



# ECMWF Global Data Monitoring Report

**March 2020**

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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 28 (June 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	Feb	Mar	Ident	Time	Feb	Mar
02591	(00)	29	12	16144	(00)	15	30
02591	(12)	29	11	23884	(12)	6	27
27707	(12)	24	10	23955	(00)	5	31
33345	(12)	29	3	31300	(00)	0	31
40430	(00)	27	16	31300	(12)	0	31
41169	(00)	30	4	41923	(00)	10	28
42027	(00)	27	1	41923	(12)	11	29
42101	(00)	29	2	41977	(00)	7	19
42339	(00)	30	8	42410	(12)	0	19
42379	(00)	29	7	42809	(12)	0	20
42634	(00)	24	0	42867	(12)	0	19
60390	(00)	29	16	43003	(12)	0	22
68512	(12)	17	1	43279	(12)	0	19
78988	(00)	18	0	63985	(12)	0	15
78988	(12)	18	0	64400	(00)	0	14
80222	(12)	28	17	71126	(00)	17	30
80398	(12)	25	14	72214	(00)	4	36
83649	(12)	28	9	72214	(12)	2	35
85469	(00)	28	15	74494	(00)	5	19
89009	(12)	21	4	76458	(00)	2	25
89664	(12)	21	4	76595	(00)	0	14
91610	(00)	20	4	76644	(00)	3	29
98747	(00)	26	0	76692	(00)	4	24
98747	(12)	24	0	76805	(00)	0	13
-	-	-	-	78397	(00)	10	31
-	-	-	-	82411	(00)	9	27
-	-	-	-	82411	(12)	13	26
-	-	-	-	82705	(00)	16	31
-	-	-	-	83362	(00)	15	28
-	-	-	-	91334	(00)	20	31

## 2.2 Drifting Buoys

Surface pressure observations from 1938 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

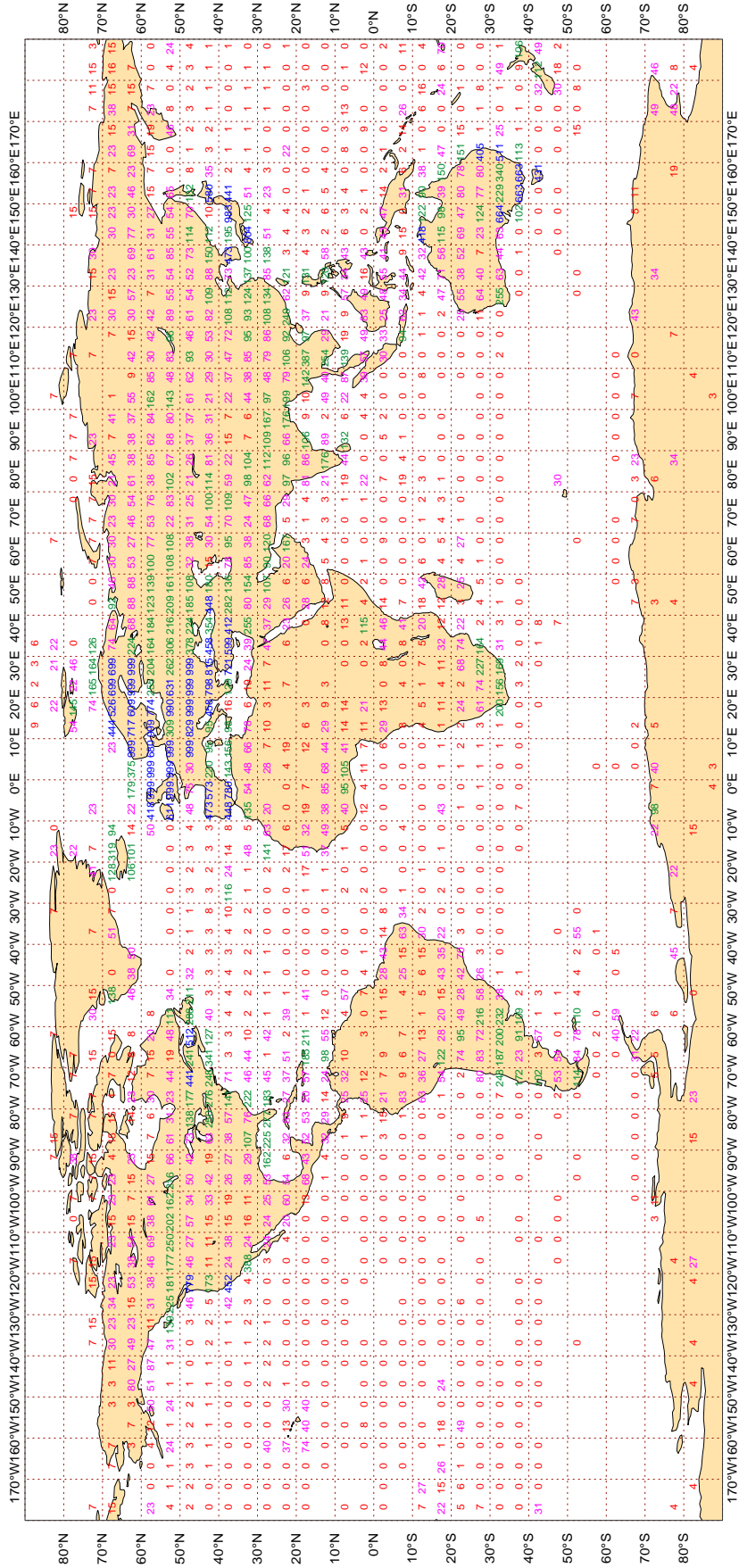
Table 12 provides quality statistics of aircraft wind observations stratified by airline carrier.



3.2.1 Figure 1 - Availability - SYNOP PRESSURE

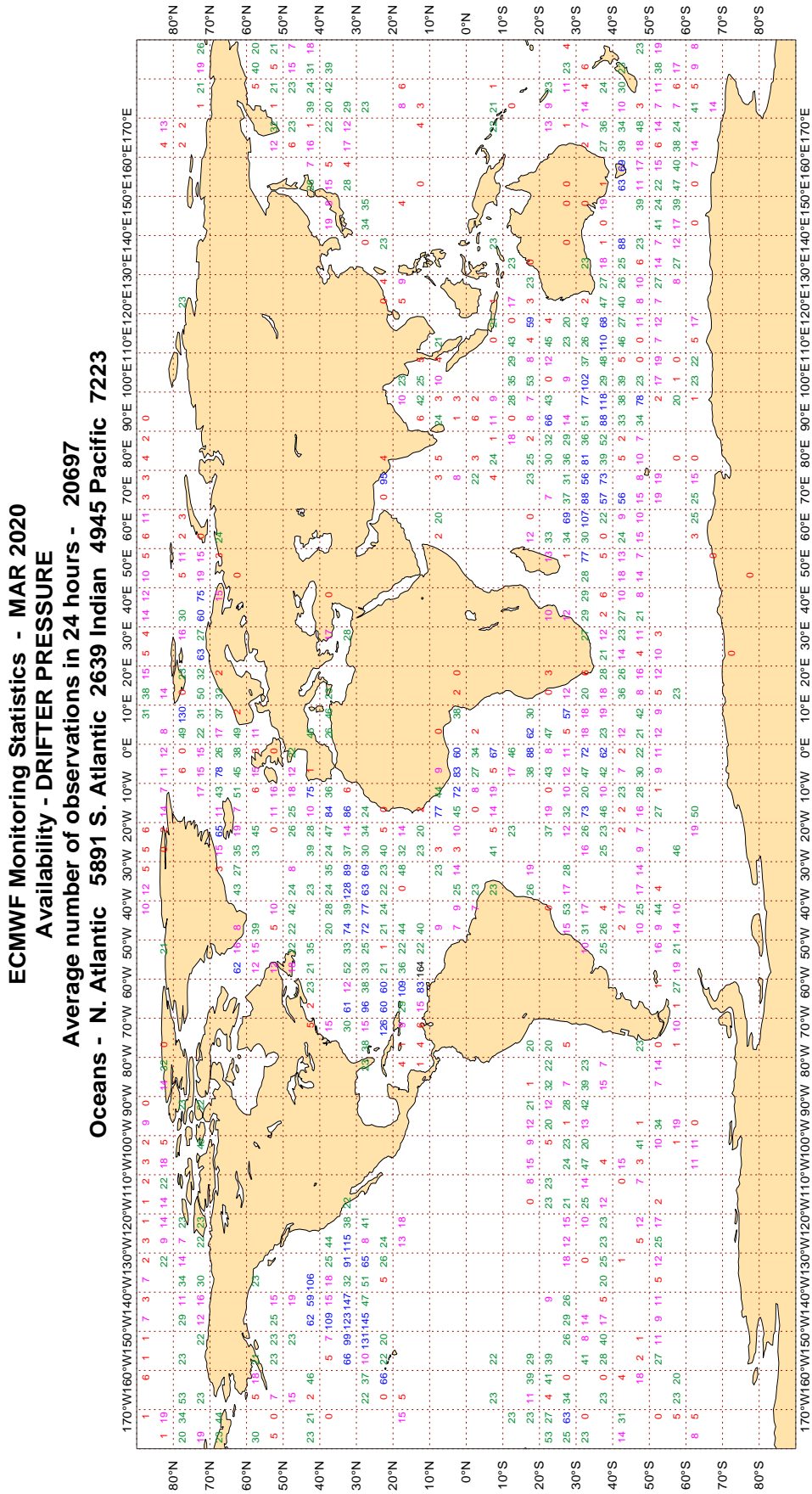
Figure 1

ECMWF Monitoring Statistics - MAR 2020  
 Availability - SYNOP/SHIP (manual, auto) pressure  
 Average number of observations in 24 hours - 95516  
 LAND - WMO Region I: 4088 II:17950 III: 4015 IV: 6989  
 Region V: 9222 VI:40325 Antarctic: 939  
 Oceans - N. Atlantic 6625 S. Atlantic 244 Indian 530 Pacific 4590



3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

Figure 2

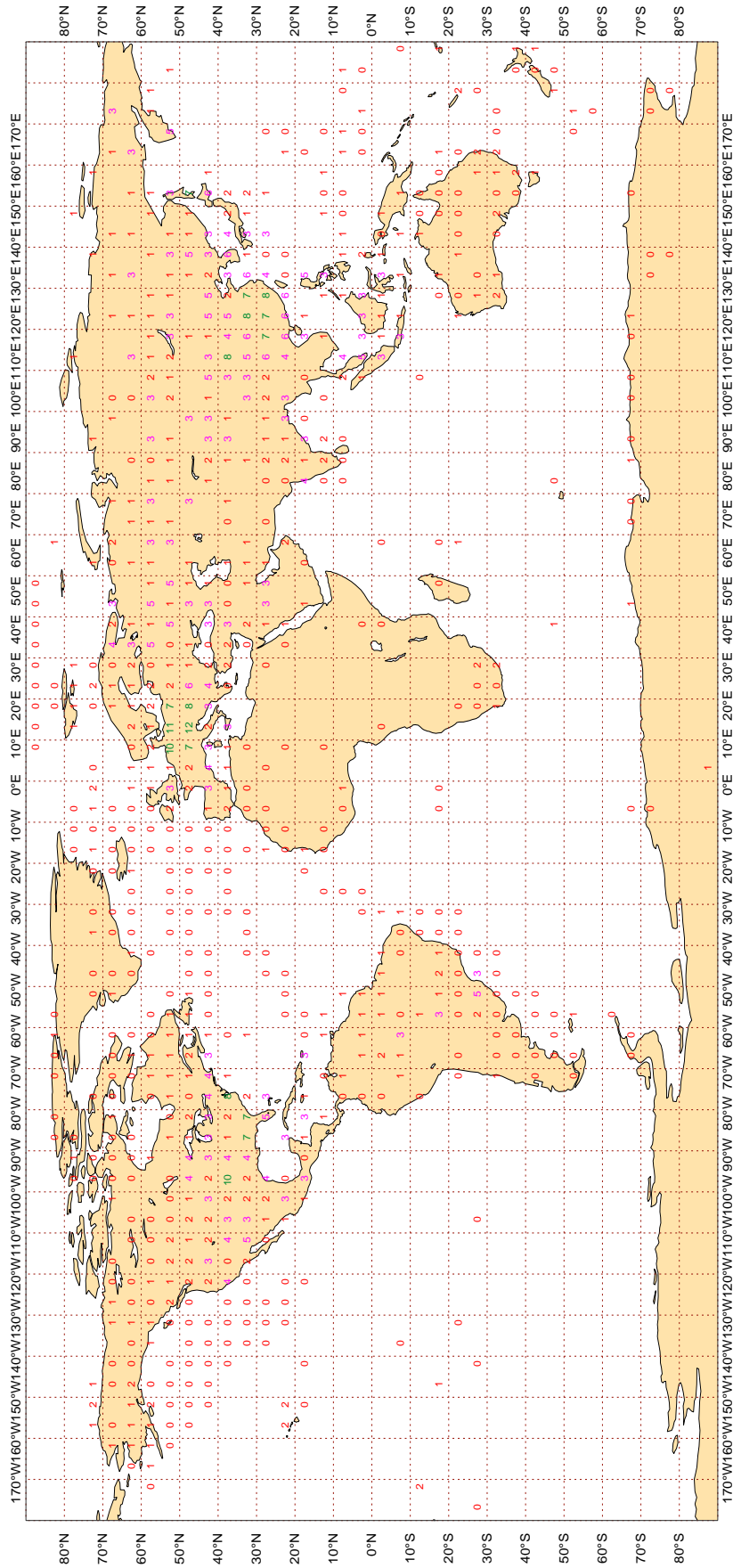


Magics 3.0.4 (64 bit)

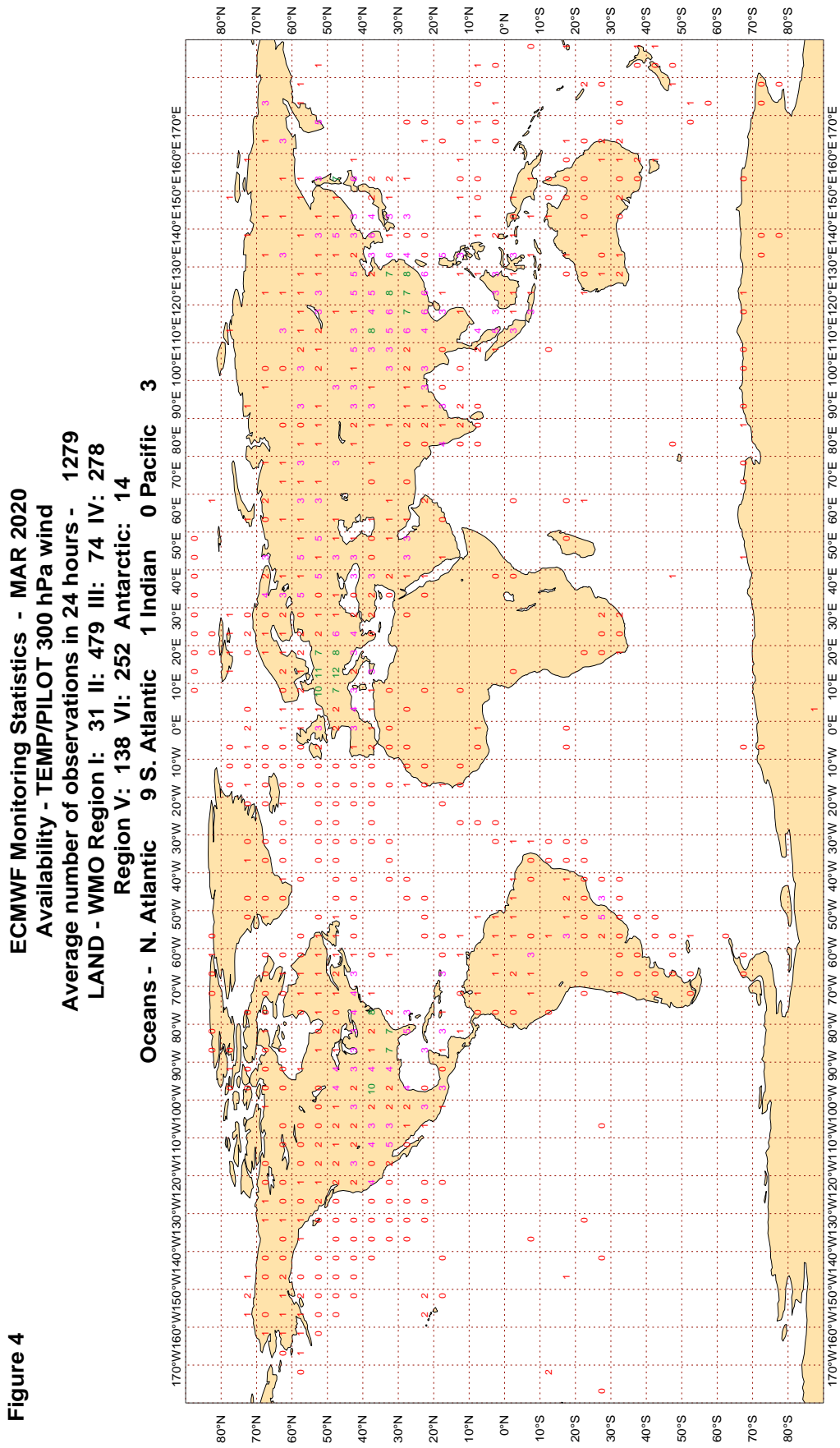
3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

Figure 3

ECMWF Monitoring Statistics - MAR 2020  
 Availability - TEMP 500 hPa Geopotential  
 Average number of observations in 24 hours - 1279  
 LAND - WMO Region I: 31 II: 479 III: 74 IV: 278  
 Region V: 138 VI: 252 Antarctic: 14  
 Oceans - N. Atlantic 9 S. Atlantic 1 Indian 0 Pacific 3



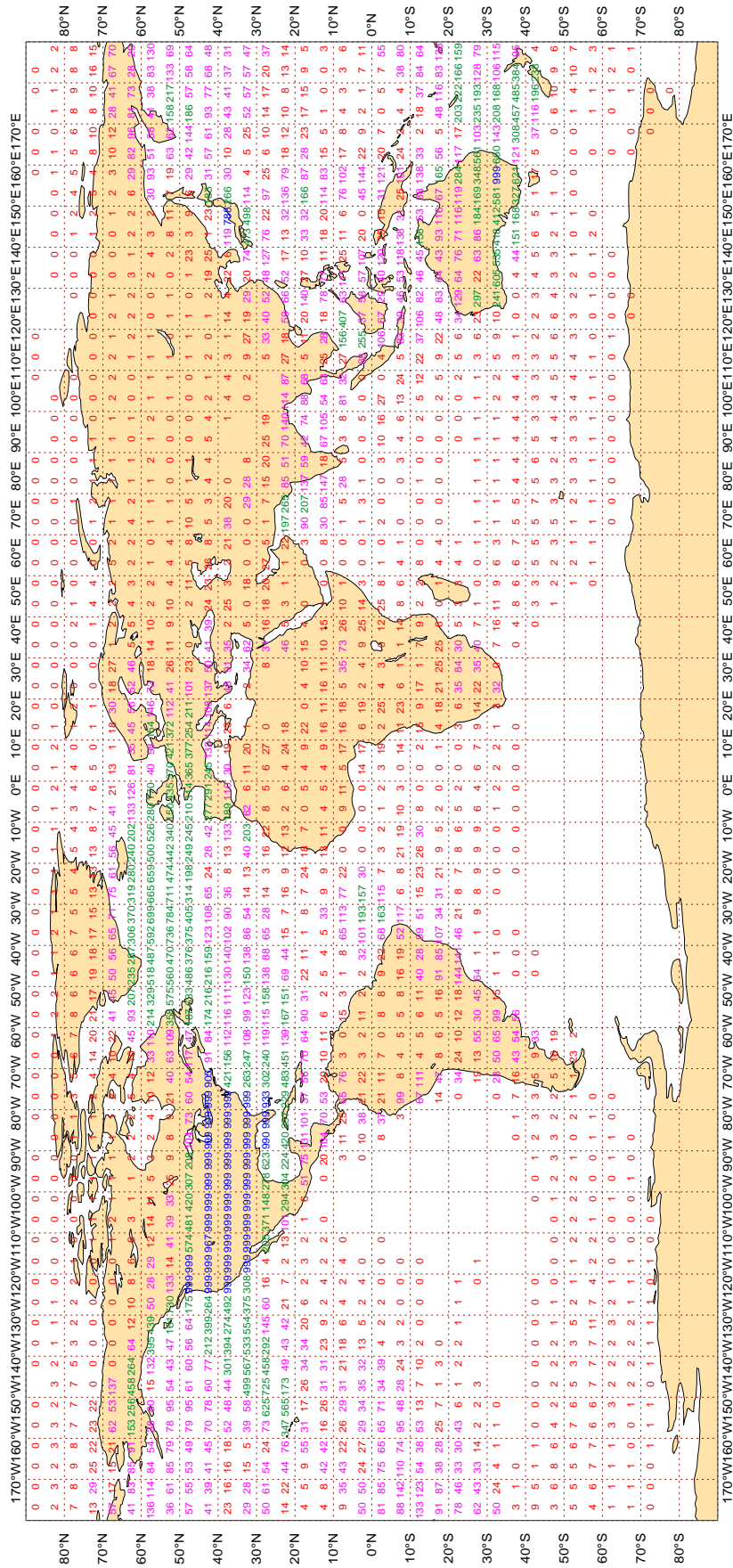
3.2.4 Figure 4 - Availability - TEMP/PILOT 300 hPa wind



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

Figure 5

ECMWF Monitoring Statistics - MAR 2020  
Availability - Aircraft winds 300-150 hPa  
Average number of observations in 24 hours - 185936

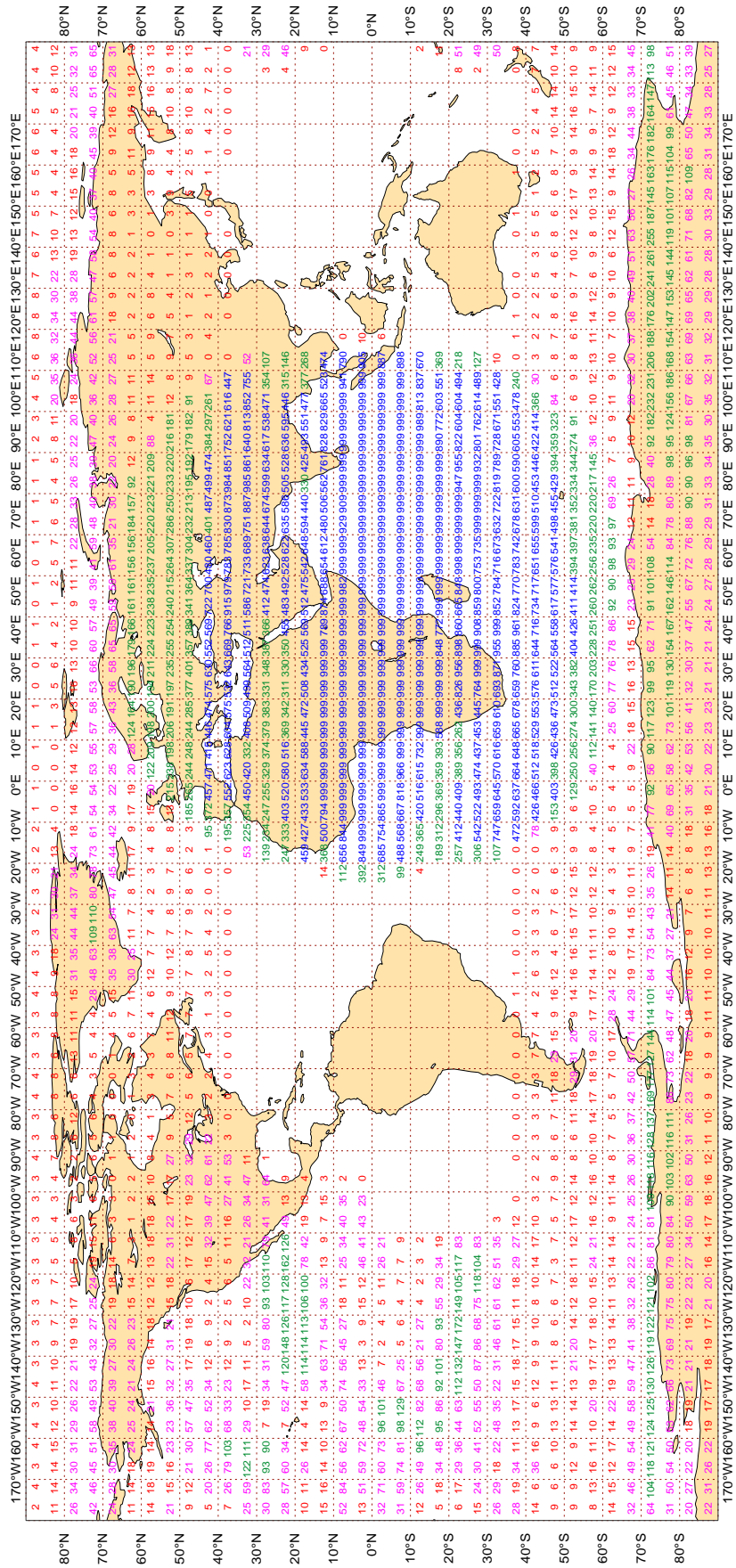




3.2.6 Figure 6 - Availability - SATOB winds 400-150 hPa

Figure 6

ECMWF Monitoring Statistics - MAR 2020  
Availability - AMV winds 400-150 hPa  
Average number of observations in 24 hours - 461306



Magics 3.0.4 (64 bit)



