Report on the Quality of Marine Surface Observations

Report Number 35

January to June 2006

Met Office

REPORT ON THE QUALITY OF MARINE SURFACE OBSERVATIONS:

JANUARY TO JUNE 2006

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REPORT ON THE QUALITY OF MARINE SURFACE OBSERVATIONS:

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1. INTRODUCTION

In 1985, the Commission for Basic Systems (CBS) 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 stations providing seemingly erroneous data. 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. The Met Office was allocated the role as lead centre for marine surface observations which encompass observations from ships, drifting buoys, moored buoys and other fixed marine platforms. This is the thirty-fifth of its reports and covers the period January to June 2006. For each observing platform identified as suspect, values are supplied for the number of observations received at the Met Office, the number of these observations with gross errors, the observations' mean differences from the background values used by the numerical data assimilation system and the standard deviations of these differences.

Following the CBS recommendations, by the end of the 1980s there were four centres active in the monthly exchange of monitoring information; The Met Office, ECMWF, RSMC Tokyo and NCEP. Since then, a number of other centres have also begun to exchange this information and these reports have included data provided by Météo-France as of report number 23. Initially, the only monitoring information exchanged on marine surface observations related to pressure, and the first two WMO reports addressed that parameter alone. Since then, these reports have contained monitoring statistics for wind observations, now being exchanged between centres on a consistent monthly basis. In addition, the report contains monitoring results for sea-surface temperature (SST). Due to changes in the observation processing system and database structure, there was no monitoring of SST data at the Met Office from May 1998 to September 2000. The SST information presented in reports 20 to 23 was therefore compiled, with permission, from the monthly NCEP monitoring data and so is not directly comparable with that presented in other reports. SST monitoring was reinstated at the Met Office from October 2000.

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 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 are possible 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 applicable in observation monitoring. The short-term forecast from the previous numerical analysis, commonly known as the first-guess or background field, 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 core of all monitoring work by GDPS centres. Unlike wind and pressure, SST monitoring at the Met Office used to be performed against the analysis field, this being judged a sufficiently good approximation due to the slowly varying nature of SST, relative to parameters measured above the surface. As of October 2000, background values have been used but with the slowly varying nature of SST used to assume persistence, such that the background is in fact the previous analysis. (These analyses are performed daily at the Met Office from an assimilation of both surface and satellite observations.) Thus the SST monitoring at the Met Office is no longer limited by a dependence upon the observations themselves.

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 often, however, a smaller group of observations departing much more from the background, for which observation error is the only reasonable explanation for the large values of O-B. Studies of the distribution and variation of O-B at different points around the globe enable reasonably accurate estimation of background error, 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 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 model background values. All observations, both synoptic and asynoptic, are assimilated. At the Met Office (as of May 2000) and ECMWF, the background fields are interpolated to the observation time whereas Météo-France, Tokyo and Washington, use the background value valid at the nearest main synoptic hour.

Given that the number of observations made during the month is at least 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 |	≥4.0 hPa
2. the standard deviation of O-B	≥6.0 hPa
3. the percentage of gross errors	≥25

Wind

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

Gross errors are defined as observations that depart from the background by more than 15hPa (Pressure) or 25ms^{-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 speeds are less than 5ms^{-1}.

Relatively little information is exchanged between centres on a regular monthly basis for SST.

The monthly results for pressure from all five 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 results for wind speed also show 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.

This report draws together all the monthly monitoring results exchanged on marine surface data and identifies a list of observing platforms that have provided observations of poor quality over the 6-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. Observing platforms are listed only where 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 are not 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 |	≥3.5 hPa
2. the standard deviation of O-B	≥5.0 hPa
3. the percentage of gross errors	≥25

Wind

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

SST

1. the | mean of O-B |	≥3.0 °C
2. the standard deviation of O-B	≥5.0 °C
3. the percentage of gross errors	≥25

All observations having gross errors are excluded from the calculation of the mean and standard deviation of O-B. The same gross error limits apply in these reports as in the monthly lists. The Met Office now sets a limit of 10°C for SST but this was previously 5°C and NCEP use 15°C. Also, criteria previously used in these reports were based on O-A statistics. Data presented here is, then, not directly comparable with that in earlier reports.

The limits on the bias and standard deviation O-B are more stringent than those for the monthly lists because the sample sizes are larger. If there has been a recent change in quality, they are only applied at the end of the period. Identifiers can be listed in this report without appearing on any of the monthly lists. This is can be due to a representative sample only being obtained over several months or deterioration occurring at the end of the period for platforms reporting very frequently. The 6-month list is longer than most of the monthly lists because many ships cease reporting for variable periods of time, in many cases while they are in port or out of service. Only over a relatively long period, probably more than 6 months, is a representative sample obtained from all those ships providing observations.

3. MONITORING RESULTS

The monitoring results presented in this report relate only 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 BUOY 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 BUOY 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, January to June 2006, 3007888 observations of pressure were monitored at Exeter from 2798 manual ships, 567 drifting buoys, and 441 automatic ships. The number of reports received from individual ships varies greatly as Table 1 demonstrates; apparently, a 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. A comparison with the corresponding table in report number 34 shows small decreases in the numbers of manual ships and drifters, and a 7% increase in automatic ships. Since most marine observations are located in the northern hemisphere, there is inevitably some seasonal variation in the number of vessels reporting, especially in the case of buoys, since new or replacement buoys are generally deployed in better weather conditions. Considering the general trends over previous reports, however, shows a continuing slight decline in the number of manual ships reporting pressure observations, whilst the number of automated platforms exhibits continue to exhibit a growth trend.

Table 2 shows the number of observations of pressure that have been received over the GTS at the Met Office and processed, over past 6-month periods. Due to changes in data storage methods in May 1991, report number 5 covered the period January to May 1991 only, thence figures for January to June 1991 have been scaled-up in order to make a fair comparison with other 6-month periods; this may not be entirely accurate. Further changes in November 1993 for drifting buoys and automatic ships for pressure and winds, may have allowed duplication of a few identifiers in totals for the period June to December 1993, as reclassification from one observation type to another occurred. 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.) The period January to June 1998 is also based on only 5 months data (February-June), but the numbers of observations received have been scaled up, as in the 1991 case.

Figure 1 shows the information presented in Table 2 more clearly. It can be seen that the total number of observations remained fairly steady with only minor fluctuations until report number 11 (January-June 1994). Since that time however, there has been a steady increase in the total, with the number of observations of pressure nearly doubling between reports 11 and 16 (July-December 1996), a period of just 2.5 years. This increase was due to the larger number of reports from each drifting buoy, as reliability has improved; many drifting buoys now make several thousand observations of pressure during a 6-month period. The number of reports from drifting buoys now exceeds those for manual ships by around 285 %, with a little under 58 % of all marine pressure observations now being made by drifting buoys. The sudden increase seen in the number of automatic ships in report number 19 (January-June 1998) was due to observation processing changes at the Met Office, whereby all reports from 'automatic ships' are processed, rather than only one report per 6-hour assimilation period, as previously. Since then there has been a steady increasing trend in the total number of pressure reports.

A histogram of O-B differences for all ship pressure reports in the period January to June 2006 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 much larger 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 (Figure 2b). The remaining 93.7 % of the observations, that 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 1.3 hPa. The principal contribution to the standard deviation is assumed to be from background errors.

A global estimate of the background error, such as that provided above, can conceal large spatial variations. Background values will be more accurate in data-rich areas (e.g.: in the North Sea or Mediterranean) or where the meteorological variability is low (e.g.: 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 most areas, the magnitude of the mean is less than 1.0 hPa, the exceptions being generally where the sample size is small. The standard deviation is generally around 1.5 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 January to June 2006. Values over the six-month period are given for the number of observations of pressure available for Met Office global model runs, the number of observations differing from the model background value by more than 15 hPa (gross errors), and the mean and standard deviation of the model O-B. The number of times the identifier has appeared on the monthly suspect lists from the five monitoring centres is also given. In order to give a detailed picture of the frequency of reporting and any changes in the observation accuracy, 6-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; although some values depart greatly from the sample mean, presumably due to some gross error in the observation, these are generally 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 report number 34 (July to December 2005) have been indicated with an asterisk. A comparison of the statistics given here with those in the report number 33 (January to June 2005), clearly indicates that the bias in the pressure observations from a few ships has hardly changed for more than a year.

Statistics for those marine observing platforms listed in report number 34 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 were received in the 6-month period for many of the ships on this list. Approximately 35 % of them, however, do show some improvement in the quality of their observations.

3.2 Wind

Monitoring observations of wind is more problematical than pressure. On most observing platforms, wind is measured using anemometers; the reported speed depends upon the averaging period and instrument height above sea level, which varies a great deal between platforms. Since large structures distort wind flow, the anemometer position relative to the wind bearing and platform structure does affect the measurement. (These factors do not apply to those ship observations where wind speed is based on visual estimates of the sea state e.g. the UK VOF fleet.)

In these monitoring results, the background winds are valid at a height of 10 metres above mean sea level; slightly lower than the average height of ship anemometers. Where anemometer height is much different from 10 metres, a significant O-B speed bias may be evident. Examples of this are, observations from oil rigs or tankers with anemometer heights of 50m or more (although the speeds reported by some rigs are now adjusted on board to be nominal 10m values) and buoys, where the anemometer can be as low as 2m.

In the period January to June 2006, 1321727 wind observations were available for monitoring at Exeter, from 2844 manual ships, 61 drifting buoys, and 485 automatic ships. (More detail is given in Table 1.) The number of reported manual ship identifiers has again shown a small drop from the previous period, whilst there was about a 33% reduction in the number of drifters reporting wind observations. Automatic ships reporting wind, on the other hand, increased slightly in numbers. As stated for pressure observations, the large increase in the number of monitored wind observations, seen in report number nineteen, was largely due to the inclusion of all 'automatic ship' data, not just one report in each six hour period.

Histograms of O-B differences for ship observations of wind speed are presented in Figures 2d, 2e and 2f and of wind direction in Figures 2g, 2h and 2i. As with observations of pressure, those wind observations that fail the quality-control checks differ most from background, some by as much as 50 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 % of the observations are nearly Gaussian. There is a speed bias of 1.2 ms^{-1} relative to background, with a direction bias of just -1.8°.

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 that 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 2.5 to 4 ms^{-1} in middle latitudes and 2 to 3 ms^{-1} in the tropics. The bias is generally around +1 ms^{-1}, but exceeds +2 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 5ms^{-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 data-sparse areas, it is as large as 40 or 50 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 to compare the O-B characteristics for different marine observing platforms. Table 5 contains a list of those ships and drifting buoys considered to have produced suspect observations of wind speed in the period January to June 2006, and in Table 7 a similar list is provided for wind direction. Values are given for the number of observations of wind received at the Met Office, the number of observations having a vector difference from background of more than 25ms^{-1} (gross errors), and the mean and standard deviation of O-B. Time-series of O-B are given at the end of the report for each listed identifier. In the majority of the cases of suspect speed observations, a constant bias is clearly evident. Errors in observations of direction are more random in nature. Tables 6 and 8 contain

statistics for platforms reporting in ship code which are not included in Tables 5 and 7 but that were listed in the previous report, for wind speed and direction respectively. Time-series plots for these identifiers are not included in this report.

3.3 Sea-surface temperature

In the six-month period January to June 2006, a total of 6293008 observations of SST were monitored at the Met Office, from 2464 manual ships, 1746 drifting buoys and 337 automatic ships. Of the total, 402994 were from manual ships, 5109798 from drifting buoys and 780216 from automatic ships. (More detail is given in Table 1.) For the same reasons as stated for pressure observations, it appears that many identifiers report only once during the six-month period. As is also apparent for pressure and wind observations, the number of manual ships reporting SSTs appears to be slowly on the wane, whereas the number of automated platforms continue to rise. Despite there being a relatively small number of drifting buoys, they contribute a substantial percentage of the total number of SST observations received. This is due to the frequency of buoy observations; hourly in many cases, with ships tending to report only at the main synoptic hours. There was a large increase (6293008 cf 3679017, 71%) in the overall total of SST observations compared to the previous period; this may have been due to more efficient receipt of the observations by the satellite collection system.

Histograms of O-B differences for all ship SST reports are shown in Figures 2j, 2k and 2l. As with observations of pressure and wind, those SST observations that fail the quality-control checks differ most from background and make a large contribution to the variance of O-B. The distribution of O-B SST for the remaining 87 % of the observations is nearly Gaussian. There is a bias of 0.1 °C relative to background.

Figures 12 and 13 show the geographical distributions over the three-month period of the mean and standard deviation of O-B for ship observations that pass the quality control checks. The numbers of reports used to generate these statistics are presented in Figure 14. The bias is generally around 0.5°C and the standard deviation 1 to 2°C. Particular exceptions to this tend to show up where the number of observations is relatively low.

Table 9 contains a list of the ships and drifting buoys considered to have produced suspect observations over the 6-month period. The comments given in each case provide an indication of the main reason for the station to be listed as suspect; time-series charts have also been plotted for SST and are included at the end of the report. The majority of the identifiers appearing on the list do so because of bias. Table 10 gives details of the performance over the latest 6-month period of ships which were considered suspect in the previous period but which do not appear in Table 9.

4. SUMMARY

152 marine observing platforms are listed as producing suspect observations of pressure over the period January to June 2006, 97 as producing suspect wind observations and 210 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. With the selection criteria remaining unchanged, an initial reduction in the number of platforms listed as suspect was followed by a series of reports listing similar numbers of suspects but RECENT_TREND. When considered alongside the fluctuations in numbers of platforms reporting and observations monitored, this trend does not, it seems, represent decreasing observation quality. Over the same period, there have been increasing numbers of wind observing platforms listed as suspect, although this also appears not to be a worrying trend.

The most common characteristic in the case of identifiers listed as producing suspect pressure observations is bias in the reported pressure, sometimes remaining constant for many months. In the case of wind suspects, the most common reason for listing a platform is a bias in the reported wind speed, while a few show large standard deviations or biases in wind direction. For sea-surface temperature observations, bias is again the most common cause of error.

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

TABLE 1: FREQUENCY DISTRIBUTION OF THE NUMBER OF REPORTS OF PRESSURE, WIND AND SEA SURFACE TEMPERATURE FROM INDIVIDUAL IDENTIFIERS AVAILABLE FOR MONITORING AT EXETER, JANUARY TO JUNE 2006.

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	347	349	285	9	10	7	28	28	9
2-10	324	336	332	7	5	15	19	17	5
11-20	168	184	189	7	2	8	3	5	1
21-40	293	303	273	8	2	5	10	9	9
41-100	561	569	501	10	6	50	18	20	5
101-200	587	590	457	20	5	44	33	34	6
201-500	392	395	313	34	8	102	46	51	34
501-1000	58	59	56	44	4	153	70	66	26
1001-1500	27	28	19	19	5	108	45	55	43
1500+	41	31	39	409	14	1254	169	200	199
Total	2798	2844	2464	567	61	1746	441	485	337
(Report 34)	(2814)	(2853)	(2523)	(572)	(94)	(1727)	(411)	(467)	(333)

* numbers are for automatic (fixed) buoys only

TABLE 2: NUMBER OF OBSERVATIONS OF PRESSURE RECEIVED AT EXETER ON THE GTS FOR EACH OF THE SIX-MONTH PERIODS COVERED BY THE WMO REPORTS ON THE QUALITY OF MARINE OBSERVATIONS.

Period	WMO report number	Number of Observations			
		Manual ships	Drifting buoys	Automatic ships	Total
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
Jan - Jun 1994	11	334134	279963	111928	726025
Jul - Dec 1994	12	383760	305618	142468	831846
Jan - Jun 1995	13	369781	407111	124537	901429
Jul - Dec 1995	14	394016	528938	138653	1061607
Jan - Jun 1996	15	430162	566035	122909	1119106
Jul - Dec 1996	16	477928	621869	133221	1233018
Jan - Jun 1997	17	446530	623835	122178	1192543
Jul - Dec 1997	18	453399	684292	140227	1277918
Jan - Jun 1998	19	426622	700743	423217	1550582
Jul - Dec 1998	20	443548	700239	497313	1641100
Jan - Jun 1999	21	432506	697983	466311	1596800
Jul - Dec 1999	22	448996	771624	500070	1720690
Jan - Jun 2000	23	443023	772510	455799	1671332
Jul - Dec 2000	24	477828	829588	512338	1819754
Jan - Jun 2001	25	458345	784686	465887	1708918
Jul - Dec 2001	26	473887	914744	554002	1942633
Jan - Jun 2002	27	443876	1111699	517200	2072775
Jul - Dec 2002	28	544433	952313	595959	2092705
Jan - Jun 2003	29	432672	994877	506185	1933734
Jul - Dec 2003	30	473591	1128039	605241	2206871
Jan - Jun 2004	31	435824	1092461	596495	2124780
Jul - Dec 2004	32	434160	1113527	724014	2271701
Jan - Jun 2005	33	471113	1221528	717207	2409848
Jul - Dec 2005	34	472565	1523938	837397	2833900
Jan - Jun 2006	35	456847	1758276	792765	3007888

TABLE 3: LIST OF MARINE OBSERVING PLATFORMS REPORTING SUSPECT PRESSURE OBSERVATIONS OVER THE PERIOD JANUARY TO JUNE 2006.

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	6-10	Number of times observing platform has appeared on suspect lists. B=Exeter, E=ECMWF, F=MétéoFrance, T=Tokyo, W=Washington.
Column	11	Comments on quality of pressure observations.

