ECMWF Global Data Monitoring Report

April 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	Mar	Apr	Ident	Time	Mar	Apr
06011	(00)	31	5	06060	(00)	5	16
06011	(12)	30	5	06458	(00)	6	29
16754	(12)	25	0	08522	(12)	15	30
41169	(00)	13	0	08579	(12)	13	30
41256	(00)	26	0	08594	(12)	2	16
41316	(00)	20	0	10304	(00)	5	18
61291	(00)	30	5	10954	(00)	5	18
61291	(12)	30	5	16144	(00)	19	30
65578	(00)	29	6	30635	(12)	16	29
65578	(12)	31	7	33658	(00)	14	30
68592	(00)	21	0	33837	(00)	10	28
74004	(12)	34	6	37789	(00)	1	29
76225	(12)	24	0	40373	(00)	13	24
76394	(00)	24	0	41923	(12)	10	28
76405	(12)	26	0	41977	(00)	0	21
76458	(00)	23	0	64650	(00)	12	25
76526	(12)	23	0	67197	(00)	12	30
76612	(00)	23	0	67197	(12)	14	30
76654	(12)	18	0	68994	(00)	1	14
76692	(00)	24	0	70350	(00)	11	30
89611	(12)	30	0	76595	(00)	4	21
91610	(00)	18	0	78970	(00)	15	29
98444	(12)	30	2	78970	(12)	17	31
-	-	-	-	82400	(00)	9	25
-	-	-	-	82400	(12)	9	25
-	-	-	-	82917	(00)	0	15
-	-	-	-	82917	(12)	0	15
-	-	-	-	89512	(12)	0	14
-	-	-	-	89592	(12)	0	13
-	-	-	-	93112	(00)	17	29
-	-	-	-	94312	(00)	7	18
-	-	-	-	98618	(12)	17	28

2.2 Drifting Buoys

Surface pressure observations from **1761** 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

