



# ECMWF Global Data Monitoring Report

**May 2018**

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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**

# Contents

<b>1</b>	<b>Introduction</b>	<b>3</b>
<b>2</b>	<b>Data summary - History of events</b>	<b>4</b>
2.1	Radiosondes . . . . .	4
2.2	Drifting Buoys . . . . .	6
<b>3</b>	<b>Global monitoring statistics</b>	<b>6</b>
3.1	Data Availability . . . . .	6
3.2	Data Quality . . . . .	6
3.2.1	Figure 1 - Availability - SYNOP PRESSURE . . . . .	8
3.2.2	Figure 2 - Availability - DRIFTER PRESSURE . . . . .	9
3.2.3	Figure 3 - Availability - TEMP 500 hPa geopotential . . . . .	10
3.2.4	Figure 4 - Availability - TEMP/PILOT 300 hPa wind . . . . .	11
3.2.5	Figure 5 - Availability - AIRCRAFT winds 300-150 hPa . . . . .	12
3.2.6	Figure 6 - Availability - SATOB winds 400-150 hPa . . . . .	13
3.2.7	Figure 7 - Availability - SATOB winds 1000-700 hPa . . . . .	14
3.2.8	Figure 8 - Availability - NOAA15 ATOVS : AMSU-A . . . . .	15
3.2.9	Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A . . . . .	16
3.2.10	Figure 9.2 - Availability - AQUA ATOVS : AMSU-A . . . . .	17
3.2.11	Figure 9.3 - Availability - METOP ATOVS : AMSU-A . . . . .	18
3.2.12	Table 1 - Suspect ships and fixed marine platforms: Surface pressure - (hPa) . . . . .	19
3.2.13	Table 2 - Suspect ships and fixed marine platforms: Wind speed (m/s) . . . . .	21
3.2.14	Table 3 - Suspect ships and fixed marine platforms: Wind direction (DEGREES) . . . . .	22
3.2.15	Table 4 - Suspect drifters: Surface pressure (HPA) . . . . .	23
3.2.16	Table 5 - Suspect drifters: Wind speed (m/s) . . . . .	25
3.2.17	Table 6 - Suspect drifters: Wind direction (degrees) . . . . .	26
3.2.18	Table 7 - Suspect radiosondes: Geopotential height (metres) . . . . .	28
3.2.19	Table 8 - Suspect radiosondes: Wind (m/s) . . . . .	29
3.2.20	Table 9 - Suspect radiosondes: Wind direction (degrees) . . . . .	30
3.2.21	Figure 10 - Suspect TEMP observations - geopotential : 00 UTC . . . . .	31
3.2.22	Figure 11 - Suspect TEMP observations - geopotential : 12 UTC . . . . .	32
3.2.23	Figure 12 - Suspect TEMP/PILOT observations - wind : 00 UTC . . . . .	33
3.2.24	Figure 13 - Suspect TEMP/PILOT observations - wind : 12 UTC . . . . .	34
3.2.25	Table 10 - Radiosonde monitoring statistics (SHIPs): Geopotential height (metres) . . . . .	35
3.2.26	Table 11 - Radiosonde monitoring statistics (SHIPs): Wind (m/s) . . . . .	36
3.2.27	Figure 14 - SATOB Winds: 700-1000hPa . . . . .	37
3.2.28	Figure 15 - SATOB Winds: 150- 400hPa . . . . .	38
3.2.29	Figure 16 - SATOB Winds: 700-1000hPa . . . . .	39
3.2.30	Figure 17 - SATOB Winds: 150- 400hPa . . . . .	40
3.2.31	Figure 18 - AIRCRAFT Winds: 150- 300hPa . . . . .	41
3.2.32	Table 12 - Airep Monitoring Statistics For Airline Carriers (Global) . . . . .	42
<b>4</b>	<b>EUCOS Area Monitoring Statistics</b>	<b>48</b>
4.1	Table 13 - Radiosonde Monitoring Statistics (EUCOS): 50 hPa Geopotential height (metres) . . . . .	49
4.2	Table 14 - Radiosonde Monitoring Statistics (EUCOS):50 hPa Wind (m/s) . . . . .	52
4.3	Table 15 - Radiosonde Monitoring Statistics (EUCOS): 100 hPa Geopotential height (metres) . . . . .	55
4.4	Table 16 - Radiosonde Monitoring Statistics (EUCOS): 100 hPa Wind (m/s) . . . . .	58
4.5	Table 17 - Radiosonde Monitoring Statistics (EUCOS): 500 hPa Geopotential height (metres) . . . . .	61
4.6	Table 18 - Radiosonde Monitoring Statistics (EUCOS): 500 hPa Wind (m/s) . . . . .	64
4.7	Table 19 - Radiosonde Monitoring Statistics (EUCOS): 850 hPa Geopotential height (metres) . . . . .	67
4.8	Table 20 - Radiosonde Monitoring Statistics (EUCOS): 850 hPa Wind (m/s) . . . . .	70
4.9	Table 21 - Drifter Monitoring Statistics (EUCOS): Surface pressure (hpa) . . . . .	73
4.10	Table 22 - Drifter Monitoring Statistics (EUCOS): Wind speed (m/s) . . . . .	82
4.11	Table 23 - Drifter Monitoring Statistics (EUCOS): Wind direction . . . . .	86
4.12	Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations . . . . .	90
4.13	Table 25 - List of BUFR Encoded Radiosonde Stations with no TAC Counterpart . . . . .	91

<b>5 Annex - Explanations of figures and tables</b>	<b>92</b>
5.1 General . . . . .	92
5.2 Data Availability . . . . .	92
5.3 Data Quality . . . . .	92

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

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

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

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	Apr	May	Ident	Time	Apr	May
08221	(00)	31	18	02527	(00)	9	30
17351	(00)	26	15	40811	(00)	12	30
30715	(00)	21	0	42314	(00)	14	27
30715	(12)	21	0	42314	(12)	0	18
33658	(00)	16	0	43128	(12)	1	24
40373	(00)	23	6	43346	(12)	12	30
40373	(12)	23	5	43599	(12)	16	29
40375	(00)	26	12	71934	(12)	15	29
40375	(12)	27	8	72215	(12)	30	41
40394	(00)	30	10	72230	(00)	29	41
40394	(12)	30	7	72261	(00)	23	42
40417	(00)	26	8	72261	(12)	24	39
40417	(12)	28	3	74004	(12)	1	33
40430	(00)	29	11	74005	(00)	0	17
40430	(12)	26	7	74794	(12)	45	59
40437	(00)	29	6	78988	(00)	18	30
40437	(12)	29	5	82599	(00)	14	31
40856	(00)	13	0	82983	(12)	19	31
41112	(00)	29	11	83566	(12)	17	31
41112	(12)	27	7	91610	(00)	0	25
47102	(00)	30	4	91765	(00)	29	41
47102	(12)	30	6	-	-	-	-
67083	(00)	18	0	-	-	-	-
67083	(12)	16	0	-	-	-	-
70219	(12)	31	14	-	-	-	-
70261	(00)	27	5	-	-	-	-
70261	(12)	24	8	-	-	-	-
70361	(12)	35	9	-	-	-	-
78384	(00)	22	11	-	-	-	-
78384	(12)	22	9	-	-	-	-
82281	(00)	27	4	-	-	-	-
82281	(12)	30	9	-	-	-	-
82400	(00)	15	2	-	-	-	-
82400	(12)	20	3	-	-	-	-
82532	(00)	27	15	-	-	-	-
82532	(12)	29	16	-	-	-	-
83554	(00)	15	3	-	-	-	-
83554	(12)	25	14	-	-	-	-
83612	(00)	24	0	-	-	-	-

## 2.2 Drifting Buoys

Surface pressure observations from **1398** 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.

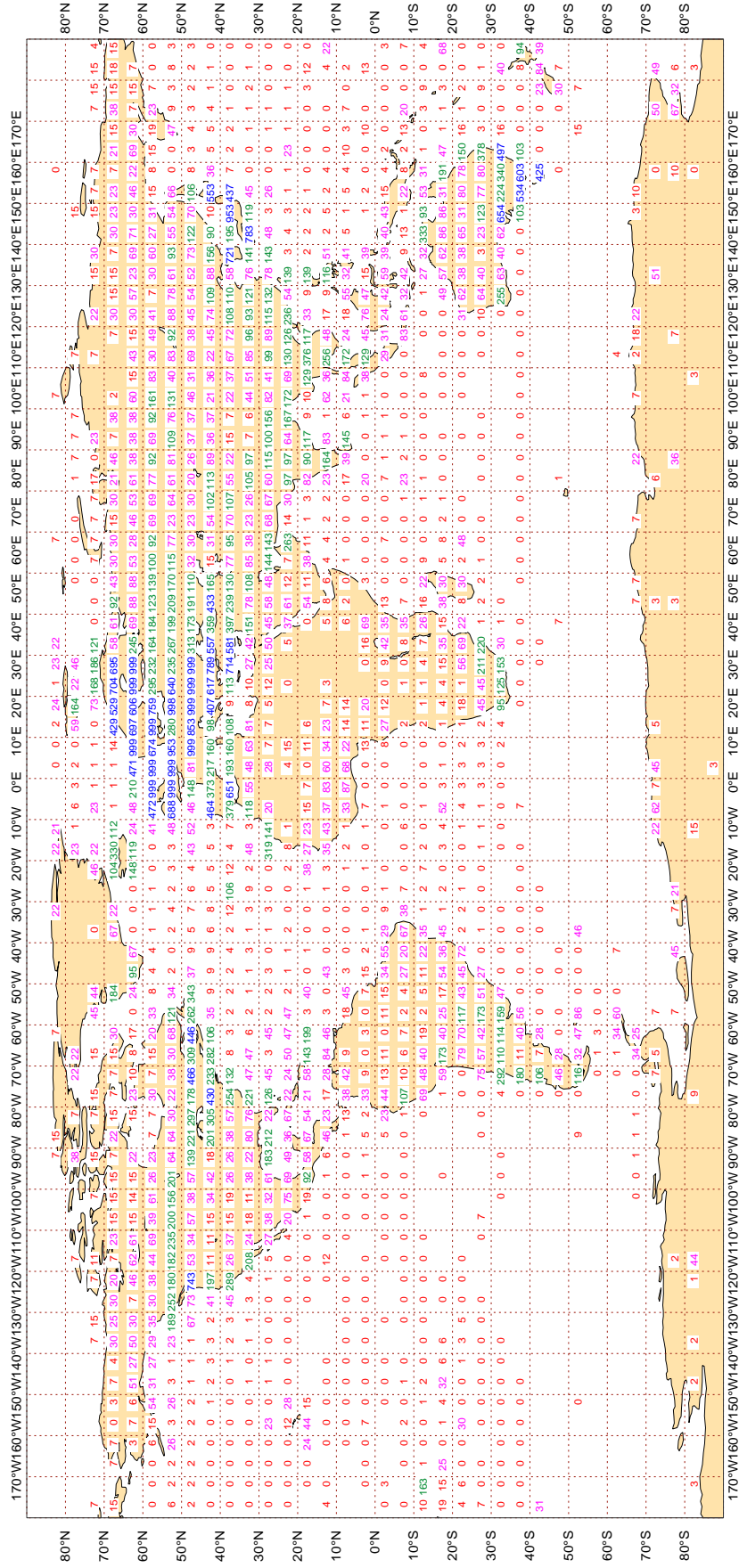


3.2.1 Figure 1 - Availability - SYNOP PRESSURE

Figure 1

ECMWF Monitoring Statistics - MAY 2018  
 Availability - SYNOP/SHIP (manual, auto) pressure  
 Average number of observations in 24 hours - 95707  
 LAND - WMO Region I: 4026 II:18325 III: 3813 IV: 7150  
 Region V: 8729 VI:39622 Antarctic: 909

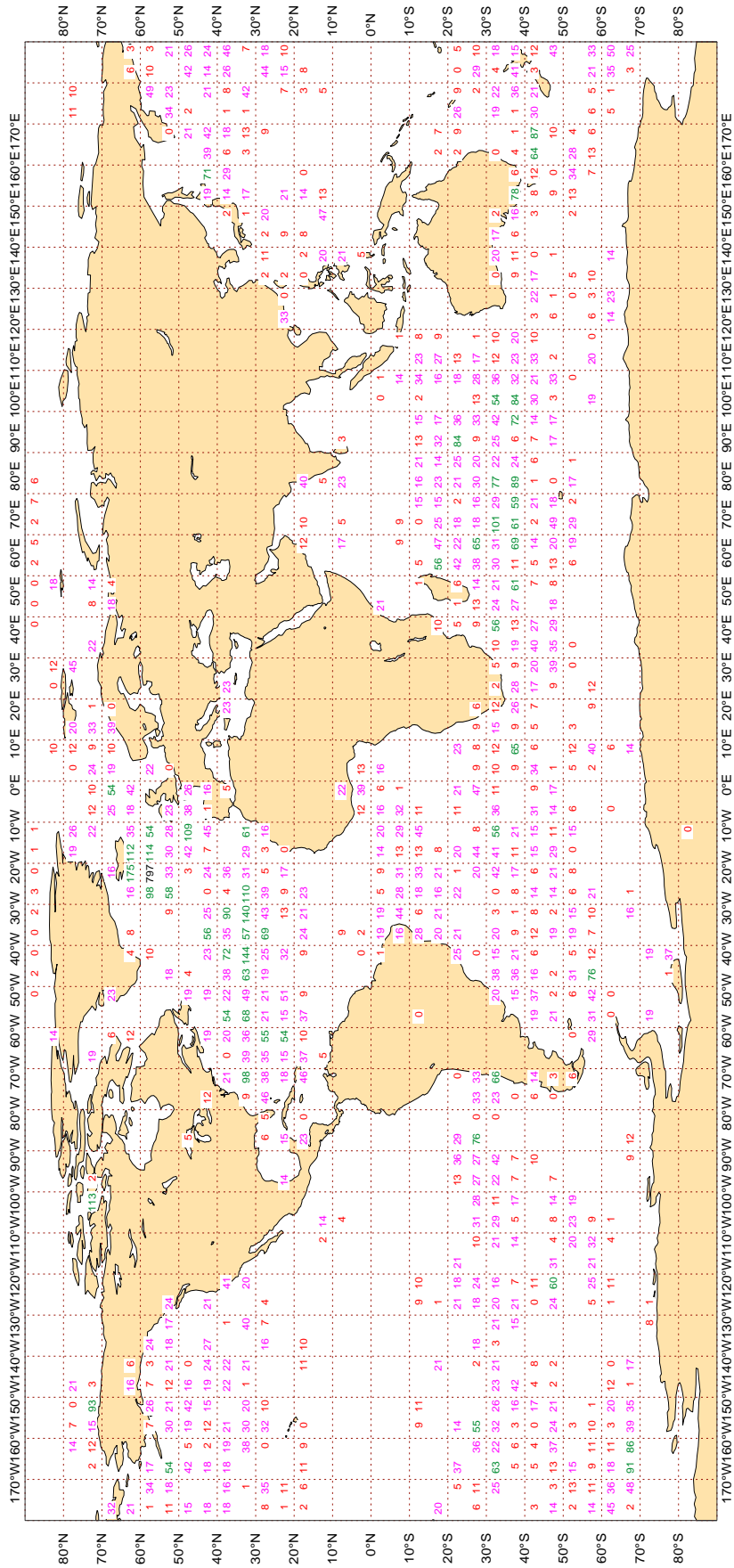
Oceans - N. Atlantic 7859 S. Atlantic 263 Indian 427 Pacific 4584



3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

Figure 2

ECMWF Monitoring Statistics - MAY 2018  
 Availability - DRIFTER PRESSURE  
 Average number of observations in 24 hours - 17479  
 Oceans - N. Atlantic 5164 S. Atlantic 2414 Indian 3642 Pacific 6259



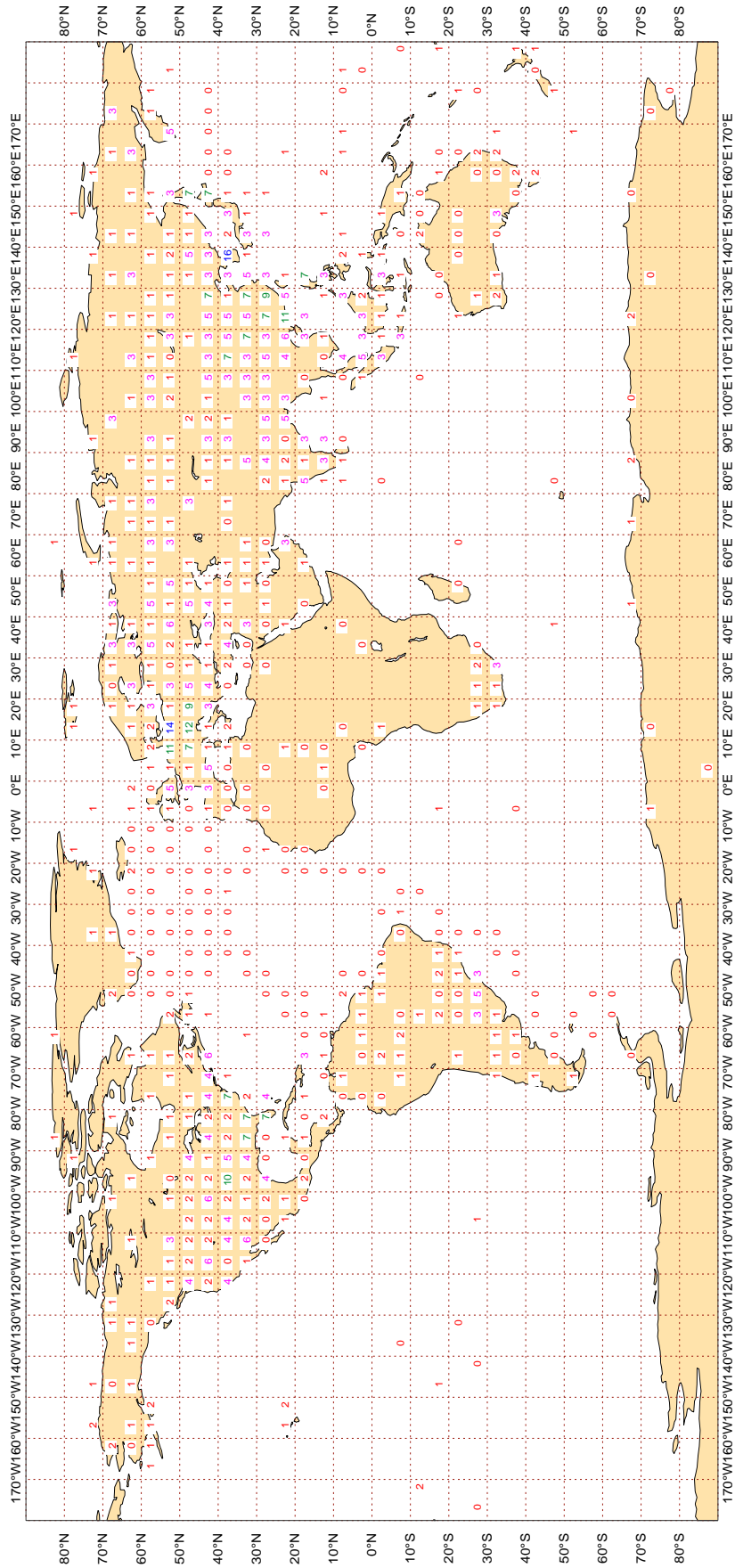
Magics 2.24.2 (64 bit)



3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

Figure 3

ECMWF Monitoring Statistics - MAY 2018  
 Availability - TEMP 500 hPa Geopotential  
 Average number of observations in 24 hours - 1320  
 LAND - WMO Region I: 38 II: 509 III: 78 IV: 280  
 Region V: 138 VI: 254 Antarctic: 16  
 Oceans - N. Atlantic 6 S. Atlantic 1 Indian 0 Pacific 1



Magics 2.24.2 (64 bit)



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

Figure 4

ECMWF Monitoring Statistics - MAY 2018

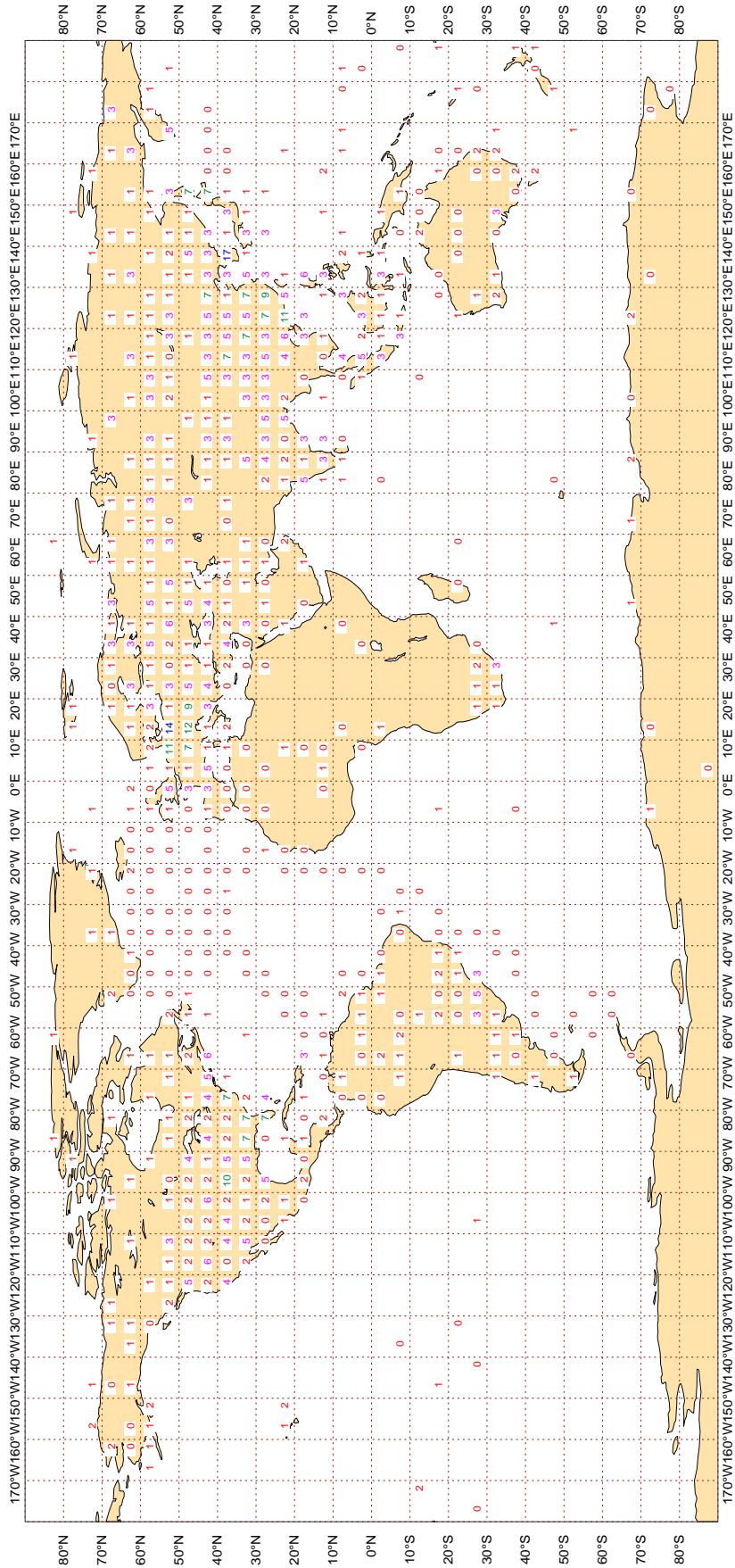
Availability - TEMP/PILOT 300 hPa wind

Average number of observations in 24 hours - 1307

LAND - WMO Region I: 38 II: 500 III: 77 IV: 282

Region V: 136 VI: 251 Antarctic: 16

Oceans - N. Atlantic 6 S. Atlantic 1 Indian 0 Pacific 1



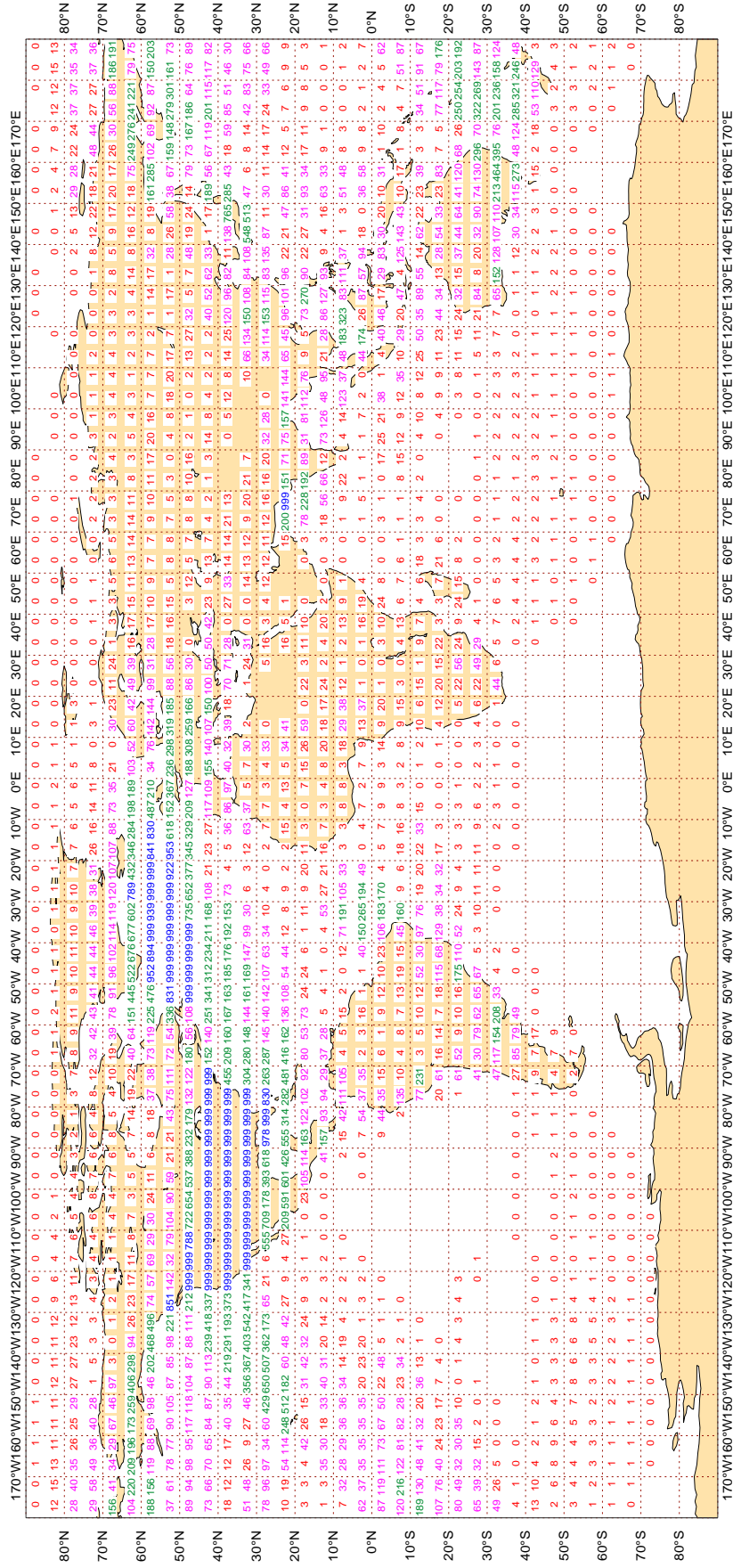
Magics 2.24.2 (64 bit)



