ECMWF Global Data Monitoring Report

February 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	Jan	Feb	Ident	Time	Jan	Feb
06458	(00)	28	9	02527	(00)	7	26
42314	(00)	19	0	43369	(00)	0	20
42379	(00)	15	0	48327	(00)	2	28
42886	(00)	25	0	63985	(12)	0	17
43333	(00)	11	0	65344	(12)	9	26
82917	(12)	29	6	67774	(00)	0	13
83362	(12)	29	8	74004	(00)	3	15
-	-	-	-	74004	(12)	8	28
-	-	-	-	74005	(00)	5	26
-	-	-	-	74005	(12)	4	20
-	-	-	-	78016	(00)	8	22
-	-	-	-	78583	(00)	11	27
-	-	-	-	78583	(12)	10	28
-	-	-	-	78954	(00)	13	27
-	-	-	-	78954	(12)	14	28
-	-	-	-	83779	(12)	12	27
-	-	-	-	83840	(00)	11	25
-	-	-	-	83928	(00)	1	19
-	-	-	-	83928	(12)	0	20
-	-	-	-	85442	(12)	29	48
-	-	-	-	85469	(00)	27	51
-	-	-	-	85799	(12)	30	55
-	-	-	-	85934	(12)	29	54
-	-	-	-	89859	(00)	2	28
-	-	-	-	91366	(00)	6	27
-	-	-	-	91610	(00)	11	23

2.2 Drifting Buoys

Surface pressure observations from **1843** 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

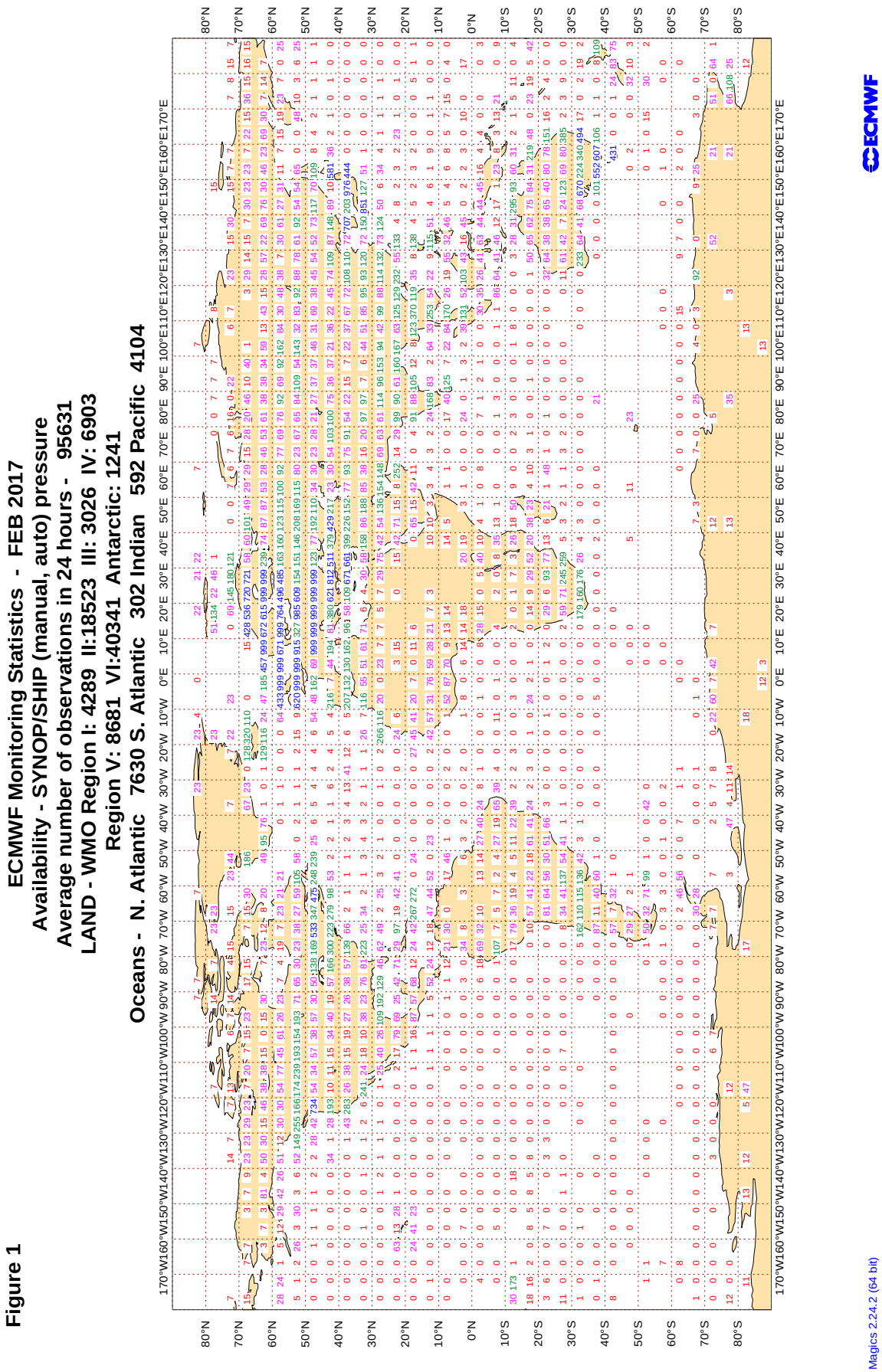


Figure 1

3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

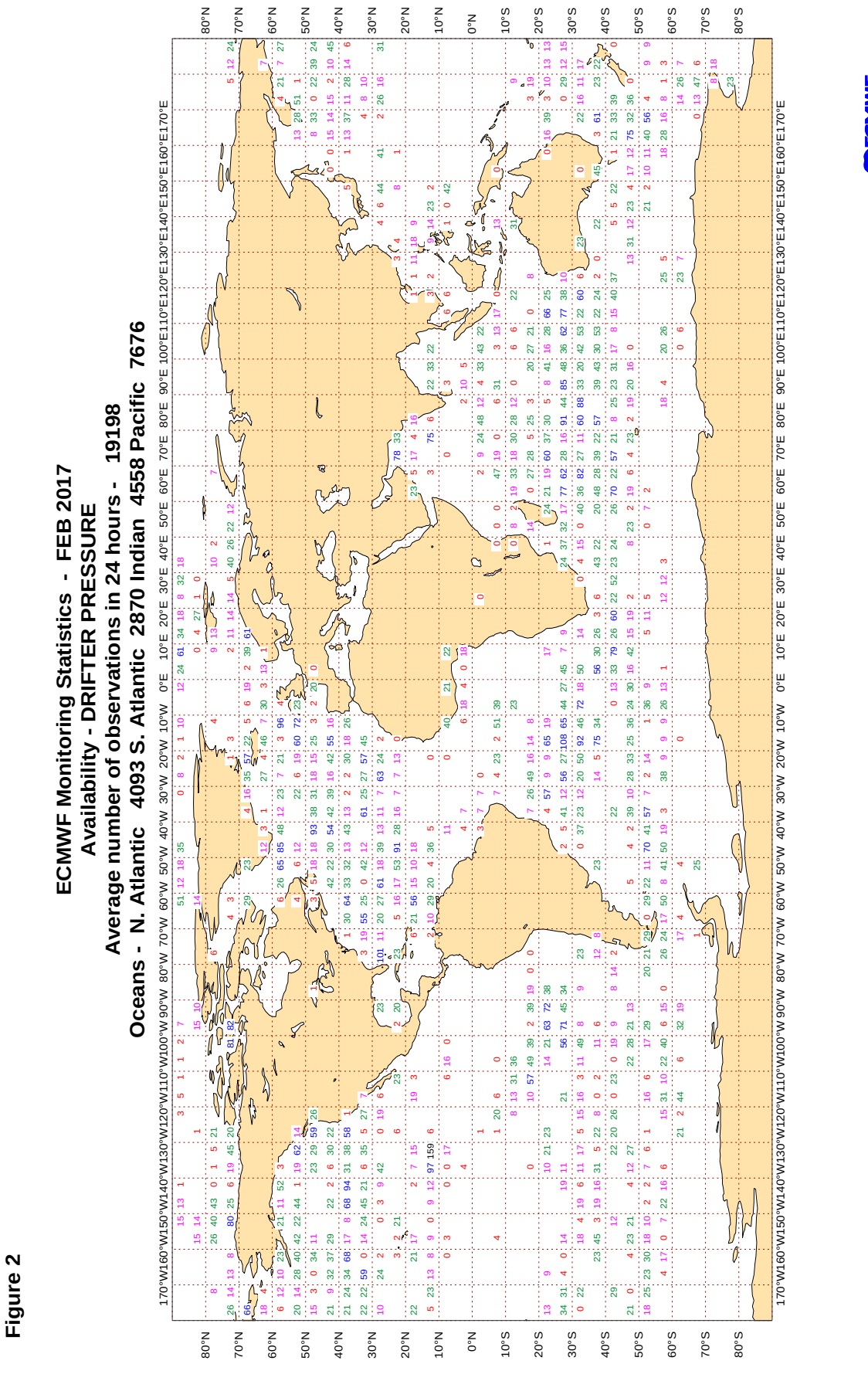


Figure 2

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

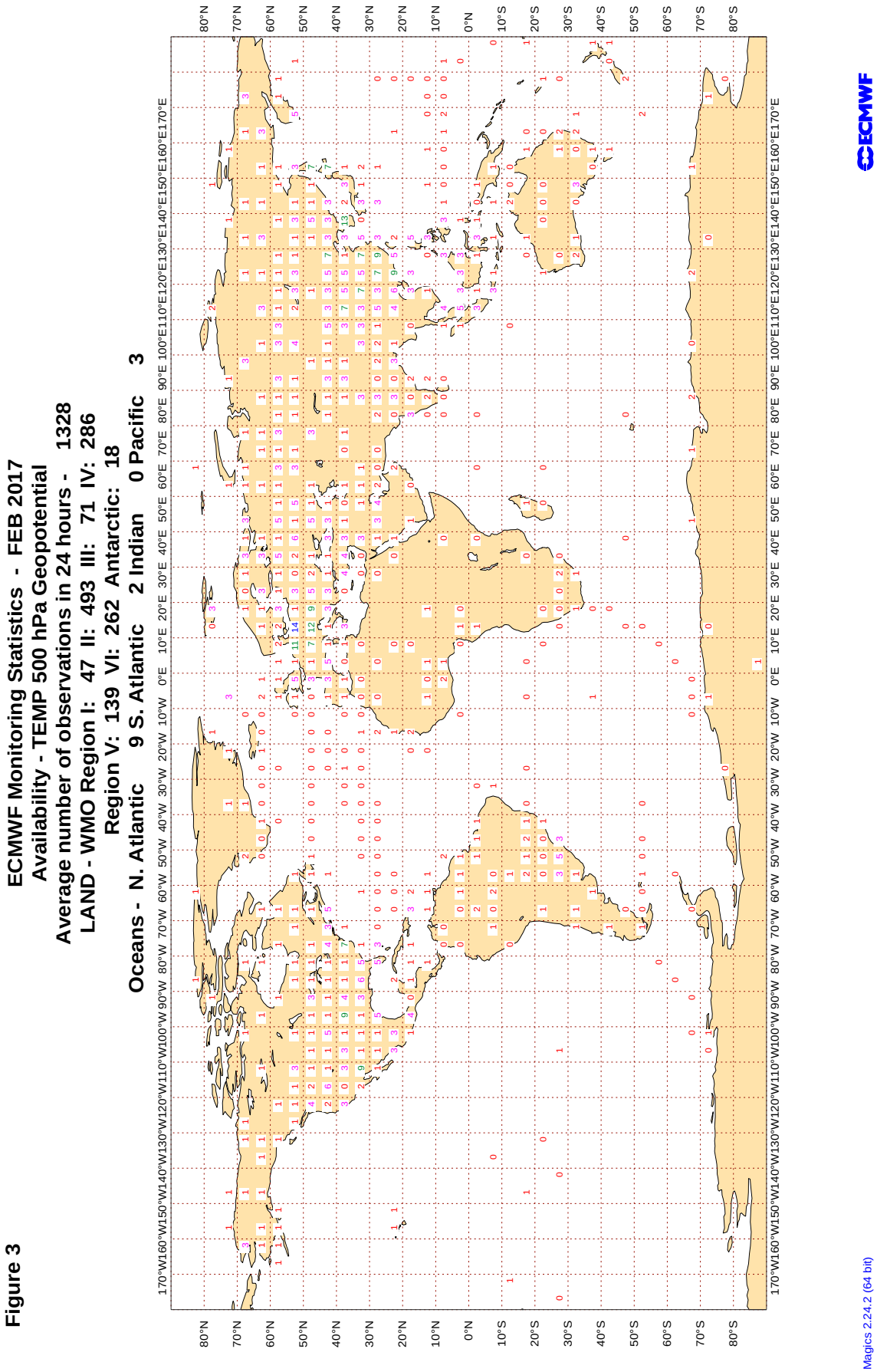


Figure 3

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

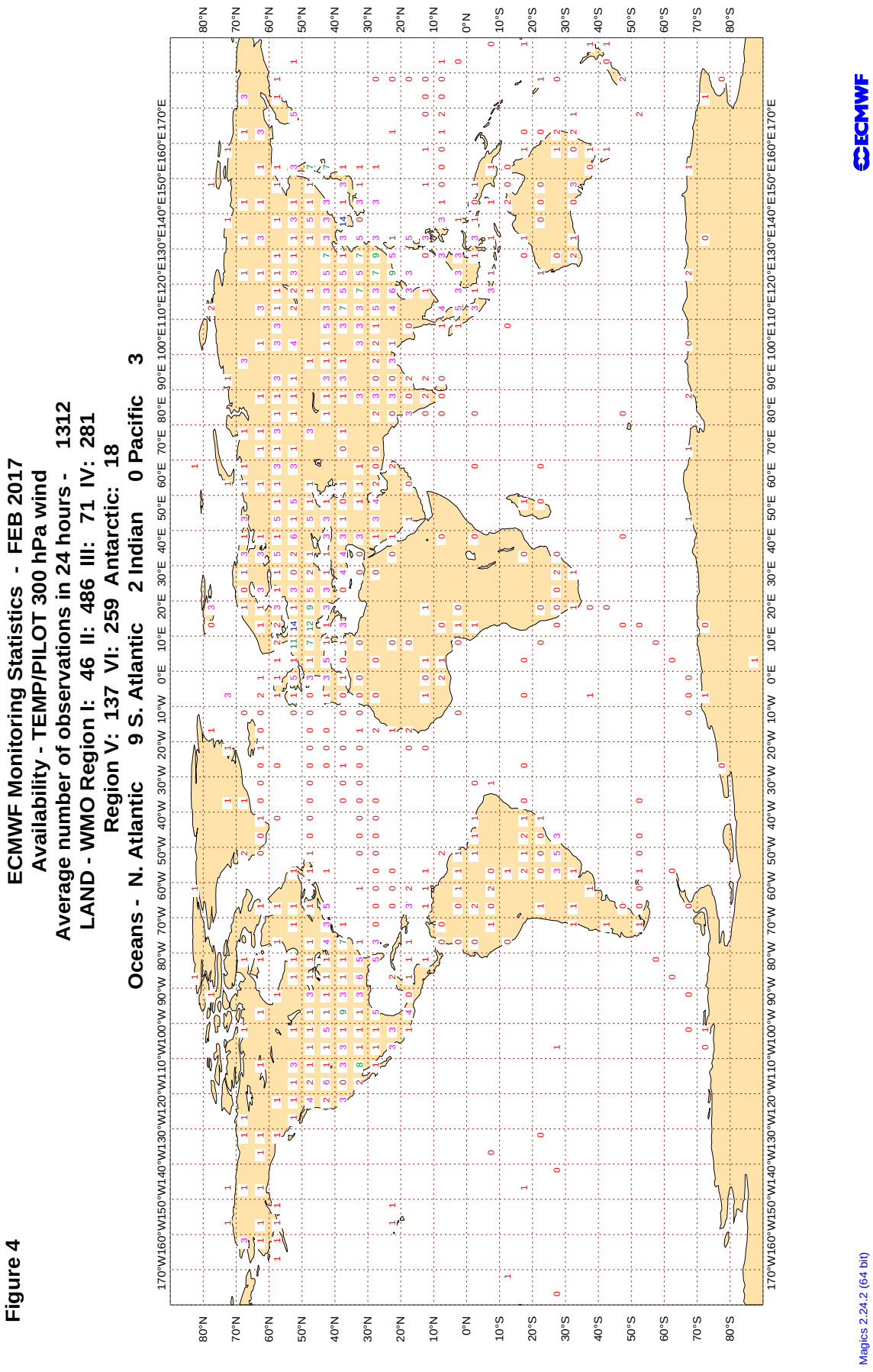


Figure 4

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

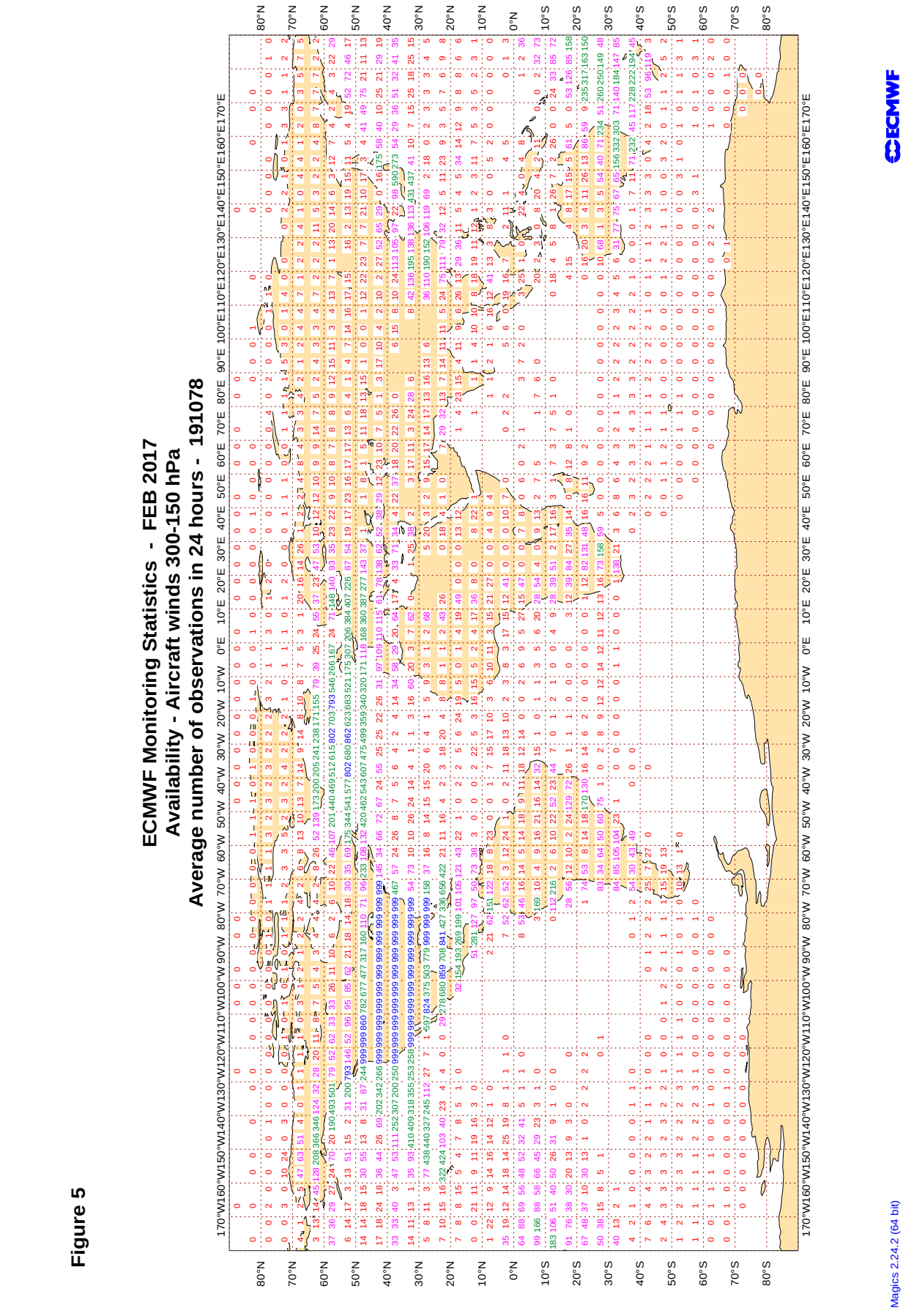
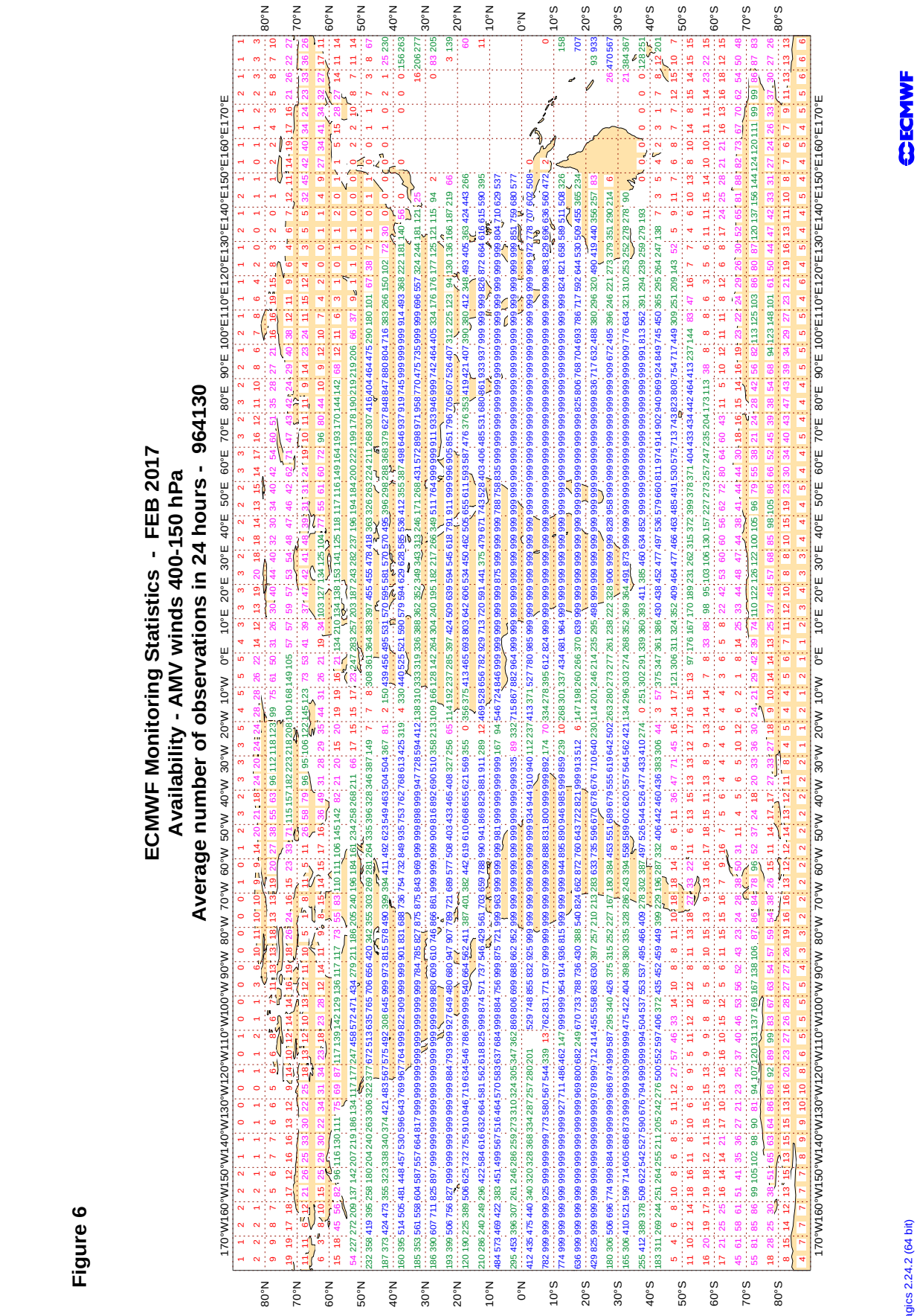


