



ECMWF Global Data Monitoring Report

July 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**

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Summary of Revisions (in reverse order)

- Revision 28 (June 15) - Monitoring of SYNOP and SYNOP-SHIPs now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart.
- Revision 27 (Feb 15) - Selection criteria for SHIPs are modified as per SOT-7/Doc.9.1.1. Different criteria applied to Manual and Automatic SHIPs.
- Revision 26 (Dec 14) - Coverage chart for ATOVS AMSU-A for Noaa_16 removed
- Revision 25 (Mar 13) - Monitoring of Radiosondes and ASAPs now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart. Tables 24 and 25 are also added to show the identifiers of these BUFR observations separately.
- Revision 24 (Aug 06) - North Atlantic Monitoring statistics replaced by EUCOS Area Monitoring Statistics (tables 13 to 23). Airep tables removed from this section.
- Revision 23 (Dec 00) - Coverage charts for Noaa_14 MSU replaced by ATOVS AMSU-A for Noaa_16.
- Revision 22 (Aug 99) - Coverage charts for TOVS thickness 300-100 hPa replaced by (A) TOVS AMSU-A and MSU (Noaa_15 and Noaa_14).
- Revision 21 (May 99) - Monitoring statistics ceased for Noaa_11 as satellite is no more available.
- Revision 20 (Sep 98) - Changes to tables and annex to remove all mention about data usage. Two more levels (50 and 850 hPa) added to the COSNA statistics for Sondes.
- Revision 19 (Jul 98) - From June 29th, 1998 ECMWF model assimilates temperature data instead of geopotential from radiosondes. As a consequence the number of used geopotential data drops to zero in tables 7, 10, 13 and 15.
- Revision 18 (Apr 98) - Changes to tables and annex to introduce the usage of accepted numbers and observations instead of percentage of rejection.

1 Introduction

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

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

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

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

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

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

ECMWF
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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	Jun	Jul	Ident	Time	Jun	Jul
16144	(00)	29	18	01004	(00)	0	31
21946	(00)	30	0	08430	(00)	0	11
21946	(12)	29	0	41883	(00)	2	16
30965	(00)	29	16	42724	(12)	6	24
30965	(12)	30	15	43599	(12)	4	27
31510	(00)	27	5	48565	(00)	0	24
33837	(00)	29	12	64458	(00)	5	28
34858	(00)	30	2	64458	(12)	5	23
34858	(12)	30	2	65344	(12)	0	13
40375	(00)	24	10	71701	(12)	3	16
40375	(12)	25	9	78970	(00)	0	16
40394	(00)	30	13	78970	(12)	1	18
40706	(12)	21	0	82332	(00)	16	30
40754	(12)	29	8	82332	(12)	17	29
40766	(00)	30	18	83554	(00)	15	31
40800	(00)	19	0	83554	(12)	15	31
40809	(12)	19	0	-	-	-	-
40811	(00)	21	0	-	-	-	-
40841	(12)	19	0	-	-	-	-
40848	(00)	20	0	-	-	-	-
40875	(00)	17	0	-	-	-	-
41024	(00)	30	18	-	-	-	-
41024	(12)	30	18	-	-	-	-
41112	(00)	26	10	-	-	-	-
41112	(12)	29	9	-	-	-	-
41169	(00)	24	6	-	-	-	-
43353	(12)	22	8	-	-	-	-
48601	(12)	30	2	-	-	-	-
48615	(12)	28	5	-	-	-	-
48657	(12)	29	17	-	-	-	-
60096	(12)	22	0	-	-	-	-
68538	(12)	25	0	-	-	-	-
70026	(00)	27	12	-	-	-	-
70200	(12)	25	13	-	-	-	-
70326	(00)	30	16	-	-	-	-
70361	(00)	20	7	-	-	-	-
76394	(12)	30	13	-	-	-	-
76595	(12)	28	12	-	-	-	-
76644	(12)	28	10	-	-	-	-
76654	(12)	26	12	-	-	-	-
78486	(00)	30	14	-	-	-	-
78583	(00)	30	15	-	-	-	-
78583	(12)	30	14	-	-	-	-
91680	(12)	29	0	-	-	-	-
96413	(12)	17	0	-	-	-	-
96441	(12)	14	0	-	-	-	-
96471	(12)	25	3	-	-	-	-
96481	(12)	11	0	-	-	-	-

2.2 Drifting Buoys

Surface pressure observations from **1305** 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.

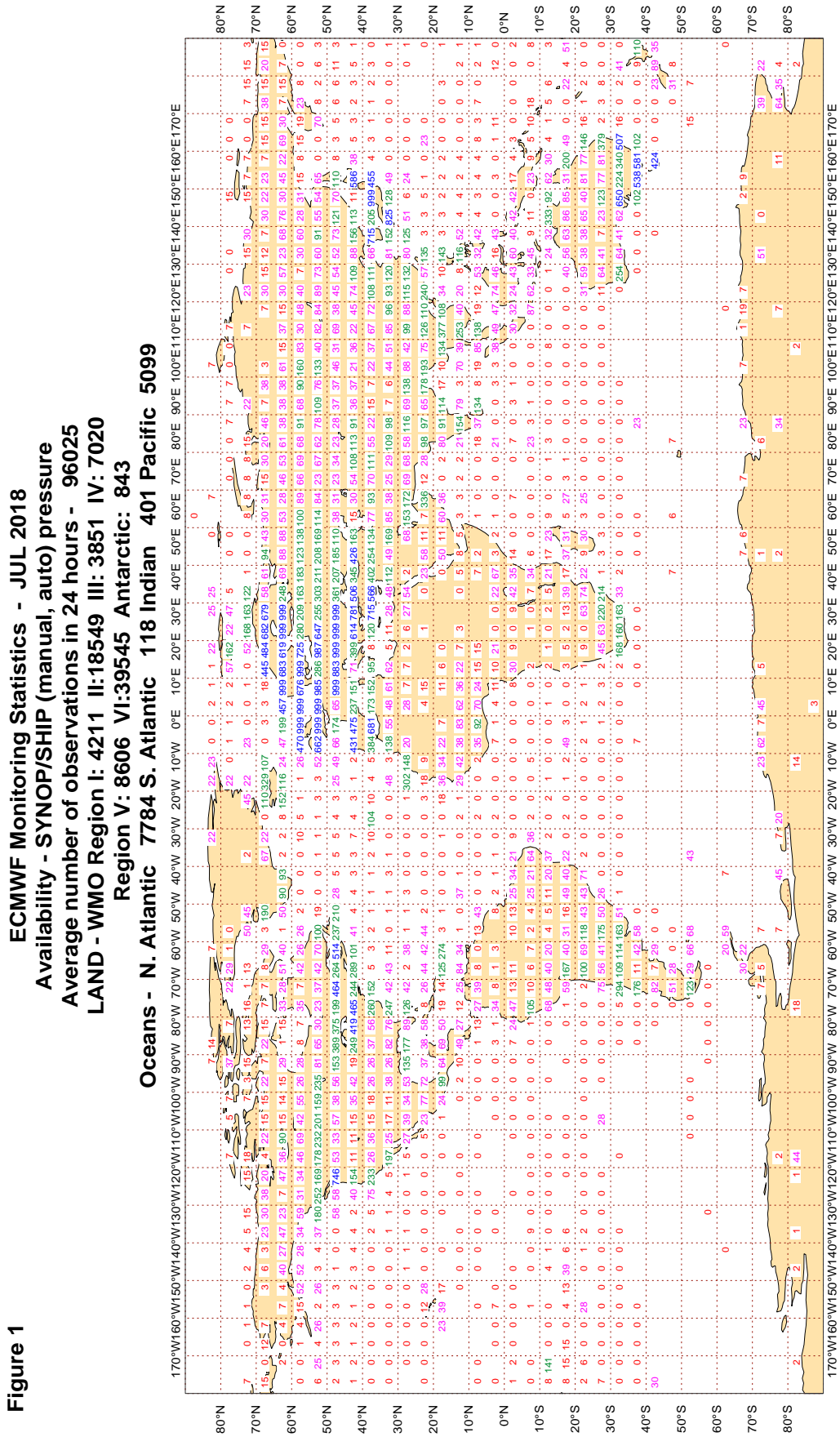
Tab	Parameter	Observation Time
10	Geopotential	00 and 12 UTC
11	Wind	00 and 12 UTC

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.

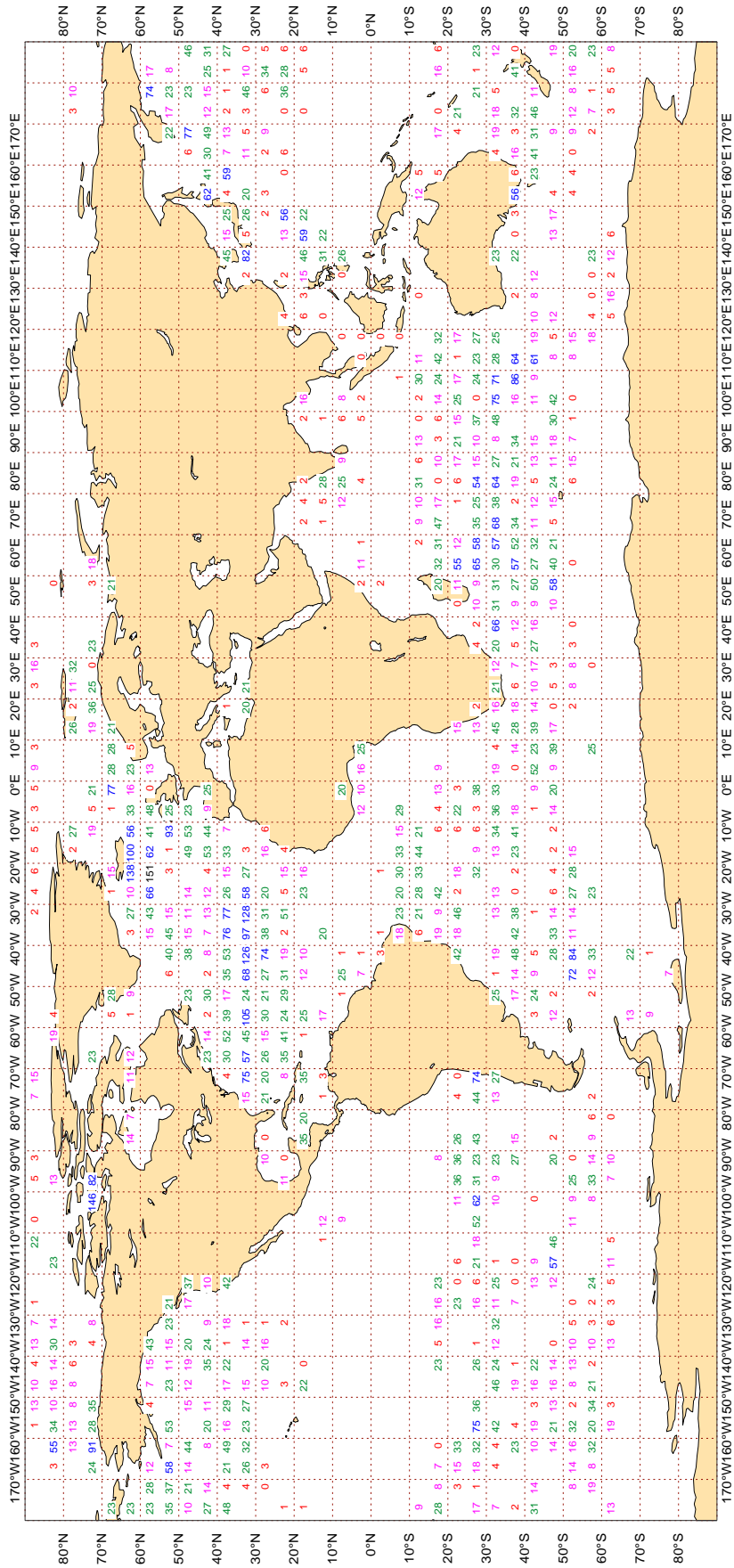
3.2.1 Figure 1 - Availability - SYNOP PRESSURE



3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

Figure 2

ECMWF Monitoring Statistics - JUL 2018
 Availability - DRIFTER PRESSURE
 Average number of observations in 24 hours - 16582
 Oceans - N. Atlantic 4466 S. Atlantic 2116 Indian 3388 Pacific 6612

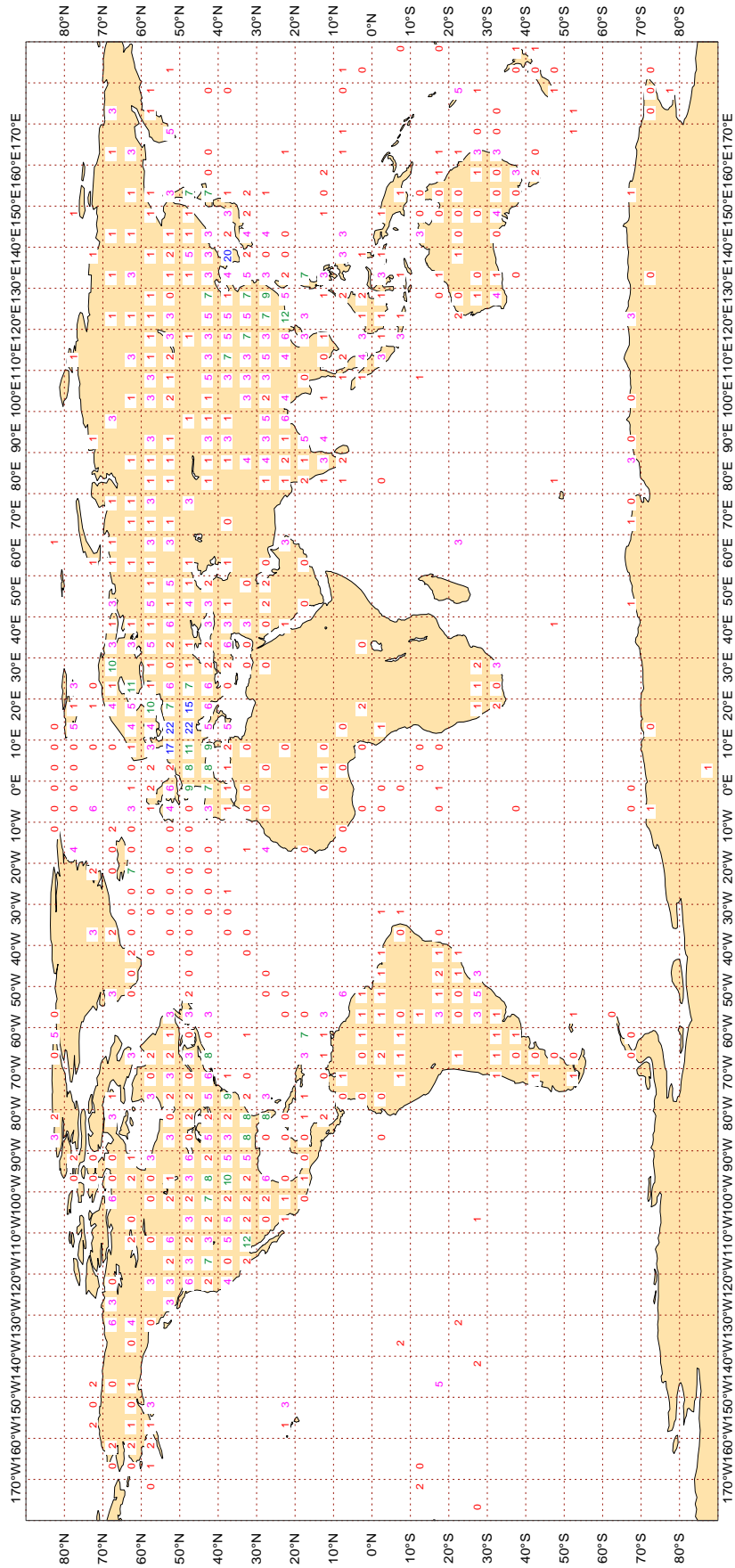


Magics 2.24.2 (64 bit)



3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

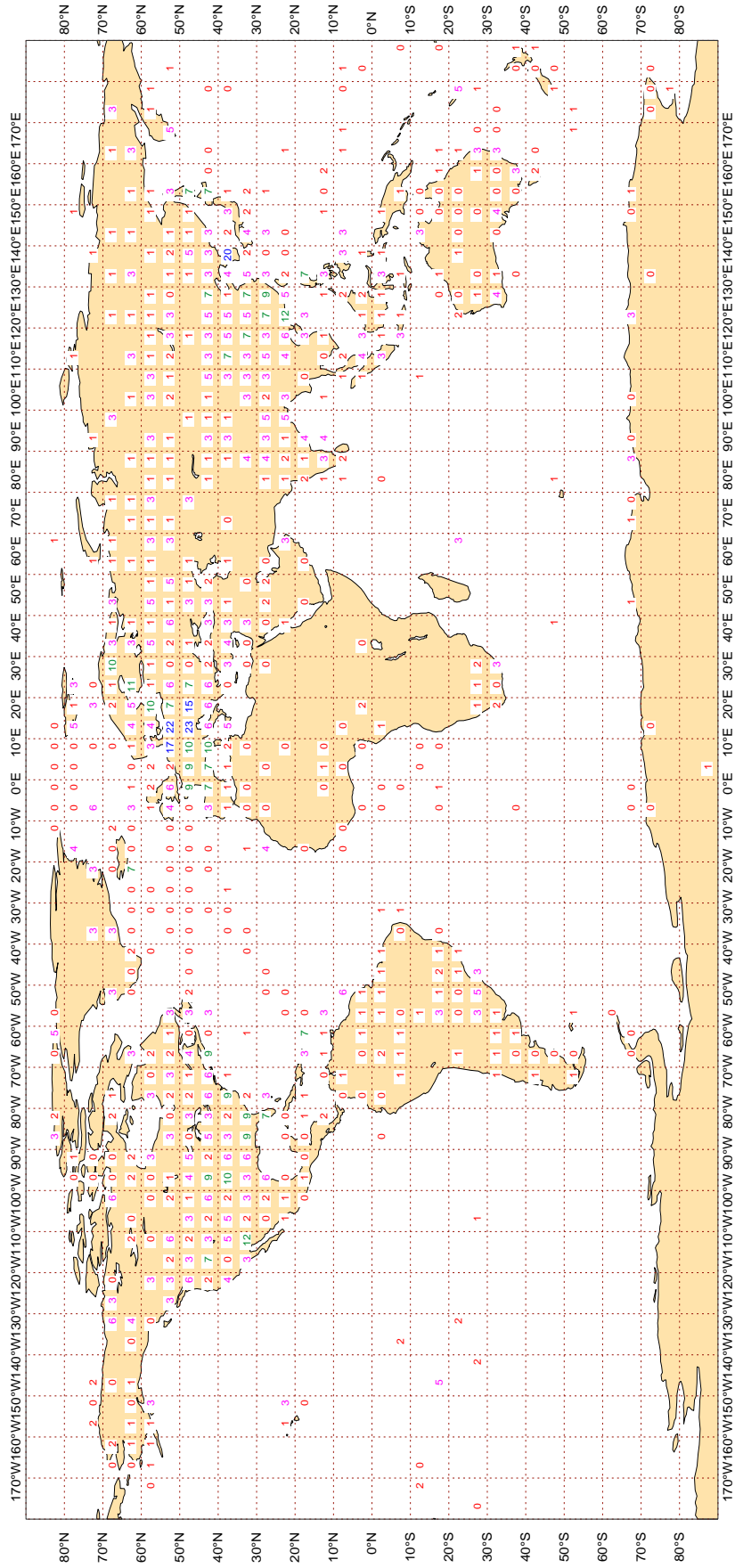
Figure 3
 ECMWF Monitoring Statistics - JUL 2018
 Availability - TEMP 500 hPa Geopotential
 Average number of observations in 24 hours - 1643
 LAND - WMO Region I: 41 II: 509 III: 88 IV: 388
 Region V: 161 VI: 414 Antarctic: 20
 Oceans - N. Atlantic 18 S. Atlantic 0 Indian 0 Pacific 4



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

Figure 4

ECMWF Monitoring Statistics - JUL 2018
 Availability - TEMP/PILOT 300 hPa wind
 Average number of observations in 24 hours - 1645
 LAND - WMO Region I: 41 II: 504 III: 88 IV: 397
 Region V: 160 VI: 414 Antarctic: 20
 Oceans - N. Atlantic 17 S. Atlantic 0 Indian 0 Pacific 4



Magics 2.24.2 (64 bit)



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

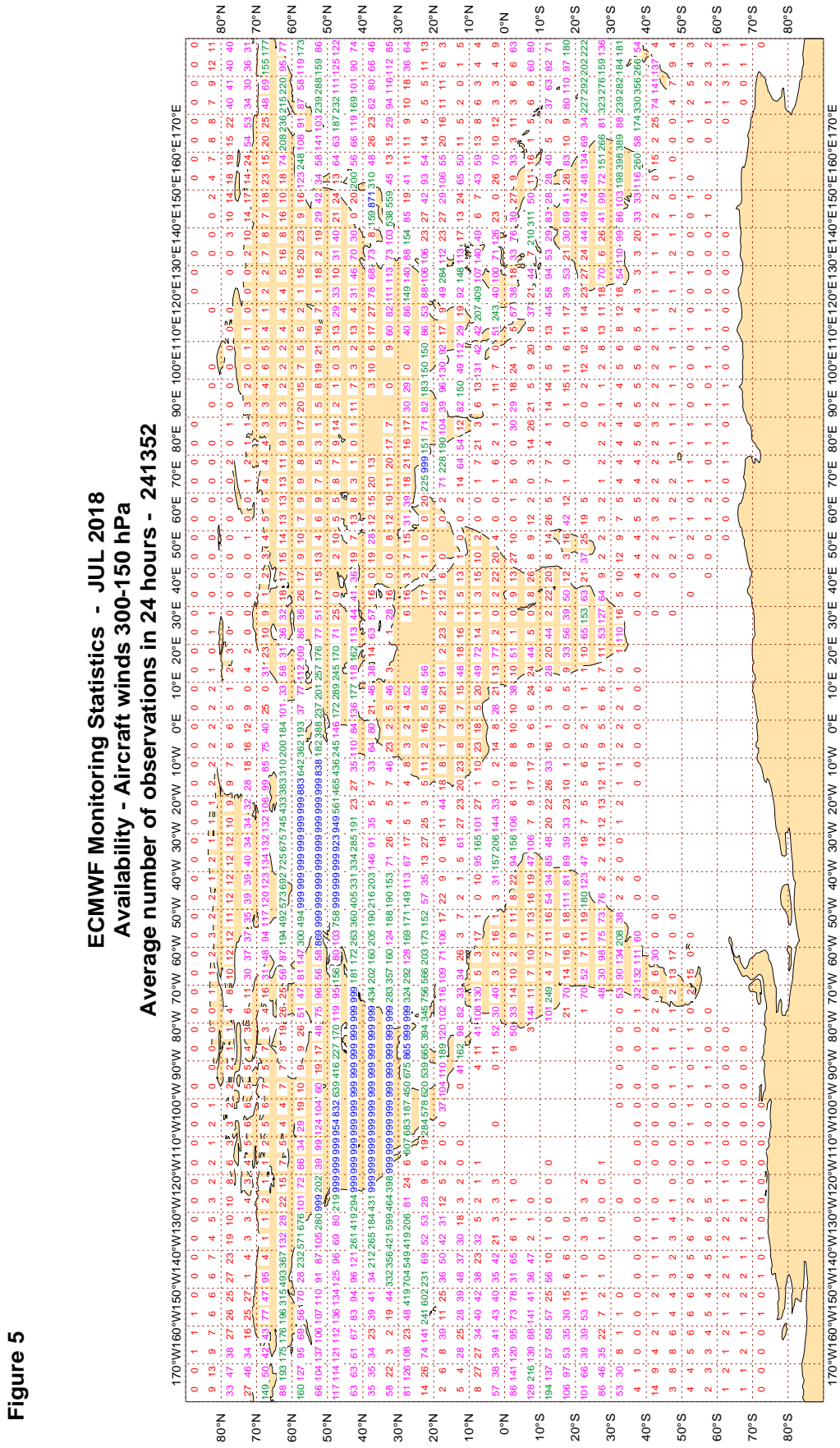


Figure 5

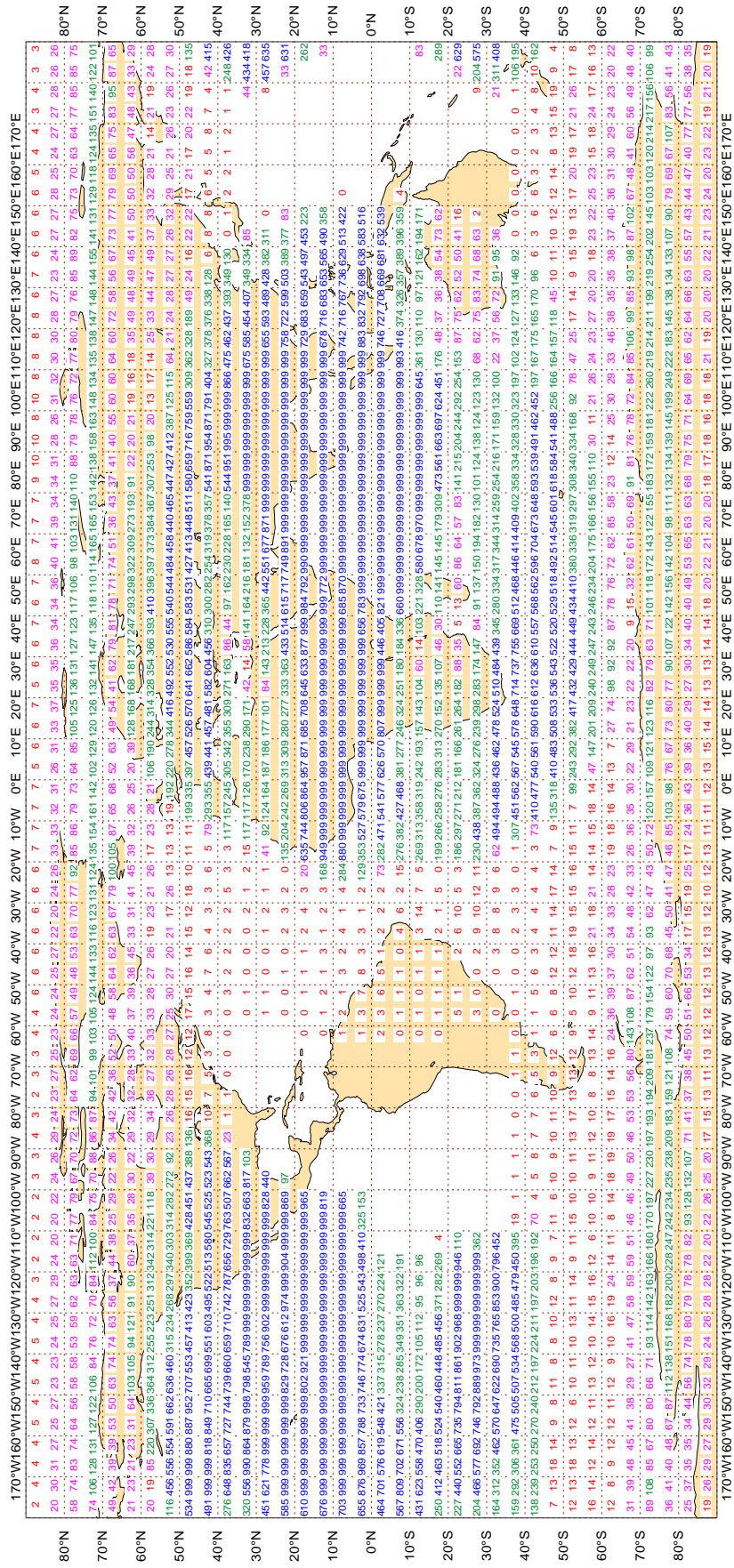


Majics 2.24.2 (64 bit)