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

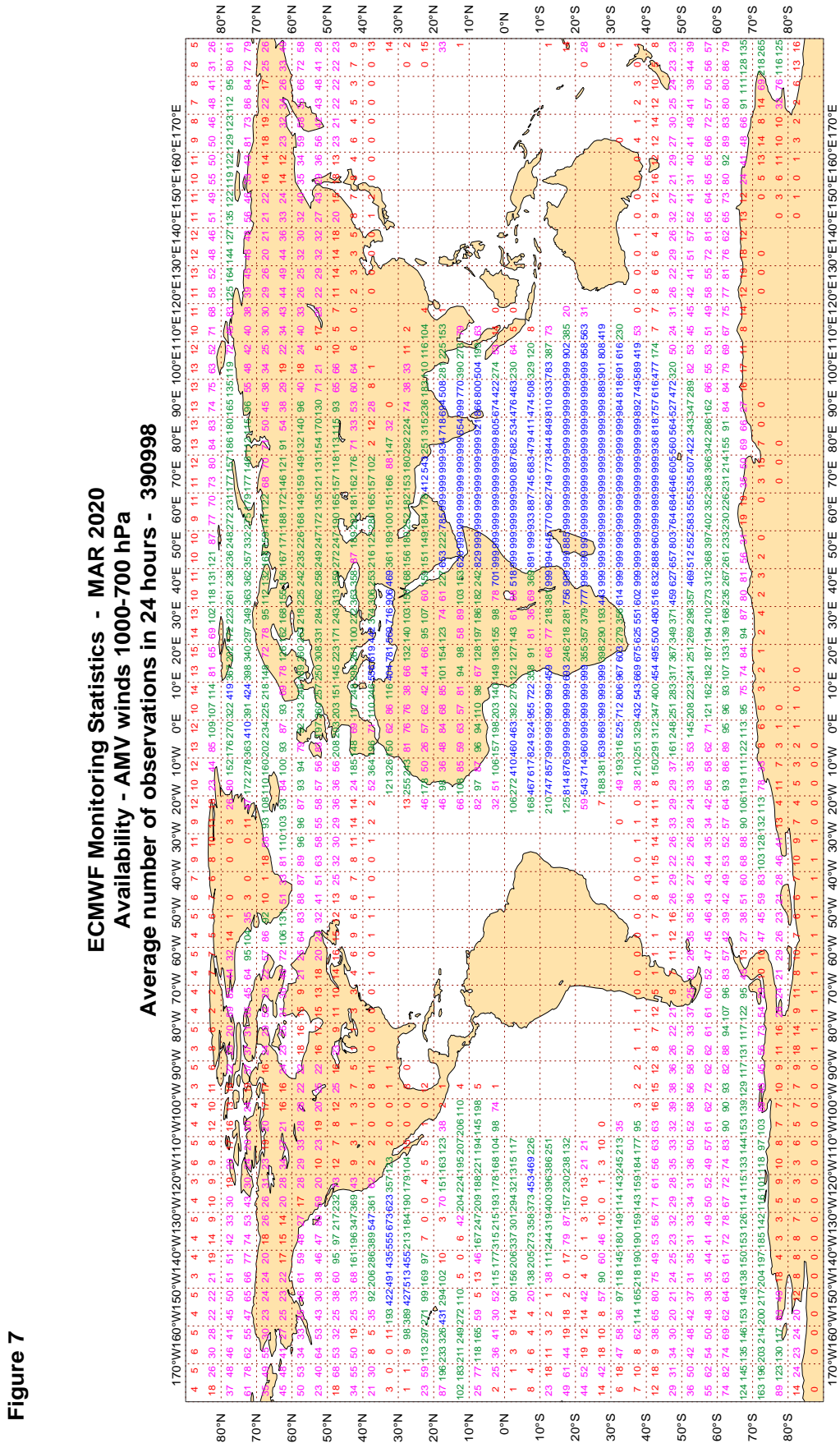


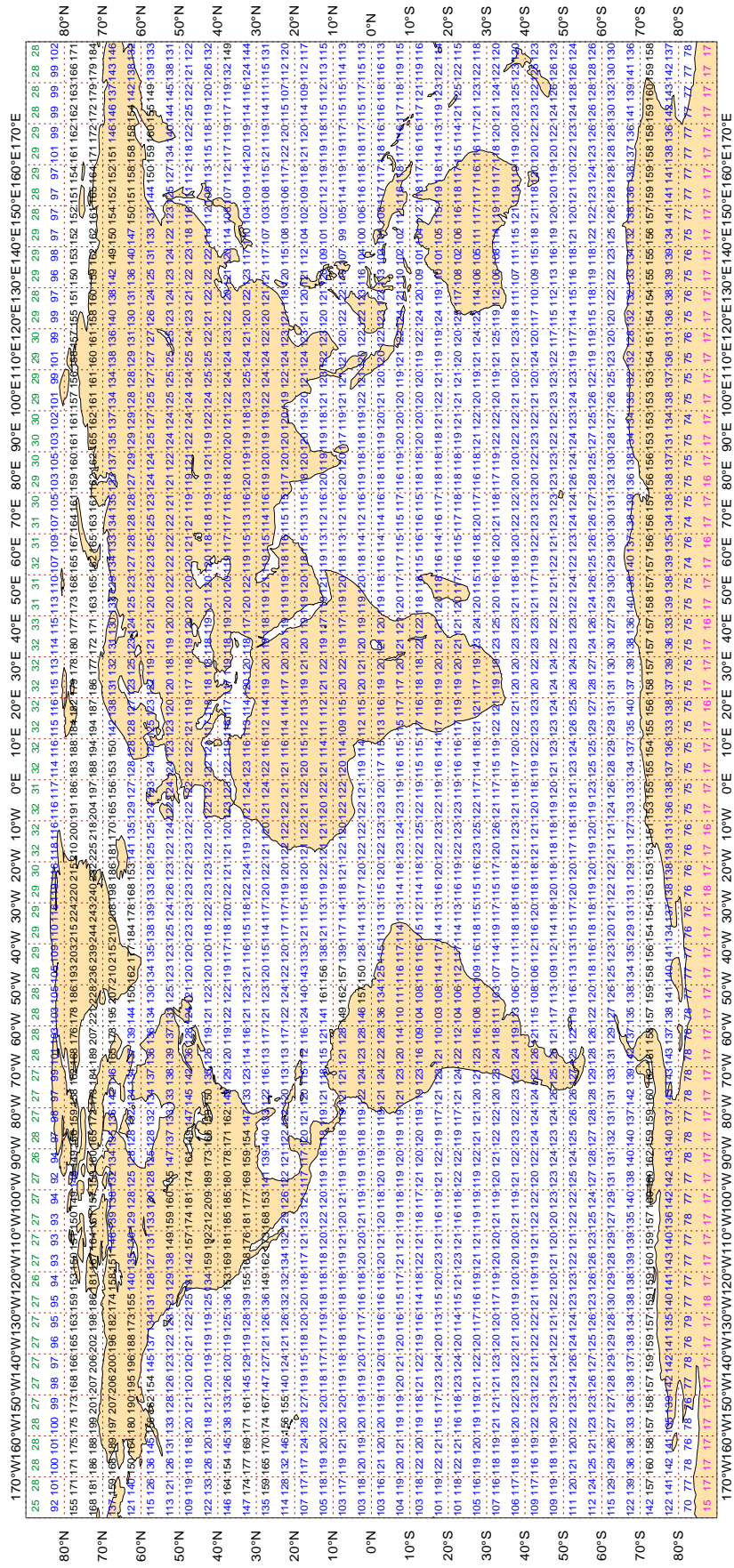
Figure 7



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

Figure 8

ECMWF Monitoring Statistics - MAR 2020  
Availability - NOAA15 ATOVS : AMSU-A  
Average number of observations in 24 hours - 315814



Magics 3.0.4 (64 bit)

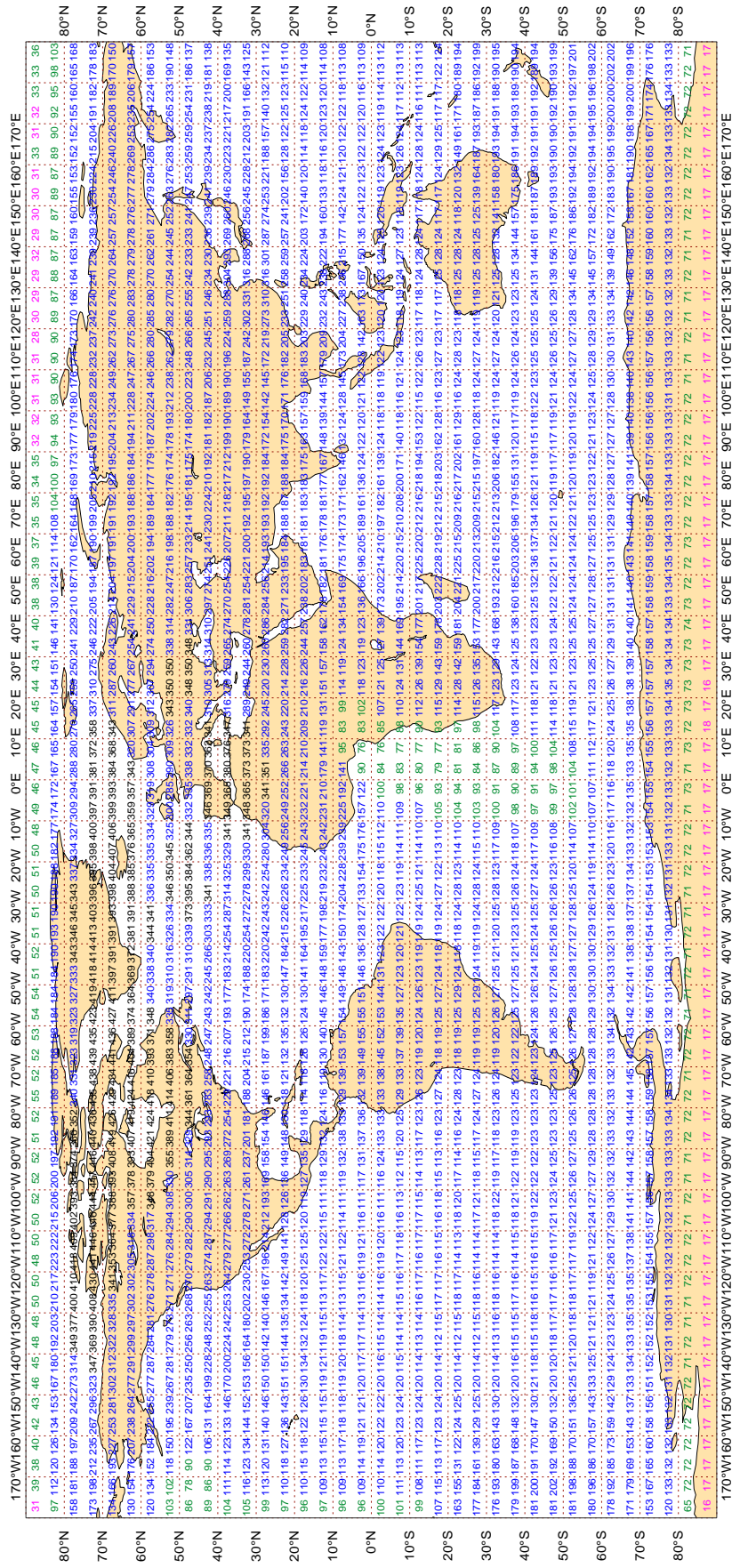




3.2.9 Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A

Figure 9.1

ECMWF Monitoring Statistics - MAR 2020  
 Availability - NOAA18 ATOVS : AMSU-A  
 Average number of observations in 24 hours - 444315



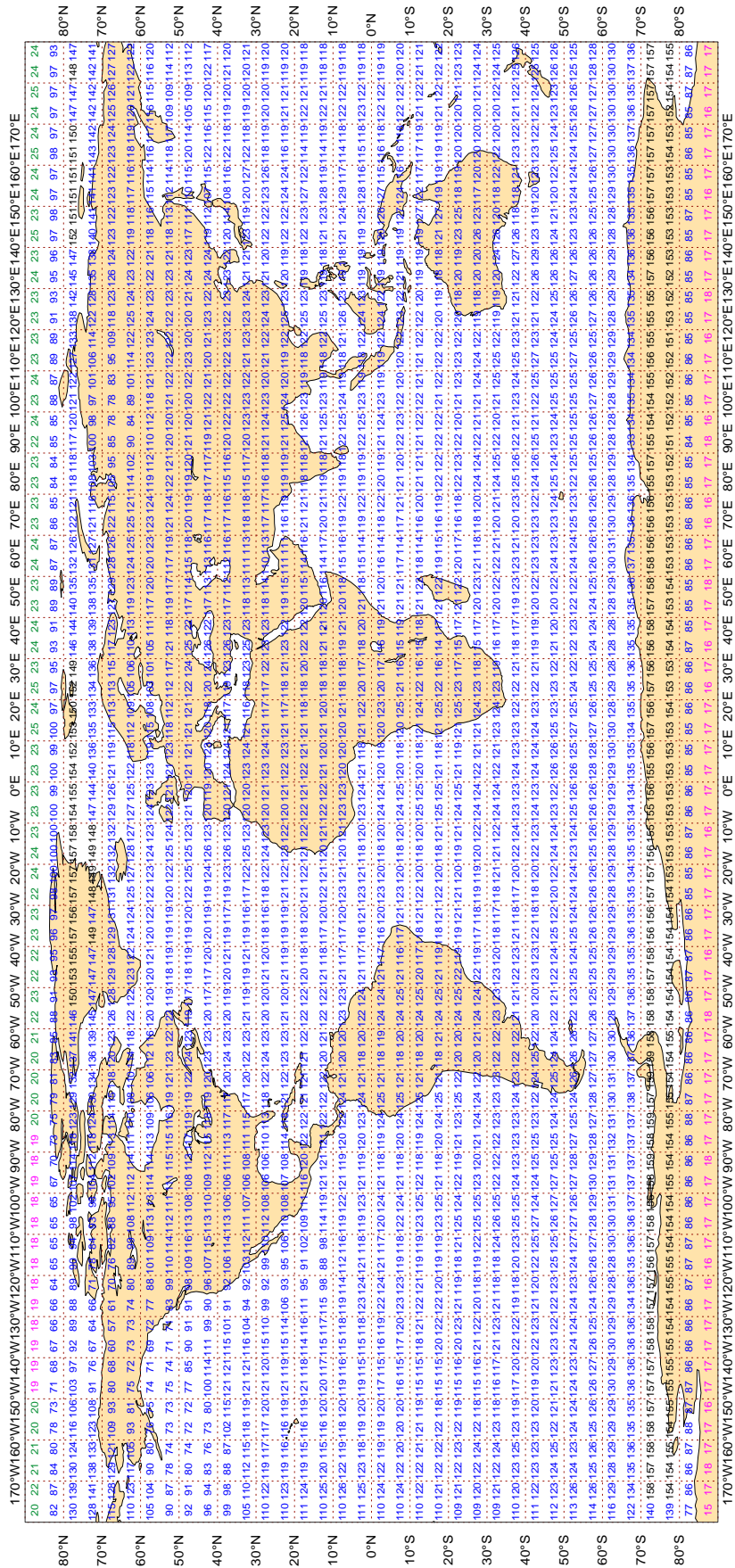
Magics 3.0.4 (64 bit)



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

Figure 9.2

ECMWF Monitoring Statistics - MAR 2020  
Availability - AQUA ATOVS : AMSU-A  
Average number of observations in 24 hours - 298533



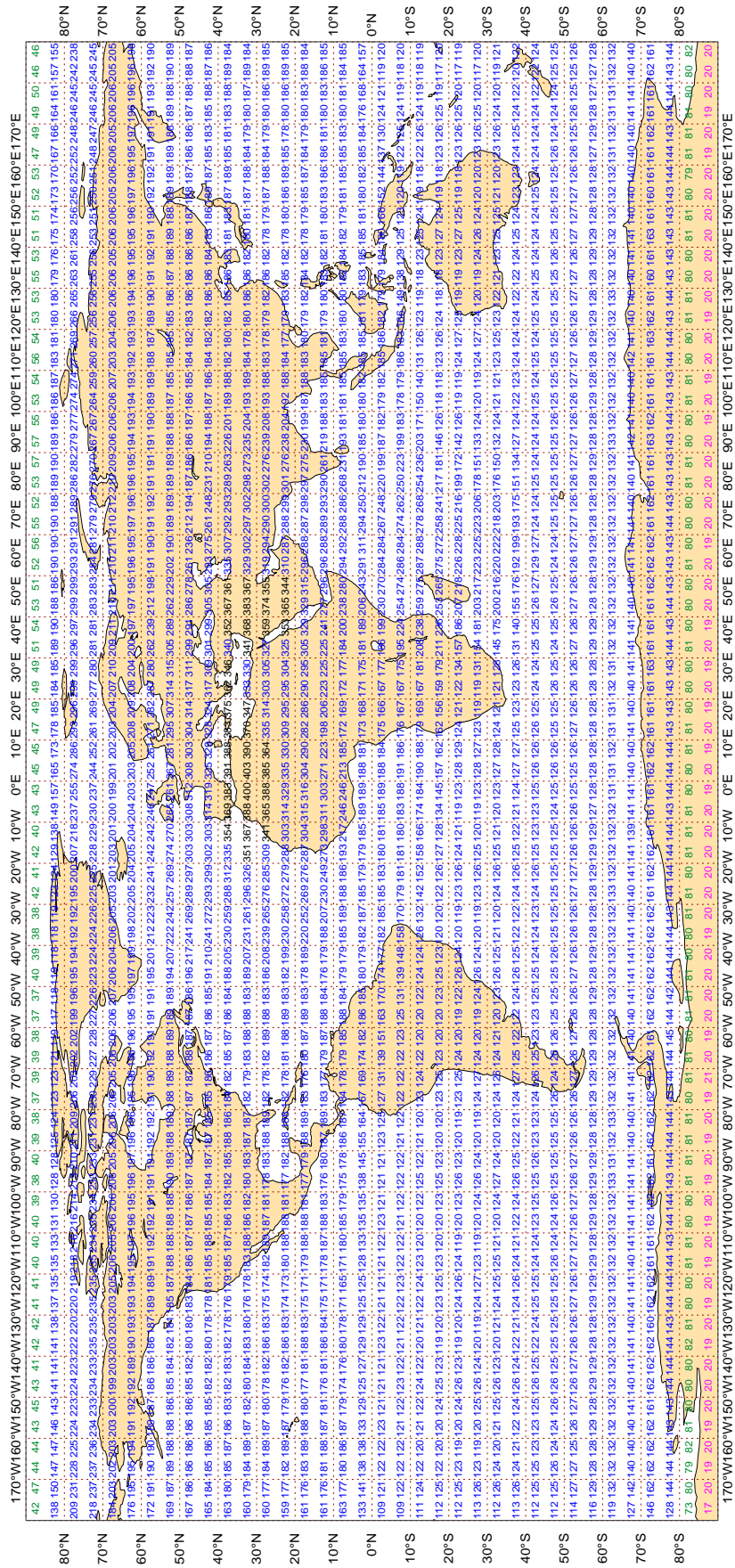
Magics 3.0.4 (64 bit)



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

Figure 9.3

ECMWF Monitoring Statistics - MAR 2020  
Availability - METOP ATOVS : AMSU-A  
Average number of observations in 24 hours - 433023



**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 : MAR 2020  
 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
2GNG3	99	P	SUR	33	0	1.1	6.2	6.2
44009	99	P	SUR	122	0	0.6	-3.8	3.8
44058	99	P	SUR	133	0	0.6	3.3	3.4
44062	99	P	SUR	89	45	6.2	-6.0	8.6
4XFC	99	P	SUR	22	0	2.0	5.8	6.1
9HA3062	99	P	SUR	19	0	1.8	-4.2	4.6
9HJB9	99	P	SUR	41	0	1.9	3.1	3.6
9V2779	99	P	SUR	34	0	4.7	3.8	6.0
9V7987	99	P	SUR	17	0	1.2	5.1	5.2
9V8503	99	P	SUR	20	0	2.5	6.5	6.9
9V8838	99	P	SUR	36	0	1.2	6.8	6.9
9V9287	99	P	SUR	27	0	1.1	-3.1	3.3
9V9373	99	P	SUR	27	0	1.0	3.4	3.5
9V9375	99	P	SUR	31	0	1.2	3.8	4.0
9V9793	99	P	SUR	24	0	1.9	4.5	4.9
A8OR8	99	P	SUR	58	0	3.0	4.3	5.2
AUXE	99	P	SUR	119	0	0.4	3.0	3.1
BKIZ	99	P	SUR	23	0	1.7	-8.2	8.4
C6JT	99	P	SUR	17	0	1.2	4.3	4.5
C6XS7	99	P	SUR	19	0	1.3	3.3	3.6
C6YM7	99	P	SUR	22	0	1.0	5.7	5.8
D5HF5	99	P	SUR	33	0	1.4	4.1	4.4
H3VU	99	P	SUR	21	0	2.3	3.3	4.1
LAPD7	99	P	SUR	17	0	1.3	3.0	3.3
LAQL7	99	P	SUR	24	0	1.5	3.5	3.8
OUIY2	99	P	SUR	28	1	1.8	6.3	6.6
OXCQ2	99	P	SUR	39	0	3.5	5.5	6.6
PDHU	99	P	SUR	23	0	1.1	4.2	4.4
UAST	99	P	SUR	18	13	2.6	1.6	3.1
UBRW	99	P	SUR	26	1	6.0	-1.0	6.0
UBXS	99	P	SUR	33	0	5.2	-5.4	7.5
UCFT	99	P	SUR	40	0	2.3	5.2	5.7

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
UCUD	99	P	SUR	103	1	1.8	-11.1	11.3
UDAD	99	P	SUR	79	30	2.4	0.2	2.4
UFJN	99	P	SUR	62	1	3.1	-3.7	4.8
V7HH2	99	P	SUR	16	0	3.1	3.7	4.8
V7UU2	99	P	SUR	35	0	1.2	5.1	5.2
V7UU3	99	P	SUR	18	0	2.4	3.4	4.2
VRDJ3	99	P	SUR	150	0	0.4	-4.9	5.0
VRFX2	99	P	SUR	36	0	1.2	-4.0	4.2
VRFX5	99	P	SUR	52	0	1.0	3.2	3.3
VRLJ2	99	P	SUR	40	0	1.0	-5.5	5.6
VRPF9	99	P	SUR	18	0	0.5	-6.6	6.6
VRR14	99	P	SUR	90	0	3.1	4.1	5.1
VRRX9	99	P	SUR	16	0	1.3	-8.8	8.9
VRVQ9	99	P	SUR	36	0	1.3	-4.2	4.4
VRWE8	99	P	SUR	15	0	3.4	-4.2	5.4
VRZQ8	99	P	SUR	16	0	1.1	-3.6	3.8
VTSG	99	P	SUR	18	0	0.0	11.7	11.7
VTWS	99	P	SUR	106	47	4.7	5.7	7.3
WDA5598	99	P	SUR	32	0	3.1	4.7	5.6
WDDI	99	P	SUR	34	0	0.8	3.6	3.7
WDG8555	99	P	SUR	44	0	2.4	4.1	4.7
WDJ3192	99	P	SUR	90	0	2.3	4.6	5.1
WDJ3199	99	P	SUR	31	0	0.8	-3.6	3.7
WPKW	99	P	SUR	72	2	2.9	4.3	5.2

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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND SPEED (M/S)  
 AREA : GLOBAL  
 PERIOD : MAR 2020  
 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
46147	99	SPEED	SUR	88	0	0	3.9	-7.8	8.7



### 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 : MAR 2020  
 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
44072	99	DIRN	SUR	127	0	0	20.9	-73.1	76.0

**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 : MAR 2020  
 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
1501667	99	P	SUR	0	-41	109	93	6.9	-9.2	11.5
2301708	99	P	SUR	21	68	931	0	2.6	4.8	5.5
2501539	99	P	SUR	72	163	744	357	6.4	-6.0	8.8
2501540	99	P	SUR	73	176	745	709	1.9	-11.5	11.6
2501662	99	P	SUR	72	-169	745	90	6.8	0.1	6.8
2501667	99	P	SUR	77	113	744	436	6.1	-5.0	7.9
2501668	99	P	SUR	79	155	744	621	5.2	-9.2	10.6
3100866	99	P	SUR	-37	-45	741	0	2.1	5.3	5.7
4400062	99	P	SUR	39	-76	2037	1111	5.6	-4.6	7.3
4401561	99	P	SUR	30	-54	431	393	1.0	-12.8	12.8
4401861	99	P	SUR	2	-16	447	0	0.5	-6.6	6.6
44062	99	P	SUR	39	-76	477	250	5.7	-4.6	7.3
4701658	99	P	SUR	72	-95	732	732	0.0	0.0	0.0
4701660	99	P	SUR	70	-102	744	744	0.0	0.0	0.0
4800770	99	P	SUR	66	4	735	735	0.0	0.0	0.0
4801654	99	P	SUR	72	172	701	701	0.0	0.0	0.0
4801667	99	P	SUR	78	-171	708	708	0.0	0.0	0.0
4801668	99	P	SUR	76	-172	320	320	0.0	0.0	0.0
5501581	99	P	SUR	-48	-151	34	0	1.2	4.7	4.9
6200191	99	P	SUR	41	-10	324	14	6.1	6.6	8.9
6202615	99	P	SUR	20	-27	447	0	0.7	11.6	11.6
6202641	99	P	SUR	16	-61	35	0	0.0	-6.6	6.6
6301563	99	P	SUR	55	-8	30	27	2.6	-2.0	3.3



**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 : MAR 2020  
 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
46147	99	SPEED	SUR	52	-131	532	0	0	3.9	-7.8	8.7
6101005	99	SPEED	SUR	38	26	235	0	0	3.5	-7.5	8.3

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

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 PERIOD : MAR 2020  
 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
1400047	99	DIRN	SUR	-4	57	118	0	0	127.9	-89.7	156.2
1500001	99	DIRN	SUR	-10	-10	476	0	0	56.7	-27.7	63.1
1500008	99	DIRN	SUR	-20	-10	223	0	0	11.1	38.5	40.1
23091	99	DIRN	SUR	18	89	45	0	0	11.9	-28.3	30.8
23094	99	DIRN	SUR	14	84	136	0	0	11.2	-28.8	30.9
23099	99	DIRN	SUR	13	80	96	0	0	152.6	12.5	153.1
23451	99	DIRN	SUR	15	69	148	0	0	10.8	-29.3	31.2
23452	99	DIRN	SUR	12	69	129	0	0	19.4	-42.2	46.4
23454	99	DIRN	SUR	10	73	87	0	0	41.7	69.4	80.9
23459	99	DIRN	SUR	14	87	54	0	0	22.1	20.5	30.2
23460	99	DIRN	SUR	7	88	160	0	0	13.3	20.3	24.2
23492	99	DIRN	SUR	11	72	76	0	0	39.4	-25.5	46.9
23497	99	DIRN	SUR	11	72	86	0	0	94.7	-71.3	118.5
3100003	99	DIRN	SUR	-8	-31	194	0	0	65.0	-0.4	65.0
41004	99	DIRN	SUR	33	-79	158	0	0	63.7	9.1	64.3
4400072	99	DIRN	SUR	37	-76	2945	0	0	22.3	-72.8	76.1
44072	99	DIRN	SUR	37	-76	576	0	0	22.3	-73.0	76.4
44139	99	DIRN	SUR	44	-57	687	0	0	12.7	-24.6	27.7
4600060	99	DIRN	SUR	61	-147	413	0	0	40.3	22.6	46.2
46060	99	DIRN	SUR	61	-147	401	0	0	37.8	21.6	43.5
5300040	99	DIRN	SUR	-8	95	296	5	0	159.4	21.8	160.9
5300056	99	DIRN	SUR	-5	95	324	0	0	160.3	-19.4	161.4
53040	99	DIRN	SUR	-8	95	288	5	0	160.7	14.2	161.3
53056	99	DIRN	SUR	-5	95	319	0	0	160.3	-18.0	161.3
6101003	99	DIRN	SUR	40	25	54	0	0	43.5	59.3	73.6

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

LIST OF SUSPECT STATIONS : RADIOSONDES  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 AREA : GLOBAL  
 PERIOD : MAR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

