



# ECMWF Global Data Monitoring Report

**November 2023**

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**European Centre for Medium-Range Weather Forecasts  
Europäisches Zentrum für mittelfristige Wettervorhersage  
Centre européen pour les prévisions météorologiques à moyen terme**

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### Summary of Revisions (in reverse order)

- Revision 30 (Nov 23) - Coverage charts for AIREP/AMDARs updated:  
Added MODE-S and ADS-C to Figure 5 and Figure 18
- Revision 29 (Dec 22) - Coverage charts for ATOVS AMSU-A updated:  
METOP-C replaces Aqua-ATOVS (Figure 9.2)  
METOP-B replaces METOP-ATOVS (Figure 9.3)  
SATOBS figures updated with METEOSAT-9, Dual-Metop,  
METEOSAT-11, GOES-16, HIMAWARI-9, GOES-17 satellites
- Revision 28 (Jun 15) - Monitoring of SYNOP and SYNOP-SHIPS now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart.
- Revision 27 (Feb 15) - Selection criteria for SHIPS are modified as per SOT-7/Doc.9.1.1.  
Different criteria applied to Manual and Automatic SHIPS.
- Revision 26 (Dec 14) - Coverage chart for ATOVS AMSU-A for NOAA\_16 removed
- Revision 25 (Mar 13) - Monitoring of Radiosondes and ASAPS now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart.  
Tables 24 and 25 are also added to show the identifiers of these BUFR observations separately.
- Revision 24 (Aug 06) - North Atlantic Monitoring statistics replaced by EUCOS Area Monitoring Statistics (tables 13 to 23).  
Airep tables removed from this section.
- Revision 23 (Dec 00) - Coverage charts for NOAA\_14 MSU replaced by ATOVS AMSU-A for NOAA\_16.
- Revision 22 (Aug 99) - Coverage charts for TOVS thickness 300-100 hPa replaced by (A) TOVS AMSU-A and MSU (NOAA\_15 and NOAA\_14).
- Revision 21 (May 99) - Monitoring statistics ceased for NOAA\_11 as satellite is no more available.
- Revision 20 (Sep 98) - Changes to tables and annex to remove all mention about data usage. Two more levels (50 and 850 hPa) added to the COSNA statistics for Sondes.
- Revision 19 (Jul 98) - From June 29th, 1998 ECMWF model assimilates temperature data instead of geopotential from radiosondes. As a consequence the number of used geopotential data drops to zero in tables 7, 10, 13 and 15.

Revision 18 (Apr 98) - Changes to tables and annex to introduce the usage of accepted numbers and observations instead of percentage of rejection.

# 1 Introduction

The ECMWF global data monitoring report is a monthly publication intended to give an overview of the availability and quality of observations from the Global Observing System within the World Weather Watch of the World Meteorological Organisation. It should be recognised that the statistics given in this report refer to data as received at ECMWF in time for the appropriate analysis. The annex of the report gives further explanations of the methods applied to compile the statistics and on the reference used to establish the quality of observations.

The information presented on data quality is based on differences between observations and the values of the most recent ECMWF forecast ("first guess") of the same parameter. Depending on the time of the observation, the forecast range is between 9 and 15 hours. It should be recognised that although the quality of the first-guess is of a generally high standard this is only true to a limited extent in certain areas, such as the tropics and data-sparse areas of both northern and southern hemispheres. The data quality results should therefore be used with care when assessing the absolute quality of a particular observing platform. Other indicators such as long-term trends of station performance, particularly in comparison with nearby stations, can be more useful in this respect.

The global monitoring results presented in this report are meant to serve a wider meteorological community as well as to support special WMO programmes such as TOGA and EUCOS. The contents of the report may therefore be adapted for special requirements as necessary.

As recommended at the ninth session of the Commission for Basic Systems at Geneva 1988, lead centres have been appointed for each main type of observation which should liaise with the participating centres and co-ordinate all the results, inform the WMO Secretariat immediately of obvious problems, and produce every six months a consolidated list of observations of that particular type believed to be of low quality. The presently nominated centres are: RSMC Exeter for marine surface observations; RSMC ECMWF for radiosonde and pilot observations; WMC Washington for aircraft and satellite observations.

ECMWF produces this monthly report as part of its routine monitoring activity in order to facilitate the exchange of monitoring information. Tables are presented according to the CBS recommended standards for the exchange of monitoring results. Copies of the report will be provided to major GDPS centres participating in data monitoring activities as initiated and recommended at the ninth session of the Commission for Basic Systems in Geneva 1988, and to the WMO Secretariat and the International TOGA office in Geneva.

Any comments on the contents and the format of the report are welcome and should be addressed to:

ECMWF  
Attn. Head of Evaluation Section  
Shinfield Park  
Reading, Berkshire, RG2 9AX  
United Kingdom

## 2 Data summary - History of events

### 2.1 Radiosondes

The following is a list of land-based stations showing a change in reporting frequency (of 500 hPa geopotential) of at least 10 observations compared with the average over the previous 3 months. The number of reports received at ECMWF for the current and previous month is shown in addition to the observation time.

Ident	Time	Oct	Nov	Ident	Time	Oct	Nov
02591	(00)	20	8	02527	(00)	1	20
02591	(12)	23	7	29231	(00)	7	23
37055	(12)	23	12	29231	(12)	9	24
40811	(12)	12	0	42123	(00)	0	24
41977	(00)	21	8	42123	(12)	1	30
43285	(00)	24	0	42623	(00)	14	28
61052	(12)	31	4	43041	(12)	0	21
63894	(12)	23	0	43185	(12)	17	28
68538	(12)	24	0	58968	(00)	13	26
70219	(00)	31	15	58968	(12)	14	25
70219	(12)	30	15	58974	(00)	11	24
71907	(00)	18	0	58974	(12)	11	25
72261	(00)	29	10	59362	(00)	11	25
72261	(12)	30	10	61980	(12)	0	30
72340	(00)	31	16	65046	(12)	2	13
72340	(12)	31	15	65548	(12)	0	24
74646	(00)	60	13	72518	(00)	8	30
74646	(12)	51	11	72518	(12)	10	31
82099	(00)	31	19	76256	(00)	9	29
82411	(00)	29	0	76256	(12)	8	24
82599	(00)	28	0	76394	(12)	11	26
82599	(12)	29	1	76405	(00)	7	25
98444	(12)	30	19	76405	(12)	8	29
98558	(12)	25	2	76458	(00)	4	23
-	-	-	-	76458	(12)	7	26
-	-	-	-	76526	(12)	8	25
-	-	-	-	76595	(12)	10	30
-	-	-	-	76612	(00)	5	22
-	-	-	-	76612	(12)	9	26
-	-	-	-	76644	(00)	6	26
-	-	-	-	76644	(12)	11	29
-	-	-	-	76679	(00)	6	28
-	-	-	-	76679	(12)	10	28
-	-	-	-	76743	(00)	0	20
-	-	-	-	76743	(12)	1	20
-	-	-	-	76903	(00)	4	15
-	-	-	-	78397	(00)	0	30
-	-	-	-	78988	(00)	13	30
-	-	-	-	78988	(12)	16	30
-	-	-	-	83208	(00)	15	29
-	-	-	-	89662	(00)	0	19
-	-	-	-	89662	(12)	0	22
-	-	-	-	96147	(00)	16	30
-	-	-	-	96147	(12)	16	30

## 2.2 Drifting Buoys

Surface pressure observations from **1501** drifting buoys were received during the month.

## 3 Global monitoring statistics

The following figures and tables provide information on both the availability and quality of various data types as received at ECMWF during the month. A brief description of each figure/table is given below. For a full explanation please refer to the Annex.

### 3.1 Data Availability

Figures 1-9 are global charts for each data type showing the average number of observations received in 24 hours in 5 degree boxes. The average daily number of observations (global) is also displayed with a breakdown, where appropriate, for each WMO region (figures 1, 3 and 4) and Ocean (figures 1-4).

Fig	Observation Type	Parameter	Level/Layer
1	SYNOP/SHIP	MSL Pressure	Surface
2	DRIFTER	MSL Pressure	Surface
3	TEMP	Geopotential	500 hPa
4	TEMP/PILOT	Wind	300 hPa
5	AIRCRAFT (AIREP/AMDAR etc.)	Wind	300-150 hPa
6	SATOB	Wind	400-150 hPa
7	SATOB	Wind	1000-700 hPa
9	TOVS (120 km) - NOAA14	Thickness	300-100 hPa

(Figure 1 includes data from fixed marine platforms e.g. moored buoys.)

### 3.2 Data Quality

Tables 1-8 contain lists of suspect stations in the format according to Recommendation 3 CBS-Ext(85).

Tab	Observation Type	Parameter	Level/Layer
1	SHIP	MSL Pressure	Surface
2	SHIP	Wind Speed	Surface
3	SHIP	Wind Direction	Surface
4	DRIFTER	MSL Pressure	Surface
5	DRIFTER	Wind Speed	Surface
6	DRIFTER	Wind Direction	Surface
7	TEMP	Geopotential	1000- 30 hPa
8	TEMP/PILOT	Wind	1000-100 hPa
9	TEMP/PILOT	Wind Direction	500-150 hPa

(SHIP tables include data from fixed marine platforms e.g. moored buoys.)

Figures 10-13 show the locations of suspect stations given in tables 7 and 8.

Fig	Observation Type	Parameter	Observation Time
10	TEMP	Geopotential	00 UTC
11	TEMP	Geopotential	12 UTC
12	TEMP/PILOT	Wind	00 UTC
13	TEMP/PILOT	Wind	12 UTC

Tables 10 and 11 provide quality statistics for all TEMPSHIPS and PILOTSHIPS received during the month.



Tab	Parameter	Observation Time
10	Geopotential	00 and 12 UTC
11	Wind	00 and 12 UTC

Figures 14-18 show global charts of SATOB and aircraft wind statistics in the form of wind vectors averaged over 5 degree boxes.

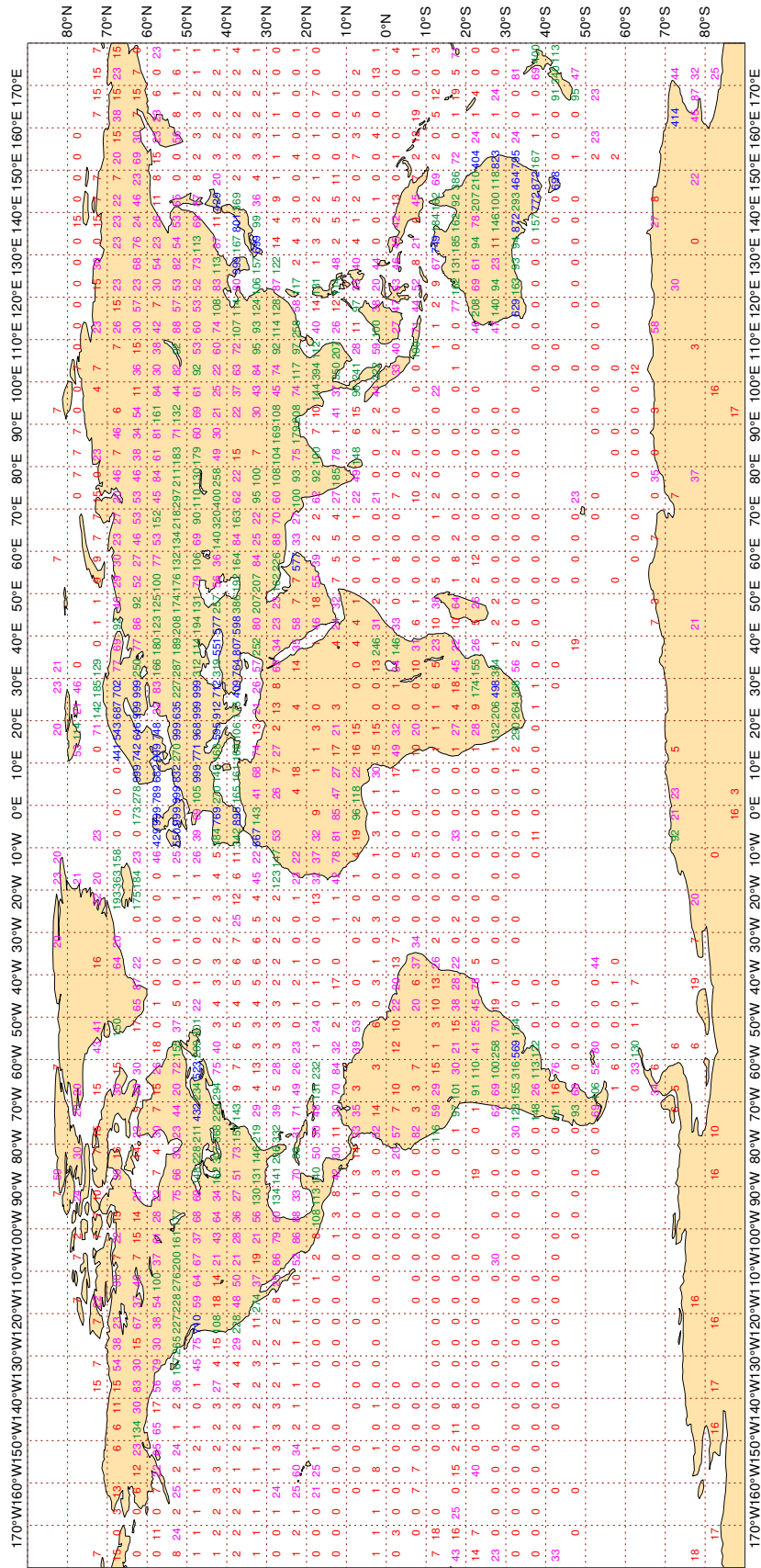
Fig	Parameter	Level/Layer
14	SATOB - Mean observed wind	1000-700 hPa
15	SATOB - Mean observed wind	400-150 hPa
16	SATOB - Mean observed minus first-guess wind	1000-700 hPa
17	SATOB - Mean observed minus first-guess wind	400-150 hPa
18	AIRCRAFT WIND - Mean observed minus first-guess	300-150 hPa

Table 12 provides quality statistics of aircraft wind observations stratified by airline carrier.

3.2.1 Figure 1 - Availability - SYNOP PRESSURE

ECMWF Monitoring Statistics - NOV 2023  
 Availability - SYNOP/SHIP (manual, auto) pressure  
 Average number of observations in 24 hours - 110431  
 LAND - WMO Region I: 6729 II:21649 III: 4623 IV: 8317  
 Region V:14927 VI:40669 Antarctic: 1492  
 Oceans - N. Atlantic 6096 S. Atlantic 208 Indian 617 Pacific 5105

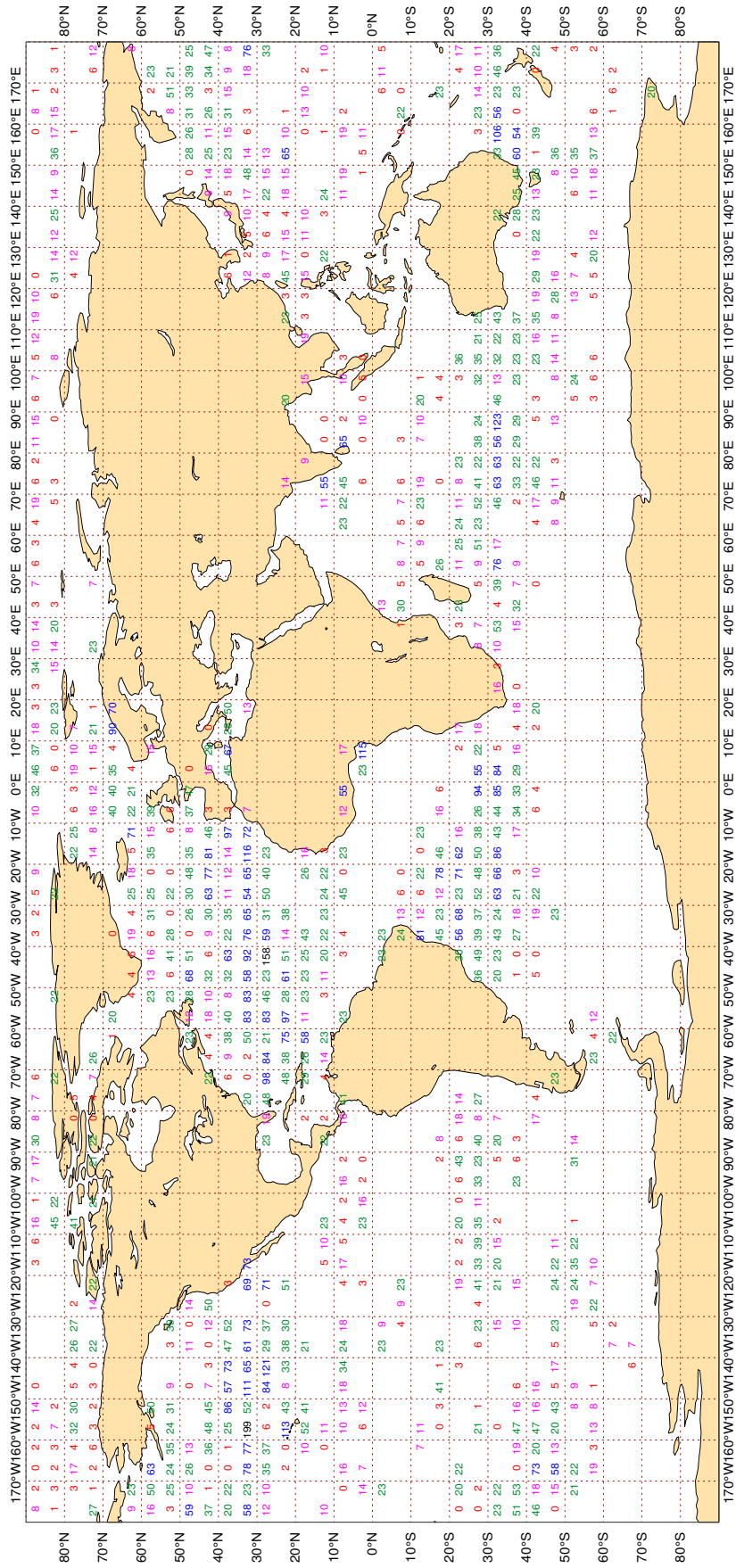
Figure 1



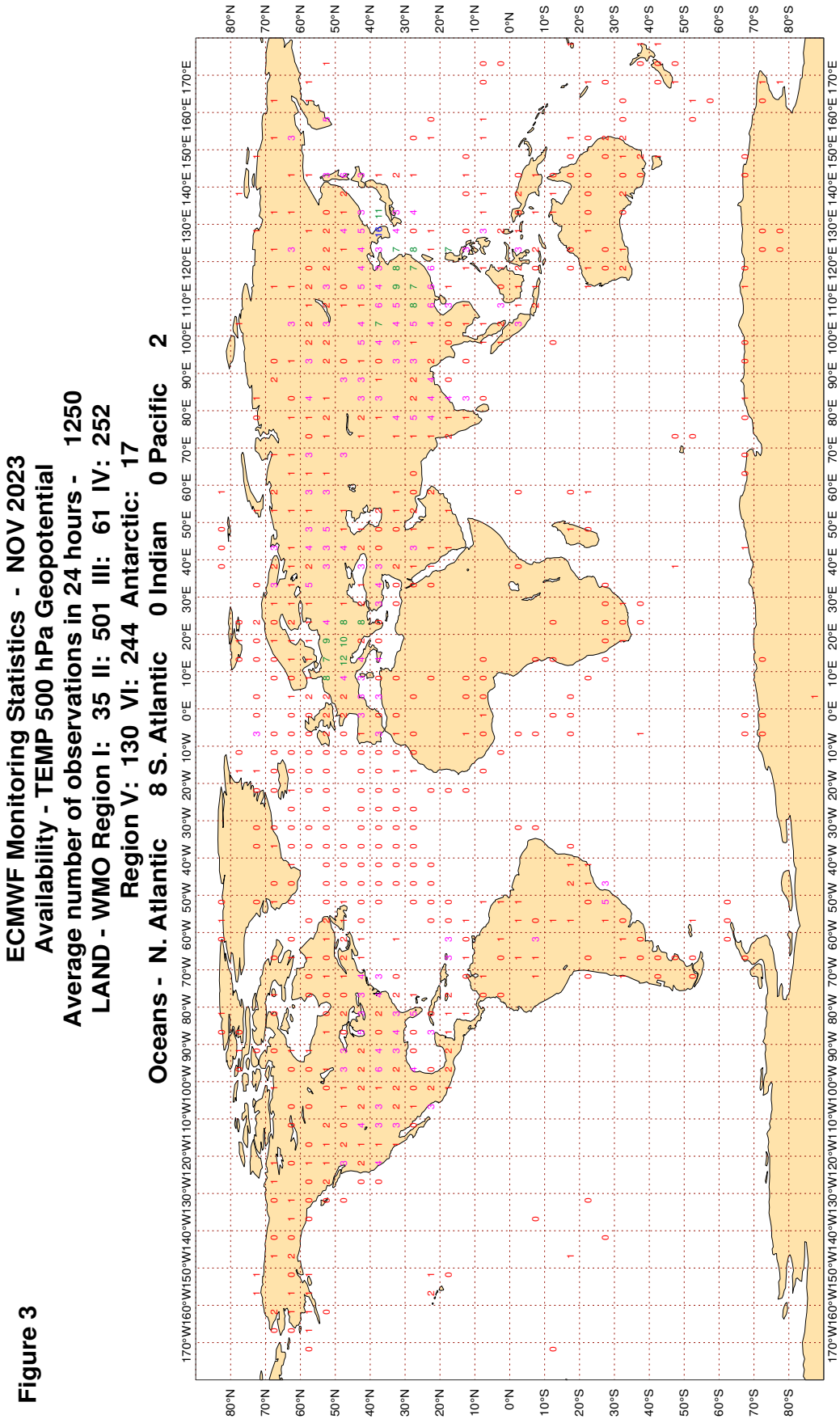
3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

Figure 2

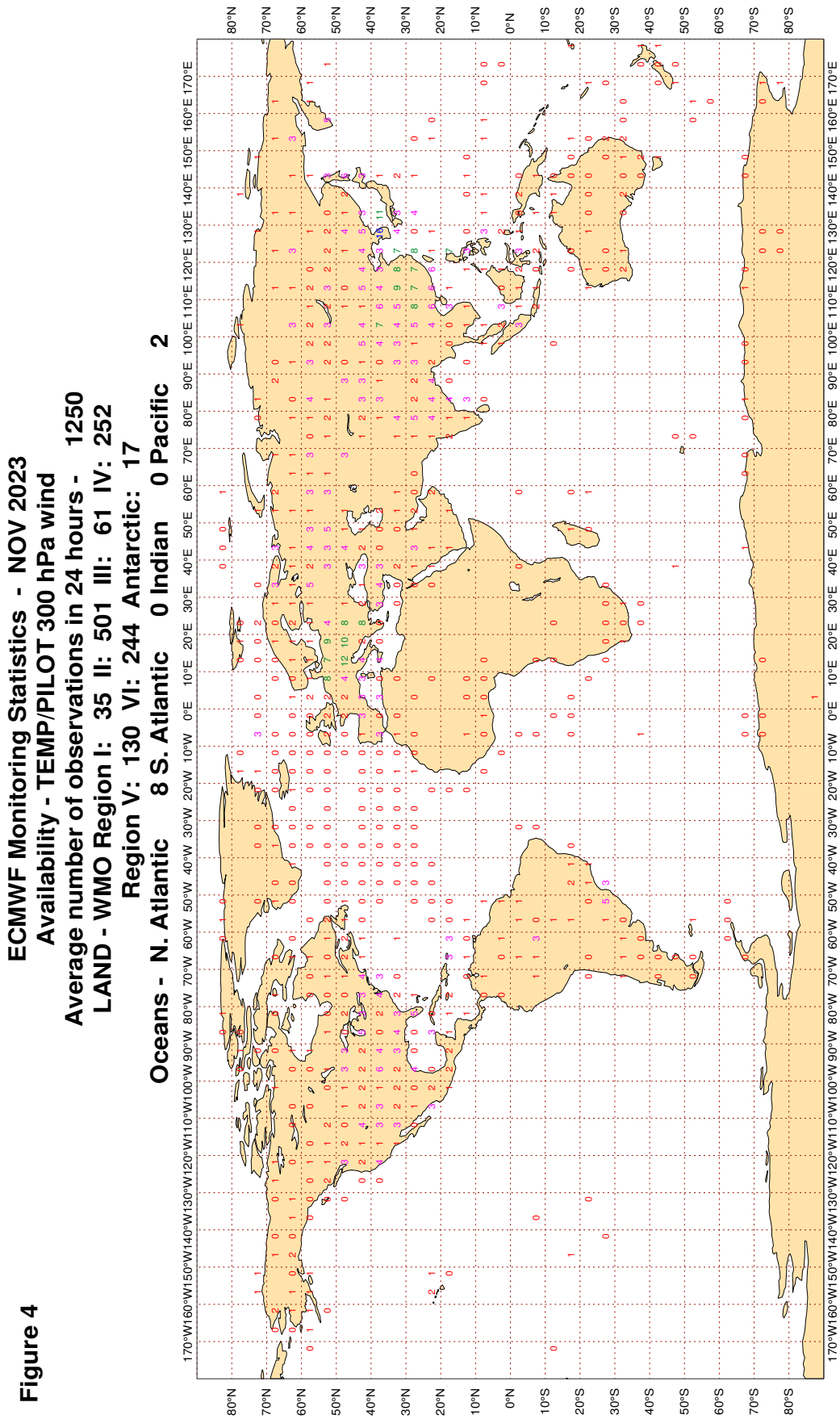
**ECMWF Monitoring Statistics - NOV 2023**  
**Availability - DRIFTER PRESSURE**  
**Average number of observations in 24 hours - 19924**  
**Oceans - N. Atlantic 5908 S. Atlantic 2384 Indian 2819 Pacific 8813**



3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential



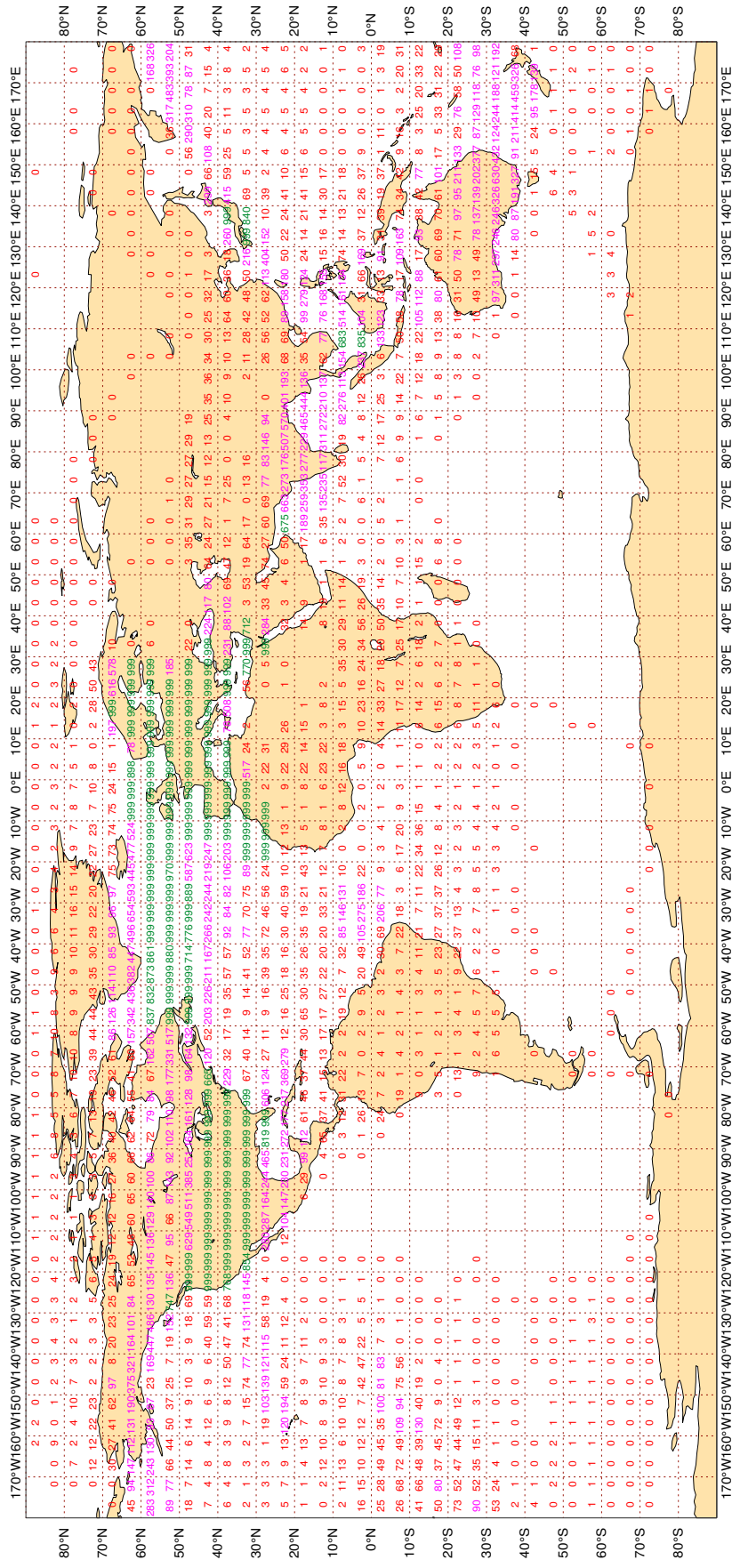
3.2.4 Figure 4 - Availability - TEMP/PILOT 300 hPa wind



3.2.5 Figure 5 - Availability - AIRCRAFT winds 300-150 hPa

Figure 5

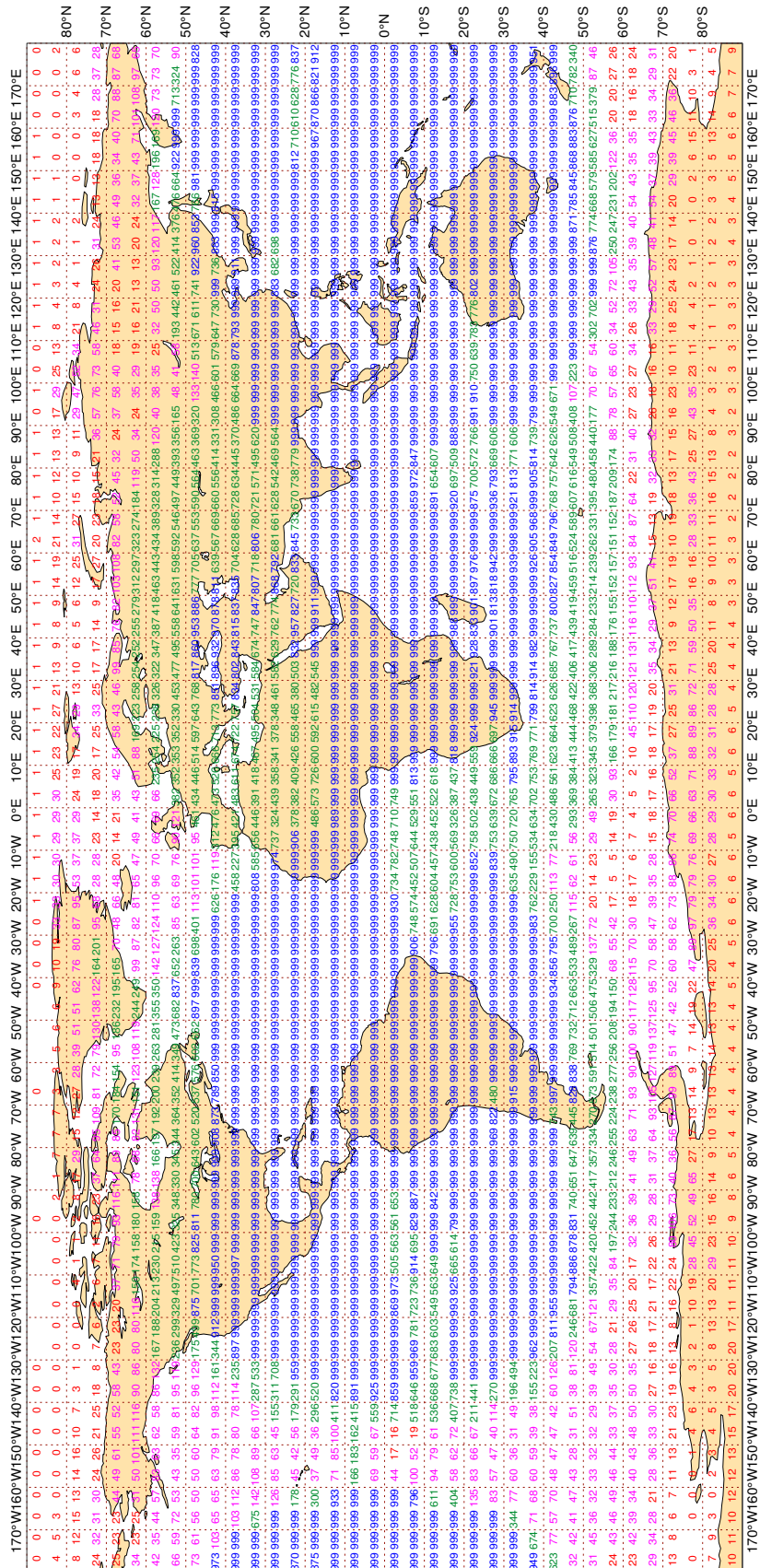
ECMWF Monitoring Statistics - NOV 2023  
Availability - Aircraft winds 300-150 hPa  
Average number of observations in 24 hours - 2207556



