ECMWF Global Data Monitoring Report

March 2015

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 27 (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 26 (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 25 (Dec 14) – Coverage chart for ATOVS AMSU-A for Noaa_16 removed

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	Feb	Mar	Ident	Time	Feb	Mar
42165	(00)	20	2	02527	(00)	17	43
42339	(00)	26	4	02591	(00)	23	43
43279	(00)	24	3	02591	(12)	26	39
43311	(00)	11	0	03005	(00)	29	47
61291	(00)	16	0	03005	(12)	28	47
61291	(12)	18	0	03808	(00)	30	53
64650	(00)	20	2	03808	(12)	29	50
64650	(12)	24	2	03882	(00)	22	36
82400	(00)	27	6	04417	(12)	25	38
82400	(12)	28	8	04692	(00)	0	24
83229	(12)	24	0	04692	(12)	0	27
83288	(12)	12	0	30554	(12)	19	31
83827	(00)	27	8	32098	(12)	19	31
83827	(12)	27	8	33837	(00)	15	27
89009	(12)	28	5	40265	(00)	20	31
-	-	-	-	40373	(00)	14	25
-	-	-	-	40650	(00)	2	18
-	-	-	-	43150	(00)	0	24
-	-	-	-	43599	(12)	0	20
-	-	-	-	44292	(12)	0	30
-	-	-	-	48565	(00)	12	25
-	-	-	-	62337	(12)	16	27
-	-	-	-	62423	(12)	0	16
-	-	-	-	67774	(00)	1	28
-	-	-	-	70414	(00)	1	19
-	-	-	-	74004	(12)	24	36
-	-	-	-	74646	(00)	0	27
-	-	-	-	74646	(12)	0	29
-	-	-	-	76595	(12)	3	28
-	-	-	-	78397	(12)	0	16
-	-	-	-	78866	(12)	13	30
-	-	-	-	81405	(12)	33	46
-	-	-	-	87344	(12)	8	31
-	-	-	-	87860	(12)	14	31
-	-	-	-	89002	(12)	0	28

2.2 Drifting Buoys

Surface pressure observations from **1479** 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