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

Figure 6

ECMWF Monitoring Statistics - JUL 2018
Availability - AMV winds 400-150 hPa
Average number of observations in 24 hours - 748755

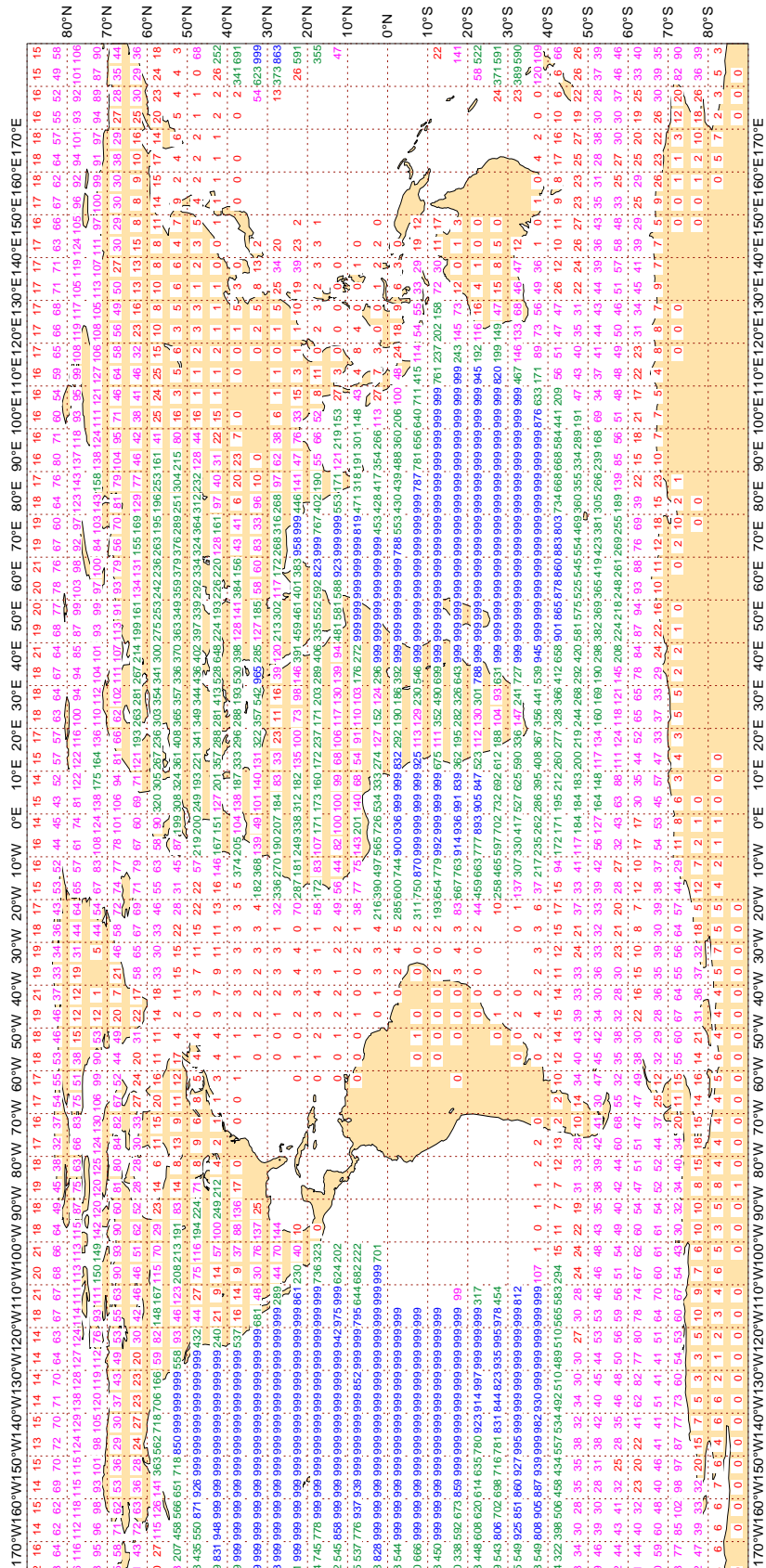


Majics 2.24.2 (64 bit)

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

Figure 7

ECMWF Monitoring Statistics - JUL 2018
Availability - AMV winds 1000-700 hPa
Average number of observations in 24 hours - 958739



Majics 2.24.2 (64 bit)



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

Figure 8

ECMWF Monitoring Statistics - JUL 2018
Availability - NOAA15 ATOVS : AMSU-A
Average number of observations in 24 hours - 309858

Table with 180 columns representing longitude (170°W to 170°E) and 18 rows representing latitude (80°N to 70°S). The table contains numerical data representing the average number of observations in 24 hours for NOAA15 ATOVS AMSU-A in July 2018.



Majics 2.24.2 (64 bit)

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

Figure 9.1

ECMWF Monitoring Statistics - JUL 2018
Availability - NOAA18 ATOVS : AMSU-A
Average number of observations in 24 hours - 534941

Table with 180 columns (representing 5-degree longitude bins from 170°W to 170°E) and 18 rows (representing 5-degree latitude bins from 80°N to 80°S). The table contains numerical data representing the average number of observations per 24 hours for NOAA18 ATOVS AMSU-A in July 2018.

Magics 2.24.2 (64 bit)



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

Figure 9.2

ECMWF Monitoring Statistics - JUL 2018
Availability - AQUA ATOVS : AMSU-A
Average number of observations in 24 hours - 299365

80°N	70°N	60°N	50°N	40°N	30°N	20°N	10°N	0°N	10°S	20°S	30°S	40°S	50°S	60°S	70°S	80°S	
21	23	22	21	20	20	19	19	18	19	18	19	18	19	18	19	18	19
85	90	87	83	80	76	73	71	69	68	66	66	67	67	67	67	67	67
133	143	137	129	121	110	93	96	82	86	85	86	89	82	88	94	104	111
113	127	128	117	103	89	76	65	57	56	57	56	57	56	57	56	57	56
109	120	118	108	99	90	83	81	77	74	73	75	83	95	104	109	112	112
102	104	88	79	76	77	80	78	79	82	80	79	82	90	113	113	111	109
87	82	73	68	71	74	79	80	78	79	85	94	98	99	101	106	113	113
94	92	75	66	69	73	77	84	83	103	104	102	100	100	101	103	107	112
97	97	84	79	92	111	117	114	108	102	99	100	103	106	112	116	117	112
102	106	106	112	121	123	123	120	110	106	98	103	108	108	107	112	119	120
105	113	112	116	121	121	120	122	124	122	121	120	121	120	121	120	121	120
107	114	115	119	118	112	106	113	118	121	121	118	119	121	121	121	121	121
107	115	113	115	119	118	120	126	123	117	107	101	102	111	118	121	122	122
107	118	121	125	123	119	118	122	122	122	119	118	121	122	122	122	122	122
107	119	122	124	122	119	119	122	122	122	122	122	122	122	122	122	122	122
108	120	123	123	120	122	121	118	117	120	122	120	118	120	122	122	122	122
109	121	122	122	121	121	121	118	119	123	123	123	123	123	123	123	123	123
110	122	122	121	122	122	122	122	122	122	122	122	122	122	122	122	122	122
111	124	122	120	121	124	122	120	119	121	124	123	121	124	123	121	124	123
112	124	122	120	122	124	122	120	119	121	124	123	121	124	123	121	124	123
112	125	122	121	122	125	125	121	120	121	125	125	123	125	124	122	125	124
113	126	123	122	126	123	122	124	125	125	125	125	125	125	125	125	125	125
113	125	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
113	127	126	126	127	124	125	127	125	125	125	125	125	125	125	125	125	125
115	127	126	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127
124	131	130	129	128	128	128	128	128	128	128	128	128	128	128	128	128	128
124	131	130	129	128	128	128	128	128	128	128	128	128	128	128	128	128	128
141	158	156	157	158	157	157	157	157	157	157	157	157	157	157	157	157	157
139	154	154	153	153	153	153	153	153	153	153	153	153	153	153	153	153	153
77	86	86	87	86	86	86	86	86	86	86	86	86	86	86	86	86	86
16	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17



Magnics 2.24.2 (64 bit)

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

Figure 9.3

ECMWF Monitoring Statistics - JUL 2018
Availability - METOP ATOVS : AMSU-A
Average number of observations in 24 hours - 438378

Table with 170 columns representing longitude (170°W to 170°E) and 170 rows representing latitude (80°N to 80°S). 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 : JUL 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
3ENU5	99	P	SUR	19	0	2.4	3.7	4.4
3FMO7	99	P	SUR	30	0	1.9	4.4	4.8
42045	99	P	SUR	193	0	1.2	-11.0	11.1
46014	99	P	SUR	240	0	3.7	-5.6	6.8
5BZE2	99	P	SUR	27	0	0.8	4.4	4.5
9HJD9	99	P	SUR	35	0	0.7	-3.7	3.8
9V9040	99	P	SUR	20	0	3.5	-3.2	4.8
9V9401	99	P	SUR	66	1	2.5	-4.2	4.9
9VKQ2	99	P	SUR	23	0	1.1	3.5	3.7
AUFI	99	P	SUR	21	0	1.6	7.6	7.8
AVBE	99	P	SUR	16	0	1.5	-8.2	8.4
AWUU	99	P	SUR	58	0	5.2	1.0	5.3
BKIF	99	P	SUR	29	0	1.2	3.4	3.6
C6TQ6	99	P	SUR	30	0	3.0	7.6	8.2
C6UC3	99	P	SUR	16	0	1.0	9.5	9.6
D5HF4	99	P	SUR	27	0	2.2	3.3	4.0
H9LA	99	P	SUR	47	0	2.5	-5.2	5.8
ONIK	99	P	SUR	18	0	0.8	4.0	4.0
PCBZ	99	P	SUR	68	0	1.7	-7.1	7.3
S6LT3	99	P	SUR	17	0	1.1	-3.7	3.9
TCZF2	99	P	SUR	42	0	5.0	-2.0	5.4
UBMO9	99	P	SUR	33	0	0.9	3.8	3.9
UBSH5	99	P	SUR	17	0	0.8	-3.3	3.4
UCTS	99	P	SUR	36	8	4.9	6.3	8.0
UIZZ	99	P	SUR	73	1	2.5	3.9	4.7
VRBJ9	99	P	SUR	17	0	1.5	5.9	6.1
VRGO7	99	P	SUR	16	0	0.6	-3.8	3.9
VRID2	99	P	SUR	38	0	1.3	6.6	6.7
VRJA4	99	P	SUR	30	8	5.6	10.8	12.2
VRMV3	99	P	SUR	45	0	1.6	3.1	3.5
VRNF7	99	P	SUR	18	0	4.1	9.5	10.3
VRNR5	99	P	SUR	19	0	0.7	5.1	5.2

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

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	SD	BIAS	RMS
VROB9	99	P	SUR	93	1	1.4	3.6	3.8
VRRD7	99	P	SUR	52	0	3.7	8.1	8.9
VWTI	99	P	SUR	125	1	2.2	8.1	8.4
WBP3210	99	P	SUR	37	0	6.1	-1.8	6.4
WCAJ	99	P	SUR	25	0	0.9	4.7	4.8
WDB3161	99	P	SUR	32	0	1.7	3.9	4.3
WDC6925	99	P	SUR	28	0	0.7	3.9	4.0
WDG8555	99	P	SUR	49	0	1.0	5.1	5.2
WDI3177	99	P	SUR	16	0	1.2	3.5	3.8
WMKA	99	P	SUR	46	0	1.0	3.8	4.0
WPAJ	99	P	SUR	53	0	1.4	3.1	3.4
WPKW	99	P	SUR	28	0	2.9	4.3	5.2
WSRL	99	P	SUR	71	0	1.5	-4.5	4.8

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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND SPEED (M/S)
 AREA : GLOBAL
 PERIOD : JUL 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
42045	99	SPEED	SUR	193	0	0	1.7	-4.9	5.2
46004	99	SPEED	SUR	82	0	0	2.1	-6.1	6.5

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 : JUL 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
42019	99	DIRN	SUR	82	0	0	40.7	40.7	57.5
45024	99	DIRN	SUR	70	0	0	32.8	31.5	45.4
45166	99	DIRN	SUR	61	0	0	22.0	-44.2	49.4
45183	99	DIRN	SUR	53	0	0	23.2	31.9	39.4
46118	99	DIRN	SUR	59	0	0	37.4	-34.2	50.7

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 : JUL 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
00000	99	P	SUR	43	-84	65	3	2.5	-6.1	6.6
0022947	99	P	SUR	34	126	300	34	7.2	1.0	7.3
0022959	99	P	SUR	34	124	347	4	7.6	0.4	7.6
0022964	99	P	SUR	35	125	323	147	7.7	1.6	7.8
1301000	99	P	SUR	33	-17	906	906	0.0	0.0	0.0
1301001	99	P	SUR	33	-17	881	881	0.0	0.0	0.0
1501517	99	P	SUR	-37	-12	741	0	0.9	-5.5	5.6
3100374	99	P	SUR	-25	-45	31	0	3.2	8.6	9.2
31374	99	P	SUR	-25	-45	31	0	3.2	8.6	9.2
3301507	99	P	SUR	-49	69	69	0	9.5	0.0	9.5
42045	99	P	SUR	26	-97	1104	0	1.1	-11.0	11.0
46014	99	P	SUR	39	-129	1081	0	3.7	-5.8	6.8
4601660	99	P	SUR	36	178	402	266	4.8	2.1	5.2
4701674	99	P	SUR	70	-67	742	0	0.5	-5.7	5.7
4800282	99	P	SUR	71	-156	730	730	0.0	0.0	0.0
4800770	99	P	SUR	78	-17	379	266	3.4	10.7	11.2
4801625	99	P	SUR	79	163	435	142	4.2	10.0	10.9
4801637	99	P	SUR	82	-163	466	70	7.4	3.6	8.2
4802000	99	P	SUR	80	-119	57	0	1.5	6.3	6.5
48282	99	P	SUR	71	-156	731	731	0.0	0.0	0.0
48770	99	P	SUR	78	-17	379	266	3.4	10.7	11.2
6202402	99	P	SUR	38	-26	896	896	0.0	0.0	0.0
6202404	99	P	SUR	39	-29	903	903	0.0	0.0	0.0
7101560	99	P	SUR	-77	-48	245	104	3.9	1.7	4.3
7401508	99	P	SUR	-58	7	69	51	1.0	0.8	1.3

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND SPEED (M/S)
 AREA : GLOBAL
 PERIOD : JUL 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
23459	99	SPEED	SUR	14	87	117	0	0	2.6	-6.6	7.1
3100231	99	SPEED	SUR	-27	-47	210	4	0	4.5	9.2	10.2
31231	99	SPEED	SUR	-27	-47	210	4	0	4.6	9.1	10.2
46004	99	SPEED	SUR	51	-136	489	0	0	2.2	-5.7	6.1

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 PERIOD : JUL 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
23095	99	DIRN	SUR	11	94	198	0	0	11.3	21.6	24.4
23451	99	DIRN	SUR	15	69	62	0	0	11.0	26.0	28.3
23454	99	DIRN	SUR	10	73	188	0	0	10.4	22.1	24.4
23491	99	DIRN	SUR	12	93	124	0	0	7.9	-20.5	22.0
23492	99	DIRN	SUR	11	72	240	0	0	13.1	44.1	46.0
3100231	99	DIRN	SUR	-27	-47	197	4	0	41.8	72.1	83.3
3100262	99	DIRN	SUR	-23	-43	63	0	0	53.5	-22.1	57.9
3100374	99	DIRN	SUR	-25	-45	26	0	0	85.4	-7.6	85.7
31231	99	DIRN	SUR	-27	-47	199	4	0	42.6	70.8	82.6
31374	99	DIRN	SUR	-25	-45	26	0	0	85.4	-4.6	85.5
3200304	99	DIRN	SUR	-5	-95	212	0	0	42.1	47.0	63.1
32304	99	DIRN	SUR	-5	-95	212	0	0	41.9	46.6	62.6
42019	99	DIRN	SUR	28	-95	468	0	0	30.6	45.2	54.6
44013	99	DIRN	SUR	42	-71	482	0	0	25.0	23.0	34.0
44027	99	DIRN	SUR	44	-67	460	0	0	18.1	22.5	28.8
44058	99	DIRN	SUR	38	-76	800	0	0	19.3	-27.5	33.6
45006	99	DIRN	SUR	47	-90	780	0	0	26.5	22.7	34.9
45024	99	DIRN	SUR	44	-87	421	0	0	24.7	34.5	42.4
45141	99	DIRN	SUR	61	-115	343	0	0	24.5	27.0	36.4
45154	99	DIRN	SUR	46	-83	572	0	0	20.4	20.3	28.7
45166	99	DIRN	SUR	45	-73	344	0	0	24.5	-46.2	52.4
45183	99	DIRN	SUR	45	-86	375	0	0	26.9	30.6	40.7
45187	99	DIRN	SUR	43	-88	55	0	0	18.2	23.9	30.0
46014	99	DIRN	SUR	39	-129	743	0	0	61.2	1.8	61.3
46118	99	DIRN	SUR	49	-123	326	0	0	38.7	-37.0	53.6
5300040	99	DIRN	SUR	-8	95	646	0	0	169.3	29.8	171.9
5300056	99	DIRN	SUR	-5	95	658	0	0	162.0	44.2	167.9
53040	99	DIRN	SUR	-8	95	642	0	0	166.6	41.6	171.7
53056	99	DIRN	SUR	-5	95	655	0	0	162.4	42.0	167.7
6100281	99	DIRN	SUR	40	0	319	0	0	41.2	-29.2	50.5
6100430	99	DIRN	SUR	40	2	292	0	0	44.3	31.5	54.4

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
6101008	99	DIRN	SUR	37	22	155	0	0	33.1	43.8	54.9

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 : JUL 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	5.7	79.9	80.1
01400	00	Z	1000	57	3	25	0	5.7	80.3	80.5
04360	12	Z	1000	66	-38	13	0	0.0	43.0	43.0
04360	00	Z	1000	66	-38	15	0	5.3	45.9	46.2
17516	00	Z	250	35	33	28	1	68.5	42.3	80.5
28698	00	Z	250	55	73	31	0	38.0	-74.9	84.0
37259	12	Z	50	43	47	25	0	138.1	145.6	200.7
37259	00	Z	50	43	47	28	1	127.7	180.4	221.0
38064	12	Z	500	45	66	30	3	55.7	-1.2	55.7

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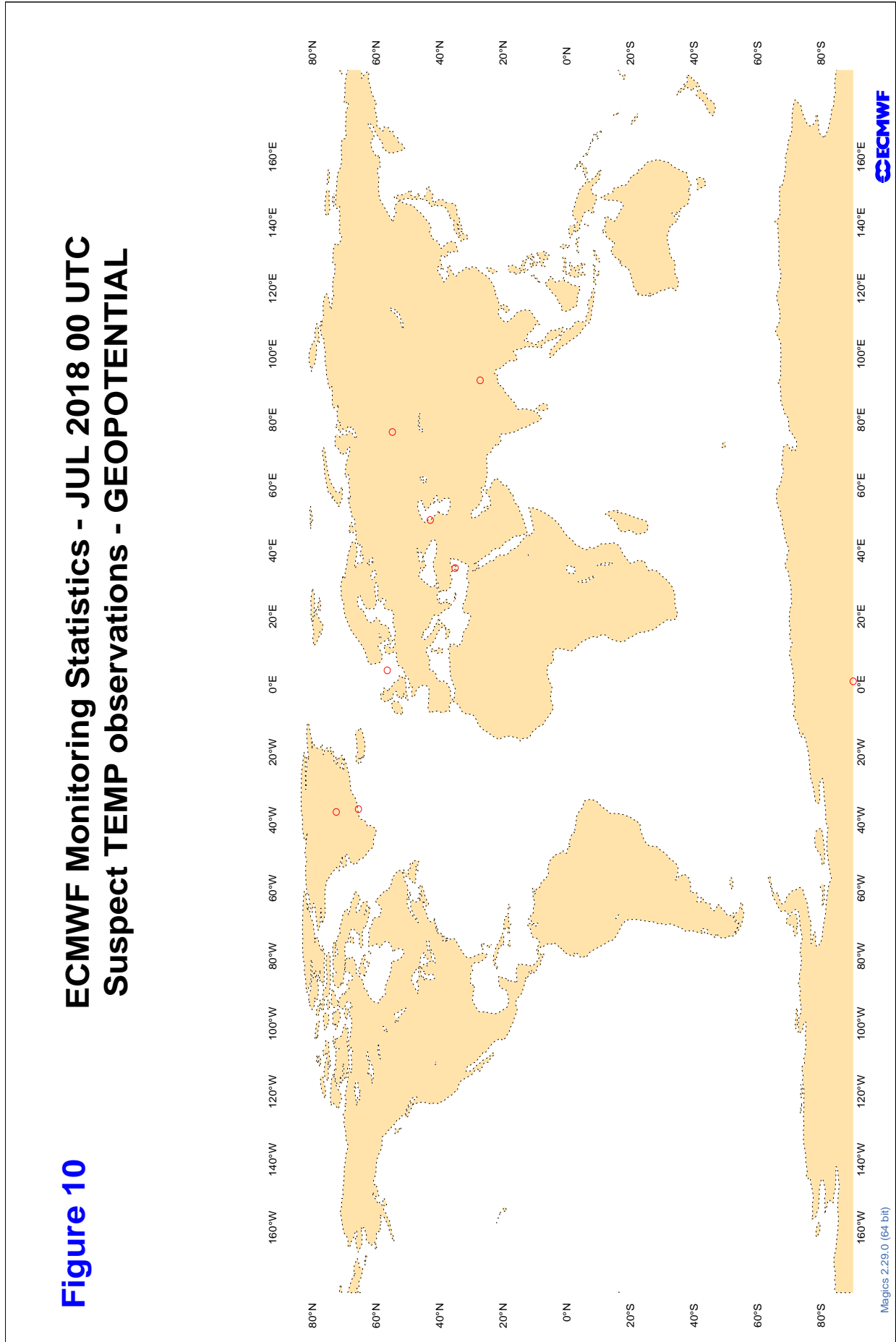
3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

LIST OF SUSPECT STATIONS : RADIOSONDES
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 AREA : GLOBAL
 PERIOD : JUL 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

