ECMWF Global Data Monitoring Report

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

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Summary of Revisions (in reverse order)

Revision 28 (June 18) – 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 (Mar 13) – Monitoring of Radiosondes and ASAPs now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart.
Tables 24 and 25 are also added to show the identifiers of these BUFR observations separately.

Revision 26 (Feb 15) – Selection criteria for SHIPs are modified as per SOT-7/Doc.9.1.1.
Different criteria applied to Manual and Automatic SHIPs.

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

Revision 24 (Aug 06) – North Atlantic Monitoring statistics replaced by EUCOS Area Monitoring Statistics (tables 13 to 23).
Airep tables removed from this section.

Revision 23 (Dec 00) – Coverage charts for Noaa_14 MSU replaced by ATOVS AMSU-A for Noaa_16.

Revision 22 (Aug 99) – Coverage charts for TOVS thickness 300-100 hPa replaced by (A)TOVS AMSU-A and MSU (Noaa_15 and Noaa_14).

Revision 21 (May 99) – Monitoring statistics ceased for Noaa_11 as satellite is no more available.

Revision 20 (Sep 98) – Changes to tables and annex to remove all mention about data usage. Two more levels (50 and 850 hPa) added to the COSNA statistics for Sondes.

Revision 19 (Jul 98) – From June 29th, 1998 ECMWF model assimilates temperature data instead of geopotential from radiosondes. As a consequence the number of used geopotential data drops to zero in tables 7, 10, 13 and 15.

Revision 18 (Apr 98) – Changes to tables and annex to introduce the usage of accepted numbers and observations instead of precentage of rejection.

1 Introduction

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

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

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

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

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

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

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

2 Data summary - History of events

2.1 Radiosondes

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

Ident	Time	May	Jun	Ident	Time	May	Jun
40582	(00)	23	3	16045	(00)	0	14
40745	(12)	31	4	16045	(12)	0	14
40766	(12)	28	0	41217	(12)	13	29
40800	(00)	31	1	42361	(12)	0	27
40848	(00)	30	0	42369	(12)	3	28
47185	(00)	31	0	42379	(12)	0	30
47185	(12)	31	0	42410	(12)	6	29
61291	(00)	30	6	42492	(12)	0	25
61291	(12)	31	6	42647	(12)	0	29
61641	(00)	31	8	42667	(12)	1	27
61641	(12)	31	8	42701	(12)	0	30
64650	(00)	26	0	42971	(12)	1	30
64650	(12)	28	1	43128	(12)	0	25
64910	(00)	19	0	43371	(12)	0	27
64910	(12)	22	0	48568	(00)	0	13
82965	(00)	22	0	64750	(00)	0	14
83525	(00)	21	0	65125	(12)	3	23
83649	(00)	21	0	65578	(00)	0	21
83768	(00)	21	0	65578	(12)	0	19
83840	(12)	26	4	67083	(00)	0	18
84203	(12)	24	0	67197	(00)	0	18
-	-	-	-	71126	(00)	18	30
-	-	-	-	74006	(00)	10	25
-	-	-	-	76405	(12)	16	28
-	-	-	-	76743	(00)	6	27
-	-	-	-	76805	(12)	15	26
-	-	-	-	78073	(12)	11	23
-	-	-	-	78384	(00)	0	27
-	-	-	-	78397	(00)	0	30
-	-	-	-	78486	(00)	0	30
-	-	-	-	78583	(00)	0	30
-	-	-	-	78866	(00)	0	27
-	-	-	-	78897	(00)	0	30
-	-	-	-	78954	(00)	0	22
-	-	-	-	78970	(00)	0	30
-	-	-	-	78988	(00)	0	16
-	-	-	-	85469	(00)	16	28

2.2 Drifting Buoys

Surface pressure observations from **1347** 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

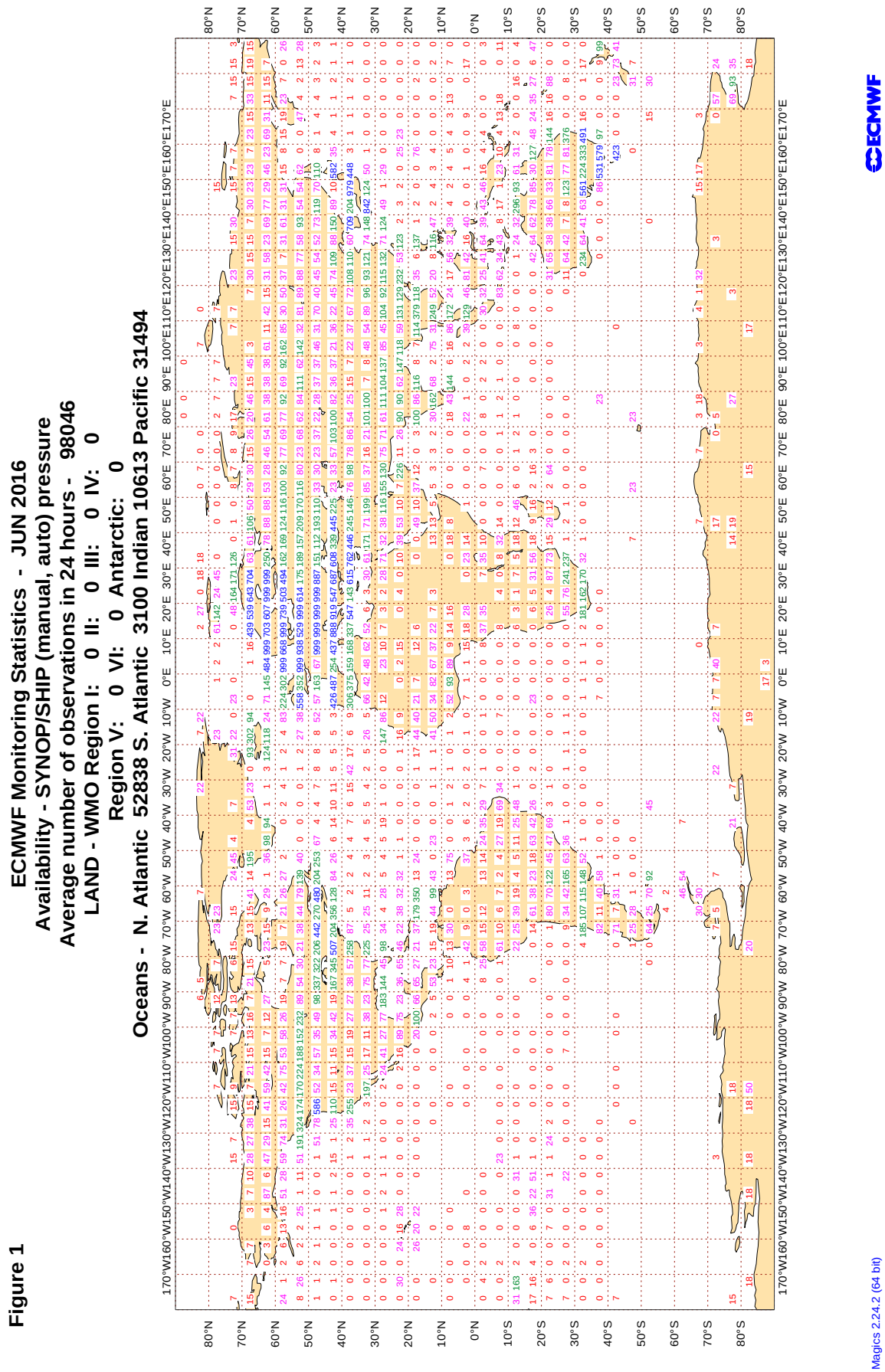


Figure 1

3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

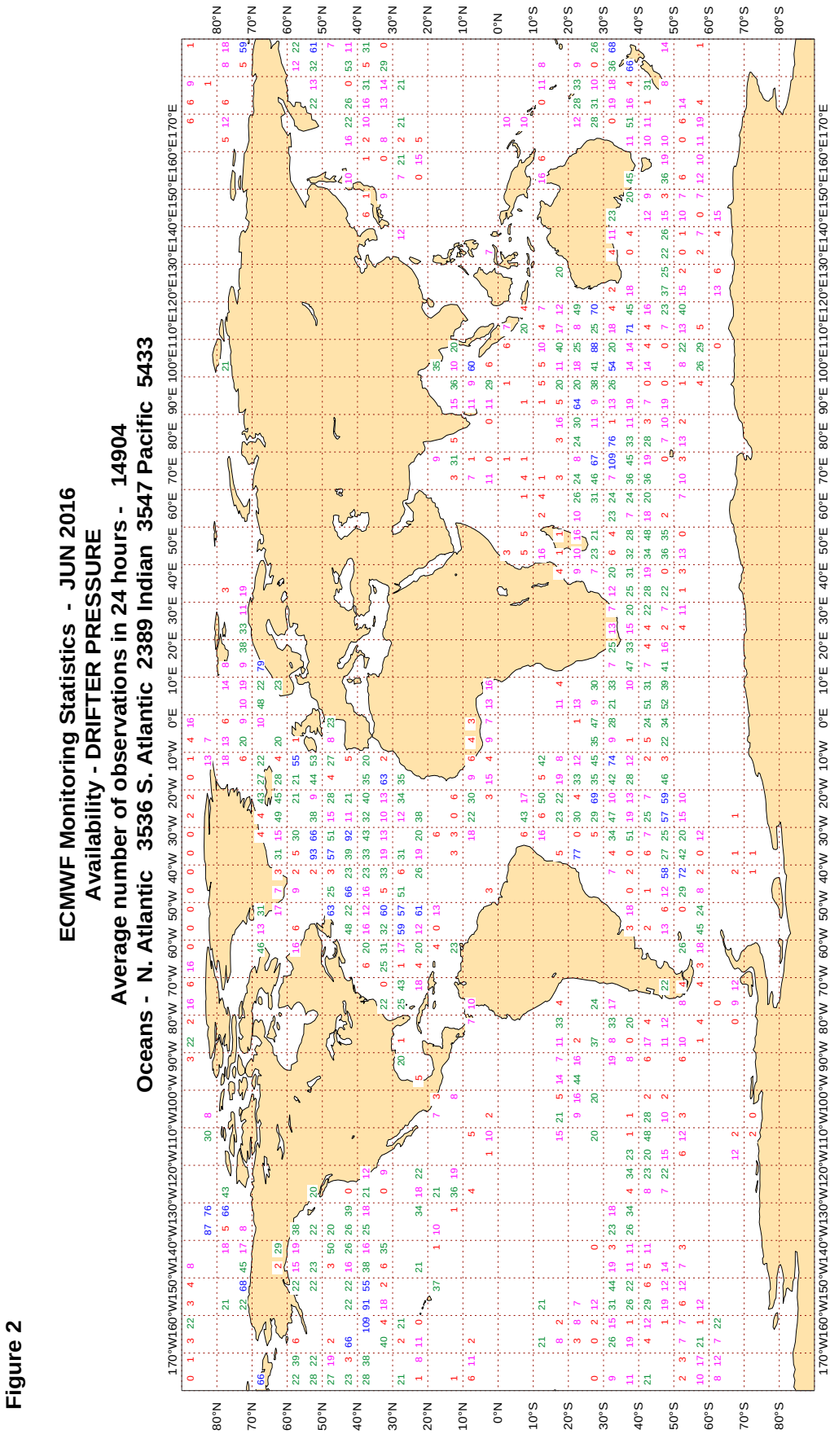


Figure 2

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

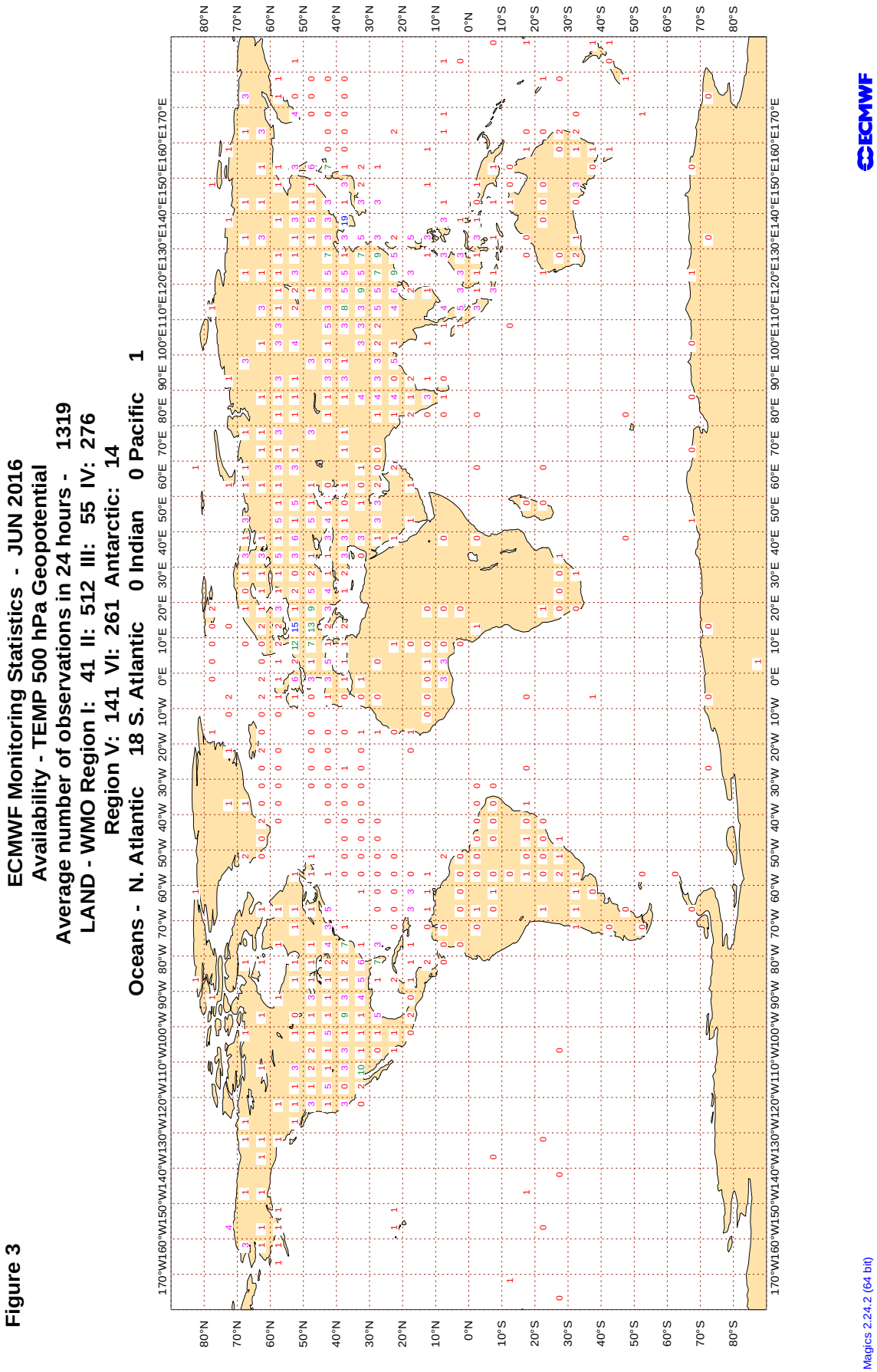


Figure 3

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

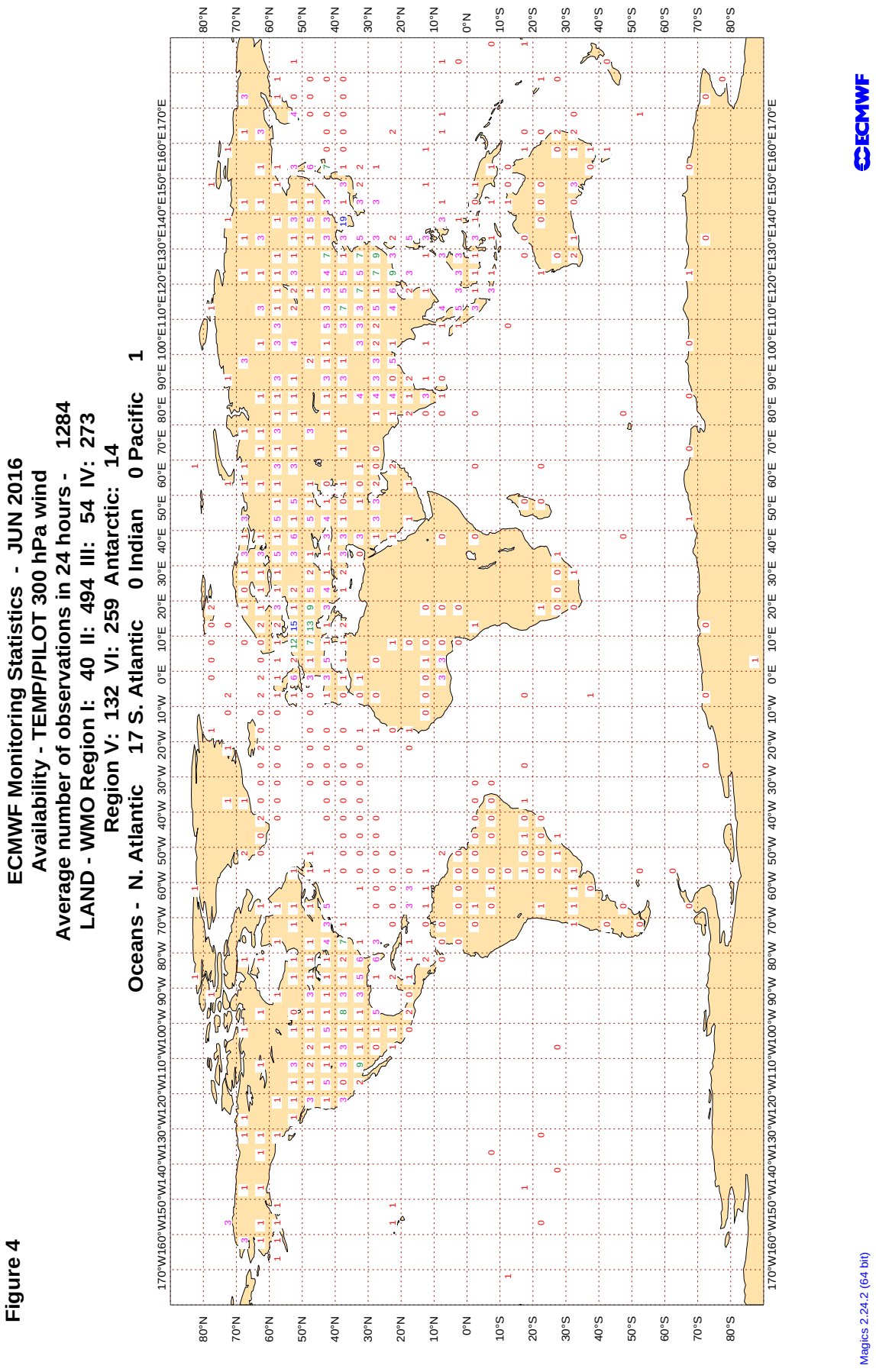


Figure 4

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

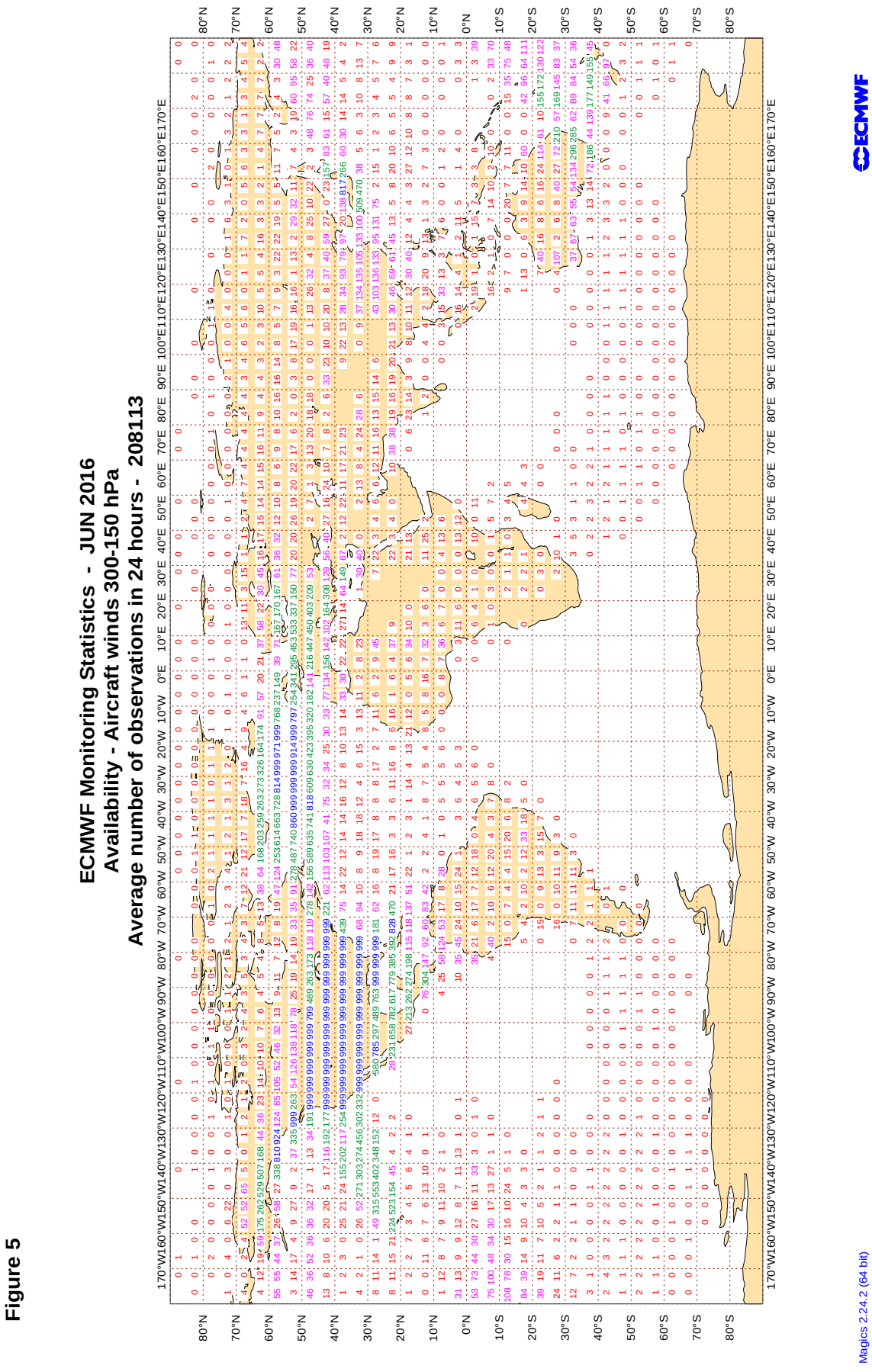
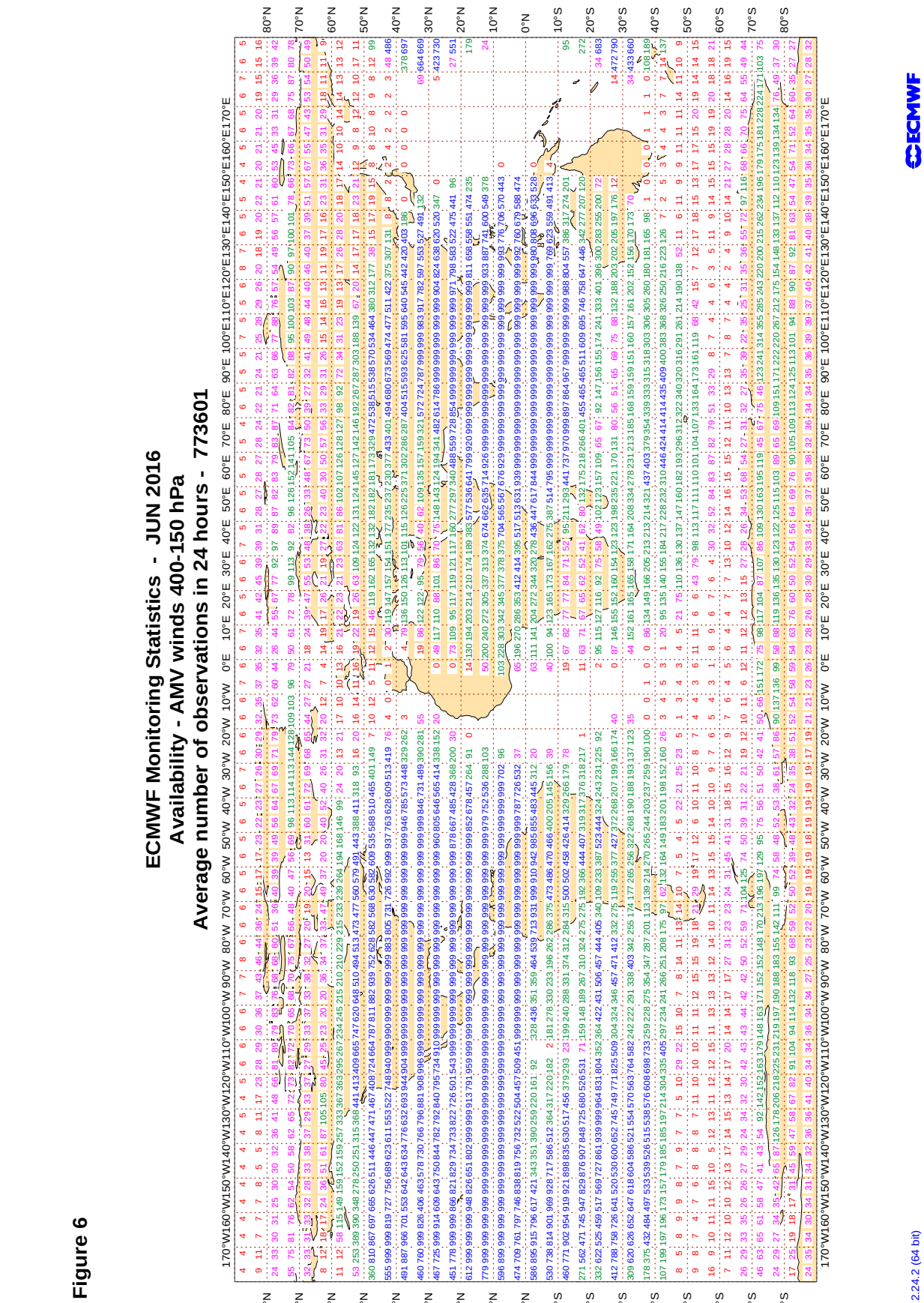


