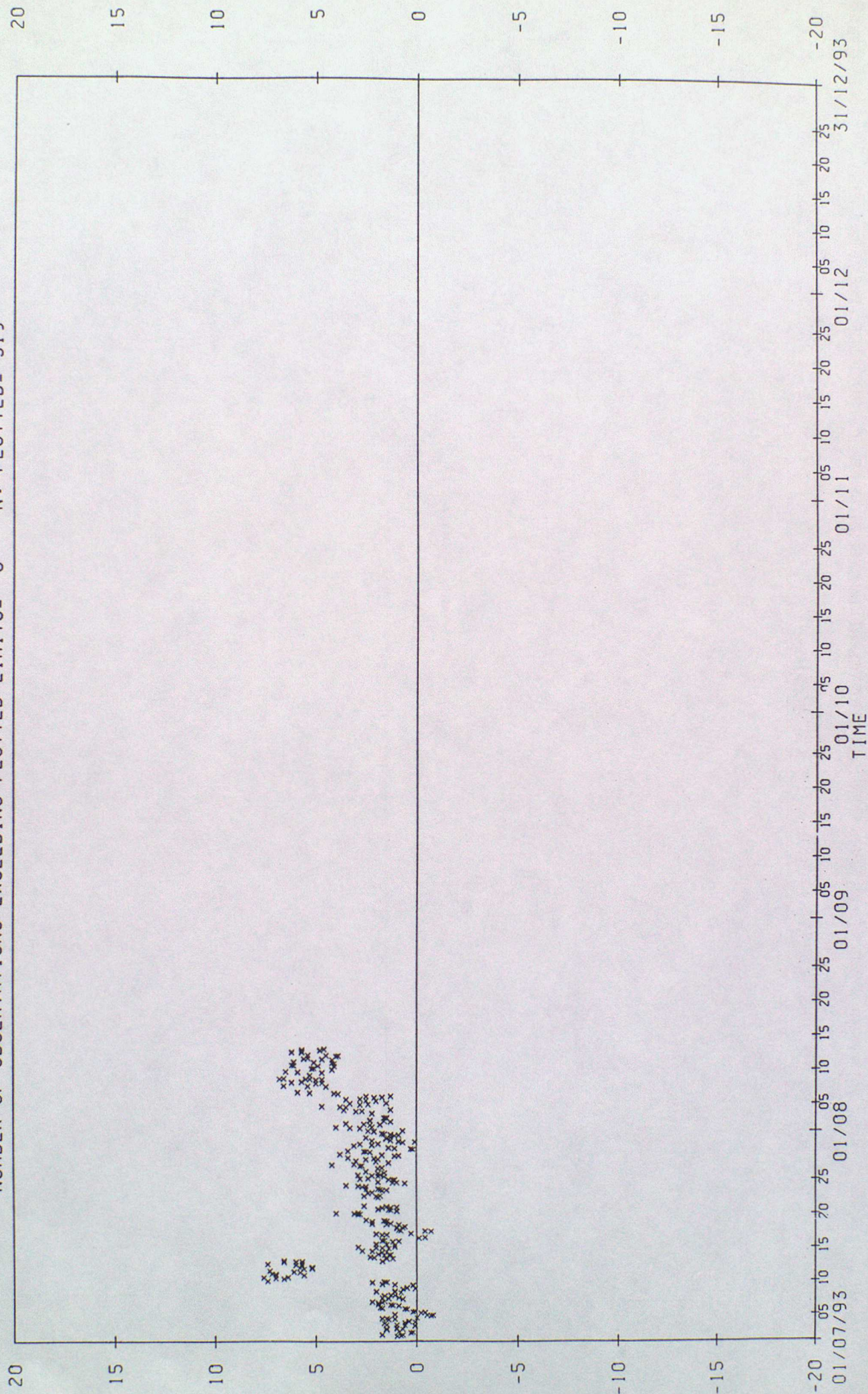
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 332

0-B





0-B  
BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 23507  
VARIABLE : MSLP IN UNITS OF HPA  
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 319  
0-B





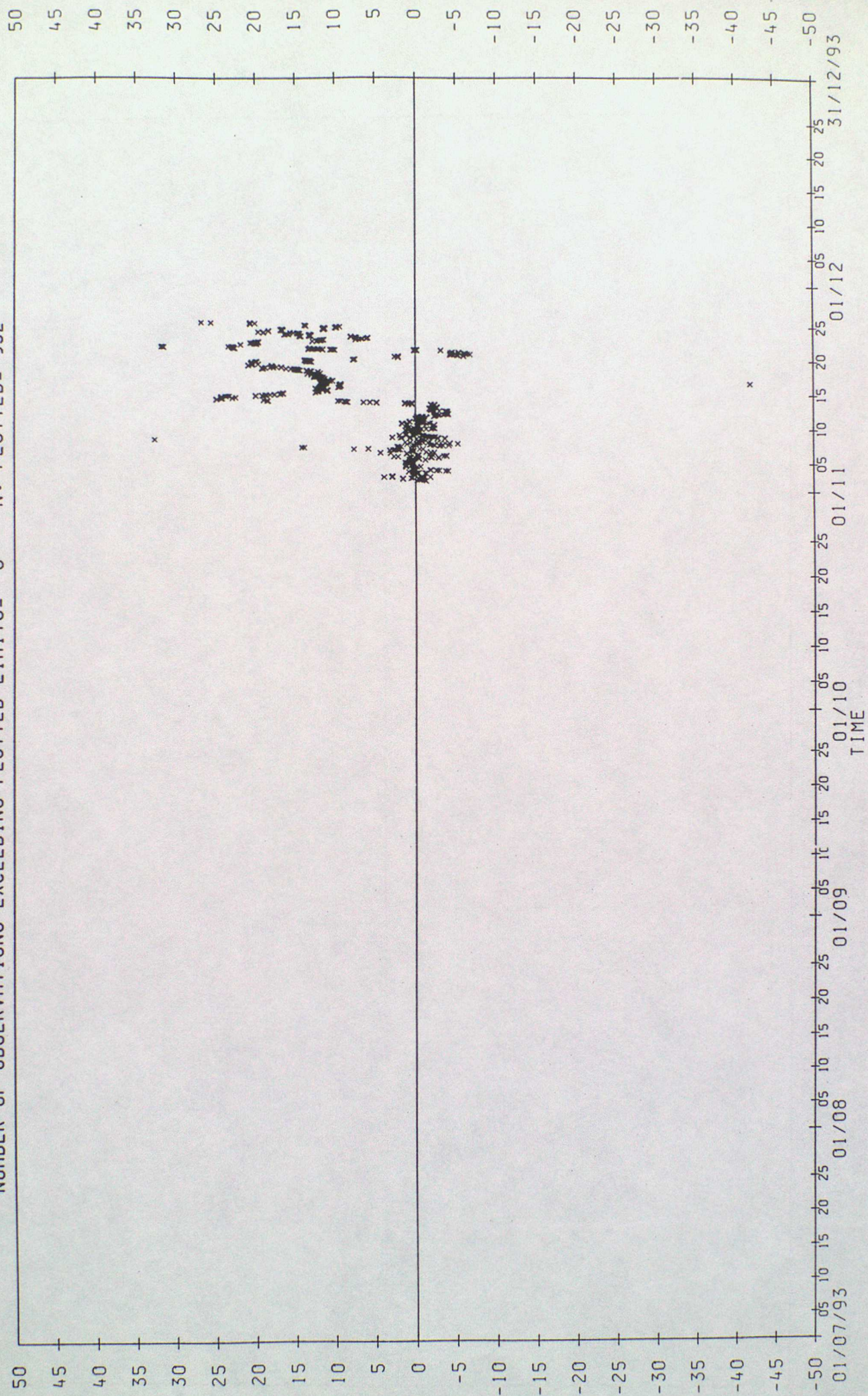
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 44614

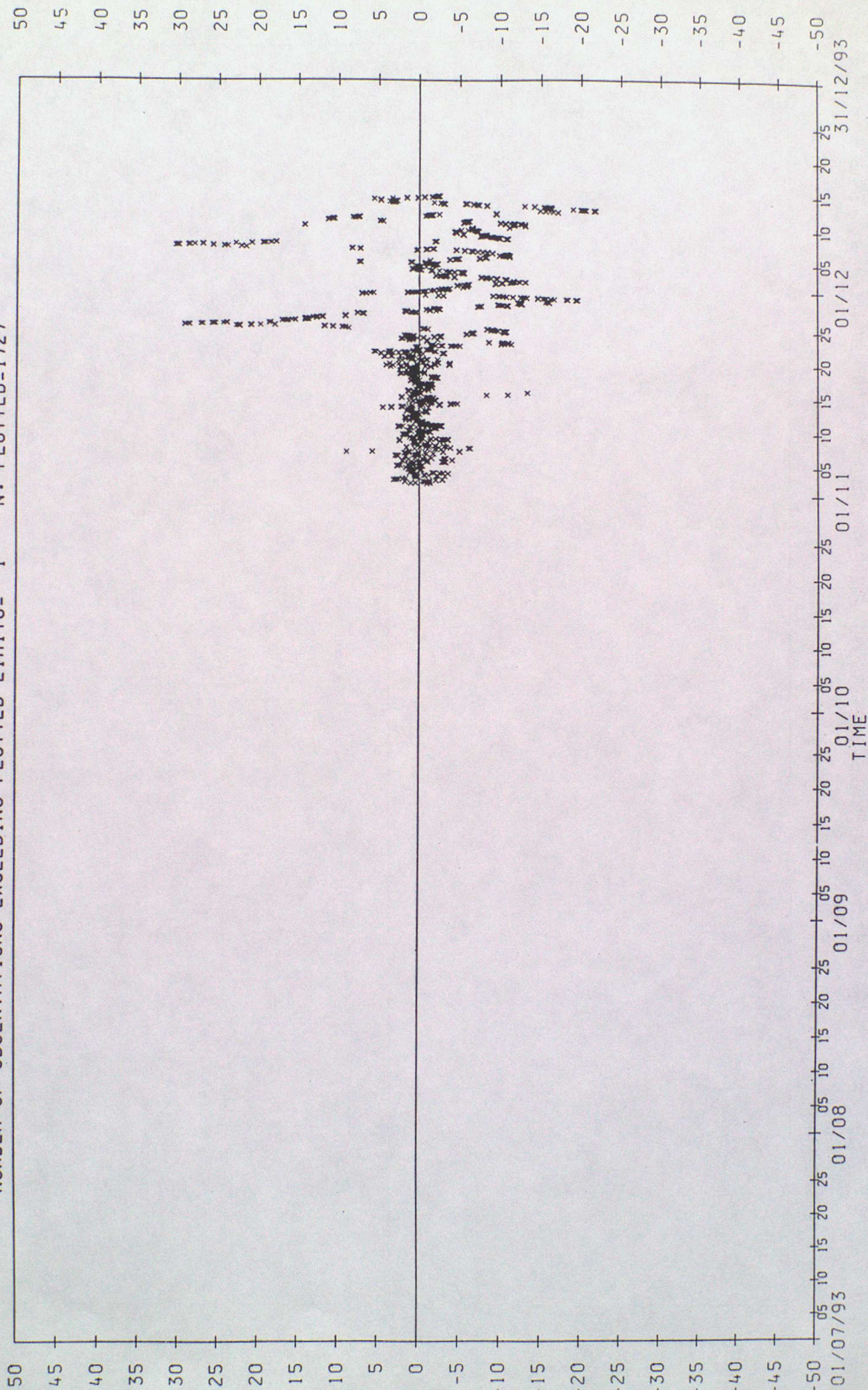
VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 952





0-B  
BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: 44616  
VARIABLE : MSLP IN UNITS OF HPA  
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 1 N. PLOTTED=1727  
0-B



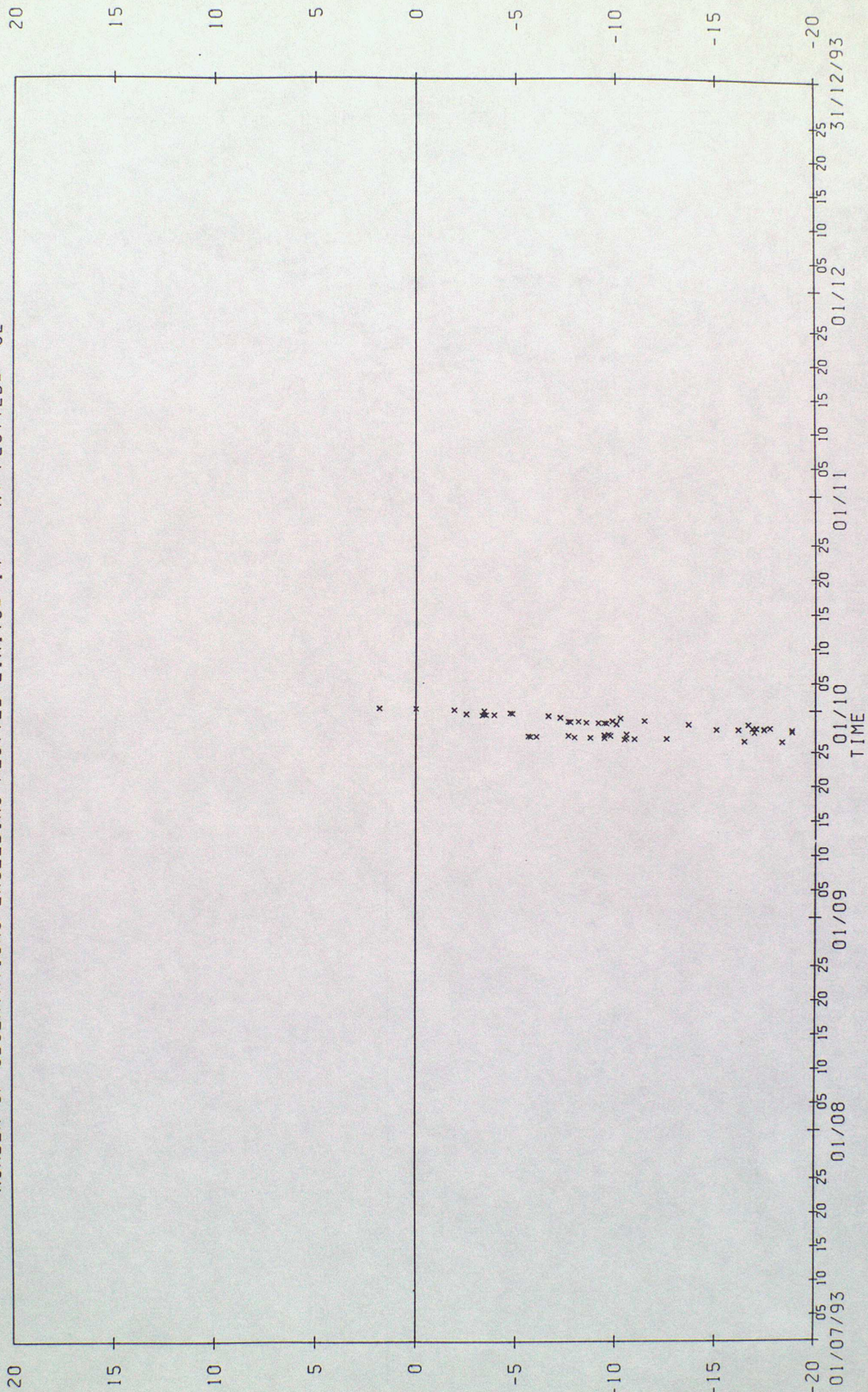


# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

0-B TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: 48566 0-B

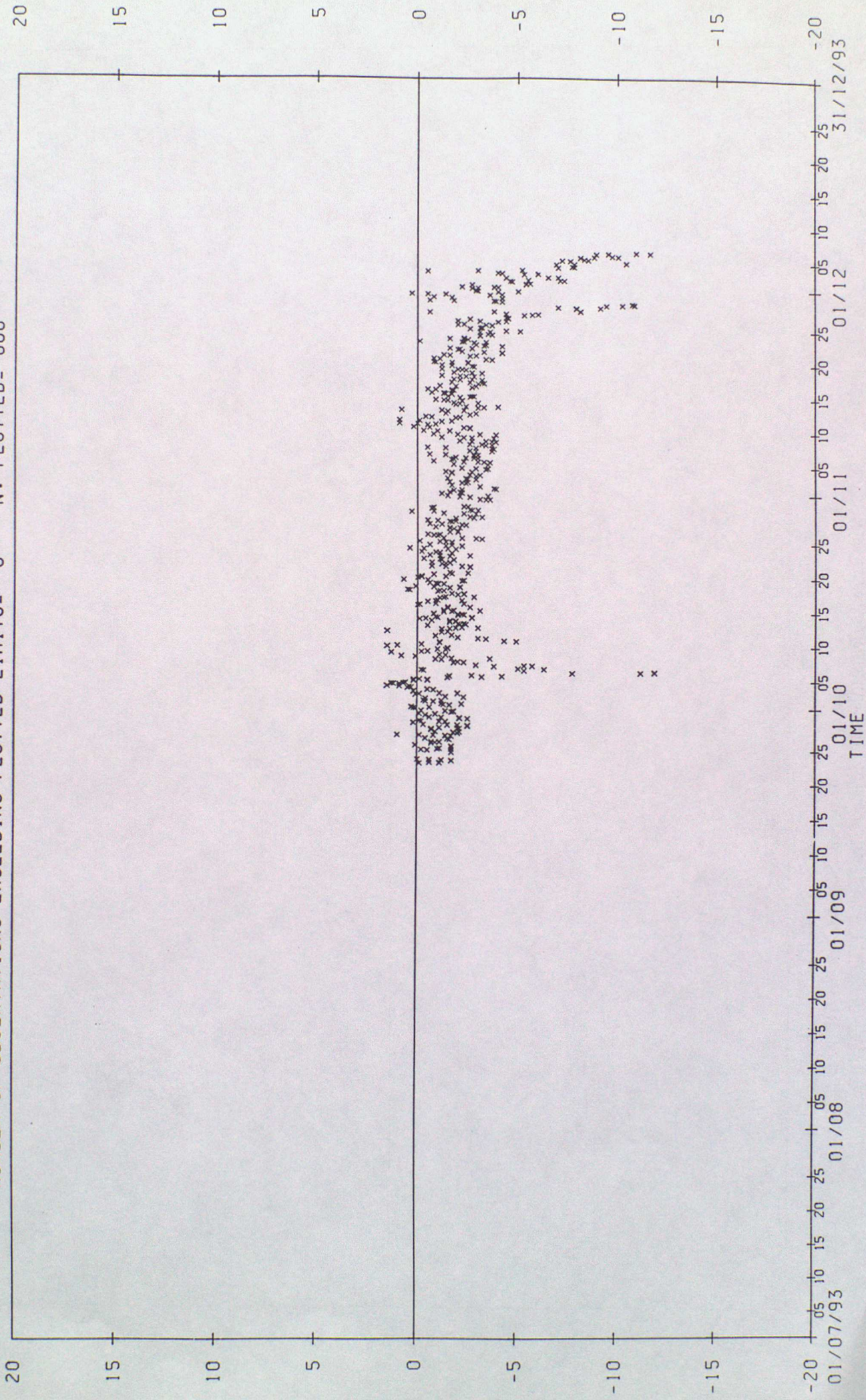
VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 14 N. PLOTTED= 62





0-B  
BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 53503  
VARIABLE : MSLP IN UNITS OF HPA  
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 608  
0-B

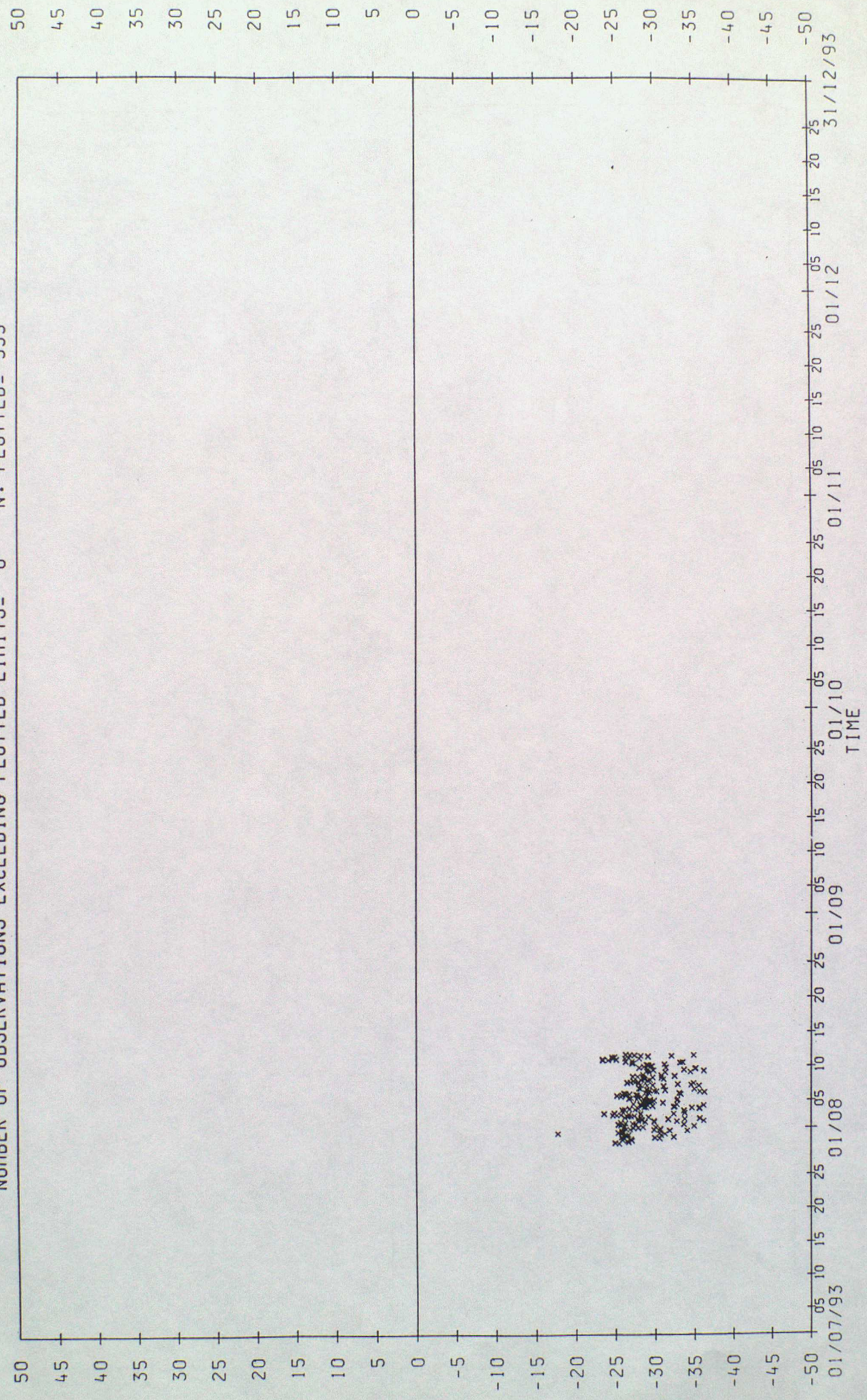




BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: 63161  
VARIABLE : MSLP IN UNITS OF HPA  
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 353

O-B

O-B

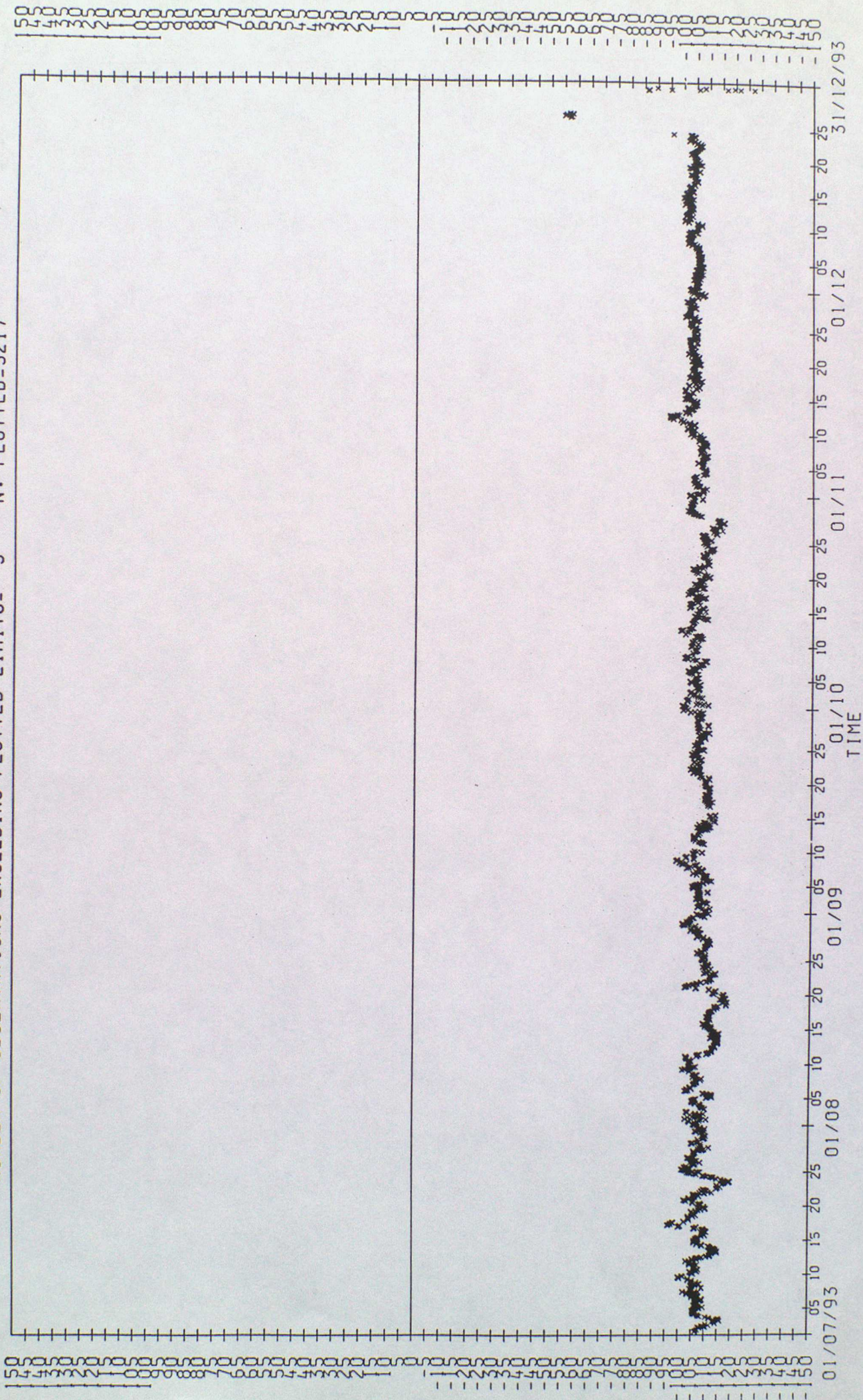




BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: 71003  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 5 N. PLOTTED=3217

O-B

O-B





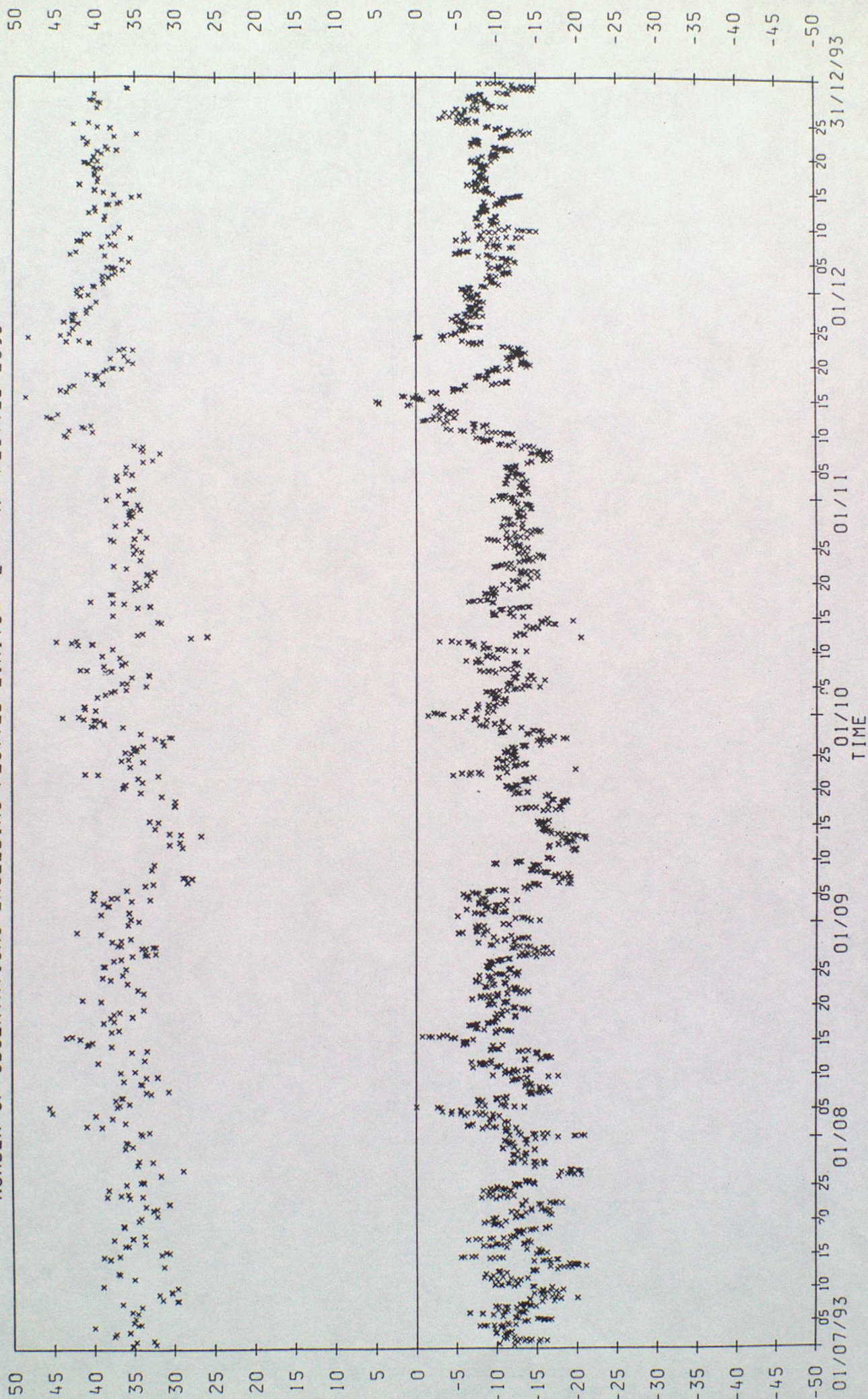
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 74002

VARIABLE : MSLP IN UNITS OF HPA

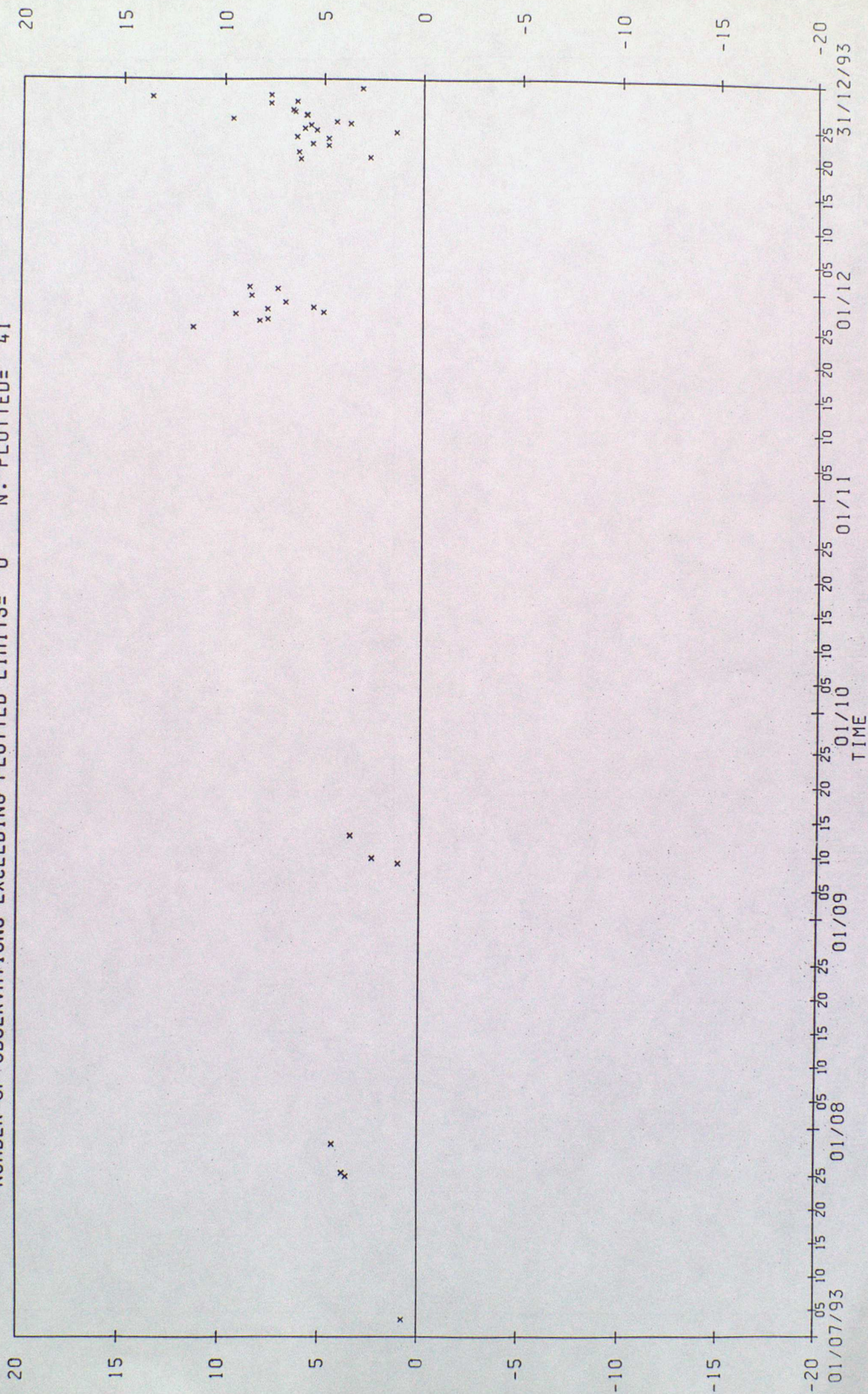
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 2 N. PLOTTED=2895





BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: ATRK  
VARIABLE : MSLP IN UNITS OF HPA  
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 41

0-B





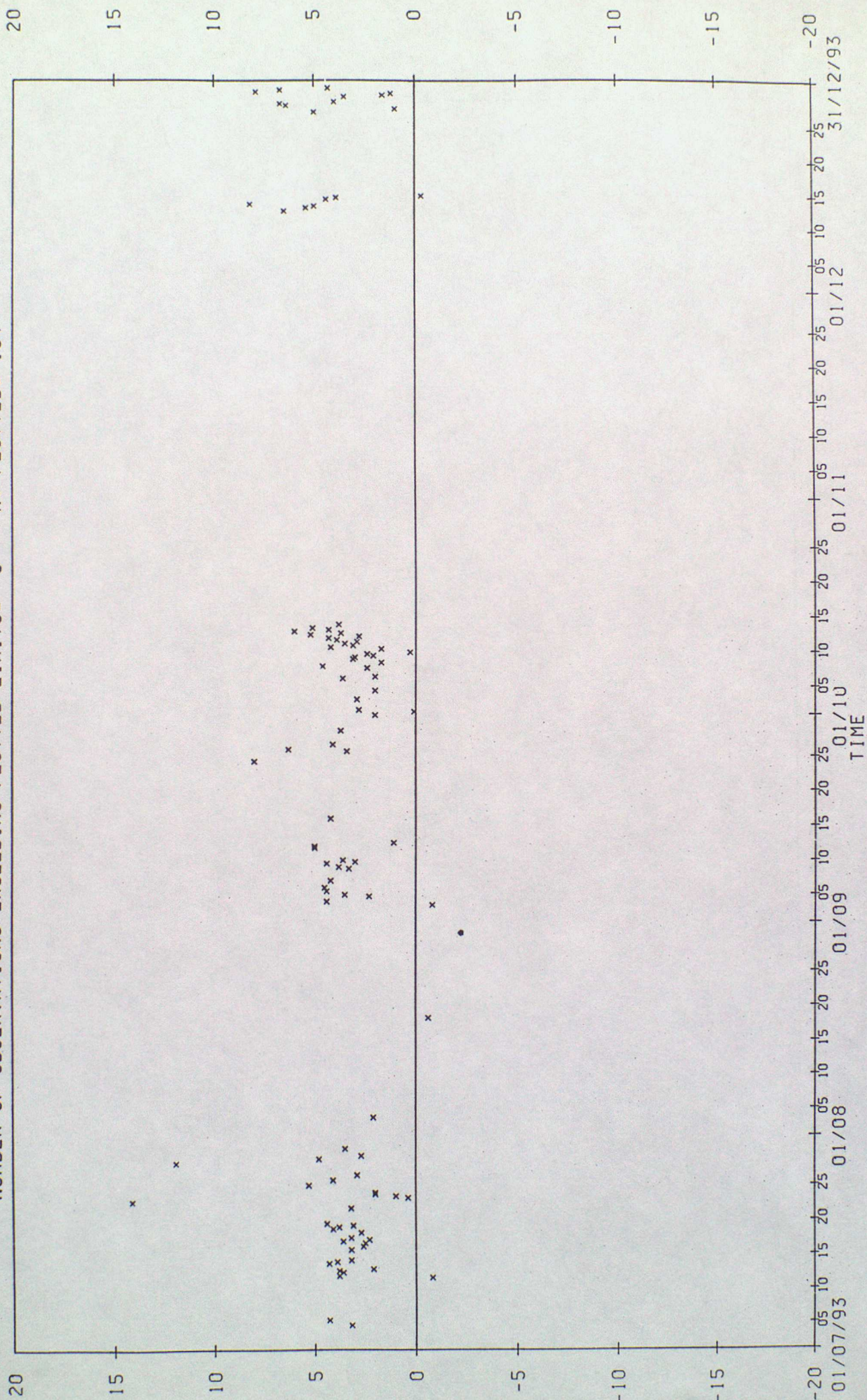
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: CGBR

VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 104



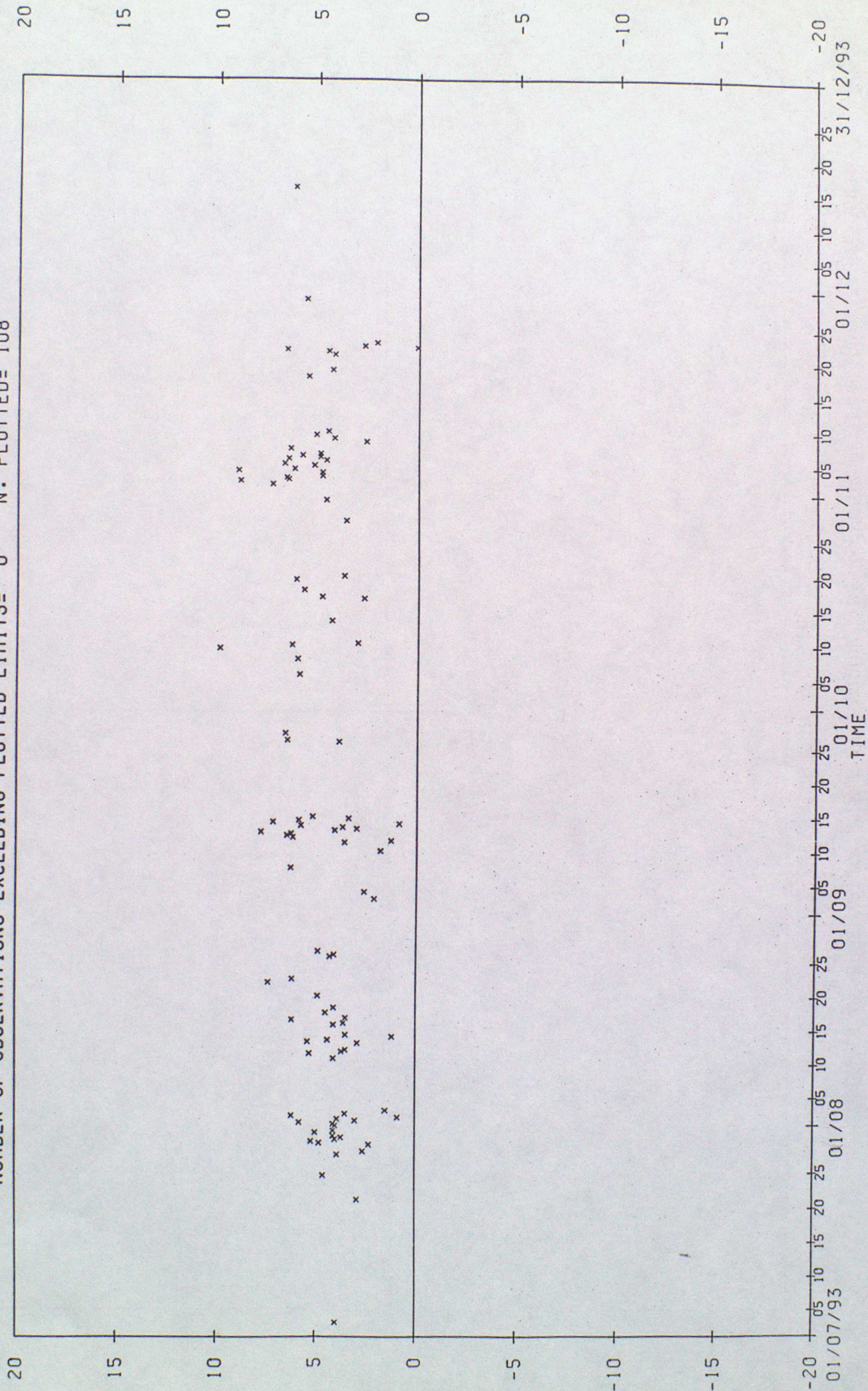


# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: CG2844

VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 108





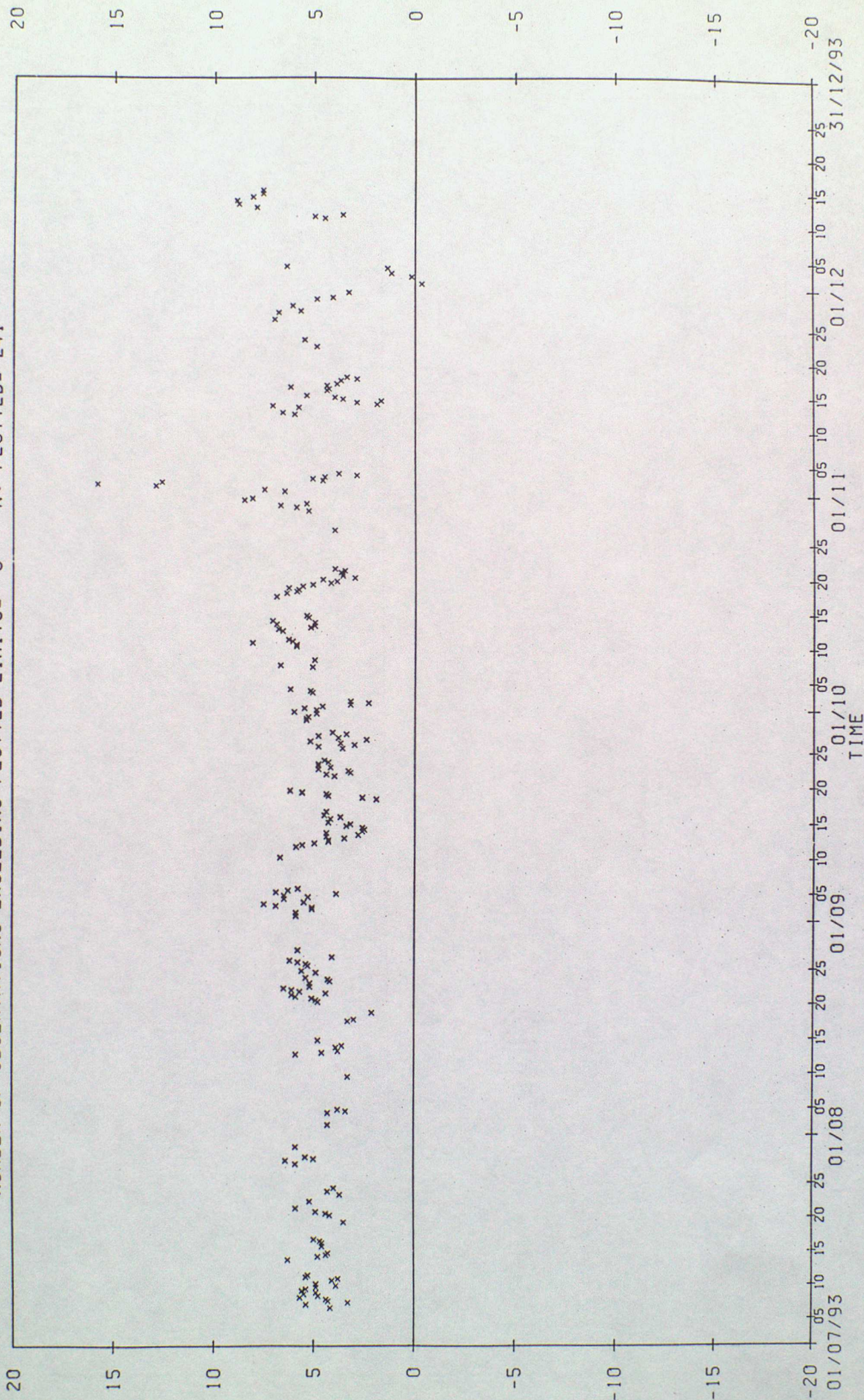
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: C6BT8

