ECMWF Global Data Monitoring Report

August 2017

European Centre for Medium-Range Weather Forecasts
Europäisches Zentrum für mittelfristige Wettervorhersage
Centre européen pour les prévisions météorologiques à moyen terme

Contents

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 precentage of rejection.

1 Introduction

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

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

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

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

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

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

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

2 Data summary - History of events

2.1 Radiosondes

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

Ident	Time	Jul	Aug	Ident	Time	Jul	Aug
33041	(12)	31	0	16144	(00)	14	31
-	-	-	-	17095	(00)	11	31
-	-	-	-	24125	(00)	18	31
-	-	-	-	24125	(12)	18	31
-	-	-	-	41256	(00)	14	36
-	-	-	-	42314	(00)	0	19
-	-	-	-	42348	(00)	10	30
-	-	-	-	42361	(00)	11	22
-	-	-	-	42647	(00)	7	21
-	-	-	-	43192	(00)	0	28
-	-	-	-	43285	(00)	12	27
-	-	-	-	43311	(00)	4	19
-	-	-	-	43369	(00)	0	23
-	-	-	-	43371	(00)	11	24
-	-	-	-	48568	(00)	17	29
-	-	-	-	61052	(00)	17	29
-	-	-	-	68442	(12)	46	57
-	-	-	-	68592	(00)	55	42
-	-	-	-	68592	(12)	62	45
-	-	-	-	74004	(12)	29	44
-	-	-	-	82411	(00)	2	28
-	-	-	-	82411	(12)	2	29
-	-	-	-	83779	(00)	0	29
-	-	-	-	96645	(00)	0	25
-	-	-	-	96645	(12)	0	25
-	-	-	-	96996	(00)	18	30
-	-	-	-	98618	(00)	5	22

2.2 Drifting Buoys

Surface pressure observations from **1552** drifting buoys were received during the month.

3 Global monitoring statistics

The following figures and tables provide information on both the availability and quality of various data types as received at ECMWF during the month. A brief description of each figure/table is given below. For a full explanation please refer to the Annex.

3.1 Data Availability

Figures 1-9 are global charts for each data type showing the average number of observations received in 24 hours in 5 degree boxes. The average daily number of observations (global) is also displayed with a breakdown, where appropriate, for each WMO region (figures 1, 3 and 4) and Ocean (figures 1-4).

Fig	Observation Type	Parameter	Level/Layer
1	SYNOP/SHIP	MSL Pressure	Surface
2	DRIFTER	MSL Pressure	Surface
3	TEMP	Geopotential	500 hPa
4	TEMP/PILOT	Wind	300 hPa
5	AIRCRAFT (AIREP/AMDAR etc.)	Wind	300-150 hPa
6	SATOB	Wind	400-150 hPa
7	SATOB	Wind	1000-700 hPa
9	TOVS (120 km) - NOAA14	Thickness	300-100 hPa

(Figure 1 includes data from fixed marine platforms e.g. moored buoys.)

3.2 Data Quality

Tables 1-8 contain lists of suspect stations in the format according to Recommendation 3 CBS-Ext(85).

Tab	Observation Type	Parameter	Level/Layer
1	SHIP	MSL Pressure	Surface
2	SHIP	Wind Speed	Surface
3	SHIP	Wind Direction	Surface
4	DRIFTER	MSL Pressure	Surface
5	DRIFTER	Wind Speed	Surface
6	DRIFTER	Wind Direction	Surface
7	TEMP	Geopotential	1000- 30 hPa
8	TEMP/PILOT	Wind	1000-100 hPa
9	TEMP/PILOT	Wind Direction	500-150 hPa

(SHIP tables include data from fixed marine platforms e.g. moored buoys.)

Figures 10-13 show the locations of suspect stations given in tables 7 and 8.

Fig	Observation Type	Parameter	Observation Time
10	TEMP	Geopotential	00 UTC
11	TEMP	Geopotential	12 UTC
12	TEMP/PILOT	Wind	00 UTC
13	TEMP/PILOT	Wind	12 UTC

Tables 10 and 11 provide quality statistics for all TEMPSHIPS and PILOTSHIPS received during the month.

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

Figures 14–18 show global charts of SATOB and aircraft wind statistics in the form of wind vectors averaged over 5 degree boxes.

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

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

3.2.1 Figure 1 - Availability - SYNOP PRESSURE

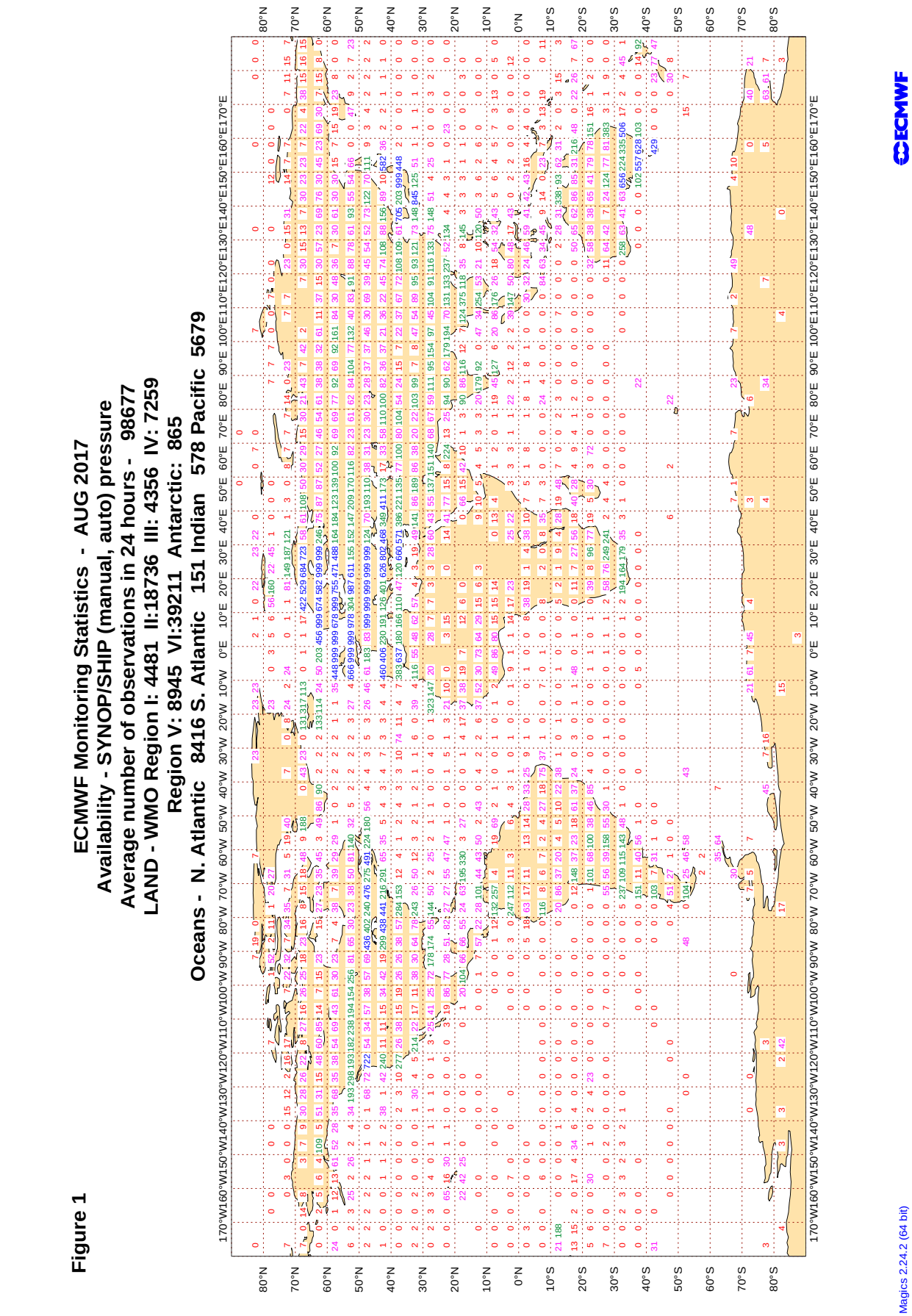


Figure 1

3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

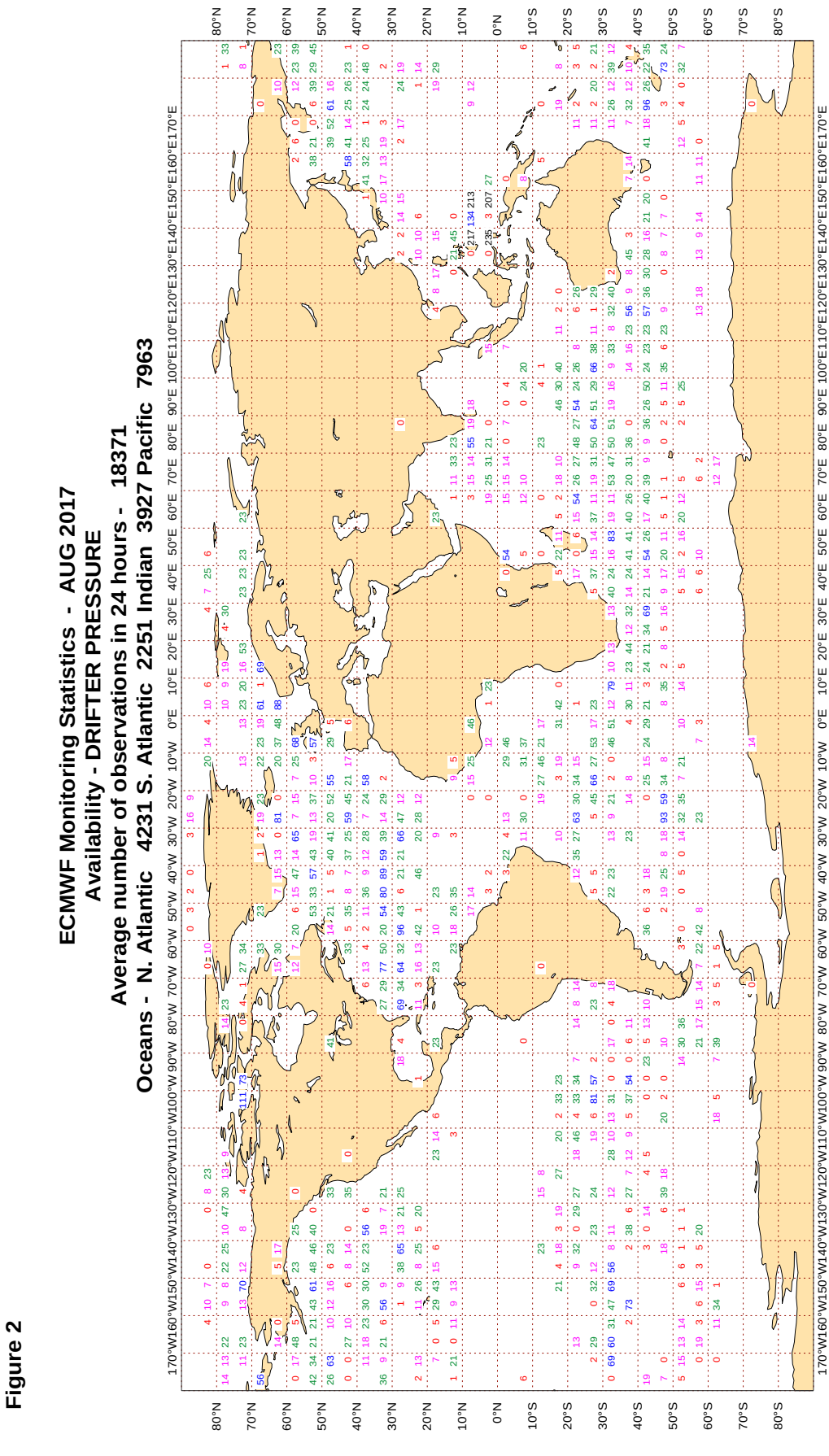


Figure 2

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

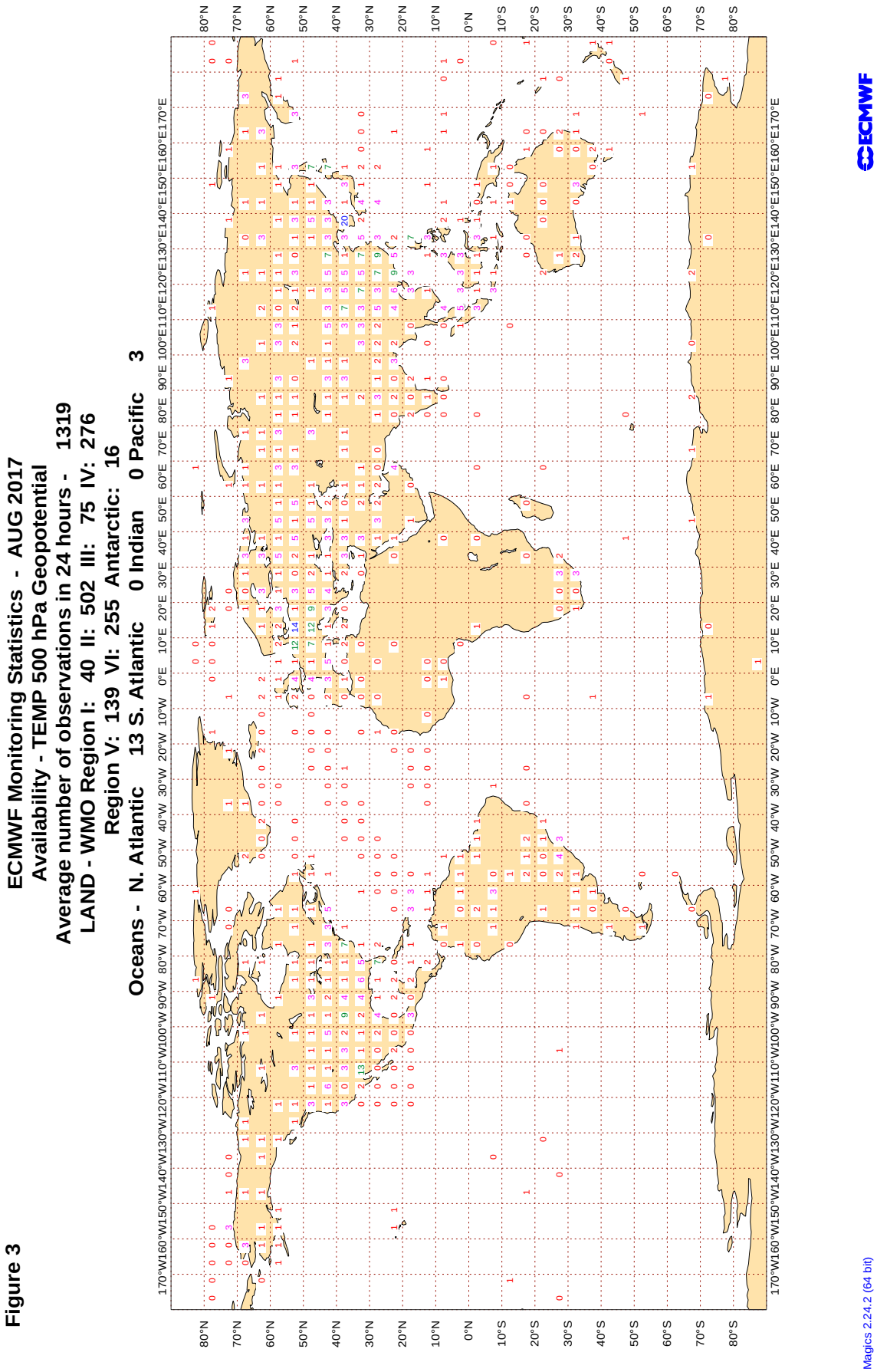


Figure 3

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

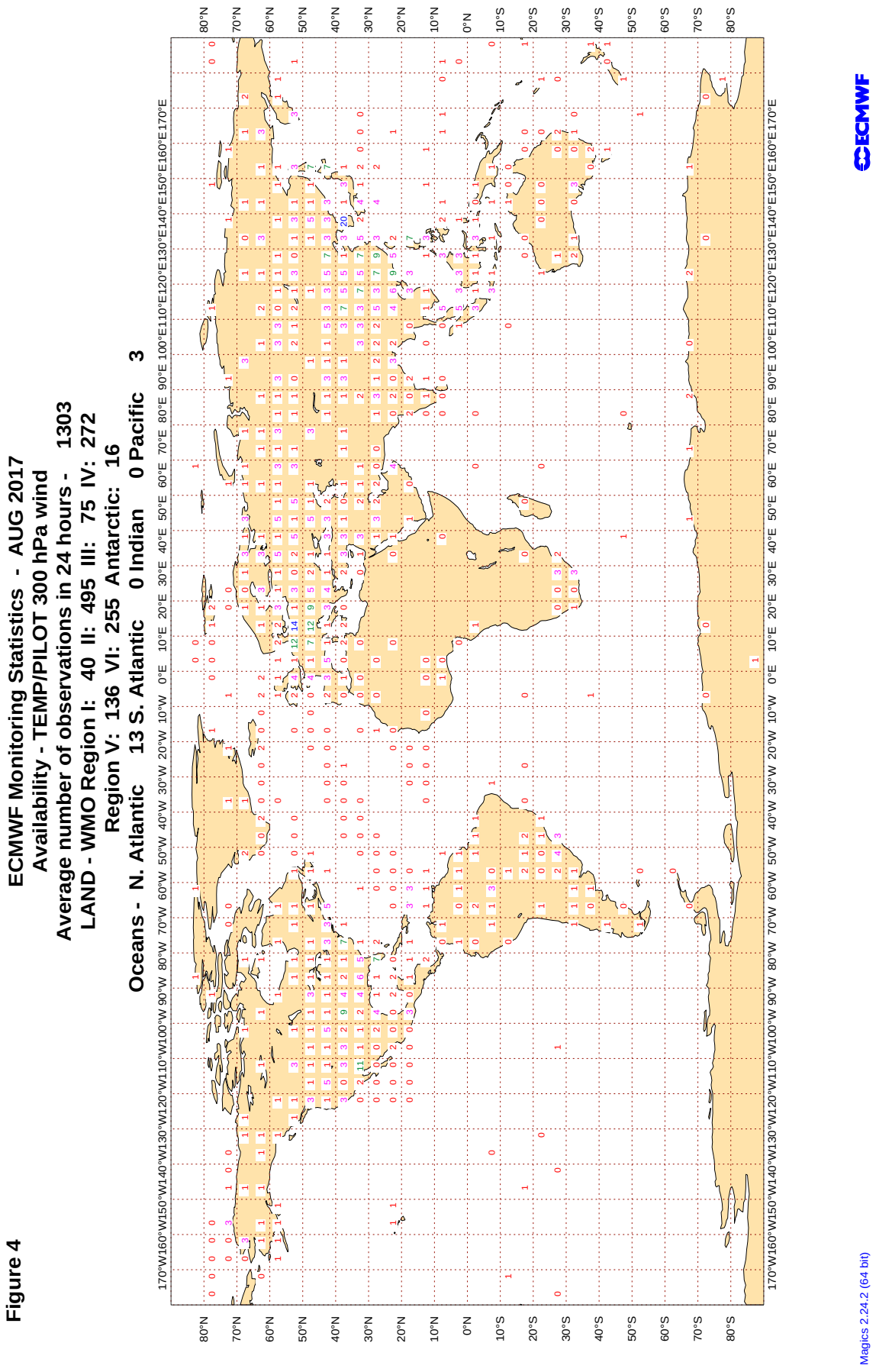


Figure 4

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

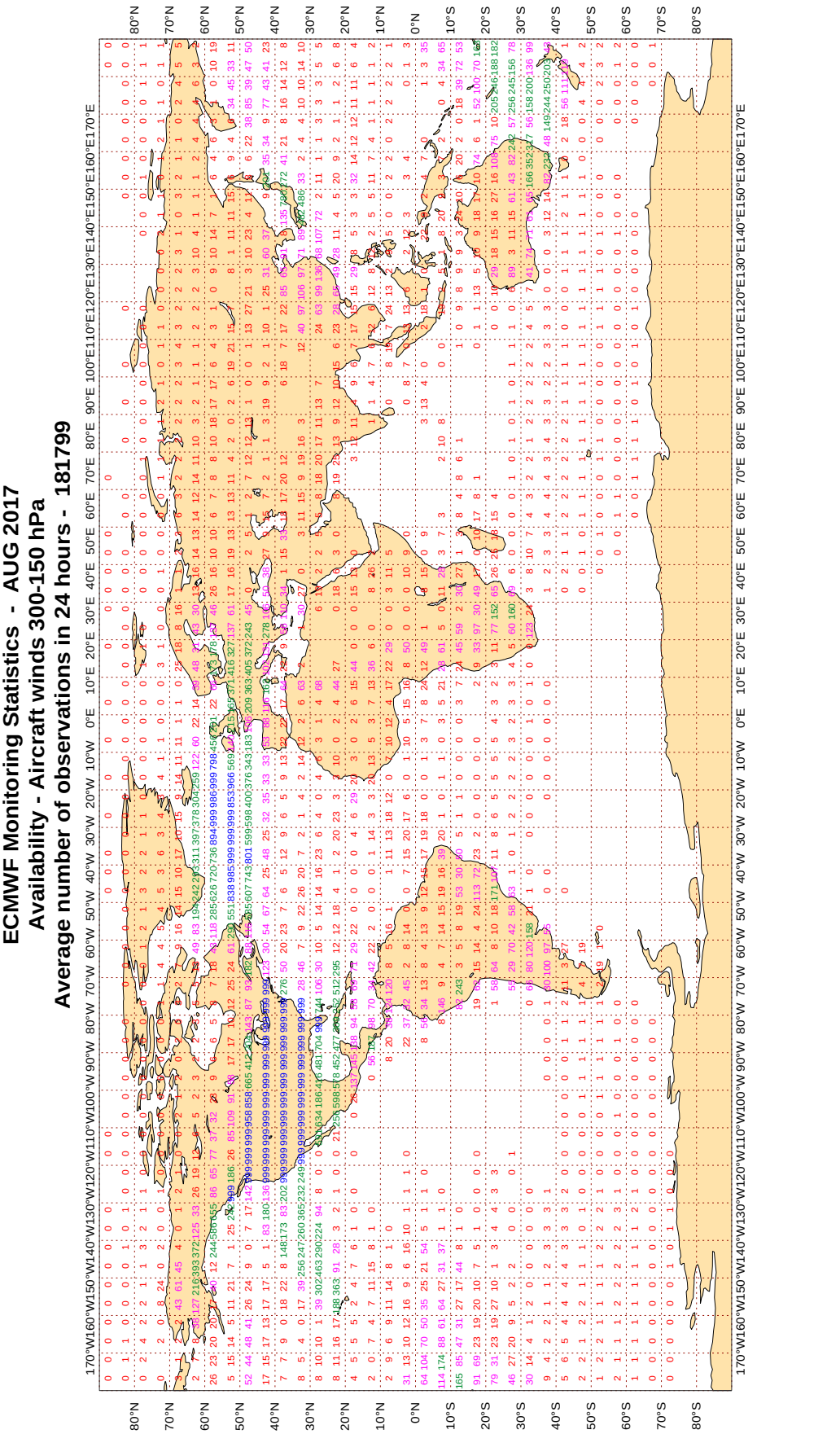
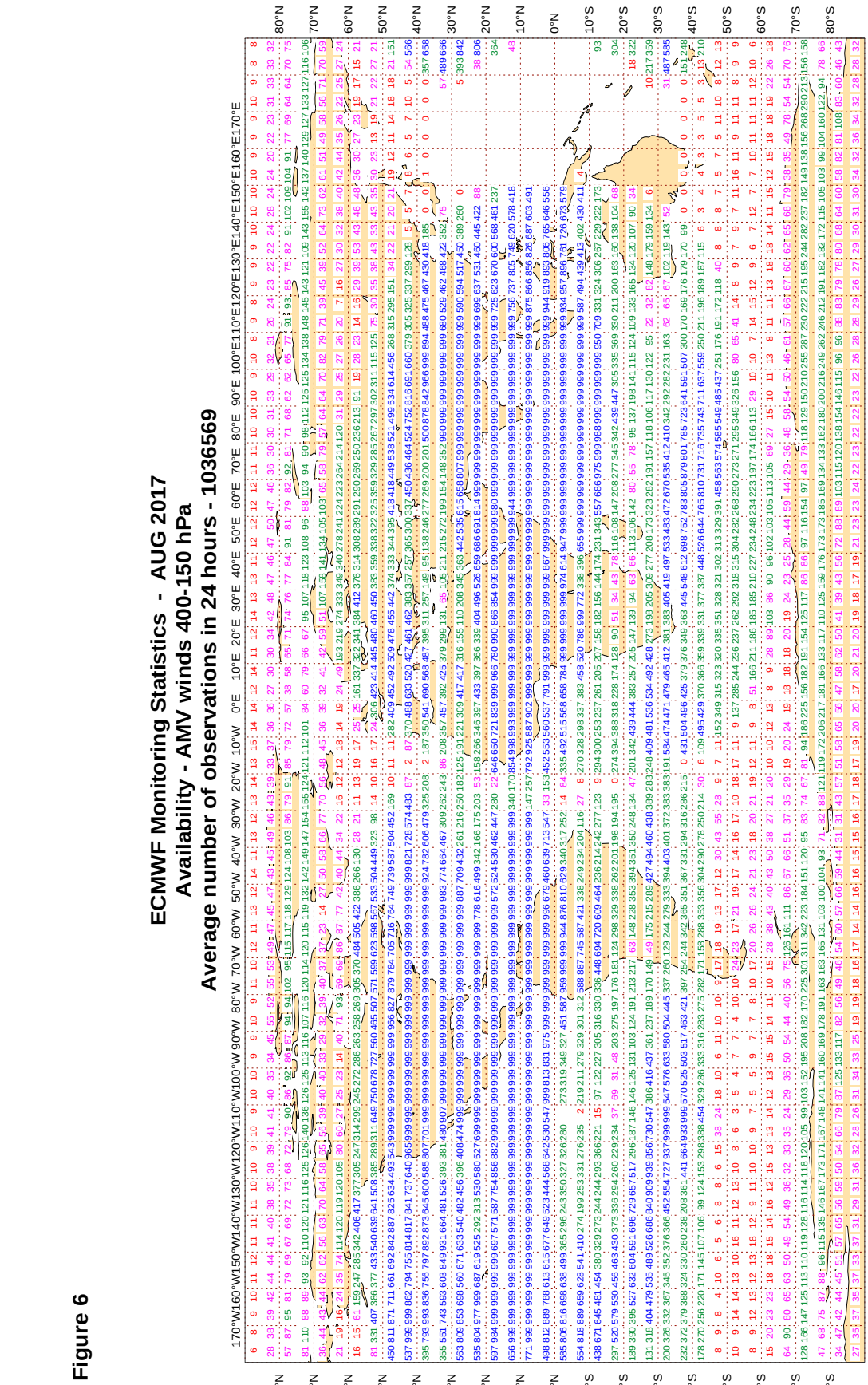