Figure 5

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



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

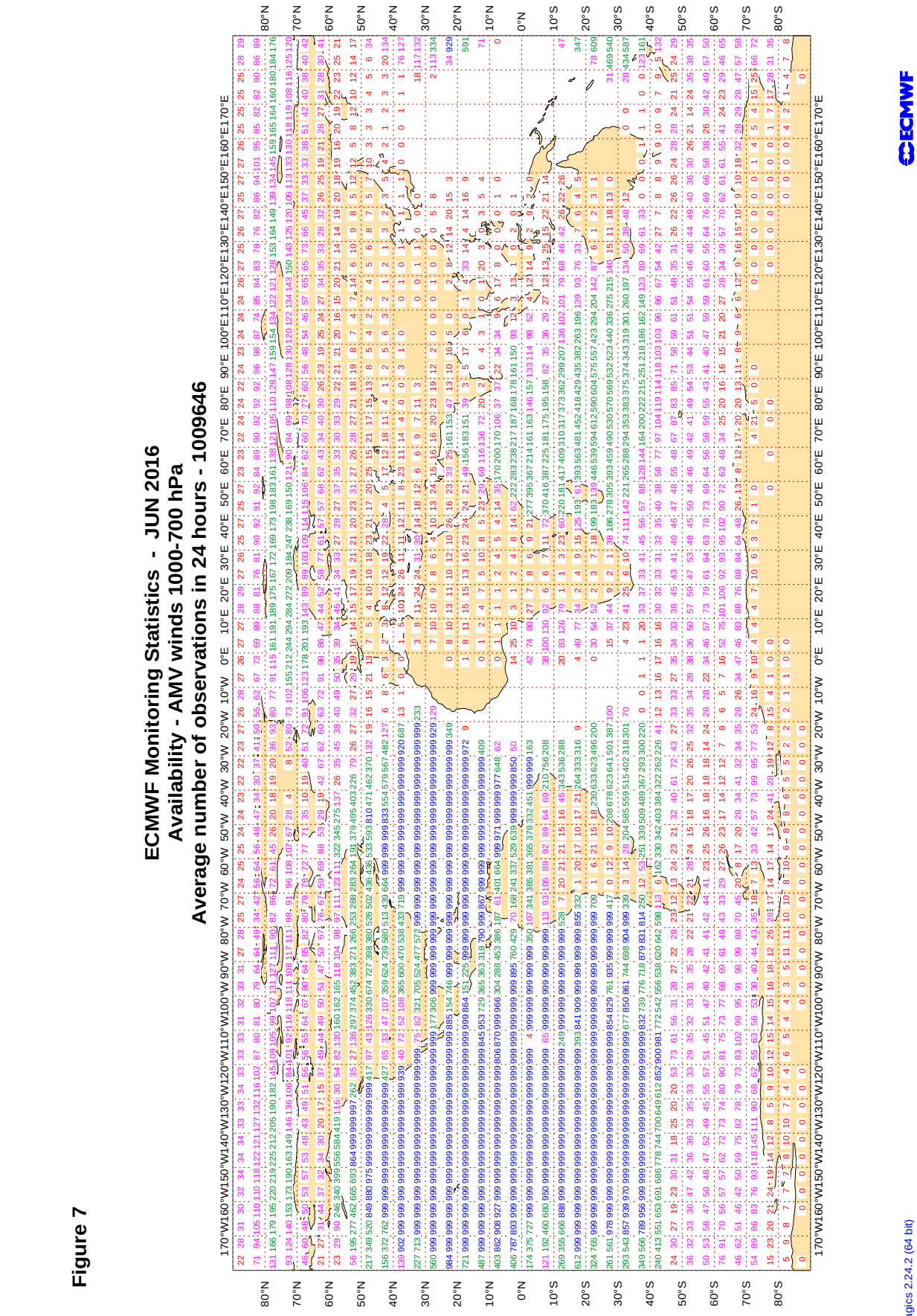
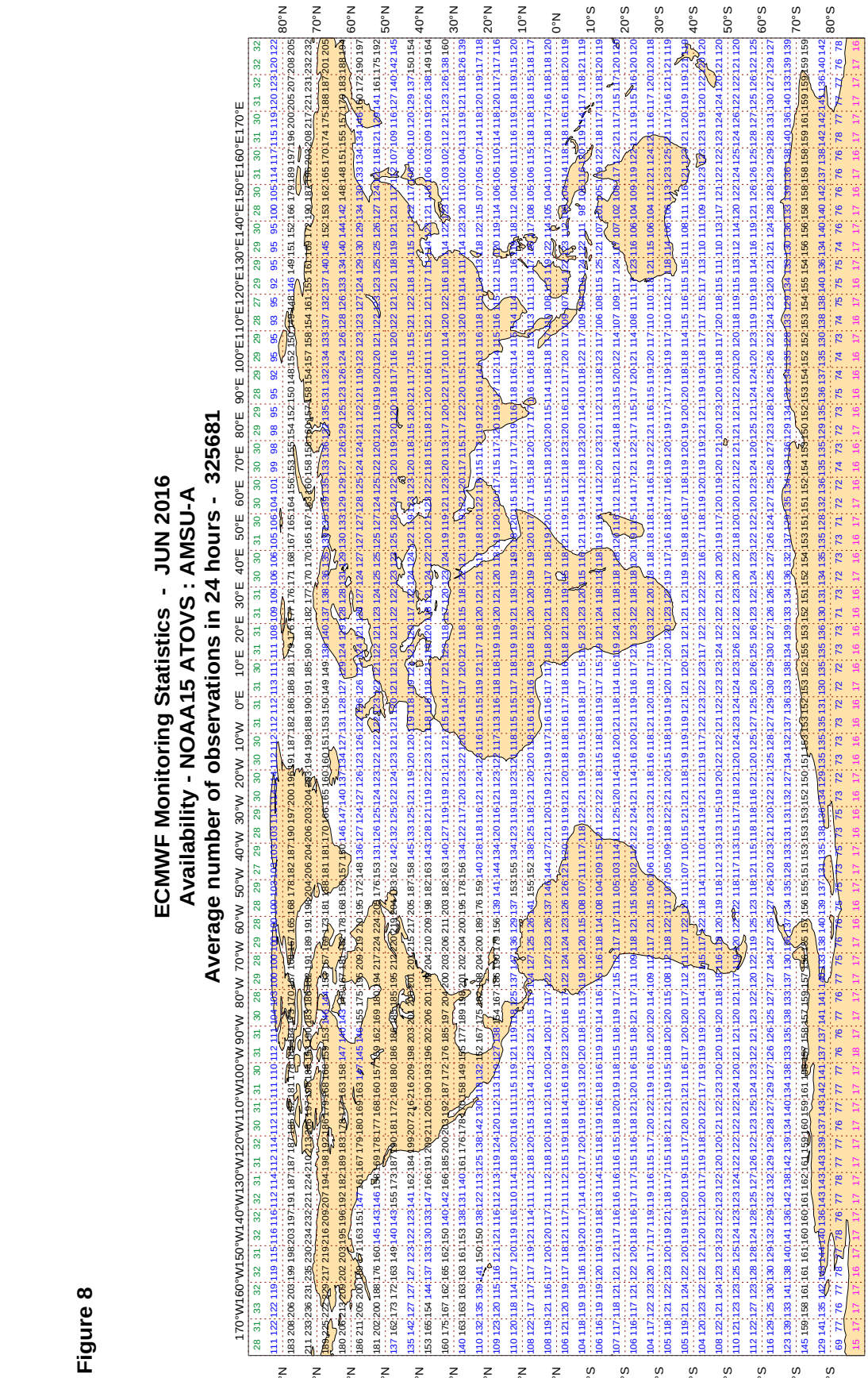


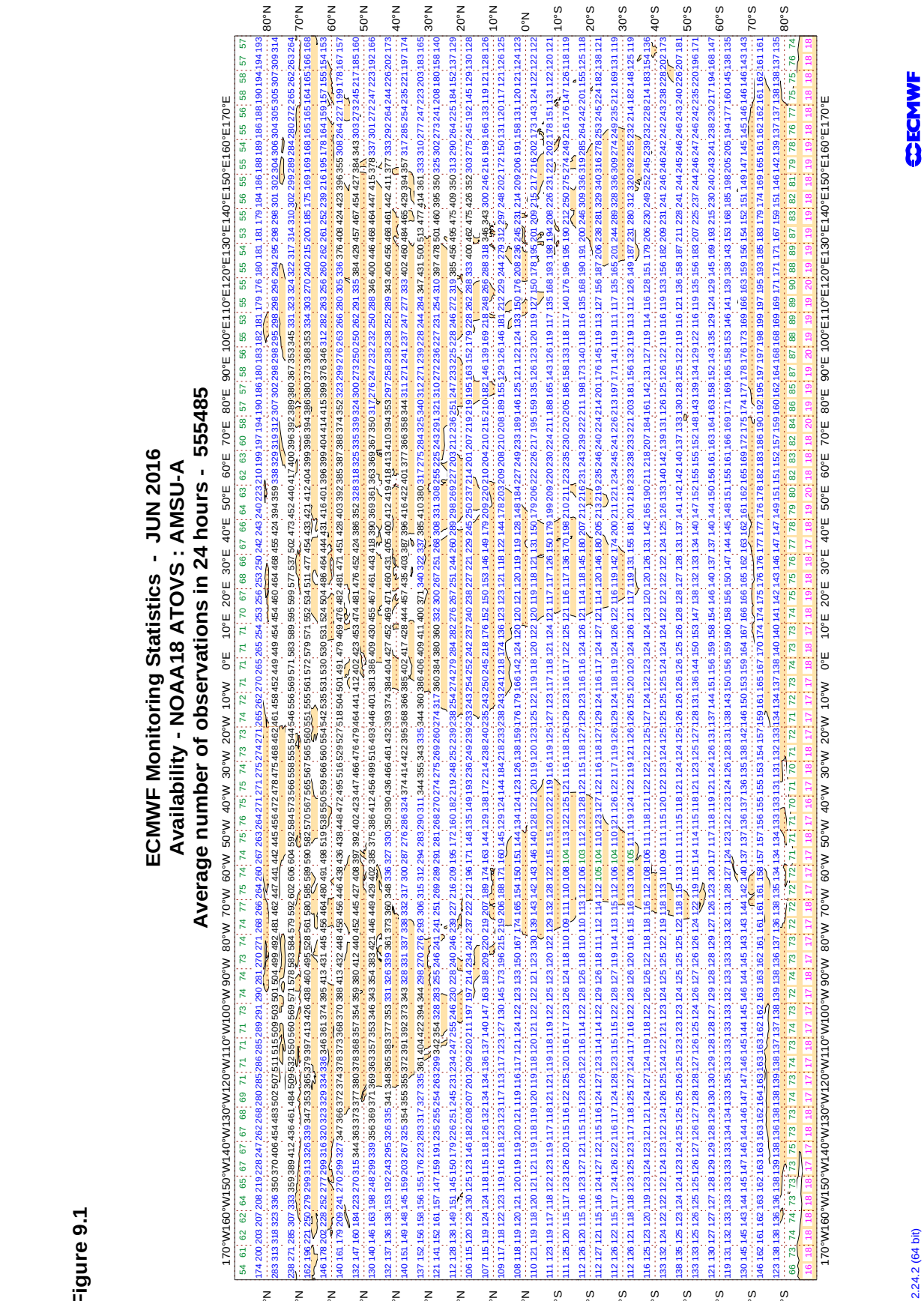
Figure 7

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

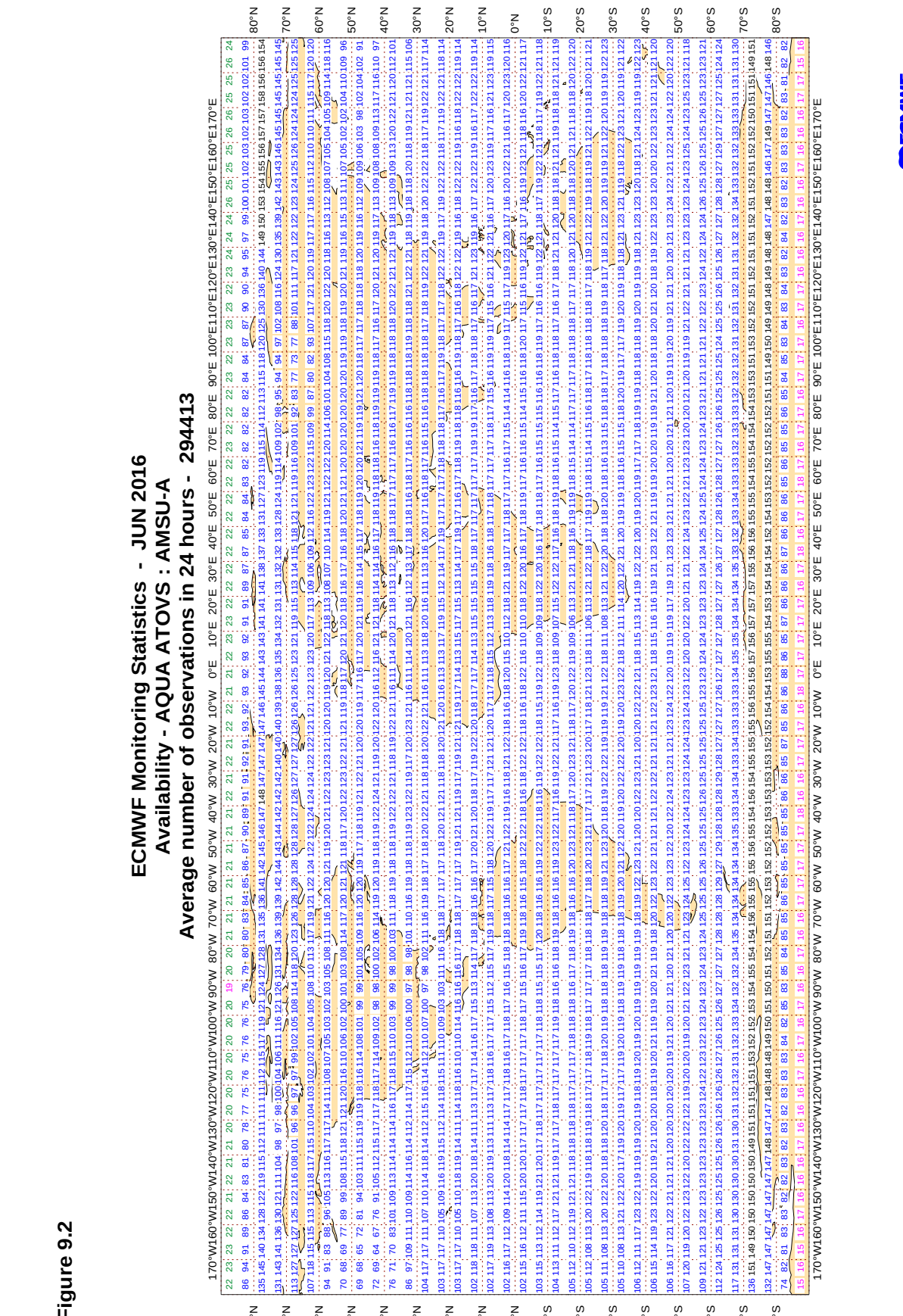
Figure 8



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

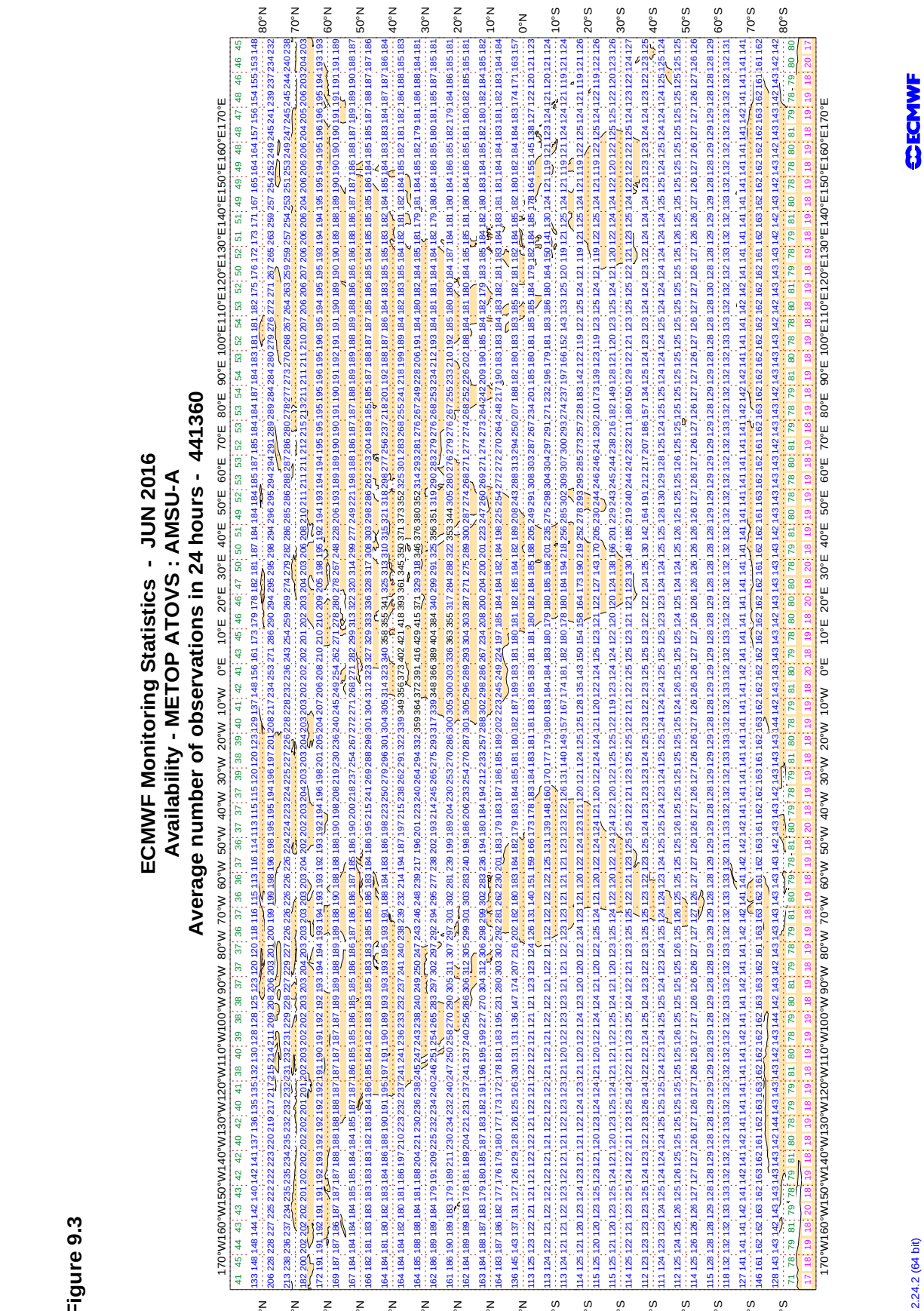


3.2.10 Figure 9.2 - Availability - AQUA ATOVS : AMSU-A



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

Figure 9.3



3.2.12 Table 1 - Suspect ships and fixed marine platforms: Surface pressure - (hPa)

```
          LIST OF SUSPECT STATIONS        : SHIPS + FIXED MARINE PLATFORMS
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : SURFACE PRESSURE (HPA)
                    AREA                  : GLOBAL
                    PERIOD                : JUN 2016
                    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
2ALD3	99	P	SUR	48	0	1.4	4.5	4.7
4XFA	99	P	SUR	20	0	1.7	3.4	3.8
9V2781	99	P	SUR	31	0	1.2	7.8	7.9
9V2782	99	P	SUR	48	0	1.6	8.5	8.7
9V3819	99	P	SUR	38	0	2.0	4.3	4.8
9V5789	99	P	SUR	15	0	1.8	3.9	4.3
9V9062	99	P	SUR	31	0	2.8	5.0	5.8
9V9130	99	P	SUR	39	0	1.3	3.2	3.4
9V9133	99	P	SUR	29	0	0.9	4.0	4.1
9V9143	99	P	SUR	22	0	2.2	5.8	6.2
9V9290	99	P	SUR	17	2	4.2	9.2	10.1
AUYN	99	P	SUR	18	0	2.7	3.9	4.8
AVBD	99	P	SUR	33	1	3.5	-5.6	6.6
AVLZ	99	P	SUR	33	1	2.3	-4.1	4.7
C6AV5	99	P	SUR	28	0	0.5	3.7	3.8
C6BR3	99	P	SUR	42	0	0.9	3.8	3.9
C6FU7	99	P	SUR	40	0	2.0	4.3	4.7
C6FV4	99	P	SUR	27	0	4.3	4.5	6.2
C6LU4	99	P	SUR	31	0	1.5	4.4	4.6
C6UK7	99	P	SUR	19	0	2.7	4.1	4.9
CCES	99	P	SUR	55	0	1.2	-5.2	5.3
CTFG	99	P	SUR	16	2	8.0	-0.1	8.0
D5KI2	99	P	SUR	104	0	0.7	-4.3	4.4
H3VR	99	P	SUR	15	0	1.1	-5.1	5.2
ICIC	99	P	SUR	17	0	5.5	-1.7	5.7
KPDL	99	P	SUR	44	0	1.5	3.6	3.9
KRAU	99	P	SUR	44	0	0.9	6.9	7.0
LF8G	99	P	SUR	100	6	6.2	1.3	6.3
OZ2049	99	P	SUR	29	0	0.7	-4.5	4.5
S6LT3	99	P	SUR	28	0	1.6	-3.2	3.6
S6LT6	99	P	SUR	25	0	1.2	3.2	3.5
UASP	99	P	SUR	16	2	3.5	-5.5	6.5

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

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	SD	BIAS	RMS
UCSJ	99	P	SUR	25	0	0.5	3.6	3.7
UHOW	99	P	SUR	43	16	3.9	-8.6	9.5
V7UT7	99	P	SUR	18	0	1.1	3.7	3.9
VRBH9	99	P	SUR	22	0	1.2	5.0	5.2
VRDY5	99	P	SUR	40	0	1.7	5.3	5.6
VRFI7	99	P	SUR	30	0	0.8	4.9	5.0
VRGV9	99	P	SUR	25	0	2.2	5.5	5.9
VRID5	99	P	SUR	35	0	2.7	6.5	7.1
VRJT8	99	P	SUR	43	0	2.2	4.8	5.2
VRKC2	99	P	SUR	39	0	1.3	-8.4	8.5
VRZK9	99	P	SUR	17	0	1.2	5.5	5.6
VTFG	99	P	SUR	119	23	7.0	-6.5	9.6
VTGB	99	P	SUR	108	51	0.5	-0.2	0.5
WACW	99	P	SUR	27	0	0.5	3.0	3.0
WAZV	99	P	SUR	17	0	0.6	-4.9	5.0
WCX8812	99	P	SUR	61	0	1.2	-3.3	3.5
WDG4379	99	P	SUR	39	0	0.7	3.2	3.3
WDG8426	99	P	SUR	37	0	1.2	3.7	3.9
WFAF	99	P	SUR	25	0	2.5	4.5	5.2

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                : JUN 2016
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD


SELECTION CRITERIA: NO. OF OBS.           >= 15(50), AND,
Manual (Automatic)  ABSOLUTE BIAS         >= 4(4) M/S, OR,
                    % GROSS ERROR         >= 25(15)
                    (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)


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

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS

3.2.14 Table 3 - Suspect ships and fixed marine platforms: Wind direction (DEGREES)

```
          LIST OF SUSPECT STATIONS        : SHIPS + FIXED MARINE PLATFORMS
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                    AREA                  : GLOBAL
                    PERIOD                : JUN 2016
                    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
45020	99	DIRN	SUR	26	0	0	88.3	-23.4	91.4
45144	99	DIRN	SUR	37	0	0	38.1	-37.2	53.3
46118	99	DIRN	SUR	60	0	0	33.6	37.3	50.2
46125	99	DIRN	SUR	42	0	0	30.3	41.1	51.1

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

```
          LIST OF SUSPECT STATIONS         : DRIFTER
                    MONITORING CENTRE      : ECMWF
                    ELEMENT MONITORED      : SURFACE PRESSURE (HPA)
                    AREA                   : GLOBAL
                    PERIOD                 : JUN 2016
                    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
16545	99	P	SUR	-31	83	183	0	2.6	-4.3	5.1
26545	99	P	SUR	68	2	718	164	7.9	5.6	9.7
44613	99	P	SUR	30	-45	39	0	0.9	-6.7	6.8
47503	99	P	SUR	64	-27	359	359	0.0	0.0	0.0
48513	99	P	SUR	76	153	667	132	8.3	-0.7	8.3
48643	99	P	SUR	70	-144	112	39	8.3	-2.5	8.7
56948	99	P	SUR	-34	84	140	98	4.6	-9.5	10.6
73653	99	P	SUR	-70	-112	115	21	7.4	-6.5	9.8

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                : JUN 2016
                    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
53040	99	SPEED	SUR	-8	95	540	11	0	8.9	7.2	11.4

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

```
          LIST OF SUSPECT STATIONS         : DRIFTER
                    MONITORING CENTRE      : ECMWF
                    ELEMENT MONITORED      : WIND DIRECTION (DEGREES)
                    PERIOD                 : JUN 2016
                    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
14041	99	DIRN	SUR	-8	55	209	0	0	15.5	-21.1	26.2
23091	99	DIRN	SUR	18	90	143	0	0	23.0	22.3	32.0
23092	99	DIRN	SUR	18	90	120	0	0	89.8	15.4	91.2
23454	99	DIRN	SUR	10	73	156	0	0	124.9	-99.1	159.5
23494	99	DIRN	SUR	8	73	188	0	0	17.9	21.3	27.8
31002	99	DIRN	SUR	-29	-47	445	1	0	26.2	-21.4	33.8
31005	99	DIRN	SUR	-19	-35	133	0	0	20.2	20.9	29.1
31053	99	DIRN	SUR	-32	-50	176	0	0	20.4	-20.2	28.7
31260	99	DIRN	SUR	-16	-38	78	0	0	92.9	133.0	162.2
31374	99	DIRN	SUR	-25	-45	24	0	0	50.9	-32.4	60.4
31380	99	DIRN	SUR	-20	-40	126	0	0	33.1	-45.3	56.1
32305	99	DIRN	SUR	-8	-95	100	0	0	31.3	48.2	57.5
42087	99	DIRN	SUR	11	-61	1517	0	0	19.0	-25.3	31.6
42361	99	DIRN	SUR	28	-93	561	1	0	21.0	28.7	35.6
42365	99	DIRN	SUR	28	-89	180	0	0	21.8	-26.9	34.7
45001	99	DIRN	SUR	48	-88	398	0	0	26.9	21.3	34.3
45020	99	DIRN	SUR	45	-86	186	0	0	100.3	-19.0	102.1
45144	99	DIRN	SUR	53	-98	229	0	0	39.0	-39.7	55.7
45145	99	DIRN	SUR	52	-97	361	0	0	27.3	21.3	34.7
45152	99	DIRN	SUR	46	-80	403	0	0	19.3	-23.0	30.0
45165	99	DIRN	SUR	42	-83	553	0	0	23.3	-30.3	38.2
45168	99	DIRN	SUR	42	-86	412	0	0	32.5	-32.0	45.7
45169	99	DIRN	SUR	42	-82	534	0	0	20.4	-20.9	29.2
45174	99	DIRN	SUR	42	-88	442	0	0	31.0	-20.8	37.3
46118	99	DIRN	SUR	49	-123	356	0	0	44.1	37.7	58.0
46125	99	DIRN	SUR	48	-123	211	0	0	33.7	36.9	49.9
52522	99	DIRN	SUR	5	149	171	0	0	82.1	54.9	98.8
53040	99	DIRN	SUR	-8	95	214	11	0	77.4	-51.4	92.9