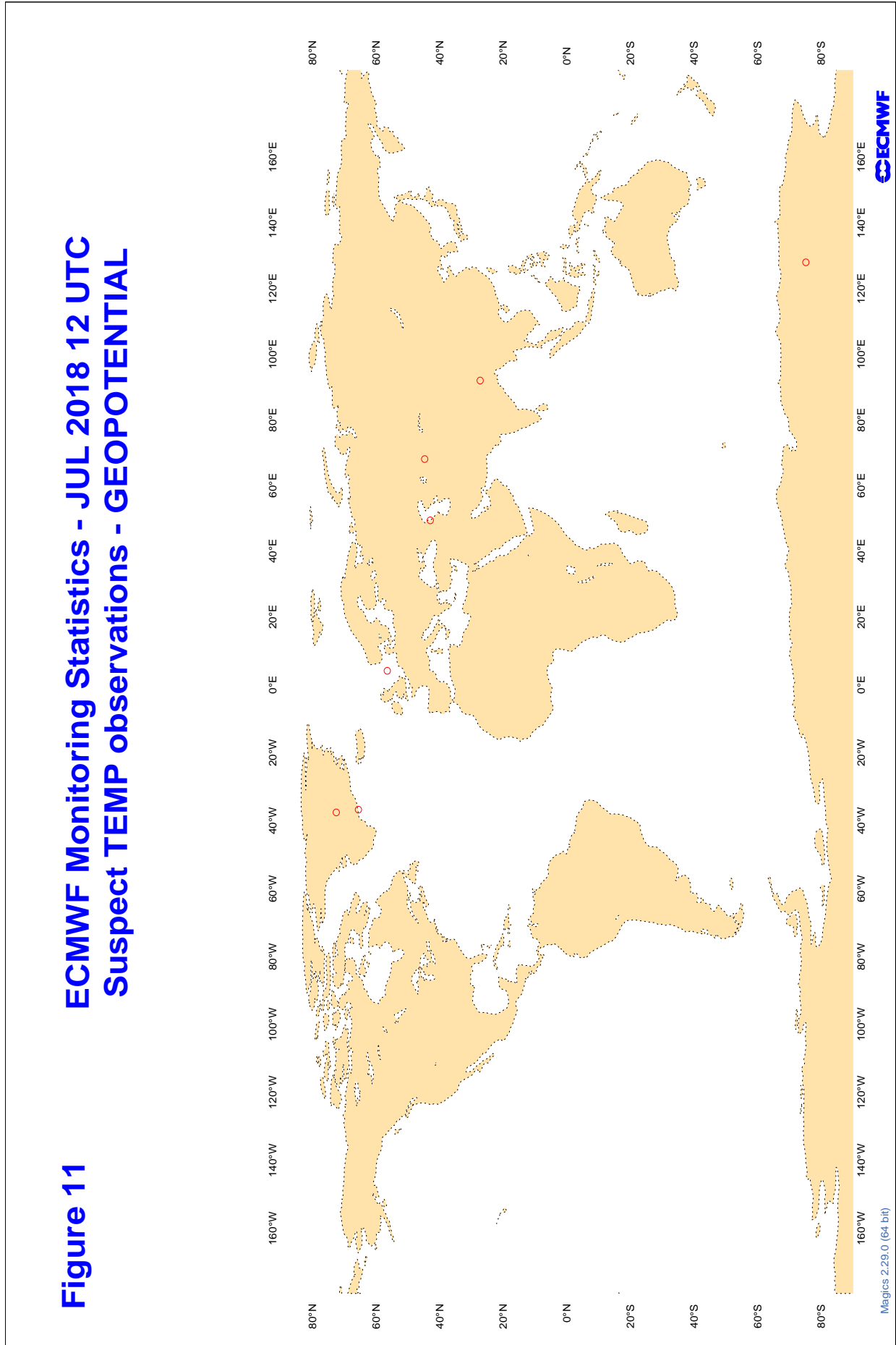
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS ≥ 5 M/S
 NO. OF OBSERVATIONS ≥ 5 , AND,
 ABSOLUTE BIAS ≥ 10 DEGREES, WITH
 STANDARD DEVIATION < 30 DEGREES, AND,
 VERTICAL SPREAD < 10 DEGREES
 (AVERAGE BETWEEN 500 AND 150 HPA)

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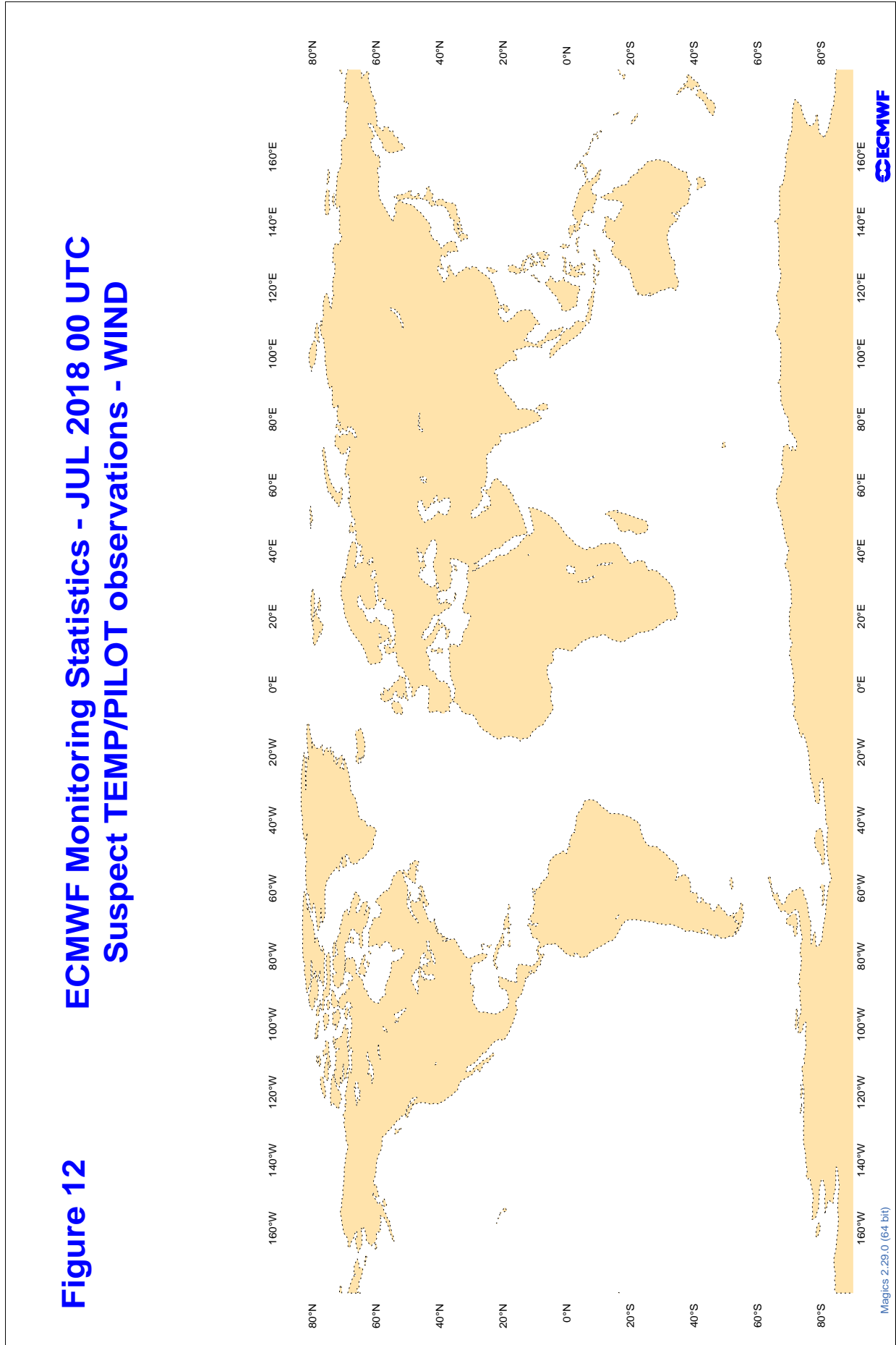
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



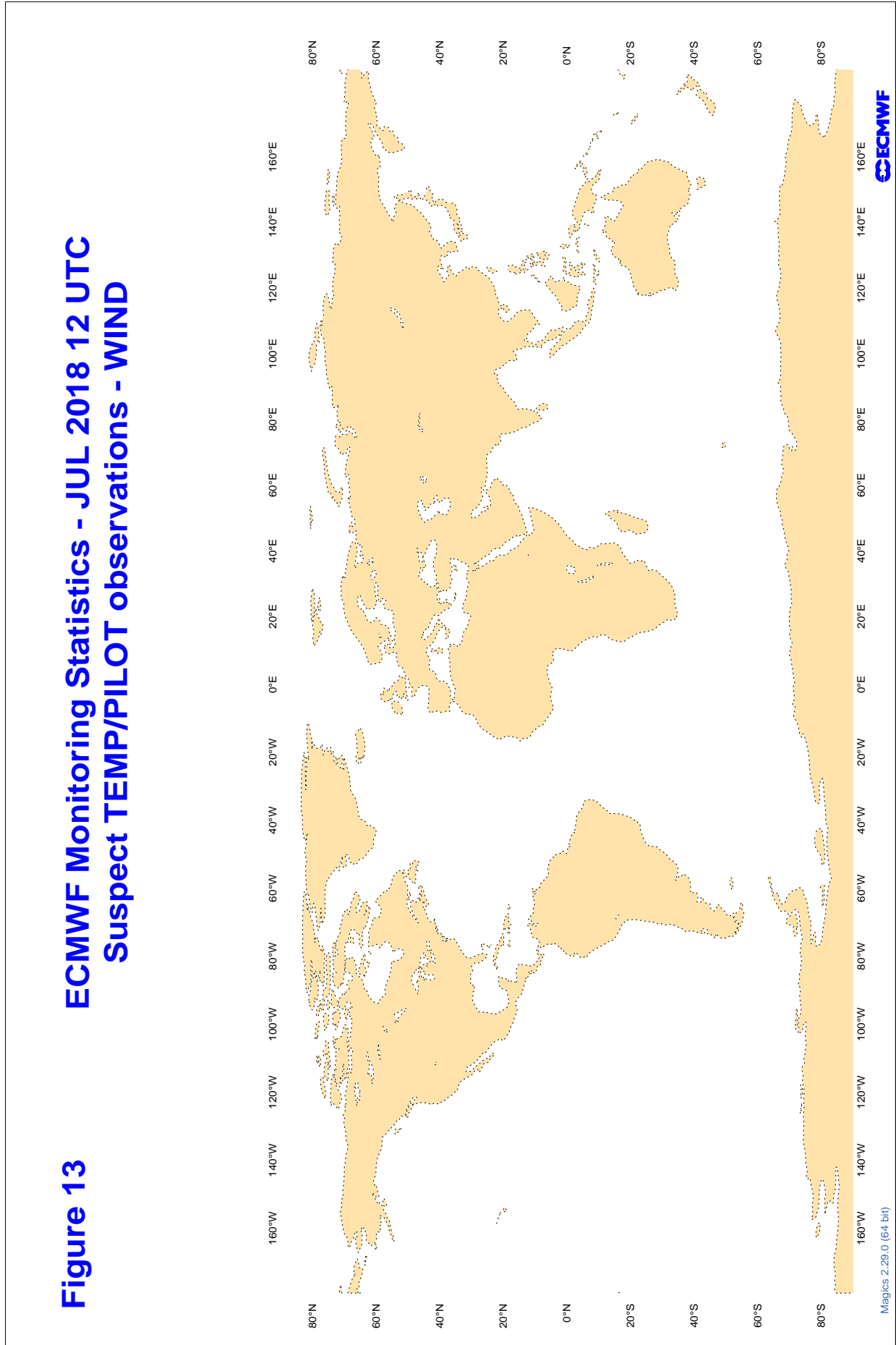
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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 : JUL 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
5QPW8X	00	Z	100	10	13.6	11.5
5QPW8X	12	Z	100	10	20.1	19.2
7JUNA4	00	Z	100	7	4.3	0.9
7JUNA4	12	Z	100	11	40.0	34.1
ASDE09	12	Z	100	1	6.3	6.3
DBLK	00	Z	100	18	6.6	2.3
DBLK	12	Z	100	18	5.0	-0.3
FHM5H	00	Z	100	2	3.2	-1.8
FHM5H	12	Z	100	2	6.7	-3.4
FHM5UJ	12	Z	100	2	8.4	4.5
FHM5UJ	00	Z	100	3	5.4	4.0
FPUW5G	12	Z	100	20	10.0	-6.8
GRAI2	00	Z	100	21	9.7	5.3
GRAI2	12	Z	100	20	13.7	9.4
GRAI3	00	Z	100	21	12.2	8.6
GRAI3	12	Z	100	19	18.1	16.6
HTXUH	12	Z	100	3	3.8	-3.0
HTXUH	00	Z	100	3	10.9	-7.4
HTXUH4	12	Z	100	3	2.1	-1.6
HTXUH4	00	Z	100	4	9.4	-0.7
JGQH	12	Z	100	4	8.2	-3.0
JGQH	00	Z	100	2	3.1	1.2
QCY3TG	12	Z	100	12	20.7	19.5
QCY3TG	00	Z	100	9	20.9	19.2
WDK38H	12	Z	100	2	9.1	-9.1
XKQLWQ	12	Z	100	14	22.8	22.0
XQFJRG	00	Z	100	6	12.7	-6.7
XQFJRG	12	Z	100	5	8.4	3.3
YLV96W	12	Z	100	4	0.0	0.0
YLV96W	00	Z	100	6	221.8	186.1
ZVQEQC	12	Z	100	9	24.7	20.9

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

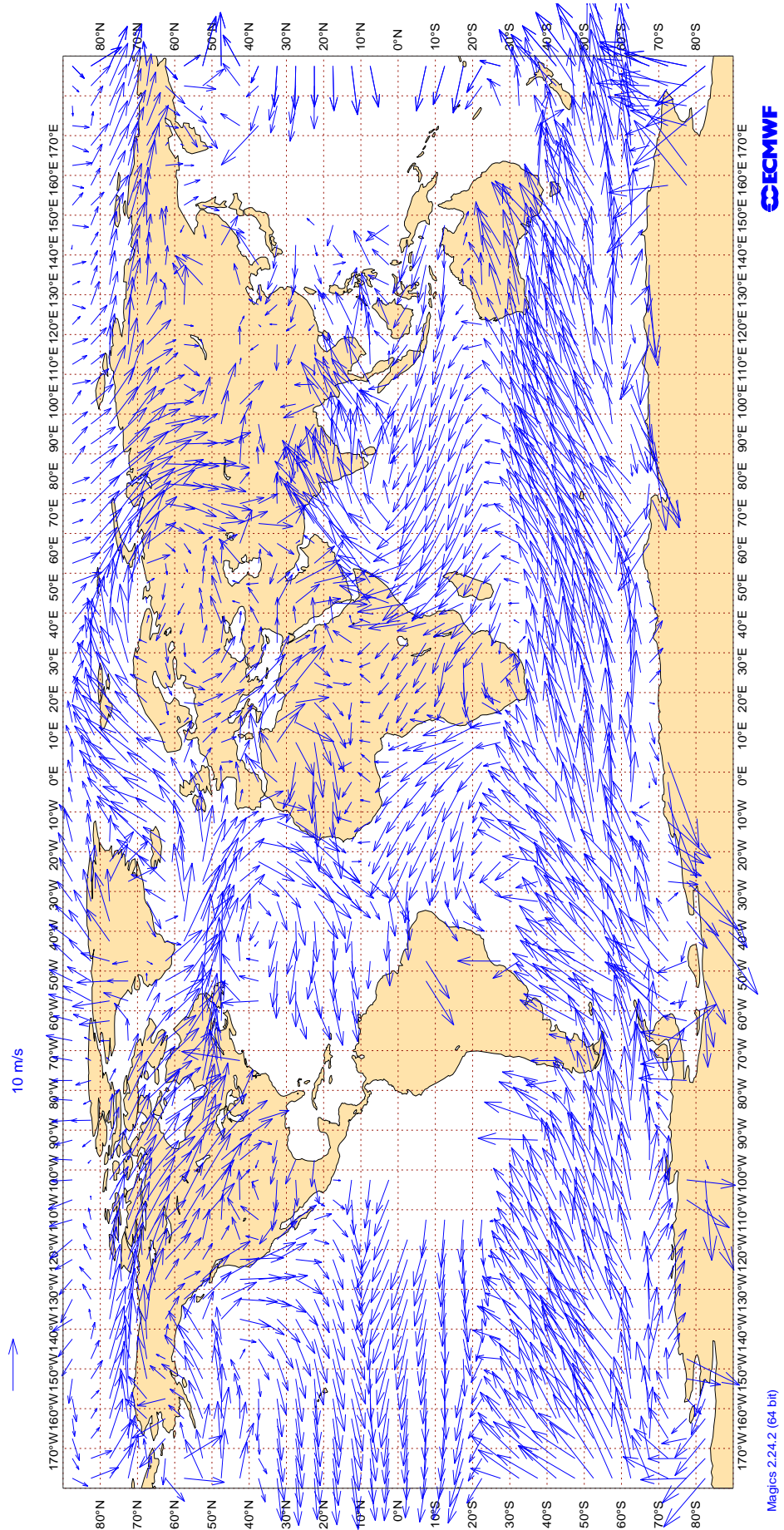
RADIOSONDE MONITORING STATISTICS (SHIPS)

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

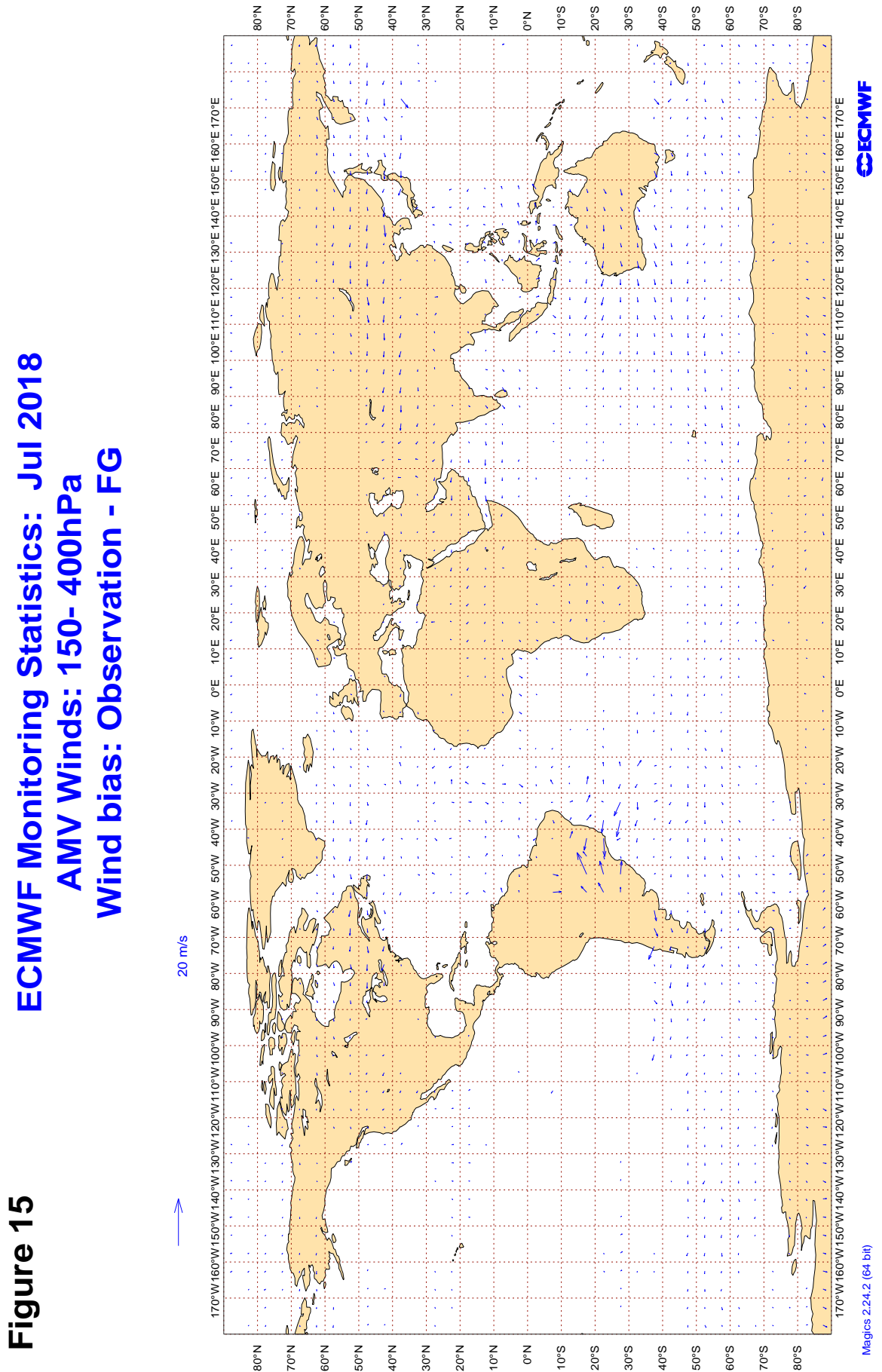
WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
5QPW8X	00	V	100	9	3.2	-1.3	0.2
5QPW8X	12	V	100	10	2.3	0.2	0.0
7JUNA4	00	V	100	7	3.2	-1.9	2.0
7JUNA4	12	V	100	11	2.6	0.4	0.6
ASDE09	12	V	100	1	0.1	-0.1	0.0
DBLK	00	V	100	18	2.3	0.0	-0.3
DBLK	12	V	100	18	2.8	0.2	-0.1
FHM5H	00	V	100	2	2.4	0.1	-1.5
FHM5H	12	V	100	2	2.6	1.5	-2.1
FHM5UJ	12	V	100	2	2.3	0.3	-1.8
FHM5UJ	00	V	100	3	1.9	1.4	0.3
FPUW5G	12	V	100	20	3.1	0.0	0.8
GRAI2	00	V	100	7	4.1	-2.3	1.6
GRAI2	12	V	100	7	6.4	0.0	-2.4
GRAI3	00	V	100	9	2.9	-0.8	-0.7
GRAI3	12	V	100	7	5.9	0.1	2.5
HTXUH	12	V	100	3	3.1	-2.5	0.9
HTXUH	00	V	100	3	3.3	1.1	0.2
HTXUH4	12	V	100	3	2.3	-1.7	0.3
HTXUH4	00	V	100	4	3.2	0.2	0.5
JGQH	12	V	100	4	2.7	0.8	1.0
JGQH	00	V	100	2	2.2	-0.9	1.9
QCY3TG	12	V	100	12	3.1	0.2	1.4
QCY3TG	00	V	100	9	2.6	-0.5	0.0
WDK38H	12	V	100	1	2.4	2.3	-0.8
XKQLWQ	12	V	100	14	2.2	-0.2	0.0
XQFJRG	00	V	100	4	2.7	-0.1	-0.2
XQFJRG	12	V	100	5	2.2	1.2	-0.6
YLV96W	12	V	100	4	3.2	-2.1	-1.5
YLV96W	00	V	100	6	3.4	-0.1	-0.2
ZVQEQC	12	V	100	9	4.2	-1.9	-0.1