3.2.6 Figure 6 - Availability - SATOB winds 400-150 hPa

Figure 6

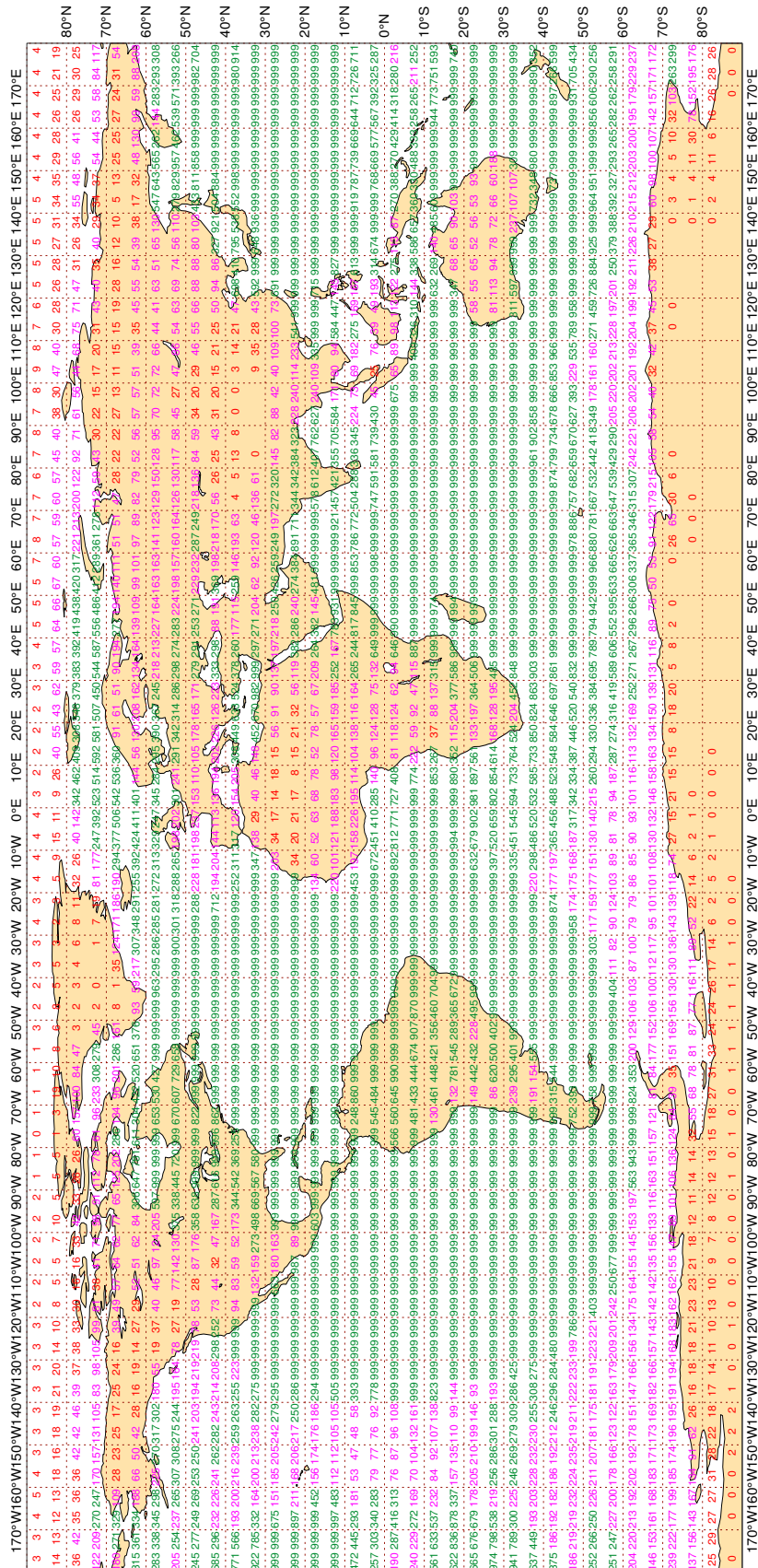
ECMWF Monitoring Statistics - NOV 2023  
Availability - AMV winds 400-150 hPa  
Average number of observations in 24 hours - 2426117



3.2.7 Figure 7 - Availability - SATOB winds 1000-700 hPa

Figure 7

ECMWF Monitoring Statistics - NOV 2023  
Availability - AMV winds 1000-700 hPa  
Average number of observations in 24 hours - 3942787



Magics 4.9.4

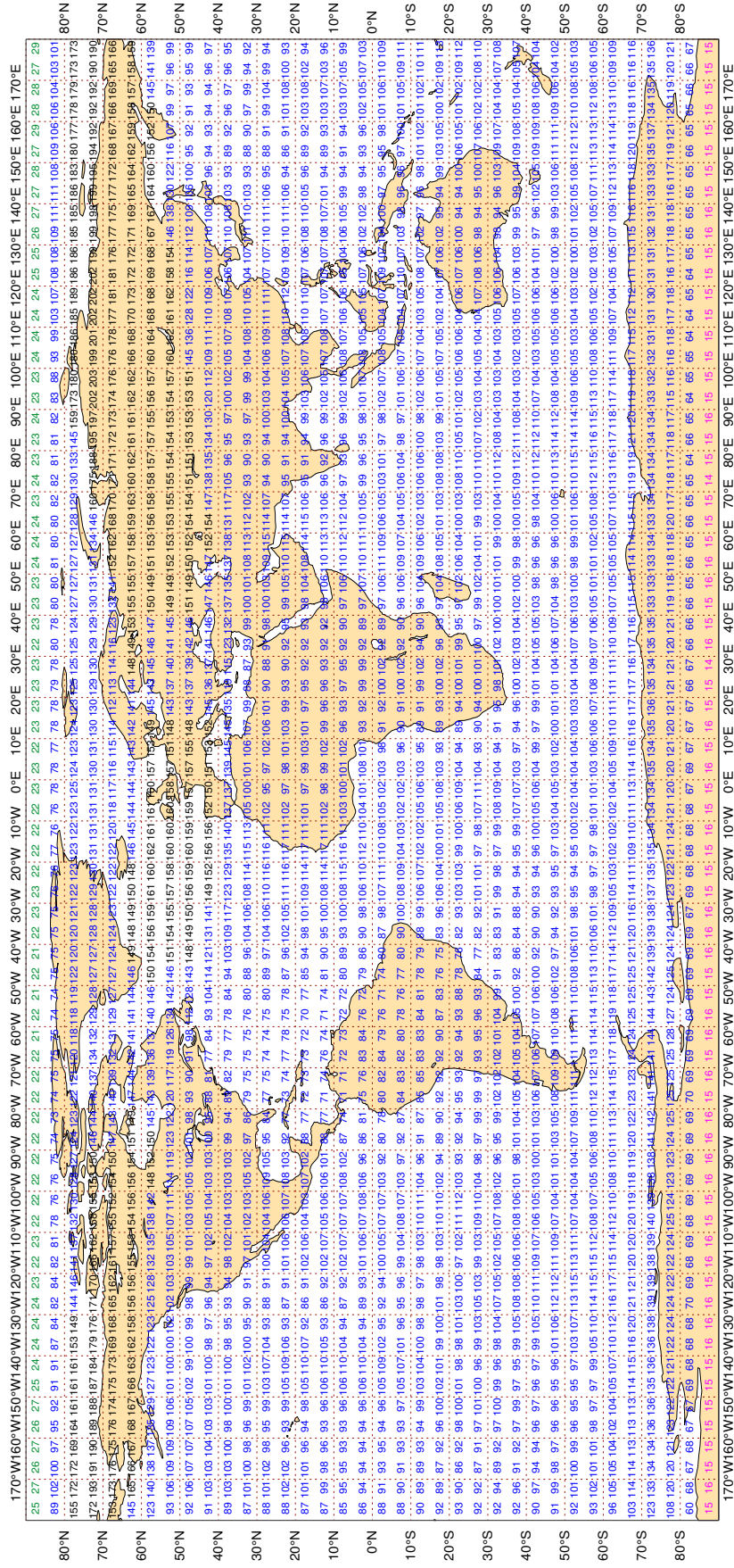




3.2.8 Figure 8 - Availability - NOAA15 ATOVS : AMSU-A

Figure 8

ECMWF Monitoring Statistics - NOV 2023  
Availability - NOAA15 ATOVS : AMSU-A  
Average number of observations in 24 hours - 276645

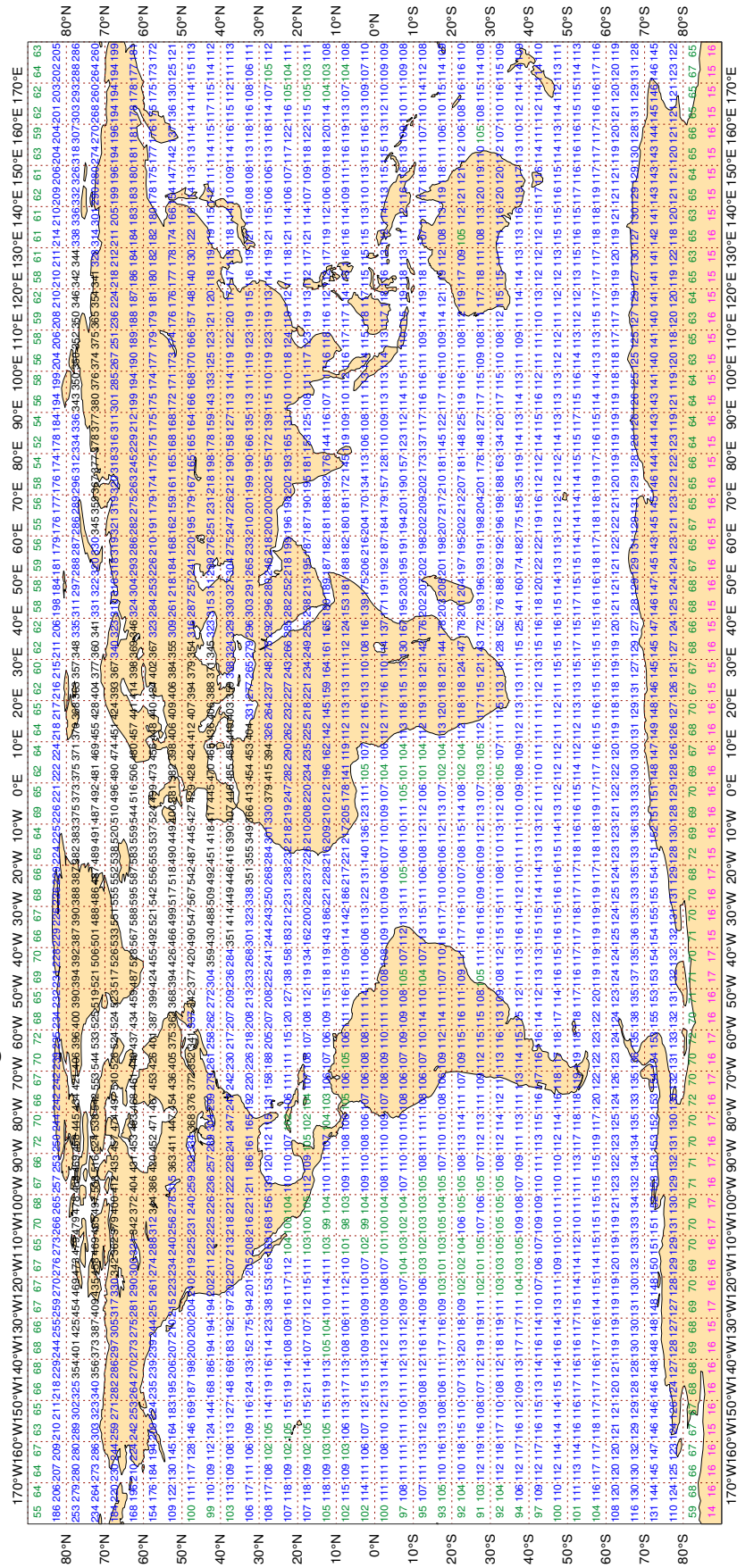


3.2.9 Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A

Figure 9.1

ECMWF Monitoring Statistics - NOV 2023  
Availability - NOAA18 ATOVS : AMSU-A

Average number of observations in 24 hours - 442227



Magics 4.9.4

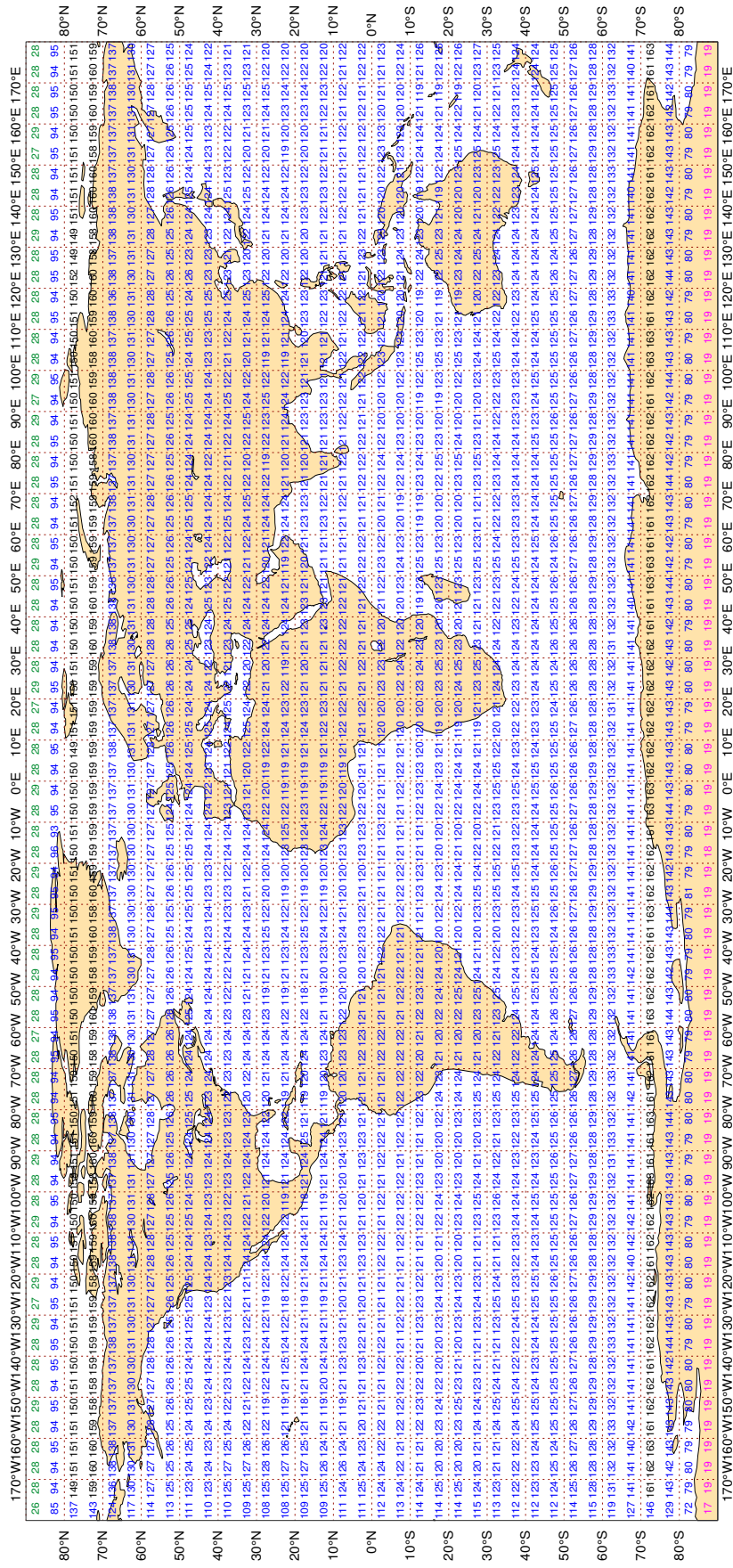


3.2.10 Figure 9.2 - Availability - AQUA ATOVS : AMSU-A

Figure 9.2

ECMWF Monitoring Statistics - NOV 2023  
Availability - METOP-C ATOVS : AMSU-A

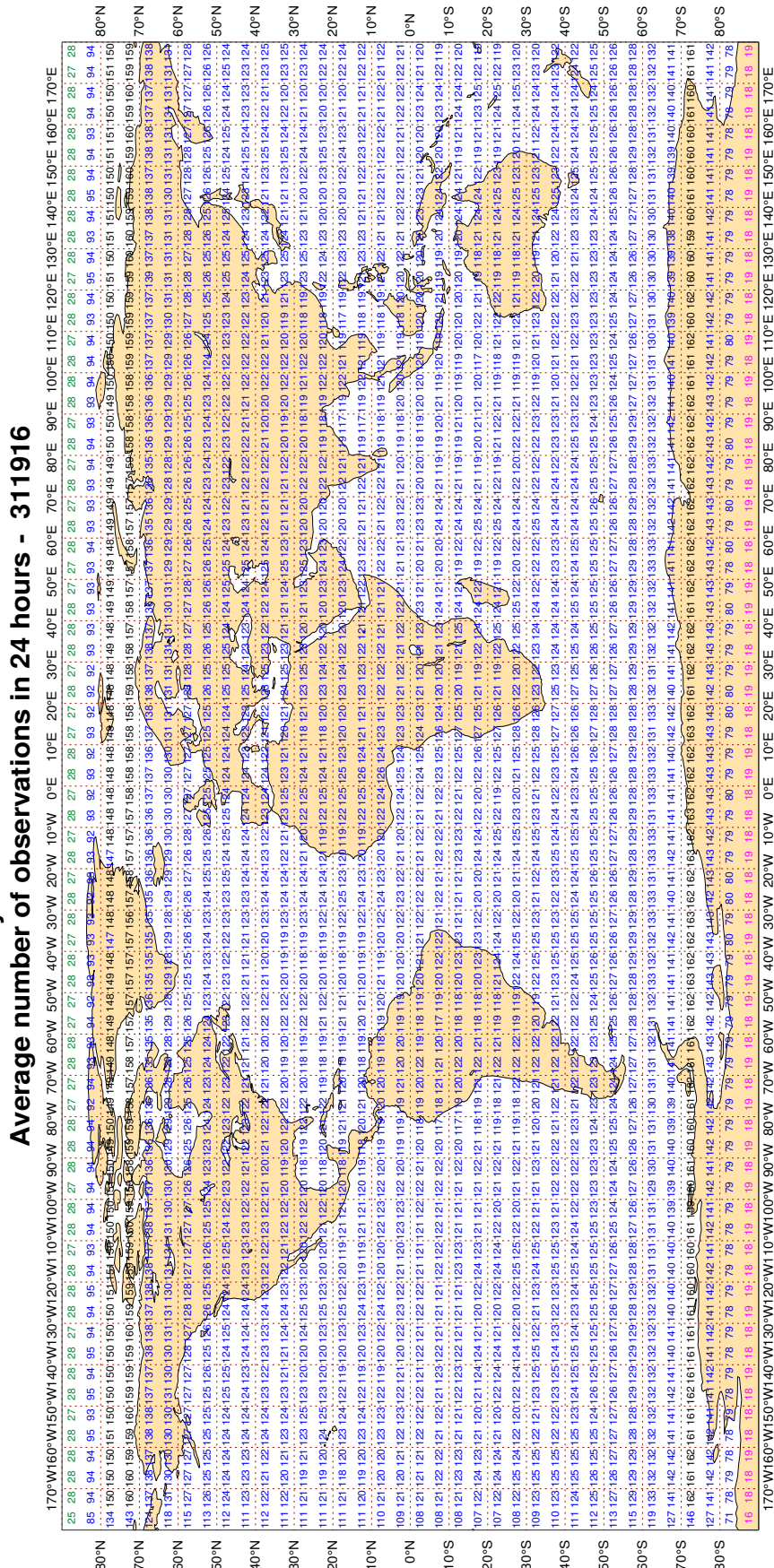
Average number of observations in 24 hours - 313540



3.2.11 Figure 9.3 - Availability - METOP ATOVS : AMSU-A

Figure 9.3

ECMWF Monitoring Statistics - NOV 2023  
Availability - METOP-B ATOVS : AMSU-A  
Average number of observations in 24 hours - 311916



Magics 4.9.4

### 3.2.12 Table 1 - Suspect ships and fixed marine platforms: Surface pressure - (hPa)

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 AREA : GLOBAL  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 15(50), AND,  
 Manual (Automatic) ABSOLUTE BIAS >= 3(2) HPA, OR,  
 STANDARD DEVIATION >= 5(4) HPA, OR,  
 % GROSS ERROR >= 25(15)  
 (GROSS ERROR LIMIT = 15 HPA)

TIME = 99 => AVERAGE OF 00, 06, 12 AND 18 UTC OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	SD	BIAS	RMS
3E3566	99	P	SUR	27	0	1.3	3.5	3.8
3FFG7	99	P	SUR	46	0	0.9	3.2	3.3
3FZI8	99	P	SUR	44	0	1.2	4.1	4.2
44064	99	P	SUR	80	39	6.4	1.9	6.7
45201	99	P	SUR	68	5	6.6	-1.7	6.9
5LDS2	99	P	SUR	28	0	4.2	4.2	6.0
7JUN	99	P	SUR	15	0	1.2	-3.1	3.3
7JXX	99	P	SUR	20	0	0.5	-5.0	5.0
9HA3062	99	P	SUR	18	0	2.4	-4.3	4.9
9HA4902	99	P	SUR	20	1	3.1	8.7	9.2
9HA5063	99	P	SUR	93	8	4.0	3.4	5.3
9HA5209	99	P	SUR	17	0	1.2	11.8	11.8
9HA5677	99	P	SUR	25	0	4.2	8.1	9.1
9V7557	99	P	SUR	34	0	1.2	-4.1	4.2
9V8705	99	P	SUR	56	0	1.0	-5.8	5.8
9V9404	99	P	SUR	69	0	2.2	8.0	8.3
A8IF2	99	P	SUR	34	0	0.8	4.8	4.9
AUYL	99	P	SUR	15	0	2.2	6.7	7.0
BNPC	99	P	SUR	38	4	5.9	4.6	7.5
C6DX2	99	P	SUR	98	0	2.0	3.8	4.3
C6FB3	99	P	SUR	15	0	1.1	-6.8	6.9
C6PZ8	99	P	SUR	24	0	0.9	-3.0	3.1
C6SE5	99	P	SUR	21	0	0.4	-3.8	3.8
C6XQ2	99	P	SUR	19	0	3.1	3.1	4.4
JMJRCES	99	P	SUR	120	0	0.8	-6.0	6.1
KIAB	99	P	SUR	29	0	1.4	3.3	3.6
LAMG7	99	P	SUR	35	0	4.2	-3.1	5.3
LAZV5	99	P	SUR	25	0	0.5	-3.6	3.6
MJKZ4	99	P	SUR	17	0	2.3	4.8	5.3
NWS0003	99	P	SUR	106	5	6.2	-3.5	7.1
OBAA	99	P	SUR	70	0	0.8	-6.8	6.8
ONGI	99	P	SUR	34	0	2.8	3.0	4.1

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 (CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	SD	BIAS	RMS
OWLD2	99	P	SUR	20	0	1.0	-4.0	4.1
OZGN2	99	P	SUR	20	0	0.3	-5.9	5.9
S6LT3	99	P	SUR	41	0	1.1	4.7	4.8
UBRW	99	P	SUR	20	0	3.2	-10.3	10.8
UBSH	99	P	SUR	26	0	1.1	-4.1	4.3
UHXO	99	P	SUR	52	3	2.7	5.1	5.8
V7A6085	99	P	SUR	16	0	0.6	3.4	3.4
V7DJ7	99	P	SUR	29	8	3.0	12.8	13.1
V7UU3	99	P	SUR	30	11	7.1	0.2	7.1
VRCG8	99	P	SUR	18	1	2.3	9.0	9.3
VRCI9	99	P	SUR	17	0	1.6	3.9	4.2
VRDJ3	99	P	SUR	89	0	1.1	-3.1	3.3
VRFU9	99	P	SUR	25	0	1.6	-5.5	5.7
VRGO2	99	P	SUR	34	0	2.1	5.8	6.2
VRGO3	99	P	SUR	18	0	0.5	7.5	7.5
VRGO6	99	P	SUR	23	0	2.1	-3.3	4.0
VRIB2	99	P	SUR	20	0	1.6	4.5	4.8
VRJU8	99	P	SUR	20	0	1.5	3.7	4.0
VRLK7	99	P	SUR	26	0	2.7	3.9	4.8
VRME7	99	P	SUR	20	0	0.8	9.9	9.9
VRNA8	99	P	SUR	29	0	1.3	7.4	7.5
VRNR6	99	P	SUR	18	0	0.7	-4.8	4.9
VROB9	99	P	SUR	18	0	3.4	4.9	5.9
VRRB5	99	P	SUR	85	0	2.0	5.3	5.7
VRSJ8	99	P	SUR	27	0	2.4	-3.2	4.0
VRTF4	99	P	SUR	18	0	1.6	-3.4	3.7
VRTG6	99	P	SUR	29	0	2.8	5.1	5.8
VRVO3	99	P	SUR	18	0	1.2	3.5	3.7
VTSJ	99	P	SUR	21	0	1.8	-8.0	8.2
VWTI	99	P	SUR	114	0	4.5	8.8	9.9
WDF2493	99	P	SUR	98	0	0.8	3.9	4.0
WDK5676	99	P	SUR	178	0	0.8	-3.4	3.5
WGEB	99	P	SUR	110	0	0.5	6.6	6.6
XXX	99	P	SUR	40	1	4.5	3.5	5.6
ZCEF6	99	P	SUR	15	0	4.0	3.8	5.5

### 3.2.13 Table 2 - Suspect ships and fixed marine platforms: Wind speed (m/s)

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND SPEED (M/S)  
 AREA : GLOBAL  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 15(50), AND,  
 Manual (Automatic) ABSOLUTE BIAS >= 4(4) M/S, OR,  
 % GROSS ERROR >= 25(15)  
 (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)

TIME = 99 => AVERAGE OF 00, 06, 12 AND 18 UTC OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
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**3.2.14 Table 3 - Suspect ships and fixed marine platforms: Wind direction (DEGREES)**

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 AREA : GLOBAL  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 15 (50) (WIND SPEEDS > 3M/S), AND ,  
 Manual (Automatic) ABSOLUTE BIAS >= 30 (25) DEGREES, OR,  
 STANDARD DEVIATION >= 70 (50) DEGREES  
 (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)

TIME = 99 => AVERAGE OF 00, 06, 12 AND 18 UTC OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44488	99	DIRN	SUR	98	0	0	16.2	-33.4	37.1
44489	99	DIRN	SUR	91	0	0	22.7	-34.5	41.3
45203	99	DIRN	SUR	39	0	0	79.3	-68.6	104.9
46145	99	DIRN	SUR	74	0	0	19.0	-40.2	44.5
46204	99	DIRN	SUR	99	0	0	16.4	42.2	45.2



### 3.2.15 Table 4 - Suspect drifters: Surface pressure (HPA)

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 AREA : GLOBAL  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20, AND,  
 ABSOLUTE BIAS >= 4 HPA, OR,  
 STANDARD DEVIATION >= 6 HPA, OR,  
 % GROSS ERROR >= 25  
 (GROSS ERROR LIMIT = 15 HPA)

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
0022684	99	P	SUR	35	122	688	232	5.0	-4.6	6.8
0022948	99	P	SUR	32	133	663	4	3.8	-6.5	7.5
0022952	99	P	SUR	23	126	659	58	5.4	-4.3	6.9
1501696	99	P	SUR	-29	-6	475	0	1.5	-6.4	6.6
1501727	99	P	SUR	-16	-39	718	0	0.4	-7.4	7.4
1501729	99	P	SUR	-23	-40	718	20	0.5	-13.9	13.9
1501732	99	P	SUR	-30	-31	26	23	2.4	10.8	11.0
1701710	99	P	SUR	-40	-25	167	51	4.2	3.0	5.1
1701713	99	P	SUR	-42	-7	77	23	5.7	6.6	8.7
1701718	99	P	SUR	10	-37	705	385	1.8	12.6	12.8
1801664	99	P	SUR	-10	45	215	215	0.0	0.0	0.0
1801697	99	P	SUR	33	-117	40	0	0.4	-6.9	7.0
1801698	99	P	SUR	33	-117	53	0	0.5	-7.1	7.1
1801701	99	P	SUR	33	-117	52	0	0.4	-7.0	7.0
1801702	99	P	SUR	33	-117	40	0	0.4	-6.8	6.9
1801703	99	P	SUR	33	-117	52	0	0.5	-7.0	7.1
1801720	99	P	SUR	33	-117	29	0	0.4	-6.7	6.8
1801726	99	P	SUR	33	-117	32	0	0.4	-6.9	7.0
1801728	99	P	SUR	33	-117	46	0	0.4	-7.6	7.6
1801729	99	P	SUR	33	-117	41	0	0.4	-6.6	6.7
1801790	99	P	SUR	6	80	59	0	0.5	-5.7	5.7
2101820	99	P	SUR	34	-178	720	0	6.6	0.3	6.6
2300094	99	P	SUR	13	84	223	0	0.8	-5.8	5.9
2302616	99	P	SUR	18	78	46	46	0.0	0.0	0.0
2302621	99	P	SUR	18	78	45	45	0.0	0.0	0.0
2302623	99	P	SUR	18	78	48	48	0.0	0.0	0.0
2302627	99	P	SUR	18	78	48	48	0.0	0.0	0.0
2302635	99	P	SUR	18	78	48	48	0.0	0.0	0.0
2302637	99	P	SUR	18	78	47	47	0.0	0.0	0.0
23094	99	P	SUR	13	84	226	0	0.8	-5.8	5.9
2801989	99	P	SUR	33	-117	52	0	0.4	-6.9	6.9
2801990	99	P	SUR	33	-117	47	0	0.4	-7.2	7.2

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 (CONTINUED)

WMO IDENT	OBS TIME	ELM	ME LAT	N LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	
2801991	99	P	SUR	33	-117	49	0	0.5	-7.2	7.2
2801992	99	P	SUR	33	-117	50	0	0.4	-7.2	7.3
2801994	99	P	SUR	33	-117	47	0	0.4	-7.1	7.2
2801995	99	P	SUR	33	-117	22	0	0.0	-6.9	6.9
2801996	99	P	SUR	33	-117	51	0	0.4	-7.0	7.0
2801997	99	P	SUR	33	-117	51	0	0.4	-7.3	7.3
2801998	99	P	SUR	33	-117	46	0	0.4	-7.1	7.1
2801999	99	P	SUR	33	-117	30	0	0.4	-7.0	7.0
2802002	99	P	SUR	33	-117	51	0	0.4	-7.1	7.1
2802003	99	P	SUR	33	-117	50	0	0.4	-7.1	7.1
2802006	99	P	SUR	33	-117	40	0	0.0	-7.0	7.0
2802014	99	P	SUR	33	-117	35	0	0.0	-6.9	6.9
2802023	99	P	SUR	33	-117	50	0	0.4	-7.1	7.1
2802061	99	P	SUR	82	22	718	668	4.9	-0.5	4.9
3101510	99	P	SUR	-35	8	311	0	1.5	-10.8	10.9
3202507	99	P	SUR	14	-90	708	218	2.3	-0.7	2.4
3301702	99	P	SUR	-42	-34	709	102	7.4	3.7	8.2
3401636	99	P	SUR	-28	-121	720	0	0.3	-4.2	4.2
3801564	99	P	SUR	-22	39	100	100	0.0	0.0	0.0
3801565	99	P	SUR	-10	61	215	215	0.0	0.0	0.0
3801600	99	P	SUR	33	-117	29	0	0.4	-6.8	6.9
3801603	99	P	SUR	33	-117	42	0	0.4	-7.0	7.0
3801604	99	P	SUR	33	-117	40	0	0.4	-6.9	6.9
3801610	99	P	SUR	33	-117	40	0	0.0	-6.9	6.9
3801617	99	P	SUR	33	-117	29	0	0.4	-7.0	7.0
3801622	99	P	SUR	33	-117	39	0	0.4	-6.8	6.9
3801624	99	P	SUR	33	-117	32	0	0.4	-7.0	7.1
3801634	99	P	SUR	33	-117	45	0	0.4	-7.2	7.2
4400064	99	P	SUR	37	-76	3918	1883	6.5	2.7	7.1
44064	99	P	SUR	37	-76	474	230	6.6	2.5	7.0
4500201	99	P	SUR	42	83	2400	208	6.5	-1.4	6.6
45201	99	P	SUR	42	83	405	32	6.6	-1.6	6.8
4601776	99	P	SUR	29	-131	720	6	6.3	-3.2	7.0
4601855	99	P	SUR	53	163	719	270	5.1	-5.3	7.3
4602563	99	P	SUR	29	-169	716	269	2.0	12.2	12.3
4602579	99	P	SUR	42	-133	246	76	4.5	3.5	5.7
4701536	99	P	SUR	74	-167	77	76	0.0	-1.1	1.1
4701545	99	P	SUR	79	157	455	148	5.5	-0.3	5.5
4701558	99	P	SUR	79	-18	56	0	0.5	-4.7	4.7
4801636	99	P	SUR	75	-135	559	245	3.5	-0.2	3.5
4801771	99	P	SUR	73	-68	708	674	1.5	-11.9	12.0
4802657	99	P	SUR	71	-145	570	163	7.6	-0.6	7.7

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 (CONTINUED)

