ECMWF Global Data Monitoring Report

September 2018

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

Contents

Summary of Revisions (in reverse order)

Revision 28 (June 15) – Monitoring of SYNOP and SYNOP-SHIPs now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart.

Revision 27 (Feb 15) – Selection criteria for SHIPs are modified as per SOT-7/Doc.9.1.1.
Different criteria applied to Manual and Automatic SHIPs.

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

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

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

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

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

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

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

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

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

1 Introduction

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

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

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

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

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

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

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

2 Data summary - History of events

2.1 Radiosondes

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

Ident	Time	Aug	Sep	Ident	Time	Aug	Sep
03882	(00)	30	16	02185	(00)	16	29
17064	(00)	30	19	21946	(00)	6	29
17095	(00)	24	12	21946	(12)	6	30
17095	(12)	25	8	40437	(00)	5	28
17281	(12)	31	17	40437	(12)	5	28
20046	(00)	27	14	41112	(00)	13	28
20046	(12)	29	13	61687	(12)	0	19
27612	(12)	30	17	64910	(00)	0	19
34247	(00)	30	10	64910	(12)	0	19
34247	(12)	28	9	76225	(12)	13	30
41256	(00)	17	0	83229	(12)	6	19
42299	(00)	21	0	91643	(00)	15	28
42299	(12)	21	0	94299	(12)	0	30
42492	(00)	24	12	94461	(12)	12	30
42492	(12)	12	0	-	-	-	-
43371	(12)	30	0	-	-	-	-
47104	(00)	24	6	-	-	-	-
47104	(12)	22	7	-	-	-	-
47138	(00)	22	8	-	-	-	-
47138	(12)	24	12	-	-	-	-
47169	(00)	19	7	-	-	-	-
47169	(12)	19	8	-	-	-	-
47186	(12)	20	9	-	-	-	-
48453	(00)	29	12	-	-	-	-
48839	(00)	28	17	-	-	-	-
70026	(12)	17	6	-	-	-	-
70133	(12)	21	0	-	-	-	-
70219	(12)	24	9	-	-	-	-
70414	(00)	11	0	-	-	-	-
70414	(12)	19	0	-	-	-	-
71816	(00)	28	14	-	-	-	-
71816	(12)	29	12	-	-	-	-
71909	(00)	30	17	-	-	-	-
76644	(12)	20	0	-	-	-	-
76805	(12)	23	5	-	-	-	-
82193	(00)	30	19	-	-	-	-
82193	(12)	31	20	-	-	-	-
82281	(00)	20	0	-	-	-	-
82281	(12)	22	1	-	-	-	-
85469	(00)	29	1	-	-	-	-
87155	(00)	28	1	-	-	-	-
87344	(00)	27	2	-	-	-	-
87418	(00)	31	1	-	-	-	-
87576	(00)	21	3	-	-	-	-
87623	(00)	30	1	-	-	-	-

2.2 Drifting Buoys

Surface pressure observations from **1267** drifting buoys were received during the month.