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

Figure 5

ECMWF Monitoring Statistics - MAY 2018  
Availability - Aircraft winds 300-150 hPa  
Average number of observations in 24 hours - 224051



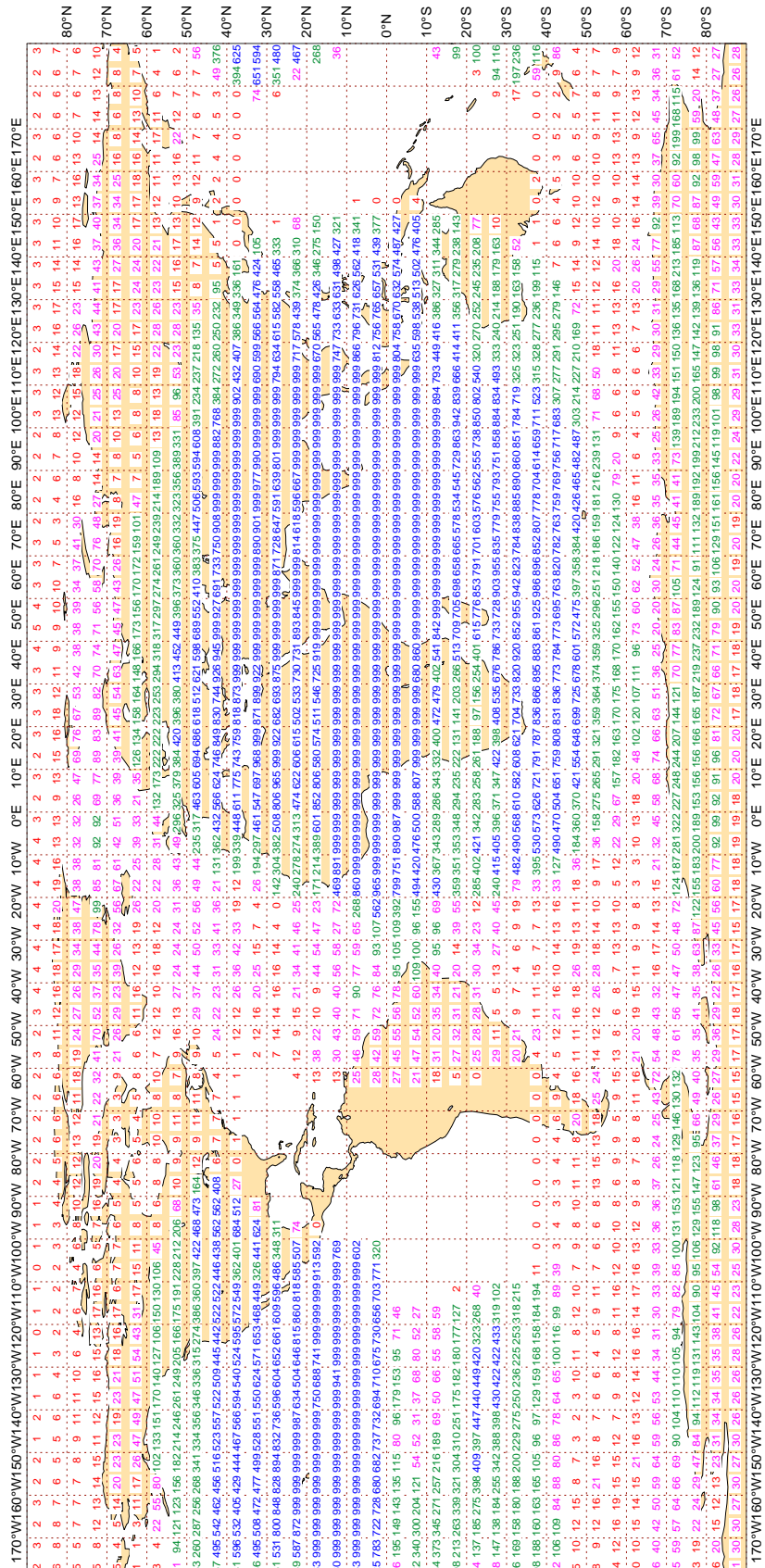
Majics 2.24.2 (64 bit)



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

Figure 6

ECMWF Monitoring Statistics - MAY 2018  
Availability - AMV winds 400-150 hPa  
Average number of observations in 24 hours - 771059



Majics 2.24.2 (64 bit)



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

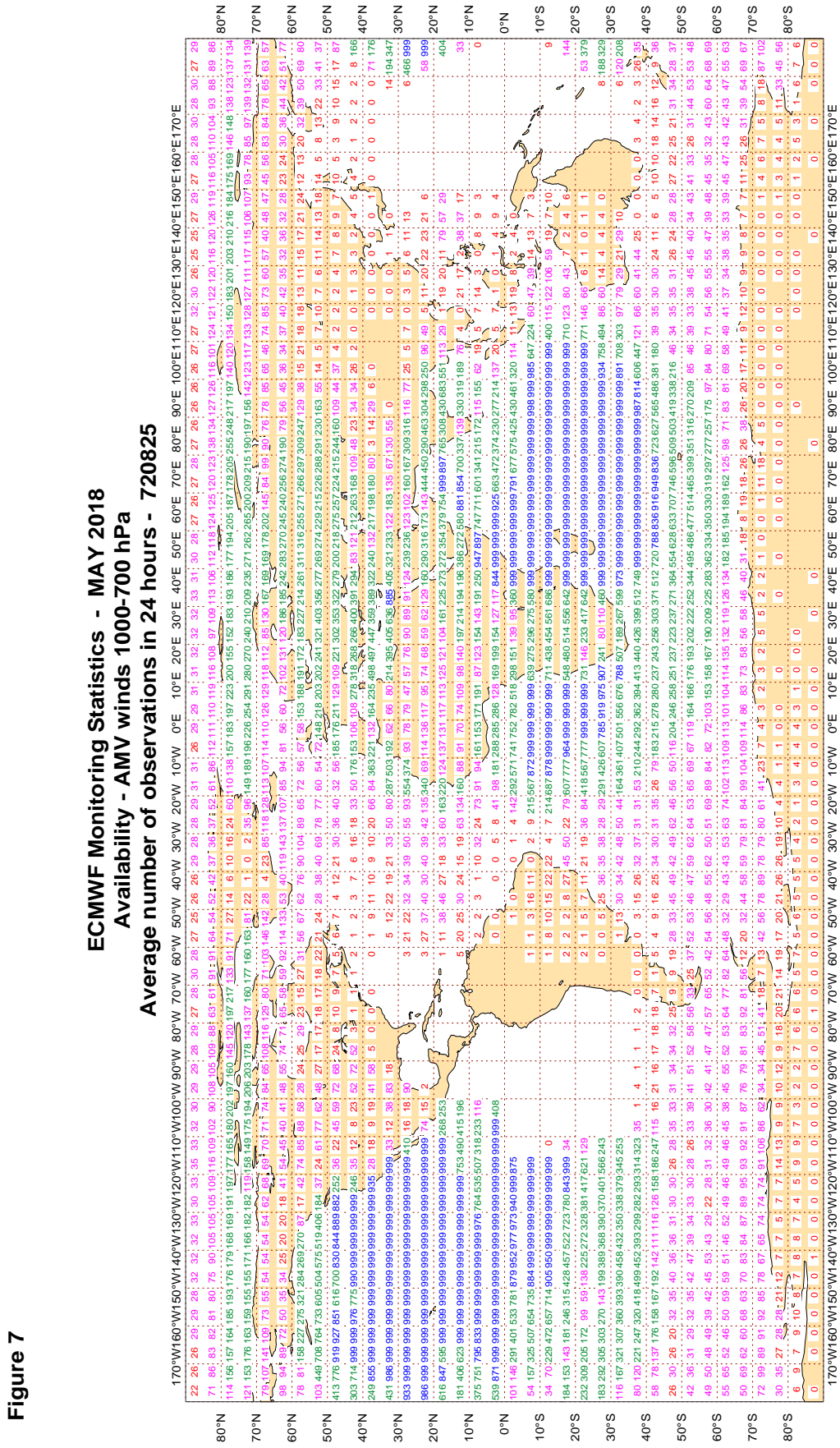


Figure 7

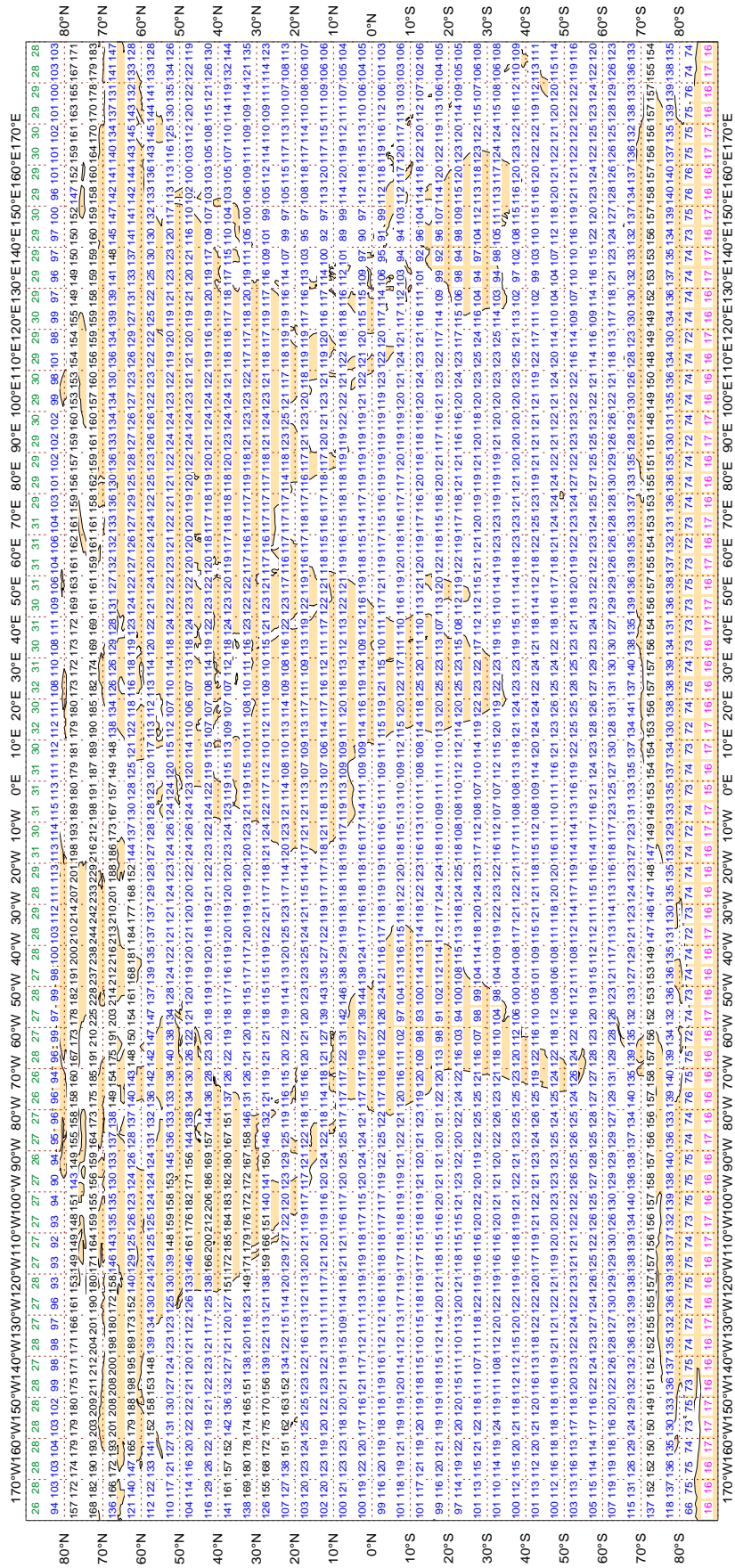


3.2.8 Figure 8 - Availability - NOAA15 ATOVS : AMSU-A

Figure 8

ECMWF Monitoring Statistics - MAY 2018  
Availability - NOAA15 ATOVS : AMSU-A

Average number of observations in 24 hours - 309857



Magics 2.24.2 (64 bit)



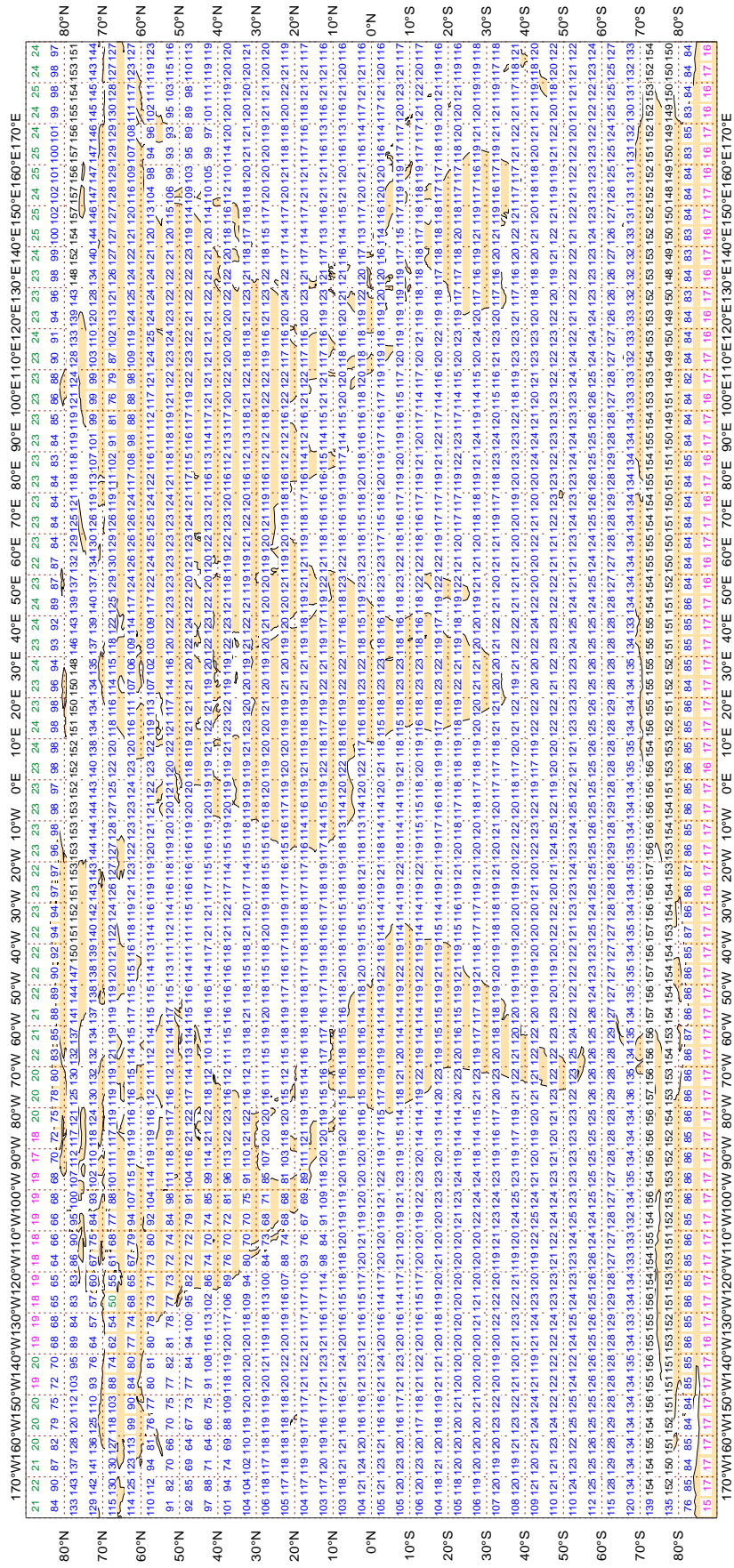




3.2.10 Figure 9.2 - Availability - AQUA ATOVS : AMSU-A

Figure 9.2

ECMWF Monitoring Statistics - MAY 2018  
 Availability - AQUA ATOVS : AMSU-A  
 Average number of observations in 24 hours - 293614



Magnics 2.24.2 (64 bit)



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

Figure 9.3

ECMWF Monitoring Statistics - MAY 2018  
Availability - METOP ATOVS : AMSU-A  
Average number of observations in 24 hours - 438695

Table with columns for latitude (80°N to 70°S) and longitude (170°W to 170°E). The table contains numerical data representing the average number of observations in 24 hours for each geographic grid cell.

Magics 2.24.2 (64 bit)



**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 : MAY 2018  
 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
2FRK8	99	P	SUR	18	0	1.3	-3.1	3.3
3FNL8	99	P	SUR	15	0	0.4	-7.7	7.7
46128	99	P	SUR	195	2	3.7	3.5	5.1
5BZE2	99	P	SUR	29	0	1.1	5.3	5.4
9HJD9	99	P	SUR	25	0	1.0	-3.8	3.9
9V8208	99	P	SUR	19	0	0.5	4.2	4.2
9V9289	99	P	SUR	25	0	1.3	4.2	4.4
AUFI	99	P	SUR	22	0	1.6	7.9	8.1
AVBC	99	P	SUR	50	0	5.1	5.1	7.2
AVQU	99	P	SUR	16	1	0.8	8.0	8.0
C6BX8	99	P	SUR	21	0	1.4	3.7	3.9
C6FM5	99	P	SUR	28	0	2.7	3.2	4.2
C6FN5	99	P	SUR	21	0	1.9	3.3	3.8
C6UC3	99	P	SUR	56	0	1.0	7.6	7.7
C6YA7	99	P	SUR	24	0	1.6	5.7	5.9
J8AZ3	99	P	SUR	39	0	0.8	3.1	3.2
OZ2049	99	P	SUR	30	0	0.8	-5.6	5.7
PCBZ	99	P	SUR	28	0	0.9	-4.0	4.1
SBPQ	99	P	SUR	18	0	0.4	-6.3	6.3
UBMO9	99	P	SUR	40	0	0.7	4.2	4.3
UBSH5	99	P	SUR	18	0	3.4	-4.2	5.4
UFJN	99	P	SUR	23	0	1.8	-3.2	3.7
V7NB9	99	P	SUR	29	0	4.2	4.0	5.8
V7WU4	99	P	SUR	27	0	1.5	3.8	4.1
VRFI2	99	P	SUR	27	0	1.4	6.7	6.8
VRGO3	99	P	SUR	16	0	2.0	-4.1	4.6
VRGO7	99	P	SUR	16	0	0.6	-4.1	4.1
VRGO8	99	P	SUR	23	0	1.9	-4.0	4.4
VRGP2	99	P	SUR	18	0	0.6	3.2	3.3
VRID2	99	P	SUR	44	0	1.2	5.7	5.8
VRJT8	99	P	SUR	67	0	3.6	4.6	5.8
VRKF2	99	P	SUR	23	0	1.1	4.8	4.9

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
VROB9	99	P	SUR	80	0	1.4	3.1	3.4
VTFG	99	P	SUR	100	0	0.9	-3.3	3.4
VTXB	99	P	SUR	114	110	0.8	6.9	7.0
VWTI	99	P	SUR	120	1	0.6	7.6	7.6
WCAJ	99	P	SUR	18	0	0.7	4.4	4.4
WDB3161	99	P	SUR	53	1	1.8	4.8	5.1
WDC6925	99	P	SUR	30	0	0.9	3.6	3.7
WDJ2573	99	P	SUR	53	0	3.5	-3.5	4.9

**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 : MAY 2018  
 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
46004	99	SPEED	SUR	18	0	0	2.6	-5.0	5.7
46184	99	SPEED	SUR	78	0	0	3.1	-6.4	7.1

**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 : MAY 2018  
 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
34002	99	DIRN	SUR	59	3	0	146.2	84.1	168.6
44037	99	DIRN	SUR	78	0	0	14.7	35.5	38.4
45001	99	DIRN	SUR	54	0	0	30.6	32.2	44.4
45024	99	DIRN	SUR	57	0	0	20.9	38.5	43.8
45166	99	DIRN	SUR	45	0	0	13.0	-48.9	50.6
46118	99	DIRN	SUR	72	0	0	37.4	-39.3	54.3
46120	99	DIRN	SUR	52	0	0	82.1	-30.9	87.8

**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 : MAY 2018  
 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
1301000	99	P	SUR	33	-17	1039	1039	0.0	0.0	0.0
1301001	99	P	SUR	33	-17	737	737	0.0	0.0	0.0
1501517	99	P	SUR	-37	-12	685	0	0.9	-5.3	5.4
1701555	99	P	SUR	-57	17	685	0	1.7	5.3	5.5
2201564	99	P	SUR	22	114	338	0	3.5	-4.8	5.9
2201565	99	P	SUR	22	114	159	0	2.0	-6.4	6.7
2201566	99	P	SUR	22	114	265	0	0.6	-8.8	8.8
2201567	99	P	SUR	22	114	222	0	0.5	-7.4	7.4
2201568	99	P	SUR	22	114	221	0	0.5	-7.3	7.3
2301560	99	P	SUR	-19	38	523	0	1.6	-5.0	5.2
3301530	99	P	SUR	-45	-35	433	0	2.1	5.0	5.5
4500509	99	P	SUR	45	-88	101	101	0.0	0.0	0.0
45509	99	P	SUR	45	-88	119	119	0.0	0.0	0.0
4701674	99	P	SUR	70	-67	625	0	0.5	-5.9	5.9
4800282	99	P	SUR	71	-156	602	602	0.0	0.0	0.0
4800731	99	P	SUR	70	-97	70	70	0.0	0.0	0.0
4802012	99	P	SUR	29	-118	3120	2547	0.3	0.3	0.4
4802503	99	P	SUR	44	-78	21	0	0.4	-8.9	9.0
4802504	99	P	SUR	44	-78	21	0	0.4	-9.8	9.8
4802506	99	P	SUR	44	-78	20	0	0.4	-9.6	9.6
4802507	99	P	SUR	44	-78	20	0	0.4	-9.3	9.3
4802508	99	P	SUR	44	-78	20	0	0.4	-9.7	9.7
4802509	99	P	SUR	44	-78	20	0	0.5	-10.2	10.2
4802510	99	P	SUR	44	-78	20	0	0.4	-9.8	9.8
4802511	99	P	SUR	44	-78	20	0	0.4	-9.6	9.6
4802512	99	P	SUR	44	-78	21	0	0.5	-10.6	10.6
4802513	99	P	SUR	44	-78	20	0	0.4	-9.7	9.8
4802514	99	P	SUR	44	-78	133	0	1.5	-9.5	9.6
4802515	99	P	SUR	44	-78	20	0	0.4	-9.6	9.6
4802516	99	P	SUR	44	-78	20	0	0.4	-9.5	9.5
48282	99	P	SUR	71	-156	710	710	0.0	0.0	0.0
48731	99	P	SUR	70	-97	71	71	0.0	0.0	0.0



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

WMO IDENT	OBS TIME	ELM	ME LAT	N LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	
5501550	99	P	SUR	-67	-164	506	180	3.5	0.7	3.5
5501551	99	P	SUR	-67	-155	484	198	3.4	-0.1	3.4
5501552	99	P	SUR	-67	-158	510	186	2.5	-0.3	2.6
5501554	99	P	SUR	-67	-155	523	200	3.8	-1.9	4.2
5501557	99	P	SUR	-67	-172	424	112	3.3	0.2	3.3
5501560	99	P	SUR	-67	-161	515	147	3.4	-0.5	3.4
5501561	99	P	SUR	-67	-161	685	236	3.1	0.1	3.1
5501562	99	P	SUR	-67	179	523	195	3.9	-0.4	3.9
5601611	99	P	SUR	-18	78	618	0	0.4	7.4	7.5
6202402	99	P	SUR	38	-26	1147	1147	0.0	0.0	0.0
6202403	99	P	SUR	39	-31	624	624	0.0	0.0	0.0
6202404	99	P	SUR	39	-29	682	682	0.0	0.0	0.0
7101508	99	P	SUR	-68	-35	588	277	7.8	-4.2	8.8
7201517	99	P	SUR	-68	-147	523	226	3.8	-0.5	3.8
7201518	99	P	SUR	-67	-158	524	191	2.8	0.4	2.8

**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 : MAY 2018  
 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
46004	99	SPEED	SUR	51	-136	106	0	0	2.5	-5.4	6.0
46184	99	SPEED	SUR	54	-139	537	0	0	3.2	-6.0	6.8