WMO IDENT	OBS TIME	ELM	ME LAT	N LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	
4802662	99	P	SUR	70	-125	714	642	7.5	-0.5	7.5
4804024	99	P	SUR	33	-117	51	0	0.5	-7.3	7.3
4804025	99	P	SUR	33	-117	39	0	0.4	-7.0	7.0
4804027	99	P	SUR	33	-117	45	0	0.4	-7.1	7.1
4804029	99	P	SUR	33	-117	40	0	0.0	-6.9	6.9
4804030	99	P	SUR	33	-117	39	0	0.0	-7.0	7.0
4804031	99	P	SUR	33	-117	36	0	0.0	-6.9	6.9
4804034	99	P	SUR	33	-117	51	0	0.4	-7.0	7.0
4804040	99	P	SUR	33	-117	37	0	0.0	-7.0	7.0
4804043	99	P	SUR	33	-117	39	0	0.4	-6.9	6.9
4804050	99	P	SUR	33	-117	51	0	0.4	-6.9	6.9
4804057	99	P	SUR	33	-117	49	0	0.4	-6.9	6.9
4804066	99	P	SUR	33	-117	42	0	0.4	-7.1	7.1
4804078	99	P	SUR	-35	101	689	0	2.5	4.5	5.1
5102637	99	P	SUR	6	-77	674	89	5.2	-4.4	6.8
5102809	99	P	SUR	10	-109	717	717	0.0	0.0	0.0
5103563	99	P	SUR	31	-157	640	28	7.1	2.6	7.6
5401775	99	P	SUR	-52	-91	719	0	1.8	4.1	4.5
5501735	99	P	SUR	-49	-161	717	717	0.0	0.0	0.0
5801993	99	P	SUR	33	-117	52	0	0.4	-7.2	7.2
5802001	99	P	SUR	33	-117	51	0	0.4	-7.1	7.1
5802004	99	P	SUR	33	-117	51	0	0.4	-7.2	7.2
5802007	99	P	SUR	33	-117	36	0	0.4	-7.0	7.0
5802009	99	P	SUR	33	-117	29	0	0.4	-7.1	7.1
5802015	99	P	SUR	33	-117	41	0	0.4	-6.9	6.9
5802025	99	P	SUR	33	-117	50	0	0.4	-7.2	7.2
5802071	99	P	SUR	71	-18	180	62	0.9	0.5	1.0
6203766	99	P	SUR	28	-52	120	0	0.0	-11.5	11.5
6204605	99	P	SUR	42	7	156	35	1.7	12.9	13.0
6801792	99	P	SUR	33	-117	53	0	0.5	-7.2	7.2
6801793	99	P	SUR	33	-117	40	0	0.4	-7.0	7.0
6801797	99	P	SUR	33	-117	39	0	0.0	-7.0	7.0
6801798	99	P	SUR	33	-117	53	0	0.5	-7.3	7.3
6801802	99	P	SUR	33	-117	30	0	0.4	-7.1	7.1
6801817	99	P	SUR	33	-117	37	0	0.0	-6.9	6.9
6801819	99	P	SUR	33	-117	39	0	0.4	-6.9	6.9
6801827	99	P	SUR	33	-117	38	0	0.4	-7.0	7.0
6801828	99	P	SUR	33	-117	40	0	0.0	-7.1	7.1
7801599	99	P	SUR	33	-117	37	0	0.0	-7.0	7.0
7801601	99	P	SUR	33	-117	40	0	0.0	-7.0	7.0
7801604	99	P	SUR	33	-117	54	0	2.1	-6.9	7.2
7801606	99	P	SUR	33	-117	36	0	2.6	-6.7	7.2

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 (CONTINUED)

WMO IDENT	OBS TIME	ELM	ME LAT	N LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	
7801610	99	P	SUR	33	-117	52	0	0.4	-7.2	7.2
7801617	99	P	SUR	33	-117	30	0	0.4	-7.2	7.2
7801621	99	P	SUR	33	-117	40	0	0.0	-6.8	6.8
7801625	99	P	SUR	33	-117	52	0	0.4	-7.1	7.1
7801634	99	P	SUR	33	-117	40	0	0.0	-6.8	6.8
7801643	99	P	SUR	33	-117	39	0	0.4	-6.9	6.9

**3.2.16 Table 5 - Suspect drifters: Wind speed (m/s)**

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND SPEED (M/S)  
 AREA : GLOBAL  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20, AND,  
 ABSOLUTE BIAS >= 5 M/S, OR,  
 % GROSS ERROR >= 25  
 (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
2100229	99	SPEED	SUR	37	131	525	0	0	4.7	-5.1	6.9
2300459	99	SPEED	SUR	14	87	23	0	0	0.5	-6.7	6.7
23459	99	SPEED	SUR	14	87	23	0	0	0.5	-6.9	6.9
6101008	99	SPEED	SUR	37	22	115	0	0	3.8	-6.4	7.4

**3.2.17 Table 6 - Suspect drifters: Wind direction (degrees)**

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20 (WIND SPEEDS > 3M/S), AND ,  
 ABSOLUTE BIAS >= 20 DEGREES, OR,  
 STANDARD DEVIATION >= 60 DEGREES  
 (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1500009	99	DIRN	SUR	0	-3	209	0	0	24.4	-20.0	31.5
2200299	99	DIRN	SUR	35	124	224	0	0	91.2	9.7	91.7
2300093	99	DIRN	SUR	16	88	133	1	0	60.4	28.4	66.8
2300094	99	DIRN	SUR	13	84	170	0	0	60.4	-49.1	77.9
2300095	99	DIRN	SUR	10	94	139	0	0	22.2	30.3	37.6
2300452	99	DIRN	SUR	12	69	123	0	0	77.9	13.6	79.1
2300460	99	DIRN	SUR	7	88	126	0	0	106.0	6.6	106.2
23093	99	DIRN	SUR	16	88	133	0	0	61.5	27.4	67.3
23094	99	DIRN	SUR	13	84	169	0	0	58.3	-50.4	77.0
23095	99	DIRN	SUR	10	94	136	0	0	21.8	30.2	37.3
23099	99	DIRN	SUR	13	80	395	0	0	65.4	-12.4	66.5
23452	99	DIRN	SUR	12	69	111	0	0	74.0	27.5	79.0
23453	99	DIRN	SUR	8	73	25	0	0	37.0	22.1	43.1
23460	99	DIRN	SUR	7	88	123	0	0	105.7	6.3	105.9
23492	99	DIRN	SUR	11	72	33	0	0	87.9	-57.9	105.2
41033	99	DIRN	SUR	32	-80	571	0	0	17.5	-20.1	26.7
4400488	99	DIRN	SUR	45	-61	426	0	0	19.7	-31.0	36.7
4400489	99	DIRN	SUR	45	-61	387	0	0	21.0	-33.9	39.9
44488	99	DIRN	SUR	45	-61	589	0	0	18.7	-32.3	37.3
44489	99	DIRN	SUR	46	-61	535	0	0	19.2	-34.6	39.6
4500168	99	DIRN	SUR	42	-86	453	0	0	43.8	32.9	54.8
4500203	99	DIRN	SUR	41	-83	1362	0	0	68.7	-78.2	104.1
45168	99	DIRN	SUR	42	-86	79	0	0	35.3	33.6	48.7
45203	99	DIRN	SUR	41	-83	231	0	0	72.5	-74.5	103.9
4600145	99	DIRN	SUR	54	-132	409	0	0	17.8	-37.1	41.1
4600204	99	DIRN	SUR	51	-129	612	0	0	19.3	41.7	46.0
46145	99	DIRN	SUR	54	-132	401	0	0	18.5	-37.7	42.0
46204	99	DIRN	SUR	51	-129	594	0	0	19.0	41.3	45.4
5100310	99	DIRN	SUR	-8	-170	280	0	0	28.3	-22.2	36.0
51310	99	DIRN	SUR	-8	-170	250	0	0	29.3	-21.8	36.6
6100281	99	DIRN	SUR	40	0	168	0	0	35.3	51.2	62.2

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 (CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
6200086	99	DIRN	SUR	55	7	238	0	0	18.1	24.1	30.1
6600022	99	DIRN	SUR	54	14	151	1	0	64.7	58.9	87.6

**3.2.18 Table 7 - Suspect radiosondes: Geopotential height (metres)**

LIST OF SUSPECT STATIONS : RADIOSONDES  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 AREA : GLOBAL  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: AT LEAST 3 LEVELS WITH  
 10 OBS AND 100 M WEIGHTED RMS

ONLY THE WORST LEVEL IS SHOWN (WITH UNWEIGHTED RMS)

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
01400	12	Z	1000	57	3	29	0	12.6	71.7	72.8
01400	00	Z	1000	57	3	29	0	5.5	76.3	76.5
04417	12	Z	1000	73	-38	28	26	14.0	-81.6	82.8
31770	00	Z	200	49	140	28	0	66.9	61.1	90.6
35700	12	Z	50	47	52	15	0	31.4	127.7	131.5
38341	12	Z	300	43	71	15	5	66.4	-109.3	127.9
38341	00	Z	70	43	71	10	1	161.6	-109.1	195.0
42339	12	Z	850	26	73	28	1	20.6	45.0	49.5
42348	00	Z	925	27	76	28	3	17.3	43.9	47.2
42348	12	Z	925	27	76	29	1	15.4	46.0	48.5
42410	12	Z	850	26	92	30	1	19.4	41.5	45.8
42410	00	Z	850	26	92	30	0	14.7	30.0	33.4
42675	00	Z	700	23	80	27	2	23.1	30.4	38.2
42874	00	Z	850	21	82	30	1	20.5	29.5	35.9
43041	12	Z	850	19	82	21	1	18.3	36.0	40.4
43128	12	Z	850	17	78	27	3	25.0	25.2	35.5
43128	00	Z	925	17	78	27	2	29.8	10.3	31.5
43185	00	Z	850	16	81	27	0	19.3	36.3	41.1
43185	12	Z	850	16	81	28	0	20.1	31.3	37.2
43346	00	Z	850	11	80	29	1	26.6	29.5	39.7
62403	12	Z	850	26	33	12	2	42.2	71.1	82.7
65344	12	Z	1000	6	2	27	0	3.4	28.2	28.4
65548	12	Z	925	7	-8	24	0	6.2	32.2	32.8
78486	00	Z	1000	18	-70	30	0	3.5	30.7	30.9
78486	12	Z	925	18	-70	29	0	3.6	32.3	32.5
80222	12	Z	1000	5	-74	30	0	8.3	-85.3	85.7
82824	12	Z	1000	-9	-64	29	1	28.9	5.3	29.4
91212	12	Z	1000	13	145	30	0	36.6	26.7	45.3



## LIST OF SUSPECT STATIONS (CONTINUED)

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
91680	12	Z	1000	-18	177	28	0	2.5	32.3	32.4
91680	00	Z	1000	-18	177	30	0	3.6	32.7	32.9
96315	00	Z	1000	5	115	30	0	8.0	53.3	53.9

**3.2.19 Table 8 - Suspect radiosondes: Wind (m/s)**

LIST OF SUSPECT STATIONS : RADIOSONDES  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 AREA : GLOBAL  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: AT LEAST 10 OBS AND 15 M/S RMS VECTOR WIND

STANDARD LEVEL (1000-100 HPA) WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	UBIAS	VBIAS	RMS
27459	12	V	100	56	44	26	0	-11.7	-3.2	16.4
38341	00	V	100	43	71	11	3	-17.8	-5.9	26.8
38341	12	V	100	43	71	8	3	-21.1	-1.9	25.5
40179	12	V	300	32	35	10	0	-4.8	2.6	19.0
42079	00	V	150	32	77	11	0	-19.4	-0.2	25.2
42339	00	V	200	26	73	23	1	-6.8	0.2	17.8
42361	12	V	150	26	78	23	0	-5.9	-1.0	18.1
42361	00	V	200	26	78	22	3	-4.2	0.2	15.4
42399	00	V	200	27	89	28	2	-11.7	-2.2	24.7
42410	12	V	250	26	92	30	0	-4.6	-0.6	16.0
42410	00	V	200	26	92	21	1	-6.2	-0.6	18.8
42667	12	V	150	23	77	23	0	-9.0	-16.1	18.9
42667	00	V	150	23	77	24	0	-8.1	-14.9	17.4
XKQLWQ	12	V	300	47	10	11	0	1.0	-4.8	16.9

### 3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

LIST OF SUSPECT STATIONS : RADIOSONDES  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 AREA : GLOBAL  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

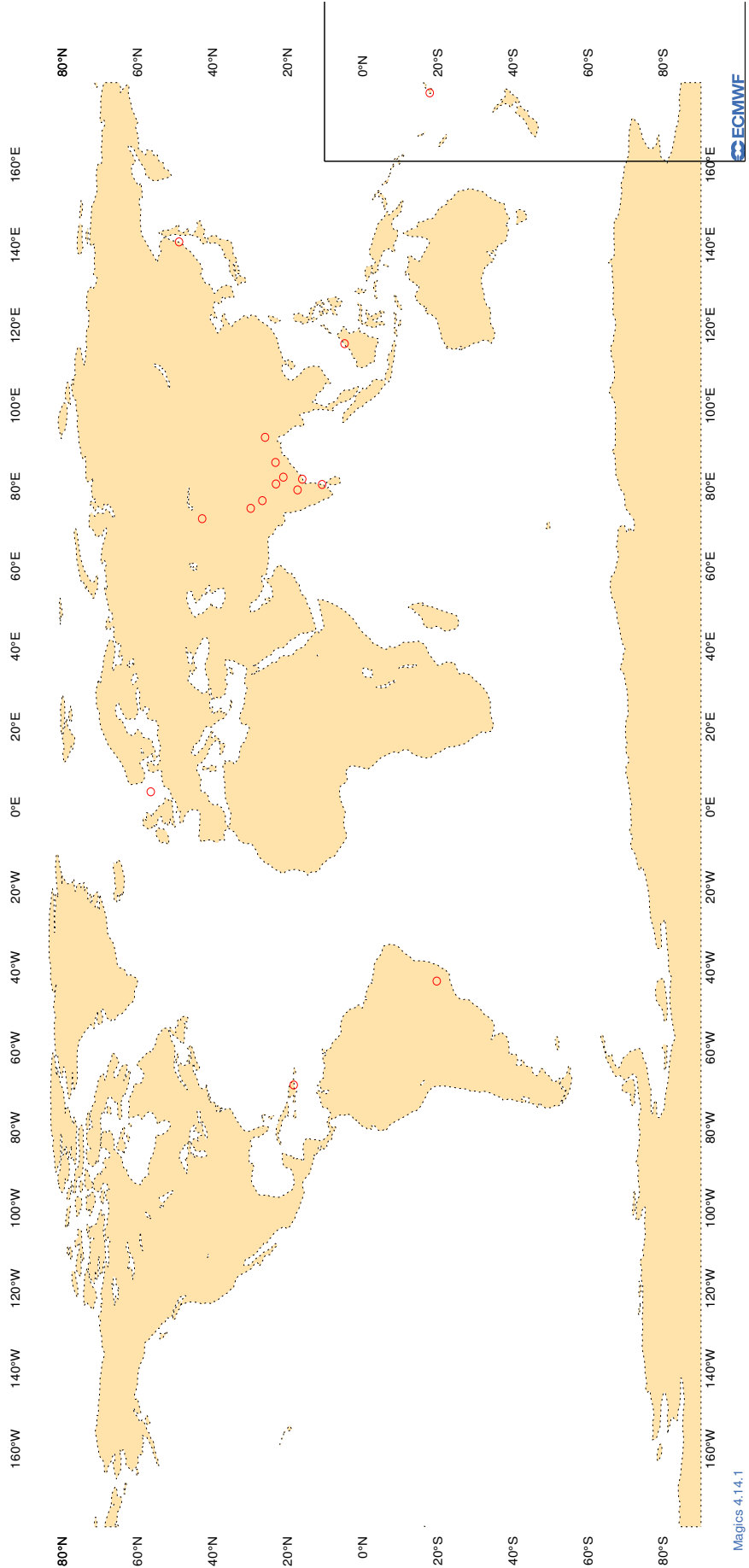
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS  $\geq$  5 M/S  
 NO. OF OBSERVATIONS  $\geq$  5, AND,  
 ABSOLUTE BIAS  $\geq$  10 DEGREES, WITH  
 STANDARD DEVIATION  $<$  30 DEGREES, AND,  
 VERTICAL SPREAD  $<$  10 DEGREES  
 (AVERAGE BETWEEN 500 AND 150 HPA)

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
42667	00	DD	23	77	25	-29.0	6.4	8.6
42667	12	DD	23	77	24	-29.1	4.0	8.3
42971	00	DD	20	86	24	-22.7	4.9	10.1
42971	12	DD	20	86	17	-22.0	6.9	10.0
48407	00	DD	15	105	14	10.4	3.9	13.0
54340	00	DD	42	124	27	-14.2	1.6	5.5
54340	12	DD	42	124	29	-13.6	1.0	4.0

3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC

Figure 10

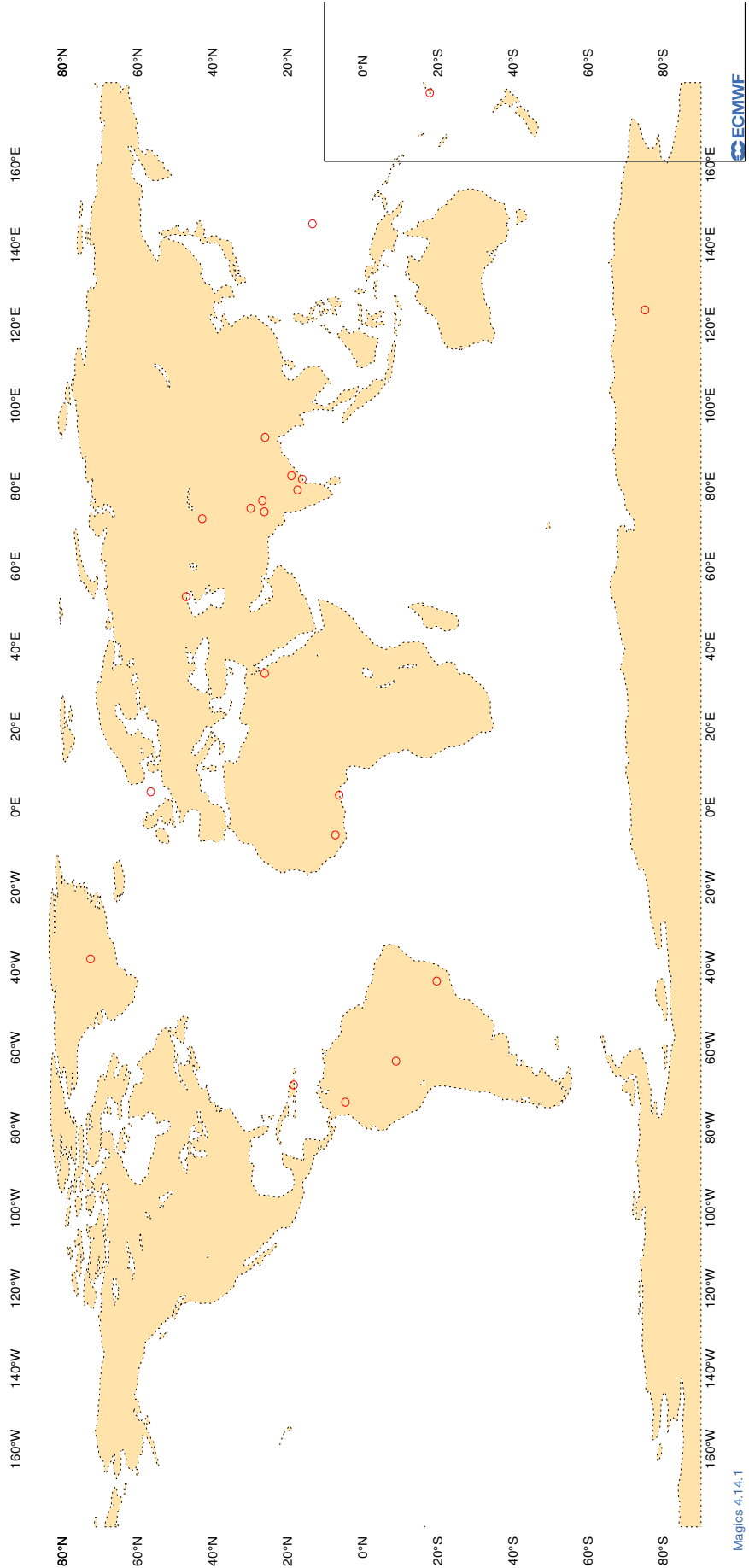
ECMWF Monitoring Statistics - NOV 2023 00 UTC  
Suspect TEMP observations - GEOPOTENTIAL



3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC

Figure 11

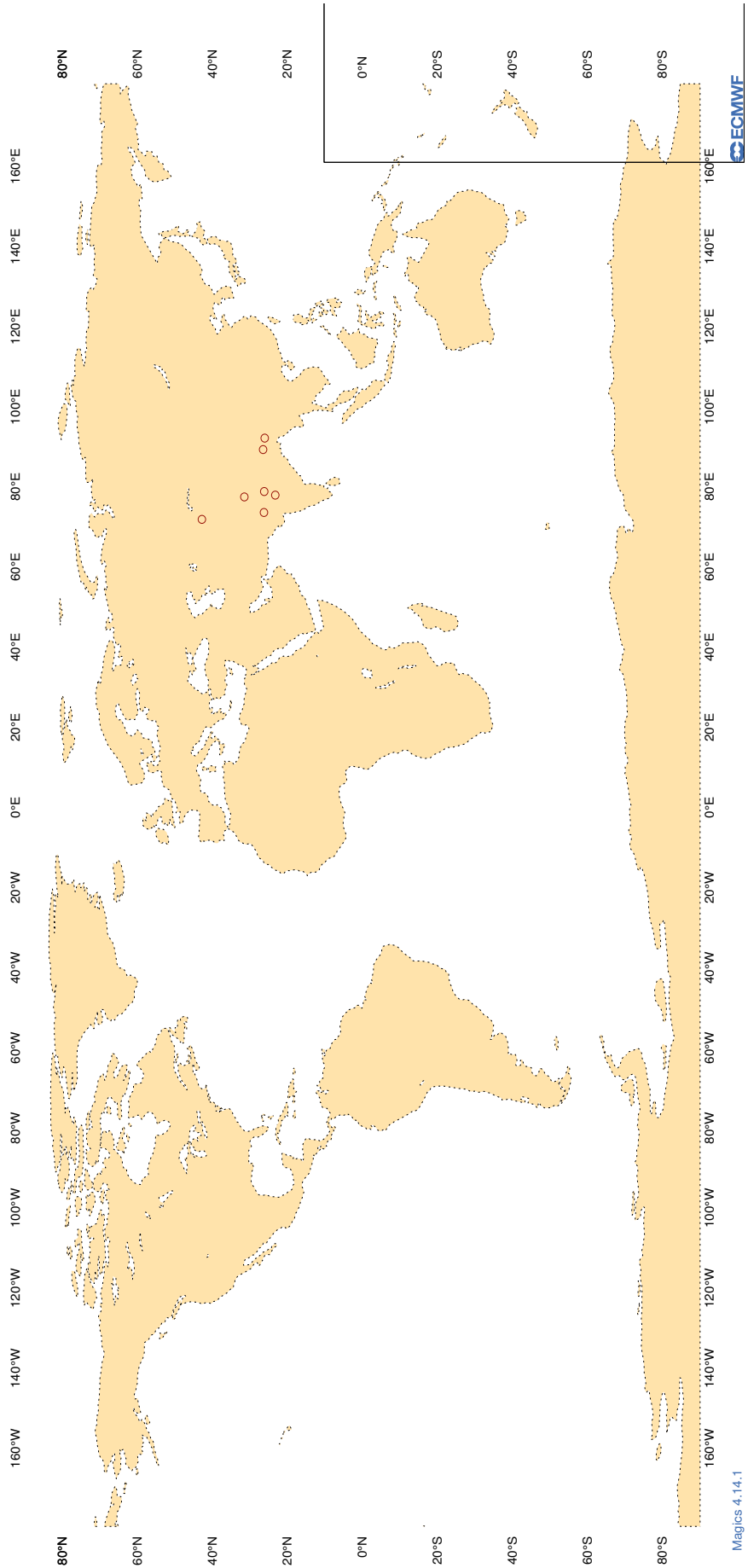
ECMWF Monitoring Statistics - NOV 2023 12 UTC  
Suspect TEMP observations - GEOPOTENTIAL



3.2.23 Figure 12 - Suspect TEMP/PILOT observations - wind : 00 UTC

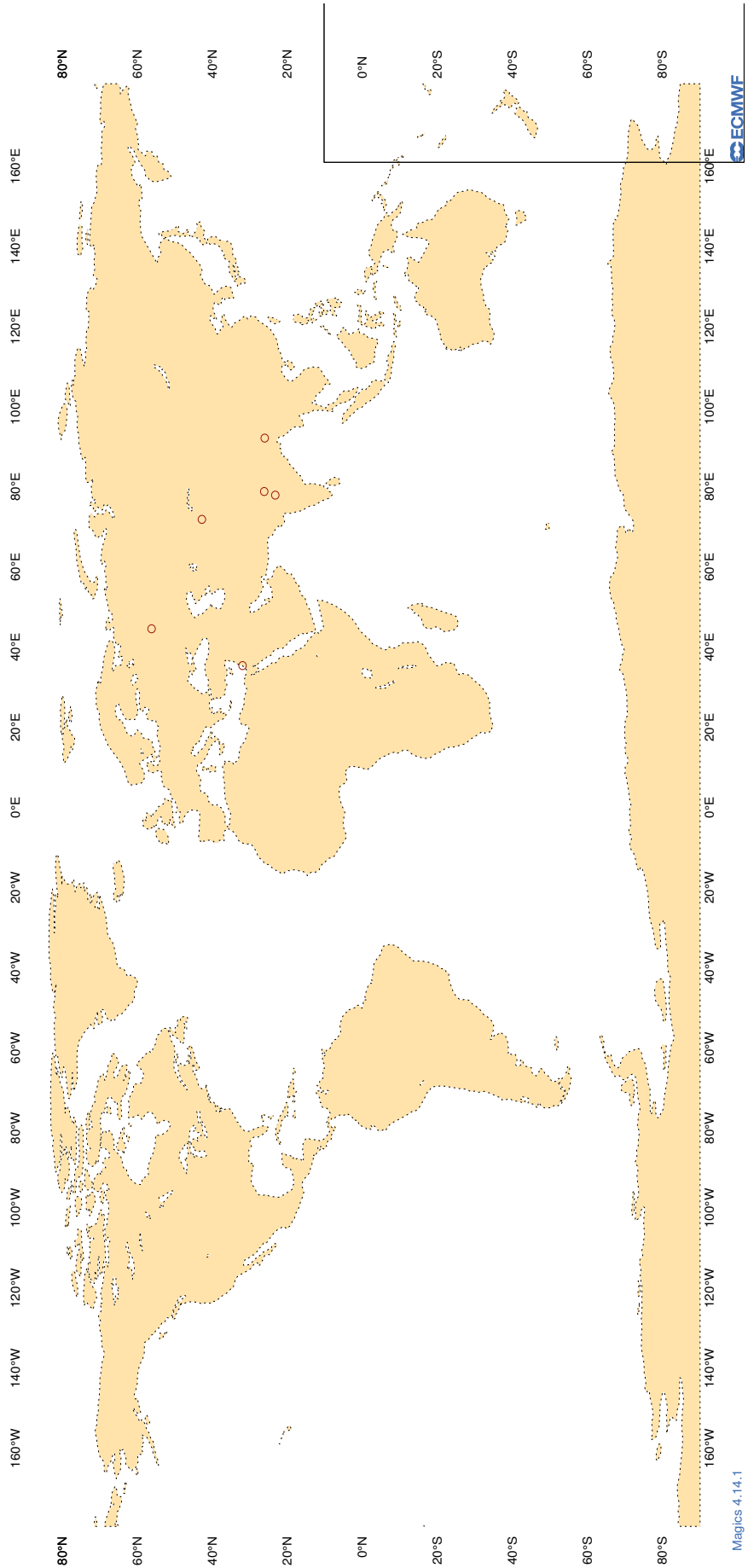
Figure 12

ECMWF Monitoring Statistics - NOV 2023 00 UTC  
Suspect TEMP/PILOT observations - WIND



3.2.24 Figure 13 - Suspect TEMP/PILOT observations - wind : 12 UTC

**Figure 13**  
**ECMWF Monitoring Statistics - NOV 2023 12 UTC**  
**Suspect TEMP/PILOT observations - WIND**



**3.2.25 Table 10 - Radiosonde monitoring statistics (SHIPS): Geopotential height (metres)**

## RADIOSONDE MONITORING STATISTICS (SHIPS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 100 HPA  
 AREA : GLOBAL  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
2EERVT	00	Z	100	1	8.9	-8.9
7JUNA4	12	Z	100	12	15.8	-2.1
7JUNA4	00	Z	100	9	7.8	1.0
9ZT9MR	00	Z	100	0	0.0	0.0
ASDE09	12	Z	100	1	39.8	39.8
ATGU3F	00	Z	100	4	25.7	-24.8
ATGU3F	12	Z	100	8	34.1	-33.8
BPMWB2	00	Z	100	14	13.5	-7.2
BPMWB2	12	Z	100	11	11.0	-7.1
DBLK	12	Z	100	21	23.4	21.8
FPUW5G	12	Z	100	4	14.2	12.6
GQBZLZ	12	Z	100	8	55.6	-42.3
GQBZLZ	00	Z	100	2	130.8	-99.5
JNKN7J	00	Z	100	5	29.6	28.8
JNKN7J	12	Z	100	8	18.6	15.7
KJJF9X	00	Z	100	6	10.4	-4.2
KJJF9X	12	Z	100	6	4.5	-0.9
KMPLHP	12	Z	100	5	42.1	41.2
KMPLHP	00	Z	100	7	48.2	46.8
LAGY8	00	Z	100	1	21.9	21.9
LAGZ8	12	Z	100	1	78.2	78.2
LRYQE3	00	Z	100	9	9.4	-5.9
LRYQE3	12	Z	100	10	27.1	10.7
UBQW2	00	Z	100	29	30.1	-28.3
USBOD	12	Z	100	4	9.4	-3.5
USBOD	00	Z	100	3	13.8	-6.8
USSIO	00	Z	100	0	0.0	0.0
USSIO	12	Z	100	0	0.0	0.0
USTAC	00	Z	100	2	12.9	-5.3
USTAC	12	Z	100	1	4.1	-4.1
UXK5JT	00	Z	100	10	8.5	1.1
UXK5JT	12	Z	100	8	28.1	0.7
WDK38H	12	Z	100	18	12.9	-3.0
XKQLWQ	12	Z	100	11	47.6	16.1
YLV96W	12	Z	100	10	22.1	-4.0
YLV96W	00	Z	100	10	34.0	12.2
ZVQEQC	00	Z	100	1	0.3	-0.3



### 3.2.26 Table 11 - Radiosonde monitoring statistics (SHIPs): Wind (m/s)

#### RADIOSONDE MONITORING STATISTICS (SHIPS)

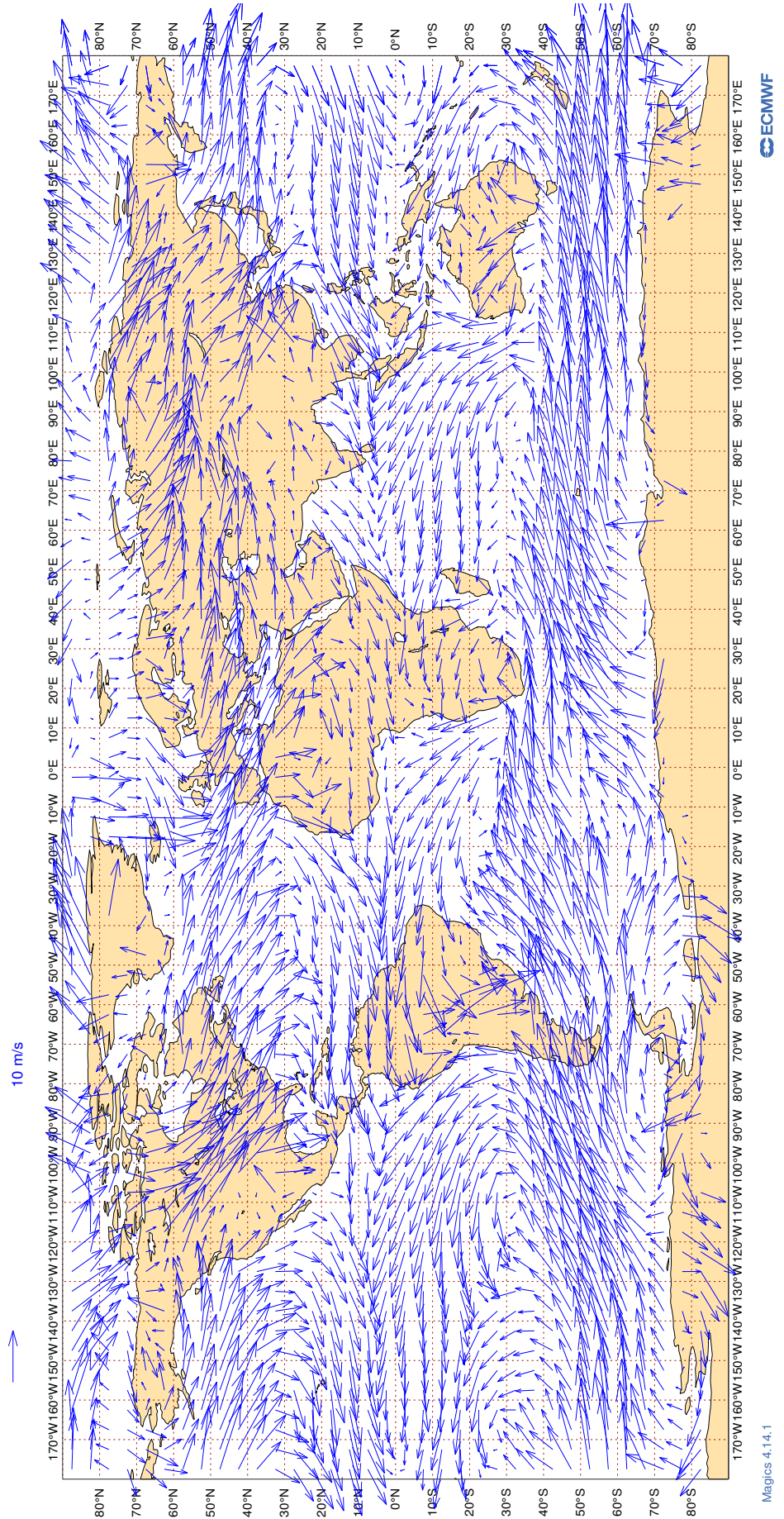
MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 100 HPA  
 AREA : GLOBAL  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
2EERVT	00	V	100	1	4.5	-1.5	-4.2
7JUNA4	12	V	100	12	2.6	-0.5	-0.1
7JUNA4	00	V	100	9	3.6	0.3	-1.0
9ZT9MR	00	V	100	0	0.0	0.0	0.0
ASDE09	12	V	100	1	2.5	1.7	1.9
ATGU3F	00	V	100	4	2.5	-0.2	0.1
ATGU3F	12	V	100	8	2.3	-0.7	-1.0
BPMWB2	00	V	100	14	3.9	-1.0	-0.1
BPMWB2	12	V	100	11	4.0	-1.2	0.4
DBLK	12	V	100	21	2.9	-0.1	-0.8
FPUW5G	12	V	100	4	3.6	0.4	1.8
GQBZLZ	12	V	100	8	2.5	-0.7	-0.4
GQBZLZ	00	V	100	2	4.1	1.8	-3.7
JNKN7J	00	V	100	5	3.1	2.1	1.4
JNKN7J	12	V	100	8	4.4	2.2	-0.2
KJJF9X	00	V	100	6	4.1	-1.3	-0.1
KJJF9X	12	V	100	6	3.5	-0.4	1.6
KMPLHP	12	V	100	5	3.0	-0.4	-0.5
KMPLHP	00	V	100	7	2.8	1.2	0.3
LAGY8	00	V	100	1	2.9	1.6	2.4
LAGZ8	12	V	100	1	2.5	-2.3	-0.9
LRYQE3	00	V	100	9	2.7	0.9	-0.2
LRYQE3	12	V	100	10	3.9	1.4	1.3
UBQW2	00	V	100	29	2.6	0.3	0.2
USBOD	12	V	100	2	3.1	0.9	1.3
USBOD	00	V	100	2	2.7	0.0	2.5
USSIO	00	V	100	0	0.0	0.0	0.0
USSIO	12	V	100	0	0.0	0.0	0.0
USTAC	00	V	100	1	1.6	1.4	0.8
USTAC	12	V	100	1	6.2	5.1	3.6
UXK5JT	00	V	100	10	3.7	0.8	0.8
UXK5JT	12	V	100	8	3.4	0.9	-0.4
WDK38H	12	V	100	17	3.1	-1.0	0.6
XKQLWQ	12	V	100	9	9.6	2.3	-1.1
YLV96W	12	V	100	10	4.8	0.3	1.5
YLV96W	00	V	100	10	4.6	-0.9	0.1
ZVQEQC	00	V	100	1	5.7	4.1	3.9