Figure 5

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

Figure 6



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

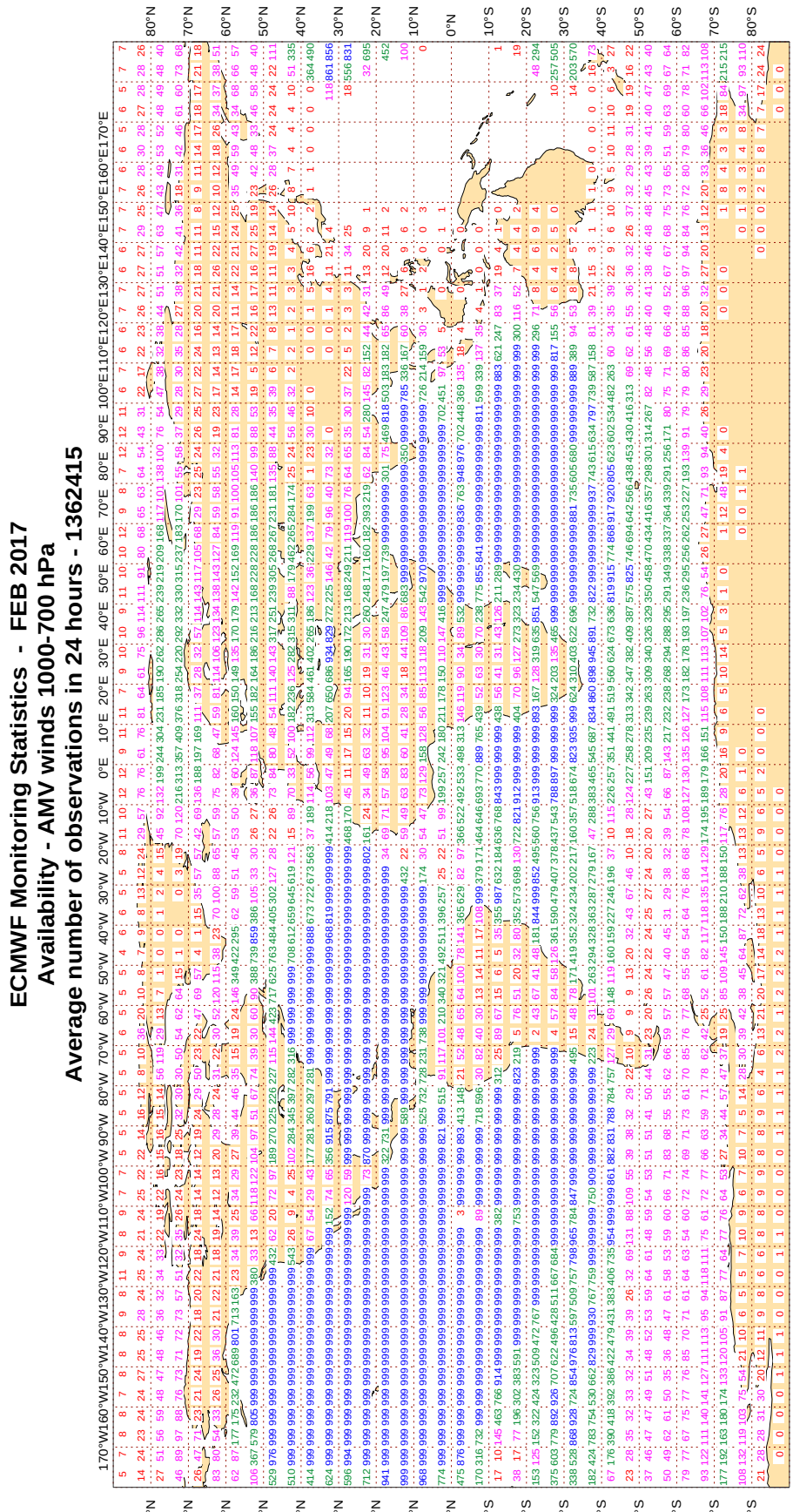
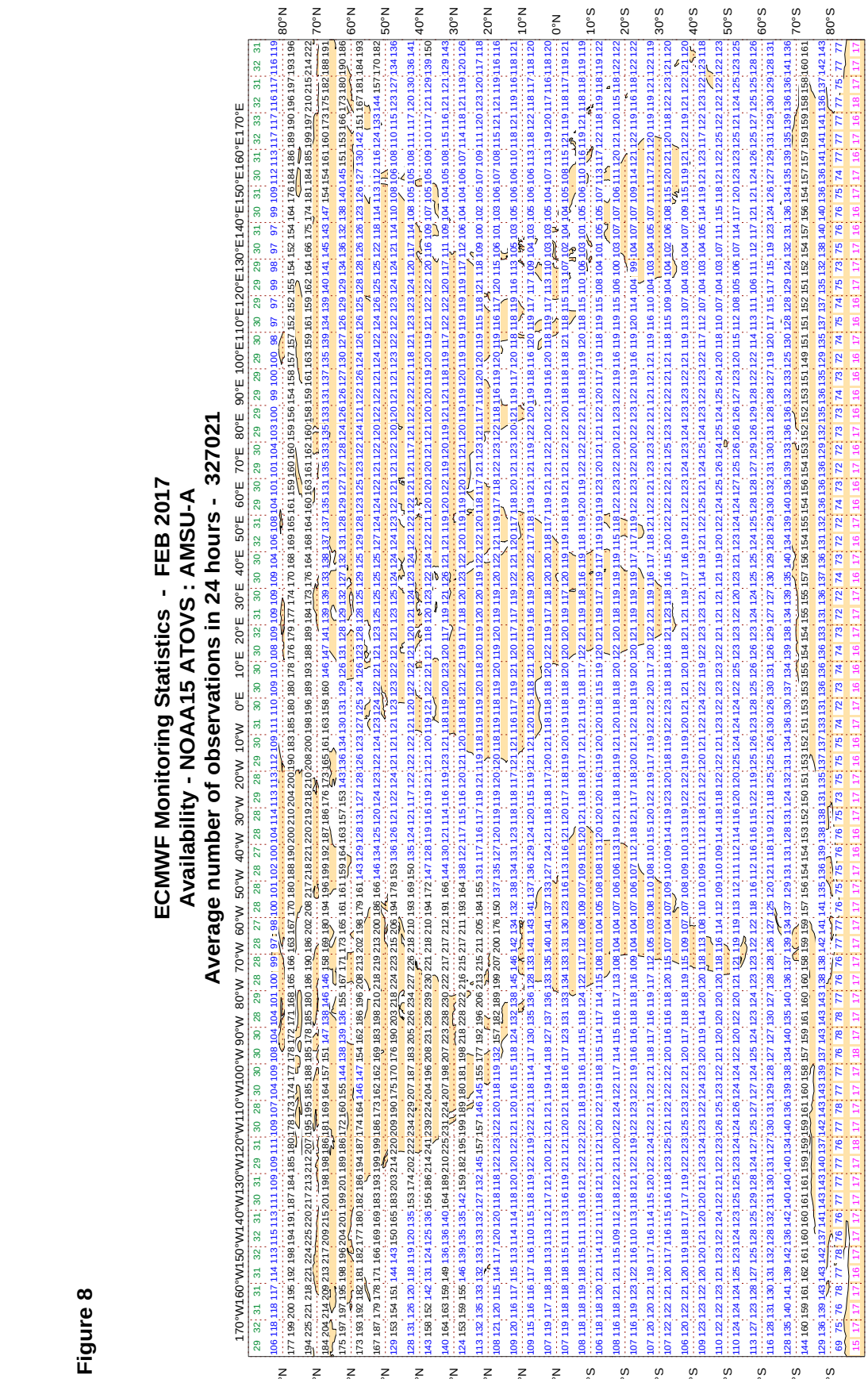


Figure 7

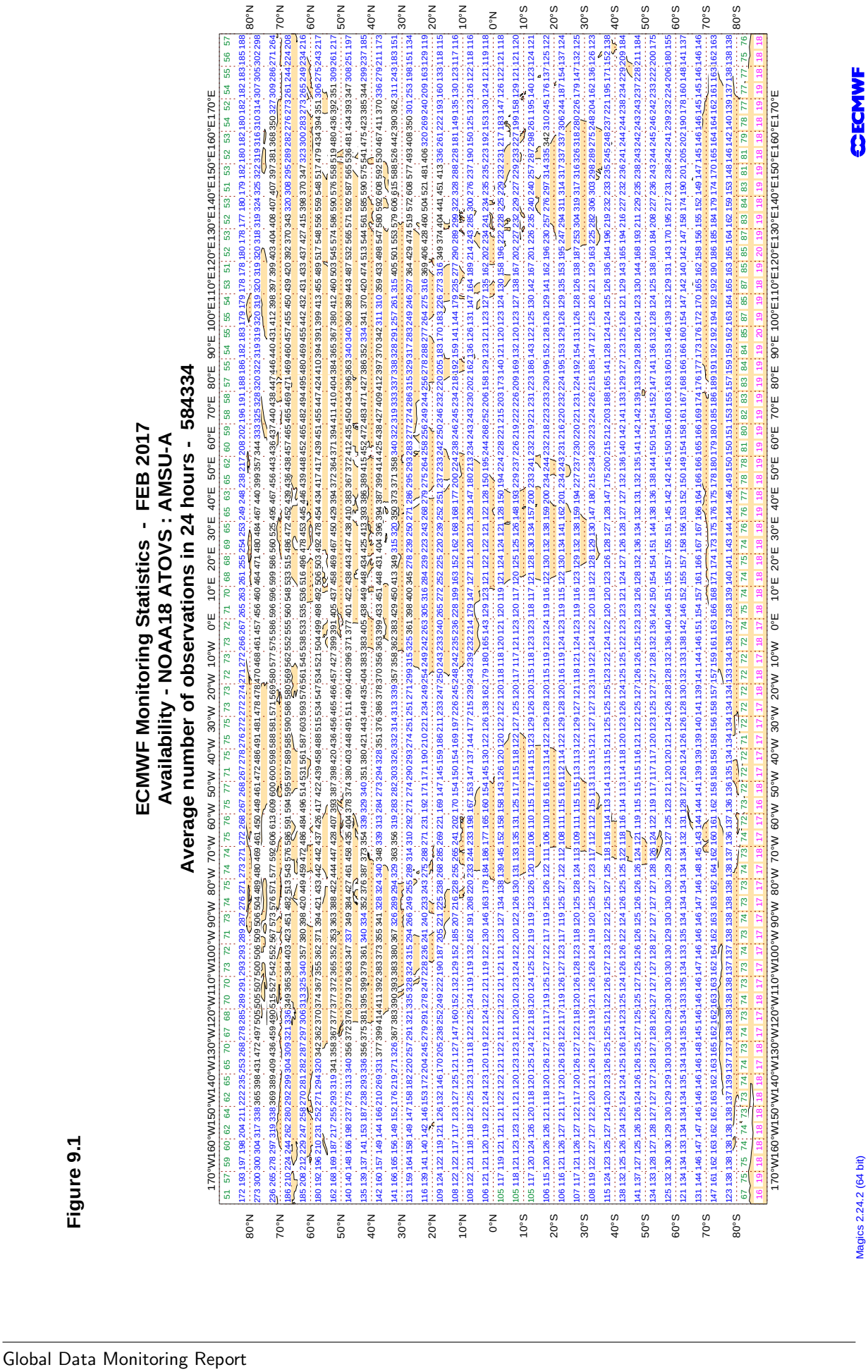
3.2.8 Figure 8 - Availability - NOAA15 ATOVS : AMSU-A

Figure 8



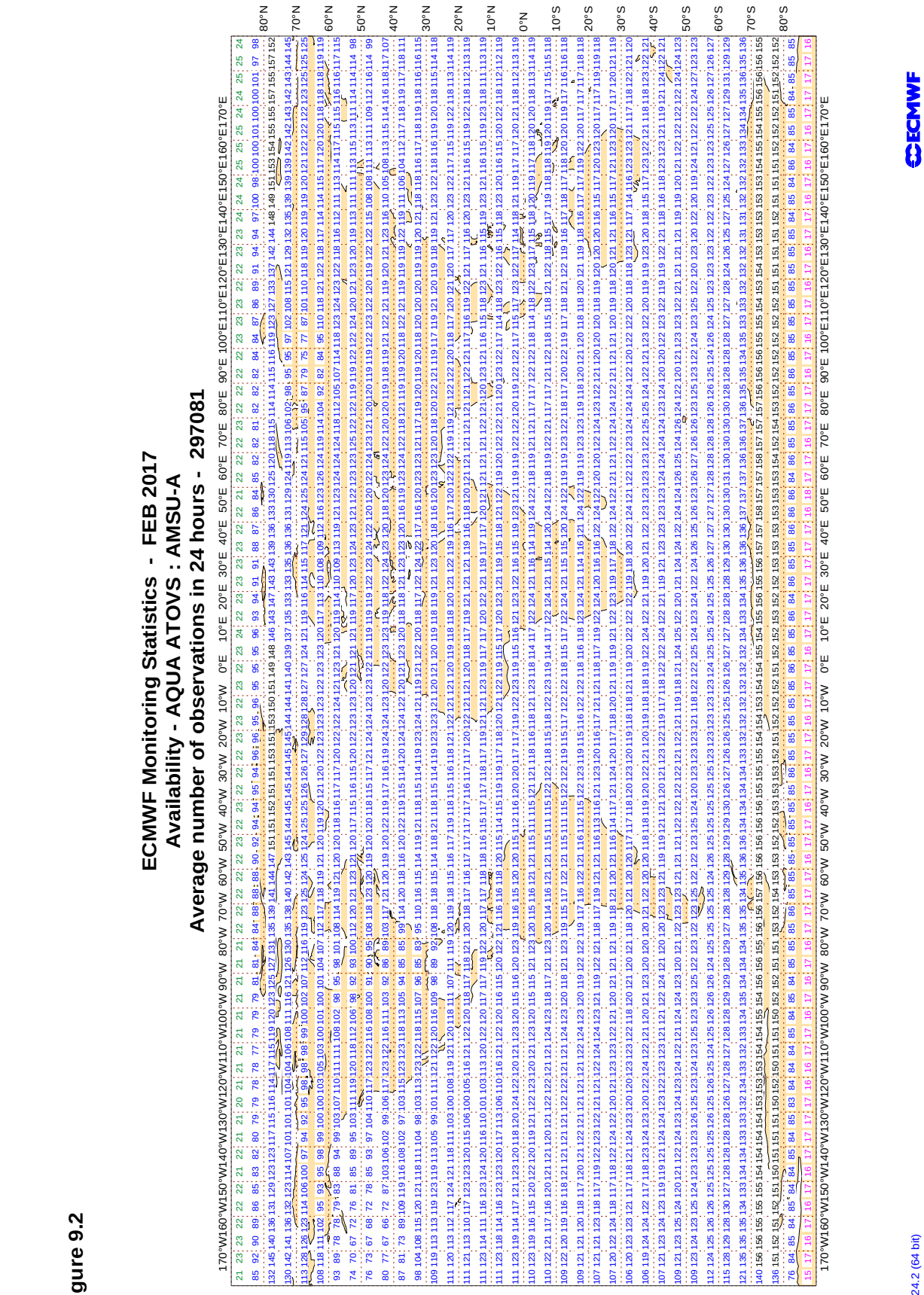
3.2.9 Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A

Figure 9.1



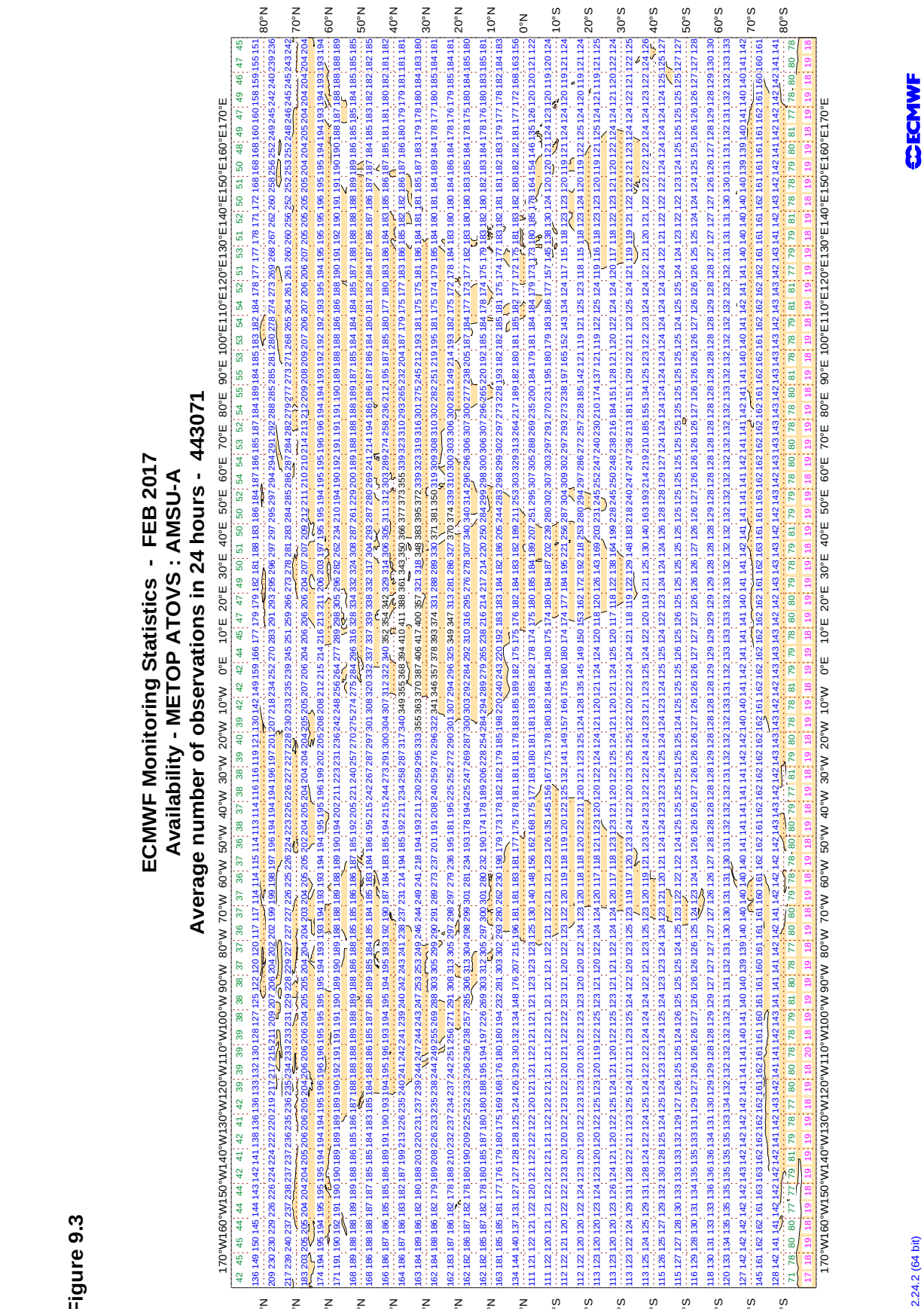
3.2.10 Figure 9.2 - Availability - AQUA ATOVS : AMSU-A

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                : FEB 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	49	0	0.9	8.0	8.0
2HDG2	99	P	SUR	24	0	1.3	7.8	7.9
2JCC5	99	P	SUR	24	0	2.0	5.9	6.2
3EUS	99	P	SUR	21	0	2.4	-4.3	4.9
44066	99	P	SUR	165	14	5.7	-1.0	5.8
9HJD9	99	P	SUR	26	0	1.1	-4.5	4.6
9V2729	99	P	SUR	48	0	1.9	6.5	6.8
9V2734	99	P	SUR	42	0	0.9	3.2	3.3
9V9374	99	P	SUR	20	0	5.4	5.3	7.6
A8HA7	99	P	SUR	19	0	1.2	-4.1	4.3
C6FN2	99	P	SUR	15	0	0.9	3.3	3.4
C6FN5	99	P	SUR	20	0	1.2	-3.2	3.4
C6FV4	99	P	SUR	15	0	1.0	10.4	10.5
C6FZ6	99	P	SUR	33	1	2.2	-4.2	4.7
C6LG5	99	P	SUR	31	0	1.7	3.8	4.2
C6VG8	99	P	SUR	34	0	3.3	-4.4	5.5
C6WW4	99	P	SUR	43	0	0.6	5.0	5.1
C6YM5	99	P	SUR	56	0	0.8	3.4	3.5
C6YM6	99	P	SUR	28	0	2.2	4.3	4.9
C6ZJ4	99	P	SUR	18	0	0.7	-4.6	4.6
DBCK	99	P	SUR	84	26	0.6	0.2	0.6
ICIC	99	P	SUR	59	0	5.8	-4.3	7.2
KRAU	99	P	SUR	31	0	1.2	5.4	5.5
LAPE7	99	P	SUR	19	1	0.7	5.4	5.4
ONFL	99	P	SUR	20	0	2.2	-3.3	4.0
OXES2	99	P	SUR	64	1	2.7	4.0	4.8
OZ2049	99	P	SUR	38	0	0.9	-5.2	5.2
S6ES6	99	P	SUR	58	5	6.6	-1.4	6.8
SLKQ	99	P	SUR	27	7	1.1	-1.5	1.9
UBXS	99	P	SUR	60	42	1.4	-12.9	13.0
UCSJ	99	P	SUR	41	0	0.7	3.9	4.0
UFLT	99	P	SUR	29	1	3.0	-3.5	4.6

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
UGYU	99	P	SUR	60	0	0.7	-3.2	3.3
VRBI2	99	P	SUR	33	0	3.1	3.1	4.4
VRDU6	99	P	SUR	53	0	2.2	4.5	5.0
VRFI7	99	P	SUR	76	0	1.3	5.1	5.3
VRGH3	99	P	SUR	21	0	2.1	4.4	4.9
VRJL6	99	P	SUR	15	0	3.5	3.4	4.9
VRJT8	99	P	SUR	52	0	3.1	5.3	6.1
VRLZ4	99	P	SUR	33	0	2.8	5.6	6.2
VRME7	99	P	SUR	17	0	2.7	-4.9	5.7
VRNR5	99	P	SUR	15	0	1.1	12.7	12.8
VRPY5	99	P	SUR	24	0	0.8	6.3	6.4
VRVP2	99	P	SUR	32	0	5.5	-0.7	5.5
VTFG	99	P	SUR	93	1	1.4	8.4	8.5
WAIU	99	P	SUR	16	0	1.5	-7.0	7.1
WCX8812	99	P	SUR	64	0	0.8	-3.5	3.5
WCZ5535	99	P	SUR	23	0	1.1	-3.7	3.8
WDE9586	99	P	SUR	72	0	1.1	-5.2	5.3
WDG8555	99	P	SUR	37	0	1.6	-3.3	3.7
WRJP	99	P	SUR	45	0	1.6	-3.7	4.0
WTDH	99	P	SUR	58	0	2.6	-3.4	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                : FEB 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
46181	99	SPEED	SUR	149	0	0	3.5	4.7	5.8

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                : FEB 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
44005	99	DIRN	SUR	27	0	0	13.9	36.2	38.8
46092	99	DIRN	SUR	44	0	0	20.3	37.6	42.7
46118	99	DIRN	SUR	51	0	0	97.8	-10.7	98.4
46132	99	DIRN	SUR	72	0	0	12.4	41.8	43.6
46207	99	DIRN	SUR	102	0	0	16.7	56.1	58.6

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                 : FEB 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
1701520	99	P	SUR	-37	-12	668	0	0.6	-5.6	5.6
2300592	99	P	SUR	13	90	1608	793	5.0	7.1	8.6
23592	99	P	SUR	13	90	1584	785	5.0	7.1	8.7
2500575	99	P	SUR	58	-29	672	672	0.0	0.0	0.0
25575	99	P	SUR	58	-29	672	672	0.0	0.0	0.0
2600545	99	P	SUR	67	-15	242	116	7.5	1.8	7.8
2600568	99	P	SUR	86	25	255	252	2.0	-12.2	12.4
26537	99	P	SUR	72	41	634	188	3.5	-1.8	3.9
26545	99	P	SUR	67	-15	639	426	8.9	-1.2	9.0
26568	99	P	SUR	86	25	654	645	2.5	-10.9	11.2
3400512	99	P	SUR	-19	-139	20	0	0.0	-5.1	5.1
34512	99	P	SUR	-19	-139	20	0	0.0	-5.1	5.1
4301506	99	P	SUR	-6	-124	191	0	1.5	7.1	7.3
45508	99	P	SUR	45	-88	27	27	0.0	0.0	0.0
45509	99	P	SUR	45	-88	25	25	0.0	0.0	0.0
4700551	99	P	SUR	43	-45	236	119	5.6	8.0	9.7
47551	99	P	SUR	43	-45	652	383	4.9	8.9	10.1
4800513	99	P	SUR	71	169	648	648	0.0	0.0	0.0
4800628	99	P	SUR	68	-177	348	348	0.0	0.0	0.0
4800631	99	P	SUR	88	-124	641	269	7.1	-0.8	7.1
4800731	99	P	SUR	70	-98	2403	1029	7.2	-6.0	9.4
4800793	99	P	SUR	74	179	199	41	8.0	-2.7	8.4
4801615	99	P	SUR	72	-130	584	442	9.2	0.8	9.2
4801617	99	P	SUR	76	-159	640	450	8.0	-1.4	8.2
4801621	99	P	SUR	75	-136	578	240	6.3	-2.3	6.7
48513	99	P	SUR	71	169	648	648	0.0	0.0	0.0
48731	99	P	SUR	70	-98	2401	1029	7.2	-6.1	9.4
48793	99	P	SUR	74	179	659	217	7.6	-4.6	8.9
5600549	99	P	SUR	-29	96	234	0	1.3	4.1	4.3
56549	99	P	SUR	-29	96	646	0	1.1	4.2	4.4
6400534	99	P	SUR	60	-47	57	57	0.0	0.0	0.0
6400757	99	P	SUR	61	-42	233	201	5.9	10.5	12.0

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

WMO IDENT	OBS TIME	ELM	ME LAT	N LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	
64534	99	P	SUR	60	-47	57	57	0.0	0.0	0.0
64757	99	P	SUR	61	-42	630	541	2.2	12.1	12.3

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

```
          LIST OF SUSPECT STATIONS        : DRIFTER
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND SPEED (M/S)
                    AREA                  : GLOBAL
                    PERIOD                : FEB 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
6100002	99	SPEED	SUR	42	5	672	0	0	4.4	8.4	9.5

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

```
          LIST OF SUSPECT STATIONS         : DRIFTER
                    MONITORING CENTRE      : ECMWF
                    ELEMENT MONITORED      : WIND DIRECTION (DEGREES)
                    PERIOD                 : FEB 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
23092	99	DIRN	SUR	18	90	84	0	0	61.1	-34.5	70.1
23099	99	DIRN	SUR	13	80	41	0	0	33.0	-27.4	42.9
23451	99	DIRN	SUR	15	69	121	0	0	12.8	38.9	41.0
23453	99	DIRN	SUR	8	73	33	0	0	17.3	43.8	47.1
23454	99	DIRN	SUR	10	73	62	0	0	100.8	-11.5	101.5
3100051	99	DIRN	SUR	-23	-43	135	1	0	21.8	-27.4	35.0
3100374	99	DIRN	SUR	-25	-45	499	0	0	16.3	-22.4	27.7
3100380	99	DIRN	SUR	-20	-40	476	0	0	21.9	-24.9	33.2
3101000	99	DIRN	SUR	-24	-42	479	0	0	13.6	-30.0	32.9
31051	99	DIRN	SUR	-23	-43	129	1	0	25.4	-29.4	38.8
31374	99	DIRN	SUR	-25	-45	500	2	0	17.1	-22.7	28.4
31380	99	DIRN	SUR	-20	-40	474	0	0	22.4	-25.9	34.2
42090	99	DIRN	SUR	18	-70	886	0	0	26.4	-26.7	37.6
42361	99	DIRN	SUR	28	-93	24	0	0	49.6	-86.1	99.4
44005	99	DIRN	SUR	43	-69	164	0	0	14.5	31.1	34.3
46060	99	DIRN	SUR	61	-147	352	0	0	32.4	22.1	39.3
46092	99	DIRN	SUR	37	-122	360	0	0	30.9	34.8	46.5
46118	99	DIRN	SUR	49	-123	320	0	0	94.6	-13.2	95.5
46132	99	DIRN	SUR	50	-128	414	0	0	17.3	38.9	42.6
46207	99	DIRN	SUR	51	-130	604	0	0	17.4	56.1	58.8
6101003	99	DIRN	SUR	40	25	84	0	0	45.3	36.5	58.2