ONLY THE WORST LEVEL IS SHOWN (WITH UNWEIGHTED RMS)

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
01400	12	Z	1000	57	3	26	0	5.6	77.7	77.9
01400	00	Z	1000	57	3	18	0	5.5	76.6	76.8
26075	12	Z	30	60	31	30	0	94.5	282.3	297.7
42361	00	Z	50	26	78	14	1	152.1	68.5	166.8
42410	00	Z	150	26	92	23	2	77.8	53.4	94.4
47138	00	Z	30	36	129	28	0	106.8	276.4	296.3
61687	12	Z	1000	14	-14	16	0	2.8	-40.1	40.2
76394	12	Z	200	26	-100	10	0	107.5	89.4	139.8
76394	00	Z	200	26	-100	11	0	105.3	151.5	184.5
98233	12	Z	1000	18	122	25	0	29.7	2.5	29.8
JNKN7J	12	Z	1000	50	-15	14	0	6.8	38.4	39.0

**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 : MAR 2020  
 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
42410	12	V	150	26	92	19	0	-14.1	-2.5	17.3
42410	00	V	150	26	92	21	0	-10.5	-0.9	15.8

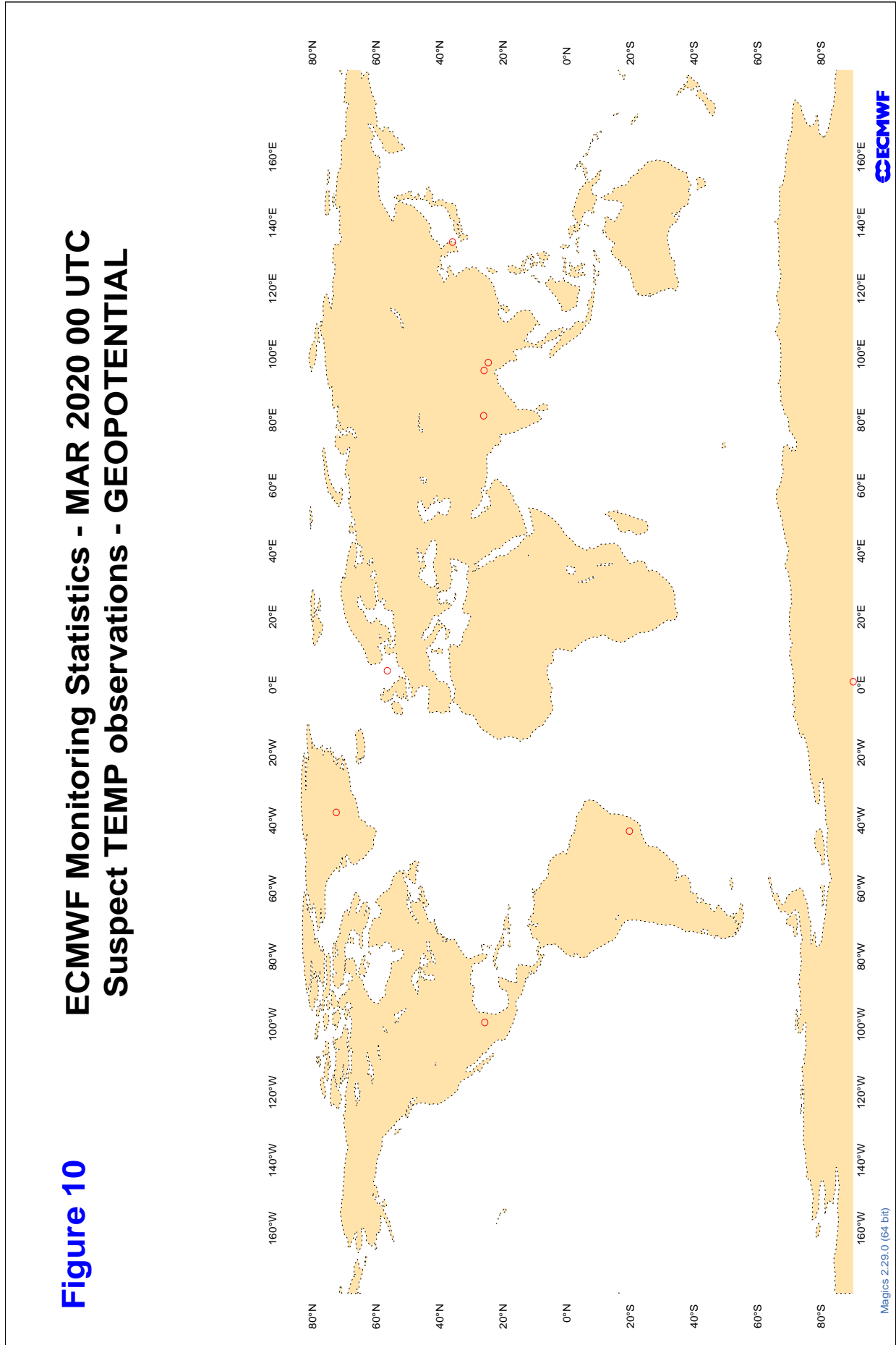
**3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)**

LIST OF SUSPECT STATIONS : RADIOSONDES  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 AREA : GLOBAL  
 PERIOD : MAR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

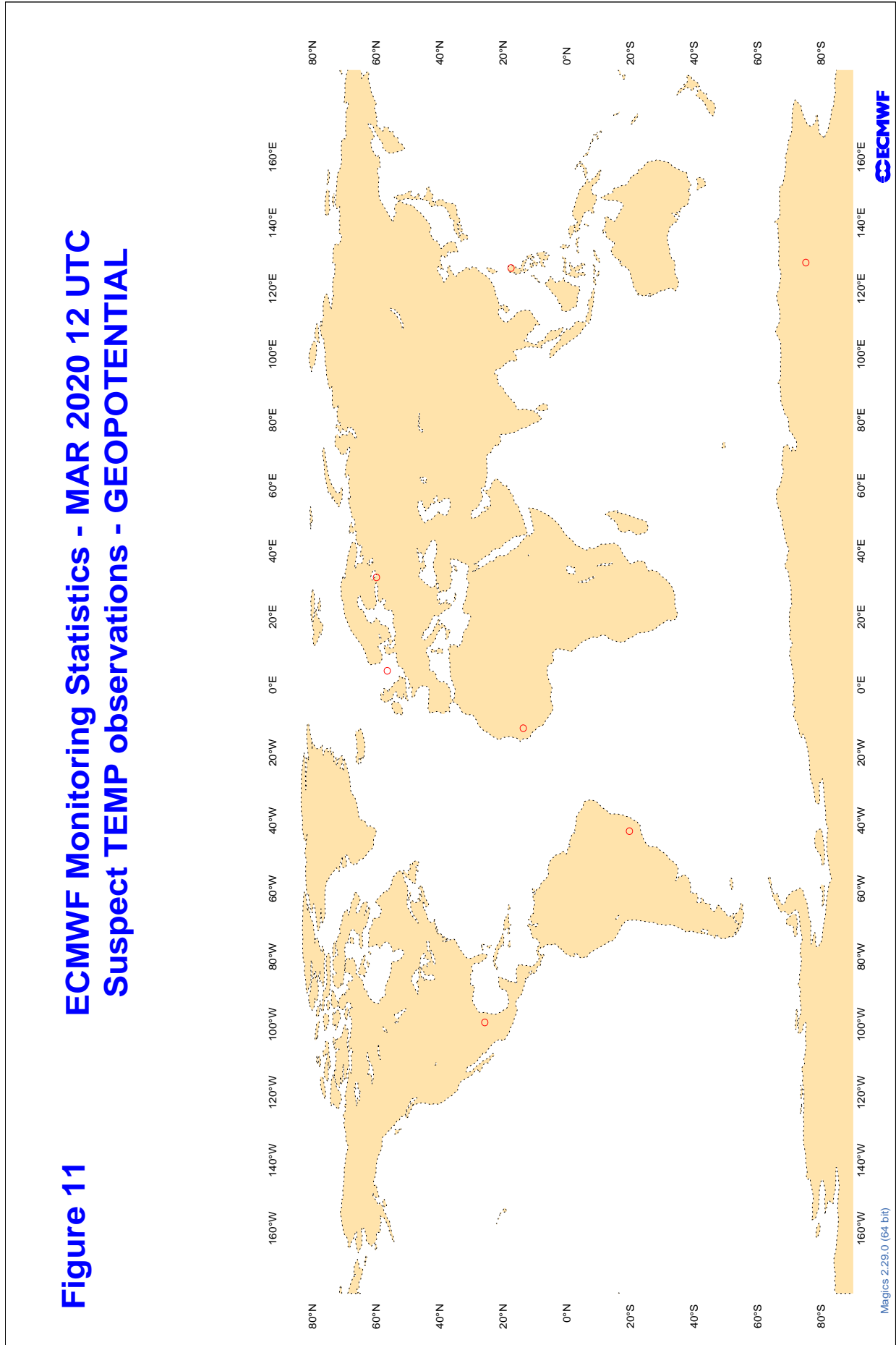
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS  $\geq$  5 M/S  
 NO. OF OBSERVATIONS  $\geq$  5, AND,  
 ABSOLUTE BIAS  $\geq$  10 DEGREES, WITH  
 STANDARD DEVIATION  $<$  30 DEGREES, AND,  
 VERTICAL SPREAD  $<$  10 DEGREES  
 (AVERAGE BETWEEN 500 AND 150 HPA)

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
33791	12	DD	48	33	27	10.4	3.6	10.5
48565	00	DD	8	98	21	13.3	3.7	13.0

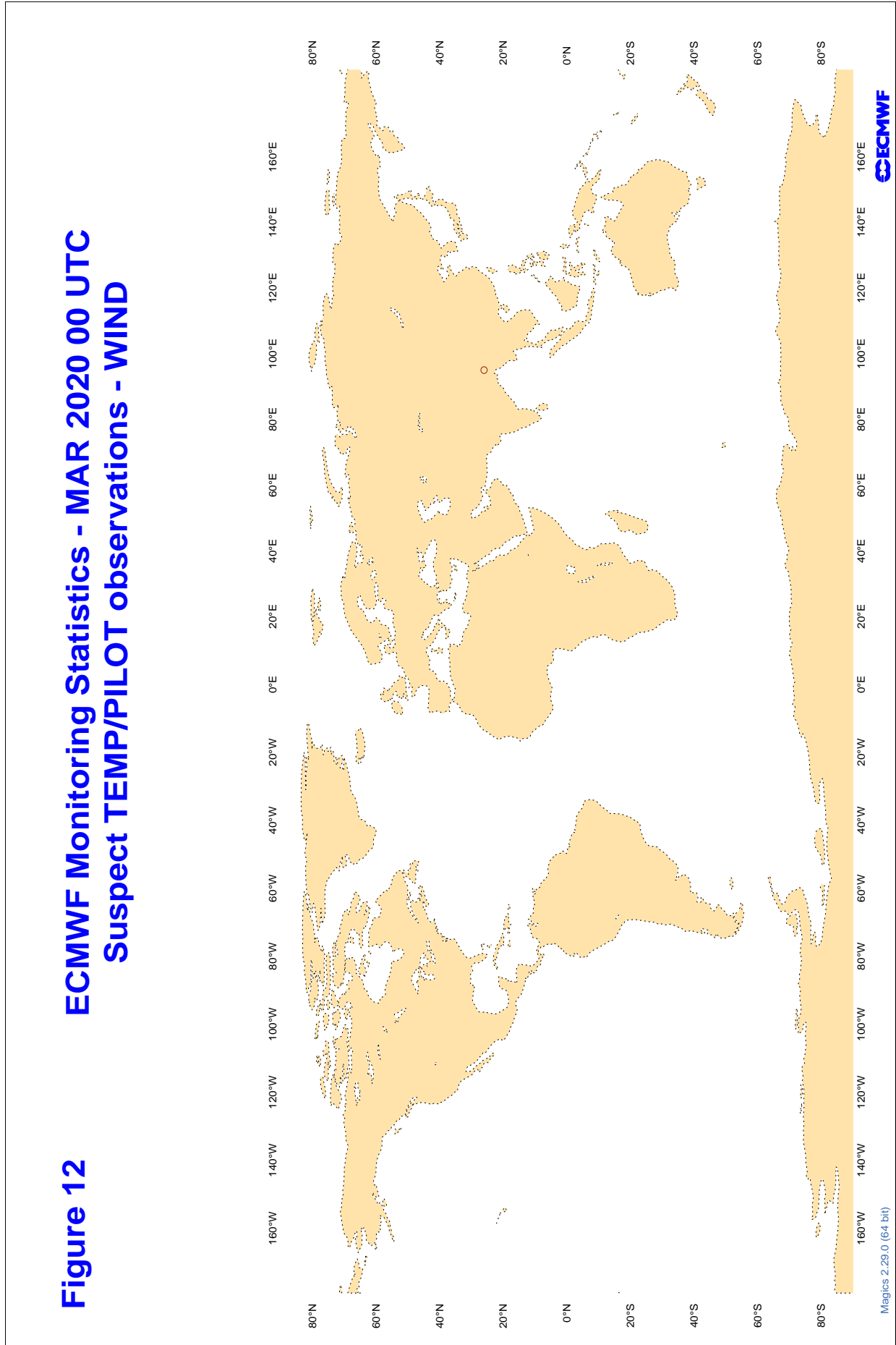
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



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

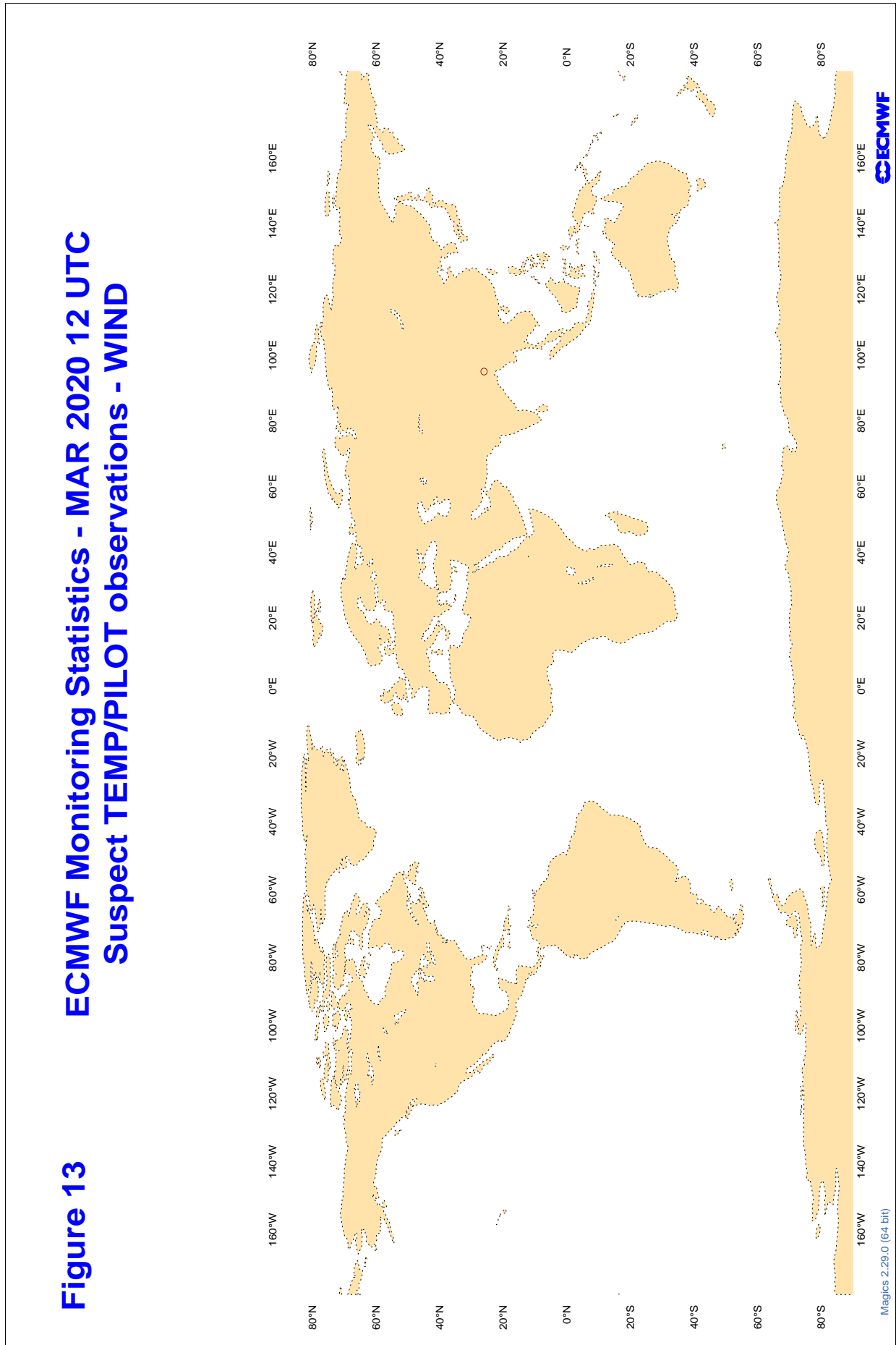


3.2.23 Figure 12 - Suspect TEMP/PILOT observations - wind : 00 UTC





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



**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 : MAR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
5QPW8X	00	Z	100	12	20.0	18.5
5QPW8X	12	Z	100	11	33.4	24.7
7JUNA4	12	Z	100	6	35.5	23.9
7JUNA4	00	Z	100	2	5.1	4.6
DBLK	12	Z	100	29	5.4	1.6
DBLK	00	Z	100	28	4.0	-1.5
FPUW5G	00	Z	100	6	23.0	22.4
FPUW5G	12	Z	100	11	17.3	16.5
JNKN7J	00	Z	100	5	32.7	30.4
JNKN7J	12	Z	100	9	119.4	114.1
JNSR	00	Z	100	14	17.6	13.1
JNSR	12	Z	100	20	21.0	20.5
KJJF9X	00	Z	100	5	19.4	17.5
KJJF9X	12	Z	100	7	22.8	18.1
KMPLHP	00	Z	100	7	157.9	127.8
KMPLHP	12	Z	100	8	48.1	44.2
LRVQE3	00	Z	100	5	9.9	8.7
LRVQE3	12	Z	100	6	27.3	25.7
USCAT	12	Z	100	0	0.0	0.0
USCAT	00	Z	100	4	9.3	-5.1
USSAL	00	Z	100	2	14.6	11.6
USSIO	00	Z	100	3	9.9	-5.1
USSIO	12	Z	100	3	17.1	3.8
VKB4L5	12	Z	100	5	29.0	26.6
VKB4L5	00	Z	100	2	50.3	50.1
XQFJRG	00	Z	100	3	12.6	-10.6
XQFJRG	12	Z	100	5	17.0	15.5
YLV96W	12	Z	100	4	74.3	73.1
YLV96W	00	Z	100	2	55.7	49.9
ZVQEQC	12	Z	100	18	10.4	9.3
ZVQEQC	00	Z	100	2	16.5	15.4

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

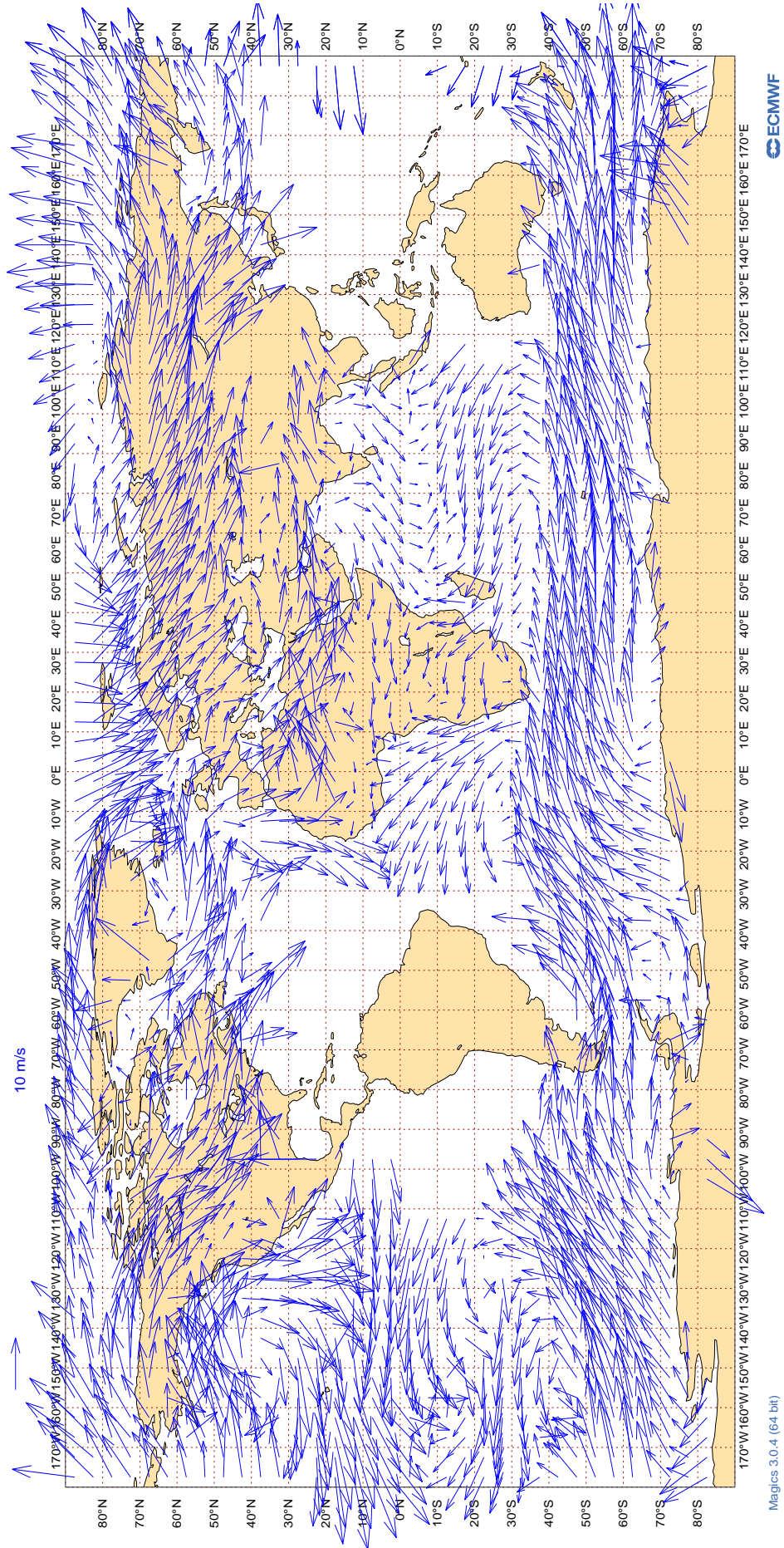
#### RADIOSONDE MONITORING STATISTICS (SHIPS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 100 HPA  
 AREA : GLOBAL  
 PERIOD : MAR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
5QPW8X	00	V	100	12	2.7	-0.7	0.1
5QPW8X	12	V	100	11	2.2	0.4	0.2
7JUNA4	12	V	100	6	2.6	-0.8	-0.9
7JUNA4	00	V	100	2	2.6	-1.2	1.6
DBLK	12	V	100	28	1.9	0.2	-0.2
DBLK	00	V	100	27	1.7	0.2	0.1
FPUW5G	00	V	100	6	4.7	-2.5	2.2
FPUW5G	12	V	100	11	4.0	-0.2	-0.6
JNKN7J	00	V	100	3	2.7	-0.9	-0.1
JNKN7J	12	V	100	9	2.7	-0.7	0.1
JNSR	00	V	100	6	7.2	-2.0	-0.7
JNSR	12	V	100	14	6.1	-0.4	-0.8
KJJF9X	00	V	100	5	4.3	1.3	-0.8
KJJF9X	12	V	100	7	3.7	-1.3	1.1
KMPLHP	00	V	100	7	3.6	-0.4	-0.9
KMPLHP	12	V	100	8	5.5	2.1	0.0
LRVQE3	00	V	100	4	3.7	-0.1	-1.0
LRVQE3	12	V	100	6	2.4	0.9	-0.4
USCAT	12	V	100	0	0.0	0.0	0.0
USCAT	00	V	100	2	3.2	1.8	1.7
USSAL	00	V	100	1	4.7	-0.4	-4.7
USSIO	00	V	100	2	5.6	4.6	2.2
USSIO	12	V	100	1	3.1	3.0	-0.9
VKB4L5	12	V	100	5	3.5	-0.7	-0.4
VKB4L5	00	V	100	2	4.9	-2.8	0.0
XQFJRG	00	V	100	3	2.0	1.5	-0.6
XQFJRG	12	V	100	5	2.5	-0.5	-1.5
YLV96W	12	V	100	4	3.3	0.7	1.3
YLV96W	00	V	100	2	3.9	-2.9	0.5
ZVQEQC	12	V	100	18	3.3	0.4	0.7
ZVQEQC	00	V	100	2	2.6	0.5	-2.1

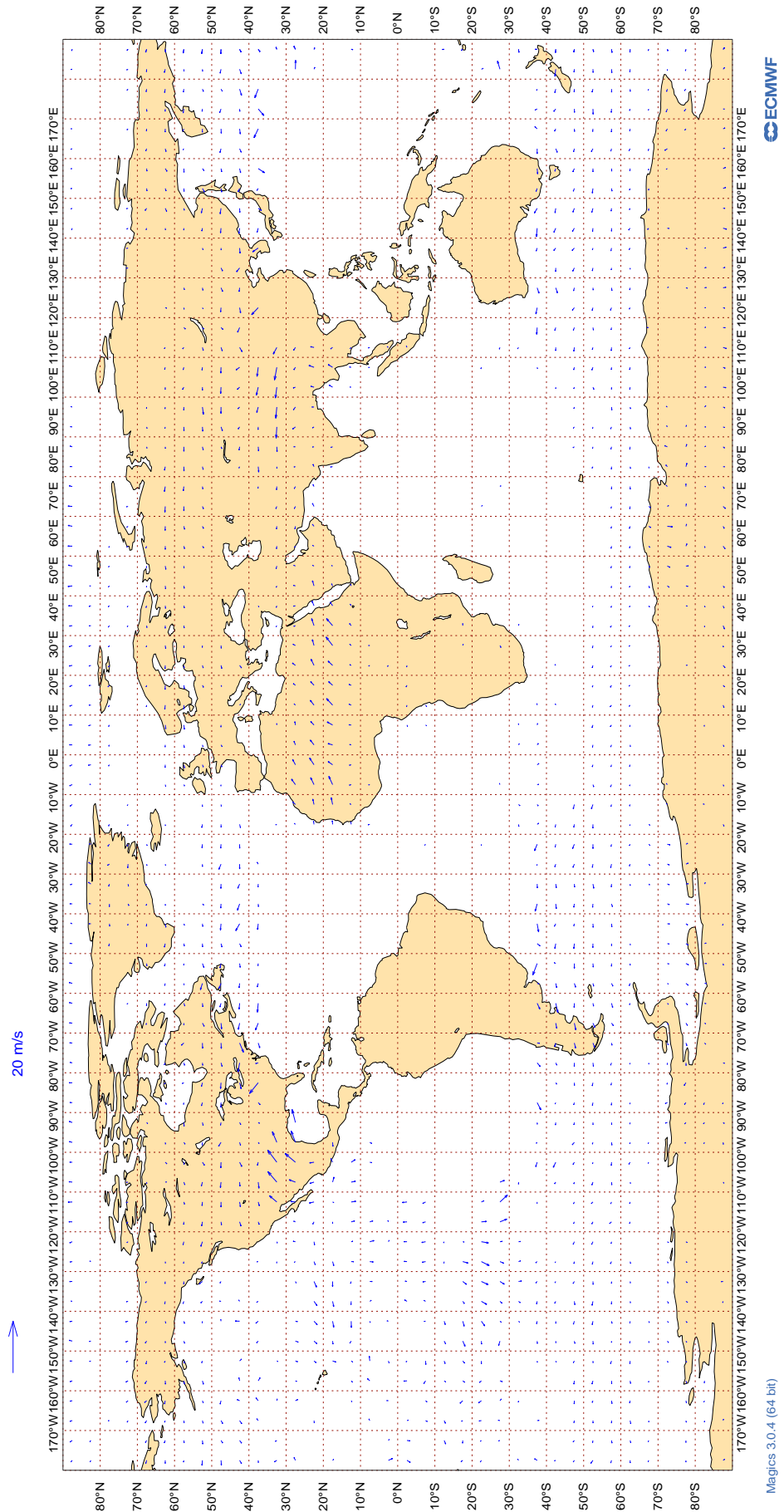
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