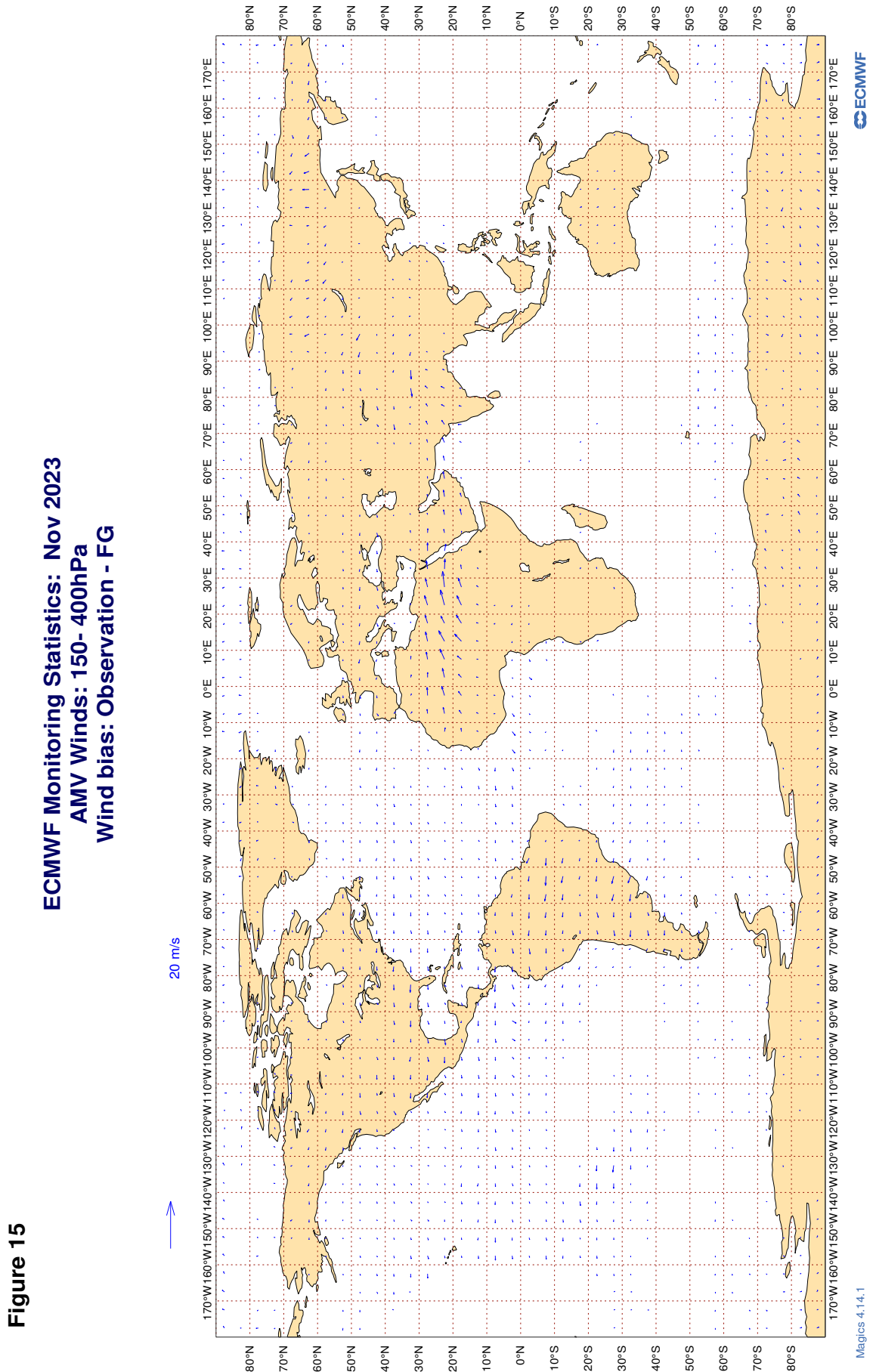
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

Figure 14

ECMWF Monitoring Statistics: Nov 2023  
AMV Winds: 700-1000hPa  
Mean Observed Wind



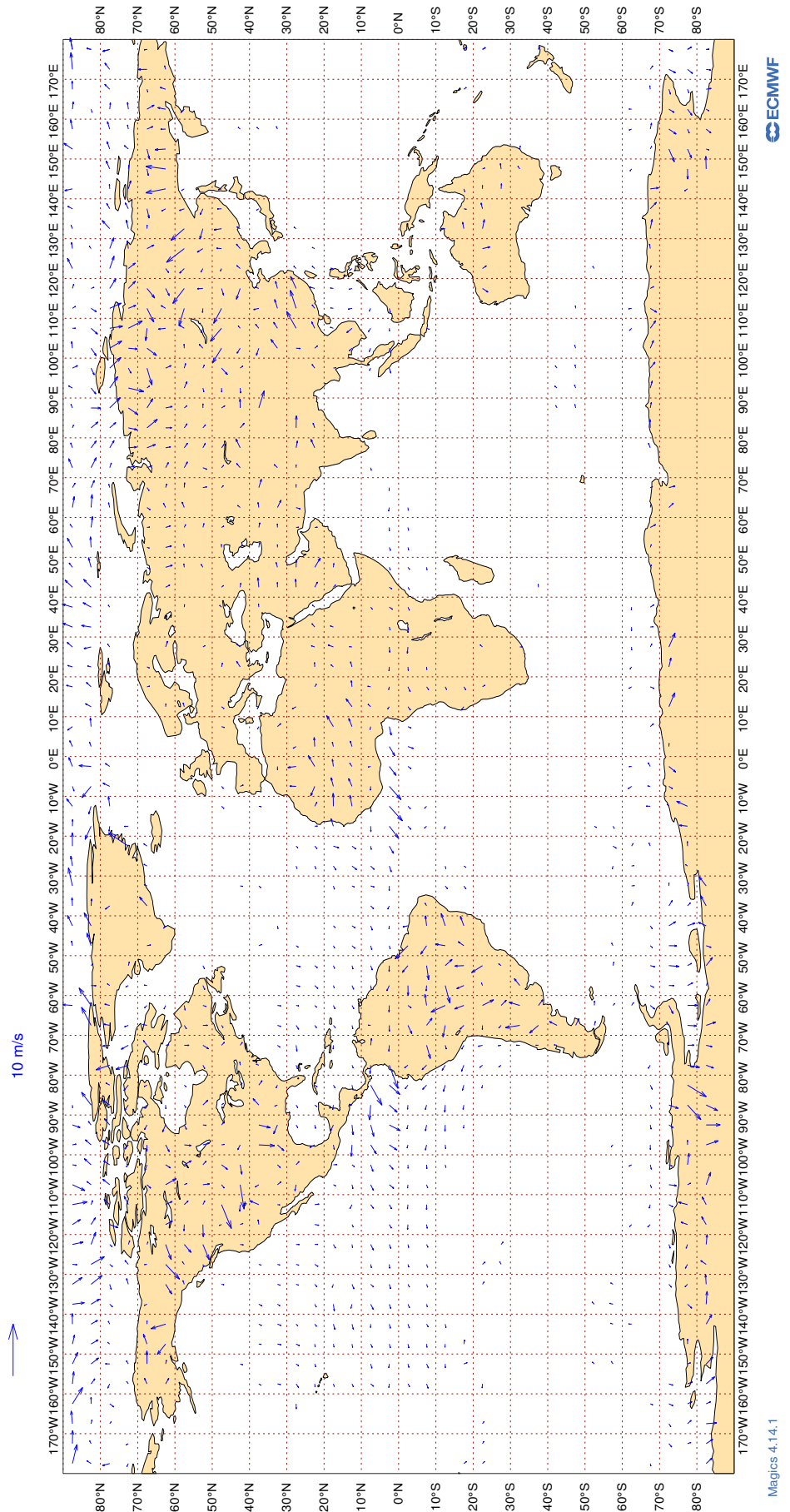
3.2.28 Figure 15 - SATOB Winds: 150- 400hPa



3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

Figure 16

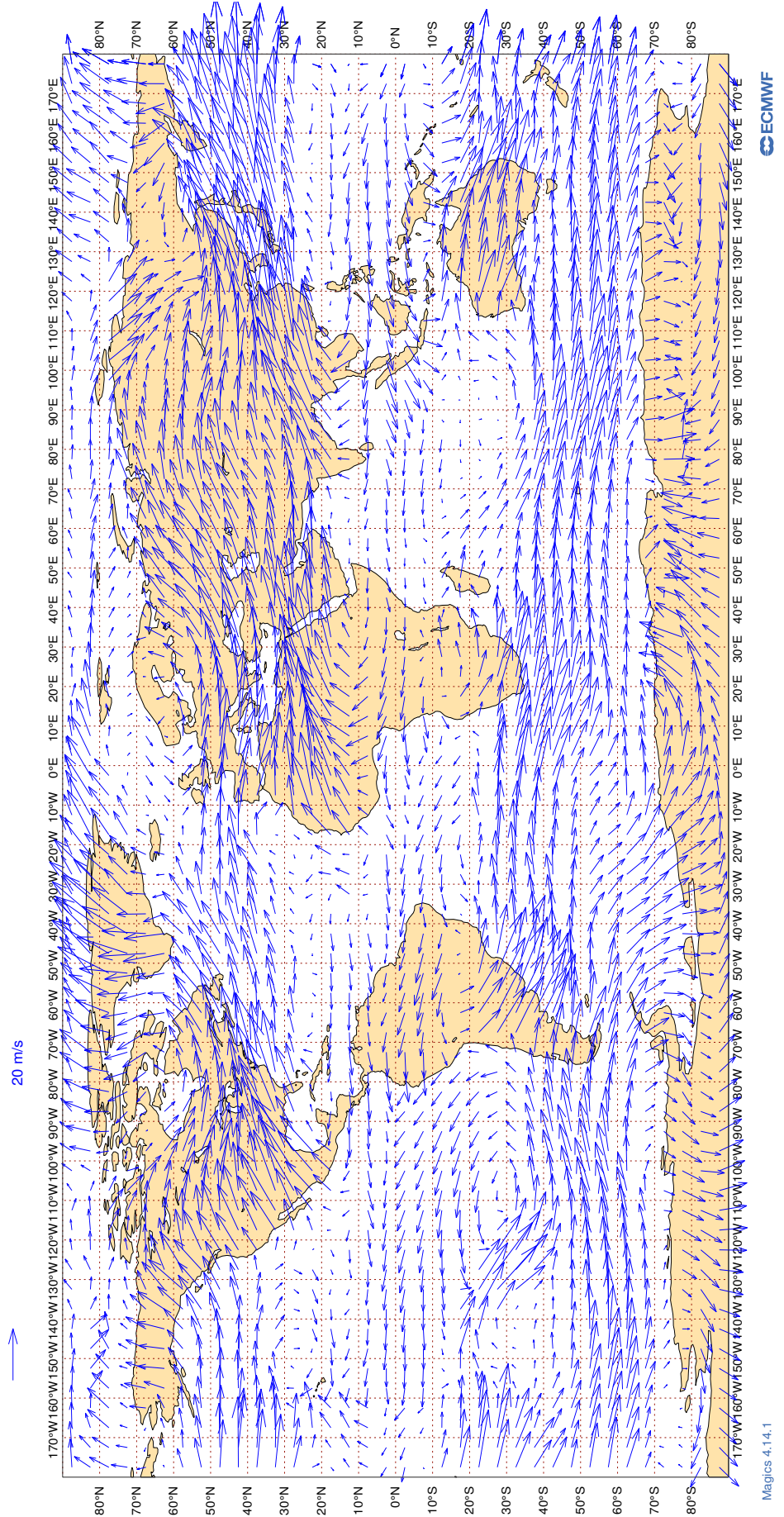
ECMWF Monitoring Statistics: Nov 2023  
AMV Winds: 700-1000hPa  
Wind bias: Observation - FG



3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

Figure 17

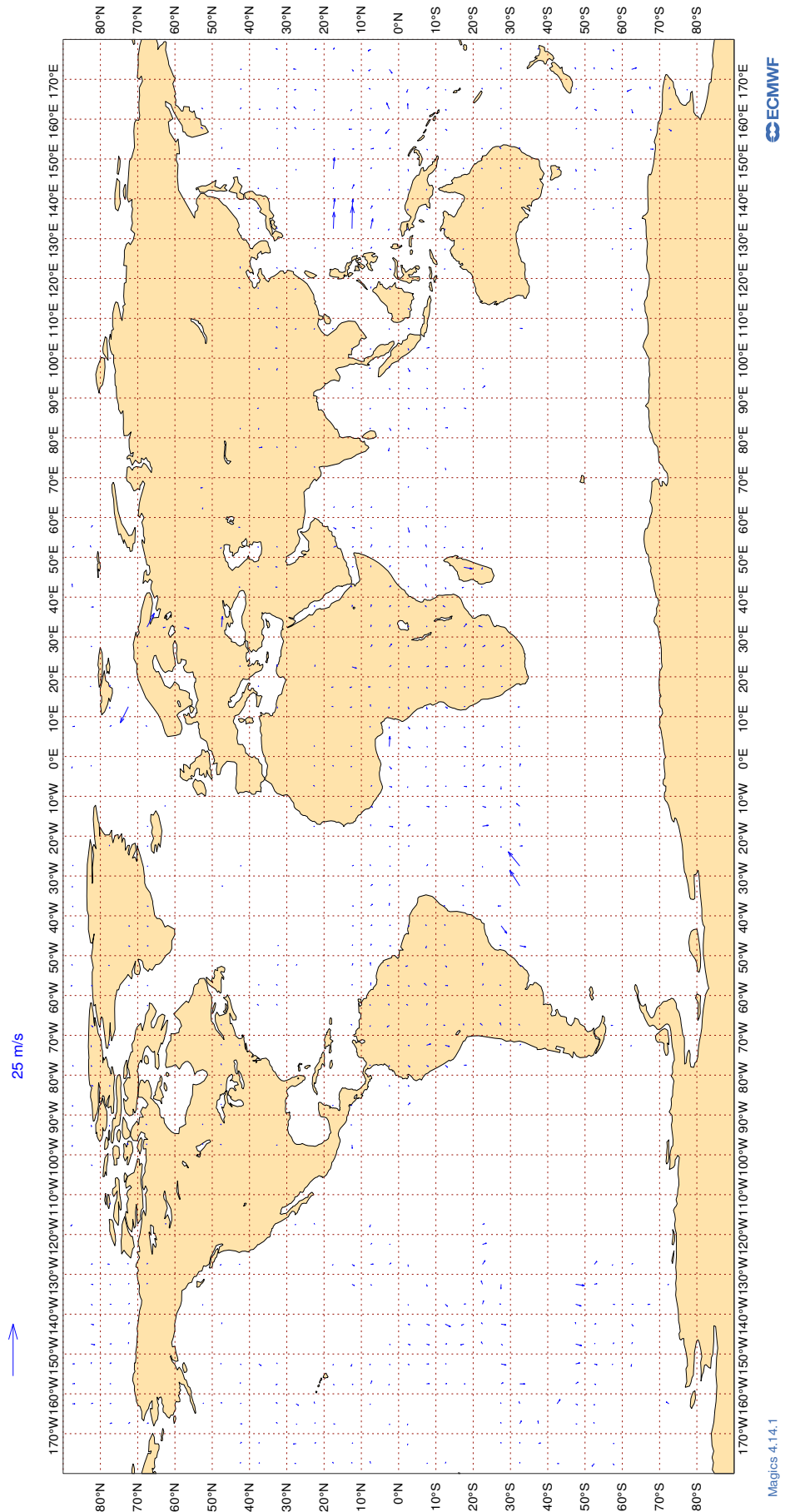
ECMWF Monitoring Statistics: Nov 2023  
AMV Winds: 150- 400hPa  
Mean Observed Wind



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

Figure 18

ECMWF Monitoring Statistics: Nov 2023  
Aircraft Winds: 150- 300hPa  
Wind bias: Observation - FG



### 3.2.32 Table 12 - Airep Monitoring Statistics For Airline Carriers (Global)

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : VECTOR WIND (M/S)  
 AREA : GLOBAL  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20

TIME = 99 => AVERAGE OF ALL OBSERVATIONS  
 GROSS ERROR LIMIT ON VECTOR WIND = 40 M/S

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AAB	99	V	300-150	37	0	0	3.2	-1.2
AAL	99	V	300-150	40611	4	0	5.3	0.2
AAR	99	V	300-150	227	0	0	3.2	-1.0
ABB	99	V	300-150	716	0	0	3.1	0.1
ABD	99	V	300-150	1705	0	0	4.1	-0.3
ABX	99	V	300-150	34	0	0	2.9	-0.6
ACA	99	V	300-150	25162	3	0	5.0	0.1
ACI	99	V	300-150	298	0	0	3.3	0.8
AEA	99	V	300-150	607	12	3	5.9	0.5
AFR	99	V	300-150	31508	1	0	4.3	0.1
AIC	99	V	300-150	4832	3	0	6.1	0.2
AJO	99	V	300-150	36	0	0	4.0	-1.5
AJT	99	V	300-150	252	0	0	5.0	-0.5
ALK	99	V	300-150	1423	0	0	3.3	0.6
AME	99	V	300-150	22	0	0	3.0	-0.5
AMX	99	V	300-150	4703	11	0	7.4	-0.1
ANA	99	V	300-150	332	3	0	3.8	0.0
ANZ	99	V	300-150	15494	0	0	4.0	0.5
AOJ	99	V	300-150	180	0	0	3.3	0.0
AOJ	99	V	300-150	26	0	0	3.5	-0.8
ASA	99	V	300-150	69	3	1	6.5	0.2
ASL	99	V	300-150	675	0	0	3.7	0.7
ASY	99	V	300-150	158	0	0	3.7	0.8
ATC	99	V	300-150	62	6	0	5.2	0.7

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
ATG	99	V	300-150	253	0	0	5.7	1.8
ATN	99	V	300-150	150	1	1	5.1	0.0
AUA	99	V	300-150	3497	0	0	3.9	0.0
AVA	99	V	300-150	443	5	2	5.7	0.0
AWC	99	V	300-150	145	0	0	3.7	-0.3
AXM	99	V	300-150	82	0	1	5.1	0.5
AXY	99	V	300-150	201	0	0	3.4	0.1
AZG	99	V	300-150	1033	0	0	3.7	-0.4
BAF	99	V	300-150	61	0	0	3.3	-0.4
BAH	99	V	300-150	49	0	0	3.5	-0.5
BAW	99	V	300-150	45957	2	0	4.5	0.1
BBB	99	V	300-150	23	0	0	4.4	1.1
BBC	99	V	300-150	636	6	0	4.9	0.4
BCS	99	V	300-150	2119	0	0	3.7	0.4
BEL	99	V	300-150	691	0	0	3.1	0.0
BFF	99	V	300-150	27	0	0	12.3	5.3
BLU	99	V	300-150	52	0	0	9.3	5.9
BLX	99	V	300-150	323	8	0	8.2	0.0
BOE	99	V	300-150	77	12	0	6.1	0.2
BOX	99	V	300-150	4105	0	0	3.5	0.0
BQB	99	V	300-150	23	0	0	3.0	0.2
BTX	99	V	300-150	51	0	0	3.4	0.2
BVR	99	V	300-150	36	0	0	3.9	-0.1
CAF	99	V	300-150	21	0	0	4.3	-0.9
CAL	99	V	300-150	1562	0	0	3.6	0.5
CAZ	99	V	300-150	127	0	0	3.3	-0.1
CBJ	99	V	300-150	166	0	0	4.1	0.8
CCA	99	V	300-150	126	2	0	2.9	0.6
CEB	99	V	300-150	675	0	0	3.2	0.4
CES	99	V	300-150	1029	0	0	3.6	0.6
CFC	99	V	300-150	215	0	0	4.0	0.3
CFG	99	V	300-150	4548	0	0	3.5	0.2
CHG	99	V	300-150	275	0	0	3.5	-0.3
CHH	99	V	300-150	148	0	0	4.1	0.6
CJT	99	V	300-150	753	0	0	4.4	-0.1
CKS	99	V	300-150	609	0	0	3.7	-0.2
CLE	99	V	300-150	32	0	0	3.6	-0.5
CLX	99	V	300-150	4968	0	0	3.7	-0.4
CMA	99	V	300-150	130	0	0	2.5	-0.1
CMB	99	V	300-150	1406	0	0	3.7	-0.1
CND	99	V	300-150	174	0	1	4.3	0.3
CNK	99	V	300-150	31	0	0	2.9	0.5
CNV	99	V	300-150	88	0	1	3.3	-0.2



AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
CPA	99	V	300-150	2717	0	0	3.5	0.4
CPJ	99	V	300-150	44	0	0	5.6	0.5
CRL	99	V	300-150	686	0	1	3.5	0.2
CRR	99	V	300-150	32	0	0	4.2	-1.2
CRV	99	V	300-150	87	0	0	3.2	0.5
CSC	99	V	300-150	865	0	0	2.8	0.3
CSG	99	V	300-150	71	0	0	3.5	0.7
CSN	99	V	300-150	679	3	0	3.7	0.2
CSS	99	V	300-150	212	0	0	2.9	0.1
CTM	99	V	300-150	103	0	0	4.7	-0.2
CTV	99	V	300-150	74	0	0	3.6	0.4
CWG	99	V	300-150	24	0	0	4.3	-0.4
CXA	99	V	300-150	57	19	0	3.0	0.6
CXF	99	V	300-150	38	0	0	3.7	0.8
DAH	99	V	300-150	742	0	0	3.4	0.1
DAL	99	V	300-150	51507	0	0	3.4	0.2
DCM	99	V	300-150	34	0	3	3.2	0.2
DGX	99	V	300-150	47	0	0	2.8	-0.8
DHK	99	V	300-150	4310	0	0	3.9	-0.2
DHX	99	V	300-150	331	0	0	3.7	0.7
DJT	99	V	300-150	1413	0	0	3.5	0.3
DLH	99	V	300-150	24602	1	0	3.9	0.0
DSO	99	V	300-150	26	0	0	3.1	0.5
EAL	99	V	300-150	105	0	0	3.8	-0.3
EAU	99	V	300-150	64	0	0	5.4	-0.6
EDC	99	V	300-150	21	0	0	1.9	0.0
EDW	99	V	300-150	1329	0	0	3.6	0.5
EIN	99	V	300-150	16376	0	0	3.3	0.3
EJM	99	V	300-150	619	0	0	3.4	0.3
ELY	99	V	300-150	4803	12	0	6.4	0.0
ETD	99	V	300-150	12579	3	0	5.1	0.2
ETH	99	V	300-150	6911	4	0	6.0	0.2
EUK	99	V	300-150	1621	0	0	3.4	0.3
EVA	99	V	300-150	1227	3	0	6.3	0.8
EVE	99	V	300-150	56	0	0	3.6	0.2
EXS	99	V	300-150	2668	0	0	3.2	0.1
EXV	99	V	300-150	184	0	0	3.1	0.5
EZY	99	V	300-150	25	0	0	3.6	-1.0
FBU	99	V	300-150	1958	0	0	3.8	-0.1
FDX	99	V	300-150	7196	0	0	3.6	0.1
FFM	99	V	300-150	45	2	0	4.5	0.4
FIN	99	V	300-150	2282	0	0	3.6	0.3
FJI	99	V	300-150	2408	0	0	3.7	0.6

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
FJO	99	V	300-150	70	0	0	3.8	0.9
FPY	99	V	300-150	3436	0	0	3.3	0.2
FSY	99	V	300-150	34	0	0	4.0	-0.4
FWI	99	V	300-150	1355	0	1	3.8	0.3
FXT	99	V	300-150	34	0	0	3.0	-0.5
FYG	99	V	300-150	97	0	0	4.0	1.0
GAF	99	V	300-150	118	0	0	3.8	1.1
GCK	99	V	300-150	70	0	0	3.7	-0.5
GEC	99	V	300-150	1776	0	0	3.4	0.1
GES	99	V	300-150	69	0	0	3.5	0.2
GFA	99	V	300-150	1419	3	0	7.1	0.7
GIA	99	V	300-150	780	0	0	3.4	0.7
GJE	99	V	300-150	177	0	0	4.2	0.0
GLJ	99	V	300-150	39	0	0	3.0	0.2
GMA	99	V	300-150	21	0	0	4.5	-0.7
GNJ	99	V	300-150	99	0	1	4.1	1.0
GOL	99	V	300-150	41	0	0	3.2	0.3
GRP	99	V	300-150	30	0	0	5.2	-0.7
GSM	99	V	300-150	90	0	0	4.3	1.3
GTI	99	V	300-150	2184	0	0	3.8	-0.1
HAL	99	V	300-150	884	0	0	4.5	0.9
HFM	99	V	300-150	58	0	0	3.7	-0.7
HKC	99	V	300-150	107	0	0	3.7	0.6
HLF	99	V	300-150	31	0	0	3.0	0.2
HRT	99	V	300-150	50	0	0	2.5	0.4
HUA	99	V	300-150	41	0	0	4.5	-0.2
HVN	99	V	300-150	1095	3	0	4.5	0.6
HYP	99	V	300-150	82	0	0	4.0	-0.3
IAM	99	V	300-150	34	0	0	3.4	1.0
IBE	99	V	300-150	3983	0	1	3.6	0.2
ICE	99	V	300-150	7081	0	0	3.4	0.3
ICV	99	V	300-150	328	0	0	3.7	-0.8
IFA	99	V	300-150	415	0	0	4.0	-0.1
IFC	99	V	300-150	38	0	0	3.4	0.1
IGA	99	V	300-150	20	0	0	3.1	0.5
IGO	99	V	300-150	34	0	0	2.9	0.5
IJM	99	V	300-150	33	0	3	3.7	0.7
ITY	99	V	300-150	5012	0	0	3.6	0.1
JAF	99	V	300-150	673	10	0	7.3	-0.1
JAL	99	V	300-150	222	2	0	6.2	0.3
JAS	99	V	300-150	72	0	0	2.9	0.7
JBU	99	V	300-150	8190	0	0	3.5	0.3
JCO	99	V	300-150	83	0	0	3.3	0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
JCY	99	V	300-150	34	0	0	3.7	0.7
JET	99	V	300-150	34	0	0	3.4	0.1
JJA	99	V	300-150	25	0	0	4.1	0.8
JME	99	V	300-150	64	0	0	3.6	-0.1
JST	99	V	300-150	385	0	0	3.8	0.7
KAC	99	V	300-150	2249	0	0	3.4	0.4
KAF	99	V	300-150	38	0	0	4.6	0.5
KAI	99	V	300-150	124	1	1	5.0	0.0
KAL	99	V	300-150	756	0	0	3.4	0.2
KAY	99	V	300-150	91	0	0	3.4	0.4
KCE	99	V	300-150	63	0	0	2.7	-0.3
KFE	99	V	300-150	31	0	0	2.2	0.2
KIW	99	V	300-150	130	0	0	3.9	0.3
KLM	99	V	300-150	18088	6	0	5.5	0.2
KOC	99	V	300-150	59	0	0	3.4	0.6
KQA	99	V	300-150	388	8	1	8.5	0.1
KUG	99	V	300-150	33	0	0	3.7	-0.2
LAE	99	V	300-150	221	0	0	3.8	-0.8
LCO	99	V	300-150	664	0	0	4.1	-0.7
LDX	99	V	300-150	60	0	0	3.9	-0.1
LEA	99	V	300-150	40	0	0	4.1	-0.7
LNI	99	V	300-150	1138	0	0	3.3	0.5
LNK	99	V	300-150	85	0	0	3.4	0.5
LOT	99	V	300-150	4207	9	0	7.7	0.2
LRQ	99	V	300-150	35	0	0	3.1	0.0
LRT	99	V	300-150	33	0	0	3.2	0.0
LUC	99	V	300-150	25	0	0	2.7	0.4
LWG	99	V	300-150	33	0	0	3.4	1.0
LXJ	99	V	300-150	325	0	0	3.5	0.2
LYX	99	V	300-150	75	0	0	3.9	0.1
MAS	99	V	300-150	6365	0	0	3.9	0.6
MAU	99	V	300-150	384	0	0	4.4	1.0
MED	99	V	300-150	64	0	0	3.2	0.2
MHV	99	V	300-150	37	0	0	3.2	0.7
MJF	99	V	300-150	28	0	0	2.5	0.5
MLM	99	V	300-150	77	0	0	4.8	1.3
MLT	99	V	300-150	210	0	1	4.1	0.2
MMD	99	V	300-150	347	0	0	3.5	0.3
MMZ	99	V	300-150	118	0	0	4.2	2.2
MNB	99	V	300-150	596	0	0	3.2	0.3
MPH	99	V	300-150	501	0	0	3.7	-0.9
MSR	99	V	300-150	2389	8	0	6.1	0.0
MVJ	99	V	300-150	58	0	0	2.8	-0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
NBT	99	V	300-150	953	8	0	6.8	0.0
NCR	99	V	300-150	266	0	0	4.4	0.0
NJE	99	V	300-150	866	0	0	3.6	0.2
NOJ	99	V	300-150	28	0	0	3.3	0.0
NOS	99	V	300-150	1189	10	0	7.3	0.1
NUM	99	V	300-150	44	0	0	4.0	0.9
OAE	99	V	300-150	351	0	0	4.4	0.2
OCN	99	V	300-150	4345	0	0	3.6	0.1
OFN	99	V	300-150	30	0	0	4.4	1.1
OMA	99	V	300-150	3046	4	0	7.3	0.5
ORF	99	V	300-150	33	0	0	2.9	0.1
PAC	99	V	300-150	281	0	0	3.8	-0.6
PAL	99	V	300-150	1797	0	0	3.3	0.5
PEG	99	V	300-150	73	0	1	3.2	-0.5
PEX	99	V	300-150	72	0	0	3.5	1.4
PIA	99	V	300-150	455	0	0	3.6	0.5
PUE	99	V	300-150	187	0	0	3.9	-0.1
PVA	99	V	300-150	250	0	0	3.5	0.3
QAF	99	V	300-150	38	0	0	3.5	-0.5
QFA	99	V	300-150	5923	2	0	5.7	0.6
QFX	99	V	300-150	54	0	0	4.5	0.5
QQE	99	V	300-150	191	0	0	4.2	0.1
QTR	99	V	300-150	36086	1	0	3.9	0.3
RAM	99	V	300-150	625	19	1	7.0	0.5
RBA	99	V	300-150	306	4	0	9.5	0.7
RCH	99	V	300-150	4910	0	0	4.4	0.4
RCR	99	V	300-150	36	0	0	3.7	0.5
RDN	99	V	300-150	37	0	0	4.2	1.0
RHH	99	V	300-150	39	0	0	4.1	1.3
RJA	99	V	300-150	1440	12	0	7.8	0.1
RKK	99	V	300-150	38	0	0	3.3	0.2
ROJ	99	V	300-150	45	0	0	3.3	0.0
RRR	99	V	300-150	128	0	0	3.6	0.2
RYR	99	V	300-150	1061	0	0	3.4	0.2
RZO	99	V	300-150	292	0	2	5.0	0.2
SAM	99	V	300-150	450	0	0	3.3	0.0
SAS	99	V	300-150	5466	0	0	3.4	0.3
SAZ	99	V	300-150	96	0	0	4.0	0.8
SCX	99	V	300-150	74	1	0	4.0	0.4
SEY	99	V	300-150	64	0	0	3.8	1.4
SIA	99	V	300-150	14586	0	0	4.1	0.4
SIO	99	V	300-150	48	0	0	4.2	0.5
SIS	99	V	300-150	29	0	7	2.7	0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
SLM	99	V	300-150	110	0	0	3.5	0.0
SNO	99	V	300-150	28	0	0	2.6	-0.6
SON	99	V	300-150	44	0	0	3.0	0.4
SPA	99	V	300-150	79	0	0	3.4	0.3
SUI	99	V	300-150	30	0	0	4.4	0.1
SVA	99	V	300-150	9986	1	0	4.6	0.4
SVW	99	V	300-150	204	0	0	3.8	0.3
SWR	99	V	300-150	10057	0	1	3.7	0.2
SWW	99	V	300-150	34	0	0	4.7	0.0
SYB	99	V	300-150	118	19	0	11.4	0.0
TAG	99	V	300-150	23	0	0	4.2	0.6
TAI	99	V	300-150	53	0	0	3.3	0.5
TAM	99	V	300-150	79	0	1	3.3	0.4
TAP	99	V	300-150	2647	0	1	3.8	0.1
TAR	99	V	300-150	303	0	0	3.2	0.2
TAY	99	V	300-150	152	0	0	3.7	-0.5
TEU	99	V	300-150	60	0	0	2.9	-0.3
TFF	99	V	300-150	56	0	0	2.7	0.1
TFL	99	V	300-150	1627	11	0	6.9	0.1
TGW	99	V	300-150	1003	2	0	7.2	0.5
THA	99	V	300-150	5807	1	0	4.8	0.4
THT	99	V	300-150	2575	4	0	7.0	0.3
THY	99	V	300-150	19234	2	0	4.6	0.2
TJS	99	V	300-150	66	0	0	4.0	0.2
TMN	99	V	300-150	383	0	0	4.0	0.4
TOM	99	V	300-150	4792	11	0	6.6	0.0
TRK	99	V	300-150	56	0	0	3.2	0.0
TSC	99	V	300-150	5553	0	0	3.5	0.3
TUA	99	V	300-150	21	0	0	2.0	0.6
TVR	99	V	300-150	64	0	0	4.0	-1.7
TWY	99	V	300-150	663	0	0	3.5	0.2
UAE	99	V	300-150	32532	0	0	3.5	0.3
UAF	99	V	300-150	118	0	0	4.1	1.2
UAG	99	V	300-150	30	0	0	3.8	0.2
UAL	99	V	300-150	67625	2	1	4.9	0.1
UBT	99	V	300-150	2613	12	0	6.8	0.0
UGD	99	V	300-150	41	0	0	3.1	0.6
UKN	99	V	300-150	36	0	3	3.1	-0.3
ULC	99	V	300-150	90	0	0	4.0	0.6
UNI	99	V	300-150	52	0	0	4.8	1.4
UPS	99	V	300-150	6253	0	0	3.8	-0.2
USY	99	V	300-150	32	0	0	3.0	-0.4
UZB	99	V	300-150	618	6	0	5.0	0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
VCG	99	V	300-150	38	0	0	4.0	1.4
VCJ	99	V	300-150	32	0	0	4.3	0.7
VIR	99	V	300-150	19805	3	0	4.7	0.1
VJC	99	V	300-150	207	0	0	3.2	0.0
VJH	99	V	300-150	616	0	0	4.1	0.4
VJT	99	V	300-150	1296	0	0	3.4	0.2
VKG	99	V	300-150	176	0	0	3.6	0.2
VLZ	99	V	300-150	106	0	0	6.2	1.4
VSV	99	V	300-150	36	0	0	9.0	3.4
VTI	99	V	300-150	2277	0	0	3.2	0.4
WFL	99	V	300-150	314	0	1	3.9	0.7
WGN	99	V	300-150	31	0	0	3.2	-0.5
WJA	99	V	300-150	876	3	0	7.5	-0.1
WWI	99	V	300-150	88	0	0	4.1	0.5
XAX	99	V	300-150	1104	0	0	3.7	0.5
XRO	99	V	300-150	32	0	0	4.4	1.4

## 4 EUCOS Area Monitoring Statistics

The following tables provide information on the quality of upper-air data and surface DRIFTER data over the EUCOS area as received at ECMWF during the month.

