



# ECMWF Global Data Monitoring Report

**April 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 co-ordinate all the results, inform the WMO Secretariat immediately of obvious problems, and produce every six months a consolidated list of observations of that particular type believed to be of low quality. The presently nominated centres are: RSMC Exeter for marine surface observations; RSMC ECMWF for radiosonde and pilot observations; WMC Washington for aircraft and satellite observations.

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

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

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

## 2 Data summary - History of events

### 2.1 Radiosondes

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

Ident	Time	Mar	Apr	Ident	Time	Mar	Apr
03238	(00)	31	16	02365	(00)	15	29
08508	(12)	31	14	02365	(12)	15	30
08522	(12)	31	15	16113	(12)	1	29
16113	(00)	31	2	32098	(00)	0	29
25428	(00)	25	0	41883	(00)	8	28
25428	(12)	23	0	41891	(00)	7	27
32150	(00)	31	7	41923	(00)	9	30
37055	(00)	28	8	41923	(12)	9	29
37055	(12)	29	9	42111	(00)	1	20
42623	(00)	22	1	42339	(00)	16	30
60155	(00)	20	3	42399	(00)	0	11
71836	(00)	29	0	43041	(00)	11	25
71836	(12)	29	0	43128	(00)	10	23
76225	(00)	21	10	48381	(00)	4	29
76225	(12)	25	9	48407	(00)	5	22
76256	(00)	27	13	48568	(00)	2	30
76394	(12)	23	6	70308	(12)	13	29
76405	(12)	26	10	70414	(00)	7	20
76458	(00)	21	9	71081	(00)	17	28
76458	(12)	25	11	71081	(12)	17	28
76526	(00)	16	5	71119	(00)	15	28
76595	(00)	26	11	82022	(00)	1	30
76595	(12)	25	10	82026	(00)	2	30
76612	(00)	19	8	82099	(00)	0	26
76612	(12)	23	9	82532	(00)	3	30
76644	(00)	26	13	91610	(00)	9	25
76644	(12)	25	10	91680	(12)	4	28
76654	(12)	19	8	91765	(12)	8	30
76679	(12)	23	10	-	-	-	-
76692	(00)	27	10	-	-	-	-
76692	(12)	22	8	-	-	-	-
76743	(00)	23	12	-	-	-	-
76743	(12)	22	9	-	-	-	-
76805	(12)	18	4	-	-	-	-
82193	(12)	17	6	-	-	-	-
91366	(00)	24	12	-	-	-	-
96645	(00)	30	16	-	-	-	-
96645	(12)	31	15	-	-	-	-
98618	(00)	30	16	-	-	-	-
98618	(12)	29	13	-	-	-	-

## 2.2 Drifting Buoys

Surface pressure observations from **1390** 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.

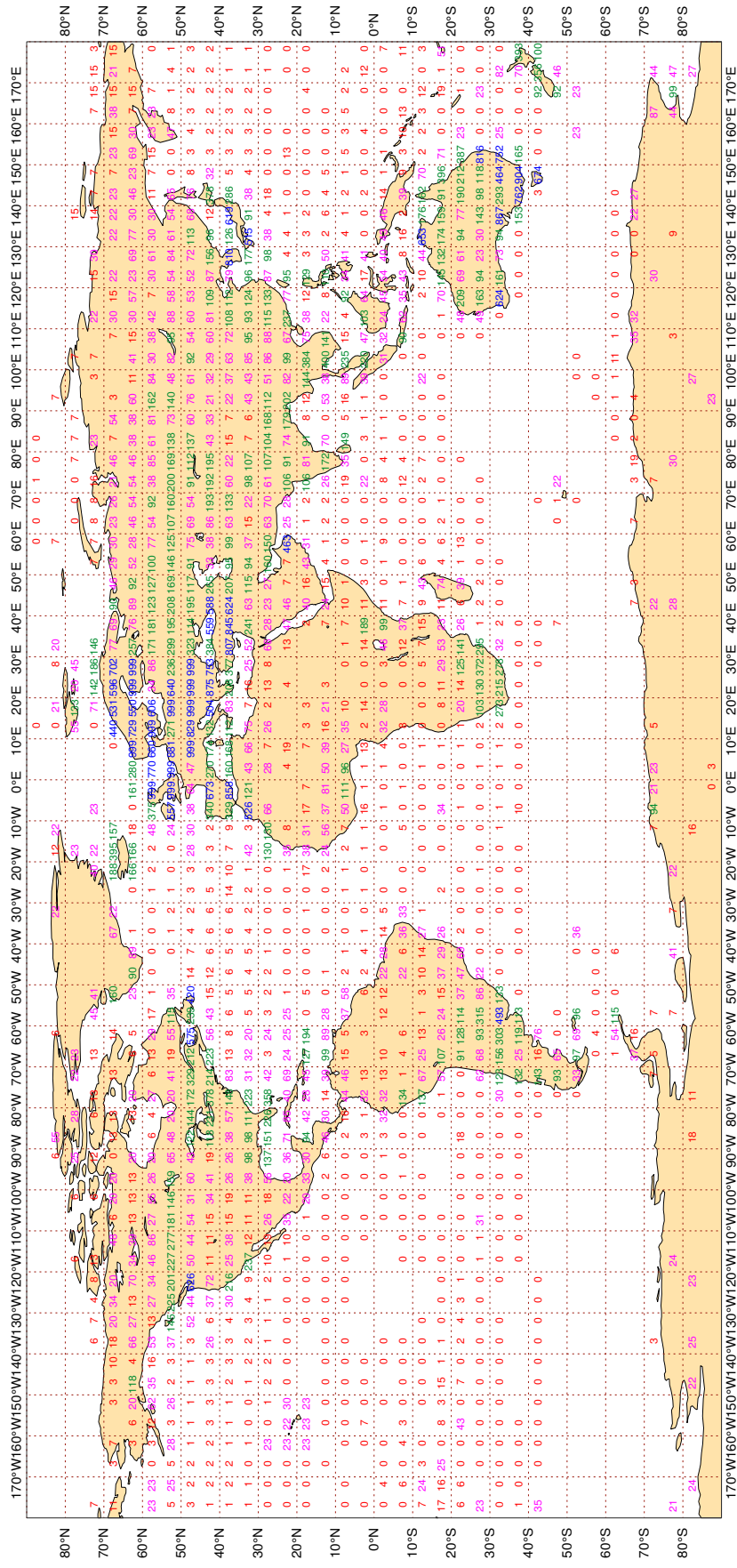
Fig	Parameter	Level/Layer
14	SATOB - Mean observed wind	1000-700 hPa
15	SATOB - Mean observed wind	400-150 hPa
16	SATOB - Mean observed minus first-guess wind	1000-700 hPa
17	SATOB - Mean observed minus first-guess wind	400-150 hPa
18	AIRCRAFT WIND - Mean observed minus first-guess	300-150 hPa

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

3.2.1 Figure 1 - Availability - SYNOP PRESSURE

ECMWF Monitoring Statistics - APR 2023  
 Availability - SYNOP/SHIP (manual, auto) pressure  
 Average number of observations in 24 hours - 104291  
 LAND - WMO Region I: 5803 II:18913 III: 4866 IV: 6702  
 Region V:14585 VI:40807 Antarctic: 1323  
 Oceans - N. Atlantic 6097 S. Atlantic 162 Indian 649 Pacific 4383

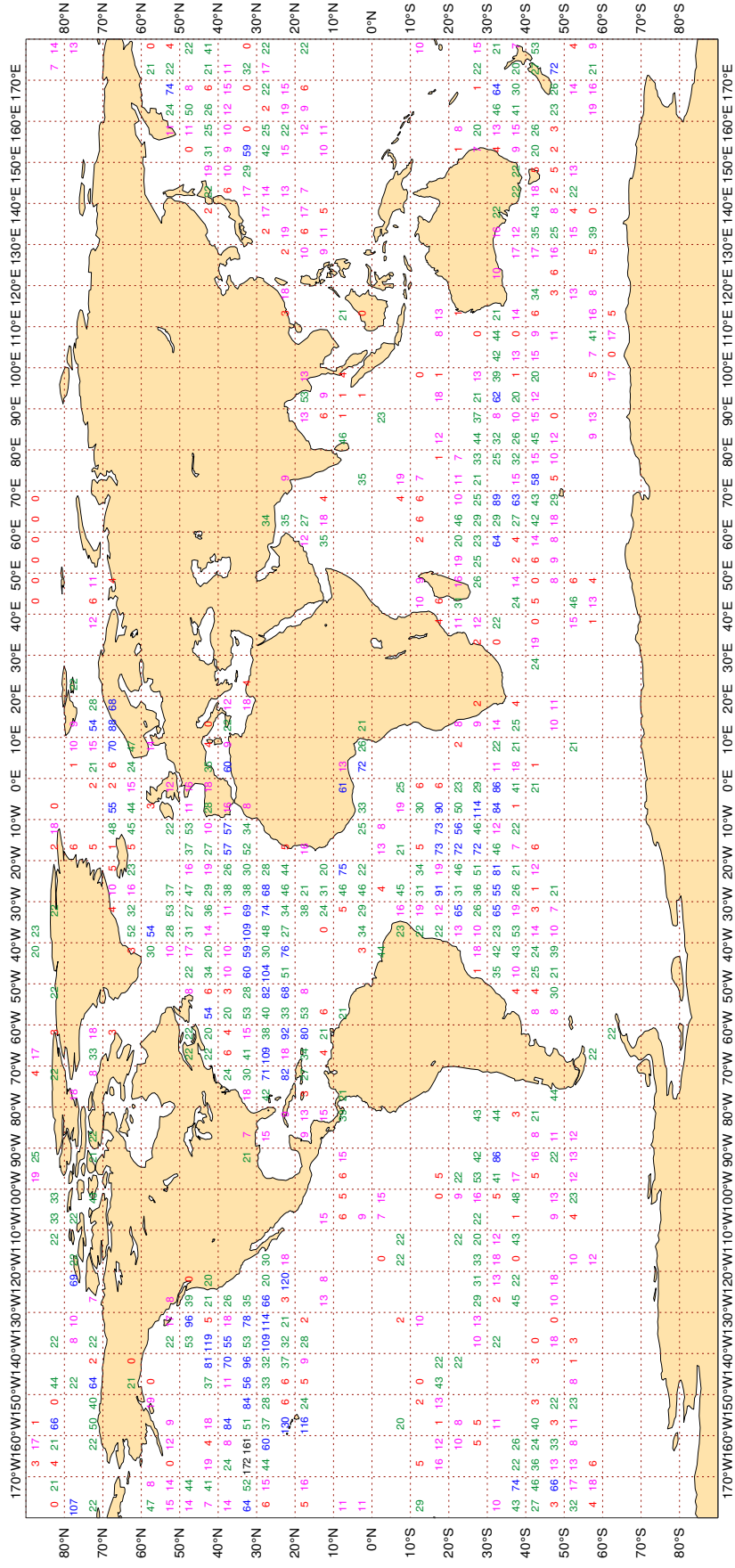
Figure 1



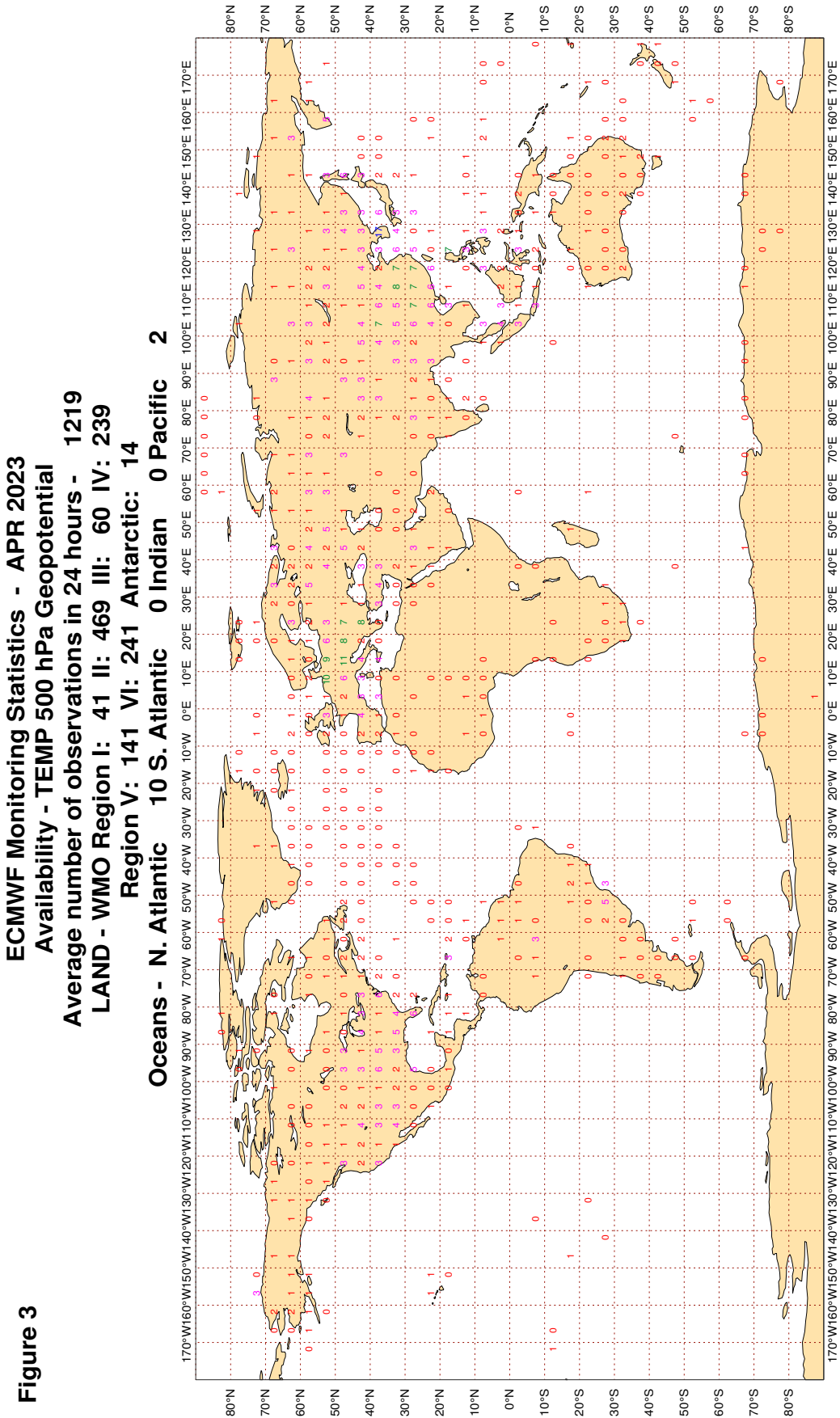
3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

Figure 2

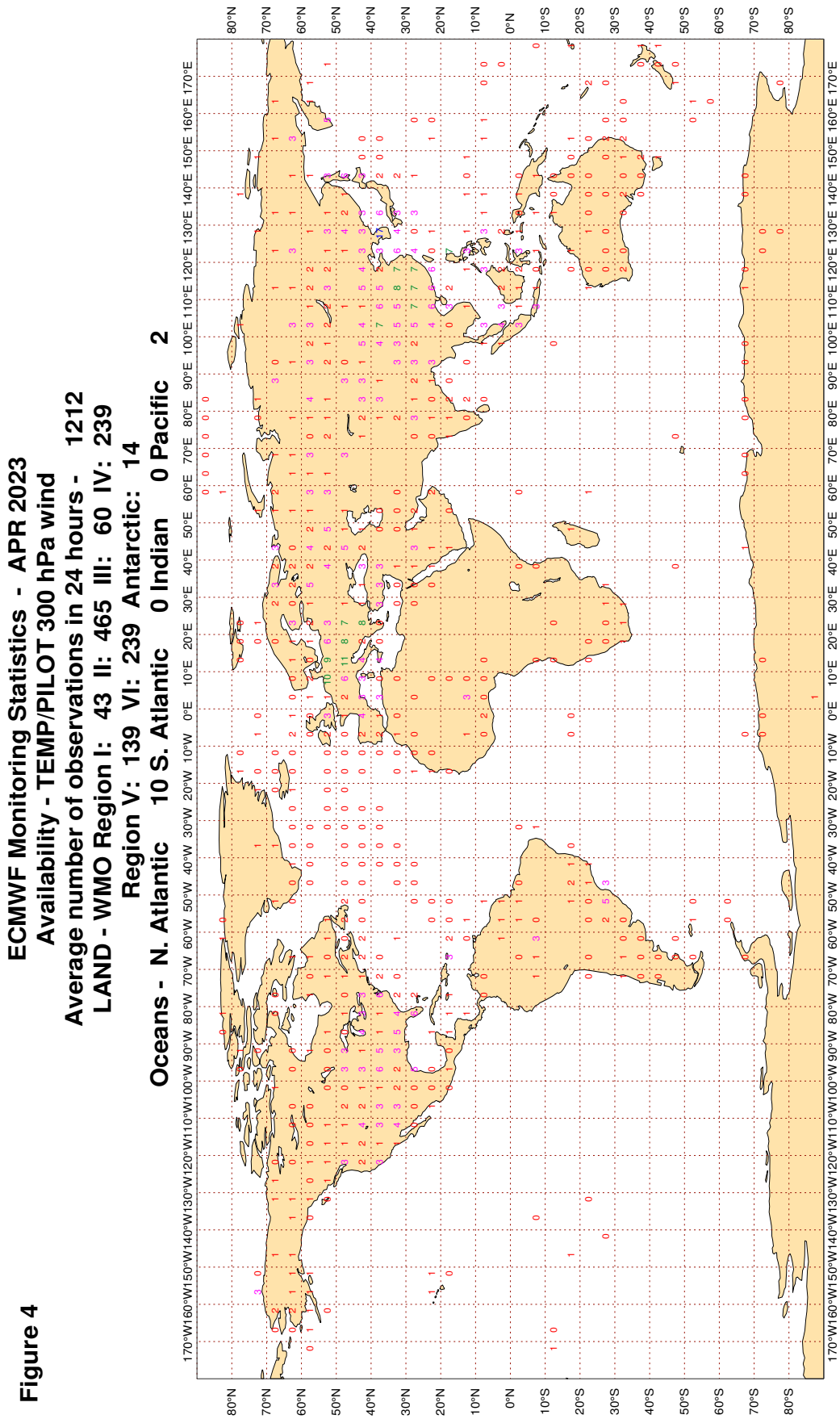
**ECMWF Monitoring Statistics - APR 2023**  
**Availability - DRIFTER PRESSURE**  
**Average number of observations in 24 hours - 19582**  
**Oceans - N. Atlantic 5433 S. Atlantic 2805 Indian 2914 Pacific 8430**



3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential



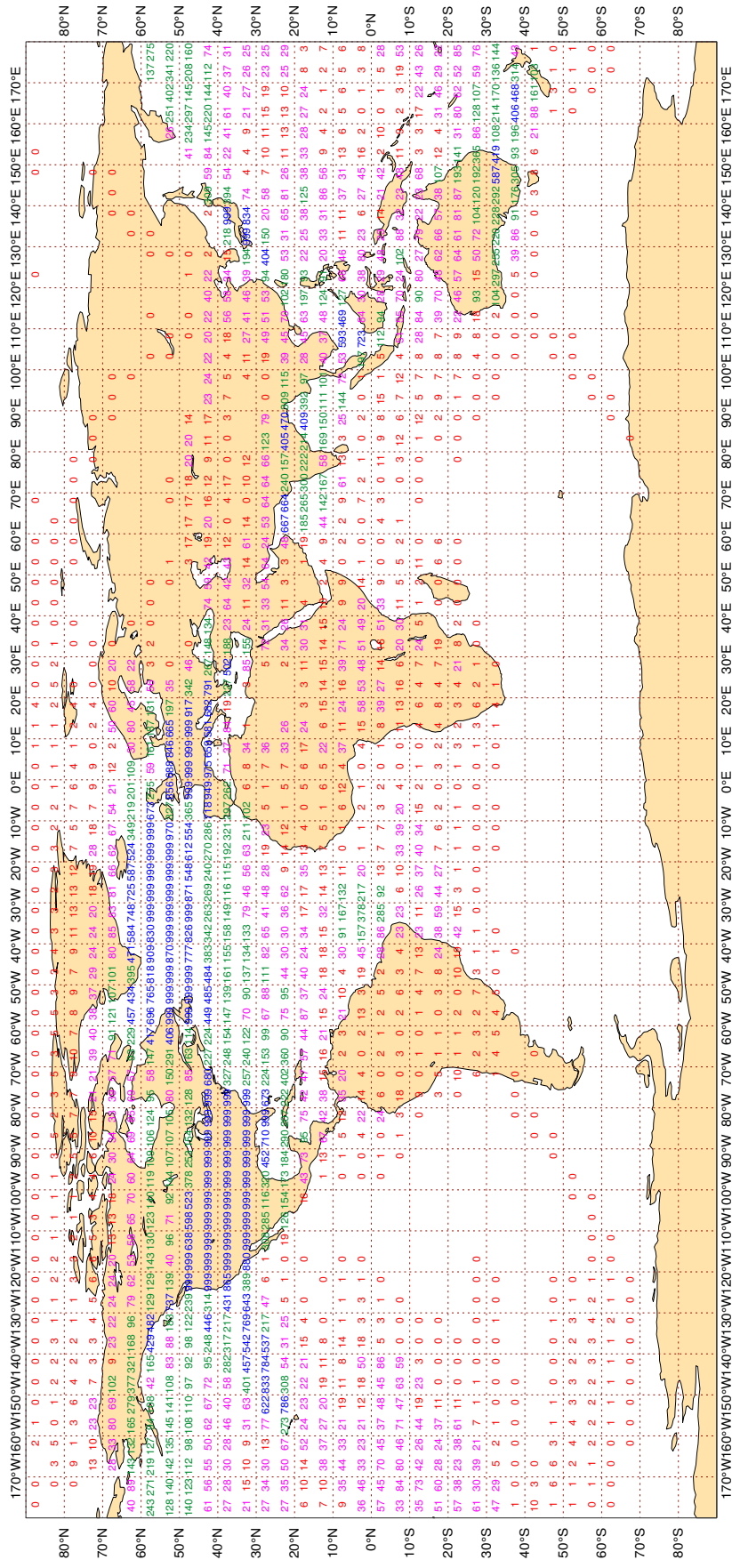
3.2.4 Figure 4 - Availability - TEMP/PILOT 300 hPa wind



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

Figure 5

ECMWF Monitoring Statistics - APR 2023  
Availability - Aircraft winds 300-150 hPa  
Average number of observations in 24 hours - 215526



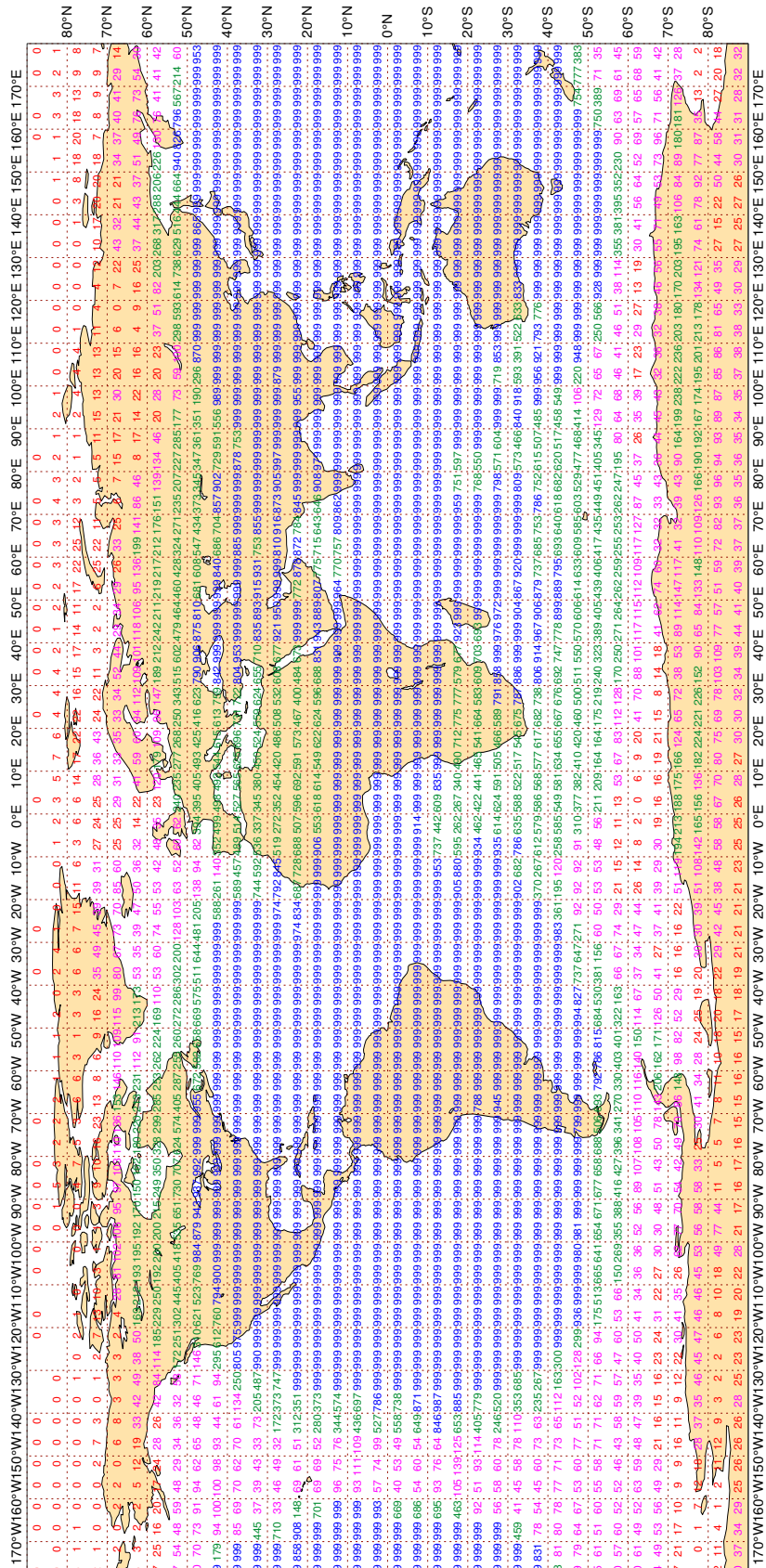
Magics 4.9.4



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

Figure 6

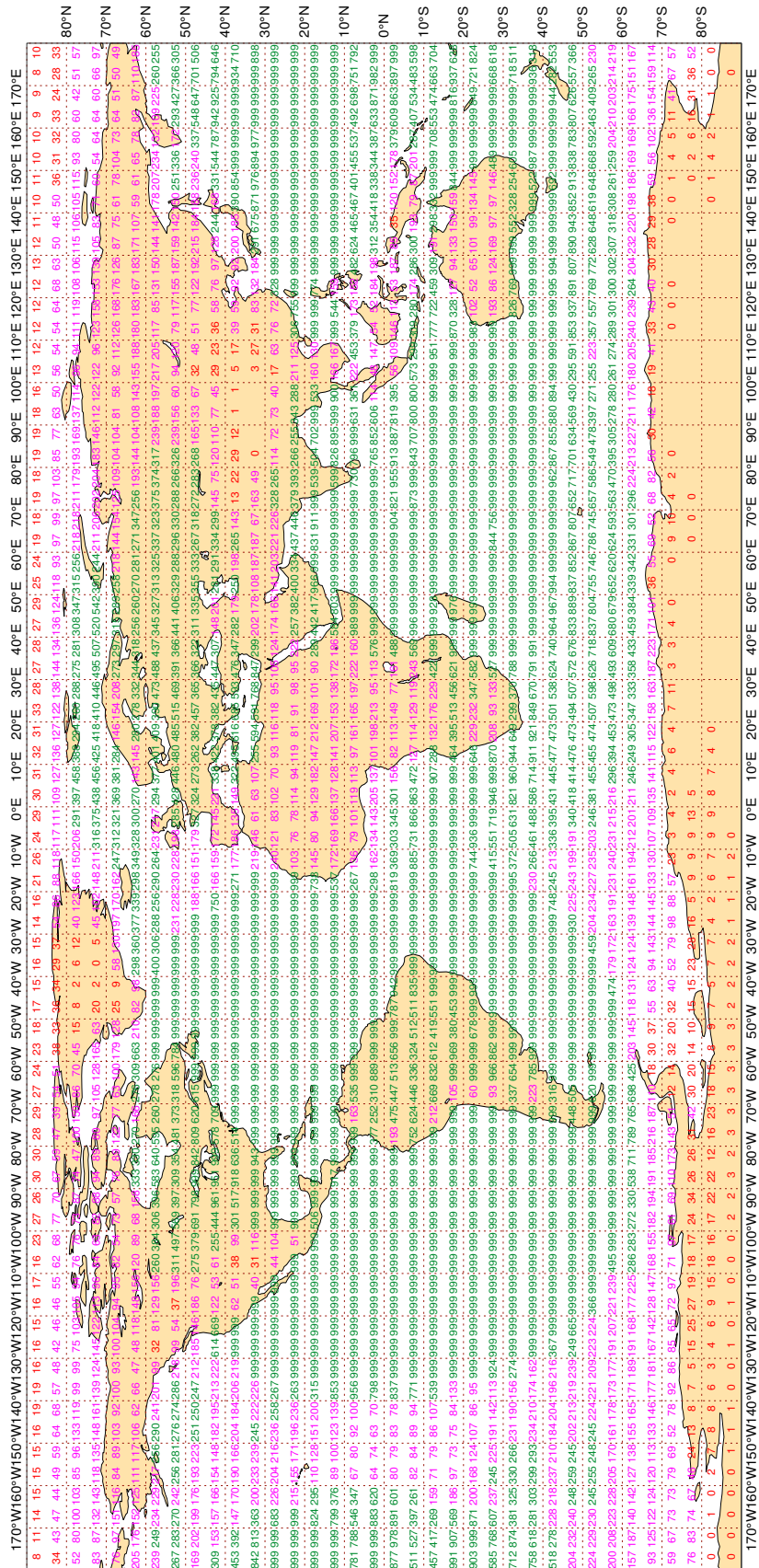
ECMWF Monitoring Statistics - APR 2023  
Availability - AMV winds 400-150 hPa  
Average number of observations in 24 hours - 2616099



