



# ECMWF Global Data Monitoring Report

February 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 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 coordinate 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:

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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	Jan	Feb	Ident	Time	Jan	Feb
16113	(12)	16	3	30230	(00)	0	23
26850	(00)	31	13	30230	(12)	0	25
29231	(00)	28	9	42079	(00)	0	11
29231	(12)	27	13	42361	(00)	3	16
40706	(12)	31	9	42492	(00)	3	20
40738	(12)	31	5	42623	(00)	5	27
40745	(00)	28	2	42647	(00)	5	23
40754	(00)	24	3	42675	(00)	1	12
40754	(12)	19	3	42724	(00)	12	27
40766	(00)	26	5	43063	(00)	12	23
40809	(12)	28	6	60191	(00)	11	27
40811	(12)	29	1	60760	(00)	2	26
40841	(12)	28	10	61415	(12)	5	18
40848	(00)	31	7	68538	(12)	0	11
40856	(00)	31	12	74005	(00)	0	16
41883	(00)	29	1	-	-	-	-
41891	(00)	21	1	-	-	-	-
41923	(00)	31	1	-	-	-	-
41923	(12)	27	0	-	-	-	-
41977	(00)	30	1	-	-	-	-
42809	(00)	31	13	-	-	-	-
42809	(12)	30	13	-	-	-	-
43003	(12)	30	12	-	-	-	-
43279	(00)	31	14	-	-	-	-
43279	(12)	22	0	-	-	-	-
47741	(00)	14	0	-	-	-	-
47741	(12)	11	0	-	-	-	-
47778	(00)	13	0	-	-	-	-
47778	(12)	12	0	-	-	-	-
47945	(00)	32	2	-	-	-	-
62306	(12)	26	0	-	-	-	-
62378	(12)	15	1	-	-	-	-
62423	(00)	22	0	-	-	-	-
67197	(00)	13	0	-	-	-	-
67197	(12)	13	0	-	-	-	-
68110	(12)	27	13	-	-	-	-
70026	(00)	32	20	-	-	-	-
70026	(12)	29	16	-	-	-	-
70308	(00)	31	13	-	-	-	-
70308	(12)	30	12	-	-	-	-
71081	(00)	21	0	-	-	-	-
71081	(12)	20	0	-	-	-	-
71836	(00)	26	7	-	-	-	-
71836	(12)	30	7	-	-	-	-
71845	(00)	31	18	-	-	-	-
71845	(12)	31	18	-	-	-	-
71926	(00)	31	18	-	-	-	-
71926	(12)	29	15	-	-	-	-
76405	(00)	24	1	-	-	-	-
78988	(00)	25	14	-	-	-	-
78988	(12)	26	12	-	-	-	-
82022	(00)	26	4	-	-	-	-
82022	(12)	26	4	-	-	-	-
82193	(00)	29	7	-	-	-	-
82400	(00)	26	9	-	-	-	-
82400	(12)	25	9	-	-	-	-
82532	(00)	29	7	-	-	-	-
82705	(00)	23	4	-	-	-	-
83554	(00)	29	1	-	-	-	-
83554	(12)	28	0	-	-	-	-

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85469	(00)	14	0	-	-	-	-
87623	(12)	31	12	-	-	-	-
89022	(12)	25	1	-	-	-	-
89662	(00)	30	0	-	-	-	-
89662	(12)	30	0	-	-	-	-
91376	(00)	23	8	-	-	-	-
91610	(00)	23	0	-	-	-	-
91643	(00)	31	19	-	-	-	-
96163	(00)	31	19	-	-	-	-
96163	(12)	30	19	-	-	-	-
98328	(12)	31	17	-	-	-	-



## 2.2 Drifting Buoys

Surface pressure observations from **1359** 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.

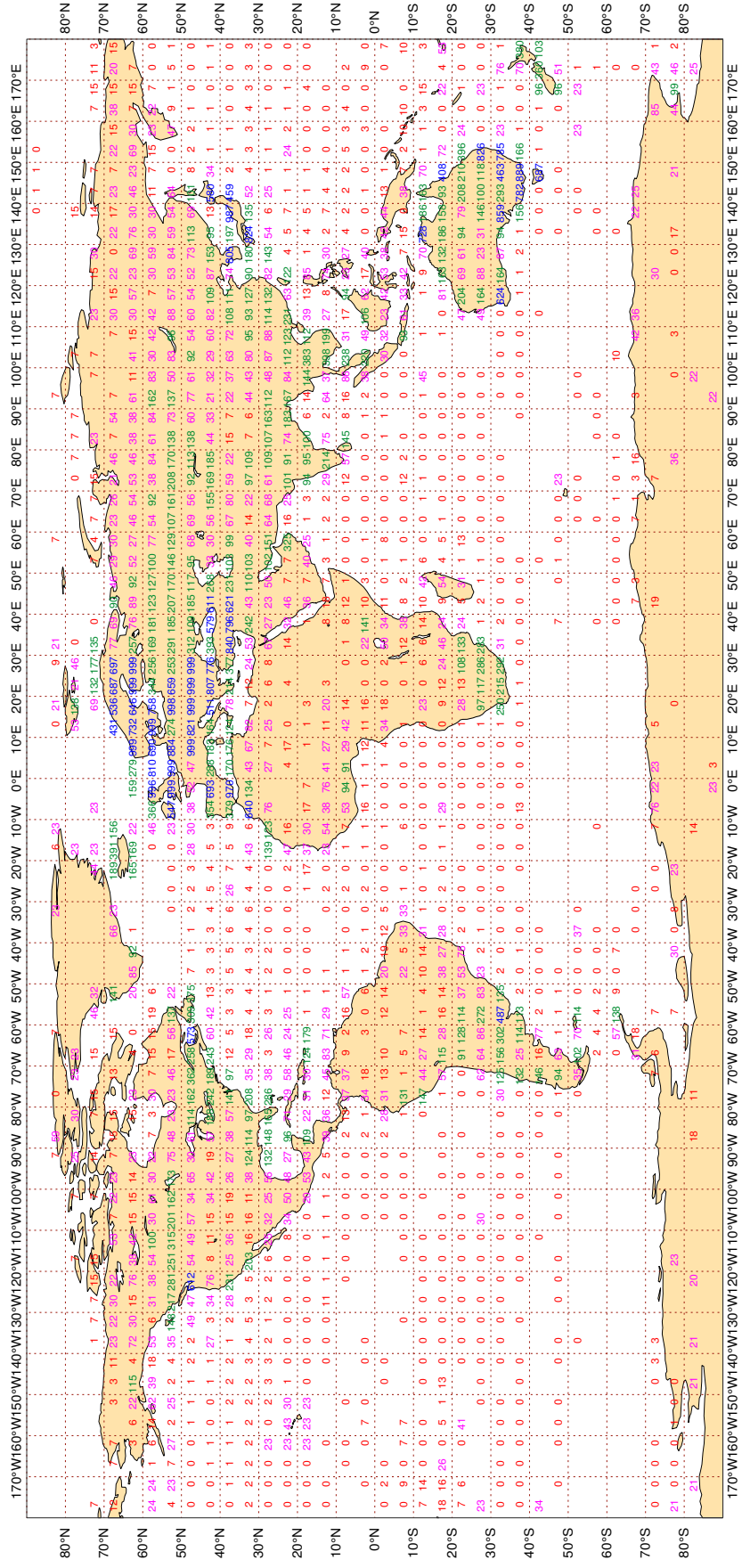
Fig	Parameter	Level/Layer
14	SATOB - Mean observed wind	1000-700 hPa
15	SATOB - Mean observed wind	400-150 hPa
16	SATOB - Mean observed minus first-guess wind	1000-700 hPa
17	SATOB - Mean observed minus first-guess wind	400-150 hPa
18	AIRCRAFT WIND - Mean observed minus first-guess	300-150 hPa

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

3.2.1 Figure 1 - Availability - SYNOP PRESSURE

ECMWF Monitoring Statistics - FEB 2023  
 Availability - SYNOP/SHIP (manual, auto) pressure  
 Average number of observations in 24 hours - 106042  
 LAND - WMO Region I: 5698 II:20030 III: 4704 IV: 7371  
 Region V:14718 VI:41682 Antarctic: 1302  
 Oceans - N. Atlantic 5652 S. Atlantic 248 Indian 639 Pacific 3998

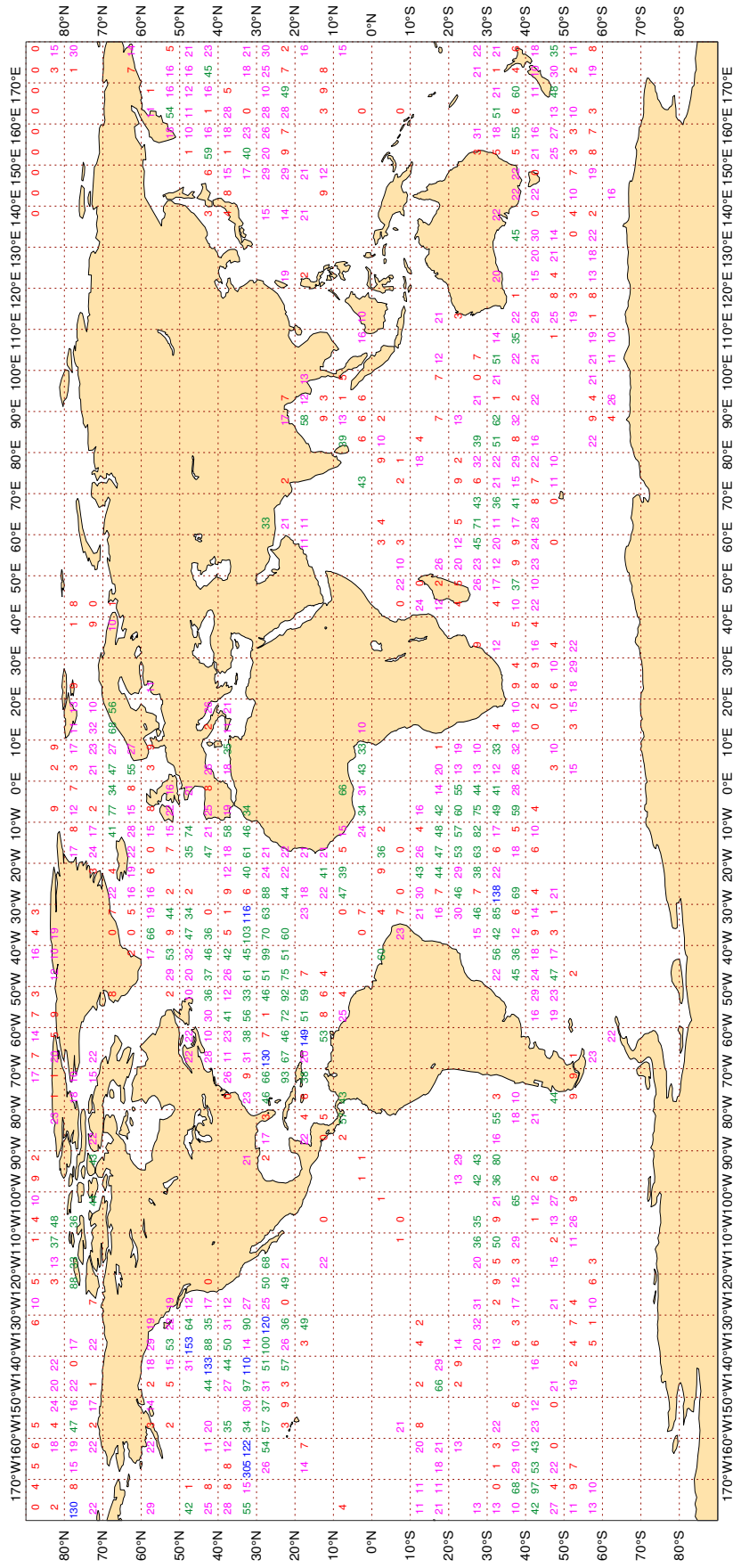
Figure 1



3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

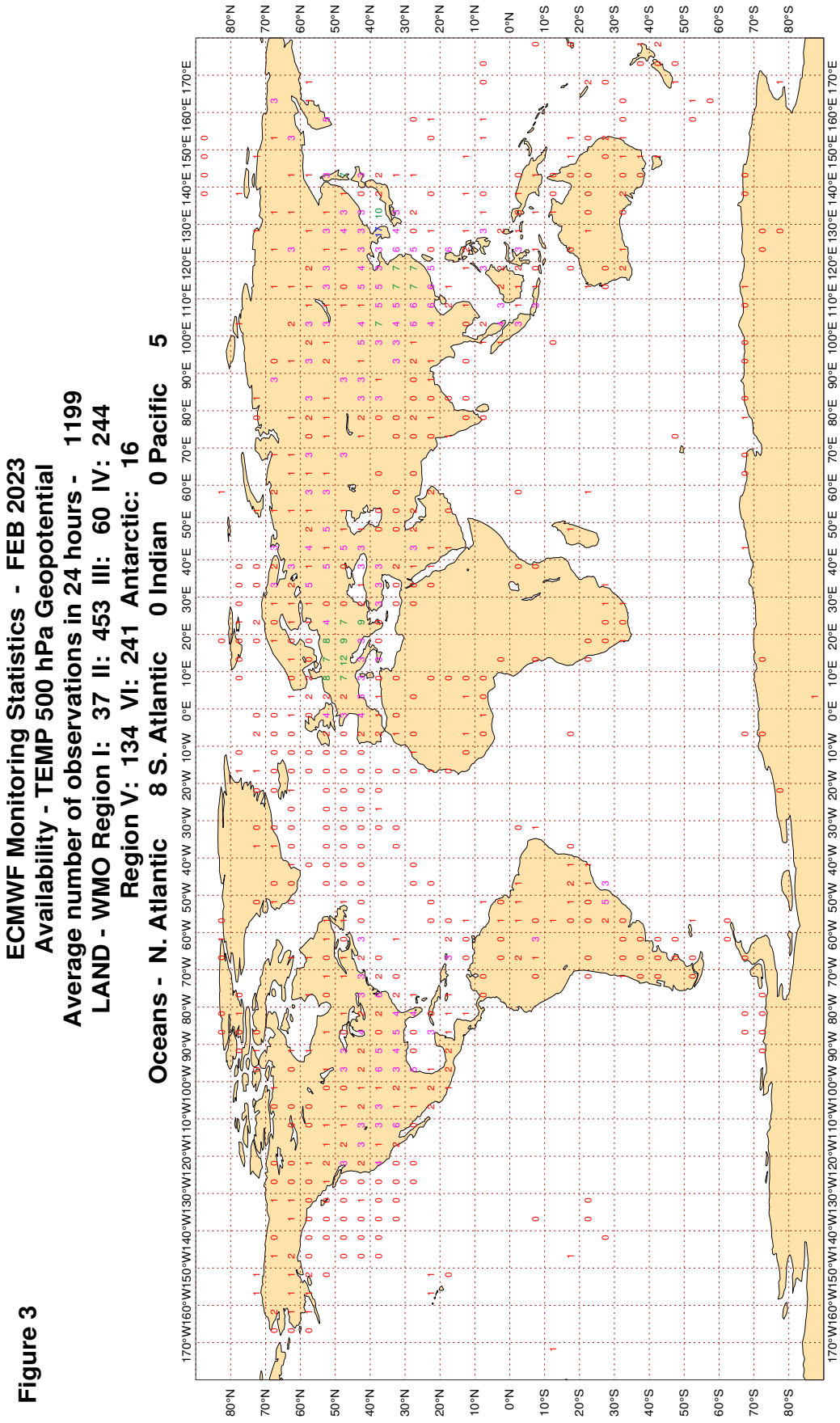
Figure 2

ECMWF Monitoring Statistics - FEB 2023  
 Availability - DRIFTER PRESSURE  
 Average number of observations in 24 hours - 18816  
 Oceans - N. Atlantic 5645 S. Atlantic 2572 Indian 2597 Pacific 8002

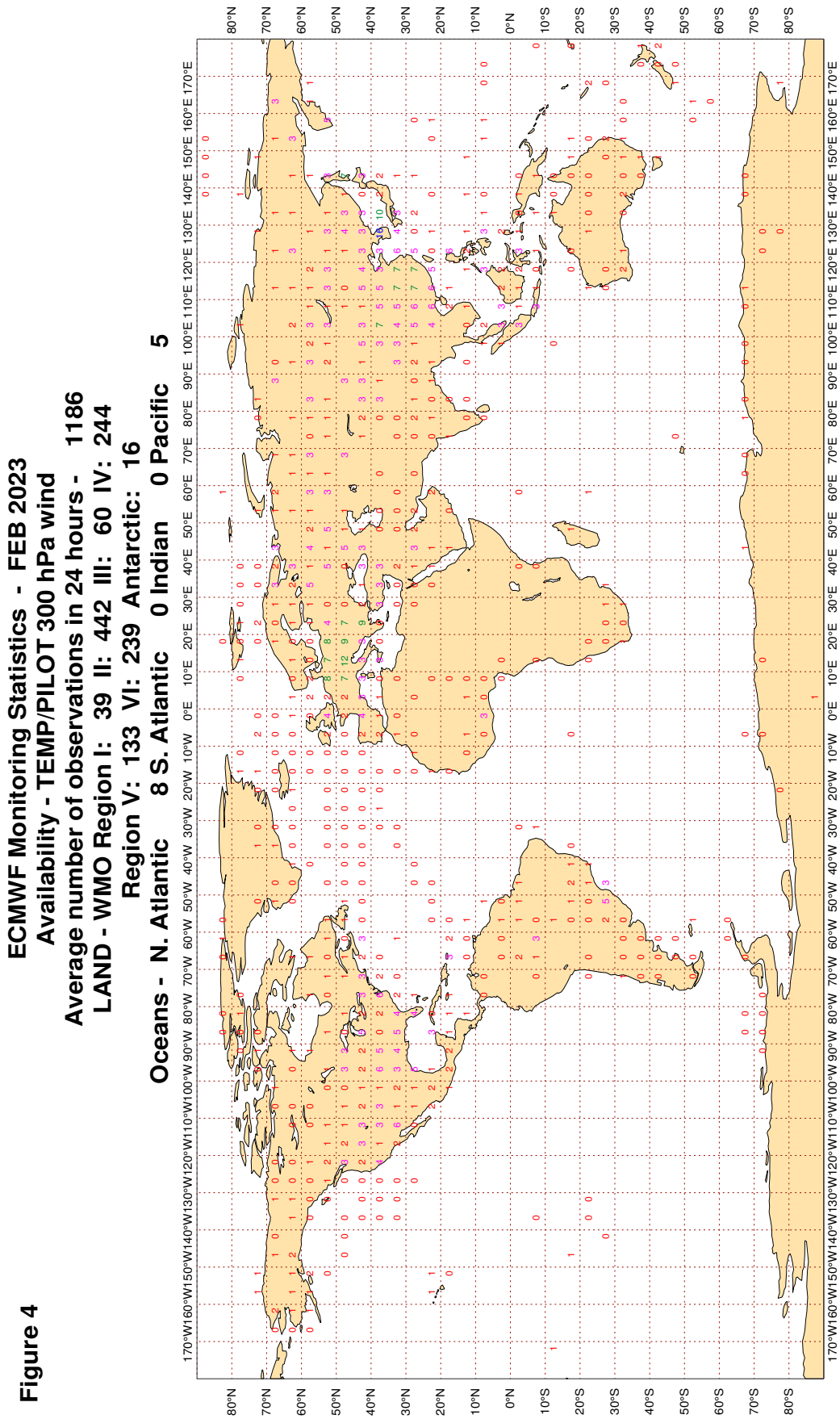


Magics 4.9.4

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential



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

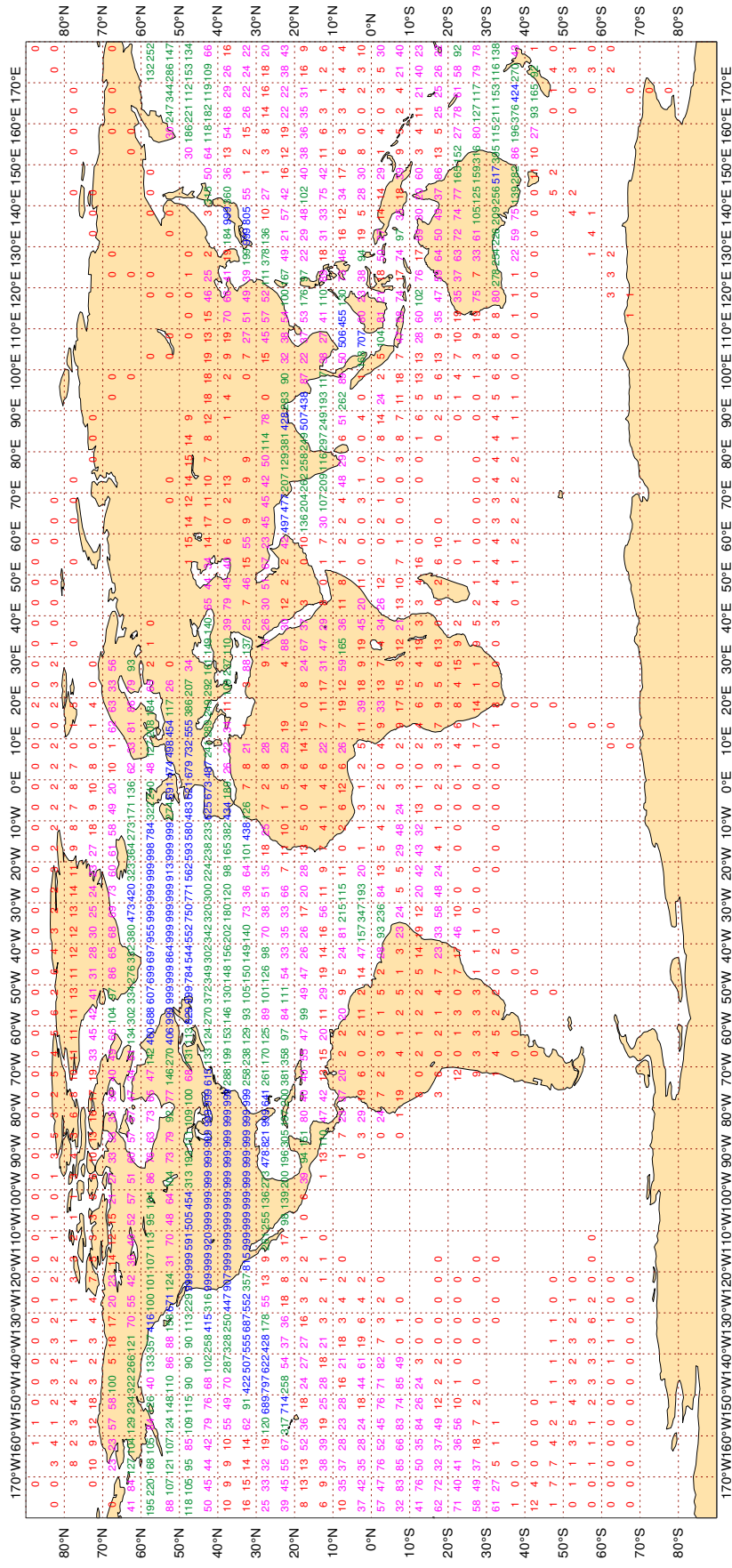


3.2.5 Figure 5 - Availability - AIRCRAFT winds 300-150 hPa

Figure 5

ECMWF Monitoring Statistics - FEB 2023  
Availability - Aircraft winds 300-150 hPa

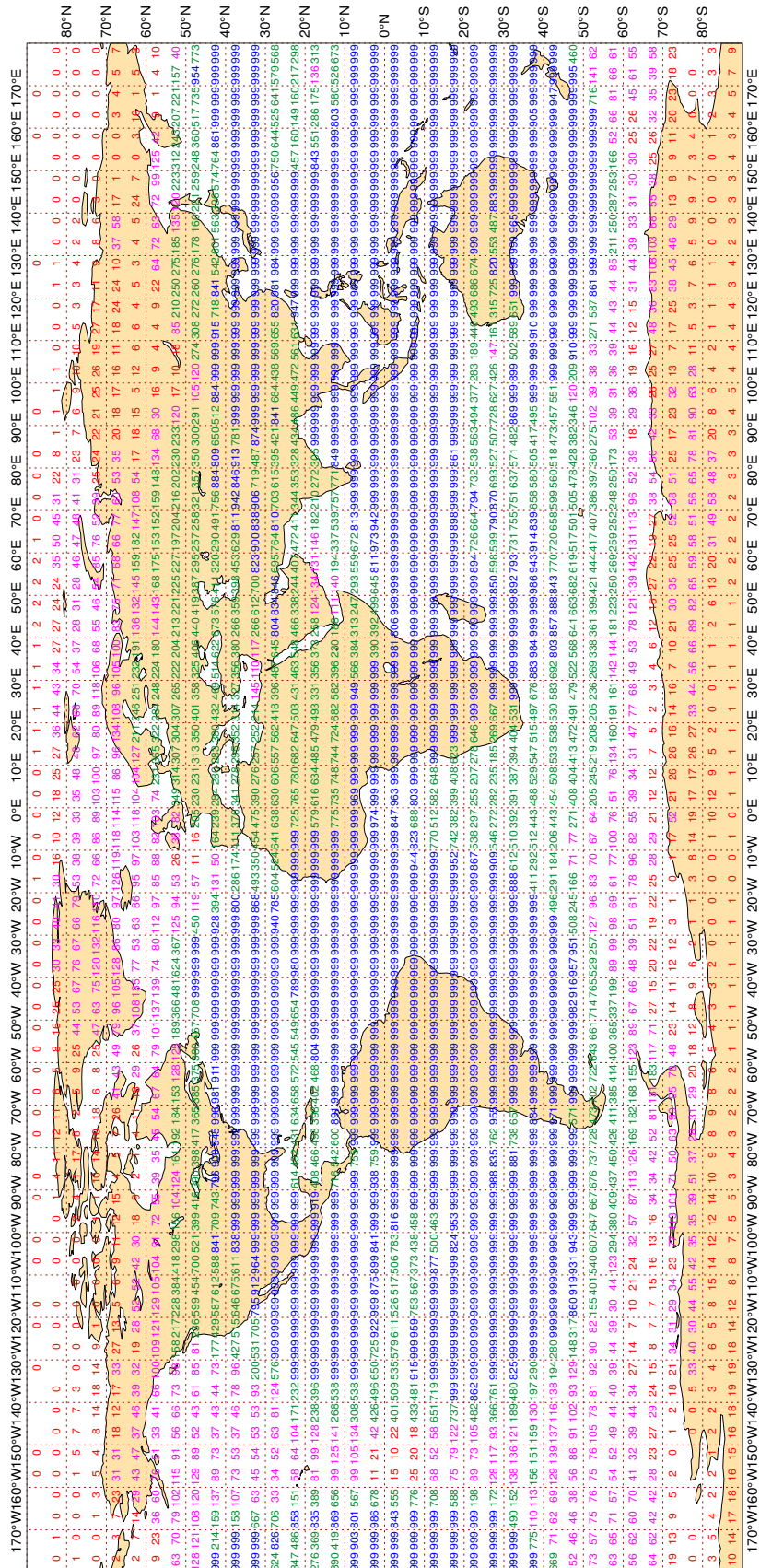
Average number of observations in 24 hours - 190473



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

Figure 6

ECMWF Monitoring Statistics - FEB 2023  
Availability - AMV winds 400-150 hPa  
Average number of observations in 24 hours - 2268759