Tables 13, 14 (50 hPa level), 15, 16 (100 hPa level) 17, 18 (500 hPa level) 19 and 20 (850 hPa level) provide quality statistics for all TEMPSHIPS and PILOTSHIPS received during the month in the area 10°N - 90°N, 70°W - 40°E and for TEMPS and PILOTS from selected land stations within the same area. The statistics are in the same form as tables 10 and 11.

Tables 21-23 provides quality statistics of pressure and wind for all DRIFTER reports received in the area 10°N - 90°N, 70°W - 40°E. The statistics are in the same form as tables 4-6.

#### 4.1 Table 13 - Radiosonde Monitoring Statistics (EUCOS): 50 hPa Geopotential height (metres)

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 50 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	50	30	13.5	1.4
01001	00	Z	50	25	58.3	-0.8
01028	12	Z	50	29	6.7	-1.3
01028	00	Z	50	30	6.9	0.2
01400	12	Z	50	21	72.5	72.1
01400	00	Z	50	19	77.6	77.1
01415	12	Z	50	29	8.7	-2.4
01415	00	Z	50	28	11.0	1.1
02365	00	Z	50	23	7.2	0.9
02365	12	Z	50	20	7.1	0.8
02591	12	Z	50	6	7.6	0.2
02591	00	Z	50	6	6.3	0.8
02836	12	Z	50	32	5.9	0.2
02836	00	Z	50	29	6.1	0.0
02963	00	Z	50	29	4.8	-1.2
02963	12	Z	50	29	8.1	-4.7
03005	00	Z	50	28	7.5	0.9
03005	12	Z	50	30	11.1	-4.8
03238	12	Z	50	4	6.0	-1.7
03238	00	Z	50	28	10.1	-0.3
03808	12	Z	50	28	10.0	-3.4
03808	00	Z	50	26	10.3	3.8
03918	00	Z	50	26	12.4	9.3
03918	12	Z	50	2	0.7	0.6
03953	00	Z	50	30	10.0	-6.5
03953	12	Z	50	30	10.6	-7.2
04018	12	Z	50	30	7.0	-4.1
04018	00	Z	50	30	5.5	1.0
04220	12	Z	50	28	19.6	-17.1
04220	00	Z	50	30	17.6	-15.8
04270	00	Z	50	28	22.1	-18.7
04270	12	Z	50	29	25.1	-22.7
04320	00	Z	50	30	20.5	-0.7
04320	12	Z	50	28	11.2	-6.0
04339	00	Z	50	26	14.4	-7.5
04339	12	Z	50	25	15.9	-9.0
04360	12	Z	50	24	13.5	-7.3
04360	00	Z	50	25	19.7	-12.8
06011	12	Z	50	22	24.9	-21.0



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	50	23	11.1	-3.2
06260	12	Z	50	4	12.8	11.3
06610	00	Z	50	29	26.8	0.8
06610	12	Z	50	31	15.5	4.5
07110	00	Z	50	27	38.7	-36.9
07110	12	Z	50	26	32.8	-26.0
07510	00	Z	50	26	28.4	-24.8
07510	12	Z	50	28	26.7	-23.3
07645	12	Z	50	22	26.2	10.7
07645	00	Z	50	22	20.6	-9.4
07761	12	Z	50	28	19.8	2.5
07761	00	Z	50	25	16.9	-7.8
08001	00	Z	50	29	12.2	0.5
08001	12	Z	50	28	11.1	1.6
08221	00	Z	50	28	10.3	3.8
08221	12	Z	50	30	12.1	5.2
08302	00	Z	50	30	10.2	-3.5
08302	12	Z	50	30	11.6	-7.7
08508	12	Z	50	29	10.7	5.4
08522	12	Z	50	30	6.6	3.1
10035	12	Z	50	30	15.0	9.8
10035	00	Z	50	30	15.7	12.4
10393	00	Z	50	30	9.3	2.8
10393	12	Z	50	30	9.7	0.2
10410	00	Z	50	30	12.8	-4.8
10410	12	Z	50	30	10.7	-1.8
10739	00	Z	50	30	10.0	1.4
10739	12	Z	50	30	11.5	0.7
11035	12	Z	50	30	16.9	3.3
11035	00	Z	50	30	15.7	-3.9
12982	12	Z	50	30	9.5	-2.7
12982	00	Z	50	29	9.9	1.3
16245	12	Z	50	30	14.0	1.9
16245	00	Z	50	29	10.9	3.6
16429	00	Z	50	30	12.0	6.8
16429	12	Z	50	29	8.4	1.4
16622	00	Z	50	18	19.1	10.6
16754	00	Z	50	26	9.8	5.6
17607	12	Z	50	24	19.7	-6.4
26435	12	Z	50	9	6.8	-2.5
2EERV	00	Z	50	1	8.6	-8.6
60018	12	Z	50	30	6.0	2.2
60018	00	Z	50	29	8.5	6.5

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
7JUNA4	12	Z	50	11	19.1	1.4
7JUNA4	00	Z	50	8	17.4	-0.3
9ZT9MR	00	Z	50	0	0.0	0.0
ASDE09	12	Z	50	1	45.0	45.0
ATGU3F	00	Z	50	3	23.1	-23.0
ATGU3F	12	Z	50	7	35.3	-34.6
BPMWB2	00	Z	50	10	10.8	-5.8
BPMWB2	12	Z	50	10	17.3	-14.7
DBLK	12	Z	50	21	19.6	17.7
FPUW5G	12	Z	50	4	9.3	6.1
GQBZLZ	12	Z	50	8	52.8	-40.3
GQBZLZ	00	Z	50	2	123.2	-93.4
JNKN7J	00	Z	50	5	29.5	27.8
JNKN7J	12	Z	50	7	14.4	9.4
KJJF9X	00	Z	50	6	13.5	-5.2
KJJF9X	12	Z	50	6	5.8	0.8
KMPLHP	12	Z	50	5	43.7	42.6
KMPLHP	00	Z	50	7	44.4	42.3
LRYQE3	00	Z	50	8	21.2	2.3
LRYQE3	12	Z	50	9	60.4	29.1
UXK5JT	00	Z	50	9	13.8	2.7
UXK5JT	12	Z	50	7	34.3	0.4
WDK38H	12	Z	50	17	17.2	-3.4
XKQLWQ	12	Z	50	9	43.2	29.8
YLV96W	12	Z	50	6	35.8	4.4
YLV96W	00	Z	50	5	23.0	3.3
ZVQEQC	00	Z	50	1	7.0	7.0

**4.2 Table 14 - Radiosonde Monitoring Statistics (EUCOS): 50 hPa Wind (m/s)**

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 50 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	50	30	2.8	0.3	0.2
01001	00	V	50	25	3.1	-0.9	0.5
01028	12	V	50	29	3.2	-0.1	0.3
01028	00	V	50	27	3.4	-0.5	0.2
01400	12	V	50	21	3.0	0.5	0.2
01400	00	V	50	14	2.8	0.0	0.0
01415	12	V	50	29	3.0	0.2	0.0
01415	00	V	50	26	3.9	0.4	0.8
02365	00	V	50	23	3.7	0.7	-0.6
02365	12	V	50	19	3.1	0.0	0.8
02591	12	V	50	6	3.0	0.5	0.3
02591	00	V	50	6	2.8	0.7	0.7
02836	12	V	50	30	2.8	-0.3	0.5
02836	00	V	50	29	3.3	0.3	-0.9
02963	00	V	50	26	2.4	0.1	-0.2
02963	12	V	50	28	3.3	0.2	0.3
03005	00	V	50	25	3.2	-0.3	0.2
03005	12	V	50	30	3.6	-0.7	-0.4
03238	12	V	50	4	2.9	0.7	-0.6
03238	00	V	50	26	4.0	0.7	-0.1
03808	12	V	50	28	4.5	0.7	-1.0
03808	00	V	50	24	4.2	0.8	-0.3
03918	00	V	50	26	4.3	0.5	-0.8
03918	12	V	50	2	3.9	1.3	1.6
03953	00	V	50	28	3.7	0.5	0.6
03953	12	V	50	30	4.1	0.6	0.0
04018	12	V	50	29	3.1	-0.4	0.4
04018	00	V	50	26	3.8	0.8	0.0
04220	12	V	50	28	3.3	0.4	-0.3
04220	00	V	50	28	3.3	-0.7	0.2
04270	00	V	50	24	4.4	-0.5	0.8
04270	12	V	50	29	3.7	0.4	0.1
04320	00	V	50	30	3.0	-0.5	1.0
04320	12	V	50	28	3.5	-0.2	0.6
04339	00	V	50	23	3.0	-0.3	-0.4
04339	12	V	50	25	2.3	0.0	-0.1
04360	12	V	50	24	3.0	-0.5	0.1
04360	00	V	50	22	4.1	-0.1	-0.1
06011	12	V	50	22	3.1	0.3	-1.3

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	50	23	4.9	0.0	-0.2
06260	12	V	50	4	3.5	0.9	-1.0
06610	00	V	50	29	6.0	1.5	-1.5
06610	12	V	50	30	5.3	1.5	-0.7
07110	00	V	50	27	3.5	0.2	-0.4
07110	12	V	50	26	3.1	0.8	-0.9
07510	00	V	50	26	3.7	0.4	-0.1
07510	12	V	50	28	4.4	-0.1	0.0
07645	12	V	50	22	4.2	-0.6	-1.1
07645	00	V	50	20	4.9	0.1	0.0
07761	12	V	50	28	6.5	-1.7	-0.2
07761	00	V	50	25	4.4	1.7	-0.2
08001	00	V	50	28	3.4	0.4	0.4
08001	12	V	50	28	4.4	0.1	-1.1
08221	00	V	50	28	4.0	0.4	-0.4
08221	12	V	50	30	4.3	0.6	-0.6
08302	00	V	50	28	4.0	-0.4	0.4
08302	12	V	50	30	3.8	-0.9	0.4
08508	12	V	50	29	3.0	0.1	0.0
08522	12	V	50	30	3.0	-1.2	-0.5
10035	12	V	50	30	4.7	-0.3	-0.4
10035	00	V	50	28	4.0	0.4	-0.8
10393	00	V	50	30	4.1	1.1	0.7
10393	12	V	50	30	4.1	0.2	-0.2
10410	00	V	50	29	4.3	0.7	0.1
10410	12	V	50	30	3.2	0.0	-0.3
10739	00	V	50	30	5.0	-0.1	0.3
10739	12	V	50	30	5.2	0.8	0.3
11035	12	V	50	30	6.2	0.0	-0.6
11035	00	V	50	27	4.5	0.6	0.1
12982	12	V	50	30	4.8	-0.2	-0.4
12982	00	V	50	29	4.5	1.0	0.9
16245	12	V	50	30	4.1	0.5	-0.1
16245	00	V	50	28	5.2	0.1	-1.1
16429	00	V	50	26	3.6	0.1	-0.6
16429	12	V	50	29	4.3	-0.4	-0.6
16622	00	V	50	16	4.7	-0.7	1.0
16754	00	V	50	24	4.5	-0.4	1.1
17607	12	V	50	6	7.7	-1.9	-1.5
26435	12	V	50	5	3.2	0.8	-1.2
2EERVT	00	V	50	1	3.6	-2.8	2.3
60018	12	V	50	30	3.9	-0.9	-1.2
60018	00	V	50	28	4.0	-0.7	1.3

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
7JUNA4	12	V	50	11	3.6	0.8	0.5
7JUNA4	00	V	50	8	2.5	0.6	-0.3
9ZT9MR	00	V	50	0	0.0	0.0	0.0
ASDE09	12	V	50	1	0.8	-0.1	0.8
ATGU3F	00	V	50	3	4.2	-0.4	3.8
ATGU3F	12	V	50	7	2.9	0.5	-1.5
BPMWB2	00	V	50	10	2.1	0.3	-0.1
BPMWB2	12	V	50	10	5.9	-0.5	0.9
DBLK	12	V	50	21	3.3	-0.4	-0.8
FPUW5G	12	V	50	4	3.9	-1.5	-3.1
GQBZLZ	12	V	50	8	3.6	0.3	1.1
GQBZLZ	00	V	50	2	4.9	2.3	3.4
JNKN7J	00	V	50	5	3.8	1.1	-0.5
JNKN7J	12	V	50	7	4.8	0.2	3.2
KJFF9X	00	V	50	6	4.9	-1.3	-1.6
KJFF9X	12	V	50	6	3.4	0.2	-1.3
KMPLHP	12	V	50	5	4.3	-2.0	3.0
KMPLHP	00	V	50	7	3.6	0.8	-0.7
LRYQE3	00	V	50	8	3.3	0.0	-0.4
LRYQE3	12	V	50	9	4.0	0.3	0.3
UXK5JT	00	V	50	9	4.6	0.3	1.1
UXK5JT	12	V	50	7	4.7	-1.1	-1.3
WDK38H	12	V	50	16	3.2	0.2	-0.9
XKQLWQ	12	V	50	9	6.4	2.0	0.2
YLV96W	12	V	50	6	4.4	1.3	0.3
YLV96W	00	V	50	5	2.2	0.5	-0.5
ZVQEQC	00	V	50	1	4.5	-0.1	-4.5

### 4.3 Table 15 - Radiosonde Monitoring Statistics (EUCOS): 100 hPa Geopotential height (metres)

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 100 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	100	30	12.3	1.2
01001	00	Z	100	29	44.2	-5.6
01028	12	Z	100	29	5.5	-1.7
01028	00	Z	100	30	6.8	-1.4
01400	12	Z	100	22	73.5	73.0
01400	00	Z	100	25	76.1	75.7
01415	12	Z	100	30	9.8	-3.6
01415	00	Z	100	28	9.5	-1.9
02365	00	Z	100	23	5.1	1.4
02365	12	Z	100	21	6.2	-0.7
02591	12	Z	100	7	3.7	-2.0
02591	00	Z	100	8	4.9	2.9
02836	12	Z	100	32	5.4	-1.4
02836	00	Z	100	29	4.5	-1.8
02963	00	Z	100	29	5.0	-2.4
02963	12	Z	100	29	5.2	-3.1
03005	00	Z	100	31	5.1	-2.3
03005	12	Z	100	31	8.4	-6.1
03238	12	Z	100	4	6.0	-2.9
03238	00	Z	100	30	7.5	-1.2
03808	12	Z	100	29	7.4	-1.2
03808	00	Z	100	29	6.4	1.5
03918	00	Z	100	26	7.7	4.6
03918	12	Z	100	2	4.4	4.2
03953	00	Z	100	30	9.2	-6.6
03953	12	Z	100	30	11.3	-8.0
04018	12	Z	100	30	5.3	-2.6
04018	00	Z	100	30	4.4	0.3
04220	12	Z	100	29	17.1	-15.4
04220	00	Z	100	30	16.3	-15.3
04270	00	Z	100	28	20.4	-17.8
04270	12	Z	100	29	22.2	-20.4
04320	00	Z	100	30	7.6	-4.2
04320	12	Z	100	29	9.7	-7.1
04339	00	Z	100	26	13.0	-10.0
04339	12	Z	100	28	19.3	-8.6
04360	12	Z	100	24	14.8	-10.5
04360	00	Z	100	27	15.1	-10.9
06011	12	Z	100	28	23.3	-20.0

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	100	24	8.6	-3.7
06260	12	Z	100	5	11.6	9.6
06610	00	Z	100	30	15.7	-3.7
06610	12	Z	100	31	10.6	-1.3
07110	00	Z	100	28	33.5	-32.4
07110	12	Z	100	27	30.5	-26.4
07510	00	Z	100	30	23.7	-21.4
07510	12	Z	100	30	22.8	-19.0
07645	12	Z	100	25	15.6	2.1
07645	00	Z	100	27	17.3	-9.0
07761	12	Z	100	29	18.5	-3.6
07761	00	Z	100	26	14.8	-7.4
08001	00	Z	100	29	13.2	0.0
08001	12	Z	100	29	9.9	1.3
08221	00	Z	100	30	10.3	0.0
08221	12	Z	100	30	11.2	3.3
08302	00	Z	100	30	10.9	-6.9
08302	12	Z	100	30	10.8	-8.5
08508	12	Z	100	29	11.3	8.6
08522	12	Z	100	30	8.2	6.1
10035	12	Z	100	31	11.7	9.0
10035	00	Z	100	30	11.2	9.7
10393	00	Z	100	30	10.2	1.0
10393	12	Z	100	30	6.6	-2.0
10410	00	Z	100	30	8.7	-5.5
10410	12	Z	100	30	9.2	-3.5
10739	00	Z	100	30	7.5	0.2
10739	12	Z	100	30	9.6	-1.5
11035	12	Z	100	30	12.4	-4.1
11035	00	Z	100	30	12.0	-8.2
12982	12	Z	100	30	8.0	-3.1
12982	00	Z	100	29	8.1	-1.0
16245	12	Z	100	30	8.6	-1.0
16245	00	Z	100	29	8.4	1.5
16429	00	Z	100	30	8.1	2.5
16429	12	Z	100	29	5.7	0.5
16622	00	Z	100	22	14.5	9.2
16754	00	Z	100	28	10.1	6.7
17607	12	Z	100	29	20.4	-5.1
26435	12	Z	100	15	4.9	-2.3
2EERVT	00	Z	100	1	8.9	-8.9
60018	12	Z	100	30	6.6	3.2
60018	00	Z	100	30	6.9	4.4

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
7JUNA4	12	Z	100	12	15.8	-2.1
7JUNA4	00	Z	100	9	7.8	1.0
9ZT9MR	00	Z	100	0	0.0	0.0
ASDE09	12	Z	100	1	39.8	39.8
ATGU3F	00	Z	100	4	25.7	-24.8
ATGU3F	12	Z	100	8	34.1	-33.8
BPMWB2	00	Z	100	14	13.5	-7.2
BPMWB2	12	Z	100	11	11.0	-7.1
DBLK	12	Z	100	21	23.4	21.8
FPUW5G	12	Z	100	4	14.2	12.6
GQBZLZ	12	Z	100	8	55.6	-42.3
GQBZLZ	00	Z	100	2	130.8	-99.5
JNKN7J	00	Z	100	5	29.6	28.8
JNKN7J	12	Z	100	8	18.6	15.7
KJJF9X	00	Z	100	6	10.4	-4.2
KJJF9X	12	Z	100	6	4.5	-0.9
KMPLHP	12	Z	100	5	42.1	41.2
KMPLHP	00	Z	100	7	48.2	46.8
LRYQE3	00	Z	100	9	9.4	-5.9
LRYQE3	12	Z	100	10	27.1	10.7
UXK5JT	00	Z	100	10	8.5	1.1
UXK5JT	12	Z	100	8	28.1	0.7
WDK38H	12	Z	100	18	12.9	-3.0
XKQLWQ	12	Z	100	11	47.6	16.1
YLV96W	12	Z	100	10	22.1	-4.0
YLV96W	00	Z	100	10	34.0	12.2
ZVQEQC	00	Z	100	1	0.3	-0.3



**4.4 Table 16 - Radiosonde Monitoring Statistics (EUCOS): 100 hPa Wind (m/s)**

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 100 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	100	30	3.0	0.6	-0.3
01001	00	V	100	28	2.3	-0.3	0.1
01028	12	V	100	29	3.2	-0.1	0.0
01028	00	V	100	28	2.6	-0.4	0.1
01400	12	V	100	21	2.8	0.6	0.4
01400	00	V	100	21	3.0	0.1	-0.7
01415	12	V	100	30	3.5	-0.4	-0.3
01415	00	V	100	27	3.2	1.3	0.1
02365	00	V	100	23	2.2	0.1	0.0
02365	12	V	100	20	2.4	0.7	-0.5
02591	12	V	100	7	3.7	0.3	-0.4
02591	00	V	100	8	3.4	-0.4	1.9
02836	12	V	100	30	2.6	0.1	-0.7
02836	00	V	100	29	2.6	0.6	0.1
02963	00	V	100	29	2.6	-0.4	0.2
02963	12	V	100	29	2.9	-0.4	-0.3
03005	00	V	100	28	2.5	-0.3	0.3
03005	12	V	100	30	2.9	0.9	-0.2
03238	12	V	100	4	3.2	2.2	1.4
03238	00	V	100	28	2.8	0.3	0.4
03808	12	V	100	29	3.3	-0.4	-0.3
03808	00	V	100	27	4.0	-0.4	-0.1
03918	00	V	100	26	3.5	-0.2	-0.1
03918	12	V	100	2	2.6	1.4	-1.6
03953	00	V	100	28	3.7	0.2	-1.2
03953	12	V	100	30	3.6	-0.6	-0.2
04018	12	V	100	30	2.6	-0.4	-0.4
04018	00	V	100	30	2.6	0.0	-0.5
04220	12	V	100	29	3.0	-0.2	0.9
04220	00	V	100	29	2.9	-0.2	0.6
04270	00	V	100	28	2.5	0.1	0.3
04270	12	V	100	29	3.5	-0.8	-0.5
04320	00	V	100	30	2.6	-0.2	-0.2
04320	12	V	100	29	3.1	0.2	-0.3
04339	00	V	100	26	2.6	0.0	-0.6
04339	12	V	100	28	3.0	-0.3	0.3
04360	12	V	100	24	2.9	0.2	-0.3
04360	00	V	100	27	2.9	-0.3	0.4
06011	12	V	100	28	2.5	0.8	0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	100	24	3.4	0.9	-1.5
06260	12	V	100	5	4.0	-0.8	2.2
06610	00	V	100	30	5.7	2.7	-2.0
06610	12	V	100	30	5.0	2.4	-0.8
07110	00	V	100	28	3.5	0.3	-0.1
07110	12	V	100	27	3.5	-0.2	-0.2
07510	00	V	100	29	3.7	0.2	-0.4
07510	12	V	100	30	4.6	-0.4	-0.4
07645	12	V	100	25	4.5	-0.6	-1.2
07645	00	V	100	24	4.4	0.1	-0.6
07761	12	V	100	29	6.5	0.9	-0.4
07761	00	V	100	26	4.5	0.7	-0.8
08001	00	V	100	29	3.9	0.2	-0.1
08001	12	V	100	29	4.1	0.2	0.1
08221	00	V	100	29	4.1	-0.1	-0.8
08221	12	V	100	30	4.7	0.2	0.4
08302	00	V	100	29	4.5	1.0	0.7
08302	12	V	100	30	4.3	0.1	0.0
08508	12	V	100	29	3.6	-1.1	0.2
08522	12	V	100	29	3.3	0.4	0.0
10035	12	V	100	30	3.5	-0.7	-0.2
10035	00	V	100	30	3.6	0.5	-0.1
10393	00	V	100	30	3.5	0.2	-0.8
10393	12	V	100	30	3.3	0.2	-0.4
10410	00	V	100	30	3.8	0.1	-0.1
10410	12	V	100	30	4.2	0.9	0.3
10739	00	V	100	30	4.0	0.1	0.3
10739	12	V	100	30	4.1	1.3	-1.1
11035	12	V	100	30	5.0	-0.4	0.8
11035	00	V	100	27	4.6	0.1	-0.6
12982	12	V	100	30	4.2	0.4	0.3
12982	00	V	100	29	4.7	0.1	0.3
16245	12	V	100	30	4.9	-0.8	-0.7
16245	00	V	100	28	4.5	0.5	0.7
16429	00	V	100	30	6.0	-0.7	1.3
16429	12	V	100	29	4.3	-0.7	0.1
16622	00	V	100	20	4.1	-0.7	-0.3
16754	00	V	100	28	4.5	-0.6	-1.0
17607	12	V	100	10	9.6	-2.3	-1.4
26435	12	V	100	12	3.2	0.8	-0.2
2EERVT	00	V	100	1	4.5	-1.5	-4.2
60018	12	V	100	30	3.3	0.0	-0.3
60018	00	V	100	29	4.0	-1.1	0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
7JUNA4	12	V	100	12	2.6	-0.5	-0.1
7JUNA4	00	V	100	9	3.6	0.3	-1.0
9ZT9MR	00	V	100	0	0.0	0.0	0.0
ASDE09	12	V	100	1	2.5	1.7	1.9
ATGU3F	00	V	100	4	2.5	-0.2	0.1
ATGU3F	12	V	100	8	2.3	-0.7	-1.0
BPMWB2	00	V	100	14	3.9	-1.0	-0.1
BPMWB2	12	V	100	11	4.0	-1.2	0.4
DBLK	12	V	100	21	2.9	-0.1	-0.8
FPUW5G	12	V	100	4	3.6	0.4	1.8
GQBZLZ	12	V	100	8	2.5	-0.7	-0.4
GQBZLZ	00	V	100	2	4.1	1.8	-3.7
JNKN7J	00	V	100	5	3.1	2.1	1.4
JNKN7J	12	V	100	8	4.4	2.2	-0.2
KJJF9X	00	V	100	6	4.1	-1.3	-0.1
KJJF9X	12	V	100	6	3.5	-0.4	1.6
KMPLHP	12	V	100	5	3.0	-0.4	-0.5
KMPLHP	00	V	100	7	2.8	1.2	0.3
LRYQE3	00	V	100	9	2.7	0.9	-0.2
LRYQE3	12	V	100	10	3.9	1.4	1.3
UXK5JT	00	V	100	10	3.7	0.8	0.8
UXK5JT	12	V	100	8	3.4	0.9	-0.4
WDK38H	12	V	100	17	3.1	-1.0	0.6
XKQLWQ	12	V	100	9	9.6	2.3	-1.1
YLV96W	12	V	100	10	4.8	0.3	1.5
YLV96W	00	V	100	10	4.6	-0.9	0.1
ZVQEQC	00	V	100	1	5.7	4.1	3.9

#### 4.5 Table 17 - Radiosonde Monitoring Statistics (EUCOS): 500 hPa Geopotential height (metres)

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 500 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	500	30	10.7	5.4
01001	00	Z	500	30	11.2	-5.4
01028	12	Z	500	30	4.5	-0.6
01028	00	Z	500	30	3.4	0.6
01400	12	Z	500	29	75.5	74.2
01400	00	Z	500	29	78.0	77.7
01415	12	Z	500	30	4.3	1.6
01415	00	Z	500	28	4.2	1.2
02365	00	Z	500	23	4.9	3.8
02365	12	Z	500	22	5.2	3.7
02591	12	Z	500	7	7.4	5.7
02591	00	Z	500	8	6.5	5.2
02836	12	Z	500	32	4.4	0.2
02836	00	Z	500	29	3.7	2.0
02963	00	Z	500	29	3.2	1.9
02963	12	Z	500	29	3.3	0.6
03005	00	Z	500	31	4.1	-0.8
03005	12	Z	500	31	5.4	-2.1
03238	12	Z	500	4	2.8	2.2
03238	00	Z	500	30	3.4	1.1
03808	12	Z	500	29	4.4	3.5
03808	00	Z	500	31	4.0	2.0
03918	00	Z	500	26	6.7	5.7
03918	12	Z	500	2	3.3	0.6
03953	00	Z	500	30	4.6	-2.3
03953	12	Z	500	30	3.9	-0.7
04018	12	Z	500	30	3.8	1.5
04018	00	Z	500	30	4.6	3.1
04220	12	Z	500	30	8.1	-6.3
04220	00	Z	500	30	8.3	-7.2
04270	00	Z	500	29	10.1	-8.1
04270	12	Z	500	30	12.9	-11.3
04320	00	Z	500	30	5.6	0.7
04320	12	Z	500	30	4.7	-0.1
04339	00	Z	500	29	8.0	-6.2
04339	12	Z	500	29	8.9	-6.0
04360	12	Z	500	24	7.8	-5.9
04360	00	Z	500	28	9.8	-5.2
06011	12	Z	500	28	13.8	-5.6

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	500	25	4.6	-2.6
06260	12	Z	500	5	2.9	-0.6
06610	00	Z	500	30	3.3	0.8
06610	12	Z	500	32	5.7	0.5
07110	00	Z	500	28	14.2	-13.3
07110	12	Z	500	30	12.4	-11.6
07510	00	Z	500	31	9.5	-5.1
07510	12	Z	500	33	5.4	-2.4
07645	12	Z	500	34	5.9	2.8
07645	00	Z	500	31	7.1	-0.5
07761	12	Z	500	30	8.0	1.7
07761	00	Z	500	28	7.3	2.5
08001	00	Z	500	31	6.3	5.3
08001	12	Z	500	29	4.8	4.0
08221	00	Z	500	30	5.4	4.4
08221	12	Z	500	30	6.6	5.7
08302	00	Z	500	30	6.3	-5.0
08302	12	Z	500	30	5.8	-5.1
08508	12	Z	500	29	8.9	7.7
08522	12	Z	500	30	7.6	7.2
10035	12	Z	500	31	12.5	12.1
10035	00	Z	500	30	12.4	12.0
10393	00	Z	500	30	6.0	1.5
10393	12	Z	500	31	2.9	-0.8
10410	00	Z	500	30	3.2	0.0
10410	12	Z	500	30	2.7	-1.3
10739	00	Z	500	30	5.3	3.7
10739	12	Z	500	31	5.4	4.1
11035	12	Z	500	30	7.2	-0.2
11035	00	Z	500	31	7.2	-4.5
12982	12	Z	500	30	4.3	0.2
12982	00	Z	500	29	3.1	-0.6
16245	12	Z	500	30	3.9	1.4
16245	00	Z	500	29	4.4	1.8
16429	00	Z	500	30	4.4	3.4
16429	12	Z	500	30	4.1	2.8
16622	00	Z	500	24	9.1	7.9
16754	00	Z	500	29	4.7	1.9
17607	12	Z	500	30	4.0	1.9
26435	12	Z	500	15	2.0	0.6
2EERVT	00	Z	500	1	10.1	-10.1
60018	12	Z	500	30	4.7	3.9
60018	00	Z	500	31	4.5	3.0