**Figure 14**  
**ECMWF Monitoring Statistics: Mar 2020**  
**AMV Winds: 700-1000hPa**  
**Mean Observed Wind**



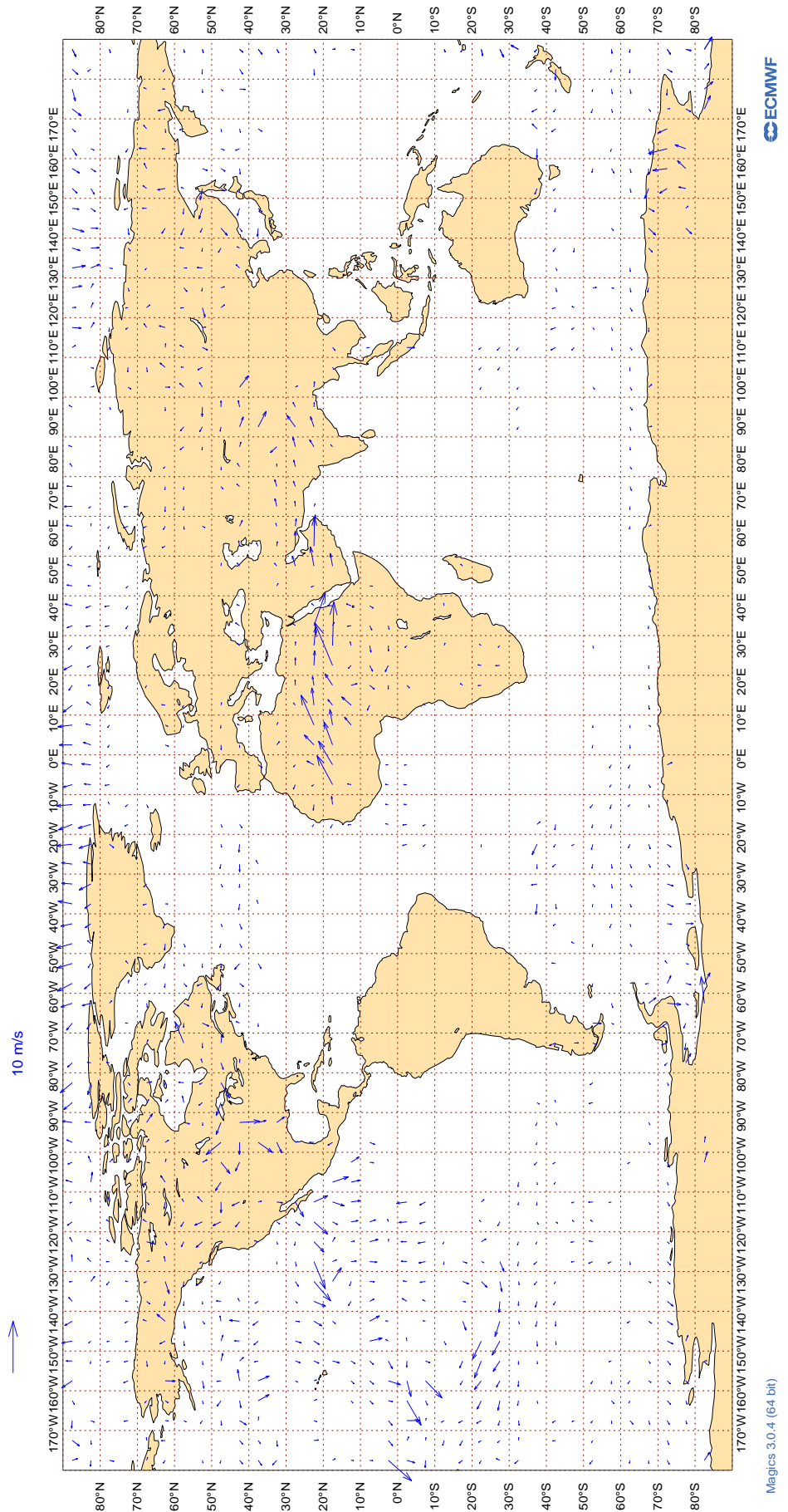
3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

**Figure 15**  
**ECMWF Monitoring Statistics: Mar 2020**  
**AMV Winds: 150- 400hPa**  
**Wind bias: Observation - FG**



3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

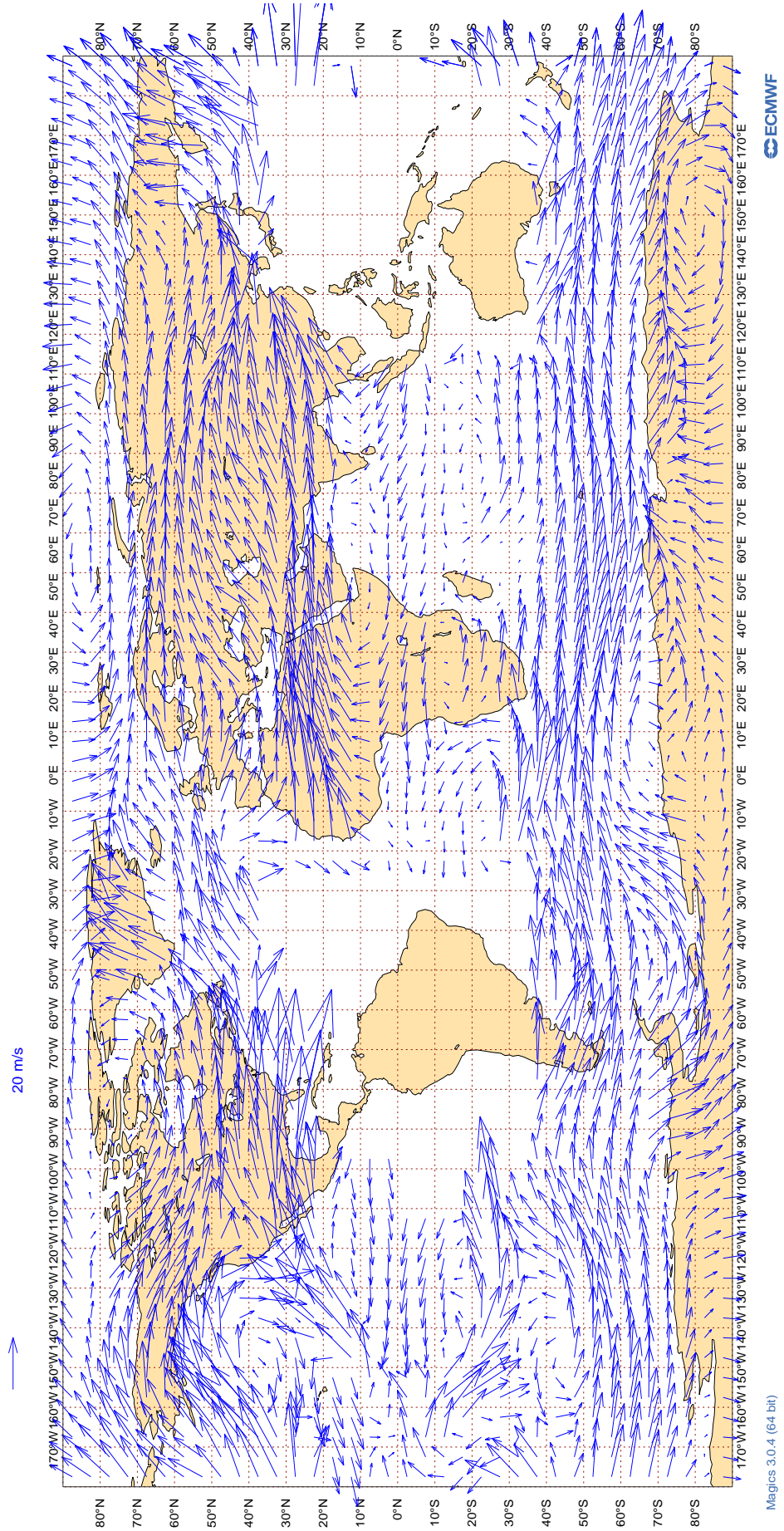
**Figure 16**  
**ECMWF Monitoring Statistics: Mar 2020**  
**AMV Winds: 700-1000hPa**  
**Wind bias: Observation - FG**





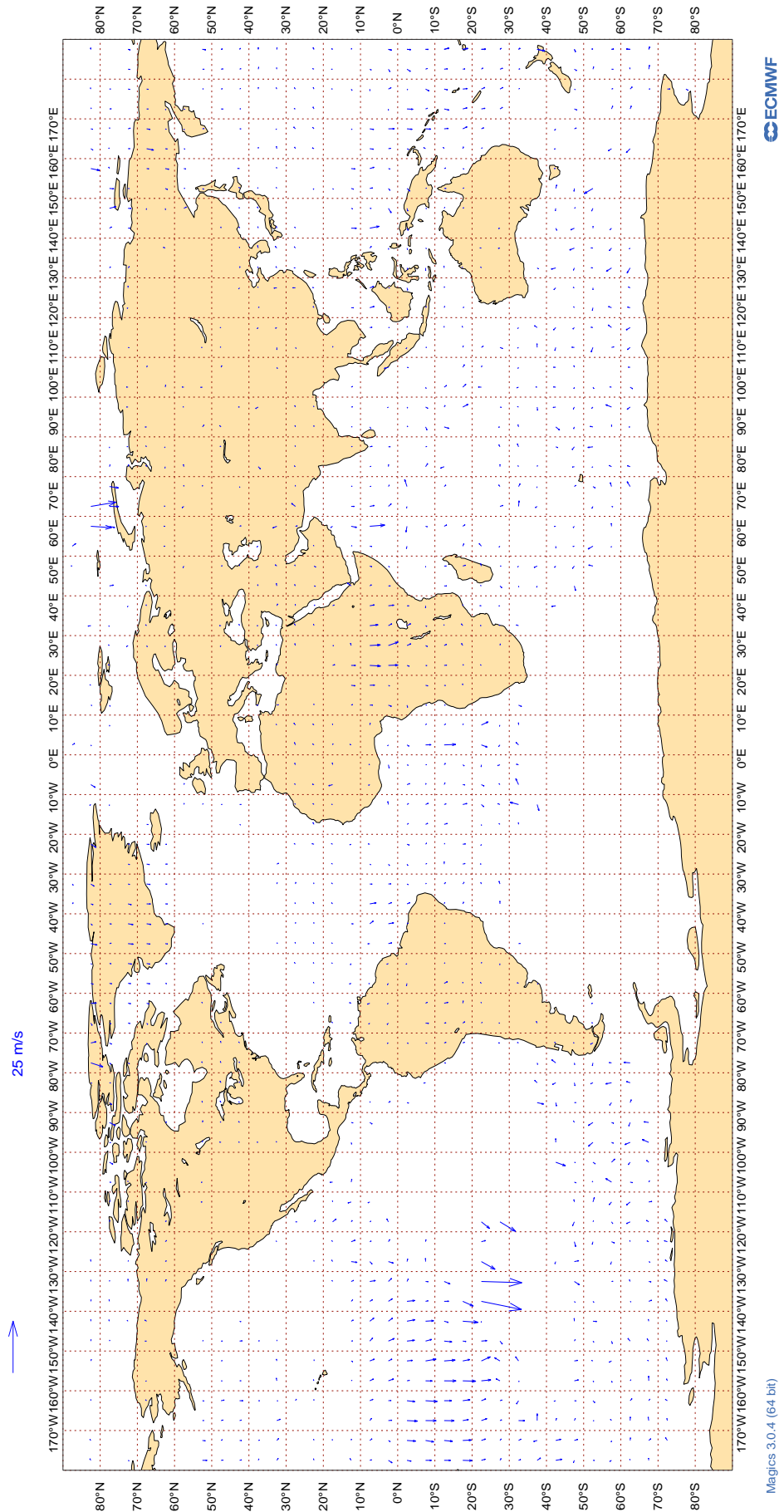
3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

**Figure 17**  
**ECMWF Monitoring Statistics: Mar 2020**  
**AMV Winds: 150- 400hPa**  
**Mean Observed Wind**



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

**Figure 18**  
**ECMWF Monitoring Statistics: Mar 2020**  
**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 : MAR 2020  
 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	47	0	0	5.7	-0.2
AAL	99	V	300-150	23093	3	0	7.7	0.5
AAR	99	V	300-150	181	0	0	4.2	-1.5
ABB	99	V	300-150	179	0	0	3.0	0.1
ABD	99	V	300-150	813	0	0	4.1	-0.2
ABG	99	V	300-150	344	0	0	3.3	0.2
ABW	99	V	300-150	738	0	0	3.8	-0.1
ACA	99	V	300-150	20300	5	0	7.1	0.3
ACI	99	V	300-150	1910	0	0	4.4	0.9
AEA	99	V	300-150	276	1	2	6.4	-0.0
AFL	99	V	300-150	1936	0	0	3.3	0.5
AFR	99	V	300-150	18420	1	0	3.7	0.3
AHO	99	V	300-150	274	0	0	3.8	0.3
AHY	99	V	300-150	193	15	0	11.3	0.2
AIB	99	V	300-150	27	0	0	3.1	-0.4
AIC	99	V	300-150	1305	1	0	4.3	0.2
AIZ	99	V	300-150	24	0	0	3.9	1.4
AJT	99	V	300-150	188	0	0	4.4	-0.2
ALK	99	V	300-150	867	0	0	3.1	0.4
AMX	99	V	300-150	2670	9	0	8.3	0.0
ANZ	99	V	300-150	20441	2	0	6.8	0.7
AOJ	99	V	300-150	76	0	0	2.9	0.8
ASA	99	V	300-150	24	0	8	4.1	-0.4
ASL	99	V	300-150	175	0	0	3.4	0.5
ASY	99	V	300-150	476	0	0	4.6	0.8
ATC	99	V	300-150	44	5	0	8.2	0.7
ATN	99	V	300-150	68	0	4	4.7	1.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AUA	99	V	300-150	1749	0	0	4.0	0.2
AUH	99	V	300-150	34	21	0	3.2	-0.9
AUI	99	V	300-150	342	0	0	3.3	0.3
AVA	99	V	300-150	439	3	0	6.0	0.2
AVL	99	V	300-150	30	0	0	3.5	0.1
AWC	99	V	300-150	201	0	0	3.5	0.2
AXM	99	V	300-150	133	0	1	4.6	0.0
AYY	99	V	300-150	42	0	0	4.0	-0.2
AZA	99	V	300-150	2633	0	0	3.5	0.3
AZG	99	V	300-150	225	0	0	3.4	-0.5
BAF	99	V	300-150	74	0	0	2.9	0.6
BAW	99	V	300-150	34805	2	0	4.7	0.2
BBB	99	V	300-150	42	0	0	4.9	1.5
BBC	99	V	300-150	160	0	0	3.9	1.5
BCS	99	V	300-150	1204	0	0	3.3	0.3
BEL	99	V	300-150	798	0	0	3.5	0.4
BFD	99	V	300-150	35	0	0	3.2	0.8
BLU	99	V	300-150	185	0	0	3.8	1.0
BLX	99	V	300-150	523	10	0	8.3	-0.0
BOS	99	V	300-150	854	0	0	3.7	0.2
BOX	99	V	300-150	2259	0	0	3.5	0.1
BPA	99	V	300-150	33	0	0	3.8	-0.2
CAL	99	V	300-150	208	0	0	4.5	1.4
CAZ	99	V	300-150	136	0	0	3.2	0.4
CCA	99	V	300-150	222	13	0	10.0	1.7
CEB	99	V	300-150	46	0	0	4.2	0.4
CES	99	V	300-150	503	10	0	10.3	0.5
CFC	99	V	300-150	271	0	0	4.4	0.5
CFG	99	V	300-150	3667	0	0	3.9	0.1
CJT	99	V	300-150	99	0	0	3.4	0.5
CKS	99	V	300-150	2050	0	0	4.0	0.1
CLX	99	V	300-150	3268	0	0	3.7	-0.2
CMB	99	V	300-150	798	0	0	3.7	0.0
CNK	99	V	300-150	56	0	0	3.1	0.2
CNV	99	V	300-150	61	0	0	5.2	-0.4
CPA	99	V	300-150	946	0	0	4.3	0.7
CRL	99	V	300-150	1236	0	0	3.7	-0.0
CRV	99	V	300-150	33	0	0	4.8	0.6
CSN	99	V	300-150	163	12	0	9.9	0.1
CTM	99	V	300-150	283	0	0	4.0	0.5
CXA	99	V	300-150	24	13	0	13.7	-0.5
DAH	99	V	300-150	369	0	0	3.7	0.4
DAL	99	V	300-150	25873	0	0	3.5	0.3

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
DCS	99	V	300-150	72	0	0	2.6	-0.1
DCW	99	V	300-150	57	0	0	3.6	0.7
DHK	99	V	300-150	937	0	0	5.5	-0.3
DJT	99	V	300-150	814	0	0	3.6	0.4
DLH	99	V	300-150	14471	0	0	3.4	0.2
DSO	99	V	300-150	67	0	0	4.2	-0.3
DUB	99	V	300-150	101	0	0	3.3	-0.1
EAU	99	V	300-150	46	0	0	4.0	-1.2
EDC	99	V	300-150	148	0	0	3.6	0.5
EDG	99	V	300-150	121	0	0	3.8	0.6
EDW	99	V	300-150	1208	0	0	3.6	0.4
EFF	99	V	300-150	24	0	0	2.9	-0.0
EIN	99	V	300-150	10338	0	0	3.3	0.3
EJM	99	V	300-150	113	0	0	3.4	0.1
ELY	99	V	300-150	2587	10	0	7.8	0.0
ETD	99	V	300-150	5049	1	0	4.3	0.3
ETH	99	V	300-150	3743	3	0	4.9	0.3
EVE	99	V	300-150	32	0	0	4.2	1.0
EWG	99	V	300-150	1665	0	0	3.8	0.4
EXS	99	V	300-150	109	0	0	3.2	-0.4
FBU	99	V	300-150	282	0	0	4.3	0.9
FDX	99	V	300-150	6821	0	0	3.5	0.4
FEX	99	V	300-150	32	0	0	2.4	0.3
FIN	99	V	300-150	913	0	0	3.2	0.1
FJI	99	V	300-150	4852	0	0	4.8	1.0
FRH	99	V	300-150	641	0	0	4.0	0.1
FWI	99	V	300-150	1431	0	0	3.5	0.2
FYL	99	V	300-150	41	0	0	4.0	-1.0
GAF	99	V	300-150	122	0	0	3.6	0.6
GAJ	99	V	300-150	35	0	0	4.2	0.2
GCK	99	V	300-150	30	0	0	3.9	0.2
GEC	99	V	300-150	2577	0	0	3.3	0.2
GES	99	V	300-150	171	12	0	7.4	0.1
GFA	99	V	300-150	208	0	0	3.5	1.1
GIA	99	V	300-150	187	0	0	3.2	0.1
GLJ	99	V	300-150	42	0	0	3.5	-0.0
GMA	99	V	300-150	60	0	0	4.9	1.4
GTH	99	V	300-150	47	0	0	3.8	0.7
GTI	99	V	300-150	2947	0	0	3.9	-0.0
HAL	99	V	300-150	2362	0	0	4.8	0.9
HFM	99	V	300-150	41	0	0	3.8	0.2
HRT	99	V	300-150	67	0	0	3.2	0.6
HZS	99	V	300-150	38	0	0	4.3	0.0

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
HZS	99	V	300-150	22	0	0	4.8	2.1
IAM	99	V	300-150	153	0	0	3.8	0.0
IBE	99	V	300-150	2632	0	0	3.5	0.3
ICE	99	V	300-150	1467	0	0	3.7	0.1
ICL	99	V	300-150	265	0	0	3.8	0.3
ICV	99	V	300-150	350	0	0	3.8	-0.1
IFA	99	V	300-150	238	0	0	3.4	0.3
IJM	99	V	300-150	186	0	0	5.4	0.8
JAF	99	V	300-150	623	6	0	4.8	0.3
JAS	99	V	300-150	83	0	0	3.6	0.9
JBU	99	V	300-150	29	0	38	3.2	-0.8
JCB	99	V	300-150	30	0	0	3.4	2.0
JCO	99	V	300-150	42	0	0	2.9	0.4
JCT	99	V	300-150	29	0	0	3.3	0.5
JEF	99	V	300-150	24	0	0	3.7	-0.4
JET	99	V	300-150	96	0	0	3.3	0.4
JME	99	V	300-150	127	0	0	4.0	-0.5
JST	99	V	300-150	331	6	0	14.6	1.1
KAC	99	V	300-150	406	0	0	3.3	0.5
KAF	99	V	300-150	36	0	0	3.1	0.7
KAI	99	V	300-150	76	0	1	5.5	0.8
KAL	99	V	300-150	203	0	1	4.8	1.0
KAY	99	V	300-150	35	0	0	2.6	0.4
KIW	99	V	300-150	27	0	0	4.1	1.3
KLM	99	V	300-150	13213	3	0	5.0	0.1
KQA	99	V	300-150	185	6	0	6.9	0.4
KTK	99	V	300-150	595	0	0	3.3	0.6
LAN	99	V	300-150	1894	8	0	9.3	0.2
LCO	99	V	300-150	270	0	0	3.8	-0.8
LDX	99	V	300-150	46	0	0	3.9	-0.1
LEA	99	V	300-150	64	0	0	4.1	-0.1
LNI	99	V	300-150	113	0	0	2.9	0.2
LNK	99	V	300-150	99	0	0	4.3	-0.0
LOT	99	V	300-150	2316	9	0	9.0	-0.1
LUC	99	V	300-150	45	0	0	3.7	0.4
LXA	99	V	300-150	38	0	0	2.8	0.0
LXJ	99	V	300-150	197	0	2	3.3	-0.2
MAS	99	V	300-150	288	0	0	3.8	0.3
MAU	99	V	300-150	170	0	0	3.6	0.6
MED	99	V	300-150	69	0	0	4.4	1.0
MHV	99	V	300-150	66	0	0	3.6	-0.1
MJF	99	V	300-150	42	0	0	4.1	0.5
MMD	99	V	300-150	485	0	0	3.2	0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
MPH	99	V	300-150	810	0	0	3.9	-0.2
MSR	99	V	300-150	983	8	0	5.9	0.2
NAG	99	V	300-150	33	0	0	4.0	1.2
NAX	99	V	300-150	3077	8	0	6.9	-0.1
NCR	99	V	300-150	127	0	0	3.7	0.2
NJE	99	V	300-150	329	0	0	3.7	0.9
NOS	99	V	300-150	413	4	0	5.4	0.2
NRS	99	V	300-150	4525	9	0	6.3	-0.0
NVR	99	V	300-150	43	0	0	3.1	-0.1
NWS	99	V	300-150	1012	0	0	3.1	0.3
OAE	99	V	300-150	1247	0	0	3.8	0.0
OMA	99	V	300-150	323	1	0	4.5	0.8
PAC	99	V	300-150	77	1	0	3.6	-0.7
PAL	99	V	300-150	391	0	0	3.9	0.7
PEG	99	V	300-150	92	0	0	3.8	0.5
PIA	99	V	300-150	186	0	0	2.8	0.2
PLF	99	V	300-150	41	0	0	3.8	-0.7
PLM	99	V	300-150	176	0	0	4.0	0.3
PVG	99	V	300-150	56	0	0	2.8	0.0
QAF	99	V	300-150	40	0	0	3.3	0.0
QFA	99	V	300-150	18571	2	0	9.3	0.9
QQE	99	V	300-150	106	0	0	3.5	0.3
QTR	99	V	300-150	14929	0	0	3.6	0.4
RAM	99	V	300-150	188	12	1	4.6	-0.0
RBA	99	V	300-150	53	0	0	4.7	0.8
RCH	99	V	300-150	3307	0	0	4.5	0.5
RJA	99	V	300-150	593	7	0	8.4	-0.2
ROM	99	V	300-150	33	0	0	3.6	-1.9
ROU	99	V	300-150	52	0	4	4.2	0.3
RRR	99	V	300-150	355	0	0	4.2	0.5
RSY	99	V	300-150	59	0	0	3.1	0.1
RZO	99	V	300-150	97	0	3	3.3	0.7
SAM	99	V	300-150	115	0	0	3.6	0.2
SAS	99	V	300-150	2289	0	0	3.0	0.2
SAZ	99	V	300-150	106	0	0	3.3	-0.0
SCX	99	V	300-150	89	0	1	5.7	0.5
SEY	99	V	300-150	109	0	0	3.0	0.6
SHE	99	V	300-150	32	0	0	2.9	0.3
SIA	99	V	300-150	2926	0	0	3.7	0.1
SKY	99	V	300-150	24	0	0	2.8	0.3
SLM	99	V	300-150	91	0	1	3.3	0.6
SOO	99	V	300-150	438	0	0	3.5	-0.3
SPA	99	V	300-150	88	0	0	4.7	0.0