Magics 4.9.4



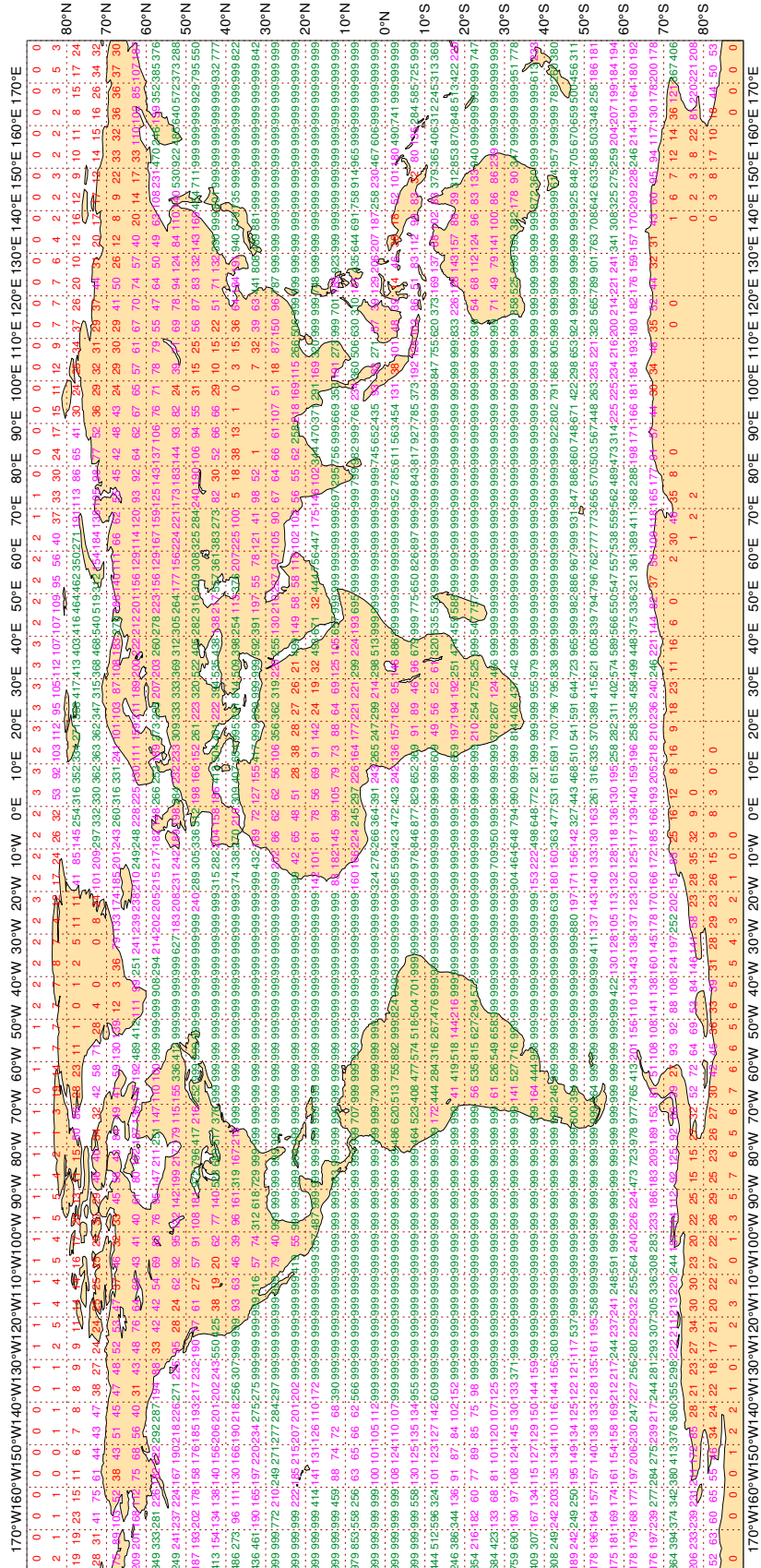


3.2.7 Figure 7 - Availability - SATOB winds 1000-700 hPa

Figure 7

ECMWF Monitoring Statistics - FEB 2023  
Availability - AMV winds 1000-700 hPa

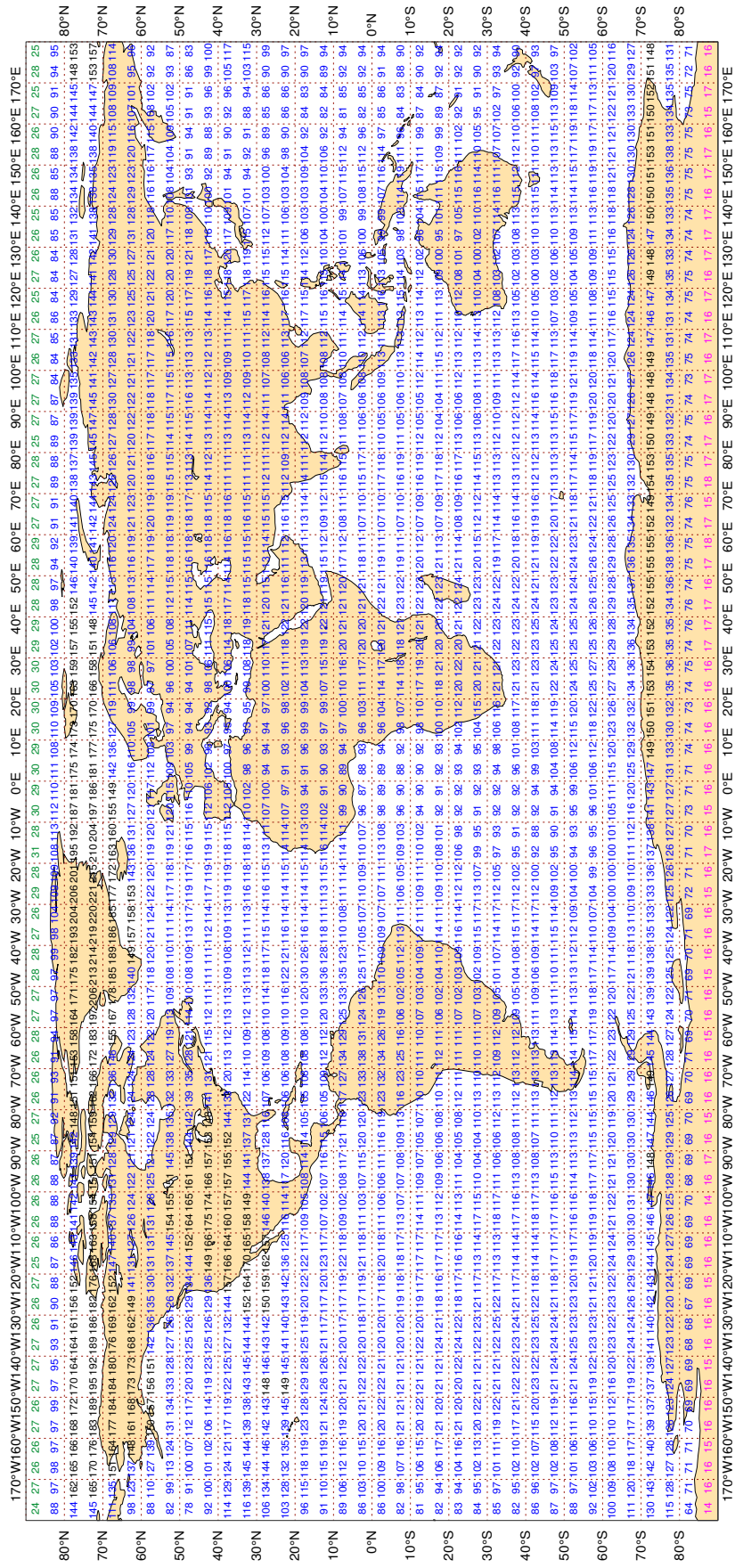
Average number of observations in 24 hours - 3498989



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

Figure 8

ECMWF Monitoring Statistics - FEB 2023  
Availability - NOAA15 ATOVS : AMSU-A  
Average number of observations in 24 hours - 291461

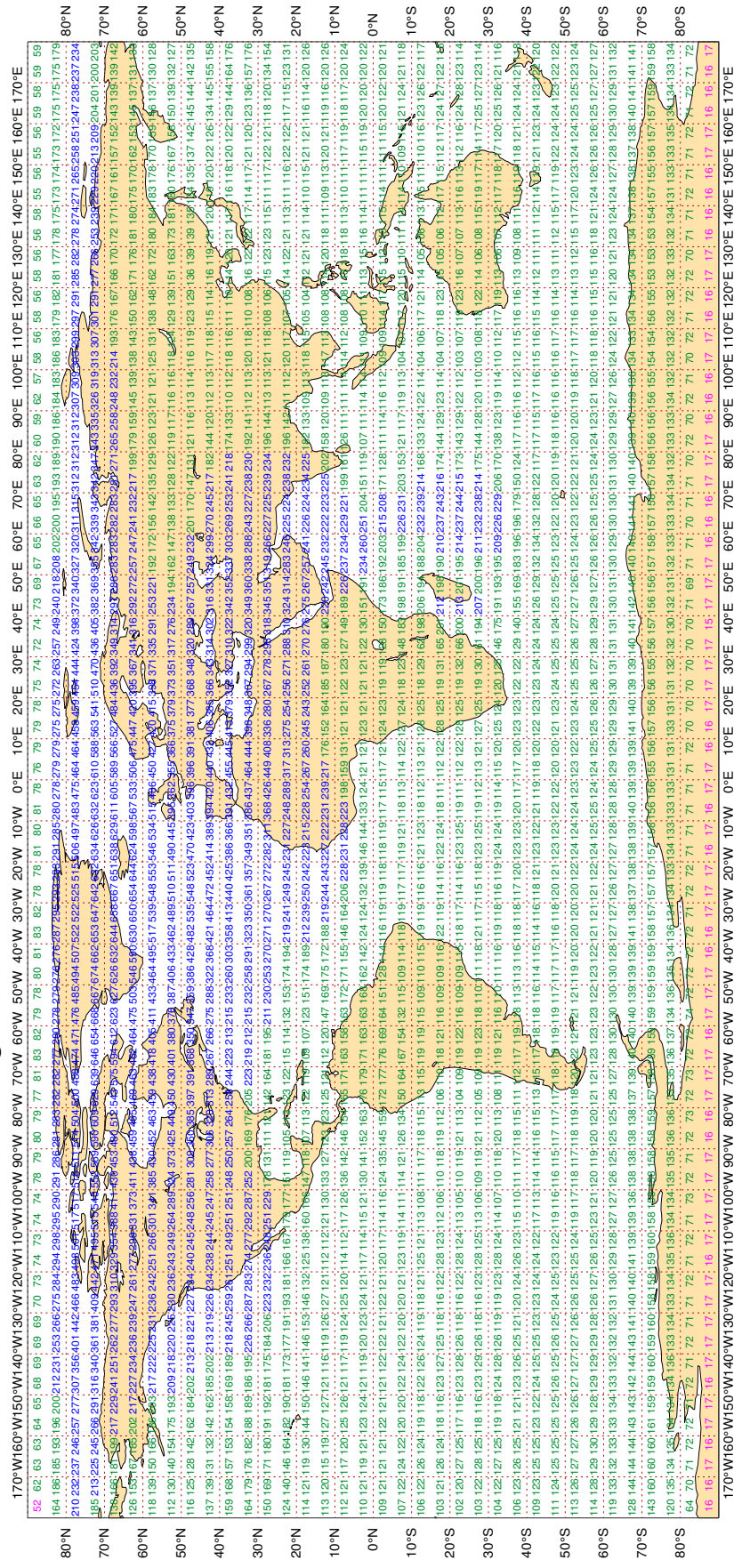


3.2.9 Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A

Figure 9.1

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

Average number of observations in 24 hours - 467144

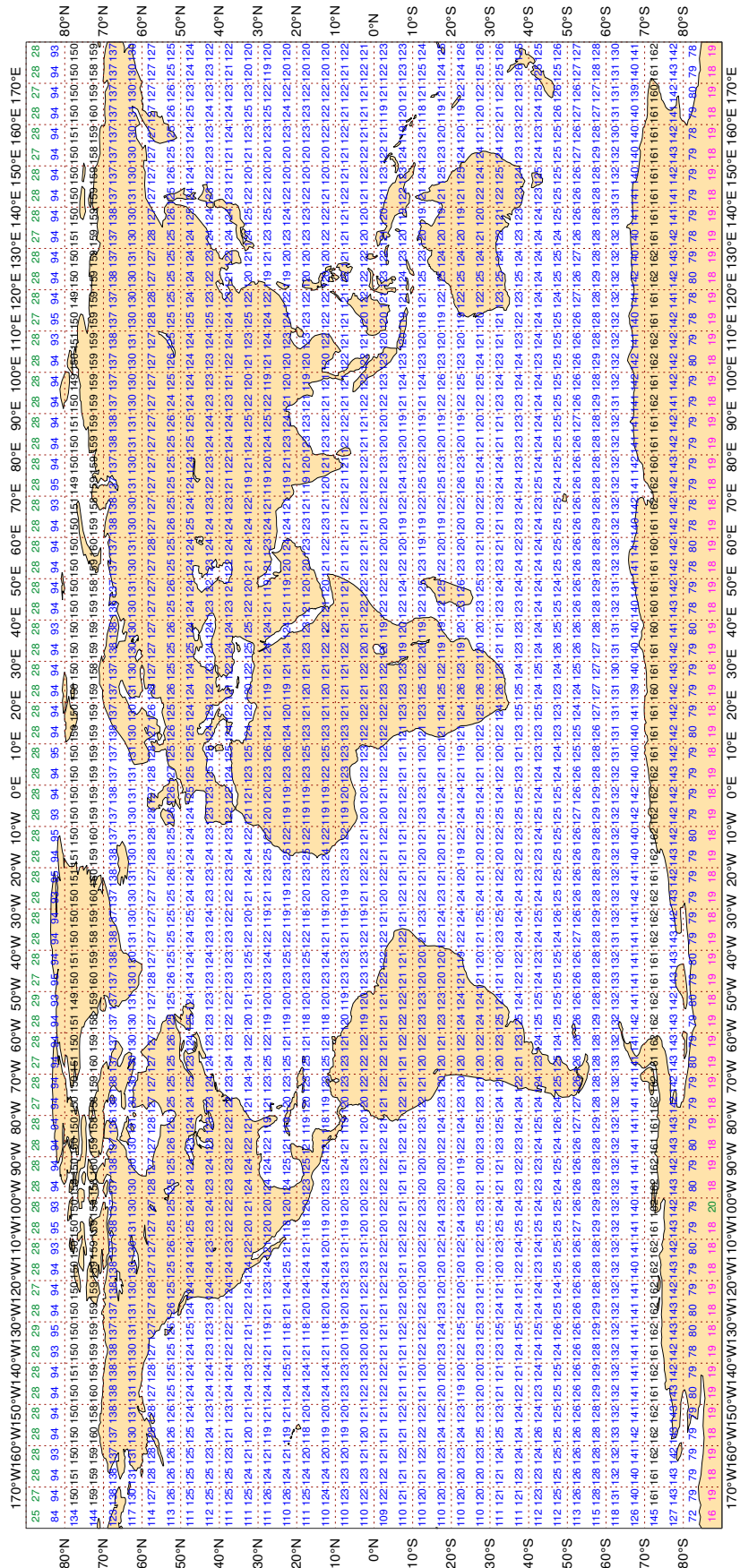


3.2.10 Figure 9.2 - Availability - AQUA ATOVS : AMSU-A

Figure 9.2

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

Average number of observations in 24 hours - 312824



Magics 4.9.4

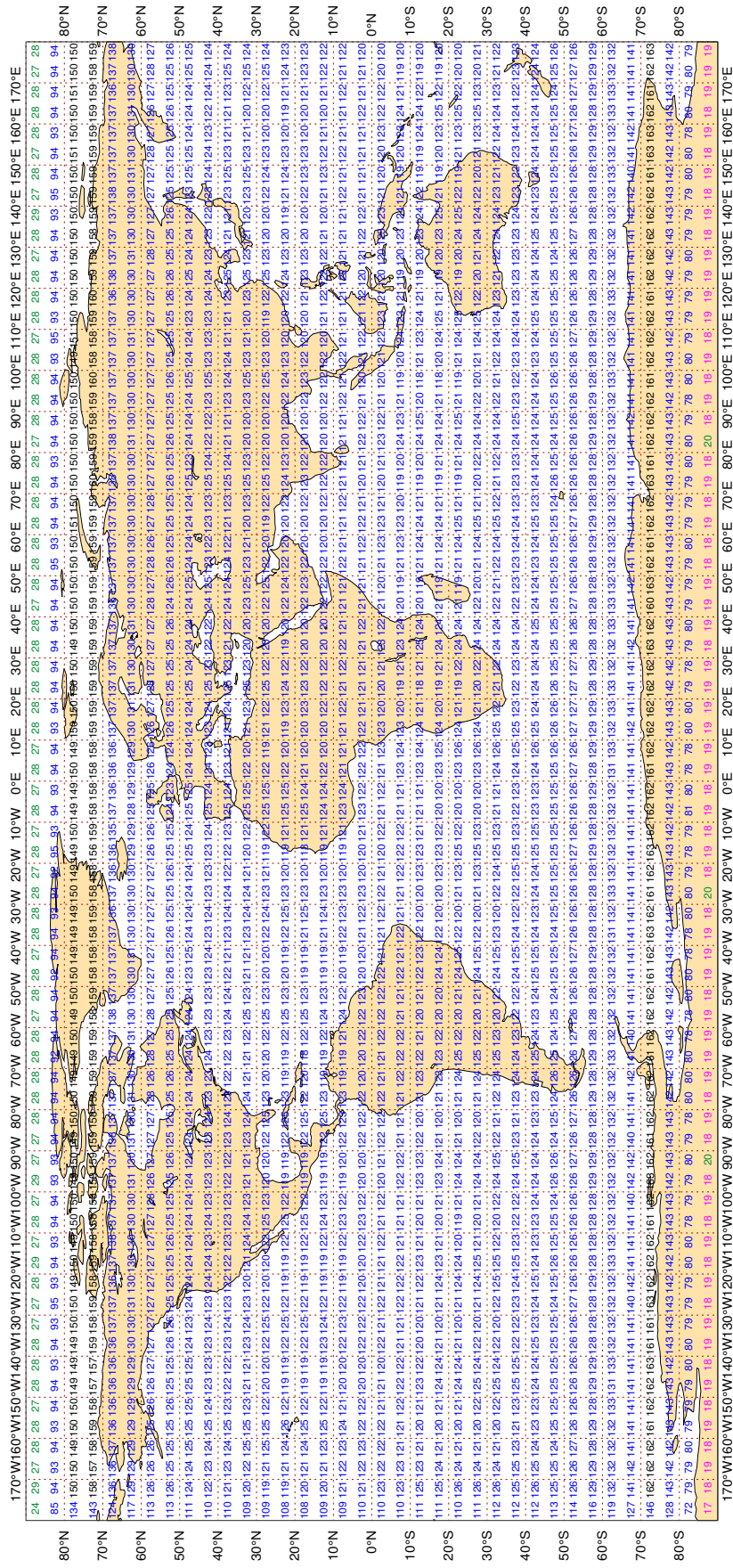


3.2.11 Figure 9.3 - Availability - METOP ATOVS : AMSU-A

Figure 9.3

ECMWF Monitoring Statistics - FEB 2023  
Availability - METOP-B ATOVS : AMSU-A

Average number of observations in 24 hours - 312828



**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 : FEB 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
2EIF7	99	P	SUR	22	0	0.5	4.8	4.9
3FJB3	99	P	SUR	45	0	0.6	3.3	3.4
7JMV	99	P	SUR	15	0	1.1	3.8	3.9
7KDG	99	P	SUR	17	0	0.7	-3.3	3.4
9HA4612	99	P	SUR	20	0	0.9	3.1	3.2
9HA4638	99	P	SUR	53	0	0.8	4.8	4.8
9HA4902	99	P	SUR	58	0	1.3	3.5	3.8
9HA4986	99	P	SUR	15	0	1.7	3.4	3.8
9HA4991	99	P	SUR	27	0	2.4	3.4	4.2
9HA5397	99	P	SUR	20	0	3.2	5.6	6.5
9HJB9	99	P	SUR	17	0	1.1	3.5	3.7
9HRJ9	99	P	SUR	29	0	0.5	3.3	3.3
9V3286	99	P	SUR	97	0	2.0	4.7	5.1
9V5246	99	P	SUR	20	0	1.0	5.1	5.2
9V8372	99	P	SUR	60	1	2.5	9.4	9.7
9V8839	99	P	SUR	17	0	0.8	3.4	3.5
9V9365	99	P	SUR	102	1	3.3	3.5	4.8
A8FG3	99	P	SUR	16	0	1.0	-7.4	7.5
BHJG	99	P	SUR	26	0	2.5	-3.3	4.1
C6FB3	99	P	SUR	29	0	1.6	-7.0	7.2
C6SE5	99	P	SUR	24	0	1.2	-3.6	3.8
GCWP	99	P	SUR	89	0	3.2	-4.2	5.3
JMJRCES	99	P	SUR	109	14	5.9	-3.8	7.0
LAPD7	99	P	SUR	26	0	2.6	5.2	5.8
LAPE7	99	P	SUR	39	0	1.5	5.6	5.8
LAQJ7	99	P	SUR	29	0	1.1	-4.4	4.5
LAQM7	99	P	SUR	26	0	1.4	5.3	5.5
LOCB	99	P	SUR	55	1	2.0	-3.1	3.7
MJKZ4	99	P	SUR	17	0	1.4	3.7	4.0
OWLD2	99	P	SUR	15	0	2.1	-5.5	5.8
PHET	99	P	SUR	35	0	2.6	3.4	4.3
S6LT3	99	P	SUR	16	0	1.3	3.6	3.8

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
TBWUK60	99	P	SUR	26	0	0.6	-3.6	3.6
UBNJ7	99	P	SUR	21	15	3.0	-9.8	10.3
V7DQ3	99	P	SUR	38	0	1.6	5.0	5.2
V7EQ4	99	P	SUR	21	0	1.1	4.2	4.3
V7TM3	99	P	SUR	32	0	1.8	-5.3	5.6
VRBQ6	99	P	SUR	40	0	0.9	-3.4	3.5
VRDJ3	99	P	SUR	68	1	2.2	-3.0	3.8
VRFS2	99	P	SUR	17	0	1.9	5.2	5.6
VRFU9	99	P	SUR	35	0	1.4	-4.4	4.6
VRGO3	99	P	SUR	23	0	1.1	7.8	7.8
VRIB2	99	P	SUR	28	0	1.2	3.9	4.1
VRID6	99	P	SUR	46	0	1.7	6.2	6.4
VRLA3	99	P	SUR	20	0	1.6	-3.6	4.0
VRLJ4	99	P	SUR	27	0	1.1	7.0	7.1
VRLZ4	99	P	SUR	19	0	2.7	-3.7	4.5
VRNL2	99	P	SUR	27	0	0.8	9.4	9.4
VRQX5	99	P	SUR	20	0	2.0	4.0	4.5
VRRB6	99	P	SUR	66	0	2.2	4.3	4.8
WDJ3199	99	P	SUR	44	0	2.2	-3.1	3.8
WGEB	99	P	SUR	28	0	1.0	9.7	9.8
ZCEF2	99	P	SUR	21	0	0.9	3.1	3.2

**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 : FEB 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 : FEB 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
46092	99	DIRN	SUR	57	0	0	28.2	31.8	42.5

**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 : FEB 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
1501696	99	P	SUR	-30	-8	639	0	0.0	-5.7	5.7
1501729	99	P	SUR	-19	-23	642	0	0.3	-5.5	5.5
2302620	99	P	SUR	14	86	553	218	7.2	-1.5	7.4
2302636	99	P	SUR	1	82	276	67	4.0	4.7	6.1
3801550	99	P	SUR	87	-64	672	672	0.0	0.0	0.0
4101850	99	P	SUR	43	-9	85	0	0.4	-9.8	9.8
4402671	99	P	SUR	18	-63	634	0	0.0	-6.2	6.2
4602605	99	P	SUR	44	-140	610	78	6.6	0.9	6.6
4701658	99	P	SUR	72	-95	631	631	0.0	0.0	0.0
4701738	99	P	SUR	70	-67	655	655	0.0	0.0	0.0
4701744	99	P	SUR	78	-106	671	671	0.0	0.0	0.0
4701747	99	P	SUR	76	-124	672	672	0.0	0.0	0.0
4801636	99	P	SUR	78	-137	512	96	9.8	-2.4	10.1
4802592	99	P	SUR	82	-161	643	643	0.0	0.0	0.0
4802655	99	P	SUR	77	-124	663	546	4.0	-6.2	7.3
5501567	99	P	SUR	-22	-91	621	507	1.3	-12.5	12.6
5601693	99	P	SUR	-61	140	474	6	0.9	12.9	12.9
6102804	99	P	SUR	40	3	644	0	0.4	-7.2	7.2
6402587	99	P	SUR	47	-45	568	8	2.3	9.7	10.0

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

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 PERIOD : FEB 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
2300092	99	DIRN	SUR	17	89	62	0	0	49.0	31.7	58.3
2300093	99	DIRN	SUR	16	88	73	0	0	66.0	43.1	78.8
2300453	99	DIRN	SUR	8	73	58	0	0	12.9	-27.1	30.0
2300454	99	DIRN	SUR	10	73	52	0	0	50.6	-38.4	63.5
2300459	99	DIRN	SUR	14	87	94	0	0	45.0	66.3	80.1
23092	99	DIRN	SUR	17	89	55	0	0	43.7	28.7	52.3
23093	99	DIRN	SUR	16	88	67	0	0	66.4	34.0	74.6
23453	99	DIRN	SUR	8	73	51	0	0	12.2	-29.0	31.5
23454	99	DIRN	SUR	10	73	48	0	0	50.3	-40.3	64.4
23459	99	DIRN	SUR	14	87	88	0	0	45.1	70.6	83.7
23491	99	DIRN	SUR	12	93	102	0	0	48.4	65.7	81.6
3100006	99	DIRN	SUR	4	-23	333	0	0	22.7	20.8	30.8
44078	99	DIRN	SUR	60	-40	46	0	0	12.4	-21.0	24.4
4600092	99	DIRN	SUR	37	-122	333	0	0	27.3	29.9	40.5
4600185	99	DIRN	SUR	53	-130	175	0	0	15.0	22.3	26.9
4600204	99	DIRN	SUR	51	-129	604	0	0	18.0	24.6	30.5
46092	99	DIRN	SUR	37	-122	310	0	0	26.9	28.2	39.0
46131	99	DIRN	SUR	50	-125	448	0	0	53.2	-24.5	58.6
46185	99	DIRN	SUR	53	-130	175	0	0	19.7	22.1	29.7
46204	99	DIRN	SUR	51	-129	601	0	0	17.6	23.5	29.4
6200025	99	DIRN	SUR	44	-6	392	0	0	16.0	-29.6	33.7
6200086	99	DIRN	SUR	55	6	30	0	0	6.9	22.6	23.7
6200199	99	DIRN	SUR	40	-9	203	0	0	16.6	27.8	32.4
6301003	99	DIRN	SUR	74	24	432	0	0	11.1	27.8	29.9
6600022	99	DIRN	SUR	54	14	170	0	0	56.4	45.1	72.2