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

```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
                    AREA                  : GLOBAL
                    PERIOD                : JUN 2016
                    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	1000	66	-38	23	0	2.9	42.2	42.3
04360	00	Z	925	66	-38	30	0	0.0	44.6	44.6
31538	12	Z	50	50	132	24	0	41.4	-128.9	135.4
38341	12	Z	50	43	71	27	1	50.1	141.5	150.1
38341	00	Z	50	43	71	25	0	54.9	153.7	163.2
40430	12	Z	925	25	40	29	0	12.0	36.9	38.8
40437	00	Z	925	25	47	24	0	2.6	34.1	34.2
40437	12	Z	925	25	47	28	2	3.7	34.8	35.0
42299	00	Z	1000	27	89	21	0	8.8	-54.8	55.5
42361	00	Z	30	26	78	26	0	21.7	195.1	196.3
42361	12	Z	30	26	78	24	0	37.6	212.4	215.7
42492	12	Z	30	26	85	20	0	19.5	210.4	211.3
42492	00	Z	30	26	85	22	0	41.0	213.7	217.6
42874	00	Z	30	21	82	20	0	29.3	214.1	216.1
43014	00	Z	30	20	75	10	0	18.6	215.4	216.2
43041	00	Z	30	19	82	20	0	25.4	214.0	215.5
43128	12	Z	50	17	78	25	1	111.9	157.0	192.8
43295	00	Z	50	13	78	10	0	15.0	141.1	141.9
43295	12	Z	30	13	78	19	0	24.6	232.2	233.5
43311	00	Z	30	11	73	15	0	25.3	199.0	200.6
43333	00	Z	30	12	93	26	0	18.9	197.0	197.9
43333	12	Z	30	12	93	14	0	36.9	192.6	196.1
43371	12	Z	70	8	77	10	0	7.7	149.6	149.8
60656	12	Z	925	28	-8	29	0	27.3	26.0	37.7
65125	12	Z	850	9	7	24	0	12.6	43.1	44.9
76405	12	Z	400	24	-110	28	0	66.6	56.5	87.3
78988	12	Z	1000	12	-69	17	0	28.5	21.2	35.5
96147	12	Z	925	4	108	26	1	6.1	46.2	46.6
96147	00	Z	925	4	108	28	1	7.1	50.4	50.9
ASEU02	00	Z	1000	26	-59	15	0	5.4	28.4	28.9
ASEU02	12	Z	1000	28	-55	16	0	4.7	28.0	28.4

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                : JUN 2016
                    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
```

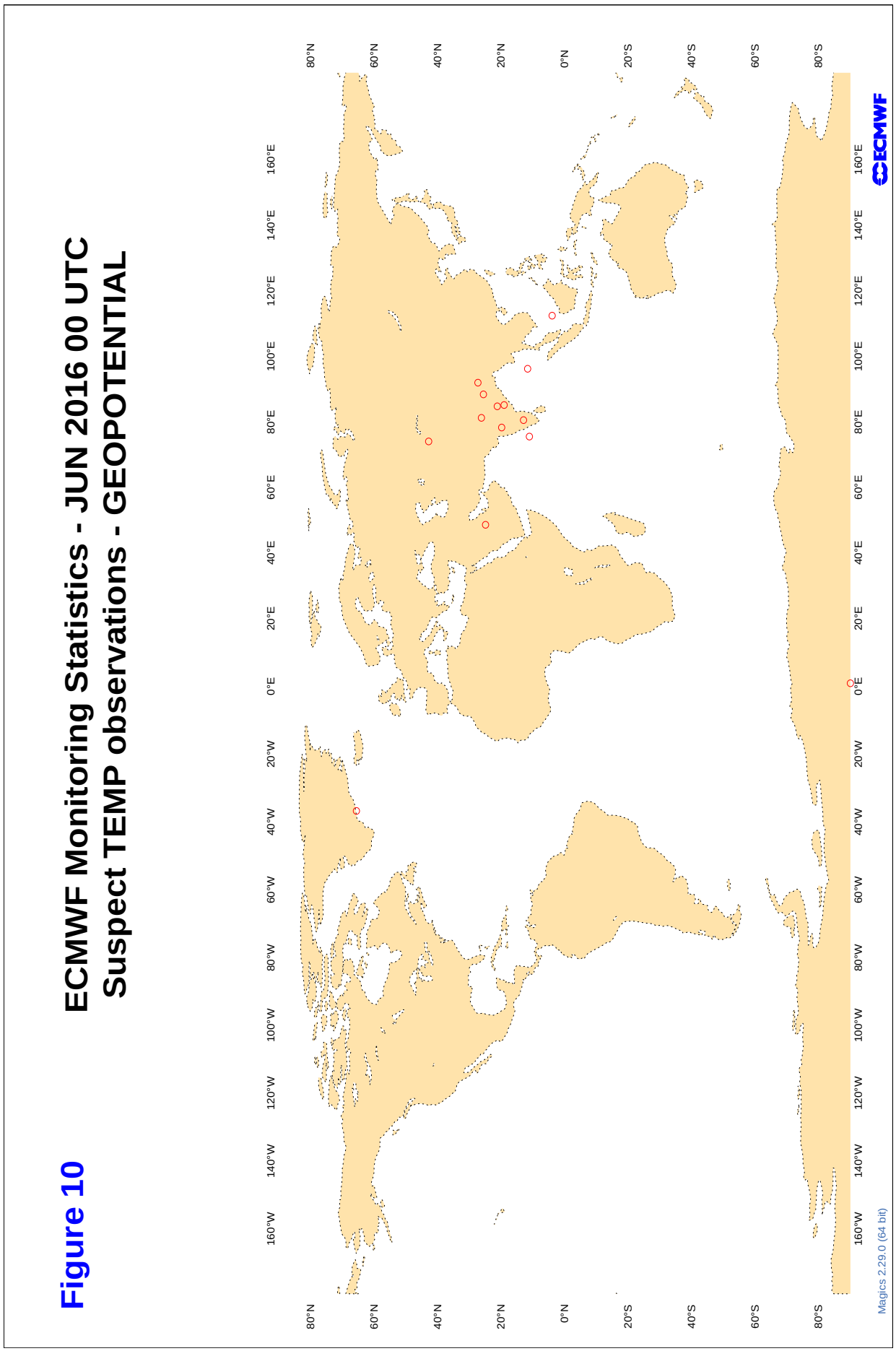
WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	UBIAS	VBIAS	RMS