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

```
          LIST OF SUSPECT STATIONS         : RADIOSONDES
                    MONITORING CENTRE      : ECMWF
                    ELEMENT MONITORED      : GEOPOTENTIAL HEIGHT (METRES)
                    AREA                   : GLOBAL
                    PERIOD                 : FEB 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	12	Z	925	66	-38	25	0	5.0	42.1	42.4
04360	00	Z	925	66	-38	24	0	2.9	42.2	42.3
21946	12	Z	50	71	148	27	0	53.3	-171.6	179.7
21946	00	Z	50	71	148	26	0	42.6	-156.1	161.8
23205	12	Z	70	68	53	25	0	113.7	-126.8	170.3
23205	00	Z	50	68	53	17	2	86.8	-179.5	199.4
24641	12	Z	50	64	122	23	0	54.8	-155.1	164.5
24641	00	Z	50	64	122	20	0	37.6	-130.7	136.0
31088	12	Z	50	59	143	24	0	60.6	-161.3	172.3
31510	00	Z	150	50	127	25	0	22.4	-88.5	91.3
31510	12	Z	70	50	127	17	0	35.2	-152.6	156.6
38064	00	Z	50	45	66	12	0	127.0	57.5	139.4
38064	12	Z	30	45	66	13	1	78.9	161.8	180.0
40437	00	Z	925	25	47	27	0	3.6	31.5	31.7
42299	00	Z	925	27	89	28	0	5.3	-46.4	46.7
42423	00	Z	300	26	90	11	0	19.5	-63.9	66.8
43041	00	Z	30	19	82	15	0	8.2	168.0	168.2
43311	00	Z	30	11	73	23	0	17.6	171.8	172.7
43369	00	Z	50	8	73	12	0	27.3	148.3	150.8
47122	12	Z	1000	37	127	28	0	3.7	34.6	34.8
47155	12	Z	1000	35	129	27	6	33.2	-68.8	76.4
78988	12	Z	1000	12	-69	28	0	32.0	17.7	36.6
96147	12	Z	925	4	108	25	0	16.3	48.1	50.8
96147	00	Z	925	4	108	28	0	10.8	52.5	53.6
ASEU06	00	Z	1000	56	-14	10	0	4.4	-49.3	49.5
ASEU06	12	Z	1000	56	-9	11	0	21.7	-58.5	62.4

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                : FEB 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
```

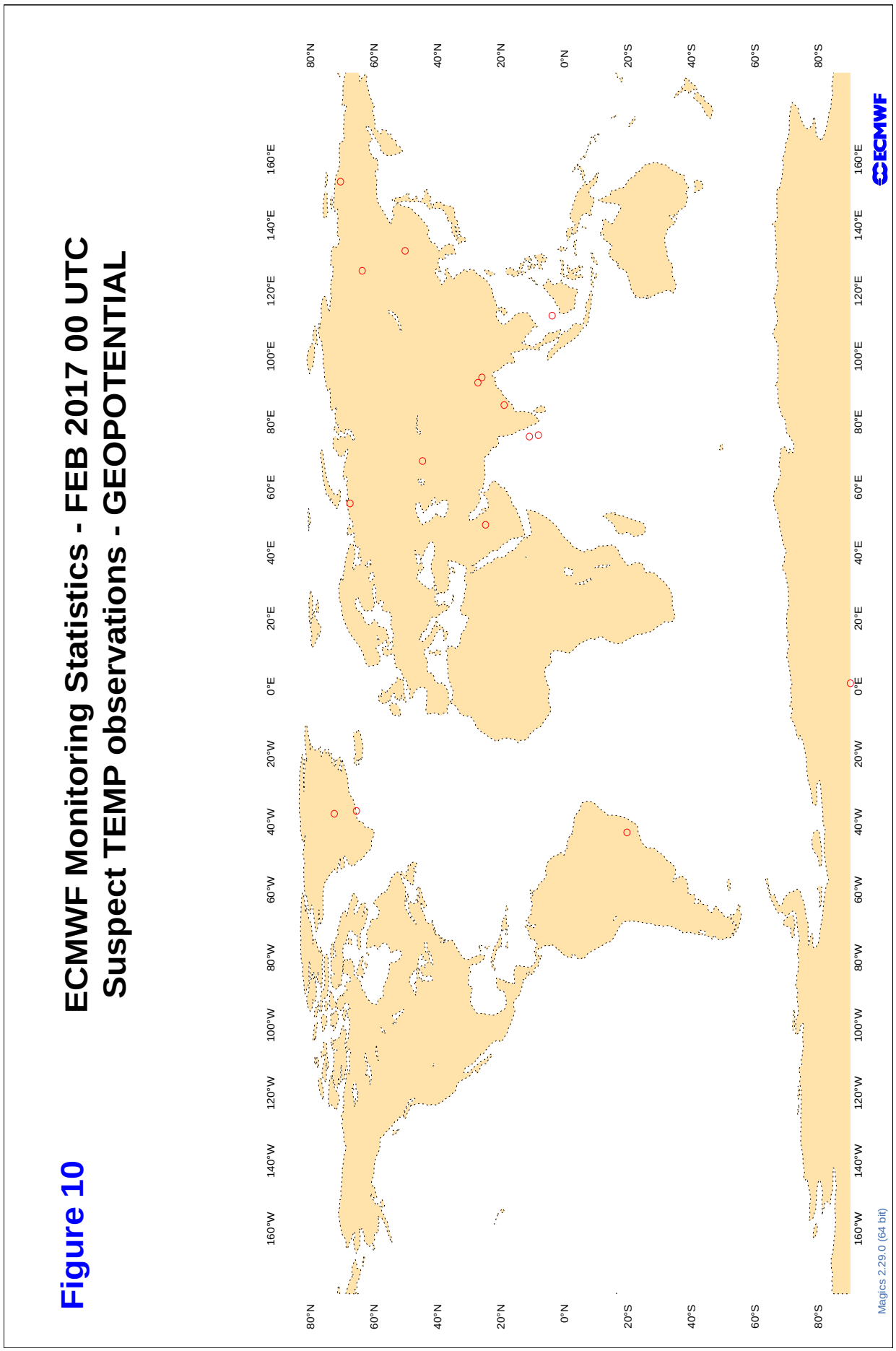
WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	UBIAS	VBIAS	RMS

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

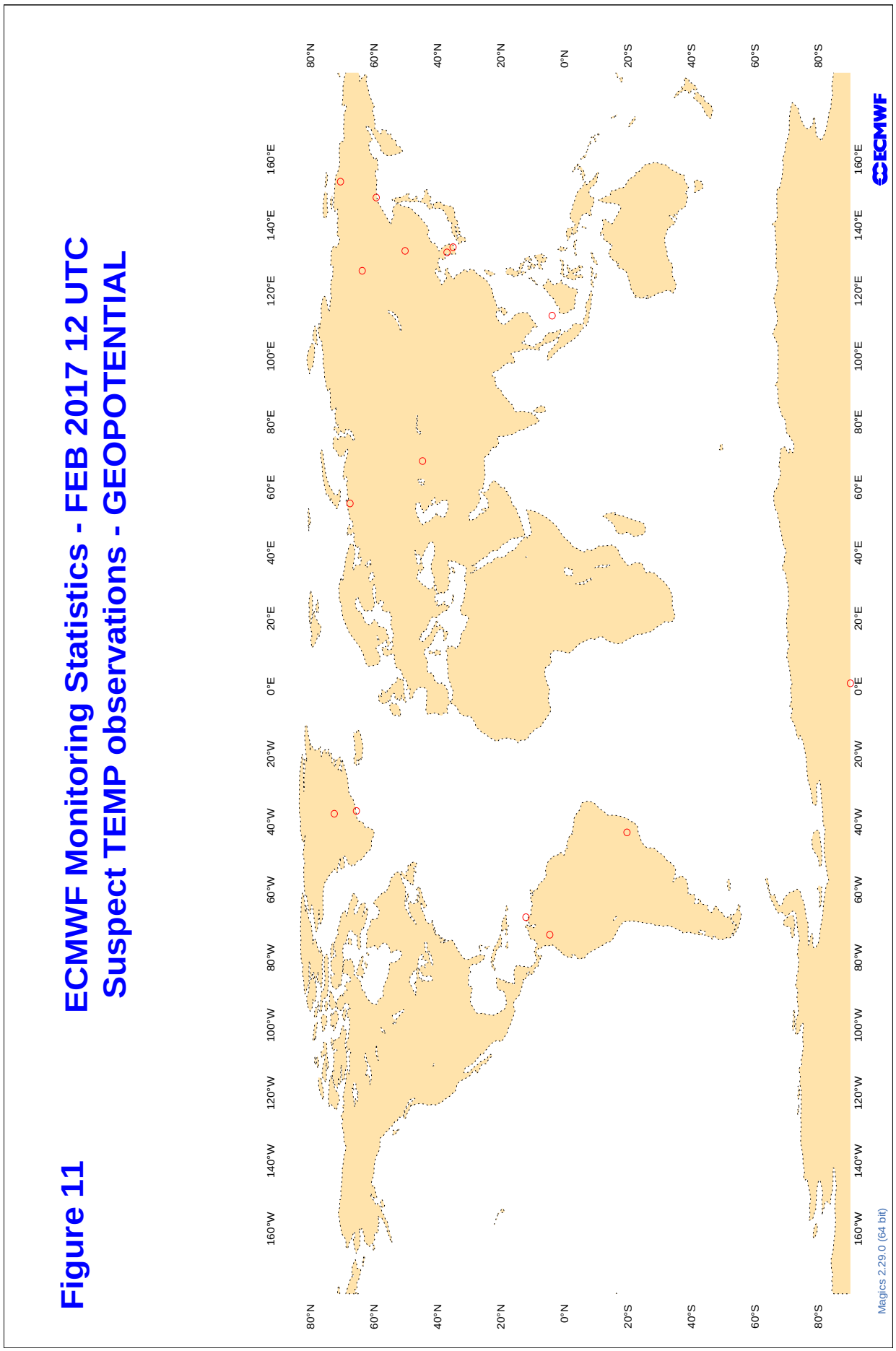
```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                    AREA                  : GLOBAL
                    PERIOD                : FEB 2017
                    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	12	DD	26	113	27	10.1	1.3	4.0

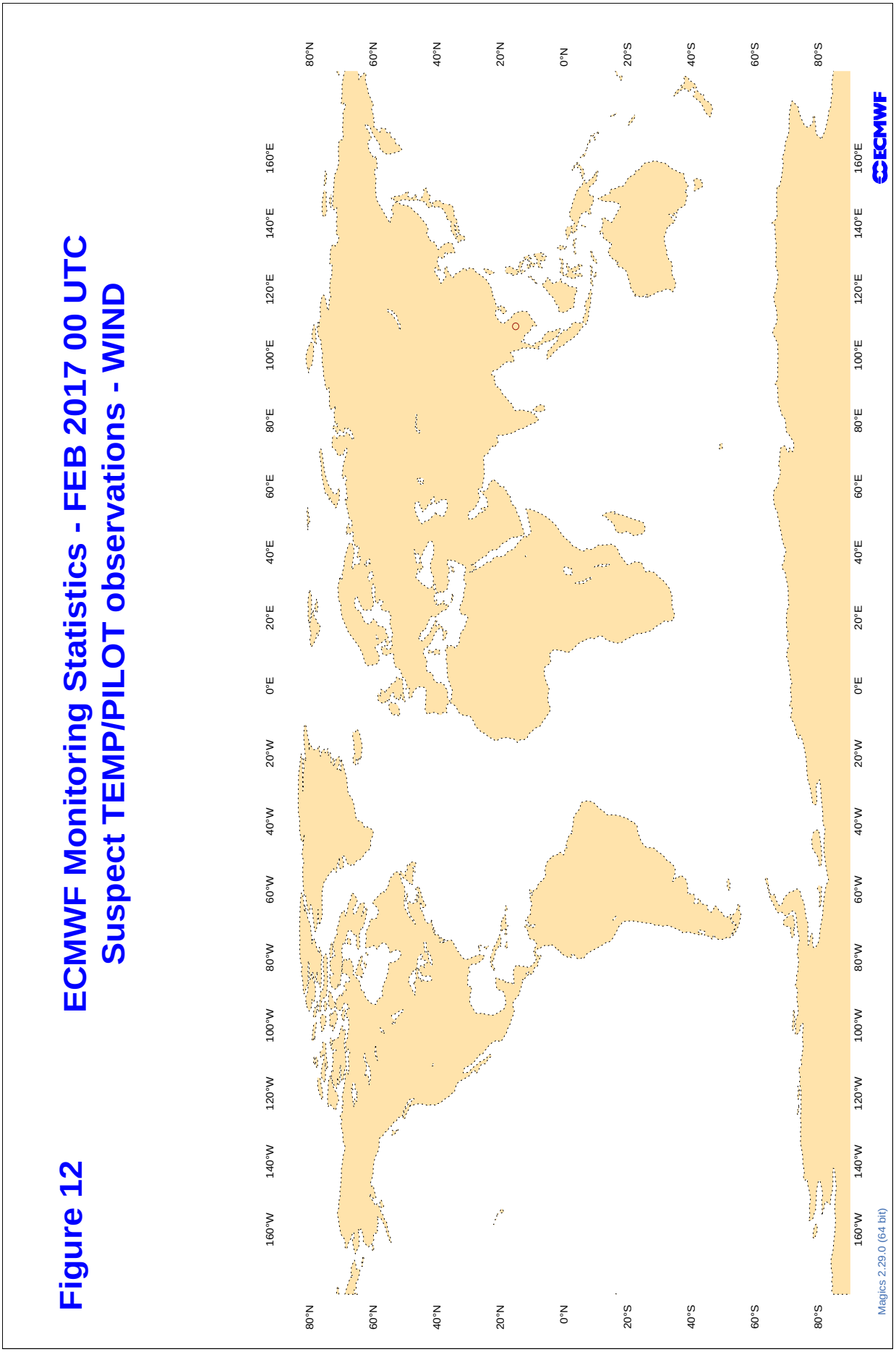
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



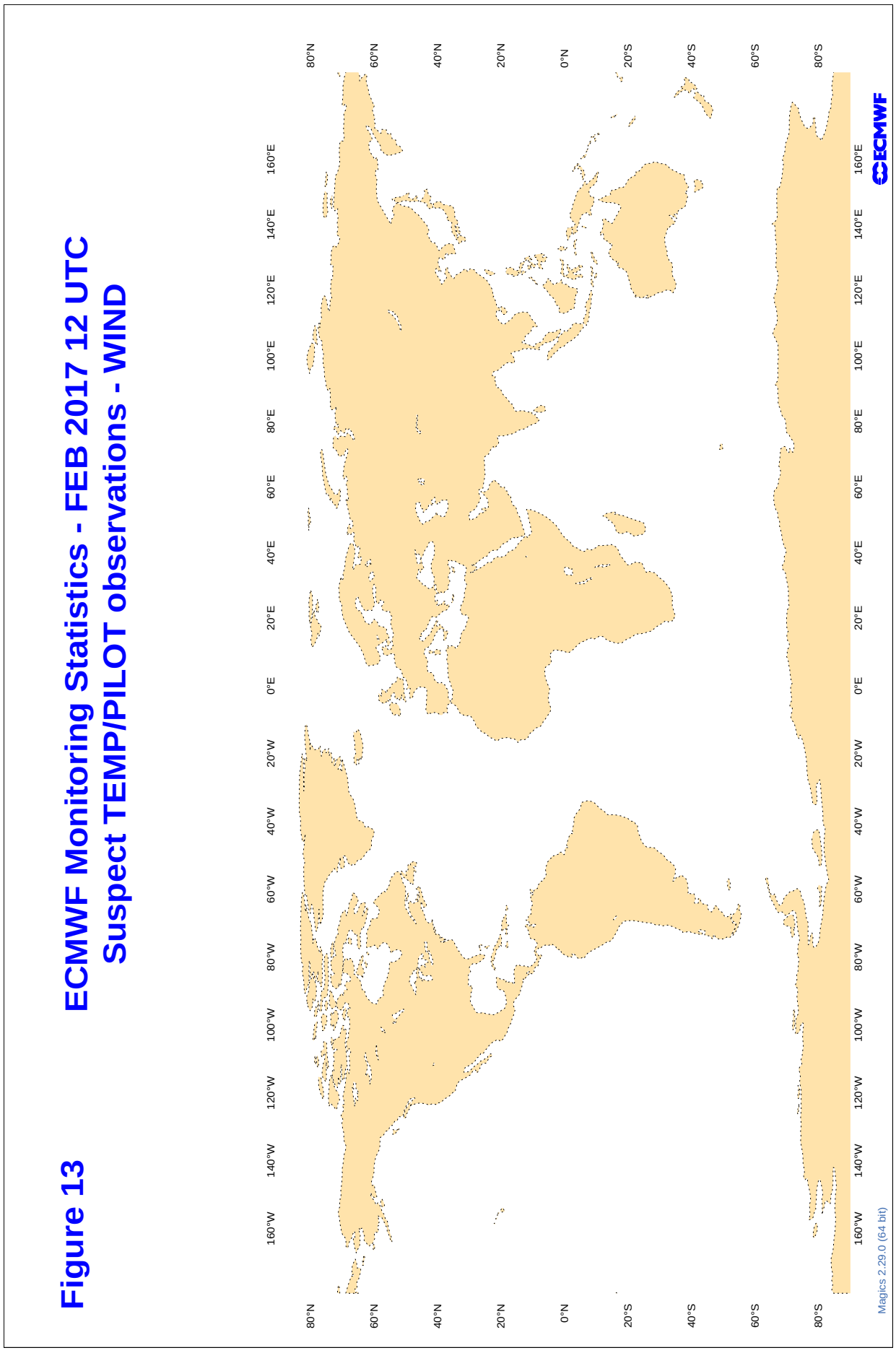
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASDE01	00	Z	100	7	39.1	-37.8
ASDE01	12	Z	100	2	31.9	10.6
ASDE02	12	Z	100	16	7.7	6.0
ASDE03	00	Z	100	7	9.5	6.0
ASDE03	12	Z	100	2	42.9	42.8
ASDE09	12	Z	100	0	0.0	0.0
ASDK01	00	Z	100	5	11.3	8.3
ASDK01	12	Z	100	5	10.0	3.1
ASDK02	12	Z	100	21	9.7	4.0
ASDK03	12	Z	100	4	48.6	-9.7
ASDK03	00	Z	100	7	18.7	17.2
ASDK1	00	Z	100	5	8.0	3.1
ASDK1	12	Z	100	5	9.0	-5.0
ASDK2	12	Z	100	15	8.2	0.2
ASDK3	12	Z	100	4	47.3	-16.9
ASDK3	00	Z	100	5	11.9	10.5
ASES01	12	Z	100	19	27.4	24.7
ASEU01	12	Z	100	11	29.4	28.3
ASEU02	00	Z	100	11	36.1	34.8
ASEU02	12	Z	100	11	34.1	33.7
ASEU03	00	Z	100	4	19.2	-7.8
ASEU03	12	Z	100	4	20.9	4.8
ASEU04	00	Z	100	6	6.5	-3.6
ASEU04	12	Z	100	7	9.1	4.5
ASEU05	00	Z	100	1	15.6	-15.6
ASEU05	12	Z	100	1	1.0	1.0
ASEU06	00	Z	100	12	31.2	-29.6
ASEU06	12	Z	100	12	28.9	-25.8
ASFR1	00	Z	100	22	17.8	16.2
ASFR1	12	Z	100	20	27.1	24.9
ASFR3	00	Z	100	7	16.5	15.1
ASFR3	12	Z	100	5	15.5	13.6
ASFR4	00	Z	100	13	29.8	29.5
ASFR4	12	Z	100	12	39.4	38.9
DBLK	00	Z	100	33	8.3	6.6
DBLK	12	Z	100	21	8.1	5.9
JGQH	00	Z	100	14	15.7	13.8
JGQH	12	Z	100	14	17.7	15.6
JSNJ	12	Z	100	5	0.0	0.0

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

```
RADIOSONDE MONITORING STATISTICS (SHIPS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 100 HPA
         AREA                  : GLOBAL
         PERIOD                : FEB 2017
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASDE01	00	V	100	5	5.1	-1.1	-0.6
ASDE01	12	V	100	2	4.0	0.9	-0.3
ASDE02	12	V	100	14	3.3	0.2	-0.6
ASDE03	00	V	100	5	5.4	-0.2	-2.7
ASDE03	12	V	100	2	13.5	-8.4	0.6
ASDE09	12	V	100	0	0.0	0.0	0.0
ASDK01	00	V	100	5	4.2	-0.1	1.5
ASDK01	12	V	100	5	2.8	0.1	0.2
ASDK02	12	V	100	18	4.1	-0.4	-1.1
ASDK03	12	V	100	4	3.3	0.6	0.7
ASDK03	00	V	100	5	4.0	-1.3	0.3
ASDK1	00	V	100	5	5.1	0.6	1.4
ASDK1	12	V	100	5	2.5	0.4	-0.5
ASDK2	12	V	100	15	3.3	-0.5	-0.4
ASDK3	12	V	100	4	3.3	2.0	0.1
ASDK3	00	V	100	5	3.0	-0.6	0.1
ASES01	12	V	100	18	4.3	1.6	0.2
ASEU01	12	V	100	10	3.8	1.1	-0.2
ASEU02	00	V	100	9	5.2	-1.5	1.9
ASEU02	12	V	100	8	3.0	0.9	-0.2
ASEU03	00	V	100	3	4.2	-1.6	0.6
ASEU03	12	V	100	4	2.3	0.0	0.7
ASEU04	00	V	100	6	4.5	-2.6	1.4
ASEU04	12	V	100	7	3.9	-0.6	0.6
ASEU05	00	V	100	1	2.2	-0.2	2.2
ASEU05	12	V	100	1	3.9	0.5	3.9
ASEU06	00	V	100	9	3.4	-0.1	1.8
ASEU06	12	V	100	8	8.2	-4.6	2.1
ASFR1	00	V	100	13	3.5	0.1	1.2
ASFR1	12	V	100	13	3.3	-0.6	-0.4
ASFR3	00	V	100	7	4.3	1.7	-0.2
ASFR3	12	V	100	5	2.5	-0.3	1.5
ASFR4	00	V	100	6	4.0	-0.2	-1.7
ASFR4	12	V	100	6	4.5	-1.0	1.2
DBLK	00	V	100	16	2.3	-0.7	-0.1
DBLK	12	V	100	15	2.3	-0.6	-0.1
JGQH	00	V	100	14	5.4	0.9	-0.8
JGQH	12	V	100	14	3.8	-0.1	-0.6
JSNJ	12	V	100	5	2.4	-0.3	1.1