3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

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

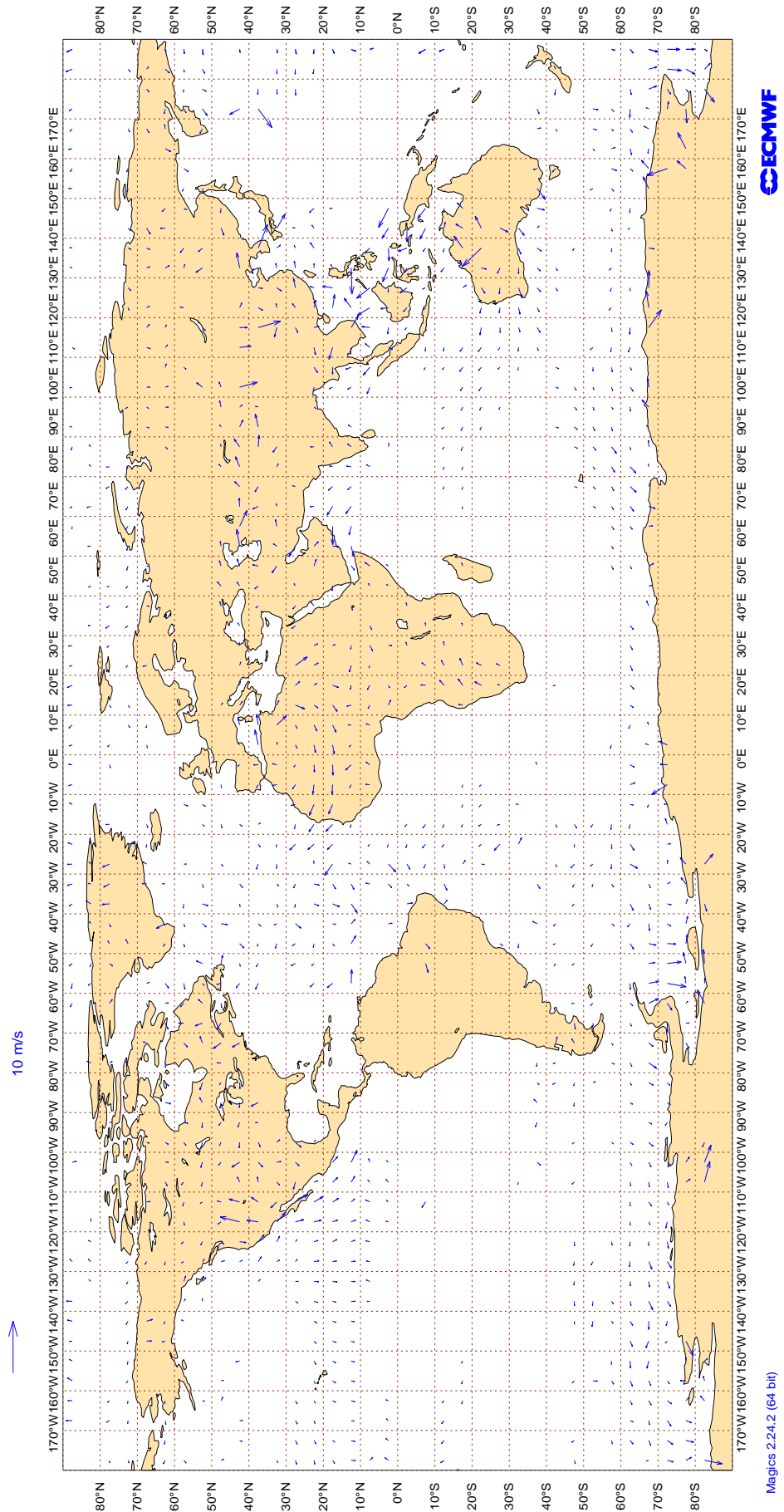


3.2.28 Figure 15 - SATOB Winds: 150- 400hPa



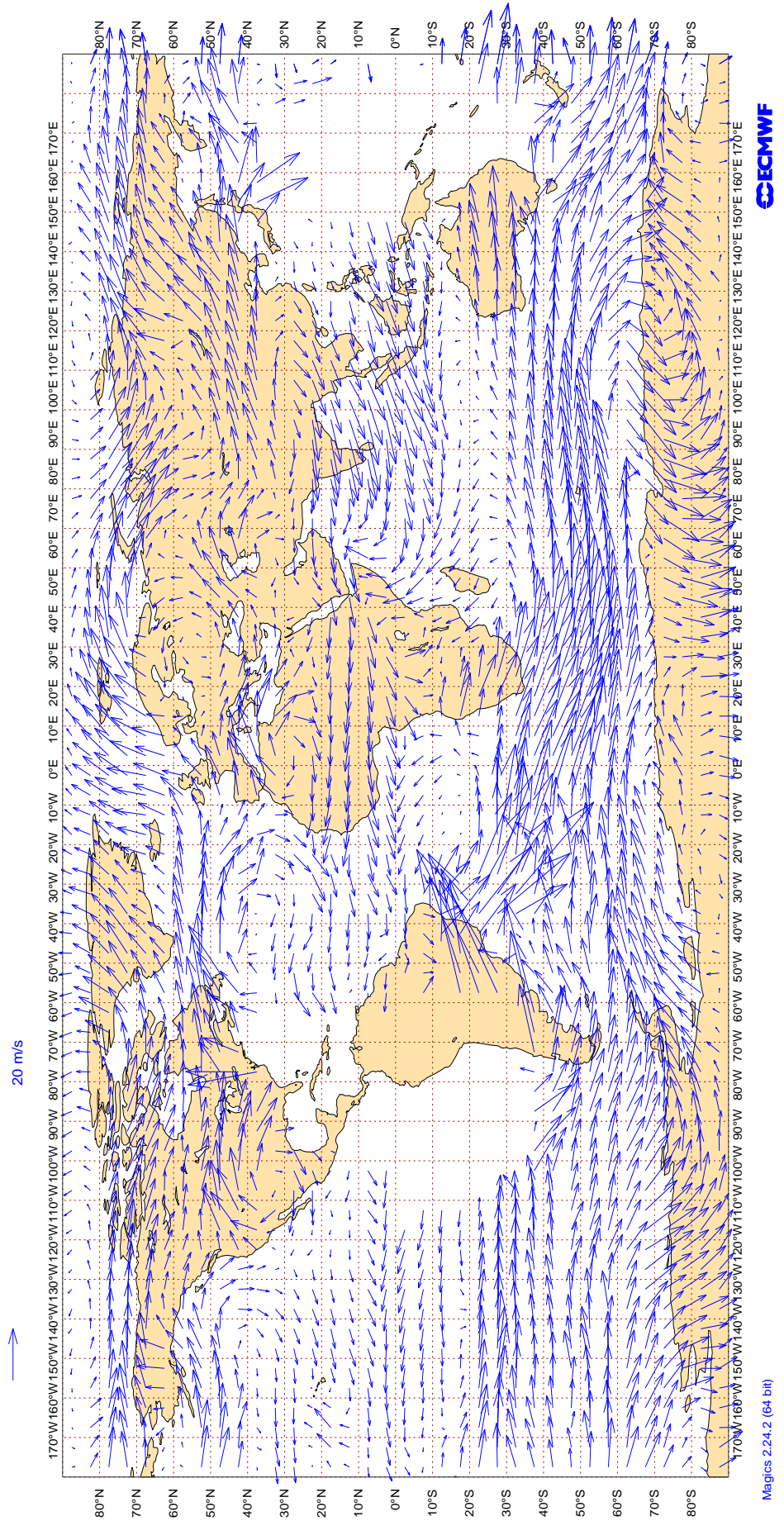
3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

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

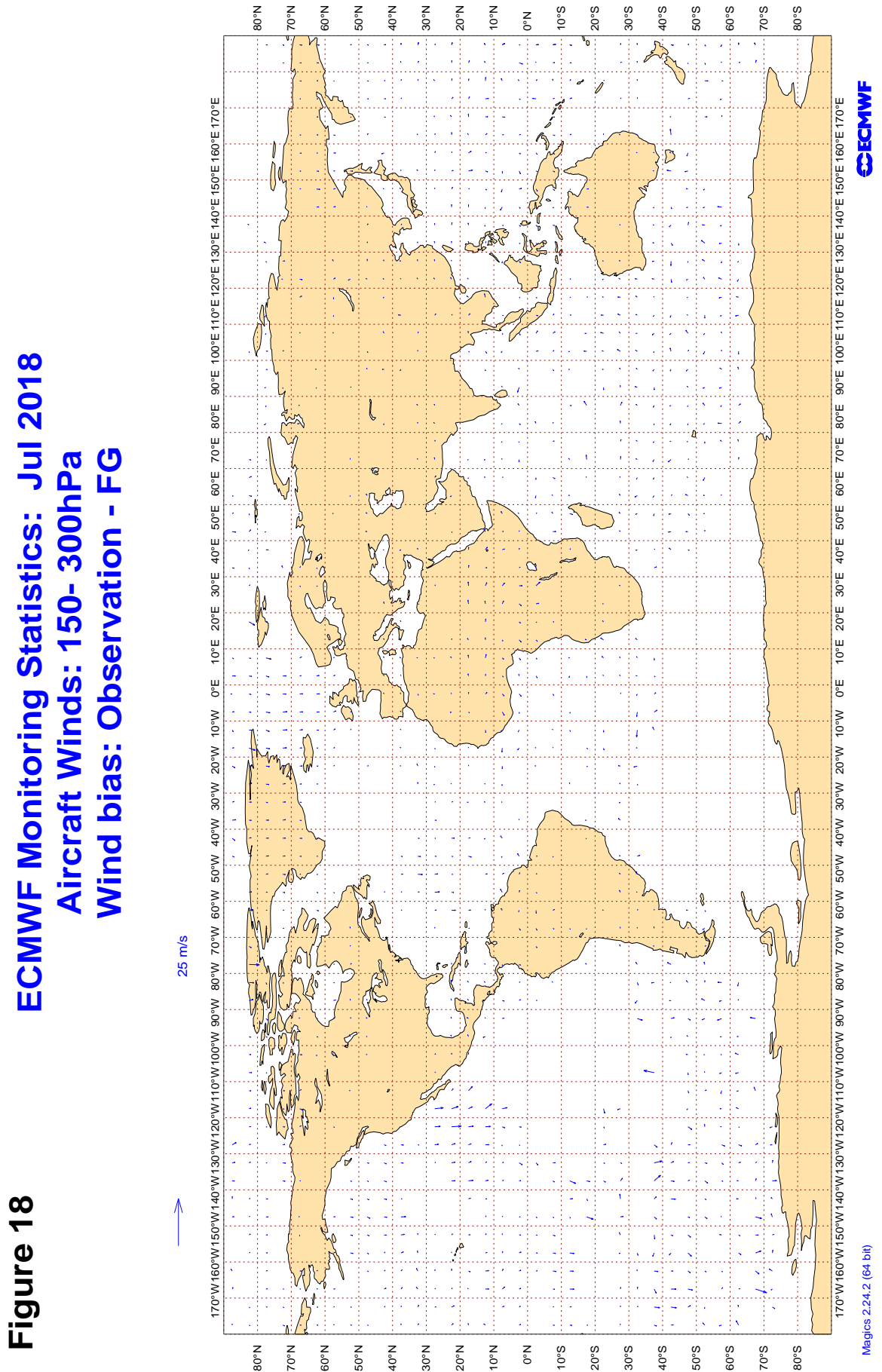


3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

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



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa



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 : JUL 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	88	0	0	3.8	0.8
AAL	99	V	300-150	68654	2	0	4.9	0.3
AAR	99	V	300-150	319	0	0	3.9	-1.0
ABD	99	V	300-150	541	0	0	4.6	-0.4
ABW	99	V	300-150	1042	0	0	3.6	-0.6
ACA	99	V	300-150	38408	4	0	6.0	0.2
ACI	99	V	300-150	2424	0	0	3.5	0.2
AEA	99	V	300-150	636	0	0	4.0	0.1
AFL	99	V	300-150	2315	0	0	3.8	0.4
AFR	99	V	300-150	31004	1	0	4.1	0.2
AHY	99	V	300-150	222	9	0	6.8	0.2
AIB	99	V	300-150	23	0	0	3.3	0.8
AIC	99	V	300-150	1959	2	0	5.2	0.2
ALK	99	V	300-150	979	0	0	4.2	0.5
AMX	99	V	300-150	3666	11	0	8.6	-0.1
ANZ	99	V	300-150	27058	3	0	4.4	0.4
AOJ	99	V	300-150	35	0	0	3.4	-0.3
ART	99	V	300-150	49	0	0	5.2	0.8
ASA	99	V	300-150	109	0	2	5.3	-0.1
ASL	99	V	300-150	890	0	0	3.2	0.2
ASY	99	V	300-150	244	0	0	5.3	1.6
ATN	99	V	300-150	149	1	1	4.4	0.2
AUA	99	V	300-150	5288	0	0	4.1	-0.1
AUH	99	V	300-150	45	0	0	2.8	-0.0
AUI	99	V	300-150	493	0	0	3.7	0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AVA	99	V	300-150	497	3	0	8.7	0.2
AXB	99	V	300-150	33	0	0	5.3	-1.1
AXM	99	V	300-150	239	0	0	5.1	0.7
AXY	99	V	300-150	46	0	0	3.6	0.6
AZA	99	V	300-150	9662	0	0	3.4	0.4
AZG	99	V	300-150	277	0	0	3.8	0.0
BAW	99	V	300-150	57212	2	0	4.8	0.1
BEL	99	V	300-150	3019	0	0	3.2	0.3
BFY	99	V	300-150	45	0	0	3.2	0.5
BLU	99	V	300-150	36	0	0	4.4	-0.7
BMW	99	V	300-150	110	0	0	3.3	0.0
BOS	99	V	300-150	641	0	0	3.5	0.3
BOX	99	V	300-150	2062	0	0	3.5	0.1
BOX	99	V	300-150	61	0	0	2.7	-0.4
BVR	99	V	300-150	27	0	0	3.1	-0.8
CAL	99	V	300-150	435	0	0	3.8	0.5
CAZ	99	V	300-150	100	0	0	3.4	-0.6
CCA	99	V	300-150	816	5	0	4.4	1.0
CEB	99	V	300-150	119	0	0	4.8	0.4
CES	99	V	300-150	1733	0	0	3.2	0.3
CFC	99	V	300-150	274	0	0	4.9	0.3
CFG	99	V	300-150	6046	0	0	4.0	-0.2
CHH	99	V	300-150	262	4	0	7.6	0.7
CJT	99	V	300-150	401	0	0	4.3	0.0
CKS	99	V	300-150	1671	0	0	3.5	0.1
CLU	99	V	300-150	548	0	0	3.7	-0.0
CLX	99	V	300-150	3195	0	0	3.7	-0.3
CMB	99	V	300-150	1031	0	0	4.0	-0.3
CNK	99	V	300-150	21	0	0	2.1	0.2
CNV	99	V	300-150	60	0	0	3.5	0.4
CPA	99	V	300-150	834	0	0	4.1	0.4
CRK	99	V	300-150	704	0	0	3.4	0.4
CRL	99	V	300-150	1809	0	0	3.5	0.4
CRV	99	V	300-150	46	0	0	4.5	-0.5
CSC	99	V	300-150	204	0	0	4.0	1.2
CSN	99	V	300-150	727	7	0	5.0	0.6
CTM	99	V	300-150	66	0	0	5.7	0.7
CXB	99	V	300-150	70	0	0	3.8	-0.4
DAH	99	V	300-150	1268	0	0	3.3	0.3
DAL	99	V	300-150	83708	0	0	3.5	0.2
DHK	99	V	300-150	1142	0	0	3.8	-0.2
DJT	99	V	300-150	1728	0	0	4.0	-0.0
DLH	99	V	300-150	37274	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
DUB	99	V	300-150	146	0	0	3.2	-0.2
EDC	99	V	300-150	39	0	0	2.3	0.6
EDG	99	V	300-150	70	0	0	3.3	0.2
EDW	99	V	300-150	2544	0	0	3.3	0.2
EIN	99	V	300-150	17406	0	0	3.4	0.2
EJM	99	V	300-150	1063	1	0	4.4	0.1
ELY	99	V	300-150	4427	6	0	6.7	0.1
ETD	99	V	300-150	7414	1	0	4.4	0.4
ETH	99	V	300-150	3513	4	0	6.6	0.4
EWG	99	V	300-150	4527	0	0	3.4	0.3
EXS	99	V	300-150	147	0	0	2.7	-0.0
FBU	99	V	300-150	943	0	0	4.0	-0.1
FDX	99	V	300-150	5698	0	0	3.5	0.2
FIN	99	V	300-150	793	0	0	3.4	0.3
FJI	99	V	300-150	7630	0	0	4.1	0.3
FWI	99	V	300-150	1671	0	0	3.0	0.2
FWK	99	V	300-150	35	0	0	3.8	0.5
FYG	99	V	300-150	22	0	0	4.0	-1.2
FYL	99	V	300-150	28	0	0	6.0	-1.9
GAF	99	V	300-150	72	0	0	3.0	-0.0
GCK	99	V	300-150	88	0	0	4.1	0.9
GCR	99	V	300-150	85	0	0	3.7	1.4
GEC	99	V	300-150	2131	0	0	3.4	-0.0
GES	99	V	300-150	108	0	0	3.5	-0.3
GFA	99	V	300-150	921	0	0	4.0	0.3
GIA	99	V	300-150	539	0	0	3.8	0.4
GJI	99	V	300-150	36	0	0	3.2	0.1
GLO	99	V	300-150	38	3	3	10.1	0.7
GMA	99	V	300-150	28	0	0	3.1	0.2
GOL	99	V	300-150	57	0	0	3.9	-0.8
GTH	99	V	300-150	127	0	0	3.7	-0.6
GTI	99	V	300-150	3466	0	0	3.8	-0.2
HAL	99	V	300-150	4952	0	0	4.0	0.6
HHG	99	V	300-150	21	0	0	2.7	-0.6
HRT	99	V	300-150	33	0	0	3.9	1.3
HZS	99	V	300-150	42	0	0	4.1	-0.1
IBE	99	V	300-150	2984	0	0	3.5	0.4
IBK	99	V	300-150	934	0	0	3.8	0.5
ICE	99	V	300-150	1170	0	0	3.6	0.1
ICL	99	V	300-150	744	0	0	4.0	-0.2
ICV	99	V	300-150	300	0	0	3.8	-0.3
IJM	99	V	300-150	21	0	0	4.5	2.7
ISS	99	V	300-150	1500	0	0	3.5	0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
IXR	99	V	300-150	31	0	0	2.5	0.6
JAF	99	V	300-150	1073	5	0	8.6	0.0
JAI	99	V	300-150	1606	0	0	3.6	0.4
JAS	99	V	300-150	110	0	0	3.1	0.6
JET	99	V	300-150	51	0	0	3.5	-0.6
JJA	99	V	300-150	30	0	3	7.4	0.9
JLN	99	V	300-150	23	0	0	4.2	0.5
JST	99	V	300-150	2363	4	0	8.1	0.3
JSX	99	V	300-150	42	0	0	2.6	0.3
KAC	99	V	300-150	1423	0	0	3.9	0.5
KAI	99	V	300-150	137	0	0	4.9	0.0
KAL	99	V	300-150	1180	0	0	3.6	0.5
KAY	99	V	300-150	243	0	0	2.9	-0.0
KCE	99	V	300-150	54	0	0	3.6	1.3
KFE	99	V	300-150	36	0	0	2.7	-0.3
KIW	99	V	300-150	72	0	0	3.7	0.5
KLM	99	V	300-150	18247	3	0	5.2	0.1
KNE	99	V	300-150	28	0	0	4.9	-1.2
KNT	99	V	300-150	35	0	0	3.4	-0.3
KQA	99	V	300-150	115	0	0	4.5	0.5
KUG	99	V	300-150	20	0	0	3.3	0.3
LAN	99	V	300-150	2464	8	0	8.0	0.2
LOT	99	V	300-150	4036	12	0	9.2	-0.0
LUC	99	V	300-150	47	0	0	4.2	-0.6
LXG	99	V	300-150	23	0	0	3.5	-0.8
LXJ	99	V	300-150	49	0	0	6.0	-0.6
MAS	99	V	300-150	810	0	0	3.8	0.4
MAU	99	V	300-150	115	0	0	5.2	0.8
MED	99	V	300-150	107	0	0	3.7	0.2
MMD	99	V	300-150	228	0	0	3.3	0.1
MPH	99	V	300-150	576	0	0	3.8	-0.9
MSR	99	V	300-150	1614	0	0	3.6	0.2
MXD	99	V	300-150	21	0	0	6.5	2.7
NAF	99	V	300-150	21	0	0	3.8	0.5
NAS	99	V	300-150	295	0	0	3.8	0.0
NAX	99	V	300-150	10424	9	0	8.3	0.0
NJE	99	V	300-150	412	0	0	3.4	0.3
NOS	99	V	300-150	281	4	0	7.0	-0.6
NRS	99	V	300-150	8276	11	0	9.0	-0.1
NWS	99	V	300-150	344	0	0	3.6	0.3
OAE	99	V	300-150	1238	0	0	4.1	-0.1
OMA	99	V	300-150	868	0	0	5.0	0.4
OPM	99	V	300-150	36	0	0	3.0	-0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
PAC	99	V	300-150	213	0	0	4.1	0.7
PAL	99	V	300-150	1325	0	0	4.5	0.6
PIA	99	V	300-150	115	0	0	3.8	-0.1
PLF	99	V	300-150	35	0	0	3.5	0.7
PLM	99	V	300-150	25	0	0	5.3	-1.4
PRI	99	V	300-150	3831	0	0	4.0	0.4
QAF	99	V	300-150	55	0	0	3.5	0.1
QFA	99	V	300-150	19742	1	0	4.3	0.2
QQE	99	V	300-150	51	0	0	4.4	0.0
QTR	99	V	300-150	15232	0	0	4.0	0.3
RAM	99	V	300-150	264	3	0	5.4	-0.4
RBA	99	V	300-150	172	0	0	4.6	0.1
RCH	99	V	300-150	5844	0	0	4.3	0.4
RDN	99	V	300-150	216	0	0	3.5	0.5
RJA	99	V	300-150	2105	10	0	8.8	0.1
ROJ	99	V	300-150	95	0	0	3.1	0.2
ROU	99	V	300-150	14509	0	0	4.0	-0.1
RRR	99	V	300-150	117	0	0	3.4	-0.3
SAM	99	V	300-150	150	0	0	3.6	0.8
SAS	99	V	300-150	4748	0	0	3.3	0.2
SAZ	99	V	300-150	22	0	0	3.9	1.7
SCX	99	V	300-150	198	0	0	3.5	0.5
SDM	99	V	300-150	44	0	0	3.5	0.3
SHE	99	V	300-150	95	0	0	3.9	-0.2
SIA	99	V	300-150	3404	0	0	3.7	0.2
SIO	99	V	300-150	51	0	0	3.8	-0.1
SLM	99	V	300-150	133	0	0	3.0	0.4
SNO	99	V	300-150	21	0	0	2.2	0.5
SOO	99	V	300-150	477	0	0	3.7	-0.2
SPA	99	V	300-150	135	0	3	3.2	0.2
SSG	99	V	300-150	38	0	0	2.9	0.4
STA	99	V	300-150	38	0	0	4.2	-1.4
SVA	99	V	300-150	5929	1	0	4.3	0.3
SVF	99	V	300-150	33	0	0	3.7	-0.1
SVW	99	V	300-150	152	0	0	3.3	0.7
SWR	99	V	300-150	12028	0	0	3.5	0.3
TAM	99	V	300-150	315	0	1	4.3	-0.2
TAP	99	V	300-150	1466	0	0	3.6	0.7
TAR	99	V	300-150	646	0	0	3.2	0.3
TAY	99	V	300-150	427	0	0	4.6	-0.5
TBJ	99	V	300-150	128	0	0	3.6	0.6
TCX	99	V	300-150	7870	0	0	3.3	0.4
TEU	99	V	300-150	47	0	0	3.5	0.6

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
TFF	99	V	300-150	54	0	0	4.3	0.4
TFL	99	V	300-150	1756	7	0	9.1	0.0
TGW	99	V	300-150	59	0	0	4.6	-0.2
THA	99	V	300-150	512	0	0	3.8	0.5
THT	99	V	300-150	4947	0	0	3.5	0.4
THY	99	V	300-150	9755	0	0	3.8	0.3
TMN	99	V	300-150	175	0	3	5.3	1.5
TOM	99	V	300-150	6420	9	0	8.4	-0.0
TOW	99	V	300-150	52	0	0	2.7	0.4
TSC	99	V	300-150	20750	0	0	3.4	0.2
TWB	99	V	300-150	37	0	5	6.4	2.3
TWY	99	V	300-150	528	3	0	7.3	0.0
UAE	99	V	300-150	18060	0	0	4.0	0.3
UAL	99	V	300-150	89525	1	1	4.8	0.2
ULC	99	V	300-150	113	0	0	3.2	0.4
UPS	99	V	300-150	5178	0	0	3.8	0.3
UZB	99	V	300-150	158	8	0	7.7	-0.3
VCG	99	V	300-150	36	0	0	2.7	0.1
VIR	99	V	300-150	24723	3	0	5.4	0.0
VJT	99	V	300-150	861	43	0	17.6	0.1
VOZ	99	V	300-150	6939	0	0	3.5	0.4
WGT	99	V	300-150	72	0	0	3.4	0.7
WJA	99	V	300-150	6809	0	0	3.7	0.2
WOW	99	V	300-150	3841	0	0	3.3	0.2
WWI	99	V	300-150	22	0	0	3.5	1.0
XAX	99	V	300-150	335	0	0	3.4	0.8
XLF	99	V	300-150	1930	0	0	3.5	0.4
XRO	99	V	300-150	33	0	0	3.1	-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 : JUL 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	50	28	14.3	11.0
01001	12	Z	50	28	11.6	8.6
01028	12	Z	50	31	5.5	-0.7
01028	00	Z	50	30	6.5	4.4
01400	00	Z	50	24	96.8	96.5
01400	12	Z	50	26	84.7	84.2
01415	12	Z	50	30	10.5	8.3
01415	00	Z	50	30	19.6	19.0
02365	12	Z	50	27	6.1	3.2
02365	00	Z	50	24	17.6	16.9
02591	00	Z	50	28	24.5	24.2
02591	12	Z	50	31	13.4	10.7
02836	12	Z	50	30	6.6	1.2
02836	00	Z	50	30	13.2	11.6
02963	12	Z	50	30	6.8	4.1
02963	00	Z	50	28	15.0	14.6
03005	12	Z	50	31	11.0	8.0
03238	00	Z	50	28	18.0	17.4
03238	12	Z	50	5	9.1	7.5
03808	00	Z	50	31	19.4	17.7
03808	12	Z	50	31	9.0	7.4
03918	12	Z	50	4	19.5	18.2
03918	00	Z	50	31	24.0	23.4
03953	00	Z	50	28	18.0	15.2
03953	12	Z	50	30	27.7	23.4
04018	00	Z	50	29	8.8	6.7
04018	12	Z	50	29	11.2	7.1
04220	00	Z	50	31	9.0	7.9
04220	12	Z	50	31	6.8	5.6
04270	12	Z	50	29	10.0	8.1
04270	00	Z	50	31	10.9	7.9
04320	00	Z	50	31	8.9	6.9
04320	12	Z	50	31	14.4	8.2
04339	00	Z	50	31	9.3	6.9
04339	12	Z	50	31	7.4	4.7
04360	12	Z	50	30	37.8	33.7
04360	00	Z	50	30	33.9	29.2
06011	00	Z	50	31	16.9	9.5
06011	12	Z	50	28	15.4	10.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	50	4	8.0	7.7
06260	00	Z	50	30	21.4	20.8
06610	12	Z	50	31	10.7	9.9
06610	00	Z	50	31	23.9	23.4
07110	12	Z	50	29	34.6	32.7
07110	00	Z	50	29	43.6	41.8
07510	00	Z	50	19	46.7	45.8
07510	12	Z	50	18	37.0	35.4
07645	12	Z	50	32	17.5	14.8
07645	00	Z	50	29	29.2	28.0
07761	00	Z	50	27	38.5	37.8
07761	12	Z	50	30	26.7	24.5
08001	00	Z	50	27	26.6	25.0
08001	12	Z	50	31	16.5	14.2
08221	00	Z	50	30	26.0	23.4
08221	12	Z	50	31	11.5	10.3
08302	12	Z	50	30	7.0	5.3
08302	00	Z	50	31	20.4	19.8
08508	12	Z	50	19	14.9	14.1
08522	12	Z	50	31	19.0	15.4
08579	12	Z	50	31	25.1	23.0
10035	12	Z	50	30	20.2	19.0
10393	00	Z	50	31	22.2	21.6
10393	12	Z	50	31	10.5	8.3
10410	00	Z	50	29	18.9	18.2
10410	12	Z	50	30	9.1	7.0
10739	12	Z	50	28	12.5	11.4
10739	00	Z	50	29	23.9	23.6
11035	12	Z	50	31	24.7	11.3
11035	00	Z	50	28	29.9	28.7
12982	00	Z	50	13	24.9	21.9
12982	12	Z	50	9	122.9	67.0
16080	12	Z	50	30	10.2	5.2
16080	00	Z	50	30	21.1	18.6
16245	12	Z	50	30	11.8	8.1
16245	00	Z	50	31	27.7	24.7
16320	12	Z	50	24	12.5	10.4
16320	00	Z	50	31	30.6	29.8
16429	12	Z	50	29	15.6	12.9
16429	00	Z	50	31	24.8	24.4
16622	00	Z	50	24	37.4	35.1
16754	00	Z	50	24	28.1	27.7
17607	12	Z	50	28	16.8	15.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
26435	00	Z	50	9	12.7	10.7
5QPW8X	00	Z	50	9	25.5	24.4
5QPW8X	12	Z	50	9	30.0	29.3
60018	12	Z	50	31	11.2	9.5
60018	00	Z	50	31	23.5	23.0
7JUNA4	00	Z	50	7	14.4	13.6
7JUNA4	12	Z	50	9	55.5	50.8
ASDE09	12	Z	50	0	0.0	0.0
DBLK	00	Z	50	18	16.3	14.7
DBLK	12	Z	50	18	12.3	10.7
FHM5H	00	Z	50	2	9.2	9.2
FHM5H	12	Z	50	2	10.0	3.0
FHM5UJ	12	Z	50	2	15.9	13.2
FHM5UJ	00	Z	50	2	13.6	13.5
FPUW5G	12	Z	50	20	8.4	1.3
GRAI2	00	Z	50	5	18.8	15.6
GRAI2	12	Z	50	7	25.3	22.0
GRAI3	00	Z	50	2	24.7	24.7
GRAI3	12	Z	50	1	18.0	18.0
HTXUH	12	Z	50	3	10.0	5.1
HTXUH	00	Z	50	1	11.6	-11.6
HTXUH4	12	Z	50	3	9.1	5.5
HTXUH4	00	Z	50	1	14.2	-14.2
QCY3TG	12	Z	50	12	33.3	32.1
QCY3TG	00	Z	50	9	36.3	34.6
WDK38H	12	Z	50	2	0.5	-0.1
XKQLWQ	12	Z	50	14	37.5	36.6
XQFJRG	00	Z	50	5	10.3	3.5
XQFJRG	12	Z	50	5	31.1	27.6
YLV96W	12	Z	50	2	0.0	0.0
YLV96W	00	Z	50	6	267.2	200.5