3 Global monitoring statistics

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

3.1 Data Availability

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

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

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

3.2 Data Quality

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

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

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

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

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

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

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

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

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

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

3.2.1 Figure 1 - Availability - SYNOP PRESSURE

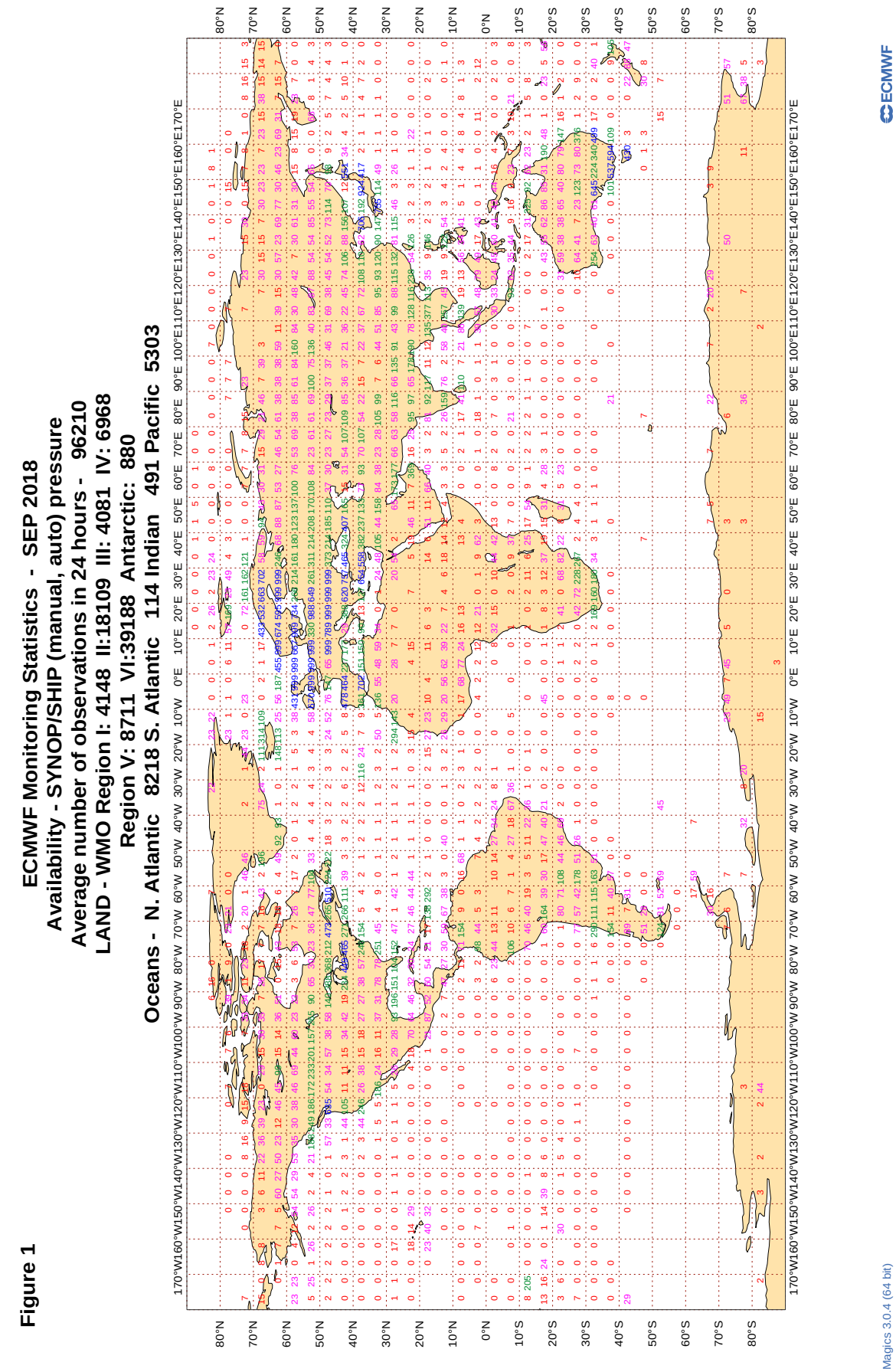


Figure 1

3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

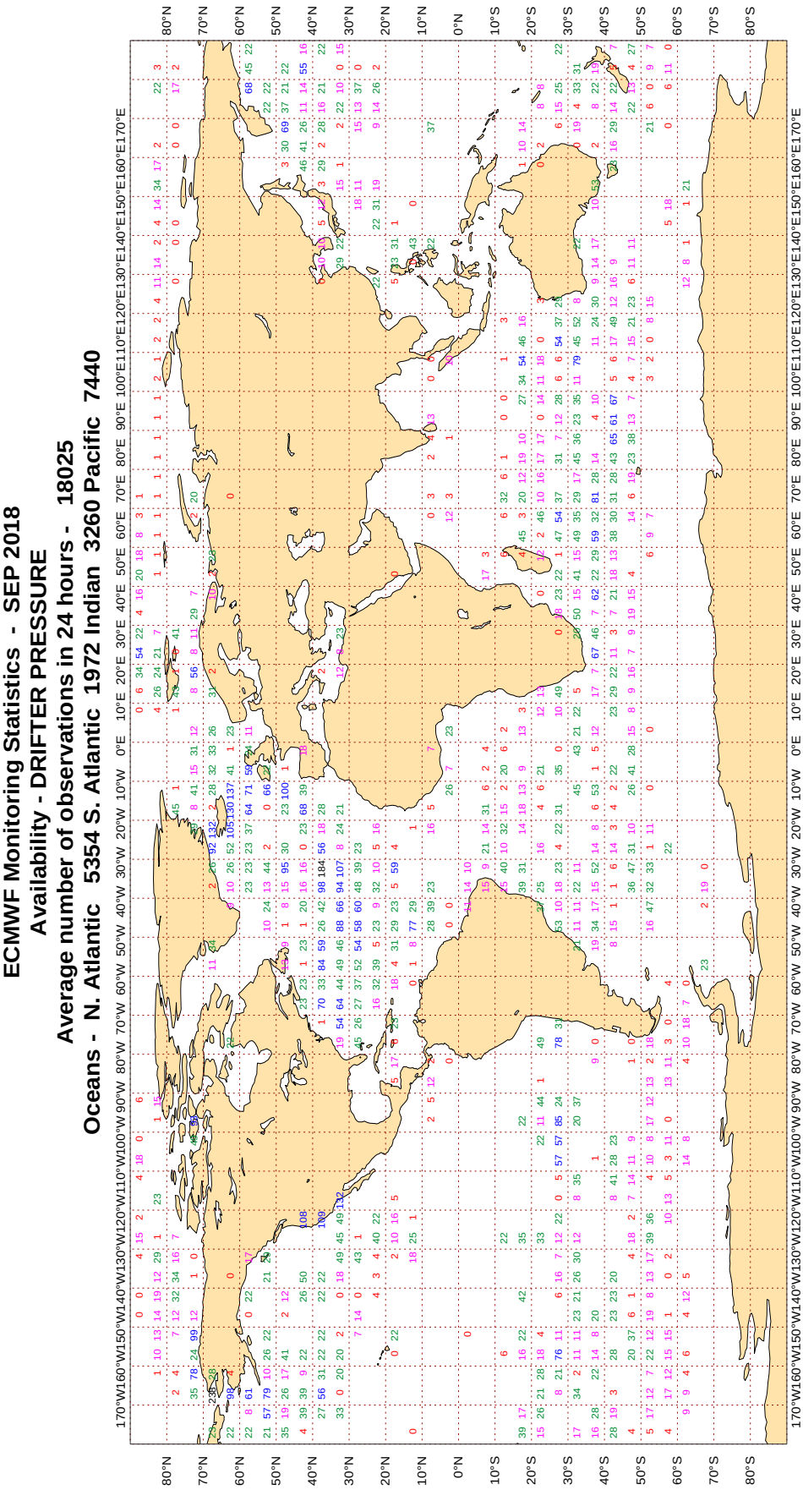


Figure 2

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

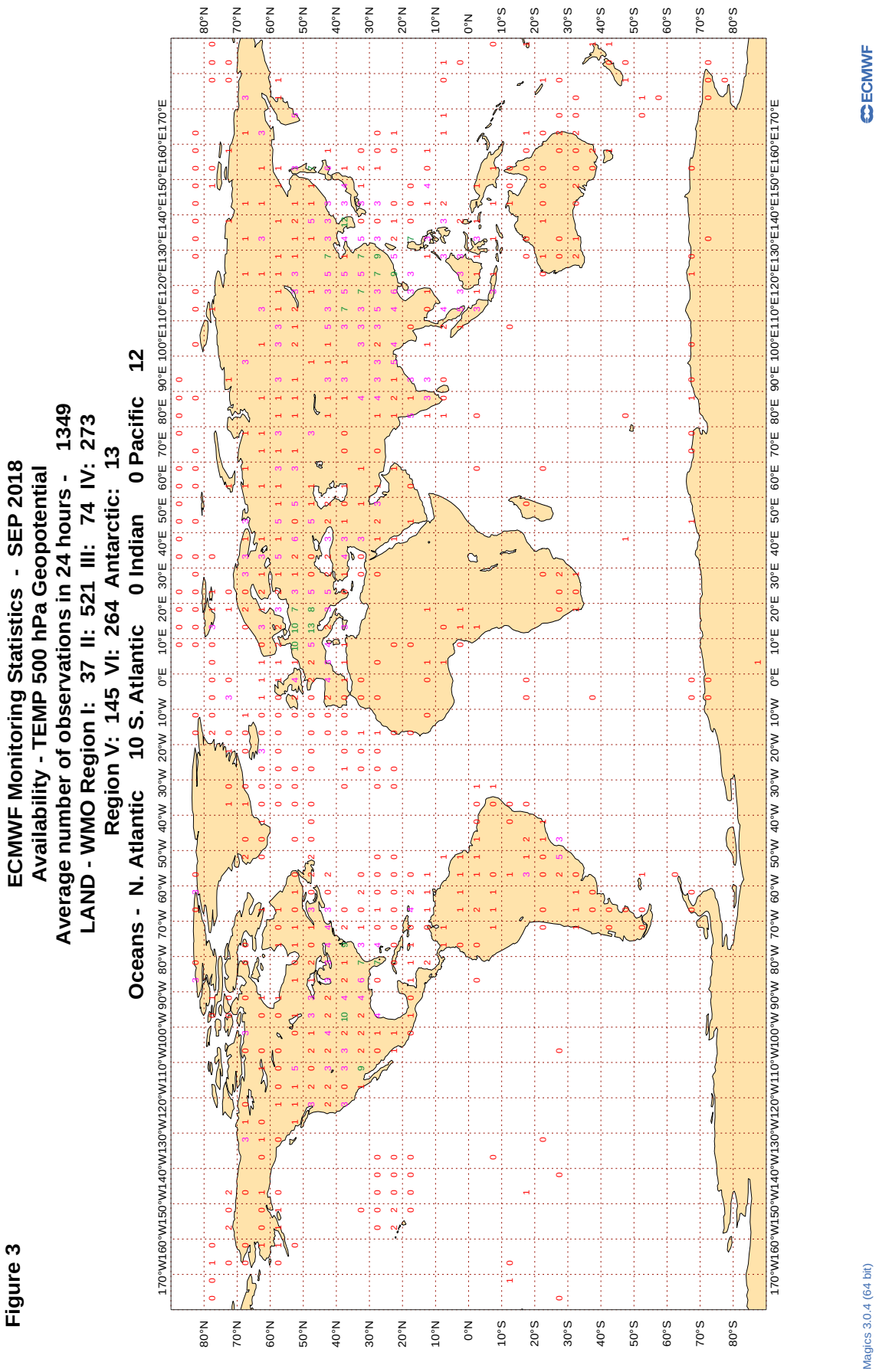


Figure 3

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

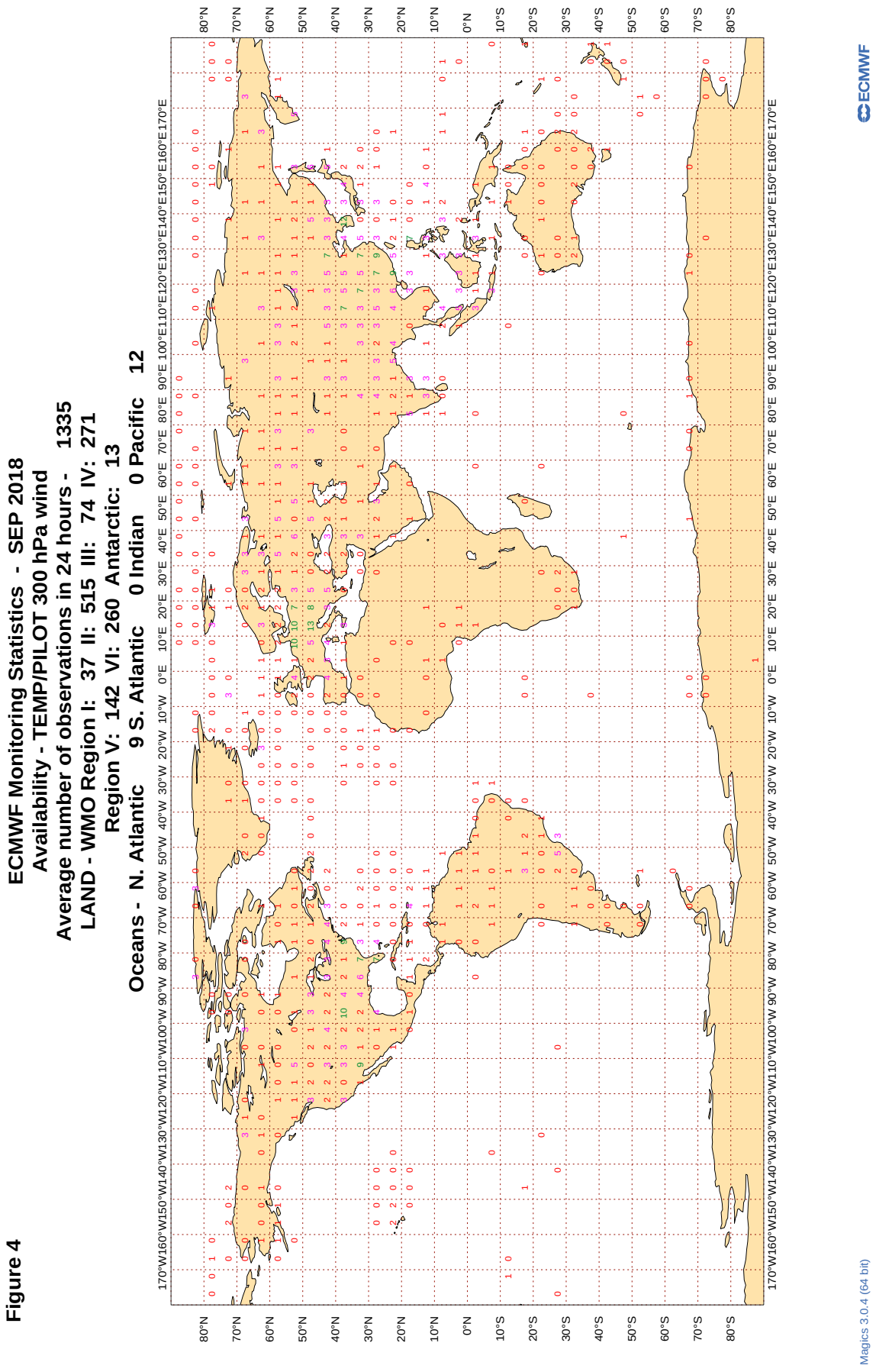


Figure 4

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

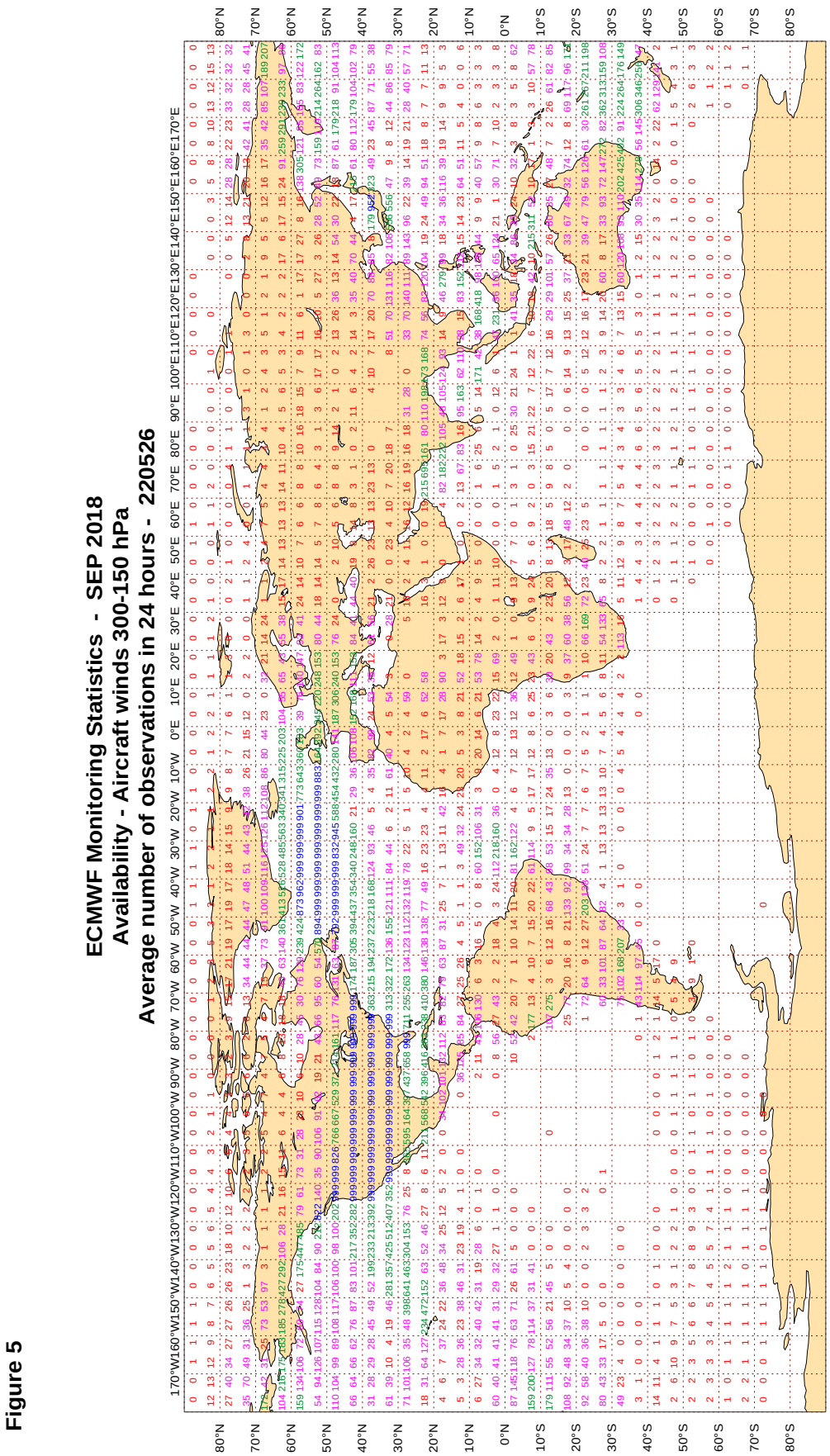


Figure 5

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

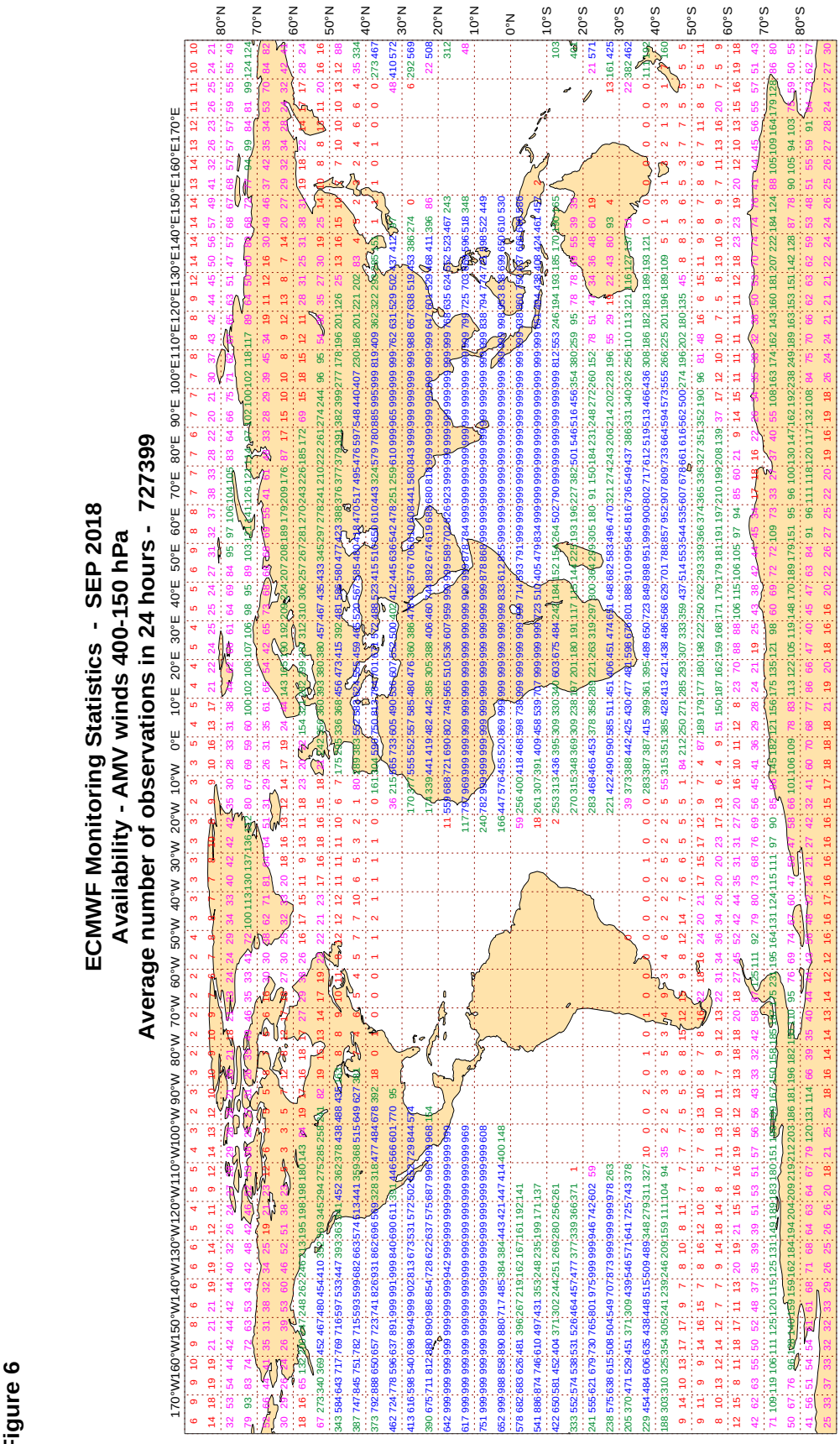


Figure 6

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

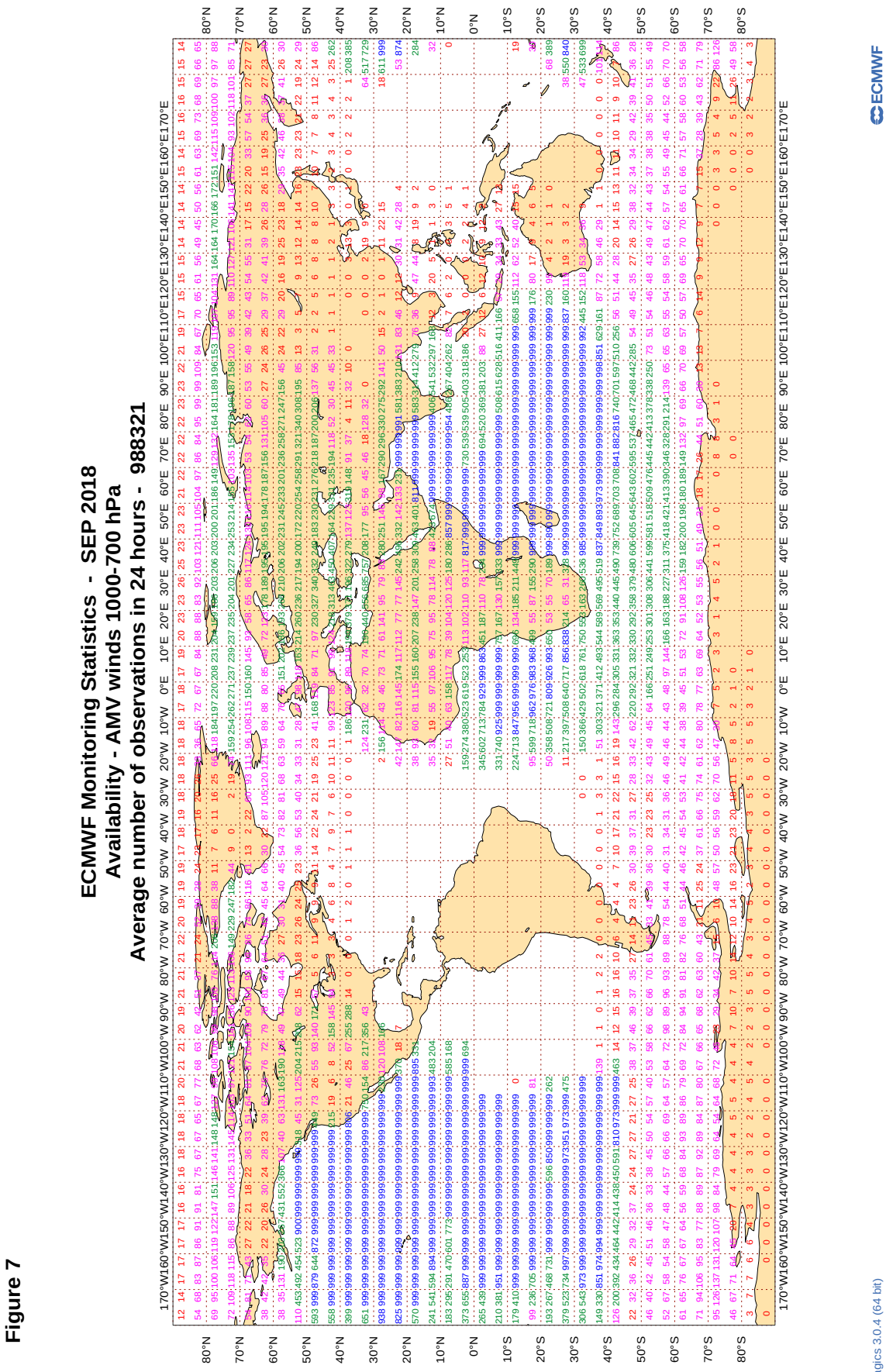


Figure 7

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

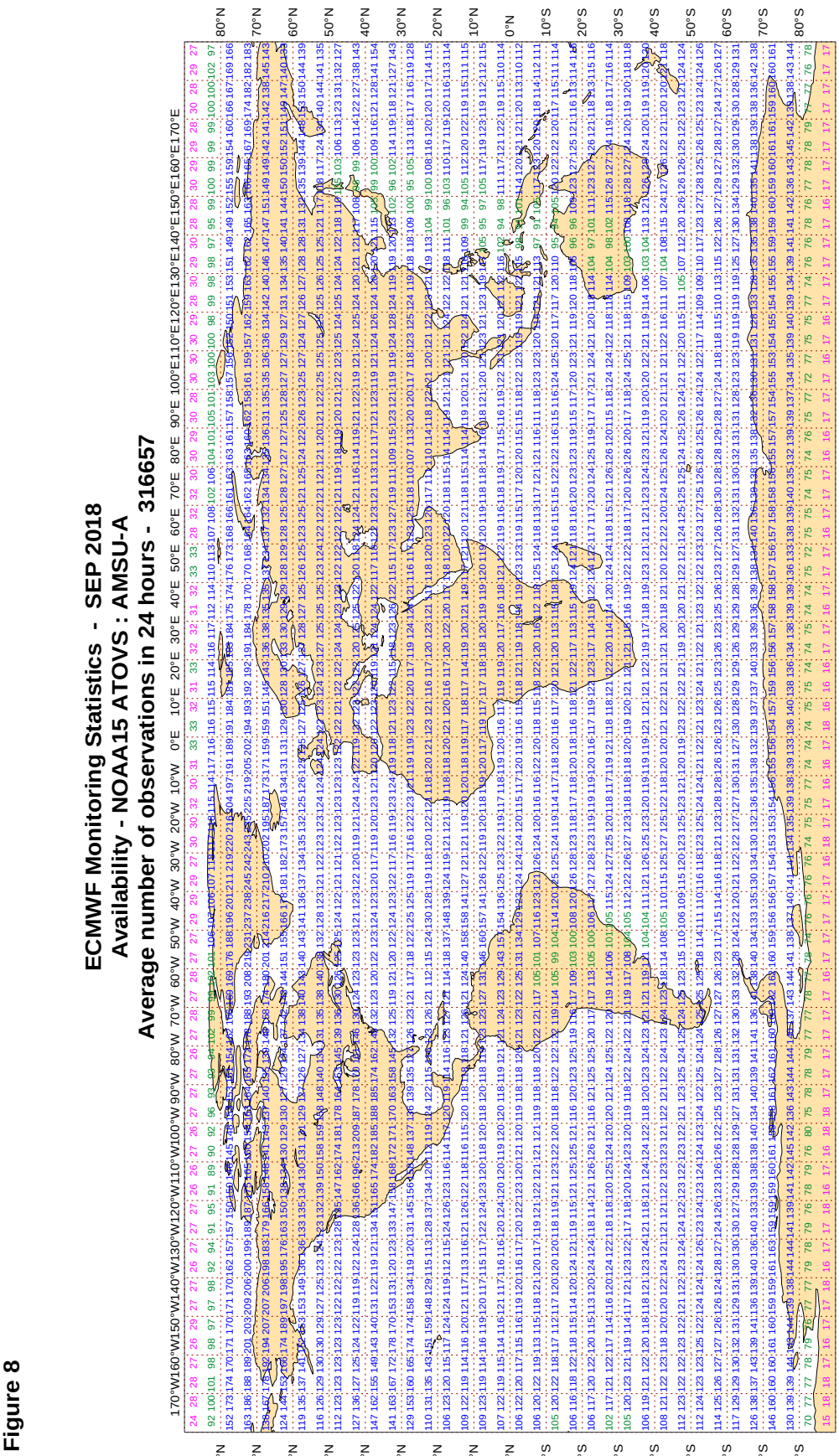


Figure 8

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

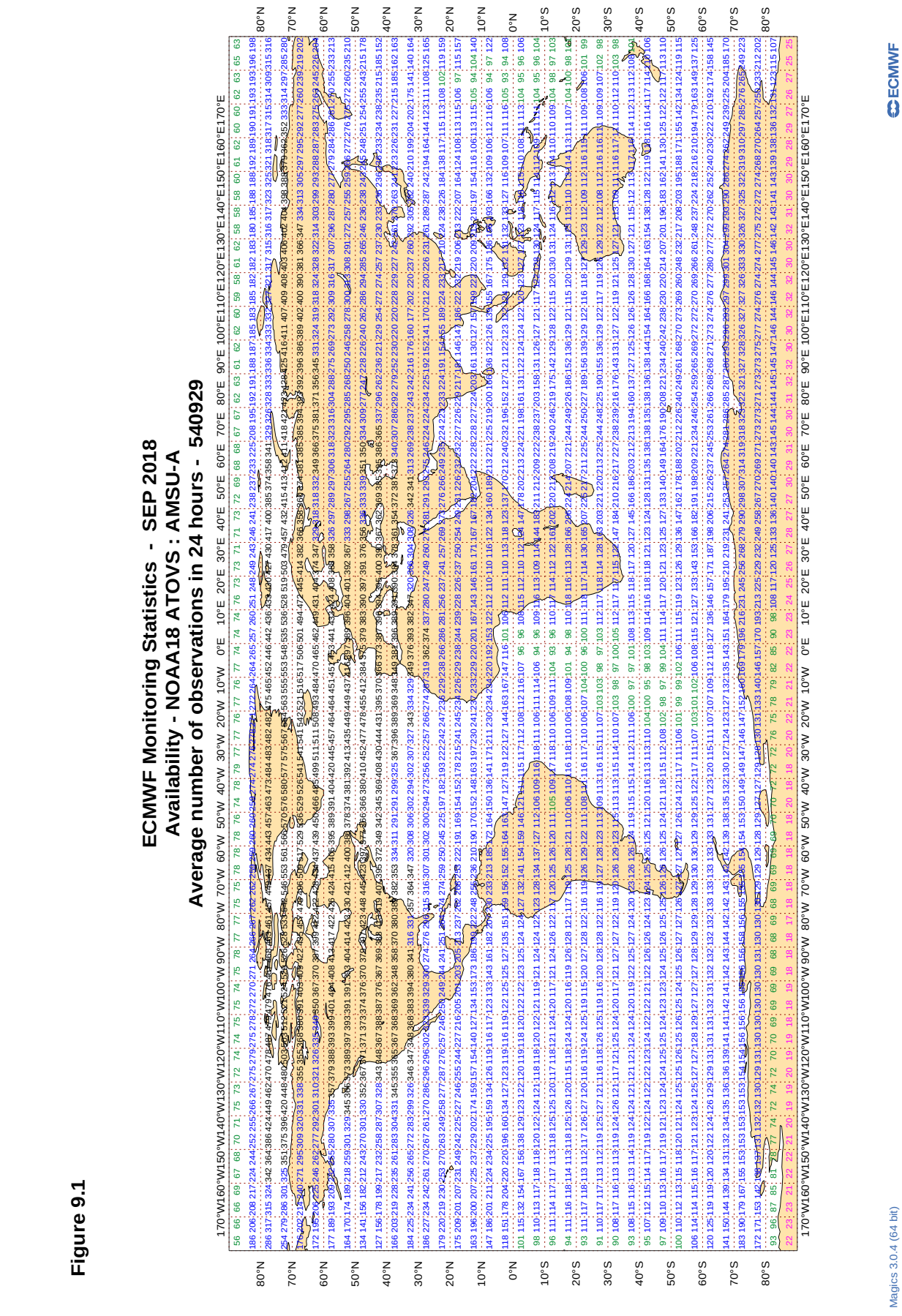


Figure 9.1

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

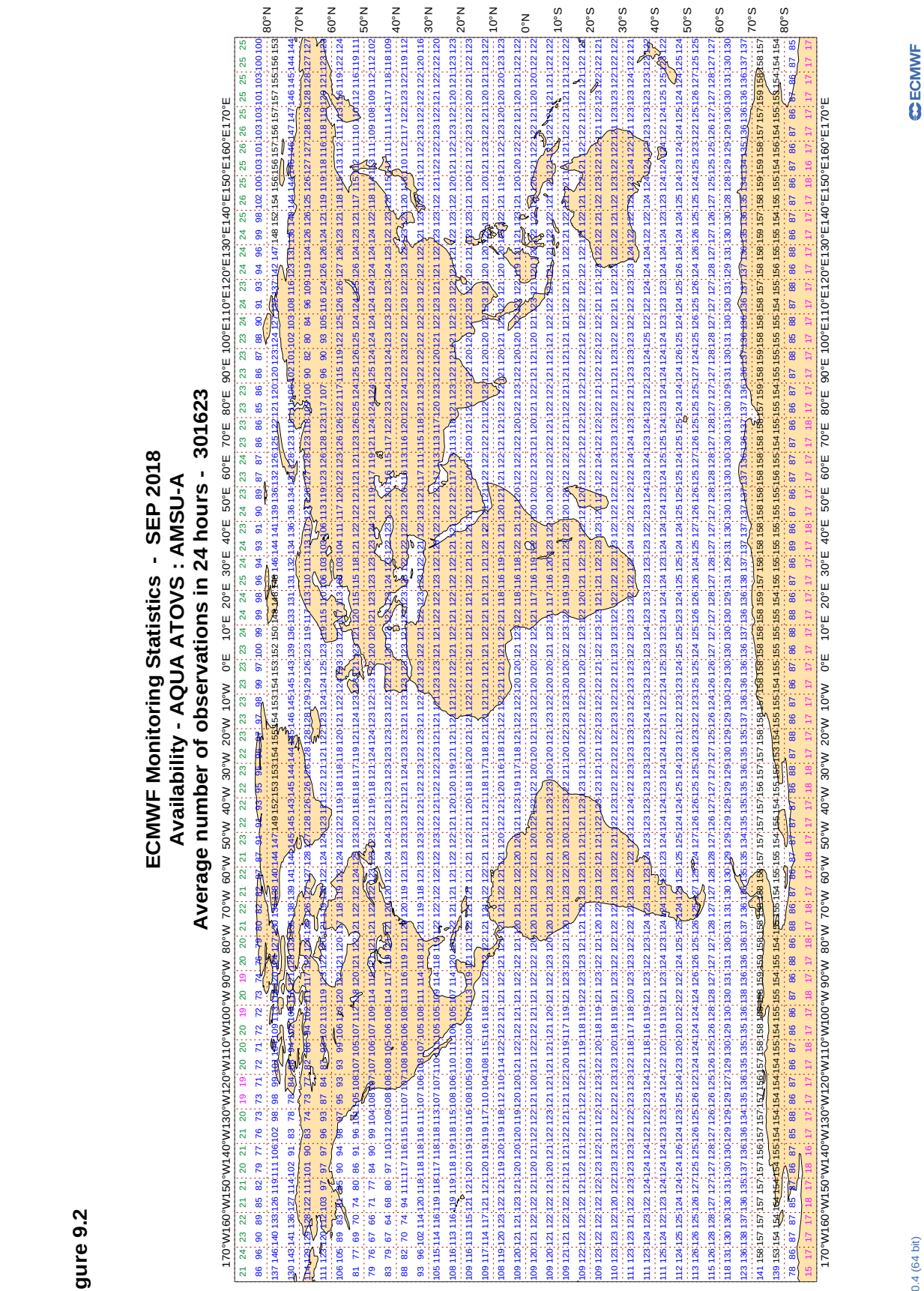


Figure 9.2

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

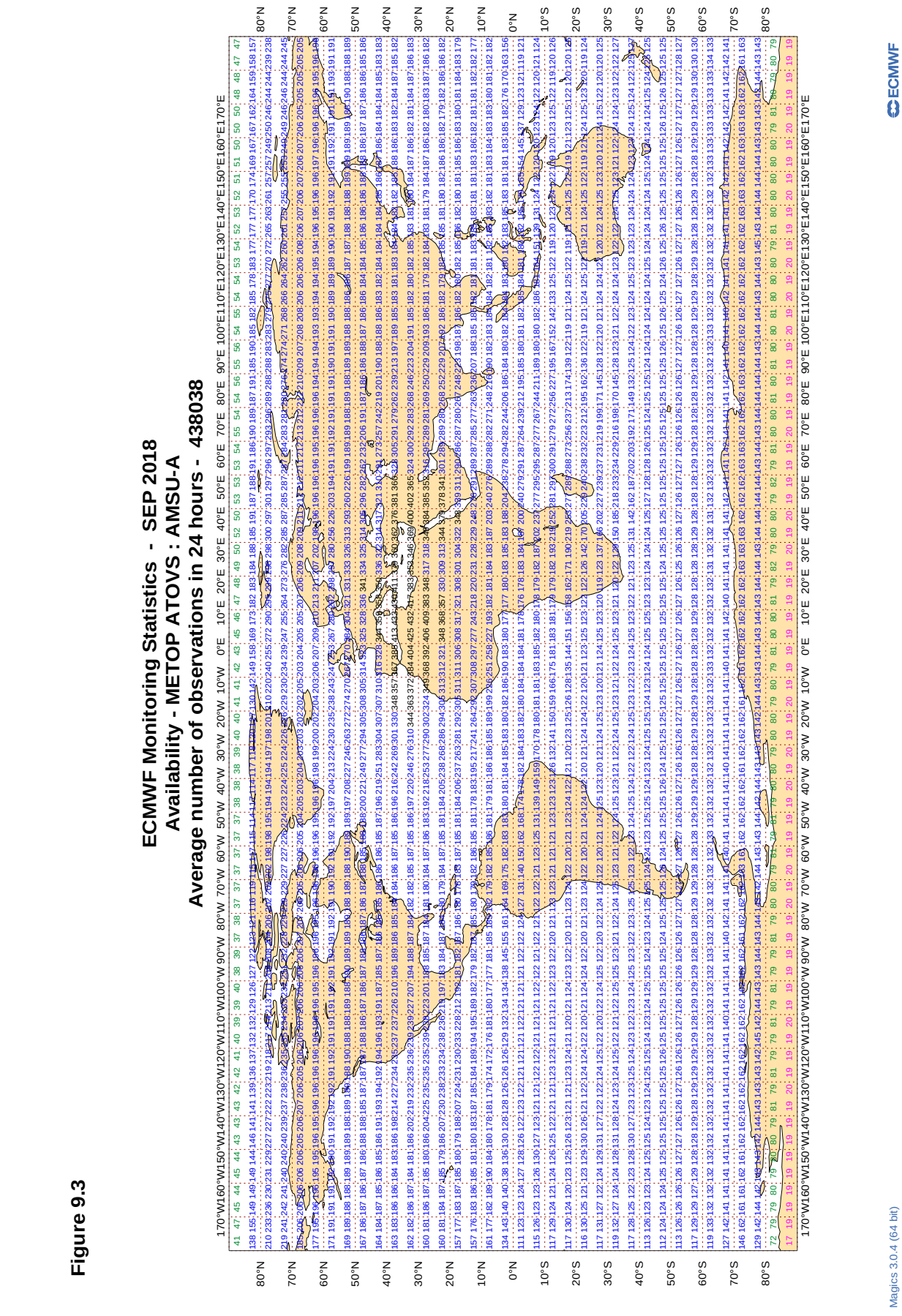


Figure 9.3

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

```
          LIST OF SUSPECT STATIONS        : SHIPS + FIXED MARINE PLATFORMS
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : SURFACE PRESSURE (HPA)
                    AREA                  : GLOBAL
                    PERIOD                : SEP 2018
                    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
3ENU5	99	P	SUR	25	0	3.1	5.1	6.0
45028	99	P	SUR	187	0	0.6	3.5	3.5
4XIS	99	P	SUR	44	4	1.1	13.0	13.0
95392	99	P	SUR	20	0	0.6	-3.2	3.2
9HJD9	99	P	SUR	30	0	1.8	-3.2	3.6
9V8839	99	P	SUR	39	0	1.1	-3.0	3.2
9V9401	99	P	SUR	27	0	1.8	-3.2	3.7
A8KX2	99	P	SUR	25	0	1.0	4.0	4.1
A8PQ8	99	P	SUR	81	0	2.2	-3.2	3.9
AUCE	99	P	SUR	118	75	5.9	1.2	6.0
C6AB7	99	P	SUR	20	3	0.9	13.1	13.2
C6FM9	99	P	SUR	36	0	2.9	6.7	7.3
C6SE4	99	P	SUR	16	0	1.1	3.4	3.5
C6UC3	99	P	SUR	53	1	1.3	8.2	8.3
C6YA7	99	P	SUR	30	0	1.2	5.9	6.0
C6YM6	99	P	SUR	69	0	1.8	4.4	4.8
C6YM7	99	P	SUR	19	0	1.0	5.2	5.3
CQHW	99	P	SUR	37	0	1.1	-3.3	3.4
ICJA	99	P	SUR	20	0	1.0	-7.2	7.2
LAQL7	99	P	SUR	20	0	1.6	4.5	4.8
ONDY	99	P	SUR	88	0	1.7	3.1	3.6
PCBZ	99	P	SUR	25	0	0.8	-7.9	8.0
UBMO9	99	P	SUR	20	0	1.7	3.1	3.5
UBNY	99	P	SUR	77	0	1.5	-3.0	3.4
UBSH5	99	P	SUR	54	1	0.7	-3.8	3.8
UFJN	99	P	SUR	100	0	0.7	-3.6	3.7
V7YL7	99	P	SUR	16	0	1.5	3.5	3.8
VRCU7	99	P	SUR	44	0	1.8	5.6	5.9
VRDU8	99	P	SUR	22	0	1.2	-3.5	3.7
VREO2	99	P	SUR	15	0	1.1	4.1	4.2
VRFT7	99	P	SUR	61	0	1.8	-3.8	4.2
VRID2	99	P	SUR	59	0	1.0	6.3	6.4

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
VRJT8	99	P	SUR	51	0	1.7	3.2	3.6
VRLA6	99	P	SUR	20	0	1.2	-3.2	3.4
VRLJ2	99	P	SUR	46	0	1.0	3.4	3.5
VRRI5	99	P	SUR	121	0	2.0	3.0	3.6
VRUR7	99	P	SUR	47	0	2.5	-3.6	4.4
VTFG	99	P	SUR	112	4	3.3	-3.3	4.7
VWTI	99	P	SUR	77	2	0.9	13.1	13.1
WCAJ	99	P	SUR	42	0	0.4	4.8	4.8
WCZ5535	99	P	SUR	23	0	2.4	-3.3	4.1
WDB9918	99	P	SUR	25	0	2.6	3.2	4.1
WDE7904	99	P	SUR	29	0	2.3	-3.5	4.2
WDG8555	99	P	SUR	34	0	0.9	5.4	5.5
WLPI	99	P	SUR	37	0	0.7	-3.7	3.8
WNFQ	99	P	SUR	18	0	2.3	3.9	4.6
WPKW	99	P	SUR	42	0	2.5	3.7	4.5
WYQ4356	99	P	SUR	140	0	5.2	2.3	5.7

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                : SEP 2018
                    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                : SEP 2018
                    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
45024	99	DIRN	SUR	91	0	0	21.4	33.9	40.1
45150	99	DIRN	SUR	105	0	0	12.5	137.2	137.8
45166	99	DIRN	SUR	83	0	0	11.3	-43.1	44.6
46118	99	DIRN	SUR	34	0	0	54.0	-56.7	78.3

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                 : SEP 2018
                    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
1301000	99	P	SUR	33	-17	856	856	0.0	0.0	0.0
1301001	99	P	SUR	33	-17	669	669	0.0	0.0	0.0
1301602	99	P	SUR	5	-2	230	0	3.8	5.8	6.9
1501517	99	P	SUR	-37	-12	323	1	2.3	-4.8	5.4
4701658	99	P	SUR	71	-102	718	73	6.4	1.7	6.6
4800282	99	P	SUR	71	-156	716	716	0.0	0.0	0.0
4800770	99	P	SUR	78	-16	711	645	2.8	12.3	12.6
4801625	99	P	SUR	77	168	621	132	3.2	8.4	9.0
4802000	99	P	SUR	79	-119	649	239	8.1	0.3	8.1
48282	99	P	SUR	71	-156	715	715	0.0	0.0	0.0
48770	99	P	SUR	78	-16	709	643	2.8	12.3	12.6
5401539	99	P	SUR	-19	147	146	63	5.0	-6.2	8.0
5500939	99	P	SUR	-21	167	270	75	5.2	-4.1	6.7
5501512	99	P	SUR	-58	-65	146	8	8.0	-2.3	8.3
55939	99	P	SUR	-21	167	270	75	5.2	-4.1	6.7
6202400	99	P	SUR	39	-28	430	430	0.0	0.0	0.0
6202402	99	P	SUR	38	-26	365	365	0.0	0.0	0.0
6202403	99	P	SUR	39	-31	160	160	0.0	0.0	0.0
6202404	99	P	SUR	39	-29	175	175	0.0	0.0	0.0
7201509	99	P	SUR	-38	152	69	55	2.2	-0.9	2.4
7401503	99	P	SUR	-37	-12	437	0	0.7	-5.5	5.5

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                : SEP 2018
                    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
3100053	99	SPEED	SUR	-32	-50	452	4	0	4.3	-6.9	8.2
3100231	99	SPEED	SUR	-27	-47	198	73	16	5.9	13.8	15.0
31053	99	SPEED	SUR	-32	-50	451	4	0	4.4	-7.2	8.4
31231	99	SPEED	SUR	-27	-47	196	72	15	6.0	13.7	14.9

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

```
          LIST OF SUSPECT STATIONS         : DRIFTER
                    MONITORING CENTRE      : ECMWF
                    ELEMENT MONITORED      : WIND DIRECTION (DEGREES)
                    PERIOD                 : SEP 2018
                    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
2300014	99	DIRN	SUR	2	67	94	0	0	27.4	23.0	35.8
23014	99	DIRN	SUR	2	67	94	0	0	30.5	23.5	38.5
23091	99	DIRN	SUR	18	89	103	0	0	15.4	24.5	28.9
23093	99	DIRN	SUR	16	88	107	0	0	104.0	-39.8	111.3
23451	99	DIRN	SUR	15	69	31	0	0	13.8	28.9	32.1
23460	99	DIRN	SUR	7	88	143	0	0	24.3	90.0	93.2
23491	99	DIRN	SUR	12	93	23	0	0	10.4	-23.8	25.9
23492	99	DIRN	SUR	11	72	150	0	0	20.6	29.9	36.3
3100231	99	DIRN	SUR	-27	-47	146	73	0	72.5	72.1	102.2
3100262	99	DIRN	SUR	-24	-42	178	0	0	15.3	-31.1	34.7
31231	99	DIRN	SUR	-27	-47	146	72	0	68.5	74.1	100.9
31262	99	DIRN	SUR	-24	-42	167	0	0	13.6	-31.0	33.9
44058	99	DIRN	SUR	38	-76	788	0	0	19.7	-27.4	33.8
44150	99	DIRN	SUR	43	-64	530	0	0	13.1	-29.6	32.4
45024	99	DIRN	SUR	44	-87	649	0	0	21.4	33.3	39.6
45141	99	DIRN	SUR	61	-115	546	0	0	15.6	20.9	26.1
45150	99	DIRN	SUR	62	-114	586	0	0	34.5	132.7	137.1
45154	99	DIRN	SUR	46	-83	621	0	0	19.1	23.6	30.3
45166	99	DIRN	SUR	45	-73	556	0	0	15.0	-43.1	45.7
46060	99	DIRN	SUR	61	-147	169	0	0	34.6	23.1	41.6
46081	99	DIRN	SUR	61	-148	58	0	0	76.1	-41.2	86.6
46118	99	DIRN	SUR	49	-123	196	0	0	51.6	-47.9	70.4
5300040	99	DIRN	SUR	-8	95	709	0	0	166.8	46.8	173.2
5300056	99	DIRN	SUR	-5	95	694	0	0	147.4	78.3	166.9
53040	99	DIRN	SUR	-8	95	697	0	0	166.4	45.8	172.6
53056	99	DIRN	SUR	-5	95	683	0	0	146.1	79.3	166.2
6101003	99	DIRN	SUR	40	25	122	0	0	50.4	44.6	67.3
6200025	99	DIRN	SUR	44	-6	410	0	0	60.5	12.5	61.7
66022	99	DIRN	SUR	54	14	923	0	0	50.2	24.6	55.9

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                : SEP 2018
                    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
01400	00	Z	1000	57	3	24	0	15.2	75.8	77.3
01400	12	Z	1000	57	3	19	0	11.8	77.1	78.0
04360	00	Z	1000	66	-38	13	0	7.6	40.8	41.5
04360	12	Z	1000	66	-38	13	0	8.5	44.7	45.5
23921	12	Z	50	61	60	29	0	28.9	142.5	145.4
28445	12	Z	50	57	61	28	0	25.2	143.1	145.3
28698	00	Z	250	55	73	30	0	35.0	-77.8	85.3
42348	12	Z	50	27	76	23	1	108.1	85.3	137.7
42348	00	Z	250	27	76	23	1	81.5	-2.7	81.5
47158	00	Z	50	35	127	27	0	119.5	114.5	165.5

