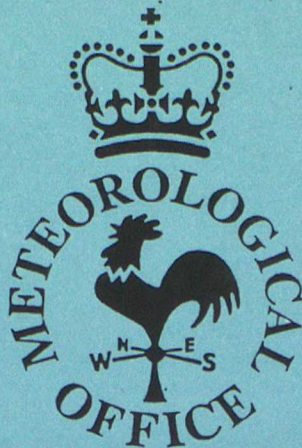


DUPLICATE ALSO



TWENTY - EIGHTH QUARTERLY REPORT
ON DRIFTING BUOYS

IN THE NORTH ATLANTIC

25-60 degN, 60 degW to 10 degE

OCTOBER TO DECEMBER 1993

Headquarters, Bracknell

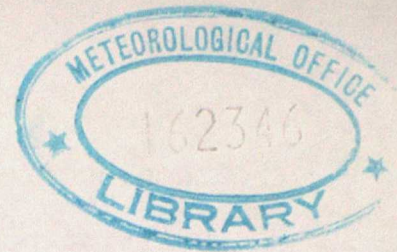
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Produced by

- P.Ellis
Meteorological Office,
Met O (OP) 3a, Room 129,
London Road,
Bracknell,
Berkshire, RG12 2SZ,
United Kingdom.

Tel - 0344 - 854446

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Permission to quote from it should be obtained from the
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1. INTRODUCTION

Drifting buoys operated by European countries, the United States, Canada and E.G.O.S. (European Group on Ocean Stations) provide valuable meteorological data in the North Atlantic Ocean. This report is a summary of the performance of these buoys giving information on the number of buoys operating, the accuracy of reported locations and data quality, timeliness and availability. It is compiled by looking at observations received in the Met. Office Meteorological Data Bank (M.D.B.) and by comparisons of observations with background fields from the Met. Office forecast model. Additional information on buoy operations and data quality is extracted from E.G.O.S. Technical Secretariat reports.

2. SUMMARY OF PRESSURE PERFORMANCE

(a) Buoy deployments, etc.

North of 50deg N

There were 15 buoys reporting pressure at the beginning of the period and 15 at the end. (Buoy 44613 which had a mean position north of 50 degN last quarter has drifted south this quarter and is included in the statistics below.). Buoy 65562 drifted out of the reporting area during the quarter. 12 new buoys were deployed during the period (44614, 44616, 44624, 44726, 44728, 64585, 64587, 65503, 65506, 65508, 65581 and 65592). 12 buoys ceased reporting (44614, 44616, 44624, 44770, 62673, 64539, 64540, 64542, 64543, 64585, 65596 and 65597). (N.B. Buoys 44614, 44616 and 44624 ceased reporting pressure on 25/11/93, 14/12/93 and 27/12/93 respectively, but continued to report other elements).

South of 50deg N

There were 12 buoys reporting pressure at the beginning of the period and 13 at the end. (Buoy 62514 was overlooked in the last report but has been included in this report). 12 new buoys were deployed (13533, 13534, 13556, 13561, 13562, 13564, 13566, 44774, 62501, 62502, 62524 and 62695). 11 buoys ceased reporting (12501, 12502, 13533, 13534, 13562, 13564, 13566, 61542, 62518, 62694 and 62805). (N.B. Buoy 12501 ceased reporting pressure on 10/12/93 but continued to report other elements until the end of the quarter.)

(b) Location Accuracy

The location accuracy was better than last quarter (38 out of 44) with 49 out of 51 of the buoys reporting having a '% of observations with acceptable positions' greater than 95%. There were 11 gross errors in location during the quarter, compared with 45 last quarter (see under Data Quality).

(c) Data timeliness

(see note 9 of section 5 for definition of terms.)

| Timeliness | Last quarter. | This quarter. |
|--------------------|---------------|---------------|
| Very Good | 27 | 26 |
| Good | 9 | 8 |
| Satisfactory | 6 | 6 |
| Poor | 1 | 1 |
| Very Poor | 1 | 10 |
| Total no. of buoys | 44 | 51 |

(d) Data availability

(see note 9 of section 5 for definition of terms.)

| Availability | South of 50 degN | | North of 50 degN | |
|--------------|------------------|-----------------|------------------|-----------------|
| | Previous Quarter | Present Quarter | Previous Quarter | Present Quarter |
| Very Good | -- | -- | 4 | 11 |
| Good | 1 | 4 | 6 | 3 |
| Satisfactory | 1 | 2 | 11 | 8 |
| Poor | 16 | 12 | 4 | 3 |
| Very Poor | -- | 6 | 1 | 2 |

The total number of buoy days in the quarter was 3,106 [obtained by summing the number of reporting days for each buoy] (last quarter the total was 2,493) and the number of 'buoy hours' with at least one observation was 36,480 (compared with 27,935 last quarter). Thus, the mean number of hours per day, for days with at least one observation (averaged over all buoys operating in the area) was 11.75 (last quarter the figure was 11.21).

(e) Data Quality - Pressure

Revised RMS Differences

The technique used to assess the quality of pressure data in this report is based on the Revised RMS differences between the observations and the background field from the Global Forecast Model (see note 8 in Explanatory Notes). For buoys south of 50 degN the Revised RMS differences should be less than 2.0 hPa and for buoys north of 50 degN they should be below 3.0 hPa. The buoys whose revised RMS difference were found to lie outside these limits have had their performance described as 'suspect' and are included in the section below. Examination of the time-series plots (see Annex B) indicates the performance of these buoys:-

- 12501 - Pressure data became erratic from 8/10 until it stopped reporting on 10/12.
- 12502 - Pressure data showed a bias of -2.8 hPa from 1/10 until it stopped reporting on 14/10.
- 44613 - Data showed a slightly larger than normal scatter throughout the period.
- 44614 - Pressure data became erratic from 11/11 and were removed from the GTS on 24/11.
- 44616 - Pressure data became erroneous on 22/11 and were removed from the GTS from 13/12.
- 44726 - Pressure data were erratic from 24/12 until the end of the quarter.
- 47606 - Data became erratic towards the end of the quarter.
- 62514 - Pressure data showed a bias of 1.7 hPa throughout the quarter.
- 62694 - Data became slightly erratic from 25/11 until it stopped reporting on 29/12.
- 65581 - Pressure data showed a larger than normal scatter throughout the quarter.
- 65596 - Pressure data became erroneous towards the end of the buoy's life on 4/11.
- 65597 - Pressure data became erroneous towards the end of the buoy's life on 29/12.

Biases

14 buoys (excluding those mentioned in the previous section) showed pressure biases greater than 0.5 hPa (pressure biases are determined using the mean value for unflagged data from Annex A). Those buoys whose pressure data showed a bias of greater than 0.5 hPa have also had their performance described as 'suspect'.

| WMO No. | Position | Buoy bias(hPa) | Ship bias(hPa) | Period of reports |
|------------|-------------|-------------------|-------------------|----------------------|
| 13566 | SCOS | +0.7 | -0.2 | 19/10 - 4/11 |
| 44624 | SOBA | -0.8 | +0.4 | 29/11 - 31/12 |
| 61542 | S of France | -0.9 | +1.2 | 1/10 - 28/11 |
| 62501 | SCOS | +0.9 | +0.4 | 5/10 - 31/12 |
| 62518 | SCOS | +0.7 | +0.3 | 1/10 - 28/11 |
| 62520 | N of SCOS | +0.6 | +0.5 | 1/10 - 31/12 |
| 62673 | SOBA | +1.0 | -0.3 | 1/10 - 16/12 |
| 64539 | SOBA | +0.7 | -0.6 | 1/10 - 9/12 |
| 64540 | W of SOBA | +0.7 | +1.9 | 1/10 - 26/11 |
| 64542 | SOBA | +0.9 | +0.3 | 1/10 - 30/10 |
| 64585 | SOBA | +0.8 | -0.5 | 26/11 - 1/12 |
| 65503 | SOBA | +1.4 | +0.2 | 29/11 - 1/12 |
| 65506 | SOBA | -0.6 | -0.3 | 26/11 - 31/12 |
| 65592 | SOBA | -0.9 | -0.2 | 3/11 - 31/12 |

The ship bias represents the mean pressure biases reported from ships within a radius of 500 nautical miles of the mean position of each buoy.

Gross errors

The observations which appear to lie outside the expected distribution - the 'gross' errors (see Time-series graphs) - have been ringed. (The erroneous observations which occurred at the end of the life of buoys 12501, 44614, 44616, 44624, 44726, 65596 and 65597 have not been included in this section.) The observations have been individually examined to see whether the errors lie with the pressure, location or the background field. Out of 129 occasions the results are as follows -

| ERROR | NUMBER Last quarter | NUMBER This quarter | COLLECTING CENTRE |
|-------------------------------|------------------------|------------------------|----------------------|
| bg field | 0 | 2 | - |
| location | 28 | 0 | Oslo |
| location | 15 | 1 | Sondre Stromfjord |
| location | 2 | 5 | Paris |
| location | 0 | 5 | US Air Force |
| location | 0 | 0 | Washington |
| pressure | 24 | 61 | Oslo |
| pressure | 7 | 2 | Sondre Stromfjord |
| pressure | 49 | 41 | Paris |
| pressure | 30 | 5 | US Air Force |
| pressure | 0 | 7 | Washington |
| Total no. of buoy hours | 27,935 | 36,480 | |

During the quarter 116 gross pressure errors were transmitted as compared to 110 last quarter. The number of gross location errors from the Local User Terminals decreased (11 compared to 45 last quarter).

(3) Air Temperatures and Sea Surface Temperatures

The following table shows the mean and standard deviation of observation minus background differences for air temperatures and sea surface temperatures. Figures in brackets are for the observations from voluntary observing ships within a radius of about 500 nautical miles of the mean position of each buoy.

(Note : The calculations below include gross errors. Therefore, in some instances, the figures may be slightly misleading.)

| WMO No. | Air Temperature | | No. of | Sea Surface Temperature | | No. of |
|------------|-----------------|----------|--------|-------------------------|----------|--------|
| | Mean | St.Dev | Obs | Mean | St.Dev | Obs. |
| 12501 | -0.1(1.4) | 1.7(2.7) | 810 | -0.1(0.0) | 0.4(2.3) | 874 |
| 12502 | -0.5(1.6) | 1.1(4.0) | 60 | 0.1(-0.3) | 0.3(2.2) | 68 |
| 13533 | - - | - - | - | 0.0(-0.2) | 0.2(1.6) | 109 |
| 13534 | - - | - - | - | -0.1(-0.4) | 0.2(2.8) | 61 |
| 13556 | - - | - - | - | 0.1(-0.3) | 0.2(1.6) | 652 |
| 13561 | - - | - - | - | 0.0(-0.2) | 0.3(2.9) | 651 |
| 13562 | - - | - - | - | 0.2(-0.3) | 0.2(2.7) | 89 |
| 13564 | - - | - - | - | -0.3(-0.3) | 0.4(2.3) | 86 |
| 13566 | - - | - - | - | -0.3(-0.4) | 0.2(2.6) | 43 |
| 44515 | 6.0(1.4) | 9.2(3.1) | 744 | -0.3(0.3) | 0.3(3.5) | 1019 |
| 44613 | 0.0(0.2) | 1.3(2.1) | 2889 | 1.6(-0.3) | 2.4(2.5) | 1192 |
| 44614 | 7.8(-0.6) | 7.5(1.9) | 2701 | -0.2(1.0) | 0.4(3.5) | 1006 |
| 44616 | 2.9(-0.2) | 2.1(2.9) | 2658 | -0.2(0.4) | 0.3(3.4) | 1838 |
| 44624 | 0.5(-0.4) | 2.3(1.8) | 1257 | -0.5(0.9) | 1.3(3.2) | 810 |
| 44726 | 12.8(-0.5) | 4.6(2.4) | 1283 | -0.1(0.6) | 1.0(3.1) | 865 |
| 44728 | 0.1(0.5) | 1.2(2.1) | 1488 | -0.1(1.0) | 0.3(3.5) | 976 |
| 44765 | -29.5(1.2) | 7.5(1.5) | 16 | -0.4(0.0) | 0.2(3.0) | 675 |
| 44770 | 0.3(0.6) | 1.0(1.1) | 1371 | 0.1(0.6) | 0.5(1.8) | 812 |
| 44774 | -0.1(0.8) | 0.7(1.6) | 219 | -0.2(-0.2) | 0.4(1.7) | 185 |
| 44775 | 3.9(1.3) | 2.4(3.6) | 2591 | -0.1(0.0) | 0.7(2.3) | 1297 |
| 44777 | -0.6(0.0) | 1.7(2.3) | 3068 | -0.4(0.3) | 0.9(1.8) | 1663 |
| 44778 | 18.1(0.2) | 6.9(2.1) | 1298 | 0.1(0.5) | 0.8(3.6) | 2857 |
| 44779 | 4.1(-0.2) | 6.6(2.9) | 3693 | 0.1(0.2) | 1.0(3.5) | 2517 |
| 47606 | -5.2(1.7) | 5.9(2.6) | 60 | - - | - - | - |

Statistics of (ob-bg) differences for buoys reporting this
quarter and all ships within 500 nautical miles

| WMO No. | Air Temperature | | No. of | Sea Surface Temperature | | No. of |
|------------|-----------------|----------|--------|-------------------------|----------|--------|
| | Mean | St.Dev | Obs | Mean | St.Dev | Obs. |
| 61542 | 1.5(1.7) | 2.2(2.5) | 208 | -3.3(-0.3) | 2.9(2.0) | 224 |
| 62501 | - - | - - | - | -0.1(0.0) | 0.2(2.2) | 1143 |
| 62502 | - - | - - | - | -0.2(0.0) | 0.2(2.3) | 596 |
| 62514 | - - | - - | - | -0.6(0.0) | 2.1(2.5) | 198 |
| 62518 | - - | - - | - | 0.0(-0.1) | 0.3(2.7) | 422 |
| 62519 | - - | - - | - | -0.2(0.0) | 0.2(2.3) | 230 |
| 62520 | - - | - - | - | -0.6(0.1) | 1.3(1.9) | 345 |
| 62524 | 0.0(1.0) | 1.2(1.5) | 1401 | 0.0(-0.2) | 0.3(1.6) | 937 |
| 62673 | 2.0(0.5) | 3.8(2.6) | 1078 | 0.0(0.9) | 2.2(4.4) | 1010 |
| 62694 | -20.8(0.9) | 7.5(2.9) | 326 | 0.2(-0.3) | 0.8(3.0) | 658 |
| 62695 | 0.0(0.8) | 1.3(1.6) | 1064 | -0.3(-0.2) | 1.3(1.7) | 720 |
| 62711 | 4.6(0.5) | 3.0(2.1) | 3604 | 0.0(1.0) | 0.7(3.6) | 2006 |
| 62712 | 0.7(0.9) | 2.2(2.4) | 3481 | -0.3(0.9) | 1.9(4.7) | 1727 |
| 62805 | 0.3(1.1) | 2.2(1.5) | 899 | 0.6(-0.6) | 1.1(4.8) | 605 |
| 64539 | 1.9(0.7) | 1.2(2.5) | 1037 | -0.3(0.7) | 0.5(4.3) | 968 |
| 64540 | 2.2(1.7) | 4.3(2.6) | 817 | 0.7(-0.3) | 1.2(1.2) | 746 |
| 64542 | 0.0(0.5) | 1.1(2.0) | 410 | -0.1(0.1) | 0.3(1.4) | 405 |
| 64543 | 2.9(0.5) | 6.9(2.3) | 622 | -0.3(0.7) | 1.3(4.2) | 600 |
| 64585 | 0.1(0.5) | 1.5(2.0) | 77 | -0.1(0.5) | 0.1(4.2) | 62 |
| 64587 | 3.2(0.3) | 7.6(1.9) | 497 | 0.8(1.2) | 1.6(5.1) | 426 |

Statistics of (ob-bg) differences for buoys reporting this
quarter and all ships within 500 nautical miles

| WMO No. | Air Temperature | | No. of Obs | Sea Surface Temperature | | No. of Obs. |
|------------|-----------------|----------|---------------|-------------------------|----------|----------------|
| | Mean | St.Dev | | Mean | St.Dev | |
| 65503 | -0.4(0.0) | 1.0(2.0) | 463 | -0.1(-0.1) | 0.2(1.4) | 402 |
| 65506 | 1.0(0.1) | 2.7(2.3) | 438 | -0.3(0.5) | 0.4(3.9) | 393 |
| 65508 | -1.0(0.2) | 1.3(2.0) | 136 | -1.3(0.6) | 0.3(4.3) | 118 |
| 65581 | 0.3(0.6) | 1.8(2.4) | 2824 | 0.9(0.8) | 1.8(4.3) | 1431 |
| 65592 | -0.2(0.6) | 1.2(2.0) | 803 | -0.4(1.0) | 0.4(3.5) | 393 |
| 65596 | 0.8(0.7) | 1.6(2.7) | 1197 | -0.1(1.0) | 1.1(4.6) | 831 |
| 65597 | 0.9(0.5) | 4.0(2.6) | 3167 | 0.6(0.9) | 1.9(4.4) | 1667 |

Statistics of (ob-bg) differences for buoys reporting this quarter and all ships within 500 nautical miles

Buoys 44515 (6.0), 44614 (7.8), 44616 (2.9), 44726 (12.8), 44765 (-29.5), 44775 (3.9), 44778 (18.1), 44779 (4.1), 47606 (-5.2), 62694 (-20.8), 62711 (4.6), 64540 (2.2), 64543 (2.9) and 64587 (3.2) all showed significant air temperature biases.

Buoys 44613, 61542 and 65508 showed significant sea surface temperature biases of 1.6 degC, -3.3 degC and -1.3 degC respectively. Data from buoy 44613 improved significantly midway through the period. Data from buoy 65581 tended to fluctuate by up to 3.0 degC for much of the quarter, depending on which LUT (Paris or Sondre Stromfjord) the data were being sent through.

(4) Winds

The following table shows the mean and standard deviation of observation minus background differences for wind speed and direction. Figures in brackets are for the observations from voluntary observing ships within a radius of about 500 nautical miles of the mean position of each buoy (Note - it is not known what proportion of the ships' winds were measured rather than estimated visually using the Beaufort Scale). The statistics for this report can be compared with those for ships and the relative quality of the wind data from each buoy can be assessed. (N.B. Buoys 44614, 44616, 44777, 44778 and 44779 are not fitted with wind sensors. However both wind speed and direction observations have been coded up as 0, hence producing a misleading value for the percentage of wind data present in the Table of Statistics (Annex A)).

| WMO No. | Period | Wind speed(kn) | | Wind direction(Deg) | | Number of Obs. |
|------------|-----------------|----------------|-----------|---------------------|------------|-------------------|
| | | Mean | St.Dev | Mean | St.Dev | |
| 13533 | 04/10- 18/11 | -0.2(7.2) | 3.1(11.1) | 2.5(-2.9) | 27.1(39.3) | 97(241) |
| 13534 | 06/10- 12/11 | -0.2(6.5) | 3.2(10.8) | 13.2(-2.2) | 17.5(40.0) | 56(288) |
| 13556 | 04/10- 31/12 | -0.4(6.2) | 3.1(10.2) | 6.3(-5.3) | 17.6(41.2) | 600(323) |
| 13561 | 08/10- 31/12 | 0.0(6.5) | 3.5(14.1) | -4.2(-2.1) | 19.4(38.7) | 564(389) |
| 13562 | 07/10- 13/11 | -0.6(6.3) | 2.9(13.7) | 8.9(-3.3) | 16.7(41.8) | 79(319) |
| 13564 | 04/10- 14/11 | -2.5(6.5) | 3.6(10.9) | -11.8(-1.9) | 89.9(38.8) | 8(280) |
| 13566 | 29/10- 14/11 | -0.6(6.5) | 2.6(10.9) | -6.7(-2.1) | 21.8(38.6) | 38(281) |
| 44728 | 01/12- 31/12 | -5.5(3.0) | 4.7(4.3) | 13.3(0.4) | 23.9(35.9) | 1004(17) |
| 62502 | 26/11- 30/12 | -2.0(3.7) | 4.2(14.2) | -7.3(-2.2) | 21.1(29.6) | 609(313) |
| 62518 | 01/10- 28/11 | 0.6(5.7) | 3.0(12.8) | -6.6(-3.4) | 21.5(34.5) | 394(446) |
| 62520 | 01/10- 31/12 | -1.4(3.5) | 7.0(12.9) | 3.0(-1.9) | 24.7(30.2) | 727(307) |
| 62695 | 19/11- 31/12 | -5.7(4.7) | 4.2(7.8) | -7.0(-4.4) | 26.5(38.0) | 849(194) |
| 62712 | 01/10- 31/12 | -5.0(2.1) | 8.6(4.4) | 1.7(-2.7) | 41.8(47.1) | 1050(9) |

Statistics of (ob-bg) differences for buoys reporting this
quarter and all ships within 500 nautical miles

Buoys 44728, 62695 and 62712 showed significant wind speed biases of -6 knots, -6 knots and -5 knots respectively.

Buoy 13564 showed a large standard deviation of wind direction, but only for a very small number of observations.

5. EXPLANATORY NOTES:

1. Buoy owners are as follows,

| | |
|------------------|---------------------|
| CA - Canada | P - Portugal |
| F - France | UK - United Kingdom |
| D - Germany | US - United States |
| N - Norway | IC - Iceland |
| NL - Netherlands | EG - EGOS |
| IR - Ireland | ?? - unknown |

2. Number of observations received is the number received at Bracknell in the Meteorological Data Bank (MDB). If identical reports are received which have originated at different Collecting Centres, the earliest one received at Bracknell is stored in the MDB.

3. An observation with valid Time and Date is one that contains no coding errors in the Date/Time group.

4. An acceptable position for an observation is within a distance d of the last acceptable position where $d=vt$ and,

v = maximum drift speed = 1/4 knot
 t = time between observations.

5. The percentage of elements present is calculated from the total number of observations received.

6. The delay is (Time of Receipt at Bracknell) - (Time of Observation).

7. The mean number of observations per day is calculated from the total number of observations received divided by the number of days in the period. It therefore includes 'quasi-identical' observations, ie those made within a few minutes of one another. For this reason the mean number of hours per day with at least one observation and the % of hour periods without an observation has been included, where an 'hour period' is defined as the period from HH-30 to HH+29 minutes.

8. Mean (OB-BG) is the mean value of (Observation-Background) Pressure, where the Background is the 6-hour forecast from the Global Forecast Model. RMS (OB-BG) is the Root Mean Square value of (Observation-Background) Pressure differences.

Unflagged data are those data used in model analyses.

Flagged data (ie. unused observations) are those observations of suspect quality and all observations reported by a buoy at a frequency greater than 5 times every 6 hours, with accepted observations being at least one hour apart. Thus, those buoys which report most frequently have a higher percentage of flagged data.

The Mean calculated over Unflagged Data gives an indication of the instrument bias, since any gross errors have been excluded from the calculation.

The Revised RMS is based on all data except for the few that contain gross errors (as indicated on the time-series graphs - see Annex B).

9. The performance categories are defined in the table below.

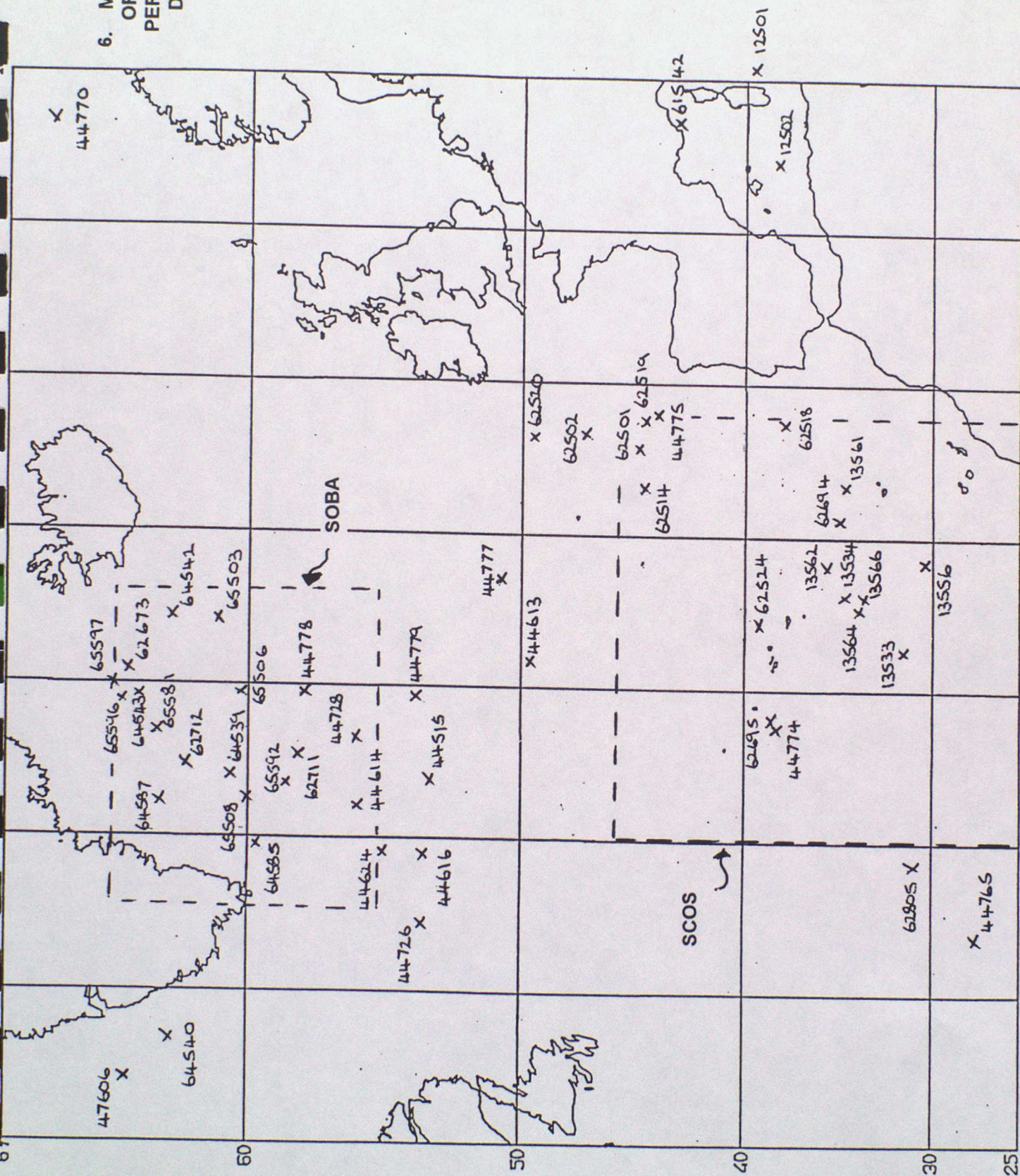
| Performance | Availability (mean no. obs/day) | Timeliness (Median delay in mins) |
|--------------|------------------------------------|--------------------------------------|
| Very Good | > 35 | < 60 |
| Good | 25-35 | 60-119 |
| Satisfactory | 15-24 | 120-179 |
| Poor | 5-14 | 180-239 |
| Very Poor | < 5 | > 240 |

(N.B. WMO requirements state the need for only 4 observations per day from marine stations.)

The pressure quality is assessed from the Revised RMS and the Mean (for unflagged data).

| Performance | Pressure Quality | | | |
|-------------|------------------|-------|------------------|-------|
| | North of 50 degN | | South of 50 degN | |
| | RMS | MEAN | RMS | MEAN |
| | (hPa) | | (hPa) | |
| Acceptable | < 3.0 | < 0.5 | < 2.0 | < 0.5 |
| Suspect | > 3.0 | > 0.5 | > 2.0 | > 0.5 |

6. MEAN POSITION
OF BUOYS DURING
PERIOD OCTOBER TO
DECEMBER 1993



ANNEX A - TABLE OF STATISTICS

| WMO NUMBER/COUNTRY ¹ | 12501/US | 12502/US | 13533/?? |
|---|-------------|-------------|-------------|
| ARGOS Id No. | 3959 | 5259 | ???? |
| PERIOD WITHIN AREA | 01/10-31/12 | 01/10-14/10 | 04/10-18/11 |
| AREA | E of SCOS | E of SCOS | SCOS |
| MEAN LATITUDE | 38.9 | 38.6 | 32.0 |
| MEAN LONGITUDE | 10.5 | 4.6 | -27.4 |
| NO. OF OBS RECEIVED ² | 900 | 74 | 110 |
| % OF OBS WITH VALID TIME AND DATE ³ | 100.0 | 100.0 | 100.0 |
| % OF OBS WITH ACCEPTABLE POSITION ⁴ | 100.0 | 100.0 | 100.0 |
| % OF PRESENT ⁵ | | | |
| PRESSURE | 65.6 | 85.1 | 100.0 |
| P. TENDENCY | 0.0 | 0.0 | 0.0 |
| AIR TEMPERATURE | 96.8 | 85.1 | 0.0 |
| WIND SPEED/DIRECTION | 0.0/0.0 | 0.0/0.0 | 100.0/100.0 |
| SEA SURFACE TEMP. | 98.1 | 91.9 | 100.0 |
| MEDIAN DELAY (MIN) ⁶ | 97.0 | 203.0 | 357.0 |
| NUMBER OF DAYS | 92.0 | 14.0 | 46.0 |
| MEAN NO. OF OBS/DAY | 9.8 | 5.3 | 2.4 |
| NO. OF HOURS WITH OBS | 825.0 | 71.0 | 110.0 |
| MEAN NO. OF HOURS/DAY WITH OBS | 9.0 | 5.1 | 2.4 |
| % OF HOUR-PERIODS WITHOUT AN OB. ⁷ | 62.5 | 78.8 | 90.0 |
| MEAN (OB-BG) unflagged | -1.9 | -2.8 | 0.1 |
| RMS (OB-BG) data ⁸ | 2.3 | 3.1 | 1.2 |
| MEAN (OB-BG) all | 20.5 | -2.8 | 0.1 |
| RMS (OB-BG) data ⁸ | 22.5 | 3.1 | 1.2 |
| REVISED RMS (OB-BG) ⁸ | 22.5 | 3.1 | 1.2 |
| % OF DATA FLAGGED ⁸ | 90.0 | 0.0 | 0.0 |
| OPERATING AT END OF PERIOD | YES | NO | NO |
| PERFORMANCE ⁹ | | | |
| AVAILABILITY | POOR | POOR | VERY POOR |
| PRESSURE QUALITY | SUSPECT | SUSPECT | ACCEPTABLE |
| TIMELINESS | GOOD | POOR | VERY POOR |
| COMMENTS | - | - | - |

| | | | |
|--|-------------|-------------|-------------|
| WMO NUMBER/COUNTRY ¹ | 13562/?? | 13564/?? | 13566/?? |
| ARGOS Id No. | ???? | ???? | ???? |
| PERIOD WITHIN AREA | 07/10-13/11 | 04/10-14/11 | 29/10-14/11 |
| AREA | SCOS | SCOS | SCOS |
| MEAN LATITUDE | 35.7 | 34.1 | 33.9 |
| MEAN LONGITUDE | -21.8 | -24.5 | -24.3 |
| NO. OF OBS RECEIVED ² | 90 | 88 | 40 |
| % OF OBS WITH VALID TIME AND DATE ³ | 100.0 | 100.0 | 100.0 |
| % OF OBS WITH ACCEPTABLE POSITION ⁴ | 100.0 | 100.0 | 100.0 |
| % OF PRESENT ⁵ | | | |
| PRESSURE | 100.0 | 100.0 | 100.0 |
| P. TENDENCY | 0.0 | 0.0 | 0.0 |
| AIR TEMPERATURE | 0.0 | 0.0 | 0.0 |
| WIND SPEED/DIRECTION | 100.0/100.0 | 20.5/11.4 | 100.0/100.0 |
| SEA SURFACE TEMP. | 100.0 | 100.0 | 100.0 |
| MEDIAN DELAY (MIN) ⁶ | 498.0 | 393.0 | 520.0 |
| NUMBER OF DAYS | 38.0 | 42.0 | 17.0 |
| MEAN NO. OF OBS/DAY | 2.4 | 2.1 | 2.4 |
| NO. OF HOURS WITH OBS | 90.0 | 88.0 | 40.0 |
| MEAN NO. OF HOURS/DAY WITH OBS | 2.4 | 2.1 | 2.4 |
| % OF HOUR-PERIODS WITHOUT AN OB. ⁷ | 90.0 | 91.3 | 90.0 |
| MEAN (OB-BG) unflagged | 0.3 | 0.2 | 0.7 |
| RMS (OB-BG) data ⁸ | 1.1 | 1.2 | 1.1 |
| MEAN (OB-BG) all | 0.3 | 0.2 | 0.7 |
| RMS (OB-BG) data ⁸ | 1.1 | 1.2 | 1.1 |
| REVISED RMS (OB-BG) ⁸ | 1.1 | 1.2 | 1.1 |
| % OF DATA FLAGGED ⁸ | 0.0 | 0.0 | 0.0 |
| OPERATING AT END OF PERIOD | NO | NO | NO |
| PERFORMANCE ⁹ | | | |
| AVAILABILITY | VERY POOR | VERY POOR | VERY POOR |
| PRESSURE QUALITY | ACCEPTABLE | ACCEPTABLE | SUSPECT |
| TIMELINESS | VERY POOR | VERY POOR | VERY POOR |
| COMMENTS | - | - | - |

| | | | |
|--|-------------|-------------|--------------|
| WMO NUMBER/COUNTRY ¹ | 44616/UK | 44624/UK | 44726/UK |
| ARGOS Id No. | 2963 | 2957 | 4626 |
| PERIOD WITHIN AREA | 02/11-31/12 | 29/11-31/12 | 29/11-31/12 |
| AREA | S of SOBA | SOBA | SW of SOBA |
| MEAN LATITUDE | 53.5 | 55.3 | 53.6 |
| MEAN LONGITUDE | -41.1 | -41.0 | -45.8 |
| NO. OF OBS RECEIVED ² | 2731 | 1279 | 1313 |
| % OF OBS WITH VALID TIME AND DATE ³ | 100.0 | 100.0 | 100.0 |
| % OF OBS WITH ACCEPTABLE POSITION ⁴ | 96.2 | 99.7 | 99.8 |
| % OF PRESENT ⁵ | | | |
| PRESSURE | 64.3 | 98.4 | 98.0 |
| P. TENDENCY | 93.8 | 96.8 | 95.9 |
| AIR TEMPERATURE | 99.4 | 97.9 | 98.9 |
| WIND SPEED/DIRECTION | 20.7/19.2 | 0.0/0.0 | 0.0/0.0 |
| SEA SURFACE TEMP. | 77.5 | 73.7 | 79.4 |
| MEDIAN DELAY (MIN) ⁶ | 17.0 | 21.0 | 168.0 |
| NUMBER OF DAYS | 60.0 | 33.0 | 33.0 |
| MEAN NO. OF OBS/DAY | 45.5 | 38.8 | 39.8 |
| NO. OF HOURS WITH OBS | 1116.0 | 491.0 | 565.0 |
| MEAN NO. OF HOURS/DAY WITH OBS | 18.6 | 14.9 | 17.1 |
| % OF HOUR-PERIODS WITHOUT AN OB. ⁷ | 22.5 | 37.9 | 28.8 |
| MEAN (OB-BG) unflagged | -0.9 | -0.8 | -1.0 |
| RMS (OB-BG) data ⁸ | 2.5 | 2.1 | 2.5 |
| MEAN (OB-BG) all | -1.7 | -1.4 | -1.6 |
| RMS (OB-BG) data ⁸ | 8.0 | 9.3 | 5.1 |
| REVISED RMS (OB-BG) ⁸ | 8.0 | 2.4 | 5.1 |
| % OF DATA FLAGGED ⁸ | 75.0 | 67.0 | 65.0 |
| OPERATING AT END OF PERIOD | YES | YES | YES |
| PERFORMANCE ⁹ | | | |
| AVAILABILITY | VERY GOOD | VERY GOOD | VERY GOOD |
| PRESSURE QUALITY | SUSPECT | SUSPECT | SUSPECT |
| TIMELINESS | VERY GOOD | VERY GOOD | SATISFACTORY |
| COMMENTS | - | - | - |

| | | | |
|---|-------------|-------------|-------------|
| WMO NUMBER/COUNTRY ¹ | 44774/UK | 44775/UK | 44777/UK |
| ARGOS Id No. | 2961 | 2962 | 1257 |
| PERIOD WITHIN AREA | 19/11-31/12 | 01/10-31/12 | 01/10-31/12 |
| AREA | SCOS | SCOS | S of SOBA |
| MEAN LATITUDE | 38.7 | 44.0 | 50.7 |
| MEAN LONGITUDE | -32.2 | -12.0 | -23.0 |
| NO. OF OBS RECEIVED ² | 225 | 2660 | 3185 |
| % OF OBS WITH VALID TIME AND DATE ³ | 100.0 | 100.0 | 100.0 |
| % OF OBS WITH ACCEPTABLE POSITION ⁴ | 99.1 | 99.9 | 99.9 |
| % OF PRESENT ⁵ | | | |
| PRESSURE | 100.0 | 99.2 | 87.8 |
| P. TENDENCY | 91.6 | 73.5 | 57.3 |
| AIR TEMPERATURE | 100.0 | 99.2 | 98.6 |
| WIND SPEED/DIRECTION | 0.0/0.0 | 0.0/0.0 | 15.9/13.0 |
| SEA SURFACE TEMP. | 100.0 | 52.1 | 57.3 |
| MEDIAN DELAY (MIN) ⁶ | 25.0 | 56.0 | 20.0 |
| NUMBER OF DAYS | 43.0 | 92.0 | 92.0 |
| MEAN NO. OF OBS/DAY | 5.2 | 28.9 | 34.6 |
| NO. OF HOURS WITH OBS | 219.0 | 1278.0 | 1445.0 |
| MEAN NO. OF HOURS/DAY WITH OBS | 5.1 | 13.9 | 15.7 |
| % OF HOUR-PERIODS WITHOUT AN OB. ⁷ | 78.8 | 42.1 | 34.6 |
| MEAN (OB-BG) unflagged | -0.2 | -0.5 | -0.2 |
| RMS (OB-BG) data ⁸ | 1.2 | 1.5 | 1.9 |
| MEAN (OB-BG) all | -0.3 | -0.7 | -0.4 |
| RMS (OB-BG) data ⁸ | 2.1 | 3.2 | 4.1 |
| REVISED RMS (OB-BG) ⁸ | 1.1 | 2.0 | 2.1 |
| % OF DATA FLAGGED ⁸ | 5.0 | 59.0 | 60.0 |
| OPERATING AT END OF PERIOD | YES | YES | YES |
| PERFORMANCE ⁹ | | | |
| AVAILABILITY | POOR | GOOD | GOOD |
| PRESSURE QUALITY | ACCEPTABLE | ACCEPTABLE | ACCEPTABLE |
| TIMELINESS | VERY GOOD | VERY GOOD | VERY GOOD |
| COMMENTS | - | - | - |

| | | | |
|--|-------------|-------------|--------------|
| WMO NUMBER/COUNTRY ¹ | 61542/US | 62501/F | 62502/F |
| ARGOS Id No. | 15356 | 10116 | 15503 |
| PERIOD WITHIN AREA | 01/10-28/11 | 05/10-31/12 | 26/11-31/12 |
| AREA | S of FRANCE | SCOS | N of SCOS |
| MEAN LATITUDE | 43.1 | 44.5 | 47.3 |
| MEAN LONGITUDE | 6.4 | -14.1 | -13.1 |
| NO. OF OBS RECEIVED ² | 240 | 1253 | 698 |
| % OF OBS WITH VALID TIME AND DATE ³ | 100.0 | 100.0 | 100.0 |
| % OF OBS WITH ACCEPTABLE POSITION ⁴ | 97.5 | 100.0 | 100.0 |
| % OF PRESENT ⁵ | | | |
| PRESSURE | 94.6 | 97.4 | 31.7 |
| P. TENDENCY | 0.0 | 92.5 | 0.0 |
| AIR TEMPERATURE | 92.9 | 0.0 | 0.0 |
| WIND SPEED/DIRECTION | 0.0/0.0 | 0.0/0.0 | 96.8/97.1 |
| SEA SURFACE TEMP. | 92.5 | 98.2 | 95.1 |
| MEDIAN DELAY (MIN) ⁶ | 39.0 | 14.0 | 255.0 |
| NUMBER OF DAYS | 59.0 | 88.0 | 36.0 |
| MEAN NO. OF OBS/DAY | 4.1 | 14.2 | 19.4 |
| NO. OF HOURS WITH OBS | 238.0 | 987.0 | 686.0 |
| MEAN NO. OF HOURS/DAY WITH OBS | 4.0 | 11.2 | 19.1 |
| % OF HOUR-PERIODS WITHOUT AN OB. ⁷ | 83.3 | 53.3 | 20.4 |
| MEAN (OB-BG) unflagged | -0.9 | 0.9 | 0.4 |
| RMS (OB-BG) data ⁸ | 1.7 | 1.5 | 1.4 |
| MEAN (OB-BG) all | -0.6 | 0.9 | 0.4 |
| RMS (OB-BG) data ⁸ | 2.8 | 1.5 | 1.7 |
| REVISED RMS (OB-BG) ⁸ | 2.0 | 1.5 | 1.7 |
| % OF DATA FLAGGED ⁸ | 3.0 | 35.0 | 46.0 |
| OPERATING AT END OF PERIOD | NO | YES | YES |
| PERFORMANCE ⁹ | | | |
| AVAILABILITY | VERY POOR | POOR | SATISFACTORY |
| PRESSURE QUALITY | SUSPECT | SUSPECT | ACCEPTABLE |
| TIMELINESS | VERY GOOD | VERY GOOD | VERY POOR |
| COMMENTS | - | - | - |

| WMO NUMBER/COUNTRY ¹ | 62520/F | 62524/UK | 62673/US |
|--|-------------|-------------|--------------|
| ARGOS Id No. | 10114 | 4625 | 6817 |
| PERIOD WITHIN AREA | 01/10-31/12 | 19/11-31/12 | 01/10-16/12 |
| AREA | N of SCOS | SCOS | SOBA |
| MEAN LATITUDE | 49.8 | 39.5 | 63.5 |
| MEAN LONGITUDE | -13.4 | -26.1 | -29.2 |
| NO. OF OBS RECEIVED ² | 1042 | 1459 | 1203 |
| % OF OBS WITH VALID TIME AND DATE ³ | 100.0 | 100.0 | 100.0 |
| % OF OBS WITH ACCEPTABLE POSITION ⁴ | 100.0 | 99.6 | 99.5 |
| % OF PRESENT ⁵ | | | |
| PRESSURE | 95.6 | 99.2 | 91.4 |
| P. TENDENCY | 65.0 | 96.7 | 0.0 |
| AIR TEMPERATURE | 0.0 | 99.7 | 91.5 |
| WIND SPEED/DIRECTION | 76.5/75.5 | 0.0/0.0 | 0.0/0.0 |
| SEA SURFACE TEMP. | 90.2 | 75.2 | 93.0 |
| MEDIAN DELAY (MIN) ⁶ | 31.0 | 25.0 | 44.0 |
| NUMBER OF DAYS | 92.0 | 43.0 | 77.0 |
| MEAN NO. OF OBS/DAY | 11.3 | 33.9 | 15.6 |
| NO. OF HOURS WITH OBS | 922.0 | 684.0 | 942.0 |
| MEAN NO. OF HOURS/DAY WITH OBS | 10.0 | 15.9 | 12.2 |
| % OF HOUR-PERIODS WITHOUT AN OB. ⁷ | 58.3 | 33.8 | 49.2 |
| MEAN (OB-BG) unflagged | 0.6 | 0.2 | 1.0 |
| RMS (OB-BG) data ⁸ | 1.7 | 1.2 | 2.3 |
| MEAN (OB-BG) all | 0.6 | 0.1 | 1.0 |
| RMS (OB-BG) data ⁸ | 1.8 | 1.7 | 3.3 |
| REVISED RMS (OB-BG) ⁸ | 1.8 | 1.2 | 2.3 |
| % OF DATA FLAGGED ⁸ | 19.0 | 60.0 | 33.0 |
| OPERATING AT END OF PERIOD | YES | YES | NO |
| PERFORMANCE ⁹ | | | |
| AVAILABILITY | POOR | GOOD | SATISFACTORY |
| PRESSURE QUALITY | SUSPECT | ACCEPTABLE | SUSPECT |
| TIMELINESS | VERY GOOD | VERY GOOD | VERY GOOD |
| COMMENTS | - | - | - |