Notes:
1. Units are hPa.
2. Observing platforms marked with an asterisk were listed in the previous report July to December 2005)

Table 3a: Platforms reporting in BUOY code

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

Identifier	N Obs.	NGE	SD	Bias	B	E	F	T	W	Comments
14909	292	65	4.4	2.4	0	0	0	0	1	Bias and GE at end of report
14917	2084	11	2.3	1.7	0	0	0	0	0	Bias at end of report
16560	1375	75	4.1	0.9	1	1	1	0	1	Bias and SD
17658	4464	106	2.5	-0.2	1	0	0	1	0	Bias, SD and GE at end of period
21514	482	4	4.2	1.2	0	0	0	0	0	Bias and SD
21541	663	1	2.3	1.9	0	0	0	0	0	Bias
21906	208	3	4.4	-0.1	0	0	0	0	0	SD
21916	197	5	3.0	3.7	0	0	0	1	0	Bias
21918	50	0	3.4	2.4	0	0	0	0	0	SD
21935	639	1	2.9	2.7	1	0	0	1	0	Bias
21941	432	0	2.7	1.9	0	0	0	0	0	Bias
21945	220	1	3.5	3.1	0	0	0	0	0	Bias
21951	150	0	1.9	3.7	0	0	0	1	1	Bias
21955	521	16	4.0	4.5	1	0	0	1	0	Bias and SD
21958	552	0	2.8	2.1	0	0	0	0	0	Bias
21962	263	24	5.3	-2.7	0	0	0	0	0	Bias and SD
21966	1640	13	3.2	3.0	1	1	0	1	1	Bias
21967	54	1	3.7	-2.0	0	0	0	0	0	SD
21968	145	0	2.5	4.3	1	0	1	1	1	Bias
23593	1660	2	1.1	-4.4	2	2	2	4	3	Bias
23596	416	0	0.8	-4.0	1	0	0	1	1	Bias
23948	656	34	5.5	-0.1	1	1	1	1	1	Bias, SD and GE
25574	147	106	6.1	2.9	5	4	5	0	0	Bias, SD and GE
31551	2770	1019	6.4	-3.2	2	1	1	2	2	Bias, SD and GE
41502	2333	3	2.6	0.1	1	1	1	1	1	Bias at end of report
41537	1005	475	4.6	3.0	2	2	2	1	2	Bias and GE from March
41647	727	19	0.8	0.8	0	0	0	0	0	GE at end of report
41648	861	133	0.9	0.9	1	1	1	1	1	GE at end of report
41927	55	0	2.0	5.8	1	0	1	0	0	Bias
41942	9844	169	0.7	0.6	1	1	1	0	1	GE at end of report
42522	333	57	0.7	0.8	0	0	0	0	0	GE at end of report
42570	2866	15	1.3	1.1	1	0	1	0	1	GE at end of report
43512	129	129	---	---	1	1	1	0	1	GE
43515	1495	4	1.7	0.9	0	0	0	0	0	Bias and SD at end of report
44636	622	71	2.1	-0.6	1	1	0	1	1	Bias and GE at end of report
44746	4192	206	0.8	0.3	1	1	1	1	1	GE at end of report
44831	2184	3	2.4	-0.3	0	0	0	0	0	Bias and SD at end of report
44832	1037	0	1.6	0.0	0	0	0	0	0	Bias at end of report
44843	415	32	2.8	-0.6	0	0	0	0	0	GE at end of report
46560	1547	47	3.4	-0.5	1	1	1	1	1	Bias at end of report

Continued →

46564	471	2	5.2	0.0	0	0	0	0	0	Bias and SD
46567	798	2	2.5	2.0	0	0	0	0	0	Bias at end of report
46568	171	0	2.9	4.4	1	0	0	1	0	Bias
46583	160	0	5.1	-4.2	1	0	0	1	0	Bias and SD
46585	408	1	2.5	1.8	0	0	0	0	0	Bias
46635	1168	62	1.0	1.1	0	0	0	0	0	GE at end of report
47506	1210	945	5.7	5.4	2	1	1	1	2	Bias, SD and GE at end of period
52530	269	56	2.4	2.1	0	0	0	0	1	GE at end of report
52534	1976	117	2.1	1.2	0	0	0	0	0	Bias, SD and GE at end of report
53525	521	235	3.8	-1.4	1	0	1	1	1	GE at end of report
56538	4410	7	1.6	1.0	0	0	0	0	0	Bias at end of report
62504	1557	0	1.6	-0.2	0	0	0	0	0	SD at end of report
62570	705	12	1.4	-0.2	0	0	0	0	0	GE at end of report
71511	7673	431	3.2	0.5	1	1	0	1	0	Bias and SD
71543	757	1	1.5	-4.1	3	3	1	2	3	Bias
71545	505	3	1.3	-2.1	0	0	0	0	0	Bias
71578	4253	11	1.5	-0.5	0	0	0	0	0	Bias at end of period
71636	3426	447	5.3	-1.0	2	1	2	2	2	Bias and SD from Apr
73501	2437	101	2.3	-1.1	0	0	0	1	1	Bias and GE at end of report
74544	3448	144	3.7	-0.2	1	0	0	1	1	Bias and SD from April
74545	2251	42	1.8	-0.4	1	1	1	1	1	Bias at end of report

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

Identifier	N Obs.	NGE	SD	Bias	B	E	F	T	W	Comments
12531	40	0	0.5	-6.4	1	0	1	0	1	Bias
16563	2794	0	1.5	-0.7	0	0	0	0	0	Bias at end of report
21960	3217	1	2.1	3.3	1	0	0	2	1	Bias
23592	2488	0	0.9	-3.0	0	0	0	0	0	Bias
23594	2224	2	0.9	-4.4	3	2	3	4	4	Bias
33661	2080	50	4.8	-0.4	1	0	0	1	1	Bias and SD from May
47505	2036	1762	6.3	0.0	1	1	1	1	1	Bias, SD and GE
54933	4654	86	2.1	-1.1	0	0	0	0	1	Bias and GE at end of period
68992	5351	0	1.2	-4.3	3	1	0	0	0	Bias
71575	4459	171	3.0	-0.4	1	0	1	1	0	Bias and SD from May
74541	4567	102	2.0	-0.4	0	0	0	1	0	Bias and SD at end of period

Table 3b: Platforms reporting in SHIP code

Identifier	N Obs.	NGE	SD	Bias	B	E	F	T	W	Comments
A8AS5	79	1	1.1	5.7	1	0	1	1	1	Bias
A8EU2 *	145	0	0.9	3.5	0	2	1	1	3	Bias
A8FZ5	509	4	1.5	-3.4	0	0	0	0	0	Bias
A8FZ6	84	0	2.1	5.7	2	0	2	2	2	Bias
A8IX5	82	0	1.6	4.8	2	0	2	0	2	Bias
CGDS	644	3	4.1	-2.1	1	0	0	2	1	Bias at end of report
CYLX *	43	2	2.4	11.7	0	0	0	0	0	Bias
C6FE5 *	44	0	0.7	3.5	0	0	0	0	0	Bias
C6FU9	40	12	5.0	-1.8	0	0	0	0	0	Bias and GE at end of report
C6FZ6 *	207	0	2.0	6.3	4	2	4	4	4	Bias
C6LU4	230	1	1.6	3.5	2	0	2	2	4	Bias
C6NL6 *	45	0	3.5	5.2	0	0	0	0	0	Bias
C6PZ3 *	243	0	1.8	6.2	5	2	5	5	5	Bias
C6QD3	125	13	5.4	0.6	0	0	0	0	1	Bias and SD
C6QK	484	8	2.1	3.0	1	0	1	2	2	Bias at end of period
DBJM	3871	2	1.5	0.2	0	0	1	0	0	Bias at end of report
DDPH	170	0	1.9	1.8	0	0	0	0	2	Bias from March
DGGE	245	0	1.2	3.6	1	0	1	1	2	Bias
DGRF	133	0	2.2	2.0	1	0	0	0	1	Bias from February
DHSI	131	0	0.8	3.9	1	0	0	0	2	Bias
DLCX	111	0	1.2	3.7	1	0	1	0	2	Bias
DMRX	185	0	1.1	3.3	0	0	1	0	2	Bias
D5XH *	48	0	2.4	-5.4	1	0	1	0	1	Bias
ELTY4 *	65	0	0.9	-5.6	1	1	1	1	1	Bias
ELVF4	56	0	0.7	4.2	1	0	1	1	1	Bias
ELVX9 *	129	0	1.4	4.3	2	0	2	2	2	Bias
ELWX5	1250	9	2.6	0.0	0	0	0	0	0	Bias and SD from May
FKJB	340	51	6.6	1.3	3	3	3	1	3	Bias and GE
KF003 *	138	2	2.4	-8.5	4	0	2	0	4	Bias
KMJL	51	2	1.9	-3.6	0	0	0	0	0	Bias
KS049 *	1404	0	0.9	-4.4	6	0	6	6	0	Bias
LAOX5 *	180	0	1.4	3.6	2	0	1	2	3	Bias
LAVX5	59	0	1.0	3.5	0	0	0	0	1	Bias
LAYG5	75	4	2.5	-3.6	0	0	0	0	0	Bias
LDGJ	631	30	4.3	0.8	1	0	1	0	0	Bias and SD in June
LJIT	55	0	2.8	4.6	1	0	1	0	0	Bias
OWAY2	218	0	2.6	0.2	1	0	1	0	1	Bias from May
OWTW2	177	0	1.0	3.9	3	1	3	3	5	Bias
OWWS2	112	0	1.9	4.6	3	0	3	2	3	Bias
OZWA2	56	0	0.9	-6.1	1	0	1	1	1	Bias

Continued →

PBGH	110	0	1.9	-3.0	1	0	0	0	0	Bias
PCEX	119	0	2.4	2.0	0	0	0	0	0	Bias from May
S6JS	129	1	4.7	-4.5	1	0	1	1	1	Bias from June
TEST	424	424	---	---	5	4	5	0	0	GE
TESTCA5	179	0	0.5	-11.1	1	0	0	0	0	Bias
TESTFR1	50	50	---	---	2	0	0	0	0	GE
UBAW *	161	4	3.7	-1.1	0	0	0	0	0	SD
UBXD	69	2	2.9	-5.7	1	0	1	1	1	Bias
UBXS	181	0	2.9	4.8	2	2	2	2	3	Bias
UCJL *	143	0	1.9	-3.8	2	1	0	1	2	Bias
UCTK	278	3	3.2	-3.6	3	0	1	2	0	Bias
UCUF *	159	44	5.1	0.1	1	1	1	1	1	SD and GE
UCUO	142	35	7.3	0.7	2	1	0	1	2	Bias, SD and GE
UCUQ	107	6	5.8	6.6	2	0	2	1	2	Bias and SD
UGNQ *	239	0	1.3	-4.4	5	0	2	1	3	Bias
UGOU	184	8	2.8	-4.9	4	0	2	3	3	Bias
UITJ	46	0	4.8	2.4	0	0	0	0	0	SD
UITP	126	7	2.6	6.2	3	1	3	3	3	Bias
VRBH5	137	1	2.6	2.7	1	0	1	1	1	Bias
VRBI3	90	0	2.7	-1.9	1	0	1	1	1	Bias at end of report
VTXL *	52	3	1.9	-8.4	0	0	0	0	0	Bias and GE
VVCZ	138	1	1.6	5.3	4	1	3	1	4	Bias
VVGG *	55	5	3.9	3.6	0	0	0	0	0	Bias
VVJN *	53	0	1.6	-6.7	1	1	1	0	1	Bias
V2AW5 *	105	0	1.7	5.0	2	0	2	0	2	Bias
V2GR	123	44	1.7	-0.2	2	2	2	0	2	GE
V2OB8	59	0	1.2	3.7	0	0	1	0	1	Bias
V7IX7	113	4	4.8	2.4	1	0	0	0	3	Bias
WAQ352 *	67	0	2.4	-5.3	2	0	2	0	2	Bias
WDB991 *	171	0	2.1	-4.0	1	0	2	1	0	Bias
WDB998 *	232	3	1.9	5.8	5	0	5	5	6	Bias
WMLG	129	0	2.9	1.4	0	0	0	0	1	Bias from May
3EES2	201	1	4.4	1.0	3	1	2	2	3	Bias
3FHJ6 *	44	1	1.4	-4.2	1	1	1	1	1	Bias
42014	3683	19	2.1	0.2	0	0	0	0	0	Bias and GE at end of report
42362	644	0	3.6	-5.1	1	0	1	1	0	Bias
46071	4217	3	1.8	-0.6	0	0	0	0	0	Bias and SD at end of period
62202	96	0	3.8	-4.9	1	0	1	0	0	Bias since April
7850	103	6	2.6	5.9	3	1	0	3	3	Bias
9VBP2	224	22	1.8	-0.2	1	1	1	0	2	GE at end of report

TABLE 4: LIST OF PLATFORMS REPORTING IN SHIP CODE NOT APPEARING IN TABLE 3 BUT LISTED AS SUSPECT OVER THE PERIOD JULY TO DECEMBER 2005.

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

Identifier	N Obs.	NGE	SD	Bias	Comments
AUBC	22	0	1.4	1.9	Less than 40 reports
AUFI	33	0	2.8	4.1	Less than 40 reports
A8FA6	0	---	---	---	No reports
A8FJ8	76	0	0.7	0.0	Bias and SD reduced
A8FN8	50	0	2.4	1.1	Bias reduced
A8FR5	31	0	1.4	1.9	Less than 40 reports
A8GQ8	147	0	2.0	2.3	Bias reduced
CSGN	0	---	---	---	No reports
CYBJ	19	0	1.1	3.8	Less than 40 reports
C6QF6	23	0	2.0	2.0	Less than 40 reports
C6SE6	32	0	1.6	6.8	Less than 40 reports
DADD	320	0	1.5	0.5	Bias reduced
DCFG2	5	0	0.6	4.7	Less than 40 reports
DDQI	1841	0	0.6	-0.4	SD and GE reduced
DEHY	98	0	2.0	2.5	Bias reduced
DPJC	0	---	---	---	No reports
DQVO	176	0	1.6	-0.2	Bias reduced
ELYY5	0	---	---	---	No reports
FNFD	612	0	1.4	-0.7	Bias reduced
HQTEST	0	---	---	---	No reports
KS028	1	0	0.0	-0.6	Less than 40 reports
OUHC2	70	0	1.8	1.8	Bias reduced
OVJB2	346	0	1.5	-0.6	Bias reduced
PCBU	95	0	2.0	1.2	Bias reduced
PCFT	112	0	1.0	1.8	Bias reduced
PINX	168	1	3.1	2.3	Bias reduced
SYAQ	151	1	2.0	-0.3	Bias reduced
UANF	6	0	0.9	4.6	Less than 40 reports
UBDU	15	0	1.6	-4.9	Less than 40 reports
UCJB	11	0	1.9	-0.9	Less than 40 reports
UCUP	0	---	---	---	No reports
UDYN	131	0	2.8	-0.2	Bias reduced
UGTP	0	---	---	---	No reports
UIAG	84	0	3.4	1.9	Bias reduced
VC6750	243	0	0.8	0.1	Bias and GE reduced
VVKS	0	---	---	---	No reports
V2AC9	0	---	---	---	No reports
V2AJ8	14	0	1.1	0.5	Less than 40 reports
V7EA2	0	---	---	---	No reports
V7EB7	0	---	---	---	No reports

Continued →

V7FW8	158	3	4.1	8.8	Bias reduced from June
WAM7635	48	0	3.1	0.6	Bias reduced
WBN7617	20	0	4.0	-6.6	Less than 40 reports
WCX5321	0	---	---	---	No reports
WCY2853	16	1	0.9	3.7	Less than 40 reports
WCZ7337	76	0	3.3	-1.8	Bias reduced
WDB3834	54	0	2.5	1.1	Bias reduced
WDB7815	125	2	1.8	-2.6	Bias reduced
ZCBN9	305	0	2.6	1.9	Bias reduced since Feb
17910	0	---	---	---	No reports
21942	0	---	---	---	No reports
23949	0	---	---	---	No reports
25522	0	---	---	---	No reports
25571	0	---	---	---	No reports
25573	0	---	---	---	No reports
3FMV4	0	---	---	---	No reports
41030	442	0	0.5	0.3	Bias reduced
41505	0	---	---	---	No reports
41528	0	---	---	---	No reports
41542	0	---	---	---	No reports
41929	0	---	---	---	No reports
41934	0	---	---	---	No reports
41935	0	---	---	---	No reports
44022	8919	0	0.6	0.6	Bias and GE reduced
44726	0	---	---	---	No reports
44840	0	---	---	---	No reports
46566	0	---	---	---	No reports
46707	0	---	---	---	No reports
48586	0	---	---	---	No reports
52522	0	---	---	---	No reports
52528	0	---	---	---	No reports
52689	0	---	---	---	No reports
55920	0	---	---	---	No reports
61557	0	---	---	---	No reports
62402	179	1	2.4	1.3	Bias reduced
62908	0	---	---	---	No reports
64609	0	---	---	---	No reports
9VIC4	61	0	1.1	-0.2	Bias reduced

TABLE 5: LIST OF MARINE OBSERVING PLATFORMS REPORTING SUSPECT WIND SPEED OBSERVATIONS OVER THE PERIOD JANUARY TO JUNE 2006.

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 25ms $^{-1}$ (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 6-10 Number of times observing platform has appeared on suspect lists. B=Exeter, E=ECMWF, F=MétéoFrance, T=Tokyo, W=Washington.
Column 11 Comments on quality of wind speed observations.