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

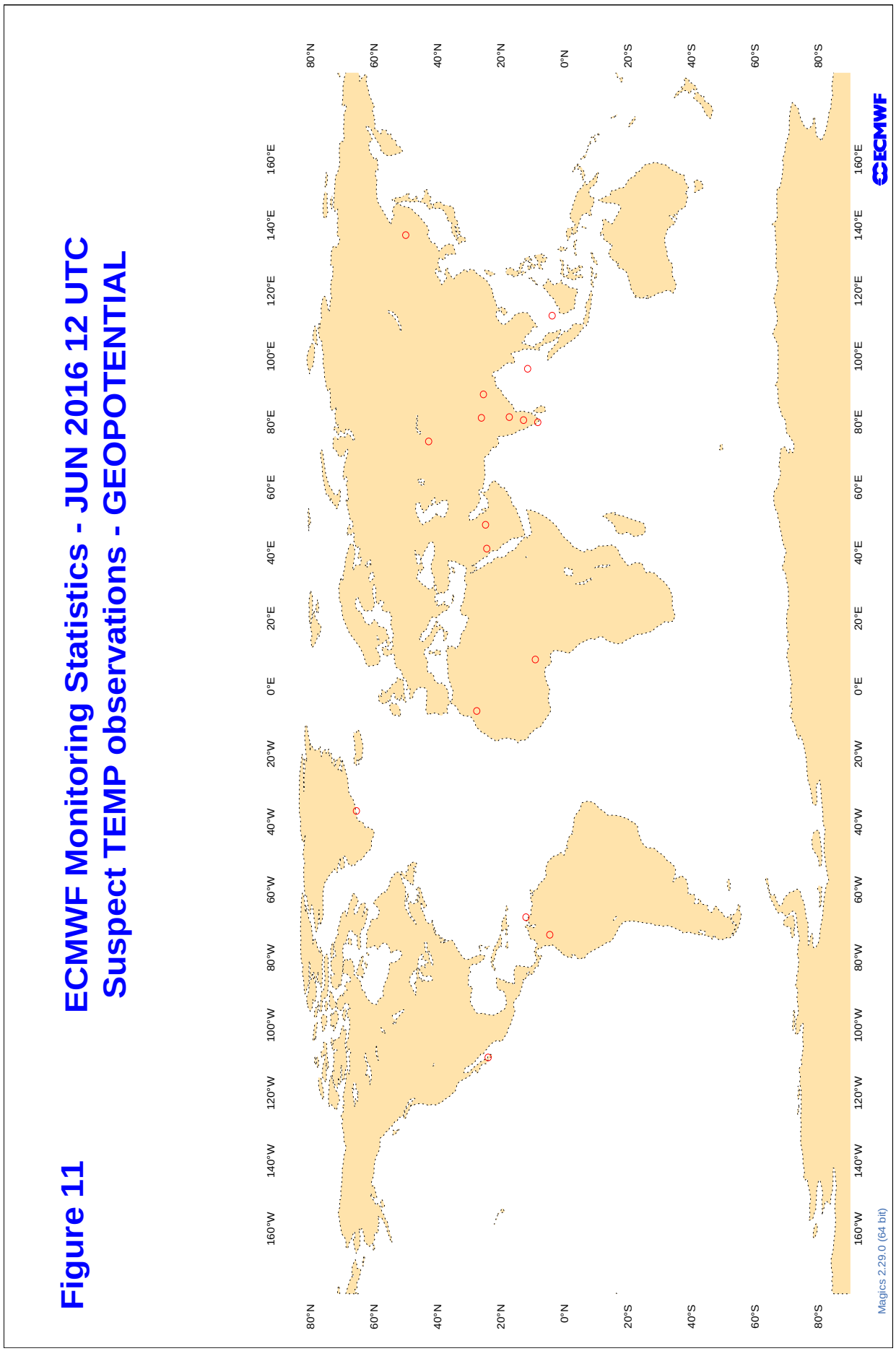
```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                    AREA                  : GLOBAL
                    PERIOD                : JUN 2016
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD


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

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
57972	00	DD	26	113	21	10.2	4.1	13.4

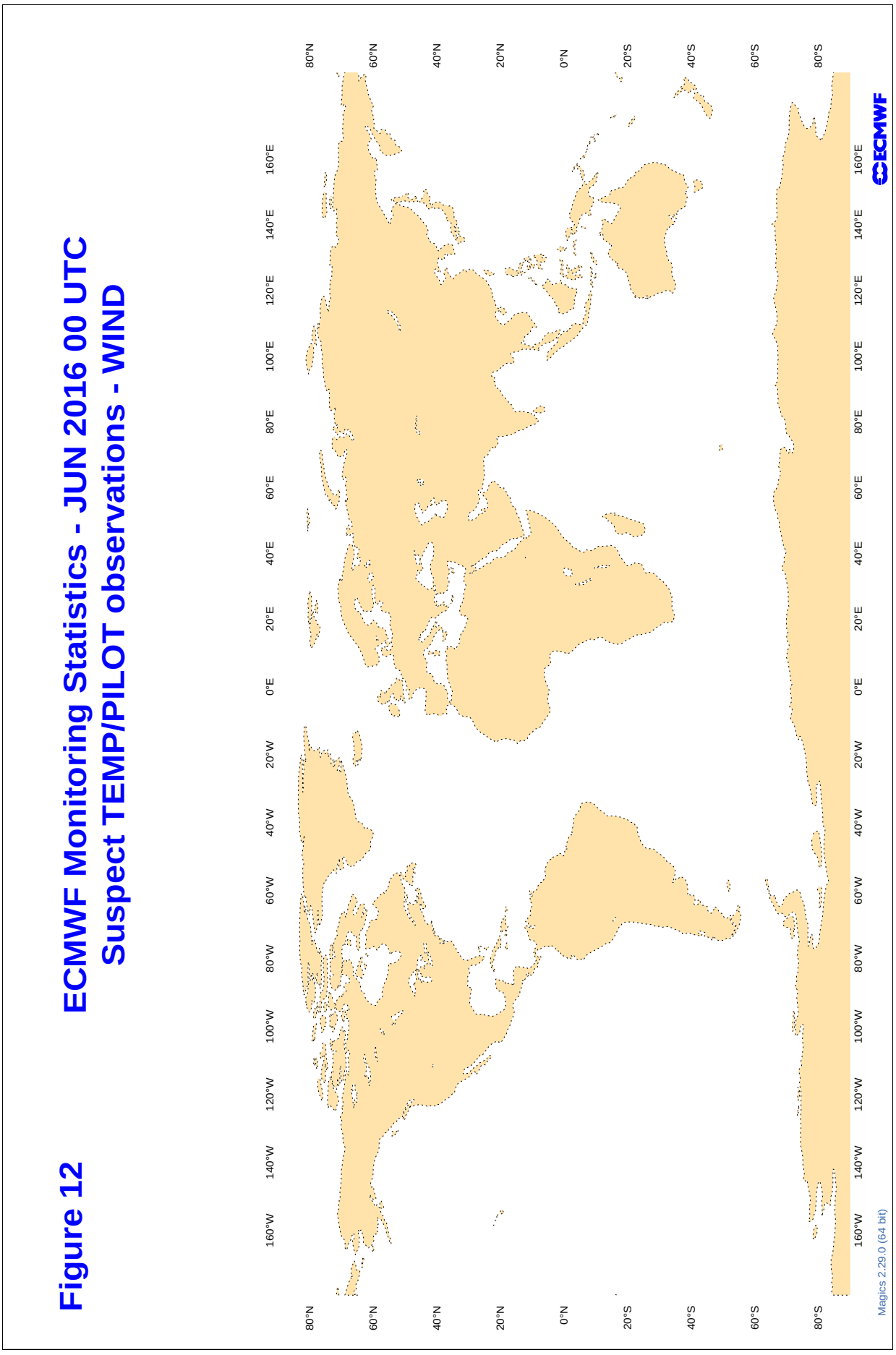
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



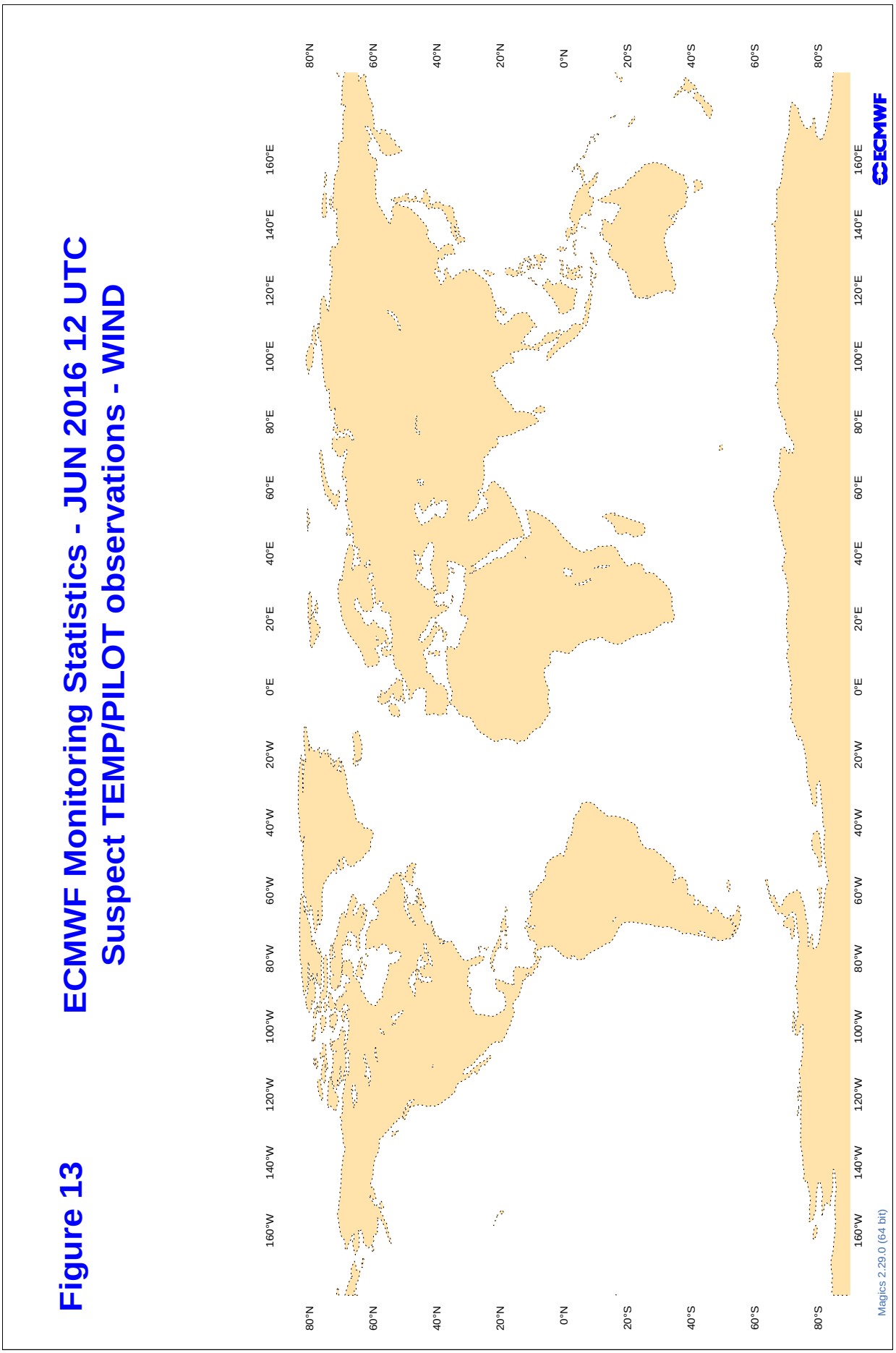
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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                : JUN 2016
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASDE02	00	Z	100	29	21.4	20.0
ASDE03	12	Z	100	11	86.1	53.8
ASDE03	00	Z	100	14	70.4	23.8
ASDE04	12	Z	100	5	40.8	39.9
ASDE04	00	Z	100	5	28.0	27.6
ASDE09	12	Z	100	4	24.2	23.4
ASDK01	12	Z	100	12	13.9	11.9
ASDK01	00	Z	100	11	9.3	7.7
ASDK02	12	Z	100	10	17.5	11.6
ASDK02	00	Z	100	10	6.3	3.9
ASDK03	12	Z	100	13	27.1	26.6
ASDK03	00	Z	100	8	23.4	22.5
ASDK1	12	Z	100	11	8.9	2.8
ASDK1	00	Z	100	11	6.6	1.7
ASDK2	12	Z	100	9	15.1	7.8
ASDK2	00	Z	100	8	5.7	0.1
ASDK3	12	Z	100	12	21.0	20.1
ASDK3	00	Z	100	8	20.3	20.0
ASES01	12	Z	100	19	60.6	26.3
ASEU01	12	Z	100	6	13.9	13.2
ASEU01	00	Z	100	5	33.8	3.6
ASEU02	12	Z	100	15	44.1	42.8
ASEU02	00	Z	100	15	37.4	35.6
ASEU03	12	Z	100	10	21.4	16.6
ASEU03	00	Z	100	12	21.1	-2.3
ASEU06	12	Z	100	17	29.9	26.9
ASEU06	00	Z	100	14	19.5	10.4
ASFR1	12	Z	100	14	15.1	13.3
ASFR1	00	Z	100	14	13.2	7.6
ASFR2	12	Z	100	3	31.8	26.2
ASFR2	00	Z	100	6	17.0	12.6
ASFR3	12	Z	100	15	16.4	14.2
ASFR3	00	Z	100	14	14.9	11.2
ASFR4	12	Z	100	7	29.6	25.1
ASFR4	00	Z	100	10	15.7	14.8
ASUK2	12	Z	100	3	38.7	-38.5
ASUK2	00	Z	100	4	32.8	-32.5
BJPAR	00	Z	100	6	58.9	-0.8
BJPAR	12	Z	100	7	42.6	41.2

RADIOSONDE MONITORING STATISTICS (SHIPS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
DBLK	12	Z	100	27	4.6	1.1
GHACC	00	Z	100	6	32.6	31.6
GHACC	12	Z	100	12	49.0	47.7
GHKUM	12	Z	100	3	38.7	-38.5
GHKUM	00	Z	100	4	32.8	-32.5
JGQH	12	Z	100	13	6.5	3.0
JGQH	00	Z	100	12	9.7	5.7
JNSR	12	Z	100	6	6.3	0.3
JNSR	00	Z	100	2	16.0	14.0

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                : JUN 2016
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASDE02	00	V	100	26	3.2	0.2	-0.7
ASDE03	12	V	100	11	2.9	0.0	0.2
ASDE03	00	V	100	13	3.5	-0.6	0.6
ASDE04	12	V	100	5	5.4	2.1	-1.2
ASDE04	00	V	100	4	6.8	-3.4	0.0
ASDE09	12	V	100	4	2.4	0.5	-0.2
ASDK01	12	V	100	11	2.5	0.9	0.1
ASDK01	00	V	100	11	3.0	0.0	-0.6
ASDK02	12	V	100	9	2.8	0.4	-0.2
ASDK02	00	V	100	10	2.4	0.4	0.9
ASDK03	12	V	100	13	2.5	-0.2	0.2
ASDK03	00	V	100	8	2.8	0.7	0.6
ASDK1	12	V	100	11	2.6	1.4	-0.1
ASDK1	00	V	100	11	2.3	0.0	-0.5
ASDK2	12	V	100	9	2.1	0.1	-0.5
ASDK2	00	V	100	8	2.4	0.6	0.8
ASDK3	12	V	100	12	2.5	-0.3	0.0
ASDK3	00	V	100	8	3.2	1.4	0.6
ASES01	12	V	100	18	3.5	0.5	-1.4
ASEU01	12	V	100	4	3.2	0.8	-0.3
ASEU01	00	V	100	1	1.3	0.6	1.2
ASEU02	12	V	100	12	3.3	-1.0	0.7
ASEU02	00	V	100	15	2.8	-0.3	-0.7
ASEU03	12	V	100	7	4.1	-1.5	-0.1
ASEU03	00	V	100	9	3.2	-0.9	-0.2
ASEU06	12	V	100	13	3.7	0.4	-0.6
ASEU06	00	V	100	9	3.8	-0.9	0.0
ASFR1	12	V	100	13	2.6	0.6	0.3
ASFR1	00	V	100	14	2.8	0.7	-0.5
ASFR2	12	V	100	3	5.1	0.2	-1.6
ASFR2	00	V	100	6	4.8	1.8	-1.4
ASFR3	12	V	100	14	2.7	-0.3	0.3
ASFR3	00	V	100	10	2.8	-0.7	1.4
ASFR4	12	V	100	6	3.3	-0.6	-0.9
ASFR4	00	V	100	7	2.9	0.2	-1.0
ASUK2	12	V	100	3	4.0	-2.9	1.4
ASUK2	00	V	100	4	4.0	-1.6	-0.6
BJPAR	00	V	100	6	5.8	-1.9	2.4
BJPAR	12	V	100	7	4.3	0.0	-0.6

RADIOSONDE MONITORING STATISTICS (SHIPS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
DBLK	12	V	100	14	2.6	0.9	0.5
GHACC	00	V	100	6	3.0	0.4	0.1
GHACC	12	V	100	12	3.4	-0.5	0.4
GHKUM	12	V	100	3	4.0	-2.9	1.4
GHKUM	00	V	100	4	4.2	-1.4	-0.6
JGQH	12	V	100	13	3.8	1.9	0.8
JGQH	00	V	100	12	4.2	-1.0	-0.4
JNSR	12	V	100	2	3.0	0.3	-1.7
JNSR	00	V	100	1	4.9	0.7	4.9

3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

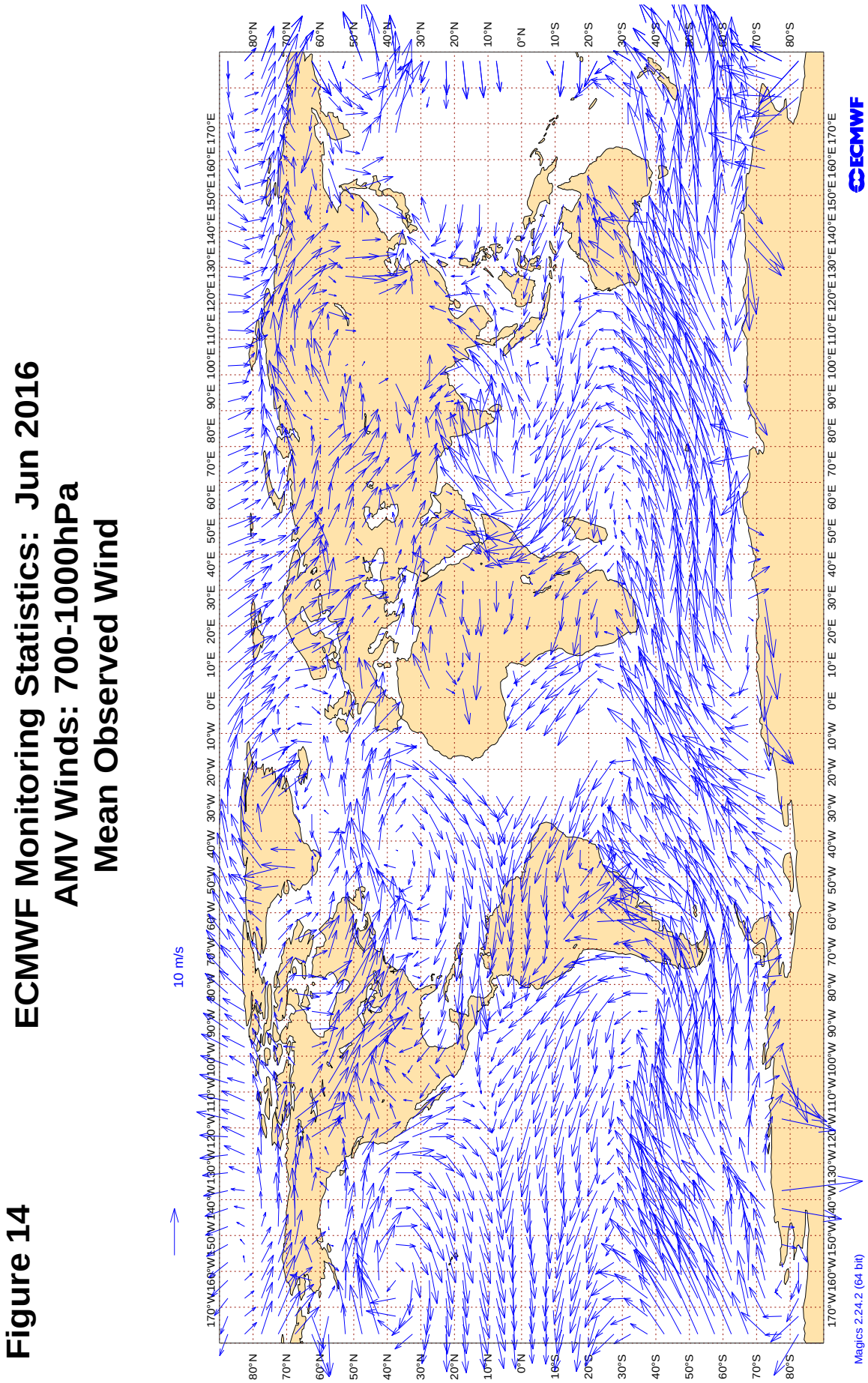


Figure 14

3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

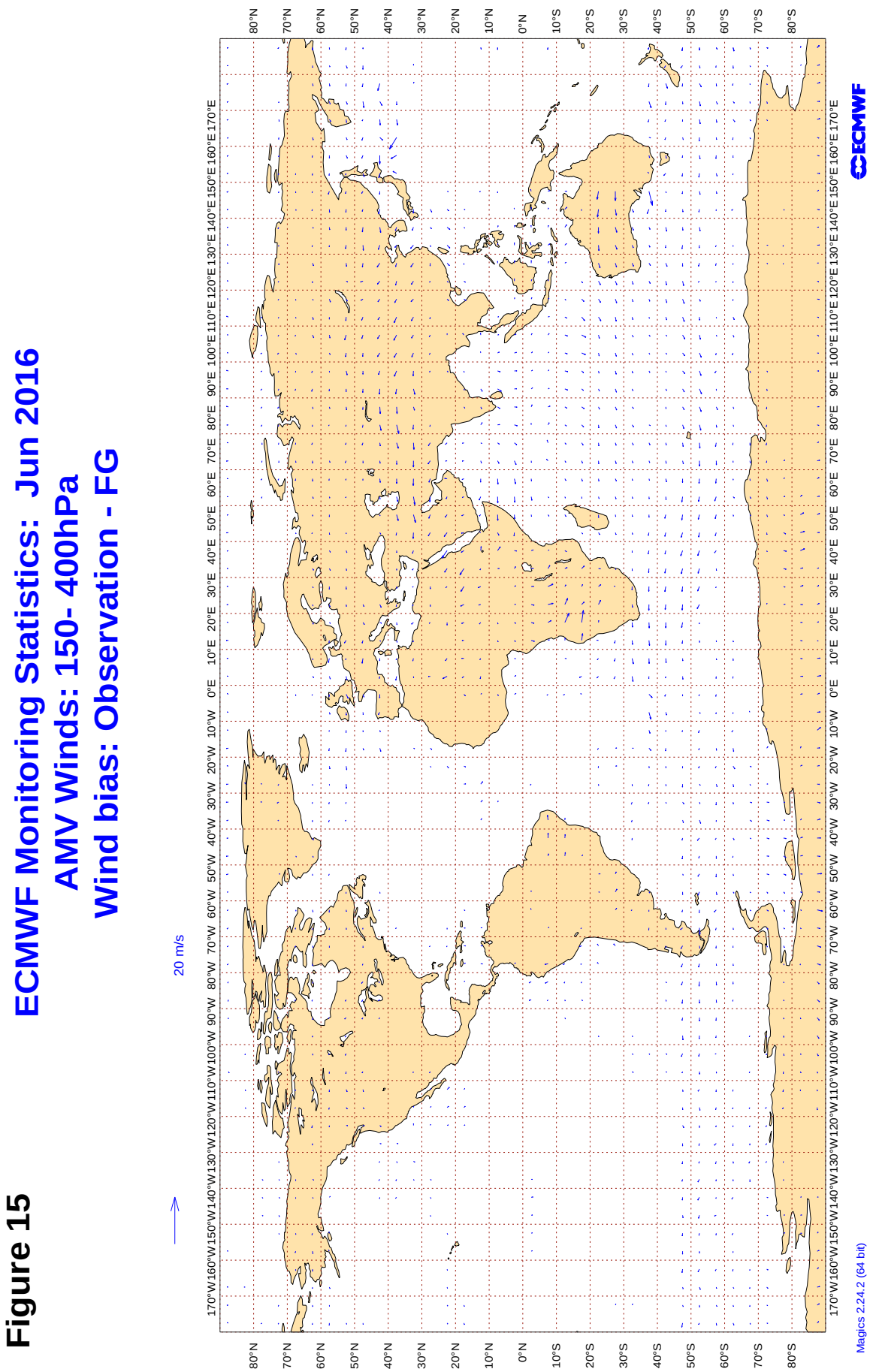


Figure 15

3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

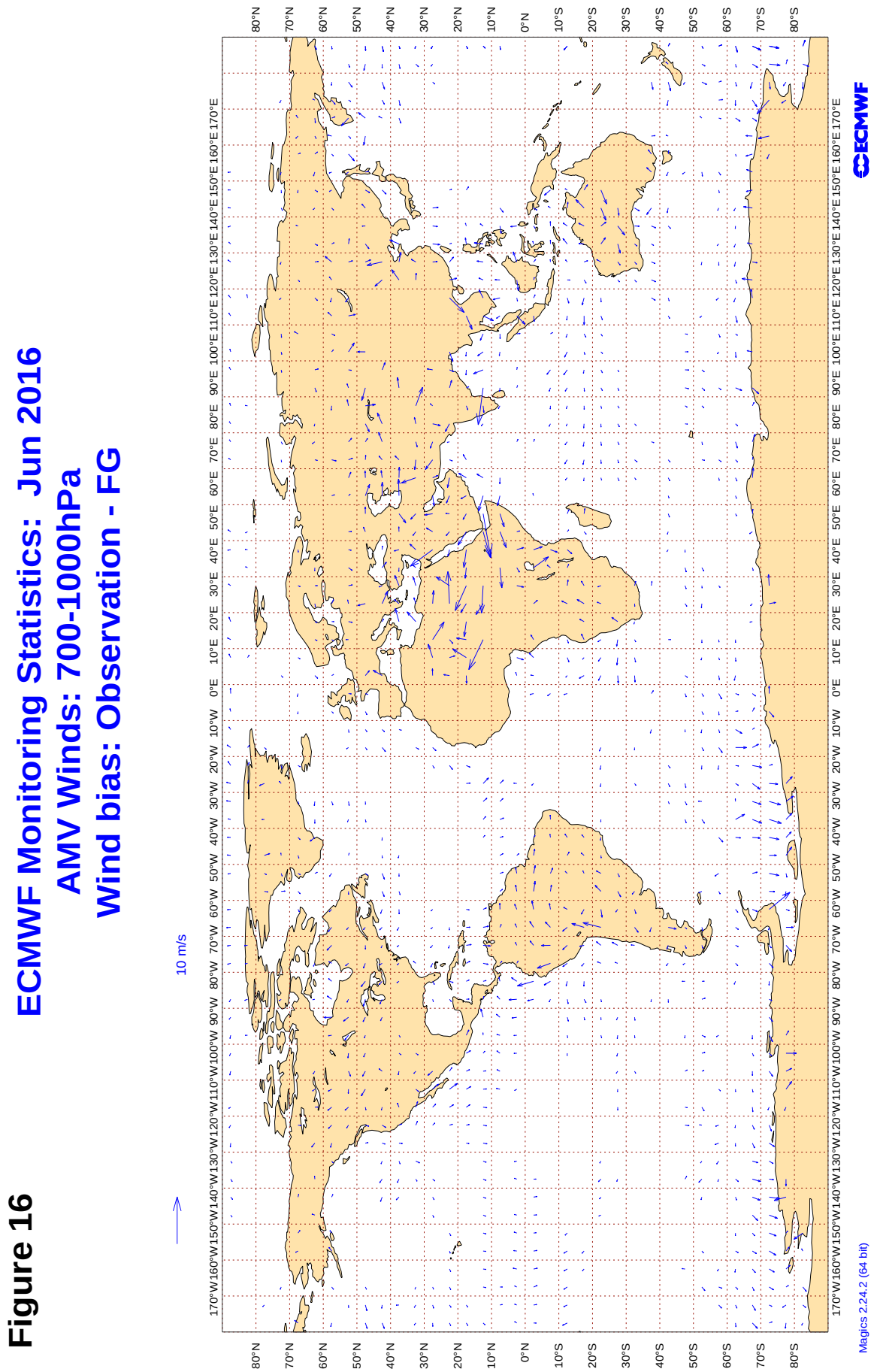


Figure 16

3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

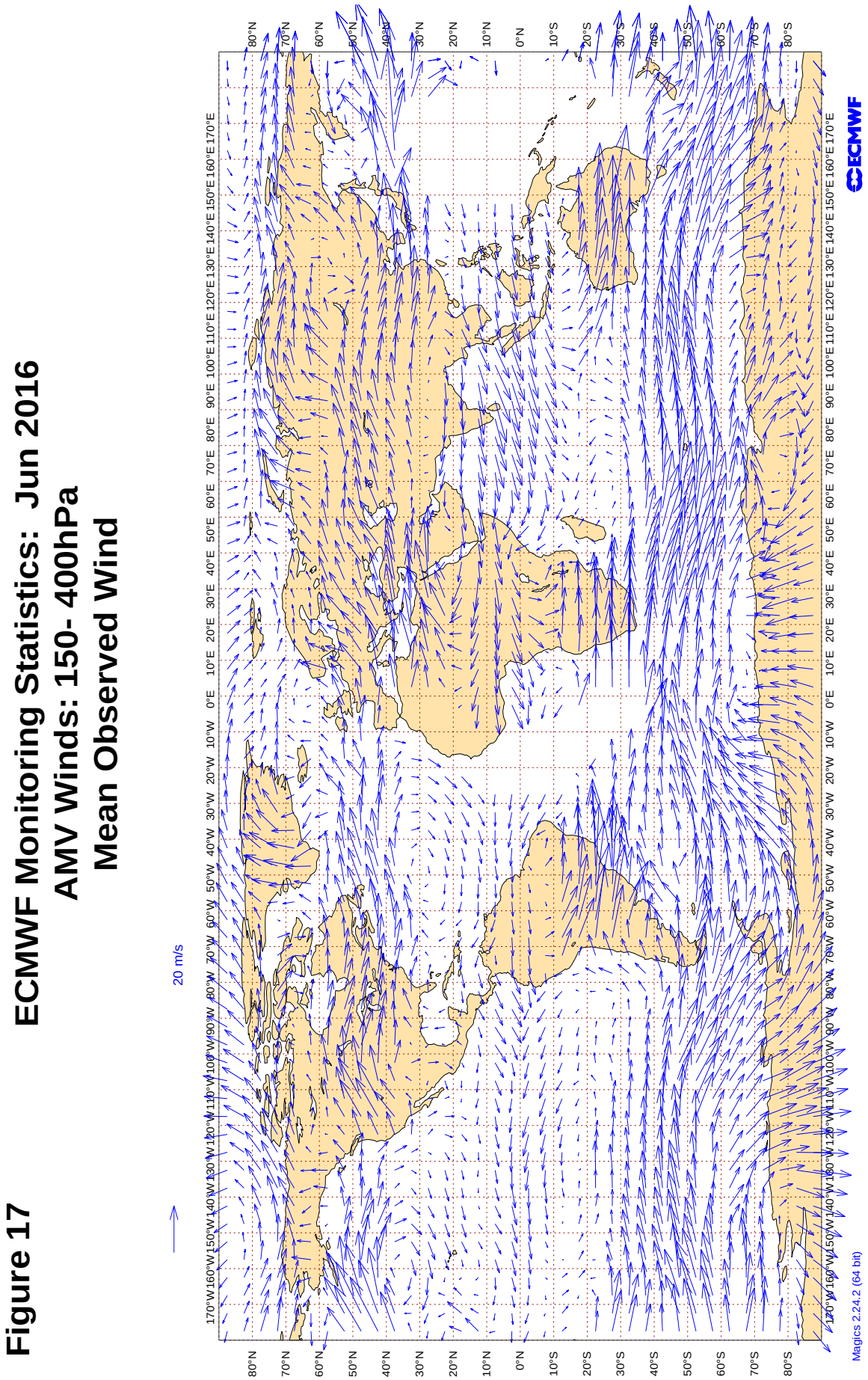


Figure 17

3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

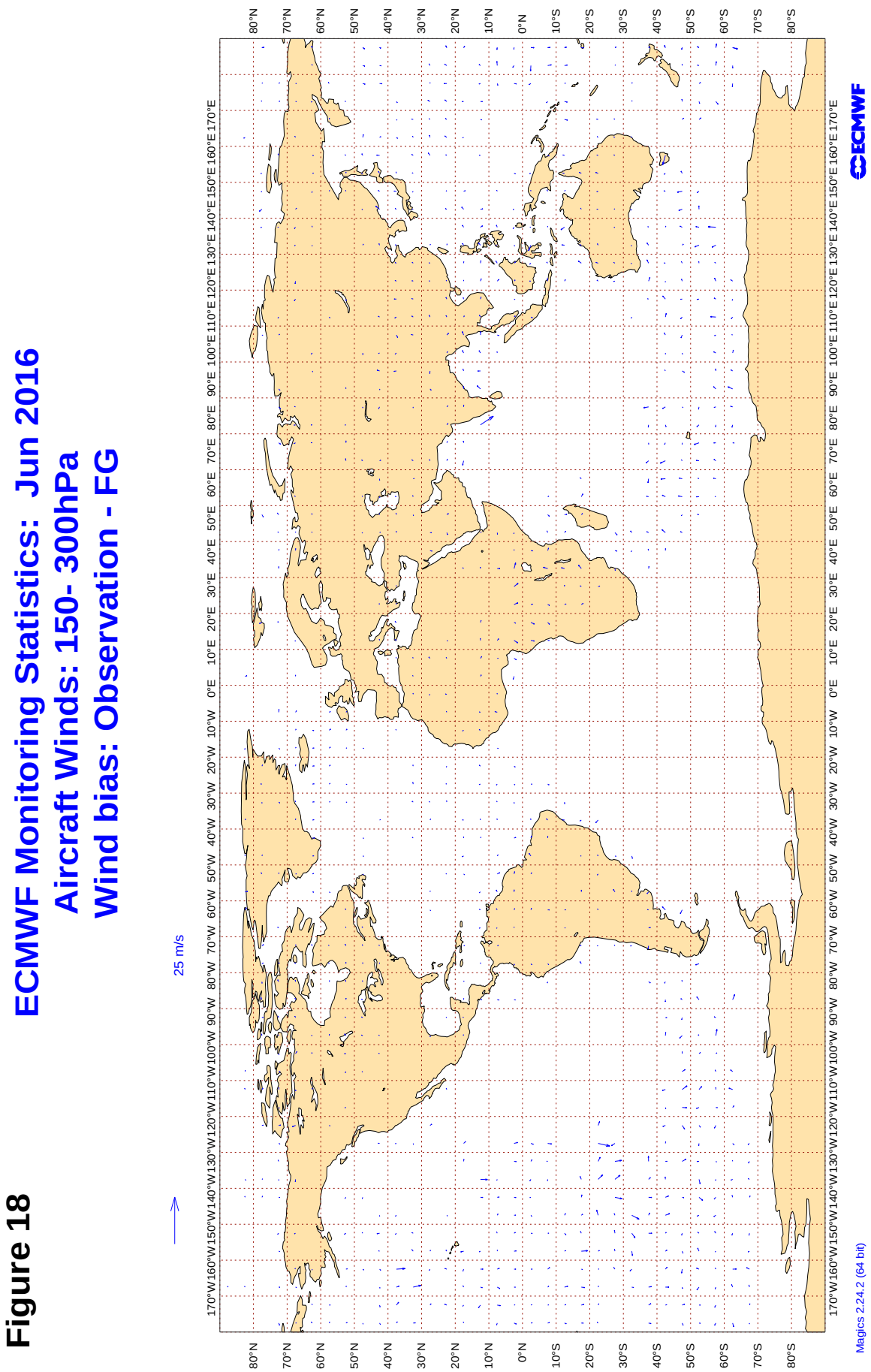


Figure 18

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

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
MONITORING CENTRE : ECMWF
ELEMENT MONITORED : VECTOR WIND (M/S)
AREA : GLOBAL
PERIOD : JUN 2016
STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20

TIME = 99 => AVERAGE OF ALL OBSERVATIONS
GROSS ERROR LIMIT ON VECTOR WIND = 40 M/S

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AAL	99	V	300-150	68789	0	0	4.0	0.3
AAR	99	V	300-150	292	0	0	4.0	-0.8
AAY	99	V	300-150	489	0	0	5.3	0.6
ABW	99	V	300-150	1032	0	0	3.8	-0.7
ABX	99	V	300-150	176	0	1	5.5	0.7
ACA	99	V	300-150	32518	2	0	6.6	0.2
ACI	99	V	300-150	2453	0	0	4.1	0.3
AEA	99	V	300-150	934	1	0	5.7	0.1
AFL	99	V	300-150	2241	0	0	3.2	0.4
AFR	99	V	300-150	33320	0	0	3.5	0.3
AHY	99	V	300-150	259	6	0	9.7	0.1
AIC	99	V	300-150	1130	0	0	3.4	-0.1
AMX	99	V	300-150	2465	8	0	10.0	0.1
ANZ	99	V	300-150	17858	2	0	5.2	0.4
ASA	99	V	300-150	6043	0	0	4.7	0.5
ASL	99	V	300-150	170	0	0	3.7	0.2
ASY	99	V	300-150	282	0	0	5.2	0.7
AUA	99	V	300-150	5720	0	0	4.2	-0.2
AVA	99	V	300-150	390	0	0	3.1	0.3
AVN	99	V	300-150	165	2	0	6.1	-0.4
AXM	99	V	300-150	107	0	2	5.6	0.3
AZA	99	V	300-150	9716	0	0	3.6	0.5
AZG	99	V	300-150	239	0	0	3.7	-0.2
BAH	99	V	300-150	76	0	1	3.5	-0.3
BAW	99	V	300-150	54520	1	0	5.1	0.2
BBR	99	V	300-150	145	2	2	11.2	-0.0

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
BEL	99	V	300-150	2978	0	0	3.4	0.3
BER	99	V	300-150	8775	0	0	3.4	0.4
BMW	99	V	300-150	42	0	0	2.8	0.1
BOX	99	V	300-150	558	0	0	3.7	0.2
BOX	99	V	300-150	85	0	0	3.8	-0.1
BPA	99	V	300-150	100	0	1	3.7	-0.0
CAL	99	V	300-150	232	0	0	4.9	0.9
CAO	99	V	300-150	176	0	0	3.2	0.1
CAZ	99	V	300-150	185	0	0	3.9	0.4
CCA	99	V	300-150	435	0	0	4.5	0.5
CES	99	V	300-150	1022	0	0	3.9	0.6
CFC	99	V	300-150	185	0	0	3.8	0.5
CFG	99	V	300-150	4714	0	0	3.8	-0.2
CJT	99	V	300-150	181	0	0	3.6	-1.0
CKS	99	V	300-150	1849	0	0	4.2	-0.2
CLE	99	V	300-150	92	0	0	5.1	1.6
CLF	99	V	300-150	47	0	0	3.7	0.2
CLX	99	V	300-150	3232	0	0	3.9	-0.1
CMB	99	V	300-150	417	0	0	4.0	-0.7
CNV	99	V	300-150	392	0	0	3.6	0.2
CPA	99	V	300-150	94	0	1	5.7	0.0
CRL	99	V	300-150	1149	0	0	3.7	0.3
CSN	99	V	300-150	892	1	0	6.1	0.4
CTM	99	V	300-150	67	0	0	2.9	0.1
DAH	99	V	300-150	1019	0	0	3.5	0.4
DAL	99	V	300-150	84664	0	0	3.8	0.2
DCS	99	V	300-150	22	0	0	4.4	1.5
DGX	99	V	300-150	22	0	0	2.8	1.5
DHK	99	V	300-150	1780	0	0	4.2	-0.3
DLH	99	V	300-150	36591	0	0	3.6	0.2
DSO	99	V	300-150	28	0	0	4.2	0.6
EDD	99	V	300-150	20	0	0	5.3	3.2
EDG	99	V	300-150	35	0	3	2.5	-0.3
EDW	99	V	300-150	1489	0	0	3.2	0.4
EIN	99	V	300-150	13207	0	0	3.7	0.3
EJM	99	V	300-150	1148	11	0	8.0	-0.0
ELY	99	V	300-150	3259	0	0	4.0	-0.1
ETD	99	V	300-150	3453	3	0	6.1	0.0
ETH	99	V	300-150	2072	3	0	8.3	0.0
EVE	99	V	300-150	75	0	0	3.2	-0.1
EWG	99	V	300-150	1481	0	0	3.1	0.5
EXU	99	V	300-150	25	0	4	3.8	1.0
FDX	99	V	300-150	5283	0	0	3.5	0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
FIN	99	V	300-150	1207	0	0	3.2	0.3
FJI	99	V	300-150	5405	0	0	4.5	0.4
FNS	99	V	300-150	37	41	0	24.2	0.2
FPG	99	V	300-150	23	0	0	10.4	0.5
FWI	99	V	300-150	1016	0	0	2.9	0.2
FYG	99	V	300-150	37	0	0	3.7	-0.2
FYL	99	V	300-150	41	0	0	5.3	-0.3
GEC	99	V	300-150	2534	0	0	3.5	-0.0
GES	99	V	300-150	64	19	0	13.6	0.7
GLO	99	V	300-150	84	6	0	11.7	0.5
GMA	99	V	300-150	28	0	4	6.2	0.4
GNJ	99	V	300-150	45	0	0	3.7	1.3
GTH	99	V	300-150	88	0	0	3.8	-0.5
GTI	99	V	300-150	2828	0	0	4.0	-0.2
HAL	99	V	300-150	3796	0	0	4.7	0.7
HFY	99	V	300-150	56	0	0	3.0	-0.2
HOI	99	V	300-150	264	0	0	3.9	0.0
HZM	99	V	300-150	42	0	0	2.6	0.1
IAM	99	V	300-150	107	0	0	3.5	0.1
IBE	99	V	300-150	3498	0	0	3.3	0.1
ICL	99	V	300-150	470	0	0	4.1	-0.5
ICV	99	V	300-150	313	0	0	3.8	-0.1
IFA	99	V	300-150	30	0	0	19.3	-0.2
JAF	99	V	300-150	1128	4	0	8.5	-0.0
JAI	99	V	300-150	1104	0	0	3.3	0.4
JAS	99	V	300-150	298	18	0	11.5	0.0
JBU	99	V	300-150	26	0	135	4.8	1.6
JEF	99	V	300-150	62	0	0	3.1	-0.1
JJA	99	V	300-150	61	2	2	4.6	0.5
JME	99	V	300-150	62	18	0	11.2	-0.3
JMK	99	V	300-150	32	50	0	25.9	-0.8
JST	99	V	300-150	2879	1	0	8.7	0.4
KAC	99	V	300-150	509	0	0	3.7	0.9
KAI	99	V	300-150	73	0	0	3.2	0.0
KAL	99	V	300-150	1232	0	0	4.4	0.7
KIW	99	V	300-150	210	0	0	4.4	0.1
KLM	99	V	300-150	17482	0	0	3.8	0.0
KUG	99	V	300-150	21	0	0	2.9	0.2
LAN	99	V	300-150	2077	10	0	6.8	0.5
LCO	99	V	300-150	188	0	0	3.6	0.2
LDM	99	V	300-150	39	38	0	24.6	0.3
LMJ	99	V	300-150	44	0	2	3.1	0.2
LOT	99	V	300-150	2836	8	0	13.2	-0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
LXJ	99	V	300-150	294	11	0	17.5	0.5
MAS	99	V	300-150	286	0	0	4.2	0.5
MMD	99	V	300-150	169	0	1	3.0	-0.2
MPH	99	V	300-150	440	0	0	3.7	-0.7
MSR	99	V	300-150	1190	0	0	3.7	0.0
NAX	99	V	300-150	6385	7	0	12.0	-0.1
NCA	99	V	300-150	322	0	0	3.6	-0.2
NJE	99	V	300-150	403	9	0	14.3	0.6
NOS	99	V	300-150	345	0	0	4.1	-0.6
NWS	99	V	300-150	93	0	0	3.3	0.7
OAE	99	V	300-150	188	1	1	5.3	0.6
OBS	99	V	300-150	40	0	0	2.8	-0.6
OPM	99	V	300-150	44	41	0	26.7	0.1
OSY	99	V	300-150	31	0	0	8.0	3.7
PAC	99	V	300-150	231	0	0	4.3	0.7
PAL	99	V	300-150	62	2	3	6.5	0.5
PAT	99	V	300-150	47	0	0	3.3	0.4
PIA	99	V	300-150	519	0	0	3.6	0.2
PLM	99	V	300-150	26	0	0	3.7	-0.5
QAF	99	V	300-150	101	0	0	2.5	0.6
QFA	99	V	300-150	16993	0	0	4.7	0.4
QQE	99	V	300-150	77	1	0	8.7	-0.2
QTR	99	V	300-150	8145	0	0	3.5	0.1
RAM	99	V	300-150	204	15	0	10.9	0.7
RCH	99	V	300-150	8329	0	0	4.7	0.3
RJA	99	V	300-150	1258	8	0	12.1	-0.0
ROJ	99	V	300-150	43	0	0	4.1	0.5
ROM	99	V	300-150	21	0	0	6.8	5.3
ROU	99	V	300-150	10543	0	0	4.1	-0.2
ROW	99	V	300-150	33	0	0	4.1	0.1
RRR	99	V	300-150	113	0	1	3.0	-0.3
SAM	99	V	300-150	271	0	0	9.4	0.7
SAS	99	V	300-150	4448	0	0	3.2	0.1
SHE	99	V	300-150	69	0	0	3.5	-0.5
SIA	99	V	300-150	1857	0	0	3.7	0.2
SJE	99	V	300-150	38	84	0	29.2	-0.4
SLM	99	V	300-150	125	0	0	3.0	0.1
SNO	99	V	300-150	29	0	0	5.3	-0.4
SOO	99	V	300-150	268	0	0	3.4	-0.3
SPA	99	V	300-150	37	0	0	1.9	0.1
SQC	99	V	300-150	503	0	0	4.2	-0.1
SVA	99	V	300-150	3331	0	0	3.5	0.3
SVF	99	V	300-150	42	0	0	3.2	-0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
SVW	99	V	300-150	31	29	0	29.8	-0.7
SWR	99	V	300-150	12098	0	0	3.4	0.4
TAM	99	V	300-150	425	0	0	4.6	0.0
TAP	99	V	300-150	692	0	0	3.2	-0.2
TAR	99	V	300-150	140	0	0	3.3	0.1
TAY	99	V	300-150	802	0	0	3.8	0.1
TCV	99	V	300-150	80	0	1	4.7	-0.2
TCX	99	V	300-150	6394	0	0	3.4	0.3
TFL	99	V	300-150	1563	7	0	9.4	0.2
TGM	99	V	300-150	72	29	0	2.9	0.3
THA	99	V	300-150	166	0	0	4.8	0.3
THT	99	V	300-150	4099	0	0	4.3	0.5
THY	99	V	300-150	9071	0	0	3.7	0.2
TMN	99	V	300-150	80	1	1	7.5	-0.3
TOM	99	V	300-150	6647	8	0	10.9	0.1
TRE	99	V	300-150	77	0	0	8.8	1.5
TRK	99	V	300-150	83	0	0	3.5	0.7
TSC	99	V	300-150	14629	0	0	3.5	0.1
TWB	99	V	300-150	47	0	0	5.3	0.4
TWY	99	V	300-150	203	1	0	13.0	0.7
UAE	99	V	300-150	11032	0	0	3.8	0.1
UAL	99	V	300-150	93598	1	1	4.7	0.2
ULC	99	V	300-150	40	88	0	20.4	-0.2
UPS	99	V	300-150	5148	0	0	3.9	0.0
VCN	99	V	300-150	44	0	0	4.1	-1.8
VIR	99	V	300-150	25489	2	0	6.1	0.2
VJT	99	V	300-150	573	47	0	24.8	-0.0
VKG	99	V	300-150	28	0	0	3.0	0.3
VMP	99	V	300-150	59	3	0	9.7	0.6
VOZ	99	V	300-150	5208	0	0	4.6	0.4
WGT	99	V	300-150	67	0	0	3.1	-0.5
WJA	99	V	300-150	5364	0	0	3.8	0.2
WOW	99	V	300-150	531	0	1	3.0	0.2
XAX	99	V	300-150	323	0	0	4.2	0.4
XLF	99	V	300-150	1445	0	0	3.3	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 $10\,°$N - $90\,°$N, $70\,°$W - $40\,°$E and for TEMPS and PILOTS from selected land stations within the same area. The statistics are in the same form as tables 10 and 11.
Tables 21-23 provides quality statistics of pressure and wind for all DRIFTER reports received in the area $10\,°$N - $90\,°$N, $70\,°$W - $40\,°$E. The statistics are in the same form as tables 4-6.

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

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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                : JUN 2016
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
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WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	50	29	19.1	17.1
01001	12	Z	50	30	17.2	13.5
01028	12	Z	50	30	15.1	13.0
01028	00	Z	50	30	19.2	17.5
01400	00	Z	50	27	28.8	27.9
01400	12	Z	50	25	28.3	25.9
01415	00	Z	50	20	17.2	15.8
01415	12	Z	50	20	17.9	16.5
02365	00	Z	50	30	17.2	14.4
02365	12	Z	50	28	14.6	8.8
02591	00	Z	50	30	23.6	22.6
02591	12	Z	50	28	18.6	16.8
02836	12	Z	50	29	15.3	13.5
02836	00	Z	50	30	18.1	16.9
02963	00	Z	50	29	15.3	14.4
02963	12	Z	50	29	17.1	14.8
03005	12	Z	50	29	14.5	8.8
03005	00	Z	50	29	12.2	9.6
03238	12	Z	50	5	20.9	18.1
03238	00	Z	50	24	18.8	17.6
03808	00	Z	50	29	18.8	14.8
03808	12	Z	50	30	13.8	11.1
03918	00	Z	50	29	17.6	15.7
03918	12	Z	50	15	19.2	18.7
03953	00	Z	50	15	19.5	9.1
03953	12	Z	50	15	41.7	34.3
04018	00	Z	50	17	16.4	14.5
04018	12	Z	50	21	19.6	18.0
04220	12	Z	50	29	17.0	15.8
04220	00	Z	50	28	17.8	16.6
04270	12	Z	50	29	17.3	11.7
04270	00	Z	50	29	15.4	14.2
04320	12	Z	50	29	20.8	19.9
04320	00	Z	50	30	17.3	16.3
04339	12	Z	50	30	18.0	16.1
04339	00	Z	50	30	13.1	12.3
04360	12	Z	50	26	67.0	64.5
04360	00	Z	50	18	51.6	49.8
06011	00	Z	50	28	22.3	3.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	50	28	27.6	25.1
06260	00	Z	50	28	23.3	18.1
06260	12	Z	50	5	24.0	23.8
06610	12	Z	50	11	17.6	6.5
06610	00	Z	50	17	21.5	15.0
07110	00	Z	50	29	30.3	28.4
07110	12	Z	50	30	55.5	51.3
07510	00	Z	50	23	38.5	36.6
07510	12	Z	50	29	46.0	43.4
07645	00	Z	50	28	13.6	10.9
07645	12	Z	50	30	36.6	28.1
07761	00	Z	50	25	31.2	28.0
07761	12	Z	50	30	36.8	31.5
08001	12	Z	50	28	20.6	17.3
08001	00	Z	50	24	20.8	18.7
08221	12	Z	50	30	50.1	23.1
08221	00	Z	50	27	17.0	15.8
08302	12	Z	50	30	9.1	0.9
08302	00	Z	50	30	11.9	8.1
08508	12	Z	50	29	31.3	28.6
08522	12	Z	50	30	17.1	15.8