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 : JUL 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	50	24	2.3	-0.3	0.2
01001	12	V	50	28	2.5	0.3	0.6
01028	12	V	50	31	2.4	-0.1	0.0
01028	00	V	50	23	2.6	-0.2	0.7
01400	00	V	50	20	3.0	0.1	0.4
01400	12	V	50	26	2.5	0.2	-0.5
01415	12	V	50	30	2.7	0.4	-0.2
01415	00	V	50	23	3.0	0.8	0.0
02365	12	V	50	26	2.2	0.2	-0.1
02365	00	V	50	19	2.7	0.3	0.7
02591	00	V	50	22	2.9	0.3	1.4
02591	12	V	50	31	2.9	0.2	-0.1
02836	12	V	50	30	2.2	0.0	-0.1
02836	00	V	50	26	2.4	0.5	0.2
02963	12	V	50	30	2.8	-0.1	-0.3
02963	00	V	50	22	2.5	0.7	-0.3
03005	12	V	50	31	2.6	0.6	-0.4
03238	00	V	50	23	2.8	0.0	0.0
03238	12	V	50	5	3.3	-0.2	1.1
03808	00	V	50	25	3.4	0.6	0.3
03808	12	V	50	31	2.5	0.3	0.5
03918	12	V	50	4	2.3	-0.9	1.3
03918	00	V	50	25	2.9	0.6	-0.4
03953	00	V	50	24	3.3	0.6	-0.2
03953	12	V	50	30	2.9	0.2	-0.1
04018	00	V	50	22	3.3	0.5	-0.4
04018	12	V	50	29	3.1	-0.6	-0.1
04220	00	V	50	26	2.8	0.1	0.1
04220	12	V	50	31	2.3	-0.5	0.1
04270	12	V	50	28	2.3	0.4	0.5
04270	00	V	50	23	2.7	0.6	0.7
04320	00	V	50	25	2.8	0.7	-0.2
04320	12	V	50	31	2.7	0.9	-0.7
04339	00	V	50	25	2.7	0.7	0.1
04339	12	V	50	31	3.3	0.1	-0.2
04360	12	V	50	30	2.7	0.6	0.1
04360	00	V	50	26	2.5	0.4	0.2
06011	00	V	50	24	2.6	-0.2	0.1
06011	12	V	50	28	2.3	0.0	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	50	4	1.6	-0.4	0.5
06260	00	V	50	24	3.3	1.1	0.8
06610	12	V	50	31	3.0	0.2	-0.2
06610	00	V	50	25	3.0	0.4	-0.2
07110	12	V	50	29	2.7	0.8	0.0
07110	00	V	50	22	3.1	0.9	0.8
07510	00	V	50	16	2.3	0.8	0.4
07510	12	V	50	18	2.8	0.0	0.7
07645	12	V	50	31	3.2	0.6	-0.3
07645	00	V	50	23	2.9	0.3	0.3
07761	00	V	50	21	3.9	1.0	-0.7
07761	12	V	50	30	3.5	1.2	-0.4
08001	00	V	50	19	3.0	0.2	0.1
08001	12	V	50	29	3.0	0.7	0.0
08221	00	V	50	23	3.5	0.9	1.0
08221	12	V	50	31	3.4	0.8	-0.5
08302	12	V	50	30	3.2	0.5	-0.2
08302	00	V	50	23	3.7	-0.2	-0.1
08508	12	V	50	19	3.4	1.5	1.0
08522	12	V	50	31	3.0	0.7	0.0
08579	12	V	50	31	3.1	1.0	-0.2
10035	12	V	50	30	3.2	0.4	-0.4
10393	00	V	50	24	3.3	-0.2	0.3
10393	12	V	50	31	3.7	-0.2	-1.1
10410	00	V	50	28	3.0	0.3	0.4
10410	12	V	50	30	2.9	0.1	0.3
10739	12	V	50	28	3.0	0.1	0.6
10739	00	V	50	28	3.3	-0.4	0.4
11035	12	V	50	31	3.3	0.3	-0.2
11035	00	V	50	22	3.5	0.7	0.2
12982	00	V	50	10	3.8	-0.9	-0.1
12982	12	V	50	9	2.9	0.4	0.5
16080	12	V	50	30	3.1	0.8	-0.5
16080	00	V	50	24	3.7	0.1	0.4
16245	12	V	50	30	3.4	0.7	0.1
16245	00	V	50	24	3.9	0.8	-0.3
16320	12	V	50	22	3.4	0.5	0.4
16320	00	V	50	24	4.0	1.2	-0.1
16429	12	V	50	28	3.5	0.1	-0.2
16429	00	V	50	24	3.8	0.7	0.0
16622	00	V	50	19	4.0	-0.1	0.8
16754	00	V	50	19	4.0	-1.5	0.0
17607	12	V	50	7	5.0	1.7	-1.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
26435	00	V	50	8	2.5	0.0	0.6
5QPW8X	00	V	50	8	2.2	-0.2	1.4
5QPW8X	12	V	50	9	2.8	-0.3	-0.3
60018	12	V	50	30	3.3	0.4	0.1
60018	00	V	50	23	3.3	-0.3	1.2
7JUNA4	00	V	50	7	2.2	-0.8	0.5
7JUNA4	12	V	50	9	2.1	0.0	-0.1
ASDE09	12	V	50	0	0.0	0.0	0.0
DBLK	00	V	50	18	2.5	-0.2	-0.3
DBLK	12	V	50	18	2.6	-0.2	-0.6
FHM5H	00	V	50	2	2.2	-1.1	-1.5
FHM5H	12	V	50	2	2.1	1.1	-0.6
FHM5UJ	12	V	50	2	2.5	2.4	0.6
FHM5UJ	00	V	50	2	2.1	-0.7	-2.0
FPUW5G	12	V	50	20	2.5	1.1	0.4
GRAI2	00	V	50	0	0.0	0.0	0.0
GRAI2	12	V	50	2	2.3	-0.3	-1.8
GRAI3	00	V	50	0	0.0	0.0	0.0
GRAI3	12	V	50	0	0.0	0.0	0.0
HTXUH	12	V	50	3	3.6	1.5	-1.8
HTXUH	00	V	50	1	1.4	-0.1	-1.4
HTXUH4	12	V	50	3	2.5	0.9	-1.1
HTXUH4	00	V	50	1	0.3	-0.1	0.3
QCY3TG	12	V	50	12	2.5	0.8	-0.2
QCY3TG	00	V	50	9	3.1	0.5	0.6
WDK38H	12	V	50	1	1.9	-1.6	-1.1
XKQLWQ	12	V	50	14	2.7	0.5	0.3
XQFJRG	00	V	50	4	2.8	2.0	-0.9
XQFJRG	12	V	50	5	3.0	-2.0	1.1
YLV96W	12	V	50	2	4.0	-1.6	-2.0
YLV96W	00	V	50	6	3.1	-0.5	-0.4

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 : JUL 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	100	28	7.3	-0.8
01001	12	Z	100	28	8.0	-0.6
01028	12	Z	100	31	11.0	-9.6
01028	00	Z	100	30	7.7	-6.3
01400	00	Z	100	25	86.1	85.9
01400	12	Z	100	28	78.0	77.7
01415	12	Z	100	31	4.9	0.3
01415	00	Z	100	30	7.4	5.5
02365	12	Z	100	28	5.0	-3.3
02365	00	Z	100	28	5.0	3.4
02591	00	Z	100	31	12.8	12.0
02591	12	Z	100	31	6.4	1.4
02836	12	Z	100	31	8.6	-7.5
02836	00	Z	100	30	4.6	-0.1
02963	12	Z	100	31	5.4	-4.0
02963	00	Z	100	29	4.0	3.3
03005	12	Z	100	31	7.0	-2.6
03238	00	Z	100	29	6.3	5.4
03238	12	Z	100	5	5.7	-3.6
03808	00	Z	100	31	7.2	5.8
03808	12	Z	100	31	4.8	-1.8
03918	12	Z	100	4	7.8	5.7
03918	00	Z	100	31	12.8	12.1
03953	00	Z	100	29	7.6	2.1
03953	12	Z	100	30	12.6	8.1
04018	00	Z	100	29	7.3	-4.4
04018	12	Z	100	29	8.2	-1.7
04220	00	Z	100	31	4.0	-1.1
04220	12	Z	100	31	4.5	-2.6
04270	12	Z	100	30	6.1	-2.3
04270	00	Z	100	31	11.0	-0.9
04320	00	Z	100	31	6.7	-4.0
04320	12	Z	100	31	11.3	-0.8
04339	00	Z	100	31	5.8	-3.9
04339	12	Z	100	31	4.9	-3.3
04360	12	Z	100	30	28.6	26.9
04360	00	Z	100	30	25.1	22.2
06011	00	Z	100	31	9.3	-0.4
06011	12	Z	100	28	9.5	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	100	4	2.8	-1.3
06260	00	Z	100	31	9.1	7.5
06610	12	Z	100	31	3.3	0.8
06610	00	Z	100	31	12.9	10.8
07110	12	Z	100	29	20.7	17.5
07110	00	Z	100	30	23.6	21.7
07510	00	Z	100	31	26.7	25.9
07510	12	Z	100	29	24.6	23.3
07645	12	Z	100	32	6.5	3.0
07645	00	Z	100	29	12.9	11.3
07761	00	Z	100	28	18.4	17.3
07761	12	Z	100	30	14.3	10.8
08001	00	Z	100	31	10.7	8.6
08001	12	Z	100	31	5.3	1.4
08221	00	Z	100	31	16.1	12.6
08221	12	Z	100	31	5.3	2.6
08302	12	Z	100	31	4.9	-3.3
08302	00	Z	100	31	9.6	8.3
08508	12	Z	100	28	6.9	5.9
08522	12	Z	100	31	7.4	3.6
08579	12	Z	100	31	10.5	6.2
10035	12	Z	100	30	10.9	9.8
10393	00	Z	100	31	8.6	7.3
10393	12	Z	100	31	4.6	-1.3
10410	00	Z	100	29	7.4	6.0
10410	12	Z	100	30	4.5	-2.0
10739	12	Z	100	28	4.4	1.9
10739	00	Z	100	30	12.9	12.1
11035	12	Z	100	31	22.0	0.6
11035	00	Z	100	29	17.4	15.9
12982	00	Z	100	13	10.5	7.9
12982	12	Z	100	9	14.3	11.4
16080	12	Z	100	30	6.8	-4.3
16080	00	Z	100	30	10.5	5.5
16245	12	Z	100	30	7.1	-4.0
16245	00	Z	100	31	14.2	10.4
16320	12	Z	100	28	5.4	1.1
16320	00	Z	100	31	17.2	16.1
16429	12	Z	100	31	6.0	1.3
16429	00	Z	100	31	14.0	13.1
16622	00	Z	100	31	23.7	21.3
16754	00	Z	100	30	18.3	17.7
17607	12	Z	100	31	6.7	4.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
26435	00	Z	100	12	5.9	4.1
5QPW8X	00	Z	100	10	13.6	11.5
5QPW8X	12	Z	100	10	20.1	19.2
60018	12	Z	100	31	5.7	3.3
60018	00	Z	100	31	14.0	13.5
7JUNA4	00	Z	100	7	4.3	0.9
7JUNA4	12	Z	100	11	40.0	34.1
ASDE09	12	Z	100	1	6.3	6.3
DBLK	00	Z	100	18	6.6	2.3
DBLK	12	Z	100	18	5.0	-0.3
FHM5H	00	Z	100	2	3.2	-1.8
FHM5H	12	Z	100	2	6.7	-3.4
FHM5UJ	12	Z	100	2	8.4	4.5
FHM5UJ	00	Z	100	3	5.4	4.0
FPUW5G	12	Z	100	20	10.0	-6.8
GRAI2	00	Z	100	21	9.7	5.3
GRAI2	12	Z	100	20	13.7	9.4
GRAI3	00	Z	100	21	12.2	8.6
GRAI3	12	Z	100	19	18.1	16.6
HTXUH	12	Z	100	3	3.8	-3.0
HTXUH	00	Z	100	3	10.9	-7.4
HTXUH4	12	Z	100	3	2.1	-1.6
HTXUH4	00	Z	100	4	9.4	-0.7
QCY3TG	12	Z	100	12	20.7	19.5
QCY3TG	00	Z	100	9	20.9	19.2
WDK38H	12	Z	100	2	9.1	-9.1
XKQLWQ	12	Z	100	14	22.8	22.0
XQFJRG	00	Z	100	6	12.7	-6.7
XQFJRG	12	Z	100	5	8.4	3.3
YLV96W	12	Z	100	4	0.0	0.0
YLV96W	00	Z	100	6	221.8	186.1

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 : JUL 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	100	24	3.2	-0.3	0.0
01001	12	V	100	28	2.6	-0.4	-0.8
01028	12	V	100	31	2.5	0.2	-0.4
01028	00	V	100	23	2.5	0.1	0.1
01400	00	V	100	22	2.9	-0.3	1.0
01400	12	V	100	28	2.4	0.4	-0.2
01415	12	V	100	31	2.8	0.4	-0.6
01415	00	V	100	28	2.3	0.0	-0.3
02365	12	V	100	28	2.1	-0.3	0.1
02365	00	V	100	22	2.2	0.7	-0.2
02591	00	V	100	24	1.9	0.0	0.0
02591	12	V	100	31	2.1	0.3	-0.2
02836	12	V	100	31	2.6	-0.4	0.3
02836	00	V	100	27	2.0	-0.3	0.1
02963	12	V	100	31	2.3	0.0	-0.4
02963	00	V	100	24	2.5	0.6	-0.2
03005	12	V	100	31	2.9	-0.6	-0.6
03238	00	V	100	24	2.8	0.9	0.1
03238	12	V	100	5	3.3	0.8	-1.0
03808	00	V	100	24	2.2	0.9	0.2
03808	12	V	100	31	2.3	0.5	0.2
03918	12	V	100	4	1.6	0.1	-0.7
03918	00	V	100	26	2.1	0.0	-0.3
03953	00	V	100	25	2.2	0.4	0.1
03953	12	V	100	30	2.3	0.1	-0.4
04018	00	V	100	28	2.8	-0.4	-0.4
04018	12	V	100	29	3.5	-0.3	-0.4
04220	00	V	100	27	2.4	-0.1	0.0
04220	12	V	100	31	2.1	-0.4	0.6
04270	12	V	100	29	3.2	0.5	0.2
04270	00	V	100	27	3.1	0.4	-0.3
04320	00	V	100	27	2.6	-0.3	-0.3
04320	12	V	100	31	2.1	-0.1	-0.5
04339	00	V	100	27	2.7	0.1	-0.1
04339	12	V	100	31	2.2	-0.3	0.2
04360	12	V	100	30	2.6	0.2	0.3
04360	00	V	100	26	2.9	-0.4	0.1
06011	00	V	100	28	2.1	0.3	-0.5
06011	12	V	100	28	2.2	-0.3	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	100	4	2.1	-2.0	0.2
06260	00	V	100	24	2.8	-0.5	0.5
06610	12	V	100	31	3.4	0.8	0.1
06610	00	V	100	29	3.7	0.2	0.8
07110	12	V	100	29	2.1	0.5	0.5
07110	00	V	100	22	2.6	0.8	0.7
07510	00	V	100	24	3.5	-0.2	-0.8
07510	12	V	100	29	2.9	0.5	0.3
07645	12	V	100	31	3.9	0.8	0.7
07645	00	V	100	23	3.8	-1.3	-1.2
07761	00	V	100	22	4.6	0.0	-0.4
07761	12	V	100	30	3.8	0.3	0.9
08001	00	V	100	24	3.2	0.2	0.4
08001	12	V	100	31	3.1	0.4	0.4
08221	00	V	100	23	4.1	-0.6	0.4
08221	12	V	100	31	3.5	0.6	-0.1
08302	12	V	100	31	3.3	-0.3	-0.4
08302	00	V	100	23	4.1	1.3	-1.1
08508	12	V	100	28	2.3	0.3	0.2
08522	12	V	100	31	3.0	0.4	-0.3
08579	12	V	100	31	2.8	-0.3	-0.3
10035	12	V	100	30	2.1	0.5	-0.4
10393	00	V	100	30	2.6	0.6	0.1
10393	12	V	100	31	2.7	0.4	-0.7
10410	00	V	100	28	3.1	-0.2	0.3
10410	12	V	100	30	2.3	0.0	0.0
10739	12	V	100	28	3.1	-0.1	-0.4
10739	00	V	100	29	3.3	0.4	0.0
11035	12	V	100	31	3.2	-0.2	-0.2
11035	00	V	100	23	4.3	0.7	0.6
12982	00	V	100	13	3.5	1.4	0.5
12982	12	V	100	9	2.2	-0.4	-0.3
16080	12	V	100	30	3.5	0.6	-0.8
16080	00	V	100	25	3.9	-0.2	1.0
16245	12	V	100	30	3.7	0.6	1.3
16245	00	V	100	24	3.9	0.7	-0.3
16320	12	V	100	28	3.4	-0.1	-0.2
16320	00	V	100	24	3.0	0.7	-0.3
16429	12	V	100	31	3.5	0.0	-1.1
16429	00	V	100	25	4.5	0.5	0.6
16622	00	V	100	25	4.1	0.0	0.2
16754	00	V	100	28	4.1	1.0	-0.6
17607	12	V	100	11	2.5	-0.3	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
26435	00	V	100	12	2.7	1.1	0.0
5QPW8X	00	V	100	9	3.2	-1.3	0.2
5QPW8X	12	V	100	10	2.3	0.2	0.0
60018	12	V	100	31	4.2	-0.5	-0.1
60018	00	V	100	24	4.0	-0.6	1.0
7JUNA4	00	V	100	7	3.2	-1.9	2.0
7JUNA4	12	V	100	11	2.6	0.4	0.6
ASDE09	12	V	100	1	0.1	-0.1	0.0
DBLK	00	V	100	18	2.3	0.0	-0.3
DBLK	12	V	100	18	2.8	0.2	-0.1
FHM5H	00	V	100	2	2.4	0.1	-1.5
FHM5H	12	V	100	2	2.6	1.5	-2.1
FHM5UJ	12	V	100	2	2.3	0.3	-1.8
FHM5UJ	00	V	100	3	1.9	1.4	0.3
FPUW5G	12	V	100	20	3.1	0.0	0.8
GRAI2	00	V	100	7	4.1	-2.3	1.6
GRAI2	12	V	100	7	6.4	0.0	-2.4
GRAI3	00	V	100	9	2.9	-0.8	-0.7
GRAI3	12	V	100	7	5.9	0.1	2.5
HTXUH	12	V	100	3	3.1	-2.5	0.9
HTXUH	00	V	100	3	3.3	1.1	0.2
HTXUH4	12	V	100	3	2.3	-1.7	0.3
HTXUH4	00	V	100	4	3.2	0.2	0.5
QCY3TG	12	V	100	12	3.1	0.2	1.4
QCY3TG	00	V	100	9	2.6	-0.5	0.0
WDK38H	12	V	100	1	2.4	2.3	-0.8
XKQLWQ	12	V	100	14	2.2	-0.2	0.0
XQFJRG	00	V	100	4	2.7	-0.1	-0.2
XQFJRG	12	V	100	5	2.2	1.2	-0.6
YLV96W	12	V	100	4	3.2	-2.1	-1.5
YLV96W	00	V	100	6	3.4	-0.1	-0.2