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

Figure 7

ECMWF Monitoring Statistics - APR 2023  
Availability - AMV winds 1000-700 hPa  
Average number of observations in 24 hours - 3194266



Magics 4.9.4

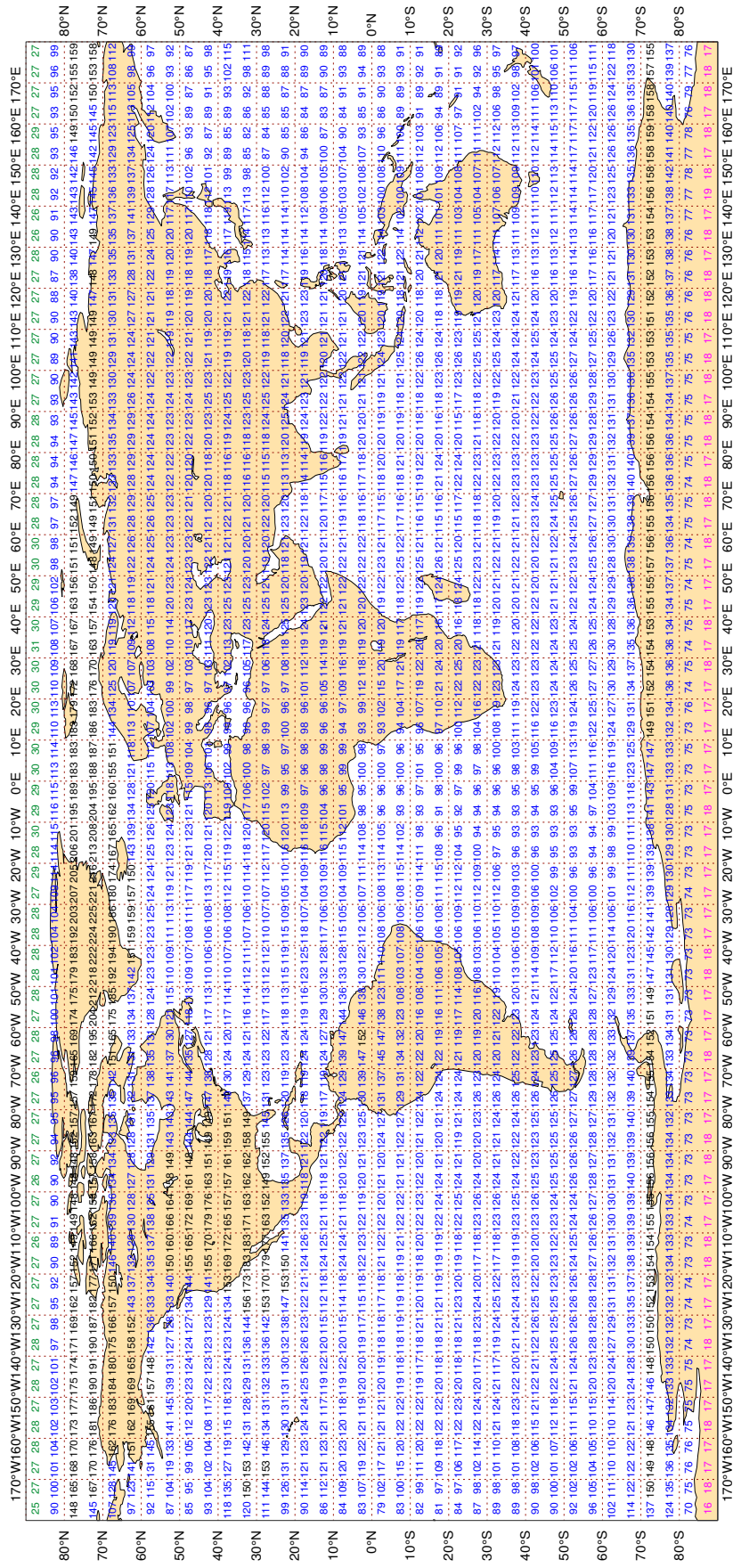




3.2.8 Figure 8 - Availability - NOAA15 ATOVS : AMSU-A

Figure 8

ECMWF Monitoring Statistics - APR 2023  
 Availability - NOAA15 ATOVS : AMSU-A  
 Average number of observations in 24 hours - 302373

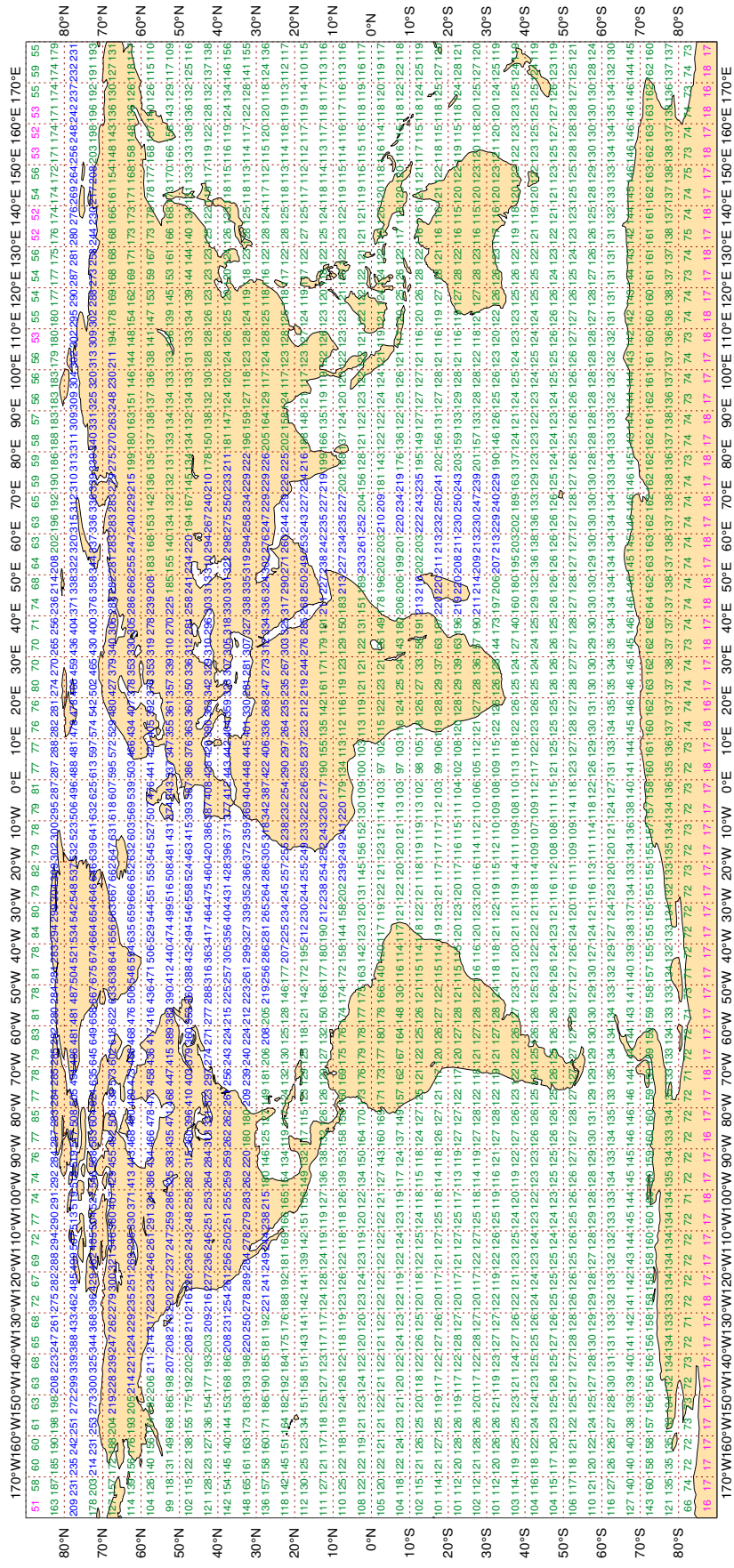


3.2.9 Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A

Figure 9.1

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

Average number of observations in 24 hours - 469989



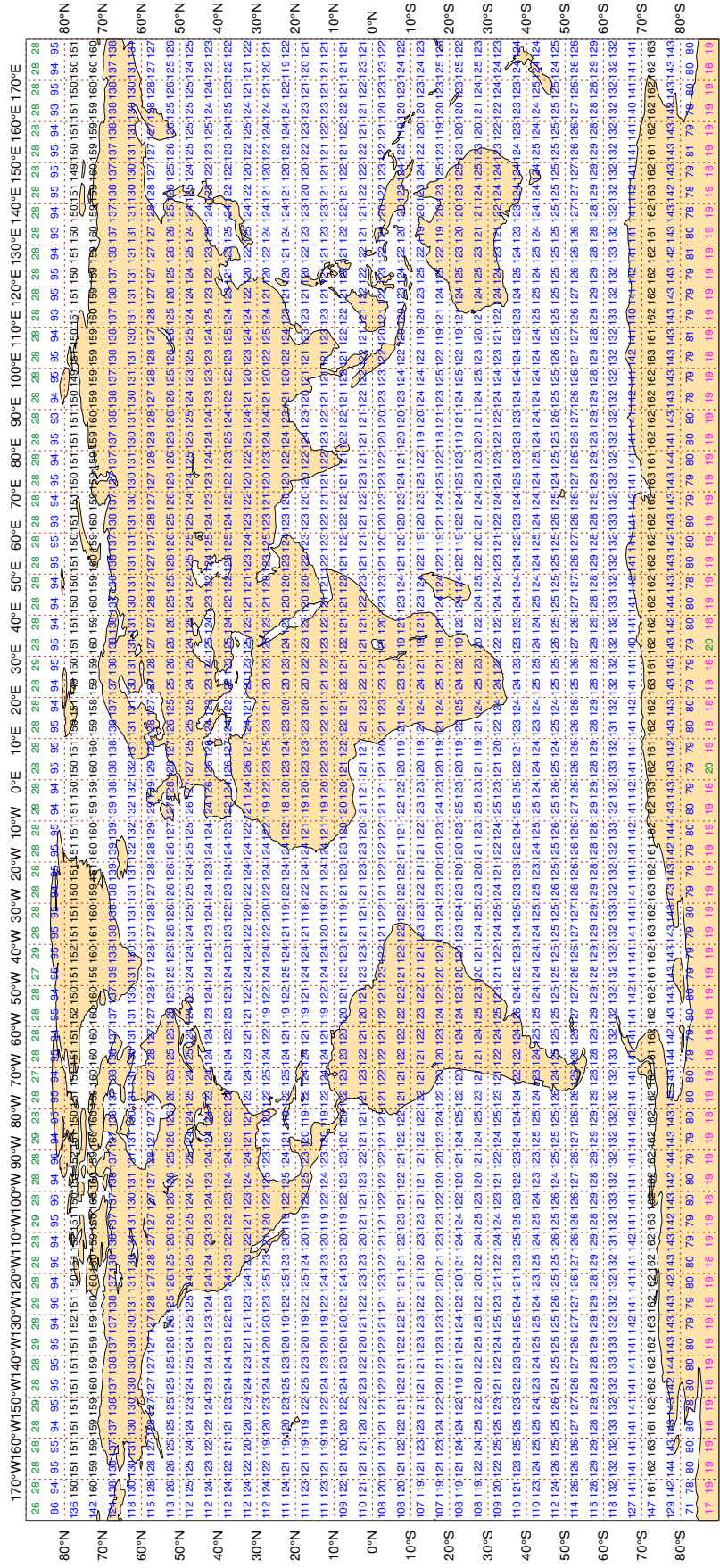
Magics 4.9.4

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

Figure 9.2

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

Average number of observations in 24 hours - 313548

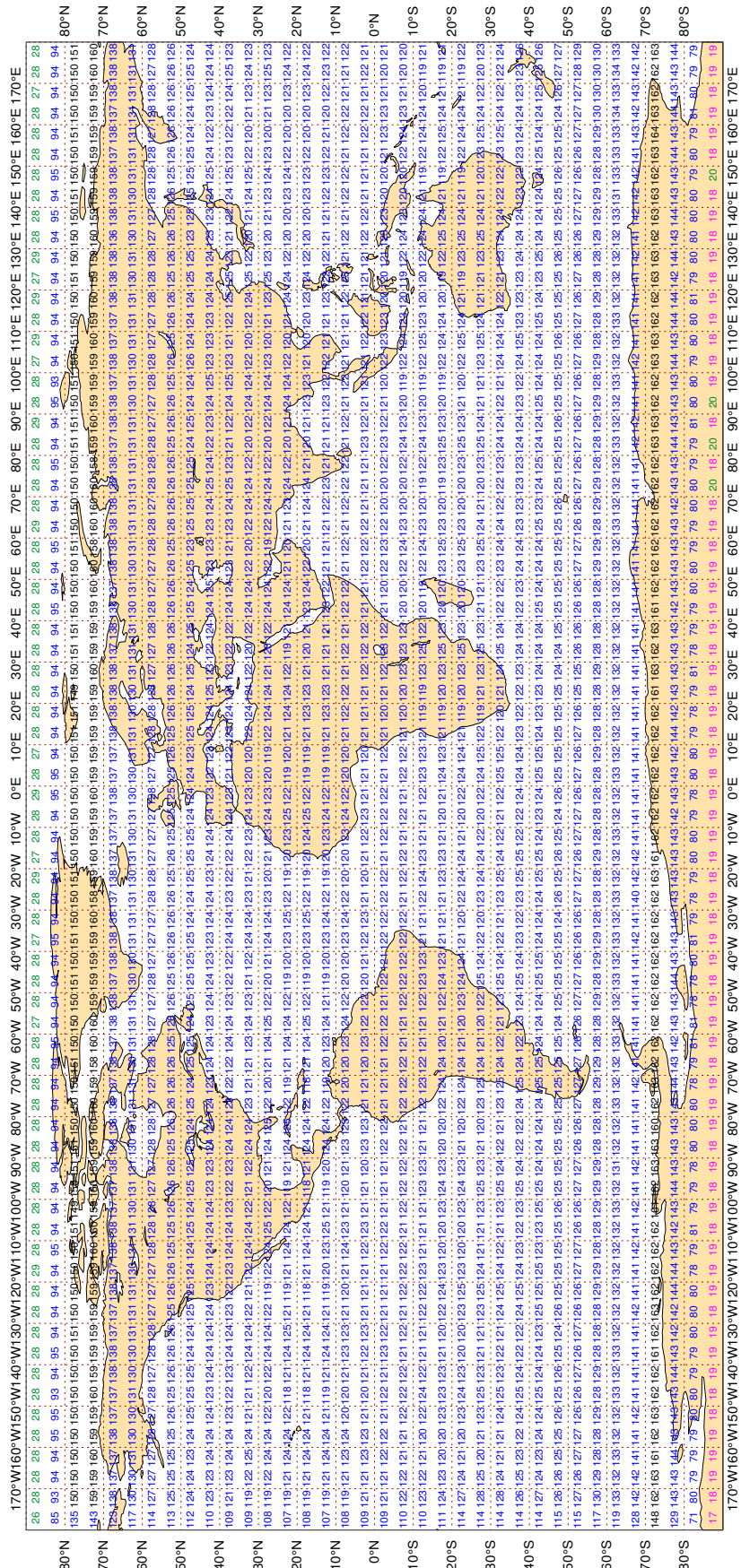


3.2.11 Figure 9.3 - Availability - METOP ATOVS : AMSU-A

Figure 9.3

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

Average number of observations in 24 hours - 313549



Magics 4.9.4



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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 AREA : GLOBAL  
 PERIOD : APR 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
00000	99	P	SUR	111	3	0.5	-13.8	13.8
2EIF7	99	P	SUR	16	0	0.5	5.1	5.1
3E2032	99	P	SUR	61	0	2.2	-3.1	3.8
3E3566	99	P	SUR	27	0	1.9	4.8	5.2
3FJB3	99	P	SUR	83	0	0.7	3.4	3.5
9HA4612	99	P	SUR	15	0	1.8	3.7	4.1
9HA4638	99	P	SUR	48	0	1.9	6.0	6.3
9HA4902	99	P	SUR	19	7	1.8	8.7	8.9
9HA4960	99	P	SUR	15	0	2.2	3.2	3.9
9HA4986	99	P	SUR	55	1	1.3	8.9	9.0
9HA5209	99	P	SUR	27	0	6.0	1.0	6.1
9HRJ9	99	P	SUR	27	0	0.4	3.5	3.6
9V3286	99	P	SUR	97	0	2.5	6.3	6.8
9V3913	99	P	SUR	34	1	2.9	5.7	6.4
9V5246	99	P	SUR	38	0	0.7	4.5	4.6
9V6408	99	P	SUR	99	0	2.1	3.2	3.8
9V8372	99	P	SUR	15	0	1.5	4.7	4.9
9VPQ7	99	P	SUR	17	0	0.4	4.1	4.1
A8KC6	99	P	SUR	22	0	0.4	4.0	4.0
ALGOM01	99	P	SUR	22	0	1.2	-5.8	5.9
AUVM	99	P	SUR	24	0	0.6	4.2	4.3
AVMH	99	P	SUR	16	0	1.5	5.1	5.3
C6BQ8	99	P	SUR	27	0	3.9	4.1	5.7
C6BU3	99	P	SUR	67	0	2.1	7.4	7.7
C6FB3	99	P	SUR	16	0	1.1	-7.1	7.2
C6FR3	99	P	SUR	15	0	2.7	4.6	5.4
C6TX6	99	P	SUR	31	0	2.2	4.9	5.3
D5DS3	99	P	SUR	49	0	0.4	3.0	3.0
D5UO7	99	P	SUR	15	0	1.4	8.1	8.2
GCWP	99	P	SUR	50	0	2.4	-3.1	3.9
JMJRCES	99	P	SUR	109	0	0.3	-6.0	6.1
KSKM	99	P	SUR	19	0	0.6	3.2	3.2

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
LAQL7	99	P	SUR	16	0	0.9	3.8	3.9
LOCV	99	P	SUR	21	0	2.4	3.8	4.5
OWLD2	99	P	SUR	18	0	1.1	-4.0	4.2
PBKH	99	P	SUR	27	0	4.0	4.1	5.7
SHIP	99	P	SUR	236	3	6.7	-6.6	9.4
SJA4RSK	99	P	SUR	89	0	0.5	-5.1	5.1
UHOW	99	P	SUR	26	0	1.3	5.0	5.1
V7A5716	99	P	SUR	19	0	2.7	-3.7	4.6
V7A6081	99	P	SUR	106	0	1.0	4.0	4.1
V7DJ7	99	P	SUR	16	0	0.4	10.1	10.1
V7DQ3	99	P	SUR	23	0	2.9	7.0	7.5
VRCB4	99	P	SUR	38	0	1.0	-4.4	4.5
VRID6	99	P	SUR	42	0	1.8	7.4	7.6
VRJA4	99	P	SUR	23	0	1.3	6.2	6.4
VRLJ4	99	P	SUR	27	0	1.1	7.5	7.6
VROX5	99	P	SUR	15	0	0.9	3.0	3.1
VRPY7	99	P	SUR	18	0	1.6	8.2	8.4
VRQX5	99	P	SUR	46	0	1.4	4.0	4.2
VSXV3	99	P	SUR	20	0	2.2	9.0	9.3
VTVS	99	P	SUR	112	0	0.6	3.6	3.6
WDJ3199	99	P	SUR	30	0	2.3	4.4	5.0
WGEB	99	P	SUR	20	0	1.1	9.7	9.8
WYQ4356	99	P	SUR	28	0	2.4	-5.2	5.8
ZGFY4	99	P	SUR	32	0	0.8	-5.8	5.8

### 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 : APR 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 : APR 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
44022	99	DIRN	SUR	28	0	0	97.9	36.4	104.4
45168	99	DIRN	SUR	31	0	0	16.5	38.1	41.6
45203	99	DIRN	SUR	49	0	0	56.7	-73.4	92.8
46131	99	DIRN	SUR	78	0	0	34.2	-31.9	46.8
62442	99	DIRN	SUR	45	0	0	12.1	42.8	44.5



### 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 : APR 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
00000	99	P	SUR	44	-79	653	8	0.5	-13.8	13.8
1301722	99	P	SUR	24	-45	317	0	4.9	5.5	7.3
1301791	99	P	SUR	35	-21	104	1	1.8	10.1	10.2
1401824	99	P	SUR	4	73	406	152	4.4	-2.2	4.9
1501696	99	P	SUR	-27	-9	654	0	0.3	-5.7	5.7
1501727	99	P	SUR	-16	-39	689	0	0.4	-7.3	7.3
1501729	99	P	SUR	-18	-25	693	0	0.4	-7.6	7.6
1501773	99	P	SUR	19	-87	305	71	6.2	-3.6	7.2
3201778	99	P	SUR	-18	-141	689	144	6.7	-2.7	7.2
3301702	99	P	SUR	-46	-52	163	5	7.0	-2.7	7.5
3801550	99	P	SUR	86	-45	720	720	0.0	0.0	0.0
4602608	99	P	SUR	47	-139	652	0	2.5	5.0	5.6
4701738	99	P	SUR	70	-67	702	702	0.0	0.0	0.0
4701744	99	P	SUR	78	-106	715	715	0.0	0.0	0.0
4701747	99	P	SUR	76	-124	214	214	0.0	0.0	0.0
4802655	99	P	SUR	78	-123	713	376	7.4	-5.5	9.2
5102809	99	P	SUR	10	-109	471	429	4.2	-11.4	12.2
5501567	99	P	SUR	-20	-99	477	477	0.0	0.0	0.0
5501656	99	P	SUR	-44	-177	562	0	4.4	-6.4	7.7
6203850	99	P	SUR	33	-16	372	4	6.2	-5.1	8.1

**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 : APR 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
6301004	99	SPEED	SUR	72	20	35	0	0	2.3	-6.9	7.3

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

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 PERIOD : APR 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
00000	99	DIRN	SUR	44	-79	49	0	0	20.1	-52.6	56.3
1500002	99	DIRN	SUR	0	-10	151	0	0	128.2	86.3	154.6
1500008	99	DIRN	SUR	-20	-10	44	0	0	54.3	20.4	58.0
1500009	99	DIRN	SUR	0	-3	157	0	0	42.7	-20.8	47.5
1801607	99	DIRN	SUR	20	-156	1127	0	0	64.0	-2.9	64.1
2200186	99	DIRN	SUR	36	126	342	0	0	66.6	-67.7	95.0
2300092	99	DIRN	SUR	17	89	33	0	0	66.8	-99.1	119.5
2300093	99	DIRN	SUR	16	88	33	0	0	83.2	-80.0	115.4
2300095	99	DIRN	SUR	10	94	31	0	0	12.4	24.9	27.8
2300453	99	DIRN	SUR	8	73	39	0	0	15.1	-41.0	43.7
2300454	99	DIRN	SUR	10	73	20	0	0	65.1	-15.7	66.9
23092	99	DIRN	SUR	17	89	53	0	0	83.1	-74.9	111.8
23093	99	DIRN	SUR	16	88	56	0	0	67.4	-92.5	114.5
23453	99	DIRN	SUR	8	73	60	0	0	18.3	-38.5	42.6
23454	99	DIRN	SUR	10	73	40	0	0	59.3	-41.0	72.1
23497	99	DIRN	SUR	11	72	38	0	0	90.3	-31.1	95.5
4400022	99	DIRN	SUR	41	-74	417	0	0	99.2	49.2	110.7
4400065	99	DIRN	SUR	40	-74	301	27	0	72.7	-27.7	77.8
44022	99	DIRN	SUR	41	-74	187	0	0	101.2	30.9	105.8
44065	99	DIRN	SUR	40	-74	51	7	0	77.0	-24.2	80.7
4500168	99	DIRN	SUR	42	-86	1153	0	0	20.7	37.0	42.4
4500203	99	DIRN	SUR	41	-83	1746	0	0	62.5	-67.9	92.3
45168	99	DIRN	SUR	42	-86	187	0	0	20.2	36.7	41.9
45203	99	DIRN	SUR	41	-83	286	0	0	64.5	-64.0	90.9
4600145	99	DIRN	SUR	54	-132	45	0	0	15.6	21.5	26.6
4600147	99	DIRN	SUR	52	-131	570	1	0	14.8	20.6	25.4
4600204	99	DIRN	SUR	51	-129	540	0	0	17.5	22.7	28.7
46131	99	DIRN	SUR	50	-125	444	0	0	37.1	-29.7	47.6
46147	99	DIRN	SUR	52	-131	630	1	0	15.2	21.2	26.1
46204	99	DIRN	SUR	51	-129	604	0	0	17.0	22.4	28.1
5100304	99	DIRN	SUR	-5	-170	112	0	0	41.5	-20.4	46.2

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
51304	99	DIRN	SUR	-5	-170	93	0	0	40.1	-26.9	48.3
5200003	99	DIRN	SUR	5	165	615	0	0	39.3	51.3	64.6
52003	99	DIRN	SUR	5	165	608	0	0	39.6	51.0	64.6
5202509	99	DIRN	SUR	13	137	36	0	0	168.8	39.7	173.4
6200082	99	DIRN	SUR	44	-8	539	0	0	31.5	26.8	41.3
6200084	99	DIRN	SUR	42	-9	376	0	0	36.2	29.2	46.5
6200086	99	DIRN	SUR	55	6	314	0	0	12.6	27.4	30.1
6200199	99	DIRN	SUR	40	-9	304	0	0	21.9	23.1	31.8
6200442	99	DIRN	SUR	49	-16	175	0	0	24.4	39.3	46.3
62442	99	DIRN	SUR	49	-16	548	0	0	12.9	41.0	43.0
6301003	99	DIRN	SUR	74	24	277	0	0	26.6	28.9	39.3
6600022	99	DIRN	SUR	54	14	197	0	0	21.8	24.5	32.8

### 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 : APR 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	27	0	3.9	74.2	74.3
01400	12	Z	1000	57	3	27	0	3.9	74.9	75.0
32389	00	Z	250	56	161	29	1	58.5	54.1	79.7
35700	12	Z	200	47	52	28	0	25.1	76.8	80.8
36003	12	Z	200	52	77	27	0	50.4	61.0	79.1
38341	12	Z	200	43	71	30	1	51.3	97.4	110.1
38341	00	Z	200	43	71	30	1	64.2	63.5	90.3
40437	00	Z	850	24	44	30	1	5.9	34.7	35.2
42348	00	Z	850	27	76	23	1	22.1	62.5	66.3
42410	12	Z	925	26	92	30	2	23.7	42.1	48.3
42410	00	Z	850	26	92	30	0	20.0	35.7	40.9
43041	00	Z	850	19	82	26	2	18.4	51.1	54.3
43049	00	Z	1000	19	85	20	0	33.0	10.9	34.8
43128	00	Z	150	17	78	21	1	79.5	65.9	103.3
43185	00	Z	850	16	81	19	0	20.7	41.2	46.1
43295	00	Z	850	13	78	17	2	36.9	22.5	43.2
48698	12	Z	200	1	104	16	0	6.8	77.0	77.3
52323	12	Z	30	42	97	30	0	110.0	186.1	216.2
52323	00	Z	30	42	97	25	2	104.3	241.0	262.6
54374	00	Z	30	42	127	28	0	122.1	254.3	282.1
55591	12	Z	50	30	91	23	0	49.7	158.6	166.2
58027	00	Z	50	34	117	26	0	121.4	122.1	172.2
58424	00	Z	50	31	117	29	1	138.3	149.3	203.5
61442	00	Z	700	18	-16	83	32	54.0	-45.8	70.8
62378	00	Z	400	30	31	21	1	51.6	67.9	85.3
68842	12	Z	1000	-34	26	29	0	28.4	23.7	37.0
76644	12	Z	70	21	-90	10	0	148.2	236.5	279.1
91680	00	Z	1000	-18	177	29	0	5.1	32.6	33.0
91680	12	Z	925	-18	177	28	0	2.6	34.2	34.3
96315	00	Z	1000	5	115	30	0	7.4	54.2	54.7
96315	12	Z	1000	5	115	30	0	8.1	54.1	54.7
97690	00	Z	925	-3	141	30	1	4.2	88.6	88.7
9ZT9MR	12	Z	100	62	-6	12	0	113.6	-89.6	144.7
JNKN7J	00	Z	1000	50	-18	12	0	5.0	41.2	41.5
JNKN7J	12	Z	1000	51	-13	16	0	5.1	42.8	43.1
KMPLHP	12	Z	1000	44	-56	11	0	26.1	39.8	47.6
KMPLHP	00	Z	1000	44	-61	10	0	27.2	38.6	47.2