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

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 PERIOD : MAY 2018  
 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
2200106	99	DIRN	SUR	36	130	601	0	0	29.3	-24.2	38.0
23170	99	DIRN	SUR	15	74	139	0	0	23.8	66.8	70.9
23451	99	DIRN	SUR	15	69	83	0	0	13.8	34.2	36.8
23454	99	DIRN	SUR	10	73	79	0	0	24.7	21.6	32.8
23460	99	DIRN	SUR	7	88	116	0	0	35.0	45.4	57.3
23492	99	DIRN	SUR	11	72	101	0	0	26.9	40.8	48.9
23497	99	DIRN	SUR	11	72	40	0	0	28.2	23.1	36.4
3100229	99	DIRN	SUR	-3	-38	114	0	0	17.2	-89.4	91.1
3100231	99	DIRN	SUR	-27	-47	178	0	0	58.2	48.6	75.9
3100262	99	DIRN	SUR	-23	-43	26	0	0	29.1	-36.4	46.6
3100374	99	DIRN	SUR	-25	-45	271	0	0	27.1	-26.4	37.8
31229	99	DIRN	SUR	-3	-38	113	0	0	17.0	-90.2	91.8
31231	99	DIRN	SUR	-27	-47	182	0	0	59.5	46.3	75.5
31262	99	DIRN	SUR	-23	-43	29	0	0	28.1	-35.6	45.3
31374	99	DIRN	SUR	-25	-45	273	0	0	27.3	-27.1	38.5
34002	99	DIRN	SUR	-55	-90	432	43	0	149.1	75.7	167.2
42019	99	DIRN	SUR	28	-95	527	0	0	11.8	23.7	26.5
42361	99	DIRN	SUR	28	-93	564	0	0	14.2	29.6	32.8
42365	99	DIRN	SUR	28	-89	98	0	0	17.3	-25.8	31.1
44037	99	DIRN	SUR	44	-68	446	0	0	16.2	37.4	40.8
45001	99	DIRN	SUR	48	-88	307	0	0	31.7	24.3	39.9
45003	99	DIRN	SUR	45	-83	175	0	0	23.7	23.6	33.4
45004	99	DIRN	SUR	48	-87	606	0	0	29.0	23.3	37.2
45006	99	DIRN	SUR	47	-90	573	0	0	33.5	21.3	39.7
45007	99	DIRN	SUR	43	-87	105	0	0	23.3	30.9	38.8
45008	99	DIRN	SUR	44	-82	314	0	0	27.6	23.0	36.0
45012	99	DIRN	SUR	44	-77	46	0	0	16.0	22.8	27.9
45024	99	DIRN	SUR	44	-87	326	0	0	19.1	37.6	42.2
45166	99	DIRN	SUR	45	-73	192	0	0	15.0	-50.1	52.3
46118	99	DIRN	SUR	49	-123	424	0	0	40.1	-36.6	54.3
46120	99	DIRN	SUR	48	-122	245	0	0	87.7	-21.2	90.3

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
46206	99	DIRN	SUR	49	-126	557	0	0	40.5	26.8	48.6
5300040	99	DIRN	SUR	-8	95	664	0	0	153.4	59.9	164.7
5300056	99	DIRN	SUR	-5	95	517	0	0	143.7	75.8	162.4
53040	99	DIRN	SUR	-8	95	664	0	0	153.5	58.1	164.1
53056	99	DIRN	SUR	-5	95	517	0	0	143.0	76.4	162.1
6200200	99	DIRN	SUR	36	-8	390	0	0	157.7	-63.3	169.9

### 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 : MAY 2018  
 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	28	0	28.0	60.3	66.5
01400	00	Z	1000	57	3	30	0	22.4	67.6	71.2
04360	12	Z	1000	66	-38	12	0	9.3	47.5	48.4
04360	00	Z	1000	66	-38	10	0	4.2	43.6	43.8
28698	00	Z	250	55	73	30	0	33.6	-80.9	87.6
28698	12	Z	250	55	73	30	0	33.2	-82.8	89.2
37259	12	Z	30	43	47	30	0	30.1	195.8	198.1
38064	12	Z	70	45	66	23	1	104.7	64.7	123.1
43110	00	Z	700	17	73	26	0	14.2	40.6	43.0
47122	00	Z	1000	37	127	30	4	12.9	-42.9	44.8
47122	12	Z	1000	37	127	30	4	13.7	-48.3	50.2
65046	12	Z	925	12	9	10	0	2.8	40.5	40.6
78988	12	Z	30	12	-69	18	6	129.9	217.1	253.0
78988	00	Z	30	12	-69	12	6	77.5	262.5	273.7
7JUNA4	00	Z	1000	51	-16	14	0	23.1	23.3	32.8
98223	00	Z	30	18	121	24	2	61.5	238.2	246.0
98747	12	Z	925	8	125	24	0	8.5	35.3	36.3
98747	00	Z	925	8	125	29	0	8.2	32.8	33.8
YLV96W	12	Z	700	47	-35	11	3	43.3	51.3	67.1
YLV96W	00	Z	250	47	-40	13	5	61.4	108.3	124.5

**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 : MAY 2018  
 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
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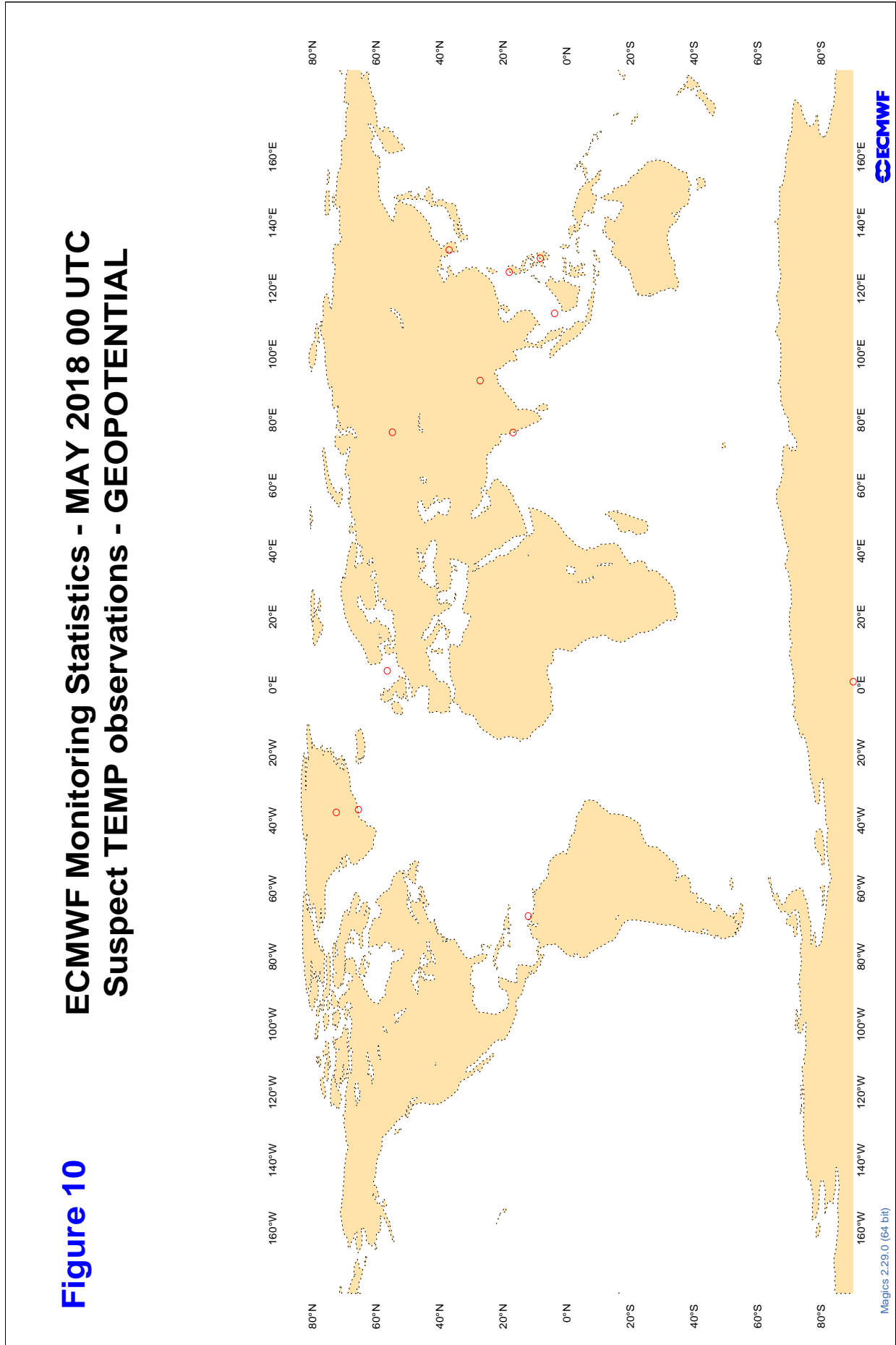
**3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)**

LIST OF SUSPECT STATIONS : RADIOSONDES  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 AREA : GLOBAL  
 PERIOD : MAY 2018  
 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)

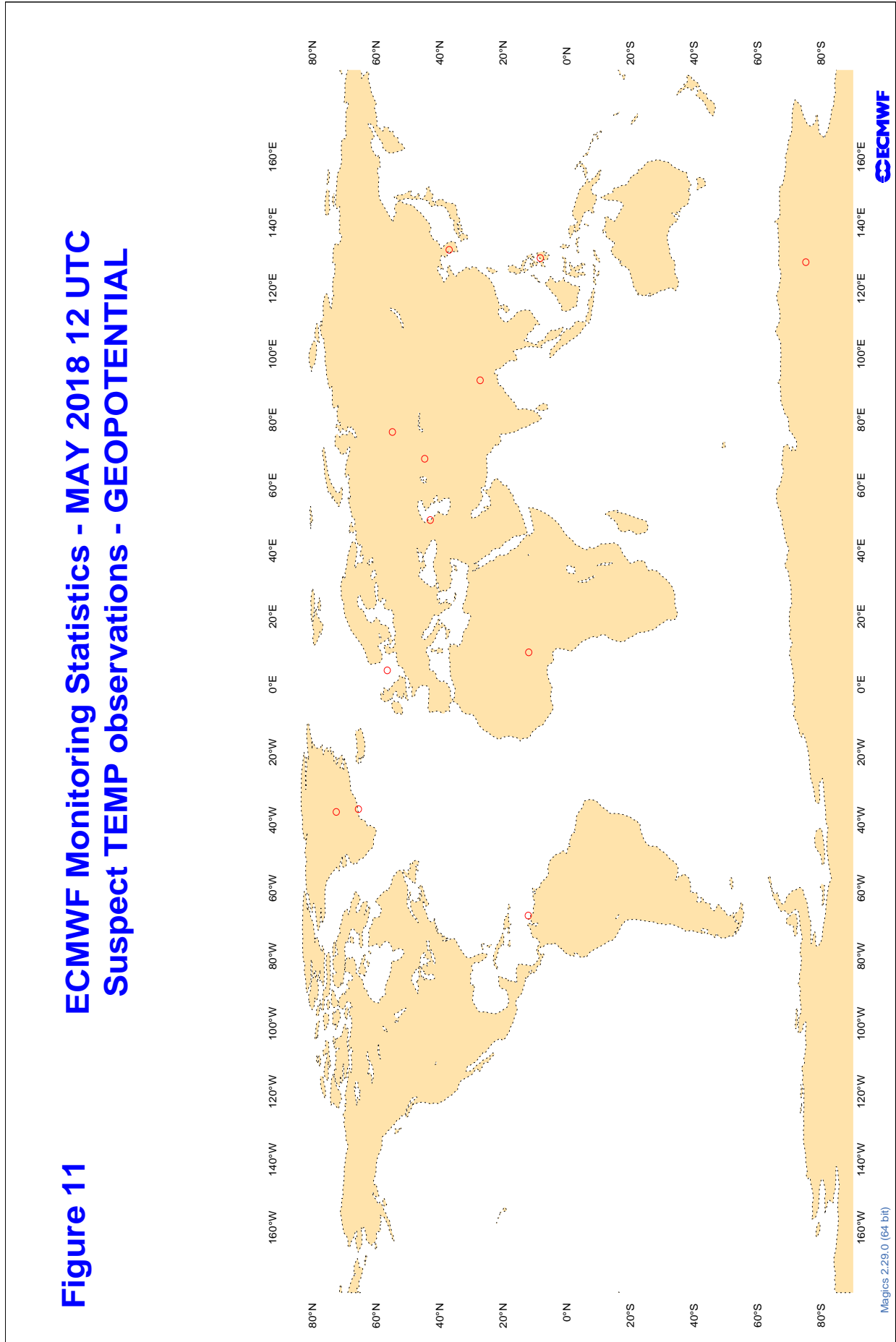
WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
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3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC

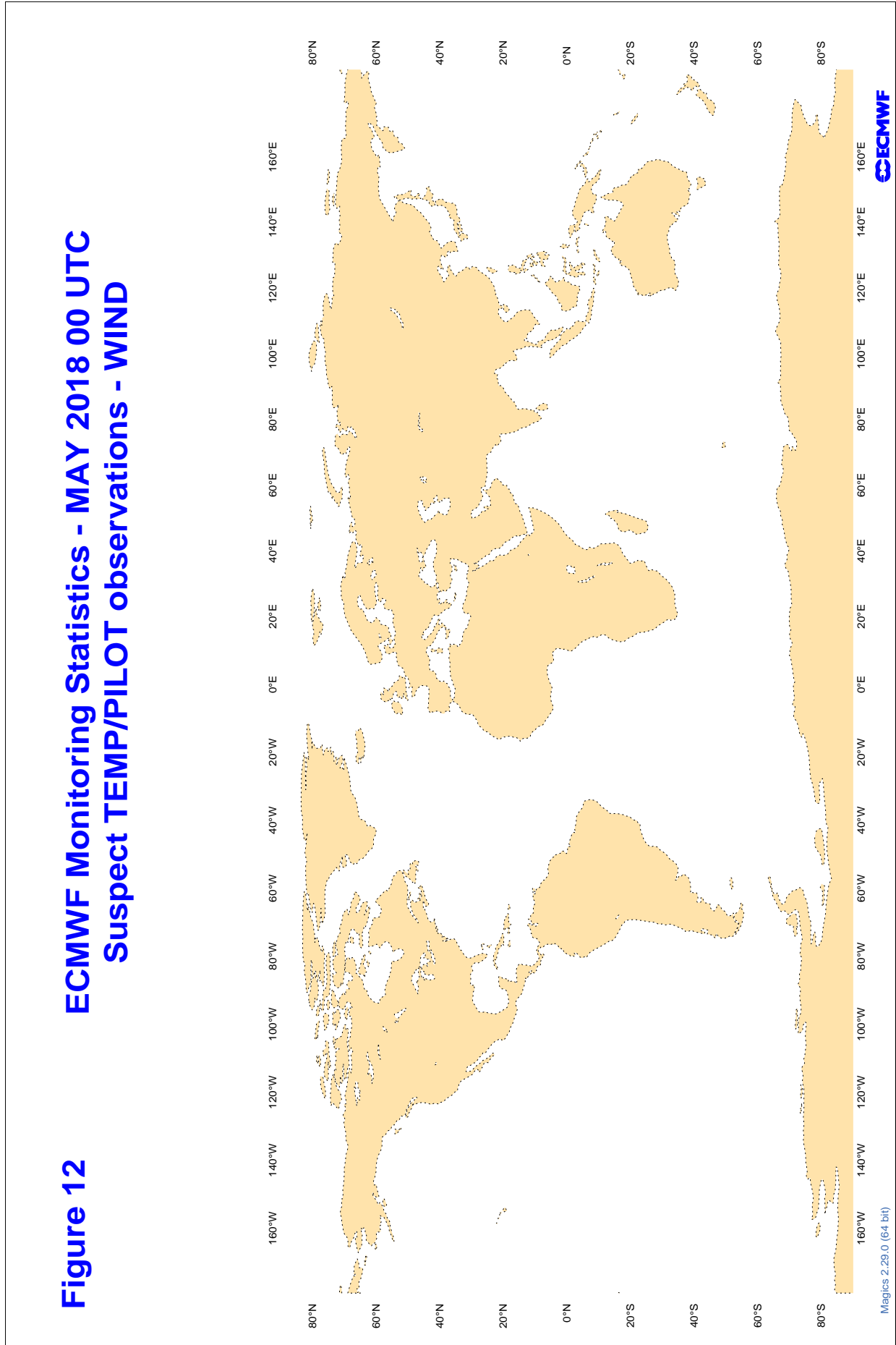




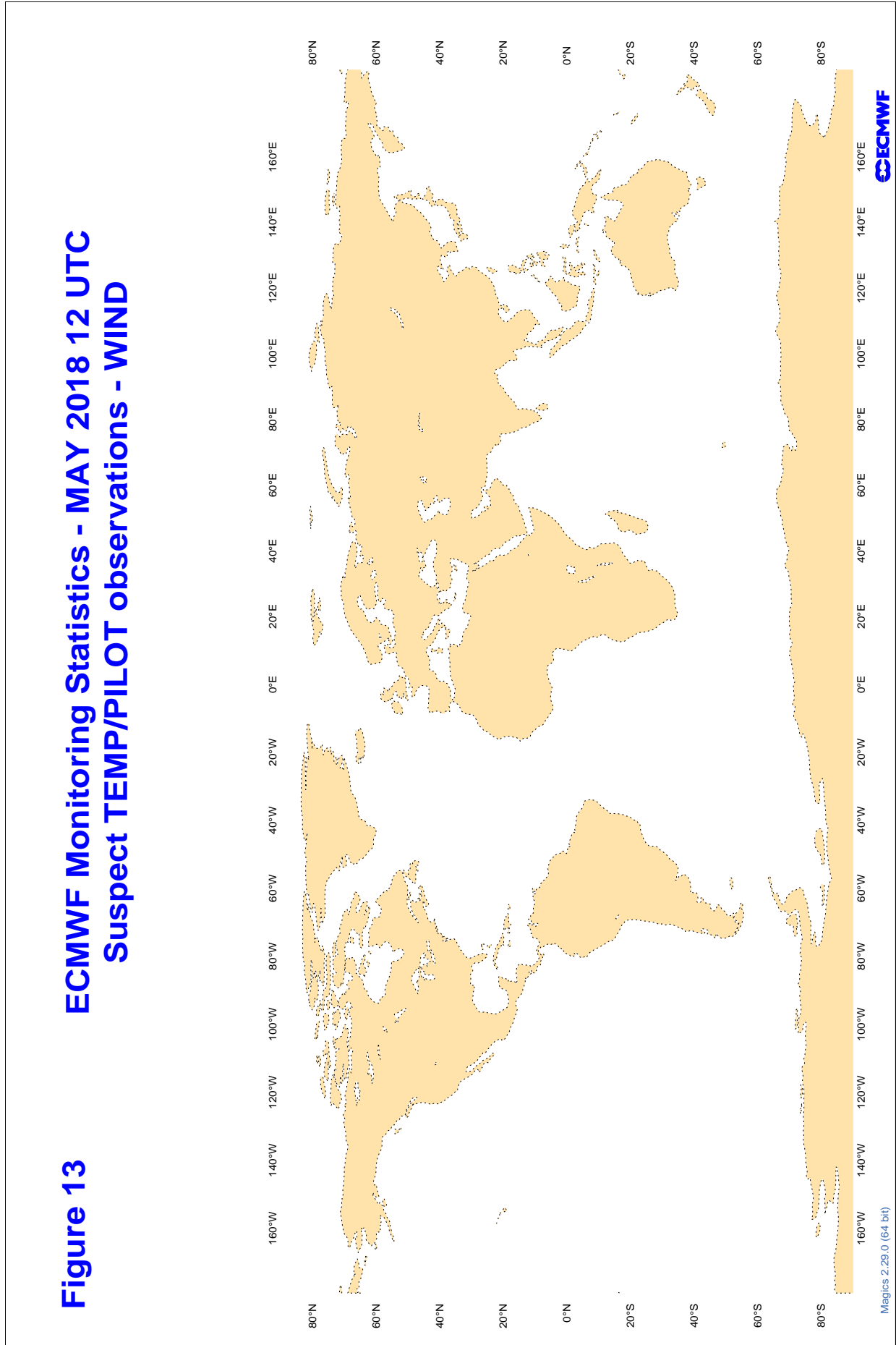
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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 : MAY 2018  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
5QPW8X	00	Z	100	11	22.3	21.2
5QPW8X	12	Z	100	10	22.5	19.4
7JUNA4	12	Z	100	11	43.8	41.1
7JUNA4	00	Z	100	14	25.5	14.8
ASDE09	12	Z	100	2	5.9	5.9
ASFR2	00	Z	100	0	0.0	0.0
ASFR2	12	Z	100	0	0.0	0.0
ASFR3	00	Z	100	4	29.4	28.8
ASFR3	12	Z	100	2	21.5	15.4
ASFR4	12	Z	100	7	24.9	23.6
ASFR4	00	Z	100	14	72.3	42.4
DBLK	12	Z	100	24	12.6	7.7
FHM5UJ	00	Z	100	1	14.2	-14.2
FHM5UJ	12	Z	100	3	10.3	8.2
FPUW5G	12	Z	100	22	8.4	4.7
HTXUH4	12	Z	100	1	12.1	12.1
HTXUH4	00	Z	100	1	4.6	-4.6
JGQH	12	Z	100	1	11.2	-11.2
JGQH	00	Z	100	2	1.3	1.3
XKQLWQ	12	Z	100	24	21.6	18.9
XQFJRG	12	Z	100	10	6.8	2.2
XQFJRG	00	Z	100	7	4.8	3.3
XWHDEA	00	Z	100	0	0.0	0.0
XWHDEA	12	Z	100	0	0.0	0.0
YLV96W	12	Z	100	3	34.5	34.2
YLV96W	00	Z	100	6	279.2	279.2
ZVQEQC	00	Z	100	1	18.4	18.4

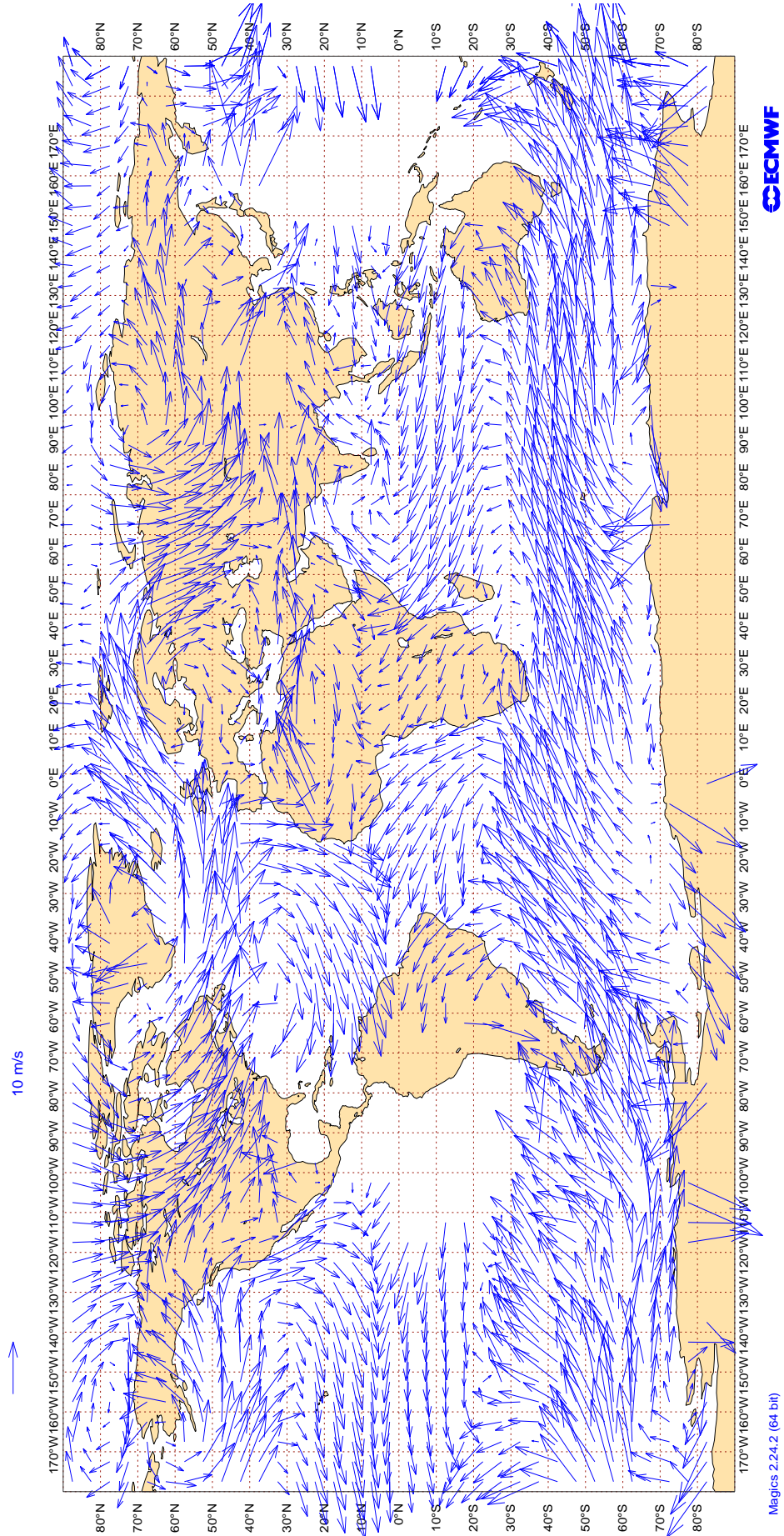
**3.2.26 Table 11 - Radiosonde monitoring statistics (SHIPs): Wind (m/s)**

RADIOSONDE MONITORING STATISTICS (SHIPS)  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 100 HPA  
 AREA : GLOBAL  
 PERIOD : MAY 2018  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
5QPW8X	00	V	100	9	3.4	-1.2	0.8
5QPW8X	12	V	100	9	3.4	0.4	1.1
7JUNA4	12	V	100	10	3.4	-0.1	0.4
7JUNA4	00	V	100	10	4.4	-0.2	0.7
ASDE09	12	V	100	1	2.1	-1.6	-1.4
ASFR2	00	V	100	0	0.0	0.0	0.0
ASFR2	12	V	100	0	0.0	0.0	0.0
ASFR3	00	V	100	3	4.5	0.8	2.7
ASFR3	12	V	100	2	2.4	0.8	-1.1
ASFR4	12	V	100	6	2.9	1.1	-0.3
ASFR4	00	V	100	12	3.4	0.7	-0.5
DBLK	12	V	100	23	5.5	-0.7	-1.4
FHM5UJ	00	V	100	1	1.1	-0.7	-0.8
FHM5UJ	12	V	100	3	2.6	-0.2	-1.3
FPUW5G	12	V	100	20	3.9	-0.4	0.2
HTXUH4	12	V	100	1	3.7	2.3	2.9
HTXUH4	00	V	100	1	2.8	1.2	-2.5
JGQH	12	V	100	0	0.0	0.0	0.0
JGQH	00	V	100	0	0.0	0.0	0.0
XKQLWQ	12	V	100	23	3.7	-0.8	1.0
XQFJRG	12	V	100	6	3.7	-1.0	0.4
XQFJRG	00	V	100	4	3.4	-1.9	1.3
XWHDEA	00	V	100	0	0.0	0.0	0.0
XWHDEA	12	V	100	0	0.0	0.0	0.0
YLV96W	12	V	100	3	4.8	-3.4	0.6
YLV96W	00	V	100	2	6.8	-3.5	1.7
ZVQEQC	00	V	100	1	3.5	-2.9	1.9