3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

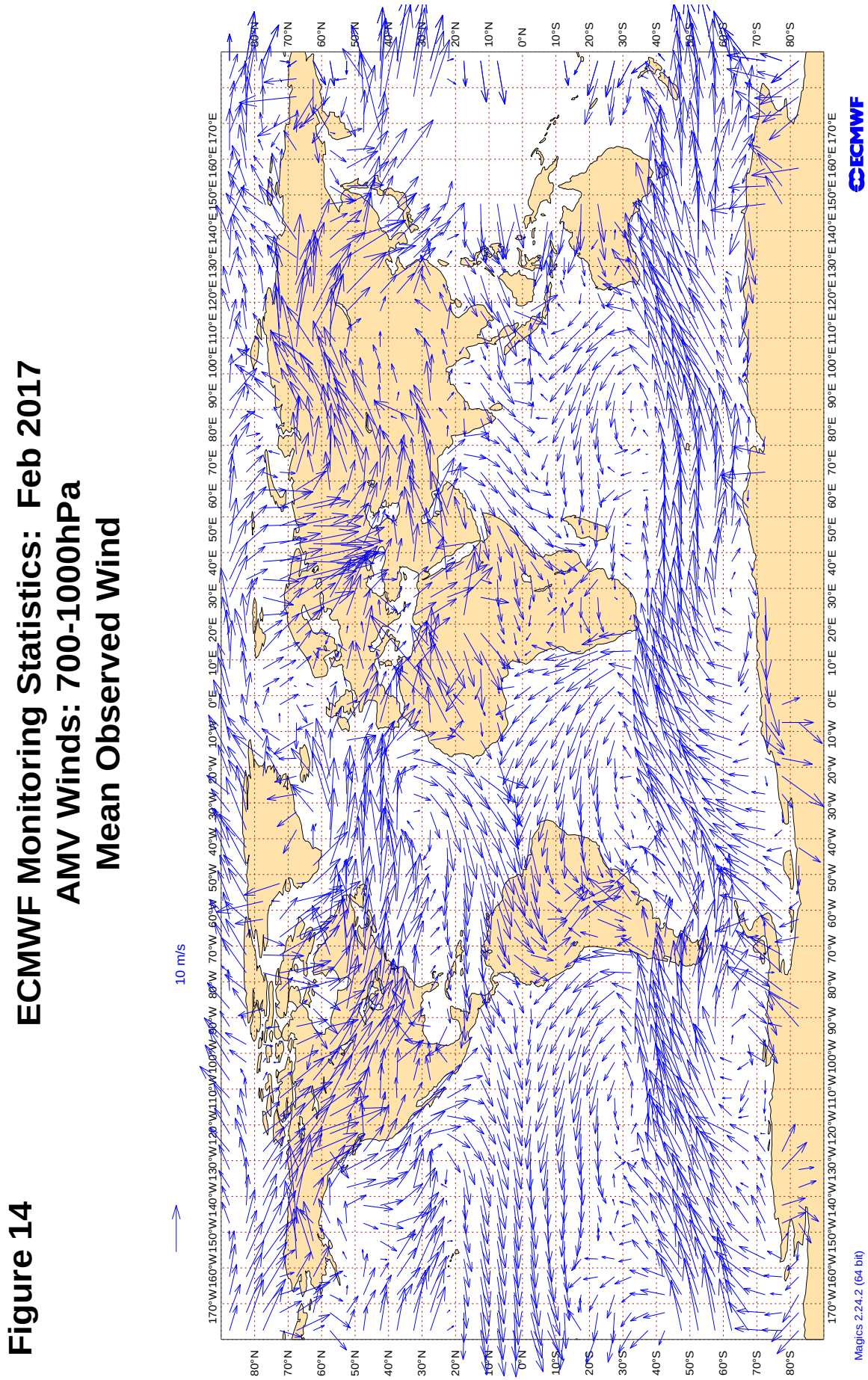


Figure 14

3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

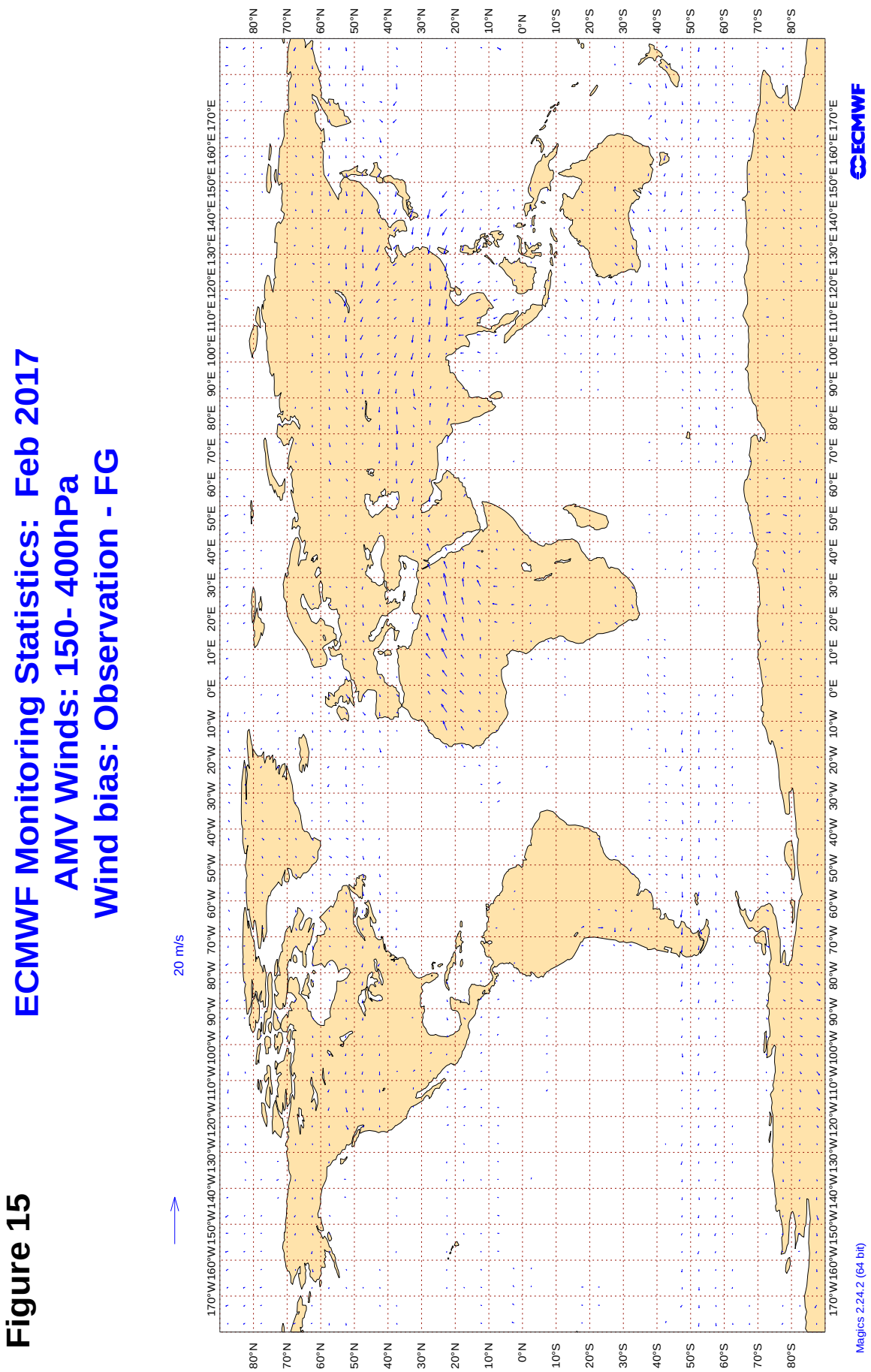


Figure 15

3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

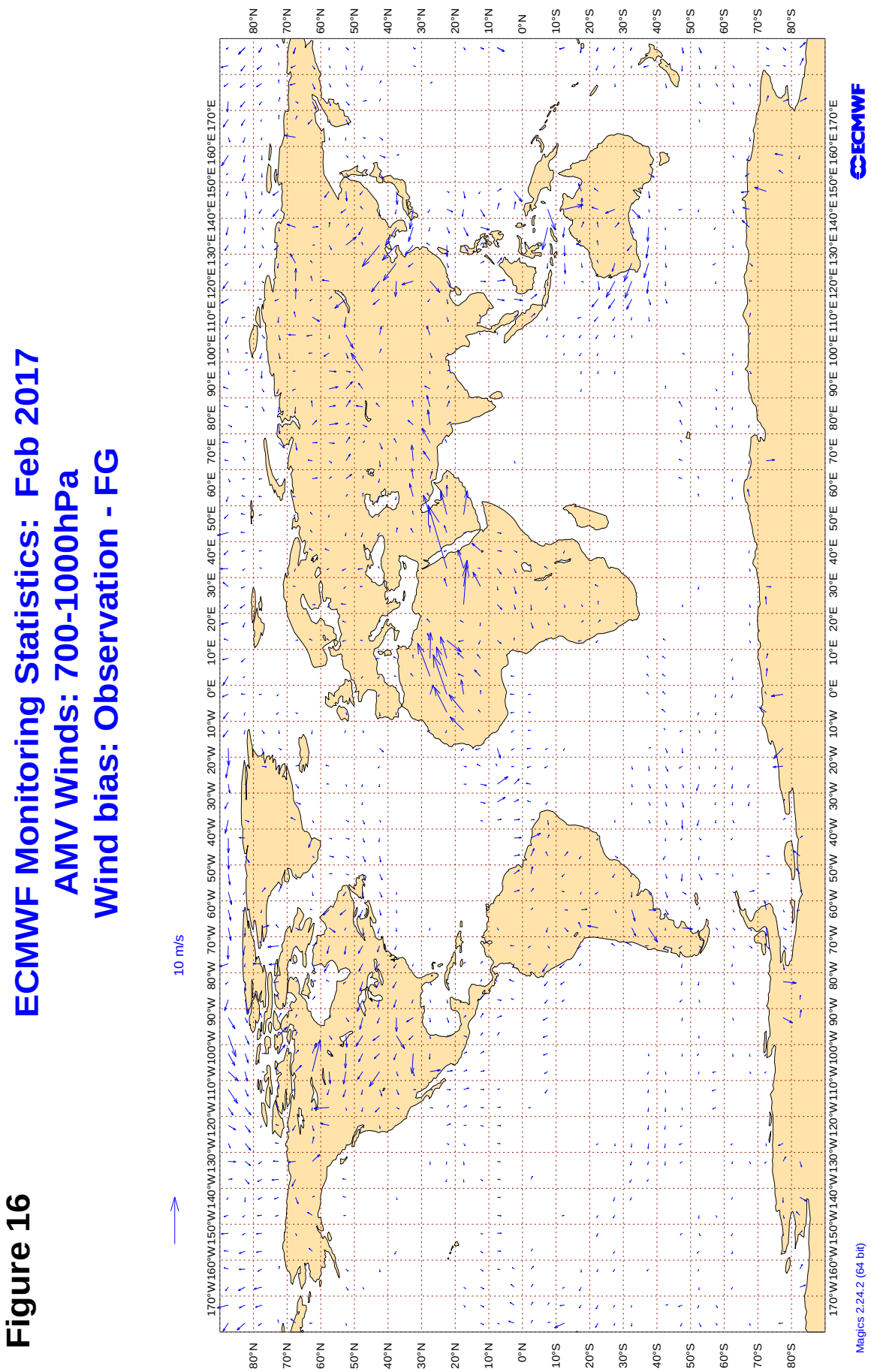


Figure 16

3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

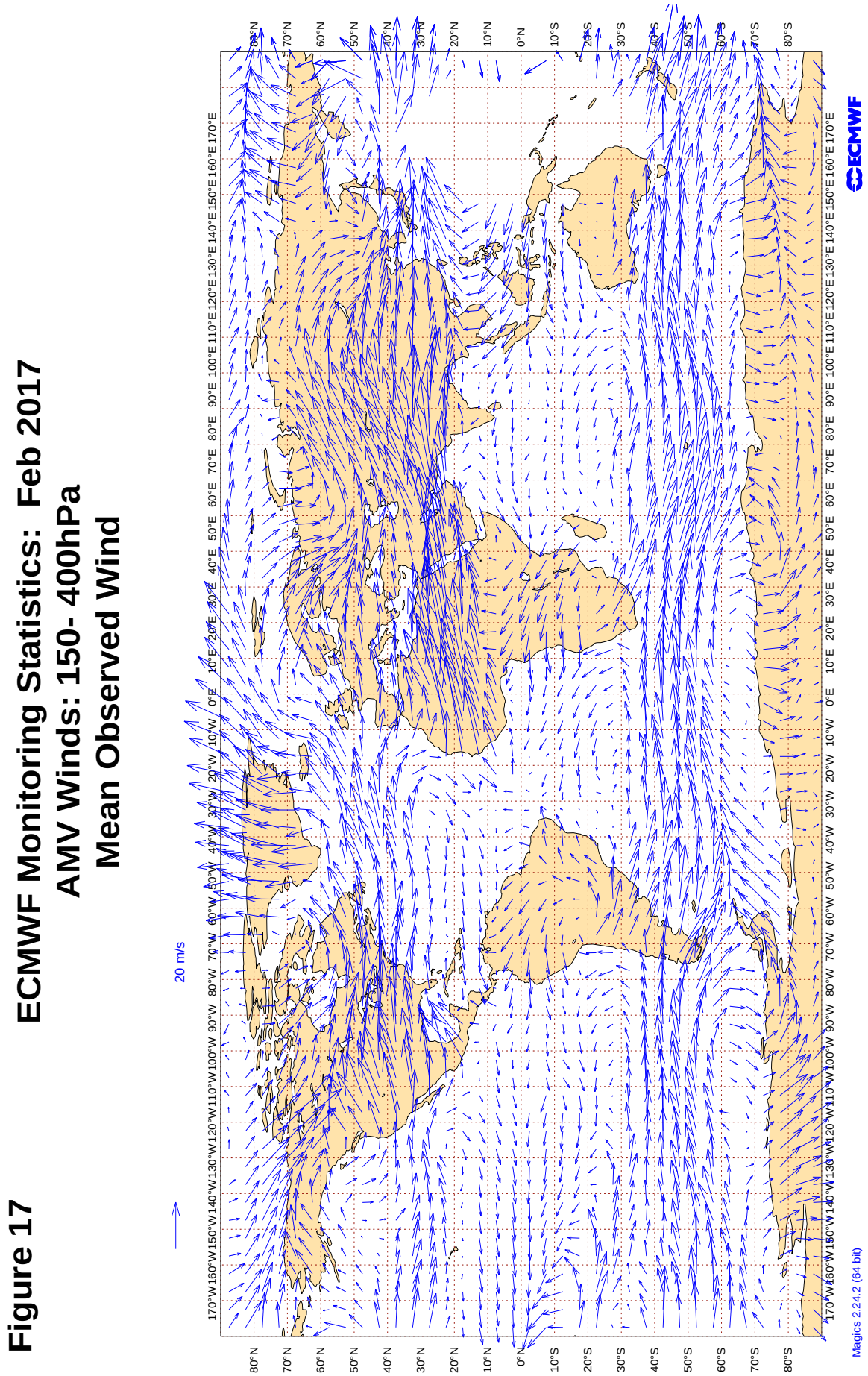


Figure 17

3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

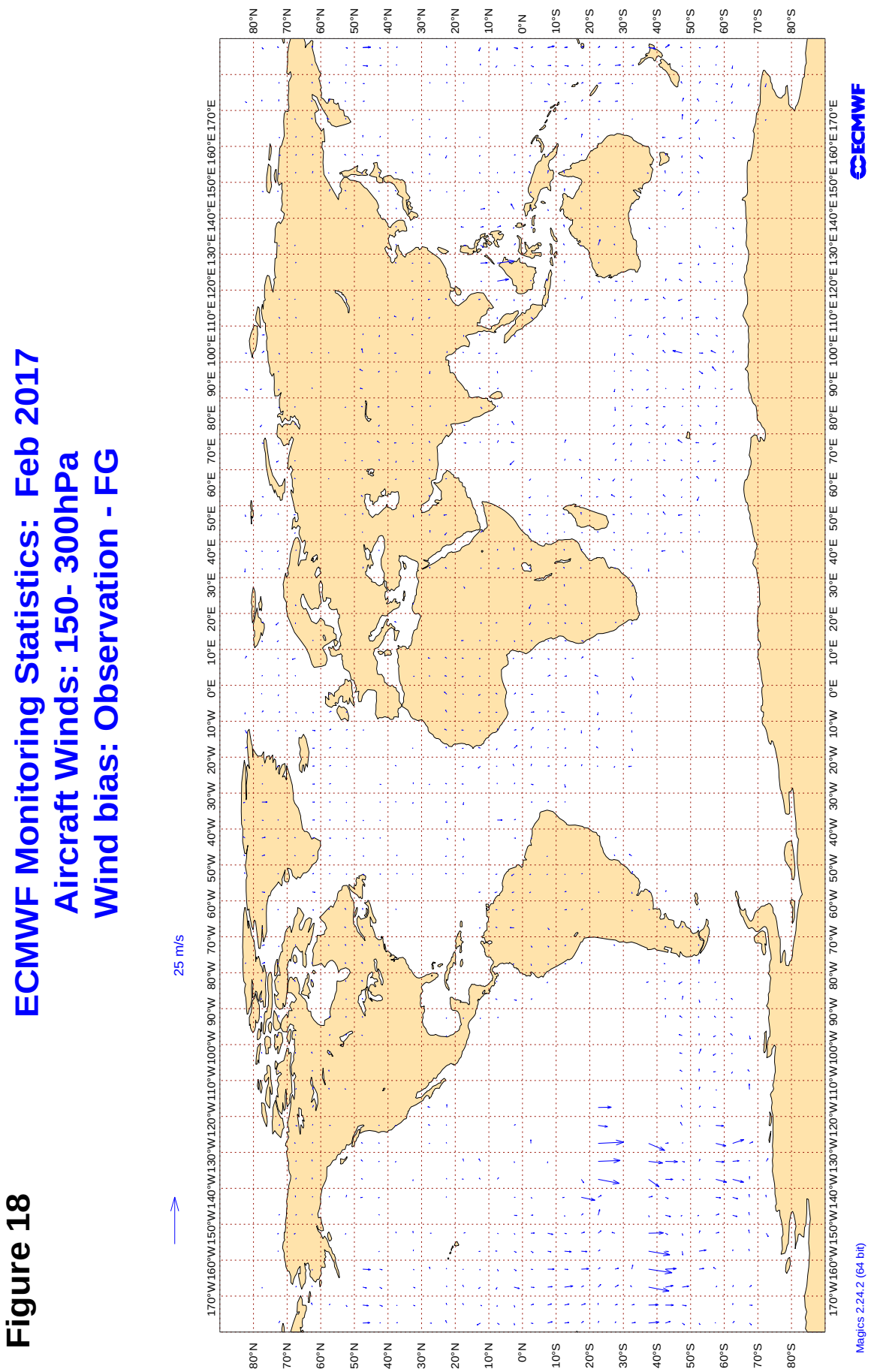


Figure 18

3.2.32 Table 12 - Airep Monitoring Statistics For Airline Carriers (Global)

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
MONITORING CENTRE : ECMWF
ELEMENT MONITORED : VECTOR WIND (M/S)
AREA : GLOBAL
PERIOD : FEB 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
AAB	99	V	300-150	99	0	0	5.0	-0.4
AAL	99	V	300-150	35610	2	0	6.1	0.3
AAR	99	V	300-150	271	0	0	4.5	-1.3
AAY	99	V	300-150	64	0	0	6.0	0.4
ABD	99	V	300-150	312	0	0	4.7	-0.1
ABW	99	V	300-150	969	0	0	4.3	-0.7
ABX	99	V	300-150	156	1	0	8.6	-0.3
ACA	99	V	300-150	22355	5	0	8.0	0.2
ACI	99	V	300-150	2460	0	0	4.1	0.4
AEA	99	V	300-150	462	7	0	5.4	0.4
AFL	99	V	300-150	1893	0	0	3.6	0.3
AFR	99	V	300-150	24724	0	0	4.1	0.2
AHY	99	V	300-150	213	18	0	12.6	-0.2
AIC	99	V	300-150	1528	6	0	6.9	0.2
AMJ	99	V	300-150	36	0	0	3.8	1.7
AMX	99	V	300-150	2363	21	0	11.4	0.0
ANZ	99	V	300-150	18221	3	0	7.2	0.6
ASA	99	V	300-150	3942	1	0	5.8	0.6
ASL	99	V	300-150	477	0	0	3.8	-0.0
ASY	99	V	300-150	376	0	0	5.8	1.1
AUA	99	V	300-150	3218	0	0	4.7	-0.2
AVA	99	V	300-150	330	6	0	7.4	-0.0
AVN	99	V	300-150	30	0	0	7.2	2.8
AXM	99	V	300-150	204	0	0	5.5	1.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AZA	99	V	300-150	4653	0	0	4.3	0.3
AZG	99	V	300-150	133	0	0	4.0	-0.0
BAW	99	V	300-150	48350	3	0	6.2	0.1
BBR	99	V	300-150	47	0	0	9.4	-0.7
BEL	99	V	300-150	1431	0	0	4.0	0.2
BER	99	V	300-150	7407	0	0	4.1	0.3
BLJ	99	V	300-150	23	0	0	2.5	-0.5
BLX	99	V	300-150	254	0	0	4.7	0.4
BMW	99	V	300-150	102	0	0	3.9	0.1
BOX	99	V	300-150	523	0	0	3.6	-0.5
BOX	99	V	300-150	30	0	0	5.1	2.7
BVR	99	V	300-150	72	0	0	4.3	-0.7
CAL	99	V	300-150	525	0	0	4.2	0.4
CAZ	99	V	300-150	77	0	0	4.9	-0.0
CCA	99	V	300-150	1301	4	0	10.4	0.6
CES	99	V	300-150	1083	0	0	3.2	0.2
CFC	99	V	300-150	267	0	0	4.6	-0.5
CFG	99	V	300-150	3993	0	0	4.4	0.1
CHH	99	V	300-150	122	0	0	3.3	0.4
CJT	99	V	300-150	137	0	0	4.1	-0.1
CKS	99	V	300-150	1971	0	0	4.8	-0.3
CLU	99	V	300-150	41	0	0	4.5	-0.1
CLX	99	V	300-150	3151	0	0	4.1	-0.3
CMB	99	V	300-150	709	0	0	4.7	-0.6
CNV	99	V	300-150	399	0	0	4.3	0.4
CPA	99	V	300-150	1150	0	0	3.4	0.1
CRK	99	V	300-150	717	0	0	3.6	-0.0
CRL	99	V	300-150	608	0	0	4.5	-0.0
CSN	99	V	300-150	850	8	0	8.2	0.2
CTM	99	V	300-150	41	0	0	6.1	2.7
CXA	99	V	300-150	21	10	0	16.6	-0.1
DAH	99	V	300-150	666	0	0	4.0	0.6
DAL	99	V	300-150	45482	0	0	4.3	0.0
DCS	99	V	300-150	36	0	0	3.7	0.5
DGX	99	V	300-150	81	0	0	5.0	0.0
DHK	99	V	300-150	1674	0	0	4.8	-0.3
DJT	99	V	300-150	1023	0	0	4.8	0.1
DLH	99	V	300-150	26454	0	0	4.0	0.1
DSO	99	V	300-150	38	0	0	3.7	-0.2
EAV	99	V	300-150	20	70	0	23.0	-1.8
EDC	99	V	300-150	93	0	0	3.9	0.5
EDG	99	V	300-150	37	0	3	5.7	0.8
EDW	99	V	300-150	687	0	0	4.2	0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
EIN	99	V	300-150	8908	0	0	4.2	0.2
EJM	99	V	300-150	563	21	0	12.6	-0.6
ELY	99	V	300-150	2143	0	0	4.3	-0.1
ESR	99	V	300-150	23	0	0	6.3	-0.8
ETD	99	V	300-150	2909	4	0	6.7	0.2
ETH	99	V	300-150	1819	14	0	10.8	0.0
EWG	99	V	300-150	2089	0	0	4.7	0.4
FAM	99	V	300-150	48	0	0	6.2	1.2
FDX	99	V	300-150	4994	0	0	4.1	0.2
FIN	99	V	300-150	1066	0	0	3.5	0.3
FJI	99	V	300-150	4300	0	0	5.1	0.6
FWI	99	V	300-150	1814	0	0	4.0	0.3
FYG	99	V	300-150	46	52	0	14.0	1.1
FYL	99	V	300-150	47	0	0	4.2	-0.3
GAF	99	V	300-150	102	26	0	13.5	1.2
GCR	99	V	300-150	139	0	0	3.2	0.1
GEC	99	V	300-150	2376	0	0	4.0	0.1
GES	99	V	300-150	37	16	0	11.1	-1.0
GLO	99	V	300-150	45	2	4	8.1	2.5
GOL	99	V	300-150	23	0	0	4.7	2.3
GTH	99	V	300-150	27	4	0	5.0	2.3
GTI	99	V	300-150	2339	0	0	4.4	-0.2
HAL	99	V	300-150	2792	0	0	4.9	0.7
HRT	99	V	300-150	25	72	0	31.7	-1.6
HZM	99	V	300-150	99	0	0	3.6	0.1
HZS	99	V	300-150	22	0	0	4.5	-0.6
HZS	99	V	300-150	60	0	0	3.5	0.5
IAM	99	V	300-150	76	0	0	4.6	-0.5
IBE	99	V	300-150	1907	0	0	3.8	0.3
ICE	99	V	300-150	126	0	6	4.7	-1.5
ICL	99	V	300-150	401	0	0	4.6	-0.0
ICV	99	V	300-150	273	0	0	4.0	-0.6
IJM	99	V	300-150	73	5	0	6.2	0.3
ISS	99	V	300-150	194	0	0	4.8	-1.8
JAF	99	V	300-150	1086	11	0	7.9	0.4
JAI	99	V	300-150	1173	0	0	4.1	0.1
JAS	99	V	300-150	149	0	0	4.2	-0.8
JBU	99	V	300-150	34	0	53	7.2	1.0
JEF	99	V	300-150	26	0	0	3.2	1.6
JET	99	V	300-150	38	0	0	4.1	-0.9
JJA	99	V	300-150	83	0	0	5.7	-0.1
JME	99	V	300-150	84	60	0	16.5	0.5
JST	99	V	300-150	1989	3	0	12.1	0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
JUN	99	V	300-150	20	0	0	4.4	0.4
KAC	99	V	300-150	816	0	0	4.4	0.8
KAI	99	V	300-150	52	2	0	5.3	0.3
KAL	99	V	300-150	1855	0	0	4.2	0.2
KAY	99	V	300-150	122	0	0	3.2	0.4
KCE	99	V	300-150	22	0	0	2.9	0.8
KFE	99	V	300-150	32	0	0	4.4	-0.6
KLM	99	V	300-150	15896	1	0	5.2	0.1
LAN	99	V	300-150	1507	11	0	12.5	0.2
LCO	99	V	300-150	164	0	0	4.1	0.2
LDM	99	V	300-150	34	44	0	34.1	0.6
LNX	99	V	300-150	26	0	0	5.4	0.7
LOT	99	V	300-150	1739	20	0	14.2	-0.2
LUC	99	V	300-150	67	88	0	28.3	-1.9
LXA	99	V	300-150	43	100	0	0.0	0.0
LXJ	99	V	300-150	50	0	2	4.0	0.3
MAS	99	V	300-150	280	0	0	3.7	-0.0
MLM	99	V	300-150	29	10	0	24.0	0.3
MMD	99	V	300-150	189	0	0	4.5	0.8
MPH	99	V	300-150	586	0	0	4.5	-0.4
MSR	99	V	300-150	898	0	0	4.4	0.2
MXD	99	V	300-150	20	0	0	6.0	1.3
NAS	99	V	300-150	49	0	0	4.1	0.7
NAX	99	V	300-150	7175	16	0	12.2	-0.1
NCA	99	V	300-150	196	0	0	4.5	-0.5
NJE	99	V	300-150	442	27	0	15.5	-0.4
NOS	99	V	300-150	801	0	0	6.3	-1.1
NWS	99	V	300-150	386	0	0	3.8	0.2
OAE	99	V	300-150	151	0	2	5.2	0.7
OPM	99	V	300-150	42	93	0	30.7	-2.0
PAC	99	V	300-150	169	0	0	4.5	0.2
PAL	99	V	300-150	97	1	2	7.4	0.7
PIA	99	V	300-150	444	0	0	4.1	0.5
PJZ	99	V	300-150	26	0	0	4.3	0.1
PLM	99	V	300-150	30	0	0	3.6	-0.7
QAF	99	V	300-150	23	0	0	3.6	-0.8
QFA	99	V	300-150	15866	0	0	4.9	0.6
QQE	99	V	300-150	50	64	0	19.6	-0.7
QTR	99	V	300-150	7233	0	0	4.1	0.2
RAM	99	V	300-150	467	17	0	8.6	1.0
RCH	99	V	300-150	5970	0	0	5.1	0.3
RJA	99	V	300-150	951	14	0	13.2	-0.3
RMA	99	V	300-150	20	0	0	5.2	1.7

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
ROU	99	V	300-150	510	0	2	4.2	-0.2
RRR	99	V	300-150	138	0	0	3.3	0.4
RZO	99	V	300-150	110	0	0	4.6	0.5
SAM	99	V	300-150	283	0	0	4.7	0.7
SAS	99	V	300-150	3964	0	0	3.6	0.1
SEC	99	V	300-150	28	0	0	4.3	1.5
SHE	99	V	300-150	70	0	0	4.5	-0.3
SIA	99	V	300-150	2501	0	0	4.1	0.2
SIO	99	V	300-150	45	0	0	4.0	-0.1
SLM	99	V	300-150	168	0	0	3.8	0.5
SOL	99	V	300-150	26	0	0	6.2	0.6
SOO	99	V	300-150	639	0	0	4.3	-0.2
SPA	99	V	300-150	65	0	0	5.9	-0.2
SQC	99	V	300-150	269	0	0	4.9	-0.4
SSG	99	V	300-150	28	0	0	3.9	-0.1
SVA	99	V	300-150	3065	0	0	3.9	0.2
SVW	99	V	300-150	61	0	0	4.0	0.6
SWR	99	V	300-150	10200	0	0	4.2	0.3
SXN	99	V	300-150	92	0	0	3.6	0.5
TAM	99	V	300-150	316	0	0	4.1	0.2
TAP	99	V	300-150	839	0	0	4.2	-0.1
TAR	99	V	300-150	165	0	0	4.3	0.1
TAY	99	V	300-150	734	0	0	5.3	-0.1
TCX	99	V	300-150	1931	0	0	4.0	0.2
TFL	99	V	300-150	1840	12	0	9.3	0.0
TGM	99	V	300-150	109	10	0	14.3	-0.5
THA	99	V	300-150	176	0	0	3.6	0.3
THT	99	V	300-150	3026	0	0	4.6	0.6
THY	99	V	300-150	6322	0	0	4.2	0.2
TMN	99	V	300-150	74	0	0	5.2	1.4
TOM	99	V	300-150	4900	15	0	11.2	0.2
TRE	99	V	300-150	25	0	0	5.2	0.8
TSC	99	V	300-150	2978	0	0	4.1	0.2
TVP	99	V	300-150	260	0	0	4.9	1.0
TWB	99	V	300-150	64	0	3	6.5	0.1
TWY	99	V	300-150	34	38	0	3.3	-1.0
UAE	99	V	300-150	9325	0	0	4.2	0.1
UAL	99	V	300-150	65376	1	2	6.7	0.2
ULC	99	V	300-150	55	55	0	27.5	-0.8
UPS	99	V	300-150	4960	0	0	4.5	0.1
VIR	99	V	300-150	19126	6	0	6.8	0.1
VJT	99	V	300-150	679	64	0	27.5	-0.0
VKG	99	V	300-150	759	0	0	3.8	0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
VMP	99	V	300-150	65	38	0	16.9	-0.5
VOZ	99	V	300-150	5169	0	0	4.5	0.3
WGT	99	V	300-150	41	0	0	3.8	0.4
WJA	99	V	300-150	2679	0	1	5.3	0.4
WOW	99	V	300-150	239	0	1	4.1	-0.2
XAX	99	V	300-150	265	0	0	3.8	-0.1
XLF	99	V	300-150	1231	0	0	4.1	0.6