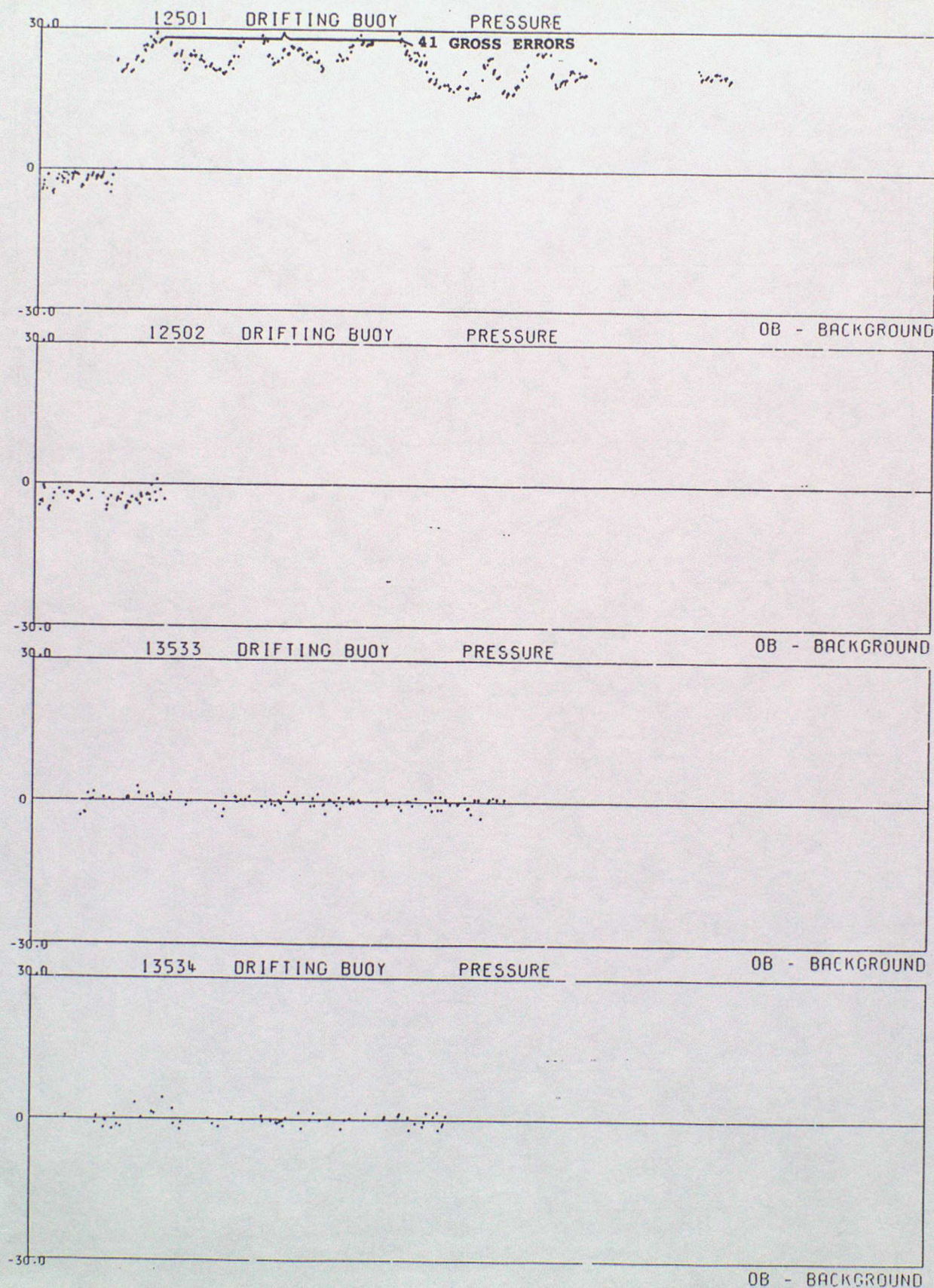
| WMO NUMBER/COUNTRY ¹ | 62712/UK | 62805/UK | 64539/US |
|---|-------------|-------------|--------------|
| ARGOS Id No. | 1247 | 6285 | 5521 |
| PERIOD WITHIN AREA | 01/10-31/12 | 01/10-11/12 | 01/10-09/12 |
| AREA | SOBA | W of SCOS | SOBA |
| MEAN LATITUDE | 61.8 | 31.2 | 60.6 |
| MEAN LONGITUDE | -35.3 | -51.3 | -36.1 |
| NO. OF OBS RECEIVED ² | 3540 | 921 | 1146 |
| % OF OBS WITH VALID TIME AND DATE ³ | 100.0 | 100.0 | 100.0 |
| % OF OBS WITH ACCEPTABLE POSITION ⁴ | 91.7 | 96.5 | 100.0 |
| % OF PRESENT ⁵ | | | |
| PRESSURE | 94.1 | 98.2 | 91.7 |
| P. TENDENCY | 85.1 | 0.0 | 0.0 |
| AIR TEMPERATURE | 99.5 | 97.9 | 91.6 |
| WIND SPEED/DIRECTION | 35.7/35.5 | 0.0/0.0 | 0.0/0.0 |
| SEA SURFACE TEMP. | 55.8 | 78.2 | 93.4 |
| MEDIAN DELAY (MIN) ⁶ | 18.0 | 12.0 | 24.0 |
| NUMBER OF DAYS | 92.0 | 72.0 | 70.0 |
| MEAN NO. OF OBS/DAY | 38.5 | 12.8 | 16.4 |
| NO. OF HOURS WITH OBS | 1573.0 | 686.0 | 896.0 |
| MEAN NO. OF HOURS/DAY WITH OBS | 17.1 | 9.5 | 12.8 |
| % OF HOUR-PERIODS WITHOUT AN OB. ⁷ | 28.8 | 60.4 | 46.7 |
| MEAN (OB-BG) unflagged | 0.1 | -0.3 | 0.7 |
| RMS (OB-BG) data ⁸ | 2.2 | 0.9 | 1.9 |
| MEAN (OB-BG) all | 0.1 | -0.5 | 0.7 |
| RMS (OB-BG) data ⁸ | 2.5 | 4.4 | 2.0 |
| REVISED RMS (OB-BG) ⁸ | 2.4 | 0.9 | 2.0 |
| % OF DATA FLAGGED ⁸ | 62.0 | 35.0 | 32.0 |
| OPERATING AT END OF PERIOD | YES | NO | NO |
| PERFORMANCE ⁹ | | | |
| AVAILABILITY | VERY GOOD | POOR | SATISFACTORY |
| PRESSURE QUALITY | ACCEPTABLE | ACCEPTABLE | SUSPECT |
| TIMELINESS | VERY GOOD | VERY GOOD | VERY GOOD |
| COMMENTS | - | - | - |

| WMO NUMBER/COUNTRY ¹ | 64585/US | 64587/US | 65503/US |
|---|-------------|--------------|--------------|
| ARGOS Id No. | 6820 | 6819 | 6280 |
| PERIOD WITHIN AREA | 26/11-01/12 | 26/11-31/12 | 29/11-31/12 |
| AREA | SOBA | SOBA | SOBA |
| MEAN LATITUDE | 59.8 | 62.4 | 60.9 |
| MEAN LONGITUDE | -40.3 | -37.9 | -26.0 |
| NO. OF OBS RECEIVED ² | 75 | 562 | 512 |
| % OF OBS WITH VALID TIME AND DATE ³ | 100.0 | 100.0 | 100.0 |
| % OF OBS WITH ACCEPTABLE POSITION ⁴ | 100.0 | 100.0 | 100.0 |
| % OF PRESENT ⁵ | | | |
| PRESSURE | 94.7 | 93.1 | 94.7 |
| P. TENDENCY | 0.0 | 0.0 | 0.0 |
| AIR TEMPERATURE | 89.3 | 92.5 | 95.1 |
| WIND SPEED/DIRECTION | 0.0/0.0 | 0.0/0.0 | 0.0/0.0 |
| SEA SURFACE TEMP. | 92.0 | 94.3 | 95.7 |
| MEDIAN DELAY (MIN) ⁶ | 286.0 | 101.0 | 142.0 |
| NUMBER OF DAYS | 6.0 | 36.0 | 33.0 |
| MEAN NO. OF OBS/DAY | 12.5 | 15.6 | 15.5 |
| NO. OF HOURS WITH OBS | 64.0 | 434.0 | 387.0 |
| MEAN NO. OF HOURS/DAY WITH OBS | 10.7 | 12.1 | 11.7 |
| % OF HOUR-PERIODS WITHOUT AN OB. ⁷ | 55.4 | 49.6 | 51.3 |
| MEAN (OB-BG) unflagged | 0.8 | 0.3 | 1.4 |
| RMS (OB-BG) data ⁸ | 2.5 | 2.1 | 2.5 |
| MEAN (OB-BG) all | 2.0 | 0.3 | 1.4 |
| RMS (OB-BG) data ⁸ | 8.2 | 2.4 | 2.5 |
| REVISED RMS (OB-BG) ⁸ | 2.4 | 2.4 | 2.5 |
| % OF DATA FLAGGED ⁸ | 42.0 | 38.0 | 37.0 |
| OPERATING AT END OF PERIOD | NO | YES | YES |
| PERFORMANCE ⁹ | | | |
| AVAILABILITY | POOR | SATISFACTORY | SATISFACTORY |
| PRESSURE QUALITY | SUSPECT | ACCEPTABLE | SUSPECT |
| TIMELINESS | VERY POOR | GOOD | SATISFACTORY |
| COMMENTS | - | - | - |

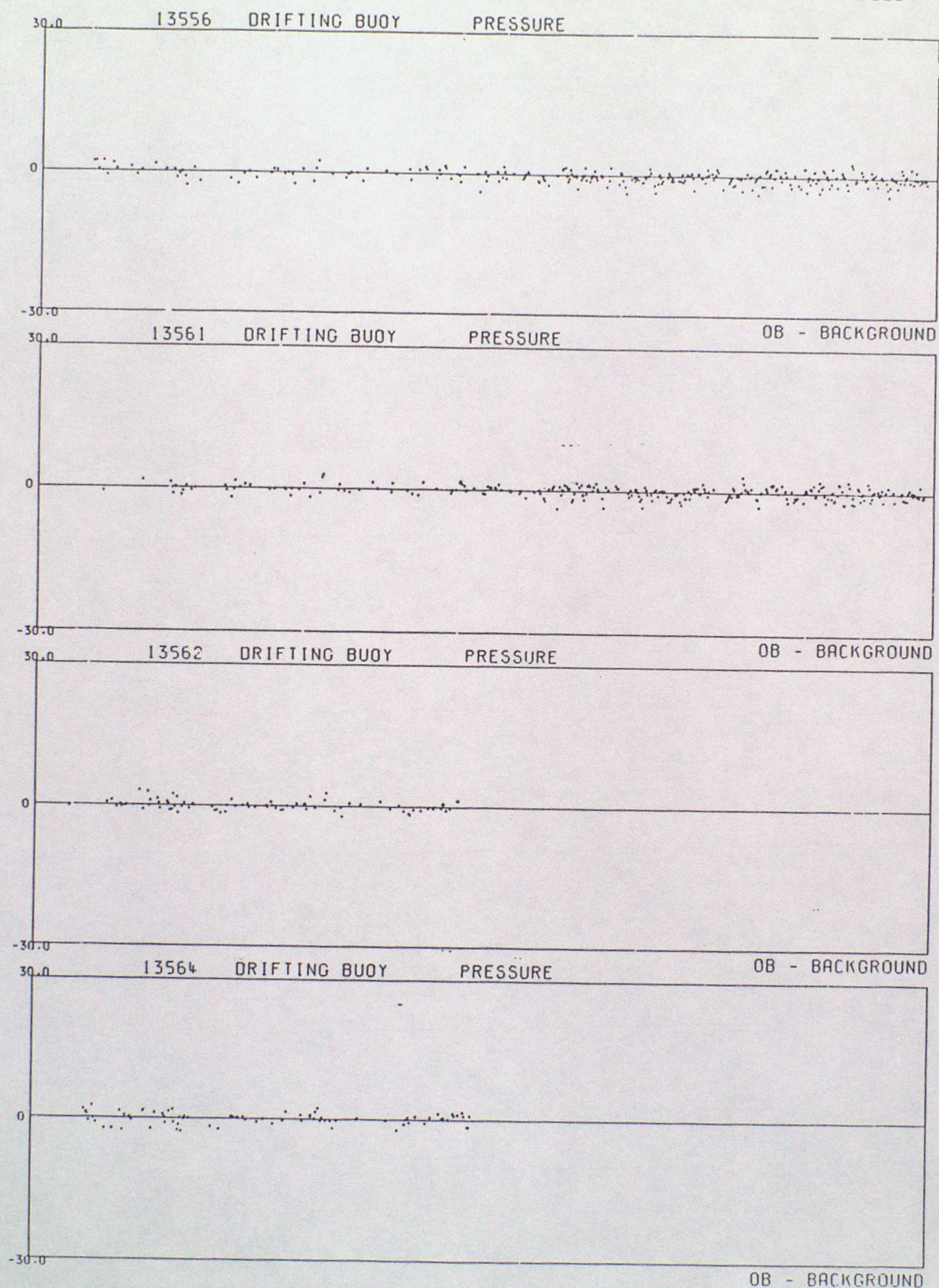
| | | | |
|---|--------------|-------------|-------------|
| WMO NUMBER/COUNTRY ¹ | 65592/NL | 65596/NL | 65597/N |
| ARGOS Id No. | 9309 | 4271 | 4270 |
| PERIOD WITHIN AREA | 03/11-31/12 | 01/10-04/11 | 01/10-29/12 |
| AREA | SOBA | SOBA | SOBA |
| MEAN LATITUDE | 58.9 | 63.6 | 63.7 |
| MEAN LONGITUDE | -36.5 | -31.5 | -30.0 |
| NO. OF OBS RECEIVED ² | 896 | 1222 | 3733 |
| % OF OBS WITH VALID TIME AND DATE ³ | 100.0 | 100.0 | 100.0 |
| % OF OBS WITH ACCEPTABLE POSITION ⁴ | 100.0 | 100.0 | 99.3 |
| % OF PRESENT ⁵ | | | |
| PRESSURE | 96.4 | 99.0 | 93.1 |
| P. TENDENCY | 93.5 | 93.1 | 83.0 |
| AIR TEMPERATURE | 96.0 | 98.6 | 85.5 |
| WIND SPEED/DIRECTION | 0.0/0.0 | 0.0/0.0 | 0.0/0.0 |
| SEA SURFACE TEMP. | 54.0 | 71.5 | 49.0 |
| MEDIAN DELAY (MIN) ⁶ | 24.0 | 104.0 | 23.0 |
| NUMBER OF DAYS | 59.0 | 35.0 | 90.0 |
| MEAN NO. OF OBS/DAY | 15.2 | 34.9 | 41.5 |
| NO. OF HOURS WITH OBS | 381.0 | 599.0 | 1586.0 |
| MEAN NO. OF HOURS/DAY WITH OBS | 6.5 | 17.1 | 17.6 |
| % OF HOUR-PERIODS WITHOUT AN OB. ⁷ | 72.9 | 28.8 | 26.7 |
| MEAN (OB-BG) unflagged | -0.9 | -0.3 | -0.3 |
| RMS (OB-BG) data ⁸ | 2.5 | 1.7 | 2.1 |
| MEAN (OB-BG) all | -1.2 | 1.8 | -1.1 |
| RMS (OB-BG) data ⁸ | 6.5 | 7.9 | 5.1 |
| REVISED RMS (OB-BG) ⁸ | 3.0 | 7.3 | 4.4 |
| % OF DATA FLAGGED ⁸ | 65.0 | 64.0 | 68.0 |
| OPERATING AT END OF PERIOD | YES | NO | NO |
| PERFORMANCE ⁹ | | | |
| AVAILABILITY | SATISFACTORY | GOOD | VERY GOOD |
| PRESSURE QUALITY | SUSPECT | SUSPECT | SUSPECT |
| TIMELINESS | VERY GOOD | GOOD | VERY GOOD |
| COMMENTS | - | - | - |

ANNEX B - TIME SERIES PLOTS OF PRESSURE

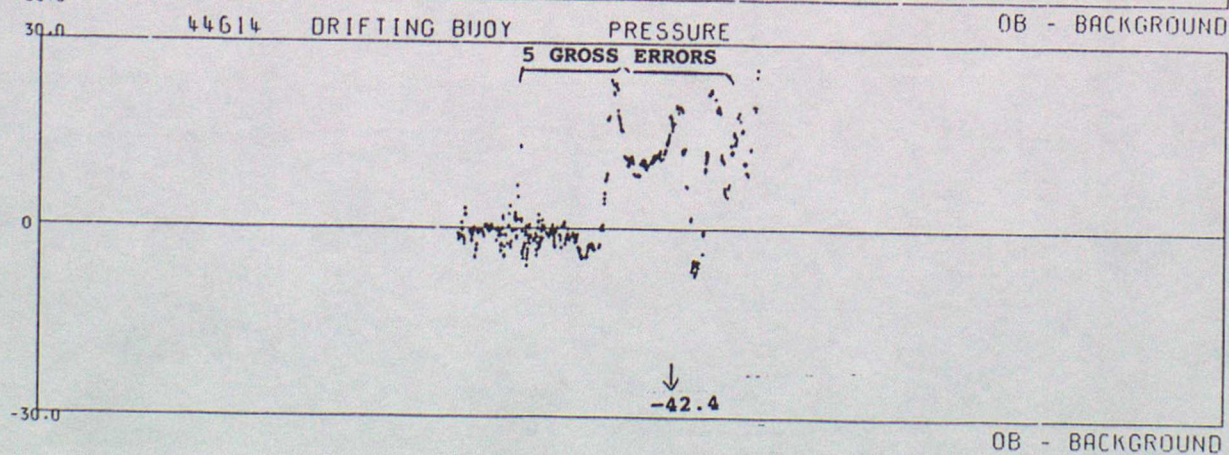
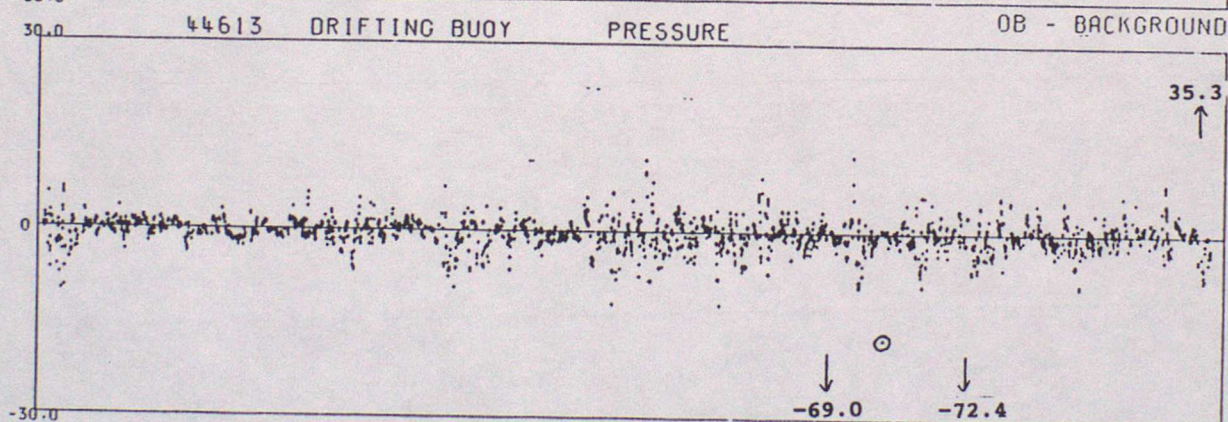
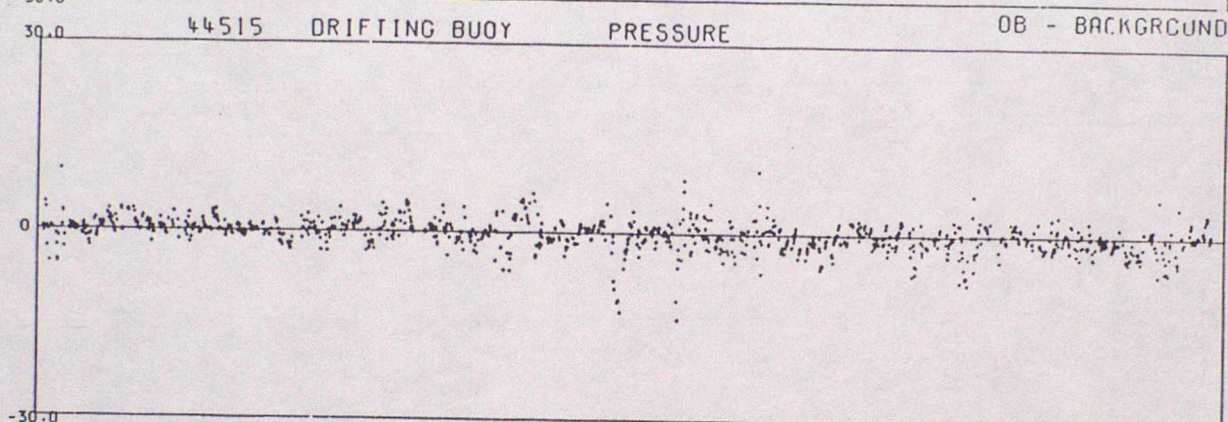
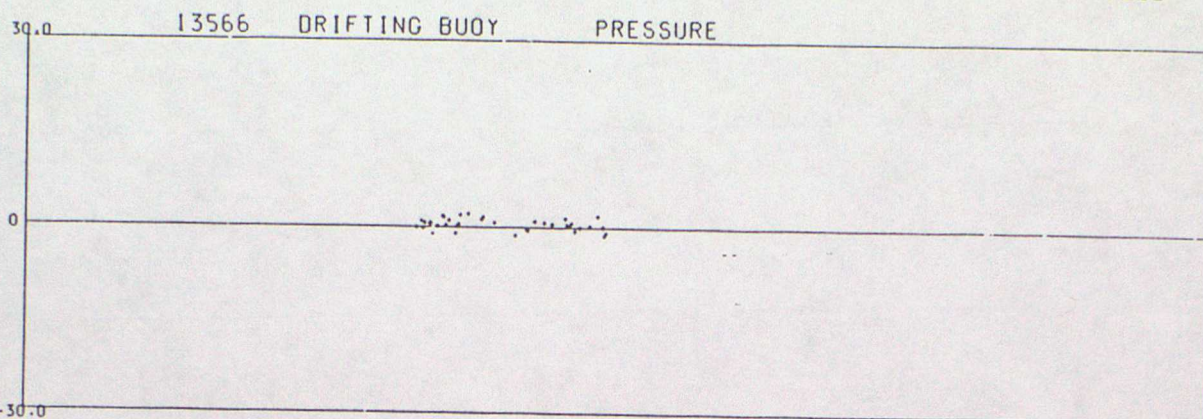
DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)



DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)

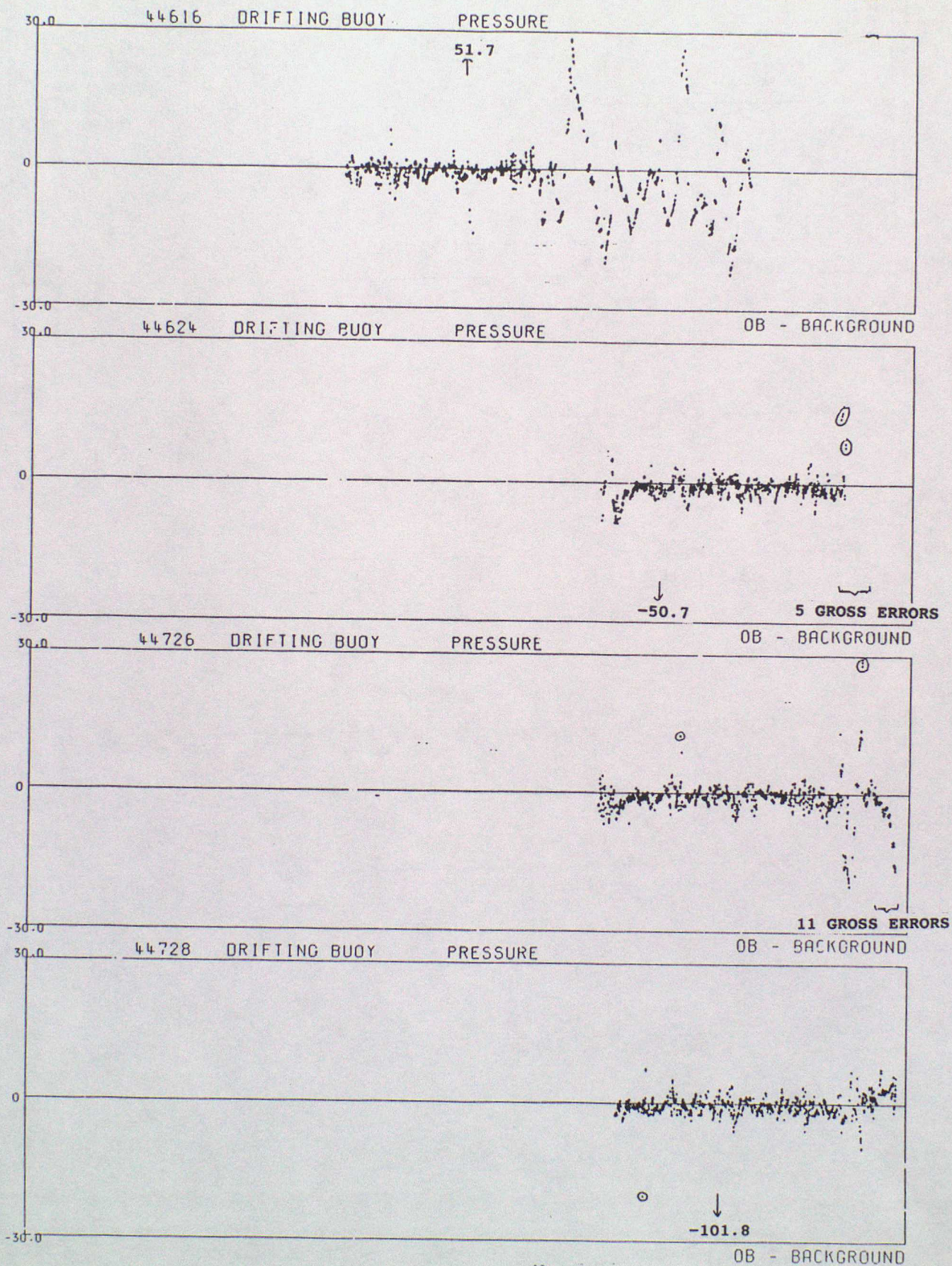


DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)

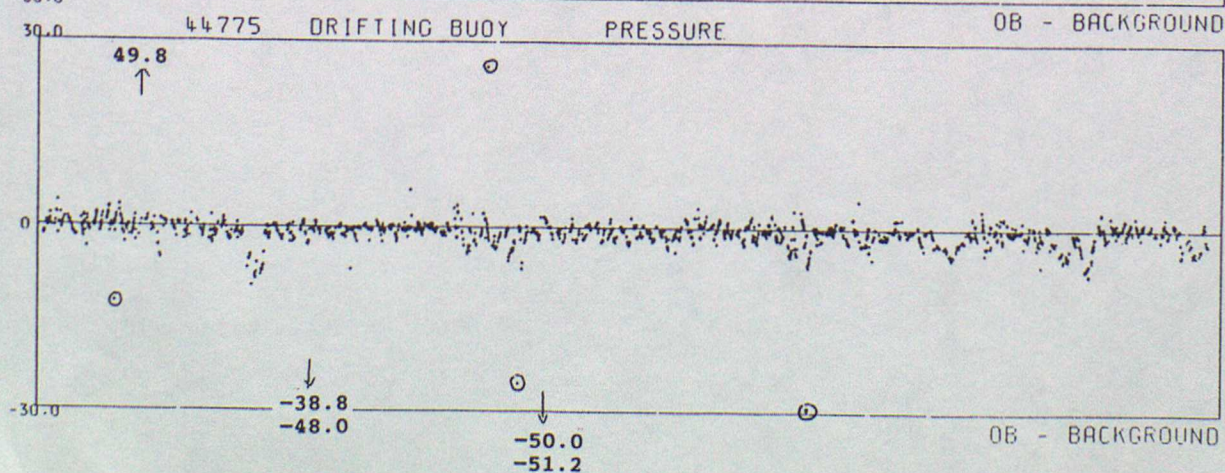
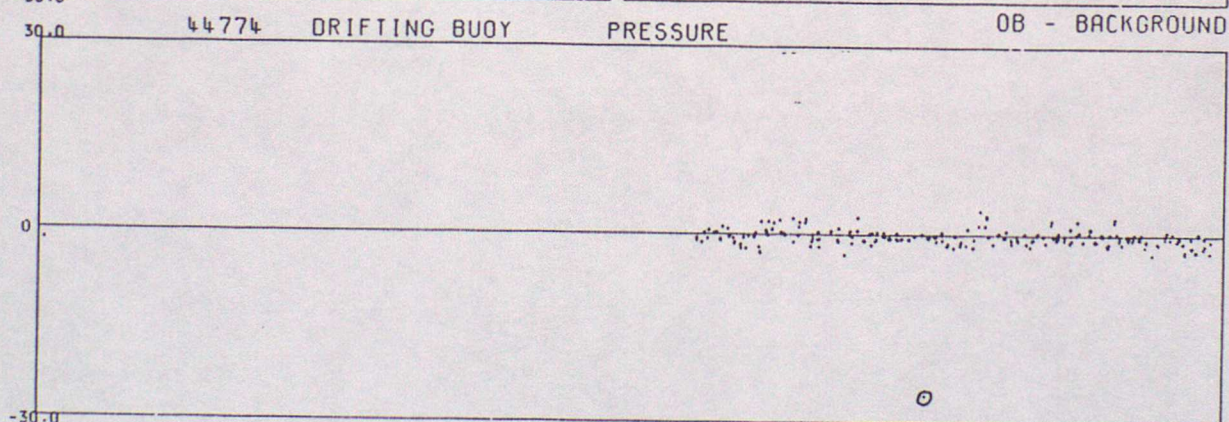
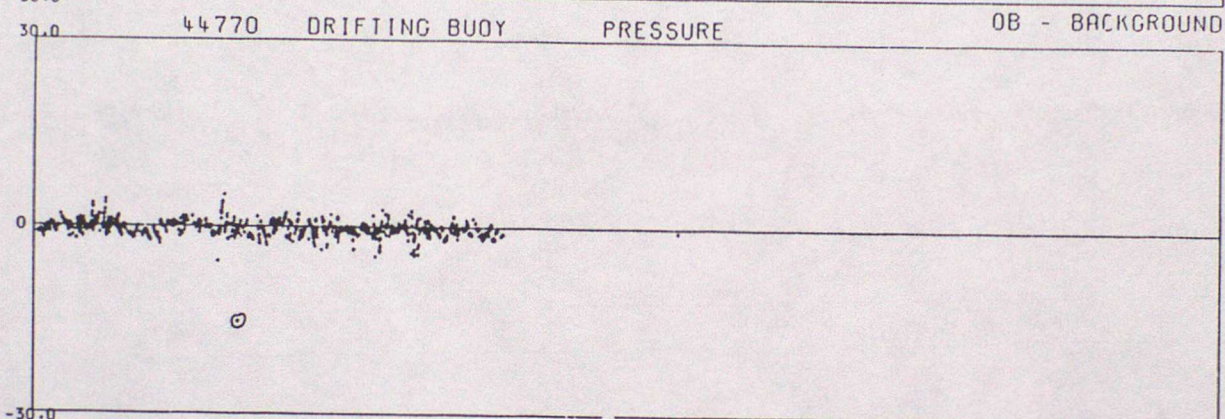
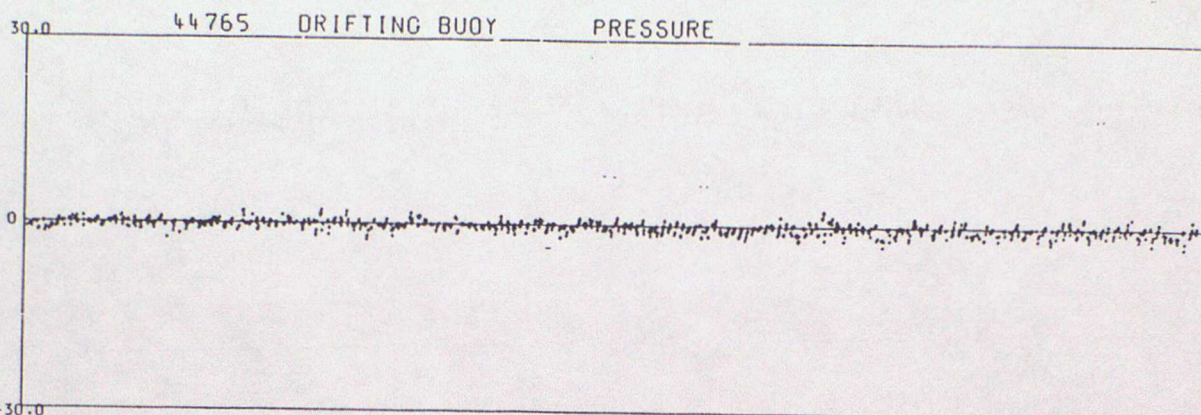


OB - BACKGROUND

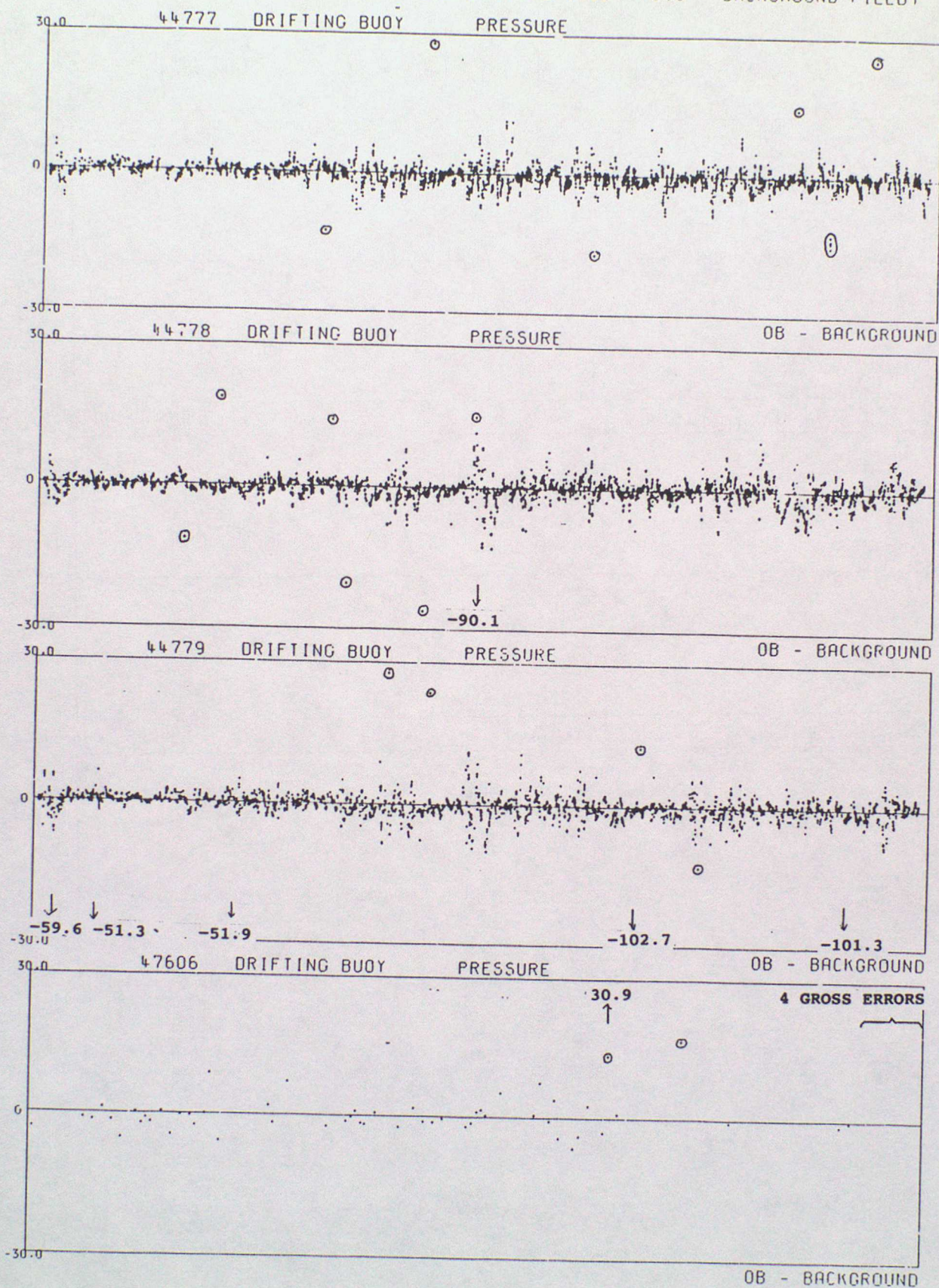
DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)