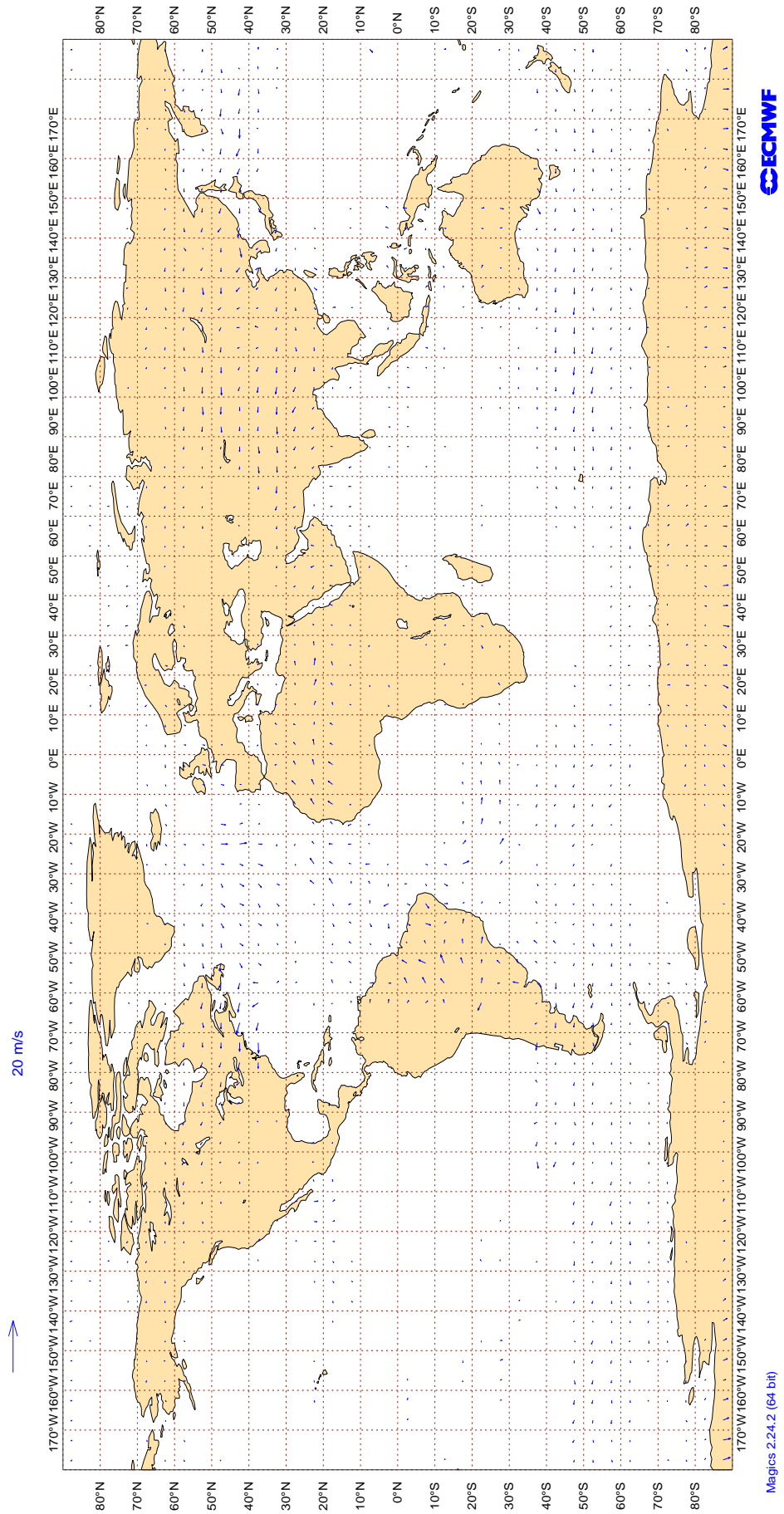
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

**Figure 14**  
**ECMWF Monitoring Statistics: May 2018**  
**AMV Winds: 700-1000hPa**  
**Mean Observed Wind**



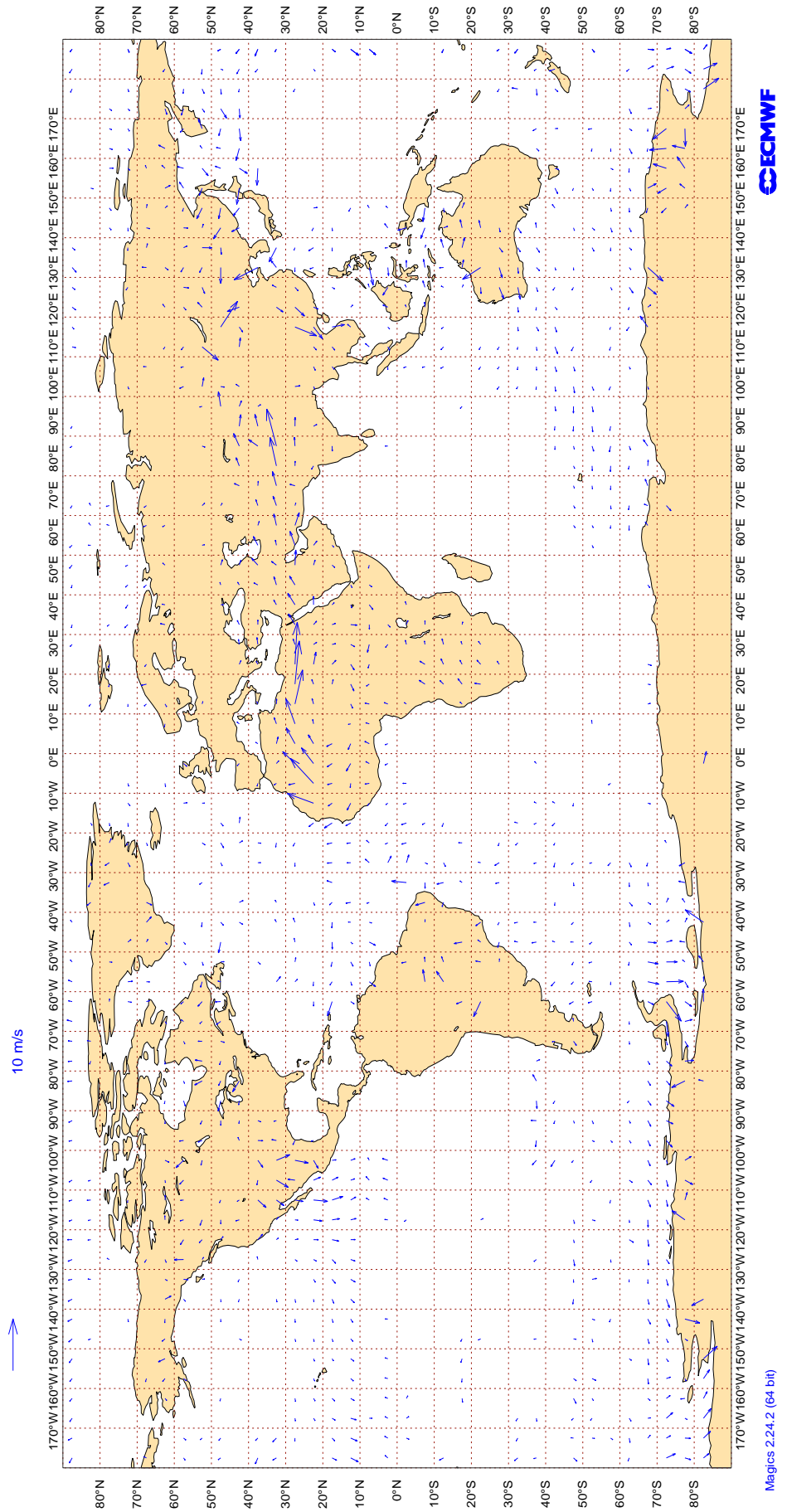
3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

**Figure 15**  
**ECMWF Monitoring Statistics: May 2018**  
**AMV Winds: 150- 400hPa**  
**Wind bias: Observation - FG**



3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

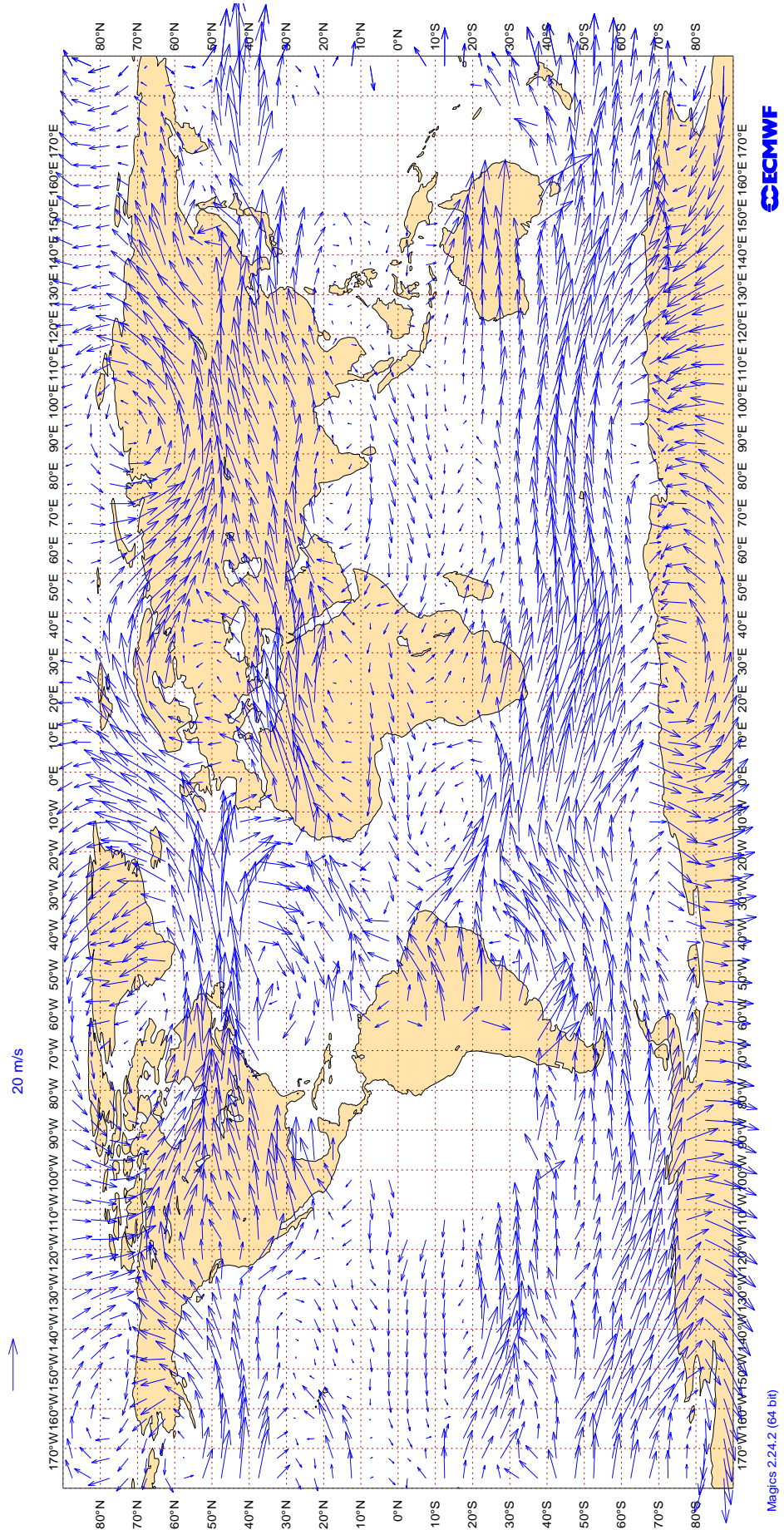
**Figure 16**  
**ECMWF Monitoring Statistics: May 2018**  
**AMV Winds: 700-1000hPa**  
**Wind bias: Observation - FG**





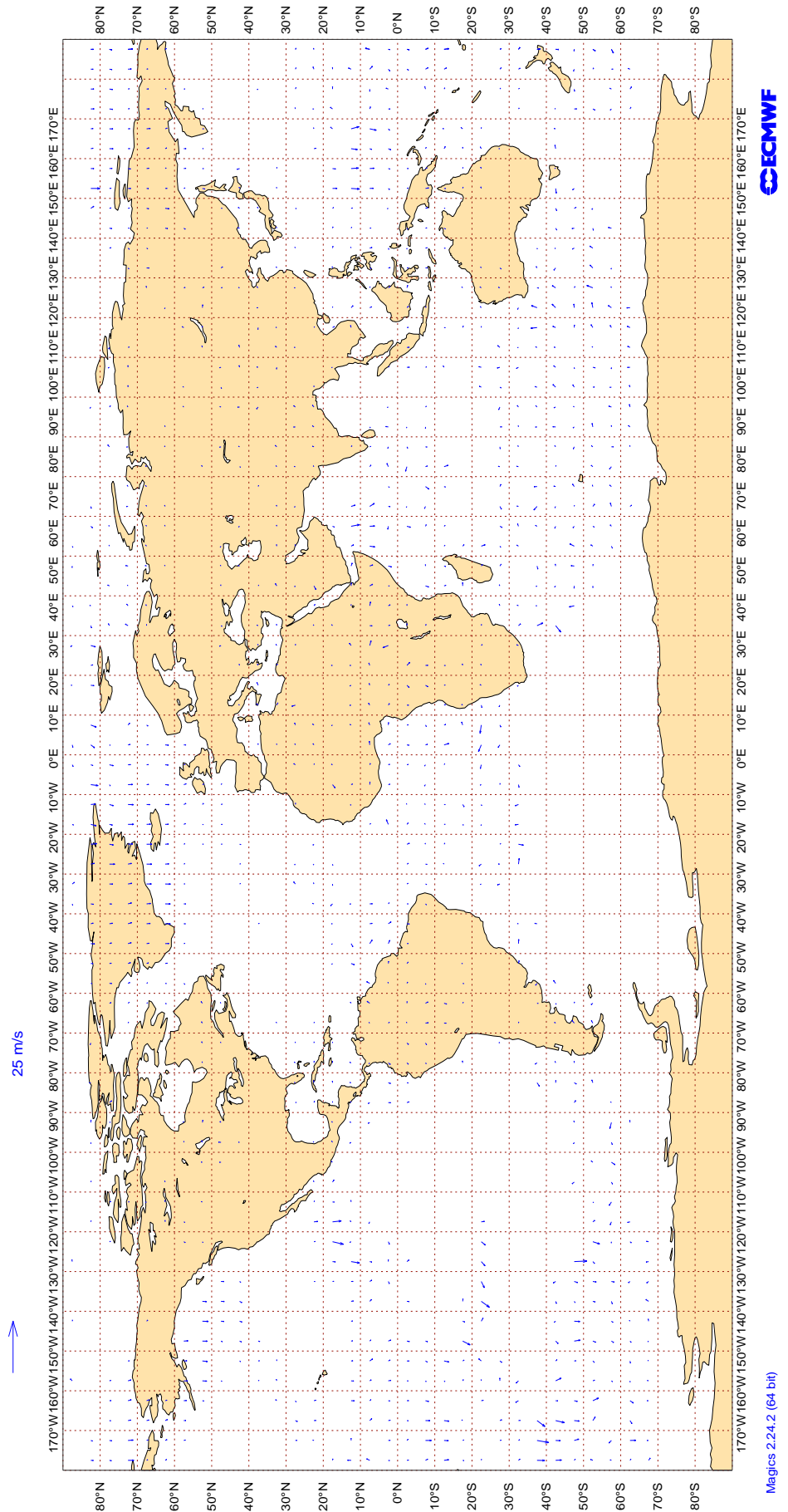
3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

**Figure 17**  
**ECMWF Monitoring Statistics: May 2018**  
**AMV Winds: 150- 400hPa**  
**Mean Observed Wind**



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

**Figure 18**  
**ECMWF Monitoring Statistics: May 2018**  
**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 : MAY 2018  
 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	111	0	0	3.8	0.3
AAL	99	V	300-150	64390	3	0	5.6	0.3
AAR	99	V	300-150	309	0	0	3.8	-1.2
ABD	99	V	300-150	506	0	0	4.3	-0.1
ABW	99	V	300-150	1125	0	0	3.5	-0.5
ACA	99	V	300-150	30188	6	0	7.4	0.1
ACI	99	V	300-150	2327	0	0	4.0	0.7
AEA	99	V	300-150	938	0	0	4.5	0.5
AFL	99	V	300-150	2438	0	0	3.1	0.3
AFR	99	V	300-150	27995	1	0	4.3	0.2
AHY	99	V	300-150	183	21	1	9.7	0.1
AIC	99	V	300-150	2155	4	0	5.9	0.1
ALK	99	V	300-150	1092	0	1	3.4	0.5
AMX	99	V	300-150	3273	18	0	10.2	0.0
ANZ	99	V	300-150	21363	3	0	5.8	0.6
AOJ	99	V	300-150	34	0	0	2.7	0.1
ASA	99	V	300-150	268	0	1	4.9	0.1
ASL	99	V	300-150	456	0	0	3.2	0.3
ASY	99	V	300-150	249	0	0	4.5	0.2
ATN	99	V	300-150	96	0	0	3.5	0.1
AUA	99	V	300-150	5526	0	0	4.0	-0.2
AUH	99	V	300-150	51	29	0	14.7	0.5
AUI	99	V	300-150	418	0	0	3.5	0.5
AVA	99	V	300-150	626	10	0	9.4	-0.0
AXM	99	V	300-150	182	0	0	4.3	0.7

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AZA	99	V	300-150	7615	0	0	3.5	0.4
AZG	99	V	300-150	160	0	0	3.1	-0.2
BAW	99	V	300-150	55717	2	0	5.5	0.1
BBC	99	V	300-150	185	0	0	3.2	1.1
BEL	99	V	300-150	2741	0	0	3.4	0.3
BLU	99	V	300-150	54	0	0	3.5	-0.8
BMW	99	V	300-150	39	0	0	3.6	-0.0
BOX	99	V	300-150	1875	0	0	3.5	0.1
BOX	99	V	300-150	117	0	0	4.0	1.2
BRK	99	V	300-150	26	0	0	3.3	0.0
BVR	99	V	300-150	51	55	0	19.5	-0.0
CAL	99	V	300-150	425	0	0	4.1	0.9
CAT	99	V	300-150	21	0	0	9.2	2.9
CAZ	99	V	300-150	148	0	0	3.8	0.1
CCA	99	V	300-150	936	3	0	5.8	0.6
CEB	99	V	300-150	144	0	1	3.0	0.6
CES	99	V	300-150	1455	0	0	3.7	0.7
CFC	99	V	300-150	290	0	0	4.0	0.7
CFG	99	V	300-150	3585	0	0	3.9	-0.6
CHH	99	V	300-150	175	0	0	5.9	0.7
CHN	99	V	300-150	68	0	0	3.3	0.1
CJT	99	V	300-150	331	0	0	4.0	0.3
CKS	99	V	300-150	1951	0	0	3.5	0.1
CLU	99	V	300-150	502	0	0	4.0	-0.4
CLX	99	V	300-150	3227	0	0	3.6	-0.4
CMB	99	V	300-150	1262	0	0	4.1	-0.3
CNK	99	V	300-150	21	0	0	2.5	0.7
CNV	99	V	300-150	144	0	0	3.6	-0.2
COB	99	V	300-150	24	0	0	3.4	0.5
CPA	99	V	300-150	822	0	0	3.3	0.2
CRK	99	V	300-150	639	0	0	3.4	0.4
CRL	99	V	300-150	574	0	0	3.7	0.2
CSC	99	V	300-150	210	0	0	3.8	0.8
CSN	99	V	300-150	693	8	0	7.0	0.6
CTM	99	V	300-150	85	0	0	3.3	0.3
CXB	99	V	300-150	39	0	0	3.8	1.2
DAH	99	V	300-150	565	0	0	3.4	0.1
DAL	99	V	300-150	72739	0	0	3.5	0.1
DCS	99	V	300-150	52	0	0	3.7	0.7
DGX	99	V	300-150	38	0	0	2.8	0.3
DHK	99	V	300-150	1117	0	0	3.9	-0.0
DJT	99	V	300-150	1645	0	0	4.0	0.2
DLH	99	V	300-150	34775	0	0	3.4	0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
DSO	99	V	300-150	57	0	0	3.6	-0.9
DUB	99	V	300-150	56	0	0	3.2	0.3
EAU	99	V	300-150	37	14	0	16.2	-0.2
EDC	99	V	300-150	26	0	0	3.7	-1.4
EDW	99	V	300-150	1536	0	0	3.6	0.4
EIN	99	V	300-150	16609	0	0	3.4	0.2
EJM	99	V	300-150	654	0	0	3.5	0.2
ELY	99	V	300-150	3464	7	0	7.2	0.2
ETD	99	V	300-150	6737	2	0	4.3	0.3
ETH	99	V	300-150	3172	8	0	7.9	0.2
EUW	99	V	300-150	22	0	0	3.2	-1.0
EWG	99	V	300-150	3791	0	0	3.5	0.4
EXS	99	V	300-150	25	0	0	3.3	0.4
FBU	99	V	300-150	471	0	0	4.0	-0.0
FDX	99	V	300-150	5790	0	0	3.5	0.2
FIN	99	V	300-150	875	0	0	2.9	0.1
FIN	99	V	300-150	57	0	0	5.9	4.4
FJI	99	V	300-150	6671	0	0	4.7	0.7
FPG	99	V	300-150	38	0	0	3.2	0.3
FWI	99	V	300-150	1260	0	0	3.4	0.4
FYG	99	V	300-150	166	0	0	3.7	0.7
GAF	99	V	300-150	53	0	0	3.3	0.0
GAJ	99	V	300-150	28	0	0	3.5	0.1
GCK	99	V	300-150	35	0	0	3.4	0.2
GCR	99	V	300-150	63	0	0	3.2	-0.2
GEC	99	V	300-150	2774	0	0	3.3	0.2
GES	99	V	300-150	114	0	0	3.8	0.5
GFA	99	V	300-150	871	0	1	2.7	0.3
GIA	99	V	300-150	368	0	0	3.2	0.5
GLO	99	V	300-150	39	3	0	11.9	0.7
GTH	99	V	300-150	102	0	0	4.0	0.2
GTI	99	V	300-150	3800	0	0	3.9	-0.2
HAL	99	V	300-150	4400	0	0	4.2	0.9
HRT	99	V	300-150	49	82	0	25.3	1.7
HZM	99	V	300-150	60	0	0	4.0	0.5
HZS	99	V	300-150	53	0	0	3.2	-0.5
IBE	99	V	300-150	2329	0	0	3.6	0.3
IBK	99	V	300-150	268	0	1	4.6	0.2
ICE	99	V	300-150	227	0	4	3.0	-0.0
ICL	99	V	300-150	671	0	0	4.2	-0.5
ICV	99	V	300-150	242	0	0	3.9	-0.2
IFA	99	V	300-150	20	90	0	38.4	-3.8
IJM	99	V	300-150	81	0	0	4.0	-0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
ISS	99	V	300-150	199	0	0	4.1	-0.3
JAF	99	V	300-150	1046	6	0	6.7	-0.2
JAI	99	V	300-150	1580	0	0	3.2	0.3
JAS	99	V	300-150	90	0	0	3.5	-0.2
JJA	99	V	300-150	46	0	2	5.8	1.5
JME	99	V	300-150	45	0	0	4.6	-0.6
JST	99	V	300-150	2791	2	0	9.1	0.7
JTS	99	V	300-150	54	0	0	4.8	-0.7
KAC	99	V	300-150	1550	0	0	3.3	0.5
KAI	99	V	300-150	57	0	0	7.0	0.1
KAL	99	V	300-150	1441	0	0	4.3	0.7
KAY	99	V	300-150	130	0	0	3.4	-0.1
KFE	99	V	300-150	32	0	0	3.8	0.3
KIW	99	V	300-150	162	0	0	5.3	1.9
KLM	99	V	300-150	19074	5	0	5.9	0.0
KQA	99	V	300-150	240	0	0	7.5	0.7
LAN	99	V	300-150	2265	10	0	9.8	-0.2
LDX	99	V	300-150	36	0	0	3.5	0.6
LEA	99	V	300-150	66	0	0	4.5	0.6
LNI	99	V	300-150	56	0	0	3.0	0.8
LNX	99	V	300-150	38	0	0	4.7	-1.6
LOT	99	V	300-150	3544	15	0	13.2	-0.2
LXJ	99	V	300-150	100	0	0	3.1	-0.8
MAS	99	V	300-150	628	0	0	3.3	0.5
MAU	99	V	300-150	258	0	0	4.6	1.0
MED	99	V	300-150	79	0	0	3.5	-0.3
MJF	99	V	300-150	22	0	0	4.0	-0.6
MLM	99	V	300-150	69	0	0	3.2	-0.1
MMD	99	V	300-150	512	0	0	3.6	0.1
MPH	99	V	300-150	755	0	0	3.5	-0.8
MSR	99	V	300-150	1356	0	0	3.3	0.3
NAS	99	V	300-150	43	0	0	3.8	-0.6
NAX	99	V	300-150	9728	13	0	10.4	0.0
NCA	99	V	300-150	265	0	0	3.8	-0.7
NJE	99	V	300-150	319	0	0	3.5	0.3
NOS	99	V	300-150	414	2	0	5.3	-0.8
NRS	99	V	300-150	7431	18	0	12.2	-0.0
NWS	99	V	300-150	661	0	0	3.1	0.2
OAE	99	V	300-150	929	0	0	3.8	0.1
OMA	99	V	300-150	670	0	0	4.0	1.0
PAC	99	V	300-150	179	0	0	5.0	0.6
PAL	99	V	300-150	1206	0	0	3.9	0.8
PIA	99	V	300-150	138	0	0	3.3	0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
PJZ	99	V	300-150	25	0	0	3.8	1.1
PLM	99	V	300-150	26	0	0	5.0	1.3
PRD	99	V	300-150	32	0	0	3.3	0.4
PRI	99	V	300-150	1333	0	0	4.0	0.4
PVJ	99	V	300-150	53	0	0	4.0	0.6
QAF	99	V	300-150	22	0	0	3.4	0.1
QFA	99	V	300-150	17498	1	0	4.7	0.4
QQE	99	V	300-150	95	0	0	5.9	-0.6
QTR	99	V	300-150	14807	0	0	3.8	0.3
RAM	99	V	300-150	442	9	0	7.4	0.1
RBA	99	V	300-150	179	0	0	5.3	0.0
RCH	99	V	300-150	4420	0	0	4.2	0.2
RDN	99	V	300-150	53	0	0	4.6	0.3
RJA	99	V	300-150	1460	15	0	10.1	-0.1
ROJ	99	V	300-150	37	0	0	2.9	0.7
ROM	99	V	300-150	46	0	0	3.0	-0.2
ROU	99	V	300-150	4648	0	0	4.1	0.1
RRR	99	V	300-150	138	0	0	3.2	0.1
RZO	99	V	300-150	22	0	9	5.6	0.7
SAM	99	V	300-150	186	0	0	4.2	0.3
SAS	99	V	300-150	4834	0	0	3.2	0.1
SCX	99	V	300-150	23	4	0	3.7	0.1
SDM	99	V	300-150	101	0	0	3.3	0.9
SHE	99	V	300-150	51	0	0	3.1	0.3
SIA	99	V	300-150	3472	0	0	3.7	0.1
SIO	99	V	300-150	46	0	0	3.3	0.5
SJE	99	V	300-150	23	0	0	5.2	-0.5
SLM	99	V	300-150	123	0	0	2.6	0.1
SOO	99	V	300-150	492	0	0	3.7	-0.1
SPA	99	V	300-150	95	0	0	4.1	0.6
SVA	99	V	300-150	5266	1	0	4.2	0.4
SVW	99	V	300-150	177	0	0	3.3	-0.3
SWR	99	V	300-150	10818	0	0	3.5	0.3
TAM	99	V	300-150	300	0	1	3.7	0.6
TAP	99	V	300-150	1428	0	0	3.9	0.8
TAR	99	V	300-150	330	0	0	3.4	0.2
TAY	99	V	300-150	471	0	0	4.3	0.6
TBJ	99	V	300-150	37	0	0	3.3	0.6
TCX	99	V	300-150	6169	0	0	3.5	0.4
TFL	99	V	300-150	1663	10	0	8.7	-0.2
TGW	99	V	300-150	63	0	0	4.4	0.8
THA	99	V	300-150	443	5	0	6.5	1.0
THT	99	V	300-150	3760	0	0	4.2	0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
THY	99	V	300-150	9529	0	0	3.5	0.2
TMN	99	V	300-150	45	0	20	3.5	0.6
TOM	99	V	300-150	6554	15	0	9.8	0.0
TOW	99	V	300-150	71	0	0	3.3	0.0
TSC	99	V	300-150	13015	0	0	3.5	0.2
TWB	99	V	300-150	26	0	0	4.6	1.9
TWY	99	V	300-150	295	0	0	4.1	0.0
UAE	99	V	300-150	15782	0	0	3.5	0.3
UAL	99	V	300-150	85388	2	2	5.5	0.2
ULC	99	V	300-150	77	0	0	4.3	0.4
UPS	99	V	300-150	5336	0	0	3.8	0.3
UZB	99	V	300-150	97	0	1	12.3	-0.0
VCN	99	V	300-150	33	0	0	3.9	0.1
VIR	99	V	300-150	24539	3	0	5.5	-0.0
VJT	99	V	300-150	963	51	0	20.8	0.3
VMP	99	V	300-150	89	0	0	4.0	0.2
VOZ	99	V	300-150	5798	0	0	3.9	0.5
WGN	99	V	300-150	23	0	4	7.0	-1.0
WGT	99	V	300-150	53	0	0	4.2	0.3
WJA	99	V	300-150	4864	0	0	3.9	0.1
WOW	99	V	300-150	3029	0	0	3.0	0.2
WWI	99	V	300-150	76	0	0	2.8	-0.6
XAX	99	V	300-150	482	0	0	3.5	0.6
XLF	99	V	300-150	1583	0	0	3.5	0.5