4 EUCOS Area Monitoring Statistics

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

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

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

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RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 :  50 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : FEB 2017
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
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WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	50	25	14.2	4.9
01001	00	Z	50	27	15.6	-1.9
01028	12	Z	50	28	11.8	6.9
01028	00	Z	50	26	14.8	2.6
01400	12	Z	50	16	29.0	20.4
01400	00	Z	50	19	19.7	5.4
01415	12	Z	50	28	15.6	7.7
01415	00	Z	50	27	14.2	1.9
02365	00	Z	50	25	26.6	8.2
02365	12	Z	50	25	18.2	11.1
02591	12	Z	50	28	23.9	20.2
02591	00	Z	50	27	15.5	13.1
02836	00	Z	50	27	14.4	8.7
02836	12	Z	50	28	20.7	15.8
02963	00	Z	50	27	17.6	9.1
02963	12	Z	50	26	14.3	8.3
03005	12	Z	50	26	14.0	1.5
03005	00	Z	50	25	14.3	-2.8
03238	00	Z	50	21	12.0	3.2
03238	12	Z	50	7	11.6	5.9
03808	12	Z	50	26	12.2	9.9
03808	00	Z	50	26	9.2	6.6
03918	00	Z	50	25	13.9	9.0
03918	12	Z	50	15	17.7	16.2
03953	00	Z	50	26	16.2	9.7
03953	12	Z	50	28	16.4	11.1
04018	12	Z	50	18	18.6	-9.5
04018	00	Z	50	17	14.3	-5.8
04220	00	Z	50	27	8.0	0.7
04220	12	Z	50	28	8.5	0.8
04270	12	Z	50	26	30.6	-3.8
04270	00	Z	50	28	15.8	4.3
04320	12	Z	50	27	9.1	0.5
04320	00	Z	50	26	10.6	2.7
04339	00	Z	50	26	25.1	-1.5
04339	12	Z	50	25	19.8	4.4
04360	00	Z	50	14	36.4	29.2
04360	12	Z	50	12	26.9	24.3
06011	00	Z	50	24	16.2	3.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	50	25	29.2	14.9
06260	12	Z	50	5	10.1	7.9
06260	00	Z	50	25	10.1	5.0
06610	00	Z	50	27	7.3	2.9
06610	12	Z	50	27	16.0	4.9
07110	12	Z	50	25	48.4	46.6
07110	00	Z	50	25	46.1	44.7
07510	00	Z	50	26	35.8	34.8
07510	12	Z	50	26	45.3	42.6
07645	12	Z	50	28	36.4	35.1
07645	00	Z	50	28	24.8	21.4
07761	00	Z	50	28	23.8	20.8
07761	12	Z	50	25	27.8	21.5
08001	12	Z	50	24	30.2	25.9
08001	00	Z	50	18	18.6	16.2
08221	00	Z	50	24	18.6	15.4
08221	12	Z	50	23	23.8	21.6
08302	00	Z	50	24	15.1	12.9
08302	12	Z	50	24	20.7	13.6
08508	12	Z	50	23	37.8	34.9
08522	12	Z	50	28	21.3	19.3
08579	12	Z	50	27	25.1	23.4
10035	00	Z	50	24	10.0	-0.7
10035	12	Z	50	28	12.8	8.2
10393	12	Z	50	28	14.8	8.1
10393	00	Z	50	26	11.9	4.7
10410	12	Z	50	28	14.3	9.5
10410	00	Z	50	27	15.5	0.4
10739	00	Z	50	28	15.5	10.6
10739	12	Z	50	28	22.1	20.3
11035	12	Z	50	28	20.7	18.2
11035	00	Z	50	29	17.1	14.2
12982	12	Z	50	25	48.2	45.5
12982	00	Z	50	24	56.5	22.4
16080	00	Z	50	28	11.0	3.1
16080	12	Z	50	28	16.5	12.8
16245	12	Z	50	27	14.0	9.9
16245	00	Z	50	28	9.4	6.2
16320	12	Z	50	28	22.0	19.6
16320	00	Z	50	28	21.0	19.3
16429	12	Z	50	33	10.0	2.6
16429	00	Z	50	35	17.5	15.0
16622	00	Z	50	54	47.6	29.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	50	43	21.3	19.5
16754	12	Z	50	43	37.7	33.8
17607	12	Z	50	27	18.1	16.1
26435	00	Z	50	14	18.0	12.6
60018	00	Z	50	28	19.3	17.6
60018	12	Z	50	28	18.6	15.4
ASDE01	00	Z	50	3	26.6	-26.0
ASDE01	12	Z	50	1	92.4	92.4
ASDE03	00	Z	50	4	16.9	14.1
ASDE03	12	Z	50	2	71.9	71.9
ASDE09	12	Z	50	0	0.0	0.0
ASDK01	00	Z	50	5	18.6	2.1
ASDK01	12	Z	50	5	14.4	3.8
ASDK03	12	Z	50	3	51.7	-13.6
ASDK03	00	Z	50	3	22.4	21.4
ASDK1	00	Z	50	5	15.4	-4.0
ASDK1	12	Z	50	5	15.2	-3.0
ASDK3	12	Z	50	3	51.0	-20.1
ASDK3	00	Z	50	3	17.1	16.9
ASES01	12	Z	50	17	38.4	36.0
ASEU01	12	Z	50	10	39.3	38.0
ASEU02	00	Z	50	8	40.7	40.0
ASEU02	12	Z	50	7	44.2	42.8
ASEU03	00	Z	50	4	17.1	-5.3
ASEU03	12	Z	50	3	47.9	36.3
ASEU04	00	Z	50	4	9.4	-1.0
ASEU04	12	Z	50	6	11.6	9.2
ASEU05	00	Z	50	1	25.2	-25.2
ASEU05	12	Z	50	1	18.9	18.9
ASEU06	00	Z	50	7	33.5	-32.1
ASEU06	12	Z	50	6	16.9	-4.3
ASFR1	00	Z	50	16	30.6	29.7
ASFR1	12	Z	50	19	45.1	42.8
ASFR3	00	Z	50	6	19.8	16.8
ASFR3	12	Z	50	5	24.1	21.9
ASFR4	00	Z	50	11	45.7	45.3
ASFR4	12	Z	50	11	57.4	56.8

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

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RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 :  50 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : FEB 2017
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	50	25	3.8	1.2	0.0
01001	00	V	50	25	3.8	0.5	-1.4
01028	12	V	50	27	4.2	-0.7	-1.0
01028	00	V	50	24	4.4	-1.5	-0.1
01400	12	V	50	12	3.3	0.1	-0.6
01400	00	V	50	14	4.0	2.6	-0.6
01415	12	V	50	28	4.1	0.7	1.1
01415	00	V	50	26	4.4	1.3	-0.2
02365	00	V	50	22	4.3	0.6	-0.1
02365	12	V	50	22	3.8	-0.5	-0.4
02591	12	V	50	27	3.6	0.5	0.5
02591	00	V	50	25	3.6	0.4	0.8
02836	00	V	50	27	5.9	-0.6	0.6
02836	12	V	50	28	4.2	-0.5	0.3
02963	00	V	50	26	4.5	1.6	0.4
02963	12	V	50	24	5.1	0.3	-0.1
03005	12	V	50	26	3.9	1.2	0.2
03005	00	V	50	25	3.5	-0.2	0.3
03238	00	V	50	20	4.4	0.4	1.1
03238	12	V	50	7	4.7	-0.2	-0.5
03808	12	V	50	25	4.2	0.7	0.1
03808	00	V	50	25	3.4	0.5	-1.2
03918	00	V	50	25	4.1	1.0	0.2
03918	12	V	50	15	4.2	0.5	0.5
03953	00	V	50	25	3.5	1.0	0.5
03953	12	V	50	28	3.7	-0.1	0.0
04018	12	V	50	18	4.6	-0.1	0.4
04018	00	V	50	16	4.5	0.5	0.5
04220	00	V	50	27	2.8	-0.5	0.4
04220	12	V	50	28	3.9	-0.2	0.8
04270	12	V	50	26	5.6	0.7	-0.2
04270	00	V	50	27	5.0	-1.1	-0.2
04320	12	V	50	27	4.0	0.5	-0.3
04320	00	V	50	26	4.2	-0.4	-1.3
04339	00	V	50	26	6.5	-0.6	-0.4
04339	12	V	50	25	4.5	-0.7	0.7
04360	00	V	50	12	3.9	-0.4	1.3
04360	12	V	50	12	3.8	-0.7	-0.5
06011	00	V	50	24	3.1	0.2	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	50	25	3.3	-1.1	-0.4
06260	12	V	50	4	3.5	0.9	-2.1
06260	00	V	50	25	3.4	0.1	0.4
06610	00	V	50	27	4.6	-0.4	0.2
06610	12	V	50	27	4.6	0.1	-0.6
07110	12	V	50	25	3.8	0.4	0.1
07110	00	V	50	25	4.2	0.5	0.1
07510	00	V	50	26	4.0	0.1	0.6
07510	12	V	50	26	3.3	0.8	-0.4
07645	12	V	50	28	4.5	0.8	-0.7
07645	00	V	50	28	3.9	1.5	0.0
07761	00	V	50	28	3.8	-0.1	1.3
07761	12	V	50	25	4.1	0.5	0.6
08001	12	V	50	22	4.2	0.1	0.8
08001	00	V	50	17	4.8	0.9	-0.1
08221	00	V	50	23	3.9	0.6	-0.5
08221	12	V	50	22	4.2	1.4	0.5
08302	00	V	50	22	4.1	-0.2	0.2
08302	12	V	50	24	5.0	1.9	0.3
08508	12	V	50	21	3.1	1.1	0.5
08522	12	V	50	28	3.7	1.4	0.5
08579	12	V	50	27	4.0	0.4	-0.2
10035	00	V	50	23	4.0	1.3	0.3
10035	12	V	50	28	4.6	1.2	0.8
10393	12	V	50	28	3.5	0.0	-0.1
10393	00	V	50	26	3.3	0.4	0.0
10410	12	V	50	26	4.0	0.2	-1.0
10410	00	V	50	26	4.0	0.2	-0.4
10739	00	V	50	28	4.1	0.8	0.4
10739	12	V	50	27	4.8	1.0	0.9
11035	12	V	50	28	3.1	0.0	0.0
11035	00	V	50	28	3.8	1.0	0.0
12982	12	V	50	24	3.1	0.3	0.2
12982	00	V	50	22	3.5	-0.9	0.3
16080	00	V	50	28	3.7	0.7	0.6
16080	12	V	50	28	5.0	1.3	0.9
16245	12	V	50	26	3.9	0.7	-0.3
16245	00	V	50	28	3.6	1.2	0.6
16320	12	V	50	28	4.6	1.7	0.0
16320	00	V	50	28	3.8	0.5	0.1
16429	12	V	50	27	4.1	2.3	0.4
16429	00	V	50	26	4.0	1.0	-1.0
16622	00	V	50	23	4.5	1.7	-1.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	50	21	4.1	2.3	1.0
16754	12	V	50	21	4.6	1.4	1.3
17607	12	V	50	26	4.3	1.2	0.0
26435	00	V	50	14	2.8	0.2	-0.7
60018	00	V	50	28	4.6	0.7	0.5
60018	12	V	50	28	4.3	0.6	0.8
ASDE01	00	V	50	3	3.3	1.3	-0.8
ASDE01	12	V	50	1	3.0	-2.5	-1.7
ASDE03	00	V	50	3	1.6	-0.7	-0.2
ASDE03	12	V	50	2	5.4	3.0	-1.8
ASDE09	12	V	50	0	0.0	0.0	0.0
ASDK01	00	V	50	4	6.1	0.6	0.7
ASDK01	12	V	50	5	3.3	1.5	0.4
ASDK03	12	V	50	3	3.1	-1.0	0.4
ASDK03	00	V	50	3	3.0	0.8	1.6
ASDK1	00	V	50	4	5.7	1.1	2.0
ASDK1	12	V	50	5	3.2	0.9	-0.1
ASDK3	12	V	50	3	2.5	-0.7	-0.2
ASDK3	00	V	50	3	2.6	0.5	-0.2
ASES01	12	V	50	16	4.3	0.3	0.3
ASEU01	12	V	50	10	6.4	-1.4	0.8
ASEU02	00	V	50	5	6.7	-2.4	4.2
ASEU02	12	V	50	2	4.6	-1.4	-3.9
ASEU03	00	V	50	4	2.9	-0.5	1.8
ASEU03	12	V	50	3	5.5	-0.5	3.1
ASEU04	00	V	50	4	3.4	-0.5	0.5
ASEU04	12	V	50	6	3.3	1.8	0.0
ASEU05	00	V	50	1	0.7	-0.6	0.3
ASEU05	12	V	50	1	2.8	-2.0	-1.9
ASEU06	00	V	50	7	5.7	-1.6	2.1
ASEU06	12	V	50	5	3.2	-0.3	0.3
ASFR1	00	V	50	11	5.0	1.3	0.3
ASFR1	12	V	50	13	3.2	-0.4	0.4
ASFR3	00	V	50	6	2.9	0.0	-0.6
ASFR3	12	V	50	5	4.8	1.1	2.1
ASFR4	00	V	50	6	4.2	0.6	0.6
ASFR4	12	V	50	6	3.4	-0.4	0.7

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

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	100	25	11.7	4.0
01001	00	Z	100	27	12.3	1.7
01028	12	Z	100	28	9.5	2.0
01028	00	Z	100	27	10.4	-1.6
01400	12	Z	100	18	20.9	13.5
01400	00	Z	100	21	16.1	2.5
01415	12	Z	100	28	11.4	1.3
01415	00	Z	100	27	11.8	-0.5
02365	00	Z	100	27	19.9	4.3
02365	12	Z	100	28	11.9	8.3
02591	12	Z	100	28	13.0	10.8
02591	00	Z	100	29	10.4	6.6
02836	00	Z	100	28	8.1	0.5
02836	12	Z	100	28	10.1	5.5
02963	00	Z	100	29	6.7	1.3
02963	12	Z	100	27	6.6	2.2
03005	12	Z	100	27	7.3	-0.9
03005	00	Z	100	28	8.7	-3.6
03238	00	Z	100	22	10.5	-2.0
03238	12	Z	100	7	8.8	4.2
03808	12	Z	100	27	7.8	4.7
03808	00	Z	100	28	7.5	2.4
03918	00	Z	100	28	10.3	5.3
03918	12	Z	100	15	15.2	13.2
03953	00	Z	100	28	12.1	4.6
03953	12	Z	100	28	13.1	3.8
04018	12	Z	100	18	14.8	-6.3
04018	00	Z	100	18	9.3	-5.7
04220	00	Z	100	27	4.6	-0.2
04220	12	Z	100	28	6.4	-1.7
04270	12	Z	100	26	15.6	-4.8
04270	00	Z	100	28	10.0	0.7
04320	12	Z	100	28	6.2	1.5
04320	00	Z	100	28	7.5	1.4
04339	00	Z	100	27	17.2	-4.5
04339	12	Z	100	25	17.3	2.4
04360	00	Z	100	16	34.4	33.5
04360	12	Z	100	16	37.3	35.3
06011	00	Z	100	24	10.8	1.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	100	26	18.1	4.5
06260	12	Z	100	6	6.5	4.3
06260	00	Z	100	26	7.1	0.2
06610	00	Z	100	28	7.2	-0.6
06610	12	Z	100	28	12.6	-2.8
07110	12	Z	100	27	36.4	35.2
07110	00	Z	100	27	30.6	30.0
07510	00	Z	100	28	22.2	20.5
07510	12	Z	100	27	28.1	26.4
07645	12	Z	100	28	22.7	21.4
07645	00	Z	100	28	13.7	10.1
07761	00	Z	100	28	13.1	10.0
07761	12	Z	100	28	21.2	14.4
08001	12	Z	100	26	21.4	17.2
08001	00	Z	100	21	16.0	9.4
08221	00	Z	100	24	11.3	7.8
08221	12	Z	100	24	17.1	13.9
08302	00	Z	100	24	8.7	3.0
08302	12	Z	100	25	14.6	5.6
08508	12	Z	100	24	23.3	20.1
08522	12	Z	100	28	16.5	13.3
08579	12	Z	100	27	14.2	10.9
10035	00	Z	100	29	9.3	-3.7
10035	12	Z	100	28	8.0	3.8
10393	12	Z	100	28	7.7	2.4
10393	00	Z	100	28	7.6	-0.5
10410	12	Z	100	28	7.5	2.7
10410	00	Z	100	28	12.4	-4.7
10739	00	Z	100	28	9.4	5.0
10739	12	Z	100	28	15.6	13.8
11035	12	Z	100	29	14.0	10.1
11035	00	Z	100	28	10.7	9.0
12982	12	Z	100	25	29.3	27.2
12982	00	Z	100	26	34.2	10.8
16080	00	Z	100	28	8.2	-3.3
16080	12	Z	100	28	8.2	3.4
16245	12	Z	100	27	8.7	1.8
16245	00	Z	100	28	7.3	-1.3
16320	12	Z	100	28	16.2	13.8
16320	00	Z	100	28	13.4	11.4
16429	12	Z	100	33	10.4	-5.2
16429	00	Z	100	35	9.8	4.1
16622	00	Z	100	45	36.4	17.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	100	45	14.1	10.2
16754	12	Z	100	42	21.0	18.5
17607	12	Z	100	28	10.5	6.5
26435	00	Z	100	14	10.6	4.7
60018	00	Z	100	28	12.5	10.2
60018	12	Z	100	28	14.3	11.6
ASDE01	00	Z	100	7	39.1	-37.8
ASDE01	12	Z	100	2	31.9	10.6
ASDE03	00	Z	100	7	9.5	6.0
ASDE03	12	Z	100	2	42.9	42.8
ASDE09	12	Z	100	0	0.0	0.0
ASDK01	00	Z	100	5	11.3	8.3
ASDK01	12	Z	100	5	10.0	3.1
ASDK03	12	Z	100	4	48.6	-9.7
ASDK03	00	Z	100	7	18.7	17.2
ASDK1	00	Z	100	5	8.0	3.1
ASDK1	12	Z	100	5	9.0	-5.0
ASDK3	12	Z	100	4	47.3	-16.9
ASDK3	00	Z	100	5	11.9	10.5
ASES01	12	Z	100	19	27.4	24.7
ASEU01	12	Z	100	11	29.4	28.3
ASEU02	00	Z	100	11	36.1	34.8
ASEU02	12	Z	100	11	34.1	33.7
ASEU03	00	Z	100	4	19.2	-7.8
ASEU03	12	Z	100	4	20.9	4.8
ASEU04	00	Z	100	6	6.5	-3.6
ASEU04	12	Z	100	7	9.1	4.5
ASEU05	00	Z	100	1	15.6	-15.6
ASEU05	12	Z	100	1	1.0	1.0
ASEU06	00	Z	100	12	31.2	-29.6
ASEU06	12	Z	100	12	28.9	-25.8
ASFR1	00	Z	100	22	17.8	16.2
ASFR1	12	Z	100	20	27.1	24.9
ASFR3	00	Z	100	7	16.5	15.1
ASFR3	12	Z	100	5	15.5	13.6
ASFR4	00	Z	100	13	29.8	29.5
ASFR4	12	Z	100	12	39.4	38.9

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

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	100	25	3.3	-0.3	-1.2
01001	00	V	100	27	4.4	-0.8	-0.1
01028	12	V	100	27	3.4	0.0	-0.3
01028	00	V	100	27	3.5	-0.1	-1.2
01400	12	V	100	15	3.0	-0.8	-0.7
01400	00	V	100	18	4.4	0.6	-0.8
01415	12	V	100	28	4.0	0.0	0.4
01415	00	V	100	26	4.4	0.4	-0.1
02365	00	V	100	27	3.7	-0.2	0.1
02365	12	V	100	28	3.9	0.0	0.4
02591	12	V	100	28	3.6	0.9	0.8
02591	00	V	100	27	3.2	-0.5	-0.1
02836	00	V	100	28	3.8	-0.1	0.0
02836	12	V	100	28	3.4	0.3	-0.2
02963	00	V	100	28	3.5	-0.2	-0.3
02963	12	V	100	27	4.4	-0.2	-0.2
03005	12	V	100	27	3.2	-0.5	0.1
03005	00	V	100	27	3.6	0.1	-0.6
03238	00	V	100	22	5.3	-0.5	-0.9
03238	12	V	100	7	3.7	0.6	-0.8
03808	12	V	100	27	3.8	1.6	0.4
03808	00	V	100	26	3.5	-0.5	0.6
03918	00	V	100	28	4.0	0.1	-0.4
03918	12	V	100	15	4.4	0.0	-0.1
03953	00	V	100	27	4.2	-1.1	-0.1
03953	12	V	100	28	3.7	0.2	-0.2
04018	12	V	100	18	5.2	-0.8	1.2
04018	00	V	100	18	4.2	0.1	-0.3
04220	00	V	100	27	2.6	-0.3	-0.4
04220	12	V	100	28	3.0	0.0	0.2
04270	12	V	100	26	3.9	0.8	0.2
04270	00	V	100	28	5.4	-0.3	-0.3
04320	12	V	100	28	2.6	0.3	-0.3
04320	00	V	100	28	3.7	1.1	-0.4
04339	00	V	100	26	3.8	-0.4	0.2
04339	12	V	100	25	4.1	0.8	0.7
04360	00	V	100	14	3.1	-0.1	-1.2
04360	12	V	100	16	3.1	-0.6	-0.6
06011	00	V	100	24	3.3	-0.2	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	100	26	2.6	-0.5	-0.5
06260	12	V	100	5	2.8	0.5	-0.4
06260	00	V	100	25	3.0	-0.1	-0.5
06610	00	V	100	28	3.8	-0.4	-0.1
06610	12	V	100	28	4.0	0.1	0.1
07110	12	V	100	26	3.5	0.1	0.8
07110	00	V	100	27	3.4	-0.2	-0.4
07510	00	V	100	28	3.0	-0.1	0.1
07510	12	V	100	27	3.6	0.7	0.7
07645	12	V	100	28	4.7	0.0	-0.2
07645	00	V	100	28	3.6	0.3	-0.2
07761	00	V	100	28	4.1	0.1	-0.7
07761	12	V	100	28	4.5	1.0	0.0
08001	12	V	100	26	3.8	-0.1	1.2
08001	00	V	100	21	3.4	0.0	0.7
08221	00	V	100	23	3.7	-0.5	0.4
08221	12	V	100	24	5.3	-0.6	0.0
08302	00	V	100	23	4.8	0.2	-1.1
08302	12	V	100	25	5.8	-0.2	-0.3
08508	12	V	100	22	3.5	0.1	0.1
08522	12	V	100	28	5.4	0.3	0.8
08579	12	V	100	26	3.6	1.2	-0.1
10035	00	V	100	27	3.4	-0.2	-0.3
10035	12	V	100	28	3.5	0.7	0.5
10393	12	V	100	28	3.3	-0.3	-0.1
10393	00	V	100	28	4.0	-0.2	0.4
10410	12	V	100	27	3.1	0.6	0.0
10410	00	V	100	28	3.7	-0.2	0.2
10739	00	V	100	28	3.6	0.7	0.0
10739	12	V	100	27	3.7	0.4	0.7
11035	12	V	100	28	4.8	0.7	0.2
11035	00	V	100	28	5.0	-0.1	-0.3
12982	12	V	100	25	3.5	-0.3	0.4
12982	00	V	100	25	4.8	0.1	0.5
16080	00	V	100	28	4.6	-0.3	0.2
16080	12	V	100	28	3.3	-0.2	-0.2
16245	12	V	100	27	4.3	0.7	0.6
16245	00	V	100	28	4.2	-0.3	-0.7
16320	12	V	100	28	3.2	1.0	0.1
16320	00	V	100	28	4.1	1.0	-0.2
16429	12	V	100	27	4.5	1.0	-0.9
16429	00	V	100	26	3.5	-0.2	-0.5
16622	00	V	100	23	5.4	-0.2	-0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	100	26	4.2	0.7	-0.3
16754	12	V	100	24	3.7	0.4	1.0
17607	12	V	100	28	3.5	1.2	-0.1
26435	00	V	100	14	3.7	0.7	-1.2
60018	00	V	100	28	4.2	1.2	0.5
60018	12	V	100	28	4.8	0.7	2.1
ASDE01	00	V	100	5	5.1	-1.1	-0.6
ASDE01	12	V	100	2	4.0	0.9	-0.3
ASDE03	00	V	100	5	5.4	-0.2	-2.7
ASDE03	12	V	100	2	13.5	-8.4	0.6
ASDE09	12	V	100	0	0.0	0.0	0.0
ASDK01	00	V	100	5	4.2	-0.1	1.5
ASDK01	12	V	100	5	2.8	0.1	0.2
ASDK03	12	V	100	4	3.3	0.6	0.7
ASDK03	00	V	100	5	4.0	-1.3	0.3
ASDK1	00	V	100	5	5.1	0.6	1.4
ASDK1	12	V	100	5	2.5	0.4	-0.5
ASDK3	12	V	100	4	3.3	2.0	0.1
ASDK3	00	V	100	5	3.0	-0.6	0.1
ASES01	12	V	100	18	4.3	1.6	0.2
ASEU01	12	V	100	10	3.8	1.1	-0.2
ASEU02	00	V	100	9	5.2	-1.5	1.9
ASEU02	12	V	100	8	3.0	0.9	-0.2
ASEU03	00	V	100	3	4.2	-1.6	0.6
ASEU03	12	V	100	4	2.3	0.0	0.7
ASEU04	00	V	100	6	4.5	-2.6	1.4
ASEU04	12	V	100	7	3.9	-0.6	0.6
ASEU05	00	V	100	1	2.2	-0.2	2.2
ASEU05	12	V	100	1	3.9	0.5	3.9
ASEU06	00	V	100	9	3.4	-0.1	1.8
ASEU06	12	V	100	8	8.2	-4.6	2.1
ASFR1	00	V	100	13	3.5	0.1	1.2
ASFR1	12	V	100	13	3.3	-0.6	-0.4
ASFR3	00	V	100	7	4.3	1.7	-0.2
ASFR3	12	V	100	5	2.5	-0.3	1.5
ASFR4	00	V	100	6	4.0	-0.2	-1.7
ASFR4	12	V	100	6	4.5	-1.0	1.2