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
7JUNA4	12	Z	500	12	5.6	2.1
7JUNA4	00	Z	500	10	5.6	3.3
9ZT9MR	00	Z	500	0	0.0	0.0
ASDE09	12	Z	500	1	58.1	58.1
ATGU3F	00	Z	500	5	21.7	-20.9
ATGU3F	12	Z	500	9	24.0	-23.8
BPMWB2	00	Z	500	14	10.5	-7.8
BPMWB2	12	Z	500	13	7.3	-5.6
DBLK	12	Z	500	21	22.6	22.4
FPUW5G	12	Z	500	5	9.2	5.5
GQBZLZ	12	Z	500	8	49.5	-33.9
GQBZLZ	00	Z	500	3	37.7	15.1
JNKN7J	00	Z	500	7	32.1	32.1
JNKN7J	12	Z	500	8	33.6	33.3
KJJF9X	00	Z	500	6	9.9	-5.1
KJJF9X	12	Z	500	7	21.3	5.7
KMPLHP	12	Z	500	5	51.6	51.0
KMPLHP	00	Z	500	7	63.9	63.3
LRYQE3	00	Z	500	11	5.0	-1.0
LRYQE3	12	Z	500	11	6.1	0.9
UXK5JT	00	Z	500	10	8.3	-1.3
UXK5JT	12	Z	500	10	31.7	-8.7
WDK38H	12	Z	500	20	6.5	3.7
XKQLWQ	12	Z	500	11	30.1	19.1
YLV96W	12	Z	500	11	6.3	-4.5
YLV96W	00	Z	500	10	37.2	9.5
ZVQEQC	00	Z	500	1	2.8	2.8

**4.6 Table 18 - Radiosonde Monitoring Statistics (EUCOS): 500 hPa Wind (m/s)**

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 500 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	500	30	2.2	0.0	0.2
01001	00	V	500	30	2.6	0.1	0.5
01028	12	V	500	30	2.1	0.0	-0.1
01028	00	V	500	30	2.2	0.0	-0.5
01400	12	V	500	29	3.1	0.3	-0.2
01400	00	V	500	29	2.2	-0.2	-0.4
01415	12	V	500	30	3.8	-0.2	0.5
01415	00	V	500	27	3.6	0.4	-0.7
02365	00	V	500	23	2.3	-0.7	0.6
02365	12	V	500	22	2.3	-0.1	0.0
02591	12	V	500	7	2.3	-0.6	0.7
02591	00	V	500	8	2.6	0.8	-0.3
02836	12	V	500	30	2.6	0.3	0.3
02836	00	V	500	29	2.5	0.3	-0.2
02963	00	V	500	29	2.1	-0.4	-0.4
02963	12	V	500	29	2.0	0.4	0.0
03005	00	V	500	28	3.8	0.5	0.3
03005	12	V	500	30	3.1	0.2	-0.3
03238	12	V	500	4	2.5	0.3	-0.5
03238	00	V	500	30	2.7	0.5	-0.1
03808	12	V	500	29	3.1	0.5	-0.1
03808	00	V	500	29	3.7	0.6	-0.3
03918	00	V	500	26	3.0	0.1	-0.4
03918	12	V	500	2	3.4	-3.0	-0.1
03953	00	V	500	30	3.1	0.3	0.4
03953	12	V	500	30	3.4	0.6	-0.2
04018	12	V	500	30	2.7	0.0	-0.5
04018	00	V	500	30	2.7	0.0	-0.1
04220	12	V	500	30	2.8	0.4	-0.3
04220	00	V	500	30	3.5	0.0	0.8
04270	00	V	500	29	2.4	0.0	-0.7
04270	12	V	500	30	4.4	-0.4	-0.3
04320	00	V	500	30	3.0	0.5	-0.1
04320	12	V	500	30	2.7	0.5	0.3
04339	00	V	500	29	2.3	0.1	-0.3
04339	12	V	500	29	2.2	0.3	0.3
04360	12	V	500	24	3.3	-0.1	0.1
04360	00	V	500	28	3.9	-0.9	0.9
06011	12	V	500	28	2.4	0.4	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	500	25	2.5	0.9	0.1
06260	12	V	500	5	2.7	0.6	-1.4
06610	00	V	500	30	2.6	-0.3	-0.4
06610	12	V	500	30	3.8	-0.8	0.3
07110	00	V	500	28	3.2	-0.1	-0.4
07110	12	V	500	28	3.3	0.5	-0.2
07510	00	V	500	30	3.0	-0.4	-0.5
07510	12	V	500	30	3.3	-0.3	-0.3
07645	12	V	500	30	3.6	0.9	-0.7
07645	00	V	500	30	2.9	0.5	-0.4
07761	12	V	500	30	3.6	0.3	-0.9
07761	00	V	500	28	2.8	0.7	0.3
08001	00	V	500	29	3.7	0.4	0.8
08001	12	V	500	29	3.3	1.4	-0.6
08221	00	V	500	30	2.3	0.0	0.0
08221	12	V	500	30	2.4	0.8	-0.4
08302	00	V	500	30	2.9	-0.4	-0.1
08302	12	V	500	30	2.6	0.1	-0.3
08508	12	V	500	29	3.7	0.8	0.5
08522	12	V	500	30	2.3	0.5	-0.1
10035	12	V	500	30	2.7	0.0	-0.2
10035	00	V	500	30	2.5	0.2	-0.6
10393	00	V	500	30	3.0	0.3	-0.1
10393	12	V	500	30	2.4	0.7	-0.4
10410	00	V	500	30	3.1	0.6	-0.7
10410	12	V	500	30	3.4	0.3	0.1
10739	00	V	500	30	3.3	0.8	-0.2
10739	12	V	500	30	2.4	0.6	0.0
11035	12	V	500	30	4.2	1.0	0.8
11035	00	V	500	28	3.2	0.6	0.0
12982	12	V	500	30	3.6	0.8	-0.5
12982	00	V	500	29	3.0	0.1	0.0
16245	12	V	500	30	3.0	0.9	0.1
16245	00	V	500	28	3.1	0.4	-0.3
16429	00	V	500	30	3.4	0.7	-0.7
16429	12	V	500	30	3.5	0.2	-0.6
16622	00	V	500	24	3.3	0.4	0.3
16754	00	V	500	28	2.0	0.4	-0.4
17607	12	V	500	29	3.2	0.8	-0.9
26435	12	V	500	15	2.5	-0.2	0.8
2EERVT	00	V	500	1	3.4	-2.9	1.7
60018	12	V	500	30	2.9	1.1	0.5
60018	00	V	500	30	2.4	0.6	0.2



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
7JUNA4	12	V	500	12	3.1	-0.1	0.0
7JUNA4	00	V	500	10	3.3	-1.2	-0.5
9ZT9MR	00	V	500	0	0.0	0.0	0.0
ASDE09	12	V	500	1	1.3	0.1	-1.3
ATGU3F	00	V	500	5	1.3	-0.7	0.5
ATGU3F	12	V	500	9	2.6	0.1	-0.6
BPMWB2	00	V	500	14	2.1	0.1	0.0
BPMWB2	12	V	500	13	1.8	0.7	0.4
DBLK	12	V	500	21	2.6	-0.3	-0.1
FPUW5G	12	V	500	5	2.9	0.2	0.0
GQBZLZ	12	V	500	8	2.0	-1.2	0.9
GQBZLZ	00	V	500	3	3.3	-0.3	2.2
JNKN7J	00	V	500	7	2.4	-0.8	0.0
JNKN7J	12	V	500	8	2.6	0.6	0.2
KJFF9X	00	V	500	6	2.5	0.1	-0.2
KJFF9X	12	V	500	7	5.6	1.7	2.2
KMPLHP	12	V	500	5	2.3	0.0	-0.4
KMPLHP	00	V	500	7	3.4	-0.5	-0.7
LRYQE3	00	V	500	11	2.3	-0.2	0.1
LRYQE3	12	V	500	11	2.4	0.4	0.5
UXK5JT	00	V	500	10	2.3	0.6	0.0
UXK5JT	12	V	500	10	1.9	0.9	0.1
WDK38H	12	V	500	20	2.2	0.1	-0.1
XKQLWQ	12	V	500	11	5.9	1.0	-1.5
YLV96W	12	V	500	11	2.9	-0.4	-0.1
YLV96W	00	V	500	10	3.7	-0.4	1.6
ZVQEQC	00	V	500	1	5.0	3.7	-3.4

#### 4.7 Table 19 - Radiosonde Monitoring Statistics (EUCOS): 850 hPa Geopotential height (metres)

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 850 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	850	30	9.0	3.9
01001	00	Z	850	30	8.9	-7.0
01028	12	Z	850	30	3.3	-1.3
01028	00	Z	850	30	2.6	0.4
01400	12	Z	850	29	73.8	72.7
01400	00	Z	850	29	77.8	77.6
01415	12	Z	850	30	3.2	1.5
01415	00	Z	850	29	3.3	1.9
02365	00	Z	850	23	5.0	4.5
02365	12	Z	850	22	4.5	4.0
02591	12	Z	850	7	8.3	7.5
02591	00	Z	850	8	7.4	6.9
02836	12	Z	850	32	3.7	2.2
02836	00	Z	850	29	2.8	1.5
02963	00	Z	850	29	3.4	2.4
02963	12	Z	850	29	2.2	1.3
03005	00	Z	850	31	4.2	-2.6
03005	12	Z	850	31	4.1	-1.5
03238	12	Z	850	4	4.6	2.4
03238	00	Z	850	30	3.6	2.9
03808	12	Z	850	29	4.5	4.0
03808	00	Z	850	31	2.8	1.4
03918	00	Z	850	26	7.0	6.4
03918	12	Z	850	2	5.2	5.2
03953	00	Z	850	30	2.9	-0.8
03953	12	Z	850	30	4.3	0.6
04018	12	Z	850	30	2.2	0.1
04018	00	Z	850	30	3.0	0.4
04220	12	Z	850	30	5.9	-5.1
04220	00	Z	850	30	7.4	-6.1
04270	00	Z	850	29	7.2	-6.4
04270	12	Z	850	30	7.1	-6.0
04320	00	Z	850	30	5.4	0.1
04320	12	Z	850	29	4.8	-0.7
04339	00	Z	850	29	9.8	-8.7
04339	12	Z	850	29	10.4	-8.6
04360	12	Z	850	24	9.2	-7.5
04360	00	Z	850	28	9.1	-7.5
06011	12	Z	850	28	9.1	-1.6

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	850	25	1.6	0.1
06260	12	Z	850	5	3.2	-2.6
06610	00	Z	850	30	3.6	2.1
06610	12	Z	850	32	3.6	1.8
07110	00	Z	850	28	6.2	-4.1
07110	12	Z	850	30	3.0	-1.5
07510	00	Z	850	31	4.5	0.9
07510	12	Z	850	33	2.8	0.3
07645	12	Z	850	34	3.7	-0.2
07645	00	Z	850	31	3.4	-1.2
07761	12	Z	850	30	4.2	1.3
07761	00	Z	850	28	3.0	1.4
08001	00	Z	850	31	3.1	-0.5
08001	12	Z	850	29	3.1	1.2
08221	00	Z	850	30	2.2	1.5
08221	12	Z	850	30	2.6	1.3
08302	00	Z	850	30	9.0	-8.8
08302	12	Z	850	30	10.4	-10.0
08508	12	Z	850	29	6.6	4.6
08522	12	Z	850	30	5.0	4.3
10035	12	Z	850	31	12.3	11.8
10035	00	Z	850	30	12.8	12.6
10393	00	Z	850	30	6.8	2.0
10393	12	Z	850	31	3.0	-0.4
10410	00	Z	850	30	2.6	-0.3
10410	12	Z	850	30	3.2	-1.1
10739	00	Z	850	30	5.6	4.6
10739	12	Z	850	31	4.4	2.9
11035	12	Z	850	30	2.9	0.7
11035	00	Z	850	33	4.2	-0.2
12982	12	Z	850	30	3.9	1.5
12982	00	Z	850	30	3.9	1.0
16245	12	Z	850	30	2.9	2.2
16245	00	Z	850	30	3.5	2.3
16429	00	Z	850	30	2.6	1.3
16429	12	Z	850	30	2.9	1.5
16622	00	Z	850	25	10.5	9.6
16754	00	Z	850	29	3.5	1.8
17607	12	Z	850	31	3.7	1.3
26435	12	Z	850	15	1.6	0.1
2EERVT	00	Z	850	1	7.1	-7.1
60018	12	Z	850	31	2.6	-0.4
60018	00	Z	850	31	3.0	-0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
7JUNA4	12	Z	850	12	5.0	2.0
7JUNA4	00	Z	850	10	6.6	4.4
9ZT9MR	00	Z	850	2	17.4	-16.9
ASDE09	12	Z	850	1	67.8	67.8
ATGU3F	00	Z	850	5	23.3	-23.1
ATGU3F	12	Z	850	10	24.7	-24.3
BPMWB2	00	Z	850	14	8.0	-5.6
BPMWB2	12	Z	850	13	6.2	-4.6
DBLK	12	Z	850	21	18.0	17.8
FPUW5G	12	Z	850	5	6.0	3.4
GQBZLZ	12	Z	850	8	32.4	-28.4
GQBZLZ	00	Z	850	4	24.0	-24.0
JNKN7J	00	Z	850	7	36.5	36.3
JNKN7J	12	Z	850	8	39.8	39.7
KJJF9X	00	Z	850	6	4.4	-3.2
KJJF9X	12	Z	850	7	2.5	-0.7
KMPLHP	12	Z	850	5	60.1	59.9
KMPLHP	00	Z	850	7	69.1	68.4
LRYQE3	00	Z	850	12	3.2	-0.9
LRYQE3	12	Z	850	12	8.7	1.8
UXK5JT	00	Z	850	10	7.3	-0.6
UXK5JT	12	Z	850	11	6.0	0.2
WDK38H	12	Z	850	20	6.2	3.2
XKQLWQ	12	Z	850	11	13.5	5.5
YLV96W	12	Z	850	11	7.1	-4.1
YLV96W	00	Z	850	11	7.3	-4.1
ZVQEQC	00	Z	850	1	1.6	1.6

**4.8 Table 20 - Radiosonde Monitoring Statistics (EUCOS): 850 hPa Wind (m/s)**

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 850 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	850	30	3.9	0.8	1.2
01001	00	V	850	30	3.8	0.7	0.4
01028	12	V	850	30	2.6	-0.1	-0.3
01028	00	V	850	30	3.3	0.4	-0.2
01400	12	V	850	29	2.3	0.0	0.1
01400	00	V	850	29	2.3	0.6	0.3
01415	12	V	850	30	3.5	-0.9	0.9
01415	00	V	850	28	2.9	-0.4	0.2
02365	00	V	850	23	2.8	-0.2	0.6
02365	12	V	850	22	2.5	0.1	0.7
02591	12	V	850	7	3.1	0.3	-0.8
02591	00	V	850	8	2.2	-0.1	-0.2
02836	12	V	850	30	2.2	0.4	0.0
02836	00	V	850	29	3.2	-0.1	-0.7
02963	00	V	850	29	2.8	0.4	-0.6
02963	12	V	850	29	2.6	0.3	0.0
03005	00	V	850	28	2.3	-0.3	0.0
03005	12	V	850	30	2.8	0.3	-0.4
03238	12	V	850	4	1.6	0.2	0.5
03238	00	V	850	30	2.4	0.5	-0.3
03808	12	V	850	29	2.5	0.5	-0.8
03808	00	V	850	29	3.3	-0.3	-0.4
03918	00	V	850	26	2.3	0.6	0.0
03918	12	V	850	2	3.1	0.1	-0.7
03953	00	V	850	30	3.0	0.3	0.1
03953	12	V	850	30	2.6	0.5	-0.7
04018	12	V	850	30	3.6	0.6	-0.1
04018	00	V	850	30	4.2	-0.6	-0.7
04220	12	V	850	30	3.7	0.5	1.1
04220	00	V	850	30	3.8	1.1	0.3
04270	00	V	850	29	5.1	1.2	0.2
04270	12	V	850	30	4.8	0.1	0.5
04320	00	V	850	30	2.8	-0.2	0.1
04320	12	V	850	29	2.8	-0.5	0.0
04339	00	V	850	29	4.0	-0.3	0.7
04339	12	V	850	29	2.7	0.2	0.3
04360	12	V	850	24	6.1	0.9	0.6
04360	00	V	850	28	7.1	1.8	0.3
06011	12	V	850	28	2.6	-0.6	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	850	25	2.5	-0.3	-0.5
06260	12	V	850	5	3.3	1.8	0.7
06610	00	V	850	30	3.2	0.0	-0.1
06610	12	V	850	30	2.8	0.2	-0.5
07110	00	V	850	28	2.0	0.1	-0.1
07110	12	V	850	28	2.4	-0.1	-0.3
07510	00	V	850	30	2.8	-0.2	-0.4
07510	12	V	850	30	3.4	0.1	0.4
07645	12	V	850	30	4.6	0.2	0.4
07645	00	V	850	30	4.3	-0.9	1.3
07761	12	V	850	30	4.1	-0.3	0.3
07761	00	V	850	28	3.1	0.4	0.4
08001	00	V	850	30	3.5	-0.1	-0.1
08001	12	V	850	29	2.7	0.3	-0.1
08221	00	V	850	30	3.4	-0.1	0.0
08221	12	V	850	30	3.3	1.1	0.2
08302	00	V	850	30	2.7	0.1	0.2
08302	12	V	850	30	3.5	0.1	0.6
08508	12	V	850	29	3.3	0.5	-0.6
08522	12	V	850	30	3.1	-0.2	0.1
10035	12	V	850	30	2.3	0.2	-0.2
10035	00	V	850	30	2.9	-0.3	-0.3
10393	00	V	850	30	2.4	0.2	0.0
10393	12	V	850	30	2.4	0.3	-0.1
10410	00	V	850	30	2.4	-0.6	-0.2
10410	12	V	850	30	2.8	-0.2	-0.3
10739	00	V	850	30	2.9	-0.2	-0.3
10739	12	V	850	30	3.8	0.1	-0.4
11035	12	V	850	30	4.6	-0.3	0.6
11035	00	V	850	29	3.9	-0.4	-1.1
12982	12	V	850	30	3.6	-0.1	-0.4
12982	00	V	850	29	3.1	-0.3	0.0
16245	12	V	850	30	3.2	0.5	-0.3
16245	00	V	850	29	3.8	-0.7	0.1
16429	00	V	850	30	3.5	0.7	0.1
16429	12	V	850	30	2.7	0.3	-0.5
16622	00	V	850	25	3.4	0.3	0.7
16754	00	V	850	29	5.2	0.0	-1.7
17607	12	V	850	30	2.8	0.0	-0.4
26435	12	V	850	15	2.3	0.3	-0.4
2EERV	00	V	850	1	2.2	2.2	0.4
60018	12	V	850	30	2.8	0.0	-0.2
60018	00	V	850	30	2.5	-0.4	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
7JUNA4	12	V	850	12	2.6	0.0	0.3
7JUNA4	00	V	850	10	2.4	1.0	0.6
9ZT9MR	00	V	850	2	2.2	1.7	-0.5
ASDE09	12	V	850	1	2.3	-2.3	-0.4
ATGU3F	00	V	850	5	1.5	0.4	-0.3
ATGU3F	12	V	850	10	1.9	-0.5	-0.8
BPMWB2	00	V	850	14	2.8	0.6	-0.8
BPMWB2	12	V	850	13	1.8	0.1	0.5
DBLK	12	V	850	21	2.8	0.0	-0.2
FPUW5G	12	V	850	5	2.5	1.1	0.2
GQBZLZ	12	V	850	8	6.2	0.4	3.5
GQBZLZ	00	V	850	4	5.7	-3.2	3.4
JNKN7J	00	V	850	7	2.1	-1.0	0.5
JNKN7J	12	V	850	8	1.9	0.1	0.3
KJJF9X	00	V	850	6	2.8	0.7	0.0
KJJF9X	12	V	850	7	3.5	-0.5	-0.3
KMPLHP	12	V	850	5	2.4	0.7	-0.2
KMPLHP	00	V	850	7	2.4	0.7	-0.6
LRYQE3	00	V	850	12	4.0	-2.0	0.8
LRYQE3	12	V	850	12	1.5	-0.2	0.9
UXK5JT	00	V	850	10	1.7	0.6	-0.4
UXK5JT	12	V	850	11	3.8	-0.4	0.3
WDK38H	12	V	850	20	2.7	0.4	-0.5
XKQLWQ	12	V	850	11	4.5	1.2	0.0
YLV96W	12	V	850	11	3.0	0.2	1.8
YLV96W	00	V	850	11	3.3	-0.3	0.8
ZVQEQC	00	V	850	1	1.4	-0.6	-1.3

**4.9 Table 21 - Drifter Monitoring Statistics (EUCOS): Surface pressure (hpa)**

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 AREA : 10N - 90N, 70W - 40E  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

TIME = 99 => AVERAGE OF ALL OBSERVATIONS  
 GROSS ERROR LIMIT = 15 HPA

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
03380	99	P	SUR	54	0	1426	0	0.4	-0.5	0.6
1300001	99	P	SUR	11	-23	595	0	0.3	0.2	0.4
1300008	99	P	SUR	15	-38	600	0	0.3	0.1	0.3
1300130	99	P	SUR	28	-16	714	0	0.3	0.3	0.4
1300131	99	P	SUR	28	-17	496	0	0.3	0.0	0.3
1301608	99	P	SUR	35	-58	717	0	2.3	-0.5	2.3
1301619	99	P	SUR	36	-27	717	0	0.4	-0.2	0.4
1301622	99	P	SUR	12	-42	717	0	0.3	0.1	0.3
1301629	99	P	SUR	23	-47	717	0	0.3	0.0	0.3
1301700	99	P	SUR	23	-60	720	0	0.3	-0.2	0.3
1301706	99	P	SUR	21	-68	720	0	0.3	-0.1	0.3
1301712	99	P	SUR	23	-62	720	0	0.3	0.0	0.3
1301713	99	P	SUR	17	-69	720	0	0.4	-0.1	0.4
1301714	99	P	SUR	24	-58	719	0	0.3	0.1	0.3
1301718	99	P	SUR	30	-47	720	0	0.4	0.1	0.4
1301719	99	P	SUR	27	-57	720	0	0.4	0.5	0.7
1301723	99	P	SUR	18	-47	720	0	0.4	0.8	0.9
1301725	99	P	SUR	25	-34	719	0	0.3	0.0	0.3
1301726	99	P	SUR	24	-40	720	0	0.3	0.0	0.3
1301731	99	P	SUR	25	-40	719	0	0.3	0.1	0.4
1301735	99	P	SUR	31	-44	720	0	0.4	-0.9	1.0
1301736	99	P	SUR	26	-41	720	0	0.3	0.1	0.3
1301737	99	P	SUR	29	-60	720	0	0.4	-0.1	0.4
1301763	99	P	SUR	11	-34	1	1	0.0	0.0	0.0
1301767	99	P	SUR	31	-17	720	0	0.3	-0.4	0.5
1301769	99	P	SUR	30	-20	719	0	0.3	1.2	1.2
1301770	99	P	SUR	30	-18	720	0	0.4	0.1	0.4
1301771	99	P	SUR	32	-16	697	0	0.5	0.0	0.5
1301773	99	P	SUR	39	-13	719	0	0.4	0.0	0.4
1301774	99	P	SUR	33	-56	719	0	0.4	0.2	0.5
1301777	99	P	SUR	40	-30	718	0	0.4	0.2	0.4
1301778	99	P	SUR	30	-22	720	0	0.4	0.0	0.4
1301779	99	P	SUR	24	-51	720	0	0.3	0.0	0.3
1301783	99	P	SUR	20	-57	718	0	0.3	0.4	0.5
1301792	99	P	SUR	19	-45	711	0	0.3	-0.5	0.6
1301793	99	P	SUR	57	-19	691	0	0.5	0.1	0.5



DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
1301794	99	P	SUR	42	-16	701	0	0.4	0.2	0.4
1301795	99	P	SUR	14	-35	709	0	0.3	0.0	0.3
1301796	99	P	SUR	16	-39	702	0	0.3	0.2	0.3
1301797	99	P	SUR	19	-42	698	0	0.3	0.2	0.4
1301798	99	P	SUR	32	-21	716	0	0.4	0.3	0.5
1301799	99	P	SUR	30	-29	703	0	0.3	0.1	0.3
1501638	99	P	SUR	15	-21	715	0	0.3	0.1	0.3
1701715	99	P	SUR	14	-49	676	0	0.3	-0.1	0.3
1801560	99	P	SUR	21	-65	446	0	0.3	0.4	0.4
1801671	99	P	SUR	49	-48	709	0	0.5	-0.1	0.5
1801678	99	P	SUR	46	-42	702	0	0.5	0.2	0.6
1801681	99	P	SUR	35	13	716	0	0.3	-0.3	0.5
1801735	99	P	SUR	46	-4	719	0	0.4	0.3	0.5
1801768	99	P	SUR	87	-8	718	0	0.4	0.2	0.4
2601714	99	P	SUR	84	37	603	0	0.9	0.4	0.9
2601716	99	P	SUR	83	30	656	0	0.5	-0.8	0.9
2801966	99	P	SUR	36	14	704	0	0.4	0.0	0.4
2801988	99	P	SUR	49	0	415	2	0.3	0.0	0.3
2802061	99	P	SUR	82	22	718	668	4.9	-0.5	4.9
2802066	99	P	SUR	88	4	718	0	0.4	0.0	0.4
2802074	99	P	SUR	55	-57	163	0	0.3	-0.3	0.5
2802075	99	P	SUR	45	-49	718	0	0.7	0.1	0.7
2802076	99	P	SUR	60	-38	716	0	0.5	-0.5	0.7
2802077	99	P	SUR	60	-36	715	0	0.4	0.3	0.5
3801550	99	P	SUR	76	-16	710	135	0.5	-0.4	0.7
3801569	99	P	SUR	51	-50	708	0	0.4	0.0	0.4
3801572	99	P	SUR	37	18	106	0	0.3	-0.2	0.3
3801576	99	P	SUR	35	17	708	0	0.3	-0.5	0.6
3801596	99	P	SUR	34	-44	719	0	0.5	-0.2	0.5
4100040	99	P	SUR	15	-53	4301	0	0.3	-0.5	0.6
4100043	99	P	SUR	21	-65	4300	0	0.3	-0.6	0.7
4100044	99	P	SUR	22	-59	4300	0	0.3	-0.5	0.6
4100046	99	P	SUR	24	-68	4301	0	0.4	0.0	0.4
4100049	99	P	SUR	28	-63	4301	0	0.4	-0.5	0.7
4100052	99	P	SUR	18	-65	4064	0	0.3	-1.1	1.2
4100053	99	P	SUR	18	-66	4230	0	0.3	-1.0	1.0
4100056	99	P	SUR	18	-65	250	0	0.3	-0.9	1.0
4100139	99	P	SUR	20	-38	716	0	0.3	0.1	0.4
4100300	99	P	SUR	16	-57	681	0	0.3	0.1	0.3
4101618	99	P	SUR	36	-56	600	0	0.5	-0.1	0.5
4101656	99	P	SUR	48	-25	717	0	1.4	0.0	1.4
4101663	99	P	SUR	33	-34	652	0	0.3	-0.2	0.3
4101665	99	P	SUR	68	-6	716	0	0.4	-0.3	0.5

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101696	99	P	SUR	27	-36	643	0	0.4	-0.2	0.4
4101717	99	P	SUR	16	-62	578	0	0.3	-1.2	1.2
4101719	99	P	SUR	20	-41	716	0	0.3	-0.1	0.3
4101725	99	P	SUR	18	-63	713	0	0.3	0.0	0.3
4101727	99	P	SUR	26	-44	717	0	0.4	0.0	0.4
4101728	99	P	SUR	29	-39	717	0	0.4	0.2	0.4
4101729	99	P	SUR	31	-57	717	12	1.8	0.0	1.8
4101730	99	P	SUR	15	-19	717	0	0.3	0.3	0.5
4101743	99	P	SUR	38	-15	717	0	0.3	-0.1	0.4
4101753	99	P	SUR	33	-45	717	0	2.2	-0.1	2.2
4101755	99	P	SUR	37	-50	717	0	0.5	0.2	0.5
4101756	99	P	SUR	12	-62	648	0	0.4	-0.7	0.8
4101842	99	P	SUR	69	16	720	0	0.4	-0.6	0.7
4101843	99	P	SUR	74	9	719	0	0.5	-0.2	0.5
4101845	99	P	SUR	68	2	720	0	0.4	0.1	0.4
4101851	99	P	SUR	30	-57	720	0	0.4	-0.5	0.7
4102547	99	P	SUR	27	-66	716	0	0.5	0.2	0.5
4102552	99	P	SUR	17	-69	719	0	0.4	0.0	0.4
4102557	99	P	SUR	14	-65	718	0	0.4	0.1	0.4
4102559	99	P	SUR	41	-66	382	0	0.4	0.0	0.4
4102561	99	P	SUR	15	-66	720	0	0.3	0.0	0.3
41040	99	P	SUR	15	-53	720	0	0.3	-0.5	0.6
41043	99	P	SUR	21	-65	720	0	0.3	-0.6	0.7
41044	99	P	SUR	22	-59	720	0	0.3	-0.5	0.6
41046	99	P	SUR	24	-68	720	0	0.4	0.0	0.4
41049	99	P	SUR	28	-63	720	0	0.4	-0.5	0.7
41052	99	P	SUR	18	-65	689	0	0.3	-1.1	1.1
41053	99	P	SUR	19	-66	718	0	0.3	-1.0	1.0
41056	99	P	SUR	18	-66	252	0	0.3	-1.0	1.0
4200059	99	P	SUR	15	-67	4302	0	0.4	-0.6	0.7
4200060	99	P	SUR	16	-63	4300	0	0.3	-0.3	0.5
4200085	99	P	SUR	18	-67	3486	0	0.3	-0.8	0.8
42059	99	P	SUR	15	-68	720	0	0.4	-0.6	0.7
42060	99	P	SUR	16	-63	720	0	0.3	-0.3	0.5
42085	99	P	SUR	18	-67	702	0	0.3	-0.8	0.9
4400005	99	P	SUR	43	-69	4301	0	0.5	-0.4	0.6
4400008	99	P	SUR	40	-69	4301	0	0.4	-0.7	0.8
4400011	99	P	SUR	41	-67	4298	0	0.5	-0.6	0.8
4400027	99	P	SUR	44	-67	4296	0	0.5	-0.7	0.9
4400033	99	P	SUR	44	-69	703	0	0.4	-1.1	1.2
4400034	99	P	SUR	44	-68	690	0	0.5	-0.6	0.8
4400037	99	P	SUR	43	-68	703	0	0.6	0.2	0.6
4400150	99	P	SUR	43	-64	708	0	0.5	0.0	0.5

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4400488	99	P	SUR	45	-61	476	0	0.6	-0.1	0.6
4400489	99	P	SUR	45	-61	466	0	0.7	-0.1	0.7
44005	99	P	SUR	43	-69	720	0	0.4	-0.4	0.6
44008	99	P	SUR	41	-69	720	0	0.4	-0.7	0.8
44011	99	P	SUR	41	-67	720	0	0.5	-0.6	0.8
4401581	99	P	SUR	36	-63	717	54	1.3	-0.2	1.3
4401582	99	P	SUR	28	-44	716	2	0.8	0.4	0.9
4401584	99	P	SUR	31	-47	717	0	0.4	-0.1	0.4
4401585	99	P	SUR	28	-57	717	0	0.5	0.0	0.5
4401587	99	P	SUR	80	26	307	44	5.0	-2.6	5.7
4401588	99	P	SUR	69	15	717	0	0.4	-0.2	0.5
4401864	99	P	SUR	29	-57	623	0	0.4	-0.2	0.4
4402603	99	P	SUR	68	12	701	0	0.5	-0.7	0.9
4402613	99	P	SUR	37	-12	719	0	0.3	-0.4	0.5
4402618	99	P	SUR	31	-62	720	0	0.4	0.2	0.5
4402656	99	P	SUR	35	-34	720	1	1.8	0.1	1.8
4402660	99	P	SUR	25	-53	720	0	0.3	0.3	0.5
4402663	99	P	SUR	33	-13	717	0	0.3	0.0	0.3
4402670	99	P	SUR	22	-59	720	0	0.3	-0.1	0.3
4402672	99	P	SUR	20	-56	720	0	0.3	-0.1	0.3
4402674	99	P	SUR	27	-67	720	0	0.4	0.1	0.4
4402675	99	P	SUR	24	-45	720	0	0.4	-0.1	0.4
4402676	99	P	SUR	31	-34	720	0	0.3	0.1	0.3
44027	99	P	SUR	44	-67	720	0	0.5	-0.7	0.9
4402721	99	P	SUR	35	-9	720	0	0.3	0.2	0.3
4402726	99	P	SUR	51	-31	720	0	0.4	-0.1	0.4
4402729	99	P	SUR	41	-49	719	0	0.5	0.2	0.6
4402730	99	P	SUR	43	-37	719	0	0.5	-0.1	0.5
4402731	99	P	SUR	48	-49	718	0	0.7	0.4	0.8
4402732	99	P	SUR	44	-18	720	0	0.5	0.0	0.5
4402733	99	P	SUR	45	-54	717	0	0.6	0.4	0.7
4402735	99	P	SUR	46	-36	720	0	0.5	-0.3	0.5
4402736	99	P	SUR	44	-17	720	0	0.4	-0.1	0.4
4402737	99	P	SUR	52	-43	718	0	0.5	0.0	0.5
4402738	99	P	SUR	50	-54	718	0	0.5	-0.7	0.9
4402739	99	P	SUR	47	-42	720	0	0.6	0.0	0.6
4402740	99	P	SUR	49	-65	720	0	0.4	0.4	0.6
4402741	99	P	SUR	47	-33	720	0	0.6	0.0	0.6
4402742	99	P	SUR	47	-20	719	0	0.5	-0.3	0.6
4402743	99	P	SUR	43	-33	717	0	0.4	-0.6	0.8
4402744	99	P	SUR	40	-56	720	0	0.6	0.1	0.6
4402746	99	P	SUR	47	-5	321	1	1.4	-0.7	1.5
4402747	99	P	SUR	43	-32	720	0	0.4	0.1	0.5