## 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 : MAY 2018  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	50	29	22.2	20.0
01001	00	Z	50	28	19.0	14.0
01028	12	Z	50	30	10.5	8.1
01028	00	Z	50	31	9.2	5.9
01400	00	Z	50	27	88.1	85.7
01400	12	Z	50	24	79.7	75.2
01415	12	Z	50	31	18.0	16.8
01415	00	Z	50	31	20.1	19.6
02365	12	Z	50	28	12.2	11.2
02365	00	Z	50	19	19.3	18.9
02591	12	Z	50	31	17.0	16.4
02591	00	Z	50	31	24.2	23.9
02836	00	Z	50	30	11.0	8.2
02836	12	Z	50	29	13.0	10.5
02963	00	Z	50	23	15.9	15.1
02963	12	Z	50	29	12.4	10.4
03005	00	Z	50	30	15.2	14.1
03005	12	Z	50	29	17.5	16.3
03238	00	Z	50	31	17.8	17.1
03808	12	Z	50	30	16.3	14.7
03808	00	Z	50	31	18.2	17.7
03918	00	Z	50	29	23.4	23.0
03918	12	Z	50	6	26.1	25.8
03953	12	Z	50	28	31.1	28.3
03953	00	Z	50	29	18.9	17.5
04018	00	Z	50	59	18.4	13.3
04018	12	Z	50	60	21.7	16.7
04220	00	Z	50	31	73.4	3.1
04220	12	Z	50	31	18.2	13.9
04270	00	Z	50	31	17.0	13.1
04270	12	Z	50	30	21.0	20.0
04320	12	Z	50	30	21.1	19.0
04320	00	Z	50	31	15.0	13.9
04339	12	Z	50	31	23.2	20.9
04339	00	Z	50	31	21.7	15.3
04360	12	Z	50	21	51.4	49.2
04360	00	Z	50	25	40.9	36.8
06011	00	Z	50	20	21.4	14.2
06011	12	Z	50	25	26.7	23.8

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	50	5	26.3	25.0
06260	00	Z	50	30	18.4	17.4
06610	00	Z	50	31	18.2	16.5
06610	12	Z	50	32	19.3	18.0
07110	00	Z	50	27	43.4	42.8
07110	12	Z	50	30	41.9	40.9
07510	12	Z	50	28	50.5	49.4
07510	00	Z	50	27	45.1	43.9
07645	12	Z	50	30	39.6	36.6
07645	00	Z	50	29	30.6	29.3
07761	00	Z	50	28	33.0	31.8
07761	12	Z	50	30	35.5	34.0
08001	00	Z	50	23	20.0	18.8
08001	12	Z	50	28	22.8	20.3
08221	12	Z	50	31	18.7	18.0
08221	00	Z	50	14	21.7	19.8
08302	00	Z	50	30	16.3	15.2
08302	12	Z	50	30	14.9	13.0
08508	12	Z	50	30	19.5	18.8
08522	12	Z	50	30	28.4	26.0
08579	12	Z	50	28	31.6	28.6
10035	00	Z	50	1	26.8	26.8
10035	12	Z	50	31	27.6	27.3
10393	00	Z	50	31	17.7	17.0
10393	12	Z	50	31	14.2	13.1
10410	00	Z	50	30	17.1	16.1
10410	12	Z	50	28	13.6	12.0
10739	00	Z	50	29	17.8	17.4
10739	12	Z	50	30	18.2	17.2
11035	12	Z	50	31	21.1	20.3
11035	00	Z	50	31	26.9	26.3
12982	12	Z	50	20	31.6	30.3
12982	00	Z	50	17	19.2	17.7
16080	00	Z	50	30	14.4	12.4
16080	12	Z	50	31	14.7	11.9
16245	12	Z	50	27	23.5	18.1
16245	00	Z	50	29	19.8	16.2
16320	00	Z	50	29	22.8	21.8
16320	12	Z	50	30	25.3	22.7
16429	12	Z	50	29	17.2	15.2
16429	00	Z	50	31	18.3	17.6
16622	00	Z	50	22	32.9	32.2
16754	00	Z	50	20	27.2	23.6

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	50	30	22.7	21.4
26435	00	Z	50	11	16.2	15.3
5QPW8X	00	Z	50	7	36.0	34.9
5QPW8X	12	Z	50	8	38.9	37.1
60018	00	Z	50	29	22.7	21.8
60018	12	Z	50	30	15.9	14.7
7JUNA4	12	Z	50	9	74.3	71.8
7JUNA4	00	Z	50	7	33.8	25.4
ASDE09	12	Z	50	2	20.1	20.1
ASFR2	00	Z	50	0	0.0	0.0
ASFR2	12	Z	50	0	0.0	0.0
ASFR3	00	Z	50	2	47.9	47.9
ASFR3	12	Z	50	1	8.5	8.5
ASFR4	12	Z	50	4	44.3	42.3
ASFR4	00	Z	50	10	88.1	65.5
FHM5UJ	00	Z	50	1	0.1	-0.1
FHM5UJ	12	Z	50	1	12.1	12.1
FPUW5G	12	Z	50	19	19.4	16.6
HTXUH4	12	Z	50	0	0.0	0.0
HTXUH4	00	Z	50	0	0.0	0.0
XKQLWQ	12	Z	50	23	36.9	35.1
XQFJRG	12	Z	50	8	22.4	19.7
XQFJRG	00	Z	50	5	18.4	16.1
XWHDEA	00	Z	50	0	0.0	0.0
XWHDEA	12	Z	50	0	0.0	0.0
YLV96W	12	Z	50	2	62.4	62.3
YLV96W	00	Z	50	0	0.0	0.0

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

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 50 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : MAY 2018  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	50	29	3.2	-0.2	-0.8
01001	00	V	50	27	2.7	0.2	0.0
01028	12	V	50	30	2.7	-0.1	-0.7
01028	00	V	50	30	3.2	0.5	-0.5
01400	00	V	50	27	3.8	0.8	0.0
01400	12	V	50	24	3.4	0.8	-0.4
01415	12	V	50	31	3.2	0.5	-1.4
01415	00	V	50	30	3.5	0.2	-0.6
02365	12	V	50	27	3.3	0.1	-0.7
02365	00	V	50	12	2.3	-0.1	0.5
02591	12	V	50	30	3.3	0.3	0.0
02591	00	V	50	28	2.9	0.1	0.5
02836	00	V	50	29	3.1	-0.2	-0.1
02836	12	V	50	28	2.6	-0.1	-0.3
02963	00	V	50	15	3.3	0.0	-1.2
02963	12	V	50	27	3.2	0.2	-0.8
03005	00	V	50	29	3.1	0.2	-1.2
03005	12	V	50	29	2.9	0.5	-0.7
03238	00	V	50	30	3.1	-0.2	-0.1
03808	12	V	50	30	3.0	0.2	-0.2
03808	00	V	50	30	3.0	-0.1	0.5
03918	00	V	50	27	3.8	0.5	0.1
03918	12	V	50	6	2.3	0.2	-0.1
03953	12	V	50	28	3.1	-0.3	-0.4
03953	00	V	50	28	2.7	0.1	0.0
04018	00	V	50	24	3.8	0.3	-0.6
04018	12	V	50	27	3.2	0.6	0.4
04220	00	V	50	30	3.0	-0.5	0.3
04220	12	V	50	30	3.5	0.7	-0.2
04270	00	V	50	30	5.0	-1.1	-0.8
04270	12	V	50	30	4.5	1.0	-0.3
04320	12	V	50	30	3.5	-0.1	-0.5
04320	00	V	50	30	2.5	0.6	-0.4
04339	12	V	50	31	3.8	0.8	0.0
04339	00	V	50	30	3.7	0.3	-0.6
04360	12	V	50	21	3.2	-0.1	-0.2
04360	00	V	50	24	3.6	0.0	0.6
06011	00	V	50	20	3.0	0.3	-0.2
06011	12	V	50	25	3.0	0.1	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	50	5	4.9	1.7	1.9
06260	00	V	50	29	3.3	0.2	0.0
06610	00	V	50	30	3.3	0.7	-0.2
06610	12	V	50	31	3.2	0.5	0.4
07110	00	V	50	26	2.8	0.3	0.2
07110	12	V	50	30	3.5	1.0	0.3
07510	12	V	50	28	3.5	0.5	-0.5
07510	00	V	50	26	3.3	0.5	-0.2
07645	12	V	50	30	3.0	0.7	-0.3
07645	00	V	50	28	3.0	0.1	-0.1
07761	00	V	50	27	3.1	0.7	-0.1
07761	12	V	50	30	3.3	0.8	-0.2
08001	00	V	50	17	2.9	0.4	0.9
08001	12	V	50	27	3.1	0.4	0.3
08221	12	V	50	31	4.4	1.2	0.2
08221	00	V	50	14	2.5	0.5	0.1
08302	00	V	50	29	4.3	0.4	-0.1
08302	12	V	50	30	3.6	0.7	0.4
08508	12	V	50	30	3.0	-0.2	0.6
08522	12	V	50	30	3.9	-0.1	0.8
08579	12	V	50	27	3.8	0.4	0.4
10035	00	V	50	1	2.4	1.9	1.4
10035	12	V	50	30	3.1	0.3	-0.2
10393	00	V	50	29	3.2	0.0	-0.6
10393	12	V	50	31	3.1	0.8	-0.3
10410	00	V	50	29	3.3	0.7	0.8
10410	12	V	50	28	3.3	0.8	0.1
10739	00	V	50	29	3.5	0.9	-0.6
10739	12	V	50	30	3.1	0.5	-0.6
11035	12	V	50	31	3.4	0.6	-0.1
11035	00	V	50	27	3.1	0.9	0.5
12982	12	V	50	20	3.2	1.1	-0.2
12982	00	V	50	17	3.7	1.9	1.1
16080	00	V	50	28	3.7	1.0	-0.5
16080	12	V	50	31	3.3	1.4	0.1
16245	12	V	50	26	3.3	1.2	0.0
16245	00	V	50	27	3.7	0.6	-0.2
16320	00	V	50	27	4.4	1.5	0.0
16320	12	V	50	27	4.0	0.9	1.2
16429	12	V	50	28	3.0	1.1	0.6
16429	00	V	50	30	3.4	0.8	-0.1
16622	00	V	50	13	4.5	2.4	-0.2
16754	00	V	50	11	4.9	0.7	-1.2

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	50	7	4.3	1.7	-2.0
26435	00	V	50	7	2.4	-0.1	0.2
5QPW8X	00	V	50	7	2.9	-1.1	0.7
5QPW8X	12	V	50	8	4.5	-2.0	-0.3
60018	00	V	50	27	3.7	1.1	-0.9
60018	12	V	50	30	4.3	-0.3	1.4
7JUNA4	12	V	50	9	3.2	0.2	0.9
7JUNA4	00	V	50	7	2.6	1.1	0.5
ASDE09	12	V	50	1	3.7	0.6	-3.7
ASFR2	00	V	50	0	0.0	0.0	0.0
ASFR2	12	V	50	0	0.0	0.0	0.0
ASFR3	00	V	50	2	2.0	0.2	1.6
ASFR3	12	V	50	1	4.3	0.0	4.3
ASFR4	12	V	50	4	3.6	0.7	0.5
ASFR4	00	V	50	10	3.5	0.6	0.8
FHM5UJ	00	V	50	1	2.7	1.5	-2.2
FHM5UJ	12	V	50	1	1.1	-0.9	-0.7
FPUW5G	12	V	50	18	4.3	0.2	0.5
HTXUH4	12	V	50	0	0.0	0.0	0.0
HTXUH4	00	V	50	0	0.0	0.0	0.0
XKQLWQ	12	V	50	22	3.9	-0.1	0.6
XQFJRG	12	V	50	6	3.3	0.2	0.3
XQFJRG	00	V	50	4	5.1	4.6	-0.7
XWHDEA	00	V	50	0	0.0	0.0	0.0
XWHDEA	12	V	50	0	0.0	0.0	0.0
YLV96W	12	V	50	2	3.1	0.4	-2.3
YLV96W	00	V	50	0	0.0	0.0	0.0

### 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 : MAY 2018  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	100	29	10.3	6.9
01001	00	Z	100	29	9.9	1.0
01028	12	Z	100	30	5.6	-3.7
01028	00	Z	100	31	8.5	-5.9
01400	00	Z	100	30	75.9	73.3
01400	12	Z	100	28	69.2	62.8
01415	12	Z	100	31	7.2	5.4
01415	00	Z	100	31	7.1	5.8
02365	12	Z	100	31	4.8	1.7
02365	00	Z	100	32	7.0	6.4
02591	12	Z	100	31	7.1	6.7
02591	00	Z	100	31	12.8	12.6
02836	00	Z	100	30	5.4	-1.4
02836	12	Z	100	30	6.7	0.5
02963	00	Z	100	29	5.0	4.4
02963	12	Z	100	31	4.2	1.0
03005	00	Z	100	36	4.8	1.6
03005	12	Z	100	32	5.6	3.9
03238	00	Z	100	31	6.3	4.0
03808	12	Z	100	31	6.0	3.2
03808	00	Z	100	31	5.6	4.7
03918	00	Z	100	31	10.1	9.4
03918	12	Z	100	6	11.2	10.9
03953	12	Z	100	29	51.9	1.9
03953	00	Z	100	29	5.4	2.7
04018	00	Z	100	34	7.8	-1.7
04018	12	Z	100	32	8.0	-0.3
04220	00	Z	100	31	4.9	3.6
04220	12	Z	100	31	12.3	2.5
04270	00	Z	100	31	8.8	0.4
04270	12	Z	100	30	8.6	6.1
04320	12	Z	100	30	8.4	5.7
04320	00	Z	100	31	5.9	0.7
04339	12	Z	100	31	10.7	5.1
04339	00	Z	100	31	12.9	2.8
04360	12	Z	100	24	40.6	39.0
04360	00	Z	100	28	30.7	28.6
06011	00	Z	100	21	13.9	2.0
06011	12	Z	100	25	12.1	8.1



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	100	5	12.9	10.0
06260	00	Z	100	30	7.7	5.3
06610	00	Z	100	32	8.1	5.1
06610	12	Z	100	32	7.1	5.2
07110	00	Z	100	27	24.3	23.6
07110	12	Z	100	30	23.2	22.3
07510	12	Z	100	29	30.3	29.2
07510	00	Z	100	29	26.8	25.6
07645	12	Z	100	30	22.5	19.1
07645	00	Z	100	30	14.1	11.6
07761	00	Z	100	30	17.0	13.8
07761	12	Z	100	31	16.7	15.5
08001	00	Z	100	29	8.2	6.6
08001	12	Z	100	31	9.8	7.0
08221	12	Z	100	31	8.1	6.2
08221	00	Z	100	15	10.3	7.6
08302	00	Z	100	30	5.2	2.8
08302	12	Z	100	30	7.0	0.0
08508	12	Z	100	31	12.0	11.4
08522	12	Z	100	30	16.4	13.1
08579	12	Z	100	28	13.9	11.6
10035	00	Z	100	1	16.9	16.9
10035	12	Z	100	31	18.3	17.4
10393	00	Z	100	32	7.2	6.3
10393	12	Z	100	31	4.6	2.7
10410	00	Z	100	30	6.3	4.9
10410	12	Z	100	30	5.0	2.7
10739	00	Z	100	31	7.6	6.2
10739	12	Z	100	30	6.7	5.4
11035	12	Z	100	31	8.1	7.6
11035	00	Z	100	31	14.9	14.2
12982	12	Z	100	20	14.3	13.1
12982	00	Z	100	18	9.1	7.0
16080	00	Z	100	31	6.0	2.2
16080	12	Z	100	31	6.0	0.2
16245	12	Z	100	28	13.4	1.3
16245	00	Z	100	30	9.7	4.4
16320	00	Z	100	30	13.4	11.5
16320	12	Z	100	32	9.1	6.2
16429	12	Z	100	31	5.9	1.7
16429	00	Z	100	31	7.2	5.8
16622	00	Z	100	28	20.4	19.4
16754	00	Z	100	30	16.2	13.3

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	100	30	8.4	4.0
26435	00	Z	100	15	10.8	6.8
5QPW8X	00	Z	100	11	22.3	21.2
5QPW8X	12	Z	100	10	22.5	19.4
60018	00	Z	100	31	13.8	12.8
60018	12	Z	100	31	10.0	8.4
7JUNA4	12	Z	100	11	43.8	41.1
7JUNA4	00	Z	100	14	25.5	14.8
ASDE09	12	Z	100	2	5.9	5.9
ASFR2	00	Z	100	0	0.0	0.0
ASFR2	12	Z	100	0	0.0	0.0
ASFR3	00	Z	100	4	29.4	28.8
ASFR3	12	Z	100	2	21.5	15.4
ASFR4	12	Z	100	7	24.9	23.6
ASFR4	00	Z	100	14	72.3	42.4
FHM5UJ	00	Z	100	1	14.2	-14.2
FHM5UJ	12	Z	100	3	10.3	8.2
FPUW5G	12	Z	100	22	8.4	4.7
HTXUH4	12	Z	100	1	12.1	12.1
HTXUH4	00	Z	100	1	4.6	-4.6
XKQLWQ	12	Z	100	24	21.6	18.9
XQFJRG	12	Z	100	10	6.8	2.2
XQFJRG	00	Z	100	7	4.8	3.3
XWHDEA	00	Z	100	0	0.0	0.0
XWHDEA	12	Z	100	0	0.0	0.0
YLV96W	12	Z	100	3	34.5	34.2
YLV96W	00	Z	100	6	279.2	279.2

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

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 100 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : MAY 2018  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	100	29	3.7	0.8	-0.5
01001	00	V	100	27	3.2	0.5	-1.0
01028	12	V	100	30	3.0	0.4	-1.2
01028	00	V	100	30	3.6	-0.3	-0.6
01400	00	V	100	29	2.5	0.2	0.0
01400	12	V	100	28	2.4	0.3	0.4
01415	12	V	100	31	2.8	-0.2	-0.3
01415	00	V	100	30	2.7	-0.2	0.2
02365	12	V	100	31	2.9	0.3	0.0
02365	00	V	100	29	3.1	0.0	0.1
02591	12	V	100	31	2.8	0.8	0.2
02591	00	V	100	30	3.0	-0.1	-0.2
02836	00	V	100	29	4.2	-1.1	-0.6
02836	12	V	100	30	4.1	-0.4	-0.6
02963	00	V	100	28	2.5	0.1	-0.1
02963	12	V	100	30	2.8	0.3	0.6
03005	00	V	100	30	4.2	-0.6	-0.2
03005	12	V	100	31	2.7	0.3	-0.1
03238	00	V	100	30	3.0	0.1	0.6
03808	12	V	100	31	3.0	0.3	0.0
03808	00	V	100	30	2.9	0.1	0.2
03918	00	V	100	29	3.3	-0.4	-0.1
03918	12	V	100	6	3.1	0.3	-0.8
03953	12	V	100	29	3.1	0.1	0.1
03953	00	V	100	28	2.4	0.2	0.3
04018	00	V	100	29	3.3	-1.2	0.3
04018	12	V	100	31	3.8	0.4	0.4
04220	00	V	100	30	3.7	0.8	0.1
04220	12	V	100	31	3.1	0.3	0.3
04270	00	V	100	30	5.6	-1.4	-0.8
04270	12	V	100	30	4.6	-0.8	0.0
04320	12	V	100	30	3.0	-0.6	-0.4
04320	00	V	100	30	3.4	-0.1	-0.7
04339	12	V	100	31	4.0	-0.1	-0.2
04339	00	V	100	30	3.7	-0.2	-0.1
04360	12	V	100	24	3.3	-0.5	0.0
04360	00	V	100	27	3.6	-0.3	-0.3
06011	00	V	100	21	3.3	0.1	0.7
06011	12	V	100	25	3.1	0.8	0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	100	5	2.9	1.0	-0.2
06260	00	V	100	29	2.5	-0.2	0.1
06610	00	V	100	30	3.2	0.0	0.3
06610	12	V	100	31	2.6	0.0	-0.1
07110	00	V	100	26	2.7	0.4	-0.4
07110	12	V	100	30	2.4	-0.6	-0.2
07510	12	V	100	29	3.4	0.1	0.9
07510	00	V	100	28	3.1	0.5	0.1
07645	12	V	100	30	2.8	0.3	-0.1
07645	00	V	100	29	3.0	-0.2	0.5
07761	00	V	100	29	3.3	0.3	0.7
07761	12	V	100	31	3.5	0.2	-0.6
08001	00	V	100	28	3.4	0.4	0.3
08001	12	V	100	31	3.2	0.9	0.9
08221	12	V	100	31	3.8	0.7	-0.5
08221	00	V	100	15	4.1	1.3	0.7
08302	00	V	100	29	3.9	1.2	1.0
08302	12	V	100	30	3.2	0.6	0.3
08508	12	V	100	31	3.0	-0.2	0.7
08522	12	V	100	30	2.8	1.4	0.2
08579	12	V	100	27	3.8	1.4	0.9
10035	00	V	100	1	2.9	0.0	2.9
10035	12	V	100	31	2.7	-0.2	0.9
10393	00	V	100	30	2.8	0.8	0.2
10393	12	V	100	31	2.5	0.3	0.4
10410	00	V	100	29	2.6	0.7	0.4
10410	12	V	100	30	2.4	0.3	0.0
10739	00	V	100	30	2.8	0.4	-0.4
10739	12	V	100	30	2.2	-0.2	0.1
11035	12	V	100	31	2.8	0.5	0.3
11035	00	V	100	28	3.1	0.1	-0.1
12982	12	V	100	20	3.4	0.5	0.2
12982	00	V	100	18	3.5	1.4	1.3
16080	00	V	100	29	3.3	0.4	-0.3
16080	12	V	100	31	3.0	0.6	-0.3
16245	12	V	100	28	3.8	0.5	-1.2
16245	00	V	100	28	3.3	0.5	-0.9
16320	00	V	100	28	4.2	0.5	-0.5
16320	12	V	100	31	3.3	-0.6	0.3
16429	12	V	100	31	3.8	1.3	0.1
16429	00	V	100	30	4.3	1.2	0.7
16622	00	V	100	25	4.0	0.7	0.7
16754	00	V	100	29	4.9	1.4	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	100	6	4.2	1.9	-1.7
26435	00	V	100	15	2.5	0.4	0.9
5QPW8X	00	V	100	9	3.4	-1.2	0.8
5QPW8X	12	V	100	9	3.4	0.4	1.1
60018	00	V	100	29	4.0	0.8	0.3
60018	12	V	100	31	4.3	1.7	-0.2
7JUNA4	12	V	100	10	3.4	-0.1	0.4
7JUNA4	00	V	100	10	4.4	-0.2	0.7
ASDE09	12	V	100	1	2.1	-1.6	-1.4
ASFR2	00	V	100	0	0.0	0.0	0.0
ASFR2	12	V	100	0	0.0	0.0	0.0
ASFR3	00	V	100	3	4.5	0.8	2.7
ASFR3	12	V	100	2	2.4	0.8	-1.1
ASFR4	12	V	100	6	2.9	1.1	-0.3
ASFR4	00	V	100	12	3.4	0.7	-0.5
FHM5UJ	00	V	100	1	1.1	-0.7	-0.8
FHM5UJ	12	V	100	3	2.6	-0.2	-1.3
FPUW5G	12	V	100	20	3.9	-0.4	0.2
HTXUH4	12	V	100	1	3.7	2.3	2.9
HTXUH4	00	V	100	1	2.8	1.2	-2.5
XKQLWQ	12	V	100	23	3.7	-0.8	1.0
XQFJRG	12	V	100	6	3.7	-1.0	0.4
XQFJRG	00	V	100	4	3.4	-1.9	1.3
XWHDEA	00	V	100	0	0.0	0.0	0.0
XWHDEA	12	V	100	0	0.0	0.0	0.0
YLV96W	12	V	100	3	4.8	-3.4	0.6
YLV96W	00	V	100	2	6.8	-3.5	1.7