O-B

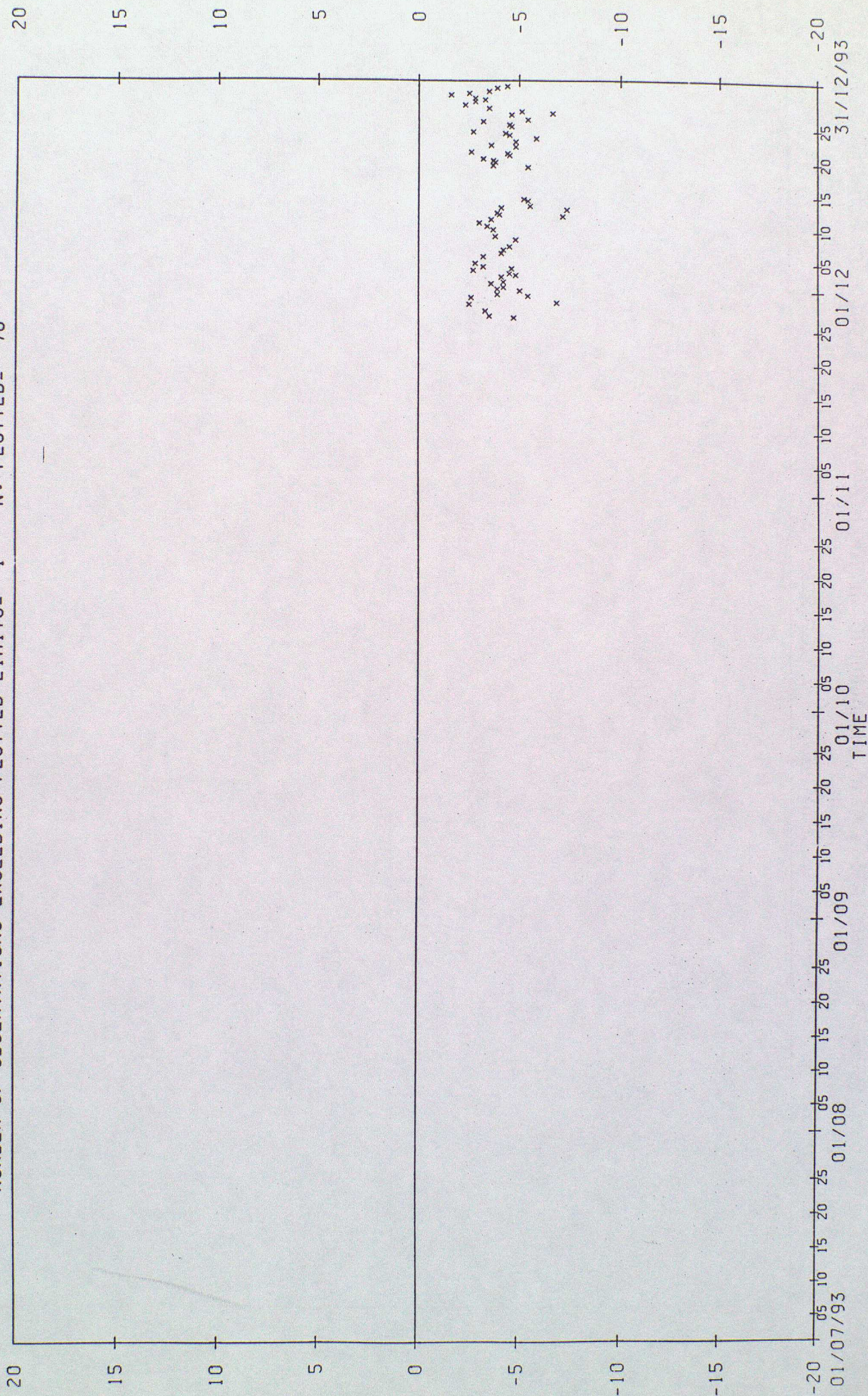
VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 241





0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: DCKF  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 1 N. PLOTTED= 70

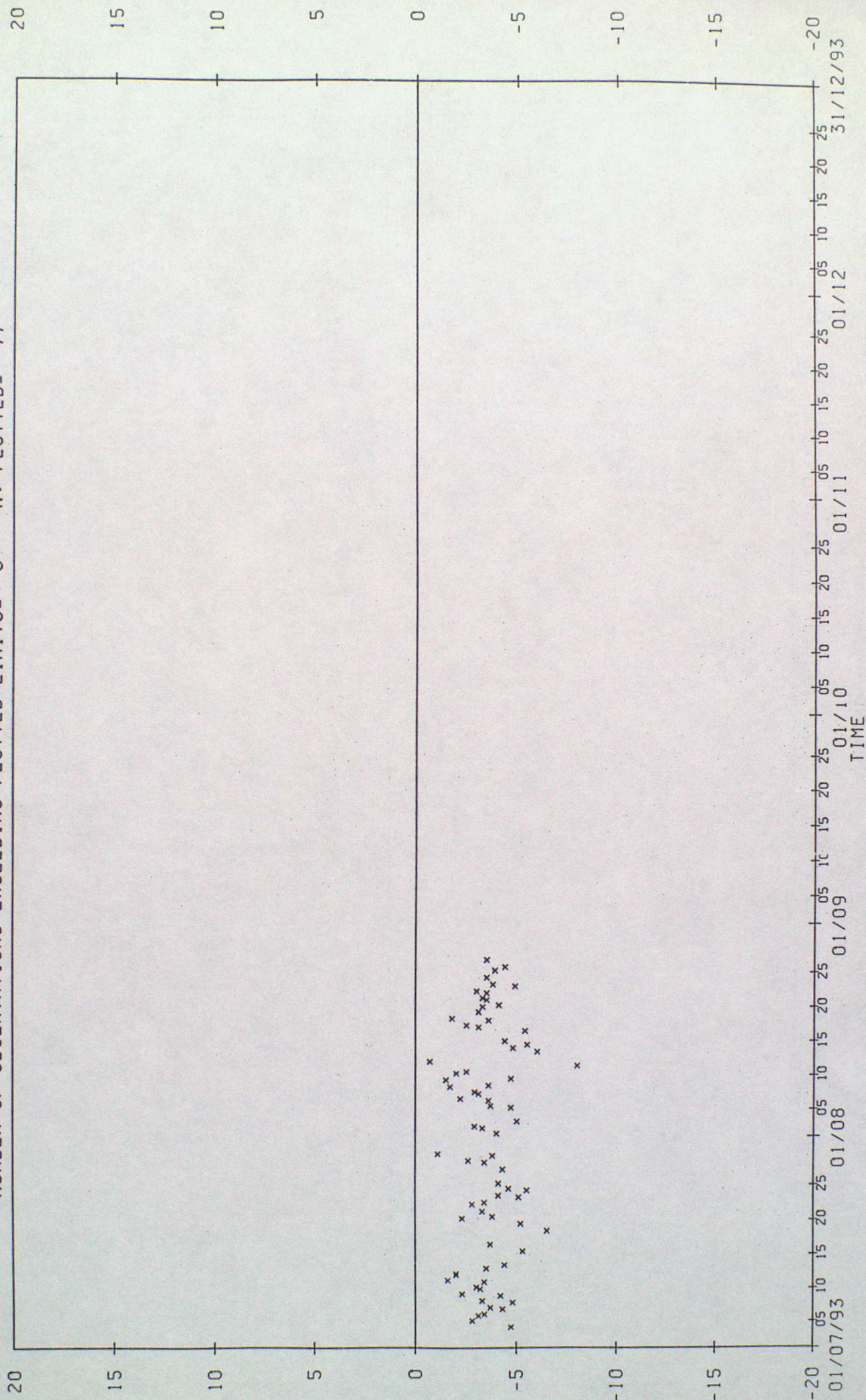




BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: DGBN  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 77

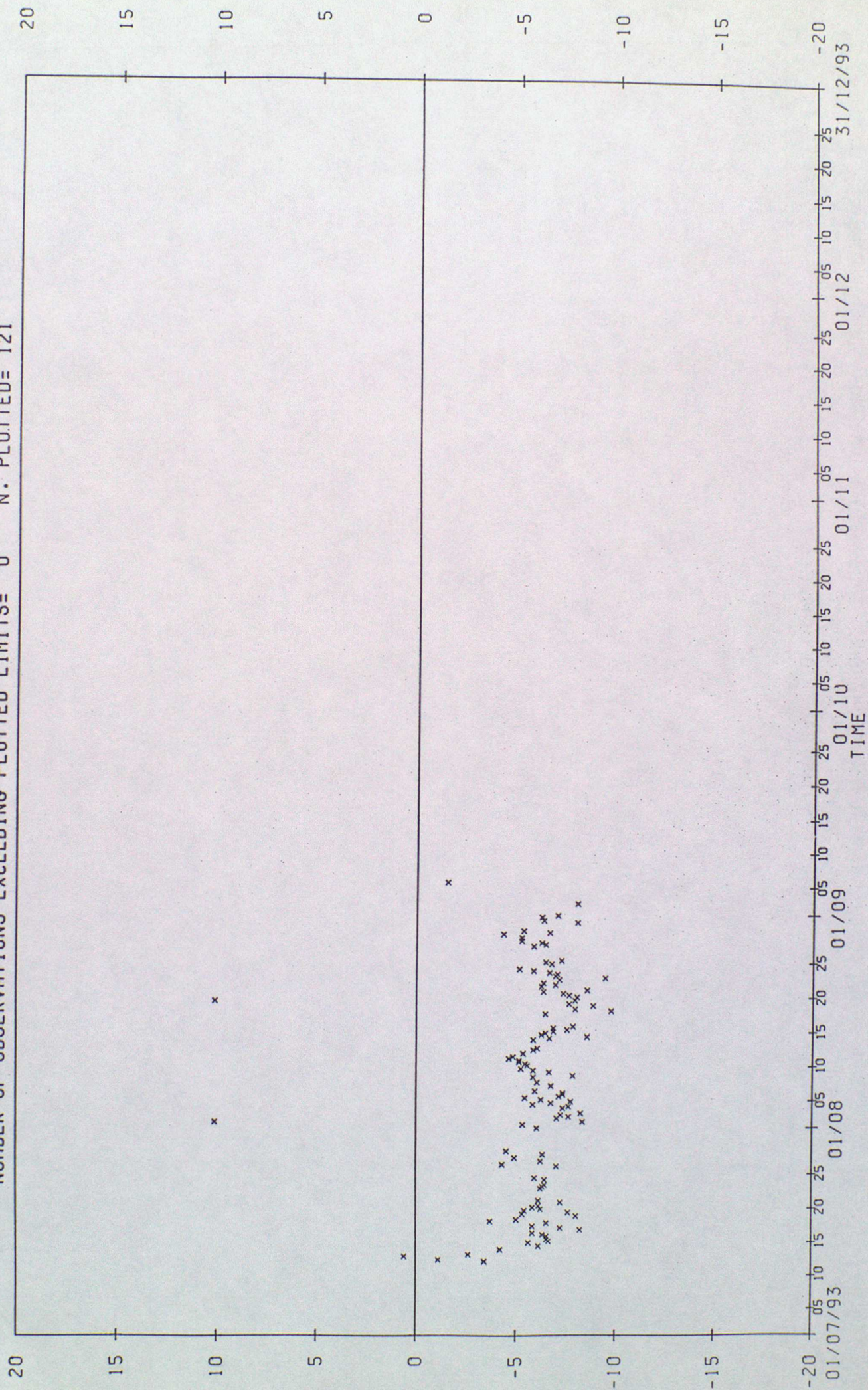
0-B

0-B





0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: DMZL  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 121  
 0-B



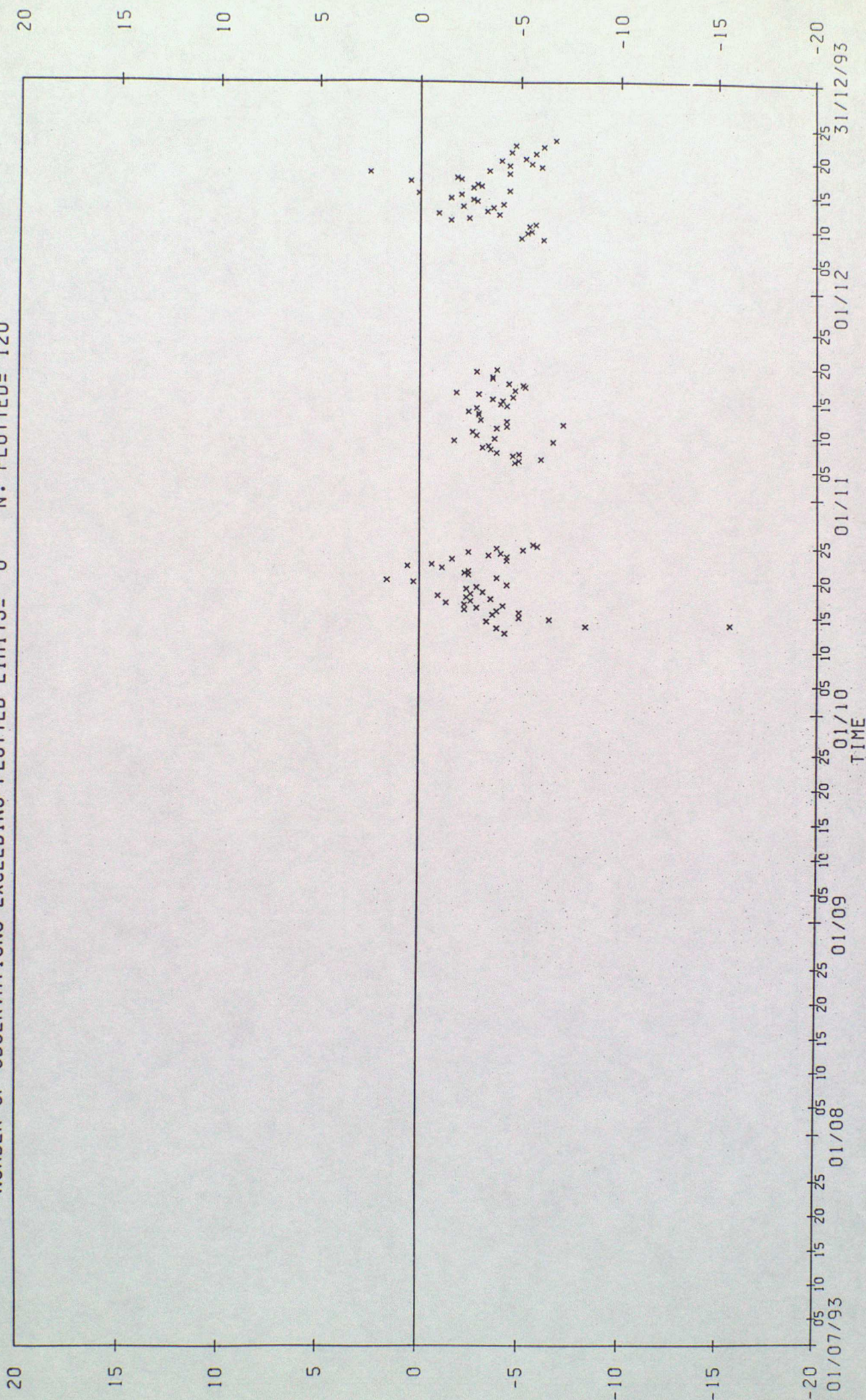


# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: DZSB  
 VARIABLE : MSLP IN UNITS OF HPA

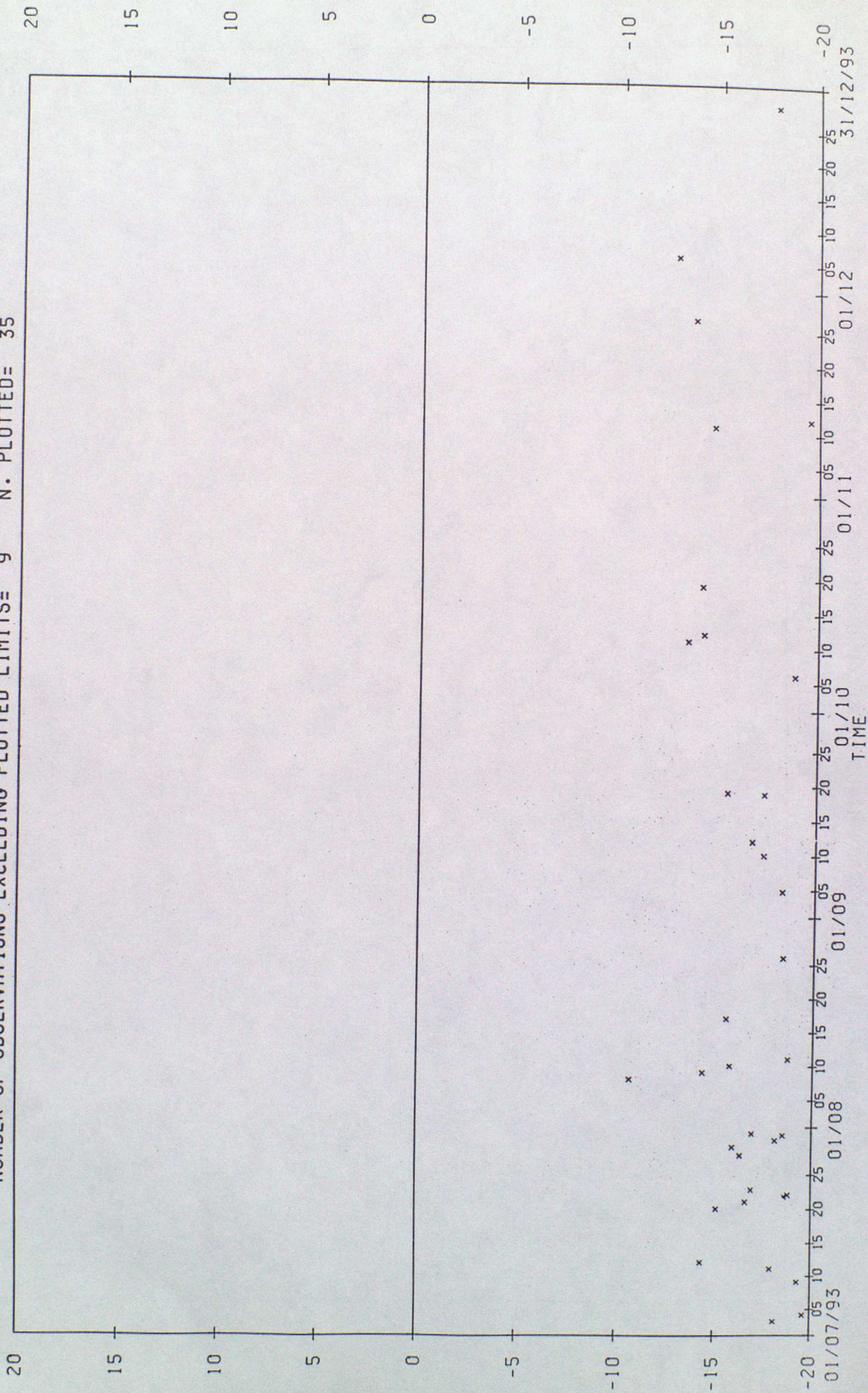
0-B

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 120



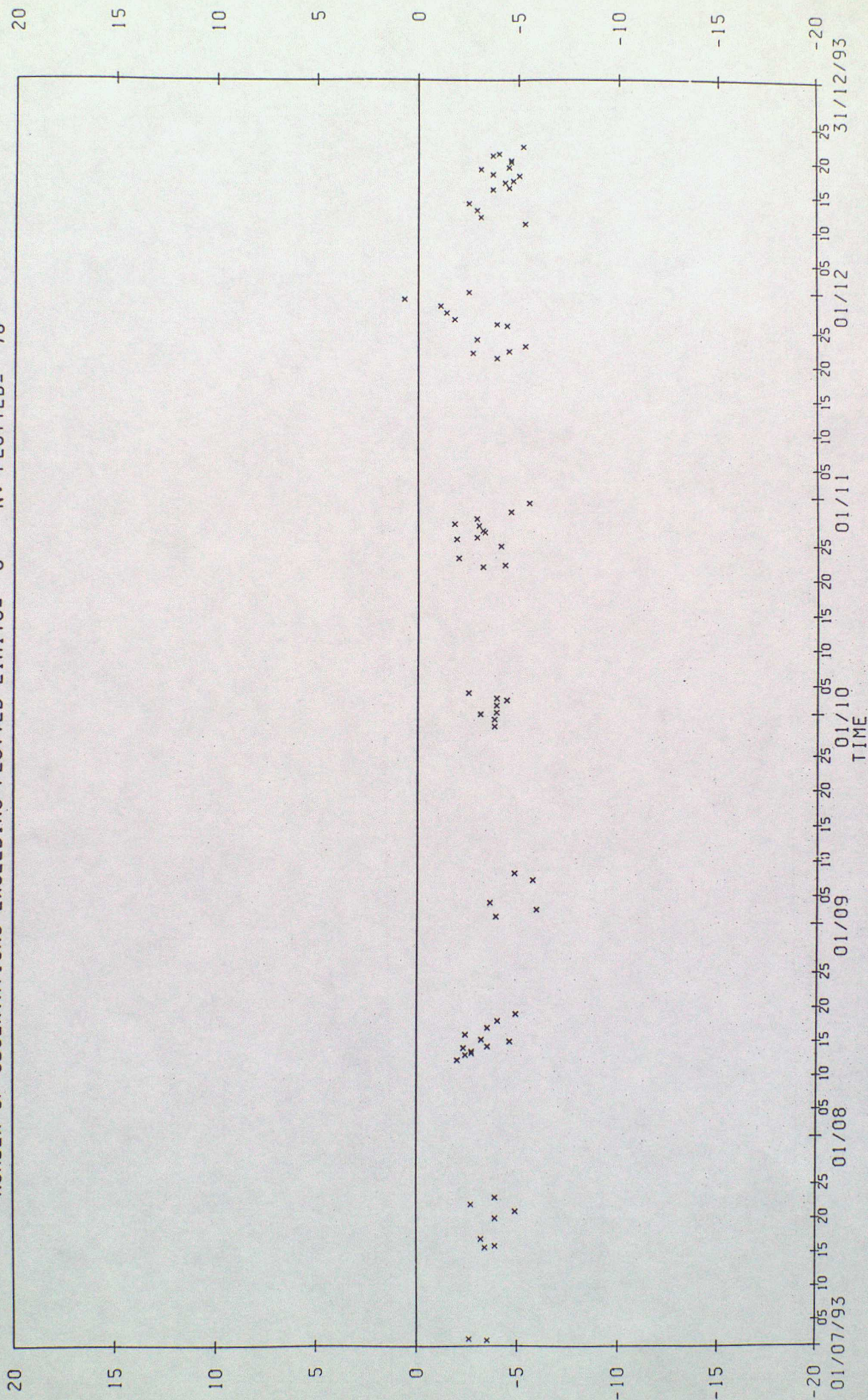


0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: ELAD7  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 9 N. PLOTTED= 35  
 0-B



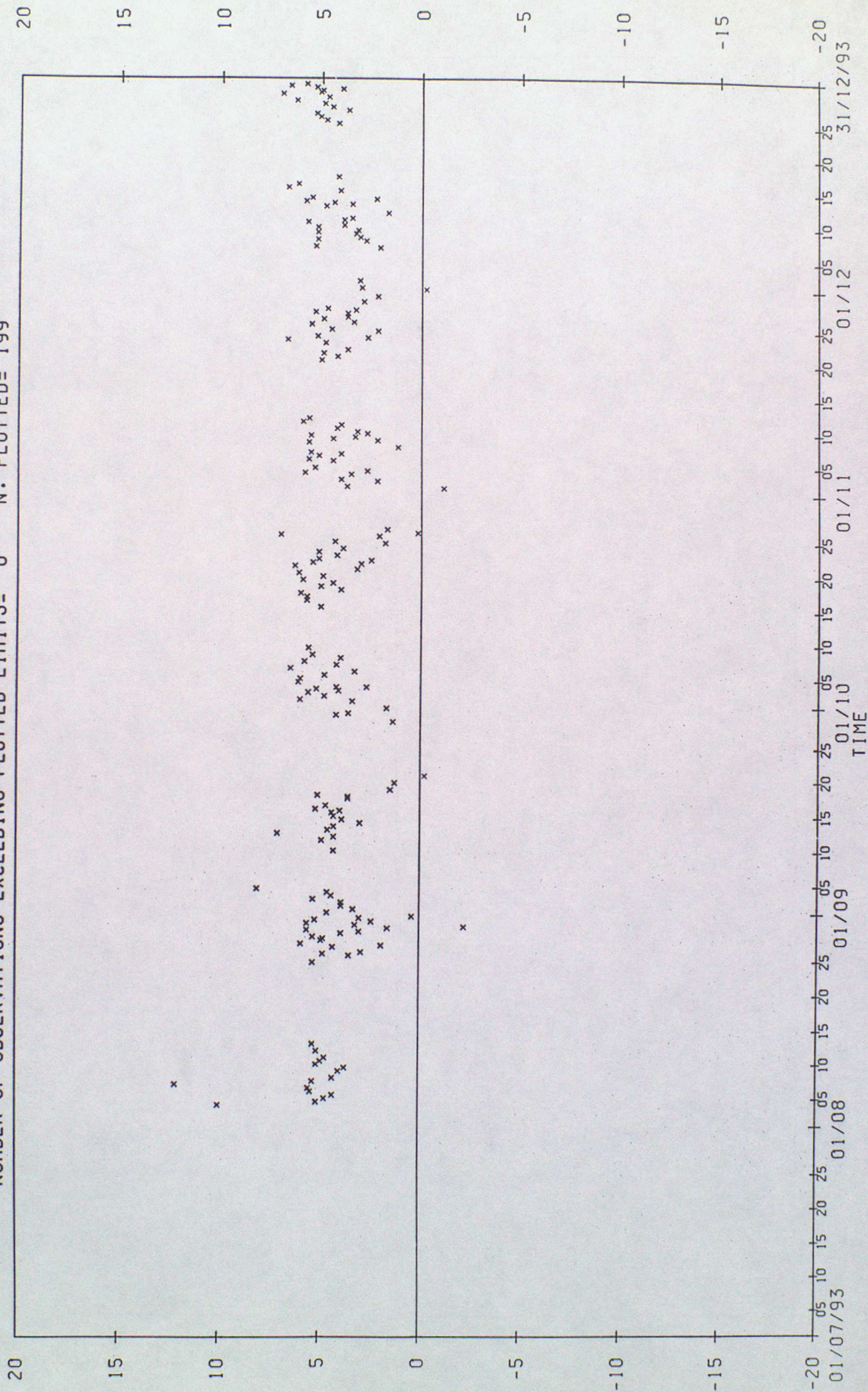


BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: ELEL2 0-B  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 76





0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: ELFN7  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 199  
 0-B



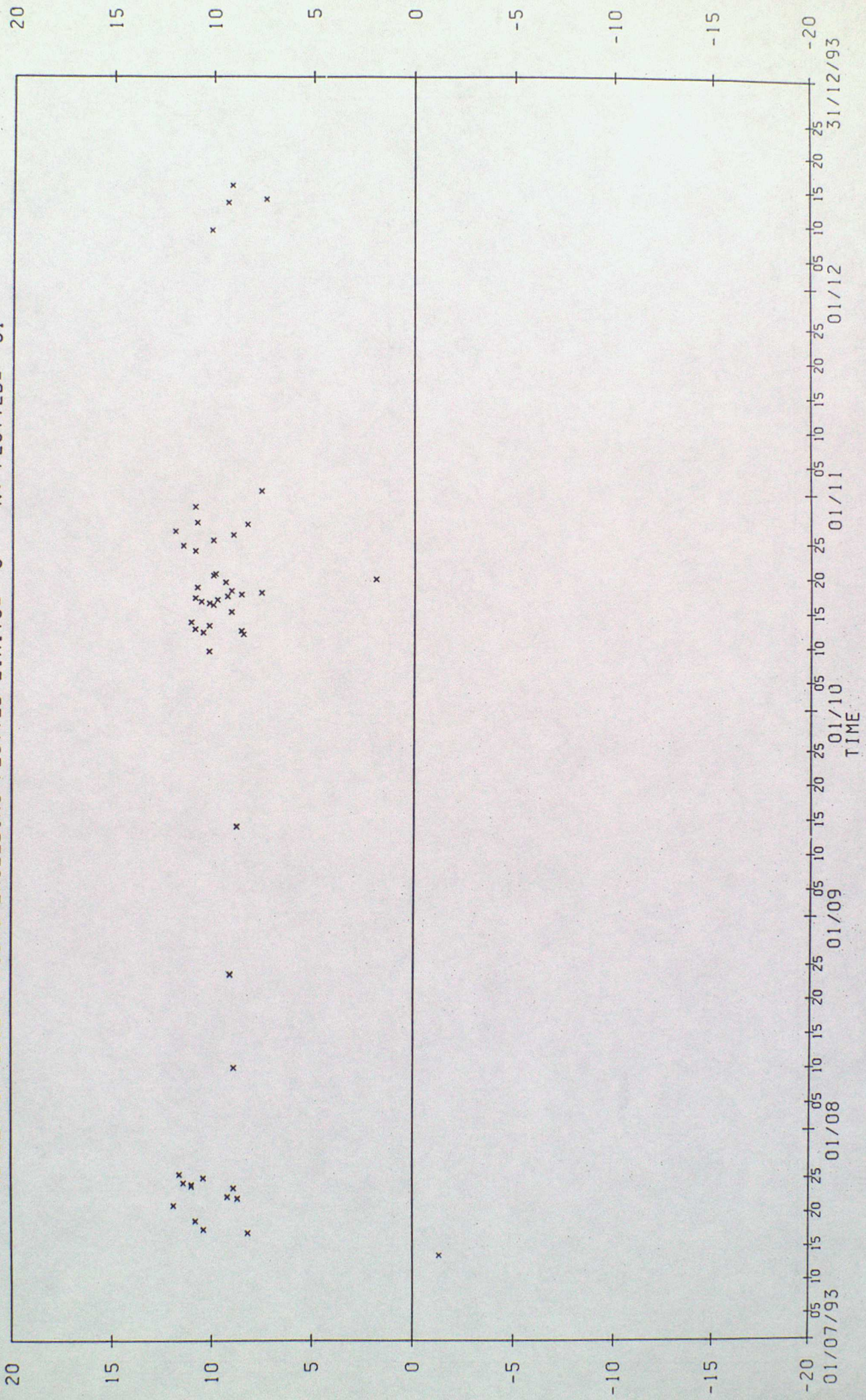


# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

0-B TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: EOGP 0-B

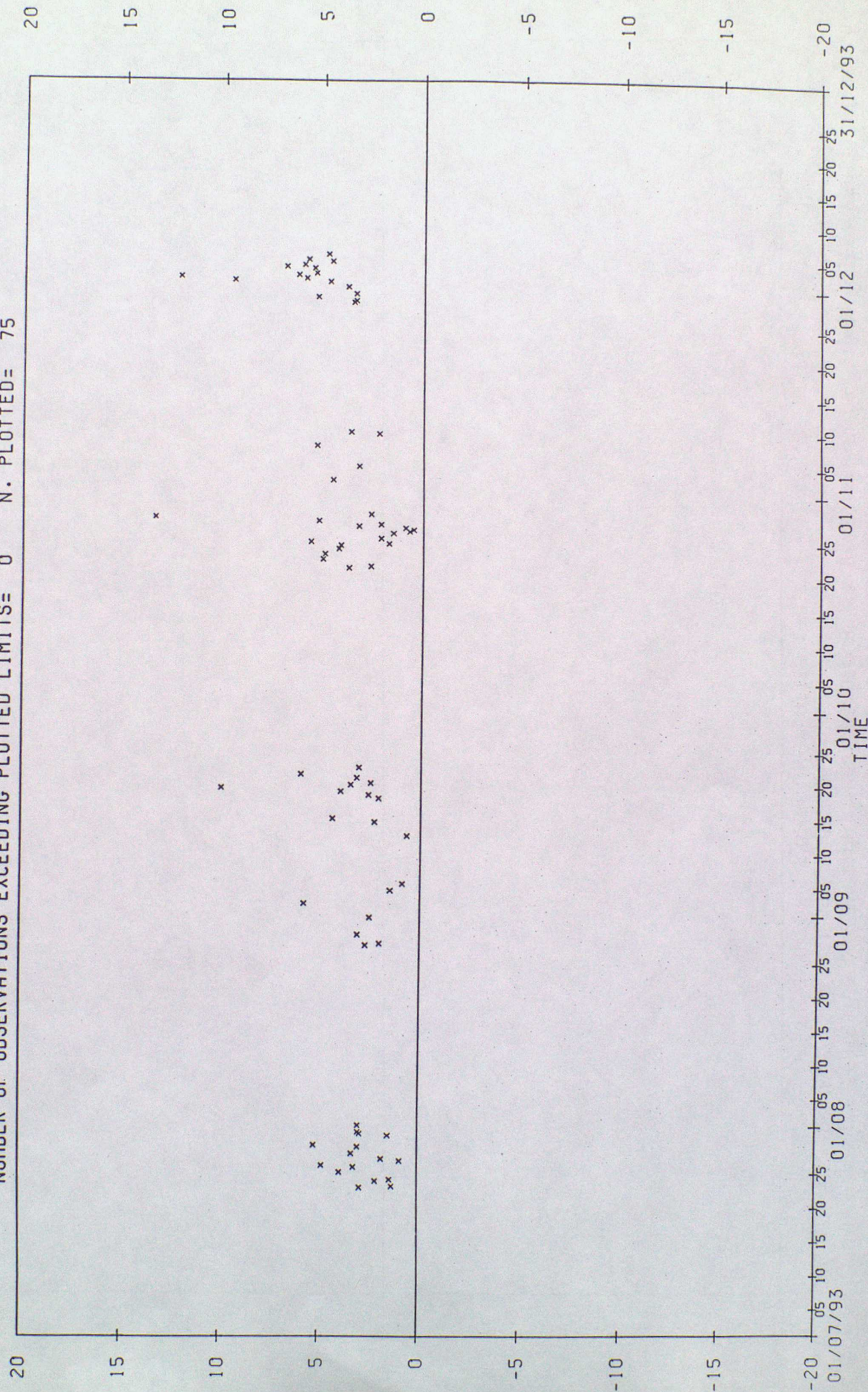
VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 51





0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: ESAX  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 75  
 0-B





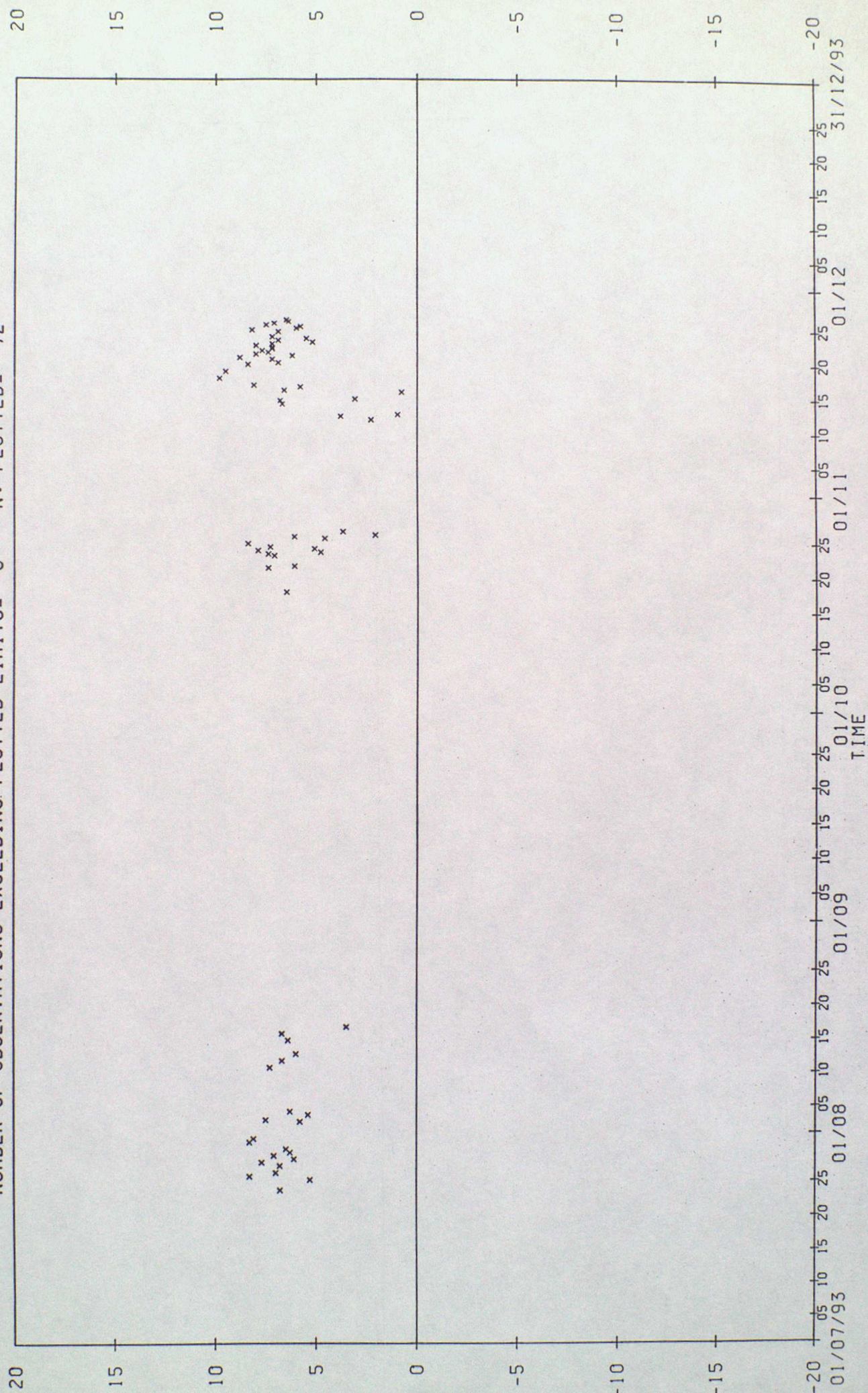
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: ESBI

0-B

VARIABLE : MSLP IN UNITS OF HPA

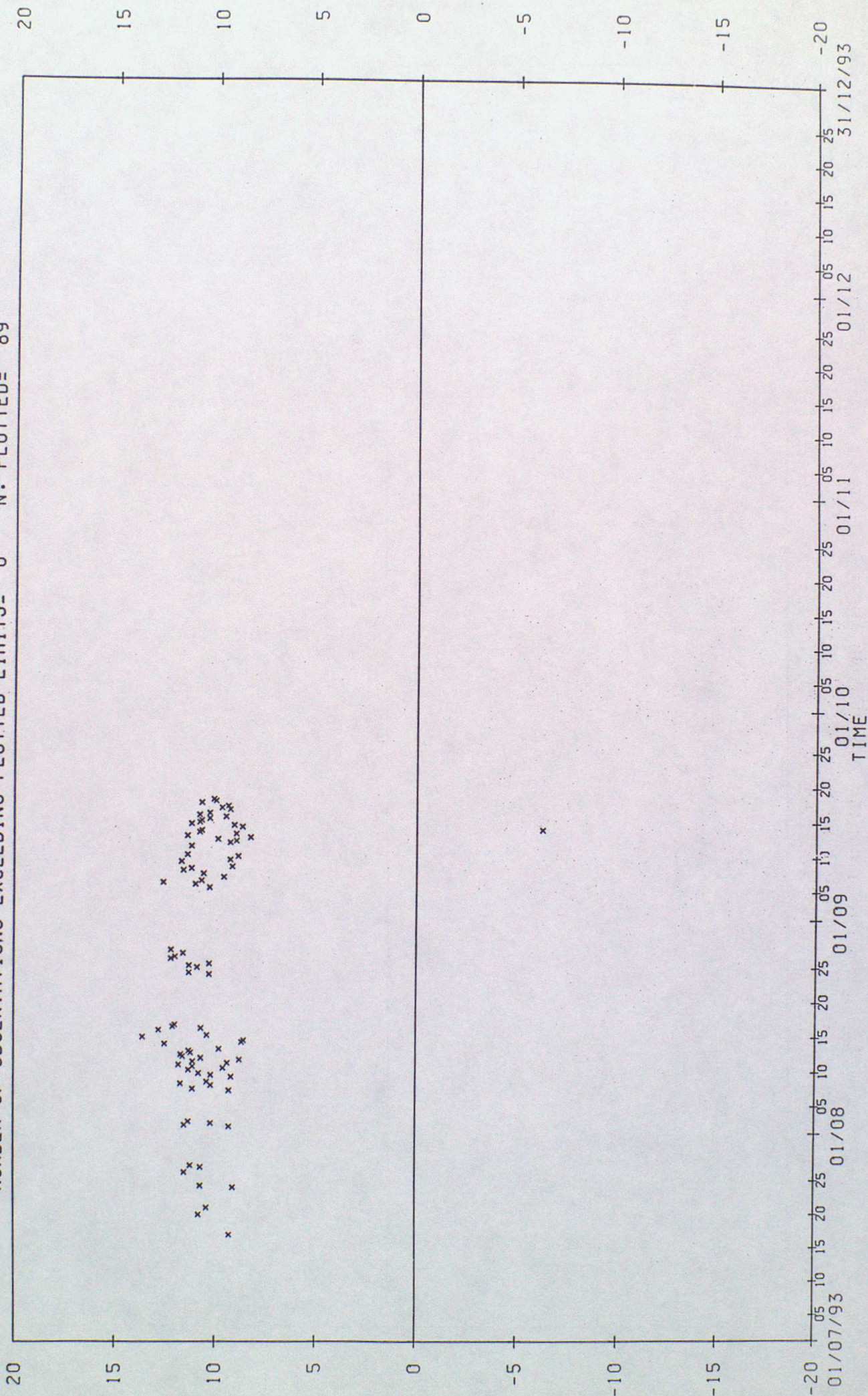
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 72





BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: ESCA  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 89

0-B





# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

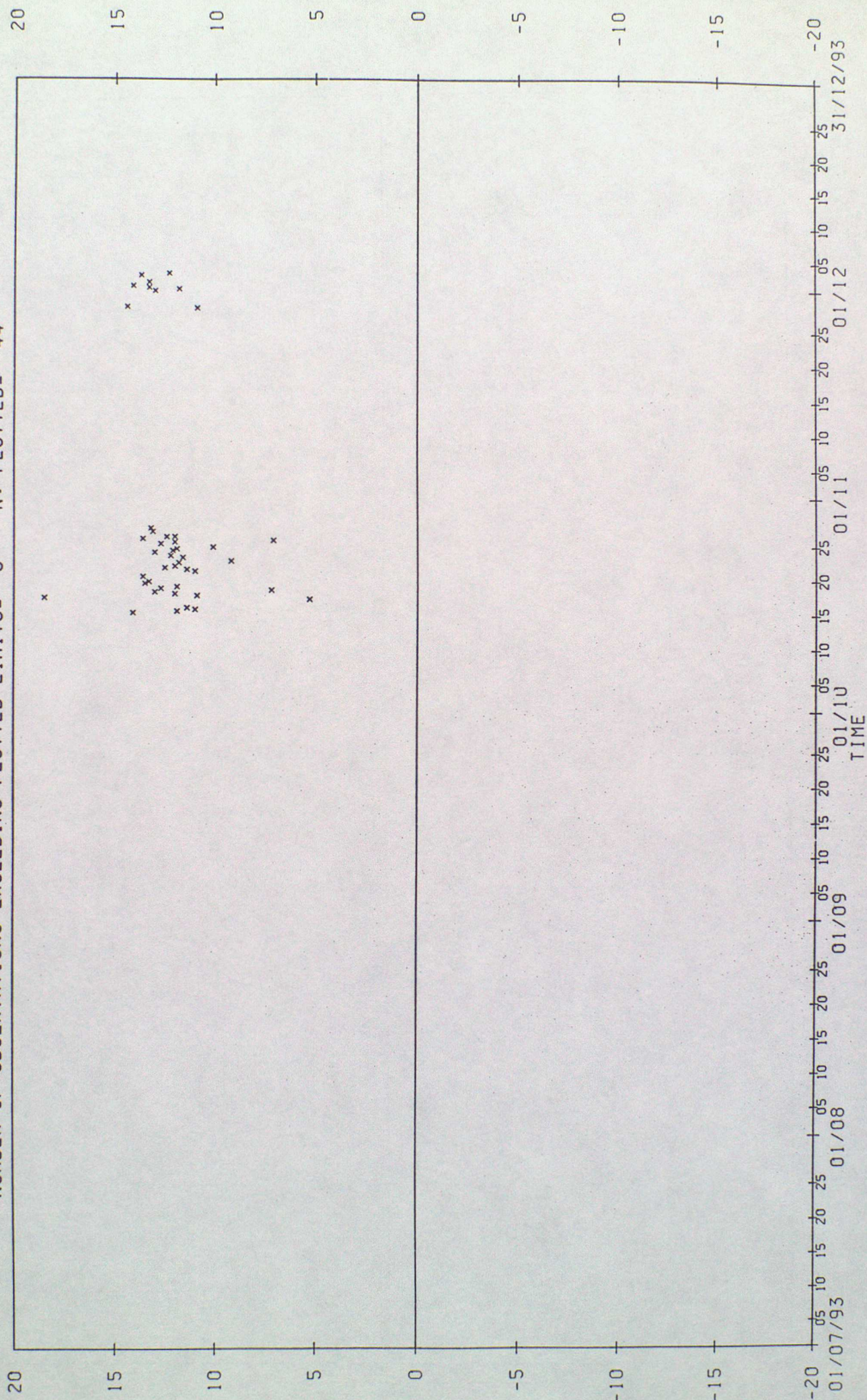
0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: ESXD