**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 : APR 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
42667	00	V	150	23	77	17	0	-10.2	13.6	19.1
61442	12	V	925	18	-16	27	3	-3.4	-5.1	15.1
61442	00	V	925	18	-16	24	5	-8.0	-8.7	20.4

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

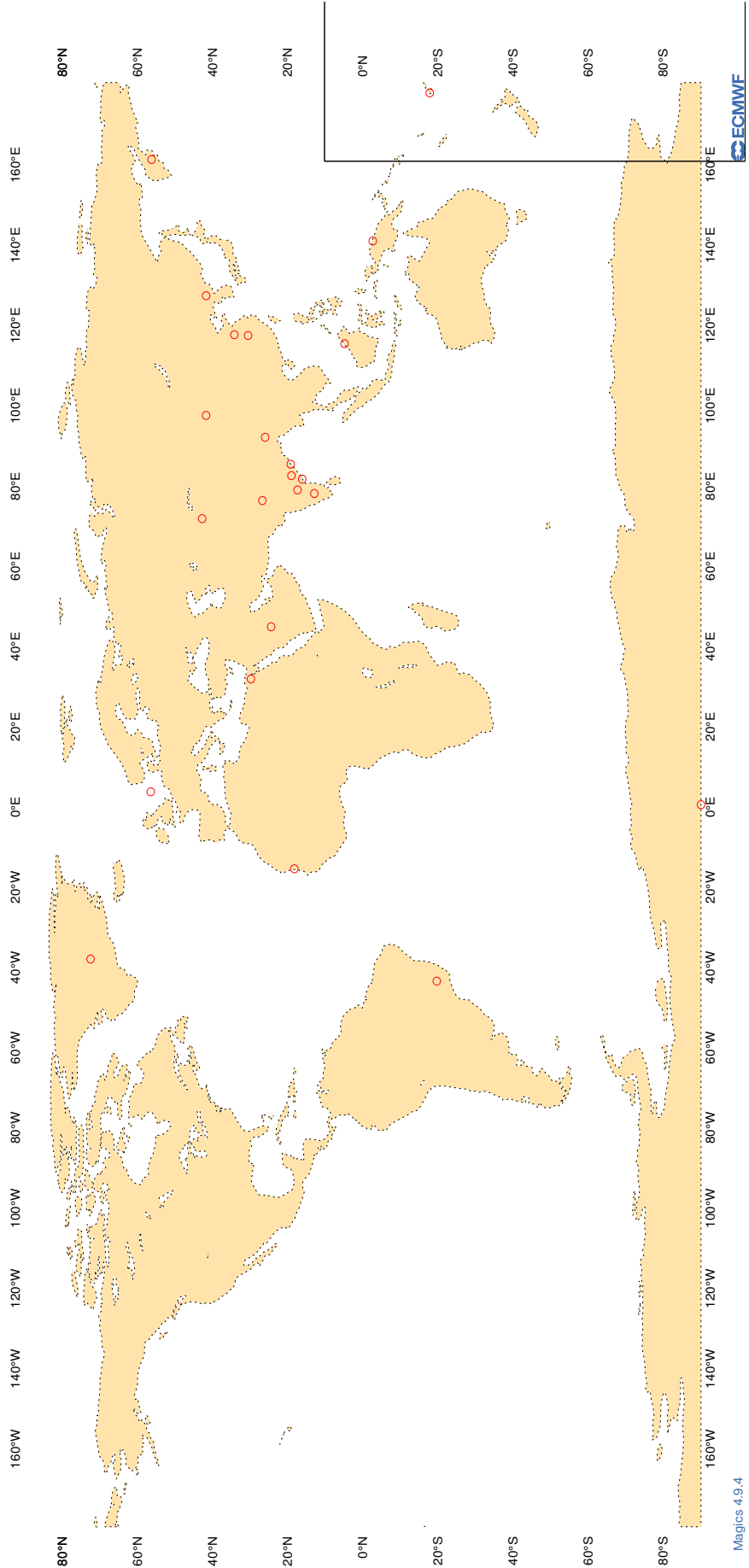
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS  $\geq$  5 M/S  
 NO. OF OBSERVATIONS  $\geq$  5, AND,  
 ABSOLUTE BIAS  $\geq$  10 DEGREES, WITH  
 STANDARD DEVIATION  $<$  30 DEGREES, AND,  
 VERTICAL SPREAD  $<$  10 DEGREES  
 (AVERAGE BETWEEN 500 AND 150 HPA)

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
34247	12	DD	50	41	23	10.2	2.0	12.7
34247	00	DD	50	41	24	12.1	3.2	11.9
42667	00	DD	23	77	20	34.1	10.0	13.0

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

Figure 10

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

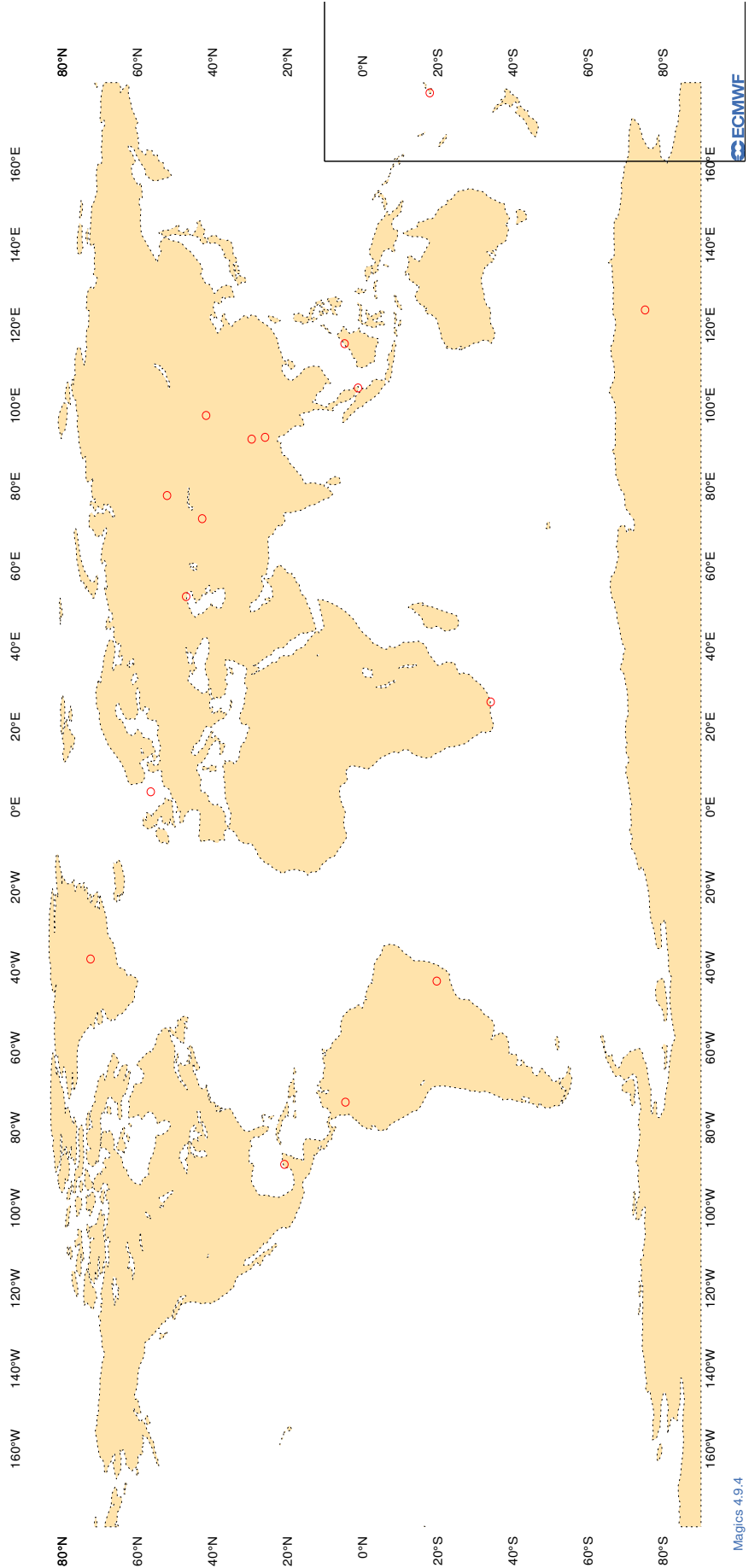




3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC

Figure 11

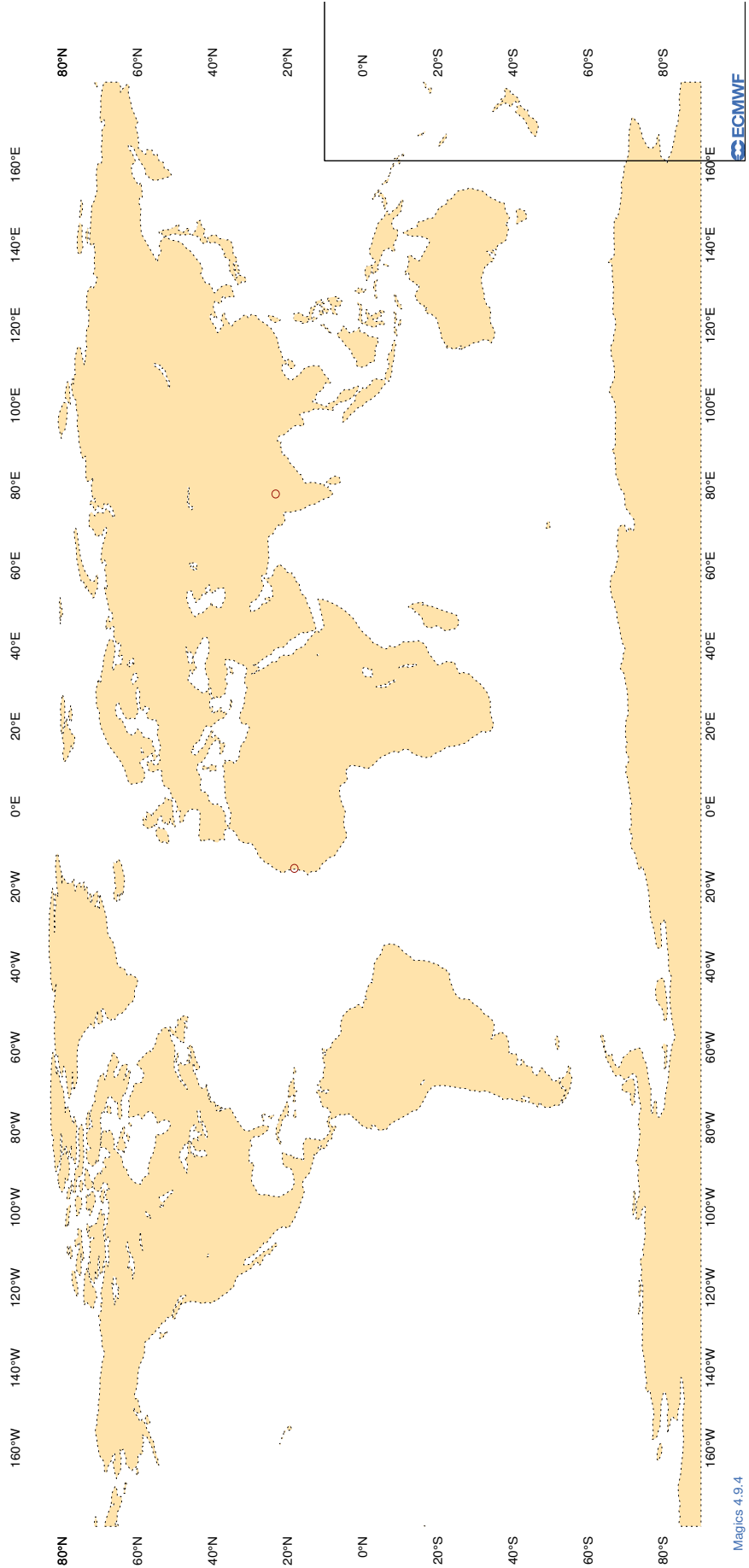
ECMWF Monitoring Statistics - APR 2023 12 UTC  
Suspect TEMP observations - GEOPOTENTIAL



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

Figure 12

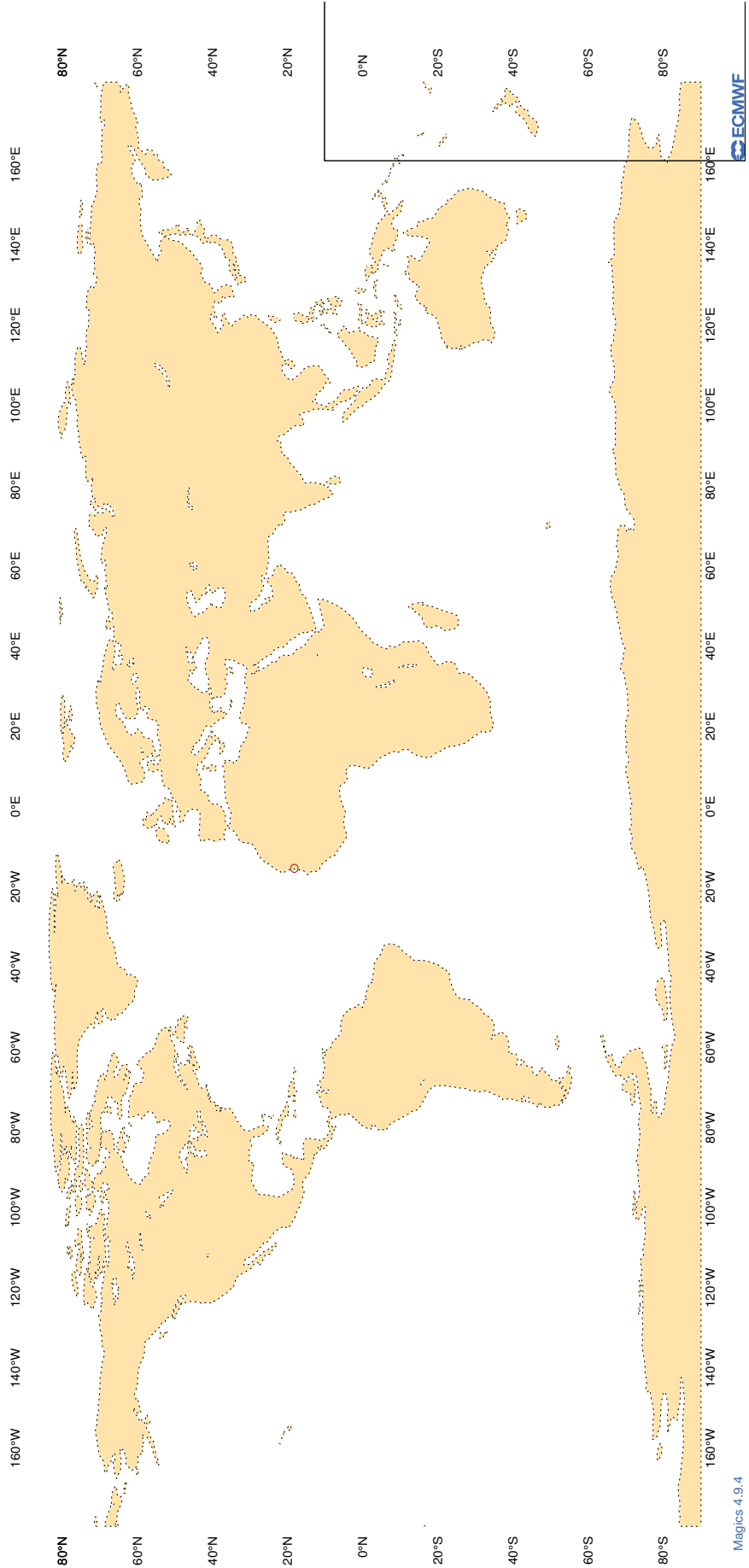
ECMWF Monitoring Statistics - APR 2023 00 UTC  
Suspect TEMP/PILOT observations - WIND



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

Figure 13

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
2EERT	12	Z	100	2	12.9	11.3
2EERT	00	Z	100	5	5.2	1.5
7JUNA4	00	Z	100	5	9.5	-6.8
7JUNA4	12	Z	100	7	88.1	75.9
9ZT9MR	00	Z	100	9	36.4	-30.1
9ZT9MR	12	Z	100	12	144.7	-89.6
ASDE09	12	Z	100	2	22.5	20.6
ATGU3F	00	Z	100	7	30.5	-27.0
ATGU3F	12	Z	100	12	25.4	-15.9
BPMWB2	12	Z	100	4	9.2	-8.0
BPMWB2	00	Z	100	9	27.6	-0.2
DBLK	12	Z	100	5	14.4	12.8
GQBZLZ	12	Z	100	1	12.8	-12.8
GQBZLZ	00	Z	100	1	46.4	-46.4
JNKN7J	12	Z	100	14	48.5	40.6
JNKN7J	00	Z	100	9	28.7	27.3
JNSR	00	Z	100	1	7.2	7.2
JNSR	12	Z	100	1	1.6	1.6
JPBN	00	Z	100	2	2.7	-2.6
JPBN	12	Z	100	3	4.9	-1.1
KJF9X	12	Z	100	5	6.8	1.1
KJF9X	00	Z	100	6	9.1	1.1
KMPLHP	12	Z	100	11	98.1	76.8
KMPLHP	00	Z	100	11	38.3	8.9
LRQE3	12	Z	100	7	16.7	-14.7
LRQE3	00	Z	100	8	9.7	-4.1
UBQW2	00	Z	100	29	38.1	8.7
UBQW2	12	Z	100	30	15.0	7.6
XKQLWQ	12	Z	100	18	44.2	21.6
XQFJRG	12	Z	100	3	5.6	-4.6
XQFJRG	00	Z	100	6	10.2	-6.8
YL96W	00	Z	100	11	76.3	16.3
YL96W	12	Z	100	12	65.5	39.2
ZSNO	12	Z	100	0	0.0	0.0
ZVQEQC	12	Z	100	3	35.5	33.4

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

#### RADIOSONDE MONITORING STATISTICS (SHIPS)

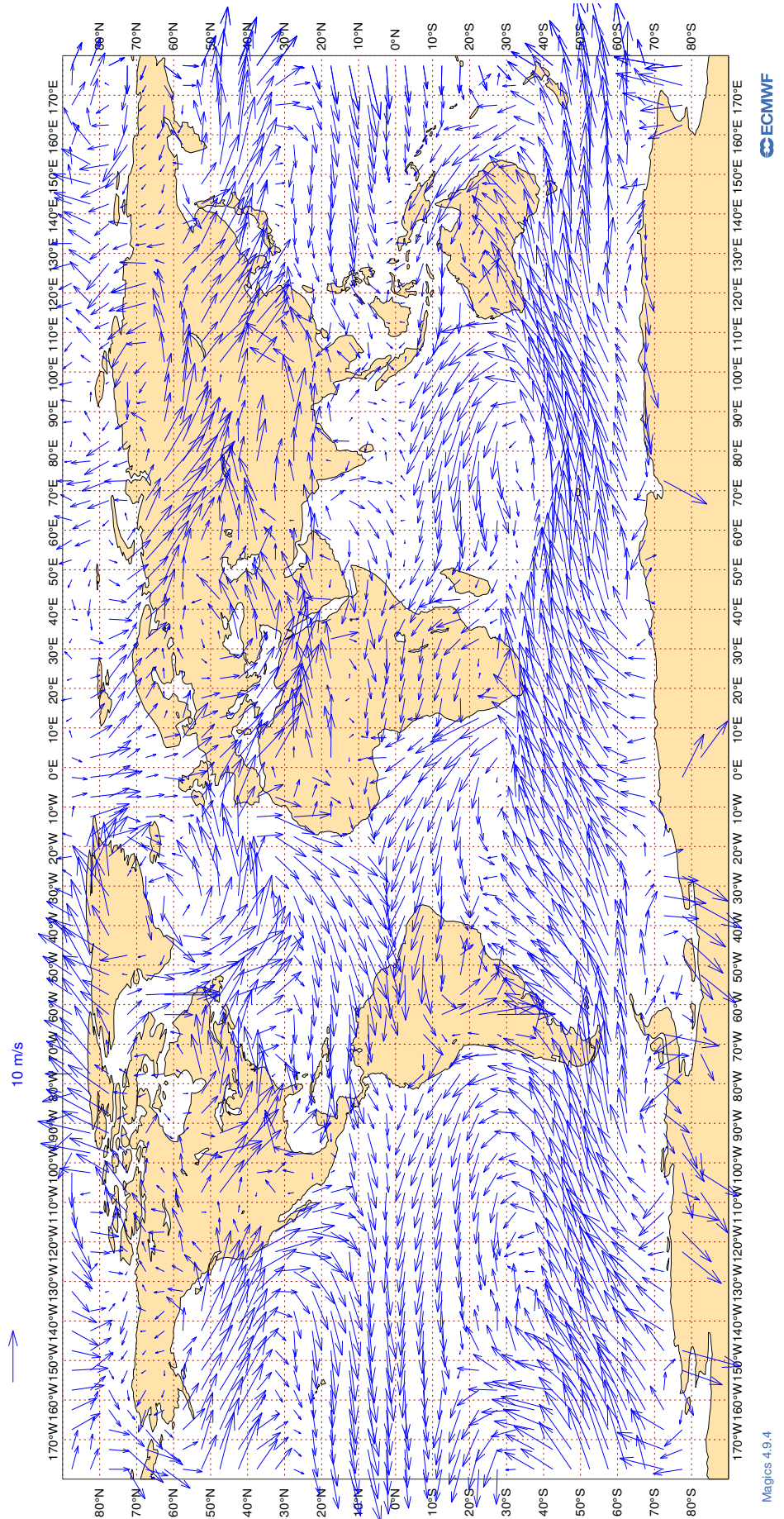
MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 100 HPA  
 AREA : GLOBAL  
 PERIOD : APR 2023  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
2EERVT	12	V	100	2	6.9	3.7	2.7
2EERVT	00	V	100	5	3.1	1.2	-1.2
7JUNA4	00	V	100	5	4.0	0.8	1.0
7JUNA4	12	V	100	7	4.1	-0.7	0.8
9ZT9MR	00	V	100	9	2.0	0.3	0.8
9ZT9MR	12	V	100	12	2.8	0.4	0.3
ASDE09	12	V	100	2	1.8	-0.9	0.1
ATGU3F	00	V	100	7	2.8	0.3	0.1
ATGU3F	12	V	100	12	2.1	-0.1	1.2
BPMWB2	12	V	100	4	2.2	1.2	-1.0
BPMWB2	00	V	100	9	7.6	-2.3	2.5
DBLK	12	V	100	5	3.1	-0.5	0.2
GQBZLZ	12	V	100	1	1.7	1.4	-1.0
GQBZLZ	00	V	100	1	4.6	4.0	-2.3
JNKN7J	12	V	100	14	4.0	0.9	0.8
JNKN7J	00	V	100	9	3.7	0.8	-0.1
JNSR	00	V	100	1	5.5	-1.6	5.3
JNSR	12	V	100	1	2.9	-2.8	0.6
JPBN	00	V	100	2	5.4	-2.0	4.5
JPBN	12	V	100	3	6.6	-0.6	3.1
KJJF9X	12	V	100	5	3.3	1.2	1.0
KJJF9X	00	V	100	6	2.2	-0.3	0.7
KMPLHP	12	V	100	11	3.6	0.1	0.0
KMPLHP	00	V	100	11	2.5	1.0	-0.6
LRYQE3	12	V	100	7	3.2	1.8	-1.5
LRYQE3	00	V	100	8	4.4	-0.1	-0.6
UBQW2	00	V	100	29	2.4	0.7	0.0
UBQW2	12	V	100	30	2.6	0.1	-0.4
XKQLWQ	12	V	100	18	4.5	1.2	1.6
XQFJRG	12	V	100	3	2.5	1.5	0.8
XQFJRG	00	V	100	6	2.9	-0.3	-1.1
YL96W	00	V	100	11	2.3	-0.4	-0.5
YL96W	12	V	100	12	2.8	0.2	0.5
ZSNO	12	V	100	0	0.0	0.0	0.0
ZVQEQC	12	V	100	3	6.5	2.9	-2.7

3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

Figure 14

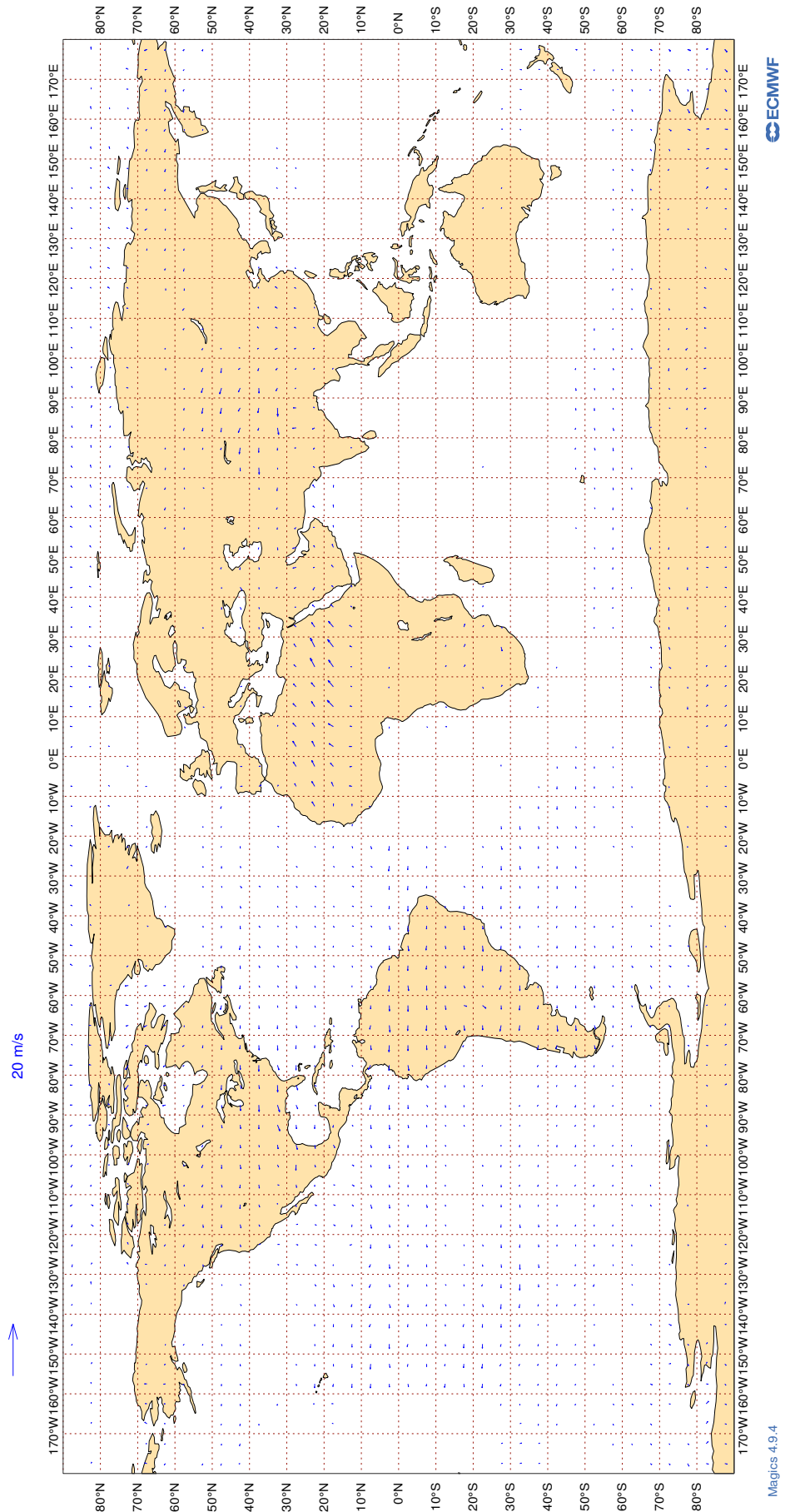
ECMWF Monitoring Statistics: Apr 2023  
AMV Winds: 700-1000hPa  
Mean Observed Wind