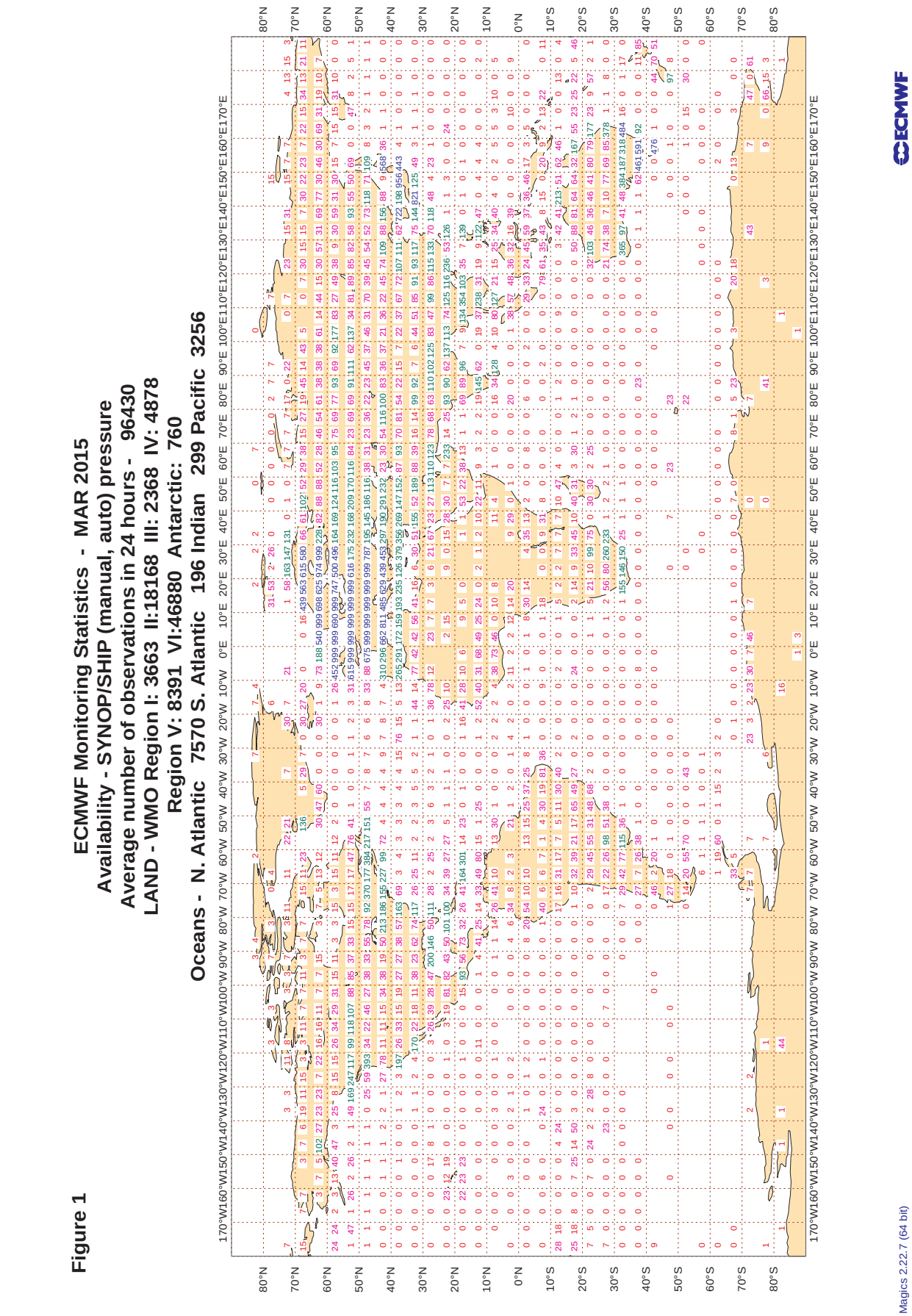


Figure 1

3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

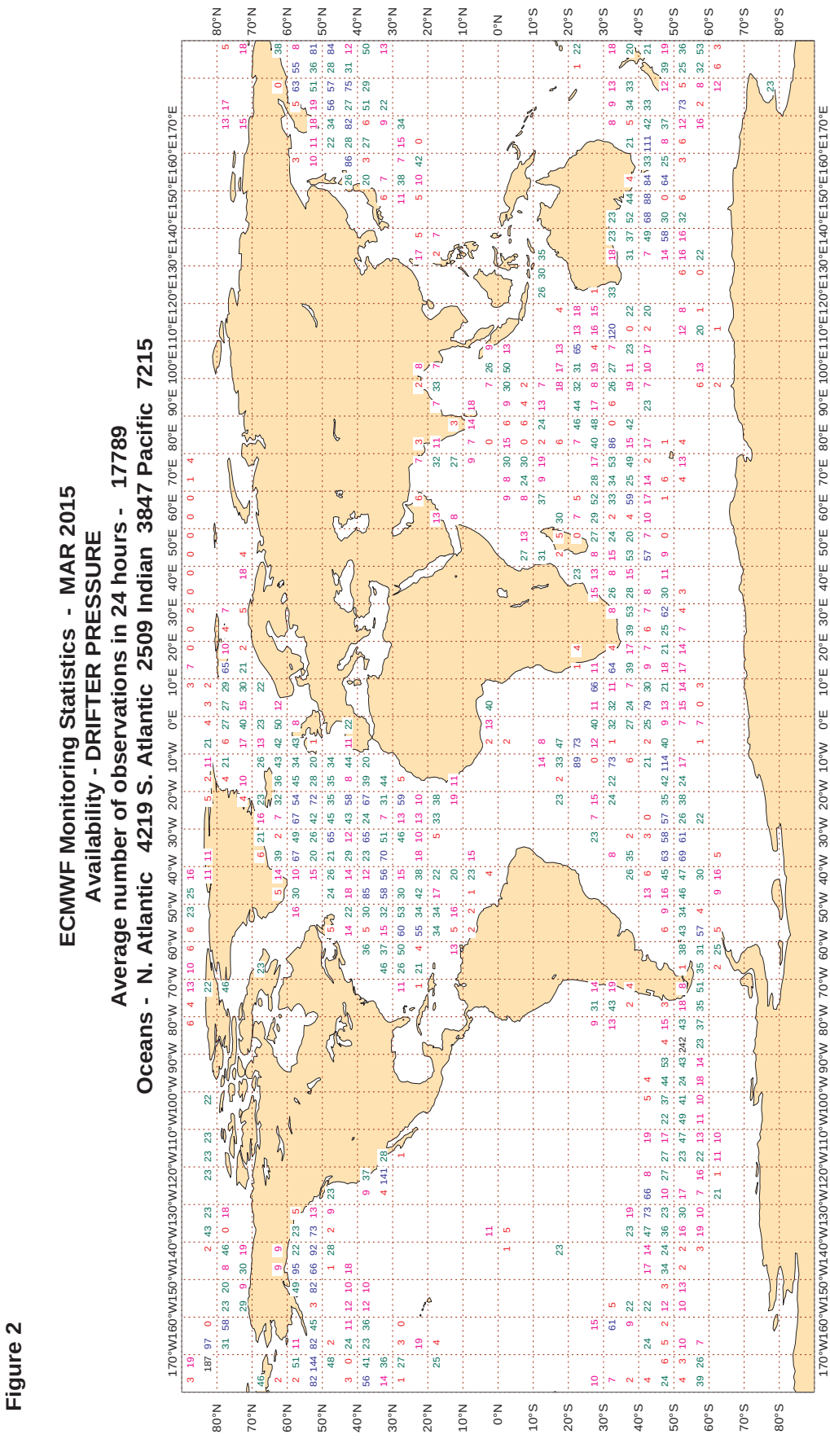


Figure 2

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

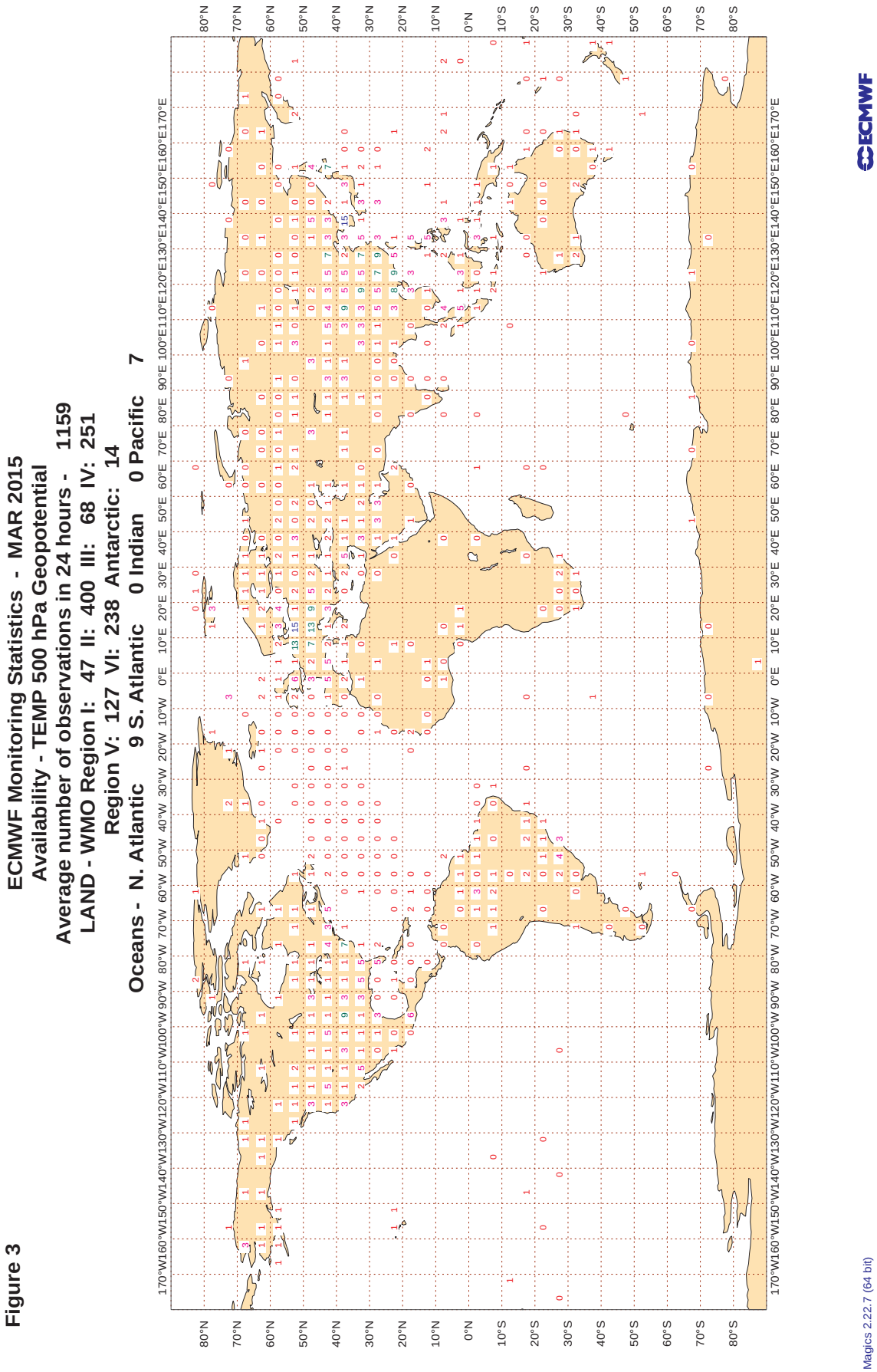


Figure 3

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

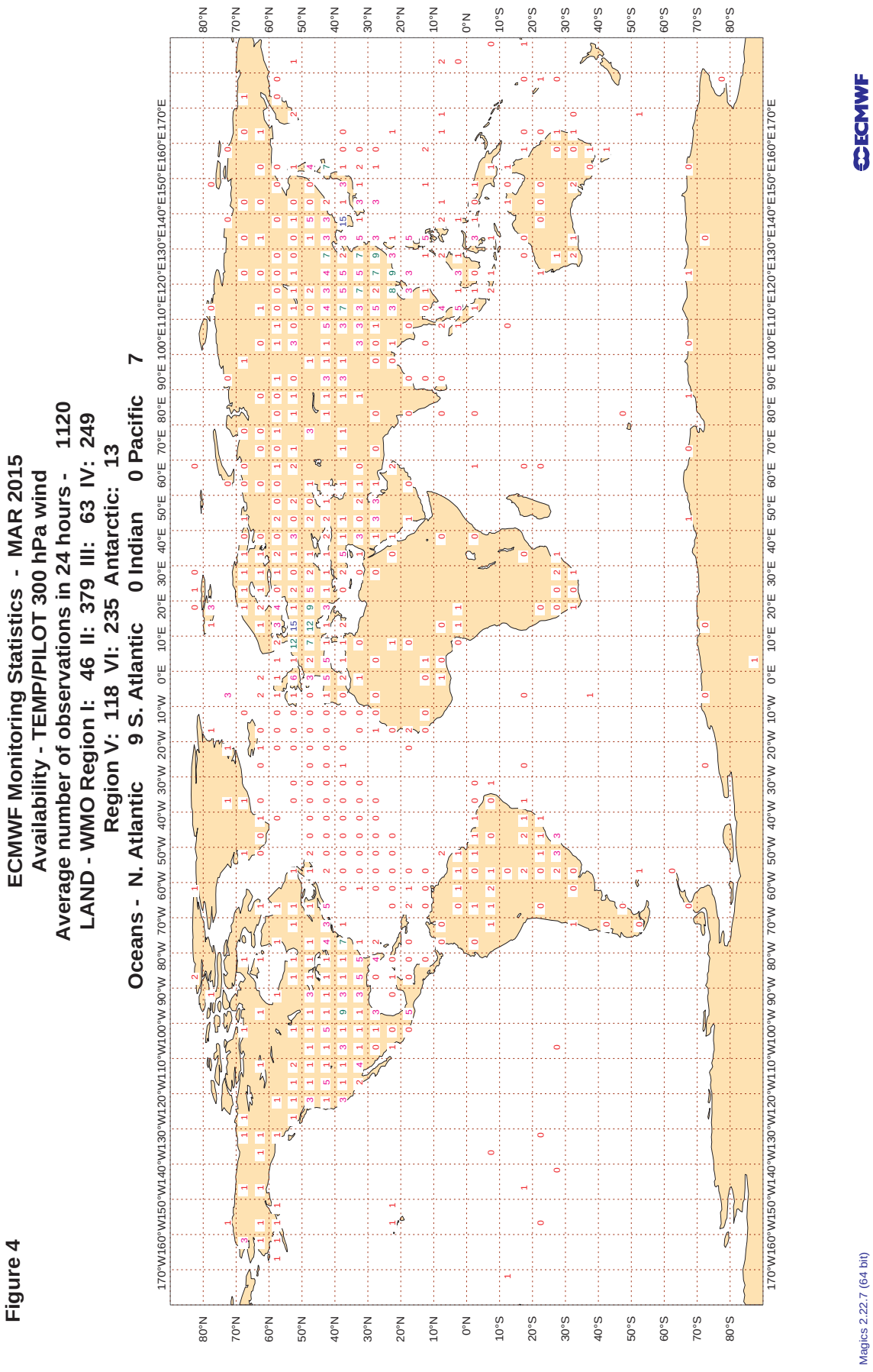


Figure 4

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

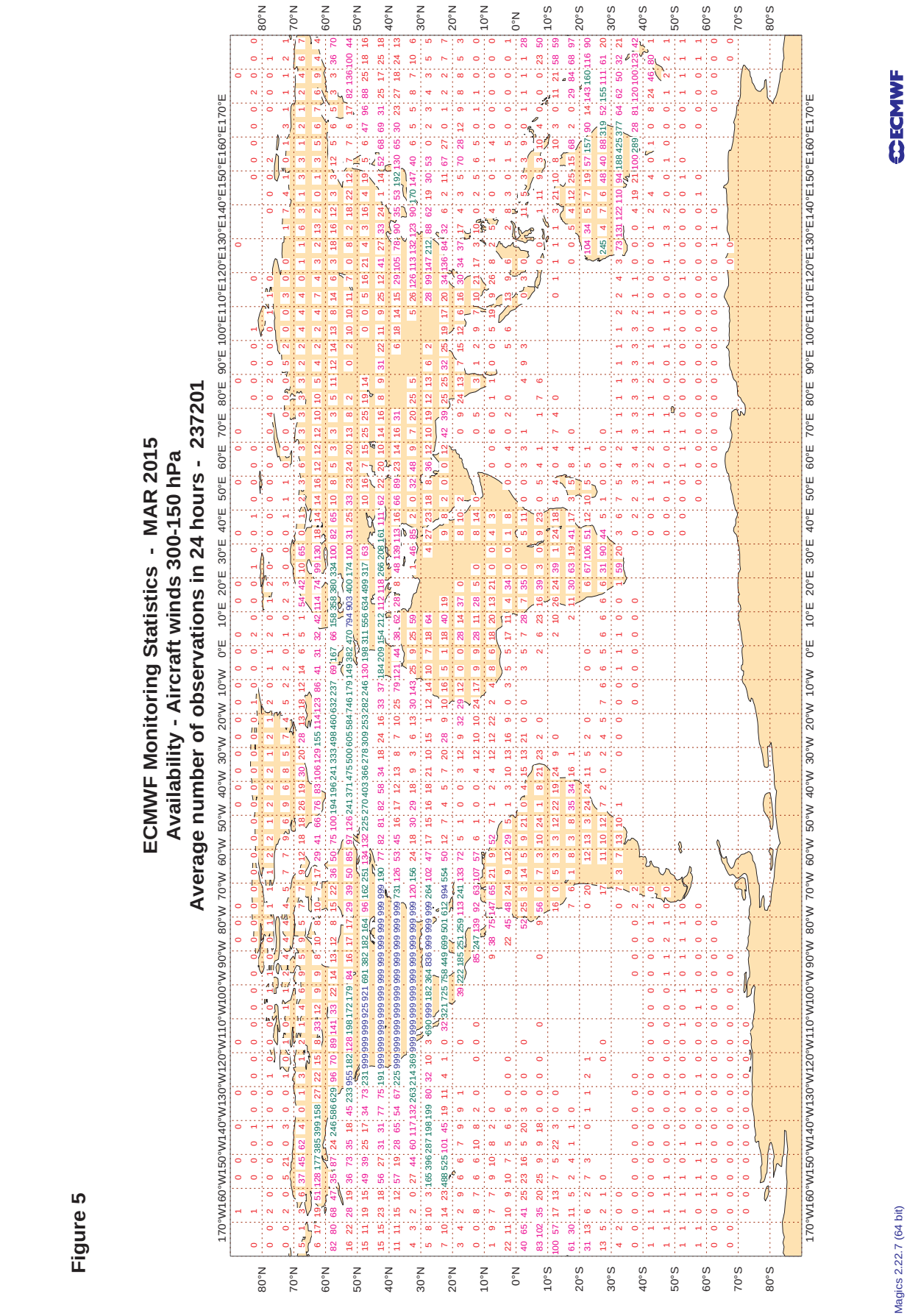


Figure 5

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

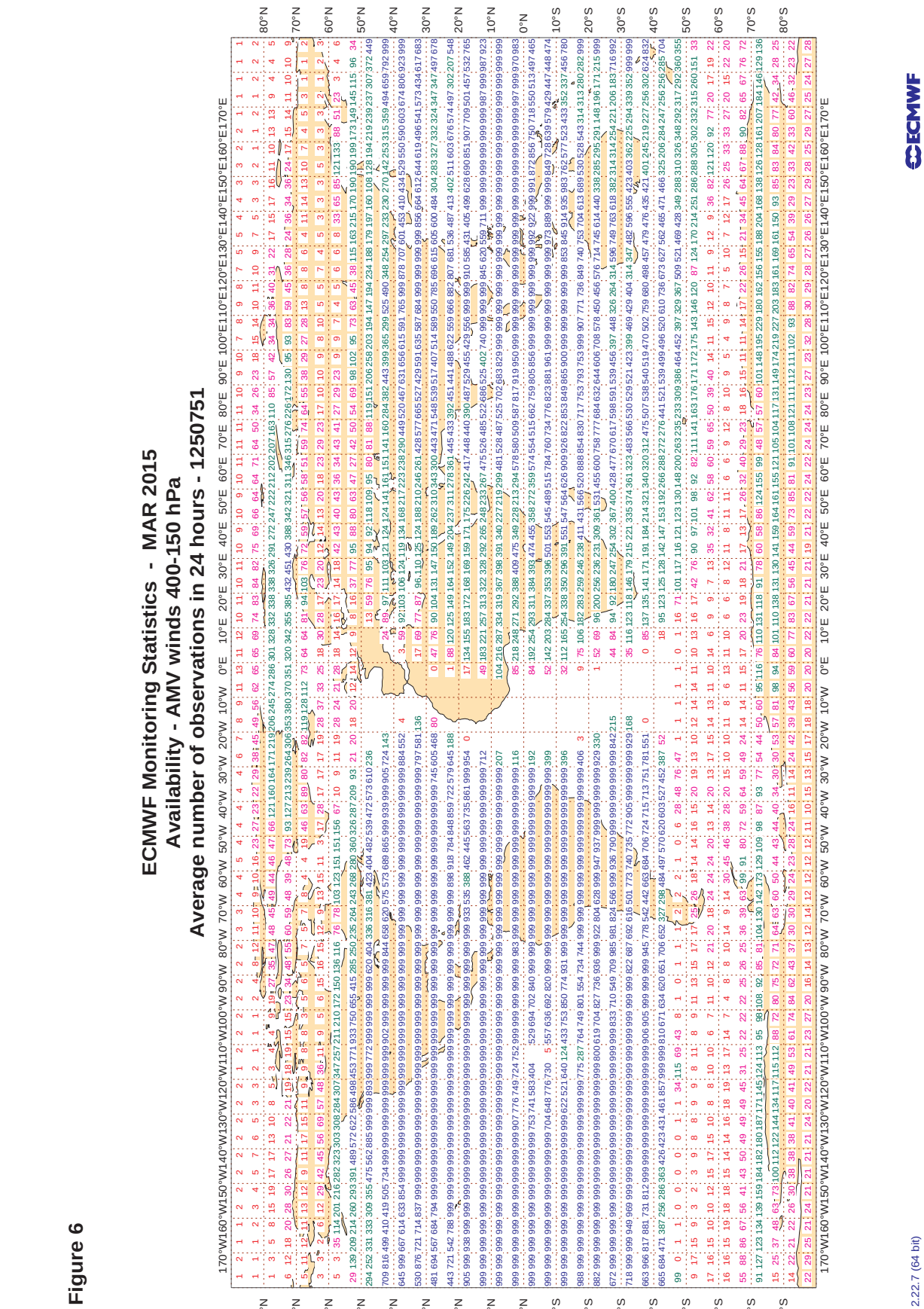


Figure 6

Magics 2.22.7 (64 bit)

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

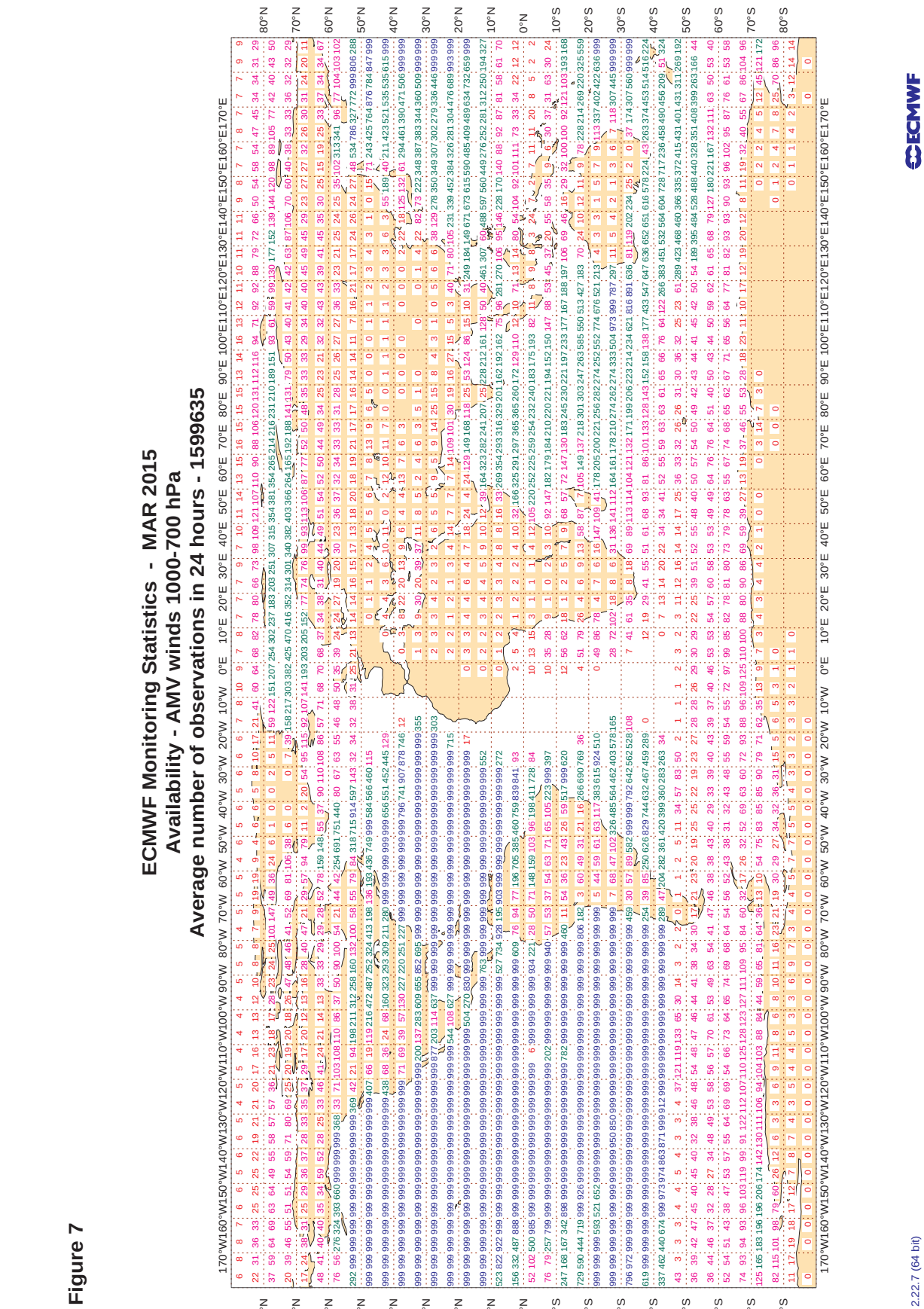
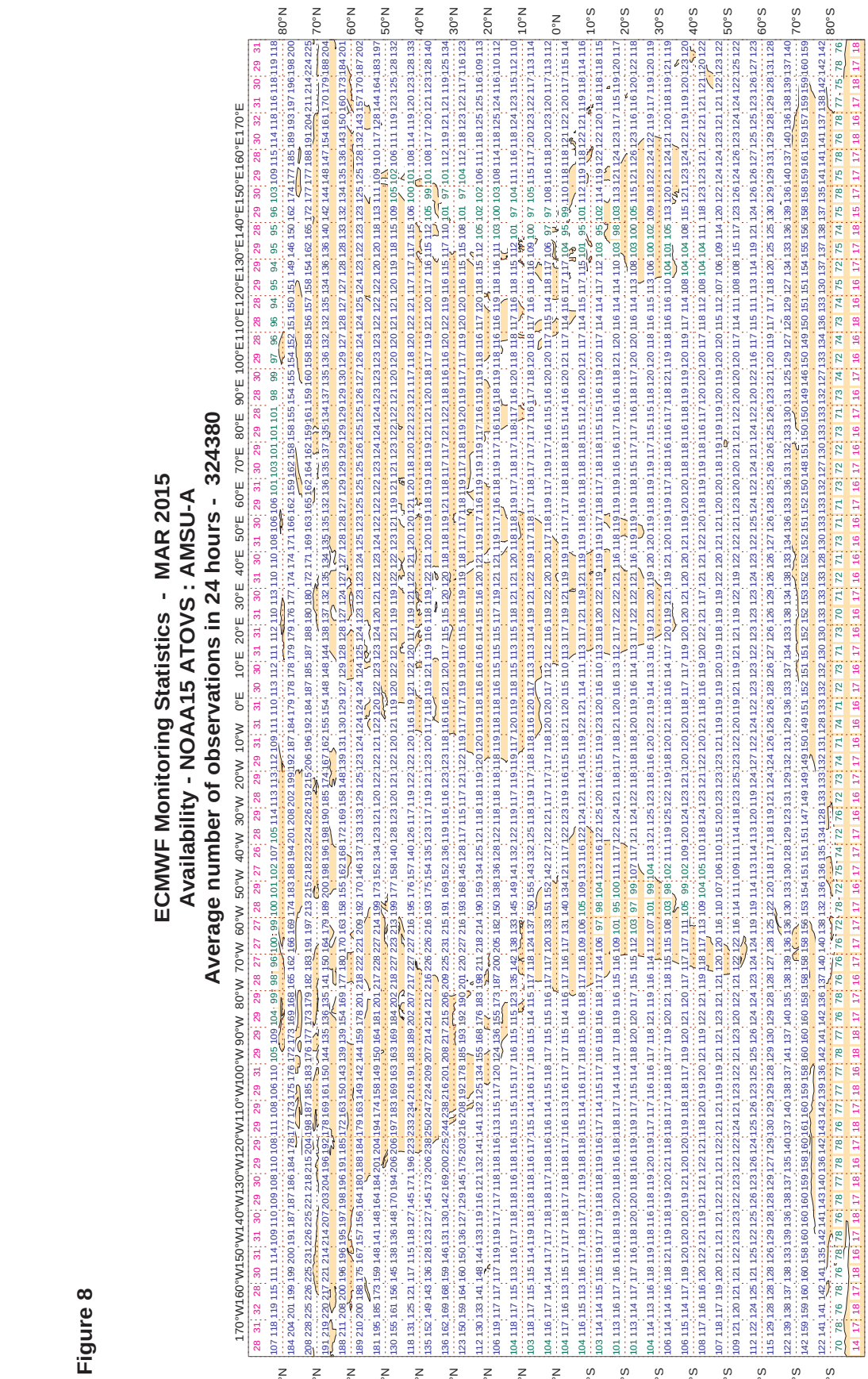


Figure 7

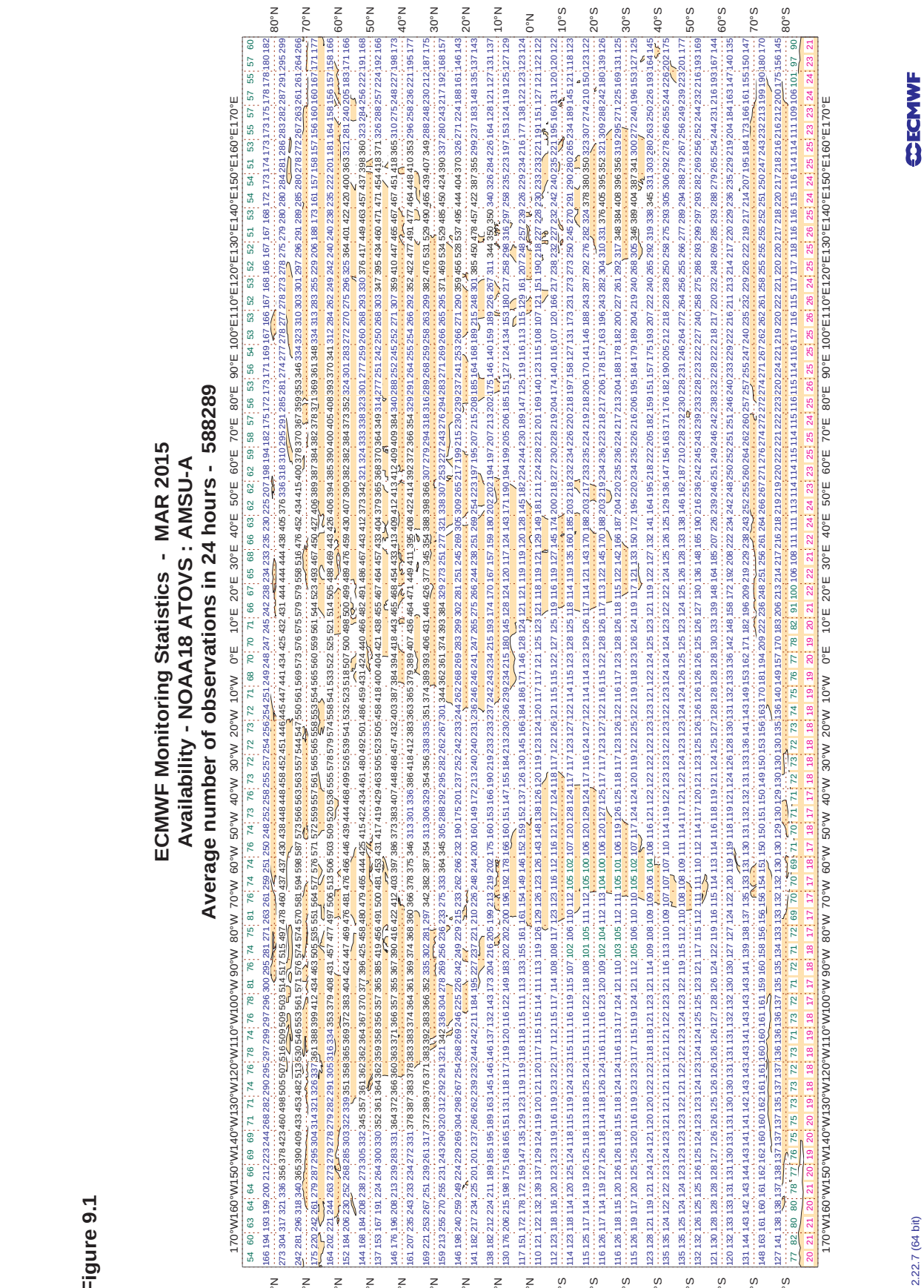
3.2.8 Figure 8 - Availability - NOAA15 ATOVS : AMSU-A

Figure 8

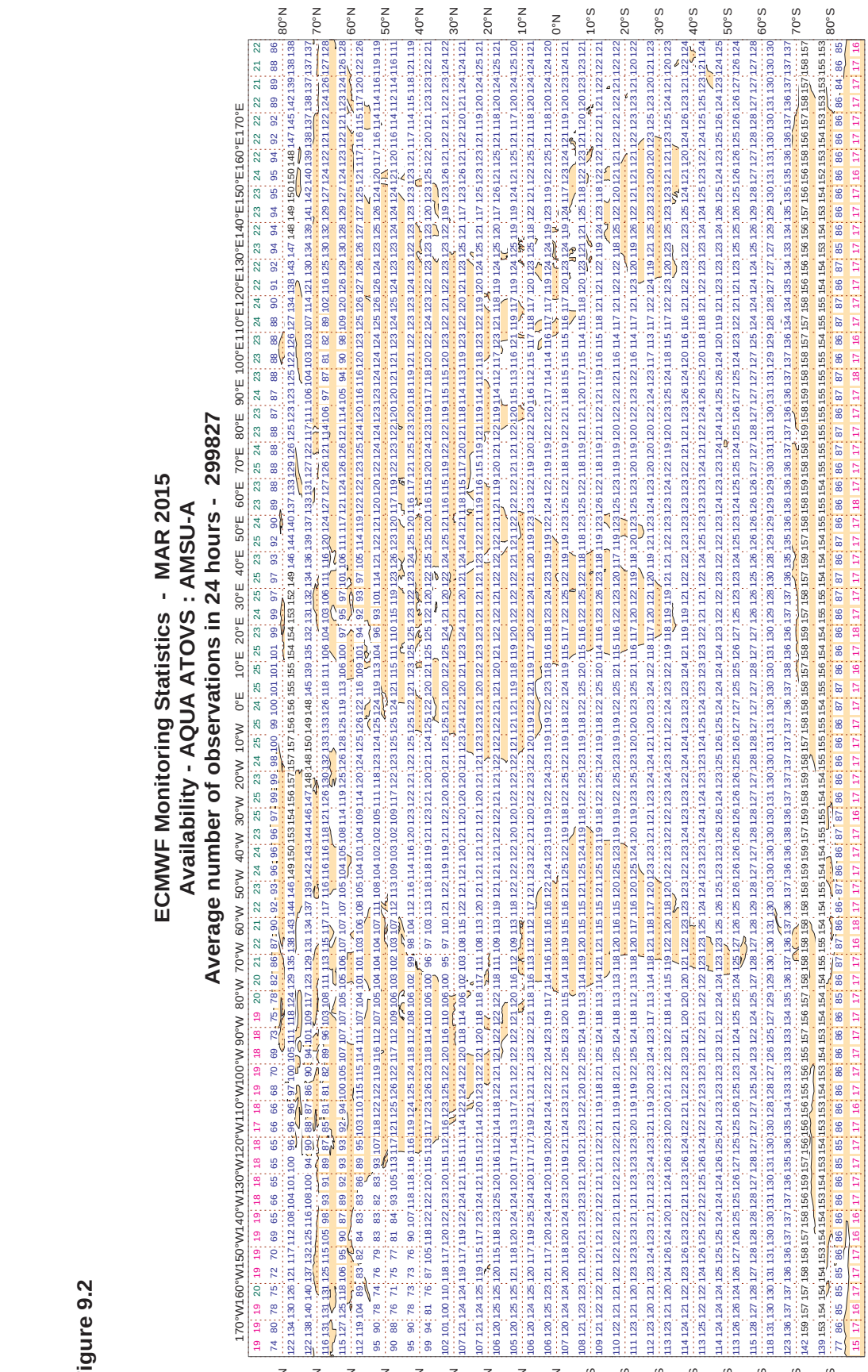


3.2.9 Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A

Figure 9.1

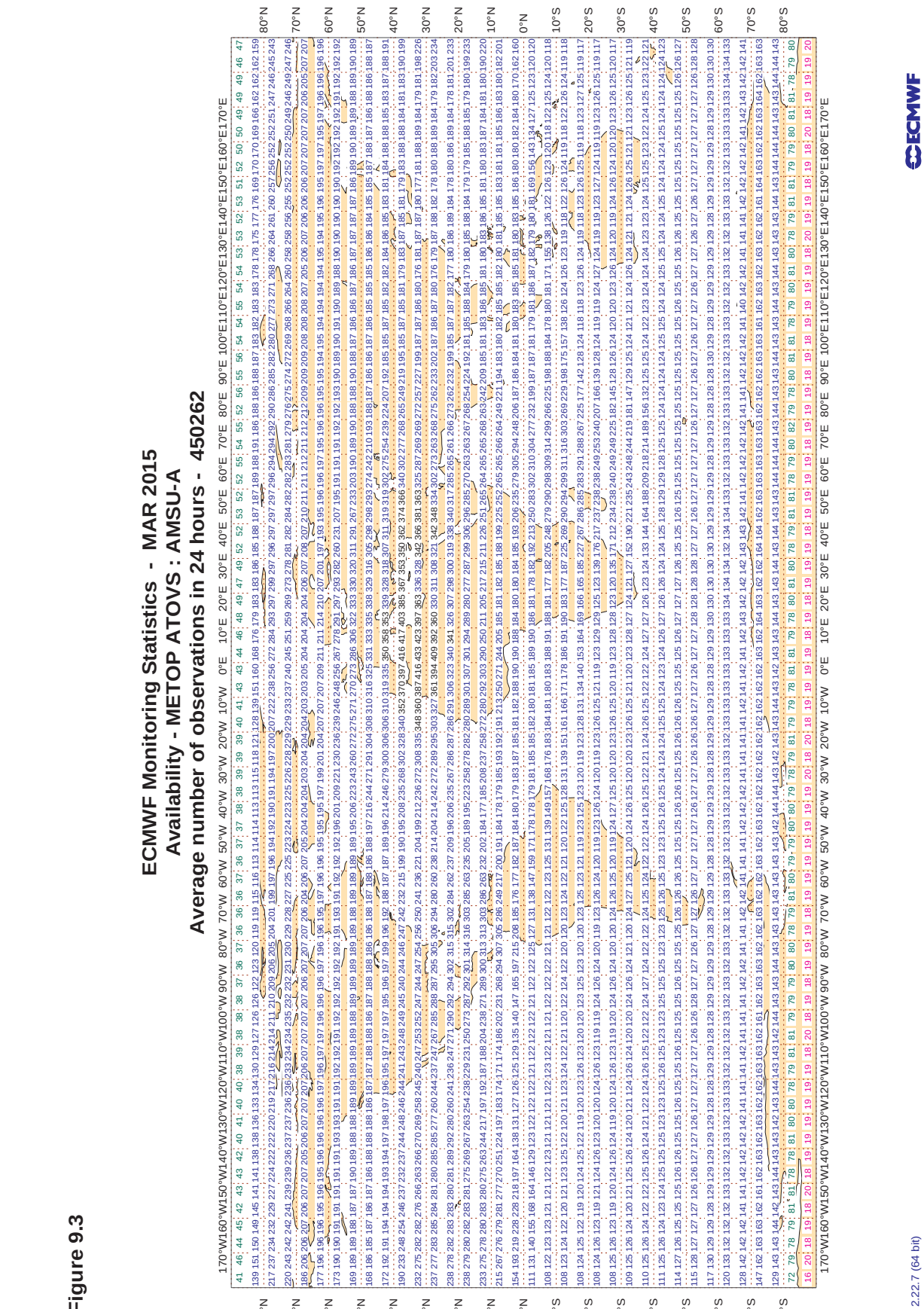


3.2.10 Figure 9.2 - Availability - AQUA ATOVS : AMSU-A



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                : MAR 2015
                    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
9V2782	99	P	SUR	27	0	1.5	3.7	4.0
UFLT	99	P	SUR	15	0	3.9	10.2	10.9