### 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 : FEB 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	00	Z	1000	57	3	25	0	5.5	76.0	76.2
01400	12	Z	1000	57	3	25	0	5.6	77.2	77.4
24726	12	Z	250	63	114	28	0	31.9	-70.3	77.2
24726	00	Z	250	63	114	27	0	33.4	-67.4	75.2
40582	12	Z	1000	29	48	19	0	17.5	24.4	30.0
42492	00	Z	200	26	85	19	0	87.7	-9.7	88.2
42647	00	Z	70	23	73	15	1	128.1	-46.9	136.4
47122	12	Z	250	37	127	28	0	63.0	58.5	86.0
58027	00	Z	30	34	117	22	0	57.5	202.6	210.6
68842	12	Z	1000	-34	26	27	0	29.1	26.3	39.2
76644	12	Z	50	21	-90	24	3	184.4	165.1	247.5
76903	00	Z	500	15	-92	10	0	47.1	109.5	119.2
76903	12	Z	500	15	-92	13	0	58.7	58.0	82.5
91680	00	Z	1000	-18	177	28	0	4.4	32.7	33.0
96315	00	Z	1000	5	115	28	0	7.8	61.3	61.8
96315	12	Z	1000	5	115	28	0	8.4	58.1	58.7
97690	00	Z	925	-3	141	28	2	4.2	89.2	89.3
98233	00	Z	1000	18	122	25	0	28.0	45.0	53.0
98558	12	Z	1000	11	126	24	2	24.6	23.2	33.8
98558	00	Z	1000	11	126	23	0	28.0	16.9	32.7
JNKN7J	00	Z	1000	40	-70	11	0	4.8	38.4	38.7
KMPLHP	00	Z	1000	50	-15	10	0	14.4	50.6	52.6

**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 : FEB 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
61442	00	V	925	18	-16	20	0	-6.5	-1.8	18.4
9ZT9MR	12	V	250	62	-4	12	1	-7.2	0.0	18.6

**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 : FEB 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

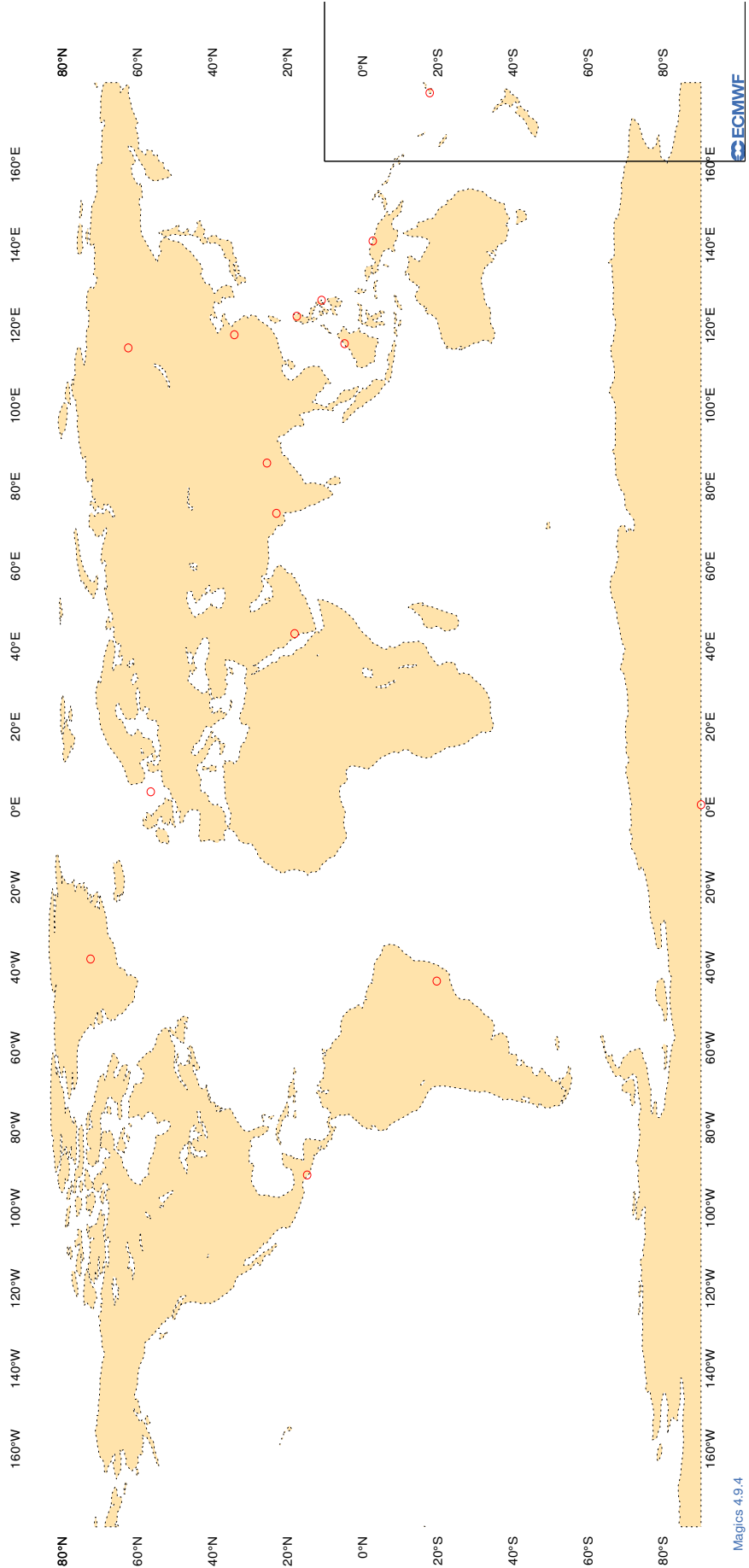
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS  $\geq$  5 M/S  
 NO. OF OBSERVATIONS  $\geq$  5, AND,  
 ABSOLUTE BIAS  $\geq$  10 DEGREES, WITH  
 STANDARD DEVIATION  $<$  30 DEGREES, AND,  
 VERTICAL SPREAD  $<$  10 DEGREES  
 (AVERAGE BETWEEN 500 AND 150 HPA)

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
43371	00	DD	9	77	7	-20.0	8.7	12.1

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

Figure 10

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

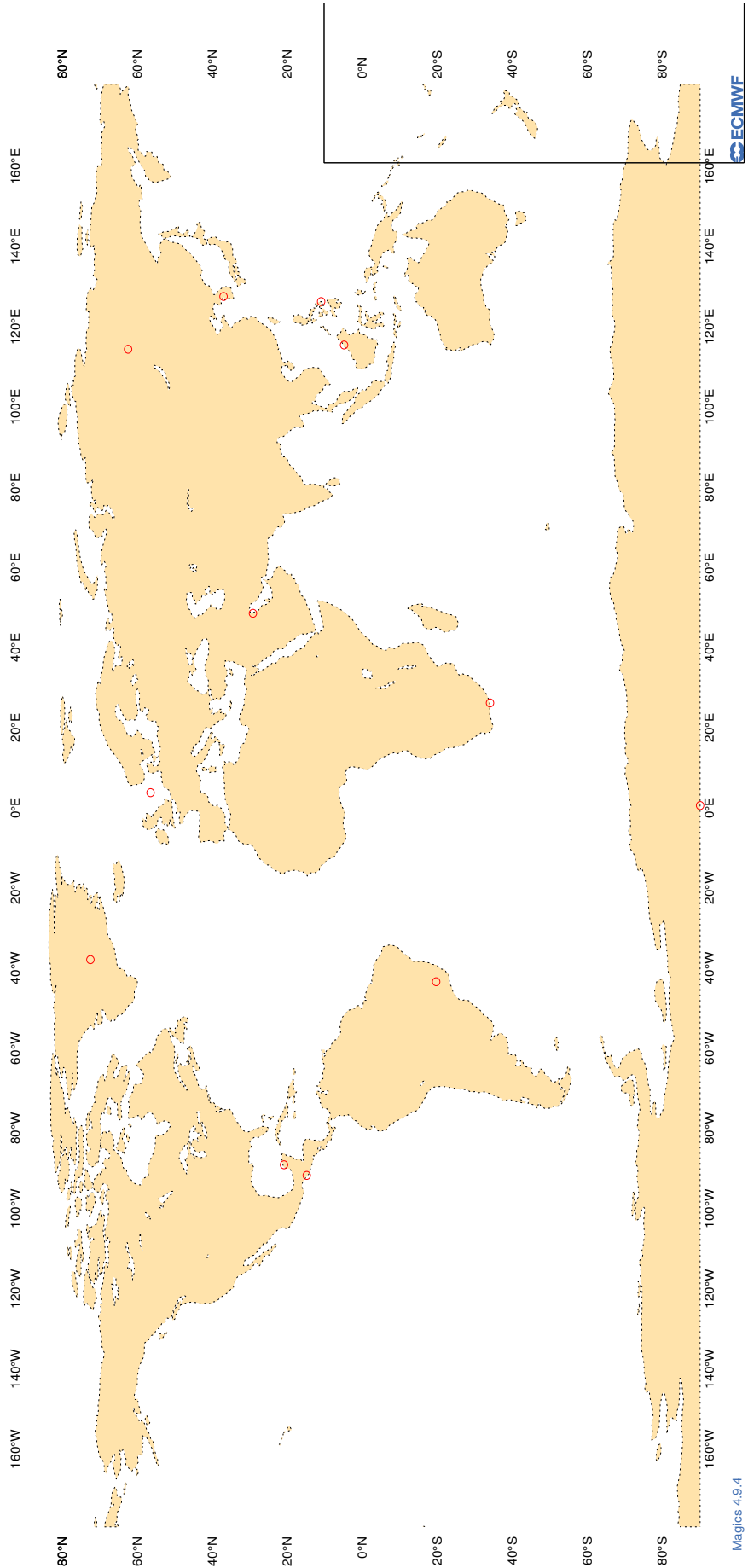




3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC

**ECMWF Monitoring Statistics - FEB 2023 12 UTC**  
**Suspect TEMP observations - GEOPOTENTIAL**

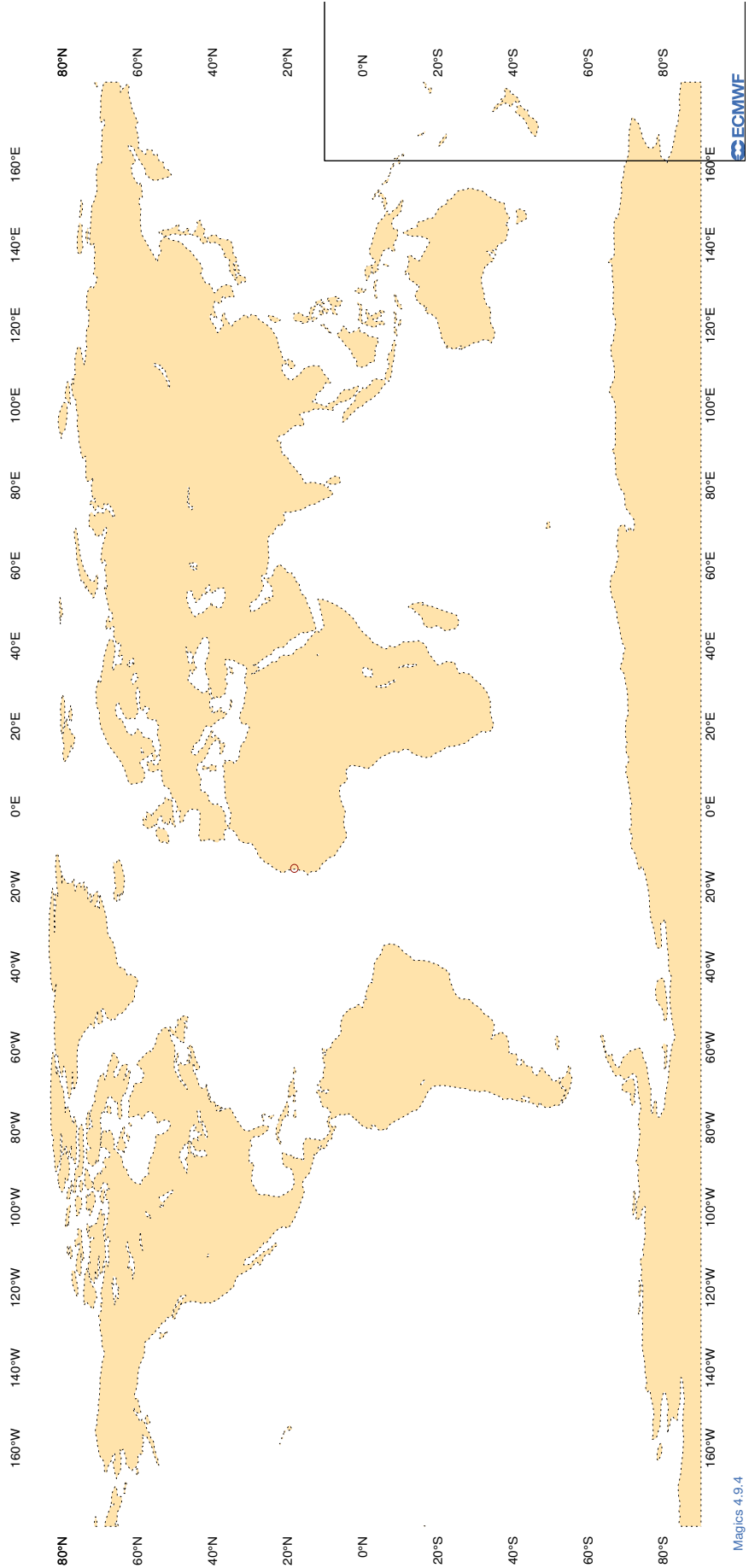
**Figure 11**



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

Figure 12

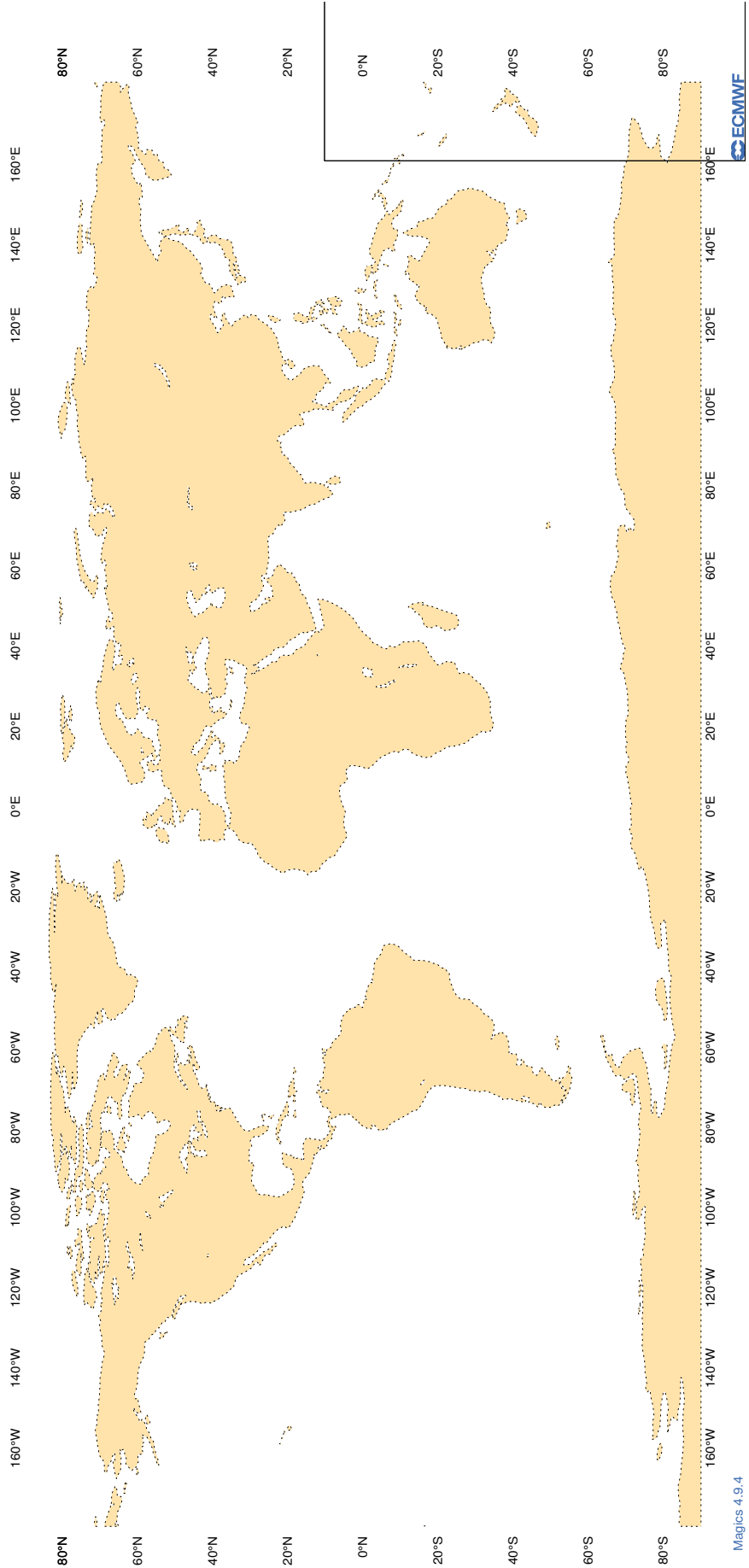
ECMWF Monitoring Statistics - FEB 2023 00 UTC  
Suspect TEMP/PILOT observations - WIND



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

Figure 13

ECMWF Monitoring Statistics - FEB 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 : FEB 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
2EERV	12	Z	100	6	11.4	-7.7
2EERV	00	Z	100	7	13.4	-11.0
7JUNA4	12	Z	100	3	62.2	52.7
7JUNA4	00	Z	100	2	1.6	1.5
9ZT9MR	12	Z	100	13	22.5	-17.7
9ZT9MR	00	Z	100	9	21.8	-19.3
ASDE09	12	Z	100	1	17.3	17.3
ATGU3F	12	Z	100	6	16.2	-12.8
ATGU3F	00	Z	100	7	22.7	-16.6
DBLK	12	Z	100	36	8.6	6.8
GQBZLZ	12	Z	100	1	10.9	-10.9
JGQH	12	Z	100	1	6.2	6.2
JGQH	00	Z	100	1	0.7	-0.7
JNKN7J	12	Z	100	8	46.5	37.6
JNKN7J	00	Z	100	10	29.6	25.3
JPBN	00	Z	100	2	10.3	5.9
JPBN	12	Z	100	4	8.6	-4.7
KJJF9X	12	Z	100	6	4.7	0.9
KJJF9X	00	Z	100	5	7.3	7.0
KMPLHP	12	Z	100	8	118.7	100.5
KMPLHP	00	Z	100	9	39.9	38.0
LAGZ8	12	Z	100	1	0.0	0.0
LAGZ8	00	Z	100	1	12.2	-12.2
LRQY3	12	Z	100	10	11.4	-3.0
LRQY3	00	Z	100	11	8.0	-2.2
UBQW2	00	Z	100	28	18.6	-4.3
UBQW2	12	Z	100	28	20.7	-11.0
USBOD	12	Z	100	1	0.2	-0.2
USBOD	00	Z	100	3	7.6	-5.0
USCAT	00	Z	100	0	0.0	0.0
USCAT	12	Z	100	0	0.0	0.0
USSIO	00	Z	100	1	7.7	-7.7
USSOD	12	Z	100	0	0.0	0.0
USSOD	00	Z	100	1	18.4	-18.4
USYUB	12	Z	100	3	16.0	6.9
USYUB	00	Z	100	8	8.6	-5.1
WDK38H	12	Z	100	9	22.5	-10.9
XKQLWQ	12	Z	100	7	23.9	13.7
XQFJRG	12	Z	100	7	12.3	-8.2

RADIOSONDE MONITORING STATISTICS (SHIPS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
XQFJRG	00	Z	100	4	15.8	-11.0
YLV96W	00	Z	100	4	12.2	-0.8
YLV96W	12	Z	100	5	41.1	22.2
ZVQEQC	12	Z	100	1	15.1	15.1

**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 : FEB 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
2EERV	12	V	100	6	4.3	-0.7	2.2
2EERV	00	V	100	7	4.3	-0.5	0.5
7JUNA4	12	V	100	3	5.3	-0.6	3.3
7JUNA4	00	V	100	2	3.4	-1.3	-1.6
9ZT9MR	12	V	100	12	6.1	-3.0	0.8
9ZT9MR	00	V	100	9	3.4	0.0	-0.1
ASDE09	12	V	100	1	3.3	-0.1	-3.3
ATGU3F	12	V	100	6	3.2	-0.6	-0.9
ATGU3F	00	V	100	7	2.6	0.4	-0.1
DBLK	12	V	100	26	2.0	-0.2	0.2
GQBZLZ	12	V	100	1	2.9	-0.3	2.9
JGQH	12	V	100	1	4.7	1.7	4.4
JGQH	00	V	100	1	2.6	2.1	-1.5
JNKN7J	12	V	100	8	3.0	0.2	1.6
JNKN7J	00	V	100	10	2.9	1.0	0.7
JPBN	00	V	100	2	4.9	4.3	-2.3
JPBN	12	V	100	3	2.8	1.1	1.4
KJJF9X	12	V	100	6	3.0	-1.2	0.8
KJJF9X	00	V	100	5	3.1	1.0	0.0
KMPLHP	12	V	100	8	5.0	-1.6	0.4
KMPLHP	00	V	100	9	2.6	0.1	0.6
LAGZ8	12	V	100	1	8.9	8.6	-2.1
LAGZ8	00	V	100	1	2.0	1.1	-1.7
LRQ3E	12	V	100	10	3.6	0.6	0.5
LRQ3E	00	V	100	11	3.9	0.1	-0.8
UBQW2	00	V	100	27	4.0	1.4	-1.2
UBQW2	12	V	100	27	3.5	1.4	-0.8
USBOD	12	V	100	1	2.1	0.9	-1.9
USBOD	00	V	100	2	1.4	0.7	0.2
USCAT	00	V	100	0	0.0	0.0	0.0
USCAT	12	V	100	0	0.0	0.0	0.0
USSIO	00	V	100	1	1.2	0.4	1.1
USSOD	12	V	100	0	0.0	0.0	0.0
USSOD	00	V	100	1	2.4	2.0	-1.4
USYUB	12	V	100	3	4.7	-1.2	2.8
USYUB	00	V	100	4	4.3	-0.1	-2.6
WDK38H	12	V	100	8	6.3	-0.6	1.7
XKQLWQ	12	V	100	7	6.4	0.8	-2.8
XQFJRG	12	V	100	6	2.7	-0.8	1.1

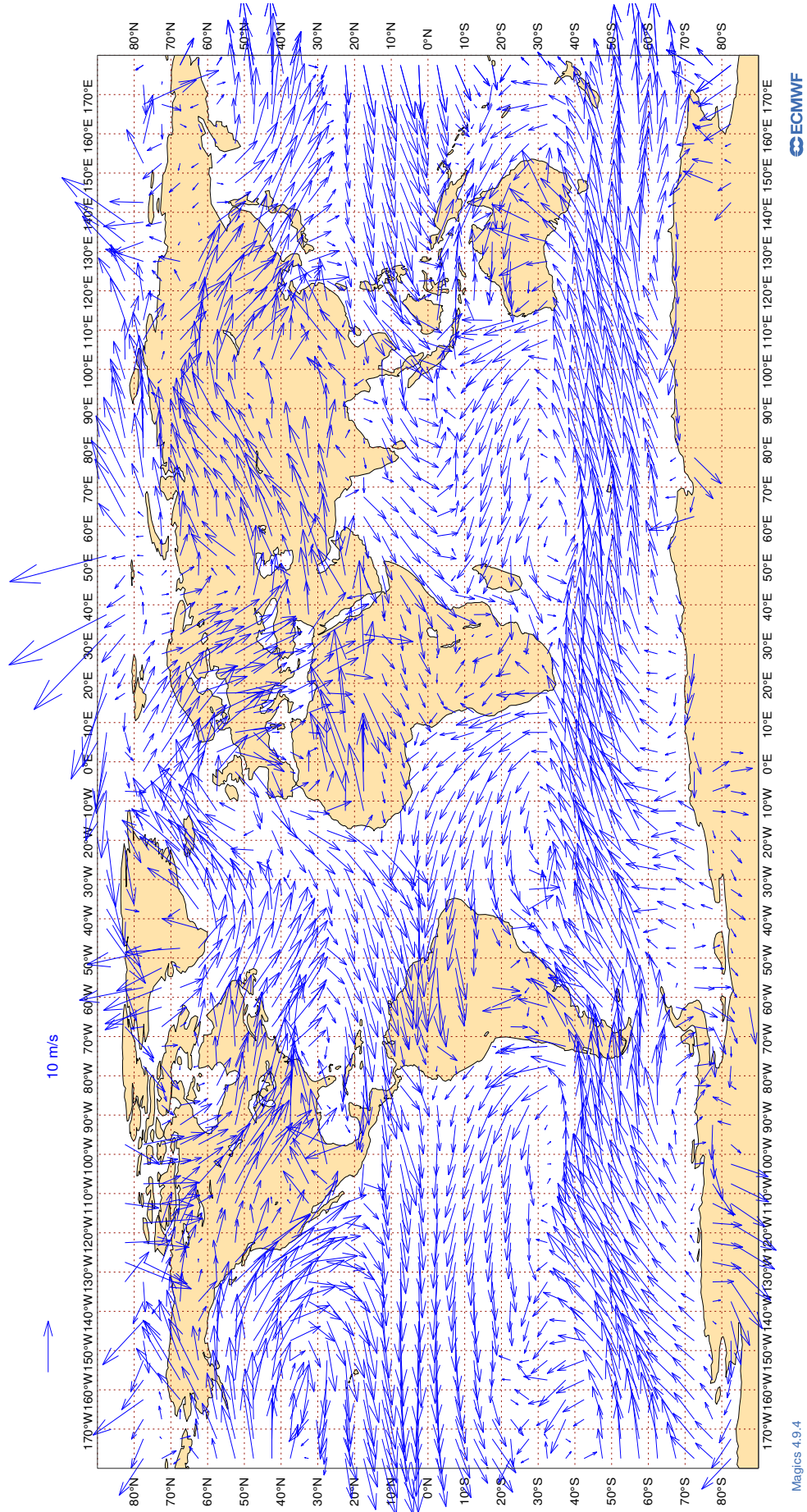
RADIOSONDE MONITORING STATISTICS (SHIPS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
XQFJRG	00	V	100	4	2.7	1.0	0.1
YLV96W	00	V	100	4	6.1	-4.2	0.7
YLV96W	12	V	100	5	2.1	0.5	0.4
ZVQEQC	12	V	100	1	2.0	1.9	-0.5