3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

Figure 15

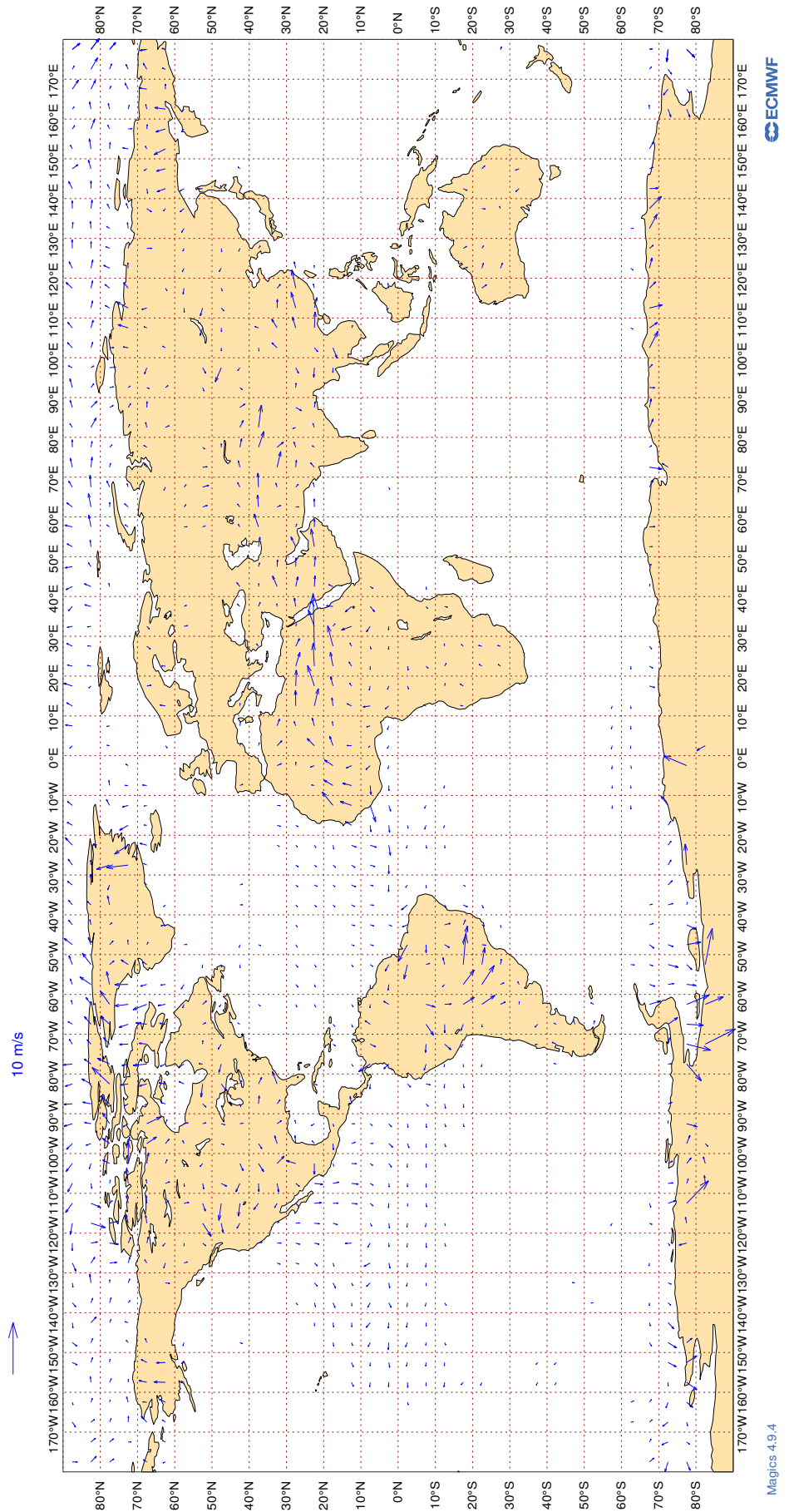
ECMWF Monitoring Statistics: Apr 2023  
AMV Winds: 150- 400hPa  
Wind bias: Observation - FG



3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

Figure 16

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

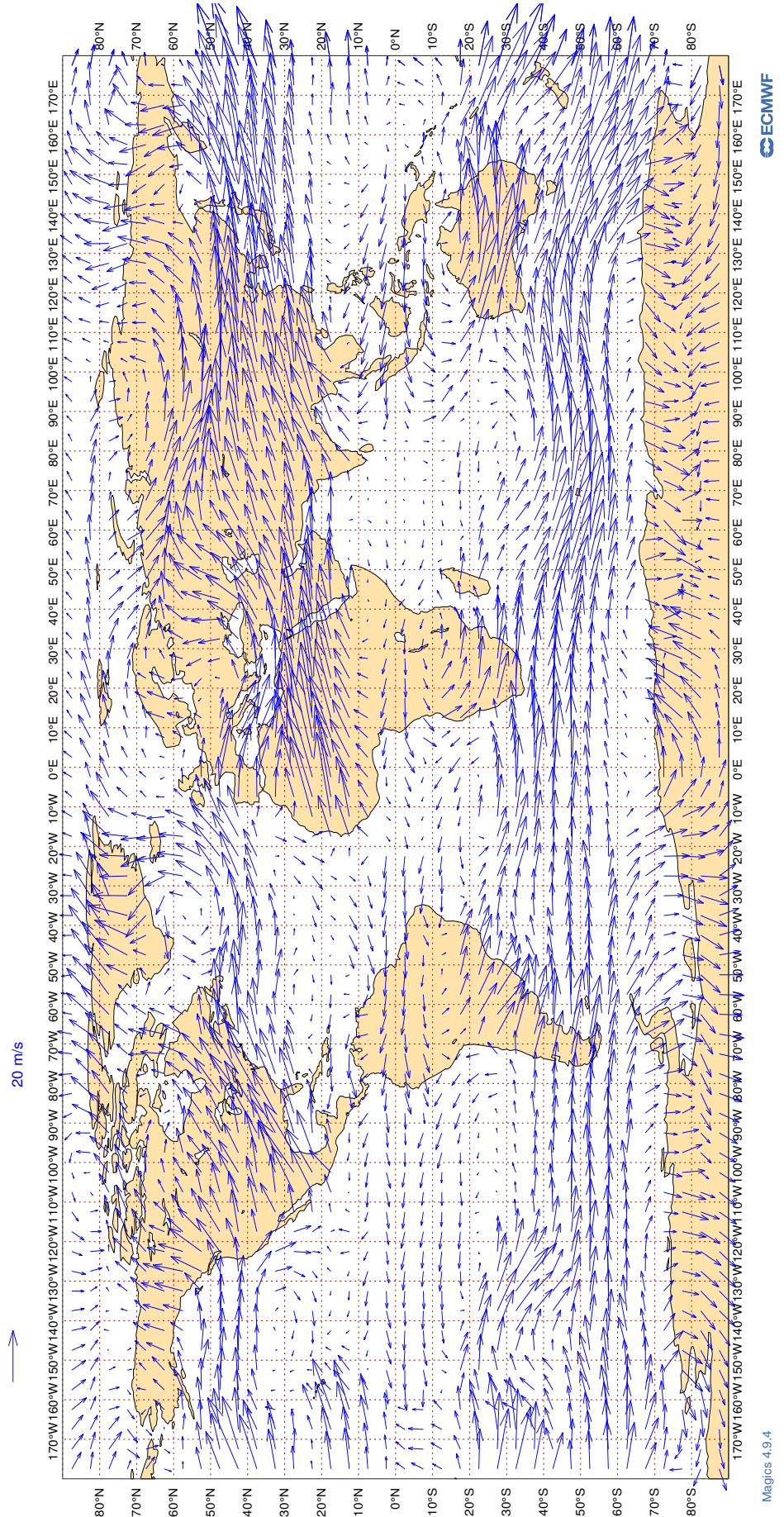




3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

Figure 17

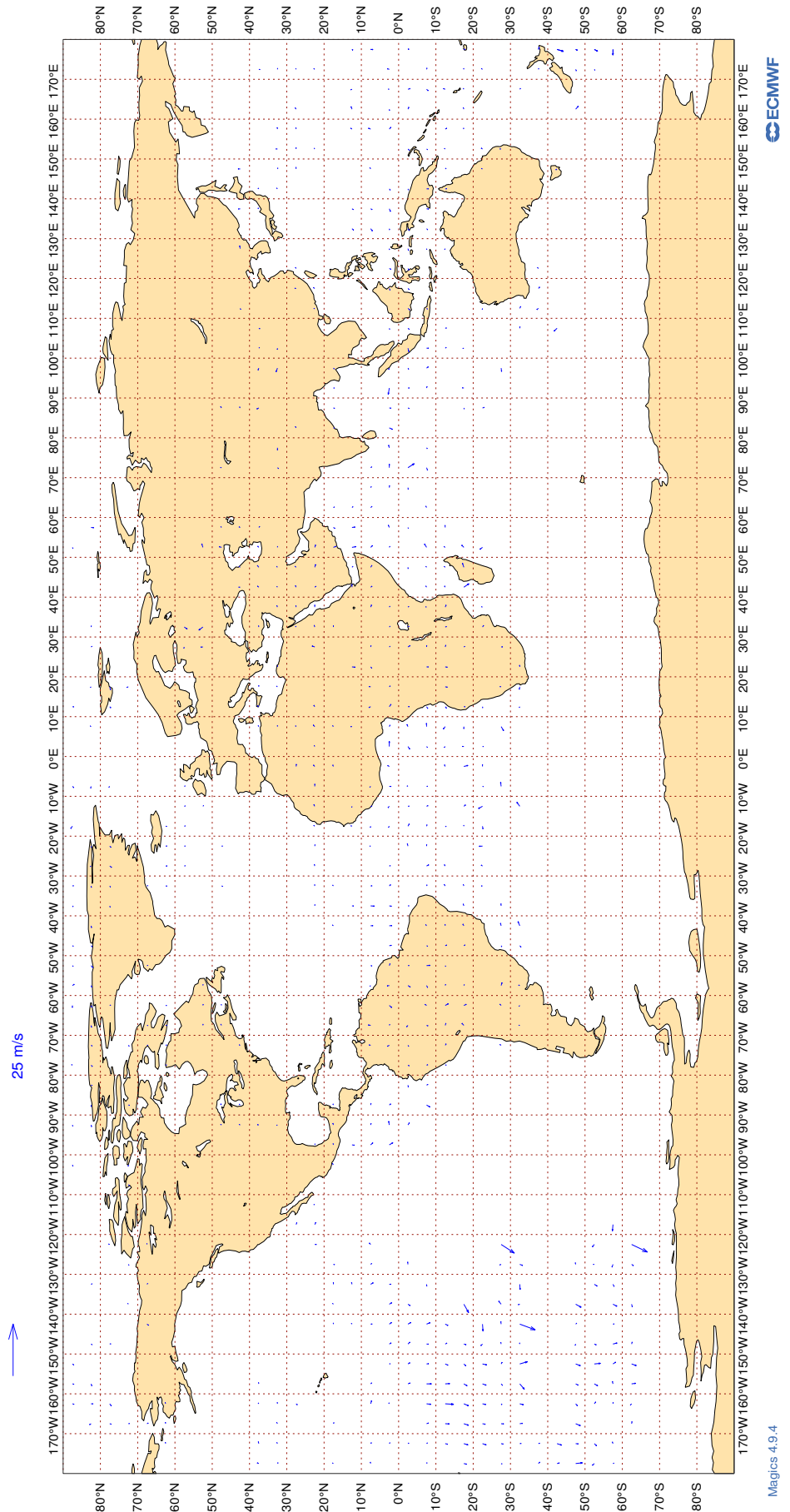
ECMWF Monitoring Statistics: Apr 2023  
AMV Winds: 150- 400hPa  
Mean Observed Wind



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

Figure 18

ECMWF Monitoring Statistics: Apr 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 : APR 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	68	0	0	4.0	-0.1
AAL	99	V	300-150	47150	3	0	5.6	0.1
AAR	99	V	300-150	230	0	0	3.4	-0.1
ABB	99	V	300-150	153	0	0	2.7	0.3
ABD	99	V	300-150	1162	0	0	4.0	-0.3
ABP	99	V	300-150	106	0	1	3.1	0.1
ABX	99	V	300-150	121	0	0	3.4	0.1
ACA	99	V	300-150	25646	2	0	5.1	0.1
ACI	99	V	300-150	408	0	0	4.7	0.5
ADY	99	V	300-150	28	0	0	3.0	0.6
AEA	99	V	300-150	911	9	1	6.7	0.0
AFR	99	V	300-150	33632	1	0	4.2	0.2
AHO	99	V	300-150	644	0	0	5.1	0.0
AIC	99	V	300-150	4557	2	0	5.5	0.1
AJT	99	V	300-150	193	0	0	3.0	-0.1
ALK	99	V	300-150	1539	0	0	3.3	0.5
AMX	99	V	300-150	4392	11	0	7.8	0.0
ANA	99	V	300-150	179	3	1	5.5	0.5
ANZ	99	V	300-150	21869	1	0	5.7	0.4
AOJ	99	V	300-150	228	0	0	3.4	0.2
ARG	99	V	300-150	79	0	1	3.9	0.3
ARL	99	V	300-150	35	0	0	5.7	-2.8
ASA	99	V	300-150	65	0	5	5.3	0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
ASJ	99	V	300-150	63	0	0	2.6	-0.4
ASL	99	V	300-150	429	0	0	3.5	0.2
ASY	99	V	300-150	66	0	3	3.2	0.3
ATC	99	V	300-150	136	0	0	4.3	0.6
ATG	99	V	300-150	688	0	0	4.5	0.7
ATN	99	V	300-150	175	0	1	4.3	-0.1
AUA	99	V	300-150	4845	0	0	3.8	0.1
AUH	99	V	300-150	33	0	0	4.2	0.2
AVA	99	V	300-150	429	10	0	7.6	-0.2
AWC	99	V	300-150	371	0	0	3.4	-0.1
AXB	99	V	300-150	45	0	0	2.5	0.6
AXM	99	V	300-150	94	0	1	3.8	0.9
AXY	99	V	300-150	124	0	0	3.1	0.3
AYJ	99	V	300-150	48	0	0	3.0	0.5
AZG	99	V	300-150	749	0	0	3.7	-0.1
BAF	99	V	300-150	179	0	0	3.0	0.6
BAV	99	V	300-150	120	6	0	8.0	0.5
BAW	99	V	300-150	48072	1	0	4.8	0.1
BBC	99	V	300-150	757	2	0	6.0	0.8
BCS	99	V	300-150	2197	0	0	3.0	0.2
BEL	99	V	300-150	1550	0	0	3.0	0.2
BFF	99	V	300-150	78	0	0	3.4	0.3
BLU	99	V	300-150	52	0	0	4.2	1.0
BLX	99	V	300-150	396	4	0	11.6	-0.2
BMW	99	V	300-150	51	0	0	3.3	0.9
BOX	99	V	300-150	4132	0	0	3.2	0.2
BTX	99	V	300-150	45	0	0	3.1	0.5
CAL	99	V	300-150	1645	0	0	4.7	0.7
CBJ	99	V	300-150	134	0	0	3.8	0.3
CCA	99	V	300-150	44	0	0	5.0	2.4
CEB	99	V	300-150	863	0	0	3.3	0.5
CES	99	V	300-150	905	0	0	4.6	0.3
CFC	99	V	300-150	297	0	0	3.7	0.7
CFG	99	V	300-150	4315	0	0	3.3	0.2
CHG	99	V	300-150	931	0	0	4.0	0.0
CJT	99	V	300-150	598	0	0	4.0	0.0
CKS	99	V	300-150	2215	0	0	3.5	0.1
CLF	99	V	300-150	35	0	0	3.3	0.0
CLX	99	V	300-150	5131	0	0	3.6	-0.2
CLY	99	V	300-150	72	0	0	3.7	-0.4
CMA	99	V	300-150	202	0	0	3.9	0.6
CMB	99	V	300-150	1876	0	0	3.5	0.2
CNK	99	V	300-150	28	0	0	2.4	-0.3

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
CNV	99	V	300-150	140	0	0	3.7	0.4
CPA	99	V	300-150	1643	0	0	4.5	0.6
CRL	99	V	300-150	1264	0	0	3.3	0.2
CRV	99	V	300-150	44	0	0	4.6	0.8
CSC	99	V	300-150	534	0	0	3.9	0.5
CSN	99	V	300-150	617	1	0	5.0	0.5
CSS	99	V	300-150	51	0	0	4.3	0.8
CTM	99	V	300-150	78	0	1	3.2	0.0
CWG	99	V	300-150	22	0	0	3.1	-0.5
DAH	99	V	300-150	696	0	0	3.2	0.1
DAL	99	V	300-150	63719	0	0	3.1	0.1
DCS	99	V	300-150	33	0	0	3.8	2.1
DGX	99	V	300-150	62	0	0	2.4	-0.1
DHK	99	V	300-150	2581	0	0	3.3	0.2
DHX	99	V	300-150	228	0	0	3.5	1.0
DJT	99	V	300-150	1852	0	0	3.3	0.3
DLH	99	V	300-150	25994	1	0	3.7	0.1
EAL	99	V	300-150	149	0	0	4.3	0.0
EAU	99	V	300-150	61	0	0	5.7	2.1
EDC	99	V	300-150	87	0	0	3.5	-0.3
EDG	99	V	300-150	75	0	1	3.6	0.0
EDW	99	V	300-150	1613	0	0	3.0	0.3
EIN	99	V	300-150	16224	0	0	2.9	0.2
EJM	99	V	300-150	666	0	0	3.3	0.1
ELY	99	V	300-150	3902	7	0	7.7	-0.1
ESW	99	V	300-150	61	0	0	3.7	-0.8
ETD	99	V	300-150	11555	3	0	5.8	0.2
ETH	99	V	300-150	6037	1	0	4.6	0.2
EUK	99	V	300-150	1635	0	0	3.1	0.3
EUW	99	V	300-150	24	0	0	2.5	-0.7
EVA	99	V	300-150	1572	3	0	5.5	0.3
EVE	99	V	300-150	123	0	0	3.5	-0.2
EXS	99	V	300-150	845	0	0	3.3	0.1
EXV	99	V	300-150	38	0	0	3.9	0.4
EZY	99	V	300-150	21	0	0	3.0	0.2
FAF	99	V	300-150	38	0	0	3.2	0.2
FBU	99	V	300-150	2548	0	0	4.0	0.5
FDX	99	V	300-150	7023	0	0	3.2	0.1
FFM	99	V	300-150	39	0	0	7.8	1.8
FIN	99	V	300-150	1691	0	0	3.2	0.2
FJI	99	V	300-150	2410	0	0	4.5	0.5
FJO	99	V	300-150	23	0	0	2.2	0.4
FPY	99	V	300-150	2764	0	0	2.9	0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
FSY	99	V	300-150	20	0	0	4.8	-1.7
FWI	99	V	300-150	2365	0	0	3.2	0.3
FXT	99	V	300-150	76	0	0	3.7	0.6
FYG	99	V	300-150	99	0	0	3.1	0.6
FYL	99	V	300-150	66	0	0	4.1	0.8
GAF	99	V	300-150	125	0	0	3.2	-0.3
GAJ	99	V	300-150	21	0	0	5.8	0.0
GCK	99	V	300-150	154	0	0	3.4	-0.4
GEC	99	V	300-150	1235	0	0	3.5	0.1
GES	99	V	300-150	153	0	1	4.2	0.7
GFA	99	V	300-150	944	2	0	6.9	0.5
GIA	99	V	300-150	740	0	0	3.0	0.5
GJE	99	V	300-150	59	0	0	3.4	0.8
GLJ	99	V	300-150	28	0	0	3.4	0.2
GMA	99	V	300-150	39	0	0	4.1	0.5
GNJ	99	V	300-150	64	0	0	3.4	-0.1
GOL	99	V	300-150	49	0	0	9.6	5.8
GSM	99	V	300-150	32	0	0	3.9	0.5
GTI	99	V	300-150	1994	0	0	3.5	0.0
GTR	99	V	300-150	328	0	0	3.8	0.6
HAL	99	V	300-150	830	0	0	5.2	0.8
HFM	99	V	300-150	58	0	0	2.8	-0.3
HIM	99	V	300-150	136	0	0	3.3	0.8
HKC	99	V	300-150	93	0	0	3.8	0.1
HLF	99	V	300-150	41	0	0	3.1	-0.2
HRN	99	V	300-150	70	0	0	3.4	-0.1
HVN	99	V	300-150	817	3	0	7.2	0.9
HYP	99	V	300-150	114	0	1	3.0	0.0
IAM	99	V	300-150	158	0	0	3.5	-0.1
IBE	99	V	300-150	6324	0	0	3.2	0.1
ICE	99	V	300-150	5798	0	0	2.9	0.2
ICL	99	V	300-150	197	0	0	4.2	1.2
ICV	99	V	300-150	478	0	0	4.5	0.5
IFA	99	V	300-150	278	0	0	3.5	0.1
IFC	99	V	300-150	23	0	0	3.8	0.3
IJM	99	V	300-150	48	0	2	3.2	0.0
ITY	99	V	300-150	4792	0	0	3.1	0.1
JAF	99	V	300-150	678	8	0	8.7	0.0
JAL	99	V	300-150	262	4	0	7.1	-0.1
JAS	99	V	300-150	83	0	1	3.5	0.8
JBU	99	V	300-150	5203	0	0	3.3	0.3
JCO	99	V	300-150	107	0	0	3.2	0.2
JCY	99	V	300-150	33	0	0	3.4	1.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
JET	99	V	300-150	50	0	0	4.0	1.4
JJA	99	V	300-150	34	3	3	4.8	-0.5
JME	99	V	300-150	42	0	2	3.2	0.5
JNY	99	V	300-150	23	0	0	3.0	0.5
JST	99	V	300-150	69	0	0	4.2	1.1
KAC	99	V	300-150	2775	0	0	3.6	0.4
KAI	99	V	300-150	118	0	0	5.0	0.1
KAL	99	V	300-150	802	0	0	4.9	0.6
KAY	99	V	300-150	354	0	0	4.3	1.0
KFE	99	V	300-150	47	0	0	3.0	0.1
KIW	99	V	300-150	28	0	0	4.8	1.9
KLM	99	V	300-150	19800	3	0	5.8	0.2
KOC	99	V	300-150	99	0	0	2.4	0.2
KQA	99	V	300-150	276	9	0	5.1	0.1
KRF	99	V	300-150	29	0	0	4.7	0.2
KRH	99	V	300-150	24	0	0	3.2	0.9
LAN	99	V	300-150	1393	8	0	6.3	0.3
LCO	99	V	300-150	794	0	0	3.7	-0.2
LDX	99	V	300-150	172	0	0	3.1	0.3
LEA	99	V	300-150	34	0	0	2.8	0.4
LNI	99	V	300-150	704	0	0	3.3	0.3
LNK	99	V	300-150	58	0	0	3.4	-0.4
LOT	99	V	300-150	3424	4	0	6.5	0.2
LUC	99	V	300-150	93	0	0	3.6	0.5
LWG	99	V	300-150	21	0	0	5.1	1.0
LXA	99	V	300-150	23	0	0	2.9	-1.4
LXJ	99	V	300-150	422	0	0	3.2	0.2
MAS	99	V	300-150	3681	0	0	3.5	0.5
MAU	99	V	300-150	355	0	0	4.0	1.0
MED	99	V	300-150	62	0	0	3.2	-0.6
MHV	99	V	300-150	27	0	0	3.1	1.2
MJF	99	V	300-150	37	0	0	3.4	0.6
MLM	99	V	300-150	44	0	0	3.8	-0.3
MMD	99	V	300-150	173	0	0	3.3	0.2
MMF	99	V	300-150	40	0	3	2.5	0.0
MMZ	99	V	300-150	25	0	0	3.3	-1.0
MNB	99	V	300-150	373	0	0	2.9	0.4
MPH	99	V	300-150	676	0	0	3.6	-0.5
MSR	99	V	300-150	1717	4	0	4.7	0.0
MYM	99	V	300-150	47	0	0	4.5	1.4
NBT	99	V	300-150	2006	5	0	7.2	0.2
NCR	99	V	300-150	339	0	0	3.9	0.2
NEW	99	V	300-150	61	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
NJE	99	V	300-150	662	0	0	3.3	0.6
NOJ	99	V	300-150	20	0	0	3.0	1.5
NOS	99	V	300-150	1598	8	0	6.9	0.0
NSH	99	V	300-150	34	0	0	2.6	0.4
NUM	99	V	300-150	27	0	0	3.4	1.3
NVR	99	V	300-150	88	0	0	3.4	-0.3
OAE	99	V	300-150	495	0	0	3.9	0.3
OCN	99	V	300-150	3730	0	0	3.2	0.2
OLI	99	V	300-150	56	0	0	2.6	0.3
OMA	99	V	300-150	2847	2	0	7.8	0.1
PAC	99	V	300-150	306	0	0	2.8	-0.1
PAC	99	V	300-150	32	0	0	2.2	0.3
PAL	99	V	300-150	1420	0	0	3.6	0.3
PEG	99	V	300-150	52	0	2	2.0	0.0
PIA	99	V	300-150	354	0	0	3.2	0.2
PJV	99	V	300-150	29	0	0	4.1	0.4
PJZ	99	V	300-150	34	0	0	2.8	0.7
PLF	99	V	300-150	63	0	0	2.7	0.1
PLM	99	V	300-150	20	0	0	3.5	-1.1
PVA	99	V	300-150	106	0	0	2.7	0.4
QAF	99	V	300-150	77	0	0	3.9	0.6
QFA	99	V	300-150	6957	1	0	6.1	0.5
QQE	99	V	300-150	236	0	0	3.3	0.6
QTR	99	V	300-150	32227	1	0	4.1	0.2
RAM	99	V	300-150	462	12	0	7.4	-0.3
RBA	99	V	300-150	243	5	0	9.7	0.1
RCH	99	V	300-150	3900	0	0	4.2	0.5
RCR	99	V	300-150	195	0	0	3.9	0.0
RHH	99	V	300-150	41	0	0	6.2	1.3
RJA	99	V	300-150	1950	6	0	7.5	-0.2
ROJ	99	V	300-150	45	0	0	3.7	0.1
ROM	99	V	300-150	51	0	0	6.8	-0.1
RRR	99	V	300-150	266	0	0	4.6	0.6
RSF	99	V	300-150	36	0	0	3.4	0.8
RTA	99	V	300-150	38	0	0	3.7	-0.3
RUN	99	V	300-150	54	0	0	4.2	2.4
RYR	99	V	300-150	1087	0	0	3.2	0.3
RZO	99	V	300-150	270	0	3	3.1	0.1
SAM	99	V	300-150	305	0	0	3.9	-0.4
SAS	99	V	300-150	5190	0	0	2.8	0.3
SAZ	99	V	300-150	165	0	0	2.7	-0.2
SCX	99	V	300-150	59	2	0	3.6	0.6
SEY	99	V	300-150	47	0	0	2.7	0.4



AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
SIA	99	V	300-150	9132	0	0	4.1	0.4
SIO	99	V	300-150	166	0	0	4.1	-0.2
SIS	99	V	300-150	56	0	0	4.3	0.5
SJE	99	V	300-150	33	0	0	2.2	0.0
SLM	99	V	300-150	139	0	0	3.0	0.0
SNO	99	V	300-150	24	0	0	1.8	0.0
SON	99	V	300-150	100	0	0	3.6	-0.5
SPA	99	V	300-150	79	0	0	2.3	0.2
SUI	99	V	300-150	34	0	0	3.9	0.8
SVA	99	V	300-150	8981	1	0	4.7	0.4
SVW	99	V	300-150	273	0	0	3.7	0.7
SWR	99	V	300-150	9874	0	1	3.2	0.1
SWW	99	V	300-150	80	0	0	3.7	-0.3
SYB	99	V	300-150	162	0	0	3.2	-0.2
TAM	99	V	300-150	23	0	4	2.8	0.0
TAP	99	V	300-150	3353	0	0	3.4	0.2
TAR	99	V	300-150	277	0	0	2.7	0.1
TAY	99	V	300-150	378	0	0	3.4	-0.1
TEU	99	V	300-150	51	0	0	3.9	-0.2
TFF	99	V	300-150	31	0	0	2.6	-0.4
TFL	99	V	300-150	1651	10	0	9.1	0.0
TGW	99	V	300-150	831	3	0	8.4	0.4
THA	99	V	300-150	5520	1	0	5.6	0.3
THT	99	V	300-150	3752	3	0	7.3	0.6
THY	99	V	300-150	17574	1	0	4.4	0.2
TMN	99	V	300-150	380	0	0	4.3	0.7
TOM	99	V	300-150	4133	8	0	8.2	0.0
TOW	99	V	300-150	68	0	0	4.6	0.8
TSC	99	V	300-150	4434	0	0	3.5	0.3
TWY	99	V	300-150	475	0	0	3.6	0.1
UAE	99	V	300-150	28827	0	0	3.6	0.3
UAF	99	V	300-150	50	0	0	4.5	0.9
UAL	99	V	300-150	73787	2	1	5.4	0.1
UBT	99	V	300-150	985	5	0	8.5	-0.1
ULC	99	V	300-150	72	0	1	3.0	0.7
UNI	99	V	300-150	100	0	0	3.8	0.7
UPS	99	V	300-150	6641	0	0	3.3	-0.1
UZB	99	V	300-150	241	0	0	4.2	0.2
VCG	99	V	300-150	58	0	0	3.7	0.9
VIR	99	V	300-150	20727	2	0	5.1	0.1
VJC	99	V	300-150	195	0	0	3.3	0.1
VJT	99	V	300-150	1820	0	0	3.2	0.3
VKG	99	V	300-150	126	0	0	3.0	0.3