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

```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND (M/S)
                    AREA                  : GLOBAL
                    PERIOD                : SEP 2018
                    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
44373	12	V	250	44	104	29	1	-4.8	-1.3	15.5

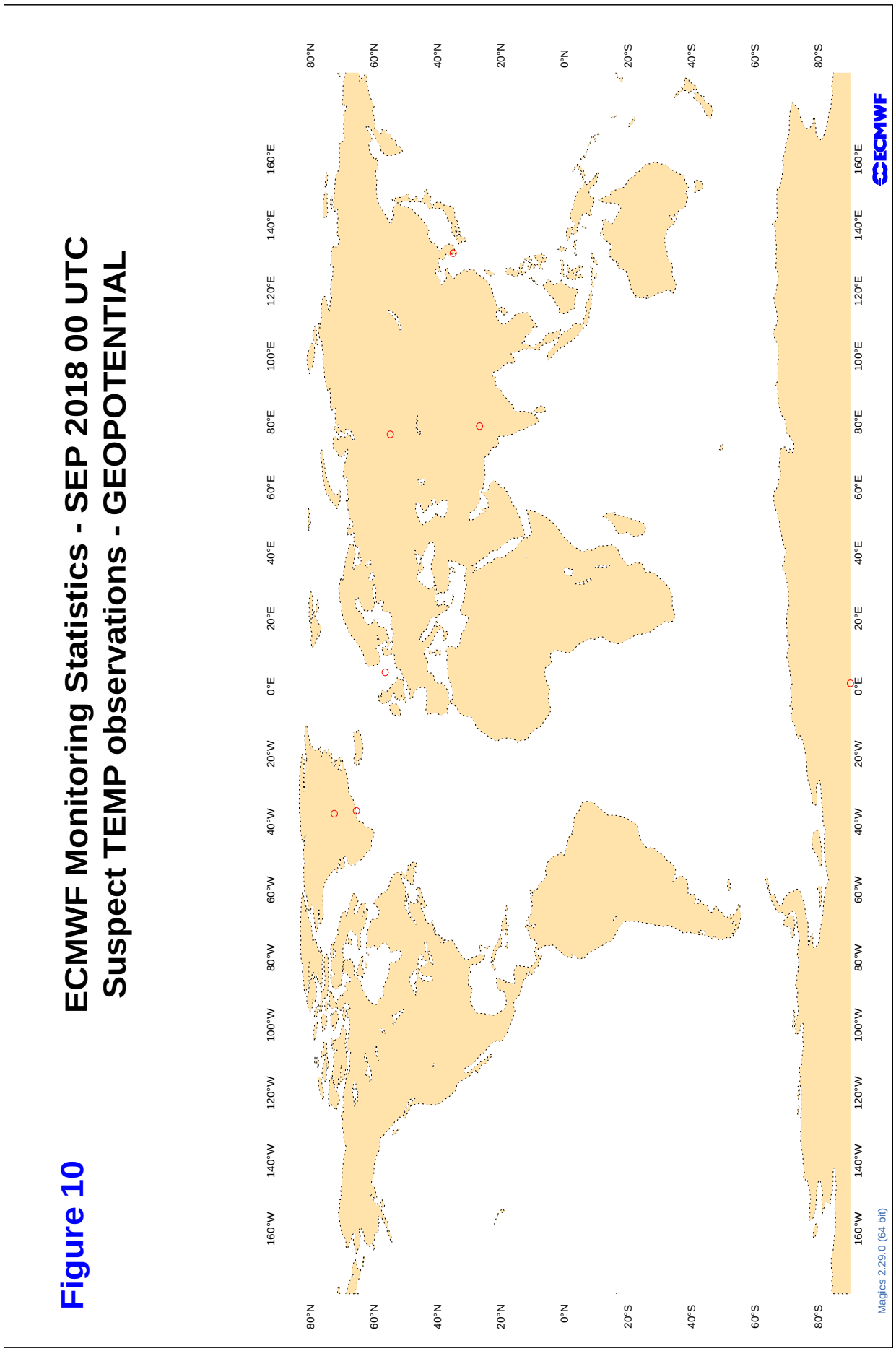
3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                    AREA                  : GLOBAL
                    PERIOD                : SEP 2018
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD

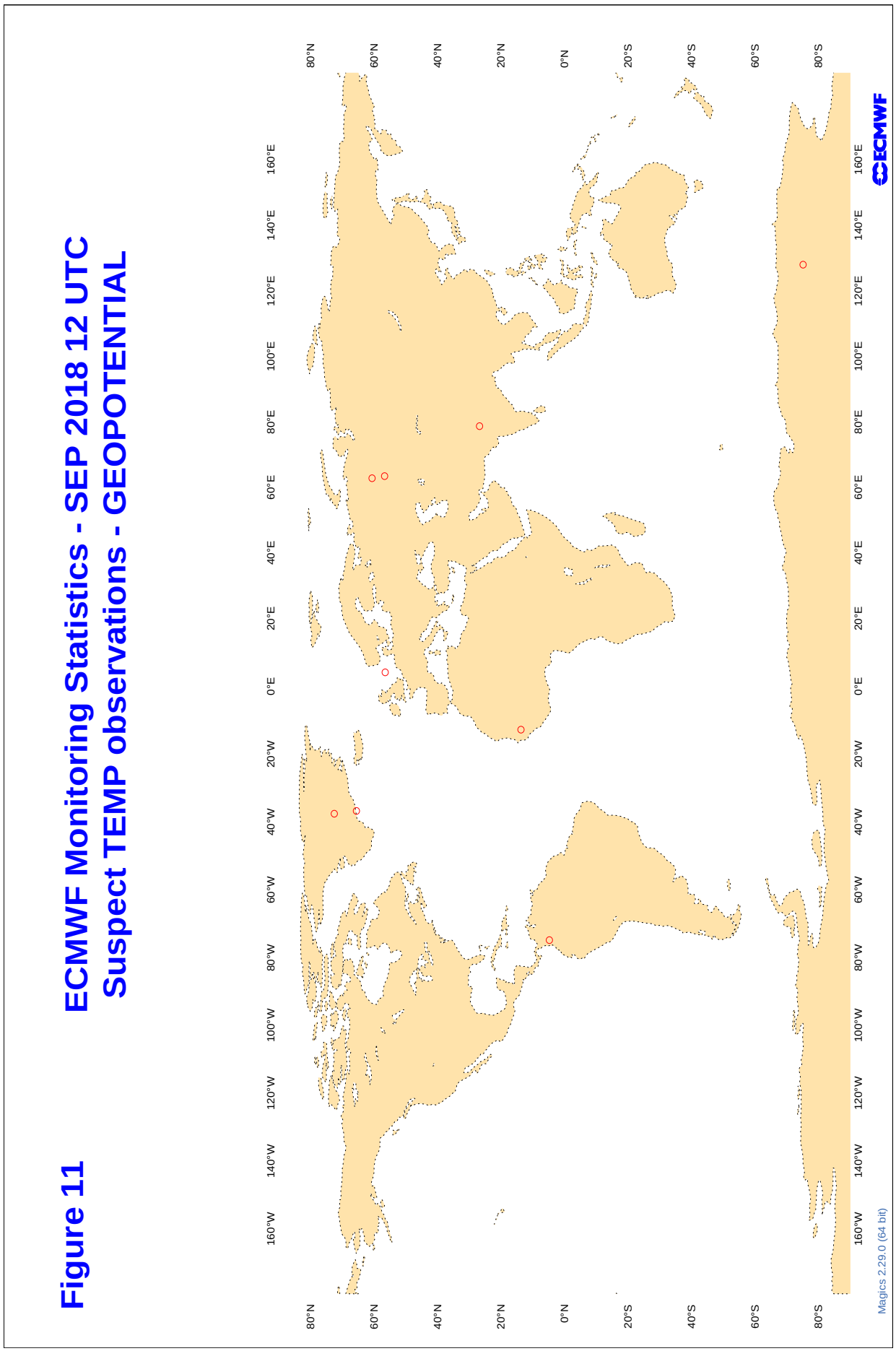

SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS >= 5 M/S
                    NO. OF OBSERVATIONS   >= 5, AND,
                    ABSOLUTE BIAS         >= 10 DEGREES, WITH
                    STANDARD DEVIATION    <  30 DEGREES, AND,
                    VERTICAL SPREAD       < 10 DEGREES
         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

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
56146	12	DD	32	100	25	10.3	7.4	16.4
56146	00	DD	32	100	21	13.9	4.9	12.8

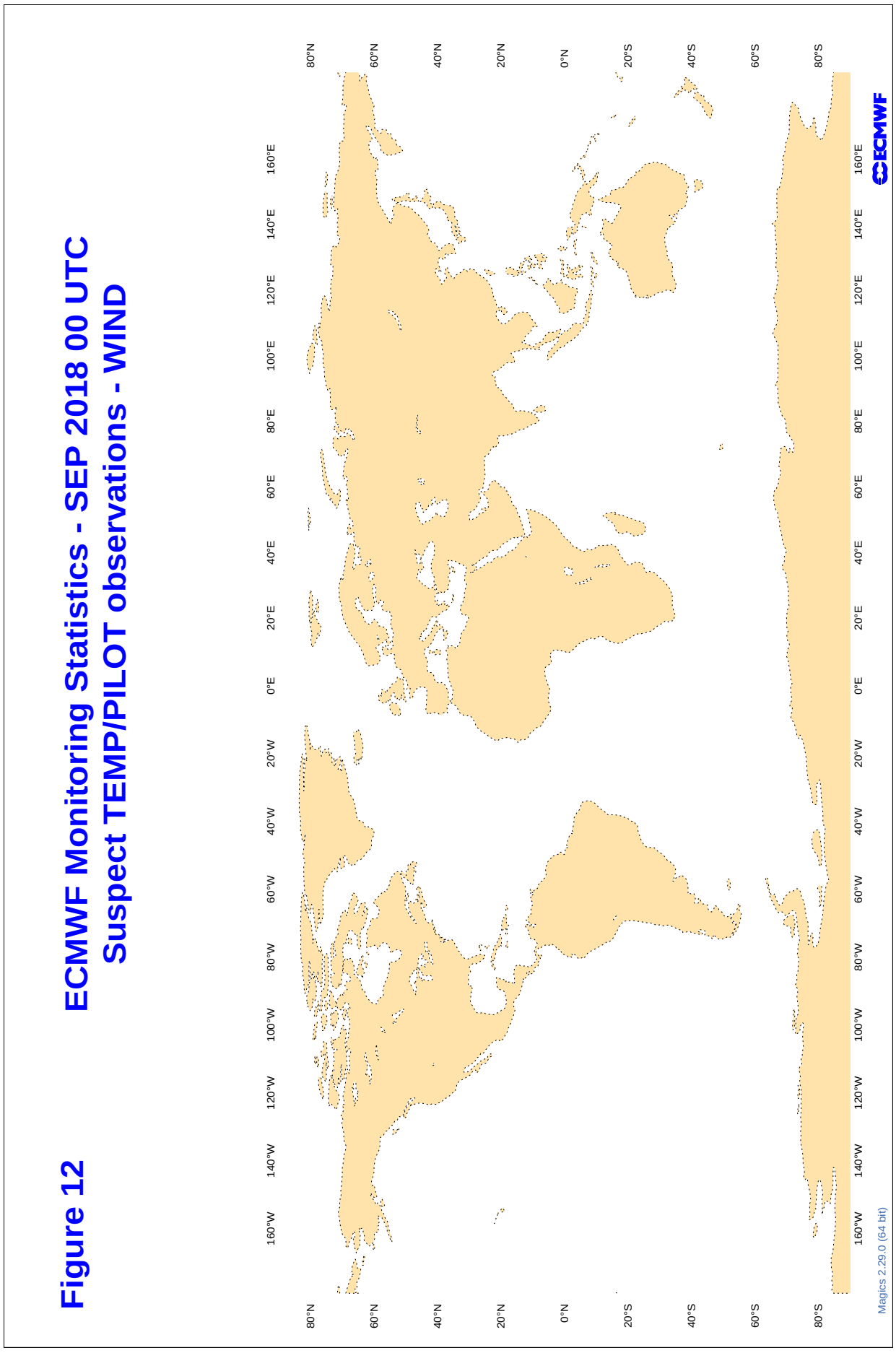
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



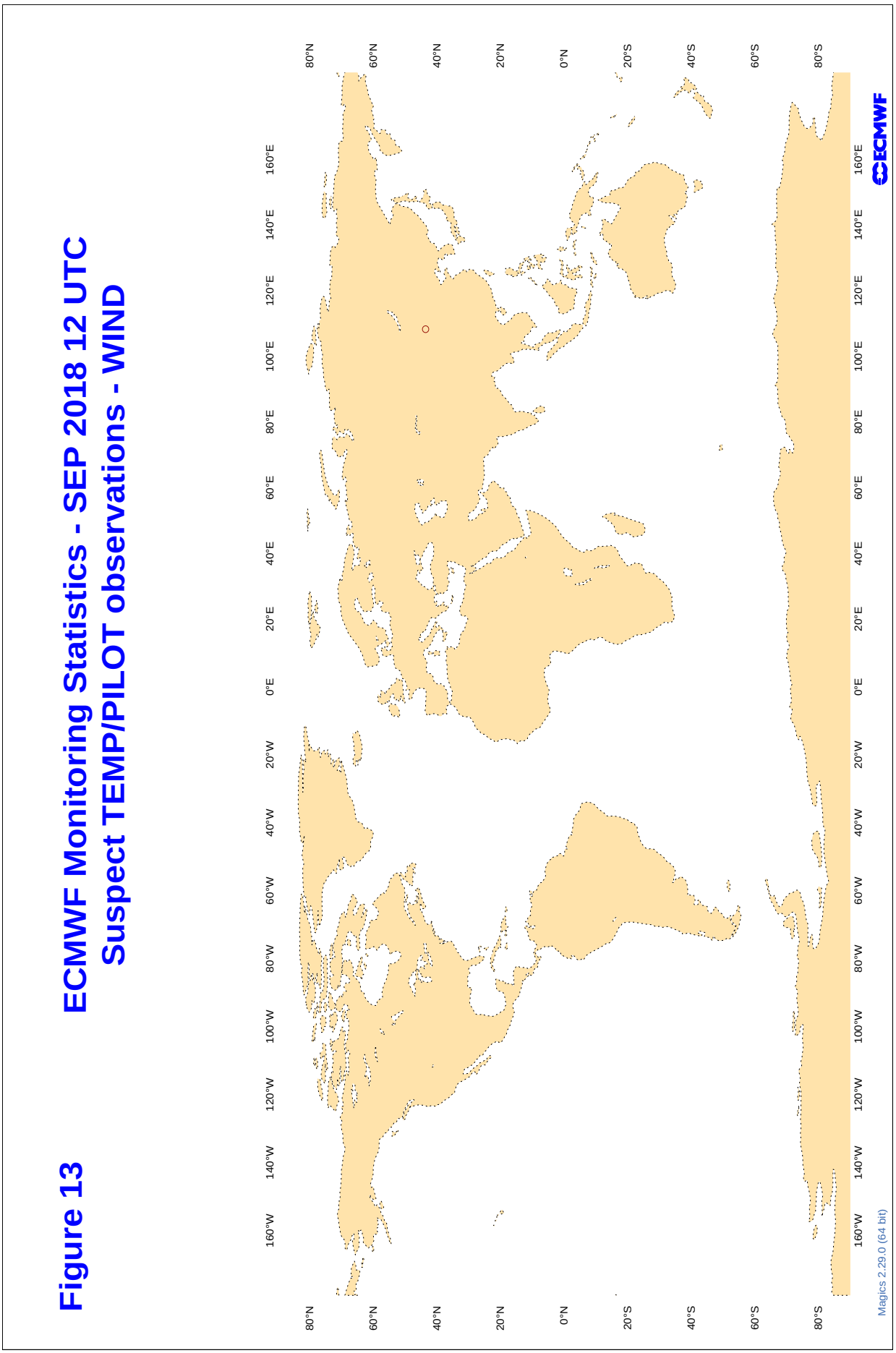
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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                : SEP 2018
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
5QPW8X	00	Z	100	7	18.3	17.2
5QPW8X	12	Z	100	11	13.9	13.1
7HCPVT	12	Z	100	1	34.9	34.9
7HCPVT	00	Z	100	2	34.0	33.9
7JUNA4	00	Z	100	9	15.1	3.0
7JUNA4	12	Z	100	10	21.2	16.5
ASUK02	00	Z	100	11	8.3	1.1
ASUK02	12	Z	100	19	5.9	4.5
BNSK	12	Z	100	3	4.4	-1.5
BNSK	00	Z	100	0	0.0	0.0
DBLK	00	Z	100	17	15.6	-2.0
DBLK	12	Z	100	22	6.5	0.3
DSQL7	00	Z	100	18	6.1	-3.2
DSQL7	12	Z	100	16	5.9	-4.1
FHM5H	00	Z	100	3	8.2	-2.1
FHM5H	12	Z	100	2	47.5	-35.7
FHM5UJ	00	Z	100	7	4.9	-0.4
FHM5UJ	12	Z	100	7	24.7	-12.1
FPUW5G	12	Z	100	14	9.9	-9.5
GHACC	12	Z	100	13	23.0	19.5
GHACC	00	Z	100	9	14.5	10.3
HTXUH	12	Z	100	1	4.3	-4.3
HTXUH	00	Z	100	4	7.4	1.1
HTXUH4	12	Z	100	3	11.1	9.5
HTXUH4	00	Z	100	4	9.4	8.1
JGQH	12	Z	100	0	0.0	0.0
JGQH	00	Z	100	1	0.5	-0.5
JNSR	00	Z	100	2	8.7	-4.9
JNSR	12	Z	100	1	12.1	12.1
PISTON	00	Z	100	62	16.0	13.0
PISTON	12	Z	100	50	15.0	11.7
SAVA1	12	Z	100	1	3.0	3.0
WDK38H	12	Z	100	9	7.8	-7.5
XKQLWQ	12	Z	100	16	30.2	26.9
XQFJRG	12	Z	100	4	14.3	10.9
XQFJRG	00	Z	100	4	20.5	-10.3
XWHDEA	12	Z	100	6	19.7	17.9
XWHDEA	00	Z	100	6	15.3	14.6
ZVQEQC	12	Z	100	1	5.1	5.1

RADIOSONDE MONITORING STATISTICS (SHIPS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ZVQEQC	00	Z	100	14	12.2	11.0

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                : SEP 2018
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
5QPW8X	00	V	100	7	2.5	-0.1	-0.5
5QPW8X	12	V	100	10	2.8	1.2	1.1
7HCPVT	12	V	100	1	3.3	1.1	-3.1
7HCPVT	00	V	100	2	3.5	0.8	-0.5
7JUNA4	00	V	100	9	2.9	-0.1	-0.2
7JUNA4	12	V	100	10	2.5	-0.8	1.0
ASUK02	00	V	100	11	2.1	-0.2	0.3
ASUK02	12	V	100	19	1.7	-0.1	0.4
BNSK	12	V	100	3	2.3	-1.3	-1.5
BNSK	00	V	100	0	0.0	0.0	0.0
DBLK	00	V	100	17	2.3	-0.4	-0.3
DBLK	12	V	100	22	2.5	0.1	-0.1
DSQL7	00	V	100	18	2.2	0.3	0.5
DSQL7	12	V	100	16	2.3	0.2	0.0
FHM5H	00	V	100	3	5.5	-2.7	-0.5
FHM5H	12	V	100	1	2.1	2.0	-0.5
FHM5UJ	00	V	100	7	3.8	-0.4	-1.0
FHM5UJ	12	V	100	6	3.2	-1.1	1.6
FPUW5G	12	V	100	13	1.6	0.2	0.1
GHACC	12	V	100	7	4.7	0.2	2.2
GHACC	00	V	100	9	4.9	-1.5	-0.1
HTXUH	12	V	100	1	2.5	2.3	1.1
HTXUH	00	V	100	4	3.4	1.1	0.7
HTXUH4	12	V	100	3	3.9	0.6	-1.7
HTXUH4	00	V	100	4	3.2	1.1	0.8
JGQH	12	V	100	0	0.0	0.0	0.0
JGQH	00	V	100	1	5.8	-5.4	2.2
JNSR	00	V	100	2	2.0	0.8	1.5
JNSR	12	V	100	1	3.6	-0.4	-3.6
PISTON	00	V	100	25	6.7	0.4	1.0
PISTON	12	V	100	23	6.7	1.0	1.3
SAVA1	12	V	100	1	3.7	3.1	-2.0
WDK38H	12	V	100	7	2.1	-0.2	0.0
XKQLWQ	12	V	100	16	3.3	-0.4	-0.2
XQFJRG	12	V	100	4	2.3	0.5	-0.3
XQFJRG	00	V	100	4	1.4	-0.6	-0.5
XWHDEA	12	V	100	6	3.6	1.7	-1.9
XWHDEA	00	V	100	6	2.5	0.2	1.3
ZVQEQC	12	V	100	1	0.3	-0.1	0.3

RADIOSONDE MONITORING STATISTICS (SHIPS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ZVQEQC	00	V	100	14	2.8	0.2	-0.4

3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

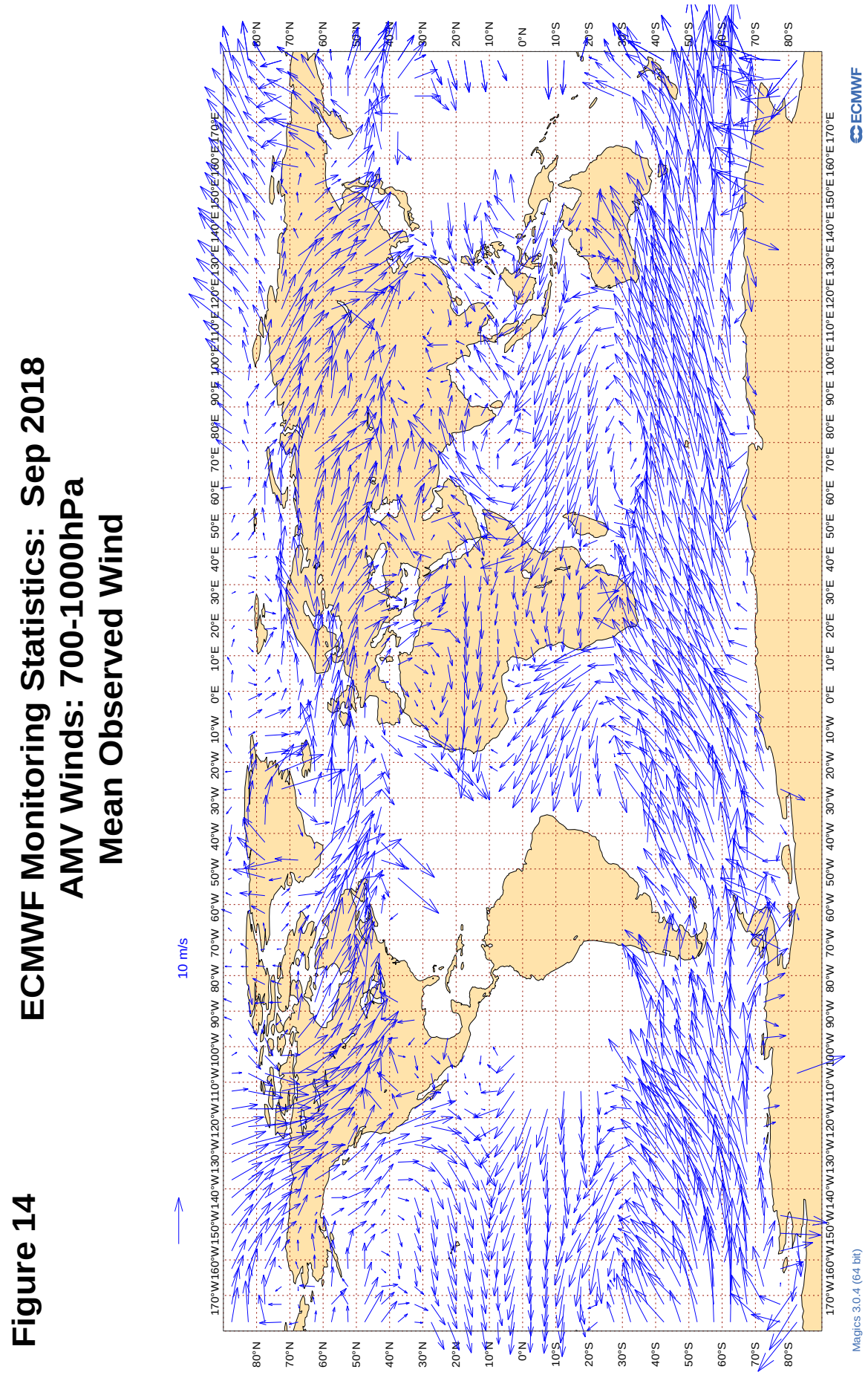


Figure 14

3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

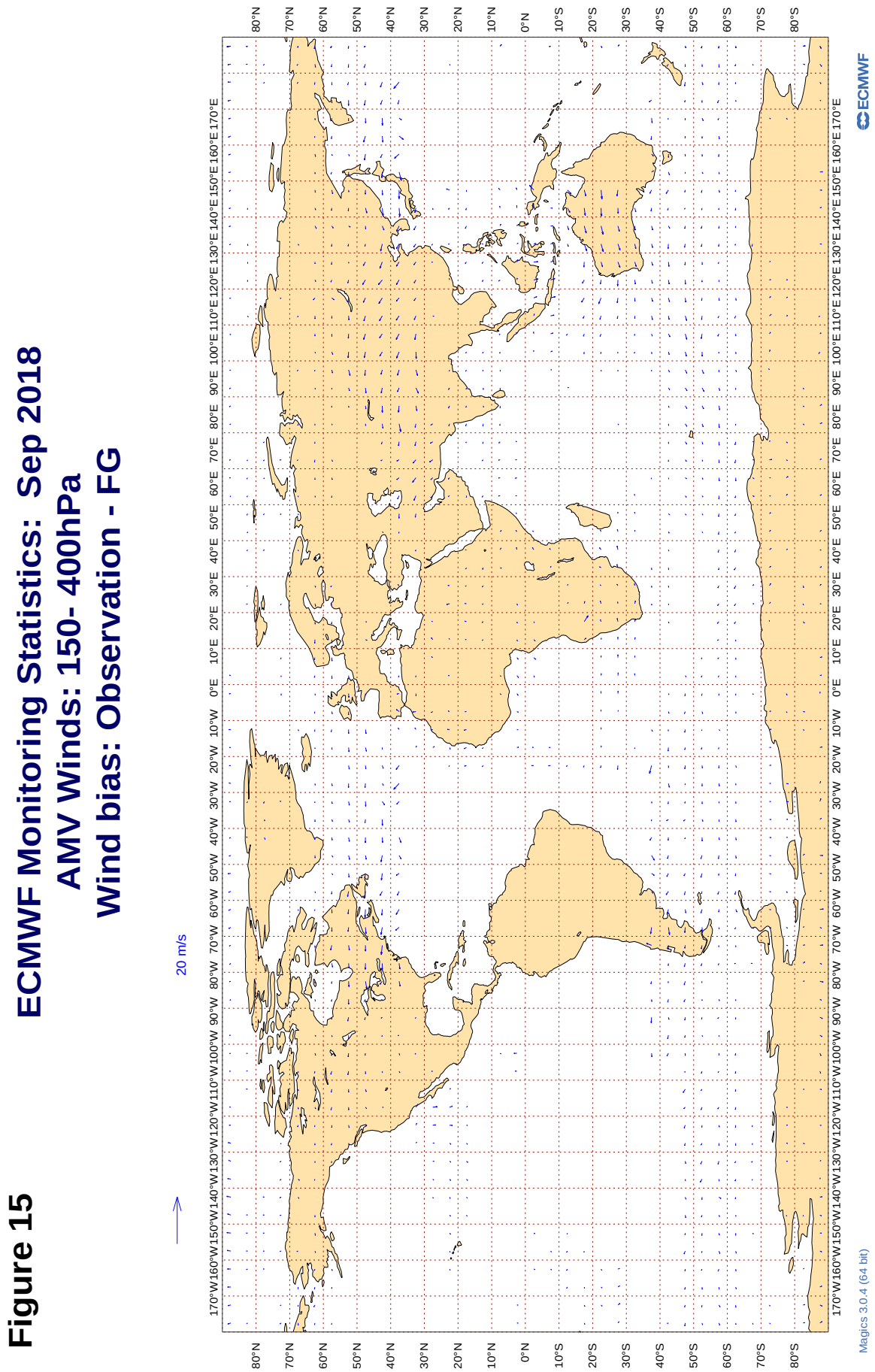


Figure 15

3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

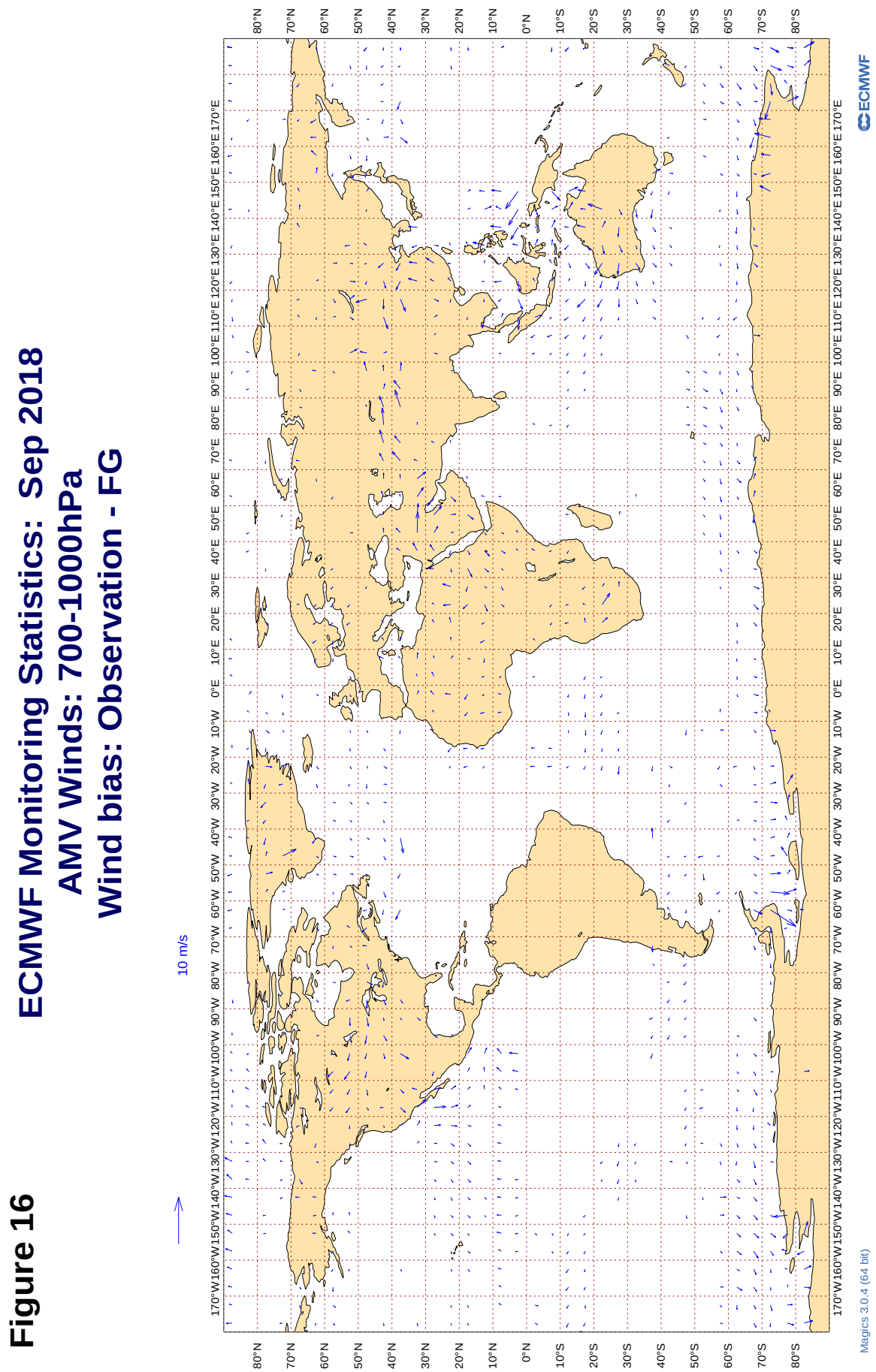


Figure 16

3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

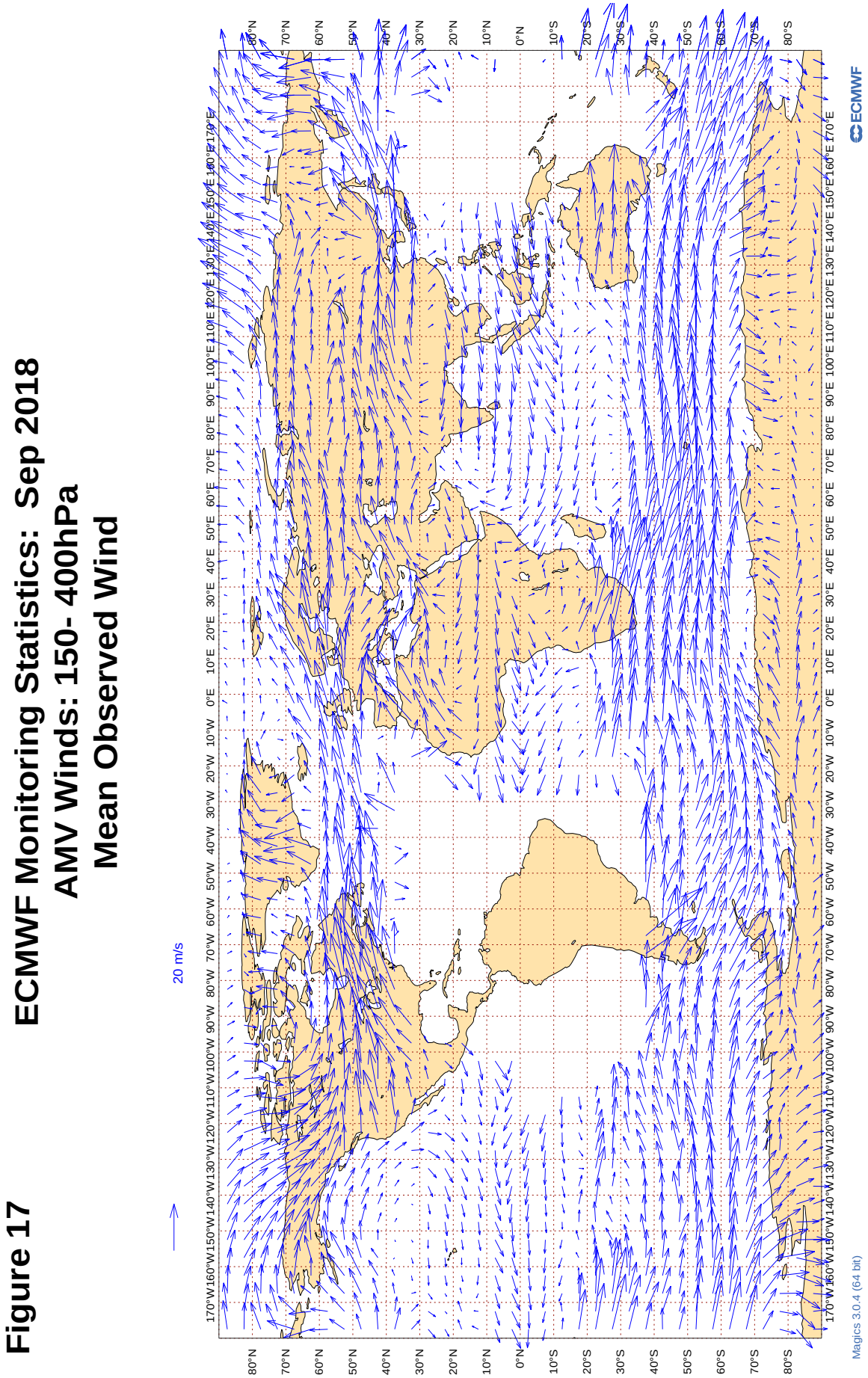


Figure 17

3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

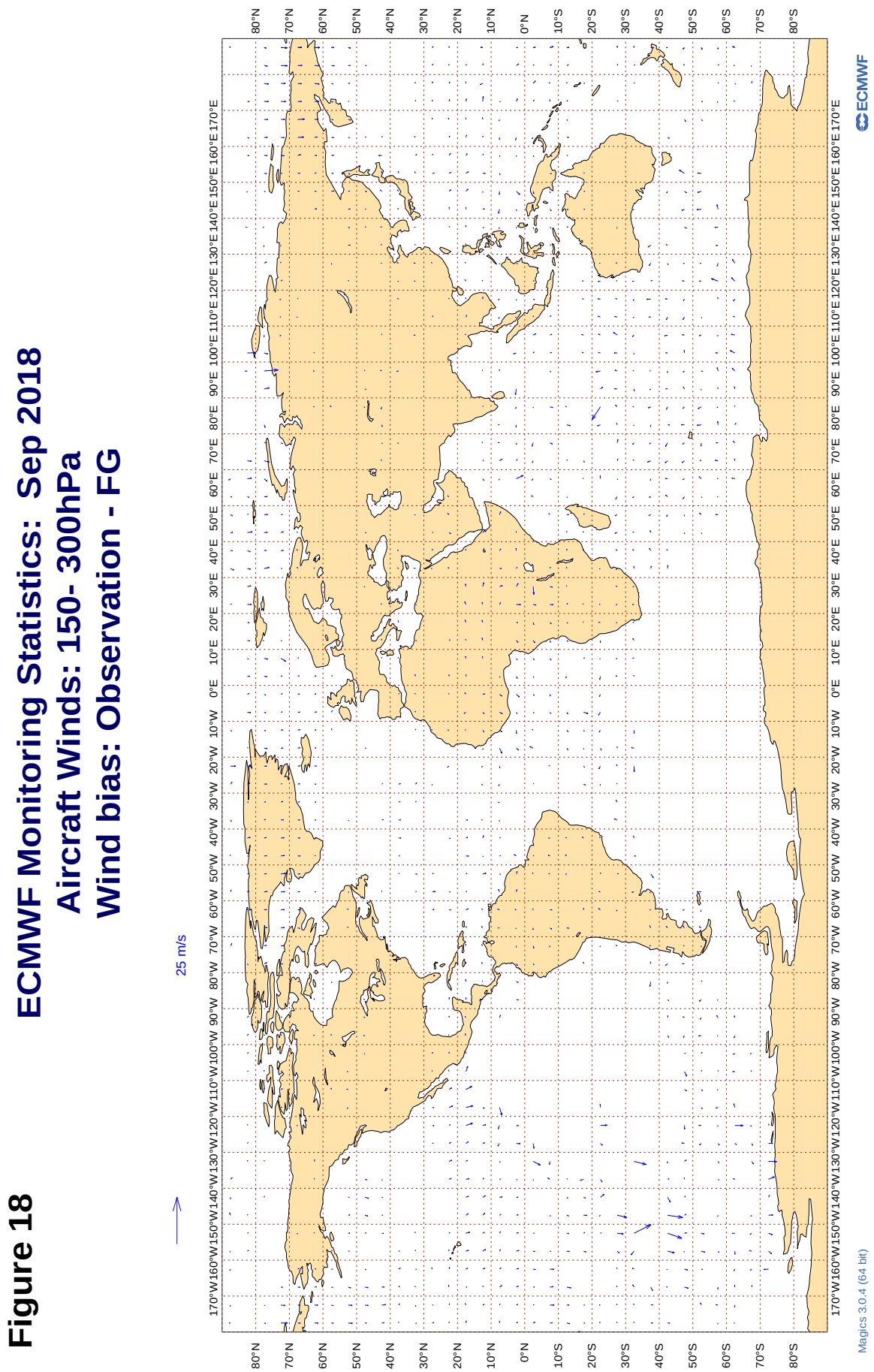


Figure 18

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 : SEP 2018
STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20

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

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AAB	99	V	300-150	159	0	0	3.8	0.6
AAL	99	V	300-150	65144	2	0	4.6	0.2
AAR	99	V	300-150	301	0	0	4.3	-1.3
ABD	99	V	300-150	777	0	0	4.4	-0.3
ABW	99	V	300-150	923	0	0	3.7	-0.9
ACA	99	V	300-150	36532	2	0	5.4	0.2
ACI	99	V	300-150	2477	0	0	3.4	0.3
AEA	99	V	300-150	1093	2	0	5.7	0.0
AFL	99	V	300-150	2317	0	0	3.3	0.5
AFR	99	V	300-150	28023	0	0	3.8	0.2
AHY	99	V	300-150	185	6	0	7.6	0.0
AIC	99	V	300-150	2347	2	0	5.3	0.0
AIZ	99	V	300-150	50	0	0	6.2	1.3
ALK	99	V	300-150	1091	0	0	3.0	0.1
AMX	99	V	300-150	3545	8	0	7.3	-0.2
ANG	99	V	300-150	29	0	0	3.2	-0.2
ANZ	99	V	300-150	23607	1	0	4.7	0.4
AOJ	99	V	300-150	20	0	0	3.8	-0.5
ART	99	V	300-150	37	0	0	3.7	-1.2
ASA	99	V	300-150	93	0	1	6.2	-0.5
ASL	99	V	300-150	699	0	0	3.8	-0.1
ASY	99	V	300-150	272	0	0	4.5	1.2
ATN	99	V	300-150	98	0	1	4.4	0.9
AUA	99	V	300-150	5257	0	0	4.2	-0.3
AUI	99	V	300-150	794	0	0	3.8	0.3
AVA	99	V	300-150	473	6	0	8.4	0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AXB	99	V	300-150	39	0	0	2.9	-1.0
AXM	99	V	300-150	208	0	1	5.2	1.2
AZA	99	V	300-150	9227	0	0	3.6	0.4
AZG	99	V	300-150	174	0	0	3.0	-0.2
BAW	99	V	300-150	53915	2	0	4.5	0.1
BBC	99	V	300-150	34	0	0	3.2	0.5
BEL	99	V	300-150	2800	0	0	3.4	0.4
BFY	99	V	300-150	24	0	0	4.6	-1.9
BLU	99	V	300-150	31	0	0	4.0	-1.7
BMW	99	V	300-150	35	0	0	4.0	-0.3
BOS	99	V	300-150	932	0	0	3.8	0.6
BOX	99	V	300-150	1377	0	0	3.5	-0.1
BOX	99	V	300-150	46	0	0	3.7	-0.9
BVR	99	V	300-150	82	0	0	3.7	0.1
BWJ	99	V	300-150	24	0	0	4.6	-1.1
CAL	99	V	300-150	372	0	0	3.5	0.5
CAT	99	V	300-150	60	0	0	7.5	0.8
CAZ	99	V	300-150	117	0	0	3.6	-0.4
CCA	99	V	300-150	751	2	0	4.7	1.0
CEB	99	V	300-150	93	0	0	2.8	0.3
CES	99	V	300-150	1465	0	0	3.4	0.3
CFC	99	V	300-150	280	0	0	4.2	1.1
CFG	99	V	300-150	5433	0	0	4.0	-0.6
CHH	99	V	300-150	266	6	0	8.3	0.7
CJT	99	V	300-150	468	0	0	4.2	-0.2
CKS	99	V	300-150	1523	0	0	3.6	-0.1
CLE	99	V	300-150	182	0	0	5.0	-0.3
CLU	99	V	300-150	595	0	0	3.7	-0.1
CLX	99	V	300-150	3510	0	0	3.9	-0.4
CMB	99	V	300-150	1010	0	0	3.9	-0.3
CNV	99	V	300-150	106	0	0	4.0	0.2
CPA	99	V	300-150	666	0	0	3.4	0.5
CPI	99	V	300-150	43	0	0	5.7	1.7
CRK	99	V	300-150	688	0	0	3.2	0.6
CRL	99	V	300-150	997	0	0	3.2	0.2
CSC	99	V	300-150	205	0	0	3.2	0.5
CSN	99	V	300-150	823	1	0	5.1	0.8
CTM	99	V	300-150	42	0	0	3.1	0.5
CVN	99	V	300-150	20	0	0	3.0	0.6
CXB	99	V	300-150	65	0	0	4.4	1.1
DAH	99	V	300-150	901	0	0	3.5	0.1
DAL	99	V	300-150	75207	0	0	3.6	0.1
DCS	99	V	300-150	44	0	0	4.0	1.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
DHK	99	V	300-150	1095	0	0	4.1	-0.2
DJT	99	V	300-150	1858	0	0	4.2	0.2
DLH	99	V	300-150	34824	0	0	3.5	0.0
DSO	99	V	300-150	73	0	0	3.8	-0.5
DUB	99	V	300-150	287	0	0	3.0	0.2
EAU	99	V	300-150	57	60	0	14.7	-0.5
EDC	99	V	300-150	60	17	0	15.8	0.4
EDG	99	V	300-150	63	24	0	15.4	-0.2
EDW	99	V	300-150	1698	0	0	3.5	0.4
EIN	99	V	300-150	16566	0	0	3.5	0.3
EJM	99	V	300-150	1190	2	0	5.4	-0.2
ELY	99	V	300-150	2890	8	0	6.0	0.1
ETD	99	V	300-150	7046	1	0	4.3	0.3
ETH	99	V	300-150	3685	4	0	5.9	0.2
EVE	99	V	300-150	41	0	0	3.0	-0.3
EWG	99	V	300-150	4182	0	0	3.6	0.4
EXS	99	V	300-150	161	0	1	3.4	0.2
FBU	99	V	300-150	789	0	0	4.3	0.2
FDX	99	V	300-150	5627	0	0	3.6	0.3
FIN	99	V	300-150	953	0	0	3.2	0.4
FJI	99	V	300-150	6823	0	0	4.2	0.6
FLA	99	V	300-150	59	0	0	4.5	1.2
FWI	99	V	300-150	741	0	0	3.3	0.1
FYG	99	V	300-150	115	0	0	4.1	0.1
GAF	99	V	300-150	143	0	0	3.6	0.1
GCR	99	V	300-150	52	0	0	3.6	0.4
GCT	99	V	300-150	39	0	0	4.1	-0.2
GEC	99	V	300-150	2753	0	0	3.5	0.0
GES	99	V	300-150	255	0	0	3.7	0.0
GFA	99	V	300-150	654	0	0	2.5	0.4
GIA	99	V	300-150	743	0	0	2.9	-0.0
GLO	99	V	300-150	45	0	4	9.0	1.9
GMA	99	V	300-150	56	0	0	3.0	0.1
GOL	99	V	300-150	36	0	0	15.3	-6.9
GTH	99	V	300-150	208	0	0	3.6	-0.2
GTI	99	V	300-150	2948	0	0	4.1	-0.5
HAL	99	V	300-150	5297	0	0	4.0	0.7
HRT	99	V	300-150	85	36	0	11.6	-0.4
HVN	99	V	300-150	41	2	0	4.9	1.1
HZS	99	V	300-150	34	0	0	2.9	0.1
HZS	99	V	300-150	69	0	0	3.2	0.3
IAM	99	V	300-150	99	0	1	3.8	0.3
IBE	99	V	300-150	4072	0	0	3.8	0.3

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
IBK	99	V	300-150	2465	0	0	3.7	0.4
ICE	99	V	300-150	1117	0	1	3.4	0.2
ICL	99	V	300-150	851	0	0	4.4	-0.3
ICV	99	V	300-150	320	0	0	5.0	-0.9
IFA	99	V	300-150	30	87	0	31.9	-3.7
IJM	99	V	300-150	48	0	0	5.0	0.8
ISS	99	V	300-150	1561	0	0	4.0	-0.2
IXR	99	V	300-150	30	0	0	3.0	0.2
JAF	99	V	300-150	1073	6	0	7.6	-0.2
JAI	99	V	300-150	1477	0	0	3.2	0.4
JAS	99	V	300-150	233	0	0	4.1	-0.0
JET	99	V	300-150	77	0	0	4.5	0.3
JJA	99	V	300-150	30	0	0	6.7	1.0
JME	99	V	300-150	46	0	0	3.7	-0.0
JML	99	V	300-150	32	0	0	2.4	0.6
JST	99	V	300-150	2900	1	0	8.1	0.5
JSX	99	V	300-150	27	0	0	4.2	-0.1
KAC	99	V	300-150	1378	0	0	3.5	0.4
KAI	99	V	300-150	57	0	0	6.5	0.7
KAL	99	V	300-150	1239	0	0	3.6	0.6
KAY	99	V	300-150	37	0	0	2.7	0.3
KCE	99	V	300-150	107	0	0	3.2	-0.2
KIW	99	V	300-150	166	0	0	4.3	1.0
KLM	99	V	300-150	17892	2	0	4.7	-0.1
KNE	99	V	300-150	75	0	0	4.1	-0.7
KNT	99	V	300-150	32	0	0	3.4	-0.3
KQA	99	V	300-150	140	0	0	6.9	0.6
KRF	99	V	300-150	36	0	0	3.3	-0.1
LAN	99	V	300-150	2270	11	0	7.4	0.2
LEA	99	V	300-150	100	0	0	3.8	-0.0
LMJ	99	V	300-150	37	0	0	3.8	0.4
LOT	99	V	300-150	3865	7	0	6.6	-0.2
LXA	99	V	300-150	24	0	0	4.6	0.6
LXJ	99	V	300-150	48	0	0	3.5	-0.5
MAN	99	V	300-150	39	0	0	4.4	0.2
MAS	99	V	300-150	677	0	0	3.3	0.8
MAU	99	V	300-150	187	0	0	4.5	0.7
MDT	99	V	300-150	27	0	0	4.6	0.4
MED	99	V	300-150	34	0	0	4.3	-1.7
MHV	99	V	300-150	34	0	0	4.4	-0.2
MMD	99	V	300-150	317	0	0	3.6	0.1
MPH	99	V	300-150	721	0	0	4.0	-0.9
MSR	99	V	300-150	1395	0	0	3.7	0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
MXD	99	V	300-150	21	0	0	4.7	1.0
NAX	99	V	300-150	10907	8	0	6.7	-0.0
NJE	99	V	300-150	272	0	0	3.4	0.5
NOS	99	V	300-150	176	0	0	6.4	-0.2
NRS	99	V	300-150	7682	9	0	6.8	0.1
NWS	99	V	300-150	493	0	0	3.2	0.4
OAE	99	V	300-150	1006	0	0	3.9	0.1
OMA	99	V	300-150	668	0	0	8.0	0.6
PAC	99	V	300-150	598	0	0	4.0	-0.5
PAL	99	V	300-150	1056	0	0	3.7	0.7
PIA	99	V	300-150	182	0	0	3.3	-0.0
PLF	99	V	300-150	45	0	0	3.0	0.4
PLM	99	V	300-150	45	0	0	3.6	-1.2
PRD	99	V	300-150	49	0	22	4.0	-1.2
PRI	99	V	300-150	4812	0	0	3.9	0.4
PVJ	99	V	300-150	39	3	0	4.3	-0.6
QAF	99	V	300-150	49	0	0	3.6	-0.2
QFA	99	V	300-150	19198	0	0	4.8	0.2
QQE	99	V	300-150	102	0	0	3.9	0.4
QTR	99	V	300-150	14769	0	0	4.3	0.1
RAM	99	V	300-150	338	5	0	5.7	-0.4
RBA	99	V	300-150	124	0	0	9.8	0.2
RCH	99	V	300-150	4660	0	0	4.4	0.1
RDN	99	V	300-150	39	0	0	3.9	0.5
REN	99	V	300-150	44	0	0	3.5	-1.2
RJA	99	V	300-150	1751	9	0	7.3	0.2
RKS	99	V	300-150	23	0	0	3.7	-0.5
ROJ	99	V	300-150	45	0	0	4.8	0.1
ROM	99	V	300-150	73	0	0	6.0	-2.3
ROU	99	V	300-150	13041	0	0	4.3	-0.2
RZO	99	V	300-150	106	0	5	3.7	1.1
SAM	99	V	300-150	115	0	0	4.2	0.3
SAS	99	V	300-150	4736	0	0	3.3	0.2
SAZ	99	V	300-150	76	0	0	3.3	0.2
SCX	99	V	300-150	26	0	0	5.1	0.2
SDM	99	V	300-150	115	0	0	4.0	0.8
SHE	99	V	300-150	143	0	0	3.8	0.1
SIA	99	V	300-150	3432	0	0	3.5	0.0
SIO	99	V	300-150	30	0	0	4.1	-0.5
SIS	99	V	300-150	39	0	0	3.0	0.8
SLE	99	V	300-150	60	0	0	6.2	1.0
SLM	99	V	300-150	136	0	0	2.9	0.1
SME	99	V	300-150	39	0	0	3.4	0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
SOO	99	V	300-150	610	0	0	3.6	-0.1
SPA	99	V	300-150	151	0	0	3.4	-0.0
SSG	99	V	300-150	39	0	0	3.5	0.8
SUI	99	V	300-150	41	0	0	4.4	1.0
SVA	99	V	300-150	5046	0	0	3.7	0.3
SVF	99	V	300-150	36	0	0	4.5	-0.6
SVW	99	V	300-150	196	0	0	4.0	1.0
SWR	99	V	300-150	11317	0	1	3.5	0.3
SXN	99	V	300-150	29	0	0	4.9	0.1
TAM	99	V	300-150	199	0	1	3.7	0.2
TAP	99	V	300-150	1738	0	0	4.1	0.5
TAR	99	V	300-150	527	0	0	3.3	0.4
TAY	99	V	300-150	355	0	0	4.4	-0.6
TBJ	99	V	300-150	39	0	0	4.4	-0.2
TCX	99	V	300-150	7629	0	0	3.5	0.4
TEU	99	V	300-150	79	0	0	3.8	-0.2
TFF	99	V	300-150	66	0	0	5.1	0.6
TFL	99	V	300-150	1837	8	0	7.8	0.0
TGW	99	V	300-150	87	0	0	8.5	0.2
THA	99	V	300-150	398	2	0	7.9	0.1
THT	99	V	300-150	4034	0	0	3.8	0.3
THY	99	V	300-150	9440	0	0	3.7	0.1
TMN	99	V	300-150	84	0	1	3.6	0.2
TOM	99	V	300-150	6130	8	0	6.8	-0.2
TOW	99	V	300-150	70	0	0	3.3	-0.5
TRK	99	V	300-150	45	0	0	4.1	-0.8
TSC	99	V	300-150	19128	0	0	3.6	0.3
TWB	99	V	300-150	29	0	7	4.8	0.9
TWY	99	V	300-150	395	0	0	3.5	0.2
UAE	99	V	300-150	17775	0	0	3.5	0.2
UAL	99	V	300-150	84266	1	1	4.9	0.1
ULC	99	V	300-150	127	0	0	4.2	-0.0
UPS	99	V	300-150	5243	0	0	4.1	0.0
UZB	99	V	300-150	146	16	1	6.4	-0.4
VIR	99	V	300-150	22947	2	0	4.6	0.0
VJT	99	V	300-150	1165	29	0	12.3	0.3
VMP	99	V	300-150	98	0	0	3.8	0.9
VOZ	99	V	300-150	6537	0	0	3.6	0.2
WGT	99	V	300-150	73	0	0	3.1	-0.2
WJA	99	V	300-150	6005	0	0	3.9	0.2
WOW	99	V	300-150	3823	0	0	3.3	0.3
WWI	99	V	300-150	34	0	0	3.6	-0.8
XAX	99	V	300-150	340	0	0	3.1	0.6

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
XLF	99	V	300-150	1377	0	0	3.7	0.4
XRO	99	V	300-150	27	0	0	3.0	1.2

4 EUCOS Area Monitoring Statistics

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

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

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

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RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 :  50 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : SEP 2018
         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	18.7	16.0
01001	12	Z	50	29	10.3	8.4
01028	00	Z	50	30	11.4	6.9
01028	12	Z	50	30	8.4	4.8
01400	12	Z	50	17	83.0	81.4
01400	00	Z	50	20	90.8	88.8