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

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	500	25	7.4	4.7
01001	00	Z	500	27	8.4	6.2
01028	12	Z	500	28	4.9	1.0
01028	00	Z	500	27	5.6	0.8
01400	12	Z	500	22	13.7	6.5
01400	00	Z	500	24	12.4	2.5
01415	12	Z	500	28	5.3	2.9
01415	00	Z	500	29	5.0	2.7
02365	00	Z	500	27	9.9	5.6
02365	12	Z	500	28	6.9	6.0
02591	12	Z	500	28	8.8	8.1
02591	00	Z	500	29	8.0	7.1
02836	00	Z	500	28	3.3	0.4
02836	12	Z	500	28	4.0	1.0
02963	00	Z	500	29	4.1	3.4
02963	12	Z	500	28	4.1	2.6
03005	12	Z	500	28	4.1	1.0
03005	00	Z	500	29	4.3	1.0
03238	00	Z	500	23	6.4	1.3
03238	12	Z	500	7	5.4	3.1
03808	12	Z	500	29	6.6	5.0
03808	00	Z	500	30	5.4	3.3
03918	00	Z	500	28	11.8	10.6
03918	12	Z	500	15	11.5	10.7
03953	00	Z	500	28	7.2	1.7
03953	12	Z	500	28	10.4	-0.7
04018	12	Z	500	18	7.2	-1.7
04018	00	Z	500	19	5.3	1.8
04220	00	Z	500	28	5.3	0.6
04220	12	Z	500	28	4.3	-0.4
04270	12	Z	500	28	6.5	1.0
04270	00	Z	500	28	5.4	1.9
04320	12	Z	500	28	6.5	4.2
04320	00	Z	500	28	6.3	1.7
04339	00	Z	500	27	13.7	2.5
04339	12	Z	500	26	20.2	6.3
04360	00	Z	500	19	40.4	39.9
04360	12	Z	500	24	39.8	38.8
06011	00	Z	500	26	6.0	2.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	500	27	8.6	1.2
06260	12	Z	500	6	2.0	0.1
06260	00	Z	500	26	5.1	1.1
06610	00	Z	500	28	4.2	1.6
06610	12	Z	500	28	6.5	-0.1
07110	12	Z	500	28	16.4	15.5
07110	00	Z	500	28	13.5	12.0
07510	00	Z	500	28	8.0	7.1
07510	12	Z	500	28	11.4	10.6
07645	12	Z	500	28	8.9	7.1
07645	00	Z	500	28	5.5	2.0
07761	00	Z	500	28	3.0	-0.3
07761	12	Z	500	29	4.8	1.7
08001	12	Z	500	28	10.8	9.5
08001	00	Z	500	21	9.6	7.7
08221	00	Z	500	25	6.8	5.6
08221	12	Z	500	24	7.9	6.7
08302	00	Z	500	24	3.7	-0.4
08302	12	Z	500	26	7.1	-0.9
08508	12	Z	500	25	13.2	11.3
08522	12	Z	500	28	8.9	7.4
08579	12	Z	500	28	7.5	5.0
10035	00	Z	500	29	5.7	-1.3
10035	12	Z	500	28	5.6	-0.2
10393	12	Z	500	28	3.8	-0.2
10393	00	Z	500	28	3.2	0.2
10410	12	Z	500	29	4.1	-1.4
10410	00	Z	500	28	3.3	-1.1
10739	00	Z	500	28	8.6	6.9
10739	12	Z	500	28	9.1	7.9
11035	12	Z	500	29	8.3	6.9
11035	00	Z	500	28	8.7	6.4
12982	12	Z	500	26	8.6	7.6
12982	00	Z	500	28	6.8	4.9
16080	00	Z	500	28	5.1	-3.6
16080	12	Z	500	28	4.3	-2.5
16245	12	Z	500	28	8.8	-6.7
16245	00	Z	500	28	7.0	-4.9
16320	12	Z	500	28	14.7	12.9
16320	00	Z	500	28	14.6	12.7
16429	12	Z	500	36	9.8	-7.5
16429	00	Z	500	36	4.6	-1.1
16622	00	Z	500	34	13.7	11.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	500	34	11.6	7.1
16754	12	Z	500	27	11.3	8.6
17607	12	Z	500	28	5.3	3.7
26435	00	Z	500	14	5.1	3.1
60018	00	Z	500	28	4.5	2.7
60018	12	Z	500	28	6.2	4.1
ASDE01	00	Z	500	7	38.7	-38.5
ASDE01	12	Z	500	3	37.6	-37.5
ASDE03	00	Z	500	7	9.7	2.9
ASDE03	12	Z	500	2	8.9	4.1
ASDE09	12	Z	500	1	7.0	-7.0
ASDK01	00	Z	500	5	14.1	12.5
ASDK01	12	Z	500	5	8.8	4.2
ASDK03	12	Z	500	5	49.6	-5.0
ASDK03	00	Z	500	7	23.8	23.3
ASDK1	00	Z	500	5	14.3	4.3
ASDK1	12	Z	500	5	9.4	-2.9
ASDK3	12	Z	500	4	51.4	-16.9
ASDK3	00	Z	500	5	21.0	18.1
ASES01	12	Z	500	19	8.2	4.8
ASEU01	12	Z	500	11	15.9	15.1
ASEU02	00	Z	500	11	31.0	30.3
ASEU02	12	Z	500	11	30.8	30.4
ASEU03	00	Z	500	5	19.2	-5.1
ASEU03	12	Z	500	5	19.0	-12.2
ASEU04	00	Z	500	7	5.6	-2.5
ASEU04	12	Z	500	7	4.7	-0.6
ASEU05	00	Z	500	1	4.8	-4.8
ASEU05	12	Z	500	1	8.6	-8.6
ASEU06	00	Z	500	14	36.9	-36.6
ASEU06	12	Z	500	14	51.7	-46.9
ASFR1	00	Z	500	22	5.3	0.9
ASFR1	12	Z	500	20	8.5	3.4
ASFR3	00	Z	500	7	4.5	2.8
ASFR3	12	Z	500	5	3.1	2.1
ASFR4	00	Z	500	13	10.2	9.3
ASFR4	12	Z	500	12	12.2	11.4

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

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	500	25	4.0	-0.1	-0.9
01001	00	V	500	27	3.9	0.0	-0.3
01028	12	V	500	27	3.7	1.0	-0.6
01028	00	V	500	27	3.4	-0.7	-1.5
01400	12	V	500	22	2.7	0.2	-0.2
01400	00	V	500	23	2.9	0.4	-0.2
01415	12	V	500	28	2.8	-0.7	0.2
01415	00	V	500	27	3.4	0.2	0.2
02365	00	V	500	27	2.3	0.7	-0.2
02365	12	V	500	28	2.4	-0.1	-0.2
02591	12	V	500	28	2.5	-0.4	0.4
02591	00	V	500	27	2.4	0.3	-0.5
02836	00	V	500	28	3.0	-0.1	-0.2
02836	12	V	500	28	2.6	-0.2	-0.8
02963	00	V	500	28	2.6	-0.1	-0.4
02963	12	V	500	28	3.0	0.3	0.6
03005	12	V	500	28	4.2	-0.5	1.0
03005	00	V	500	28	3.5	-0.5	0.2
03238	00	V	500	23	3.4	-0.8	0.3
03238	12	V	500	7	3.7	0.3	0.4
03808	12	V	500	28	3.1	0.1	0.1
03808	00	V	500	28	3.0	0.0	0.3
03918	00	V	500	28	4.5	0.2	0.3
03918	12	V	500	15	3.1	-0.6	0.6
03953	00	V	500	27	3.6	0.0	0.2
03953	12	V	500	28	3.8	-0.2	-0.2
04018	12	V	500	18	3.3	-0.4	0.7
04018	00	V	500	19	3.0	-0.4	0.1
04220	00	V	500	28	3.3	-0.1	0.4
04220	12	V	500	28	3.5	-0.1	-0.2
04270	12	V	500	27	3.0	0.5	0.2
04270	00	V	500	28	4.0	-1.1	0.1
04320	12	V	500	28	3.8	0.4	0.8
04320	00	V	500	28	3.7	0.3	0.6
04339	00	V	500	27	3.7	-0.2	-0.1
04339	12	V	500	26	4.4	0.8	0.5
04360	00	V	500	17	4.1	0.5	1.2
04360	12	V	500	23	4.1	0.9	-0.4
06011	00	V	500	26	3.4	-0.2	0.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	500	27	3.3	0.5	-0.7
06260	12	V	500	6	2.0	0.1	1.0
06260	00	V	500	26	2.6	0.7	0.0
06610	00	V	500	28	2.6	0.2	-0.4
06610	12	V	500	28	2.8	0.4	0.3
07110	12	V	500	28	3.7	-0.7	0.0
07110	00	V	500	28	3.1	-0.8	0.1
07510	00	V	500	28	3.7	0.2	-0.5
07510	12	V	500	28	3.8	0.9	-0.5
07645	12	V	500	28	3.5	0.6	0.2
07645	00	V	500	28	2.7	0.4	0.7
07761	00	V	500	28	3.6	0.3	0.3
07761	12	V	500	28	3.6	-0.1	-0.6
08001	12	V	500	28	3.9	1.1	0.4
08001	00	V	500	21	4.3	0.1	0.4
08221	00	V	500	25	3.3	-0.1	-0.3
08221	12	V	500	24	3.4	0.1	-0.8
08302	00	V	500	23	3.8	-1.0	-0.5
08302	12	V	500	26	3.4	-0.1	-0.4
08508	12	V	500	25	2.8	0.8	-0.4
08522	12	V	500	28	2.6	0.1	-0.4
08579	12	V	500	27	3.0	0.2	0.2
10035	00	V	500	28	3.1	0.4	0.4
10035	12	V	500	28	3.2	-0.5	-0.7
10393	12	V	500	28	3.2	0.8	0.2
10393	00	V	500	28	2.7	0.2	-1.1
10410	12	V	500	27	2.8	-0.3	0.0
10410	00	V	500	28	3.1	0.2	0.0
10739	00	V	500	28	2.7	0.4	0.0
10739	12	V	500	27	2.9	0.3	-0.2
11035	12	V	500	28	3.1	1.0	0.8
11035	00	V	500	28	2.9	0.3	0.2
12982	12	V	500	26	2.6	-0.1	-0.5
12982	00	V	500	28	3.3	0.3	-0.2
16080	00	V	500	28	4.0	0.5	0.0
16080	12	V	500	28	3.2	-0.7	0.3
16245	12	V	500	28	3.0	0.7	-0.1
16245	00	V	500	28	3.5	-0.6	0.4
16320	12	V	500	28	2.3	0.9	0.3
16320	00	V	500	28	2.7	0.2	0.6
16429	12	V	500	28	2.7	0.6	0.1
16429	00	V	500	26	2.9	0.2	0.3
16622	00	V	500	21	4.0	0.0	0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	500	26	4.5	-1.3	0.0
16754	12	V	500	24	3.4	-0.1	0.9
17607	12	V	500	28	2.6	0.1	-0.5
26435	00	V	500	14	2.2	-0.2	-0.6
60018	00	V	500	28	2.5	0.3	0.3
60018	12	V	500	28	2.8	0.3	0.2
ASDE01	00	V	500	5	3.3	0.3	-1.5
ASDE01	12	V	500	3	5.3	3.2	0.6
ASDE03	00	V	500	6	4.2	0.9	1.0
ASDE03	12	V	500	2	2.8	-0.1	1.2
ASDE09	12	V	500	1	1.2	-1.1	0.5
ASDK01	00	V	500	5	3.8	2.6	-0.7
ASDK01	12	V	500	5	2.9	1.2	1.6
ASDK03	12	V	500	5	3.5	-0.3	1.0
ASDK03	00	V	500	5	2.0	-0.3	1.1
ASDK1	00	V	500	5	3.8	2.1	-0.2
ASDK1	12	V	500	5	4.2	1.7	2.2
ASDK3	12	V	500	4	2.8	-0.6	0.2
ASDK3	00	V	500	5	2.3	0.1	1.5
ASES01	12	V	500	18	2.6	-0.2	0.4
ASEU01	12	V	500	10	2.3	0.6	0.6
ASEU02	00	V	500	9	4.8	0.7	0.9
ASEU02	12	V	500	8	3.7	0.0	0.6
ASEU03	00	V	500	5	2.8	1.0	1.1
ASEU03	12	V	500	5	6.4	0.9	-1.8
ASEU04	00	V	500	7	3.7	2.1	-1.0
ASEU04	12	V	500	7	3.8	1.5	-0.1
ASEU05	00	V	500	1	9.5	-7.3	-6.1
ASEU05	12	V	500	1	5.8	2.5	5.2
ASEU06	00	V	500	12	4.0	-1.1	0.0
ASEU06	12	V	500	13	4.0	1.4	0.1
ASFR1	00	V	500	13	2.9	0.0	0.2
ASFR1	12	V	500	13	3.7	0.5	0.1
ASFR3	00	V	500	7	2.8	-0.5	0.3
ASFR3	12	V	500	5	3.6	-2.0	1.4
ASFR4	00	V	500	6	2.5	-0.1	0.5
ASFR4	12	V	500	6	2.6	0.5	-0.8

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	850	26	5.0	0.8
01001	00	Z	850	27	6.4	3.2
01028	12	Z	850	28	5.9	-0.7
01028	00	Z	850	28	5.1	-0.7
01400	12	Z	850	22	12.4	4.1
01400	00	Z	850	24	13.2	2.4
01415	12	Z	850	28	3.6	2.5
01415	00	Z	850	29	4.2	3.1
02365	00	Z	850	27	5.5	4.4
02365	12	Z	850	28	5.2	3.9
02591	12	Z	850	28	6.2	5.5
02591	00	Z	850	29	7.8	7.2
02836	00	Z	850	28	2.1	0.8
02836	12	Z	850	28	2.6	0.2
02963	00	Z	850	29	4.0	3.5
02963	12	Z	850	28	3.8	3.4
03005	12	Z	850	28	3.0	-0.6
03005	00	Z	850	29	2.3	0.7
03238	00	Z	850	23	3.6	2.7
03238	12	Z	850	7	5.1	4.2
03808	12	Z	850	29	3.8	2.7
03808	00	Z	850	30	3.2	2.1
03918	00	Z	850	28	10.6	10.1
03918	12	Z	850	15	9.8	9.4
03953	00	Z	850	28	3.4	2.2
03953	12	Z	850	28	4.8	3.3
04018	12	Z	850	18	5.3	-2.9
04018	00	Z	850	19	3.0	-1.9
04220	00	Z	850	28	3.7	0.4
04220	12	Z	850	28	3.3	1.4
04270	12	Z	850	28	5.6	1.3
04270	00	Z	850	28	5.1	0.6
04320	12	Z	850	29	4.5	-1.2
04320	00	Z	850	28	3.8	-0.6
04339	00	Z	850	27	15.3	-1.4
04339	12	Z	850	26	21.1	5.0
04360	00	Z	850	24	43.5	42.8
04360	12	Z	850	25	41.8	41.6
06011	00	Z	850	27	5.8	2.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	850	27	4.5	2.2
06260	12	Z	850	6	2.2	0.5
06260	00	Z	850	26	3.8	1.5
06610	00	Z	850	28	3.3	1.9
06610	12	Z	850	28	3.3	0.9
07110	12	Z	850	28	5.4	4.8
07110	00	Z	850	28	5.7	4.5
07510	00	Z	850	29	4.5	3.1
07510	12	Z	850	28	5.9	4.9
07645	12	Z	850	28	5.9	4.9
07645	00	Z	850	28	4.2	2.6
07761	00	Z	850	28	3.2	-1.4
07761	12	Z	850	29	2.7	-0.4
08001	12	Z	850	28	6.5	5.6
08001	00	Z	850	21	6.3	5.1
08221	00	Z	850	25	4.2	3.6
08221	12	Z	850	24	5.5	4.8
08302	00	Z	850	24	3.1	-1.6
08302	12	Z	850	26	5.3	-3.5
08508	12	Z	850	25	6.6	4.8
08522	12	Z	850	28	4.3	3.4
08579	12	Z	850	28	3.9	2.6
10035	00	Z	850	29	2.4	0.1
10035	12	Z	850	29	4.1	1.0
10393	12	Z	850	28	1.9	-0.5
10393	00	Z	850	28	1.6	0.9
10410	12	Z	850	29	3.5	-2.7
10410	00	Z	850	28	3.3	-2.3
10739	00	Z	850	28	7.5	7.2
10739	12	Z	850	28	6.6	6.2
11035	12	Z	850	29	7.4	6.8
11035	00	Z	850	28	7.5	6.9
12982	12	Z	850	26	6.4	5.2
12982	00	Z	850	28	5.1	4.1
16080	00	Z	850	28	4.5	-2.4
16080	12	Z	850	28	5.3	-4.6
16245	12	Z	850	28	10.0	-8.1
16245	00	Z	850	28	7.0	-5.0
16320	12	Z	850	28	16.0	13.7
16320	00	Z	850	28	14.6	12.8
16429	12	Z	850	36	9.5	-8.1
16429	00	Z	850	36	5.7	-1.6
16622	00	Z	850	28	10.7	9.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	850	26	9.4	4.6
16754	12	Z	850	24	9.9	7.5
17607	12	Z	850	28	3.4	1.6
26435	00	Z	850	14	4.2	3.1
60018	00	Z	850	28	3.2	-1.9
60018	12	Z	850	30	4.3	-0.8
ASDE01	00	Z	850	7	46.0	-45.7
ASDE01	12	Z	850	3	41.8	-41.7
ASDE03	00	Z	850	7	9.4	1.9
ASDE03	12	Z	850	3	4.4	0.3
ASDE09	12	Z	850	1	13.3	-13.3
ASDK01	00	Z	850	5	8.3	7.4
ASDK01	12	Z	850	5	8.2	1.5
ASDK03	12	Z	850	6	24.0	23.0
ASDK03	00	Z	850	7	24.6	24.0
ASDK1	00	Z	850	5	10.1	7.8
ASDK1	12	Z	850	5	10.5	-1.7
ASDK3	12	Z	850	4	27.1	26.8
ASDK3	00	Z	850	5	24.7	23.2
ASES01	12	Z	850	19	5.1	-2.6
ASEU01	12	Z	850	12	8.8	8.2
ASEU02	00	Z	850	11	26.5	25.9
ASEU02	12	Z	850	11	26.0	25.7
ASEU03	00	Z	850	5	21.9	-10.8
ASEU03	12	Z	850	5	24.0	-9.6
ASEU04	00	Z	850	7	6.1	-3.6
ASEU04	12	Z	850	7	7.4	-4.1
ASEU05	00	Z	850	1	12.5	-12.5
ASEU05	12	Z	850	1	25.6	-25.6
ASEU06	00	Z	850	14	43.5	-43.3
ASEU06	12	Z	850	14	61.8	-57.5
ASFR1	00	Z	850	22	5.4	-3.4
ASFR1	12	Z	850	22	4.5	-1.7
ASFR3	00	Z	850	7	3.1	0.2
ASFR3	12	Z	850	5	3.1	1.7
ASFR4	00	Z	850	13	3.9	3.4
ASFR4	12	Z	850	12	3.2	0.3

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	850	25	3.0	0.4	0.3
01001	00	V	850	27	4.0	0.1	0.5
01028	12	V	850	27	2.8	0.0	-0.7
01028	00	V	850	26	3.6	0.5	-0.4
01400	12	V	850	22	2.4	0.6	0.2
01400	00	V	850	23	2.6	0.8	0.6
01415	12	V	850	28	3.2	0.1	0.1
01415	00	V	850	27	3.2	-0.5	0.3
02365	00	V	850	27	3.0	-0.4	-0.5
02365	12	V	850	28	2.7	-0.1	-0.4
02591	12	V	850	28	2.4	0.5	-0.1
02591	00	V	850	27	2.5	-0.8	0.3
02836	00	V	850	28	2.9	-0.4	-0.3
02836	12	V	850	28	2.6	-0.2	0.0
02963	00	V	850	28	2.1	-0.4	0.2
02963	12	V	850	28	2.1	0.0	-0.4
03005	12	V	850	28	3.0	0.3	0.3
03005	00	V	850	28	3.1	0.7	0.5
03238	00	V	850	23	2.6	0.5	0.8
03238	12	V	850	7	2.2	-0.4	0.5
03808	12	V	850	28	2.9	-0.3	-0.8
03808	00	V	850	28	2.3	0.2	-0.5
03918	00	V	850	28	3.2	0.6	-0.1
03918	12	V	850	15	2.3	-0.6	-0.2
03953	00	V	850	27	3.2	0.4	0.3
03953	12	V	850	28	2.6	-0.7	0.1
04018	12	V	850	18	2.6	0.1	0.9
04018	00	V	850	19	3.0	0.8	-0.4
04220	00	V	850	28	3.3	-0.2	-0.9
04220	12	V	850	28	2.8	0.5	0.1
04270	12	V	850	27	4.2	-0.2	-0.6
04270	00	V	850	28	3.4	-0.3	0.7
04320	12	V	850	28	4.2	0.5	0.5
04320	00	V	850	28	3.7	-0.6	0.2
04339	00	V	850	27	4.9	0.2	0.5
04339	12	V	850	26	4.7	0.6	0.4
04360	00	V	850	22	9.5	4.2	1.6
04360	12	V	850	24	5.9	2.6	0.5
06011	00	V	850	27	3.5	-0.1	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	850	27	3.0	0.3	0.7
06260	12	V	850	6	2.9	0.7	-0.6
06260	00	V	850	26	2.4	1.1	0.1
06610	00	V	850	28	2.8	0.4	0.0
06610	12	V	850	28	2.1	0.8	-0.2
07110	12	V	850	28	3.0	-0.6	-0.1
07110	00	V	850	28	2.9	-0.4	0.1
07510	00	V	850	28	3.6	0.9	0.5
07510	12	V	850	28	3.2	-0.2	-0.1
07645	12	V	850	28	4.2	-0.1	-0.3
07645	00	V	850	28	3.4	-0.6	0.6
07761	00	V	850	28	4.4	-0.1	-0.7
07761	12	V	850	28	4.2	-0.1	-0.4
08001	12	V	850	28	3.3	0.0	0.4
08001	00	V	850	21	3.6	0.7	0.6
08221	00	V	850	25	3.2	0.3	-0.2
08221	12	V	850	24	2.9	0.3	-0.8
08302	00	V	850	23	3.5	-1.0	0.1
08302	12	V	850	26	3.6	1.0	0.2
08508	12	V	850	25	3.0	0.1	0.2
08522	12	V	850	28	4.2	0.3	0.3
08579	12	V	850	28	3.2	0.7	0.2
10035	00	V	850	28	2.6	-0.2	0.2
10035	12	V	850	28	2.2	0.3	0.5
10393	12	V	850	28	2.8	-0.3	0.0
10393	00	V	850	28	2.4	-0.4	0.6
10410	12	V	850	27	2.6	-0.1	-0.6
10410	00	V	850	28	2.5	0.2	0.3
10739	00	V	850	28	3.6	0.0	-0.4
10739	12	V	850	27	2.8	0.2	0.4
11035	12	V	850	28	3.8	0.3	0.3
11035	00	V	850	28	3.5	0.2	0.9
12982	12	V	850	26	3.2	-0.1	0.2
12982	00	V	850	28	3.0	0.8	-0.4
16080	00	V	850	28	3.7	0.7	-0.4
16080	12	V	850	28	3.2	0.6	-0.6
16245	12	V	850	28	3.4	0.2	-0.3
16245	00	V	850	28	2.8	0.1	0.2
16320	12	V	850	28	4.0	1.0	-0.5
16320	00	V	850	28	3.3	0.5	-0.3
16429	12	V	850	28	2.3	0.1	0.4
16429	00	V	850	27	2.6	-0.4	-0.1
16622	00	V	850	21	3.2	-0.2	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	850	26	3.8	0.3	0.4
16754	12	V	850	24	4.2	-0.1	-1.3
17607	12	V	850	28	3.5	1.5	0.2
26435	00	V	850	14	3.2	0.4	0.4
60018	00	V	850	28	2.8	0.0	0.5
60018	12	V	850	28	4.1	-0.4	1.0
ASDE01	00	V	850	5	2.6	0.4	0.2
ASDE01	12	V	850	3	6.5	-3.0	1.6
ASDE03	00	V	850	6	4.2	0.7	-0.6
ASDE03	12	V	850	3	4.0	1.3	0.0
ASDE09	12	V	850	1	3.3	-2.9	-1.5
ASDK01	00	V	850	5	3.0	-1.3	-0.2
ASDK01	12	V	850	5	2.6	0.2	0.4
ASDK03	12	V	850	6	2.9	-0.6	1.2
ASDK03	00	V	850	5	3.3	0.0	1.4
ASDK1	00	V	850	5	3.6	-1.3	0.9
ASDK1	12	V	850	5	2.7	0.4	0.3
ASDK3	12	V	850	4	3.9	0.4	2.7
ASDK3	00	V	850	5	5.0	-1.0	3.5
ASES01	12	V	850	18	2.8	0.5	-0.4
ASEU01	12	V	850	10	3.3	-1.4	1.4
ASEU02	00	V	850	9	2.6	-0.4	0.4
ASEU02	12	V	850	8	2.1	0.6	-0.1
ASEU03	00	V	850	5	2.5	0.6	-0.2
ASEU03	12	V	850	5	3.2	0.5	1.5
ASEU04	00	V	850	6	3.3	0.2	1.5
ASEU04	12	V	850	7	2.1	-0.3	1.3
ASEU05	00	V	850	1	0.8	0.2	0.8
ASEU05	12	V	850	1	1.8	0.4	-1.8
ASEU06	00	V	850	12	3.8	1.4	0.4
ASEU06	12	V	850	13	2.5	0.2	0.0
ASFR1	00	V	850	13	2.5	-0.2	0.0
ASFR1	12	V	850	14	2.9	0.4	-0.3
ASFR3	00	V	850	7	2.9	0.9	-1.2
ASFR3	12	V	850	5	3.2	0.2	-1.3
ASFR4	00	V	850	6	3.7	-0.2	0.0
ASFR4	12	V	850	6	2.5	1.0	0.2