3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

Figure 14

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

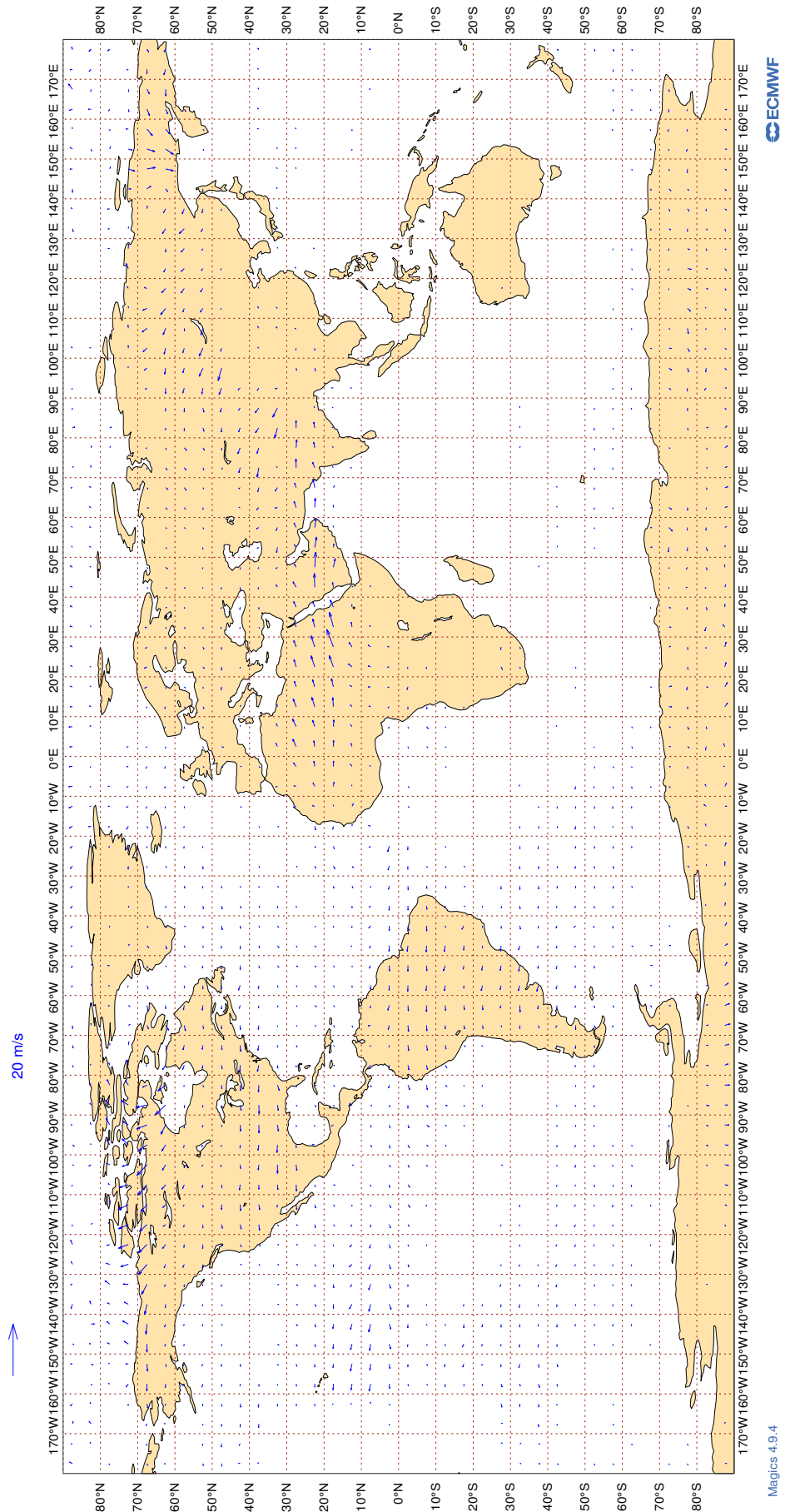




3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

Figure 15

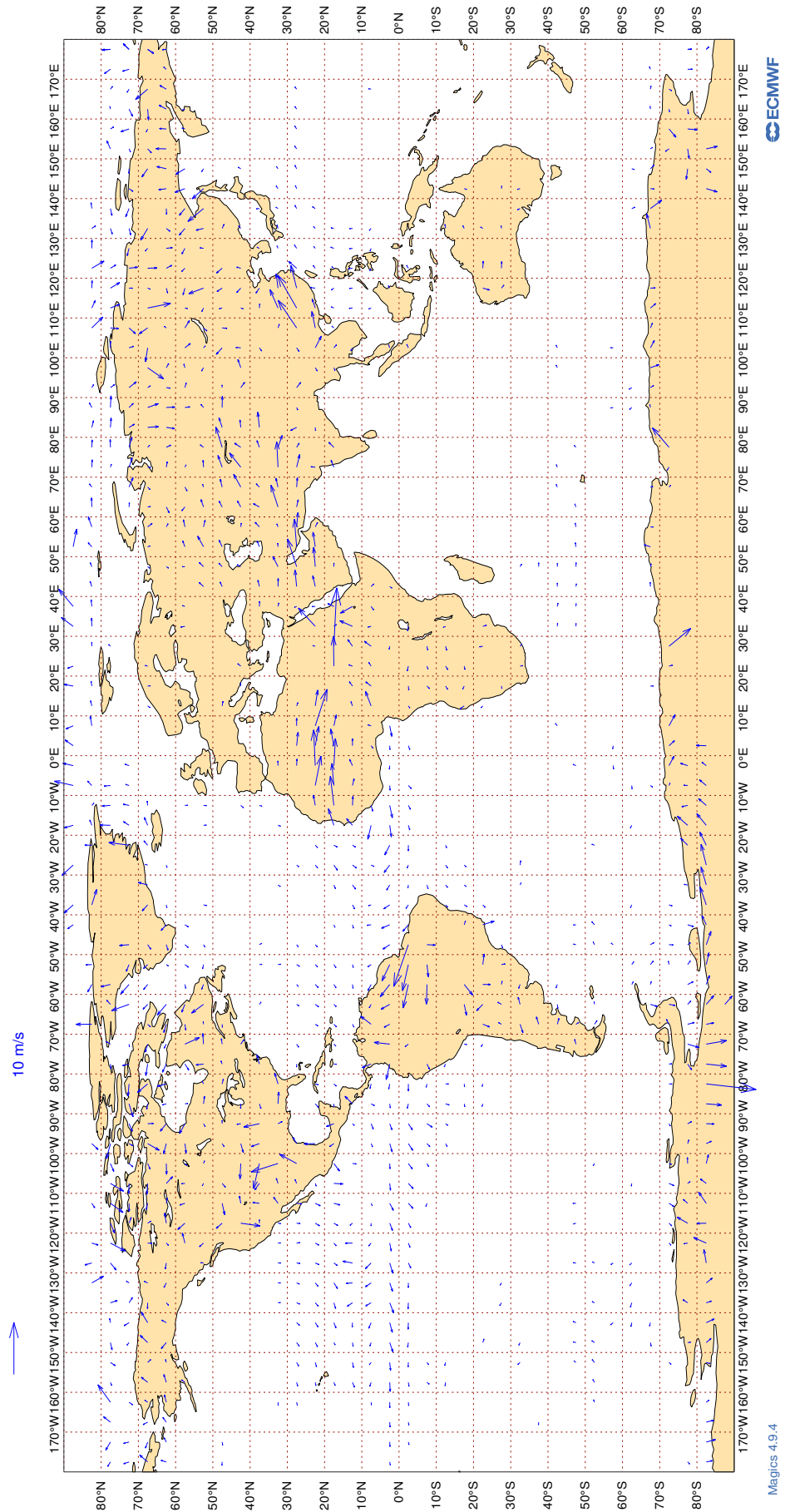
ECMWF Monitoring Statistics: Feb 2023  
AMV Winds: 150- 400hPa  
Wind bias: Observation - FG



3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

Figure 16

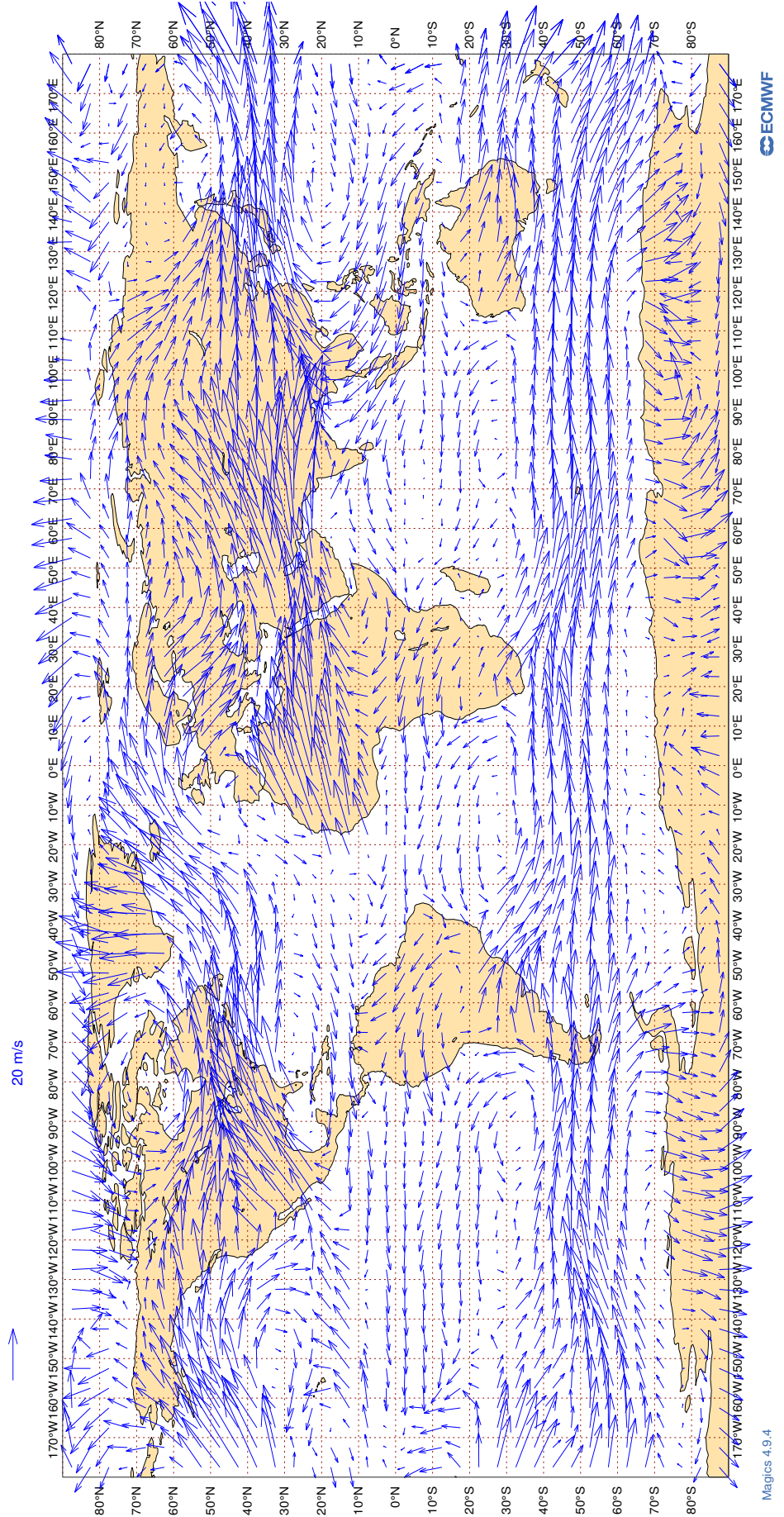
ECMWF Monitoring Statistics: Feb 2023  
AMV Winds: 700-1000hPa  
Wind bias: Observation - FG



3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

Figure 17

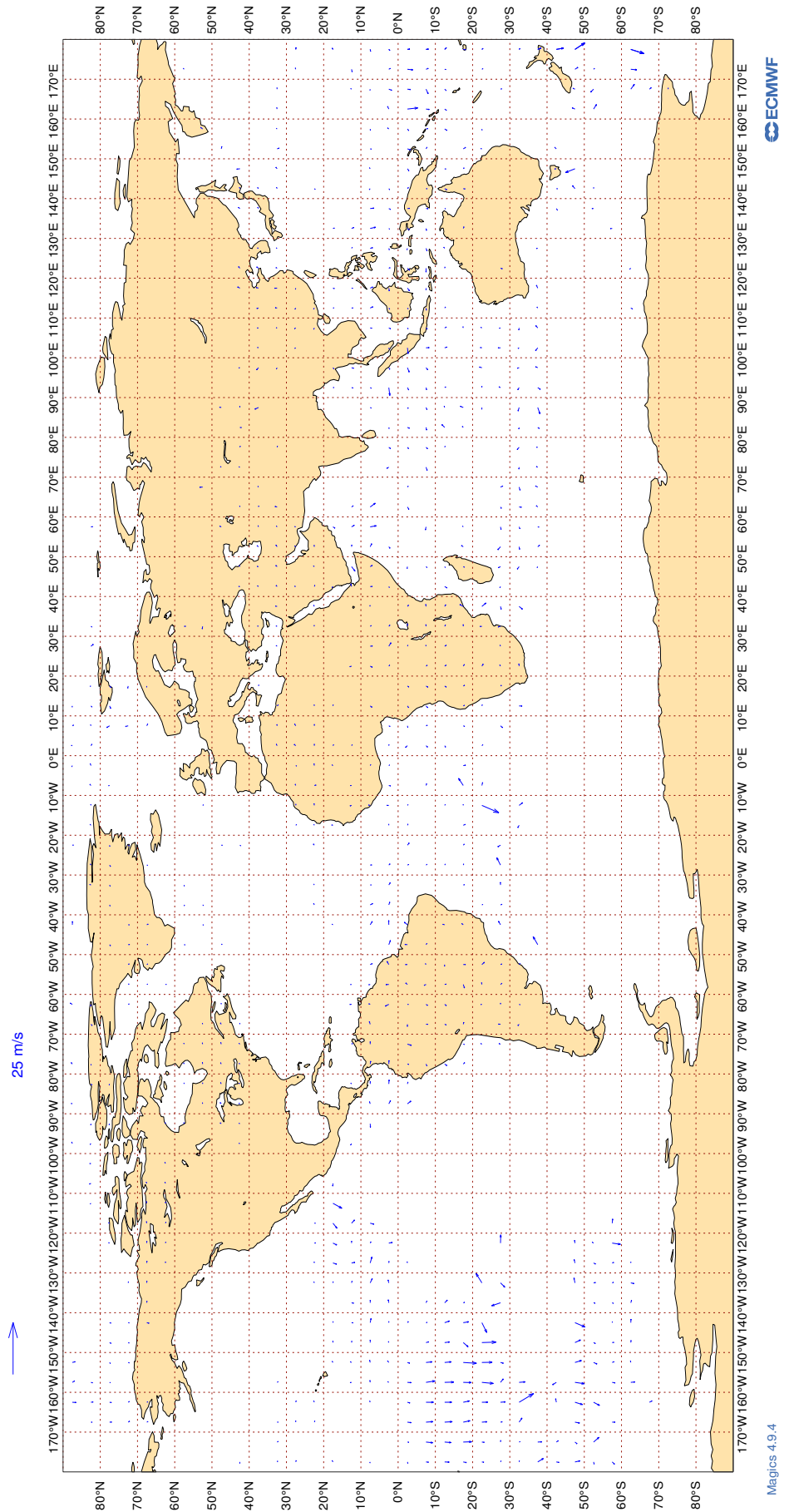
ECMWF Monitoring Statistics: Feb 2023  
AMV Winds: 150- 400hPa  
Mean Observed Wind



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

Figure 18

ECMWF Monitoring Statistics: Feb 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 : FEB 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	46	0	0	5.5	0.3
AAL	99	V	300-150	32057	7	0	6.4	0.1
AAR	99	V	300-150	227	0	0	4.1	-1.1
ABB	99	V	300-150	269	0	1	3.4	0.2
ABD	99	V	300-150	1033	0	0	4.1	-0.2
ABX	99	V	300-150	207	0	0	4.0	-0.4
ACA	99	V	300-150	20232	9	0	6.3	0.1
ACI	99	V	300-150	390	0	0	4.7	1.1
AEA	99	V	300-150	369	18	3	9.1	0.1
AFR	99	V	300-150	28544	2	0	4.3	0.1
AHO	99	V	300-150	377	1	0	3.9	-0.1
AIB	99	V	300-150	31	0	0	3.2	-0.3
AIC	99	V	300-150	4602	2	0	6.1	0.1
AJT	99	V	300-150	181	0	1	3.6	0.1
ALK	99	V	300-150	1201	0	0	2.9	0.4
AMX	99	V	300-150	2982	23	0	8.9	-0.3
ANA	99	V	300-150	130	2	0	5.8	0.7
ANZ	99	V	300-150	17366	2	0	6.5	0.4
AOJ	99	V	300-150	296	0	0	3.3	0.2
AOJ	99	V	300-150	28	0	0	3.0	0.8
ARL	99	V	300-150	35	0	0	4.2	1.3
ASA	99	V	300-150	42	0	2	5.7	0.4
ASJ	99	V	300-150	43	0	0	4.1	-0.8
ASL	99	V	300-150	410	0	0	3.5	0.2
ASY	99	V	300-150	73	0	0	4.5	0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
ATC	99	V	300-150	122	0	0	7.5	0.9
ATN	99	V	300-150	155	1	4	4.6	-0.5
AUA	99	V	300-150	3372	0	0	4.2	0.0
AUH	99	V	300-150	54	11	0	10.3	1.2
AVA	99	V	300-150	423	7	1	7.5	0.1
AVL	99	V	300-150	35	0	0	5.5	1.7
AWC	99	V	300-150	246	0	0	3.6	0.2
AXA	99	V	300-150	25	0	0	3.6	0.7
AXM	99	V	300-150	105	0	1	5.0	1.1
AXY	99	V	300-150	104	0	0	2.7	0.2
AZG	99	V	300-150	559	0	0	3.3	-0.1
BAV	99	V	300-150	143	0	0	3.7	0.6
BAW	99	V	300-150	42596	5	0	5.7	0.0
BBC	99	V	300-150	455	10	0	4.3	0.6
BCS	99	V	300-150	1723	0	0	3.7	0.1
BEL	99	V	300-150	665	0	0	3.6	0.1
BFF	99	V	300-150	87	0	0	11.7	-1.1
BLX	99	V	300-150	808	7	0	7.8	-0.2
BMW	99	V	300-150	22	0	0	4.0	-1.6
BOX	99	V	300-150	3951	0	0	3.4	0.1
BOX	99	V	300-150	50	0	0	3.6	-0.4
BTX	99	V	300-150	74	0	0	3.8	1.0
CAL	99	V	300-150	1473	0	0	3.5	0.4
CAZ	99	V	300-150	31	0	0	4.0	1.6
CBJ	99	V	300-150	165	0	0	3.1	0.5
CCA	99	V	300-150	55	0	0	3.2	0.3
CEB	99	V	300-150	578	0	0	3.0	0.2
CEF	99	V	300-150	29	0	0	5.2	-0.1
CES	99	V	300-150	486	0	0	3.8	0.3
CFC	99	V	300-150	320	0	0	4.8	-0.2
CFG	99	V	300-150	4204	0	0	4.0	0.2
CHG	99	V	300-150	814	0	0	4.3	0.1
CJT	99	V	300-150	1155	0	0	4.4	-0.1
CKS	99	V	300-150	2022	0	0	3.5	0.1
CLF	99	V	300-150	53	0	0	3.8	0.9
CLX	99	V	300-150	4625	0	0	3.8	-0.2
CLY	99	V	300-150	90	0	0	3.6	-0.1
CMA	99	V	300-150	700	0	0	3.7	0.2
CMB	99	V	300-150	1065	0	0	4.0	-0.3
CNV	99	V	300-150	53	0	0	4.0	-0.1
CPA	99	V	300-150	1851	0	0	3.4	0.3
CPI	99	V	300-150	33	0	0	4.5	0.1
CRL	99	V	300-150	1133	0	1	3.3	0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
CSC	99	V	300-150	379	0	0	2.9	0.3
CSN	99	V	300-150	436	2	0	4.3	0.4
CSS	99	V	300-150	28	0	0	4.4	1.3
CTM	99	V	300-150	202	0	0	3.6	0.0
DAH	99	V	300-150	476	0	0	3.9	0.2
DAL	99	V	300-150	40575	0	0	3.7	0.1
DCS	99	V	300-150	49	0	0	3.6	0.8
DGX	99	V	300-150	44	0	0	3.2	0.6
DHK	99	V	300-150	2199	0	0	4.2	-0.2
DHX	99	V	300-150	211	0	0	3.2	0.9
DJT	99	V	300-150	1421	0	0	3.8	0.2
DLH	99	V	300-150	17797	2	0	3.9	0.0
DSO	99	V	300-150	86	0	0	3.0	0.1
DUB	99	V	300-150	35	0	0	2.7	0.6
EAL	99	V	300-150	40	0	0	4.1	0.9
EAU	99	V	300-150	67	0	0	2.8	0.3
EDC	99	V	300-150	21	0	0	3.7	0.0
EDG	99	V	300-150	77	0	3	3.2	-0.3
EDW	99	V	300-150	985	0	0	3.5	0.3
EIN	99	V	300-150	9414	0	0	3.8	0.2
EJM	99	V	300-150	425	0	0	4.0	0.4
ELY	99	V	300-150	3854	17	0	8.4	0.0
ESW	99	V	300-150	35	0	0	3.9	-0.7
ETD	99	V	300-150	9093	5	0	5.5	0.0
ETH	99	V	300-150	4493	5	0	4.9	0.2
EUK	99	V	300-150	1606	0	0	3.7	0.1
EVA	99	V	300-150	1346	0	0	3.2	0.3
EVE	99	V	300-150	78	0	1	4.1	-0.2
EXS	99	V	300-150	132	0	0	3.0	0.6
EXV	99	V	300-150	47	0	0	3.3	-0.1
FBU	99	V	300-150	1673	0	0	4.2	0.4
FDX	99	V	300-150	7111	0	0	3.5	0.1
FFM	99	V	300-150	39	0	0	3.8	1.3
FIN	99	V	300-150	2470	0	0	3.2	0.2
FJI	99	V	300-150	2018	0	0	4.3	0.6
FJO	99	V	300-150	131	0	0	3.1	-0.1
FPY	99	V	300-150	1620	0	0	3.2	0.1
FWI	99	V	300-150	1989	0	0	3.5	0.1
FXT	99	V	300-150	35	0	0	3.0	-0.9
FYG	99	V	300-150	123	0	0	3.7	0.0
GAF	99	V	300-150	149	0	0	3.0	0.3
GBG	99	V	300-150	25	0	0	2.0	0.4
GCK	99	V	300-150	49	0	0	3.5	-0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
GDG	99	V	300-150	21	0	0	5.1	-1.1
GEC	99	V	300-150	1555	0	0	3.8	0.0
GES	99	V	300-150	106	0	0	4.0	0.0
GFA	99	V	300-150	684	1	0	5.8	0.4
GIA	99	V	300-150	713	0	0	2.7	0.3
GJE	99	V	300-150	46	0	0	3.6	0.6
GKY	99	V	300-150	37	0	0	3.3	-0.3
GNJ	99	V	300-150	38	0	0	4.8	-0.5
GRB	99	V	300-150	35	0	0	3.0	-1.0
GSM	99	V	300-150	37	0	0	4.5	0.6
GTI	99	V	300-150	2300	0	0	4.0	-0.3
GTR	99	V	300-150	401	0	0	3.6	0.0
HAL	99	V	300-150	770	0	0	4.6	0.8
HFY	99	V	300-150	26	0	8	3.8	0.7
HIM	99	V	300-150	179	0	0	2.6	0.1
HKC	99	V	300-150	126	0	0	3.3	0.3
HLF	99	V	300-150	54	0	0	3.4	0.4
HOO	99	V	300-150	39	0	0	5.2	-0.4
HUA	99	V	300-150	107	0	0	4.0	0.9
HVN	99	V	300-150	907	0	1	3.7	0.7
HYP	99	V	300-150	46	0	0	3.1	0.8
IAM	99	V	300-150	28	0	0	2.7	0.2
IBE	99	V	300-150	3233	0	1	3.7	0.4
ICE	99	V	300-150	4686	0	0	3.4	0.0
ICV	99	V	300-150	301	0	0	3.7	0.4
IFA	99	V	300-150	318	0	0	3.2	0.0
IFC	99	V	300-150	38	0	0	3.0	0.8
IJM	99	V	300-150	82	0	0	4.0	-0.4
ITY	99	V	300-150	2775	0	0	4.0	0.3
IXR	99	V	300-150	22	0	0	3.2	0.0
JAF	99	V	300-150	429	14	0	8.6	-0.2
JAL	99	V	300-150	221	1	0	5.9	-0.2
JAS	99	V	300-150	126	0	0	4.0	0.7
JBU	99	V	300-150	4986	0	0	3.9	0.2
JCO	99	V	300-150	69	0	0	3.7	0.3
JEF	99	V	300-150	34	0	0	3.4	0.1
JET	99	V	300-150	39	0	3	3.8	0.6
JJA	99	V	300-150	30	0	0	7.3	-1.4
JME	99	V	300-150	66	0	0	3.5	0.4
JML	99	V	300-150	26	0	0	3.2	-0.5
JST	99	V	300-150	50	0	0	2.8	-0.3
KAC	99	V	300-150	2566	0	0	3.1	0.4
KAF	99	V	300-150	37	0	0	3.6	0.3



AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
KAI	99	V	300-150	93	0	0	4.7	0.7
KAL	99	V	300-150	757	1	0	4.0	0.6
KAY	99	V	300-150	84	0	0	3.8	0.1
KFE	99	V	300-150	56	0	0	3.3	0.8
KIW	99	V	300-150	111	0	0	3.7	0.6
KLM	99	V	300-150	16576	12	0	6.8	0.1
KOC	99	V	300-150	69	0	0	3.0	-0.5
KQA	99	V	300-150	296	8	2	6.3	0.2
LAN	99	V	300-150	1214	8	0	6.4	0.3
LCO	99	V	300-150	651	0	0	4.1	-0.6
LDX	99	V	300-150	130	11	0	6.0	0.7
LNI	99	V	300-150	1812	0	0	2.8	0.4
LOT	99	V	300-150	4058	20	0	9.1	-0.1
LRQ	99	V	300-150	31	0	0	4.8	-0.2
LUC	99	V	300-150	23	0	0	4.3	-0.7
LXJ	99	V	300-150	336	0	0	3.9	-0.2
MAS	99	V	300-150	5772	0	0	3.3	0.4
MAU	99	V	300-150	159	0	0	4.4	1.0
MDT	99	V	300-150	20	0	0	2.5	0.9
MED	99	V	300-150	52	0	0	4.4	0.2
MLM	99	V	300-150	111	0	0	4.6	-0.1
MMD	99	V	300-150	518	0	0	4.3	0.3
MMF	99	V	300-150	45	0	0	2.8	0.2
MNB	99	V	300-150	282	0	0	3.4	0.3
MPH	99	V	300-150	613	0	0	4.1	-0.5
MSR	99	V	300-150	1691	3	0	4.3	0.1
MYM	99	V	300-150	30	0	3	5.6	1.5
NBT	99	V	300-150	2087	22	0	9.4	0.1
NCR	99	V	300-150	408	0	0	4.4	-0.2
NEW	99	V	300-150	33	0	0	4.7	-1.5
NJE	99	V	300-150	468	0	0	3.8	0.1
NOJ	99	V	300-150	50	0	0	3.4	-1.1
NOS	99	V	300-150	1435	12	0	7.5	-0.1
NSP	99	V	300-150	33	0	0	7.8	0.2
NVR	99	V	300-150	21	0	0	3.8	0.4
OAE	99	V	300-150	404	0	0	4.5	0.0
OCN	99	V	300-150	4439	0	0	3.8	0.1
OMA	99	V	300-150	2428	1	0	5.2	0.4
PAC	99	V	300-150	497	0	0	3.9	-0.2
PAL	99	V	300-150	1810	0	0	2.8	0.1
PAT	99	V	300-150	36	0	0	4.0	-1.2
PEG	99	V	300-150	54	0	0	4.8	0.2
PIA	99	V	300-150	445	0	0	3.1	0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
PJS	99	V	300-150	24	0	0	3.4	-0.2
PLF	99	V	300-150	53	0	0	3.2	0.6
PRD	99	V	300-150	31	0	0	4.4	-0.1
PVA	99	V	300-150	27	0	0	4.0	-0.1
QAF	99	V	300-150	37	0	0	2.7	-0.1
QFA	99	V	300-150	5478	3	0	6.8	0.4
QQE	99	V	300-150	123	0	0	3.5	0.6
QTR	99	V	300-150	28453	0	0	3.8	0.2
RAM	99	V	300-150	497	15	0	8.7	0.0
RBA	99	V	300-150	284	3	0	7.3	-0.1
RCH	99	V	300-150	3012	0	0	4.8	0.3
RDN	99	V	300-150	104	0	0	3.6	0.2
RHH	99	V	300-150	92	0	0	6.9	0.1
RJA	99	V	300-150	1650	18	0	8.8	0.1
RNA	99	V	300-150	40	0	0	3.1	0.6
ROJ	99	V	300-150	108	0	0	3.4	0.2
RRR	99	V	300-150	303	0	0	3.2	0.3
RSF	99	V	300-150	38	0	0	4.7	-1.1
RUN	99	V	300-150	54	0	0	4.3	2.3
RYR	99	V	300-150	612	0	0	3.1	0.3
RZO	99	V	300-150	209	0	1	5.4	0.2
SAM	99	V	300-150	382	0	0	3.8	-0.2
SAS	99	V	300-150	4131	0	0	3.4	0.0
SAZ	99	V	300-150	114	0	0	3.5	-0.3
SCX	99	V	300-150	41	2	0	5.9	1.0
SHE	99	V	300-150	69	0	0	3.3	0.6
SIA	99	V	300-150	12968	0	0	4.2	0.2
SIO	99	V	300-150	55	0	0	4.0	0.6
SKA	99	V	300-150	46	0	0	4.7	-0.5
SLM	99	V	300-150	89	0	0	3.4	0.3
SON	99	V	300-150	69	0	0	3.2	0.1
SPA	99	V	300-150	201	0	0	3.8	0.4
SVA	99	V	300-150	6969	0	0	4.6	0.3
SVW	99	V	300-150	140	0	0	4.0	-0.8
SWR	99	V	300-150	8911	0	0	3.7	0.1
SYB	99	V	300-150	113	0	0	3.7	-0.5
TAM	99	V	300-150	87	0	0	3.4	-0.1
TAP	99	V	300-150	2188	0	1	3.7	0.1
TAR	99	V	300-150	203	0	0	4.0	0.0
TAY	99	V	300-150	324	0	0	4.4	0.0
TBJ	99	V	300-150	43	0	0	3.2	0.0
TFL	99	V	300-150	1526	15	0	9.6	-0.1
TGW	99	V	300-150	1212	1	0	7.2	0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
THA	99	V	300-150	5274	1	0	4.9	0.3
THT	99	V	300-150	2925	5	0	6.9	0.7
THY	99	V	300-150	16350	3	0	4.8	0.1
TLJ	99	V	300-150	28	0	0	3.9	-1.1
TMN	99	V	300-150	401	0	0	3.5	0.1
TOM	99	V	300-150	3973	14	0	8.8	-0.2
TOW	99	V	300-150	122	0	0	3.2	0.2
TSC	99	V	300-150	3414	0	0	3.8	0.2
TWY	99	V	300-150	375	0	0	3.6	0.2
UAE	99	V	300-150	25227	0	0	3.3	0.2
UAF	99	V	300-150	104	0	0	3.7	0.7
UAL	99	V	300-150	58942	6	1	5.9	0.0
ULC	99	V	300-150	56	0	0	3.5	-0.3
UNI	99	V	300-150	60	0	0	3.8	-0.1
UPS	99	V	300-150	5177	0	0	3.8	-0.2
UZB	99	V	300-150	357	2	0	5.2	0.0
VCG	99	V	300-150	164	0	0	4.6	0.5
VIR	99	V	300-150	17021	5	0	5.8	0.0
VJT	99	V	300-150	1349	0	0	3.7	0.5
VKG	99	V	300-150	430	0	1	2.9	0.3
VLZ	99	V	300-150	94	0	0	6.5	2.1
VMP	99	V	300-150	30	0	0	5.2	1.2
VSV	99	V	300-150	76	0	0	3.0	-0.1
VTI	99	V	300-150	1669	0	0	2.8	0.3
VXS	99	V	300-150	20	0	0	3.0	-0.9
WFL	99	V	300-150	20	0	5	3.3	1.2
WGN	99	V	300-150	110	0	0	3.9	0.5
WJA	99	V	300-150	1185	10	0	8.1	0.2
WWI	99	V	300-150	30	0	0	3.9	0.2
XAX	99	V	300-150	737	0	0	3.4	0.2
XRO	99	V	300-150	71	0	0	4.5	1.1