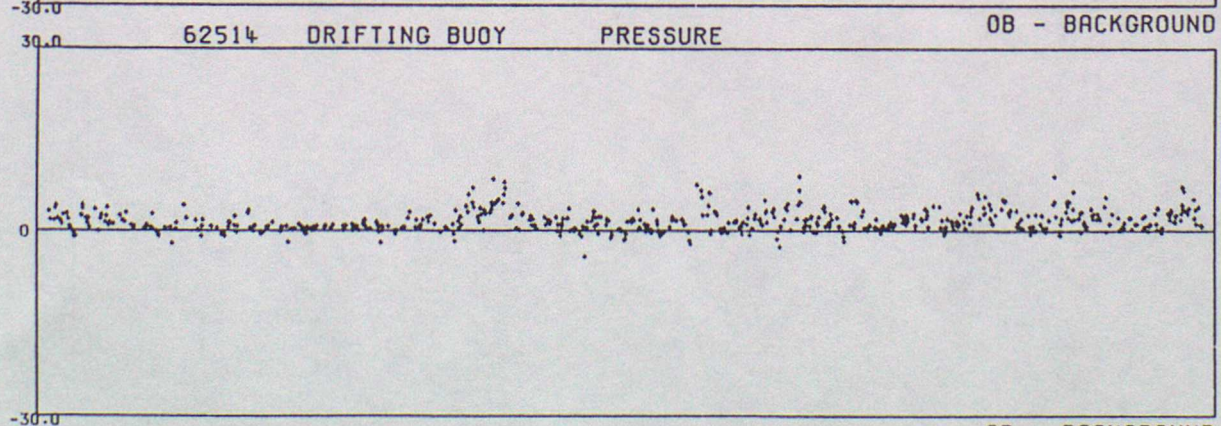
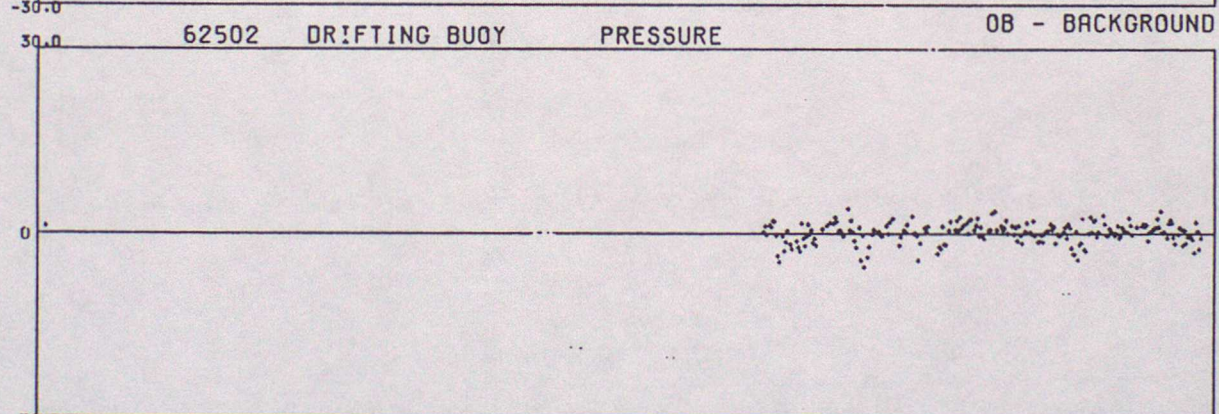
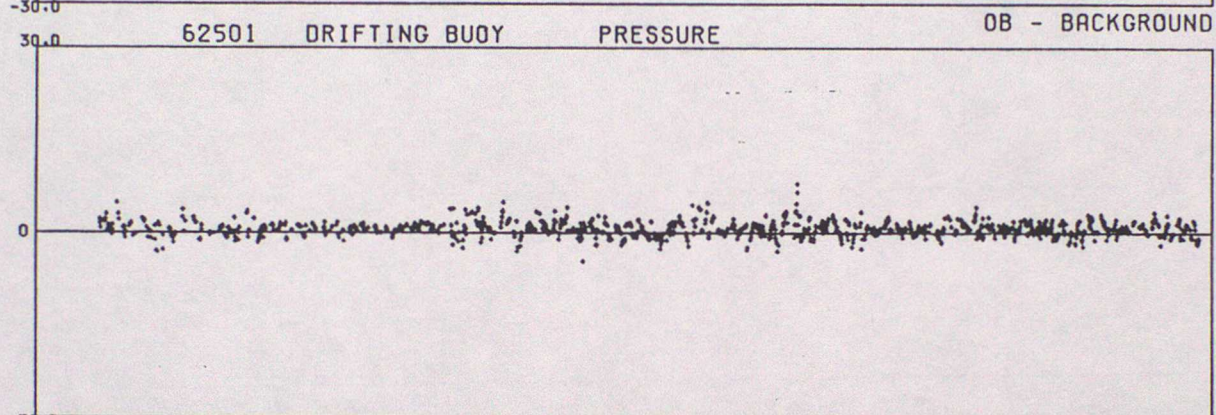
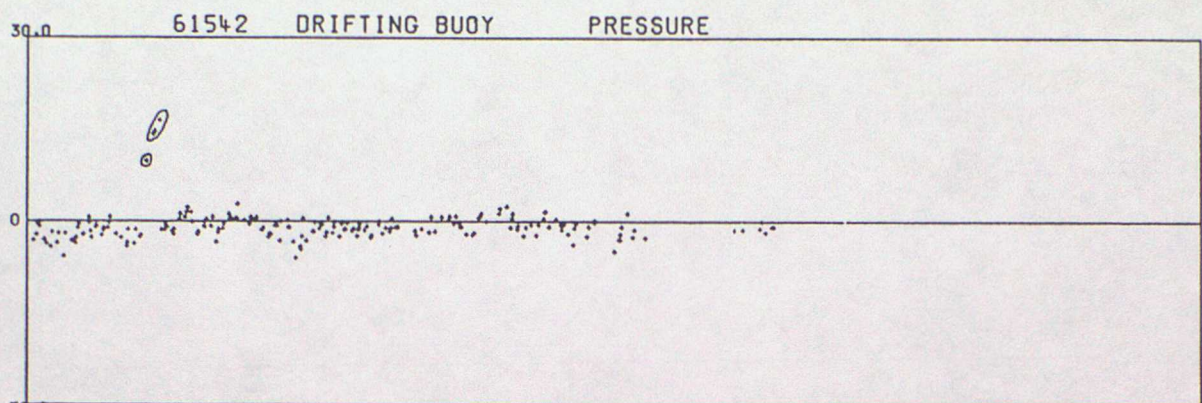
DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)



DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 10BS - BACKGROUND FIELD

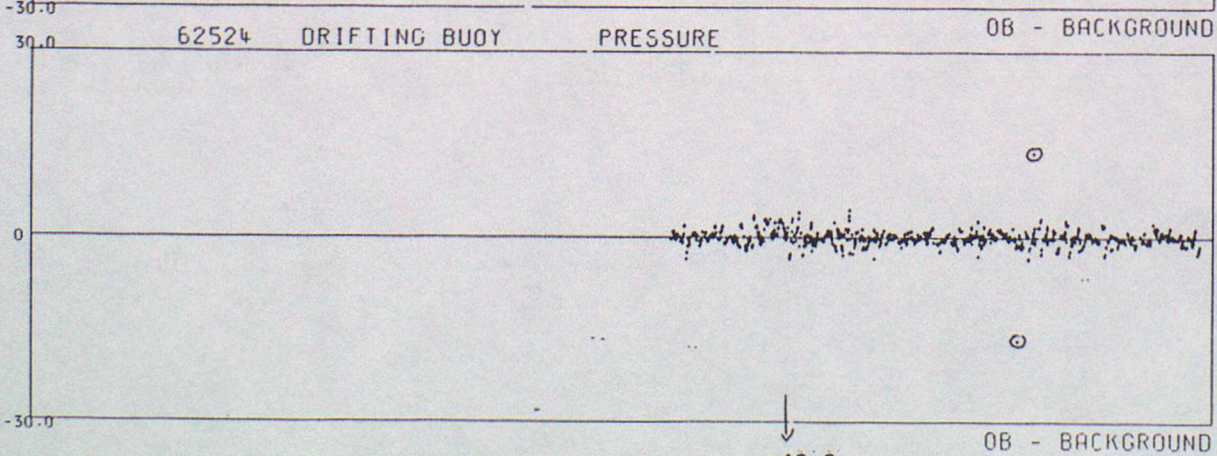
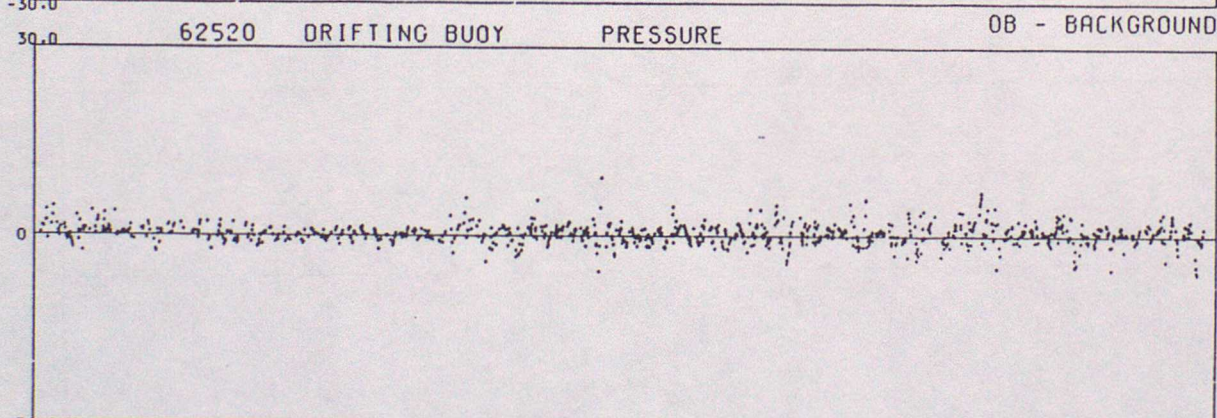
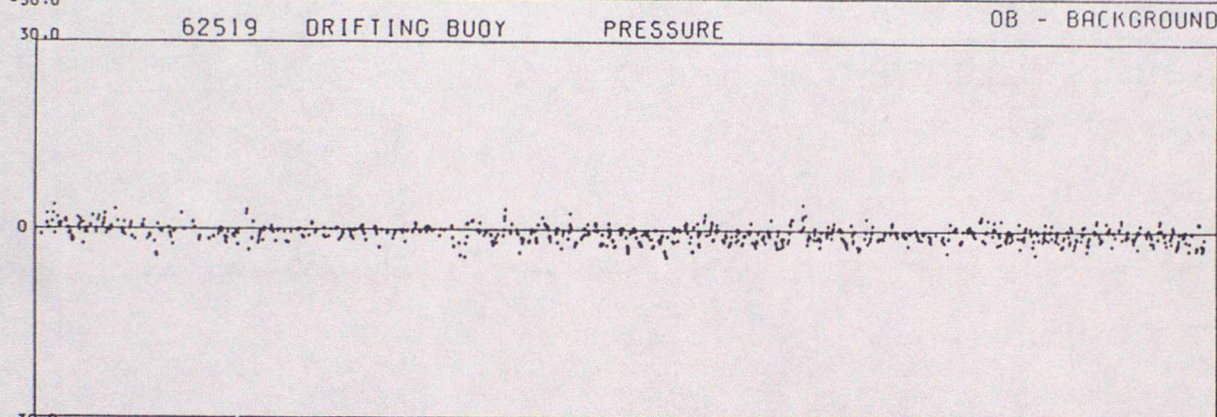
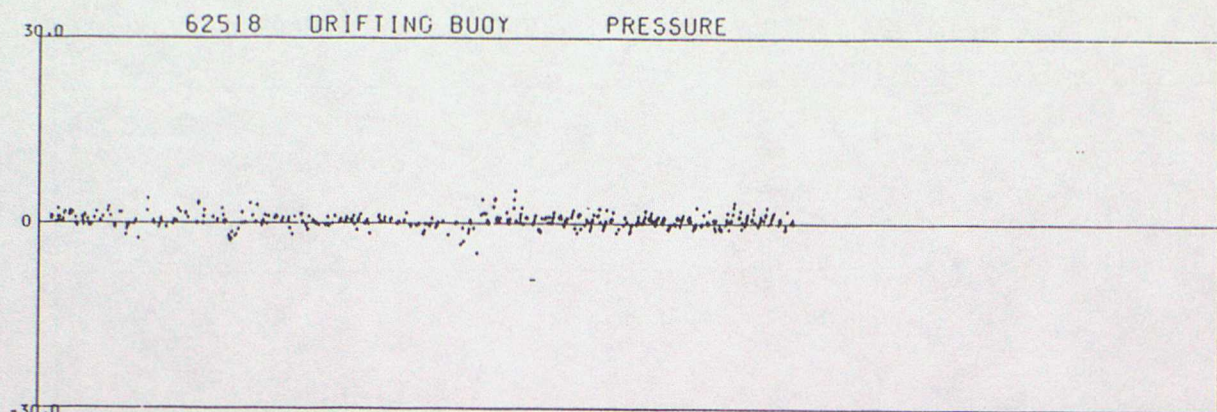


DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)

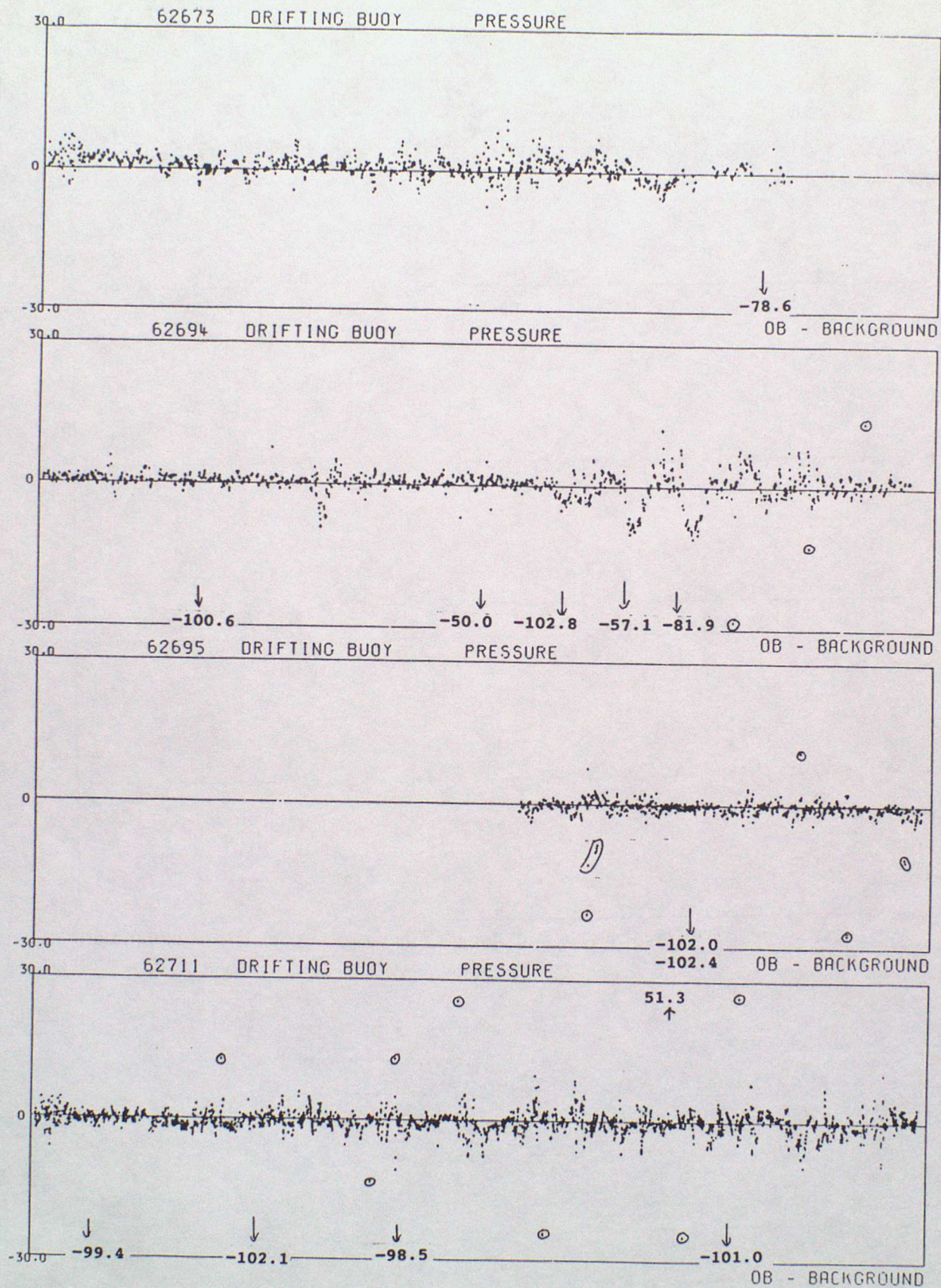


OB - BACKGROUND

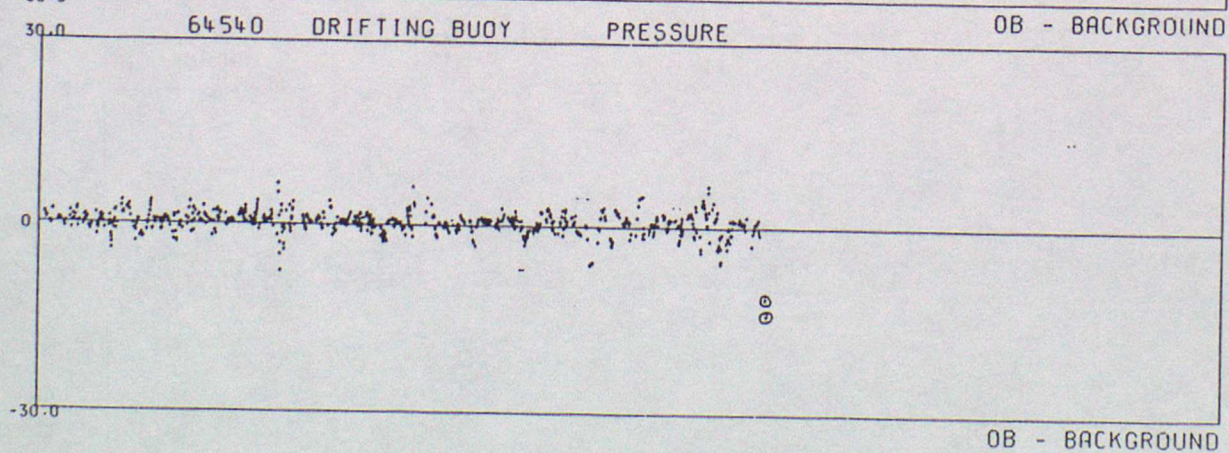
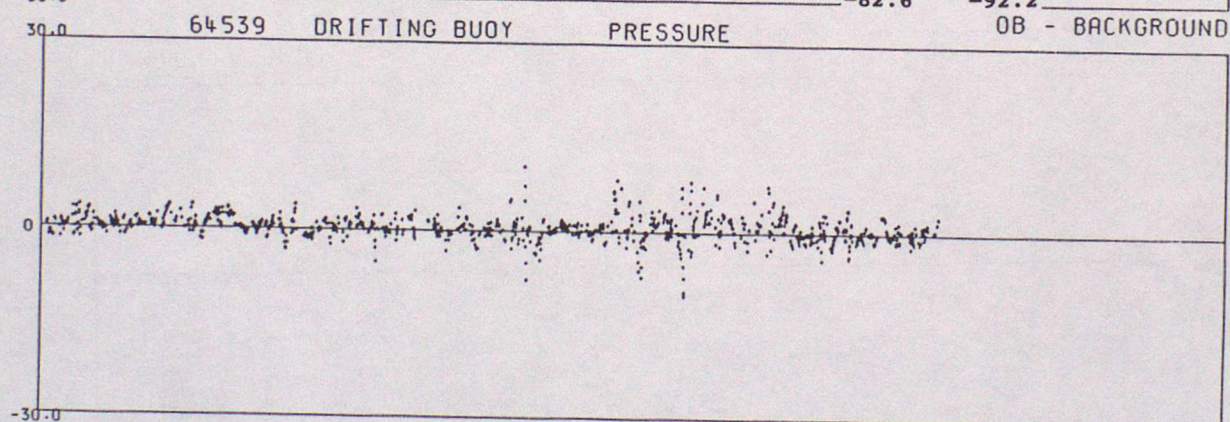
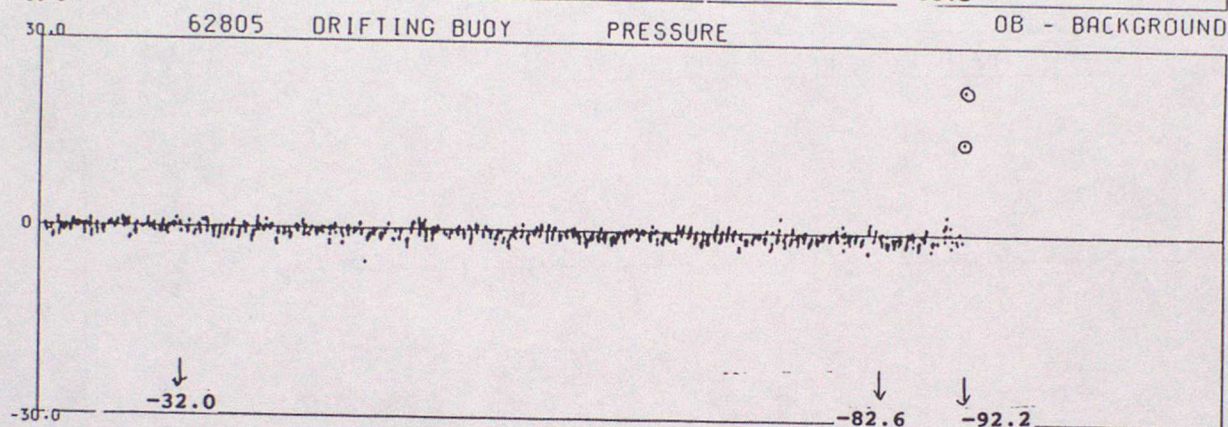
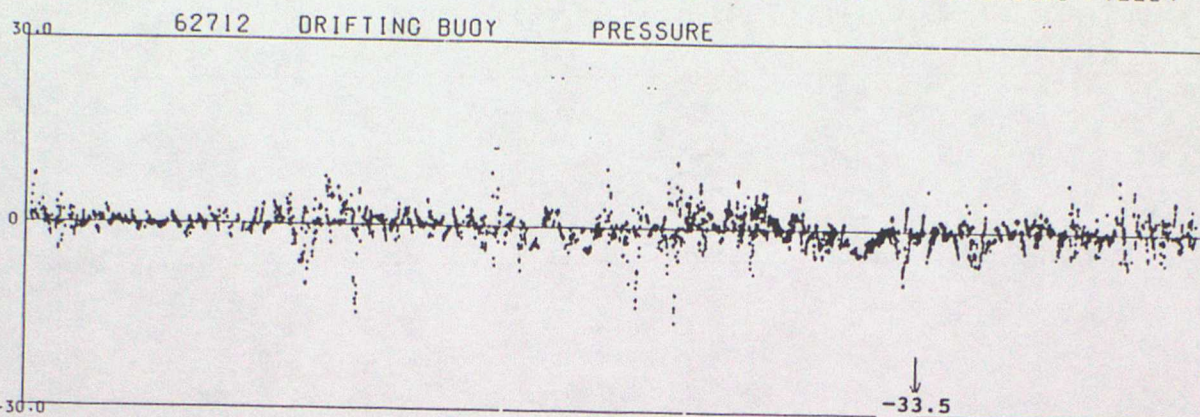
DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)



DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)

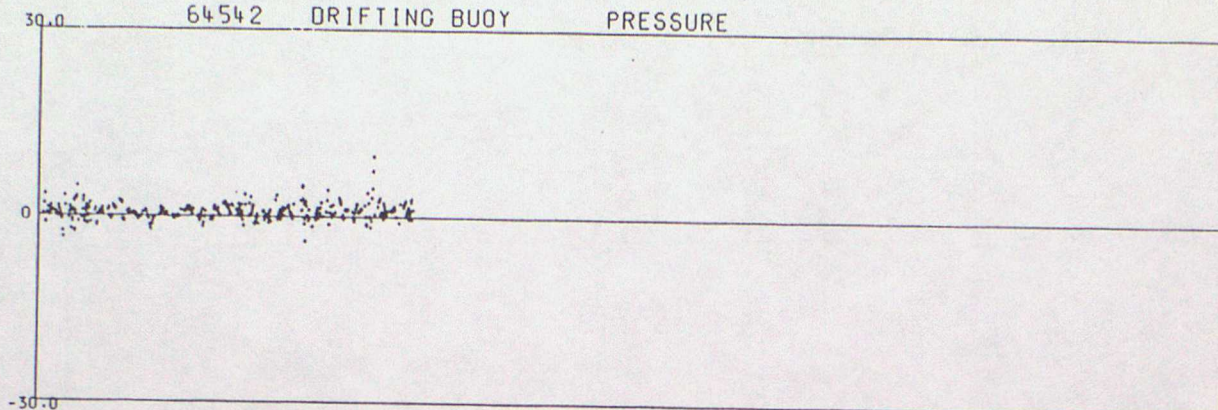


DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)



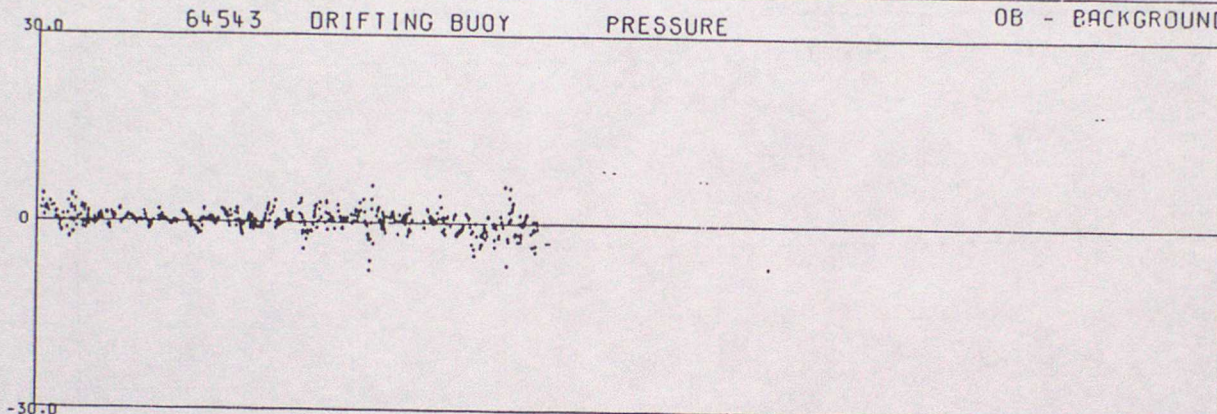
DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)

64542 DRIFTING BUOY PRESSURE



64543 DRIFTING BUOY PRESSURE

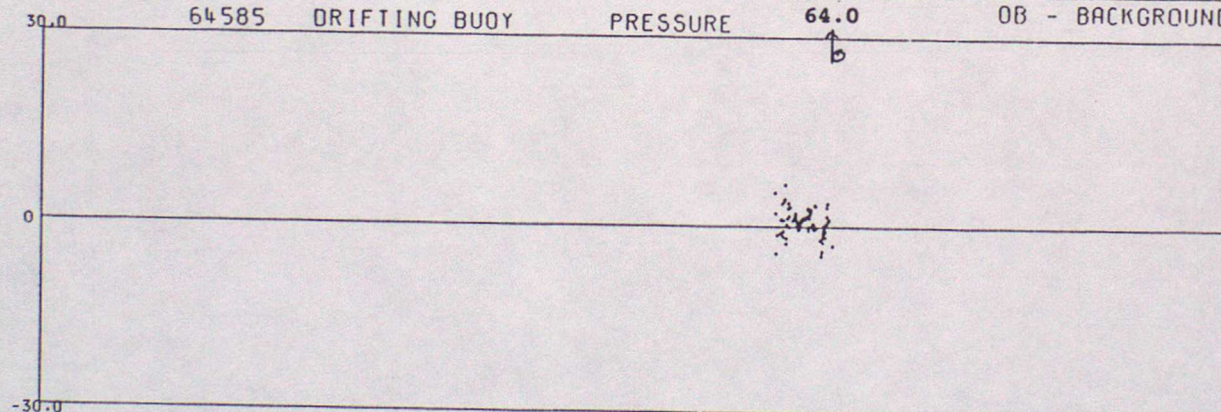
OB - BACKGROUND



64585 DRIFTING BUOY PRESSURE

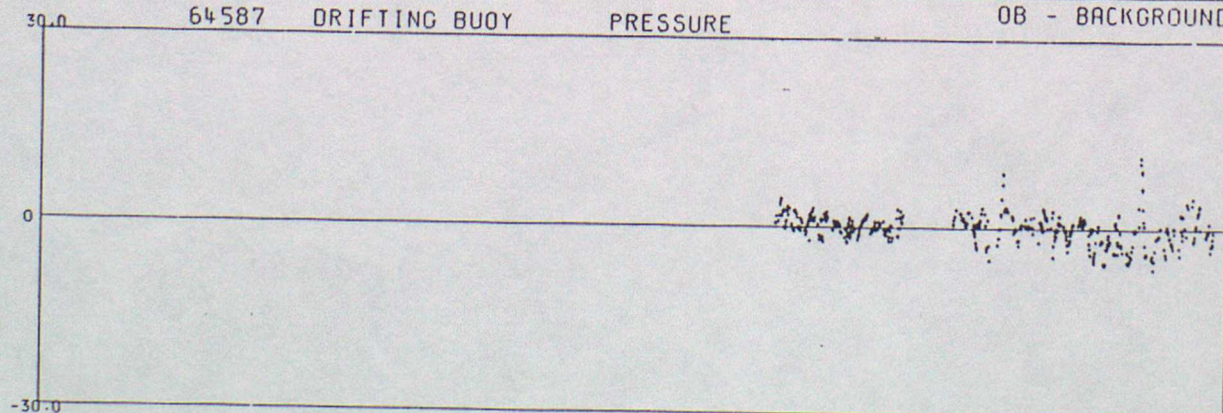
64.0

OB - BACKGROUND



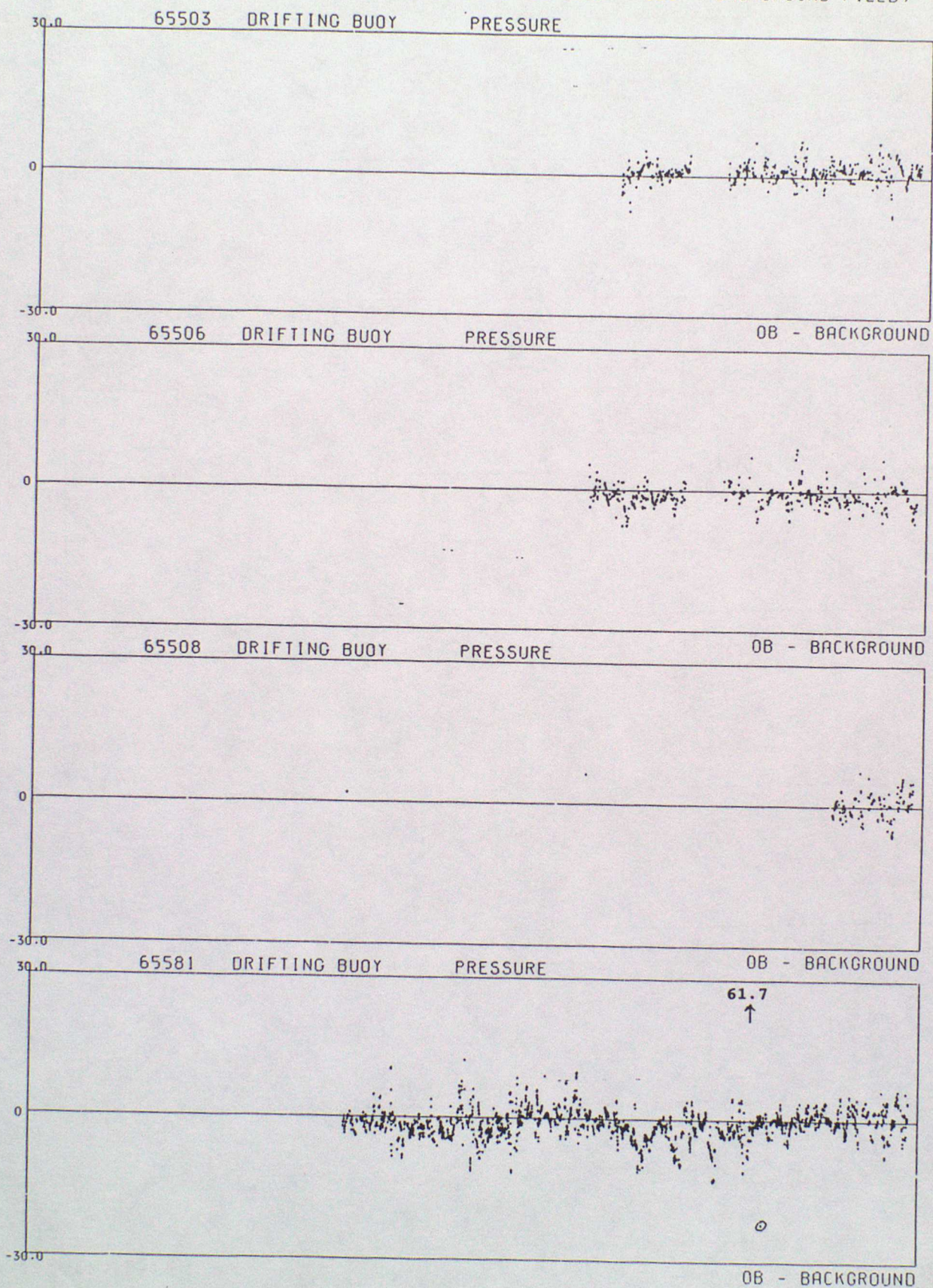
64587 DRIFTING BUOY PRESSURE

OB - BACKGROUND

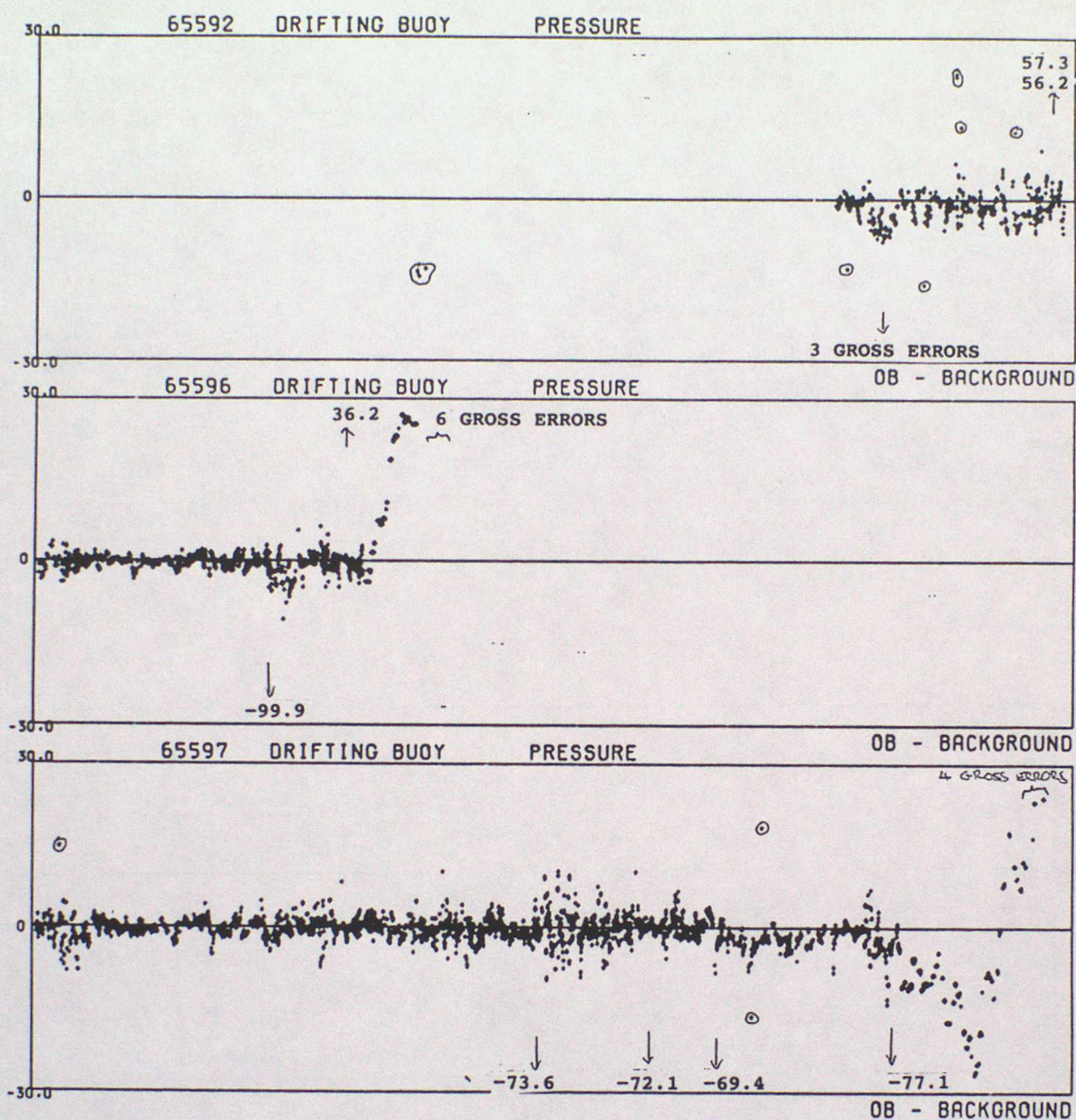


OB - BACKGROUND

DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)