#### 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 : MAY 2018  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	500	31	7.0	3.3
01001	00	Z	500	31	7.6	2.3
01028	12	Z	500	30	4.5	-3.0
01028	00	Z	500	31	6.0	-4.0
01400	00	Z	500	30	73.5	70.8
01400	12	Z	500	28	68.0	61.9
01415	12	Z	500	31	5.0	4.3
01415	00	Z	500	31	5.6	3.9
02365	12	Z	500	31	4.1	3.6
02365	00	Z	500	32	6.0	5.7
02591	12	Z	500	31	8.7	8.6
02591	00	Z	500	31	9.9	9.7
02836	00	Z	500	30	3.6	2.4
02836	12	Z	500	30	5.1	2.1
02963	00	Z	500	29	5.0	4.2
02963	12	Z	500	31	4.2	3.7
03005	00	Z	500	36	3.5	0.3
03005	12	Z	500	32	2.1	0.1
03238	00	Z	500	31	4.8	3.9
03808	12	Z	500	31	3.7	2.0
03808	00	Z	500	31	3.6	3.1
03918	00	Z	500	31	11.5	11.1
03918	12	Z	500	6	11.9	11.3
03953	12	Z	500	31	6.2	3.3
03953	00	Z	500	30	4.8	-0.3
04018	00	Z	500	33	3.7	0.4
04018	12	Z	500	31	4.2	-1.1
04220	00	Z	500	31	4.0	2.4
04220	12	Z	500	31	12.9	-0.2
04270	00	Z	500	31	3.9	-0.6
04270	12	Z	500	31	5.7	-2.3
04320	12	Z	500	30	3.4	1.4
04320	00	Z	500	31	4.2	0.7
04339	12	Z	500	31	6.4	0.5
04339	00	Z	500	31	13.6	2.5
04360	12	Z	500	29	40.4	39.4
04360	00	Z	500	30	39.4	39.2
06011	00	Z	500	29	7.4	2.5
06011	12	Z	500	25	6.7	3.9

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	500	5	3.5	2.4
06260	00	Z	500	30	5.7	0.4
06610	00	Z	500	32	4.1	3.5
06610	12	Z	500	33	3.0	1.1
07110	00	Z	500	29	9.8	8.9
07110	12	Z	500	31	10.1	9.2
07510	12	Z	500	32	17.3	16.4
07510	00	Z	500	32	17.4	16.8
07645	12	Z	500	31	8.6	5.9
07645	00	Z	500	32	5.5	3.5
07761	00	Z	500	31	7.7	1.7
07761	12	Z	500	31	4.9	3.2
08001	00	Z	500	31	5.9	5.1
08001	12	Z	500	31	5.8	4.6
08221	12	Z	500	31	6.4	5.0
08221	00	Z	500	18	6.3	4.6
08302	00	Z	500	30	3.3	-0.3
08302	12	Z	500	30	5.1	-2.6
08508	12	Z	500	31	7.0	6.7
08522	12	Z	500	30	6.6	5.6
08579	12	Z	500	28	5.5	4.6
10035	00	Z	500	1	15.4	15.4
10035	12	Z	500	32	16.1	15.9
10393	00	Z	500	33	3.5	2.5
10393	12	Z	500	31	2.7	1.3
10410	00	Z	500	30	3.1	2.3
10410	12	Z	500	31	2.8	1.5
10739	00	Z	500	31	3.3	1.1
10739	12	Z	500	31	3.0	1.2
11035	12	Z	500	31	7.2	6.4
11035	00	Z	500	32	10.4	9.9
12982	12	Z	500	21	5.7	4.6
12982	00	Z	500	20	5.5	4.4
16080	00	Z	500	31	3.2	-0.7
16080	12	Z	500	31	4.5	-3.4
16245	12	Z	500	30	14.2	-4.8
16245	00	Z	500	30	2.4	-0.3
16320	00	Z	500	30	9.1	6.8
16320	12	Z	500	33	7.7	3.6
16429	12	Z	500	33	4.0	0.8
16429	00	Z	500	31	5.9	3.2
16622	00	Z	500	29	12.3	11.6
16754	00	Z	500	30	8.1	6.6

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	500	31	9.0	5.6
26435	00	Z	500	15	4.8	3.3
5QPW8X	00	Z	500	15	21.6	20.0
5QPW8X	12	Z	500	15	18.7	17.6
60018	00	Z	500	31	4.2	3.6
60018	12	Z	500	32	6.1	4.3
7JUNA4	12	Z	500	15	22.8	16.2
7JUNA4	00	Z	500	14	30.0	20.5
ASDE09	12	Z	500	2	7.2	7.2
ASFR2	00	Z	500	2	16.3	13.2
ASFR2	12	Z	500	4	18.8	18.7
ASFR3	00	Z	500	4	9.5	9.3
ASFR3	12	Z	500	2	7.9	7.7
ASFR4	12	Z	500	10	7.3	6.4
ASFR4	00	Z	500	17	8.8	6.5
FHM5UJ	00	Z	500	1	2.1	2.1
FHM5UJ	12	Z	500	3	4.6	2.8
FPUW5G	12	Z	500	23	4.6	-2.1
HTXUH4	12	Z	500	1	4.9	-4.9
HTXUH4	00	Z	500	1	5.2	5.2
XKQLWQ	12	Z	500	24	10.4	6.3
XQFJRG	12	Z	500	12	6.0	-4.4
XQFJRG	00	Z	500	9	8.3	-6.8
XWHDEA	00	Z	500	0	0.0	0.0
XWHDEA	12	Z	500	0	0.0	0.0
YLV96W	12	Z	500	11	68.9	39.3
YLV96W	00	Z	500	16	46.3	34.3



**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 : MAY 2018  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	500	31	3.1	-0.2	0.3
01001	00	V	500	30	3.3	0.4	-0.6
01028	12	V	500	30	3.6	-0.1	-1.3
01028	00	V	500	30	2.5	0.2	-0.3
01400	00	V	500	29	2.0	0.4	0.3
01400	12	V	500	28	2.2	-0.4	0.3
01415	12	V	500	31	2.3	0.0	0.3
01415	00	V	500	30	2.3	0.2	-0.2
02365	12	V	500	31	1.9	0.2	-0.1
02365	00	V	500	30	2.1	0.2	-0.2
02591	12	V	500	31	1.9	-0.4	0.1
02591	00	V	500	30	2.7	-0.3	-0.3
02836	00	V	500	29	2.8	0.9	-0.5
02836	12	V	500	30	3.3	1.2	-0.5
02963	00	V	500	28	2.4	0.1	-0.2
02963	12	V	500	31	2.2	0.4	-0.2
03005	00	V	500	30	3.3	-0.3	-0.4
03005	12	V	500	31	2.9	0.2	0.3
03238	00	V	500	30	3.7	0.7	-0.7
03808	12	V	500	31	3.5	0.5	0.6
03808	00	V	500	30	2.4	-0.1	0.1
03918	00	V	500	30	2.3	-0.4	0.6
03918	12	V	500	6	3.3	0.1	0.8
03953	12	V	500	31	2.7	0.0	0.2
03953	00	V	500	29	4.6	-0.6	0.3
04018	00	V	500	30	2.8	0.1	-0.2
04018	12	V	500	31	3.0	-0.2	0.1
04220	00	V	500	30	3.0	0.2	-0.3
04220	12	V	500	31	3.0	0.0	-0.4
04270	00	V	500	30	2.8	-0.2	0.8
04270	12	V	500	31	2.8	-0.4	0.1
04320	12	V	500	30	2.1	-0.4	-0.1
04320	00	V	500	30	3.1	-0.2	0.5
04339	12	V	500	31	3.5	0.1	0.5
04339	00	V	500	30	3.5	0.8	0.0
04360	12	V	500	29	2.8	-0.1	0.0
04360	00	V	500	29	3.2	0.6	-0.4
06011	00	V	500	29	3.1	0.0	-0.6
06011	12	V	500	25	2.4	-0.4	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	500	5	2.3	1.0	0.6
06260	00	V	500	29	2.1	-0.3	0.4
06610	00	V	500	30	2.9	-0.1	0.3
06610	12	V	500	31	2.8	-0.6	-0.1
07110	00	V	500	28	2.9	-0.6	0.7
07110	12	V	500	31	2.5	-0.2	0.0
07510	12	V	500	31	3.0	0.0	0.1
07510	00	V	500	30	2.6	-0.5	-0.2
07645	12	V	500	31	3.5	0.2	0.2
07645	00	V	500	30	3.0	-0.4	0.5
07761	00	V	500	30	2.8	-0.7	0.2
07761	12	V	500	31	2.9	0.0	0.3
08001	00	V	500	30	2.1	-0.1	0.5
08001	12	V	500	31	2.6	0.1	0.0
08221	12	V	500	31	2.2	0.2	0.2
08221	00	V	500	17	2.8	-0.1	0.1
08302	00	V	500	29	3.2	0.5	0.5
08302	12	V	500	30	4.1	0.0	-0.1
08508	12	V	500	31	2.1	0.1	-0.1
08522	12	V	500	30	2.0	0.2	-0.3
08579	12	V	500	28	2.8	-0.9	0.7
10035	00	V	500	1	3.5	-1.3	-3.3
10035	12	V	500	31	2.3	0.6	0.5
10393	00	V	500	30	3.0	-0.7	0.1
10393	12	V	500	31	2.5	0.0	0.1
10410	00	V	500	29	2.9	-0.3	0.0
10410	12	V	500	31	2.1	0.0	0.4
10739	00	V	500	30	3.4	-0.1	0.0
10739	12	V	500	31	2.4	-0.4	-0.1
11035	12	V	500	31	2.6	0.2	-0.4
11035	00	V	500	29	2.5	0.1	0.6
12982	12	V	500	21	2.2	0.2	0.2
12982	00	V	500	20	2.1	0.2	0.0
16080	00	V	500	29	3.8	-0.5	0.1
16080	12	V	500	31	3.1	0.0	-0.2
16245	12	V	500	30	2.7	0.3	-0.1
16245	00	V	500	28	2.7	0.4	-0.7
16320	00	V	500	28	3.2	0.2	-0.1
16320	12	V	500	31	2.4	-0.2	-0.3
16429	12	V	500	31	2.8	-0.1	0.4
16429	00	V	500	30	3.0	-0.2	0.5
16622	00	V	500	27	3.1	-0.1	0.5
16754	00	V	500	29	3.9	1.2	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	500	24	2.9	0.7	0.1
26435	00	V	500	15	2.1	0.8	-0.2
5QPW8X	00	V	500	11	2.9	0.3	-1.2
5QPW8X	12	V	500	12	3.1	-0.1	-0.7
60018	00	V	500	30	2.4	0.7	0.7
60018	12	V	500	31	2.3	0.6	0.2
7JUNA4	12	V	500	12	3.3	1.2	-0.1
7JUNA4	00	V	500	10	2.9	-0.5	1.2
ASDE09	12	V	500	1	1.5	0.5	1.4
ASFR2	00	V	500	2	1.7	1.0	-0.6
ASFR2	12	V	500	3	2.3	0.9	0.0
ASFR3	00	V	500	3	1.5	-0.8	-0.3
ASFR3	12	V	500	2	2.9	-0.2	1.7
ASFR4	12	V	500	9	1.8	0.7	-0.3
ASFR4	00	V	500	14	4.3	0.9	0.8
FHM5UJ	00	V	500	1	2.4	-2.1	-1.1
FHM5UJ	12	V	500	3	4.9	2.3	0.6
FPUW5G	12	V	500	21	3.3	0.0	-0.2
HTXUH4	12	V	500	1	2.3	2.1	-0.9
HTXUH4	00	V	500	1	1.3	1.2	-0.4
XKQLWQ	12	V	500	23	2.3	0.2	0.4
XQFJRG	12	V	500	7	3.6	1.0	-0.8
XQFJRG	00	V	500	5	2.3	0.2	0.1
XWHDEA	00	V	500	0	0.0	0.0	0.0
XWHDEA	12	V	500	0	0.0	0.0	0.0
YLV96W	12	V	500	9	3.4	0.6	0.1
YLV96W	00	V	500	9	2.4	0.4	0.0

#### 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 : MAY 2018  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	850	32	5.6	2.2
01001	00	Z	850	31	6.8	3.0
01028	12	Z	850	30	3.8	-2.7
01028	00	Z	850	31	4.0	-2.9
01400	00	Z	850	30	72.4	69.0
01400	12	Z	850	28	67.3	61.0
01415	12	Z	850	31	3.5	3.1
01415	00	Z	850	31	3.9	3.5
02365	12	Z	850	31	3.1	2.8
02365	00	Z	850	32	4.4	3.9
02591	12	Z	850	31	9.1	8.9
02591	00	Z	850	31	8.3	8.1
02836	00	Z	850	30	3.1	2.2
02836	12	Z	850	30	3.7	2.8
02963	00	Z	850	29	3.2	2.9
02963	12	Z	850	31	4.1	3.8
03005	00	Z	850	36	2.1	-0.9
03005	12	Z	850	32	2.0	-0.4
03238	00	Z	850	31	4.2	3.9
03808	12	Z	850	31	2.0	1.3
03808	00	Z	850	31	3.1	2.1
03918	00	Z	850	31	11.5	11.3
03918	12	Z	850	6	11.0	10.8
03953	12	Z	850	31	3.9	2.0
03953	00	Z	850	30	2.9	1.9
04018	00	Z	850	33	2.1	0.3
04018	12	Z	850	31	2.4	-1.0
04220	00	Z	850	31	4.0	3.5
04220	12	Z	850	31	14.0	0.4
04270	00	Z	850	31	2.7	1.5
04270	12	Z	850	31	3.2	1.8
04320	12	Z	850	30	3.0	1.0
04320	00	Z	850	31	3.3	0.7
04339	12	Z	850	31	3.6	1.9
04339	00	Z	850	31	15.8	4.5
04360	12	Z	850	30	43.7	43.4
04360	00	Z	850	31	43.1	42.3
06011	00	Z	850	29	5.1	4.4
06011	12	Z	850	26	4.5	3.9

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	850	5	3.8	2.8
06260	00	Z	850	30	6.1	-0.4
06610	00	Z	850	32	4.2	3.5
06610	12	Z	850	33	3.0	1.8
07110	00	Z	850	30	4.1	3.5
07110	12	Z	850	31	4.2	3.1
07510	12	Z	850	33	14.4	13.9
07510	00	Z	850	32	15.9	15.7
07645	12	Z	850	31	4.5	2.9
07645	00	Z	850	32	4.5	3.9
07761	00	Z	850	32	4.1	3.2
07761	12	Z	850	31	3.8	2.1
08001	00	Z	850	31	3.0	2.3
08001	12	Z	850	31	2.7	2.1
08221	12	Z	850	31	4.4	4.0
08221	00	Z	850	18	4.8	4.5
08302	00	Z	850	30	2.2	-0.7
08302	12	Z	850	30	3.6	-2.9
08508	12	Z	850	31	4.2	3.5
08522	12	Z	850	30	3.1	2.4
08579	12	Z	850	28	4.0	3.2
10035	00	Z	850	1	16.7	16.7
10035	12	Z	850	32	15.4	15.2
10393	00	Z	850	33	2.3	1.2
10393	12	Z	850	31	2.3	1.5
10410	00	Z	850	30	2.3	1.1
10410	12	Z	850	31	2.2	0.7
10739	00	Z	850	31	3.1	1.8
10739	12	Z	850	31	2.6	1.4
11035	12	Z	850	31	9.8	9.5
11035	00	Z	850	32	8.6	8.3
12982	12	Z	850	21	6.2	5.8
12982	00	Z	850	20	5.4	4.9
16080	00	Z	850	31	2.5	0.0
16080	12	Z	850	31	2.7	-0.4
16245	12	Z	850	30	15.3	-3.5
16245	00	Z	850	30	2.3	-0.4
16320	00	Z	850	30	9.5	8.1
16320	12	Z	850	33	9.6	6.5
16429	12	Z	850	33	3.1	1.3
16429	00	Z	850	31	4.3	2.4
16622	00	Z	850	30	11.5	11.1
16754	00	Z	850	31	5.4	4.5

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	850	31	4.6	3.7
26435	00	Z	850	15	3.0	2.1
5QPW8X	00	Z	850	15	23.0	21.8
5QPW8X	12	Z	850	15	23.4	22.9
60018	00	Z	850	31	2.4	1.7
60018	12	Z	850	32	2.5	0.2
7JUNA4	12	Z	850	15	24.8	14.8
7JUNA4	00	Z	850	14	32.7	22.7
ASDE09	12	Z	850	2	5.3	5.3
ASFR2	00	Z	850	6	11.8	10.4
ASFR2	12	Z	850	9	11.7	9.9
ASFR3	00	Z	850	7	5.3	3.4
ASFR3	12	Z	850	7	4.3	3.8
ASFR4	12	Z	850	12	8.2	0.4
ASFR4	00	Z	850	17	2.5	-0.9
FHM5UJ	00	Z	850	1	13.3	13.3
FHM5UJ	12	Z	850	3	2.9	2.2
FPUW5G	12	Z	850	23	5.3	-3.3
HTXUH4	12	Z	850	1	3.6	-3.6
HTXUH4	00	Z	850	1	3.6	3.6
XKQLWQ	12	Z	850	24	8.1	-0.1
XQFJRG	12	Z	850	12	7.5	-6.2
XQFJRG	00	Z	850	9	8.3	-8.2
XWHDEA	00	Z	850	0	0.0	0.0
XWHDEA	12	Z	850	0	0.0	0.0
YLV96W	12	Z	850	11	39.0	29.7
YLV96W	00	Z	850	16	7.6	1.8

**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 : MAY 2018  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	850	31	3.4	-0.1	0.3
01001	00	V	850	30	3.3	-0.5	-0.2
01028	12	V	850	30	3.0	0.3	-0.2
01028	00	V	850	30	2.2	0.2	-0.1
01400	00	V	850	29	1.9	0.6	0.3
01400	12	V	850	28	2.1	0.5	0.0
01415	12	V	850	31	2.1	0.5	-0.4
01415	00	V	850	30	2.3	0.1	0.6
02365	12	V	850	31	2.9	0.1	0.1
02365	00	V	850	30	2.6	-0.3	0.1
02591	12	V	850	31	2.1	0.3	0.2
02591	00	V	850	30	2.4	0.0	0.0
02836	00	V	850	29	3.2	1.0	0.1
02836	12	V	850	30	3.4	1.1	-0.3
02963	00	V	850	28	2.5	-0.8	-0.4
02963	12	V	850	31	2.5	-0.5	0.0
03005	00	V	850	30	2.5	0.1	-0.2
03005	12	V	850	31	2.9	0.0	-0.2
03238	00	V	850	30	1.8	0.2	-0.1
03808	12	V	850	31	2.3	0.5	0.0
03808	00	V	850	30	2.3	0.1	0.2
03918	00	V	850	30	2.5	-0.3	-0.2
03918	12	V	850	6	2.7	0.6	-0.8
03953	12	V	850	31	2.8	0.2	0.4
03953	00	V	850	29	2.5	0.3	0.7
04018	00	V	850	30	2.9	0.1	0.5
04018	12	V	850	31	2.9	0.0	0.4
04220	00	V	850	30	3.5	0.4	0.9
04220	12	V	850	31	3.0	-0.5	0.0
04270	00	V	850	30	3.3	-0.9	0.0
04270	12	V	850	31	3.3	0.2	-0.4
04320	12	V	850	30	2.7	0.1	0.7
04320	00	V	850	30	2.8	0.1	-0.4
04339	12	V	850	31	4.8	0.8	0.2
04339	00	V	850	30	4.9	1.4	0.7
04360	12	V	850	29	3.6	1.2	0.1
04360	00	V	850	29	6.0	1.5	0.5
06011	00	V	850	29	2.4	-0.2	-0.2
06011	12	V	850	26	2.5	0.4	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	850	5	3.2	-0.1	-0.2
06260	00	V	850	29	2.7	0.5	-0.3
06610	00	V	850	30	3.2	-0.4	-0.8
06610	12	V	850	31	2.7	0.5	0.6
07110	00	V	850	29	2.3	-0.1	0.1
07110	12	V	850	31	2.2	0.1	-0.1
07510	12	V	850	31	4.3	0.7	-0.5
07510	00	V	850	30	2.1	0.1	-0.5
07645	12	V	850	31	3.3	-0.9	-0.1
07645	00	V	850	30	2.9	0.1	0.8
07761	00	V	850	30	3.0	0.2	0.6
07761	12	V	850	31	2.4	0.3	-0.1
08001	00	V	850	30	2.6	0.9	0.2
08001	12	V	850	31	2.1	0.2	-0.2
08221	12	V	850	31	2.9	0.4	0.4
08221	00	V	850	17	3.2	1.2	0.8
08302	00	V	850	29	2.7	-0.4	0.9
08302	12	V	850	30	3.3	0.6	0.4
08508	12	V	850	31	2.4	0.5	-0.2
08522	12	V	850	30	3.2	-0.1	0.5
08579	12	V	850	28	3.5	-0.3	-0.1
10035	00	V	850	1	2.8	2.7	0.9
10035	12	V	850	31	1.9	0.3	-0.1
10393	00	V	850	30	2.3	0.2	-0.1
10393	12	V	850	31	2.4	0.9	0.1
10410	00	V	850	29	2.5	0.5	-0.5
10410	12	V	850	31	2.3	0.4	0.2
10739	00	V	850	30	2.6	0.2	0.0
10739	12	V	850	31	2.4	0.4	0.1
11035	12	V	850	31	2.4	0.4	0.8
11035	00	V	850	29	3.3	0.0	-0.3
12982	12	V	850	21	3.0	0.3	-0.3
12982	00	V	850	20	2.9	-0.7	-1.4
16080	00	V	850	29	3.6	-0.1	-0.9
16080	12	V	850	31	2.9	0.0	-0.8
16245	12	V	850	30	2.3	-1.0	-0.2
16245	00	V	850	28	2.6	-0.4	0.5
16320	00	V	850	28	2.9	-0.6	-0.2
16320	12	V	850	31	3.5	1.3	-0.8
16429	12	V	850	31	3.2	-0.3	1.6
16429	00	V	850	30	2.8	-0.4	0.4
16622	00	V	850	27	2.5	-0.3	0.2
16754	00	V	850	30	2.6	-0.4	-0.6



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	850	31	3.5	-0.2	0.7
26435	00	V	850	15	2.3	0.5	0.5
5QPW8X	00	V	850	11	2.3	-0.2	-0.5
5QPW8X	12	V	850	12	2.9	-0.3	-1.4
60018	00	V	850	30	4.2	-2.2	1.3
60018	12	V	850	31	3.4	-1.1	1.1
7JUNA4	12	V	850	12	2.4	-0.8	1.1
7JUNA4	00	V	850	10	3.5	1.1	0.2
ASDE09	12	V	850	1	2.1	-0.2	2.1
ASFR2	00	V	850	6	1.7	0.2	0.1
ASFR2	12	V	850	9	2.8	-0.3	-0.2
ASFR3	00	V	850	6	2.7	0.8	-0.4
ASFR3	12	V	850	7	2.5	0.6	0.4
ASFR4	12	V	850	11	4.0	0.5	-0.9
ASFR4	00	V	850	14	1.9	0.4	0.2
FHM5UJ	00	V	850	1	0.7	0.3	-0.6
FHM5UJ	12	V	850	3	1.9	1.3	0.2
FPUW5G	12	V	850	21	2.6	0.0	-0.2
HTXUH4	12	V	850	1	1.9	1.1	-1.6
HTXUH4	00	V	850	1	1.0	0.5	0.9
XKQLWQ	12	V	850	23	2.1	-0.4	-0.2
XQFJRG	12	V	850	7	3.9	0.8	-0.6
XQFJRG	00	V	850	5	2.5	-0.4	-1.1
XWHDEA	00	V	850	0	0.0	0.0	0.0
XWHDEA	12	V	850	0	0.0	0.0	0.0
YLV96W	12	V	850	9	3.3	-0.2	0.0
YLV96W	00	V	850	9	2.0	0.3	0.3

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

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 AREA : 10N - 90N, 70W - 40E  
 PERIOD : MAY 2018  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
03380	99	P	SUR	54	0	742	0	0.3	0.0	0.3
1300001	99	P	SUR	11	-23	674	0	0.3	0.0	0.3
1300008	99	P	SUR	15	-38	720	0	0.3	0.0	0.3
1300131	99	P	SUR	28	-17	695	0	0.4	-0.3	0.5
1300869	99	P	SUR	27	-64	728	0	0.3	-0.0	0.3
1300872	99	P	SUR	35	-36	737	0	0.2	0.5	0.5
1301000	99	P	SUR	33	-17	1039	1039	0.0	0.0	0.0
1301001	99	P	SUR	33	-17	737	737	0.0	0.0	0.0
1301603	99	P	SUR	19	-37	738	0	0.3	0.5	0.5
1301604	99	P	SUR	15	-32	333	24	0.3	0.5	0.5
1301605	99	P	SUR	26	-39	738	0	0.2	0.2	0.3
1301606	99	P	SUR	16	-35	738	0	0.3	0.7	0.7
1301607	99	P	SUR	15	-26	737	0	0.3	0.4	0.5
1301608	99	P	SUR	21	-29	738	0	0.3	0.6	0.7
1301609	99	P	SUR	25	-24	737	0	0.3	0.5	0.5
1301610	99	P	SUR	26	-33	738	0	0.2	0.3	0.4
1301611	99	P	SUR	26	-35	738	0	0.2	-0.1	0.2
1301612	99	P	SUR	30	-30	738	0	0.2	0.2	0.3
13869	99	P	SUR	27	-64	740	0	0.3	-0.0	0.3
13872	99	P	SUR	35	-36	740	0	0.2	0.5	0.5
1501529	99	P	SUR	25	-28	684	0	0.2	0.4	0.5
1501531	99	P	SUR	20	-44	682	0	0.2	0.2	0.3
1501534	99	P	SUR	23	-44	685	0	0.2	-0.3	0.4
2500622	99	P	SUR	57	-25	729	0	2.3	-1.1	2.6
25622	99	P	SUR	57	-25	741	0	2.3	-1.1	2.6
2601621	99	P	SUR	90	31	744	0	0.4	-0.3	0.5
3100735	99	P	SUR	22	-66	738	0	0.9	0.3	0.9
31735	99	P	SUR	22	-66	740	0	0.9	0.3	0.9
4100300	99	P	SUR	16	-57	741	0	0.4	0.1	0.4
4100597	99	P	SUR	32	-29	739	0	0.2	0.5	0.6
4100729	99	P	SUR	34	-26	738	0	0.3	0.5	0.6
4100730	99	P	SUR	40	-38	739	0	0.3	0.3	0.4
4101530	99	P	SUR	36	-34	728	0	0.3	0.6	0.7
4101538	99	P	SUR	37	-59	537	0	0.4	0.1	0.5
4101554	99	P	SUR	29	-58	737	0	0.3	0.4	0.5
4101556	99	P	SUR	32	-40	739	0	0.2	0.6	0.7