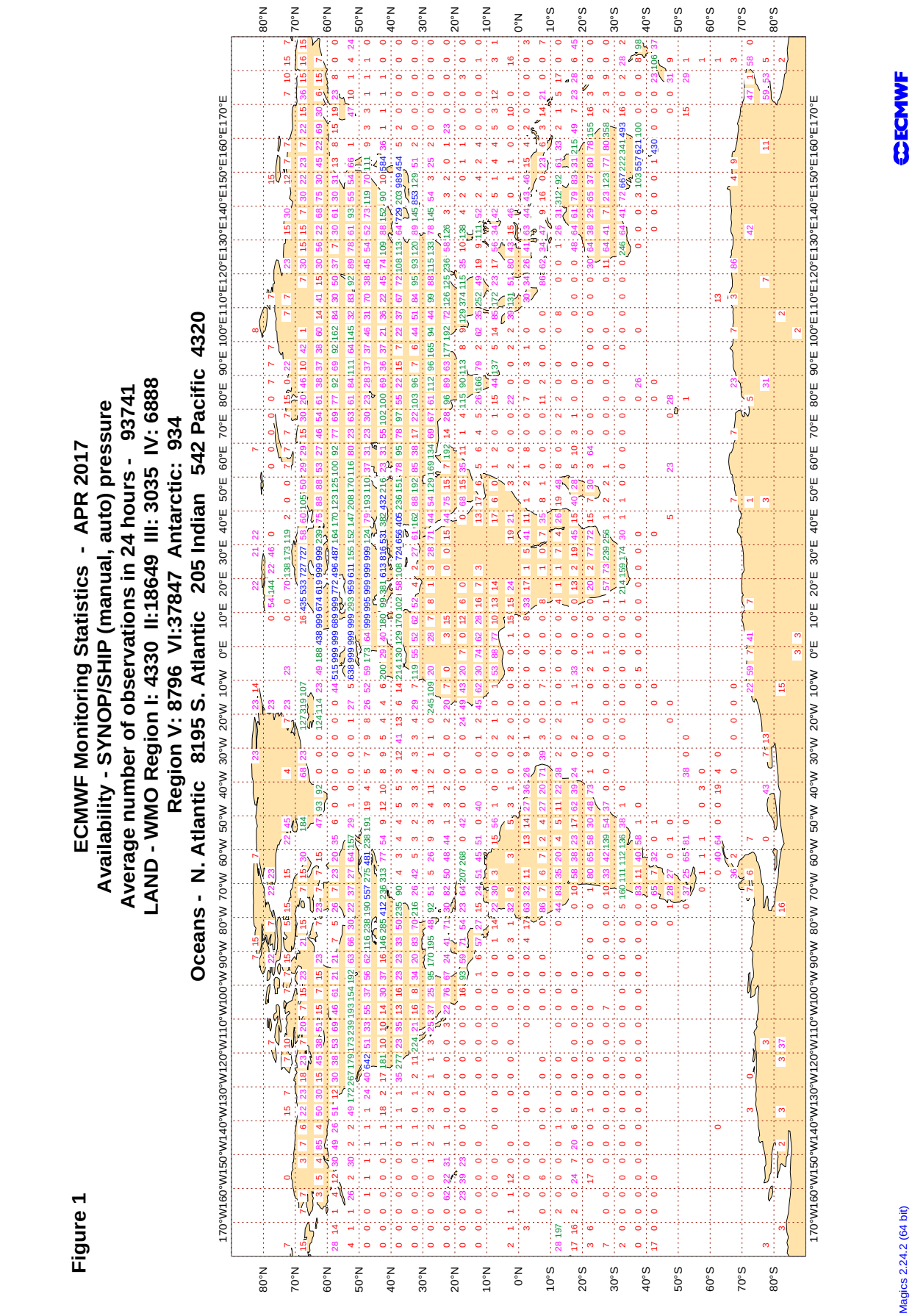


Figure 1

3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

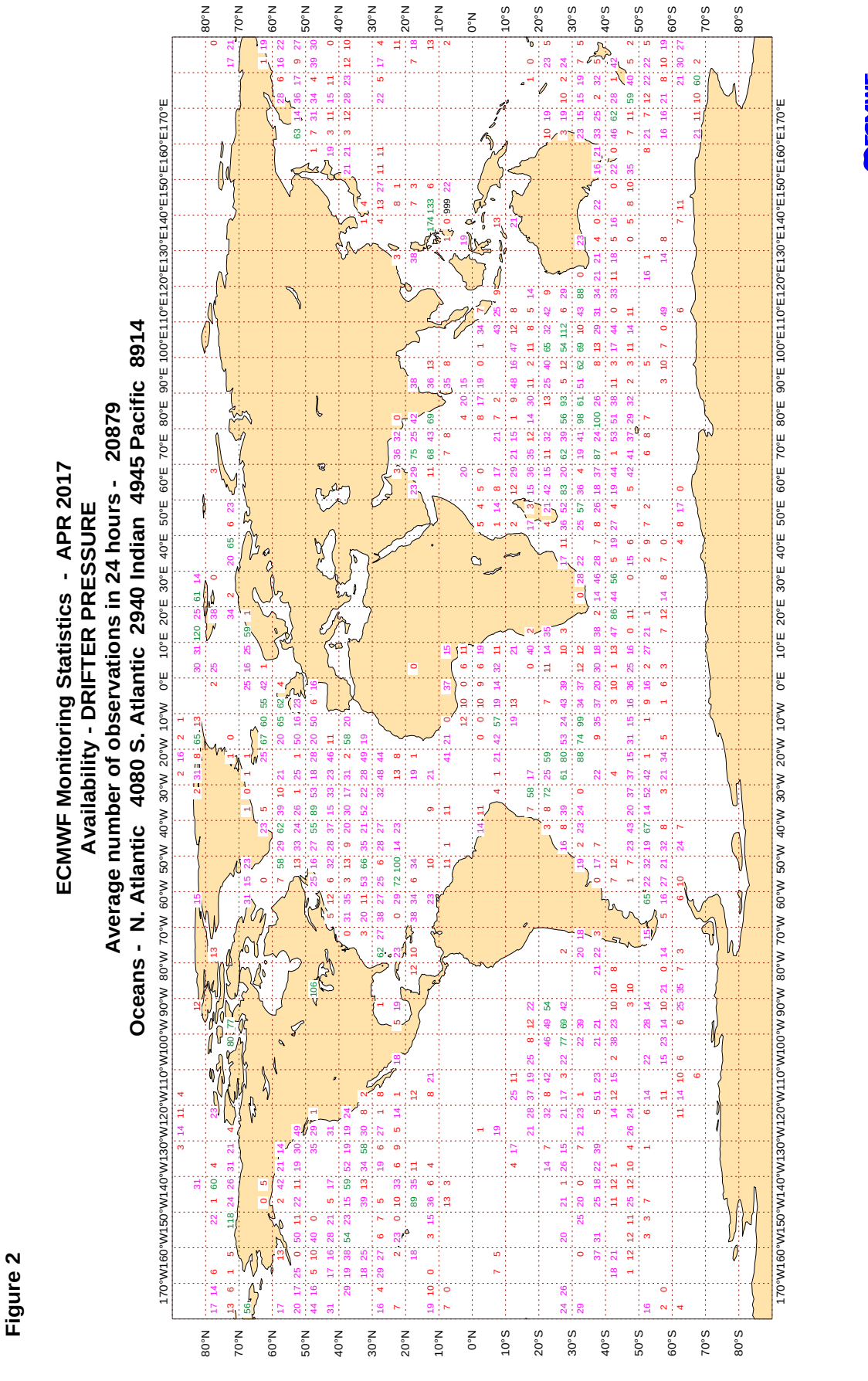


Figure 2

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

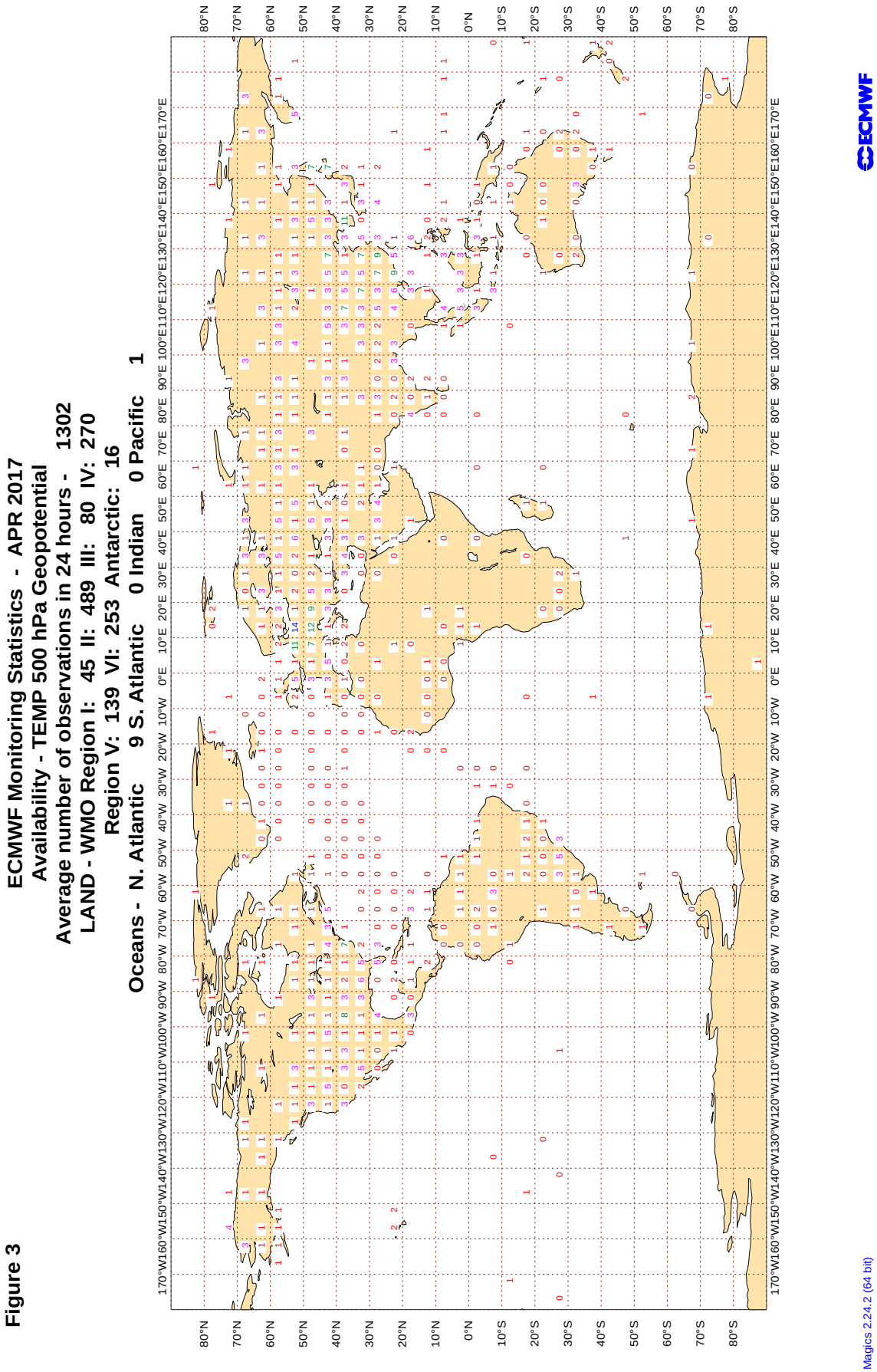


Figure 3

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

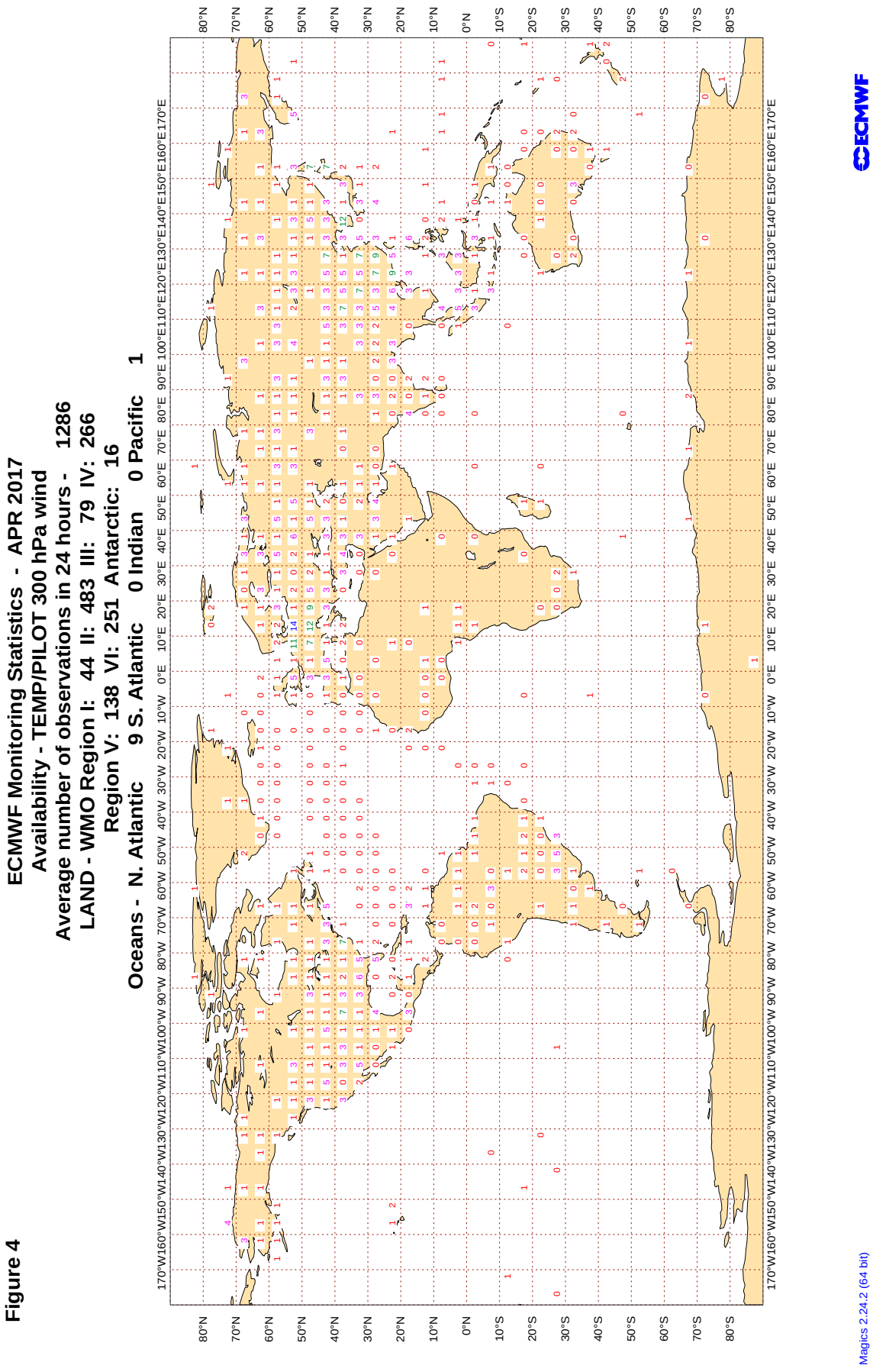


Figure 4

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

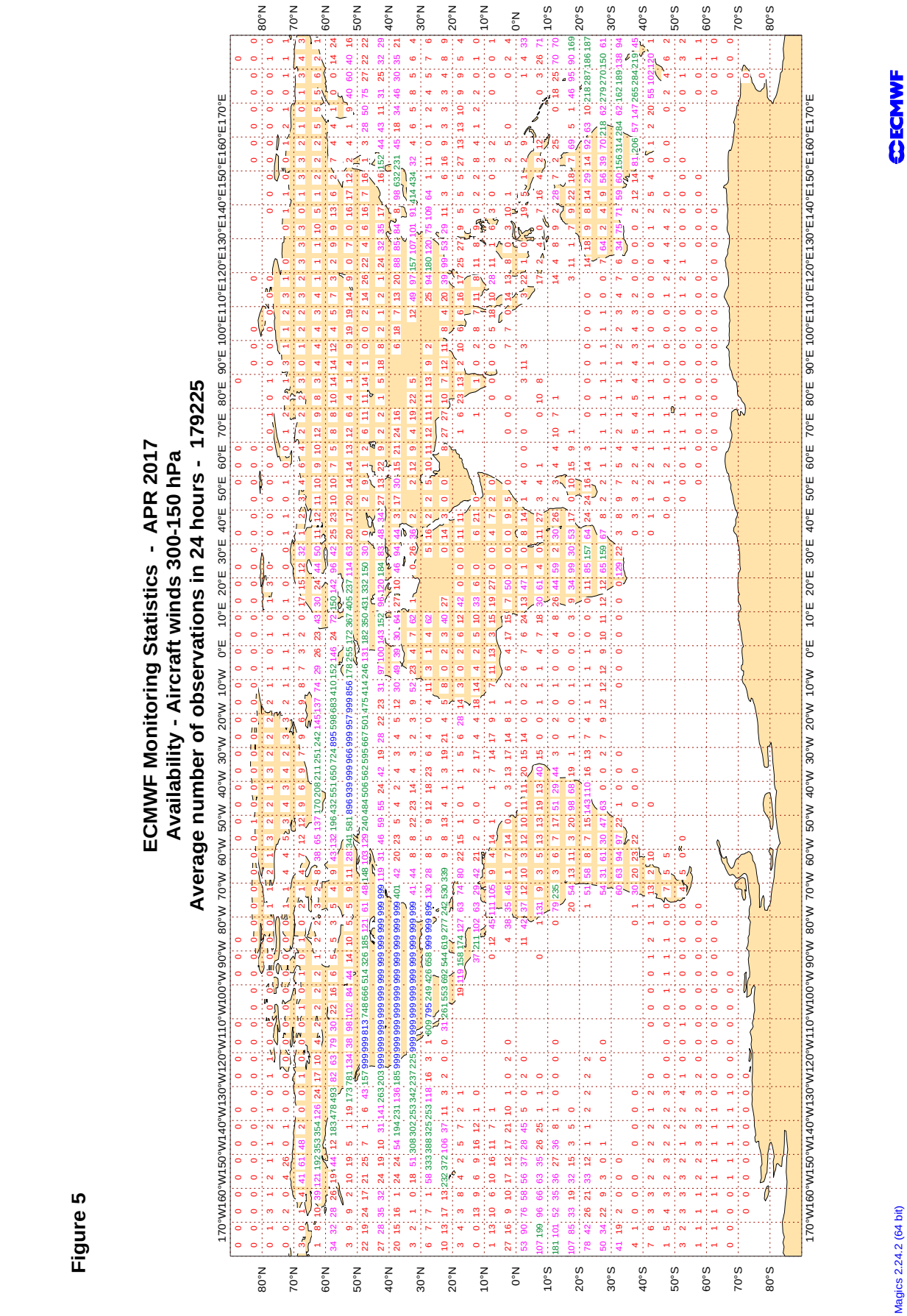


Figure 5

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

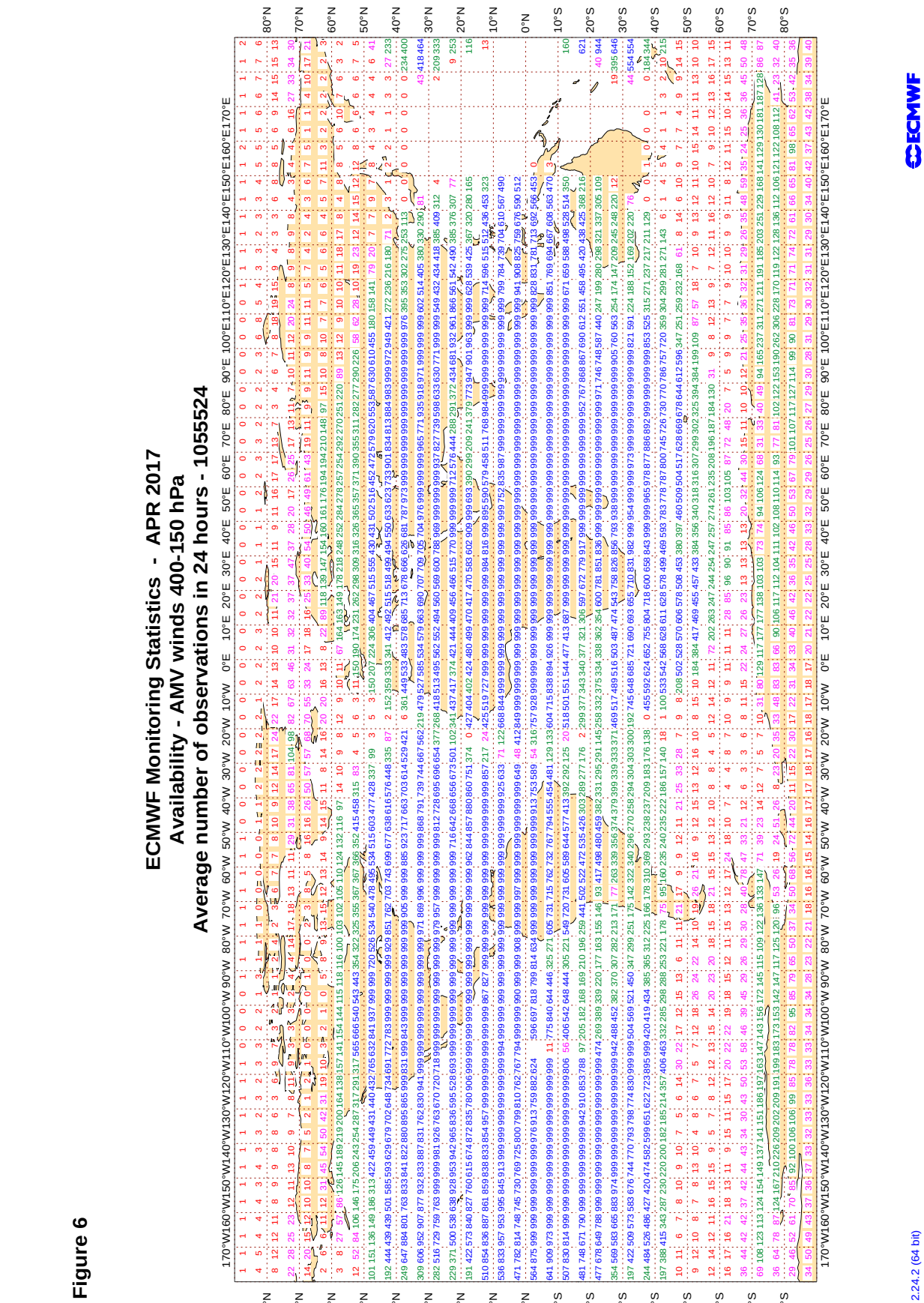


Figure 6

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

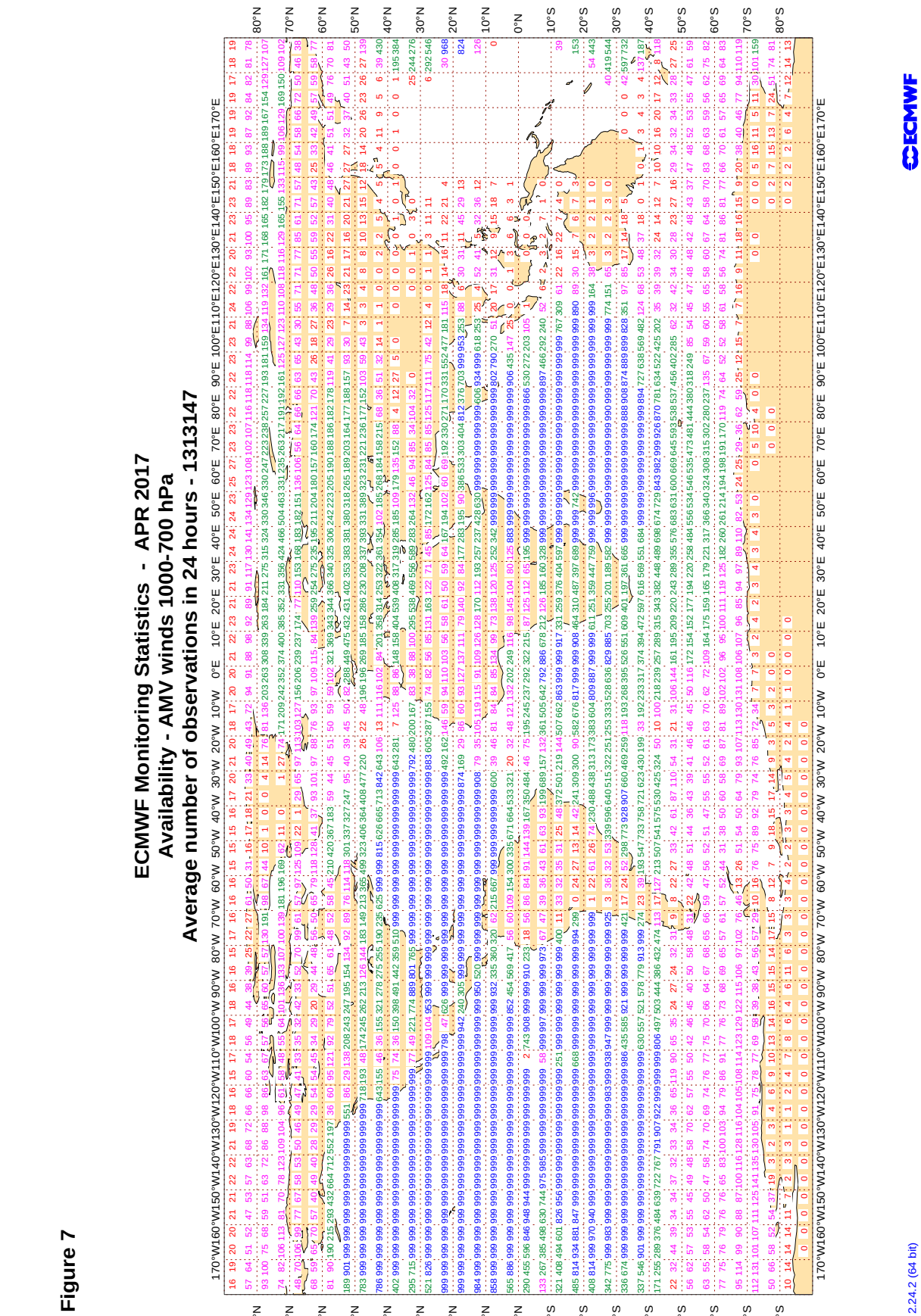


Figure 7

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

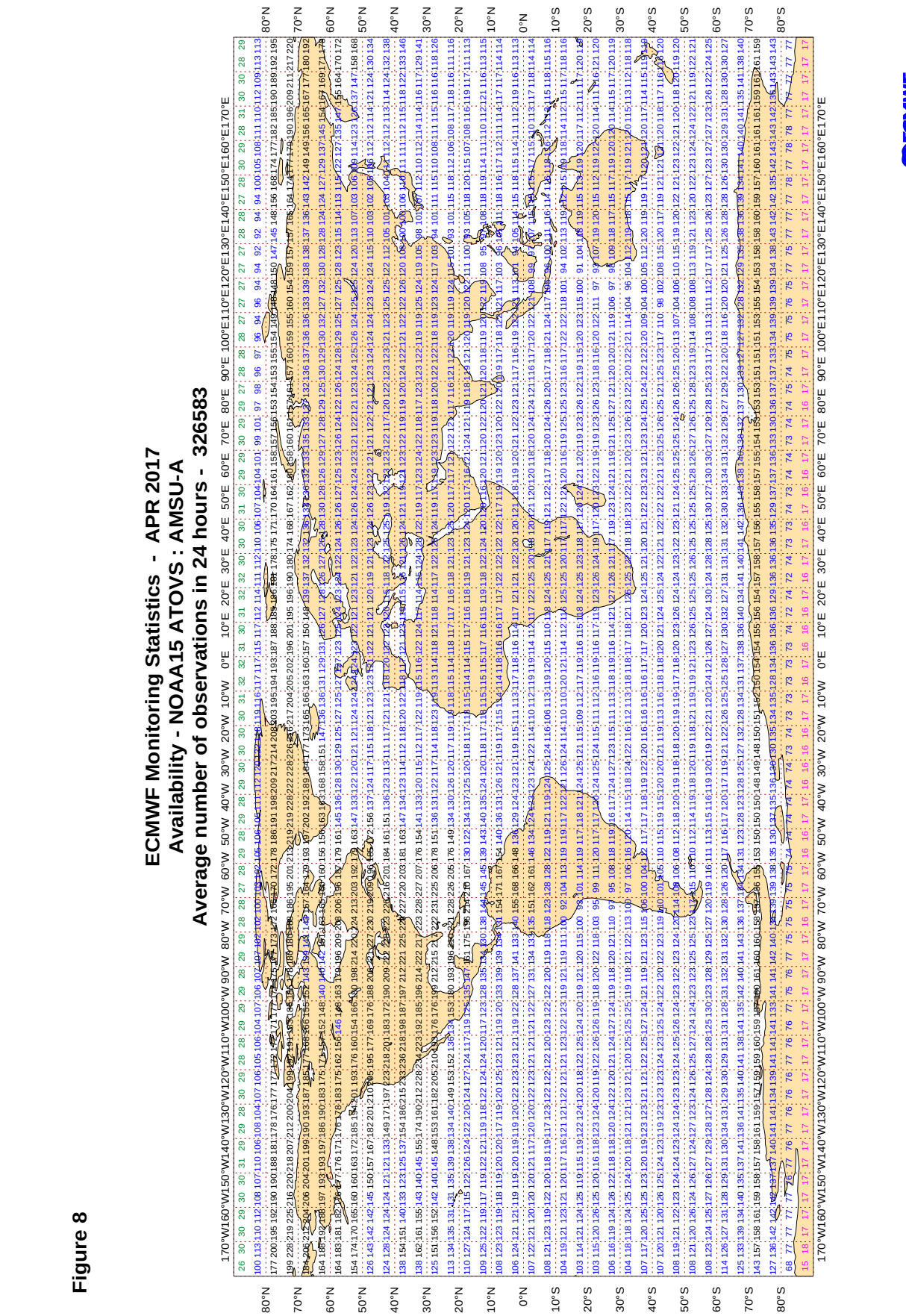
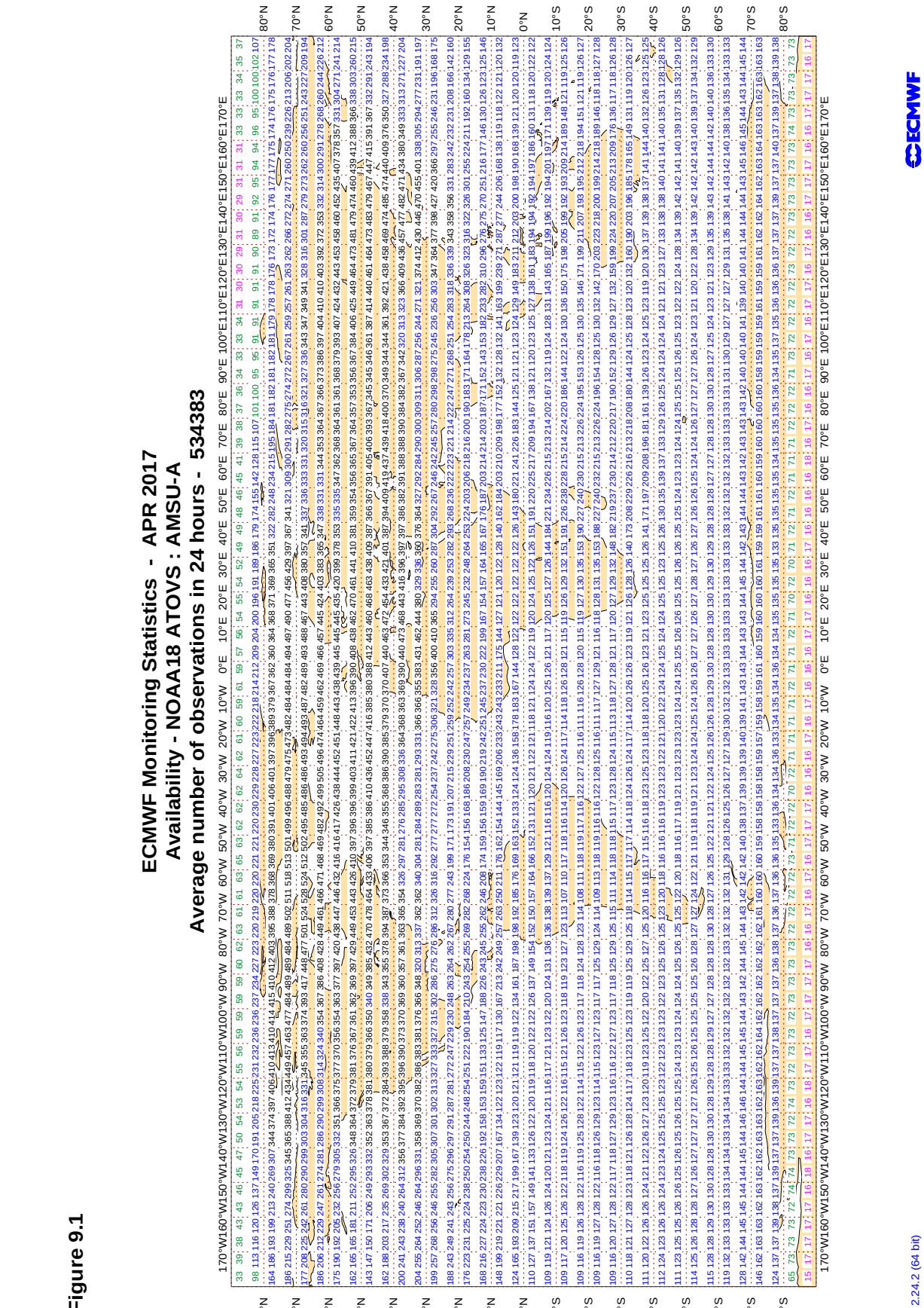


Figure 8

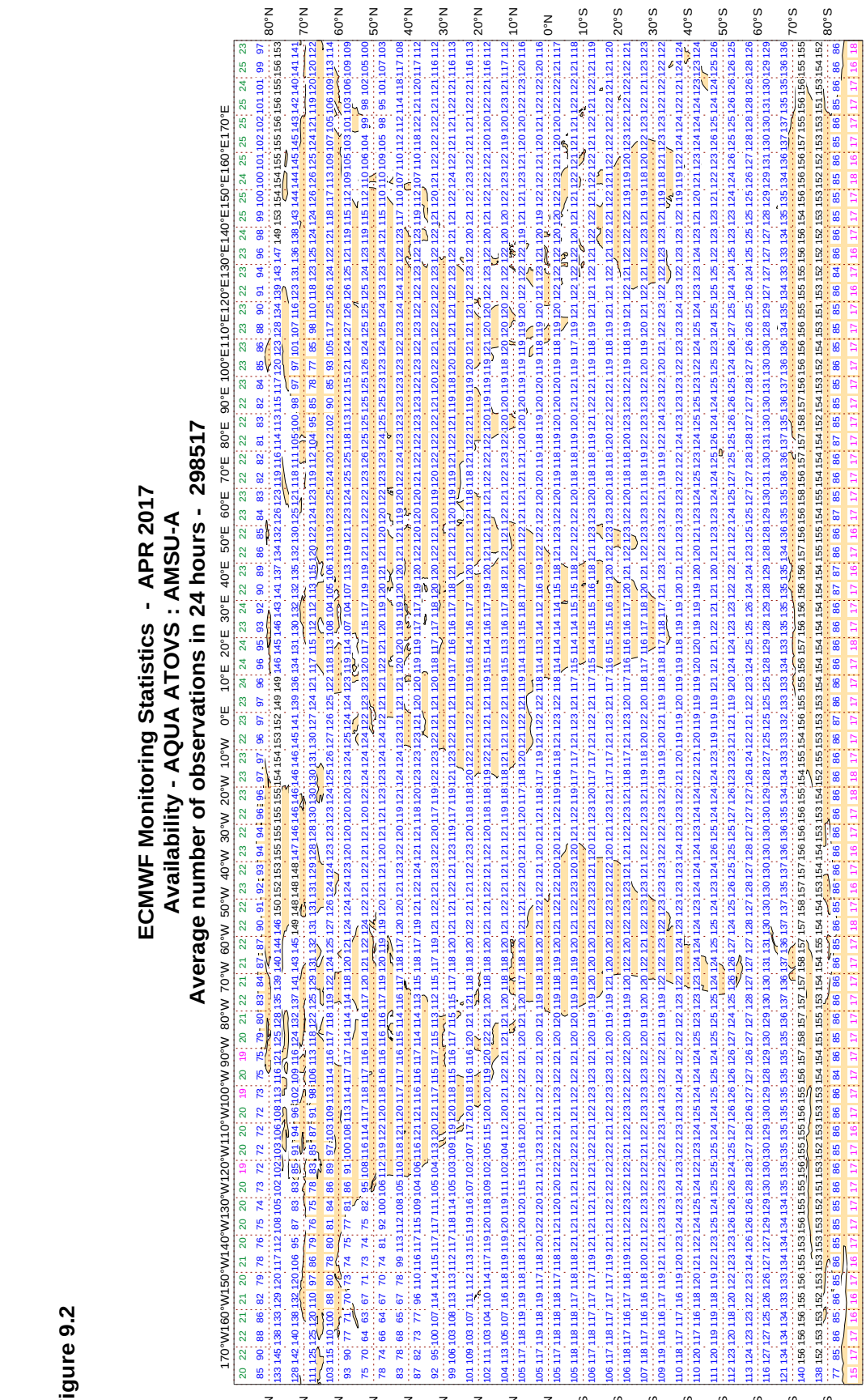
3.2.9 Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A

Figure 9.1



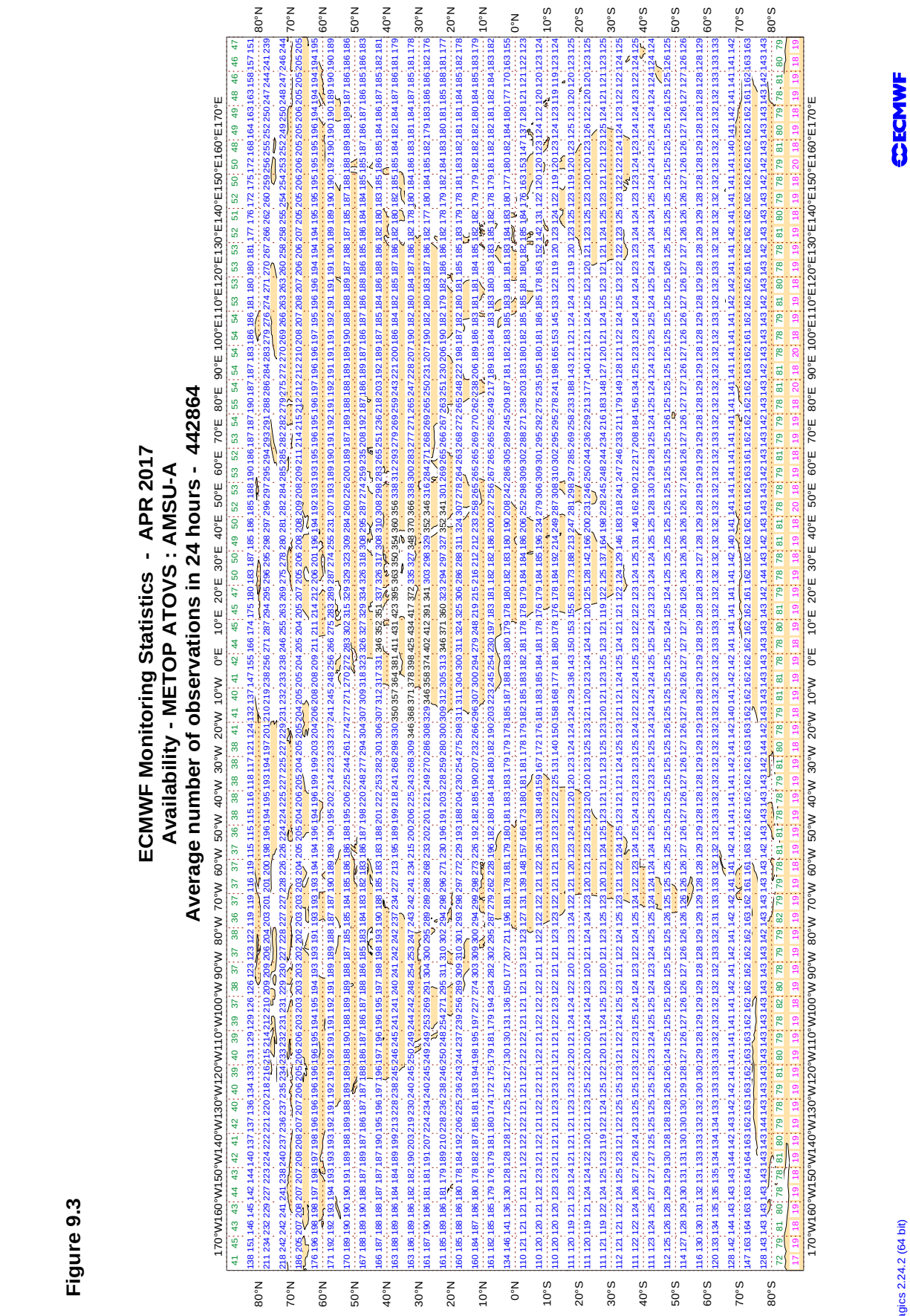
3.2.10 Figure 9.2 - Availability - AQUA ATOVS : AMSU-A

Figure 9.2



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                : APR 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
2GNG3	99	P	SUR	34	0	3.0	6.1	6.8
3FIW4	99	P	SUR	36	1	1.7	-5.4	5.6
4XIS	99	P	SUR	17	0	0.9	4.2	4.3
9V2729	99	P	SUR	26	0	2.3	4.9	5.4
9V2734	99	P	SUR	23	0	1.3	3.1	3.3
9V9132	99	P	SUR	20	0	1.6	3.0	3.4
A8IY7	99	P	SUR	34	0	1.5	3.0	3.3
A8KW3	99	P	SUR	28	0	1.0	-4.3	4.5
BPBE	99	P	SUR	38	38	0.0	0.0	0.0
C6AV5	99	P	SUR	28	0	0.8	3.7	3.7
C6BQ4	99	P	SUR	24	0	0.7	-3.8	3.9
C6BR3	99	P	SUR	19	0	2.8	9.6	10.0
C6LU4	99	P	SUR	27	0	1.0	3.1	3.3
C6YM5	99	P	SUR	27	0	1.1	3.7	3.8
C6ZI9	99	P	SUR	32	0	1.8	4.0	4.3
LAQO7	99	P	SUR	20	0	1.4	8.3	8.4
ONCD	99	P	SUR	60	0	2.4	4.1	4.7
OXES2	99	P	SUR	19	0	2.0	5.3	5.7
OZ2049	99	P	SUR	36	0	0.9	-5.2	5.3
UAST	99	P	SUR	26	3	3.6	-3.4	4.9
UBRI5	99	P	SUR	35	8	3.2	-3.1	4.5
UBRW	99	P	SUR	41	2	7.3	0.0	7.3
UCSJ	99	P	SUR	43	0	1.1	4.0	4.1
UFNZ	99	P	SUR	15	5	0.6	-0.7	0.9
UGYU	99	P	SUR	17	0	0.9	-3.0	3.1
V7SD8	99	P	SUR	20	0	2.1	4.6	5.0
V7UU7	99	P	SUR	17	0	1.2	5.8	5.9
VRDJ7	99	P	SUR	77	0	1.9	4.4	4.8
VREM6	99	P	SUR	78	0	1.5	3.7	3.9
VRFU8	99	P	SUR	60	0	3.4	-5.7	6.6
VRFX8	99	P	SUR	31	0	3.8	-3.8	5.4
VRMR6	99	P	SUR	29	0	1.5	-6.3	6.5

```
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
VRNR5	99	P	SUR	15	0	4.1	4.1	5.8
VROH8	99	P	SUR	16	0	1.1	3.4	3.6
VRPP5	99	P	SUR	24	0	1.5	3.4	3.7
VRWN4	99	P	SUR	33	0	1.8	3.1	3.6
WAHV	99	P	SUR	60	0	2.6	3.6	4.5
WAIU	99	P	SUR	15	0	1.3	-6.2	6.4
WAZV	99	P	SUR	38	0	1.3	3.5	3.8
WCX8812	99	P	SUR	48	0	1.8	-3.0	3.5
WCZ5535	99	P	SUR	25	0	1.1	-3.8	4.0
WTDH	99	P	SUR	46	0	0.4	-4.3	4.3

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                : APR 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
46132	99	SPEED	SUR	97	0	0	2.7	-5.2	5.9

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                : APR 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
42045	99	DIRN	SUR	60	0	0	12.1	-54.3	55.7
45169	99	DIRN	SUR	72	0	0	31.2	-39.5	50.3
46092	99	DIRN	SUR	41	0	0	9.4	31.1	32.5
46132	99	DIRN	SUR	17	0	0	19.8	60.5	63.7
46207	99	DIRN	SUR	101	0	0	17.7	53.0	55.8
62030	99	DIRN	SUR	16	0	0	45.0	79.7	91.6

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                 : APR 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
1600549	99	P	SUR	-40	144	57	19	4.9	-8.2	9.6
16549	99	P	SUR	-40	144	57	19	4.9	-8.2	9.6
1700523	99	P	SUR	-39	63	410	220	0.3	-0.7	0.8
17523	99	P	SUR	-39	63	409	219	0.3	-0.7	0.8
2300592	99	P	SUR	10	86	831	822	1.2	-0.4	1.2
2300670	99	P	SUR	17	82	1191	1075	2.3	1.3	2.6
23592	99	P	SUR	10	86	821	812	1.2	-0.4	1.2
23670	99	P	SUR	17	82	1191	1075	2.3	1.3	2.6
2600545	99	P	SUR	65	-37	292	25	6.7	0.4	6.7
2600568	99	P	SUR	82	24	566	566	0.0	0.0	0.0
26568	99	P	SUR	82	24	631	631	0.0	0.0	0.0
4500508	99	P	SUR	45	-88	788	788	0.0	0.0	0.0
4500509	99	P	SUR	45	-88	616	616	0.0	0.0	0.0
45508	99	P	SUR	45	-88	1326	1326	0.0	0.0	0.0
45509	99	P	SUR	45	-88	1387	1387	0.0	0.0	0.0
4601513	99	P	SUR	53	-155	61	2	2.5	10.9	11.2
4800513	99	P	SUR	71	175	709	663	3.9	-9.0	9.8
4800731	99	P	SUR	70	-98	2388	1716	7.3	-5.1	8.9
4800790	99	P	SUR	74	180	27	27	0.0	0.0	0.0
4801615	99	P	SUR	71	-129	688	75	7.8	-1.4	7.9
4801617	99	P	SUR	76	-152	690	537	7.5	-2.9	8.0
4801621	99	P	SUR	74	-134	626	180	3.1	8.3	8.9
48513	99	P	SUR	71	175	709	663	3.9	-9.0	9.8
48731	99	P	SUR	70	-98	2388	1716	7.3	-5.1	8.9
5201519	99	P	SUR	9	139	195	0	1.4	10.3	10.4
5601510	99	P	SUR	-58	154	200	6	3.1	4.9	5.8
6400757	99	P	SUR	0	0	473	473	0.0	0.0	0.0
64757	99	P	SUR	62	-25	428	428	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                : APR 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
46132	99	SPEED	SUR	50	-128	580	0	0	2.9	-5.1	5.8

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

```
          LIST OF SUSPECT STATIONS         : DRIFTER
                    MONITORING CENTRE      : ECMWF
                    ELEMENT MONITORED      : WIND DIRECTION (DEGREES)
                    PERIOD                 : APR 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
23093	99	DIRN	SUR	16	88	163	0	0	15.1	20.0	25.0
23451	99	DIRN	SUR	15	69	114	0	0	14.1	37.7	40.2
23454	99	DIRN	SUR	10	73	31	0	0	41.8	-21.1	46.8
23456	99	DIRN	SUR	19	67	166	0	0	18.2	26.1	31.8
23492	99	DIRN	SUR	11	72	60	0	0	69.6	46.4	83.6
23497	99	DIRN	SUR	11	72	135	0	0	70.7	-86.0	111.3
3100231	99	DIRN	SUR	-27	-47	199	0	0	60.8	44.8	75.6
3100380	99	DIRN	SUR	-20	-40	522	0	0	27.3	-33.4	43.2
3101000	99	DIRN	SUR	-24	-42	473	0	0	32.2	-60.5	68.5
31231	99	DIRN	SUR	-27	-47	199	0	0	60.8	44.6	75.4
31380	99	DIRN	SUR	-20	-40	515	0	0	26.9	-33.9	43.3
42045	99	DIRN	SUR	26	-97	348	0	0	11.6	-54.1	55.3
42090	99	DIRN	SUR	18	-70	1022	0	0	29.5	-21.8	36.7
45168	99	DIRN	SUR	42	-86	311	0	0	27.9	-20.4	34.6
45169	99	DIRN	SUR	42	-82	438	0	0	30.5	-39.8	50.1
46092	99	DIRN	SUR	37	-122	363	0	0	11.5	30.0	32.2
46132	99	DIRN	SUR	50	-128	93	0	0	26.3	56.0	61.9
46147	99	DIRN	SUR	52	-131	589	0	0	19.1	22.7	29.6
46181	99	DIRN	SUR	54	-129	59	0	0	18.8	-22.8	29.6
46207	99	DIRN	SUR	51	-130	596	0	0	16.0	52.0	54.4
6101003	99	DIRN	SUR	40	25	50	0	0	60.5	6.0	60.8
62030	99	DIRN	SUR	50	-4	90	0	0	50.1	82.6	96.7