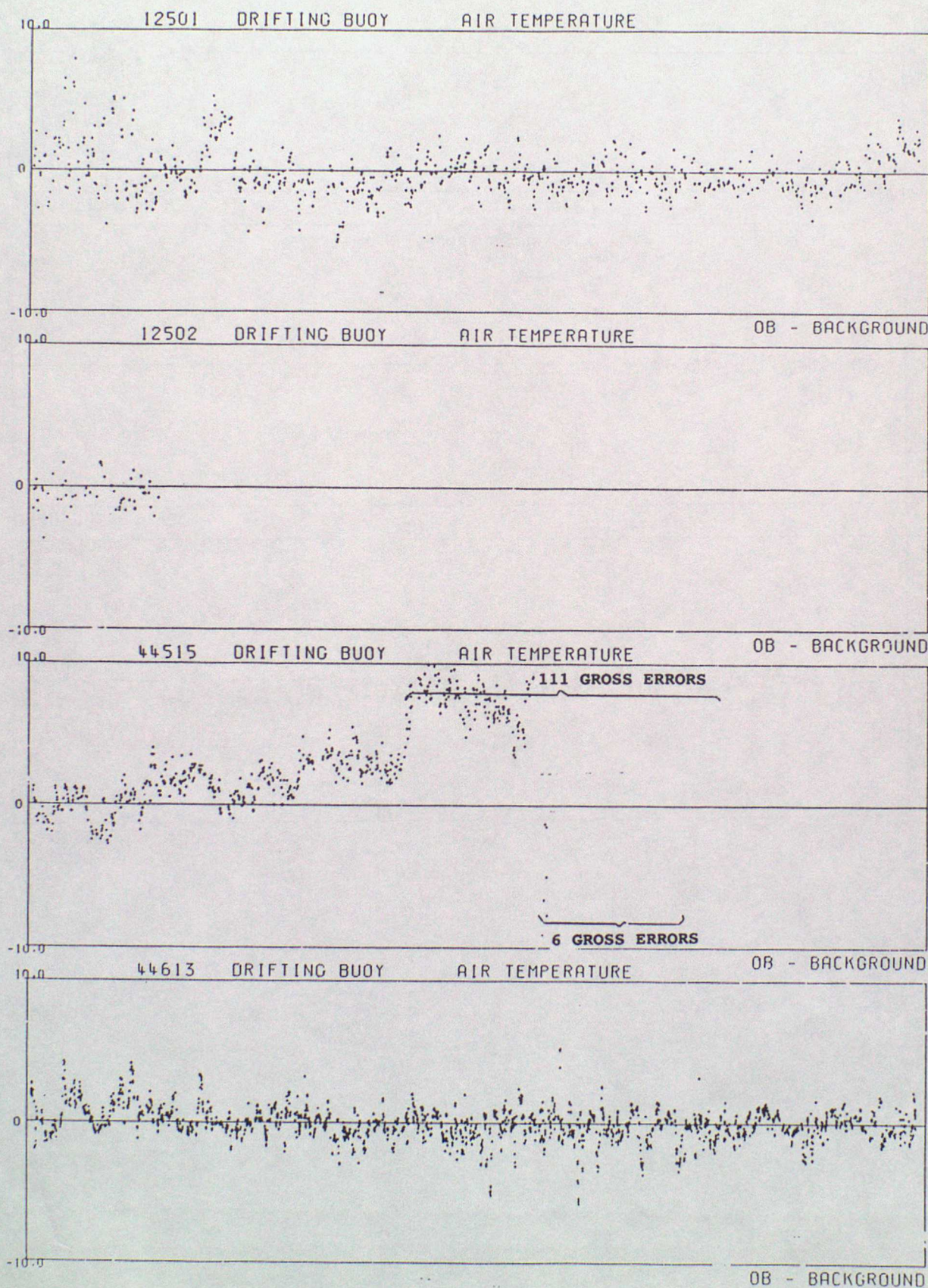


DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)

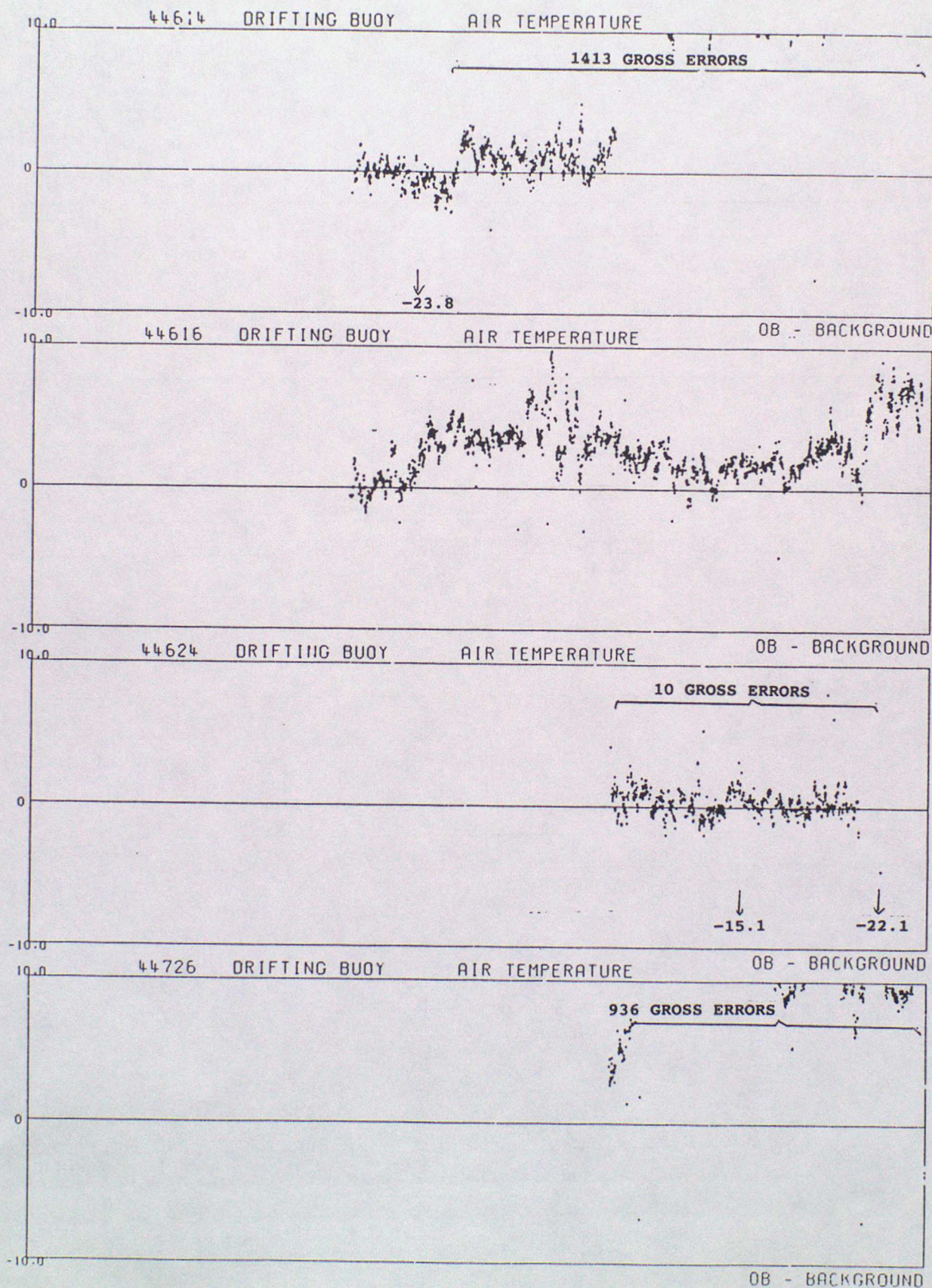


ANNEX C - TIME SERIES PLOTS OF AIR TEMPERATURE

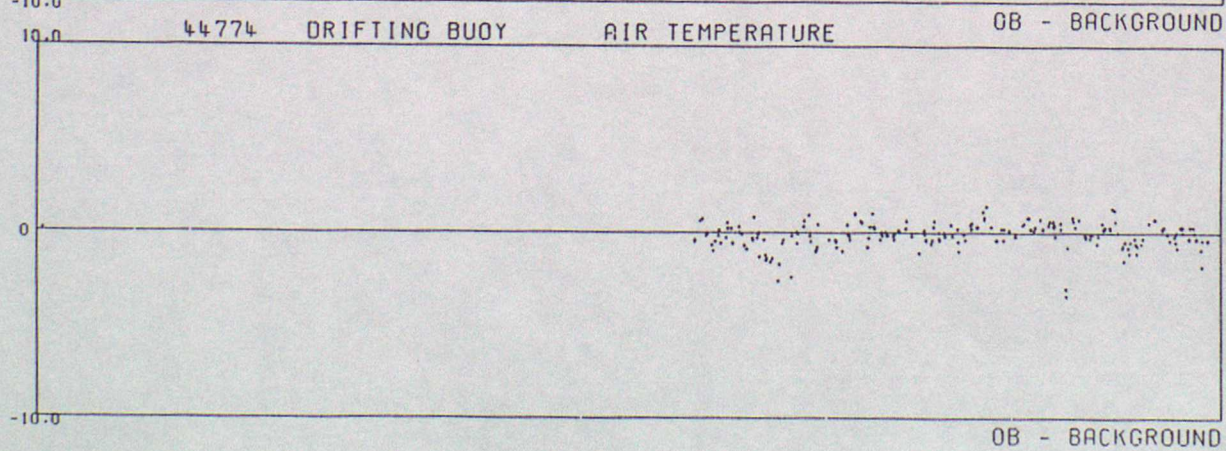
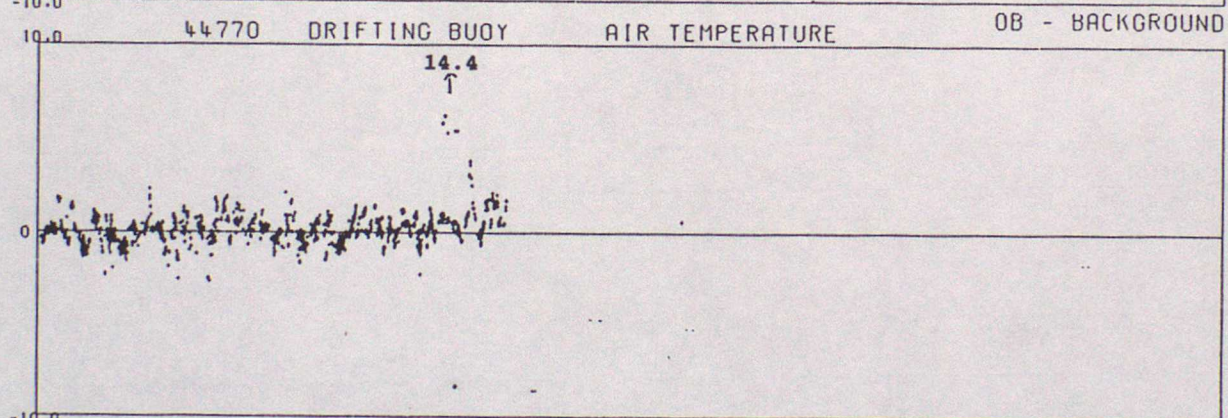
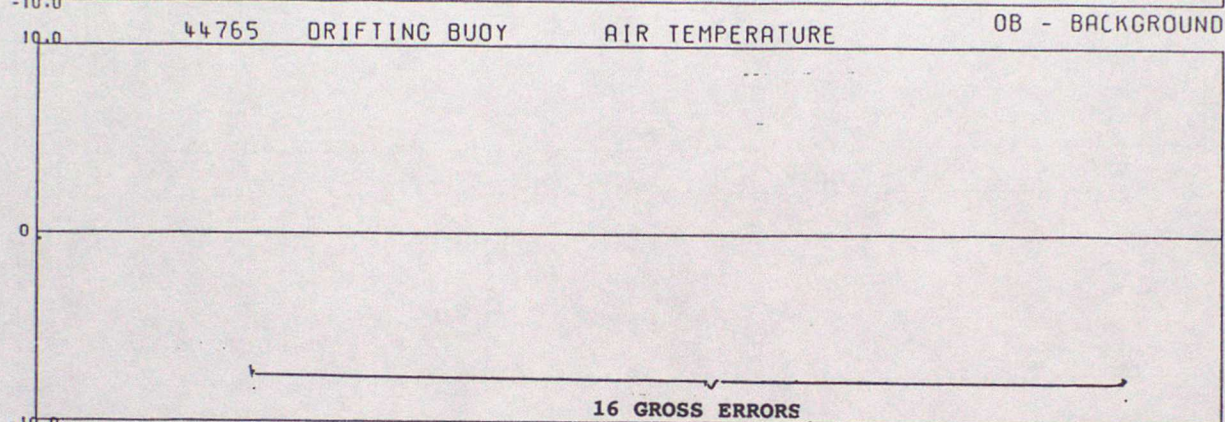
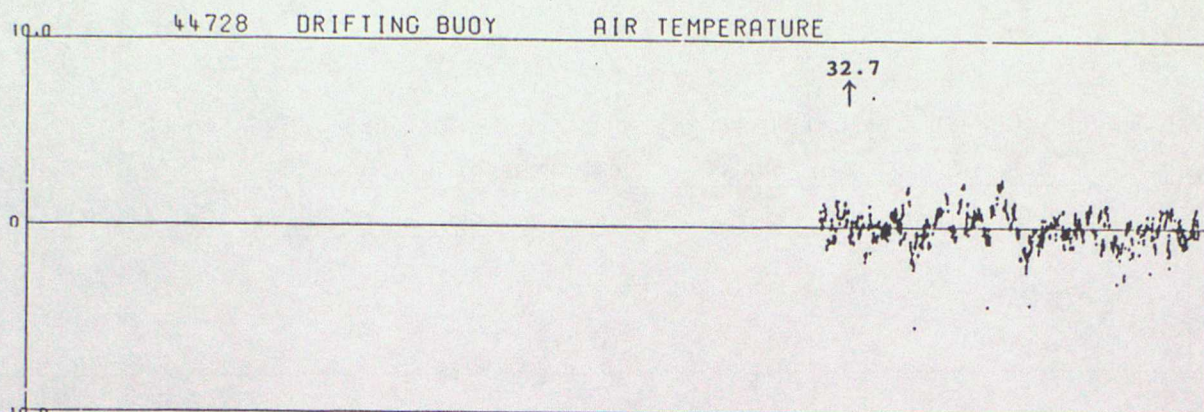
DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)



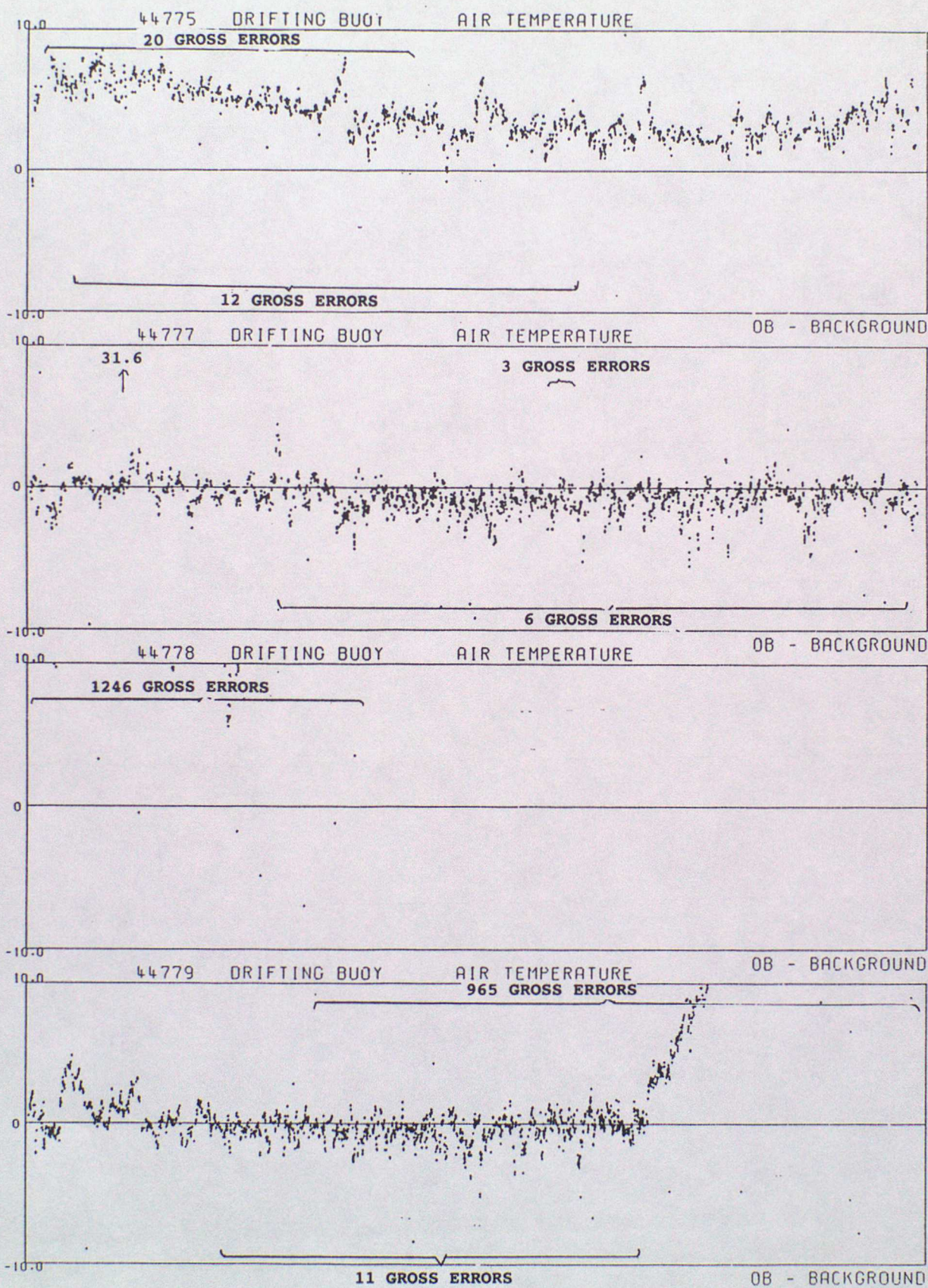
DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)



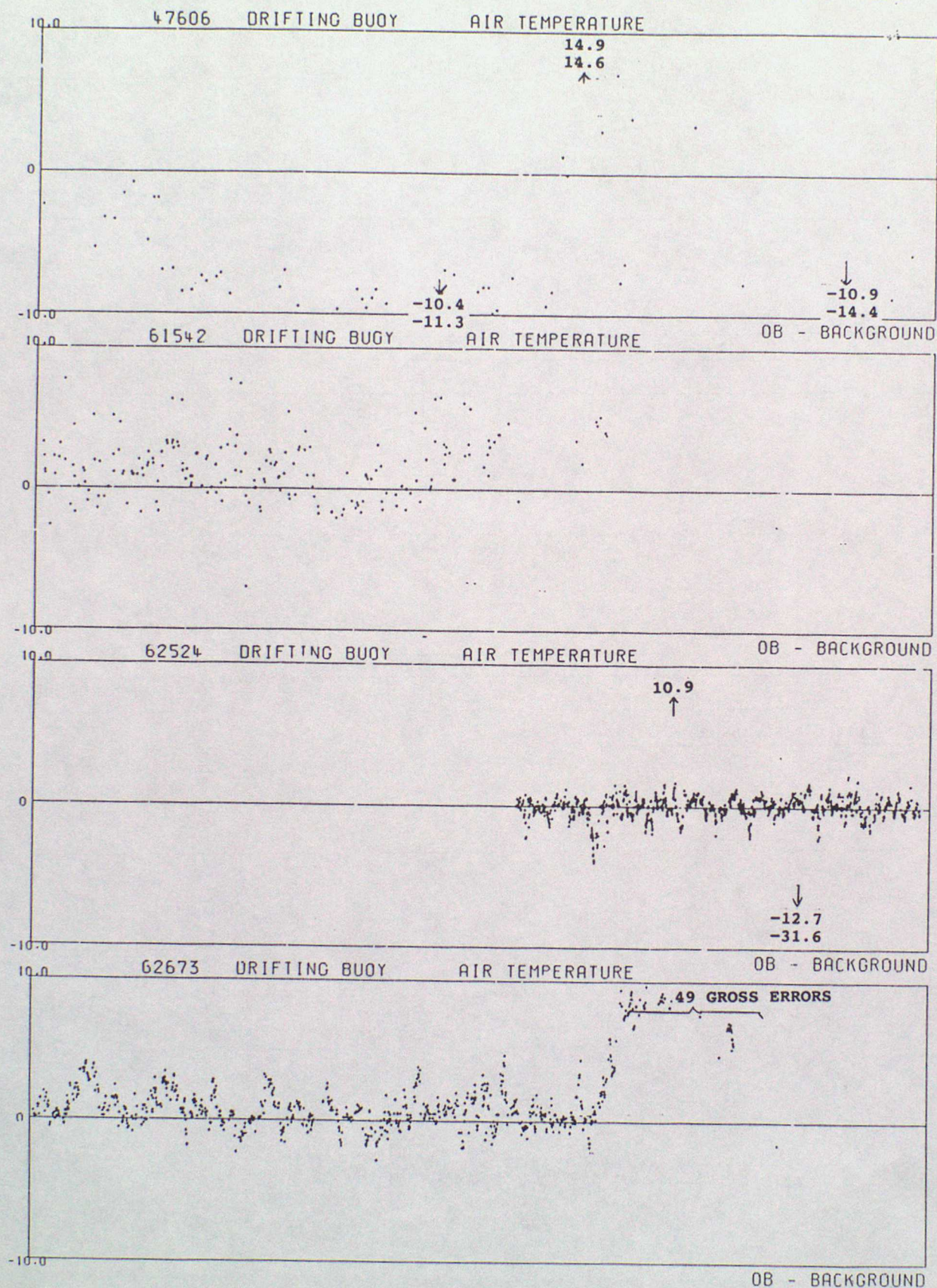
DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)



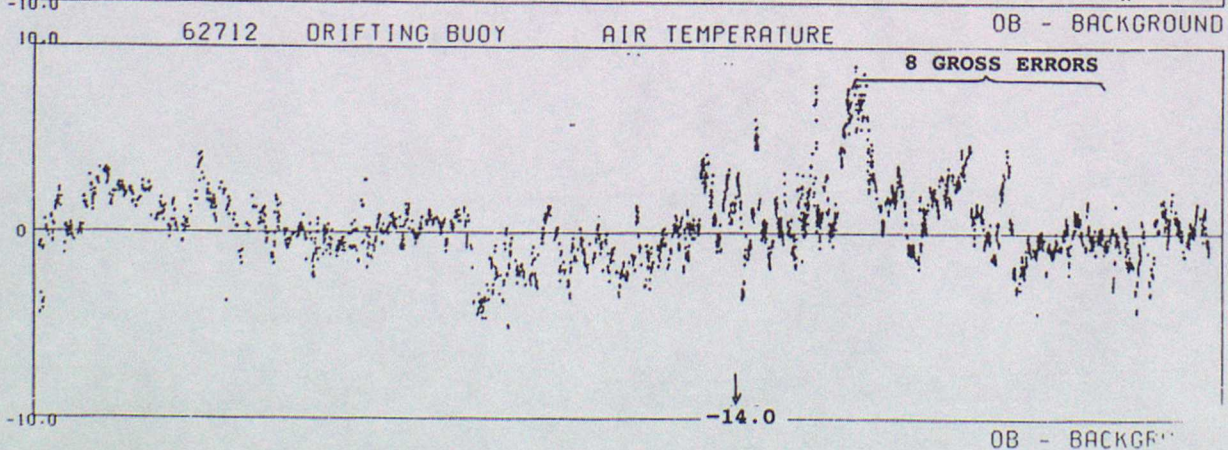
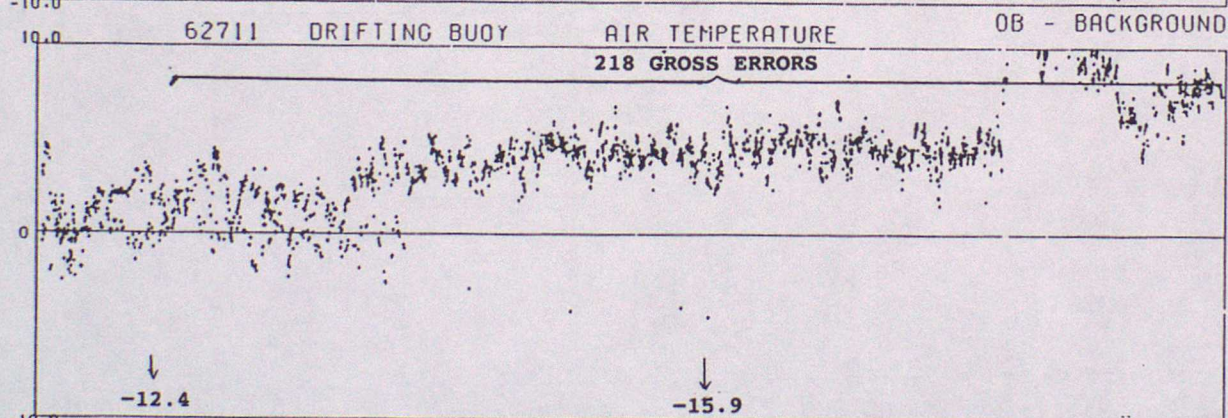
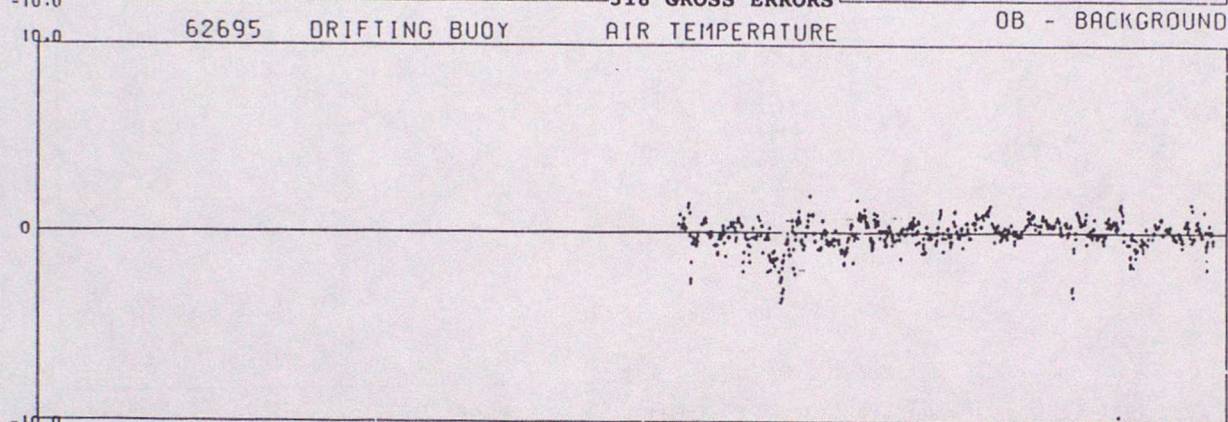
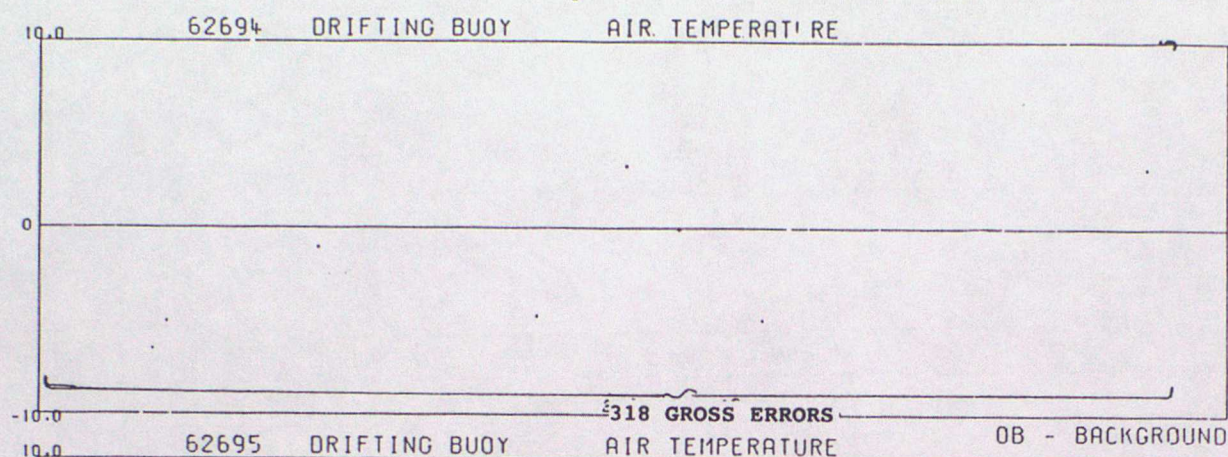
DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)



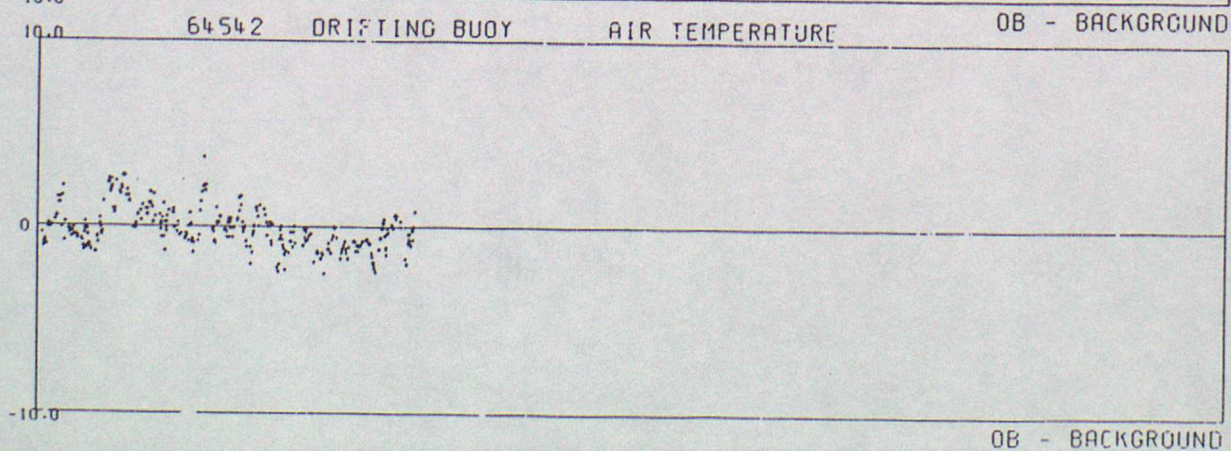
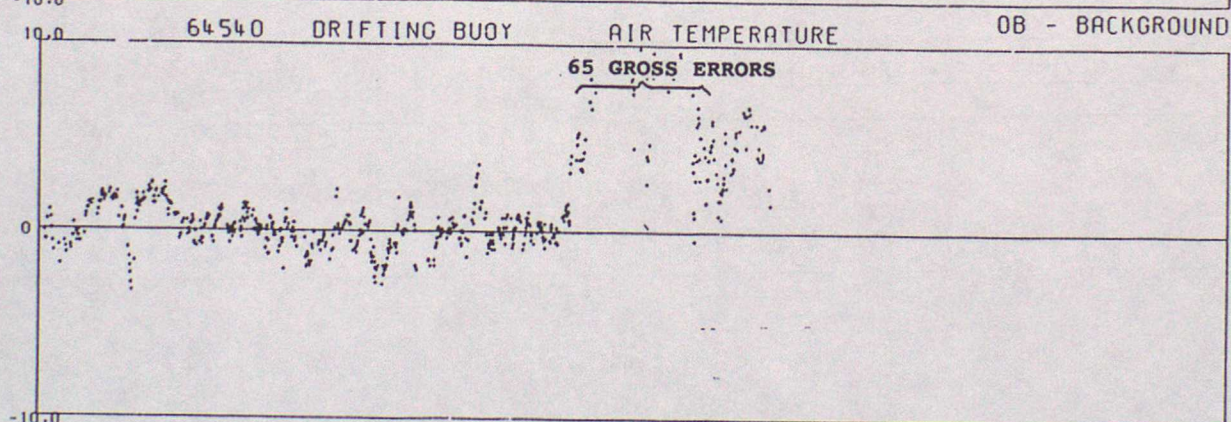
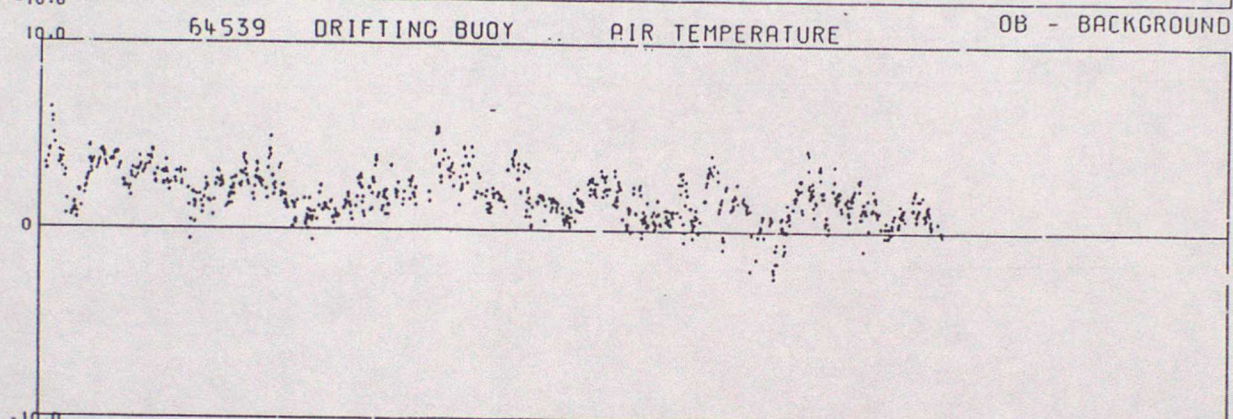
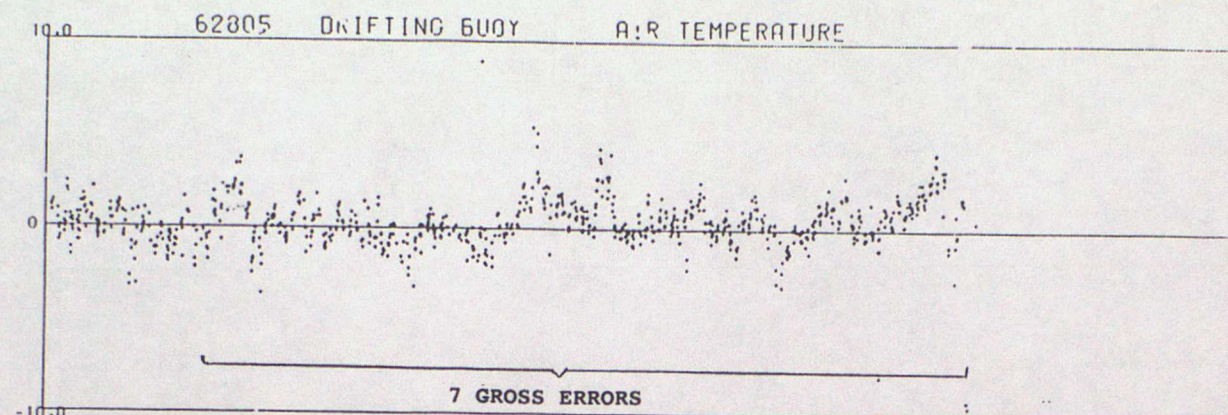
DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)



DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)

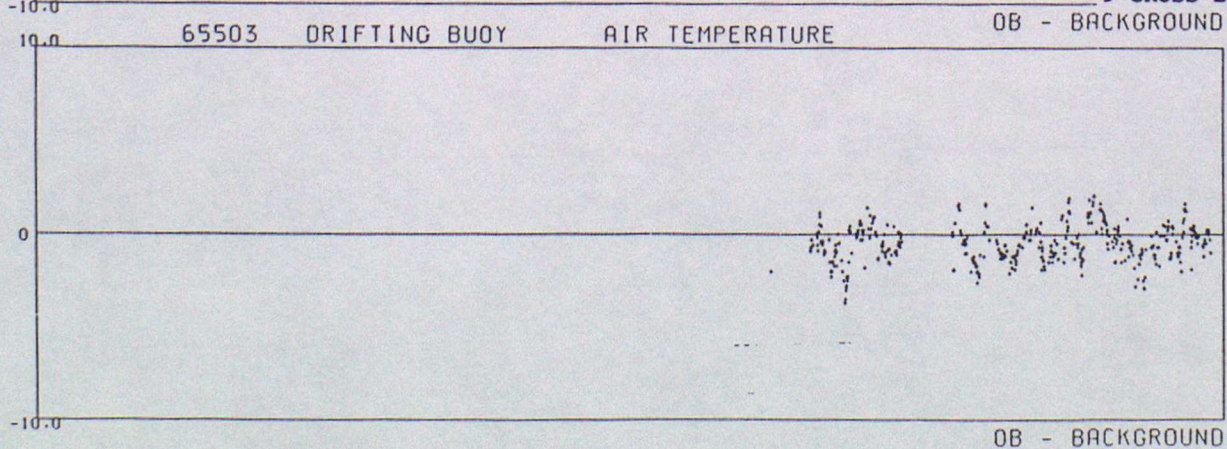
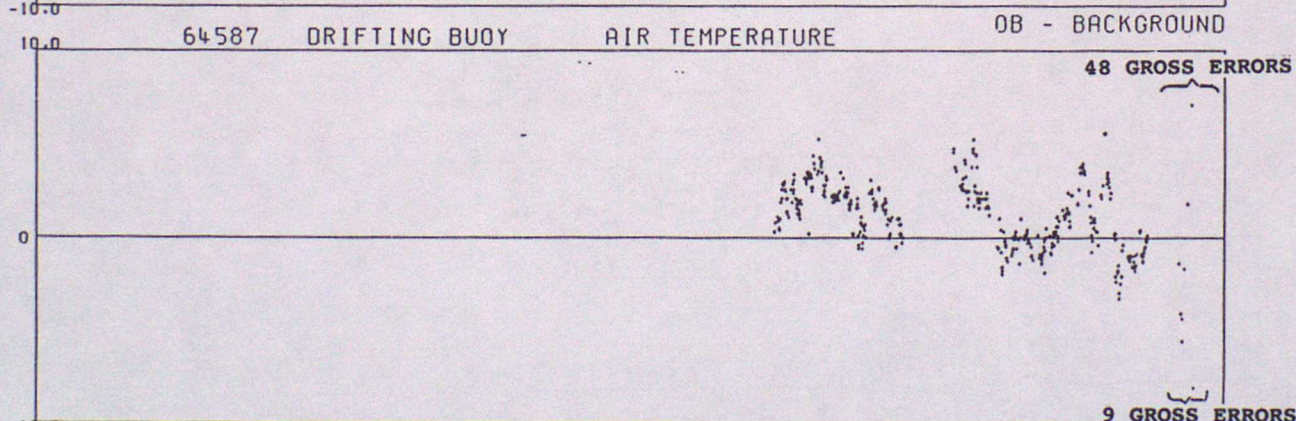
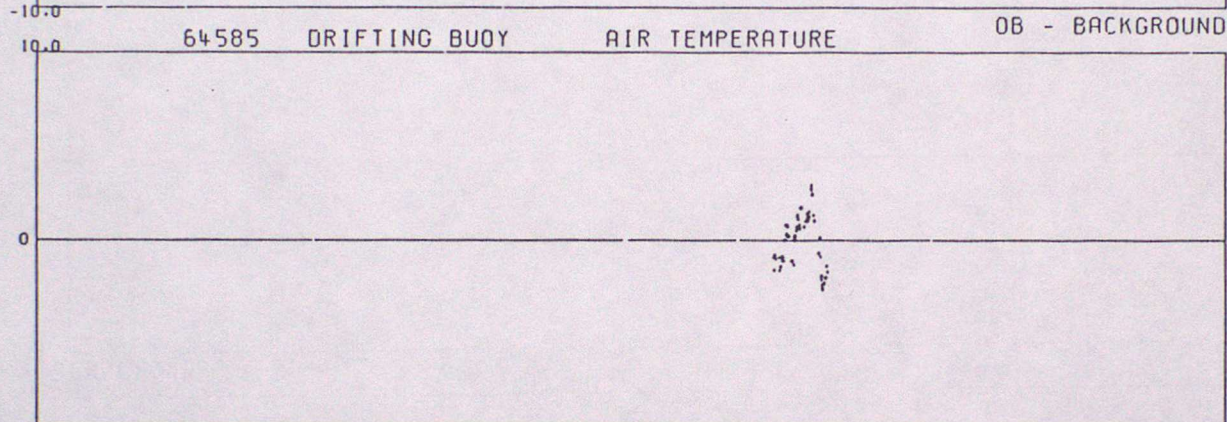
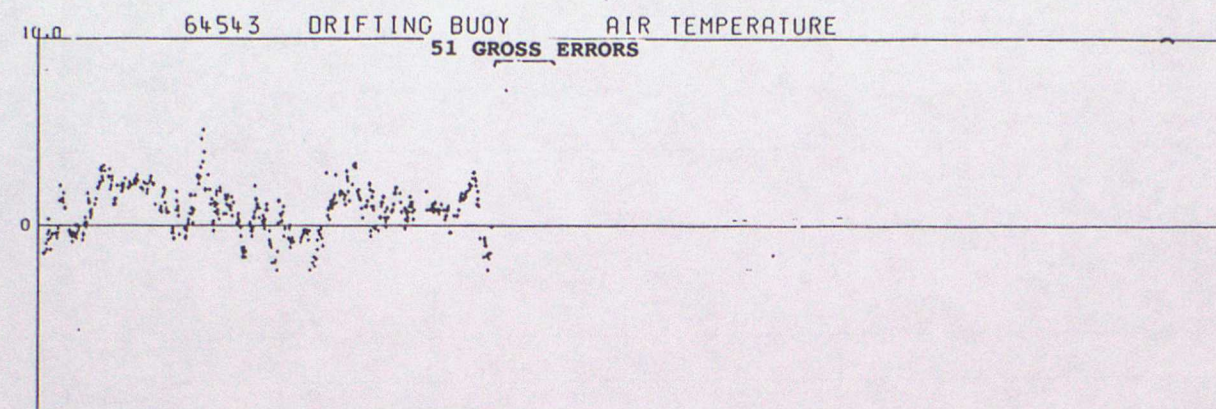


DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 10BS - BACKGROUND FIELD

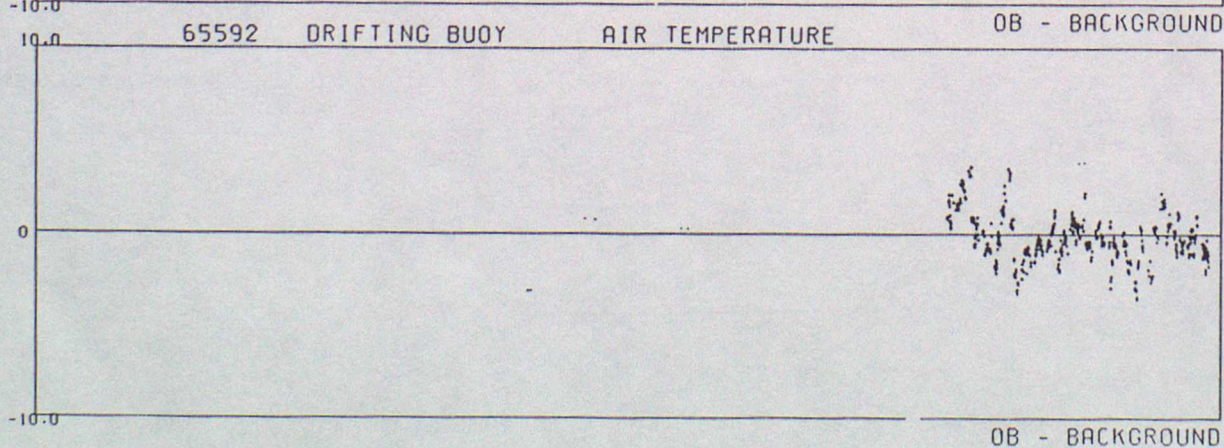
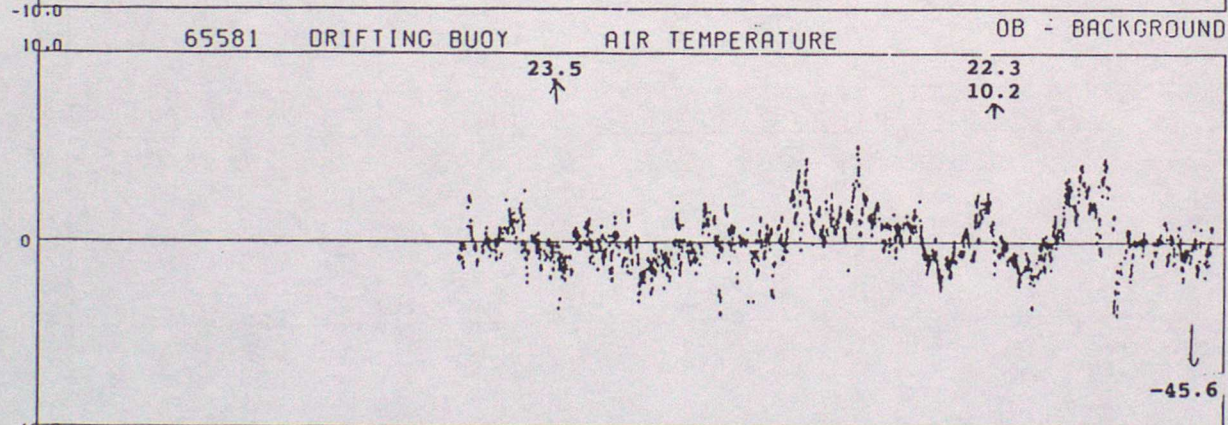
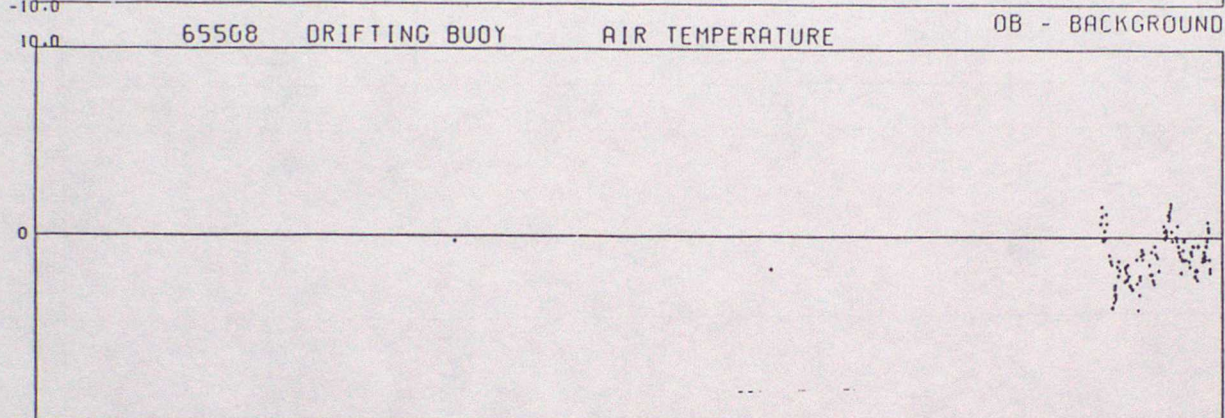
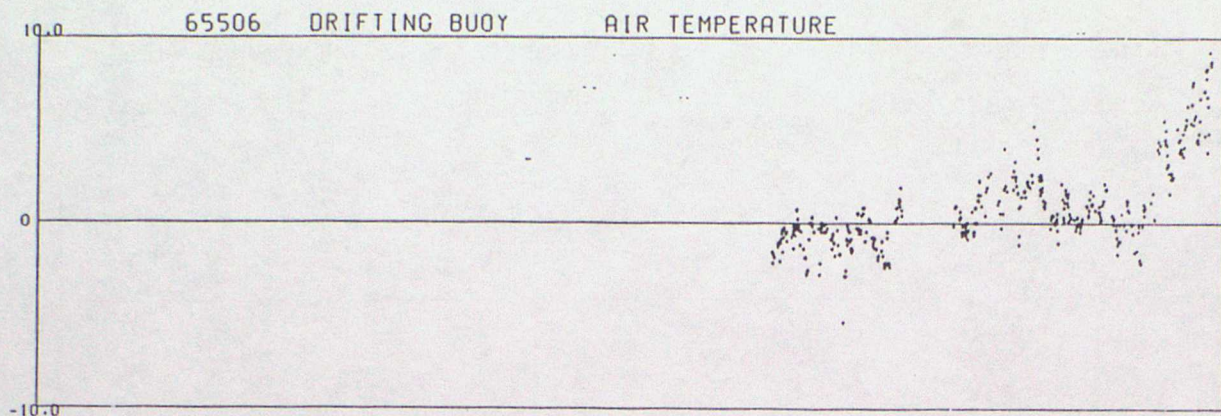


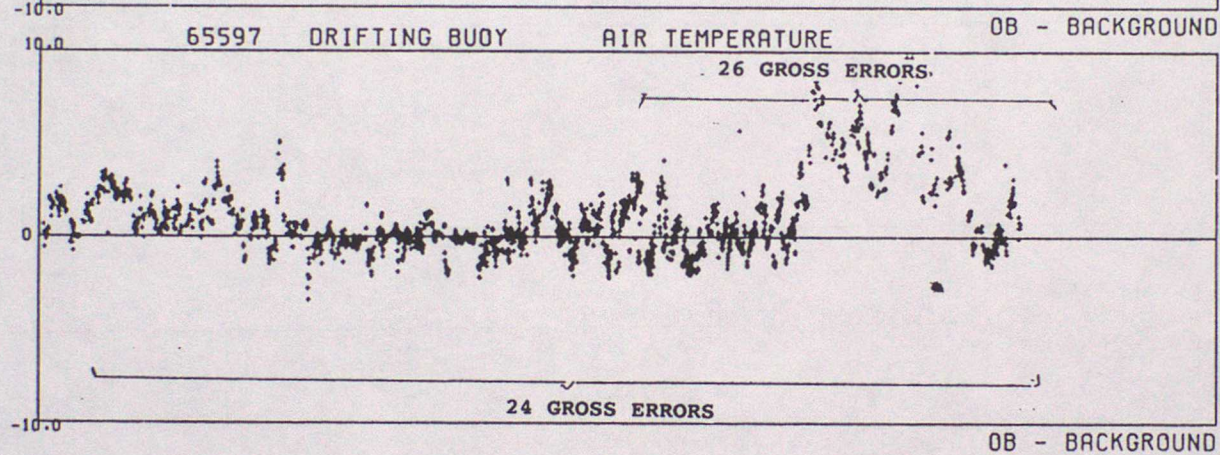
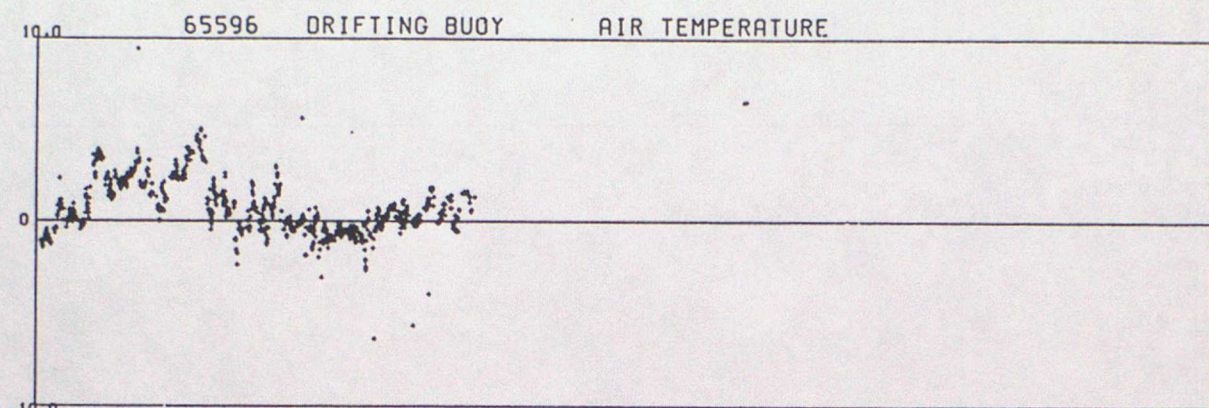
OB - BACKGROUND

DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)



DATA FROM 00Z ON 01/10/1993 TO 23Z ON 31/12/1993 (OBS - BACKGROUND FIELD)