Notes:
1. Units are ms^{-1}
2. Observing platforms marked with an asterisk were listed in the previous report (July to December 2005)

Table 5a: Platforms reporting in BUOY code

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

Identifier	N Obs.	NGE	SD	Bias	B	E	F	T	W	Comments
13977	109	0	1.6	-5.7	1	0	0	0	0	Bias
41933	1038	90	6.2	6.7	2	1	2	0	0	Bias and SD
41941	2312	144	6.6	5.9	3	3	3	0	3	Bias and SD
46633	1105	1	3.2	4.4	0	2	0	0	0	Bias at end of report
46634	217	1	8.9	2.1	0	1	0	0	1	Bias and SD
46643	42	0	2.6	5.6	1	1	0	0	1	Bias

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

Identifier	N Obs.	NGE	SD	Bias	B	E	F	T	W	Comments

Table 5b: Platforms reporting in SHIP code

Identifier		N Obs.	NGE	SD	Bias	B	E	F	T	W	Comments
A8DV4		147	0	3.7	3.1	1	1	1	0	1	Bias at end of period
A8IH7		49	1	7.2	7.6	0	0	0	0	0	Bias and SD
BATFR01		298	0	3.0	2.0	0	0	0	0	0	Bias at end of period
CFN3031		510	58	5.3	-0.2	0	0	0	0	0	SD
DBJM		3871	1	2.0	0.9	0	0	1	0	0	Bias at end of report
ELNT7		44	2	5.7	9.0	1	0	1	0	1	Bias and SD
ELXT8	*	61	3	5.2	5.5	0	0	0	0	0	Bias
FNJI		453	1	2.9	1.4	0	0	0	0	0	Bias at end of period
HP6038	*	1360	0	3.5	5.2	3	0	0	1	1	Bias
LAJV4		679	61	5.5	2.9	0	0	0	0	0	Bias and SD
LDGJ		629	14	6.8	2.0	1	0	0	0	0	Bias and SD
OWFU2	*	439	1	3.7	3.9	1	0	0	0	0	Bias at end of period
OZWP2		321	0	4.3	3.0	1	1	1	1	1	Bias at end of period
PBAD		754	0	2.8	3.1	0	0	0	0	0	Bias at end of report
PJTA	*	1099	0	5.1	-2.8	0	0	0	0	0	Bias and SD
UCUF	*	159	10	4.8	7.1	3	3	3	1	3	Bias
UCUO		143	2	5.1	5.9	0	2	1	1	2	Bias and SD
UIAG		85	0	3.4	6.0	2	1	1	1	1	Bias
VEP717	*	1339	0	4.2	5.9	5	0	2	3	2	Bias and SD
VNVR		1107	1	2.8	1.5	1	0	1	0	1	Bias at end of report
VRYO9		102	0	3.7	3.9	0	0	0	0	0	Bias
VVCZ		139	1	4.4	5.7	2	2	2	1	2	Bias
V2OO4		84	0	4.8	3.7	0	0	0	0	0	Bias
V7IA5		112	1	7.4	5.2	1	1	1	1	1	Bias and SD at end of period
WBN207	*	88	0	4.3	5.4	1	0	2	0	2	Bias
WDA2311		49	0	4.3	4.6	0	0	0	0	0	Bias
WYL5718		65	0	3.2	5.1	0	0	0	0	0	Bias
ZCDF8		89	0	3.3	5.5	2	0	1	0	1	Bias
23097		254	0	3.0	-2.2	0	0	0	0	0	Bias at end of period
3FMV3		120	1	6.8	4.2	1	1	0	1	0	Bias and SD
46054		1214	0	2.7	3.0	0	0	0	0	0	Bias
46088	*	2106	0	3.3	3.9	0	0	0	0	0	Bias
46131	*	4285	0	3.0	3.7	0	0	0	0	0	Bias
46146	*	4284	0	2.5	3.5	0	0	0	0	0	Bias
46181	*	4287	0	3.1	2.9	0	3	0	0	0	Bias
62052		2171	0	2.3	-0.6	1	0	1	0	0	Bias at end of report
62092		3833	1	2.6	-0.8	0	0	0	0	0	Bias at end of report
63113		3600	0	2.1	-1.0	1	0	0	1	1	Bias at end of period
9HGR8		222	30	6.0	4.2	2	0	1	2	1	Bias and SD
9MCD3	*	62	1	6.8	7.3	1	0	1	0	1	Bias and SD
9MSM	*	150	2	5.2	5.3	2	2	2	2	2	Bias

TABLE 6: LIST OF PLATFORMS REPORTING IN SHIP CODE NOT APPEARING IN TABLE 5 BUT LISTED AS SUSPECT OVER THE PERIOD JULY TO DECEMBER 2005.

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 25ms^{-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 ms^{-1}

Identifier	N Obs.	NGE	SD	Bias	Comments
ATVX	8	0	2.9	1.8	Less than 40 reports
A8FI3	288	2	5.0	4.0	Bias reduced
A8GS3	196	0	2.9	2.0	Bias reduced
CYLY	2	0	0.3	1.2	Less than 40 reports
ELRJ6	0	---	---	---	No reports
GYYP	0	---	---	---	No reports
H3PK	66	0	3.6	-1.5	Bias reduced
JPBN	1869	0	2.1	1.2	Bias reduced
JPPO	0	---	---	---	No reports
KGTY	437	0	3.0	1.9	Bias reduced
LF3J	634	0	1.5	-0.2	Bias and SD reduced
MDGV9	47	0	4.5	1.6	Bias and SD reduced
MHNL6	278	0	3.5	0.2	Bias reduced
SBNX	417	0	2.6	1.3	SD reduced
SDBQ	95	0	2.7	1.8	Bias reduced
SGBA	129	0	3.1	2.5	Bias reduced
UCFT	236	1	3.3	2.7	Bias reduced
UCJO	48	1	3.3	2.9	GE reduced
UDDE	101	0	4.1	0.9	SD reduced
UIHY	50	0	3.6	3.5	Bias reduced
VCLX	130	1	3.1	2.8	Bias reduced
VLTT	1223	0	3.7	3.1	Bias reduced
VRVP2	506	9	4.0	1.9	GE reduced
VWSZ	0	---	---	---	No reports
V2JN	331	2	3.2	1.7	Bias reduced

Continued →

V7IS7	366	0	3.4	2.4	Bias reduced
WAZ9548	39	0	3.7	3.5	Less than 40 reports
WCQ8110	456	2	3.2	3.4	Bias
WDA5598	39	0	4.1	4.5	Less than 40 reports
YJUF7	1116	1	3.3	3.9	Bias reduced
3FZM6	49	0	1.9	0.6	Bias and SD reduced
41670	0	---	---	---	No reports
41929	0	---	---	---	No reports
41934	0	---	---	---	No reports
41936	0	---	---	---	No reports
41937	0	---	---	---	No reports
42047	0	---	---	---	No reports
44255	3677	0	1.8	0.0	Bias reduced
45142	2411	0	1.6	0.8	Bias reduced
62147	326	0	3.4	3.6	Bias reduced
62168	435	0	2.5	2.4	Bias reduced
62407	231	0	2.5	3.4	Bias reduced
62566	0	---	---	---	No reports
8PNZ	41	0	2.2	3.7	Bias reduced
9MBW7	144	0	2.5	2.0	Bias and SD reduced
9MBX5	108	0	2.5	1.3	Bias and SD reduced
9MTE	0	---	---	---	No reports

TABLE 7: LIST OF MARINE OBSERVING PLATFORMS PRODUCING SUSPECT WIND DIRECTION OBSERVATIONS OVER THE PERIOD JANUARY TO JUNE 2006 .

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 25ms^{-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	6-10	Number of times observing platform has appeared on suspect lists. B=Exeter, E=ECMWF, F=MétéoFrance, T=Tokyo, W=Washington.
Column	11	Comments on quality of wind direction observations.

Notes:

1. Units are degrees (°).
2. Observing platforms marked § had a significant speed bias at some time within the period and the statistics and their plots refer to direction reports associated with background wind speeds greater than 5 ms^{-1} . If no significant speed bias was present, the statistics and plots refer to direction reports with an observed speed greater than 5 ms^{-1}.
3. Observing platforms marked with an asterisk were listed in the previous report (July to December 2005)

Table 7a: Platforms reporting in BUOY code

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

Identifier	N Obs.	NGE	SD	Bias	B	E	F	T	W	Comments
22618	120	44	3.1	-1.9	1	-	1	-	1	GE
22624	1433	0	1.3	-0.1	1	-	1	-	1	Bias at end of report
22627	782	31	1.7	-0.8	0	-	0	-	0	GE at end of report
22632	959	1	1.7	-0.2	0	-	0	-	0	Bias at end of period
22633	967	8	1.9	0.4	0	-	0	-	0	Bias at end of report
22638	1538	0	1.8	-0.7	0	-	0	-	0	Bias at end of report
22641	696	1	2.9	-1.6	1	-	1	-	1	Bias at end of report
22646	1137	0	1.8	-1.6	1	-	0	-	0	Bias
22647	1262	0	1.1	0.0	0	-	0	-	0	Bias at end of report
22649	2911	0	1.0	-0.2	0	-	0	-	0	Bias at end of report
22651	627	0	1.8	-0.6	1	-	0	-	0	Bias at end of report
22908	1127	0	2.3	-0.5	0	-	0	-	0	Bias at end of report
22913	173	14	1.1	-0.5	0	-	0	-	0	GE at end of report
22916	1654	0	1.6	0.2	0	-	0	-	0	Bias at end of report
22918	1394	0	2.2	-0.9	2	-	1	-	1	Bias from March
22919	449	0	2.1	-2.1	0	-	0	-	0	Bias
22923	709	16	2.5	-0.9	0	-	0	-	0	Bias at end of report
22924	179	30	1.8	-2.7	0	-	0	-	0	Bias and GE at end of report
22927	2490	0	1.7	1.4	1	-	0	-	1	Bias from March
22932	2817	0	1.9	-0.3	1	-	0	-	1	Bias from April
31551	777	33	1.1	0.0	1	-	1	-	1	GE at end of report
32620	2388	0	1.9	-0.8	0	-	0	-	0	Bias at end of report
32668	746	27	2.5	-1.6	0	-	0	-	0	Bias
32671	2778	186	0.8	0.2	1	-	0	-	1	GE at end of report
32675	88	39	3.4	-1.4	1	-	1	-	1	GE
32708	3622	43	1.0	0.0	0	-	0	-	0	GE at end of report
32823	508	4	2.3	-3.1	1	-	0	-	0	Bias
32868	1087	2	1.7	-0.2	0	-	0	-	0	Bias at end of report
33584	905	0	2.2	0.0	1	-	0	-	0	Bias
33587	384	0	1.5	-1.0	0	-	0	-	0	Bias
33632	74	37	1.1	8.6	1	-	1	-	1	Bias and GE
33636	3068	0	2.0	0.0	0	-	0	-	0	Bias
33673	5853	0	1.4	0.0	0	-	0	-	0	Bias
34534	6253	0	1.1	-0.5	0	-	0	-	0	Bias at end of period
34544	4987	0	1.3	-0.3	0	-	0	-	0	Bias at end of report
41502	2047	1	0.8	-0.2	0	-	0	-	0	Bias at end of report
41553	2358	0	1.0	2.2	1	-	0	-	0	Bias
41560	1871	0	0.7	-0.5	0	-	0	-	0	Bias at end of report
41623	805	0	1.2	3.6	2	-	0	-	1	Bias
41648	815	15	0.3	0.2	0	-	0	-	0	GE at end of report

Continued →

41649	61	29	5.1	2.3	1	-	1	-	1	GE
41650	78	32	5.1	2.7	1	-	1	-	1	GE
41919	2556	528	4.0	3.4	2	-	2	-	2	Bias from February
41928	78	10	5.0	2.5	2	-	1	-	1	Bias and SD
41930	780	0	1.1	-1.1	0	-	0	-	0	Bias at end of report
41944	1586	13	1.3	-0.1	0	-	0	-	0	Bias and SD at end of report
42522	658	0	1.5	0.2	0	-	0	-	0	Bias at end of report
42570	3577	3	1.0	0.0	1	-	1	-	0	Bias at end of report
43526	269	84	0.9	1.0	1	-	0	-	0	GE at end of report
43531	80	33	5.4	-0.8	1	-	1	-	1	SD and GE at end of report
51711	1903	0	0.7	0.0	0	-	0	-	0	Bias at end of report
51716	2077	166	0.4	0.1	0	-	0	-	0	GE at end of report
51743	3055	0	1.7	-0.6	0	-	0	-	0	Bias at end of report
51762	3925	0	1.1	-0.1	0	-	0	-	0	Bias from April
51776	865	0	0.7	-0.4	0	-	0	-	0	Bias at end of report
51878	2531	0	0.8	-0.1	0	-	0	-	0	Bias at end of report
51889	3259	0	0.9	-0.2	0	-	0	-	0	Bias at end of report
51961	328	3	3.0	-2.1	2	-	2	-	1	Bias
52538	6676	5	0.5	0.0	0	-	0	-	0	Bias at end of report
52664	2027	33	0.5	-0.3	1	-	1	-	1	Bias and GE at end of report
53522	1455	0	1.7	-0.8	0	-	0	-	0	Bias at end of report
53523	83	1	4.1	-4.1	1	-	1	-	1	Bias
53524	2271	105	0.4	0.2	0	-	0	-	0	GE at end of report
53562	66	47	7.0	3.2	2	-	0	-	0	SD and GE
53567	1121	1	1.9	-0.9	0	-	0	-	0	Bias at end of report
53593	526	6	3.1	-2.1	0	-	0	-	0	Bias at end of report
53595	1436	0	1.7	-0.9	0	-	0	-	0	Bias at end of report

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

Identifier	N Obs.	NGE	SD	Bias	B	E	F	T	W	Comments
14919	4393	0	0.9	-0.2	0	-	0	-	0	Bias at end of period
15504	3545	0	1.3	-0.2	0	-	0	-	0	Bias at end of period
15607	119	18	3.7	3.2	1	-	0	-	2	Bias
21546	2556	0	1.0	0.7	0	-	0	-	0	Bias from May
22625	106	0	2.0	-5.2	2	-	1	-	0	Bias
32521	2555	0	1.1	0.3	0	-	0	-	0	Bias at end of period
32674	4090	186	1.8	-0.6	0	-	0	-	0	Bias and GE
33634	3216	0	1.4	-0.7	0	-	0	-	0	Bias
41685	4559	0	0.7	-3.0	3	-	0	-	0	Bias
43524	593	0	1.5	1.6	0	-	0	-	0	Bias at end of period
51959	166	0	0.9	-2.9	3	-	0	-	0	Bias

Table 7b: Platforms reporting in SHIP code

Identifier	N Obs.	NGE	SD	Bias	B	E	F	T	W	Comments
A8AX3 *	185	0	65.1	-11.7	0	0	0	0	0	SD
A8CD2 *	109	0	61.1	-20.2	0	0	0	0	0	SD
A8FN8	48	0	61.9	-23.1	0	0	0	0	0	SD
A8GQ8	145	8	70.0	-7.4	0	0	1	1	3	SD
A8JC8	90	0	70.3	-3.3	0	0	0	0	0	SD
CFN3031 *	509	57	65.3	-27.9	1	0	2	1	3	Bias and SD
CGBR	937	0	41.0	-45.8	1	1	1	1	4	Bias
CGTF *	773	0	60.4	-97.6	0	1	4	1	5	Bias and SD
C6LP4 *	137	0	64.9	-0.2	0	0	0	0	0	SD
C6QY4	82	1	61.7	-7.9	0	0	1	0	1	SD
C6SS3 *	187	0	63.6	-23.3	0	1	0	0	1	Bias and SD
DGZN	158	6	90.7	19.7	2	2	3	2	3	Bias and SD
ELOV9	251	0	61.9	1.0	0	1	0	1	5	SD
ELVG7	74	0	66.7	2.5	0	0	0	0	0	SD
ELXT8 *§	61	3	72.5	-28.8	0	0	0	0	0	SD
GQVS	85	0	74.0	-14.8	0	0	0	0	0	SD
HZZB	118	0	63.4	-9.8	0	0	0	0	1	SD
H3VT *	76	0	45.0	-30.7	1	0	0	0	1	Bias
KCDK	96	0	66.7	14.8	0	0	0	0	1	SD
KF002 *	288	0	61.3	2.1	0	0	0	0	2	SD
LAJV4 *§	677	58	89.9	26.8	3	6	5	2	4	Bias and SD
LAYG5	75	1	67.8	5.3	0	0	0	0	0	SD
LDGJ §	582	12	60.1	-10.5	1	0	1	0	1	Bias and SD
OVZV2 *	181	0	62.9	-2.2	1	1	1	1	2	SD
PCHS *	177	1	66.6	2.9	0	2	2	1	2	SD
PGDP	157	1	63.5	-25.8	0	1	1	0	1	SD
PJTA §	723	0	103.0	14.0	1	0	1	0	2	Bias and SD
SYAQ *	152	1	62.0	14.6	1	0	1	0	1	Bias and SD
TOUR §	629	0	108.8	11.9	5	3	4	3	5	Bias and SD
UCFT	236	1	63.5	-5.8	0	0	0	0	1	SD
UDDE	82	0	63.7	-10.2	0	0	0	0	2	SD
UDYG	86	1	48.0	56.6	0	0	0	0	1	Bias
VCLM	519	13	93.9	33.5	0	2	0	0	4	Bias and SD
VQEN3	96	0	61.6	-10.3	0	0	0	0	2	SD
VRBH5	134	0	68.1	-24.5	0	0	0	0	0	SD
VRBI2	108	0	64.9	-12.3	0	1	0	0	2	SD
VRY09 §	566	36	71.4	4.7	2	2	2	2	3	Bias and SD
V2AZ5 *	141	0	61.7	-4.2	0	0	0	0	0	SD
V3ZB2 *	63	0	71.2	-30.4	0	1	0	0	1	Bias and SD
V7CG7	135	0	65.0	-11.8	1	0	1	1	1	SD

Continued →

V7IA5	§	112	1	97.6	-3.1	0	0	0	0	1	Bias and SD
WCZ7336		89	1	61.0	-37.9	0	0	0	0	2	Bias
WCZ733	*	89	0	50.7	-60.5	0	0	0	0	1	Bias
WDC7227		78	0	60.4	6.9	0	0	0	0	0	SD
WYL544	*	49	0	60.8	-26.1	0	0	0	0	0	SD
ZCBU6		84	0	65.8	-10.6	0	0	0	0	0	SD
ZIZP9		107	0	65.8	-4.2	0	0	0	0	0	SD
23099		549	0	62.3	35.2	2	1	3	3	4	Bias and SD
23174		1164	0	99.1	-27.3	3	4	4	3	5	Bias and SD
41027		188	0	73.5	17.8	0	0	0	0	2	SD
44040	*	4469	0	22.8	28.4	0	1	1	0	0	Bias
45140		423	0	32.2	53.0	0	1	1	1	1	Bias
45144		486	0	30.4	58.5	0	0	0	0	1	Bias
46081	*§	4126	0	47.3	-41.6	0	0	4	5	6	Bias
6ZXG	*	296	0	54.0	-24.0	0	0	0	0	2	Bias and SD reduced
9HGR8	*§	222	29	84.4	20.0	1	0	2	2	2	Bias and SD
9VAY4	*	250	2	62.3	-9.3	0	0	0	0	0	SD
WQZ9670		100	1	2.5	4.6	1	-	1	-	1	Bias
WSRH	*	148	0	1.1	-3.8	4	-	3	-	1	Bias
WTEA		120	0	2.3	3.0	1	-	0	-	0	Bias
WXQ4511		49	1	2.9	3.7	1	-	1	-	1	Bias
WZJD	*	152	1	1.2	-3.6	4	-	4	-	1	Bias
Y3CH	*	3927	3	1.8	1.8	0	-	2	-	1	Bias
3FRR5		354	2	2.8	-4.6	4	-	4	-	4	Bias from February
41025	*	4301	0	3.7	0.1	0	-	0	-	0	Bias
41035	*	6743	0	2.5	-2.1	3	-	0	-	0	Bias
42007	*	3985	0	2.0	-0.2	1	-	0	-	0	Bias
44004		2764	1	2.9	1.7	1	-	0	-	1	Bias from April
44008		4320	0	1.1	-1.4	1	-	0	-	1	Bias from May
44014	*	1965	0	1.7	-2.2	1	-	0	-	2	Bias
44018		4241	0	0.7	-0.4	0	-	0	-	0	Bias at end of period
44034		4135	0	0.8	0.1	0	-	0	-	0	Bias at end of period
44140		3982	0	1.0	0.0	0	-	0	-	0	Bias at end of period

TABLE 8: LIST OF PLATFORMS REPORTING IN SHIP CODE NOT APPEARING IN TABLE 7 BUT LISTED AS SUSPECT OVER THE PERIOD JULY TO DECEMBER 2005.