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101557	99	P	SUR	31	-33	738	0	0.2	0.4	0.4
4101558	99	P	SUR	43	-14	739	0	0.3	0.5	0.6
4101560	99	P	SUR	29	-48	729	0	0.2	0.9	0.9
4101561	99	P	SUR	29	-70	734	0	0.3	0.1	0.3
4101562	99	P	SUR	39	-42	710	0	0.5	0.5	0.7
4101564	99	P	SUR	30	-42	732	0	0.2	0.1	0.2
4101565	99	P	SUR	37	-42	696	0	0.3	0.5	0.5
4101566	99	P	SUR	27	-62	700	0	0.3	0.4	0.5
4101567	99	P	SUR	36	-46	724	0	0.3	0.7	0.8
4101568	99	P	SUR	34	-58	722	0	0.3	0.4	0.5
4101570	99	P	SUR	30	-51	729	0	0.2	0.5	0.6
4101574	99	P	SUR	35	-61	664	0	0.3	0.6	0.7
4101576	99	P	SUR	16	-57	738	0	0.4	0.7	0.8
4101577	99	P	SUR	20	-55	738	0	0.3	0.5	0.6
4101599	99	P	SUR	49	-15	406	0	0.3	0.1	0.3
4101620	99	P	SUR	49	-15	416	0	0.3	0.3	0.4
4101700	99	P	SUR	27	-36	738	0	0.2	0.4	0.5
4101702	99	P	SUR	36	-56	739	0	0.3	0.1	0.3
4101705	99	P	SUR	33	-35	739	0	0.2	0.2	0.3
4101706	99	P	SUR	32	-30	739	0	0.2	-0.5	0.5
4101707	99	P	SUR	33	-35	738	0	0.2	-0.1	0.2
4101708	99	P	SUR	31	-25	739	0	0.2	-0.0	0.2
4101709	99	P	SUR	31	-12	738	0	0.8	0.8	1.2
4101712	99	P	SUR	35	-46	730	0	0.3	0.1	0.3
4101713	99	P	SUR	33	-55	739	0	0.2	-0.0	0.2
4101714	99	P	SUR	33	-40	739	0	0.2	-0.0	0.2
4101715	99	P	SUR	29	-50	736	0	0.2	0.2	0.3
4101716	99	P	SUR	26	-54	738	0	0.2	-0.9	0.9
4101717	99	P	SUR	20	-61	738	0	0.3	-0.0	0.3
4101741	99	P	SUR	17	-66	738	0	0.4	0.5	0.7
4101743	99	P	SUR	23	-53	738	0	0.3	1.0	1.0
4101746	99	P	SUR	16	-66	738	0	1.0	0.3	1.0
41040	99	P	SUR	15	-53	1242	0	0.4	1.4	1.5
41041	99	P	SUR	14	-46	1310	0	0.3	0.7	0.8
41043	99	P	SUR	21	-65	1418	0	0.4	0.1	0.4
41044	99	P	SUR	22	-59	1452	0	0.3	0.4	0.5
41046	99	P	SUR	24	-68	1401	0	0.4	0.5	0.6
41048	99	P	SUR	32	-70	1322	0	0.4	-0.1	0.4
41049	99	P	SUR	28	-63	1343	0	0.3	0.3	0.5
41052	99	P	SUR	18	-65	411	0	0.5	-1.5	1.6
41053	99	P	SUR	19	-66	1322	0	0.4	-0.8	0.8
41056	99	P	SUR	18	-66	434	0	0.3	-0.8	0.9
41300	99	P	SUR	16	-57	742	0	0.4	0.1	0.4

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
41597	99	P	SUR	32	-29	742	0	0.2	0.5	0.6
41729	99	P	SUR	34	-26	741	0	0.3	0.5	0.6
41730	99	P	SUR	40	-38	742	0	0.3	0.3	0.4
42059	99	P	SUR	15	-68	1272	0	0.5	0.1	0.5
42060	99	P	SUR	16	-63	1407	0	0.4	0.0	0.4
42085	99	P	SUR	18	-67	650	0	0.4	-0.9	1.0
44005	99	P	SUR	43	-69	422	0	0.6	-0.2	0.6
4400513	99	P	SUR	54	-10	722	0	0.3	-0.4	0.5
4400517	99	P	SUR	21	-53	728	0	0.3	0.4	0.5
4400521	99	P	SUR	35	-31	714	0	0.5	-0.7	0.9
4400746	99	P	SUR	31	-42	739	0	0.2	0.3	0.4
4400776	99	P	SUR	29	-66	727	0	0.3	0.5	0.6
4400777	99	P	SUR	32	-48	739	0	0.2	0.2	0.3
4400778	99	P	SUR	28	-26	727	0	0.3	0.5	0.6
44008	99	P	SUR	41	-69	735	0	0.5	-0.7	0.9
4400857	99	P	SUR	26	-35	738	0	0.2	0.5	0.5
4400874	99	P	SUR	36	-43	739	0	0.3	0.5	0.6
4400887	99	P	SUR	32	-48	713	0	0.2	-0.2	0.3
4400891	99	P	SUR	39	-49	716	0	0.4	-0.5	0.6
4401527	99	P	SUR	29	-60	728	0	0.3	0.0	0.3
4401531	99	P	SUR	35	-60	729	0	0.3	0.2	0.4
4401536	99	P	SUR	46	-18	670	0	0.3	0.5	0.6
4401537	99	P	SUR	31	-27	664	0	0.3	-0.4	0.5
4401539	99	P	SUR	36	-43	728	0	0.2	-0.1	0.2
4401540	99	P	SUR	33	-59	729	0	0.3	0.2	0.4
4401541	99	P	SUR	41	-33	728	0	0.3	-0.1	0.3
4401542	99	P	SUR	26	-70	728	0	0.3	0.4	0.5
4401543	99	P	SUR	25	-65	558	0	0.3	-0.0	0.3
4401544	99	P	SUR	33	-55	728	0	0.2	-0.6	0.6
4401549	99	P	SUR	64	-22	3219	0	0.3	-0.3	0.5
4401550	99	P	SUR	54	-14	732	0	0.6	0.1	0.6
4401551	99	P	SUR	34	-32	703	0	0.2	0.5	0.6
4401552	99	P	SUR	34	-11	731	0	0.3	0.4	0.5
4401553	99	P	SUR	54	-31	739	0	0.8	0.1	0.8
4401554	99	P	SUR	54	-29	739	0	0.4	0.4	0.5
4401555	99	P	SUR	57	-16	739	0	0.4	-0.2	0.5
4401556	99	P	SUR	32	-39	738	0	0.2	-0.0	0.2
4401557	99	P	SUR	40	-35	738	0	0.3	0.1	0.3
4401558	99	P	SUR	53	-29	739	0	0.4	0.0	0.4
4401559	99	P	SUR	50	-13	739	0	0.4	0.4	0.5
4401560	99	P	SUR	41	-22	739	0	0.4	0.3	0.5
4401561	99	P	SUR	39	-26	739	0	0.2	0.0	0.2
4401562	99	P	SUR	39	-23	738	0	0.3	0.0	0.3

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401563	99	P	SUR	32	-36	739	0	0.2	-0.2	0.3
4401564	99	P	SUR	39	-36	738	0	0.4	0.8	1.0
4401565	99	P	SUR	54	-24	739	0	0.4	0.2	0.4
4401566	99	P	SUR	50	-20	739	0	0.5	0.6	0.8
4401601	99	P	SUR	52	-33	618	0	0.5	-0.2	0.6
4401603	99	P	SUR	56	-15	620	0	0.5	0.5	0.7
4401605	99	P	SUR	56	-25	628	0	0.4	-0.4	0.5
4401611	99	P	SUR	46	-55	629	0	0.5	0.4	0.6
4401613	99	P	SUR	48	-8	621	0	0.3	0.5	0.6
4401616	99	P	SUR	37	-32	628	0	0.2	0.0	0.2
4401633	99	P	SUR	47	-17	615	0	0.4	0.2	0.5
4401750	99	P	SUR	64	-22	3287	0	0.4	-1.8	1.9
4401751	99	P	SUR	64	-22	2021	0	0.3	0.1	0.3
4401753	99	P	SUR	64	-22	3153	0	0.4	0.2	0.5
4401755	99	P	SUR	65	-2	567	0	0.3	0.7	0.8
4401757	99	P	SUR	69	-9	480	0	0.5	0.7	0.8
4401802	99	P	SUR	40	-38	629	0	0.3	0.1	0.3
4401804	99	P	SUR	58	-24	934	0	0.4	0.0	0.4
4401805	99	P	SUR	58	-23	1139	0	0.4	0.2	0.4
4401806	99	P	SUR	59	-24	1165	0	0.4	0.1	0.4
4401807	99	P	SUR	59	-24	1156	0	0.4	0.2	0.4
4401808	99	P	SUR	58	-25	898	0	0.4	0.0	0.4
44027	99	P	SUR	44	-67	766	0	0.5	0.2	0.6
44032	99	P	SUR	44	-69	730	0	0.5	-1.2	1.3
44033	99	P	SUR	44	-69	738	0	0.5	-0.2	0.6
44034	99	P	SUR	44	-68	739	0	0.5	-0.9	1.0
44037	99	P	SUR	44	-68	670	0	0.5	-0.9	1.0
44137	99	P	SUR	42	-62	762	0	0.4	0.0	0.4
44139	99	P	SUR	44	-57	351	0	0.4	0.1	0.5
44150	99	P	SUR	43	-64	739	0	0.4	-0.0	0.4
44513	99	P	SUR	54	-10	737	0	0.3	-0.3	0.5
44517	99	P	SUR	21	-53	740	0	0.3	0.4	0.5
44521	99	P	SUR	35	-31	713	0	0.5	-0.7	0.9
44746	99	P	SUR	31	-42	741	0	0.2	0.3	0.4
44776	99	P	SUR	29	-66	739	0	0.3	0.5	0.6
44777	99	P	SUR	32	-48	742	0	0.2	0.2	0.3
44778	99	P	SUR	28	-26	739	0	0.2	0.5	0.6
44857	99	P	SUR	26	-35	740	0	0.2	0.5	0.5
44874	99	P	SUR	36	-43	742	0	0.3	0.5	0.6
44887	99	P	SUR	32	-48	716	0	0.2	-0.2	0.3
44891	99	P	SUR	39	-49	719	0	0.4	-0.5	0.6
45138	99	P	SUR	50	-66	81	0	0.7	-0.5	0.9
4700546	99	P	SUR	32	-25	563	0	0.3	0.7	0.7

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4700555	99	P	SUR	29	-11	23	0	0.2	0.1	0.3
4700560	99	P	SUR	70	1	632	0	0.5	0.2	0.5
4700568	99	P	SUR	45	-2	622	0	0.3	0.5	0.6
4700574	99	P	SUR	32	-14	618	0	0.3	0.4	0.5
4701668	99	P	SUR	44	-61	630	0	0.5	0.4	0.6
4701669	99	P	SUR	44	-52	627	0	0.4	0.5	0.7
4701673	99	P	SUR	65	-65	625	0	0.6	-1.3	1.4
4701674	99	P	SUR	70	-67	625	0	0.5	-5.9	5.9
4701677	99	P	SUR	43	-43	739	0	0.4	0.2	0.4
47546	99	P	SUR	32	-25	660	0	0.2	0.7	0.7
47555	99	P	SUR	29	-12	85	0	0.2	0.2	0.3
47560	99	P	SUR	70	1	725	0	0.4	0.2	0.5
47568	99	P	SUR	45	-2	724	0	0.3	0.5	0.6
47574	99	P	SUR	32	-14	725	0	0.2	0.4	0.5
4800510	99	P	SUR	79	-12	396	0	1.5	-0.4	1.6
4800770	99	P	SUR	78	-16	361	0	0.4	0.2	0.5
4802004	99	P	SUR	60	-29	628	46	4.9	-0.1	4.9
48510	99	P	SUR	79	-12	461	0	0.4	-0.3	0.5
48770	99	P	SUR	78	-16	428	0	0.4	0.3	0.5
6100001	99	P	SUR	43	8	741	0	0.4	0.3	0.5
6100002	99	P	SUR	42	5	741	0	0.4	0.5	0.6
61001	99	P	SUR	43	8	741	0	0.4	0.3	0.5
6100196	99	P	SUR	42	4	85	0	0.3	0.3	0.4
6100197	99	P	SUR	40	4	689	0	0.4	0.3	0.5
6100198	99	P	SUR	37	-2	689	0	0.4	0.3	0.5
61002	99	P	SUR	42	5	742	0	0.4	0.5	0.6
6100280	99	P	SUR	41	1	675	0	0.4	0.2	0.5
6100281	99	P	SUR	40	0	695	0	0.4	0.3	0.5
6100417	99	P	SUR	38	0	37	0	0.3	0.2	0.4
6100430	99	P	SUR	40	2	427	0	0.4	0.1	0.4
6101001	99	P	SUR	38	24	240	0	0.5	0.7	0.8
6101003	99	P	SUR	40	25	234	0	0.5	0.5	0.7
6101007	99	P	SUR	36	25	242	0	0.8	1.5	1.7
6101008	99	P	SUR	37	22	165	0	0.5	0.3	0.6
6102501	99	P	SUR	36	19	737	0	0.4	0.4	0.6
6102502	99	P	SUR	35	23	737	0	0.4	0.5	0.6
6102503	99	P	SUR	35	-4	86	0	0.2	0.5	0.6
6102504	99	P	SUR	36	-3	86	0	0.3	0.5	0.5
6200024	99	P	SUR	44	-3	308	0	0.3	0.3	0.4
6200025	99	P	SUR	44	-6	653	0	0.4	0.1	0.4
6200082	99	P	SUR	44	-8	696	0	0.4	-0.1	0.4
6200083	99	P	SUR	43	-9	641	0	0.4	-0.1	0.4
6200084	99	P	SUR	42	-9	691	0	0.5	-0.1	0.5

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6200085	99	P	SUR	36	-7	684	0	0.4	0.2	0.4
6200091	99	P	SUR	53	-5	730	0	0.4	-0.0	0.4
6200092	99	P	SUR	51	-11	736	0	0.4	-0.1	0.4
6200093	99	P	SUR	55	-10	736	0	0.4	-0.2	0.5
6200094	99	P	SUR	52	-7	723	1	1.3	-0.1	1.3
62001	99	P	SUR	45	-5	745	0	0.3	0.1	0.3
6200191	99	P	SUR	41	-10	734	0	0.5	-0.2	0.5
6200192	99	P	SUR	40	-10	727	0	0.4	-0.7	0.8
6200199	99	P	SUR	40	-9	263	0	0.4	0.6	0.7
6200200	99	P	SUR	36	-8	515	0	0.3	0.1	0.3
6200513	99	P	SUR	64	-17	515	0	0.7	-0.7	1.0
6200940	99	P	SUR	33	-45	730	0	0.2	-0.0	0.2
6200941	99	P	SUR	24	-64	600	0	0.3	-0.3	0.4
6201030	99	P	SUR	44	-4	254	0	0.4	1.3	1.3
6201070	99	P	SUR	43	-9	636	0	0.7	-1.1	1.3
62023	99	P	SUR	51	-8	723	0	0.3	0.2	0.4
6202402	99	P	SUR	38	-26	1147	1147	0.0	0.0	0.0
6202403	99	P	SUR	39	-31	624	624	0.0	0.0	0.0
6202404	99	P	SUR	39	-29	682	682	0.0	0.0	0.0
62029	99	P	SUR	49	-12	1479	0	0.3	-0.1	0.4
62030	99	P	SUR	50	-4	342	0	0.4	0.1	0.4
6203503	99	P	SUR	32	-49	536	0	0.3	0.1	0.3
6203504	99	P	SUR	28	-63	688	0	0.3	0.2	0.3
6203510	99	P	SUR	20	-62	686	0	0.3	0.1	0.3
6203523	99	P	SUR	65	2	659	0	0.3	-0.2	0.3
6203525	99	P	SUR	64	-9	653	0	0.4	-0.6	0.7
6203526	99	P	SUR	71	9	591	0	0.4	0.3	0.5
6203527	99	P	SUR	64	-22	2261	0	0.3	-2.7	2.7
6203528	99	P	SUR	31	-17	709	0	0.3	0.5	0.5
6203529	99	P	SUR	18	-54	734	0	0.3	0.1	0.3
6203600	99	P	SUR	44	-11	739	0	0.3	0.3	0.4
6203601	99	P	SUR	46	-14	739	0	0.3	0.5	0.6
6203602	99	P	SUR	63	-40	738	0	0.6	0.4	0.7
6203603	99	P	SUR	56	-29	738	0	0.3	0.0	0.3
6203604	99	P	SUR	46	-22	739	0	0.3	0.3	0.4
6203605	99	P	SUR	61	-29	739	0	0.4	0.0	0.5
6203606	99	P	SUR	43	-5	118	0	0.4	0.6	0.7
6203607	99	P	SUR	33	-36	739	0	0.2	-0.2	0.3
6203608	99	P	SUR	49	-15	336	0	0.3	0.4	0.5
6203609	99	P	SUR	49	-15	247	0	1.9	-0.4	1.9
6203610	99	P	SUR	49	-15	412	0	0.3	0.2	0.3
62050	99	P	SUR	50	-4	748	0	0.3	0.3	0.5
62081	99	P	SUR	51	-13	748	0	0.4	-0.2	0.4

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62086	99	P	SUR	55	6	343	0	0.4	-0.1	0.4
62095	99	P	SUR	53	-16	707	0	0.4	-0.2	0.4
62102	99	P	SUR	58	2	748	0	0.3	0.3	0.4
62103	99	P	SUR	50	-3	747	0	0.3	0.6	0.7
62104	99	P	SUR	57	1	748	0	0.3	0.1	0.3
62107	99	P	SUR	50	-6	1483	2	0.7	0.4	0.8
62111	99	P	SUR	58	0	743	0	0.4	1.2	1.3
62112	99	P	SUR	58	0	746	0	0.3	0.4	0.5
62113	99	P	SUR	58	0	748	0	0.3	-0.0	0.3
62114	99	P	SUR	58	0	1483	0	0.3	0.3	0.4
62115	99	P	SUR	58	-3	739	0	0.4	0.3	0.5
62116	99	P	SUR	58	1	743	0	0.4	0.2	0.4
62118	99	P	SUR	58	1	735	0	0.3	0.5	0.6
62119	99	P	SUR	57	2	743	0	0.3	0.1	0.3
62120	99	P	SUR	56	2	724	0	0.4	0.1	0.5
62121	99	P	SUR	54	3	741	0	0.4	0.3	0.5
62122	99	P	SUR	57	2	1483	0	0.3	0.1	0.3
62124	99	P	SUR	54	-4	748	0	0.3	0.1	0.3
62127	99	P	SUR	54	1	724	0	0.3	0.8	0.8
62129	99	P	SUR	58	0	747	0	0.3	0.1	0.3
62130	99	P	SUR	59	1	748	0	0.3	0.1	0.3
62131	99	P	SUR	54	1	748	0	0.3	0.7	0.7
62132	99	P	SUR	56	2	748	0	0.3	0.3	0.4
62133	99	P	SUR	57	1	743	0	0.4	0.3	0.5
62134	99	P	SUR	58	1	748	0	0.3	0.4	0.5
62135	99	P	SUR	54	2	300	0	0.3	0.4	0.5
62136	99	P	SUR	54	3	746	0	0.3	0.7	0.8
62138	99	P	SUR	54	0	1482	0	0.3	0.8	0.8
62139	99	P	SUR	53	2	1479	2	0.4	0.5	0.7
62140	99	P	SUR	57	1	1481	0	0.3	0.3	0.4
62141	99	P	SUR	61	2	742	0	0.3	0.2	0.4
62143	99	P	SUR	58	2	746	0	0.3	0.6	0.7
62144	99	P	SUR	53	2	743	0	0.3	0.3	0.5
62145	99	P	SUR	53	3	1482	0	0.4	0.6	0.7
62146	99	P	SUR	57	2	661	0	0.3	0.2	0.3
62148	99	P	SUR	54	2	743	0	0.3	0.4	0.6
62149	99	P	SUR	54	1	748	0	0.3	0.9	0.9
62150	99	P	SUR	54	1	724	0	0.4	1.5	1.5
62151	99	P	SUR	57	2	1463	0	0.3	0.3	0.4
62152	99	P	SUR	57	2	748	0	0.3	0.4	0.5
62153	99	P	SUR	57	2	1473	0	0.3	0.5	0.6
62154	99	P	SUR	56	2	748	0	0.3	0.1	0.3
62155	99	P	SUR	58	1	717	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
62157	99	P	SUR	58	0	748	0	0.3	0.2	0.3
62160	99	P	SUR	57	2	1480	0	0.3	0.5	0.6
62161	99	P	SUR	58	1	748	0	0.3	0.0	0.3
62162	99	P	SUR	57	1	742	0	0.3	0.2	0.4
62163	99	P	SUR	48	-8	742	0	0.3	0.3	0.4
62164	99	P	SUR	57	1	456	0	0.3	0.4	0.5
62165	99	P	SUR	54	1	746	0	0.4	0.7	0.8
62168	99	P	SUR	58	1	734	0	0.3	0.2	0.4
62170	99	P	SUR	51	2	748	0	0.7	0.2	0.8
62296	99	P	SUR	53	2	748	0	0.3	0.3	0.4
62297	99	P	SUR	59	2	1483	0	0.3	0.2	0.4
62302	99	P	SUR	61	-2	725	0	0.4	0.2	0.4
62304	99	P	SUR	51	2	623	1	0.4	0.4	0.6
62305	99	P	SUR	50	0	731	0	0.4	0.3	0.5
62442	99	P	SUR	49	-16	863	0	0.4	-0.3	0.4
62513	99	P	SUR	64	-17	513	0	0.7	-0.7	1.0
62940	99	P	SUR	33	-45	733	0	0.2	-0.0	0.2
62941	99	P	SUR	24	-64	601	0	0.2	-0.3	0.4
6301552	99	P	SUR	79	27	734	0	0.4	-0.2	0.4
6301555	99	P	SUR	76	27	737	0	0.4	0.5	0.7
6301556	99	P	SUR	79	6	737	0	0.7	0.1	0.7
6301557	99	P	SUR	81	21	401	0	0.3	0.7	0.8
63055	99	P	SUR	61	2	748	0	0.3	-0.0	0.3
63056	99	P	SUR	60	2	748	0	0.3	0.4	0.5
63057	99	P	SUR	59	2	747	0	0.3	0.0	0.3
63058	99	P	SUR	53	2	2224	0	0.4	0.5	0.6
63059	99	P	SUR	58	-1	748	0	0.3	0.6	0.6
63101	99	P	SUR	61	1	748	0	0.4	0.3	0.5
63102	99	P	SUR	61	1	738	0	0.3	0.1	0.3
63103	99	P	SUR	61	1	748	0	0.3	0.2	0.4
63104	99	P	SUR	61	2	748	0	0.3	0.2	0.3
63105	99	P	SUR	61	2	743	0	0.3	-0.0	0.3
63108	99	P	SUR	61	2	747	0	0.3	-0.1	0.3
63109	99	P	SUR	60	2	748	0	0.3	-0.0	0.3
63110	99	P	SUR	60	2	740	0	0.3	0.0	0.3
63111	99	P	SUR	61	2	1449	0	0.3	-0.1	0.3
63112	99	P	SUR	61	1	748	0	0.3	-0.1	0.3
63115	99	P	SUR	62	1	746	0	0.3	0.0	0.3
63117	99	P	SUR	61	1	1483	0	0.4	0.5	0.7
63118	99	P	SUR	57	1	718	0	0.7	-0.1	0.7
63120	99	P	SUR	54	2	746	0	0.3	0.6	0.7
6400526	99	P	SUR	46	-7	676	0	0.3	0.3	0.5
6400562	99	P	SUR	65	-6	739	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
6401501	99	P	SUR	70	7	548	0	0.4	0.5	0.6
6401502	99	P	SUR	64	-22	3201	0	0.4	0.0	0.4
6401503	99	P	SUR	64	-22	3348	0	0.3	0.1	0.3
6401504	99	P	SUR	64	-22	3240	0	0.4	-0.1	0.4
6401505	99	P	SUR	64	-22	3397	0	0.4	-0.1	0.4
6401506	99	P	SUR	64	-22	2595	0	0.4	-0.0	0.4
6401507	99	P	SUR	77	12	668	0	0.4	0.5	0.7
6401550	99	P	SUR	68	12	736	0	0.3	0.2	0.3
6401555	99	P	SUR	69	-7	737	0	0.5	0.5	0.7
6401556	99	P	SUR	68	-3	739	0	0.4	0.5	0.7
6401557	99	P	SUR	52	-50	739	0	0.4	0.2	0.5
6401560	99	P	SUR	58	0	735	0	0.3	0.4	0.5
6401561	99	P	SUR	59	-21	739	0	0.4	0.0	0.4
6401562	99	P	SUR	61	-3	738	0	0.4	0.5	0.7
6401563	99	P	SUR	64	-24	739	0	1.0	0.2	1.0
6401564	99	P	SUR	61	-3	739	0	0.4	0.2	0.4
6401565	99	P	SUR	63	-13	739	0	0.4	0.0	0.4
6401566	99	P	SUR	61	-12	739	0	0.4	0.4	0.6
6401567	99	P	SUR	62	-24	738	0	0.4	0.1	0.4
6401568	99	P	SUR	61	-12	227	0	0.4	0.4	0.6
6401569	99	P	SUR	63	-17	227	0	0.3	0.2	0.4
6401570	99	P	SUR	67	-5	198	0	0.3	0.2	0.4
6401654	99	P	SUR	89	40	625	0	0.4	0.3	0.5
6401655	99	P	SUR	83	-62	469	0	0.5	0.6	0.8
64041	99	P	SUR	61	-3	747	0	0.3	0.1	0.3
64045	99	P	SUR	59	-12	1311	0	0.4	-0.2	0.4
64046	99	P	SUR	61	-4	746	0	0.3	0.0	0.3
64526	99	P	SUR	46	-7	679	0	0.3	0.3	0.5
64562	99	P	SUR	65	-6	742	0	0.4	0.2	0.5
6500519	99	P	SUR	70	33	732	0	0.5	0.2	0.5
6500596	99	P	SUR	71	-13	731	0	0.6	0.5	0.8
6500602	99	P	SUR	69	8	737	0	0.3	0.6	0.7
6501551	99	P	SUR	53	-28	632	0	0.4	-0.1	0.4
6501553	99	P	SUR	53	-20	739	0	0.5	0.2	0.5
6501555	99	P	SUR	65	-52	741	0	0.5	-0.3	0.6
6501556	99	P	SUR	57	-21	739	0	0.4	0.1	0.4
65519	99	P	SUR	70	33	735	0	0.5	0.2	0.5
65596	99	P	SUR	71	-13	734	0	0.6	0.5	0.8
65602	99	P	SUR	69	8	740	0	0.3	0.6	0.7