Figure 5

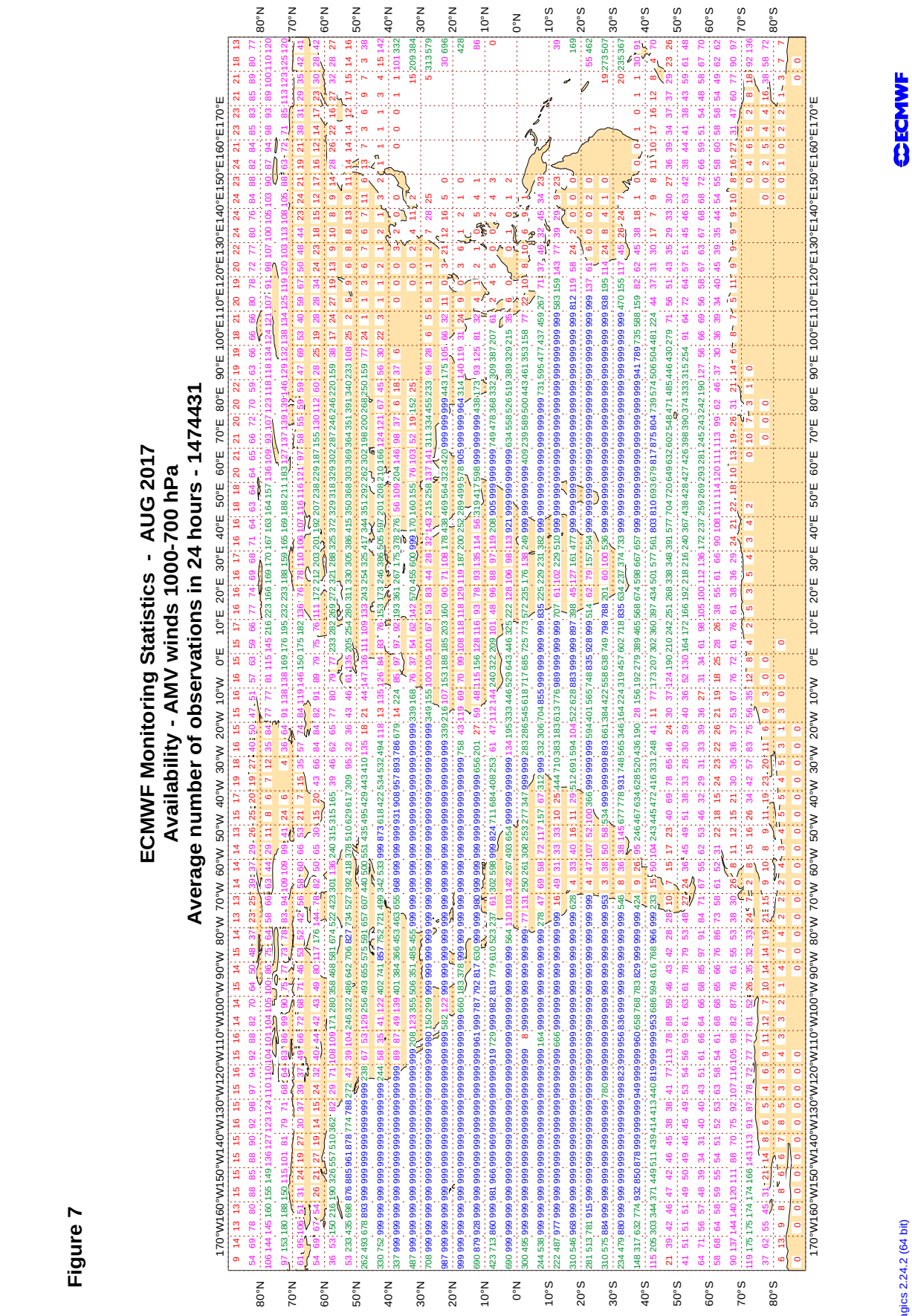
3.2.6 Figure 6 - Availability - SATOB winds 400-150 hPa

Figure 6



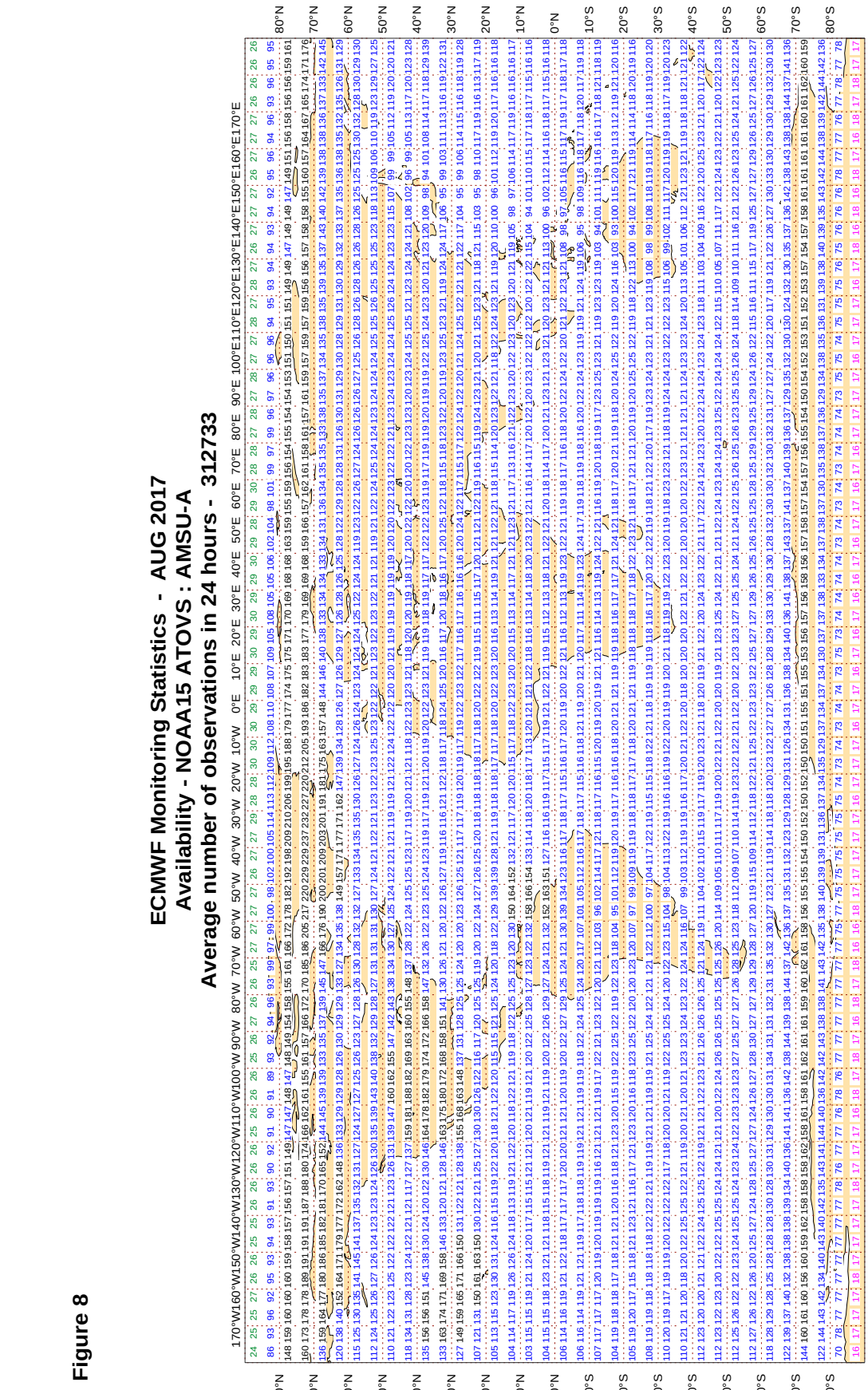
3.2.7 Figure 7 - Availability - SATOB winds 1000-700 hPa

Figure 7



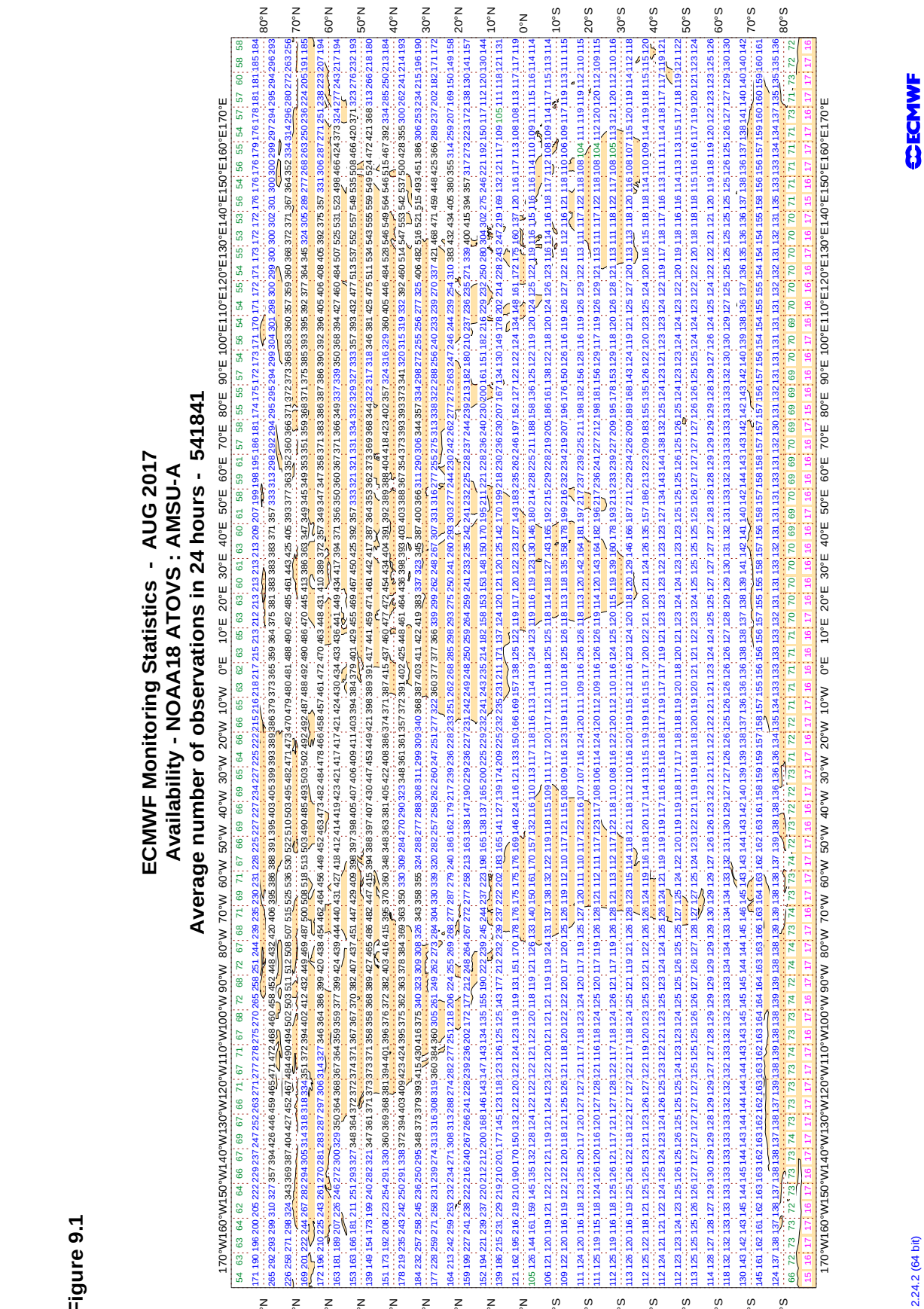
3.2.8 Figure 8 - Availability - NOAA15 ATOVS : AMSU-A

Figure 8

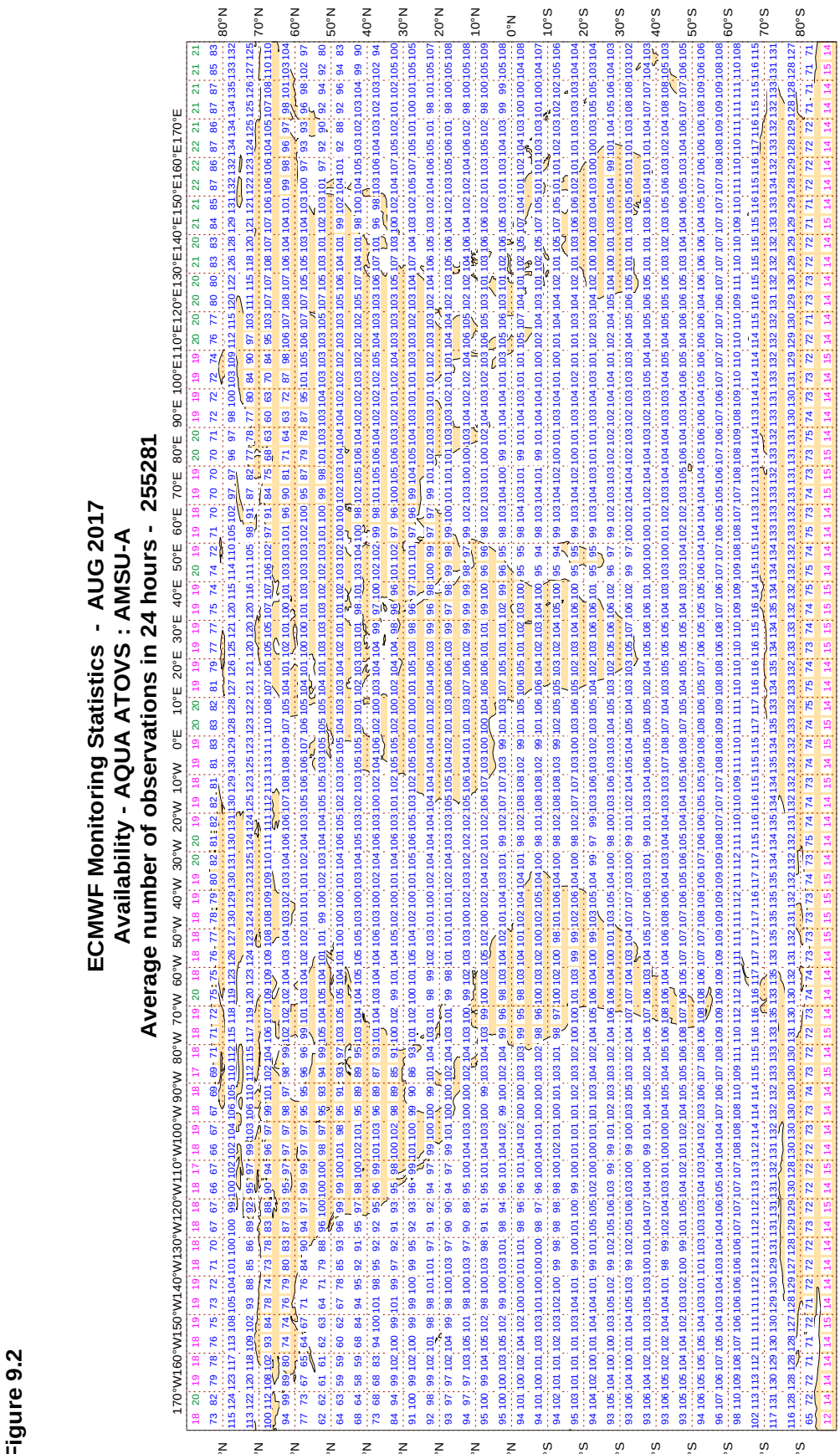


3.2.9 Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A

Figure 9.1

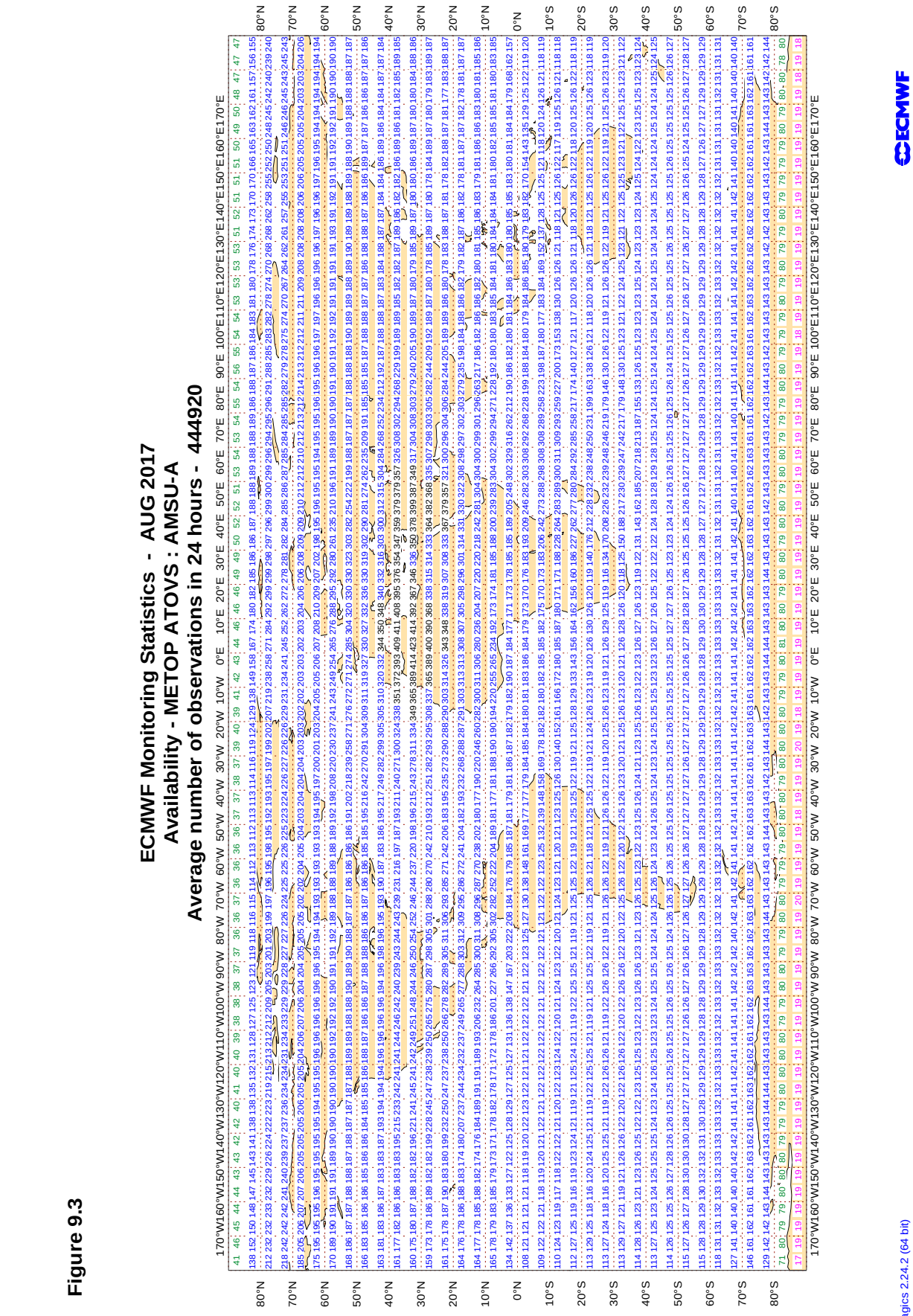


3.2.10 Figure 9.2 - Availability - AQUA ATOVS : AMSU-A



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

Figure 9.3



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                : AUG 2017
                    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
2HDG2	99	P	SUR	15	0	1.5	4.4	4.7
3FFA5	99	P	SUR	39	2	1.2	13.3	13.3
3FSV5	99	P	SUR	28	0	1.9	4.1	4.5
7KAB	99	P	SUR	15	0	2.9	4.0	5.0
9HJD9	99	P	SUR	39	0	0.8	-4.2	4.3
9V2774	99	P	SUR	15	0	0.7	3.7	3.8
9V5256	99	P	SUR	21	0	2.0	-3.8	4.3
9V9132	99	P	SUR	96	0	1.6	4.2	4.5
9V9373	99	P	SUR	21	0	0.8	3.7	3.8
9V9375	99	P	SUR	39	0	1.4	4.3	4.5
9V9832	99	P	SUR	29	0	0.9	-3.4	3.5
A8WI3	99	P	SUR	27	0	0.7	-3.1	3.2
AUXE	99	P	SUR	107	30	5.6	6.5	8.6
C6AB9	99	P	SUR	25	5	4.4	-3.2	5.5
C6BR3	99	P	SUR	58	0	0.9	12.1	12.2
C6BX8	99	P	SUR	40	0	0.5	4.5	4.5
C6FN2	99	P	SUR	30	0	1.0	4.0	4.1
C6TQ6	99	P	SUR	59	0	1.7	7.5	7.7
C6UZ6	99	P	SUR	16	0	1.2	3.4	3.6
C6YM5	99	P	SUR	61	0	1.6	3.1	3.5
CTEC	99	P	SUR	24	0	1.5	-4.6	4.9
CTEL	99	P	SUR	16	0	2.3	3.1	3.9
D5AG9	99	P	SUR	95	0	1.8	3.6	4.0
ELPX7	99	P	SUR	37	0	1.0	3.4	3.6
LAJF7	99	P	SUR	120	0	3.8	5.1	6.3
LAQO7	99	P	SUR	38	0	1.9	10.7	10.8
ONAC	99	P	SUR	34	0	1.7	3.6	4.0
ONFN	99	P	SUR	35	0	0.9	-3.4	3.5
OZ2049	99	P	SUR	22	0	1.2	-5.5	5.6
PFBF	99	P	SUR	34	0	1.4	4.0	4.2
UAEV	99	P	SUR	50	0	1.4	3.1	3.4
UAHF	99	P	SUR	54	0	2.7	-3.4	4.3

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
UCLD	99	P	SUR	52	0	1.7	-4.9	5.2
UHOM	99	P	SUR	23	2	6.2	0.1	6.2
VRBJ9	99	P	SUR	107	0	1.2	7.8	7.9
VRDW2	99	P	SUR	81	0	1.9	-3.0	3.6
VREM6	99	P	SUR	88	0	2.0	3.8	4.3
VRFI7	99	P	SUR	95	0	1.2	4.3	4.5
VRGO8	99	P	SUR	24	0	2.0	-3.3	3.8
VRIB2	99	P	SUR	33	0	2.4	6.1	6.5
VRID2	99	P	SUR	25	0	0.8	4.3	4.4
VRJT8	99	P	SUR	27	0	3.1	3.1	4.4
VRKC2	99	P	SUR	59	0	1.5	3.2	3.6
VRLA6	99	P	SUR	19	0	1.7	5.2	5.4
VRNM9	99	P	SUR	88	4	1.9	9.7	9.9
VRPY5	99	P	SUR	19	0	2.6	8.6	9.0
VRRB5	99	P	SUR	31	0	1.3	4.0	4.2
VRWE8	99	P	SUR	16	0	0.9	-4.1	4.2
VRYO7	99	P	SUR	26	0	2.1	-3.6	4.1
WC5932	99	P	SUR	43	1	7.5	-7.9	10.9
WCAJ	99	P	SUR	17	0	0.8	4.9	4.9
WCX8884	99	P	SUR	40	0	2.8	3.8	4.7
WDB3161	99	P	SUR	57	1	1.8	6.3	6.6
WDD9283	99	P	SUR	60	0	2.8	-3.6	4.6
WDG8555	99	P	SUR	19	0	1.0	5.6	5.7
WTDH	99	P	SUR	116	0	0.3	-4.4	4.4

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                : AUG 2017
                    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

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                : AUG 2017
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD


SELECTION CRITERIA: NO. OF OBS.           >= 15(50) (WIND SPEEDS > 3M/S), AND ,
Manual (Automatic)  ABSOLUTE BIAS         >= 30(25) DEGREES, OR,
                    STANDARD DEVIATION    >= 70(50) DEGREES
                    (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)


TIME = 99 => AVERAGE OF 00, 06, 12 AND 18 UTC OBSERVATIONS
```

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
34002	99	DIRN	SUR	168	42	0	163.7	41.7	168.9
42045	99	DIRN	SUR	34	0	0	12.1	-39.1	40.9
42365	99	DIRN	SUR	86	0	0	21.2	-33.9	40.0
44037	99	DIRN	SUR	79	0	0	13.2	38.9	41.1
45166	99	DIRN	SUR	28	0	0	20.6	-48.8	52.9
46081	99	DIRN	SUR	42	0	0	36.0	32.3	48.4
46118	99	DIRN	SUR	95	0	0	29.1	39.4	49.0
46120	99	DIRN	SUR	29	0	0	73.1	-7.2	73.4
46207	99	DIRN	SUR	104	0	0	12.4	44.4	46.1

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                 : AUG 2017
                    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
1600643	99	P	SUR	-34	48	372	52	5.1	-6.1	7.9
16643	99	P	SUR	-34	47	372	52	5.1	-6.1	7.9
2300782	99	P	SUR	-12	90	194	13	3.0	5.6	6.3
2301554	99	P	SUR	6	80	596	88	2.0	-4.0	4.5
23782	99	P	SUR	-12	90	194	13	3.0	5.6	6.3
2600568	99	P	SUR	80	33	350	34	5.6	4.2	7.0
3101502	99	P	SUR	-20	-32	330	139	3.0	-2.4	3.9
4100708	99	P	SUR	20	-80	370	142	5.2	0.7	5.3
41708	99	P	SUR	20	-80	370	142	5.2	0.7	5.3
45509	99	P	SUR	45	-88	1311	1311	0.0	0.0	0.0
4700557	99	P	SUR	55	-10	452	0	4.0	-4.0	5.7
47557	99	P	SUR	55	-10	628	0	4.0	-4.1	5.8
4801613	99	P	SUR	74	-159	713	0	1.8	8.2	8.4
5301603	99	P	SUR	11	69	929	922	0.0	14.5	14.5
5600942	99	P	SUR	-26	80	455	48	3.8	-5.1	6.4
56942	99	P	SUR	-26	80	630	65	3.7	-5.2	6.4
6203518	99	P	SUR	65	-39	260	11	1.6	12.0	12.1
6203519	99	P	SUR	59	-46	253	4	2.5	9.8	10.1
6400757	99	P	SUR	63	-28	464	464	0.0	0.0	0.0
64757	99	P	SUR	63	-28	623	623	0.0	0.0	0.0

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

```
          LIST OF SUSPECT STATIONS        : DRIFTER
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND SPEED (M/S)
                    AREA                  : GLOBAL
                    PERIOD                : AUG 2017
                    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

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

```
          LIST OF SUSPECT STATIONS         : DRIFTER
                    MONITORING CENTRE      : ECMWF
                    ELEMENT MONITORED      : WIND DIRECTION (DEGREES)
                    PERIOD                 : AUG 2017
                    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
23451	99	DIRN	SUR	15	69	179	0	0	9.8	37.2	38.4
23456	99	DIRN	SUR	18	67	197	0	0	12.5	44.8	46.5
23492	99	DIRN	SUR	11	72	175	0	0	21.1	24.0	32.0
23497	99	DIRN	SUR	11	72	240	0	0	16.4	-21.6	27.2
3100004	99	DIRN	SUR	-14	-33	88	0	0	67.9	18.2	70.3
3100053	99	DIRN	SUR	-23	-43	24	2	0	44.4	-20.2	48.8
3100229	99	DIRN	SUR	-3	-38	650	0	0	10.6	-20.3	22.9
3100231	99	DIRN	SUR	-27	-47	205	0	0	48.3	51.1	70.3
3100374	99	DIRN	SUR	-25	-45	155	0	0	13.7	-52.2	53.9
31004	99	DIRN	SUR	-14	-33	89	0	0	66.0	19.3	68.8
3101000	99	DIRN	SUR	-24	-42	540	0	0	28.8	-96.3	100.5
31053	99	DIRN	SUR	-23	-43	24	2	0	46.4	-24.2	52.4
31229	99	DIRN	SUR	-3	-38	650	0	0	10.9	-20.6	23.3
31231	99	DIRN	SUR	-27	-47	208	0	0	49.2	49.9	70.1
31374	99	DIRN	SUR	-25	-45	156	0	0	15.5	-52.5	54.8
34002	99	DIRN	SUR	-55	-90	1479	392	0	165.0	35.1	168.7
42045	99	DIRN	SUR	26	-97	199	0	0	16.0	-40.0	43.1
42361	99	DIRN	SUR	28	-93	592	2	0	22.6	29.9	37.5
42365	99	DIRN	SUR	28	-89	433	0	0	24.6	-30.6	39.3
44037	99	DIRN	SUR	44	-68	451	0	0	14.7	36.2	39.1
44058	99	DIRN	SUR	38	-76	743	0	0	20.3	-25.2	32.3
44062	99	DIRN	SUR	39	-76	736	0	0	28.3	-20.1	34.7
44063	99	DIRN	SUR	39	-76	572	0	0	67.5	-14.9	69.1
45026	99	DIRN	SUR	42	-87	601	0	0	21.3	-24.2	32.3
45028	99	DIRN	SUR	47	-92	691	0	0	25.8	-23.3	34.8
45154	99	DIRN	SUR	46	-83	609	0	0	28.5	25.3	38.2
45159	99	DIRN	SUR	44	-79	54	0	0	24.1	20.1	31.4
45166	99	DIRN	SUR	45	-73	164	0	0	18.9	-45.1	48.9
46059	99	DIRN	SUR	31	-132	987	0	0	44.0	-20.0	48.3
46060	99	DIRN	SUR	61	-147	439	0	0	25.8	21.5	33.6
46081	99	DIRN	SUR	61	-148	249	0	0	38.5	29.4	48.4