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

```
          LIST OF SUSPECT STATIONS        : SHIPS + FIXED MARINE PLATFORMS
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND SPEED (M/S)
                    AREA                  : GLOBAL
                    PERIOD                : MAR 2015
                    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                : MAR 2015
                    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

3.2.15 Table 4 - Suspect drifters: Surface pressure (HPA)

```
          LIST OF SUSPECT STATIONS         : DRIFTER
                    MONITORING CENTRE      : ECMWF
                    ELEMENT MONITORED      : SURFACE PRESSURE (HPA)
                    AREA                   : GLOBAL
                    PERIOD                 : MAR 2015
                    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
21626	99	P	SUR	58	148	27	27	0.0	0.0	0.0
23994	99	P	SUR	19	85	105	77	0.3	-0.8	0.8
48627	99	P	SUR	0	0	33	33	0.0	0.0	0.0
71248	99	P	SUR	-72	-17	79	79	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                : MAR 2015
                    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                : MAR 2015
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD


SELECTION CRITERIA: NO. OF OBS.           >= 20 (WIND SPEEDS > 3M/S), AND ,
                    ABSOLUTE BIAS         >= 20 DEGREES, OR,
                    STANDARD DEVIATION    >= 60 DEGREES
                    (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)


TIME = 99 => AVERAGE OF ALL OBSERVATIONS
```

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
23095	99	DIRN	SUR	10	94	36	0	0	15.9	20.7	26.1
23097	99	DIRN	SUR	15	69	42	0	0	12.7	21.2	24.7
23460	99	DIRN	SUR	7	88	52	0	0	11.6	21.0	24.0
31053	99	DIRN	SUR	-32	-50	175	0	15	38.1	43.3	57.7
31260	99	DIRN	SUR	-16	-38	142	0	81	55.2	50.7	75.0
31374	99	DIRN	SUR	-25	-45	136	0	5	43.9	-22.9	49.5
32303	99	DIRN	SUR	5	-95	76	0	3	27.5	38.8	47.6

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

```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
                    AREA                  : GLOBAL
                    PERIOD                : MAR 2015
                    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
04417	00	Z	1000	73	-38	30	26	13.7	-72.0	73.3
04417	12	Z	1000	73	-38	38	32	12.8	-80.8	81.8
33041	00	Z	250	52	31	30	0	69.6	50.8	86.2
42182	00	Z	700	29	77	27	0	36.3	-21.0	41.9
42410	00	Z	300	26	92	14	1	56.6	-86.2	103.1
43003	00	Z	100	19	73	11	0	162.6	47.3	169.3
60760	12	Z	1000	34	8	17	0	28.0	15.5	32.0
83566	12	Z	1000	-20	-44	25	1	10.8	-52.2	53.3
83566	00	Z	1000	-20	-44	23	0	10.5	-54.9	55.9
91680	12	Z	925	-18	177	31	0	2.5	30.6	30.7
91680	00	Z	1000	-18	177	31	0	6.4	29.1	29.8
96481	00	Z	1000	4	118	29	4	2.8	39.3	39.4
96481	12	Z	1000	4	118	27	3	4.9	39.1	39.4
ASEU02	12	Z	1000	43	-24	10	0	2.5	31.5	31.6
ASEU02	00	Z	1000	42	-28	10	0	7.4	30.3	31.2
ASEU03	00	Z	1000	49	-9	15	0	13.0	29.8	32.5
ASEU03	12	Z	1000	49	-5	17	0	17.3	23.9	29.5
ASEU06	12	Z	1000	46	-50	11	0	36.4	-2.3	36.5

3.2.19 Table 8 - Suspect radiosondes: Wind (m/s)

```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND (M/S)
                    AREA                  : GLOBAL
                    PERIOD                : MAR 2015
                    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
```

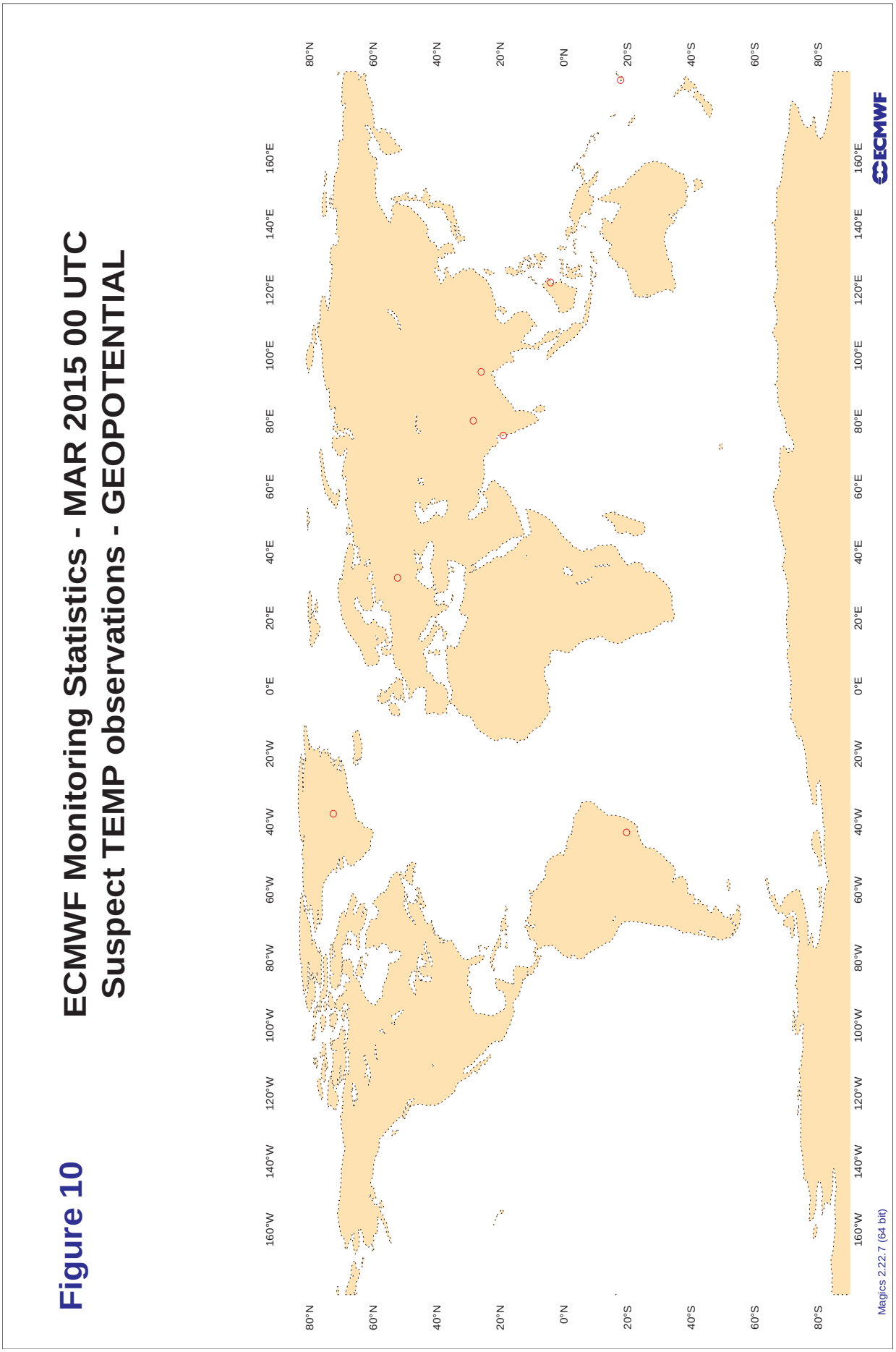
WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	UBIAS	VBIAS	RMS

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

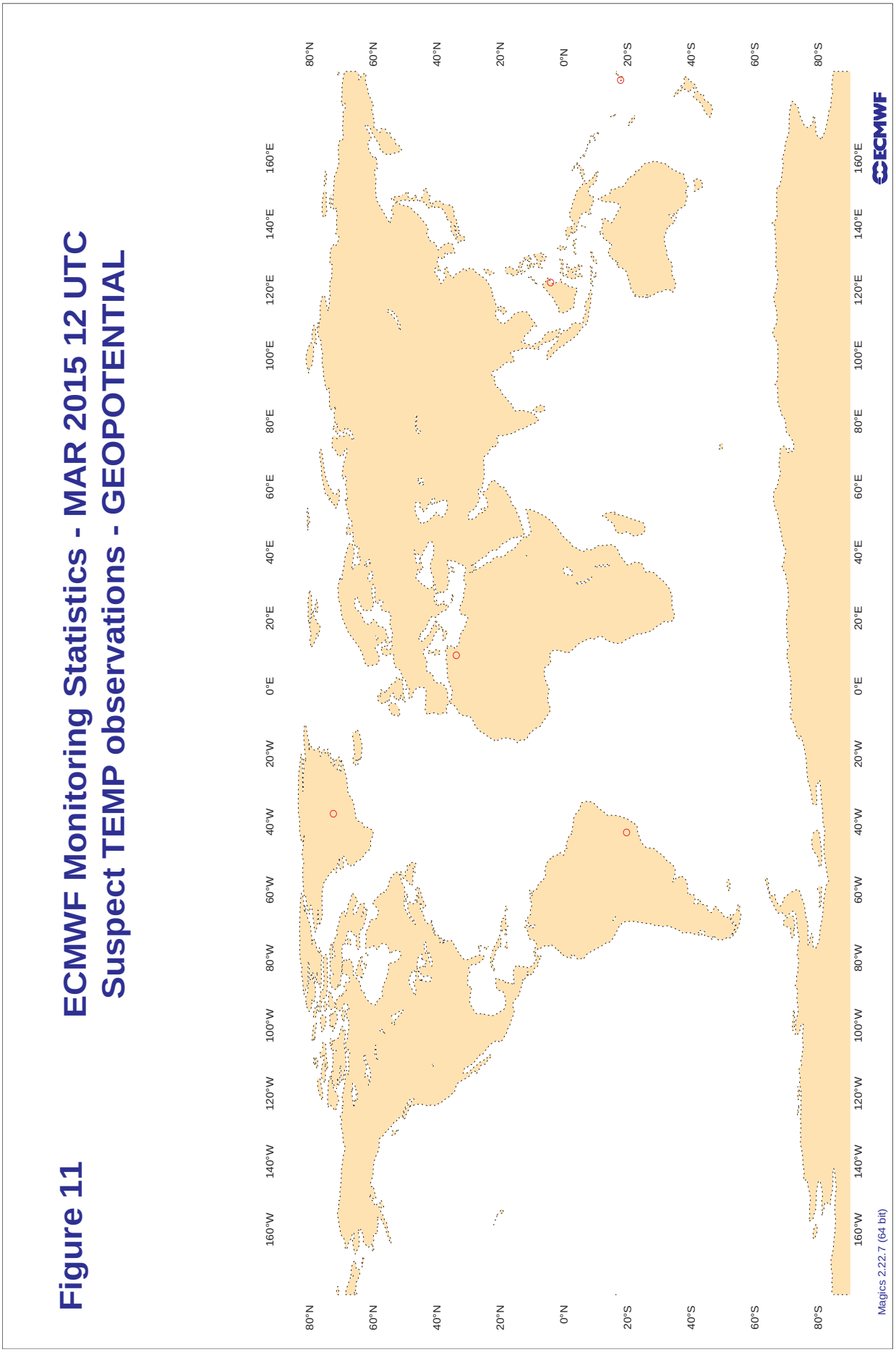
```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                    AREA                  : GLOBAL
                    PERIOD                : MAR 2015
                    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
48565	00	DD	8	98	19	11.8	9.0	22.2

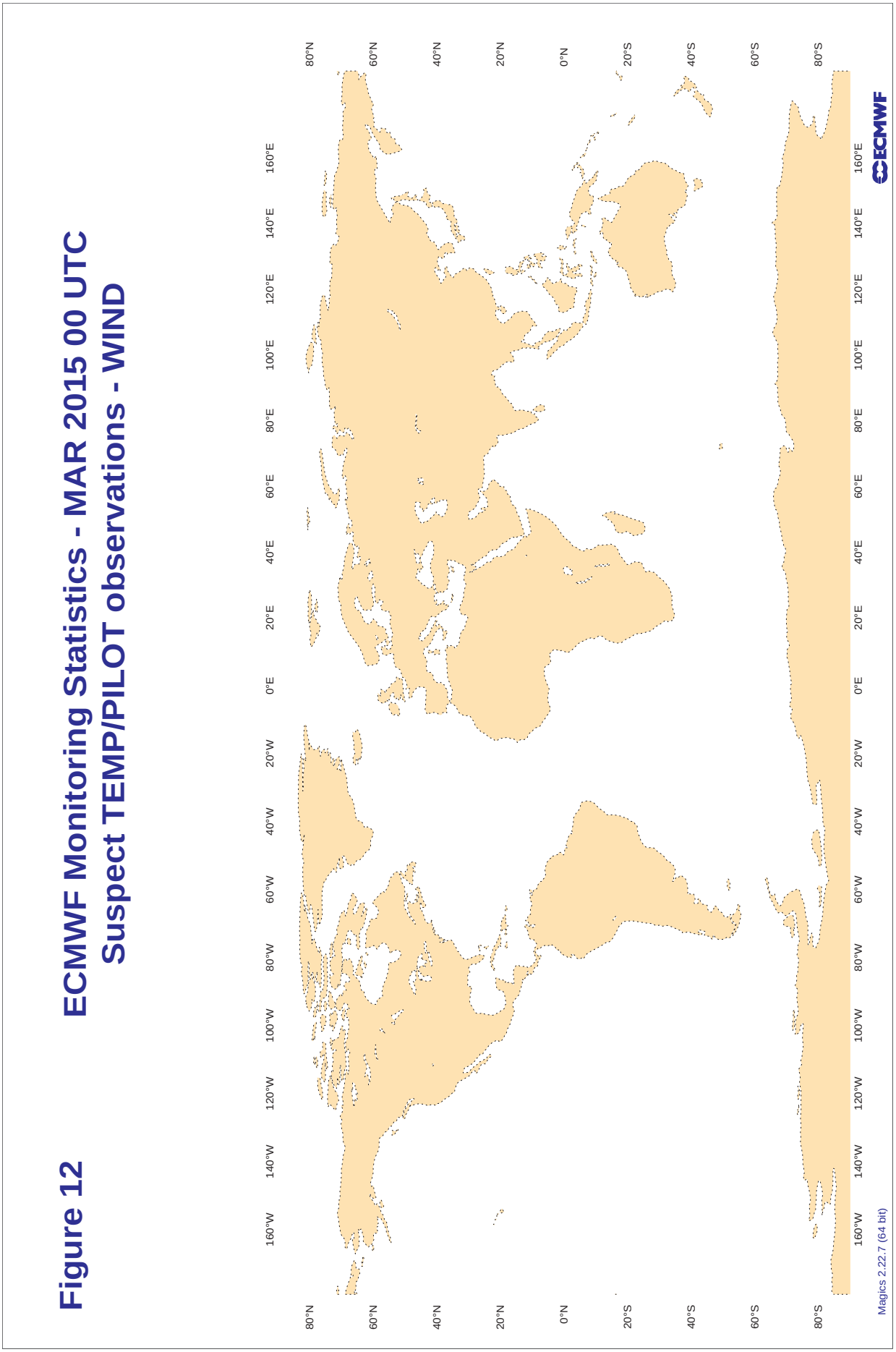
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



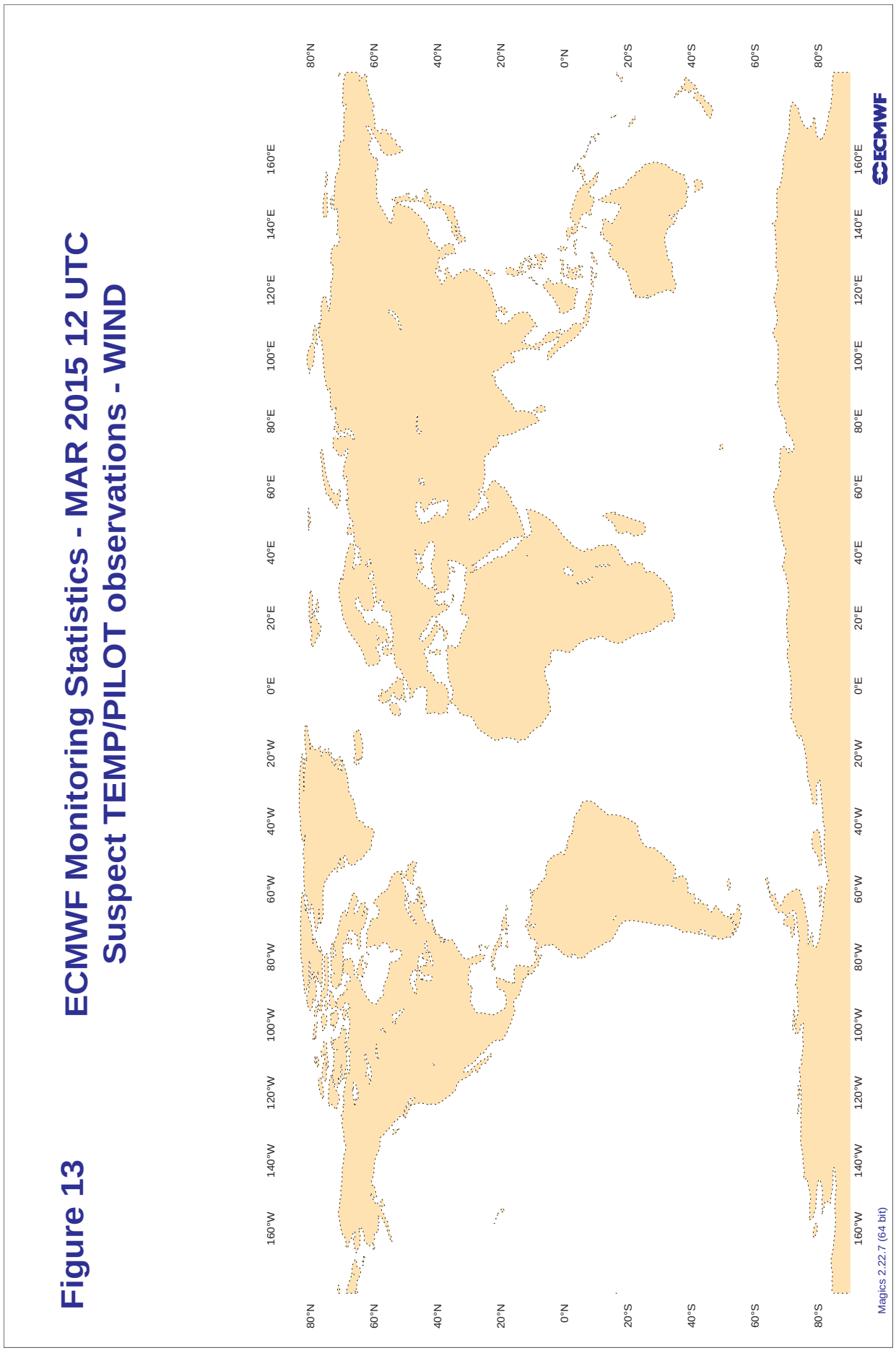
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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



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



3.2.25 Table 10 - Radiosonde monitoring statistics (SHIPs): Geopotential height (metres)