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                 : APR 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	20	0	2.9	41.1	41.2
04360	12	Z	1000	66	-38	21	0	0.0	40.4	40.4
25400	12	Z	50	66	151	25	0	95.0	-101.3	138.9
30230	12	Z	200	58	108	28	0	36.6	73.6	82.2
30230	00	Z	50	58	108	29	0	78.1	131.1	152.6
30715	00	Z	50	52	104	25	0	64.6	119.2	135.6
38064	12	Z	70	45	66	22	1	70.4	123.9	142.5
42874	00	Z	30	21	82	25	0	45.1	178.7	184.3
43041	00	Z	30	19	82	22	0	23.0	189.0	190.4
43063	00	Z	30	19	74	21	7	19.8	177.1	178.2
43110	00	Z	30	17	73	12	0	26.3	190.9	192.7
43128	00	Z	50	17	78	18	0	61.0	160.7	171.9
43295	00	Z	30	13	78	16	1	26.8	178.2	180.2
43311	00	Z	30	11	73	27	0	16.3	189.8	190.5
43369	00	Z	70	8	73	24	0	28.8	120.5	123.9
47122	00	Z	1000	37	127	28	0	2.6	34.6	34.7
47155	00	Z	1000	35	129	30	0	28.6	38.3	47.8
47155	12	Z	1000	35	129	29	13	28.3	-62.6	68.7
89592	00	Z	50	-67	93	28	0	46.0	-149.7	156.6
89592	12	Z	50	-67	93	13	0	30.2	-155.7	158.6
97372	12	Z	500	-10	124	29	0	58.9	33.2	67.6
98223	00	Z	30	18	121	26	1	64.3	265.0	272.7
98233	12	Z	925	18	122	21	0	27.7	14.5	31.3
98233	00	Z	1000	18	122	21	1	28.4	41.0	49.9

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                : APR 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

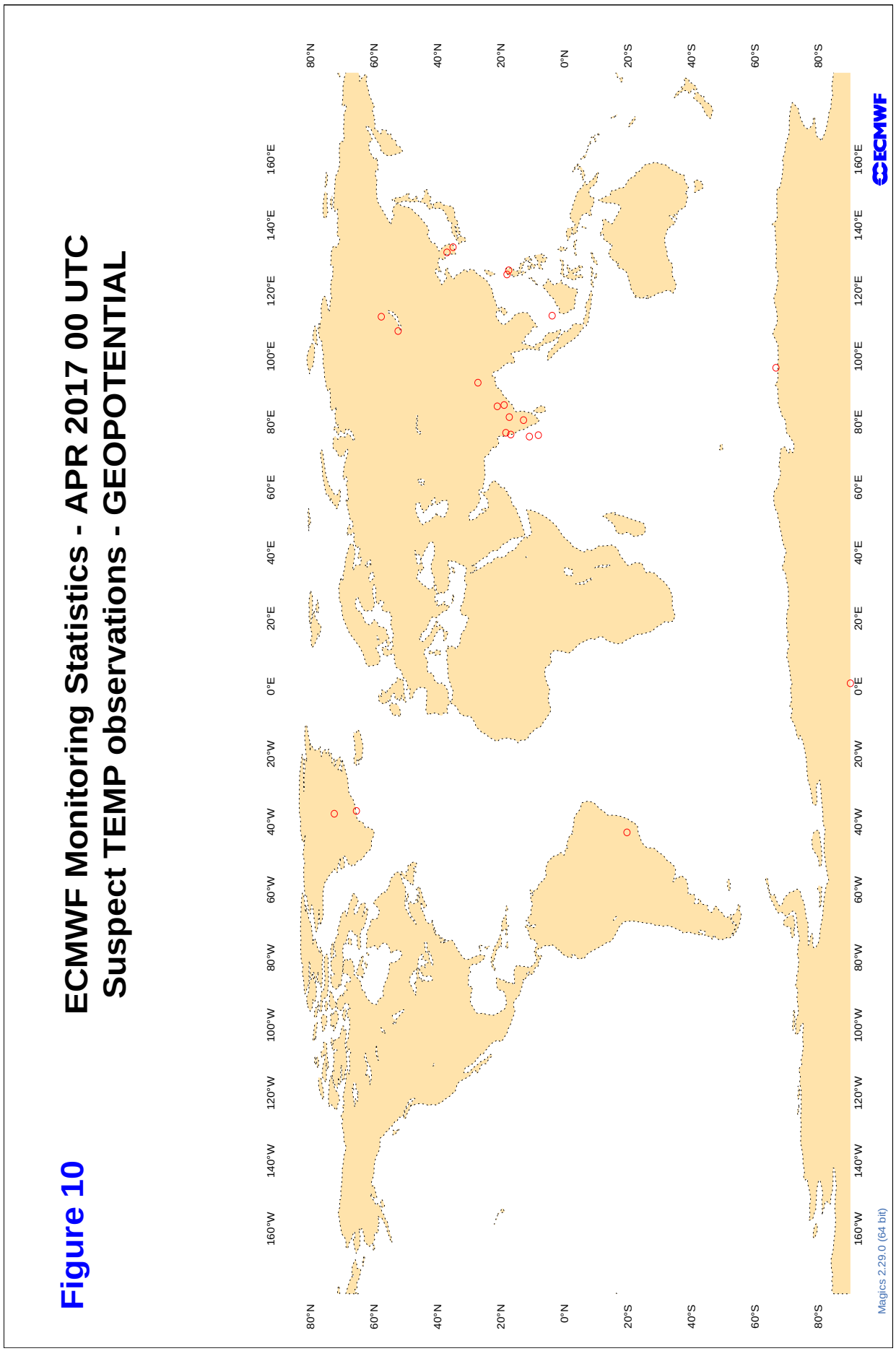
3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

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

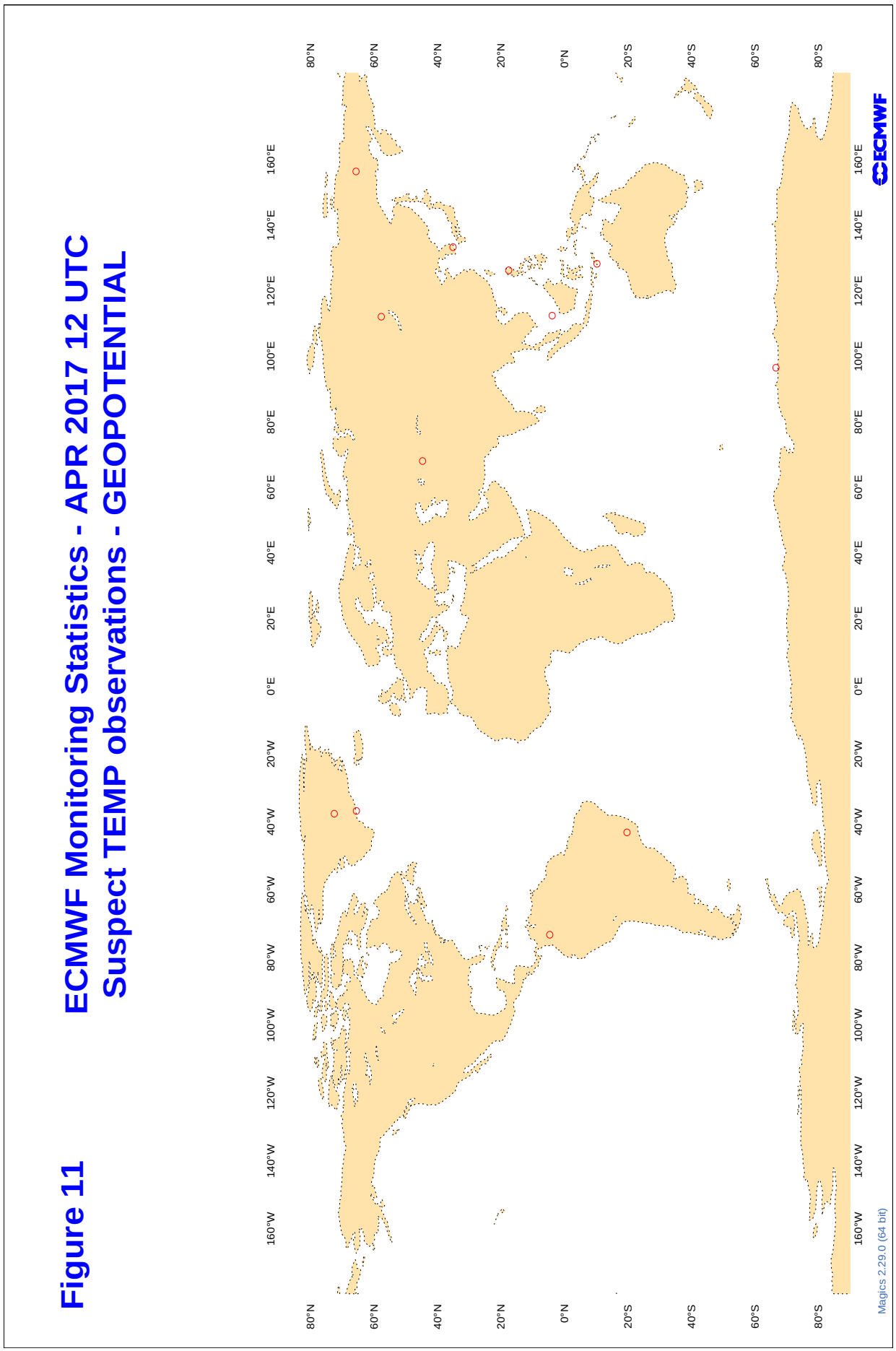

SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS >= 5 M/S
                    NO. OF OBSERVATIONS   >= 5, AND,
                    ABSOLUTE BIAS         >= 10 DEGREES, WITH
                    STANDARD DEVIATION    <  30 DEGREES, AND,
                    VERTICAL SPREAD       < 10 DEGREES
         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

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
57972	00	DD	26	113	30	10.7	2.2	6.2

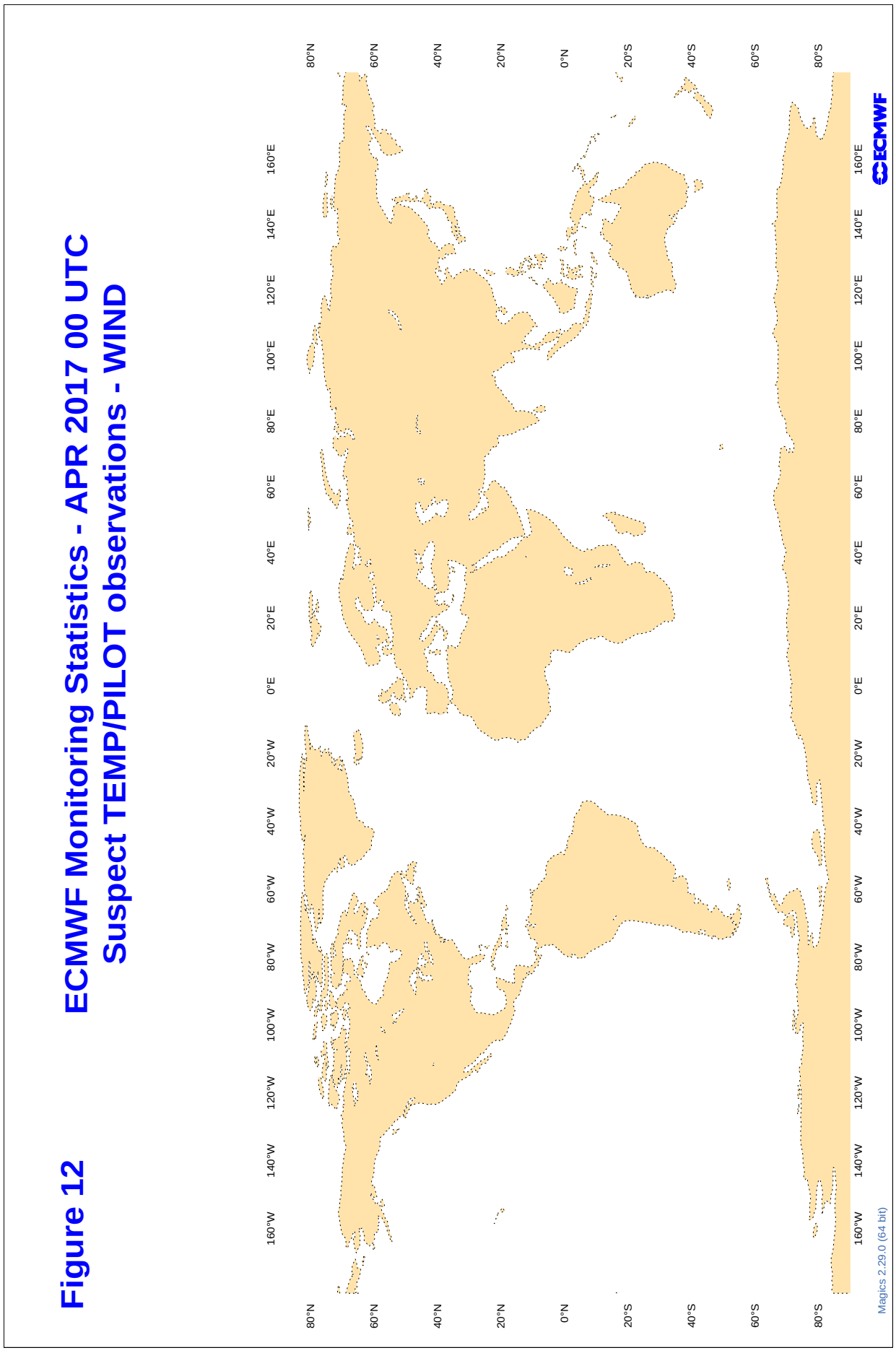
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



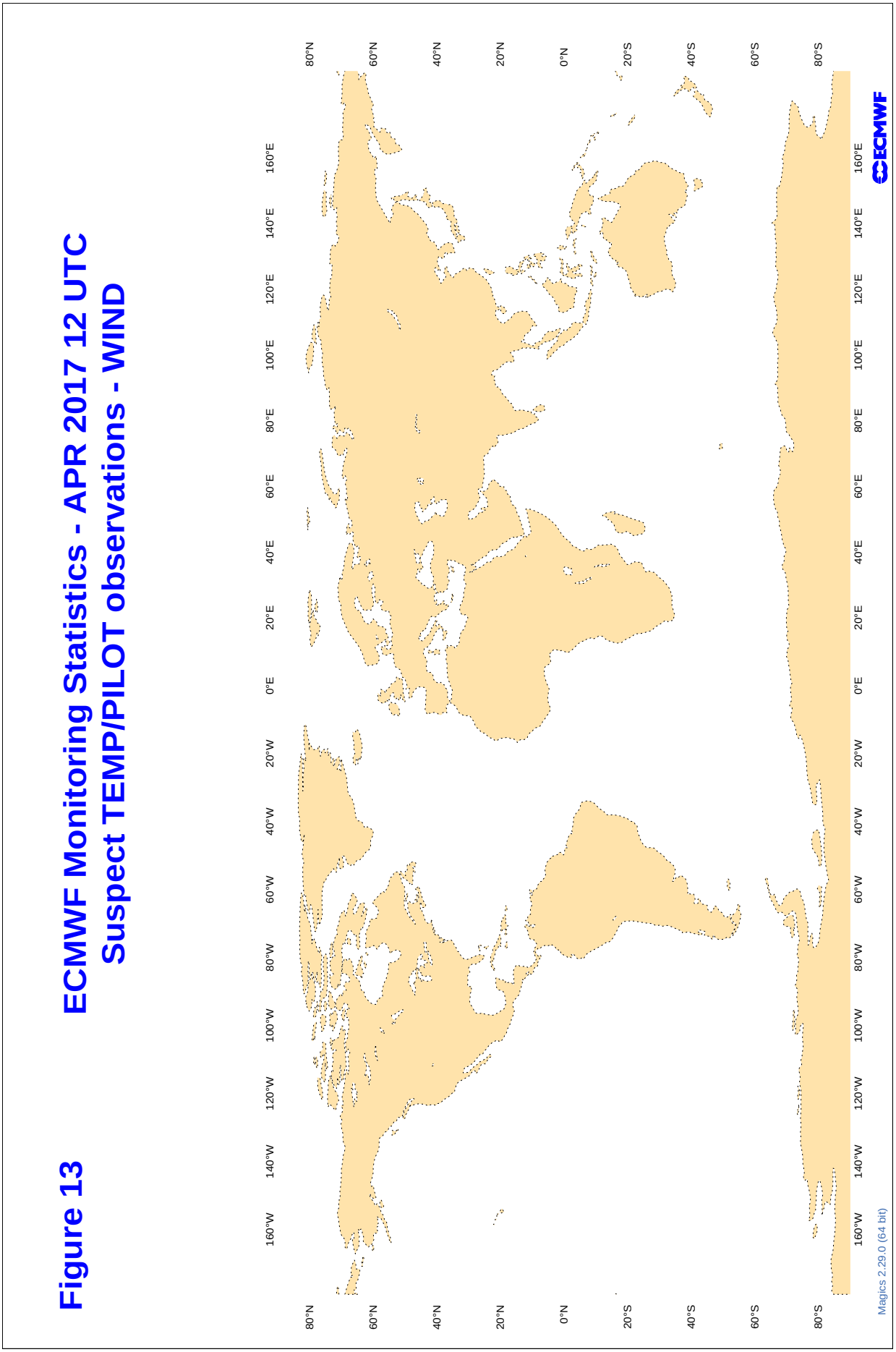
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASDE01	12	Z	100	1	17.9	17.9
ASDE02	00	Z	100	23	13.6	12.8
ASDE03	00	Z	100	4	41.5	41.5
ASDE03	12	Z	100	2	76.9	76.4
ASDK01	12	Z	100	6	8.1	7.3
ASDK01	00	Z	100	14	8.1	5.6
ASDK03	00	Z	100	4	16.8	16.1
ASDK03	12	Z	100	5	26.6	24.6
ASDK1	12	Z	100	6	3.0	0.4
ASDK1	00	Z	100	12	6.4	1.9
ASDK3	00	Z	100	3	15.6	15.2
ASDK3	12	Z	100	5	22.7	17.9
ASES01	12	Z	100	26	40.5	38.8
ASEU02	00	Z	100	9	40.1	39.1
ASEU02	12	Z	100	10	43.7	42.5
ASEU03	00	Z	100	5	7.1	3.6
ASEU03	12	Z	100	9	29.5	28.4
ASEU04	00	Z	100	6	4.7	-1.6
ASEU04	12	Z	100	7	5.6	4.9
ASEU05	00	Z	100	5	11.2	-0.5
ASEU05	12	Z	100	9	39.8	36.8
ASEU06	00	Z	100	16	10.2	7.5
ASEU06	12	Z	100	17	64.2	44.5
ASFR1	00	Z	100	23	17.4	16.0
ASFR1	12	Z	100	26	27.9	27.0
ASFR3	00	Z	100	9	15.8	15.5
ASFR3	12	Z	100	8	29.7	27.3
ASFR4	00	Z	100	11	23.1	22.0
ASFR4	12	Z	100	10	36.0	35.3
DBLK	12	Z	100	26	16.2	13.1
JGQH	00	Z	100	4	13.8	8.4
JGQH	12	Z	100	5	12.2	11.8

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASDE01	12	V	100	1	7.4	-6.6	-3.4
ASDE02	00	V	100	18	5.1	0.1	1.1
ASDE03	00	V	100	3	4.9	-1.6	2.5
ASDE03	12	V	100	2	3.3	1.3	0.8
ASDK01	12	V	100	6	2.2	0.3	1.3
ASDK01	00	V	100	12	2.9	0.7	-0.6
ASDK03	00	V	100	3	4.5	-1.9	-0.5
ASDK03	12	V	100	5	2.5	0.3	0.8
ASDK1	12	V	100	6	2.1	0.7	0.8
ASDK1	00	V	100	12	3.5	1.3	-0.4
ASDK3	00	V	100	3	3.5	-0.4	0.4
ASDK3	12	V	100	5	2.8	0.4	0.5
ASES01	12	V	100	19	5.6	0.3	2.3
ASEU02	00	V	100	7	2.9	-1.5	-1.0
ASEU02	12	V	100	9	3.7	0.7	1.0
ASEU03	00	V	100	5	2.1	0.1	0.3
ASEU03	12	V	100	5	2.8	-0.2	1.4
ASEU04	00	V	100	6	3.3	-0.8	0.3
ASEU04	12	V	100	7	2.9	-0.3	0.6
ASEU05	00	V	100	3	4.6	1.0	-0.1
ASEU05	12	V	100	7	3.0	0.6	1.0
ASEU06	00	V	100	11	3.3	-1.9	0.0
ASEU06	12	V	100	15	4.4	-1.4	1.6
ASFR1	00	V	100	12	3.0	-0.5	0.2
ASFR1	12	V	100	14	3.7	0.8	-0.1
ASFR3	00	V	100	7	3.3	-1.4	-0.2
ASFR3	12	V	100	7	4.0	-1.2	-0.7
ASFR4	00	V	100	5	4.4	2.3	0.9
ASFR4	12	V	100	5	4.0	0.7	0.7
DBLK	12	V	100	14	6.2	-1.2	0.7
JGQH	00	V	100	4	7.6	0.1	1.6
JGQH	12	V	100	5	7.5	-2.4	4.9