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
STV	99	V	300-150	21	0	0	3.8	2.4
SVA	99	V	300-150	2194	0	0	3.8	0.3
SVW	99	V	300-150	186	0	0	3.1	0.1
SWA	99	V	300-150	47	2	4	5.3	-0.5
SWR	99	V	300-150	5041	0	0	3.6	0.3
SXN	99	V	300-150	65	0	0	3.5	-0.5
SYB	99	V	300-150	71	0	1	3.7	-0.1
TAM	99	V	300-150	58	0	2	3.6	0.8
TAP	99	V	300-150	908	0	2	3.7	0.3
TAR	99	V	300-150	260	0	0	3.2	0.1
TAY	99	V	300-150	228	0	0	3.8	-0.1
TBJ	99	V	300-150	30	0	0	3.3	0.8
TEU	99	V	300-150	63	0	0	3.9	0.1
TFL	99	V	300-150	1276	5	0	5.2	-0.1
THA	99	V	300-150	277	7	0	8.2	0.2
THT	99	V	300-150	2111	4	0	13.6	1.1
THY	99	V	300-150	7105	3	0	5.0	0.1
TMN	99	V	300-150	228	0	0	4.9	0.6
TOM	99	V	300-150	3488	9	0	6.0	0.2
TOW	99	V	300-150	71	0	0	3.1	-0.2
TPA	99	V	300-150	293	0	0	3.8	0.3
TSC	99	V	300-150	3737	0	0	3.5	0.3
TWY	99	V	300-150	53	0	0	3.3	0.2
UAE	99	V	300-150	11105	0	0	3.6	0.3
UAL	99	V	300-150	51210	3	2	7.3	0.5
ULC	99	V	300-150	33	0	0	4.3	-0.6
UPS	99	V	300-150	4591	0	0	3.8	0.3
UZB	99	V	300-150	82	7	0	7.8	-0.3
VAJ	99	V	300-150	35	0	0	2.8	0.2
VCG	99	V	300-150	98	0	0	3.3	0.3
VCJ	99	V	300-150	34	0	0	3.7	-0.3
VIR	99	V	300-150	13064	3	0	5.2	0.1
VJT	99	V	300-150	1077	0	0	3.6	0.6
VKG	99	V	300-150	186	0	0	3.4	0.0
VMP	99	V	300-150	92	0	0	5.1	0.2
VOZ	99	V	300-150	5328	0	0	4.5	0.8
VTI	99	V	300-150	25	0	0	3.7	-0.3
WGN	99	V	300-150	530	0	0	3.6	0.4
WGT	99	V	300-150	40	0	0	2.9	0.9
WJA	99	V	300-150	2654	7	0	6.6	0.3
WWI	99	V	300-150	68	0	0	3.6	0.6
XAX	99	V	300-150	28	0	0	2.9	0.3
XRO	99	V	300-150	55	0	0	3.7	-0.9

## 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 : MAR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	50	30	17.0	11.0
01001	00	Z	50	30	21.7	16.0
01028	00	Z	50	47	11.1	6.7
01028	12	Z	50	49	9.8	4.5
01400	00	Z	50	17	87.8	87.5
01400	12	Z	50	26	83.0	82.6
01415	12	Z	50	31	15.5	8.8
01415	00	Z	50	31	15.2	11.3
02365	12	Z	50	29	14.9	11.4
02365	00	Z	50	28	18.3	15.2
02591	00	Z	50	11	19.0	18.1
02591	12	Z	50	10	15.3	14.2
02836	12	Z	50	31	14.5	9.4
02836	00	Z	50	31	13.7	7.2
02963	00	Z	50	31	11.8	10.4
02963	12	Z	50	30	11.2	8.3
03005	12	Z	50	31	50.7	13.1
03005	00	Z	50	27	11.6	8.8
03238	00	Z	50	29	13.8	10.1
03238	12	Z	50	6	16.3	15.7
03808	00	Z	50	27	16.7	12.5
03808	12	Z	50	29	13.1	10.7
03918	00	Z	50	30	18.5	17.2
03918	12	Z	50	7	18.9	15.0
03953	00	Z	50	31	27.5	22.6
03953	12	Z	50	29	36.8	34.1
04018	12	Z	50	30	13.4	7.6
04018	00	Z	50	30	14.5	10.6
04220	00	Z	50	30	18.2	10.0
04220	12	Z	50	30	11.0	7.9
04270	00	Z	50	29	18.1	9.1
04270	12	Z	50	31	14.3	2.3
04320	12	Z	50	31	11.7	7.6
04320	00	Z	50	30	12.2	7.0
04339	00	Z	50	29	14.3	7.3
04339	12	Z	50	30	15.2	8.9
04360	12	Z	50	29	32.3	23.0
04360	00	Z	50	23	11.1	-0.5
06011	00	Z	50	27	14.7	7.9



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	50	29	25.3	20.9
06260	00	Z	50	31	16.6	12.2
06260	12	Z	50	14	13.8	12.8
06610	00	Z	50	30	19.1	16.2
06610	12	Z	50	29	18.0	16.3
07110	12	Z	50	29	15.8	9.9
07110	00	Z	50	31	14.3	11.6
07510	00	Z	50	32	26.7	24.6
07510	12	Z	50	29	39.1	37.0
07645	12	Z	50	29	30.5	27.9
07645	00	Z	50	28	24.3	22.1
07761	00	Z	50	30	28.0	24.7
07761	12	Z	50	31	37.3	34.6
08001	12	Z	50	29	17.1	16.0
08001	00	Z	50	25	24.2	22.1
08221	00	Z	50	21	22.8	19.9
08221	12	Z	50	23	23.2	21.6
08302	12	Z	50	31	12.7	7.9
08302	00	Z	50	31	18.6	15.9
08508	12	Z	50	28	17.8	16.7
08522	12	Z	50	29	20.4	19.6
10035	00	Z	50	30	23.7	23.1
10035	12	Z	50	30	18.6	17.4
10393	00	Z	50	31	15.7	14.5
10393	12	Z	50	31	14.0	11.0
10410	00	Z	50	30	15.5	12.4
10410	12	Z	50	31	9.7	7.9
10739	00	Z	50	31	20.0	18.4
10739	12	Z	50	31	14.3	13.0
11035	12	Z	50	31	38.0	33.6
11035	00	Z	50	31	24.5	22.2
12982	00	Z	50	29	20.6	17.4
12982	12	Z	50	28	53.0	44.5
16080	00	Z	50	31	14.0	12.4
16080	12	Z	50	30	12.3	10.6
16245	00	Z	50	28	24.3	12.3
16245	12	Z	50	30	14.8	12.9
16320	12	Z	50	28	19.8	18.7
16320	00	Z	50	20	22.6	21.9
16429	12	Z	50	31	21.8	21.1
16429	00	Z	50	30	23.0	21.3
16622	00	Z	50	27	23.3	21.6
16754	00	Z	50	31	29.0	27.4

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	50	26	20.1	17.3
26435	12	Z	50	15	8.2	3.2
5QPW8X	00	Z	50	11	29.8	27.2
5QPW8X	12	Z	50	9	43.8	35.6
60018	00	Z	50	29	23.7	23.0
60018	12	Z	50	28	16.8	15.7
7JUNA4	12	Z	50	1	25.6	25.6
7JUNA4	00	Z	50	2	7.4	7.4
DBLK	12	Z	50	28	9.6	7.9
DBLK	00	Z	50	26	7.5	6.0
JNKN7J	00	Z	50	3	39.6	24.1
JNKN7J	12	Z	50	6	214.6	201.4
KJJF9X	00	Z	50	4	36.0	33.3
KJJF9X	12	Z	50	6	32.0	28.6
KMPLHP	00	Z	50	6	278.9	246.3
KMPLHP	12	Z	50	8	79.3	72.2
LRVQE3	00	Z	50	3	20.8	18.0
LRVQE3	12	Z	50	6	47.0	46.2
VKB4L5	12	Z	50	5	36.6	35.7
VKB4L5	00	Z	50	2	56.3	56.3
XQFJRG	00	Z	50	3	8.8	-0.7
XQFJRG	12	Z	50	5	38.5	37.0
YLV96W	12	Z	50	4	144.2	142.4
YLV96W	00	Z	50	0	0.0	0.0
ZVQEQC	12	Z	50	18	18.9	17.9
ZVQEQC	00	Z	50	2	20.8	18.8

**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 : MAR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	50	30	3.1	0.3	-0.2
01001	00	V	50	24	3.4	-1.1	-0.3
01028	00	V	50	25	3.5	0.8	-0.1
01028	12	V	50	31	3.8	0.1	-0.8
01400	00	V	50	16	3.1	1.1	-0.1
01400	12	V	50	25	3.3	0.0	0.2
01415	12	V	50	31	3.6	0.1	-0.1
01415	00	V	50	24	4.1	-0.3	-0.8
02365	12	V	50	27	4.7	0.4	0.0
02365	00	V	50	21	4.0	0.1	-1.5
02591	00	V	50	10	4.0	-1.4	-0.5
02591	12	V	50	9	3.3	-0.4	-1.1
02836	12	V	50	31	3.5	-0.6	-0.5
02836	00	V	50	27	2.8	0.0	0.3
02963	00	V	50	25	3.0	0.8	0.3
02963	12	V	50	30	3.4	-0.5	0.4
03005	12	V	50	30	3.6	0.1	-0.3
03005	00	V	50	20	3.7	0.0	0.1
03238	00	V	50	24	3.9	-0.1	-0.1
03238	12	V	50	6	2.5	0.2	1.3
03808	00	V	50	24	3.7	-0.4	0.5
03808	12	V	50	29	3.5	0.8	-0.3
03918	00	V	50	23	3.8	0.0	0.0
03918	12	V	50	7	4.0	0.0	0.6
03953	00	V	50	26	4.2	0.2	0.2
03953	12	V	50	29	3.8	-0.5	0.0
04018	12	V	50	30	4.1	-0.5	-0.2
04018	00	V	50	23	3.5	0.0	-0.1
04220	00	V	50	22	3.5	0.7	-0.3
04220	12	V	50	30	3.7	-0.5	0.0
04270	00	V	50	23	5.4	0.0	-1.0
04270	12	V	50	31	4.1	1.0	0.4
04320	12	V	50	31	3.3	0.4	-0.4
04320	00	V	50	23	3.7	0.0	0.1
04339	00	V	50	22	5.0	0.7	-0.5
04339	12	V	50	30	3.3	0.4	-1.4
04360	12	V	50	29	3.6	0.1	0.1
04360	00	V	50	18	3.1	0.9	-0.3
06011	00	V	50	21	3.1	-0.4	0.7

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	50	29	3.8	0.1	-0.7
06260	00	V	50	24	3.3	-0.2	0.4
06260	12	V	50	14	3.6	-0.7	-0.3
06610	00	V	50	23	2.9	0.4	0.2
06610	12	V	50	29	2.9	-0.7	-0.1
07110	12	V	50	29	3.0	-0.1	0.3
07110	00	V	50	23	3.0	0.0	-0.3
07510	00	V	50	22	2.8	0.7	0.0
07510	12	V	50	29	3.0	0.6	-0.5
07645	12	V	50	29	3.3	0.9	-0.6
07645	00	V	50	24	3.3	0.5	0.3
07761	00	V	50	25	3.5	0.6	-0.4
07761	12	V	50	31	3.2	0.2	-0.1
08001	12	V	50	29	2.8	0.6	-1.0
08001	00	V	50	14	3.0	-0.2	-0.1
08221	00	V	50	18	3.8	0.0	-0.1
08221	12	V	50	23	3.4	0.8	0.5
08302	12	V	50	31	3.2	0.5	-0.8
08302	00	V	50	26	3.6	0.2	0.1
08508	12	V	50	28	3.1	0.4	-0.5
08522	12	V	50	29	3.3	0.4	1.0
10035	00	V	50	26	3.6	-0.8	-0.1
10035	12	V	50	30	3.1	-1.0	-0.2
10393	00	V	50	25	2.4	0.2	-0.3
10393	12	V	50	31	2.6	0.0	-0.3
10410	00	V	50	28	3.5	-0.5	0.0
10410	12	V	50	31	3.1	0.0	0.0
10739	00	V	50	30	2.9	0.3	-0.4
10739	12	V	50	31	2.8	0.2	0.1
11035	12	V	50	31	3.1	0.2	-0.7
11035	00	V	50	22	3.6	0.7	0.2
12982	00	V	50	24	2.5	0.0	0.0
12982	12	V	50	28	2.9	0.6	-0.6
16080	00	V	50	22	3.1	0.1	-0.6
16080	12	V	50	30	3.3	1.0	-0.5
16245	00	V	50	24	3.0	0.4	-0.2
16245	12	V	50	30	3.7	0.5	-0.4
16320	12	V	50	28	3.0	0.8	0.3
16320	00	V	50	15	2.3	0.8	0.4
16429	12	V	50	30	3.1	0.8	-0.3
16429	00	V	50	23	3.8	0.0	0.0
16622	00	V	50	20	3.7	0.3	-0.1
16754	00	V	50	22	3.3	1.3	0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	50	1	3.2	2.7	-1.8
26435	12	V	50	15	4.1	0.6	0.5
5QPW8X	00	V	50	10	2.5	-0.1	-0.1
5QPW8X	12	V	50	9	3.6	-1.5	-0.8
60018	00	V	50	21	3.6	1.3	0.9
60018	12	V	50	28	3.9	0.0	-0.6
7JUNA4	12	V	50	1	1.6	-1.6	-0.4
7JUNA4	00	V	50	2	3.8	0.5	2.8
DBLK	12	V	50	27	3.5	-0.1	-0.2
DBLK	00	V	50	24	2.6	-0.2	0.6
JNKN7J	00	V	50	3	3.8	0.6	-0.6
JNKN7J	12	V	50	6	2.8	1.0	0.1
KJJF9X	00	V	50	4	1.8	0.6	0.7
KJJF9X	12	V	50	6	3.3	1.7	0.5
KMPLHP	00	V	50	6	2.6	0.0	1.6
KMPLHP	12	V	50	8	6.0	-0.9	0.0
LRVQE3	00	V	50	3	3.9	0.8	-2.7
LRVQE3	12	V	50	6	2.8	0.3	1.4
VKB4L5	12	V	50	5	3.5	-1.8	0.4
VKB4L5	00	V	50	1	3.4	-0.1	-3.4
XQFJRG	00	V	50	3	7.1	-1.6	3.2
XQFJRG	12	V	50	4	4.1	-1.1	2.3
YLV96W	12	V	50	4	4.6	-2.5	-0.3
YLV96W	00	V	50	0	0.0	0.0	0.0
ZVQEQC	12	V	50	18	2.7	0.0	0.2
ZVQEQC	00	V	50	2	2.1	-1.2	-0.1

### 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 : MAR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	100	30	8.9	2.0
01001	00	Z	100	30	9.5	1.1
01028	00	Z	100	48	7.1	-0.6
01028	12	Z	100	49	6.0	0.0
01400	00	Z	100	18	80.6	80.3
01400	12	Z	100	26	75.1	74.7
01415	12	Z	100	31	8.1	1.8
01415	00	Z	100	31	6.5	1.4
02365	12	Z	100	30	6.6	2.4
02365	00	Z	100	30	10.7	6.7
02591	00	Z	100	12	9.2	7.7
02591	12	Z	100	11	8.2	6.7
02836	12	Z	100	31	9.0	-1.2
02836	00	Z	100	31	6.9	-1.5
02963	00	Z	100	31	5.4	1.9
02963	12	Z	100	31	5.0	1.8
03005	12	Z	100	31	47.8	4.9
03005	00	Z	100	27	5.1	-0.9
03238	00	Z	100	31	8.1	2.6
03238	12	Z	100	6	6.7	5.6
03808	00	Z	100	28	9.3	2.8
03808	12	Z	100	31	9.6	2.9
03918	00	Z	100	30	10.7	7.7
03918	12	Z	100	7	9.8	7.3
03953	00	Z	100	31	14.7	11.7
03953	12	Z	100	30	20.7	17.6
04018	12	Z	100	30	6.5	-0.5
04018	00	Z	100	30	7.1	0.3
04220	00	Z	100	31	12.0	3.2
04220	12	Z	100	31	6.7	-0.9
04270	00	Z	100	29	6.6	-0.2
04270	12	Z	100	31	7.4	-1.6
04320	12	Z	100	31	7.3	1.8
04320	00	Z	100	31	7.5	1.0
04339	00	Z	100	30	9.7	2.7
04339	12	Z	100	30	7.8	2.3
04360	12	Z	100	30	20.1	7.2
04360	00	Z	100	28	10.9	-6.7
06011	00	Z	100	28	9.5	-1.3

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	100	30	13.2	9.3
06260	00	Z	100	31	8.8	0.6
06260	12	Z	100	15	5.3	2.6
06610	00	Z	100	31	8.6	3.6
06610	12	Z	100	31	8.5	5.5
07110	12	Z	100	29	8.9	-1.0
07110	00	Z	100	31	5.9	-1.4
07510	00	Z	100	32	13.3	10.8
07510	12	Z	100	29	21.6	20.0
07645	12	Z	100	29	14.7	12.6
07645	00	Z	100	29	12.1	8.2
07761	00	Z	100	31	15.8	7.5
07761	12	Z	100	31	19.9	17.4
08001	12	Z	100	30	7.4	6.0
08001	00	Z	100	30	10.3	6.8
08221	00	Z	100	22	11.6	6.5
08221	12	Z	100	24	14.0	10.5
08302	12	Z	100	31	10.0	-2.5
08302	00	Z	100	31	7.4	2.0
08508	12	Z	100	29	11.1	8.9
08522	12	Z	100	29	10.9	9.7
10035	00	Z	100	31	14.0	13.3
10035	12	Z	100	31	10.2	8.5
10393	00	Z	100	31	6.3	3.9
10393	12	Z	100	31	6.6	0.8
10410	00	Z	100	30	7.1	2.0
10410	12	Z	100	31	5.5	-1.6
10739	00	Z	100	31	10.2	7.7
10739	12	Z	100	31	6.9	4.1
11035	12	Z	100	32	23.3	18.9
11035	00	Z	100	32	14.5	10.9
12982	00	Z	100	29	9.8	6.3
12982	12	Z	100	28	29.5	21.5
16080	00	Z	100	31	6.0	-0.3
16080	12	Z	100	30	5.1	-0.6
16245	00	Z	100	28	7.1	3.3
16245	12	Z	100	30	5.5	0.8
16320	12	Z	100	28	8.0	6.6
16320	00	Z	100	20	9.6	8.5
16429	12	Z	100	31	8.6	6.9
16429	00	Z	100	30	10.4	7.5
16622	00	Z	100	30	11.1	9.1
16754	00	Z	100	31	15.1	12.4

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	100	31	10.0	5.5
26435	12	Z	100	15	7.3	-2.7
5QPW8X	00	Z	100	12	20.0	18.5
5QPW8X	12	Z	100	11	33.4	24.7
60018	00	Z	100	31	12.3	11.2
60018	12	Z	100	31	9.9	7.8
7JUNA4	12	Z	100	6	35.5	23.9
7JUNA4	00	Z	100	2	5.1	4.6
DBLK	12	Z	100	29	5.4	1.6
DBLK	00	Z	100	28	4.0	-1.5
JNKN7J	00	Z	100	5	32.7	30.4
JNKN7J	12	Z	100	9	119.4	114.1
KJJF9X	00	Z	100	5	19.4	17.5
KJJF9X	12	Z	100	7	22.8	18.1
KMPLHP	00	Z	100	7	157.9	127.8
KMPLHP	12	Z	100	8	48.1	44.2
LRVQE3	00	Z	100	5	9.9	8.7
LRVQE3	12	Z	100	6	27.3	25.7
VKB4L5	12	Z	100	5	29.0	26.6
VKB4L5	00	Z	100	2	50.3	50.1
XQFJRG	00	Z	100	3	12.6	-10.6
XQFJRG	12	Z	100	5	17.0	15.5
YLV96W	12	Z	100	4	74.3	73.1
YLV96W	00	Z	100	2	55.7	49.9
ZVQEQC	12	Z	100	18	10.4	9.3
ZVQEQC	00	Z	100	2	16.5	15.4



**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 : MAR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	100	30	3.0	-0.3	0.0
01001	00	V	100	24	3.8	0.1	0.1
01028	00	V	100	26	3.0	-0.6	0.2
01028	12	V	100	31	2.7	-0.2	0.2
01400	00	V	100	16	2.9	-0.6	-0.1
01400	12	V	100	26	2.8	0.3	0.4
01415	12	V	100	31	3.0	-0.2	0.1
01415	00	V	100	26	3.3	0.1	-0.4
02365	12	V	100	30	3.9	-0.4	-0.2
02365	00	V	100	26	3.7	-0.2	0.4
02591	00	V	100	11	4.3	0.2	0.6
02591	12	V	100	11	2.7	0.2	0.4
02836	12	V	100	31	2.5	0.6	0.0
02836	00	V	100	27	3.5	0.5	-0.2
02963	00	V	100	25	3.4	-0.5	-0.4
02963	12	V	100	31	3.0	0.2	-0.6
03005	12	V	100	31	3.0	0.4	0.2
03005	00	V	100	20	2.4	0.2	0.3
03238	00	V	100	24	3.6	-0.8	0.2
03238	12	V	100	6	2.2	-0.5	-1.0
03808	00	V	100	25	4.2	0.8	-0.1
03808	12	V	100	31	3.0	0.2	-0.3
03918	00	V	100	23	3.2	-0.3	-0.1
03918	12	V	100	7	5.0	-0.1	0.2
03953	00	V	100	26	3.3	-0.2	-0.5
03953	12	V	100	30	3.3	0.5	0.4
04018	12	V	100	30	3.3	0.4	0.2
04018	00	V	100	29	3.4	0.0	0.1
04220	00	V	100	30	2.4	0.0	-0.4
04220	12	V	100	31	2.5	0.0	0.1
04270	00	V	100	25	3.3	0.9	0.3
04270	12	V	100	31	3.6	-0.1	0.7
04320	12	V	100	31	3.0	0.4	0.3
04320	00	V	100	30	2.4	0.4	-0.2
04339	00	V	100	26	2.9	-0.4	-0.7
04339	12	V	100	30	3.1	-0.2	-0.2
04360	12	V	100	30	2.5	-0.1	0.0
04360	00	V	100	27	2.7	-0.1	-0.3
06011	00	V	100	22	2.1	0.0	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	100	30	2.8	-0.3	0.0
06260	00	V	100	24	3.5	0.6	-0.3
06260	12	V	100	15	3.0	0.8	0.4
06610	00	V	100	29	3.2	0.6	0.0
06610	12	V	100	30	3.3	0.8	-0.3
07110	12	V	100	29	3.3	0.9	0.0
07110	00	V	100	23	3.6	1.2	-0.9
07510	00	V	100	22	2.8	-0.2	-0.1
07510	12	V	100	29	2.5	0.1	0.3
07645	12	V	100	29	3.2	0.5	0.4
07645	00	V	100	24	3.6	0.2	-0.1
07761	00	V	100	25	3.6	1.0	0.4
07761	12	V	100	31	3.5	0.0	0.5
08001	12	V	100	30	3.4	-0.2	0.4
08001	00	V	100	24	3.3	0.2	0.4
08221	00	V	100	18	3.8	-1.4	0.4
08221	12	V	100	24	3.9	1.1	-0.1
08302	12	V	100	31	3.8	0.8	0.1
08302	00	V	100	26	3.2	-0.2	-0.1
08508	12	V	100	29	3.5	0.7	1.1
08522	12	V	100	29	4.2	0.8	-0.2
10035	00	V	100	29	2.8	0.0	-0.6
10035	12	V	100	31	2.9	-0.1	-0.3
10393	00	V	100	30	2.9	-0.3	0.5
10393	12	V	100	31	3.1	0.2	-0.3
10410	00	V	100	29	2.9	0.0	-0.7
10410	12	V	100	31	3.2	0.6	-0.1
10739	00	V	100	30	3.0	-0.3	-0.1
10739	12	V	100	31	2.6	0.3	0.1
11035	12	V	100	31	3.0	0.0	-0.3
11035	00	V	100	23	3.0	0.5	-0.3
12982	00	V	100	25	2.9	-0.3	-0.6
12982	12	V	100	28	3.3	0.7	-0.1
16080	00	V	100	27	3.1	-0.7	-0.2
16080	12	V	100	30	3.4	0.7	0.2
16245	00	V	100	24	3.6	0.6	0.8
16245	12	V	100	30	3.7	1.1	-0.3
16320	12	V	100	28	3.4	0.7	-0.8
16320	00	V	100	18	2.7	0.8	0.8
16429	12	V	100	31	4.2	1.3	-0.7
16429	00	V	100	27	3.9	1.3	0.5
16622	00	V	100	24	3.3	0.6	-0.3
16754	00	V	100	23	3.9	0.6	0.7

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	100	3	5.8	3.6	2.6
26435	12	V	100	15	2.8	-0.4	0.7
5QPW8X	00	V	100	12	2.7	-0.7	0.1
5QPW8X	12	V	100	11	2.2	0.4	0.2
60018	00	V	100	23	4.2	1.1	1.4
60018	12	V	100	31	3.6	0.7	0.5
7JUNA4	12	V	100	6	2.6	-0.8	-0.9
7JUNA4	00	V	100	2	2.6	-1.2	1.6
DBLK	12	V	100	28	1.9	0.2	-0.2
DBLK	00	V	100	27	1.7	0.2	0.1
JNKN7J	00	V	100	3	2.7	-0.9	-0.1
JNKN7J	12	V	100	9	2.7	-0.7	0.1
KJJF9X	00	V	100	5	4.3	1.3	-0.8
KJJF9X	12	V	100	7	3.7	-1.3	1.1
KMPLHP	00	V	100	7	3.6	-0.4	-0.9
KMPLHP	12	V	100	8	5.5	2.1	0.0
LRVQE3	00	V	100	4	3.7	-0.1	-1.0
LRVQE3	12	V	100	6	2.4	0.9	-0.4
VKB4L5	12	V	100	5	3.5	-0.7	-0.4
VKB4L5	00	V	100	2	4.9	-2.8	0.0
XQFJRG	00	V	100	3	2.0	1.5	-0.6
XQFJRG	12	V	100	5	2.5	-0.5	-1.5
YLV96W	12	V	100	4	3.3	0.7	1.3
YLV96W	00	V	100	2	3.9	-2.9	0.5
ZVQEQC	12	V	100	18	3.3	0.4	0.7
ZVQEQC	00	V	100	2	2.6	0.5	-2.1

#### 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 : MAR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	500	32	11.5	-8.4
01001	00	Z	500	34	9.6	-6.9
01028	00	Z	500	40	5.4	-1.6
01028	12	Z	500	41	3.0	-0.6
01400	00	Z	500	18	79.3	79.0
01400	12	Z	500	26	79.4	79.2
01415	12	Z	500	31	5.2	3.9
01415	00	Z	500	31	5.9	3.8
02365	12	Z	500	31	6.9	4.1
02365	00	Z	500	30	8.1	5.1
02591	00	Z	500	12	7.7	7.1
02591	12	Z	500	11	9.3	8.7
02836	12	Z	500	31	3.9	-0.8
02836	00	Z	500	31	3.1	-0.4
02963	00	Z	500	31	3.8	2.3
02963	12	Z	500	31	4.8	3.4
03005	12	Z	500	32	4.6	-2.1
03005	00	Z	500	27	4.2	-2.4
03238	00	Z	500	31	4.2	1.6
03238	12	Z	500	6	6.1	5.4
03808	00	Z	500	28	5.6	4.5
03808	12	Z	500	31	5.0	3.2
03918	00	Z	500	30	8.1	7.3
03918	12	Z	500	7	8.3	7.8
03953	00	Z	500	31	7.9	5.6
03953	12	Z	500	33	9.6	6.2
04018	12	Z	500	30	3.3	-0.9
04018	00	Z	500	30	3.6	0.9
04220	00	Z	500	31	12.7	2.4
04220	12	Z	500	31	3.8	0.9
04270	00	Z	500	30	5.1	-1.9
04270	12	Z	500	31	3.9	-1.4
04320	12	Z	500	31	4.8	1.1
04320	00	Z	500	31	4.7	1.4
04339	00	Z	500	30	5.4	2.1
04339	12	Z	500	30	5.1	2.4
04360	12	Z	500	30	9.8	-7.6
04360	00	Z	500	29	11.0	-10.2
06011	00	Z	500	31	7.2	4.6