```
RADIOSONDE MONITORING STATISTICS (SHIPS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 100 HPA
         AREA                  : GLOBAL
         PERIOD                : MAR 2015
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASDE01	00	Z	100	11	38.6	12.5
ASDE01	12	Z	100	5	13.4	7.4
ASDE02	00	Z	100	25	26.1	25.6
ASDE03	00	Z	100	7	10.7	10.2
ASDE03	12	Z	100	8	30.2	29.4
ASDE04	00	Z	100	5	46.2	41.1
ASDE04	12	Z	100	6	47.7	44.3
ASDE09	12	Z	100	4	25.0	23.2
ASDK1	00	Z	100	5	31.8	21.6
ASDK1	12	Z	100	8	15.1	13.6
ASDK3	12	Z	100	2	32.2	31.9
ASDK3	00	Z	100	11	29.4	23.4
ASES01	12	Z	100	19	20.8	18.9
ASEU01	12	Z	100	8	35.1	32.5
ASEU02	12	Z	100	9	48.3	47.8
ASEU02	00	Z	100	10	45.3	43.8
ASEU03	00	Z	100	11	40.6	39.9
ASEU03	12	Z	100	11	48.0	45.2
ASEU04	00	Z	100	3	10.6	7.9
ASEU04	12	Z	100	6	9.7	7.9
ASEU05	00	Z	100	10	20.9	18.4
ASEU05	12	Z	100	13	23.5	20.3
ASEU06	00	Z	100	7	26.0	-8.1
ASEU06	12	Z	100	10	38.3	20.8
ASFR1	12	Z	100	12	9.7	3.3
ASFR1	00	Z	100	15	10.8	2.0
ASFR2	00	Z	100	11	16.8	15.0
ASFR2	12	Z	100	12	22.4	19.0
ASFR3	00	Z	100	1	2.4	2.4
ASFR3	12	Z	100	4	15.7	-0.4
ASFR4	00	Z	100	5	45.6	25.0
ASFR4	12	Z	100	8	21.6	18.4
DBLK	12	Z	100	6	3.6	2.2
EWM	00	Z	100	1	14.9	-14.9
JGQH	12	Z	100	7	13.9	11.5
JGQH	00	Z	100	6	15.1	14.8
LGKI	12	Z	100	24	26.7	9.5
LGKI	00	Z	100	22	16.9	9.0