0-B

VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 44

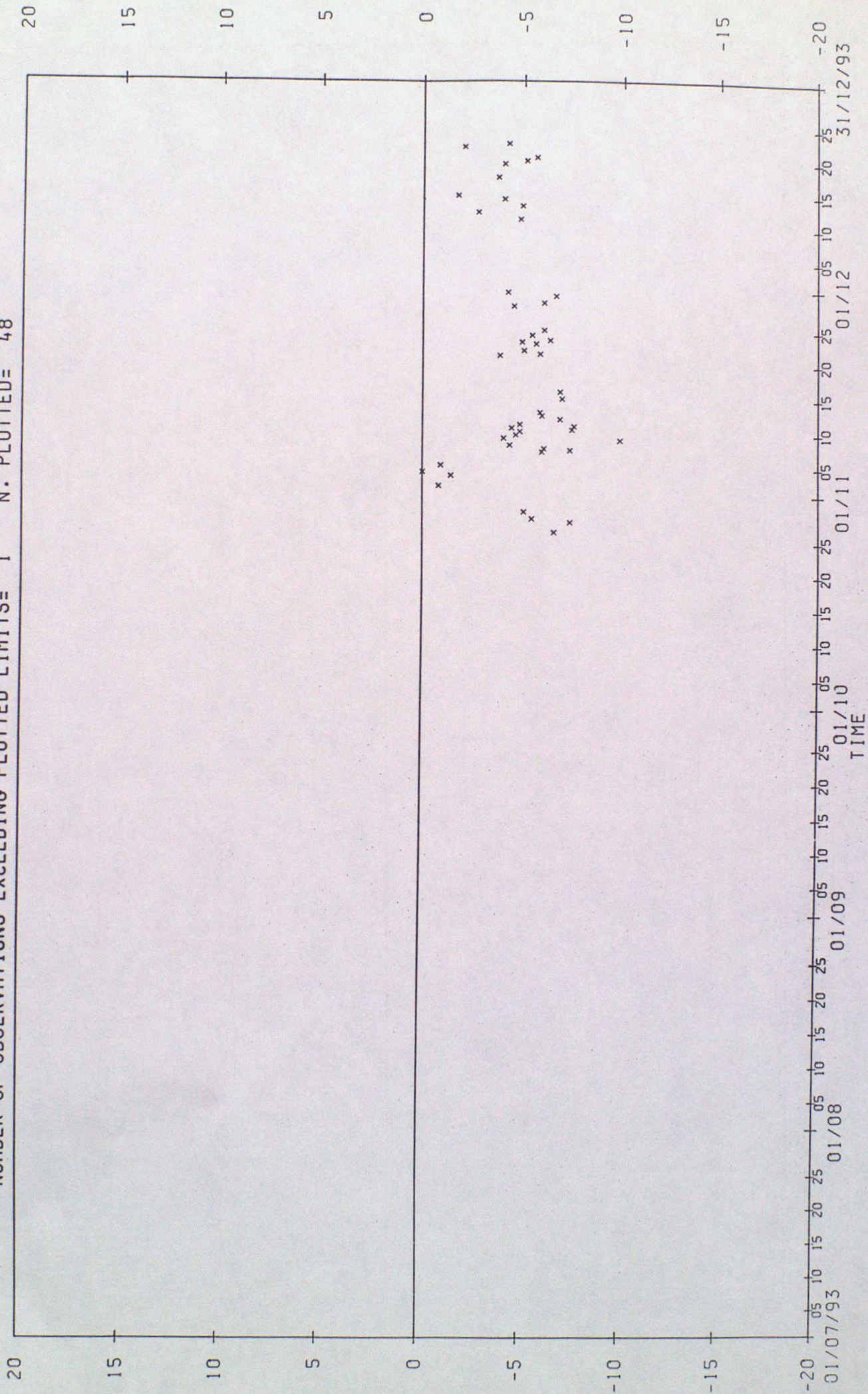




BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: FNVA  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 1 N. PLOTTED= 48

0-B

0-B





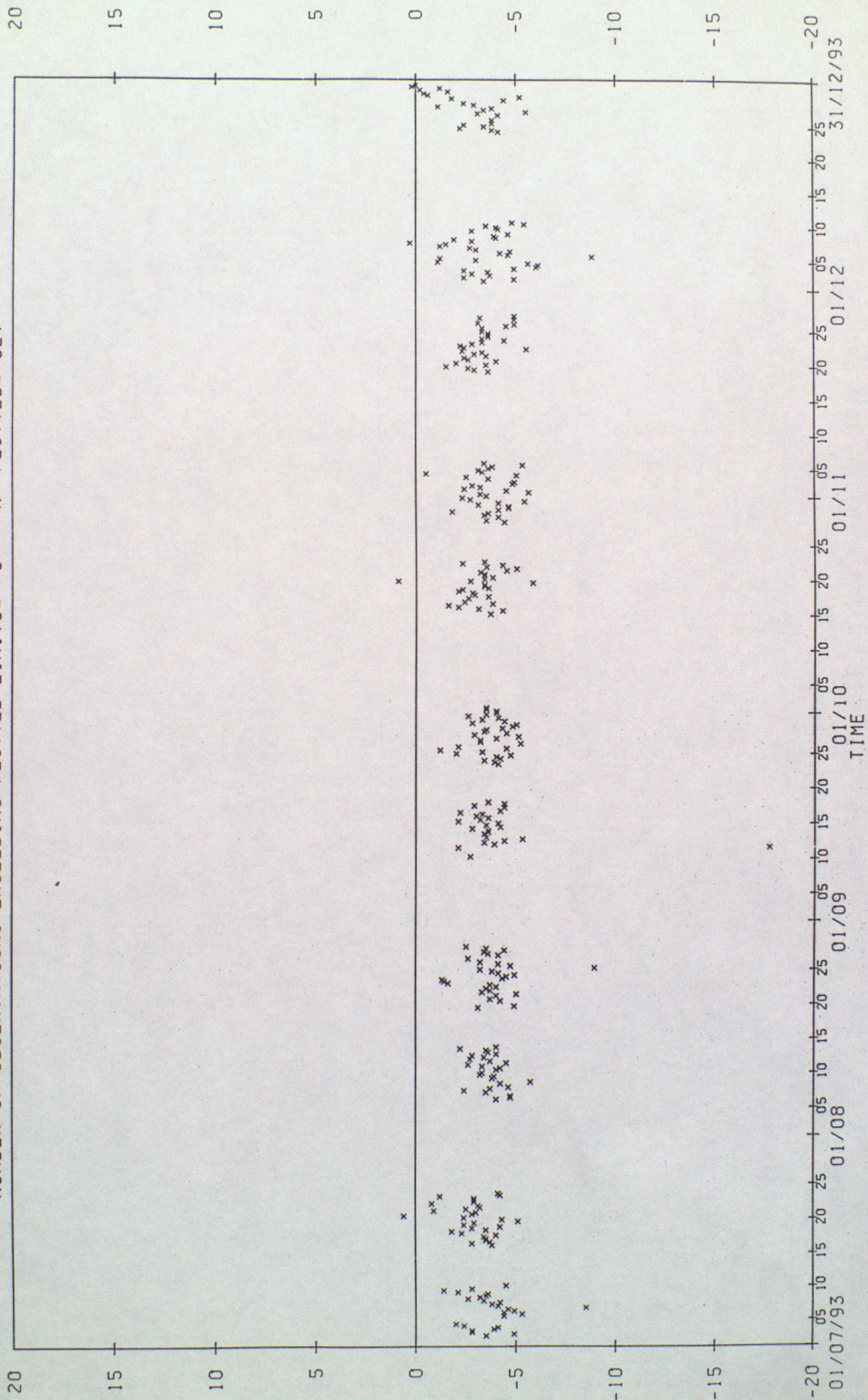
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: JMOY

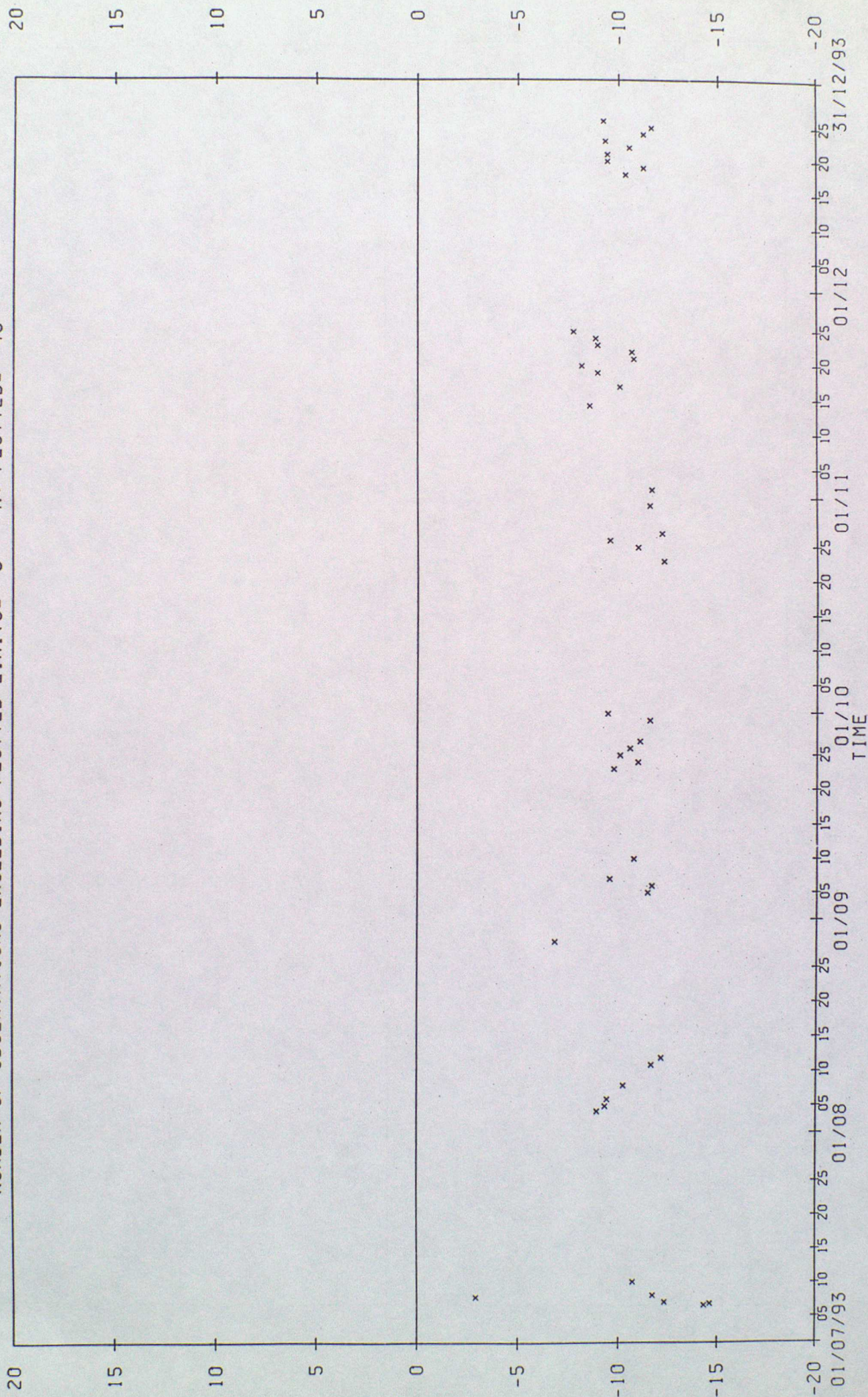
VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 327





0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: KRHZ  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 48  
 0-B





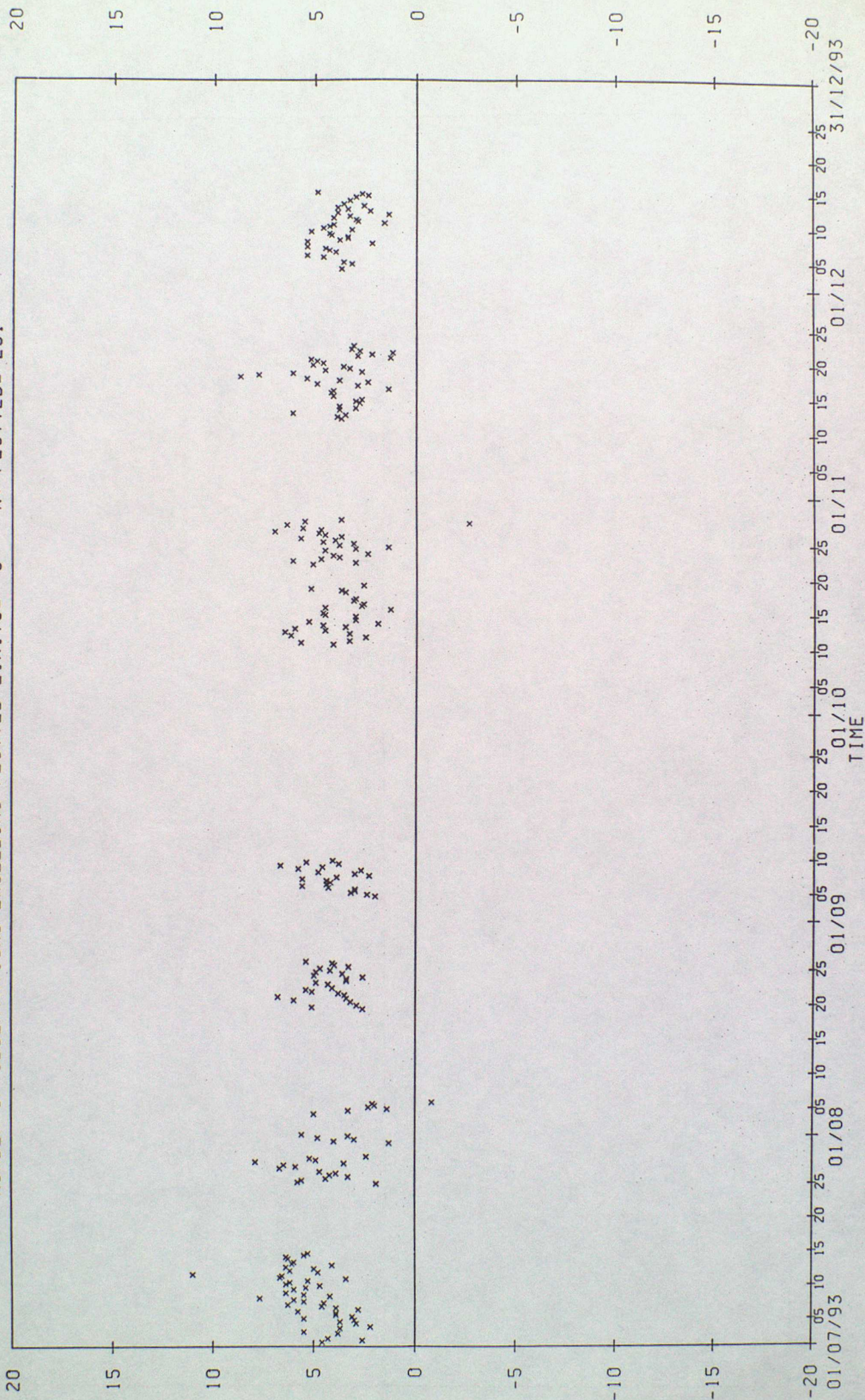
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: OMOG2

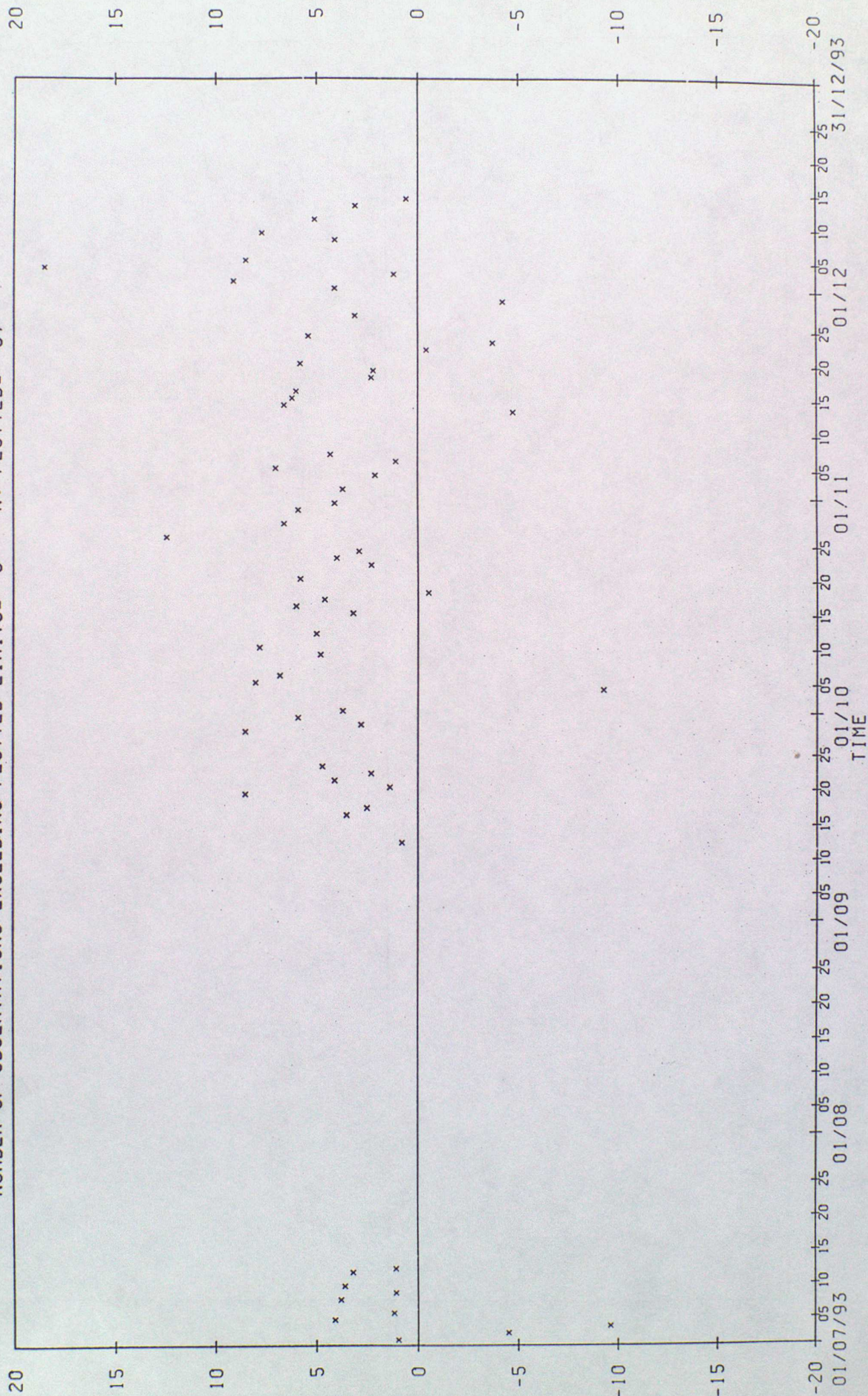
VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 251



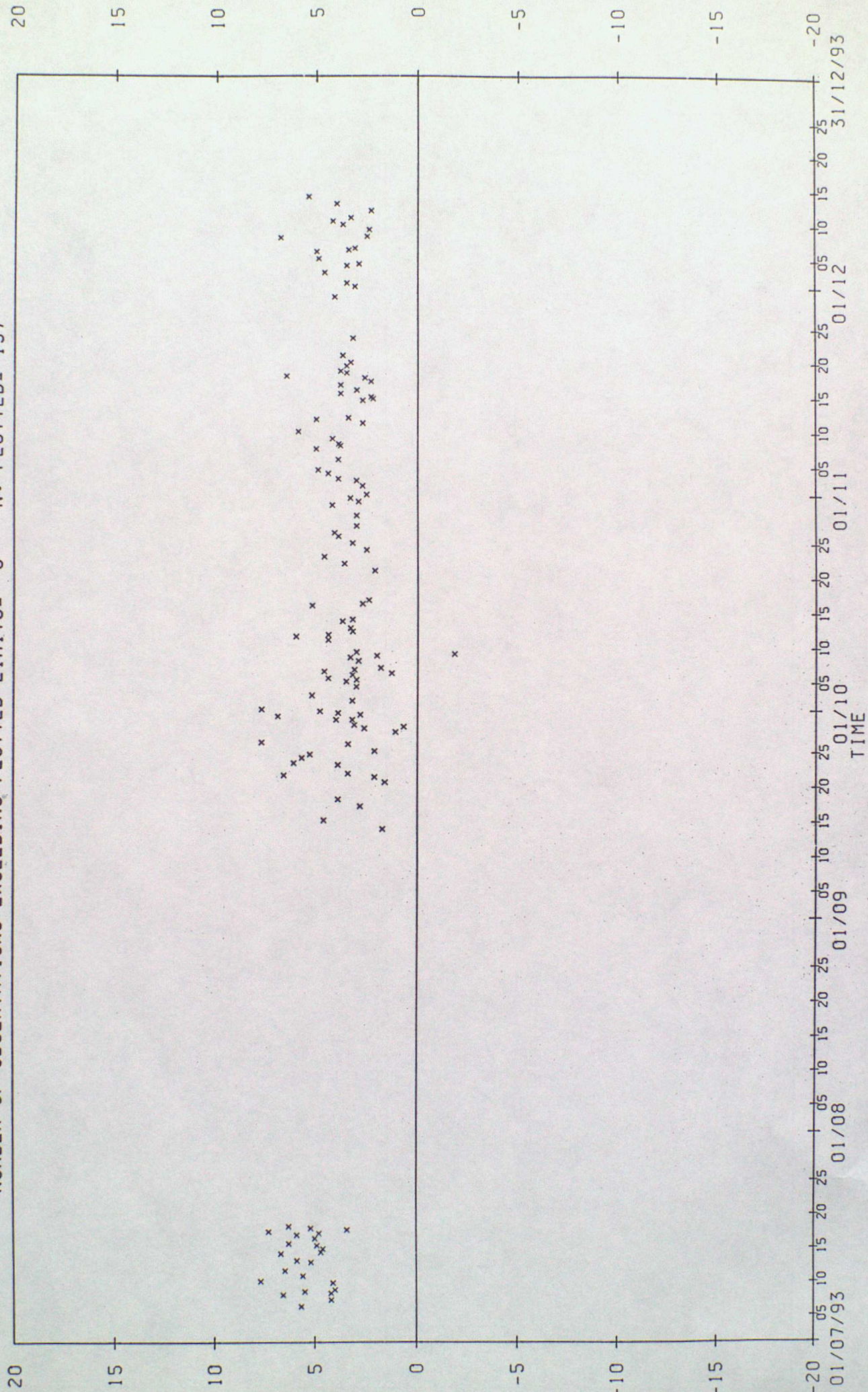


0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: UBFE  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 67  
 0-B



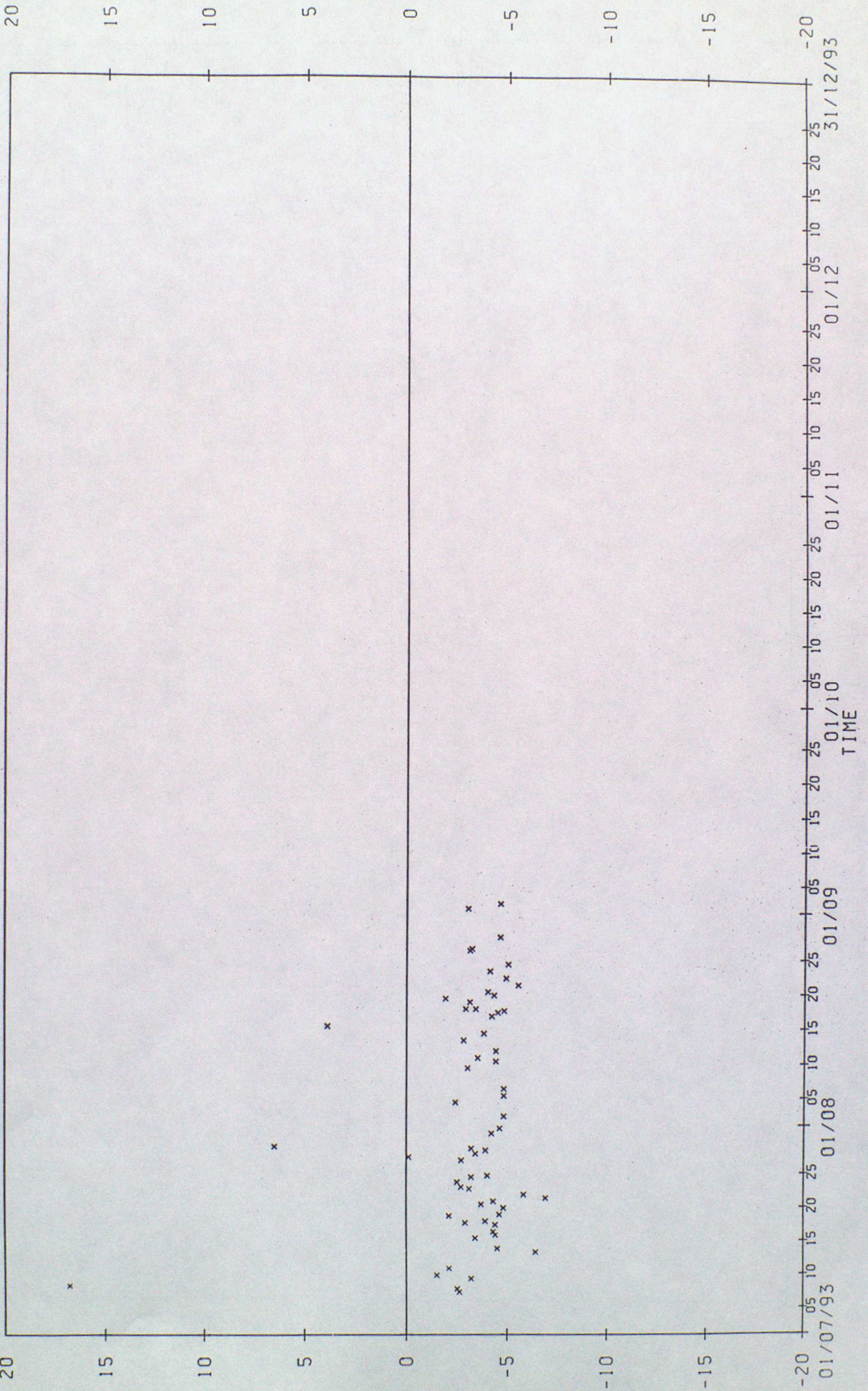


BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: UFAB 0-B  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 137





0-B  
BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: UFOJ  
VARIABLE : MSLP IN UNITS OF HPA  
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 1 N. PLOTTED= 63  
0-B





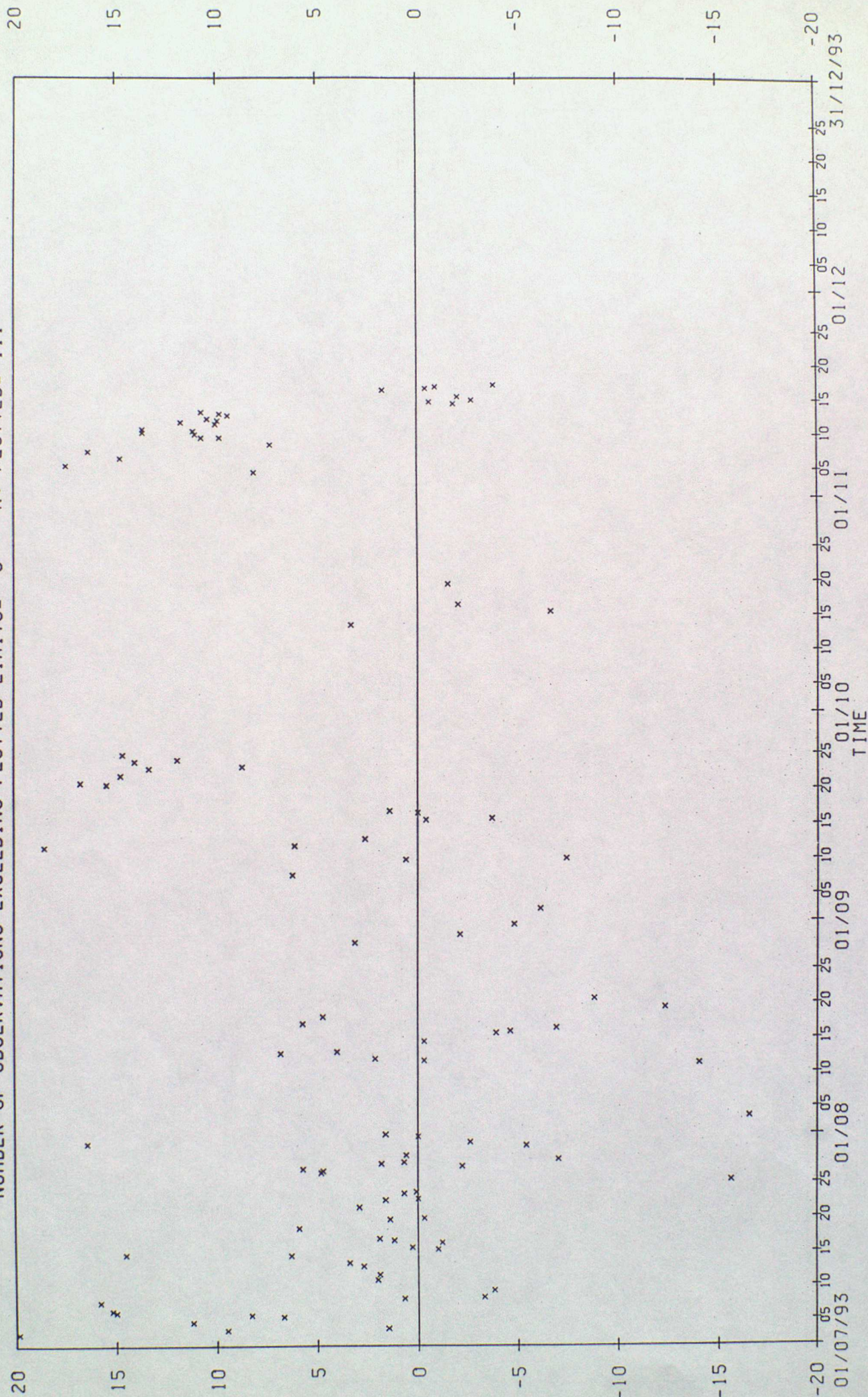
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: UGPA

O-B

VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 6 N. PLOTTED= 111

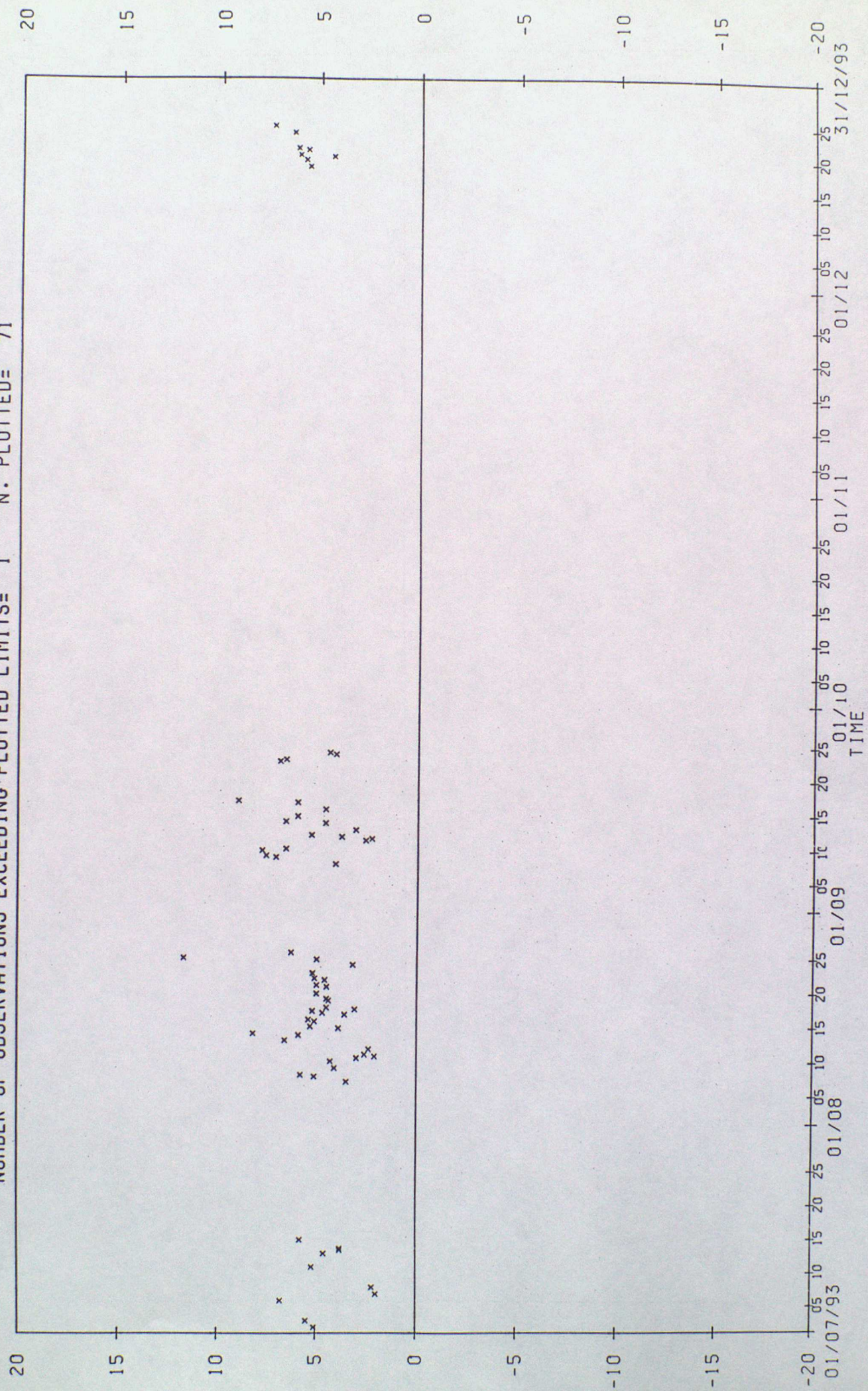




0-B

0-B

BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: UHUN  
VARIABLE : MSLP IN UNITS OF HPA  
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 1 N. PLOTTED= 71





# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

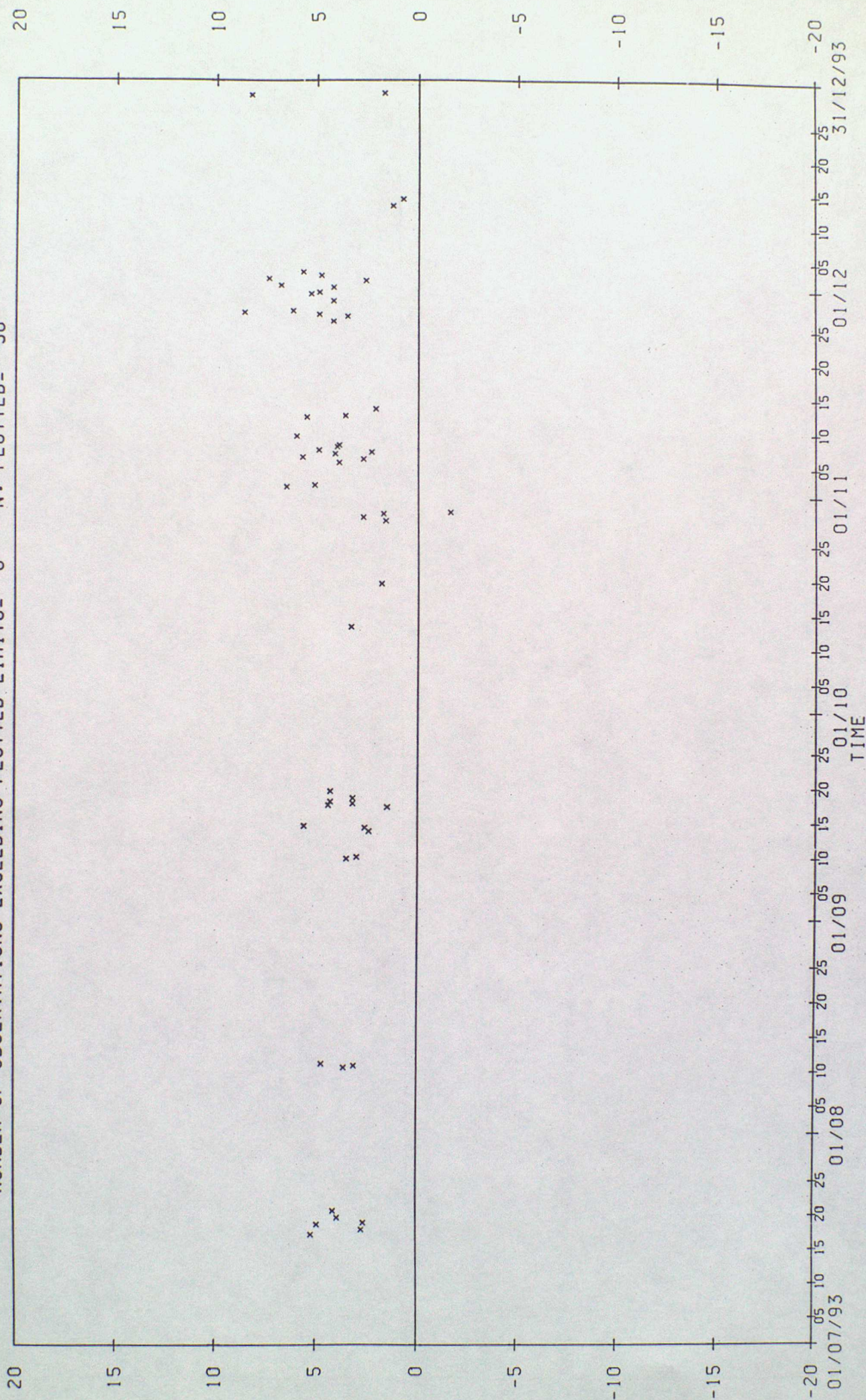
0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: UHVW

0-B

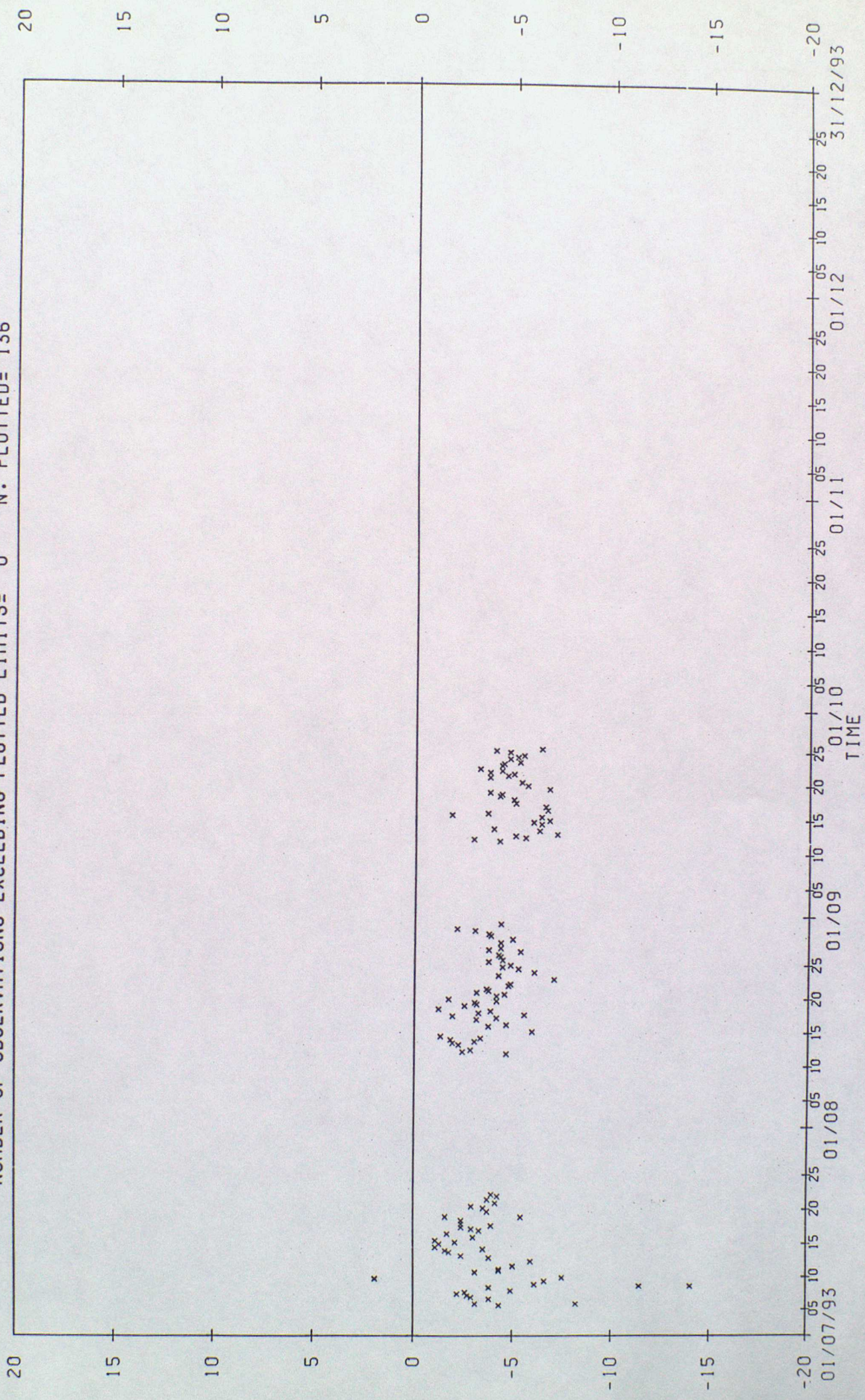
VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 58





0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: UIIG  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 136  
 0-B





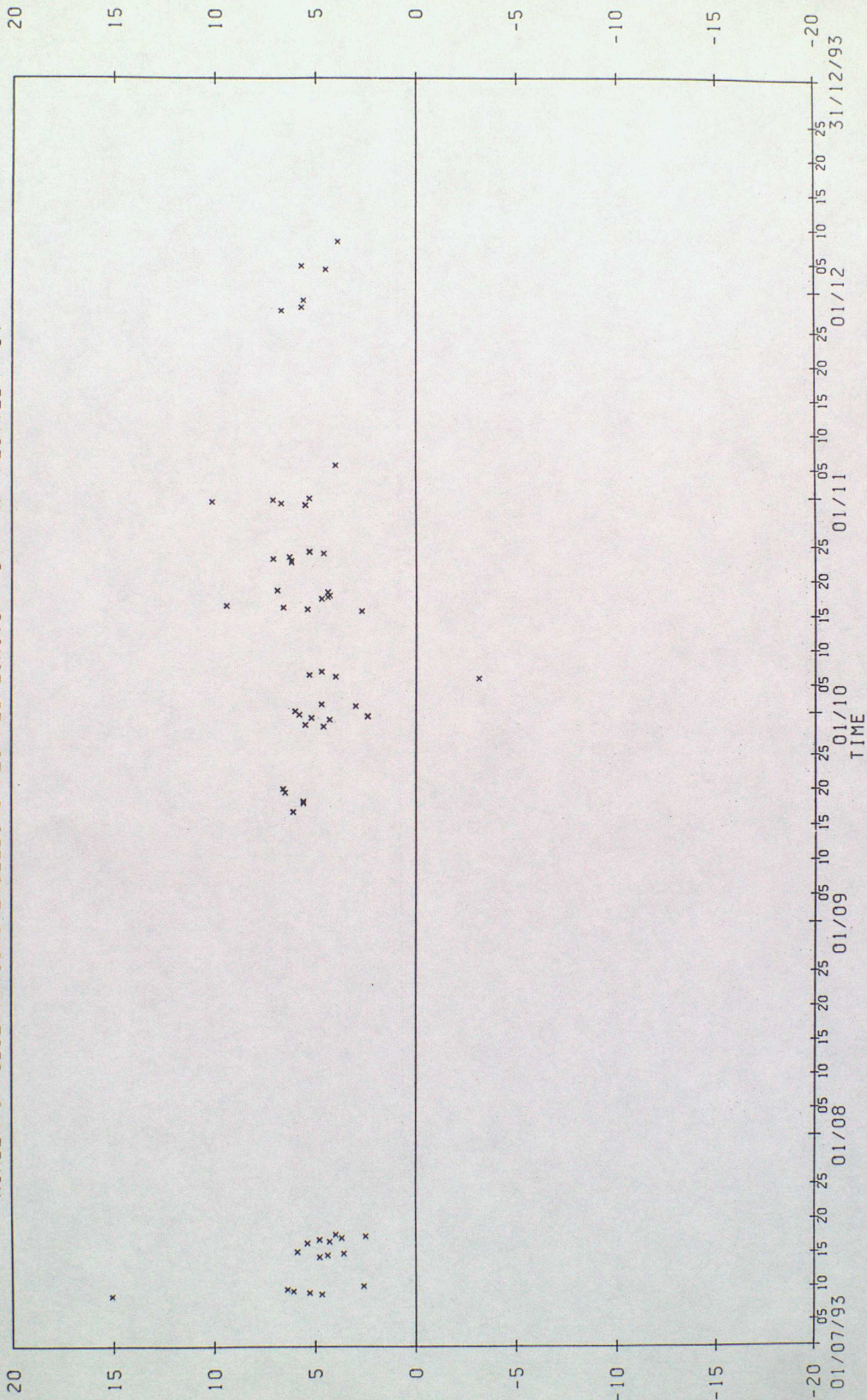
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: UKTV