08579	12	Z	50	29	19.2	17.3
10035	00	Z	50	30	13.9	12.3
10035	12	Z	50	30	15.6	10.6
10393	00	Z	50	30	13.3	11.6
10393	12	Z	50	30	11.5	8.4
10410	00	Z	50	30	12.8	10.9
10410	12	Z	50	30	17.9	13.0
10739	12	Z	50	28	19.8	17.1
10739	00	Z	50	27	18.2	15.5
11035	00	Z	50	30	19.8	17.3
11035	12	Z	50	31	11.7	8.5
12982	00	Z	50	26	20.8	18.2
12982	12	Z	50	29	37.6	34.3
16044	12	Z	50	16	21.2	17.9
16044	00	Z	50	16	18.8	17.8
16080	00	Z	50	20	12.1	9.9
16080	12	Z	50	29	15.1	2.3
16245	00	Z	50	27	17.2	14.8
16245	12	Z	50	30	17.7	3.9
16320	12	Z	50	29	12.5	7.7
16320	00	Z	50	22	19.6	16.9
16429	00	Z	50	38	17.1	13.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	12	Z	50	35	8.5	-1.9
16622	00	Z	50	29	61.9	57.6
16754	00	Z	50	27	38.2	36.2
17607	12	Z	50	20	26.2	-24.1
26435	00	Z	50	15	15.3	13.1
60018	12	Z	50	28	11.7	9.1
60018	00	Z	50	30	16.7	15.2
ASDE02	00	Z	50	25	29.9	28.0
ASDE03	12	Z	50	11	99.8	73.6
ASDE03	00	Z	50	12	81.8	38.0
ASDE04	12	Z	50	5	47.8	46.7
ASDE04	00	Z	50	4	36.4	35.0
ASDE09	12	Z	50	4	39.0	38.4
ASDK01	12	Z	50	11	23.4	21.9
ASDK01	00	Z	50	11	15.3	13.3
ASDK02	12	Z	50	8	31.9	28.1
ASDK02	00	Z	50	9	15.3	13.6
ASDK03	12	Z	50	12	34.9	34.2
ASDK03	00	Z	50	8	32.0	31.3
ASDK1	12	Z	50	11	15.8	12.8
ASDK1	00	Z	50	11	14.2	10.4
ASDK2	12	Z	50	8	26.5	21.9
ASDK2	00	Z	50	8	11.9	7.9
ASDK3	12	Z	50	12	28.2	27.1
ASDK3	00	Z	50	8	28.3	27.8
ASES01	12	Z	50	17	40.3	26.5
ASEU01	12	Z	50	5	29.1	28.0
ASEU01	00	Z	50	3	39.0	6.5
ASEU02	12	Z	50	11	57.7	55.6
ASEU02	00	Z	50	15	45.3	43.4
ASEU03	12	Z	50	8	37.7	35.3
ASEU03	00	Z	50	10	23.3	3.3
ASEU06	12	Z	50	14	44.4	42.8
ASEU06	00	Z	50	9	22.4	16.3
ASFR1	12	Z	50	14	24.0	22.7
ASFR1	00	Z	50	13	25.7	21.5
ASFR2	12	Z	50	1	42.9	42.9
ASFR2	00	Z	50	5	29.0	23.8
ASFR3	12	Z	50	15	32.1	29.5
ASFR3	00	Z	50	14	25.4	20.8
ASFR4	12	Z	50	7	47.5	36.1
ASFR4	00	Z	50	10	26.2	25.9
ASUK2	12	Z	50	3	34.6	-34.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASUK2	00	Z	50	4	49.2	-49.0
BJPAR	00	Z	50	5	72.6	-1.9
BJPAR	12	Z	50	8	61.1	58.7
DBLK	12	Z	50	14	13.8	12.7
GHACC	00	Z	50	6	41.3	39.7
GHACC	12	Z	50	10	60.3	59.3
GHKUM	12	Z	50	2	36.0	-36.0
GHKUM	00	Z	50	3	48.4	-48.1

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 :  50 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : JUN 2016
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	50	29	3.0	0.1	0.0
01001	12	V	50	30	2.6	0.3	0.4
01028	12	V	50	30	2.9	0.8	0.4
01028	00	V	50	30	2.9	0.4	-0.1
01400	00	V	50	23	3.0	-0.1	0.4
01400	12	V	50	23	3.3	1.2	0.5
01415	00	V	50	20	2.8	0.7	0.2
01415	12	V	50	19	3.0	0.7	0.3
02365	00	V	50	28	2.6	-0.6	0.2
02365	12	V	50	28	2.2	0.3	-0.2
02591	00	V	50	29	2.8	0.1	0.0
02591	12	V	50	28	3.0	0.1	0.0
02836	12	V	50	29	2.8	0.7	-0.1
02836	00	V	50	29	2.7	0.6	0.2
02963	00	V	50	29	2.9	-0.2	0.6
02963	12	V	50	29	2.5	0.1	-0.1
03005	12	V	50	29	3.4	-0.4	-0.1
03005	00	V	50	29	3.0	0.2	-0.2
03238	12	V	50	5	3.1	-1.5	-0.5
03238	00	V	50	24	3.3	0.3	0.1
03808	00	V	50	28	2.8	1.0	0.3
03808	12	V	50	30	2.9	1.2	0.3
03918	00	V	50	29	2.6	0.4	-0.1
03918	12	V	50	15	3.0	-0.3	0.3
03953	00	V	50	15	2.9	0.2	0.3
03953	12	V	50	15	2.9	-0.2	0.3
04018	00	V	50	16	2.7	0.4	0.4
04018	12	V	50	18	2.5	0.4	-0.6
04220	12	V	50	29	2.4	0.1	1.1
04220	00	V	50	27	2.8	0.3	-0.1
04270	12	V	50	29	2.6	0.0	0.1
04270	00	V	50	28	2.5	-0.6	0.0
04320	12	V	50	29	2.3	-0.6	0.2
04320	00	V	50	30	2.7	-0.6	0.0
04339	12	V	50	30	2.8	0.0	-0.6
04339	00	V	50	30	3.3	0.3	-0.6
04360	12	V	50	26	2.6	-0.6	0.9
04360	00	V	50	18	2.8	-0.3	-0.1
06011	00	V	50	27	2.6	-0.1	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	50	28	2.3	0.2	-0.7
06260	00	V	50	28	3.0	0.1	-0.1
06260	12	V	50	5	2.5	-1.1	0.9
06610	12	V	50	11	4.1	0.7	0.2
06610	00	V	50	17	3.6	1.7	0.4
07110	00	V	50	28	3.2	0.6	-0.1
07110	12	V	50	30	2.6	0.4	0.0
07510	00	V	50	23	3.5	0.3	-0.1
07510	12	V	50	29	3.2	-0.2	0.7
07645	00	V	50	28	3.8	0.1	-0.4
07645	12	V	50	30	3.3	0.2	0.3
07761	00	V	50	25	3.8	0.3	-0.1
07761	12	V	50	30	4.0	1.4	0.9
08001	12	V	50	28	3.6	1.0	1.4
08001	00	V	50	19	3.5	1.1	0.3
08221	12	V	50	30	3.2	0.1	0.0
08221	00	V	50	27	3.3	-0.1	0.3
08302	12	V	50	30	3.7	0.3	-0.2
08302	00	V	50	30	4.0	-0.4	0.7
08508	12	V	50	25	3.2	0.4	0.7
08522	12	V	50	30	4.1	1.0	0.8
08579	12	V	50	29	3.5	0.4	0.5
10035	00	V	50	30	2.9	0.0	0.5
10035	12	V	50	30	3.1	0.2	0.6
10393	00	V	50	30	3.1	-0.4	-0.2
10393	12	V	50	30	3.3	0.5	0.4
10410	00	V	50	30	3.0	0.2	0.0
10410	12	V	50	30	3.5	-0.3	0.1
10739	12	V	50	28	3.2	0.5	0.2
10739	00	V	50	27	3.2	-0.1	-0.1
11035	00	V	50	30	3.6	0.2	-0.2
11035	12	V	50	29	3.1	0.5	0.0
12982	00	V	50	25	3.9	0.7	0.1
12982	12	V	50	29	3.2	0.0	-0.4
16044	12	V	50	16	3.1	0.8	0.9
16044	00	V	50	16	3.5	1.1	0.5
16080	00	V	50	20	3.7	0.3	0.1
16080	12	V	50	29	3.5	0.5	-0.1
16245	00	V	50	26	3.1	0.5	1.1
16245	12	V	50	29	3.9	0.1	-0.1
16320	12	V	50	29	4.0	0.7	1.1
16320	00	V	50	21	4.0	0.3	0.1
16429	00	V	50	29	4.6	1.5	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	12	V	50	29	3.8	1.1	1.3
16622	00	V	50	24	4.1	-0.5	-0.2
16754	00	V	50	25	3.2	0.5	0.0
17607	12	V	50	18	4.1	1.0	0.7
26435	00	V	50	15	2.6	-0.5	1.0
60018	12	V	50	28	4.1	1.1	1.6
60018	00	V	50	30	3.9	-1.0	0.0
ASDE02	00	V	50	25	3.2	0.1	0.0
ASDE03	12	V	50	11	2.8	0.9	0.9
ASDE03	00	V	50	12	2.5	1.1	1.0
ASDE04	12	V	50	5	2.7	0.7	0.9
ASDE04	00	V	50	4	3.0	-1.2	0.2
ASDE09	12	V	50	4	2.5	1.1	-0.5
ASDK01	12	V	50	11	2.7	-0.9	-0.3
ASDK01	00	V	50	11	2.6	-0.7	0.2
ASDK02	12	V	50	8	2.5	1.3	-0.9
ASDK02	00	V	50	8	3.3	0.1	-0.6
ASDK03	12	V	50	12	2.5	-0.9	-0.6
ASDK03	00	V	50	8	2.0	-0.8	-0.7
ASDK1	12	V	50	11	3.0	-0.6	-0.9
ASDK1	00	V	50	11	2.5	0.0	0.2
ASDK2	12	V	50	8	2.2	0.6	-1.2
ASDK2	00	V	50	8	2.5	0.7	-0.5
ASDK3	12	V	50	12	2.3	-1.0	-0.8
ASDK3	00	V	50	8	2.0	-0.5	-0.5
ASES01	12	V	50	17	4.1	1.6	-0.4
ASEU01	12	V	50	4	3.7	0.3	-0.4
ASEU01	00	V	50	1	2.1	1.4	1.6
ASEU02	12	V	50	11	3.0	0.9	-0.9
ASEU02	00	V	50	15	3.4	-0.4	-0.7
ASEU03	12	V	50	6	2.3	0.4	1.1
ASEU03	00	V	50	9	2.3	0.0	-0.3
ASEU06	12	V	50	12	2.9	0.1	1.6
ASEU06	00	V	50	6	3.5	0.1	-0.3
ASFR1	12	V	50	14	3.1	0.3	0.0
ASFR1	00	V	50	13	3.3	-0.2	-0.2
ASFR2	12	V	50	1	3.4	2.4	-2.4
ASFR2	00	V	50	5	3.6	0.7	-0.2
ASFR3	12	V	50	15	3.7	-0.2	0.0
ASFR3	00	V	50	14	3.9	0.4	0.0
ASFR4	12	V	50	7	3.9	-1.9	0.7
ASFR4	00	V	50	10	5.2	-0.7	1.5
ASUK2	12	V	50	3	6.4	-0.1	3.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASUK2	00	V	50	4	4.3	-1.7	-1.3
BJPAR	00	V	50	5	5.4	0.7	0.0
BJPAR	12	V	50	8	4.1	-1.5	0.0
DBLK	12	V	50	14	3.8	0.4	0.4
GHACC	00	V	50	6	5.7	-3.9	0.7
GHACC	12	V	50	10	4.9	0.0	-0.1
GHKUM	12	V	50	2	6.9	-2.4	3.8
GHKUM	00	V	50	3	3.6	-2.5	0.2

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 100 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : JUN 2016
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	100	30	8.1	3.9
01001	12	Z	100	30	8.2	0.8
01028	12	Z	100	30	4.9	1.5
01028	00	Z	100	30	7.6	5.0
01400	00	Z	100	27	14.9	13.3
01400	12	Z	100	26	14.2	11.6
01415	00	Z	100	20	6.2	4.4
01415	12	Z	100	20	6.5	4.7
02365	00	Z	100	30	7.6	1.9
02365	12	Z	100	29	7.4	-1.6
02591	00	Z	100	30	13.1	12.2
02591	12	Z	100	28	8.3	7.0
02836	12	Z	100	29	6.2	0.7
02836	00	Z	100	30	7.1	5.1
02963	00	Z	100	29	5.2	4.6
02963	12	Z	100	30	7.4	4.4
03005	12	Z	100	29	7.8	0.0
03005	00	Z	100	30	5.8	-2.6
03238	12	Z	100	5	9.2	7.5
03238	00	Z	100	26	9.1	6.4
03808	00	Z	100	30	10.7	6.9
03808	12	Z	100	30	5.5	2.2
03918	00	Z	100	29	8.7	6.7
03918	12	Z	100	15	7.1	5.7
03953	00	Z	100	28	11.8	-0.3
03953	12	Z	100	30	25.7	21.3
04018	00	Z	100	25	7.5	5.4
04018	12	Z	100	28	9.1	6.4
04220	12	Z	100	28	8.0	6.4
04220	00	Z	100	28	8.8	7.1
04270	12	Z	100	30	9.1	5.2
04270	00	Z	100	29	8.4	6.2
04320	12	Z	100	29	10.1	8.2
04320	00	Z	100	30	7.8	6.1
04339	12	Z	100	30	8.9	6.5
04339	00	Z	100	30	4.9	3.2
04360	12	Z	100	27	60.5	59.4
04360	00	Z	100	22	47.0	45.8
06011	00	Z	100	28	18.7	-4.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	100	27	12.5	8.4
06260	00	Z	100	28	12.7	7.7
06260	12	Z	100	5	10.1	9.4
06610	12	Z	100	29	10.4	2.5
06610	00	Z	100	31	17.1	7.0
07110	00	Z	100	30	17.2	15.7
07110	12	Z	100	30	33.8	30.8
07510	00	Z	100	24	22.5	21.7
07510	12	Z	100	29	27.4	26.0
07645	00	Z	100	28	9.0	2.6
07645	12	Z	100	30	18.8	13.1
07761	00	Z	100	25	20.4	15.5
07761	12	Z	100	30	24.9	21.4
08001	12	Z	100	28	10.9	8.3
08001	00	Z	100	28	11.1	8.3
08221	12	Z	100	30	37.9	14.0
08221	00	Z	100	27	9.8	8.7
08302	12	Z	100	30	8.6	-5.3
08302	00	Z	100	30	5.7	-1.7
08508	12	Z	100	29	19.4	16.2
08522	12	Z	100	30	7.7	5.8
08579	12	Z	100	30	9.6	6.9
10035	00	Z	100	30	5.9	0.5
10035	12	Z	100	30	8.6	-0.9
10393	00	Z	100	30	4.6	1.6
10393	12	Z	100	30	6.6	-2.3
10410	00	Z	100	30	6.9	0.2
10410	12	Z	100	30	7.4	0.2
10739	12	Z	100	28	9.0	6.2
10739	00	Z	100	28	9.7	6.6
11035	00	Z	100	31	11.5	6.3
11035	12	Z	100	33	7.5	-2.5
12982	00	Z	100	29	10.9	7.1
12982	12	Z	100	28	18.6	13.5
16044	12	Z	100	16	9.6	5.0
16044	00	Z	100	16	11.0	9.7
16080	00	Z	100	30	6.0	1.4
16080	12	Z	100	30	14.9	-8.3
16245	00	Z	100	29	8.4	2.3
16245	12	Z	100	30	16.5	-7.1
16320	12	Z	100	30	8.4	-3.8
16320	00	Z	100	30	10.5	6.2
16429	00	Z	100	38	9.1	4.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	12	Z	100	36	15.8	-5.6
16622	00	Z	100	29	43.8	40.6
16754	00	Z	100	29	27.1	25.3
17607	12	Z	100	20	19.5	-16.9
26435	00	Z	100	15	7.0	2.9
60018	12	Z	100	28	8.6	4.9
60018	00	Z	100	30	10.9	9.4
ASDE02	00	Z	100	29	21.4	20.0
ASDE03	12	Z	100	11	86.1	53.8
ASDE03	00	Z	100	14	70.4	23.8
ASDE04	12	Z	100	5	40.8	39.9
ASDE04	00	Z	100	5	28.0	27.6
ASDE09	12	Z	100	4	24.2	23.4
ASDK01	12	Z	100	12	13.9	11.9
ASDK01	00	Z	100	11	9.3	7.7
ASDK02	12	Z	100	10	17.5	11.6
ASDK02	00	Z	100	10	6.3	3.9
ASDK03	12	Z	100	13	27.1	26.6
ASDK03	00	Z	100	8	23.4	22.5
ASDK1	12	Z	100	11	8.9	2.8
ASDK1	00	Z	100	11	6.6	1.7
ASDK2	12	Z	100	9	15.1	7.8
ASDK2	00	Z	100	8	5.7	0.1
ASDK3	12	Z	100	12	21.0	20.1
ASDK3	00	Z	100	8	20.3	20.0
ASES01	12	Z	100	19	60.6	26.3
ASEU01	12	Z	100	6	13.9	13.2
ASEU01	00	Z	100	5	33.8	3.6
ASEU02	12	Z	100	15	44.1	42.8
ASEU02	00	Z	100	15	37.4	35.6
ASEU03	12	Z	100	10	21.4	16.6
ASEU03	00	Z	100	12	21.1	-2.3
ASEU06	12	Z	100	17	29.9	26.9
ASEU06	00	Z	100	14	19.5	10.4
ASFR1	12	Z	100	14	15.1	13.3
ASFR1	00	Z	100	14	13.2	7.6
ASFR2	12	Z	100	3	31.8	26.2
ASFR2	00	Z	100	6	17.0	12.6
ASFR3	12	Z	100	15	16.4	14.2
ASFR3	00	Z	100	14	14.9	11.2
ASFR4	12	Z	100	7	29.6	25.1
ASFR4	00	Z	100	10	15.7	14.8
ASUK2	12	Z	100	3	38.7	-38.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASUK2	00	Z	100	4	32.8	-32.5
BJPAR	00	Z	100	6	58.9	-0.8
BJPAR	12	Z	100	7	42.6	41.2
DBLK	12	Z	100	27	4.6	1.1
GHACC	00	Z	100	6	32.6	31.6
GHACC	12	Z	100	12	49.0	47.7
GHKUM	12	Z	100	3	38.7	-38.5
GHKUM	00	Z	100	4	32.8	-32.5

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 100 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : JUN 2016
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	100	30	2.8	-0.1	-0.8
01001	12	V	100	30	2.4	0.3	-0.1
01028	12	V	100	30	2.1	0.3	0.0
01028	00	V	100	30	2.3	-0.4	0.0
01400	00	V	100	24	2.7	0.7	-0.9
01400	12	V	100	25	2.2	0.5	-0.1
01415	00	V	100	20	2.8	1.4	-0.2
01415	12	V	100	20	3.7	0.6	-0.2
02365	00	V	100	29	2.8	0.3	0.1
02365	12	V	100	29	3.3	0.5	0.5
02591	00	V	100	30	3.0	0.6	0.1
02591	12	V	100	28	3.4	-0.4	-0.5
02836	12	V	100	29	2.8	0.7	-0.4
02836	00	V	100	30	2.5	0.2	0.5
02963	00	V	100	29	3.5	-0.9	0.4
02963	12	V	100	30	2.8	0.1	-0.1
03005	12	V	100	29	2.2	0.3	-0.2
03005	00	V	100	30	2.1	0.1	0.1
03238	12	V	100	5	2.1	1.0	-0.5
03238	00	V	100	26	2.6	0.2	-0.4
03808	00	V	100	29	2.8	0.0	0.7
03808	12	V	100	30	2.8	0.6	0.2
03918	00	V	100	29	2.8	0.3	-0.2
03918	12	V	100	15	1.6	-0.2	0.4
03953	00	V	100	28	2.8	0.0	0.7
03953	12	V	100	30	2.5	0.3	1.0
04018	00	V	100	21	2.3	0.5	0.2
04018	12	V	100	26	2.3	0.6	-0.1
04220	12	V	100	28	2.4	-0.2	0.3
04220	00	V	100	27	2.3	-0.3	0.5
04270	12	V	100	29	2.6	0.6	0.3
04270	00	V	100	29	2.9	0.0	0.0
04320	12	V	100	29	3.6	0.8	-0.3
04320	00	V	100	30	2.8	0.4	-0.2
04339	12	V	100	30	2.5	0.3	0.5
04339	00	V	100	30	3.2	-0.2	-0.4
04360	12	V	100	27	2.4	-0.4	0.1
04360	00	V	100	22	2.8	-1.0	0.1
06011	00	V	100	27	2.3	0.0	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	100	27	2.0	0.2	0.0
06260	00	V	100	28	3.1	0.7	-0.4
06260	12	V	100	5	3.7	-0.2	1.8
06610	12	V	100	29	3.0	0.3	-0.1
06610	00	V	100	30	3.3	-0.1	0.3
07110	00	V	100	28	2.8	0.3	0.2
07110	12	V	100	30	2.7	0.5	-0.3
07510	00	V	100	24	3.0	0.4	0.6
07510	12	V	100	28	3.1	-0.4	-0.3
07645	00	V	100	27	4.0	1.2	0.3
07645	12	V	100	28	3.5	0.2	0.2
07761	00	V	100	25	3.2	0.3	0.6
07761	12	V	100	29	4.0	1.3	-0.2
08001	12	V	100	28	2.9	0.0	-0.3
08001	00	V	100	27	2.8	0.7	0.9
08221	12	V	100	30	3.7	0.2	0.5
08221	00	V	100	27	3.3	0.4	0.0
08302	12	V	100	30	3.8	-0.2	0.5
08302	00	V	100	30	4.0	0.6	0.4
08508	12	V	100	26	3.3	-0.2	-0.4
08522	12	V	100	30	3.6	0.5	-0.5
08579	12	V	100	30	2.5	-0.3	-0.7
10035	00	V	100	30	2.7	1.4	0.2
10035	12	V	100	30	2.9	-0.2	-0.1
10393	00	V	100	30	2.3	-0.4	0.0
10393	12	V	100	30	3.2	0.0	-0.3
10410	00	V	100	30	2.8	0.4	0.4
10410	12	V	100	30	3.1	1.0	0.4
10739	12	V	100	28	2.9	0.8	-0.6
10739	00	V	100	28	2.8	0.5	-0.2
11035	00	V	100	30	3.6	0.5	-0.1
11035	12	V	100	30	3.3	0.2	0.1
12982	00	V	100	29	4.6	-0.2	-0.4
12982	12	V	100	27	3.8	-0.6	0.5
16044	12	V	100	16	3.1	-0.6	-0.8
16044	00	V	100	16	3.3	0.6	-1.0
16080	00	V	100	30	2.7	-0.1	0.5
16080	12	V	100	30	3.6	0.3	-0.6
16245	00	V	100	27	4.4	1.5	-0.3
16245	12	V	100	29	4.2	0.9	0.5
16320	12	V	100	30	4.1	0.3	0.3
16320	00	V	100	30	4.1	-0.5	0.4
16429	00	V	100	30	4.5	1.2	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	12	V	100	30	4.0	0.6	-0.1
16622	00	V	100	25	3.9	-0.4	0.1
16754	00	V	100	28	5.2	0.8	1.4
17607	12	V	100	20	5.3	0.1	1.0
26435	00	V	100	15	2.5	0.3	0.9
60018	12	V	100	28	3.7	0.1	-0.5
60018	00	V	100	30	3.5	0.2	0.3
ASDE02	00	V	100	26	3.2	0.2	-0.7
ASDE03	12	V	100	11	2.9	0.0	0.2
ASDE03	00	V	100	13	3.5	-0.6	0.6
ASDE04	12	V	100	5	5.4	2.1	-1.2
ASDE04	00	V	100	4	6.8	-3.4	0.0
ASDE09	12	V	100	4	2.4	0.5	-0.2
ASDK01	12	V	100	11	2.5	0.9	0.1
ASDK01	00	V	100	11	3.0	0.0	-0.6
ASDK02	12	V	100	9	2.8	0.4	-0.2
ASDK02	00	V	100	10	2.4	0.4	0.9
ASDK03	12	V	100	13	2.5	-0.2	0.2
ASDK03	00	V	100	8	2.8	0.7	0.6
ASDK1	12	V	100	11	2.6	1.4	-0.1
ASDK1	00	V	100	11	2.3	0.0	-0.5
ASDK2	12	V	100	9	2.1	0.1	-0.5
ASDK2	00	V	100	8	2.4	0.6	0.8
ASDK3	12	V	100	12	2.5	-0.3	0.0
ASDK3	00	V	100	8	3.2	1.4	0.6
ASES01	12	V	100	18	3.5	0.5	-1.4
ASEU01	12	V	100	4	3.2	0.8	-0.3
ASEU01	00	V	100	1	1.3	0.6	1.2
ASEU02	12	V	100	12	3.3	-1.0	0.7