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

```
RADIOSONDE MONITORING STATISTICS (SHIPS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 100 HPA
         AREA                  : GLOBAL
         PERIOD                : MAR 2015
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASDE01	00	V	100	10	3.9	1.8	0.0
ASDE01	12	V	100	5	4.7	2.4	0.0
ASDE02	00	V	100	25	4.9	0.3	0.1
ASDE03	00	V	100	7	3.5	-0.3	-1.3
ASDE03	12	V	100	8	4.5	-0.6	-2.4
ASDE04	00	V	100	4	4.2	-1.6	-0.2
ASDE04	12	V	100	6	3.8	-0.9	0.0
ASDE09	12	V	100	4	3.6	2.1	1.0
ASDK1	00	V	100	5	4.7	1.1	0.8
ASDK1	12	V	100	8	4.4	-0.2	-1.5
ASDK3	12	V	100	2	3.5	0.4	-1.6
ASDK3	00	V	100	10	3.7	1.0	0.7
ASES01	12	V	100	19	3.8	0.5	-0.5
ASEU01	12	V	100	8	3.0	0.1	-0.1
ASEU02	12	V	100	8	3.3	-1.4	1.6
ASEU02	00	V	100	9	4.0	-1.4	1.5
ASEU03	00	V	100	8	3.7	0.7	0.3
ASEU03	12	V	100	8	4.2	0.3	0.5
ASEU04	00	V	100	3	2.3	-0.2	1.3
ASEU04	12	V	100	6	3.0	-1.0	0.4
ASEU05	00	V	100	7	5.4	-3.5	1.6
ASEU05	12	V	100	9	3.3	0.9	-1.3
ASEU06	00	V	100	7	4.0	-0.5	0.7
ASEU06	12	V	100	10	5.0	0.0	0.8
ASFR1	12	V	100	12	3.1	0.5	-0.8
ASFR1	00	V	100	14	4.1	0.5	-1.0
ASFR2	00	V	100	11	2.8	0.5	1.0
ASFR2	12	V	100	12	3.9	-1.1	-0.7
ASFR3	00	V	100	1	3.6	3.6	-0.6
ASFR3	12	V	100	3	3.7	1.6	-0.1
ASFR4	00	V	100	4	2.6	-1.6	-0.6
ASFR4	12	V	100	7	3.6	0.7	-1.3
DBLK	12	V	100	6	3.3	-0.2	1.6
EWM	00	V	100	1	0.6	0.6	-0.2
JGQH	12	V	100	7	8.6	1.1	0.1
JGQH	00	V	100	6	7.0	-2.3	-0.6
LGKI	12	V	100	23	4.0	0.8	-1.3
LGKI	00	V	100	21	4.2	2.3	-1.1

3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

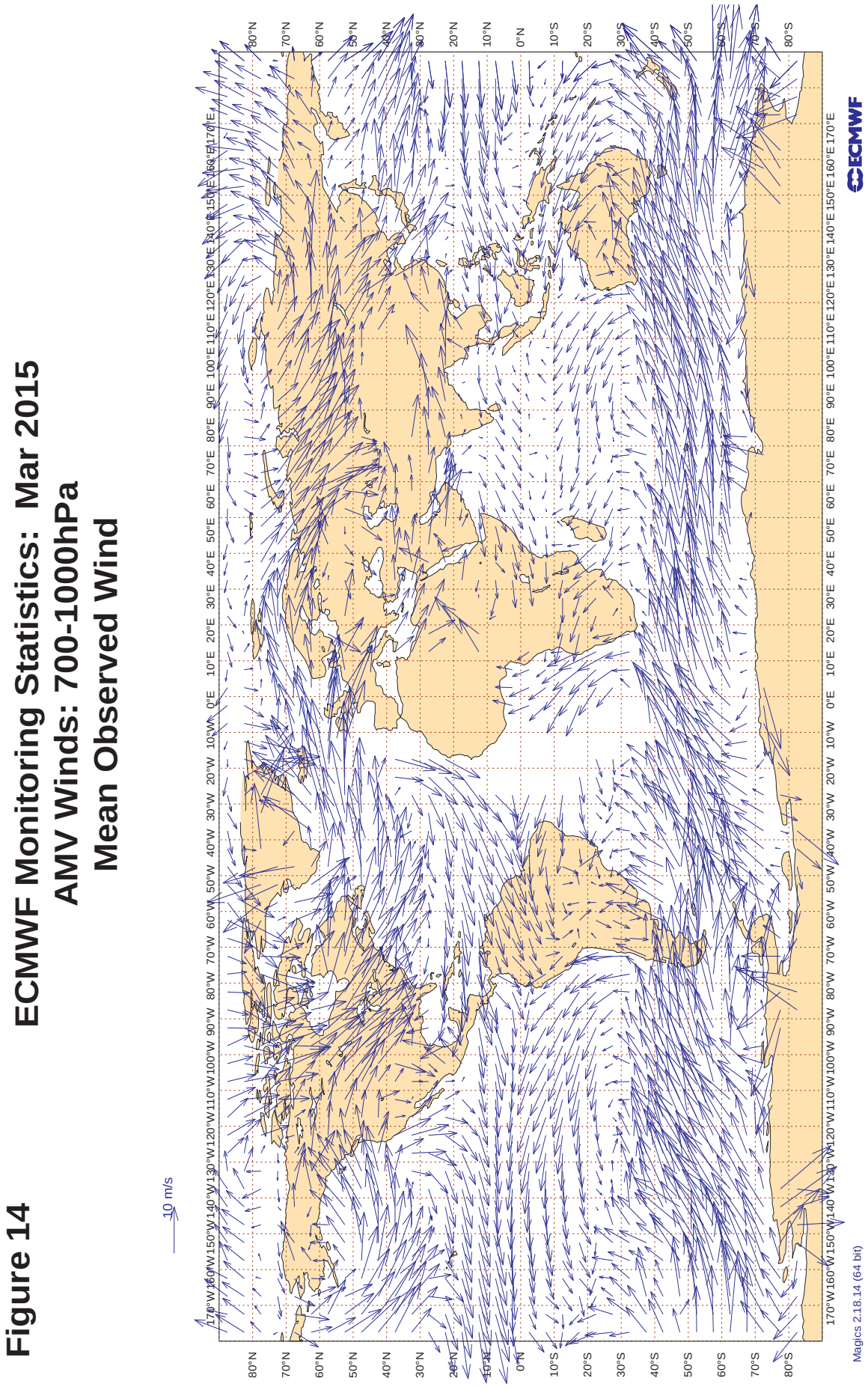


Figure 14

3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

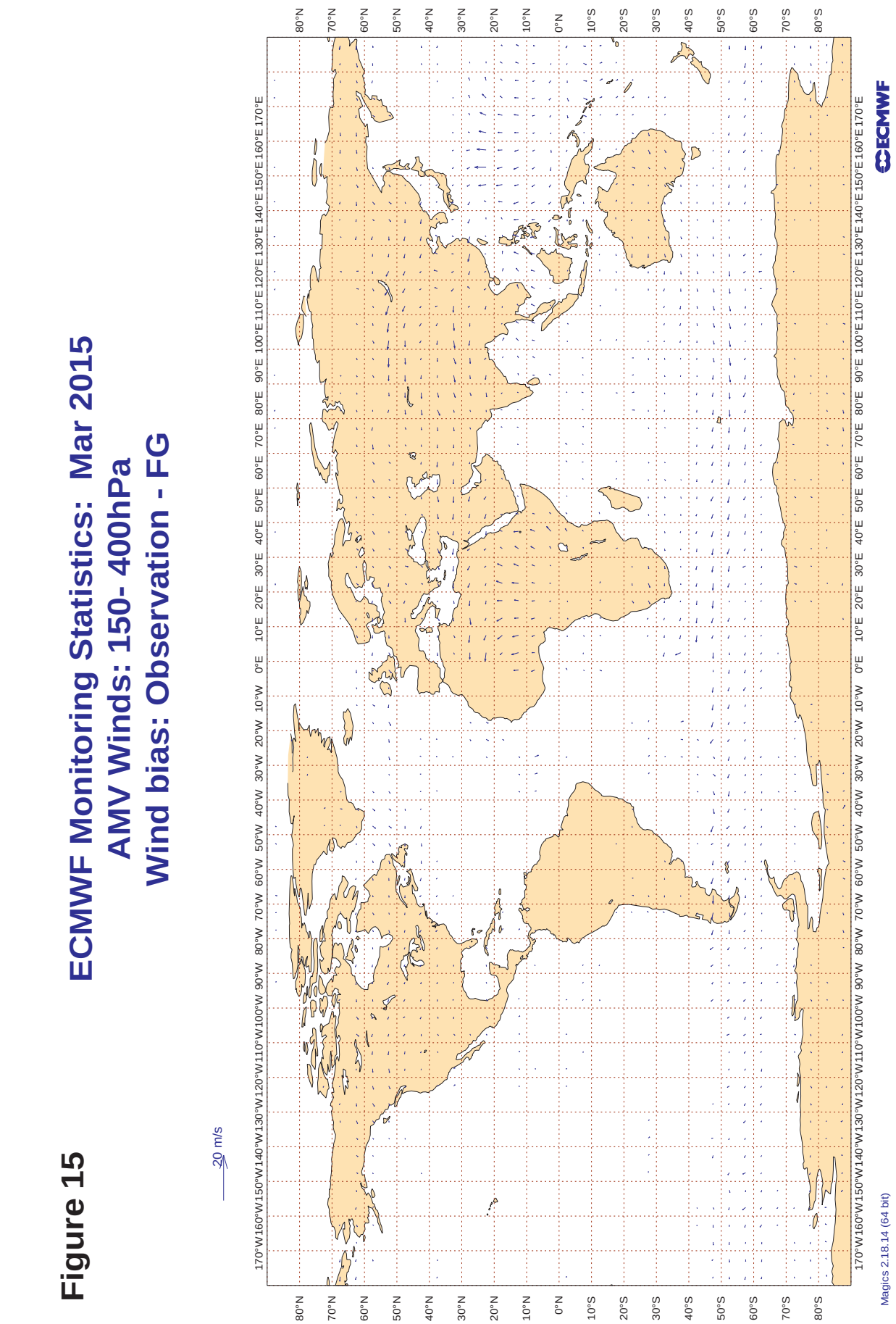


Figure 15

3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

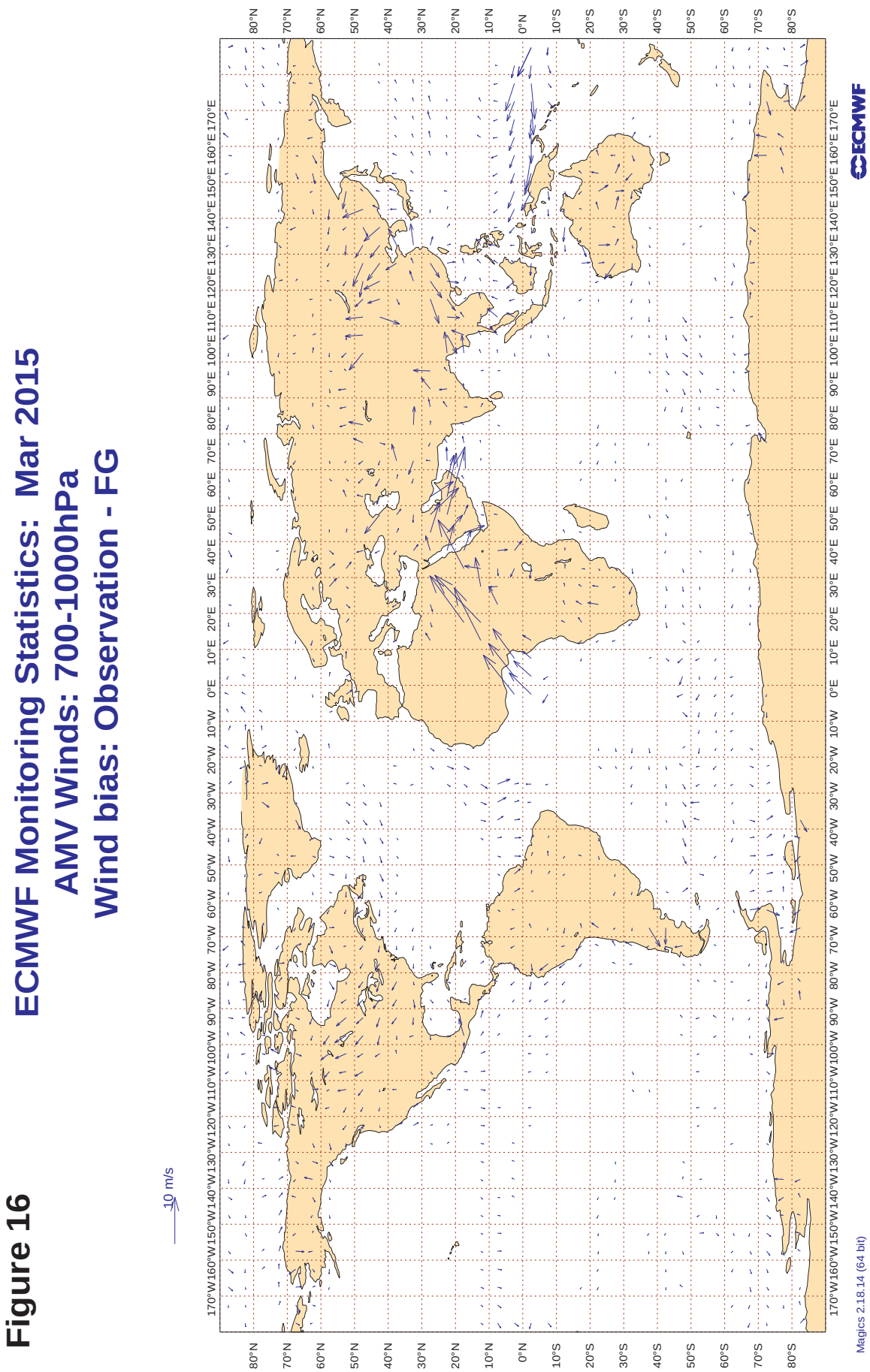


Figure 16

3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

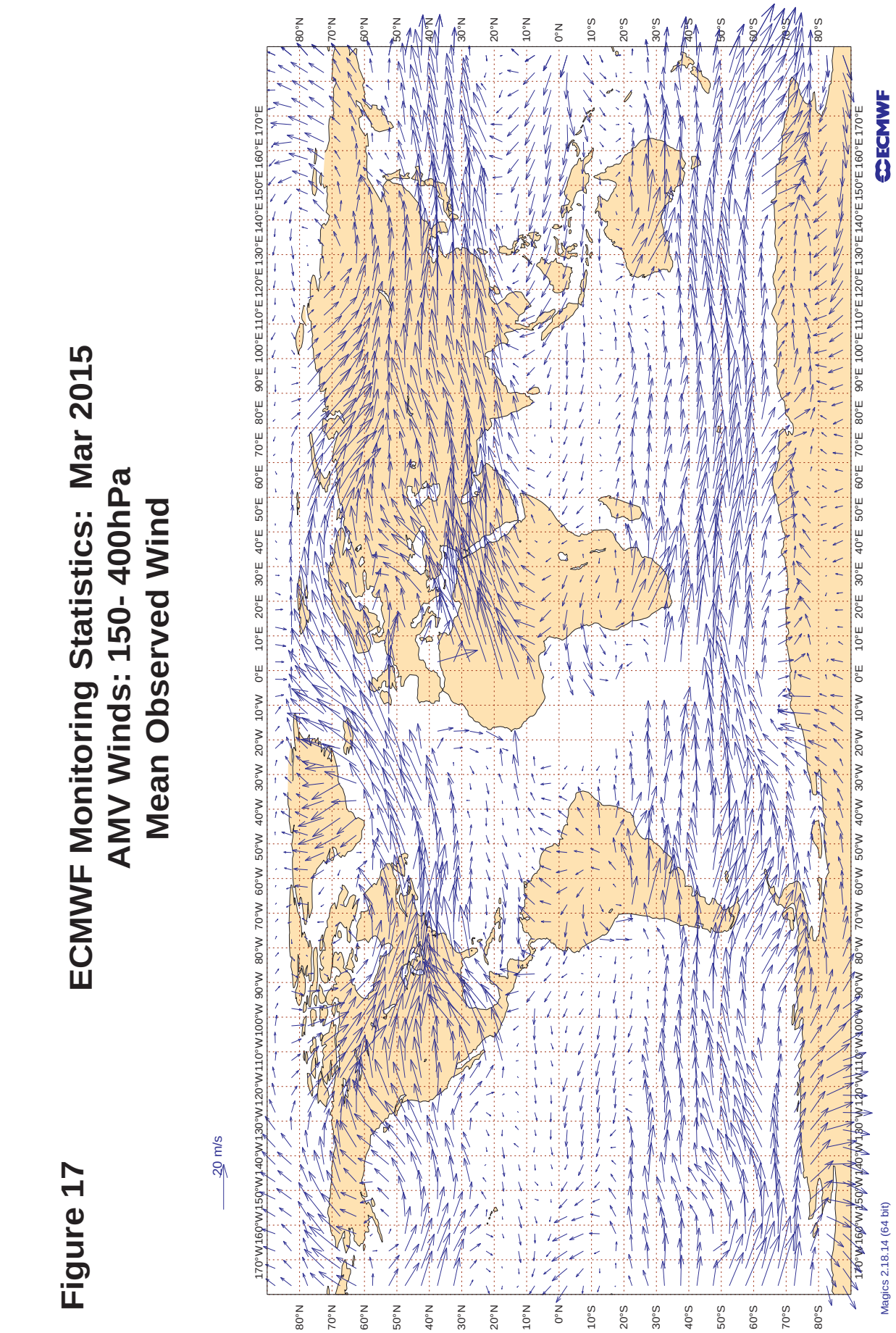


Figure 17

3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

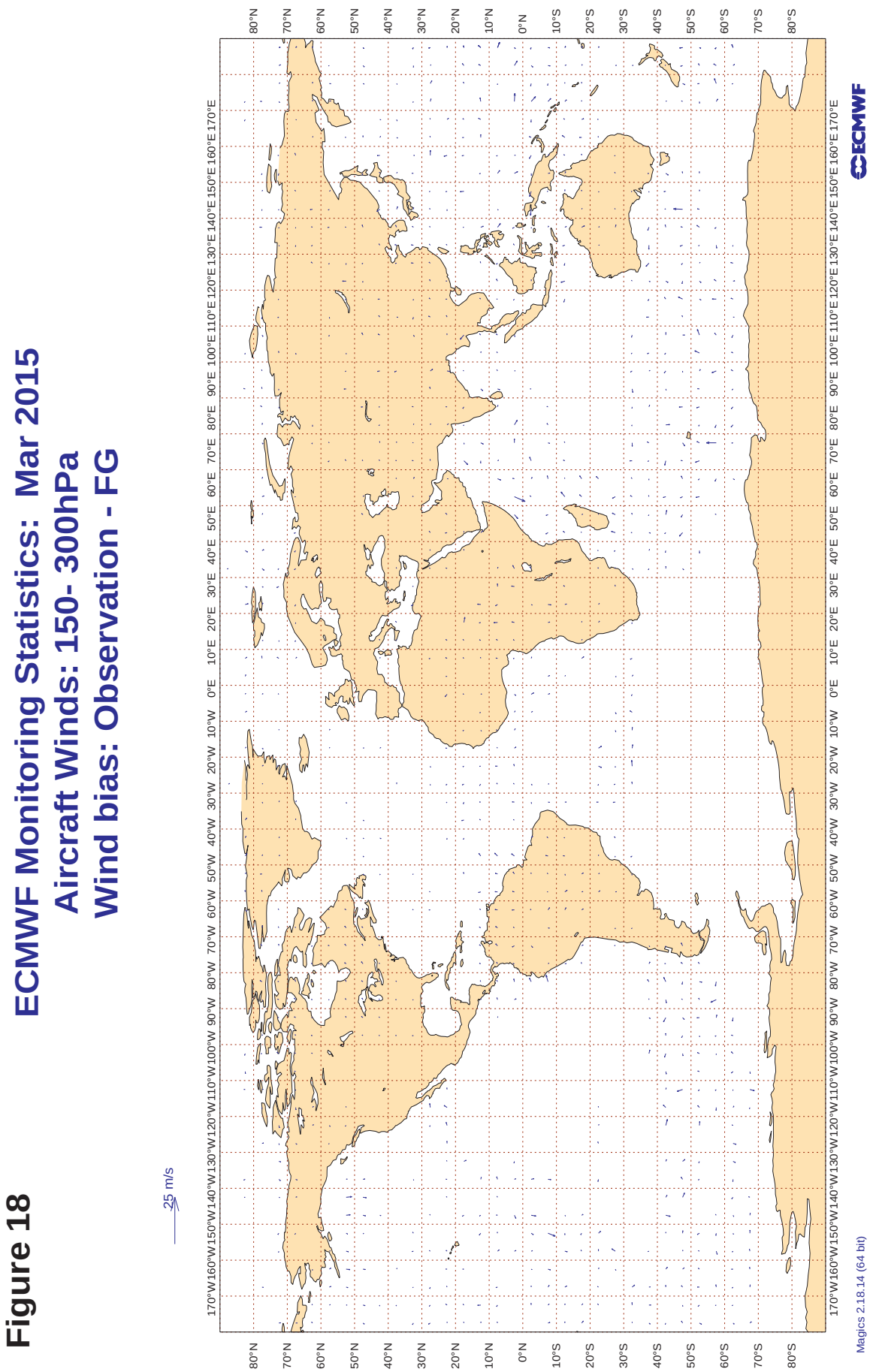


Figure 18

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 : MAR 2015
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	2456	0	0	4.9	-0.8
AAY	99	V	300-150	134	0	0	6.1	-0.2
ABW	99	V	300-150	43	0	0	3.6	-0.6
ABX	99	V	300-150	47	0	0	7.9	-2.2
ACA	99	V	300-150	1994	2	0	4.6	-0.5
ACI	99	V	300-150	504	0	0	3.8	0.5
AFL	99	V	300-150	361	0	0	3.4	0.5
AFR	99	V	300-150	2173	0	0	4.7	0.3
AHY	99	V	300-150	33	0	0	4.9	1.4
AIC	99	V	300-150	691	0	0	3.8	-0.2
AMX	99	V	300-150	251	29	0	10.7	0.0
ANZ	99	V	300-150	2928	1	0	5.2	0.5
ASA	99	V	300-150	3467	1	0	5.6	0.3
ASY	99	V	300-150	142	0	0	5.2	-0.7
AUA	99	V	300-150	639	0	0	4.7	-1.5
AVN	99	V	300-150	79	0	0	4.4	-0.1
AWE	99	V	300-150	1736	0	0	4.9	0.7
AXM	99	V	300-150	61	0	0	5.5	1.9
AZA	99	V	300-150	482	0	0	5.3	1.1
BAW	99	V	300-150	3215	2	0	4.6	-0.1
BEL	99	V	300-150	232	0	0	4.8	-1.0
BER	99	V	300-150	1408	0	0	4.9	1.0
BLX	99	V	300-150	28	0	0	6.0	-1.0
BOX	99	V	300-150	88	0	0	3.6	0.0
CAL	99	V	300-150	65	0	0	4.3	0.1
CAZ	99	V	300-150	22	0	0	3.8	-1.2
CES	99	V	300-150	271	0	0	4.5	0.5
CFG	99	V	300-150	279	0	0	4.7	-1.1
CKS	99	V	300-150	303	0	0	5.9	0.3
CLX	99	V	300-150	340	0	0	4.0	-0.4
CPA	99	V	300-150	34	0	0	2.6	0.0
CSN	99	V	300-150	225	4	0	6.6	0.0

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
DAH	99	V	300-150	125	0	0	4.7	0.3
DAL	99	V	300-150	7289	0	0	4.6	-0.5
DHK	99	V	300-150	207	0	0	4.0	0.2
DLH	99	V	300-150	3390	0	0	4.6	-0.3
EIN	99	V	300-150	763	0	0	4.4	-0.3
EJM	99	V	300-150	49	39	0	8.9	-0.3
ELY	99	V	300-150	342	0	0	4.3	0.1
ETD	99	V	300-150	135	0	0	3.8	0.5
ETH	99	V	300-150	22	0	0	3.9	0.8
FDX	99	V	300-150	1155	0	0	4.1	0.4
FIN	99	V	300-150	278	0	0	4.2	0.6
FJI	99	V	300-150	1548	0	0	4.3	0.2
FWI	99	V	300-150	96	0	0	3.8	0.5
GAF	99	V	300-150	21	33	0	3.2	-1.0
GEC	99	V	300-150	346	0	0	3.5	-0.1
GTI	99	V	300-150	261	0	0	4.5	0.1
HAL	99	V	300-150	861	0	0	5.7	1.3
HBJ	99	V	300-150	39	21	0	3.9	0.4
IBE	99	V	300-150	162	0	0	4.6	0.3
JAF	99	V	300-150	55	18	0	5.8	-1.4
JAI	99	V	300-150	380	0	0	4.6	0.2
JAS	99	V	300-150	38	84	0	18.8	-1.5
JST	99	V	300-150	1081	0	0	7.7	1.3
KAI	99	V	300-150	40	3	0	4.5	0.3
KAL	99	V	300-150	534	0	0	4.6	0.7
KLM	99	V	300-150	1680	0	0	4.5	-0.2
LAE	99	V	300-150	22	0	0	3.4	0.6
LAN	99	V	300-150	91	0	0	3.3	-0.2
LOT	99	V	300-150	106	17	0	12.2	-0.3
MAS	99	V	300-150	93	0	0	3.6	0.5
MMN	99	V	300-150	37	0	0	4.6	-1.3
MON	99	V	300-150	33	0	0	4.4	1.4
MPD	99	V	300-150	23	0	0	4.1	-0.5
MSR	99	V	300-150	168	0	0	3.9	0.3
NAX	99	V	300-150	101	20	0	16.6	0.9
NCA	99	V	300-150	43	0	0	5.2	-1.0
NJE	99	V	300-150	24	63	0	3.3	0.9
NOS	99	V	300-150	33	0	0	6.3	-1.1
NVR	99	V	300-150	20	0	0	6.3	0.8
OAE	99	V	300-150	107	1	1	6.0	-0.3
PAC	99	V	300-150	51	0	0	4.4	-0.7
PAL	99	V	300-150	21	0	0	5.4	-0.1
QFA	99	V	300-150	2617	0	0	4.3	0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
QTR	99	V	300-150	193	0	0	4.3	0.8
RCH	99	V	300-150	678	0	0	4.9	0.0
RJA	99	V	300-150	86	22	0	11.2	-0.1
RRR	99	V	300-150	29	0	0	3.4	0.8
SAM	99	V	300-150	46	0	0	3.3	-0.1
SAS	99	V	300-150	767	0	0	3.5	-0.2
SIA	99	V	300-150	267	0	0	3.6	0.0
SPA	99	V	300-150	29	0	0	6.1	1.6
SQC	99	V	300-150	50	0	0	4.4	2.1
SVA	99	V	300-150	420	0	0	4.5	0.0
SWR	99	V	300-150	791	0	0	4.6	0.3
TAM	99	V	300-150	115	0	0	3.6	0.4
TAP	99	V	300-150	37	3	0	5.7	1.4
TAY	99	V	300-150	22	0	0	4.3	0.0
TCX	99	V	300-150	227	0	0	5.0	1.2
TFL	99	V	300-150	110	15	0	9.3	-0.6
THA	99	V	300-150	102	0	0	3.5	0.3
THT	99	V	300-150	277	0	0	5.3	-0.2
THY	99	V	300-150	406	0	0	4.4	0.3
TOM	99	V	300-150	521	17	0	8.1	-0.4
TSC	99	V	300-150	104	0	0	5.2	1.3
TSO	99	V	300-150	194	0	0	4.4	0.3
UAE	99	V	300-150	959	0	0	4.2	-0.3
UAL	99	V	300-150	10445	0	0	5.0	-0.5
UPS	99	V	300-150	921	0	0	4.7	0.5
VHC	99	V	300-150	38	0	0	19.8	2.6
VHL	99	V	300-150	74	43	0	30.1	2.7
VIR	99	V	300-150	1286	3	0	4.4	-0.4
VJT	99	V	300-150	78	97	0	35.3	-0.2
VKG	99	V	300-150	36	0	0	4.3	1.2
VOZ	99	V	300-150	1183	0	0	3.5	0.4
VPB	99	V	300-150	62	23	0	8.9	-1.1
VPC	99	V	300-150	27	22	0	11.7	0.2
VQB	99	V	300-150	29	0	0	3.5	0.2
WJA	99	V	300-150	640	0	0	6.2	0.4
XAA	99	V	300-150	42	0	0	4.4	-0.1

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)

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 :  50 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : MAR 2015
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	50	31	18.0	-3.4
01001	12	Z	50	31	19.4	-3.3
01028	12	Z	50	30	24.7	5.4
01028	00	Z	50	30	16.4	5.4
01400	00	Z	50	17	29.8	23.3
01400	12	Z	50	19	35.5	29.8
01415	12	Z	50	30	19.6	15.2
01415	00	Z	50	31	15.6	5.3
02365	00	Z	50	35	10.7	0.7
02365	12	Z	50	41	13.4	2.8
02591	00	Z	50	38	15.5	13.3
02591	12	Z	50	36	19.8	17.9
02836	00	Z	50	29	18.0	0.1
02836	12	Z	50	29	15.2	3.6
02963	12	Z	50	31	10.4	5.4
02963	00	Z	50	30	12.1	5.4
03005	12	Z	50	46	12.9	5.3
03005	00	Z	50	47	11.9	-0.2
03238	00	Z	50	29	17.9	13.8
03238	12	Z	50	9	19.1	16.5
03808	00	Z	50	48	10.2	7.4
03808	12	Z	50	50	14.2	10.3
03918	12	Z	50	16	27.3	23.2
03918	00	Z	50	28	19.4	16.3
03953	12	Z	50	31	22.2	19.4
03953	00	Z	50	31	15.4	10.5
04018	12	Z	50	28	17.0	1.3
04018	00	Z	50	30	27.3	-9.8
04220	12	Z	50	29	25.9	13.1
04220	00	Z	50	23	23.9	6.1
04270	00	Z	50	27	18.3	-2.2
04270	12	Z	50	29	20.5	12.8
04320	00	Z	50	23	35.6	-2.5
04320	12	Z	50	25	29.8	5.1
04339	00	Z	50	27	29.6	19.8
04339	12	Z	50	29	26.0	10.6
04360	12	Z	50	12	17.9	5.4
04360	00	Z	50	21	21.1	-8.7
06011	00	Z	50	28	19.2	3.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	50	29	22.7	15.6
06260	00	Z	50	27	15.5	12.7
06260	12	Z	50	4	19.4	17.1
06610	00	Z	50	31	21.4	9.2
06610	12	Z	50	31	33.5	15.7
07110	00	Z	50	25	27.8	15.6
07110	12	Z	50	29	24.3	18.1
07510	00	Z	50	20	11.5	4.6
07510	12	Z	50	25	18.5	13.7
07645	12	Z	50	19	66.2	64.4
07645	00	Z	50	15	58.8	57.4
07761	00	Z	50	8	10.1	5.0
07761	12	Z	50	16	19.1	16.8
08001	00	Z	50	26	16.5	13.2
08001	12	Z	50	30	24.6	21.0
08221	00	Z	50	31	21.5	19.4
08221	12	Z	50	31	21.3	18.4
08302	12	Z	50	27	8.9	2.4
08302	00	Z	50	30	10.5	8.1
08508	12	Z	50	31	30.2	27.6
08522	12	Z	50	31	19.6	17.0
08579	12	Z	50	31	20.0	17.1
10035	00	Z	50	31	9.0	7.2
10035	12	Z	50	31	15.2	12.1
10393	00	Z	50	29	9.8	7.4
10393	12	Z	50	31	14.1	11.0
10410	00	Z	50	31	10.7	2.9
10410	12	Z	50	30	16.9	11.1
10739	00	Z	50	31	13.3	8.2
10739	12	Z	50	31	17.7	15.3
11035	12	Z	50	31	13.7	10.0
11035	00	Z	50	31	12.1	7.6
12982	00	Z	50	30	9.7	5.9
12982	12	Z	50	31	43.1	41.8
16044	12	Z	50	31	10.8	5.9
16044	00	Z	50	31	35.7	10.8
16080	00	Z	50	31	8.5	3.2
16080	12	Z	50	31	15.1	-2.3
16245	12	Z	50	30	10.9	3.4
16245	00	Z	50	29	32.8	-0.8
16320	12	Z	50	30	12.2	5.8
16320	00	Z	50	30	11.6	8.5
16429	12	Z	50	28	13.4	7.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	00	Z	50	29	15.4	13.2
16622	00	Z	50	26	63.2	40.2
16754	00	Z	50	29	25.2	22.2
17607	12	Z	50	23	18.1	-17.0
26435	00	Z	50	14	13.3	9.7
60018	00	Z	50	31	16.9	15.6
60018	12	Z	50	31	11.4	8.7
ASDE01	00	Z	50	7	71.1	43.9
ASDE01	12	Z	50	4	27.2	26.2
ASDE02	00	Z	50	25	36.2	35.6
ASDE03	00	Z	50	7	16.1	14.8
ASDE03	12	Z	50	7	51.5	50.5
ASDE04	00	Z	50	5	57.2	51.4
ASDE04	12	Z	50	6	59.6	56.1
ASDE09	12	Z	50	3	47.2	46.8
ASDK1	00	Z	50	4	37.2	19.5
ASDK1	12	Z	50	8	21.6	19.3
ASDK3	12	Z	50	9	40.5	38.1
ASDK3	00	Z	50	8	31.8	23.6
ASES01	12	Z	50	19	29.8	27.6
ASEU01	12	Z	50	7	49.7	47.5
ASEU02	12	Z	50	8	56.0	55.3
ASEU02	00	Z	50	9	47.9	45.1
ASEU03	00	Z	50	6	46.2	44.9
ASEU03	12	Z	50	8	64.5	63.5
ASEU04	00	Z	50	1	9.8	9.8
ASEU04	12	Z	50	6	24.9	15.7
ASEU05	00	Z	50	6	27.7	27.2
ASEU05	12	Z	50	8	34.1	32.4
ASEU06	00	Z	50	7	31.4	-3.7
ASEU06	12	Z	50	9	51.2	40.9
ASFR1	12	Z	50	13	17.7	8.5
ASFR1	00	Z	50	15	13.6	6.8
ASFR2	00	Z	50	11	29.8	28.5
ASFR2	12	Z	50	10	32.0	28.2
ASFR3	00	Z	50	1	1.8	-1.8
ASFR3	12	Z	50	4	22.6	0.4
ASFR4	00	Z	50	5	50.2	32.0
ASFR4	12	Z	50	8	121.3	65.1
DBLK	12	Z	50	6	5.8	4.4
LGKI	12	Z	50	23	36.5	14.0
LGKI	00	Z	50	22	20.9	10.3

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
          MONITORING CENTRE      : ECMWF
          ELEMENT MONITORED      : WIND (M/S)
          LEVEL                  :  50 HPA
          AREA                   : 0 - 90N, 100W - 40E
          PERIOD                 : MAR 2015
          STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	50	31	4.0	1.1	-0.3
01001	12	V	50	31	4.4	1.5	-0.6
01028	12	V	50	30	4.5	1.0	-1.0
01028	00	V	50	28	5.3	0.4	-2.4
01400	00	V	50	9	3.0	0.1	0.0
01400	12	V	50	15	4.1	-0.5	-0.2
01415	12	V	50	30	4.4	-0.8	0.3
01415	00	V	50	30	5.2	0.3	0.5
02365	00	V	50	27	4.8	0.1	-0.1
02365	12	V	50	30	3.8	0.0	-0.9
02591	00	V	50	27	4.0	0.2	-0.4
02591	12	V	50	27	3.6	0.2	-0.4
02836	00	V	50	29	4.8	0.5	-1.1
02836	12	V	50	29	4.5	-0.3	-1.1
02963	12	V	50	30	3.5	0.3	-0.3
02963	00	V	50	30	4.0	-0.1	-0.1
03005	12	V	50	31	5.0	-0.1	0.2
03005	00	V	50	31	4.3	1.1	-0.3
03238	00	V	50	24	6.0	-0.8	1.4
03238	12	V	50	9	3.3	0.9	0.3
03808	00	V	50	29	4.2	-0.1	0.3
03808	12	V	50	31	3.5	0.4	-0.1
03918	12	V	50	16	4.8	-0.1	-0.7
03918	00	V	50	25	5.9	-1.3	1.5
03953	12	V	50	31	3.8	-0.5	0.0
03953	00	V	50	29	3.8	-0.3	1.3
04018	12	V	50	27	5.1	-0.2	0.5
04018	00	V	50	26	5.4	0.9	0.9
04220	12	V	50	29	3.3	-0.1	-0.2
04220	00	V	50	23	3.4	-1.0	0.0
04270	00	V	50	26	6.2	-0.4	0.9
04270	12	V	50	29	4.9	-0.6	-0.5
04320	00	V	50	23	4.3	0.6	-1.1
04320	12	V	50	25	4.5	1.0	-1.9
04339	00	V	50	25	5.3	1.2	0.3
04339	12	V	50	29	3.7	-0.5	0.6
04360	12	V	50	12	4.3	-1.0	0.2
04360	00	V	50	21	3.9	0.2	1.3
06011	00	V	50	27	4.3	1.0	-0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	50	28	4.2	0.4	0.0
06260	00	V	50	25	3.4	0.5	0.2
06260	12	V	50	4	2.9	-0.9	0.7
06610	00	V	50	29	3.9	0.0	0.7
06610	12	V	50	31	3.5	0.6	0.3
07110	00	V	50	21	3.9	0.8	0.1
07110	12	V	50	28	3.1	1.0	-0.1
07510	00	V	50	20	4.0	0.7	0.9
07510	12	V	50	25	4.3	-0.1	-1.0
07645	12	V	50	19	4.1	0.6	0.7
07645	00	V	50	15	5.4	1.5	-0.6
07761	00	V	50	7	5.8	3.4	0.5
07761	12	V	50	16	3.6	1.4	0.1
08001	00	V	50	24	3.5	0.7	-0.1
08001	12	V	50	30	3.5	-0.6	-0.3
08221	00	V	50	31	3.9	-0.8	0.9
08221	12	V	50	29	3.2	-0.1	0.2
08302	12	V	50	27	3.3	0.6	-0.3
08302	00	V	50	30	3.4	0.9	0.2
08508	12	V	50	30	3.6	-0.2	-0.8
08522	12	V	50	31	3.5	0.1	0.1
08579	12	V	50	31	3.4	-0.2	-0.3
10035	00	V	50	30	4.2	-0.1	0.1
10035	12	V	50	30	3.7	-0.3	0.6
10393	00	V	50	28	3.4	0.8	-0.9
10393	12	V	50	31	3.6	-0.4	0.2
10410	00	V	50	30	3.3	0.3	-0.1
10410	12	V	50	30	3.7	0.9	0.1
10739	00	V	50	30	3.3	0.3	-0.3
10739	12	V	50	31	3.2	0.4	0.2
11035	12	V	50	31	4.4	0.9	-0.6
11035	00	V	50	31	3.1	0.1	0.3
12982	00	V	50	30	3.4	0.6	-0.1
12982	12	V	50	31	3.0	0.2	-0.5
16044	12	V	50	31	3.3	0.1	-0.6
16044	00	V	50	30	2.8	0.0	-0.6
16080	00	V	50	30	3.3	0.1	-0.4
16080	12	V	50	31	3.0	0.5	-0.2
16245	12	V	50	30	3.3	0.2	0.5
16245	00	V	50	25	4.0	1.0	0.3
16320	12	V	50	30	3.9	0.7	-0.5
16320	00	V	50	29	5.0	1.7	-0.3
16429	12	V	50	28	4.0	0.9	0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	00	V	50	27	4.0	0.4	0.9
16622	00	V	50	15	4.1	0.8	1.5
16754	00	V	50	26	4.1	0.4	-0.1
17607	12	V	50	14	4.2	0.0	1.1
26435	00	V	50	13	3.5	-0.9	0.5
60018	00	V	50	31	4.4	0.4	1.0
60018	12	V	50	31	4.0	1.3	-0.1
ASDE01	00	V	50	6	3.9	0.4	0.0
ASDE01	12	V	50	4	3.4	-0.4	-0.9
ASDE02	00	V	50	24	4.4	0.1	-1.2
ASDE03	00	V	50	7	2.9	1.0	0.6
ASDE03	12	V	50	7	3.0	-1.1	-0.8
ASDE04	00	V	50	4	3.7	-0.1	-1.3
ASDE04	12	V	50	5	4.8	0.4	2.1
ASDE09	12	V	50	3	6.2	-1.9	-1.2
ASDK1	00	V	50	3	2.2	-1.0	0.7
ASDK1	12	V	50	8	3.7	0.8	-1.0
ASDK3	12	V	50	9	3.5	-0.1	0.3
ASDK3	00	V	50	8	4.7	-1.0	-0.1
ASES01	12	V	50	19	5.4	-1.7	-0.5
ASEU01	12	V	50	7	3.5	-1.2	-0.6
ASEU02	12	V	50	7	5.1	-0.4	1.7
ASEU02	00	V	50	9	5.5	-0.5	-0.2
ASEU03	00	V	50	5	3.0	-0.3	0.4
ASEU03	12	V	50	6	3.3	1.1	1.3
ASEU04	00	V	50	1	2.3	-1.4	-1.8
ASEU04	12	V	50	5	3.0	-1.6	0.1
ASEU05	00	V	50	5	3.2	-1.5	1.1
ASEU05	12	V	50	7	3.6	0.9	-0.2
ASEU06	00	V	50	7	4.2	-1.6	1.0
ASEU06	12	V	50	8	4.4	-0.8	0.7
ASFR1	12	V	50	13	3.6	-0.7	1.5
ASFR1	00	V	50	14	4.1	-0.2	0.8
ASFR2	00	V	50	11	3.9	0.9	-0.6
ASFR2	12	V	50	10	4.1	-1.1	-0.9
ASFR3	00	V	50	1	1.7	-1.5	0.9
ASFR3	12	V	50	3	2.8	-1.0	0.4
ASFR4	00	V	50	4	3.7	0.6	-0.5
ASFR4	12	V	50	7	4.0	-0.7	0.9
DBLK	12	V	50	6	4.9	1.5	2.3
LGKI	12	V	50	20	4.5	0.3	-2.0
LGKI	00	V	50	18	4.5	0.6	-2.7

4.3 Table 15 - Radiosonde Monitoring Statistics (EUCOS): 100 hPa Geopotential height (metres)

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 100 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : MAR 2015
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	100	30	11.7	-2.8
01001	12	Z	100	30	9.7	1.8
01028	12	Z	100	29	14.8	4.6
01028	00	Z	100	30	10.9	4.3
01400	00	Z	100	19	24.2	19.0
01400	12	Z	100	24	28.1	21.2
01415	12	Z	100	31	12.4	4.7
01415	00	Z	100	31	12.9	0.8
02365	00	Z	100	38	7.8	-0.4
02365	12	Z	100	41	9.3	0.1
02591	00	Z	100	43	11.3	10.0
02591	12	Z	100	39	13.3	11.6
02836	00	Z	100	29	11.2	-2.8
02836	12	Z	100	30	9.2	0.5
02963	12	Z	100	31	7.4	3.4
02963	00	Z	100	31	8.2	4.1
03005	12	Z	100	47	9.5	1.9
03005	00	Z	100	47	8.1	-0.7
03238	00	Z	100	31	12.4	9.5
03238	12	Z	100	11	12.5	8.5
03808	00	Z	100	49	9.3	3.8
03808	12	Z	100	50	9.1	5.6
03918	12	Z	100	17	18.7	15.4
03918	00	Z	100	30	15.3	11.2
03953	12	Z	100	31	13.1	11.0
03953	00	Z	100	31	11.7	7.4
04018	12	Z	100	29	12.1	0.8
04018	00	Z	100	30	16.4	-5.0
04220	12	Z	100	29	19.2	9.9
04220	00	Z	100	27	14.1	3.6
04270	00	Z	100	29	9.4	-1.4
04270	12	Z	100	29	13.4	8.1
04320	00	Z	100	25	24.3	4.0
04320	12	Z	100	26	20.5	2.7
04339	00	Z	100	27	23.5	18.7
04339	12	Z	100	30	19.0	9.3
04360	12	Z	100	18	14.1	7.4
04360	00	Z	100	26	13.2	0.8
06011	00	Z	100	29	13.3	2.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	100	31	16.0	9.4
06260	00	Z	100	30	11.1	8.8
06260	12	Z	100	4	16.0	13.8
06610	00	Z	100	31	16.7	9.0
06610	12	Z	100	31	22.7	11.2
07110	00	Z	100	31	24.3	8.6
07110	12	Z	100	29	16.7	11.9
07510	00	Z	100	24	9.2	2.0
07510	12	Z	100	28	11.4	8.4
07645	12	Z	100	25	47.8	46.8
07645	00	Z	100	26	41.6	39.9
07761	00	Z	100	13	8.5	0.0
07761	12	Z	100	23	13.2	10.1
08001	00	Z	100	29	11.7	8.6
08001	12	Z	100	31	18.2	14.6
08221	00	Z	100	31	17.2	14.5
08221	12	Z	100	31	15.0	12.2
08302	12	Z	100	29	8.9	-1.1
08302	00	Z	100	30	6.8	1.1
08508	12	Z	100	31	24.2	21.3
08522	12	Z	100	31	12.0	9.8
08579	12	Z	100	31	9.3	6.8
10035	00	Z	100	31	6.4	4.2
10035	12	Z	100	32	9.0	5.5
10393	00	Z	100	31	6.6	3.6
10393	12	Z	100	31	7.1	3.0
10410	00	Z	100	31	7.9	-1.0
10410	12	Z	100	31	10.6	3.5
10739	00	Z	100	31	9.9	6.7
10739	12	Z	100	31	10.5	8.0
11035	12	Z	100	31	7.9	4.4
11035	00	Z	100	31	10.2	0.9
12982	00	Z	100	30	6.8	1.1
12982	12	Z	100	31	28.4	27.4
16044	12	Z	100	31	9.2	2.0
16044	00	Z	100	31	33.5	7.1
16080	00	Z	100	31	9.7	-0.6
16080	12	Z	100	31	13.9	-4.0
16245	12	Z	100	29	8.8	-0.8
16245	00	Z	100	29	29.5	-6.1
16320	12	Z	100	31	11.8	1.0
16320	00	Z	100	31	8.1	4.9
16429	12	Z	100	30	8.9	2.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	00	Z	100	30	9.8	6.4
16622	00	Z	100	28	41.0	28.4
16754	00	Z	100	30	19.4	15.0
17607	12	Z	100	39	11.0	-9.5
26435	00	Z	100	15	8.5	5.3
60018	00	Z	100	31	12.0	10.4
60018	12	Z	100	31	7.9	4.6
ASDE01	00	Z	100	11	38.6	12.5
ASDE01	12	Z	100	5	13.4	7.4
ASDE02	00	Z	100	25	26.1	25.6
ASDE03	00	Z	100	7	10.7	10.2
ASDE03	12	Z	100	8	30.2	29.4
ASDE04	00	Z	100	5	46.2	41.1
ASDE04	12	Z	100	6	47.7	44.3
ASDE09	12	Z	100	4	25.0	23.2
ASDK1	00	Z	100	5	31.8	21.6
ASDK1	12	Z	100	8	15.1	13.6
ASDK3	12	Z	100	2	32.2	31.9
ASDK3	00	Z	100	11	29.4	23.4
ASES01	12	Z	100	19	20.8	18.9
ASEU01	12	Z	100	8	35.1	32.5
ASEU02	12	Z	100	9	48.3	47.8
ASEU02	00	Z	100	10	45.3	43.8
ASEU03	00	Z	100	11	40.6	39.9
ASEU03	12	Z	100	11	48.0	45.2
ASEU04	00	Z	100	3	10.6	7.9
ASEU04	12	Z	100	6	9.7	7.9
ASEU05	00	Z	100	10	20.9	18.4
ASEU05	12	Z	100	13	23.5	20.3
ASEU06	00	Z	100	7	26.0	-8.1
ASEU06	12	Z	100	10	38.3	20.8
ASFR1	12	Z	100	12	9.7	3.3
ASFR1	00	Z	100	15	10.8	2.0
ASFR2	00	Z	100	11	16.8	15.0
ASFR2	12	Z	100	12	22.4	19.0
ASFR3	00	Z	100	1	2.4	2.4
ASFR3	12	Z	100	4	15.7	-0.4
ASFR4	00	Z	100	5	45.6	25.0
ASFR4	12	Z	100	8	21.6	18.4
DBLK	12	Z	100	6	3.6	2.2
LGKI	12	Z	100	24	26.7	9.5
LGKI	00	Z	100	22	16.9	9.0

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 100 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : MAR 2015
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	100	30	4.0	0.5	-0.7
01001	12	V	100	30	4.7	0.9	-1.1
01028	12	V	100	29	4.0	1.5	-1.7
01028	00	V	100	29	3.3	0.9	0.2
01400	00	V	100	15	3.8	0.5	-0.9
01400	12	V	100	18	3.2	0.0	-0.5
01415	12	V	100	31	4.8	0.6	-0.8
01415	00	V	100	30	5.1	-0.2	-0.8
02365	00	V	100	30	3.9	0.6	0.1
02365	12	V	100	31	4.0	-0.9	-0.9
02591	00	V	100	29	3.2	0.3	0.3
02591	12	V	100	31	3.2	0.5	-0.8
02836	00	V	100	29	4.1	0.6	-0.8
02836	12	V	100	29	3.3	1.2	-0.4
02963	12	V	100	31	3.8	-0.3	-1.0
02963	00	V	100	31	4.0	-0.4	-0.2
03005	12	V	100	31	4.2	0.1	0.0
03005	00	V	100	31	4.9	-0.8	0.1
03238	00	V	100	27	6.4	1.2	-0.7
03238	12	V	100	11	4.7	1.0	0.4
03808	00	V	100	29	3.8	-0.5	0.3
03808	12	V	100	31	4.0	0.5	-0.2
03918	12	V	100	17	4.9	1.0	0.1
03918	00	V	100	27	4.8	-0.8	1.2
03953	12	V	100	30	4.2	-0.4	0.4
03953	00	V	100	30	4.8	-1.4	-0.5
04018	12	V	100	29	4.3	1.2	0.7
04018	00	V	100	28	4.8	1.1	-0.9
04220	12	V	100	29	3.0	-0.7	0.0
04220	00	V	100	27	2.5	-0.2	0.1
04270	00	V	100	28	4.5	-0.2	-0.6
04270	12	V	100	29	4.4	-0.2	0.4
04320	00	V	100	25	2.6	0.4	-0.2
04320	12	V	100	26	3.6	0.7	-0.9
04339	00	V	100	25	3.4	0.4	-0.6
04339	12	V	100	29	4.3	0.6	0.5
04360	12	V	100	18	3.2	0.3	-0.4
04360	00	V	100	26	2.2	-0.6	-0.4
06011	00	V	100	28	3.5	0.2	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	100	30	3.5	0.4	-0.3
06260	00	V	100	29	4.0	0.4	-0.2
06260	12	V	100	4	4.0	-2.7	1.9
06610	00	V	100	29	5.1	0.8	-1.6
06610	12	V	100	31	3.5	0.6	-0.3
07110	00	V	100	26	3.7	0.2	-1.1
07110	12	V	100	28	4.0	0.4	-0.2
07510	00	V	100	24	3.5	-0.5	-0.6
07510	12	V	100	27	3.6	-0.8	0.4
07645	12	V	100	23	5.1	1.7	-0.7
07645	00	V	100	21	4.0	0.6	0.2
07761	00	V	100	11	4.3	-0.5	0.0
07761	12	V	100	21	4.0	1.4	-0.1
08001	00	V	100	28	3.4	-0.5	0.9
08001	12	V	100	31	3.3	-0.1	0.0
08221	00	V	100	31	3.2	-0.9	0.4
08221	12	V	100	31	3.0	-0.7	0.4
08302	12	V	100	29	3.5	-0.6	-0.2
08302	00	V	100	30	4.3	0.3	0.8
08508	12	V	100	30	3.7	-0.3	-0.9
08522	12	V	100	31	3.9	0.2	0.2
08579	12	V	100	31	3.8	-0.1	-0.1
10035	00	V	100	30	3.3	-0.2	-0.6
10035	12	V	100	31	3.8	0.5	0.3
10393	00	V	100	30	3.4	0.2	0.5
10393	12	V	100	31	3.3	0.5	0.9
10410	00	V	100	30	3.5	0.3	0.0
10410	12	V	100	31	3.7	0.3	-0.8
10739	00	V	100	30	3.9	0.1	-0.3
10739	12	V	100	31	3.0	0.4	0.4
11035	12	V	100	31	4.1	0.8	-0.8
11035	00	V	100	31	3.5	-0.4	-1.2
12982	00	V	100	30	3.4	0.7	0.0
12982	12	V	100	31	4.0	0.6	-1.7
16044	12	V	100	31	4.3	1.1	-1.0
16044	00	V	100	30	4.3	-0.7	0.4
16080	00	V	100	30	4.8	0.2	0.0
16080	12	V	100	31	5.7	-0.3	-0.3
16245	12	V	100	29	4.0	1.2	-0.4
16245	00	V	100	25	2.9	-0.1	0.4
16320	12	V	100	31	3.4	0.5	-0.3
16320	00	V	100	29	4.5	1.6	-0.5
16429	12	V	100	29	4.3	1.0	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	00	V	100	28	4.7	0.3	1.0
16622	00	V	100	15	4.0	1.0	-0.1
16754	00	V	100	30	4.9	-0.6	-1.3
17607	12	V	100	20	4.1	0.8	-1.0
26435	00	V	100	15	2.9	-0.7	0.4
60018	00	V	100	31	4.4	0.4	0.1
60018	12	V	100	30	4.7	1.0	0.5
ASDE01	00	V	100	10	3.9	1.8	0.0
ASDE01	12	V	100	5	4.7	2.4	0.0
ASDE02	00	V	100	25	4.9	0.3	0.1
ASDE03	00	V	100	7	3.5	-0.3	-1.3
ASDE03	12	V	100	8	4.5	-0.6	-2.4
ASDE04	00	V	100	4	4.2	-1.6	-0.2
ASDE04	12	V	100	6	3.8	-0.9	0.0
ASDE09	12	V	100	4	3.6	2.1	1.0
ASDK1	00	V	100	5	4.7	1.1	0.8
ASDK1	12	V	100	8	4.4	-0.2	-1.5
ASDK3	12	V	100	2	3.5	0.4	-1.6
ASDK3	00	V	100	10	3.7	1.0	0.7
ASES01	12	V	100	19	3.8	0.5	-0.5
ASEU01	12	V	100	8	3.0	0.1	-0.1
ASEU02	12	V	100	8	3.3	-1.4	1.6
ASEU02	00	V	100	9	4.0	-1.4	1.5
ASEU03	00	V	100	8	3.7	0.7	0.3
ASEU03	12	V	100	8	4.2	0.3	0.5
ASEU04	00	V	100	3	2.3	-0.2	1.3
ASEU04	12	V	100	6	3.0	-1.0	0.4
ASEU05	00	V	100	7	5.4	-3.5	1.6
ASEU05	12	V	100	9	3.3	0.9	-1.3
ASEU06	00	V	100	7	4.0	-0.5	0.7
ASEU06	12	V	100	10	5.0	0.0	0.8
ASFR1	12	V	100	12	3.1	0.5	-0.8
ASFR1	00	V	100	14	4.1	0.5	-1.0
ASFR2	00	V	100	11	2.8	0.5	1.0
ASFR2	12	V	100	12	3.9	-1.1	-0.7
ASFR3	00	V	100	1	3.6	3.6	-0.6
ASFR3	12	V	100	3	3.7	1.6	-0.1
ASFR4	00	V	100	4	2.6	-1.6	-0.6
ASFR4	12	V	100	7	3.6	0.7	-1.3
DBLK	12	V	100	6	3.3	-0.2	1.6
LGKI	12	V	100	23	4.0	0.8	-1.3
LGKI	00	V	100	21	4.2	2.3	-1.1

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

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RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 500 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : MAR 2015
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	500	29	10.6	1.4
01001	12	Z	500	30	6.5	1.1
01028	12	Z	500	29	8.2	4.3
01028	00	Z	500	31	8.0	2.9
01400	00	Z	500	21	21.1	15.0
01400	12	Z	500	25	22.6	13.8
01415	12	Z	500	31	7.9	4.8
01415	00	Z	500	31	6.1	2.1
02365	00	Z	500	38	4.9	3.5
02365	12	Z	500	41	4.7	1.9
02591	00	Z	500	43	9.5	9.2
02591	12	Z	500	39	11.1	10.4
02836	00	Z	500	29	4.7	2.5
02836	12	Z	500	30	5.6	3.1
02963	12	Z	500	31	7.9	6.5
02963	00	Z	500	31	6.9	5.1
03005	12	Z	500	47	7.0	0.2
03005	00	Z	500	47	5.2	0.8
03238	00	Z	500	31	11.9	10.1
03238	12	Z	500	11	8.1	6.3
03808	00	Z	500	53	5.7	2.5
03808	12	Z	500	50	7.1	3.0
03918	12	Z	500	17	13.0	11.1
03918	00	Z	500	30	12.5	11.2
03953	12	Z	500	32	7.6	6.6
03953	00	Z	500	31	7.0	5.3
04018	12	Z	500	29	6.1	3.9
04018	00	Z	500	30	8.0	4.5
04220	12	Z	500	30	9.5	5.0
04220	00	Z	500	30	7.6	3.1
04270	00	Z	500	29	7.2	0.6
04270	12	Z	500	30	5.3	2.8
04320	00	Z	500	26	10.2	7.5
04320	12	Z	500	27	9.0	6.2
04339	00	Z	500	27	6.4	4.0
04339	12	Z	500	30	7.1	3.7
04360	12	Z	500	27	5.8	1.5
04360	00	Z	500	29	5.6	1.9
06011	00	Z	500	31	6.6	1.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	500	32	32.3	15.1
06260	00	Z	500	30	6.4	5.2
06260	12	Z	500	4	8.0	6.0
06610	00	Z	500	31	8.4	6.5
06610	12	Z	500	31	9.8	7.9
07110	00	Z	500	31	21.0	2.9
07110	12	Z	500	31	7.4	5.5
07510	00	Z	500	28	6.8	-1.8
07510	12	Z	500	31	5.6	1.9
07645	12	Z	500	32	19.0	18.0
07645	00	Z	500	29	16.9	15.9
07761	00	Z	500	30	7.0	-2.3
07761	12	Z	500	36	8.0	3.3
08001	00	Z	500	30	10.7	7.4
08001	12	Z	500	31	9.8	7.1
08221	00	Z	500	31	11.0	9.1
08221	12	Z	500	31	10.3	8.9
08302	12	Z	500	29	5.3	1.0
08302	00	Z	500	30	5.2	1.9
08508	12	Z	500	31	17.4	14.7
08522	12	Z	500	31	8.7	6.8
08579	12	Z	500	30	7.3	5.8
10035	00	Z	500	31	4.9	3.2
10035	12	Z	500	32	4.8	2.3
10393	00	Z	500	31	2.9	0.0
10393	12	Z	500	31	3.2	-1.7
10410	00	Z	500	31	3.8	-1.9
10410	12	Z	500	31	4.0	-1.7
10739	00	Z	500	31	6.9	6.1
10739	12	Z	500	31	7.9	7.1
11035	12	Z	500	31	5.3	0.7
11035	00	Z	500	31	4.8	-0.3
12982	00	Z	500	31	5.6	2.2
12982	12	Z	500	31	10.9	9.4
16044	12	Z	500	31	6.5	3.0
16044	00	Z	500	31	6.8	4.9
16080	00	Z	500	31	6.0	0.0
16080	12	Z	500	31	4.4	-0.6
16245	12	Z	500	31	8.4	-6.1
16245	00	Z	500	31	18.9	-9.5
16320	12	Z	500	31	8.1	-1.0
16320	00	Z	500	31	5.0	1.1
16429	12	Z	500	30	6.3	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	00	Z	500	30	7.1	2.7
16622	00	Z	500	30	17.1	13.4
16754	00	Z	500	31	13.8	9.5
17607	12	Z	500	39	6.1	4.2
26435	00	Z	500	15	6.5	5.4
60018	00	Z	500	31	7.8	5.4
60018	12	Z	500	31	6.5	3.0
ASDE01	00	Z	500	11	23.0	5.9
ASDE01	12	Z	500	8	14.8	-9.6
ASDE02	00	Z	500	25	13.6	13.4
ASDE03	00	Z	500	9	10.0	0.2
ASDE03	12	Z	500	8	8.9	1.0
ASDE04	00	Z	500	5	35.5	29.7
ASDE04	12	Z	500	6	33.0	29.5
ASDE09	12	Z	500	3	6.1	3.3
ASDK1	00	Z	500	5	35.4	25.5
ASDK1	12	Z	500	9	14.4	10.8
ASDK3	12	Z	500	2	18.5	18.3
ASDK3	00	Z	500	11	25.1	18.4
ASES01	12	Z	500	19	8.3	5.7
ASEU01	12	Z	500	8	14.8	12.9
ASEU02	12	Z	500	10	35.8	35.5
ASEU02	00	Z	500	10	37.0	36.2
ASEU03	00	Z	500	15	35.9	33.0
ASEU03	12	Z	500	17	32.0	26.6
ASEU04	00	Z	500	4	8.4	-4.5
ASEU04	12	Z	500	7	6.7	-1.9
ASEU05	00	Z	500	13	14.8	11.5
ASEU05	12	Z	500	13	15.1	11.4
ASEU06	00	Z	500	8	30.1	-9.6
ASEU06	12	Z	500	11	39.3	-1.6
ASFR1	12	Z	500	13	7.8	-5.2
ASFR1	00	Z	500	16	9.8	-7.6
ASFR2	00	Z	500	11	10.6	9.4
ASFR2	12	Z	500	13	9.9	8.6
ASFR3	00	Z	500	2	8.8	5.1
ASFR3	12	Z	500	5	7.0	-2.0
ASFR4	00	Z	500	5	9.3	1.7
ASFR4	12	Z	500	8	14.2	7.4
DBLK	12	Z	500	6	4.5	3.5
LGKI	12	Z	500	24	12.3	5.6
LGKI	00	Z	500	23	10.6	0.5

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                : MAR 2015
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	500	29	3.8	0.3	-0.8
01001	12	V	500	30	4.4	-0.1	-0.2
01028	12	V	500	29	3.3	-0.3	0.3
01028	00	V	500	30	3.7	-0.3	0.1
01400	00	V	500	21	2.6	0.3	-0.5
01400	12	V	500	25	3.7	-0.6	0.2
01415	12	V	500	31	3.4	0.9	0.1
01415	00	V	500	30	3.0	0.1	0.6
02365	00	V	500	30	2.7	0.5	-0.5
02365	12	V	500	31	2.9	-0.1	0.3
02591	00	V	500	30	3.0	-0.3	1.2
02591	12	V	500	31	3.3	-0.2	-0.7
02836	00	V	500	29	3.1	0.3	0.0
02836	12	V	500	30	3.7	0.2	-0.4
02963	12	V	500	31	3.8	1.1	-0.3
02963	00	V	500	31	3.2	0.6	0.0
03005	12	V	500	31	3.4	0.6	0.4
03005	00	V	500	31	3.8	0.2	-0.2
03238	00	V	500	27	3.1	0.8	0.2
03238	12	V	500	11	3.0	1.2	0.2
03808	00	V	500	31	2.8	-0.4	0.0
03808	12	V	500	31	3.3	0.5	0.2
03918	12	V	500	17	4.0	1.0	-1.1
03918	00	V	500	27	2.9	0.4	-0.2
03953	12	V	500	31	2.9	0.2	-0.4
03953	00	V	500	30	3.5	-0.3	-0.8
04018	12	V	500	29	3.5	0.6	-0.4
04018	00	V	500	28	4.7	0.8	0.2
04220	12	V	500	30	3.8	-0.7	0.3
04220	00	V	500	29	3.4	0.3	0.2
04270	00	V	500	28	3.4	-0.8	0.7
04270	12	V	500	30	3.6	-0.6	-0.2
04320	00	V	500	25	3.6	0.6	0.4
04320	12	V	500	27	2.9	0.8	-0.5
04339	00	V	500	25	3.5	-0.1	0.2
04339	12	V	500	30	4.2	-0.3	0.7
04360	12	V	500	27	4.2	-0.9	0.8
04360	00	V	500	28	4.1	0.5	0.2
06011	00	V	500	30	3.3	0.1	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	500	31	4.0	0.3	-0.7
06260	00	V	500	29	2.8	0.0	0.4
06260	12	V	500	4	2.9	-0.6	0.8
06610	00	V	500	29	3.0	0.3	-0.4
06610	12	V	500	31	2.7	0.0	0.1
07110	00	V	500	26	3.5	0.2	0.1
07110	12	V	500	31	4.1	0.2	-0.2
07510	00	V	500	27	3.7	-0.5	0.2
07510	12	V	500	30	3.6	0.0	-0.2
07645	12	V	500	31	3.2	0.1	-0.1
07645	00	V	500	27	2.9	0.1	-0.1
07761	00	V	500	27	3.5	0.4	0.7
07761	12	V	500	31	4.8	0.0	0.2
08001	00	V	500	30	2.7	0.2	0.3
08001	12	V	500	31	3.1	-0.3	0.5
08221	00	V	500	31	2.4	-0.1	-0.2
08221	12	V	500	31	3.4	-0.3	-0.8
08302	12	V	500	29	3.7	0.3	0.1
08302	00	V	500	30	2.9	0.4	0.1
08508	12	V	500	31	2.7	0.4	-0.4
08522	12	V	500	31	2.7	0.3	-0.1
08579	12	V	500	30	2.5	-0.3	-0.2
10035	00	V	500	30	3.1	-0.3	-0.1
10035	12	V	500	31	3.9	-0.5	-0.4
10393	00	V	500	30	3.7	-0.4	0.1
10393	12	V	500	31	2.8	0.6	0.5
10410	00	V	500	30	2.5	-0.1	-0.4
10410	12	V	500	31	2.4	0.2	0.2
10739	00	V	500	30	2.2	0.5	-0.5
10739	12	V	500	31	3.2	0.4	0.0
11035	12	V	500	31	3.4	-0.4	-0.3
11035	00	V	500	31	2.8	-0.6	-0.3
12982	00	V	500	31	3.3	-0.3	-0.4
12982	12	V	500	31	3.1	0.0	0.3
16044	12	V	500	31	3.2	-0.1	-0.2
16044	00	V	500	30	3.3	0.2	-0.3
16080	00	V	500	30	3.4	-0.2	-0.8
16080	12	V	500	31	3.6	0.2	-1.2
16245	12	V	500	30	3.8	0.7	1.0
16245	00	V	500	27	3.5	0.5	-0.2
16320	12	V	500	31	3.3	0.7	-0.1
16320	00	V	500	29	3.6	0.8	-0.5
16429	12	V	500	30	3.5	0.4	0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	00	V	500	28	3.5	-0.1	0.7
16622	00	V	500	15	2.5	-0.3	-0.2
16754	00	V	500	31	3.4	0.0	0.4
17607	12	V	500	21	3.3	0.8	0.0
26435	00	V	500	15	2.6	0.4	-0.4
60018	00	V	500	31	3.0	-0.1	0.8
60018	12	V	500	31	3.4	0.9	0.3
ASDE01	00	V	500	10	3.4	-0.9	-1.2
ASDE01	12	V	500	8	3.2	0.1	-1.0
ASDE02	00	V	500	25	3.6	0.1	0.5
ASDE03	00	V	500	8	2.6	0.5	0.7
ASDE03	12	V	500	8	4.8	-0.2	1.9
ASDE04	00	V	500	5	2.2	0.8	-0.3
ASDE04	12	V	500	6	1.7	-0.3	0.8
ASDE09	12	V	500	3	1.6	-0.1	0.3
ASDK1	00	V	500	5	4.2	-1.3	1.8
ASDK1	12	V	500	9	2.1	0.5	0.1
ASDK3	12	V	500	2	6.2	-2.8	0.8
ASDK3	00	V	500	11	3.3	1.1	0.1
ASES01	12	V	500	19	3.8	0.3	0.5
ASEU01	12	V	500	8	3.3	0.0	0.0
ASEU02	12	V	500	9	3.2	0.1	0.7
ASEU02	00	V	500	9	3.2	0.1	0.8
ASEU03	00	V	500	14	4.9	-1.0	2.1
ASEU03	12	V	500	15	2.5	0.3	0.3
ASEU04	00	V	500	4	3.6	-0.3	1.3
ASEU04	12	V	500	7	3.8	-0.1	-1.9
ASEU05	00	V	500	12	7.6	3.0	0.4
ASEU05	12	V	500	12	2.4	1.2	0.3
ASEU06	00	V	500	8	5.0	0.1	-0.1
ASEU06	12	V	500	11	3.0	-0.4	0.4
ASFR1	12	V	500	13	2.5	-0.1	-0.3
ASFR1	00	V	500	15	2.8	0.7	-1.0
ASFR2	00	V	500	11	3.3	0.6	1.4
ASFR2	12	V	500	13	2.8	0.5	0.1
ASFR3	00	V	500	2	3.6	-1.6	-0.6
ASFR3	12	V	500	4	1.6	-0.4	0.4
ASFR4	00	V	500	4	3.1	-1.1	1.1
ASFR4	12	V	500	7	2.7	-0.2	1.1
DBLK	12	V	500	6	2.7	0.3	0.0
LGKI	12	V	500	24	3.3	1.2	-1.1
LGKI	00	V	500	22	4.4	0.9	-0.6

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 850 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : MAR 2015
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	850	30	8.8	-0.8
01001	12	Z	850	29	5.7	-3.7
01028	12	Z	850	28	5.1	1.4
01028	00	Z	850	31	5.3	-0.7
01400	00	Z	850	21	18.3	11.1
01400	12	Z	850	25	18.8	8.2
01415	12	Z	850	31	4.1	2.0
01415	00	Z	850	31	3.8	1.4
02365	00	Z	850	38	4.4	3.5
02365	12	Z	850	41	3.4	1.4
02591	00	Z	850	43	7.9	7.6
02591	12	Z	850	39	8.8	8.4
02836	00	Z	850	29	3.3	1.5
02836	12	Z	850	30	3.5	1.9
02963	12	Z	850	31	4.6	2.9
02963	00	Z	850	31	4.6	3.6
03005	12	Z	850	47	5.7	-0.2
03005	00	Z	850	47	3.6	0.3
03238	00	Z	850	31	7.6	6.3
03238	12	Z	850	11	5.8	5.4
03808	00	Z	850	53	4.1	2.2
03808	12	Z	850	50	3.9	2.6
03918	12	Z	850	17	9.9	9.6
03918	00	Z	850	30	9.0	8.6
03953	12	Z	850	32	6.5	5.5
03953	00	Z	850	31	5.8	4.7
04018	12	Z	850	30	3.7	1.2
04018	00	Z	850	30	3.4	0.7
04220	12	Z	850	30	8.9	1.9
04220	00	Z	850	30	6.4	0.5
04270	00	Z	850	29	4.8	-1.7
04270	12	Z	850	30	2.9	-0.7
04320	00	Z	850	26	8.0	6.8
04320	12	Z	850	28	6.8	5.5
04339	00	Z	850	28	5.3	-2.7
04339	12	Z	850	30	4.2	-1.7
04360	12	Z	850	27	4.9	-2.5
04360	00	Z	850	29	6.0	-3.1
06011	00	Z	850	31	3.2	2.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	850	32	8.6	5.9
06260	00	Z	850	30	4.3	3.5
06260	12	Z	850	4	3.4	1.5
06610	00	Z	850	31	3.3	2.2
06610	12	Z	850	31	4.4	1.9
07110	00	Z	850	31	3.9	1.1
07110	12	Z	850	31	3.8	1.7
07510	00	Z	850	28	5.0	-3.7
07510	12	Z	850	31	2.9	-1.6
07645	12	Z	850	32	4.9	3.4
07645	00	Z	850	30	4.6	2.2
07761	00	Z	850	30	4.4	-3.2
07761	12	Z	850	36	4.0	-0.3
08001	00	Z	850	30	6.2	1.4
08001	12	Z	850	31	6.4	1.7
08221	00	Z	850	31	4.5	4.0
08221	12	Z	850	31	5.0	4.5
08302	12	Z	850	29	2.6	-1.2
08302	00	Z	850	30	3.2	-1.4
08508	12	Z	850	31	14.3	9.8
08522	12	Z	850	31	4.2	3.2
08579	12	Z	850	30	3.9	3.1
10035	00	Z	850	31	4.1	2.4
10035	12	Z	850	32	3.1	1.5
10393	00	Z	850	31	2.7	-1.0
10393	12	Z	850	31	3.0	-2.4
10410	00	Z	850	31	3.4	-2.2
10410	12	Z	850	31	3.6	-2.5
10739	00	Z	850	31	6.6	5.9
10739	12	Z	850	31	7.4	6.9
11035	12	Z	850	31	3.5	-1.9
11035	00	Z	850	31	3.9	-2.9
12982	00	Z	850	31	3.3	-1.2
12982	12	Z	850	31	5.1	4.0
16044	12	Z	850	31	5.4	-3.4
16044	00	Z	850	31	3.7	-0.7
16080	00	Z	850	31	6.4	-2.8
16080	12	Z	850	31	4.7	-3.2
16245	12	Z	850	31	10.0	-9.1
16245	00	Z	850	30	16.2	-10.8
16320	12	Z	850	31	7.1	-2.3
16320	00	Z	850	31	5.2	-0.5
16429	12	Z	850	30	6.0	-3.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	00	Z	850	30	5.8	0.2
16622	00	Z	850	30	16.1	12.9
16754	00	Z	850	31	7.2	3.9
17607	12	Z	850	39	3.4	1.4
26435	00	Z	850	15	4.7	4.1
60018	00	Z	850	31	3.4	-0.6
60018	12	Z	850	31	3.9	-2.4
ASDE01	00	Z	850	11	8.6	-4.6
ASDE01	12	Z	850	8	10.2	-9.0
ASDE02	00	Z	850	25	9.4	9.2
ASDE03	00	Z	850	8	6.4	-4.7
ASDE03	12	Z	850	8	6.9	-4.7
ASDE04	00	Z	850	5	33.8	26.7
ASDE04	12	Z	850	6	29.2	25.3
ASDE09	12	Z	850	3	2.5	-1.1
ASDK1	00	Z	850	5	39.8	28.0
ASDK1	12	Z	850	9	14.3	9.5
ASDK3	12	Z	850	2	16.2	16.0
ASDK3	00	Z	850	11	23.6	15.1
ASES01	12	Z	850	19	6.1	1.0
ASEU01	12	Z	850	8	9.8	7.6
ASEU02	12	Z	850	10	32.7	32.5
ASEU02	00	Z	850	10	32.7	31.8
ASEU03	00	Z	850	15	33.2	30.5
ASEU03	12	Z	850	17	30.4	24.8
ASEU04	00	Z	850	4	9.8	-7.8
ASEU04	12	Z	850	7	6.7	-4.2
ASEU05	00	Z	850	14	12.0	9.1
ASEU05	12	Z	850	13	13.5	9.5
ASEU06	00	Z	850	9	30.5	-7.4
ASEU06	12	Z	850	12	36.4	-0.5
ASFR1	12	Z	850	13	9.0	-7.6
ASFR1	00	Z	850	17	8.8	-7.5
ASFR2	00	Z	850	11	8.0	7.2
ASFR2	12	Z	850	13	6.2	5.5
ASFR3	00	Z	850	2	2.5	-1.2
ASFR3	12	Z	850	5	3.4	-1.9
ASFR4	00	Z	850	4	10.1	-10.1
ASFR4	12	Z	850	9	12.5	-0.9
DBLK	12	Z	850	6	3.4	1.3
LGKI	12	Z	850	25	5.2	-2.6
LGKI	00	Z	850	24	9.2	-5.6

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 850 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : MAR 2015
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	850	29	3.7	-0.5	0.0
01001	12	V	850	29	3.6	0.6	0.0
01028	12	V	850	28	2.7	-0.5	-0.3
01028	00	V	850	30	3.3	0.6	-0.4
01400	00	V	850	21	2.5	0.1	0.1
01400	12	V	850	25	2.4	0.1	-0.2
01415	12	V	850	31	2.8	0.3	0.0
01415	00	V	850	30	2.8	-0.5	0.1
02365	00	V	850	30	2.9	-0.7	0.0
02365	12	V	850	31	3.1	-0.2	-0.1
02591	00	V	850	30	2.9	0.7	-0.8
02591	12	V	850	31	2.3	-0.3	-0.3
02836	00	V	850	29	3.0	-0.7	0.6
02836	12	V	850	30	2.8	-0.3	-0.2
02963	12	V	850	31	2.3	0.2	0.4
02963	00	V	850	31	2.2	0.4	0.1
03005	12	V	850	31	2.9	-0.2	0.1
03005	00	V	850	31	3.2	0.7	-0.9
03238	00	V	850	27	3.5	-0.2	-0.3
03238	12	V	850	11	3.4	0.0	0.7
03808	00	V	850	31	2.9	0.3	0.4
03808	12	V	850	31	3.3	-0.5	-0.3
03918	12	V	850	17	4.3	0.5	-1.0
03918	00	V	850	27	2.5	-0.8	-0.9
03953	12	V	850	31	2.9	0.0	0.4
03953	00	V	850	30	2.8	0.3	0.7
04018	12	V	850	30	2.8	0.7	0.4
04018	00	V	850	28	3.3	0.0	-0.3
04220	12	V	850	30	3.0	-0.1	0.3
04220	00	V	850	29	2.9	0.6	0.4
04270	00	V	850	28	4.5	1.4	1.0
04270	12	V	850	30	4.5	1.1	0.9
04320	00	V	850	25	3.0	0.2	0.8
04320	12	V	850	28	3.2	-0.1	0.6
04339	00	V	850	26	6.1	0.8	0.7
04339	12	V	850	30	5.3	0.6	2.2
04360	12	V	850	27	6.6	3.6	1.1
04360	00	V	850	28	7.0	3.5	0.9
06011	00	V	850	30	3.1	0.4	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	850	31	2.6	-0.6	-0.3
06260	00	V	850	29	2.0	0.2	0.0
06260	12	V	850	4	2.9	1.9	0.0
06610	00	V	850	29	3.2	0.4	-0.3
06610	12	V	850	31	3.0	0.1	0.8
07110	00	V	850	26	2.9	-0.5	0.6
07110	12	V	850	31	3.0	-0.2	0.9
07510	00	V	850	27	2.6	-0.5	0.2
07510	12	V	850	30	4.2	-1.1	-1.0
07645	12	V	850	31	4.7	-0.1	0.7
07645	00	V	850	27	3.7	0.1	-0.2
07761	00	V	850	27	5.4	0.9	-0.1
07761	12	V	850	31	5.8	1.0	0.7
08001	00	V	850	30	2.7	-0.1	-0.4
08001	12	V	850	31	2.8	-0.1	0.1
08221	00	V	850	31	3.0	0.6	-0.1
08221	12	V	850	31	3.3	0.2	1.0
08302	12	V	850	29	4.8	-0.6	0.0
08302	00	V	850	30	4.0	-0.5	-0.7
08508	12	V	850	30	3.5	-0.5	-0.8
08522	12	V	850	30	4.5	-0.2	0.6
08579	12	V	850	30	3.3	-0.8	-0.2
10035	00	V	850	30	2.6	0.1	0.0
10035	12	V	850	31	2.6	0.3	-0.9
10393	00	V	850	30	2.5	-0.1	0.5
10393	12	V	850	31	2.7	-0.3	0.4
10410	00	V	850	30	2.8	-0.1	0.1
10410	12	V	850	31	2.7	0.4	0.5
10739	00	V	850	30	2.9	0.2	-0.1
10739	12	V	850	31	2.4	-0.6	0.2
11035	12	V	850	31	3.3	0.1	0.0
11035	00	V	850	31	3.1	0.3	0.3
12982	00	V	850	31	2.3	0.0	-0.9
12982	12	V	850	31	2.8	-0.3	-0.6
16044	12	V	850	31	3.5	0.1	0.9
16044	00	V	850	30	3.6	0.5	0.7
16080	00	V	850	30	3.4	0.2	-1.2
16080	12	V	850	31	3.7	0.1	-0.8
16245	12	V	850	29	3.6	0.8	-0.3
16245	00	V	850	26	4.3	1.2	-0.1
16320	12	V	850	31	3.4	0.5	-0.7
16320	00	V	850	29	3.0	-0.3	-0.7
16429	12	V	850	30	3.8	-0.2	1.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	00	V	850	28	2.8	-0.2	0.0
16622	00	V	850	15	3.0	-0.8	-0.6
16754	00	V	850	31	3.8	0.5	-1.1
17607	12	V	850	21	2.9	0.0	0.1
26435	00	V	850	15	1.7	0.0	0.0
60018	00	V	850	31	3.2	1.3	-0.5
60018	12	V	850	31	3.8	0.8	-0.5
ASDE01	00	V	850	10	3.8	-1.2	1.2
ASDE01	12	V	850	8	3.7	2.2	0.1
ASDE02	00	V	850	25	3.1	-0.2	0.9
ASDE03	00	V	850	8	2.9	1.2	-0.3
ASDE03	12	V	850	8	2.3	0.1	0.3
ASDE04	00	V	850	5	2.9	-0.7	-1.4
ASDE04	12	V	850	6	3.3	-1.0	0.5
ASDE09	12	V	850	3	2.6	1.0	0.5
ASDK1	00	V	850	5	3.1	0.1	-0.2
ASDK1	12	V	850	9	2.8	-1.9	-0.1
ASDK3	12	V	850	2	1.4	-1.3	-0.5
ASDK3	00	V	850	11	4.9	-1.4	0.2
ASES01	12	V	850	19	2.6	0.0	0.2
ASEU01	12	V	850	8	2.8	0.1	-0.9
ASEU02	12	V	850	9	3.3	0.3	-0.1
ASEU02	00	V	850	9	3.7	-1.6	0.4
ASEU03	00	V	850	14	4.0	-0.7	0.4
ASEU03	12	V	850	16	2.3	1.0	0.4
ASEU04	00	V	850	4	2.4	-0.2	0.7
ASEU04	12	V	850	7	3.3	-0.5	0.5
ASEU05	00	V	850	13	2.4	-0.3	0.6
ASEU05	12	V	850	12	2.7	0.5	0.2
ASEU06	00	V	850	9	11.6	-3.5	-1.8
ASEU06	12	V	850	11	4.3	-0.3	0.6
ASFR1	12	V	850	13	2.7	0.3	-0.5
ASFR1	00	V	850	16	2.8	-0.5	-0.1
ASFR2	00	V	850	11	3.5	-0.9	0.6
ASFR2	12	V	850	13	2.8	-0.5	0.7
ASFR3	00	V	850	2	1.2	-1.0	-0.4
ASFR3	12	V	850	4	2.4	1.5	1.7
ASFR4	00	V	850	4	1.5	-0.8	0.9
ASFR4	12	V	850	8	4.3	0.4	0.8
DBLK	12	V	850	6	1.9	0.0	0.4
LGKI	12	V	850	24	3.5	0.3	-1.2
LGKI	00	V	850	23	4.6	0.2	-0.1

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