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 : JUL 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	500	31	9.3	3.7
01001	12	Z	500	31	7.4	1.9
01028	12	Z	500	31	5.2	-4.2
01028	00	Z	500	31	5.7	-4.4
01400	00	Z	500	25	81.9	81.7
01400	12	Z	500	28	81.2	81.0
01415	12	Z	500	31	3.6	2.8
01415	00	Z	500	30	4.4	3.5
02365	12	Z	500	30	2.5	1.2
02365	00	Z	500	29	4.6	4.0
02591	00	Z	500	31	10.4	10.2
02591	12	Z	500	31	8.8	8.6
02836	12	Z	500	31	3.0	2.5
02836	00	Z	500	30	3.3	3.0
02963	12	Z	500	31	3.9	3.3
02963	00	Z	500	29	5.5	4.6
03005	12	Z	500	31	3.2	-0.8
03238	00	Z	500	29	4.9	3.7
03238	12	Z	500	5	1.9	1.2
03808	00	Z	500	31	3.7	3.2
03808	12	Z	500	31	3.0	1.2
03918	12	Z	500	4	9.7	9.6
03918	00	Z	500	31	11.7	11.4
03953	00	Z	500	30	6.6	-2.2
03953	12	Z	500	30	4.4	1.9
04018	00	Z	500	29	4.4	-1.6
04018	12	Z	500	30	3.1	-1.3
04220	00	Z	500	31	2.6	0.9
04220	12	Z	500	31	2.7	-0.2
04270	12	Z	500	31	5.7	-1.5
04270	00	Z	500	31	3.2	-0.6
04320	00	Z	500	31	4.6	-1.2
04320	12	Z	500	31	12.1	1.1
04339	00	Z	500	31	10.3	-0.3
04339	12	Z	500	31	3.1	-1.6
04360	12	Z	500	30	36.8	36.2
04360	00	Z	500	31	37.3	36.9
06011	00	Z	500	31	6.0	-0.5
06011	12	Z	500	30	7.4	0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	500	4	2.8	2.1
06260	00	Z	500	31	4.2	3.6
06610	12	Z	500	31	3.2	1.8
06610	00	Z	500	32	7.8	6.0
07110	12	Z	500	29	10.9	7.1
07110	00	Z	500	31	8.2	7.3
07510	00	Z	500	31	17.9	17.0
07510	12	Z	500	30	18.5	18.0
07645	12	Z	500	32	4.1	2.9
07645	00	Z	500	29	5.0	2.9
07761	00	Z	500	31	16.5	7.6
07761	12	Z	500	31	9.2	6.8
08001	00	Z	500	31	4.6	3.2
08001	12	Z	500	31	3.0	0.9
08221	00	Z	500	31	7.7	7.1
08221	12	Z	500	31	4.1	3.4
08302	12	Z	500	31	2.4	-1.2
08302	00	Z	500	31	4.6	3.8
08508	12	Z	500	28	5.7	5.0
08522	12	Z	500	31	5.6	4.8
08579	12	Z	500	31	3.9	2.3
10035	12	Z	500	30	13.3	12.5
10393	00	Z	500	31	4.9	3.7
10393	12	Z	500	31	2.5	0.2
10410	00	Z	500	29	3.5	2.6
10410	12	Z	500	30	3.0	-1.3
10739	12	Z	500	28	3.3	2.2
10739	00	Z	500	30	7.3	6.8
11035	12	Z	500	31	25.9	3.3
11035	00	Z	500	29	11.9	11.5
12982	00	Z	500	13	7.1	6.4
12982	12	Z	500	10	5.9	3.1
16080	12	Z	500	31	3.9	-2.6
16080	00	Z	500	31	3.3	0.8
16245	12	Z	500	31	3.4	-2.5
16245	00	Z	500	31	3.8	1.0
16320	12	Z	500	29	5.6	4.3
16320	00	Z	500	31	10.0	8.7
16429	12	Z	500	31	4.5	3.4
16429	00	Z	500	31	5.6	4.8
16622	00	Z	500	31	12.2	10.4
16754	00	Z	500	31	7.5	5.5
17607	12	Z	500	31	5.0	3.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
26435	00	Z	500	15	6.1	5.0
5QPW8X	00	Z	500	10	21.1	20.7
5QPW8X	12	Z	500	12	21.8	21.6
60018	12	Z	500	31	4.1	3.2
60018	00	Z	500	31	5.5	4.7
7JUNA4	00	Z	500	8	15.9	7.7
7JUNA4	12	Z	500	11	21.3	15.4
ASDE09	12	Z	500	1	9.1	9.1
DBLK	00	Z	500	18	5.0	2.1
DBLK	12	Z	500	18	4.2	0.5
FHM5H	00	Z	500	2	1.1	1.0
FHM5H	12	Z	500	5	8.7	0.8
FHM5UJ	12	Z	500	5	8.9	8.1
FHM5UJ	00	Z	500	4	3.3	2.9
FPUW5G	12	Z	500	23	8.4	-7.7
GRAI2	00	Z	500	21	6.1	4.2
GRAI2	12	Z	500	20	6.3	2.4
GRAI3	00	Z	500	21	8.0	5.4
GRAI3	12	Z	500	20	8.6	6.0
HTXUH	12	Z	500	3	1.7	0.2
HTXUH	00	Z	500	3	6.2	4.4
HTXUH4	12	Z	500	3	3.1	1.7
HTXUH4	00	Z	500	4	6.5	0.8
QCY3TG	12	Z	500	12	11.2	9.0
QCY3TG	00	Z	500	11	8.5	7.1
WDK38H	12	Z	500	2	9.3	-8.1
XKQLWQ	12	Z	500	14	15.1	14.5
XQFJRG	00	Z	500	7	10.9	-10.7
XQFJRG	12	Z	500	6	8.3	-8.0
YLV96W	12	Z	500	8	74.6	59.3
YLV96W	00	Z	500	9	42.3	32.5

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 500 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : JUL 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	500	30	3.6	0.5	0.4
01001	12	V	500	31	2.8	-0.4	-0.3
01028	12	V	500	31	2.3	0.0	0.2
01028	00	V	500	29	2.1	0.3	-0.4
01400	00	V	500	23	1.5	0.0	0.1
01400	12	V	500	28	2.3	-0.4	-0.1
01415	12	V	500	31	2.2	0.1	0.2
01415	00	V	500	29	2.1	0.2	0.7
02365	12	V	500	30	1.9	0.3	0.3
02365	00	V	500	28	2.9	-0.2	0.0
02591	00	V	500	30	2.1	-0.1	0.1
02591	12	V	500	31	2.2	0.1	0.2
02836	12	V	500	31	1.7	0.3	0.1
02836	00	V	500	30	2.4	-0.5	0.2
02963	12	V	500	31	2.1	0.1	-0.3
02963	00	V	500	28	2.3	0.3	0.1
03005	12	V	500	31	2.3	0.0	-0.1
03238	00	V	500	28	2.7	0.6	0.1
03238	12	V	500	5	1.7	-0.6	0.6
03808	00	V	500	30	2.5	0.5	-0.1
03808	12	V	500	31	2.8	0.1	-0.1
03918	12	V	500	4	1.8	-0.2	-0.5
03918	00	V	500	30	2.4	0.3	0.2
03953	00	V	500	28	2.2	-0.7	0.6
03953	12	V	500	30	2.5	0.2	0.4
04018	00	V	500	28	2.6	0.2	0.2
04018	12	V	500	30	3.0	-0.1	0.6
04220	00	V	500	30	1.8	0.2	-0.2
04220	12	V	500	31	2.1	0.5	-0.2
04270	12	V	500	31	4.5	0.2	0.2
04270	00	V	500	30	3.3	0.1	0.1
04320	00	V	500	30	2.3	0.3	0.3
04320	12	V	500	31	2.5	0.6	-0.2
04339	00	V	500	30	2.5	-0.2	0.5
04339	12	V	500	31	2.6	0.3	0.2
04360	12	V	500	30	2.7	-0.5	-0.1
04360	00	V	500	30	2.8	0.2	0.0
06011	00	V	500	30	2.4	-1.0	0.3
06011	12	V	500	30	3.1	-0.2	0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	500	4	1.1	0.0	-0.8
06260	00	V	500	30	2.4	-0.3	-0.1
06610	12	V	500	31	2.3	0.3	0.0
06610	00	V	500	30	3.3	-0.4	-0.3
07110	12	V	500	29	2.1	0.1	0.0
07110	00	V	500	30	2.5	-0.3	0.6
07510	00	V	500	30	2.4	-0.3	-0.1
07510	12	V	500	30	2.4	0.5	0.0
07645	12	V	500	31	2.6	0.2	0.5
07645	00	V	500	28	3.3	1.2	0.6
07761	00	V	500	30	2.9	1.3	-0.6
07761	12	V	500	31	2.4	-0.3	0.2
08001	00	V	500	30	2.3	0.1	0.6
08001	12	V	500	31	2.1	-0.1	0.0
08221	00	V	500	30	3.1	0.5	0.6
08221	12	V	500	31	2.1	0.3	-0.1
08302	12	V	500	31	2.4	0.5	0.0
08302	00	V	500	29	3.7	0.6	0.8
08508	12	V	500	28	2.1	-0.4	-0.7
08522	12	V	500	31	2.2	0.2	-0.1
08579	12	V	500	31	2.6	0.5	0.5
10035	12	V	500	30	1.8	0.2	0.2
10393	00	V	500	30	2.6	0.1	-0.3
10393	12	V	500	31	2.6	-0.1	0.3
10410	00	V	500	28	2.0	-0.4	0.0
10410	12	V	500	30	2.1	0.1	0.1
10739	12	V	500	28	2.4	0.5	-0.6
10739	00	V	500	29	2.4	0.1	0.2
11035	12	V	500	31	2.8	-0.5	0.2
11035	00	V	500	28	3.1	1.2	0.4
12982	00	V	500	13	2.3	-0.7	0.9
12982	12	V	500	10	1.9	0.3	0.3
16080	12	V	500	31	2.0	0.1	-0.4
16080	00	V	500	30	3.3	-0.2	0.0
16245	12	V	500	31	2.3	0.7	0.4
16245	00	V	500	30	2.6	1.0	-0.1
16320	12	V	500	29	1.8	0.3	-0.1
16320	00	V	500	30	2.5	0.2	0.4
16429	12	V	500	31	2.5	0.8	-0.1
16429	00	V	500	30	3.2	-0.2	-0.4
16622	00	V	500	28	2.5	0.5	-0.2
16754	00	V	500	30	2.3	0.7	-0.3
17607	12	V	500	14	3.1	-0.3	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
26435	00	V	500	15	3.5	-0.5	-0.7
5QPW8X	00	V	500	10	4.1	0.1	1.7
5QPW8X	12	V	500	12	3.3	-0.1	-0.4
60018	12	V	500	31	3.3	0.4	0.5
60018	00	V	500	29	3.8	0.5	1.1
7JUNA4	00	V	500	8	1.5	0.9	0.6
7JUNA4	12	V	500	11	2.1	0.5	-0.1
ASDE09	12	V	500	1	1.6	-1.3	1.0
DBLK	00	V	500	18	1.8	0.2	0.2
DBLK	12	V	500	18	2.8	0.4	0.3
FHM5H	00	V	500	2	3.2	-1.6	0.8
FHM5H	12	V	500	5	3.1	0.6	-0.5
FHM5UJ	12	V	500	5	3.4	1.1	-1.1
FHM5UJ	00	V	500	4	2.8	-0.8	-1.1
FPUW5G	12	V	500	23	3.5	0.1	-0.9
GRAI2	00	V	500	8	4.0	-0.4	0.4
GRAI2	12	V	500	7	4.8	1.6	1.8
GRAI3	00	V	500	9	5.7	-1.4	2.5
GRAI3	12	V	500	7	5.7	-2.4	1.1
HTXUH	12	V	500	3	2.8	-0.5	1.2
HTXUH	00	V	500	3	2.3	0.4	-0.9
HTXUH4	12	V	500	3	1.9	1.3	0.8
HTXUH4	00	V	500	4	3.4	0.8	-1.3
QCY3TG	12	V	500	12	2.3	-0.1	0.1
QCY3TG	00	V	500	11	1.4	0.0	0.1
WDK38H	12	V	500	1	2.7	2.2	1.5
XKQLWQ	12	V	500	14	3.9	0.8	-0.9
XQFJRG	00	V	500	6	2.6	-0.5	-1.0
XQFJRG	12	V	500	6	2.0	-0.6	-0.2
YLV96W	12	V	500	8	3.2	-0.6	0.8
YLV96W	00	V	500	9	2.0	-0.8	-0.1

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 850 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : JUL 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	850	31	8.8	4.9
01001	12	Z	850	31	6.0	1.8
01028	12	Z	850	31	4.2	-2.7
01028	00	Z	850	31	3.9	-2.4
01400	00	Z	850	25	81.1	80.8
01400	12	Z	850	28	81.4	81.1
01415	12	Z	850	31	3.7	3.4
01415	00	Z	850	30	4.9	4.4
02365	12	Z	850	30	2.7	1.7
02365	00	Z	850	29	5.0	4.3
02591	00	Z	850	31	10.5	10.3
02591	12	Z	850	31	9.5	9.2
02836	12	Z	850	31	4.3	4.0
02836	00	Z	850	30	3.9	3.6
02963	12	Z	850	31	5.1	4.7
02963	00	Z	850	29	6.1	5.7
03005	12	Z	850	31	2.5	-0.9
03238	00	Z	850	29	4.0	3.6
03238	12	Z	850	5	3.7	3.3
03808	00	Z	850	31	2.8	2.1
03808	12	Z	850	31	2.4	1.5
03918	12	Z	850	4	11.9	11.9
03918	00	Z	850	31	10.6	10.5
03953	00	Z	850	30	2.1	1.0
03953	12	Z	850	30	3.5	1.8
04018	00	Z	850	29	2.0	0.5
04018	12	Z	850	30	2.3	-1.3
04220	00	Z	850	31	3.8	2.7
04220	12	Z	850	31	3.3	2.5
04270	12	Z	850	31	2.7	0.0
04270	00	Z	850	31	3.1	1.0
04320	00	Z	850	31	5.7	2.0
04320	12	Z	850	31	13.9	5.3
04339	00	Z	850	31	3.8	0.0
04339	12	Z	850	31	2.9	-0.4
04360	12	Z	850	30	43.0	42.9
04360	00	Z	850	31	45.7	44.7
06011	00	Z	850	31	4.8	3.8
06011	12	Z	850	30	3.9	2.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	850	4	3.1	2.9
06260	00	Z	850	31	3.2	2.3
06610	12	Z	850	31	2.9	2.4
06610	00	Z	850	32	5.2	4.1
07110	12	Z	850	30	4.6	2.2
07110	00	Z	850	31	3.3	2.5
07510	00	Z	850	31	18.0	17.6
07510	12	Z	850	30	16.8	16.6
07645	12	Z	850	32	2.4	1.6
07645	00	Z	850	29	3.6	0.4
07761	00	Z	850	31	5.4	3.6
07761	12	Z	850	31	7.9	4.7
08001	00	Z	850	31	3.3	2.5
08001	12	Z	850	31	2.5	1.5
08221	00	Z	850	31	5.3	5.0
08221	12	Z	850	31	4.4	4.1
08302	12	Z	850	31	2.8	-2.3
08302	00	Z	850	31	2.3	0.7
08508	12	Z	850	28	4.1	3.8
08522	12	Z	850	31	3.4	3.1
08579	12	Z	850	31	3.3	2.6
10035	12	Z	850	30	13.6	12.8
10393	00	Z	850	31	3.1	2.3
10393	12	Z	850	31	2.3	0.8
10410	00	Z	850	29	1.9	0.0
10410	12	Z	850	30	1.8	-0.7
10739	12	Z	850	28	4.3	3.8
10739	00	Z	850	30	4.2	3.7
11035	12	Z	850	31	9.5	9.1
11035	00	Z	850	29	10.9	10.5
12982	00	Z	850	13	8.6	8.2
12982	12	Z	850	10	7.8	6.9
16080	12	Z	850	31	2.2	-0.7
16080	00	Z	850	31	3.0	0.1
16245	12	Z	850	31	2.2	-1.0
16245	00	Z	850	31	3.2	1.2
16320	12	Z	850	31	7.7	6.0
16320	00	Z	850	31	10.7	9.2
16429	12	Z	850	31	3.2	2.1
16429	00	Z	850	31	5.6	4.9
16622	00	Z	850	31	11.9	10.8
16754	00	Z	850	31	5.5	4.0
17607	12	Z	850	31	3.3	2.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
26435	00	Z	850	15	4.2	3.6
5QPW8X	00	Z	850	10	24.8	24.6
5QPW8X	12	Z	850	12	24.0	23.5
60018	12	Z	850	31	3.4	1.2
60018	00	Z	850	31	3.5	2.1
7JUNA4	00	Z	850	8	18.5	10.2
7JUNA4	12	Z	850	11	19.0	11.7
ASDE09	12	Z	850	2	23.7	21.4
DBLK	00	Z	850	18	4.3	2.6
DBLK	12	Z	850	18	3.7	1.9
FHM5H	00	Z	850	2	9.1	8.4
FHM5H	12	Z	850	5	10.4	9.1
FHM5UJ	12	Z	850	5	7.6	7.5
FHM5UJ	00	Z	850	4	4.9	4.8
FPUW5G	12	Z	850	24	14.1	-5.5
GRAI2	00	Z	850	21	7.2	6.3
GRAI2	12	Z	850	20	5.9	3.0
GRAI3	00	Z	850	21	11.2	10.5
GRAI3	12	Z	850	20	10.2	8.4
HTXUH	12	Z	850	3	4.1	4.0
HTXUH	00	Z	850	3	11.3	10.1
HTXUH4	12	Z	850	3	2.7	1.4
HTXUH4	00	Z	850	4	4.6	3.8
QCY3TG	12	Z	850	12	6.4	6.0
QCY3TG	00	Z	850	11	6.3	4.5
WDK38H	12	Z	850	2	9.4	-9.0
XKQLWQ	12	Z	850	14	10.8	10.1
XQFJRG	00	Z	850	7	10.7	-10.2
XQFJRG	12	Z	850	7	8.9	-8.6
YLV96W	12	Z	850	8	23.6	14.3
YLV96W	00	Z	850	10	8.2	6.8

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 : JUL 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	850	30	3.3	0.9	0.2
01001	12	V	850	31	3.2	0.0	-0.1
01028	12	V	850	31	2.5	0.2	0.1
01028	00	V	850	29	2.2	0.1	0.2
01400	00	V	850	23	2.6	0.2	-0.2
01400	12	V	850	28	2.4	0.4	-0.4
01415	12	V	850	31	2.7	-0.3	-0.8
01415	00	V	850	29	1.8	0.1	-0.1
02365	12	V	850	30	2.8	0.0	-0.9
02365	00	V	850	28	2.8	0.2	-0.4
02591	00	V	850	30	2.5	0.0	-0.2
02591	12	V	850	31	2.4	0.1	0.2
02836	12	V	850	31	2.8	0.4	0.9
02836	00	V	850	30	2.4	0.4	-0.5
02963	12	V	850	31	2.5	0.4	-0.1
02963	00	V	850	28	1.9	0.0	0.7
03005	12	V	850	31	2.4	-0.3	-0.7
03238	00	V	850	28	2.6	0.4	0.4
03238	12	V	850	5	2.6	-0.5	1.4
03808	00	V	850	30	2.5	0.1	-0.5
03808	12	V	850	31	2.5	-0.2	0.2
03918	12	V	850	4	1.1	-0.3	-0.1
03918	00	V	850	30	2.8	0.3	0.1
03953	00	V	850	28	3.0	-0.1	0.1
03953	12	V	850	30	3.0	0.8	0.8
04018	00	V	850	28	2.7	-0.5	0.4
04018	12	V	850	30	2.3	-0.1	0.1
04220	00	V	850	30	2.8	0.3	0.2
04220	12	V	850	31	3.5	-0.7	-0.6
04270	12	V	850	31	3.7	-0.1	-0.2
04270	00	V	850	30	2.1	0.8	0.4
04320	00	V	850	30	2.5	0.3	-0.4
04320	12	V	850	31	3.0	-0.5	-0.7
04339	00	V	850	30	3.5	-0.6	-1.4
04339	12	V	850	31	3.1	0.0	-0.7
04360	12	V	850	30	2.8	0.0	0.2
04360	00	V	850	30	4.1	0.8	-0.1
06011	00	V	850	30	2.8	0.0	-0.5
06011	12	V	850	30	3.0	0.4	-1.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	850	4	3.1	0.2	-0.2
06260	00	V	850	30	2.0	-0.2	0.3
06610	12	V	850	31	3.1	1.6	0.4
06610	00	V	850	30	3.5	0.7	0.3
07110	12	V	850	30	2.6	0.2	0.1
07110	00	V	850	30	2.8	-0.1	0.2
07510	00	V	850	30	2.9	0.3	-0.2
07510	12	V	850	30	3.1	0.5	0.1
07645	12	V	850	31	3.2	0.5	0.0
07645	00	V	850	28	4.0	0.6	0.4
07761	00	V	850	30	2.3	0.6	-0.1
07761	12	V	850	31	2.8	-1.1	-0.6
08001	00	V	850	30	2.6	1.0	-0.2
08001	12	V	850	31	2.0	0.7	0.4
08221	00	V	850	30	3.8	1.2	1.2
08221	12	V	850	31	2.3	0.3	-0.1
08302	12	V	850	31	3.0	1.0	0.4
08302	00	V	850	29	2.1	0.1	0.1
08508	12	V	850	28	2.4	0.7	0.3
08522	12	V	850	30	2.8	-0.3	-0.2
08579	12	V	850	31	2.6	0.6	-0.1
10035	12	V	850	30	2.3	0.0	-0.1
10393	00	V	850	30	3.0	0.2	0.2
10393	12	V	850	31	3.0	0.5	0.3
10410	00	V	850	28	2.3	0.5	0.2
10410	12	V	850	30	2.7	0.4	-0.4
10739	12	V	850	28	2.2	0.2	0.7
10739	00	V	850	29	2.3	0.0	0.2
11035	12	V	850	31	2.8	0.8	0.2
11035	00	V	850	28	2.3	0.3	-0.7
12982	00	V	850	13	2.8	0.6	0.4
12982	12	V	850	10	2.4	0.2	0.0
16080	12	V	850	31	2.5	0.1	-0.9
16080	00	V	850	30	4.1	0.2	-0.5
16245	12	V	850	31	2.4	-0.8	0.1
16245	00	V	850	30	3.3	0.5	0.2
16320	12	V	850	31	2.5	0.2	0.0
16320	00	V	850	30	2.6	0.1	-0.3
16429	12	V	850	31	2.2	0.5	-0.2
16429	00	V	850	30	2.2	0.1	-0.2
16622	00	V	850	30	2.3	0.8	0.2
16754	00	V	850	30	2.3	0.2	0.0
17607	12	V	850	31	3.2	-0.1	0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
26435	00	V	850	15	1.8	-0.4	-0.4
5QPW8X	00	V	850	10	2.4	0.3	0.7
5QPW8X	12	V	850	12	2.0	0.4	0.1
60018	12	V	850	31	4.3	0.1	1.8
60018	00	V	850	29	4.0	0.5	2.1
7JUNA4	00	V	850	8	2.4	0.7	0.5
7JUNA4	12	V	850	11	2.0	0.6	-0.8
ASDE09	12	V	850	1	2.2	-2.1	0.6
DBLK	00	V	850	18	2.6	-0.1	-0.1
DBLK	12	V	850	18	2.3	0.1	0.3
FHM5H	00	V	850	2	1.8	-0.5	1.1
FHM5H	12	V	850	5	5.0	-2.7	-2.4
FHM5UJ	12	V	850	5	4.4	-2.1	0.5
FHM5UJ	00	V	850	4	0.9	0.1	-0.4
FPUW5G	12	V	850	24	2.4	0.8	-0.1
GRAI2	00	V	850	8	4.3	0.7	-1.1
GRAI2	12	V	850	7	5.8	0.0	-1.1
GRAI3	00	V	850	9	3.0	0.0	0.0
GRAI3	12	V	850	7	4.2	-0.4	-0.1
HTXUH	12	V	850	3	4.9	1.1	0.7
HTXUH	00	V	850	3	6.5	-1.8	-1.2
HTXUH4	12	V	850	3	5.4	2.1	-1.1
HTXUH4	00	V	850	4	3.6	-0.1	0.5
QCY3TG	12	V	850	12	2.5	0.8	-0.1
QCY3TG	00	V	850	11	1.9	0.0	0.5
WDK38H	12	V	850	1	1.5	-1.1	1.0
XKQLWQ	12	V	850	14	2.4	0.1	0.0
XQFJRG	00	V	850	6	1.9	0.3	1.3
XQFJRG	12	V	850	7	1.7	0.2	0.3
YLV96W	12	V	850	8	3.2	-0.1	-0.2
YLV96W	00	V	850	10	1.9	0.3	1.1