ASEU02	00	V	100	15	2.8	-0.3	-0.7
ASEU03	12	V	100	7	4.1	-1.5	-0.1
ASEU03	00	V	100	9	3.2	-0.9	-0.2
ASEU06	12	V	100	13	3.7	0.4	-0.6
ASEU06	00	V	100	9	3.8	-0.9	0.0
ASFR1	12	V	100	13	2.6	0.6	0.3
ASFR1	00	V	100	14	2.8	0.7	-0.5
ASFR2	12	V	100	3	5.1	0.2	-1.6
ASFR2	00	V	100	6	4.8	1.8	-1.4
ASFR3	12	V	100	14	2.7	-0.3	0.3
ASFR3	00	V	100	10	2.8	-0.7	1.4
ASFR4	12	V	100	6	3.3	-0.6	-0.9
ASFR4	00	V	100	7	2.9	0.2	-1.0
ASUK2	12	V	100	3	4.0	-2.9	1.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASUK2	00	V	100	4	4.0	-1.6	-0.6
BJPAR	00	V	100	6	5.8	-1.9	2.4
BJPAR	12	V	100	7	4.3	0.0	-0.6
DBLK	12	V	100	14	2.6	0.9	0.5
GHACC	00	V	100	6	3.0	0.4	0.1
GHACC	12	V	100	12	3.4	-0.5	0.4
GHKUM	12	V	100	3	4.0	-2.9	1.4
GHKUM	00	V	100	4	4.2	-1.4	-0.6

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

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RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 500 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : JUN 2016
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
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WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	500	30	6.5	1.1
01001	12	Z	500	30	7.8	0.0
01028	12	Z	500	30	3.8	0.7
01028	00	Z	500	30	3.8	0.9
01400	00	Z	500	27	10.0	7.6
01400	12	Z	500	26	9.0	7.1
01415	00	Z	500	20	6.0	5.3
01415	12	Z	500	20	5.1	2.9
02365	00	Z	500	30	3.1	1.4
02365	12	Z	500	29	3.0	0.6
02591	00	Z	500	30	9.6	9.1
02591	12	Z	500	28	8.7	8.4
02836	12	Z	500	30	4.9	2.7
02836	00	Z	500	30	3.7	1.4
02963	00	Z	500	29	6.4	5.9
02963	12	Z	500	30	4.0	3.4
03005	12	Z	500	30	4.0	-0.1
03005	00	Z	500	30	3.6	-1.0
03238	12	Z	500	5	7.8	7.2
03238	00	Z	500	27	6.9	5.7
03808	00	Z	500	30	9.0	4.4
03808	12	Z	500	30	4.9	2.1
03918	00	Z	500	30	6.5	4.7
03918	12	Z	500	15	7.6	6.7
03953	00	Z	500	30	10.7	-3.8
03953	12	Z	500	30	7.9	5.0
04018	00	Z	500	29	4.7	3.6
04018	12	Z	500	28	5.1	3.8
04220	12	Z	500	28	4.1	2.3
04220	00	Z	500	28	5.6	3.1
04270	12	Z	500	30	6.0	2.5
04270	00	Z	500	30	5.3	2.4
04320	12	Z	500	29	5.7	3.2
04320	00	Z	500	30	5.4	4.2
04339	12	Z	500	30	6.2	3.2
04339	00	Z	500	30	4.3	2.6
04360	12	Z	500	30	48.9	48.2
04360	00	Z	500	25	46.8	46.5
06011	00	Z	500	29	16.5	-2.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	500	29	4.4	1.0
06260	00	Z	500	28	5.5	4.1
06260	12	Z	500	5	4.1	2.0
06610	12	Z	500	29	4.5	2.0
06610	00	Z	500	31	14.3	3.3
07110	00	Z	500	30	6.3	3.6
07110	12	Z	500	30	9.7	6.9
07510	00	Z	500	30	12.0	10.8
07510	12	Z	500	33	12.6	10.4
07645	00	Z	500	29	5.5	3.3
07645	12	Z	500	30	6.8	4.5
07761	00	Z	500	27	9.2	0.5
07761	12	Z	500	31	8.7	6.5
08001	12	Z	500	30	7.3	6.5
08001	00	Z	500	30	9.5	9.1
08221	12	Z	500	30	15.6	8.9
08221	00	Z	500	27	7.4	6.9
08302	12	Z	500	30	3.7	-2.8
08302	00	Z	500	30	3.0	-0.1
08508	12	Z	500	29	13.7	9.9
08522	12	Z	500	30	6.7	4.8
08579	12	Z	500	29	7.4	6.6
10035	00	Z	500	30	3.9	0.3
10035	12	Z	500	30	3.9	-0.6
10393	00	Z	500	30	3.3	0.2
10393	12	Z	500	30	3.9	-2.2
10410	00	Z	500	30	3.3	-0.7
10410	12	Z	500	31	3.5	-1.3
10739	12	Z	500	28	8.6	6.8
10739	00	Z	500	28	9.0	7.9
11035	00	Z	500	31	3.7	1.0
11035	12	Z	500	33	6.5	-2.9
12982	00	Z	500	30	17.0	7.6
12982	12	Z	500	30	8.1	4.7
16044	12	Z	500	16	3.3	1.5
16044	00	Z	500	16	5.7	4.5
16080	00	Z	500	30	5.8	-3.2
16080	12	Z	500	30	12.0	-6.1
16245	00	Z	500	31	5.8	-3.8
16245	12	Z	500	31	12.4	-9.9
16320	12	Z	500	30	8.5	-5.7
16320	00	Z	500	30	6.7	-0.6
16429	00	Z	500	38	6.5	-3.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	12	Z	500	36	11.1	-8.5
16622	00	Z	500	30	23.9	21.4
16754	00	Z	500	29	16.8	14.5
17607	12	Z	500	20	5.6	2.9
26435	00	Z	500	15	6.6	0.2
60018	12	Z	500	28	3.9	2.5
60018	00	Z	500	30	2.8	1.6
ASDE02	00	Z	500	30	9.4	8.5
ASDE03	12	Z	500	12	14.4	6.0
ASDE03	00	Z	500	14	12.5	3.7
ASDE04	12	Z	500	5	29.4	29.1
ASDE04	00	Z	500	5	25.0	24.8
ASDE09	12	Z	500	5	9.4	8.6
ASDK01	12	Z	500	14	12.1	11.2
ASDK01	00	Z	500	14	10.6	8.7
ASDK02	12	Z	500	10	16.5	5.4
ASDK02	00	Z	500	10	6.4	3.2
ASDK03	12	Z	500	14	25.8	25.5
ASDK03	00	Z	500	9	26.6	26.3
ASDK1	12	Z	500	11	6.7	2.9
ASDK1	00	Z	500	13	8.7	3.1
ASDK2	12	Z	500	9	17.8	0.6
ASDK2	00	Z	500	8	5.0	-0.9
ASDK3	12	Z	500	12	19.9	18.8
ASDK3	00	Z	500	9	29.5	27.3
ASES01	12	Z	500	19	13.1	7.4
ASEU01	12	Z	500	6	5.6	4.4
ASEU01	00	Z	500	5	32.2	-4.1
ASEU02	12	Z	500	16	35.6	35.1
ASEU02	00	Z	500	15	32.9	32.1
ASEU03	12	Z	500	12	14.5	-3.2
ASEU03	00	Z	500	12	16.0	-5.5
ASEU06	12	Z	500	18	11.1	5.3
ASEU06	00	Z	500	15	27.3	2.8
ASFR1	12	Z	500	15	7.3	-2.4
ASFR1	00	Z	500	15	10.6	-7.7
ASFR2	12	Z	500	4	14.9	14.6
ASFR2	00	Z	500	6	13.2	10.3
ASFR3	12	Z	500	15	7.2	2.1
ASFR3	00	Z	500	14	4.5	0.8
ASFR4	12	Z	500	9	3.8	-0.3
ASFR4	00	Z	500	11	5.9	-3.0
ASUK2	12	Z	500	3	72.4	-72.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASUK2	00	Z	500	4	72.5	-72.4
BJPAR	00	Z	500	6	7.7	4.5
BJPAR	12	Z	500	7	13.1	12.3
DBLK	12	Z	500	27	3.9	-1.9
GHACC	00	Z	500	7	22.7	22.6
GHACC	12	Z	500	15	28.4	27.3
GHKUM	12	Z	500	3	72.4	-72.3
GHKUM	00	Z	500	4	72.5	-72.4

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

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RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 500 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : JUN 2016
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	500	30	2.2	0.0	-0.3
01001	12	V	500	30	2.1	0.5	-0.4
01028	12	V	500	30	1.9	0.1	0.0
01028	00	V	500	30	1.8	0.1	0.0
01400	00	V	500	26	2.4	0.8	-0.1
01400	12	V	500	26	2.7	0.4	0.2
01415	00	V	500	20	2.6	0.0	0.0
01415	12	V	500	20	1.8	0.0	0.4
02365	00	V	500	29	3.2	-0.2	0.4
02365	12	V	500	29	2.0	-0.5	0.0
02591	00	V	500	30	2.6	0.4	0.2
02591	12	V	500	28	2.2	0.0	-0.1
02836	12	V	500	30	2.7	-0.2	-0.2
02836	00	V	500	30	2.6	0.1	-0.4
02963	00	V	500	29	3.1	0.0	-0.5
02963	12	V	500	30	3.0	0.1	-0.1
03005	12	V	500	30	2.8	-0.2	-0.2
03005	00	V	500	30	2.6	0.7	0.6
03238	12	V	500	5	2.5	0.6	-1.1
03238	00	V	500	27	2.9	0.4	1.1
03808	00	V	500	29	2.7	0.7	0.4
03808	12	V	500	30	3.3	0.3	0.1
03918	00	V	500	30	2.3	0.1	0.4
03918	12	V	500	15	3.1	-0.4	1.2
03953	00	V	500	30	2.4	0.1	0.6
03953	12	V	500	30	2.9	-0.2	0.3
04018	00	V	500	29	3.0	0.1	0.1
04018	12	V	500	28	2.4	0.3	-0.1
04220	12	V	500	28	2.5	-0.1	0.3
04220	00	V	500	27	2.2	-0.3	-0.3
04270	12	V	500	30	3.4	0.0	-0.3
04270	00	V	500	30	3.7	0.0	0.3
04320	12	V	500	29	2.5	0.0	0.2
04320	00	V	500	30	2.7	0.9	0.3
04339	12	V	500	30	2.8	-0.4	-0.1
04339	00	V	500	30	2.5	0.3	-0.3
04360	12	V	500	30	2.5	0.5	0.3
04360	00	V	500	25	3.2	0.5	0.2
06011	00	V	500	28	1.7	-0.1	0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	500	29	2.3	0.1	-0.2
06260	00	V	500	28	3.1	0.1	0.4
06260	12	V	500	5	3.4	0.7	-1.5
06610	12	V	500	29	3.0	0.0	0.0
06610	00	V	500	30	3.1	0.1	0.0
07110	00	V	500	30	3.4	0.4	1.0
07110	12	V	500	30	2.8	0.3	0.1
07510	00	V	500	28	3.3	0.3	0.3
07510	12	V	500	30	2.8	-0.4	-0.5
07645	00	V	500	29	3.3	-1.1	0.2
07645	12	V	500	30	2.3	-0.1	-0.1
07761	00	V	500	26	3.5	0.6	0.4
07761	12	V	500	30	2.5	0.5	0.4
08001	12	V	500	30	2.3	0.1	0.4
08001	00	V	500	30	2.3	-0.7	-0.1
08221	12	V	500	30	2.2	0.4	-0.4
08221	00	V	500	27	2.9	0.6	0.2
08302	12	V	500	30	3.3	0.1	0.1
08302	00	V	500	29	3.0	0.5	0.3
08508	12	V	500	26	2.5	0.8	-0.7
08522	12	V	500	30	1.8	-0.3	-0.1
08579	12	V	500	29	2.4	0.3	0.0
10035	00	V	500	30	2.2	0.0	-0.1
10035	12	V	500	30	2.3	0.0	0.1
10393	00	V	500	30	3.1	0.2	0.3
10393	12	V	500	30	2.7	-0.1	-0.2
10410	00	V	500	30	3.1	0.9	0.4
10410	12	V	500	30	2.4	0.2	-0.1
10739	12	V	500	28	2.5	0.0	0.0
10739	00	V	500	28	3.1	0.9	0.0
11035	00	V	500	30	4.1	1.1	0.6
11035	12	V	500	30	3.2	0.0	0.3
12982	00	V	500	30	3.0	-0.1	0.8
12982	12	V	500	30	3.0	0.2	-0.4
16044	12	V	500	16	2.5	0.0	0.4
16044	00	V	500	16	2.8	0.2	-0.3
16080	00	V	500	30	3.1	0.1	0.0
16080	12	V	500	29	2.1	0.5	-0.2
16245	00	V	500	29	2.5	0.8	-0.3
16245	12	V	500	30	2.6	0.2	-0.3
16320	12	V	500	30	3.4	0.5	-0.4
16320	00	V	500	30	2.8	0.4	0.2
16429	00	V	500	30	4.4	0.9	0.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	12	V	500	30	3.5	1.2	-0.5
16622	00	V	500	29	4.0	0.2	1.0
16754	00	V	500	29	3.6	0.1	0.8
17607	12	V	500	20	2.2	0.2	0.2
26435	00	V	500	15	2.3	-0.2	-1.1
60018	12	V	500	28	2.2	-0.1	0.2
60018	00	V	500	30	2.3	-0.3	-0.5
ASDE02	00	V	500	27	1.8	0.1	0.3
ASDE03	12	V	500	12	2.7	0.6	0.4
ASDE03	00	V	500	13	2.8	-0.1	0.9
ASDE04	12	V	500	4	1.5	-0.4	0.2
ASDE04	00	V	500	5	2.2	-0.2	0.3
ASDE09	12	V	500	5	2.4	0.8	-0.6
ASDK01	12	V	500	11	2.1	0.2	0.1
ASDK01	00	V	500	13	2.7	0.8	-0.7
ASDK02	12	V	500	9	2.4	0.5	-0.2
ASDK02	00	V	500	10	3.6	-0.3	-0.4
ASDK03	12	V	500	14	4.0	1.2	-0.8
ASDK03	00	V	500	9	2.3	-0.4	0.1
ASDK1	12	V	500	11	2.8	0.1	-0.9
ASDK1	00	V	500	13	2.4	0.2	-1.7
ASDK2	12	V	500	9	1.8	-0.1	0.4
ASDK2	00	V	500	8	3.4	-0.6	-0.4
ASDK3	12	V	500	12	2.8	1.6	-0.2
ASDK3	00	V	500	9	4.2	0.9	-0.1
ASES01	12	V	500	18	3.0	-0.1	0.2
ASEU01	12	V	500	5	2.1	-0.7	-0.1
ASEU01	00	V	500	2	1.4	-0.3	-1.2
ASEU02	12	V	500	13	2.4	0.4	-0.1
ASEU02	00	V	500	15	3.5	0.3	0.7
ASEU03	12	V	500	12	3.6	-0.5	-1.4
ASEU03	00	V	500	10	3.4	-1.0	-0.5
ASEU06	12	V	500	15	2.4	1.2	-0.4
ASEU06	00	V	500	12	4.1	0.3	-1.4
ASFR1	12	V	500	15	2.6	0.0	-0.5
ASFR1	00	V	500	15	2.5	-0.4	-0.2
ASFR2	12	V	500	4	3.7	1.3	0.6
ASFR2	00	V	500	6	3.1	-0.3	-0.4
ASFR3	12	V	500	15	4.6	0.1	1.9
ASFR3	00	V	500	14	3.2	0.1	0.0
ASFR4	12	V	500	8	3.1	0.6	2.1
ASFR4	00	V	500	11	2.9	-0.4	0.3
ASUK2	12	V	500	3	2.9	1.1	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASUK2	00	V	500	4	1.9	-0.3	0.5
BJPAR	00	V	500	6	4.9	3.5	2.1
BJPAR	12	V	500	7	4.8	1.2	1.0
DBLK	12	V	500	14	1.7	0.5	0.7
GHACC	00	V	500	7	3.6	-1.3	1.8
GHACC	12	V	500	15	3.0	0.0	-0.9
GHKUM	12	V	500	3	2.9	1.1	0.0
GHKUM	00	V	500	4	1.9	-0.3	0.5

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                : JUN 2016
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	850	30	6.5	-1.6
01001	12	Z	850	30	6.0	-1.6
01028	12	Z	850	30	3.0	-0.9
01028	00	Z	850	31	3.0	-0.3
01400	00	Z	850	28	8.0	5.9
01400	12	Z	850	26	7.3	4.8
01415	00	Z	850	20	3.9	3.6
01415	12	Z	850	20	4.1	2.8
02365	00	Z	850	30	2.5	1.5
02365	12	Z	850	29	2.3	0.9
02591	00	Z	850	30	8.7	8.5
02591	12	Z	850	28	9.2	9.1
02836	12	Z	850	30	3.7	2.8
02836	00	Z	850	30	3.4	2.4
02963	00	Z	850	29	4.8	4.4
02963	12	Z	850	30	4.6	4.2
03005	12	Z	850	30	2.9	-0.1
03005	00	Z	850	30	2.8	-0.6
03238	12	Z	850	5	6.8	6.7
03238	00	Z	850	27	5.6	5.3
03808	00	Z	850	30	7.8	3.2
03808	12	Z	850	30	2.4	0.2
03918	00	Z	850	30	5.4	5.0
03918	12	Z	850	15	6.7	6.1
03953	00	Z	850	30	3.7	1.1
03953	12	Z	850	30	3.1	2.0
04018	00	Z	850	29	2.1	1.0
04018	12	Z	850	28	1.7	0.2
04220	12	Z	850	28	3.0	1.6
04220	00	Z	850	28	3.5	2.6
04270	12	Z	850	30	3.0	1.8
04270	00	Z	850	30	3.5	1.4
04320	12	Z	850	29	5.7	4.4
04320	00	Z	850	30	5.5	4.0
04339	12	Z	850	30	4.0	2.4
04339	00	Z	850	30	3.9	1.6
04360	12	Z	850	30	44.5	44.5
04360	00	Z	850	30	44.9	44.9
06011	00	Z	850	29	17.2	0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	850	29	3.8	2.9
06260	00	Z	850	28	3.5	2.7
06260	12	Z	850	5	2.6	1.2
06610	12	Z	850	29	4.1	3.6
06610	00	Z	850	31	5.9	5.2
07110	00	Z	850	30	2.8	2.1
07110	12	Z	850	30	2.8	1.5
07510	00	Z	850	31	6.7	6.2
07510	12	Z	850	33	6.3	5.8
07645	00	Z	850	29	3.5	2.6
07645	12	Z	850	30	4.4	3.8
07761	00	Z	850	26	3.1	-0.8
07761	12	Z	850	31	2.8	-1.1
08001	12	Z	850	30	5.7	5.2
08001	00	Z	850	30	6.8	6.3
08221	12	Z	850	30	4.3	3.1
08221	00	Z	850	27	5.2	4.8
08302	12	Z	850	30	4.1	-3.4
08302	00	Z	850	30	2.1	-0.9
08508	12	Z	850	29	11.5	8.3
08522	12	Z	850	30	3.1	2.5
08579	12	Z	850	29	3.4	2.1
10035	00	Z	850	31	3.8	0.1
10035	12	Z	850	30	3.7	0.9
10393	00	Z	850	30	2.2	0.1
10393	12	Z	850	31	1.8	0.6
10410	00	Z	850	30	3.4	-2.1
10410	12	Z	850	31	2.5	-0.8
10739	12	Z	850	29	8.4	8.0
10739	00	Z	850	28	8.6	8.3
11035	00	Z	850	31	4.2	2.4
11035	12	Z	850	33	4.3	1.9
12982	00	Z	850	30	16.2	5.0
12982	12	Z	850	30	8.0	7.2
16044	12	Z	850	16	5.2	4.4
16044	00	Z	850	16	6.3	4.3
16080	00	Z	850	30	5.9	-3.6
16080	12	Z	850	30	12.5	-3.5
16245	00	Z	850	31	6.5	-5.3
16245	12	Z	850	31	10.7	-9.0
16320	12	Z	850	30	8.5	-4.6
16320	00	Z	850	30	7.4	-2.1
16429	00	Z	850	39	6.6	-3.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	12	Z	850	36	9.3	-8.2
16622	00	Z	850	30	15.8	14.6
16754	00	Z	850	29	9.9	8.2
17607	12	Z	850	21	2.2	-0.7
26435	00	Z	850	15	3.1	0.2
60018	12	Z	850	28	3.4	-2.1
60018	00	Z	850	30	3.6	-2.8
ASDE02	00	Z	850	30	3.1	2.2
ASDE03	12	Z	850	12	4.6	-1.6
ASDE03	00	Z	850	14	6.6	-3.4
ASDE04	12	Z	850	5	25.5	24.6
ASDE04	00	Z	850	6	25.3	24.8
ASDE09	12	Z	850	5	8.7	8.1
ASDK01	12	Z	850	14	10.1	8.8
ASDK01	00	Z	850	14	9.9	7.7
ASDK02	12	Z	850	10	18.3	5.3
ASDK02	00	Z	850	10	4.6	1.1
ASDK03	12	Z	850	15	27.3	26.9
ASDK03	00	Z	850	11	26.1	25.8
ASDK1	12	Z	850	11	9.8	7.8
ASDK1	00	Z	850	13	9.3	6.8
ASDK2	12	Z	850	9	21.0	6.0
ASDK2	00	Z	850	8	5.9	-0.5
ASDK3	12	Z	850	12	26.9	26.4
ASDK3	00	Z	850	10	28.7	28.1
ASES01	12	Z	850	19	7.6	3.7
ASEU01	12	Z	850	6	4.9	-2.0
ASEU01	00	Z	850	5	32.7	-6.3
ASEU02	12	Z	850	16	29.8	29.3
ASEU02	00	Z	850	15	30.2	29.5
ASEU03	12	Z	850	12	17.4	-10.2
ASEU03	00	Z	850	12	11.9	-6.7
ASEU06	12	Z	850	18	7.3	-2.1
ASEU06	00	Z	850	15	21.8	-4.0
ASFR1	12	Z	850	15	9.5	-8.5
ASFR1	00	Z	850	15	9.2	-8.6
ASFR2	12	Z	850	4	10.7	10.6
ASFR2	00	Z	850	6	13.8	12.0
ASFR3	12	Z	850	15	3.4	-0.7
ASFR3	00	Z	850	14	3.6	-1.2
ASFR4	12	Z	850	9	8.9	-8.1
ASFR4	00	Z	850	11	6.9	-6.6
ASUK2	12	Z	850	4	77.0	-76.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASUK2	00	Z	850	4	84.4	-84.3
BJPAR	00	Z	850	6	5.9	-4.4
BJPAR	12	Z	850	7	5.4	3.3
DBLK	12	Z	850	27	4.9	-3.5
GHACC	00	Z	850	7	16.3	16.2
GHACC	12	Z	850	15	22.3	22.1
GHKUM	12	Z	850	4	77.0	-76.9
GHKUM	00	Z	850	4	84.4	-84.3

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                : JUN 2016
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	850	30	2.9	0.6	-0.7
01001	12	V	850	30	2.5	-0.5	-0.3
01028	12	V	850	30	3.2	0.2	-0.5
01028	00	V	850	30	2.3	-0.1	0.1
01400	00	V	850	27	2.4	-0.2	-0.1
01400	12	V	850	26	2.6	0.2	-1.2
01415	00	V	850	20	2.3	-0.4	0.1
01415	12	V	850	20	3.6	0.0	0.7
02365	00	V	850	29	3.2	-0.2	0.6
02365	12	V	850	29	2.4	0.1	-0.2
02591	00	V	850	30	2.7	0.0	-0.5
02591	12	V	850	28	2.8	0.2	0.0
02836	12	V	850	30	2.8	-0.9	0.4
02836	00	V	850	30	3.0	-0.7	0.0
02963	00	V	850	29	2.7	-0.5	-0.1
02963	12	V	850	30	2.8	0.0	0.2
03005	12	V	850	30	3.0	-0.4	-0.2
03005	00	V	850	30	2.7	0.2	-0.1
03238	12	V	850	5	2.1	1.1	0.5
03238	00	V	850	27	1.8	0.5	0.2