```
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
46087	99	DIRN	SUR	49	-125	225	0	0	25.8	25.0	35.9
46118	99	DIRN	SUR	49	-123	630	0	0	28.9	38.2	47.9
46120	99	DIRN	SUR	48	-122	123	0	0	81.3	-2.1	81.3
46207	99	DIRN	SUR	51	-130	638	0	0	13.0	45.1	46.9
6101007	99	DIRN	SUR	36	25	215	0	0	15.6	20.1	25.4
6200082	99	DIRN	SUR	44	-8	539	0	0	61.5	46.7	77.2

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

```
          LIST OF SUSPECT STATIONS         : RADIOSONDES
                    MONITORING CENTRE      : ECMWF
                    ELEMENT MONITORED      : GEOPOTENTIAL HEIGHT (METRES)
                    AREA                   : GLOBAL
                    PERIOD                 : AUG 2017
                    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
04360	00	Z	1000	66	-38	23	0	2.9	42.4	42.5
04360	12	Z	1000	66	-38	22	0	6.7	44.1	44.6
21946	00	Z	50	71	148	26	0	35.2	-149.4	153.5
21946	12	Z	50	71	148	29	0	54.1	-176.9	185.0
31088	12	Z	30	59	143	31	0	56.6	-164.1	173.6
31873	12	Z	70	46	134	29	0	47.7	-119.1	128.3
31873	00	Z	70	46	134	29	0	35.1	-113.8	119.1
33393	00	Z	150	50	24	17	0	60.6	84.3	103.8
38064	12	Z	30	45	66	19	5	98.9	170.0	196.7
40437	00	Z	925	25	47	27	0	2.5	32.3	32.4
42348	00	Z	30	27	76	25	2	33.4	212.6	215.2
43014	00	Z	30	20	75	21	0	21.8	197.4	198.6
43041	00	Z	30	19	82	19	0	63.0	201.8	211.4
43128	00	Z	30	17	78	20	1	61.1	255.4	262.6
43295	00	Z	30	13	78	11	0	21.5	177.9	179.2
43369	00	Z	50	8	73	11	0	48.7	159.0	166.3
47155	12	Z	925	35	129	31	6	30.2	-22.7	37.8
47155	00	Z	1000	35	129	31	0	34.9	25.0	42.9
78486	00	Z	1000	18	-70	31	0	4.1	27.5	27.8
78988	00	Z	1000	12	-69	24	0	31.8	7.5	32.7
89512	00	Z	50	-71	12	31	0	79.3	-158.8	177.5
89592	00	Z	50	-67	93	24	0	77.1	-197.5	212.0
96147	12	Z	925	4	108	27	1	13.8	44.5	46.6
96147	00	Z	925	4	108	31	3	5.2	44.8	45.1
97372	12	Z	500	-10	124	28	0	60.2	44.6	74.9
98223	00	Z	30	18	121	25	1	54.8	275.8	281.2
98233	00	Z	1000	18	122	30	0	26.7	44.3	51.7

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                : AUG 2017
                    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

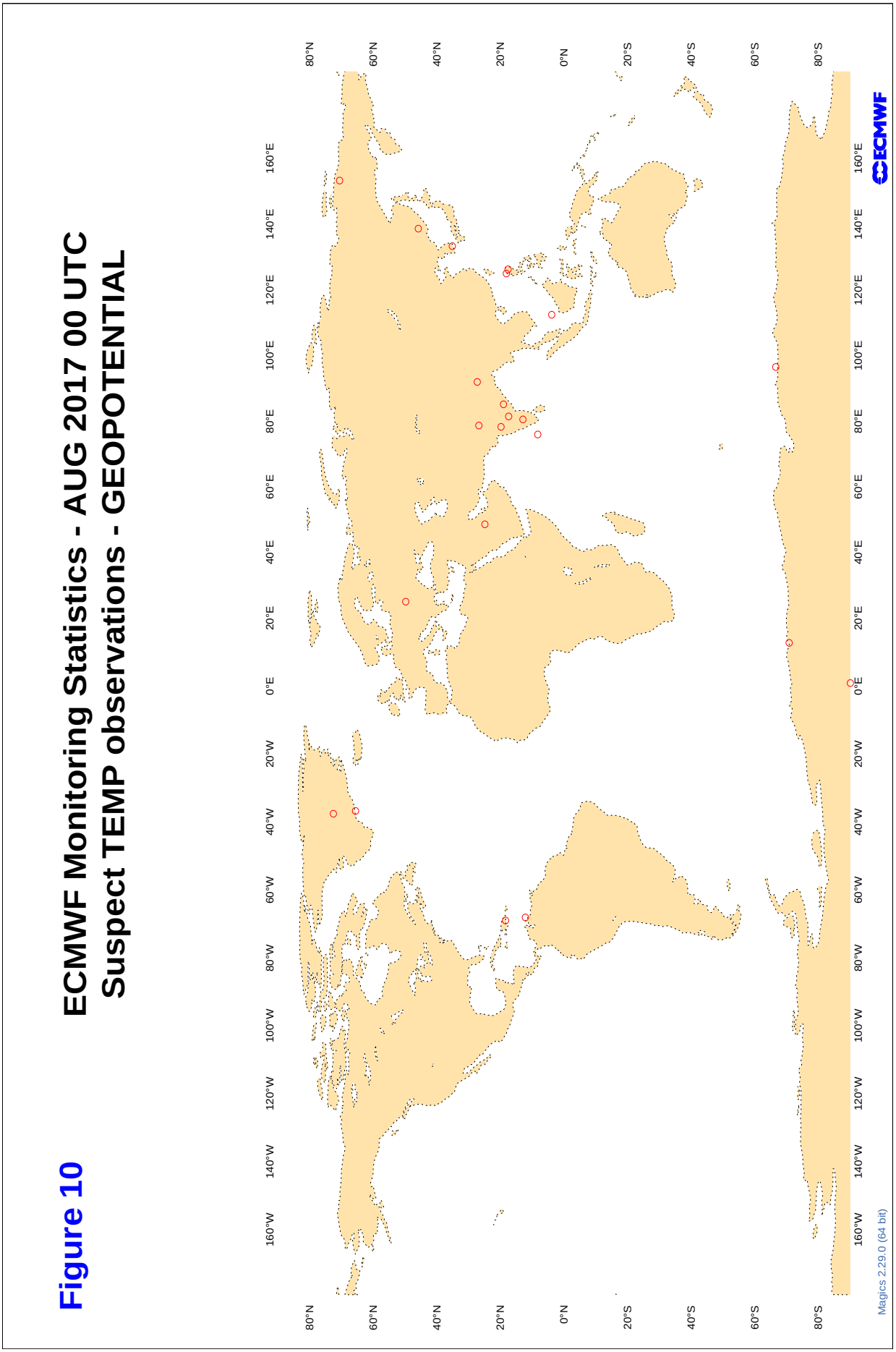
3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                    AREA                  : GLOBAL
                    PERIOD                : AUG 2017
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD

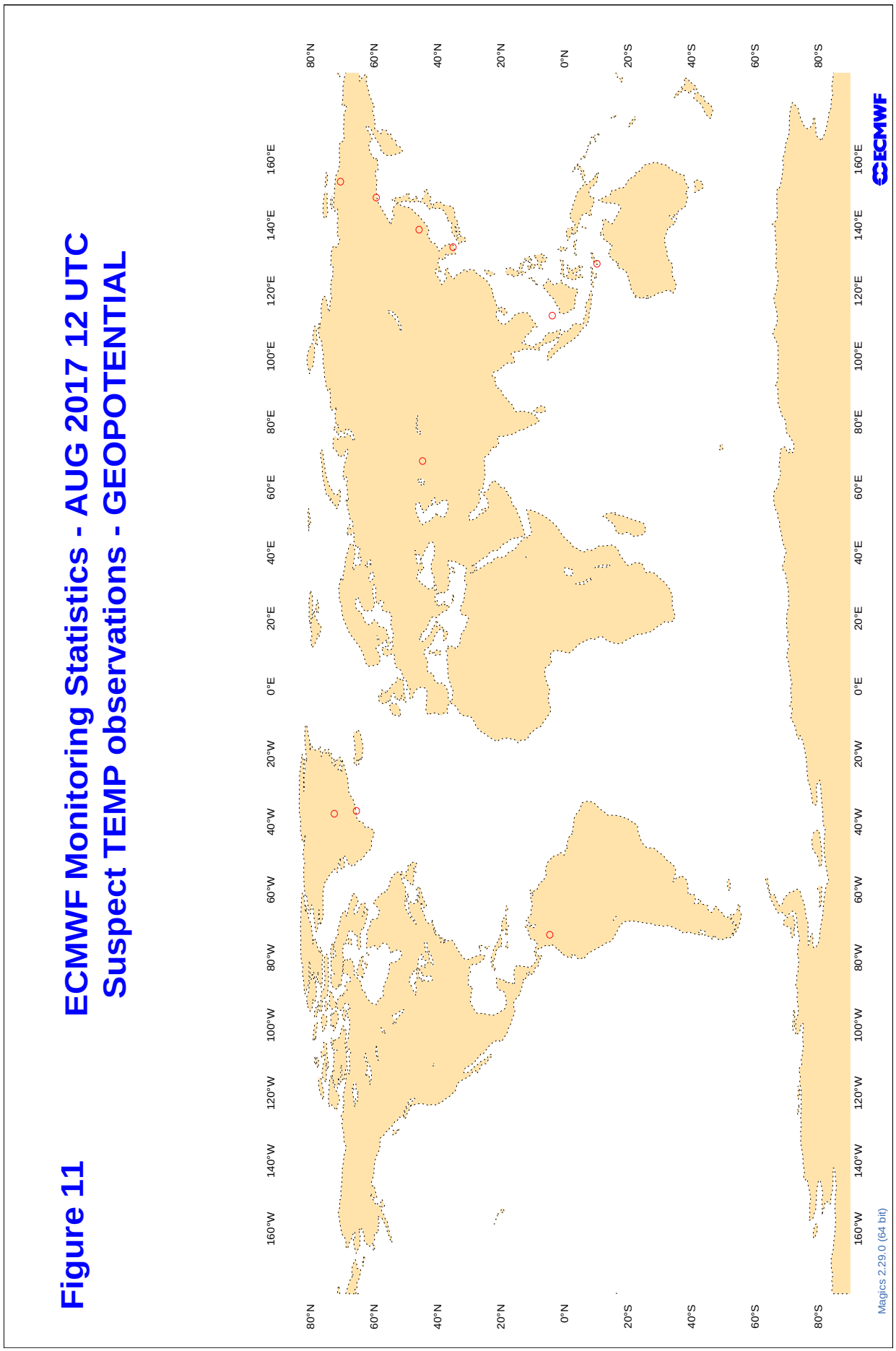

SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS >= 5 M/S
                    NO. OF OBSERVATIONS   >= 5, AND,
                    ABSOLUTE BIAS         >= 10 DEGREES, WITH
                    STANDARD DEVIATION    <  30 DEGREES, AND,
                    VERTICAL SPREAD       < 10 DEGREES
         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

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD

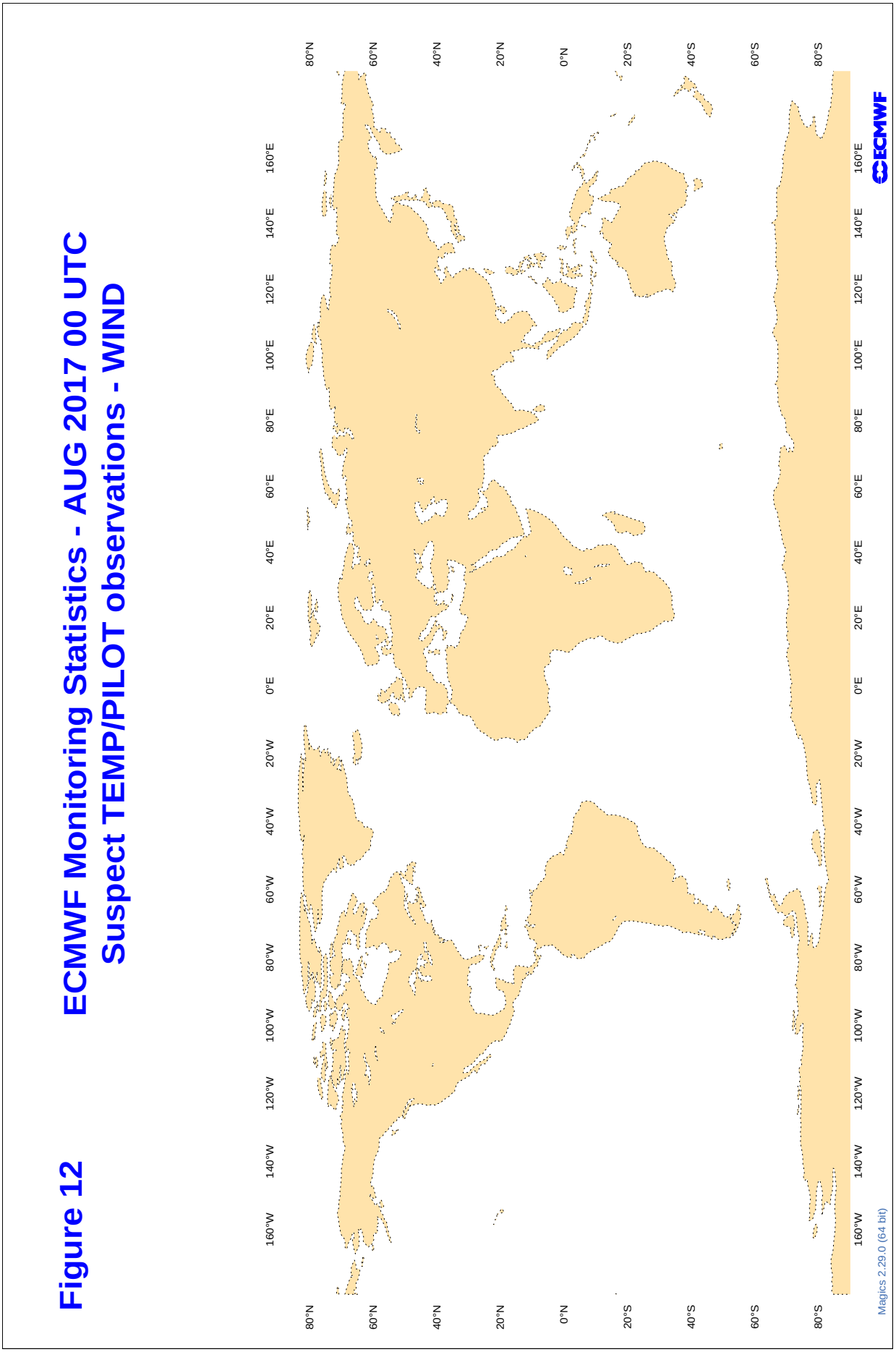
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



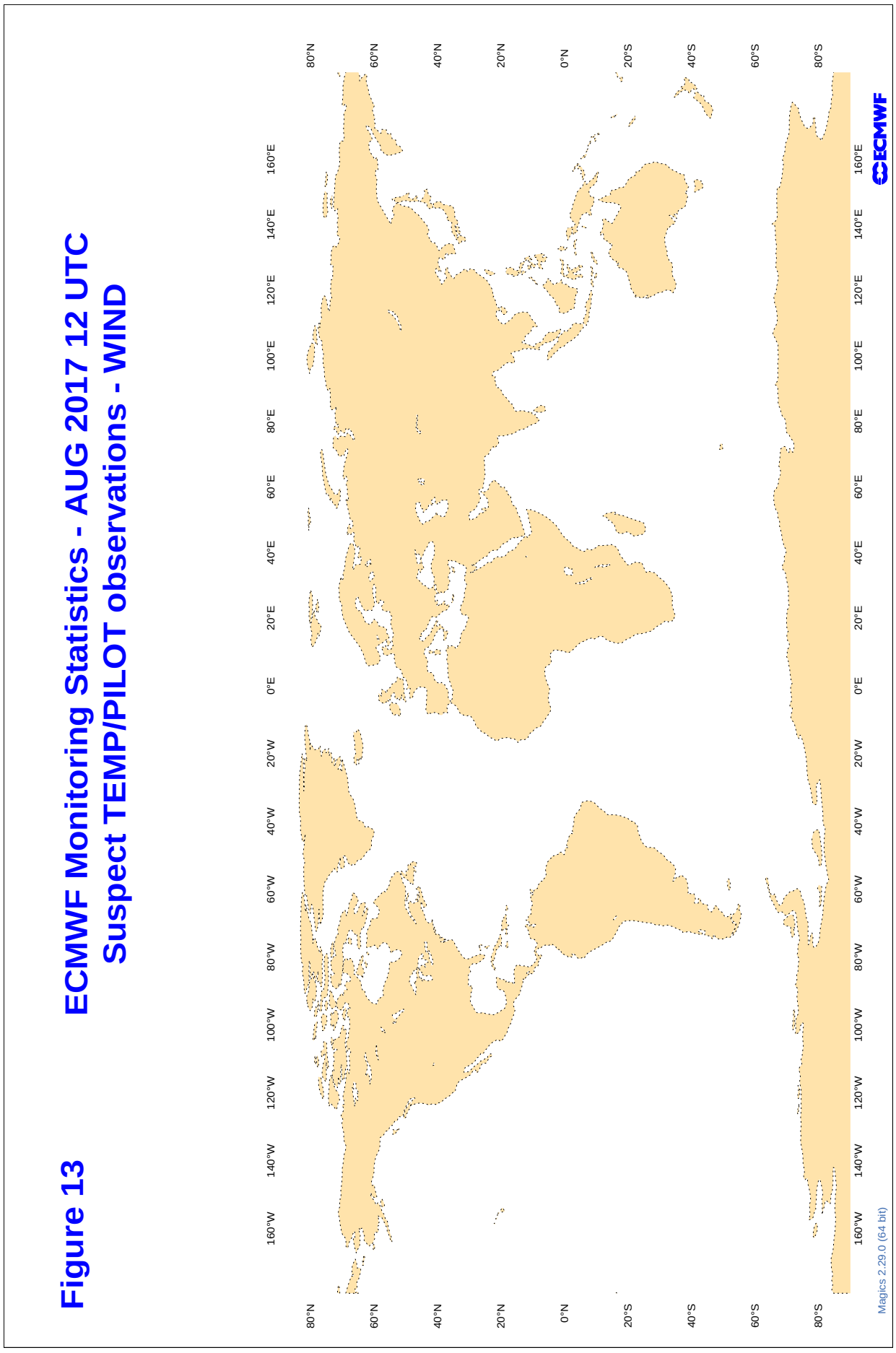
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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                : AUG 2017
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

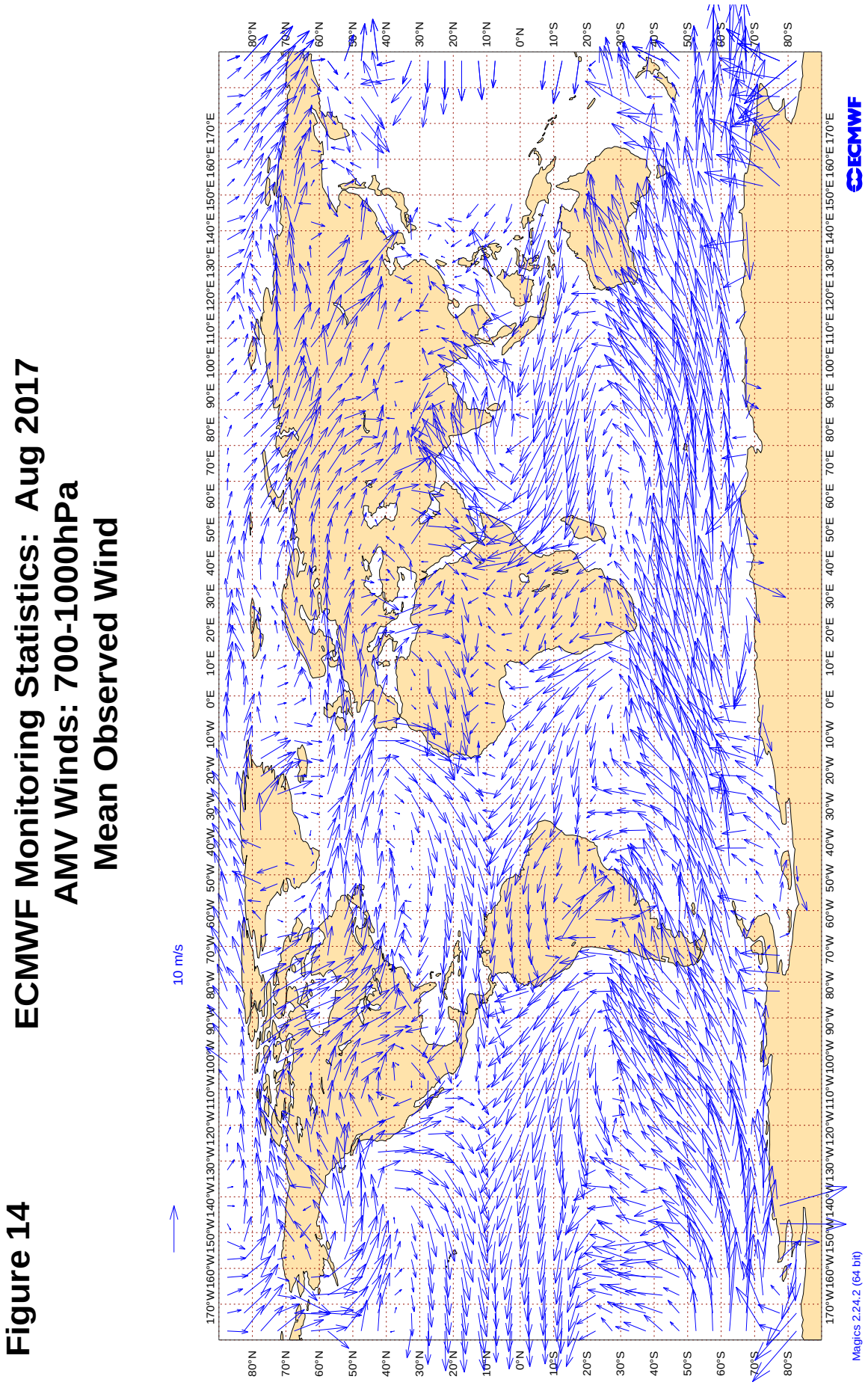
WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASDE01	12	Z	100	5	3.0	-1.4
ASDE01	00	Z	100	2	1.8	-1.8
ASDE02	12	Z	100	29	20.8	13.2
ASDE02	00	Z	100	32	13.9	11.8
ASDE09	12	Z	100	2	19.7	18.9
ASDK01	12	Z	100	8	5.9	-0.4
ASDK01	00	Z	100	9	6.7	0.0
ASDK02	12	Z	100	11	6.1	3.9
ASDK02	00	Z	100	13	9.1	-3.7
ASDK03	12	Z	100	8	19.9	19.6
ASDK03	00	Z	100	3	18.9	18.7
ASDK3	12	Z	100	7	12.9	12.8
ASDK3	00	Z	100	3	15.8	14.9
ASES01	12	Z	100	22	11.0	3.0
ASEU01	12	Z	100	4	33.1	32.0
ASEU01	00	Z	100	3	8.3	-0.5
ASEU02	12	Z	100	1	36.3	36.3
ASEU02	00	Z	100	2	37.3	37.3
ASEU04	12	Z	100	4	5.7	-0.1
ASEU04	00	Z	100	3	10.6	-5.5
ASEU05	12	Z	100	0	0.0	0.0
ASEU05	00	Z	100	0	0.0	0.0
ASEU06	12	Z	100	7	34.8	32.2
ASEU06	00	Z	100	7	27.7	-3.2
ASFR1	12	Z	100	18	21.7	15.0
ASFR1	00	Z	100	13	15.0	12.0
ASFR2	00	Z	100	2	8.6	6.5
ASFR2	12	Z	100	4	11.7	10.2
ASFR3	12	Z	100	10	18.1	16.9
ASFR3	00	Z	100	13	14.2	7.9
ASFR4	12	Z	100	11	22.2	20.4
ASFR4	00	Z	100	17	23.4	22.1
DBLK	12	Z	100	43	5.9	-1.3
DSQL7	12	Z	100	18	11.3	-10.3
DSQL7	00	Z	100	27	8.4	-5.8
JGQH	12	Z	100	3	3.0	0.8
JGQH	00	Z	100	3	3.9	-1.2
JNSR	00	Z	100	6	11.9	-10.5
JNSR	12	Z	100	6	11.8	-9.5

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                 : AUG 2017
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASDE01	12	V	100	5	1.9	-0.5	0.4
ASDE01	00	V	100	1	3.7	3.3	-1.6
ASDE02	12	V	100	25	6.4	1.1	0.9
ASDE02	00	V	100	23	5.7	0.3	-2.1
ASDE09	12	V	100	2	0.8	0.5	0.6
ASDK01	12	V	100	7	2.7	-0.2	0.1
ASDK01	00	V	100	8	3.5	1.1	0.2
ASDK02	12	V	100	11	2.5	0.7	0.1
ASDK02	00	V	100	12	2.5	-0.1	0.4
ASDK03	12	V	100	6	2.5	0.2	0.0
ASDK03	00	V	100	3	1.1	-0.3	-0.6
ASDK3	12	V	100	6	3.2	-0.2	-1.2
ASDK3	00	V	100	3	1.9	-1.0	-0.8
ASES01	12	V	100	20	3.9	1.0	-0.6
ASEU01	12	V	100	2	4.2	-1.8	-2.7
ASEU01	00	V	100	3	2.3	0.4	-1.1
ASEU02	12	V	100	1	3.4	-1.0	3.2
ASEU02	00	V	100	2	2.2	1.1	-0.7
ASEU04	12	V	100	4	3.2	0.8	-1.1
ASEU04	00	V	100	3	4.5	-1.2	2.7
ASEU05	12	V	100	0	0.0	0.0	0.0
ASEU05	00	V	100	0	0.0	0.0	0.0
ASEU06	12	V	100	7	2.1	0.2	-0.7
ASEU06	00	V	100	6	2.5	0.9	0.6
ASFR1	12	V	100	13	3.3	0.2	0.0
ASFR1	00	V	100	12	4.1	-0.8	-0.3
ASFR2	00	V	100	2	3.3	-2.6	1.5
ASFR2	12	V	100	4	2.3	0.5	0.5
ASFR3	12	V	100	9	3.9	0.2	-0.4
ASFR3	00	V	100	9	2.9	0.3	0.0
ASFR4	12	V	100	10	3.1	0.6	0.4
ASFR4	00	V	100	13	2.4	-0.3	0.0
DBLK	12	V	100	26	1.8	0.3	-0.1
DSQL7	12	V	100	14	2.1	-0.3	0.7
DSQL7	00	V	100	17	1.8	-0.1	0.2
JGQH	12	V	100	3	3.5	1.0	-2.1
JGQH	00	V	100	3	5.9	-1.4	5.0
JNSR	00	V	100	6	1.8	-0.3	-0.6
JNSR	12	V	100	6	2.9	0.7	0.0

3.2.27 Figure 14 - SATOB Winds: 700-1000hPa



3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

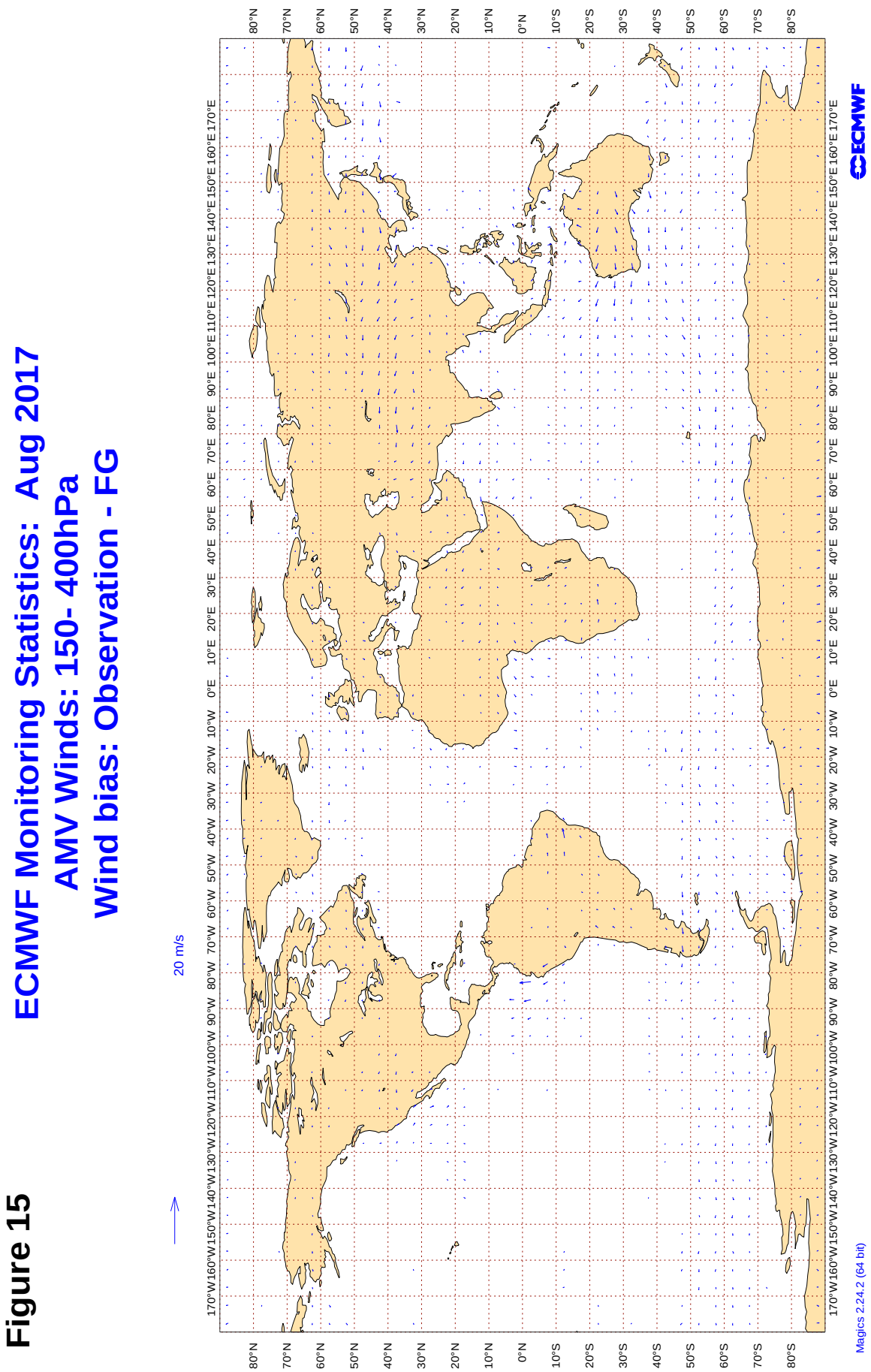


Figure 15

3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

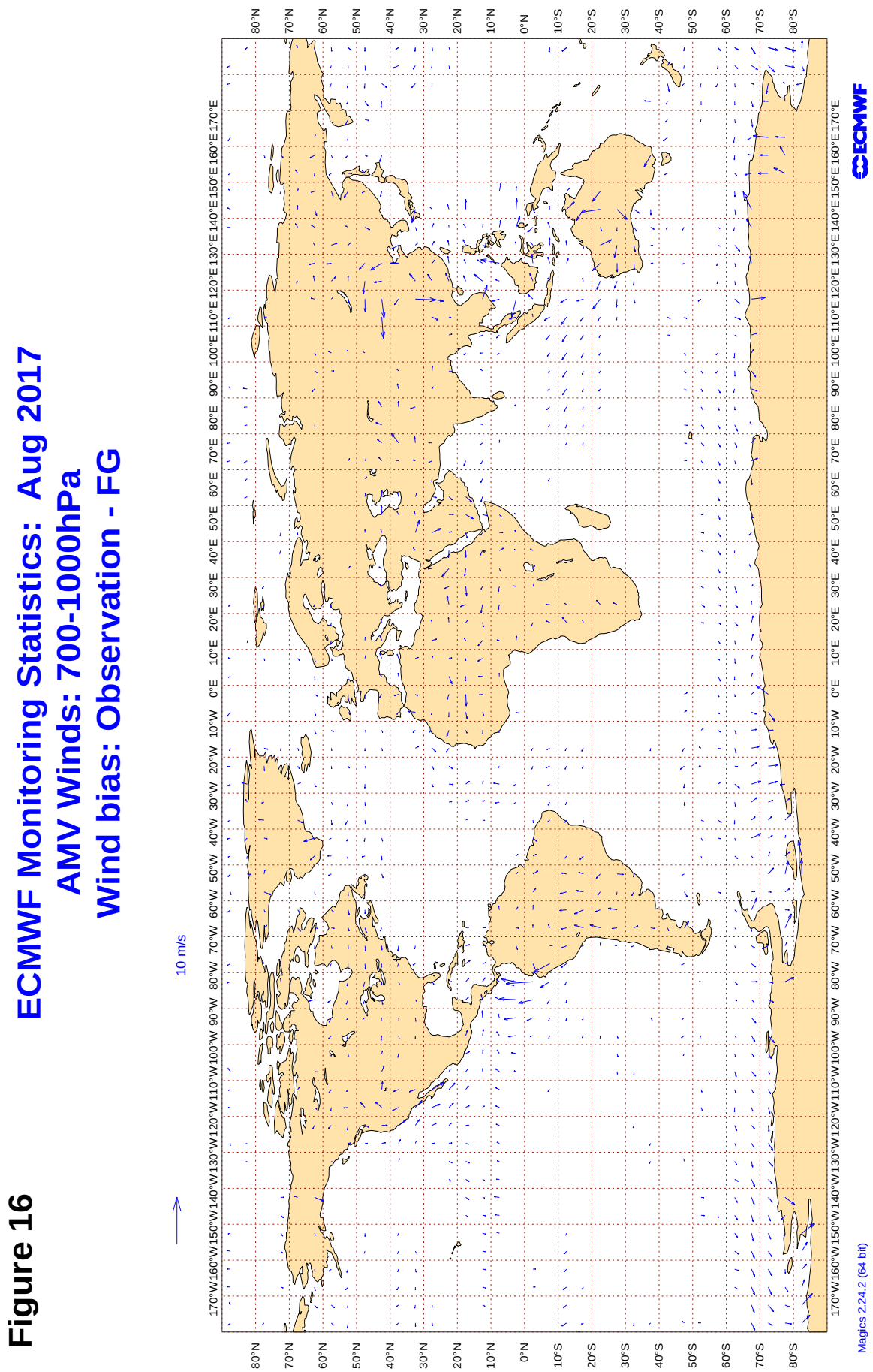


Figure 16

3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

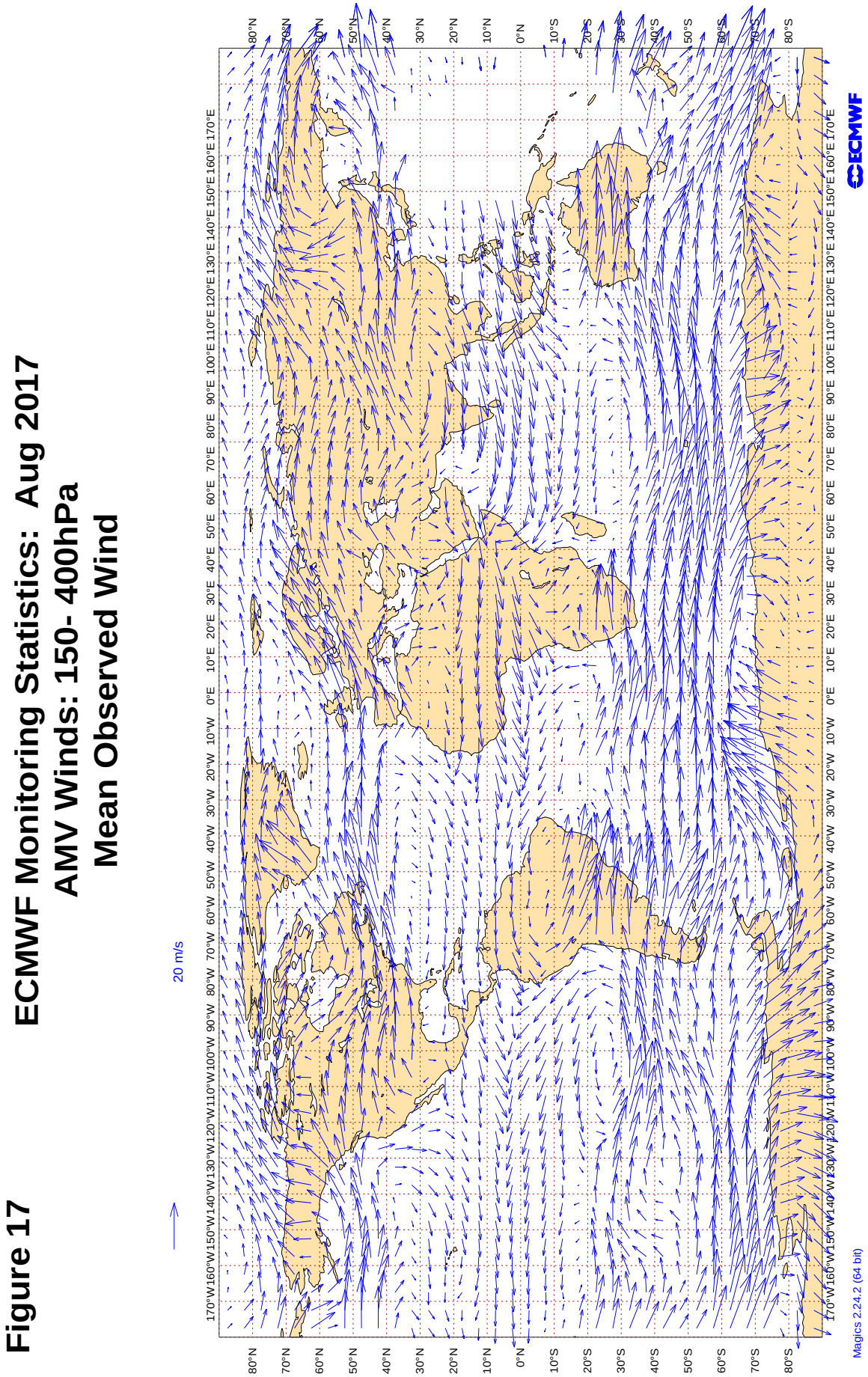


Figure 17

3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

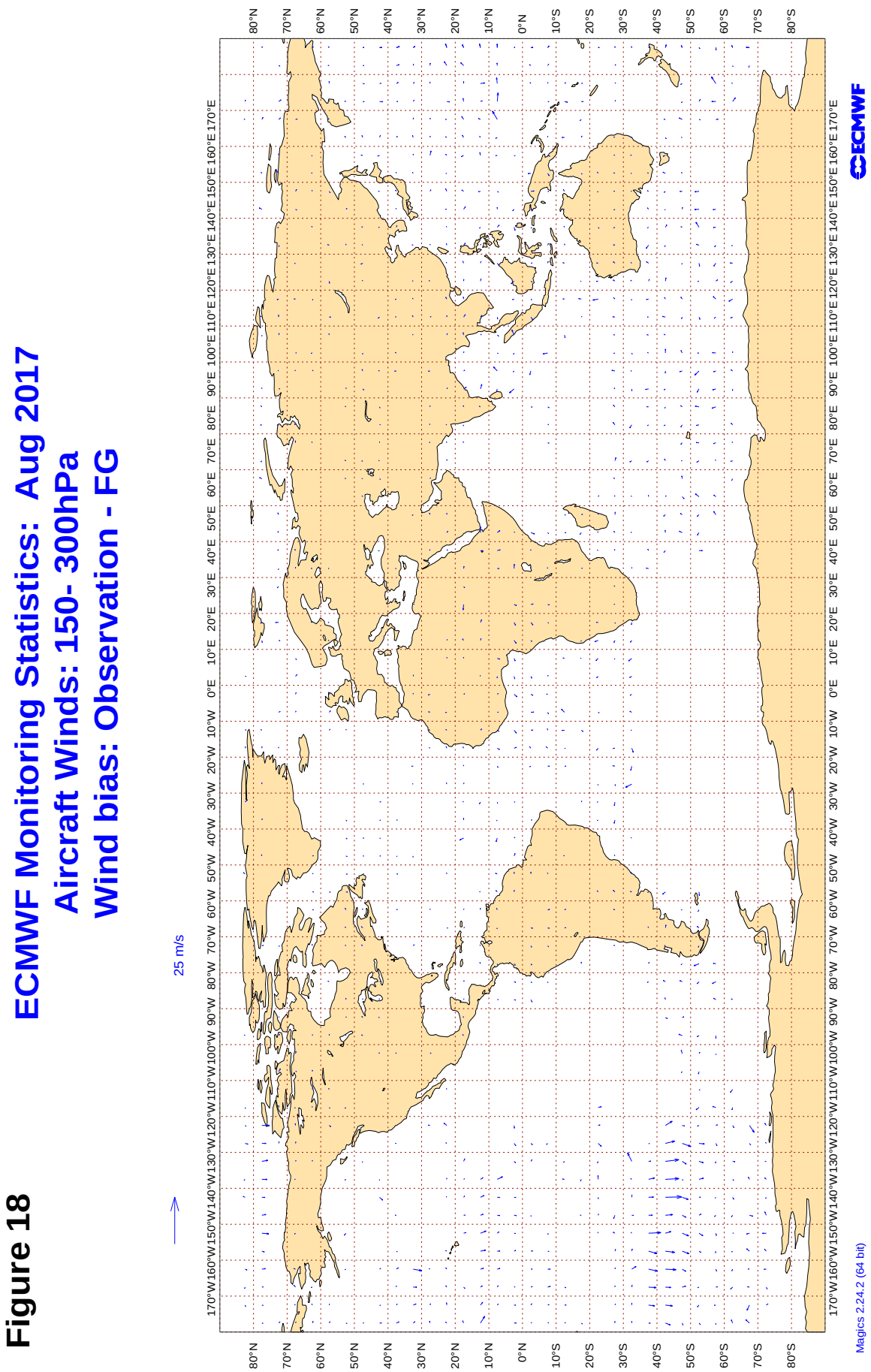


Figure 18

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 : AUG 2017
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
AAL	99	V	300-150	73755	1	0	4.3	0.3
AAR	99	V	300-150	268	0	0	4.4	-1.5
AAY	99	V	300-150	78	0	0	7.6	0.2
ABD	99	V	300-150	409	0	0	4.5	-0.5
ABW	99	V	300-150	1071	0	0	3.5	-0.5
ABX	99	V	300-150	207	0	1	5.9	0.6
ACA	99	V	300-150	37919	1	0	5.0	0.3
ACI	99	V	300-150	2973	0	0	3.5	0.3
AEA	99	V	300-150	1060	0	0	4.5	0.7
AFL	99	V	300-150	2645	0	0	3.2	0.4
AFR	99	V	300-150	35299	0	0	3.7	0.3
AHY	99	V	300-150	291	9	0	6.9	0.1
AIC	99	V	300-150	1929	2	0	5.0	0.1
AMX	99	V	300-150	3536	7	0	7.7	0.0
ANX	99	V	300-150	23	0	0	3.9	1.3
ANZ	99	V	300-150	22834	3	0	4.4	0.5
ASA	99	V	300-150	1430	0	0	4.0	0.4
ASL	99	V	300-150	738	0	0	3.3	0.3
ASY	99	V	300-150	393	0	0	6.4	1.0
AUA	99	V	300-150	6191	0	0	4.0	-0.3
AUH	99	V	300-150	20	0	0	2.3	-0.1
AVA	99	V	300-150	402	7	0	4.9	0.3
AWC	99	V	300-150	43	0	0	5.3	0.6
AXM	99	V	300-150	200	0	0	5.7	0.1
AZA	99	V	300-150	11161	0	0	3.7	0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AZG	99	V	300-150	142	0	0	3.5	0.1
BAW	99	V	300-150	56529	1	0	4.5	0.2
BBA	99	V	300-150	38	0	0	3.7	0.9
BEL	99	V	300-150	3104	0	0	3.4	0.4
BER	99	V	300-150	10980	0	0	3.6	0.6
BLU	99	V	300-150	57	0	0	4.6	1.1
BMW	99	V	300-150	33	0	0	3.8	1.0
BOX	99	V	300-150	764	0	0	3.3	0.0
BOX	99	V	300-150	120	0	0	3.3	0.2
BVR	99	V	300-150	61	0	0	3.2	0.6
CAF	99	V	300-150	21	0	0	2.9	1.5
CAL	99	V	300-150	179	0	1	3.8	0.3
CAT	99	V	300-150	45	0	0	7.3	1.4
CAZ	99	V	300-150	49	0	0	3.6	-0.0
CCA	99	V	300-150	869	9	0	5.0	0.7
CES	99	V	300-150	1069	0	0	3.5	0.8
CFC	99	V	300-150	382	0	0	4.6	0.5
CFG	99	V	300-150	5151	0	0	4.0	-0.3
CHH	99	V	300-150	110	0	0	3.8	0.2
CHI	99	V	300-150	20	0	0	4.3	-1.8
CJT	99	V	300-150	163	0	0	3.7	0.4
CKS	99	V	300-150	1834	0	0	3.6	-0.1
CLE	99	V	300-150	112	0	0	3.4	0.2
CLF	99	V	300-150	44	0	0	2.9	0.6
CLU	99	V	300-150	101	0	0	4.1	-0.3
CLX	99	V	300-150	3524	0	0	4.0	-0.4
CMB	99	V	300-150	972	0	0	4.0	0.0
CNV	99	V	300-150	195	0	0	3.7	0.6
COB	99	V	300-150	43	0	0	3.5	-0.1
CPA	99	V	300-150	974	0	0	3.6	0.5
CRK	99	V	300-150	1099	0	0	3.4	0.1
CRL	99	V	300-150	1953	0	0	3.6	0.3
CSC	99	V	300-150	189	0	0	3.5	0.8
CSN	99	V	300-150	832	1	0	4.5	0.6
DAH	99	V	300-150	1238	0	0	3.4	0.3
DAL	99	V	300-150	93396	0	0	3.6	0.2
DCS	99	V	300-150	40	0	0	3.5	-0.5
DGX	99	V	300-150	40	0	0	5.6	-2.7
DHK	99	V	300-150	1858	0	0	4.2	-0.4
DJT	99	V	300-150	1546	0	0	4.2	0.5
DLH	99	V	300-150	38241	0	0	3.5	0.2
DUB	99	V	300-150	142	0	0	3.6	0.2
EAU	99	V	300-150	36	0	0	5.2	0.8

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
EAV	99	V	300-150	71	69	0	24.7	0.5
EDC	99	V	300-150	39	0	0	5.1	1.8
EDG	99	V	300-150	55	0	0	4.2	-0.7
EDW	99	V	300-150	2075	0	0	3.7	0.6
EIN	99	V	300-150	16879	0	0	3.5	0.4
EJM	99	V	300-150	1034	7	0	7.7	0.2
ELY	99	V	300-150	3610	0	0	3.9	-0.1
ESR	99	V	300-150	25	0	4	5.6	0.5
ETA	99	V	300-150	59	46	0	20.0	-0.7
ETD	99	V	300-150	4150	1	0	4.6	-0.1
ETH	99	V	300-150	2339	3	0	6.4	0.1
EVE	99	V	300-150	21	0	0	4.2	-0.7
EWG	99	V	300-150	2596	0	0	3.7	0.4
EXS	99	V	300-150	117	0	1	3.3	0.6
FDX	99	V	300-150	6053	0	0	3.6	0.2
FIN	99	V	300-150	858	0	0	3.4	0.4
FJI	99	V	300-150	6421	0	0	4.0	0.5
FWI	99	V	300-150	1874	0	0	3.5	0.5
FYG	99	V	300-150	58	0	0	3.6	0.3
FYL	99	V	300-150	45	0	0	4.1	-0.8
GAF	99	V	300-150	107	0	0	4.6	0.4
GAJ	99	V	300-150	54	0	0	3.7	0.0
GCR	99	V	300-150	90	0	0	3.7	0.5
GCT	99	V	300-150	37	0	0	3.5	0.5
GEC	99	V	300-150	2548	0	0	3.5	0.2
GHO	99	V	300-150	77	0	0	6.4	2.6
GLO	99	V	300-150	61	3	7	6.9	1.6
GOL	99	V	300-150	80	0	0	4.7	1.4
GTH	99	V	300-150	70	0	0	4.0	0.7
GTI	99	V	300-150	2263	0	0	3.7	-0.1
HAL	99	V	300-150	4500	0	0	4.3	0.8
HZM	99	V	300-150	64	0	0	3.5	0.7
HZS	99	V	300-150	28	0	0	3.8	0.9
HZS	99	V	300-150	63	0	0	2.8	0.0
IBE	99	V	300-150	3287	0	0	3.7	0.4
IBK	99	V	300-150	257	0	2	3.0	0.5
ICL	99	V	300-150	437	0	0	4.4	-0.5
ICV	99	V	300-150	383	0	0	3.7	-0.0
IJM	99	V	300-150	108	32	0	14.6	0.7
ISS	99	V	300-150	1154	0	0	4.0	-0.2
JAF	99	V	300-150	1197	4	0	5.0	0.0
JAI	99	V	300-150	1217	0	0	3.3	0.2
JAS	99	V	300-150	190	15	0	9.6	0.6

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
JJA	99	V	300-150	52	2	0	6.3	1.3
JME	99	V	300-150	96	0	0	3.4	0.8
JON	99	V	300-150	22	0	0	7.8	4.3
JSI	99	V	300-150	29	0	7	2.2	0.4
JST	99	V	300-150	2798	4	0	7.2	0.5
JTL	99	V	300-150	39	0	0	3.6	-0.8
JUN	99	V	300-150	29	0	0	4.1	-0.7
KAC	99	V	300-150	1152	0	0	3.5	0.3
KAI	99	V	300-150	64	0	0	3.4	0.3
KAL	99	V	300-150	1333	0	0	3.7	0.7
KAY	99	V	300-150	37	0	0	4.8	-0.9
KCE	99	V	300-150	70	0	0	3.3	-0.3
KIW	99	V	300-150	148	0	0	3.9	0.6
KLM	99	V	300-150	19401	0	0	4.1	0.1
LAN	99	V	300-150	1984	8	0	9.1	0.4
LCO	99	V	300-150	153	0	1	3.7	-0.1
LDM	99	V	300-150	58	0	0	3.2	-0.3
LEA	99	V	300-150	73	0	0	3.6	0.0
LMJ	99	V	300-150	25	76	0	28.8	-2.6
LOT	99	V	300-150	2709	6	0	8.4	-0.2
LUC	99	V	300-150	112	0	0	3.3	-0.6
LXJ	99	V	300-150	156	34	0	17.7	-0.3
MAS	99	V	300-150	373	0	0	3.6	0.7
MMD	99	V	300-150	265	0	0	3.1	-0.1
MOV	99	V	300-150	33	0	0	4.4	0.3
MPH	99	V	300-150	625	0	0	4.1	-0.8
MSR	99	V	300-150	1407	0	0	3.3	0.1
NAS	99	V	300-150	202	0	0	4.0	0.0
NAX	99	V	300-150	11352	5	0	7.6	0.0
NCA	99	V	300-150	244	0	0	4.4	-1.0
NJE	99	V	300-150	252	13	0	8.8	-0.1
NOS	99	V	300-150	309	0	0	4.4	-1.3
NWS	99	V	300-150	191	0	0	3.2	-0.1
OAE	99	V	300-150	165	0	1	3.9	0.3
OBS	99	V	300-150	31	0	0	3.2	0.7
OLI	99	V	300-150	38	0	0	3.3	-0.3
PAC	99	V	300-150	188	1	0	4.2	0.8
PAL	99	V	300-150	163	1	4	7.5	1.1
PAT	99	V	300-150	98	0	0	3.4	-0.4
PIA	99	V	300-150	383	0	0	3.2	0.5
PJZ	99	V	300-150	26	0	0	5.4	1.1
PLF	99	V	300-150	77	0	0	3.0	-0.8
PLM	99	V	300-150	98	0	0	4.4	-1.0

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
PVJ	99	V	300-150	61	0	0	3.8	0.1
QAF	99	V	300-150	78	0	0	3.7	0.4
QFA	99	V	300-150	15524	0	0	4.0	0.3
QID	99	V	300-150	24	0	0	2.8	-0.9
QQE	99	V	300-150	48	42	0	4.1	-1.1
QTR	99	V	300-150	10069	0	0	3.7	0.1
RAM	99	V	300-150	273	11	0	8.2	0.3
RCH	99	V	300-150	6375	0	0	4.4	0.3
REN	99	V	300-150	20	0	0	3.6	-0.4
RJA	99	V	300-150	2239	4	0	7.9	0.0
RMA	99	V	300-150	42	0	0	3.2	0.4
ROJ	99	V	300-150	25	0	0	2.7	-0.6
ROU	99	V	300-150	16527	0	0	4.2	-0.0
RRR	99	V	300-150	319	0	0	3.0	0.4
RZO	99	V	300-150	150	0	4	4.8	1.0
SAM	99	V	300-150	102	0	0	3.7	0.5
SAS	99	V	300-150	5307	0	0	3.2	0.2
SIA	99	V	300-150	2712	0	0	3.6	0.2
SLM	99	V	300-150	163	0	0	3.2	0.2
SOO	99	V	300-150	647	0	0	4.1	-0.2
SPA	99	V	300-150	87	0	0	3.0	0.3
SQC	99	V	300-150	638	0	0	4.5	-0.7
SVA	99	V	300-150	3378	1	0	4.7	0.3
SVW	99	V	300-150	131	0	0	4.4	0.9
SWR	99	V	300-150	12631	0	0	3.5	0.4
SXN	99	V	300-150	31	0	0	4.3	0.1
TAM	99	V	300-150	315	0	0	4.8	0.3
TAP	99	V	300-150	1226	0	0	4.5	1.3
TAR	99	V	300-150	561	0	0	3.9	0.7
TAY	99	V	300-150	950	0	0	4.9	-0.1
TBJ	99	V	300-150	103	10	1	9.2	-0.1
TCV	99	V	300-150	90	0	1	7.7	0.6
TCX	99	V	300-150	9239	0	0	3.6	0.4
TFL	99	V	300-150	1949	6	0	5.7	-0.1
THA	99	V	300-150	213	0	0	4.2	0.3
THT	99	V	300-150	4818	0	0	3.5	0.5
THY	99	V	300-150	9183	0	0	3.7	0.2
TMN	99	V	300-150	52	6	29	6.7	1.9
TOM	99	V	300-150	7245	6	0	7.0	0.2
TOW	99	V	300-150	75	0	0	3.8	-0.3
TRE	99	V	300-150	66	0	0	5.4	1.9
TSC	99	V	300-150	22155	0	0	3.6	0.2
TWB	99	V	300-150	58	0	2	6.9	1.3

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
TWY	99	V	300-150	94	0	0	6.3	-0.0
UAE	99	V	300-150	11432	0	0	3.8	0.1
UAL	99	V	300-150	95448	1	1	4.6	0.2
ULC	99	V	300-150	59	54	0	26.5	-0.7
UPS	99	V	300-150	5606	0	0	4.2	-0.1
UZB	99	V	300-150	115	3	0	6.5	-0.2
VCN	99	V	300-150	44	0	0	2.5	0.0
VIR	99	V	300-150	26844	2	0	5.1	0.1
VJT	99	V	300-150	948	40	0	20.3	0.3
VKG	99	V	300-150	28	0	0	3.2	0.5
VMP	99	V	300-150	82	9	0	3.9	0.7
VOZ	99	V	300-150	6678	0	0	3.6	0.4
VRD	99	V	300-150	33	0	0	9.4	0.2
WGT	99	V	300-150	65	0	0	4.4	1.8
WJA	99	V	300-150	6019	0	0	3.7	0.2
WOW	99	V	300-150	927	0	1	3.2	0.3
XAX	99	V	300-150	448	0	0	3.6	0.2
XLF	99	V	300-150	2455	0	0	3.7	0.6

4 EUCOS Area Monitoring Statistics

The following tables provide information on the quality of upper-air data and surface DRIFTER data over the EUCOS area as received at ECMWF during the month.

Tables 13, 14 (50 hPa level), 15, 16 (100 hPa level) 17, 18 (500 hPa level) 19 and 20 (850 hPa level) provide quality statistics for all TEMPSHIPS and PILOTSHIPS received during the month in the area $10\,^{\circ}$N - $90\,^{\circ}$N, $70\,^{\circ}$W - $40\,^{\circ}$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 $10\,^{\circ}$N - $90\,^{\circ}$N, $70\,^{\circ}$W - $40\,^{\circ}$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)

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RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 :  50 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : AUG 2017
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
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WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	50	31	7.9	6.7
01001	12	Z	50	28	12.2	7.7
01028	12	Z	50	30	14.3	10.5
01028	00	Z	50	31	8.4	5.7
010280	00	Z	50	0	0.0	0.0
01400	12	Z	50	23	39.7	30.6
01400	00	Z	50	22	21.9	19.5
01415	00	Z	50	31	15.5	14.5
01415	12	Z	50	30	16.6	14.6
02365	00	Z	50	21	12.2	10.4
02365	12	Z	50	26	18.8	15.1
02591	12	Z	50	26	23.4	22.5
02591	00	Z	50	28	26.1	25.6
02836	00	Z	50	30	10.6	9.8
02836	12	Z	50	30	10.5	9.4
02963	12	Z	50	31	13.6	12.1
02963	00	Z	50	30	14.3	13.4
03005	12	Z	50	30	12.1	10.9
03005	00	Z	50	30	11.4	10.3
03238	00	Z	50	29	13.5	11.7
03238	12	Z	50	2	15.6	15.6
03808	00	Z	50	31	16.2	15.1
03808	12	Z	50	31	13.7	12.5
03918	00	Z	50	29	21.0	20.6
03918	12	Z	50	9	27.5	27.0
03953	00	Z	50	15	16.5	4.7
03953	12	Z	50	11	21.4	18.7
04018	12	Z	50	28	9.2	6.7
04018	00	Z	50	25	10.0	7.6
04220	00	Z	50	30	11.7	6.0
04220	12	Z	50	31	10.1	8.9
04270	12	Z	50	30	7.1	3.9
04270	00	Z	50	31	8.7	3.4
04320	00	Z	50	31	10.8	9.8
04320	12	Z	50	31	11.6	8.6
04339	12	Z	50	31	9.1	7.2
04339	00	Z	50	31	13.1	7.9
04360	12	Z	50	14	24.6	21.8
04360	00	Z	50	7	31.0	29.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	50	14	16.8	14.1
06011	00	Z	50	9	17.1	3.1
06260	00	Z	50	30	16.9	15.1
06260	12	Z	50	6	18.9	15.5
06610	12	Z	50	30	26.7	22.7
06610	00	Z	50	27	20.0	18.4
07110	12	Z	50	19	37.5	35.9
07110	00	Z	50	12	37.8	36.5
07510	12	Z	50	15	45.1	43.1
07510	00	Z	50	17	39.6	38.9
07645	00	Z	50	16	29.5	27.3
07645	12	Z	50	15	37.3	36.1
07761	12	Z	50	14	31.1	29.6
07761	00	Z	50	9	35.5	34.5
08001	00	Z	50	25	20.7	19.5
08001	12	Z	50	30	27.4	19.6
08221	12	Z	50	31	16.7	13.8
08221	00	Z	50	31	22.5	21.6
082214	00	Z	50	0	0.0	0.0
08302	00	Z	50	30	12.9	11.1
08302	12	Z	50	29	13.4	9.7
08508	12	Z	50	31	40.1	35.6
08522	12	Z	50	31	20.4	19.1
085226	00	Z	50	0	0.0	0.0
085229	00	Z	50	0	0.0	0.0
08579	12	Z	50	30	52.1	29.4
10035	12	Z	50	30	27.7	26.9
10035	00	Z	50	31	27.2	26.0
10393	00	Z	50	31	18.6	17.4
10393	12	Z	50	31	15.8	14.2
10410	00	Z	50	31	13.5	11.7
10410	12	Z	50	30	14.8	13.2
10739	00	Z	50	28	15.3	10.3
10739	12	Z	50	30	14.3	8.4
11035	00	Z	50	31	29.7	27.6
11035	12	Z	50	32	23.0	21.7
12982	00	Z	50	30	27.1	25.4
12982	12	Z	50	30	34.3	32.7
16080	00	Z	50	30	14.8	12.0
16080	12	Z	50	31	15.9	12.7
16245	00	Z	50	31	18.1	17.1
16245	12	Z	50	31	12.6	11.3
16320	12	Z	50	30	20.5	19.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16320	00	Z	50	31	27.4	26.2
16429	00	Z	50	39	18.6	17.5
16429	12	Z	50	29	18.7	17.8
16622	00	Z	50	30	28.7	27.8
16754	00	Z	50	30	28.3	27.1
17607	12	Z	50	30	17.1	15.2
26435	00	Z	50	15	16.0	15.3
60018	12	Z	50	31	11.5	3.8
60018	00	Z	50	30	16.0	14.1
ASDE01	12	Z	50	4	10.7	9.2
ASDE01	00	Z	50	1	7.9	7.9
ASDE02	12	Z	50	24	32.4	24.0
ASDE02	00	Z	50	22	25.0	23.5
ASDE09	12	Z	50	2	42.4	42.3
ASDK01	12	Z	50	6	13.3	10.4
ASDK01	00	Z	50	7	15.6	14.5
ASDK02	12	Z	50	11	15.2	13.0
ASDK02	00	Z	50	12	13.5	4.6
ASDK03	12	Z	50	6	28.3	27.8
ASDK03	00	Z	50	3	30.2	30.0
ASDK3	12	Z	50	6	21.9	21.0
ASDK3	00	Z	50	3	31.7	31.3
ASES01	12	Z	50	19	24.4	18.3
ASEU01	12	Z	50	2	36.7	36.7
ASEU01	00	Z	50	3	255.7	190.4
ASEU02	12	Z	50	1	43.4	43.4
ASEU02	00	Z	50	2	42.6	42.5
ASEU04	12	Z	50	4	18.9	16.4
ASEU04	00	Z	50	2	17.2	13.3
ASEU05	12	Z	50	0	0.0	0.0
ASEU05	00	Z	50	0	0.0	0.0
ASEU06	12	Z	50	6	55.8	52.8
ASEU06	00	Z	50	3	19.2	14.7
ASFR1	12	Z	50	11	34.0	26.4
ASFR1	00	Z	50	2	40.7	40.4
ASFR2	00	Z	50	1	9.0	9.0
ASFR2	12	Z	50	1	27.7	27.7
ASFR3	12	Z	50	4	31.4	31.0
ASFR3	00	Z	50	5	19.6	17.1
ASFR4	12	Z	50	8	39.8	37.7
ASFR4	00	Z	50	6	40.9	38.8
DBLK	12	Z	50	26	15.9	13.4

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                : AUG 2017
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	50	31	2.5	0.1	-0.1
01001	12	V	50	28	3.0	0.4	0.3
01028	12	V	50	30	2.7	-0.6	0.5
01028	00	V	50	31	3.1	-0.6	0.3
010280	00	V	50	0	0.0	0.0	0.0
01400	12	V	50	19	3.8	0.6	0.0
01400	00	V	50	20	3.3	0.5	0.6
01415	00	V	50	31	3.3	0.1	0.2
01415	12	V	50	29	3.3	-0.7	-0.5
02365	00	V	50	16	2.2	-0.3	-0.4
02365	12	V	50	24	3.0	1.4	0.3
02591	12	V	50	25	2.6	0.3	0.0
02591	00	V	50	24	3.0	-0.1	0.2
02836	00	V	50	30	3.0	0.8	0.2
02836	12	V	50	30	3.0	0.8	0.1
02963	12	V	50	31	2.9	-0.1	-0.6
02963	00	V	50	28	2.4	-0.2	0.2
03005	12	V	50	29	2.9	0.7	0.1
03005	00	V	50	29	3.3	0.8	0.4
03238	00	V	50	29	3.0	1.6	0.3
03238	12	V	50	2	1.9	-1.0	-0.1
03808	00	V	50	31	3.1	0.5	-0.3
03808	12	V	50	31	3.1	0.8	0.1
03918	00	V	50	28	3.4	0.8	0.4
03918	12	V	50	9	2.9	0.3	0.6
03953	00	V	50	15	3.7	1.3	0.7
03953	12	V	50	11	4.1	1.7	-0.9
04018	12	V	50	27	2.8	0.2	0.6
04018	00	V	50	22	2.9	0.2	0.4
04220	00	V	50	30	2.1	0.2	0.3
04220	12	V	50	31	2.4	0.6	0.1
04270	12	V	50	30	3.5	0.5	0.4
04270	00	V	50	31	3.1	-0.3	0.2
04320	00	V	50	31	2.3	-0.4	-0.3
04320	12	V	50	31	1.9	-0.2	-0.2
04339	12	V	50	31	2.4	0.1	-0.4
04339	00	V	50	31	2.3	0.0	-0.3
04360	12	V	50	14	2.3	0.3	0.1
04360	00	V	50	7	1.9	-1.3	0.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	50	14	2.8	-0.5	0.7
06011	00	V	50	9	3.4	1.2	0.0
06260	00	V	50	30	3.3	-0.2	-0.5
06260	12	V	50	5	3.5	0.7	-0.9
06610	12	V	50	30	3.6	0.6	0.4
06610	00	V	50	27	3.3	0.4	0.3
07110	12	V	50	19	3.3	1.0	0.2
07110	00	V	50	12	3.4	-0.3	0.2
07510	12	V	50	15	3.1	0.4	0.2
07510	00	V	50	17	3.0	-0.3	0.1
07645	00	V	50	16	3.5	0.9	0.5
07645	12	V	50	15	3.7	1.3	-0.1
07761	12	V	50	14	4.2	1.5	-0.6
07761	00	V	50	9	3.8	0.0	0.5
08001	00	V	50	18	3.9	1.0	1.4
08001	12	V	50	26	3.1	0.4	1.0
08221	12	V	50	31	3.3	0.5	0.3
08221	00	V	50	30	3.5	-0.2	0.9
082214	00	V	50	0	0.0	0.0	0.0
08302	00	V	50	30	3.7	0.0	0.4
08302	12	V	50	28	3.9	1.1	0.4
08508	12	V	50	31	3.2	0.6	0.3
08522	12	V	50	31	4.3	1.2	0.8
085226	00	V	50	0	0.0	0.0	0.0
085229	00	V	50	0	0.0	0.0	0.0
08579	12	V	50	30	4.1	0.9	0.3
10035	12	V	50	30	3.0	0.6	-0.9
10035	00	V	50	31	2.3	0.1	-0.1
10393	00	V	50	30	2.8	0.7	0.0
10393	12	V	50	31	3.1	0.6	0.0
10410	00	V	50	30	3.1	0.4	-0.4
10410	12	V	50	30	3.4	0.9	-0.6
10739	00	V	50	26	3.6	0.5	0.6
10739	12	V	50	30	3.4	0.1	-0.2
11035	00	V	50	30	4.1	0.6	0.6
11035	12	V	50	30	4.0	0.9	-0.1
12982	00	V	50	30	4.3	0.5	-0.9
12982	12	V	50	30	3.7	0.0	-0.4
16080	00	V	50	30	3.6	0.4	1.3
16080	12	V	50	31	3.3	1.0	0.8
16245	00	V	50	31	4.0	0.3	0.2
16245	12	V	50	31	3.8	1.4	-0.4
16320	12	V	50	29	3.8	0.6	0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16320	00	V	50	29	4.3	1.1	-0.5
16429	00	V	50	31	3.7	0.6	0.7
16429	12	V	50	26	4.3	1.7	0.3
16622	00	V	50	29	3.7	0.0	0.4
16754	00	V	50	30	3.5	0.3	0.1
17607	12	V	50	30	3.4	0.6	-0.1
26435	00	V	50	11	3.0	-0.3	-1.5
60018	12	V	50	30	3.9	0.4	0.6
60018	00	V	50	30	4.7	0.4	-0.2
ASDE01	12	V	50	4	1.3	0.3	-0.4
ASDE01	00	V	50	1	0.8	-0.8	-0.1
ASDE02	12	V	50	24	6.2	0.2	0.0
ASDE02	00	V	50	21	4.6	-0.8	0.2
ASDE09	12	V	50	2	2.8	-0.6	-2.3
ASDK01	12	V	50	6	4.2	0.5	1.0
ASDK01	00	V	50	6	3.1	0.6	1.0
ASDK02	12	V	50	11	2.5	-0.6	0.3
ASDK02	00	V	50	12	2.7	0.1	0.3
ASDK03	12	V	50	6	2.4	0.1	0.1
ASDK03	00	V	50	3	4.4	0.0	0.5
ASDK3	12	V	50	6	2.4	0.6	0.2
ASDK3	00	V	50	3	4.7	0.1	-0.9
ASES01	12	V	50	18	2.7	0.8	0.5
ASEU01	12	V	50	2	3.2	-2.4	0.2
ASEU01	00	V	50	3	2.8	-1.4	1.2
ASEU02	12	V	50	1	3.8	2.2	-3.1
ASEU02	00	V	50	2	2.2	-2.2	-0.1
ASEU04	12	V	50	4	1.7	-0.7	1.0
ASEU04	00	V	50	2	2.2	-0.4	1.9
ASEU05	12	V	50	0	0.0	0.0	0.0
ASEU05	00	V	50	0	0.0	0.0	0.0
ASEU06	12	V	50	6	3.8	-2.3	0.6
ASEU06	00	V	50	3	3.0	-0.1	2.0
ASFR1	12	V	50	8	5.4	0.4	2.3
ASFR1	00	V	50	2	5.6	-0.2	1.9
ASFR2	00	V	50	1	2.9	2.9	0.3
ASFR2	12	V	50	1	3.4	0.9	-3.3
ASFR3	12	V	50	3	3.4	-0.1	-0.8
ASFR3	00	V	50	4	2.3	0.2	0.7
ASFR4	12	V	50	7	2.6	1.8	1.0
ASFR4	00	V	50	4	2.5	0.0	1.0
DBLK	12	V	50	26	2.3	-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                : AUG 2017
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	100	31	5.9	-4.8
01001	12	Z	100	29	6.5	-3.1
01028	12	Z	100	30	7.6	-3.7
01028	00	Z	100	31	8.1	-6.3
010280	00	Z	100	0	0.0	0.0
01400	12	Z	100	23	22.4	12.9
01400	00	Z	100	23	7.6	3.1
01415	00	Z	100	31	5.5	1.8
01415	12	Z	100	30	4.6	2.0
02365	00	Z	100	24	5.7	-3.5
02365	12	Z	100	26	6.7	0.6
02591	12	Z	100	26	10.1	8.1
02591	00	Z	100	29	11.6	10.6
02836	00	Z	100	31	4.5	-3.3
02836	12	Z	100	30	5.1	-3.2
02963	12	Z	100	31	4.8	-0.5
02963	00	Z	100	31	3.2	-0.6
03005	12	Z	100	31	4.5	-1.5
03005	00	Z	100	31	5.3	-2.7
03238	00	Z	100	30	6.2	-1.5
03238	12	Z	100	2	2.7	-0.2
03808	00	Z	100	31	3.5	-0.1
03808	12	Z	100	31	4.5	0.7
03918	00	Z	100	29	8.4	7.4
03918	12	Z	100	9	12.2	11.1
03953	00	Z	100	29	12.4	-7.0