01415	00	Z	50	30	15.6	12.2
01415	12	Z	50	30	13.1	6.0
02365	12	Z	50	27	7.7	5.1
02365	00	Z	50	24	15.5	13.6
02591	12	Z	50	29	13.3	12.1
02591	00	Z	50	28	22.9	22.2
02836	12	Z	50	30	10.8	5.1
02836	00	Z	50	30	14.9	12.1
02963	12	Z	50	26	9.3	7.3
02963	00	Z	50	18	17.5	16.3
03005	00	Z	50	25	11.9	9.0
03005	12	Z	50	30	9.2	4.5
03238	12	Z	50	2	10.5	10.5
03238	00	Z	50	28	19.0	14.3
03808	00	Z	50	26	16.2	15.5
03808	12	Z	50	27	12.7	10.2
03918	12	Z	50	3	17.4	16.7
03918	00	Z	50	30	21.1	17.4
03953	12	Z	50	28	37.8	35.5
03953	00	Z	50	29	31.2	29.3
04018	00	Z	50	31	13.5	11.9
04018	12	Z	50	29	10.7	5.0
04220	12	Z	50	30	6.3	4.1
04220	00	Z	50	30	11.4	9.2
04270	00	Z	50	30	13.6	9.1
04270	12	Z	50	29	12.4	5.7
04320	00	Z	50	30	13.3	10.6
04320	12	Z	50	30	9.0	7.9
04339	00	Z	50	29	16.5	5.3
04339	12	Z	50	28	9.0	5.2
04360	12	Z	50	21	30.4	28.9
04360	00	Z	50	21	29.3	19.8
06011	00	Z	50	27	16.8	7.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	50	27	15.1	10.2
06260	12	Z	50	5	18.6	16.9
06260	00	Z	50	28	18.0	16.1
06610	12	Z	50	30	11.6	10.1
06610	00	Z	50	29	21.7	20.9
07110	12	Z	50	28	20.9	16.6
07110	00	Z	50	29	19.5	18.1
07510	00	Z	50	22	39.8	38.4
07510	12	Z	50	28	31.2	29.5
07645	00	Z	50	28	25.2	22.9
07645	12	Z	50	27	19.2	16.9
07761	00	Z	50	27	34.1	33.3
07761	12	Z	50	28	28.8	27.4
08001	12	Z	50	29	19.6	17.3
08001	00	Z	50	30	23.0	22.4
08221	12	Z	50	30	15.0	13.9
08221	00	Z	50	30	25.8	25.3
08302	12	Z	50	28	13.0	11.1
08302	00	Z	50	28	18.5	17.5
08508	12	Z	50	28	15.2	13.6
08522	12	Z	50	30	19.1	17.4
08579	12	Z	50	28	25.8	23.4
10035	12	Z	50	30	12.8	11.3
10393	12	Z	50	30	10.2	5.9
10393	00	Z	50	30	17.8	16.4
10410	12	Z	50	29	10.4	5.5
10410	00	Z	50	30	13.8	11.9
10739	00	Z	50	30	21.7	20.1
10739	12	Z	50	30	14.4	12.8
11035	00	Z	50	30	25.7	24.9
11035	12	Z	50	28	14.5	13.4
12982	12	Z	50	18	32.5	31.4
12982	00	Z	50	22	23.4	22.1
16080	12	Z	50	30	9.1	5.1
16080	00	Z	50	30	15.0	12.7
16245	12	Z	50	29	13.0	11.1
16245	00	Z	50	27	19.5	18.6
16320	12	Z	50	29	19.3	16.6
16320	00	Z	50	27	26.3	23.3
16429	00	Z	50	30	22.9	22.1
16429	12	Z	50	29	17.4	14.7
16622	00	Z	50	23	34.9	33.8
16754	00	Z	50	24	29.8	29.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	50	27	17.2	14.0
26435	00	Z	50	15	22.7	13.4
5QPW8X	00	Z	50	5	26.4	24.7
5QPW8X	12	Z	50	10	22.7	22.3
60018	00	Z	50	26	24.9	23.9
60018	12	Z	50	27	13.3	11.7
7HCPVT	12	Z	50	1	65.3	65.3
7HCPVT	00	Z	50	2	52.6	52.5
7JUNA4	00	Z	50	6	13.6	11.8
7JUNA4	12	Z	50	8	49.4	46.1
DBLK	00	Z	50	17	17.6	8.1
DBLK	12	Z	50	22	13.6	9.8
FHM5H	00	Z	50	3	8.1	1.4
FHM5H	12	Z	50	1	1.2	1.2
FHM5UJ	00	Z	50	6	13.6	11.3
FHM5UJ	12	Z	50	5	11.3	6.7
FPUW5G	12	Z	50	12	3.9	1.2
GHACC	12	Z	50	8	34.3	30.6
GHACC	00	Z	50	6	17.6	13.1
HTXUH	12	Z	50	1	14.0	14.0
HTXUH	00	Z	50	4	14.3	6.6
HTXUH4	12	Z	50	3	19.6	19.2
HTXUH4	00	Z	50	4	18.9	13.9
SAVA1	12	Z	50	1	40.5	40.5
WDK38H	12	Z	50	6	6.2	2.9
XKQLWQ	12	Z	50	16	44.6	42.5
XQFJRG	12	Z	50	2	28.0	27.9
XQFJRG	00	Z	50	4	23.9	-6.9
XWHDEA	12	Z	50	6	23.9	23.2
XWHDEA	00	Z	50	6	35.1	34.8
ZVQEQC	12	Z	50	0	0.0	0.0
ZVQEQC	00	Z	50	10	22.0	21.2

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

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RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 :  50 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : SEP 2018
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	50	24	3.2	-0.6	-0.5
01001	12	V	50	29	2.9	-0.1	-1.2
01028	00	V	50	24	2.8	-0.1	-0.1
01028	12	V	50	30	2.8	0.5	0.0
01400	12	V	50	17	3.5	0.1	0.0
01400	00	V	50	18	3.5	0.1	-0.6
01415	00	V	50	23	3.3	0.8	-0.7
01415	12	V	50	30	3.8	0.5	-0.3
02365	12	V	50	27	2.8	-0.2	0.1
02365	00	V	50	16	2.2	0.3	0.1
02591	12	V	50	29	3.6	-0.5	0.4
02591	00	V	50	22	3.2	0.6	0.3
02836	12	V	50	30	3.5	-0.2	0.1
02836	00	V	50	25	2.9	0.8	0.0
02963	12	V	50	23	3.0	0.7	-0.3
02963	00	V	50	13	3.4	-0.2	0.7
03005	00	V	50	17	3.3	1.1	-0.7
03005	12	V	50	30	3.7	-0.1	0.4
03238	12	V	50	2	2.4	-1.7	-0.6
03238	00	V	50	22	4.5	1.1	-0.4
03808	00	V	50	19	3.7	0.6	-0.5
03808	12	V	50	27	3.3	0.0	-0.3
03918	12	V	50	3	4.8	3.9	-2.2
03918	00	V	50	24	3.8	0.0	0.2
03953	12	V	50	28	3.7	0.5	0.0
03953	00	V	50	24	3.8	0.1	0.2
04018	00	V	50	26	3.2	0.5	-0.2
04018	12	V	50	29	3.2	0.6	0.5
04220	12	V	50	30	2.7	0.0	-0.3
04220	00	V	50	24	2.8	0.1	-0.1
04270	00	V	50	27	4.0	-0.9	1.0
04270	12	V	50	28	4.2	-1.2	-0.2
04320	00	V	50	24	2.4	-0.1	0.0
04320	12	V	50	30	2.8	0.5	-0.4
04339	00	V	50	20	3.0	0.8	-0.7
04339	12	V	50	27	3.9	0.0	-0.3
04360	12	V	50	21	3.6	-0.7	0.3
04360	00	V	50	19	3.4	0.4	-0.2
06011	00	V	50	22	3.4	1.1	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	50	27	3.2	-0.2	1.0
06260	12	V	50	5	3.8	-0.8	0.9
06260	00	V	50	21	3.5	0.8	0.1
06610	12	V	50	30	3.1	-0.4	0.4
06610	00	V	50	21	4.0	0.4	0.9
07110	12	V	50	28	3.6	0.1	-0.3
07110	00	V	50	22	2.8	-0.1	0.7
07510	00	V	50	19	2.8	0.3	-0.3
07510	12	V	50	28	3.5	0.2	-0.4
07645	00	V	50	23	3.5	0.3	-0.2
07645	12	V	50	27	3.1	0.3	-0.1
07761	00	V	50	21	3.0	0.1	0.0
07761	12	V	50	28	3.5	0.3	0.3
08001	12	V	50	27	3.4	0.3	-0.1
08001	00	V	50	24	3.8	-0.5	0.7
08221	12	V	50	30	3.5	0.2	0.0
08221	00	V	50	24	3.1	0.1	1.0
08302	12	V	50	27	4.2	0.5	0.1
08302	00	V	50	23	3.6	0.2	-0.3
08508	12	V	50	28	3.3	0.3	-0.1
08522	12	V	50	30	3.6	0.3	0.5
08579	12	V	50	26	4.0	1.7	0.4
10035	12	V	50	30	3.6	0.1	-0.4
10393	12	V	50	30	3.5	0.3	-0.1
10393	00	V	50	25	3.5	0.3	-0.1
10410	12	V	50	29	3.4	-0.1	-0.3
10410	00	V	50	30	3.6	0.1	-0.2
10739	00	V	50	30	3.4	0.9	-0.4
10739	12	V	50	30	3.4	0.6	0.0
11035	00	V	50	26	3.4	0.3	0.4
11035	12	V	50	28	3.0	0.5	-0.2
12982	12	V	50	18	3.1	-0.2	-1.0
12982	00	V	50	18	2.8	0.8	0.2
16080	12	V	50	30	3.0	0.4	0.9
16080	00	V	50	24	3.0	-0.1	0.1
16245	12	V	50	29	3.1	0.2	0.2
16245	00	V	50	22	4.3	0.8	0.7
16320	12	V	50	28	3.6	0.8	1.1
16320	00	V	50	23	2.9	0.5	-0.3
16429	00	V	50	22	4.3	1.2	-0.4
16429	12	V	50	28	3.7	0.4	0.4
16622	00	V	50	12	4.0	1.1	0.9
16754	00	V	50	16	3.3	0.4	0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	50	4	2.4	1.2	0.3
26435	00	V	50	14	3.5	0.4	0.5
5QPW8X	00	V	50	4	2.8	-0.2	-1.6
5QPW8X	12	V	50	8	3.7	-0.2	0.9
60018	00	V	50	19	3.8	-0.1	1.0
60018	12	V	50	27	3.5	-0.1	0.0
7HCPVT	12	V	50	1	4.4	1.6	-4.1
7HCPVT	00	V	50	2	2.9	-1.4	0.3
7JUNA4	00	V	50	6	3.4	0.0	0.8
7JUNA4	12	V	50	8	2.2	0.3	-0.4
DBLK	00	V	50	17	3.0	-0.5	0.2
DBLK	12	V	50	22	3.0	-0.4	0.1
FHM5H	00	V	50	3	2.7	1.9	1.0
FHM5H	12	V	50	1	1.3	-0.6	1.1
FHM5UJ	00	V	50	6	2.6	0.9	1.2
FHM5UJ	12	V	50	4	3.2	-1.2	1.1
FPUW5G	12	V	50	12	2.0	-0.6	0.4
GHACC	12	V	50	6	4.6	1.5	-0.4
GHACC	00	V	50	6	3.7	-0.8	0.0
HTXUH	12	V	50	1	2.6	1.0	2.4
HTXUH	00	V	50	2	3.5	-3.2	-0.7
HTXUH4	12	V	50	3	2.1	0.8	0.3
HTXUH4	00	V	50	2	3.7	-3.5	-0.1
SAVA1	12	V	50	0	0.0	0.0	0.0
WDK38H	12	V	50	6	2.3	0.6	1.1
XKQLWQ	12	V	50	16	3.4	0.9	-0.8
XQFJRG	12	V	50	2	1.4	0.3	1.1
XQFJRG	00	V	50	4	2.6	0.8	1.6
XWHDEA	12	V	50	6	3.4	0.3	-1.1
XWHDEA	00	V	50	6	2.7	0.6	1.1
ZVQEQC	12	V	50	0	0.0	0.0	0.0
ZVQEQC	00	V	50	10	2.6	0.2	0.0

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                : SEP 2018
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	100	29	10.0	4.0
01001	12	Z	100	29	5.3	-1.7
01028	00	Z	100	30	7.6	-3.6
01028	12	Z	100	30	7.1	-4.4
01400	12	Z	100	18	76.2	74.3
01400	00	Z	100	23	80.6	78.9
01415	00	Z	100	30	8.2	4.0
01415	12	Z	100	30	13.5	-2.7
02365	12	Z	100	27	6.3	-4.0
02365	00	Z	100	29	5.7	3.0
02591	12	Z	100	29	6.8	5.3
02591	00	Z	100	29	13.0	11.3
02836	12	Z	100	30	7.6	-3.0
02836	00	Z	100	30	7.8	1.7
02963	12	Z	100	30	5.4	-1.4
02963	00	Z	100	30	6.8	3.7
03005	00	Z	100	25	4.5	0.0
03005	12	Z	100	30	8.0	-5.1
03238	12	Z	100	2	2.2	-1.1
03238	00	Z	100	28	10.6	5.0
03808	00	Z	100	26	7.3	5.9
03808	12	Z	100	29	5.7	1.2
03918	12	Z	100	3	7.8	5.5
03918	00	Z	100	30	11.1	5.8
03953	12	Z	100	28	20.6	18.0
03953	00	Z	100	29	16.3	14.5
04018	00	Z	100	30	5.4	1.0
04018	12	Z	100	29	7.7	-3.2
04220	12	Z	100	30	4.4	-2.2
04220	00	Z	100	30	4.1	0.5
04270	00	Z	100	30	8.1	-0.4
04270	12	Z	100	29	10.4	-1.4
04320	00	Z	100	30	5.6	-0.6
04320	12	Z	100	30	3.3	-0.6
04339	00	Z	100	29	10.0	-4.3
04339	12	Z	100	28	6.6	-3.9
04360	12	Z	100	25	24.3	22.2
04360	00	Z	100	23	23.3	17.8
06011	00	Z	100	29	11.2	-0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	100	27	8.2	0.1
06260	12	Z	100	5	7.4	4.2
06260	00	Z	100	28	7.6	4.7
06610	12	Z	100	30	4.8	1.6
06610	00	Z	100	30	8.7	8.1
07110	12	Z	100	28	10.0	4.1
07110	00	Z	100	30	8.5	4.9
07510	00	Z	100	29	20.1	18.7
07510	12	Z	100	30	18.1	16.0
07645	00	Z	100	29	10.8	8.1
07645	12	Z	100	27	6.9	4.5
07761	00	Z	100	29	16.2	15.2
07761	12	Z	100	30	16.0	14.2
08001	12	Z	100	30	6.9	4.0
08001	00	Z	100	30	9.9	8.6
08221	12	Z	100	30	6.6	5.4
08221	00	Z	100	30	13.7	12.9
08302	12	Z	100	30	4.3	0.3
08302	00	Z	100	29	9.2	7.3
08508	12	Z	100	28	9.9	8.1
08522	12	Z	100	30	9.0	7.3
08579	12	Z	100	28	11.7	8.6
10035	12	Z	100	30	5.9	2.8
10393	12	Z	100	30	6.5	-1.5
10393	00	Z	100	30	8.1	4.8
10410	12	Z	100	29	6.6	-2.9
10410	00	Z	100	30	5.3	1.9
10739	00	Z	100	30	11.9	9.4
10739	12	Z	100	30	7.7	5.8
11035	00	Z	100	30	14.3	12.9
11035	12	Z	100	28	7.7	4.7
12982	12	Z	100	19	16.5	15.4
12982	00	Z	100	22	12.2	10.6
16080	12	Z	100	30	6.5	-3.0
16080	00	Z	100	30	7.1	1.8
16245	12	Z	100	30	5.8	-0.1
16245	00	Z	100	30	9.6	7.8
16320	12	Z	100	29	9.7	6.2
16320	00	Z	100	28	15.1	12.3
16429	00	Z	100	30	11.4	10.0
16429	12	Z	100	30	8.3	2.5
16622	00	Z	100	29	18.5	17.6
16754	00	Z	100	29	16.7	15.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	100	27	8.0	1.7
26435	00	Z	100	15	17.8	3.8
5QPW8X	00	Z	100	7	18.3	17.2
5QPW8X	12	Z	100	11	13.9	13.1
60018	00	Z	100	26	16.3	15.4
60018	12	Z	100	27	7.9	6.7
7HCPVT	12	Z	100	1	34.9	34.9
7HCPVT	00	Z	100	2	34.0	33.9
7JUNA4	00	Z	100	9	15.1	3.0
7JUNA4	12	Z	100	10	21.2	16.5
DBLK	00	Z	100	17	15.6	-2.0
DBLK	12	Z	100	22	6.5	0.3
FHM5H	00	Z	100	3	8.2	-2.1
FHM5H	12	Z	100	2	47.5	-35.7
FHM5UJ	00	Z	100	7	4.9	-0.4
FHM5UJ	12	Z	100	7	24.7	-12.1
FPUW5G	12	Z	100	14	9.9	-9.5
GHACC	12	Z	100	13	23.0	19.5
GHACC	00	Z	100	9	14.5	10.3
HTXUH	12	Z	100	1	4.3	-4.3
HTXUH	00	Z	100	4	7.4	1.1
HTXUH4	12	Z	100	3	11.1	9.5
HTXUH4	00	Z	100	4	9.4	8.1
SAVA1	12	Z	100	1	3.0	3.0
WDK38H	12	Z	100	9	7.8	-7.5
XKQLWQ	12	Z	100	16	30.2	26.9
XQFJRG	12	Z	100	4	14.3	10.9
XQFJRG	00	Z	100	4	20.5	-10.3
XWHDEA	12	Z	100	6	19.7	17.9
XWHDEA	00	Z	100	6	15.3	14.6
ZVQEQC	12	Z	100	1	5.1	5.1
ZVQEQC	00	Z	100	14	12.2	11.0

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 100 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : SEP 2018
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	100	24	2.5	0.3	0.2
01001	12	V	100	29	2.8	-0.3	-0.2
01028	00	V	100	24	2.2	-0.1	0.3
01028	12	V	100	30	2.9	-0.5	-0.9
01400	12	V	100	18	3.0	-0.1	0.0
01400	00	V	100	19	2.9	0.2	0.4
01415	00	V	100	24	4.0	-0.6	-0.7
01415	12	V	100	30	3.9	0.3	-0.7
02365	12	V	100	27	2.8	0.9	0.0
02365	00	V	100	25	3.6	-0.1	-0.6
02591	12	V	100	29	3.2	1.0	0.7
02591	00	V	100	23	3.6	0.3	0.3
02836	12	V	100	30	2.9	0.6	-0.4
02836	00	V	100	25	2.6	0.0	0.5
02963	12	V	100	30	3.4	0.6	0.7
02963	00	V	100	23	3.7	0.0	-0.6
03005	00	V	100	18	3.0	0.5	-0.7
03005	12	V	100	30	3.6	1.0	-1.2
03238	12	V	100	2	4.8	2.2	-2.1
03238	00	V	100	22	4.1	-0.1	-0.6
03808	00	V	100	19	3.1	-0.4	0.6
03808	12	V	100	29	4.0	-0.3	-0.1
03918	12	V	100	3	3.9	-1.7	-0.2
03918	00	V	100	24	3.1	0.7	0.0
03953	12	V	100	28	2.9	-0.1	-0.1
03953	00	V	100	24	2.9	-0.1	0.7
04018	00	V	100	28	3.7	0.1	0.4
04018	12	V	100	29	4.0	-0.4	0.1
04220	12	V	100	30	2.3	0.3	0.0
04220	00	V	100	26	2.7	0.4	0.4
04270	00	V	100	30	4.5	0.2	0.4
04270	12	V	100	29	4.2	-0.5	0.1
04320	00	V	100	28	3.5	0.9	-0.7
04320	12	V	100	30	3.0	-0.5	-0.1
04339	00	V	100	25	3.0	0.2	-0.4
04339	12	V	100	28	2.5	-0.8	0.3
04360	12	V	100	25	3.3	-0.1	0.0
04360	00	V	100	20	2.9	-0.9	-0.6
06011	00	V	100	22	3.7	0.5	0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	100	27	3.0	0.0	0.0
06260	12	V	100	5	3.6	1.2	0.1
06260	00	V	100	21	3.5	0.4	-0.4
06610	12	V	100	30	3.0	0.1	0.4
06610	00	V	100	29	3.3	-0.2	-0.3
07110	12	V	100	28	3.1	0.2	-0.9
07110	00	V	100	23	3.0	0.3	0.3
07510	00	V	100	25	2.8	0.1	0.3
07510	12	V	100	30	2.9	-0.5	0.4
07645	00	V	100	24	3.8	-0.2	-0.1
07645	12	V	100	27	2.7	0.1	0.2
07761	00	V	100	23	3.7	0.8	0.4
07761	12	V	100	30	3.5	-0.8	-0.3
08001	12	V	100	30	3.3	1.0	0.9
08001	00	V	100	24	2.9	-0.3	0.0
08221	12	V	100	30	3.0	0.3	-0.5
08221	00	V	100	24	3.7	0.1	-0.9
08302	12	V	100	30	4.1	0.6	0.0
08302	00	V	100	24	4.0	0.2	1.3
08508	12	V	100	28	2.9	-0.4	0.0
08522	12	V	100	29	4.0	0.5	-0.6
08579	12	V	100	28	3.4	0.7	0.3
10035	12	V	100	30	3.3	0.7	0.0
10393	12	V	100	30	3.5	0.4	0.2
10393	00	V	100	30	3.1	0.1	-0.2
10410	12	V	100	29	3.2	-0.2	0.2
10410	00	V	100	30	3.3	0.3	-0.1
10739	00	V	100	30	3.1	0.2	0.8
10739	12	V	100	30	3.2	0.0	-0.7
11035	00	V	100	25	3.5	0.2	0.4
11035	12	V	100	28	3.0	0.5	-0.7
12982	12	V	100	19	2.5	0.5	-0.3
12982	00	V	100	19	3.6	0.1	0.2
16080	12	V	100	30	3.0	0.0	0.2
16080	00	V	100	26	2.6	0.9	-0.6
16245	12	V	100	30	3.4	-0.6	0.3
16245	00	V	100	25	3.3	-0.3	0.0
16320	12	V	100	29	3.5	0.1	-0.2
16320	00	V	100	25	2.9	0.3	-0.2
16429	00	V	100	25	3.0	0.1	0.3
16429	12	V	100	30	3.4	-0.3	-0.9
16622	00	V	100	24	3.4	1.6	0.2
16754	00	V	100	22	4.3	-0.1	0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	100	3	3.0	2.7	0.5
26435	00	V	100	15	2.7	0.1	0.1
5QPW8X	00	V	100	7	2.5	-0.1	-0.5
5QPW8X	12	V	100	10	2.8	1.2	1.1
60018	00	V	100	19	3.0	-1.0	0.8
60018	12	V	100	27	4.3	0.4	0.1
7HCPVT	12	V	100	1	3.3	1.1	-3.1
7HCPVT	00	V	100	2	3.5	0.8	-0.5
7JUNA4	00	V	100	9	2.9	-0.1	-0.2
7JUNA4	12	V	100	10	2.5	-0.8	1.0
DBLK	00	V	100	17	2.3	-0.4	-0.3
DBLK	12	V	100	22	2.5	0.1	-0.1
FHM5H	00	V	100	3	5.5	-2.7	-0.5
FHM5H	12	V	100	1	2.1	2.0	-0.5
FHM5UJ	00	V	100	7	3.8	-0.4	-1.0
FHM5UJ	12	V	100	6	3.2	-1.1	1.6
FPUW5G	12	V	100	13	1.6	0.2	0.1
GHACC	12	V	100	7	4.7	0.2	2.2
GHACC	00	V	100	9	4.9	-1.5	-0.1
HTXUH	12	V	100	1	2.5	2.3	1.1
HTXUH	00	V	100	4	3.4	1.1	0.7
HTXUH4	12	V	100	3	3.9	0.6	-1.7
HTXUH4	00	V	100	4	3.2	1.1	0.8
SAVA1	12	V	100	1	3.7	3.1	-2.0
WDK38H	12	V	100	7	2.1	-0.2	0.0
XKQLWQ	12	V	100	16	3.3	-0.4	-0.2
XQFJRG	12	V	100	4	2.3	0.5	-0.3
XQFJRG	00	V	100	4	1.4	-0.6	-0.5
XWHDEA	12	V	100	6	3.6	1.7	-1.9
XWHDEA	00	V	100	6	2.5	0.2	1.3
ZVQEQC	12	V	100	1	0.3	-0.1	0.3
ZVQEQC	00	V	100	14	2.8	0.2	-0.4

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 500 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : SEP 2018