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
VLZ	99	V	300-150	248	0	0	3.2	0.3
VSV	99	V	300-150	101	0	0	4.4	0.7
VTI	99	V	300-150	2193	0	0	3.3	0.3
WDY	99	V	300-150	21	0	0	2.2	1.0
WFL	99	V	300-150	182	0	1	3.4	0.2
WGN	99	V	300-150	76	0	0	3.4	0.1
WJA	99	V	300-150	1293	4	0	7.0	0.2
WWI	99	V	300-150	21	0	0	3.1	-0.4
XAX	99	V	300-150	652	0	0	3.8	0.7
XRO	99	V	300-150	71	0	0	3.7	0.6

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	50	30	7.2	-3.4
01001	00	Z	50	24	24.4	-20.7
01028	00	Z	50	30	6.3	-3.4
01028	12	Z	50	30	8.3	-5.2
01400	12	Z	50	24	71.5	71.2
01400	00	Z	50	21	80.0	79.7
01415	00	Z	50	29	8.0	3.4
01415	12	Z	50	29	6.6	-2.3
02365	12	Z	50	29	6.7	-2.4
02365	00	Z	50	29	7.4	1.5
02591	12	Z	50	4	5.3	4.6
02591	00	Z	50	3	7.1	6.8
02836	00	Z	50	30	5.8	-0.7
02836	12	Z	50	33	4.9	-1.9
02963	12	Z	50	30	6.2	-4.3
02963	00	Z	50	30	5.7	4.2
03005	12	Z	50	29	9.8	-5.9
03005	00	Z	50	29	5.6	-0.9
03238	12	Z	50	3	11.1	9.8
03238	00	Z	50	16	4.4	2.6
03808	00	Z	50	29	6.1	2.9
03808	12	Z	50	30	7.9	-0.9
03918	12	Z	50	3	9.8	-1.3
03918	00	Z	50	29	9.3	2.9
03953	00	Z	50	30	7.7	-6.1
03953	12	Z	50	30	10.0	-2.8
04018	00	Z	50	22	7.7	-3.5
04018	12	Z	50	26	6.3	-4.0
04220	12	Z	50	29	12.5	-8.6
04220	00	Z	50	30	27.1	-22.4
04270	12	Z	50	29	21.4	-18.6
04270	00	Z	50	29	21.7	-18.6
04320	00	Z	50	30	9.5	-3.7
04320	12	Z	50	30	9.5	3.1
04339	00	Z	50	30	45.0	-19.6
04339	12	Z	50	27	10.8	-5.5
04360	12	Z	50	28	9.4	0.6
04360	00	Z	50	29	15.9	-8.9
06011	00	Z	50	25	10.9	1.9

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	50	30	11.7	3.1
06260	12	Z	50	5	7.2	-4.6
06260	00	Z	50	28	5.6	0.4
06610	12	Z	50	30	6.9	3.4
06610	00	Z	50	30	7.1	3.1
07110	12	Z	50	27	27.8	-26.7
07110	00	Z	50	25	31.1	-29.9
07510	00	Z	50	30	14.7	9.9
07510	12	Z	50	29	13.7	10.1
07645	00	Z	50	26	30.7	-16.8
07645	12	Z	50	28	30.6	-27.8
07761	12	Z	50	30	17.0	-10.3
07761	00	Z	50	30	22.4	-13.2
08001	00	Z	50	28	9.0	0.7
08001	12	Z	50	29	9.0	-1.1
08221	00	Z	50	30	9.6	6.5
08221	12	Z	50	30	7.4	1.5
08302	00	Z	50	30	6.1	-1.1
08302	12	Z	50	29	16.5	-13.5
08508	12	Z	50	14	14.1	-4.8
08522	12	Z	50	15	4.0	-1.5
10035	00	Z	50	29	14.5	13.7
10035	12	Z	50	29	11.5	9.4
10393	00	Z	50	30	10.7	3.7
10393	12	Z	50	30	6.3	-1.0
10410	12	Z	50	31	8.3	-4.4
10410	00	Z	50	30	7.0	-1.2
10739	12	Z	50	30	7.7	1.4
10739	00	Z	50	30	7.7	6.2
11035	00	Z	50	30	9.9	5.3
11035	12	Z	50	30	22.4	16.4
12982	00	Z	50	30	7.5	5.0
12982	12	Z	50	30	6.2	1.9
16245	00	Z	50	30	6.6	4.4
16245	12	Z	50	30	9.6	-3.5
16429	12	Z	50	29	8.4	-0.3
16429	00	Z	50	29	11.4	8.3
16622	00	Z	50	28	14.1	10.4
16754	00	Z	50	25	14.7	11.1
17607	12	Z	50	17	9.4	4.3
26435	12	Z	50	15	4.9	-1.9
2EERV	12	Z	50	3	45.5	36.6
2EERV	00	Z	50	4	9.0	4.5

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
60018	12	Z	50	30	7.5	-1.8
60018	00	Z	50	30	9.8	8.4
7JUNA4	00	Z	50	5	22.1	11.0
7JUNA4	12	Z	50	7	171.0	151.4
9ZT9MR	00	Z	50	8	39.5	-32.0
9ZT9MR	12	Z	50	12	143.5	-87.1
ASDE09	12	Z	50	1	1.0	-1.0
ATGU3F	00	Z	50	5	27.4	-23.5
ATGU3F	12	Z	50	11	25.5	-9.8
BPMWB2	12	Z	50	4	12.5	-9.4
BPMWB2	00	Z	50	8	35.4	2.1
DBLK	12	Z	50	5	13.2	12.1
GQBZLZ	12	Z	50	0	0.0	0.0
GQBZLZ	00	Z	50	0	0.0	0.0
JNKN7J	12	Z	50	13	123.3	71.4
JNKN7J	00	Z	50	9	29.0	26.2
KJFF9X	12	Z	50	5	4.3	-2.4
KJFF9X	00	Z	50	6	13.1	5.8
KMPLHP	12	Z	50	10	135.9	106.5
KMPLHP	00	Z	50	10	41.4	7.8
LRYQE3	12	Z	50	7	21.0	-17.4
LRYQE3	00	Z	50	8	54.4	11.5
XKQLWQ	12	Z	50	17	49.9	39.9
XQFJRG	12	Z	50	3	4.3	-0.6
XQFJRG	00	Z	50	5	6.0	-2.9
YLV96W	00	Z	50	10	79.1	18.1
YLV96W	12	Z	50	8	103.3	72.6

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	50	30	3.1	0.2	0.1
01001	00	V	50	22	2.5	0.0	-0.4
01028	00	V	50	29	2.5	0.5	0.1
01028	12	V	50	30	2.6	0.0	-0.2
01400	12	V	50	23	3.4	0.5	0.0
01400	00	V	50	17	2.5	0.9	0.2
01415	00	V	50	29	3.2	0.9	0.5
01415	12	V	50	29	3.3	0.8	0.3
02365	12	V	50	29	2.9	0.1	1.1
02365	00	V	50	24	2.4	0.2	0.7
02591	12	V	50	4	2.4	-0.8	-0.9
02591	00	V	50	2	1.4	0.3	0.1
02836	00	V	50	30	2.6	-0.2	-0.3
02836	12	V	50	30	3.0	-0.4	-0.1
02963	12	V	50	30	2.6	-0.8	-0.2
02963	00	V	50	30	2.5	-0.6	0.2
03005	12	V	50	29	2.8	-0.1	-0.1
03005	00	V	50	28	3.5	0.0	-0.7
03238	12	V	50	3	2.8	-1.2	1.1
03238	00	V	50	15	2.3	-0.2	-0.4
03808	00	V	50	28	2.3	0.7	-0.2
03808	12	V	50	29	3.1	0.1	0.0
03918	12	V	50	3	1.4	-0.2	0.1
03918	00	V	50	29	2.5	-0.2	-0.1
03953	00	V	50	30	3.4	1.0	0.2
03953	12	V	50	30	2.5	0.5	0.3
04018	00	V	50	17	2.9	0.3	-0.2
04018	12	V	50	26	3.0	0.5	-0.1
04220	12	V	50	29	2.6	0.3	-0.2
04220	00	V	50	27	2.1	0.3	0.1
04270	12	V	50	29	2.4	0.2	0.0
04270	00	V	50	29	2.7	-0.1	0.9
04320	00	V	50	30	2.8	-0.2	-0.7
04320	12	V	50	30	2.8	0.3	-0.3
04339	00	V	50	28	2.5	0.1	0.7
04339	12	V	50	27	3.3	-0.1	-0.5
04360	12	V	50	28	2.8	-0.8	0.5
04360	00	V	50	29	2.9	-0.4	0.1
06011	00	V	50	25	2.9	0.0	-0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	50	30	3.0	-0.1	-0.7
06260	12	V	50	5	3.8	-0.7	-0.6
06260	00	V	50	28	2.9	0.8	0.4
06610	12	V	50	30	3.1	0.1	0.3
06610	00	V	50	30	3.4	0.1	-0.2
07110	12	V	50	27	2.4	0.5	-0.4
07110	00	V	50	25	2.1	0.1	0.1
07510	00	V	50	28	2.7	0.0	0.1
07510	12	V	50	29	3.5	-0.1	0.3
07645	00	V	50	23	3.3	0.4	0.0
07645	12	V	50	28	3.7	0.8	-0.8
07761	12	V	50	30	3.6	-0.2	-0.2
07761	00	V	50	29	3.7	1.1	-0.6
08001	00	V	50	28	2.7	0.5	-0.5
08001	12	V	50	29	3.0	-0.2	-0.4
08221	00	V	50	30	3.3	0.0	0.5
08221	12	V	50	30	3.1	-0.9	-0.1
08302	00	V	50	30	4.0	0.7	-0.3
08302	12	V	50	29	3.8	0.1	-0.6
08508	12	V	50	14	3.8	1.2	-0.2
08522	12	V	50	15	4.9	0.4	-1.9
10035	00	V	50	28	2.7	0.4	0.0
10035	12	V	50	29	2.8	0.5	-0.3
10393	00	V	50	30	2.8	0.0	-0.6
10393	12	V	50	30	2.5	0.5	0.2
10410	12	V	50	30	2.9	-0.7	-0.2
10410	00	V	50	29	2.6	-0.4	0.0
10739	12	V	50	30	3.1	-0.1	-0.9
10739	00	V	50	29	3.0	-0.2	-0.4
11035	00	V	50	29	3.3	-0.3	-0.1
11035	12	V	50	30	3.2	-0.1	-0.6
12982	00	V	50	30	3.2	0.5	-0.1
12982	12	V	50	29	3.3	-0.4	0.2
16245	00	V	50	30	3.4	0.5	-0.1
16245	12	V	50	30	4.3	1.6	-0.4
16429	12	V	50	29	3.7	1.0	0.0
16429	00	V	50	29	3.7	0.5	0.1
16622	00	V	50	22	3.8	0.3	-1.1
16754	00	V	50	19	5.2	0.0	-1.8
17607	12	V	50	5	4.6	-3.5	0.0
26435	12	V	50	15	2.7	-0.2	0.4
2EERV	12	V	50	3	3.1	1.8	-1.2
2EERV	00	V	50	4	2.8	-0.2	-0.3



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
60018	12	V	50	30	3.7	0.6	0.5
60018	00	V	50	30	3.5	-0.5	0.2
7JUNA4	00	V	50	5	1.8	0.6	0.7
7JUNA4	12	V	50	7	3.2	-0.8	-1.7
9ZT9MR	00	V	50	8	3.1	-0.3	-0.9
9ZT9MR	12	V	50	12	3.0	-0.6	0.8
ASDE09	12	V	50	1	1.9	-1.9	0.2
ATGU3F	00	V	50	5	3.2	1.2	-0.7
ATGU3F	12	V	50	11	2.7	0.2	-0.3
BPMWB2	12	V	50	4	3.2	1.0	-1.2
BPMWB2	00	V	50	8	4.8	1.7	-2.0
DBLK	12	V	50	5	5.0	-1.0	-0.5
GQBZLZ	12	V	50	0	0.0	0.0	0.0
GQBZLZ	00	V	50	0	0.0	0.0	0.0
JNKN7J	12	V	50	13	2.5	0.0	0.2
JNKN7J	00	V	50	9	2.8	-0.7	0.4
KJFF9X	12	V	50	5	3.4	1.6	1.1
KJFF9X	00	V	50	6	2.9	-0.3	1.1
KMPLHP	12	V	50	10	2.5	-0.4	-0.1
KMPLHP	00	V	50	10	2.7	1.8	0.7
LRYQE3	12	V	50	7	2.7	-0.7	-0.3
LRYQE3	00	V	50	8	3.3	0.4	1.4
XKQLWQ	12	V	50	15	3.7	-0.4	0.6
XQFJRG	12	V	50	3	2.6	2.0	1.2
XQFJRG	00	V	50	5	3.5	-0.7	0.4
YLV96W	00	V	50	10	2.5	0.8	0.0
YLV96W	12	V	50	8	3.1	-0.4	0.6

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	100	30	8.1	-4.2
01001	00	Z	100	24	20.8	-19.0
01028	00	Z	100	30	6.2	-4.1
01028	12	Z	100	30	7.6	-5.0
01400	12	Z	100	26	71.2	71.0
01400	00	Z	100	24	75.5	75.1
01415	00	Z	100	29	6.1	1.8
01415	12	Z	100	29	5.8	-1.9
02365	12	Z	100	30	5.3	-1.9
02365	00	Z	100	29	6.3	-0.1
02591	12	Z	100	5	3.3	1.3
02591	00	Z	100	3	3.9	2.6
02836	00	Z	100	30	4.1	-2.4
02836	12	Z	100	32	5.0	-2.9
02963	12	Z	100	30	3.3	-2.2
02963	00	Z	100	30	3.6	1.7
03005	12	Z	100	31	8.0	-5.3
03005	00	Z	100	29	4.4	-1.6
03238	12	Z	100	3	6.4	5.1
03238	00	Z	100	16	3.7	0.1
03808	00	Z	100	29	5.0	1.3
03808	12	Z	100	30	6.3	-2.1
03918	12	Z	100	3	10.3	0.7
03918	00	Z	100	30	5.9	0.6
03953	00	Z	100	30	8.5	-7.4
03953	12	Z	100	30	10.1	-5.0
04018	00	Z	100	25	7.4	-3.4
04018	12	Z	100	28	5.2	-3.0
04220	12	Z	100	29	10.8	-9.1
04220	00	Z	100	30	23.0	-19.6
04270	12	Z	100	29	17.0	-14.9
04270	00	Z	100	29	20.6	-17.4
04320	00	Z	100	30	8.6	-4.8
04320	12	Z	100	30	7.0	2.1
04339	00	Z	100	30	16.3	-13.7
04339	12	Z	100	27	11.7	-7.6
04360	12	Z	100	28	7.3	-3.5
04360	00	Z	100	29	14.6	-10.8
06011	00	Z	100	29	9.0	-0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	100	30	10.4	1.3
06260	12	Z	100	5	7.2	-3.2
06260	00	Z	100	28	5.7	-2.4
06610	12	Z	100	30	5.6	0.8
06610	00	Z	100	30	4.4	-1.3
07110	12	Z	100	27	25.8	-25.0
07110	00	Z	100	26	27.3	-26.2
07510	00	Z	100	30	9.8	4.7
07510	12	Z	100	29	10.7	7.3
07645	00	Z	100	29	27.9	-23.9
07645	12	Z	100	28	25.2	-22.2
07761	12	Z	100	30	16.0	-12.3
07761	00	Z	100	30	24.1	-16.9
08001	00	Z	100	29	8.0	-1.6
08001	12	Z	100	30	6.5	-0.9
08221	00	Z	100	30	7.2	1.6
08221	12	Z	100	30	6.5	1.5
08302	00	Z	100	30	8.2	-6.5
08302	12	Z	100	29	15.5	-13.1
08508	12	Z	100	14	9.1	0.0
08522	12	Z	100	15	3.7	1.7
10035	00	Z	100	30	12.7	11.4
10035	12	Z	100	29	10.3	9.1
10393	00	Z	100	30	7.8	-0.1
10393	12	Z	100	30	4.8	-2.9
10410	12	Z	100	31	7.3	-4.8
10410	00	Z	100	31	6.4	-2.8
10739	12	Z	100	30	4.7	0.1
10739	00	Z	100	30	4.5	2.4
11035	00	Z	100	30	5.2	0.7
11035	12	Z	100	30	14.4	9.0
12982	00	Z	100	30	5.3	3.0
12982	12	Z	100	30	4.4	-0.2
16245	00	Z	100	30	4.7	0.9
16245	12	Z	100	30	7.4	-3.1
16429	12	Z	100	29	5.4	-0.7
16429	00	Z	100	29	7.2	3.6
16622	00	Z	100	30	10.5	7.9
16754	00	Z	100	29	9.7	4.6
17607	12	Z	100	22	6.5	-0.9
26435	12	Z	100	15	4.3	-2.3
2EERV	12	Z	100	2	12.9	11.3
2EERV	00	Z	100	5	5.2	1.5

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
60018	12	Z	100	30	4.7	1.5
60018	00	Z	100	30	8.1	6.0
7JUNA4	00	Z	100	5	9.5	-6.8
7JUNA4	12	Z	100	7	88.1	75.9
9ZT9MR	00	Z	100	9	36.4	-30.1
9ZT9MR	12	Z	100	12	144.7	-89.6
ASDE09	12	Z	100	2	22.5	20.6
ATGU3F	00	Z	100	7	30.5	-27.0
ATGU3F	12	Z	100	12	25.4	-15.9
BPMWB2	12	Z	100	4	9.2	-8.0
BPMWB2	00	Z	100	9	27.6	-0.2
DBLK	12	Z	100	5	14.4	12.8
GQBZLZ	12	Z	100	1	12.8	-12.8
GQBZLZ	00	Z	100	1	46.4	-46.4
JNKN7J	12	Z	100	14	48.5	40.6
JNKN7J	00	Z	100	9	28.7	27.3
KJFF9X	12	Z	100	5	6.8	1.1
KJFF9X	00	Z	100	6	9.1	1.1
KMPLHP	12	Z	100	11	98.1	76.8
KMPLHP	00	Z	100	11	38.3	8.9
LRYQE3	12	Z	100	7	16.7	-14.7
LRYQE3	00	Z	100	8	9.7	-4.1
XKQLWQ	12	Z	100	18	44.2	21.6
XQFJRG	12	Z	100	3	5.6	-4.6
XQFJRG	00	Z	100	6	10.2	-6.8
YLV96W	00	Z	100	11	76.3	16.3
YLV96W	12	Z	100	12	65.5	39.2

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	100	30	2.6	-0.8	0.2
01001	00	V	100	22	2.3	0.3	0.1
01028	00	V	100	29	2.7	-0.1	0.2
01028	12	V	100	30	2.6	-0.6	0.7
01400	12	V	100	25	2.2	0.5	0.1
01400	00	V	100	22	2.6	-0.7	0.0
01415	00	V	100	29	2.4	0.4	-0.2
01415	12	V	100	29	2.5	0.1	0.3
02365	12	V	100	30	2.3	0.2	-0.1
02365	00	V	100	29	2.1	0.1	0.2
02591	12	V	100	5	2.9	-1.8	0.2
02591	00	V	100	3	3.0	0.0	1.0
02836	00	V	100	30	3.0	0.3	-0.4
02836	12	V	100	30	2.3	0.0	0.0
02963	12	V	100	30	2.3	0.1	0.0
02963	00	V	100	30	2.2	0.6	-0.2
03005	12	V	100	30	2.2	0.3	0.1
03005	00	V	100	28	2.3	-0.1	0.2
03238	12	V	100	3	2.1	0.8	-0.1
03238	00	V	100	15	2.1	0.7	-0.1
03808	00	V	100	28	3.0	0.2	-0.8
03808	12	V	100	30	3.0	0.0	0.0
03918	12	V	100	3	1.8	0.4	1.3
03918	00	V	100	30	3.0	0.6	-0.6
03953	00	V	100	30	2.8	0.2	-0.7
03953	12	V	100	30	3.2	-0.3	-0.3
04018	00	V	100	23	2.7	0.5	0.7
04018	12	V	100	28	2.9	-0.3	-0.2
04220	12	V	100	29	2.1	-0.4	-0.2
04220	00	V	100	29	2.3	0.4	0.0
04270	12	V	100	29	2.5	-0.4	0.2
04270	00	V	100	29	2.8	-0.2	0.1
04320	00	V	100	30	2.7	-0.5	-0.2
04320	12	V	100	30	2.7	-0.1	0.3
04339	00	V	100	29	3.1	0.4	0.1
04339	12	V	100	27	2.8	0.0	-0.3
04360	12	V	100	28	3.3	-0.5	0.1
04360	00	V	100	29	2.0	0.1	-0.2
06011	00	V	100	29	2.5	0.6	0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	100	30	2.3	0.1	0.3
06260	12	V	100	5	3.3	-0.8	-0.4
06260	00	V	100	28	2.5	0.4	-0.2
06610	12	V	100	30	3.6	-0.8	0.0
06610	00	V	100	30	3.3	0.5	-0.3
07110	12	V	100	27	2.8	0.6	0.1
07110	00	V	100	26	2.7	0.1	-0.3
07510	00	V	100	28	2.6	0.3	0.2
07510	12	V	100	29	2.8	0.4	0.2
07645	00	V	100	25	3.0	0.6	-0.1
07645	12	V	100	28	3.5	-0.2	0.3
07761	12	V	100	30	4.3	-0.2	-0.1
07761	00	V	100	29	4.0	0.6	-0.8
08001	00	V	100	29	3.4	0.1	-0.6
08001	12	V	100	30	3.3	0.9	-0.6
08221	00	V	100	30	3.8	1.2	-0.2
08221	12	V	100	30	2.8	0.1	-0.3
08302	00	V	100	30	3.2	-0.3	0.1
08302	12	V	100	29	3.5	0.6	0.1
08508	12	V	100	14	4.0	-1.0	-0.4
08522	12	V	100	15	4.0	-0.6	0.1
10035	00	V	100	30	2.5	0.9	0.0
10035	12	V	100	29	2.2	-0.2	-0.3
10393	00	V	100	30	2.5	-0.2	-0.5
10393	12	V	100	30	2.4	-0.1	-0.3
10410	12	V	100	30	2.3	0.0	-0.3
10410	00	V	100	30	2.2	0.0	-0.4
10739	12	V	100	30	2.6	0.7	-0.2
10739	00	V	100	30	2.8	0.5	0.3
11035	00	V	100	29	2.6	0.8	0.0
11035	12	V	100	30	2.4	-0.1	-0.2
12982	00	V	100	30	3.4	0.1	0.1
12982	12	V	100	30	2.6	0.0	-0.3
16245	00	V	100	30	3.0	0.5	0.2
16245	12	V	100	30	3.7	1.4	-0.3
16429	12	V	100	29	4.9	1.1	0.7
16429	00	V	100	29	4.8	0.1	0.2
16622	00	V	100	26	2.7	0.0	0.0
16754	00	V	100	26	3.6	0.5	-1.1
17607	12	V	100	9	2.8	-0.2	-0.6
26435	12	V	100	15	2.4	-0.6	-0.3
2EERV	12	V	100	2	6.9	3.7	2.7
2EERV	00	V	100	5	3.1	1.2	-1.2

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
60018	12	V	100	30	4.0	0.4	-0.1
60018	00	V	100	30	3.5	0.0	0.5
7JUNA4	00	V	100	5	4.0	0.8	1.0
7JUNA4	12	V	100	7	4.1	-0.7	0.8
9ZT9MR	00	V	100	9	2.0	0.3	0.8
9ZT9MR	12	V	100	12	2.8	0.4	0.3
ASDE09	12	V	100	2	1.8	-0.9	0.1
ATGU3F	00	V	100	7	2.8	0.3	0.1
ATGU3F	12	V	100	12	2.1	-0.1	1.2
BPMWB2	12	V	100	4	2.2	1.2	-1.0
BPMWB2	00	V	100	9	7.6	-2.3	2.5
DBLK	12	V	100	5	3.1	-0.5	0.2
GQBZLZ	12	V	100	1	1.7	1.4	-1.0
GQBZLZ	00	V	100	1	4.6	4.0	-2.3
JNKN7J	12	V	100	14	4.0	0.9	0.8
JNKN7J	00	V	100	9	3.7	0.8	-0.1
KJFF9X	12	V	100	5	3.3	1.2	1.0
KJFF9X	00	V	100	6	2.2	-0.3	0.7
KMPLHP	12	V	100	11	3.6	0.1	0.0
KMPLHP	00	V	100	11	2.5	1.0	-0.6
LRYQE3	12	V	100	7	3.2	1.8	-1.5
LRYQE3	00	V	100	8	4.4	-0.1	-0.6
XKQLWQ	12	V	100	18	4.5	1.2	1.6
XQFJRG	12	V	100	3	2.5	1.5	0.8
XQFJRG	00	V	100	6	2.9	-0.3	-1.1
YLV96W	00	V	100	11	2.3	-0.4	-0.5
YLV96W	12	V	100	12	2.8	0.2	0.5

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	500	30	6.5	0.5
01001	00	Z	500	30	11.7	-10.3
01028	00	Z	500	30	3.1	-0.4
01028	12	Z	500	30	3.5	-0.5
01400	12	Z	500	27	76.1	76.0
01400	00	Z	500	27	76.1	75.9
01415	00	Z	500	29	4.4	2.9
01415	12	Z	500	29	4.6	3.1
02365	12	Z	500	30	4.1	2.4
02365	00	Z	500	29	4.2	2.6
02591	12	Z	500	5	6.6	6.5
02591	00	Z	500	3	3.9	3.6
02836	00	Z	500	30	3.1	1.9
02836	12	Z	500	32	3.5	1.6
02963	12	Z	500	30	4.2	3.1
02963	00	Z	500	30	4.6	3.7
03005	12	Z	500	31	4.6	-0.3
03005	00	Z	500	30	2.9	-0.9
03238	12	Z	500	3	3.8	3.5
03238	00	Z	500	16	3.4	2.0
03808	00	Z	500	30	3.8	2.4
03808	12	Z	500	31	4.7	1.8
03918	12	Z	500	2	6.2	5.7
03918	00	Z	500	30	5.9	5.2
03953	00	Z	500	30	3.9	-2.7
03953	12	Z	500	30	4.7	-0.3
04018	00	Z	500	27	3.0	0.6
04018	12	Z	500	28	2.6	0.3
04220	12	Z	500	29	6.1	-4.1
04220	00	Z	500	30	8.6	-6.8
04270	12	Z	500	30	9.8	-6.4
04270	00	Z	500	31	15.2	-9.7
04320	00	Z	500	30	5.0	1.6
04320	12	Z	500	30	6.7	5.5
04339	00	Z	500	29	7.4	-6.5
04339	12	Z	500	27	9.2	-4.2
04360	12	Z	500	29	4.9	-3.7
04360	00	Z	500	30	6.8	-5.7
06011	00	Z	500	31	6.0	0.6



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	500	30	12.3	1.8
06260	12	Z	500	5	3.2	0.6
06260	00	Z	500	28	3.4	-0.9
06610	12	Z	500	30	2.6	1.3
06610	00	Z	500	30	3.1	1.3
07110	12	Z	500	28	10.8	-9.8
07110	00	Z	500	26	14.4	-10.1
07510	00	Z	500	30	6.2	4.6
07510	12	Z	500	33	7.9	6.9
07645	00	Z	500	34	11.6	-10.6
07645	12	Z	500	32	9.1	-8.3
07761	12	Z	500	30	8.3	-6.1
07761	00	Z	500	31	11.9	-9.3
08001	00	Z	500	29	3.9	3.0
08001	12	Z	500	30	3.5	2.4
08221	00	Z	500	30	4.7	3.1
08221	12	Z	500	30	4.9	4.2
08302	00	Z	500	30	6.5	-5.5
08302	12	Z	500	29	7.0	-6.3
08508	12	Z	500	14	7.3	4.9
08522	12	Z	500	15	6.3	5.9
10035	00	Z	500	30	12.9	12.6
10035	12	Z	500	29	12.9	12.6
10393	00	Z	500	30	3.2	1.4
10393	12	Z	500	30	2.4	0.2
10410	12	Z	500	31	3.8	-1.2
10410	00	Z	500	31	2.4	-0.6
10739	12	Z	500	30	3.8	2.5
10739	00	Z	500	30	5.5	4.7
11035	00	Z	500	30	4.1	1.8
11035	12	Z	500	32	4.9	0.9
12982	00	Z	500	30	3.6	2.8
12982	12	Z	500	30	3.6	1.5
16245	00	Z	500	30	3.4	0.7
16245	12	Z	500	30	2.7	0.0
16429	12	Z	500	30	2.9	1.4
16429	00	Z	500	29	3.1	2.0
16622	00	Z	500	30	8.5	7.8
16754	00	Z	500	29	5.4	2.3
17607	12	Z	500	22	3.3	1.5
26435	12	Z	500	15	2.2	0.7
2EERV	12	Z	500	2	1.1	0.9
2EERV	00	Z	500	5	6.7	-2.7