## 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 : FEB 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	50	23	23.8	-20.4
01001	12	Z	50	27	14.5	-8.3
01028	12	Z	50	25	10.2	-3.7
01028	00	Z	50	21	10.6	-6.0
01400	12	Z	50	12	74.6	74.3
01400	00	Z	50	9	76.7	75.4
01415	12	Z	50	25	15.1	-2.4
01415	00	Z	50	23	19.4	-6.8
02365	12	Z	50	13	15.9	-6.5
02365	00	Z	50	12	10.4	0.5
02836	12	Z	50	28	7.7	-3.0
02836	00	Z	50	20	15.0	1.4
02963	12	Z	50	26	9.3	-5.0
02963	00	Z	50	22	9.2	-3.0
03005	00	Z	50	27	12.1	-7.7
03005	12	Z	50	25	13.0	-9.2
03238	00	Z	50	27	10.2	-4.3
03238	12	Z	50	1	16.2	16.2
03808	12	Z	50	27	6.2	-0.9
03808	00	Z	50	26	6.5	0.0
03918	12	Z	50	1	10.0	-10.0
03918	00	Z	50	22	11.1	1.1
03953	00	Z	50	27	11.5	-7.2
03953	12	Z	50	27	10.8	-4.0
04018	12	Z	50	20	11.1	-4.0
04018	00	Z	50	18	13.3	-7.7
04220	00	Z	50	21	23.5	-22.2
04220	12	Z	50	24	26.7	-24.9
04270	00	Z	50	24	31.9	-19.8
04270	12	Z	50	22	29.2	-22.4
04320	00	Z	50	26	9.9	-5.6
04320	12	Z	50	27	15.3	-10.6
04339	12	Z	50	23	39.7	-13.2
04339	00	Z	50	22	14.1	-9.4
04360	00	Z	50	13	23.8	-19.6
04360	12	Z	50	13	75.8	15.3
06011	12	Z	50	18	14.4	-4.4
06011	00	Z	50	13	26.0	5.6
06260	00	Z	50	26	16.9	-5.7

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	50	4	6.0	-0.8
06610	12	Z	50	28	6.0	-1.2
06610	00	Z	50	27	7.4	-0.3
07110	00	Z	50	27	67.3	8.4
07110	12	Z	50	26	11.3	-1.8
07510	12	Z	50	23	25.2	22.4
07510	00	Z	50	23	12.8	9.6
07645	12	Z	50	25	52.5	-37.2
07645	00	Z	50	26	49.1	-34.6
07761	12	Z	50	27	15.3	-10.4
07761	00	Z	50	26	13.7	-9.7
08001	12	Z	50	27	7.7	2.1
08001	00	Z	50	26	8.1	3.4
08221	12	Z	50	27	8.2	4.3
08221	00	Z	50	27	9.5	6.9
08302	00	Z	50	25	8.5	-3.5
08302	12	Z	50	26	6.5	-3.2
08508	12	Z	50	27	7.9	2.0
08522	12	Z	50	27	7.5	2.9
10035	12	Z	50	27	11.0	6.8
10035	00	Z	50	25	13.8	10.7
10393	12	Z	50	27	8.8	-2.7
10393	00	Z	50	27	8.3	-1.2
10410	12	Z	50	26	12.3	-5.2
10410	00	Z	50	26	10.0	-3.1
10739	12	Z	50	27	8.0	1.1
10739	00	Z	50	27	10.0	-1.1
11035	12	Z	50	27	30.4	6.7
11035	00	Z	50	27	9.8	0.6
12982	00	Z	50	27	8.7	-0.2
12982	12	Z	50	27	6.2	0.0
16245	12	Z	50	27	5.9	0.5
16245	00	Z	50	26	5.2	2.1
16429	00	Z	50	27	6.8	2.5
16429	12	Z	50	27	6.1	2.1
16622	00	Z	50	20	11.5	7.7
16754	00	Z	50	17	18.5	2.7
17607	12	Z	50	15	7.4	-2.3
26435	12	Z	50	11	8.3	-5.4
2EERVT	12	Z	50	5	13.1	-11.1
2EERVT	00	Z	50	7	11.3	-7.7
60018	00	Z	50	26	12.2	8.6
60018	12	Z	50	24	6.3	3.5

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
7JUNA4	12	Z	50	2	97.7	65.2
7JUNA4	00	Z	50	2	9.5	-8.1
9ZT9MR	12	Z	50	13	21.8	-11.8
9ZT9MR	00	Z	50	9	22.4	-16.0
ASDE09	12	Z	50	1	20.2	20.2
ATGU3F	12	Z	50	5	24.0	-20.4
ATGU3F	00	Z	50	6	26.6	-23.7
GQBZLZ	12	Z	50	1	9.3	-9.3
JNKN7J	12	Z	50	8	71.8	48.8
JNKN7J	00	Z	50	10	30.4	25.7
KJJF9X	12	Z	50	5	5.9	-3.6
KJJF9X	00	Z	50	4	12.7	12.3
KMPLHP	12	Z	50	6	201.6	167.4
KMPLHP	00	Z	50	5	40.5	39.1
LRYQE3	12	Z	50	10	12.9	-0.9
LRYQE3	00	Z	50	9	11.0	-2.8
WDK38H	12	Z	50	8	26.7	-16.9
XKQLWQ	12	Z	50	7	21.8	8.3
XQFJRG	12	Z	50	6	17.8	-5.0
XQFJRG	00	Z	50	4	13.3	-9.0
YLV96W	00	Z	50	3	10.3	-9.4
YLV96W	12	Z	50	5	126.0	82.1

**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 : FEB 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	50	23	3.0	-0.2	0.3
01001	12	V	50	27	3.1	0.2	-0.4
01028	12	V	50	25	3.0	-0.3	-0.1
01028	00	V	50	18	2.8	0.6	0.0
01400	12	V	50	11	3.9	-1.1	0.1
01400	00	V	50	7	3.0	-1.1	-0.4
01415	12	V	50	25	4.9	-0.3	0.3
01415	00	V	50	18	4.7	0.0	0.4
02365	12	V	50	13	5.3	0.6	-0.3
02365	00	V	50	10	4.1	2.5	-0.3
02836	12	V	50	24	4.4	-1.5	0.0
02836	00	V	50	16	3.9	-0.6	0.1
02963	12	V	50	26	3.5	0.5	-0.2
02963	00	V	50	19	3.5	0.1	-0.2
03005	00	V	50	24	2.8	-0.4	0.0
03005	12	V	50	25	4.3	0.5	0.1
03238	00	V	50	23	3.6	-0.3	0.9
03238	12	V	50	1	4.7	-3.4	-3.3
03808	12	V	50	27	3.6	-0.3	0.4
03808	00	V	50	25	3.2	0.0	0.3
03918	12	V	50	1	3.0	-1.0	2.8
03918	00	V	50	21	4.3	1.3	-0.3
03953	00	V	50	27	3.7	-0.4	-0.4
03953	12	V	50	27	3.3	0.2	-0.4
04018	12	V	50	19	2.7	0.1	0.0
04018	00	V	50	15	4.2	0.0	-1.6
04220	00	V	50	20	3.5	0.9	-0.1
04220	12	V	50	24	3.5	0.4	0.8
04270	00	V	50	24	5.6	-1.3	0.7
04270	12	V	50	22	4.5	0.4	0.4
04320	00	V	50	26	2.9	0.5	0.4
04320	12	V	50	27	3.3	-0.2	-0.4
04339	12	V	50	23	3.8	0.2	1.0
04339	00	V	50	21	4.0	0.1	-0.3
04360	00	V	50	12	2.3	0.1	0.6
04360	12	V	50	13	3.9	1.0	1.2
06011	12	V	50	18	5.5	-0.7	-0.3
06011	00	V	50	11	2.7	-0.8	0.3
06260	00	V	50	25	3.6	-0.1	0.0



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	50	4	3.9	-0.9	0.8
06610	12	V	50	27	3.7	0.2	-0.7
06610	00	V	50	27	3.2	0.8	0.5
07110	00	V	50	23	3.9	0.7	0.8
07110	12	V	50	26	3.3	-0.4	-0.1
07510	12	V	50	23	3.8	0.2	-0.1
07510	00	V	50	23	3.0	0.1	-0.4
07645	12	V	50	25	3.1	0.2	0.4
07645	00	V	50	26	2.5	0.2	0.2
07761	12	V	50	27	3.1	-0.3	0.0
07761	00	V	50	26	3.2	0.6	0.1
08001	12	V	50	27	3.2	0.4	-0.5
08001	00	V	50	26	3.8	-0.4	0.6
08221	12	V	50	26	2.8	-0.9	-0.7
08221	00	V	50	25	3.1	0.7	0.0
08302	00	V	50	25	3.0	-0.1	0.5
08302	12	V	50	25	3.3	0.4	0.7
08508	12	V	50	27	4.0	0.9	0.4
08522	12	V	50	27	3.7	-0.4	0.0
10035	12	V	50	26	3.7	0.0	0.3
10035	00	V	50	24	3.6	0.0	-0.4
10393	12	V	50	27	3.3	-0.2	-0.7
10393	00	V	50	27	3.5	-0.4	-0.8
10410	12	V	50	26	3.8	-0.3	-0.2
10410	00	V	50	24	3.3	0.4	-0.1
10739	12	V	50	27	3.7	-0.2	0.8
10739	00	V	50	27	3.4	-0.1	0.0
11035	12	V	50	27	4.4	0.8	-1.1
11035	00	V	50	27	4.4	-0.3	0.5
12982	00	V	50	24	3.0	-0.3	-0.7
12982	12	V	50	27	3.1	0.5	-0.3
16245	12	V	50	27	2.9	0.3	-0.1
16245	00	V	50	26	2.7	-0.1	-0.8
16429	00	V	50	25	3.5	0.5	-1.0
16429	12	V	50	27	3.6	0.4	-0.3
16622	00	V	50	13	4.1	0.5	-0.8
16754	00	V	50	14	3.3	0.7	-0.6
17607	12	V	50	5	6.5	3.5	-2.5
26435	12	V	50	8	3.1	-0.7	0.4
2EERV	12	V	50	5	3.6	0.4	-0.8
2EERV	00	V	50	7	3.7	-1.3	0.6
60018	00	V	50	26	4.1	1.2	0.5
60018	12	V	50	24	3.5	0.1	-0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
7JUNA4	12	V	50	2	2.3	1.5	0.5
7JUNA4	00	V	50	2	4.8	-0.1	2.9
9ZT9MR	12	V	50	11	16.7	-10.5	-0.4
9ZT9MR	00	V	50	8	3.3	-0.5	-0.1
ASDE09	12	V	50	1	7.1	-1.2	7.0
ATGU3F	12	V	50	5	2.5	-0.1	1.4
ATGU3F	00	V	50	6	3.3	-0.9	2.1
GQBZLZ	12	V	50	1	6.8	-3.5	-5.8
JNKN7J	12	V	50	8	4.3	-0.1	1.5
JNKN7J	00	V	50	10	3.5	0.7	-0.1
KJJF9X	12	V	50	5	1.5	0.3	-0.7
KJJF9X	00	V	50	4	2.3	0.1	0.4
KMPLHP	12	V	50	6	4.9	-0.5	-0.6
KMPLHP	00	V	50	5	4.3	1.6	0.0
LRYQE3	12	V	50	10	3.5	1.4	0.8
LRYQE3	00	V	50	9	3.4	1.1	-0.3
WDK38H	12	V	50	7	5.9	1.2	0.6
XKQLWQ	12	V	50	7	6.4	3.6	-2.0
XQFJRG	12	V	50	6	3.7	0.9	0.5
XQFJRG	00	V	50	4	1.6	-0.6	-0.5
YLV96W	00	V	50	3	4.6	3.0	-2.0
YLV96W	12	V	50	5	2.9	0.3	-0.7

### 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 : FEB 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	100	25	21.5	-18.9
01001	12	Z	100	27	14.3	-9.3
01028	12	Z	100	27	10.1	-5.4
01028	00	Z	100	27	7.7	-5.5
01400	12	Z	100	14	76.9	76.6
01400	00	Z	100	13	74.2	74.0
01415	12	Z	100	26	12.2	-1.8
01415	00	Z	100	26	16.2	-5.1
02365	12	Z	100	14	9.1	-2.3
02365	00	Z	100	14	6.4	1.4
02836	12	Z	100	30	6.7	-3.9
02836	00	Z	100	25	7.5	-4.8
02963	12	Z	100	26	6.1	-3.9
02963	00	Z	100	25	6.4	-3.8
03005	00	Z	100	27	9.3	-6.6
03005	12	Z	100	28	10.6	-7.8
03238	00	Z	100	27	9.2	-3.7
03238	12	Z	100	1	8.9	8.9
03808	12	Z	100	27	6.0	-1.0
03808	00	Z	100	26	4.4	-0.6
03918	12	Z	100	1	7.8	7.8
03918	00	Z	100	23	8.3	4.4
03953	00	Z	100	27	8.8	-6.5
03953	12	Z	100	27	8.3	-3.9
04018	12	Z	100	22	9.7	-2.8
04018	00	Z	100	20	11.2	-8.1
04220	00	Z	100	25	22.5	-20.9
04220	12	Z	100	26	23.5	-21.8
04270	00	Z	100	24	22.6	-19.9
04270	12	Z	100	24	23.9	-20.2
04320	00	Z	100	27	9.8	-4.9
04320	12	Z	100	27	11.1	-8.7
04339	12	Z	100	24	35.1	-16.7
04339	00	Z	100	25	13.7	-11.4
04360	00	Z	100	16	16.3	-13.9
04360	12	Z	100	15	23.9	-2.7
06011	12	Z	100	23	10.8	-6.6
06011	00	Z	100	22	12.0	-1.8
06260	00	Z	100	26	17.6	-8.2

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	100	4	5.8	-3.0
06610	12	Z	100	28	6.7	-2.6
06610	00	Z	100	27	6.6	-3.3
07110	00	Z	100	27	42.5	-0.2
07110	12	Z	100	26	9.4	-5.8
07510	12	Z	100	25	18.1	16.3
07510	00	Z	100	24	9.6	5.8
07645	12	Z	100	25	44.6	-32.9
07645	00	Z	100	27	42.3	-31.9
07761	12	Z	100	27	16.2	-13.3
07761	00	Z	100	26	15.9	-13.9
08001	12	Z	100	27	5.6	1.2
08001	00	Z	100	27	4.8	0.8
08221	12	Z	100	27	6.1	3.5
08221	00	Z	100	27	6.0	3.6
08302	00	Z	100	26	9.7	-6.9
08302	12	Z	100	27	6.7	-5.4
08508	12	Z	100	27	7.5	3.1
08522	12	Z	100	27	4.4	2.9
10035	12	Z	100	27	9.9	6.5
10035	00	Z	100	27	9.8	8.4
10393	12	Z	100	27	7.6	-2.6
10393	00	Z	100	27	8.6	-4.4
10410	12	Z	100	26	9.3	-6.0
10410	00	Z	100	28	9.3	-6.2
10739	12	Z	100	27	7.3	-0.9
10739	00	Z	100	27	8.5	-2.4
11035	12	Z	100	27	15.0	-1.6
11035	00	Z	100	27	10.3	-1.3
12982	00	Z	100	27	6.6	-1.3
12982	12	Z	100	27	4.5	0.5
16245	12	Z	100	27	4.2	-2.2
16245	00	Z	100	26	3.2	-1.3
16429	00	Z	100	27	4.1	0.7
16429	12	Z	100	27	5.0	1.1
16622	00	Z	100	27	8.1	6.1
16754	00	Z	100	22	11.8	-1.6
17607	12	Z	100	26	5.4	-1.0
26435	12	Z	100	13	6.9	-4.8
2EERVT	12	Z	100	6	11.4	-7.7
2EERVT	00	Z	100	7	13.4	-11.0
60018	00	Z	100	27	8.0	4.8
60018	12	Z	100	27	6.4	1.2

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
7JUNA4	12	Z	100	3	62.2	52.7
7JUNA4	00	Z	100	2	1.6	1.5
9ZT9MR	12	Z	100	13	22.5	-17.7
9ZT9MR	00	Z	100	9	21.8	-19.3
ASDE09	12	Z	100	1	17.3	17.3
ATGU3F	12	Z	100	6	16.2	-12.8
ATGU3F	00	Z	100	7	22.7	-16.6
GQBZLZ	12	Z	100	1	10.9	-10.9
JNKN7J	12	Z	100	8	46.5	37.6
JNKN7J	00	Z	100	10	29.6	25.3
KJJF9X	12	Z	100	6	4.7	0.9
KJJF9X	00	Z	100	5	7.3	7.0
KMPLHP	12	Z	100	8	118.7	100.5
KMPLHP	00	Z	100	9	39.9	38.0
LRYQE3	12	Z	100	10	11.4	-3.0
LRYQE3	00	Z	100	11	8.0	-2.2
WDK38H	12	Z	100	9	22.5	-10.9
XKQLWQ	12	Z	100	7	23.9	13.7
XQFJRG	12	Z	100	7	12.3	-8.2
XQFJRG	00	Z	100	4	15.8	-11.0
YLV96W	00	Z	100	4	12.2	-0.8
YLV96W	12	Z	100	5	41.1	22.2

**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 : FEB 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	100	25	2.8	0.3	-0.2
01001	12	V	100	27	3.7	0.0	0.3
01028	12	V	100	27	3.5	-0.3	-0.6
01028	00	V	100	23	2.9	-0.4	-0.4
01400	12	V	100	12	3.3	-0.7	0.7
01400	00	V	100	11	3.5	1.6	-0.6
01415	12	V	100	26	3.4	0.9	0.2
01415	00	V	100	25	3.7	0.0	-0.2
02365	12	V	100	14	4.0	-0.4	0.1
02365	00	V	100	12	5.1	-2.3	-0.7
02836	12	V	100	25	4.5	0.1	0.8
02836	00	V	100	23	4.0	0.9	0.2
02963	12	V	100	26	4.7	0.9	-0.5
02963	00	V	100	24	3.8	-0.4	-0.5
03005	00	V	100	25	4.0	0.9	0.3
03005	12	V	100	27	3.2	0.7	0.0
03238	00	V	100	25	3.6	-0.1	-1.3
03238	12	V	100	1	3.2	3.0	1.2
03808	12	V	100	27	3.3	0.4	-0.3
03808	00	V	100	26	3.0	-0.5	-0.2
03918	12	V	100	1	5.1	0.4	5.1
03918	00	V	100	23	3.7	-0.4	0.2
03953	00	V	100	27	3.3	0.2	0.5
03953	12	V	100	27	3.0	0.2	-0.2
04018	12	V	100	21	3.7	-0.3	-0.1
04018	00	V	100	19	3.3	-0.4	0.1
04220	00	V	100	25	3.3	-0.3	1.0
04220	12	V	100	26	3.0	-0.3	0.5
04270	00	V	100	24	3.3	-0.1	-0.5
04270	12	V	100	24	3.5	1.3	0.2
04320	00	V	100	27	3.7	0.9	-0.3
04320	12	V	100	27	2.5	-0.2	0.1
04339	12	V	100	24	3.2	0.4	0.3
04339	00	V	100	25	3.2	0.3	-0.6
04360	00	V	100	16	3.0	-0.3	-0.2
04360	12	V	100	15	2.9	0.2	1.9
06011	12	V	100	23	3.4	0.3	-0.5
06011	00	V	100	21	3.2	0.3	-0.2
06260	00	V	100	26	3.5	0.1	-0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	100	4	3.2	1.4	0.8
06610	12	V	100	27	3.0	-0.2	-0.9
06610	00	V	100	27	3.5	0.5	0.5
07110	00	V	100	23	3.1	0.3	-0.6
07110	12	V	100	26	3.2	-0.4	0.4
07510	12	V	100	25	2.7	0.2	0.0
07510	00	V	100	24	3.0	0.1	0.2
07645	12	V	100	25	3.2	0.3	-0.4
07645	00	V	100	27	2.9	-0.3	-0.9
07761	12	V	100	27	3.6	-0.2	0.1
07761	00	V	100	26	2.7	0.5	0.4
08001	12	V	100	27	3.0	0.2	0.4
08001	00	V	100	27	2.9	-0.4	0.1
08221	12	V	100	27	3.0	0.5	-0.4
08221	00	V	100	26	3.2	0.0	-0.2
08302	00	V	100	26	3.0	0.4	-0.5
08302	12	V	100	27	3.4	-0.3	0.2
08508	12	V	100	27	3.3	-0.1	-0.1
08522	12	V	100	27	3.7	0.0	0.1
10035	12	V	100	27	3.8	0.1	0.0
10035	00	V	100	27	3.7	0.0	-0.2
10393	12	V	100	27	3.3	-0.1	0.4
10393	00	V	100	27	3.3	0.0	-0.1
10410	12	V	100	26	3.3	0.7	-0.8
10410	00	V	100	27	3.8	0.3	-0.1
10739	12	V	100	27	3.7	0.6	1.1
10739	00	V	100	27	3.1	-0.1	0.0
11035	12	V	100	27	3.6	0.2	-0.7
11035	00	V	100	27	3.3	-0.5	-0.2
12982	00	V	100	26	3.9	-0.4	-0.4
12982	12	V	100	27	3.8	-0.3	0.2
16245	12	V	100	27	3.9	-0.2	0.9
16245	00	V	100	26	3.0	0.3	0.8
16429	00	V	100	27	3.5	0.9	-0.6
16429	12	V	100	27	3.4	0.3	-0.7
16622	00	V	100	23	3.6	0.7	-1.0
16754	00	V	100	22	3.7	-0.4	-0.3
17607	12	V	100	15	2.5	1.1	0.5
26435	12	V	100	13	2.3	-0.1	0.5
2EERV	12	V	100	6	4.3	-0.7	2.2
2EERV	00	V	100	7	4.3	-0.5	0.5
60018	00	V	100	27	4.5	-0.8	-0.8
60018	12	V	100	27	4.3	0.8	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
7JUNA4	12	V	100	3	5.3	-0.6	3.3
7JUNA4	00	V	100	2	3.4	-1.3	-1.6
9ZT9MR	12	V	100	12	6.1	-3.0	0.8
9ZT9MR	00	V	100	9	3.4	0.0	-0.1
ASDE09	12	V	100	1	3.3	-0.1	-3.3
ATGU3F	12	V	100	6	3.2	-0.6	-0.9
ATGU3F	00	V	100	7	2.6	0.4	-0.1
GQBZLZ	12	V	100	1	2.9	-0.3	2.9
JNKN7J	12	V	100	8	3.0	0.2	1.6
JNKN7J	00	V	100	10	2.9	1.0	0.7
KJJF9X	12	V	100	6	3.0	-1.2	0.8
KJJF9X	00	V	100	5	3.1	1.0	0.0
KMPLHP	12	V	100	8	5.0	-1.6	0.4
KMPLHP	00	V	100	9	2.6	0.1	0.6
LRYQE3	12	V	100	10	3.6	0.6	0.5
LRYQE3	00	V	100	11	3.9	0.1	-0.8
WDK38H	12	V	100	8	6.3	-0.6	1.7
XKQLWQ	12	V	100	7	6.4	0.8	-2.8
XQFJRG	12	V	100	6	2.7	-0.8	1.1
XQFJRG	00	V	100	4	2.7	1.0	0.1
YLV96W	00	V	100	4	6.1	-4.2	0.7
YLV96W	12	V	100	5	2.1	0.5	0.4