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	500	30	8.1	2.3
01001	12	Z	500	30	4.1	-1.7
01028	00	Z	500	30	4.1	-1.7
01028	12	Z	500	30	5.6	-4.0
01400	12	Z	500	19	76.3	75.1
01400	00	Z	500	24	77.9	76.5
01415	00	Z	500	30	5.0	3.7
01415	12	Z	500	30	6.7	1.2
02365	12	Z	500	30	3.8	-1.3
02365	00	Z	500	29	3.5	1.1
02591	12	Z	500	30	8.8	8.7
02591	00	Z	500	30	9.4	8.5
02836	12	Z	500	30	3.0	0.7
02836	00	Z	500	30	3.6	1.4
02963	12	Z	500	30	3.0	1.4
02963	00	Z	500	30	4.4	3.0
03005	00	Z	500	25	4.1	-2.6
03005	12	Z	500	30	6.0	-4.6
03238	12	Z	500	2	0.9	-0.3
03238	00	Z	500	28	4.7	3.3
03808	00	Z	500	26	3.6	2.8
03808	12	Z	500	29	2.8	2.0
03918	12	Z	500	3	7.7	7.3
03918	00	Z	500	30	7.1	6.1
03953	12	Z	500	29	10.4	6.8
03953	00	Z	500	29	8.4	3.9
04018	00	Z	500	30	3.5	-0.3
04018	12	Z	500	29	4.4	-2.6
04220	12	Z	500	30	3.0	-1.8
04220	00	Z	500	30	2.7	0.1
04270	00	Z	500	30	4.7	-1.5
04270	12	Z	500	30	6.3	-3.1
04320	00	Z	500	30	3.3	-0.6
04320	12	Z	500	30	3.4	-1.0
04339	00	Z	500	30	4.2	-2.7
04339	12	Z	500	30	6.0	-3.3
04360	12	Z	500	25	32.2	31.8
04360	00	Z	500	25	33.5	32.3
06011	00	Z	500	30	5.3	1.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	500	27	6.1	1.0
06260	12	Z	500	5	3.1	2.9
06260	00	Z	500	28	4.4	3.0
06610	12	Z	500	30	2.9	2.0
06610	00	Z	500	31	5.9	5.3
07110	12	Z	500	30	4.9	2.2
07110	00	Z	500	30	5.0	-1.6
07510	00	Z	500	30	12.6	9.9
07510	12	Z	500	30	13.1	11.1
07645	00	Z	500	29	5.0	-0.3
07645	12	Z	500	27	3.5	2.3
07761	00	Z	500	29	5.4	4.3
07761	12	Z	500	30	6.6	5.2
08001	12	Z	500	30	4.4	3.6
08001	00	Z	500	30	5.3	4.9
08221	12	Z	500	30	6.0	5.4
08221	00	Z	500	30	7.8	7.3
08302	12	Z	500	30	3.3	-1.0
08302	00	Z	500	29	3.4	1.5
08508	12	Z	500	29	8.6	7.5
08522	12	Z	500	30	6.3	5.9
08579	12	Z	500	28	7.0	5.4
10035	12	Z	500	30	6.1	5.1
10393	12	Z	500	30	2.0	0.8
10393	00	Z	500	30	3.5	1.8
10410	12	Z	500	29	2.0	-0.7
10410	00	Z	500	30	3.1	1.9
10739	00	Z	500	30	7.0	5.7
10739	12	Z	500	30	5.5	4.8
11035	00	Z	500	30	10.9	10.2
11035	12	Z	500	28	7.9	7.3
12982	12	Z	500	20	7.5	6.8
12982	00	Z	500	22	7.7	6.7
16080	12	Z	500	30	5.1	-3.0
16080	00	Z	500	30	4.4	-0.6
16245	12	Z	500	30	3.7	-2.2
16245	00	Z	500	30	3.3	0.9
16320	12	Z	500	30	8.2	6.0
16320	00	Z	500	30	9.5	6.8
16429	00	Z	500	30	5.7	2.8
16429	12	Z	500	31	7.1	3.0
16622	00	Z	500	30	10.6	10.2
16754	00	Z	500	30	5.6	4.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	500	28	4.1	3.3
26435	00	Z	500	15	19.8	7.9
5QPW8X	00	Z	500	10	19.2	18.3
5QPW8X	12	Z	500	12	18.0	16.9
60018	00	Z	500	26	5.9	5.0
60018	12	Z	500	27	5.5	4.7
7HCPVT	12	Z	500	2	23.6	23.2
7HCPVT	00	Z	500	4	14.2	13.9
7JUNA4	00	Z	500	9	11.4	4.0
7JUNA4	12	Z	500	10	10.3	1.3
DBLK	00	Z	500	18	14.7	-3.2
DBLK	12	Z	500	25	3.2	1.0
FHM5H	00	Z	500	3	5.9	-5.8
FHM5H	12	Z	500	3	42.4	-23.3
FHM5UJ	00	Z	500	7	3.6	1.0
FHM5UJ	12	Z	500	8	24.5	-8.9
FPUW5G	12	Z	500	14	7.0	-6.3
GHACC	12	Z	500	14	8.8	7.1
GHACC	00	Z	500	9	4.2	1.8
HTXUH	12	Z	500	1	5.8	5.8
HTXUH	00	Z	500	4	18.1	15.2
HTXUH4	12	Z	500	3	6.8	5.8
HTXUH4	00	Z	500	4	15.8	12.8
SAVA1	12	Z	500	1	4.8	4.8
WDK38H	12	Z	500	19	12.4	-11.1
XKQLWQ	12	Z	500	17	21.8	17.3
XQFJRG	12	Z	500	8	15.6	-1.6
XQFJRG	00	Z	500	4	6.8	-4.3
XWHDEA	12	Z	500	7	2.4	1.6
XWHDEA	00	Z	500	6	1.7	-0.1
ZVQEQC	12	Z	500	1	2.3	2.3
ZVQEQC	00	Z	500	14	5.2	4.0

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 500 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : SEP 2018
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	500	30	2.5	0.3	0.0
01001	12	V	500	30	2.2	0.3	0.1
01028	00	V	500	30	2.8	0.0	-0.4
01028	12	V	500	30	2.5	0.4	-0.5
01400	12	V	500	19	2.5	0.4	-0.2
01400	00	V	500	23	2.8	0.3	0.6
01415	00	V	500	29	4.0	0.7	0.3
01415	12	V	500	30	3.8	0.4	-0.1
02365	12	V	500	30	2.8	0.3	0.4
02365	00	V	500	29	3.8	0.8	-0.1
02591	12	V	500	30	2.7	0.7	-0.1
02591	00	V	500	30	2.3	0.6	0.6
02836	12	V	500	30	2.9	0.1	0.6
02836	00	V	500	30	2.6	0.4	-0.2
02963	12	V	500	30	3.0	0.1	-0.7
02963	00	V	500	30	2.5	0.6	0.0
03005	00	V	500	24	3.0	-0.3	-0.3
03005	12	V	500	30	3.3	-0.1	0.8
03238	12	V	500	2	2.3	1.4	0.4
03238	00	V	500	28	3.0	0.2	1.1
03808	00	V	500	26	2.7	0.5	0.3
03808	12	V	500	29	3.0	0.5	0.3
03918	12	V	500	3	1.7	1.0	0.2
03918	00	V	500	30	3.3	0.5	0.2
03953	12	V	500	29	3.3	0.5	0.1
03953	00	V	500	29	3.7	0.5	0.6
04018	00	V	500	30	2.8	0.7	-0.2
04018	12	V	500	29	3.3	0.6	0.7
04220	12	V	500	30	2.8	0.2	0.9
04220	00	V	500	30	2.3	-0.6	-0.1
04270	00	V	500	30	3.0	-0.3	0.2
04270	12	V	500	30	4.2	-0.8	0.2
04320	00	V	500	30	2.3	0.3	0.0
04320	12	V	500	30	2.5	-0.8	0.0
04339	00	V	500	30	2.3	0.6	-0.3
04339	12	V	500	29	3.0	-0.1	0.3
04360	12	V	500	25	3.7	-0.3	-0.1
04360	00	V	500	25	2.9	-0.8	1.3
06011	00	V	500	30	4.0	-1.2	-0.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	500	27	3.3	-0.2	-0.1
06260	12	V	500	5	2.9	0.1	1.4
06260	00	V	500	28	2.5	0.3	0.3
06610	12	V	500	30	2.5	0.6	-0.6
06610	00	V	500	30	2.7	0.2	0.0
07110	12	V	500	30	2.2	-0.3	-0.3
07110	00	V	500	30	2.3	0.1	0.5
07510	00	V	500	30	2.3	-0.5	0.0
07510	12	V	500	30	2.6	-0.5	0.6
07645	00	V	500	29	2.4	-0.7	0.5
07645	12	V	500	27	1.7	0.4	0.0
07761	00	V	500	29	2.4	0.1	-0.1
07761	12	V	500	30	3.1	-0.1	0.1
08001	12	V	500	30	2.5	0.2	0.1
08001	00	V	500	29	2.6	0.0	0.3
08221	12	V	500	30	2.5	0.9	0.5
08221	00	V	500	30	2.5	-0.8	0.1
08302	12	V	500	30	3.2	-0.3	-0.2
08302	00	V	500	29	3.4	1.0	-1.4
08508	12	V	500	29	2.8	0.5	-0.5
08522	12	V	500	30	2.5	0.0	-0.1
08579	12	V	500	28	1.8	-0.2	-0.1
10035	12	V	500	30	2.6	0.7	-0.4
10393	12	V	500	30	2.6	0.6	0.3
10393	00	V	500	30	2.1	0.1	0.0
10410	12	V	500	29	2.2	0.3	-0.1
10410	00	V	500	30	2.5	0.7	0.3
10739	00	V	500	30	2.4	0.3	-0.1
10739	12	V	500	30	2.1	0.0	-0.5
11035	00	V	500	30	3.2	0.6	-0.3
11035	12	V	500	28	2.3	0.3	-0.1
12982	12	V	500	20	2.2	0.2	-0.5
12982	00	V	500	21	2.3	0.3	-0.2
16080	12	V	500	30	2.3	0.6	-0.1
16080	00	V	500	30	3.1	0.3	-0.4
16245	12	V	500	30	2.2	-0.4	0.3
16245	00	V	500	30	2.6	-0.1	-0.6
16320	12	V	500	30	2.8	-0.2	-0.2
16320	00	V	500	30	2.6	0.2	0.3
16429	00	V	500	30	3.1	0.0	0.0
16429	12	V	500	30	3.4	1.0	-0.4
16622	00	V	500	30	2.5	-0.5	-0.1
16754	00	V	500	28	2.3	0.4	0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	500	7	3.2	1.4	-1.4
26435	00	V	500	15	2.1	0.4	0.2
5QPW8X	00	V	500	10	3.1	-0.5	-0.2
5QPW8X	12	V	500	12	2.9	-0.2	-0.7
60018	00	V	500	26	2.8	0.3	-0.4
60018	12	V	500	27	2.5	0.5	-0.7
7HCPVT	12	V	500	2	2.2	1.3	0.9
7HCPVT	00	V	500	4	1.4	-0.1	0.1
7JUNA4	00	V	500	9	2.6	0.4	-0.3
7JUNA4	12	V	500	10	2.1	-0.6	0.0
DBLK	00	V	500	18	2.0	0.1	-0.8
DBLK	12	V	500	25	2.4	-0.2	0.3
FHM5H	00	V	500	3	3.4	0.7	2.5
FHM5H	12	V	500	3	3.4	-2.4	0.9
FHM5UJ	00	V	500	7	2.1	0.1	0.7
FHM5UJ	12	V	500	8	1.6	-0.2	0.0
FPUW5G	12	V	500	14	1.8	0.6	0.0
GHACC	12	V	500	8	2.0	0.0	-0.6
GHACC	00	V	500	9	2.7	1.3	-1.1
HTXUH	12	V	500	1	0.6	0.5	-0.3
HTXUH	00	V	500	4	2.7	1.8	-0.4
HTXUH4	12	V	500	3	2.8	-0.1	-0.4
HTXUH4	00	V	500	4	2.9	0.5	-1.0
SAVA1	12	V	500	1	0.6	0.1	0.6
WDK38H	12	V	500	19	2.4	-0.2	-0.2
XKQLWQ	12	V	500	17	1.8	0.0	0.2
XQFJRG	12	V	500	8	2.9	-0.7	-0.1
XQFJRG	00	V	500	4	4.0	0.3	-0.2
XWHDEA	12	V	500	7	2.4	-0.6	-0.6
XWHDEA	00	V	500	6	3.1	0.7	-0.5
ZVQEQC	12	V	500	1	1.7	0.7	1.6
ZVQEQC	00	V	500	14	2.5	0.0	-0.4

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                : SEP 2018
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	850	30	6.3	0.6
01001	12	Z	850	30	4.3	-1.0
01028	00	Z	850	30	3.8	-1.7
01028	12	Z	850	30	3.6	-2.0
01400	12	Z	850	19	77.2	76.2
01400	00	Z	850	24	78.2	76.6
01415	00	Z	850	30	5.8	4.8
01415	12	Z	850	30	4.1	3.1
02365	12	Z	850	30	3.1	1.9
02365	00	Z	850	29	3.1	2.4
02591	12	Z	850	30	9.0	8.5
02591	00	Z	850	30	10.2	10.0
02836	12	Z	850	30	2.3	1.7
02836	00	Z	850	30	3.8	3.1
02963	12	Z	850	30	4.1	3.7
02963	00	Z	850	30	4.3	3.9
03005	00	Z	850	25	2.7	-1.2
03005	12	Z	850	30	3.4	-1.9
03238	12	Z	850	2	5.8	5.4
03238	00	Z	850	28	3.2	2.5
03808	00	Z	850	26	2.5	1.7
03808	12	Z	850	29	2.7	1.7
03918	12	Z	850	3	5.0	5.0
03918	00	Z	850	30	6.2	5.9
03953	12	Z	850	29	5.7	4.0
03953	00	Z	850	29	4.3	3.3
04018	00	Z	850	30	2.9	-0.1
04018	12	Z	850	29	3.7	-2.3
04220	12	Z	850	30	3.3	1.6
04220	00	Z	850	30	3.0	2.0
04270	00	Z	850	30	3.7	1.3
04270	12	Z	850	30	3.7	0.3
04320	00	Z	850	30	2.2	0.8
04320	12	Z	850	30	2.5	0.3
04339	00	Z	850	30	3.4	-0.5
04339	12	Z	850	30	4.5	-1.7
04360	12	Z	850	25	40.2	40.0
04360	00	Z	850	25	40.3	39.9
06011	00	Z	850	30	5.2	3.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	850	28	4.3	3.1
06260	12	Z	850	5	1.4	1.3
06260	00	Z	850	28	3.0	1.7
06610	12	Z	850	31	2.1	1.5
06610	00	Z	850	31	4.3	3.7
07110	12	Z	850	30	3.0	0.5
07110	00	Z	850	30	2.8	-0.8
07510	00	Z	850	30	11.5	8.0
07510	12	Z	850	30	10.7	7.9
07645	00	Z	850	29	2.4	-0.5
07645	12	Z	850	27	1.9	-0.2
07761	00	Z	850	30	9.3	4.1
07761	12	Z	850	30	3.6	2.5
08001	12	Z	850	30	2.1	0.7
08001	00	Z	850	30	2.1	1.5
08221	12	Z	850	30	4.3	3.8
08221	00	Z	850	30	5.0	4.5
08302	12	Z	850	30	3.8	-1.5
08302	00	Z	850	29	3.0	-1.2
08508	12	Z	850	29	6.1	4.3
08522	12	Z	850	30	4.4	4.1
08579	12	Z	850	28	4.4	3.3
10035	12	Z	850	30	5.6	5.4
10393	12	Z	850	30	2.1	1.1
10393	00	Z	850	30	2.3	1.1
10410	12	Z	850	30	2.2	-1.1
10410	00	Z	850	30	1.9	0.5
10739	00	Z	850	30	5.3	5.0
10739	12	Z	850	30	4.5	3.9
11035	00	Z	850	30	10.6	10.1
11035	12	Z	850	28	8.7	8.1
12982	12	Z	850	20	7.1	6.8
12982	00	Z	850	22	6.7	6.4
16080	12	Z	850	30	3.6	-2.4
16080	00	Z	850	30	2.6	-0.5
16245	12	Z	850	30	3.2	-2.0
16245	00	Z	850	30	2.2	0.0
16320	12	Z	850	30	7.8	5.6
16320	00	Z	850	30	10.3	6.9
16429	00	Z	850	30	3.8	2.2
16429	12	Z	850	31	3.3	1.9
16622	00	Z	850	30	10.2	9.8
16754	00	Z	850	30	3.8	3.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	850	30	2.8	1.8
26435	00	Z	850	15	20.4	8.1
5QPW8X	00	Z	850	10	21.9	21.0
5QPW8X	12	Z	850	12	23.0	22.8
60018	00	Z	850	26	2.2	0.3
60018	12	Z	850	27	3.7	2.7
7HCPVT	12	Z	850	2	19.8	18.0
7HCPVT	00	Z	850	4	9.7	9.1
7JUNA4	00	Z	850	9	11.6	5.2
7JUNA4	12	Z	850	11	8.9	-1.5
DBLK	00	Z	850	18	15.1	0.7
DBLK	12	Z	850	25	6.6	4.4
FHM5H	00	Z	850	3	5.6	5.0
FHM5H	12	Z	850	3	41.4	-20.8
FHM5UJ	00	Z	850	7	5.7	4.8
FHM5UJ	12	Z	850	9	24.5	-6.8
FPUW5G	12	Z	850	14	8.4	-7.7
GHACC	12	Z	850	14	6.2	2.6
GHACC	00	Z	850	9	3.5	-2.4
HTXUH	12	Z	850	1	2.3	-2.3
HTXUH	00	Z	850	4	18.5	16.7
HTXUH4	12	Z	850	3	8.2	7.3
HTXUH4	00	Z	850	4	17.3	11.6
SAVA1	12	Z	850	1	4.8	4.8
WDK38H	12	Z	850	19	9.8	-9.0
XKQLWQ	12	Z	850	17	18.9	12.5
XQFJRG	12	Z	850	9	15.3	-4.4
XQFJRG	00	Z	850	4	8.6	-8.4
XWHDEA	12	Z	850	7	3.4	-3.2
XWHDEA	00	Z	850	6	3.4	-2.5
ZVQEQC	12	Z	850	1	2.8	-2.8
ZVQEQC	00	Z	850	14	2.9	0.4

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                : SEP 2018
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	850	30	4.2	1.1	0.5
01001	12	V	850	30	3.4	0.4	0.7
01028	00	V	850	30	2.5	-0.1	0.5
01028	12	V	850	30	2.3	0.3	-0.3
01400	12	V	850	19	2.0	0.2	0.1
01400	00	V	850	23	3.3	0.9	0.0
01415	00	V	850	29	3.3	0.4	0.4
01415	12	V	850	30	2.5	0.3	0.4
02365	12	V	850	30	3.5	0.4	-0.7
02365	00	V	850	29	2.9	0.1	-0.3
02591	12	V	850	30	2.5	0.5	-0.1
02591	00	V	850	30	2.5	0.0	-0.3
02836	12	V	850	30	3.1	0.3	-0.2
02836	00	V	850	30	3.2	-0.4	-0.1
02963	12	V	850	30	2.4	0.2	0.4
02963	00	V	850	30	2.1	0.7	0.0
03005	00	V	850	24	2.4	-0.5	0.8
03005	12	V	850	30	3.3	-0.1	0.1
03238	12	V	850	2	1.3	0.0	0.9
03238	00	V	850	28	2.8	0.8	0.2
03808	00	V	850	26	2.4	0.1	0.3
03808	12	V	850	29	3.1	0.5	-0.6
03918	12	V	850	3	3.7	-1.4	-1.1
03918	00	V	850	30	2.7	0.0	-0.3
03953	12	V	850	29	2.1	0.5	-0.6
03953	00	V	850	29	2.6	-0.2	0.3
04018	00	V	850	30	3.4	-0.4	0.1
04018	12	V	850	29	3.5	0.5	0.8
04220	12	V	850	30	3.5	0.2	-0.3
04220	00	V	850	30	2.8	0.0	0.3
04270	00	V	850	30	3.7	1.3	0.0
04270	12	V	850	30	3.8	0.5	-0.2
04320	00	V	850	30	3.2	-0.4	0.0
04320	12	V	850	30	3.2	0.2	-0.1
04339	00	V	850	30	3.8	0.2	-1.2
04339	12	V	850	30	4.0	0.2	-0.8
04360	12	V	850	25	4.3	-0.5	-0.2
04360	00	V	850	25	6.2	1.3	0.1
06011	00	V	850	30	2.4	-0.3	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	850	28	3.0	-0.8	-0.6
06260	12	V	850	5	1.6	0.3	0.6
06260	00	V	850	28	2.4	0.5	-0.3
06610	12	V	850	30	2.5	0.5	0.3
06610	00	V	850	30	2.4	0.3	0.3
07110	12	V	850	30	2.8	0.2	0.0
07110	00	V	850	30	2.8	-0.2	-0.1
07510	00	V	850	30	2.6	0.1	-0.3
07510	12	V	850	30	3.2	0.3	0.8
07645	00	V	850	29	2.5	-0.3	0.3
07645	12	V	850	27	2.3	-0.5	0.0
07761	00	V	850	29	3.2	0.7	0.3
07761	12	V	850	30	2.5	-0.5	0.4
08001	12	V	850	30	2.1	0.6	-0.2
08001	00	V	850	29	2.8	0.8	0.5
08221	12	V	850	30	2.5	0.0	0.8
08221	00	V	850	30	3.7	-0.6	-0.4
08302	12	V	850	30	2.5	-0.2	-0.3
08302	00	V	850	29	3.1	-0.7	0.8
08508	12	V	850	29	3.0	0.4	-0.3
08522	12	V	850	29	2.9	0.0	0.3
08579	12	V	850	28	2.6	-0.3	-0.1
10035	12	V	850	30	2.3	0.2	0.6
10393	12	V	850	30	2.4	0.5	-0.1
10393	00	V	850	30	2.3	0.0	-0.1
10410	12	V	850	30	2.3	-0.1	0.0
10410	00	V	850	30	2.7	0.3	-0.2
10739	00	V	850	30	2.5	0.8	-0.5
10739	12	V	850	30	2.1	0.3	0.0
11035	00	V	850	30	3.0	0.5	-0.7
11035	12	V	850	28	2.6	0.6	0.1
12982	12	V	850	20	2.5	-0.1	0.0
12982	00	V	850	21	3.3	0.6	0.4
16080	12	V	850	30	2.9	0.6	-0.1
16080	00	V	850	30	2.8	0.5	-0.5
16245	12	V	850	30	2.9	-0.3	-0.2
16245	00	V	850	30	2.3	-0.1	0.5
16320	12	V	850	30	2.8	0.4	-0.2
16320	00	V	850	30	3.0	0.1	-0.8
16429	00	V	850	30	2.4	0.0	1.1
16429	12	V	850	30	2.7	-0.8	0.0
16622	00	V	850	30	3.9	1.2	-1.1
16754	00	V	850	30	2.7	-0.3	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	850	26	3.7	0.9	0.3
26435	00	V	850	15	2.5	-0.5	-0.2
5QPW8X	00	V	850	10	3.8	0.8	-1.9
5QPW8X	12	V	850	12	2.2	-0.6	-0.1
60018	00	V	850	26	3.5	0.6	1.1
60018	12	V	850	27	3.5	0.1	1.1
7HCPVT	12	V	850	2	3.9	0.8	-3.4
7HCPVT	00	V	850	4	1.5	0.0	0.5
7JUNA4	00	V	850	9	2.5	-0.6	-0.6
7JUNA4	12	V	850	11	3.0	-0.4	-0.6
DBLK	00	V	850	18	2.7	0.3	0.4
DBLK	12	V	850	25	2.8	0.3	0.4
FHM5H	00	V	850	3	1.5	0.2	-1.2
FHM5H	12	V	850	3	3.0	0.0	-0.7
FHM5UJ	00	V	850	7	2.0	0.0	0.0
FHM5UJ	12	V	850	9	3.1	0.2	0.4
FPUW5G	12	V	850	14	2.6	-0.1	-0.8
GHACC	12	V	850	8	2.4	-0.2	-0.1
GHACC	00	V	850	9	2.5	-0.3	-1.3
HTXUH	12	V	850	1	4.3	-2.1	3.8
HTXUH	00	V	850	4	8.3	2.7	4.0
HTXUH4	12	V	850	3	2.8	-0.3	0.3
HTXUH4	00	V	850	4	5.1	3.0	2.4
SAVA1	12	V	850	1	2.5	-1.1	-2.3
WDK38H	12	V	850	19	2.4	0.0	0.5
XKQLWQ	12	V	850	17	3.0	-0.2	0.2
XQFJRG	12	V	850	9	2.3	0.3	0.9
XQFJRG	00	V	850	4	1.6	-0.1	0.7
XWHDEA	12	V	850	7	3.7	-1.4	0.2
XWHDEA	00	V	850	6	3.4	1.0	-0.9
ZVQEQC	12	V	850	1	0.6	-0.4	0.5
ZVQEQC	00	V	850	14	2.4	0.1	-0.3

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