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

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


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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
03380	99	P	SUR	54	0	662	0	0.4	-0.2	0.4
1300001	99	P	SUR	11	-23	639	0	0.3	0.1	0.3
1300515	99	P	SUR	27	-56	50	3	0.2	0.3	0.4
1300572	99	P	SUR	18	-62	669	0	0.3	0.1	0.3
1300633	99	P	SUR	26	-57	271	0	0.3	-0.8	0.8
1300868	99	P	SUR	23	-27	215	0	0.3	0.6	0.7
1300869	99	P	SUR	20	-51	668	0	0.3	-0.0	0.3
1300871	99	P	SUR	22	-53	647	0	0.3	0.4	0.5
1300872	99	P	SUR	32	-53	671	0	0.4	0.2	0.5
1301500	99	P	SUR	18	-67	635	0	0.6	-0.1	0.6
1301501	99	P	SUR	19	-47	665	0	0.3	0.2	0.4
1301502	99	P	SUR	21	-41	661	0	0.3	0.6	0.6
13515	99	P	SUR	27	-56	52	4	0.2	0.3	0.4
13572	99	P	SUR	18	-62	671	0	0.3	0.1	0.3
13633	99	P	SUR	26	-57	271	0	0.3	-0.8	0.8
13868	99	P	SUR	23	-27	215	0	0.3	0.6	0.7
13869	99	P	SUR	20	-51	668	0	0.3	-0.0	0.3
13871	99	P	SUR	22	-53	647	0	0.3	0.4	0.5
13872	99	P	SUR	32	-53	671	0	0.4	0.2	0.5
1501529	99	P	SUR	25	-21	153	0	0.2	0.4	0.5
1501531	99	P	SUR	21	-23	131	0	0.2	0.3	0.4
1501533	99	P	SUR	11	-23	23	0	0.3	0.6	0.7
1501534	99	P	SUR	23	-22	141	0	0.2	0.1	0.3
2100942	99	P	SUR	25	-48	649	0	0.3	0.3	0.4
21942	99	P	SUR	25	-48	649	0	0.3	0.3	0.4
2500575	99	P	SUR	58	-29	672	672	0.0	0.0	0.0
2500622	99	P	SUR	86	1	671	0	0.7	-0.5	0.8
2500623	99	P	SUR	87	-31	669	0	0.6	-0.2	0.6
25575	99	P	SUR	58	-29	672	672	0.0	0.0	0.0
25622	99	P	SUR	86	1	671	0	0.7	-0.5	0.8
25623	99	P	SUR	87	-31	669	0	0.6	-0.2	0.6
2600545	99	P	SUR	67	-15	242	116	7.5	1.8	7.8
2600565	99	P	SUR	87	-4	254	0	0.6	0.2	0.6
2600566	99	P	SUR	87	1	254	0	0.6	0.2	0.7
2600568	99	P	SUR	86	25	255	252	2.0	-12.2	12.4
2600571	99	P	SUR	86	5	249	0	0.7	-0.3	0.8

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
2601560	99	P	SUR	86	4	671	0	0.6	0.5	0.8
2601561	99	P	SUR	85	5	465	0	0.5	0.8	0.9
26545	99	P	SUR	67	-15	639	426	8.9	-1.2	9.0
26565	99	P	SUR	87	-4	651	0	0.6	0.1	0.6
26566	99	P	SUR	87	1	651	0	0.6	0.0	0.6
26568	99	P	SUR	86	25	654	645	2.5	-10.9	11.2
26571	99	P	SUR	86	5	650	0	0.6	-0.4	0.8
4100139	99	P	SUR	20	-38	310	0	0.8	-0.0	0.8
4100300	99	P	SUR	16	-57	672	0	0.3	0.4	0.5
4100506	99	P	SUR	29	-49	639	0	0.3	0.0	0.3
4100590	99	P	SUR	41	-39	672	0	0.6	-0.6	0.8
4100597	99	P	SUR	35	-55	671	0	1.5	-0.2	1.5
4100635	99	P	SUR	25	-69	663	0	0.3	0.3	0.5
4100706	99	P	SUR	31	-36	539	0	1.8	-0.5	1.9
4100707	99	P	SUR	14	-61	672	0	0.3	-0.8	0.8
4100729	99	P	SUR	41	-39	672	0	0.6	0.1	0.6
4100731	99	P	SUR	31	-67	671	0	0.5	0.2	0.5
4100975	99	P	SUR	28	-56	602	1	0.6	-0.2	0.6
4101700	99	P	SUR	39	-46	671	0	0.6	0.2	0.6
4101702	99	P	SUR	19	-47	670	0	0.3	0.4	0.5
4101703	99	P	SUR	21	-48	669	0	0.3	0.6	0.7
4101704	99	P	SUR	13	-58	670	0	0.4	0.8	0.8
4101740	99	P	SUR	13	-64	669	0	0.3	0.5	0.6
4101741	99	P	SUR	21	-46	670	0	0.3	0.7	0.7
41040	99	P	SUR	15	-53	671	0	0.4	-0.8	0.8
41041	99	P	SUR	14	-46	670	0	0.3	-0.5	0.6
41043	99	P	SUR	21	-65	1150	0	0.4	0.5	0.6
41044	99	P	SUR	22	-59	1181	0	0.4	-0.0	0.4
41048	99	P	SUR	32	-70	930	0	0.5	-0.8	0.9
41049	99	P	SUR	28	-63	672	0	0.5	-0.1	0.5
41052	99	P	SUR	18	-65	1732	0	0.4	-1.1	1.2
41053	99	P	SUR	19	-66	1688	0	0.4	-0.4	0.5
41056	99	P	SUR	18	-66	1505	0	0.4	-0.8	0.9
41139	99	P	SUR	20	-38	310	0	0.8	-0.0	0.8
41300	99	P	SUR	16	-57	672	0	0.3	0.4	0.5
41506	99	P	SUR	29	-49	640	0	0.3	0.0	0.3
41590	99	P	SUR	41	-39	671	0	0.6	-0.6	0.8
41597	99	P	SUR	35	-55	671	0	1.5	-0.2	1.5
41635	99	P	SUR	25	-69	663	0	0.3	0.3	0.5
41706	99	P	SUR	31	-36	539	0	1.8	-0.5	1.9
41707	99	P	SUR	14	-61	672	0	0.3	-0.8	0.8
41729	99	P	SUR	41	-39	672	0	0.6	0.1	0.6
41731	99	P	SUR	31	-67	671	0	0.5	0.2	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
41975	99	P	SUR	28	-56	604	1	0.6	-0.2	0.6
4201500	99	P	SUR	35	-70	664	4	1.5	0.2	1.5
42059	99	P	SUR	15	-68	1151	0	0.4	0.5	0.6
42085	99	P	SUR	18	-67	1581	0	0.4	-0.7	0.8
42088	99	P	SUR	11	-61	1384	0	0.5	0.2	0.5
42090	99	P	SUR	18	-70	2073	0	0.4	0.0	0.4
44005	99	P	SUR	43	-69	913	0	0.6	-0.2	0.6
4400510	99	P	SUR	43	-51	1341	49	2.0	0.5	2.0
4400513	99	P	SUR	54	-10	667	0	0.5	-0.4	0.6
4400517	99	P	SUR	26	-23	669	0	0.3	0.4	0.5
4400521	99	P	SUR	38	-26	664	0	0.4	-0.4	0.6
4400624	99	P	SUR	26	-60	659	0	0.3	-0.3	0.5
4400670	99	P	SUR	44	-58	158	0	0.7	0.4	0.8
4400746	99	P	SUR	33	-19	670	0	0.3	0.5	0.6
4400765	99	P	SUR	56	-14	670	0	0.8	-0.2	0.8
4400766	99	P	SUR	42	-20	671	0	0.8	0.0	0.8
4400768	99	P	SUR	30	-29	671	0	0.4	0.9	0.9
4400772	99	P	SUR	52	-18	645	0	0.7	-0.2	0.7
4400773	99	P	SUR	46	-6	669	0	0.6	0.6	0.9
4400776	99	P	SUR	32	-27	671	0	0.3	0.7	0.8
4400777	99	P	SUR	38	-49	671	0	1.3	-0.3	1.3
4400778	99	P	SUR	40	-19	669	0	0.3	0.5	0.6
4400779	99	P	SUR	51	-27	672	0	0.5	-0.2	0.6
4400835	99	P	SUR	29	-46	644	0	0.3	-0.5	0.6
4400839	99	P	SUR	22	-47	670	0	0.3	-0.2	0.4
4400846	99	P	SUR	26	-29	669	0	0.3	0.6	0.7
4400848	99	P	SUR	25	-34	670	0	0.3	0.4	0.5
4400857	99	P	SUR	43	-25	504	29	1.6	0.2	1.6
4400863	99	P	SUR	31	-66	668	0	0.4	-0.7	0.8
4400869	99	P	SUR	35	-21	636	0	1.6	0.8	1.8
4400874	99	P	SUR	31	-32	670	0	0.3	0.4	0.5
4400887	99	P	SUR	31	-52	671	0	0.4	-0.1	0.4
4400889	99	P	SUR	32	-36	671	0	0.3	-0.0	0.3
4400891	99	P	SUR	28	-56	671	0	0.3	-0.5	0.6
4400896	99	P	SUR	28	-36	124	0	0.6	-0.4	0.8
4400901	99	P	SUR	52	-16	669	0	0.7	0.0	0.7
4400904	99	P	SUR	43	-22	671	0	0.5	-0.2	0.5
44011	99	P	SUR	41	-67	671	0	0.6	-0.6	0.8
4401500	99	P	SUR	34	-63	668	0	0.4	0.2	0.5
4401501	99	P	SUR	45	-38	670	0	0.6	0.0	0.6
4401503	99	P	SUR	30	-55	670	0	0.4	0.3	0.5
4401526	99	P	SUR	38	-11	669	0	0.3	0.5	0.5
4401527	99	P	SUR	12	-47	662	0	0.4	0.5	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401528	99	P	SUR	38	-45	670	0	0.5	0.4	0.6
4401529	99	P	SUR	21	-61	666	0	0.3	0.0	0.3
4401530	99	P	SUR	37	-64	670	0	0.6	-0.3	0.7
4401531	99	P	SUR	21	-59	670	0	0.3	0.6	0.7
4401533	99	P	SUR	15	-60	496	0	0.4	0.5	0.7
4401534	99	P	SUR	34	-63	667	0	0.4	-0.1	0.4
4401535	99	P	SUR	48	-31	567	0	0.5	0.2	0.6
4401536	99	P	SUR	50	-46	623	0	0.6	0.5	0.8
4401537	99	P	SUR	40	-38	642	0	0.5	-0.7	0.9
4401538	99	P	SUR	43	-29	517	0	0.5	-2.0	2.1
4401539	99	P	SUR	38	-60	670	0	0.5	0.2	0.6
4401545	99	P	SUR	36	-64	666	0	0.4	0.6	0.7
4401546	99	P	SUR	45	-37	669	0	0.7	0.7	1.0
4401547	99	P	SUR	34	-67	667	0	0.4	-0.2	0.5
4401548	99	P	SUR	50	-35	671	1	0.7	0.1	0.7
4401550	99	P	SUR	42	-43	578	0	0.6	-0.2	0.6
4401551	99	P	SUR	31	-39	657	0	0.3	0.5	0.6
4401552	99	P	SUR	42	-46	672	0	0.6	0.2	0.6
4401553	99	P	SUR	56	-43	668	0	0.6	0.3	0.6
4401554	99	P	SUR	58	-34	648	0	0.6	0.5	0.8
4401555	99	P	SUR	48	-44	672	0	0.6	-0.0	0.7
44016	99	P	SUR	55	-53	3017	8	1.4	0.5	1.5
4401601	99	P	SUR	57	-53	244	0	0.5	0.1	0.5
4401602	99	P	SUR	47	-52	239	0	1.0	0.8	1.2
4401603	99	P	SUR	56	-41	238	0	0.5	0.3	0.6
4401604	99	P	SUR	56	-51	241	0	0.5	-0.1	0.5
4401605	99	P	SUR	56	-46	241	0	0.4	-0.3	0.5
4401606	99	P	SUR	45	-48	247	0	0.6	0.3	0.7
4401608	99	P	SUR	53	-51	233	0	1.0	3.3	3.5
4401609	99	P	SUR	50	-61	244	7	4.5	0.5	4.5
4401612	99	P	SUR	44	-55	239	0	0.7	0.6	0.9
4401613	99	P	SUR	50	-51	234	5	2.4	1.5	2.9
4401616	99	P	SUR	48	-51	249	0	0.7	0.4	0.8
4401625	99	P	SUR	47	-56	73	0	0.8	0.3	0.9
4401629	99	P	SUR	56	-55	233	0	1.4	1.1	1.8
4401631	99	P	SUR	48	-44	249	0	0.7	0.2	0.7
4401633	99	P	SUR	44	-47	244	0	0.7	0.4	0.8
4401634	99	P	SUR	52	-34	241	0	0.9	-0.3	0.9
4401758	99	P	SUR	65	-11	85	0	0.5	0.6	0.8
44024	99	P	SUR	42	-66	795	0	1.2	-1.2	1.8
44027	99	P	SUR	44	-67	698	0	0.6	-0.1	0.6
44032	99	P	SUR	44	-69	638	0	1.5	-0.4	1.6
44033	99	P	SUR	44	-69	598	0	0.7	-0.4	0.8

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44034	99	P	SUR	44	-68	554	0	0.7	-0.5	0.9
44137	99	P	SUR	42	-62	583	0	0.6	-0.1	0.6
44139	99	P	SUR	44	-57	653	0	0.5	0.1	0.5
44150	99	P	SUR	43	-64	648	1	0.6	0.2	0.6
44251	99	P	SUR	46	-53	656	0	0.9	1.0	1.4
44258	99	P	SUR	45	-63	660	0	0.6	-0.1	0.6
44510	99	P	SUR	43	-51	1340	49	2.0	0.5	2.0
44513	99	P	SUR	54	-10	667	0	0.5	-0.4	0.6
44517	99	P	SUR	26	-23	669	0	0.3	0.4	0.5
44521	99	P	SUR	38	-26	664	0	0.4	-0.4	0.6
44624	99	P	SUR	26	-60	659	0	0.3	-0.3	0.5
44670	99	P	SUR	44	-58	642	0	0.6	0.3	0.6
44746	99	P	SUR	33	-19	670	0	0.3	0.5	0.6
44765	99	P	SUR	56	-14	670	0	0.8	-0.2	0.8
44766	99	P	SUR	42	-20	671	0	0.8	0.0	0.8
44768	99	P	SUR	30	-29	671	0	0.4	0.9	0.9
44772	99	P	SUR	52	-18	645	0	0.7	-0.2	0.7
44773	99	P	SUR	46	-6	669	0	0.6	0.6	0.9
44776	99	P	SUR	32	-27	671	0	0.3	0.7	0.8
44777	99	P	SUR	38	-49	671	0	1.3	-0.3	1.3
44778	99	P	SUR	40	-19	669	0	0.3	0.5	0.6
44779	99	P	SUR	51	-27	672	0	0.5	-0.2	0.6
44835	99	P	SUR	29	-46	644	0	0.3	-0.5	0.6
44839	99	P	SUR	22	-47	670	0	0.3	-0.2	0.4
44846	99	P	SUR	26	-29	669	0	0.3	0.6	0.7
44848	99	P	SUR	25	-34	670	0	0.3	0.4	0.5
44857	99	P	SUR	43	-25	504	29	1.6	0.2	1.6
44863	99	P	SUR	31	-67	668	0	0.4	-0.7	0.8
44869	99	P	SUR	35	-21	636	0	1.6	0.8	1.8
44874	99	P	SUR	31	-32	670	0	0.3	0.4	0.5
44887	99	P	SUR	31	-52	671	0	0.4	-0.1	0.4
44889	99	P	SUR	32	-36	671	0	0.3	-0.0	0.3
44891	99	P	SUR	28	-56	671	0	0.3	-0.5	0.6
44896	99	P	SUR	28	-36	124	0	0.6	-0.4	0.8
44901	99	P	SUR	52	-16	669	0	0.7	0.0	0.7
44904	99	P	SUR	43	-22	671	0	0.5	-0.2	0.5
4700539	99	P	SUR	41	-22	239	0	0.7	0.1	0.7
4700540	99	P	SUR	56	-14	240	0	0.5	0.8	1.0
4700546	99	P	SUR	44	-57	237	0	0.5	0.6	0.8
4700551	99	P	SUR	43	-45	236	119	5.6	8.0	9.7
4700552	99	P	SUR	67	-63	232	0	0.4	-1.8	1.8
4700555	99	P	SUR	46	-44	230	0	1.1	-0.5	1.2
4700557	99	P	SUR	51	-17	242	0	0.6	0.0	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4700560	99	P	SUR	53	-16	205	0	0.6	0.4	0.7
4700562	99	P	SUR	58	-14	238	0	0.6	0.4	0.8
4700568	99	P	SUR	48	-19	243	0	0.9	0.4	1.0
4700569	99	P	SUR	53	-16	241	30	2.5	-1.0	2.7
4700574	99	P	SUR	44	-35	239	0	0.8	-0.2	0.8
4701656	99	P	SUR	73	-68	255	0	0.5	-1.4	1.5
4701657	99	P	SUR	80	-65	254	0	0.7	-0.5	0.8
47539	99	P	SUR	41	-22	645	0	1.5	-0.0	1.5
47540	99	P	SUR	56	-14	641	0	0.6	0.8	1.0
47546	99	P	SUR	44	-57	639	0	0.5	0.6	0.8
47551	99	P	SUR	43	-45	652	383	4.9	8.9	10.1
47552	99	P	SUR	67	-63	657	0	0.6	-1.9	2.0
47555	99	P	SUR	45	-44	643	0	1.0	-0.7	1.2
47557	99	P	SUR	51	-17	645	0	0.5	0.1	0.5
47560	99	P	SUR	53	-16	637	0	0.6	0.4	0.7
47562	99	P	SUR	58	-14	649	0	0.6	0.5	0.7
47568	99	P	SUR	48	-19	640	0	0.6	0.5	0.8
47569	99	P	SUR	53	-16	635	48	2.0	-0.8	2.2
47574	99	P	SUR	44	-35	640	0	0.6	-0.0	0.6
4800276	99	P	SUR	84	-68	197	0	0.6	0.1	0.6
4800508	99	P	SUR	85	-65	2703	0	0.6	0.2	0.6
4800520	99	P	SUR	78	-15	139	0	0.7	0.2	0.7
4800600	99	P	SUR	72	-19	658	0	0.7	0.2	0.8
4800664	99	P	SUR	58	-61	672	0	0.6	0.4	0.8
4800770	99	P	SUR	84	-65	255	0	0.6	0.4	0.7
48276	99	P	SUR	84	-68	652	0	0.6	0.1	0.6
48508	99	P	SUR	85	-65	2701	0	0.6	0.2	0.6
48520	99	P	SUR	78	-15	139	0	0.7	0.2	0.7
48600	99	P	SUR	72	-19	658	0	0.7	0.2	0.8
48664	99	P	SUR	58	-61	672	0	0.6	0.4	0.8
48770	99	P	SUR	85	-65	625	0	0.6	0.4	0.7
6100001	99	P	SUR	43	8	672	0	0.6	-0.1	0.6
6100002	99	P	SUR	42	5	672	0	0.5	0.1	0.5
61001	99	P	SUR	43	8	672	0	0.6	-0.1	0.6
61002	99	P	SUR	42	5	672	0	0.5	0.1	0.5
6101003	99	P	SUR	40	25	122	0	0.8	-2.7	2.8
6101007	99	P	SUR	36	25	129	0	0.6	3.3	3.3
6200091	99	P	SUR	53	-5	671	0	0.5	-0.1	0.5
6200093	99	P	SUR	55	-10	664	0	0.6	-0.5	0.8
6200094	99	P	SUR	52	-7	636	0	1.3	-0.1	1.3
62001	99	P	SUR	45	-5	672	0	0.5	-0.2	0.5
6200513	99	P	SUR	65	-30	671	0	0.7	-0.1	0.7
6200554	99	P	SUR	40	-15	575	0	0.4	0.4	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6200556	99	P	SUR	27	-28	642	0	0.3	-0.2	0.4
6200558	99	P	SUR	51	-13	669	0	0.6	0.1	0.6
6200559	99	P	SUR	47	-26	411	0	2.5	0.6	2.6
6200560	99	P	SUR	17	-62	619	0	0.3	0.4	0.5
6200714	99	P	SUR	38	-25	57	0	0.4	0.1	0.4
6200940	99	P	SUR	32	-16	669	0	0.4	0.1	0.4
6200941	99	P	SUR	23	-39	671	0	0.3	-0.1	0.3
62027	99	P	SUR	49	-2	223	0	0.6	-0.0	0.6
62029	99	P	SUR	49	-12	1320	0	0.6	-0.2	0.6
6203503	99	P	SUR	31	-21	669	0	0.3	0.1	0.3
6203504	99	P	SUR	33	-22	669	0	0.3	0.4	0.5
62050	99	P	SUR	50	-4	672	0	0.4	0.2	0.4
62082	99	P	SUR	55	6	1	0	0.0	-0.4	0.4
62086	99	P	SUR	55	6	652	0	0.4	-0.2	0.5
62095	99	P	SUR	53	-16	368	0	0.6	-0.2	0.6
62102	99	P	SUR	58	2	636	0	0.8	0.5	1.0
62103	99	P	SUR	50	-3	672	0	0.4	0.4	0.6
62104	99	P	SUR	57	1	662	0	0.5	0.1	0.5
62105	99	P	SUR	55	-13	601	1	0.6	-0.5	0.8
62107	99	P	SUR	50	-6	1327	2	0.6	0.3	0.7
62111	99	P	SUR	58	0	588	0	0.6	1.1	1.3
62112	99	P	SUR	58	0	660	0	0.4	0.2	0.5
62113	99	P	SUR	58	0	662	0	0.7	0.2	0.8
62114	99	P	SUR	58	0	1321	0	0.6	0.1	0.6
62115	99	P	SUR	58	-3	559	0	0.7	0.2	0.7
62116	99	P	SUR	58	1	541	0	0.6	0.0	0.6
62117	99	P	SUR	58	0	662	0	0.5	0.4	0.7
62118	99	P	SUR	58	1	662	0	0.4	0.4	0.6
62119	99	P	SUR	57	2	660	0	0.5	0.1	0.5
62120	99	P	SUR	56	2	662	0	0.5	-0.2	0.6
62121	99	P	SUR	54	3	661	0	0.6	0.3	0.6
62122	99	P	SUR	57	2	1320	0	0.5	0.0	0.5
62124	99	P	SUR	54	-4	618	0	0.4	0.0	0.4
62127	99	P	SUR	54	1	180	0	0.4	0.6	0.7
62128	99	P	SUR	59	1	662	0	0.6	0.1	0.6
62129	99	P	SUR	58	0	662	0	0.6	0.1	0.7
62130	99	P	SUR	59	1	483	0	0.5	-0.3	0.5
62131	99	P	SUR	54	1	662	0	0.5	0.6	0.8
62132	99	P	SUR	56	2	661	0	0.5	0.4	0.7
62133	99	P	SUR	57	1	659	0	0.8	0.5	0.9
62134	99	P	SUR	58	1	659	0	0.4	0.3	0.5
62135	99	P	SUR	54	2	601	0	0.5	0.4	0.6
62136	99	P	SUR	54	3	662	0	0.5	0.7	0.9

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62137	99	P	SUR	57	2	632	0	0.5	-0.1	0.5
62138	99	P	SUR	54	0	1321	0	0.5	0.8	0.9
62139	99	P	SUR	53	2	1319	0	0.4	0.2	0.5
62140	99	P	SUR	57	1	1319	0	0.5	0.2	0.5
62141	99	P	SUR	58	-4	660	0	0.5	-2.3	2.3
62143	99	P	SUR	58	2	657	0	0.6	0.5	0.8
62144	99	P	SUR	53	2	660	0	0.4	0.2	0.5
62145	99	P	SUR	53	3	1319	0	0.4	0.3	0.5
62146	99	P	SUR	57	2	644	0	0.6	0.3	0.7
62148	99	P	SUR	54	2	293	0	0.5	1.2	1.3
62149	99	P	SUR	54	1	662	0	0.4	0.7	0.8
62150	99	P	SUR	54	1	537	0	0.4	1.1	1.2
62151	99	P	SUR	57	2	1321	0	0.5	0.3	0.6
62152	99	P	SUR	57	2	662	0	0.5	0.4	0.7
62153	99	P	SUR	57	2	1321	0	0.5	0.3	0.6
62154	99	P	SUR	56	2	662	0	0.5	-0.0	0.5
62155	99	P	SUR	58	1	659	0	0.5	0.4	0.6
62157	99	P	SUR	58	0	660	0	0.4	0.5	0.7
62160	99	P	SUR	57	2	918	0	0.6	0.2	0.7
62161	99	P	SUR	58	1	459	0	0.7	0.1	0.7
62162	99	P	SUR	57	1	662	0	0.5	0.0	0.5
62163	99	P	SUR	48	-8	669	0	0.5	0.2	0.6
62164	99	P	SUR	57	1	661	0	0.4	0.4	0.6
62165	99	P	SUR	54	1	662	0	0.4	0.4	0.6
62167	99	P	SUR	53	2	1279	0	0.4	0.2	0.4
62168	99	P	SUR	58	1	662	0	0.4	0.0	0.4
62170	99	P	SUR	51	2	672	0	0.5	0.2	0.6
62296	99	P	SUR	53	2	662	0	0.4	0.0	0.4
62297	99	P	SUR	59	2	923	0	0.4	-0.0	0.5
62302	99	P	SUR	61	-2	662	0	0.6	-0.1	0.6
62304	99	P	SUR	51	2	579	4	0.6	0.3	0.7
62305	99	P	SUR	50	0	725	1	0.4	0.2	0.5
62513	99	P	SUR	65	-30	671	0	0.7	-0.1	0.7
62554	99	P	SUR	40	-15	575	0	0.4	0.4	0.6
62556	99	P	SUR	27	-28	642	0	0.3	-0.2	0.4
62558	99	P	SUR	51	-13	669	0	0.6	0.1	0.6
62559	99	P	SUR	47	-26	411	0	2.5	0.6	2.6
62560	99	P	SUR	17	-62	617	0	0.3	0.4	0.5
62714	99	P	SUR	38	-25	57	0	0.3	0.1	0.4
62940	99	P	SUR	32	-16	669	0	0.4	0.1	0.4
62941	99	P	SUR	23	-39	671	0	0.3	-0.1	0.3
6300646	99	P	SUR	72	27	672	0	0.8	0.8	1.1
6301550	99	P	SUR	70	38	672	0	0.6	0.5	0.8