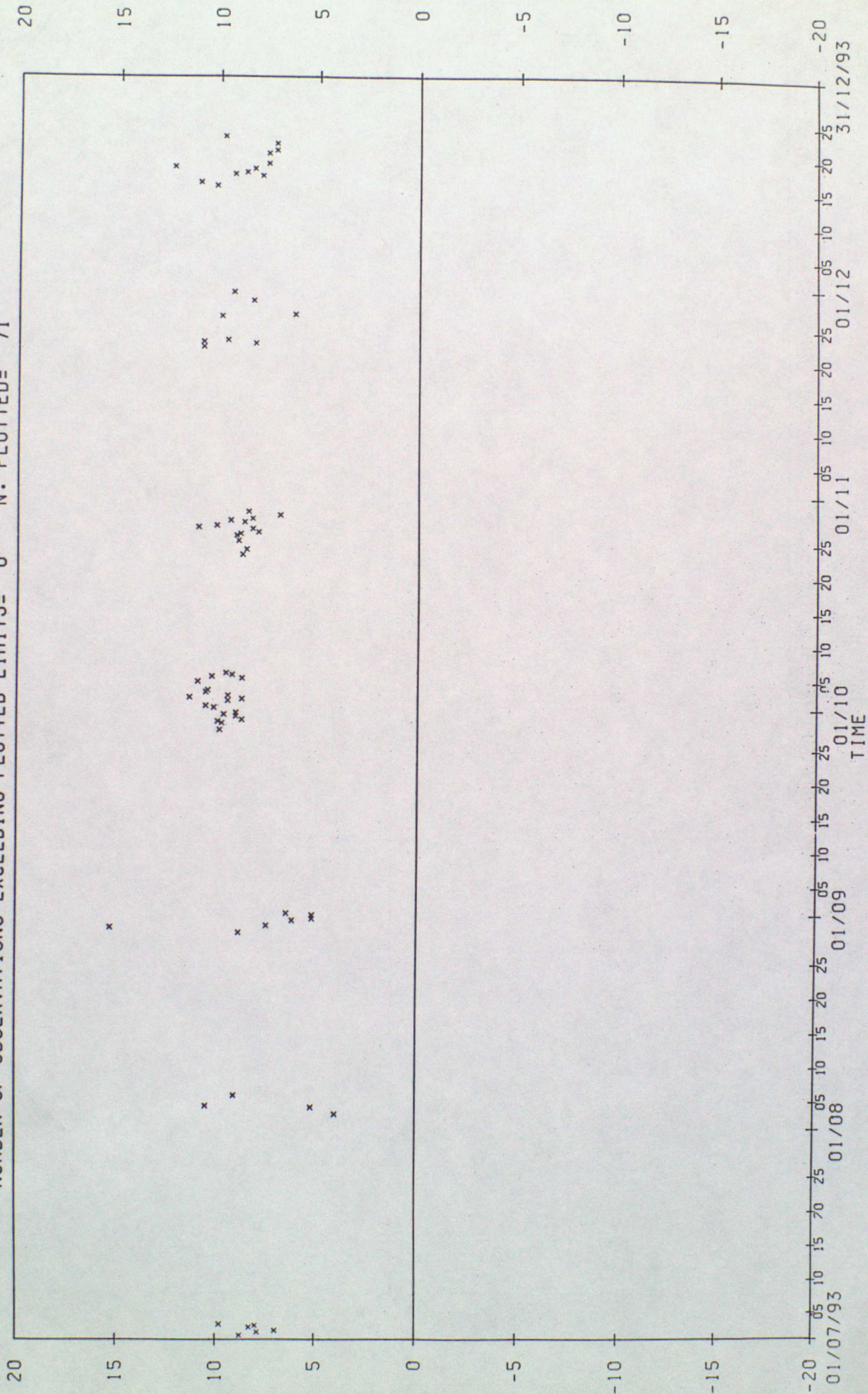
VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 64





0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: ULDZ  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 71  
 0-B





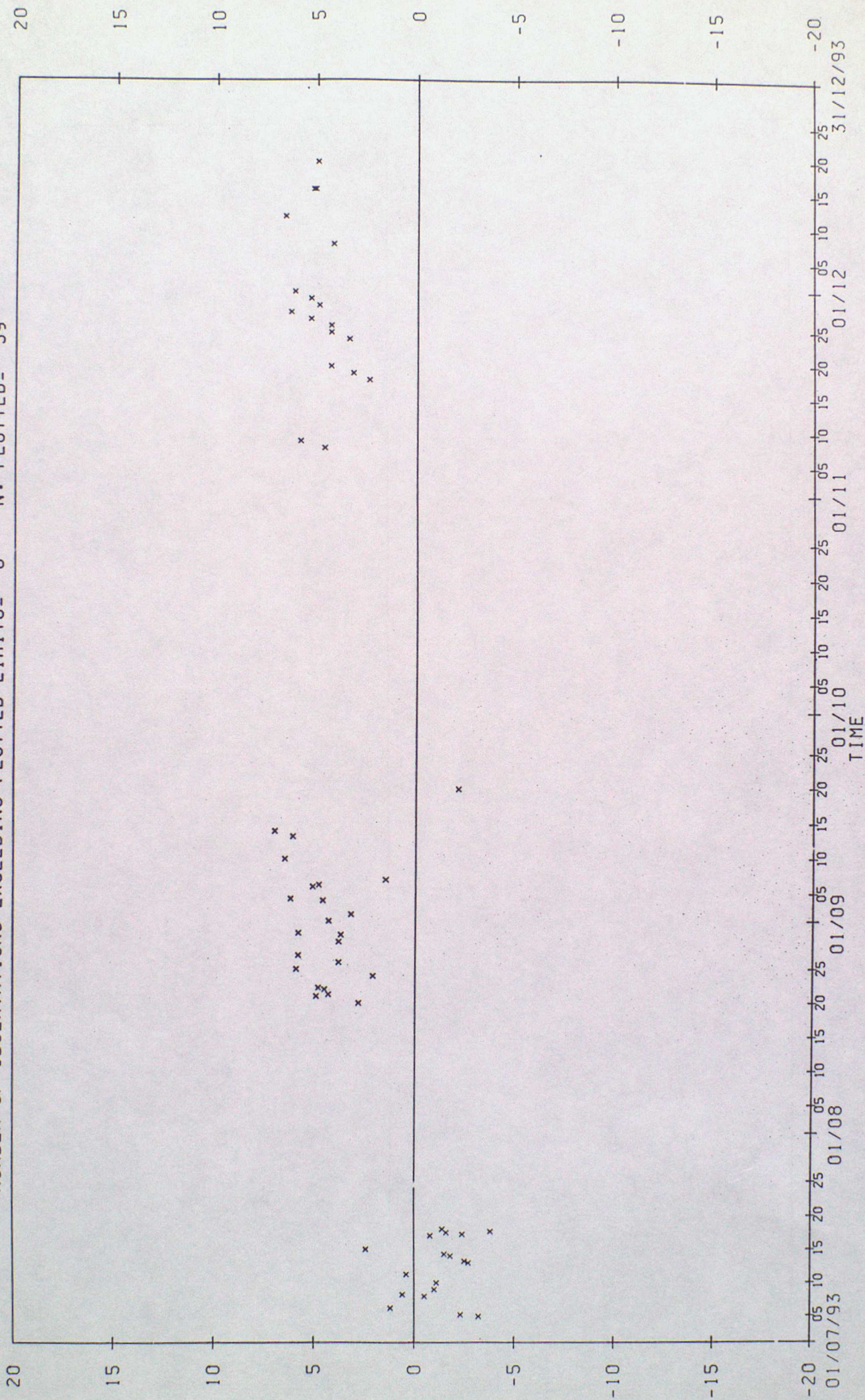
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: UNJN

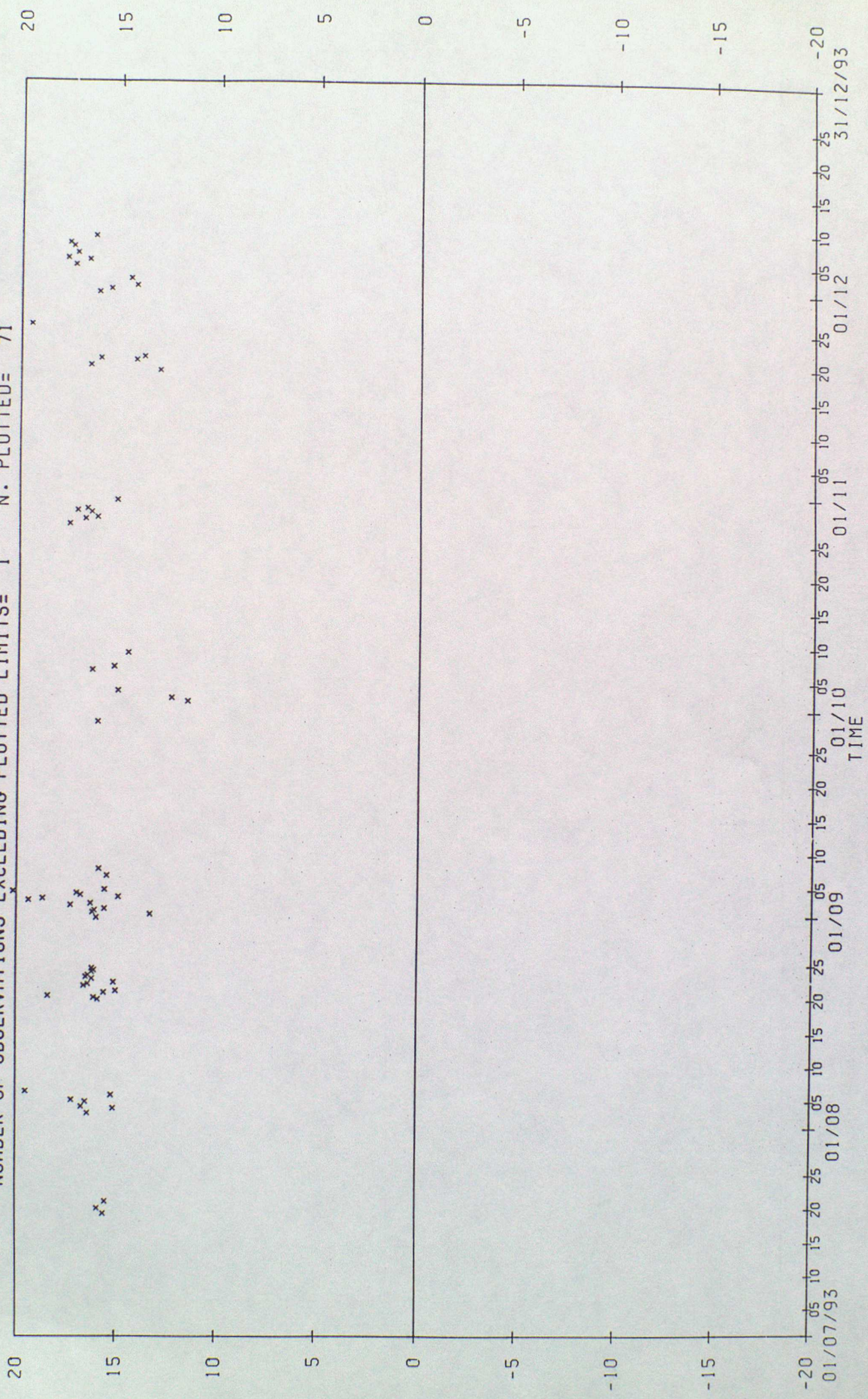
VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 59





0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: UOVE  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 1 N. PLOTTED= 71  
 0-B





# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

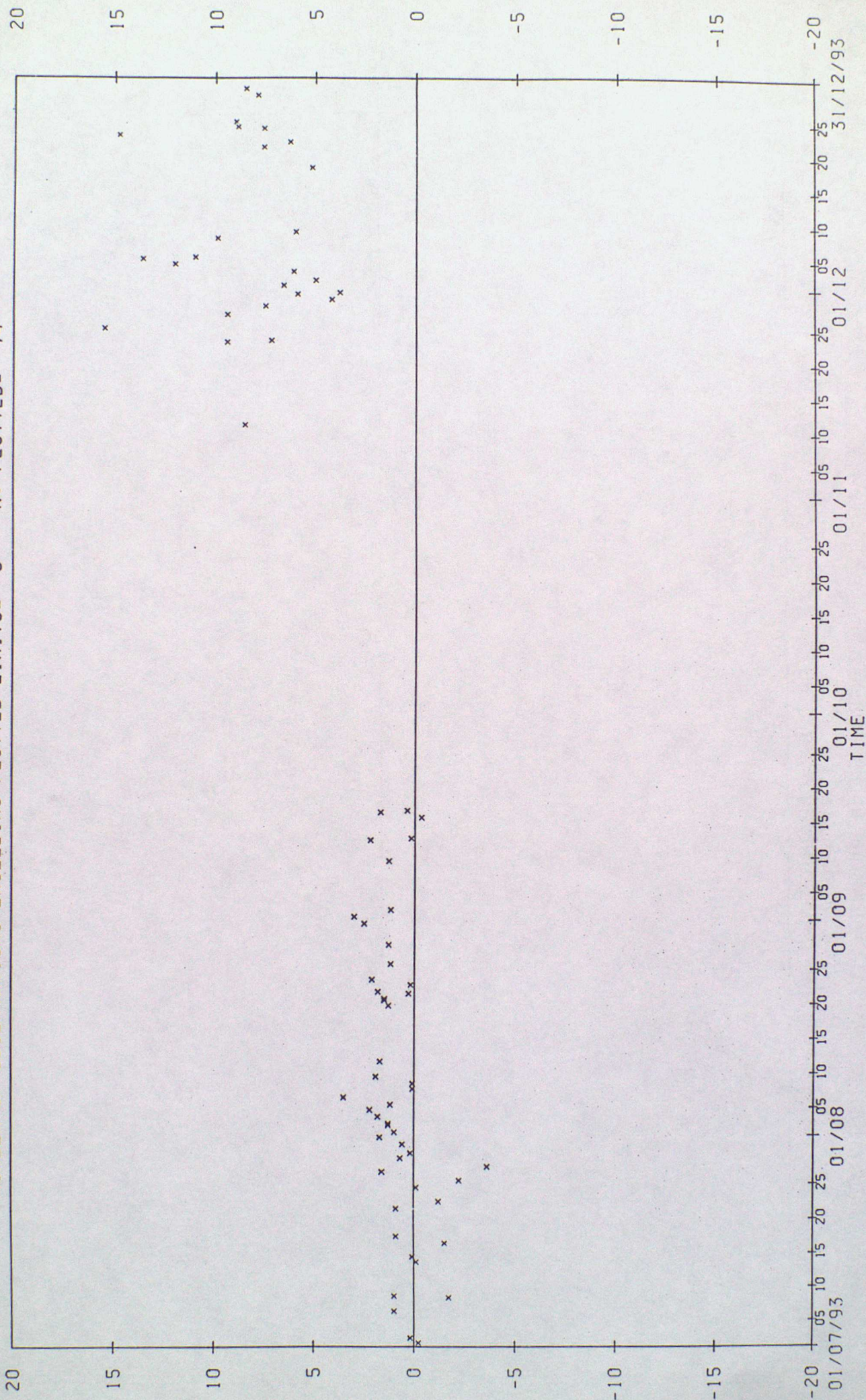
0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: UQJK

0-B

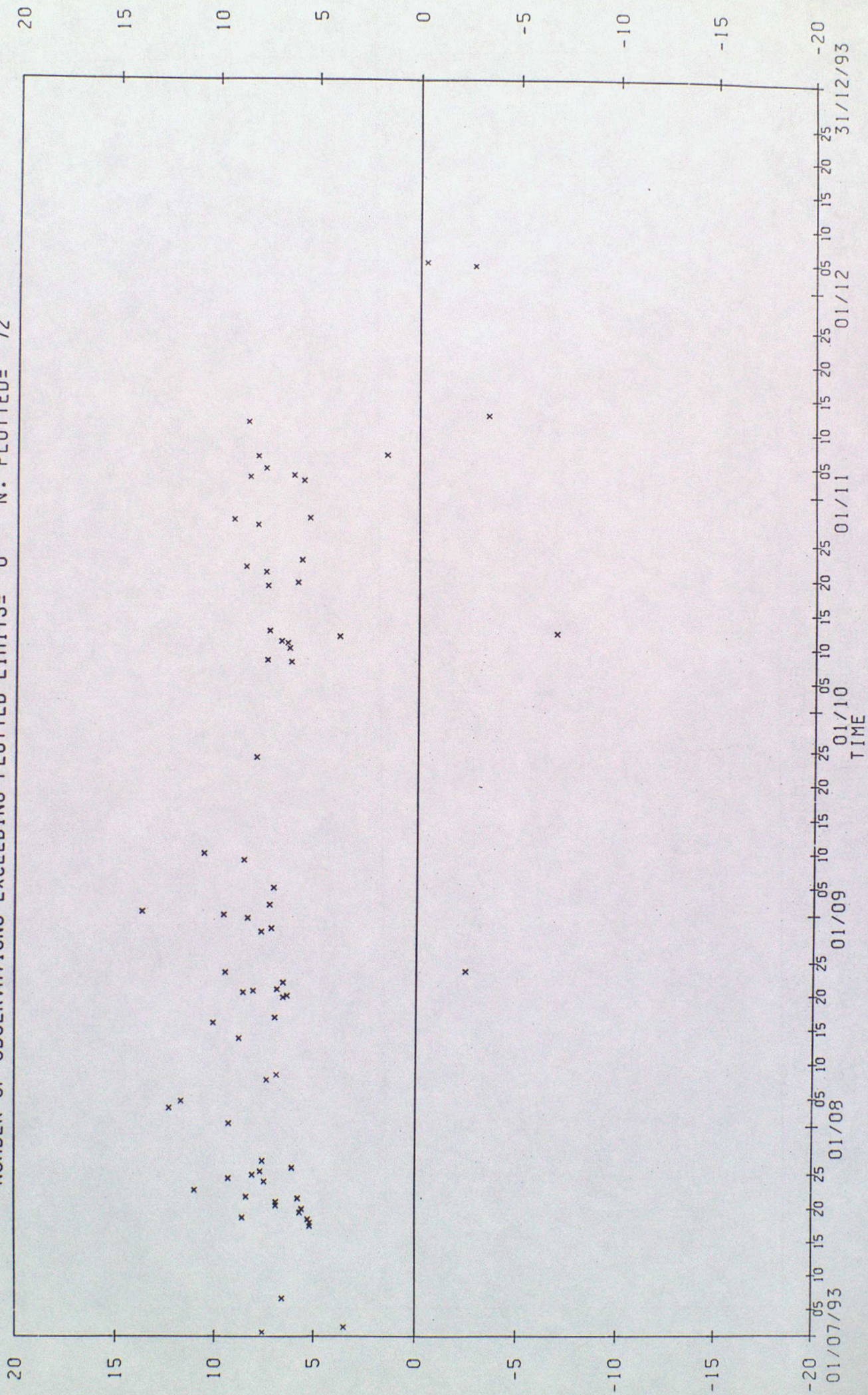
VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 74





0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: UORA  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 72  
 0-B





# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

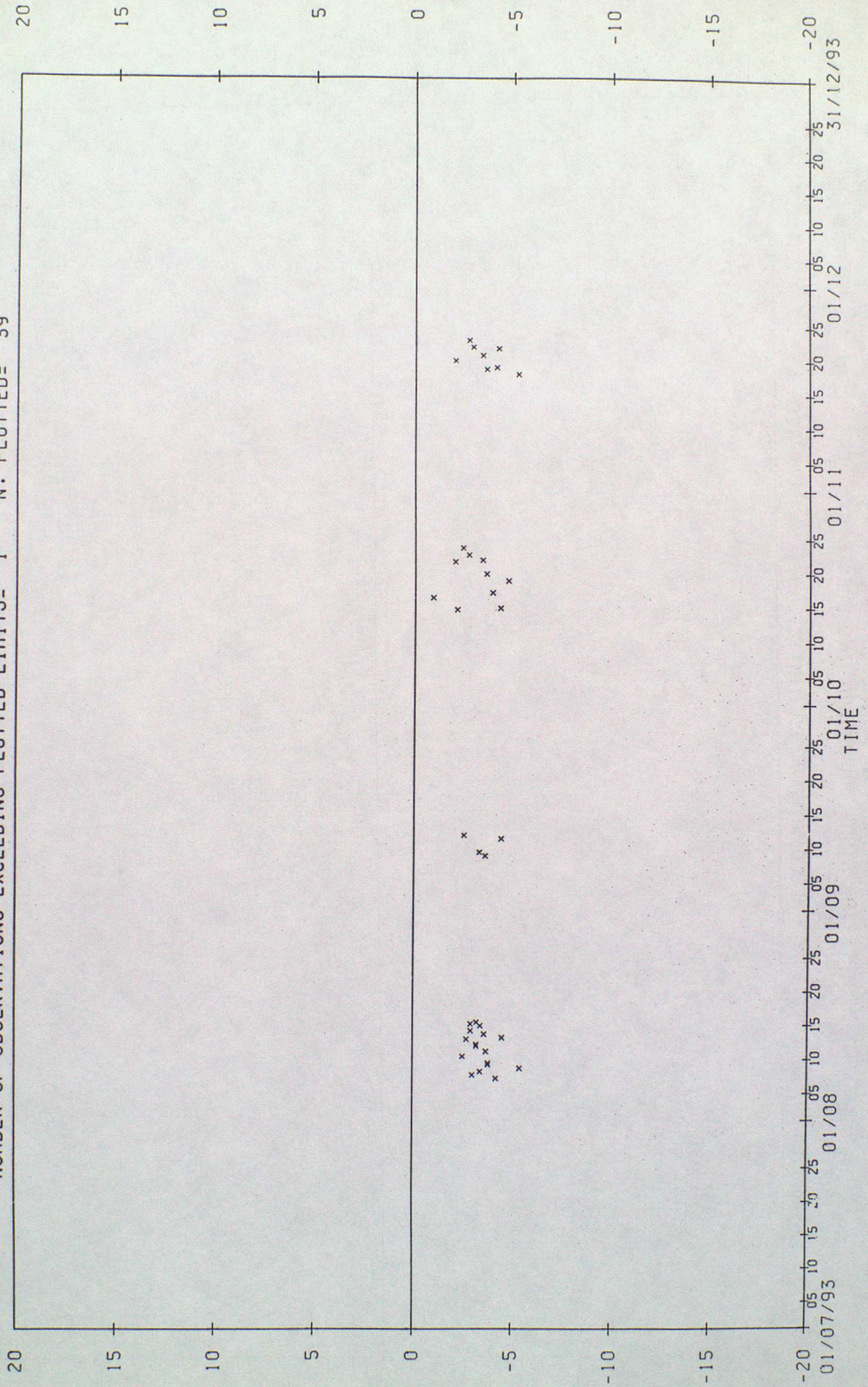
0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: URPR

0-B

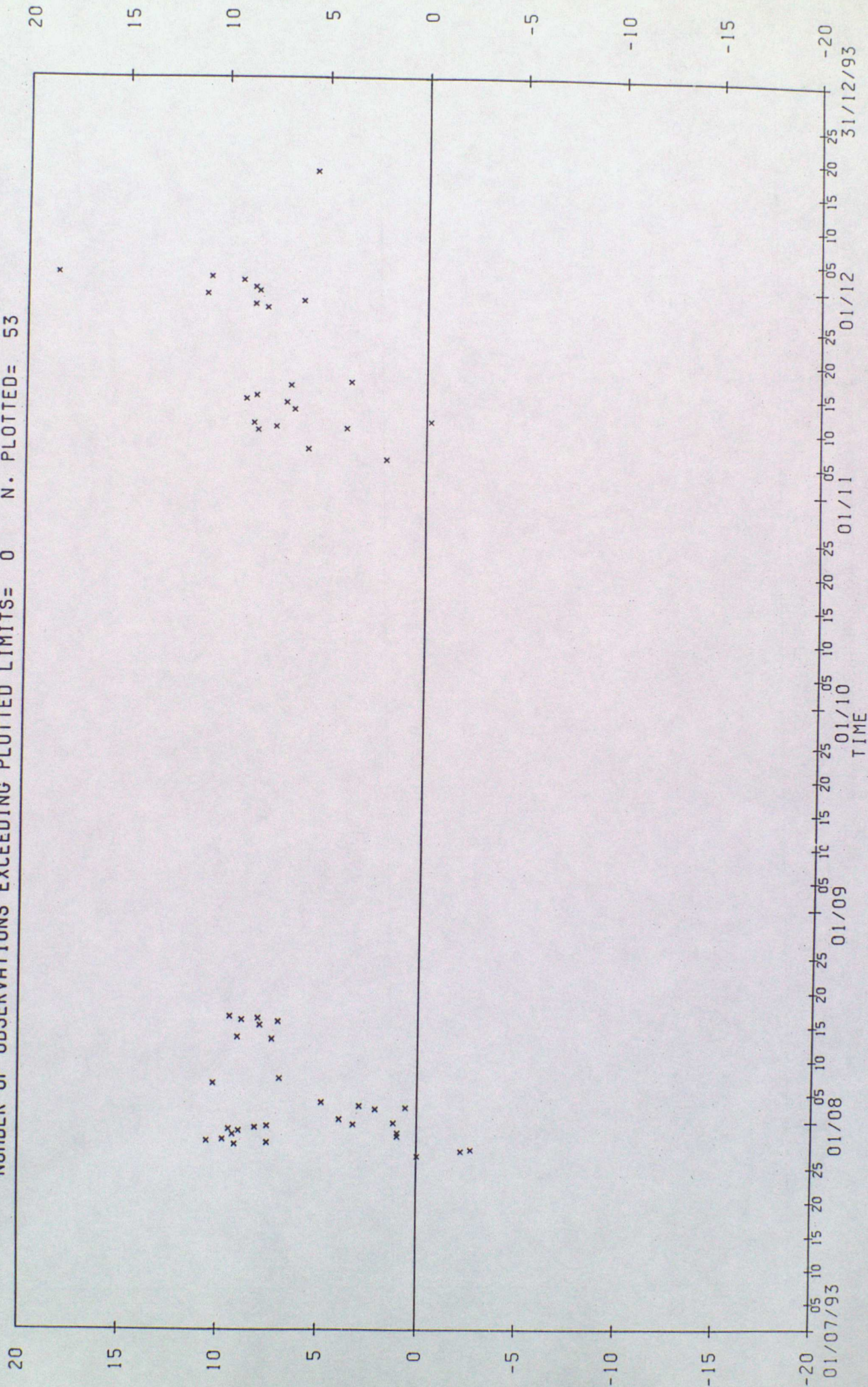
VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 1 N. PLOTTED= 39





0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: USCC  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 53  
 0-B

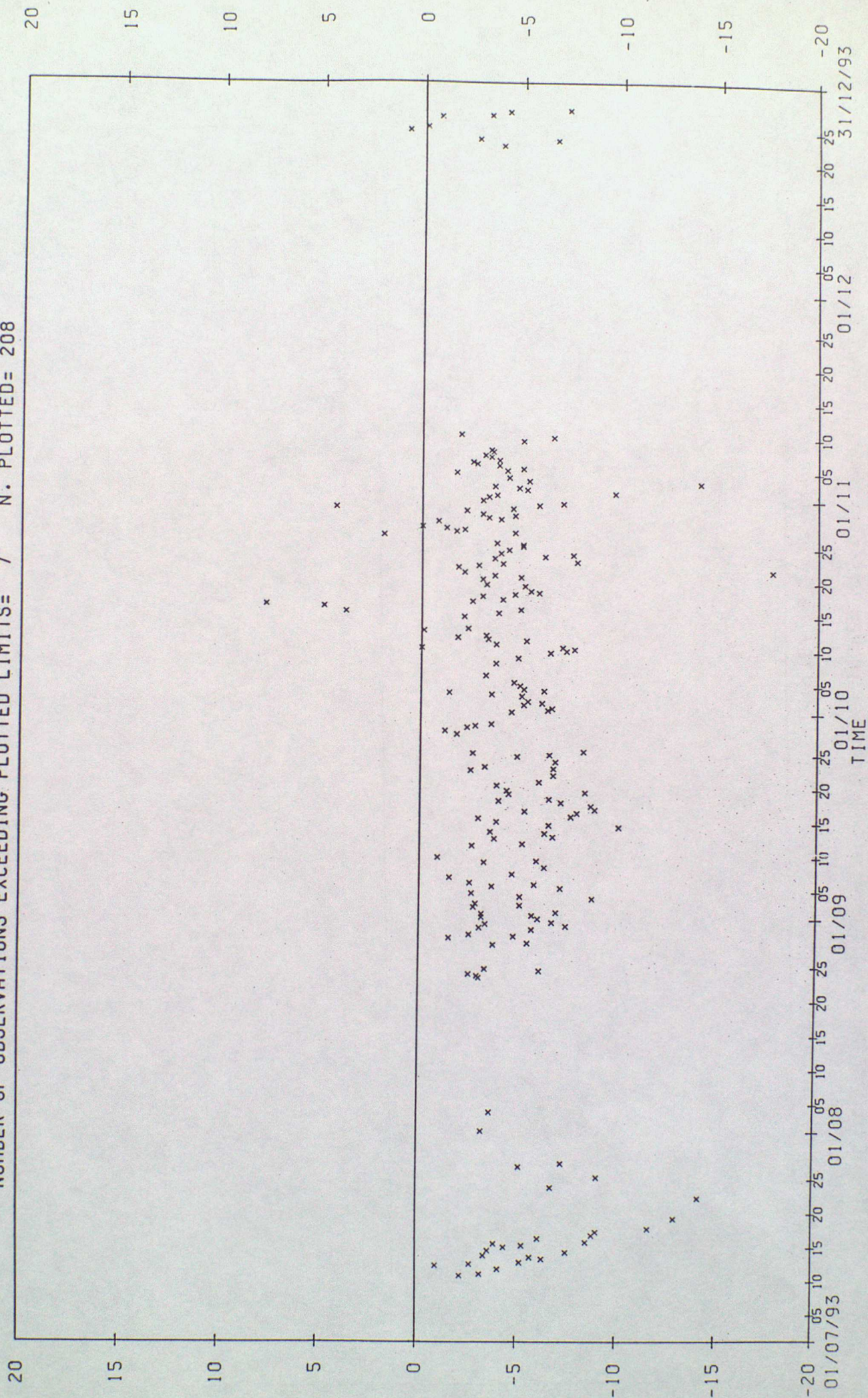




BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: USZO  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 7 N. PLOTTED= 208

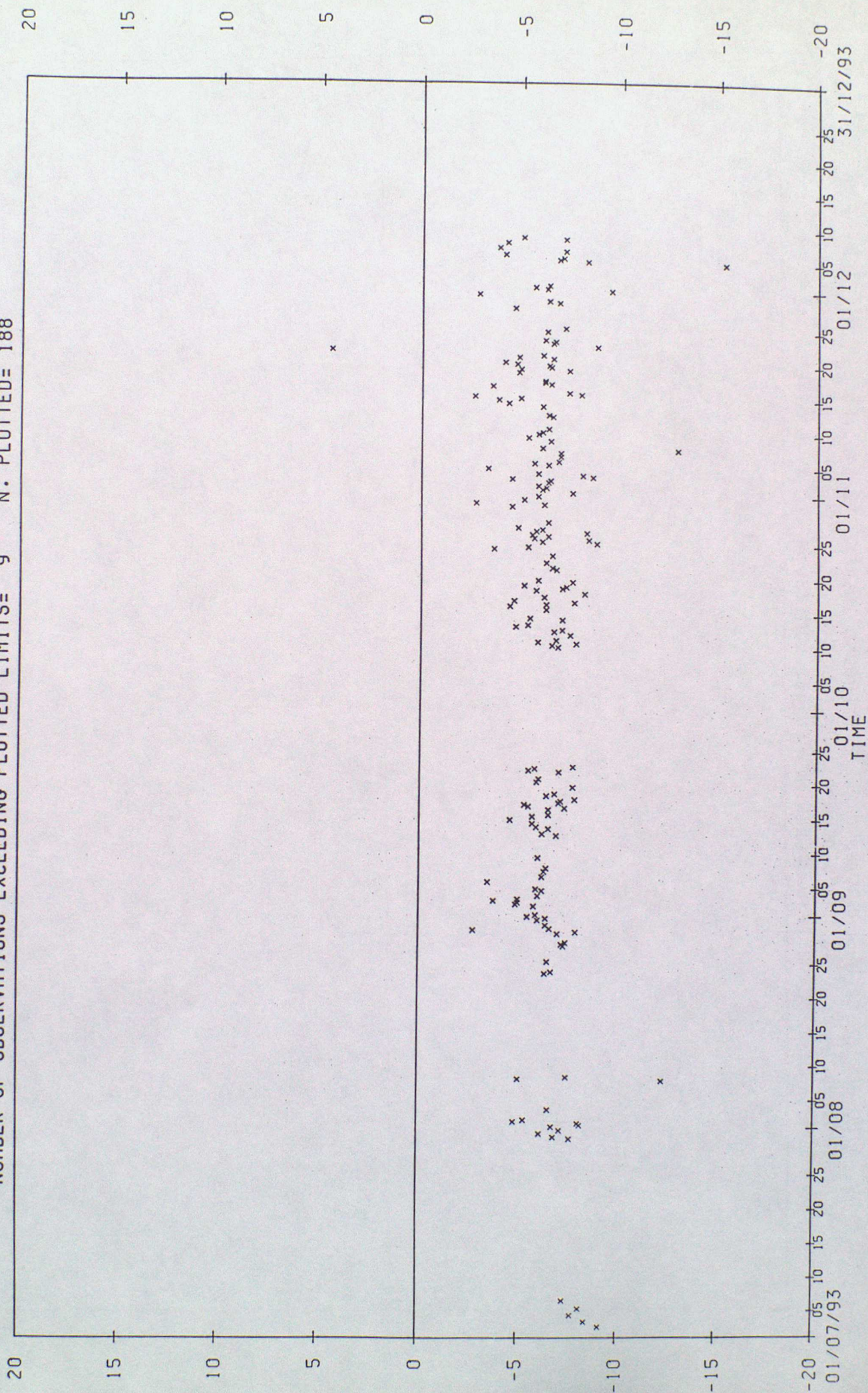
0-B

0-B





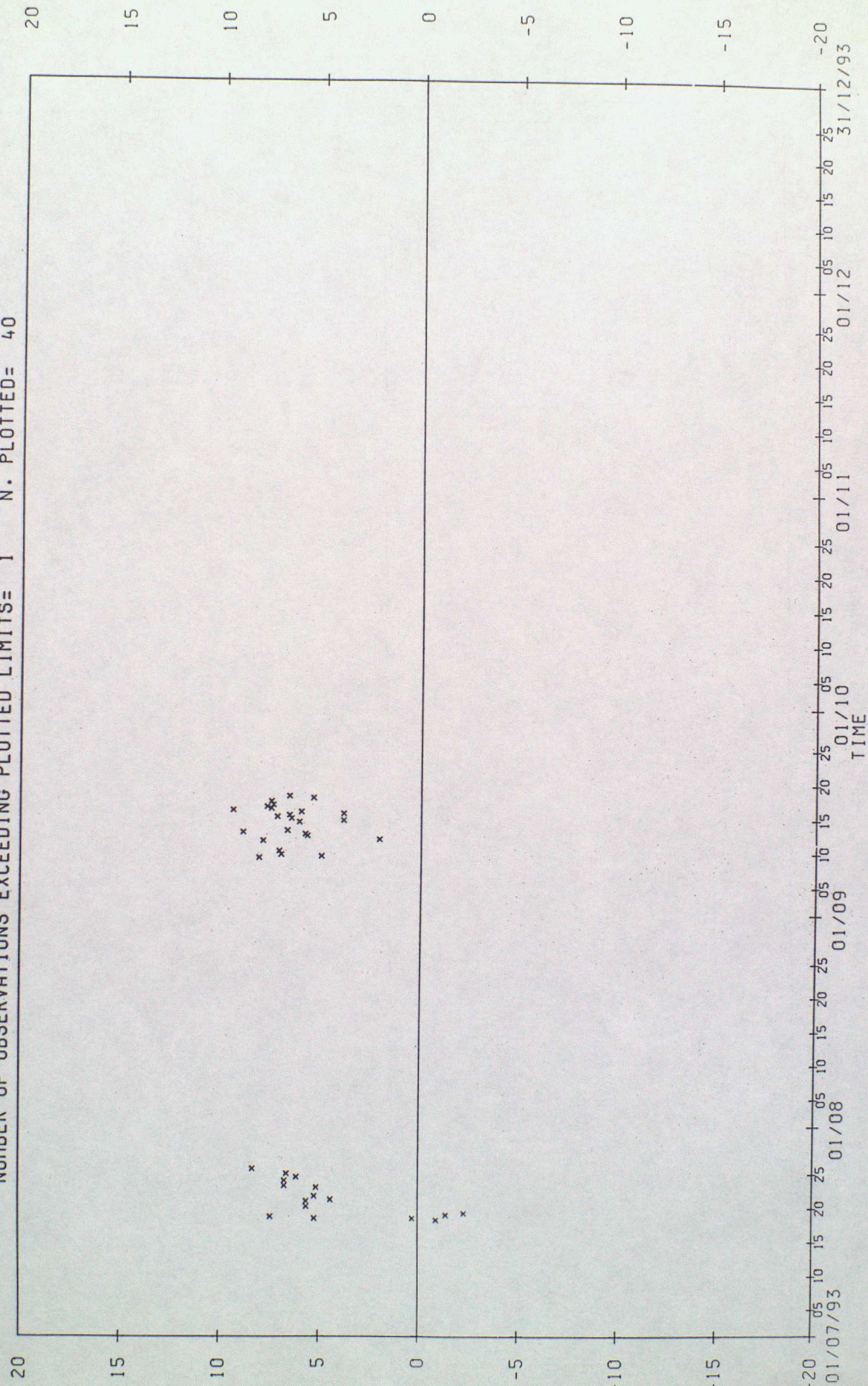
0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: UUJV  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 9 N. PLOTTED= 188  
 0-B





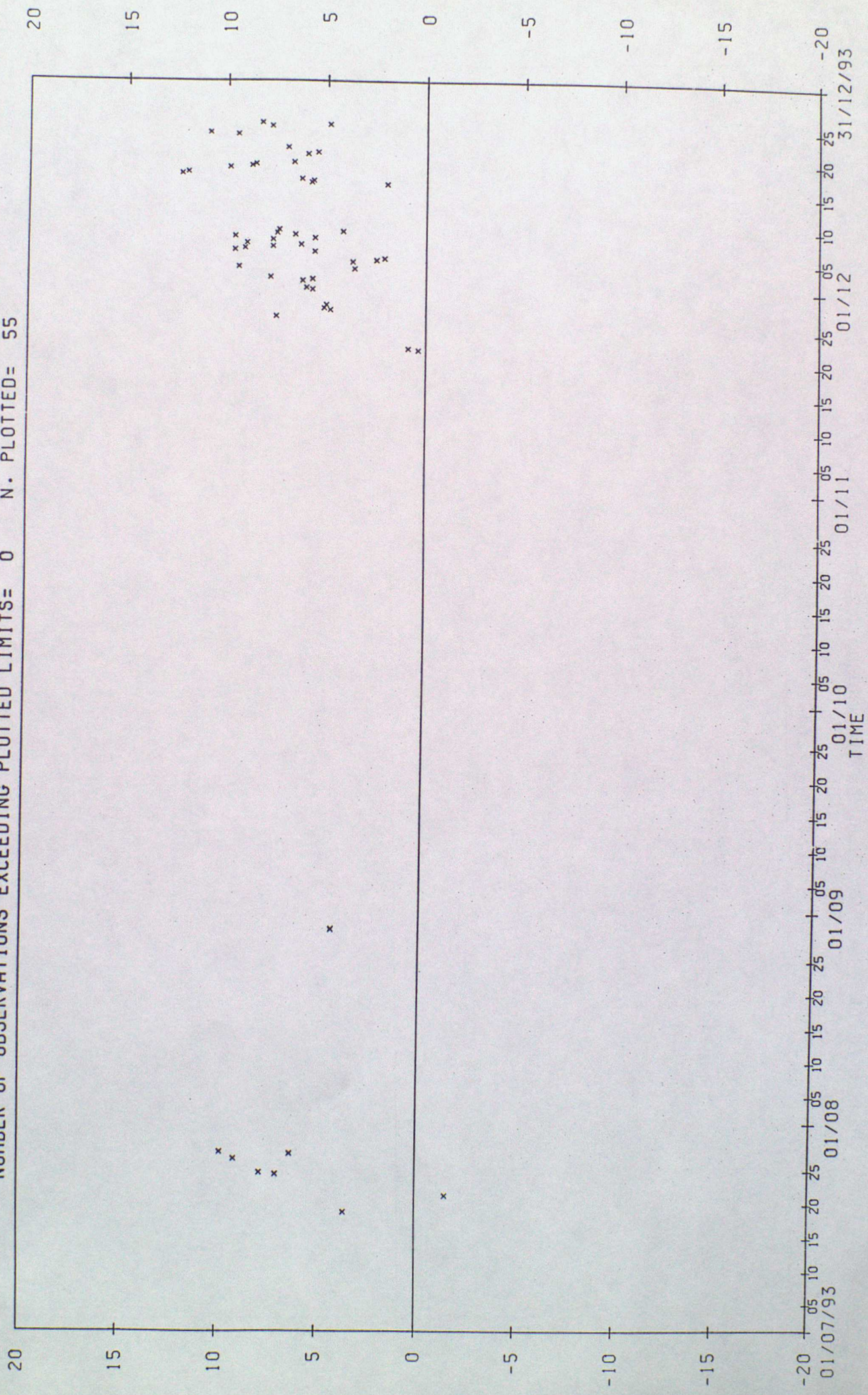
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: UUOD  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 1 N. PLOTTED= 40





0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: UYDW  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 55  
 0-B





# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

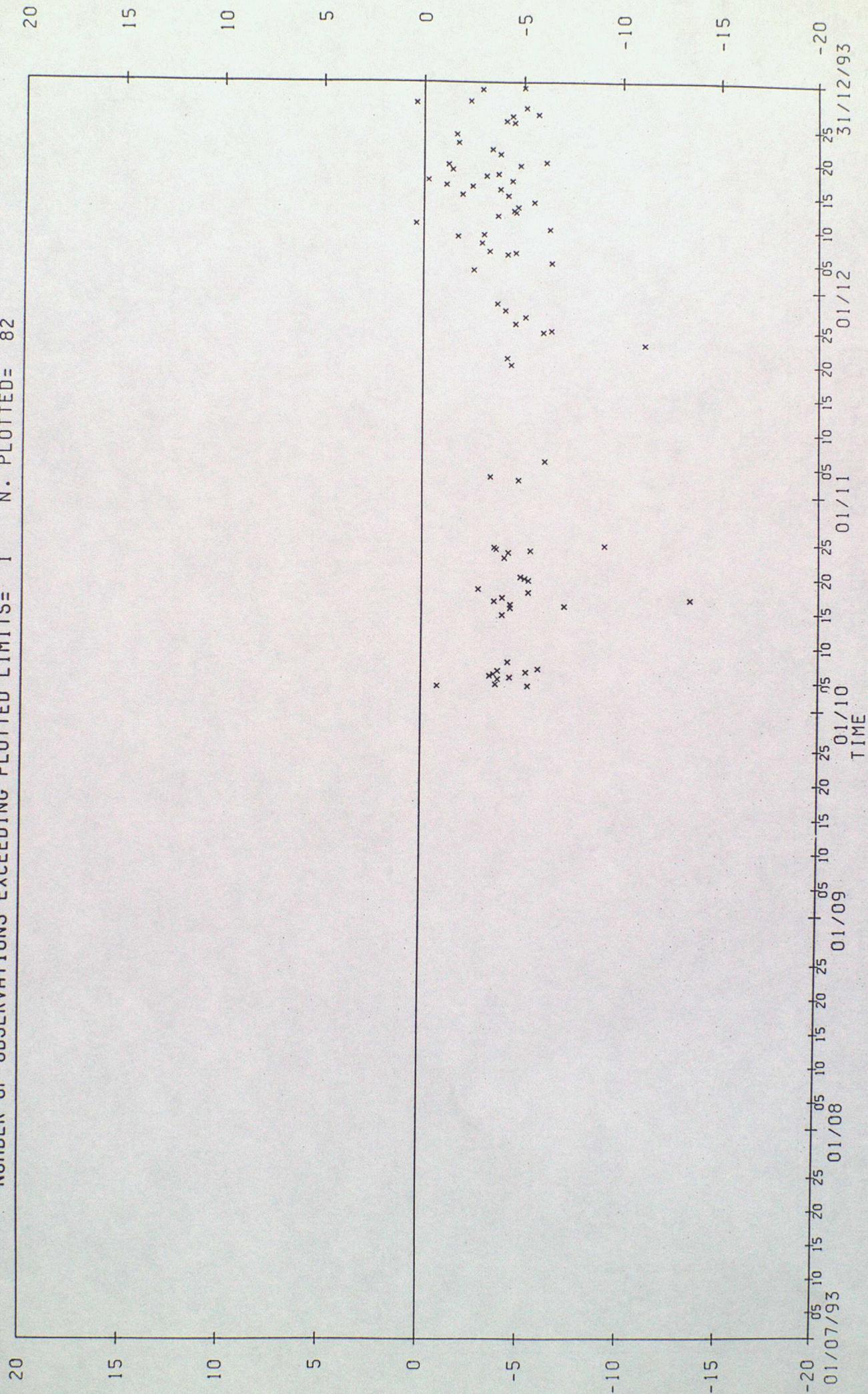
0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: UYJL