```
DRIFTER MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE      : ECMWF
         ELEMENT MONITORED      : SURFACE PRESSURE (HPA)
         AREA                   : 10N - 90N, 70W - 40E
         PERIOD                 : SEP 2018
         STANDARD OF COMPARISON: FIRST-GUESS FIELD


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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
03380	99	P	SUR	54	0	676	0	0.3	-0.1	0.3
1300001	99	P	SUR	11	-23	686	0	0.5	-0.2	0.6
1300008	99	P	SUR	15	-38	720	0	0.4	-0.2	0.4
1300130	99	P	SUR	28	-16	720	0	0.4	0.1	0.4
1300131	99	P	SUR	28	-17	720	0	0.4	-0.0	0.4
1300871	99	P	SUR	38	-57	648	0	0.5	0.3	0.6
1300872	99	P	SUR	36	-35	720	0	0.8	0.3	0.8
1301000	99	P	SUR	33	-17	856	856	0.0	0.0	0.0
1301001	99	P	SUR	33	-17	669	669	0.0	0.0	0.0
1301603	99	P	SUR	24	-48	720	0	0.6	0.1	0.6
1301605	99	P	SUR	25	-45	719	0	0.4	0.0	0.4
1301606	99	P	SUR	12	-45	720	0	0.8	0.3	0.8
1301607	99	P	SUR	18	-32	719	0	0.5	0.2	0.6
1301608	99	P	SUR	27	-35	719	0	0.4	0.5	0.6
1301609	99	P	SUR	19	-30	719	0	0.6	0.3	0.7
1301610	99	P	SUR	24	-35	720	0	0.3	0.2	0.3
1301611	99	P	SUR	28	-42	720	0	0.3	0.1	0.4
1301612	99	P	SUR	27	-28	720	0	0.3	0.1	0.3
13871	99	P	SUR	38	-57	648	0	0.5	0.3	0.6
13872	99	P	SUR	36	-35	720	0	0.8	0.3	0.9
1501529	99	P	SUR	27	-33	712	0	0.2	0.3	0.4
1501531	99	P	SUR	19	-50	711	0	0.3	-0.1	0.3
1501534	99	P	SUR	24	-53	711	0	0.8	-0.9	1.2
1501580	99	P	SUR	16	-60	706	0	1.8	-1.4	2.2
2601620	99	P	SUR	87	24	709	0	0.4	-0.8	0.9
2601621	99	P	SUR	89	7	710	0	0.5	-0.9	1.1
3100735	99	P	SUR	36	-69	622	0	1.2	0.2	1.2
31735	99	P	SUR	36	-69	622	0	1.2	0.2	1.2
4100139	99	P	SUR	20	-38	706	0	0.8	-0.2	0.9
4100300	99	P	SUR	16	-57	720	0	0.4	0.2	0.5
4100597	99	P	SUR	29	-44	720	0	0.4	0.0	0.4
4100729	99	P	SUR	29	-40	720	0	0.4	-0.0	0.4
4100730	99	P	SUR	38	-35	552	41	3.9	-1.2	4.1
4101528	99	P	SUR	39	-45	731	0	0.6	0.5	0.8
4101529	99	P	SUR	32	-67	728	0	0.7	-0.1	0.7
4101530	99	P	SUR	34	-34	740	0	0.4	0.5	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101531	99	P	SUR	47	-36	569	0	0.6	0.6	0.8
4101532	99	P	SUR	39	-40	721	0	0.5	0.2	0.5
4101533	99	P	SUR	43	-47	737	0	0.4	0.4	0.6
4101534	99	P	SUR	50	-41	722	0	0.4	0.3	0.5
4101535	99	P	SUR	41	-65	732	0	0.3	0.1	0.4
4101536	99	P	SUR	48	-35	741	0	0.5	0.1	0.5
4101537	99	P	SUR	42	-34	507	0	0.4	0.5	0.7
4101538	99	P	SUR	28	-60	538	0	0.3	0.4	0.5
4101539	99	P	SUR	38	-63	755	0	0.3	0.2	0.4
4101554	99	P	SUR	30	-61	598	0	0.3	0.4	0.5
4101556	99	P	SUR	36	-38	759	0	0.6	0.6	0.8
4101557	99	P	SUR	34	-35	757	0	0.4	0.3	0.5
4101558	99	P	SUR	34	-18	758	0	0.3	0.7	0.7
4101560	99	P	SUR	34	-49	744	0	0.4	0.6	0.8
4101562	99	P	SUR	35	-51	739	0	0.6	0.5	0.8
4101564	99	P	SUR	34	-42	748	0	0.5	-0.0	0.5
4101565	99	P	SUR	32	-39	723	0	0.5	0.4	0.6
4101566	99	P	SUR	26	-60	675	0	0.4	0.3	0.4
4101567	99	P	SUR	34	-51	733	0	0.5	0.5	0.7
4101568	99	P	SUR	36	-66	740	0	0.3	0.4	0.5
4101570	99	P	SUR	32	-50	738	0	0.3	0.5	0.6
4101571	99	P	SUR	49	-39	714	0	0.5	0.5	0.7
4101572	99	P	SUR	46	-32	587	0	0.4	0.4	0.5
4101573	99	P	SUR	35	-69	721	0	0.4	0.3	0.5
4101574	99	P	SUR	35	-66	705	0	0.3	0.7	0.7
4101576	99	P	SUR	21	-60	759	0	0.3	0.5	0.6
4101579	99	P	SUR	20	-56	759	0	1.2	0.7	1.4
4101594	99	P	SUR	10	-50	758	0	0.4	-0.6	0.7
4101595	99	P	SUR	15	-47	759	0	0.3	0.6	0.7
4101596	99	P	SUR	51	-32	760	0	0.4	0.5	0.6
4101597	99	P	SUR	11	-57	58	0	0.6	0.3	0.7
4101598	99	P	SUR	18	-44	759	0	0.3	0.4	0.5
4101599	99	P	SUR	50	-15	760	0	0.4	0.0	0.4
4101601	99	P	SUR	12	-44	755	0	0.3	0.2	0.4
4101602	99	P	SUR	11	-47	758	0	0.4	0.2	0.4
4101603	99	P	SUR	11	-45	757	0	0.4	0.3	0.5
4101605	99	P	SUR	70	-12	759	0	0.4	0.3	0.5
4101608	99	P	SUR	69	-11	759	0	0.4	0.3	0.5
4101610	99	P	SUR	68	-10	757	0	0.4	0.4	0.5
4101619	99	P	SUR	48	-31	759	0	0.4	-0.0	0.4
4101620	99	P	SUR	51	-13	760	0	0.4	0.2	0.5
4101622	99	P	SUR	72	-9	757	0	0.4	0.2	0.5
4101623	99	P	SUR	71	-19	759	0	0.4	0.1	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101624	99	P	SUR	62	-32	759	0	0.4	0.3	0.5
4101625	99	P	SUR	61	-31	761	0	0.5	0.3	0.5
4101626	99	P	SUR	58	-38	759	1	0.4	0.1	0.5
4101627	99	P	SUR	57	-32	759	0	0.4	-0.0	0.4
4101629	99	P	SUR	61	-28	760	0	0.5	-0.4	0.6
4101700	99	P	SUR	27	-46	720	0	2.1	0.7	2.2
4101702	99	P	SUR	34	-55	720	7	2.1	0.4	2.1
4101705	99	P	SUR	31	-32	720	0	0.3	0.1	0.3
4101706	99	P	SUR	33	-37	719	0	0.5	-0.7	0.8
4101707	99	P	SUR	34	-31	720	0	0.3	-0.2	0.3
4101708	99	P	SUR	31	-32	720	0	0.3	-0.3	0.4
4101709	99	P	SUR	17	-29	720	0	0.5	0.7	0.9
4101712	99	P	SUR	36	-28	703	0	0.3	0.1	0.3
4101713	99	P	SUR	33	-61	719	0	0.3	-0.0	0.3
4101714	99	P	SUR	36	-40	720	0	0.4	-0.1	0.4
4101715	99	P	SUR	30	-48	565	34	1.3	0.6	1.4
4101716	99	P	SUR	25	-54	720	0	0.5	-0.5	0.7
4101717	99	P	SUR	25	-62	719	0	0.5	-0.1	0.5
4101743	99	P	SUR	26	-57	719	0	0.4	0.8	0.9
41041	99	P	SUR	14	-46	1225	0	0.4	0.5	0.7
41043	99	P	SUR	21	-65	1295	0	0.4	0.3	0.5
41044	99	P	SUR	22	-59	1343	0	0.4	0.5	0.7
41046	99	P	SUR	24	-68	1203	0	0.4	0.8	0.9
41049	99	P	SUR	28	-63	1267	0	0.4	0.3	0.5
41052	99	P	SUR	18	-65	1813	0	0.4	-1.2	1.3
41053	99	P	SUR	19	-66	1887	0	0.4	-0.6	0.7
41056	99	P	SUR	18	-66	1864	0	0.4	-0.8	0.9
41300	99	P	SUR	16	-57	720	0	0.4	0.2	0.5
41597	99	P	SUR	29	-44	720	0	0.4	0.0	0.4
41729	99	P	SUR	29	-40	720	0	0.4	-0.0	0.4
41730	99	P	SUR	38	-35	552	41	3.9	-1.2	4.1
42060	99	P	SUR	16	-63	1987	0	0.4	0.1	0.4
42085	99	P	SUR	18	-67	1094	0	0.4	-0.9	0.9
44005	99	P	SUR	43	-69	155	0	0.4	0.2	0.5
4400513	99	P	SUR	54	-10	700	0	0.4	-0.4	0.6
4400517	99	P	SUR	23	-59	718	0	0.4	0.2	0.4
4400521	99	P	SUR	33	-37	678	0	0.6	-0.8	1.0
4400746	99	P	SUR	30	-50	720	0	1.2	0.3	1.2
4400777	99	P	SUR	33	-47	720	0	0.3	0.2	0.4
4400778	99	P	SUR	24	-39	720	0	0.3	0.3	0.4
44008	99	P	SUR	41	-69	13	0	0.2	-0.4	0.5
4400857	99	P	SUR	26	-50	575	0	1.5	0.4	1.5
4400874	99	P	SUR	35	-42	720	13	2.5	1.1	2.7