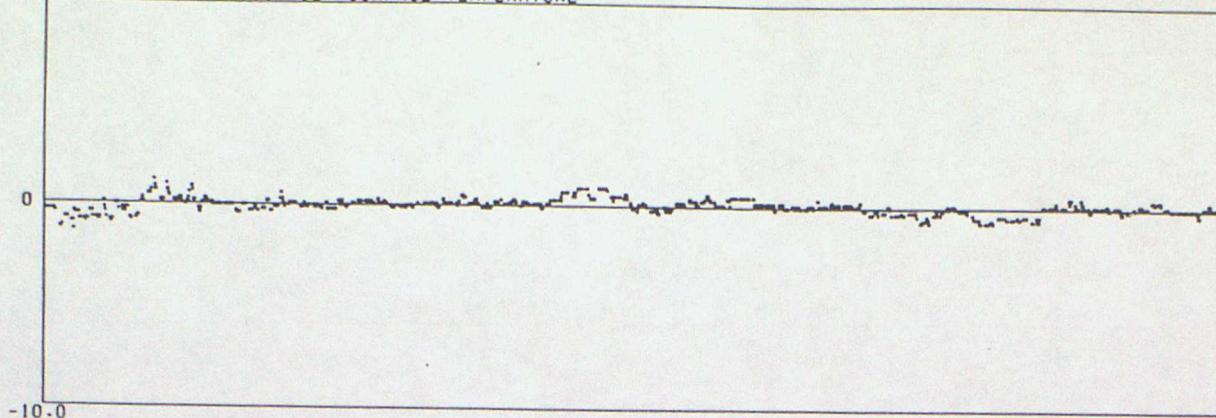
AREA D - TIME SERIES PLOTS OF SEA SURFACE TEMPERATURE

01/10/1993

31/12/1993

10.0

12501 SEA SURFACE TEMPERATURE



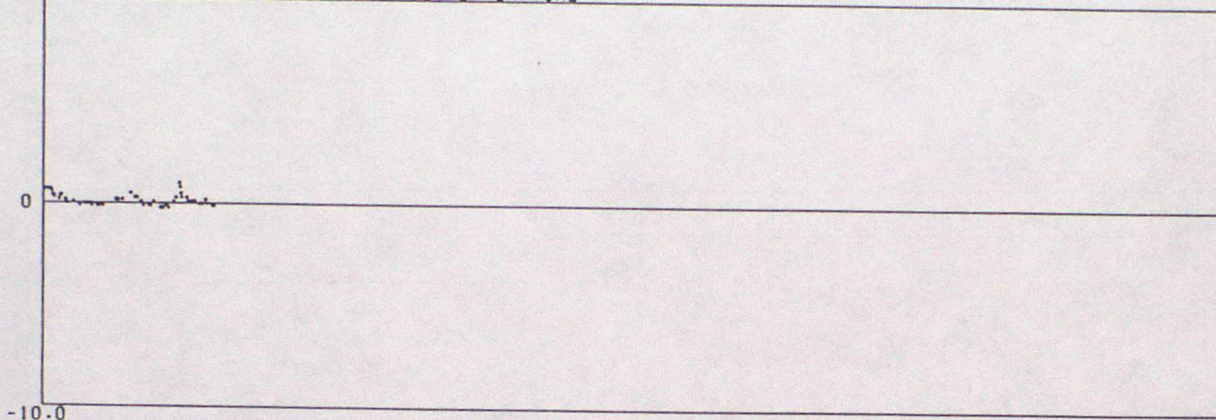
08 - BACKGROUND

01/10/1993

31/12/1993

10.0

12502 SEA SURFACE TEMPERATURE



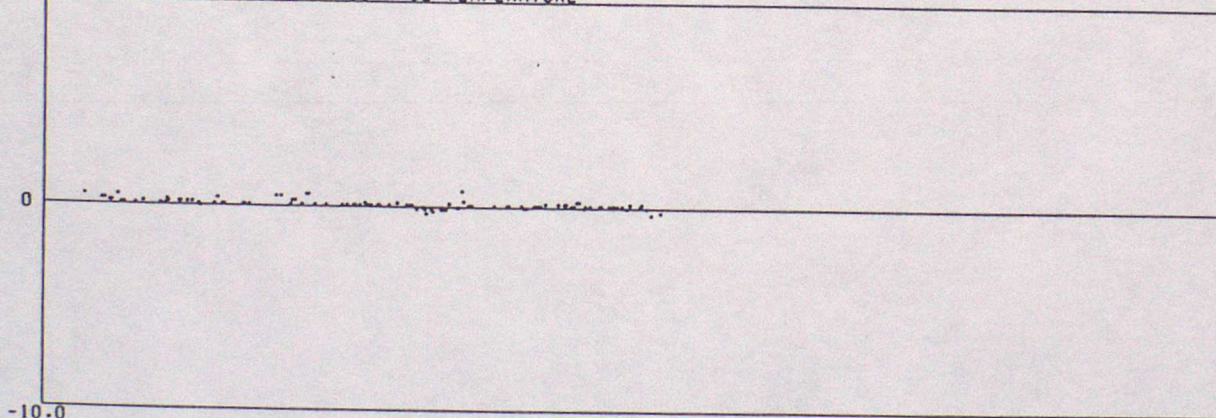
08 - BACKGROUND

01/10/1993

31/12/1993

10.0

13533 SEA SURFACE TEMPERATURE



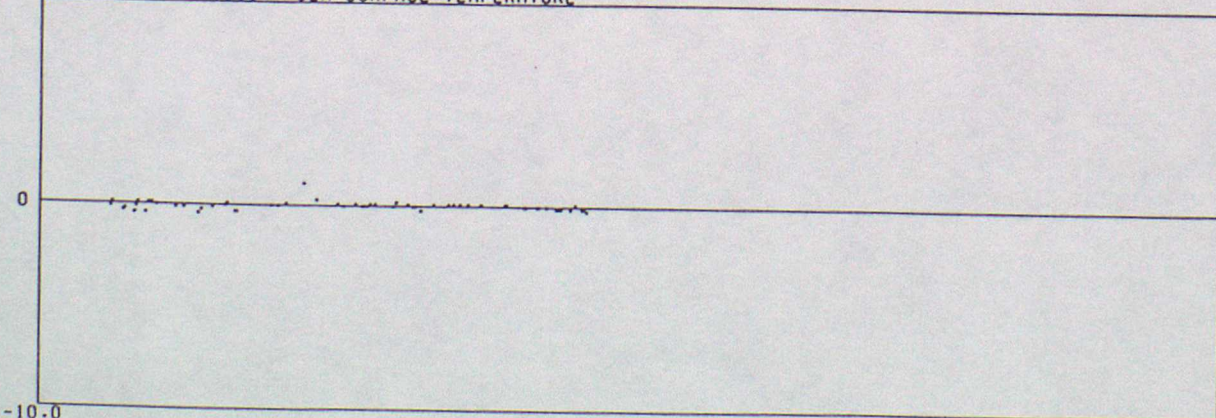
08 - BACKGROUND

01/10/1993

31/12/1993

10.0

13534 SEA SURFACE TEMPERATURE



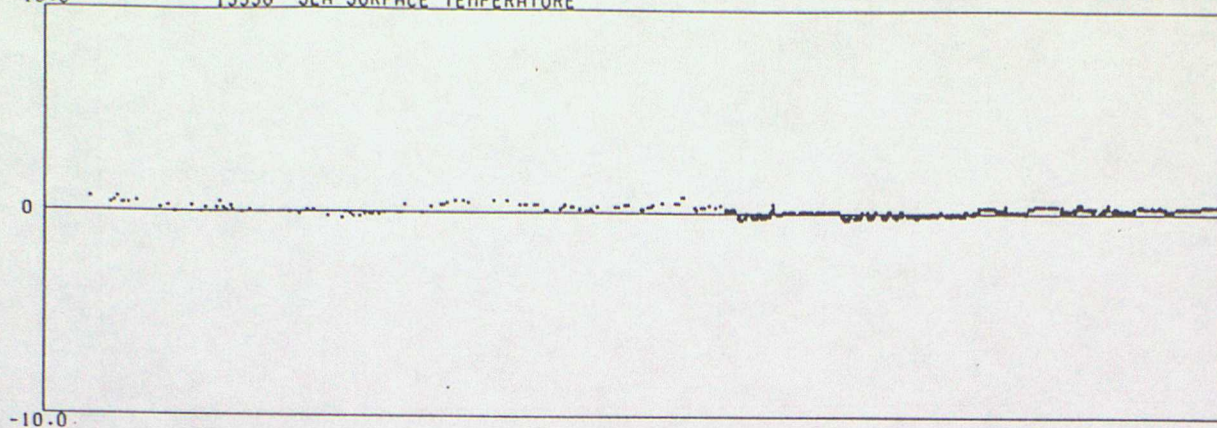
08 - BACKGROUND

01/10/1993

10.0

13556 SEA SURFACE TEMPERATURE

31/12/1993



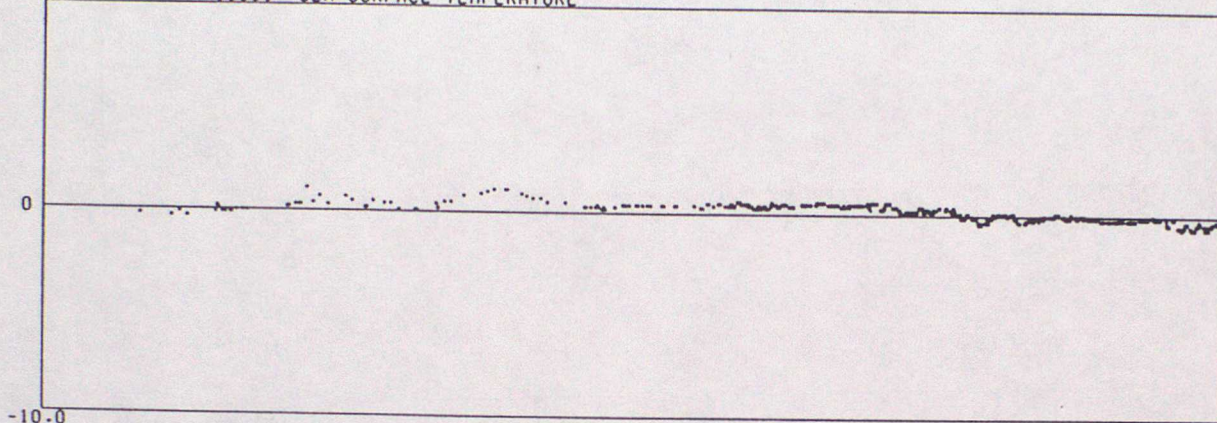
08 - BACKGROUND

01/10/1993

10.0

13561 SEA SURFACE TEMPERATURE

31/12/1993



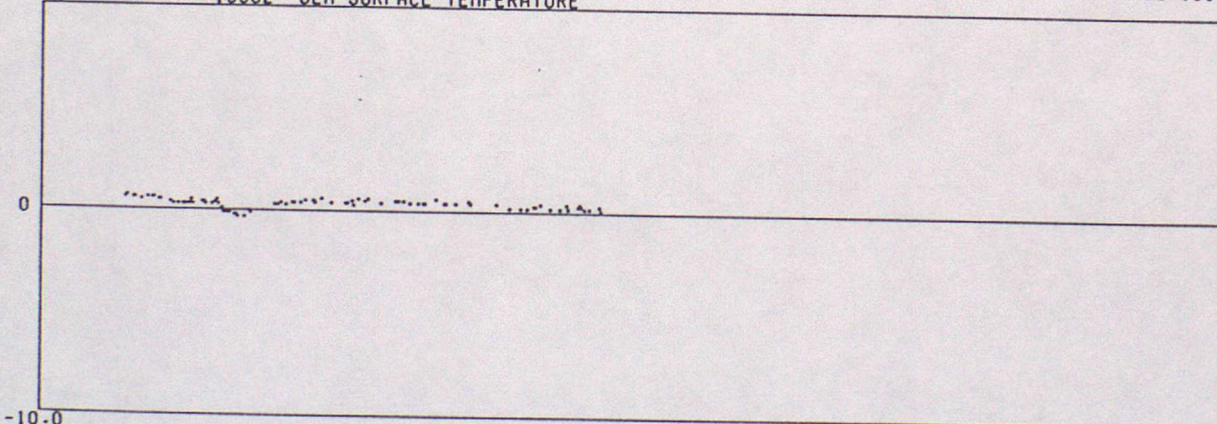
08 - BACKGROUND

01/10/1993

10.0

13562 SEA SURFACE TEMPERATURE

31/12/1993



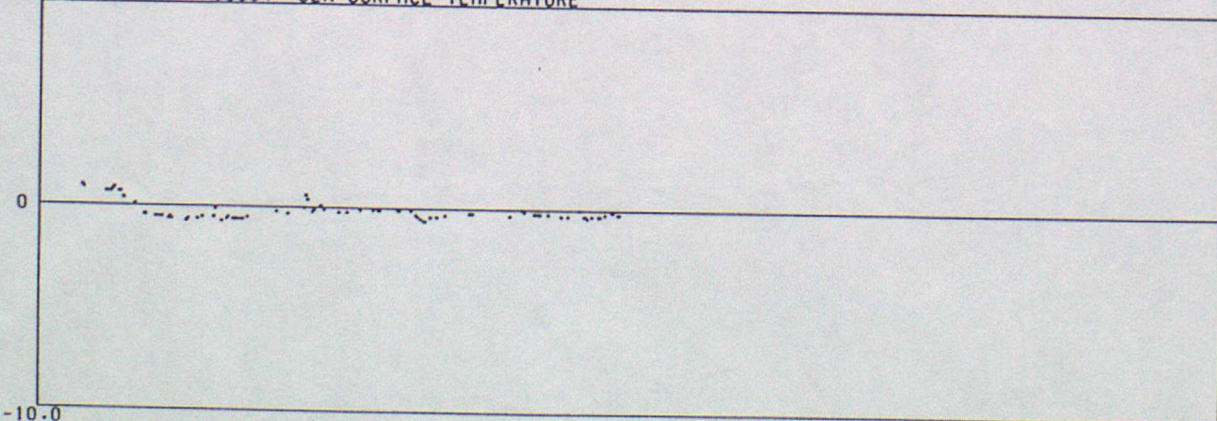
08 - BACKGROUND

01/10/1993

10.0

13564 SEA SURFACE TEMPERATURE

31/12/1993

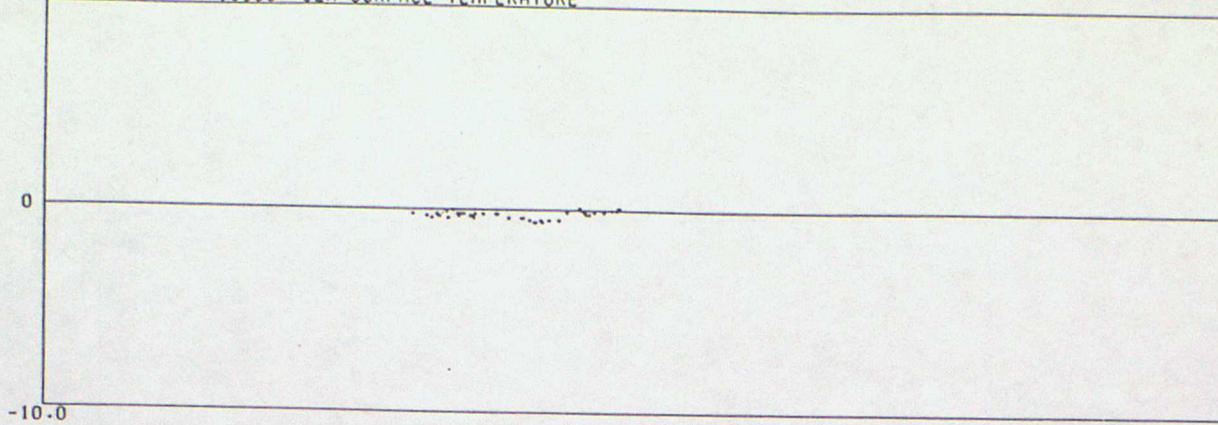


08 - BACKGROUND

01/10/1993
10.0

13566 SEA SURFACE TEMPERATURE

31/12/1993

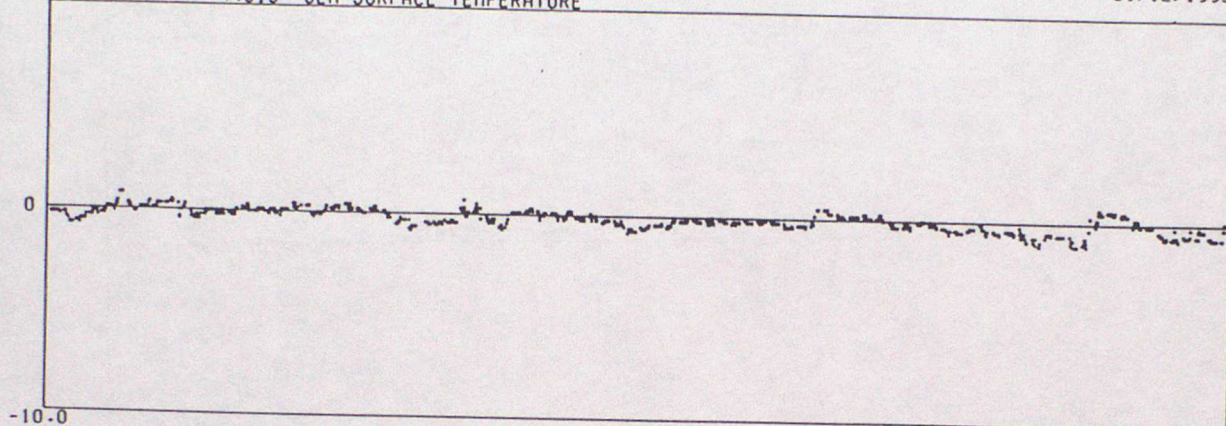


01/10/1993
10.0

44515 SEA SURFACE TEMPERATURE

OB - BACKGROUND

31/12/1993

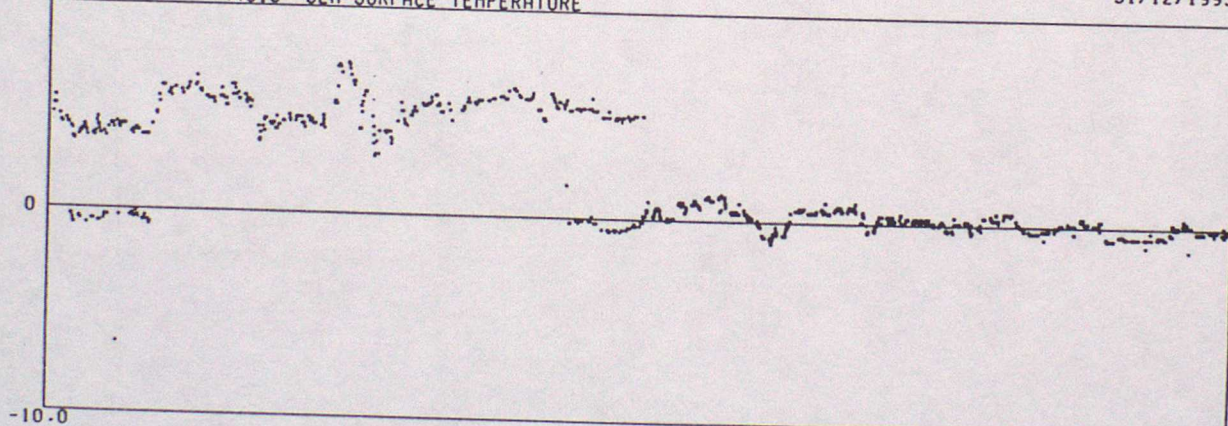


01/10/1993
10.0

44613 SEA SURFACE TEMPERATURE

OB - BACKGROUND

31/12/1993

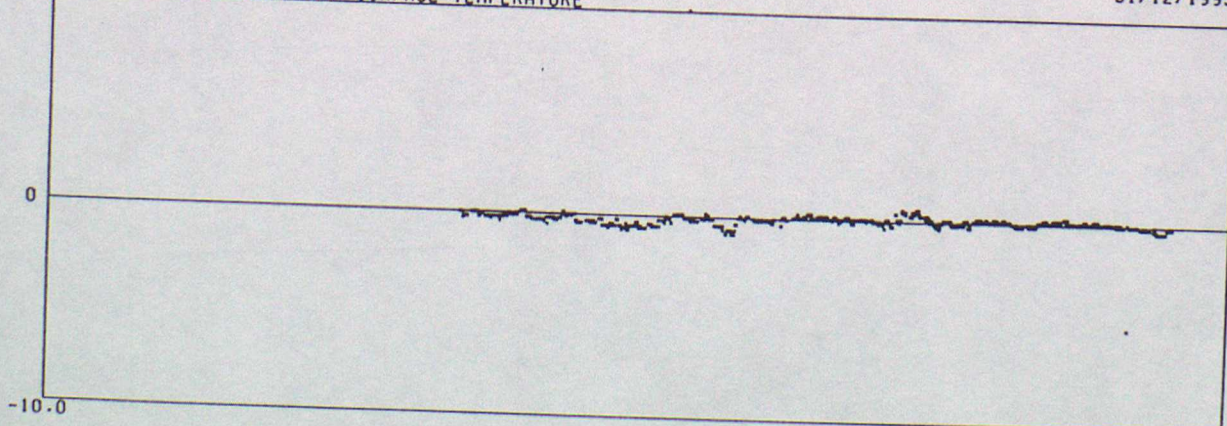


01/10/1993
10.0

44614 SEA SURFACE TEMPERATURE

OB - BACKGROUND

31/12/1993



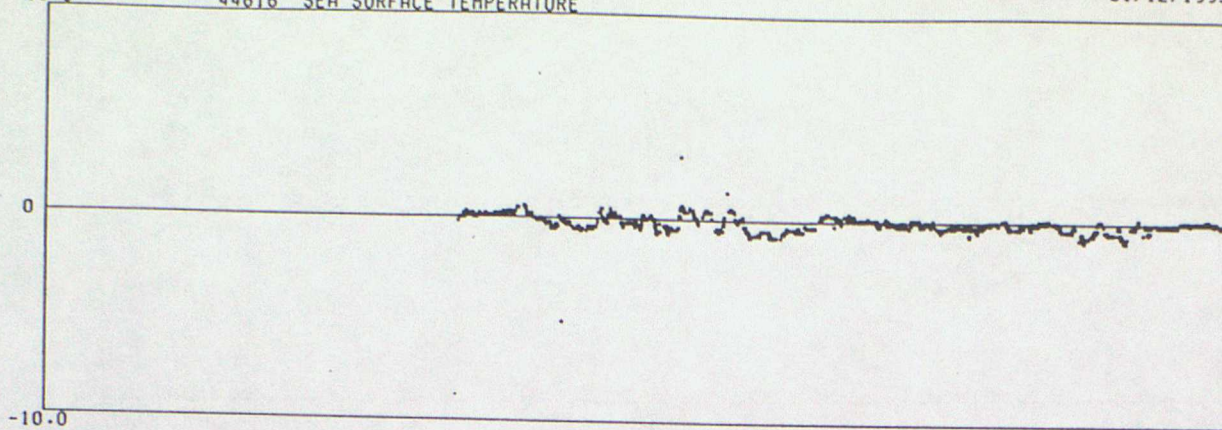
OB - BACKGROUND

01/10/1993

10.0

44616 SEA SURFACE TEMPERATURE

31/12/1993



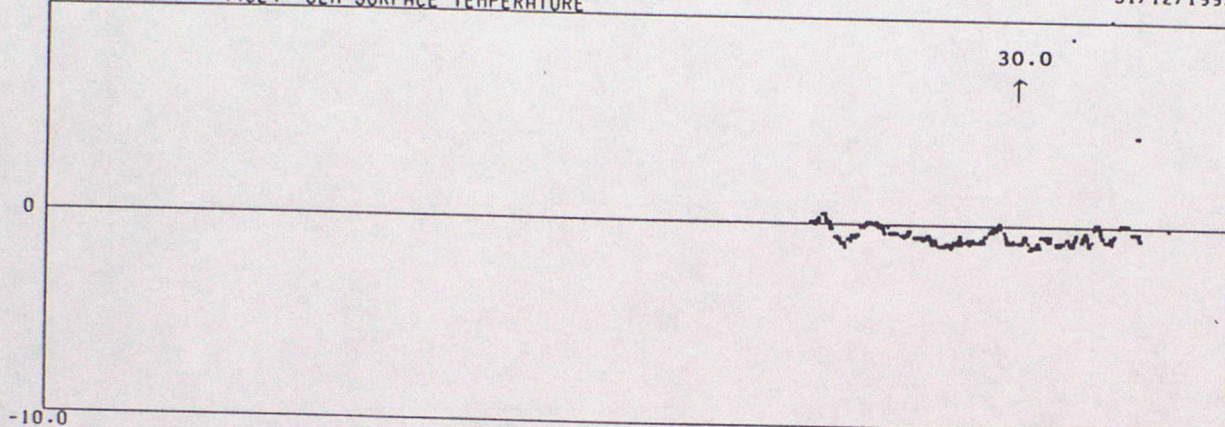
08 - BACKGROUND

01/10/1993

10.0

44624 SEA SURFACE TEMPERATURE

31/12/1993



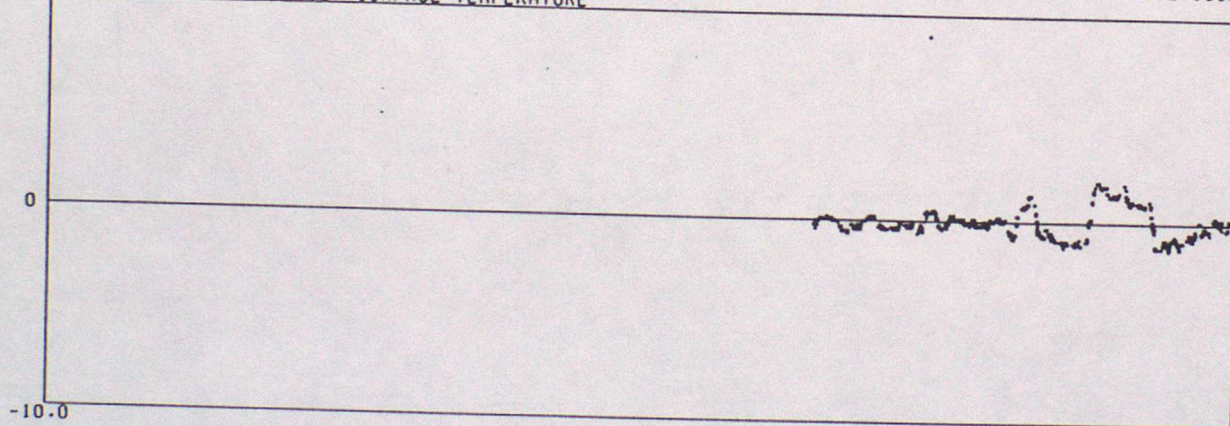
08 - BACKGROUND

01/10/1993

10.0

44726 SEA SURFACE TEMPERATURE

31/12/1993



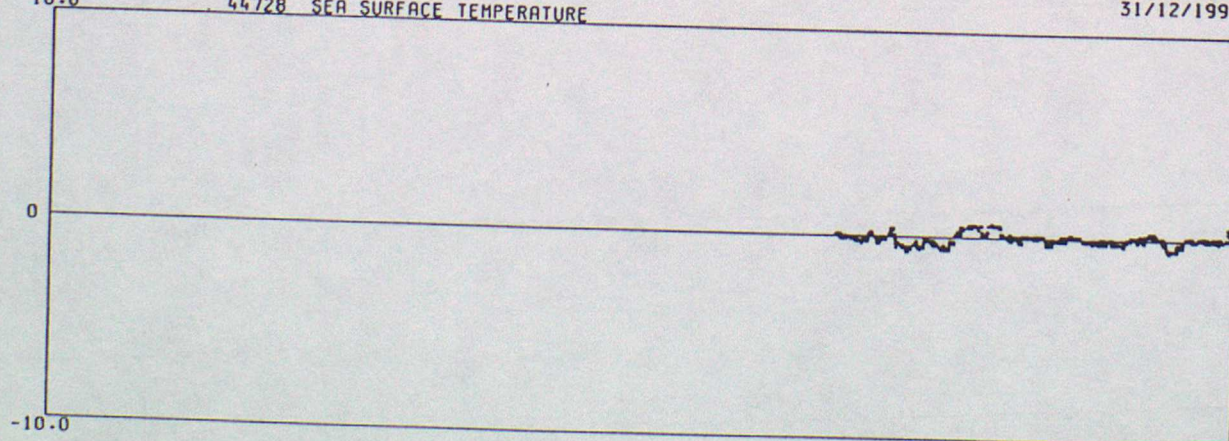
08 - BACKGROUND

01/10/1993

10.0

44728 SEA SURFACE TEMPERATURE

31/12/1993

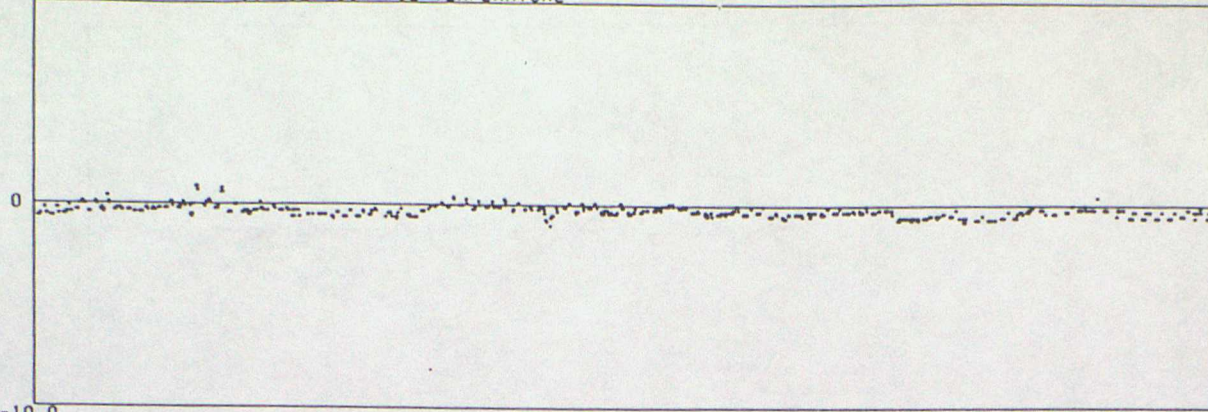


08 - BACKGROUND

01/10/1993
10.0

44765 SEA SURFACE TEMPERATURE

31/12/1993

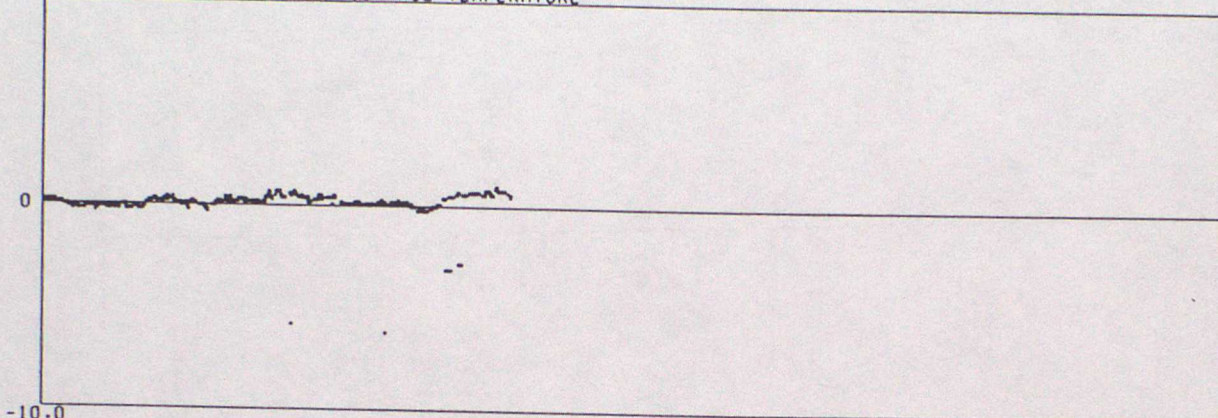


OB - BACKGROUND

01/10/1993
10.0

44770 SEA SURFACE TEMPERATURE

31/12/1993

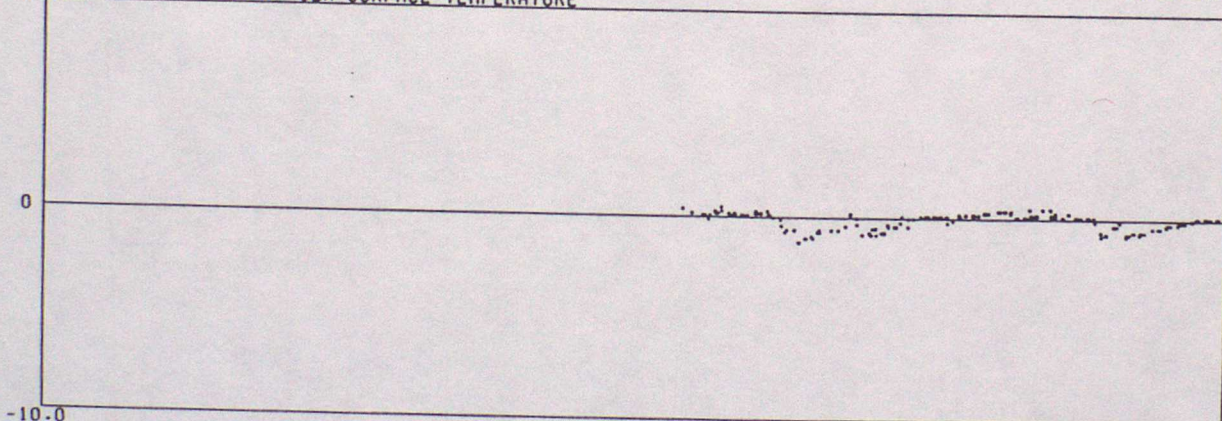


OB - BACKGROUND

01/10/1993
10.0

44774 SEA SURFACE TEMPERATURE

31/12/1993

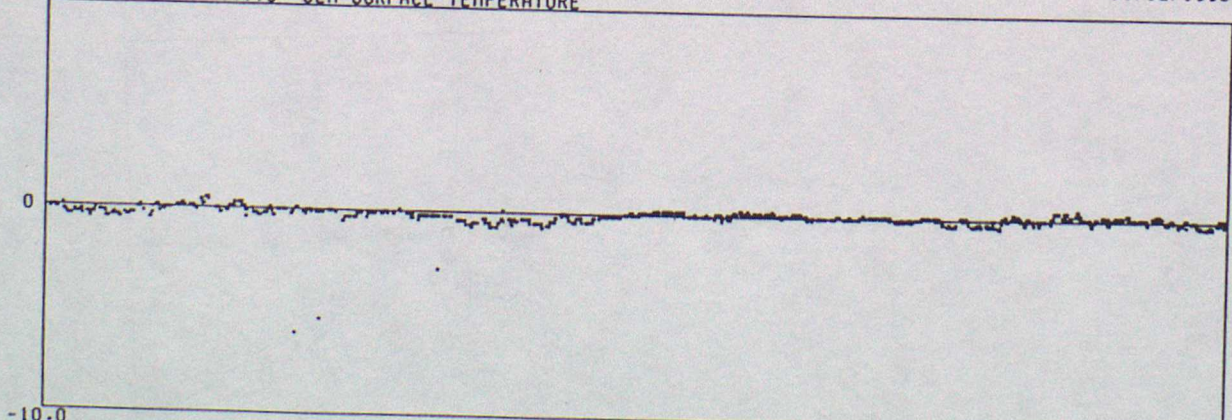


OB - BACKGROUND

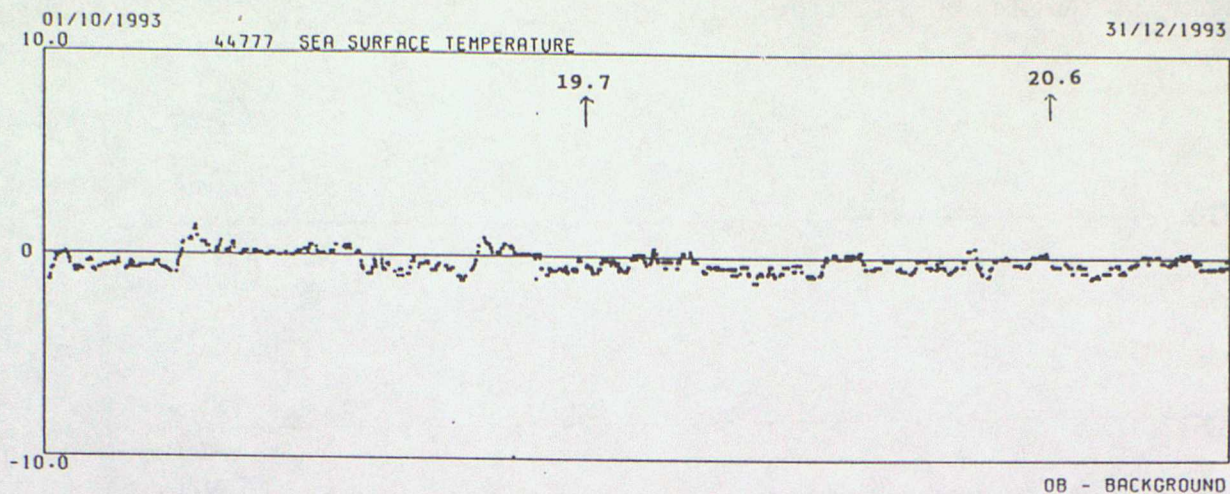
01/10/1993
10.0

44775 SEA SURFACE TEMPERATURE

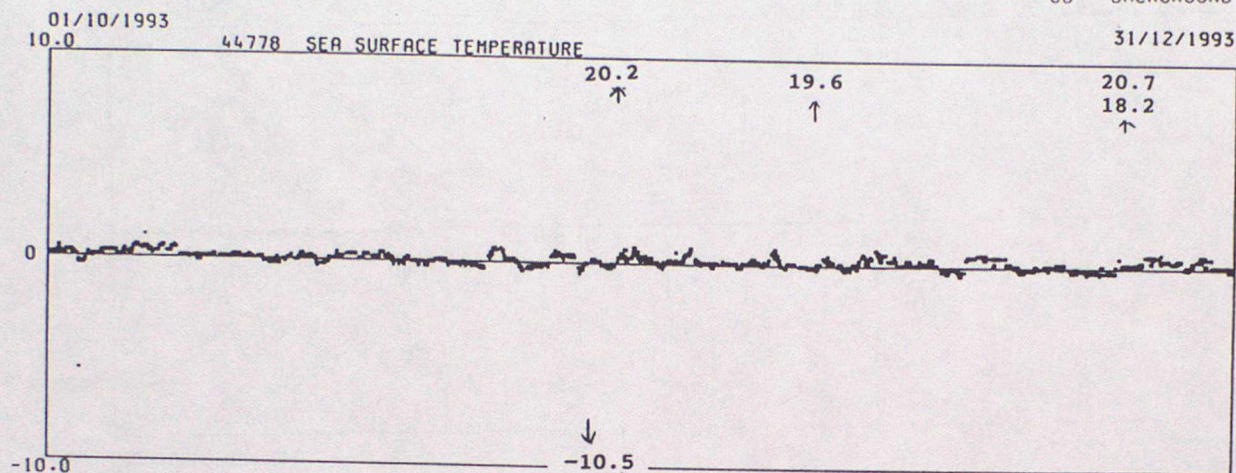
31/12/1993



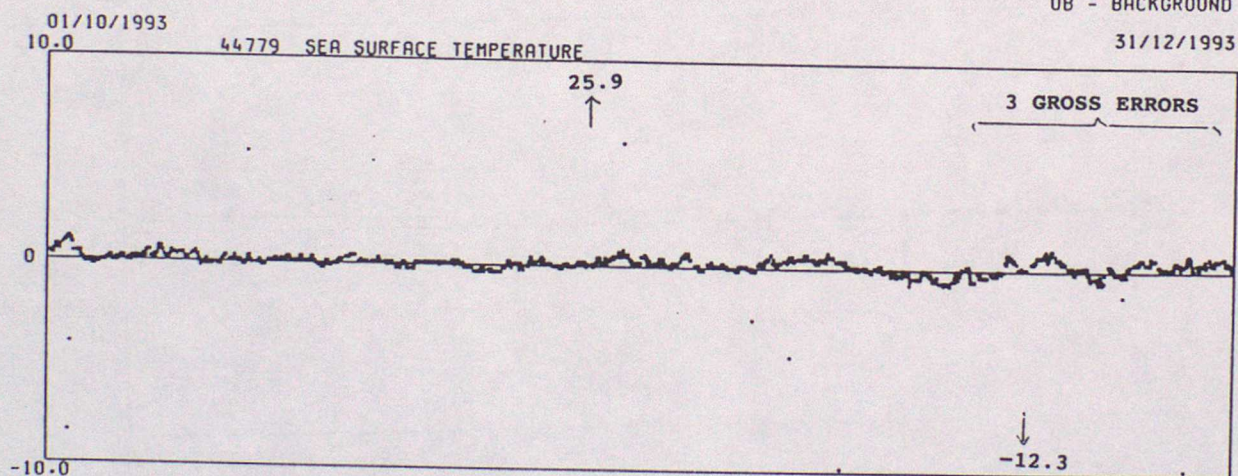
OB - BACKGROUND



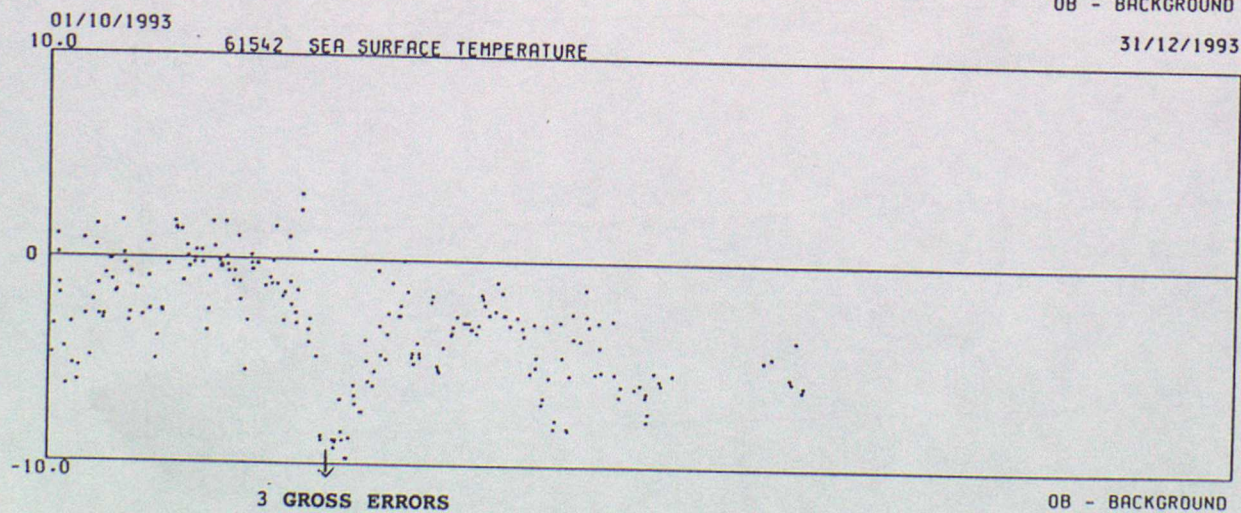
OB - BACKGROUND



OB - BACKGROUND



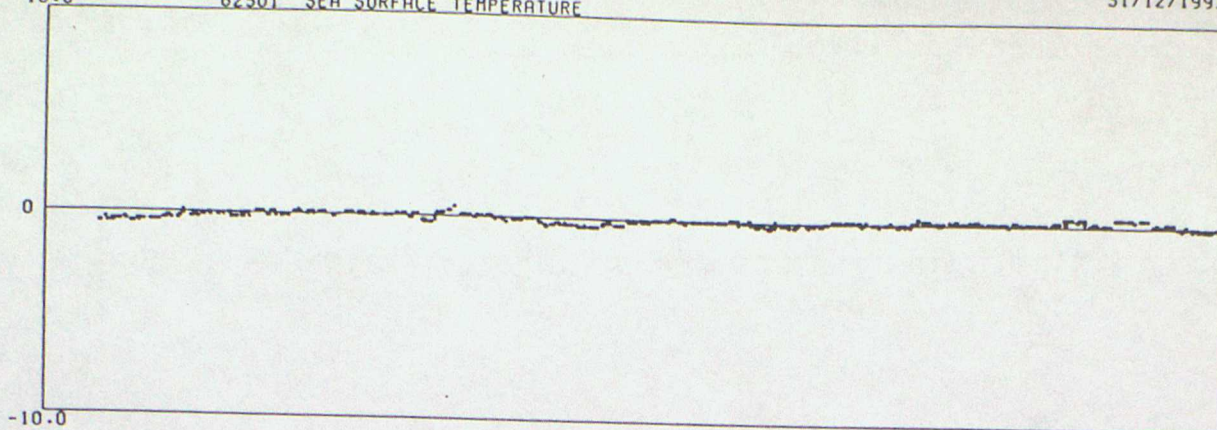
OB - BACKGROUND



01/10/1993

62501 SEA SURFACE TEMPERATURE

31/12/1993

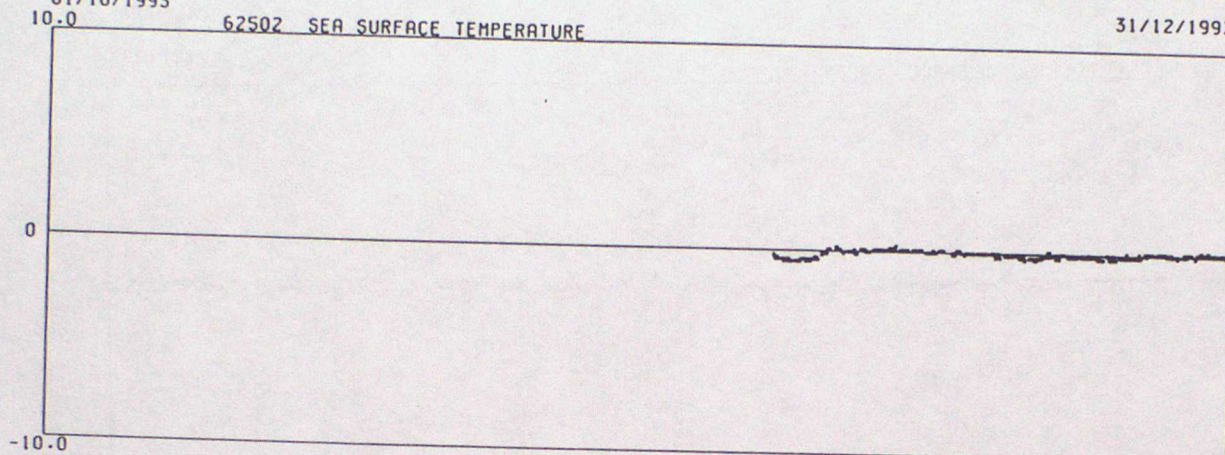


01/10/1993

62502 SEA SURFACE TEMPERATURE

OB - BACKGROUND

31/12/1993

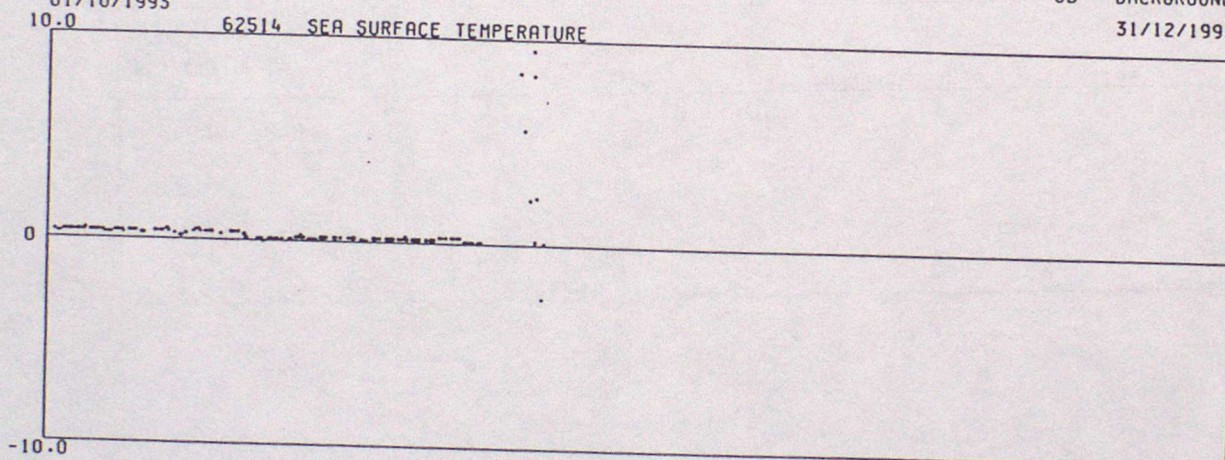


01/10/1993

62514 SEA SURFACE TEMPERATURE

OB - BACKGROUND

31/12/1993

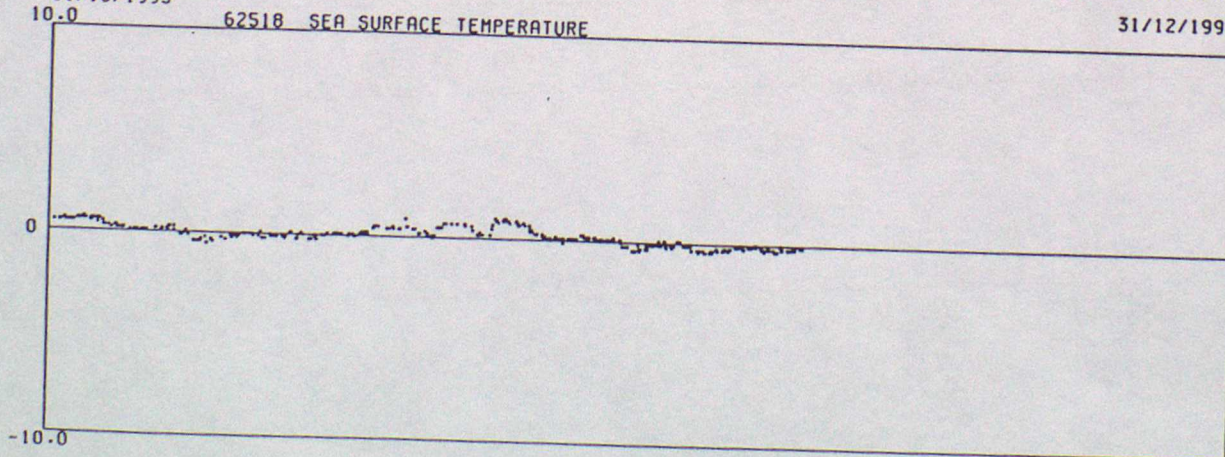


01/10/1993

62518 SEA SURFACE TEMPERATURE

OB - BACKGROUND

31/12/1993

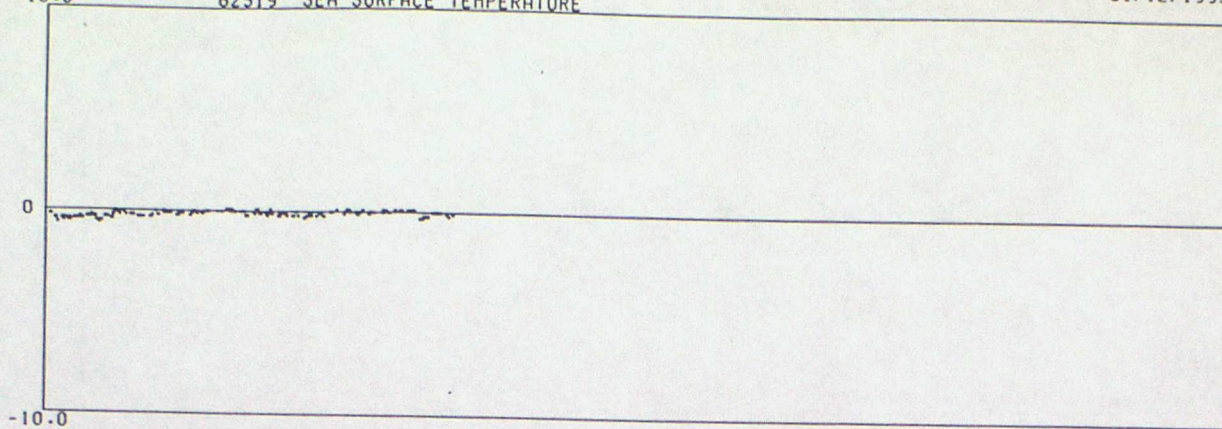


OB - BACKGROUND

01/10/1993
10.0

62519 SEA SURFACE TEMPERATURE

31/12/1993

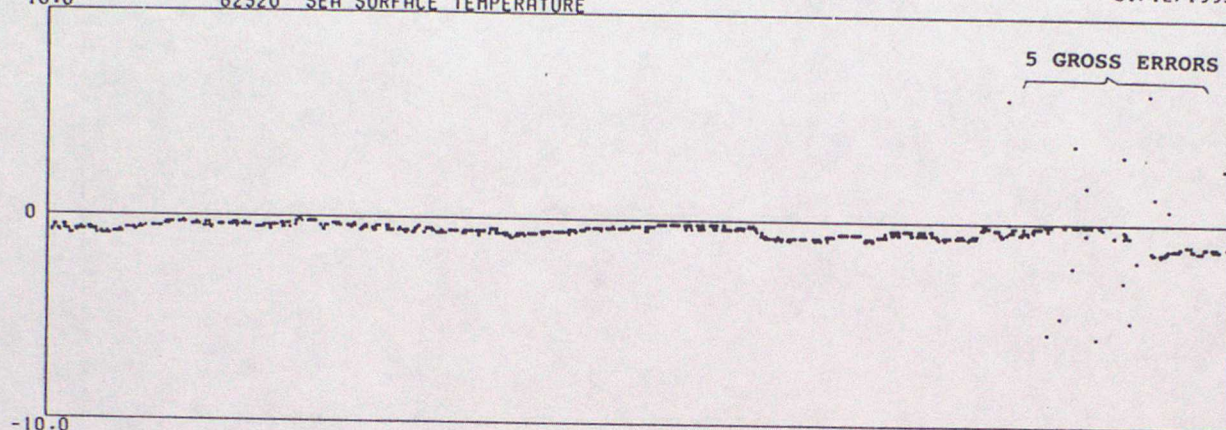


OB - BACKGROUND

01/10/1993
10.0

62520 SEA SURFACE TEMPERATURE

31/12/1993

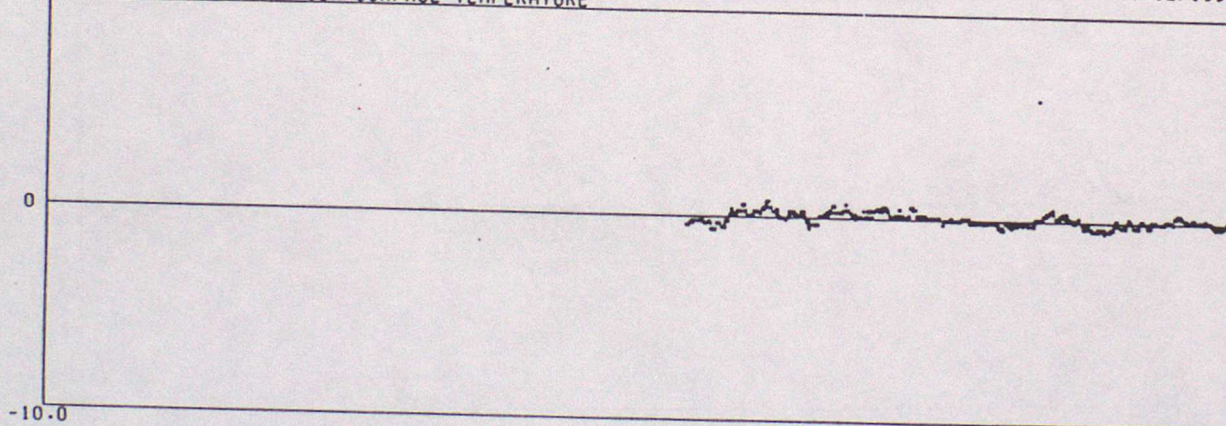


OB - BACKGROUND

01/10/1993
10.0

62524 SEA SURFACE TEMPERATURE

31/12/1993

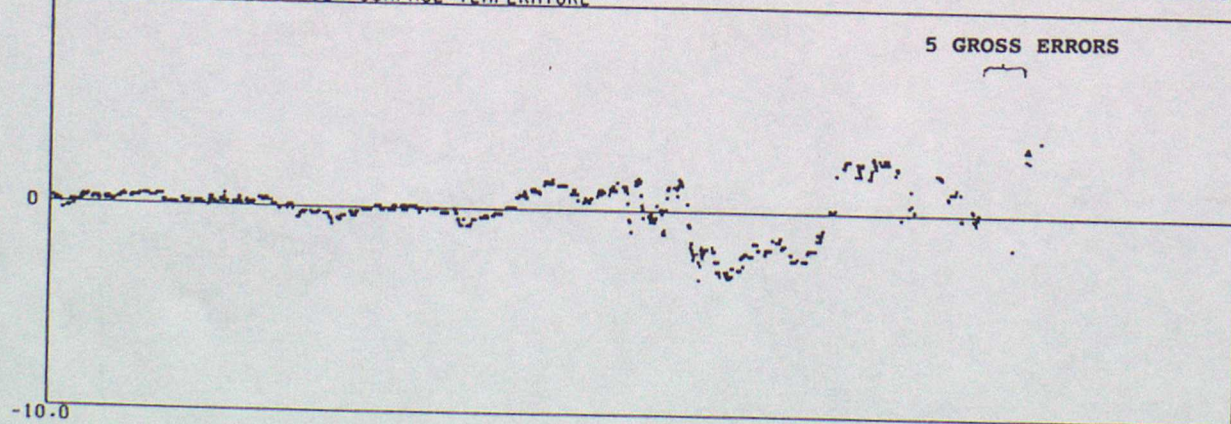


OB - BACKGROUND

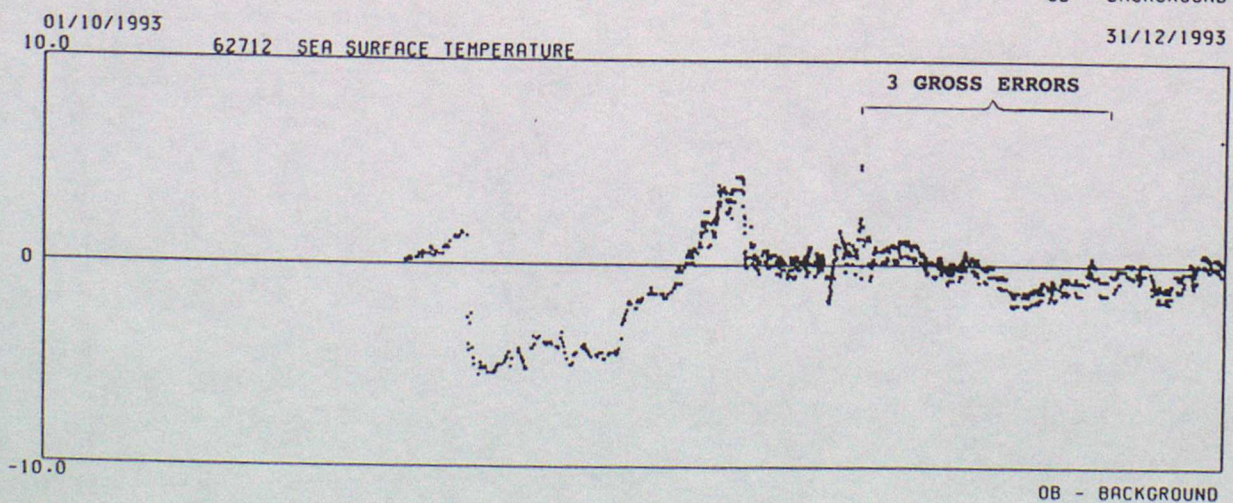
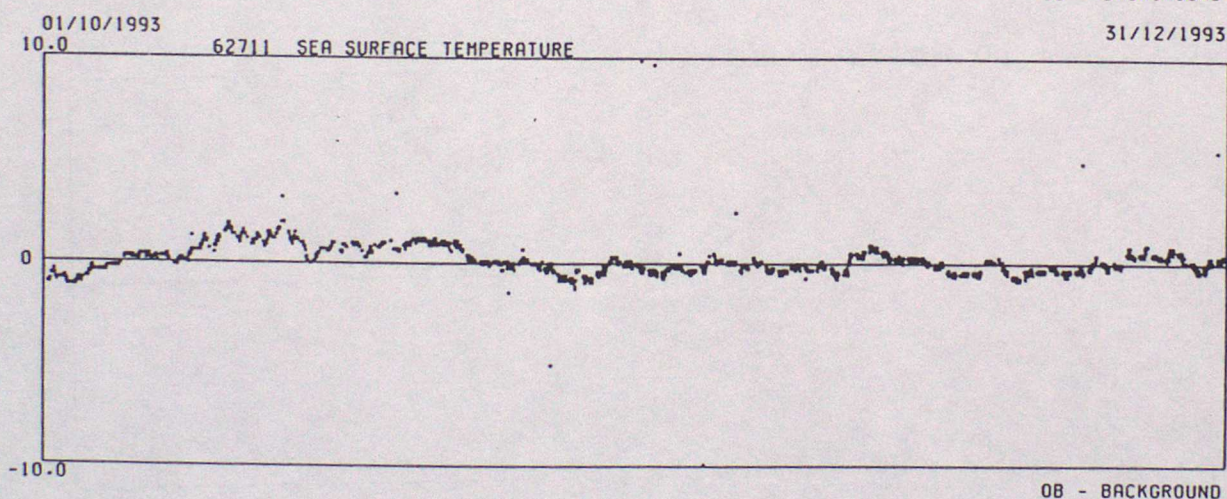
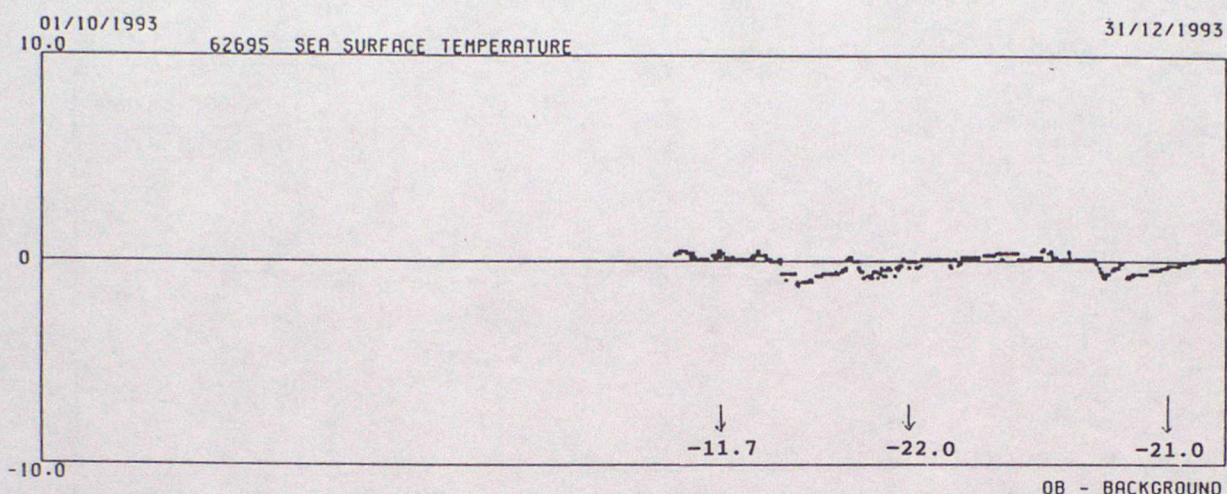
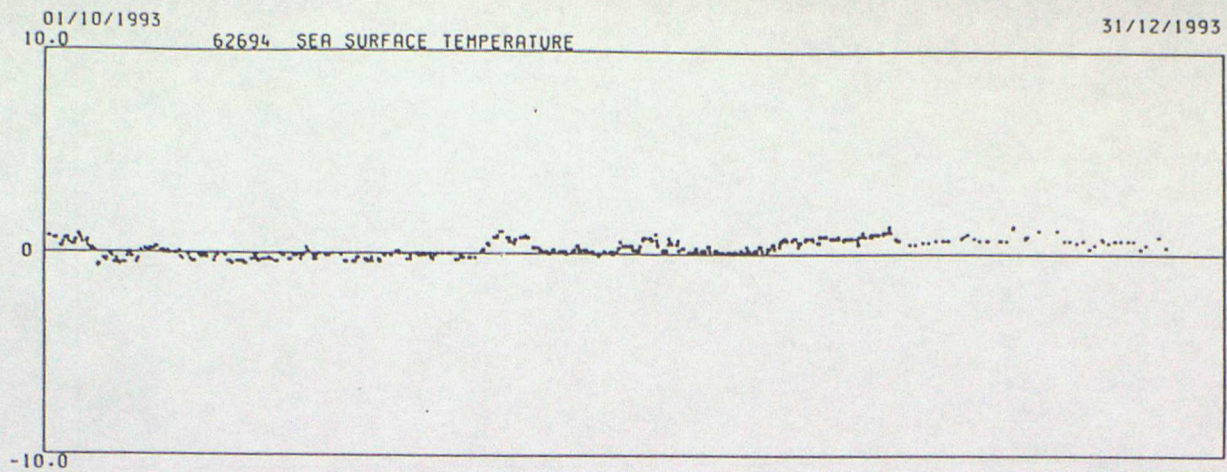
01/10/1993
10.0