#### 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 : FEB 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	500	27	21.9	-7.0
01001	12	Z	500	27	6.2	-2.7
01028	12	Z	500	28	5.8	-1.0
01028	00	Z	500	27	5.0	-1.7
01400	12	Z	500	25	78.7	78.4
01400	00	Z	500	24	76.9	76.7
01415	12	Z	500	26	6.5	5.5
01415	00	Z	500	27	7.1	4.0
02365	12	Z	500	15	4.7	3.8
02365	00	Z	500	14	6.5	5.9
02836	12	Z	500	30	2.5	0.8
02836	00	Z	500	27	2.4	0.5
02963	12	Z	500	27	4.6	2.5
02963	00	Z	500	28	3.6	1.6
03005	00	Z	500	27	3.7	-1.9
03005	12	Z	500	30	4.0	-1.4
03238	00	Z	500	27	4.7	2.3
03238	12	Z	500	1	5.6	5.6
03808	12	Z	500	27	4.4	3.6
03808	00	Z	500	26	6.0	4.5
03918	12	Z	500	1	10.6	10.6
03918	00	Z	500	23	8.5	8.1
03953	00	Z	500	27	3.4	-0.7
03953	12	Z	500	27	4.4	0.8
04018	12	Z	500	25	6.2	-1.5
04018	00	Z	500	24	7.6	-0.6
04220	00	Z	500	26	11.3	-9.8
04220	12	Z	500	27	11.6	-10.5
04270	00	Z	500	25	10.6	-9.6
04270	12	Z	500	25	10.3	-9.3
04320	00	Z	500	27	4.9	2.0
04320	12	Z	500	27	7.2	2.4
04339	12	Z	500	26	27.6	-11.0
04339	00	Z	500	26	9.2	-7.6
04360	00	Z	500	16	10.1	-8.9
04360	12	Z	500	15	25.6	-2.3
06011	12	Z	500	27	7.6	-0.3
06011	00	Z	500	24	6.6	1.8
06260	00	Z	500	27	15.7	-2.7

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	500	4	2.1	2.1
06610	12	Z	500	28	2.7	2.1
06610	00	Z	500	27	3.5	1.4
07110	00	Z	500	32	6.4	-5.2
07110	12	Z	500	26	6.9	-4.5
07510	12	Z	500	27	10.5	9.8
07510	00	Z	500	29	7.0	6.3
07645	12	Z	500	28	16.2	-11.5
07645	00	Z	500	29	17.3	-12.4
07761	12	Z	500	27	10.4	-8.8
07761	00	Z	500	26	12.3	-11.5
08001	12	Z	500	27	5.3	3.4
08001	00	Z	500	27	3.9	1.8
08221	12	Z	500	27	3.8	2.7
08221	00	Z	500	27	3.1	2.0
08302	00	Z	500	26	8.3	-7.3
08302	12	Z	500	27	7.8	-7.2
08508	12	Z	500	27	7.9	5.9
08522	12	Z	500	27	6.5	5.0
10035	12	Z	500	27	12.5	12.0
10035	00	Z	500	27	13.8	13.6
10393	12	Z	500	27	3.2	0.8
10393	00	Z	500	27	3.9	-0.3
10410	12	Z	500	27	2.6	0.5
10410	00	Z	500	28	2.5	-0.2
10739	12	Z	500	27	5.3	4.4
10739	00	Z	500	28	5.0	3.8
11035	12	Z	500	27	6.6	-2.3
11035	00	Z	500	27	4.2	-0.3
12982	00	Z	500	27	3.5	0.3
12982	12	Z	500	28	3.0	1.1
16245	12	Z	500	27	1.8	0.3
16245	00	Z	500	26	2.2	0.9
16429	00	Z	500	27	3.0	1.1
16429	12	Z	500	27	3.8	1.6
16622	00	Z	500	27	8.2	7.3
16754	00	Z	500	27	5.6	-0.6
17607	12	Z	500	27	3.6	0.7
26435	12	Z	500	13	3.6	-1.6
2EERVT	12	Z	500	6	7.9	-3.8
2EERVT	00	Z	500	7	11.6	-10.6
60018	00	Z	500	27	5.0	3.5
60018	12	Z	500	27	4.8	3.7

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
7JUNA4	12	Z	500	5	3.3	0.0
7JUNA4	00	Z	500	6	12.3	-1.9
9ZT9MR	12	Z	500	13	16.1	-14.7
9ZT9MR	00	Z	500	10	16.6	-14.9
ASDE09	12	Z	500	1	27.7	27.7
ATGU3F	12	Z	500	6	19.3	0.6
ATGU3F	00	Z	500	10	13.0	-6.3
GQBZLZ	12	Z	500	2	19.5	-18.6
JNKN7J	12	Z	500	8	32.1	31.8
JNKN7J	00	Z	500	9	34.5	34.2
KJJF9X	12	Z	500	6	5.3	5.1
KJJF9X	00	Z	500	7	4.2	3.5
KMPLHP	12	Z	500	8	61.6	55.7
KMPLHP	00	Z	500	10	44.6	42.8
LRYQE3	12	Z	500	10	8.6	-3.5
LRYQE3	00	Z	500	11	5.8	2.8
WDK38H	12	Z	500	9	18.4	-4.0
XKQLWQ	12	Z	500	7	56.7	14.5
XQFJRG	12	Z	500	8	6.3	-3.9
XQFJRG	00	Z	500	4	7.1	-5.7
YLV96W	00	Z	500	6	10.6	-6.8
YLV96W	12	Z	500	6	7.8	-6.6

**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 : FEB 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	500	27	3.4	0.8	-0.3
01001	12	V	500	27	2.8	-0.1	0.8
01028	12	V	500	27	3.0	0.0	-0.1
01028	00	V	500	26	4.2	0.2	-0.3
01400	12	V	500	25	2.3	0.0	0.0
01400	00	V	500	24	2.7	0.7	-0.2
01415	12	V	500	26	3.5	0.2	-0.2
01415	00	V	500	25	2.8	0.0	0.6
02365	12	V	500	15	3.4	1.0	0.0
02365	00	V	500	14	3.0	-0.1	-0.7
02836	12	V	500	26	3.0	0.4	0.3
02836	00	V	500	27	2.1	0.3	0.4
02963	12	V	500	27	2.7	0.2	0.0
02963	00	V	500	26	2.8	0.1	0.1
03005	00	V	500	27	2.6	0.1	-0.6
03005	12	V	500	27	2.7	-0.3	0.3
03238	00	V	500	27	2.6	0.4	0.0
03238	12	V	500	1	2.8	-1.6	2.3
03808	12	V	500	27	2.3	0.4	0.1
03808	00	V	500	26	2.6	0.1	0.1
03918	12	V	500	1	1.3	-1.3	-0.1
03918	00	V	500	23	2.5	-0.1	-0.3
03953	00	V	500	27	2.2	-0.2	-0.1
03953	12	V	500	27	2.7	0.4	0.8
04018	12	V	500	25	3.7	0.4	0.5
04018	00	V	500	23	3.9	1.2	0.7
04220	00	V	500	26	2.9	-0.1	-0.1
04220	12	V	500	27	2.9	0.7	-0.6
04270	00	V	500	25	3.7	-0.1	0.9
04270	12	V	500	25	3.3	0.7	0.6
04320	00	V	500	27	2.3	-0.3	0.2
04320	12	V	500	27	4.2	0.2	0.9
04339	12	V	500	26	4.1	0.0	0.7
04339	00	V	500	26	3.2	0.6	-0.1
04360	00	V	500	16	3.0	0.9	0.7
04360	12	V	500	15	3.3	0.7	0.2
06011	12	V	500	26	2.7	0.4	-0.6
06011	00	V	500	24	2.5	-0.3	-0.3
06260	00	V	500	27	2.0	0.3	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	500	4	2.3	0.2	-0.5
06610	12	V	500	27	1.8	0.2	0.1
06610	00	V	500	27	2.6	-0.6	-0.2
07110	00	V	500	27	2.4	-0.1	-0.2
07110	12	V	500	26	2.1	-0.1	0.0
07510	12	V	500	26	3.7	0.3	-0.4
07510	00	V	500	27	1.8	-0.6	0.2
07645	12	V	500	27	2.6	0.4	-0.3
07645	00	V	500	28	2.5	0.1	0.5
07761	12	V	500	27	2.6	-0.5	-0.2
07761	00	V	500	26	2.9	0.5	0.4
08001	12	V	500	27	2.1	0.2	0.3
08001	00	V	500	27	2.4	-0.2	-0.7
08221	12	V	500	27	2.7	-0.1	-0.5
08221	00	V	500	27	2.4	-0.9	0.0
08302	00	V	500	26	2.8	0.7	0.2
08302	12	V	500	27	3.4	0.4	0.4
08508	12	V	500	27	3.1	0.4	-0.3
08522	12	V	500	27	2.5	0.0	-0.1
10035	12	V	500	27	2.4	-0.2	-0.4
10035	00	V	500	27	2.3	-0.7	-0.3
10393	12	V	500	27	2.5	0.6	-0.4
10393	00	V	500	27	2.7	0.3	-0.5
10410	12	V	500	27	2.1	-0.3	-0.2
10410	00	V	500	27	2.0	0.4	-0.1
10739	12	V	500	27	2.1	0.1	-0.1
10739	00	V	500	27	2.0	0.1	-0.4
11035	12	V	500	27	2.4	0.5	0.0
11035	00	V	500	27	2.4	-0.3	-0.4
12982	00	V	500	27	2.3	0.2	-0.5
12982	12	V	500	27	2.8	0.5	-0.3
16245	12	V	500	27	2.8	0.6	-0.6
16245	00	V	500	26	2.5	0.0	0.2
16429	00	V	500	27	2.9	0.5	0.2
16429	12	V	500	27	1.9	0.3	0.1
16622	00	V	500	27	2.7	0.0	0.3
16754	00	V	500	27	2.7	0.9	-0.2
17607	12	V	500	23	3.6	0.6	0.0
26435	12	V	500	13	3.2	0.6	0.3
2EERV	12	V	500	6	1.8	0.6	0.0
2EERV	00	V	500	7	1.7	0.7	0.4
60018	00	V	500	27	3.3	0.3	0.6
60018	12	V	500	27	3.0	0.7	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
7JUNA4	12	V	500	5	2.5	0.0	-0.2
7JUNA4	00	V	500	6	5.2	0.1	1.2
9ZT9MR	12	V	500	13	2.2	0.0	-0.1
9ZT9MR	00	V	500	10	1.8	-0.7	-0.6
ASDE09	12	V	500	1	2.1	-1.3	1.6
ATGU3F	12	V	500	6	2.8	-1.1	0.5
ATGU3F	00	V	500	10	3.4	-0.1	0.2
GQBZLZ	12	V	500	2	3.9	2.8	-1.3
JNKN7J	12	V	500	8	4.1	-0.3	-0.5
JNKN7J	00	V	500	9	3.6	1.6	0.6
KJJF9X	12	V	500	6	2.1	1.0	-0.1
KJJF9X	00	V	500	7	3.7	0.1	1.3
KMPLHP	12	V	500	8	3.2	-0.5	1.0
KMPLHP	00	V	500	10	5.0	2.0	1.4
LRVQE3	12	V	500	10	3.9	-0.3	-0.4
LRVQE3	00	V	500	11	2.5	0.2	-0.3
WDK38H	12	V	500	9	3.1	0.4	0.2
XKQLWQ	12	V	500	7	11.4	-4.2	-6.4
XQFJRG	12	V	500	8	3.1	-1.3	-0.4
XQFJRG	00	V	500	4	2.4	-0.4	0.5
YLV96W	00	V	500	6	2.3	0.2	0.2
YLV96W	12	V	500	6	2.0	0.3	0.4

#### 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 : FEB 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	850	27	10.1	-8.3
01001	12	Z	850	27	5.8	-0.6
01028	12	Z	850	28	5.6	0.4
01028	00	Z	850	27	3.8	-1.4
01400	12	Z	850	25	77.3	77.2
01400	00	Z	850	25	75.6	75.4
01415	12	Z	850	26	4.6	4.1
01415	00	Z	850	27	4.3	3.4
02365	12	Z	850	15	6.3	5.5
02365	00	Z	850	14	7.4	6.8
02836	12	Z	850	30	3.1	1.1
02836	00	Z	850	27	2.4	1.0
02963	12	Z	850	27	3.2	2.1
02963	00	Z	850	28	3.6	2.3
03005	00	Z	850	27	4.9	-1.9
03005	12	Z	850	30	4.2	-1.9
03238	00	Z	850	27	3.5	2.5
03238	12	Z	850	1	2.9	2.9
03808	12	Z	850	27	3.5	3.0
03808	00	Z	850	26	3.1	2.5
03918	12	Z	850	1	7.2	7.2
03918	00	Z	850	24	7.1	6.5
03953	00	Z	850	27	2.6	0.3
03953	12	Z	850	27	3.5	0.6
04018	12	Z	850	25	4.6	-2.6
04018	00	Z	850	26	2.6	-1.0
04220	00	Z	850	26	8.0	-7.0
04220	12	Z	850	27	6.8	-5.8
04270	00	Z	850	25	7.9	-7.1
04270	12	Z	850	26	8.7	-7.4
04320	00	Z	850	28	6.8	-3.0
04320	12	Z	850	27	5.8	-2.0
04339	12	Z	850	26	10.7	-8.8
04339	00	Z	850	26	9.5	-8.7
04360	00	Z	850	17	10.4	-9.0
04360	12	Z	850	15	9.3	-7.8
06011	12	Z	850	27	4.5	-1.5
06011	00	Z	850	25	4.9	-1.0
06260	00	Z	850	27	15.7	-2.8

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	850	4	1.9	1.1
06610	12	Z	850	28	2.4	0.5
06610	00	Z	850	27	2.3	0.6
07110	00	Z	850	32	3.3	-2.8
07110	12	Z	850	26	3.1	-2.2
07510	12	Z	850	27	4.0	3.3
07510	00	Z	850	29	3.5	2.7
07645	12	Z	850	28	9.1	-8.1
07645	00	Z	850	29	9.1	-8.1
07761	12	Z	850	27	6.1	-5.6
07761	00	Z	850	26	6.3	-5.8
08001	12	Z	850	27	2.5	1.5
08001	00	Z	850	27	2.6	1.5
08221	12	Z	850	27	1.8	0.7
08221	00	Z	850	27	1.7	0.1
08302	00	Z	850	26	8.6	-8.4
08302	12	Z	850	27	9.7	-9.4
08508	12	Z	850	27	6.6	5.0
08522	12	Z	850	27	4.6	3.9
10035	12	Z	850	27	13.1	13.0
10035	00	Z	850	27	12.8	12.6
10393	12	Z	850	27	2.0	-0.3
10393	00	Z	850	27	2.4	-0.5
10410	12	Z	850	27	2.3	-0.1
10410	00	Z	850	28	2.0	-1.0
10739	12	Z	850	27	4.5	4.0
10739	00	Z	850	28	3.9	3.5
11035	12	Z	850	28	3.0	0.6
11035	00	Z	850	27	2.8	0.9
12982	00	Z	850	27	3.2	1.6
12982	12	Z	850	28	3.0	0.9
16245	12	Z	850	27	2.1	0.6
16245	00	Z	850	27	2.1	0.3
16429	00	Z	850	27	1.9	1.5
16429	12	Z	850	27	2.3	1.3
16622	00	Z	850	27	8.4	8.1
16754	00	Z	850	27	3.9	-0.3
17607	12	Z	850	27	2.0	-0.1
26435	12	Z	850	13	3.1	-2.2
2EERVT	12	Z	850	6	8.1	-5.3
2EERVT	00	Z	850	7	8.9	-8.6
60018	00	Z	850	27	2.5	1.7
60018	12	Z	850	27	3.2	2.5



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
7JUNA4	12	Z	850	6	7.0	-3.8
7JUNA4	00	Z	850	7	6.3	2.1
9ZT9MR	12	Z	850	13	11.9	-10.5
9ZT9MR	00	Z	850	10	14.4	-9.6
ASDE09	12	Z	850	1	32.1	32.1
ATGU3F	12	Z	850	8	18.0	-10.2
ATGU3F	00	Z	850	11	17.1	-11.4
GQBZLZ	12	Z	850	2	23.2	-22.6
JNKN7J	12	Z	850	8	37.2	36.3
JNKN7J	00	Z	850	11	37.6	37.4
KJJF9X	12	Z	850	7	3.9	2.9
KJJF9X	00	Z	850	7	2.3	1.6
KMPLHP	12	Z	850	9	50.7	48.9
KMPLHP	00	Z	850	10	49.9	48.1
LRYQE3	12	Z	850	10	8.2	-2.8
LRYQE3	00	Z	850	11	4.8	3.0
WDK38H	12	Z	850	10	12.4	-0.7
XKQLWQ	12	Z	850	7	33.3	26.9
XQFJRG	12	Z	850	8	6.3	-4.8
XQFJRG	00	Z	850	4	7.7	-6.9
YLV96W	00	Z	850	6	7.7	-5.3
YLV96W	12	Z	850	6	4.7	-4.3

**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 : FEB 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	850	27	3.6	-0.4	0.4
01001	12	V	850	27	3.7	-0.1	0.5
01028	12	V	850	27	2.9	0.6	0.1
01028	00	V	850	26	2.6	0.2	0.2
01400	12	V	850	25	3.3	1.1	0.4
01400	00	V	850	25	2.4	0.1	-0.3
01415	12	V	850	26	2.9	-0.2	0.4
01415	00	V	850	25	3.2	0.1	0.1
02365	12	V	850	15	3.0	-0.3	-0.7
02365	00	V	850	14	3.3	0.4	-0.3
02836	12	V	850	26	2.4	-0.2	-0.1
02836	00	V	850	27	2.6	-0.4	0.4
02963	12	V	850	27	2.9	-0.3	-0.2
02963	00	V	850	27	2.9	0.3	-0.7
03005	00	V	850	27	2.7	-0.4	0.8
03005	12	V	850	27	3.5	-0.2	-0.2
03238	00	V	850	27	3.6	0.4	-0.3
03238	12	V	850	1	2.1	-1.8	-1.1
03808	12	V	850	27	3.1	-0.3	0.0
03808	00	V	850	26	2.8	0.6	0.0
03918	12	V	850	1	1.5	-0.1	-1.5
03918	00	V	850	23	3.2	-0.1	-0.1
03953	00	V	850	27	2.5	-0.3	0.4
03953	12	V	850	27	2.7	0.3	-0.8
04018	12	V	850	25	3.0	0.2	1.1
04018	00	V	850	25	3.0	0.9	0.3
04220	00	V	850	26	3.3	-0.7	-0.3
04220	12	V	850	27	3.6	0.6	0.0
04270	00	V	850	25	4.7	0.3	-0.8
04270	12	V	850	26	3.3	0.1	-0.3
04320	00	V	850	27	6.7	-0.1	2.5
04320	12	V	850	27	3.4	0.3	-0.3
04339	12	V	850	26	4.3	0.2	0.4
04339	00	V	850	26	5.3	0.0	1.3
04360	00	V	850	16	6.0	2.1	0.5
04360	12	V	850	15	11.4	4.1	1.8
06011	12	V	850	26	3.5	-0.5	-1.3
06011	00	V	850	25	3.3	0.2	-0.7
06260	00	V	850	27	1.9	0.4	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	850	4	1.8	0.0	0.1
06610	12	V	850	27	2.2	0.3	-0.4
06610	00	V	850	27	2.4	0.5	0.3
07110	00	V	850	27	2.6	-0.1	0.2
07110	12	V	850	26	2.1	-0.4	-0.5
07510	12	V	850	26	2.8	0.3	0.4
07510	00	V	850	27	2.7	-0.1	-0.1
07645	12	V	850	27	3.9	-0.4	-0.2
07645	00	V	850	28	3.0	-0.8	-0.6
07761	12	V	850	27	2.5	0.1	-0.2
07761	00	V	850	26	2.3	0.1	-0.3
08001	12	V	850	27	2.6	0.3	-0.2
08001	00	V	850	27	3.1	-0.5	0.3
08221	12	V	850	27	3.7	0.1	0.0
08221	00	V	850	27	2.9	-0.1	-0.6
08302	00	V	850	26	2.9	-0.2	0.3
08302	12	V	850	27	3.3	-0.3	0.6
08508	12	V	850	27	3.6	0.4	-0.3
08522	12	V	850	27	3.9	-0.6	0.8
10035	12	V	850	27	2.6	-0.1	0.3
10035	00	V	850	27	2.7	-0.3	0.3
10393	12	V	850	27	2.4	0.2	-0.5
10393	00	V	850	27	2.3	0.3	0.0
10410	12	V	850	27	2.7	-0.1	0.2
10410	00	V	850	27	2.3	0.3	0.8
10739	12	V	850	27	3.1	-1.1	0.2
10739	00	V	850	27	2.1	-0.7	0.4
11035	12	V	850	27	2.9	0.0	-0.2
11035	00	V	850	27	3.1	0.2	-0.5
12982	00	V	850	27	3.2	0.8	-0.3
12982	12	V	850	27	3.0	0.9	0.1
16245	12	V	850	27	3.4	0.7	-1.0
16245	00	V	850	26	3.7	-0.2	-0.4
16429	00	V	850	27	2.8	0.4	0.1
16429	12	V	850	27	2.6	0.9	-0.6
16622	00	V	850	27	3.4	0.6	-0.2
16754	00	V	850	27	3.5	-0.1	-0.7
17607	12	V	850	27	3.8	1.4	0.2
26435	12	V	850	13	2.2	0.0	-0.7
2EERV	12	V	850	6	2.2	-0.2	-0.4
2EERV	00	V	850	7	3.6	-1.1	-0.6
60018	00	V	850	27	2.9	-0.4	0.9
60018	12	V	850	27	3.2	-0.3	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
7JUNA4	12	V	850	6	2.6	0.5	1.0
7JUNA4	00	V	850	7	2.7	0.6	-0.3
9ZT9MR	12	V	850	13	3.1	0.4	-0.1
9ZT9MR	00	V	850	10	3.0	0.0	0.4
ASDE09	12	V	850	1	1.9	-1.8	-0.5
ATGU3F	12	V	850	8	3.2	-0.3	-0.7
ATGU3F	00	V	850	11	6.4	-1.4	1.0
GQBZLZ	12	V	850	2	1.6	0.4	-1.6
JNKN7J	12	V	850	8	3.5	-0.3	0.1
JNKN7J	00	V	850	11	2.3	-0.1	-1.0
KJJF9X	12	V	850	7	3.1	-0.4	0.2
KJJF9X	00	V	850	7	3.3	-0.7	-0.7
KMPLHP	12	V	850	9	3.8	-0.8	2.1
KMPLHP	00	V	850	10	2.0	-0.5	1.0
LRYQE3	12	V	850	10	2.8	-0.4	1.1
LRYQE3	00	V	850	11	2.9	0.7	0.2
WDK38H	12	V	850	10	3.1	-0.4	0.4
XKQLWQ	12	V	850	7	6.1	-3.9	-1.4
XQFJRG	12	V	850	8	2.3	0.0	-0.1
XQFJRG	00	V	850	4	2.4	0.7	-0.3
YLV96W	00	V	850	6	3.2	-1.0	-1.3
YLV96W	12	V	850	6	2.1	-0.3	-0.1

#### 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 : FEB 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	1344	0	0.3	-0.5	0.6
1300001	99	P	SUR	11	-23	560	0	0.3	0.2	0.4
1300008	99	P	SUR	15	-38	560	0	0.2	0.1	0.3
1300130	99	P	SUR	28	-16	672	0	0.3	0.2	0.4
1300131	99	P	SUR	28	-17	672	0	0.4	0.0	0.4
1301603	99	P	SUR	33	-50	669	0	0.5	0.1	0.5
1301608	99	P	SUR	29	-49	669	0	0.4	0.2	0.5
1301610	99	P	SUR	53	-10	513	60	4.4	-2.1	4.9
1301612	99	P	SUR	23	-64	669	0	0.3	-0.6	0.7
1301619	99	P	SUR	39	-54	670	1	2.2	-0.4	2.3
1301629	99	P	SUR	19	-33	670	0	0.3	0.1	0.3
1301699	99	P	SUR	29	-33	633	0	0.2	-0.4	0.5
1301700	99	P	SUR	20	-61	629	0	0.2	-0.2	0.3
1301706	99	P	SUR	23	-53	635	0	0.2	-0.1	0.2
1301708	99	P	SUR	14	-17	485	0	0.4	-0.4	0.6
1301712	99	P	SUR	24	-52	637	0	0.2	-0.1	0.2
1301713	99	P	SUR	15	-50	632	0	0.3	0.0	0.3
1301714	99	P	SUR	24	-51	637	0	0.2	0.1	0.2
1301718	99	P	SUR	25	-40	640	0	0.4	0.1	0.4
1301719	99	P	SUR	22	-42	645	0	0.2	0.5	0.5
1301720	99	P	SUR	26	-29	608	0	0.3	0.2	0.4
1301721	99	P	SUR	30	-19	413	0	0.2	-0.3	0.4
1301722	99	P	SUR	24	-44	634	0	0.2	-0.1	0.2
1301723	99	P	SUR	33	-10	636	0	0.4	0.6	0.7
1301724	99	P	SUR	34	-9	639	0	0.4	-0.1	0.4
1301725	99	P	SUR	23	-22	642	0	0.3	0.1	0.3
1301726	99	P	SUR	25	-29	635	0	0.2	0.1	0.3
1301728	99	P	SUR	14	-27	638	0	0.4	0.3	0.5
1301731	99	P	SUR	22	-28	650	0	0.3	0.3	0.4
1301735	99	P	SUR	27	-43	634	0	0.3	-0.5	0.6
1301736	99	P	SUR	26	-44	633	0	0.3	0.2	0.4
1301737	99	P	SUR	25	-53	632	0	0.2	0.0	0.2
1301756	99	P	SUR	11	-64	638	0	0.3	-0.7	0.7
1301763	99	P	SUR	15	-29	4	4	0.0	0.0	0.0
1301766	99	P	SUR	19	-27	524	0	0.7	0.1	0.7
1501772	99	P	SUR	10	-50	637	0	0.3	-0.2	0.4

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
3801550	99	P	SUR	87	-64	672	672	0.0	0.0	0.0
3801561	99	P	SUR	43	-70	670	0	0.6	0.0	0.6
4100043	99	P	SUR	21	-65	4027	0	0.3	-1.7	1.7
4100044	99	P	SUR	22	-59	4024	0	0.2	0.4	0.4
4100046	99	P	SUR	24	-68	4026	0	0.2	0.4	0.5
4100048	99	P	SUR	32	-70	4015	0	0.4	0.3	0.5
4100049	99	P	SUR	27	-63	4026	0	0.3	-1.5	1.6
4100053	99	P	SUR	18	-66	4023	0	0.3	-0.9	0.9
4100056	99	P	SUR	18	-65	3129	0	0.2	-1.0	1.0
4100139	99	P	SUR	20	-38	672	0	0.3	0.1	0.3
4100300	99	P	SUR	16	-57	614	0	0.3	0.0	0.3
4101613	99	P	SUR	31	-57	625	0	0.4	0.2	0.4
4101616	99	P	SUR	30	-44	652	0	0.3	0.0	0.3
4101618	99	P	SUR	29	-53	608	0	0.3	0.1	0.3
4101656	99	P	SUR	50	-47	670	1	2.0	0.7	2.1
4101663	99	P	SUR	30	-36	669	0	0.3	0.0	0.3
4101665	99	P	SUR	70	2	627	0	0.7	0.2	0.7
4101696	99	P	SUR	31	-36	670	0	0.3	-0.1	0.3
4101717	99	P	SUR	15	-56	669	0	3.0	-1.1	3.2
4101719	99	P	SUR	36	-14	670	0	0.3	0.2	0.4
4101723	99	P	SUR	25	-69	670	0	0.2	0.1	0.3
4101724	99	P	SUR	26	-69	668	0	0.2	-0.3	0.4
4101725	99	P	SUR	18	-63	669	0	0.2	0.0	0.2
4101727	99	P	SUR	32	-20	669	0	0.3	0.1	0.3
4101728	99	P	SUR	32	-41	670	0	0.4	0.4	0.6
4101729	99	P	SUR	32	-49	670	0	0.3	0.1	0.3
4101730	99	P	SUR	13	-22	671	0	0.3	0.5	0.6
4101731	99	P	SUR	14	-50	669	0	0.3	0.2	0.3
4101743	99	P	SUR	35	-41	670	57	2.8	-0.7	2.9
4101753	99	P	SUR	36	-56	670	0	1.4	0.4	1.4
4101755	99	P	SUR	32	-62	669	0	0.5	0.1	0.5
4101756	99	P	SUR	12	-62	623	0	0.3	-0.6	0.7
4101842	99	P	SUR	69	16	474	0	0.8	-0.4	0.9
4101843	99	P	SUR	70	5	630	0	0.6	0.1	0.6
4101845	99	P	SUR	67	-2	630	0	0.5	0.2	0.5
4101848	99	P	SUR	24	-68	642	0	0.2	0.2	0.3
4101850	99	P	SUR	43	-9	85	0	0.4	-9.8	9.8
4101851	99	P	SUR	24	-56	612	0	0.3	-0.1	0.3
4102547	99	P	SUR	23	-57	629	0	0.3	0.2	0.4
4102549	99	P	SUR	21	-70	302	0	0.2	0.0	0.2
4102558	99	P	SUR	13	-61	287	0	0.3	-0.3	0.4
4102560	99	P	SUR	15	-61	645	0	0.3	-0.8	0.8
4102632	99	P	SUR	39	-63	589	0	0.7	-1.4	1.5