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 25ms $^{-1}$ (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 (°)

A8CG2	173	0	54.6	2.7	Bias and SD reduced
A8FU7	32	0	57.8	-17.1	Less than 40 reports
C6SI3	272	0	48.9	-6.4	Bias and SD reduced
DCCO2	62	0	50.1	-15.3	SD reduced
DEFL	99	0	57.5	14.7	SD reduced
ELWX5	1241	0	52.2	-1.3	Bias and SD reduced
FPOW	55	0	58.0	-8.9	SD reduced
JPPO	0	---	---	---	No reports
KCB53	72	0	55.8	-11.4	Bias reduced
KS044	90	0	41.5	-75.2	Bias
KUU619	33	0	80.4	-3.8	Less than 40 reports
MDGV9	47	0	35.2	8.4	Bias reduced
MZHC8	8	0	12.0	-7.1	Less than 40 reports
PCPR	142	0	47.3	-11.2	SD reduced
PJOY	183	0	48.9	-9.9	SD reduced
PJRH	34	0	58.2	-4.0	Less than 40 reports
SYMK	12	0	7.7	63.6	Less than 40 reports
S6CD2	0	---	---	---	No reports
S6MJ	149	2	69.2	-10.5	SD reduced
UAJS	0	---	---	---	No reports
UANF	5	0	6.9	-6.8	Less than 40 reports
UBDU	15	0	46.3	21.6	Less than 40 reports
VHA2333	0	---	---	---	No reports
VRVP2	502	9	56.9	-3.1	Bias, SD and GE reduced
V2FM	144	0	58.4	5.6	SD reduced
V2OL	33	0	58.4	36.1	Less than 40 reports
V2PJ6	0	---	---	---	No reports
V3ZK2	27	0	55.9	11.6	Less than 40 reports
WBM8733	1	0	0.0	87.1	Less than 40 reports
WBN2074	87	0	52.5	1.1	SD reduced

Continued →

WBO3345	0	---	---	---	No reports
WCX5321	0	---	---	---	No reports
WCY2853	16	0	35.4	24.1	Less than 40 reports
WCZ7335	87	0	56.0	-14.7	Bias reduced
WYT8569	140	1	55.7	-6.5	SD reduced
ZCDM2	0	---	---	---	No reports
ZCDP2	151	0	50.1	-1.3	SD reduced
ZCGL2	368	0	51.8	10.6	Bias reduced
ZIYE7	47	0	56.6	-19.3	SD reduced
23098	1148	0	29.7	-15.5	Bias reduced
23100	0	---	---	---	No reports
3EXQ9	0	---	---	---	No reports
3FMH7	348	0	40.4	-5.5	SD reduced
3FPS9	15	0	78.3	-29.1	Less than 40 reports
3FZM6	49	0	35.6	1.5	SD reduced
41030	420	0	35.3	0.1	SD reduced
41037	0	---	---	---	No reports
42023	0	---	---	---	No reports
44258	4024	0	37.6	13.5	Bias reduced
46091	0	---	---	---	No reports
46092	0	---	---	---	No reports
46707	0	---	---	---	No reports
5WDC	34	0	52.7	-24.9	Less than 40 reports
53057	0	---	---	---	No reports
7850	101	1	49.2	-6.0	SD reduced
9VHB9	48	0	58.4	-13.5	SD reduced

TABLE 9: LIST OF MARINE OBSERVING PLATFORMS REPORTING SUSPECT SEA SURFACE TEMPERATURE OBSERVATIONS OVER THE PERIOD JANUARY TO JUNE 2006.

Column 1 Call sign or identifier.
Column 2 Number of sea-surface temperature observations available for monitoring over the six-month period, excluding duplicates, but including any observations with gross errors.
Column 3 Number of sea surface temperature observations differing by more than 10 °C 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 excluding cases of gross error.
Columns 6-10 Number of times observing platform has appeared on suspect lists. B=Exeter, E=ECMWF, F=MétéoFrance, T=Tokyo, W=Washington.
Column 11 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 (July to December 2005)

Table 9a: Platforms reporting in BUOY code

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

Identifier	N Obs.	NGE	SD	Bias	B	E	F	T	W	Comments
22618	120	44	3.1	-1.9	1	-	1	-	1	GE
22624	1433	0	1.3	-0.1	1	-	1	-	1	Bias at end of report
22627	782	31	1.7	-0.8	0	-	0	-	0	GE at end of report
22632	959	1	1.7	-0.2	0	-	0	-	0	Bias at end of period
22633	967	8	1.9	0.4	0	-	0	-	0	Bias at end of report
22638	1538	0	1.8	-0.7	0	-	0	-	0	Bias at end of report
22641	696	1	2.9	-1.6	1	-	1	-	1	Bias at end of report
22646	1137	0	1.8	-1.6	1	-	0	-	0	Bias
22647	1262	0	1.1	0.0	0	-	0	-	0	Bias at end of report
22649	2911	0	1.0	-0.2	0	-	0	-	0	Bias at end of report
22651	627	0	1.8	-0.6	1	-	0	-	0	Bias at end of report
22908	1127	0	2.3	-0.5	0	-	0	-	0	Bias at end of report
22913	173	14	1.1	-0.5	0	-	0	-	0	GE at end of report
22916	1654	0	1.6	0.2	0	-	0	-	0	Bias at end of report
22918	1394	0	2.2	-0.9	2	-	1	-	1	Bias from March
22919	449	0	2.1	-2.1	0	-	0	-	0	Bias
22923	709	16	2.5	-0.9	0	-	0	-	0	Bias at end of report

Continued →

22924	179	30	1.8	-2.7	0 - 0 - 0	Bias and GE at end of report
22927	2490	0	1.7	1.4	1 - 0 - 1	Bias from March
22932	2817	0	1.9	-0.3	1 - 0 - 1	Bias from April
31551	777	33	1.1	0.0	1 - 1 - 1	GE at end of report
32620	2388	0	1.9	-0.8	0 - 0 - 0	Bias at end of report
32668	746	27	2.5	-1.6	0 - 0 - 0	Bias
32671	2778	186	0.8	0.2	1 - 0 - 1	GE at end of report
32675	88	39	3.4	-1.4	1 - 1 - 1	GE
32708	3622	43	1.0	0.0	0 - 0 - 0	GE at end of report
32823	508	4	2.3	-3.1	1 - 0 - 0	Bias
32868	1087	2	1.7	-0.2	0 - 0 - 0	Bias at end of report
33584	905	0	2.2	0.0	1 - 0 - 0	Bias
33587	384	0	1.5	-1.0	0 - 0 - 0	Bias
33632	74	37	1.1	8.6	1 - 1 - 1	Bias and GE
33636	3068	0	2.0	0.0	0 - 0 - 0	Bias
33673	5853	0	1.4	0.0	0 - 0 - 0	Bias
34534	6253	0	1.1	-0.5	0 - 0 - 0	Bias at end of period
34544	4987	0	1.3	-0.3	0 - 0 - 0	Bias at end of report
41502	2047	1	0.8	-0.2	0 - 0 - 0	Bias at end of report
41553	2358	0	1.0	2.2	1 - 0 - 0	Bias
41560	1871	0	0.7	-0.5	0 - 0 - 0	Bias at end of report
41623	805	0	1.2	3.6	2 - 0 - 1	Bias
41648	815	15	0.3	0.2	0 - 0 - 0	GE at end of report
41649	61	29	5.1	2.3	1 - 1 - 1	GE
41650	78	32	5.1	2.7	1 - 1 - 1	GE
41919	2556	528	4.0	3.4	2 - 2 - 2	Bias from February
41928	78	10	5.0	2.5	2 - 1 - 1	Bias and SD
41930	780	0	1.1	-1.1	0 - 0 - 0	Bias at end of report
41944	1586	13	1.3	-0.1	0 - 0 - 0	Bias and SD at end of report
42522	658	0	1.5	0.2	0 - 0 - 0	Bias at end of report
42570	3577	3	1.0	0.0	1 - 1 - 0	Bias at end of report
43526	269	84	0.9	1.0	1 - 0 - 0	GE at end of report
43531	80	33	5.4	-0.8	1 - 1 - 1	SD and GE at end of report
44502	1741	641	2.0	-0.2	2 - 2 - 2	GE reduced
44503	1598	552	1.9	-0.4	2 - 2 - 2	GE reduced
44504	1847	488	4.3	0.9	2 - 2 - 2	GE reduced
44505	1872	754	0.5	0.4	2 - 2 - 2	GE reduced
44506	2062	875	2.1	-0.9	2 - 2 - 2	GE reduced
44507	1312	252	0.9	-1.3	1 - 1 - 1	Bias at end of period
44620	2262	0	1.3	1.0	0 - 0 - 0	Bias

Continued →

44636	619	3	3.2	-2.4	0 - 0 - 0	Bias
44745	708	76	0.6	-0.2	0 - 0 - 0	GE
44768	3373	0	2.3	1.4	1 - 0 - 0	Bias from May
44843	368	0	2.0	-1.0	0 - 0 - 0	Bias
46562	717	194	0.3	0.0	0 - 0 - 1	GE
46635	1165	17	1.2	-0.2	0 - 0 - 0	GE at end of report
51517	1297	135	0.4	0.0	1 - 1 - 1	GE at end of report
51518	126	66	3.2	-2.6	3 - 2 - 3	GE
51519	2945	0	1.2	-0.4	0 - 0 - 0	Bias at end of report
51523	94	0	0.3	-4.4	1 - 1 - 1	Bias
51667	1642	28	1.7	0.4	0 - 0 - 0	Bias and GE at end of report
51677	3263	0	0.6	0.0	0 - 0 - 0	Bias at end of report
51711	1903	0	0.7	0.0	0 - 0 - 0	Bias at end of report
51716	2077	166	0.4	0.1	0 - 0 - 0	GE at end of report
51743	3055	0	1.7	-0.6	0 - 0 - 0	Bias at end of report
51776	865	0	0.7	-0.4	0 - 0 - 0	Bias at end of report
51878	2531	0	0.8	-0.1	0 - 0 - 0	Bias at end of report
51889	3259	0	0.9	-0.2	0 - 0 - 0	Bias at end of report
51961	328	3	3.0	-2.1	2 - 2 - 1	Bias
52538	6676	5	0.5	0.0	0 - 0 - 0	Bias at end of report
52664	2027	33	0.5	-0.3	1 - 1 - 1	Bias and GE at end of report
53522	1455	0	1.7	-0.8	0 - 0 - 0	Bias at end of report
53523	83	1	4.1	-4.1	1 - 1 - 1	Bias at end of report
53524	2271	105	0.4	0.2	0 - 0 - 0	GE at end of report
53562	66	47	7.0	3.2	2 - 0 - 0	Bias, SD and GE
53567	1121	1	1.9	-0.9	0 - 0 - 0	Bias at end of report
53582	2205	1	1.8	-0.5	0 - 0 - 0	Bias at end of report
53593	526	6	3.1	-2.1	0 - 0 - 0	Bias at end of report
53600	1690	0	1.6	-0.7	0 - 0 - 0	Bias at end of report
53607	954	0	1.9	-1.0	0 - 0 - 0	Bias at end of report
53907	4070	121	0.3	-0.1	1 - 0 - 1	GE at end of report
53908	1609	0	1.2	-0.5	0 - 0 - 0	Bias at end of report
54918	1330	0	1.2	-0.5	0 - 0 - 0	Bias at end of report
55588	3380	28	1.0	-0.1	0 - 0 - 0	Bias and GE at end of report
55611	3309	1	1.1	-0.3	0 - 0 - 0	Bias at end of report
56519	1037	34	1.6	-0.3	0 - 0 - 0	Bias and GE at end of report
56551	3126	0	1.6	0.2	1 - 0 - 1	Bias at end of report
61799	308	0	2.3	-0.6	0 - 0 - 0	SD at end of report
61814	2871	6	0.9	0.3	0 - 0 - 0	Bias and SD at end of report
61816	169	169	---	---	1 - 0 - 0	GE
61818	1655	186	1.0	0.7	1 - 0 - 0	Bias at end of report
61820	1800	179	0.9	0.3	1 - 0 - 0	Bias at end of report
61823	1327	3	1.2	-0.3	0 - 0 - 0	Bias at end of report
61832	1043	146	2.3	0.8	1 - 1 - 1	Bias at end of period
61835	479	0	1.5	-1.9	0 - 0 - 0	Bias at end of period
61836	520	0	1.6	-2.8	0 - 0 - 0	Bias at end of period
61837	129	4	3.9	-0.4	0 - 0 - 0	Bias and SD
61842	496	206	1.2	0.2	2 - 1 - 1	GE
61843	728	311	0.9	0.8	2 - 2 - 2	GE
61846	651	261	1.2	1.2	1 - 1 - 1	GE
63528	7294	249	1.3	0.6	0 - 0 - 0	GE at end of report
64613	2203	0	1.9	0.8	1 - 0 - 0	Bias at end of report

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

Identifier	N Obs.	NGE	SD	Bias	B E F T W	Comments
21546	2556	0	1.0	0.7	0 - 0 - 0	Bias from May
22625	106	0	2.0	-5.2	2 - 1 - 0	Bias
32521	2555	0	1.1	0.3	0 - 0 - 0	Bias at end of period
32674	4090	186	1.8	-0.6	0 - 0 - 0	Bias and GE
33634	3216	0	1.4	-0.7	0 - 0 - 0	Bias
41685	4559	0	0.7	-3.0	3 - 0 - 0	Bias
43524	593	0	1.5	1.6	0 - 0 - 0	Bias at end of period
44501	2190	1044	2.6	0.1	2 - 2 - 2	Bias reduced
44507	1312	252	0.9	-1.3	1 - 1 - 1	Bias at end of period
44637	2002	8	2.3	-0.1	0 - 0 - 0	Bias
44767	3330	1	0.8	0.0	0 - 0 - 0	Bias at end of period
51518	126	66	3.2	-2.6	3 - 2 - 3	Bias and GE
51681	85	0	0.7	-2.8	1 - 0 - 0	Bias
51762	3925	0	1.1	-0.1	0 - 0 - 0	Bias from May
51959	166	0	0.9	-2.9	3 - 0 - 0	Bias
61689	2646	28	0.9	0.4	0 - 0 - 0	Bias and GE at end of period
61825	1653	1	1.2	-0.3	0 - 0 - 0	Bias at end of period
61838	533	0	1.6	-2.8	1 - 0 - 0	Bias at end of period
63529	8427	24	1.6	0.8	0 - 1 - 0	Bias
64615	4067	183	1.9	0.8	1 - 1 - 0	Bias and GE from May
71644	3761	1453	1.9	7.0	4 - 4 - 4	Bias and GE

Table9b: Platforms reporting in SHIP code

Identifier	N Obs.	NGE	SD	Bias	B E F T W	Comments
A8CF9	161	3	2.3	-0.7	1 - 1 - 0	Bias from May
A8DZ4 *	182	0	1.6	2.9	2 - 1 - 0	Bias
A8GA2	154	6	3.3	-3.2	3 - 4 - 2	Bias
CGDR	515	0	1.1	3.1	3 - 4 - 4	Bias
CGTF	51	4	2.5	4.0	1 - 0 - 0	Bias
CG2960	257	0	1.9	1.0	0 - 0 - 0	Bias at end of report
CG8049	161	0	2.0	4.8	3 - 1 - 0	Bias
C6KD5	168	3	2.5	-1.3	1 - 1 - 1	Bias
C6RJ6 *	124	0	1.0	-3.1	2 - 2 - 0	Bias
C6UG4	201	1	1.6	-3.0	3 - 3 - 0	Bias