03808	00	V	850	29	2.9	0.2	0.8
03808	12	V	850	30	3.4	0.1	0.1
03918	00	V	850	30	2.2	0.0	0.6
03918	12	V	850	15	3.2	-0.4	-0.8
03953	00	V	850	30	2.2	-0.1	0.6
03953	12	V	850	30	2.3	-0.7	0.5
04018	00	V	850	29	3.0	-0.3	1.0
04018	12	V	850	28	2.6	-0.4	0.0
04220	12	V	850	28	2.2	0.1	0.1
04220	00	V	850	27	2.8	0.1	0.2
04270	12	V	850	30	4.4	0.4	0.1
04270	00	V	850	30	2.9	-0.3	0.0
04320	12	V	850	29	3.1	0.1	0.0
04320	00	V	850	30	2.8	0.4	-0.1
04339	12	V	850	30	2.8	0.0	-0.3
04339	00	V	850	30	3.2	-0.1	-0.4
04360	12	V	850	30	3.4	0.4	0.4
04360	00	V	850	30	4.4	0.2	-1.2
06011	00	V	850	28	2.7	-0.3	-0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	850	29	2.3	-0.2	-0.4
06260	00	V	850	28	3.9	0.3	-0.4
06260	12	V	850	5	3.8	-1.3	-1.8
06610	12	V	850	29	2.6	0.1	-0.2
06610	00	V	850	30	3.4	-0.2	0.1
07110	00	V	850	30	2.5	0.0	-0.1
07110	12	V	850	30	3.0	0.9	0.8
07510	00	V	850	29	2.9	0.0	-0.3
07510	12	V	850	30	3.1	-0.2	0.7
07645	00	V	850	29	3.9	0.8	0.4
07645	12	V	850	30	3.5	0.7	0.2
07761	00	V	850	26	3.5	0.0	-0.5
07761	12	V	850	30	3.6	-0.2	-0.1
08001	12	V	850	30	2.8	0.2	0.5
08001	00	V	850	30	2.5	0.3	0.5
08221	12	V	850	28	1.9	-0.3	0.0
08221	00	V	850	27	3.2	-0.1	0.0
08302	12	V	850	30	2.9	0.0	0.3
08302	00	V	850	30	2.5	0.4	0.5
08508	12	V	850	27	3.0	-0.4	-0.2
08522	12	V	850	30	3.0	-0.5	-0.3
08579	12	V	850	29	2.8	0.8	-0.5
10035	00	V	850	30	3.0	0.0	0.5
10035	12	V	850	30	2.3	0.3	0.4
10393	00	V	850	30	2.4	0.1	0.4
10393	12	V	850	30	2.9	0.5	0.0
10410	00	V	850	30	2.3	0.7	-0.4
10410	12	V	850	30	2.4	0.3	0.0
10739	12	V	850	28	2.7	-0.4	0.2
10739	00	V	850	28	2.3	0.4	0.4
11035	00	V	850	30	2.8	0.3	-0.1
11035	12	V	850	30	3.0	1.1	-0.1
12982	00	V	850	30	3.3	0.7	-0.5
12982	12	V	850	30	3.1	0.7	0.1
16044	12	V	850	16	2.9	0.4	-0.1
16044	00	V	850	16	2.6	0.1	0.0
16080	00	V	850	30	2.8	-0.1	0.0
16080	12	V	850	30	2.5	0.3	-0.3
16245	00	V	850	29	2.6	-0.5	0.0
16245	12	V	850	30	4.0	-1.6	0.3
16320	12	V	850	30	3.4	0.4	0.1
16320	00	V	850	30	2.5	0.0	-0.1
16429	00	V	850	30	4.3	0.1	0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	12	V	850	30	2.7	-0.9	0.3
16622	00	V	850	30	3.9	1.2	-0.7
16754	00	V	850	29	2.6	-0.3	-0.5
17607	12	V	850	21	3.5	0.8	0.8
26435	00	V	850	15	2.5	-0.5	0.5
60018	12	V	850	27	2.8	0.3	0.1
60018	00	V	850	30	2.6	0.1	1.0
ASDE02	00	V	850	27	1.7	0.0	0.1
ASDE03	12	V	850	12	4.0	-0.8	0.8
ASDE03	00	V	850	13	2.3	-1.1	0.3
ASDE04	12	V	850	4	0.7	-0.2	0.3
ASDE04	00	V	850	6	3.5	0.0	-0.3
ASDE09	12	V	850	5	1.9	0.1	-0.2
ASDK01	12	V	850	11	1.8	0.0	0.8
ASDK01	00	V	850	13	2.1	0.2	0.1
ASDK02	12	V	850	9	2.5	0.1	-0.7
ASDK02	00	V	850	10	2.3	-0.3	-0.1
ASDK03	12	V	850	15	2.6	-0.9	-0.6
ASDK03	00	V	850	10	2.1	-1.2	0.1
ASDK1	12	V	850	11	2.0	0.1	0.4
ASDK1	00	V	850	13	2.4	0.4	-0.5
ASDK2	12	V	850	9	3.4	0.4	-1.1
ASDK2	00	V	850	8	2.2	-0.3	0.8
ASDK3	12	V	850	12	2.5	-0.5	-0.4
ASDK3	00	V	850	10	2.2	-0.3	-0.9
ASES01	12	V	850	18	3.3	0.0	-0.2
ASEU01	12	V	850	5	2.2	-0.5	0.7
ASEU01	00	V	850	2	1.1	-0.1	0.7
ASEU02	12	V	850	13	1.7	0.4	0.1
ASEU02	00	V	850	15	2.4	0.6	-0.6
ASEU03	12	V	850	12	2.9	-0.1	0.0
ASEU03	00	V	850	10	3.4	0.9	0.4
ASEU06	12	V	850	15	2.2	0.1	0.6
ASEU06	00	V	850	9	4.2	2.2	0.0
ASFR1	12	V	850	15	3.2	0.3	0.0
ASFR1	00	V	850	15	2.4	0.1	0.4
ASFR2	12	V	850	4	2.4	0.1	1.2
ASFR2	00	V	850	6	3.0	1.7	0.4
ASFR3	12	V	850	15	2.9	0.1	-0.5
ASFR3	00	V	850	14	2.4	0.9	0.2
ASFR4	12	V	850	9	2.7	0.0	1.5
ASFR4	00	V	850	11	3.3	-0.9	0.5
ASUK2	12	V	850	4	1.9	0.1	-1.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASUK2	00	V	850	4	2.1	-0.7	-0.2
BJPAR	00	V	850	6	4.7	0.3	2.0
BJPAR	12	V	850	7	4.7	-0.9	0.2
DBLK	12	V	850	14	3.8	0.8	-1.2
GHACC	00	V	850	7	1.8	-1.0	-0.7
GHACC	12	V	850	15	2.2	-1.3	-0.3
GHKUM	12	V	850	4	1.9	0.1	-1.3
GHKUM	00	V	850	4	2.1	-0.7	-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                 : JUN 2016
         STANDARD OF COMPARISON: FIRST-GUESS FIELD


TIME = 99 => AVERAGE OF ALL OBSERVATIONS
GROSS ERROR LIMIT = 15 HPA
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WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
03380	99	P	SUR	54	0	722	0	0.3	0.0	0.3
13008	99	P	SUR	15	-38	104	0	0.2	0.1	0.2
13515	99	P	SUR	26	-53	486	0	0.3	0.3	0.4
13530	99	P	SUR	12	-25	207	0	0.3	-0.2	0.4
13572	99	P	SUR	30	-20	458	0	0.2	0.2	0.3
13633	99	P	SUR	26	-38	343	0	0.2	-0.5	0.5
13661	99	P	SUR	19	-60	712	0	0.3	-0.2	0.4
13665	99	P	SUR	21	-28	710	0	0.3	0.4	0.5
13868	99	P	SUR	27	-18	709	0	0.3	0.5	0.6
13869	99	P	SUR	22	-44	714	0	0.2	0.3	0.4
13871	99	P	SUR	27	-39	687	0	0.3	0.7	0.8
13872	99	P	SUR	23	-38	713	0	0.3	0.6	0.7
21942	99	P	SUR	26	-48	633	0	0.2	0.5	0.5
25575	99	P	SUR	62	-42	635	0	0.6	0.0	0.6
25617	99	P	SUR	62	-36	613	0	2.5	-0.9	2.6
26537	99	P	SUR	73	14	718	2	1.7	0.3	1.8
26545	99	P	SUR	68	2	718	164	7.9	5.6	9.7
31863	99	P	SUR	29	-63	712	0	0.4	0.6	0.7
41040	99	P	SUR	15	-53	713	0	0.3	-0.7	0.8
41041	99	P	SUR	14	-46	705	0	0.3	-0.4	0.5
41043	99	P	SUR	21	-65	913	0	0.6	0.4	0.7
41044	99	P	SUR	22	-59	931	0	0.4	0.1	0.4
41046	99	P	SUR	24	-69	935	0	0.4	-0.0	0.4
41048	99	P	SUR	32	-70	730	0	0.5	-0.7	0.8
41049	99	P	SUR	28	-63	713	0	0.4	-0.0	0.4
41051	99	P	SUR	18	-65	1459	0	0.4	-0.2	0.4
41052	99	P	SUR	18	-65	1815	0	0.4	-1.0	1.1
41053	99	P	SUR	19	-66	1808	0	0.4	-0.2	0.5
41056	99	P	SUR	18	-66	1614	0	0.4	-0.7	0.8
41139	99	P	SUR	20	-38	226	0	0.3	0.1	0.3
41506	99	P	SUR	36	-55	584	0	0.3	0.1	0.3
41564	99	P	SUR	33	-31	29	0	0.2	0.8	0.9
41590	99	P	SUR	41	-44	665	0	0.5	-0.2	0.5
41594	99	P	SUR	36	-62	524	0	0.4	-0.1	0.4
41597	99	P	SUR	28	-56	716	0	0.3	0.4	0.5
41598	99	P	SUR	29	-69	403	0	1.8	-0.5	1.9

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
41635	99	P	SUR	23	-51	707	0	0.3	0.7	0.7
41638	99	P	SUR	21	-64	279	1	0.3	0.4	0.5
41706	99	P	SUR	32	-30	710	0	0.3	0.3	0.4
41707	99	P	SUR	14	-61	713	0	0.4	-0.9	1.0
41708	99	P	SUR	17	-54	717	0	0.3	0.3	0.5
41709	99	P	SUR	34	-69	708	0	0.4	0.2	0.5
41729	99	P	SUR	36	-63	716	0	0.5	-0.2	0.6
41731	99	P	SUR	29	-55	715	0	0.3	0.3	0.4
41936	99	P	SUR	33	-63	593	0	0.4	-1.0	1.1
41970	99	P	SUR	33	-64	719	0	0.4	0.1	0.4
41972	99	P	SUR	33	-44	710	0	0.3	0.0	0.3
41975	99	P	SUR	24	-31	583	0	0.3	0.3	0.4
42059	99	P	SUR	15	-68	923	0	0.4	0.5	0.7
42060	99	P	SUR	16	-63	921	0	0.5	0.5	0.7
42085	99	P	SUR	18	-67	1572	0	0.4	-0.7	0.8
42087	99	P	SUR	11	-61	1809	0	0.6	-0.0	0.6
42088	99	P	SUR	11	-61	1278	0	0.6	0.2	0.6
44005	99	P	SUR	43	-69	709	0	0.4	-0.0	0.4
44008	99	P	SUR	41	-69	711	0	0.4	-0.3	0.5
44011	99	P	SUR	41	-67	719	0	0.5	-0.8	0.9
44018	99	P	SUR	42	-70	826	0	0.7	-0.4	0.8
44024	99	P	SUR	42	-66	834	0	0.4	-0.8	0.9
44027	99	P	SUR	44	-67	806	0	0.4	-0.0	0.4
44032	99	P	SUR	44	-69	712	0	0.4	-1.2	1.3
44033	99	P	SUR	44	-69	710	0	0.4	-1.2	1.2
44034	99	P	SUR	44	-68	706	0	0.4	-0.0	0.4
44037	99	P	SUR	44	-68	568	0	0.4	-0.0	0.4
44137	99	P	SUR	42	-62	724	0	0.5	-0.1	0.5
44139	99	P	SUR	44	-57	714	0	0.5	0.1	0.5
44141	99	P	SUR	43	-58	709	0	0.6	0.2	0.7
44150	99	P	SUR	43	-64	673	0	0.4	0.2	0.5
44251	99	P	SUR	46	-53	717	0	0.4	-0.1	0.4
44255	99	P	SUR	47	-57	1151	0	0.4	0.1	0.5
44258	99	P	SUR	45	-63	718	0	0.4	-0.0	0.4
44510	99	P	SUR	47	-52	1262	0	0.4	0.7	0.8
44513	99	P	SUR	53	-11	709	0	0.4	0.5	0.6
44515	99	P	SUR	53	-32	705	0	0.3	-0.0	0.3
44517	99	P	SUR	36	-15	708	0	0.3	0.6	0.7
44521	99	P	SUR	40	-34	511	0	0.4	-0.3	0.5
44546	99	P	SUR	29	-48	709	0	0.2	0.0	0.2
44551	99	P	SUR	68	9	714	0	0.3	0.4	0.5
44557	99	P	SUR	44	-34	710	0	0.4	0.6	0.7
44558	99	P	SUR	29	-50	463	0	0.3	0.7	0.8

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44613	99	P	SUR	30	-45	39	0	0.9	-6.7	6.8
44614	99	P	SUR	52	-12	666	0	0.3	-0.1	0.4
44624	99	P	SUR	25	-50	685	0	0.2	-0.0	0.2
44625	99	P	SUR	57	-32	224	0	0.5	0.3	0.6
44670	99	P	SUR	45	-50	713	0	0.4	0.2	0.5
44739	99	P	SUR	36	-39	717	0	0.5	0.8	0.9
44740	99	P	SUR	31	-60	6	0	0.2	-0.4	0.4
44744	99	P	SUR	51	-20	711	0	0.3	-0.0	0.3
44746	99	P	SUR	37	-27	716	0	0.4	0.7	0.8
44747	99	P	SUR	52	-19	715	0	0.4	-0.0	0.4
44761	99	P	SUR	57	-15	714	0	0.5	-0.3	0.6
44764	99	P	SUR	57	-14	713	0	0.4	-0.2	0.4
44765	99	P	SUR	51	-36	611	0	0.5	0.0	0.5
44766	99	P	SUR	43	-33	717	0	0.5	0.0	0.5
44768	99	P	SUR	36	-25	718	0	0.3	1.1	1.1
44772	99	P	SUR	46	-36	716	0	0.5	0.1	0.5
44773	99	P	SUR	48	-11	711	0	0.3	0.7	0.8
44776	99	P	SUR	36	-23	706	0	0.3	0.9	0.9
44777	99	P	SUR	43	-58	716	0	0.4	0.3	0.5
44778	99	P	SUR	41	-37	707	0	0.3	0.5	0.6
44779	99	P	SUR	44	-57	714	0	0.5	0.1	0.5
44835	99	P	SUR	29	-25	711	0	0.2	-0.2	0.3
44836	99	P	SUR	66	12	709	0	0.4	0.2	0.4
44837	99	P	SUR	20	-51	716	0	0.3	0.1	0.3
44839	99	P	SUR	30	-19	718	0	0.2	0.1	0.3
44846	99	P	SUR	35	-22	708	0	0.3	0.7	0.8
44847	99	P	SUR	32	-15	112	0	0.3	0.7	0.7
44848	99	P	SUR	30	-18	709	0	0.3	0.5	0.5
44856	99	P	SUR	43	-37	626	0	0.6	0.6	0.9
44857	99	P	SUR	42	-35	712	0	0.5	0.4	0.6
44863	99	P	SUR	32	-54	716	0	0.3	-0.5	0.6
44866	99	P	SUR	69	8	709	0	0.3	-0.2	0.3
44867	99	P	SUR	63	-6	392	0	1.1	-0.3	1.1
44868	99	P	SUR	27	-60	708	6	1.4	0.2	1.5
44873	99	P	SUR	34	-46	715	0	0.4	1.0	1.1
44874	99	P	SUR	37	-33	717	0	0.5	0.7	0.8
44875	99	P	SUR	36	-31	718	0	1.1	-0.2	1.1
44885	99	P	SUR	21	-26	713	0	0.3	0.1	0.3
44887	99	P	SUR	30	-40	718	0	0.3	0.2	0.3
44889	99	P	SUR	32	-55	713	0	0.4	-0.0	0.4
44891	99	P	SUR	26	-58	717	0	0.3	-0.1	0.4
44896	99	P	SUR	34	-42	590	0	0.4	-0.3	0.5
44901	99	P	SUR	44	-46	708	0	0.5	0.1	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44902	99	P	SUR	48	-41	710	0	0.4	0.2	0.4
44904	99	P	SUR	44	-36	709	0	0.4	-0.1	0.4
45138	99	P	SUR	50	-66	706	0	0.6	-0.3	0.7
47503	99	P	SUR	64	-27	359	359	0.0	0.0	0.0
47509	99	P	SUR	76	-14	715	0	0.4	-0.1	0.4
47539	99	P	SUR	48	-41	704	0	0.6	0.2	0.6
47540	99	P	SUR	50	-39	709	0	0.3	0.6	0.7
47546	99	P	SUR	44	-51	704	0	0.8	-1.0	1.3
47549	99	P	SUR	50	-40	704	0	0.4	-0.1	0.4
47551	99	P	SUR	57	-61	713	0	0.4	-1.2	1.2
47552	99	P	SUR	67	-63	719	0	0.4	-1.8	1.9
47555	99	P	SUR	46	-52	712	0	0.4	0.3	0.5
47557	99	P	SUR	51	-38	709	0	0.4	-0.2	0.4
47560	99	P	SUR	52	-29	710	0	0.4	0.3	0.5
47562	99	P	SUR	53	-38	711	0	0.4	0.1	0.4
47567	99	P	SUR	48	-38	707	0	0.4	-0.2	0.4
47568	99	P	SUR	49	-33	679	0	0.4	0.4	0.5
47569	99	P	SUR	47	-26	702	0	0.3	-0.3	0.5
47574	99	P	SUR	43	-49	715	0	0.6	0.3	0.7
47584	99	P	SUR	45	-50	658	0	0.4	0.3	0.5
47589	99	P	SUR	67	-63	715	0	0.6	-2.1	2.2
48568	99	P	SUR	60	-8	704	0	0.3	-0.4	0.5
62001	99	P	SUR	45	-5	719	0	0.5	0.2	0.5
62027	99	P	SUR	49	-2	239	0	0.7	0.2	0.7
62029	99	P	SUR	49	-12	1382	0	0.3	0.1	0.4
62030	99	P	SUR	50	-4	886	0	0.3	0.3	0.5
62050	99	P	SUR	50	-4	721	0	0.3	0.3	0.5
62081	99	P	SUR	51	-13	720	0	0.5	0.1	0.5
62082	99	P	SUR	55	6	2	0	0.1	-0.0	0.1
62086	99	P	SUR	55	6	720	0	0.3	0.0	0.3
62095	99	P	SUR	53	-16	714	0	0.4	0.1	0.4
62102	99	P	SUR	58	2	720	0	0.3	0.3	0.5
62103	99	P	SUR	50	-3	720	0	0.4	0.7	0.8
62104	99	P	SUR	57	1	722	0	0.3	0.3	0.5
62105	99	P	SUR	55	-13	670	0	0.4	0.0	0.4
62107	99	P	SUR	50	-6	1401	4	0.6	0.5	0.8
62111	99	P	SUR	58	0	722	0	0.3	1.4	1.5
62112	99	P	SUR	58	0	722	0	0.3	0.5	0.6
62113	99	P	SUR	58	0	722	0	0.3	0.4	0.5
62114	99	P	SUR	58	0	1431	0	0.4	0.6	0.7
62115	99	P	SUR	58	-3	672	0	0.3	0.4	0.5
62116	99	P	SUR	58	1	611	0	0.3	0.3	0.4
62117	99	P	SUR	58	0	720	0	0.3	0.4	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62118	99	P	SUR	58	1	722	0	0.3	0.7	0.8
62119	99	P	SUR	57	2	721	0	0.3	0.2	0.3
62120	99	P	SUR	56	2	718	0	0.5	0.2	0.5
62121	99	P	SUR	54	3	714	0	0.4	0.7	0.7
62122	99	P	SUR	57	2	1426	0	0.3	0.2	0.4
62123	99	P	SUR	56	2	1430	0	0.3	0.4	0.5
62124	99	P	SUR	54	-4	705	0	0.3	0.1	0.3
62127	99	P	SUR	54	1	708	0	0.3	0.8	0.8
62128	99	P	SUR	59	1	720	0	0.3	0.5	0.6
62129	99	P	SUR	58	0	722	0	0.3	0.2	0.3
62130	99	P	SUR	59	1	721	0	0.3	0.3	0.4
62131	99	P	SUR	54	1	570	0	0.3	0.6	0.7
62132	99	P	SUR	56	2	716	0	0.3	0.5	0.6
62133	99	P	SUR	57	1	720	0	0.3	0.3	0.5
62134	99	P	SUR	58	1	715	0	0.3	0.5	0.6
62135	99	P	SUR	54	2	707	0	0.5	0.7	0.8
62136	99	P	SUR	54	3	719	0	0.3	0.7	0.8
62137	99	P	SUR	57	2	696	0	0.3	0.2	0.4
62138	99	P	SUR	54	0	1429	0	0.3	0.8	0.9
62139	99	P	SUR	53	2	1428	0	0.3	0.6	0.6
62140	99	P	SUR	57	1	1416	0	0.3	0.4	0.5
62141	99	P	SUR	61	1	685	0	0.7	0.4	0.8
62143	99	P	SUR	58	2	720	0	0.3	0.7	0.8
62144	99	P	SUR	53	2	715	0	0.3	0.4	0.5
62145	99	P	SUR	53	3	1424	0	0.3	0.7	0.8
62146	99	P	SUR	57	2	712	0	0.3	0.3	0.5
62148	99	P	SUR	54	2	715	0	0.3	1.2	1.3
62149	99	P	SUR	54	1	714	0	0.3	1.0	1.0
62150	99	P	SUR	54	1	722	0	0.3	1.5	1.6
62151	99	P	SUR	57	2	1428	0	0.3	0.4	0.5
62152	99	P	SUR	57	2	722	0	0.3	0.7	0.7
62153	99	P	SUR	57	2	1426	0	0.4	0.6	0.7
62154	99	P	SUR	56	2	707	0	0.3	0.2	0.3
62155	99	P	SUR	58	1	658	0	0.3	0.5	0.6
62157	99	P	SUR	58	0	721	0	0.5	0.9	1.0
62160	99	P	SUR	57	2	1427	0	0.3	0.4	0.5
62162	99	P	SUR	57	1	711	0	0.3	0.4	0.5
62163	99	P	SUR	48	-8	718	0	0.4	0.4	0.6
62164	99	P	SUR	57	1	722	0	0.3	0.6	0.7
62165	99	P	SUR	54	1	706	0	0.3	0.7	0.8
62167	99	P	SUR	53	2	1426	0	0.4	0.5	0.6
62168	99	P	SUR	58	1	719	0	0.3	0.3	0.4
62170	99	P	SUR	51	2	718	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
62198	99	P	SUR	52	1	219	0	0.3	0.8	0.9
62296	99	P	SUR	53	2	721	0	0.3	0.3	0.5
62297	99	P	SUR	59	2	1428	0	0.3	0.3	0.5
62302	99	P	SUR	61	-2	720	0	0.3	0.2	0.3
62304	99	P	SUR	51	2	781	6	0.6	0.5	0.8
62305	99	P	SUR	50	0	807	1	1.1	0.5	1.2
62513	99	P	SUR	61	-25	716	0	0.4	-0.1	0.4
62553	99	P	SUR	61	-21	714	0	0.4	-0.0	0.4
62554	99	P	SUR	46	-16	706	0	0.4	0.3	0.5
62555	99	P	SUR	46	-5	716	0	0.4	0.6	0.7
62556	99	P	SUR	34	-25	653	0	0.3	0.2	0.3
62557	99	P	SUR	53	-19	709	0	0.4	0.1	0.4
62558	99	P	SUR	47	-27	644	0	0.3	0.2	0.4
62559	99	P	SUR	43	-34	712	0	0.6	0.8	1.0
62560	99	P	SUR	31	-16	408	0	0.3	0.7	0.7
62713	99	P	SUR	33	-60	694	0	0.4	-0.5	0.6
62714	99	P	SUR	38	-48	678	0	0.4	-0.3	0.5
62940	99	P	SUR	41	-26	713	0	0.3	0.2	0.4
62941	99	P	SUR	27	-20	716	0	0.3	0.1	0.3
63055	99	P	SUR	61	2	721	0	0.3	-0.0	0.3
63056	99	P	SUR	60	2	720	0	0.3	0.4	0.5
63057	99	P	SUR	59	2	721	0	0.3	0.2	0.3
63058	99	P	SUR	53	2	2148	0	0.3	0.6	0.7
63059	99	P	SUR	58	-1	721	0	0.3	0.8	0.8
63101	99	P	SUR	61	1	721	0	0.3	0.2	0.4
63102	99	P	SUR	61	1	714	0	0.3	0.1	0.3
63103	99	P	SUR	61	1	721	0	0.3	0.2	0.4
63104	99	P	SUR	61	2	722	0	0.3	0.2	0.4
63105	99	P	SUR	61	2	722	0	0.4	0.4	0.6
63107	99	P	SUR	61	2	722	0	0.3	-0.1	0.4
63108	99	P	SUR	61	2	721	0	0.4	-0.2	0.4
63109	99	P	SUR	60	2	722	0	0.3	0.2	0.4
63110	99	P	SUR	60	2	722	0	0.3	0.0	0.3
63111	99	P	SUR	61	2	1323	0	0.3	-0.1	0.3
63112	99	P	SUR	61	1	721	0	0.3	-0.2	0.4
63115	99	P	SUR	62	1	720	0	0.4	0.2	0.4
63117	99	P	SUR	61	1	1427	0	0.3	0.3	0.5