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	500	31	9.2	8.0
06260	00	Z	500	31	7.1	0.4
06260	12	Z	500	15	4.1	3.2
06610	00	Z	500	32	3.8	2.3
06610	12	Z	500	32	2.9	1.3
07110	12	Z	500	31	6.0	-2.2
07110	00	Z	500	31	6.7	-3.8
07510	00	Z	500	33	5.5	4.2
07510	12	Z	500	30	8.6	7.2
07645	12	Z	500	29	5.5	2.0
07645	00	Z	500	29	5.2	0.8
07761	00	Z	500	32	5.8	-1.1
07761	12	Z	500	31	6.1	2.4
08001	12	Z	500	31	6.9	6.2
08001	00	Z	500	31	6.2	4.1
08221	00	Z	500	22	7.9	6.5
08221	12	Z	500	24	7.9	6.2
08302	12	Z	500	32	6.2	-4.2
08302	00	Z	500	31	4.2	-2.9
08508	12	Z	500	29	8.2	7.7
08522	12	Z	500	29	8.6	8.1
10035	00	Z	500	31	12.1	11.4
10035	12	Z	500	31	11.3	10.8
10393	00	Z	500	31	3.8	0.7
10393	12	Z	500	31	4.1	0.1
10410	00	Z	500	31	3.1	1.0
10410	12	Z	500	31	3.6	-0.4
10739	00	Z	500	31	6.0	4.5
10739	12	Z	500	31	5.4	4.2
11035	12	Z	500	32	15.2	12.6
11035	00	Z	500	31	8.1	7.1
12982	00	Z	500	29	4.7	3.5
12982	12	Z	500	28	14.1	3.4
16080	00	Z	500	32	3.9	-2.3
16080	12	Z	500	30	4.0	-2.4
16245	00	Z	500	30	2.6	-0.9
16245	12	Z	500	31	4.0	-2.2
16320	12	Z	500	29	6.1	4.7
16320	00	Z	500	20	8.1	6.3
16429	12	Z	500	31	5.8	2.6
16429	00	Z	500	30	5.6	4.2
16622	00	Z	500	30	6.6	3.8
16754	00	Z	500	31	7.2	5.5

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	500	31	5.6	4.1
26435	12	Z	500	15	3.0	2.1
5QPW8X	00	Z	500	14	21.2	20.2
5QPW8X	12	Z	500	12	34.1	25.2
60018	00	Z	500	31	6.5	4.2
60018	12	Z	500	31	7.4	6.5
7JUNA4	12	Z	500	7	6.2	0.1
7JUNA4	00	Z	500	3	2.9	1.6
DBLK	12	Z	500	29	3.9	0.3
DBLK	00	Z	500	29	4.1	-2.8
JNKN7J	00	Z	500	5	32.4	32.3
JNKN7J	12	Z	500	13	41.5	40.6
KJJF9X	00	Z	500	5	9.4	7.8
KJJF9X	12	Z	500	7	8.6	6.8
KMPLHP	00	Z	500	6	37.2	32.9
KMPLHP	12	Z	500	8	53.2	39.9
LRVQE3	00	Z	500	4	5.3	3.1
LRVQE3	12	Z	500	6	16.6	13.1
VKB4L5	12	Z	500	5	30.9	29.2
VKB4L5	00	Z	500	3	42.0	41.5
XQFJRG	00	Z	500	4	8.4	-6.9
XQFJRG	12	Z	500	5	7.6	-2.2
YLV96W	12	Z	500	4	34.9	31.2
YLV96W	00	Z	500	5	28.6	18.7
ZVQEQC	12	Z	500	18	12.2	9.6
ZVQEQC	00	Z	500	2	9.7	9.4

**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 : MAR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	500	31	2.5	0.9	0.2
01001	00	V	500	29	2.9	0.9	0.5
01028	00	V	500	30	3.4	0.4	-1.2
01028	12	V	500	31	2.5	0.0	-0.1
01400	00	V	500	17	2.4	0.1	-0.1
01400	12	V	500	26	2.5	0.0	0.0
01415	12	V	500	31	2.9	0.3	0.4
01415	00	V	500	30	2.9	-0.1	0.8
02365	12	V	500	31	3.9	0.3	-0.8
02365	00	V	500	29	3.6	0.2	0.6
02591	00	V	500	12	3.7	-0.2	0.4
02591	12	V	500	11	3.5	-0.5	-0.3
02836	12	V	500	31	3.9	-0.6	0.6
02836	00	V	500	30	3.9	-0.5	0.8
02963	00	V	500	30	2.9	0.0	0.5
02963	12	V	500	31	3.1	0.7	0.8
03005	12	V	500	31	2.8	-0.1	-0.1
03005	00	V	500	26	3.0	0.2	-0.3
03238	00	V	500	30	2.9	0.1	0.3
03238	12	V	500	6	2.0	0.0	0.6
03808	00	V	500	28	2.9	1.0	-0.4
03808	12	V	500	31	3.0	0.4	0.0
03918	00	V	500	29	3.1	0.3	0.4
03918	12	V	500	7	3.3	-1.1	0.4
03953	00	V	500	30	3.3	0.3	0.5
03953	12	V	500	31	3.1	0.5	0.2
04018	12	V	500	30	3.7	0.3	1.2
04018	00	V	500	29	3.5	0.2	-0.4
04220	00	V	500	30	2.3	-0.2	0.0
04220	12	V	500	31	2.5	-0.3	-0.1
04270	00	V	500	29	3.9	0.5	0.9
04270	12	V	500	31	3.6	0.4	0.7
04320	12	V	500	31	3.3	-0.1	0.5
04320	00	V	500	30	2.8	0.2	0.0
04339	00	V	500	29	2.6	0.3	0.2
04339	12	V	500	30	2.6	0.7	0.0
04360	12	V	500	30	3.1	0.1	0.1
04360	00	V	500	28	3.5	-0.5	0.8
06011	00	V	500	30	3.5	0.1	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	500	31	3.7	0.0	0.2
06260	00	V	500	29	3.1	0.1	-0.1
06260	12	V	500	14	2.8	0.0	-0.1
06610	00	V	500	30	2.8	0.3	-0.1
06610	12	V	500	31	3.3	-0.2	0.2
07110	12	V	500	31	2.5	0.5	-0.2
07110	00	V	500	30	3.7	0.0	0.3
07510	00	V	500	28	4.5	-0.1	-0.5
07510	12	V	500	29	3.3	0.9	-0.1
07645	12	V	500	29	3.8	-1.1	-0.4
07645	00	V	500	29	2.8	0.1	0.2
07761	00	V	500	30	3.0	0.6	0.4
07761	12	V	500	31	3.0	-0.2	0.2
08001	12	V	500	31	3.5	0.9	0.4
08001	00	V	500	30	3.0	0.3	-0.1
08221	00	V	500	22	2.5	0.2	0.3
08221	12	V	500	24	3.0	0.5	-0.2
08302	12	V	500	31	4.1	0.1	-0.5
08302	00	V	500	30	3.5	0.1	-0.3
08508	12	V	500	29	2.1	0.3	0.6
08522	12	V	500	29	2.5	0.8	0.1
10035	00	V	500	30	2.1	0.2	0.0
10035	12	V	500	31	2.8	-0.3	-0.5
10393	00	V	500	30	3.4	0.4	0.1
10393	12	V	500	31	2.5	0.7	0.0
10410	00	V	500	30	2.6	0.5	-0.5
10410	12	V	500	31	2.1	0.2	-0.3
10739	00	V	500	30	2.6	0.7	0.2
10739	12	V	500	31	3.0	-0.1	-0.1
11035	12	V	500	31	3.3	0.2	-0.4
11035	00	V	500	30	3.0	-0.2	0.3
12982	00	V	500	28	3.3	-0.7	-1.1
12982	12	V	500	28	2.3	0.0	-0.1
16080	00	V	500	31	3.2	-0.7	-0.6
16080	12	V	500	30	3.0	-0.2	-0.5
16245	00	V	500	30	2.7	1.0	0.1
16245	12	V	500	31	2.7	-0.3	-0.1
16320	12	V	500	28	2.6	0.1	0.0
16320	00	V	500	20	2.9	-0.5	0.7
16429	12	V	500	31	2.8	0.6	-0.4
16429	00	V	500	29	2.9	0.2	0.2
16622	00	V	500	29	3.0	0.0	0.1
16754	00	V	500	25	3.5	0.2	0.2



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	500	19	3.0	0.8	0.6
26435	12	V	500	15	3.2	1.3	0.7
5QPW8X	00	V	500	14	2.8	0.2	0.1
5QPW8X	12	V	500	12	2.2	-0.4	0.5
60018	00	V	500	30	2.9	0.2	-0.4
60018	12	V	500	31	2.3	0.3	0.0
7JUNA4	12	V	500	7	2.9	-0.7	-0.1
7JUNA4	00	V	500	3	2.6	-0.8	1.2
DBLK	12	V	500	29	1.9	0.3	-0.2
DBLK	00	V	500	28	2.5	-0.3	0.2
JNKN7J	00	V	500	5	2.7	0.8	0.8
JNKN7J	12	V	500	13	2.7	-0.1	0.7
KJJF9X	00	V	500	5	3.7	0.1	1.3
KJJF9X	12	V	500	7	2.9	-0.5	0.8
KMPLHP	00	V	500	6	2.6	-0.1	1.0
KMPLHP	12	V	500	8	2.3	-0.1	-0.3
LRVQE3	00	V	500	4	2.6	-0.3	0.2
LRVQE3	12	V	500	6	1.2	0.1	-0.8
VKB4L5	12	V	500	5	2.1	0.1	0.8
VKB4L5	00	V	500	3	1.1	-0.8	0.0
XQFJRG	00	V	500	4	3.4	2.6	0.8
XQFJRG	12	V	500	5	2.8	-1.5	1.0
YLV96W	12	V	500	4	3.3	0.0	1.1
YLV96W	00	V	500	5	4.6	2.4	-1.1
ZVQEQC	12	V	500	18	3.0	-0.1	-0.1
ZVQEQC	00	V	500	2	1.3	0.2	-0.8

#### 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 : MAR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	850	32	11.4	-9.2
01001	00	Z	850	34	9.8	-6.4
01028	00	Z	850	40	3.6	-2.1
01028	12	Z	850	41	4.1	-1.7
01400	00	Z	850	18	78.9	78.7
01400	12	Z	850	26	79.7	79.5
01415	12	Z	850	31	5.1	4.7
01415	00	Z	850	31	4.5	3.7
02365	12	Z	850	31	5.9	4.4
02365	00	Z	850	30	7.2	6.1
02591	00	Z	850	12	8.2	7.9
02591	12	Z	850	11	9.6	9.2
02836	12	Z	850	31	2.5	1.6
02836	00	Z	850	31	3.3	1.0
02963	00	Z	850	31	3.6	3.1
02963	12	Z	850	31	4.3	3.7
03005	12	Z	850	32	4.0	-0.6
03005	00	Z	850	27	3.9	-1.6
03238	00	Z	850	31	4.2	3.5
03238	12	Z	850	6	5.6	4.9
03808	00	Z	850	28	4.0	2.4
03808	12	Z	850	31	4.0	3.4
03918	00	Z	850	30	7.8	7.4
03918	12	Z	850	7	9.1	8.7
03953	00	Z	850	31	7.2	6.0
03953	12	Z	850	33	7.1	6.2
04018	12	Z	850	30	3.1	-0.2
04018	00	Z	850	30	2.6	0.5
04220	00	Z	850	31	14.0	2.6
04220	12	Z	850	31	3.1	0.3
04270	00	Z	850	30	3.6	0.3
04270	12	Z	850	31	3.7	0.9
04320	12	Z	850	31	5.7	-3.5
04320	00	Z	850	31	5.4	-2.5
04339	00	Z	850	30	4.0	0.7
04339	12	Z	850	30	4.2	0.4
04360	12	Z	850	30	12.1	-11.4
04360	00	Z	850	30	15.3	-12.7
06011	00	Z	850	31	5.3	4.0

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	850	31	6.4	5.1
06260	00	Z	850	31	5.8	0.3
06260	12	Z	850	15	2.7	2.0
06610	00	Z	850	32	2.9	2.2
06610	12	Z	850	32	3.0	1.3
07110	12	Z	850	31	4.1	1.6
07110	00	Z	850	31	4.1	-1.6
07510	00	Z	850	35	8.4	3.6
07510	12	Z	850	30	5.1	3.9
07645	12	Z	850	29	3.2	-0.8
07645	00	Z	850	29	2.7	0.0
07761	00	Z	850	32	3.0	-0.9
07761	12	Z	850	31	2.3	0.1
08001	12	Z	850	31	3.6	2.6
08001	00	Z	850	31	2.5	1.2
08221	00	Z	850	22	4.4	4.0
08221	12	Z	850	24	5.3	4.5
08302	12	Z	850	32	5.8	-5.3
08302	00	Z	850	31	5.2	-4.8
08508	12	Z	850	29	4.6	3.8
08522	12	Z	850	29	5.0	4.5
10035	00	Z	850	31	10.9	10.7
10035	12	Z	850	31	13.3	13.0
10393	00	Z	850	31	3.7	1.4
10393	12	Z	850	31	4.2	0.5
10410	00	Z	850	31	2.1	0.6
10410	12	Z	850	31	3.3	0.5
10739	00	Z	850	31	5.0	4.4
10739	12	Z	850	31	5.0	4.2
11035	12	Z	850	32	15.9	13.5
11035	00	Z	850	31	9.1	8.3
12982	00	Z	850	29	3.2	2.4
12982	12	Z	850	28	15.1	0.6
16080	00	Z	850	32	3.7	-2.6
16080	12	Z	850	32	3.9	-3.0
16245	00	Z	850	30	2.8	-1.6
16245	12	Z	850	31	3.6	-2.6
16320	12	Z	850	29	6.5	5.2
16320	00	Z	850	20	7.8	5.1
16429	12	Z	850	31	4.4	2.6
16429	00	Z	850	30	5.0	3.4
16622	00	Z	850	31	5.7	3.1
16754	00	Z	850	31	4.6	2.2

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	850	31	4.1	3.5
26435	12	Z	850	15	3.0	2.5
5QPW8X	00	Z	850	14	23.2	22.3
5QPW8X	12	Z	850	12	22.2	22.0
60018	00	Z	850	31	4.0	1.6
60018	12	Z	850	31	4.0	2.7
7JUNA4	12	Z	850	7	3.5	-1.1
7JUNA4	00	Z	850	3	5.6	4.6
DBLK	12	Z	850	29	5.2	-2.6
DBLK	00	Z	850	29	5.6	-5.0
JNKN7J	00	Z	850	6	37.0	36.9
JNKN7J	12	Z	850	13	39.4	38.9
KJJF9X	00	Z	850	5	3.6	2.4
KJJF9X	12	Z	850	7	4.8	3.8
KMPLHP	00	Z	850	7	18.4	15.2
KMPLHP	12	Z	850	8	22.5	17.9
LRVQE3	00	Z	850	4	6.9	3.0
LRVQE3	12	Z	850	7	16.8	6.9
VKB4L5	12	Z	850	5	28.6	28.1
VKB4L5	00	Z	850	3	38.9	38.5
XQFJRG	00	Z	850	4	11.2	-9.2
XQFJRG	12	Z	850	5	8.6	-4.7
YLV96W	12	Z	850	4	39.6	33.6
YLV96W	00	Z	850	6	29.9	22.8
ZVQEQC	12	Z	850	18	9.2	5.7
ZVQEQC	00	Z	850	2	2.5	2.4

**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 : MAR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	850	31	5.1	0.9	1.6
01001	00	V	850	29	3.7	0.6	0.1
01028	00	V	850	30	2.7	0.8	0.0
01028	12	V	850	31	3.9	1.3	-0.8
01400	00	V	850	17	2.8	0.1	-0.5
01400	12	V	850	26	2.6	0.7	-0.4
01415	12	V	850	31	2.3	-0.2	0.5
01415	00	V	850	30	2.3	0.1	-0.2
02365	12	V	850	31	3.6	0.7	0.1
02365	00	V	850	29	3.0	0.2	0.2
02591	00	V	850	12	2.1	-0.2	0.3
02591	12	V	850	11	2.7	0.0	-0.4
02836	12	V	850	31	2.5	-0.5	0.1
02836	00	V	850	30	3.1	0.5	-0.1
02963	00	V	850	30	2.5	-0.2	-0.3
02963	12	V	850	31	2.3	-0.1	0.1
03005	12	V	850	31	3.5	0.6	-0.2
03005	00	V	850	26	2.9	-0.1	0.4
03238	00	V	850	30	3.0	0.0	-0.6
03238	12	V	850	6	2.1	0.6	0.9
03808	00	V	850	28	3.1	0.6	-0.6
03808	12	V	850	31	3.3	0.3	0.2
03918	00	V	850	29	2.7	0.4	0.6
03918	12	V	850	7	2.9	0.9	0.2
03953	00	V	850	30	2.8	-0.1	-0.1
03953	12	V	850	31	3.3	0.2	-0.2
04018	12	V	850	30	4.0	1.0	0.4
04018	00	V	850	29	3.3	-0.2	0.1
04220	00	V	850	30	3.0	0.2	-0.2
04220	12	V	850	31	3.5	1.0	-0.5
04270	00	V	850	29	3.6	-0.1	-0.2
04270	12	V	850	31	4.0	0.5	0.4
04320	12	V	850	31	3.6	-0.7	0.5
04320	00	V	850	30	3.9	-0.1	0.7
04339	00	V	850	29	5.3	1.3	1.3
04339	12	V	850	30	5.2	1.1	2.4
04360	12	V	850	30	4.3	0.7	0.9
04360	00	V	850	28	4.5	1.3	1.2
06011	00	V	850	30	3.7	-0.5	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	850	31	3.5	0.3	-0.8
06260	00	V	850	29	3.1	-0.1	0.0
06260	12	V	850	14	3.3	-0.1	-0.2
06610	00	V	850	30	2.6	0.6	-0.3
06610	12	V	850	31	2.7	0.0	-0.2
07110	12	V	850	31	3.1	-0.5	0.1
07110	00	V	850	30	3.1	-0.2	0.3
07510	00	V	850	30	3.3	-0.5	0.7
07510	12	V	850	29	4.2	1.1	-0.2
07645	12	V	850	29	3.0	-0.5	0.4
07645	00	V	850	29	2.6	-0.2	0.2
07761	00	V	850	30	3.7	0.7	0.8
07761	12	V	850	31	2.6	0.9	0.4
08001	12	V	850	31	3.0	0.0	0.0
08001	00	V	850	30	3.6	0.7	0.7
08221	00	V	850	22	3.1	0.7	-0.5
08221	12	V	850	24	3.3	0.3	-0.2
08302	12	V	850	31	4.5	0.0	-0.1
08302	00	V	850	30	3.2	-0.1	-0.4
08508	12	V	850	29	2.4	-0.2	0.3
08522	12	V	850	29	4.4	0.0	1.7
10035	00	V	850	30	2.6	0.4	0.1
10035	12	V	850	31	1.9	0.0	-0.1
10393	00	V	850	30	2.4	-0.1	0.1
10393	12	V	850	31	2.3	0.1	-0.1
10410	00	V	850	30	2.5	0.4	0.1
10410	12	V	850	31	2.7	0.3	0.3
10739	00	V	850	30	2.9	0.6	-0.8
10739	12	V	850	31	3.2	0.3	0.0
11035	12	V	850	31	2.7	-0.1	0.0
11035	00	V	850	30	3.5	-0.2	-0.3
12982	00	V	850	28	3.0	0.4	-0.6
12982	12	V	850	28	3.5	0.2	0.0
16080	00	V	850	31	3.8	0.6	-0.5
16080	12	V	850	31	3.9	1.7	-0.3
16245	00	V	850	30	3.0	0.2	0.6
16245	12	V	850	31	3.2	0.0	-0.4
16320	12	V	850	28	3.1	0.8	0.4
16320	00	V	850	20	2.7	0.2	-0.6
16429	12	V	850	31	3.4	0.3	-0.5
16429	00	V	850	29	2.6	0.0	0.3
16622	00	V	850	30	3.5	1.1	0.2
16754	00	V	850	25	2.7	-0.6	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	850	29	3.4	0.5	-0.2
26435	12	V	850	15	2.8	-0.2	-1.1
5QPW8X	00	V	850	14	4.8	0.6	-0.5
5QPW8X	12	V	850	12	3.5	-0.8	-0.2
60018	00	V	850	30	5.0	-1.1	2.0
60018	12	V	850	31	3.3	-0.3	0.1
7JUNA4	12	V	850	7	2.9	-1.3	0.7
7JUNA4	00	V	850	3	2.7	-0.8	0.2
DBLK	12	V	850	29	2.6	0.1	-0.1
DBLK	00	V	850	28	2.8	-0.2	-0.7
JNKN7J	00	V	850	6	2.2	-1.1	0.3
JNKN7J	12	V	850	13	3.0	0.5	-0.7
KJJF9X	00	V	850	5	1.7	0.0	-0.9
KJJF9X	12	V	850	7	3.3	-0.5	-1.4
KMPLHP	00	V	850	7	2.3	0.3	0.5
KMPLHP	12	V	850	8	2.1	0.8	-0.1
LRVQE3	00	V	850	4	3.2	-1.5	0.1
LRVQE3	12	V	850	7	1.8	-0.4	0.3
VKB4L5	12	V	850	5	2.0	-1.0	0.9
VKB4L5	00	V	850	3	3.0	-0.3	-2.0
XQFJRG	00	V	850	4	2.3	0.2	0.4
XQFJRG	12	V	850	5	2.6	0.3	0.4
YLV96W	12	V	850	4	4.0	1.1	1.2
YLV96W	00	V	850	5	3.1	0.5	-0.3
ZVQEQC	12	V	850	18	2.6	0.4	-0.3
ZVQEQC	00	V	850	2	3.2	1.1	-0.6

**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 : MAR 2020  
 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
0062087	99	P	SUR	55	7	400	0	0.4	-0.2	0.4
0066023	99	P	SUR	55	11	275	0	0.4	0.2	0.4
0066024	99	P	SUR	55	13	48	0	0.5	-0.1	0.5
03380	99	P	SUR	54	0	752	0	0.3	-0.2	0.4
0640046	99	P	SUR	60	-4	579	0	0.4	-0.3	0.5
1300001	99	P	SUR	11	-23	725	0	0.3	0.3	0.5
1300008	99	P	SUR	15	-38	706	0	0.2	0.1	0.3
1300131	99	P	SUR	28	-17	744	0	0.4	0.3	0.5
1301569	99	P	SUR	24	-41	743	0	0.3	-0.4	0.5
1301603	99	P	SUR	29	-53	739	0	0.3	0.0	0.3
1301605	99	P	SUR	24	-66	730	0	0.4	0.2	0.5
1301608	99	P	SUR	30	-46	741	0	0.3	-0.9	1.0
1301610	99	P	SUR	23	-66	740	0	0.3	0.2	0.4
1301612	99	P	SUR	27	-43	745	0	0.3	0.0	0.3
1301618	99	P	SUR	19	-55	737	1	0.3	-0.3	0.5
1301619	99	P	SUR	32	-34	739	0	0.3	0.3	0.4
1301620	99	P	SUR	11	-47	744	0	0.3	0.6	0.6
1501531	99	P	SUR	29	-49	743	0	0.3	-0.3	0.4
1501584	99	P	SUR	12	-49	742	0	0.2	-0.1	0.3
2501643	99	P	SUR	85	-23	739	0	0.5	-0.1	0.5
2501644	99	P	SUR	84	-9	739	0	0.5	-0.1	0.5
2501645	99	P	SUR	86	-41	739	0	0.4	0.2	0.5
2501647	99	P	SUR	86	-41	743	0	0.5	0.2	0.5
2501651	99	P	SUR	86	-38	329	0	0.4	-0.4	0.5
2601623	99	P	SUR	73	23	90	0	0.5	0.3	0.6
2601625	99	P	SUR	77	17	745	0	4.6	-1.5	4.8
4100040	99	P	SUR	15	-53	4307	0	0.3	-0.2	0.3
4100044	99	P	SUR	22	-59	4322	0	0.3	0.6	0.7
4100046	99	P	SUR	24	-68	4186	0	0.3	0.2	0.4
4100048	99	P	SUR	32	-70	4209	0	0.4	-0.1	0.4
4100049	99	P	SUR	27	-63	4328	0	0.3	0.7	0.8
4100052	99	P	SUR	18	-65	2541	0	0.3	-1.1	1.2
4100053	99	P	SUR	18	-66	4409	0	0.3	-0.9	1.0
4100056	99	P	SUR	18	-65	4406	0	0.3	-0.9	1.0
4100139	99	P	SUR	20	-38	742	0	0.2	-0.0	0.2
4100300	99	P	SUR	16	-57	737	0	0.3	0.1	0.3



DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4100597	99	P	SUR	28	-30	2	1	0.0	-13.3	13.3
4100729	99	P	SUR	36	-35	742	0	0.8	0.8	1.1
4101529	99	P	SUR	32	-67	742	0	0.4	-1.1	1.2
4101531	99	P	SUR	30	-19	739	0	0.2	0.7	0.8
4101537	99	P	SUR	32	-16	91	0	0.3	-0.7	0.7
4101539	99	P	SUR	36	-16	743	0	0.3	0.4	0.5
4101554	99	P	SUR	24	-63	472	0	0.7	1.3	1.5
4101557	99	P	SUR	27	-29	743	0	0.3	0.2	0.3
4101560	99	P	SUR	40	-13	743	0	0.4	0.7	0.8
4101562	99	P	SUR	29	-55	683	0	0.3	0.5	0.6
4101564	99	P	SUR	30	-46	699	0	0.3	0.0	0.3
4101565	99	P	SUR	23	-45	742	0	0.3	0.2	0.4
4101567	99	P	SUR	32	-30	743	0	0.3	0.5	0.6
4101570	99	P	SUR	27	-60	742	0	0.3	0.2	0.3
4101572	99	P	SUR	52	-4	2	0	0.0	-2.5	2.5
4101573	99	P	SUR	30	-35	743	0	0.3	0.2	0.4
4101574	99	P	SUR	36	-44	742	0	0.4	0.5	0.7
4101603	99	P	SUR	15	-61	743	0	0.3	-0.1	0.3
4101607	99	P	SUR	39	-13	743	0	0.4	0.4	0.5
4101609	99	P	SUR	36	-23	743	0	0.2	0.3	0.4
4101610	99	P	SUR	65	-8	743	0	0.4	0.4	0.6
4101613	99	P	SUR	29	-20	743	0	0.3	0.7	0.8
4101614	99	P	SUR	34	-16	743	0	0.3	0.2	0.3
4101615	99	P	SUR	20	-69	743	1	0.4	0.2	0.4
4101616	99	P	SUR	38	-18	744	0	0.3	0.2	0.4
4101617	99	P	SUR	28	-23	743	0	0.4	0.5	0.6
4101618	99	P	SUR	32	-28	743	0	0.3	0.2	0.3
4101621	99	P	SUR	39	-33	742	0	0.3	0.4	0.5
4101622	99	P	SUR	67	-23	743	0	0.7	-0.1	0.7
4101623	99	P	SUR	56	-51	743	0	0.5	-0.2	0.6
4101627	99	P	SUR	60	-56	743	0	0.6	-0.0	0.6
4101630	99	P	SUR	15	-65	743	0	0.3	0.1	0.3
4101636	99	P	SUR	10	-21	743	2	0.6	0.4	0.7
4101655	99	P	SUR	61	-12	539	0	0.4	-0.1	0.4
4101658	99	P	SUR	62	-26	743	0	0.6	0.1	0.7
4101659	99	P	SUR	60	-7	743	0	0.4	0.1	0.4
4101662	99	P	SUR	71	16	743	0	0.5	0.0	0.5
4101663	99	P	SUR	63	-57	743	0	0.8	-0.2	0.8
4101664	99	P	SUR	59	-29	742	0	0.6	0.1	0.6
4101669	99	P	SUR	17	-46	743	0	0.3	0.1	0.3
4101690	99	P	SUR	45	-22	743	0	0.5	0.0	0.5
4101697	99	P	SUR	12	-59	741	0	0.3	-0.1	0.3
4101698	99	P	SUR	13	-59	743	0	0.3	0.4	0.5

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101699	99	P	SUR	13	-61	744	0	0.3	-0.5	0.6
4101705	99	P	SUR	30	-37	741	0	0.3	-0.5	0.6
4101706	99	P	SUR	35	-19	740	0	0.2	-0.7	0.7
4101707	99	P	SUR	39	-26	742	0	0.3	-0.0	0.3
4101708	99	P	SUR	32	-50	741	7	1.4	-0.5	1.5
4101712	99	P	SUR	44	-14	742	18	1.6	-0.1	1.6
4101714	99	P	SUR	33	-35	741	0	0.3	-0.2	0.4
4101715	99	P	SUR	30	-62	741	0	0.5	-0.5	0.7
4101716	99	P	SUR	26	-69	740	0	0.3	-1.1	1.2
4101717	99	P	SUR	29	-68	742	0	0.4	-0.1	0.4
4101718	99	P	SUR	29	-29	743	0	0.2	0.0	0.2
4101719	99	P	SUR	30	-47	743	0	0.4	0.2	0.4
4101720	99	P	SUR	32	-46	743	0	0.5	0.5	0.7
4101721	99	P	SUR	29	-45	744	0	0.3	0.8	0.9
4101742	99	P	SUR	30	-36	740	0	0.3	0.0	0.3
4101743	99	P	SUR	29	-68	741	0	0.4	0.6	0.7
4101752	99	P	SUR	16	-69	741	0	0.3	0.1	0.3
4101753	99	P	SUR	26	-33	743	0	0.3	0.3	0.4
4101754	99	P	SUR	13	-63	739	9	1.8	0.5	1.9
4101755	99	P	SUR	19	-32	742	0	0.3	0.3	0.4
4101756	99	P	SUR	11	-28	742	0	0.3	0.4	0.5
4101757	99	P	SUR	13	-60	1486	0	0.3	0.4	0.5
4101758	99	P	SUR	12	-59	1485	0	0.4	0.7	0.8
4101780	99	P	SUR	14	-60	743	0	0.4	-0.1	0.4
41040	99	P	SUR	15	-53	1274	0	0.3	-0.2	0.4
41044	99	P	SUR	22	-59	1238	0	0.4	0.6	0.7
41046	99	P	SUR	24	-68	1341	0	0.4	0.2	0.4
41048	99	P	SUR	32	-70	1333	0	0.5	-0.1	0.5
41049	99	P	SUR	28	-63	1311	0	0.3	0.7	0.8
41052	99	P	SUR	18	-65	1073	0	0.3	-1.1	1.2
41053	99	P	SUR	19	-66	1584	0	0.4	-1.0	1.0
41056	99	P	SUR	18	-66	1573	0	0.4	-1.0	1.0
4200059	99	P	SUR	15	-67	4309	0	0.3	0.7	0.8
4200085	99	P	SUR	18	-67	4356	0	0.3	-0.8	0.8
42059	99	P	SUR	15	-68	1301	0	0.4	0.7	0.8
42085	99	P	SUR	18	-67	1565	0	0.4	-0.8	0.9
4400008	99	P	SUR	41	-69	4291	0	0.7	-0.1	0.8
4400011	99	P	SUR	41	-67	4321	0	0.7	0.3	0.8
4400027	99	P	SUR	44	-67	728	0	0.6	-0.5	0.8
4400032	99	P	SUR	44	-69	728	0	0.6	-1.5	1.6
4400033	99	P	SUR	44	-69	726	0	0.6	-1.1	1.2
4400037	99	P	SUR	43	-68	727	0	0.5	0.0	0.5
4400777	99	P	SUR	30	-60	742	0	0.5	0.2	0.5

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44008	99	P	SUR	41	-69	2217	0	0.9	-0.1	0.9
4400857	99	P	SUR	33	-28	742	0	0.3	0.4	0.5
4400874	99	P	SUR	30	-30	710	0	3.2	-2.7	4.2
44011	99	P	SUR	41	-67	1913	0	0.8	0.3	0.9
4401531	99	P	SUR	39	-18	744	0	0.3	0.4	0.5
4401536	99	P	SUR	34	-15	739	0	0.4	0.9	1.0
4401539	99	P	SUR	30	-33	744	0	3.2	-1.9	3.7
4401540	99	P	SUR	34	-35	744	0	0.3	0.2	0.4
4401541	99	P	SUR	33	-38	744	0	0.3	-0.3	0.5
4401551	99	P	SUR	35	-28	731	0	0.2	0.3	0.4
4401556	99	P	SUR	22	-61	741	0	0.5	-0.0	0.5
4401557	99	P	SUR	32	-39	741	0	0.3	0.3	0.4
4401558	99	P	SUR	66	12	743	0	0.6	-0.6	0.8
4401561	99	P	SUR	30	-54	431	393	1.0	-12.8	12.8
4401562	99	P	SUR	28	-39	740	0	0.3	-0.5	0.5
4401563	99	P	SUR	35	-38	740	0	0.4	-0.2	0.4
4401564	99	P	SUR	34	-19	740	0	0.4	0.5	0.7
4401565	99	P	SUR	59	-29	696	0	1.2	0.3	1.2
4401568	99	P	SUR	59	-1	741	0	0.6	0.5	0.8
4401569	99	P	SUR	54	-23	743	0	0.7	0.1	0.7
4401572	99	P	SUR	43	-15	739	0	0.4	0.5	0.7
4401574	99	P	SUR	62	-36	743	0	0.9	0.2	0.9
4401576	99	P	SUR	40	-16	743	0	0.4	0.5	0.6
4401577	99	P	SUR	43	-25	743	0	0.5	0.4	0.6
4401578	99	P	SUR	40	-15	740	0	0.3	0.2	0.4
4401579	99	P	SUR	42	-29	742	0	0.4	0.2	0.4
4401580	99	P	SUR	49	-19	743	0	0.9	0.5	1.1
4401581	99	P	SUR	40	-38	743	0	0.5	0.5	0.7
4401582	99	P	SUR	44	-22	740	0	0.4	0.4	0.5
4401611	99	P	SUR	48	-20	742	0	0.6	0.3	0.7
4401613	99	P	SUR	28	-34	743	0	0.3	0.2	0.4
4401750	99	P	SUR	69	-2	678	0	0.7	-1.2	1.4
4401751	99	P	SUR	67	9	740	0	0.6	-0.2	0.6
4401753	99	P	SUR	73	8	172	0	0.4	0.5	0.7
4401799	99	P	SUR	25	-67	595	0	0.3	0.1	0.3
4401826	99	P	SUR	45	-57	733	0	0.9	-0.9	1.3
4401827	99	P	SUR	44	-64	113	0	0.5	0.2	0.5
4401828	99	P	SUR	50	-48	679	0	0.5	0.3	0.6
4401829	99	P	SUR	47	-44	727	0	0.5	0.4	0.6
4401830	99	P	SUR	46	-39	570	0	0.5	0.0	0.5
4401831	99	P	SUR	42	-55	423	0	0.8	1.4	1.6
4401833	99	P	SUR	47	-52	726	0	0.6	0.9	1.1
4401837	99	P	SUR	44	-52	698	0	0.5	0.2	0.6

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401838	99	P	SUR	47	-38	483	0	0.5	0.2	0.6
4401839	99	P	SUR	50	-57	411	0	2.4	0.8	2.6
4401840	99	P	SUR	47	-47	443	0	0.5	0.7	0.9
4401870	99	P	SUR	22	-27	743	0	0.3	0.3	0.4
4401872	99	P	SUR	22	-31	743	0	0.3	0.1	0.3
4401873	99	P	SUR	17	-24	743	0	0.3	0.4	0.5
4401874	99	P	SUR	24	-20	743	0	0.3	0.5	0.5
4401894	99	P	SUR	49	-43	735	0	0.6	0.1	0.6
4402687	99	P	SUR	41	-64	742	0	0.5	0.3	0.6
44027	99	P	SUR	44	-67	742	0	0.6	-0.5	0.8
44032	99	P	SUR	44	-69	732	0	0.6	-1.5	1.7
44033	99	P	SUR	44	-69	730	0	0.6	-1.1	1.2
44037	99	P	SUR	44	-68	730	0	0.5	-0.0	0.5
44137	99	P	SUR	42	-62	733	0	0.7	-0.5	0.8
44139	99	P	SUR	44	-57	737	0	0.7	-0.3	0.8
44150	99	P	SUR	43	-64	55	0	0.3	0.1	0.3
44258	99	P	SUR	45	-63	711	0	0.6	-0.1	0.6
4700546	99	P	SUR	33	-54	717	0	0.5	0.5	0.7
4800770	99	P	SUR	66	4	735	735	0.0	0.0	0.0
4802505	99	P	SUR	83	-54	691	0	0.7	0.4	0.8
6100001	99	P	SUR	43	8	735	0	0.5	0.3	0.6
6100002	99	P	SUR	42	5	558	0	0.4	0.1	0.4
6100196	99	P	SUR	42	4	740	0	1.6	1.8	2.4
6100198	99	P	SUR	37	-2	744	0	0.5	0.4	0.7
6100281	99	P	SUR	40	0	744	0	0.5	0.5	0.7
6100417	99	P	SUR	38	0	744	0	0.4	0.4	0.6
6100430	99	P	SUR	40	2	744	0	0.5	0.2	0.5
6101003	99	P	SUR	40	25	77	0	0.5	0.7	0.9
6101007	99	P	SUR	36	25	185	0	0.5	0.2	0.5
6101008	99	P	SUR	37	22	37	0	0.6	0.6	0.8
6102507	99	P	SUR	32	27	743	0	0.5	0.2	0.5
6102508	99	P	SUR	36	28	743	0	0.5	-0.1	0.5
6200024	99	P	SUR	44	-3	744	0	0.4	0.5	0.7
6200025	99	P	SUR	44	-6	744	0	0.6	0.3	0.7
6200082	99	P	SUR	44	-8	743	0	0.6	0.0	0.6
6200083	99	P	SUR	43	-9	743	0	1.4	1.0	1.7
6200084	99	P	SUR	42	-9	744	0	0.5	0.2	0.5
6200085	99	P	SUR	36	-7	744	0	0.4	0.8	0.9
6200091	99	P	SUR	53	-5	743	0	0.5	-0.2	0.5
6200092	99	P	SUR	51	-11	7	0	0.2	-0.0	0.2
6200093	99	P	SUR	55	-10	154	0	0.3	0.1	0.3
6200094	99	P	SUR	52	-7	743	0	0.4	0.0	0.4
62001	99	P	SUR	45	-5	748	0	0.4	0.0	0.4

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6200191	99	P	SUR	41	-10	324	14	6.1	6.6	8.9
6200192	99	P	SUR	40	-10	409	0	0.4	-0.5	0.6
6200199	99	P	SUR	40	-9	427	0	0.4	1.6	1.7
6200200	99	P	SUR	36	-8	682	0	0.4	0.1	0.4
6201030	99	P	SUR	44	-4	725	0	0.5	0.2	0.6
62023	99	P	SUR	51	-8	603	0	0.4	-0.4	0.6
6202613	99	P	SUR	19	-36	743	0	0.3	0.1	0.3
6202614	99	P	SUR	17	-30	743	0	0.6	1.2	1.4
6202615	99	P	SUR	20	-27	447	0	0.7	11.6	11.6
6202638	99	P	SUR	18	-50	743	0	0.2	-0.1	0.3
6202639	99	P	SUR	30	-41	743	0	0.3	0.0	0.3
6202640	99	P	SUR	22	-55	743	0	0.3	-0.1	0.3
6202641	99	P	SUR	16	-61	35	0	0.0	-6.6	6.6
6202642	99	P	SUR	19	-61	743	0	0.3	-0.2	0.4
6202643	99	P	SUR	16	-64	743	1	0.4	-0.3	0.5
6202644	99	P	SUR	25	-48	743	0	0.3	-0.2	0.4
6202645	99	P	SUR	20	-61	743	0	0.3	-0.2	0.4
6202646	99	P	SUR	18	-53	743	0	0.3	0.0	0.3
6202647	99	P	SUR	18	-63	475	0	0.2	-0.1	0.3
6202675	99	P	SUR	57	-12	684	0	0.5	0.3	0.6
6202676	99	P	SUR	63	-21	737	9	3.3	0.7	3.3
6202677	99	P	SUR	63	-12	702	0	0.5	0.2	0.5
6202678	99	P	SUR	65	-34	647	0	0.6	0.3	0.7
6202679	99	P	SUR	62	-56	635	0	0.5	0.2	0.6
6202680	99	P	SUR	63	-4	707	0	0.5	0.3	0.5
6202681	99	P	SUR	65	-11	690	0	0.5	0.4	0.6
6202683	99	P	SUR	61	-10	693	0	0.4	0.4	0.6
6202684	99	P	SUR	67	-19	666	0	0.6	0.4	0.7
6202685	99	P	SUR	39	7	743	0	0.4	0.6	0.7
6202686	99	P	SUR	38	6	743	0	0.4	0.5	0.6
6202687	99	P	SUR	39	12	741	0	0.4	0.7	0.8
6202688	99	P	SUR	39	2	741	0	0.4	0.4	0.6
6202689	99	P	SUR	40	2	565	0	0.4	0.5	0.7
6202690	99	P	SUR	40	3	492	4	0.4	-0.1	0.4
6202691	99	P	SUR	40	3	492	4	0.4	0.2	0.5
6202692	99	P	SUR	40	3	2	0	0.2	-0.3	0.4
6203523	99	P	SUR	70	-1	694	0	0.5	-0.8	1.0
6203528	99	P	SUR	20	-29	180	0	0.4	-0.5	0.7
6203529	99	P	SUR	38	-49	743	0	0.4	-0.7	0.8
6203574	99	P	SUR	57	-56	721	0	0.6	0.3	0.7
6203576	99	P	SUR	49	-59	434	25	3.2	1.3	3.5
6203580	99	P	SUR	66	-10	648	0	0.5	0.5	0.7
6203581	99	P	SUR	75	13	687	0	0.5	-0.0	0.5

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6203582	99	P	SUR	60	-49	657	0	0.5	0.3	0.6
6203583	99	P	SUR	57	-24	615	0	0.6	0.0	0.6
6203585	99	P	SUR	62	0	661	0	0.4	0.5	0.6
6203586	99	P	SUR	68	-11	727	0	0.5	0.5	0.8
6203587	99	P	SUR	63	1	622	0	0.4	-0.1	0.4
6203588	99	P	SUR	59	-49	686	0	0.6	0.4	0.8
6203601	99	P	SUR	26	-34	741	0	0.3	0.4	0.5
6203607	99	P	SUR	34	-22	743	0	0.3	0.4	0.5
6203609	99	P	SUR	37	-20	742	0	0.3	-0.0	0.3
6203634	99	P	SUR	45	-10	743	0	0.4	0.3	0.5
6203641	99	P	SUR	46	-5	743	0	0.5	0.5	0.7
62091	99	P	SUR	53	-5	736	0	0.5	-0.2	0.5
62092	99	P	SUR	51	-11	7	0	0.2	-0.0	0.2
62093	99	P	SUR	55	-10	151	0	0.3	0.1	0.3
62094	99	P	SUR	52	-7	735	0	0.4	-0.0	0.4
62102	99	P	SUR	58	2	752	0	0.3	0.2	0.4
62103	99	P	SUR	50	-3	724	0	0.5	0.5	0.7
62104	99	P	SUR	57	1	752	0	0.3	-0.1	0.4
62105	99	P	SUR	55	-12	747	0	0.7	-0.3	0.8
62107	99	P	SUR	50	-6	1463	0	0.5	0.2	0.5
62112	99	P	SUR	58	0	752	0	0.3	0.2	0.4
62113	99	P	SUR	58	0	753	0	0.5	0.3	0.6
62114	99	P	SUR	58	0	1471	0	0.5	0.1	0.5
62115	99	P	SUR	58	-3	753	0	0.4	-0.1	0.4
62116	99	P	SUR	58	1	752	0	0.6	0.1	0.6
62118	99	P	SUR	58	1	752	0	0.4	0.4	0.5
62119	99	P	SUR	57	2	753	0	0.5	0.4	0.6
62120	99	P	SUR	56	2	692	0	0.6	-0.1	0.6
62121	99	P	SUR	54	3	752	0	0.5	0.5	0.7
62122	99	P	SUR	57	2	1469	0	0.4	0.2	0.4
62124	99	P	SUR	54	-4	752	0	0.4	-0.0	0.4
62127	99	P	SUR	54	1	660	0	0.4	0.6	0.7
62129	99	P	SUR	58	0	753	0	0.6	0.4	0.7
62130	99	P	SUR	59	1	753	0	0.4	-0.2	0.5
62131	99	P	SUR	54	1	751	0	0.4	0.6	0.7
62132	99	P	SUR	56	2	753	0	0.5	0.4	0.6
62133	99	P	SUR	57	1	753	0	0.5	0.2	0.6
62134	99	P	SUR	58	1	752	0	0.4	0.6	0.7
62135	99	P	SUR	54	2	753	0	0.6	0.5	0.8
62140	99	P	SUR	57	1	1469	0	0.4	0.2	0.4
62141	99	P	SUR	58	-4	751	0	0.4	-2.3	2.3
62143	99	P	SUR	58	2	752	0	0.5	0.6	0.8
62144	99	P	SUR	53	2	753	0	0.4	0.3	0.5

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62145	99	P	SUR	53	3	1471	0	0.4	0.4	0.6
62146	99	P	SUR	57	2	751	0	0.6	-0.0	0.6
62148	99	P	SUR	54	2	753	0	0.5	0.6	0.8
62149	99	P	SUR	54	1	753	0	0.4	0.8	0.9
62150	99	P	SUR	54	1	753	0	0.4	1.3	1.4
62151	99	P	SUR	57	2	1471	0	0.3	0.3	0.4
62152	99	P	SUR	57	2	753	0	0.4	0.5	0.7
62153	99	P	SUR	57	2	735	0	0.5	0.4	0.6
62154	99	P	SUR	56	2	753	0	0.4	0.1	0.4
62155	99	P	SUR	58	1	744	0	0.4	0.5	0.7
62157	99	P	SUR	58	0	743	0	0.4	0.1	0.4
62160	99	P	SUR	57	2	1424	0	0.4	0.3	0.5
62161	99	P	SUR	58	1	746	0	0.6	0.3	0.7
62162	99	P	SUR	57	1	752	0	0.4	-0.0	0.4
62163	99	P	SUR	48	-8	747	0	0.4	0.3	0.5
62164	99	P	SUR	57	1	738	0	0.3	0.4	0.6
62165	99	P	SUR	54	1	751	0	0.5	0.6	0.7
62168	99	P	SUR	58	1	752	0	0.3	0.1	0.3
62296	99	P	SUR	53	2	752	0	0.3	0.2	0.4
62297	99	P	SUR	59	2	1470	0	0.3	0.1	0.3
62302	99	P	SUR	61	-2	687	0	0.7	-0.0	0.7
62304	99	P	SUR	51	2	753	0	0.5	0.1	0.5
62305	99	P	SUR	50	0	8	0	0.4	0.3	0.5
6301508	99	P	SUR	72	30	717	0	0.4	0.0	0.5
6301535	99	P	SUR	72	34	732	0	0.4	0.1	0.4
6301536	99	P	SUR	70	35	729	0	0.4	0.3	0.5
6301537	99	P	SUR	74	33	678	0	0.5	0.2	0.5
6301538	99	P	SUR	75	-7	701	9	3.3	2.2	3.9
6301542	99	P	SUR	79	5	1	1	0.0	0.0	0.0
6301543	99	P	SUR	71	34	727	0	0.4	0.2	0.5
6301544	99	P	SUR	73	20	671	0	0.6	0.3	0.7
6301545	99	P	SUR	76	29	730	15	2.5	-0.2	2.5
6301546	99	P	SUR	72	36	687	0	0.4	0.3	0.5
6301563	99	P	SUR	55	-8	30	27	2.6	-2.0	3.3
6301564	99	P	SUR	64	-30	741	1	0.8	0.5	0.9
6301567	99	P	SUR	87	14	742	0	0.6	-0.0	0.6
6301569	99	P	SUR	86	11	735	0	0.6	0.7	0.9
6301570	99	P	SUR	89	23	740	0	0.6	0.8	1.0
6301571	99	P	SUR	88	18	739	0	0.6	0.3	0.7
6301683	99	P	SUR	77	4	742	0	0.6	-0.3	0.7
63055	99	P	SUR	61	2	752	0	0.6	0.0	0.6
63056	99	P	SUR	60	2	753	0	0.5	0.3	0.6
63057	99	P	SUR	59	2	753	0	0.4	-0.2	0.5

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
63058	99	P	SUR	53	2	2238	0	0.4	0.5	0.6
63059	99	P	SUR	58	-1	752	0	0.4	0.4	0.5
63101	99	P	SUR	61	1	752	0	0.6	0.1	0.7
63102	99	P	SUR	61	1	752	0	0.6	0.1	0.6
63103	99	P	SUR	61	1	752	0	0.5	0.2	0.5
63104	99	P	SUR	61	2	753	0	0.5	-0.2	0.5
63108	99	P	SUR	61	2	752	0	0.7	0.0	0.7
63109	99	P	SUR	60	2	753	0	0.4	-0.4	0.6
63110	99	P	SUR	60	2	751	0	0.5	-0.3	0.6
63112	99	P	SUR	61	1	744	0	0.4	-0.5	0.6
63115	99	P	SUR	62	1	752	0	0.5	-0.1	0.5
63117	99	P	SUR	61	1	1469	0	0.7	0.5	0.9
63118	99	P	SUR	60	6	750	0	0.5	0.2	0.5
6401502	99	P	SUR	74	10	718	0	0.5	0.3	0.5
6401503	99	P	SUR	69	9	367	0	0.5	0.5	0.7
6401506	99	P	SUR	70	-3	628	1	0.6	0.5	0.8
6401531	99	P	SUR	63	-26	741	0	0.6	-0.0	0.7
6401539	99	P	SUR	51	-18	736	0	0.5	0.6	0.8
6401556	99	P	SUR	71	24	57	0	1.0	1.2	1.6
6401568	99	P	SUR	71	20	413	25	2.9	-0.3	3.0
6401569	99	P	SUR	67	-19	738	0	1.2	-0.0	1.2
6401784	99	P	SUR	76	6	2915	0	0.5	0.0	0.5
6401789	99	P	SUR	77	1	704	0	0.6	0.2	0.6
6401795	99	P	SUR	73	4	725	0	0.4	0.3	0.5
6401796	99	P	SUR	72	24	728	0	0.5	0.2	0.5
6401797	99	P	SUR	74	30	724	1	1.9	0.0	1.9
6401804	99	P	SUR	78	8	394	0	1.2	0.1	1.2
6401806	99	P	SUR	78	9	697	0	0.6	-0.0	0.7
6401807	99	P	SUR	73	32	727	0	0.5	0.1	0.5
6402539	99	P	SUR	65	-33	741	0	0.6	0.1	0.6
6402540	99	P	SUR	68	-22	673	0	0.6	0.1	0.7
6402541	99	P	SUR	65	-8	688	0	0.5	0.2	0.5
6402542	99	P	SUR	64	-13	709	0	0.5	0.2	0.6
64041	99	P	SUR	61	-3	753	0	0.5	-0.3	0.6
64045	99	P	SUR	59	-12	877	0	0.6	-0.4	0.7
64046	99	P	SUR	61	-4	749	0	0.4	-0.1	0.4
6501556	99	P	SUR	69	9	741	0	0.5	0.4	0.6