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4400875	99	P	SUR	29	-46	720	0	1.8	-0.6	1.9
4400887	99	P	SUR	38	-39	706	0	0.5	-0.2	0.5
4400891	99	P	SUR	37	-45	228	0	0.4	-1.7	1.8
4401503	99	P	SUR	39	-57	875	0	0.4	0.1	0.4
4401527	99	P	SUR	33	-57	873	0	0.3	0.0	0.3
4401531	99	P	SUR	36	-53	870	0	0.3	0.3	0.4
4401536	99	P	SUR	43	-16	696	0	0.3	0.7	0.8
4401537	99	P	SUR	33	-36	688	0	1.0	-0.5	1.1
4401539	99	P	SUR	39	-39	965	0	0.5	-0.3	0.6
4401540	99	P	SUR	34	-64	964	0	0.5	0.1	0.5
4401541	99	P	SUR	39	-31	965	0	0.3	-0.0	0.3
4401542	99	P	SUR	31	-70	966	0	0.3	0.5	0.6
4401543	99	P	SUR	23	-65	750	0	0.3	-0.0	0.3
4401544	99	P	SUR	36	-58	966	0	0.3	-0.7	0.8
4401549	99	P	SUR	58	-16	670	0	0.4	-0.1	0.4
4401551	99	P	SUR	36	-34	697	0	0.3	0.3	0.5
4401552	99	P	SUR	21	-21	684	0	0.4	0.4	0.5
4401553	99	P	SUR	63	-14	720	0	0.4	0.2	0.4
4401554	99	P	SUR	59	-21	556	0	0.3	0.3	0.5
4401555	99	P	SUR	58	-9	720	0	0.5	-0.2	0.5
4401556	99	P	SUR	35	-34	719	0	0.3	-0.2	0.3
4401557	99	P	SUR	34	-34	720	0	0.3	0.2	0.4
4401558	99	P	SUR	57	-16	720	0	0.5	-0.1	0.5
4401559	99	P	SUR	45	-12	719	0	0.5	0.4	0.7
4401560	99	P	SUR	41	-18	720	0	0.2	0.0	0.2
4401561	99	P	SUR	31	-31	719	0	0.4	-0.0	0.4
4401562	99	P	SUR	37	-22	720	0	0.2	-0.2	0.3
4401563	99	P	SUR	29	-38	720	0	0.3	-0.5	0.6
4401564	99	P	SUR	38	-38	720	0	0.6	-0.2	0.6
4401565	99	P	SUR	57	-21	719	0	0.4	0.2	0.5
4401566	99	P	SUR	47	-12	719	0	0.6	0.5	0.8
4401570	99	P	SUR	50	-34	720	0	0.6	-0.0	0.6
4401571	99	P	SUR	49	-31	720	0	0.4	0.1	0.5
4401601	99	P	SUR	56	-20	714	0	0.5	-0.2	0.5
4401603	99	P	SUR	59	-2	715	0	0.4	0.5	0.7
4401605	99	P	SUR	58	-17	718	0	0.5	-0.3	0.6
4401611	99	P	SUR	46	-56	718	0	0.4	0.6	0.7
4401613	99	P	SUR	45	-10	716	0	0.3	0.5	0.5
4401616	99	P	SUR	35	-35	718	0	0.4	-0.0	0.5
4401633	99	P	SUR	43	-18	717	0	0.3	0.3	0.4
4401750	99	P	SUR	60	-17	696	0	0.4	-1.6	1.6
4401751	99	P	SUR	61	-16	677	0	0.4	0.3	0.5
4401753	99	P	SUR	60	-16	670	0	0.4	0.5	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401755	99	P	SUR	68	10	561	0	0.4	0.5	0.6
4401757	99	P	SUR	70	-6	30	0	0.4	0.5	0.6
4401799	99	P	SUR	22	-39	582	0	0.3	0.2	0.4
4401802	99	P	SUR	41	-24	718	0	0.3	0.2	0.3
4401803	99	P	SUR	52	-41	755	0	0.4	0.2	0.4
4401804	99	P	SUR	61	-18	698	1	2.3	1.6	2.8
4401805	99	P	SUR	59	-21	671	0	2.6	2.2	3.4
4401806	99	P	SUR	60	-22	696	0	3.1	1.8	3.6
4401807	99	P	SUR	62	-13	698	0	2.4	1.9	3.0
4401808	99	P	SUR	60	-26	709	0	3.4	0.9	3.5
44027	99	P	SUR	44	-67	728	0	0.5	-0.1	0.5
44032	99	P	SUR	44	-69	684	0	0.4	-0.9	1.0
44033	99	P	SUR	44	-69	706	0	0.5	-0.4	0.6
44034	99	P	SUR	44	-68	708	0	0.4	-0.5	0.7
44037	99	P	SUR	44	-68	704	0	0.4	-1.0	1.1
44137	99	P	SUR	42	-62	735	0	0.3	-0.1	0.3
44139	99	P	SUR	44	-57	706	0	0.4	0.1	0.4
44150	99	P	SUR	43	-64	701	0	0.4	0.2	0.5
44513	99	P	SUR	54	-10	700	0	0.4	-0.4	0.6
44517	99	P	SUR	23	-59	718	0	0.4	0.2	0.4
44521	99	P	SUR	33	-37	678	0	0.6	-0.8	1.0
44746	99	P	SUR	30	-50	720	0	1.2	0.3	1.2
44777	99	P	SUR	33	-47	720	0	0.3	0.2	0.4
44778	99	P	SUR	24	-39	720	0	0.3	0.3	0.4
44857	99	P	SUR	26	-50	575	0	1.5	0.4	1.5
44874	99	P	SUR	35	-42	720	13	2.5	1.1	2.7
44875	99	P	SUR	29	-46	720	0	1.8	-0.6	1.9
44887	99	P	SUR	38	-39	706	0	0.5	-0.2	0.5
44891	99	P	SUR	37	-45	228	0	0.4	-1.7	1.8
45138	99	P	SUR	50	-66	712	0	0.4	0.2	0.5
4700546	99	P	SUR	28	-41	705	0	1.0	0.2	1.0
4700560	99	P	SUR	73	26	711	0	0.4	0.1	0.4
4700568	99	P	SUR	44	-1	585	0	0.3	-0.6	0.7
4701668	99	P	SUR	41	-68	718	0	1.1	1.0	1.5
4701669	99	P	SUR	44	-51	717	0	0.5	0.7	0.8
47546	99	P	SUR	28	-41	703	0	1.0	0.2	1.0
47560	99	P	SUR	73	26	709	0	0.4	0.1	0.4
47568	99	P	SUR	44	-1	581	0	0.3	-0.6	0.7
4800510	99	P	SUR	79	-15	714	0	0.4	-0.5	0.6
4800770	99	P	SUR	78	-16	711	645	2.8	12.3	12.6
4802004	99	P	SUR	66	-15	716	10	3.6	-1.3	3.8
48510	99	P	SUR	79	-15	714	0	0.4	-0.5	0.7
48770	99	P	SUR	78	-16	709	643	2.8	12.3	12.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6100001	99	P	SUR	43	8	680	0	0.5	0.0	0.5
6100002	99	P	SUR	42	5	720	0	0.3	0.0	0.3
61001	99	P	SUR	43	8	680	0	0.5	0.0	0.5
6100196	99	P	SUR	42	4	720	0	0.4	0.1	0.4
6100197	99	P	SUR	40	4	720	0	0.4	0.2	0.5
6100198	99	P	SUR	37	-2	720	0	0.4	0.1	0.5
61002	99	P	SUR	42	5	720	0	0.3	0.0	0.3
6100280	99	P	SUR	41	1	719	0	0.4	0.0	0.4
6100281	99	P	SUR	40	0	720	0	0.5	0.0	0.5
6100417	99	P	SUR	38	0	717	0	0.4	0.0	0.4
6100430	99	P	SUR	40	2	720	0	0.4	-0.1	0.4
6101001	99	P	SUR	38	24	160	0	0.5	0.3	0.6
6101003	99	P	SUR	40	25	194	0	0.5	0.5	0.8
6101007	99	P	SUR	36	25	214	0	0.5	-0.0	0.5
6101008	99	P	SUR	37	22	152	0	0.9	0.2	0.9
6102501	99	P	SUR	34	19	759	0	0.6	0.3	0.7
6102502	99	P	SUR	33	25	759	0	0.4	0.3	0.5
6200024	99	P	SUR	44	-3	718	0	0.4	0.0	0.4
6200025	99	P	SUR	44	-6	720	0	0.3	0.1	0.3
6200082	99	P	SUR	44	-8	720	0	0.4	-0.2	0.4
6200083	99	P	SUR	43	-9	666	0	0.4	0.1	0.4
6200084	99	P	SUR	42	-9	679	0	0.4	0.1	0.4
6200085	99	P	SUR	36	-7	720	0	0.4	0.0	0.4
6200091	99	P	SUR	53	-5	61	0	0.3	-0.0	0.3
6200092	99	P	SUR	51	-11	719	0	0.4	-0.1	0.4
6200093	99	P	SUR	55	-10	717	0	0.5	-0.3	0.6
6200094	99	P	SUR	52	-7	718	0	0.5	0.0	0.5
62001	99	P	SUR	45	-5	719	0	0.3	0.1	0.3
6200191	99	P	SUR	41	-10	525	0	0.3	-0.0	0.3
6200192	99	P	SUR	40	-10	527	0	0.3	-0.5	0.6
6200513	99	P	SUR	64	-17	720	0	0.6	-0.3	0.7
6200940	99	P	SUR	33	-45	710	0	0.6	-0.0	0.6
6200941	99	P	SUR	31	-56	710	0	0.3	-0.4	0.5
62023	99	P	SUR	51	-8	720	0	0.4	0.3	0.5
6202400	99	P	SUR	39	-28	430	430	0.0	0.0	0.0
6202402	99	P	SUR	38	-26	365	365	0.0	0.0	0.0
6202403	99	P	SUR	39	-31	160	160	0.0	0.0	0.0
6202404	99	P	SUR	39	-29	175	175	0.0	0.0	0.0
62029	99	P	SUR	49	-12	1414	0	0.4	-0.1	0.4
62030	99	P	SUR	50	-4	1265	0	0.3	0.0	0.3
6203503	99	P	SUR	40	-36	800	0	0.7	-0.4	0.8
6203504	99	P	SUR	31	-66	862	0	0.3	0.1	0.3
6203510	99	P	SUR	27	-65	708	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
6203523	99	P	SUR	67	1	686	0	0.5	-0.4	0.7
6203525	99	P	SUR	66	1	661	0	0.4	-0.7	0.8
6203526	99	P	SUR	76	12	675	0	0.4	0.3	0.5
6203527	99	P	SUR	60	-19	687	0	0.3	-2.5	2.5
6203528	99	P	SUR	31	-21	752	0	0.3	0.2	0.3
6203529	99	P	SUR	24	-68	755	0	0.3	-0.1	0.3
6203600	99	P	SUR	44	-13	719	0	0.3	0.3	0.4
6203601	99	P	SUR	46	-12	719	0	0.4	0.6	0.7
6203602	99	P	SUR	66	-55	720	0	0.4	0.3	0.4
6203603	99	P	SUR	56	-29	720	0	0.4	0.0	0.4
6203604	99	P	SUR	37	-19	720	0	0.2	0.5	0.5
6203607	99	P	SUR	36	-29	720	0	0.3	0.2	0.3
6203608	99	P	SUR	51	-15	720	0	0.4	0.3	0.5
6203609	99	P	SUR	48	-16	720	0	0.5	0.0	0.5
6203610	99	P	SUR	48	-13	733	0	0.4	0.2	0.5
62050	99	P	SUR	50	-4	728	0	0.4	0.3	0.5
62081	99	P	SUR	51	-13	731	0	0.4	-0.2	0.4
62087	99	P	SUR	54	9	443	0	0.3	-0.1	0.3
62091	99	P	SUR	53	-5	61	0	0.3	-0.0	0.3
62092	99	P	SUR	51	-11	61	0	0.2	0.0	0.2
62093	99	P	SUR	55	-10	60	0	0.3	-0.2	0.4
62094	99	P	SUR	52	-7	60	0	0.8	0.3	0.9
62095	99	P	SUR	53	-15	825	0	0.5	-0.1	0.5
62102	99	P	SUR	58	2	732	0	0.5	0.2	0.5
62103	99	P	SUR	50	-3	732	0	0.5	0.6	0.7
62104	99	P	SUR	57	1	732	0	0.6	-0.1	0.6
62107	99	P	SUR	50	-6	1416	2	0.6	0.4	0.7
62111	99	P	SUR	58	0	730	0	0.5	1.5	1.5
62112	99	P	SUR	58	0	730	0	0.4	0.3	0.5
62113	99	P	SUR	58	0	732	0	0.6	0.3	0.7
62114	99	P	SUR	58	0	1417	0	0.5	0.2	0.5
62115	99	P	SUR	58	-3	717	0	0.5	0.2	0.5
62116	99	P	SUR	58	1	732	0	0.6	0.0	0.6
62118	99	P	SUR	58	1	732	0	0.5	0.5	0.7
62119	99	P	SUR	57	2	731	0	0.7	0.4	0.8
62120	99	P	SUR	56	2	732	0	0.6	-0.2	0.6
62121	99	P	SUR	54	3	727	0	0.5	0.5	0.7
62122	99	P	SUR	57	2	1417	0	0.7	0.3	0.8
62124	99	P	SUR	54	-4	730	0	0.3	0.0	0.3
62129	99	P	SUR	58	0	732	0	0.6	0.5	0.8
62130	99	P	SUR	59	1	732	0	0.5	0.0	0.5
62131	99	P	SUR	54	1	727	0	0.3	0.5	0.6
62132	99	P	SUR	56	2	729	0	0.5	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
62133	99	P	SUR	57	1	732	0	0.6	0.0	0.7
62134	99	P	SUR	58	1	732	0	0.5	0.8	0.9
62135	99	P	SUR	54	2	731	0	0.4	0.4	0.6
62136	99	P	SUR	54	3	688	0	0.4	0.7	0.8
62138	99	P	SUR	54	0	1415	0	0.4	1.1	1.2
62139	99	P	SUR	53	2	1326	0	0.4	0.5	0.6
62140	99	P	SUR	57	1	1414	0	0.6	0.1	0.7
62141	99	P	SUR	58	-2	724	0	0.4	-0.0	0.4
62143	99	P	SUR	58	2	731	0	0.6	0.9	1.1
62144	99	P	SUR	53	2	727	0	0.4	0.5	0.6
62145	99	P	SUR	53	3	1415	0	0.4	0.6	0.7
62146	99	P	SUR	57	2	732	0	0.7	0.4	0.8
62148	99	P	SUR	54	2	727	0	0.4	0.8	0.9
62149	99	P	SUR	54	1	730	0	0.3	0.8	0.8
62150	99	P	SUR	54	1	730	0	0.3	1.4	1.5
62151	99	P	SUR	57	2	1415	0	0.5	0.3	0.6
62152	99	P	SUR	57	2	732	0	0.6	0.8	1.0
62153	99	P	SUR	57	2	1417	0	0.5	0.3	0.6
62154	99	P	SUR	56	2	732	0	0.5	0.2	0.6
62155	99	P	SUR	58	1	672	0	0.5	0.7	0.8
62157	99	P	SUR	58	0	732	1	0.4	0.1	0.5
62160	99	P	SUR	57	2	1415	0	0.6	0.3	0.7
62161	99	P	SUR	58	1	732	0	0.7	0.5	0.9
62162	99	P	SUR	57	1	720	0	0.5	0.0	0.5
62163	99	P	SUR	48	-8	714	0	0.4	0.3	0.5
62164	99	P	SUR	57	1	729	0	0.4	0.4	0.6
62165	99	P	SUR	54	1	730	0	0.4	0.6	0.8
62168	99	P	SUR	58	1	732	0	0.4	0.3	0.5
62170	99	P	SUR	51	2	732	0	0.7	0.1	0.7
62296	99	P	SUR	53	2	732	0	0.3	0.2	0.4
62297	99	P	SUR	59	2	1415	0	0.5	0.3	0.6
62302	99	P	SUR	61	-2	640	0	0.6	0.1	0.6
62304	99	P	SUR	51	2	733	0	0.3	0.3	0.5
62305	99	P	SUR	50	0	718	0	0.3	0.3	0.5
62442	99	P	SUR	49	-16	698	0	0.4	-0.0	0.5
62513	99	P	SUR	64	-17	720	0	0.6	-0.3	0.7
62940	99	P	SUR	33	-45	710	0	0.6	-0.0	0.6
62941	99	P	SUR	31	-56	710	0	0.3	-0.4	0.5
6301552	99	P	SUR	79	27	606	0	0.3	-0.2	0.4
6301555	99	P	SUR	75	26	716	0	1.2	0.8	1.4
6301558	99	P	SUR	88	21	371	0	0.6	0.7	0.9
6301559	99	P	SUR	82	18	79	0	0.4	-0.5	0.7
6301560	99	P	SUR	83	20	248	0	0.5	-0.2	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6301561	99	P	SUR	81	10	720	0	2.4	-0.3	2.4
6301562	99	P	SUR	86	23	720	0	0.3	-0.1	0.4
6301564	99	P	SUR	84	24	719	0	0.4	0.1	0.4
6301600	99	P	SUR	89	28	385	0	0.6	-0.2	0.6
6301670	99	P	SUR	82	19	385	0	2.0	-0.6	2.1
6301671	99	P	SUR	81	12	150	0	0.5	-0.0	0.5
6301672	99	P	SUR	81	24	109	0	0.5	0.1	0.5
63055	99	P	SUR	61	2	732	0	0.5	0.3	0.6
63056	99	P	SUR	60	2	732	0	0.5	0.5	0.7
63057	99	P	SUR	59	2	732	0	0.4	-0.0	0.4
63058	99	P	SUR	53	2	2133	0	0.3	0.5	0.6
63059	99	P	SUR	58	-1	730	0	0.4	0.5	0.6
63101	99	P	SUR	61	1	732	0	0.6	0.2	0.6
63102	99	P	SUR	61	1	732	0	0.5	0.4	0.7
63103	99	P	SUR	61	1	732	0	0.4	0.5	0.7
63104	99	P	SUR	61	2	732	0	0.5	0.0	0.5
63105	99	P	SUR	61	2	732	0	0.4	-0.2	0.4
63108	99	P	SUR	61	2	685	0	0.6	0.3	0.7
63109	99	P	SUR	60	2	732	0	0.4	-0.2	0.4
63110	99	P	SUR	60	2	732	0	0.5	-0.1	0.5
63111	99	P	SUR	61	2	1407	0	0.5	-0.3	0.5
63112	99	P	SUR	61	1	732	0	0.4	-0.2	0.5
63115	99	P	SUR	62	1	732	0	0.4	0.2	0.4
63117	99	P	SUR	61	1	1416	0	0.5	0.6	0.8
63118	99	P	SUR	58	1	732	0	0.5	-0.2	0.5
63120	99	P	SUR	54	2	687	0	0.4	0.7	0.8
6400562	99	P	SUR	69	0	720	0	0.6	0.0	0.6
6401501	99	P	SUR	69	38	404	0	0.4	0.4	0.6
6401502	99	P	SUR	59	-9	686	0	0.4	0.4	0.5
6401503	99	P	SUR	59	-7	687	0	0.4	0.5	0.6
6401504	99	P	SUR	60	-13	676	0	0.4	0.1	0.4
6401505	99	P	SUR	61	-25	679	0	0.4	0.2	0.4
6401506	99	P	SUR	60	-24	676	0	0.4	0.2	0.4
6401507	99	P	SUR	79	11	708	0	0.7	-0.1	0.7
6401530	99	P	SUR	68	-29	705	0	0.4	0.3	0.5
6401531	99	P	SUR	68	-30	708	0	0.4	0.3	0.5
6401536	99	P	SUR	69	-24	710	0	0.5	0.2	0.5
6401537	99	P	SUR	68	-27	710	0	0.4	0.1	0.4
6401538	99	P	SUR	68	-26	405	0	0.4	0.1	0.4
6401539	99	P	SUR	68	-28	710	0	0.4	0.4	0.6
6401540	99	P	SUR	69	-26	203	0	0.4	-0.1	0.4
6401541	99	P	SUR	70	-20	710	0	0.5	0.2	0.5
6401542	99	P	SUR	67	-25	710	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
6401543	99	P	SUR	67	-25	709	0	0.5	0.3	0.6
6401544	99	P	SUR	68	-25	710	2	0.9	0.8	1.3
6401545	99	P	SUR	71	-20	710	1	0.5	0.2	0.5
6401550	99	P	SUR	68	12	720	0	0.5	0.0	0.5
6401555	99	P	SUR	74	14	720	0	0.5	0.3	0.6
6401556	99	P	SUR	71	-1	720	0	0.6	0.3	0.6
6401557	99	P	SUR	52	-48	200	0	2.0	2.9	3.5
6401561	99	P	SUR	62	-18	720	0	0.4	-0.1	0.4
6401562	99	P	SUR	68	2	720	0	0.7	0.1	0.7
6401563	99	P	SUR	65	-37	719	0	0.9	-0.3	0.9
6401564	99	P	SUR	70	16	720	0	0.4	0.1	0.4
6401565	99	P	SUR	69	12	720	3	2.1	-0.3	2.2
6401566	99	P	SUR	63	1	720	0	0.8	0.3	0.8
6401567	99	P	SUR	64	-22	639	10	1.5	0.2	1.5
6401568	99	P	SUR	61	-8	597	0	0.3	0.3	0.4
6401569	99	P	SUR	61	-22	720	0	0.3	0.0	0.3
6401570	99	P	SUR	67	-5	719	0	0.4	0.2	0.5
6401571	99	P	SUR	62	-12	720	0	0.4	0.0	0.4
6401572	99	P	SUR	62	-18	720	0	0.3	0.1	0.3
6401654	99	P	SUR	89	16	716	0	0.5	-0.3	0.6
64041	99	P	SUR	61	-3	730	0	0.5	0.1	0.5
64045	99	P	SUR	59	-12	879	1	0.5	-0.3	0.5
64046	99	P	SUR	61	-4	721	0	0.4	-0.0	0.4
64562	99	P	SUR	69	0	720	0	0.6	0.0	0.6
6500596	99	P	SUR	71	-11	718	0	0.4	0.5	0.6
6500602	99	P	SUR	71	33	720	0	0.4	0.3	0.5
6501553	99	P	SUR	57	-6	720	0	0.4	-0.1	0.4
6501555	99	P	SUR	65	-52	720	0	0.4	-0.4	0.6
6501556	99	P	SUR	63	-15	720	0	0.4	0.3	0.5
65596	99	P	SUR	71	-11	718	0	0.4	0.5	0.6
65602	99	P	SUR	71	33	720	0	0.4	0.3	0.5
66023	99	P	SUR	55	11	445	0	0.3	0.2	0.4
95392	99	P	SUR	47	-7	67	0	0.5	-3.1	3.1