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
60018	12	Z	500	30	5.2	4.4
60018	00	Z	500	30	3.8	3.0
7JUNA4	00	Z	500	8	8.6	1.8
7JUNA4	12	Z	500	8	9.6	4.2
9ZT9MR	00	Z	500	9	51.5	-41.5
9ZT9MR	12	Z	500	12	42.1	-31.9
ASDE09	12	Z	500	2	28.6	28.6
ATGU3F	00	Z	500	9	25.9	-22.3
ATGU3F	12	Z	500	17	33.2	-22.6
BPMWB2	12	Z	500	11	39.8	9.3
BPMWB2	00	Z	500	13	8.3	-7.2
DBLK	12	Z	500	5	18.5	18.4
GQBZLZ	12	Z	500	2	10.8	-9.7
GQBZLZ	00	Z	500	3	28.0	-24.9
JNKN7J	12	Z	500	16	40.2	40.0
JNKN7J	00	Z	500	10	37.9	37.6
KJFF9X	12	Z	500	6	5.0	3.4
KJFF9X	00	Z	500	7	8.4	-5.5
KMPLHP	12	Z	500	11	49.2	42.0
KMPLHP	00	Z	500	11	50.5	22.7
LRYQE3	12	Z	500	8	6.7	-0.8
LRYQE3	00	Z	500	10	5.1	0.8
XKQLWQ	12	Z	500	18	39.8	10.7
XQFJRG	12	Z	500	5	6.4	-5.0
XQFJRG	00	Z	500	6	10.8	-9.0
YLV96W	00	Z	500	14	24.2	2.8
YLV96W	12	Z	500	17	4.8	-2.5

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	500	30	2.4	0.1	-0.3
01001	00	V	500	29	2.4	-0.4	-0.7
01028	00	V	500	30	2.2	0.0	0.3
01028	12	V	500	30	2.5	0.0	0.6
01400	12	V	500	27	3.1	0.7	0.3
01400	00	V	500	27	1.9	0.1	0.2
01415	00	V	500	29	2.5	0.3	0.4
01415	12	V	500	29	2.1	0.2	-0.1
02365	12	V	500	30	2.1	-0.1	0.2
02365	00	V	500	29	2.1	-0.4	-0.1
02591	12	V	500	5	1.8	0.3	0.3
02591	00	V	500	3	2.3	-0.2	1.3
02836	00	V	500	30	2.3	0.3	0.0
02836	12	V	500	30	2.3	0.3	-0.1
02963	12	V	500	30	2.1	-0.2	0.1
02963	00	V	500	30	2.5	-0.3	0.5
03005	12	V	500	30	2.8	0.4	0.2
03005	00	V	500	29	1.8	0.0	0.2
03238	12	V	500	3	2.4	-1.7	-0.7
03238	00	V	500	16	1.8	0.1	0.3
03808	00	V	500	28	2.5	0.5	-0.1
03808	12	V	500	30	2.3	-0.3	0.2
03918	12	V	500	2	2.3	-0.5	-2.1
03918	00	V	500	30	2.3	0.1	-0.1
03953	00	V	500	30	3.2	0.2	0.3
03953	12	V	500	30	3.2	0.7	-0.2
04018	00	V	500	27	2.6	0.3	0.4
04018	12	V	500	28	2.7	0.4	0.1
04220	12	V	500	29	2.9	0.1	-0.2
04220	00	V	500	30	2.3	0.0	0.1
04270	12	V	500	30	3.5	0.2	0.2
04270	00	V	500	30	3.2	0.3	0.1
04320	00	V	500	30	2.5	0.6	-0.1
04320	12	V	500	30	2.0	0.0	-0.3
04339	00	V	500	29	2.7	-0.8	-0.1
04339	12	V	500	27	3.0	0.3	-0.7
04360	12	V	500	29	3.1	0.1	0.3
04360	00	V	500	30	3.3	-0.3	-0.2
06011	00	V	500	30	3.1	0.0	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	500	30	2.9	-0.2	-0.2
06260	12	V	500	5	1.7	-0.5	-0.6
06260	00	V	500	28	2.2	-0.1	-0.1
06610	12	V	500	30	2.6	0.5	-0.2
06610	00	V	500	30	3.0	0.1	-0.3
07110	12	V	500	27	2.3	0.2	0.1
07110	00	V	500	26	2.5	-0.4	-0.1
07510	00	V	500	30	2.4	0.1	0.7
07510	12	V	500	30	3.2	0.9	-0.1
07645	00	V	500	30	2.1	0.0	0.2
07645	12	V	500	30	3.0	0.3	-0.5
07761	12	V	500	30	2.8	0.7	-0.4
07761	00	V	500	30	3.1	0.4	0.0
08001	00	V	500	29	2.5	0.7	0.2
08001	12	V	500	30	2.5	0.3	0.3
08221	00	V	500	30	2.5	-0.1	-0.1
08221	12	V	500	30	2.3	0.4	-0.1
08302	00	V	500	30	2.5	0.3	-0.5
08302	12	V	500	29	2.7	0.7	-0.9
08508	12	V	500	14	3.0	0.6	0.7
08522	12	V	500	15	2.0	0.2	0.3
10035	00	V	500	30	3.1	0.3	0.7
10035	12	V	500	29	2.1	0.3	0.1
10393	00	V	500	30	2.3	-0.2	0.3
10393	12	V	500	30	3.3	0.5	0.4
10410	12	V	500	30	2.3	0.4	-0.4
10410	00	V	500	30	2.5	0.4	-0.4
10739	12	V	500	30	2.3	0.3	-0.1
10739	00	V	500	30	2.3	-0.1	0.0
11035	00	V	500	30	2.9	0.6	-0.2
11035	12	V	500	30	2.8	-0.8	0.0
12982	00	V	500	30	2.1	-0.3	0.4
12982	12	V	500	30	2.9	-0.4	0.0
16245	00	V	500	30	2.6	0.0	-0.2
16245	12	V	500	30	3.2	0.0	0.2
16429	12	V	500	30	3.3	0.6	0.3
16429	00	V	500	29	2.5	0.5	-0.1
16622	00	V	500	30	2.6	-0.3	0.0
16754	00	V	500	29	2.7	1.2	-0.2
17607	12	V	500	20	5.3	-1.0	-0.2
26435	12	V	500	15	1.8	0.8	0.3
2EERV	12	V	500	2	3.2	2.2	-1.5
2EERV	00	V	500	5	1.9	-0.4	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
60018	12	V	500	30	2.3	0.6	-0.1
60018	00	V	500	30	2.3	0.4	-0.6
7JUNA4	00	V	500	8	2.0	-0.1	0.6
7JUNA4	12	V	500	8	2.6	1.3	0.2
9ZT9MR	00	V	500	9	2.8	0.1	0.2
9ZT9MR	12	V	500	11	7.3	-0.4	-3.0
ASDE09	12	V	500	2	1.1	0.8	0.5
ATGU3F	00	V	500	9	2.2	-0.2	0.2
ATGU3F	12	V	500	17	2.2	-0.1	-0.3
BPMWB2	12	V	500	11	3.3	-0.7	0.1
BPMWB2	00	V	500	13	3.4	-0.1	-0.8
DBLK	12	V	500	5	2.8	0.3	0.8
GQBZLZ	12	V	500	2	3.6	0.0	1.3
GQBZLZ	00	V	500	3	1.3	-0.2	0.5
JNKN7J	12	V	500	16	2.3	0.6	0.1
JNKN7J	00	V	500	10	2.5	-0.9	0.6
KJFF9X	12	V	500	6	2.1	0.8	-1.2
KJFF9X	00	V	500	7	1.6	0.3	-0.3
KMPLHP	12	V	500	11	3.3	0.4	0.7
KMPLHP	00	V	500	11	3.6	0.5	1.3
LRYQE3	12	V	500	8	2.5	-0.3	-0.2
LRYQE3	00	V	500	10	3.5	0.1	-1.8
XKQLWQ	12	V	500	18	4.5	1.8	-0.4
XQFJRG	12	V	500	5	3.1	0.6	-0.6
XQFJRG	00	V	500	6	3.4	-0.6	2.0
YLV96W	00	V	500	14	2.1	-0.4	-0.8
YLV96W	12	V	500	17	2.5	0.4	0.1

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	850	30	4.3	-1.6
01001	00	Z	850	30	11.5	-10.3
01028	00	Z	850	30	3.0	-0.8
01028	12	Z	850	30	3.8	-1.1
01400	12	Z	850	27	75.7	75.6
01400	00	Z	850	27	74.9	74.7
01415	00	Z	850	29	2.7	2.2
01415	12	Z	850	29	2.8	2.1
02365	12	Z	850	30	2.8	1.8
02365	00	Z	850	29	3.6	2.9
02591	12	Z	850	5	7.7	7.6
02591	00	Z	850	3	6.6	6.6
02836	00	Z	850	31	3.2	2.7
02836	12	Z	850	30	2.7	2.2
02963	12	Z	850	30	3.3	2.7
02963	00	Z	850	30	3.1	2.4
03005	12	Z	850	31	2.3	-1.2
03005	00	Z	850	30	3.2	-2.0
03238	12	Z	850	3	2.2	1.4
03238	00	Z	850	16	3.0	2.0
03808	00	Z	850	30	3.0	2.1
03808	12	Z	850	31	3.5	2.5
03918	12	Z	850	2	8.7	8.6
03918	00	Z	850	30	6.3	6.1
03953	00	Z	850	30	2.8	-0.9
03953	12	Z	850	30	3.9	-0.6
04018	00	Z	850	27	2.0	-0.1
04018	12	Z	850	28	1.9	-1.1
04220	12	Z	850	29	4.9	-4.1
04220	00	Z	850	30	5.2	-4.4
04270	12	Z	850	30	10.2	-7.1
04270	00	Z	850	31	6.2	-5.6
04320	00	Z	850	30	4.3	-0.8
04320	12	Z	850	30	3.0	1.3
04339	00	Z	850	29	9.1	-8.1
04339	12	Z	850	27	8.7	-6.9
04360	12	Z	850	29	7.1	-6.3
04360	00	Z	850	30	7.3	-6.0
06011	00	Z	850	31	2.9	0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	850	30	3.4	2.3
06260	12	Z	850	5	3.6	2.6
06260	00	Z	850	28	2.4	-0.6
06610	12	Z	850	30	2.1	1.2
06610	00	Z	850	30	2.5	1.6
07110	12	Z	850	29	4.6	-4.0
07110	00	Z	850	26	6.2	-5.8
07510	00	Z	850	30	3.1	1.9
07510	12	Z	850	33	3.0	1.7
07645	00	Z	850	34	7.4	-6.9
07645	12	Z	850	32	8.8	-8.4
07761	12	Z	850	30	4.7	-3.3
07761	00	Z	850	31	4.8	-3.0
08001	00	Z	850	29	1.6	0.4
08001	12	Z	850	30	2.3	0.7
08221	00	Z	850	30	2.4	1.2
08221	12	Z	850	30	2.1	1.3
08302	00	Z	850	30	9.2	-8.9
08302	12	Z	850	29	9.6	-9.4
08508	12	Z	850	15	6.3	5.3
08522	12	Z	850	15	4.0	3.3
10035	00	Z	850	30	12.9	12.7
10035	12	Z	850	30	12.9	12.7
10393	00	Z	850	30	1.8	0.5
10393	12	Z	850	30	2.2	0.0
10410	12	Z	850	31	2.0	-0.2
10410	00	Z	850	31	2.4	-1.3
10739	12	Z	850	30	4.0	3.6
10739	00	Z	850	30	4.7	3.9
11035	00	Z	850	30	3.8	2.2
11035	12	Z	850	32	3.3	1.0
12982	00	Z	850	30	3.6	2.6
12982	12	Z	850	30	3.6	2.9
16245	00	Z	850	30	3.0	1.9
16245	12	Z	850	30	2.6	1.8
16429	12	Z	850	30	2.8	2.2
16429	00	Z	850	29	3.0	2.4
16622	00	Z	850	30	9.6	9.1
16754	00	Z	850	29	4.6	2.3
17607	12	Z	850	22	2.8	1.9
26435	12	Z	850	15	1.3	-0.1
2EERVT	12	Z	850	3	4.9	0.2
2EERVT	00	Z	850	5	6.9	-4.6

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
60018	12	Z	850	30	3.0	-0.3
60018	00	Z	850	30	2.5	-1.2
7JUNA4	00	Z	850	8	8.5	1.9
7JUNA4	12	Z	850	9	3.8	2.1
9ZT9MR	00	Z	850	9	25.4	-1.8
9ZT9MR	12	Z	850	12	32.0	7.7
ASDE09	12	Z	850	2	32.0	32.0
ATGU3F	00	Z	850	9	25.1	-8.3
ATGU3F	12	Z	850	17	20.1	-16.1
BPMWB2	12	Z	850	13	7.0	-5.9
BPMWB2	00	Z	850	14	8.6	-7.4
DBLK	12	Z	850	5	16.1	16.0
GQBZLZ	12	Z	850	2	16.6	-16.3
GQBZLZ	00	Z	850	3	28.9	-26.8
JNKN7J	12	Z	850	17	42.4	42.1
JNKN7J	00	Z	850	12	41.1	40.9
KJJF9X	12	Z	850	6	1.6	0.6
KJJF9X	00	Z	850	7	5.3	-3.4
KMPLHP	12	Z	850	11	46.6	38.7
KMPLHP	00	Z	850	10	45.4	37.3
LRYQE3	12	Z	850	8	4.9	-0.3
LRYQE3	00	Z	850	10	5.4	3.8
XKQLWQ	12	Z	850	18	22.2	0.7
XQFJRG	12	Z	850	6	6.1	-4.8
XQFJRG	00	Z	850	6	13.3	-10.4
YLV96W	00	Z	850	14	26.9	3.8
YLV96W	12	Z	850	17	7.3	-5.0



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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	850	30	4.1	0.4	-1.3
01001	00	V	850	29	3.0	0.3	0.1
01028	00	V	850	30	2.3	0.3	-0.2
01028	12	V	850	30	2.8	0.6	-0.5
01400	12	V	850	27	1.9	0.4	0.0
01400	00	V	850	27	2.5	0.0	0.4
01415	00	V	850	29	2.7	0.4	0.2
01415	12	V	850	29	2.3	0.4	0.0
02365	12	V	850	30	2.1	-0.5	0.3
02365	00	V	850	29	2.9	-0.5	0.1
02591	12	V	850	5	2.1	-0.5	-0.8
02591	00	V	850	3	2.1	0.2	1.0
02836	00	V	850	30	2.4	0.2	0.7
02836	12	V	850	30	2.7	0.0	-0.6
02963	12	V	850	30	2.5	0.2	-0.3
02963	00	V	850	30	2.1	-0.6	-0.3
03005	12	V	850	30	2.8	0.0	-0.3
03005	00	V	850	29	2.7	0.0	0.2
03238	12	V	850	3	1.8	-1.1	0.9
03238	00	V	850	16	2.2	-0.7	1.0
03808	00	V	850	29	2.1	0.3	0.0
03808	12	V	850	30	2.8	1.3	-0.1
03918	12	V	850	2	1.0	-0.7	-0.4
03918	00	V	850	30	2.7	-0.6	0.1
03953	00	V	850	30	2.3	0.3	0.0
03953	12	V	850	30	3.3	-0.1	-0.3
04018	00	V	850	27	2.5	-0.6	-0.2
04018	12	V	850	28	2.3	-0.2	-0.2
04220	12	V	850	29	2.3	0.1	0.2
04220	00	V	850	30	2.3	0.0	0.5
04270	12	V	850	30	3.5	-0.3	-0.6
04270	00	V	850	30	4.9	-0.8	-0.4
04320	00	V	850	30	2.5	0.4	0.5
04320	12	V	850	30	3.2	0.0	0.4
04339	00	V	850	29	3.4	-0.1	-0.8
04339	12	V	850	27	3.4	0.0	-0.3
04360	12	V	850	29	3.8	0.6	0.2
04360	00	V	850	30	5.7	2.7	1.2
06011	00	V	850	30	2.4	0.0	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	850	30	2.7	0.2	-0.5
06260	12	V	850	5	2.0	-0.2	-0.2
06260	00	V	850	28	2.2	0.0	-0.1
06610	12	V	850	30	2.9	0.8	0.1
06610	00	V	850	30	2.5	0.4	-0.1
07110	12	V	850	27	3.0	-0.7	-0.2
07110	00	V	850	26	2.5	0.0	-0.2
07510	00	V	850	30	2.4	0.0	0.1
07510	12	V	850	30	2.8	0.1	-0.5
07645	00	V	850	30	3.8	-0.3	0.9
07645	12	V	850	30	4.1	0.3	0.1
07761	12	V	850	30	3.5	-0.4	0.6
07761	00	V	850	30	3.2	0.5	0.3
08001	00	V	850	29	2.3	0.2	-0.3
08001	12	V	850	30	2.7	0.6	0.0
08221	00	V	850	30	3.3	0.8	0.6
08221	12	V	850	30	2.5	0.5	-0.1
08302	00	V	850	30	3.7	0.5	0.7
08302	12	V	850	29	2.7	0.9	0.2
08508	12	V	850	15	3.2	0.4	-1.5
08522	12	V	850	15	3.6	-0.1	0.8
10035	00	V	850	30	2.4	-0.2	0.0
10035	12	V	850	29	2.1	0.6	-0.4
10393	00	V	850	30	2.4	0.3	0.2
10393	12	V	850	30	2.4	0.6	0.0
10410	12	V	850	30	2.1	-0.1	0.6
10410	00	V	850	30	2.4	0.4	-0.1
10739	12	V	850	30	2.8	-0.3	0.2
10739	00	V	850	30	3.0	0.4	-0.5
11035	00	V	850	30	3.0	0.6	0.2
11035	12	V	850	30	2.6	0.3	0.3
12982	00	V	850	30	2.6	0.5	-0.6
12982	12	V	850	30	2.6	-0.1	-0.4
16245	00	V	850	30	2.9	0.2	-0.3
16245	12	V	850	30	3.7	0.0	0.3
16429	12	V	850	30	2.6	-0.4	0.9
16429	00	V	850	29	2.2	0.0	0.1
16622	00	V	850	30	3.1	-0.1	0.6
16754	00	V	850	29	3.8	0.6	-0.5
17607	12	V	850	22	4.4	-0.9	-0.7
26435	12	V	850	15	2.8	-0.2	0.0
2EERV	12	V	850	3	2.2	-0.8	-0.1
2EERV	00	V	850	5	2.0	0.9	0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
60018	12	V	850	30	3.4	0.1	-0.1
60018	00	V	850	30	3.2	0.5	0.1
7JUNA4	00	V	850	8	2.3	-0.6	-0.1
7JUNA4	12	V	850	9	2.7	-1.0	-0.4
9ZT9MR	00	V	850	9	5.7	2.1	2.3
9ZT9MR	12	V	850	12	5.4	1.2	1.3
ASDE09	12	V	850	2	1.1	0.7	-0.7
ATGU3F	00	V	850	9	7.7	1.7	0.7
ATGU3F	12	V	850	17	5.0	0.9	0.2
BPMWB2	12	V	850	13	1.8	0.0	-0.3
BPMWB2	00	V	850	14	2.5	1.5	0.5
DBLK	12	V	850	5	3.7	-1.1	-0.6
GQBZLZ	12	V	850	2	0.5	-0.1	0.3
GQBZLZ	00	V	850	3	1.6	0.2	0.0
JNKN7J	12	V	850	17	2.4	0.4	0.3
JNKN7J	00	V	850	12	2.0	0.3	0.3
KJJF9X	12	V	850	6	2.0	0.6	0.2
KJJF9X	00	V	850	7	1.7	0.2	0.1
KMPLHP	12	V	850	11	3.5	-1.2	-0.4
KMPLHP	00	V	850	10	2.5	-0.7	0.9
LRYQE3	12	V	850	8	2.5	0.5	0.6
LRYQE3	00	V	850	10	3.3	-0.8	0.6
XKQLWQ	12	V	850	18	4.5	2.2	-0.2
XQFJRG	12	V	850	6	5.3	2.5	0.5
XQFJRG	00	V	850	6	2.3	0.2	1.1
YLV96W	00	V	850	14	1.8	0.2	0.4
YLV96W	12	V	850	17	2.7	-0.7	-0.2

**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 : APR 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
0000	99	P	SUR	37	-8	8	0	0.9	3.1	3.2
03380	99	P	SUR	54	0	1440	0	0.3	-0.3	0.4
1300001	99	P	SUR	11	-23	580	0	0.3	0.3	0.5
1300008	99	P	SUR	15	-38	580	0	0.3	0.2	0.3
1300130	99	P	SUR	28	-16	720	0	0.3	0.2	0.4
1300131	99	P	SUR	28	-17	720	0	0.4	0.2	0.4
1301603	99	P	SUR	33	-45	720	0	0.3	-0.2	0.4
1301608	99	P	SUR	29	-46	720	0	0.3	0.0	0.3
1301619	99	P	SUR	39	-33	720	0	0.3	-0.2	0.4
1301629	99	P	SUR	19	-33	720	0	0.3	0.2	0.3
1301699	99	P	SUR	28	-37	151	0	0.2	-0.4	0.4
1301700	99	P	SUR	22	-62	702	0	0.3	-0.3	0.4
1301706	99	P	SUR	23	-57	709	0	0.3	-0.1	0.3
1301712	99	P	SUR	20	-54	683	0	0.3	-0.1	0.3
1301713	99	P	SUR	18	-54	682	0	0.3	0.0	0.3
1301714	99	P	SUR	22	-52	686	0	0.3	0.0	0.3
1301718	99	P	SUR	25	-40	686	0	0.2	0.2	0.3
1301719	99	P	SUR	20	-47	689	0	0.3	0.5	0.5
1301720	99	P	SUR	25	-29	650	0	0.3	0.3	0.4
1301722	99	P	SUR	24	-45	317	0	4.9	5.5	7.3
1301723	99	P	SUR	33	-11	688	0	0.3	0.8	0.9
1301725	99	P	SUR	22	-23	691	0	0.3	0.1	0.3
1301726	99	P	SUR	21	-30	684	0	0.2	0.1	0.3
1301728	99	P	SUR	13	-32	685	0	0.3	0.3	0.4
1301731	99	P	SUR	24	-27	714	0	0.3	0.3	0.4
1301735	99	P	SUR	27	-40	694	0	0.3	-0.5	0.6
1301736	99	P	SUR	26	-46	683	0	0.3	0.2	0.4
1301737	99	P	SUR	26	-53	687	0	0.3	-0.1	0.3
1301763	99	P	SUR	14	-36	5	5	0.0	0.0	0.0
1301791	99	P	SUR	35	-21	104	1	1.8	10.1	10.2
1301792	99	P	SUR	17	-30	673	0	0.3	-0.2	0.3
1301794	99	P	SUR	46	-20	37	0	0.2	0.3	0.3
1301796	99	P	SUR	11	-29	672	0	0.3	0.2	0.4
1301797	99	P	SUR	15	-29	676	0	0.3	0.3	0.4
1301798	99	P	SUR	40	-20	106	0	0.3	0.2	0.4
1301799	99	P	SUR	30	-23	257	0	0.2	0.0	0.2

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
1501772	99	P	SUR	15	-65	585	0	0.4	-0.3	0.5
3801550	99	P	SUR	86	-45	720	720	0.0	0.0	0.0
3801561	99	P	SUR	42	-69	718	0	0.5	0.2	0.6
3801586	99	P	SUR	75	12	151	0	0.3	-0.4	0.5
3801588	99	P	SUR	71	10	242	0	0.4	-0.2	0.4
3801596	99	P	SUR	41	-49	82	0	0.3	0.0	0.3
4100040	99	P	SUR	15	-53	648	0	0.4	-0.1	0.4
4100043	99	P	SUR	21	-65	4262	0	0.3	-1.7	1.8
4100044	99	P	SUR	22	-59	4252	0	0.4	0.3	0.4
4100048	99	P	SUR	32	-70	4271	0	0.3	0.3	0.5
4100049	99	P	SUR	27	-63	4311	0	0.4	-1.7	1.7
4100052	99	P	SUR	18	-65	4214	0	0.3	-1.1	1.1
4100053	99	P	SUR	18	-66	4153	0	0.4	-0.8	0.9
4100056	99	P	SUR	18	-65	4298	0	0.3	-1.0	1.1
4100139	99	P	SUR	20	-38	700	0	0.2	0.1	0.3
4100300	99	P	SUR	16	-57	658	0	0.3	0.0	0.3
4101613	99	P	SUR	29	-51	629	0	0.3	0.4	0.5
4101616	99	P	SUR	31	-39	683	0	0.2	-0.1	0.3
4101618	99	P	SUR	28	-49	581	0	0.3	0.1	0.3
4101663	99	P	SUR	30	-31	654	0	0.3	-0.1	0.3
4101665	99	P	SUR	70	7	692	0	0.5	-0.1	0.5
4101696	99	P	SUR	31	-35	712	0	0.3	-0.1	0.3
4101717	99	P	SUR	16	-62	600	0	0.4	-1.2	1.2
4101719	99	P	SUR	35	-12	718	0	0.3	0.1	0.3
4101723	99	P	SUR	25	-68	720	0	0.4	0.0	0.4
4101724	99	P	SUR	24	-64	719	0	0.4	-0.3	0.5
4101725	99	P	SUR	18	-63	719	0	0.3	-0.1	0.4
4101727	99	P	SUR	32	-20	720	0	0.2	0.0	0.2
4101728	99	P	SUR	33	-45	719	0	0.3	0.3	0.4
4101729	99	P	SUR	31	-48	719	0	0.3	0.0	0.3
4101731	99	P	SUR	16	-55	720	0	0.3	0.1	0.3
4101743	99	P	SUR	40	-30	720	0	0.8	0.0	0.8
4101753	99	P	SUR	33	-47	720	0	1.4	0.2	1.4
4101755	99	P	SUR	31	-57	720	0	0.3	0.2	0.3
4101756	99	P	SUR	12	-62	668	0	0.4	-0.7	0.8
4101842	99	P	SUR	69	16	699	0	0.5	-0.5	0.7
4101843	99	P	SUR	70	11	705	0	0.4	0.0	0.4
4101844	99	P	SUR	17	-68	313	0	0.3	0.1	0.3
4101845	99	P	SUR	69	-1	709	0	0.4	0.1	0.4
4101848	99	P	SUR	27	-69	709	0	0.4	0.2	0.4
4101851	99	P	SUR	25	-54	699	0	0.3	-0.2	0.4
4102547	99	P	SUR	20	-62	676	0	0.3	0.1	0.4
4102636	99	P	SUR	25	-65	662	0	0.4	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
41040	99	P	SUR	15	-53	109	0	0.4	-0.1	0.4
41043	99	P	SUR	21	-65	711	0	0.4	-1.7	1.8
41044	99	P	SUR	22	-59	710	0	0.4	0.2	0.5
41048	99	P	SUR	32	-70	720	0	0.3	0.4	0.5
41049	99	P	SUR	28	-63	718	0	0.4	-1.7	1.7
41052	99	P	SUR	18	-65	710	0	0.3	-1.0	1.1
41053	99	P	SUR	19	-66	717	0	0.4	-0.8	0.9
41056	99	P	SUR	18	-66	718	0	0.3	-1.0	1.1
4200059	99	P	SUR	15	-67	4260	0	0.4	-0.1	0.4
4200060	99	P	SUR	16	-63	4265	0	0.4	-0.1	0.5
4200085	99	P	SUR	18	-67	3166	0	0.3	-0.8	0.9
4201703	99	P	SUR	43	-16	218	0	0.4	0.2	0.4
42059	99	P	SUR	15	-68	712	0	0.4	-0.1	0.4
42060	99	P	SUR	16	-63	713	0	0.4	-0.1	0.5
42085	99	P	SUR	18	-67	695	0	0.3	-0.8	0.9
4400005	99	P	SUR	43	-69	714	0	0.5	0.0	0.5
4400008	99	P	SUR	40	-69	4307	0	0.4	-1.0	1.1
4400032	99	P	SUR	44	-69	714	0	0.5	-0.7	0.9
4400033	99	P	SUR	44	-69	717	0	0.5	-0.8	1.0
4400150	99	P	SUR	43	-64	618	0	0.5	-0.1	0.5
4400488	99	P	SUR	45	-61	69	0	0.4	0.4	0.6
4400489	99	P	SUR	45	-61	80	0	0.4	0.3	0.5
44005	99	P	SUR	43	-69	714	0	0.5	0.0	0.5
4400777	99	P	SUR	33	-37	720	0	0.7	0.1	0.7
44008	99	P	SUR	41	-69	719	0	0.4	-1.0	1.1
4401581	99	P	SUR	28	-67	719	0	0.3	-0.1	0.4
4401582	99	P	SUR	29	-27	718	0	0.4	0.3	0.5
4401584	99	P	SUR	30	-40	720	0	0.3	0.0	0.3
4401585	99	P	SUR	22	-38	720	0	0.3	0.3	0.5
4401587	99	P	SUR	74	6	719	0	0.4	0.2	0.4
4401588	99	P	SUR	64	-12	720	0	0.4	0.0	0.4
4401863	99	P	SUR	17	-62	552	0	0.4	-1.6	1.7
4401864	99	P	SUR	23	-64	705	0	0.3	-0.3	0.5
4401867	99	P	SUR	35	-52	714	0	0.3	0.0	0.3
4401872	99	P	SUR	27	-65	713	0	0.3	-0.1	0.4
4402603	99	P	SUR	65	4	703	0	0.3	0.1	0.3
4402606	99	P	SUR	62	-7	702	0	0.4	0.2	0.5
4402607	99	P	SUR	46	-16	697	0	0.3	-0.2	0.4
4402611	99	P	SUR	49	-13	692	0	0.4	0.2	0.4
4402613	99	P	SUR	39	-17	680	0	0.9	1.5	1.7
4402618	99	P	SUR	26	-58	706	0	0.3	0.2	0.4
4402656	99	P	SUR	33	-34	705	11	0.6	0.2	0.7
4402660	99	P	SUR	27	-32	689	0	0.2	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
4402663	99	P	SUR	45	-6	692	0	0.3	-0.2	0.4
4402670	99	P	SUR	23	-43	704	0	0.3	-0.2	0.3
4402672	99	P	SUR	21	-48	708	0	0.3	-0.2	0.3
4402673	99	P	SUR	18	-57	4	0	0.4	0.1	0.4
4402674	99	P	SUR	16	-63	703	0	0.3	0.1	0.4
4402675	99	P	SUR	24	-34	703	0	0.3	0.0	0.3
4402676	99	P	SUR	31	-36	701	0	0.3	0.2	0.3
4402721	99	P	SUR	45	-16	680	0	0.3	0.0	0.3
4402726	99	P	SUR	54	-34	684	0	0.5	-0.1	0.5
4402727	99	P	SUR	59	-7	683	0	0.3	-0.1	0.3
4402731	99	P	SUR	48	-53	250	0	0.4	-0.4	0.6
4402732	99	P	SUR	48	-39	669	0	1.1	0.3	1.2
4402733	99	P	SUR	47	-49	694	0	0.5	0.4	0.6
4402735	99	P	SUR	42	-48	695	0	0.5	0.0	0.5
4402736	99	P	SUR	47	-30	102	0	0.6	0.4	0.7
4402737	99	P	SUR	46	-42	245	0	0.3	-0.2	0.4
4402742	99	P	SUR	47	-29	672	0	0.7	0.2	0.7
4402743	99	P	SUR	44	-57	699	0	0.6	-0.2	0.6
4402744	99	P	SUR	43	-56	662	0	0.5	0.3	0.6
4402746	99	P	SUR	44	-29	715	0	0.7	-0.1	0.7
4402747	99	P	SUR	47	-45	254	0	0.4	0.0	0.4
4402749	99	P	SUR	54	-40	685	0	0.4	-0.1	0.4
4402750	99	P	SUR	55	-42	679	0	0.3	-0.4	0.5
4402877	99	P	SUR	40	-62	113	0	3.4	-2.0	4.0
4402880	99	P	SUR	39	-45	626	0	0.4	0.3	0.5
4402881	99	P	SUR	44	-36	601	0	0.4	0.0	0.4
4402882	99	P	SUR	33	-64	675	0	0.4	0.3	0.5
4402883	99	P	SUR	44	-41	463	0	0.4	0.2	0.4
44032	99	P	SUR	44	-69	714	0	0.5	-0.7	0.9
44033	99	P	SUR	44	-69	717	0	0.5	-0.8	1.0
4403557	99	P	SUR	60	2	680	0	0.6	0.8	1.0
4403558	99	P	SUR	48	-17	720	0	0.4	-0.2	0.4
4403568	99	P	SUR	41	-62	720	0	0.5	0.3	0.6
4403569	99	P	SUR	44	-34	718	0	0.4	-0.1	0.4
44078	99	P	SUR	60	-40	34	0	0.6	-0.8	1.0
44150	99	P	SUR	43	-64	691	0	0.5	-0.1	0.5
44258	99	P	SUR	45	-63	697	0	0.4	0.0	0.5
44488	99	P	SUR	45	-61	683	0	0.5	0.1	0.5
44489	99	P	SUR	46	-61	699	0	0.4	0.2	0.5
4601782	99	P	SUR	39	-21	705	0	0.3	0.4	0.5
4601812	99	P	SUR	83	-17	656	0	0.5	0.3	0.6
4701518	99	P	SUR	75	-19	141	0	0.4	0.1	0.5
4701738	99	P	SUR	70	-67	702	702	0.0	0.0	0.0