Continued →

DACP	114	1	1.5	2.7	1 - 1 - 0	Bias
DBJM	3480	0	1.1	-0.2	0 - 1 - 0	Bias at end of report
DHSI	78	0	1.1	-3.6	2 - 2 - 0	Bias
DNDD	213	0	1.1	3.3	4 - 4 - 0	Bias
ELMA6	319	0	0.9	2.2	0 - 0 - 0	Bias
ELXU2	68	0	1.8	-3.2	1 - 1 - 0	Bias
ELZW9	66	0	0.7	3.1	0 - 0 - 0	Bias
FNIA *	268	25	3.3	0.7	0 - 0 - 0	Bias and GE at end of report
FPOD	322	20	1.0	0.3	1 - 0 - 1	GE at end of report
HPDV	302	1	1.9	2.4	1 - 1 - 0	Bias
IBPW	125	0	3.1	-3.9	2 - 2 - 2	Bias
J7AW6	75	0	2.8	-2.7	1 - 1 - 1	Bias at end of period
KRHX	416	0	2.3	-1.2	0 - 0 - 0	Bias
KS035	641	14	1.3	1.1	0 - 0 - 0	Bias and GE at end of report
KS049 *	1402	26	2.7	-2.9	2 - 3 - 0	Bias
KS057	2221	0	1.9	-1.3	0 - 0 - 1	Bias
LAIP5	280	6	2.8	-3.1	2 - 2 - 1	Bias
MCZN2	67	1	2.9	-3.0	1 - 0 - 0	Bias
MGYF6	197	11	2.4	1.5	1 - 1 - 1	Bias at end of report
NL9H	301	0	1.4	-2.1	1 - 2 - 1	Bias
OWEB2	148	1	0.9	-3.1	3 - 2 - 0	Bias
P3BP9	65	0	0.8	3.7	1 - 1 - 1	Bias
P3ND5	81	17	1.3	1.1	1 - 0 - 1	GE from April
P3ZY6	63	0	3.4	3.5	1 - 1 - 0	Bias
PDZR	103	0	1.7	2.4	0 - 0 - 0	Bias
PJTA	1104	791	2.1	-0.4	2 - 0 - 2	GE
S6IW *	226	0	2.2	-2.4	2 - 2 - 1	Bias
S6PI	52	14	4.8	5.3	2 - 2 - 2	Bias and GE
SBFC	109	5	3.0	1.8	1 - 1 - 1	Bias
SIWB	220	0	1.6	2.3	3 - 2 - 1	Bias from April
TEST	427	427	---	---	5 - 0 - 0	GE
UCBM	146	0	3.5	0.8	1 - 1 - 0	Bias
UCDM *	47	1	2.8	-4.0	0 - 0 - 1	Bias
UCEF	182	0	2.3	1.9	2 - 1 - 3	Bias
UCFT	237	0	2.2	-1.6	2 - 1 - 1	Bias from May
UHCO	70	0	2.0	-3.5	1 - 1 - 0	Bias
UICO	65	6	1.3	5.2	2 - 2 - 2	Bias
V2007	60	1	2.2	3.9	1 - 1 - 1	Bias
V2EX	145	5	1.8	-2.7	1 - 0 - 0	Bias
V7GX5	58	0	3.4	-3.6	2 - 2 - 2	Bias
V7IP9	192	2	2.3	4.0	4 - 3 - 2	Bias
VLTT	896	49	1.2	-0.4	1 - 1 - 1	GE at end of period

Continued →

VROB	140	24	3.0	-2.0	1 - 1 - 0	GE
WAAH *	445	2	1.6	3.2	5 - 0 - 0	Bias
WCY2306	243	0	2.1	-3.4	3 - 0 - 0	Bias
WCZ552 *	150	2	2.7	-3.0	2 - 2 - 1	Bias
WMLH *	205	1	1.1	2.8	3 - 1 - 0	Bias
WQZ9670	100	1	2.5	4.6	1 - 1 - 1	Bias
WSRH *	148	0	1.1	-3.8	4 - 3 - 1	Bias
WTEA	120	0	2.3	3.0	1 - 0 - 0	Bias
WXQ4511	49	1	2.9	3.7	1 - 1 - 1	Bias
WZJD *	152	1	1.2	-3.6	4 - 4 - 1	Bias
Y3CH *	3927	3	1.8	1.8	0 - 2 - 1	Bias
3FRR5	354	2	2.8	-4.6	4 - 4 - 4	Bias from February
41025 *	4301	0	3.7	0.1	0 - 0 - 0	Bias
41035 *	6743	0	2.5	-2.1	3 - 0 - 0	Bias
42007 *	3985	0	2.0	-0.2	1 - 0 - 0	Bias
44004	2764	1	2.9	1.7	1 - 0 - 1	Bias from April
44008	4320	0	1.1	-1.4	1 - 0 - 1	Bias from May
44014 *	1965	0	1.7	-2.2	1 - 0 - 2	Bias
44018	4241	0	0.7	-0.4	0 - 0 - 0	Bias at end of period
44034	4135	0	0.8	0.1	0 - 0 - 0	Bias at end of period
44140	3982	0	1.0	0.0	0 - 0 - 0	Bias at end of period
44141 *	4303	0	4.0	0.5	3 - 0 - 2	Bias
44142 *	561	0	1.7	0.8	0 - 0 - 0	Bias
44150 *	2883	0	2.1	0.7	0 - 0 - 0	Bias
45006	536	2	2.1	1.6	1 - 0 - 0	Bias at end of period
45136	1466	0	1.3	1.1	0 - 0 - 2	Bias at end of period
45139 *	1908	0	1.8	0.8	0 - 0 - 0	Bias
45142 *	2428	0	1.8	1.1	0 - 0 - 0	Bias
45144	546	494	0.2	9.6	1 - 0 - 1	GE
45145 *	371	371	---	---	1 - 0 - 1	GE
45154	1311	38	1.8	5.1	2 - 0 - 1	Bias
45158 *	47	23	0.7	9.1	1 - 1 - 1	Bias and GE
46029	1428	0	0.6	-2.4	1 - 0 - 0	Bias
46211	2445	0	1.0	-0.3	0 - 0 - 0	Bias at end of period
46212 *	2827	0	1.6	0.2	0 - 0 - 0	Bias
61298 *	305	304	0.0	-2.9	1 - 0 - 0	GE
61299 *	289	288	0.0	-3.2	1 - 0 - 0	GE
61301 *	324	324	---	---	1 - 0 - 0	GE
61302 *	380	380	---	---	1 - 0 - 0	GE
61303 *	318	318	---	---	1 - 0 - 0	GE
61304 *	326	326	---	---	1 - 0 - 0	GE
61305 *	253	253	---	---	1 - 0 - 0	GE
61306 *	259	259	---	---	1 - 0 - 0	GE
61307 *	271	271	---	---	1 - 0 - 0	GE
61308 *	229	229	---	---	1 - 0 - 0	GE
61310 *	234	234	---	---	1 - 0 - 0	GE
61312 *	326	326	---	---	1 - 0 - 0	GE
61314 *	333	333	---	---	1 - 0 - 0	GE
9HQK6 *	59	11	1.9	-3.2	1 - 1 - 1	GE

TABLE 10: LIST OF PLATFORMS REPORTING IN SHIP CODE NOT APPEARING IN TABLE 9 BUT LISTED AS SUSPECT OVER THE PERIOD JULY TO DECEMBER 2005.

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 10 °C from the 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 excluding cases of gross error.
Column 6 Comments on quality of sea surface temperature observations.

Notes: 1. Units are °C

Identifier	N Obs.	NGE	SD	Bias	Comments
44150	2883	0	2.1	0.7	Bias reduced
44509	0	---	---	---	No reports
44608	0	---	---	---	No reports
44902	0	---	---	---	No reports
44908	0	---	---	---	No reports
45139	1908	0	1.8	0.8	Bias reduced
45141	0	---	---	---	No reports
45143	1894	0	1.5	0.4	Bias reduced
45150	0	---	---	---	No reports
46539	0	---	---	---	No reports
46707	0	---	---	---	No reports
46972	0	---	---	---	No reports
51525	0	---	---	---	No reports
51716	0	---	---	---	No reports
51743	0	---	---	---	No reports
51747	0	---	---	---	No reports
51748	0	---	---	---	No reports
51750	0	---	---	---	No reports
51751	0	---	---	---	No reports
51752	0	---	---	---	No reports
51762	0	---	---	---	No reports
51776	0	---	---	---	No reports
51878	0	---	---	---	No reports
51889	0	---	---	---	No reports
51905	0	---	---	---	No reports

Continued →

51959	0	---	---	---	No reports
51961	0	---	---	---	No reports
51980	0	---	---	---	No reports
52528	0	---	---	---	No reports
52538	0	---	---	---	No reports
52607	0	---	---	---	No reports
52664	0	---	---	---	No reports
53521	0	---	---	---	No reports
53522	0	---	---	---	No reports
53523	0	---	---	---	No reports
53524	0	---	---	---	No reports
53562	0	---	---	---	No reports
53566	0	---	---	---	No reports
53567	0	---	---	---	No reports
53568	0	---	---	---	No reports
53571	0	---	---	---	No reports
53578	0	---	---	---	No reports
53580	0	---	---	---	No reports
53582	0	---	---	---	No reports
53591	0	---	---	---	No reports
53592	0	---	---	---	No reports
53593	0	---	---	---	No reports
53594	0	---	---	---	No reports
53595	0	---	---	---	No reports
53596	0	---	---	---	No reports
53599	0	---	---	---	No reports
53600	0	---	---	---	No reports
53601	0	---	---	---	No reports
53602	0	---	---	---	No reports
53603	0	---	---	---	No reports
53604	0	---	---	---	No reports
53605	0	---	---	---	No reports
53606	0	---	---	---	No reports
53607	0	---	---	---	No reports
53608	0	---	---	---	No reports
53609	0	---	---	---	No reports
53901	0	---	---	---	No reports
53902	0	---	---	---	No reports
53903	0	---	---	---	No reports
53904	0	---	---	---	No reports
53907	0	---	---	---	No reports
53908	0	---	---	---	No reports
54918	0	---	---	---	No reports
55588	0	---	---	---	No reports
55611	0	---	---	---	No reports

Continued →

61300	0	---	---	---	No reports
61301	0	---	---	---	No reports
61302	0	---	---	---	No reports
61303	0	---	---	---	No reports
61304	0	---	---	---	No reports
61305	0	---	---	---	No reports
61306	0	---	---	---	No reports
61307	0	---	---	---	No reports
61308	0	---	---	---	No reports
61309	0	---	---	---	No reports
61310	0	---	---	---	No reports
61311	0	---	---	---	No reports
61312	0	---	---	---	No reports
61313	0	---	---	---	No reports
61314	0	---	---	---	No reports
61689	0	---	---	---	No reports
61769	0	---	---	---	No reports
61799	0	---	---	---	No reports
61814	0	---	---	---	No reports
61815	0	---	---	---	No reports
61816	0	---	---	---	No reports
61817	0	---	---	---	No reports
61818	0	---	---	---	No reports
61819	0	---	---	---	No reports
61820	0	---	---	---	No reports
61823	0	---	---	---	No reports
61825	0	---	---	---	No reports
61832	0	---	---	---	No reports
61835	0	---	---	---	No reports
61836	0	---	---	---	No reports
61837	0	---	---	---	No reports
61838	0	---	---	---	No reports
61842	0	---	---	---	No reports
61843	0	---	---	---	No reports
61846	0	---	---	---	No reports
62512	0	---	---	---	No reports
63528	0	---	---	---	No reports
63529	0	---	---	---	No reports
64613	0	---	---	---	No reports
64615	0	---	---	---	No reports
71644	0	---	---	---	No reports
9HQK6	0	---	---	---	No reports

TABLE 11: NUMBER OF PLATFORMS REPORTING SUSPECT PRESSURE, WIND AND SST OBSERVATIONS FOR EACH OF THE SIX-MONTH PERIODS COVERED BY THE WMO REPORTS ON THE QUALITY OF MARINE OBSERVATIONS.

Report	Period Covered		Pressure	Wind	SST	Comments
1	January to June	1989	150			
2	July to December	1989				
3	January to June	1990				
4	July to December	1990				
5	January to June	1991				
6	July to December	1991	81	27	98	
7	January to June	1992	74	23	126	
8	July to December	1992	64	19	102	
9	January to June	1993	64	24	164	
10	July to December	1993	71	21	124	
11	January to June	1994	72	27	130	
12	July to December	1994	71	29	127	
13	January to June	1995	82	33	132	
14	July to December	1995	104	39	121	
15	January to June	1996	99	35	124	
16	July to December	1996	112	23	102	
17	January to June	1997	88	19	94	
18	July to December	1997	85	22	100	
19	January to June	1998	74	28	89	Feb-Jun for P & Wind, Jan-Apr for SST
20	July to December	1998	75	45	58	NCEP SST data
21	January to June	1999	95	45	35	NCEP SST data
22	July to December	1999	111	43	35	NCEP SST data
23	January to June	2000	129	64	38	NCEP SST data
24	July to December	2000	124	80	79	
25	January to June	2001	123	101	123	
26	July to December	2001	125	114	145	
27	January to June	2002	152	129	165	
28	July to December	2002	158	148	171	
29	January to June	2003	119	136	143	
30	July to December	2003	133	130	152	
31	January to June	2004	106	110	139	
32	July to December	2004	141	150	152	
33	January to June	2005	125	113	174	
34	July to December	2005	157	142	225	
35	January to June	2006	152	97	210	

Figure 1: Number of observations of pressure received at Exeter on the GTS for each of the six-month periods covered by the WMO reports on the quality of marine surface observations

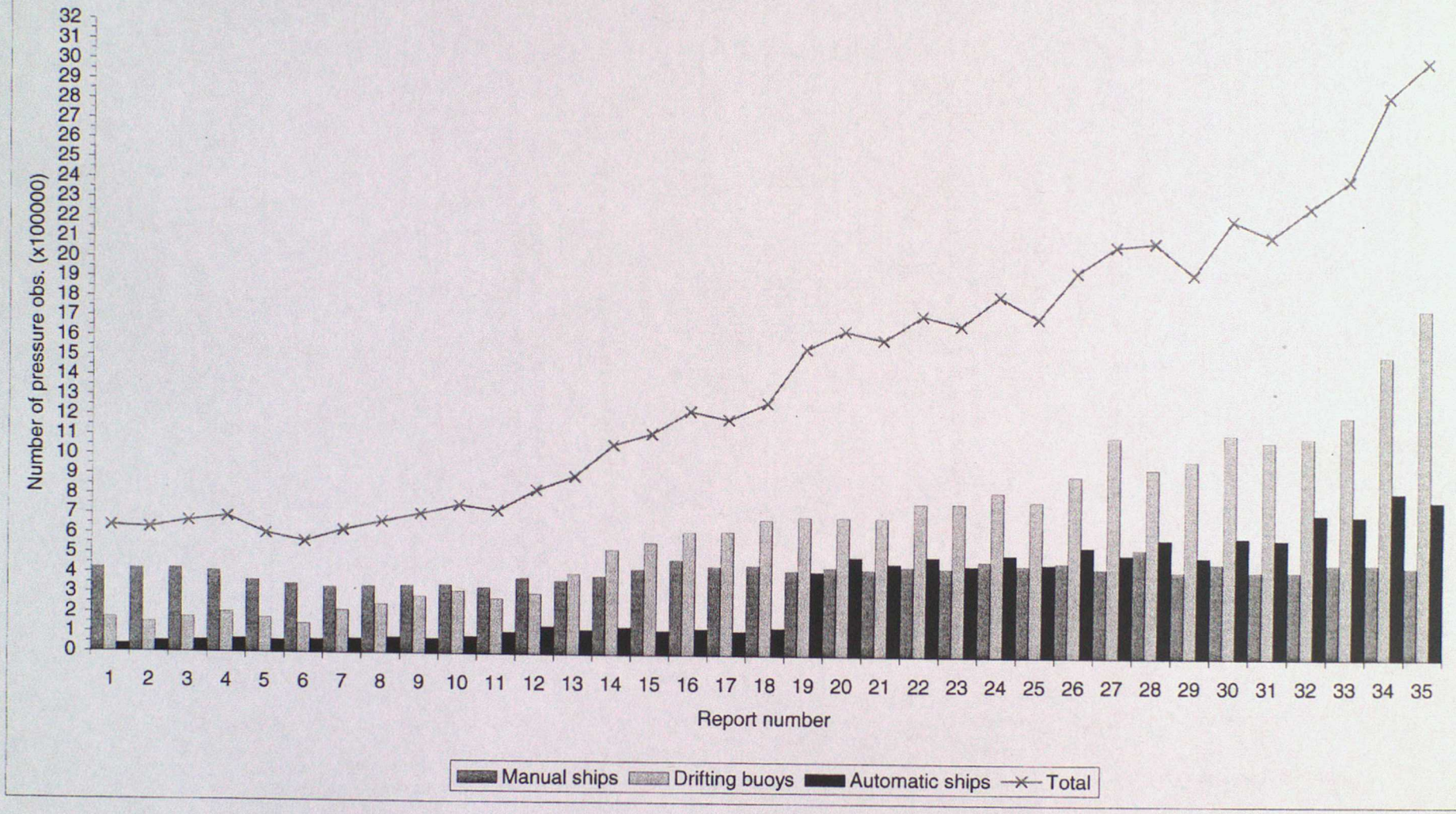
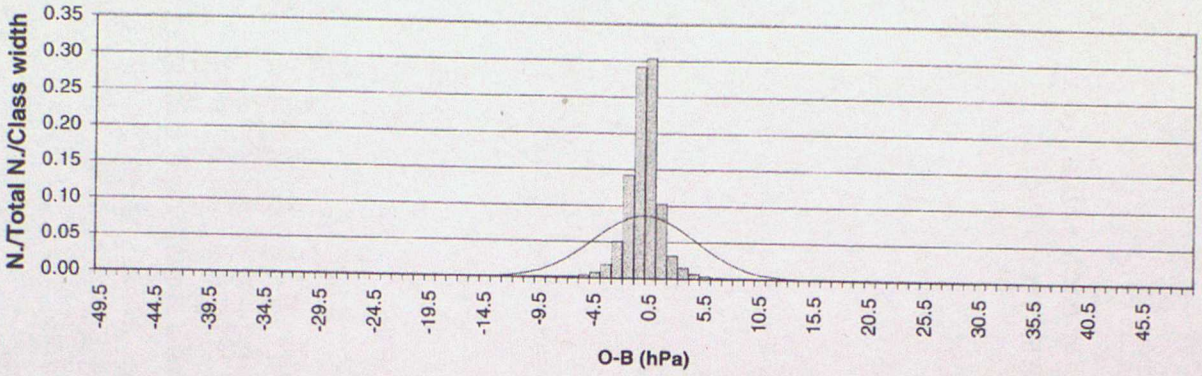
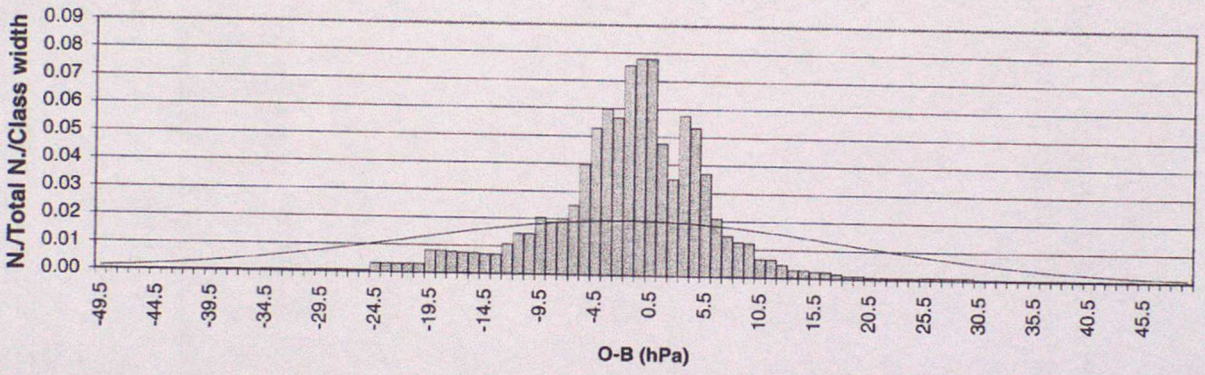