```
DRIFTER MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE      : ECMWF
         ELEMENT MONITORED      : SURFACE PRESSURE (HPA)
         AREA                   : 10N - 90N, 70W - 40E
         PERIOD                 : MAR 2015
         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
13001	99	P	SUR	12	-23	131	0	0.3	0.2	0.4
13008	99	P	SUR	15	-38	100	0	0.3	0.2	0.3
13515	99	P	SUR	22	-34	184	0	0.4	0.3	0.5
13517	99	P	SUR	15	-25	154	0	0.3	0.5	0.6
13519	99	P	SUR	16	-28	191	0	0.3	0.3	0.5
13529	99	P	SUR	17	-23	200	0	0.8	0.0	0.8
13530	99	P	SUR	17	-22	173	0	0.4	0.3	0.5
13531	99	P	SUR	10	-44	176	0	0.3	0.0	0.3
13569	99	P	SUR	32	-30	192	0	0.3	0.1	0.3
13570	99	P	SUR	34	-27	215	0	0.4	0.5	0.7
13572	99	P	SUR	34	-31	217	0	0.3	0.1	0.3
13590	99	P	SUR	34	-24	72	0	0.4	0.8	0.8
13633	99	P	SUR	37	-32	216	0	0.5	-0.4	0.6
13659	99	P	SUR	27	-53	214	0	0.2	-0.1	0.3
13660	99	P	SUR	33	-53	214	5	2.0	-0.1	2.0
13661	99	P	SUR	12	-19	214	0	0.4	-0.2	0.4
13662	99	P	SUR	28	-44	214	0	0.2	0.0	0.2
13664	99	P	SUR	22	-46	214	0	0.3	0.5	0.6
13868	99	P	SUR	37	-15	214	0	0.3	0.3	0.5
13869	99	P	SUR	25	-26	214	0	0.3	0.3	0.5
13870	99	P	SUR	35	-16	123	0	0.5	0.6	0.8
13871	99	P	SUR	22	-23	98	0	0.5	0.3	0.6
13872	99	P	SUR	27	-20	102	0	0.4	0.8	0.9
21942	99	P	SUR	29	-25	201	0	0.4	0.4	0.6
25535	99	P	SUR	87	-54	189	0	1.1	0.3	1.1
25540	99	P	SUR	86	-46	217	0	1.0	0.5	1.1
25575	99	P	SUR	87	-55	217	0	0.6	0.0	0.6
26538	99	P	SUR	80	7	152	0	2.4	-0.4	2.4
31717	99	P	SUR	18	-55	215	0	0.3	0.2	0.4
31863	99	P	SUR	22	-51	206	0	0.5	0.6	0.8
41139	99	P	SUR	20	-38	139	0	0.3	-0.1	0.3
41560	99	P	SUR	34	-23	214	0	0.4	0.5	0.6
41564	99	P	SUR	31	-41	207	0	0.3	0.3	0.5
41580	99	P	SUR	17	-44	200	0	0.3	0.3	0.5
41590	99	P	SUR	19	-51	201	0	0.2	0.2	0.3
41591	99	P	SUR	15	-50	165	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
41594	99	P	SUR	20	-39	195	0	0.3	0.5	0.5
41596	99	P	SUR	21	-59	214	0	0.3	0.1	0.3
41597	99	P	SUR	22	-54	215	0	0.3	0.5	0.5
41598	99	P	SUR	22	-46	215	0	0.3	0.2	0.3
41599	99	P	SUR	21	-67	215	0	0.3	0.5	0.6
41600	99	P	SUR	15	-59	215	0	0.3	0.8	0.8
41632	99	P	SUR	27	-60	214	0	0.3	0.0	0.3
41705	99	P	SUR	34	-50	214	0	0.5	-0.3	0.6
41706	99	P	SUR	27	-63	214	0	0.3	0.0	0.3
41709	99	P	SUR	25	-70	214	0	0.3	0.3	0.4
41711	99	P	SUR	33	-49	214	0	0.4	-0.2	0.4
41737	99	P	SUR	26	-56	69	0	0.4	0.4	0.6
41739	99	P	SUR	34	-67	214	0	0.7	-0.5	0.8
41933	99	P	SUR	36	-54	216	0	0.4	-0.5	0.6
41936	99	P	SUR	37	-65	164	2	0.7	-0.3	0.7
41969	99	P	SUR	22	-40	181	0	0.3	-0.4	0.5
41970	99	P	SUR	31	-60	215	0	0.3	0.1	0.3
41971	99	P	SUR	35	-39	215	0	0.4	-0.1	0.4
41972	99	P	SUR	27	-49	215	0	0.3	0.0	0.3
41975	99	P	SUR	38	-46	183	0	0.6	-0.3	0.7
44505	99	P	SUR	46	-12	442	76	0.5	0.1	0.5
44513	99	P	SUR	48	-36	152	0	0.8	-0.1	0.8
44515	99	P	SUR	45	-58	166	0	0.6	0.0	0.6
44516	99	P	SUR	27	-64	209	0	0.3	0.3	0.4
44517	99	P	SUR	49	-30	145	0	0.5	-0.1	0.5
44546	99	P	SUR	27	-30	214	0	0.3	0.0	0.3
44547	99	P	SUR	54	-31	214	0	0.6	-0.1	0.6
44548	99	P	SUR	55	-40	214	0	0.7	-0.1	0.7
44549	99	P	SUR	49	-25	215	0	0.7	0.2	0.7
44550	99	P	SUR	53	-25	215	0	0.6	0.0	0.6
44551	99	P	SUR	54	-25	215	0	0.5	-0.1	0.5
44554	99	P	SUR	32	-41	201	0	0.3	0.1	0.3
44558	99	P	SUR	36	-55	217	0	0.6	0.2	0.6
44560	99	P	SUR	48	-34	198	0	0.6	0.0	0.6
44601	99	P	SUR	50	-28	214	0	0.6	-0.2	0.6
44602	99	P	SUR	55	-17	214	0	0.4	-0.4	0.6
44603	99	P	SUR	40	-60	13	13	0.0	0.0	0.0
44605	99	P	SUR	43	-4	206	0	0.4	-0.3	0.5
44606	99	P	SUR	48	-30	214	0	0.6	-0.3	0.7
44608	99	P	SUR	43	-22	203	21	1.2	0.5	1.3
44609	99	P	SUR	48	-39	214	0	0.5	0.2	0.6
44612	99	P	SUR	55	-19	197	0	0.7	-0.4	0.8
44613	99	P	SUR	35	-18	214	0	0.3	-0.1	0.3