#### 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 : MAY 2018  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1300001	99	SPEED	SUR	11	-23	674	0	0	0.7	0.4	0.8
1300002	99	SPEED	SUR	20	-23	700	0	0	0.8	0.2	0.8
1300008	99	SPEED	SUR	15	-38	720	0	0	1.0	-0.1	1.0
1300131	99	SPEED	SUR	28	-17	689	0	0	2.3	1.9	3.0
4100026	99	SPEED	SUR	12	-38	304	0	0	0.9	-0.9	1.2
4100300	99	SPEED	SUR	16	-57	741	0	0	0.9	-0.4	1.0
41026	99	SPEED	SUR	12	-38	309	0	0	0.9	-0.8	1.2
41040	99	SPEED	SUR	15	-53	1240	0	0	0.7	-0.2	0.8
41041	99	SPEED	SUR	14	-46	1309	0	0	0.8	-0.6	1.0
41043	99	SPEED	SUR	21	-65	1414	0	0	0.8	0.0	0.8
41044	99	SPEED	SUR	22	-59	1452	0	0	0.8	-0.3	0.9
41046	99	SPEED	SUR	24	-68	1401	0	0	0.9	-0.2	0.9
41048	99	SPEED	SUR	32	-70	1320	0	0	1.2	-0.1	1.2
41049	99	SPEED	SUR	28	-63	1339	0	0	1.3	-0.0	1.3
41052	99	SPEED	SUR	18	-65	411	0	0	0.9	-0.3	1.0
41053	99	SPEED	SUR	19	-66	1322	0	0	1.5	0.7	1.7
41056	99	SPEED	SUR	18	-66	436	0	0	1.0	-0.2	1.1
41300	99	SPEED	SUR	16	-57	742	0	0	1.0	-0.4	1.0
42059	99	SPEED	SUR	15	-68	1271	0	0	0.7	0.2	0.8
42060	99	SPEED	SUR	16	-63	1403	0	0	1.0	-0.0	1.0
42085	99	SPEED	SUR	18	-67	650	0	0	1.1	-0.2	1.1
44027	99	SPEED	SUR	44	-67	766	0	0	1.5	-0.5	1.6
44032	99	SPEED	SUR	44	-69	730	0	0	1.7	-0.5	1.8
44033	99	SPEED	SUR	44	-69	738	0	0	1.7	0.0	1.7
44034	99	SPEED	SUR	44	-68	739	0	0	1.6	-1.0	1.9
44037	99	SPEED	SUR	44	-68	673	0	0	1.3	-0.3	1.4
44137	99	SPEED	SUR	42	-62	766	0	0	1.4	0.0	1.4
44139	99	SPEED	SUR	44	-57	353	0	0	1.5	-0.6	1.6
45138	99	SPEED	SUR	50	-66	81	0	0	1.6	-0.5	1.7
6100001	99	SPEED	SUR	43	8	736	0	0	1.7	-0.4	1.7
6100002	99	SPEED	SUR	42	5	741	0	0	1.3	0.1	1.3
61001	99	SPEED	SUR	43	8	736	0	0	1.9	-0.7	2.0
6100196	99	SPEED	SUR	42	4	85	0	0	1.1	-0.2	1.1
6100197	99	SPEED	SUR	40	4	676	0	0	1.4	-0.3	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
6100198	99	SPEED	SUR	37	-2	639	0	0	1.4	-1.1	1.8
61002	99	SPEED	SUR	42	5	742	0	0	1.3	-0.4	1.4
6100280	99	SPEED	SUR	41	1	644	0	0	1.5	-0.8	1.7
6100281	99	SPEED	SUR	40	0	689	0	0	2.0	-0.0	2.0
6100417	99	SPEED	SUR	38	0	37	0	0	1.1	0.4	1.2
6100430	99	SPEED	SUR	40	2	419	0	0	1.7	-0.5	1.8
6101001	99	SPEED	SUR	38	24	240	0	0	1.9	-0.6	2.0
6101003	99	SPEED	SUR	40	25	234	0	0	2.1	-1.6	2.7
6101007	99	SPEED	SUR	36	25	242	0	0	1.5	-0.7	1.7
6101008	99	SPEED	SUR	37	22	165	0	0	1.4	-0.5	1.5
6200024	99	SPEED	SUR	44	-3	300	0	0	1.0	-0.6	1.2
6200025	99	SPEED	SUR	44	-6	642	0	0	1.2	-0.2	1.2
6200082	99	SPEED	SUR	44	-8	696	0	0	0.8	-0.2	0.9
6200083	99	SPEED	SUR	43	-9	633	0	0	1.3	-0.3	1.3
6200084	99	SPEED	SUR	42	-9	689	0	0	1.1	-0.3	1.2
6200085	99	SPEED	SUR	36	-7	677	0	0	1.4	-0.2	1.4
6200091	99	SPEED	SUR	53	-5	730	0	0	1.3	0.2	1.3
6200092	99	SPEED	SUR	51	-11	736	0	0	1.1	0.0	1.1
6200093	99	SPEED	SUR	55	-10	736	0	0	1.2	-0.1	1.2
6200094	99	SPEED	SUR	52	-7	723	0	0	1.3	0.4	1.3
62001	99	SPEED	SUR	45	-5	745	0	0	1.1	0.8	1.3
6200191	99	SPEED	SUR	41	-10	734	0	0	1.3	0.2	1.3
6200192	99	SPEED	SUR	40	-10	727	0	0	1.1	0.1	1.1
6200199	99	SPEED	SUR	40	-9	263	0	0	1.1	-0.1	1.2
6200200	99	SPEED	SUR	36	-8	514	0	0	1.3	-0.0	1.3
6201030	99	SPEED	SUR	44	-4	251	0	0	1.4	-0.5	1.5
6201070	99	SPEED	SUR	43	-9	633	0	0	1.5	-0.2	1.5
62023	99	SPEED	SUR	51	-8	722	0	0	1.6	-0.2	1.6
62029	99	SPEED	SUR	49	-12	1479	0	0	1.1	0.5	1.2
62050	99	SPEED	SUR	50	-4	747	0	0	1.3	0.5	1.4
62081	99	SPEED	SUR	51	-13	748	0	0	1.0	0.3	1.1
62086	99	SPEED	SUR	55	6	346	0	0	1.2	-0.2	1.2
62095	99	SPEED	SUR	53	-16	707	0	0	1.3	0.3	1.3
62102	99	SPEED	SUR	58	2	748	0	0	1.4	0.7	1.5
62103	99	SPEED	SUR	50	-3	746	0	0	1.3	1.2	1.7
62104	99	SPEED	SUR	57	1	748	0	0	1.4	0.2	1.4
62107	99	SPEED	SUR	50	-6	1483	0	0	1.4	1.0	1.7
62111	99	SPEED	SUR	58	0	740	0	0	1.5	-0.1	1.5
62112	99	SPEED	SUR	58	0	746	0	0	1.8	-0.4	1.8
62113	99	SPEED	SUR	58	0	748	0	0	1.7	1.2	2.1
62114	99	SPEED	SUR	58	0	1483	0	0	1.6	1.3	2.0

## 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
62118	99	SPEED	SUR	58	1	735	0	0	1.3	1.0	1.7
62119	99	SPEED	SUR	57	2	743	0	0	1.2	0.2	1.2
62120	99	SPEED	SUR	56	2	748	0	0	1.3	0.7	1.5
62121	99	SPEED	SUR	54	3	741	0	0	1.3	0.6	1.4
62122	99	SPEED	SUR	57	2	1483	0	0	1.6	0.1	1.6
62129	99	SPEED	SUR	58	0	747	0	0	1.4	0.8	1.6
62131	99	SPEED	SUR	54	1	748	0	0	2.3	-0.6	2.3
62132	99	SPEED	SUR	56	2	747	0	0	2.1	-1.0	2.3
62133	99	SPEED	SUR	57	1	743	0	0	1.4	0.9	1.7
62134	99	SPEED	SUR	58	1	748	0	0	1.4	0.6	1.5
62140	99	SPEED	SUR	57	1	1481	2	0	1.0	0.3	1.1
62143	99	SPEED	SUR	58	2	745	0	0	1.3	0.2	1.3
62144	99	SPEED	SUR	53	2	743	0	0	1.6	-0.4	1.7
62145	99	SPEED	SUR	53	3	1482	0	0	1.7	1.7	2.4
62146	99	SPEED	SUR	57	2	661	0	0	1.4	0.4	1.5
62148	99	SPEED	SUR	54	2	743	0	0	1.3	0.1	1.3
62149	99	SPEED	SUR	54	1	748	0	0	1.7	0.1	1.7
62150	99	SPEED	SUR	54	1	724	0	0	1.9	-0.7	2.0
62152	99	SPEED	SUR	57	2	748	0	0	1.1	-0.2	1.1
62153	99	SPEED	SUR	57	2	1473	0	0	1.6	-0.5	1.7
62154	99	SPEED	SUR	56	2	748	0	0	1.4	0.2	1.4
62155	99	SPEED	SUR	58	1	656	0	0	1.8	0.5	1.9
62163	99	SPEED	SUR	48	-8	742	0	0	1.0	0.3	1.0
62164	99	SPEED	SUR	57	1	450	0	0	1.2	-0.8	1.4
62165	99	SPEED	SUR	54	1	746	0	0	1.2	0.0	1.2
62170	99	SPEED	SUR	51	2	748	0	0	1.7	0.9	1.9
62304	99	SPEED	SUR	51	2	621	0	0	1.4	0.9	1.7
62305	99	SPEED	SUR	50	0	394	0	0	1.7	0.7	1.9
62442	99	SPEED	SUR	49	-16	863	0	0	1.6	-1.7	2.3
63055	99	SPEED	SUR	61	2	748	0	0	1.1	-0.3	1.1
63056	99	SPEED	SUR	60	2	748	0	0	1.2	0.6	1.3
63057	99	SPEED	SUR	59	2	747	0	0	1.6	0.8	1.8
63058	99	SPEED	SUR	53	2	1475	0	0	1.4	0.7	1.6
63101	99	SPEED	SUR	61	1	748	0	0	1.2	-0.0	1.2
63103	99	SPEED	SUR	61	1	748	0	0	1.4	0.3	1.4
63104	99	SPEED	SUR	61	2	748	0	0	1.1	0.2	1.1
63105	99	SPEED	SUR	61	2	743	0	0	1.2	0.4	1.3
63106	99	SPEED	SUR	61	2	741	0	0	1.2	0.2	1.2
63108	99	SPEED	SUR	61	2	748	0	0	1.6	0.3	1.6
63109	99	SPEED	SUR	60	2	703	0	0	1.3	0.8	1.5
63110	99	SPEED	SUR	60	2	740	0	0	1.4	0.3	1.4

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
63112	99	SPEED	SUR	61	1	748	0	0	1.1	-0.2	1.1
63113	99	SPEED	SUR	61	2	747	0	0	1.1	0.1	1.1
63115	99	SPEED	SUR	62	1	710	0	0	1.2	-0.3	1.2
63117	99	SPEED	SUR	61	1	1483	0	0	1.2	0.1	1.2
64041	99	SPEED	SUR	61	-3	747	0	0	1.3	0.3	1.3
64045	99	SPEED	SUR	59	-12	1311	0	0	1.1	0.2	1.1
64046	99	SPEED	SUR	61	-4	746	0	0	1.1	0.6	1.3
66021	99	SPEED	SUR	55	14	624	0	0	1.6	0.3	1.7
66022	99	SPEED	SUR	54	14	1008	0	0	1.2	-0.2	1.2
66024	99	SPEED	SUR	55	13	587	0	0	1.3	-0.0	1.3

### 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 : MAY 2018  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1300001	99	DIRN	SUR	11	-23	670	0	0	8.5	1.4	8.7
1300002	99	DIRN	SUR	20	-23	700	0	0	8.0	-1.6	8.2
1300008	99	DIRN	SUR	15	-38	720	0	0	8.9	0.0	8.9
1300131	99	DIRN	SUR	28	-17	329	0	0	30.6	-11.7	32.8
4100026	99	DIRN	SUR	12	-38	304	0	0	8.7	-17.5	19.5
41002	99	DIRN	SUR	32	-75	933	0	0	13.9	8.0	16.1
4100300	99	DIRN	SUR	16	-57	741	0	0	11.1	2.8	11.5
41004	99	DIRN	SUR	33	-79	600	0	0	22.3	2.0	22.4
41008	99	DIRN	SUR	31	-81	527	0	0	18.6	6.8	19.8
41009	99	DIRN	SUR	29	-80	854	0	0	24.4	6.7	25.3
41010	99	DIRN	SUR	29	-79	1275	0	0	19.4	11.1	22.3
41013	99	DIRN	SUR	33	-78	817	0	0	18.0	9.0	20.2
41024	99	DIRN	SUR	34	-79	604	0	0	20.9	-11.9	24.0
41025	99	DIRN	SUR	35	-75	919	0	0	16.5	4.1	17.0
41026	99	DIRN	SUR	12	-38	309	0	0	9.1	-18.6	20.7
41029	99	DIRN	SUR	33	-80	702	0	0	19.8	-6.4	20.8
41033	99	DIRN	SUR	32	-80	392	0	0	21.6	-2.4	21.7
41037	99	DIRN	SUR	34	-77	641	0	0	15.0	-0.9	15.0
41038	99	DIRN	SUR	34	-78	369	0	0	53.2	16.2	55.6
41040	99	DIRN	SUR	15	-53	1240	0	0	7.9	-11.6	14.0
41041	99	DIRN	SUR	14	-46	1309	0	0	8.4	-11.8	14.5
41043	99	DIRN	SUR	21	-65	1411	0	0	10.9	-10.6	15.2
41044	99	DIRN	SUR	22	-59	1430	0	0	8.7	1.5	8.8
41046	99	DIRN	SUR	24	-68	1387	0	0	9.4	1.6	9.5
41047	99	DIRN	SUR	28	-72	1211	0	0	9.5	-3.4	10.1
41048	99	DIRN	SUR	32	-70	986	0	0	14.1	-2.5	14.3
41049	99	DIRN	SUR	28	-63	1107	0	0	14.3	2.6	14.5
41052	99	DIRN	SUR	18	-65	410	0	0	11.6	5.2	12.7
41053	99	DIRN	SUR	19	-66	1198	0	0	15.8	-0.4	15.8
41056	99	DIRN	SUR	18	-66	436	0	0	12.7	3.2	13.2
41063	99	DIRN	SUR	35	-76	777	0	0	19.9	-8.8	21.8
41064	99	DIRN	SUR	34	-77	588	0	0	15.9	3.0	16.2

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
41300	99	DIRN	SUR	16	-57	741	0	0	11.0	2.8	11.4
42013	99	DIRN	SUR	27	-83	856	0	0	22.4	-0.0	22.4
42056	99	DIRN	SUR	20	-85	1325	0	0	21.7	9.9	23.9
42057	99	DIRN	SUR	17	-81	1157	0	0	17.1	3.7	17.5
42058	99	DIRN	SUR	15	-75	1359	0	0	10.5	8.3	13.4
42059	99	DIRN	SUR	15	-68	1271	0	0	14.7	4.1	15.3
42060	99	DIRN	SUR	16	-63	1400	0	0	9.9	0.7	9.9
42085	99	DIRN	SUR	18	-67	650	0	0	10.6	9.9	14.5
44007	99	DIRN	SUR	44	-70	461	0	0	22.4	8.2	23.8
44009	99	DIRN	SUR	39	-75	509	0	0	32.5	14.5	35.6
44013	99	DIRN	SUR	42	-71	479	0	0	23.1	20.0	30.5
44014	99	DIRN	SUR	37	-75	537	0	0	20.0	5.8	20.8
44017	99	DIRN	SUR	41	-72	492	0	0	22.1	8.8	23.8
44018	99	DIRN	SUR	42	-70	536	0	0	18.5	16.6	24.9
44020	99	DIRN	SUR	41	-70	621	0	0	16.8	4.2	17.3
44025	99	DIRN	SUR	40	-73	531	0	0	19.2	6.7	20.3
44027	99	DIRN	SUR	44	-67	530	0	0	20.3	12.0	23.5
44030	99	DIRN	SUR	43	-70	438	0	0	27.0	10.3	28.9
44032	99	DIRN	SUR	44	-69	439	0	0	20.6	15.5	25.8
44033	99	DIRN	SUR	44	-69	406	0	0	24.8	4.9	25.3
44034	99	DIRN	SUR	44	-68	448	0	0	22.6	10.7	25.0
44037	99	DIRN	SUR	44	-68	446	0	0	16.2	37.4	40.8
44039	99	DIRN	SUR	41	-73	391	0	0	24.8	9.3	26.5
44040	99	DIRN	SUR	41	-74	180	0	0	18.2	1.6	18.3
44042	99	DIRN	SUR	38	-76	565	0	0	32.5	-1.0	32.5
44058	99	DIRN	SUR	38	-76	814	0	0	31.1	-18.6	36.2
44062	99	DIRN	SUR	39	-76	746	0	0	36.3	-11.3	38.0
44063	99	DIRN	SUR	39	-76	346	0	0	27.7	-14.5	31.3
44064	99	DIRN	SUR	37	-76	905	0	0	35.0	-13.4	37.5
44065	99	DIRN	SUR	40	-74	683	0	0	20.0	8.0	21.5
44066	99	DIRN	SUR	40	-73	544	0	0	20.9	10.1	23.2
44072	99	DIRN	SUR	37	-76	902	0	0	32.7	-10.2	34.3
44137	99	DIRN	SUR	42	-62	672	0	0	16.9	-13.2	21.5
44139	99	DIRN	SUR	44	-57	257	0	0	14.5	7.9	16.5
45003	99	DIRN	SUR	45	-83	175	0	0	23.7	23.6	33.4
45005	99	DIRN	SUR	42	-82	303	0	0	23.2	13.6	26.9
45008	99	DIRN	SUR	44	-82	314	0	0	27.6	23.0	36.0
45012	99	DIRN	SUR	44	-77	46	0	0	16.0	22.8	27.9
45132	99	DIRN	SUR	43	-81	124	0	0	18.4	12.2	22.1
45135	99	DIRN	SUR	44	-77	554	0	0	24.0	-1.1	24.0
45137	99	DIRN	SUR	46	-81	261	0	0	22.6	9.5	24.5



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
45138	99	DIRN	SUR	50	-66	26	0	0	30.4	15.5	34.2
45139	99	DIRN	SUR	43	-80	263	0	0	23.7	-0.1	23.7
45142	99	DIRN	SUR	43	-79	106	0	0	23.9	7.2	25.0
45143	99	DIRN	SUR	45	-81	368	0	0	28.8	15.2	32.6
45149	99	DIRN	SUR	44	-82	280	0	0	17.3	2.0	17.5
45152	99	DIRN	SUR	46	-80	47	0	0	34.1	7.4	34.8
45159	99	DIRN	SUR	44	-79	305	0	0	24.1	17.8	30.0
45162	99	DIRN	SUR	45	-83	333	0	0	26.6	-6.7	27.5
45163	99	DIRN	SUR	44	-84	399	0	0	23.1	6.5	24.0
45164	99	DIRN	SUR	42	-82	63	0	0	29.9	-2.7	30.0
45165	99	DIRN	SUR	42	-83	140	0	0	35.8	13.2	38.1
45166	99	DIRN	SUR	45	-73	192	0	0	15.0	-50.1	52.3
45167	99	DIRN	SUR	42	-80	50	0	0	14.2	-17.2	22.3
45169	99	DIRN	SUR	42	-82	128	0	0	32.0	-3.6	32.2
45175	99	DIRN	SUR	46	-85	309	0	0	21.4	-16.6	27.1
45176	99	DIRN	SUR	42	-82	203	0	0	21.6	-14.4	25.9
6100198	99	DIRN	SUR	37	-2	390	0	0	16.6	-1.7	16.7
6100281	99	DIRN	SUR	40	0	217	0	0	54.4	-17.4	57.2
6100417	99	DIRN	SUR	38	0	24	0	0	16.5	-0.8	16.5
6200024	99	DIRN	SUR	44	-3	94	0	0	23.0	5.4	23.6
6200025	99	DIRN	SUR	44	-6	394	0	0	16.3	5.1	17.1
6200082	99	DIRN	SUR	44	-8	621	0	0	14.2	4.0	14.8
6200083	99	DIRN	SUR	43	-9	534	0	0	14.7	2.4	14.9
6200084	99	DIRN	SUR	42	-9	522	0	0	12.8	7.7	14.9
6200085	99	DIRN	SUR	36	-7	464	0	0	15.4	3.4	15.7
6200091	99	DIRN	SUR	53	-5	594	0	0	13.1	2.8	13.4
6200092	99	DIRN	SUR	51	-11	571	0	0	14.5	7.0	16.1
6200093	99	DIRN	SUR	55	-10	626	0	0	10.5	-0.4	10.5
6200094	99	DIRN	SUR	52	-7	547	0	0	15.8	-0.7	15.8
62001	99	DIRN	SUR	45	-5	627	0	0	13.0	1.8	13.1
6200191	99	DIRN	SUR	41	-10	564	0	0	12.6	-0.9	12.7
6200192	99	DIRN	SUR	40	-10	586	0	0	14.9	1.8	15.0
6200199	99	DIRN	SUR	40	-9	191	0	0	14.0	-2.2	14.1
6200200	99	DIRN	SUR	36	-8	390	0	0	157.7	-63.3	169.9
6201030	99	DIRN	SUR	44	-4	185	0	0	15.3	-10.7	18.7
6201070	99	DIRN	SUR	43	-9	408	0	0	16.3	1.9	16.4
62023	99	DIRN	SUR	51	-8	589	0	0	16.3	6.7	17.6
62029	99	DIRN	SUR	49	-12	1225	0	0	12.2	9.6	15.5
62050	99	DIRN	SUR	50	-4	489	0	0	18.0	2.8	18.2
62081	99	DIRN	SUR	51	-13	656	0	0	11.1	12.0	16.4
62095	99	DIRN	SUR	53	-16	619	0	0	11.9	8.1	14.4

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND DIRECTION (DEGREES)

(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62103	99	DIRN	SUR	50	-3	602	0	0	20.7	7.6	22.0
62107	99	DIRN	SUR	50	-6	1166	0	0	18.9	7.5	20.3
62111	99	DIRN	SUR	58	0	580	0	0	13.1	6.6	14.7
62112	99	DIRN	SUR	58	0	560	0	0	13.8	2.6	14.1
62114	99	DIRN	SUR	58	0	1265	0	0	12.5	-3.4	13.0
62163	99	DIRN	SUR	48	-8	599	0	0	11.8	-6.2	13.4
62305	99	DIRN	SUR	50	0	267	0	0	29.0	17.1	33.7
62442	99	DIRN	SUR	49	-16	670	0	0	20.3	-19.0	27.8
64041	99	DIRN	SUR	61	-3	668	0	0	12.2	5.8	13.5
64045	99	DIRN	SUR	59	-12	1165	0	0	11.1	7.7	13.6
64046	99	DIRN	SUR	61	-4	666	0	0	16.6	-1.2	16.6

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

ASDE09	ASFR2	ASFR3	ASFR4	DBLK	FHM5UJH	FPUW5GN	HTXUH4H	VKB4L5Q
XKQLWQB	XQFJRGX	XWHDEAD	YLV96WM	ZVQEQCM	5QPW8XG	7JUNA4N	01001	01004
01010	01028	01241	01400	01415	01492	02185	02365	02527
02591	02836	02963	03005	03238	03354	03502	03743	03808
03882	03918	03953	04018	04220	04270	04320	04339	04360
04417	06011	06260	06610	07110	07145	07510	07645	07761
08001	08023	08190	08221	08302	08430	08508	08522	08579
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	17220	17240	17281	17351	17516	17607	33008
37789	40179	40186	43599	45004	47102	47104	47138	47155
47169	47186	60018	61901	61904	61980	61998	68263	68424
68442	68512	68538	68816	68842	70026	70133	70200	70219
70231	70261	70308	70316	70326	70350	70361	70398	71043
71081	71082	71109	71119	71194	71600	71603	71722	71802
71811	71815	71816	71823	71836	71845	71867	71906	71907
71908	71909	71913	71917	71924	71925	71926	71934	71945
71957	71964	72201	72206	72208	72210	72214	72215	72230
72233	72235	72240	72248	72249	72250	72251	72261	72265
72274	72293	72317	72327	72340	72363	72364	72365	72376
72388	72426	72440	72451	72476	72489	72493	72501	72518
72520	72528	72558	72562	72572	72582	72597	72632	72634
72645	72649	72659	72662	72672	72681	72694	72712	72747
72764	72768	72776	72786	72797	73033	74389	74494	74560
76612	76679	76692	76805	76903	78897	78954	81405	85442
85469	85586	85799	85934	88889	89002	89062	89564	89571
89611	89642	89859	91212	91285	91592	91765	91925	91938
91948	91958	93112	93417	93817	93844	93997	94120	94150
94170	94203	94294	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**

ASDE09	ASFR2	ASFR3	ASFR4	DBLK	FHM5UJH	FPUW5GN	HTXUH4H	VKB4L5Q
XKQLWQB	XQFJRGX	XWHDEAD	YLV96WM	ZVQEQCM	5QPW8XG	7JUNA4N	01001	01004
01010	01028	01241	01400	01415	01492	02836	02963	06610
17607	40186	47155	61904	71194	73033	76903	94653	

## 5 Annex - Explanations of figures and tables

### 5.1 General

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

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

### 5.2 Data Availability

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

### 5.3 Data Quality

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

It should be noted that:

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

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

standard pressure level are shown. Units of RMS, standard deviation and bias are hPa in tables 1 and 4, m in table 7 and  $\text{ms}^{-1}$  in tables 2, 5 and 8. In tables 7 and 8 the station position is indicated; in the case of TEMP Ships and PILOT Ships 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.