3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

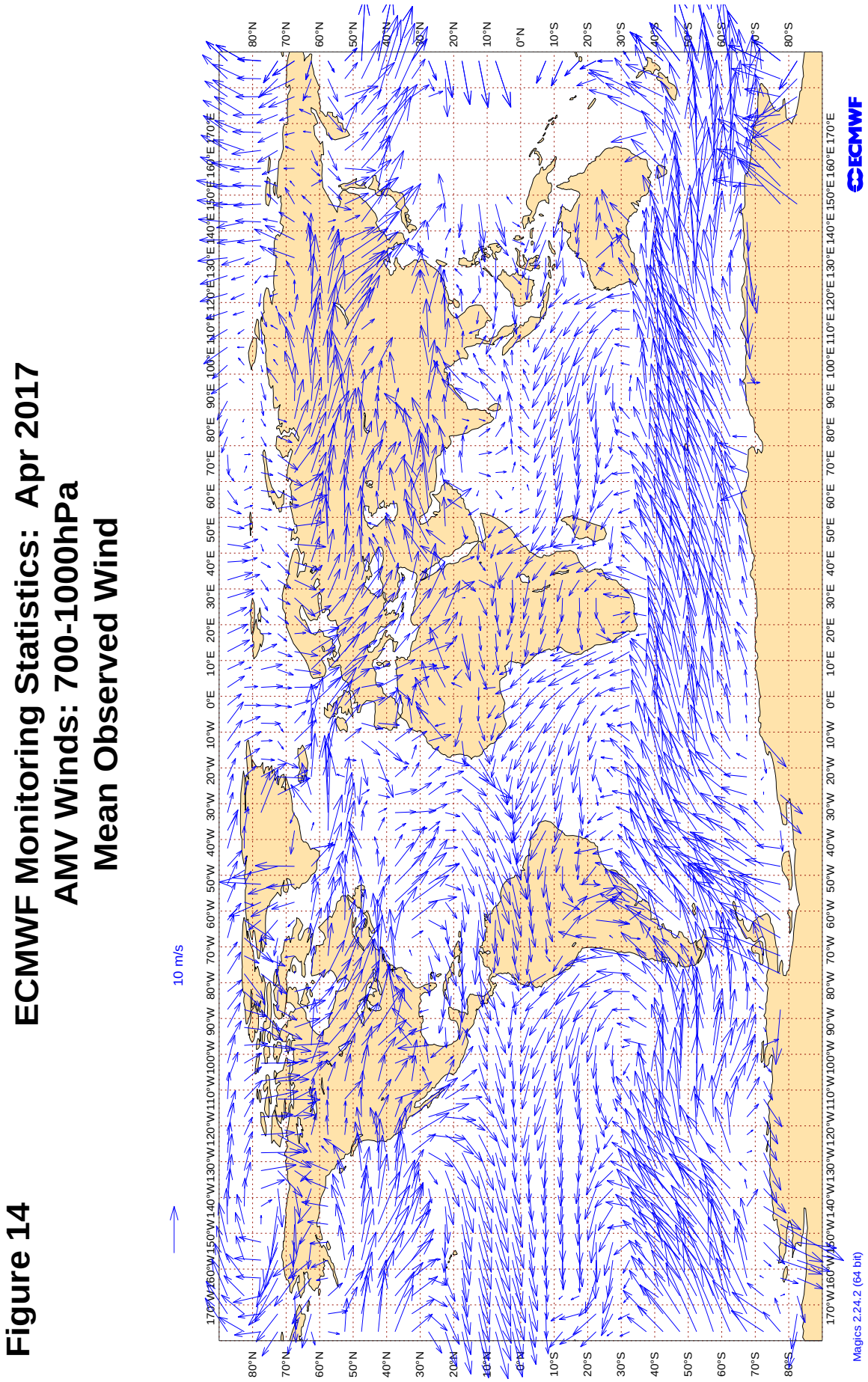


Figure 14

3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

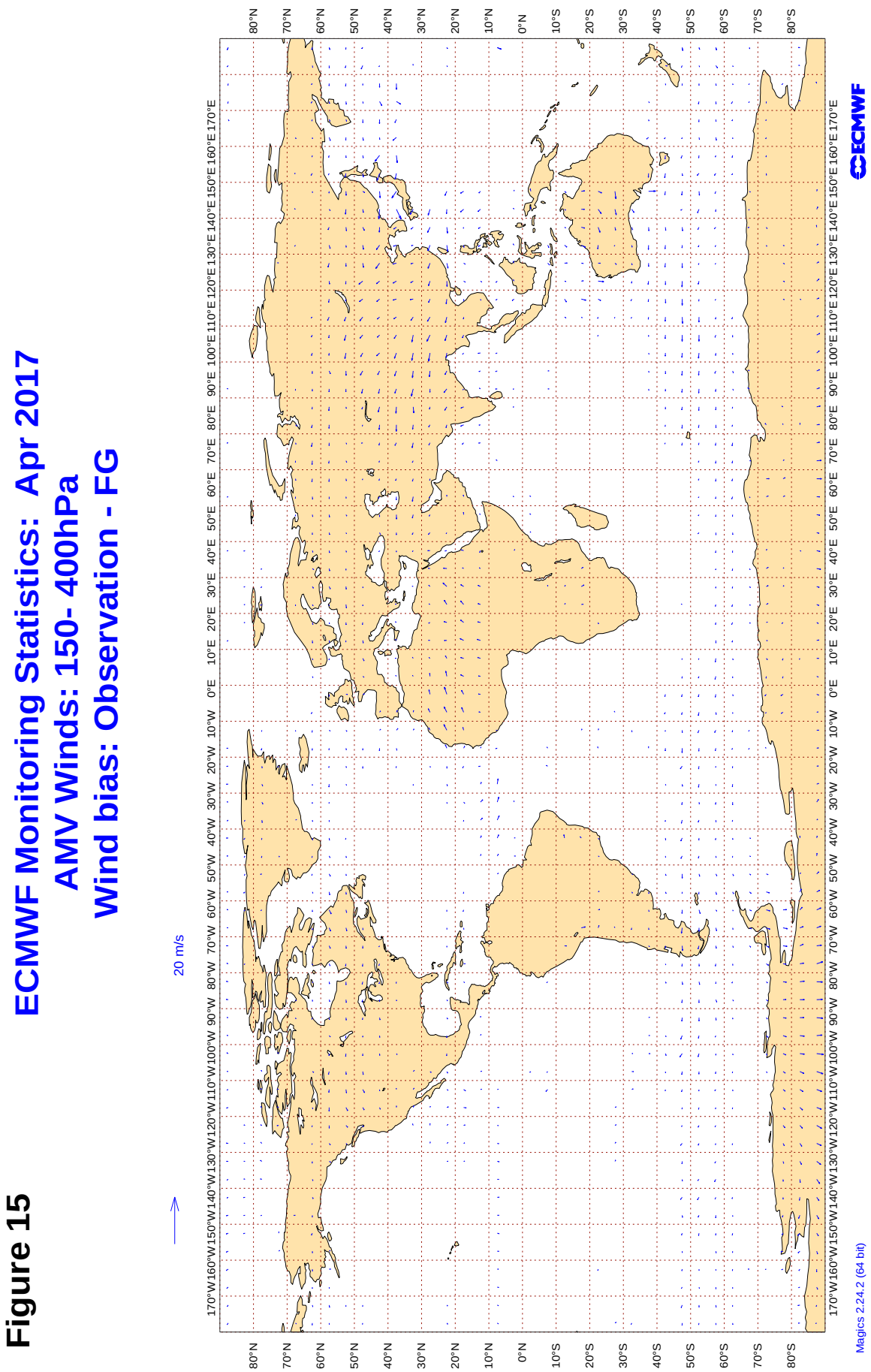


Figure 15

3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

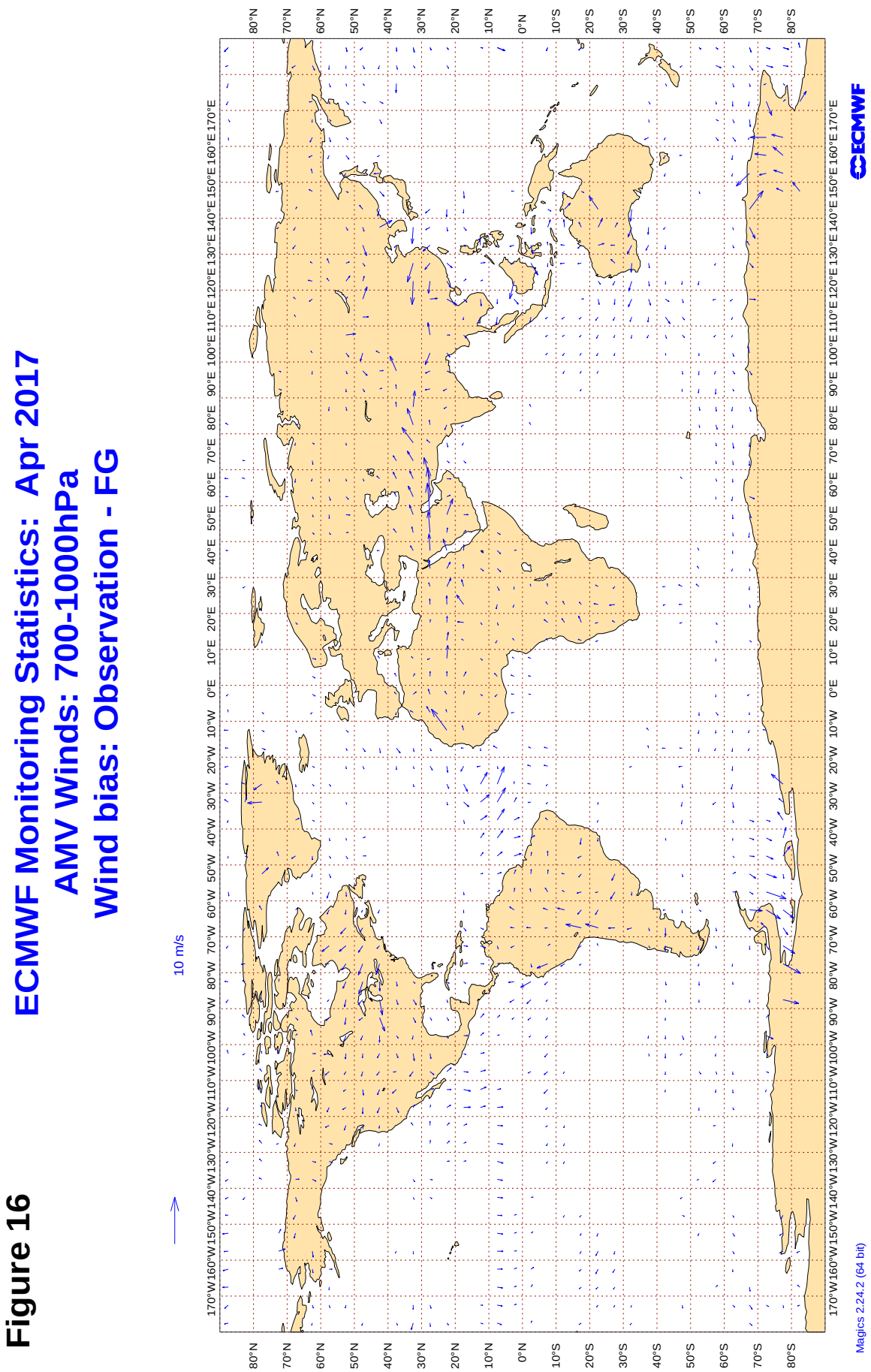


Figure 16

3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

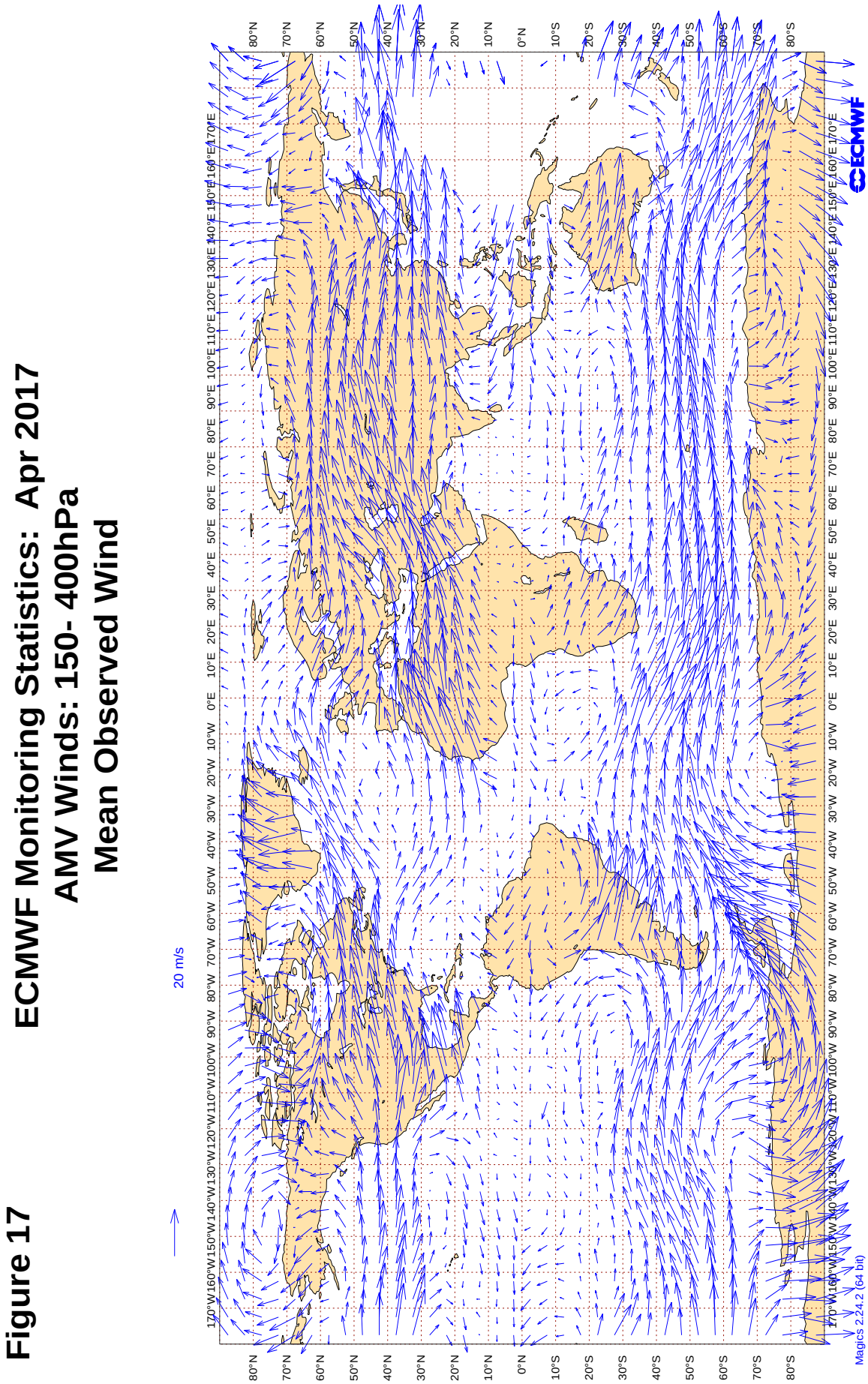


Figure 17

3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

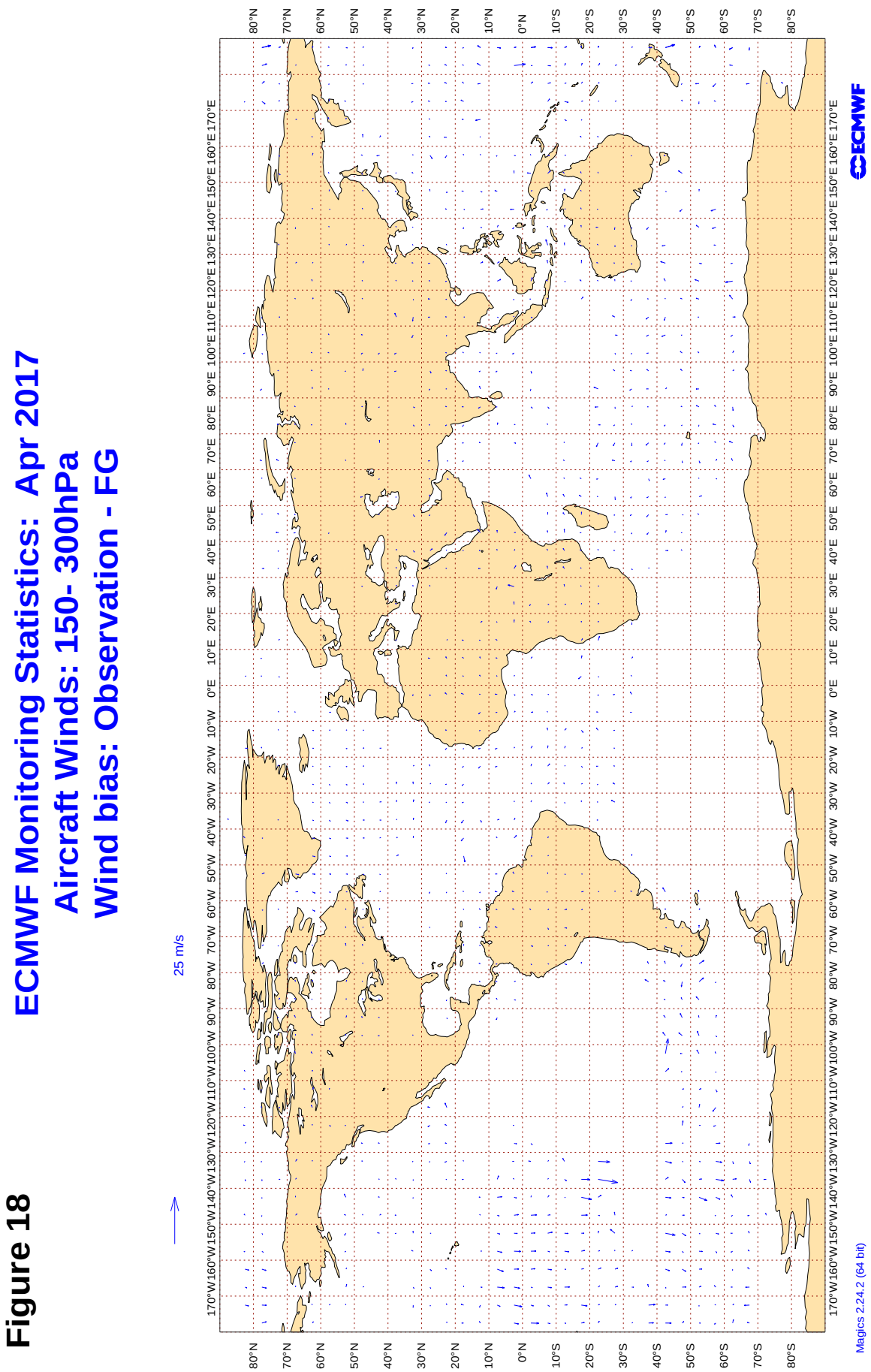


Figure 18

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 : APR 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	59206	2	0	5.9	0.2
AAR	99	V	300-150	323	0	0	4.1	-1.4
AAY	99	V	300-150	81	0	0	5.5	0.3
ABD	99	V	300-150	329	0	0	3.6	-1.0
ABW	99	V	300-150	1039	0	0	3.3	-0.7
ABX	99	V	300-150	214	0	0	5.2	0.2
ACA	99	V	300-150	29167	5	0	7.6	0.1
ACI	99	V	300-150	2662	0	0	4.3	0.6
AEA	99	V	300-150	598	3	0	6.0	0.2
AFL	99	V	300-150	1715	0	0	3.2	0.5
AFR	99	V	300-150	30023	0	0	3.4	0.2
AHY	99	V	300-150	255	18	0	11.2	-0.2
AIC	99	V	300-150	1504	4	0	7.5	0.2
AKK	99	V	300-150	52	0	0	5.1	0.5
AMX	99	V	300-150	2633	17	0	12.1	-0.0
ANA	99	V	300-150	89	0	1	4.5	0.9
ANG	99	V	300-150	21	0	0	9.6	1.9
ANZ	99	V	300-150	20674	1	0	5.7	0.5
AOJ	99	V	300-150	109	1	0	13.5	0.0
ASA	99	V	300-150	2852	1	0	4.9	0.3
ASL	99	V	300-150	536	0	0	3.3	0.2
ASY	99	V	300-150	181	0	0	6.0	-1.0
AUA	99	V	300-150	5408	0	0	3.9	-0.1
AVA	99	V	300-150	387	2	0	11.4	0.1
AVN	99	V	300-150	71	4	1	3.9	-0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AXM	99	V	300-150	234	0	0	4.7	0.9
AXY	99	V	300-150	22	0	0	3.2	-1.6
AZA	99	V	300-150	8014	0	0	3.5	0.3
AZG	99	V	300-150	180	0	1	3.4	0.1
BAH	99	V	300-150	49	0	0	3.5	0.4
BAW	99	V	300-150	59000	2	0	5.8	0.0
BBR	99	V	300-150	57	0	0	6.7	-1.6
BEL	99	V	300-150	3033	0	0	3.3	0.0
BER	99	V	300-150	9701	0	0	3.3	0.2
BFD	99	V	300-150	38	0	0	3.2	-0.9
BLU	99	V	300-150	27	0	0	4.8	-0.2
BLX	99	V	300-150	156	0	0	4.0	-0.5
BMW	99	V	300-150	113	0	0	3.5	-0.4
BND	99	V	300-150	23	0	0	6.2	-0.0
BOX	99	V	300-150	781	0	0	3.5	0.0
BOX	99	V	300-150	73	0	0	4.9	0.6
BPA	99	V	300-150	59	0	2	3.1	0.4
CAL	99	V	300-150	393	0	0	4.0	0.6
CAZ	99	V	300-150	50	0	0	4.2	-1.4
CCA	99	V	300-150	997	0	0	5.5	0.7
CES	99	V	300-150	1382	0	0	3.5	0.3
CFC	99	V	300-150	538	0	0	3.7	-0.2
CFG	99	V	300-150	3950	0	0	3.8	-0.0
CHH	99	V	300-150	179	0	0	4.8	0.5
CJT	99	V	300-150	185	0	0	3.8	0.0
CKS	99	V	300-150	1958	0	0	3.7	0.1
CLE	99	V	300-150	113	0	0	4.0	0.5
CLU	99	V	300-150	26	0	0	4.2	0.1
CLX	99	V	300-150	3717	0	0	3.8	-0.3
CMB	99	V	300-150	903	0	0	4.2	-0.3
CNV	99	V	300-150	202	0	0	4.1	0.3
CPA	99	V	300-150	918	0	0	3.4	0.2
CPI	99	V	300-150	43	0	0	4.2	0.3
CRK	99	V	300-150	781	0	0	3.9	0.3
CRL	99	V	300-150	551	0	0	3.2	0.2
CRV	99	V	300-150	56	0	0	5.0	1.1
CSN	99	V	300-150	694	3	0	7.8	-0.1
CXA	99	V	300-150	30	3	0	13.4	0.1
DAH	99	V	300-150	738	0	0	3.5	0.5
DAL	99	V	300-150	72561	0	0	3.6	0.0
DCS	99	V	300-150	23	0	0	3.1	1.2
DHK	99	V	300-150	2026	0	0	3.9	-0.1
DJT	99	V	300-150	1425	0	0	4.2	-0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
DLH	99	V	300-150	36216	0	0	3.3	0.1
EAU	99	V	300-150	24	0	0	3.6	-0.3
EDC	99	V	300-150	154	0	0	3.6	-0.4
EDW	99	V	300-150	1269	0	0	3.4	0.4
EIN	99	V	300-150	15547	0	0	3.5	0.1
EJM	99	V	300-150	748	5	0	7.8	0.2
ELY	99	V	300-150	3198	0	0	3.7	-0.2
ESR	99	V	300-150	38	0	0	5.0	0.2
ETD	99	V	300-150	3735	4	0	5.8	0.0
ETH	99	V	300-150	2037	9	0	8.4	-0.0
EVA	99	V	300-150	28	0	4	6.9	1.6
EWG	99	V	300-150	2106	0	0	3.7	0.1
FDX	99	V	300-150	5383	0	0	3.5	0.2
FIN	99	V	300-150	925	0	0	3.2	0.4
FJI	99	V	300-150	5537	0	0	4.8	0.8
FPG	99	V	300-150	47	0	0	3.8	1.1
FWI	99	V	300-150	1699	0	0	2.9	0.2
GAF	99	V	300-150	103	9	0	7.8	0.7
GCR	99	V	300-150	101	0	0	3.2	0.6
GEC	99	V	300-150	2892	0	0	3.2	0.2
GES	99	V	300-150	83	8	0	15.2	0.2
GLO	99	V	300-150	48	6	2	9.0	0.9
GMA	99	V	300-150	96	0	0	3.9	0.2
GOL	99	V	300-150	63	0	0	5.0	-1.6
GTH	99	V	300-150	34	0	0	4.6	1.7
GTI	99	V	300-150	2700	0	0	3.8	-0.3
HAL	99	V	300-150	4382	0	0	4.9	1.1
HRT	99	V	300-150	37	22	0	29.2	0.4
HZM	99	V	300-150	124	0	0	3.7	0.1
HZS	99	V	300-150	60	0	0	3.6	-0.7
HZS	99	V	300-150	45	0	0	3.7	-0.4
IAM	99	V	300-150	58	0	0	3.4	0.4
IBE	99	V	300-150	2860	0	0	3.3	0.3
ICL	99	V	300-150	754	0	0	4.4	-0.5
ICV	99	V	300-150	447	0	0	4.0	-0.4
IFA	99	V	300-150	61	44	2	18.8	1.0
IJM	99	V	300-150	130	3	0	12.2	0.7
ISS	99	V	300-150	820	0	0	3.8	-0.4
JAF	99	V	300-150	1285	6	0	10.0	0.0
JAI	99	V	300-150	1220	0	0	3.3	0.1
JAS	99	V	300-150	115	7	0	8.2	-0.6
JBU	99	V	300-150	29	0	93	2.7	0.7
JET	99	V	300-150	115	0	0	3.6	-0.4

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	66	0	3	6.5	-1.2
JME	99	V	300-150	98	7	0	12.9	-0.2
JSI	99	V	300-150	45	0	0	3.1	-0.5
JST	99	V	300-150	2388	1	0	10.1	0.7
KAC	99	V	300-150	1171	0	0	3.5	0.2
KAI	99	V	300-150	92	1	0	5.9	0.1
KAL	99	V	300-150	1377	0	0	4.0	0.5
KAY	99	V	300-150	61	0	0	3.8	1.0
KCE	99	V	300-150	41	0	0	4.8	1.5
KFE	99	V	300-150	65	0	0	3.2	0.1
KIW	99	V	300-150	58	0	0	5.1	0.4
KLM	99	V	300-150	19781	1	0	4.5	0.0
LAN	99	V	300-150	1765	11	0	10.5	0.3
LCO	99	V	300-150	94	0	0	3.4	-0.8
LDM	99	V	300-150	41	0	0	3.1	-0.0
LGT	99	V	300-150	24	0	0	3.5	0.6
LHO	99	V	300-150	21	0	0	4.5	-1.7
LOT	99	V	300-150	1965	15	0	15.0	-0.0
LUC	99	V	300-150	47	4	0	13.4	-0.5
LXA	99	V	300-150	40	58	0	32.5	-0.6
LXG	99	V	300-150	44	0	0	3.8	-0.8
LXJ	99	V	300-150	146	0	0	6.8	-0.6
MAS	99	V	300-150	370	0	0	3.8	0.3
MDT	99	V	300-150	30	0	0	3.0	0.3
MJF	99	V	300-150	30	0	0	3.1	-0.0
MLM	99	V	300-150	27	44	0	24.7	-0.7
MMD	99	V	300-150	179	0	0	3.6	0.4
MPH	99	V	300-150	631	0	0	3.6	-0.5
MSR	99	V	300-150	1133	0	0	3.3	0.2
MXD	99	V	300-150	22	0	0	6.0	1.5
NAX	99	V	300-150	7967	12	0	12.6	-0.1
NCA	99	V	300-150	274	0	0	3.7	-0.9
NJE	99	V	300-150	408	23	0	17.1	-0.4
NOS	99	V	300-150	744	0	0	6.6	-0.5
NWS	99	V	300-150	358	0	0	3.4	0.2
OAE	99	V	300-150	182	0	1	4.7	0.0
OSY	99	V	300-150	23	0	0	4.0	1.8
PAC	99	V	300-150	165	1	1	4.3	1.3
PAL	99	V	300-150	105	1	2	7.4	0.8
PIA	99	V	300-150	452	0	0	3.7	0.1
PNC	99	V	300-150	62	0	0	4.2	-0.8
PVJ	99	V	300-150	45	0	0	2.8	-0.2
QAF	99	V	300-150	21	0	0	3.5	0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
QFA	99	V	300-150	16974	0	0	4.8	0.7
QQE	99	V	300-150	68	29	0	23.1	-0.3
QTR	99	V	300-150	9625	0	0	3.5	0.1
RAM	99	V	300-150	450	11	0	11.6	0.2
RCH	99	V	300-150	5716	0	0	4.6	0.4
RJA	99	V	300-150	1595	14	0	13.9	-0.2
ROM	99	V	300-150	61	0	0	3.4	-0.5
ROU	99	V	300-150	1983	0	0	3.9	0.1
RRR	99	V	300-150	266	0	0	3.5	-0.0
RZO	99	V	300-150	311	0	0	3.7	0.3
SAM	99	V	300-150	338	0	0	3.8	-0.3
SAS	99	V	300-150	5097	0	0	3.1	0.1
SHE	99	V	300-150	81	0	0	3.8	-0.6
SIA	99	V	300-150	2881	0	0	3.6	-0.0
SIO	99	V	300-150	91	0	0	4.0	0.6
SJE	99	V	300-150	50	0	0	6.7	0.6
SLM	99	V	300-150	150	0	0	3.0	0.2
SOL	99	V	300-150	34	0	0	5.4	-1.0
SOO	99	V	300-150	532	0	0	3.3	-0.3
SPA	99	V	300-150	168	0	0	3.5	0.3
SQC	99	V	300-150	490	0	0	4.0	-1.0
SVA	99	V	300-150	3339	0	0	3.2	0.0
SVW	99	V	300-150	348	2	0	7.9	-0.3
SWR	99	V	300-150	11899	0	0	3.3	0.2
TAM	99	V	300-150	456	0	0	3.6	0.2
TAP	99	V	300-150	636	0	0	3.8	0.5
TAR	99	V	300-150	175	0	0	2.8	0.1
TAY	99	V	300-150	29	0	0	4.7	1.2
TCX	99	V	300-150	4916	0	0	3.3	0.1
TFL	99	V	300-150	1798	10	0	10.8	-0.1
TGM	99	V	300-150	70	16	0	8.9	0.7
THA	99	V	300-150	201	0	0	3.6	0.0
THT	99	V	300-150	3394	0	0	4.8	1.0
THY	99	V	300-150	10549	0	0	3.5	0.2
TMN	99	V	300-150	23	0	0	3.2	-0.7
TOM	99	V	300-150	6105	10	0	12.2	-0.2
TRK	99	V	300-150	27	0	0	3.5	-0.1
TSC	99	V	300-150	4650	0	0	3.3	0.1
TWB	99	V	300-150	62	0	0	8.0	-1.2
TWY	99	V	300-150	185	19	0	7.4	-0.2
UAE	99	V	300-150	13183	0	0	3.6	0.1
UAL	99	V	300-150	79963	1	2	5.8	0.1
ULC	99	V	300-150	157	22	0	21.7	-0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
UPS	99	V	300-150	4806	0	0	3.7	0.1
UZB	99	V	300-150	185	0	0	3.7	0.1
VIR	99	V	300-150	25047	4	0	6.3	-0.0
VJT	99	V	300-150	1082	32	0	23.9	0.2
VKG	99	V	300-150	208	0	0	3.3	0.5
VOZ	99	V	300-150	7602	0	0	4.5	0.7
VRD	99	V	300-150	24	0	0	2.8	0.8
WGT	99	V	300-150	79	0	0	3.1	-0.0
WJA	99	V	300-150	2993	1	0	5.2	0.1
WOW	99	V	300-150	317	0	0	3.3	0.2
WWI	99	V	300-150	28	0	0	3.0	0.2
XAX	99	V	300-150	386	0	0	3.7	0.4
XLF	99	V	300-150	1799	0	0	3.4	0.3

4 EUCOS Area Monitoring Statistics

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

Tables 13, 14 (50 hPa level), 15, 16 (100 hPa level) 17, 18 (500 hPa level) 19 and 20 (850 hPa level) provide quality statistics for all TEMPSHIPS and PILOTSHIPS received during the month in the area $10\,°$N - $90\,°$N, $70\,°$W - $40\,°$E and for TEMPS and PILOTS from selected land stations within the same area. The statistics are in the same form as tables 10 and 11.
Tables 21-23 provides quality statistics of pressure and wind for all DRIFTER reports received in the area $10\,°$N - $90\,°$N, $70\,°$W - $40\,°$E. The statistics are in the same form as tables 4-6.