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4402749	99	P	SUR	52	-41	719	0	0.4	-0.1	0.4
4402750	99	P	SUR	54	-39	719	0	0.4	-0.4	0.5
4402878	99	P	SUR	36	-59	587	0	0.5	0.3	0.6
4402879	99	P	SUR	39	-48	668	0	0.6	0.4	0.7
4402880	99	P	SUR	35	-35	341	0	0.4	0.4	0.6
4402881	99	P	SUR	50	-22	630	0	0.5	0.0	0.5
4402882	99	P	SUR	31	-56	699	0	0.4	0.4	0.6
4402885	99	P	SUR	35	-47	690	0	0.5	0.4	0.6
44033	99	P	SUR	44	-69	706	0	0.5	-1.0	1.2
44034	99	P	SUR	44	-68	693	0	0.5	-0.6	0.8
4403558	99	P	SUR	46	-6	450	0	1.2	-0.2	1.2
4403568	99	P	SUR	38	-36	717	0	0.4	0.2	0.5
4403569	99	P	SUR	42	-24	717	0	0.4	-0.2	0.4
44037	99	P	SUR	44	-68	706	0	0.6	0.2	0.7
44078	99	P	SUR	60	-40	689	0	0.6	-0.7	0.9
44150	99	P	SUR	43	-64	707	0	0.5	0.0	0.5
44258	99	P	SUR	45	-63	716	0	0.5	-0.1	0.5
44488	99	P	SUR	45	-61	686	0	0.6	-0.1	0.6
44489	99	P	SUR	46	-61	668	0	0.6	-0.1	0.6
4601782	99	P	SUR	29	-23	720	0	0.3	0.4	0.5
4601818	99	P	SUR	78	-4	665	0	0.7	0.2	0.8
4701554	99	P	SUR	87	-8	633	0	0.4	-0.2	0.5
4701555	99	P	SUR	88	7	633	0	0.4	-0.2	0.4
4701558	99	P	SUR	79	-18	56	0	0.5	-4.7	4.7
4701560	99	P	SUR	88	-4	650	0	0.4	-0.1	0.4
4701561	99	P	SUR	87	8	648	0	0.4	0.2	0.4
4801763	99	P	SUR	83	-27	702	0	0.7	0.0	0.7
4801771	99	P	SUR	73	-68	708	674	1.5	-11.9	12.0
4802506	99	P	SUR	56	-14	718	0	0.4	0.1	0.5
4802592	99	P	SUR	87	-38	661	0	0.4	-0.1	0.4
4802602	99	P	SUR	59	-29	634	0	0.4	0.0	0.4
4802603	99	P	SUR	84	10	632	0	0.4	-0.1	0.5
4802663	99	P	SUR	68	-60	718	0	2.0	-0.6	2.0
4802664	99	P	SUR	84	-55	714	0	0.5	0.0	0.5
4803978	99	P	SUR	77	-12	718	0	0.6	-0.2	0.7
4804002	99	P	SUR	36	13	703	0	0.3	-0.5	0.6
5801958	99	P	SUR	21	-65	52	0	0.2	0.3	0.3
5801959	99	P	SUR	21	-60	634	0	0.3	0.4	0.5
5801972	99	P	SUR	52	-53	713	0	0.4	-0.1	0.5
5801976	99	P	SUR	45	-49	714	0	0.6	0.0	0.6
5801983	99	P	SUR	36	-19	439	0	0.4	0.2	0.4
5802034	99	P	SUR	47	-8	720	0	0.4	0.0	0.4
5802061	99	P	SUR	88	-4	718	0	0.4	0.2	0.5

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
5802068	99	P	SUR	47	-52	713	0	0.4	0.5	0.7
5802071	99	P	SUR	71	-18	180	62	0.9	0.5	1.0
5802077	99	P	SUR	32	-60	714	0	0.4	0.0	0.4
6100001	99	P	SUR	43	8	702	0	0.5	-0.2	0.6
6100002	99	P	SUR	42	5	715	0	0.5	-0.3	0.6
6100196	99	P	SUR	42	4	714	0	0.5	0.4	0.6
6100197	99	P	SUR	40	4	616	0	0.5	0.0	0.5
6100198	99	P	SUR	37	-2	710	0	0.4	0.2	0.4
6100280	99	P	SUR	41	1	700	0	0.5	0.0	0.5
6100281	99	P	SUR	40	0	713	0	0.6	0.2	0.6
6100417	99	P	SUR	38	0	714	0	0.3	0.3	0.4
6100430	99	P	SUR	40	2	714	0	0.4	0.2	0.4
6101007	99	P	SUR	36	25	86	0	0.6	-0.4	0.7
6101009	99	P	SUR	35	25	84	0	0.5	-0.7	0.8
6101031	99	P	SUR	42	8	713	0	0.4	-0.1	0.4
6102810	99	P	SUR	42	7	97	0	0.6	-0.2	0.6
6102812	99	P	SUR	38	4	579	0	0.3	-0.4	0.5
6200001	99	P	SUR	45	-5	711	0	0.5	0.0	0.5
6200024	99	P	SUR	44	-3	249	0	0.4	0.3	0.5
6200025	99	P	SUR	44	-6	224	0	0.3	0.2	0.4
6200029	99	P	SUR	49	-12	715	0	0.5	-0.5	0.7
6200050	99	P	SUR	50	-4	715	0	0.4	-0.1	0.4
6200081	99	P	SUR	51	-13	716	0	0.4	-0.2	0.5
6200082	99	P	SUR	44	-8	714	0	1.4	0.4	1.5
6200083	99	P	SUR	43	-9	390	0	1.0	-0.1	1.0
6200084	99	P	SUR	42	-9	713	0	0.5	0.2	0.5
6200085	99	P	SUR	36	-7	711	0	0.3	0.3	0.4
6200086	99	P	SUR	55	7	283	0	0.4	-0.5	0.6
6200087	99	P	SUR	55	7	366	0	0.5	-0.7	0.8
6200091	99	P	SUR	53	-5	715	0	0.4	-0.2	0.5
6200092	99	P	SUR	51	-11	716	0	0.4	-0.2	0.4
6200093	99	P	SUR	55	-10	716	0	0.4	-0.2	0.5
6200094	99	P	SUR	52	-7	716	0	0.5	-0.2	0.5
6200095	99	P	SUR	53	-16	715	0	0.4	-0.3	0.5
6200103	99	P	SUR	50	-3	715	0	0.4	-0.4	0.6
6200163	99	P	SUR	47	-8	714	0	0.4	-0.2	0.5
6200191	99	P	SUR	41	-10	616	0	0.5	-0.5	0.7
6200192	99	P	SUR	40	-10	463	0	0.7	0.1	0.7
6200199	99	P	SUR	40	-9	411	0	0.5	-0.4	0.6
6200200	99	P	SUR	36	-8	175	0	0.3	-0.4	0.5
6201065	99	P	SUR	54	7	643	0	0.4	0.9	1.0
6201066	99	P	SUR	55	7	707	0	0.4	0.2	0.4
6201081	99	P	SUR	38	-9	688	0	0.4	-0.5	0.6

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6202597	99	P	SUR	47	-31	717	0	0.5	0.1	0.5
6202598	99	P	SUR	41	-28	717	0	0.4	0.1	0.4
6202637	99	P	SUR	64	-9	717	0	0.3	0.0	0.3
6202639	99	P	SUR	29	-34	674	0	0.3	-0.2	0.4
6202644	99	P	SUR	38	-42	649	0	0.7	0.2	0.7
62029	99	P	SUR	49	-12	1438	0	0.5	-0.4	0.7
6203516	99	P	SUR	42	-18	718	0	0.4	-0.1	0.4
6203607	99	P	SUR	31	-25	717	6	2.4	-0.4	2.4
6203612	99	P	SUR	33	-54	716	0	1.0	0.3	1.0
6203613	99	P	SUR	48	-9	715	0	0.7	0.2	0.7
6203621	99	P	SUR	29	-40	712	0	0.3	-0.1	0.3
6203624	99	P	SUR	39	-62	717	16	1.2	-0.1	1.2
6203625	99	P	SUR	31	-35	717	0	0.3	-0.2	0.4
6203632	99	P	SUR	30	-51	717	13	3.1	0.4	3.1
6203634	99	P	SUR	33	-40	716	0	0.3	0.2	0.4
6203639	99	P	SUR	29	-26	715	0	0.3	-0.2	0.4
6203640	99	P	SUR	27	-66	714	0	0.6	-0.1	0.6
6203651	99	P	SUR	43	-19	716	0	0.4	0.2	0.5
6203655	99	P	SUR	85	36	717	0	0.4	-0.2	0.5
6203656	99	P	SUR	88	-3	716	0	0.4	0.3	0.5
6203660	99	P	SUR	86	2	716	0	0.5	-0.1	0.5
6203661	99	P	SUR	88	32	717	0	0.4	-0.1	0.4
6203667	99	P	SUR	86	30	717	0	0.5	-0.3	0.6
6203669	99	P	SUR	80	16	716	0	0.6	-0.4	0.7
6203741	99	P	SUR	61	-6	715	0	0.4	0.0	0.4
6203744	99	P	SUR	72	14	708	0	0.4	0.2	0.4
6203753	99	P	SUR	56	-52	720	0	0.4	-0.4	0.6
6203755	99	P	SUR	29	-19	720	0	0.3	-0.4	0.5
6203766	99	P	SUR	28	-52	120	0	0.0	-11.5	11.5
6203768	99	P	SUR	28	-29	720	0	0.3	0.2	0.3
6203771	99	P	SUR	26	-42	720	0	0.3	0.0	0.3
6203773	99	P	SUR	33	-60	720	0	0.5	-0.6	0.7
6203824	99	P	SUR	62	-12	718	0	0.4	0.9	0.9
6203825	99	P	SUR	63	-8	719	0	0.3	0.2	0.3
6203826	99	P	SUR	63	-12	720	0	0.4	0.0	0.4
6203827	99	P	SUR	66	12	702	0	0.5	-0.2	0.6
6203839	99	P	SUR	33	-54	720	0	0.4	-0.2	0.5
6203840	99	P	SUR	26	-50	720	0	0.4	0.2	0.4
6203842	99	P	SUR	29	-27	720	0	0.3	0.0	0.3
6203844	99	P	SUR	45	-23	720	0	0.5	0.2	0.5
6203845	99	P	SUR	57	-7	719	0	0.3	-0.4	0.5
6203846	99	P	SUR	29	-29	720	0	0.3	-0.2	0.3
6203848	99	P	SUR	56	-18	720	0	0.4	0.0	0.4

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6203849	99	P	SUR	25	-44	717	0	0.4	0.0	0.4
6203853	99	P	SUR	69	5	720	0	0.3	0.0	0.3
6203854	99	P	SUR	59	-43	718	0	0.5	0.3	0.6
6203855	99	P	SUR	68	12	719	0	0.5	-0.2	0.5
6203861	99	P	SUR	25	-45	720	0	0.4	0.1	0.4
6203864	99	P	SUR	69	-6	718	0	0.5	0.1	0.5
6203865	99	P	SUR	64	-33	720	0	0.6	0.0	0.6
6203866	99	P	SUR	69	15	720	0	0.4	0.0	0.4
6203888	99	P	SUR	11	-29	719	0	0.3	0.0	0.3
6204603	99	P	SUR	41	7	653	0	0.3	0.4	0.5
6204604	99	P	SUR	39	4	674	0	0.3	-1.0	1.0
6204605	99	P	SUR	42	7	156	35	1.7	12.9	13.0
6204607	99	P	SUR	37	9	344	0	0.4	-3.1	3.1
6204609	99	P	SUR	40	3	668	0	2.2	-1.0	2.5
6204610	99	P	SUR	39	1	533	0	0.3	0.0	0.3
6204611	99	P	SUR	39	1	525	0	0.3	0.1	0.3
62050	99	P	SUR	50	-4	1440	0	0.4	-0.1	0.5
62081	99	P	SUR	51	-13	1438	0	0.4	-0.2	0.5
62091	99	P	SUR	53	-5	715	0	0.4	-0.2	0.5
62092	99	P	SUR	51	-11	715	0	0.4	-0.2	0.4
62093	99	P	SUR	55	-10	715	0	0.4	-0.2	0.5
62094	99	P	SUR	52	-7	715	0	0.5	-0.2	0.5
62095	99	P	SUR	53	-16	714	0	0.4	-0.3	0.5
62102	99	P	SUR	58	2	1440	0	0.6	0.0	0.6
62103	99	P	SUR	50	-3	1440	0	0.5	-0.4	0.6
62104	99	P	SUR	57	1	1438	0	0.5	-0.2	0.5
62105	99	P	SUR	55	-13	1439	0	0.6	-0.2	0.6
62107	99	P	SUR	50	-6	374	0	0.5	-0.1	0.5
62112	99	P	SUR	58	0	1433	0	0.4	0.1	0.4
62113	99	P	SUR	58	0	1440	0	0.5	-0.3	0.6
62114	99	P	SUR	58	0	960	0	0.4	0.3	0.5
62115	99	P	SUR	58	-3	1433	0	0.4	-0.1	0.4
62116	99	P	SUR	58	1	1440	0	0.5	-0.2	0.5
62118	99	P	SUR	58	1	1440	0	0.4	0.3	0.5
62119	99	P	SUR	57	2	1440	0	0.4	-0.2	0.5
62120	99	P	SUR	56	2	1436	0	0.6	-0.1	0.6
62121	99	P	SUR	54	3	1440	0	0.6	0.2	0.6
62122	99	P	SUR	57	2	1434	0	0.5	-0.1	0.5
62124	99	P	SUR	54	-4	1431	0	0.4	0.0	0.4
62127	99	P	SUR	54	1	1434	0	0.6	0.2	0.6
62129	99	P	SUR	58	0	1440	0	0.5	-0.2	0.5
62130	99	P	SUR	59	1	1422	0	0.5	-0.3	0.6
62131	99	P	SUR	54	1	1432	0	0.5	0.3	0.6

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62132	99	P	SUR	56	2	1436	0	0.7	0.3	0.8
62133	99	P	SUR	57	1	1440	0	0.6	0.0	0.6
62134	99	P	SUR	58	1	1424	0	0.4	0.0	0.4
62135	99	P	SUR	54	2	1326	0	0.5	0.2	0.6
62140	99	P	SUR	57	1	1432	0	0.5	0.0	0.5
62141	99	P	SUR	58	0	1118	0	0.6	-0.5	0.7
62143	99	P	SUR	58	2	1440	0	0.5	0.5	0.7
62144	99	P	SUR	53	2	1440	0	0.5	0.2	0.5
62145	99	P	SUR	53	3	1374	0	0.4	0.3	0.5
62146	99	P	SUR	57	2	1416	0	0.5	-0.2	0.5
62148	99	P	SUR	54	2	1440	0	0.6	0.6	0.8
62149	99	P	SUR	54	1	1440	0	0.5	0.4	0.7
62151	99	P	SUR	57	2	1426	0	0.5	0.1	0.5
62152	99	P	SUR	57	2	1432	0	0.4	0.1	0.5
62153	99	P	SUR	57	2	926	0	0.5	0.2	0.6
62154	99	P	SUR	56	2	1434	0	0.5	-0.2	0.5
62155	99	P	SUR	58	1	1440	0	0.4	0.2	0.4
62157	99	P	SUR	58	0	1426	0	0.4	-0.2	0.5
62160	99	P	SUR	57	2	1438	0	0.6	0.2	0.7
62161	99	P	SUR	58	1	1428	0	0.4	-0.7	0.8
62162	99	P	SUR	57	1	1310	0	0.5	-0.1	0.5
62163	99	P	SUR	48	-9	1438	0	0.4	-0.2	0.5
62164	99	P	SUR	57	1	1426	0	0.4	0.3	0.5
62165	99	P	SUR	54	1	1440	0	0.6	0.2	0.7
62168	99	P	SUR	58	1	1440	0	0.4	-0.2	0.5
62170	99	P	SUR	51	2	1440	0	0.4	-0.2	0.4
62297	99	P	SUR	59	2	1422	0	0.5	-0.2	0.5
62302	99	P	SUR	61	-2	1433	0	0.5	-0.2	0.6
62304	99	P	SUR	51	2	1440	0	0.5	0.0	0.5
62305	99	P	SUR	50	0	1440	0	0.5	-0.4	0.6
6301001	99	P	SUR	64	5	717	0	0.3	-0.2	0.4
6301008	99	P	SUR	68	15	707	0	0.4	-0.6	0.7
6301572	99	P	SUR	52	-13	402	1	3.3	0.3	3.3
6301575	99	P	SUR	47	-29	717	0	0.5	0.3	0.5
6301577	99	P	SUR	64	1	716	0	0.3	-0.1	0.3
63055	99	P	SUR	61	2	1432	0	0.4	-0.3	0.5
63056	99	P	SUR	60	2	1432	0	0.5	0.2	0.6
63057	99	P	SUR	59	2	1422	0	0.4	-0.2	0.5
63058	99	P	SUR	53	2	757	0	0.4	-0.1	0.4
63059	99	P	SUR	58	-1	1427	0	0.4	0.2	0.5
63101	99	P	SUR	61	1	1432	0	0.5	0.0	0.5
63102	99	P	SUR	61	1	1430	0	0.4	-0.2	0.5
63103	99	P	SUR	61	1	1440	0	0.5	0.2	0.6



DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
63108	99	P	SUR	61	2	1432	0	0.4	-0.3	0.5
63109	99	P	SUR	60	2	1440	0	0.5	-0.6	0.8
63110	99	P	SUR	60	2	1440	0	0.5	-0.5	0.7
63111	99	P	SUR	61	2	1428	0	0.4	-0.4	0.6
63112	99	P	SUR	61	1	1438	0	0.4	-0.6	0.7
63115	99	P	SUR	62	1	1410	0	0.7	0.0	0.7
63117	99	P	SUR	61	1	1440	0	0.4	0.2	0.5
63118	99	P	SUR	58	1	1440	0	0.5	-0.4	0.7
6400045	99	P	SUR	59	-12	715	0	0.5	-0.3	0.6
6400046	99	P	SUR	61	-4	715	0	0.4	-0.4	0.6
6401583	99	P	SUR	58	-36	717	0	0.4	0.1	0.4
6401584	99	P	SUR	63	-16	717	0	0.3	0.2	0.4
6401590	99	P	SUR	70	32	717	0	0.4	-0.3	0.5
6401592	99	P	SUR	69	1	717	0	0.5	0.2	0.5
6401759	99	P	SUR	56	-30	717	0	0.4	-0.2	0.5
6401762	99	P	SUR	70	-5	716	0	0.5	0.2	0.5
6401763	99	P	SUR	66	12	716	0	0.5	0.0	0.5
6402551	99	P	SUR	49	-12	714	0	0.5	0.1	0.5
6402597	99	P	SUR	61	-25	716	0	0.4	-0.1	0.4
6402615	99	P	SUR	23	-61	720	0	0.3	0.2	0.4
6402616	99	P	SUR	29	-44	720	0	0.3	-0.1	0.3
6402617	99	P	SUR	30	-44	720	0	0.4	0.3	0.5
6402618	99	P	SUR	24	-50	720	0	0.3	0.1	0.3
6402619	99	P	SUR	31	-12	720	0	0.2	0.1	0.3
6402621	99	P	SUR	32	-16	720	0	0.3	0.4	0.5
6402622	99	P	SUR	33	-17	720	0	0.3	0.1	0.3
64041	99	P	SUR	61	-3	1433	0	0.5	0.0	0.5
64045	99	P	SUR	59	-12	1440	0	0.5	-0.3	0.6
64046	99	P	SUR	61	-4	1440	0	0.4	-0.4	0.6
6600021	99	P	SUR	55	14	106	0	0.4	-1.0	1.1
6600022	99	P	SUR	54	14	175	0	0.4	-0.6	0.7
6600023	99	P	SUR	55	11	279	0	0.3	-0.4	0.5
6600024	99	P	SUR	55	13	15	0	0.4	-1.7	1.7
6801786	99	P	SUR	37	18	105	0	0.3	0.1	0.3
6801790	99	P	SUR	37	-14	484	0	0.3	0.0	0.3
6801791	99	P	SUR	31	-41	720	0	0.4	0.4	0.5
6801876	99	P	SUR	71	-16	410	0	2.7	0.6	2.8
7801552	99	P	SUR	74	-5	718	37	2.9	-1.0	3.1
7801588	99	P	SUR	37	-14	482	0	0.3	0.2	0.4
7801591	99	P	SUR	40	-11	485	0	0.3	0.1	0.4
7801592	99	P	SUR	37	18	105	0	0.3	0.2	0.4
9308649	99	P	SUR	35	-67	25	0	1.7	1.3	2.1

**4.10 Table 22 - Drifter Monitoring Statistics (EUCOS): Wind speed (m/s)**

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND SPEED (M/S)  
 AREA : 10N - 90N, 70W - 40E  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1300001	99	SPEED	SUR	11	-23	595	0	0	0.9	0.5	1.0
1300002	99	SPEED	SUR	20	-23	598	0	0	0.8	0.3	0.9
1300008	99	SPEED	SUR	15	-38	600	0	0	0.7	-0.1	0.7
1300130	99	SPEED	SUR	28	-16	710	0	0	1.2	-0.2	1.2
1300131	99	SPEED	SUR	28	-17	494	0	0	1.8	0.9	2.0
1801560	99	SPEED	SUR	21	-65	446	0	0	0.8	0.6	1.0
4100026	99	SPEED	SUR	12	-38	279	0	0	0.9	0.0	0.9
4100040	99	SPEED	SUR	15	-53	4299	0	0	0.9	0.0	0.9
4100043	99	SPEED	SUR	21	-65	4300	0	0	0.9	0.0	1.0
4100044	99	SPEED	SUR	22	-59	4299	0	0	1.0	0.0	1.0
4100046	99	SPEED	SUR	24	-68	4298	0	0	1.3	-0.2	1.4
4100049	99	SPEED	SUR	28	-63	4301	0	0	1.5	-0.1	1.5
4100052	99	SPEED	SUR	18	-65	4138	0	0	1.0	0.0	1.0
4100053	99	SPEED	SUR	18	-66	4230	0	0	1.4	-0.2	1.5
4100056	99	SPEED	SUR	18	-65	250	0	0	1.2	-0.4	1.3
4100139	99	SPEED	SUR	20	-38	716	0	0	1.1	-0.1	1.1
4100300	99	SPEED	SUR	16	-57	677	0	0	0.8	-0.3	0.9
41040	99	SPEED	SUR	15	-53	720	0	0	1.0	0.0	1.0
41043	99	SPEED	SUR	21	-65	720	0	0	1.0	0.1	1.0
41044	99	SPEED	SUR	22	-59	720	0	0	1.1	0.1	1.1
41046	99	SPEED	SUR	24	-68	720	0	0	1.4	-0.2	1.5
41049	99	SPEED	SUR	28	-63	720	0	0	1.5	0.0	1.5
41052	99	SPEED	SUR	18	-65	701	0	0	1.0	0.1	1.0
41053	99	SPEED	SUR	19	-66	718	0	0	1.6	-0.8	1.7
41056	99	SPEED	SUR	18	-66	252	0	0	1.3	-0.3	1.3
4200059	99	SPEED	SUR	15	-67	4300	0	0	1.3	0.2	1.3
4200060	99	SPEED	SUR	16	-63	4298	0	0	0.9	0.1	0.9
4200085	99	SPEED	SUR	18	-67	3522	0	0	1.2	-0.4	1.3
42059	99	SPEED	SUR	15	-68	720	0	0	1.4	0.3	1.4
42060	99	SPEED	SUR	16	-63	720	0	0	1.0	0.2	1.0
42085	99	SPEED	SUR	18	-67	701	0	0	1.2	0.1	1.2
4400005	99	SPEED	SUR	43	-69	4301	0	0	1.1	-0.1	1.1
4400008	99	SPEED	SUR	40	-69	4295	0	0	1.2	0.0	1.2
4400011	99	SPEED	SUR	41	-67	4300	0	0	1.3	-0.3	1.4

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
4400027	99	SPEED	SUR	44	-67	4296	0	0	1.2	0.3	1.2
4400032	99	SPEED	SUR	44	-69	696	0	0	1.2	0.2	1.2
4400033	99	SPEED	SUR	44	-69	704	1	0	1.3	0.3	1.3
4400034	99	SPEED	SUR	44	-68	691	0	0	1.1	0.1	1.1
4400037	99	SPEED	SUR	43	-68	703	0	0	1.1	0.2	1.1
4400150	99	SPEED	SUR	43	-64	705	0	0	1.4	0.3	1.4
4400488	99	SPEED	SUR	45	-61	476	0	0	1.7	0.8	1.9
4400489	99	SPEED	SUR	45	-61	466	0	0	1.7	1.8	2.5
44005	99	SPEED	SUR	43	-69	720	0	0	1.1	-0.2	1.2
44008	99	SPEED	SUR	41	-69	719	0	0	1.2	0.0	1.2
44011	99	SPEED	SUR	41	-67	720	0	0	1.4	-0.2	1.4
44027	99	SPEED	SUR	44	-67	720	0	0	1.2	0.3	1.2
44032	99	SPEED	SUR	44	-69	700	0	0	1.2	0.2	1.2
44033	99	SPEED	SUR	44	-69	707	1	0	1.3	0.6	1.4
44034	99	SPEED	SUR	44	-68	694	0	0	1.2	0.1	1.2
44037	99	SPEED	SUR	44	-68	706	0	0	1.1	0.2	1.1
44078	99	SPEED	SUR	60	-40	689	0	0	2.2	-1.2	2.5
44150	99	SPEED	SUR	43	-64	704	0	0	1.5	0.3	1.5
44258	99	SPEED	SUR	45	-63	716	0	0	1.4	0.7	1.6
44488	99	SPEED	SUR	45	-61	686	0	0	1.7	1.2	2.1
44489	99	SPEED	SUR	46	-61	668	0	0	1.6	2.0	2.6
5801958	99	SPEED	SUR	21	-65	52	0	0	0.5	0.4	0.7
5801959	99	SPEED	SUR	21	-60	634	0	0	0.9	0.4	1.0
6100001	99	SPEED	SUR	43	8	699	0	0	2.2	0.1	2.2
6100002	99	SPEED	SUR	42	5	715	0	0	1.5	0.2	1.5
6100196	99	SPEED	SUR	42	4	685	0	0	1.7	-0.2	1.7
6100197	99	SPEED	SUR	40	4	611	0	0	1.1	-0.1	1.1
6100198	99	SPEED	SUR	37	-2	686	0	0	1.6	-0.7	1.7
6100280	99	SPEED	SUR	41	1	676	0	0	1.9	-1.3	2.3
6100281	99	SPEED	SUR	40	0	179	0	0	2.0	1.1	2.3
6100417	99	SPEED	SUR	38	0	708	0	0	1.4	-0.8	1.6
6100430	99	SPEED	SUR	40	2	701	0	0	1.6	-1.2	2.0
6101007	99	SPEED	SUR	36	25	87	0	0	2.0	-0.9	2.2
6101008	99	SPEED	SUR	37	22	115	0	0	3.8	-6.4	7.4
6101009	99	SPEED	SUR	35	25	84	0	0	2.4	1.2	2.7
6101031	99	SPEED	SUR	42	8	713	0	0	1.2	0.1	1.2
6200001	99	SPEED	SUR	45	-5	705	0	0	1.4	-0.9	1.7
6200024	99	SPEED	SUR	44	-3	702	0	0	1.8	-0.8	1.9
6200025	99	SPEED	SUR	44	-6	223	0	0	1.1	-1.1	1.6
6200029	99	SPEED	SUR	49	-12	715	0	0	1.2	0.4	1.3
6200050	99	SPEED	SUR	50	-4	715	0	0	1.3	0.0	1.3

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
6200081	99	SPEED	SUR	51	-13	715	0	0	1.3	-0.2	1.3
6200082	99	SPEED	SUR	44	-8	708	0	0	3.1	-2.3	3.8
6200083	99	SPEED	SUR	43	-9	389	0	0	1.4	-0.8	1.6
6200084	99	SPEED	SUR	42	-9	703	0	0	1.2	-1.0	1.5
6200085	99	SPEED	SUR	36	-7	704	0	0	1.1	-0.3	1.1
6200086	99	SPEED	SUR	55	7	283	0	0	2.4	1.7	2.9
6200087	99	SPEED	SUR	55	7	367	0	0	2.0	1.8	2.7
6200091	99	SPEED	SUR	53	-5	715	0	0	1.2	0.4	1.3
6200092	99	SPEED	SUR	51	-11	716	0	0	1.6	0.2	1.6
6200093	99	SPEED	SUR	55	-10	716	0	0	1.2	-0.2	1.2
6200094	99	SPEED	SUR	52	-7	716	0	0	1.2	0.4	1.3
6200095	99	SPEED	SUR	53	-16	715	0	0	1.4	-0.7	1.5
6200103	99	SPEED	SUR	50	-3	706	1	0	1.5	-0.2	1.5
6200163	99	SPEED	SUR	47	-8	713	0	0	1.3	-0.6	1.4
6200191	99	SPEED	SUR	41	-10	82	0	0	1.3	-0.4	1.3
6200192	99	SPEED	SUR	40	-10	156	0	0	1.6	-0.3	1.6
6200199	99	SPEED	SUR	40	-9	109	0	0	1.8	-0.1	1.8
6200200	99	SPEED	SUR	36	-8	298	0	0	1.1	-0.1	1.1
6201065	99	SPEED	SUR	54	7	643	0	0	2.1	-0.5	2.2
6201066	99	SPEED	SUR	55	7	707	0	0	1.8	0.5	1.9
62029	99	SPEED	SUR	49	-12	1438	0	0	1.2	0.4	1.3
62050	99	SPEED	SUR	50	-4	1440	0	0	1.3	0.7	1.5
62081	99	SPEED	SUR	51	-13	1436	0	0	1.2	0.6	1.4
62091	99	SPEED	SUR	53	-5	715	0	0	1.2	0.7	1.4
62092	99	SPEED	SUR	51	-11	715	0	0	1.6	0.3	1.6
62093	99	SPEED	SUR	55	-10	715	0	0	1.2	-0.1	1.2
62094	99	SPEED	SUR	52	-7	715	0	0	1.2	0.5	1.3
62095	99	SPEED	SUR	53	-16	714	0	0	1.4	-0.6	1.5
62102	99	SPEED	SUR	58	2	1440	0	0	1.6	0.2	1.7
62103	99	SPEED	SUR	50	-3	1422	2	0	1.5	-0.3	1.6
62104	99	SPEED	SUR	57	1	1438	0	0	1.5	-0.5	1.6
62105	99	SPEED	SUR	55	-13	1439	0	0	1.3	0.3	1.3
62107	99	SPEED	SUR	50	-6	174	0	0	1.2	0.2	1.2
62112	99	SPEED	SUR	58	0	1433	0	0	1.5	-0.6	1.6
62113	99	SPEED	SUR	58	0	1440	0	0	1.4	-0.3	1.4
62114	99	SPEED	SUR	58	0	960	0	0	1.2	-0.1	1.2
62118	99	SPEED	SUR	58	1	1440	0	0	1.4	0.3	1.5
62119	99	SPEED	SUR	57	2	1440	0	0	2.3	-1.6	2.8
62120	99	SPEED	SUR	56	2	1438	0	0	1.4	-0.7	1.6
62121	99	SPEED	SUR	54	3	1250	0	0	1.5	-0.7	1.7
62122	99	SPEED	SUR	57	2	1434	0	0	1.6	-0.3	1.6

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62129	99	SPEED	SUR	58	0	1438	0	0	1.3	-0.3	1.4
62131	99	SPEED	SUR	54	1	1432	0	0	1.8	-0.4	1.8
62133	99	SPEED	SUR	57	1	1440	0	0	1.5	0.0	1.5
62134	99	SPEED	SUR	58	1	1424	0	0	1.3	-0.4	1.4
62140	99	SPEED	SUR	57	1	1432	2	0	1.4	-0.1	1.4
62143	99	SPEED	SUR	58	2	1440	0	0	1.6	-0.5	1.7
62144	99	SPEED	SUR	53	2	1440	0	0	2.0	-0.8	2.2
62145	99	SPEED	SUR	53	3	1376	0	0	1.7	0.0	1.7
62146	99	SPEED	SUR	57	2	1412	0	0	1.6	-0.3	1.7
62148	99	SPEED	SUR	54	2	1440	0	0	2.0	-1.0	2.2
62149	99	SPEED	SUR	54	1	1440	0	0	1.3	0.0	1.3
62152	99	SPEED	SUR	57	2	1432	0	0	1.8	-0.8	2.0
62154	99	SPEED	SUR	56	2	1434	0	0	1.5	-0.1	1.5
62155	99	SPEED	SUR	58	1	1440	0	0	1.5	0.0	1.5
62163	99	SPEED	SUR	48	-9	1436	0	0	1.2	0.0	1.2
62164	99	SPEED	SUR	57	1	1426	0	0	1.6	-1.2	2.0
62165	99	SPEED	SUR	54	1	1440	0	0	1.8	-0.8	1.9
62170	99	SPEED	SUR	51	2	1438	0	0	1.7	1.0	2.0
62304	99	SPEED	SUR	51	2	1430	0	0	1.8	1.4	2.3
62305	99	SPEED	SUR	50	0	182	0	0	1.7	1.2	2.1
6301001	99	SPEED	SUR	64	5	717	0	0	1.1	0.0	1.1
6301008	99	SPEED	SUR	68	15	706	0	0	1.7	0.8	1.9
63055	99	SPEED	SUR	61	2	1432	0	0	1.6	-0.9	1.8
63056	99	SPEED	SUR	60	2	1432	0	0	1.6	0.1	1.6
63057	99	SPEED	SUR	59	2	1422	0	0	2.0	-0.3	2.0
63058	99	SPEED	SUR	53	2	756	0	0	1.5	-0.1	1.5
63101	99	SPEED	SUR	61	1	1432	0	0	1.4	-0.3	1.5
63103	99	SPEED	SUR	61	1	1440	0	0	1.5	-0.7	1.7
63108	99	SPEED	SUR	61	2	1432	0	0	1.7	-0.7	1.8
63109	99	SPEED	SUR	60	2	1440	0	0	1.5	0.0	1.5
63110	99	SPEED	SUR	60	2	1440	0	0	1.8	-0.6	1.9
63112	99	SPEED	SUR	61	1	1438	0	0	1.4	-0.6	1.5
63115	99	SPEED	SUR	62	1	1410	0	0	1.4	-0.9	1.7
63117	99	SPEED	SUR	61	1	1440	0	0	1.5	-0.5	1.5
6400045	99	SPEED	SUR	59	-12	715	0	0	1.4	0.1	1.4
6400046	99	SPEED	SUR	61	-4	63	0	0	1.5	0.6	1.6
64041	99	SPEED	SUR	61	-3	1433	0	0	1.3	-0.5	1.4
64045	99	SPEED	SUR	59	-12	1438	0	0	1.4	0.6	1.6
64046	99	SPEED	SUR	61	-4	124	0	0	1.6	1.3	2.1
6600021	99	SPEED	SUR	55	14	106	0	0	1.5	0.8	1.7
6600022	99	SPEED	SUR	54	14	175	1	0	1.4	0.1	1.4