62673 SEA SURFACE TEMPERATURE

31/12/1993



OB - BACKGROUND

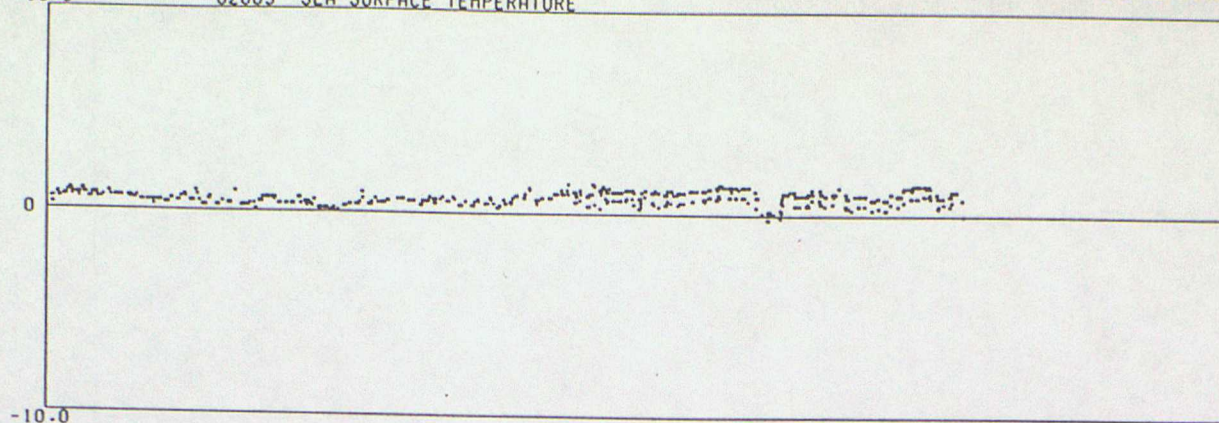


01/10/1993

10.0

62805 SEA SURFACE TEMPERATURE

31/12/1993



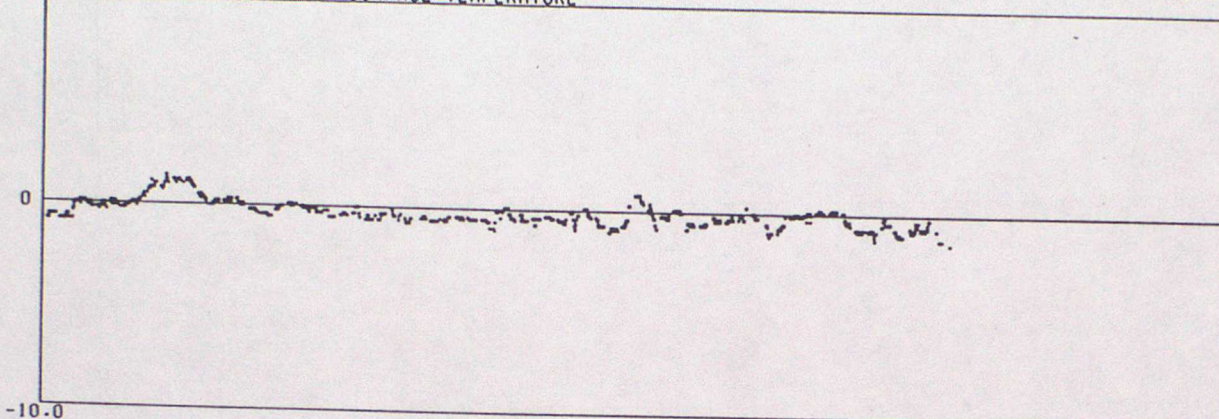
OB - BACKGROUND

01/10/1993

10.0

64539 SEA SURFACE TEMPERATURE

31/12/1993



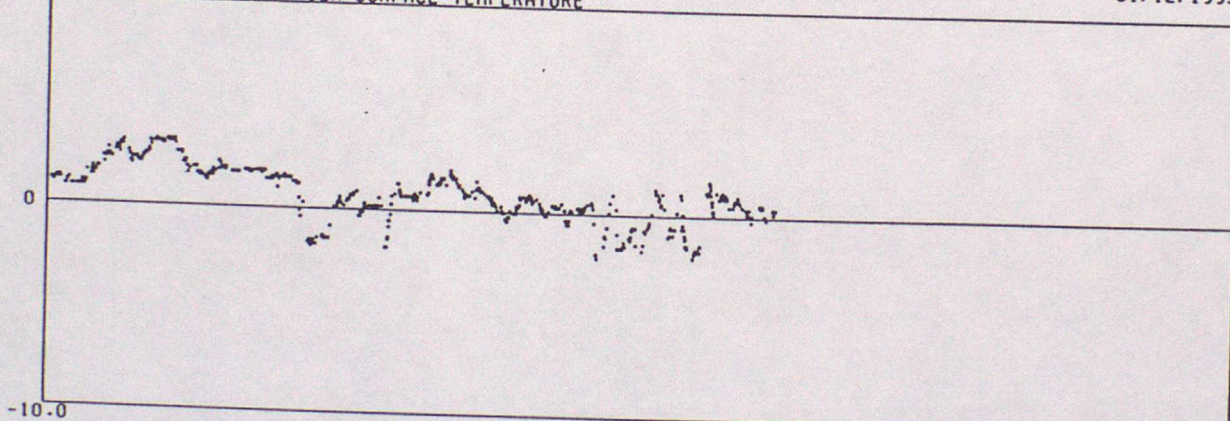
OB - BACKGROUND

01/10/1993

10.0

64540 SEA SURFACE TEMPERATURE

31/12/1993



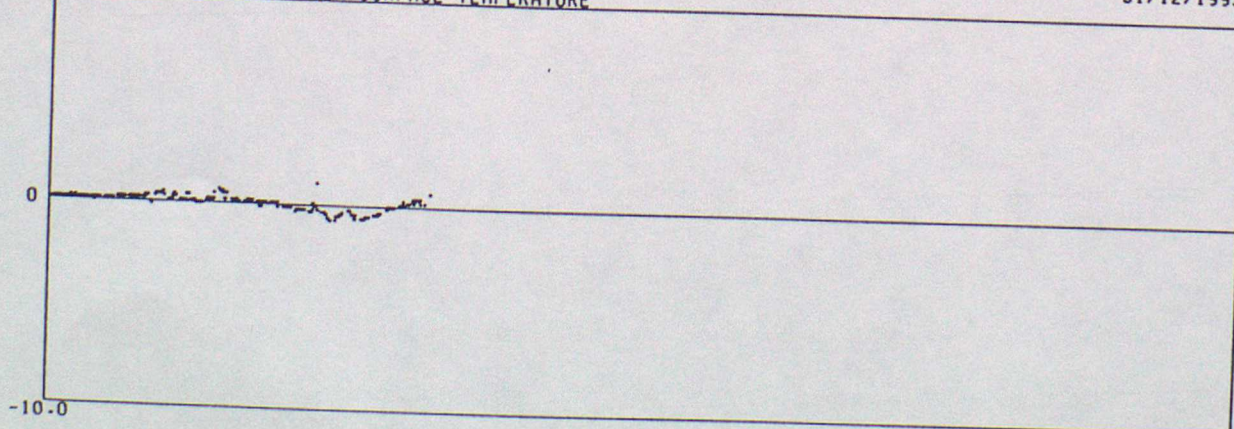
OB - BACKGROUND

01/10/1993

10.0

64542 SEA SURFACE TEMPERATURE

31/12/1993

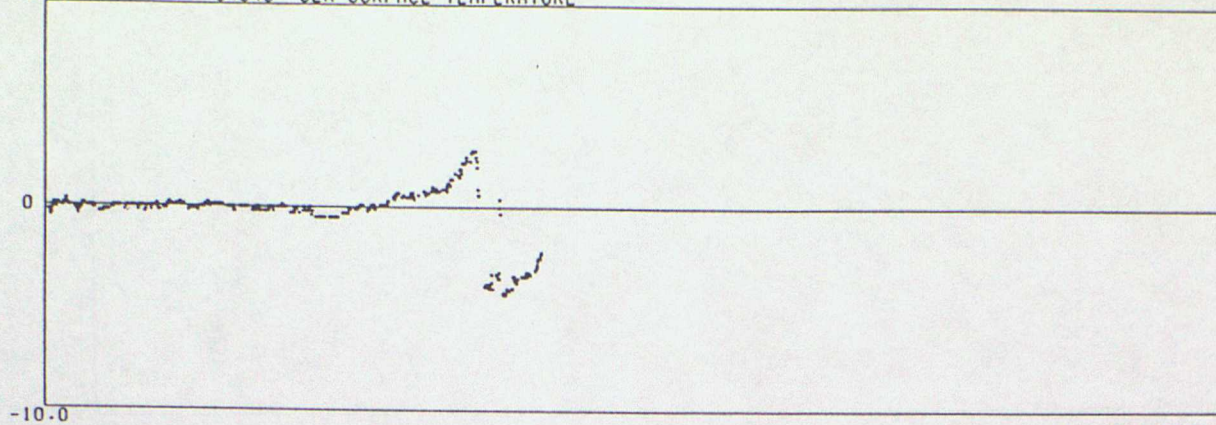


OB - BACKGROUND

01/10/1993

31/12/1993

10.0 64543 SEA SURFACE TEMPERATURE

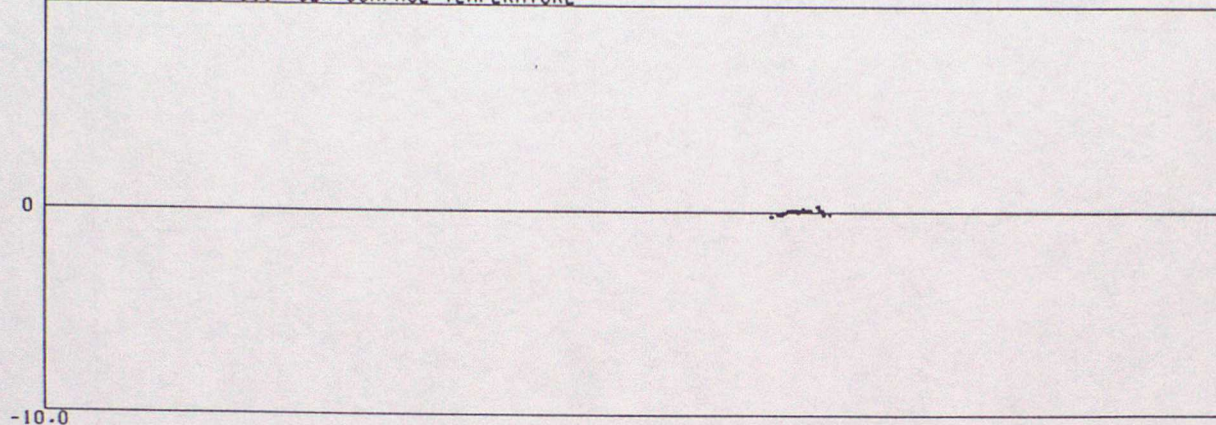


OB - BACKGROUND

01/10/1993

31/12/1993

10.0 64585 SEA SURFACE TEMPERATURE

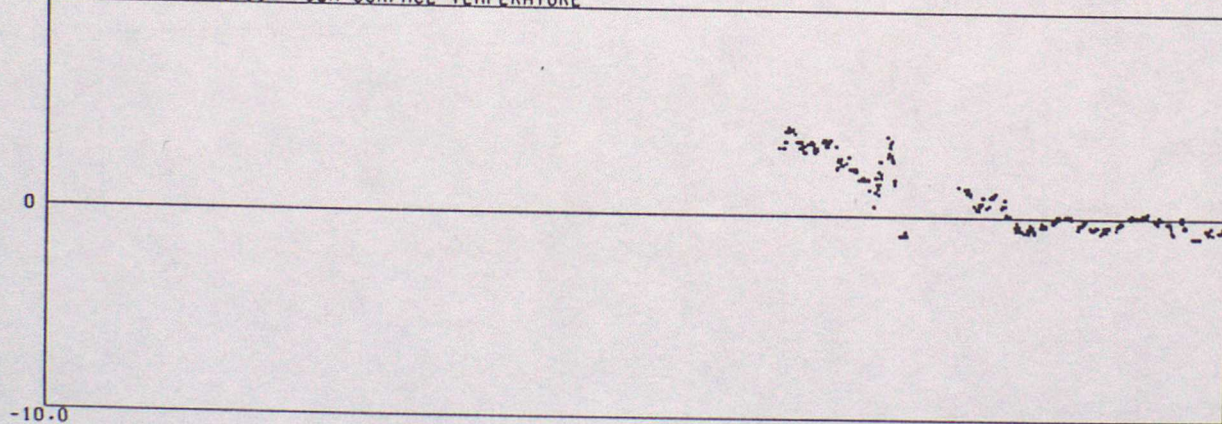


OB - BACKGROUND

01/10/1993

31/12/1993

10.0 64587 SEA SURFACE TEMPERATURE

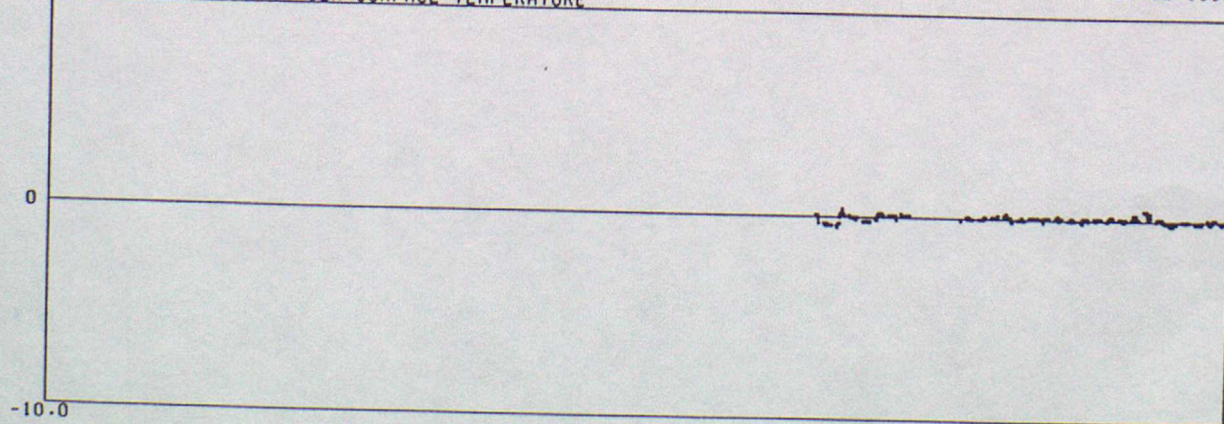


OB - BACKGROUND

01/10/1993

31/12/1993

10.0 65503 SEA SURFACE TEMPERATURE



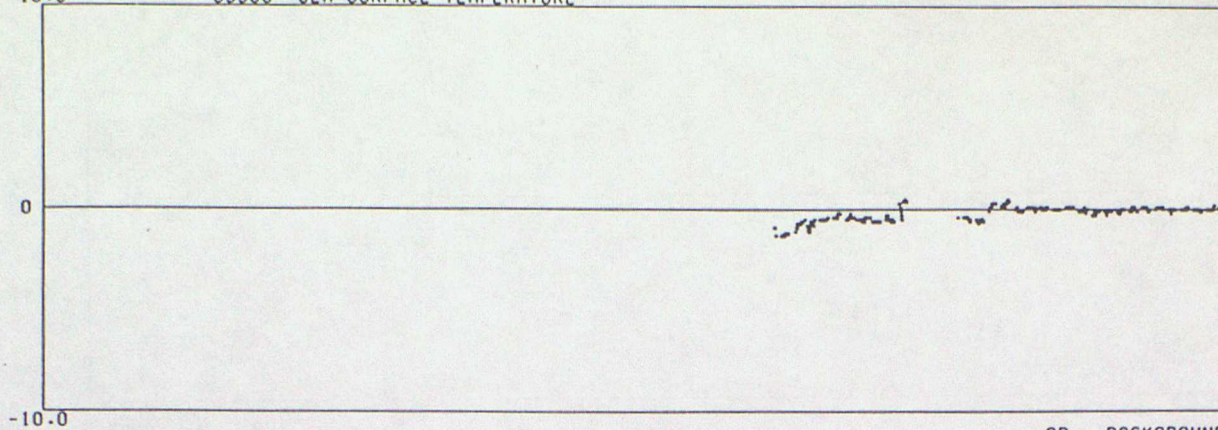
OB - BACKGROUND

01/10/1993

31/12/1993

10.0

65506 SEA SURFACE TEMPERATURE



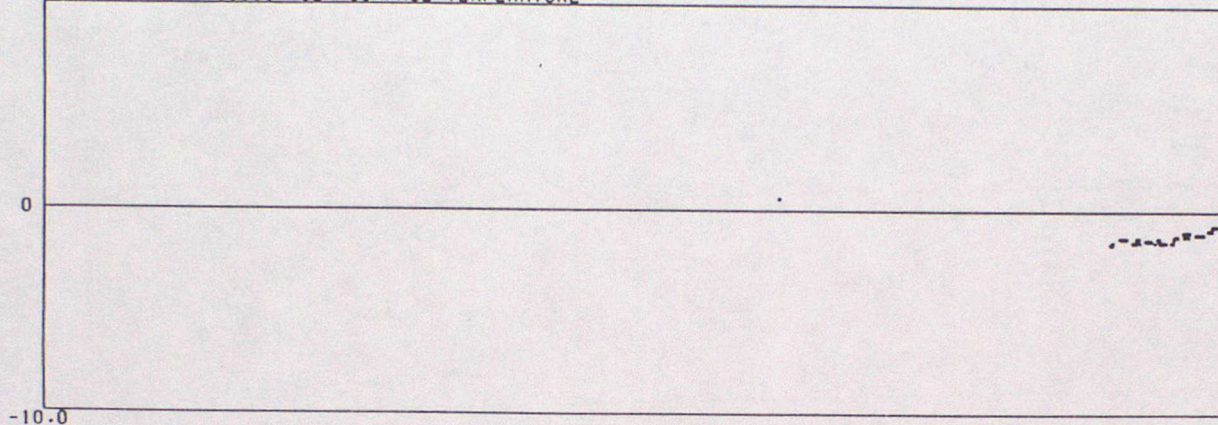
08 - BACKGROUND

01/10/1993

31/12/1993

10.0

65508 SEA SURFACE TEMPERATURE



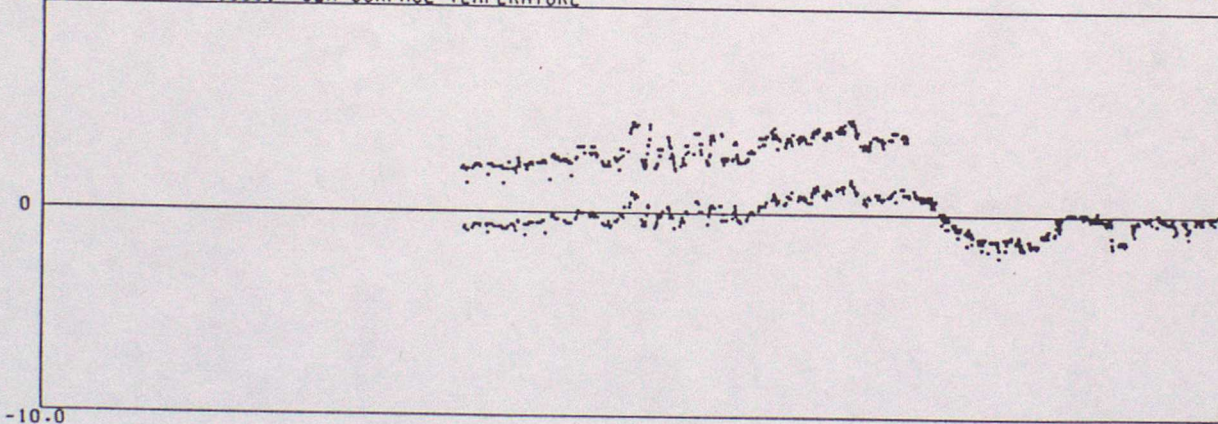
08 - BACKGROUND

01/10/1993

31/12/1993

10.0

65581 SEA SURFACE TEMPERATURE



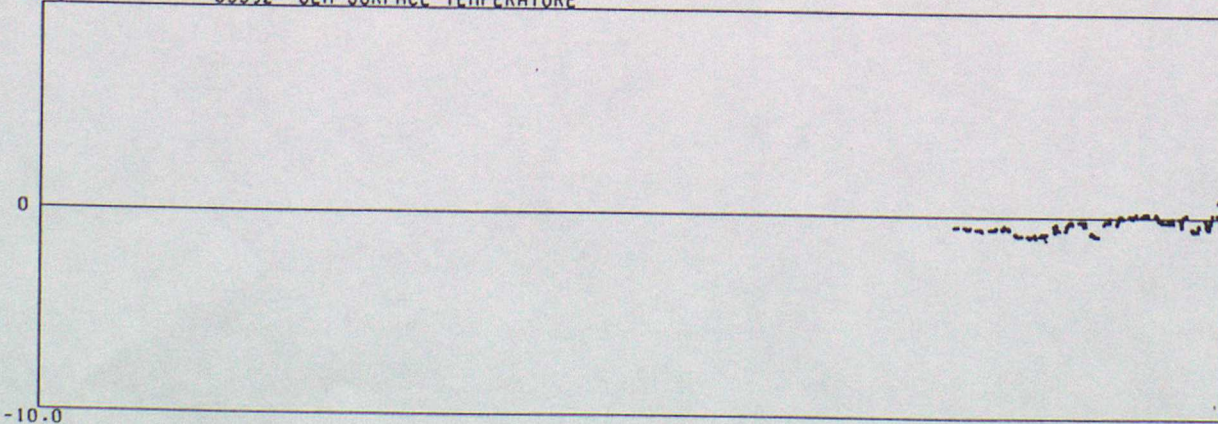
08 - BACKGROUND

01/10/1993

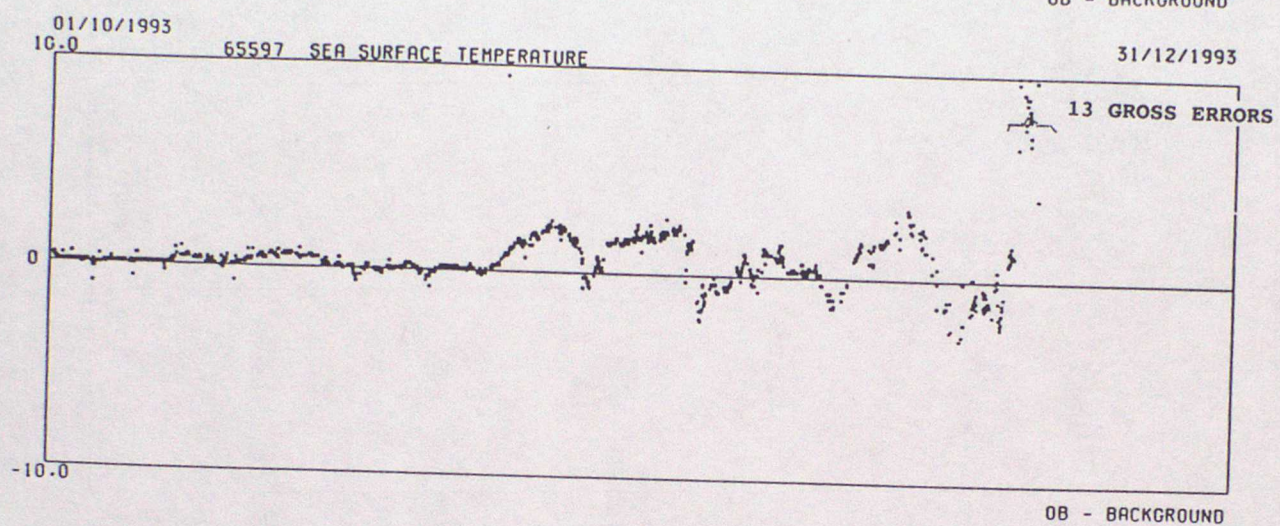
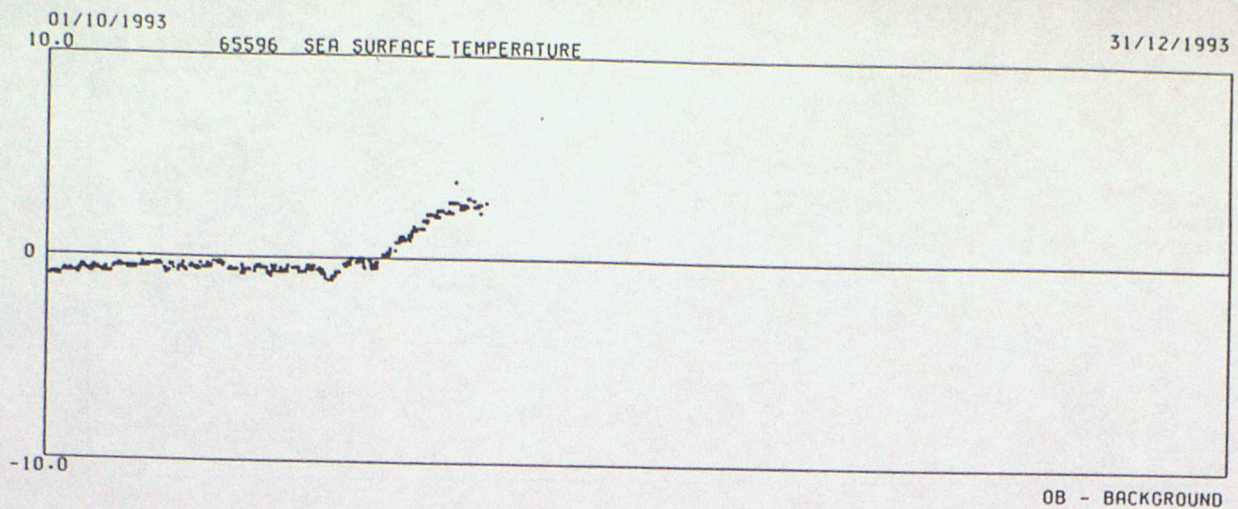
31/12/1993