4.1 Table 13 - Radiosonde Monitoring Statistics (EUCOS): 50 hPa Geopotential height (metres)

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 :  50 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : APR 2017
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	50	26	12.8	5.7
01001	12	Z	50	25	9.6	6.4
01028	00	Z	50	29	20.7	1.0
01028	12	Z	50	29	15.1	11.7
01400	12	Z	50	12	19.8	17.8
01400	00	Z	50	16	30.2	10.3
01415	00	Z	50	10	13.8	11.4
01415	12	Z	50	11	15.9	14.8
02365	12	Z	50	25	17.0	13.4
02365	00	Z	50	26	14.9	8.4
02591	12	Z	50	24	21.9	20.8
02591	00	Z	50	24	19.4	18.1
02836	12	Z	50	30	13.4	11.0
02836	00	Z	50	29	13.3	7.6
02963	00	Z	50	28	10.9	8.9
02963	12	Z	50	31	11.4	9.1
03005	00	Z	50	29	8.9	5.6
03005	12	Z	50	29	18.2	7.3
03238	12	Z	50	3	11.5	9.3
03238	00	Z	50	27	11.6	9.3
03808	00	Z	50	29	11.3	10.1
03808	12	Z	50	28	11.2	9.7
03918	00	Z	50	29	17.6	16.2
03918	12	Z	50	10	17.5	16.7
03953	12	Z	50	27	27.1	24.7
03953	00	Z	50	26	19.2	17.7
04018	12	Z	50	26	13.6	7.3
04018	00	Z	50	24	13.5	2.9
04220	12	Z	50	30	11.7	9.3
04220	00	Z	50	30	10.6	7.7
04270	00	Z	50	30	12.5	9.8
04270	12	Z	50	28	16.1	11.6
04320	12	Z	50	30	17.0	16.6
04320	00	Z	50	30	13.2	8.3
04339	12	Z	50	29	22.2	16.9
04339	00	Z	50	30	23.8	10.5
04360	12	Z	50	15	52.6	50.4
04360	00	Z	50	16	34.9	32.9
06011	12	Z	50	4	20.0	12.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	50	5	26.4	9.0
06260	12	Z	50	5	18.1	18.0
06260	00	Z	50	30	12.7	11.9
06610	12	Z	50	28	55.1	8.2
06610	00	Z	50	30	17.8	5.9
07110	12	Z	50	30	44.5	43.0
07110	00	Z	50	30	42.5	41.7
07510	12	Z	50	29	49.9	48.0
07510	00	Z	50	28	40.5	39.1
07645	00	Z	50	30	30.4	29.1
07645	12	Z	50	28	32.5	30.7
07761	00	Z	50	27	27.9	26.5
07761	12	Z	50	29	23.6	21.1
08001	00	Z	50	27	19.3	18.6
08001	12	Z	50	29	17.4	13.1
08221	12	Z	50	30	20.7	17.5
08221	00	Z	50	23	16.2	15.2
08302	12	Z	50	29	9.4	4.8
08302	00	Z	50	29	14.0	12.0
08508	12	Z	50	30	31.5	29.7
08522	12	Z	50	29	28.6	20.2
08579	12	Z	50	30	22.4	21.5
10035	00	Z	50	29	28.0	24.8
10035	12	Z	50	30	23.7	21.8
10393	12	Z	50	30	15.1	13.1
10393	00	Z	50	30	14.7	13.6
10410	00	Z	50	30	13.5	10.0
10410	12	Z	50	30	16.6	13.3
10739	12	Z	50	29	22.1	19.4
10739	00	Z	50	30	17.5	15.3
11035	00	Z	50	29	24.3	22.1
11035	12	Z	50	30	21.1	19.5
12982	00	Z	50	27	18.8	14.6
12982	12	Z	50	30	39.3	36.7
16080	12	Z	50	26	13.7	12.3
16080	00	Z	50	24	11.2	9.9
16245	12	Z	50	28	11.2	6.2
16245	00	Z	50	29	17.1	15.7
16320	12	Z	50	28	25.9	24.2
16320	00	Z	50	24	26.8	25.0
16429	00	Z	50	30	15.9	14.7
16429	12	Z	50	29	16.2	14.5
16622	00	Z	50	38	39.5	36.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16622	12	Z	50	2	30.8	30.8
16754	00	Z	50	52	29.1	25.9
17607	12	Z	50	30	16.1	11.5
26435	00	Z	50	15	15.0	11.7
60018	00	Z	50	28	13.3	12.4
60018	12	Z	50	28	12.0	3.4
ASDE01	12	Z	50	1	28.9	28.9
ASDE03	00	Z	50	1	0.0	0.0
ASDE03	12	Z	50	0	0.0	0.0
ASDK01	12	Z	50	6	11.2	10.8
ASDK01	00	Z	50	12	10.5	8.3
ASDK03	00	Z	50	2	22.3	22.2
ASDK03	12	Z	50	5	35.1	31.4
ASDK1	12	Z	50	6	8.2	5.9
ASDK1	00	Z	50	12	10.0	7.1
ASDK3	00	Z	50	2	15.1	14.5
ASDK3	12	Z	50	5	28.4	23.6
ASES01	12	Z	50	20	35.8	33.9
ASEU02	00	Z	50	6	51.7	51.5
ASEU02	12	Z	50	7	51.1	50.2
ASEU03	00	Z	50	4	11.2	5.1
ASEU03	12	Z	50	6	46.0	44.7
ASEU04	00	Z	50	5	11.0	8.7
ASEU04	12	Z	50	7	10.4	9.4
ASEU05	00	Z	50	3	13.1	-1.9
ASEU05	12	Z	50	4	65.1	59.3
ASEU06	00	Z	50	9	16.4	14.1
ASEU06	12	Z	50	12	52.1	50.3
ASFR1	00	Z	50	18	31.6	30.1
ASFR1	12	Z	50	25	43.5	42.6
ASFR3	00	Z	50	6	32.5	30.6
ASFR3	12	Z	50	6	45.2	41.9
ASFR4	00	Z	50	8	35.8	34.0
ASFR4	12	Z	50	9	61.6	60.7

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	50	25	2.7	0.3	-0.9
01001	12	V	50	25	3.1	-0.2	-0.5
01028	00	V	50	28	2.9	0.2	-0.5
01028	12	V	50	28	3.3	-0.3	-0.5
01400	12	V	50	7	3.6	-0.2	-1.0
01400	00	V	50	5	4.0	1.4	0.6
01415	00	V	50	10	3.4	1.5	-1.4
01415	12	V	50	11	3.1	0.1	-0.9
02365	12	V	50	21	3.6	0.1	-0.9
02365	00	V	50	22	4.2	-0.3	0.3
02591	12	V	50	23	2.8	-0.1	-0.2
02591	00	V	50	24	4.2	-0.6	0.5
02836	12	V	50	30	2.8	-0.2	0.2
02836	00	V	50	29	2.8	-0.2	0.3
02963	00	V	50	28	3.0	-0.3	-0.2
02963	12	V	50	30	3.3	0.3	-1.0
03005	00	V	50	29	2.9	-0.3	0.2
03005	12	V	50	29	3.1	0.3	-0.4
03238	12	V	50	2	1.7	-0.7	1.4
03238	00	V	50	27	3.0	0.6	-0.5
03808	00	V	50	28	3.4	0.3	0.1
03808	12	V	50	28	3.1	0.7	0.1
03918	00	V	50	29	2.9	0.9	0.6
03918	12	V	50	10	3.1	0.8	0.1
03953	12	V	50	27	3.3	0.0	0.9
03953	00	V	50	26	3.5	0.6	0.6
04018	12	V	50	24	3.3	1.1	0.0
04018	00	V	50	18	3.0	1.2	-0.2
04220	12	V	50	30	2.7	-0.1	0.2
04220	00	V	50	30	3.0	0.1	0.2
04270	00	V	50	30	3.5	-0.2	0.0
04270	12	V	50	28	3.5	0.6	0.0
04320	12	V	50	30	2.4	-0.2	0.3
04320	00	V	50	30	2.5	-0.1	0.3
04339	12	V	50	29	2.7	-0.5	-0.7
04339	00	V	50	30	3.1	0.2	-0.1
04360	12	V	50	15	2.9	-0.7	-0.1
04360	00	V	50	16	3.0	0.0	-0.6
06011	12	V	50	4	3.1	-1.4	0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	50	5	3.4	-1.8	-1.8
06260	12	V	50	5	2.6	-0.2	-0.9
06260	00	V	50	30	2.9	-0.1	-0.4
06610	12	V	50	28	3.5	0.0	0.6
06610	00	V	50	30	3.6	0.0	0.6
07110	12	V	50	30	3.5	0.7	0.4
07110	00	V	50	30	3.1	0.9	-0.2
07510	12	V	50	29	3.2	0.9	0.0
07510	00	V	50	28	3.8	2.0	0.6
07645	00	V	50	30	5.2	1.0	0.4
07645	12	V	50	28	3.8	0.9	0.0
07761	00	V	50	27	3.5	1.5	0.9
07761	12	V	50	29	3.4	1.7	-0.6
08001	00	V	50	22	3.1	0.6	0.4
08001	12	V	50	29	3.9	1.7	0.5
08221	12	V	50	30	3.7	0.0	0.1
08221	00	V	50	20	4.3	2.2	0.6
08302	12	V	50	29	3.3	0.8	-0.2
08302	00	V	50	29	3.4	1.1	0.6
08508	12	V	50	29	3.5	0.3	0.2
08522	12	V	50	28	4.2	0.7	0.7
08579	12	V	50	29	3.4	1.1	0.4
10035	00	V	50	29	3.5	0.1	0.2
10035	12	V	50	30	3.2	0.1	-1.0
10393	12	V	50	30	2.9	-0.4	0.2
10393	00	V	50	29	3.0	0.6	-0.1
10410	00	V	50	30	3.1	0.2	-0.4
10410	12	V	50	30	3.8	1.2	0.5
10739	12	V	50	29	3.7	1.3	0.2
10739	00	V	50	30	3.7	0.9	0.7
11035	00	V	50	29	3.8	0.2	-0.4
11035	12	V	50	29	4.2	0.3	-0.4
12982	00	V	50	27	3.7	-0.1	-0.1
12982	12	V	50	30	3.3	0.8	0.0
16080	12	V	50	26	4.0	0.7	0.1
16080	00	V	50	24	4.4	1.8	0.1
16245	12	V	50	28	3.0	0.5	-0.1
16245	00	V	50	29	3.1	0.8	0.4
16320	12	V	50	28	4.3	0.9	0.5
16320	00	V	50	24	3.7	0.4	0.0
16429	00	V	50	29	4.0	1.4	0.8
16429	12	V	50	29	3.3	0.7	0.8
16622	00	V	50	17	4.7	-0.5	1.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16622	12	V	50	1	5.1	-4.7	1.9
16754	00	V	50	25	4.5	1.4	0.4
17607	12	V	50	29	5.4	1.6	-0.6
26435	00	V	50	10	3.7	-0.5	0.8
60018	00	V	50	28	3.8	0.9	1.7
60018	12	V	50	28	4.5	-0.7	0.3
ASDE01	12	V	50	1	4.0	-0.5	-4.0
ASDE03	00	V	50	1	7.4	-6.6	3.4
ASDE03	12	V	50	0	0.0	0.0	0.0
ASDK01	12	V	50	6	4.0	-0.3	0.6
ASDK01	00	V	50	12	2.4	-0.7	0.4
ASDK03	00	V	50	2	2.9	-2.0	-0.5
ASDK03	12	V	50	4	3.7	1.0	-0.3
ASDK1	12	V	50	6	3.6	0.2	0.6
ASDK1	00	V	50	12	2.2	-0.3	-0.1
ASDK3	00	V	50	2	2.8	-2.2	-0.6
ASDK3	12	V	50	4	3.2	1.4	-0.3
ASES01	12	V	50	20	3.2	0.0	-0.8
ASEU02	00	V	50	5	3.6	1.9	1.0
ASEU02	12	V	50	5	4.2	1.7	2.4
ASEU03	00	V	50	4	2.2	-1.0	1.5
ASEU03	12	V	50	5	3.8	-0.6	-1.2
ASEU04	00	V	50	5	2.8	1.1	1.8
ASEU04	12	V	50	7	2.9	-1.3	-0.6
ASEU05	00	V	50	2	3.4	2.1	0.2
ASEU05	12	V	50	4	2.5	-1.0	1.4
ASEU06	00	V	50	7	2.8	-1.7	0.4
ASEU06	12	V	50	12	2.5	0.2	-0.5
ASFR1	00	V	50	11	3.8	1.8	0.7
ASFR1	12	V	50	14	3.8	1.0	0.2
ASFR3	00	V	50	6	2.6	0.1	-0.7
ASFR3	12	V	50	6	4.3	1.1	1.9
ASFR4	00	V	50	4	5.2	0.6	2.0
ASFR4	12	V	50	5	5.0	0.8	-1.2

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	100	27	7.3	1.8
01001	12	Z	100	29	8.0	-0.2
01028	00	Z	100	29	21.2	-6.6
01028	12	Z	100	29	7.9	3.3
01400	12	Z	100	16	14.3	11.5
01400	00	Z	100	18	25.5	7.2
01415	00	Z	100	30	11.4	4.5
01415	12	Z	100	29	9.3	5.6
02365	12	Z	100	30	8.1	4.8
02365	00	Z	100	30	7.4	2.8
02591	12	Z	100	24	12.5	11.1
02591	00	Z	100	24	12.0	10.7
02836	12	Z	100	30	4.4	2.2
02836	00	Z	100	30	6.6	0.2
02963	00	Z	100	30	4.8	3.2
02963	12	Z	100	31	5.7	1.9
03005	00	Z	100	31	4.4	-0.2
03005	12	Z	100	30	15.0	2.6
03238	12	Z	100	3	6.0	0.4
03238	00	Z	100	29	7.7	3.5
03808	00	Z	100	30	6.7	5.3
03808	12	Z	100	31	7.6	6.1
03918	00	Z	100	30	13.7	12.8
03918	12	Z	100	10	16.4	15.6
03953	12	Z	100	28	17.6	16.0
03953	00	Z	100	27	11.1	9.5
04018	12	Z	100	27	8.3	4.0
04018	00	Z	100	29	7.3	-1.1
04220	12	Z	100	30	6.2	4.2
04220	00	Z	100	30	6.3	2.8
04270	00	Z	100	30	8.6	3.0
04270	12	Z	100	28	8.5	5.0
04320	12	Z	100	30	9.6	9.0
04320	00	Z	100	30	7.6	4.2
04339	12	Z	100	29	15.8	10.8
04339	00	Z	100	30	20.8	6.8
04360	12	Z	100	23	48.3	47.6
04360	00	Z	100	21	34.3	32.7
06011	12	Z	100	5	8.4	2.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	100	5	14.0	1.2
06260	12	Z	100	5	10.4	9.5
06260	00	Z	100	30	6.7	5.5
06610	12	Z	100	30	51.3	-2.5
06610	00	Z	100	30	14.8	1.3
07110	12	Z	100	30	31.6	30.6
07110	00	Z	100	30	28.7	28.3
07510	12	Z	100	29	34.1	33.2
07510	00	Z	100	30	25.0	24.2
07645	00	Z	100	30	18.9	17.3
07645	12	Z	100	30	18.6	17.3
07761	00	Z	100	29	15.0	12.4
07761	12	Z	100	30	14.0	11.3
08001	00	Z	100	30	12.6	11.5
08001	12	Z	100	30	12.9	8.3
08221	12	Z	100	30	12.8	9.7
08221	00	Z	100	23	9.5	8.5
08302	12	Z	100	29	7.1	-0.3
08302	00	Z	100	29	7.6	3.4
08508	12	Z	100	30	18.2	16.3
08522	12	Z	100	29	22.5	12.9
08579	12	Z	100	30	13.6	12.1
10035	00	Z	100	29	20.4	15.9
10035	12	Z	100	30	17.1	15.6
10393	12	Z	100	30	7.2	3.7
10393	00	Z	100	31	6.1	3.8
10410	00	Z	100	30	8.8	1.5
10410	12	Z	100	30	9.9	4.8
10739	12	Z	100	30	13.1	10.1
10739	00	Z	100	30	9.9	6.6
11035	00	Z	100	30	15.7	13.3
11035	12	Z	100	30	11.6	9.7
12982	00	Z	100	27	11.9	7.9
12982	12	Z	100	30	20.9	18.3
16080	12	Z	100	26	5.5	2.0
16080	00	Z	100	26	5.6	1.7
16245	12	Z	100	29	8.7	-3.3
16245	00	Z	100	29	8.4	4.4
16320	12	Z	100	31	17.2	14.8
16320	00	Z	100	26	18.5	16.5
16429	00	Z	100	30	9.0	7.3
16429	12	Z	100	30	8.6	6.3
16622	00	Z	100	33	28.0	25.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16622	12	Z	100	4	9.6	9.5
16754	00	Z	100	46	19.9	16.3
17607	12	Z	100	30	9.3	3.7
26435	00	Z	100	15	8.3	5.6
60018	00	Z	100	28	6.8	5.0
60018	12	Z	100	28	8.3	0.5
ASDE01	12	Z	100	1	17.9	17.9
ASDE03	00	Z	100	4	41.5	41.5
ASDE03	12	Z	100	2	76.9	76.4
ASDK01	12	Z	100	6	8.1	7.3
ASDK01	00	Z	100	14	8.1	5.6
ASDK03	00	Z	100	4	16.8	16.1
ASDK03	12	Z	100	5	26.6	24.6
ASDK1	12	Z	100	6	3.0	0.4
ASDK1	00	Z	100	12	6.4	1.9
ASDK3	00	Z	100	3	15.6	15.2
ASDK3	12	Z	100	5	22.7	17.9
ASES01	12	Z	100	26	40.5	38.8
ASEU02	00	Z	100	9	40.1	39.1
ASEU02	12	Z	100	10	43.7	42.5
ASEU03	00	Z	100	5	7.1	3.6
ASEU03	12	Z	100	9	29.5	28.4
ASEU04	00	Z	100	6	4.7	-1.6
ASEU04	12	Z	100	7	5.6	4.9
ASEU05	00	Z	100	5	11.2	-0.5
ASEU05	12	Z	100	9	39.8	36.8
ASEU06	00	Z	100	16	10.2	7.5
ASEU06	12	Z	100	17	64.2	44.5
ASFR1	00	Z	100	23	17.4	16.0
ASFR1	12	Z	100	26	27.9	27.0
ASFR3	00	Z	100	9	15.8	15.5
ASFR3	12	Z	100	8	29.7	27.3
ASFR4	00	Z	100	11	23.1	22.0
ASFR4	12	Z	100	10	36.0	35.3

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	100	27	2.5	0.6	0.2
01001	12	V	100	29	2.3	-0.2	-0.1
01028	00	V	100	29	2.3	-0.1	-0.1
01028	12	V	100	28	2.5	0.2	-0.9
01400	12	V	100	11	3.2	-0.3	0.7
01400	00	V	100	10	3.1	0.1	1.2
01415	00	V	100	30	4.5	0.0	1.0
01415	12	V	100	29	4.6	-0.4	0.1
02365	12	V	100	30	3.1	0.2	-0.4
02365	00	V	100	30	3.8	0.7	0.2
02591	12	V	100	24	3.2	0.1	-0.5
02591	00	V	100	24	3.0	0.0	0.0
02836	12	V	100	30	2.1	-0.1	-0.6
02836	00	V	100	30	2.1	-0.1	-0.5
02963	00	V	100	30	3.0	0.1	-1.0
02963	12	V	100	30	2.9	0.2	-0.3
03005	00	V	100	29	3.0	0.3	0.0
03005	12	V	100	30	3.9	-0.2	0.3
03238	12	V	100	3	2.8	1.3	0.1
03238	00	V	100	29	3.9	0.3	0.1
03808	00	V	100	30	2.5	0.8	-0.4
03808	12	V	100	30	3.3	0.9	-0.3
03918	00	V	100	30	3.7	-1.3	0.0
03918	12	V	100	10	4.3	1.0	1.3
03953	12	V	100	28	2.8	-0.3	0.5
03953	00	V	100	27	3.0	0.2	0.7
04018	12	V	100	27	3.3	-0.1	-1.3
04018	00	V	100	28	2.8	0.8	-0.2
04220	12	V	100	30	2.6	0.1	0.7
04220	00	V	100	30	2.9	-0.5	0.1
04270	00	V	100	30	5.1	0.1	0.3
04270	12	V	100	28	4.2	0.2	-0.4
04320	12	V	100	30	2.6	0.1	-0.5
04320	00	V	100	30	2.8	0.4	-0.7
04339	12	V	100	29	3.4	-0.9	-0.5
04339	00	V	100	30	2.9	-0.6	-0.2
04360	12	V	100	23	3.8	0.3	-0.8
04360	00	V	100	21	4.3	-0.3	-0.2
06011	12	V	100	5	2.9	0.0	-0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	100	5	2.8	0.7	1.2
06260	12	V	100	5	3.3	1.2	0.0
06260	00	V	100	30	3.0	0.1	0.3
06610	12	V	100	29	3.6	0.2	-0.3
06610	00	V	100	30	3.4	0.3	-0.1
07110	12	V	100	30	3.1	0.3	0.2
07110	00	V	100	30	3.0	0.7	-0.5
07510	12	V	100	29	3.2	0.4	0.0
07510	00	V	100	30	2.7	0.0	-0.5
07645	00	V	100	30	3.6	0.7	0.1
07645	12	V	100	30	3.5	0.7	0.5
07761	00	V	100	29	3.6	0.3	0.1
07761	12	V	100	30	3.6	0.0	-0.1
08001	00	V	100	29	3.2	0.0	0.7
08001	12	V	100	30	3.3	0.3	0.3
08221	12	V	100	30	3.5	0.9	0.2
08221	00	V	100	21	3.3	1.2	-0.2
08302	12	V	100	29	3.5	1.3	0.8
08302	00	V	100	29	3.8	0.1	-0.7
08508	12	V	100	28	2.8	0.1	-0.2
08522	12	V	100	29	4.0	0.7	-0.5
08579	12	V	100	30	3.0	0.5	-0.1
10035	00	V	100	29	3.8	0.4	1.1
10035	12	V	100	30	3.7	1.1	-0.1
10393	12	V	100	30	3.3	0.4	-0.2
10393	00	V	100	29	3.0	0.7	-0.3
10410	00	V	100	30	4.5	-0.1	1.4
10410	12	V	100	30	2.6	0.7	0.3
10739	12	V	100	30	2.8	0.4	-0.3
10739	00	V	100	30	3.6	1.0	0.1
11035	00	V	100	30	3.9	0.7	-0.4
11035	12	V	100	30	4.2	-0.5	-0.9
12982	00	V	100	27	3.5	0.0	0.7
12982	12	V	100	30	3.9	-0.1	0.7
16080	12	V	100	26	3.8	0.5	-1.0
16080	00	V	100	26	3.7	0.6	0.8
16245	12	V	100	29	3.5	0.7	-0.3
16245	00	V	100	29	3.3	0.3	0.0
16320	12	V	100	30	3.2	0.7	0.1
16320	00	V	100	26	4.4	0.7	-0.3
16429	00	V	100	30	3.1	0.4	-0.1
16429	12	V	100	30	3.4	0.4	0.0
16622	00	V	100	17	4.9	-0.5	-1.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16622	12	V	100	1	3.2	-1.8	-2.6
16754	00	V	100	28	4.2	0.6	1.5
17607	12	V	100	30	4.1	0.5	0.2
26435	00	V	100	14	3.1	0.3	1.3
60018	00	V	100	28	4.7	-0.6	0.1
60018	12	V	100	28	4.5	0.9	-0.6
ASDE01	12	V	100	1	7.4	-6.6	-3.4
ASDE03	00	V	100	3	4.9	-1.6	2.5
ASDE03	12	V	100	2	3.3	1.3	0.8
ASDK01	12	V	100	6	2.2	0.3	1.3
ASDK01	00	V	100	12	2.9	0.7	-0.6
ASDK03	00	V	100	3	4.5	-1.9	-0.5
ASDK03	12	V	100	5	2.5	0.3	0.8
ASDK1	12	V	100	6	2.1	0.7	0.8
ASDK1	00	V	100	12	3.5	1.3	-0.4
ASDK3	00	V	100	3	3.5	-0.4	0.4
ASDK3	12	V	100	5	2.8	0.4	0.5
ASES01	12	V	100	19	5.6	0.3	2.3
ASEU02	00	V	100	7	2.9	-1.5	-1.0
ASEU02	12	V	100	9	3.7	0.7	1.0
ASEU03	00	V	100	5	2.1	0.1	0.3
ASEU03	12	V	100	5	2.8	-0.2	1.4
ASEU04	00	V	100	6	3.3	-0.8	0.3
ASEU04	12	V	100	7	2.9	-0.3	0.6
ASEU05	00	V	100	3	4.6	1.0	-0.1
ASEU05	12	V	100	7	3.0	0.6	1.0
ASEU06	00	V	100	11	3.3	-1.9	0.0
ASEU06	12	V	100	15	4.4	-1.4	1.6
ASFR1	00	V	100	12	3.0	-0.5	0.2
ASFR1	12	V	100	14	3.7	0.8	-0.1
ASFR3	00	V	100	7	3.3	-1.4	-0.2
ASFR3	12	V	100	7	4.0	-1.2	-0.7
ASFR4	00	V	100	5	4.4	2.3	0.9
ASFR4	12	V	100	5	4.0	0.7	0.7