03953	12	Z	100	28	13.0	5.0
04018	12	Z	100	29	4.9	-3.1
04018	00	Z	100	27	6.7	-3.3
04220	00	Z	100	30	7.7	-3.4
04220	12	Z	100	31	3.8	-0.9
04270	12	Z	100	31	6.2	-4.2
04270	00	Z	100	31	7.6	-5.0
04320	00	Z	100	31	3.6	-1.2
04320	12	Z	100	31	5.5	-1.1
04339	12	Z	100	31	6.2	-3.6
04339	00	Z	100	31	10.8	-2.8
04360	12	Z	100	29	27.0	25.6
04360	00	Z	100	29	20.8	19.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	100	31	10.3	1.7
06011	00	Z	100	28	13.3	-5.5
06260	00	Z	100	31	6.0	1.4
06260	12	Z	100	6	5.8	2.2
06610	12	Z	100	31	10.1	5.4
06610	00	Z	100	31	10.4	6.1
07110	12	Z	100	30	20.5	18.9
07110	00	Z	100	29	17.1	16.2
07510	12	Z	100	31	25.1	23.8
07510	00	Z	100	30	21.1	20.3
07645	00	Z	100	31	15.2	13.4
07645	12	Z	100	31	18.7	17.7
07761	12	Z	100	31	14.7	13.4
07761	00	Z	100	29	18.0	16.0
08001	00	Z	100	31	9.5	6.5
08001	12	Z	100	31	13.4	6.0
08221	12	Z	100	31	8.4	2.9
08221	00	Z	100	31	11.7	8.9
082214	00	Z	100	0	0.0	0.0
08302	00	Z	100	30	6.4	-0.1
08302	12	Z	100	30	9.6	-5.5
08508	12	Z	100	31	22.6	17.0
08522	12	Z	100	31	9.1	7.8
085226	00	Z	100	1	17.6	17.6
085229	00	Z	100	0	0.0	0.0
08579	12	Z	100	30	41.6	14.5
10035	12	Z	100	31	15.3	14.6
10035	00	Z	100	31	14.5	13.6
10393	00	Z	100	31	7.5	5.4
10393	12	Z	100	31	5.8	3.3
10410	00	Z	100	31	5.3	-1.3
10410	12	Z	100	31	5.3	0.6
10739	00	Z	100	30	10.1	-2.0
10739	12	Z	100	30	9.1	-3.3
11035	00	Z	100	31	18.4	17.0
11035	12	Z	100	32	12.2	10.0
12982	00	Z	100	31	15.6	13.6
12982	12	Z	100	30	15.9	13.9
16080	00	Z	100	30	6.4	0.1
16080	12	Z	100	31	6.4	-1.2
16245	00	Z	100	31	9.4	7.9
16245	12	Z	100	31	3.7	0.4
16320	12	Z	100	32	11.8	10.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16320	00	Z	100	31	18.2	17.7
16429	00	Z	100	39	12.4	11.4
16429	12	Z	100	35	9.7	8.2
16622	00	Z	100	31	18.3	17.5
16754	00	Z	100	30	19.5	17.6
17607	12	Z	100	30	6.6	-1.0
26435	00	Z	100	15	3.8	1.8
60018	12	Z	100	31	9.8	-4.3
60018	00	Z	100	31	6.2	3.3
ASDE01	12	Z	100	5	3.0	-1.4
ASDE01	00	Z	100	2	1.8	-1.8
ASDE02	12	Z	100	29	20.8	13.2
ASDE02	00	Z	100	32	13.9	11.8
ASDE09	12	Z	100	2	19.7	18.9
ASDK01	12	Z	100	8	5.9	-0.4
ASDK01	00	Z	100	9	6.7	0.0
ASDK02	12	Z	100	11	6.1	3.9
ASDK02	00	Z	100	13	9.1	-3.7
ASDK03	12	Z	100	8	19.9	19.6
ASDK03	00	Z	100	3	18.9	18.7
ASDK3	12	Z	100	7	12.9	12.8
ASDK3	00	Z	100	3	15.8	14.9
ASES01	12	Z	100	22	11.0	3.0
ASEU01	12	Z	100	4	33.1	32.0
ASEU01	00	Z	100	3	8.3	-0.5
ASEU02	12	Z	100	1	36.3	36.3
ASEU02	00	Z	100	2	37.3	37.3
ASEU04	12	Z	100	4	5.7	-0.1
ASEU04	00	Z	100	3	10.6	-5.5
ASEU05	12	Z	100	0	0.0	0.0
ASEU05	00	Z	100	0	0.0	0.0
ASEU06	12	Z	100	7	34.8	32.2
ASEU06	00	Z	100	7	27.7	-3.2
ASFR1	12	Z	100	18	21.7	15.0
ASFR1	00	Z	100	13	15.0	12.0
ASFR2	00	Z	100	2	8.6	6.5
ASFR2	12	Z	100	4	11.7	10.2
ASFR3	12	Z	100	10	18.1	16.9
ASFR3	00	Z	100	13	14.2	7.9
ASFR4	12	Z	100	11	22.2	20.4
ASFR4	00	Z	100	17	23.4	22.1
DBLK	12	Z	100	43	5.9	-1.3

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

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RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 100 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : AUG 2017
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	100	31	1.9	0.5	0.0
01001	12	V	100	28	2.1	0.6	-0.2
01028	12	V	100	30	2.6	0.1	0.0
01028	00	V	100	31	2.6	-0.2	0.2
010280	00	V	100	0	0.0	0.0	0.0
01400	12	V	100	20	2.8	0.4	0.5
01400	00	V	100	20	3.5	0.2	0.2
01415	00	V	100	31	3.3	0.4	0.2
01415	12	V	100	30	3.0	0.3	0.0
02365	00	V	100	24	3.3	0.9	-0.2
02365	12	V	100	25	3.5	0.3	-0.4
02591	12	V	100	26	3.2	0.4	0.4
02591	00	V	100	27	3.0	0.4	-0.1
02836	00	V	100	31	3.2	0.5	-0.1
02836	12	V	100	30	2.8	0.6	-0.3
02963	12	V	100	31	2.8	0.2	-0.4
02963	00	V	100	30	3.2	0.5	-0.3
03005	12	V	100	31	3.3	0.1	0.0
03005	00	V	100	29	3.2	0.3	1.0
03238	00	V	100	30	3.8	0.6	0.2
03238	12	V	100	2	1.9	-0.7	1.3
03808	00	V	100	31	3.4	0.6	0.5
03808	12	V	100	31	3.6	0.4	0.4
03918	00	V	100	29	3.3	0.6	0.8
03918	12	V	100	9	3.0	-0.3	-0.6
03953	00	V	100	29	3.3	0.2	0.8
03953	12	V	100	28	3.9	-0.2	0.2
04018	12	V	100	29	2.8	0.8	0.0
04018	00	V	100	26	2.5	0.0	-0.3
04220	00	V	100	30	2.3	0.0	0.5
04220	12	V	100	31	2.7	0.2	0.4
04270	12	V	100	31	2.6	0.5	-0.4
04270	00	V	100	31	3.2	-0.7	0.2
04320	00	V	100	31	2.4	-0.3	0.3
04320	12	V	100	31	2.3	-0.5	-0.2
04339	12	V	100	31	2.4	-0.3	0.3
04339	00	V	100	31	2.1	0.2	-0.2
04360	12	V	100	29	2.5	0.8	0.0
04360	00	V	100	29	2.1	-0.2	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	100	31	2.8	0.6	-0.4
06011	00	V	100	28	2.6	0.2	-0.1
06260	00	V	100	31	3.5	-0.1	-0.4
06260	12	V	100	6	3.7	-1.3	0.9
06610	12	V	100	30	3.8	1.0	-0.3
06610	00	V	100	31	4.5	-0.5	0.7
07110	12	V	100	29	3.0	-0.4	0.0
07110	00	V	100	29	3.8	0.4	0.8
07510	12	V	100	31	3.5	0.3	0.6
07510	00	V	100	29	4.0	-0.1	0.4
07645	00	V	100	30	3.8	-0.3	0.2
07645	12	V	100	31	4.3	0.4	0.7
07761	12	V	100	29	4.3	0.0	0.1
07761	00	V	100	28	4.4	0.0	0.9
08001	00	V	100	31	3.7	0.2	0.7
08001	12	V	100	31	3.5	0.2	0.7
08221	12	V	100	31	4.0	0.1	1.1
08221	00	V	100	31	5.0	0.3	-0.1
082214	00	V	100	0	0.0	0.0	0.0
08302	00	V	100	30	4.7	0.4	0.0
08302	12	V	100	30	4.5	1.2	0.9
08508	12	V	100	31	3.7	-0.7	0.2
08522	12	V	100	31	3.6	0.3	0.0
085226	00	V	100	1	3.3	-2.8	-1.7
085229	00	V	100	0	0.0	0.0	0.0
08579	12	V	100	30	3.4	-0.2	0.3
10035	12	V	100	31	3.7	-0.3	0.2
10035	00	V	100	31	3.9	0.5	-0.4
10393	00	V	100	31	3.3	0.4	0.8
10393	12	V	100	31	3.6	-0.1	-0.1
10410	00	V	100	31	3.8	0.0	0.1
10410	12	V	100	31	3.3	-0.3	0.6
10739	00	V	100	28	5.2	1.1	0.1
10739	12	V	100	30	3.8	-0.4	0.5
11035	00	V	100	30	3.5	-0.1	0.3
11035	12	V	100	31	4.2	0.1	-1.2
12982	00	V	100	31	4.0	0.8	0.5
12982	12	V	100	30	3.9	0.6	0.9
16080	00	V	100	30	3.5	-0.4	0.0
16080	12	V	100	31	3.5	0.0	0.0
16245	00	V	100	31	4.5	0.6	0.6
16245	12	V	100	31	3.7	0.5	0.8
16320	12	V	100	30	3.4	0.1	0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16320	00	V	100	29	4.3	0.1	-0.4
16429	00	V	100	31	4.6	1.5	1.3
16429	12	V	100	31	3.6	-0.2	0.6
16622	00	V	100	30	4.2	1.1	-0.7
16754	00	V	100	30	3.5	0.7	0.3
17607	12	V	100	30	3.8	-0.1	0.2
26435	00	V	100	15	3.3	0.7	-1.1
60018	12	V	100	30	3.7	-1.0	-0.5
60018	00	V	100	31	4.9	0.6	0.8
ASDE01	12	V	100	5	1.9	-0.5	0.4
ASDE01	00	V	100	1	3.7	3.3	-1.6
ASDE02	12	V	100	25	6.4	1.1	0.9
ASDE02	00	V	100	23	5.7	0.3	-2.1
ASDE09	12	V	100	2	0.8	0.5	0.6
ASDK01	12	V	100	7	2.7	-0.2	0.1
ASDK01	00	V	100	8	3.5	1.1	0.2
ASDK02	12	V	100	11	2.5	0.7	0.1
ASDK02	00	V	100	12	2.5	-0.1	0.4
ASDK03	12	V	100	6	2.5	0.2	0.0
ASDK03	00	V	100	3	1.1	-0.3	-0.6
ASDK3	12	V	100	6	3.2	-0.2	-1.2
ASDK3	00	V	100	3	1.9	-1.0	-0.8
ASES01	12	V	100	20	3.9	1.0	-0.6
ASEU01	12	V	100	2	4.2	-1.8	-2.7
ASEU01	00	V	100	3	2.3	0.4	-1.1
ASEU02	12	V	100	1	3.4	-1.0	3.2
ASEU02	00	V	100	2	2.2	1.1	-0.7
ASEU04	12	V	100	4	3.2	0.8	-1.1
ASEU04	00	V	100	3	4.5	-1.2	2.7
ASEU05	12	V	100	0	0.0	0.0	0.0
ASEU05	00	V	100	0	0.0	0.0	0.0
ASEU06	12	V	100	7	2.1	0.2	-0.7
ASEU06	00	V	100	6	2.5	0.9	0.6
ASFR1	12	V	100	13	3.3	0.2	0.0
ASFR1	00	V	100	12	4.1	-0.8	-0.3
ASFR2	00	V	100	2	3.3	-2.6	1.5
ASFR2	12	V	100	4	2.3	0.5	0.5
ASFR3	12	V	100	9	3.9	0.2	-0.4
ASFR3	00	V	100	9	2.9	0.3	0.0
ASFR4	12	V	100	10	3.1	0.6	0.4
ASFR4	00	V	100	13	2.4	-0.3	0.0
DBLK	12	V	100	26	1.8	0.3	-0.1

4.5 Table 17 - Radiosonde Monitoring Statistics (EUCOS): 500 hPa Geopotential height (metres)

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 500 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : AUG 2017
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	500	31	4.3	-1.1
01001	12	Z	500	29	3.7	-2.1
01028	12	Z	500	31	3.7	-2.1
01028	00	Z	500	31	5.3	-3.6
010280	00	Z	500	0	0.0	0.0
01400	12	Z	500	23	10.2	6.9
01400	00	Z	500	25	7.5	5.8
01415	00	Z	500	31	4.7	2.5
01415	12	Z	500	30	3.1	2.0
02365	00	Z	500	25	2.7	-0.1
02365	12	Z	500	26	3.9	-0.3
02591	12	Z	500	27	8.7	8.4
02591	00	Z	500	29	9.5	8.9
02836	00	Z	500	31	3.0	0.2
02836	12	Z	500	30	2.4	0.6
02963	12	Z	500	31	2.9	1.9
02963	00	Z	500	32	3.7	3.2
03005	12	Z	500	31	3.6	-1.7
03005	00	Z	500	32	3.1	-1.6
03238	00	Z	500	30	4.4	2.2
03238	12	Z	500	2	3.6	0.3
03808	00	Z	500	31	3.7	1.0
03808	12	Z	500	32	3.6	1.2
03918	00	Z	500	29	8.7	8.1
03918	12	Z	500	9	9.3	9.0
03953	00	Z	500	31	9.3	-3.5
03953	12	Z	500	31	5.2	0.4
04018	12	Z	500	30	3.7	-0.2
04018	00	Z	500	28	5.7	-0.4
04220	00	Z	500	31	3.9	0.6
04220	12	Z	500	31	3.3	-0.3
04270	12	Z	500	31	4.7	-3.0
04270	00	Z	500	31	4.3	-1.6
04320	00	Z	500	31	3.8	-0.6
04320	12	Z	500	31	3.3	-0.7
04339	12	Z	500	31	4.8	-2.0
04339	00	Z	500	31	11.3	1.7
04360	12	Z	500	30	36.4	36.0
04360	00	Z	500	31	34.6	34.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	500	31	8.7	0.3
06011	00	Z	500	31	4.5	-1.0
06260	00	Z	500	31	7.5	2.7
06260	12	Z	500	6	3.5	-1.5
06610	12	Z	500	31	5.0	2.2
06610	00	Z	500	31	6.1	5.0
07110	12	Z	500	30	8.4	6.6
07110	00	Z	500	30	7.3	6.0
07510	12	Z	500	31	13.2	12.1
07510	00	Z	500	30	11.7	11.1
07645	00	Z	500	31	8.2	7.4
07645	12	Z	500	31	8.8	8.4
07761	12	Z	500	31	6.3	5.3
07761	00	Z	500	29	6.9	6.1
08001	00	Z	500	31	8.5	7.8
08001	12	Z	500	31	9.1	8.0
08221	12	Z	500	31	5.5	4.2
08221	00	Z	500	31	7.0	6.6
082214	00	Z	500	1	2.6	2.6
08302	00	Z	500	30	3.5	0.5
08302	12	Z	500	30	3.4	-1.4
08508	12	Z	500	31	18.8	12.1
08522	12	Z	500	31	7.2	6.7
085226	00	Z	500	1	0.6	0.6
085229	00	Z	500	1	7.6	-7.6
08579	12	Z	500	30	19.6	9.1
10035	12	Z	500	31	15.0	14.6
10035	00	Z	500	31	15.4	14.9
10393	00	Z	500	31	3.9	2.5
10393	12	Z	500	31	3.1	0.2
10410	00	Z	500	31	3.6	1.5
10410	12	Z	500	32	2.8	-0.6
10739	00	Z	500	30	8.1	-3.2
10739	12	Z	500	30	7.8	-4.1
11035	00	Z	500	31	11.0	10.1
11035	12	Z	500	33	9.9	8.3
12982	00	Z	500	31	10.5	9.7
12982	12	Z	500	30	8.2	7.2
16080	00	Z	500	30	2.4	1.3
16080	12	Z	500	31	3.4	-2.3
16245	00	Z	500	31	2.8	1.9
16245	12	Z	500	31	2.4	-0.4
16320	12	Z	500	33	13.3	12.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16320	00	Z	500	33	16.1	15.7
16429	00	Z	500	39	7.7	6.9
16429	12	Z	500	35	7.2	6.5
16622	00	Z	500	31	13.4	12.9
16754	00	Z	500	30	8.6	8.0
17607	12	Z	500	30	3.6	2.2
26435	00	Z	500	15	6.8	6.1
60018	12	Z	500	31	3.3	0.7
60018	00	Z	500	31	2.4	0.3
ASDE01	12	Z	500	5	0.9	-0.3
ASDE01	00	Z	500	2	0.2	-0.2
ASDE02	12	Z	500	29	11.1	8.6
ASDE02	00	Z	500	33	8.8	7.5
ASDE09	12	Z	500	2	6.8	5.6
ASDK01	12	Z	500	9	5.7	2.5
ASDK01	00	Z	500	9	6.4	1.4
ASDK02	12	Z	500	11	3.3	0.7
ASDK02	00	Z	500	14	5.2	0.3
ASDK03	12	Z	500	9	19.7	19.5
ASDK03	00	Z	500	9	22.0	21.6
ASDK3	12	Z	500	8	11.3	10.4
ASDK3	00	Z	500	5	24.0	21.5
ASES01	12	Z	500	23	7.1	0.4
ASEU01	12	Z	500	7	8.5	4.9
ASEU01	00	Z	500	3	9.0	-3.7
ASEU02	12	Z	500	1	31.0	31.0
ASEU02	00	Z	500	2	32.2	32.1
ASEU04	12	Z	500	4	5.3	-3.9
ASEU04	00	Z	500	3	6.9	-6.3
ASEU05	12	Z	500	2	4.7	4.4
ASEU05	00	Z	500	2	10.0	-7.7
ASEU06	12	Z	500	7	24.5	16.5
ASEU06	00	Z	500	7	36.0	-5.4
ASFR1	12	Z	500	20	6.9	0.7
ASFR1	00	Z	500	15	5.6	-2.0
ASFR2	00	Z	500	2	3.2	-0.4
ASFR2	12	Z	500	5	2.8	2.0
ASFR3	12	Z	500	13	5.9	4.0
ASFR3	00	Z	500	14	6.2	-0.6
ASFR4	12	Z	500	11	9.4	7.8
ASFR4	00	Z	500	17	5.5	4.1
DBLK	12	Z	500	43	2.9	-2.0

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

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RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 500 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : AUG 2017
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	500	31	2.6	-0.1	0.0
01001	12	V	500	28	2.1	0.2	0.2
01028	12	V	500	30	2.5	-0.4	0.3
01028	00	V	500	31	2.3	0.5	0.0
010280	00	V	500	0	0.0	0.0	0.0
01400	12	V	500	23	2.9	-0.4	-0.5
01400	00	V	500	25	2.9	0.5	0.2
01415	00	V	500	31	2.7	0.3	0.5
01415	12	V	500	30	2.3	-0.2	0.6
02365	00	V	500	25	3.0	0.9	-0.4
02365	12	V	500	25	3.0	0.1	1.0
02591	12	V	500	27	2.1	-0.2	-0.2
02591	00	V	500	28	3.1	0.3	0.0
02836	00	V	500	31	2.6	-0.2	0.5
02836	12	V	500	30	2.4	0.0	0.3
02963	12	V	500	31	3.1	-0.4	-0.5
02963	00	V	500	30	2.0	0.4	-0.2
03005	12	V	500	31	2.9	0.6	0.0
03005	00	V	500	31	2.8	0.0	0.6
03238	00	V	500	30	2.0	0.7	-0.3
03238	12	V	500	2	1.4	-0.6	-0.6
03808	00	V	500	31	2.7	-0.1	-0.3
03808	12	V	500	31	2.6	-0.5	-0.1
03918	00	V	500	29	2.3	0.5	-0.2
03918	12	V	500	9	2.1	-0.4	-0.3
03953	00	V	500	31	2.7	0.0	0.3
03953	12	V	500	31	2.5	0.4	0.2
04018	12	V	500	30	2.3	-0.1	-0.2
04018	00	V	500	27	2.3	0.2	0.2
04220	00	V	500	31	3.2	-0.5	0.4
04220	12	V	500	31	2.6	0.1	-0.4
04270	12	V	500	31	2.8	0.1	0.4
04270	00	V	500	31	2.9	-0.2	-0.4
04320	00	V	500	31	2.6	0.1	0.4
04320	12	V	500	31	2.9	0.3	0.2
04339	12	V	500	31	2.7	0.3	0.1
04339	00	V	500	31	2.2	0.4	-0.1
04360	12	V	500	30	3.0	0.3	-0.1
04360	00	V	500	31	2.1	0.0	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	500	31	2.4	0.1	0.2
06011	00	V	500	31	2.4	-0.3	0.2
06260	00	V	500	31	3.3	0.2	0.0
06260	12	V	500	6	4.9	-0.3	-1.7
06610	12	V	500	31	3.5	0.1	0.1
06610	00	V	500	31	3.2	0.7	0.2
07110	12	V	500	30	2.8	0.1	-0.1
07110	00	V	500	30	3.0	-0.2	0.5
07510	12	V	500	31	2.8	1.0	0.1
07510	00	V	500	30	2.8	0.1	0.4
07645	00	V	500	31	3.3	0.7	0.3
07645	12	V	500	31	3.2	0.3	-0.7
07761	12	V	500	31	3.0	0.8	0.4
07761	00	V	500	29	2.8	-0.2	0.1
08001	00	V	500	31	2.5	-0.2	0.3
08001	12	V	500	31	3.0	0.3	-0.1
08221	12	V	500	31	3.0	-0.2	0.2
08221	00	V	500	31	3.0	0.3	1.0
082214	00	V	500	1	2.7	0.4	2.7
08302	00	V	500	30	4.0	-0.5	0.0
08302	12	V	500	30	3.0	0.5	0.4
08508	12	V	500	31	2.3	0.3	-0.2
08522	12	V	500	31	2.6	0.2	-0.1
085226	00	V	500	1	0.8	-0.5	0.6
085229	00	V	500	1	4.1	-0.1	4.1
08579	12	V	500	30	2.4	-0.1	0.1
10035	12	V	500	31	3.6	-0.3	-0.3
10035	00	V	500	31	2.9	0.3	-0.1
10393	00	V	500	31	2.4	0.2	0.1
10393	12	V	500	31	2.7	0.6	-0.2
10410	00	V	500	31	3.5	0.0	-0.1
10410	12	V	500	31	2.8	0.4	-0.2
10739	00	V	500	29	3.0	0.2	0.2
10739	12	V	500	30	3.2	-0.2	-0.7
11035	00	V	500	30	4.2	0.5	1.2
11035	12	V	500	31	3.4	0.8	0.4
12982	00	V	500	31	2.4	0.1	-0.1
12982	12	V	500	30	2.8	0.6	0.3
16080	00	V	500	30	2.5	0.4	0.2
16080	12	V	500	31	2.7	0.4	0.2
16245	00	V	500	31	2.5	0.5	-0.7
16245	12	V	500	31	2.3	0.5	0.0
16320	12	V	500	31	2.6	1.1	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16320	00	V	500	31	2.1	0.5	0.3
16429	00	V	500	31	2.3	-0.3	-0.2
16429	12	V	500	31	1.7	-0.1	0.1
16622	00	V	500	30	2.1	0.0	-0.2
16754	00	V	500	30	2.6	0.4	-0.3
17607	12	V	500	30	2.3	0.6	0.0
26435	00	V	500	15	3.2	-1.0	-0.1
60018	12	V	500	31	3.0	0.8	-0.4
60018	00	V	500	31	2.2	0.0	0.4
ASDE01	12	V	500	5	2.2	1.1	-0.6
ASDE01	00	V	500	1	2.1	2.1	0.3
ASDE02	12	V	500	25	3.4	0.3	-0.2
ASDE02	00	V	500	24	3.4	0.4	0.9
ASDE09	12	V	500	2	2.5	-1.0	-1.7
ASDK01	12	V	500	8	3.0	0.0	0.3
ASDK01	00	V	500	8	2.1	0.5	0.1
ASDK02	12	V	500	11	3.5	-0.6	0.0
ASDK02	00	V	500	13	3.7	-0.8	0.1
ASDK03	12	V	500	8	2.4	-0.8	0.5
ASDK03	00	V	500	6	2.9	0.5	1.6
ASDK3	12	V	500	8	2.4	-0.2	-0.8
ASDK3	00	V	500	5	3.2	-0.1	0.8
ASES01	12	V	500	21	2.8	0.6	-0.2
ASEU01	12	V	500	5	1.7	-0.1	-0.3
ASEU01	00	V	500	3	2.3	0.8	-0.7
ASEU02	12	V	500	1	3.3	-0.2	3.3
ASEU02	00	V	500	2	1.9	-0.8	-1.4
ASEU04	12	V	500	4	3.0	-0.1	-0.6
ASEU04	00	V	500	3	4.6	0.5	-1.6
ASEU05	12	V	500	2	2.3	1.6	0.9
ASEU05	00	V	500	2	3.6	2.7	1.3
ASEU06	12	V	500	7	2.5	-0.2	0.3
ASEU06	00	V	500	6	2.1	-0.6	-0.1
ASFR1	12	V	500	15	3.0	0.8	0.5
ASFR1	00	V	500	14	2.7	-0.3	-0.4
ASFR2	00	V	500	2	2.8	-2.1	0.8
ASFR2	12	V	500	5	3.7	0.3	-0.8
ASFR3	12	V	500	11	3.7	0.7	-0.7
ASFR3	00	V	500	11	3.2	0.8	-0.1
ASFR4	12	V	500	10	2.0	1.2	-0.1
ASFR4	00	V	500	13	2.2	0.0	0.9
DBLK	12	V	500	26	2.3	-0.3	0.2

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

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RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 850 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : AUG 2017
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	850	31	2.7	-1.2
01001	12	Z	850	29	3.7	-1.7
01028	12	Z	850	32	3.7	-1.4
01028	00	Z	850	31	3.2	-0.8
010280	00	Z	850	1	27.9	-27.9
01400	12	Z	850	23	6.6	5.3
01400	00	Z	850	25	7.5	5.7
01415	00	Z	850	31	5.2	4.1
01415	12	Z	850	30	3.9	3.1
02365	00	Z	850	25	1.9	0.1
02365	12	Z	850	26	2.7	-0.1
02591	12	Z	850	27	8.6	8.4
02591	00	Z	850	29	8.9	8.6
02836	00	Z	850	31	3.2	2.6
02836	12	Z	850	30	3.7	3.0
02963	12	Z	850	31	4.3	3.8
02963	00	Z	850	32	4.5	4.1
03005	12	Z	850	31	2.2	-0.9
03005	00	Z	850	32	2.3	-0.4
03238	00	Z	850	30	4.2	3.9
03238	12	Z	850	2	4.7	4.6
03808	00	Z	850	31	2.6	1.4
03808	12	Z	850	32	2.3	0.6
03918	00	Z	850	29	10.2	10.1
03918	12	Z	850	9	10.5	10.3
03953	00	Z	850	31	3.0	0.2
03953	12	Z	850	31	2.7	1.0
04018	12	Z	850	30	2.6	-0.2
04018	00	Z	850	28	2.3	1.3
04220	00	Z	850	31	3.1	1.6
04220	12	Z	850	31	3.0	2.0
04270	12	Z	850	31	5.4	-2.5
04270	00	Z	850	31	5.1	-2.4
04320	00	Z	850	31	4.1	1.7
04320	12	Z	850	31	3.7	0.9
04339	12	Z	850	31	4.4	0.6
04339	00	Z	850	31	12.3	4.2
04360	12	Z	850	30	43.1	43.0
04360	00	Z	850	31	43.4	43.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	850	31	10.0	3.7
06011	00	Z	850	31	4.1	3.2
06260	00	Z	850	31	5.9	2.3
06260	12	Z	850	6	4.4	2.1
06610	12	Z	850	31	4.0	3.1
06610	00	Z	850	31	4.7	4.2
07110	12	Z	850	30	2.1	0.7
07110	00	Z	850	30	3.0	1.7
07510	12	Z	850	31	7.0	6.2
07510	00	Z	850	30	7.2	6.8
07645	00	Z	850	31	5.2	4.2
07645	12	Z	850	31	4.1	3.4
07761	12	Z	850	31	2.4	1.1
07761	00	Z	850	29	3.2	2.2
08001	00	Z	850	31	5.6	5.2
08001	12	Z	850	31	5.8	5.1
08221	12	Z	850	31	3.2	1.8
08221	00	Z	850	31	4.8	4.2
082214	00	Z	850	1	0.8	-0.8
08302	00	Z	850	30	3.5	-0.3
08302	12	Z	850	30	3.9	-3.2
08508	12	Z	850	31	16.6	7.4
08522	12	Z	850	31	3.8	3.0
085226	00	Z	850	1	1.3	1.3
085229	00	Z	850	1	5.5	-5.5
08579	12	Z	850	30	6.0	3.5
10035	12	Z	850	31	14.4	14.2
10035	00	Z	850	31	14.9	14.7
10393	00	Z	850	31	2.1	1.0
10393	12	Z	850	31	2.7	0.5
10410	00	Z	850	31	1.9	1.0
10410	12	Z	850	32	2.7	-0.1
10739	00	Z	850	30	8.8	-3.3
10739	12	Z	850	30	8.9	-4.5
11035	00	Z	850	31	10.9	10.4
11035	12	Z	850	33	8.8	7.8
12982	00	Z	850	31	9.7	8.6
12982	12	Z	850	30	8.5	7.8
16080	00	Z	850	30	2.2	-0.5
16080	12	Z	850	31	3.1	-1.0
16245	00	Z	850	31	1.4	0.2
16245	12	Z	850	31	2.1	-1.0
16320	12	Z	850	33	13.7	13.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16320	00	Z	850	33	15.2	14.7
16429	00	Z	850	39	6.1	4.6
16429	12	Z	850	35	6.4	5.3
16622	00	Z	850	31	11.6	11.3
16754	00	Z	850	31	6.7	6.0
17607	12	Z	850	31	3.1	2.9
26435	00	Z	850	15	4.3	2.8
60018	12	Z	850	31	3.9	-3.4
60018	00	Z	850	31	3.8	-3.3
ASDE01	12	Z	850	5	5.1	4.0
ASDE01	00	Z	850	2	6.2	6.2
ASDE02	12	Z	850	30	4.4	2.9
ASDE02	00	Z	850	33	3.4	0.1
ASDE09	12	Z	850	2	2.4	1.9
ASDK01	12	Z	850	11	10.2	0.4
ASDK01	00	Z	850	9	6.6	1.0
ASDK02	12	Z	850	11	4.7	2.9
ASDK02	00	Z	850	14	6.0	1.2
ASDK03	12	Z	850	9	23.5	23.2
ASDK03	00	Z	850	9	23.0	22.6
ASDK3	12	Z	850	8	21.1	20.8
ASDK3	00	Z	850	5	25.8	25.4
ASES01	12	Z	850	23	5.1	-2.9
ASEU01	12	Z	850	7	2.5	0.6
ASEU01	00	Z	850	3	3.5	1.0
ASEU02	12	Z	850	1	27.2	27.2
ASEU02	00	Z	850	2	28.0	27.9
ASEU04	12	Z	850	5	9.0	-8.4
ASEU04	00	Z	850	5	11.6	-11.4
ASEU05	12	Z	850	2	4.2	-2.1
ASEU05	00	Z	850	3	3.0	-0.9
ASEU06	12	Z	850	7	22.4	9.6
ASEU06	00	Z	850	7	20.6	2.5
ASFR1	12	Z	850	20	5.7	-3.8
ASFR1	00	Z	850	15	4.9	-3.6
ASFR2	00	Z	850	2	5.0	-3.4
ASFR2	12	Z	850	5	4.8	-4.0
ASFR3	12	Z	850	13	4.5	-1.2
ASFR3	00	Z	850	14	3.1	-0.7
ASFR4	12	Z	850	11	3.4	-0.7
ASFR4	00	Z	850	17	3.3	-0.8
DBLK	12	Z	850	43	2.9	-1.0

4.8 Table 20 - Radiosonde Monitoring Statistics (EUCOS): 850 hPa Wind (m/s)

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RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 850 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : AUG 2017
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	850	31	2.8	0.3	0.0
01001	12	V	850	28	2.8	-0.9	0.1
01028	12	V	850	30	2.3	-0.1	0.8
01028	00	V	850	31	2.3	0.8	-0.1
010280	00	V	850	1	17.9	4.3	-17.4
01400	12	V	850	23	1.9	0.4	-0.2
01400	00	V	850	25	1.9	-0.3	0.0
01415	00	V	850	31	1.9	-0.2	0.6
01415	12	V	850	30	2.5	-0.1	0.0
02365	00	V	850	25	2.9	-0.5	0.0
02365	12	V	850	25	2.9	-0.1	0.0
02591	12	V	850	27	2.7	-0.1	-0.3
02591	00	V	850	28	2.4	0.2	-0.3
02836	00	V	850	31	2.8	0.4	0.2
02836	12	V	850	30	3.0	0.8	0.0
02963	12	V	850	31	2.4	0.3	-0.1
02963	00	V	850	31	1.9	-0.1	0.0
03005	12	V	850	31	3.0	0.1	0.5
03005	00	V	850	31	2.5	-0.6	-0.2
03238	00	V	850	30	2.4	0.0	0.0
03238	12	V	850	2	2.4	1.1	2.0
03808	00	V	850	31	2.3	-0.3	0.5
03808	12	V	850	31	2.3	0.3	-0.5
03918	00	V	850	29	2.1	0.3	-0.3
03918	12	V	850	9	2.9	-0.3	-0.3
03953	00	V	850	31	2.8	-0.3	0.8
03953	12	V	850	31	2.5	0.2	-0.1
04018	12	V	850	30	3.1	-0.3	-0.1
04018	00	V	850	27	3.3	-1.1	0.9
04220	00	V	850	31	2.6	-0.6	0.1
04220	12	V	850	31	3.0	-1.0	0.1
04270	12	V	850	31	3.3	0.0	0.5
04270	00	V	850	31	3.1	0.2	-0.8
04320	00	V	850	31	3.0	0.3	-0.1
04320	12	V	850	31	2.8	0.3	-0.2
04339	12	V	850	31	3.0	0.5	-0.6
04339	00	V	850	31	3.2	-0.7	-1.1
04360	12	V	850	30	3.2	0.1	0.3
04360	00	V	850	31	3.1	0.5	0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	850	31	2.5	0.6	0.3
06011	00	V	850	31	2.8	-0.4	-0.3
06260	00	V	850	31	2.5	0.2	-0.5
06260	12	V	850	6	6.2	1.2	-1.9
06610	12	V	850	31	3.9	0.4	-0.3
06610	00	V	850	31	3.2	0.7	0.2
07110	12	V	850	30	3.3	0.5	0.1
07110	00	V	850	30	3.0	0.0	0.1
07510	12	V	850	31	3.3	0.9	0.0
07510	00	V	850	30	3.4	-0.7	0.5
07645	00	V	850	31	3.4	0.4	0.3
07645	12	V	850	31	3.1	-0.4	0.4
07761	12	V	850	31	2.5	-0.3	-0.1
07761	00	V	850	29	3.1	0.3	-0.1
08001	00	V	850	31	2.8	0.2	0.0
08001	12	V	850	31	2.6	0.3	0.0
08221	12	V	850	31	2.7	0.0	0.1
08221	00	V	850	31	4.0	-0.1	0.1
082214	00	V	850	1	0.5	0.2	-0.5
08302	00	V	850	28	4.7	-0.6	0.2
08302	12	V	850	30	2.9	-0.4	0.1
08508	12	V	850	31	3.3	0.2	-0.4
08522	12	V	850	30	3.1	-0.5	0.0
085226	00	V	850	1	0.7	0.7	-0.2
085229	00	V	850	1	0.8	0.3	-0.7
08579	12	V	850	30	2.4	0.5	0.1
10035	12	V	850	31	2.3	0.4	0.0
10035	00	V	850	31	2.1	0.0	-0.2
10393	00	V	850	31	2.9	0.4	-0.2
10393	12	V	850	31	3.0	0.0	0.0
10410	00	V	850	31	2.6	0.7	-0.3
10410	12	V	850	31	2.8	0.1	-0.5
10739	00	V	850	29	3.2	0.7	-0.4
10739	12	V	850	30	2.7	-0.1	0.0
11035	00	V	850	30	3.1	0.7	-0.8
11035	12	V	850	31	3.0	0.4	-0.5
12982	00	V	850	31	3.0	0.6	0.3
12982	12	V	850	30	2.4	0.5	0.4
16080	00	V	850	30	3.6	0.6	-0.8
16080	12	V	850	31	2.8	0.8	-0.7
16245	00	V	850	31	2.6	-0.1	0.3
16245	12	V	850	31	2.7	-0.6	0.0
16320	12	V	850	31	2.6	0.3	-0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16320	00	V	850	31	2.3	0.0	-0.6
16429	00	V	850	31	2.0	0.2	-0.2
16429	12	V	850	31	2.4	0.3	0.1
16622	00	V	850	30	3.4	0.3	-0.7
16754	00	V	850	31	2.5	0.1	0.3
17607	12	V	850	31	2.6	0.0	0.1
26435	00	V	850	15	2.7	0.2	0.1
60018	12	V	850	31	3.6	1.2	0.4
60018	00	V	850	31	3.5	1.3	0.7
ASDE01	12	V	850	5	2.6	0.7	-0.8
ASDE01	00	V	850	1	2.5	2.4	0.6
ASDE02	12	V	850	26	3.5	-0.5	0.0
ASDE02	00	V	850	24	4.2	-1.3	0.4
ASDE09	12	V	850	2	2.8	0.3	-2.1
ASDK01	12	V	850	9	2.3	-0.2	0.0
ASDK01	00	V	850	8	2.8	-0.4	-1.1
ASDK02	12	V	850	11	2.6	-0.1	-0.2
ASDK02	00	V	850	13	3.1	-0.2	0.5
ASDK03	12	V	850	8	3.0	-1.0	-1.2
ASDK03	00	V	850	6	2.1	0.0	-0.2
ASDK3	12	V	850	8	2.6	-1.3	-0.5
ASDK3	00	V	850	5	1.9	-0.4	0.0
ASES01	12	V	850	21	2.8	0.0	-0.4
ASEU01	12	V	850	5	2.8	0.2	1.2
ASEU01	00	V	850	3	2.1	-0.1	1.4
ASEU02	12	V	850	1	1.9	-1.1	-1.6
ASEU02	00	V	850	2	1.7	-1.0	-0.6
ASEU04	12	V	850	5	2.5	1.1	0.0
ASEU04	00	V	850	5	3.4	0.4	-0.1
ASEU05	12	V	850	2	0.9	0.5	-0.3
ASEU05	00	V	850	3	2.3	0.3	-0.3
ASEU06	12	V	850	7	1.7	-0.1	0.0
ASEU06	00	V	850	6	3.1	-0.6	0.6
ASFR1	12	V	850	15	3.3	0.5	-0.8
ASFR1	00	V	850	14	2.7	-0.1	0.4
ASFR2	00	V	850	2	4.2	1.6	-2.9
ASFR2	12	V	850	5	1.9	0.3	-0.5
ASFR3	12	V	850	11	1.9	-0.7	-0.1
ASFR3	00	V	850	11	3.1	-0.3	0.2
ASFR4	12	V	850	10	2.3	-0.6	-0.1
ASFR4	00	V	850	13	2.8	-0.5	0.5
DBLK	12	V	850	26	2.9	0.0	0.3

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