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44614	99	P	SUR	50	-22	214	0	0.5	0.0	0.5
44620	99	P	SUR	54	-29	215	0	0.8	0.2	0.8
44621	99	P	SUR	57	-20	205	0	0.5	0.2	0.5
44622	99	P	SUR	57	-7	215	0	0.6	0.3	0.7
44623	99	P	SUR	55	-40	215	0	0.7	-0.4	0.8
44624	99	P	SUR	25	-21	213	0	0.3	0.0	0.3
44625	99	P	SUR	57	-23	180	0	0.5	0.0	0.5
44725	99	P	SUR	30	-61	201	0	2.5	-0.2	2.5
44739	99	P	SUR	42	-46	215	0	0.8	0.3	0.9
44740	99	P	SUR	28	-51	215	0	0.3	-0.3	0.4
44747	99	P	SUR	65	-30	209	0	1.1	-0.1	1.1
44760	99	P	SUR	56	-40	215	0	0.7	-0.5	0.9
44761	99	P	SUR	53	-41	215	0	0.7	-0.6	0.9
44762	99	P	SUR	48	-45	215	0	0.6	0.1	0.6
44763	99	P	SUR	56	-38	104	0	0.4	-0.1	0.4
44764	99	P	SUR	52	-45	97	0	0.7	-0.2	0.7
44765	99	P	SUR	36	-15	170	0	0.3	0.4	0.5
44766	99	P	SUR	49	-49	82	0	0.7	0.5	0.8
44773	99	P	SUR	22	-53	189	0	0.2	0.2	0.3
44774	99	P	SUR	39	-64	213	0	0.6	0.0	0.6
44775	99	P	SUR	32	-68	214	0	0.4	0.1	0.4
44776	99	P	SUR	40	-51	213	0	0.7	0.4	0.8
44778	99	P	SUR	35	-48	214	0	0.5	0.1	0.5
44779	99	P	SUR	41	-37	213	0	0.6	-0.1	0.6
44835	99	P	SUR	42	-29	215	0	0.5	-0.3	0.6
44836	99	P	SUR	53	-28	215	0	0.6	-0.2	0.7
44837	99	P	SUR	42	-11	215	0	0.3	0.0	0.3
44839	99	P	SUR	38	-23	215	0	0.3	0.1	0.3
44846	99	P	SUR	32	-38	214	0	0.3	0.5	0.6
44847	99	P	SUR	45	-29	214	0	0.5	0.2	0.5
44848	99	P	SUR	42	-40	214	0	0.7	-0.2	0.7
44863	99	P	SUR	31	-36	215	0	0.2	-0.1	0.3
44866	99	P	SUR	56	-34	214	0	0.6	-0.6	0.8
44867	99	P	SUR	53	-36	214	0	0.8	-0.5	0.9
44868	99	P	SUR	31	-52	214	0	0.4	-0.4	0.6
44871	99	P	SUR	47	-23	214	0	0.5	0.0	0.5
44872	99	P	SUR	48	-41	214	0	0.7	-0.8	1.0
44876	99	P	SUR	38	-48	118	0	0.6	0.2	0.6
44877	99	P	SUR	37	-25	215	0	0.3	0.2	0.3
44878	99	P	SUR	43	-25	215	0	0.3	0.0	0.3
44880	99	P	SUR	45	-49	215	0	0.7	-0.5	0.8
44885	99	P	SUR	42	-24	215	0	0.3	0.0	0.3
44887	99	P	SUR	38	-51	215	0	0.7	-0.3	0.7