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

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	500	28	6.5	2.5
01001	12	Z	500	29	5.7	0.3
01028	00	Z	500	30	20.9	-6.8
01028	12	Z	500	32	3.6	0.6
01400	12	Z	500	27	8.9	7.6
01400	00	Z	500	27	11.9	7.8
01415	00	Z	500	30	7.2	3.7
01415	12	Z	500	29	5.6	3.3
02365	12	Z	500	30	4.7	1.3
02365	00	Z	500	30	5.4	3.5
02591	12	Z	500	24	8.8	8.5
02591	00	Z	500	24	8.4	7.8
02836	12	Z	500	30	3.7	0.2
02836	00	Z	500	30	4.0	1.7
02963	00	Z	500	30	4.9	3.3
02963	12	Z	500	31	3.4	1.4
03005	00	Z	500	31	3.5	-0.7
03005	12	Z	500	30	14.9	1.8
03238	12	Z	500	3	4.4	-1.8
03238	00	Z	500	29	6.2	3.6
03808	00	Z	500	30	5.1	4.5
03808	12	Z	500	31	4.8	4.2
03918	00	Z	500	30	12.9	12.5
03918	12	Z	500	10	13.2	12.5
03953	12	Z	500	31	8.3	6.7
03953	00	Z	500	31	22.8	6.1
04018	12	Z	500	28	4.3	1.4
04018	00	Z	500	29	5.3	0.1
04220	12	Z	500	30	3.2	1.5
04220	00	Z	500	30	4.2	2.0
04270	00	Z	500	30	4.0	0.7
04270	12	Z	500	30	4.0	0.8
04320	12	Z	500	30	5.4	4.2
04320	00	Z	500	30	3.7	2.3
04339	12	Z	500	29	13.3	6.5
04339	00	Z	500	30	20.7	6.5
04360	12	Z	500	27	41.3	41.1
04360	00	Z	500	29	38.8	38.5
06011	12	Z	500	5	6.7	-0.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	500	5	5.8	-4.5
06260	12	Z	500	5	4.3	2.8
06260	00	Z	500	30	4.6	3.9
06610	12	Z	500	30	5.3	3.3
06610	00	Z	500	30	6.2	3.9
07110	12	Z	500	30	20.7	15.7
07110	00	Z	500	30	10.9	10.6
07510	12	Z	500	30	14.5	13.9
07510	00	Z	500	30	10.4	9.6
07645	00	Z	500	30	5.8	5.1
07645	12	Z	500	30	9.1	8.1
07761	00	Z	500	30	5.1	-0.2
07761	12	Z	500	30	4.3	1.6
08001	00	Z	500	30	9.8	9.4
08001	12	Z	500	30	9.2	8.5
08221	12	Z	500	30	8.2	6.8
08221	00	Z	500	29	6.4	5.8
08302	12	Z	500	29	3.5	-1.9
08302	00	Z	500	30	3.3	-2.0
08508	12	Z	500	30	11.3	9.3
08522	12	Z	500	30	18.4	9.7
08579	12	Z	500	30	7.2	6.3
10035	00	Z	500	29	17.6	14.3
10035	12	Z	500	31	13.8	13.1
10393	12	Z	500	30	4.2	-1.3
10393	00	Z	500	31	3.6	1.2
10410	00	Z	500	30	3.8	-0.1
10410	12	Z	500	30	4.3	0.1
10739	12	Z	500	30	8.8	7.7
10739	00	Z	500	30	9.0	7.9
11035	00	Z	500	30	10.0	9.2
11035	12	Z	500	31	7.6	5.8
12982	00	Z	500	30	6.7	3.7
12982	12	Z	500	30	7.9	3.8
16080	12	Z	500	26	4.1	-2.3
16080	00	Z	500	26	4.0	-0.7
16245	12	Z	500	30	9.4	-7.8
16245	00	Z	500	30	5.1	-2.1
16320	12	Z	500	31	14.1	12.4
16320	00	Z	500	30	16.2	14.2
16429	00	Z	500	30	6.1	4.6
16429	12	Z	500	30	5.3	3.2
16622	00	Z	500	26	17.9	15.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16622	12	Z	500	2	1.1	-1.1
16754	00	Z	500	34	14.2	7.7
17607	12	Z	500	30	6.0	4.2
26435	00	Z	500	15	7.3	2.8
60018	00	Z	500	28	2.5	0.1
60018	12	Z	500	28	4.2	1.4
ASDE01	12	Z	500	1	21.3	21.3
ASDE03	00	Z	500	4	40.3	40.3
ASDE03	12	Z	500	2	48.6	48.6
ASDK01	12	Z	500	8	8.8	6.6
ASDK01	00	Z	500	16	7.5	5.5
ASDK03	00	Z	500	7	16.9	15.2
ASDK03	12	Z	500	6	20.5	19.6
ASDK1	12	Z	500	6	8.5	3.3
ASDK1	00	Z	500	13	8.7	1.8
ASDK3	00	Z	500	5	21.7	14.2
ASDK3	12	Z	500	5	24.4	17.9
ASES01	12	Z	500	27	18.8	17.3
ASEU02	00	Z	500	9	33.5	33.1
ASEU02	12	Z	500	10	33.9	33.0
ASEU03	00	Z	500	5	8.4	-3.2
ASEU03	12	Z	500	9	9.5	4.7
ASEU04	00	Z	500	6	7.0	-4.2
ASEU04	12	Z	500	7	6.0	1.7
ASEU05	00	Z	500	6	10.2	-1.7
ASEU05	12	Z	500	9	7.8	1.1
ASEU06	00	Z	500	16	9.3	3.2
ASEU06	12	Z	500	17	27.7	13.2
ASFR1	00	Z	500	27	8.6	-1.2
ASFR1	12	Z	500	26	7.9	0.6
ASFR3	00	Z	500	9	7.0	5.9
ASFR3	12	Z	500	8	12.0	11.2
ASFR4	00	Z	500	11	5.1	2.0
ASFR4	12	Z	500	10	7.9	6.7

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	500	28	2.5	0.3	-0.2
01001	12	V	500	29	2.8	0.2	0.3
01028	00	V	500	30	2.0	0.4	-0.1
01028	12	V	500	29	1.7	-0.1	0.2
01400	12	V	500	27	2.5	0.0	0.2
01400	00	V	500	24	2.9	0.6	0.2
01415	00	V	500	30	2.8	0.2	0.4
01415	12	V	500	29	3.1	0.1	0.0
02365	12	V	500	30	2.9	0.9	0.0
02365	00	V	500	30	3.4	0.0	0.1
02591	12	V	500	24	1.9	-0.1	-0.2
02591	00	V	500	24	2.3	0.4	0.2
02836	12	V	500	30	2.4	0.1	-0.2
02836	00	V	500	30	2.9	0.2	-0.1
02963	00	V	500	30	2.4	0.1	0.8
02963	12	V	500	30	2.8	0.7	0.2
03005	00	V	500	30	2.8	0.4	-0.6
03005	12	V	500	30	3.0	-0.3	-0.2
03238	12	V	500	3	2.9	1.4	1.1
03238	00	V	500	29	3.0	1.0	-0.1
03808	00	V	500	30	2.6	0.5	-0.3
03808	12	V	500	30	2.7	0.2	0.1
03918	00	V	500	30	2.3	0.4	0.3
03918	12	V	500	10	1.8	0.5	-0.1
03953	12	V	500	30	2.8	0.0	1.2
03953	00	V	500	30	2.5	0.0	0.3
04018	12	V	500	28	2.8	0.1	-0.4
04018	00	V	500	28	3.8	-0.3	0.1
04220	12	V	500	30	2.7	-0.5	0.5
04220	00	V	500	30	3.2	0.1	-0.2
04270	00	V	500	30	3.8	0.9	-0.3
04270	12	V	500	30	3.0	0.0	0.0
04320	12	V	500	30	2.8	-0.3	0.1
04320	00	V	500	30	2.3	0.3	-0.7
04339	12	V	500	29	2.6	0.2	0.6
04339	00	V	500	30	2.9	0.7	0.4
04360	12	V	500	27	3.5	0.3	0.1
04360	00	V	500	28	3.4	0.3	0.4
06011	12	V	500	5	4.5	0.9	-1.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	500	5	2.8	-1.0	-0.5
06260	12	V	500	5	3.0	0.4	0.8
06260	00	V	500	30	2.3	0.7	-0.5
06610	12	V	500	29	3.4	0.2	-1.3
06610	00	V	500	30	3.4	-0.6	0.5
07110	12	V	500	30	2.8	-0.3	0.1
07110	00	V	500	30	2.3	0.1	-0.3
07510	12	V	500	30	2.1	0.2	-0.2
07510	00	V	500	30	2.7	0.0	0.3
07645	00	V	500	30	2.5	0.2	0.3
07645	12	V	500	30	2.5	-0.2	-0.7
07761	00	V	500	30	3.2	0.6	0.7
07761	12	V	500	30	2.0	0.3	-0.2
08001	00	V	500	30	2.9	0.4	0.6
08001	12	V	500	30	2.6	-0.3	-0.2
08221	12	V	500	30	2.5	0.4	-0.2
08221	00	V	500	25	2.6	0.5	0.2
08302	12	V	500	29	2.5	0.6	0.4
08302	00	V	500	30	2.8	0.1	1.0
08508	12	V	500	30	3.0	0.7	-0.7
08522	12	V	500	30	2.8	0.2	-0.3
08579	12	V	500	30	2.3	0.1	0.0
10035	00	V	500	29	2.4	0.4	-0.1
10035	12	V	500	30	2.8	0.1	-0.5
10393	12	V	500	30	2.9	0.9	0.1
10393	00	V	500	30	2.8	0.1	-0.2
10410	00	V	500	30	2.5	-0.3	0.3
10410	12	V	500	30	2.3	0.9	0.2
10739	12	V	500	30	2.5	0.3	-0.7
10739	00	V	500	30	3.1	0.1	-0.3
11035	00	V	500	30	3.2	0.6	0.2
11035	12	V	500	30	2.6	0.0	-0.4
12982	00	V	500	30	3.9	-0.4	-0.4
12982	12	V	500	30	3.0	0.4	-0.2
16080	12	V	500	26	3.1	-0.1	-0.6
16080	00	V	500	26	2.5	-0.3	0.1
16245	12	V	500	30	2.5	0.7	-0.3
16245	00	V	500	30	2.6	0.4	-0.1
16320	12	V	500	30	3.1	1.0	0.3
16320	00	V	500	28	2.4	0.6	0.0
16429	00	V	500	30	2.6	0.2	0.5
16429	12	V	500	30	3.1	0.6	0.1
16622	00	V	500	16	4.2	-0.7	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16622	12	V	500	1	2.6	-0.5	-2.6
16754	00	V	500	28	3.1	0.1	-0.1
17607	12	V	500	30	3.2	0.5	-0.3
26435	00	V	500	14	2.7	0.1	-0.1
60018	00	V	500	28	2.9	-0.3	0.3
60018	12	V	500	28	3.1	0.9	0.1
ASDE01	12	V	500	1	3.1	1.6	2.6
ASDE03	00	V	500	3	4.4	3.3	1.5
ASDE03	12	V	500	2	3.4	1.9	-1.8
ASDK01	12	V	500	7	1.7	0.7	-0.5
ASDK01	00	V	500	12	2.8	0.2	0.8
ASDK03	00	V	500	5	4.6	-0.7	-1.7
ASDK03	12	V	500	6	2.5	0.4	-0.7
ASDK1	12	V	500	6	2.1	1.0	-1.0
ASDK1	00	V	500	12	4.6	0.7	-0.6
ASDK3	00	V	500	5	4.9	-0.3	-0.3
ASDK3	12	V	500	5	2.8	0.5	-1.5
ASES01	12	V	500	21	3.3	1.1	-0.2
ASEU02	00	V	500	7	2.4	0.8	0.1
ASEU02	12	V	500	9	3.6	1.3	-0.4
ASEU03	00	V	500	5	2.6	0.6	0.3
ASEU03	12	V	500	6	2.3	0.6	0.2
ASEU04	00	V	500	6	2.3	0.2	0.3
ASEU04	12	V	500	7	2.1	-0.2	0.3
ASEU05	00	V	500	6	2.1	0.5	1.0
ASEU05	12	V	500	7	1.9	-0.3	-0.6
ASEU06	00	V	500	12	2.8	0.2	1.3
ASEU06	12	V	500	15	2.8	0.2	0.8
ASFR1	00	V	500	14	3.4	-0.4	0.6
ASFR1	12	V	500	14	3.2	0.1	0.2
ASFR3	00	V	500	7	2.7	0.3	0.7
ASFR3	12	V	500	7	3.2	1.0	0.0
ASFR4	00	V	500	5	1.8	0.4	0.7
ASFR4	12	V	500	5	1.7	-0.1	0.2

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	850	28	4.4	-0.1
01001	12	Z	850	29	4.3	-0.9
01028	00	Z	850	30	20.1	-6.7
01028	12	Z	850	32	4.0	-1.7
01400	12	Z	850	27	7.2	5.9
01400	00	Z	850	27	8.2	6.8
01415	00	Z	850	30	4.5	3.1
01415	12	Z	850	30	4.0	3.5
02365	12	Z	850	30	2.1	1.2
02365	00	Z	850	30	3.8	2.9
02591	12	Z	850	24	8.3	8.0
02591	00	Z	850	24	8.0	7.7
02836	12	Z	850	30	2.4	1.4
02836	00	Z	850	30	2.9	2.3
02963	00	Z	850	30	4.1	3.7
02963	12	Z	850	31	3.7	2.9
03005	00	Z	850	31	2.6	-0.2
03005	12	Z	850	30	14.6	2.0
03238	12	Z	850	3	2.0	0.0
03238	00	Z	850	29	4.3	3.7
03808	00	Z	850	30	3.7	2.8
03808	12	Z	850	31	3.6	3.1
03918	00	Z	850	30	11.6	11.5
03918	12	Z	850	10	11.1	11.0
03953	12	Z	850	31	4.7	4.0
03953	00	Z	850	31	4.5	3.0
04018	12	Z	850	28	3.7	0.1
04018	00	Z	850	29	3.2	0.3
04220	12	Z	850	30	3.1	1.2
04220	00	Z	850	30	3.0	1.5
04270	00	Z	850	30	3.0	0.1
04270	12	Z	850	30	4.1	1.8
04320	12	Z	850	30	3.3	0.3
04320	00	Z	850	30	3.2	-0.2
04339	12	Z	850	29	12.9	6.5
04339	00	Z	850	30	22.3	5.4
04360	12	Z	850	28	41.2	41.1
04360	00	Z	850	30	41.5	41.2
06011	12	Z	850	5	4.3	1.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	850	5	4.1	0.7
06260	12	Z	850	5	3.1	2.6
06260	00	Z	850	30	3.3	2.1
06610	12	Z	850	30	3.0	2.2
06610	00	Z	850	30	4.1	3.6
07110	12	Z	850	31	6.6	5.7
07110	00	Z	850	30	5.1	4.7
07510	12	Z	850	30	8.2	7.6
07510	00	Z	850	30	5.5	4.8
07645	00	Z	850	30	2.9	1.7
07645	12	Z	850	30	3.8	2.9
07761	00	Z	850	30	3.5	-1.6
07761	12	Z	850	30	3.4	-2.1
08001	00	Z	850	30	6.3	5.9
08001	12	Z	850	30	5.2	4.8
08221	12	Z	850	30	2.7	2.2
08221	00	Z	850	31	4.6	4.0
08302	12	Z	850	29	4.6	-4.1
08302	00	Z	850	30	2.8	-2.0
08508	12	Z	850	30	6.4	5.2
08522	12	Z	850	30	16.4	5.8
08579	12	Z	850	30	2.9	1.8
10035	00	Z	850	29	18.3	15.4
10035	12	Z	850	31	14.5	13.8
10393	12	Z	850	30	2.0	0.8
10393	00	Z	850	31	2.9	2.2
10410	00	Z	850	30	1.6	-0.4
10410	12	Z	850	30	2.2	-0.2
10739	12	Z	850	31	8.1	7.8
10739	00	Z	850	30	8.8	8.6
11035	00	Z	850	30	9.7	9.5
11035	12	Z	850	31	7.5	7.0
12982	00	Z	850	30	6.2	4.7
12982	12	Z	850	30	6.7	4.8
16080	12	Z	850	26	4.5	-3.1
16080	00	Z	850	26	3.8	-2.0
16245	12	Z	850	30	9.8	-8.7
16245	00	Z	850	30	5.4	-3.4
16320	12	Z	850	32	15.2	13.8
16320	00	Z	850	32	16.7	14.9
16429	00	Z	850	30	5.0	3.8
16429	12	Z	850	30	3.8	2.3
16622	00	Z	850	21	13.1	10.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16622	12	Z	850	2	5.9	5.9
16754	00	Z	850	29	9.4	7.7
17607	12	Z	850	30	4.1	3.3
26435	00	Z	850	15	3.9	3.1
60018	00	Z	850	28	3.2	-2.5
60018	12	Z	850	28	3.2	-2.2
ASDE01	12	Z	850	1	13.1	13.1
ASDE03	00	Z	850	4	39.3	39.3
ASDE03	12	Z	850	2	38.4	38.4
ASDK01	12	Z	850	8	7.5	5.3
ASDK01	00	Z	850	16	6.2	4.6
ASDK03	00	Z	850	7	18.2	16.9
ASDK03	12	Z	850	6	21.3	20.5
ASDK1	12	Z	850	6	10.2	6.2
ASDK1	00	Z	850	13	9.1	4.5
ASDK3	00	Z	850	5	18.0	15.9
ASDK3	12	Z	850	5	25.1	23.4
ASES01	12	Z	850	27	11.6	9.6
ASEU02	00	Z	850	9	29.1	28.5
ASEU02	12	Z	850	11	25.8	24.9
ASEU03	00	Z	850	5	13.5	-7.3
ASEU03	12	Z	850	9	6.3	-1.2
ASEU04	00	Z	850	6	9.0	-7.3
ASEU04	12	Z	850	7	6.8	-4.9
ASEU05	00	Z	850	6	8.9	-5.6
ASEU05	12	Z	850	9	10.0	-5.6
ASEU06	00	Z	850	16	9.2	0.0
ASEU06	12	Z	850	17	11.6	1.5
ASFR1	00	Z	850	27	5.1	-3.7
ASFR1	12	Z	850	26	5.8	-4.3
ASFR3	00	Z	850	9	4.4	4.1
ASFR3	12	Z	850	8	4.6	4.1
ASFR4	00	Z	850	11	4.7	-3.7
ASFR4	12	Z	850	10	4.0	-1.1

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	850	28	4.7	0.7	1.2
01001	12	V	850	29	3.8	0.4	-0.8
01028	00	V	850	30	3.2	0.8	-0.3
01028	12	V	850	29	3.7	-0.7	-0.4
01400	12	V	850	27	2.1	0.4	0.0
01400	00	V	850	24	2.6	-0.4	0.1
01415	00	V	850	30	2.8	0.6	0.3
01415	12	V	850	30	2.7	0.0	0.3
02365	12	V	850	30	2.5	-0.2	-0.5
02365	00	V	850	29	2.7	-0.4	0.2
02591	12	V	850	24	2.9	0.6	-0.5
02591	00	V	850	24	2.5	0.2	0.0
02836	12	V	850	30	2.5	-0.8	-0.4
02836	00	V	850	30	2.9	0.8	-0.1
02963	00	V	850	30	2.7	0.6	-0.3
02963	12	V	850	30	2.6	0.3	0.2
03005	00	V	850	30	3.3	0.2	-1.4
03005	12	V	850	30	3.5	0.1	-0.5
03238	12	V	850	3	4.4	0.2	-2.0
03238	00	V	850	29	2.6	0.0	0.1
03808	00	V	850	30	2.7	0.0	-0.2
03808	12	V	850	30	2.2	0.4	0.0
03918	00	V	850	30	2.8	0.2	0.0
03918	12	V	850	10	2.2	0.1	-0.2
03953	12	V	850	30	2.3	0.1	0.2
03953	00	V	850	30	2.1	-0.1	0.7
04018	12	V	850	28	3.1	0.3	0.0
04018	00	V	850	28	2.9	0.5	0.6
04220	12	V	850	30	3.3	0.0	0.4
04220	00	V	850	30	2.7	0.3	-0.4
04270	00	V	850	30	3.8	0.1	0.1
04270	12	V	850	30	3.7	0.2	0.4
04320	12	V	850	30	3.2	0.3	0.4
04320	00	V	850	30	2.6	0.7	0.4
04339	12	V	850	29	3.3	0.6	-0.3
04339	00	V	850	30	4.2	0.7	0.1
04360	12	V	850	28	7.5	1.6	1.1
04360	00	V	850	29	6.9	1.4	0.9
06011	12	V	850	5	2.2	0.0	-0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	850	5	4.1	-2.6	-0.5
06260	12	V	850	5	3.7	1.1	-0.3
06260	00	V	850	30	2.6	0.7	-0.5
06610	12	V	850	29	3.5	0.7	0.9
06610	00	V	850	30	2.6	0.4	-0.2
07110	12	V	850	30	2.5	0.1	-0.2
07110	00	V	850	30	4.0	-0.2	-0.2
07510	12	V	850	30	3.7	-0.1	-0.5
07510	00	V	850	30	2.8	-0.5	-0.1
07645	00	V	850	30	3.3	0.0	-0.3
07645	12	V	850	30	3.1	-0.3	0.2
07761	00	V	850	30	4.1	0.0	-0.1
07761	12	V	850	30	3.5	-0.3	0.1
08001	00	V	850	30	2.3	0.2	-0.1
08001	12	V	850	30	2.4	0.3	0.2
08221	12	V	850	30	2.5	-0.2	0.2
08221	00	V	850	30	3.8	1.1	-0.3
08302	12	V	850	29	2.9	1.1	0.6
08302	00	V	850	30	2.7	0.2	0.0
08508	12	V	850	27	2.8	-0.1	-0.8
08522	12	V	850	30	2.7	0.0	-0.5
08579	12	V	850	30	3.3	0.7	0.1
10035	00	V	850	29	2.3	0.4	0.4
10035	12	V	850	30	2.8	0.1	-0.3
10393	12	V	850	30	3.0	0.4	0.8
10393	00	V	850	30	2.1	-0.2	-0.2
10410	00	V	850	30	2.5	0.9	0.1
10410	12	V	850	30	2.5	0.4	-0.6
10739	12	V	850	30	2.8	-0.3	0.3
10739	00	V	850	30	2.7	-0.4	-0.7
11035	00	V	850	30	3.0	0.1	0.2
11035	12	V	850	30	3.4	0.9	-0.3
12982	00	V	850	30	3.3	-0.1	-1.3
12982	12	V	850	30	2.8	-0.3	-0.1
16080	12	V	850	26	3.0	0.0	0.1
16080	00	V	850	26	3.7	-0.8	-0.2
16245	12	V	850	30	3.0	-0.3	-0.1
16245	00	V	850	30	3.5	-0.3	0.4
16320	12	V	850	30	2.7	0.1	-0.8
16320	00	V	850	30	2.9	0.6	-0.4
16429	00	V	850	30	2.5	-0.3	-0.1
16429	12	V	850	30	3.0	-0.5	0.1
16622	00	V	850	15	3.5	-0.1	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16622	12	V	850	1	4.3	2.1	3.8
16754	00	V	850	28	4.1	-0.6	0.2
17607	12	V	850	30	3.5	0.4	-0.2
26435	00	V	850	14	2.0	-0.5	0.1
60018	00	V	850	28	2.7	0.0	0.0
60018	12	V	850	28	3.1	-0.3	0.0
ASDE01	12	V	850	1	1.5	1.5	0.1
ASDE03	00	V	850	3	3.7	2.8	-0.5
ASDE03	12	V	850	2	4.1	2.2	-3.5
ASDK01	12	V	850	7	4.0	2.8	-0.4
ASDK01	00	V	850	13	2.9	-1.0	0.0
ASDK03	00	V	850	5	3.0	1.3	-0.4
ASDK03	12	V	850	6	1.8	-1.0	0.4
ASDK1	12	V	850	6	3.7	2.4	-1.0
ASDK1	00	V	850	13	3.5	-1.0	-1.5
ASDK3	00	V	850	5	2.7	1.5	0.5
ASDK3	12	V	850	5	2.6	-1.0	1.0
ASES01	12	V	850	21	3.6	1.1	-0.8
ASEU02	00	V	850	7	2.6	-0.1	0.1
ASEU02	12	V	850	10	2.1	-0.2	0.0
ASEU03	00	V	850	5	2.4	1.4	-0.1
ASEU03	12	V	850	6	2.5	0.1	1.4
ASEU04	00	V	850	6	2.2	-0.4	-0.3
ASEU04	12	V	850	7	1.8	0.8	0.1
ASEU05	00	V	850	6	1.9	0.1	0.4
ASEU05	12	V	850	7	2.6	0.7	-0.1
ASEU06	00	V	850	12	2.5	0.3	-0.2
ASEU06	12	V	850	15	2.7	0.2	-0.4
ASFR1	00	V	850	14	3.0	0.0	-0.4
ASFR1	12	V	850	14	2.6	0.6	0.2
ASFR3	00	V	850	7	3.9	1.5	-1.6
ASFR3	12	V	850	7	3.9	-0.4	-0.3
ASFR4	00	V	850	5	2.1	1.2	-0.1
ASFR4	12	V	850	5	2.9	-1.0	-0.9