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6301551	99	P	SUR	75	34	671	5	1.5	0.9	1.7
6301552	99	P	SUR	85	17	669	0	0.5	0.3	0.6
6301553	99	P	SUR	86	25	671	0	0.6	0.5	0.7
63055	99	P	SUR	61	2	662	0	0.6	-0.1	0.6
63056	99	P	SUR	60	2	660	0	0.6	0.5	0.8
63057	99	P	SUR	59	2	662	0	0.4	-0.0	0.4
63058	99	P	SUR	53	2	1977	0	0.4	0.3	0.5
63059	99	P	SUR	58	-1	662	0	0.4	0.3	0.5
63101	99	P	SUR	61	1	662	0	0.8	0.4	0.9
63102	99	P	SUR	61	1	659	0	0.5	0.1	0.5
63103	99	P	SUR	61	1	662	0	0.4	0.2	0.5
63104	99	P	SUR	61	2	660	0	0.4	0.1	0.4
63105	99	P	SUR	61	2	661	0	0.4	0.0	0.4
63108	99	P	SUR	61	2	662	0	0.6	-0.1	0.6
63109	99	P	SUR	60	2	662	0	0.5	-0.2	0.5
63110	99	P	SUR	60	2	662	0	0.6	0.0	0.6
63111	99	P	SUR	61	2	1275	0	0.4	-0.3	0.5
63112	99	P	SUR	61	1	662	0	0.4	-0.2	0.5
63115	99	P	SUR	62	1	662	0	0.5	0.0	0.5
63117	99	P	SUR	61	1	1321	0	0.9	0.8	1.2
63118	99	P	SUR	62	1	658	0	0.4	-0.2	0.5
63119	99	P	SUR	56	-3	63	0	1.5	-0.3	1.5
63120	99	P	SUR	54	2	93	0	0.4	0.4	0.5
63646	99	P	SUR	72	27	672	0	0.8	0.8	1.1
6400524	99	P	SUR	67	13	671	0	0.6	0.2	0.6
6400526	99	P	SUR	57	-55	666	0	2.1	0.5	2.2
6400528	99	P	SUR	72	31	672	0	0.5	0.4	0.7
6400530	99	P	SUR	80	15	671	0	0.9	0.0	0.9
6400534	99	P	SUR	60	-47	57	57	0.0	0.0	0.0
6400547	99	P	SUR	76	11	671	0	0.7	0.3	0.8
6400551	99	P	SUR	61	-42	667	0	0.9	-0.2	0.9
6400562	99	P	SUR	65	-11	661	7	3.3	-0.8	3.4
6400666	99	P	SUR	67	-22	670	0	0.6	0.6	0.9
6400757	99	P	SUR	61	-42	233	201	5.9	10.5	12.0
6401501	99	P	SUR	64	-11	648	0	0.5	0.4	0.7
6401550	99	P	SUR	68	12	671	0	1.0	0.5	1.1
6401552	99	P	SUR	62	-28	671	0	0.6	0.8	1.0
6401554	99	P	SUR	67	9	671	0	1.1	0.7	1.3
6401555	99	P	SUR	64	5	671	0	0.6	0.9	1.0
6401556	99	P	SUR	65	-2	670	0	0.8	0.8	1.1
6401557	99	P	SUR	63	-18	670	0	0.6	0.2	0.6
64041	99	P	SUR	61	-3	662	0	0.6	-0.2	0.6
64045	99	P	SUR	59	-12	1233	0	0.5	-0.2	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
64046	99	P	SUR	61	-4	672	0	0.5	0.0	0.5
64476	99	P	SUR	54	9	3	0	0.5	-1.7	1.7
64524	99	P	SUR	67	13	671	0	0.6	0.2	0.6
64526	99	P	SUR	57	-55	666	0	2.1	0.5	2.2
64528	99	P	SUR	72	31	672	0	0.5	0.4	0.7
64530	99	P	SUR	80	15	671	0	0.9	0.0	0.9
64534	99	P	SUR	60	-47	57	57	0.0	0.0	0.0
64547	99	P	SUR	76	10	671	0	0.7	0.3	0.8
64551	99	P	SUR	61	-42	667	0	0.9	-0.2	0.9
64562	99	P	SUR	65	-11	661	7	3.3	-0.8	3.4
64666	99	P	SUR	67	-22	670	0	0.6	0.6	0.9
64757	99	P	SUR	61	-42	630	541	2.2	12.1	12.3
6500514	99	P	SUR	56	-20	671	0	0.7	0.1	0.7
6500515	99	P	SUR	65	-23	671	0	0.6	-0.7	0.9
6500519	99	P	SUR	71	13	671	0	0.7	0.4	0.8
6500596	99	P	SUR	69	8	669	0	1.4	0.9	1.7
6500599	99	P	SUR	65	8	671	0	0.7	0.3	0.7
6500602	99	P	SUR	60	-18	670	0	0.6	0.2	0.7
6501551	99	P	SUR	57	-52	671	0	0.5	0.3	0.6
6501552	99	P	SUR	56	-50	671	0	0.6	0.6	0.8
6501553	99	P	SUR	58	-51	667	0	0.6	0.7	0.9
6501555	99	P	SUR	65	-52	672	0	0.6	-0.5	0.8
6501556	99	P	SUR	57	-48	671	0	0.6	0.6	0.8
6501557	99	P	SUR	66	-27	533	0	0.7	0.5	0.9
6501558	99	P	SUR	59	-57	300	0	0.5	0.3	0.6
65514	99	P	SUR	56	-20	671	0	0.7	0.1	0.7
65515	99	P	SUR	65	-23	671	0	0.6	-0.7	0.9
65519	99	P	SUR	71	13	671	0	0.7	0.4	0.8
65596	99	P	SUR	69	8	669	0	1.4	0.9	1.7
65599	99	P	SUR	65	8	671	0	0.7	0.3	0.7
65602	99	P	SUR	60	-18	670	0	0.6	0.2	0.7

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                : FEB 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	639	0	0	0.8	0.6	1.0
1300002	99	SPEED	SUR	20	-23	327	0	0	0.8	-0.0	0.8
13002	99	SPEED	SUR	20	-23	327	0	0	0.9	0.0	0.9
4100026	99	SPEED	SUR	11	-38	301	0	0	0.8	-0.3	0.9
4100139	99	SPEED	SUR	20	-38	310	0	0	1.1	-0.3	1.2
4100300	99	SPEED	SUR	16	-57	672	0	0	1.0	-0.7	1.2
41026	99	SPEED	SUR	11	-38	301	0	0	0.9	-0.3	0.9
41040	99	SPEED	SUR	15	-53	671	0	0	1.1	-0.1	1.1
41041	99	SPEED	SUR	14	-46	670	0	0	1.1	-0.1	1.1
41043	99	SPEED	SUR	21	-65	1166	0	0	1.2	-0.1	1.2
41044	99	SPEED	SUR	22	-59	1180	0	0	1.3	-0.0	1.3
41048	99	SPEED	SUR	32	-70	930	0	0	1.2	0.1	1.2
41049	99	SPEED	SUR	28	-63	672	0	0	1.2	0.1	1.2
41052	99	SPEED	SUR	18	-65	1732	0	0	1.1	-0.5	1.2
41053	99	SPEED	SUR	19	-66	1688	0	0	1.4	0.4	1.4
41056	99	SPEED	SUR	18	-66	1505	0	0	1.1	-0.6	1.2
41139	99	SPEED	SUR	20	-38	310	0	0	1.1	-0.3	1.2
41300	99	SPEED	SUR	16	-57	672	0	0	1.0	-0.6	1.2
42059	99	SPEED	SUR	15	-68	1165	0	0	0.8	0.0	0.8
42085	99	SPEED	SUR	18	-67	1581	0	0	1.2	0.0	1.2
42088	99	SPEED	SUR	11	-61	1384	0	0	1.4	-2.2	2.6
42090	99	SPEED	SUR	18	-70	2073	0	0	1.3	0.2	1.3
44005	99	SPEED	SUR	43	-69	191	0	0	3.1	-0.5	3.1
44024	99	SPEED	SUR	42	-66	861	0	0	1.6	-0.5	1.7
44032	99	SPEED	SUR	44	-69	664	0	0	1.7	0.3	1.8
44033	99	SPEED	SUR	44	-69	659	0	0	1.8	0.1	1.8
44034	99	SPEED	SUR	44	-68	650	0	0	1.5	-0.1	1.5
44037	99	SPEED	SUR	44	-68	244	0	0	2.5	0.2	2.5
44137	99	SPEED	SUR	42	-62	588	0	0	1.6	-0.2	1.7
44139	99	SPEED	SUR	44	-57	659	0	0	1.6	0.0	1.6
44150	99	SPEED	SUR	43	-64	656	0	0	1.7	-0.1	1.7
44251	99	SPEED	SUR	46	-53	662	0	0	1.8	0.2	1.8
44258	99	SPEED	SUR	45	-63	641	1	0	1.6	0.4	1.6
6100001	99	SPEED	SUR	43	8	672	0	0	1.7	-0.1	1.7

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
6100002	99	SPEED	SUR	42	5	672	0	0	4.4	8.4	9.5
61001	99	SPEED	SUR	43	8	672	0	0	2.0	-1.3	2.3
61002	99	SPEED	SUR	42	5	672	0	0	1.3	-0.8	1.5
6101003	99	SPEED	SUR	40	25	122	0	0	1.8	-1.3	2.2
6101007	99	SPEED	SUR	36	25	129	0	0	2.3	-1.0	2.5
6200091	99	SPEED	SUR	53	-5	671	0	0	1.3	-0.5	1.4
6200093	99	SPEED	SUR	55	-10	664	0	0	1.5	-0.2	1.6
6200094	99	SPEED	SUR	52	-7	671	0	0	1.2	-0.2	1.2
62001	99	SPEED	SUR	45	-5	672	0	0	1.5	0.5	1.6
62027	99	SPEED	SUR	49	-2	224	0	0	1.7	0.1	1.7
62029	99	SPEED	SUR	49	-12	1320	0	0	1.6	-0.1	1.6
62050	99	SPEED	SUR	50	-4	671	0	0	1.3	0.3	1.4
62082	99	SPEED	SUR	55	6	1	0	0	0.0	3.7	3.7
62086	99	SPEED	SUR	55	6	658	0	0	1.2	0.8	1.5
62095	99	SPEED	SUR	53	-16	368	0	0	1.4	-0.1	1.4
62102	99	SPEED	SUR	58	2	662	0	0	1.4	0.0	1.4
62104	99	SPEED	SUR	57	1	662	0	0	1.4	-0.9	1.6
62105	99	SPEED	SUR	55	-13	565	0	0	1.8	0.5	1.8
62107	99	SPEED	SUR	50	-6	1327	2	0	1.7	0.8	1.9
62111	99	SPEED	SUR	58	0	660	0	0	1.6	0.1	1.7
62112	99	SPEED	SUR	58	0	662	0	0	2.2	-1.4	2.6
62113	99	SPEED	SUR	58	0	662	0	0	1.7	0.2	1.7
62114	99	SPEED	SUR	58	0	1321	0	0	1.5	0.6	1.6
62117	99	SPEED	SUR	58	0	662	0	0	1.3	-0.3	1.3
62118	99	SPEED	SUR	58	1	662	0	0	1.5	0.5	1.6
62119	99	SPEED	SUR	57	2	660	0	0	1.7	-0.8	1.9
62120	99	SPEED	SUR	56	2	662	0	0	1.3	0.0	1.3
62121	99	SPEED	SUR	54	3	661	0	0	1.4	0.2	1.4
62122	99	SPEED	SUR	57	2	1320	0	0	1.2	-0.1	1.2
62128	99	SPEED	SUR	59	1	662	0	0	1.6	0.2	1.6
62129	99	SPEED	SUR	58	0	662	0	0	1.4	-0.3	1.4
62131	99	SPEED	SUR	54	1	662	0	0	3.2	-1.5	3.5
62132	99	SPEED	SUR	56	2	661	0	0	2.1	-1.7	2.7
62133	99	SPEED	SUR	57	1	657	0	0	1.3	-0.2	1.4
62134	99	SPEED	SUR	58	1	659	0	0	1.5	-0.3	1.5
62140	99	SPEED	SUR	57	1	1319	0	0	1.3	-0.2	1.3
62143	99	SPEED	SUR	58	2	657	0	0	2.1	-1.1	2.3
62144	99	SPEED	SUR	53	2	660	0	0	2.4	-0.6	2.5
62145	99	SPEED	SUR	53	3	1317	0	0	1.5	1.1	1.8
62146	99	SPEED	SUR	57	2	644	0	0	1.5	-0.3	1.5
62148	99	SPEED	SUR	54	2	293	0	0	2.1	-0.4	2.2

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62149	99	SPEED	SUR	54	1	662	0	0	1.5	0.0	1.5
62150	99	SPEED	SUR	54	1	537	0	0	1.4	-0.7	1.6
62152	99	SPEED	SUR	57	2	662	0	0	2.3	-1.8	3.0
62153	99	SPEED	SUR	57	2	1321	0	0	3.0	-2.0	3.6
62154	99	SPEED	SUR	56	2	662	0	0	1.5	-0.4	1.6
62155	99	SPEED	SUR	58	1	600	0	0	1.5	-0.0	1.5
62163	99	SPEED	SUR	48	-8	669	1	0	1.3	-0.2	1.3
62164	99	SPEED	SUR	57	1	661	0	0	1.5	-1.8	2.4
62165	99	SPEED	SUR	54	1	662	0	0	1.6	-0.8	1.8
62170	99	SPEED	SUR	51	2	672	0	0	1.8	1.5	2.3
62304	99	SPEED	SUR	51	2	583	0	0	1.6	1.1	1.9
62305	99	SPEED	SUR	50	0	725	1	0	1.7	1.3	2.2
63055	99	SPEED	SUR	61	2	662	0	0	1.5	-1.5	2.1
63056	99	SPEED	SUR	60	2	660	0	0	1.4	-0.5	1.5
63057	99	SPEED	SUR	59	2	662	0	0	1.9	0.0	1.9
63058	99	SPEED	SUR	53	2	1316	0	0	1.3	0.3	1.4
63101	99	SPEED	SUR	61	1	474	0	0	1.4	-0.9	1.7
63103	99	SPEED	SUR	61	1	662	0	0	1.7	-0.6	1.8
63104	99	SPEED	SUR	61	2	660	0	0	1.3	-0.7	1.5
63105	99	SPEED	SUR	61	2	661	0	0	1.6	-0.3	1.6
63106	99	SPEED	SUR	61	2	658	0	0	1.5	-0.5	1.6
63108	99	SPEED	SUR	61	2	662	0	0	1.7	-0.3	1.7
63109	99	SPEED	SUR	60	2	658	0	0	1.5	-0.3	1.6
63110	99	SPEED	SUR	60	2	662	0	0	1.5	-0.3	1.6
63112	99	SPEED	SUR	61	1	662	0	0	1.4	-1.1	1.8
63113	99	SPEED	SUR	61	2	660	0	0	1.4	-1.0	1.7
63115	99	SPEED	SUR	62	1	662	0	0	1.5	-1.0	1.8
63117	99	SPEED	SUR	61	1	1321	0	0	1.4	-0.6	1.5
63119	99	SPEED	SUR	56	-3	63	0	0	2.3	-0.8	2.5
64041	99	SPEED	SUR	61	-3	648	0	0	1.3	-0.3	1.3
66021	99	SPEED	SUR	55	14	672	0	0	1.2	0.2	1.2
66024	99	SPEED	SUR	55	13	662	0	0	1.2	0.4	1.2

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                : FEB 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	637	0	0	7.3	1.4	7.5
1300002	99	DIRN	SUR	20	-23	309	0	0	8.7	4.6	9.9
13002	99	DIRN	SUR	20	-23	311	0	0	9.1	4.0	9.9
4100026	99	DIRN	SUR	11	-38	301	0	0	10.5	-0.9	10.5
4100139	99	DIRN	SUR	20	-38	291	0	0	11.4	-4.3	12.2
41002	99	DIRN	SUR	32	-75	621	0	0	20.0	7.5	21.4
4100300	99	DIRN	SUR	16	-57	636	0	0	13.3	-13.6	19.0
41004	99	DIRN	SUR	33	-79	610	0	0	15.6	9.1	18.1
41008	99	DIRN	SUR	31	-81	538	0	0	18.7	13.0	22.8
41013	99	DIRN	SUR	33	-78	996	0	0	21.4	13.0	25.0
41024	99	DIRN	SUR	34	-79	456	0	0	18.3	-1.2	18.3
41025	99	DIRN	SUR	35	-75	597	0	0	20.9	-0.5	20.9
41026	99	DIRN	SUR	11	-38	301	0	0	11.0	-1.3	11.1
41029	99	DIRN	SUR	33	-80	542	0	0	19.4	1.5	19.4
41033	99	DIRN	SUR	32	-80	484	0	0	18.7	4.4	19.2
41037	99	DIRN	SUR	34	-77	552	0	0	23.1	1.9	23.2
41038	99	DIRN	SUR	34	-78	466	0	0	21.2	6.5	22.2
41040	99	DIRN	SUR	15	-53	648	0	0	12.4	1.7	12.6
41041	99	DIRN	SUR	14	-46	666	0	0	10.7	1.8	10.9
41043	99	DIRN	SUR	21	-65	1080	0	0	13.8	8.8	16.4
41044	99	DIRN	SUR	22	-59	999	0	0	13.2	3.7	13.7
41046	99	DIRN	SUR	24	-72	919	0	0	14.2	9.7	17.2
41047	99	DIRN	SUR	28	-72	944	0	0	15.5	7.5	17.2
41048	99	DIRN	SUR	32	-70	885	0	0	14.9	10.9	18.4
41049	99	DIRN	SUR	28	-63	536	0	0	13.3	7.7	15.4
41052	99	DIRN	SUR	18	-65	1389	0	0	19.0	1.7	19.0
41053	99	DIRN	SUR	19	-66	1050	0	0	19.6	2.8	19.8
41056	99	DIRN	SUR	18	-66	1199	0	0	16.1	2.6	16.3
41064	99	DIRN	SUR	34	-77	549	0	0	18.7	-4.4	19.2
41139	99	DIRN	SUR	20	-38	290	0	0	11.9	-5.2	13.0
41300	99	DIRN	SUR	16	-57	631	0	0	12.0	-13.8	18.3
42013	99	DIRN	SUR	27	-83	540	0	0	18.8	0.1	18.8

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
42022	99	DIRN	SUR	28	-84	783	0	0	24.4	2.9	24.6
42023	99	DIRN	SUR	26	-83	813	0	0	18.6	-1.1	18.6
42036	99	DIRN	SUR	29	-85	464	0	0	24.1	3.0	24.3
42056	99	DIRN	SUR	20	-85	1044	0	0	10.0	1.9	10.2
42058	99	DIRN	SUR	15	-75	619	0	0	6.9	4.5	8.3
42059	99	DIRN	SUR	15	-68	1099	0	0	9.7	2.8	10.1
42085	99	DIRN	SUR	18	-67	1210	0	0	14.7	5.5	15.7
42088	99	DIRN	SUR	11	-61	973	0	0	16.4	-16.3	23.1
42090	99	DIRN	SUR	18	-70	886	0	0	26.4	-26.7	37.6
44005	99	DIRN	SUR	43	-69	164	0	0	14.5	31.1	34.3
44007	99	DIRN	SUR	44	-70	569	0	0	24.2	9.6	26.0
44013	99	DIRN	SUR	42	-71	620	0	0	21.0	7.9	22.4
44014	99	DIRN	SUR	37	-75	489	0	0	20.6	4.7	21.2
44017	99	DIRN	SUR	41	-72	302	0	0	32.7	3.3	32.9
44020	99	DIRN	SUR	41	-70	606	0	0	15.9	7.8	17.7
44024	99	DIRN	SUR	42	-66	760	0	0	17.2	7.0	18.6
44025	99	DIRN	SUR	40	-73	631	0	0	17.7	2.8	17.9
44029	99	DIRN	SUR	43	-71	867	0	0	21.9	3.1	22.1
44030	99	DIRN	SUR	43	-70	558	0	0	18.2	5.1	18.9
44032	99	DIRN	SUR	44	-69	567	0	0	17.5	4.5	18.0
44033	99	DIRN	SUR	44	-69	501	0	0	18.1	3.2	18.4
44034	99	DIRN	SUR	44	-68	574	0	0	15.3	6.7	16.8
44037	99	DIRN	SUR	44	-68	224	0	0	18.3	0.5	18.3
44039	99	DIRN	SUR	41	-73	493	0	0	18.7	4.5	19.3
44040	99	DIRN	SUR	41	-74	274	0	0	24.8	3.7	25.1
44041	99	DIRN	SUR	37	-77	210	0	0	16.9	3.8	17.3
44042	99	DIRN	SUR	38	-76	562	0	0	24.1	-12.7	27.3
44058	99	DIRN	SUR	38	-76	283	0	0	25.5	-17.1	30.7
44062	99	DIRN	SUR	39	-76	636	0	0	27.5	-5.6	28.1
44065	99	DIRN	SUR	40	-74	568	0	0	20.2	6.3	21.2
44066	99	DIRN	SUR	40	-73	2	0	0	0.0	-22.1	22.1
44072	99	DIRN	SUR	37	-76	595	0	0	26.8	-7.7	27.9
44137	99	DIRN	SUR	42	-62	550	0	0	12.7	-0.5	12.7
44139	99	DIRN	SUR	44	-57	603	0	0	10.9	7.4	13.2
44150	99	DIRN	SUR	43	-64	590	0	0	15.8	4.0	16.3
44251	99	DIRN	SUR	46	-53	596	0	0	14.5	10.0	17.7
44258	99	DIRN	SUR	45	-63	546	1	0	17.6	4.3	18.2
6200091	99	DIRN	SUR	53	-5	636	0	0	12.9	0.7	12.9
6200093	99	DIRN	SUR	55	-10	652	0	0	15.0	0.4	15.0
6200094	99	DIRN	SUR	52	-7	649	0	0	10.4	1.9	10.6
62001	99	DIRN	SUR	45	-5	523	0	0	15.5	5.0	16.3

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
62027	99	DIRN	SUR	49	-2	196	0	0	13.8	-6.5	15.2
62029	99	DIRN	SUR	49	-12	1294	0	0	13.1	6.4	14.6
62050	99	DIRN	SUR	50	-4	638	0	0	14.3	2.9	14.6
62095	99	DIRN	SUR	53	-16	351	0	0	9.7	6.8	11.8
62105	99	DIRN	SUR	55	-13	554	0	0	13.4	4.1	14.0
62107	99	DIRN	SUR	50	-6	1309	2	0	15.6	0.5	15.6
62111	99	DIRN	SUR	58	0	636	0	0	13.1	-0.6	13.1
62112	99	DIRN	SUR	58	0	625	0	0	10.2	2.9	10.6
62114	99	DIRN	SUR	58	0	1287	0	0	9.1	1.6	9.3
62117	99	DIRN	SUR	58	0	639	0	0	8.9	3.7	9.6
62163	99	DIRN	SUR	48	-8	629	1	0	18.0	-0.4	18.0
62305	99	DIRN	SUR	50	0	713	1	0	15.5	5.9	16.6
63119	99	DIRN	SUR	56	-3	52	0	0	20.0	1.4	20.0
64041	99	DIRN	SUR	61	-3	613	0	0	9.7	8.8	13.1

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASDE01	ASDE02	ASDE03	ASDE09	ASDK01	ASDK02	ASDK03	ASES01	ASEU01
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
03743	03808	03882	03918	03953	04220	04270	04320	04339
04417	06011	06260	06610	07110	07145	07510	07645	07761
08001	08023	08190	08221	08302	08430	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	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	ASDE09	ASDK01	ASDK02	ASDK03	ASES01	ASEU01
ASEU02	ASEU03	ASEU04	ASEU05	ASEU06	ASFR1	ASFR3	ASFR4	DBLK
17607	33008	47155	76743	76903	94653	94767		

5 Annex - Explanations of figures and tables

5.1 General

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

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

5.2 Data Availability

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

5.3 Data Quality

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

It should be noted that:

(i) all results are based on software that may undergo further development;

(ii) although the quality of the ECMWF first-guess fields is of a generally high standard this is only true to a limited extent in the tropics, where small-scale processes such as convection are of much greater importance than in mid-latitudes, and the observations will sometimes not be representative of the scales of motion given by the first-guess;

(iii) the first-guess fields themselves will vary in accuracy depending on the density and quality of data, particularly in the upstream regions and over Antarctica and the southern hemisphere mid-latitudes. Direct comparisons between stations (or airlines) should preferably be restricted to observations in a reasonably homogeneous climatic region.

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

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

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

The corresponding limits for wind (table 8) are:

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

In table 7 the weighted RMS values at standard levels are calculated using the following weights:

Level	Weight
1000	3.70
925	3.55
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

Tables 10 and 11 provide geopotential and wind quality statistics (100 hPa level) for TEMPSHIPs and PILOTSHIPs received during the month. Units and display format are identical to those in tables 7 and 8 respectively. Tables 13, 14 (50 hPa), 15 and 16 (100 hPa), 17 and 18 (500hPa), 19 and 20 (850hPa) provide similar radiosonde statistics for the EUCOS area.

Tables 21-23 are similar to tables 4-6 with data coverage restricted to the EUCOS area.

Figures 14-18 show global charts of SATOB and aircraft wind quality, where the statistics have been averaged over latitude/longitude boxes of 5 degrees square, and the mean observed minus first-guess (or 'bias') wind vectors have been plotted. All observations in the specified layers have been used. For comparison the mean observed wind (from the SATOB reports only) for each layer is shown in figures 14 and 15. A reference value of wind speed is plotted in the top right corner of each figure. An arrow is only plotted if 10 or more observations have been received in that 5 degree square.

Table 12 provides quality statistics of aircraft wind observations in the layer 300-150 hPa stratified by airline carrier. The format and specifications of the table have been defined by NMC Washington, the lead centre for the monitoring of aircraft and satellite data.

Table 24 shows list of Assimilated BUFR Encoded Radiosonde Stations monitored within the month.

Table 25 shows list of BUFR Encoded Radiosonde Stations with no TAC Counterpart monitored within the month.