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44888	99	P	SUR	42	-29	215	0	0.5	-0.2	0.5
44889	99	P	SUR	33	-45	215	0	0.3	-0.1	0.3
44890	99	P	SUR	32	-61	215	0	0.4	-0.4	0.6
44891	99	P	SUR	31	-32	215	0	0.3	0.1	0.3
44892	99	P	SUR	47	-34	207	0	0.7	-0.5	0.8
44896	99	P	SUR	31	-37	210	0	0.3	-0.2	0.3
47503	99	P	SUR	83	-13	217	0	0.7	-0.3	0.8
47585	99	P	SUR	68	-67	214	0	0.4	0.3	0.5
47586	99	P	SUR	56	-53	214	0	2.5	-0.7	2.5
48568	99	P	SUR	65	-38	213	0	2.9	-0.1	2.9
48597	99	P	SUR	84	-45	217	0	0.6	-0.1	0.6
48778	99	P	SUR	84	-23	215	0	0.6	-0.3	0.7
48779	99	P	SUR	80	-8	214	0	0.8	-0.5	0.9
62091	99	P	SUR	53	-5	215	0	0.5	-0.2	0.5
62092	99	P	SUR	51	-11	214	0	0.4	-0.2	0.5
62093	99	P	SUR	55	-10	214	0	1.0	-0.1	1.0
62094	99	P	SUR	52	-7	213	0	0.5	-0.2	0.6
62513	99	P	SUR	58	-33	215	0	0.6	0.0	0.6
62514	99	P	SUR	66	-6	214	0	0.5	0.0	0.5
62516	99	P	SUR	31	-17	214	0	0.3	0.4	0.5
62536	99	P	SUR	58	-10	214	0	0.6	-0.5	0.8
62537	99	P	SUR	55	-10	47	0	0.7	-0.3	0.7
62539	99	P	SUR	55	-27	215	0	0.5	-0.1	0.5
62551	99	P	SUR	59	-12	215	0	0.4	-0.2	0.5
62552	99	P	SUR	49	-20	213	0	0.4	0.1	0.4
62553	99	P	SUR	72	5	214	0	1.7	-0.2	1.7
62677	99	P	SUR	58	-34	104	0	0.5	0.1	0.5
62681	99	P	SUR	42	-10	214	0	0.3	-0.2	0.3
62687	99	P	SUR	77	2	214	0	1.6	-0.1	1.6
62695	99	P	SUR	25	-31	214	0	0.3	0.4	0.5
62713	99	P	SUR	27	-56	210	0	0.2	-0.2	0.3
62714	99	P	SUR	26	-57	211	0	0.2	-0.2	0.3
62940	99	P	SUR	35	-25	215	0	0.3	0.2	0.3
62941	99	P	SUR	35	-35	215	0	0.3	-0.1	0.3
63546	99	P	SUR	68	-14	214	7	3.3	-1.2	3.5
63640	99	P	SUR	74	35	214	0	0.5	0.0	0.5
63641	99	P	SUR	76	14	122	4	2.7	1.0	2.9
63644	99	P	SUR	74	19	173	0	2.0	-0.8	2.1
64471	99	P	SUR	83	26	208	0	0.6	-0.3	0.7
64517	99	P	SUR	59	-7	184	0	0.6	0.2	0.6
64518	99	P	SUR	60	-13	211	0	0.5	-0.2	0.5
64519	99	P	SUR	62	-8	215	0	0.6	0.1	0.6
64520	99	P	SUR	68	-12	138	13	1.5	-0.1	1.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
64521	99	P	SUR	71	-6	214	0	0.8	0.1	0.8
64522	99	P	SUR	67	6	215	0	0.7	0.1	0.8
64523	99	P	SUR	64	-13	215	0	0.6	0.1	0.6
64524	99	P	SUR	61	-3	215	0	0.5	-0.1	0.5
64525	99	P	SUR	68	-12	115	1	4.8	-0.1	4.8
64526	99	P	SUR	60	-23	199	0	0.5	-0.2	0.6
64527	99	P	SUR	61	-17	198	0	0.5	0.3	0.6
64532	99	P	SUR	65	-32	217	0	2.4	0.5	2.4
64533	99	P	SUR	67	-30	175	2	1.0	0.1	1.0
64534	99	P	SUR	65	-31	217	29	3.0	1.7	3.5
64535	99	P	SUR	78	-13	217	0	0.9	-0.3	1.0
64606	99	P	SUR	62	-12	166	0	0.5	0.4	0.7
64613	99	P	SUR	76	9	214	6	2.4	-0.4	2.4
64614	99	P	SUR	58	-28	214	0	0.5	-0.2	0.5
64615	99	P	SUR	75	14	210	6	2.8	0.0	2.8
64622	99	P	SUR	70	-7	214	0	1.2	0.3	1.3
64623	99	P	SUR	76	12	214	1	2.4	-0.5	2.5
64665	99	P	SUR	73	8	214	0	2.3	-0.3	2.3
64666	99	P	SUR	72	1	214	0	0.7	0.6	0.9
64667	99	P	SUR	63	-18	169	0	1.1	-0.4	1.2
64668	99	P	SUR	76	2	194	7	2.8	-0.8	2.9
64669	99	P	SUR	65	-23	214	0	0.5	-0.1	0.5
64692	99	P	SUR	70	4	214	0	0.5	0.4	0.6
65596	99	P	SUR	56	-47	215	0	0.7	0.0	0.7
65597	99	P	SUR	62	-25	125	1	0.9	-0.6	1.1
65598	99	P	SUR	50	-16	214	0	0.7	-0.1	0.7

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

```
          DRIFTER MONITORING STATISTICS (EUCOS)
                   MONITORING CENTRE     : ECMWF
                   ELEMENT MONITORED     : WIND SPEED (M/S)
                   AREA                  : 10N - 90N, 70W - 40E
                   PERIOD                : MAR 2015
                   STANDARD OF COMPARISON: FIRST-GUESS FIELD


TIME = 99 => AVERAGE OF ALL OBSERVATIONS


GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S
```

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
13001	99	SPEED	SUR	12	-23	131	0	0	0.8	0.8	1.1
13002	99	SPEED	SUR	20	-23	108	0	0	1.0	0.4	1.1
13008	99	SPEED	SUR	15	-38	100	0	0	0.8	-0.1	0.8
41026	99	SPEED	SUR	12	-38	79	0	0	0.9	0.2	0.9
41139	99	SPEED	SUR	20	-38	139	0	0	1.0	-0.1	1.0
62091	99	SPEED	SUR	53	-5	215	0	0	1.2	0.3	1.3
62092	99	SPEED	SUR	51	-11	214	0	0	1.3	-0.5	1.4
62093	99	SPEED	SUR	55	-10	214	0	0	1.5	-0.1	1.5
62094	99	SPEED	SUR	52	-7	213	0	0	1.2	-0.4	1.3

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

```
DRIFTER MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
         AREA                  : 10N - 90N, 70W - 40E
         PERIOD                : MAR 2015
         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
13001	99	DIRN	SUR	12	-23	131	0	0	9.4	1.4	9.5
13002	99	DIRN	SUR	20	-23	108	0	0	7.1	5.8	9.2
13008	99	DIRN	SUR	15	-38	100	0	0	10.5	-0.3	10.5
41026	99	DIRN	SUR	12	-38	79	0	0	7.7	4.3	8.8
41139	99	DIRN	SUR	20	-38	132	0	0	10.1	10.4	14.5
62091	99	DIRN	SUR	53	-5	185	0	0	10.2	-0.3	10.2
62092	99	DIRN	SUR	51	-11	190	0	0	12.1	-0.4	12.1
62093	99	DIRN	SUR	55	-10	206	0	0	11.4	-5.3	12.6
62094	99	DIRN	SUR	52	-7	192	0	0	13.6	4.3	14.3

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASDE02	ASDE04	ASES01	ASEU01	ASEU02	ASEU03	ASEU04	ASEU05	ASEU06
DBLK	02185	02365	02527	02591	03953	06260	10035	10113
10184	10238	10304	10393	10410	10548	10618	10739	10771
10868	10954	10962						

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

ASDE01 ASDE02 ASDE03 ASDE04 ASDE09 ASES01 ASEU01 ASEU02 ASEU03
ASEU04 ASEU05 ASEU06 ASEU06 Baguio DBLK Dalanzad DavaoAi
Laoag Legaspi LumbiaA Mactan Muren PuertoP Tanay Ulaan-Ba
Ulaan-Go 04692 17516 48811

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.