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

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DRIFTER MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : SURFACE PRESSURE (HPA)
         AREA                  : 10N - 90N, 70W - 40E
         PERIOD                : APR 2017
         STANDARD OF COMPARISON: FIRST-GUESS FIELD


TIME = 99 => AVERAGE OF ALL OBSERVATIONS
GROSS ERROR LIMIT = 15 HPA
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WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
03380	99	P	SUR	54	0	724	0	0.3	-0.2	0.3
1300001	99	P	SUR	11	-23	630	0	0.4	-0.0	0.4
1300869	99	P	SUR	22	-56	719	0	0.3	-0.0	0.3
1300871	99	P	SUR	23	-59	692	0	0.3	0.3	0.5
1300872	99	P	SUR	32	-53	719	0	0.5	0.3	0.5
1301500	99	P	SUR	18	-67	469	0	0.4	0.0	0.4
1301501	99	P	SUR	19	-59	715	0	0.4	0.2	0.4
1301502	99	P	SUR	20	-51	709	0	0.3	0.3	0.4
13869	99	P	SUR	22	-56	719	0	0.3	-0.0	0.3
13871	99	P	SUR	23	-59	692	0	0.3	0.3	0.5
13872	99	P	SUR	32	-53	719	0	0.5	0.3	0.5
1501529	99	P	SUR	25	-22	656	0	0.3	0.3	0.4
1501531	99	P	SUR	18	-25	657	0	0.4	0.4	0.5
1501533	99	P	SUR	11	-26	655	0	0.3	0.3	0.4
1501534	99	P	SUR	23	-25	655	0	0.3	0.1	0.3
2100942	99	P	SUR	23	-51	689	0	0.3	0.2	0.3
21942	99	P	SUR	23	-51	689	0	0.3	0.2	0.3
2500575	99	P	SUR	62	-25	720	20	3.1	0.2	3.2
2500622	99	P	SUR	82	9	718	0	0.5	-0.5	0.7
2500623	99	P	SUR	83	1	719	0	0.4	-0.2	0.4
25575	99	P	SUR	62	-25	720	20	3.1	0.2	3.2
25622	99	P	SUR	82	9	718	0	0.5	-0.5	0.7
25623	99	P	SUR	83	1	719	0	0.4	-0.2	0.4
2600545	99	P	SUR	65	-37	292	25	6.7	0.4	6.7
2600565	99	P	SUR	83	12	566	0	0.4	0.1	0.4
2600566	99	P	SUR	83	13	566	0	0.5	-0.0	0.5
2600568	99	P	SUR	82	24	566	566	0.0	0.0	0.0
2600571	99	P	SUR	82	13	566	0	0.5	-0.5	0.7
2601560	99	P	SUR	82	13	719	0	0.5	0.2	0.5
2601561	99	P	SUR	78	-2	158	0	0.5	1.5	1.5
26545	99	P	SUR	65	-37	322	25	5.9	0.8	5.9
26565	99	P	SUR	83	12	618	0	0.4	0.1	0.5
26566	99	P	SUR	83	13	619	0	0.5	0.0	0.5
26568	99	P	SUR	82	24	631	631	0.0	0.0	0.0
26571	99	P	SUR	82	13	593	0	0.5	-0.5	0.7
4100139	99	P	SUR	20	-38	690	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
4100300	99	P	SUR	16	-57	720	0	0.4	0.3	0.5
4100506	99	P	SUR	29	-47	671	0	0.3	-0.1	0.3
4100590	99	P	SUR	43	-28	713	0	0.4	-0.3	0.5
4100597	99	P	SUR	34	-55	720	6	1.8	0.5	1.9
4100707	99	P	SUR	14	-61	718	0	0.4	-0.9	1.0
4100729	99	P	SUR	41	-36	717	0	0.6	0.3	0.7
4100731	99	P	SUR	28	-66	718	0	0.4	0.2	0.4
4100970	99	P	SUR	38	-69	601	1	1.3	0.2	1.3
4100975	99	P	SUR	28	-57	716	1	0.3	-0.2	0.4
4101700	99	P	SUR	36	-42	718	0	0.4	0.2	0.4
4101702	99	P	SUR	20	-50	720	0	0.3	0.3	0.4
4101703	99	P	SUR	22	-51	715	0	0.3	0.5	0.6
4101704	99	P	SUR	16	-66	716	0	0.4	0.7	0.8
4101705	99	P	SUR	31	-48	719	0	0.4	0.2	0.5
4101706	99	P	SUR	35	-41	718	0	0.4	-0.2	0.4
4101707	99	P	SUR	40	-32	718	0	0.3	0.1	0.3
4101708	99	P	SUR	33	-46	720	0	0.4	0.7	0.8
4101709	99	P	SUR	43	-22	718	0	0.4	0.3	0.5
4101741	99	P	SUR	22	-50	719	0	0.3	0.4	0.5
41040	99	P	SUR	15	-53	1270	0	0.4	-0.3	0.5
41041	99	P	SUR	14	-46	1248	0	0.4	0.2	0.4
41043	99	P	SUR	21	-65	1293	0	0.5	-0.4	0.6
41044	99	P	SUR	22	-59	1293	0	0.4	-0.1	0.4
41046	99	P	SUR	24	-68	1142	0	0.4	0.2	0.4
41048	99	P	SUR	32	-70	1189	0	0.5	-0.2	0.5
41049	99	P	SUR	28	-63	714	0	0.4	0.3	0.5
41052	99	P	SUR	18	-65	885	0	0.3	-1.2	1.2
41053	99	P	SUR	19	-66	1484	0	0.4	-0.5	0.7
41056	99	P	SUR	18	-66	696	0	0.5	-0.7	0.9
41300	99	P	SUR	16	-57	720	0	0.4	0.3	0.5
41506	99	P	SUR	29	-47	671	0	0.3	-0.1	0.3
41590	99	P	SUR	43	-28	713	0	0.4	-0.3	0.5
41597	99	P	SUR	34	-55	720	6	1.8	0.5	1.9
41707	99	P	SUR	14	-61	718	0	0.4	-0.9	1.0
41729	99	P	SUR	41	-36	717	0	0.6	0.3	0.7
41731	99	P	SUR	28	-66	718	0	0.4	0.2	0.4
41970	99	P	SUR	38	-69	601	1	1.3	0.2	1.3
41975	99	P	SUR	28	-57	716	1	0.3	-0.2	0.4
4200518	99	P	SUR	51	-10	4	4	0.0	0.0	0.0
4201500	99	P	SUR	34	-62	655	0	0.3	0.3	0.5
42059	99	P	SUR	15	-68	1263	0	0.5	-0.3	0.6
42060	99	P	SUR	16	-63	1276	0	0.4	-0.1	0.5
42085	99	P	SUR	18	-67	144	0	0.4	-0.6	0.8

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
42088	99	P	SUR	11	-61	1472	0	0.6	0.2	0.6
42090	99	P	SUR	18	-70	2128	0	0.5	-0.0	0.5
42518	99	P	SUR	51	-10	4	4	0.0	0.0	0.0
44005	99	P	SUR	43	-69	966	0	0.6	-0.2	0.6
4400510	99	P	SUR	46	-35	1218	0	0.4	0.4	0.5
4400513	99	P	SUR	54	-10	717	0	0.3	-0.4	0.5
4400517	99	P	SUR	26	-27	718	0	0.3	0.2	0.4
4400521	99	P	SUR	37	-25	706	0	0.4	-0.4	0.6
4400624	99	P	SUR	25	-65	693	0	0.4	-0.4	0.6
4400670	99	P	SUR	41	-51	366	0	0.8	0.7	1.1
4400746	99	P	SUR	30	-23	720	0	0.3	0.3	0.4
4400765	99	P	SUR	60	-11	711	0	0.4	0.3	0.5
4400766	99	P	SUR	36	-17	719	0	0.3	0.0	0.3
4400768	99	P	SUR	27	-33	720	0	0.3	0.6	0.7
4400773	99	P	SUR	47	-3	720	0	0.4	0.7	0.8
4400776	99	P	SUR	30	-30	718	0	0.4	0.6	0.7
4400777	99	P	SUR	38	-46	719	0	0.8	0.1	0.8
4400778	99	P	SUR	35	-18	718	0	0.3	0.4	0.5
4400779	99	P	SUR	51	-18	718	0	0.4	0.2	0.5
44008	99	P	SUR	41	-69	435	0	0.5	-0.6	0.8
4400835	99	P	SUR	28	-48	352	0	0.5	-0.7	0.8
4400839	99	P	SUR	24	-57	719	0	0.3	-0.2	0.4
4400848	99	P	SUR	26	-41	716	0	0.3	0.2	0.3
4400857	99	P	SUR	42	-21	717	0	0.4	0.3	0.5
4400863	99	P	SUR	29	-68	711	0	0.4	-0.7	0.8
4400874	99	P	SUR	30	-34	720	0	0.3	0.3	0.4
4400887	99	P	SUR	34	-49	719	0	0.4	-0.1	0.4
4400889	99	P	SUR	35	-30	718	0	0.4	-0.1	0.5
4400891	99	P	SUR	29	-56	719	0	0.3	-0.6	0.6
4400901	99	P	SUR	56	-13	719	0	0.3	0.1	0.3
4400904	99	P	SUR	37	-19	719	0	0.3	-0.2	0.4
44011	99	P	SUR	41	-67	720	0	0.5	-0.6	0.8
4401500	99	P	SUR	36	-62	718	0	0.4	0.2	0.4
4401501	99	P	SUR	49	-24	720	0	0.5	0.1	0.5
4401503	99	P	SUR	30	-56	719	0	0.3	0.3	0.4
4401527	99	P	SUR	16	-55	712	0	0.4	0.3	0.5
4401528	99	P	SUR	34	-43	718	0	0.3	0.4	0.5
4401529	99	P	SUR	21	-64	716	0	0.4	-0.1	0.4
4401530	99	P	SUR	37	-53	714	0	0.6	-0.4	0.7
4401531	99	P	SUR	20	-60	712	0	0.4	0.5	0.6
4401532	99	P	SUR	33	-67	717	0	0.4	0.5	0.7
4401533	99	P	SUR	16	-62	89	0	0.4	-0.3	0.5
4401534	99	P	SUR	37	-63	717	0	0.4	-0.1	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401535	99	P	SUR	49	-25	568	0	0.4	0.5	0.6
4401536	99	P	SUR	49	-44	634	0	0.4	0.3	0.5
4401537	99	P	SUR	39	-31	623	0	0.4	-0.5	0.6
4401538	99	P	SUR	43	-27	17	0	0.3	-1.6	1.6
4401539	99	P	SUR	40	-54	718	0	0.5	0.3	0.6
4401545	99	P	SUR	33	-59	715	0	0.3	0.6	0.7
4401546	99	P	SUR	42	-34	715	0	0.3	0.7	0.8
4401547	99	P	SUR	29	-69	715	0	0.3	-0.3	0.5
4401548	99	P	SUR	46	-32	715	0	0.4	0.2	0.4
4401550	99	P	SUR	42	-43	660	0	0.5	-0.1	0.5
4401551	99	P	SUR	30	-37	698	0	0.3	0.4	0.5
4401552	99	P	SUR	43	-38	719	0	0.4	0.3	0.5
4401553	99	P	SUR	56	-44	716	0	0.4	0.3	0.5
4401554	99	P	SUR	58	-30	719	0	0.5	0.6	0.8
4401555	99	P	SUR	50	-44	716	0	0.5	-0.2	0.5
4401601	99	P	SUR	57	-51	533	0	0.6	0.1	0.6
4401602	99	P	SUR	45	-55	541	0	0.4	0.5	0.7
4401603	99	P	SUR	54	-38	542	0	0.5	0.5	0.7
4401604	99	P	SUR	56	-53	198	0	0.5	0.2	0.5
4401605	99	P	SUR	55	-46	547	0	0.4	-0.1	0.5
4401606	99	P	SUR	49	-38	566	0	0.4	-0.2	0.4
4401609	99	P	SUR	46	-58	559	0	0.6	0.9	1.1
4401612	99	P	SUR	42	-53	538	0	0.5	0.6	0.8
4401613	99	P	SUR	45	-44	541	0	0.4	0.4	0.5
4401616	99	P	SUR	47	-50	560	0	0.6	0.2	0.6
4401629	99	P	SUR	49	-49	528	0	0.6	1.9	1.9
4401631	99	P	SUR	50	-39	565	0	0.4	-0.1	0.4
4401633	99	P	SUR	44	-44	558	0	0.4	0.2	0.5
4401634	99	P	SUR	55	-18	530	0	0.5	0.1	0.5
4401754	99	P	SUR	62	-11	620	0	0.6	0.1	0.6
4401756	99	P	SUR	63	-16	627	0	0.5	0.3	0.6
4401757	99	P	SUR	63	-14	632	0	0.4	0.5	0.7
4401758	99	P	SUR	64	-7	567	0	0.5	0.5	0.7
44018	99	P	SUR	42	-70	394	0	0.5	-0.4	0.6
44024	99	P	SUR	42	-66	898	0	0.5	-1.1	1.2
44027	99	P	SUR	44	-67	752	0	0.5	-0.2	0.6
44032	99	P	SUR	44	-69	717	0	0.5	-0.2	0.6
44033	99	P	SUR	44	-69	552	0	0.5	-0.4	0.7
44034	99	P	SUR	44	-68	697	0	0.5	-0.5	0.7
44139	99	P	SUR	44	-57	679	0	0.5	0.2	0.5
44150	99	P	SUR	43	-64	687	0	0.5	0.2	0.5
44251	99	P	SUR	46	-53	99	0	0.9	0.8	1.2
44258	99	P	SUR	45	-63	705	0	0.5	0.1	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44510	99	P	SUR	46	-35	1218	0	0.4	0.4	0.5
44513	99	P	SUR	54	-10	717	0	0.3	-0.4	0.5
44517	99	P	SUR	26	-27	718	0	0.3	0.2	0.4
44521	99	P	SUR	37	-25	706	0	0.4	-0.4	0.6
44624	99	P	SUR	25	-65	693	0	0.4	-0.4	0.6
44670	99	P	SUR	41	-51	509	0	0.9	0.6	1.0
44746	99	P	SUR	30	-23	720	0	0.3	0.3	0.4
44765	99	P	SUR	60	-11	711	0	0.4	0.3	0.5
44766	99	P	SUR	36	-17	719	0	0.3	0.0	0.3
44768	99	P	SUR	27	-33	720	0	0.3	0.6	0.7
44773	99	P	SUR	47	-3	720	0	0.4	0.7	0.8
44776	99	P	SUR	30	-30	718	0	0.4	0.6	0.7
44777	99	P	SUR	38	-46	719	0	0.8	0.1	0.8
44778	99	P	SUR	35	-18	718	0	0.3	0.4	0.5
44779	99	P	SUR	51	-18	718	0	0.4	0.2	0.5
44835	99	P	SUR	28	-48	352	0	0.5	-0.7	0.8
44839	99	P	SUR	24	-57	719	0	0.3	-0.2	0.4
44848	99	P	SUR	26	-41	716	0	0.3	0.2	0.3
44857	99	P	SUR	42	-21	717	0	0.4	0.3	0.5
44863	99	P	SUR	29	-68	711	0	0.4	-0.7	0.8
44874	99	P	SUR	30	-34	720	0	0.3	0.3	0.4
44887	99	P	SUR	34	-49	719	0	0.4	-0.1	0.4
44889	99	P	SUR	35	-30	718	0	0.4	-0.1	0.5
44891	99	P	SUR	29	-56	719	0	0.3	-0.6	0.6
44901	99	P	SUR	56	-13	719	0	0.3	0.1	0.3
44904	99	P	SUR	37	-19	719	0	0.3	-0.2	0.4
4700540	99	P	SUR	59	-10	534	0	0.4	0.8	0.9
4700546	99	P	SUR	41	-48	537	0	0.5	0.3	0.5
4700551	99	P	SUR	49	-28	507	46	5.5	-2.2	6.0
4700552	99	P	SUR	67	-63	502	0	0.4	-1.5	1.5
4700555	99	P	SUR	49	-37	548	0	0.4	0.1	0.4
4700557	99	P	SUR	50	-17	539	0	0.3	0.2	0.3
4700560	99	P	SUR	57	-12	407	0	0.3	0.4	0.5
4700562	99	P	SUR	59	-11	547	0	0.4	0.4	0.5
4700568	99	P	SUR	47	-13	534	0	0.5	0.8	1.0
4700574	99	P	SUR	44	-26	538	0	0.4	0.1	0.4
4701656	99	P	SUR	67	-58	495	0	0.4	-1.7	1.7
4701657	99	P	SUR	80	-65	491	0	0.5	-1.2	1.3
47540	99	P	SUR	59	-10	616	0	0.4	0.8	0.9
47546	99	P	SUR	41	-48	619	0	0.4	0.3	0.5
47551	99	P	SUR	49	-28	601	47	5.3	-2.0	5.7
47552	99	P	SUR	67	-63	600	0	0.5	-1.4	1.5
47555	99	P	SUR	49	-37	623	0	0.4	0.1	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
47557	99	P	SUR	50	-17	620	0	0.3	0.1	0.4
47560	99	P	SUR	57	-12	527	0	0.3	0.4	0.5
47562	99	P	SUR	59	-11	623	0	0.3	0.4	0.5
47568	99	P	SUR	47	-13	625	0	0.5	0.8	0.9
47574	99	P	SUR	44	-26	625	0	0.4	0.1	0.4
4800274	99	P	SUR	86	-60	492	0	0.4	0.5	0.6
4800276	99	P	SUR	84	-39	411	0	0.4	0.1	0.5
4800508	99	P	SUR	84	-22	2722	0	0.4	0.2	0.5
4800520	99	P	SUR	72	-20	141	0	0.4	0.2	0.4
4800600	99	P	SUR	59	-42	719	0	0.6	-0.3	0.6
4800631	99	P	SUR	88	-29	687	0	0.5	-0.2	0.5
4800664	99	P	SUR	48	-53	241	0	0.5	0.5	0.7
4800770	99	P	SUR	84	-35	495	0	0.5	0.5	0.6
48274	99	P	SUR	86	-60	554	0	0.4	0.5	0.6
48276	99	P	SUR	84	-39	539	0	0.5	0.2	0.5
48508	99	P	SUR	84	-23	2722	0	0.4	0.2	0.5
48520	99	P	SUR	72	-20	141	0	0.4	0.2	0.4
48600	99	P	SUR	59	-42	719	0	0.6	-0.3	0.6
48664	99	P	SUR	48	-53	241	0	0.5	0.5	0.7
48770	99	P	SUR	84	-35	556	0	0.5	0.5	0.7
52086	99	P	SUR	55	6	1	0	0.0	0.6	0.6
6100001	99	P	SUR	43	8	720	0	0.5	0.0	0.5
6100002	99	P	SUR	42	5	720	0	0.4	-0.0	0.4
61001	99	P	SUR	43	8	720	0	0.5	0.0	0.5
61002	99	P	SUR	42	5	720	0	0.4	-0.0	0.4
6101001	99	P	SUR	38	24	21	0	0.5	0.7	0.9
6101003	99	P	SUR	40	25	130	0	0.5	0.3	0.6
6101007	99	P	SUR	36	25	69	0	1.1	2.6	2.8
6101008	99	P	SUR	37	22	24	0	0.7	0.3	0.8
6200091	99	P	SUR	53	-5	718	0	0.3	0.1	0.3
6200092	99	P	SUR	51	-11	718	0	0.4	0.0	0.4
6200093	99	P	SUR	55	-10	719	0	0.3	-0.2	0.4
6200094	99	P	SUR	52	-7	719	0	0.3	0.1	0.3
62001	99	P	SUR	45	-5	717	0	0.4	0.1	0.4
6200513	99	P	SUR	59	-41	720	0	0.5	-0.3	0.6
6200554	99	P	SUR	39	-15	713	0	0.3	0.3	0.4
6200556	99	P	SUR	26	-31	428	0	0.2	-0.4	0.5
6200558	99	P	SUR	49	-12	657	0	0.7	0.4	0.8
6200559	99	P	SUR	48	-14	626	0	0.4	-0.3	0.5
6200560	99	P	SUR	17	-62	453	0	0.4	0.3	0.5
6200940	99	P	SUR	32	-20	719	0	0.4	0.0	0.4
6200941	99	P	SUR	24	-45	719	0	0.3	-0.2	0.3
62027	99	P	SUR	49	-2	240	0	0.5	0.1	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62029	99	P	SUR	49	-12	1356	0	0.7	-0.1	0.7
62030	99	P	SUR	50	-4	208	0	0.4	1.2	1.3
6203503	99	P	SUR	29	-21	718	0	0.3	0.0	0.3
6203504	99	P	SUR	30	-26	718	0	0.3	0.2	0.4
62050	99	P	SUR	50	-4	722	0	0.3	0.4	0.5
62082	99	P	SUR	55	6	4	0	0.1	-0.1	0.2
62086	99	P	SUR	55	6	707	0	0.3	0.0	0.3
62095	99	P	SUR	53	-16	724	0	0.3	-0.1	0.3
62102	99	P	SUR	58	2	720	0	0.4	0.0	0.4
62103	99	P	SUR	50	-3	723	0	0.3	0.6	0.7
62104	99	P	SUR	57	1	716	0	0.4	-0.0	0.4
62105	99	P	SUR	55	-13	608	1	0.4	-0.4	0.5
62107	99	P	SUR	50	-6	1375	4	0.6	0.4	0.8
62111	99	P	SUR	58	0	719	0	0.4	1.5	1.5
62112	99	P	SUR	58	0	720	0	0.4	0.1	0.4
62113	99	P	SUR	58	0	721	0	0.5	0.1	0.5
62114	99	P	SUR	58	0	1438	0	0.5	0.0	0.5
62115	99	P	SUR	58	-3	711	0	0.4	-0.1	0.5
62116	99	P	SUR	58	1	720	0	0.4	-0.1	0.5
62117	99	P	SUR	58	0	719	0	0.4	0.1	0.4
62118	99	P	SUR	58	1	715	0	0.3	0.5	0.6
62119	99	P	SUR	57	2	719	0	0.3	0.2	0.4
62120	99	P	SUR	56	2	642	0	0.4	-0.1	0.5
62121	99	P	SUR	54	3	720	0	0.3	0.1	0.3
62122	99	P	SUR	57	2	1437	0	0.4	-0.0	0.4
62124	99	P	SUR	54	-4	723	0	0.3	0.0	0.3
62128	99	P	SUR	59	1	720	0	0.5	0.3	0.6
62129	99	P	SUR	58	0	721	0	0.4	-0.0	0.4
62130	99	P	SUR	59	1	718	1	0.4	-0.1	0.4
62131	99	P	SUR	54	1	579	0	0.3	0.5	0.6
62132	99	P	SUR	56	2	719	0	0.4	0.5	0.7
62133	99	P	SUR	57	1	720	0	0.4	-0.0	0.4
62134	99	P	SUR	58	1	720	0	0.3	0.3	0.4
62135	99	P	SUR	54	2	718	0	0.3	0.4	0.5
62136	99	P	SUR	54	3	718	0	0.3	0.6	0.7
62137	99	P	SUR	57	2	34	0	1.5	1.6	2.2
62138	99	P	SUR	54	0	1437	0	0.3	0.7	0.8
62139	99	P	SUR	53	2	1433	0	0.3	0.4	0.5
62140	99	P	SUR	57	1	1433	0	0.4	-0.0	0.4
62141	99	P	SUR	58	-4	713	0	0.5	-2.6	2.6
62143	99	P	SUR	58	2	675	0	0.4	0.6	0.7
62144	99	P	SUR	53	2	720	0	0.3	0.2	0.4
62145	99	P	SUR	53	3	1437	0	0.3	0.5	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62146	99	P	SUR	57	2	688	0	0.4	0.3	0.5
62148	99	P	SUR	54	2	720	0	0.3	1.2	1.2
62149	99	P	SUR	54	1	720	0	0.3	0.7	0.7
62150	99	P	SUR	54	1	720	0	0.3	1.4	1.4
62151	99	P	SUR	57	2	1435	0	0.3	0.1	0.3
62152	99	P	SUR	57	2	720	0	0.3	0.4	0.5
62153	99	P	SUR	57	2	1435	0	0.4	0.3	0.5
62154	99	P	SUR	56	2	719	0	0.3	-0.1	0.3
62155	99	P	SUR	58	1	720	0	0.4	0.4	0.5
62157	99	P	SUR	58	0	719	0	0.4	0.9	1.0
62160	99	P	SUR	57	2	1436	0	0.3	0.0	0.3
62161	99	P	SUR	58	1	718	0	0.4	-0.1	0.5
62162	99	P	SUR	57	1	721	0	0.4	-0.1	0.4
62163	99	P	SUR	48	-8	716	0	0.4	0.3	0.5
62164	99	P	SUR	57	1	720	0	0.3	0.3	0.4
62165	99	P	SUR	54	1	720	0	0.3	0.6	0.7
62167	99	P	SUR	53	2	1337	0	0.3	0.3	0.4
62168	99	P	SUR	58	1	720	0	0.3	0.0	0.3
62170	99	P	SUR	51	2	720	0	0.7	0.2	0.7
62296	99	P	SUR	53	2	718	0	0.3	0.0	0.3
62297	99	P	SUR	59	2	1433	0	0.4	-0.0	0.4
62302	99	P	SUR	61	-2	720	0	0.6	-0.3	0.7
62304	99	P	SUR	51	2	698	3	0.5	0.4	0.6
62305	99	P	SUR	50	0	775	0	0.4	0.3	0.5
62442	99	P	SUR	49	-16	247	0	0.4	-0.1	0.4
62513	99	P	SUR	59	-41	720	0	0.5	-0.3	0.6
62554	99	P	SUR	39	-15	713	0	0.3	0.3	0.4
62556	99	P	SUR	26	-31	428	0	0.2	-0.4	0.5
62558	99	P	SUR	49	-12	657	0	0.7	0.4	0.8
62559	99	P	SUR	48	-14	626	0	0.4	-0.3	0.5
62560	99	P	SUR	17	-62	453	0	0.4	0.3	0.5
62940	99	P	SUR	32	-20	719	0	0.4	0.0	0.4
62941	99	P	SUR	24	-45	719	0	0.3	-0.2	0.3
6300646	99	P	SUR	70	37	717	0	0.4	0.5	0.7
6301551	99	P	SUR	73	39	719	0	1.5	0.7	1.6
6301552	99	P	SUR	81	20	719	0	0.5	0.0	0.5
6301553	99	P	SUR	83	24	719	0	0.4	0.3	0.5
63055	99	P	SUR	61	2	718	0	0.5	0.1	0.5
63056	99	P	SUR	60	2	720	0	0.5	0.1	0.5
63057	99	P	SUR	59	2	720	0	0.4	-0.2	0.5
63058	99	P	SUR	53	2	2156	0	0.3	0.3	0.4
63059	99	P	SUR	58	-1	718	0	0.3	0.3	0.5
63101	99	P	SUR	61	1	624	0	0.6	-0.1	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
63102	99	P	SUR	61	1	718	0	0.4	0.3	0.5
63103	99	P	SUR	61	1	720	0	0.4	0.2	0.5
63104	99	P	SUR	61	2	720	0	0.6	0.3	0.6
63105	99	P	SUR	61	2	720	0	0.5	-0.1	0.5
63108	99	P	SUR	61	2	720	0	0.5	-0.1	0.5
63109	99	P	SUR	60	2	713	0	0.5	-0.2	0.5
63110	99	P	SUR	60	2	715	0	0.5	-0.3	0.6
63111	99	P	SUR	61	2	1425	0	0.5	-0.3	0.6
63112	99	P	SUR	61	1	720	0	0.4	-0.4	0.6
63115	99	P	SUR	62	1	720	0	0.6	0.2	0.6
63117	99	P	SUR	61	1	1437	0	0.5	0.3	0.6
63118	99	P	SUR	58	1	716	0	0.3	-0.1	0.3
63119	99	P	SUR	56	-3	31	0	1.7	0.7	1.8
63646	99	P	SUR	70	37	717	0	0.4	0.5	0.7
6400476	99	P	SUR	83	-62	257	0	1.9	-3.0	3.5
6400524	99	P	SUR	67	13	719	0	0.5	0.3	0.6
6400526	99	P	SUR	53	-51	714	0	0.5	0.5	0.7
6400528	99	P	SUR	70	37	720	0	0.4	0.4	0.6
6400530	99	P	SUR	80	15	481	0	0.5	0.3	0.6
6400547	99	P	SUR	78	2	720	0	0.8	0.1	0.8
6400551	99	P	SUR	57	-47	718	0	0.4	-0.3	0.5
6400562	99	P	SUR	64	-5	717	0	0.6	-0.1	0.6
6400777	99	P	SUR	78	17	567	0	0.5	-0.5	0.7
6401501	99	P	SUR	64	-7	632	0	0.5	0.4	0.6
6401550	99	P	SUR	68	12	719	0	0.5	0.1	0.5
6401552	99	P	SUR	64	-40	439	0	0.7	0.9	1.2
6401554	99	P	SUR	69	13	719	0	0.4	0.0	0.4
6401555	99	P	SUR	68	3	717	0	0.4	0.6	0.7
6401556	99	P	SUR	66	-3	717	0	0.5	0.4	0.6
6401557	99	P	SUR	62	-20	718	0	0.5	0.2	0.6
6401558	99	P	SUR	60	-12	158	0	0.4	0.4	0.6
6401559	99	P	SUR	62	-17	157	0	0.5	0.3	0.6
64041	99	P	SUR	61	-3	720	0	0.5	-0.2	0.5
64045	99	P	SUR	59	-12	733	0	0.4	-0.3	0.5
64046	99	P	SUR	61	-4	719	0	0.4	0.0	0.4
64476	99	P	SUR	83	-62	290	0	1.8	-3.2	3.7
64524	99	P	SUR	67	13	719	0	0.5	0.3	0.6
64526	99	P	SUR	53	-51	714	0	0.5	0.5	0.7
64528	99	P	SUR	70	37	720	0	0.4	0.4	0.6
64530	99	P	SUR	80	15	481	0	0.5	0.3	0.6
64547	99	P	SUR	78	2	720	0	0.8	0.1	0.8
64551	99	P	SUR	57	-47	718	0	0.4	-0.3	0.5
64562	99	P	SUR	64	-5	717	0	0.6	-0.1	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
64757	99	P	SUR	62	-25	428	428	0.0	0.0	0.0
64777	99	P	SUR	78	17	625	0	0.5	-0.4	0.7
6500514	99	P	SUR	59	-16	720	0	0.4	0.1	0.5
6500519	99	P	SUR	70	33	719	0	0.4	0.2	0.5
6500596	99	P	SUR	73	15	720	0	0.7	0.5	0.9
6500599	99	P	SUR	66	10	719	0	0.5	0.3	0.6
6500602	99	P	SUR	62	-16	720	0	0.5	0.6	0.8
6501551	99	P	SUR	57	-53	719	0	0.7	0.1	0.7
6501552	99	P	SUR	56	-52	720	0	0.5	0.6	0.8
6501553	99	P	SUR	55	-46	712	0	0.5	0.5	0.7
6501555	99	P	SUR	65	-52	719	0	0.5	-0.2	0.5
6501556	99	P	SUR	57	-45	720	0	0.4	0.4	0.6
65514	99	P	SUR	59	-16	720	0	0.4	0.1	0.5
65519	99	P	SUR	71	33	719	0	0.4	0.2	0.5
65596	99	P	SUR	73	15	720	0	0.7	0.5	0.9
65599	99	P	SUR	66	10	719	0	0.5	0.3	0.6
65602	99	P	SUR	62	-16	720	0	0.5	0.6	0.8