0-B

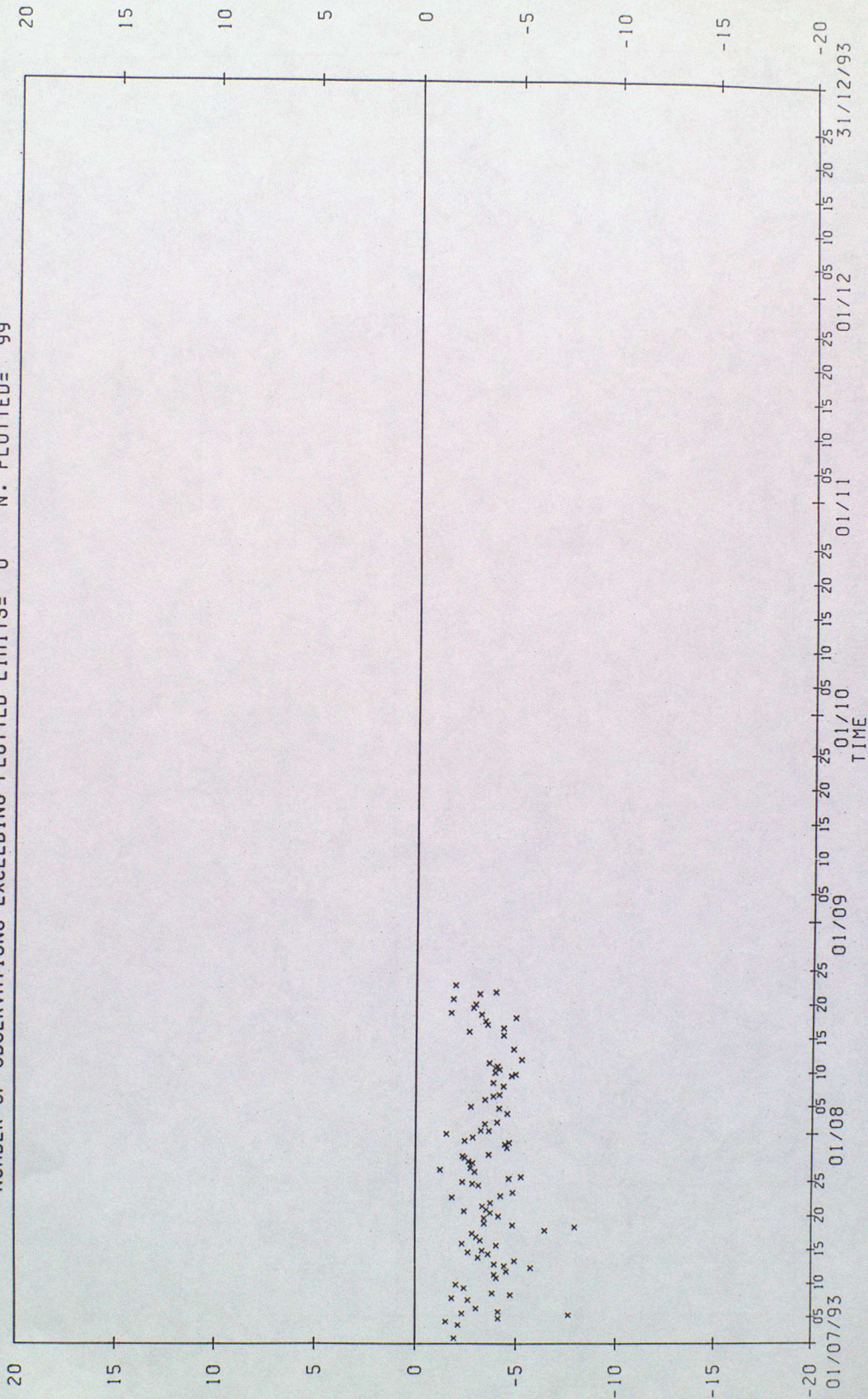
VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 1 N. PLOTTED= 82



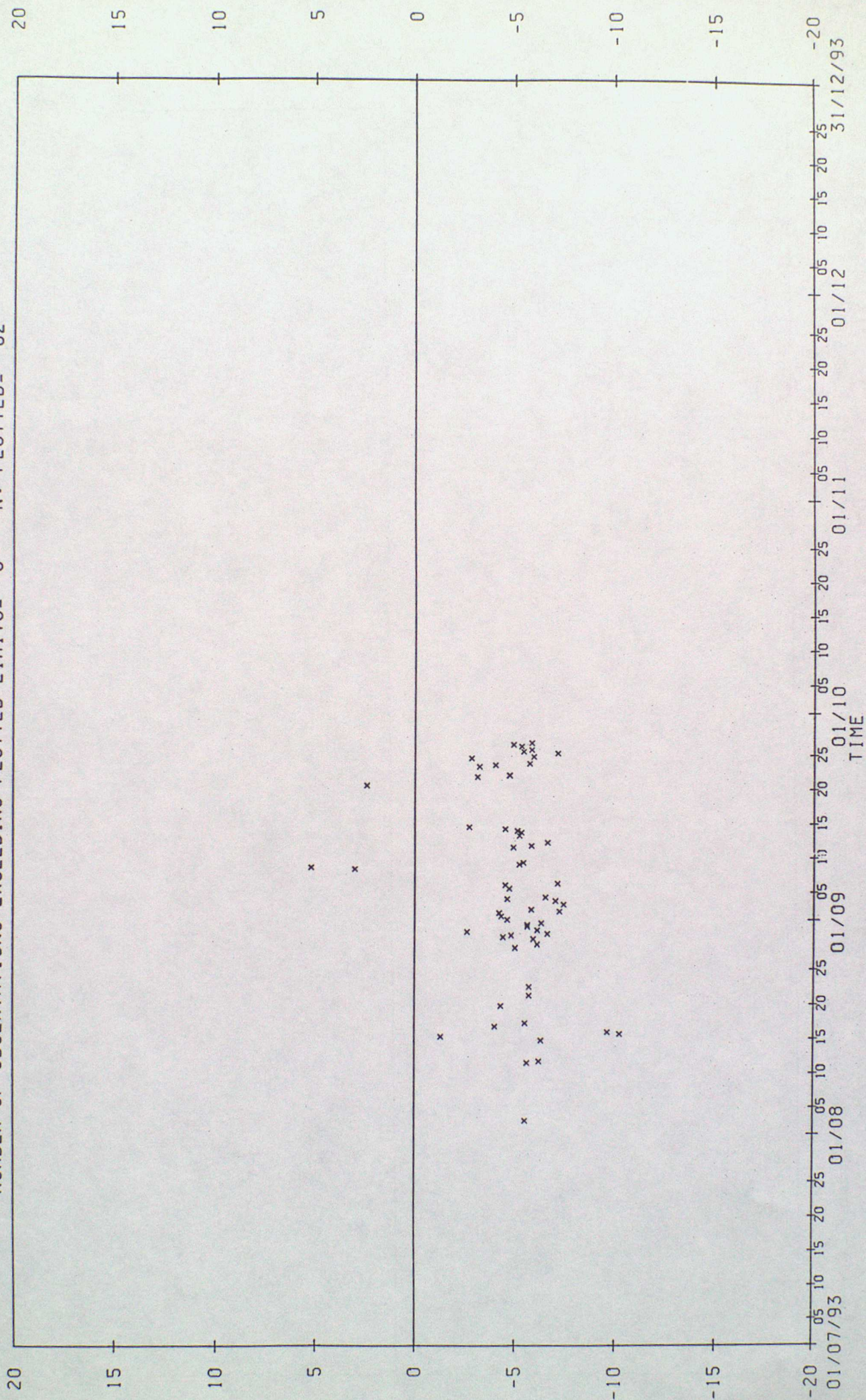


0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: UYTA  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 99



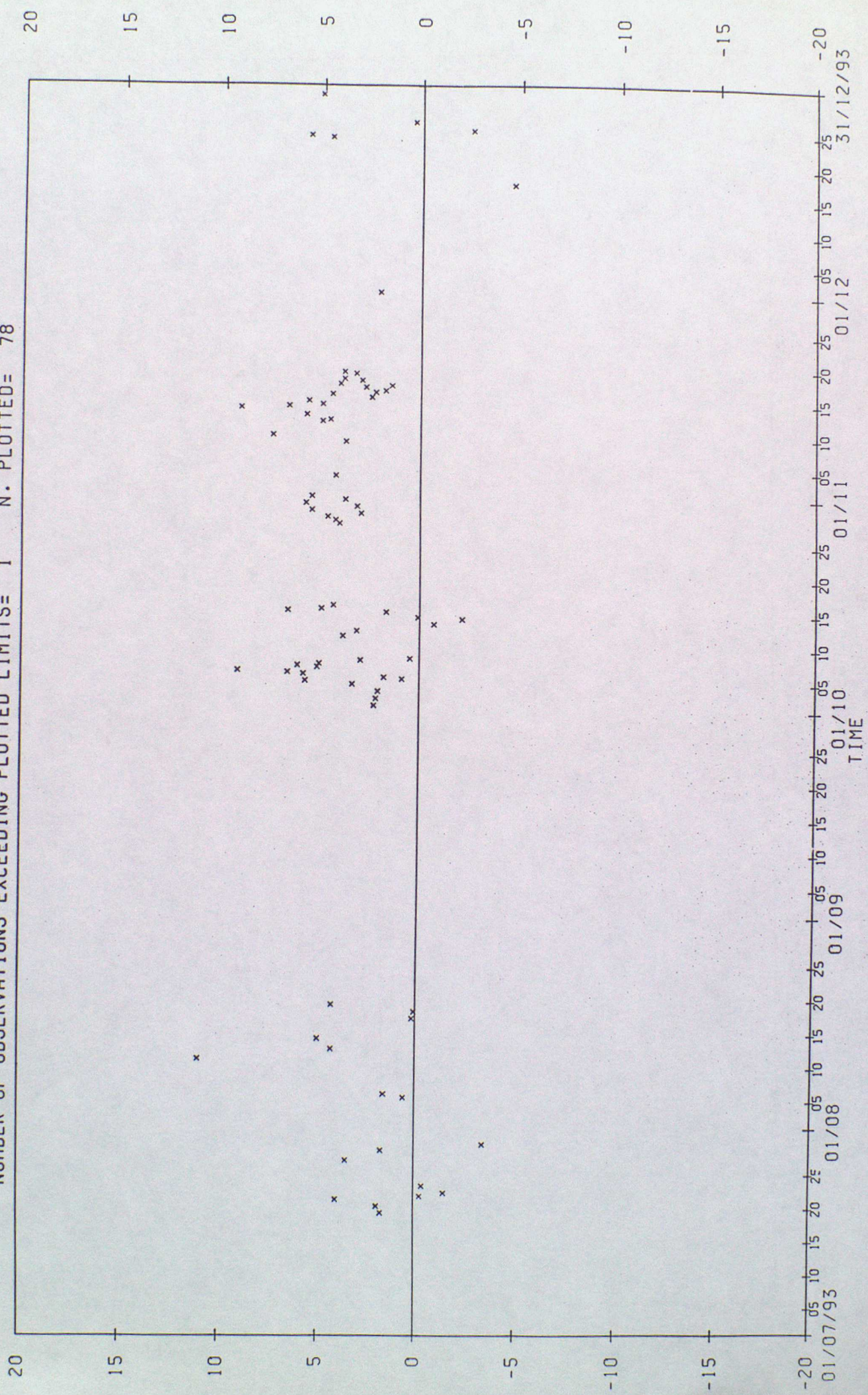


BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: VC6749 0-B  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 62





0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: VTCN  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 1 N. PLOTTED= 78





# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

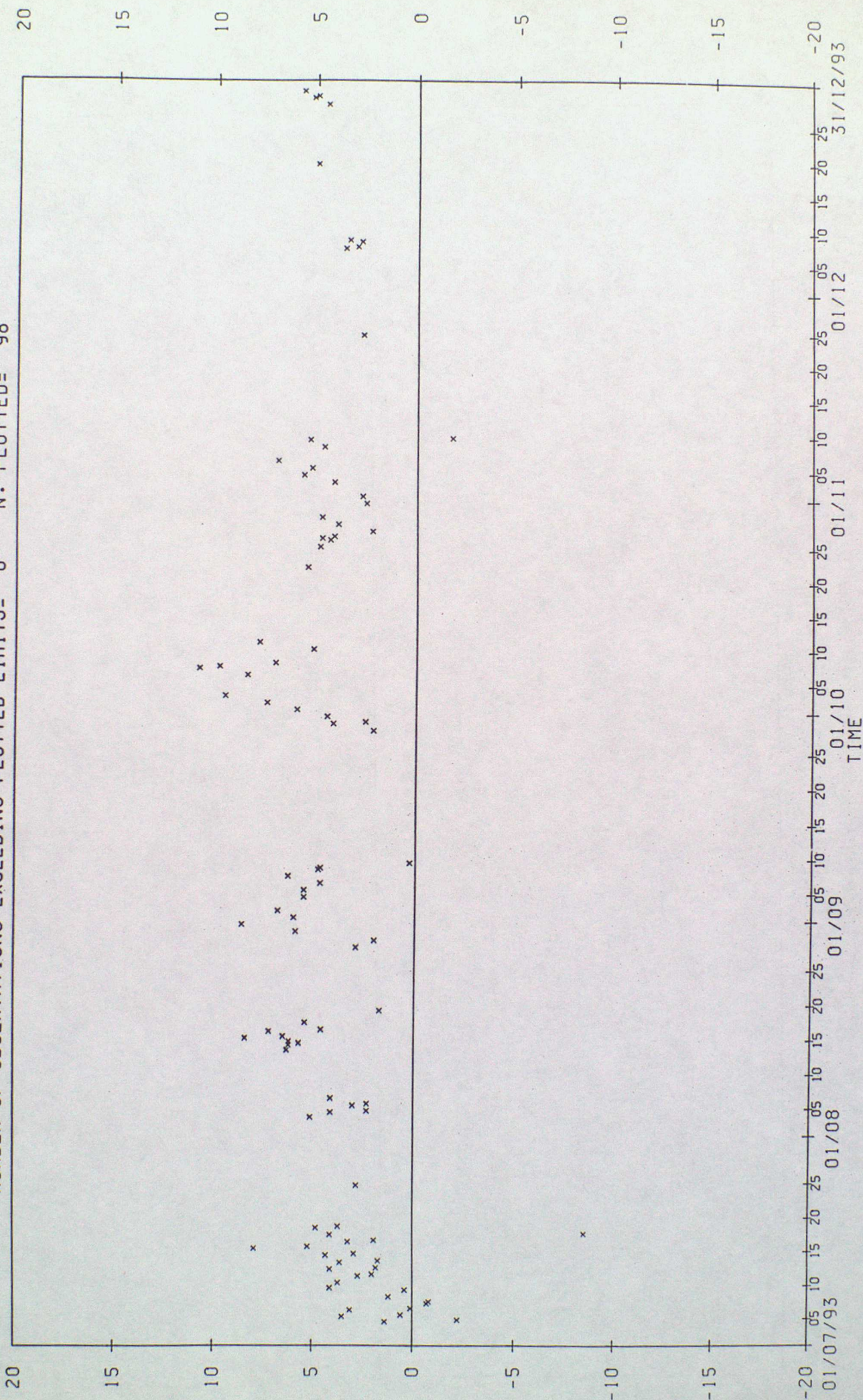
0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: VVGC

0-B

VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 98

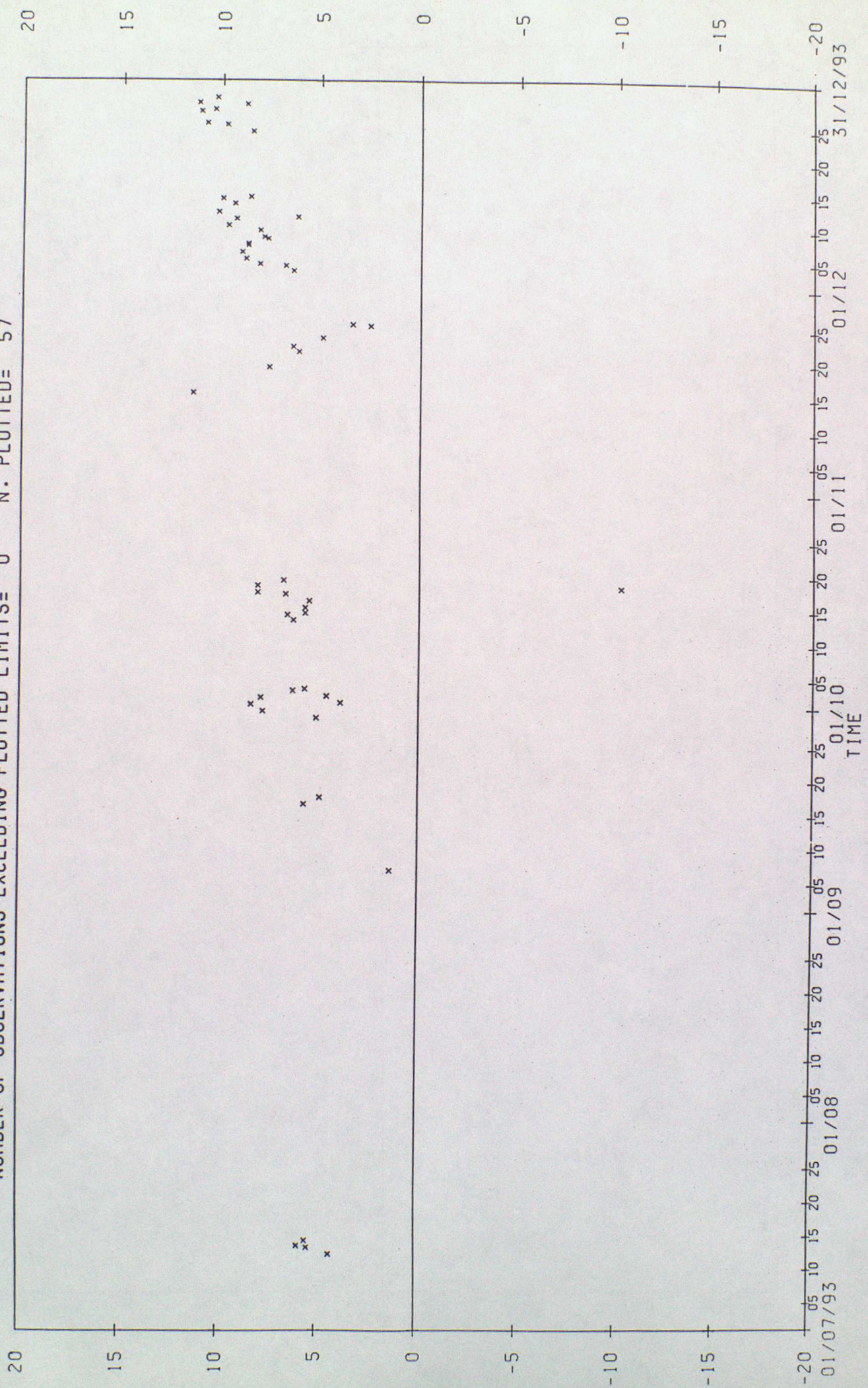




BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: VVKK  
VARIABLE : MSLP IN UNITS OF HPA  
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 57

O-B

O-B





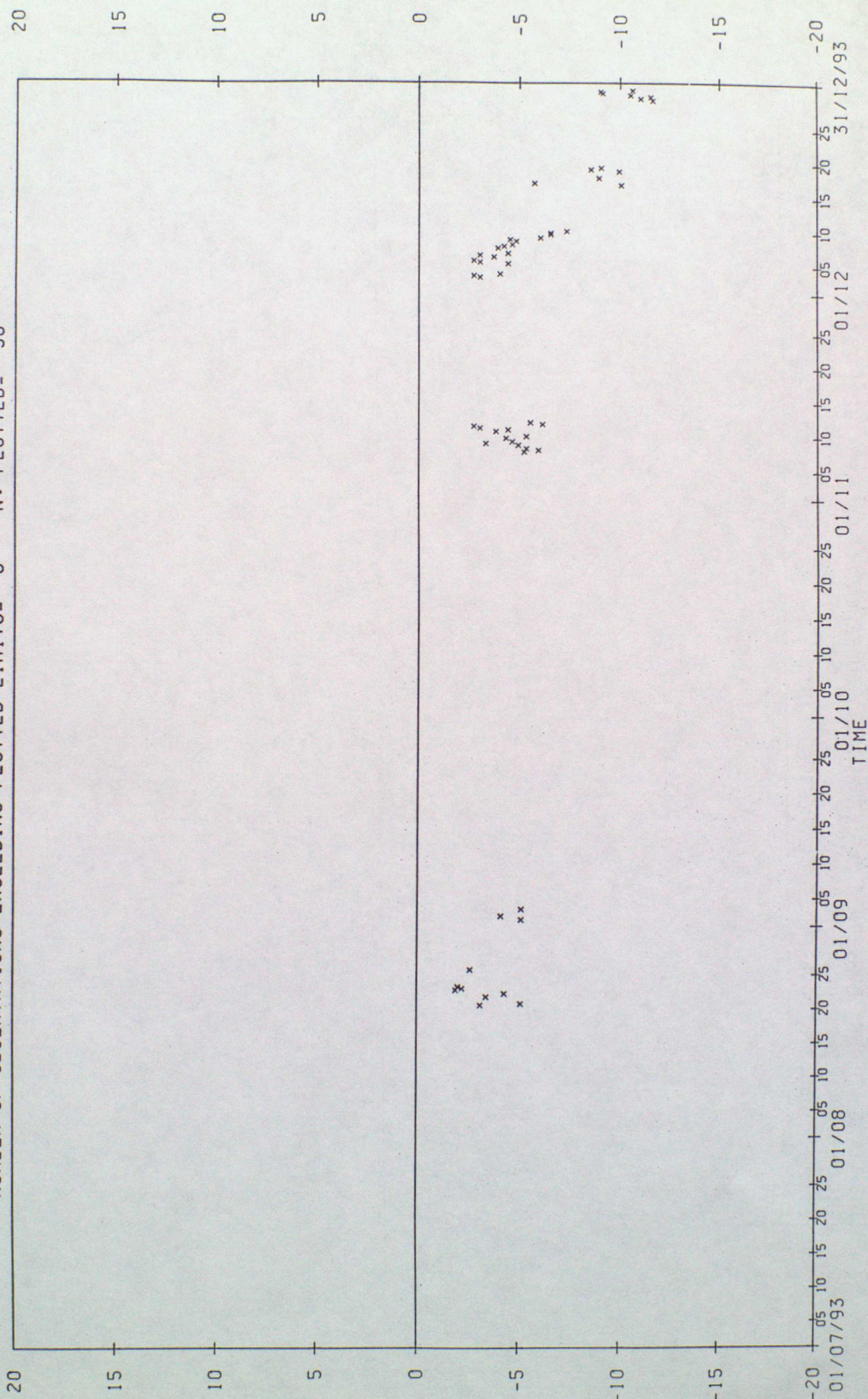
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: V2SM

VARIABLE : MSLP IN UNITS OF HPA

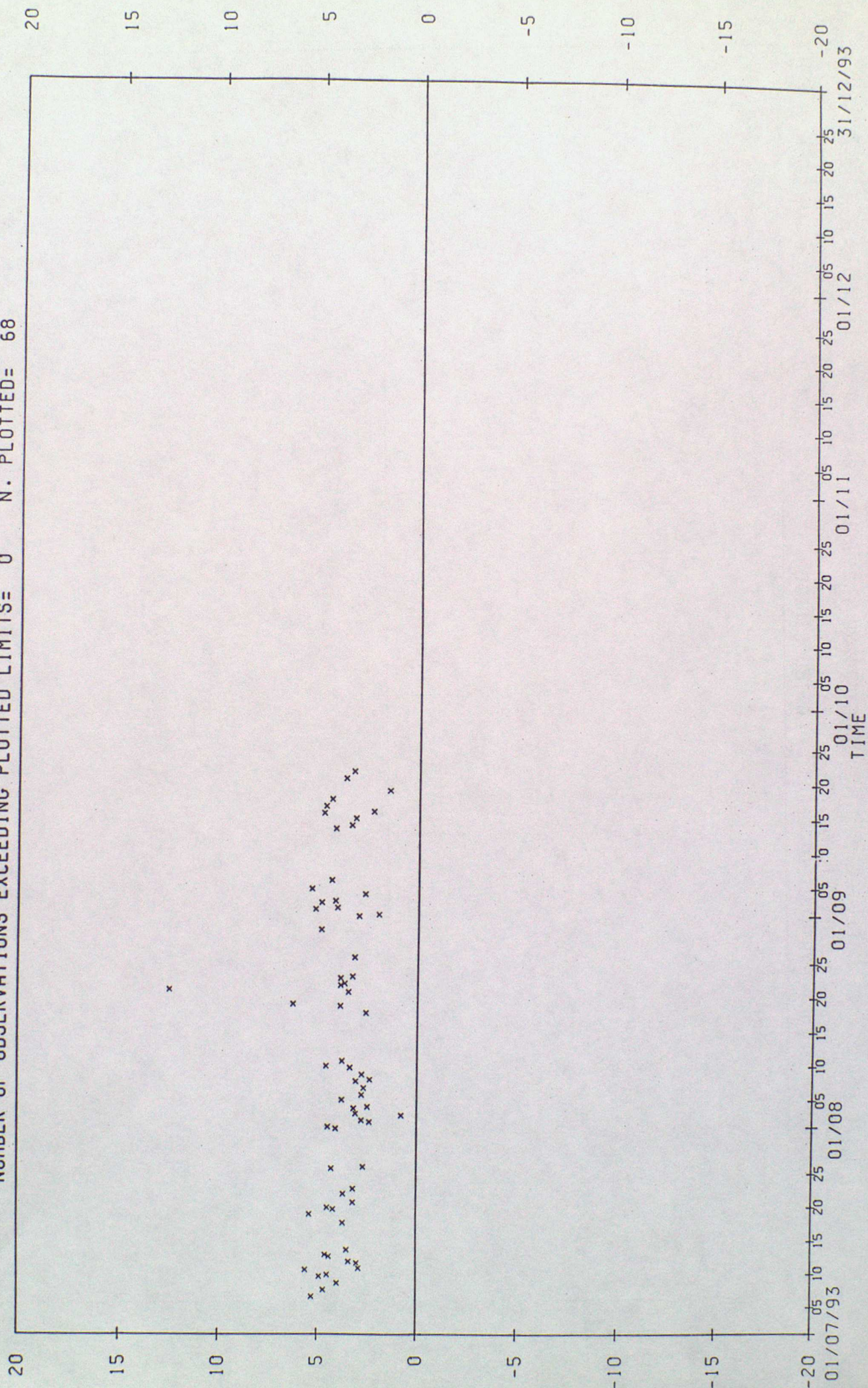
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 56

0-B





0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: WCYR  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 68  
 0-B





# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

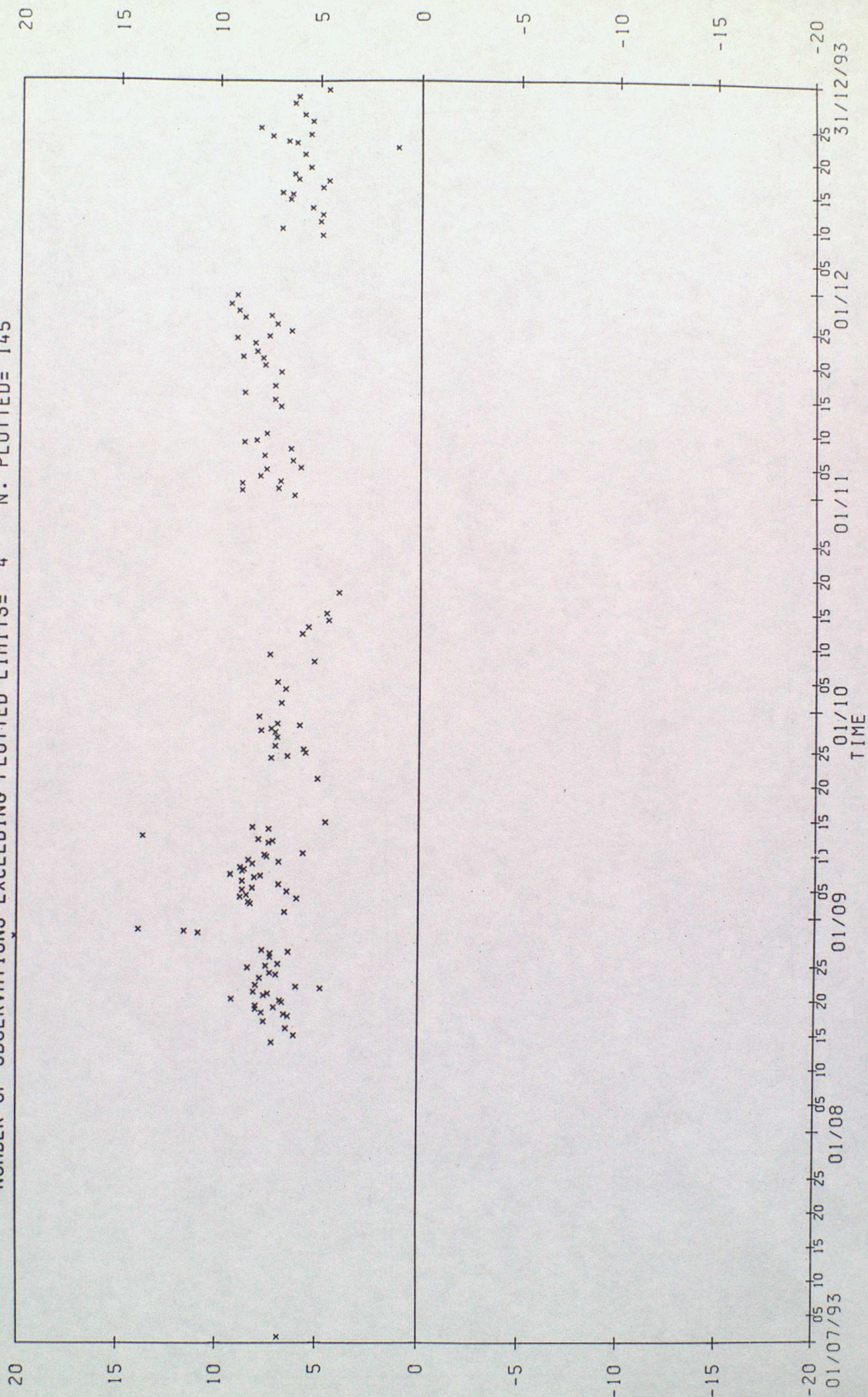
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: WCZB

VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 4 N. PLOTTED= 145

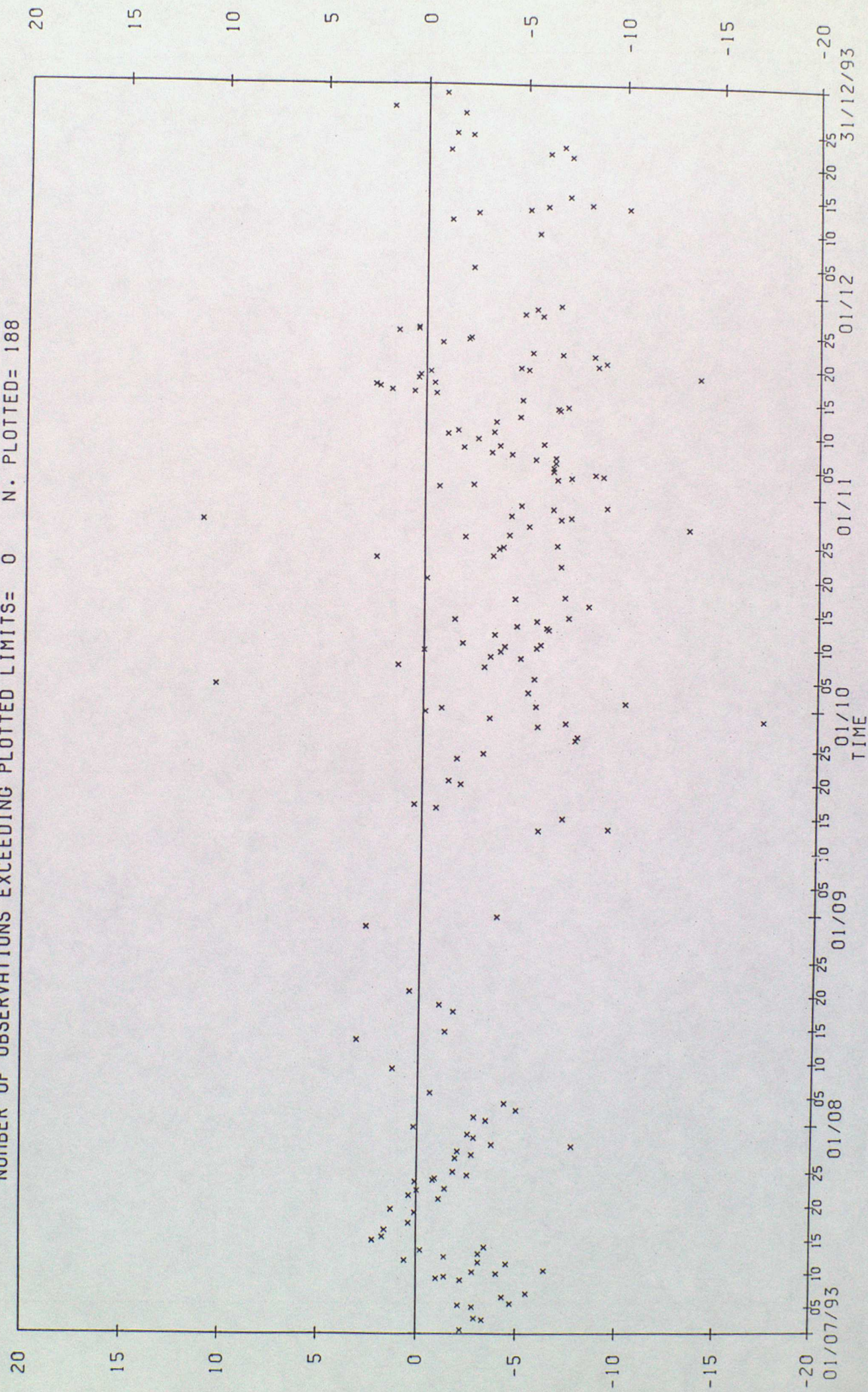
O-B

O-B



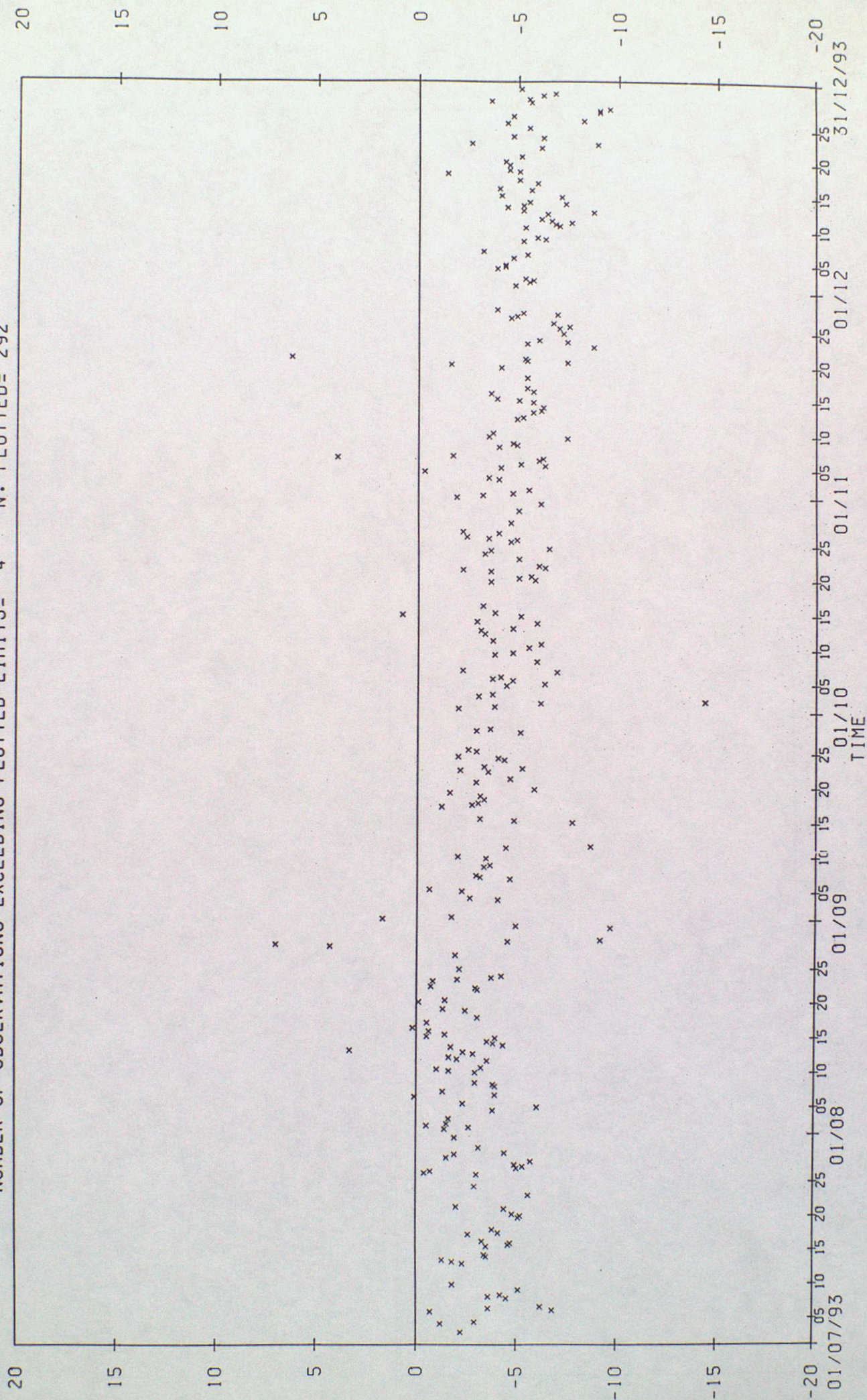


0-B  
BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: WC5932  
VARIABLE : MSLP IN UNITS OF HPA  
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 188  
0-B





BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: WE3806 0-B  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 4 N. PLOTTED= 292





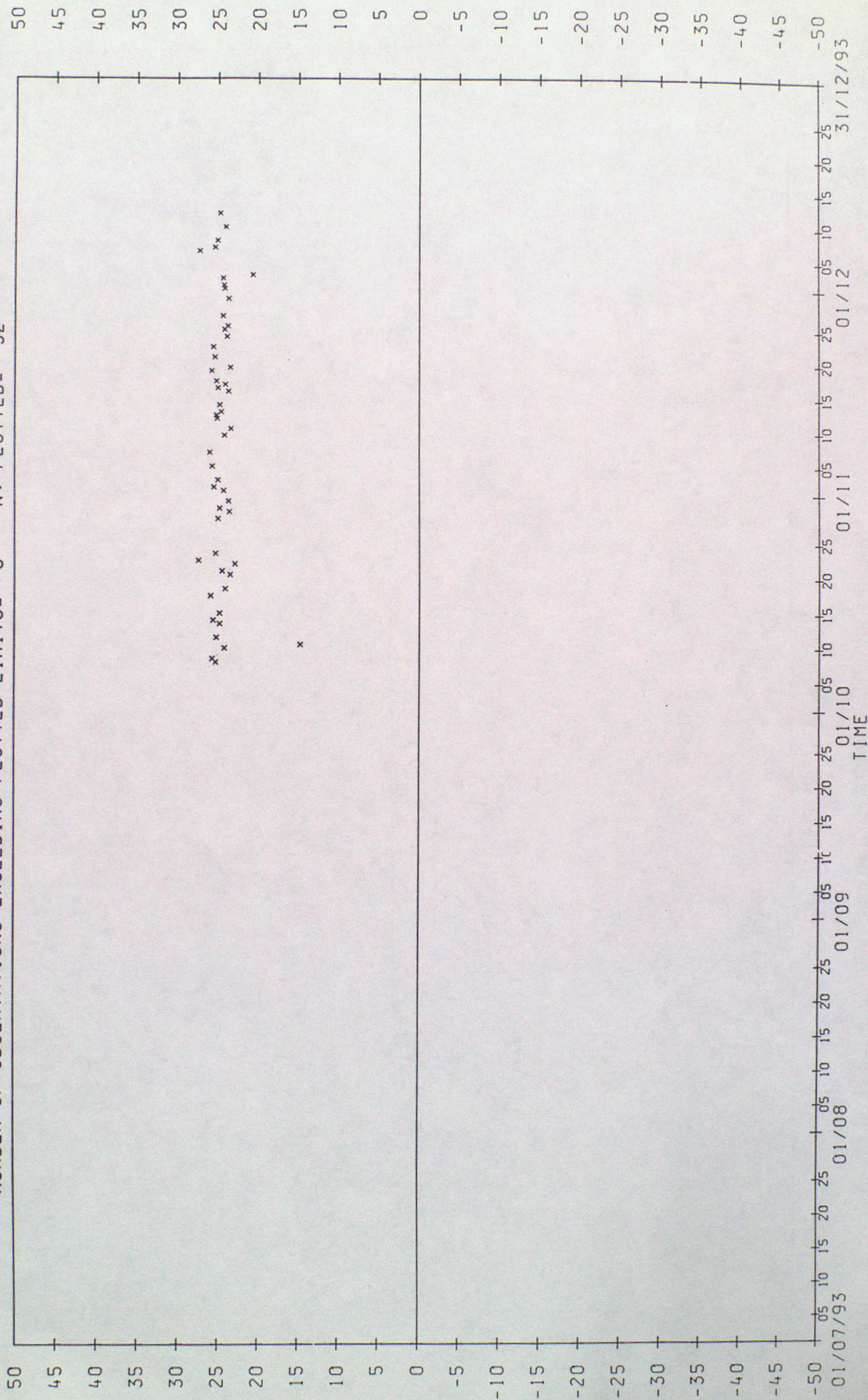
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: WE4805