Figure 2a: Distribution of ship O-B pressure (hPa)
Period of data: Jan-June 2006 Data used: All observations



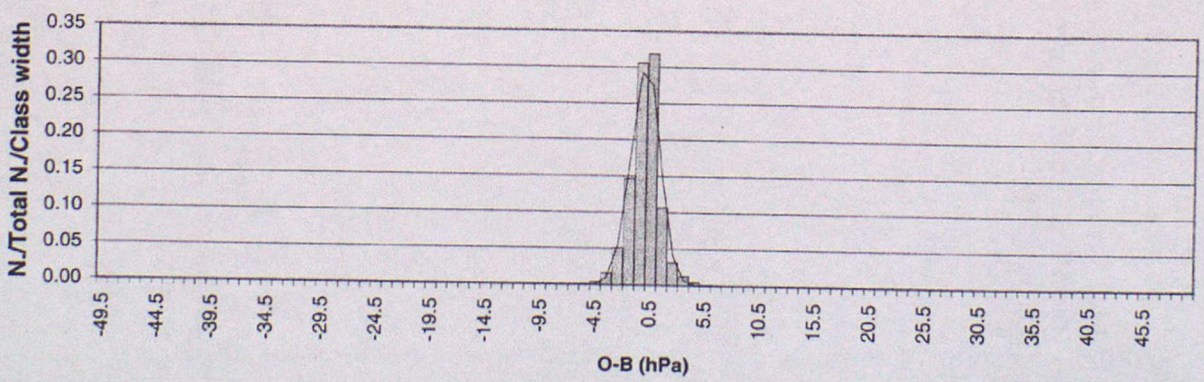
Mean O-B = -0.1 SD O-B = 4.6

Figure 2b: Distribution of ship O-B pressure (hPa)
Period of data: Jan-June 2006 Data used: Flagged observations



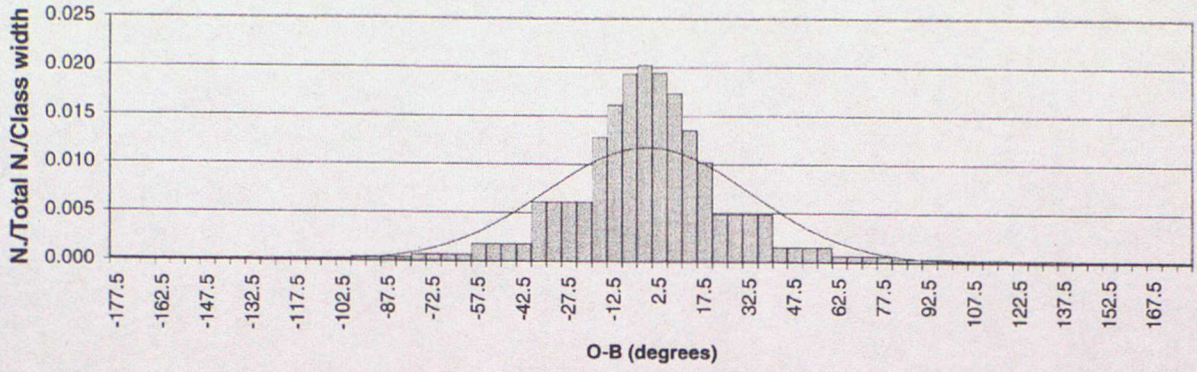
Mean O-B = -1.5 SD O-B = 20.3

Figure 2c: Distribution of ship O-B pressure (hPa)
Period of data: Jan-June 2006 Data used: Unflagged observations



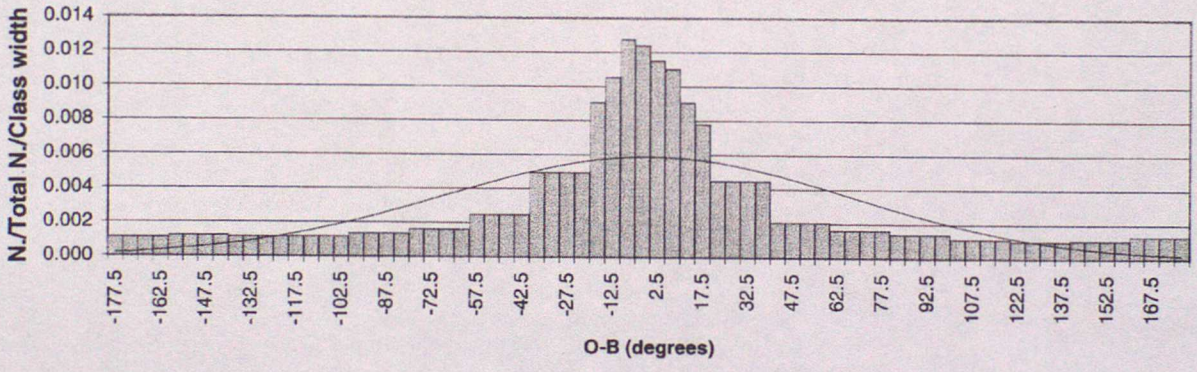
Mean O-B = -0.1 SD O-B = 1.3

Figure 2g: Distribution of ship O-B wind direction (degrees)
Period of data: Jan-June 2006 Data used: All observations



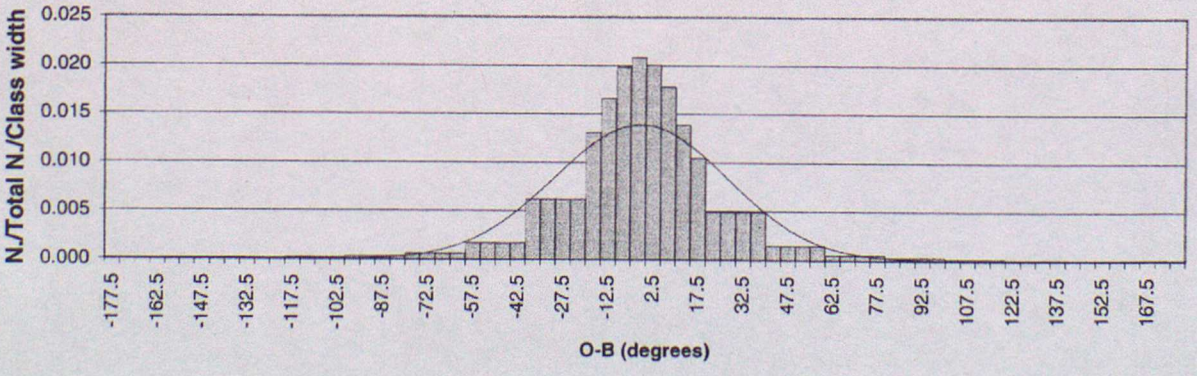
Mean O-B = -1.7 SD O-B = 33.9

Figure 2h: Distribution of ship O-B wind direction (degrees)
Period of data: Jan-June 2006 Data used: Flagged observations



Mean O-B = -0.7 SD O-B = 67.8

Figure 2i: Distribution of ship O-B wind direction (degrees)
Period of data: Jan-June 2006 Data used: Unflagged observations



Mean O-B = -1.8 SD O-B = 28.7

Figure 3: Bias of Ship O-B Pressure (hPa). Date:- January - June 2006
Only observations passing quality control used in statistics
Contours drawn to 10 degree boxes, if the number of observations is greater than 10
Shaded areas have a bias of magnitude greater than 0.5 hPa

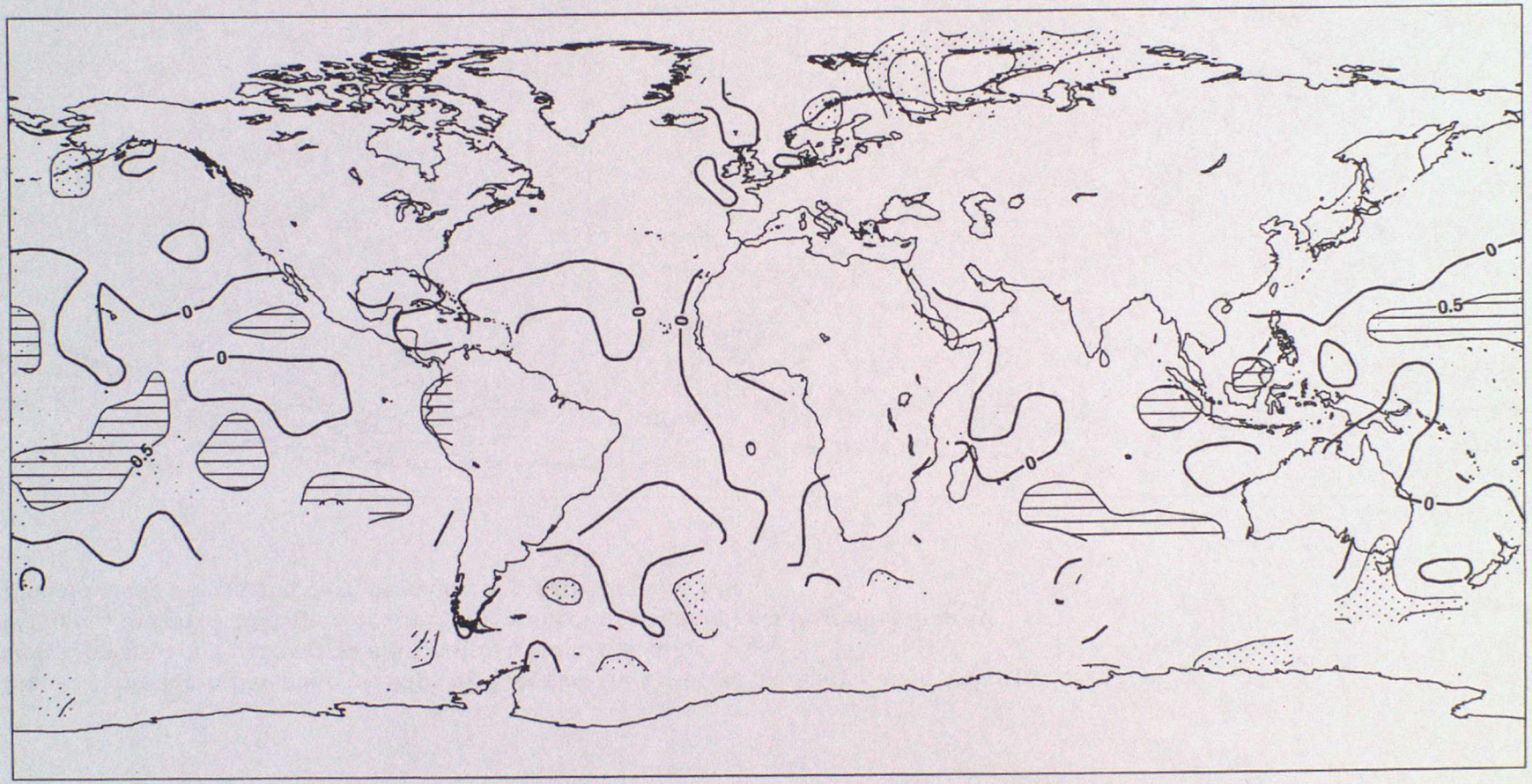


Figure 4: Standard Deviation of Ship O-B Pressure (hPa). Date:- January - June 2006
Only Observations passing quality control used in statistics
Contours drawn to 10 degree boxes, if the number of observations is greater than 10
Shaded areas have a standard deviation of greater than 2.0 hPa

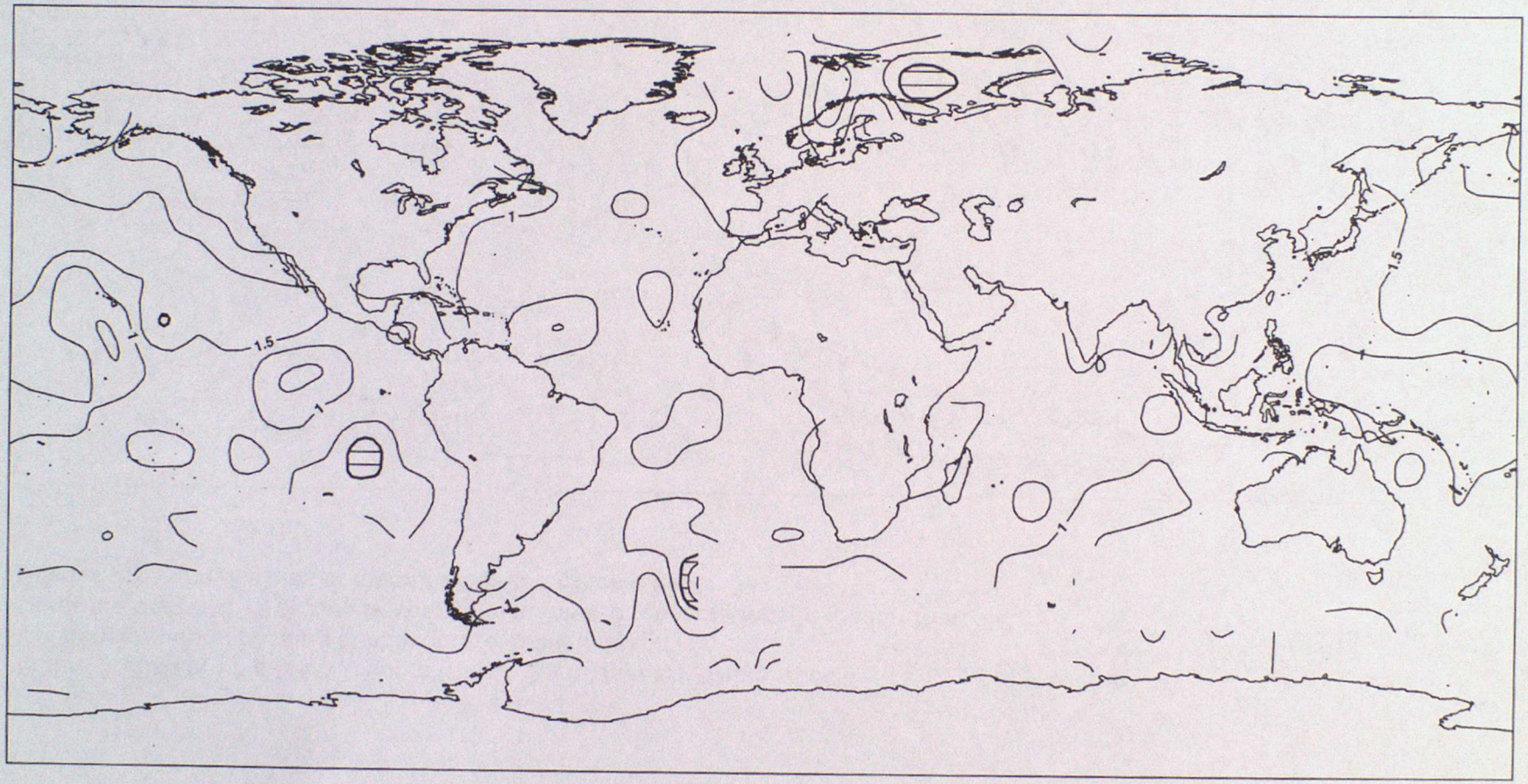


Figure 5:
Plot of the Number of Ship Pressure Observations. Date:- January - June 2006
Only observations passing quality control included