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

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)
 AREA : 10N - 90N, 70W - 40E
 PERIOD : JUL 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	703	0	0.3	0.1	0.3
1300001	99	P	SUR	11	-23	704	0	0.4	-0.0	0.4
1300008	99	P	SUR	15	-38	735	0	0.2	-0.2	0.3
1300130	99	P	SUR	28	-16	742	0	0.3	-0.1	0.3
1300131	99	P	SUR	28	-17	742	0	0.4	0.1	0.4
1300871	99	P	SUR	36	-70	618	4	1.6	0.4	1.7
1300872	99	P	SUR	34	-34	710	0	0.3	0.6	0.7
1301000	99	P	SUR	33	-17	906	906	0.0	0.0	0.0
1301001	99	P	SUR	33	-17	881	881	0.0	0.0	0.0
1301603	99	P	SUR	21	-43	641	0	0.2	0.4	0.5
1301605	99	P	SUR	26	-41	644	0	0.2	0.3	0.4
1301606	99	P	SUR	14	-37	643	0	0.3	0.3	0.4
1301607	99	P	SUR	17	-26	641	0	0.3	0.4	0.5
1301608	99	P	SUR	24	-34	641	0	0.2	0.6	0.7
1301609	99	P	SUR	22	-25	644	0	0.3	0.6	0.6
1301610	99	P	SUR	23	-31	643	0	0.3	0.4	0.5
1301611	99	P	SUR	27	-42	643	0	0.2	0.2	0.3
1301612	99	P	SUR	29	-30	646	0	0.2	0.2	0.3
13871	99	P	SUR	36	-70	618	4	1.6	0.4	1.7
13872	99	P	SUR	34	-34	710	0	0.3	0.6	0.7
1501529	99	P	SUR	24	-32	741	0	0.2	0.5	0.5
1501531	99	P	SUR	19	-45	741	0	0.2	0.1	0.2
1501534	99	P	SUR	23	-46	742	0	0.2	-0.5	0.5
1501580	99	P	SUR	12	-56	741	0	0.4	0.2	0.4
2500622	99	P	SUR	61	-9	82	0	0.3	0.4	0.5
25622	99	P	SUR	61	-9	82	0	0.3	0.4	0.5
2601620	99	P	SUR	88	28	744	0	0.3	-0.5	0.6
2601621	99	P	SUR	89	-34	743	0	0.4	-0.5	0.7
4100139	99	P	SUR	20	-38	708	0	0.2	-0.2	0.3
4100300	99	P	SUR	16	-57	743	0	0.3	0.1	0.3
4100597	99	P	SUR	29	-35	644	0	0.2	0.5	0.6
4100729	99	P	SUR	31	-29	707	0	0.2	0.5	0.5
4100730	99	P	SUR	38	-33	714	0	0.3	0.6	0.7
4100731	99	P	SUR	32	-69	712	0	0.4	-0.7	0.8
4101528	99	P	SUR	38	-66	694	0	0.6	0.5	0.8
4101530	99	P	SUR	33	-34	691	0	0.2	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
4101531	99	P	SUR	44	-46	693	0	0.3	0.6	0.7
4101532	99	P	SUR	41	-41	707	0	0.2	0.3	0.4
4101535	99	P	SUR	39	-64	700	0	0.8	0.0	0.8
4101537	99	P	SUR	42	-34	702	0	0.3	0.5	0.6
4101538	99	P	SUR	32	-58	630	0	0.3	0.5	0.6
4101554	99	P	SUR	31	-60	707	0	0.3	0.4	0.5
4101556	99	P	SUR	34	-41	712	0	0.2	0.7	0.7
4101557	99	P	SUR	31	-36	710	0	0.2	0.5	0.5
4101558	99	P	SUR	39	-15	713	0	0.3	0.7	0.8
4101560	99	P	SUR	30	-46	705	0	0.3	0.8	0.9
4101562	99	P	SUR	36	-47	693	0	0.2	0.7	0.8
4101564	99	P	SUR	31	-42	701	0	0.2	0.1	0.3
4101565	99	P	SUR	36	-38	666	0	0.2	0.6	0.7
4101566	99	P	SUR	26	-61	585	0	0.3	0.4	0.5
4101567	99	P	SUR	36	-49	702	0	0.2	0.7	0.7
4101568	99	P	SUR	32	-61	689	0	0.4	0.4	0.6
4101570	99	P	SUR	33	-48	698	0	0.2	0.6	0.6
4101573	99	P	SUR	36	-70	670	0	0.8	0.3	0.8
4101574	99	P	SUR	35	-61	614	0	0.4	0.6	0.7
4101576	99	P	SUR	18	-59	641	0	0.3	0.6	0.7
4101577	99	P	SUR	21	-66	641	0	0.3	0.5	0.6
4101579	99	P	SUR	21	-49	638	0	0.4	0.3	0.5
4101596	99	P	SUR	52	-42	690	0	0.4	0.5	0.7
4101599	99	P	SUR	51	-14	690	0	0.3	0.1	0.3
4101619	99	P	SUR	51	-41	712	0	0.5	-0.0	0.5
4101620	99	P	SUR	50	-14	712	0	0.3	0.3	0.5
4101624	99	P	SUR	59	-33	653	0	0.4	0.2	0.5
4101625	99	P	SUR	59	-35	637	0	0.4	0.1	0.5
4101626	99	P	SUR	60	-38	613	0	0.5	0.2	0.5
4101627	99	P	SUR	58	-30	676	0	0.4	-0.1	0.5
4101629	99	P	SUR	59	-32	675	0	0.4	-0.4	0.6
4101700	99	P	SUR	28	-44	643	0	0.2	0.4	0.5
4101702	99	P	SUR	33	-58	712	0	0.3	0.1	0.3
4101705	99	P	SUR	32	-31	713	0	0.2	0.3	0.3
4101706	99	P	SUR	31	-32	711	0	0.2	-0.5	0.5
4101707	99	P	SUR	33	-28	713	0	0.2	0.1	0.2
4101708	99	P	SUR	31	-30	713	0	0.2	-0.1	0.3
4101709	99	P	SUR	20	-23	641	0	0.3	1.0	1.1
4101712	99	P	SUR	35	-33	692	0	0.3	0.3	0.4
4101713	99	P	SUR	34	-56	714	0	0.3	-0.1	0.3
4101714	99	P	SUR	33	-42	712	0	0.3	0.0	0.3
4101715	99	P	SUR	29	-49	643	0	0.2	0.3	0.4
4101716	99	P	SUR	23	-54	643	0	0.3	-0.8	0.8

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101717	99	P	SUR	22	-60	643	0	0.3	0.0	0.3
4101743	99	P	SUR	25	-54	641	0	0.3	0.9	1.0
41041	99	P	SUR	14	-46	1176	0	0.3	0.5	0.6
41043	99	P	SUR	21	-65	1293	0	0.3	0.3	0.5
41044	99	P	SUR	22	-59	1323	0	0.3	0.6	0.7
41046	99	P	SUR	24	-68	1252	0	0.3	0.8	0.8
41048	99	P	SUR	32	-70	1260	0	0.4	-0.1	0.4
41049	99	P	SUR	28	-63	1203	0	0.4	0.4	0.5
41052	99	P	SUR	18	-65	1779	0	0.3	-1.1	1.2
41053	99	P	SUR	19	-66	1872	0	0.4	-0.6	0.7
41056	99	P	SUR	18	-66	1750	0	0.3	-0.8	0.8
41300	99	P	SUR	16	-57	743	0	0.3	0.1	0.3
41597	99	P	SUR	29	-35	644	0	0.2	0.5	0.6
41729	99	P	SUR	31	-29	707	0	0.2	0.5	0.5
41730	99	P	SUR	38	-33	714	0	0.3	0.6	0.7
41731	99	P	SUR	32	-69	712	0	0.4	-0.7	0.8
42060	99	P	SUR	16	-63	1741	0	0.3	0.0	0.3
42085	99	P	SUR	18	-67	801	0	0.3	-0.8	0.9
44005	99	P	SUR	43	-69	83	0	0.5	-0.1	0.5
4400513	99	P	SUR	54	-10	687	0	0.3	-0.3	0.4
4400517	99	P	SUR	24	-58	662	0	0.3	0.3	0.4
4400521	99	P	SUR	36	-34	708	0	0.2	-0.7	0.7
4400746	99	P	SUR	33	-42	714	0	0.2	0.3	0.4
4400777	99	P	SUR	31	-45	713	0	0.3	0.5	0.5
4400778	99	P	SUR	25	-34	660	0	0.2	0.5	0.6
44008	99	P	SUR	41	-69	735	0	0.4	-0.4	0.6
4400857	99	P	SUR	26	-40	645	0	0.2	0.6	0.6
4400874	99	P	SUR	30	-43	669	0	0.2	0.6	0.6
4400887	99	P	SUR	35	-38	704	0	0.2	0.0	0.2
4400891	99	P	SUR	36	-53	697	0	0.4	-0.2	0.5
4401503	99	P	SUR	31	-64	689	0	0.3	0.1	0.3
4401527	99	P	SUR	31	-63	689	0	0.3	0.0	0.3
4401531	99	P	SUR	36	-58	688	0	0.3	0.3	0.4
4401536	99	P	SUR	44	-14	709	0	0.3	0.7	0.8
4401537	99	P	SUR	31	-30	716	0	0.3	-0.4	0.5
4401539	99	P	SUR	32	-41	688	0	0.2	-0.0	0.2
4401540	99	P	SUR	33	-56	689	0	0.2	0.3	0.3
4401541	99	P	SUR	39	-30	690	0	0.3	0.1	0.3
4401543	99	P	SUR	23	-65	511	0	0.3	0.0	0.3
4401544	99	P	SUR	32	-57	690	0	0.3	-0.6	0.7
4401549	99	P	SUR	59	-19	720	0	0.4	-0.1	0.4
4401550	99	P	SUR	54	-11	374	0	2.5	-0.3	2.5
4401551	99	P	SUR	36	-34	705	0	0.3	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
4401552	99	P	SUR	27	-15	593	0	0.4	0.5	0.6
4401553	99	P	SUR	59	-25	713	0	0.4	0.1	0.4
4401554	99	P	SUR	58	-24	711	0	0.5	0.3	0.6
4401555	99	P	SUR	58	-11	710	0	0.4	-0.2	0.5
4401556	99	P	SUR	32	-36	714	0	0.2	0.0	0.2
4401557	99	P	SUR	37	-36	712	0	0.3	0.4	0.5
4401558	99	P	SUR	56	-19	712	0	0.3	-0.0	0.3
4401559	99	P	SUR	48	-11	713	0	0.3	0.4	0.5
4401560	99	P	SUR	41	-17	711	0	0.2	0.2	0.3
4401561	99	P	SUR	37	-24	712	0	0.2	0.2	0.3
4401562	99	P	SUR	39	-20	713	0	0.2	-0.0	0.2
4401563	99	P	SUR	30	-34	661	0	0.2	-0.2	0.3
4401564	99	P	SUR	40	-38	265	0	0.7	1.5	1.7
4401565	99	P	SUR	55	-22	711	0	0.4	0.2	0.4
4401566	99	P	SUR	48	-16	713	0	0.3	0.5	0.6
4401570	99	P	SUR	50	-38	712	0	0.4	-0.0	0.4
4401571	99	P	SUR	52	-42	703	0	0.4	0.1	0.5
4401601	99	P	SUR	54	-23	739	0	0.3	-0.2	0.4
4401603	99	P	SUR	57	-9	740	0	0.3	0.5	0.6
4401605	99	P	SUR	57	-24	741	0	0.4	-0.2	0.5
4401611	99	P	SUR	47	-55	740	0	0.5	0.3	0.5
4401613	99	P	SUR	46	-9	740	0	0.3	0.6	0.6
4401616	99	P	SUR	36	-36	741	0	0.4	0.2	0.4
4401633	99	P	SUR	47	-18	741	0	0.3	0.3	0.4
4401750	99	P	SUR	60	-20	724	0	0.4	-1.6	1.7
4401751	99	P	SUR	58	-26	727	0	0.4	0.3	0.5
4401753	99	P	SUR	61	-18	716	0	0.4	0.4	0.5
4401755	99	P	SUR	66	3	710	0	0.3	0.7	0.7
4401757	99	P	SUR	69	-4	420	0	0.4	0.6	0.7
4401802	99	P	SUR	45	-30	740	0	0.5	0.4	0.7
4401803	99	P	SUR	52	-43	693	0	0.5	0.3	0.5
4401804	99	P	SUR	61	-22	740	0	0.4	0.2	0.4
4401805	99	P	SUR	59	-21	739	0	0.7	0.5	0.8
4401806	99	P	SUR	59	-21	739	0	0.4	0.3	0.5
4401807	99	P	SUR	59	-23	737	0	0.4	0.4	0.5
4401808	99	P	SUR	59	-25	741	0	0.5	0.2	0.5
44027	99	P	SUR	44	-67	772	0	0.4	0.1	0.4
44032	99	P	SUR	44	-69	709	0	0.4	-1.0	1.1
44033	99	P	SUR	44	-69	735	0	0.4	-0.2	0.5
44034	99	P	SUR	44	-68	723	0	0.4	-0.9	1.0
44037	99	P	SUR	44	-68	697	0	0.4	-0.9	1.0
44137	99	P	SUR	42	-62	759	0	0.5	0.1	0.5
44139	99	P	SUR	44	-57	702	0	0.5	-0.0	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44150	99	P	SUR	43	-64	742	0	0.6	-0.0	0.6
44513	99	P	SUR	54	-10	687	0	0.3	-0.3	0.4
44517	99	P	SUR	24	-58	662	0	0.3	0.3	0.4
44521	99	P	SUR	36	-34	707	0	0.2	-0.7	0.7
44746	99	P	SUR	33	-42	714	0	0.2	0.3	0.4
44777	99	P	SUR	31	-45	713	0	0.3	0.5	0.5
44778	99	P	SUR	25	-34	660	0	0.2	0.5	0.6
44857	99	P	SUR	26	-40	645	0	0.2	0.6	0.6
44874	99	P	SUR	30	-43	669	0	0.3	0.5	0.6
44887	99	P	SUR	35	-38	704	0	0.2	0.0	0.2
44891	99	P	SUR	36	-53	697	0	0.4	-0.2	0.5
45138	99	P	SUR	50	-66	743	0	0.5	-0.1	0.5
4700546	99	P	SUR	30	-32	734	0	0.2	0.4	0.5
4700560	99	P	SUR	73	17	742	0	0.3	0.4	0.5
4700568	99	P	SUR	44	-1	739	0	0.4	-0.7	0.8
4700574	99	P	SUR	29	-16	303	0	0.3	0.3	0.5
4701668	99	P	SUR	43	-68	741	0	0.4	0.3	0.5
4701669	99	P	SUR	43	-51	740	0	0.4	0.4	0.5
4701673	99	P	SUR	62	-68	742	0	0.5	-1.4	1.5
4701674	99	P	SUR	70	-67	742	0	0.5	-5.7	5.7
4701677	99	P	SUR	46	-43	710	0	0.4	0.2	0.4
47546	99	P	SUR	30	-32	738	0	0.2	0.4	0.5
47560	99	P	SUR	73	17	743	0	0.3	0.4	0.5
47568	99	P	SUR	44	-1	740	0	0.4	-0.7	0.8
47574	99	P	SUR	29	-16	302	0	0.3	0.3	0.5
4800510	99	P	SUR	78	-15	568	0	0.4	-0.5	0.6
4800770	99	P	SUR	78	-17	379	266	3.4	10.7	11.2
4802004	99	P	SUR	64	-16	739	16	4.4	3.2	5.4
48510	99	P	SUR	78	-15	566	0	0.4	-0.5	0.6
48770	99	P	SUR	78	-17	379	266	3.4	10.7	11.2
6100001	99	P	SUR	43	8	744	0	0.4	0.3	0.5
6100002	99	P	SUR	42	5	710	0	0.4	0.2	0.5
61001	99	P	SUR	43	8	744	0	0.4	0.3	0.5
6100196	99	P	SUR	42	4	740	0	0.4	0.4	0.5
6100197	99	P	SUR	40	4	742	0	0.4	0.3	0.5
6100198	99	P	SUR	37	-2	742	0	0.4	0.4	0.6
61002	99	P	SUR	42	5	710	0	0.4	0.2	0.5
6100280	99	P	SUR	41	1	741	0	0.3	0.3	0.4
6100281	99	P	SUR	40	0	742	0	0.4	0.2	0.4
6100417	99	P	SUR	38	0	742	0	0.4	0.3	0.5
6100430	99	P	SUR	40	2	742	0	0.4	0.1	0.4
6101001	99	P	SUR	38	24	158	0	0.6	0.5	0.8
6101003	99	P	SUR	40	25	154	0	0.5	0.5	0.7

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6101007	99	P	SUR	36	25	157	0	0.4	0.0	0.4
6101008	99	P	SUR	37	22	177	0	0.4	0.6	0.8
6102501	99	P	SUR	34	17	691	0	0.2	0.5	0.5
6102502	99	P	SUR	34	22	692	0	0.3	0.4	0.5
6200024	99	P	SUR	44	-3	742	0	0.4	0.3	0.5
6200025	99	P	SUR	44	-6	742	0	0.3	0.2	0.4
6200082	99	P	SUR	44	-8	742	0	0.3	0.1	0.3
6200083	99	P	SUR	43	-9	742	0	0.4	0.2	0.4
6200084	99	P	SUR	42	-9	742	0	0.3	0.2	0.4
6200085	99	P	SUR	36	-7	742	0	0.3	0.5	0.6
6200092	99	P	SUR	51	-11	744	0	0.3	-0.1	0.3
6200093	99	P	SUR	55	-10	743	0	0.3	0.0	0.3
6200094	99	P	SUR	52	-7	482	0	0.4	0.1	0.5
62001	99	P	SUR	45	-5	723	0	0.3	0.3	0.4
6200191	99	P	SUR	41	-10	599	3	0.3	-0.0	0.3
6200192	99	P	SUR	40	-10	598	0	0.3	-0.5	0.6
6200513	99	P	SUR	64	-17	222	0	0.3	-0.4	0.5
6200940	99	P	SUR	35	-45	706	0	0.2	-0.0	0.2
6200941	99	P	SUR	29	-60	611	0	0.3	-0.4	0.5
62023	99	P	SUR	51	-8	742	0	0.3	0.4	0.5
6202402	99	P	SUR	38	-26	896	896	0.0	0.0	0.0
6202404	99	P	SUR	39	-29	903	903	0.0	0.0	0.0
62029	99	P	SUR	49	-12	1480	0	0.3	0.0	0.3
62030	99	P	SUR	50	-4	1323	0	0.3	0.1	0.3
6203503	99	P	SUR	35	-39	506	0	0.2	0.1	0.2
6203504	99	P	SUR	28	-67	664	0	0.3	0.1	0.4
6203510	99	P	SUR	23	-67	740	0	0.3	0.1	0.3
6203523	99	P	SUR	66	-3	729	0	0.3	-0.2	0.4
6203525	99	P	SUR	65	-1	727	0	0.3	-0.7	0.7
6203526	99	P	SUR	73	12	686	0	0.3	0.4	0.5
6203527	99	P	SUR	59	-25	726	0	0.4	-2.5	2.6
6203528	99	P	SUR	32	-20	706	0	0.2	0.4	0.5
6203529	99	P	SUR	19	-62	639	0	0.3	0.0	0.3
6203600	99	P	SUR	43	-13	713	0	0.3	0.3	0.4
6203601	99	P	SUR	47	-14	712	0	0.3	0.5	0.6
6203602	99	P	SUR	63	-52	712	0	0.4	0.2	0.5
6203603	99	P	SUR	57	-29	712	0	0.4	0.0	0.4
6203604	99	P	SUR	43	-18	712	0	0.2	0.4	0.5
6203605	99	P	SUR	64	-24	213	18	0.9	-0.0	0.9
6203606	99	P	SUR	44	-5	381	0	1.4	-0.1	1.4
6203607	99	P	SUR	33	-29	711	0	0.3	0.3	0.4
6203608	99	P	SUR	50	-15	710	0	0.3	0.4	0.5
6203609	99	P	SUR	48	-15	713	0	0.3	0.1	0.3

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6203610	99	P	SUR	50	-13	697	0	0.3	0.3	0.4
62050	99	P	SUR	50	-4	744	0	0.3	0.4	0.5
62081	99	P	SUR	51	-13	744	0	0.3	-0.0	0.3
62095	99	P	SUR	53	-16	744	0	0.3	0.1	0.3
62102	99	P	SUR	58	2	744	0	0.4	0.5	0.6
62103	99	P	SUR	50	-3	744	0	0.3	0.7	0.8
62104	99	P	SUR	57	1	744	0	0.3	0.2	0.4
62107	99	P	SUR	50	-6	1484	0	0.5	0.6	0.8
62111	99	P	SUR	58	0	703	0	0.4	1.4	1.5
62112	99	P	SUR	58	0	744	0	0.3	0.6	0.7
62113	99	P	SUR	58	0	744	0	0.4	0.2	0.4
62114	99	P	SUR	58	0	1485	0	0.3	0.6	0.7
62115	99	P	SUR	58	-3	744	0	0.3	0.6	0.7
62116	99	P	SUR	58	1	741	0	0.4	0.4	0.6
62118	99	P	SUR	58	1	743	0	0.3	0.7	0.8
62119	99	P	SUR	57	2	718	0	0.3	0.3	0.4
62120	99	P	SUR	56	2	742	0	0.4	0.3	0.5
62121	99	P	SUR	54	3	686	0	0.4	0.5	0.7
62122	99	P	SUR	57	2	1485	0	0.3	0.4	0.5
62124	99	P	SUR	54	-4	744	0	0.3	0.3	0.4
62127	99	P	SUR	54	1	531	0	0.2	0.9	1.0
62129	99	P	SUR	58	0	744	0	0.4	0.3	0.5
62130	99	P	SUR	59	1	743	0	0.3	0.4	0.5
62131	99	P	SUR	54	1	744	0	0.3	0.8	0.8
62132	99	P	SUR	56	2	741	0	0.3	0.5	0.6
62133	99	P	SUR	57	1	741	0	0.4	0.5	0.6
62134	99	P	SUR	58	1	744	0	0.3	0.6	0.6
62135	99	P	SUR	54	2	744	0	0.4	0.7	0.8
62136	99	P	SUR	54	3	744	0	0.3	0.8	0.9
62138	99	P	SUR	54	0	1485	0	0.4	0.9	1.0
62139	99	P	SUR	53	2	1481	0	0.3	0.7	0.7
62140	99	P	SUR	57	1	1479	0	0.3	0.5	0.5
62141	99	P	SUR	58	-2	744	0	0.4	0.4	0.6
62143	99	P	SUR	58	2	744	0	0.3	0.8	0.8
62144	99	P	SUR	53	2	687	0	0.3	0.5	0.6
62145	99	P	SUR	53	3	1483	0	0.3	0.7	0.7
62146	99	P	SUR	57	2	744	0	0.3	0.4	0.5
62148	99	P	SUR	54	2	687	0	0.3	0.6	0.7
62149	99	P	SUR	54	1	739	0	0.3	1.0	1.0
62150	99	P	SUR	54	1	744	0	0.4	1.5	1.6
62151	99	P	SUR	57	2	1389	0	0.3	0.5	0.6
62152	99	P	SUR	57	2	743	0	0.3	0.6	0.7
62153	99	P	SUR	57	2	1457	0	0.3	0.5	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62154	99	P	SUR	56	2	744	0	0.3	0.3	0.4
62155	99	P	SUR	58	1	728	0	0.3	0.6	0.7
62157	99	P	SUR	58	0	744	0	0.3	0.4	0.5
62160	99	P	SUR	57	2	1439	0	0.3	0.7	0.7
62161	99	P	SUR	58	1	167	0	0.5	0.2	0.6
62162	99	P	SUR	57	1	648	0	0.3	0.5	0.6
62163	99	P	SUR	48	-8	729	0	0.4	0.4	0.6
62164	99	P	SUR	57	1	727	0	0.3	0.6	0.7
62165	99	P	SUR	54	1	701	0	0.3	0.8	0.9
62168	99	P	SUR	58	1	744	0	0.3	0.4	0.5
62170	99	P	SUR	51	2	745	0	0.8	0.2	0.8
62296	99	P	SUR	53	2	741	0	0.3	0.4	0.5
62297	99	P	SUR	59	2	1485	0	0.3	0.4	0.5
62302	99	P	SUR	61	-2	740	0	0.4	0.3	0.5
62304	99	P	SUR	51	2	745	0	0.3	0.4	0.5
62305	99	P	SUR	50	0	736	0	0.3	0.4	0.5
62442	99	P	SUR	49	-16	712	0	0.3	0.1	0.3
62513	99	P	SUR	64	-17	221	0	0.3	-0.4	0.5
62940	99	P	SUR	35	-45	706	0	0.2	-0.0	0.2
62941	99	P	SUR	29	-60	611	0	0.3	-0.4	0.5
6301552	99	P	SUR	79	27	692	0	0.4	-0.4	0.6
6301555	99	P	SUR	75	24	690	0	0.3	0.5	0.6
63055	99	P	SUR	61	2	743	0	0.3	0.1	0.3
63056	99	P	SUR	60	2	744	0	0.3	0.6	0.7
63057	99	P	SUR	59	2	744	0	0.3	0.2	0.4
63058	99	P	SUR	53	2	2111	0	0.3	0.6	0.7
63059	99	P	SUR	58	-1	743	0	0.3	0.8	0.8
63101	99	P	SUR	61	1	743	0	0.4	0.4	0.6
63102	99	P	SUR	61	1	743	0	0.3	0.2	0.4
63103	99	P	SUR	61	1	743	0	0.3	0.4	0.5
63104	99	P	SUR	61	2	744	0	0.3	0.3	0.4
63105	99	P	SUR	61	2	744	0	0.3	0.1	0.3
63108	99	P	SUR	61	2	743	0	0.3	0.1	0.3
63109	99	P	SUR	60	2	743	0	0.3	0.2	0.3
63110	99	P	SUR	60	2	743	0	0.3	0.1	0.3
63111	99	P	SUR	61	2	1459	0	0.3	0.1	0.3
63112	99	P	SUR	61	1	743	0	0.3	0.0	0.3
63115	99	P	SUR	62	1	742	0	0.3	0.2	0.4
63117	99	P	SUR	61	1	1483	0	0.4	0.7	0.8
63118	99	P	SUR	60	-4	754	0	0.7	0.1	0.7
63120	99	P	SUR	54	2	744	0	0.3	0.7	0.8
6400562	99	P	SUR	67	-1	709	0	0.3	0.2	0.4
6401501	99	P	SUR	71	29	710	0	0.4	0.5	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6401502	99	P	SUR	61	-14	726	0	0.3	0.3	0.5
6401503	99	P	SUR	60	-14	718	0	0.3	0.4	0.5
6401504	99	P	SUR	59	-15	728	0	0.3	0.2	0.4
6401505	99	P	SUR	60	-23	730	0	0.4	0.1	0.4
6401506	99	P	SUR	61	-25	723	0	0.4	0.2	0.4
6401507	99	P	SUR	79	11	740	0	0.5	0.6	0.7
6401550	99	P	SUR	68	12	687	0	0.3	0.2	0.4
6401555	99	P	SUR	71	13	693	0	0.3	0.4	0.5
6401556	99	P	SUR	69	-2	712	0	0.4	0.2	0.4
6401557	99	P	SUR	48	-43	710	0	0.5	0.2	0.5
6401560	99	P	SUR	56	2	433	0	0.2	-0.0	0.2
6401561	99	P	SUR	61	-19	712	0	0.4	-0.0	0.4
6401562	99	P	SUR	63	0	697	0	0.3	0.5	0.6
6401563	99	P	SUR	66	-25	561	0	1.8	-0.4	1.9
6401564	99	P	SUR	64	5	692	0	0.3	0.1	0.3
6401565	99	P	SUR	64	2	693	0	0.3	-0.0	0.3
6401566	99	P	SUR	63	-9	712	0	0.3	0.2	0.4
6401567	99	P	SUR	63	-22	712	0	0.4	0.2	0.4
6401568	99	P	SUR	61	-9	712	0	0.3	0.3	0.4
6401569	99	P	SUR	62	-20	711	0	0.4	0.1	0.4
6401570	99	P	SUR	66	-5	714	0	0.3	0.2	0.4
6401654	99	P	SUR	89	-26	741	0	0.4	0.0	0.4
6401655	99	P	SUR	83	-62	742	0	0.4	-0.2	0.4
64041	99	P	SUR	61	-3	740	0	0.3	0.3	0.4
64045	99	P	SUR	59	-12	789	0	0.4	-0.2	0.4
64046	99	P	SUR	61	-4	737	0	0.3	0.1	0.3
64562	99	P	SUR	67	-1	709	0	0.3	0.2	0.4
6500519	99	P	SUR	70	33	66	0	0.4	0.6	0.7
6500596	99	P	SUR	71	-12	712	0	0.4	0.5	0.6
6500602	99	P	SUR	71	18	693	0	0.3	0.7	0.7
6501553	99	P	SUR	55	-10	712	0	0.3	0.4	0.5
6501555	99	P	SUR	65	-52	711	0	0.5	-0.3	0.5
6501556	99	P	SUR	62	-17	713	0	0.4	0.2	0.4
65519	99	P	SUR	70	33	61	0	0.4	0.5	0.7
65596	99	P	SUR	71	-12	712	0	0.4	0.5	0.6
65602	99	P	SUR	71	18	693	0	0.3	0.7	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 : JUL 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	704	0	0	1.2	0.2	1.2
1300002	99	SPEED	SUR	20	-23	712	0	0	1.0	0.3	1.1
1300008	99	SPEED	SUR	15	-38	735	0	0	1.0	0.3	1.0
1300130	99	SPEED	SUR	28	-16	742	0	0	0.7	-0.1	0.7
1300131	99	SPEED	SUR	28	-17	742	0	0	2.2	3.4	4.1
4100026	99	SPEED	SUR	11	-38	314	0	0	1.2	-0.0	1.2
4100139	99	SPEED	SUR	20	-38	708	0	0	0.9	0.0	0.9
4100300	99	SPEED	SUR	16	-57	743	0	0	0.8	-0.7	1.1
41026	99	SPEED	SUR	12	-38	314	0	0	1.2	0.1	1.2
41041	99	SPEED	SUR	14	-46	1176	0	0	0.9	-0.1	0.9
41043	99	SPEED	SUR	21	-65	1293	0	0	0.8	-0.2	0.9
41044	99	SPEED	SUR	22	-59	1322	0	0	0.8	-0.3	0.9
41046	99	SPEED	SUR	24	-68	1251	0	0	1.2	-0.5	1.2
41048	99	SPEED	SUR	32	-70	1258	0	0	1.1	-0.3	1.1
41049	99	SPEED	SUR	28	-63	1202	0	0	1.2	-0.0	1.2
41052	99	SPEED	SUR	18	-65	1781	0	0	0.7	-0.6	1.0
41053	99	SPEED	SUR	19	-66	1872	0	0	1.3	0.6	1.4
41056	99	SPEED	SUR	18	-66	1750	0	0	1.1	-1.1	1.6
41300	99	SPEED	SUR	16	-57	743	0	0	0.9	-0.6	1.1
42060	99	SPEED	SUR	16	-63	1748	0	0	1.0	-0.2	1.0
42085	99	SPEED	SUR	18	-67	783	0	0	1.2	-0.2	1.2
44027	99	SPEED	SUR	44	-67	773	0	0	1.3	-0.9	1.6
44032	99	SPEED	SUR	44	-69	709	0	0	1.4	-1.1	1.8
44033	99	SPEED	SUR	44	-69	735	0	0	1.5	-0.8	1.7
44034	99	SPEED	SUR	44	-68	724	0	0	1.7	-1.5	2.2
44037	99	SPEED	SUR	44	-68	697	0	0	1.2	-0.5	1.3
44137	99	SPEED	SUR	42	-62	760	0	0	1.4	-0.4	1.4
44139	99	SPEED	SUR	44	-57	703	0	0	1.5	-1.1	1.9
45138	99	SPEED	SUR	50	-66	744	0	0	1.8	-0.3	1.9
6100001	99	SPEED	SUR	43	8	744	0	0	1.3	0.2	1.3
6100002	99	SPEED	SUR	42	5	744	0	0	1.2	-0.1	1.2
61001	99	SPEED	SUR	43	8	744	0	0	1.3	-0.0	1.3
6100196	99	SPEED	SUR	42	4	730	0	0	2.1	-0.9	2.2
6100197	99	SPEED	SUR	40	4	558	0	0	1.6	-0.5	1.7