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4801663	99	P	SUR	84	-64	694	0	0.4	-0.1	0.4
4801723	99	P	SUR	77	22	711	0	0.5	0.1	0.5
4801760	99	P	SUR	84	-54	710	0	0.4	-0.7	0.8
4801761	99	P	SUR	62	-18	720	2	2.4	-0.1	2.4
4801763	99	P	SUR	84	-34	705	0	0.5	-0.3	0.6
4801770	99	P	SUR	67	-30	176	0	0.6	-0.1	0.6
4801771	99	P	SUR	72	-66	720	0	0.4	0.1	0.4
4802506	99	P	SUR	62	-39	788	0	1.6	0.7	1.7
4802602	99	P	SUR	71	-17	688	0	0.6	0.4	0.7
4803978	99	P	SUR	85	-40	719	0	0.4	-0.2	0.5
5801965	99	P	SUR	45	-66	720	0	0.5	0.5	0.7
6100001	99	P	SUR	43	8	718	0	0.6	-0.2	0.6
6100002	99	P	SUR	42	5	717	0	0.4	-0.3	0.5
6100196	99	P	SUR	42	4	720	0	0.4	0.0	0.4
6100197	99	P	SUR	40	4	719	0	0.3	0.2	0.4
6100198	99	P	SUR	37	-2	720	0	0.4	0.3	0.5
6100280	99	P	SUR	41	1	720	0	0.4	0.6	0.7
6100281	99	P	SUR	40	0	720	0	0.5	0.4	0.7
6100417	99	P	SUR	38	0	720	0	0.4	0.4	0.6
6100430	99	P	SUR	40	2	359	0	0.5	0.5	0.7
6101007	99	P	SUR	36	25	83	0	0.6	-0.3	0.6
6101008	99	P	SUR	37	22	2	0	0.1	0.1	0.1
6101009	99	P	SUR	35	25	130	0	0.5	-0.3	0.6
6102732	99	P	SUR	34	17	690	0	0.5	0.0	0.5
6102809	99	P	SUR	37	11	660	0	0.3	-0.7	0.7
6102810	99	P	SUR	39	3	698	0	0.5	-0.1	0.5
6102812	99	P	SUR	39	2	674	0	0.4	-0.2	0.5
6102813	99	P	SUR	39	1	434	0	0.3	0.3	0.4
6200001	99	P	SUR	45	-5	714	0	0.3	0.2	0.4
6200024	99	P	SUR	44	-3	710	0	0.4	0.1	0.5
6200025	99	P	SUR	44	-6	720	0	0.5	0.0	0.5
6200029	99	P	SUR	49	-12	610	0	0.4	-0.3	0.5
6200081	99	P	SUR	51	-13	612	0	0.4	-0.1	0.4
6200082	99	P	SUR	44	-8	350	0	0.3	0.3	0.5
6200083	99	P	SUR	43	-9	608	0	0.4	0.2	0.4
6200084	99	P	SUR	42	-9	717	0	0.3	0.2	0.4
6200085	99	P	SUR	36	-7	720	0	0.4	0.2	0.4
6200086	99	P	SUR	55	6	346	0	0.2	-0.3	0.4
6200087	99	P	SUR	55	7	346	0	0.3	-0.4	0.5
6200091	99	P	SUR	53	-5	719	0	0.4	-0.1	0.4
6200092	99	P	SUR	51	-11	720	0	0.4	-0.2	0.5
6200093	99	P	SUR	55	-10	720	0	0.3	-0.2	0.4
6200094	99	P	SUR	52	-7	720	0	0.4	-0.1	0.4



DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6200095	99	P	SUR	53	-16	720	0	0.4	-0.3	0.5
6200103	99	P	SUR	50	-3	611	0	0.4	-0.3	0.5
6200163	99	P	SUR	47	-8	610	0	0.4	-0.2	0.5
6200191	99	P	SUR	41	-10	126	0	0.6	-0.5	0.8
6200192	99	P	SUR	40	-10	490	0	0.4	0.3	0.5
6200199	99	P	SUR	40	-9	490	0	0.3	0.2	0.4
6200442	99	P	SUR	49	-16	606	0	0.4	-0.3	0.5
6201065	99	P	SUR	54	7	701	0	0.3	0.8	0.9
6202597	99	P	SUR	44	-44	109	0	0.2	-0.2	0.3
6202598	99	P	SUR	43	-45	109	0	0.3	-0.1	0.3
6202623	99	P	SUR	74	35	711	0	0.8	-0.2	0.8
6202627	99	P	SUR	67	13	675	0	0.6	0.1	0.7
6202637	99	P	SUR	66	-11	711	0	0.3	0.1	0.3
6202639	99	P	SUR	31	-38	712	0	0.3	-0.2	0.3
6202640	99	P	SUR	35	-30	630	0	0.3	-0.1	0.3
6202644	99	P	SUR	40	-43	564	0	0.5	-0.6	0.8
62029	99	P	SUR	49	-12	1436	0	0.4	-0.3	0.5
6203516	99	P	SUR	43	-26	607	0	0.3	-0.4	0.5
6203607	99	P	SUR	33	-30	717	0	0.3	0.3	0.4
6203612	99	P	SUR	31	-57	720	0	0.3	0.2	0.3
6203613	99	P	SUR	44	-32	716	0	0.4	-0.1	0.4
6203615	99	P	SUR	24	-70	720	0	0.4	-0.2	0.4
6203616	99	P	SUR	23	-65	720	0	0.4	0.0	0.4
6203621	99	P	SUR	28	-27	721	0	0.2	0.0	0.2
6203624	99	P	SUR	35	-55	717	0	0.9	-0.1	0.9
6203625	99	P	SUR	32	-31	718	0	0.3	-0.2	0.3
6203632	99	P	SUR	24	-45	720	0	0.3	0.2	0.3
6203633	99	P	SUR	68	15	719	0	0.8	0.2	0.8
6203634	99	P	SUR	30	-36	718	0	0.3	0.3	0.4
6203639	99	P	SUR	33	-29	720	0	0.3	-0.1	0.3
6203640	99	P	SUR	21	-56	718	0	1.6	-0.5	1.7
6203642	99	P	SUR	14	-67	718	0	1.0	-0.2	1.0
6203651	99	P	SUR	43	-30	716	0	0.4	0.4	0.6
6203730	99	P	SUR	24	-70	703	0	0.4	0.1	0.4
6203737	99	P	SUR	22	-47	706	0	0.3	0.3	0.4
6203741	99	P	SUR	63	-13	700	0	0.3	0.1	0.3
6203744	99	P	SUR	65	5	428	0	0.3	0.3	0.5
6203753	99	P	SUR	64	-32	704	0	0.4	0.0	0.4
6203755	99	P	SUR	37	-10	697	0	0.5	0.3	0.6
6203765	99	P	SUR	27	-54	252	0	0.9	0.4	1.0
6203768	99	P	SUR	31	-16	705	0	0.3	0.3	0.4
6203771	99	P	SUR	25	-35	707	0	0.3	0.0	0.3
6203772	99	P	SUR	32	-66	707	0	0.3	0.0	0.3

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6203773	99	P	SUR	32	-49	705	0	0.3	-0.5	0.5
6203776	99	P	SUR	29	-30	709	0	0.2	0.0	0.2
6203825	99	P	SUR	69	-14	254	0	0.6	0.3	0.7
6203827	99	P	SUR	66	12	713	0	0.3	0.0	0.3
6203838	99	P	SUR	20	-65	674	0	0.3	0.2	0.4
6203839	99	P	SUR	27	-54	683	0	0.2	-0.2	0.3
6203840	99	P	SUR	22	-43	681	0	0.3	0.2	0.3
6203842	99	P	SUR	35	-29	685	0	0.3	0.0	0.3
6203844	99	P	SUR	44	-15	679	0	0.3	0.2	0.4
6203845	99	P	SUR	53	-13	690	0	0.4	-0.1	0.4
6203846	99	P	SUR	29	-25	690	0	0.2	0.0	0.2
6203848	99	P	SUR	47	-32	658	0	0.5	-0.2	0.5
6203849	99	P	SUR	29	-21	691	0	0.3	0.1	0.3
6203850	99	P	SUR	33	-16	372	4	6.2	-5.1	8.1
6203853	99	P	SUR	65	7	662	0	0.3	0.2	0.4
6203854	99	P	SUR	60	-25	692	0	0.4	0.1	0.4
6203855	99	P	SUR	66	7	652	0	0.3	0.1	0.3
6203856	99	P	SUR	61	5	693	0	0.3	0.3	0.4
6203857	99	P	SUR	64	8	716	0	0.3	0.1	0.3
6203859	99	P	SUR	15	-17	679	0	1.8	-1.2	2.2
6203860	99	P	SUR	11	-22	668	0	0.3	0.7	0.8
6203861	99	P	SUR	24	-22	695	0	0.3	0.2	0.3
6203864	99	P	SUR	64	-9	694	0	0.3	0.1	0.3
6203865	99	P	SUR	60	-33	658	0	0.4	0.0	0.4
6203866	99	P	SUR	69	15	693	0	0.4	0.0	0.4
6204603	99	P	SUR	38	2	679	0	0.3	0.4	0.5
6204604	99	P	SUR	40	1	104	0	0.4	-0.6	0.8
6204605	99	P	SUR	40	1	98	0	0.4	0.4	0.6
6204606	99	P	SUR	40	2	94	0	0.4	0.3	0.5
6204607	99	P	SUR	40	2	94	0	0.4	0.2	0.5
6204608	99	P	SUR	40	2	96	0	0.4	0.4	0.6
62081	99	P	SUR	51	-13	1439	0	0.4	-0.1	0.4
62091	99	P	SUR	53	-5	719	0	0.4	-0.1	0.4
62092	99	P	SUR	51	-11	719	0	0.4	-0.2	0.5
62093	99	P	SUR	55	-10	719	0	0.3	-0.2	0.4
62094	99	P	SUR	52	-7	719	0	0.4	-0.1	0.4
62095	99	P	SUR	53	-16	719	0	0.4	-0.3	0.5
62102	99	P	SUR	58	2	1440	0	0.5	0.3	0.5
62103	99	P	SUR	50	-3	1440	0	0.4	-0.3	0.5
62104	99	P	SUR	57	1	1356	0	0.3	0.0	0.3
62105	99	P	SUR	55	-13	1440	0	0.4	-0.2	0.5
62107	99	P	SUR	50	-6	1438	0	0.4	-0.2	0.4
62112	99	P	SUR	58	0	1356	0	0.3	0.2	0.3

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62113	99	P	SUR	58	0	1356	0	0.3	-0.3	0.4
62114	99	P	SUR	58	0	1354	0	0.4	0.2	0.4
62115	99	P	SUR	58	-3	1140	0	0.4	-0.2	0.4
62116	99	P	SUR	58	1	1429	0	0.4	0.1	0.4
62118	99	P	SUR	58	1	1440	0	0.3	0.3	0.5
62119	99	P	SUR	57	2	1440	0	0.3	-0.1	0.3
62120	99	P	SUR	56	2	1346	0	0.4	-0.2	0.5
62121	99	P	SUR	54	3	1440	0	0.4	0.2	0.5
62122	99	P	SUR	57	2	1402	0	0.3	-0.1	0.3
62124	99	P	SUR	54	-4	1312	0	0.4	0.0	0.4
62127	99	P	SUR	54	1	1382	0	0.3	0.5	0.6
62129	99	P	SUR	58	0	940	0	0.3	-0.1	0.3
62130	99	P	SUR	59	1	1438	0	0.3	-0.2	0.3
62131	99	P	SUR	54	1	1440	0	0.3	0.5	0.6
62132	99	P	SUR	56	2	1346	0	0.5	0.2	0.5
62133	99	P	SUR	57	1	1438	0	0.4	0.2	0.5
62134	99	P	SUR	58	1	1402	0	0.3	0.5	0.5
62138	99	P	SUR	54	0	790	0	0.4	0.4	0.5
62140	99	P	SUR	57	1	1356	0	0.3	0.1	0.3
62141	99	P	SUR	56	-3	1348	0	0.6	0.0	0.6
62143	99	P	SUR	58	2	1440	0	0.3	0.5	0.6
62144	99	P	SUR	53	2	1440	0	0.6	0.0	0.6
62145	99	P	SUR	53	3	1440	0	0.3	0.3	0.4
62146	99	P	SUR	57	2	1436	0	0.3	-0.2	0.4
62148	99	P	SUR	54	2	1440	0	0.3	0.9	1.0
62149	99	P	SUR	54	1	1440	0	0.3	0.6	0.7
62151	99	P	SUR	57	2	1036	0	0.3	0.2	0.3
62152	99	P	SUR	57	2	1440	0	0.3	0.1	0.3
62153	99	P	SUR	57	2	1398	0	0.4	0.3	0.5
62154	99	P	SUR	56	2	1346	0	0.3	-0.2	0.3
62155	99	P	SUR	58	1	1436	0	0.3	0.2	0.3
62157	99	P	SUR	58	0	1440	0	0.3	-0.1	0.3
62160	99	P	SUR	57	2	1408	0	0.4	0.6	0.7
62161	99	P	SUR	58	1	1440	0	0.3	-0.2	0.4
62162	99	P	SUR	57	1	1406	0	0.3	0.0	0.3
62163	99	P	SUR	48	-9	1434	0	0.4	-0.2	0.5
62164	99	P	SUR	57	1	1440	0	0.3	0.2	0.3
62165	99	P	SUR	54	1	1440	0	0.4	0.1	0.4
62168	99	P	SUR	58	1	1440	0	0.3	-0.1	0.3
62170	99	P	SUR	51	2	1440	0	0.3	-0.1	0.3
62296	99	P	SUR	53	2	1440	0	0.3	0.0	0.3
62297	99	P	SUR	59	2	1438	0	0.3	-0.1	0.3
62302	99	P	SUR	61	-2	1402	0	0.3	-0.2	0.3

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62304	99	P	SUR	51	2	1440	0	0.4	-0.2	0.5
62305	99	P	SUR	50	0	1440	0	0.4	-0.1	0.4
62442	99	P	SUR	49	-16	1425	0	0.4	-0.3	0.5
6301001	99	P	SUR	64	5	678	0	0.4	-0.1	0.4
6301003	99	P	SUR	74	24	356	0	1.3	-0.5	1.4
6301004	99	P	SUR	72	20	35	0	3.2	-2.0	3.8
6301572	99	P	SUR	51	-41	296	0	1.5	-0.3	1.5
6301575	99	P	SUR	56	-43	718	0	0.3	-0.1	0.3
6301577	99	P	SUR	68	-9	720	0	0.3	0.1	0.3
63055	99	P	SUR	61	2	1436	0	0.4	-0.4	0.5
63056	99	P	SUR	60	2	1440	0	0.5	0.3	0.6
63057	99	P	SUR	59	2	1418	0	0.3	-0.1	0.3
63058	99	P	SUR	53	2	2148	0	0.4	0.3	0.5
63059	99	P	SUR	58	-1	1432	0	0.3	0.3	0.4
63101	99	P	SUR	61	1	1440	0	0.5	0.1	0.5
63102	99	P	SUR	61	1	1438	0	0.3	-0.2	0.4
63103	99	P	SUR	61	1	1440	0	0.7	0.4	0.8
63108	99	P	SUR	61	2	1440	0	0.3	-0.5	0.6
63109	99	P	SUR	60	2	1440	0	0.3	-0.6	0.7
63110	99	P	SUR	60	2	1440	0	0.4	-0.2	0.4
63111	99	P	SUR	61	2	1440	0	0.4	-0.4	0.5
63112	99	P	SUR	61	1	1440	0	0.3	-0.5	0.6
63115	99	P	SUR	62	1	1436	0	0.4	-0.2	0.4
63117	99	P	SUR	61	1	1440	0	0.6	0.4	0.7
63118	99	P	SUR	58	1	1440	0	0.5	-0.2	0.5
6400045	99	P	SUR	59	-12	608	0	0.3	-0.2	0.3
6400046	99	P	SUR	61	-4	611	0	0.3	-0.2	0.3
6401583	99	P	SUR	60	-33	720	0	0.5	0.1	0.5
6401584	99	P	SUR	68	-10	718	26	2.8	0.1	2.8
6401587	99	P	SUR	75	-19	718	0	0.4	0.2	0.5
6401590	99	P	SUR	66	8	718	0	0.4	0.2	0.4
6401592	99	P	SUR	73	11	719	0	0.4	0.3	0.5
6401759	99	P	SUR	57	-38	720	0	0.4	0.5	0.6
6401762	99	P	SUR	65	-7	720	0	0.3	0.3	0.5
6401763	99	P	SUR	66	12	717	0	0.5	0.3	0.5
6402539	99	P	SUR	71	17	691	0	0.4	0.0	0.4
6402551	99	P	SUR	51	-33	663	0	0.5	0.1	0.5
6402594	99	P	SUR	51	-36	646	0	0.5	-0.2	0.5
6402596	99	P	SUR	59	-40	645	0	0.5	0.2	0.5
6402597	99	P	SUR	52	-30	647	0	0.5	-0.1	0.5
6402615	99	P	SUR	18	-56	711	0	0.3	0.1	0.3
6402616	99	P	SUR	29	-47	704	0	0.3	-0.3	0.4
6402617	99	P	SUR	25	-46	707	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
6402618	99	P	SUR	22	-39	711	0	0.3	0.1	0.3
6402619	99	P	SUR	38	-10	691	0	0.3	0.1	0.3
6402620	99	P	SUR	45	-4	696	0	0.3	0.3	0.5
6402621	99	P	SUR	42	-10	706	0	0.3	0.3	0.4
6402622	99	P	SUR	35	-19	699	0	0.3	0.2	0.3
64041	99	P	SUR	61	-3	1402	0	0.3	-0.1	0.3
64045	99	P	SUR	59	-12	1431	0	0.3	-0.2	0.3
64046	99	P	SUR	61	-4	1440	0	0.3	-0.2	0.3
6600021	99	P	SUR	55	14	137	0	0.3	-1.0	1.0
6600022	99	P	SUR	54	14	208	0	0.4	-0.4	0.6
6600024	99	P	SUR	55	13	178	0	0.4	-1.3	1.4
6801791	99	P	SUR	41	-47	98	0	0.4	0.1	0.4
7801563	99	P	SUR	45	-65	718	0	0.6	0.5	0.8

**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 : APR 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
0000	99	SPEED	SUR	37	-8	8	0	0	4.9	4.6	6.7
1300001	99	SPEED	SUR	11	-23	580	0	0	0.7	0.3	0.8
1300002	99	SPEED	SUR	20	-23	576	0	0	0.9	0.0	0.9
1300008	99	SPEED	SUR	15	-38	580	0	0	0.7	-0.2	0.7
1300130	99	SPEED	SUR	28	-16	708	0	0	0.9	-0.5	1.0
1300131	99	SPEED	SUR	28	-17	689	0	0	2.0	1.2	2.3
4100026	99	SPEED	SUR	12	-38	233	0	0	0.6	-0.1	0.7
4100040	99	SPEED	SUR	15	-53	648	0	0	0.7	-0.3	0.8
4100043	99	SPEED	SUR	21	-65	4262	0	0	1.1	0.0	1.1
4100044	99	SPEED	SUR	22	-59	284	0	0	1.3	0.2	1.3
4100049	99	SPEED	SUR	27	-63	4313	0	0	1.3	0.2	1.3
4100052	99	SPEED	SUR	18	-65	4232	0	0	1.0	-0.1	1.0
4100053	99	SPEED	SUR	18	-66	4153	0	0	1.4	1.3	1.9
4100056	99	SPEED	SUR	18	-65	4298	0	0	1.2	-0.1	1.2
4100139	99	SPEED	SUR	20	-38	700	0	0	0.8	0.2	0.8
4100300	99	SPEED	SUR	16	-57	655	0	0	0.9	-0.3	0.9
41040	99	SPEED	SUR	15	-53	109	0	0	0.7	-0.3	0.8
41043	99	SPEED	SUR	21	-65	712	0	0	1.1	0.0	1.2
41044	99	SPEED	SUR	22	-59	48	0	0	1.3	0.2	1.3
41049	99	SPEED	SUR	28	-63	720	0	0	1.3	0.3	1.4
41052	99	SPEED	SUR	18	-65	714	0	0	1.1	0.0	1.1
41053	99	SPEED	SUR	19	-66	717	0	0	1.4	0.7	1.6
41056	99	SPEED	SUR	18	-66	718	0	0	1.2	0.0	1.2
4200059	99	SPEED	SUR	15	-67	4260	0	0	0.9	0.2	0.9
4200060	99	SPEED	SUR	16	-63	1783	0	0	0.9	0.0	0.9
4200085	99	SPEED	SUR	18	-67	3233	0	0	1.4	-0.4	1.4
42059	99	SPEED	SUR	15	-68	712	0	0	0.9	0.2	0.9
42060	99	SPEED	SUR	16	-63	299	0	0	1.0	0.1	1.0
42085	99	SPEED	SUR	18	-67	696	0	0	1.3	-0.2	1.3
4400005	99	SPEED	SUR	43	-69	714	0	0	1.4	-0.4	1.5
4400008	99	SPEED	SUR	40	-69	4314	0	0	1.3	-0.6	1.4
4400027	99	SPEED	SUR	44	-67	4316	0	0	1.4	0.0	1.4
4400032	99	SPEED	SUR	44	-69	714	0	0	1.5	-0.2	1.5
4400033	99	SPEED	SUR	44	-69	717	0	0	1.5	0.0	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
4400034	99	SPEED	SUR	44	-68	717	0	0	1.5	-0.3	1.6
4400150	99	SPEED	SUR	43	-64	616	0	0	1.2	0.2	1.3
4400488	99	SPEED	SUR	45	-61	69	0	0	2.2	0.2	2.2
4400489	99	SPEED	SUR	45	-61	80	0	0	1.9	0.9	2.1
44005	99	SPEED	SUR	43	-69	714	0	0	1.4	-0.3	1.5
44008	99	SPEED	SUR	41	-69	720	0	0	1.3	-0.5	1.4
44027	99	SPEED	SUR	44	-67	720	0	0	1.5	0.1	1.5
44032	99	SPEED	SUR	44	-69	714	0	0	1.5	-0.2	1.5
44033	99	SPEED	SUR	44	-69	717	0	0	1.5	0.2	1.5
44034	99	SPEED	SUR	44	-68	717	0	0	1.6	-0.3	1.6
44078	99	SPEED	SUR	60	-40	39	0	0	2.1	-1.6	2.6
44150	99	SPEED	SUR	43	-64	689	0	0	1.3	0.2	1.3
44258	99	SPEED	SUR	45	-63	697	0	0	1.6	0.0	1.6
44488	99	SPEED	SUR	45	-61	681	0	0	1.9	0.7	2.1
44489	99	SPEED	SUR	46	-61	699	1	0	1.9	1.4	2.4
6100001	99	SPEED	SUR	43	8	715	0	0	1.8	-0.2	1.8
6100002	99	SPEED	SUR	42	5	713	0	0	1.2	0.3	1.3
6100196	99	SPEED	SUR	42	4	704	0	0	1.8	-0.5	1.8
6100197	99	SPEED	SUR	40	4	696	0	0	1.3	-0.9	1.6
6100198	99	SPEED	SUR	37	-2	686	0	0	1.5	-1.1	1.8
6100280	99	SPEED	SUR	41	1	693	0	0	1.5	-0.8	1.7
6100281	99	SPEED	SUR	40	0	698	0	0	2.2	0.2	2.2
6100417	99	SPEED	SUR	38	0	714	0	0	1.3	-0.3	1.3
6100430	99	SPEED	SUR	40	2	346	0	0	1.9	-0.7	2.0
6101007	99	SPEED	SUR	36	25	83	0	0	1.8	-0.4	1.9
6101008	99	SPEED	SUR	37	22	124	0	0	2.6	-4.7	5.3
6101009	99	SPEED	SUR	35	25	130	0	0	1.7	0.7	1.8
6200001	99	SPEED	SUR	45	-5	712	0	0	1.2	-0.8	1.4
6200024	99	SPEED	SUR	44	-3	675	0	0	1.4	-0.6	1.6
6200025	99	SPEED	SUR	44	-6	707	0	0	1.4	-0.8	1.6
6200029	99	SPEED	SUR	49	-12	610	0	0	1.0	0.5	1.2
6200081	99	SPEED	SUR	51	-13	612	0	0	1.2	0.0	1.2
6200082	99	SPEED	SUR	44	-8	706	0	0	1.1	-0.9	1.4
6200083	99	SPEED	SUR	43	-9	598	0	0	1.0	-0.8	1.3
6200084	99	SPEED	SUR	42	-9	687	0	0	1.2	-0.5	1.3
6200085	99	SPEED	SUR	36	-7	693	0	0	1.6	-1.1	2.0
6200086	99	SPEED	SUR	55	6	344	0	0	1.5	1.2	2.0
6200087	99	SPEED	SUR	55	7	346	0	0	1.4	1.3	1.9
6200091	99	SPEED	SUR	53	-5	719	0	0	1.3	0.6	1.4
6200092	99	SPEED	SUR	51	-11	720	0	0	1.1	-0.3	1.2
6200093	99	SPEED	SUR	55	-10	720	0	0	1.2	0.4	1.2