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                : APR 2017
                   STANDARD OF COMPARISON: FIRST-GUESS FIELD


TIME = 99 => AVERAGE OF ALL OBSERVATIONS


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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1300001	99	SPEED	SUR	11	-23	630	0	0	1.0	1.1	1.5
1300002	99	SPEED	SUR	20	-23	690	0	0	0.9	0.4	1.0
1704	99	SPEED	SUR	15	12	1	1	100	0.0	0.0	0.0
4100139	99	SPEED	SUR	20	-38	690	0	0	1.0	0.1	1.0
4100300	99	SPEED	SUR	16	-57	720	0	0	0.8	-0.4	0.9
41040	99	SPEED	SUR	15	-53	1285	0	0	0.7	-0.3	0.8
41041	99	SPEED	SUR	14	-46	1248	0	0	0.7	-0.3	0.8
41043	99	SPEED	SUR	21	-65	1293	0	0	1.3	0.0	1.3
41044	99	SPEED	SUR	22	-59	1247	0	0	1.1	0.1	1.2
41046	99	SPEED	SUR	24	-68	1142	0	0	1.3	0.1	1.3
41048	99	SPEED	SUR	32	-70	1185	0	0	1.0	-0.3	1.1
41049	99	SPEED	SUR	28	-63	714	0	0	1.4	-0.0	1.4
41052	99	SPEED	SUR	18	-65	884	0	0	0.9	-0.1	0.9
41053	99	SPEED	SUR	19	-66	1484	0	0	1.3	0.7	1.5
41056	99	SPEED	SUR	18	-66	696	0	0	1.4	-0.3	1.4
41300	99	SPEED	SUR	16	-57	720	0	0	0.8	-0.4	0.9
42059	99	SPEED	SUR	15	-68	1279	0	0	0.9	-0.1	0.9
42060	99	SPEED	SUR	16	-63	1295	0	0	1.1	0.0	1.1
42085	99	SPEED	SUR	18	-67	144	0	0	1.3	-0.2	1.3
42088	99	SPEED	SUR	11	-61	1472	0	0	1.1	-2.9	3.0
42090	99	SPEED	SUR	18	-70	2128	0	0	1.6	0.0	1.6
44008	99	SPEED	SUR	41	-69	435	0	0	1.5	-0.5	1.6
44018	99	SPEED	SUR	42	-70	394	0	0	1.6	-0.5	1.7
44024	99	SPEED	SUR	42	-66	898	0	0	1.4	-0.4	1.4
44032	99	SPEED	SUR	44	-69	717	0	0	1.6	-0.3	1.6
44033	99	SPEED	SUR	44	-69	552	0	0	1.6	-0.2	1.6
44034	99	SPEED	SUR	44	-68	697	0	0	1.6	-0.7	1.7
44139	99	SPEED	SUR	44	-57	690	0	0	1.4	-0.2	1.4
44251	99	SPEED	SUR	46	-53	102	0	0	1.7	0.6	1.8
44258	99	SPEED	SUR	45	-63	706	0	0	1.5	-0.2	1.5
52086	99	SPEED	SUR	55	6	1	0	0	0.0	0.3	0.3
6100001	99	SPEED	SUR	43	8	720	0	0	1.7	-0.0	1.7
6100002	99	SPEED	SUR	42	5	720	0	0	1.2	0.2	1.2
61001	99	SPEED	SUR	43	8	720	0	0	1.8	-0.5	1.8

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
61002	99	SPEED	SUR	42	5	720	0	0	1.2	-0.4	1.3
6101001	99	SPEED	SUR	38	24	21	0	0	1.1	-0.5	1.2
6101003	99	SPEED	SUR	40	25	130	0	0	1.7	-1.1	2.0
6101007	99	SPEED	SUR	36	25	69	0	0	1.4	-0.5	1.5
6101008	99	SPEED	SUR	37	22	24	0	0	1.4	-0.4	1.5
6200091	99	SPEED	SUR	53	-5	718	0	0	1.2	-0.4	1.2
6200092	99	SPEED	SUR	51	-11	718	0	0	1.1	0.0	1.1
6200093	99	SPEED	SUR	55	-10	719	0	0	1.3	-0.3	1.3
6200094	99	SPEED	SUR	52	-7	719	0	0	1.0	0.1	1.0
62001	99	SPEED	SUR	45	-5	717	0	0	1.1	0.9	1.4
62027	99	SPEED	SUR	49	-2	240	0	0	1.2	0.6	1.3
62030	99	SPEED	SUR	50	-4	108	0	0	1.2	0.3	1.3
62050	99	SPEED	SUR	50	-4	722	0	0	1.1	0.5	1.2
62082	99	SPEED	SUR	55	6	5	0	0	0.6	1.2	1.3
62086	99	SPEED	SUR	55	6	719	0	0	1.1	0.3	1.2
62095	99	SPEED	SUR	53	-16	724	0	0	1.0	0.4	1.1
62102	99	SPEED	SUR	58	2	720	0	0	1.2	-0.2	1.2
62103	99	SPEED	SUR	50	-3	568	0	0	1.3	1.4	1.9
62104	99	SPEED	SUR	57	1	716	0	0	1.5	-0.4	1.5
62105	99	SPEED	SUR	55	-13	626	0	0	1.1	0.5	1.2
62107	99	SPEED	SUR	50	-6	1375	0	0	1.3	1.1	1.7
62111	99	SPEED	SUR	58	0	719	0	0	1.5	-0.2	1.5
62112	99	SPEED	SUR	58	0	720	0	0	2.3	-1.8	2.9
62113	99	SPEED	SUR	58	0	721	0	0	1.7	-0.2	1.7
62114	99	SPEED	SUR	58	0	1438	0	0	1.6	0.3	1.6
62117	99	SPEED	SUR	58	0	720	0	0	1.4	-0.4	1.5
62118	99	SPEED	SUR	58	1	715	0	0	1.5	0.3	1.5
62119	99	SPEED	SUR	57	2	719	0	0	1.6	-0.7	1.8
62120	99	SPEED	SUR	56	2	713	0	0	1.3	0.2	1.3
62121	99	SPEED	SUR	54	3	720	0	0	1.1	-0.2	1.1
62122	99	SPEED	SUR	57	2	1437	0	0	1.3	-0.2	1.3
62128	99	SPEED	SUR	59	1	720	0	0	1.5	0.2	1.5
62129	99	SPEED	SUR	58	0	721	0	0	1.4	-0.4	1.4
62131	99	SPEED	SUR	54	1	579	0	0	1.7	-0.1	1.7
62132	99	SPEED	SUR	56	2	719	0	0	2.7	-1.8	3.2
62133	99	SPEED	SUR	57	1	720	0	0	1.5	-0.1	1.5
62134	99	SPEED	SUR	58	1	717	0	0	1.5	-0.4	1.5
62140	99	SPEED	SUR	57	1	1127	0	0	1.4	-0.1	1.4
62143	99	SPEED	SUR	58	2	675	0	0	2.3	-1.2	2.6
62144	99	SPEED	SUR	53	2	720	0	0	1.5	-0.7	1.7
62145	99	SPEED	SUR	53	3	1437	0	0	1.4	0.5	1.5

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62146	99	SPEED	SUR	57	2	688	0	0	1.4	0.2	1.4
62148	99	SPEED	SUR	54	2	720	0	0	1.6	-0.3	1.6
62149	99	SPEED	SUR	54	1	720	0	0	1.3	0.0	1.3
62150	99	SPEED	SUR	54	1	720	0	0	2.1	-1.0	2.3
62152	99	SPEED	SUR	57	2	720	0	0	1.5	-1.1	1.9
62153	99	SPEED	SUR	57	2	1349	0	0	2.7	-2.5	3.7
62154	99	SPEED	SUR	56	2	719	0	0	1.2	-0.3	1.2
62155	99	SPEED	SUR	58	1	598	0	0	1.5	0.0	1.5
62163	99	SPEED	SUR	48	-8	716	0	0	1.0	0.4	1.1
62164	99	SPEED	SUR	57	1	720	0	0	1.6	-1.8	2.4
62165	99	SPEED	SUR	54	1	720	0	0	1.5	-0.5	1.6
62170	99	SPEED	SUR	51	2	720	0	0	1.5	1.3	2.0
62304	99	SPEED	SUR	51	2	694	0	0	1.7	1.1	2.0
62305	99	SPEED	SUR	50	0	773	0	0	1.4	1.3	1.8
62442	99	SPEED	SUR	49	-16	247	0	0	0.9	0.2	1.0
63055	99	SPEED	SUR	61	2	718	0	0	1.5	-1.2	1.9
63056	99	SPEED	SUR	60	2	720	0	0	1.4	-0.2	1.4
63057	99	SPEED	SUR	59	2	720	0	0	1.7	-0.2	1.7
63058	99	SPEED	SUR	53	2	1437	0	0	1.2	0.2	1.2
63101	99	SPEED	SUR	61	1	720	0	0	1.5	-0.7	1.6
63103	99	SPEED	SUR	61	1	720	0	0	1.7	-0.5	1.8
63104	99	SPEED	SUR	61	2	719	0	0	1.5	-0.7	1.6
63105	99	SPEED	SUR	61	2	720	0	0	1.5	-0.4	1.5
63106	99	SPEED	SUR	61	2	720	0	0	1.5	-0.4	1.5
63108	99	SPEED	SUR	61	2	720	0	0	1.8	-0.4	1.8
63109	99	SPEED	SUR	60	2	699	0	0	1.5	0.1	1.5
63110	99	SPEED	SUR	60	2	715	0	0	1.3	-0.6	1.4
63112	99	SPEED	SUR	61	1	720	0	0	1.4	-0.8	1.6
63113	99	SPEED	SUR	61	2	720	0	0	1.5	-0.7	1.7
63115	99	SPEED	SUR	62	1	719	0	0	1.6	-0.8	1.8
63117	99	SPEED	SUR	61	1	1437	0	0	1.6	-0.8	1.7
63119	99	SPEED	SUR	56	-3	31	0	0	1.9	-1.9	2.7
64041	99	SPEED	SUR	61	-3	720	0	0	1.4	-0.5	1.5
66021	99	SPEED	SUR	55	14	631	0	0	1.3	0.0	1.3
66022	99	SPEED	SUR	54	14	854	0	0	1.1	-0.1	1.1
66024	99	SPEED	SUR	55	13	718	0	0	1.5	0.2	1.5

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                : APR 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	585	0	0	10.7	2.8	11.1
1300002	99	DIRN	SUR	20	-23	625	0	0	10.6	2.0	10.7
41001	99	DIRN	SUR	35	-73	700	0	0	13.3	8.9	16.0
4100139	99	DIRN	SUR	20	-38	489	0	0	18.7	1.4	18.7
41002	99	DIRN	SUR	32	-75	643	0	0	13.8	9.0	16.5
4100300	99	DIRN	SUR	16	-57	700	0	0	11.5	-17.4	20.9
41004	99	DIRN	SUR	33	-79	741	0	0	19.8	7.9	21.3
41008	99	DIRN	SUR	31	-81	522	0	0	24.5	7.2	25.5
41009	99	DIRN	SUR	29	-80	314	0	0	16.7	-2.3	16.8
41010	99	DIRN	SUR	29	-79	378	0	0	17.9	1.6	17.9
41013	99	DIRN	SUR	33	-78	987	0	0	20.2	6.3	21.2
41024	99	DIRN	SUR	34	-79	288	0	0	21.7	-12.8	25.1
41025	99	DIRN	SUR	35	-75	400	0	0	24.1	1.8	24.2
41029	99	DIRN	SUR	33	-80	413	0	0	16.6	-7.0	18.1
41033	99	DIRN	SUR	32	-80	500	0	0	25.8	-5.8	26.5
41037	99	DIRN	SUR	34	-77	595	0	0	20.3	3.9	20.7
41038	99	DIRN	SUR	34	-78	555	0	0	19.7	5.2	20.3
41040	99	DIRN	SUR	15	-53	1243	0	0	9.5	-10.5	14.2
41041	99	DIRN	SUR	14	-46	1134	0	0	10.0	-11.2	15.0
41043	99	DIRN	SUR	21	-65	1125	0	0	16.6	-3.9	17.0
41044	99	DIRN	SUR	22	-59	1067	0	0	12.3	5.0	13.3
41046	99	DIRN	SUR	24	-68	1059	0	0	15.1	2.4	15.3
41047	99	DIRN	SUR	28	-72	1158	0	0	14.4	-0.5	14.4
41048	99	DIRN	SUR	32	-70	945	0	0	13.7	-2.5	14.0
41049	99	DIRN	SUR	28	-63	586	0	0	16.0	8.9	18.3
41052	99	DIRN	SUR	18	-65	787	0	0	11.5	6.3	13.2
41053	99	DIRN	SUR	19	-66	911	0	0	18.6	1.5	18.7
41056	99	DIRN	SUR	18	-66	641	0	0	17.7	-0.7	17.7
41064	99	DIRN	SUR	34	-77	605	0	0	17.3	-6.9	18.6
41300	99	DIRN	SUR	16	-57	696	0	0	11.4	-17.3	20.7
42013	99	DIRN	SUR	27	-83	886	0	0	16.7	-4.7	17.4
42022	99	DIRN	SUR	28	-84	1033	0	0	16.6	-0.3	16.6

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
42023	99	DIRN	SUR	26	-83	907	0	0	16.0	2.7	16.3
42036	99	DIRN	SUR	29	-85	552	0	0	16.4	4.7	17.1
42056	99	DIRN	SUR	20	-85	1100	0	0	16.9	2.5	17.1
42057	99	DIRN	SUR	17	-81	1153	0	0	13.8	3.8	14.3
42058	99	DIRN	SUR	15	-75	1324	0	0	7.5	10.2	12.7
42059	99	DIRN	SUR	15	-68	1268	0	0	10.2	2.9	10.6
42060	99	DIRN	SUR	16	-63	1179	0	0	12.1	5.4	13.2
42085	99	DIRN	SUR	18	-67	124	0	0	17.1	0.8	17.2
42088	99	DIRN	SUR	11	-61	988	0	0	17.1	-13.5	21.8
42090	99	DIRN	SUR	18	-70	1022	0	0	29.5	-21.8	36.7
44007	99	DIRN	SUR	44	-70	543	0	0	25.1	9.6	26.9
44008	99	DIRN	SUR	41	-69	349	0	0	17.7	17.1	24.6
44009	99	DIRN	SUR	39	-75	278	0	0	26.7	18.3	32.4
44013	99	DIRN	SUR	42	-71	570	0	0	23.0	16.3	28.2
44014	99	DIRN	SUR	37	-75	594	0	0	15.0	9.0	17.5
44018	99	DIRN	SUR	42	-70	297	0	0	20.4	12.7	24.1
44024	99	DIRN	SUR	42	-66	786	0	0	12.8	9.8	16.1
44025	99	DIRN	SUR	40	-73	568	0	0	17.4	8.9	19.5
44029	99	DIRN	SUR	43	-71	889	0	0	24.3	10.7	26.5
44030	99	DIRN	SUR	43	-70	550	0	0	23.2	8.4	24.7
44032	99	DIRN	SUR	44	-69	542	0	0	20.0	7.2	21.3
44033	99	DIRN	SUR	44	-69	360	0	0	25.1	2.7	25.3
44034	99	DIRN	SUR	44	-68	531	0	0	19.6	7.7	21.0
44039	99	DIRN	SUR	41	-73	363	0	0	22.6	2.3	22.7
44040	99	DIRN	SUR	41	-74	263	0	0	16.1	0.2	16.1
44041	99	DIRN	SUR	37	-77	428	0	0	16.5	4.9	17.2
44042	99	DIRN	SUR	38	-76	794	0	0	23.1	-13.6	26.8
44043	99	DIRN	SUR	39	-76	552	0	0	28.8	-8.8	30.1
44057	99	DIRN	SUR	40	-76	360	0	0	25.2	7.0	26.2
44058	99	DIRN	SUR	38	-76	873	0	0	21.2	-19.5	28.8
44062	99	DIRN	SUR	39	-76	766	0	0	25.6	-10.5	27.6
44063	99	DIRN	SUR	39	-76	387	0	0	28.2	-14.5	31.7
44065	99	DIRN	SUR	40	-74	499	0	0	20.6	8.9	22.5
44066	99	DIRN	SUR	40	-73	722	0	0	21.4	10.2	23.7
44069	99	DIRN	SUR	41	-73	458	0	0	18.5	0.2	18.5
44072	99	DIRN	SUR	37	-76	893	0	0	21.1	-10.9	23.7
44139	99	DIRN	SUR	44	-57	574	0	0	12.8	8.1	15.1
44251	99	DIRN	SUR	46	-53	102	0	0	15.7	0.3	15.7
44258	99	DIRN	SUR	45	-63	547	0	0	20.2	-0.5	20.2
45005	99	DIRN	SUR	42	-82	380	0	0	32.7	14.7	35.8
45012	99	DIRN	SUR	44	-77	142	0	0	18.7	16.5	25.0

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
45135	99	DIRN	SUR	44	-77	166	0	0	21.8	12.8	25.3
45137	99	DIRN	SUR	46	-81	153	0	0	18.3	17.6	25.4
45139	99	DIRN	SUR	43	-80	78	0	0	23.0	5.7	23.7
45143	99	DIRN	SUR	45	-81	243	0	0	16.5	8.2	18.4
45149	99	DIRN	SUR	44	-82	318	0	0	20.9	10.2	23.3
45159	99	DIRN	SUR	44	-79	122	0	0	14.4	14.0	20.1
45162	99	DIRN	SUR	45	-83	110	0	0	17.7	-0.5	17.7
45169	99	DIRN	SUR	42	-82	438	0	0	30.5	-39.8	50.1
45175	99	DIRN	SUR	46	-85	265	0	0	31.2	-12.8	33.7
45176	99	DIRN	SUR	42	-82	325	0	0	28.2	-17.8	33.3
6200091	99	DIRN	SUR	53	-5	576	0	0	16.8	1.2	16.8
6200092	99	DIRN	SUR	51	-11	533	0	0	12.8	5.7	14.0
6200093	99	DIRN	SUR	55	-10	648	0	0	12.6	1.0	12.6
6200094	99	DIRN	SUR	52	-7	509	0	0	15.9	1.0	15.9
62001	99	DIRN	SUR	45	-5	594	0	0	13.3	0.0	13.3
62027	99	DIRN	SUR	49	-2	191	0	0	19.7	-3.8	20.0
62030	99	DIRN	SUR	50	-4	90	0	0	50.1	82.6	96.7
62050	99	DIRN	SUR	50	-4	551	0	0	17.6	1.0	17.6
62095	99	DIRN	SUR	53	-16	557	0	0	11.7	8.3	14.3
62103	99	DIRN	SUR	50	-3	435	0	0	29.3	8.3	30.5
62105	99	DIRN	SUR	55	-13	578	0	0	13.6	6.4	15.0
62107	99	DIRN	SUR	50	-6	1159	0	0	15.9	2.7	16.2
62111	99	DIRN	SUR	58	0	679	0	0	12.9	-4.6	13.7
62112	99	DIRN	SUR	58	0	668	0	0	11.1	4.2	11.9
62114	99	DIRN	SUR	58	0	1368	0	0	10.1	1.3	10.2
62117	99	DIRN	SUR	58	0	689	0	0	9.8	4.9	11.0
62163	99	DIRN	SUR	48	-8	594	0	0	10.9	-0.5	10.9
62305	99	DIRN	SUR	50	0	623	0	0	19.1	1.7	19.2
62442	99	DIRN	SUR	49	-16	229	0	0	14.9	-6.1	16.2
63119	99	DIRN	SUR	56	-3	26	0	0	31.9	-6.6	32.5
64041	99	DIRN	SUR	61	-3	682	0	0	11.1	8.8	14.1

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASDE01	ASDE02	ASDE03	ASDK01	ASDK03	ASES01	ASEU02	ASEU03	ASEU04
ASEU05	ASEU06	ASFR1	ASFR3	ASFR4	DBLK	01001	01004	01010
01028	01241	01400	01415	01492	02185	02365	02527	02591
02836	02963	03005	03238	03354	03502	03808	03882	03918
03953	04220	04270	04320	04339	04417	06011	06260	06610
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
16045	16080	16113	16144	16245	16320	16429	16546	16622
16716	16754	17607	33008	43599	47102	47104	47138	47155
47169	47186	60018	61901	61980	61998	76743	76903	78897
81405	85442	85469	85586	85799	85934	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							

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

ASDE01	ASDE02	ASDE03	ASDK01	ASDK03	ASES01	ASEU02	ASEU03	ASEU04
ASEU05	ASEU06	ASFR1	ASFR3	ASFR4	DBLK	17607	33008	47155
76743	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.