0-B

VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 52



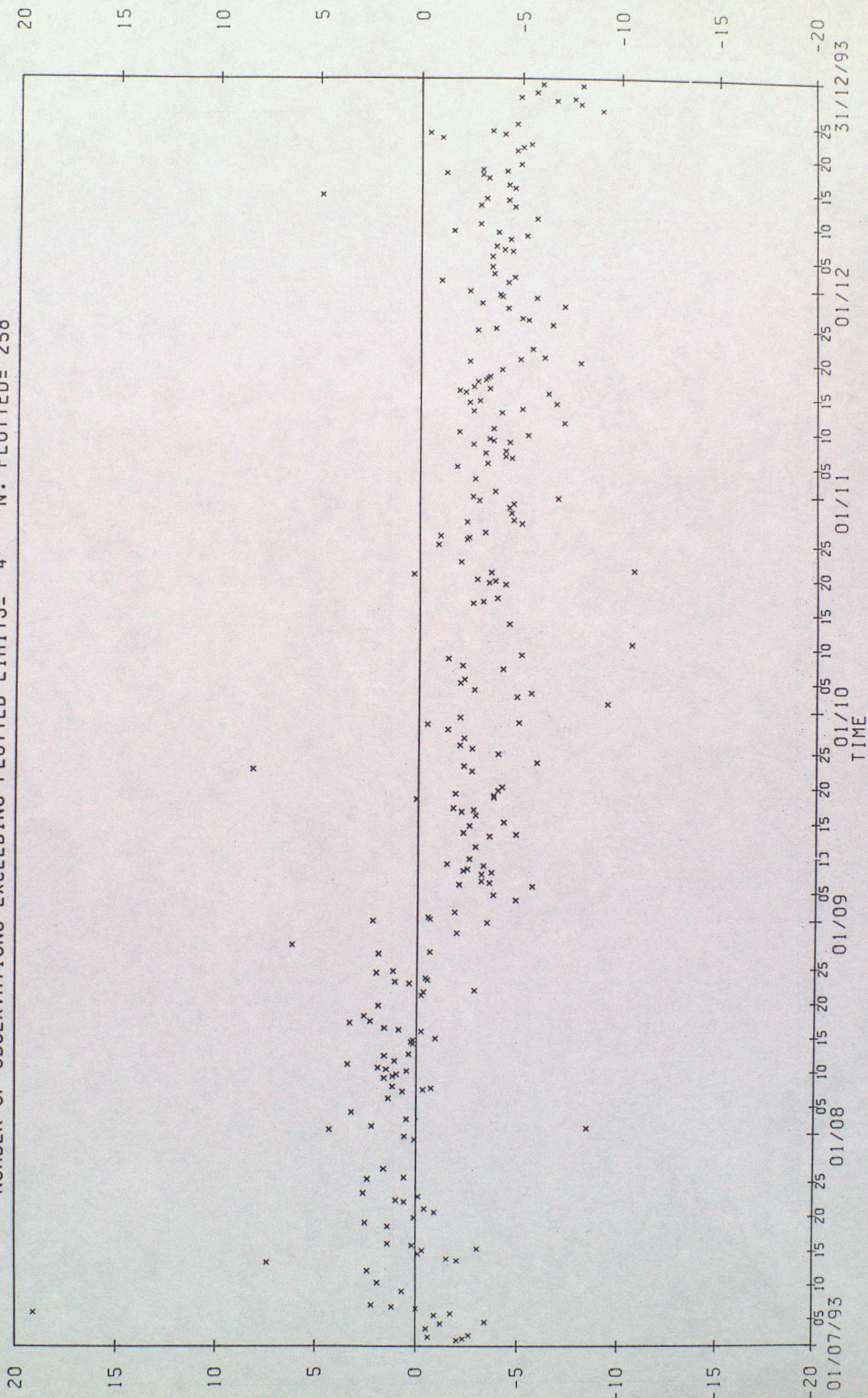


# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: WE4879 0-B

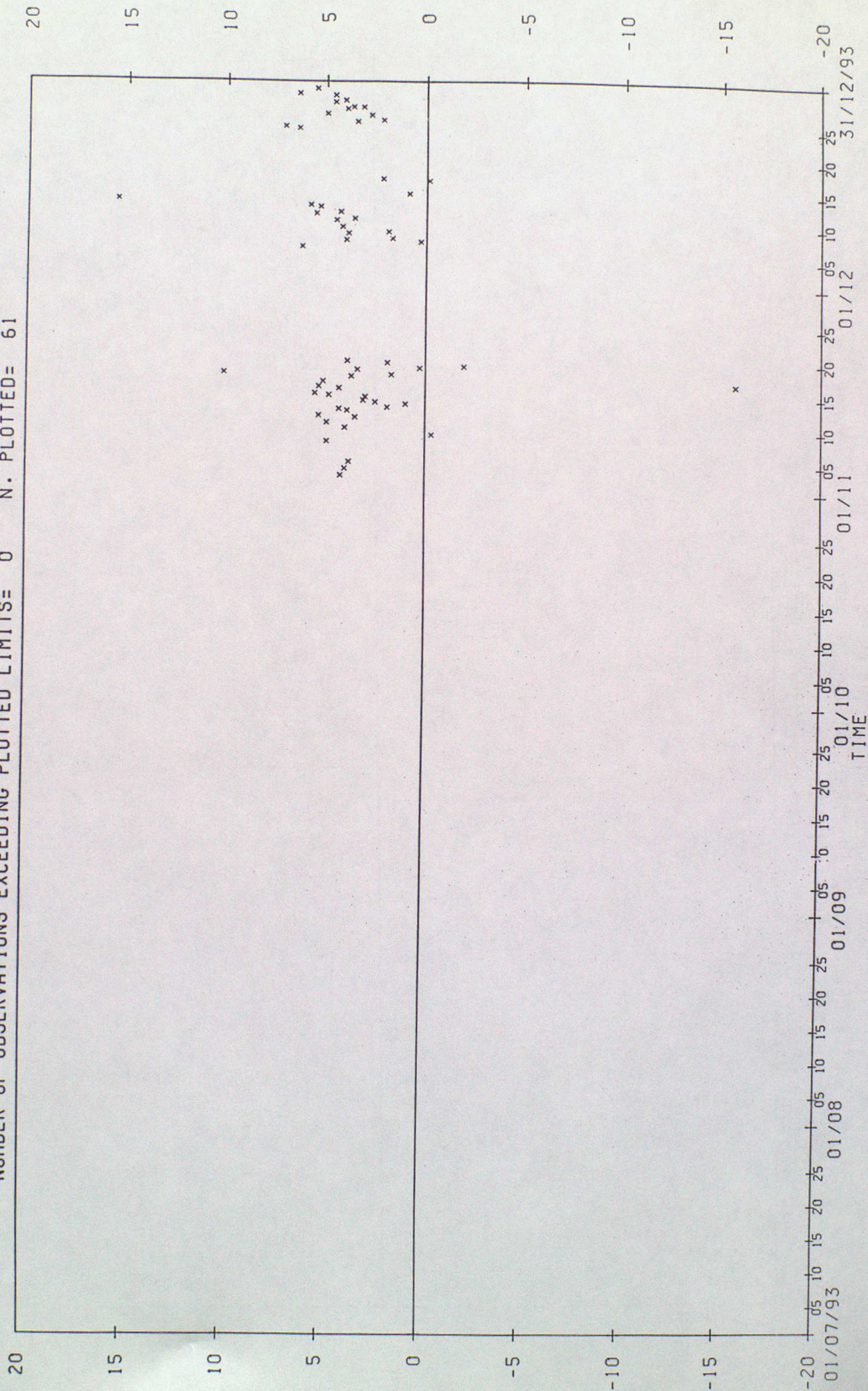
VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 4 N. PLOTTED= 258





0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: WPPO  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 61  
 0-B





# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

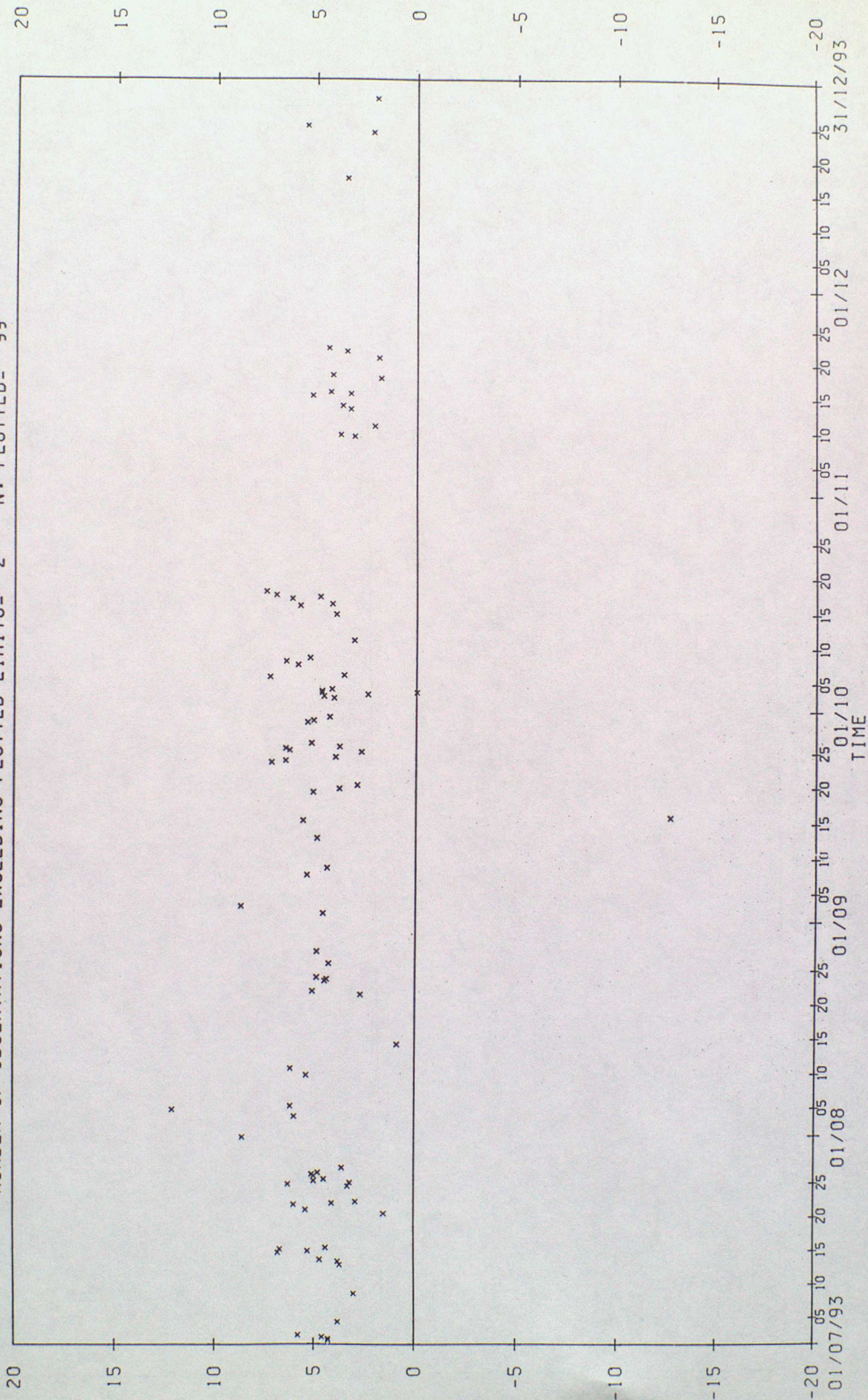
0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: WTC9408

0-B

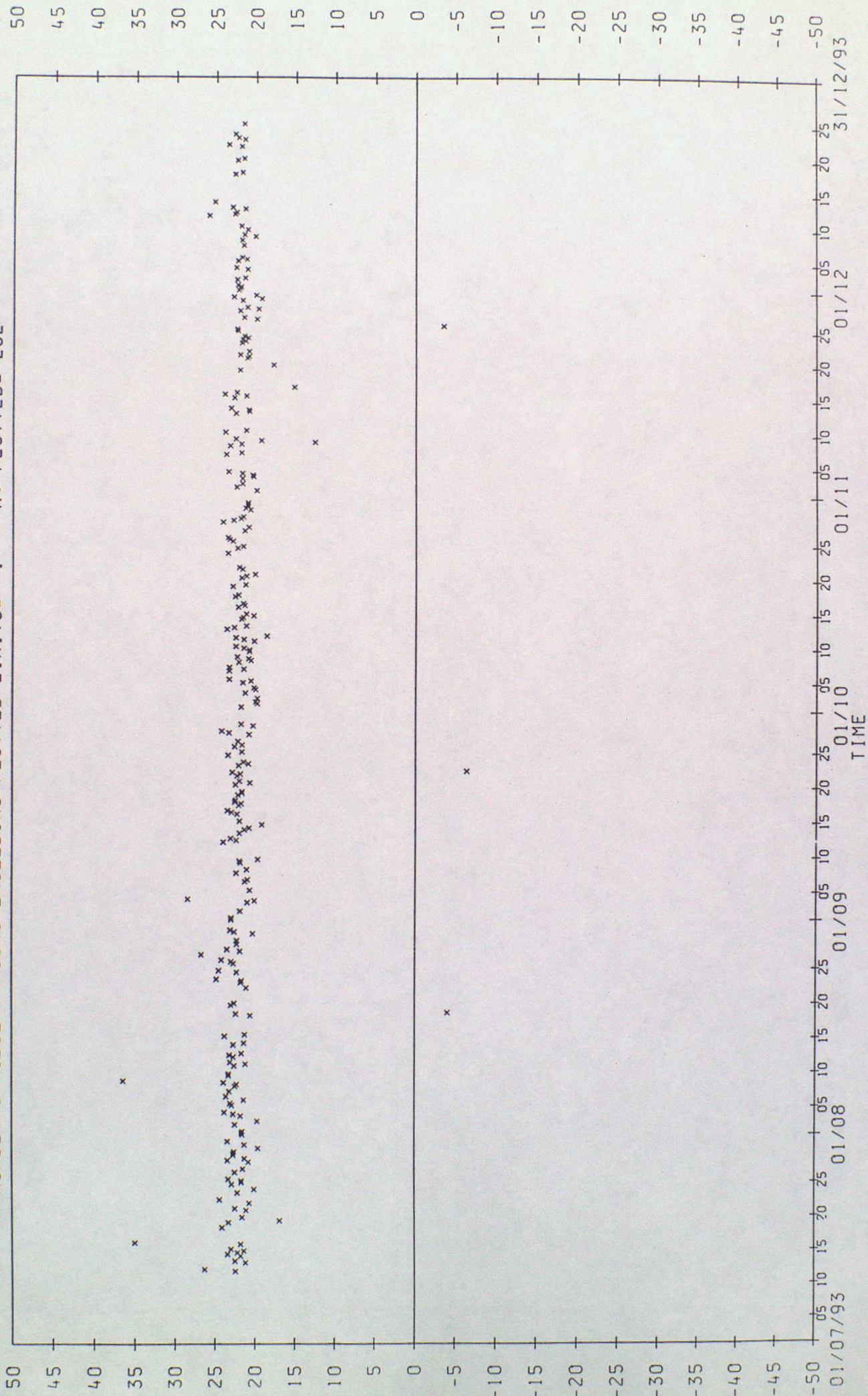
VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 2 N. PLOTTED= 99





BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: WZE4928  
VARIABLE : MSLP IN UNITS OF HPA  
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 1 N. PLOTTED= 282

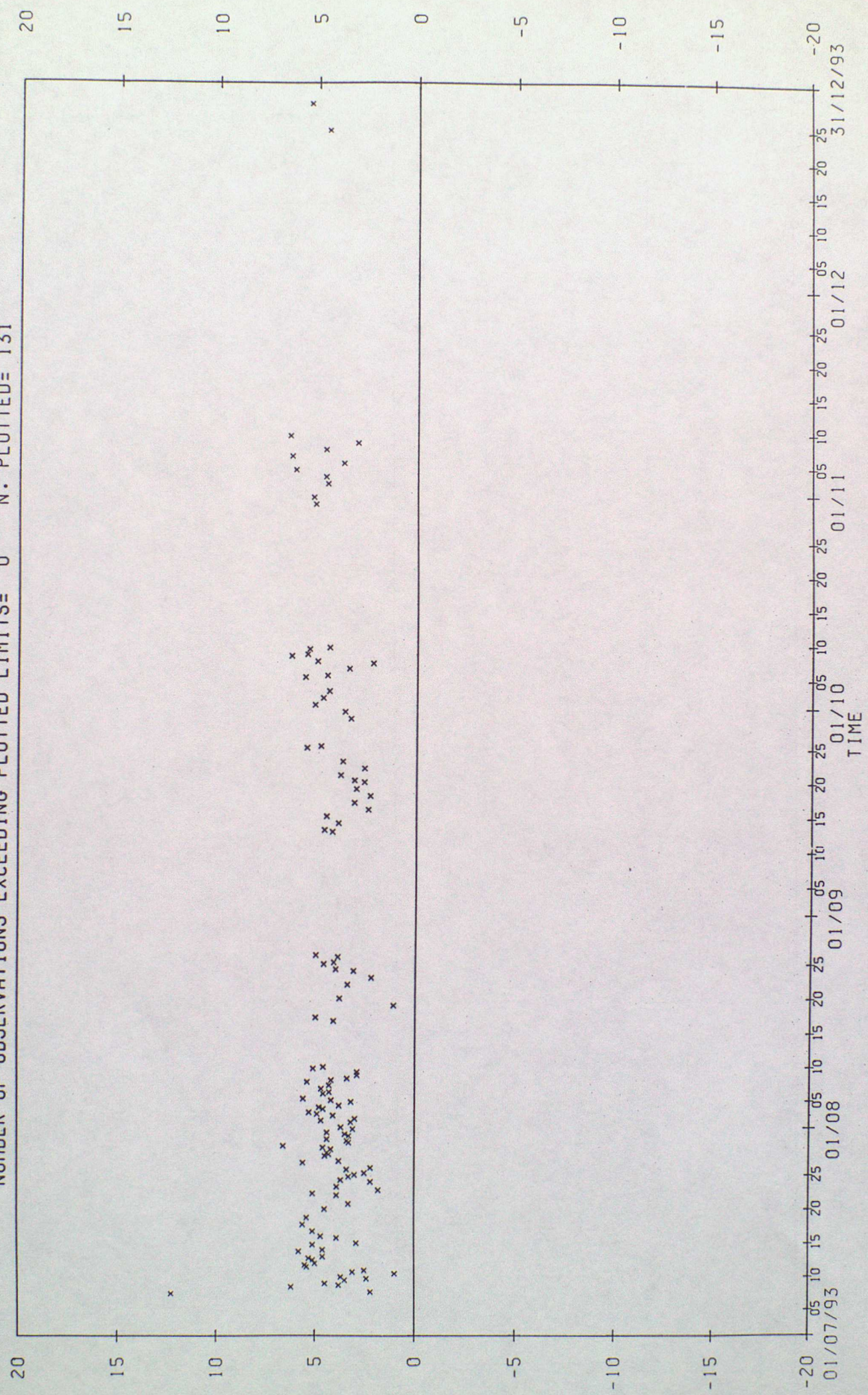




BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: ZBWP  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 131

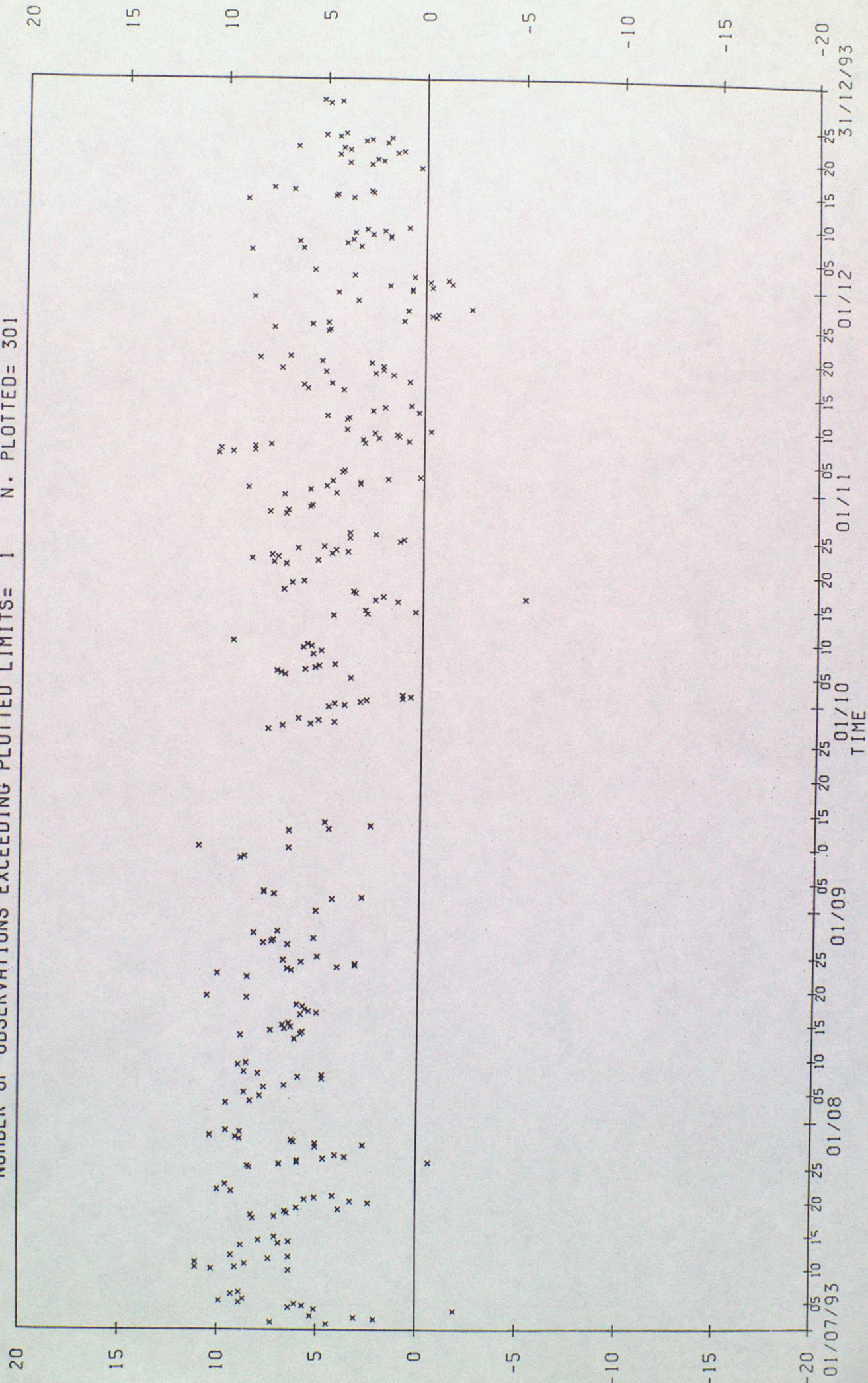
O-B

O-B





BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: ZCAM9  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 1 N. PLOTTED= 301





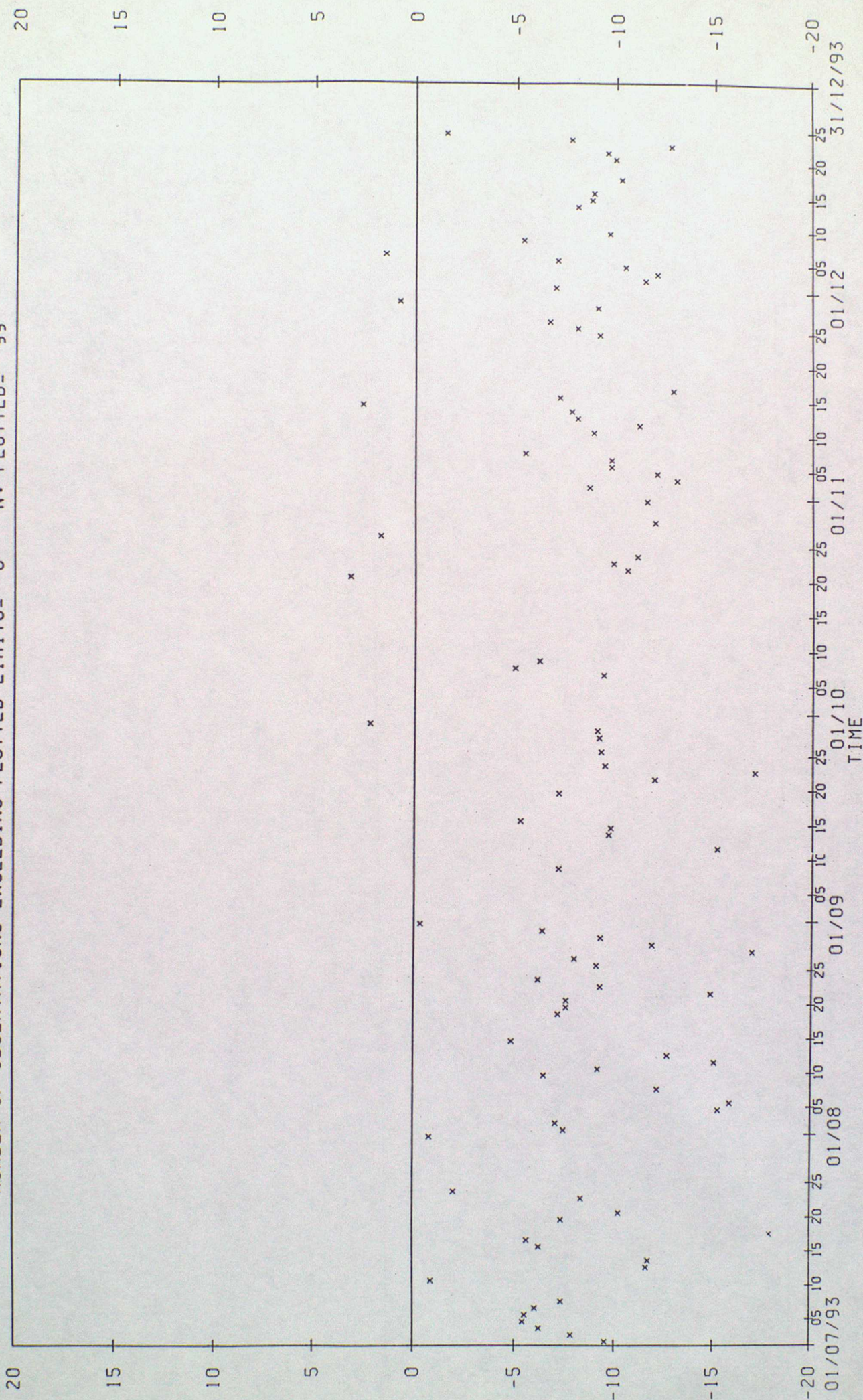
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: ZSBK

O-B

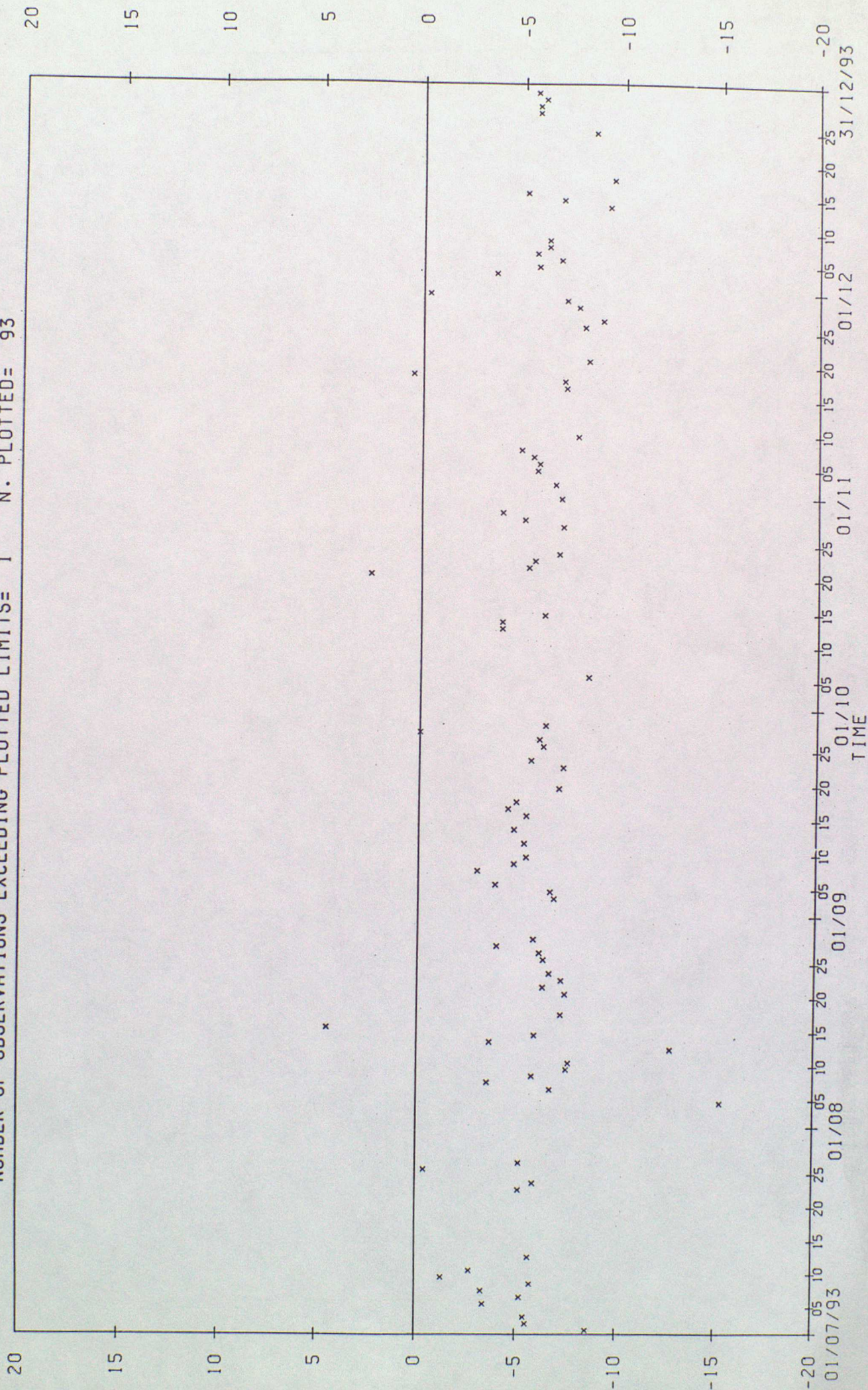
VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 99





BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: ZTCD  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 1 N. PLOTTED= 93





# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

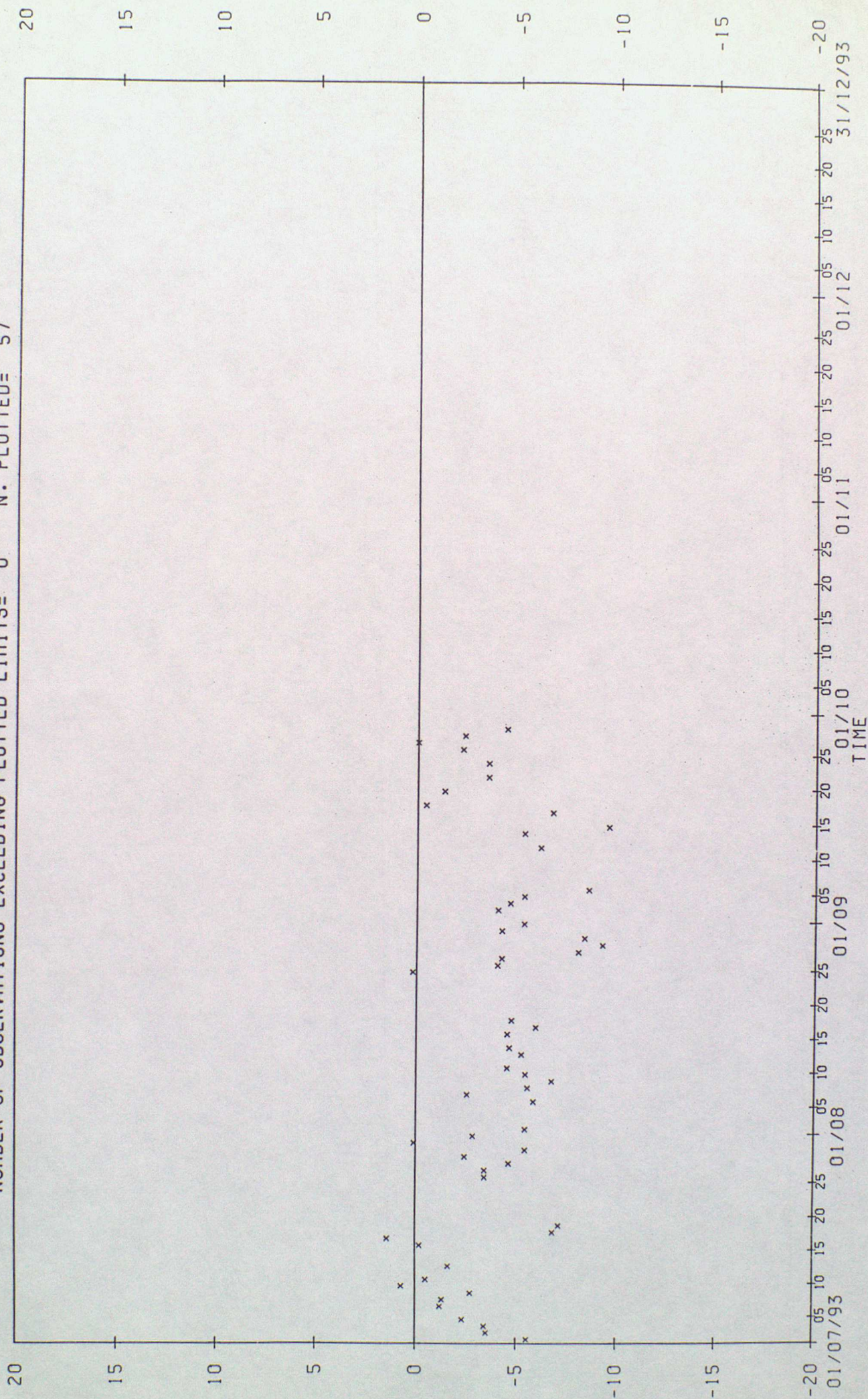
0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: ZTFM

0-B

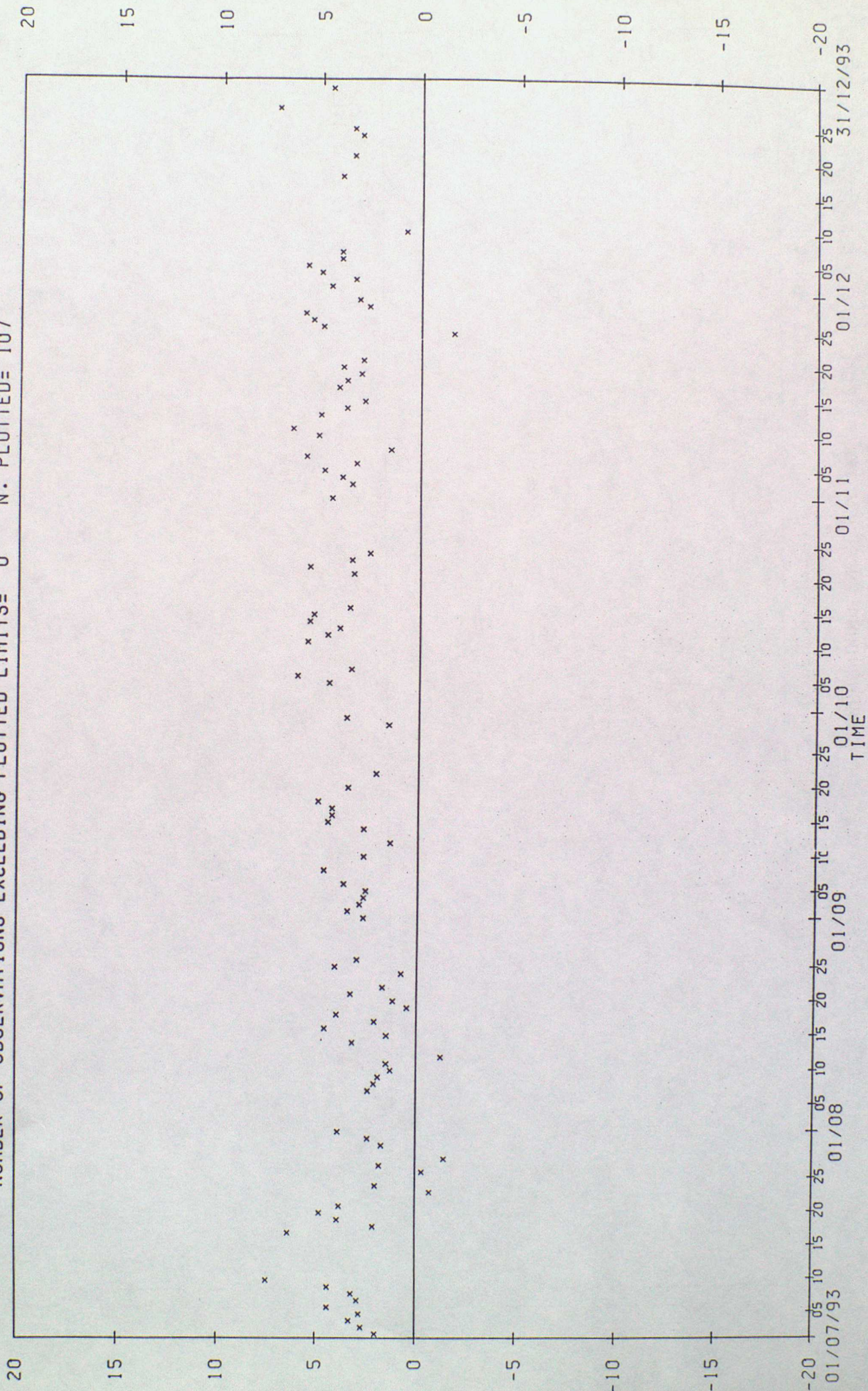
VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 57





0-B  
BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: ZTHG  
VARIABLE : MSLP IN UNITS OF HPA  
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 107  
0-B





# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

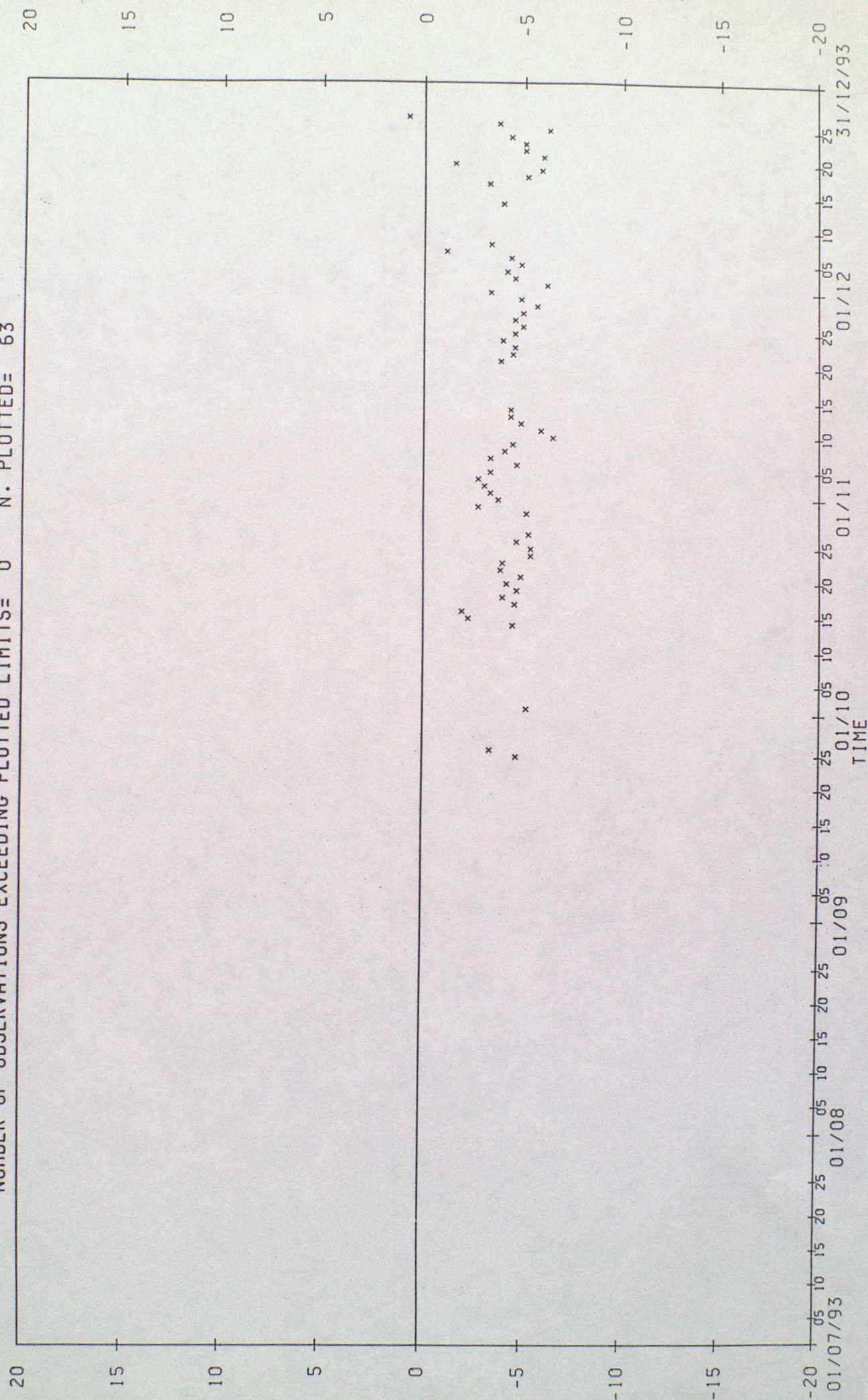
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 3EAYS

0-B

0-B

VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 63

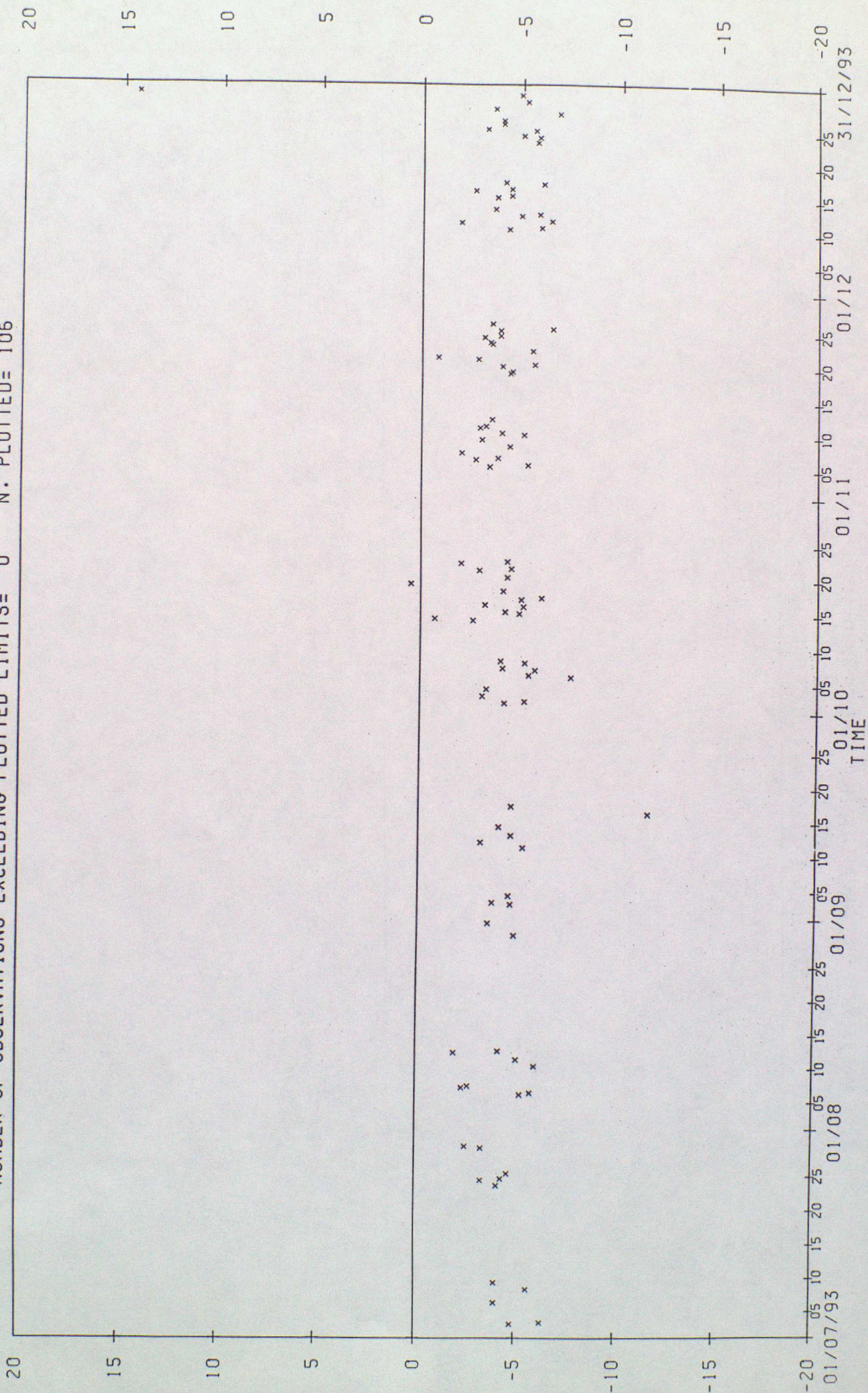




BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: 3FCH3  
 VARIABLE : MSLP IN UNITS OF HPA  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 106

0-B

0-B





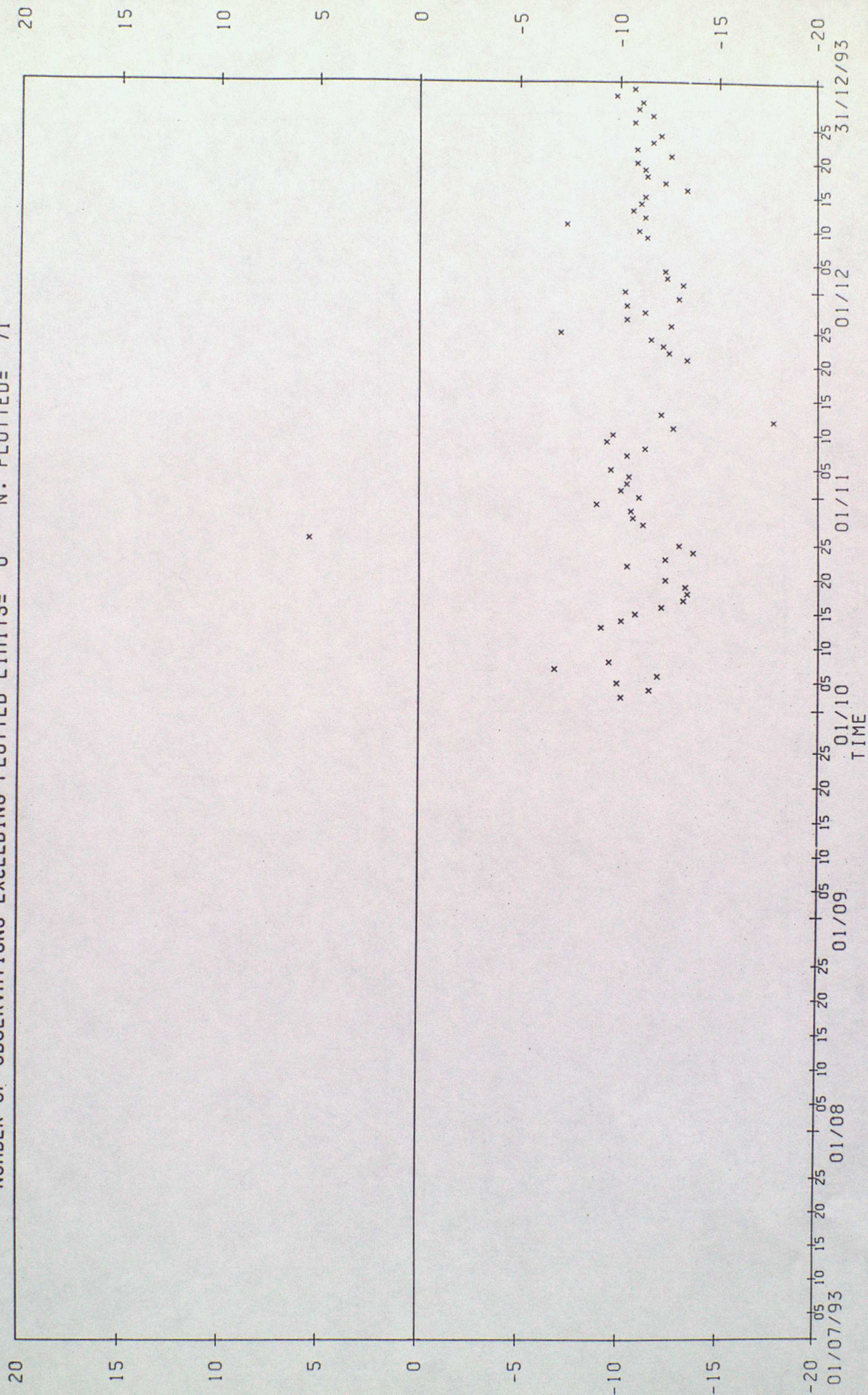
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 3FJJ3