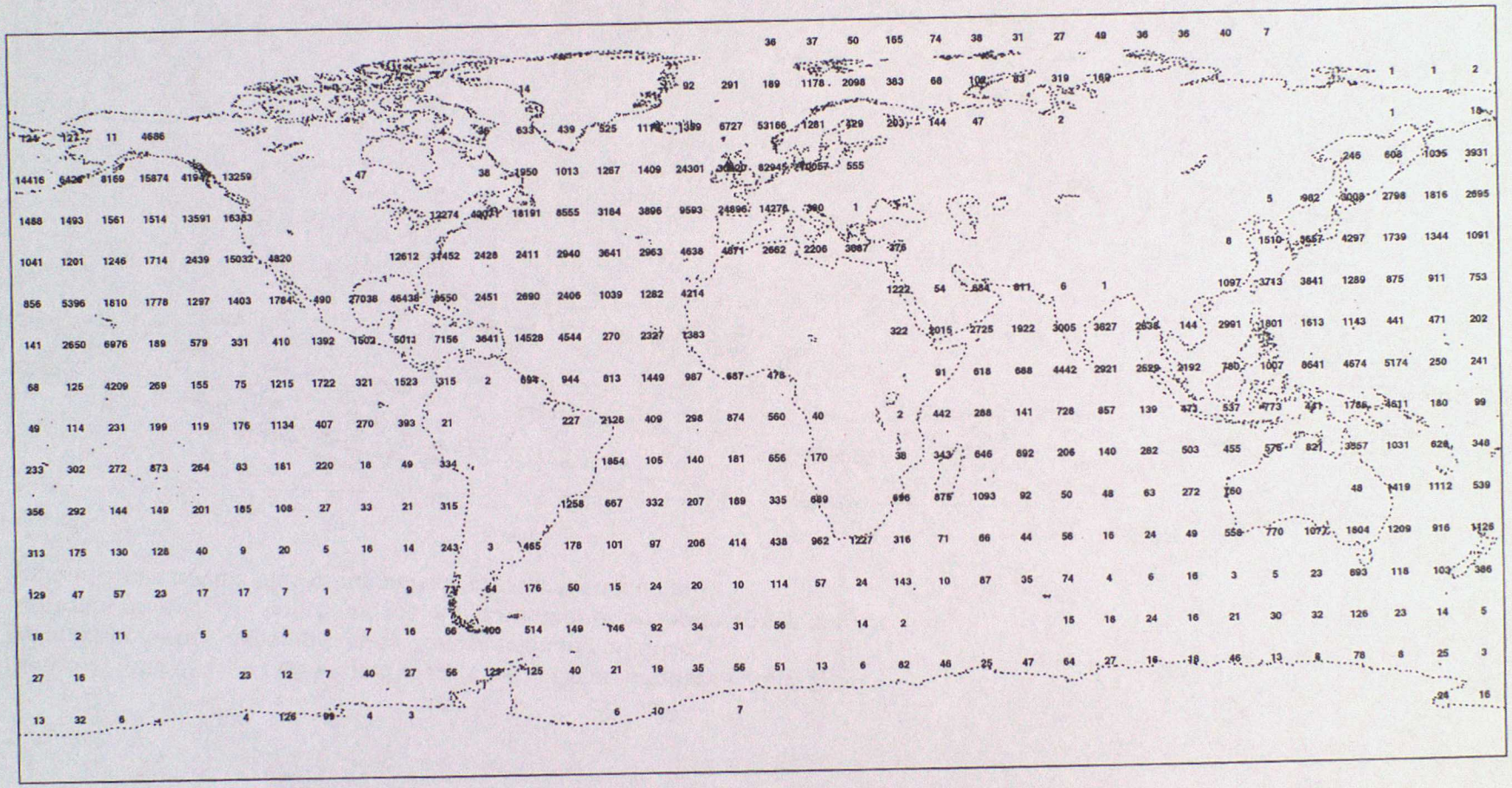


Figure 6: Bias of Ship O-B Wind Speed (ms-1). Date:- January - June 2006
Only observations passing quality control used in statistics
Contours drawn to 10 degree boxes, if the number of observations is greater than 10
Shaded areas have a bias of magnitude greater than 2.0 ms-1

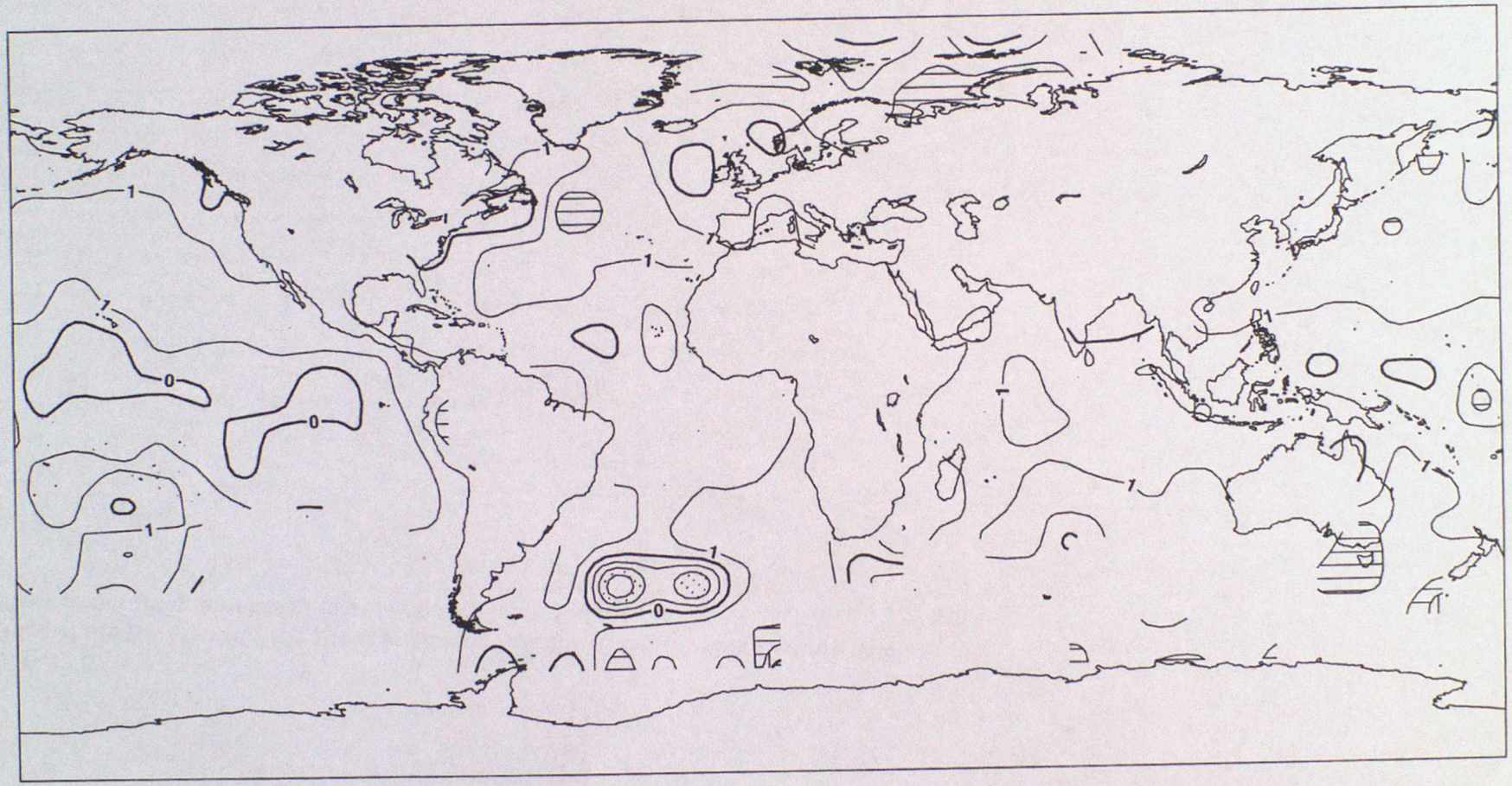


Figure 7: Standard Deviation of Ship O-B Wind Speed (ms-1). Date:- January - June 2006
Only Observations passing quality control used in statistics
Contours drawn to 10 degree boxes, if the number of observations is greater than 10
Shaded areas have a standard deviation of greater than 4.0 ms-1

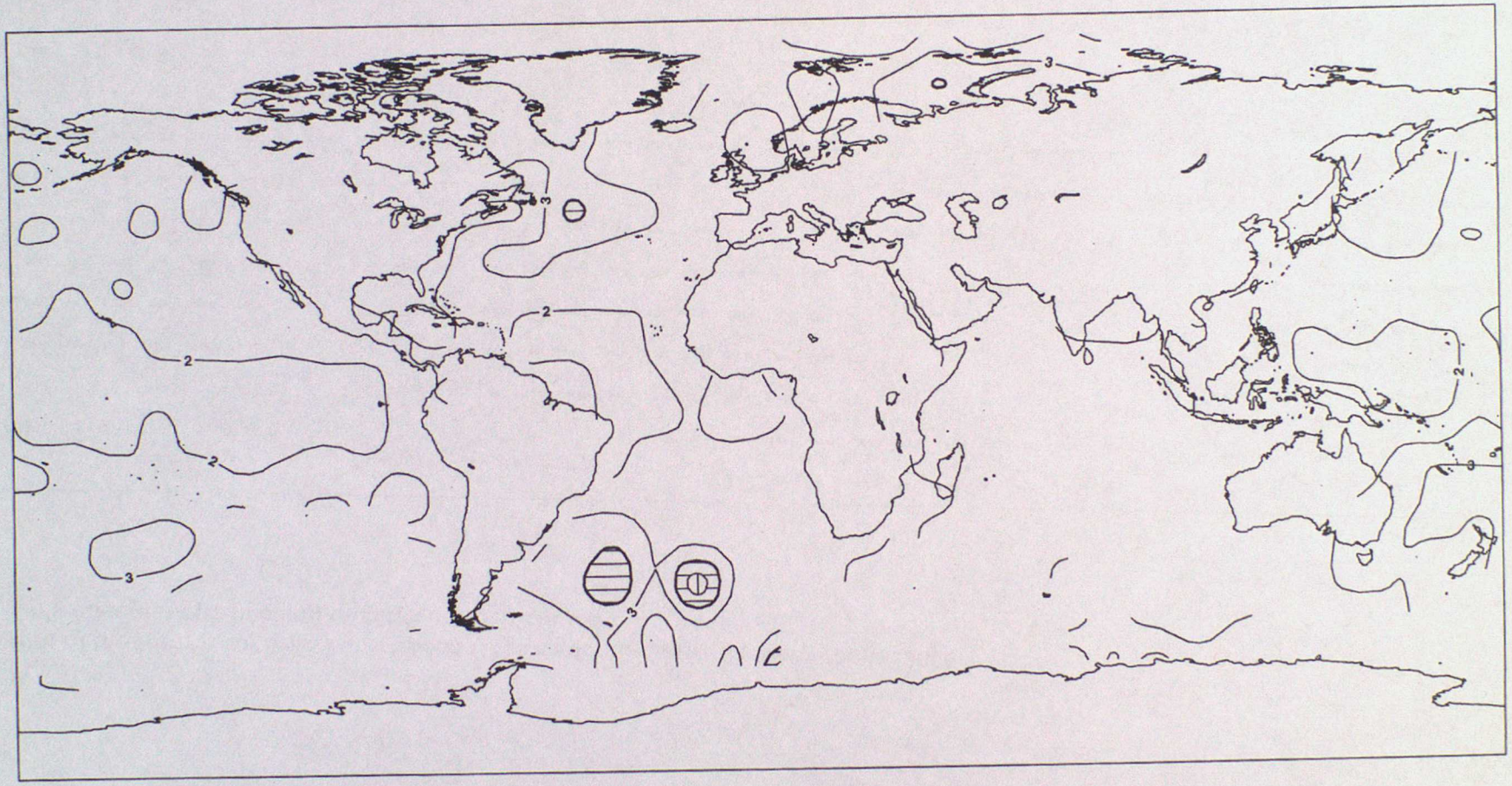


Figure 8:
Plot of the Number of Ship Wind Speed Observations. Date:- January - June 2006
Only observations passing quality control included

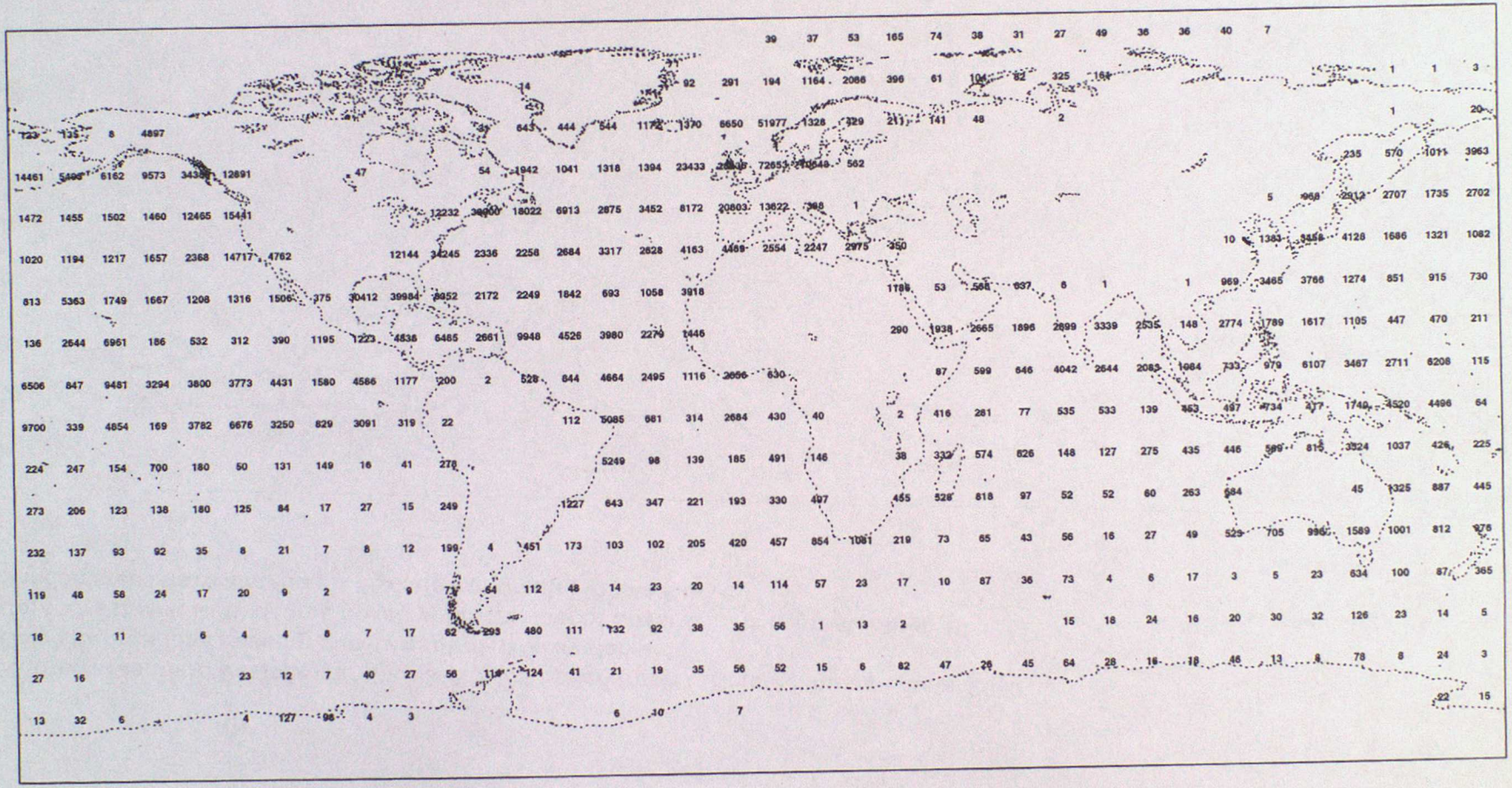


Figure 9: Bias of Ship O-B Wind Direction (degrees). Date:- January - June 2006
Only observations passing quality control used in statistics
Contours drawn to 10 degree boxes, if the number of observations is greater than 10
Shaded areas have a bias of magnitude greater than 10 degrees

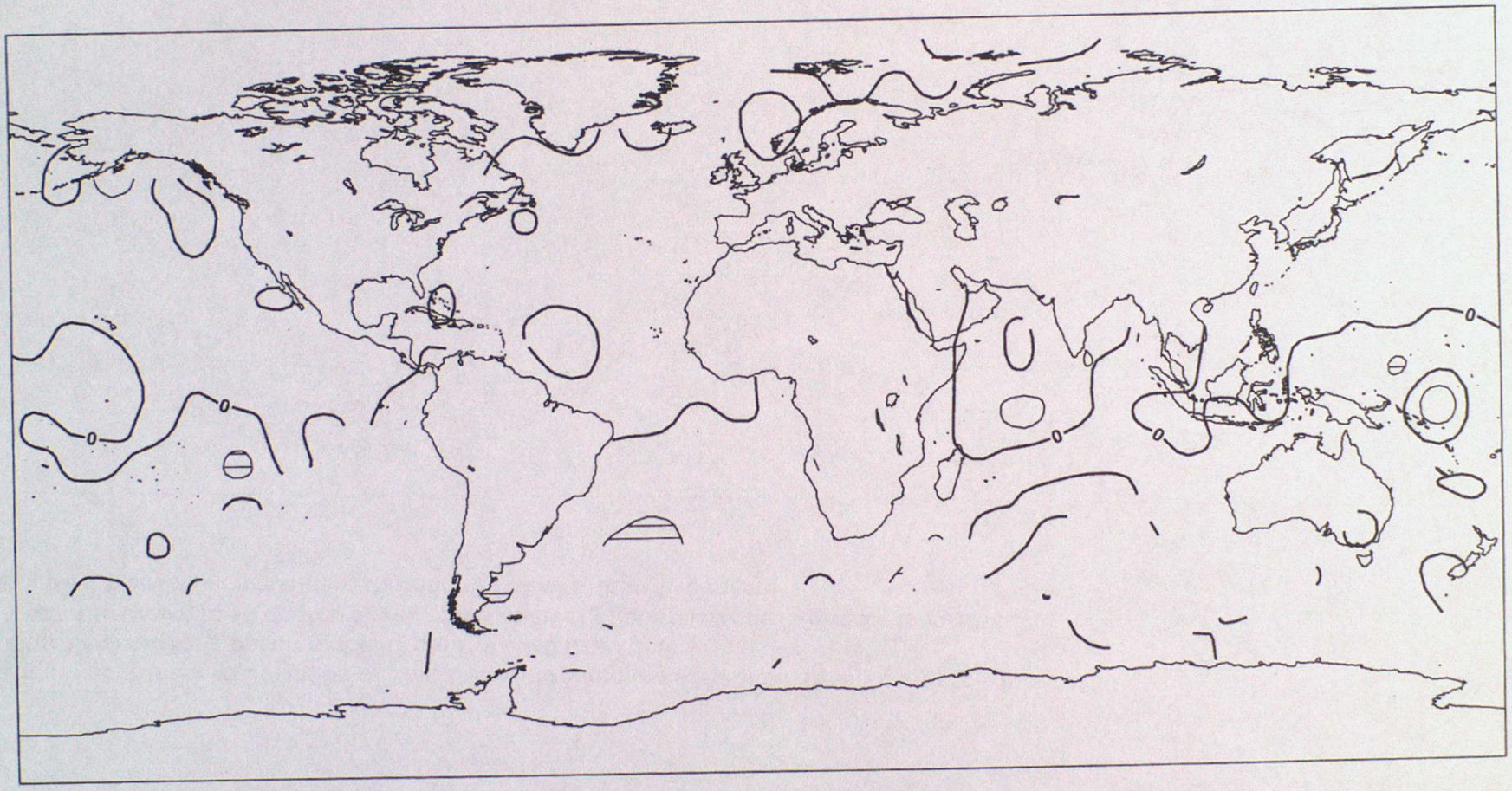


Figure 10: Standard Deviation of Ship O-B Wind Direction (degrees). Date:- January - June 2006
Only Observations passing quality control used in statistics
Contours drawn to 10 degree boxes, if the number of observations is greater than 10
Shaded areas have a standard deviation of greater than 40 degrees