```
DRIFTER MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE      : ECMWF
         ELEMENT MONITORED      : SURFACE PRESSURE (HPA)
         AREA                   : 10N - 90N, 70W - 40E
         PERIOD                 : AUG 2017
         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
0000000	99	P	SUR	60	-29	95	0	0.3	0.1	0.3
03380	99	P	SUR	54	0	762	0	0.3	-0.0	0.3
1300001	99	P	SUR	11	-23	663	0	0.5	-0.2	0.6
1300130	99	P	SUR	28	-16	708	0	0.4	0.0	0.4
1300131	99	P	SUR	28	-17	707	0	0.5	0.2	0.5
1300869	99	P	SUR	23	-56	744	0	0.3	0.2	0.3
1300871	99	P	SUR	29	-69	659	0	0.4	0.3	0.5
1300872	99	P	SUR	34	-46	737	0	0.3	0.4	0.5
1301502	99	P	SUR	20	-64	737	0	0.3	0.5	0.7
1301601	99	P	SUR	11	-16	470	0	0.6	-0.0	0.6
13869	99	P	SUR	23	-56	744	0	0.3	0.2	0.3
13871	99	P	SUR	29	-69	659	0	0.4	0.3	0.5
13872	99	P	SUR	34	-46	737	0	0.3	0.4	0.5
1501529	99	P	SUR	28	-24	741	0	0.3	0.5	0.5
1501531	99	P	SUR	19	-32	741	0	0.3	0.3	0.4
1501533	99	P	SUR	13	-33	106	0	0.4	0.1	0.4
1501534	99	P	SUR	23	-28	742	0	0.3	0.2	0.3
1501601	99	P	SUR	13	-57	744	0	0.4	0.2	0.4
2100942	99	P	SUR	24	-58	347	0	0.3	0.3	0.4
21942	99	P	SUR	24	-58	347	0	0.3	0.3	0.4
2500622	99	P	SUR	74	1	744	0	0.4	-0.6	0.8
2500623	99	P	SUR	74	-13	449	0	0.7	-0.2	0.8
25622	99	P	SUR	74	2	744	0	0.4	-0.6	0.8
25623	99	P	SUR	74	-13	449	0	0.7	-0.2	0.8
2600568	99	P	SUR	80	33	350	34	5.6	4.2	7.0
2601560	99	P	SUR	77	4	742	0	0.3	0.1	0.3
26568	99	P	SUR	80	33	485	43	5.9	3.1	6.7
4100139	99	P	SUR	20	-38	714	0	0.3	-0.1	0.3
4100300	99	P	SUR	16	-57	468	0	0.4	0.3	0.5
4100506	99	P	SUR	30	-49	686	0	0.3	0.0	0.3
4100590	99	P	SUR	40	-19	736	0	0.2	-0.3	0.4
4100597	99	P	SUR	33	-48	744	0	0.3	0.3	0.4
4100707	99	P	SUR	14	-61	744	0	0.5	-1.0	1.1
4100729	99	P	SUR	34	-35	744	0	0.3	0.2	0.3
4101700	99	P	SUR	34	-36	744	0	0.2	0.4	0.5
4101702	99	P	SUR	25	-53	744	0	0.3	0.3	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101703	99	P	SUR	26	-54	744	0	0.3	0.7	0.7
4101704	99	P	SUR	18	-67	744	0	0.4	0.8	0.9
4101705	99	P	SUR	31	-47	744	0	0.3	0.1	0.3
4101706	99	P	SUR	34	-44	744	0	0.3	-0.3	0.4
4101707	99	P	SUR	36	-34	743	0	0.2	-0.1	0.2
4101708	99	P	SUR	33	-39	744	0	0.3	-0.3	0.4
4101709	99	P	SUR	40	-22	743	0	0.3	0.6	0.6
4101710	99	P	SUR	34	-49	743	0	0.3	0.2	0.3
4101711	99	P	SUR	33	-51	744	0	0.3	0.2	0.4
4101712	99	P	SUR	26	-61	729	0	0.3	-0.1	0.3
4101713	99	P	SUR	28	-58	744	0	0.3	-0.1	0.3
4101741	99	P	SUR	24	-59	744	0	0.3	0.6	0.7
4101742	99	P	SUR	23	-41	744	0	0.3	0.1	0.3
4101743	99	P	SUR	20	-43	744	0	0.3	0.6	0.6
4101744	99	P	SUR	12	-47	744	0	0.3	-0.6	0.7
4101746	99	P	SUR	11	-48	744	0	0.3	-0.2	0.4
41040	99	P	SUR	15	-53	832	0	0.4	-0.5	0.6
41041	99	P	SUR	14	-46	1348	0	0.4	0.1	0.4
41043	99	P	SUR	21	-65	1418	0	0.4	-0.3	0.5
41044	99	P	SUR	22	-59	1455	0	0.4	0.2	0.4
41046	99	P	SUR	24	-68	1448	0	0.4	0.3	0.5
41048	99	P	SUR	32	-70	1454	0	0.4	-0.0	0.4
41049	99	P	SUR	28	-63	745	0	0.3	0.6	0.7
41052	99	P	SUR	18	-65	1764	0	0.5	-1.2	1.3
41053	99	P	SUR	19	-66	1817	0	0.4	-0.4	0.5
41056	99	P	SUR	18	-66	1803	0	0.4	0.0	0.4
41300	99	P	SUR	16	-57	468	0	0.4	0.3	0.5
41506	99	P	SUR	30	-49	686	0	0.3	0.0	0.3
41590	99	P	SUR	40	-19	736	0	0.2	-0.3	0.4
41597	99	P	SUR	33	-48	744	0	0.3	0.3	0.4
41707	99	P	SUR	14	-61	744	0	0.5	-1.0	1.1
41729	99	P	SUR	34	-35	744	0	0.3	0.2	0.3
42059	99	P	SUR	15	-68	1409	0	0.5	-0.2	0.5
42060	99	P	SUR	16	-63	1403	0	0.4	-0.1	0.5
42085	99	P	SUR	18	-67	1580	0	0.4	-0.8	0.8
42088	99	P	SUR	11	-61	1533	0	0.5	0.0	0.5
44005	99	P	SUR	43	-69	779	0	0.4	0.1	0.4
4400510	99	P	SUR	49	-20	1292	0	0.4	0.5	0.6
4400513	99	P	SUR	54	-10	742	0	0.3	-0.3	0.5
4400517	99	P	SUR	27	-33	744	0	0.2	0.5	0.5
4400521	99	P	SUR	32	-27	723	0	0.2	-0.5	0.5
4400746	99	P	SUR	29	-28	744	0	0.3	0.4	0.5
4400765	99	P	SUR	60	1	738	0	0.4	0.3	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4400766	99	P	SUR	24	-23	744	0	0.3	0.0	0.3
4400768	99	P	SUR	25	-49	744	0	0.3	0.7	0.8
4400773	99	P	SUR	45	-3	377	0	1.2	0.3	1.2
4400776	99	P	SUR	26	-40	744	0	0.3	0.8	0.9
4400777	99	P	SUR	39	-51	744	0	0.5	-0.1	0.5
4400778	99	P	SUR	31	-22	744	0	0.3	0.6	0.6
4400779	99	P	SUR	53	-11	721	3	0.6	-0.1	0.6
44008	99	P	SUR	41	-69	746	0	0.6	-0.5	0.8
4400839	99	P	SUR	29	-68	744	0	0.4	-0.3	0.5
4400848	99	P	SUR	27	-56	743	0	0.3	0.2	0.4
4400857	99	P	SUR	36	-17	744	0	0.3	0.5	0.6
4400874	99	P	SUR	30	-38	744	0	0.3	0.4	0.5
4400875	99	P	SUR	35	-33	368	0	0.3	-0.2	0.4
4400887	99	P	SUR	33	-43	743	0	0.3	0.0	0.3
4400891	99	P	SUR	33	-50	744	0	0.7	-0.5	0.8
4400901	99	P	SUR	53	-11	373	0	0.3	0.2	0.4
4400904	99	P	SUR	35	-20	624	0	0.3	-0.1	0.3
44011	99	P	SUR	41	-67	744	0	0.7	-0.9	1.1
4401501	99	P	SUR	52	-13	744	0	0.3	0.3	0.4
4401503	99	P	SUR	33	-56	744	0	0.4	0.1	0.4
4401525	99	P	SUR	13	-60	490	0	0.4	0.0	0.4
4401527	99	P	SUR	23	-59	741	0	0.3	0.3	0.5
4401529	99	P	SUR	26	-68	742	0	0.4	0.1	0.4
4401530	99	P	SUR	33	-51	737	0	0.3	-0.3	0.4
4401531	99	P	SUR	29	-61	742	0	0.3	0.4	0.5
4401535	99	P	SUR	51	-19	180	0	0.9	0.1	0.9
4401536	99	P	SUR	49	-42	724	0	0.4	0.5	0.6
4401537	99	P	SUR	35	-27	726	0	0.2	-0.4	0.5
4401538	99	P	SUR	41	-28	685	0	0.3	-1.7	1.7
4401539	99	P	SUR	37	-47	741	0	0.3	0.2	0.4
4401540	99	P	SUR	30	-64	739	0	0.3	0.3	0.4
4401541	99	P	SUR	34	-65	741	0	0.3	0.0	0.3
4401542	99	P	SUR	33	-60	741	0	0.4	0.4	0.5
4401543	99	P	SUR	29	-66	739	0	0.3	0.0	0.3
4401546	99	P	SUR	45	-27	743	0	0.3	0.6	0.7
4401548	99	P	SUR	49	-22	742	0	0.4	-0.0	0.4
4401550	99	P	SUR	43	-34	746	0	0.4	-0.1	0.4
4401551	99	P	SUR	34	-42	699	0	0.3	0.5	0.6
4401552	99	P	SUR	44	-26	712	0	0.3	0.2	0.4
4401553	99	P	SUR	55	-42	744	0	0.3	0.2	0.4
4401554	99	P	SUR	57	-31	744	0	0.3	0.5	0.6
4401555	99	P	SUR	55	-20	744	0	0.4	-0.2	0.5
4401556	99	P	SUR	40	-49	744	0	0.5	-0.2	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401557	99	P	SUR	44	-64	744	0	0.6	0.2	0.6
4401558	99	P	SUR	44	-55	744	0	0.6	-0.1	0.6
4401559	99	P	SUR	45	-39	743	0	0.4	0.1	0.5
4401560	99	P	SUR	45	-38	743	0	0.4	0.1	0.4
4401561	99	P	SUR	45	-52	742	0	0.5	0.1	0.5
4401562	99	P	SUR	40	-34	743	0	0.4	-0.3	0.5
4401563	99	P	SUR	36	-39	744	0	0.3	-0.3	0.4
4401601	99	P	SUR	56	-49	472	0	0.3	0.1	0.4
4401602	99	P	SUR	46	-58	461	0	0.4	0.4	0.5
4401603	99	P	SUR	53	-37	473	0	0.3	0.2	0.4
4401605	99	P	SUR	53	-45	454	0	0.3	-0.1	0.3
4401606	99	P	SUR	50	-28	449	0	0.3	-0.2	0.4
4401609	99	P	SUR	42	-64	447	0	0.9	-0.1	0.9
4401611	99	P	SUR	56	-59	453	0	0.3	0.2	0.4
4401613	99	P	SUR	47	-35	469	0	0.4	0.1	0.5
4401616	99	P	SUR	45	-54	451	0	0.4	0.2	0.5
4401629	99	P	SUR	48	-34	464	0	0.4	1.6	1.6
4401631	99	P	SUR	52	-24	450	0	0.3	-0.0	0.3
4401633	99	P	SUR	46	-31	447	0	0.4	0.2	0.4
4401634	99	P	SUR	59	-14	463	0	0.3	-0.0	0.3
4401754	99	P	SUR	62	2	708	0	0.4	0.3	0.5
4401756	99	P	SUR	61	-28	723	0	0.4	0.3	0.5
4401757	99	P	SUR	65	0	721	0	0.5	0.5	0.7
44027	99	P	SUR	44	-67	815	0	0.4	0.0	0.4
44032	99	P	SUR	44	-69	683	0	0.4	-0.4	0.5
44033	99	P	SUR	44	-69	694	0	0.4	-0.4	0.6
44034	99	P	SUR	44	-68	663	0	0.4	-0.4	0.5
44037	99	P	SUR	44	-68	695	0	0.4	-0.9	0.9
44139	99	P	SUR	44	-57	738	0	0.5	0.2	0.5
44150	99	P	SUR	43	-64	367	0	0.7	0.2	0.8
44258	99	P	SUR	45	-63	739	0	0.4	0.1	0.4
44510	99	P	SUR	49	-20	1292	0	0.4	0.5	0.6
44513	99	P	SUR	54	-10	742	0	0.3	-0.3	0.4
44517	99	P	SUR	27	-33	744	0	0.2	0.5	0.5
44521	99	P	SUR	32	-27	723	0	0.2	-0.5	0.5
44746	99	P	SUR	29	-28	744	0	0.3	0.4	0.5
44765	99	P	SUR	60	1	738	0	0.4	0.3	0.5
44766	99	P	SUR	24	-23	744	0	0.3	0.0	0.3
44768	99	P	SUR	25	-49	744	0	0.3	0.7	0.8
44773	99	P	SUR	45	-3	377	0	1.2	0.3	1.2
44776	99	P	SUR	26	-40	744	0	0.3	0.8	0.9
44777	99	P	SUR	39	-51	744	0	0.5	-0.1	0.5
44778	99	P	SUR	31	-22	744	0	0.3	0.6	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44779	99	P	SUR	53	-11	720	3	0.6	-0.1	0.6
44839	99	P	SUR	29	-68	744	0	0.4	-0.3	0.5
44848	99	P	SUR	27	-56	743	0	0.3	0.2	0.4
44857	99	P	SUR	36	-17	744	0	0.3	0.5	0.6
44874	99	P	SUR	30	-38	744	0	0.3	0.4	0.5
44875	99	P	SUR	35	-33	368	0	0.3	-0.2	0.3
44887	99	P	SUR	33	-43	743	0	0.3	0.0	0.3
44891	99	P	SUR	33	-50	744	0	0.7	-0.5	0.8
44901	99	P	SUR	53	-11	373	0	0.3	0.2	0.4
44904	99	P	SUR	35	-20	624	0	0.3	-0.1	0.3
45138	99	P	SUR	50	-66	723	0	0.5	-0.1	0.5
4700540	99	P	SUR	62	0	469	46	5.2	2.3	5.7
4700546	99	P	SUR	40	-29	452	0	0.3	0.5	0.6
4700551	99	P	SUR	56	-13	453	23	4.4	1.0	4.5
4700552	99	P	SUR	67	-64	445	0	0.4	-1.8	1.9
4700555	99	P	SUR	45	-24	463	0	0.3	0.1	0.4
4700557	99	P	SUR	55	-10	452	0	4.0	-4.0	5.7
4700560	99	P	SUR	60	-6	343	0	0.2	0.4	0.5
4700562	99	P	SUR	61	-2	469	0	0.3	0.5	0.5
4700568	99	P	SUR	45	-10	471	0	0.3	0.3	0.4
4700574	99	P	SUR	41	-15	457	0	0.2	0.2	0.3
4701656	99	P	SUR	61	-65	176	0	0.4	-1.6	1.6
4701657	99	P	SUR	80	-65	391	0	3.7	-1.4	3.9
4701668	99	P	SUR	56	-59	453	0	0.3	0.4	0.5
4701669	99	P	SUR	54	-53	450	0	0.3	0.2	0.4
4701670	99	P	SUR	62	-65	451	0	0.5	-1.5	1.6
4701671	99	P	SUR	70	-67	429	0	0.4	-3.2	3.2
4701672	99	P	SUR	70	-67	446	0	0.4	-2.4	2.5
4701675	99	P	SUR	56	-59	743	0	0.3	0.1	0.4
4701676	99	P	SUR	72	-65	610	0	0.3	-0.1	0.3
4701677	99	P	SUR	60	-69	744	0	0.5	0.0	0.5
4701678	99	P	SUR	61	-67	743	0	0.4	0.1	0.5
4701679	99	P	SUR	72	-65	611	0	0.3	0.0	0.3
47540	99	P	SUR	62	0	621	62	5.5	1.9	5.8
47546	99	P	SUR	40	-29	618	0	0.3	0.5	0.6
47551	99	P	SUR	56	-13	633	31	4.3	0.8	4.4
47552	99	P	SUR	67	-64	623	0	0.4	-1.9	1.9
47555	99	P	SUR	45	-24	626	0	0.4	0.1	0.4
47557	99	P	SUR	55	-10	628	0	4.0	-4.1	5.8
47560	99	P	SUR	60	-6	599	0	0.3	0.4	0.5
47562	99	P	SUR	61	-2	627	0	0.3	0.5	0.6
47568	99	P	SUR	45	-10	628	0	0.3	0.3	0.5
47574	99	P	SUR	41	-15	624	0	0.3	0.2	0.3