**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 : MAR 2020  
 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
0066023	99	SPEED	SUR	55	11	276	0	0	1.6	1.5	2.2
0066024	99	SPEED	SUR	55	13	48	0	0	1.1	0.7	1.3
0640046	99	SPEED	SUR	60	-4	579	0	0	1.6	-0.7	1.8
1300001	99	SPEED	SUR	11	-23	725	0	0	0.8	0.3	0.8
1300002	99	SPEED	SUR	20	-23	664	0	0	0.8	0.1	0.8
1300008	99	SPEED	SUR	15	-38	706	0	0	0.9	0.2	0.9
1300131	99	SPEED	SUR	28	-17	740	0	0	2.3	1.7	2.8
4100026	99	SPEED	SUR	12	-38	252	0	0	0.7	0.1	0.7
4100040	99	SPEED	SUR	15	-53	4340	0	0	0.8	0.2	0.9
4100043	99	SPEED	SUR	21	-65	4320	0	0	1.3	0.5	1.4
4100044	99	SPEED	SUR	22	-59	4347	0	0	1.1	0.2	1.2
4100046	99	SPEED	SUR	24	-68	4160	0	0	1.1	0.1	1.1
4100048	99	SPEED	SUR	32	-70	4207	0	0	1.0	-0.2	1.0
4100049	99	SPEED	SUR	27	-63	4328	0	0	0.8	-0.0	0.8
4100052	99	SPEED	SUR	18	-65	2541	0	0	1.3	-0.5	1.4
4100053	99	SPEED	SUR	18	-66	4409	0	0	1.8	1.5	2.3
4100056	99	SPEED	SUR	18	-65	4406	0	0	1.2	-0.4	1.3
4100139	99	SPEED	SUR	20	-38	742	0	0	0.9	0.1	0.9
4100300	99	SPEED	SUR	16	-57	737	0	0	0.8	-0.2	0.8
41040	99	SPEED	SUR	15	-53	1293	0	0	0.9	-0.1	0.9
41043	99	SPEED	SUR	21	-65	1292	0	0	1.4	0.3	1.4
41044	99	SPEED	SUR	22	-59	1253	0	0	1.1	-0.2	1.1
41046	99	SPEED	SUR	24	-68	1326	0	0	1.1	-0.0	1.2
41048	99	SPEED	SUR	32	-70	1333	0	0	1.1	-0.3	1.1
41049	99	SPEED	SUR	28	-63	1311	0	0	0.9	-0.1	0.9
41052	99	SPEED	SUR	18	-65	1073	0	0	1.3	-0.4	1.3
41053	99	SPEED	SUR	19	-66	1584	0	0	1.8	0.9	2.0
41056	99	SPEED	SUR	18	-66	1573	0	0	1.3	-0.2	1.3
4200059	99	SPEED	SUR	15	-67	4354	0	0	0.8	0.2	0.8
4200085	99	SPEED	SUR	18	-67	4376	0	0	1.3	-0.2	1.3
42059	99	SPEED	SUR	15	-68	1322	0	0	0.9	0.0	0.9
42085	99	SPEED	SUR	18	-67	1573	0	0	1.4	0.1	1.4
4400008	99	SPEED	SUR	41	-69	4341	0	0	1.6	0.1	1.6
4400027	99	SPEED	SUR	44	-67	728	0	0	1.4	0.5	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
440032	99	SPEED	SUR	44	-69	731	0	0	1.5	0.1	1.5
440033	99	SPEED	SUR	44	-69	728	0	0	1.6	0.0	1.6
440037	99	SPEED	SUR	43	-68	728	0	0	1.3	0.0	1.3
44008	99	SPEED	SUR	41	-69	2265	0	0	1.6	-0.3	1.6
44027	99	SPEED	SUR	44	-67	742	0	0	1.4	0.6	1.5
44032	99	SPEED	SUR	44	-69	735	0	0	1.5	0.2	1.5
44033	99	SPEED	SUR	44	-69	732	0	0	1.6	0.3	1.6
44037	99	SPEED	SUR	44	-68	731	0	0	1.3	0.1	1.3
44139	99	SPEED	SUR	44	-57	737	0	0	1.4	-0.0	1.5
44150	99	SPEED	SUR	43	-64	54	0	0	1.2	0.4	1.2
610001	99	SPEED	SUR	43	8	735	0	0	1.7	-0.2	1.7
610002	99	SPEED	SUR	42	5	468	0	0	1.3	-0.1	1.3
6100196	99	SPEED	SUR	42	4	734	0	0	1.9	-0.3	1.9
6100198	99	SPEED	SUR	37	-2	733	0	0	1.6	-0.2	1.6
6100417	99	SPEED	SUR	38	0	739	0	0	1.4	-0.4	1.4
6100430	99	SPEED	SUR	40	2	740	0	0	1.8	-0.3	1.8
6101003	99	SPEED	SUR	40	25	92	0	0	2.2	-1.9	2.9
6101005	99	SPEED	SUR	38	26	235	0	0	3.5	-7.5	8.3
6101007	99	SPEED	SUR	36	25	185	0	0	2.3	-0.4	2.3
6101008	99	SPEED	SUR	37	22	47	0	0	4.0	-1.6	4.3
6101009	99	SPEED	SUR	35	25	1	0	0	0.0	-5.8	5.8
6200024	99	SPEED	SUR	44	-3	742	0	0	1.6	-1.0	1.9
6200025	99	SPEED	SUR	44	-6	734	0	0	1.4	-0.9	1.6
6200082	99	SPEED	SUR	44	-8	742	0	0	1.0	-1.2	1.5
6200083	99	SPEED	SUR	43	-9	741	0	0	1.0	-0.4	1.1
6200084	99	SPEED	SUR	42	-9	739	0	0	1.3	-0.6	1.4
6200085	99	SPEED	SUR	36	-7	741	0	0	1.6	-0.1	1.6
6200091	99	SPEED	SUR	53	-5	743	0	0	1.2	0.4	1.2
6200092	99	SPEED	SUR	51	-11	7	0	0	0.5	-0.4	0.6
6200093	99	SPEED	SUR	55	-10	744	0	0	1.4	-0.5	1.5
6200094	99	SPEED	SUR	52	-7	743	0	0	1.0	0.0	1.0
62001	99	SPEED	SUR	45	-5	749	0	0	1.4	0.7	1.5
6200192	99	SPEED	SUR	40	-10	409	0	0	1.2	0.4	1.3
6200200	99	SPEED	SUR	36	-8	682	0	0	1.4	0.2	1.4
6201030	99	SPEED	SUR	44	-4	709	0	0	1.5	-0.6	1.7
62023	99	SPEED	SUR	51	-8	601	0	0	1.5	1.0	1.8
62091	99	SPEED	SUR	53	-5	736	0	0	1.2	0.5	1.3
62092	99	SPEED	SUR	51	-11	7	0	0	0.5	-0.2	0.5
62093	99	SPEED	SUR	55	-10	736	0	0	1.4	-0.5	1.5
62094	99	SPEED	SUR	52	-7	735	0	0	1.0	0.0	1.0
62102	99	SPEED	SUR	58	2	752	0	0	2.6	-1.9	3.2

## 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
62103	99	SPEED	SUR	50	-3	723	1	0	1.7	1.5	2.3
62104	99	SPEED	SUR	57	1	752	0	0	1.4	-0.4	1.5
62105	99	SPEED	SUR	55	-12	641	0	0	1.4	0.7	1.5
62107	99	SPEED	SUR	50	-6	1463	0	0	1.8	1.4	2.3
62112	99	SPEED	SUR	58	0	752	0	0	1.3	-0.3	1.3
62113	99	SPEED	SUR	58	0	753	0	0	1.8	0.4	1.8
62114	99	SPEED	SUR	58	0	1471	0	0	1.7	0.6	1.8
62118	99	SPEED	SUR	58	1	752	0	0	1.4	0.6	1.5
62119	99	SPEED	SUR	57	2	753	0	0	2.1	-0.6	2.2
62120	99	SPEED	SUR	56	2	753	0	0	1.5	0.0	1.5
62121	99	SPEED	SUR	54	3	752	0	0	1.4	-0.3	1.4
62122	99	SPEED	SUR	57	2	1469	0	0	1.3	-0.3	1.3
62129	99	SPEED	SUR	58	0	753	0	0	1.4	-0.1	1.5
62131	99	SPEED	SUR	54	1	751	0	0	2.1	-0.3	2.1
62132	99	SPEED	SUR	56	2	698	0	0	2.2	-2.5	3.3
62133	99	SPEED	SUR	57	1	753	0	0	1.5	0.2	1.5
62134	99	SPEED	SUR	58	1	752	0	0	1.3	0.1	1.3
62140	99	SPEED	SUR	57	1	1144	0	0	1.4	0.2	1.4
62143	99	SPEED	SUR	58	2	752	0	0	2.0	-0.6	2.1
62144	99	SPEED	SUR	53	2	753	0	0	2.0	-0.5	2.0
62145	99	SPEED	SUR	53	3	1471	0	0	1.5	0.7	1.6
62146	99	SPEED	SUR	57	2	721	0	0	1.2	-0.0	1.2
62148	99	SPEED	SUR	54	2	753	0	0	1.7	-0.4	1.7
62149	99	SPEED	SUR	54	1	753	0	0	1.2	0.3	1.3
62150	99	SPEED	SUR	54	1	753	0	0	1.6	-0.7	1.7
62152	99	SPEED	SUR	57	2	753	0	0	1.4	-0.9	1.7
62153	99	SPEED	SUR	57	2	735	0	0	2.4	-1.7	2.9
62154	99	SPEED	SUR	56	2	739	0	0	1.2	-0.2	1.2
62155	99	SPEED	SUR	58	1	712	0	0	1.4	-0.2	1.4
62163	99	SPEED	SUR	48	-8	746	0	0	1.0	0.2	1.1
62164	99	SPEED	SUR	57	1	738	0	0	1.5	-1.2	1.9
62165	99	SPEED	SUR	54	1	751	0	0	1.5	-0.5	1.6
62304	99	SPEED	SUR	51	2	752	0	0	2.0	2.1	2.9
62305	99	SPEED	SUR	50	0	3	0	0	0.8	0.4	0.9
63055	99	SPEED	SUR	61	2	752	0	0	1.4	-1.1	1.8
63056	99	SPEED	SUR	60	2	753	0	0	1.5	0.3	1.5
63057	99	SPEED	SUR	59	2	753	0	0	2.0	0.2	2.0
63058	99	SPEED	SUR	53	2	1488	0	0	1.2	0.0	1.2
63101	99	SPEED	SUR	61	1	752	0	0	1.5	-1.0	1.8
63103	99	SPEED	SUR	61	1	752	0	0	1.9	-0.2	1.9
63104	99	SPEED	SUR	61	2	753	0	0	1.5	-0.4	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
63106	99	SPEED	SUR	61	2	724	0	0	1.8	-1.0	2.0
63108	99	SPEED	SUR	61	2	752	0	0	1.7	0.1	1.7
63109	99	SPEED	SUR	60	2	750	0	0	1.5	0.2	1.5
63110	99	SPEED	SUR	60	2	751	0	0	1.4	-0.8	1.6
63112	99	SPEED	SUR	61	1	744	0	0	1.4	-0.9	1.7
63115	99	SPEED	SUR	62	1	752	0	0	1.6	-0.7	1.7
63117	99	SPEED	SUR	61	1	1469	0	0	1.5	-0.7	1.7
64041	99	SPEED	SUR	61	-3	753	0	0	1.6	-0.6	1.7
64045	99	SPEED	SUR	59	-12	875	0	0	1.5	0.4	1.5
64046	99	SPEED	SUR	61	-4	749	0	0	1.5	0.5	1.6
66024	99	SPEED	SUR	55	13	742	0	0	1.4	0.7	1.5

### 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 : MAR 2020  
 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
0640046	99	DIRN	SUR	60	-4	553	0	0	13.7	0.3	13.7
1300001	99	DIRN	SUR	11	-23	721	0	0	8.9	0.5	8.9
1300002	99	DIRN	SUR	20	-23	641	0	0	9.1	-1.0	9.2
1300008	99	DIRN	SUR	15	-38	686	0	0	11.3	2.6	11.6
1300131	99	DIRN	SUR	28	-17	400	0	0	31.9	-5.3	32.3
4100002	99	DIRN	SUR	32	-75	3722	0	0	19.3	12.3	22.9
4100004	99	DIRN	SUR	33	-79	657	0	0	56.7	1.8	56.8
4100008	99	DIRN	SUR	31	-81	500	0	0	27.9	3.5	28.1
4100009	99	DIRN	SUR	29	-80	3586	0	0	14.6	4.5	15.2
4100010	99	DIRN	SUR	29	-78	3644	0	0	9.1	8.3	12.3
4100013	99	DIRN	SUR	33	-78	3590	0	0	15.9	5.3	16.8
4100024	99	DIRN	SUR	34	-78	468	0	0	26.1	-10.0	27.9
4100025	99	DIRN	SUR	35	-75	3823	0	0	20.6	7.9	22.1
4100026	99	DIRN	SUR	12	-38	252	0	0	10.1	7.3	12.4
4100029	99	DIRN	SUR	33	-80	518	0	0	20.1	-11.4	23.1
4100033	99	DIRN	SUR	32	-80	500	0	0	19.8	-0.1	19.8
4100037	99	DIRN	SUR	34	-77	605	0	0	18.8	-9.3	21.0
4100038	99	DIRN	SUR	34	-78	517	0	0	16.5	-4.8	17.2
4100040	99	DIRN	SUR	15	-53	4305	0	0	9.9	4.5	10.9
4100043	99	DIRN	SUR	21	-65	3767	0	0	14.6	4.0	15.1
4100044	99	DIRN	SUR	22	-59	3813	0	0	13.2	7.4	15.1
4100046	99	DIRN	SUR	24	-68	3846	0	0	10.1	9.4	13.8
4100047	99	DIRN	SUR	28	-71	3608	0	0	15.5	4.4	16.1
4100048	99	DIRN	SUR	32	-70	3697	0	0	12.7	9.8	16.0
4100049	99	DIRN	SUR	27	-63	3966	0	0	11.3	5.0	12.4
4100052	99	DIRN	SUR	18	-65	2401	0	0	16.1	7.9	17.9
4100053	99	DIRN	SUR	18	-66	3125	0	0	15.6	4.3	16.2
4100056	99	DIRN	SUR	18	-65	3934	0	0	17.0	4.8	17.7
4100064	99	DIRN	SUR	34	-77	569	0	0	19.4	-11.8	22.7
4100139	99	DIRN	SUR	20	-38	726	0	0	12.9	2.7	13.2
41002	99	DIRN	SUR	32	-75	1088	0	0	21.0	11.2	23.8
4100300	99	DIRN	SUR	16	-57	718	0	0	9.5	3.2	10.1

## 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
41004	99	DIRN	SUR	33	-79	158	0	0	63.7	9.1	64.3
41008	99	DIRN	SUR	31	-81	485	0	0	27.5	1.8	27.6
41009	99	DIRN	SUR	29	-80	915	0	0	14.1	3.0	14.4
41010	99	DIRN	SUR	29	-79	1096	0	0	10.3	7.3	12.6
41013	99	DIRN	SUR	33	-78	907	0	0	16.5	4.1	17.0
41024	99	DIRN	SUR	34	-79	479	0	0	28.2	-11.2	30.3
41025	99	DIRN	SUR	35	-75	985	0	0	19.5	7.8	21.0
41029	99	DIRN	SUR	33	-80	541	0	0	19.6	-12.2	23.0
41033	99	DIRN	SUR	32	-80	476	0	0	19.2	-0.5	19.2
41037	99	DIRN	SUR	34	-77	602	0	0	18.6	-9.9	21.1
41038	99	DIRN	SUR	34	-78	505	0	0	16.0	-5.3	16.9
41040	99	DIRN	SUR	15	-53	1261	0	0	10.7	5.3	12.0
41043	99	DIRN	SUR	21	-65	1099	0	0	14.1	3.0	14.4
41044	99	DIRN	SUR	22	-59	1090	0	0	13.8	6.4	15.3
41046	99	DIRN	SUR	24	-68	1219	0	0	10.3	8.3	13.2
41047	99	DIRN	SUR	28	-72	1026	0	0	15.2	3.2	15.6
41048	99	DIRN	SUR	32	-70	1143	0	0	12.1	8.3	14.7
41049	99	DIRN	SUR	28	-63	1183	0	0	11.3	4.3	12.1
41052	99	DIRN	SUR	18	-65	1001	0	0	16.0	7.1	17.5
41053	99	DIRN	SUR	19	-66	1171	0	0	16.4	3.2	16.7
41056	99	DIRN	SUR	18	-66	1381	0	0	17.3	5.1	18.0
41064	99	DIRN	SUR	34	-77	566	0	0	21.1	-12.1	24.3
4200013	99	DIRN	SUR	27	-83	815	0	0	12.5	-0.5	12.5
4200022	99	DIRN	SUR	28	-84	856	0	0	12.9	-3.6	13.4
4200023	99	DIRN	SUR	26	-83	965	0	0	12.4	-3.7	12.9
4200026	99	DIRN	SUR	25	-83	1037	0	0	11.5	6.6	13.2
4200036	99	DIRN	SUR	29	-85	2440	0	0	12.3	12.5	17.5
4200056	99	DIRN	SUR	20	-85	3915	0	0	8.2	4.9	9.5
4200057	99	DIRN	SUR	17	-81	4128	0	0	9.4	3.4	10.0
4200058	99	DIRN	SUR	15	-75	4239	0	0	5.9	1.3	6.0
4200059	99	DIRN	SUR	15	-67	4345	0	0	9.5	3.5	10.2
4200085	99	DIRN	SUR	18	-67	3809	0	0	17.4	15.7	23.4
42013	99	DIRN	SUR	27	-83	745	0	0	13.3	-1.1	13.4
42022	99	DIRN	SUR	28	-84	786	0	0	13.3	-5.1	14.2
42023	99	DIRN	SUR	26	-83	793	0	0	12.9	-4.3	13.6
42026	99	DIRN	SUR	25	-84	995	0	0	12.1	6.8	13.8
42036	99	DIRN	SUR	29	-85	1275	0	0	13.0	11.3	17.2
42056	99	DIRN	SUR	20	-85	1296	0	0	8.8	3.1	9.3
42057	99	DIRN	SUR	17	-81	1358	0	0	10.1	4.8	11.2
42058	99	DIRN	SUR	15	-75	1324	0	0	6.8	-1.6	7.0
42059	99	DIRN	SUR	15	-68	1312	0	0	10.5	1.1	10.5

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
42085	99	DIRN	SUR	18	-67	1320	0	0	16.2	15.1	22.2
4400007	99	DIRN	SUR	44	-70	615	0	0	18.2	-0.7	18.2
4400008	99	DIRN	SUR	41	-69	4099	0	0	14.4	7.0	16.0
4400009	99	DIRN	SUR	38	-75	633	0	0	20.7	16.6	26.5
4400013	99	DIRN	SUR	42	-71	636	0	0	23.0	7.6	24.2
4400018	99	DIRN	SUR	42	-70	669	0	0	15.4	10.8	18.8
4400022	99	DIRN	SUR	41	-74	1259	0	0	16.7	8.1	18.6
4400027	99	DIRN	SUR	44	-67	666	0	0	12.6	2.4	12.8
4400029	99	DIRN	SUR	43	-71	658	0	0	18.1	-19.2	26.4
4400030	99	DIRN	SUR	43	-70	597	0	0	15.7	7.2	17.3
4400032	99	DIRN	SUR	44	-69	646	0	0	14.4	4.2	15.0
4400033	99	DIRN	SUR	44	-69	593	0	0	18.0	-2.8	18.3
4400037	99	DIRN	SUR	43	-68	674	0	0	12.0	3.3	12.5
4400040	99	DIRN	SUR	41	-74	890	0	0	16.4	-0.5	16.4
4400042	99	DIRN	SUR	38	-76	4365	9	0	27.2	14.2	30.7
4400058	99	DIRN	SUR	38	-76	1340	0	0	22.6	-6.8	23.6
4400062	99	DIRN	SUR	39	-76	2266	0	0	27.3	-2.4	27.4
4400064	99	DIRN	SUR	37	-76	2922	0	0	19.9	-16.9	26.1
4400065	99	DIRN	SUR	40	-74	3548	0	0	16.6	9.5	19.1
4400072	99	DIRN	SUR	37	-76	2945	0	0	22.3	-72.8	76.1
4400073	99	DIRN	SUR	43	-71	534	0	0	15.4	6.5	16.7
44007	99	DIRN	SUR	44	-70	634	0	0	18.0	-0.8	18.0
44008	99	DIRN	SUR	41	-69	2106	0	0	13.2	3.1	13.6
44009	99	DIRN	SUR	39	-75	619	0	0	20.7	16.7	26.6
44013	99	DIRN	SUR	42	-71	637	0	0	23.0	7.7	24.3
44018	99	DIRN	SUR	42	-70	672	0	0	15.7	10.5	18.9
44022	99	DIRN	SUR	41	-74	412	0	0	15.0	9.0	17.5
44027	99	DIRN	SUR	44	-67	673	0	0	12.7	1.9	12.8
44029	99	DIRN	SUR	43	-71	740	0	0	18.9	-19.5	27.2
44030	99	DIRN	SUR	43	-70	590	0	0	15.6	7.0	17.1
44032	99	DIRN	SUR	44	-69	639	0	0	15.2	4.3	15.8
44033	99	DIRN	SUR	44	-69	572	0	0	19.2	-3.2	19.5
44037	99	DIRN	SUR	44	-68	671	0	0	12.4	3.2	12.8
44040	99	DIRN	SUR	41	-74	433	0	0	15.9	0.8	16.0
44042	99	DIRN	SUR	38	-76	603	0	0	30.7	14.0	33.8
44058	99	DIRN	SUR	38	-76	487	0	0	23.4	-8.5	24.9
44062	99	DIRN	SUR	39	-76	551	0	0	26.6	-3.0	26.8
44064	99	DIRN	SUR	37	-76	598	0	0	21.0	-17.6	27.4
44065	99	DIRN	SUR	40	-74	867	0	0	16.7	8.4	18.7
44072	99	DIRN	SUR	37	-76	576	0	0	22.3	-73.0	76.4
44073	99	DIRN	SUR	43	-71	536	0	0	15.5	6.2	16.7

## 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
44139	99	DIRN	SUR	44	-57	687	0	0	12.7	-24.6	27.7
44150	99	DIRN	SUR	43	-64	53	0	0	17.4	-8.6	19.4
6100198	99	DIRN	SUR	37	-2	509	0	0	18.1	2.2	18.2
6100417	99	DIRN	SUR	38	0	576	0	0	22.5	2.6	22.6
6200024	99	DIRN	SUR	44	-3	465	0	0	15.5	3.3	15.9
6200025	99	DIRN	SUR	44	-6	495	0	0	17.9	-1.4	18.0
6200082	99	DIRN	SUR	44	-8	650	0	0	13.4	0.5	13.5
6200083	99	DIRN	SUR	43	-9	652	0	0	11.2	1.4	11.3
6200084	99	DIRN	SUR	42	-9	566	0	0	11.2	0.9	11.2
6200085	99	DIRN	SUR	36	-7	568	0	0	21.5	2.1	21.6
6200091	99	DIRN	SUR	53	-5	686	0	0	11.5	1.7	11.7
6200092	99	DIRN	SUR	51	-11	2	0	0	3.9	19.9	20.2
6200093	99	DIRN	SUR	55	-10	726	0	0	11.7	-1.8	11.8
6200094	99	DIRN	SUR	52	-7	718	0	0	10.2	3.4	10.8
62001	99	DIRN	SUR	45	-5	695	0	0	12.7	4.1	13.3
6200192	99	DIRN	SUR	40	-10	343	0	0	12.7	-1.1	12.7
6200200	99	DIRN	SUR	36	-8	534	0	0	16.9	3.0	17.1
6201030	99	DIRN	SUR	44	-4	481	0	0	16.2	6.3	17.4
62023	99	DIRN	SUR	51	-8	579	0	0	11.5	4.0	12.2
62091	99	DIRN	SUR	53	-5	674	0	0	12.2	1.4	12.3
62092	99	DIRN	SUR	51	-11	4	0	0	47.1	7.7	47.7
62093	99	DIRN	SUR	55	-10	720	0	0	12.2	-2.3	12.4
62094	99	DIRN	SUR	52	-7	706	0	0	10.3	3.0	10.7
62103	99	DIRN	SUR	50	-3	710	1	0	22.2	7.8	23.5
62105	99	DIRN	SUR	55	-12	616	0	0	15.1	1.6	15.2
62107	99	DIRN	SUR	50	-6	1455	0	0	17.5	7.0	18.9
62112	99	DIRN	SUR	58	0	690	0	0	11.9	-0.0	11.9
62114	99	DIRN	SUR	58	0	1352	0	0	11.3	1.6	11.4
62163	99	DIRN	SUR	48	-8	717	0	0	10.8	-1.2	10.9
62305	99	DIRN	SUR	50	0	3	0	0	9.3	13.6	16.5
64041	99	DIRN	SUR	61	-3	689	0	0	15.4	9.7	18.2
64045	99	DIRN	SUR	59	-12	842	0	0	15.4	3.1	15.7
64046	99	DIRN	SUR	61	-4	714	0	0	14.5	-2.9	14.8



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

DBLK	FPUW5GN	JNKN7JF	KJJF9XN	KMPLHPW	LRYQE3U	VKB4L5Q	XQFJRGX	YLV96WM
ZVQEQCM	5QPW8XG	7JUNA4N	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	06060	06260
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	12843	12982	13275	13388	14015
14240	14430	15420	15614	16045	16080	16113	16144	16245
16320	16429	16546	16622	16716	16754	17030	17064	17095
17130	17220	17240	17281	17516	17607	22008	23205	23472
23884	26038	26435	26850	27707	27713	29612	40179	40186
42101	42339	42379	45004	47102	47104	47138	47155	47169
47186	47401	47412	47418	47582	47600	47646	47678	47741
47778	47807	47827	47909	47918	47945	47971	47991	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	57447	57461	57494	57516	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
60390	60571	60630	60656	60680	61660	61901	61980	61998
63741	68263	68424	68442	68512	68538	68816	68842	70026
70133	70200	70219	70231	70261	70308	70316	70326	70350
70361	70398	71043	71081	71082	71109	71119	71603	71722
71802	71811	71815	71816	71823	71836	71845	71867	71906
71907	71908	71909	71917	71924	71925	71926	71934	71945
71957	71964	72206	72208	72210	72214	72215	72230	72233
72235	72240	72248	72249	72250	72251	72265	72274	72293
72317	72327	72340	72363	72364	72365	72376	72388	72413
72426	72440	72451	72476	72489	72493	72501	72518	72520
72528	72558	72562	72572	72582	72597	72632	72634	72645
72649	72659	72662	72672	72694	72712	72747	72764	72768
72776	72786	72797	73033	73110	74389	74494	74560	76225
76256	76394	76405	76458	76526	76595	76612	76644	76654
76679	76692	76743	76805	76903	78897	78954	81405	82983
83525	83649	83768	84384	85442	85469	85586	85799	85934
87155	87344	87418	87576	87623	87715	87860	88889	89002
89062	89564	89571	89592	89611	89625	89642	89859	91212
91285	91592	91610	91765	91925	91938	91948	91958	93112
93417	93817	93844	93997	94120	94150	94170	94203	94299
94302	94312	94326	94332	94374	94403	94430	94461	94510
94578	94610	94637	94638	94653	94659	94672	94711	94767
94776	94802	94821	94866	94910	94975	94995	94996	94998
95527	96996							

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

	DBLK	FPUW5GN	JNKN7JF	KJJF9XN	KMPLHPW	LRYQE3U	USSAL	VKB4L5Q
XQFJRGX	YLV96WM	ZVQEQCM	5QPW8XG	7JUNA4N	01001	01010	01028	01241
01400	01415	01492	02836	02963	06610	07110	07145	07510
07645	07761	08536	11010	11035	11120	11240	17607	40186
47155	51243	51656	52652	53543	56046	56492	56651	57245
59023	59293	61980	61998	72413	76743	76903	78897	81405
84384	89002	89642	89859	91592	91938	93817	94653	94767

## 5 Annex - Explanations of figures and tables

### 5.1 General

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

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

### 5.2 Data Availability

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

### 5.3 Data Quality

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

It should be noted that:

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

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

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

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

The corresponding limits for wind (table 8) are:

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

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

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

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

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

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

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

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

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