0-B

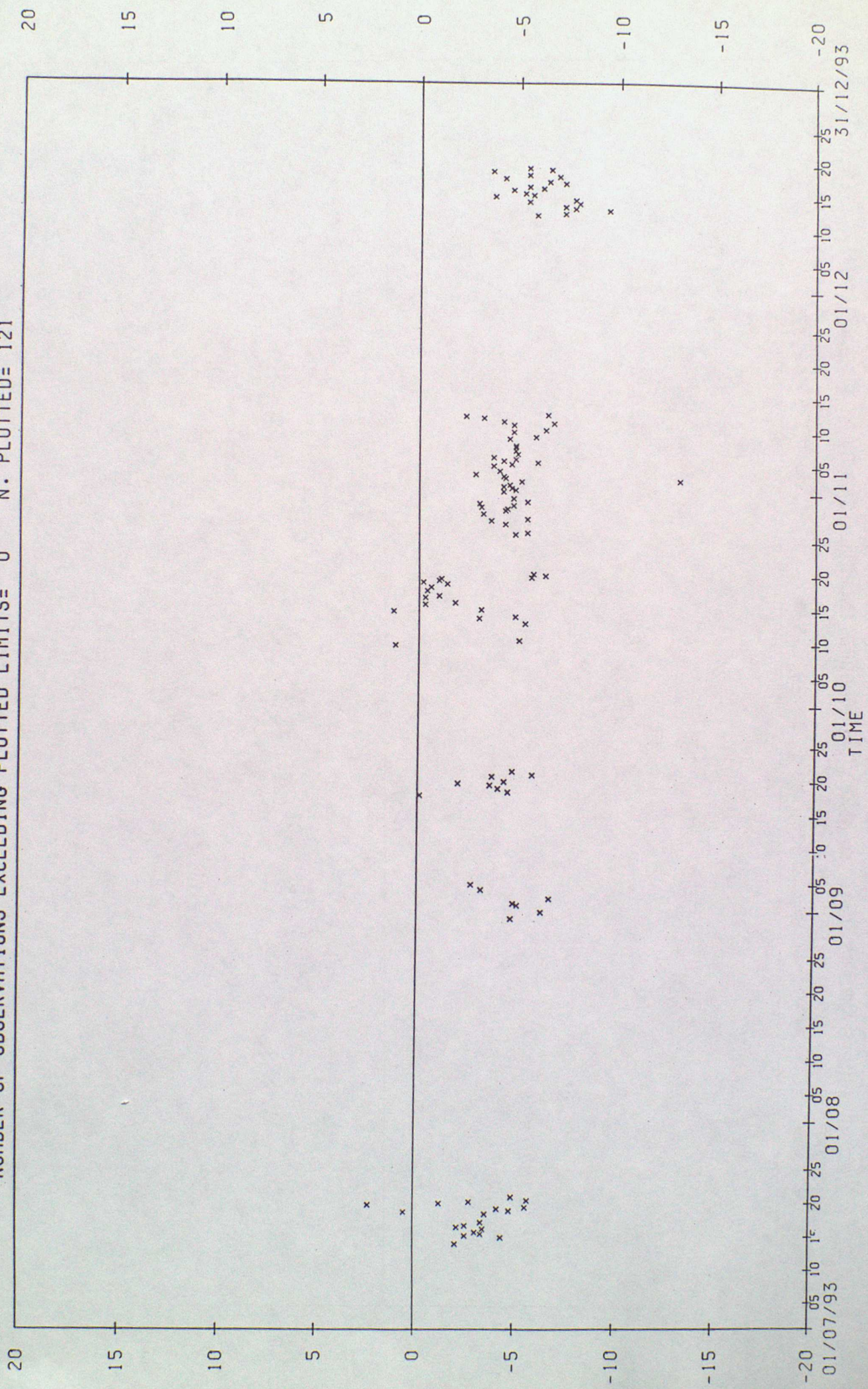
VARIABLE : MSLP IN UNITS OF HPA

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 71





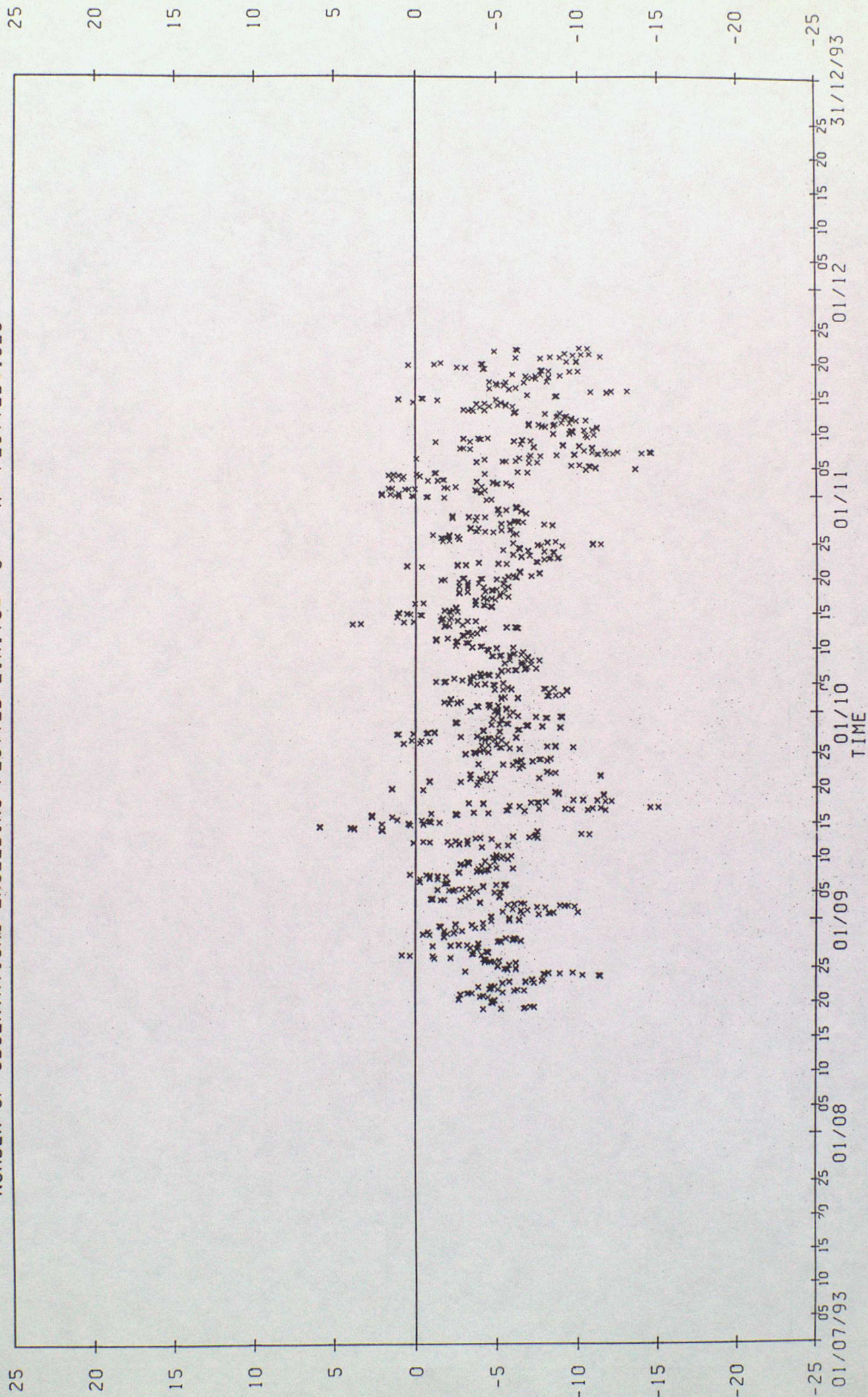
0-B  
BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 3FLS2  
VARIABLE : MSLP IN UNITS OF HPA  
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 121  
0-B





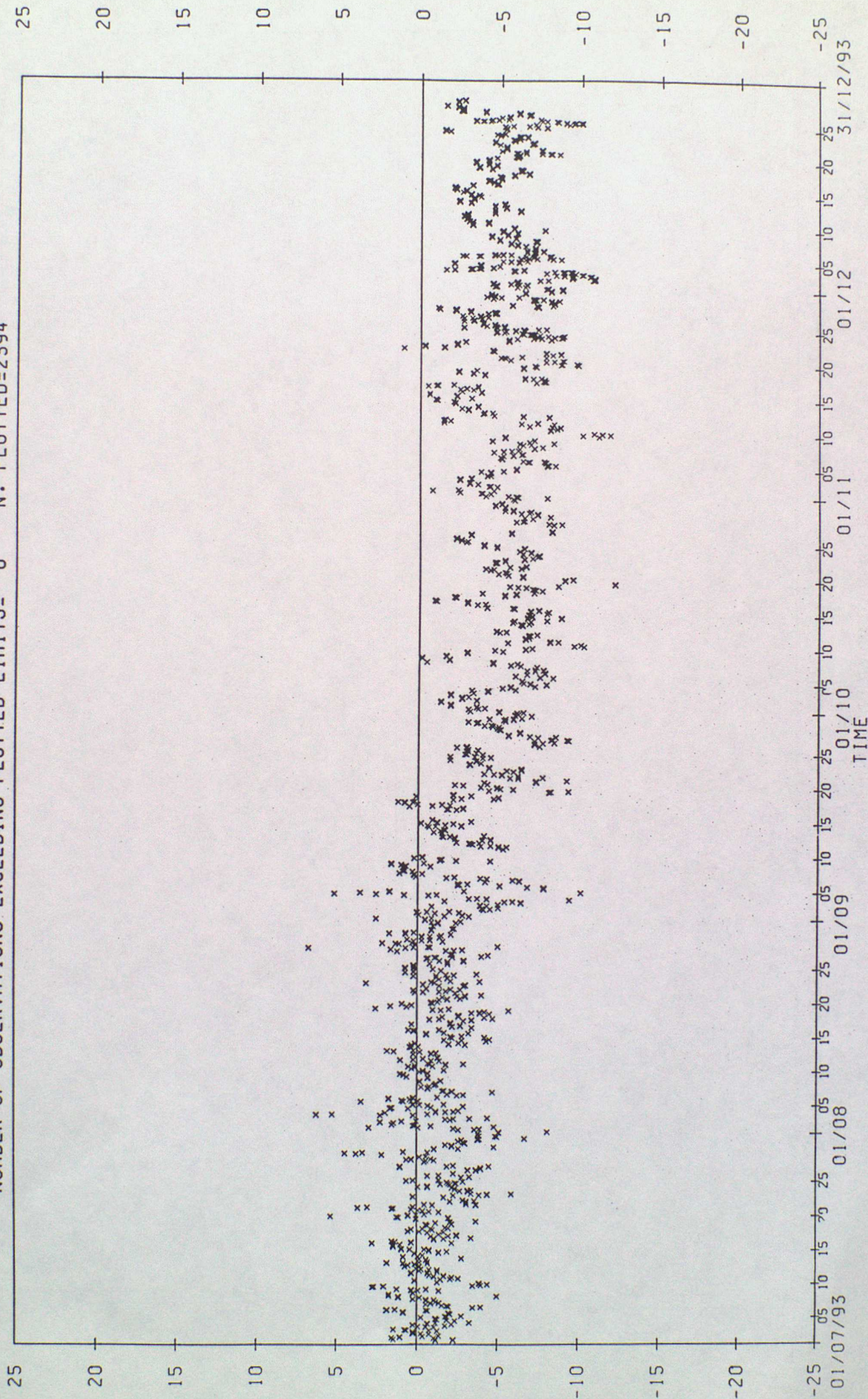
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 44513 0-B  
 VARIABLE : WIND SPEED IN UNITS OF MS-1  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED=1323





BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 55583  
VARIABLE : WIND SPEED IN UNITS OF MS-1  
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED=2394

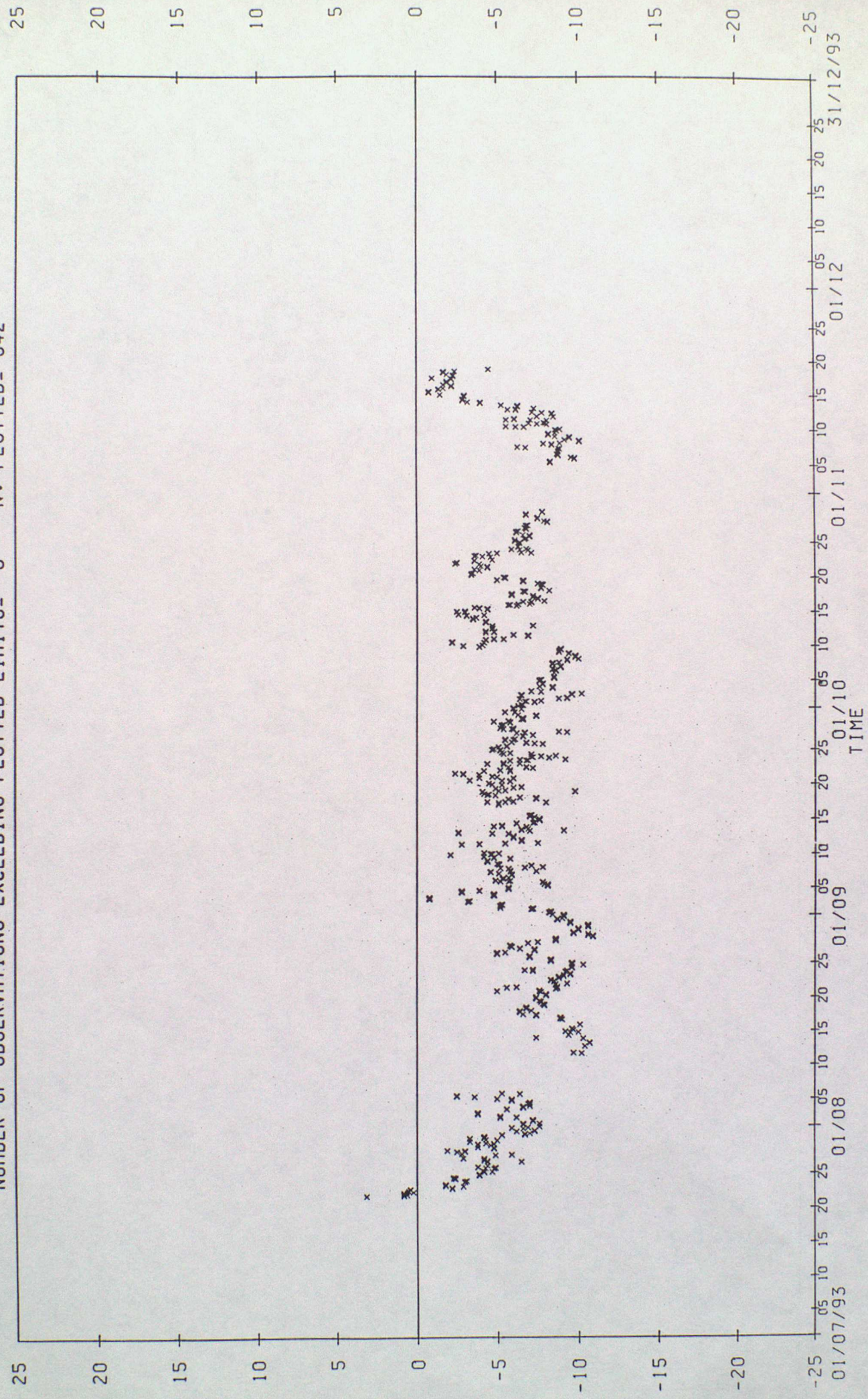




BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: 56513  
 VARIABLE : WIND SPEED IN UNITS OF MS-1  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 842

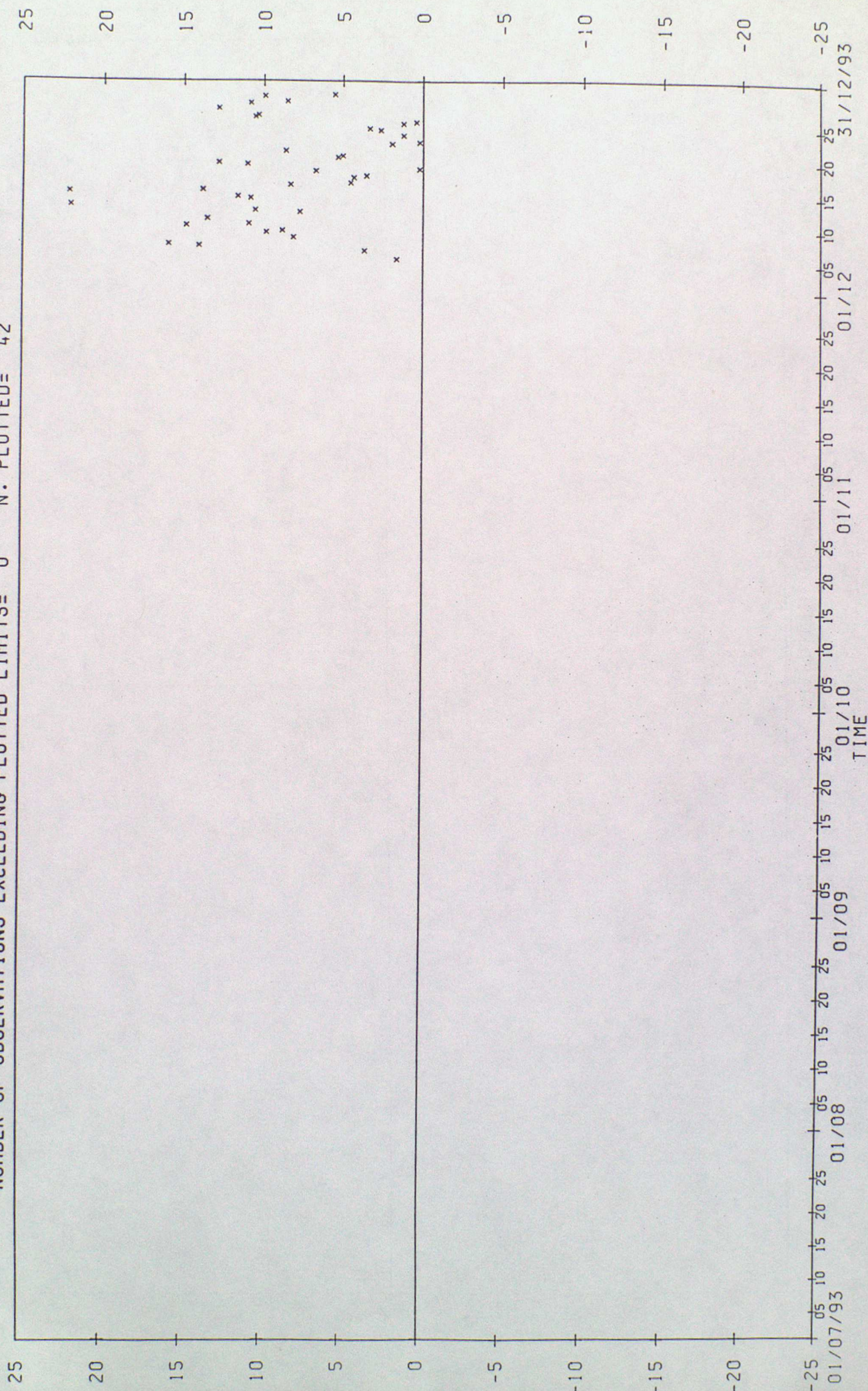
O-B

O-B





0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: DFCG  
 VARIABLE : WIND SPEED IN UNITS OF MS-1  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 42  
 0-B



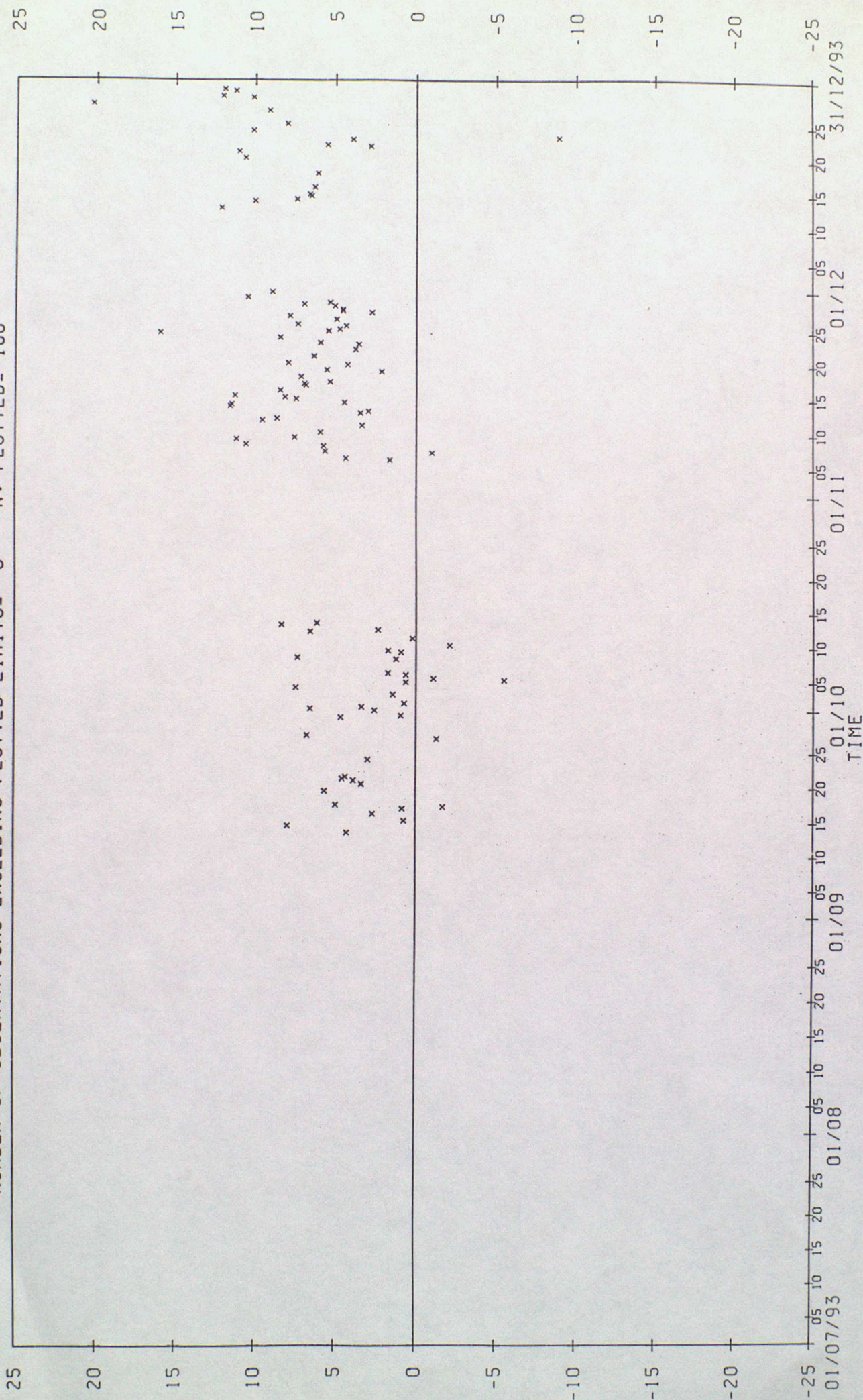


# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: ELDU4

VARIABLE : WIND SPEED IN UNITS OF MS-1

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 108

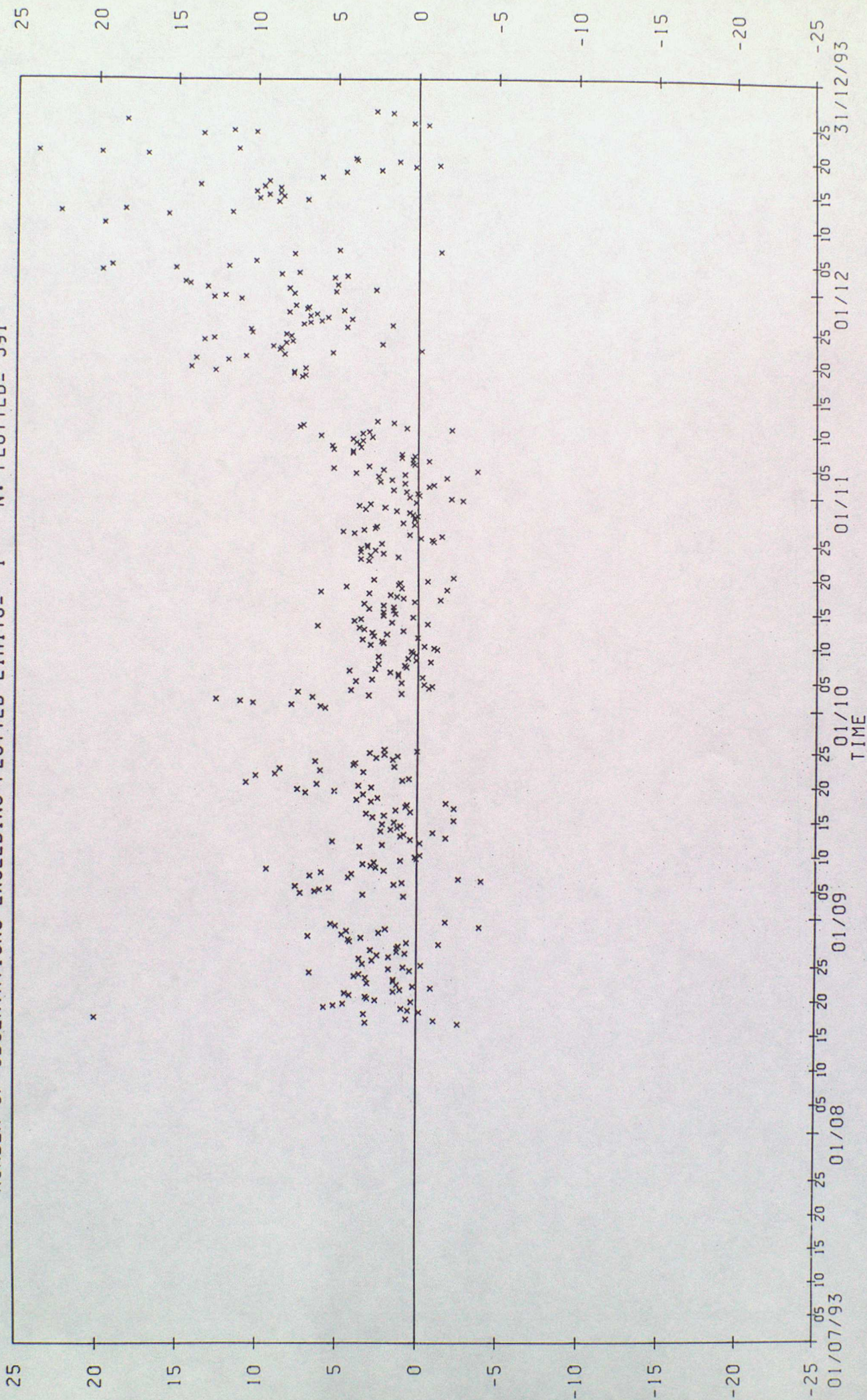


0-B

0-B



0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: ELLE9  
 VARIABLE : WIND SPEED IN UNITS OF MS-1  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 1 N. PLOTTED= 391





# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

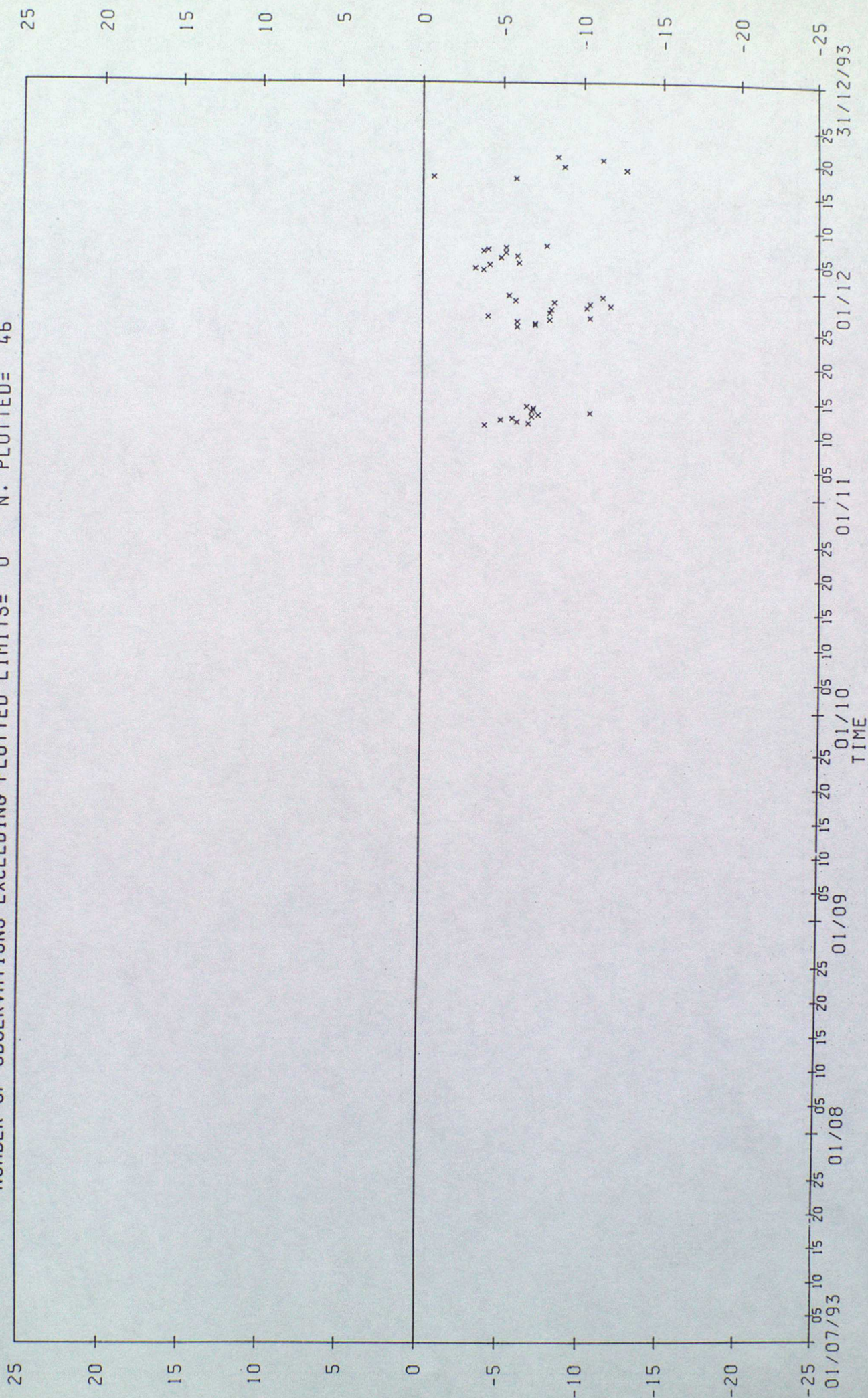
0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: P3LE5

0-B

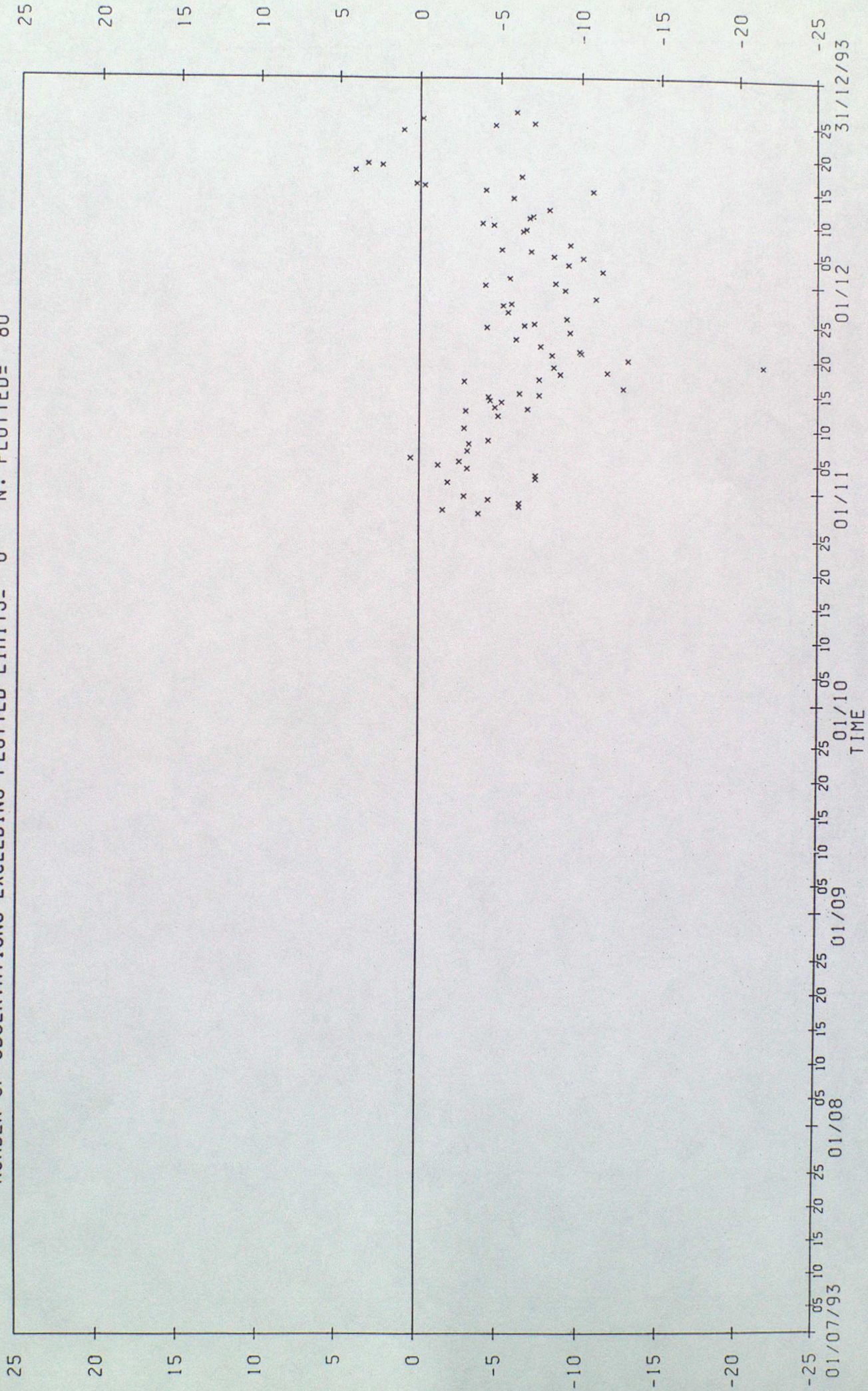
VARIABLE : WIND SPEED IN UNITS OF MS-1

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 46





0-B  
BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: UTNT  
VARIABLE : WIND SPEED IN UNITS OF MS-1  
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 80





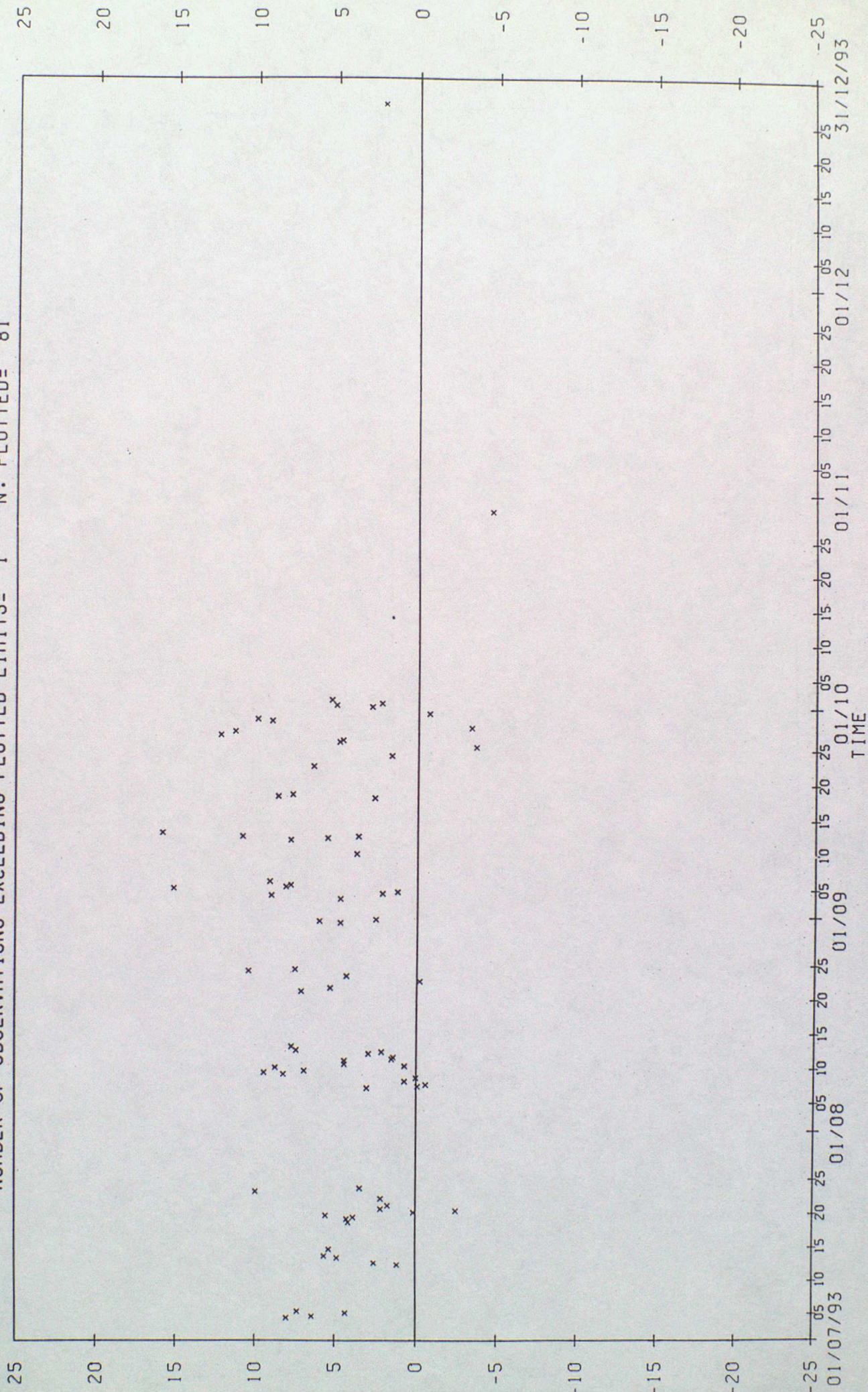
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: VJBE

VARIABLE : WIND SPEED IN UNITS OF MS-1

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 1 N. PLOTTED= 81



0-B

31/12/93

01/12

01/11

01/10

01/09

01/08

01/07/93

TIME

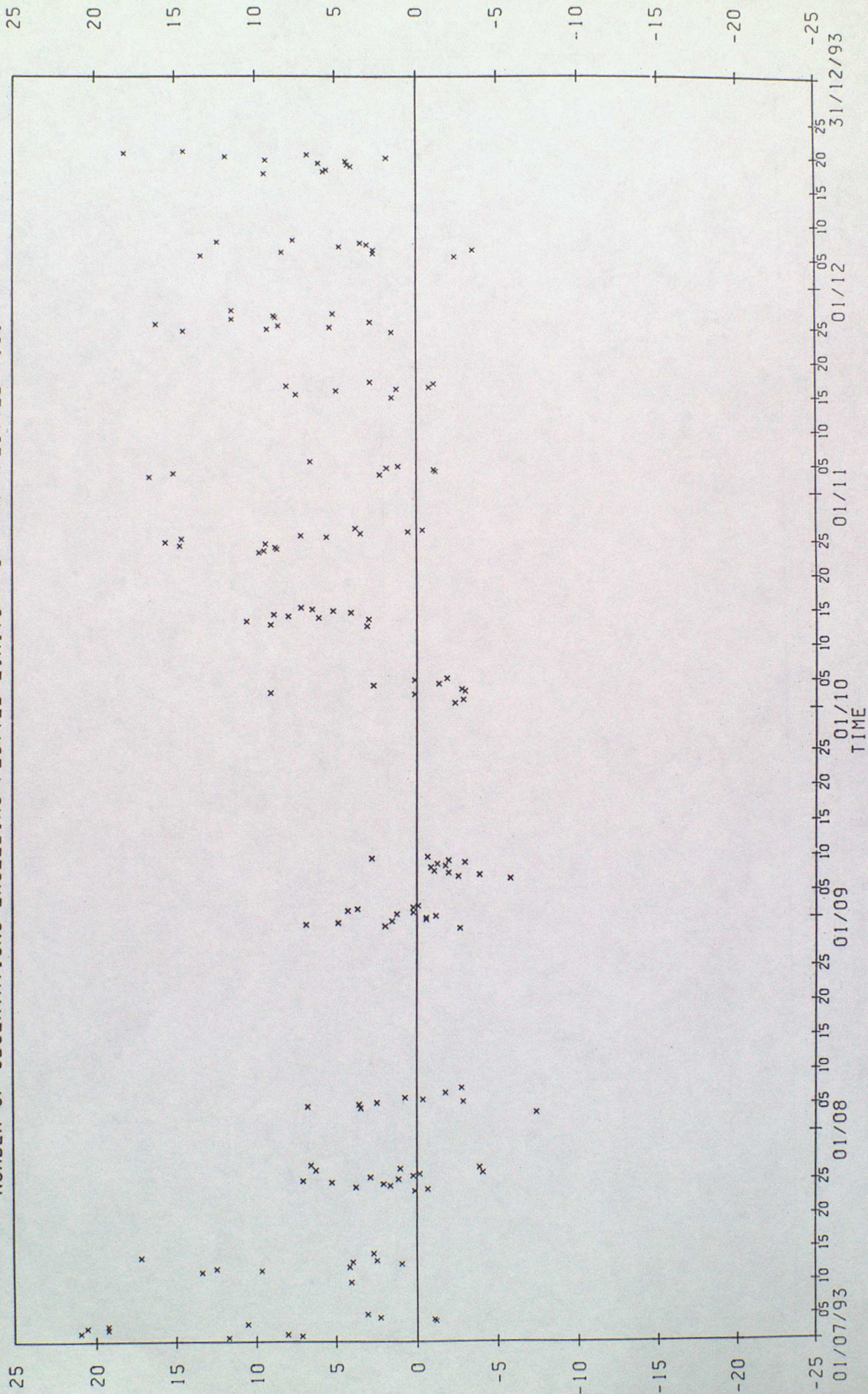


# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: VMAL

VARIABLE : WIND SPEED IN UNITS OF MS-1

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 161





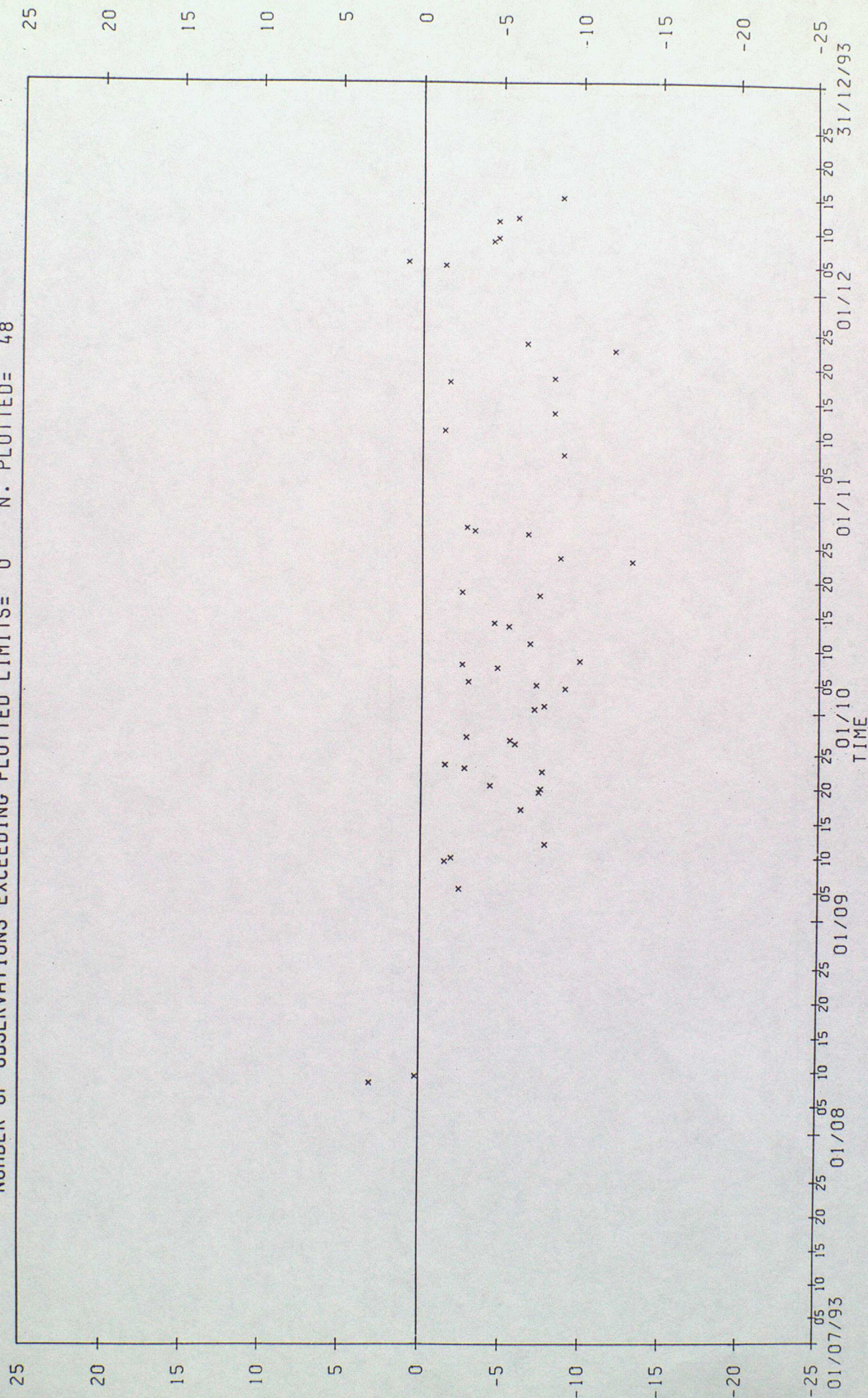
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: VOXC