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
41043	99	P	SUR	21	-65	672	0	0.3	-1.6	1.7
41044	99	P	SUR	22	-59	672	0	0.3	0.4	0.5
41046	99	P	SUR	24	-68	672	0	0.4	0.4	0.5
41048	99	P	SUR	32	-70	672	0	0.5	0.3	0.6
41049	99	P	SUR	28	-63	671	0	0.4	-1.5	1.6
41053	99	P	SUR	19	-66	672	0	0.4	-0.9	1.0
41056	99	P	SUR	18	-66	544	0	0.3	-1.0	1.1
4200059	99	P	SUR	15	-67	4027	0	0.3	0.1	0.3
4200060	99	P	SUR	16	-63	4027	0	0.2	0.2	0.3
4200085	99	P	SUR	18	-67	2902	0	0.3	-0.8	0.9
4201703	99	P	SUR	41	-18	617	0	0.3	0.2	0.4
42059	99	P	SUR	15	-68	672	0	0.4	0.1	0.4
42060	99	P	SUR	16	-63	672	0	0.4	0.2	0.4
42085	99	P	SUR	18	-67	650	0	0.3	-0.9	0.9
4400005	99	P	SUR	43	-69	670	0	0.7	-0.2	0.7
4400008	99	P	SUR	40	-69	4026	0	0.7	-1.2	1.3
4400011	99	P	SUR	41	-67	3983	0	0.8	0.0	0.8
4400027	99	P	SUR	44	-67	654	16	2.4	-1.5	2.9
4400032	99	P	SUR	44	-69	621	0	0.6	-0.8	1.0
4400033	99	P	SUR	44	-69	458	0	0.6	-1.1	1.2
4400150	99	P	SUR	43	-64	665	0	0.8	-0.5	1.0
4400488	99	P	SUR	45	-61	357	0	0.6	0.0	0.6
4400489	99	P	SUR	45	-61	332	0	0.6	0.0	0.6
44005	99	P	SUR	43	-69	671	0	0.7	-0.2	0.7
4400777	99	P	SUR	31	-35	669	0	0.5	0.2	0.6
44008	99	P	SUR	41	-69	672	0	0.8	-1.2	1.4
44011	99	P	SUR	41	-67	669	0	0.8	0.0	0.8
4401581	99	P	SUR	30	-67	670	0	0.3	-0.1	0.3
4401582	99	P	SUR	30	-28	669	0	0.2	0.3	0.4
4401584	99	P	SUR	31	-40	669	0	0.5	0.2	0.5
4401585	99	P	SUR	23	-36	671	0	0.3	0.4	0.5
4401587	99	P	SUR	75	8	670	0	0.6	0.6	0.9
4401588	99	P	SUR	66	-11	668	0	0.6	0.0	0.6
4401859	99	P	SUR	17	-67	56	0	0.2	0.1	0.2
4401863	99	P	SUR	17	-59	631	0	0.3	-1.1	1.1
4401864	99	P	SUR	20	-58	620	0	0.2	-0.2	0.3
4401867	99	P	SUR	35	-57	670	0	0.5	-0.2	0.5
4401872	99	P	SUR	30	-65	670	0	0.3	-0.2	0.4
4401874	99	P	SUR	25	-69	668	0	0.2	-0.2	0.3
4402603	99	P	SUR	64	-2	625	0	0.5	0.1	0.5
4402604	99	P	SUR	43	-18	433	0	0.2	0.0	0.2
4402606	99	P	SUR	61	-19	623	0	0.5	0.0	0.5
4402607	99	P	SUR	45	-15	623	0	0.3	-0.1	0.3

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4402609	99	P	SUR	65	-30	636	0	0.7	-0.1	0.7
4402611	99	P	SUR	50	-16	618	0	0.4	0.0	0.4
4402613	99	P	SUR	39	-17	616	0	0.4	0.1	0.4
4402618	99	P	SUR	31	-63	633	0	0.3	0.1	0.3
4402656	99	P	SUR	35	-32	614	0	0.4	0.5	0.6
4402660	99	P	SUR	27	-26	641	0	0.3	0.3	0.4
4402663	99	P	SUR	44	-8	491	0	0.3	-0.2	0.4
4402670	99	P	SUR	25	-42	631	0	0.2	-0.1	0.3
4402671	99	P	SUR	18	-63	634	0	0.0	-6.2	6.2
4402672	99	P	SUR	20	-47	638	0	0.2	-0.2	0.3
4402673	99	P	SUR	16	-53	634	0	0.2	0.2	0.3
4402674	99	P	SUR	17	-59	630	0	0.2	0.2	0.3
4402675	99	P	SUR	26	-33	629	0	0.3	0.0	0.3
4402676	99	P	SUR	30	-38	631	0	0.3	0.3	0.5
44027	99	P	SUR	44	-67	109	2	2.1	-1.5	2.6
4402721	99	P	SUR	46	-14	639	0	0.3	0.2	0.4
4402726	99	P	SUR	53	-35	635	0	0.7	-0.2	0.7
4402727	99	P	SUR	56	-15	643	0	0.5	-0.2	0.5
4402732	99	P	SUR	45	-46	635	1	0.7	0.1	0.7
4402733	99	P	SUR	51	-50	629	0	0.6	0.2	0.7
4402735	99	P	SUR	46	-48	638	0	0.7	0.0	0.7
4402736	99	P	SUR	47	-38	647	3	1.5	1.0	1.8
4402742	99	P	SUR	49	-34	630	0	0.9	0.4	0.9
4402743	99	P	SUR	44	-51	631	0	0.9	-0.2	0.9
4402744	99	P	SUR	42	-57	636	0	0.8	0.4	0.8
4402746	99	P	SUR	42	-40	649	0	1.0	0.2	1.0
4402749	99	P	SUR	54	-43	637	0	0.6	-0.4	0.7
4402750	99	P	SUR	55	-38	640	0	0.6	-0.8	1.0
4402878	99	P	SUR	40	-67	611	0	0.7	0.4	0.8
4402880	99	P	SUR	42	-57	600	0	0.7	0.4	0.8
4402881	99	P	SUR	44	-39	166	0	0.6	0.0	0.6
4402882	99	P	SUR	34	-67	175	0	0.5	0.0	0.5
4402883	99	P	SUR	41	-46	161	0	0.8	0.3	0.8
44032	99	P	SUR	44	-69	623	0	0.7	-0.8	1.0
44033	99	P	SUR	44	-69	460	0	0.6	-1.1	1.2
4403557	99	P	SUR	61	0	655	0	0.5	0.9	1.0
4403558	99	P	SUR	49	-19	671	0	0.6	0.4	0.7
4403568	99	P	SUR	43	-60	669	0	0.7	0.1	0.7
4403569	99	P	SUR	45	-44	670	0	0.6	0.2	0.7
44078	99	P	SUR	60	-40	42	0	0.7	-1.6	1.8
44150	99	P	SUR	43	-64	665	0	0.8	-0.5	1.0
44258	99	P	SUR	45	-63	668	0	0.7	-0.3	0.7
44488	99	P	SUR	45	-61	644	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
44489	99	P	SUR	46	-61	619	0	0.5	0.1	0.5
4601782	99	P	SUR	38	-25	617	0	0.4	0.7	0.8
4601812	99	P	SUR	86	-35	637	0	0.6	0.5	0.8
4701518	99	P	SUR	75	-19	129	0	0.6	0.1	0.6
4701738	99	P	SUR	70	-67	655	655	0.0	0.0	0.0
4801658	99	P	SUR	83	-61	646	0	0.6	0.0	0.6
4801723	99	P	SUR	75	15	652	0	1.6	-0.1	1.6
4801760	99	P	SUR	85	-66	672	0	0.5	-0.7	0.8
4801761	99	P	SUR	67	-13	672	87	3.6	-0.6	3.7
4801763	99	P	SUR	84	-43	671	0	0.7	-0.4	0.8
4801765	99	P	SUR	84	-38	672	0	0.8	0.1	0.8
4801767	99	P	SUR	66	-28	156	1	2.4	-0.9	2.6
4801770	99	P	SUR	76	-13	672	0	0.6	0.0	0.6
4802506	99	P	SUR	74	-18	672	0	0.7	0.7	1.0
4802602	99	P	SUR	82	-6	642	0	1.1	0.1	1.1
4802663	99	P	SUR	83	-57	672	0	0.6	0.5	0.8
4803978	99	P	SUR	86	-53	672	0	0.5	-0.2	0.5
5801965	99	P	SUR	45	-66	670	0	1.0	0.4	1.1
6100001	99	P	SUR	43	8	672	0	0.6	-0.2	0.6
6100002	99	P	SUR	42	5	671	0	0.4	-0.2	0.5
6100196	99	P	SUR	42	4	300	0	3.6	-1.2	3.8
6100197	99	P	SUR	40	4	672	0	0.5	0.5	0.7
6100198	99	P	SUR	37	-2	672	0	0.4	0.3	0.5
6100280	99	P	SUR	41	1	620	0	0.4	0.3	0.5
6100281	99	P	SUR	40	0	466	35	1.4	0.5	1.5
6100417	99	P	SUR	38	0	672	0	0.4	0.4	0.6
6100430	99	P	SUR	40	2	672	0	0.4	0.2	0.4
6101007	99	P	SUR	36	25	114	0	0.6	-0.5	0.7
6101008	99	P	SUR	37	22	122	0	0.6	-0.3	0.6
6101009	99	P	SUR	35	25	120	0	0.6	-0.4	0.7
6102731	99	P	SUR	42	19	106	0	0.4	-0.2	0.5
6102732	99	P	SUR	36	19	637	0	0.5	0.0	0.5
6102733	99	P	SUR	40	19	648	52	1.8	-2.2	2.8
6102804	99	P	SUR	40	3	644	0	0.4	-7.2	7.2
6102809	99	P	SUR	37	7	632	0	0.3	-0.6	0.7
6102810	99	P	SUR	39	2	201	0	0.5	0.0	0.5
6102811	99	P	SUR	40	3	105	0	0.4	0.2	0.5
6102812	99	P	SUR	39	2	121	0	0.5	-0.3	0.5
6102813	99	P	SUR	39	1	122	0	0.4	0.4	0.5
6200001	99	P	SUR	45	-5	665	0	0.3	0.2	0.4
6200024	99	P	SUR	44	-3	672	0	0.4	0.1	0.5
6200025	99	P	SUR	44	-6	582	0	0.4	0.1	0.4
6200082	99	P	SUR	44	-8	672	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
6200083	99	P	SUR	43	-9	672	0	0.5	0.2	0.6
6200084	99	P	SUR	42	-9	672	0	0.4	0.0	0.5
6200085	99	P	SUR	36	-7	276	0	0.3	0.2	0.4
6200086	99	P	SUR	55	6	30	0	0.3	-0.1	0.3
6200087	99	P	SUR	55	7	243	0	0.4	-0.3	0.5
6200091	99	P	SUR	53	-5	672	0	0.4	-0.1	0.4
6200092	99	P	SUR	51	-11	672	0	0.4	-0.1	0.4
6200093	99	P	SUR	55	-10	672	0	0.5	-0.3	0.6
6200094	99	P	SUR	52	-7	672	0	0.3	0.0	0.3
6200095	99	P	SUR	53	-16	672	0	0.5	-0.3	0.6
6200192	99	P	SUR	40	-10	420	0	0.3	0.6	0.7
6200199	99	P	SUR	40	-9	495	0	0.3	0.3	0.5
6200200	99	P	SUR	36	-8	398	0	2.1	-0.2	2.1
6201065	99	P	SUR	54	7	653	0	0.3	0.8	0.8
6201081	99	P	SUR	38	-9	500	0	0.3	-0.2	0.4
6202613	99	P	SUR	38	-43	670	0	0.5	-0.1	0.5
6202627	99	P	SUR	65	7	639	0	0.5	0.0	0.5
6202632	99	P	SUR	67	-53	403	57	3.8	-1.2	4.0
6202637	99	P	SUR	67	-10	669	0	0.6	0.2	0.6
6202639	99	P	SUR	29	-41	670	0	0.3	-0.1	0.3
6202640	99	P	SUR	32	-37	664	0	0.3	-0.1	0.3
6202644	99	P	SUR	36	-48	664	0	0.5	-0.6	0.8
62029	99	P	SUR	49	-13	1330	0	0.3	-0.1	0.3
62030	99	P	SUR	50	-4	42	0	0.2	-2.9	2.9
6203516	99	P	SUR	42	-45	565	0	0.7	-0.3	0.7
6203607	99	P	SUR	31	-31	535	0	0.3	0.3	0.5
6203612	99	P	SUR	32	-55	669	0	1.2	0.0	1.2
6203613	99	P	SUR	40	-48	669	0	0.8	0.1	0.8
6203615	99	P	SUR	24	-67	668	0	0.2	-0.1	0.2
6203616	99	P	SUR	22	-56	670	0	0.4	0.2	0.4
6203621	99	P	SUR	30	-25	668	0	0.2	0.0	0.2
6203624	99	P	SUR	37	-60	669	11	2.0	-0.2	2.0
6203625	99	P	SUR	30	-33	669	0	0.3	-0.1	0.3
6203632	99	P	SUR	25	-45	670	0	0.2	0.2	0.3
6203633	99	P	SUR	68	15	667	1	1.0	0.4	1.0
6203634	99	P	SUR	27	-37	669	0	1.7	0.3	1.7
6203639	99	P	SUR	30	-30	670	0	0.6	0.1	0.6
6203640	99	P	SUR	25	-51	670	0	0.2	-0.2	0.3
6203642	99	P	SUR	15	-60	670	0	0.3	-0.6	0.7
6203643	99	P	SUR	22	-65	670	0	0.2	-0.1	0.2
6203651	99	P	SUR	44	-32	670	0	0.6	0.6	0.8
6203730	99	P	SUR	25	-67	633	0	0.2	0.2	0.3
6203737	99	P	SUR	24	-45	637	0	0.3	0.3	0.4

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6203741	99	P	SUR	63	-20	619	0	0.6	0.0	0.6
6203744	99	P	SUR	63	-1	623	0	0.4	0.3	0.5
6203753	99	P	SUR	58	-31	630	0	0.7	-0.5	0.8
6203755	99	P	SUR	38	-10	624	0	0.3	-0.6	0.7
6203765	99	P	SUR	26	-49	640	0	0.3	0.3	0.4
6203767	99	P	SUR	18	-65	637	0	0.2	-0.9	0.9
6203768	99	P	SUR	32	-14	638	0	0.3	0.2	0.3
6203771	99	P	SUR	24	-38	631	0	0.3	0.0	0.3
6203772	99	P	SUR	33	-68	631	0	0.4	-0.1	0.4
6203773	99	P	SUR	31	-50	630	0	0.4	-0.5	0.7
6203776	99	P	SUR	29	-27	630	0	0.2	0.0	0.2
6203825	99	P	SUR	69	-12	635	51	2.5	0.8	2.7
6203827	99	P	SUR	64	4	651	0	0.5	0.1	0.5
6203838	99	P	SUR	20	-64	642	0	0.2	0.3	0.4
6203839	99	P	SUR	24	-51	633	0	0.2	-0.1	0.3
6203840	99	P	SUR	26	-41	642	0	0.3	0.2	0.3
6203841	99	P	SUR	29	-16	635	0	0.3	-1.2	1.3
6203842	99	P	SUR	34	-33	643	0	0.3	0.1	0.3
6203844	99	P	SUR	45	-12	635	0	0.3	0.4	0.5
6203845	99	P	SUR	48	-18	639	0	0.3	0.0	0.3
6203846	99	P	SUR	28	-23	635	0	0.2	0.0	0.2
6203848	99	P	SUR	42	-46	634	0	0.6	-0.1	0.6
6203849	99	P	SUR	30	-19	631	0	0.3	0.1	0.3
6203850	99	P	SUR	35	-15	636	0	0.3	0.2	0.3
6203853	99	P	SUR	65	4	629	0	0.5	0.4	0.7
6203854	99	P	SUR	57	-26	632	0	0.6	0.1	0.6
6203855	99	P	SUR	68	0	637	0	0.5	0.2	0.6
6203856	99	P	SUR	60	3	295	73	2.8	-1.5	3.2
6203857	99	P	SUR	60	4	649	0	0.4	0.1	0.5
6203859	99	P	SUR	15	-17	632	0	0.4	-0.4	0.5
6203860	99	P	SUR	13	-19	638	0	0.3	0.7	0.8
6203861	99	P	SUR	22	-19	640	0	0.3	0.3	0.5
6203864	99	P	SUR	67	-8	626	6	1.7	0.0	1.7
6203865	99	P	SUR	58	-38	635	0	0.6	-0.2	0.7
6203866	99	P	SUR	68	12	644	0	0.5	0.2	0.6
6203867	99	P	SUR	50	-5	151	0	0.8	0.5	1.0
6204603	99	P	SUR	39	1	118	0	0.4	0.3	0.5
62081	99	P	SUR	51	-13	1341	0	0.4	-0.1	0.4
62091	99	P	SUR	53	-5	671	0	0.4	-0.1	0.4
62092	99	P	SUR	51	-11	671	0	0.4	-0.1	0.4
62093	99	P	SUR	55	-10	671	0	0.5	-0.3	0.6
62094	99	P	SUR	52	-7	671	0	0.3	0.0	0.3
62095	99	P	SUR	53	-16	671	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
62102	99	P	SUR	58	2	1343	0	0.5	-0.2	0.5
62103	99	P	SUR	50	-3	1338	0	0.3	-0.3	0.4
62104	99	P	SUR	57	1	1341	0	0.5	-0.4	0.6
62105	99	P	SUR	55	-13	1339	0	0.6	-0.3	0.7
62107	99	P	SUR	50	-6	1076	0	0.3	-0.2	0.4
62112	99	P	SUR	58	0	1340	0	0.4	0.0	0.4
62113	99	P	SUR	58	0	1341	0	0.7	-0.1	0.7
62114	99	P	SUR	58	0	1020	0	0.6	-0.2	0.7
62115	99	P	SUR	58	-3	788	0	0.4	-0.3	0.5
62116	99	P	SUR	58	1	1341	0	0.5	-0.3	0.7
62118	99	P	SUR	58	1	1343	0	0.4	0.2	0.4
62119	99	P	SUR	57	2	1341	0	0.5	0.2	0.5
62120	99	P	SUR	56	2	1335	0	0.7	-0.3	0.7
62121	99	P	SUR	54	3	1344	0	0.3	0.1	0.3
62122	99	P	SUR	57	2	1338	0	0.5	0.0	0.5
62124	99	P	SUR	54	-4	1288	0	0.4	-0.1	0.4
62127	99	P	SUR	54	1	1344	0	0.4	0.4	0.5
62129	99	P	SUR	58	0	1342	0	0.6	0.0	0.6
62130	99	P	SUR	59	1	1344	0	0.5	-0.5	0.7
62131	99	P	SUR	54	1	1312	0	0.4	0.2	0.4
62132	99	P	SUR	56	2	1339	0	0.7	0.4	0.8
62133	99	P	SUR	57	1	1343	0	0.5	-0.3	0.6
62134	99	P	SUR	58	1	1321	0	0.4	0.5	0.6
62138	99	P	SUR	54	0	738	0	0.4	0.4	0.5
62140	99	P	SUR	57	1	1341	0	0.6	-0.2	0.6
62141	99	P	SUR	58	0	1313	0	0.9	-0.5	1.1
62143	99	P	SUR	58	2	1343	0	0.7	0.7	0.9
62144	99	P	SUR	53	2	1344	0	0.3	0.1	0.3
62145	99	P	SUR	53	3	1343	0	0.3	0.2	0.4
62146	99	P	SUR	57	2	1315	0	0.6	0.0	0.6
62148	99	P	SUR	54	2	1344	0	0.3	0.7	0.8
62149	99	P	SUR	54	1	1344	0	0.3	0.5	0.6
62151	99	P	SUR	57	2	951	0	0.4	-0.1	0.4
62152	99	P	SUR	57	2	1343	0	0.4	0.4	0.6
62153	99	P	SUR	57	2	1338	0	0.5	0.1	0.5
62154	99	P	SUR	56	2	1341	0	0.4	-0.2	0.5
62155	99	P	SUR	58	1	1343	0	0.4	0.4	0.5
62157	99	P	SUR	58	0	1343	0	0.6	-0.3	0.6
62160	99	P	SUR	57	2	1335	0	0.4	0.2	0.5
62161	99	P	SUR	58	1	1343	0	0.8	0.0	0.8
62162	99	P	SUR	57	1	1342	0	0.5	-0.3	0.6
62163	99	P	SUR	48	-9	1342	0	0.3	-0.1	0.3
62164	99	P	SUR	57	1	1319	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
62165	99	P	SUR	54	1	1340	0	0.5	0.0	0.5
62168	99	P	SUR	58	1	1343	0	0.4	-0.1	0.4
62170	99	P	SUR	51	2	1342	0	0.3	-0.1	0.3
62296	99	P	SUR	53	2	1331	0	0.3	-0.2	0.4
62297	99	P	SUR	59	2	1344	0	0.5	-0.2	0.5
62302	99	P	SUR	61	-2	1335	0	0.9	-0.2	0.9
62304	99	P	SUR	51	2	1343	0	0.4	-0.1	0.4
62305	99	P	SUR	50	0	1342	0	0.3	0.0	0.3
62442	99	P	SUR	49	-16	1341	0	0.4	-0.2	0.4
6301001	99	P	SUR	64	5	671	0	0.8	0.1	0.8
6301003	99	P	SUR	74	24	461	0	0.5	-0.2	0.5
6301572	99	P	SUR	50	-35	670	0	1.1	-0.1	1.1
6301575	99	P	SUR	56	-42	670	0	0.9	-0.3	1.0
6301576	99	P	SUR	59	-15	520	0	1.8	-0.6	1.9
6301577	99	P	SUR	67	-8	669	0	0.5	0.1	0.5
63055	99	P	SUR	61	2	1340	0	0.6	0.0	0.6
63056	99	P	SUR	60	2	1341	0	0.7	0.1	0.7
63057	99	P	SUR	59	2	1344	0	0.4	-0.4	0.6
63058	99	P	SUR	53	2	2070	0	0.4	0.2	0.5
63059	99	P	SUR	58	-1	1320	0	0.4	0.2	0.5
63101	99	P	SUR	61	1	1341	0	0.7	-0.1	0.7
63102	99	P	SUR	61	1	1344	0	0.6	0.1	0.6
63103	99	P	SUR	61	1	1341	0	0.8	0.2	0.8
63108	99	P	SUR	61	2	1344	0	0.6	0.0	0.7
63109	99	P	SUR	60	2	1344	0	0.5	-0.8	0.9
63110	99	P	SUR	60	2	1344	0	0.5	-0.6	0.8
63111	99	P	SUR	61	2	1344	0	0.6	-0.6	0.9
63112	99	P	SUR	61	1	1321	0	0.5	-0.6	0.8
63115	99	P	SUR	62	1	1344	0	0.6	-0.1	0.6
63117	99	P	SUR	61	1	1344	0	0.6	0.4	0.7
63118	99	P	SUR	58	-4	1325	0	0.8	-0.5	1.0
6401582	99	P	SUR	81	8	586	4	2.3	0.3	2.3
6401583	99	P	SUR	58	-34	670	0	0.8	-0.1	0.8
6401584	99	P	SUR	79	-1	190	5	2.1	-0.1	2.1
6401587	99	P	SUR	75	-19	670	0	0.6	0.1	0.6
6401590	99	P	SUR	71	-7	319	4	1.3	0.0	1.3
6401592	99	P	SUR	73	11	670	0	0.6	0.4	0.7
6401759	99	P	SUR	55	-37	669	0	0.7	0.2	0.7
6401762	99	P	SUR	65	-5	670	0	0.5	0.4	0.6
6401763	99	P	SUR	66	12	669	0	0.5	0.0	0.5
6402539	99	P	SUR	74	14	602	0	1.1	0.0	1.1
6402551	99	P	SUR	51	-42	604	0	0.7	0.2	0.7
6402563	99	P	SUR	70	37	608	0	0.5	0.5	0.7

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6402587	99	P	SUR	47	-45	568	8	2.3	9.7	10.0
6402594	99	P	SUR	54	-48	596	0	0.6	-0.1	0.7
6402596	99	P	SUR	60	-42	611	0	0.6	-0.3	0.7
6402597	99	P	SUR	48	-37	597	0	0.6	-0.1	0.6
6402599	99	P	SUR	52	-11	178	0	0.6	0.4	0.8
6402615	99	P	SUR	16	-53	631	0	0.2	0.1	0.3
6402616	99	P	SUR	29	-47	633	0	0.4	-0.2	0.4
6402617	99	P	SUR	25	-45	634	0	0.2	0.3	0.4
6402618	99	P	SUR	23	-38	641	0	0.3	0.1	0.3
6402619	99	P	SUR	37	-11	629	0	0.3	0.0	0.3
6402620	99	P	SUR	47	-3	626	0	0.3	0.4	0.5
6402621	99	P	SUR	43	-10	639	0	0.3	0.2	0.4
6402622	99	P	SUR	35	-20	633	0	0.2	0.2	0.3
64041	99	P	SUR	61	-3	1337	0	0.6	-0.5	0.8
64045	99	P	SUR	59	-12	1339	0	0.5	-0.5	0.7
64046	99	P	SUR	61	-4	1341	0	0.4	-0.4	0.5
6600021	99	P	SUR	55	14	188	0	0.4	-1.0	1.1
6600022	99	P	SUR	54	14	199	0	0.5	-0.5	0.7
7801563	99	P	SUR	45	-65	669	0	1.1	0.4	1.2