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
61002	99	SPEED	SUR	42	5	744	0	0	1.2	-0.5	1.3
6100280	99	SPEED	SUR	41	1	729	0	0	1.3	-0.2	1.3
6100281	99	SPEED	SUR	40	0	729	0	0	1.8	0.1	1.8
6100417	99	SPEED	SUR	38	0	737	0	0	1.2	-0.1	1.2
6100430	99	SPEED	SUR	40	2	560	0	0	1.9	0.6	2.0
6101001	99	SPEED	SUR	38	24	158	0	0	1.8	-0.1	1.8
6101003	99	SPEED	SUR	40	25	155	0	0	1.7	0.1	1.7
6101007	99	SPEED	SUR	36	25	157	0	0	1.8	-0.2	1.8
6101008	99	SPEED	SUR	37	22	190	0	0	1.3	-1.2	1.8
6200024	99	SPEED	SUR	44	-3	731	0	0	1.4	-0.2	1.4
6200025	99	SPEED	SUR	44	-6	736	0	0	1.4	-0.3	1.4
6200082	99	SPEED	SUR	44	-8	740	0	0	1.2	0.0	1.2
6200083	99	SPEED	SUR	43	-9	721	0	0	1.2	-0.9	1.5
6200084	99	SPEED	SUR	42	-9	732	0	0	1.2	-0.7	1.4
6200085	99	SPEED	SUR	36	-7	740	0	0	1.2	-0.3	1.2
6200092	99	SPEED	SUR	51	-11	744	0	0	1.0	-0.0	1.0
6200093	99	SPEED	SUR	55	-10	743	0	0	1.2	-0.2	1.2
6200094	99	SPEED	SUR	52	-7	482	0	0	1.5	-0.4	1.5
62001	99	SPEED	SUR	45	-5	723	0	0	1.1	0.7	1.3
6200191	99	SPEED	SUR	41	-10	599	0	0	0.9	0.2	1.0
6200192	99	SPEED	SUR	40	-10	598	0	0	0.8	0.2	0.8
6201030	99	SPEED	SUR	44	-4	726	0	0	1.3	-0.3	1.3
62023	99	SPEED	SUR	51	-8	742	0	0	1.5	0.0	1.5
62029	99	SPEED	SUR	49	-12	1480	0	0	1.1	0.4	1.2
62050	99	SPEED	SUR	50	-4	744	0	0	1.4	0.3	1.4
62081	99	SPEED	SUR	51	-13	744	0	0	1.0	0.3	1.1
62095	99	SPEED	SUR	53	-16	725	0	0	1.0	0.4	1.1
62102	99	SPEED	SUR	58	2	744	0	0	1.1	0.1	1.1
62103	99	SPEED	SUR	50	-3	744	0	0	1.4	1.0	1.7
62104	99	SPEED	SUR	57	1	744	0	0	1.3	-0.3	1.3
62107	99	SPEED	SUR	50	-6	1484	0	0	1.5	0.8	1.7
62111	99	SPEED	SUR	58	0	661	0	0	2.2	-1.7	2.8
62112	99	SPEED	SUR	58	0	744	0	0	1.3	-0.5	1.3
62113	99	SPEED	SUR	58	0	744	0	0	1.4	0.3	1.5
62114	99	SPEED	SUR	58	0	1485	0	0	1.4	0.5	1.5
62118	99	SPEED	SUR	58	1	743	0	0	1.2	0.5	1.3
62119	99	SPEED	SUR	57	2	718	0	0	1.1	-0.3	1.2
62120	99	SPEED	SUR	56	2	742	0	0	1.1	-0.0	1.1
62121	99	SPEED	SUR	54	3	686	0	0	1.3	0.2	1.3
62122	99	SPEED	SUR	57	2	1485	0	0	1.1	-0.1	1.1
62129	99	SPEED	SUR	58	0	744	0	0	1.2	0.0	1.2

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62131	99	SPEED	SUR	54	1	743	0	0	1.8	-0.5	1.9
62132	99	SPEED	SUR	56	2	741	0	0	2.3	-1.2	2.6
62133	99	SPEED	SUR	57	1	741	0	0	1.2	0.2	1.3
62134	99	SPEED	SUR	58	1	744	0	0	1.2	0.1	1.2
62140	99	SPEED	SUR	57	1	1443	0	0	1.1	-0.0	1.1
62143	99	SPEED	SUR	58	2	744	0	0	1.3	-0.3	1.3
62144	99	SPEED	SUR	53	2	687	0	0	2.1	-0.6	2.2
62145	99	SPEED	SUR	53	3	1483	0	0	1.7	1.0	1.9
62146	99	SPEED	SUR	57	2	744	0	0	1.1	-0.0	1.1
62148	99	SPEED	SUR	54	2	687	0	0	1.3	0.1	1.3
62149	99	SPEED	SUR	54	1	739	0	0	1.4	0.2	1.4
62150	99	SPEED	SUR	54	1	744	0	0	1.6	-0.2	1.6
62152	99	SPEED	SUR	57	2	743	0	0	1.1	-0.4	1.2
62153	99	SPEED	SUR	57	2	1457	0	0	1.4	-0.8	1.7
62154	99	SPEED	SUR	56	2	744	0	0	1.1	-0.1	1.1
62155	99	SPEED	SUR	58	1	723	0	0	2.2	0.4	2.2
62163	99	SPEED	SUR	48	-8	729	0	0	1.1	0.2	1.1
62164	99	SPEED	SUR	57	1	727	0	0	1.4	-0.7	1.6
62165	99	SPEED	SUR	54	1	701	0	0	1.2	-0.2	1.2
62170	99	SPEED	SUR	51	2	745	0	0	1.7	0.6	1.8
62304	99	SPEED	SUR	51	2	741	0	0	1.9	1.2	2.3
62305	99	SPEED	SUR	50	0	736	0	0	1.4	0.8	1.6
62442	99	SPEED	SUR	49	-16	711	0	0	1.0	0.2	1.0
63055	99	SPEED	SUR	61	2	743	0	0	1.0	-0.7	1.2
63056	99	SPEED	SUR	60	2	743	0	0	1.1	-0.1	1.1
63057	99	SPEED	SUR	59	2	744	0	0	1.5	-0.1	1.5
63058	99	SPEED	SUR	53	2	1367	0	0	1.3	0.4	1.4
63101	99	SPEED	SUR	61	1	743	0	0	1.4	-0.0	1.4
63103	99	SPEED	SUR	61	1	743	0	0	1.5	0.2	1.5
63104	99	SPEED	SUR	61	2	744	0	0	1.2	0.2	1.2
63105	99	SPEED	SUR	61	2	744	0	0	1.3	0.2	1.3
63106	99	SPEED	SUR	61	2	744	0	0	1.2	0.3	1.2
63108	99	SPEED	SUR	61	2	743	0	0	1.3	0.3	1.4
63109	99	SPEED	SUR	60	2	726	0	0	1.4	-0.1	1.4
63110	99	SPEED	SUR	60	2	743	0	0	1.3	-0.1	1.3
63112	99	SPEED	SUR	61	1	743	0	0	1.3	-0.2	1.3
63113	99	SPEED	SUR	61	2	742	0	0	1.1	-0.1	1.1
63115	99	SPEED	SUR	62	1	742	0	0	1.5	-0.2	1.5
63117	99	SPEED	SUR	61	1	1483	0	0	1.5	0.1	1.5
64041	99	SPEED	SUR	61	-3	740	0	0	1.4	0.6	1.6
64045	99	SPEED	SUR	59	-12	789	0	0	0.9	0.3	1.0

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
64046	99	SPEED	SUR	61	-4	737	0	0	1.1	0.4	1.2
66021	99	SPEED	SUR	55	14	676	0	0	1.3	0.6	1.4
66022	99	SPEED	SUR	54	14	1178	0	0	1.5	0.2	1.5
66024	99	SPEED	SUR	55	13	706	0	0	1.4	0.7	1.5

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

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 AREA : 10N - 90N, 70W - 40E
 PERIOD : JUL 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
00000	99	DIRN	SUR	43	-84	13	0	0	86.6	-9.2	87.1
1300001	99	DIRN	SUR	11	-23	385	0	0	24.3	-0.2	24.3
1300002	99	DIRN	SUR	20	-23	700	0	0	9.0	-1.3	9.1
1300008	99	DIRN	SUR	15	-38	734	0	0	9.0	5.2	10.4
1300130	99	DIRN	SUR	28	-16	742	0	0	5.9	0.1	5.9
1300131	99	DIRN	SUR	28	-17	505	0	0	20.7	7.3	21.9
4100026	99	DIRN	SUR	11	-38	296	0	0	13.7	-13.4	19.1
4100139	99	DIRN	SUR	20	-38	708	0	0	7.2	4.3	8.4
41002	99	DIRN	SUR	32	-75	941	0	0	18.5	14.2	23.3
4100300	99	DIRN	SUR	16	-57	743	0	0	9.2	4.1	10.1
41004	99	DIRN	SUR	33	-79	991	0	0	18.3	4.7	18.9
41008	99	DIRN	SUR	31	-81	600	0	0	21.4	12.9	24.9
41009	99	DIRN	SUR	29	-80	741	0	0	27.8	5.8	28.4
41010	99	DIRN	SUR	29	-79	855	0	0	22.4	10.4	24.7
41013	99	DIRN	SUR	33	-78	990	0	0	18.6	11.5	21.8
41024	99	DIRN	SUR	34	-79	594	0	0	30.7	-9.7	32.2
41025	99	DIRN	SUR	35	-75	1025	0	0	24.0	11.7	26.7
41026	99	DIRN	SUR	12	-38	294	0	0	14.0	-14.0	19.8
41029	99	DIRN	SUR	33	-80	815	0	0	29.4	-7.0	30.2
41033	99	DIRN	SUR	32	-80	551	0	0	26.0	-4.7	26.4
41037	99	DIRN	SUR	34	-77	595	0	0	20.9	-4.2	21.4
41038	99	DIRN	SUR	34	-78	596	0	0	27.0	12.0	29.6
41041	99	DIRN	SUR	14	-46	1176	0	0	7.7	-9.8	12.5
41043	99	DIRN	SUR	21	-65	1269	0	0	10.3	-11.2	15.3
41044	99	DIRN	SUR	22	-59	1320	0	0	8.6	2.0	8.8
41046	99	DIRN	SUR	24	-68	1139	0	0	13.0	3.0	13.3
41047	99	DIRN	SUR	28	-72	971	0	0	19.7	-9.3	21.8
41048	99	DIRN	SUR	32	-70	1188	0	0	14.1	-4.1	14.7
41049	99	DIRN	SUR	28	-63	1051	0	0	15.1	6.0	16.2
41052	99	DIRN	SUR	18	-65	1781	0	0	8.1	3.5	8.8
41053	99	DIRN	SUR	19	-66	1777	0	0	11.3	1.3	11.4
41056	99	DIRN	SUR	18	-66	1747	0	0	10.8	2.5	11.1

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
41063	99	DIRN	SUR	35	-76	774	0	0	24.1	-5.9	24.8
41064	99	DIRN	SUR	34	-77	562	0	0	23.7	-1.1	23.8
41300	99	DIRN	SUR	16	-57	743	0	0	9.2	4.1	10.1
42013	99	DIRN	SUR	27	-83	659	0	0	24.4	-7.5	25.5
42022	99	DIRN	SUR	28	-84	599	0	0	22.0	-2.7	22.1
42023	99	DIRN	SUR	26	-83	535	0	0	22.3	-0.6	22.3
42056	99	DIRN	SUR	20	-85	1008	0	0	17.8	4.3	18.3
42057	99	DIRN	SUR	17	-81	1221	0	0	11.0	4.2	11.8
42060	99	DIRN	SUR	16	-63	1742	0	0	9.4	-0.9	9.4
42085	99	DIRN	SUR	18	-67	776	0	0	11.4	10.5	15.5
44007	99	DIRN	SUR	44	-70	399	0	0	21.0	8.3	22.6
44009	99	DIRN	SUR	39	-75	531	0	0	16.1	14.5	21.7
44013	99	DIRN	SUR	42	-71	482	0	0	25.0	23.0	34.0
44014	99	DIRN	SUR	37	-75	550	0	0	16.8	4.3	17.3
44017	99	DIRN	SUR	41	-72	462	0	0	16.4	3.2	16.7
44018	99	DIRN	SUR	42	-70	512	0	0	15.5	13.2	20.4
44020	99	DIRN	SUR	42	-70	924	0	0	16.1	4.7	16.7
44022	99	DIRN	SUR	41	-74	16	0	0	15.6	0.4	15.6
44025	99	DIRN	SUR	40	-73	540	0	0	17.2	2.2	17.3
44027	99	DIRN	SUR	44	-67	460	0	0	18.1	22.5	28.8
44029	99	DIRN	SUR	43	-71	472	0	0	19.8	4.2	20.2
44030	99	DIRN	SUR	43	-70	415	0	0	23.1	10.7	25.4
44032	99	DIRN	SUR	44	-69	324	0	0	17.5	16.4	23.9
44033	99	DIRN	SUR	44	-69	267	0	0	21.7	7.1	22.8
44034	99	DIRN	SUR	44	-68	323	0	0	18.7	18.0	26.0
44037	99	DIRN	SUR	44	-68	464	0	0	19.0	18.0	26.2
44039	99	DIRN	SUR	41	-73	378	0	0	19.6	4.2	20.0
44040	99	DIRN	SUR	41	-74	216	0	0	17.1	1.5	17.2
44042	99	DIRN	SUR	38	-76	595	0	0	26.9	-11.5	29.3
44058	99	DIRN	SUR	38	-76	800	0	0	19.3	-27.5	33.6
44062	99	DIRN	SUR	39	-76	747	0	0	28.3	-15.2	32.1
44063	99	DIRN	SUR	39	-76	645	0	0	30.3	-19.6	36.1
44064	99	DIRN	SUR	37	-76	878	0	0	21.1	-15.4	26.1
44065	99	DIRN	SUR	40	-74	845	0	0	20.1	4.9	20.7
44066	99	DIRN	SUR	40	-73	503	0	0	16.7	4.8	17.4
44069	99	DIRN	SUR	41	-73	605	0	0	21.8	-0.4	21.8
44072	99	DIRN	SUR	37	-76	844	1	0	27.0	-12.1	29.6
44137	99	DIRN	SUR	42	-62	543	0	0	26.0	-5.9	26.6
44139	99	DIRN	SUR	44	-57	568	0	0	14.8	17.8	23.2
45003	99	DIRN	SUR	45	-83	424	0	0	22.4	11.2	25.0
45005	99	DIRN	SUR	42	-82	771	0	0	22.2	5.8	22.9

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND DIRECTION (DEGREES)

(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
45008	99	DIRN	SUR	44	-82	605	0	0	22.5	8.1	23.9
45012	99	DIRN	SUR	44	-77	434	0	0	21.6	9.7	23.7
45132	99	DIRN	SUR	43	-81	444	0	0	28.6	4.0	28.9
45135	99	DIRN	SUR	44	-77	605	0	0	19.9	-9.9	22.2
45137	99	DIRN	SUR	46	-81	448	0	0	15.5	-1.5	15.6
45138	99	DIRN	SUR	50	-66	420	0	0	23.4	8.6	25.0
45139	99	DIRN	SUR	43	-80	358	0	0	30.3	2.9	30.4
45142	99	DIRN	SUR	43	-79	424	0	0	25.9	-1.1	25.9
45143	99	DIRN	SUR	45	-81	651	0	0	20.6	4.2	21.0
45147	99	DIRN	SUR	42	-83	315	0	0	31.0	0.3	31.0
45149	99	DIRN	SUR	44	-82	401	0	0	18.7	-3.2	19.0
45151	99	DIRN	SUR	45	-79	337	0	0	27.9	2.6	28.1
45152	99	DIRN	SUR	46	-80	172	0	0	16.3	4.7	17.0
45154	99	DIRN	SUR	46	-83	572	0	0	20.4	20.3	28.7
45159	99	DIRN	SUR	44	-79	338	0	0	23.2	17.0	28.8
45162	99	DIRN	SUR	45	-83	414	0	0	23.1	-7.6	24.3
45163	99	DIRN	SUR	44	-84	468	0	0	26.7	0.7	26.7
45164	99	DIRN	SUR	42	-82	235	0	0	40.6	-5.6	41.0
45165	99	DIRN	SUR	42	-83	512	0	0	42.0	7.1	42.6
45166	99	DIRN	SUR	45	-73	344	0	0	24.5	-46.2	52.4
45167	99	DIRN	SUR	42	-80	477	0	0	26.6	-14.8	30.4
45169	99	DIRN	SUR	42	-82	298	0	0	41.8	-13.0	43.8
45175	99	DIRN	SUR	46	-85	668	0	0	24.2	-3.2	24.4
45176	99	DIRN	SUR	42	-82	502	0	0	29.5	-13.0	32.3
45178	99	DIRN	SUR	45	-73	584	0	0	31.4	-14.2	34.5
6100281	99	DIRN	SUR	40	0	319	0	0	41.2	-29.2	50.5
6100417	99	DIRN	SUR	38	0	366	0	0	15.3	4.9	16.1
6200024	99	DIRN	SUR	44	-3	385	0	0	29.2	7.4	30.1
6200025	99	DIRN	SUR	44	-6	357	0	0	16.1	0.5	16.1
6200082	99	DIRN	SUR	44	-8	556	0	0	15.4	8.3	17.5
6200083	99	DIRN	SUR	43	-9	437	0	0	14.5	11.0	18.2
6200084	99	DIRN	SUR	42	-9	432	0	0	14.7	7.2	16.4
6200085	99	DIRN	SUR	36	-7	527	0	0	16.7	6.4	17.9
6200092	99	DIRN	SUR	51	-11	634	0	0	14.1	6.5	15.5
6200093	99	DIRN	SUR	55	-10	609	0	0	13.6	5.6	14.8
6200094	99	DIRN	SUR	52	-7	386	0	0	20.9	2.6	21.0
62001	99	DIRN	SUR	45	-5	580	0	0	15.3	1.6	15.4
6200191	99	DIRN	SUR	41	-10	493	0	0	19.2	-4.2	19.7
6200192	99	DIRN	SUR	40	-10	544	0	0	11.8	-0.3	11.8
6201030	99	DIRN	SUR	44	-4	356	0	0	20.8	-1.7	20.9
62023	99	DIRN	SUR	51	-8	609	0	0	18.8	9.2	21.0

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62029	99	DIRN	SUR	49	-12	1208	0	0	12.9	10.2	16.5
62050	99	DIRN	SUR	50	-4	487	0	0	16.9	4.8	17.6
62081	99	DIRN	SUR	51	-13	647	0	0	11.5	11.8	16.5
62095	99	DIRN	SUR	53	-16	552	0	0	15.0	6.6	16.4
62103	99	DIRN	SUR	50	-3	443	0	0	21.3	11.6	24.3
62107	99	DIRN	SUR	50	-6	1150	0	0	19.7	8.5	21.4
62111	99	DIRN	SUR	58	0	299	0	0	26.4	-9.8	28.2
62112	99	DIRN	SUR	58	0	491	0	0	16.4	4.1	16.9
62114	99	DIRN	SUR	58	0	1081	0	0	17.7	-2.0	17.8
62163	99	DIRN	SUR	48	-8	507	0	0	12.4	-6.0	13.8
62305	99	DIRN	SUR	50	0	520	0	0	20.6	8.8	22.4
62442	99	DIRN	SUR	49	-16	538	0	0	13.4	-6.6	14.9
64041	99	DIRN	SUR	61	-3	598	0	0	13.6	4.9	14.4
64045	99	DIRN	SUR	59	-12	756	0	0	15.8	6.6	17.2
64046	99	DIRN	SUR	61	-4	605	0	0	14.0	-0.6	14.0

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASDE09	DBLK	FHM5UJH	FPUW5GN	HTXUH4H	QCY3TGN	WDK38HS	XKQLWQB	XQFJRGX
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	04089	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	17516	17607	33008	37789	40179	40186
43599	45004	47102	47104	47138	47155	47169	47186	60018
61901	61904	61980	61998	68263	68424	68442	68512	68816
68842	70026	70133	70200	70219	70231	70261	70308	70316
70326	70350	70361	70398	71043	71081	71082	71109	71119
71194	71600	71603	71722	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	FHM5UJH	FPUW5GN	HTXUH4H	QCY3TGN	WDK38HS	XKQLWQB	XQFJRGX	YLV96WM
ZVQEQCM	5QPW8XG	7JUNA4N	01001	01010	01028	01241	01400	01415
01492	02836	02963	06610	17607	40186	47155	61904	71194
72551	73033	76903	94653	94767				

5 Annex - Explanations of figures and tables

5.1 General

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

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

5.2 Data Availability

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

5.3 Data Quality

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

It should be noted that:

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

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

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

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

The corresponding limits for wind (table 8) are:

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