0-B

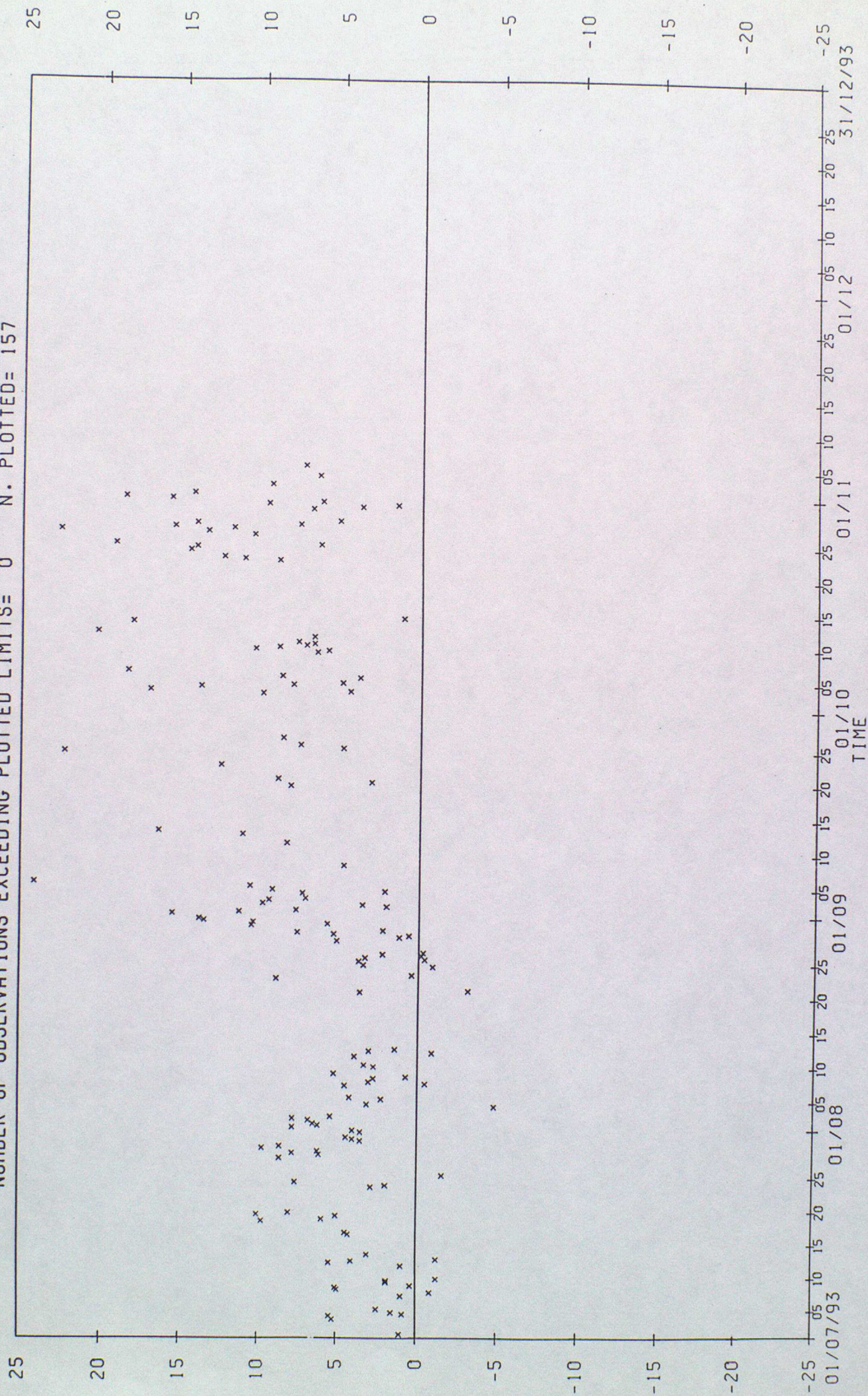
VARIABLE : WIND SPEED IN UNITS OF MS-1

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 48





0-B  
BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: VRSM  
VARIABLE : WIND SPEED IN UNITS OF MS-1  
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 157  
0-B





# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

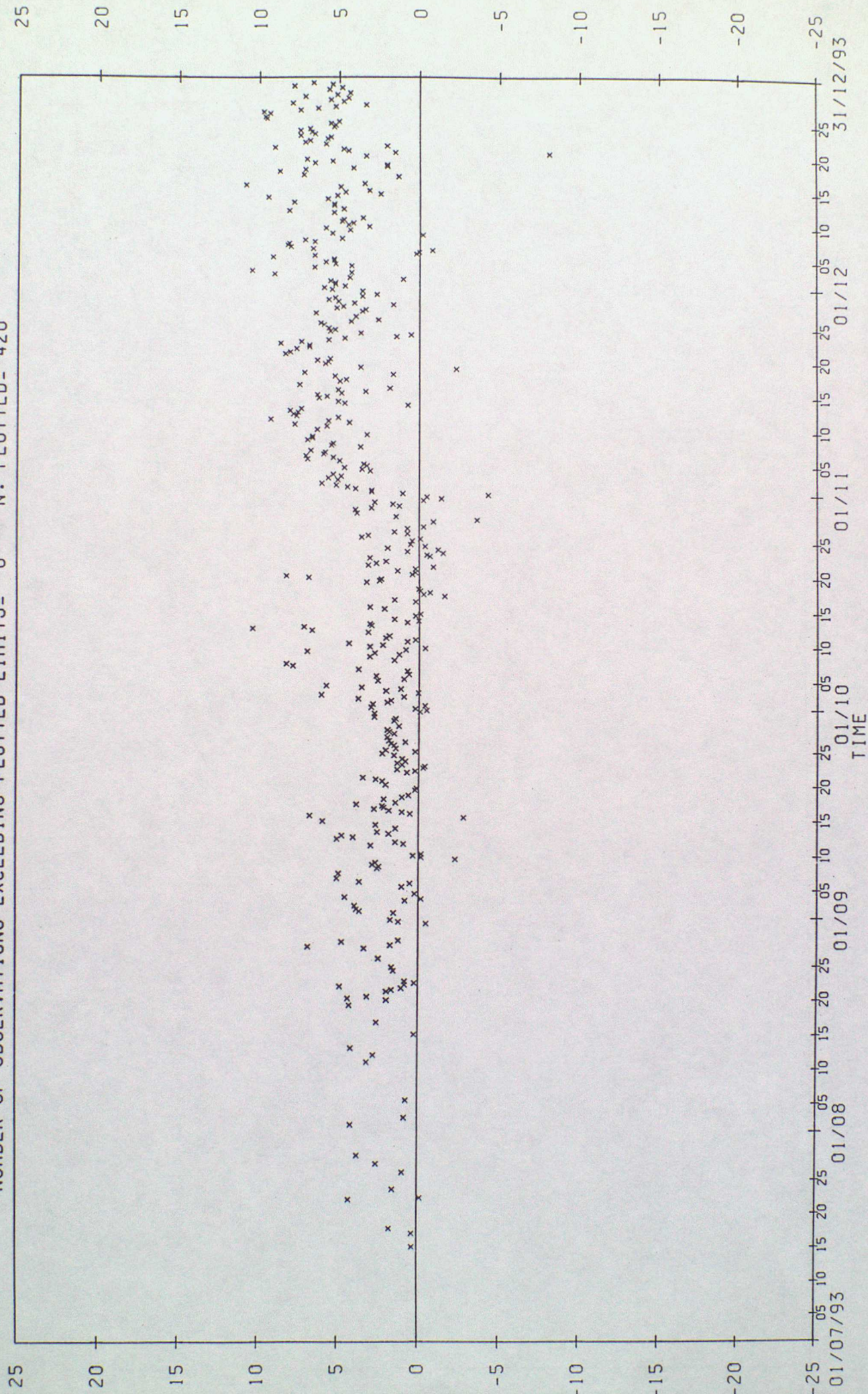
0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 3EZ7

0-B

VARIABLE : WIND SPEED IN UNITS OF MS-1

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 420





0-B

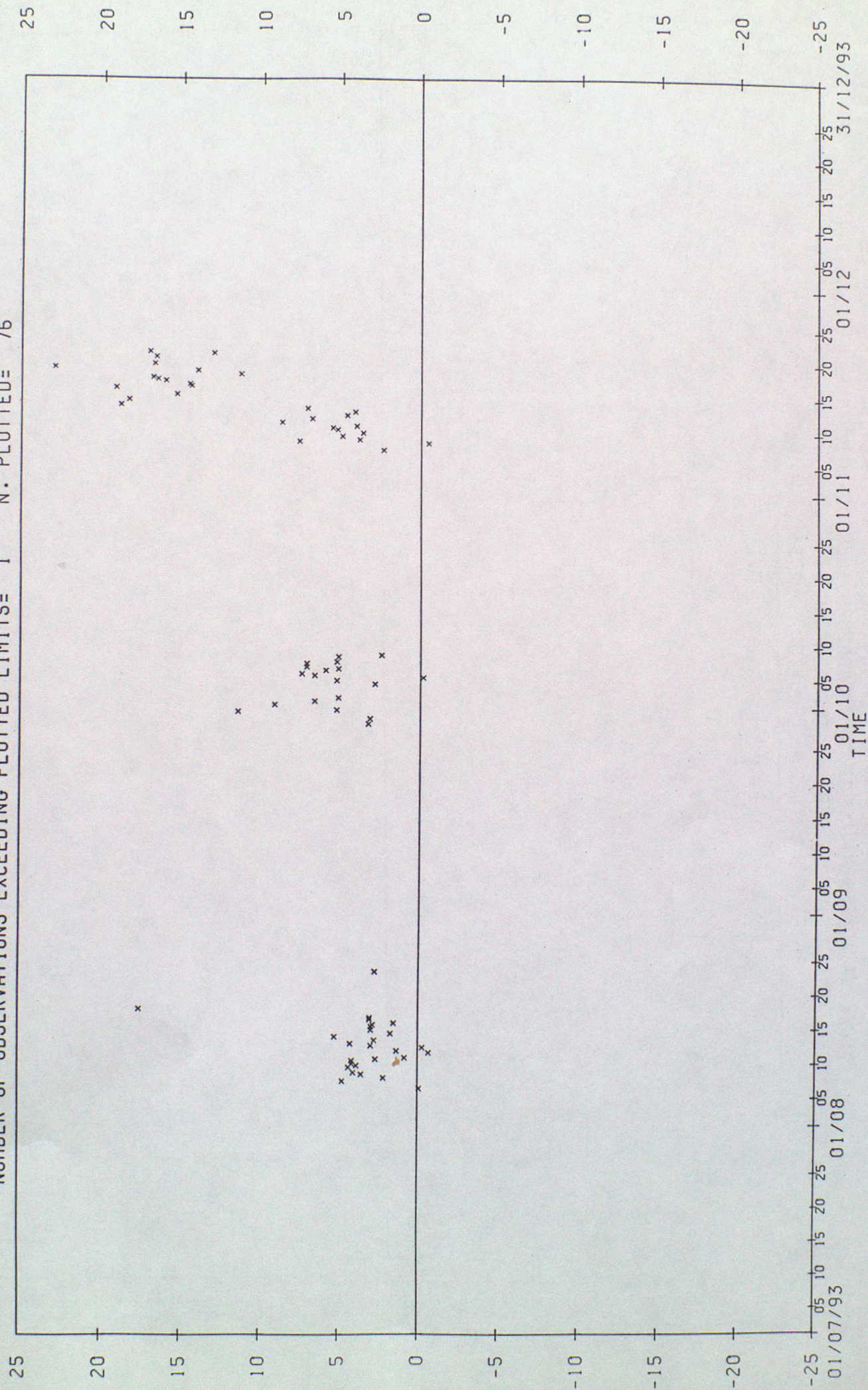
BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 3FCN3

0-B

VARIABLE : WIND SPEED IN UNITS OF MS-1

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 1 N. PLOTTED= 76



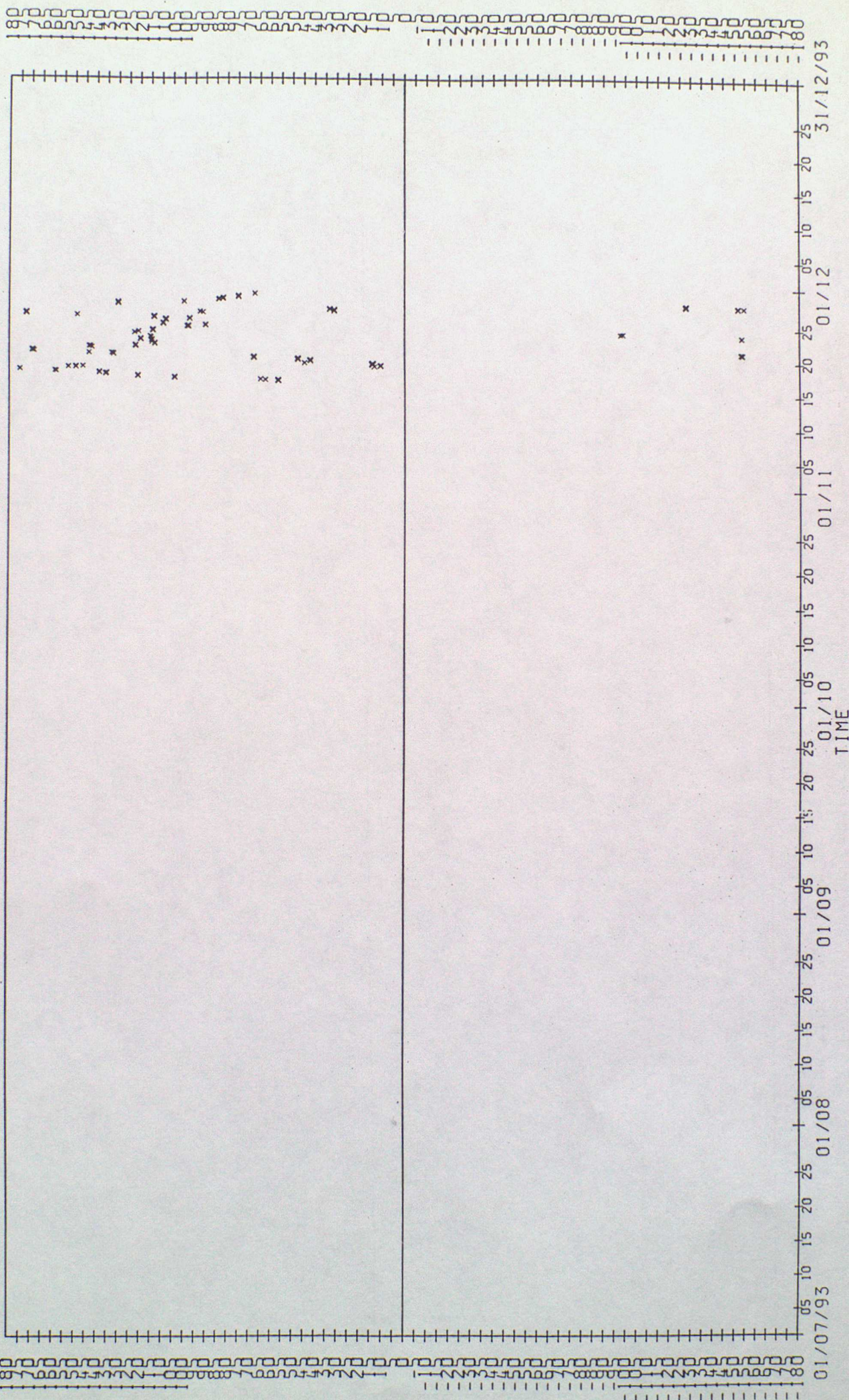


# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: 21528

VARIABLE : DIRECTION IN DEG. IF SPEED >5 MS-1

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 132



0-B

0-B



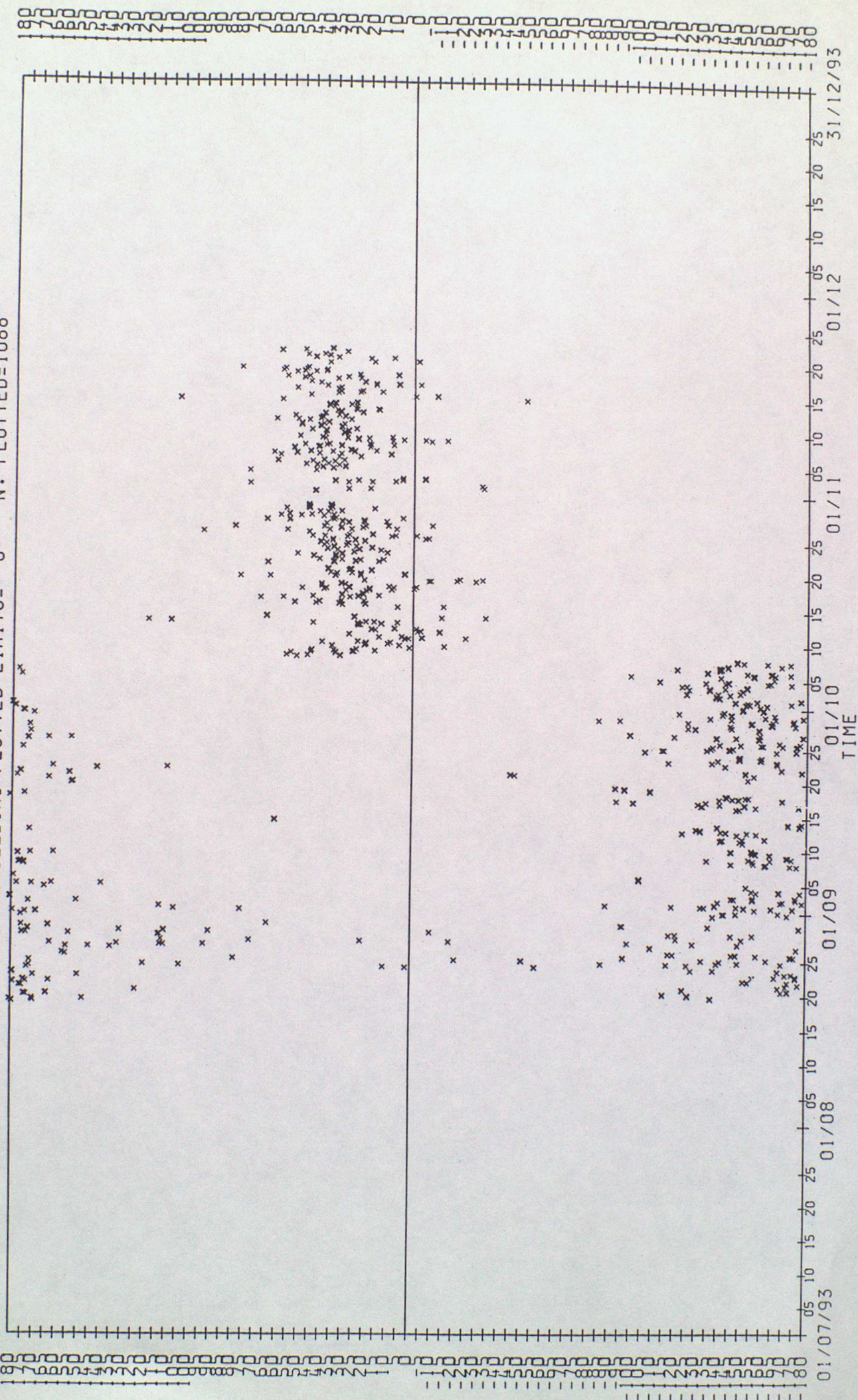
# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 44513

0-B

VARIABLE : DIRECTION IN DEG. IF SPEED >5 MS-1

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED=1088





# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

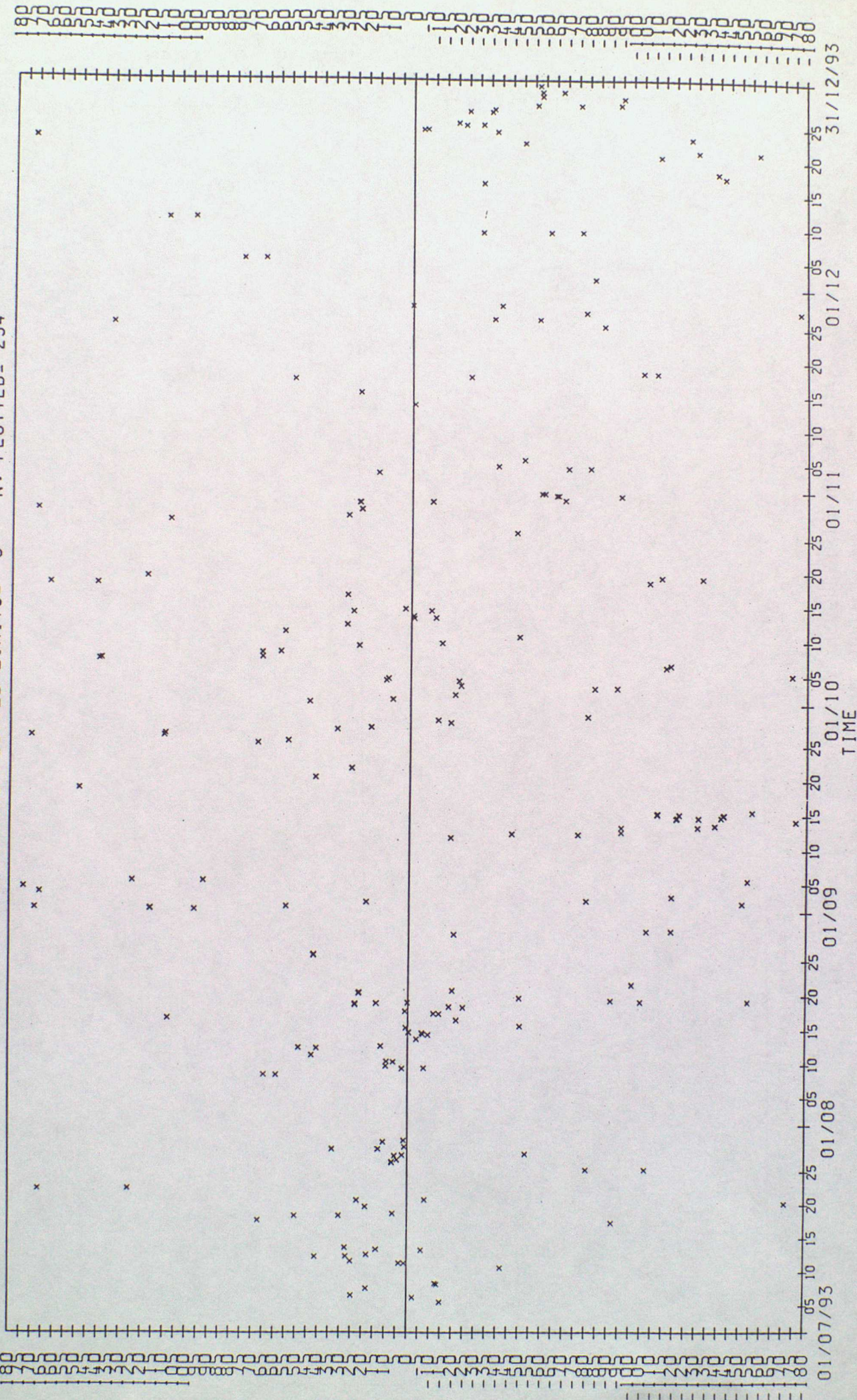
0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 52004

0-B

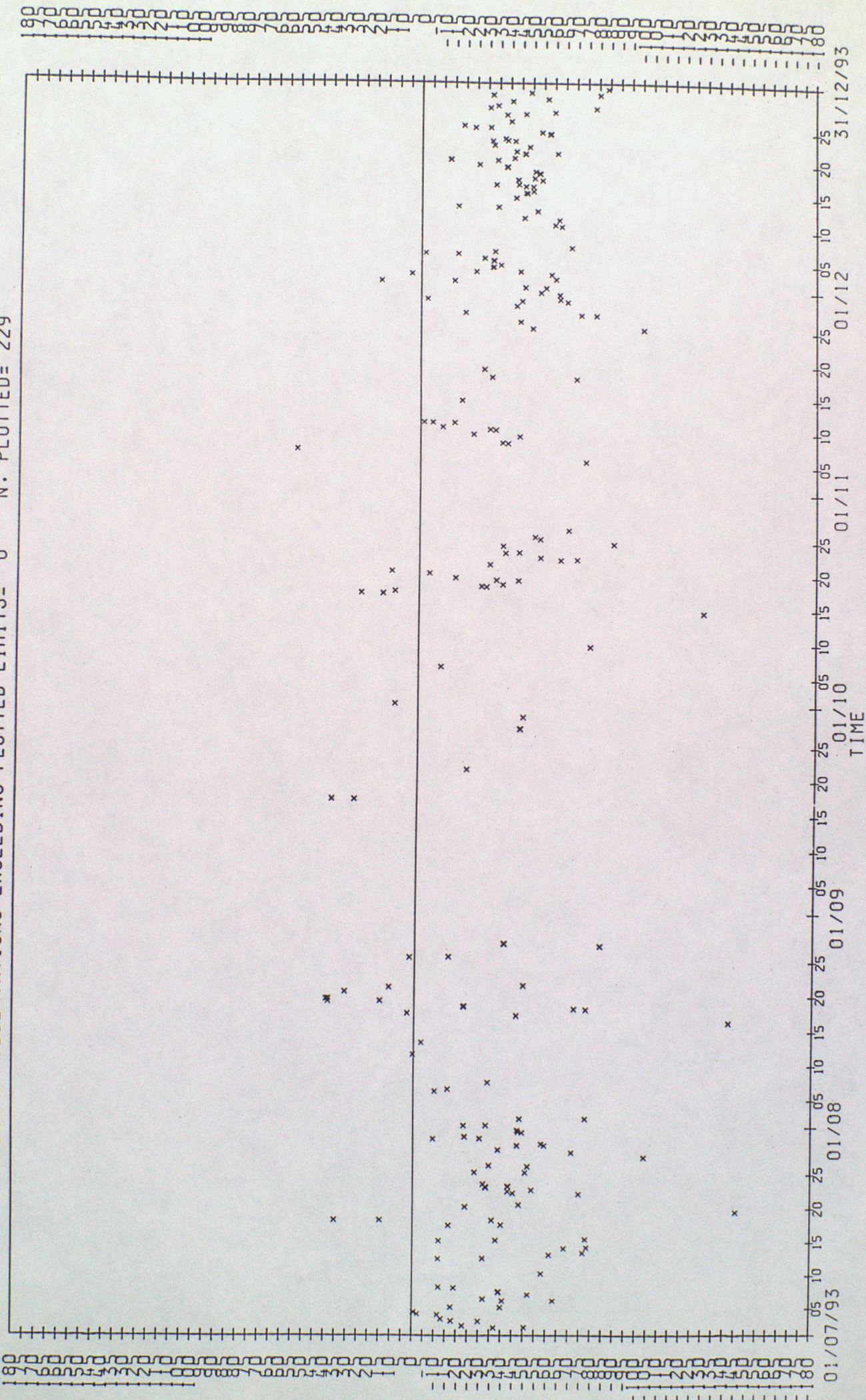
VARIABLE : DIRECTION IN DEG. IF SPEED >5 MS-1

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 234





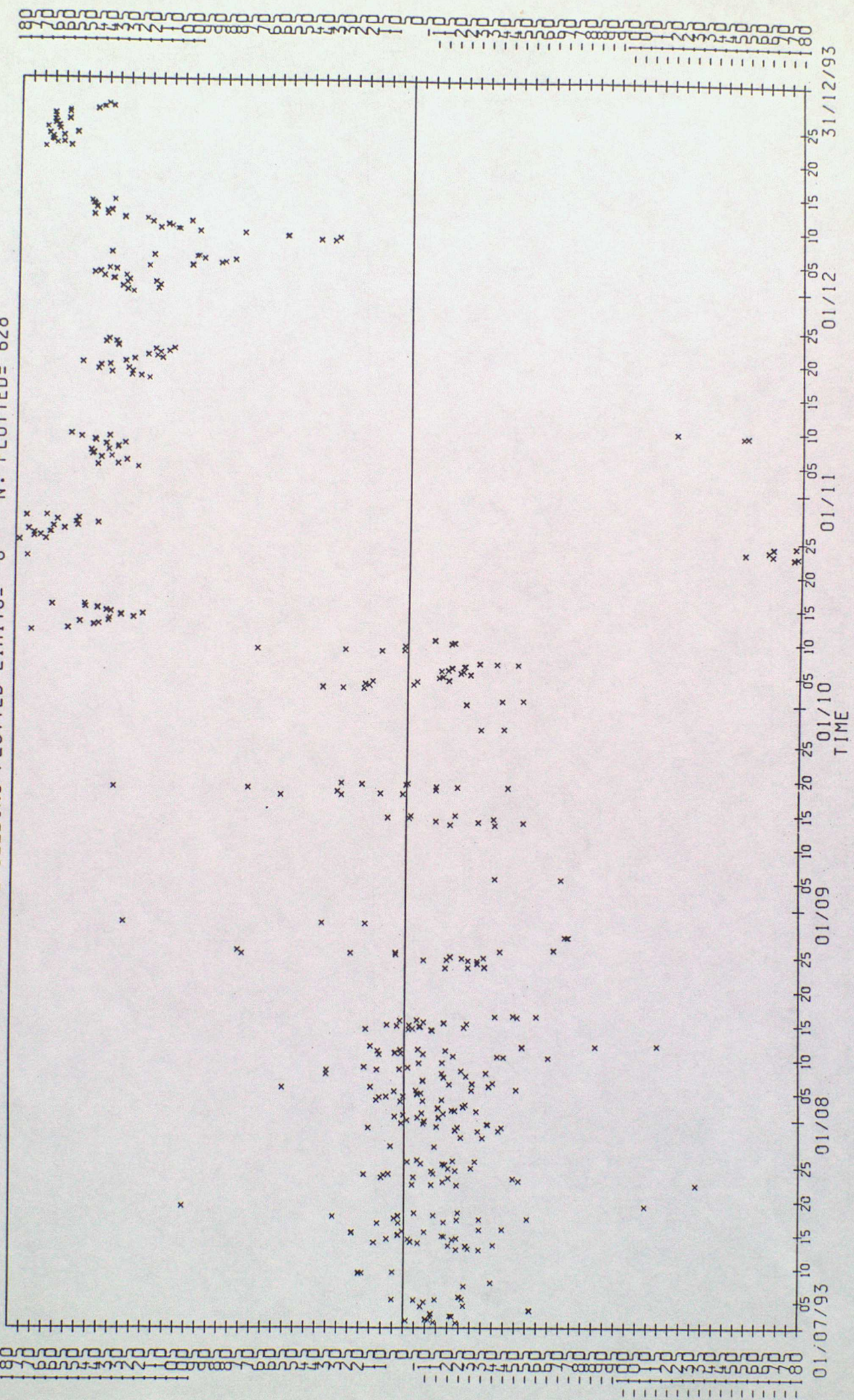
0-B  
BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 52006  
VARIABLE : DIRECTION IN DEG. IF SPEED >5 MS-1  
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 229  
0-B





# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 52521  
 VARIABLE : DIRECTION IN DEG. IF SPEED >5 MS-1  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 628



0-B

0-B

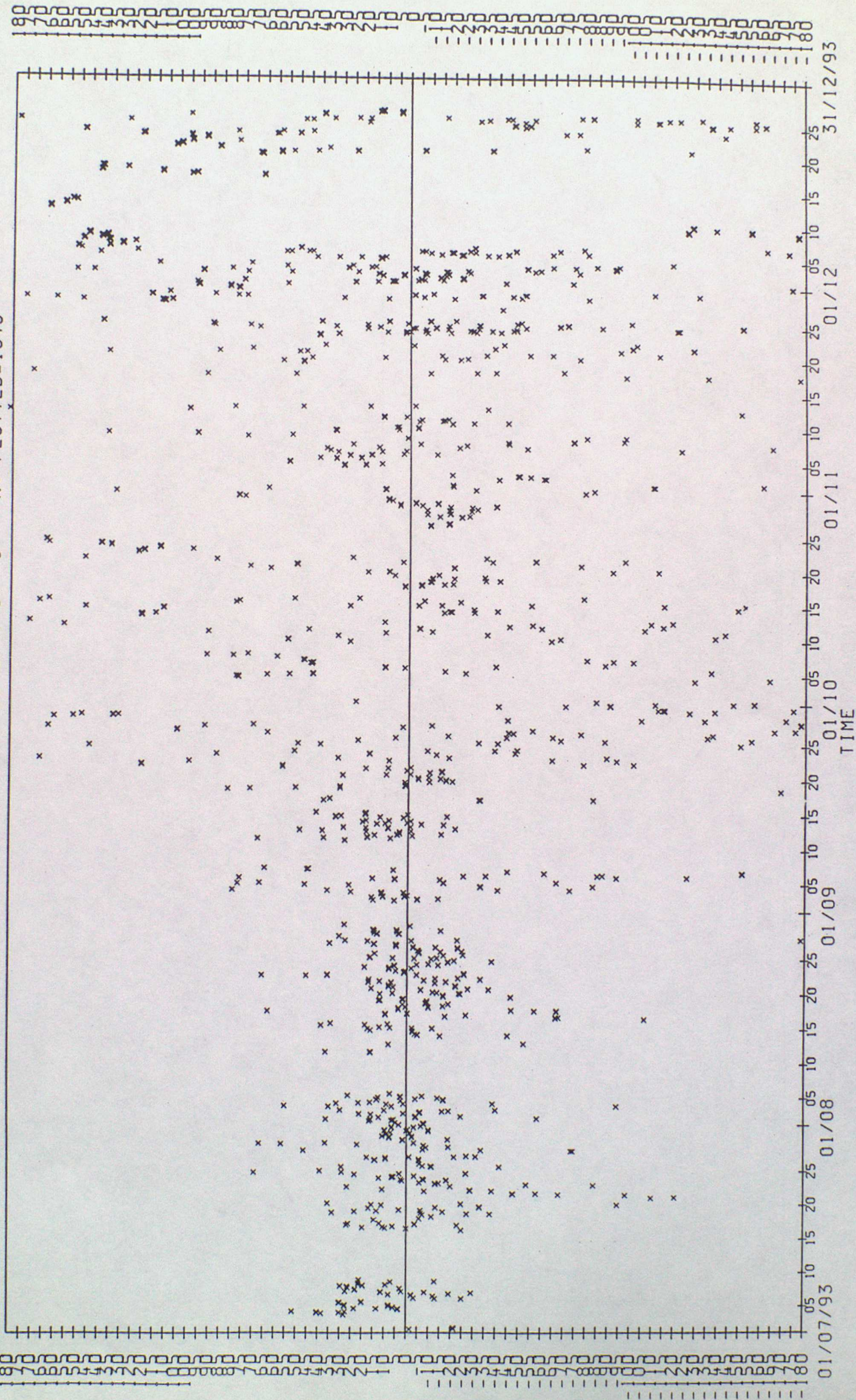


# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 55583

VARIABLE : DIRECTION IN DEG. IF SPEED >5 MS-1

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED=1543



0-B

0-B



# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

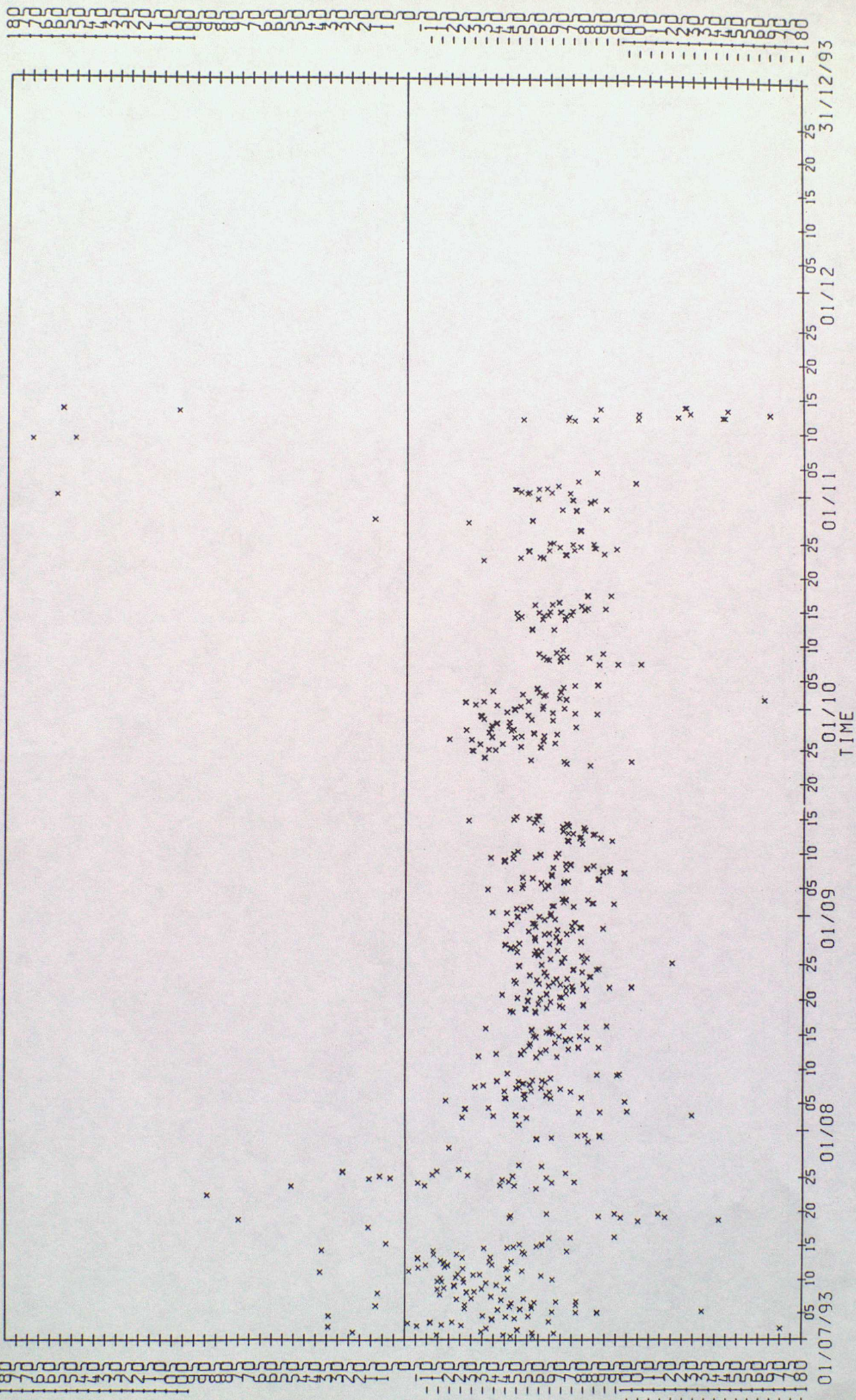
TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(O-B) FOR IDENTIFIER: 55589

O-B

VARIABLE : DIRECTION IN DEG. IF SPEED >5 MS-1

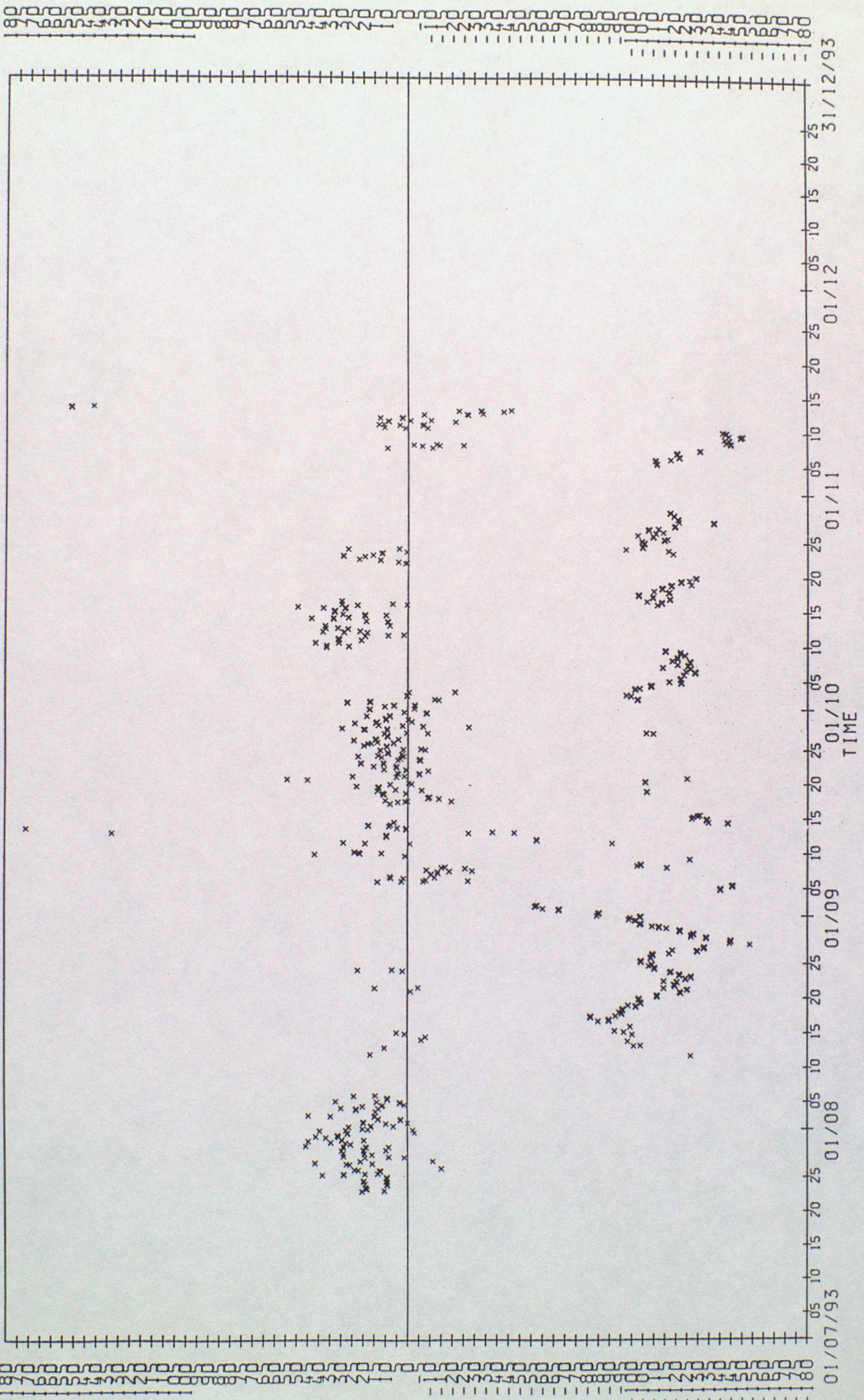
NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 677

O-B





0-B  
 BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA  
 TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: 56513  
 VARIABLE : DIRECTION IN DEG. IF SPEED >5 MS-1  
 NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 756  
 0-B





# BRACKNELL MONITORING INFORMATION FOR MARINE SURFACE DATA

0-B

TIME SERIES OF OBSERVATION MINUS BACKGROUND INCREMENTS(0-B) FOR IDENTIFIER: DCG2959D

0-B

VARIABLE : DIRECTION IN DEG. IF SPEED >5 MS-1

NUMBER OF OBSERVATIONS EXCEEDING PLOTTED LIMITS= 0 N. PLOTTED= 174