## 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
6200094	99	SPEED	SUR	52	-7	720	0	0	1.2	0.3	1.2
6200095	99	SPEED	SUR	53	-16	720	0	0	1.1	0.1	1.1
6200103	99	SPEED	SUR	50	-3	398	0	0	1.3	0.2	1.3
6200163	99	SPEED	SUR	47	-8	609	0	0	1.2	-0.1	1.2
6200191	99	SPEED	SUR	41	-10	126	0	0	1.1	0.3	1.2
6200192	99	SPEED	SUR	40	-10	490	0	0	1.3	0.2	1.3
6200199	99	SPEED	SUR	40	-9	461	0	0	1.4	-0.3	1.4
6200442	99	SPEED	SUR	49	-16	195	0	0	1.5	-0.1	1.5
6201065	99	SPEED	SUR	54	7	701	0	0	1.5	-1.0	1.8
62029	99	SPEED	SUR	49	-12	1436	0	0	1.0	0.5	1.2
62081	99	SPEED	SUR	51	-13	1439	0	0	1.1	0.7	1.3
62091	99	SPEED	SUR	53	-5	719	0	0	1.3	0.7	1.5
62092	99	SPEED	SUR	51	-11	719	0	0	1.1	-0.2	1.2
62093	99	SPEED	SUR	55	-10	719	0	0	1.2	0.5	1.3
62094	99	SPEED	SUR	52	-7	719	0	0	1.2	0.4	1.3
62095	99	SPEED	SUR	53	-16	719	0	0	1.2	0.2	1.2
62102	99	SPEED	SUR	58	2	1440	0	0	1.2	0.3	1.3
62103	99	SPEED	SUR	50	-3	1012	0	0	1.3	0.1	1.3
62104	99	SPEED	SUR	57	1	1356	0	0	1.0	-0.2	1.0
62105	99	SPEED	SUR	55	-13	1440	0	0	1.2	0.7	1.4
62107	99	SPEED	SUR	50	-6	844	0	0	1.2	0.6	1.3
62112	99	SPEED	SUR	58	0	1356	0	0	1.4	-0.4	1.5
62113	99	SPEED	SUR	58	0	1356	0	0	1.3	-0.1	1.3
62114	99	SPEED	SUR	58	0	1354	0	0	1.2	0.3	1.2
62118	99	SPEED	SUR	58	1	1440	0	0	1.2	0.5	1.3
62119	99	SPEED	SUR	57	2	1440	0	0	1.3	-1.0	1.6
62120	99	SPEED	SUR	56	2	1346	0	0	1.0	0.0	1.0
62121	99	SPEED	SUR	54	3	1440	0	0	1.3	-0.4	1.3
62122	99	SPEED	SUR	57	2	1402	0	0	1.1	0.1	1.1
62129	99	SPEED	SUR	58	0	940	0	0	1.2	-0.1	1.2
62131	99	SPEED	SUR	54	1	1440	0	0	2.4	-1.1	2.7
62132	99	SPEED	SUR	56	2	1346	0	0	2.4	-1.5	2.8
62133	99	SPEED	SUR	57	1	1436	0	0	1.3	0.4	1.3
62134	99	SPEED	SUR	58	1	1402	0	0	1.3	-0.1	1.3
62140	99	SPEED	SUR	57	1	1130	0	0	1.0	-0.2	1.0
62143	99	SPEED	SUR	58	2	1440	0	0	1.4	-0.4	1.5
62144	99	SPEED	SUR	53	2	1440	0	0	2.0	-1.1	2.3
62145	99	SPEED	SUR	53	3	1440	0	0	1.3	0.6	1.5
62146	99	SPEED	SUR	57	2	1390	0	0	1.3	-0.3	1.3
62148	99	SPEED	SUR	54	2	1440	0	0	1.4	-0.5	1.5
62149	99	SPEED	SUR	54	1	1440	0	0	1.3	0.0	1.3



## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62152	99	SPEED	SUR	57	2	1440	0	0	2.3	-1.2	2.6
62153	99	SPEED	SUR	57	2	1398	0	0	1.7	-0.8	1.9
62154	99	SPEED	SUR	56	2	1346	0	0	1.2	0.2	1.2
62155	99	SPEED	SUR	58	1	1364	0	0	1.2	0.0	1.2
62163	99	SPEED	SUR	48	-9	1432	0	0	1.2	0.4	1.2
62164	99	SPEED	SUR	57	1	1440	0	0	1.3	-1.3	1.9
62165	99	SPEED	SUR	54	1	1440	0	0	1.2	-0.5	1.3
62170	99	SPEED	SUR	51	2	1440	0	0	1.4	0.6	1.5
62304	99	SPEED	SUR	51	2	1412	0	0	1.4	0.8	1.7
62442	99	SPEED	SUR	49	-16	601	0	0	1.3	0.7	1.5
6301001	99	SPEED	SUR	64	5	678	0	0	1.3	0.0	1.3
6301003	99	SPEED	SUR	74	24	356	0	0	2.4	-1.6	2.9
6301004	99	SPEED	SUR	72	20	35	0	0	2.3	-6.9	7.3
63055	99	SPEED	SUR	61	2	1438	0	0	1.3	-0.9	1.6
63056	99	SPEED	SUR	60	2	1440	0	0	1.4	0.2	1.4
63057	99	SPEED	SUR	59	2	1418	0	0	1.8	-0.4	1.8
63058	99	SPEED	SUR	53	2	783	0	0	1.2	0.2	1.2
63101	99	SPEED	SUR	61	1	1440	0	0	1.2	-0.3	1.3
63103	99	SPEED	SUR	61	1	1440	0	0	1.4	-0.4	1.4
63106	99	SPEED	SUR	61	2	1440	0	0	1.8	-1.2	2.2
63108	99	SPEED	SUR	61	2	1440	0	0	1.8	-0.5	1.9
63109	99	SPEED	SUR	60	2	1428	0	0	1.5	0.0	1.5
63110	99	SPEED	SUR	60	2	1438	0	0	1.5	0.0	1.5
63112	99	SPEED	SUR	61	1	1440	0	0	1.2	-0.5	1.3
63115	99	SPEED	SUR	62	1	1436	0	0	1.3	-0.8	1.6
63117	99	SPEED	SUR	61	1	1440	0	0	1.3	-0.3	1.3
6400045	99	SPEED	SUR	59	-12	608	0	0	1.3	0.3	1.3
6400046	99	SPEED	SUR	61	-4	610	0	0	1.1	0.3	1.2
64041	99	SPEED	SUR	61	-3	1402	0	0	1.1	-0.5	1.2
64045	99	SPEED	SUR	59	-12	1431	0	0	1.2	0.8	1.4
64046	99	SPEED	SUR	61	-4	1438	0	0	1.1	0.6	1.3
6600021	99	SPEED	SUR	55	14	137	0	0	1.0	0.5	1.2
6600022	99	SPEED	SUR	54	14	208	0	0	1.2	0.1	1.2
6600024	99	SPEED	SUR	55	13	166	0	0	1.4	0.9	1.7

**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 : APR 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
0000	99	DIRN	SUR	37	-8	8	0	0	5.0	-11.3	12.4
00000	99	DIRN	SUR	44	-79	49	0	0	20.1	-52.6	56.3
1300001	99	DIRN	SUR	11	-23	534	0	0	9.5	0.6	9.5
1300002	99	DIRN	SUR	20	-23	560	0	0	8.6	-2.0	8.8
1300008	99	DIRN	SUR	15	-38	563	0	0	9.7	0.3	9.7
1300130	99	DIRN	SUR	28	-16	586	0	0	9.5	-5.8	11.2
1300131	99	DIRN	SUR	28	-17	303	0	0	27.8	-1.8	27.9
4100001	99	DIRN	SUR	35	-72	3820	0	0	13.4	7.1	15.1
4100002	99	DIRN	SUR	32	-75	3768	0	0	17.7	1.6	17.8
4100004	99	DIRN	SUR	33	-79	3443	0	0	17.1	2.5	17.3
4100008	99	DIRN	SUR	31	-81	557	0	0	21.6	-2.2	21.8
4100009	99	DIRN	SUR	29	-80	3762	0	0	21.3	1.8	21.4
4100010	99	DIRN	SUR	29	-78	2840	0	0	15.7	8.2	17.8
4100013	99	DIRN	SUR	33	-78	3179	0	0	20.8	2.6	21.0
4100024	99	DIRN	SUR	34	-78	523	0	0	19.3	4.5	19.8
4100025	99	DIRN	SUR	35	-75	3858	0	0	19.4	0.9	19.4
4100026	99	DIRN	SUR	12	-38	233	0	0	9.0	-8.0	12.0
4100029	99	DIRN	SUR	33	-80	518	0	0	17.9	-4.8	18.5
4100033	99	DIRN	SUR	32	-80	517	0	0	20.3	-0.3	20.3
4100037	99	DIRN	SUR	34	-77	620	0	0	19.7	0.9	19.7
4100038	99	DIRN	SUR	34	-78	511	0	0	19.5	1.7	19.6
4100040	99	DIRN	SUR	15	-53	479	0	0	16.8	-4.1	17.3
4100043	99	DIRN	SUR	21	-65	3152	0	0	14.1	1.4	14.1
4100044	99	DIRN	SUR	22	-59	65	0	0	20.2	9.1	22.2
4100047	99	DIRN	SUR	27	-71	3796	0	0	15.8	5.8	16.8
4100049	99	DIRN	SUR	27	-63	3790	0	0	19.9	4.6	20.4
4100052	99	DIRN	SUR	18	-65	3872	0	0	11.7	5.5	12.9
4100053	99	DIRN	SUR	18	-66	2370	0	0	19.3	12.9	23.2
4100056	99	DIRN	SUR	18	-65	3876	0	0	16.6	5.6	17.5
4100064	99	DIRN	SUR	34	-77	612	0	0	20.6	-1.8	20.7
4100066	99	DIRN	SUR	33	-80	515	0	0	17.3	2.0	17.4
41001	99	DIRN	SUR	35	-72	629	0	0	13.7	7.2	15.5

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
4100139	99	DIRN	SUR	20	-38	604	0	0	10.8	2.6	11.1
41002	99	DIRN	SUR	32	-75	613	0	0	17.7	2.5	17.8
4100300	99	DIRN	SUR	16	-57	543	0	0	11.1	-11.7	16.1
41004	99	DIRN	SUR	33	-79	556	0	0	18.0	3.0	18.3
41008	99	DIRN	SUR	31	-81	540	0	0	21.8	-2.8	22.0
41009	99	DIRN	SUR	29	-80	623	0	0	21.4	3.2	21.7
41010	99	DIRN	SUR	29	-79	475	0	0	16.6	8.9	18.9
41013	99	DIRN	SUR	33	-78	525	0	0	21.9	2.7	22.1
41024	99	DIRN	SUR	34	-79	516	0	0	21.2	4.4	21.6
41025	99	DIRN	SUR	35	-76	633	0	0	19.3	1.3	19.3
41029	99	DIRN	SUR	33	-80	5	0	0	13.9	-5.6	15.0
41033	99	DIRN	SUR	32	-80	498	0	0	22.2	-0.2	22.2
41037	99	DIRN	SUR	34	-77	608	0	0	21.1	0.7	21.1
41038	99	DIRN	SUR	34	-78	493	0	0	19.1	2.8	19.3
41040	99	DIRN	SUR	15	-53	72	0	0	16.8	-4.1	17.2
41043	99	DIRN	SUR	21	-65	515	0	0	14.6	1.8	14.7
41044	99	DIRN	SUR	22	-59	13	0	0	20.5	7.2	21.7
41047	99	DIRN	SUR	28	-72	626	0	0	16.0	5.8	17.1
41049	99	DIRN	SUR	28	-63	619	0	0	19.3	4.5	19.8
41052	99	DIRN	SUR	18	-65	626	0	0	11.8	4.8	12.8
41053	99	DIRN	SUR	19	-66	434	0	0	17.0	11.0	20.3
41056	99	DIRN	SUR	18	-66	629	0	0	16.7	5.5	17.6
41064	99	DIRN	SUR	34	-77	603	0	0	20.6	-1.3	20.6
41066	99	DIRN	SUR	33	-80	499	0	0	17.9	1.8	18.0
4200013	99	DIRN	SUR	27	-83	954	0	0	27.5	-4.2	27.8
4200022	99	DIRN	SUR	28	-84	973	0	0	24.9	-2.7	25.0
4200023	99	DIRN	SUR	26	-83	896	0	0	26.3	2.2	26.4
4200026	99	DIRN	SUR	25	-83	971	0	0	28.4	-2.5	28.5
4200036	99	DIRN	SUR	29	-85	3128	0	0	23.8	2.1	23.8
4200056	99	DIRN	SUR	20	-85	2210	0	0	13.4	3.5	13.8
4200057	99	DIRN	SUR	17	-81	1917	0	0	9.5	3.1	10.0
4200058	99	DIRN	SUR	15	-75	1942	0	0	7.2	9.5	11.9
4200059	99	DIRN	SUR	15	-67	3701	0	0	11.2	4.2	12.0
4200060	99	DIRN	SUR	16	-63	1006	0	0	14.2	8.2	16.5
4200085	99	DIRN	SUR	18	-67	2821	0	0	21.5	15.1	26.3
42013	99	DIRN	SUR	27	-83	464	0	0	28.5	-0.9	28.5
42022	99	DIRN	SUR	28	-84	468	0	0	26.0	-1.7	26.1
42023	99	DIRN	SUR	26	-83	428	0	0	25.7	4.5	26.1
42026	99	DIRN	SUR	25	-84	476	0	0	30.0	-0.2	30.1
42036	99	DIRN	SUR	29	-85	502	0	0	23.2	2.5	23.3
42056	99	DIRN	SUR	20	-85	355	0	0	13.4	3.0	13.8

## 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
42057	99	DIRN	SUR	17	-82	304	0	0	10.0	2.9	10.4
42058	99	DIRN	SUR	15	-75	321	0	0	7.7	9.1	11.9
42059	99	DIRN	SUR	15	-68	611	0	0	11.4	3.9	12.1
42060	99	DIRN	SUR	16	-63	161	0	0	14.9	8.8	17.4
42085	99	DIRN	SUR	18	-67	587	0	0	21.4	13.3	25.2
4400005	99	DIRN	SUR	43	-69	557	0	0	16.5	5.9	17.5
4400007	99	DIRN	SUR	44	-70	3026	0	0	21.5	7.2	22.7
4400008	99	DIRN	SUR	40	-69	3410	0	0	16.9	13.2	21.5
4400009	99	DIRN	SUR	38	-75	2739	0	0	21.4	8.9	23.2
4400018	99	DIRN	SUR	42	-70	3143	0	0	21.8	9.9	24.0
4400020	99	DIRN	SUR	41	-70	3305	0	0	18.9	8.9	20.9
4400022	99	DIRN	SUR	41	-74	417	0	0	99.2	49.2	110.7
4400027	99	DIRN	SUR	44	-67	3446	0	0	16.2	10.4	19.2
4400029	99	DIRN	SUR	43	-71	505	0	0	21.1	7.7	22.5
4400030	99	DIRN	SUR	43	-70	537	0	0	26.9	4.9	27.4
4400032	99	DIRN	SUR	44	-69	533	0	0	17.3	-1.4	17.4
4400033	99	DIRN	SUR	44	-69	513	0	0	22.8	16.0	27.8
4400034	99	DIRN	SUR	44	-68	561	0	0	14.9	-2.5	15.1
4400039	99	DIRN	SUR	41	-73	338	0	0	52.3	7.4	52.8
4400040	99	DIRN	SUR	41	-74	495	0	0	29.5	8.5	30.8
4400041	99	DIRN	SUR	37	-77	1617	0	0	20.4	0.5	20.4
4400042	99	DIRN	SUR	38	-76	5055	0	0	23.5	1.8	23.6
4400058	99	DIRN	SUR	38	-76	5656	0	0	23.3	-0.2	23.3
4400062	99	DIRN	SUR	39	-76	4938	0	0	24.8	4.8	25.3
4400063	99	DIRN	SUR	39	-76	4615	0	0	28.6	0.7	28.6
4400064	99	DIRN	SUR	37	-76	5052	0	0	23.7	6.1	24.5
4400065	99	DIRN	SUR	40	-74	301	27	0	72.7	-27.7	77.8
4400066	99	DIRN	SUR	40	-73	3594	0	0	18.0	9.9	20.5
4400072	99	DIRN	SUR	37	-76	4939	0	0	24.8	2.7	25.0
4400150	99	DIRN	SUR	43	-64	559	0	0	17.1	16.7	23.9
4400488	99	DIRN	SUR	45	-61	50	0	0	23.2	4.9	23.7
4400489	99	DIRN	SUR	45	-61	50	0	0	18.9	-4.5	19.4
44005	99	DIRN	SUR	43	-69	546	0	0	17.2	5.2	18.0
44007	99	DIRN	SUR	44	-70	495	0	0	23.8	8.7	25.4
44008	99	DIRN	SUR	41	-69	555	0	0	17.4	13.5	22.0
44009	99	DIRN	SUR	39	-75	446	0	0	20.9	8.4	22.5
44018	99	DIRN	SUR	42	-70	500	0	0	21.1	11.3	24.0
44020	99	DIRN	SUR	42	-70	536	0	0	20.2	9.5	22.3
44022	99	DIRN	SUR	41	-74	187	0	0	101.2	30.9	105.8
44027	99	DIRN	SUR	44	-67	559	0	0	16.2	10.6	19.3
44029	99	DIRN	SUR	43	-71	497	0	0	21.4	7.2	22.6

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44030	99	DIRN	SUR	43	-70	515	0	0	26.8	4.9	27.3
44032	99	DIRN	SUR	44	-69	525	0	0	17.5	-1.8	17.6
44033	99	DIRN	SUR	44	-69	498	0	0	20.8	15.6	25.9
44034	99	DIRN	SUR	44	-68	549	0	0	15.2	-3.1	15.5
44039	99	DIRN	SUR	41	-73	321	0	0	50.9	10.7	52.0
44040	99	DIRN	SUR	41	-74	239	0	0	22.0	7.3	23.2
44041	99	DIRN	SUR	37	-77	177	0	0	21.5	1.0	21.5
44042	99	DIRN	SUR	38	-76	534	0	0	23.8	3.7	24.1
44058	99	DIRN	SUR	38	-76	552	0	0	23.3	-1.3	23.3
44062	99	DIRN	SUR	39	-76	527	0	0	25.3	6.7	26.2
44063	99	DIRN	SUR	39	-76	484	0	0	28.7	2.1	28.8
44064	99	DIRN	SUR	37	-76	559	0	0	23.2	6.8	24.1
44065	99	DIRN	SUR	40	-74	51	7	0	77.0	-24.2	80.7
44066	99	DIRN	SUR	40	-73	593	0	0	18.0	10.6	20.9
44072	99	DIRN	SUR	37	-76	542	0	0	24.3	4.5	24.8
44078	99	DIRN	SUR	60	-40	35	0	0	14.2	-10.1	17.4
44150	99	DIRN	SUR	43	-64	622	0	0	17.8	15.6	23.6
44258	99	DIRN	SUR	45	-63	505	0	0	19.0	-6.8	20.2
44488	99	DIRN	SUR	45	-61	479	0	0	27.0	11.5	29.3
44489	99	DIRN	SUR	46	-61	461	1	0	24.1	1.4	24.2
4500003	99	DIRN	SUR	45	-83	375	0	0	18.4	6.7	19.6
4500005	99	DIRN	SUR	42	-82	3225	0	0	19.6	7.8	21.1
4500008	99	DIRN	SUR	44	-82	1384	0	0	20.0	11.6	23.1
4500012	99	DIRN	SUR	44	-77	1854	0	0	17.9	17.2	24.8
4500132	99	DIRN	SUR	42	-81	270	0	0	21.7	-0.4	21.7
4500135	99	DIRN	SUR	44	-77	151	0	0	21.0	11.8	24.1
4500139	99	DIRN	SUR	43	-80	306	0	0	27.7	3.5	27.9
4500142	99	DIRN	SUR	43	-79	281	0	0	19.9	3.3	20.1
4500143	99	DIRN	SUR	45	-81	72	0	0	13.9	17.5	22.3
4500159	99	DIRN	SUR	44	-79	339	0	0	26.2	0.5	26.2
4500165	99	DIRN	SUR	42	-83	1114	0	0	19.7	4.7	20.3
4500203	99	DIRN	SUR	41	-83	1746	0	0	62.5	-67.9	92.3
45003	99	DIRN	SUR	45	-83	61	0	0	15.6	2.5	15.8
45005	99	DIRN	SUR	42	-82	518	0	0	19.5	7.8	21.0
45008	99	DIRN	SUR	44	-82	226	0	0	20.7	11.0	23.5
45012	99	DIRN	SUR	44	-77	295	0	0	18.1	16.4	24.4
45132	99	DIRN	SUR	43	-81	321	0	0	24.5	-0.5	24.5
45135	99	DIRN	SUR	44	-77	150	0	0	21.0	9.7	23.2
45139	99	DIRN	SUR	43	-80	369	0	0	27.3	2.4	27.4
45142	99	DIRN	SUR	43	-79	334	0	0	20.0	1.5	20.0
45143	99	DIRN	SUR	45	-81	70	0	0	16.3	14.3	21.7

## 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
45159	99	DIRN	SUR	44	-79	371	0	0	25.2	-0.9	25.2
45165	99	DIRN	SUR	42	-83	206	0	0	19.5	3.8	19.8
45203	99	DIRN	SUR	41	-83	286	0	0	64.5	-64.0	90.9
6100198	99	DIRN	SUR	37	-2	402	0	0	18.7	3.9	19.1
6100281	99	DIRN	SUR	40	0	289	0	0	44.9	-18.0	48.4
6100417	99	DIRN	SUR	38	0	498	0	0	17.4	10.2	20.2
6200001	99	DIRN	SUR	45	-5	533	0	0	12.6	-0.1	12.6
6200024	99	DIRN	SUR	44	-3	396	0	0	16.0	7.9	17.9
6200025	99	DIRN	SUR	44	-6	431	0	0	22.2	-18.8	29.1
6200029	99	DIRN	SUR	49	-12	569	0	0	12.3	-2.7	12.6
6200081	99	DIRN	SUR	51	-13	594	0	0	14.6	-6.4	16.0
6200082	99	DIRN	SUR	44	-8	539	0	0	31.5	26.8	41.3
6200083	99	DIRN	SUR	43	-9	438	0	0	14.1	4.5	14.8
6200084	99	DIRN	SUR	42	-9	376	0	0	36.2	29.2	46.5
6200085	99	DIRN	SUR	36	-7	509	0	0	11.4	12.1	16.6
6200091	99	DIRN	SUR	53	-5	590	0	0	15.8	7.6	17.5
6200092	99	DIRN	SUR	51	-11	688	0	0	10.9	5.5	12.2
6200093	99	DIRN	SUR	55	-10	651	0	0	14.3	7.9	16.3
6200094	99	DIRN	SUR	52	-7	637	0	0	13.2	8.3	15.6
6200095	99	DIRN	SUR	53	-16	689	0	0	10.8	5.0	11.9
6200103	99	DIRN	SUR	50	-3	382	0	0	13.2	-0.3	13.2
6200163	99	DIRN	SUR	47	-8	509	0	0	21.6	12.0	24.7
6200191	99	DIRN	SUR	41	-10	79	0	0	33.5	3.2	33.7
6200192	99	DIRN	SUR	40	-10	395	0	0	17.9	-5.9	18.9
6200199	99	DIRN	SUR	40	-9	304	0	0	21.9	23.1	31.8
6200442	99	DIRN	SUR	49	-16	175	0	0	24.4	39.3	46.3
62029	99	DIRN	SUR	49	-12	1343	0	0	12.3	-3.2	12.7
62081	99	DIRN	SUR	51	-13	1371	0	0	14.3	-6.3	15.7
62091	99	DIRN	SUR	53	-5	584	0	0	15.8	7.3	17.4
62092	99	DIRN	SUR	51	-11	682	0	0	10.9	4.8	12.0
62093	99	DIRN	SUR	55	-10	647	0	0	14.8	7.3	16.5
62094	99	DIRN	SUR	52	-7	631	0	0	13.9	7.9	16.0
62095	99	DIRN	SUR	53	-16	687	0	0	11.2	4.6	12.1
62103	99	DIRN	SUR	50	-3	931	0	0	13.2	0.2	13.2
62105	99	DIRN	SUR	55	-13	1365	0	0	11.7	-4.8	12.6
62107	99	DIRN	SUR	50	-6	759	0	0	14.6	0.9	14.6
62112	99	DIRN	SUR	58	0	1256	0	0	10.8	-4.9	11.9
62114	99	DIRN	SUR	58	0	1295	0	0	10.8	-2.1	11.0
62163	99	DIRN	SUR	48	-9	1181	0	0	20.7	10.6	23.3
62442	99	DIRN	SUR	49	-16	548	0	0	12.9	41.0	43.0
6400045	99	DIRN	SUR	59	-12	581	0	0	15.6	-8.4	17.7

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
6400046	99	DIRN	SUR	61	-4	554	0	0	13.3	2.5	13.5
64041	99	DIRN	SUR	61	-3	1284	0	0	14.9	9.1	17.5
64045	99	DIRN	SUR	59	-12	1358	0	0	15.0	-9.4	17.7
64046	99	DIRN	SUR	61	-4	1301	0	0	13.3	1.8	13.5

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

ASDE09	ATGU3FT	BPMWB2N	DBLK	GQBZLZL	JNKN7JF	JNSR	JPBN	KJJF9XN
KMPLHPW	LRVQE3U	USSIO	XKQLWQB	XQFJRGX	YLV96WM	ZVQEQCM	2EERVTP	7JUNA4N
9ZT9MRK	01001	01004	01010	01028	01241	01400	01415	01492
02365	02527	02591	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
17196	17220	17240	17351	17516	17607	20674	22008	22820
22845	23205	23472	23884	23921	24641	24908	26038	26435
26629	26708	27459	27707	27713	27962	28225	28661	28695
29612	29698	30557	30673	30935	31770	34122	34172	34731
35121	40179	42101	42369	42971	43150	45004	47102	47104
47138	47155	47169	47186	47230	47401	47412	47582	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
60096	60155	60191	60253	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	71081	71082	71109	71119	71603	71722
71802	71811	71815	71816	71823	71845	71867	71906	71907
71908	71909	71913	71917	71924	71925	71926	71934	71945
71957	71964	72202	72206	72208	72210	72215	72230	72240
72248	72251	72261	72265	72274	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
89055	89062	89564	89571	89592	89611	89625	89642	91165
91212	91285	91334	91348	91376	91408	91413	91592	91765
91925	91938	91948	91958	93112	93417	93817	93844	94001
94120	94150	94170	94203	94299	94302	94312	94326	94332
94403	94430	94461	94510	94578	94610	94637	94638	94653
94659	94672	94711	94767	94776	94802	94821	94866	94910
94975	94995	94996	94998	95282	95527	96413	96441	96471
96996								



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

ASDE09	ATGU3FT	BPMWB2N	DBLK	GQBZLZL	JNKN7JF	JNSR	KJJF9XN	KMPLHPW
LRVQE3U	XKQLWQB	XQFJRGX	YLV96WM	ZVQEQCM	2EERVTP	7JUNA4N	9ZT9MRK	01010
01028	01415	01492	02365	02527	02591	02836	02963	06610
07110	07145	07510	07645	07761	08001	08023	08190	08221
08302	08383	08430	08508	08522	08536	11010	11035	11120
11240	12575	17607	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	60253	65344	67083	72413	76743	76903	89002
89642	91925	91938	91948	91958	93817	94001	94653	

## 5 Annex - Explanations of figures and tables

### 5.1 General

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

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

### 5.2 Data Availability

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

### 5.3 Data Quality

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

It should be noted that:

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

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

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

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

The corresponding limits for wind (table 8) are:

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

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

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

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

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

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

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

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

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