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4800274	99	P	SUR	85	-37	525	0	0.4	0.4	0.5
4800276	99	P	SUR	84	-41	524	0	0.5	-0.2	0.5
4800280	99	P	SUR	86	-43	532	0	0.4	0.0	0.4
4800510	99	P	SUR	87	-55	528	0	0.4	-0.3	0.5
4800600	99	P	SUR	57	-36	734	0	0.3	-0.1	0.3
4800631	99	P	SUR	84	-3	712	0	0.4	-0.2	0.4
4800770	99	P	SUR	82	-11	506	0	1.1	-0.4	1.2
4802011	99	P	SUR	77	-69	4	0	1.9	-9.9	10.1
4802012	99	P	SUR	77	-69	4	0	1.8	-9.1	9.3
4802013	99	P	SUR	77	-69	3	0	1.8	-9.3	9.5
48274	99	P	SUR	85	-37	610	0	0.4	0.4	0.5
48276	99	P	SUR	84	-41	612	0	0.5	-0.2	0.5
48280	99	P	SUR	86	-43	615	0	0.4	0.0	0.4
48510	99	P	SUR	87	-55	615	0	0.4	-0.4	0.6
48600	99	P	SUR	57	-36	734	0	0.3	-0.1	0.3
48770	99	P	SUR	82	-11	608	0	1.1	-0.4	1.1
6100001	99	P	SUR	43	8	743	0	0.4	0.2	0.5
6100002	99	P	SUR	42	5	743	0	0.4	0.2	0.4
61001	99	P	SUR	43	8	744	0	0.4	0.2	0.5
6100196	99	P	SUR	42	4	707	0	0.4	0.1	0.5
6100197	99	P	SUR	40	4	708	0	0.4	0.3	0.5
6100198	99	P	SUR	37	-2	708	0	0.5	0.3	0.5
61002	99	P	SUR	42	5	744	0	0.4	0.2	0.4
6100280	99	P	SUR	41	1	708	0	0.4	0.3	0.6
6100281	99	P	SUR	40	0	708	0	0.5	0.2	0.6
6100417	99	P	SUR	38	0	708	0	0.5	0.3	0.6
6100430	99	P	SUR	40	2	708	0	0.5	0.1	0.5
6101001	99	P	SUR	38	24	230	0	0.4	0.5	0.7
6101003	99	P	SUR	40	25	207	0	0.4	0.3	0.5
6101007	99	P	SUR	36	25	230	0	0.8	0.8	1.1
6101008	99	P	SUR	37	22	199	0	0.4	0.4	0.6
6200024	99	P	SUR	44	-3	708	0	0.4	0.2	0.5
6200025	99	P	SUR	44	-6	708	0	0.4	0.1	0.4
6200082	99	P	SUR	44	-8	708	0	0.3	0.1	0.3
6200083	99	P	SUR	43	-9	707	0	0.4	-0.1	0.4
6200084	99	P	SUR	42	-9	708	0	0.4	0.0	0.4
6200085	99	P	SUR	36	-7	701	0	0.4	0.3	0.5
6200091	99	P	SUR	53	-5	744	0	0.4	0.1	0.4
6200093	99	P	SUR	55	-10	744	0	0.4	-0.1	0.4
6200094	99	P	SUR	52	-7	744	0	0.3	0.1	0.4
62001	99	P	SUR	45	-5	741	0	0.3	0.1	0.3
6200191	99	P	SUR	41	-10	37	0	0.2	-0.6	0.6
6200199	99	P	SUR	40	-9	642	0	0.3	0.7	0.8