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                : SEP 2018
                   STANDARD OF COMPARISON: FIRST-GUESS FIELD


TIME = 99 => AVERAGE OF ALL OBSERVATIONS


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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1300001	99	SPEED	SUR	11	-23	686	0	0	1.5	0.1	1.5
1300002	99	SPEED	SUR	20	-23	666	0	0	0.8	0.5	1.0
1300008	99	SPEED	SUR	15	-38	720	0	0	0.9	0.2	1.0
1300130	99	SPEED	SUR	28	-16	719	0	0	1.0	0.2	1.0
4100139	99	SPEED	SUR	20	-38	706	0	0	1.0	0.2	1.0
4100300	99	SPEED	SUR	16	-57	720	0	0	0.9	-0.5	1.1
41041	99	SPEED	SUR	14	-46	1224	0	0	1.2	-0.1	1.2
41043	99	SPEED	SUR	21	-65	1316	0	0	1.1	-0.3	1.1
41044	99	SPEED	SUR	22	-59	1343	0	0	1.1	-0.3	1.1
41046	99	SPEED	SUR	24	-68	1201	0	0	1.3	-0.0	1.3
41049	99	SPEED	SUR	28	-63	1267	0	0	1.2	-0.1	1.2
41052	99	SPEED	SUR	18	-65	1813	0	0	1.0	-0.4	1.0
41053	99	SPEED	SUR	19	-66	1887	0	0	1.4	0.3	1.5
41056	99	SPEED	SUR	18	-66	1867	0	0	1.2	-0.5	1.3
41300	99	SPEED	SUR	16	-57	720	0	0	1.0	-0.5	1.1
42060	99	SPEED	SUR	16	-63	1995	0	0	1.1	-0.3	1.2
42085	99	SPEED	SUR	18	-67	1092	0	0	1.4	-0.1	1.5
44027	99	SPEED	SUR	44	-67	728	0	0	1.3	-0.2	1.3
44032	99	SPEED	SUR	44	-69	684	0	0	1.4	-0.6	1.5
44033	99	SPEED	SUR	44	-69	706	0	0	1.4	-0.2	1.4
44034	99	SPEED	SUR	44	-68	708	0	0	1.4	-0.8	1.6
44037	99	SPEED	SUR	44	-68	704	0	0	1.2	-0.1	1.2
44137	99	SPEED	SUR	42	-62	736	0	0	1.1	-0.1	1.1
44139	99	SPEED	SUR	44	-57	712	0	0	1.1	-0.2	1.1
44150	99	SPEED	SUR	43	-64	703	0	0	1.2	-0.3	1.2
45138	99	SPEED	SUR	50	-66	715	0	0	1.6	0.0	1.6
6100001	99	SPEED	SUR	43	8	680	0	0	1.5	-0.1	1.5
6100002	99	SPEED	SUR	42	5	720	0	0	1.2	0.2	1.3
61001	99	SPEED	SUR	43	8	680	0	0	1.7	-0.3	1.7
6100196	99	SPEED	SUR	42	4	711	0	0	1.6	-0.3	1.6
6100198	99	SPEED	SUR	37	-2	691	0	0	1.5	-0.9	1.7
61002	99	SPEED	SUR	42	5	720	0	0	1.3	-0.1	1.3
6100280	99	SPEED	SUR	41	1	712	0	0	1.6	-0.1	1.6
6100281	99	SPEED	SUR	40	0	715	0	0	1.8	0.3	1.9

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
6100417	99	SPEED	SUR	38	0	714	0	0	1.4	-0.4	1.5
6100430	99	SPEED	SUR	40	2	711	0	0	1.7	0.0	1.7
6101001	99	SPEED	SUR	38	24	160	0	0	1.6	-0.5	1.7
6101003	99	SPEED	SUR	40	25	207	0	0	1.9	-1.4	2.4
6101007	99	SPEED	SUR	36	25	214	0	0	1.6	-0.2	1.6
6101008	99	SPEED	SUR	37	22	158	0	0	2.2	-0.6	2.3
6200024	99	SPEED	SUR	44	-3	706	0	0	1.5	-0.0	1.5
6200025	99	SPEED	SUR	44	-6	719	0	0	3.0	1.5	3.4
6200082	99	SPEED	SUR	44	-8	718	0	0	0.9	-0.4	1.0
6200083	99	SPEED	SUR	43	-9	659	0	0	1.2	-1.0	1.6
6200084	99	SPEED	SUR	42	-9	658	0	0	1.3	-1.0	1.7
6200085	99	SPEED	SUR	36	-7	710	0	0	1.6	-0.4	1.7
6200091	99	SPEED	SUR	53	-5	61	0	0	0.9	0.2	0.9
6200092	99	SPEED	SUR	51	-11	719	0	0	1.0	0.0	1.0
6200093	99	SPEED	SUR	55	-10	717	0	0	1.2	-0.2	1.2
6200094	99	SPEED	SUR	52	-7	718	0	0	1.0	0.1	1.0
62001	99	SPEED	SUR	45	-5	719	0	0	1.0	0.7	1.2
6200191	99	SPEED	SUR	41	-10	525	0	0	1.2	0.1	1.2
6200192	99	SPEED	SUR	40	-10	527	0	0	1.1	0.3	1.2
6201030	99	SPEED	SUR	44	-4	687	0	0	1.1	-0.2	1.2
62023	99	SPEED	SUR	51	-8	720	0	0	1.8	0.0	1.8
62029	99	SPEED	SUR	49	-12	1414	0	0	1.0	0.4	1.1
62050	99	SPEED	SUR	50	-4	728	0	0	1.3	0.4	1.4
62081	99	SPEED	SUR	51	-13	731	0	0	1.1	0.2	1.1
62087	99	SPEED	SUR	54	9	443	0	0	1.7	-1.9	2.5
62091	99	SPEED	SUR	53	-5	61	0	0	0.9	0.3	1.0
62092	99	SPEED	SUR	51	-11	61	0	0	1.0	-0.1	1.0
62093	99	SPEED	SUR	55	-10	60	0	0	0.9	-0.2	0.9
62094	99	SPEED	SUR	52	-7	60	0	0	0.8	0.1	0.8
62095	99	SPEED	SUR	53	-15	775	0	0	1.1	0.3	1.2
62102	99	SPEED	SUR	58	2	732	0	0	1.6	-0.8	1.8
62103	99	SPEED	SUR	50	-3	732	0	0	1.4	1.0	1.7
62104	99	SPEED	SUR	57	1	732	0	0	1.5	-0.5	1.6
62107	99	SPEED	SUR	50	-6	1416	0	0	1.7	0.8	1.8
62112	99	SPEED	SUR	58	0	730	0	0	2.1	-1.4	2.6
62113	99	SPEED	SUR	58	0	732	0	0	1.8	0.1	1.8
62114	99	SPEED	SUR	58	0	1417	0	0	1.7	0.4	1.7
62118	99	SPEED	SUR	58	1	732	0	0	1.6	0.5	1.7
62119	99	SPEED	SUR	57	2	732	0	0	1.7	-0.2	1.7
62120	99	SPEED	SUR	56	2	732	1	0	1.4	-0.1	1.4
62121	99	SPEED	SUR	54	3	727	0	0	1.2	-0.3	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
62122	99	SPEED	SUR	57	2	1417	0	0	1.4	-0.6	1.5
62129	99	SPEED	SUR	58	0	732	0	0	1.5	-0.3	1.6
62131	99	SPEED	SUR	54	1	727	0	0	1.2	0.1	1.2
62132	99	SPEED	SUR	56	2	729	1	0	2.0	-1.9	2.8
62133	99	SPEED	SUR	57	1	732	0	0	1.5	-0.1	1.5
62134	99	SPEED	SUR	58	1	732	0	0	1.7	-0.2	1.7
62140	99	SPEED	SUR	57	1	1414	0	0	1.5	-0.0	1.5
62143	99	SPEED	SUR	58	2	730	0	0	2.6	-1.4	3.0
62144	99	SPEED	SUR	53	2	727	0	0	1.5	-0.7	1.7
62145	99	SPEED	SUR	53	3	1415	0	0	1.5	0.3	1.5
62146	99	SPEED	SUR	57	2	711	0	0	1.5	-0.4	1.5
62148	99	SPEED	SUR	54	2	669	0	0	2.0	-1.9	2.8
62149	99	SPEED	SUR	54	1	730	0	0	2.4	-1.0	2.7
62150	99	SPEED	SUR	54	1	730	0	0	1.9	-0.8	2.0
62152	99	SPEED	SUR	57	2	732	1	0	1.8	-1.6	2.5
62153	99	SPEED	SUR	57	2	1417	0	0	3.0	-2.5	3.9
62154	99	SPEED	SUR	56	2	732	1	0	1.3	-0.8	1.5
62155	99	SPEED	SUR	58	1	666	0	0	2.2	0.3	2.2
62163	99	SPEED	SUR	48	-8	714	0	0	0.9	0.4	1.0
62164	99	SPEED	SUR	57	1	729	0	0	1.8	-1.4	2.2
62165	99	SPEED	SUR	54	1	730	0	0	1.8	-0.7	1.9
62170	99	SPEED	SUR	51	2	732	0	0	1.6	0.7	1.7
62304	99	SPEED	SUR	51	2	729	0	0	1.7	1.6	2.4
62305	99	SPEED	SUR	50	0	718	0	0	1.5	1.0	1.8
62442	99	SPEED	SUR	49	-16	698	0	0	1.2	0.2	1.2
63055	99	SPEED	SUR	61	2	732	0	0	1.4	-1.1	1.7
63056	99	SPEED	SUR	60	2	732	0	0	1.3	-0.2	1.3
63057	99	SPEED	SUR	59	2	732	0	0	2.2	-0.4	2.2
63058	99	SPEED	SUR	53	2	780	0	0	1.2	-0.2	1.2
63101	99	SPEED	SUR	61	1	732	0	0	1.6	-0.7	1.8
63103	99	SPEED	SUR	61	1	732	0	0	1.8	-0.1	1.8
63104	99	SPEED	SUR	61	2	732	0	0	1.5	-0.5	1.6
63105	99	SPEED	SUR	61	2	732	0	0	1.6	-0.3	1.6
63106	99	SPEED	SUR	61	2	729	0	0	1.5	-0.1	1.5
63108	99	SPEED	SUR	61	2	685	0	0	1.6	0.0	1.6
63109	99	SPEED	SUR	60	2	720	0	0	1.5	-0.0	1.5
63110	99	SPEED	SUR	60	2	732	0	0	1.5	-1.0	1.8
63112	99	SPEED	SUR	61	1	732	0	0	1.5	-0.7	1.7
63113	99	SPEED	SUR	61	2	732	0	0	1.6	-0.6	1.7
63115	99	SPEED	SUR	62	1	732	0	0	1.4	-0.5	1.5
63117	99	SPEED	SUR	61	1	1416	0	0	1.6	-0.7	1.8

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
64041	99	SPEED	SUR	61	-3	730	0	0	1.5	-0.4	1.5
64045	99	SPEED	SUR	59	-12	877	0	0	1.3	0.1	1.3
64046	99	SPEED	SUR	61	-4	721	0	0	1.1	0.3	1.1
66021	99	SPEED	SUR	55	14	715	0	0	1.3	0.5	1.4
66022	99	SPEED	SUR	54	14	1033	0	0	1.5	-0.1	1.5
66024	99	SPEED	SUR	55	13	718	0	0	1.4	0.7	1.6
95392	99	SPEED	SUR	47	-7	67	0	0	1.9	1.3	2.2

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

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          DRIFTER MONITORING STATISTICS (EUCOS)
                   MONITORING CENTRE     : ECMWF
                   ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                   AREA                  : 10N - 90N, 70W - 40E
                   PERIOD                : SEP 2018
                   STANDARD OF COMPARISON: FIRST-GUESS FIELD


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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1300001	99	DIRN	SUR	11	-23	475	0	0	24.9	5.2	25.4
1300002	99	DIRN	SUR	20	-23	617	0	0	10.3	-1.5	10.4
1300008	99	DIRN	SUR	15	-38	664	0	0	9.6	3.9	10.4
1300130	99	DIRN	SUR	28	-16	688	0	0	10.9	2.0	11.1
4100139	99	DIRN	SUR	20	-38	635	0	0	9.1	4.6	10.2
41002	99	DIRN	SUR	32	-75	1032	0	0	13.1	11.0	17.2
4100300	99	DIRN	SUR	16	-57	661	0	0	12.1	5.1	13.1
41004	99	DIRN	SUR	33	-79	1100	0	0	15.6	5.2	16.4
41008	99	DIRN	SUR	31	-81	559	0	0	19.7	9.5	21.8
41009	99	DIRN	SUR	29	-80	982	0	0	15.6	6.3	16.9
41010	99	DIRN	SUR	29	-79	927	0	0	14.5	7.0	16.1
41013	99	DIRN	SUR	33	-78	1156	0	0	16.3	8.2	18.3
41024	99	DIRN	SUR	34	-79	539	0	0	21.9	-9.8	24.0
41025	99	DIRN	SUR	35	-75	1053	0	0	17.2	5.6	18.1
41029	99	DIRN	SUR	33	-80	781	0	0	20.2	1.1	20.2
41033	99	DIRN	SUR	32	-80	565	0	0	15.5	-0.7	15.5
41037	99	DIRN	SUR	34	-77	535	5	0	22.2	-6.3	23.0
41038	99	DIRN	SUR	34	-78	528	0	0	58.8	11.4	59.9
41041	99	DIRN	SUR	14	-46	1103	0	0	12.2	-10.1	15.8
41043	99	DIRN	SUR	21	-65	1095	0	0	18.7	-9.2	20.9
41044	99	DIRN	SUR	22	-59	1017	0	0	14.3	4.5	15.0
41046	99	DIRN	SUR	24	-68	812	0	0	17.1	3.3	17.4
41047	99	DIRN	SUR	28	-72	867	0	0	13.4	-4.5	14.2
41049	99	DIRN	SUR	28	-63	1023	0	0	16.9	5.7	17.8
41052	99	DIRN	SUR	18	-65	1605	0	0	13.0	2.6	13.2
41053	99	DIRN	SUR	19	-66	1287	0	0	19.5	0.8	19.5
41056	99	DIRN	SUR	18	-66	1675	0	0	16.1	3.8	16.6
41063	99	DIRN	SUR	35	-76	503	0	0	17.6	-19.5	26.2
41064	99	DIRN	SUR	34	-77	457	2	0	21.3	-12.5	24.7
41300	99	DIRN	SUR	16	-57	644	0	0	12.1	5.0	13.1
42013	99	DIRN	SUR	27	-83	621	0	0	26.2	5.4	26.8
42022	99	DIRN	SUR	28	-84	674	0	0	23.5	4.3	23.9

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
42023	99	DIRN	SUR	26	-83	534	0	0	20.9	10.8	23.5
42056	99	DIRN	SUR	20	-85	125	0	0	18.4	7.3	19.8
42057	99	DIRN	SUR	17	-81	1196	0	0	13.0	2.2	13.2
42060	99	DIRN	SUR	16	-63	1808	0	0	13.5	-0.5	13.5
42085	99	DIRN	SUR	18	-67	965	0	0	21.8	14.1	26.0
44007	99	DIRN	SUR	44	-70	422	0	0	23.1	0.7	23.1
44009	99	DIRN	SUR	39	-75	103	0	0	16.3	0.9	16.3
44013	99	DIRN	SUR	42	-71	473	0	0	19.1	12.3	22.7
44014	99	DIRN	SUR	37	-75	365	0	0	16.2	7.7	17.9
44017	99	DIRN	SUR	41	-72	386	0	0	24.2	3.9	24.5
44018	99	DIRN	SUR	42	-70	484	0	0	15.6	8.5	17.8
44020	99	DIRN	SUR	42	-70	1146	0	0	17.3	3.2	17.6
44022	99	DIRN	SUR	41	-74	302	0	0	19.1	5.9	20.0
44025	99	DIRN	SUR	40	-73	563	0	0	18.7	3.6	19.1
44027	99	DIRN	SUR	44	-67	482	0	0	15.6	9.4	18.2
44029	99	DIRN	SUR	43	-71	771	0	0	18.9	-0.3	18.9
44030	99	DIRN	SUR	43	-70	96	0	0	24.0	5.1	24.6
44032	99	DIRN	SUR	44	-69	348	0	0	18.1	14.3	23.0
44033	99	DIRN	SUR	44	-69	369	0	0	22.1	5.2	22.7
44034	99	DIRN	SUR	44	-68	389	0	0	16.0	8.8	18.3
44037	99	DIRN	SUR	44	-68	500	0	0	17.0	6.1	18.1
44039	99	DIRN	SUR	41	-73	528	0	0	20.1	1.8	20.2
44040	99	DIRN	SUR	41	-74	356	0	0	17.0	-0.3	17.0
44042	99	DIRN	SUR	38	-76	812	0	0	16.9	-12.2	20.8
44058	99	DIRN	SUR	38	-76	788	0	0	19.7	-27.4	33.8
44062	99	DIRN	SUR	39	-76	840	0	0	27.1	-9.1	28.6
44063	99	DIRN	SUR	39	-76	513	0	0	32.7	-11.0	34.5
44064	99	DIRN	SUR	37	-76	773	0	0	21.8	-14.4	26.2
44065	99	DIRN	SUR	40	-74	1058	0	0	21.3	6.2	22.2
44066	99	DIRN	SUR	40	-73	541	0	0	18.2	3.7	18.5
44069	99	DIRN	SUR	41	-73	568	0	0	22.5	3.8	22.8
44072	99	DIRN	SUR	37	-76	727	0	0	18.8	-8.7	20.7
44137	99	DIRN	SUR	42	-62	623	0	0	13.6	5.7	14.7
44139	99	DIRN	SUR	44	-57	554	0	0	11.4	13.5	17.7
44150	99	DIRN	SUR	43	-64	530	0	0	13.1	-29.6	32.4
45003	99	DIRN	SUR	45	-83	555	0	0	22.4	4.8	23.0
45005	99	DIRN	SUR	42	-82	949	0	0	19.6	7.3	20.9
45008	99	DIRN	SUR	44	-82	828	0	0	15.1	4.4	15.8
45012	99	DIRN	SUR	44	-77	512	0	0	17.1	13.0	21.4
45132	99	DIRN	SUR	43	-81	492	0	0	19.4	1.9	19.5
45135	99	DIRN	SUR	44	-77	661	0	0	17.1	-8.9	19.3

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
45137	99	DIRN	SUR	46	-81	551	0	0	14.7	-4.5	15.4
45138	99	DIRN	SUR	50	-66	535	0	0	17.8	3.8	18.2
45139	99	DIRN	SUR	43	-80	399	0	0	22.6	-0.8	22.6
45142	99	DIRN	SUR	43	-79	472	0	0	20.5	-2.6	20.7
45143	99	DIRN	SUR	45	-81	702	0	0	24.1	1.8	24.2
45147	99	DIRN	SUR	42	-83	448	0	0	20.3	1.8	20.4
45149	99	DIRN	SUR	44	-82	634	0	0	19.2	-8.1	20.9
45151	99	DIRN	SUR	45	-79	438	0	0	15.2	4.6	15.9
45152	99	DIRN	SUR	46	-80	434	0	0	18.1	1.7	18.2
45154	99	DIRN	SUR	46	-83	621	0	0	19.1	23.6	30.3
45159	99	DIRN	SUR	44	-79	407	0	0	18.1	12.4	21.9
45162	99	DIRN	SUR	45	-83	275	0	0	16.3	-12.6	20.6
45163	99	DIRN	SUR	44	-84	311	0	0	18.3	3.2	18.6
45164	99	DIRN	SUR	42	-82	456	0	0	35.1	-13.4	37.6
45165	99	DIRN	SUR	42	-83	504	0	0	29.2	11.2	31.3
45166	99	DIRN	SUR	45	-73	556	0	0	15.0	-43.1	45.7
45167	99	DIRN	SUR	42	-80	455	0	0	26.1	-18.8	32.2
45169	99	DIRN	SUR	42	-82	402	0	0	37.7	-13.0	39.8
45175	99	DIRN	SUR	46	-85	567	0	0	24.7	-12.2	27.6
45176	99	DIRN	SUR	42	-82	338	0	0	25.4	-13.6	28.8
45178	99	DIRN	SUR	45	-73	703	0	0	25.7	-14.9	29.7
6100198	99	DIRN	SUR	37	-2	471	0	0	17.6	-1.3	17.7
6100281	99	DIRN	SUR	40	0	277	0	0	28.7	-12.9	31.4
6100417	99	DIRN	SUR	38	0	418	0	0	18.5	4.2	19.0
6200024	99	DIRN	SUR	44	-3	408	0	0	24.2	5.7	24.8
6200025	99	DIRN	SUR	44	-6	410	0	0	60.5	12.5	61.7
6200082	99	DIRN	SUR	44	-8	612	0	0	11.9	-0.8	11.9
6200083	99	DIRN	SUR	43	-9	491	0	0	9.7	7.2	12.1
6200084	99	DIRN	SUR	42	-9	351	0	0	9.6	8.7	13.0
6200085	99	DIRN	SUR	36	-7	406	0	0	18.1	7.3	19.5
6200091	99	DIRN	SUR	53	-5	48	0	0	10.5	-3.4	11.1
6200092	99	DIRN	SUR	51	-11	660	0	0	10.2	6.0	11.8
6200093	99	DIRN	SUR	55	-10	670	0	0	12.1	6.6	13.7
6200094	99	DIRN	SUR	52	-7	641	0	0	12.7	-0.0	12.7
62001	99	DIRN	SUR	45	-5	612	0	0	11.5	4.1	12.2
6200191	99	DIRN	SUR	41	-10	352	0	0	16.3	-2.4	16.5
6200192	99	DIRN	SUR	40	-10	409	0	0	12.8	-3.9	13.4
6201030	99	DIRN	SUR	44	-4	436	0	0	18.4	-4.1	18.8
62023	99	DIRN	SUR	51	-8	634	0	0	14.5	4.2	15.1
62029	99	DIRN	SUR	49	-12	1231	0	0	12.9	9.5	16.0
62050	99	DIRN	SUR	50	-4	597	0	0	13.6	1.8	13.7

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
62081	99	DIRN	SUR	51	-13	658	0	0	13.9	12.3	18.5
62091	99	DIRN	SUR	53	-5	49	0	0	10.2	-2.6	10.5
62092	99	DIRN	SUR	51	-11	44	0	0	12.4	3.8	13.0
62093	99	DIRN	SUR	55	-10	57	0	0	10.8	5.2	12.0
62094	99	DIRN	SUR	52	-7	48	0	0	22.3	2.9	22.5
62095	99	DIRN	SUR	53	-15	713	0	0	11.3	6.8	13.1
62103	99	DIRN	SUR	50	-3	680	0	0	15.3	5.4	16.3
62107	99	DIRN	SUR	50	-6	1263	0	0	18.3	7.8	19.8
62112	99	DIRN	SUR	58	0	635	0	0	12.9	3.8	13.4
62114	99	DIRN	SUR	58	0	1315	0	0	12.4	1.9	12.6
62163	99	DIRN	SUR	48	-8	588	0	0	13.1	-2.7	13.3
62305	99	DIRN	SUR	50	0	655	0	0	19.5	5.0	20.1
62442	99	DIRN	SUR	49	-16	588	0	0	13.8	-5.7	14.9
64041	99	DIRN	SUR	61	-3	677	0	0	13.8	8.0	15.9
64045	99	DIRN	SUR	59	-12	826	0	0	13.2	6.0	14.5
64046	99	DIRN	SUR	61	-4	672	0	0	10.8	-1.1	10.8
95392	99	DIRN	SUR	47	-7	54	0	0	22.9	-7.8	24.2

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASUK02	BNSK	DBLK	DSQL7	FHM5UJH	FPUW5GN	HTXUH4H	PISTON	WDK38HS
XKQLWQB	XQFJRGX	XWHDEAD	ZVQEQCM	5QPW8XG	7HCPVTB	7JUNA4N	01001	01004
01010	01028	01241	01400	01415	01492	02185	02365	02527
02591	02836	02963	03005	03023	03238	03354	03502	03743
03808	03882	03918	03953	04018	04089	04220	04270	04320
04339	04360	04417	06011	06260	06610	07110	07145	07510
07645	07761	08001	08023	08190	08221	08302	08430	08508
08522	08579	10035	10113	10184	10238	10304	10393	10410
10548	10618	10739	10771	10868	10954	10962	11010	11035
11120	11240	11520	11747	11952	12120	12374	12425	12843
12982	13275	13388	14015	14240	14430	15420	15421	15614
16045	16080	16113	16144	16245	16320	16429	16546	16622
16716	16754	17030	17064	17095	17130	17220	17240	17281
17516	17607	33008	37789	40179	40186	43599	45004	47102
47104	47138	47155	47169	47186	47401	47412	47418	47582
47600	47646	47678	47741	47778	47807	47827	47909	47918
47945	47971	47991	60018	61901	61904	61980	61998	67083
68263	68424	68442	68512	68816	68842	70026	70133	70200
70219	70231	70261	70308	70316	70326	70350	70361	70398
71043	71081	71082	71109	71119	71600	71603	71722	71811
71815	71816	71823	71836	71845	71867	71906	71907	71908
71909	71913	71917	71924	71925	71926	71934	71945	71957
71964	72201	72206	72208	72210	72214	72215	72230	72233
72235	72240	72248	72249	72250	72251	72261	72265	72274
72293	72317	72327	72340	72363	72364	72365	72376	72388
72426	72440	72451	72476	72489	72493	72501	72518	72520
72528	72558	72562	72572	72582	72597	72632	72634	72645
72649	72659	72662	72672	72681	72694	72712	72747	72764
72768	72776	72786	72797	73033	74389	74494	74560	76612
76679	76805	76903	78897	78954	81405	85442	85469	85586
85799	85934	88889	89002	89062	89564	89571	89611	89642
89859	91212	91285	91592	91765	91925	91938	91948	91958
93112	93417	93817	93844	93997	94120	94150	94170	94203
94294	94299	94302	94312	94326	94332	94374	94403	94430
94461	94510	94578	94610	94637	94638	94653	94659	94672
94711	94767	94776	94802	94821	94866	94910	94975	94995
94996	94998	95527	96996					

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

ASUK02	BNSK	DBLK	DSQL7	FHM5UJH	FPUW5GN	HTXUH4H	PISTON	WDK38HS
XKQLWQB	XQFJRGX	XWHDEAD	ZVQEQCM	5QPW8XG	7HCPVTB	7JUNA4N	01001	01004
01010	01028	01241	01400	01415	01492	02185	02365	02527
02836	02963	03005	03023	03238	03502	03808	03882	03918
04018	04089	04220	04270	04320	04339	04360	04417	06011
06260	06610	07110	07145	07510	07645	07761	08001	08190
08221	08302	08508	08522	08579	10035	10113	10184	10238
10304	10393	10410	10548	10618	10739	10771	10868	10962
11010	11120	11240	11520	11747	11952	12374	12425	12843
13275	13388	14015	14240	15421	16080	16144	16245	16320
16429	16546	16622	16716	16754	17516	17607	33008	40179
40186	45004	47155	47186	47401	47412	47418	47582	47600
47646	47678	47741	47778	47807	47827	47909	47918	47945
47971	47991	60018	61901	61904	61980	61998	68263	68816
71043	71109	71600	71722	71811	71815	71823	71845	71867
71906	71907	71908	71913	71917	71924	71925	71926	71945
71957	71964	72201	72206	72208	72210	72214	72215	72230
72233	72235	72240	72248	72249	72250	72251	72265	72274
72293	72317	72327	72340	72363	72364	72365	72376	72388
72426	72440	72451	72476	72489	72493	72501	72520	72528
72558	72572	72582	72597	72632	72634	72645	72659	72662
72672	72681	72694	72712	72747	72764	72768	72776	72786
73033	74389	74560	76903	78897	78954	81405	85442	85586
85799	85934	88889	89002	89062	89564	89571	89611	89642
89859	91212	91592	91925	91938	91948	91958	93417	94120
94170	94203	94294	94299	94302	94312	94326	94332	94374
94403	94430	94510	94578	94610	94637	94638	94653	94659
94672	94711	94767	94776	94802	94821	94866	94910	94975
94995	94996	94998	95527	96996				

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.