63118	99	P	SUR	60	-4	680	0	0.5	-0.0	0.5
63119	99	P	SUR	58	-4	51	0	1.7	-0.6	1.8
63120	99	P	SUR	54	2	718	0	0.3	0.6	0.7
63561	99	P	SUR	74	10	640	0	0.3	0.1	0.3
63646	99	P	SUR	67	2	715	0	0.3	0.4	0.5
64041	99	P	SUR	61	-3	720	0	0.3	0.2	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
64045	99	P	SUR	59	-12	1430	0	0.4	-0.0	0.4
64046	99	P	SUR	61	-4	709	0	0.3	0.3	0.4
64473	99	P	SUR	87	-3	135	0	0.3	0.1	0.3
64476	99	P	SUR	89	-62	716	0	0.4	-0.1	0.4
64519	99	P	SUR	76	-6	620	0	1.5	1.0	1.8
64521	99	P	SUR	74	22	707	0	0.3	-0.2	0.4
64523	99	P	SUR	73	15	698	0	0.3	0.3	0.5
64524	99	P	SUR	67	13	714	0	0.3	0.7	0.8
64526	99	P	SUR	60	-49	616	0	0.5	0.1	0.5
64528	99	P	SUR	72	22	704	0	0.3	0.2	0.4
64530	99	P	SUR	77	11	711	0	0.4	0.3	0.5
64547	99	P	SUR	70	5	673	0	0.3	0.2	0.3
64549	99	P	SUR	66	-20	717	0	0.4	-0.0	0.4
64551	99	P	SUR	62	-28	708	0	0.4	-0.1	0.4
64553	99	P	SUR	68	0	715	0	0.3	-0.0	0.3
64554	99	P	SUR	67	-24	715	0	0.4	0.3	0.5
64555	99	P	SUR	62	6	715	0	0.4	0.3	0.5
64560	99	P	SUR	66	-25	712	0	0.4	0.1	0.4
64562	99	P	SUR	63	-20	519	0	0.9	0.1	0.9
64606	99	P	SUR	75	32	703	0	0.4	0.8	0.8
64623	99	P	SUR	66	-13	707	0	0.4	-0.3	0.4
64666	99	P	SUR	70	-10	709	0	0.4	0.5	0.7
64694	99	P	SUR	60	-38	551	0	0.6	-0.5	0.8
64749	99	P	SUR	81	-10	660	0	0.4	-0.6	0.7
64758	99	P	SUR	87	-11	703	0	0.3	-0.1	0.3
64760	99	P	SUR	89	-61	239	0	0.4	-0.2	0.4
65514	99	P	SUR	52	-37	713	0	0.4	-0.0	0.4
65515	99	P	SUR	62	-30	573	0	1.2	0.2	1.2
65519	99	P	SUR	60	-21	716	0	0.5	0.5	0.7
65596	99	P	SUR	57	-24	716	0	0.5	0.3	0.6
65599	99	P	SUR	59	-20	716	0	0.5	0.1	0.5
65601	99	P	SUR	65	-55	714	0	0.5	0.2	0.5
65602	99	P	SUR	57	-32	713	0	0.5	-1.0	1.1
65603	99	P	SUR	68	-54	701	0	0.5	0.1	0.5
71235	99	P	SUR	87	1	573	0	0.3	0.2	0.4

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                : JUN 2016
                   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
13002	99	SPEED	SUR	20	-23	257	0	0	0.8	-0.2	0.8
13008	99	SPEED	SUR	15	-38	104	0	0	0.9	-0.0	0.9
41026	99	SPEED	SUR	12	-38	60	0	0	1.0	0.5	1.2
41040	99	SPEED	SUR	15	-53	713	0	0	0.9	-0.2	0.9
41041	99	SPEED	SUR	14	-46	705	0	0	0.9	-0.2	0.9
41043	99	SPEED	SUR	21	-65	912	0	0	0.9	-0.3	1.0
41044	99	SPEED	SUR	22	-59	930	0	0	0.9	-0.3	0.9
41046	99	SPEED	SUR	24	-69	934	0	0	1.2	0.1	1.2
41048	99	SPEED	SUR	32	-70	730	0	0	1.3	-0.3	1.4
41049	99	SPEED	SUR	28	-63	713	0	0	1.1	0.2	1.1
41051	99	SPEED	SUR	18	-65	1459	0	0	0.9	-0.1	0.9
41052	99	SPEED	SUR	18	-65	1815	0	0	0.8	-0.4	0.9
41053	99	SPEED	SUR	19	-66	1808	0	0	1.3	0.5	1.4
41056	99	SPEED	SUR	18	-66	1614	0	0	1.0	-0.5	1.1
41139	99	SPEED	SUR	20	-38	226	0	0	0.8	-0.3	0.9
42059	99	SPEED	SUR	15	-68	925	0	0	0.9	-0.2	0.9
42060	99	SPEED	SUR	16	-63	919	0	0	1.3	0.2	1.3
42085	99	SPEED	SUR	18	-67	1572	0	0	1.2	-0.3	1.2
42087	99	SPEED	SUR	11	-61	1809	0	0	1.4	0.5	1.5
42088	99	SPEED	SUR	11	-61	1278	0	0	1.5	-2.9	3.3
44005	99	SPEED	SUR	43	-69	709	0	0	1.3	-0.5	1.4
44008	99	SPEED	SUR	41	-69	711	0	0	1.3	-0.7	1.5
44018	99	SPEED	SUR	42	-70	826	0	0	2.0	-0.2	2.0
44024	99	SPEED	SUR	42	-66	834	0	0	1.4	-0.7	1.5
44027	99	SPEED	SUR	44	-67	809	0	0	1.3	-0.9	1.6
44032	99	SPEED	SUR	44	-69	712	0	0	1.4	-0.7	1.5
44033	99	SPEED	SUR	44	-69	711	0	0	1.7	-0.4	1.8
44034	99	SPEED	SUR	44	-68	706	0	0	1.5	-1.2	1.9
44037	99	SPEED	SUR	44	-68	568	0	0	1.3	-0.3	1.4
44137	99	SPEED	SUR	42	-62	726	0	0	1.7	-0.0	1.7
44139	99	SPEED	SUR	44	-57	716	0	0	1.5	-0.8	1.7
44141	99	SPEED	SUR	43	-58	711	0	0	1.5	-0.5	1.5
44150	99	SPEED	SUR	43	-64	675	0	0	1.4	-0.4	1.5
44251	99	SPEED	SUR	46	-53	718	0	0	1.5	-0.5	1.5

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44255	99	SPEED	SUR	47	-57	1153	0	0	1.6	-0.7	1.7
44258	99	SPEED	SUR	45	-63	718	0	0	1.6	-0.3	1.7
45138	99	SPEED	SUR	50	-66	710	0	0	1.7	-0.2	1.7
62001	99	SPEED	SUR	45	-5	719	0	0	1.2	0.8	1.5
62027	99	SPEED	SUR	49	-2	210	0	0	1.1	0.3	1.2
62029	99	SPEED	SUR	49	-12	1382	0	0	0.9	0.4	1.0
62050	99	SPEED	SUR	50	-4	618	0	0	1.3	0.2	1.3
62081	99	SPEED	SUR	51	-13	720	0	0	0.9	0.2	0.9
62082	99	SPEED	SUR	55	6	2	0	0	0.9	-0.3	0.9
62086	99	SPEED	SUR	55	6	720	0	0	1.2	0.3	1.3
62095	99	SPEED	SUR	53	-16	714	0	0	0.9	0.1	0.9
62102	99	SPEED	SUR	58	2	720	0	0	1.1	0.3	1.2
62103	99	SPEED	SUR	50	-3	720	0	0	1.5	0.5	1.5
62104	99	SPEED	SUR	57	1	722	0	0	1.1	-0.3	1.2
62105	99	SPEED	SUR	55	-13	627	0	0	1.6	0.5	1.6
62107	99	SPEED	SUR	50	-6	1399	0	0	1.4	0.8	1.6
62111	99	SPEED	SUR	58	0	722	0	0	1.2	-0.1	1.2
62112	99	SPEED	SUR	58	0	722	0	0	1.7	-0.9	1.9
62113	99	SPEED	SUR	58	0	722	0	0	1.3	0.2	1.3
62114	99	SPEED	SUR	58	0	1431	0	0	1.2	0.5	1.3
62117	99	SPEED	SUR	58	0	720	0	0	1.2	0.0	1.2
62118	99	SPEED	SUR	58	1	722	0	0	1.2	0.7	1.3
62119	99	SPEED	SUR	57	2	721	0	0	1.6	-0.6	1.7
62120	99	SPEED	SUR	56	2	718	0	0	1.2	0.2	1.2
62121	99	SPEED	SUR	54	3	714	0	0	1.2	-0.1	1.2
62122	99	SPEED	SUR	57	2	1426	0	0	1.2	0.0	1.2
62123	99	SPEED	SUR	56	2	1430	0	0	1.2	0.2	1.2
62127	99	SPEED	SUR	54	1	708	0	0	1.3	0.3	1.4
62128	99	SPEED	SUR	59	1	720	0	0	1.1	0.4	1.2
62129	99	SPEED	SUR	58	0	722	0	0	1.2	-0.1	1.2
62131	99	SPEED	SUR	54	1	570	0	0	1.8	-0.6	1.9
62132	99	SPEED	SUR	56	2	716	0	0	2.4	-1.5	2.8
62133	99	SPEED	SUR	57	1	720	0	0	1.2	-0.2	1.2
62134	99	SPEED	SUR	58	1	714	0	0	1.2	0.2	1.2
62140	99	SPEED	SUR	57	1	1177	0	0	1.0	0.0	1.0
62143	99	SPEED	SUR	58	2	720	0	0	1.3	-0.0	1.3
62144	99	SPEED	SUR	53	2	715	0	0	1.6	-0.5	1.7
62145	99	SPEED	SUR	53	3	1424	0	0	1.2	-0.1	1.2
62146	99	SPEED	SUR	57	2	712	0	0	1.4	-0.0	1.4
62148	99	SPEED	SUR	54	2	715	0	0	1.4	0.1	1.4
62149	99	SPEED	SUR	54	1	714	0	0	1.2	0.4	1.2

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62150	99	SPEED	SUR	54	1	722	0	0	2.0	-0.8	2.2
62152	99	SPEED	SUR	57	2	722	0	0	1.5	-0.7	1.7
62153	99	SPEED	SUR	57	2	1426	0	0	1.8	-1.8	2.5
62154	99	SPEED	SUR	56	2	707	0	0	1.2	-0.0	1.2
62155	99	SPEED	SUR	58	1	657	0	0	1.2	0.0	1.2
62163	99	SPEED	SUR	48	-8	718	0	0	1.1	0.1	1.1
62164	99	SPEED	SUR	57	1	722	0	0	1.3	-0.6	1.4
62165	99	SPEED	SUR	54	1	706	0	0	1.3	-0.5	1.4
62170	99	SPEED	SUR	51	2	718	0	0	1.8	1.6	2.4
62198	99	SPEED	SUR	52	1	219	0	0	1.3	1.7	2.2
62304	99	SPEED	SUR	51	2	775	1	0	2.1	0.8	2.2
62305	99	SPEED	SUR	50	0	773	0	0	1.4	0.6	1.6
63055	99	SPEED	SUR	61	2	721	0	0	1.2	-0.8	1.5
63056	99	SPEED	SUR	60	2	720	0	0	1.2	-0.0	1.2
63057	99	SPEED	SUR	59	2	721	0	0	1.3	0.3	1.4
63058	99	SPEED	SUR	53	2	716	0	0	1.2	0.2	1.2
63101	99	SPEED	SUR	61	1	720	0	0	1.4	-0.1	1.4
63104	99	SPEED	SUR	61	2	722	0	0	1.0	-0.1	1.0
63105	99	SPEED	SUR	61	2	722	0	0	1.1	0.2	1.2
63106	99	SPEED	SUR	61	2	722	0	0	1.1	0.0	1.1
63107	99	SPEED	SUR	61	2	722	0	0	1.0	0.0	1.0
63108	99	SPEED	SUR	61	2	721	0	0	2.1	-1.3	2.5
63109	99	SPEED	SUR	60	2	696	0	0	1.3	0.1	1.3
63110	99	SPEED	SUR	60	2	722	0	0	1.2	-0.1	1.2
63112	99	SPEED	SUR	61	1	721	0	0	1.0	-0.2	1.0
63113	99	SPEED	SUR	61	2	714	0	0	1.0	-0.2	1.0
63115	99	SPEED	SUR	62	1	720	0	0	1.2	-0.5	1.2
63117	99	SPEED	SUR	61	1	1427	0	0	1.2	0.1	1.2
63119	99	SPEED	SUR	58	-4	51	0	0	2.4	0.2	2.4
64041	99	SPEED	SUR	61	-3	720	0	0	1.2	-0.3	1.3
64045	99	SPEED	SUR	59	-12	1430	0	0	1.1	0.6	1.3
64046	99	SPEED	SUR	61	-4	708	0	0	0.9	0.3	1.0
66021	99	SPEED	SUR	55	14	714	0	0	1.5	0.2	1.5

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

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          DRIFTER MONITORING STATISTICS (EUCOS)
                   MONITORING CENTRE     : ECMWF
                   ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                   AREA                  : 10N - 90N, 70W - 40E
                   PERIOD                : JUN 2016
                   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
13002	99	DIRN	SUR	20	-23	255	0	0	8.9	5.9	10.7
13008	99	DIRN	SUR	15	-38	104	0	0	7.7	6.0	9.8
41002	99	DIRN	SUR	32	-75	550	0	0	19.1	19.3	27.2
41004	99	DIRN	SUR	33	-79	646	0	0	19.7	7.6	21.1
41008	99	DIRN	SUR	31	-81	621	0	0	24.7	12.1	27.5
41009	99	DIRN	SUR	29	-80	475	0	0	22.1	2.3	22.2
41010	99	DIRN	SUR	29	-79	536	0	0	18.8	1.7	18.9
41013	99	DIRN	SUR	33	-78	891	0	0	18.6	8.4	20.5
41024	99	DIRN	SUR	34	-79	563	0	0	25.0	-9.4	26.8
41025	99	DIRN	SUR	35	-75	575	0	0	23.6	3.6	23.8
41026	99	DIRN	SUR	12	-38	60	0	0	8.4	2.2	8.7
41029	99	DIRN	SUR	33	-80	650	0	0	19.9	-5.8	20.8
41033	99	DIRN	SUR	32	-80	520	4	0	18.9	-4.6	19.4
41037	99	DIRN	SUR	34	-77	568	0	0	19.1	-3.3	19.4
41038	99	DIRN	SUR	34	-78	546	0	0	18.6	-8.1	20.3
41040	99	DIRN	SUR	15	-53	713	0	0	9.1	1.9	9.3
41041	99	DIRN	SUR	14	-46	702	0	0	8.6	3.6	9.3
41043	99	DIRN	SUR	21	-65	848	0	0	11.0	5.3	12.2
41044	99	DIRN	SUR	22	-59	841	0	0	11.2	0.9	11.2
41046	99	DIRN	SUR	24	-69	815	0	0	16.3	7.0	17.7
41047	99	DIRN	SUR	28	-72	605	0	0	20.1	2.4	20.3
41048	99	DIRN	SUR	32	-70	582	0	0	23.9	12.1	26.8
41049	99	DIRN	SUR	28	-63	607	0	0	14.5	8.4	16.8
41051	99	DIRN	SUR	18	-65	1456	0	0	10.1	-9.8	14.0
41052	99	DIRN	SUR	18	-65	1815	0	0	9.2	7.0	11.5
41053	99	DIRN	SUR	19	-66	1426	0	0	15.4	2.6	15.6
41056	99	DIRN	SUR	18	-66	1607	0	0	12.2	4.6	13.0
41064	99	DIRN	SUR	34	-77	601	0	0	22.2	-0.7	22.2
41139	99	DIRN	SUR	20	-38	218	0	0	11.2	-1.8	11.3
42013	99	DIRN	SUR	27	-83	415	0	0	18.7	-2.0	18.8
42022	99	DIRN	SUR	28	-84	407	0	0	17.5	1.5	17.5
42023	99	DIRN	SUR	26	-83	600	0	0	19.7	1.8	19.8

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
42036	99	DIRN	SUR	29	-85	307	0	0	21.6	0.2	21.6
42056	99	DIRN	SUR	20	-85	794	0	0	17.1	3.1	17.3
42057	99	DIRN	SUR	17	-82	650	0	0	20.3	3.7	20.6
42058	99	DIRN	SUR	15	-75	706	0	0	6.7	1.5	6.9
42059	99	DIRN	SUR	15	-68	925	0	0	8.5	2.6	8.9
42060	99	DIRN	SUR	16	-63	898	0	0	12.8	5.7	14.0
42085	99	DIRN	SUR	18	-67	1549	0	0	13.6	7.1	15.4
42087	99	DIRN	SUR	11	-61	1517	0	0	19.0	-25.3	31.6
42088	99	DIRN	SUR	11	-61	951	0	0	20.6	-18.5	27.7
44005	99	DIRN	SUR	43	-69	481	0	0	17.0	15.3	22.9
44007	99	DIRN	SUR	44	-70	476	0	0	26.3	1.9	26.4
44008	99	DIRN	SUR	41	-69	454	0	0	16.8	16.6	23.6
44013	99	DIRN	SUR	42	-71	553	0	0	22.6	18.8	29.4
44014	99	DIRN	SUR	37	-75	429	0	0	21.2	7.6	22.5
44017	99	DIRN	SUR	41	-72	493	0	0	15.6	3.4	16.0
44018	99	DIRN	SUR	42	-70	554	0	0	22.6	13.0	26.0
44020	99	DIRN	SUR	41	-70	583	0	0	19.5	-1.4	19.5
44024	99	DIRN	SUR	42	-66	603	0	0	14.9	8.7	17.3
44025	99	DIRN	SUR	40	-73	618	0	0	16.8	4.8	17.5
44027	99	DIRN	SUR	44	-67	489	0	0	19.3	13.9	23.8
44030	99	DIRN	SUR	43	-70	411	0	0	21.2	6.6	22.2
44032	99	DIRN	SUR	44	-69	376	0	0	19.7	9.7	22.0
44033	99	DIRN	SUR	44	-69	330	0	0	20.3	1.4	20.4
44034	99	DIRN	SUR	44	-68	358	0	0	19.9	5.9	20.8
44037	99	DIRN	SUR	44	-68	363	0	0	16.7	4.9	17.4
44039	99	DIRN	SUR	41	-73	390	0	0	24.9	4.0	25.2
44041	99	DIRN	SUR	37	-77	143	0	0	20.9	0.1	20.9
44042	99	DIRN	SUR	38	-76	630	0	0	23.7	-13.8	27.4
44043	99	DIRN	SUR	39	-76	623	0	0	24.9	-11.8	27.5
44057	99	DIRN	SUR	40	-76	383	0	0	22.8	-15.2	27.4
44058	99	DIRN	SUR	38	-76	723	0	0	25.2	-11.8	27.8
44060	99	DIRN	SUR	41	-72	298	0	0	25.5	2.7	25.6
44061	99	DIRN	SUR	39	-77	165	0	0	30.2	-12.2	32.6
44062	99	DIRN	SUR	39	-76	623	0	0	24.5	-6.3	25.3
44063	99	DIRN	SUR	39	-76	618	0	0	25.1	-15.2	29.3
44064	99	DIRN	SUR	37	-76	722	0	0	27.1	4.6	27.5
44065	99	DIRN	SUR	40	-74	486	0	0	17.8	6.4	19.0
44069	99	DIRN	SUR	41	-73	543	0	0	21.1	-6.4	22.0
44137	99	DIRN	SUR	42	-62	655	0	0	15.2	2.7	15.4
44139	99	DIRN	SUR	44	-57	625	0	0	12.3	12.2	17.3
44141	99	DIRN	SUR	43	-58	652	0	0	11.8	8.4	14.5

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44150	99	DIRN	SUR	43	-64	552	0	0	17.0	8.3	18.9
44251	99	DIRN	SUR	46	-53	547	0	0	17.3	13.2	21.8
44255	99	DIRN	SUR	47	-57	688	0	0	17.4	10.2	20.2
44258	99	DIRN	SUR	45	-63	507	0	0	18.0	6.1	19.1
45003	99	DIRN	SUR	45	-83	423	0	0	24.5	8.0	25.7
45005	99	DIRN	SUR	42	-82	722	0	0	20.8	7.4	22.1
45008	99	DIRN	SUR	44	-82	626	0	0	22.9	10.6	25.2
45012	99	DIRN	SUR	44	-77	397	0	0	24.6	11.4	27.1
45132	99	DIRN	SUR	43	-81	506	0	0	21.0	-9.0	22.8
45135	99	DIRN	SUR	44	-77	551	0	0	23.8	-14.4	27.8
45137	99	DIRN	SUR	46	-81	466	0	0	22.0	-3.8	22.3
45138	99	DIRN	SUR	50	-66	574	0	0	18.8	3.7	19.2
45139	99	DIRN	SUR	43	-80	367	0	0	24.1	-18.8	30.6
45142	99	DIRN	SUR	43	-79	466	0	0	23.4	-19.8	30.7
45143	99	DIRN	SUR	45	-81	668	0	0	19.4	-10.7	22.2
45147	99	DIRN	SUR	42	-83	430	0	0	25.5	0.4	25.5
45149	99	DIRN	SUR	44	-82	306	0	0	23.2	-4.9	23.7
45151	99	DIRN	SUR	45	-79	92	0	0	18.2	2.4	18.4
45152	99	DIRN	SUR	46	-80	403	0	0	19.3	-23.0	30.0
45154	99	DIRN	SUR	46	-83	571	0	0	22.1	-11.7	25.0
45159	99	DIRN	SUR	44	-79	358	0	0	18.7	-10.4	21.5
45162	99	DIRN	SUR	45	-83	379	0	0	22.1	-4.1	22.5
45163	99	DIRN	SUR	44	-84	516	0	0	22.5	1.7	22.6
45164	99	DIRN	SUR	42	-82	424	0	0	26.3	-13.4	29.5
45165	99	DIRN	SUR	42	-83	553	0	0	23.3	-30.3	38.2
45167	99	DIRN	SUR	42	-80	753	0	0	30.1	-12.5	32.6
45169	99	DIRN	SUR	42	-82	534	0	0	20.4	-20.9	29.2
45175	99	DIRN	SUR	46	-85	730	0	0	37.0	-15.5	40.2
45176	99	DIRN	SUR	42	-82	457	0	0	25.8	-16.2	30.5
62001	99	DIRN	SUR	45	-5	574	0	0	16.2	2.0	16.3
62027	99	DIRN	SUR	49	-2	163	0	0	30.9	2.4	31.0
62029	99	DIRN	SUR	49	-12	1286	0	0	11.6	5.6	12.9
62050	99	DIRN	SUR	50	-4	421	0	0	14.0	2.3	14.2
62081	99	DIRN	SUR	51	-13	671	0	0	12.1	10.1	15.8
62095	99	DIRN	SUR	53	-16	687	0	0	11.5	4.3	12.2
62103	99	DIRN	SUR	50	-3	590	0	0	20.4	6.7	21.5
62105	99	DIRN	SUR	55	-13	563	0	0	14.0	5.2	15.0
62107	99	DIRN	SUR	50	-6	1094	0	0	16.7	0.3	16.7
62111	99	DIRN	SUR	58	0	559	0	0	12.0	3.6	12.5
62112	99	DIRN	SUR	58	0	488	0	0	11.1	-0.3	11.1
62114	99	DIRN	SUR	58	0	1118	0	0	11.1	-2.0	11.3

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
62117	99	DIRN	SUR	58	0	553	0	0	11.1	2.9	11.4
62163	99	DIRN	SUR	48	-8	595	0	0	14.4	1.2	14.5
62305	99	DIRN	SUR	50	0	664	0	0	18.4	7.5	19.8
63119	99	DIRN	SUR	58	-4	34	0	0	51.4	5.0	51.6
64041	99	DIRN	SUR	61	-3	647	0	0	11.0	8.0	13.6
64045	99	DIRN	SUR	59	-12	1263	0	0	12.2	9.0	15.1
64046	99	DIRN	SUR	61	-4	615	0	0	11.3	-4.5	12.2

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASDE02	ASDE04	ASDK01	ASDK02	ASDK03	ASES01	ASEU01	ASEU02	DBLK
01001	01004	01010	01028	01241	01400	01415	01492	02185
02365	02527	02591	02836	02935	02963	03953	06260	06610
08001	08023	08190	08221	08302	08430	10035	10113	10141
10184	10238	10304	10393	10410	10618	10739	10868	10954
10962	16044	16080	16245	16320	16429	16546	47155	60018
76743	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

ASDE02	ASDE03	ASDE04	ASDE09	ASDK01	ASDK02	ASDK03	ASES01	ASEU01
ASEU02	ASEU03	ASEU06	DBLK	10141	17516	37789	47155	76743
76903	93817	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.