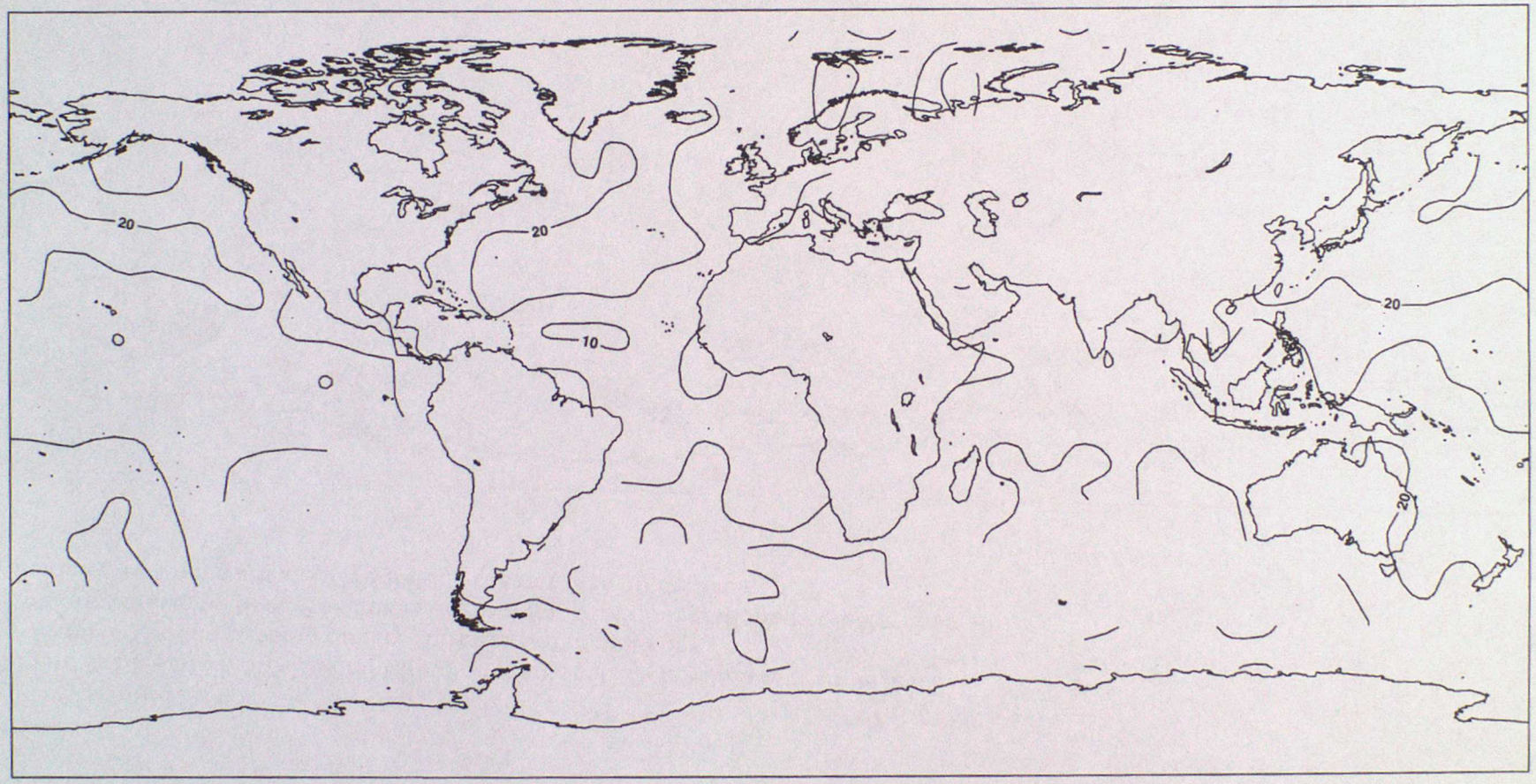


Figure 11:
Plot of the Number of Ship Wind Direction Observations. Date:- January - June 2006
Only observations passing quality control included

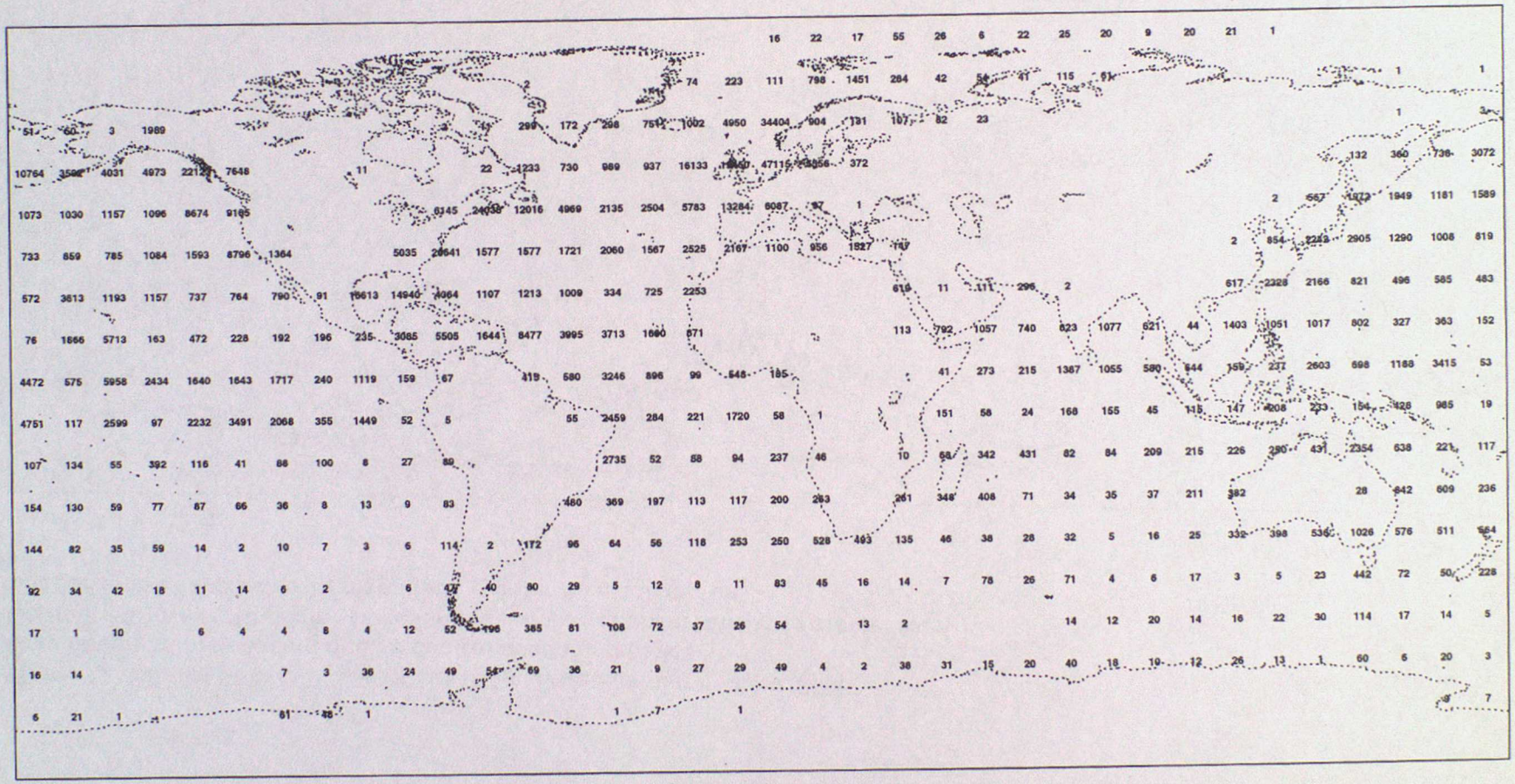


Figure 12: Bias of Ship O-B SST (degrees C). Date:- January - June 2006
Only observations passing quality control used in statistics
Contours drawn to 10 degree boxes, if the number of observations is greater than 10
Shaded areas have a bias of magnitude greater than 1.0 degree C

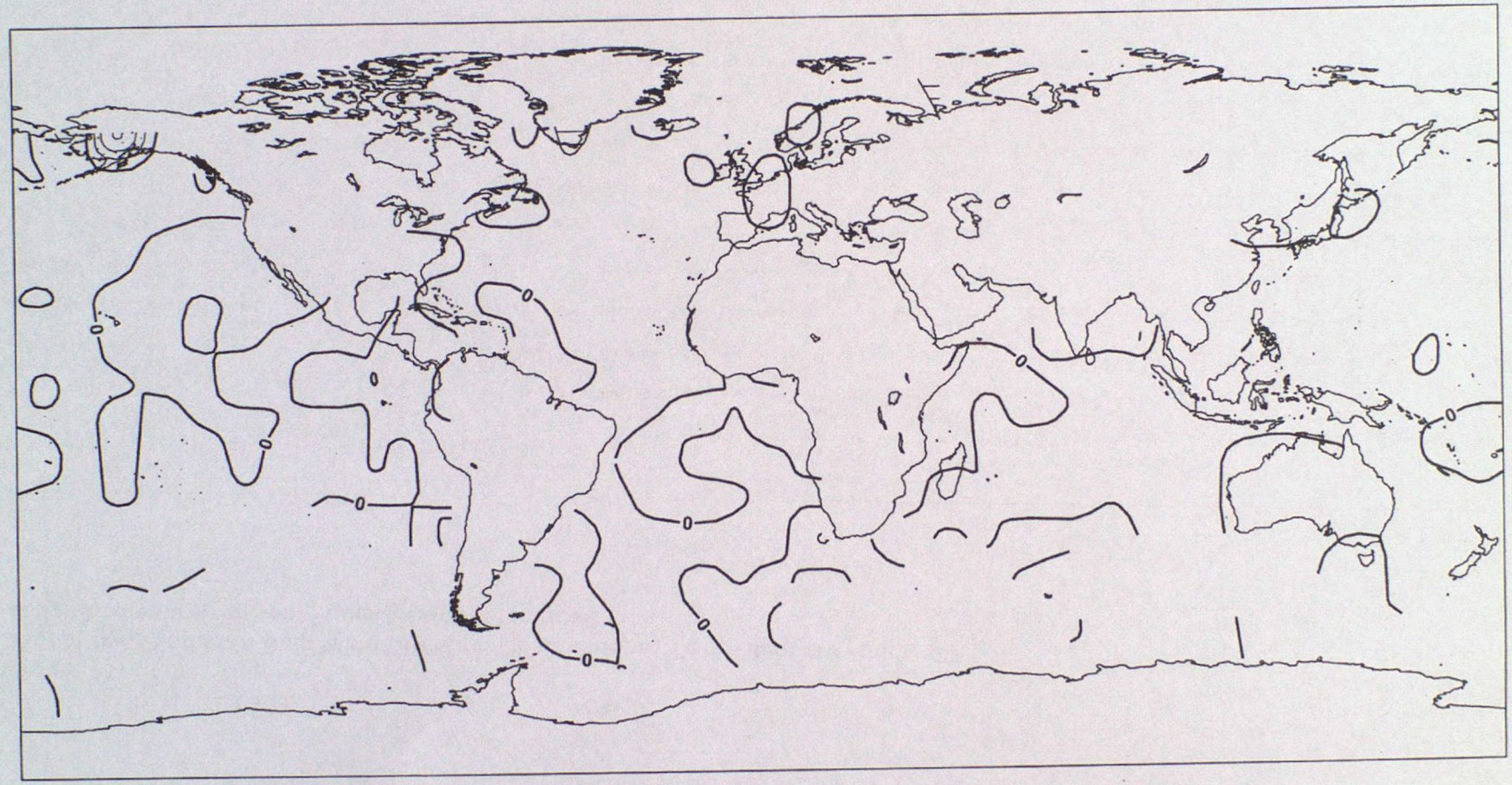


Figure 13: Standard Deviation of Ship O-B SST (degrees C). Date:- January - June 2006
Only Observations passing quality control used in statistics
Contours drawn to 10 degree boxes, if the number of observations is greater than 10
Shaded areas have a standard deviation of greater than 3.0 degrees C

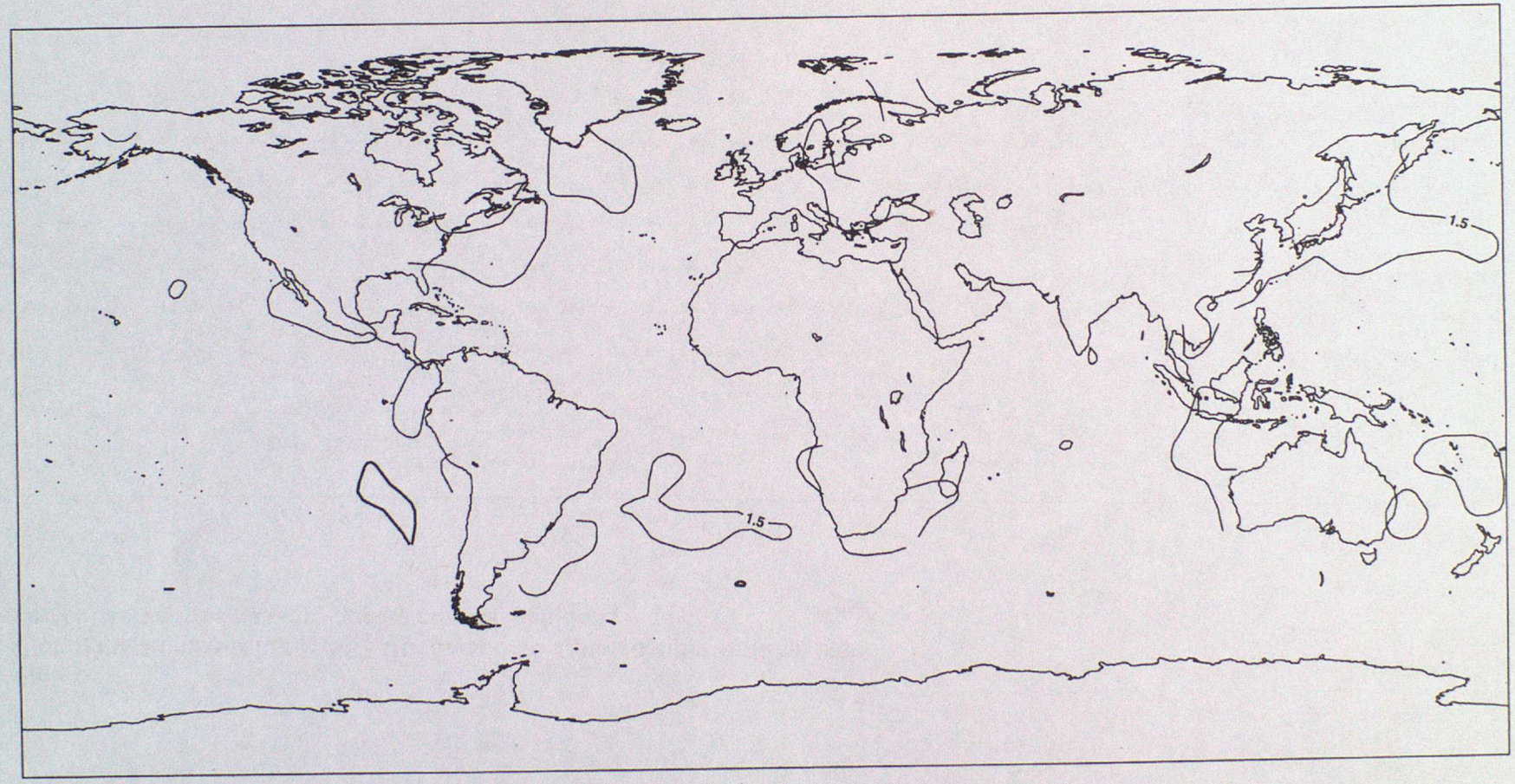


Figure 14:
Plot of the Number of Ship SST Observations. Date:- January - June 2006
Only observations passing quality control included