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6200513	99	P	SUR	63	-27	744	0	0.4	-0.2	0.5
6200554	99	P	SUR	38	-18	631	0	0.3	0.3	0.4
6200559	99	P	SUR	55	-10	744	3	1.4	-0.3	1.5
6200940	99	P	SUR	29	-30	744	0	0.3	0.2	0.4
6200941	99	P	SUR	19	-50	744	0	0.4	-0.1	0.4
6201030	99	P	SUR	44	-4	583	0	0.4	1.2	1.3
62023	99	P	SUR	51	-8	740	0	0.3	0.3	0.5
62027	99	P	SUR	49	-2	208	0	0.5	0.0	0.5
62029	99	P	SUR	49	-13	1291	0	0.4	-0.0	0.4
62030	99	P	SUR	50	-4	896	0	0.3	-0.0	0.3
6203503	99	P	SUR	27	-30	739	0	0.3	0.1	0.3
6203504	99	P	SUR	28	-35	737	0	0.2	0.5	0.5
6203510	99	P	SUR	10	-52	741	0	0.4	-0.1	0.4
6203518	99	P	SUR	65	-39	260	11	1.6	12.0	12.1
6203519	99	P	SUR	59	-46	253	4	2.5	9.8	10.1
6203524	99	P	SUR	64	-35	734	0	0.4	0.7	0.7
6203526	99	P	SUR	68	-12	719	0	0.4	0.3	0.5
6203600	99	P	SUR	50	-24	744	0	0.3	0.1	0.3
6203601	99	P	SUR	47	-27	744	0	0.4	0.3	0.5
6203602	99	P	SUR	60	-29	587	0	0.3	0.0	0.3
6203603	99	P	SUR	54	-35	490	0	0.4	-0.2	0.4
6203604	99	P	SUR	51	-35	490	0	0.4	-0.1	0.4
6203605	99	P	SUR	57	-33	588	0	0.3	-0.2	0.3
62050	99	P	SUR	50	-4	743	0	0.3	0.3	0.5
62095	99	P	SUR	53	-16	761	0	0.4	-0.0	0.4
62102	99	P	SUR	58	2	764	0	0.3	0.3	0.4
62103	99	P	SUR	50	-3	761	0	0.4	0.6	0.7
62104	99	P	SUR	57	1	765	0	0.3	0.3	0.4
62105	99	P	SUR	55	-13	297	0	0.5	-0.2	0.6
62107	99	P	SUR	50	-6	1442	2	0.6	0.5	0.8
62111	99	P	SUR	58	0	762	0	0.4	1.4	1.5
62112	99	P	SUR	58	0	765	0	0.3	0.5	0.6
62113	99	P	SUR	58	0	765	0	0.4	0.4	0.6
62114	99	P	SUR	58	0	1445	0	0.3	0.4	0.5
62115	99	P	SUR	58	-3	734	0	0.3	0.3	0.5
62116	99	P	SUR	58	1	761	0	0.4	0.2	0.4
62117	99	P	SUR	58	0	208	0	0.4	0.5	0.6
62118	99	P	SUR	58	1	225	0	0.4	0.8	0.9
62119	99	P	SUR	57	2	764	0	0.3	0.3	0.5
62120	99	P	SUR	56	2	761	0	0.3	0.1	0.3
62121	99	P	SUR	54	3	735	0	0.3	0.4	0.5
62122	99	P	SUR	57	2	1445	0	0.3	0.3	0.5
62124	99	P	SUR	54	-4	756	0	0.3	0.2	0.3

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62127	99	P	SUR	54	1	754	0	0.3	0.8	0.8
62128	99	P	SUR	59	1	292	0	0.4	0.5	0.6
62129	99	P	SUR	58	0	765	0	0.4	0.3	0.5
62130	99	P	SUR	59	1	764	0	0.3	0.2	0.4
62131	99	P	SUR	54	1	761	0	0.3	0.7	0.7
62132	99	P	SUR	56	2	653	0	0.4	0.7	0.8
62133	99	P	SUR	57	1	764	0	0.3	0.3	0.5
62134	99	P	SUR	58	1	765	0	0.3	0.5	0.6
62135	99	P	SUR	54	2	763	0	0.3	0.5	0.7
62136	99	P	SUR	54	3	763	0	0.3	0.7	0.8
62138	99	P	SUR	54	0	1443	0	0.3	1.0	1.0
62139	99	P	SUR	53	2	1091	0	0.3	0.5	0.6
62140	99	P	SUR	57	1	1445	0	0.3	0.4	0.5
62141	99	P	SUR	58	-4	739	0	1.3	-0.7	1.5
62143	99	P	SUR	58	2	765	0	0.4	0.8	0.9
62144	99	P	SUR	53	2	764	0	0.3	0.5	0.6
62145	99	P	SUR	53	3	1440	0	0.3	0.6	0.7
62146	99	P	SUR	57	2	703	0	0.4	0.5	0.6
62148	99	P	SUR	54	2	763	0	0.3	1.2	1.2
62149	99	P	SUR	54	1	764	0	0.3	0.9	0.9
62150	99	P	SUR	54	1	601	0	0.3	1.5	1.5
62151	99	P	SUR	57	2	1260	0	0.3	0.4	0.5
62152	99	P	SUR	57	2	765	0	0.3	0.7	0.7
62153	99	P	SUR	57	2	1445	0	0.3	0.4	0.5
62154	99	P	SUR	56	2	765	0	0.3	0.3	0.4
62155	99	P	SUR	58	1	666	0	0.3	0.6	0.7
62157	99	P	SUR	58	0	764	0	0.3	0.2	0.4
62160	99	P	SUR	57	2	1431	0	0.3	0.3	0.4
62161	99	P	SUR	58	1	764	0	0.4	0.1	0.4
62162	99	P	SUR	57	1	740	0	0.3	0.3	0.4
62163	99	P	SUR	48	-8	739	0	0.4	0.3	0.5
62164	99	P	SUR	57	1	764	0	0.3	0.5	0.6
62165	99	P	SUR	54	1	457	0	0.3	0.7	0.8
62168	99	P	SUR	58	1	764	0	0.3	0.3	0.5
62170	99	P	SUR	51	2	758	0	0.6	0.2	0.6
62296	99	P	SUR	53	2	762	0	0.3	0.3	0.4
62297	99	P	SUR	59	2	1442	0	0.3	0.3	0.4
62302	99	P	SUR	61	-2	765	0	0.3	0.3	0.5
62304	99	P	SUR	51	2	769	1	0.4	0.3	0.5
62305	99	P	SUR	50	0	760	0	0.4	0.3	0.5
62442	99	P	SUR	49	-16	724	0	0.4	-0.0	0.4
62513	99	P	SUR	63	-27	744	0	0.4	-0.2	0.5
62554	99	P	SUR	38	-18	631	0	0.3	0.3	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62559	99	P	SUR	55	-10	744	3	1.4	-0.3	1.5
62940	99	P	SUR	29	-30	744	0	0.3	0.2	0.4
62941	99	P	SUR	19	-50	744	0	0.4	-0.1	0.4
6301552	99	P	SUR	78	25	743	0	0.5	-0.2	0.5
6301553	99	P	SUR	80	28	519	0	0.3	0.1	0.3
6301554	99	P	SUR	67	10	744	0	0.3	0.0	0.3
6301555	99	P	SUR	70	12	742	0	0.3	0.5	0.6
6301556	99	P	SUR	69	1	744	0	0.4	0.4	0.6
6301557	99	P	SUR	74	6	743	0	0.4	0.5	0.6
63055	99	P	SUR	61	2	765	0	0.4	0.2	0.5
63056	99	P	SUR	60	2	765	0	0.3	0.5	0.6
63057	99	P	SUR	59	2	765	0	0.3	0.1	0.3
63058	99	P	SUR	53	2	2247	0	0.3	0.5	0.5
63059	99	P	SUR	58	-1	762	0	0.3	0.6	0.7
63101	99	P	SUR	61	1	765	0	0.4	0.4	0.6
63102	99	P	SUR	61	1	764	0	0.4	0.3	0.5
63103	99	P	SUR	61	1	765	0	0.4	0.4	0.6
63104	99	P	SUR	61	2	765	0	0.4	0.8	0.8
63105	99	P	SUR	61	2	763	0	0.4	0.3	0.5
63108	99	P	SUR	61	2	746	0	0.5	0.2	0.5
63109	99	P	SUR	60	2	765	0	0.3	0.2	0.3
63110	99	P	SUR	60	2	765	0	0.3	0.0	0.3
63111	99	P	SUR	61	2	1412	0	0.4	-0.0	0.4
63112	99	P	SUR	61	1	765	0	0.4	-0.1	0.4
63115	99	P	SUR	62	1	765	0	0.5	0.3	0.5
63117	99	P	SUR	61	1	1444	0	0.4	0.6	0.7
63118	99	P	SUR	57	2	1440	0	0.3	0.1	0.3
63120	99	P	SUR	54	2	744	0	0.3	0.7	0.8
6400524	99	P	SUR	67	13	742	0	0.3	0.3	0.5
6400526	99	P	SUR	49	-38	699	0	0.5	0.1	0.5
6400528	99	P	SUR	70	36	742	0	0.3	0.2	0.4
6400551	99	P	SUR	54	-43	744	0	0.4	-0.2	0.4
6400562	99	P	SUR	64	-2	744	0	0.3	0.1	0.4
6400757	99	P	SUR	63	-28	464	464	0.0	0.0	0.0
6401501	99	P	SUR	66	1	722	0	0.3	0.2	0.4
6401508	99	P	SUR	75	10	230	0	0.5	0.4	0.7
6401550	99	P	SUR	68	12	744	0	0.3	0.1	0.3
6401555	99	P	SUR	69	-5	743	0	0.3	0.2	0.4
6401556	99	P	SUR	68	-6	744	0	0.4	0.1	0.4
6401557	99	P	SUR	66	-26	743	0	0.4	0.2	0.4
6401558	99	P	SUR	61	-8	744	0	0.3	0.4	0.5
6401559	99	P	SUR	65	-23	744	0	0.3	0.3	0.4
6401560	99	P	SUR	61	-12	85	0	0.3	0.3	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6401651	99	P	SUR	81	34	420	0	0.3	-0.2	0.4
64041	99	P	SUR	61	-3	765	0	0.4	0.3	0.5
64045	99	P	SUR	59	-12	784	0	0.4	-0.1	0.4
64046	99	P	SUR	61	-4	716	0	0.3	0.0	0.3
64524	99	P	SUR	67	13	742	0	0.3	0.3	0.5
64526	99	P	SUR	49	-38	699	0	0.5	0.1	0.5
64528	99	P	SUR	70	36	742	0	0.3	0.2	0.4
64551	99	P	SUR	54	-43	744	0	0.4	-0.2	0.4
64562	99	P	SUR	64	-2	744	0	0.3	0.1	0.4
64757	99	P	SUR	63	-28	623	623	0.0	0.0	0.0
6500519	99	P	SUR	70	33	739	0	0.4	-0.1	0.4
6500596	99	P	SUR	74	16	744	0	0.4	0.3	0.5
6500599	99	P	SUR	71	18	743	0	0.3	0.1	0.4
6500602	99	P	SUR	62	-10	744	0	0.4	0.4	0.6
6501551	99	P	SUR	54	-52	744	0	0.3	-0.0	0.3
6501552	99	P	SUR	51	-49	744	0	0.4	0.7	0.8
6501553	99	P	SUR	55	-42	744	0	0.3	0.2	0.4
6501555	99	P	SUR	65	-52	744	0	0.4	-0.3	0.5
6501556	99	P	SUR	56	-42	743	0	0.3	0.3	0.4
65519	99	P	SUR	70	33	739	0	0.4	-0.1	0.4
65596	99	P	SUR	74	16	744	0	0.4	0.3	0.5
65599	99	P	SUR	71	18	743	0	0.3	0.1	0.4
65602	99	P	SUR	62	-10	744	0	0.4	0.4	0.6