10.0

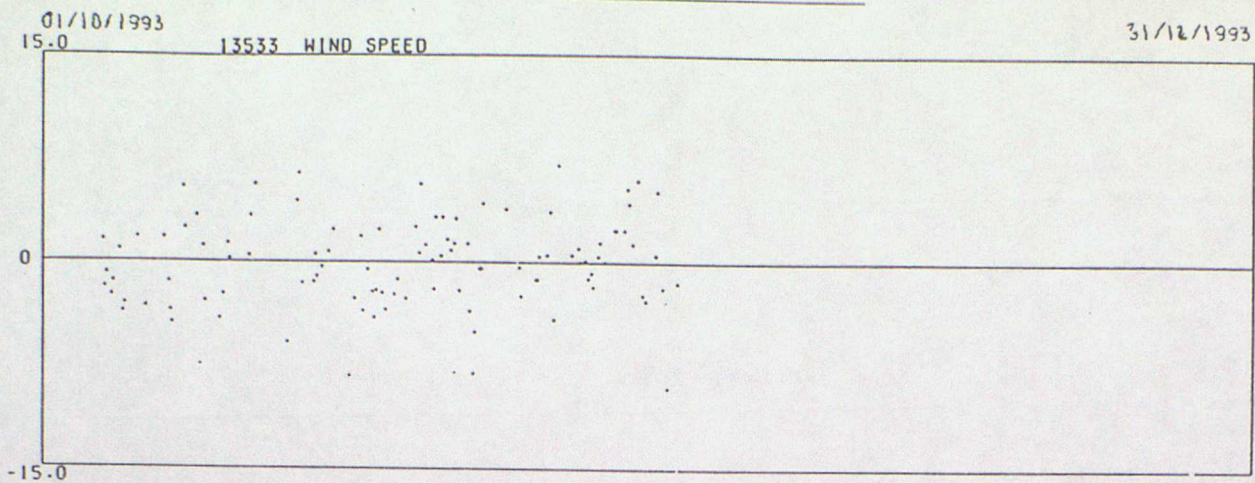
65592 SEA SURFACE TEMPERATURE



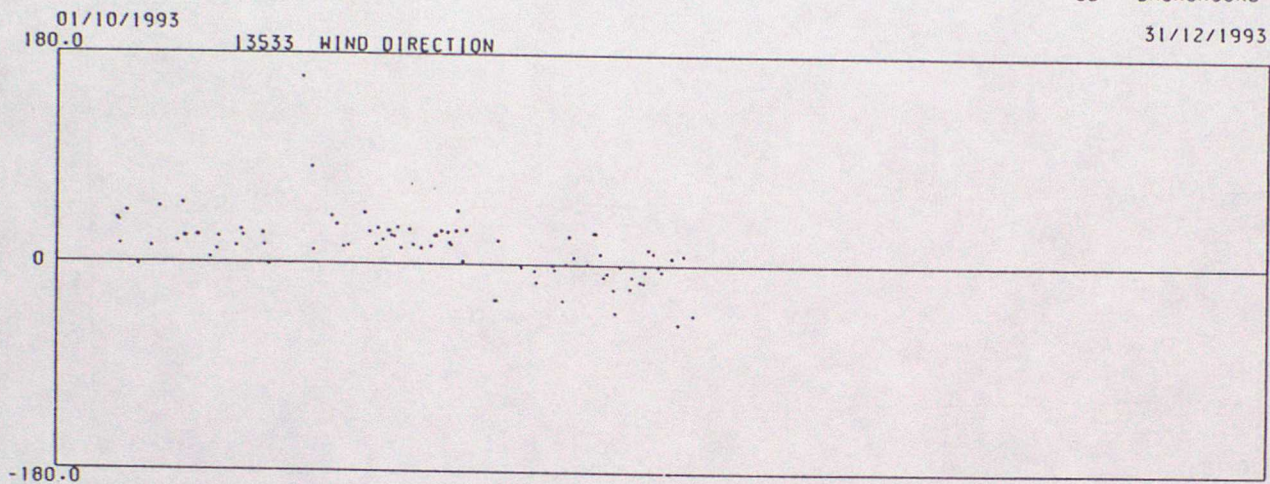
08 - BACKGROUND



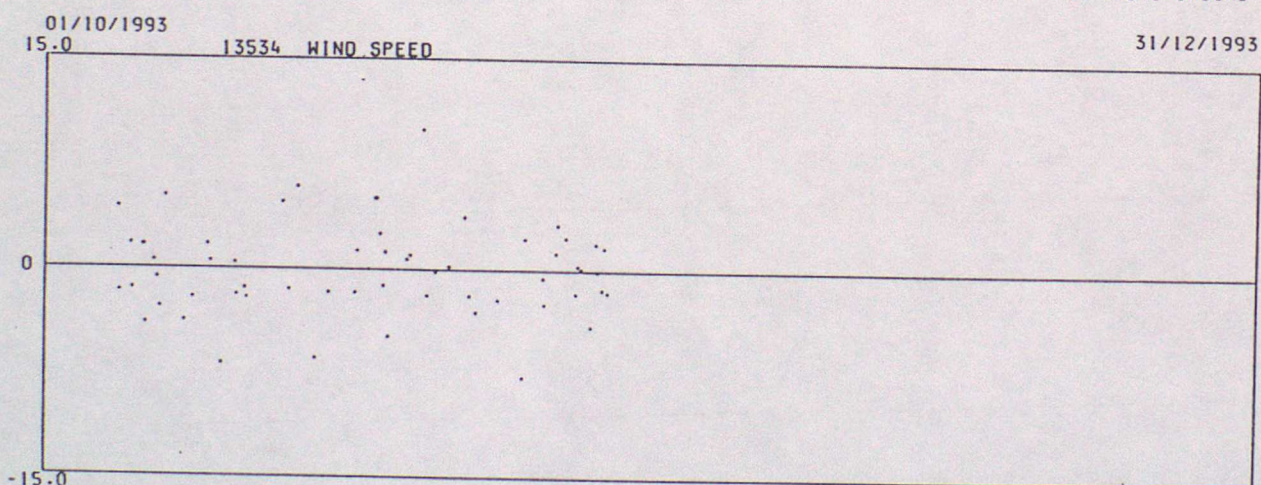
ANNEX E - TIME SERIES PLOTS OF WINDS



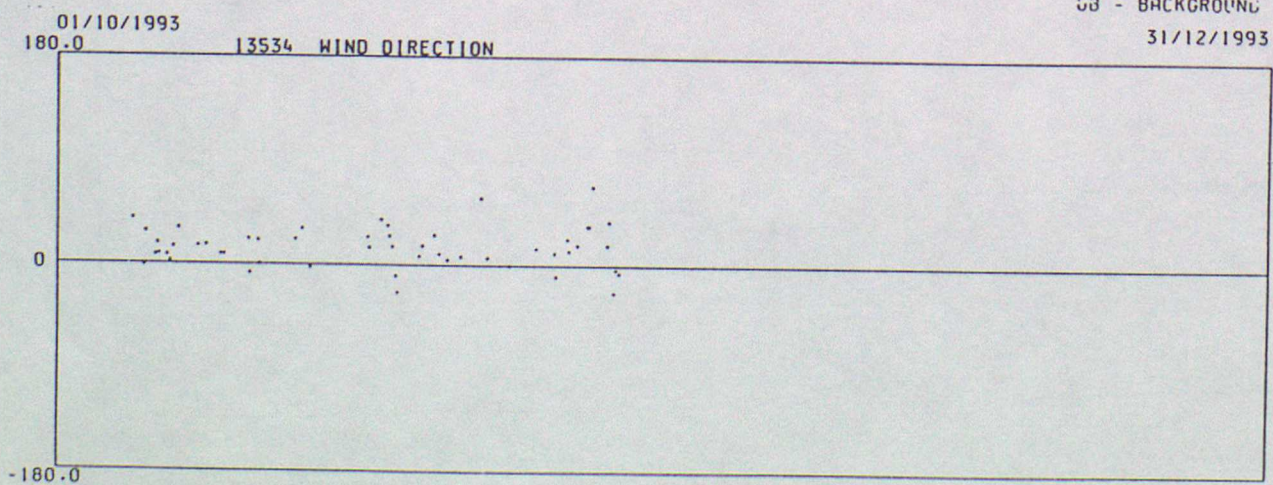
08 - BACKGROUND



03 - BACKGROUND



03 - BACKGROUND

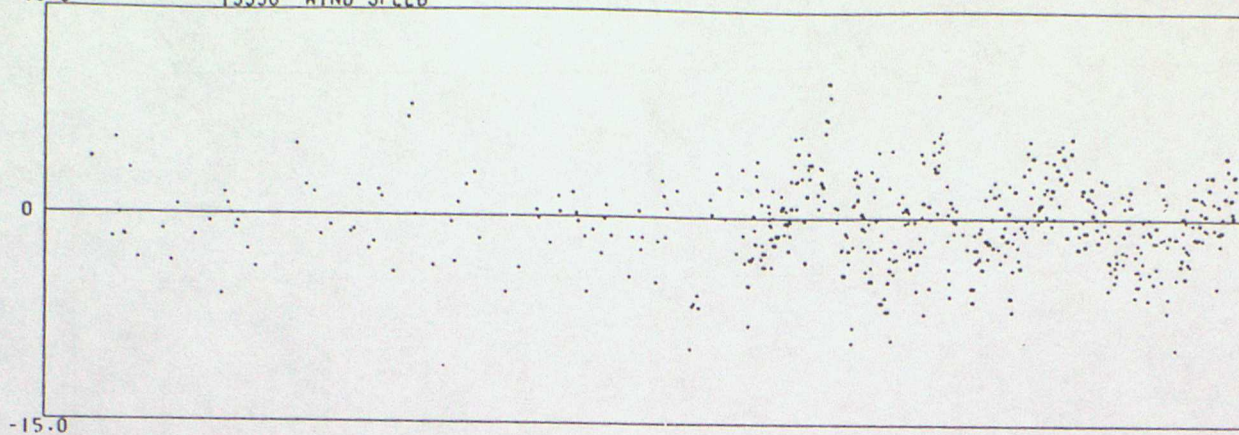


06 - BACKGROUND

01/10/1993

31/12/1993

13556 WIND SPEED

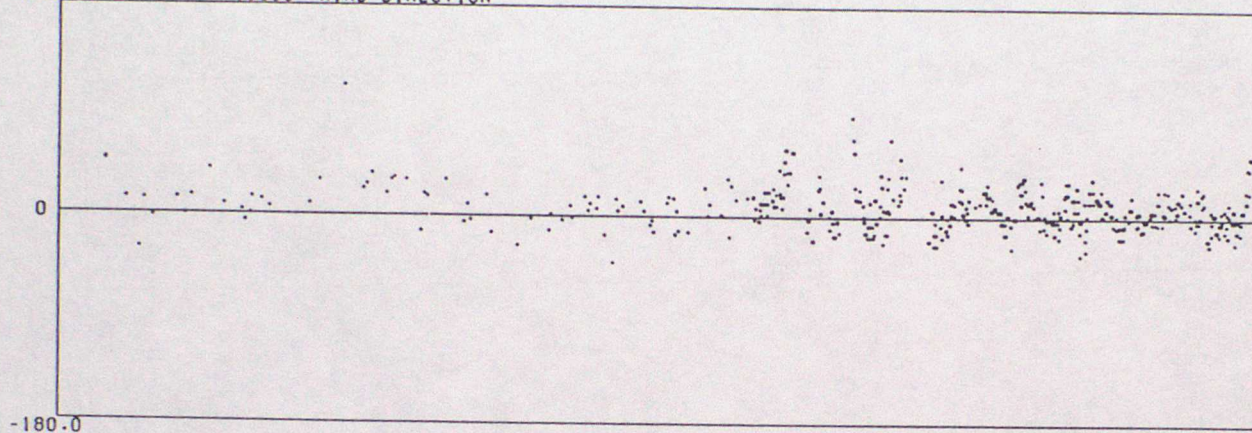


00 - BACKGROUND

01/10/1993

31/12/1993

13556 WIND DIRECTION



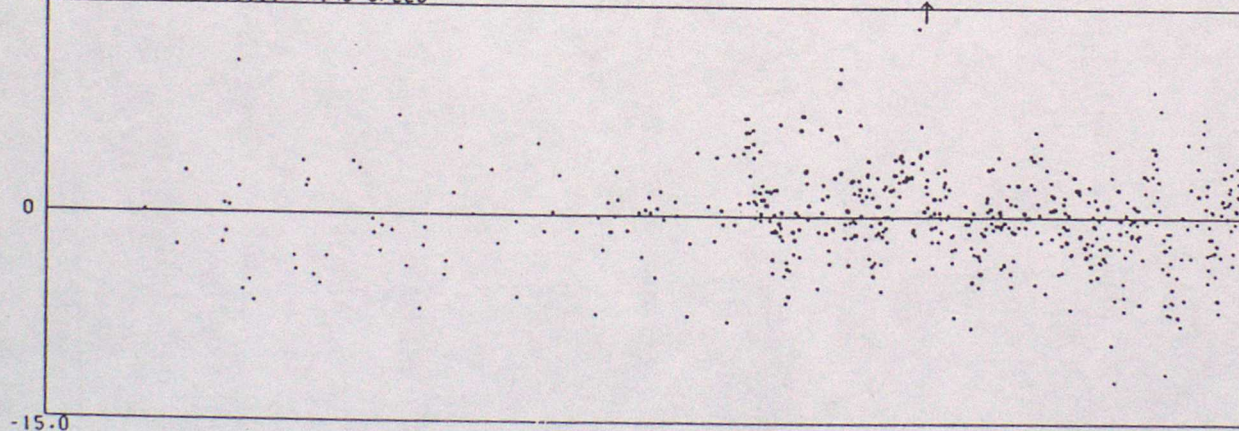
00 - BACKGROUND

01/10/1993

31/12/1993

13561 WIND SPEED

3 GROSS ERRORS

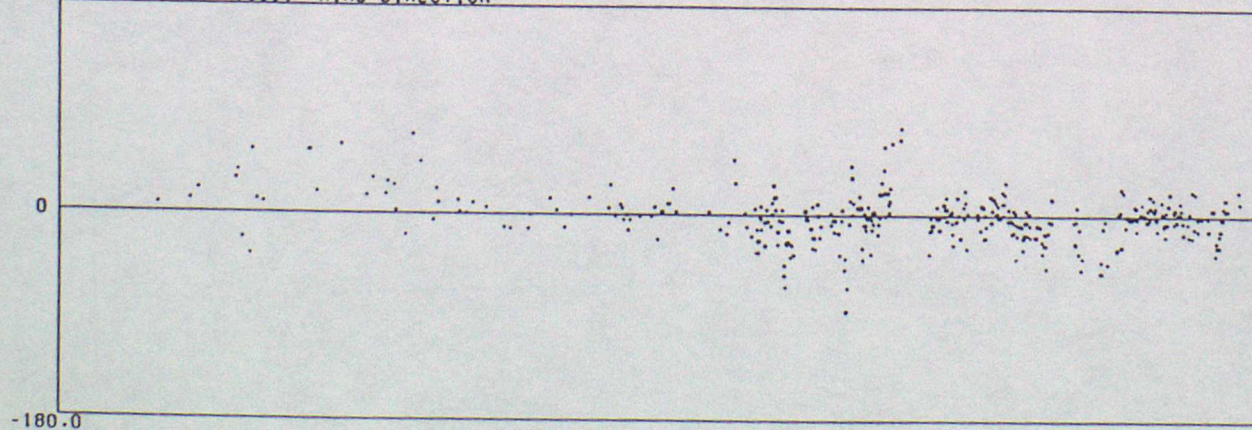


00 - BACKGROUND

01/10/1993

31/12/1993

13561 WIND DIRECTION



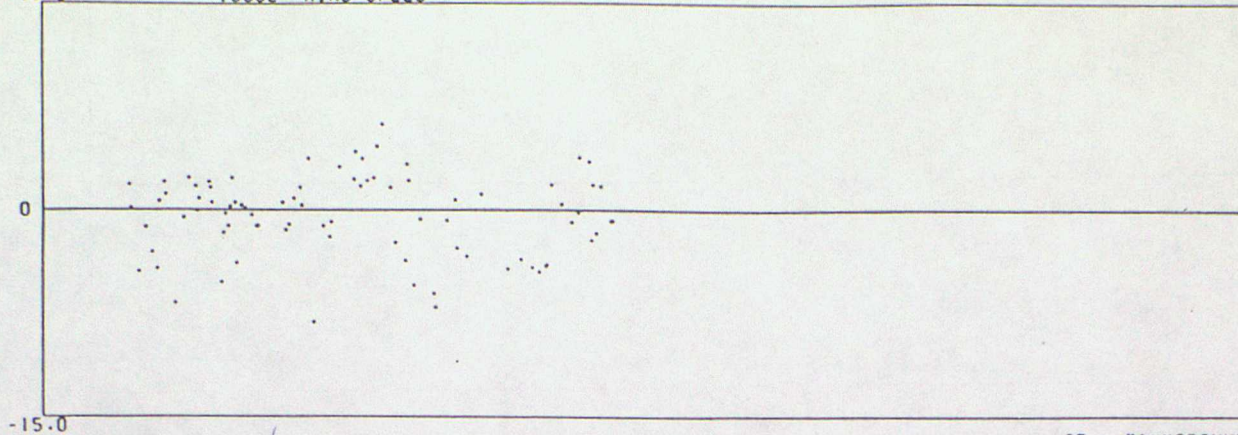
00 - BACKGROUND

01/10/1993

31/12/1993

15.0

13562 WIND SPEED



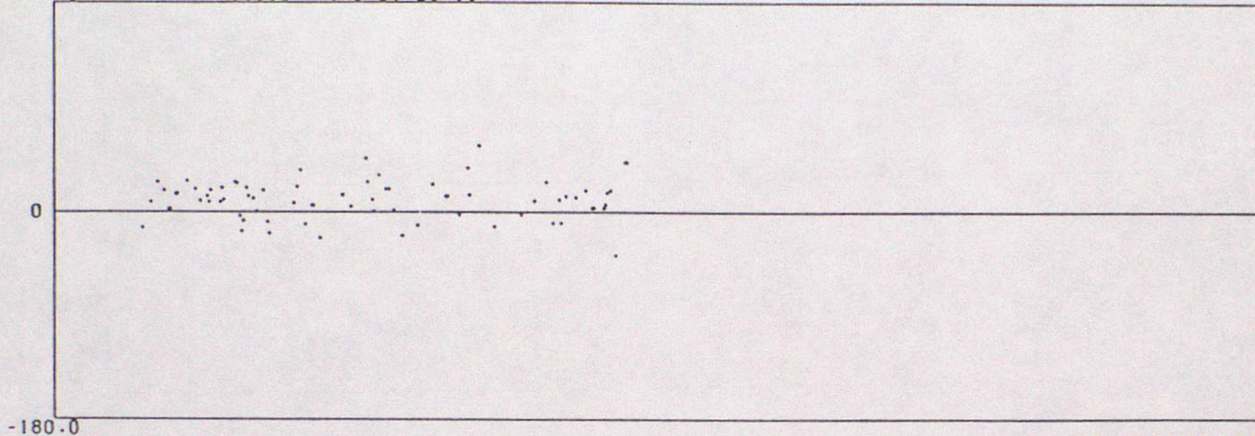
05 - BACKGROUND

01/10/1993

31/12/1993

180.0

13562 WIND DIRECTION



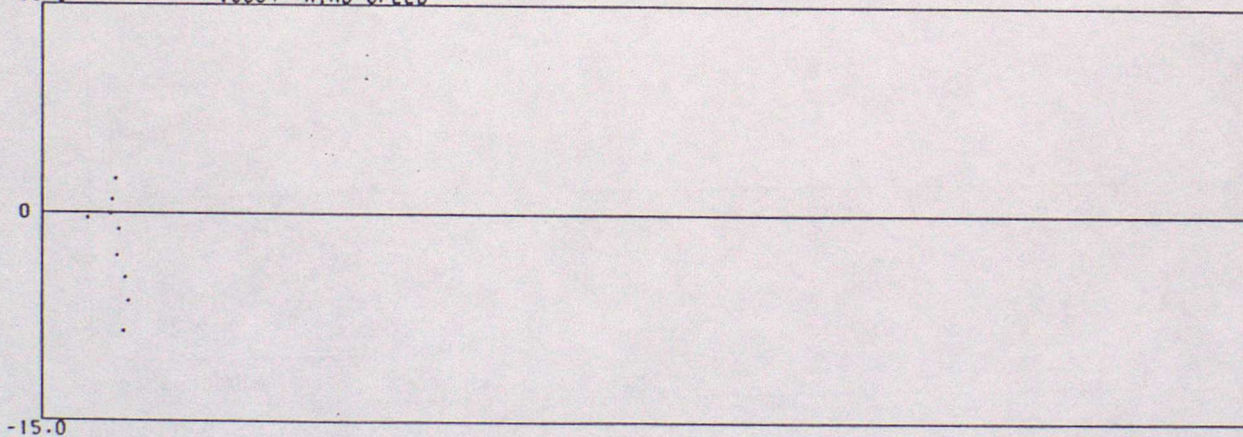
05 - BACKGROUND

01/10/1993

31/12/1993

15.0

13564 WIND SPEED



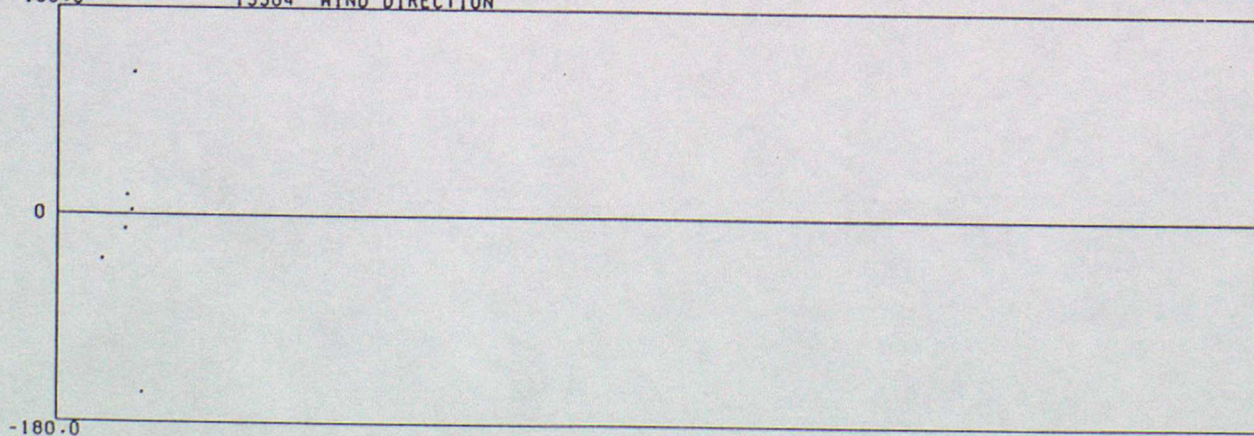
05 - BACKGROUND

01/10/1993

31/12/1993

180.0

13564 WIND DIRECTION



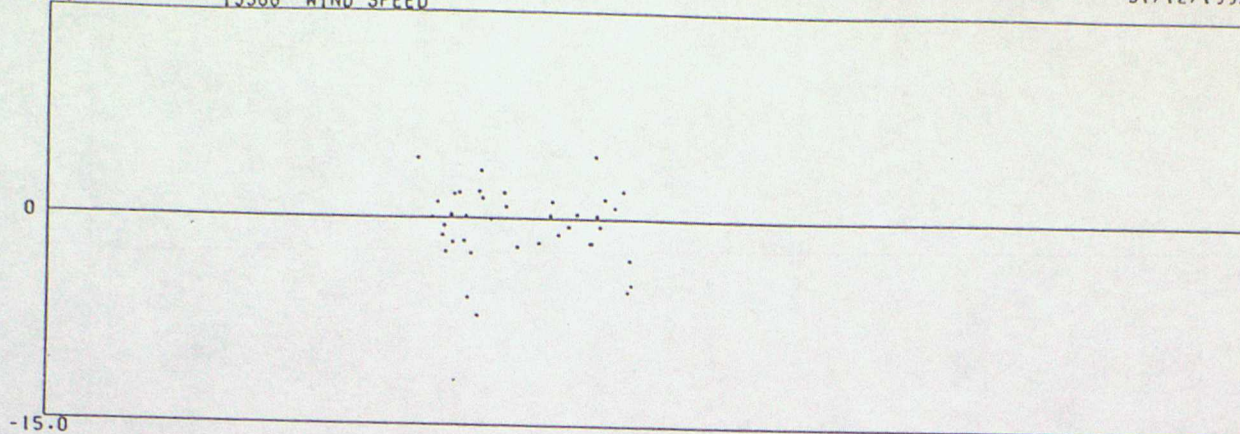
05 - BACKGROUND

01/10/1993

15.0

13566 WIND SPEED

31/12/1993



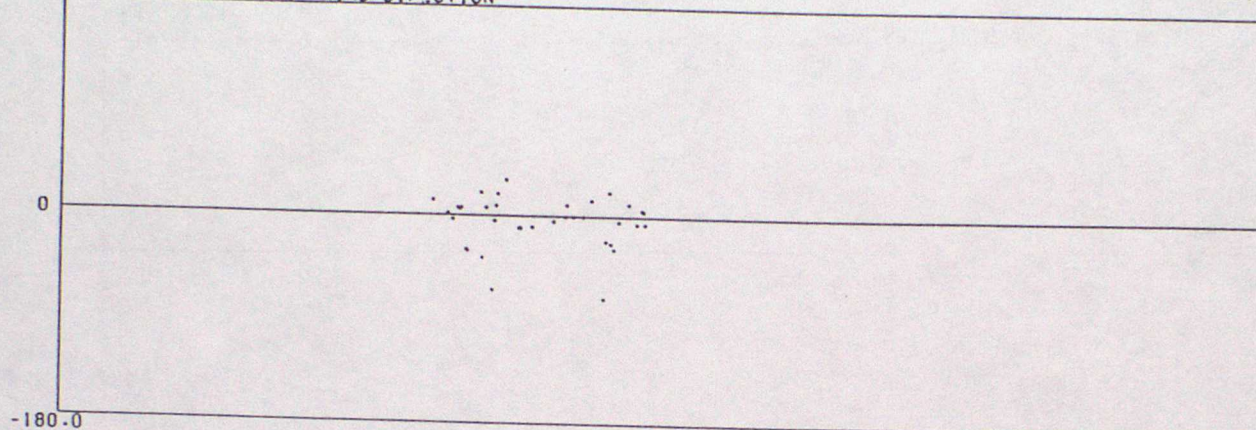
01/10/1993

180.0

13566 WIND DIRECTION

03 - BACKGROUND

31/12/1993



01/10/1993

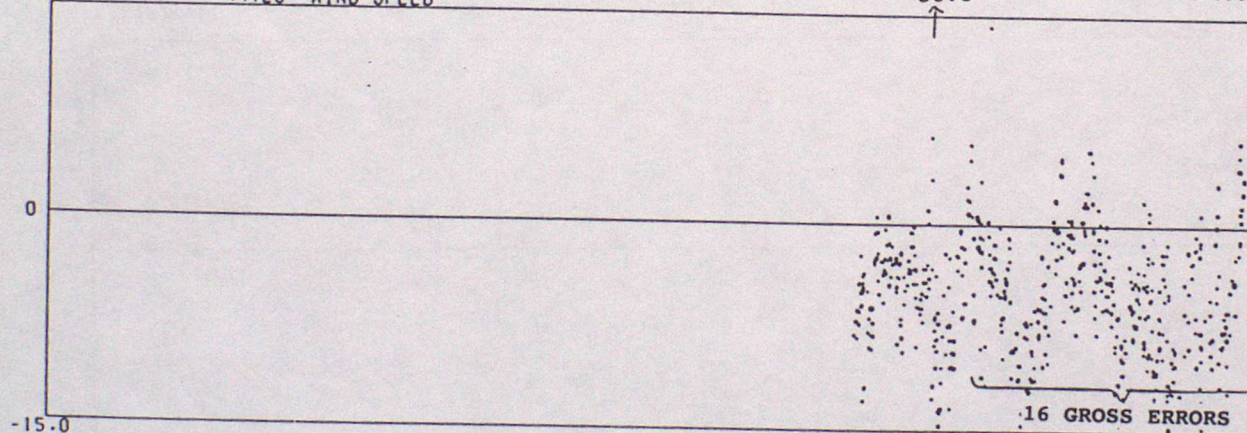
15.0

44728 WIND SPEED

08 - BACKGROUND

36.0

31/12/1993



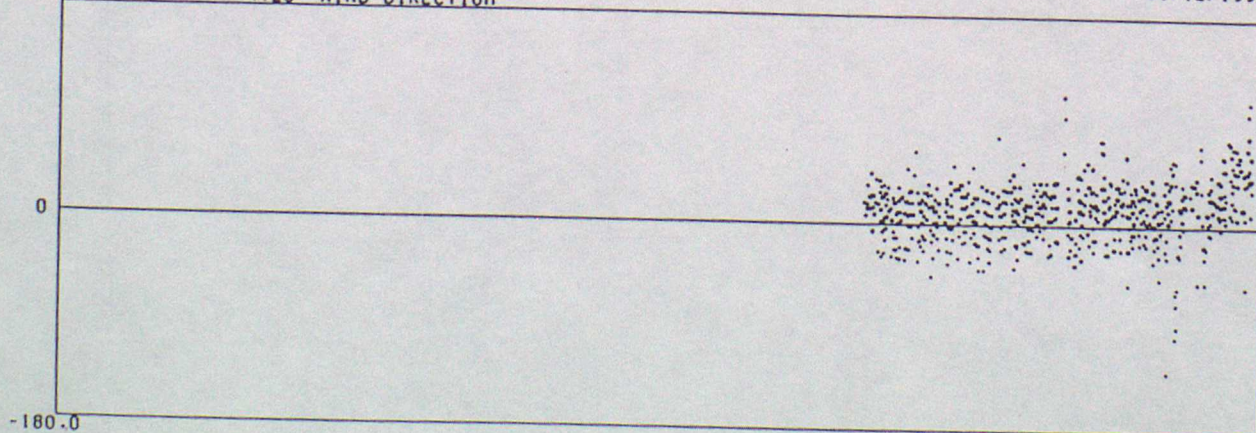
01/10/1993

180.0

44728 WIND DIRECTION

08 - BACKGROUND

31/12/1993



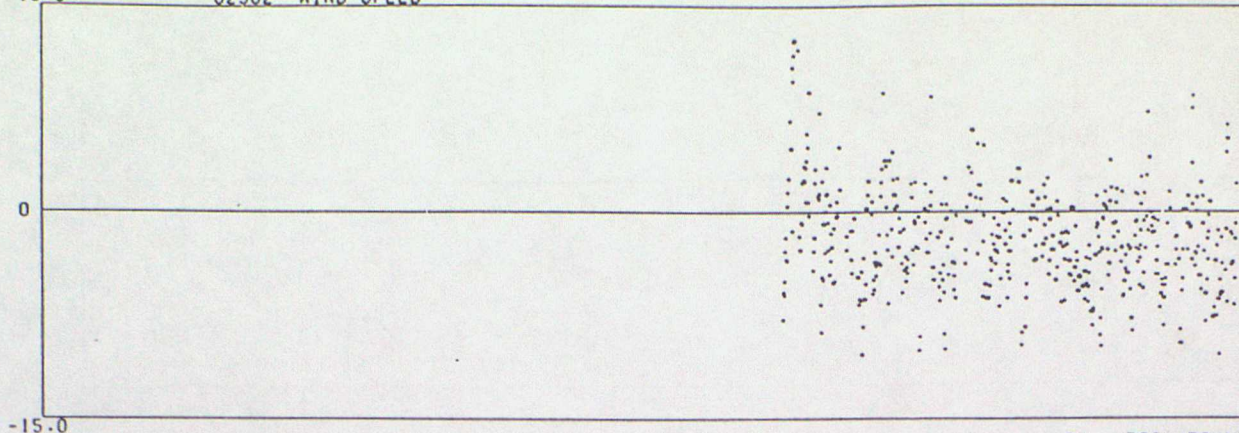
08 - BACKGROUND

01/10/1993

31/12/1993

15.0

62502 WIND SPEED



-15.0

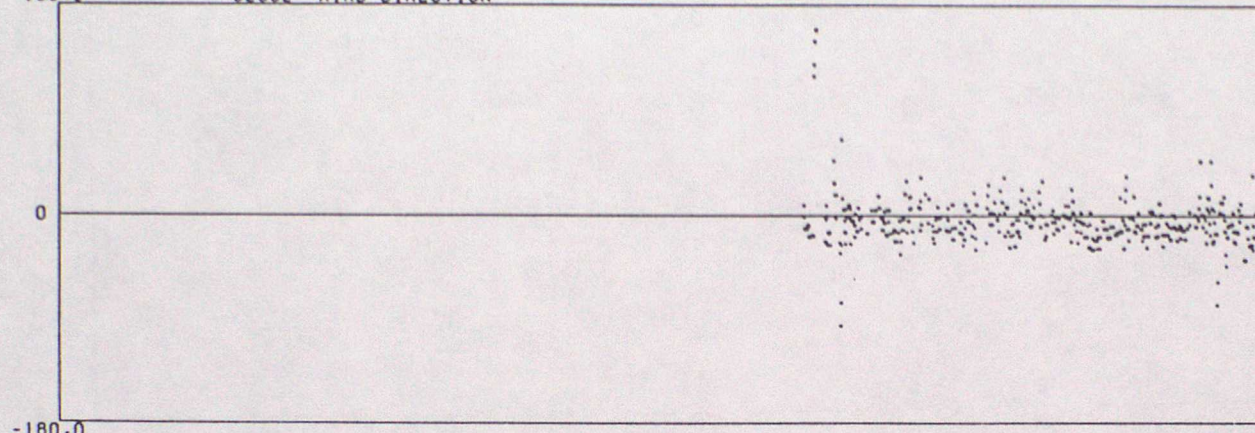
05 - BACKGROUND

01/10/1993

31/12/1993

180.0

62502 WIND DIRECTION



-180.0

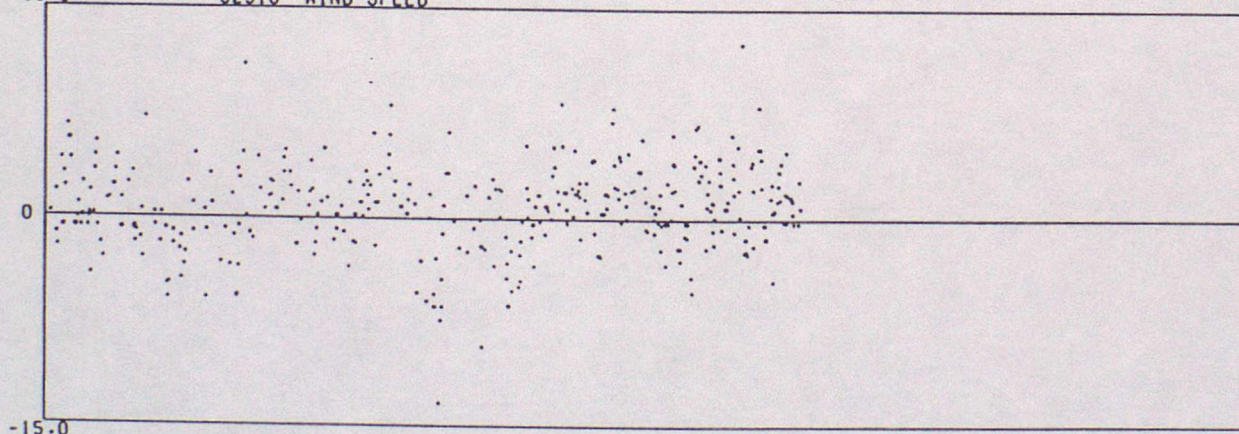
06 - BACKGROUND

01/10/1993

31/12/1993

15.0

62518 WIND SPEED



-15.0

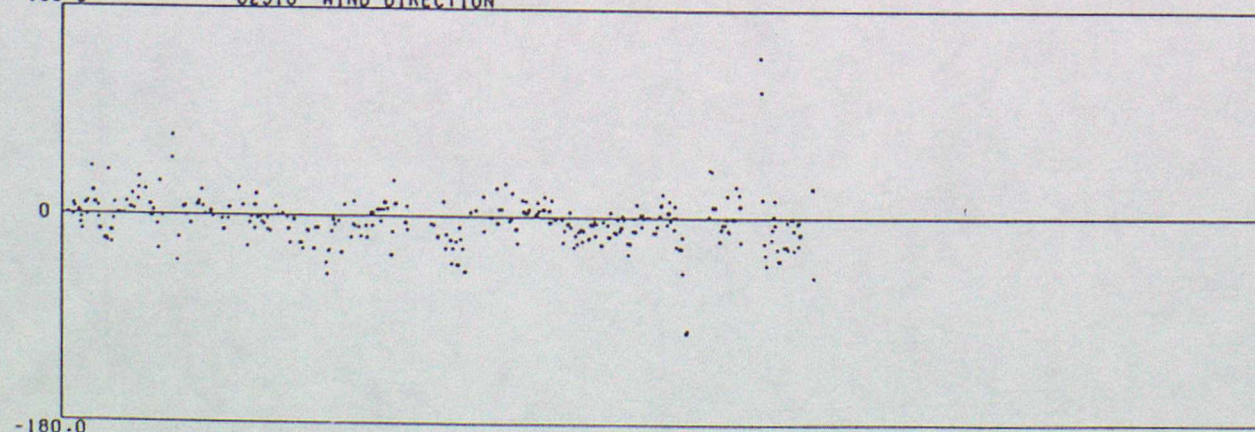
06 - BACKGROUND

01/10/1993

31/12/1993

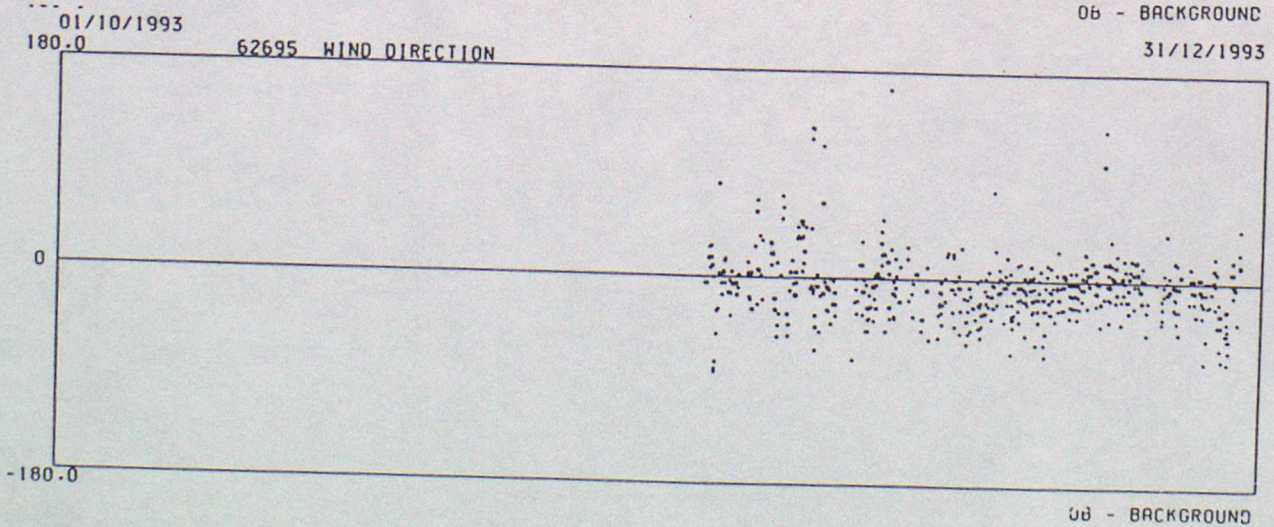
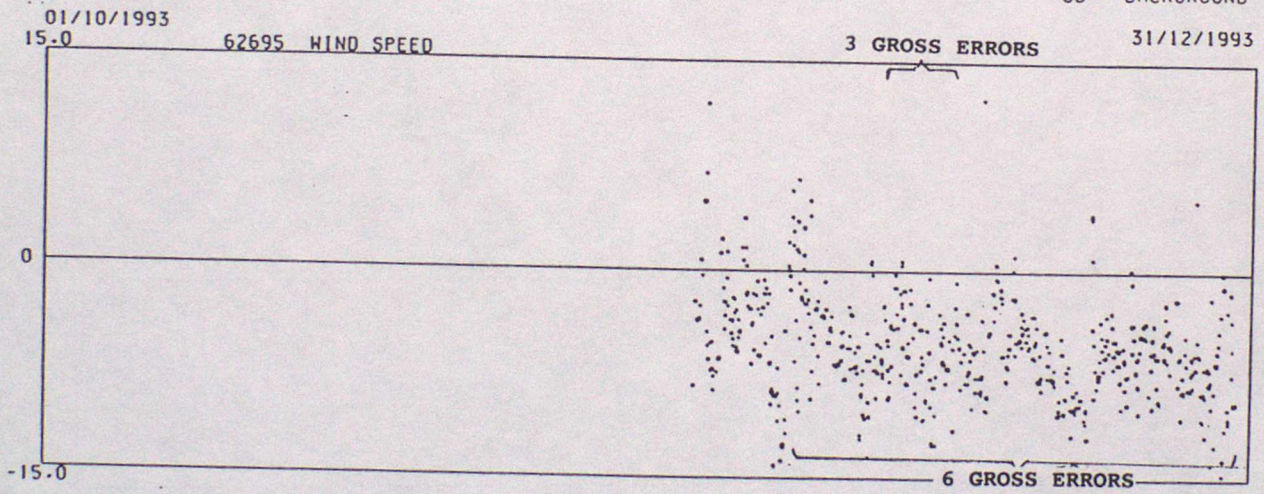
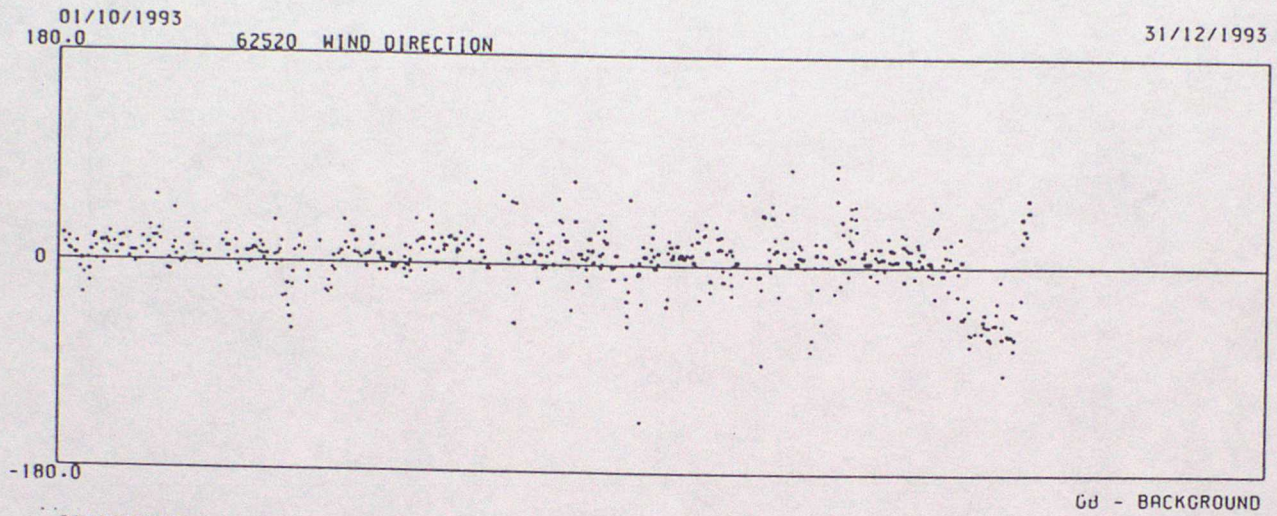
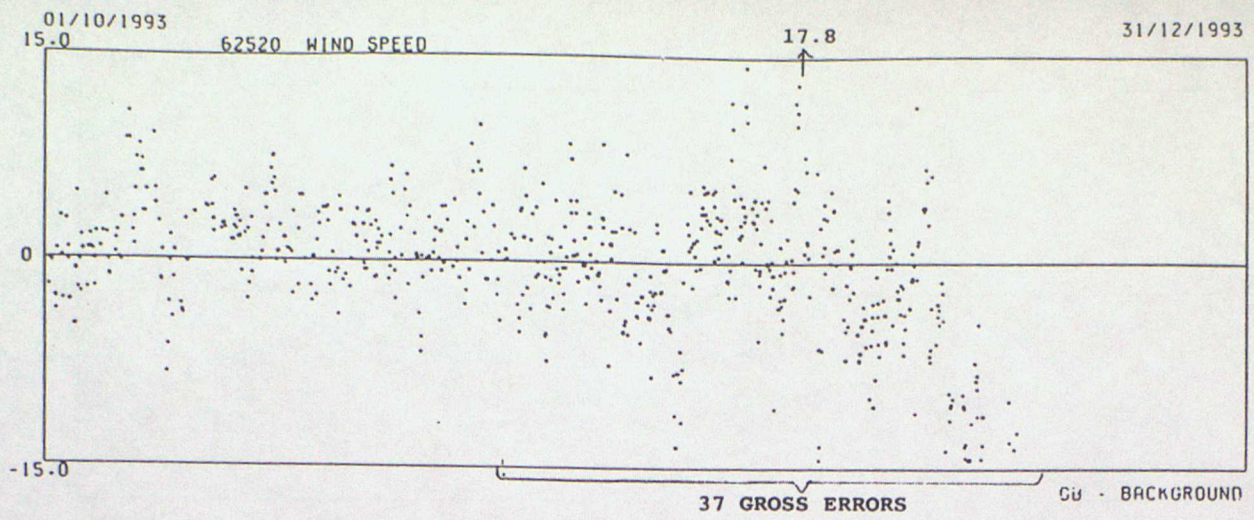
180.0

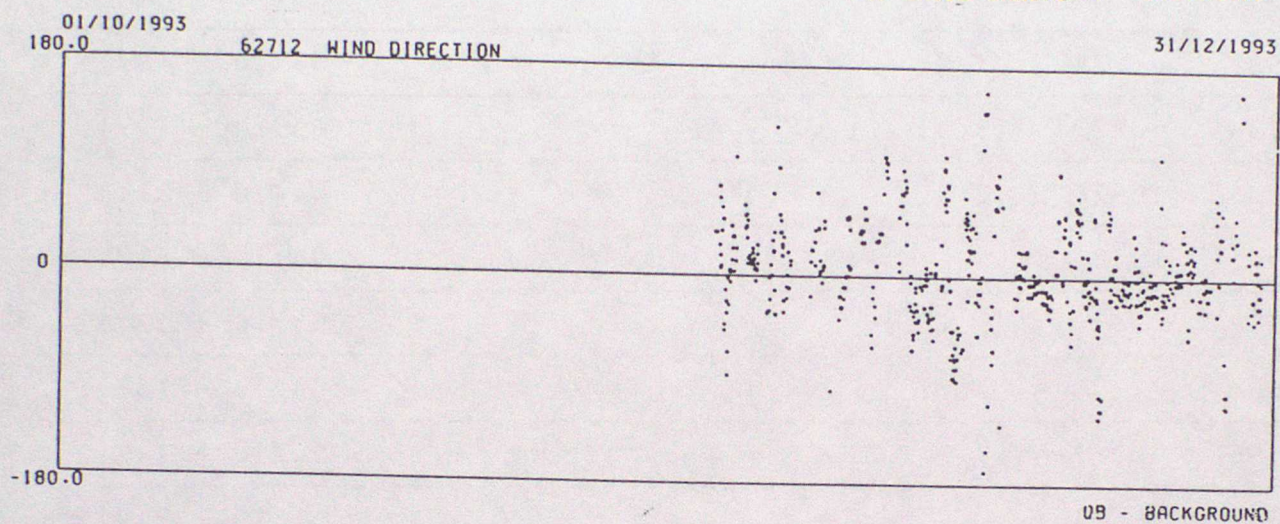
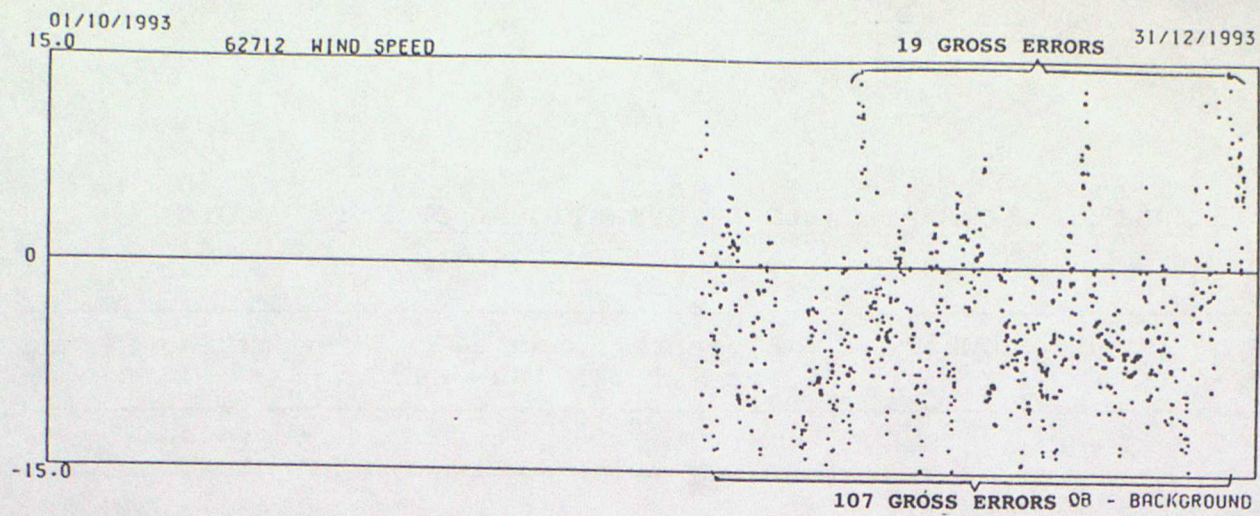
62518 WIND DIRECTION



-180.0

06 - BACKGROUND





ANNEX F - SUMMARY TABLE OF OPERATIONAL DRIFTING BUOYS

| W.M.O No. | Argos No. | Owner | Elements Reported | | | | | | Reporting Period |
|--------------|--------------|-------|-------------------|----|----|----|----|-----|------------------|
| | | | PP | Pt | TT | FF | DD | SST | |
| 12501 | 3959 | U.S. | * | | * | | | * | 01/10 - 31/12 + |
| 12502 | 5259 | U.S. | * | | * | | | * | 01/10 - 14/10 |
| 13533 | ???? | ?.?. | * | | | * | * | * | 04/10 - 18/11 |
| 13534 | ???? | ?.?. | * | | | * | * | * | 06/10 - 12/11 |
| 13556 | 15526 | U.S. | * | | | * | * | * | 04/10 - 31/12 |
| 13561 | 15531 | F. | * | | | * | * | * | 08/10 - 31/12 |
| 13562 | ???? | ?.?. | * | | | * | * | * | 07/10 - 13/11 |
| 13564 | ???? | ?.?. | * | | | * | * | * | 04/10 - 14/11 |
| 13566 | ???? | ?.?. | * | | | * | * | * | 29/10 - 14/11 |
| 44515 | 5524 | U.S. | * | | * | | | * | 01/10 - 31/12 |
| 44613 | 3676 | N. | * | * | * | | | * | 01/10 - 31/12 |
| 44614 | 2959 | U.K. | * | * | * | * | * | * | 02/11 - 29/12 + |
| 44616 | 2963 | U.K. | * | * | * | * | * | * | 02/11 - 31/12 + |
| 44624 | 2957 | U.K. | * | * | * | | | * | 29/11 - 31/12 + |
| 44726 | 2961 | U.K. | * | * | * | | | * | 29/11 - 31/12 |
| 44728 | 2952 | U.K. | * | * | * | * | * | * | 01/12 - 31/12 |
| 44765 | 1255 | U.K. | * | | * | | | * | 01/10 - 31/12 |
| 44770 | 6287 | U.K. | * | * | * | | | * | 01/10 - 06/11 |
| 44774 | 2961 | U.K. | * | * | * | | | * | 19/11 - 31/12 |
| 44775 | 2962 | U.K. | * | * | * | | | * | 01/10 - 31/12 |

PP - Pressure Pt - Pressure tendency TT - Air temperature
FF - Wind speed DD - Wind direction SST - Sea surface temperature

+ - These buoys stopped reporting pressure before the end of the quarter but continued to report other elements.

| W.M.O No. | Argos No. | Owner | Elements Reported | | | | | | Reporting Period |
|--------------|--------------|-------|-------------------|----|----|----|----|-----|------------------|
| | | | PP | Pt | TT | FF | DD | SST | |
| 44777 | 1257 | U.K. | * | * | * | * | * | * | 01/10 - 31/12 |
| 44778 | 1259 | U.K. | * | * | * | * | * | * | 01/10 - 31/12 |
| 44779 | 1260 | U.K. | * | * | * | * | * | * | 01/10 - 31/12 |
| 47606 | ???? | ?.?. | * | | * | | | | 01/10 - 31/12 |
| 61542 | 15356 | U.S. | * | | * | | | * | 01/10 - 28/11 |
| 62501 | 10116 | F. | * | * | | | | * | 05/10 - 31/12 |
| 62502 | 15503 | F. | * | | | * | * | * | 26/11 - 31/12 |
| 62514 | 1356 | F. | * | | | | | * | 01/10 - 31/12 |
| 62518 | 10113 | F. | * | * | | * | * | * | 01/10 - 28/11 |
| 62519 | 10112 | F. | * | * | | | | * | 01/10 - 31/12 |
| 62520 | 10114 | F. | * | * | | * | * | * | 01/10 - 31/12 |
| 62524 | 4625 | U.K. | * | * | * | | | * | 19/11 - 31/12 |
| 62673 | 6817 | U.S. | * | | * | | | * | 01/10 - 16/12 |
| 62694 | 2958 | U.K. | * | * | * | | | * | 01/10 - 29/12 |
| 62695 | 2956 | U.K. | * | * | * | * | * | * | 19/11 - 31/12 |
| 62711 | 1258 | U.K. | * | * | * | | | * | 01/10 - 31/12 |
| 62712 | 1247 | U.K. | * | * | * | * | * | * | 01/10 - 31/12 |
| 62805 | 6285 | U.K. | * | | * | | | * | 01/10 - 11/12 |
| 64539 | 5521 | U.S. | * | | * | | | * | 01/10 - 09/12 |
| 64540 | 5522 | U.S. | * | | * | | | * | 01/10 - 26/11 |

PP - Pressure Pt - Pressure tendency TT - Air temperature
FF - Wind speed DD - Wind direction SST - Sea surface temperature