#### 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 : FEB 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	560	0	0	0.7	0.0	0.7
1300002	99	SPEED	SUR	20	-23	560	0	0	0.8	-0.1	0.8
1300008	99	SPEED	SUR	15	-38	560	0	0	0.7	-0.2	0.8
1300130	99	SPEED	SUR	28	-16	670	0	0	1.5	0.2	1.5
1300131	99	SPEED	SUR	28	-17	665	0	0	1.7	0.8	1.8
4100026	99	SPEED	SUR	12	-38	205	0	0	0.9	-0.1	0.9
4100043	99	SPEED	SUR	21	-65	4026	0	0	0.8	-0.1	0.8
4100046	99	SPEED	SUR	24	-68	4026	0	0	0.9	-0.1	0.9
4100049	99	SPEED	SUR	27	-63	4021	0	0	1.0	-0.2	1.0
4100052	99	SPEED	SUR	18	-65	3982	0	0	0.9	-0.6	1.1
4100053	99	SPEED	SUR	18	-66	4023	0	0	1.5	1.4	2.0
4100056	99	SPEED	SUR	18	-65	3129	0	0	1.1	-0.8	1.3
4100139	99	SPEED	SUR	20	-38	672	0	0	1.1	0.0	1.1
4100300	99	SPEED	SUR	16	-57	611	0	0	0.9	-1.0	1.3
41043	99	SPEED	SUR	21	-65	672	0	0	0.9	-0.2	1.0
41046	99	SPEED	SUR	24	-68	672	0	0	1.0	-0.2	1.0
41049	99	SPEED	SUR	28	-63	671	0	0	1.1	-0.2	1.1
41052	99	SPEED	SUR	18	-65	665	0	0	0.9	-0.5	1.1
41053	99	SPEED	SUR	19	-66	672	0	0	1.4	0.6	1.5
41056	99	SPEED	SUR	18	-66	544	0	0	1.1	-0.6	1.2
4200059	99	SPEED	SUR	15	-67	4026	0	0	0.7	0.0	0.8
4200085	99	SPEED	SUR	18	-67	3033	0	0	1.2	-0.9	1.5
42059	99	SPEED	SUR	15	-68	672	0	0	0.9	-0.2	0.9
42085	99	SPEED	SUR	18	-67	661	0	0	1.2	-0.5	1.3
4400005	99	SPEED	SUR	43	-69	670	0	0	1.4	0.1	1.4
4400008	99	SPEED	SUR	40	-69	4025	0	0	1.7	-0.2	1.7
4400027	99	SPEED	SUR	44	-67	4025	0	0	1.6	0.3	1.7
4400032	99	SPEED	SUR	44	-69	665	0	0	1.5	-0.1	1.5
4400033	99	SPEED	SUR	44	-69	458	0	0	1.6	0.1	1.7
4400034	99	SPEED	SUR	44	-68	666	0	0	1.7	-0.1	1.7
4400150	99	SPEED	SUR	43	-64	665	0	0	1.6	0.4	1.6
4400488	99	SPEED	SUR	45	-61	342	0	0	1.8	0.9	2.0
4400489	99	SPEED	SUR	45	-61	310	0	0	1.7	1.8	2.5
44005	99	SPEED	SUR	43	-69	671	0	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
44008	99	SPEED	SUR	41	-69	671	0	0	1.8	-0.3	1.8
44027	99	SPEED	SUR	44	-67	671	0	0	1.7	0.3	1.8
44032	99	SPEED	SUR	44	-69	667	0	0	1.5	0.0	1.5
44033	99	SPEED	SUR	44	-69	460	0	0	1.6	0.4	1.7
44034	99	SPEED	SUR	44	-68	668	0	0	1.8	-0.1	1.8
44078	99	SPEED	SUR	60	-40	46	0	0	1.9	-2.2	2.9
44150	99	SPEED	SUR	43	-64	665	0	0	1.6	0.4	1.6
44258	99	SPEED	SUR	45	-63	668	0	0	1.7	0.5	1.8
44488	99	SPEED	SUR	45	-61	629	0	0	1.8	0.6	1.9
44489	99	SPEED	SUR	46	-61	597	0	0	1.7	1.4	2.2
6100001	99	SPEED	SUR	43	8	668	0	0	1.7	-1.4	2.2
6100002	99	SPEED	SUR	42	5	667	0	0	1.3	-0.6	1.4
6100197	99	SPEED	SUR	40	4	651	0	0	1.4	-0.3	1.4
6100198	99	SPEED	SUR	37	-2	666	0	0	1.4	-0.4	1.5
6100280	99	SPEED	SUR	41	1	600	0	0	1.5	-0.5	1.6
6100281	99	SPEED	SUR	40	0	413	0	0	1.5	-0.1	1.5
6100430	99	SPEED	SUR	40	2	631	0	0	1.7	-0.5	1.8
6101007	99	SPEED	SUR	36	25	114	0	0	2.4	-1.4	2.8
6101008	99	SPEED	SUR	37	22	122	0	0	1.9	0.0	1.9
6101009	99	SPEED	SUR	35	25	120	0	0	2.1	1.0	2.3
6200001	99	SPEED	SUR	45	-5	660	0	0	1.1	-0.5	1.2
6200024	99	SPEED	SUR	44	-3	671	0	0	1.3	-0.1	1.3
6200025	99	SPEED	SUR	44	-6	571	0	0	1.3	-0.9	1.6
6200082	99	SPEED	SUR	44	-8	667	0	0	1.1	-0.8	1.4
6200083	99	SPEED	SUR	43	-9	667	0	0	1.3	-0.8	1.5
6200084	99	SPEED	SUR	42	-9	661	0	0	1.4	0.0	1.4
6200085	99	SPEED	SUR	36	-7	276	0	0	1.4	-0.4	1.5
6200086	99	SPEED	SUR	55	6	30	0	0	1.4	1.7	2.2
6200087	99	SPEED	SUR	55	7	242	0	0	1.5	1.3	2.0
6200091	99	SPEED	SUR	53	-5	672	0	0	1.3	0.7	1.5
6200092	99	SPEED	SUR	51	-11	672	0	0	1.0	-0.3	1.1
6200093	99	SPEED	SUR	55	-10	672	0	0	1.1	0.5	1.2
6200094	99	SPEED	SUR	52	-7	672	0	0	0.9	0.3	1.0
6200095	99	SPEED	SUR	53	-16	672	0	0	1.0	0.1	1.0
6200192	99	SPEED	SUR	40	-10	420	0	0	1.3	0.5	1.4
6200199	99	SPEED	SUR	40	-9	262	0	0	1.4	-0.2	1.4
6201065	99	SPEED	SUR	54	7	3	0	0	0.2	-0.2	0.2
6201081	99	SPEED	SUR	38	-9	500	0	0	1.4	0.4	1.5
62029	99	SPEED	SUR	49	-13	1330	0	0	1.0	0.7	1.2
62081	99	SPEED	SUR	51	-13	1341	0	0	1.0	1.0	1.5
62091	99	SPEED	SUR	53	-5	671	0	0	1.3	0.7	1.5



## 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
62092	99	SPEED	SUR	51	-11	671	0	0	1.0	0.0	1.0
62093	99	SPEED	SUR	55	-10	671	0	0	1.1	0.8	1.4
62094	99	SPEED	SUR	52	-7	671	0	0	1.0	0.6	1.1
62095	99	SPEED	SUR	53	-16	671	0	0	1.0	0.5	1.1
62102	99	SPEED	SUR	58	2	1343	0	0	1.5	0.0	1.5
62103	99	SPEED	SUR	50	-3	423	0	0	1.2	-0.2	1.2
62104	99	SPEED	SUR	57	1	1341	0	0	1.5	-0.2	1.5
62105	99	SPEED	SUR	55	-13	1339	0	0	1.1	1.1	1.5
62107	99	SPEED	SUR	50	-6	686	0	0	1.3	0.5	1.4
62112	99	SPEED	SUR	58	0	1340	0	0	1.4	-0.3	1.5
62113	99	SPEED	SUR	58	0	1341	0	0	1.7	0.2	1.7
62114	99	SPEED	SUR	58	0	1020	0	0	1.6	0.9	1.9
62118	99	SPEED	SUR	58	1	1343	0	0	1.6	0.8	1.8
62119	99	SPEED	SUR	57	2	1341	0	0	1.6	-0.1	1.6
62120	99	SPEED	SUR	56	2	1337	0	0	1.5	0.4	1.5
62121	99	SPEED	SUR	54	3	1344	0	0	1.2	-0.4	1.3
62122	99	SPEED	SUR	57	2	1338	0	0	1.3	-0.1	1.3
62129	99	SPEED	SUR	58	0	1342	0	0	1.8	0.4	1.8
62131	99	SPEED	SUR	54	1	1312	0	0	1.5	0.0	1.5
62132	99	SPEED	SUR	56	2	1339	1	0	3.0	-1.8	3.5
62133	99	SPEED	SUR	57	1	1343	0	0	1.5	-0.2	1.5
62134	99	SPEED	SUR	58	1	1321	0	0	1.5	0.1	1.5
62140	99	SPEED	SUR	57	1	1341	2	0	1.4	0.4	1.5
62143	99	SPEED	SUR	58	2	1343	0	0	2.2	-0.8	2.4
62144	99	SPEED	SUR	53	2	1344	0	0	1.7	-0.5	1.8
62145	99	SPEED	SUR	53	3	1343	0	0	1.5	0.8	1.7
62146	99	SPEED	SUR	57	2	1315	0	0	1.5	0.3	1.5
62148	99	SPEED	SUR	54	2	1344	0	0	1.9	-1.0	2.1
62149	99	SPEED	SUR	54	1	1344	0	0	1.3	0.0	1.3
62152	99	SPEED	SUR	57	2	1343	0	0	1.6	-1.4	2.1
62153	99	SPEED	SUR	57	2	1338	0	0	3.0	-2.7	4.0
62154	99	SPEED	SUR	56	2	1341	0	0	1.4	0.1	1.4
62155	99	SPEED	SUR	58	1	12	0	0	1.3	0.3	1.4
62163	99	SPEED	SUR	48	-9	1341	0	0	1.0	0.6	1.1
62164	99	SPEED	SUR	57	1	1319	0	0	1.6	-1.6	2.2
62165	99	SPEED	SUR	54	1	1340	0	0	1.9	-0.8	2.0
62170	99	SPEED	SUR	51	2	1341	0	0	1.3	0.6	1.5
62304	99	SPEED	SUR	51	2	1331	0	0	1.6	0.8	1.8
62442	99	SPEED	SUR	49	-16	1337	0	0	1.1	0.8	1.4
6301001	99	SPEED	SUR	64	5	671	0	0	1.3	-0.4	1.4
6301003	99	SPEED	SUR	74	24	461	0	0	1.8	-2.2	2.9

## 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
63055	99	SPEED	SUR	61	2	1340	0	0	1.5	-1.4	2.1
63056	99	SPEED	SUR	60	2	1341	0	0	1.7	0.4	1.7
63057	99	SPEED	SUR	59	2	1344	0	0	2.5	-1.0	2.7
63058	99	SPEED	SUR	53	2	741	0	0	1.5	0.4	1.6
63101	99	SPEED	SUR	61	1	1339	0	0	1.3	-0.8	1.6
63103	99	SPEED	SUR	61	1	1341	0	0	1.7	-0.1	1.7
63106	99	SPEED	SUR	61	2	1343	0	0	2.4	-1.3	2.7
63108	99	SPEED	SUR	61	2	1344	0	0	1.7	0.0	1.7
63109	99	SPEED	SUR	60	2	1286	0	0	1.6	0.5	1.7
63110	99	SPEED	SUR	60	2	1344	0	0	1.4	-0.7	1.6
63112	99	SPEED	SUR	61	1	1321	0	0	1.4	-0.6	1.5
63115	99	SPEED	SUR	62	1	1344	0	0	1.3	-0.7	1.4
63117	99	SPEED	SUR	61	1	1344	0	0	1.4	-0.8	1.6
64041	99	SPEED	SUR	61	-3	1337	0	0	1.6	-0.2	1.6
64045	99	SPEED	SUR	59	-12	1339	0	0	1.2	1.0	1.6
64046	99	SPEED	SUR	61	-4	1336	0	0	1.3	1.0	1.6
6600021	99	SPEED	SUR	55	14	188	0	0	1.3	0.6	1.4
6600022	99	SPEED	SUR	54	14	199	0	0	1.6	0.0	1.6

### 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 : FEB 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	560	0	0	7.0	-0.2	7.0
1300002	99	DIRN	SUR	20	-23	547	0	0	8.8	-1.9	9.0
1300008	99	DIRN	SUR	15	-38	556	0	0	8.4	0.2	8.5
1300130	99	DIRN	SUR	28	-16	488	0	0	16.7	0.3	16.7
1300131	99	DIRN	SUR	28	-17	224	0	0	29.3	0.7	29.3
4100001	99	DIRN	SUR	35	-72	3648	0	0	14.0	8.3	16.3
4100002	99	DIRN	SUR	32	-75	3688	0	0	15.9	6.0	17.0
4100004	99	DIRN	SUR	33	-79	3379	0	0	26.9	3.2	27.1
4100008	99	DIRN	SUR	31	-81	410	0	0	27.0	2.6	27.1
4100009	99	DIRN	SUR	29	-80	3187	0	0	17.4	-1.6	17.4
4100010	99	DIRN	SUR	29	-78	3555	1	0	15.9	6.4	17.2
4100013	99	DIRN	SUR	33	-78	3560	0	0	28.6	8.0	29.7
4100024	99	DIRN	SUR	34	-78	495	0	0	20.2	6.2	21.1
4100025	99	DIRN	SUR	35	-75	3702	0	0	25.8	2.8	26.0
4100026	99	DIRN	SUR	12	-38	205	0	0	8.2	-11.1	13.8
4100033	99	DIRN	SUR	32	-80	444	0	0	23.2	10.9	25.7
4100037	99	DIRN	SUR	34	-77	506	0	0	23.8	9.0	25.5
4100038	99	DIRN	SUR	34	-78	434	0	0	25.0	8.3	26.3
4100043	99	DIRN	SUR	21	-65	3616	0	0	9.3	2.1	9.5
4100046	99	DIRN	SUR	24	-68	3431	0	0	12.5	5.9	13.8
4100047	99	DIRN	SUR	27	-71	3408	0	0	14.6	7.7	16.5
4100049	99	DIRN	SUR	27	-63	3202	0	0	14.3	6.2	15.6
4100052	99	DIRN	SUR	18	-65	3966	0	0	11.2	5.0	12.2
4100053	99	DIRN	SUR	18	-66	3357	0	0	13.2	10.5	16.9
4100056	99	DIRN	SUR	18	-65	3099	0	0	11.8	6.0	13.3
4100064	99	DIRN	SUR	34	-77	591	0	0	27.6	7.0	28.5
4100066	99	DIRN	SUR	33	-80	480	0	0	33.1	11.2	35.0
41001	99	DIRN	SUR	35	-72	606	0	0	14.0	5.5	15.0
4100139	99	DIRN	SUR	20	-38	519	0	0	15.4	0.0	15.4
41002	99	DIRN	SUR	32	-75	611	0	0	16.7	4.3	17.2
4100300	99	DIRN	SUR	16	-57	596	0	0	9.8	-10.8	14.5
41004	99	DIRN	SUR	33	-79	549	0	0	26.9	0.8	26.9

## 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
41008	99	DIRN	SUR	31	-81	386	0	0	27.9	1.7	27.9
41009	99	DIRN	SUR	29	-80	530	0	0	18.2	-3.6	18.6
41010	99	DIRN	SUR	29	-79	586	1	0	16.5	5.0	17.3
41013	99	DIRN	SUR	33	-78	584	0	0	29.2	6.3	29.8
41024	99	DIRN	SUR	34	-79	413	0	0	20.1	5.3	20.8
41025	99	DIRN	SUR	35	-76	617	0	0	24.9	1.2	24.9
41033	99	DIRN	SUR	32	-80	420	0	0	25.6	11.9	28.2
41037	99	DIRN	SUR	34	-77	506	0	0	23.4	8.1	24.8
41038	99	DIRN	SUR	34	-78	424	0	0	28.1	10.4	29.9
41043	99	DIRN	SUR	21	-65	595	0	0	9.6	1.3	9.7
41046	99	DIRN	SUR	24	-68	563	0	0	14.0	5.1	15.0
41047	99	DIRN	SUR	28	-72	561	0	0	14.4	5.9	15.5
41049	99	DIRN	SUR	28	-63	529	0	0	14.5	4.2	15.1
41052	99	DIRN	SUR	18	-65	659	0	0	11.6	4.4	12.4
41053	99	DIRN	SUR	19	-66	600	0	0	15.4	8.1	17.4
41056	99	DIRN	SUR	18	-66	538	0	0	11.9	5.6	13.2
41064	99	DIRN	SUR	34	-77	577	0	0	28.3	8.2	29.5
41066	99	DIRN	SUR	33	-80	493	0	0	35.6	10.5	37.1
4200013	99	DIRN	SUR	27	-83	860	0	0	15.1	-1.8	15.2
4200022	99	DIRN	SUR	28	-84	1016	0	0	15.9	-1.1	16.0
4200036	99	DIRN	SUR	29	-85	3185	0	0	24.2	5.1	24.7
4200059	99	DIRN	SUR	15	-67	4026	0	0	8.1	0.7	8.1
4200085	99	DIRN	SUR	18	-67	2937	0	0	15.7	9.1	18.1
42013	99	DIRN	SUR	27	-83	401	0	0	15.6	-1.8	15.7
42022	99	DIRN	SUR	28	-84	494	0	0	18.0	-1.5	18.1
42036	99	DIRN	SUR	29	-85	516	0	0	23.9	3.4	24.1
42059	99	DIRN	SUR	15	-68	672	0	0	8.6	0.5	8.7
42085	99	DIRN	SUR	18	-67	632	0	0	16.0	7.6	17.7
4400005	99	DIRN	SUR	43	-69	610	0	0	13.6	0.3	13.7
4400007	99	DIRN	SUR	44	-70	3361	0	0	18.4	3.5	18.7
4400008	99	DIRN	SUR	40	-69	3437	0	0	14.7	8.6	17.0
4400009	99	DIRN	SUR	38	-75	3326	0	0	19.7	8.8	21.5
4400018	99	DIRN	SUR	42	-70	3425	0	0	14.7	8.0	16.7
4400020	99	DIRN	SUR	41	-70	3215	0	0	14.8	7.6	16.6
4400022	99	DIRN	SUR	41	-74	605	0	0	20.5	6.9	21.7
4400027	99	DIRN	SUR	44	-67	3623	0	0	16.6	7.0	18.0
4400029	99	DIRN	SUR	43	-71	561	0	0	17.0	4.4	17.5
4400030	99	DIRN	SUR	43	-70	560	0	0	20.8	1.4	20.9
4400032	99	DIRN	SUR	44	-69	600	0	0	17.8	-2.3	18.0
4400033	99	DIRN	SUR	44	-69	375	0	0	25.3	16.9	30.4
4400034	99	DIRN	SUR	44	-68	596	0	0	14.6	-4.9	15.4

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
440039	99	DIRN	SUR	41	-73	355	0	0	49.5	3.8	49.6
440040	99	DIRN	SUR	41	-74	729	0	0	25.8	8.4	27.2
440041	99	DIRN	SUR	37	-77	1787	0	0	21.2	0.6	21.2
440042	99	DIRN	SUR	38	-76	4091	0	0	27.6	3.7	27.8
440058	99	DIRN	SUR	38	-76	4738	0	0	25.7	1.4	25.7
440062	99	DIRN	SUR	39	-76	4376	0	0	28.6	7.2	29.5
440063	99	DIRN	SUR	39	-76	3786	0	0	22.1	0.4	22.1
440064	99	DIRN	SUR	37	-76	4726	0	0	18.7	3.9	19.1
440065	99	DIRN	SUR	40	-74	3475	0	0	19.2	19.7	27.5
440066	99	DIRN	SUR	40	-73	3583	0	0	14.2	4.8	15.0
440072	99	DIRN	SUR	37	-76	4336	0	0	23.4	4.0	23.7
4400150	99	DIRN	SUR	43	-64	639	0	0	17.4	9.0	19.5
4400488	99	DIRN	SUR	45	-61	302	0	0	18.4	4.6	18.9
4400489	99	DIRN	SUR	45	-61	268	0	0	21.1	0.0	21.1
44005	99	DIRN	SUR	43	-69	608	0	0	13.8	-0.1	13.8
44007	99	DIRN	SUR	44	-70	553	0	0	19.3	3.5	19.6
44008	99	DIRN	SUR	41	-69	573	0	0	15.5	7.4	17.2
44009	99	DIRN	SUR	39	-75	553	0	0	19.5	7.3	20.8
44018	99	DIRN	SUR	42	-70	565	0	0	15.6	6.5	16.9
44020	99	DIRN	SUR	42	-70	527	0	0	14.7	6.4	16.0
44022	99	DIRN	SUR	41	-74	310	0	0	17.7	6.9	19.0
44027	99	DIRN	SUR	44	-67	600	0	0	17.6	5.5	18.4
44029	99	DIRN	SUR	43	-71	554	0	0	17.3	4.5	17.9
44030	99	DIRN	SUR	43	-70	547	0	0	21.0	1.7	21.0
44032	99	DIRN	SUR	44	-69	588	0	0	18.0	-2.4	18.2
44033	99	DIRN	SUR	44	-69	368	0	0	25.4	16.2	30.1
44034	99	DIRN	SUR	44	-68	583	0	0	14.8	-5.0	15.6
44039	99	DIRN	SUR	41	-73	339	0	0	49.1	2.9	49.2
44040	99	DIRN	SUR	41	-74	327	0	0	24.3	9.7	26.1
44041	99	DIRN	SUR	37	-77	195	0	0	18.5	0.8	18.5
44042	99	DIRN	SUR	38	-76	434	0	0	29.6	2.5	29.7
44058	99	DIRN	SUR	38	-76	469	0	0	26.2	1.8	26.3
44062	99	DIRN	SUR	39	-76	470	0	0	28.1	7.0	29.0
44063	99	DIRN	SUR	39	-76	410	0	0	21.9	0.0	21.9
44064	99	DIRN	SUR	37	-76	553	0	0	18.4	3.1	18.7
44065	99	DIRN	SUR	40	-74	568	0	0	19.1	17.9	26.2
44066	99	DIRN	SUR	40	-73	596	0	0	15.3	3.0	15.6
44072	99	DIRN	SUR	37	-76	517	0	0	24.0	3.3	24.2
44078	99	DIRN	SUR	60	-40	46	0	0	12.4	-21.0	24.4
44150	99	DIRN	SUR	43	-64	633	0	0	17.7	8.4	19.6
44258	99	DIRN	SUR	45	-63	579	0	0	15.4	-10.6	18.7

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
44488	99	DIRN	SUR	45	-61	563	0	0	18.1	3.8	18.5
44489	99	DIRN	SUR	46	-61	531	0	0	18.5	-3.1	18.8
6100198	99	DIRN	SUR	37	-2	543	0	0	13.9	5.7	15.0
6100281	99	DIRN	SUR	40	0	155	0	0	27.3	-14.1	30.7
6200001	99	DIRN	SUR	45	-5	572	0	0	11.9	-5.1	12.9
6200024	99	DIRN	SUR	44	-3	510	0	0	16.6	9.2	19.0
6200025	99	DIRN	SUR	44	-6	392	0	0	16.0	-29.6	33.7
6200082	99	DIRN	SUR	44	-8	548	0	0	14.1	-2.5	14.3
6200083	99	DIRN	SUR	43	-9	517	0	0	10.5	-2.8	10.8
6200084	99	DIRN	SUR	42	-9	417	0	0	17.1	6.7	18.4
6200085	99	DIRN	SUR	36	-7	221	0	0	13.9	5.8	15.0
6200091	99	DIRN	SUR	53	-5	660	0	0	12.8	4.8	13.7
6200092	99	DIRN	SUR	51	-11	659	0	0	11.4	3.8	12.0
6200093	99	DIRN	SUR	55	-10	655	0	0	10.9	7.1	13.0
6200094	99	DIRN	SUR	52	-7	642	0	0	9.0	9.6	13.2
6200095	99	DIRN	SUR	53	-16	658	0	0	8.9	2.1	9.1
6200192	99	DIRN	SUR	40	-10	353	0	0	12.3	-6.6	14.0
6200199	99	DIRN	SUR	40	-9	203	0	0	16.6	27.8	32.4
6201081	99	DIRN	SUR	38	-9	373	0	0	16.2	2.0	16.3
62029	99	DIRN	SUR	49	-13	1250	0	0	18.7	4.9	19.3
62081	99	DIRN	SUR	51	-13	1309	0	0	11.4	-8.5	14.2
62091	99	DIRN	SUR	53	-5	656	0	0	12.9	4.3	13.6
62092	99	DIRN	SUR	51	-11	658	0	0	11.7	3.3	12.2
62093	99	DIRN	SUR	55	-10	653	0	0	11.3	6.2	12.9
62094	99	DIRN	SUR	52	-7	635	0	0	9.1	8.8	12.7
62095	99	DIRN	SUR	53	-16	654	0	0	9.1	1.7	9.3
62103	99	DIRN	SUR	50	-3	423	0	0	10.7	-0.5	10.8
62105	99	DIRN	SUR	55	-13	1326	0	0	9.9	-5.6	11.3
62107	99	DIRN	SUR	50	-6	668	0	0	12.3	2.7	12.6
62112	99	DIRN	SUR	58	0	1311	0	0	12.7	-3.6	13.2
62114	99	DIRN	SUR	58	0	1001	0	0	10.4	-1.7	10.5
62163	99	DIRN	SUR	48	-9	1082	0	0	17.4	7.8	19.1
62442	99	DIRN	SUR	49	-16	1320	0	0	11.0	4.7	11.9
64041	99	DIRN	SUR	61	-3	1286	0	0	11.1	10.3	15.1
64045	99	DIRN	SUR	59	-12	1259	0	0	14.3	-10.8	18.0
64046	99	DIRN	SUR	61	-4	1235	0	0	12.1	-0.1	12.1

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

ASDE09	ATGU3FT	DBLK	GQBZLZL	JGQH	JNKN7JF	JPBN	KJJF9XN	KMPLHPW
LAGZ8	LRVQE3U	USBOD	USCAT	USSIO	USSOD	USYUB	WDK38HS	XKQLWQB
XQFJRGX	YLV96WM	ZVQEQCM	2EERVTP	7JUNA4N	9ZT9MRK	01001	01004	01010
01028	01241	01400	01415	01492	02365	02527	02836	02963
03005	03238	03354	03502	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	17130	17196	17220	17240	17351
17607	20674	22008	22820	23205	23472	23884	23921	24641
24908	26038	26435	26629	26708	26850	27459	27707	27713
27962	28225	28661	28695	29612	29698	30557	30673	30935
31770	34172	34731	35121	40179	40186	42369	42667	42867
43150	43371	45004	47102	47104	47138	47155	47169	47183
47186	47230	47401	47412	47582	47600	47646	47678	47807
47827	47909	47918	47945	47971	47991	48601	48615	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	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	59023	59134	59211	59265
59280	59293	59316	59431	59758	59981	60018	60155	60390
60571	60630	60656	60680	60715	60760	61901	61980	61998
63894	63985	65344	66160	67083	68263	68424	68442	68512
68816	68842	70026	70133	70200	70219	70231	70261	70273
70308	70316	70326	70350	70361	70398	71043	71082	71109
71119	71603	71722	71802	71811	71815	71816	71823	71836
71845	71867	71906	71907	71908	71909	71913	71917	71924
71925	71926	71934	71945	71957	71964	72201	72202	72206
72208	72210	72215	72230	72240	72248	72251	72261	72265
72293	72305	72317	72318	72327	72340	72357	72363	72364
72365	72376	72388	72402	72413	72426	72440	72456	72476
72489	72493	72501	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	74389	74455	74560	76225	76256	76394	76405	76458
76526	76595	76612	76644	76654	76679	76692	76743	76805
76903	78384	78397	78583	78866	78897	78954	81405	82965
85442	85586	85799	85934	87155	87344	87418	87582	87623
87715	87860	88889	89002	89062	89564	89571	89592	89611
89625	89642	91165	91212	91285	91334	91348	91376	91408
91413	91592	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	96996						

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

ASDE09	ATGU3FT	DBLK	GQBZLZL	JNKN7JF	KJJF9XN	KMPLHPW	LAGZ8	LRYQE3U
USSOD	WDK38HS	XKQLWQB	XQFJRGX	YLV96WM	ZVQEQCM	2EERVTP	7JUNA4N	9ZT9MRK
01010	01028	01415	01492	02365	02527	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	47183	47230	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
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	59023	59134	59211	59265	59280	59293
59316	59431	59758	59981	65344	67083	72413	76743	76903
89002	89642	91925	91938	91948	91958	93817	94001	94653
94767								



## 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.