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
6600023	99	SPEED	SUR	55	11	280	0	0	1.4	2.2	2.6
6600024	99	SPEED	SUR	55	13	7	0	0	0.5	1.7	1.7
9308649	99	SPEED	SUR	35	-67	25	0	0	2.6	-1.5	3.0

### 4.11 Table 23 - Drifter Monitoring Statistics (EUCOS): Wind direction

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 AREA : 10N - 90N, 70W - 40E  
 PERIOD : NOV 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

TIME = 99 => AVERAGE OF ALL OBSERVATIONS  
 GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S  
 WIND SPEEDS > 3M/S USED

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1300001	99	DIRN	SUR	11	-23	499	0	0	11.9	4.8	12.8
1300002	99	DIRN	SUR	20	-23	533	0	0	7.5	-0.8	7.6
1300008	99	DIRN	SUR	15	-38	598	0	0	9.5	4.7	10.6
1300130	99	DIRN	SUR	28	-16	600	0	0	11.4	6.1	12.9
1300131	99	DIRN	SUR	28	-17	293	0	0	14.2	6.2	15.5
1801560	99	DIRN	SUR	21	-65	428	0	0	7.6	2.2	8.0
1801565	99	DIRN	SUR	32	-78	209	0	0	9.0	-3.8	9.8
4100001	99	DIRN	SUR	35	-72	3875	0	0	18.6	6.7	19.8
4100002	99	DIRN	SUR	32	-75	3309	0	0	19.9	2.5	20.1
4100004	99	DIRN	SUR	33	-79	3997	0	0	12.7	6.3	14.1
4100008	99	DIRN	SUR	31	-81	3499	0	0	15.1	9.9	18.0
4100009	99	DIRN	SUR	29	-80	3579	0	0	23.2	5.2	23.8
4100013	99	DIRN	SUR	33	-78	3950	0	0	13.1	5.8	14.3
4100024	99	DIRN	SUR	34	-78	533	0	0	16.5	7.4	18.1
4100025	99	DIRN	SUR	35	-75	4053	0	0	15.5	5.2	16.4
4100026	99	DIRN	SUR	12	-38	279	0	0	10.3	7.1	12.5
4100029	99	DIRN	SUR	33	-80	570	0	0	17.0	-8.7	19.1
4100033	99	DIRN	SUR	32	-80	585	0	0	17.0	-19.2	25.7
4100037	99	DIRN	SUR	34	-77	635	0	0	12.6	-1.1	12.7
4100038	99	DIRN	SUR	34	-78	594	0	0	16.3	2.6	16.5
4100040	99	DIRN	SUR	15	-53	4058	0	0	10.3	4.8	11.4
4100043	99	DIRN	SUR	21	-65	3866	0	0	12.5	9.1	15.5
4100044	99	DIRN	SUR	22	-59	3198	0	0	14.0	5.7	15.1
4100046	99	DIRN	SUR	24	-68	3198	0	0	15.6	6.5	16.9
4100047	99	DIRN	SUR	27	-71	3431	0	0	30.6	7.4	31.5
4100049	99	DIRN	SUR	28	-63	3452	0	0	19.5	9.7	21.8
4100052	99	DIRN	SUR	18	-65	3825	0	0	14.8	4.8	15.5
4100053	99	DIRN	SUR	18	-66	2942	0	0	18.9	6.8	20.0
4100056	99	DIRN	SUR	18	-65	209	0	0	18.3	6.0	19.3
4100064	99	DIRN	SUR	34	-77	366	0	0	14.9	-0.5	14.9
4100068	99	DIRN	SUR	28	-80	626	0	0	23.6	4.3	24.0
4100069	99	DIRN	SUR	29	-81	568	0	0	18.5	7.3	19.9

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND DIRECTION (DEGREES)

(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
41001	99	DIRN	SUR	35	-72	649	0	0	19.8	6.5	20.8
4100139	99	DIRN	SUR	20	-38	574	0	0	18.2	5.2	18.9
41002	99	DIRN	SUR	32	-75	541	0	0	20.2	3.5	20.5
4100300	99	DIRN	SUR	16	-57	644	0	0	10.2	-12.7	16.3
41004	99	DIRN	SUR	33	-79	669	0	0	13.2	5.9	14.5
41008	99	DIRN	SUR	31	-81	571	0	0	15.8	10.1	18.8
41009	99	DIRN	SUR	29	-80	593	0	0	22.5	4.2	22.9
41013	99	DIRN	SUR	33	-78	652	0	0	11.9	5.8	13.3
41024	99	DIRN	SUR	34	-79	536	0	0	17.9	8.5	19.8
41025	99	DIRN	SUR	35	-76	677	0	0	16.9	5.3	17.8
41029	99	DIRN	SUR	33	-80	564	0	0	17.6	-8.8	19.7
41033	99	DIRN	SUR	32	-80	571	0	0	17.5	-20.1	26.7
41037	99	DIRN	SUR	34	-77	638	0	0	13.1	-1.7	13.2
41038	99	DIRN	SUR	34	-78	599	0	0	17.8	4.9	18.5
41040	99	DIRN	SUR	15	-53	676	0	0	10.7	4.7	11.7
41043	99	DIRN	SUR	21	-65	631	0	0	13.1	9.1	15.9
41044	99	DIRN	SUR	22	-59	512	0	0	14.3	5.5	15.3
41046	99	DIRN	SUR	24	-68	522	0	0	15.8	7.2	17.4
41047	99	DIRN	SUR	28	-72	558	0	0	30.2	6.6	30.9
41049	99	DIRN	SUR	28	-63	564	0	0	19.0	11.0	22.0
41052	99	DIRN	SUR	18	-65	647	0	0	15.0	4.0	15.5
41053	99	DIRN	SUR	19	-66	496	0	0	17.6	6.5	18.8
41056	99	DIRN	SUR	18	-66	204	0	0	15.9	7.3	17.5
41064	99	DIRN	SUR	34	-77	366	0	0	16.1	0.0	16.1
41068	99	DIRN	SUR	28	-80	623	0	0	24.6	4.0	24.9
41069	99	DIRN	SUR	29	-81	567	0	0	18.5	6.9	19.8
4200013	99	DIRN	SUR	27	-83	1242	0	0	14.6	-7.0	16.2
4200022	99	DIRN	SUR	28	-84	1230	0	0	12.6	-8.4	15.1
4200023	99	DIRN	SUR	26	-83	1284	0	0	12.4	-4.4	13.2
4200026	99	DIRN	SUR	25	-83	1299	0	0	14.5	-3.2	14.8
4200036	99	DIRN	SUR	29	-85	3643	0	0	12.5	4.2	13.2
4200056	99	DIRN	SUR	20	-85	4083	0	0	15.9	0.0	15.9
4200057	99	DIRN	SUR	17	-82	4066	0	0	15.7	1.0	15.7
4200058	99	DIRN	SUR	15	-75	3861	0	0	11.3	5.9	12.8
4200059	99	DIRN	SUR	15	-67	4061	0	0	15.4	4.1	15.9
4200060	99	DIRN	SUR	16	-63	4055	0	0	11.1	3.7	11.7
4200085	99	DIRN	SUR	18	-67	3213	0	0	18.8	14.8	24.0
42013	99	DIRN	SUR	27	-83	612	0	0	15.0	-5.9	16.1
42022	99	DIRN	SUR	28	-84	605	0	0	13.0	-8.0	15.3
42023	99	DIRN	SUR	26	-83	638	0	0	13.5	-3.3	13.9
42026	99	DIRN	SUR	25	-84	653	0	0	15.4	-2.3	15.6



DRIFTER MONITORING STATISTICS (EUCOS)  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 (CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
42036	99	DIRN	SUR	29	-85	599	0	0	13.1	4.3	13.8
42056	99	DIRN	SUR	20	-85	676	0	0	15.8	-0.4	15.8
42057	99	DIRN	SUR	17	-82	674	0	0	15.3	0.8	15.3
42058	99	DIRN	SUR	15	-75	640	0	0	11.6	5.8	13.0
42059	99	DIRN	SUR	15	-68	682	0	0	16.2	3.5	16.6
42060	99	DIRN	SUR	16	-63	676	0	0	11.5	3.0	11.8
42085	99	DIRN	SUR	18	-67	615	0	0	17.1	11.3	20.5
4400005	99	DIRN	SUR	43	-69	3842	0	0	12.9	2.0	13.1
4400007	99	DIRN	SUR	44	-70	3734	0	0	17.5	3.2	17.8
4400008	99	DIRN	SUR	40	-69	3779	0	0	12.5	15.0	19.5
4400009	99	DIRN	SUR	38	-75	3506	0	0	12.6	4.4	13.4
4400011	99	DIRN	SUR	41	-67	3780	0	0	14.7	3.3	15.1
4400013	99	DIRN	SUR	42	-71	3724	0	0	12.5	5.4	13.7
4400014	99	DIRN	SUR	37	-75	3460	0	0	11.6	4.5	12.5
4400018	99	DIRN	SUR	42	-70	3830	0	0	13.8	5.2	14.8
4400020	99	DIRN	SUR	41	-70	3664	0	0	13.1	4.4	13.8
4400022	99	DIRN	SUR	41	-74	989	0	0	16.1	7.5	17.8
4400027	99	DIRN	SUR	44	-67	3774	0	0	12.3	6.9	14.1
4400029	99	DIRN	SUR	43	-71	623	0	0	12.7	-2.7	13.0
4400030	99	DIRN	SUR	43	-70	591	0	0	14.5	1.1	14.6
4400032	99	DIRN	SUR	44	-69	627	0	0	13.9	-5.5	15.0
4400033	99	DIRN	SUR	44	-69	610	1	0	22.9	14.3	27.0
4400034	99	DIRN	SUR	44	-68	616	0	0	13.1	-4.5	13.9
4400037	99	DIRN	SUR	43	-68	630	0	0	12.2	1.8	12.3
4400039	99	DIRN	SUR	41	-73	509	0	0	38.4	-1.2	38.4
4400041	99	DIRN	SUR	37	-77	1055	0	0	23.4	-2.6	23.6
4400042	99	DIRN	SUR	38	-76	4903	0	0	16.5	-2.9	16.8
4400043	99	DIRN	SUR	39	-76	4570	0	0	21.0	2.2	21.1
4400058	99	DIRN	SUR	38	-76	2340	0	0	16.6	-0.4	16.6
4400062	99	DIRN	SUR	39	-76	5021	0	0	18.8	-2.3	18.9
4400063	99	DIRN	SUR	39	-76	4214	0	0	18.9	-0.2	18.9
4400064	99	DIRN	SUR	37	-76	4386	0	0	19.1	3.7	19.4
4400072	99	DIRN	SUR	37	-76	4455	0	0	18.0	-2.4	18.1
4400073	99	DIRN	SUR	43	-71	689	0	0	10.5	-1.5	10.7
4400150	99	DIRN	SUR	43	-64	631	0	0	16.4	9.3	18.8
4400488	99	DIRN	SUR	45	-61	426	0	0	19.7	-31.0	36.7
4400489	99	DIRN	SUR	45	-61	387	0	0	21.0	-33.9	39.9
44005	99	DIRN	SUR	43	-69	633	0	0	13.5	1.8	13.7
44007	99	DIRN	SUR	44	-70	622	0	0	18.7	4.4	19.2
44008	99	DIRN	SUR	41	-69	627	0	0	13.4	14.8	19.9
44009	99	DIRN	SUR	39	-75	576	0	0	14.3	4.7	15.0

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND DIRECTION (DEGREES)

(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44011	99	DIRN	SUR	41	-67	627	0	0	16.2	3.7	16.6
44013	99	DIRN	SUR	42	-71	604	0	0	13.4	4.0	14.0
44014	99	DIRN	SUR	37	-75	600	0	0	12.6	4.3	13.3
44018	99	DIRN	SUR	42	-70	636	0	0	13.6	5.2	14.6
44020	99	DIRN	SUR	42	-70	599	0	0	13.7	4.2	14.3
44022	99	DIRN	SUR	41	-74	258	0	0	16.1	8.0	18.0
44027	99	DIRN	SUR	44	-67	630	0	0	12.3	6.4	13.9
44029	99	DIRN	SUR	43	-71	623	0	0	12.5	-3.4	13.0
44030	99	DIRN	SUR	43	-70	586	0	0	14.9	1.4	14.9
44032	99	DIRN	SUR	44	-69	621	0	0	12.9	-5.8	14.1
44033	99	DIRN	SUR	44	-69	606	1	0	23.4	13.7	27.1
44034	99	DIRN	SUR	44	-68	613	0	0	12.8	-4.7	13.6
44037	99	DIRN	SUR	44	-68	628	0	0	12.4	2.0	12.5
44039	99	DIRN	SUR	41	-73	491	0	0	38.3	-2.3	38.4
44041	99	DIRN	SUR	37	-77	120	0	0	23.8	-3.1	24.0
44042	99	DIRN	SUR	38	-76	522	0	0	17.6	-0.6	17.7
44043	99	DIRN	SUR	39	-76	477	0	0	20.0	2.4	20.1
44058	99	DIRN	SUR	38	-76	237	0	0	19.7	0.5	19.7
44062	99	DIRN	SUR	39	-76	557	0	0	19.3	-1.5	19.3
44063	99	DIRN	SUR	39	-76	471	0	0	21.1	1.5	21.2
44064	99	DIRN	SUR	37	-76	518	0	0	19.7	4.6	20.3
44072	99	DIRN	SUR	37	-76	506	0	0	18.7	-2.0	18.8
44073	99	DIRN	SUR	43	-71	140	0	0	12.7	-0.8	12.7
44078	99	DIRN	SUR	60	-40	573	0	0	21.5	-18.1	28.2
44150	99	DIRN	SUR	43	-64	620	0	0	16.8	8.8	18.9
44258	99	DIRN	SUR	45	-63	627	0	0	15.6	-8.0	17.5
44488	99	DIRN	SUR	45	-61	589	0	0	18.7	-32.3	37.3
44489	99	DIRN	SUR	46	-61	535	0	0	19.2	-34.6	39.6
4500003	99	DIRN	SUR	45	-83	2537	0	0	14.0	1.5	14.0
4500005	99	DIRN	SUR	42	-82	3708	0	0	12.4	12.6	17.6
4500008	99	DIRN	SUR	44	-82	2380	0	0	14.9	15.0	21.1
4500012	99	DIRN	SUR	44	-77	3910	0	0	15.7	8.8	18.0
4500132	99	DIRN	SUR	42	-81	99	0	0	26.1	-9.7	27.8
4500135	99	DIRN	SUR	44	-77	188	1	0	22.2	-2.9	22.4
4500137	99	DIRN	SUR	46	-81	654	0	0	13.5	-4.6	14.3
4500139	99	DIRN	SUR	43	-80	106	0	0	19.1	-3.3	19.4
4500142	99	DIRN	SUR	43	-79	100	0	0	22.3	-10.8	24.8
4500143	99	DIRN	SUR	45	-81	656	0	0	14.7	-4.4	15.3
4500159	99	DIRN	SUR	44	-79	209	0	0	19.6	-1.8	19.7
4500164	99	DIRN	SUR	42	-82	260	0	0	18.9	-11.3	22.0
4500175	99	DIRN	SUR	46	-85	1761	0	0	34.2	10.3	35.7

DRIFTER MONITORING STATISTICS (EUCOS)  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 (CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
4500176	99	DIRN	SUR	42	-82	1517	0	0	16.0	-5.6	17.0
4500196	99	DIRN	SUR	42	-82	879	0	0	15.7	-10.8	19.1
4500197	99	DIRN	SUR	42	-82	749	0	0	17.9	-14.9	23.3
4500203	99	DIRN	SUR	41	-83	1362	0	0	68.7	-78.2	104.1
4500209	99	DIRN	SUR	43	-82	1188	0	0	24.5	6.7	25.4
45003	99	DIRN	SUR	45	-83	418	0	0	14.5	2.3	14.7
45005	99	DIRN	SUR	42	-82	609	0	0	13.3	13.0	18.6
45008	99	DIRN	SUR	44	-82	395	0	0	15.7	15.0	21.7
45012	99	DIRN	SUR	44	-77	642	0	0	15.6	9.0	18.0
45132	99	DIRN	SUR	43	-81	99	0	0	26.3	-10.9	28.5
45135	99	DIRN	SUR	44	-77	186	1	0	20.9	-3.1	21.2
45137	99	DIRN	SUR	46	-81	649	0	0	15.7	-5.3	16.6
45139	99	DIRN	SUR	43	-80	109	0	0	20.4	-0.1	20.4
45142	99	DIRN	SUR	43	-79	97	0	0	26.6	-13.7	29.9
45143	99	DIRN	SUR	45	-81	649	0	0	15.3	-6.0	16.5
45147	99	DIRN	SUR	42	-83	90	0	0	21.1	2.7	21.3
45149	99	DIRN	SUR	44	-82	659	0	0	13.0	-9.8	16.3
45151	99	DIRN	SUR	45	-79	394	0	0	14.9	-1.9	15.0
45154	99	DIRN	SUR	46	-83	322	0	0	16.8	7.9	18.6
45159	99	DIRN	SUR	44	-79	204	0	0	20.7	-2.2	20.8
45164	99	DIRN	SUR	42	-82	254	0	0	18.7	-12.7	22.6
45175	99	DIRN	SUR	46	-85	194	0	0	32.2	10.8	33.9
45176	99	DIRN	SUR	42	-82	272	0	0	17.2	-3.5	17.6
45196	99	DIRN	SUR	42	-82	260	0	0	16.1	-12.0	20.1
45197	99	DIRN	SUR	42	-82	242	0	0	18.5	-16.6	24.9
45203	99	DIRN	SUR	41	-83	231	0	0	72.5	-74.5	103.9
45209	99	DIRN	SUR	43	-82	221	0	0	23.4	7.4	24.6
5801958	99	DIRN	SUR	21	-65	52	0	0	5.8	-1.0	5.9
5801959	99	DIRN	SUR	21	-60	608	0	0	10.6	-0.2	10.6
6100198	99	DIRN	SUR	37	-2	360	0	0	19.0	4.1	19.5
6100281	99	DIRN	SUR	40	0	168	0	0	35.3	51.2	62.2
6100417	99	DIRN	SUR	38	0	444	0	0	16.7	0.4	16.7
6200001	99	DIRN	SUR	45	-5	662	0	0	15.9	2.1	16.1
6200024	99	DIRN	SUR	44	-3	510	0	0	21.3	2.5	21.5
6200025	99	DIRN	SUR	44	-6	186	0	0	18.3	4.7	18.8
6200029	99	DIRN	SUR	49	-12	648	0	0	13.3	-5.4	14.3
6200050	99	DIRN	SUR	50	-4	662	0	0	12.5	1.2	12.5
6200081	99	DIRN	SUR	51	-13	674	0	0	14.8	-6.9	16.3
6200082	99	DIRN	SUR	44	-8	583	0	0	26.0	1.9	26.1
6200083	99	DIRN	SUR	43	-9	357	0	0	14.7	-8.6	17.0
6200084	99	DIRN	SUR	42	-9	550	0	0	13.0	2.7	13.3

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND DIRECTION (DEGREES)

(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
6200085	99	DIRN	SUR	36	-7	470	0	0	16.2	8.6	18.3
6200091	99	DIRN	SUR	53	-5	669	0	0	13.8	3.8	14.3
6200092	99	DIRN	SUR	51	-11	670	0	0	15.3	7.2	16.9
6200093	99	DIRN	SUR	55	-10	679	0	0	13.5	4.2	14.1
6200094	99	DIRN	SUR	52	-7	693	0	0	14.4	2.1	14.5
6200095	99	DIRN	SUR	53	-16	680	0	0	13.9	1.1	14.0
6200103	99	DIRN	SUR	50	-3	656	1	0	23.6	7.0	24.6
6200163	99	DIRN	SUR	47	-8	656	0	0	16.9	0.1	16.9
6200191	99	DIRN	SUR	41	-10	72	0	0	16.4	4.1	16.9
6200192	99	DIRN	SUR	40	-10	119	0	0	30.9	-2.2	31.0
6200199	99	DIRN	SUR	40	-9	71	0	0	24.0	15.7	28.7
6200200	99	DIRN	SUR	36	-8	224	0	0	12.9	4.9	13.8
62029	99	DIRN	SUR	49	-12	1297	0	0	13.7	-5.6	14.8
62050	99	DIRN	SUR	50	-4	1334	0	0	15.1	1.5	15.2
62081	99	DIRN	SUR	51	-13	1344	0	0	14.5	-6.9	16.0
62091	99	DIRN	SUR	53	-5	667	0	0	14.1	3.2	14.5
62092	99	DIRN	SUR	51	-11	665	0	0	15.7	6.9	17.2
62093	99	DIRN	SUR	55	-10	672	0	0	13.3	3.9	13.9
62094	99	DIRN	SUR	52	-7	688	0	0	14.7	1.6	14.8
62095	99	DIRN	SUR	53	-16	675	0	0	14.2	0.7	14.3
62103	99	DIRN	SUR	50	-3	1321	2	0	23.7	7.0	24.7
62105	99	DIRN	SUR	55	-13	1363	0	0	12.2	-2.3	12.4
62107	99	DIRN	SUR	50	-6	171	0	0	9.3	0.7	9.3
62112	99	DIRN	SUR	58	0	1104	0	0	14.9	-2.2	15.1
62114	99	DIRN	SUR	58	0	731	0	0	15.0	1.6	15.1
62163	99	DIRN	SUR	48	-9	1311	0	0	17.4	0.2	17.4
62305	99	DIRN	SUR	50	0	182	0	0	28.4	-14.9	32.0
6400045	99	DIRN	SUR	59	-12	682	0	0	15.7	-7.1	17.2
6400046	99	DIRN	SUR	61	-4	63	0	0	21.5	-8.2	23.0
64041	99	DIRN	SUR	61	-3	1305	0	0	14.9	10.4	18.2
64045	99	DIRN	SUR	59	-12	1370	0	0	16.0	-7.2	17.6
64046	99	DIRN	SUR	61	-4	124	0	0	22.0	-8.7	23.7
9308649	99	DIRN	SUR	35	-67	25	0	0	23.6	13.5	27.2

**4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations**

ASDE09	ATGU3FT	BPMWB2N	DBLK	FPUW5GN	GQBZLZL	JNKN7JF	KJJF9XN	KMPLHPW
LAGY8	LAGZ8	LRVQE3U	USBOD	USSIO	USTAC	UXK5JTU	WDK38HS	XKQLWQB
YLV96WM	ZVQEQCM	2EERVTP	7JUNA4N	9ZT9MRK	01001	01004	01010	01028
01241	01400	01415	01492	02185	02365	02527	02591	02836
02963	03005	03023	03238	03354	03743	03808	03882	03918
03953	04018	04089	04220	04270	04320	04339	04360	04417
06011	06260	06458	06610	07110	07145	07510	07645	07761
08001	08023	08190	08221	08302	08383	08430	08508	08522
08536	10035	10113	10184	10238	10304	10393	10410	10548
10618	10739	10771	10868	10954	10962	11010	11035	11120
11240	11520	11747	11952	12120	12374	12425	12575	12843
12982	13275	13388	14015	14240	14430	15420	15614	16045
16064	16113	16144	16224	16245	16332	16429	16546	16622
16716	16754	17030	17064	17095	17196	17220	17240	17351
17516	17607	20674	22008	22820	22845	23205	23472	23884
23921	23955	24641	24908	26038	26435	26477	26629	26708
27459	27707	27713	27962	28225	28445	28661	28695	29612
29698	30557	30673	30935	31004	31770	31873	31977	34122
34172	34731	35121	35671	40179	40186	42101	42369	43333
45004	47102	47104	47138	47155	47169	47186	47193	47230
47401	47412	47582	47646	47678	47807	47827	47909	47918
47945	47971	47991	48601	48615	48650	48657	48698	50527
50557	50774	50953	51076	51243	51431	51463	51644	51656
51709	51777	51828	51839	52203	52267	52323	52418	52533
52652	52681	52818	52836	52866	52983	53068	53463	53513
53543	53614	53772	53845	53915	54102	54135	54161	54218
54292	54340	54374	54511	54662	54727	54857	55299	55591
56029	56046	56080	56137	56146	56187	56492	56571	56651
56691	56739	56778	56964	56985	57083	57127	57131	57178
57245	57461	57494	57516	57541	57687	57749	57816	57957
57972	57993	58027	58150	58203	58238	58362	58424	58457
58606	58633	58665	58725	58847	58968	58974	59023	59134
59211	59265	59280	59293	59316	59362	59431	59758	59981
60018	60155	60253	60571	60630	60656	60680	60715	60760
61901	61980	61998	63985	65344	66160	67083	68263	68424
68442	68512	68816	68842	70026	70133	70200	70219	70231
70261	70273	70308	70316	70326	70350	70361	70398	71043
71081	71082	71109	71119	71603	71722	71802	71811	71815
71816	71823	71845	71867	71906	71907	71908	71909	71913
71917	71924	71925	71926	71934	71945	71957	71964	72201
72202	72206	72208	72210	72214	72215	72230	72233	72235
72240	72248	72250	72251	72261	72265	72274	72293	72305
72317	72318	72327	72340	72357	72363	72364	72365	72376
72388	72402	72403	72413	72426	72440	72451	72456	72476
72489	72493	72501	72518	72520	72528	72558	72562	72572
72582	72597	72632	72634	72645	72649	72659	72662	72672
72681	72694	72712	72747	72764	72768	72776	72786	72797
73033	73110	73111	74389	74455	74560	76225	76256	76394
76405	76458	76526	76595	76612	76644	76654	76679	76692
76743	76903	78384	78397	78486	78583	78866	78897	78954
78970	80001	81405	82965	85442	85799	85934	87155	87344
87418	87582	87623	87715	87860	88889	89002	89055	89564
89571	89592	89611	89625	89642	89662	89859	91165	91212
91285	91334	91348	91376	91408	91413	91592	91610	91765
91925	91938	91948	91958	93112	93417	93817	93844	94001
94120	94150	94170	94203	94299	94302	94312	94326	94332
94403	94430	94461	94510	94578	94610	94637	94638	94653
94659	94672	94711	94767	94776	94802	94821	94866	94910
94975	94995	94996	94998	95282	95527	96413	96441	96471

96481 96996

#### 4.13 Table 25 - List of BUFR Encoded Radiosonde Stations with no TAC Counterpart

ASDE09	ATGU3FT	BPMWB2N	DBLK	FPUW5GN	GQBZLZL	JNKN7JF	KJJF9XN	KMPLHPW
LAGY8	LAGZ8	LRYQE3U	UXK5JTU	WDK38HS	XKQLWQB	YLV96WM	ZVQEQCM	2EERVTP
7JUNA4N	9ZT9MRK	01001	01004	01010	01028	01241	01400	01415
01492	02836	02963	06610	07110	07145	07510	07645	07761
08001	08023	08190	08221	08302	08383	08430	08508	08522
08536	11010	11035	11120	11240	12575	17607	40186	47193
48698	50527	50557	50774	50953	51076	51243	51431	51463
51644	51656	51709	51777	51828	51839	52203	52267	52323
52418	52533	52652	52681	52818	52836	52866	52983	53068
53463	53513	53543	53614	53772	53845	53915	54102	54135
54161	54218	54292	54340	54374	54662	54727	54857	55299
55591	56029	56046	56080	56137	56146	56187	56492	56571
56651	56691	56739	56778	56964	56985	57083	57127	57131
57178	57245	57461	57494	57516	57541	57687	57749	57816
57957	57972	57993	58027	58150	58203	58238	58362	58424
58457	58606	58633	58665	58725	58847	58968	58974	59023
59134	59211	59265	59280	59293	59316	59362	59431	59758
59981	60253	72413	73111	76743	76903	89002	89642	89859
91925	91938	91948	91958	94001	94653			

## 5 Annex - Explanations of figures and tables

### 5.1 General

All information presented in this report is based on data received at ECMWF before the appropriate analysis. Approximate cut-off times (UTC) are shown below:

Analysis	Obs Time	Cut-off
0000	2101-0300	1530 (16 hours)
1200	0901-1500	1900 ( 7 hours)

### 5.2 Data Availability

For each observation type/parameter the average number of reports received per day is displayed in boxes of 5 degrees square. The numbers plotted are the nearest integer values - e.g. if 40 reports were received during the month then the average daily value plotted will be 1. If the average number is greater than 1000 then 999 will be plotted. If the average number is less than 0.5 then the digit 0 will be plotted. If no observations were received then the box will be left blank.

### 5.3 Data Quality

The information presented on data quality is based on differences between observations and the values of the most recent ECMWF forecast ("first guess") of the same parameter. Depending on the time of the observation, the forecast range is between 9 and 15 hours. The ability of a modern data assimilation system to provide the diagnostic facilities to monitor the performance of the observational network is demonstrated by A. Hollingsworth et. al., *Monthly Weather Review*, Vol 114, No. 5, May 1986.

It should be noted that:

- (i) all results are based on software that may undergo further development;
- (ii) although the quality of the ECMWF first-guess fields is of a generally high standard this is only true to a limited extent in the tropics, where small-scale processes such as convection are of much greater importance than in mid-latitudes, and the observations will sometimes not be representative of the scales of motion given by the first-guess;
- (iii) the first-guess fields themselves will vary in accuracy depending on the density and quality of data, particularly in the upstream regions and over Antarctica and the southern hemisphere mid-latitudes. Direct comparisons between stations (or airlines) should preferably be restricted to observations in a reasonably homogeneous climatic region.

Tables 1-9 contain lists of SHIPs (including fixed marine platforms), DRIFTERS, TEMPs and TEMPs/PILOTs believed to have supplied suspect reports of surface pressure, geopotential height or wind during the month. The format of the tables is according to Recommendation 3 CBS-Ext(85) and the criteria for stations or data platforms to be classified as suspect are given at the top of each table. For tables 7 and 8 data for the worst



standard pressure level are shown. Units of RMS, standard deviation and bias are hPa in tables 1 and 4, m in table 7 and  $\text{ms}^{-1}$  in tables 2, 5 and 8. In tables 7 and 8 the station position is indicated; in the case of TEMPSHIPS and PILOTSHIPS this position is obtained from the first report of the month. The gross error limits for first-guess deviations of geopotential in table 7 are as follows:

Level	Geop
1000	100m
925	100m
850	100m
700	100m
500	150m
400	175m
300	200m
250	225m
200	250m
150	275m
100	300m
70	375m
50	400m
30	450m

The corresponding limits for wind (table 8) are:

Level	Wind
1000	$35\text{ms}^{-1}$
925	$35\text{ms}^{-1}$
850	$35\text{ms}^{-1}$
700	$40\text{ms}^{-1}$
500	$45\text{ms}^{-1}$
400	$50\text{ms}^{-1}$
300	$60\text{ms}^{-1}$
250	$60\text{ms}^{-1}$
200	$50\text{ms}^{-1}$
150	$50\text{ms}^{-1}$
100	$45\text{ms}^{-1}$

In table 7 the weighted RMS values at standard levels are calculated using the following weights:

Level	Weight
1000	3.70
925	3.55
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

Tables 10 and 11 provide geopotential and wind quality statistics (100 hPa level) for TEMPSHIPs and PILOTSHIPs received during the month. Units and display format are identical to those in tables 7 and 8 respectively. Tables 13, 14 (50 hPa), 15 and 16 (100 hPa), 17 and 18 (500hPa), 19 and 20 (850hPa) provide similar radiosonde statistics for the EUCOS area.

Tables 21-23 are similar to tables 4-6 with data coverage restricted to the EUCOS area.

Figures 14-18 show global charts of SATOB and aircraft wind quality, where the statistics have been averaged over latitude/longitude boxes of 5 degrees square, and the mean observed minus first-guess (or 'bias') wind vectors have been plotted. All observations in the specified layers have been used. For comparison the mean observed wind (from the SATOB reports only) for each layer is shown in figures 14 and 15. A reference value of wind speed is plotted in the top right corner of each figure. An arrow is only plotted if 10 or more observations have been received in that 5 degree square.

Table 12 provides quality statistics of aircraft wind observations in the layer 300-150 hPa stratified by airline carrier. The format and specifications of the table have been defined by NMC Washington, the lead centre for the monitoring of aircraft and satellite data.

Table 24 shows list of Assimilated BUFR Encoded Radiosonde Stations monitored within the month.

Table 25 shows list of BUFR Encoded Radiosonde Stations with no TAC Counterpart monitored within the month.