4.10 Table 22 - Drifter Monitoring Statistics (EUCOS): Wind speed (m/s)

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          DRIFTER MONITORING STATISTICS (EUCOS)
                   MONITORING CENTRE     : ECMWF
                   ELEMENT MONITORED     : WIND SPEED (M/S)
                   AREA                  : 10N - 90N, 70W - 40E
                   PERIOD                : AUG 2017
                   STANDARD OF COMPARISON: FIRST-GUESS FIELD


TIME = 99 => AVERAGE OF ALL OBSERVATIONS


GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S
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WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1300001	99	SPEED	SUR	11	-23	663	0	0	1.8	-0.1	1.8
1300002	99	SPEED	SUR	20	-23	701	0	0	0.9	0.6	1.0
1300130	99	SPEED	SUR	28	-16	708	0	0	0.9	0.1	0.9
1300131	99	SPEED	SUR	28	-17	702	0	0	2.4	2.4	3.4
4100026	99	SPEED	SUR	11	-38	329	0	0	1.6	0.5	1.7
4100139	99	SPEED	SUR	20	-38	714	0	0	0.9	0.1	1.0
4100300	99	SPEED	SUR	16	-57	547	0	0	1.1	-0.4	1.1
41026	99	SPEED	SUR	12	-38	329	0	0	1.6	0.5	1.7
41040	99	SPEED	SUR	15	-53	1423	0	0	1.1	0.2	1.1
41041	99	SPEED	SUR	14	-46	1346	0	0	1.2	0.3	1.2
41043	99	SPEED	SUR	21	-65	1432	0	0	1.0	-0.4	1.1
41044	99	SPEED	SUR	22	-59	1455	0	0	0.9	-0.5	1.0
41046	99	SPEED	SUR	24	-68	1447	0	0	1.0	-0.5	1.1
41048	99	SPEED	SUR	32	-70	1449	0	0	1.3	-0.2	1.3
41049	99	SPEED	SUR	28	-63	745	0	0	1.0	-0.3	1.1
41052	99	SPEED	SUR	18	-65	1764	0	0	1.1	-0.5	1.2
41053	99	SPEED	SUR	19	-66	1819	0	0	1.5	0.3	1.5
41056	99	SPEED	SUR	18	-66	1803	0	0	1.4	-0.8	1.6
41058	99	SPEED	SUR	19	-65	792	0	0	1.2	-0.8	1.4
41300	99	SPEED	SUR	16	-57	547	0	0	1.1	-0.3	1.2
42059	99	SPEED	SUR	15	-68	1428	0	0	1.0	-0.2	1.0
42060	99	SPEED	SUR	16	-63	1423	0	0	1.2	-0.1	1.2
42085	99	SPEED	SUR	18	-67	1580	0	0	1.5	-0.2	1.5
42088	99	SPEED	SUR	11	-61	1533	0	0	1.5	-1.8	2.3
44008	99	SPEED	SUR	41	-69	746	0	0	1.6	-0.3	1.6
44032	99	SPEED	SUR	44	-69	683	0	0	1.4	-0.9	1.6
44033	99	SPEED	SUR	44	-69	694	0	0	1.4	-0.3	1.5
44034	99	SPEED	SUR	44	-68	663	0	0	1.4	-1.2	1.8
44037	99	SPEED	SUR	44	-68	694	0	0	1.3	-0.3	1.3
44139	99	SPEED	SUR	44	-57	738	0	0	1.3	-0.3	1.3
44258	99	SPEED	SUR	45	-63	740	0	0	1.4	0.0	1.4
45138	99	SPEED	SUR	50	-66	725	0	0	1.6	-0.2	1.6
6100001	99	SPEED	SUR	43	8	743	0	0	1.5	0.1	1.5
6100002	99	SPEED	SUR	42	5	743	0	0	1.1	0.3	1.1

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
61001	99	SPEED	SUR	43	8	744	0	0	1.6	-0.1	1.7
6100196	99	SPEED	SUR	42	4	607	0	0	1.5	-1.4	2.1
6100197	99	SPEED	SUR	40	4	699	0	0	1.2	-0.3	1.3
6100198	99	SPEED	SUR	37	-2	697	0	0	1.6	-0.7	1.8
61002	99	SPEED	SUR	42	5	744	0	0	1.2	-0.2	1.2
6100280	99	SPEED	SUR	41	1	670	0	0	1.7	-0.8	1.9
6100281	99	SPEED	SUR	40	0	697	0	0	1.8	0.2	1.8
6100417	99	SPEED	SUR	38	0	705	0	0	1.4	-0.7	1.5
6100430	99	SPEED	SUR	40	2	701	0	0	1.9	0.1	1.9
6101001	99	SPEED	SUR	38	24	230	0	0	1.6	-0.8	1.8
6101003	99	SPEED	SUR	40	25	207	0	0	2.2	-1.8	2.8
6101007	99	SPEED	SUR	36	25	230	0	0	1.3	-0.4	1.4
6101008	99	SPEED	SUR	37	22	199	0	0	1.6	-0.4	1.6
6200024	99	SPEED	SUR	44	-3	694	0	0	1.3	-0.2	1.3
6200025	99	SPEED	SUR	44	-6	699	0	0	1.6	-0.5	1.7
6200082	99	SPEED	SUR	44	-8	674	0	0	1.4	-0.5	1.5
6200083	99	SPEED	SUR	43	-9	707	0	0	1.1	0.2	1.1
6200084	99	SPEED	SUR	42	-9	693	0	0	1.1	-0.5	1.2
6200085	99	SPEED	SUR	36	-7	704	0	0	1.6	-0.5	1.7
6200091	99	SPEED	SUR	53	-5	744	0	0	1.3	-0.2	1.3
6200093	99	SPEED	SUR	55	-10	744	0	0	1.0	-0.4	1.1
6200094	99	SPEED	SUR	52	-7	744	0	0	1.0	0.1	1.0
62001	99	SPEED	SUR	45	-5	741	0	0	1.1	0.7	1.2
6200199	99	SPEED	SUR	40	-9	642	0	0	1.5	-1.3	2.0
6201030	99	SPEED	SUR	44	-4	575	0	0	1.1	-0.3	1.2
62023	99	SPEED	SUR	51	-8	740	0	0	1.6	-0.0	1.6
62027	99	SPEED	SUR	49	-2	211	0	0	1.1	0.3	1.1
62050	99	SPEED	SUR	50	-4	743	0	0	1.1	0.4	1.2
62095	99	SPEED	SUR	53	-16	761	0	0	1.1	0.1	1.1
62102	99	SPEED	SUR	58	2	764	0	0	1.1	-0.2	1.2
62103	99	SPEED	SUR	50	-3	761	0	0	1.3	1.0	1.6
62104	99	SPEED	SUR	57	1	765	0	0	1.0	-0.5	1.1
62105	99	SPEED	SUR	55	-13	678	0	0	1.2	0.4	1.3
62107	99	SPEED	SUR	50	-6	1442	0	0	1.2	0.9	1.5
62111	99	SPEED	SUR	58	0	762	0	0	1.3	-0.2	1.3
62112	99	SPEED	SUR	58	0	765	0	0	1.8	-1.2	2.1
62113	99	SPEED	SUR	58	0	765	0	0	1.4	0.0	1.4
62114	99	SPEED	SUR	58	0	1445	0	0	1.3	0.2	1.3
62117	99	SPEED	SUR	58	0	208	0	0	1.0	-0.2	1.0
62118	99	SPEED	SUR	58	1	225	0	0	1.1	0.3	1.2
62119	99	SPEED	SUR	57	2	764	0	0	1.3	-0.7	1.5

DRIFTER MONITORING STATISTICS (EUCOS)
MONITORING CENTRE : ECMWF
ELEMENT MONITORED : WIND SPEED (M/S) (CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62120	99	SPEED	SUR	56	2	761	0	0	1.0	-0.2	1.0
62121	99	SPEED	SUR	54	3	735	0	0	1.1	-0.3	1.1
62122	99	SPEED	SUR	57	2	1445	0	0	0.9	-0.3	1.0
62129	99	SPEED	SUR	58	0	765	0	0	1.3	-0.2	1.3
62131	99	SPEED	SUR	54	1	761	0	0	1.4	-0.2	1.4
62132	99	SPEED	SUR	56	2	765	0	0	1.9	-1.2	2.3
62133	99	SPEED	SUR	57	1	764	0	0	1.1	-0.2	1.1
62134	99	SPEED	SUR	58	1	765	0	0	1.2	-0.1	1.2
62143	99	SPEED	SUR	58	2	765	0	0	1.9	-1.3	2.3
62144	99	SPEED	SUR	53	2	764	0	0	1.6	-0.6	1.7
62145	99	SPEED	SUR	53	3	1440	0	0	1.3	0.1	1.3
62146	99	SPEED	SUR	57	2	703	0	0	1.4	-0.4	1.4
62148	99	SPEED	SUR	54	2	763	0	0	1.5	-0.3	1.6
62149	99	SPEED	SUR	54	1	764	0	0	1.4	0.1	1.4
62150	99	SPEED	SUR	54	1	601	0	0	1.5	-0.7	1.7
62152	99	SPEED	SUR	57	2	765	0	0	1.2	-1.3	1.7
62153	99	SPEED	SUR	57	2	1445	0	0	2.1	-1.5	2.5
62154	99	SPEED	SUR	56	2	765	0	0	1.0	-0.5	1.1
62155	99	SPEED	SUR	58	1	668	0	0	1.0	0.0	1.0
62163	99	SPEED	SUR	48	-8	739	0	0	0.9	0.3	1.0
62164	99	SPEED	SUR	57	1	764	0	0	1.4	-1.0	1.7
62165	99	SPEED	SUR	54	1	458	0	0	1.6	-0.6	1.7
62170	99	SPEED	SUR	51	2	758	0	0	1.7	1.5	2.3
62304	99	SPEED	SUR	51	2	764	0	0	1.6	1.0	1.9
62305	99	SPEED	SUR	50	0	760	0	0	1.4	1.2	1.8
62442	99	SPEED	SUR	49	-16	723	0	0	1.0	0.1	1.0
63055	99	SPEED	SUR	61	2	765	0	0	1.3	-1.3	1.9
63056	99	SPEED	SUR	60	2	765	0	0	1.1	-0.3	1.1
63057	99	SPEED	SUR	59	2	765	0	0	1.5	-0.2	1.5
63058	99	SPEED	SUR	53	2	1479	0	0	1.3	0.1	1.3
63101	99	SPEED	SUR	61	1	765	0	0	1.3	-0.4	1.4
63103	99	SPEED	SUR	61	1	765	0	0	1.4	-0.2	1.4
63104	99	SPEED	SUR	61	2	765	0	0	1.2	-0.4	1.3
63105	99	SPEED	SUR	61	2	763	0	0	1.3	-0.4	1.4
63106	99	SPEED	SUR	61	2	764	0	0	1.3	-0.2	1.3
63108	99	SPEED	SUR	61	2	746	0	0	1.5	-0.2	1.5
63109	99	SPEED	SUR	60	2	758	0	0	1.1	-0.1	1.2
63110	99	SPEED	SUR	60	2	765	0	0	1.2	-0.6	1.3
63112	99	SPEED	SUR	61	1	765	0	0	1.2	-0.6	1.4
63113	99	SPEED	SUR	61	2	763	0	0	1.2	-0.5	1.3
63115	99	SPEED	SUR	62	1	765	0	0	1.2	-0.5	1.3

DRIFTER MONITORING STATISTICS (EUCOS)
MONITORING CENTRE : ECMWF
ELEMENT MONITORED : WIND SPEED (M/S) (CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
63117	99	SPEED	SUR	61	1	1444	0	0	1.4	-0.3	1.5
64041	99	SPEED	SUR	61	-3	764	0	0	1.2	-0.2	1.2
64045	99	SPEED	SUR	59	-12	603	0	0	1.1	0.1	1.1
64046	99	SPEED	SUR	61	-4	556	0	0	1.0	0.3	1.0
66021	99	SPEED	SUR	55	14	132	0	0	1.3	0.2	1.3
66022	99	SPEED	SUR	54	14	291	0	0	1.5	-0.4	1.5
66024	99	SPEED	SUR	55	13	720	0	0	1.3	-0.0	1.3

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

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          DRIFTER MONITORING STATISTICS (EUCOS)
                   MONITORING CENTRE     : ECMWF
                   ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                   AREA                  : 10N - 90N, 70W - 40E
                   PERIOD                : AUG 2017
                   STANDARD OF COMPARISON: FIRST-GUESS FIELD


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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1300001	99	DIRN	SUR	11	-23	519	0	0	30.1	2.4	30.2
1300002	99	DIRN	SUR	20	-23	671	0	0	11.3	2.8	11.6
1300130	99	DIRN	SUR	28	-16	697	0	0	12.2	2.9	12.5
1300131	99	DIRN	SUR	28	-17	308	0	0	33.4	12.2	35.6
4100026	99	DIRN	SUR	11	-38	182	0	0	31.7	-2.6	31.8
41001	99	DIRN	SUR	35	-73	731	0	0	19.2	11.2	22.3
4100139	99	DIRN	SUR	20	-38	713	0	0	9.1	4.2	10.0
41002	99	DIRN	SUR	32	-75	558	0	0	27.1	9.5	28.7
4100300	99	DIRN	SUR	16	-57	518	0	0	12.8	-12.4	17.8
41004	99	DIRN	SUR	33	-79	1107	0	0	26.6	9.0	28.1
41008	99	DIRN	SUR	31	-81	644	0	0	22.9	10.2	25.0
41009	99	DIRN	SUR	29	-80	889	0	0	23.4	4.9	23.9
41010	99	DIRN	SUR	29	-79	1146	0	0	17.1	1.7	17.2
41013	99	DIRN	SUR	33	-78	1026	0	0	23.8	10.2	25.9
41024	99	DIRN	SUR	34	-79	463	0	0	26.3	-12.7	29.2
41025	99	DIRN	SUR	35	-75	553	0	0	23.9	3.2	24.1
41026	99	DIRN	SUR	12	-38	164	0	0	30.7	-2.6	30.8
41029	99	DIRN	SUR	33	-80	636	0	0	30.2	-1.8	30.2
41033	99	DIRN	SUR	32	-80	514	0	0	28.2	-2.6	28.3
41037	99	DIRN	SUR	34	-77	493	0	0	25.9	2.9	26.0
41038	99	DIRN	SUR	34	-78	500	0	0	28.3	0.6	28.3
41040	99	DIRN	SUR	15	-53	1260	0	0	11.7	-3.6	12.2
41041	99	DIRN	SUR	14	-46	1088	0	0	15.4	-4.0	15.9
41043	99	DIRN	SUR	21	-65	1371	0	0	9.3	-4.0	10.2
41044	99	DIRN	SUR	22	-59	1377	0	0	10.4	3.0	10.8
41046	99	DIRN	SUR	24	-68	1298	0	0	12.1	2.7	12.4
41047	99	DIRN	SUR	28	-72	941	0	0	15.1	-4.9	15.9
41048	99	DIRN	SUR	32	-70	1089	0	0	17.4	-6.2	18.5
41049	99	DIRN	SUR	28	-63	429	0	0	15.3	6.7	16.7
41052	99	DIRN	SUR	18	-65	1732	0	0	14.2	8.7	16.6
41053	99	DIRN	SUR	19	-66	1397	0	0	15.9	5.2	16.7
41056	99	DIRN	SUR	18	-66	1705	0	0	15.5	5.5	16.5

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
41058	99	DIRN	SUR	19	-65	784	0	0	13.9	-9.1	16.6
41062	99	DIRN	SUR	36	-75	16	0	0	88.5	-5.0	88.7
41063	99	DIRN	SUR	35	-76	698	0	0	27.6	-5.1	28.1
41064	99	DIRN	SUR	34	-77	462	0	0	23.2	-4.3	23.6
41300	99	DIRN	SUR	16	-57	518	0	0	14.5	-12.3	19.0
42013	99	DIRN	SUR	27	-83	552	0	0	33.0	3.1	33.2
42023	99	DIRN	SUR	26	-83	585	0	0	56.2	-4.4	56.3
42036	99	DIRN	SUR	29	-85	401	0	0	27.6	2.6	27.8
42056	99	DIRN	SUR	20	-85	1323	0	0	14.3	3.8	14.8
42057	99	DIRN	SUR	17	-81	1453	0	0	19.0	5.4	19.8
42058	99	DIRN	SUR	15	-75	1453	0	0	9.3	8.5	12.6
42059	99	DIRN	SUR	15	-68	1420	0	0	11.5	5.7	12.8
42060	99	DIRN	SUR	16	-63	1355	0	0	12.9	5.9	14.2
42085	99	DIRN	SUR	18	-67	1470	0	0	16.0	11.2	19.5
42088	99	DIRN	SUR	11	-61	596	0	0	30.7	-9.5	32.2
44007	99	DIRN	SUR	44	-70	416	0	0	22.9	5.3	23.5
44008	99	DIRN	SUR	41	-69	388	0	0	24.0	14.0	27.8
44009	99	DIRN	SUR	39	-75	520	0	0	18.9	12.6	22.7
44013	99	DIRN	SUR	42	-71	474	0	0	26.3	17.6	31.6
44014	99	DIRN	SUR	37	-75	460	0	0	20.7	3.2	21.0
44020	99	DIRN	SUR	41	-70	314	0	0	22.6	1.6	22.6
44022	99	DIRN	SUR	41	-74	44	0	0	18.2	4.7	18.8
44025	99	DIRN	SUR	40	-73	354	0	0	24.7	0.9	24.8
44029	99	DIRN	SUR	43	-71	564	0	0	28.6	7.3	29.5
44030	99	DIRN	SUR	43	-70	379	0	0	25.2	4.0	25.5
44032	99	DIRN	SUR	44	-69	305	0	0	20.3	14.2	24.8
44033	99	DIRN	SUR	44	-69	240	0	0	26.0	-1.2	26.1
44034	99	DIRN	SUR	44	-68	252	0	0	18.3	12.1	21.9
44037	99	DIRN	SUR	44	-68	451	0	0	14.7	36.2	39.1
44039	99	DIRN	SUR	41	-73	78	0	0	26.6	3.9	26.9
44040	99	DIRN	SUR	41	-74	53	0	0	19.8	-1.8	19.9
44041	99	DIRN	SUR	37	-77	138	0	0	24.5	-14.9	28.7
44042	99	DIRN	SUR	38	-76	751	0	0	22.8	-9.3	24.6
44043	99	DIRN	SUR	39	-76	598	0	0	25.9	-8.3	27.1
44057	99	DIRN	SUR	40	-76	244	0	0	18.4	2.4	18.6
44058	99	DIRN	SUR	38	-76	743	0	0	20.3	-25.2	32.3
44062	99	DIRN	SUR	39	-76	736	0	0	28.3	-20.1	34.7
44063	99	DIRN	SUR	39	-76	572	0	0	67.5	-14.9	69.1
44065	99	DIRN	SUR	40	-74	507	0	0	24.6	4.2	25.0
44066	99	DIRN	SUR	40	-73	463	0	0	26.2	6.4	26.9
44069	99	DIRN	SUR	41	-73	480	0	0	24.0	-2.2	24.1

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
44072	99	DIRN	SUR	37	-76	785	0	0	24.4	-12.4	27.4
44139	99	DIRN	SUR	44	-57	639	0	0	15.0	8.7	17.3
44258	99	DIRN	SUR	45	-63	496	0	0	18.8	6.3	19.8
45003	99	DIRN	SUR	45	-83	515	0	0	22.9	1.7	23.0
45005	99	DIRN	SUR	42	-82	939	0	0	24.9	5.3	25.4
45008	99	DIRN	SUR	44	-82	773	0	0	19.1	1.2	19.2
45012	99	DIRN	SUR	44	-77	527	0	0	24.7	7.2	25.8
45132	99	DIRN	SUR	43	-81	533	0	0	23.8	-0.2	23.8
45135	99	DIRN	SUR	44	-77	678	0	0	22.7	0.9	22.7
45137	99	DIRN	SUR	46	-81	513	0	0	20.1	9.7	22.3
45138	99	DIRN	SUR	50	-66	502	0	0	23.3	3.3	23.5
45139	99	DIRN	SUR	43	-80	379	0	0	22.6	2.8	22.8
45142	99	DIRN	SUR	43	-79	531	0	0	25.4	-5.2	25.9
45143	99	DIRN	SUR	45	-81	747	0	0	20.2	3.2	20.5
45147	99	DIRN	SUR	42	-83	387	0	0	26.1	3.4	26.3
45149	99	DIRN	SUR	44	-82	434	0	0	24.5	-1.5	24.5
45151	99	DIRN	SUR	45	-79	425	0	0	18.3	4.4	18.8
45152	99	DIRN	SUR	46	-80	362	0	0	28.1	-4.8	28.5
45154	99	DIRN	SUR	46	-83	609	0	0	28.5	25.3	38.2
45159	99	DIRN	SUR	44	-79	54	0	0	24.1	20.1	31.4
45162	99	DIRN	SUR	45	-83	482	0	0	20.6	-3.9	20.9
45163	99	DIRN	SUR	44	-84	475	0	0	19.7	-1.0	19.8
45164	99	DIRN	SUR	42	-82	381	0	0	27.6	-9.8	29.3
45165	99	DIRN	SUR	42	-83	655	0	0	30.7	15.1	34.2
45166	99	DIRN	SUR	45	-73	164	0	0	18.9	-45.1	48.9
45167	99	DIRN	SUR	42	-80	623	0	0	27.7	-13.3	30.7
45169	99	DIRN	SUR	42	-82	759	0	0	26.2	-14.0	29.7
45175	99	DIRN	SUR	46	-85	808	0	0	32.5	-18.3	37.3
45176	99	DIRN	SUR	42	-82	794	0	0	27.0	-14.6	30.7
45178	99	DIRN	SUR	45	-73	706	0	0	32.3	-6.7	33.0
6100198	99	DIRN	SUR	37	-2	429	0	0	22.1	-5.2	22.7
6100281	99	DIRN	SUR	40	0	248	0	0	49.3	-5.8	49.7
6100417	99	DIRN	SUR	38	0	414	0	0	18.6	5.7	19.5
6200024	99	DIRN	SUR	44	-3	380	0	0	26.1	-0.1	26.1
6200025	99	DIRN	SUR	44	-6	406	0	0	16.5	1.4	16.5
6200082	99	DIRN	SUR	44	-8	539	0	0	61.5	46.7	77.2
6200083	99	DIRN	SUR	43	-9	586	0	0	10.9	-0.2	10.9
6200084	99	DIRN	SUR	42	-9	498	0	0	11.0	5.2	12.2
6200085	99	DIRN	SUR	36	-7	369	0	0	18.5	7.4	19.9
6200091	99	DIRN	SUR	53	-5	616	0	0	13.1	4.8	14.0
6200093	99	DIRN	SUR	55	-10	706	0	0	12.9	-0.5	12.9

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
6200094	99	DIRN	SUR	52	-7	655	0	0	11.6	2.0	11.7
62001	99	DIRN	SUR	45	-5	540	0	0	12.5	2.0	12.7
6200199	99	DIRN	SUR	40	-9	359	0	0	12.8	-5.8	14.0
6201030	99	DIRN	SUR	44	-4	368	0	0	22.3	-11.5	25.1
62023	99	DIRN	SUR	51	-8	683	0	0	11.7	11.0	16.0
62027	99	DIRN	SUR	49	-2	164	0	0	18.0	-7.8	19.6
62050	99	DIRN	SUR	50	-4	608	0	0	11.9	1.3	12.0
62095	99	DIRN	SUR	53	-16	656	0	0	13.4	8.6	15.9
62103	99	DIRN	SUR	50	-3	646	0	0	16.1	6.5	17.3
62105	99	DIRN	SUR	55	-13	596	0	0	12.3	5.1	13.3
62107	99	DIRN	SUR	50	-6	1261	0	0	13.4	1.2	13.4
62111	99	DIRN	SUR	58	0	668	0	0	16.4	-4.1	16.9
62112	99	DIRN	SUR	58	0	608	0	0	15.2	2.6	15.4
62114	99	DIRN	SUR	58	0	1273	0	0	14.1	-0.8	14.2
62117	99	DIRN	SUR	58	0	200	0	0	30.2	1.8	30.3
62163	99	DIRN	SUR	48	-8	645	0	0	11.6	-0.4	11.6
62305	99	DIRN	SUR	50	0	583	0	0	24.2	3.4	24.4
62442	99	DIRN	SUR	49	-16	672	0	0	13.3	-5.1	14.2
64041	99	DIRN	SUR	61	-3	618	0	0	11.2	9.7	14.8
64045	99	DIRN	SUR	59	-12	541	0	0	16.3	7.7	18.0
64046	99	DIRN	SUR	61	-4	503	0	0	10.5	-2.8	10.8

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASDE01	ASDE02	ASDE09	ASDK01	ASDK02	ASDK03	ASES01	ASEU01	ASEU02
ASEU04	ASEU05	ASEU06	ASFR1	ASFR2	ASFR3	ASFR4	DBLK	01001
01004	01010	01028	01241	01400	01415	01492	02185	02365
02527	02591	02836	02963	03005	03238	03354	03502	03743
03808	03882	03918	03953	04220	04270	04320	04339	04360
06011	06260	06610	07101	07110	07145	07510	07645	07761
08001	08023	08190	08221	08302	08430	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	16045	16080	16113
16144	16245	16320	16429	16546	16622	16754	17351	17607
33008	40179	43599	47102	47104	47138	47155	47169	47186
60018	61901	61980	61998	68442	68592	68816	68842	76903
78897	78954	81405	85442	85469	85586	85799	85934	88889
89002	89564	89571	89611	89642	89859	91592	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

ASDE01	ASDE02	ASDE09	ASDK01	ASDK02	ASDK03	ASES01	ASEU01	ASEU02
ASEU04	ASEU05	ASEU06	ASFR1	ASFR2	ASFR3	ASFR4	DBLK	DSQL7
07101	08098	14101	15105	17607	19099	33008	47155	48453
76903	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.