ECMWF Global Data Monitoring Report

October 2019

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	Sep	Oct	Ident	Time	Sep	Oct
23884	(00)	24	8	17095	(00)	28	47
26477	(00)	17	0	17095	(12)	28	48
26477	(12)	16	0	43192	(00)	0	28
28951	(12)	30	15	43311	(00)	0	27
29612	(00)	30	16	48453	(00)	0	25
29612	(12)	30	7	60096	(12)	9	30
30673	(00)	28	15	60715	(00)	3	18
30673	(12)	29	17	61660	(00)	0	30
35229	(12)	30	15	61660	(12)	0	32
35394	(12)	30	15	64500	(12)	37	49
35671	(12)	30	15	65548	(12)	1	23
42027	(12)	30	0	65578	(00)	17	29
42874	(12)	13	0	68512	(12)	1	21
43185	(12)	25	0	68816	(00)	18	31
48327	(00)	30	14	70308	(00)	14	28
60390	(00)	29	9	70308	(12)	17	28
61687	(12)	20	0	76679	(00)	14	26
61980	(12)	31	20	78988	(00)	0	19
65344	(12)	28	8	78988	(12)	0	20
67197	(12)	14	0	82026	(12)	15	31
70316	(12)	32	20	89009	(12)	10	28
71823	(00)	30	9	89664	(12)	13	27
71823	(12)	30	9	91765	(00)	5	39
74626	(00)	25	0	91765	(12)	1	40
74626	(12)	26	0	-	-	-	-
74794	(12)	48	37	-	-	-	-
76405	(00)	14	0	-	-	-	-
76692	(00)	17	0	-	-	-	-
76805	(00)	17	0	-	-	-	-
82022	(00)	28	15	-	-	-	-
82099	(00)	30	12	-	-	-	-
82107	(00)	27	14	-	-	-	-
82193	(00)	30	17	-	-	-	-
82244	(00)	27	16	-	-	-	-
82281	(00)	30	15	-	-	-	-
82332	(00)	30	17	-	-	-	-
82400	(00)	25	5	-	-	-	-
82411	(00)	27	15	-	-	-	-
82532	(00)	29	15	-	-	-	-
82705	(00)	30	15	-	-	-	-
82824	(00)	30	15	-	-	-	-
82917	(00)	21	0	-	-	-	-
83208	(00)	30	13	-	-	-	-
83362	(00)	29	13	-	-	-	-
83362	(12)	28	14	-	-	-	-
87418	(12)	29	14	-	-	-	-
96315	(00)	20	3	-	-	-	-
96315	(12)	21	4	-	-	-	-

2.2 Drifting Buoys

Surface pressure observations from **1922** 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

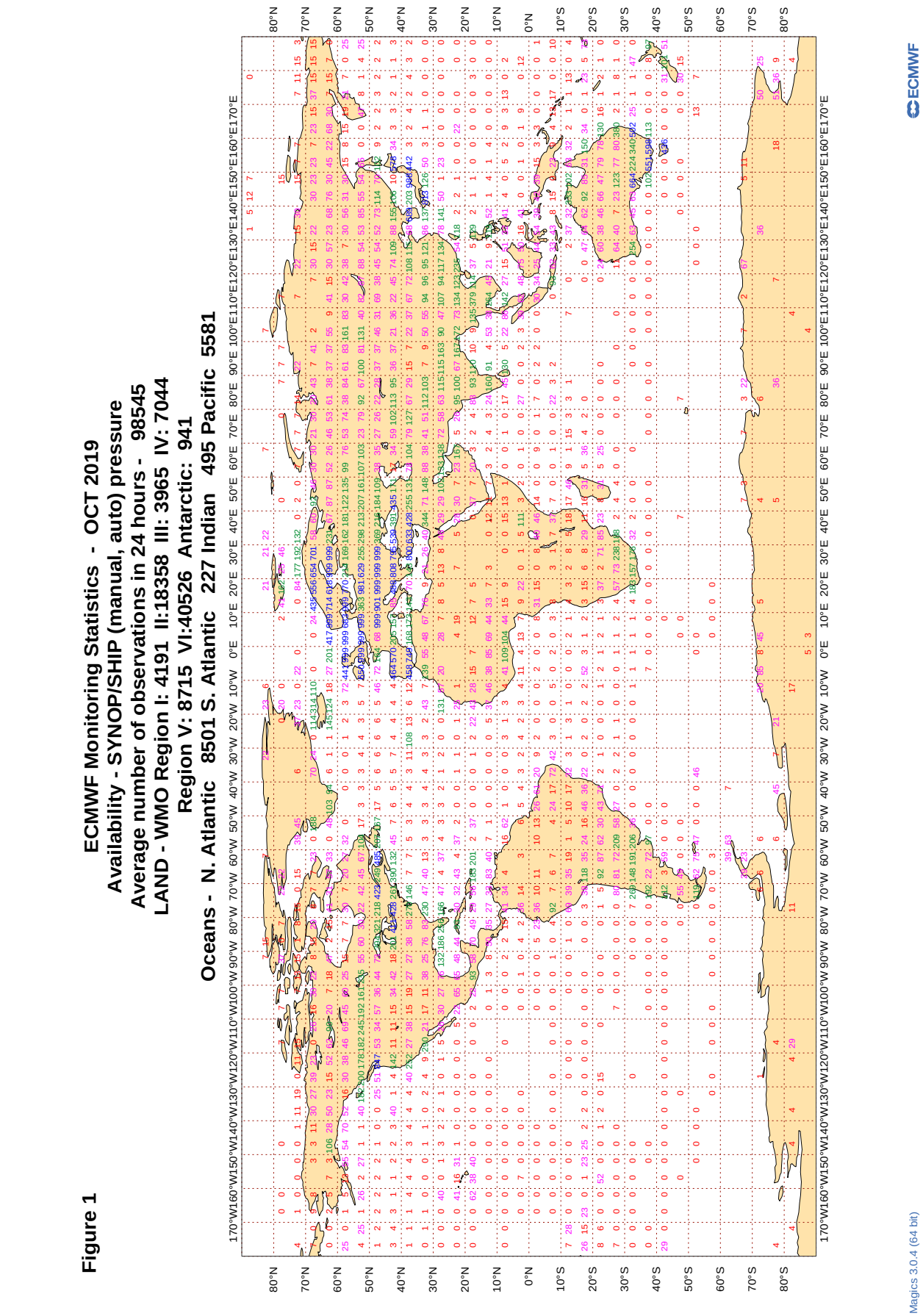


Figure 1

3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

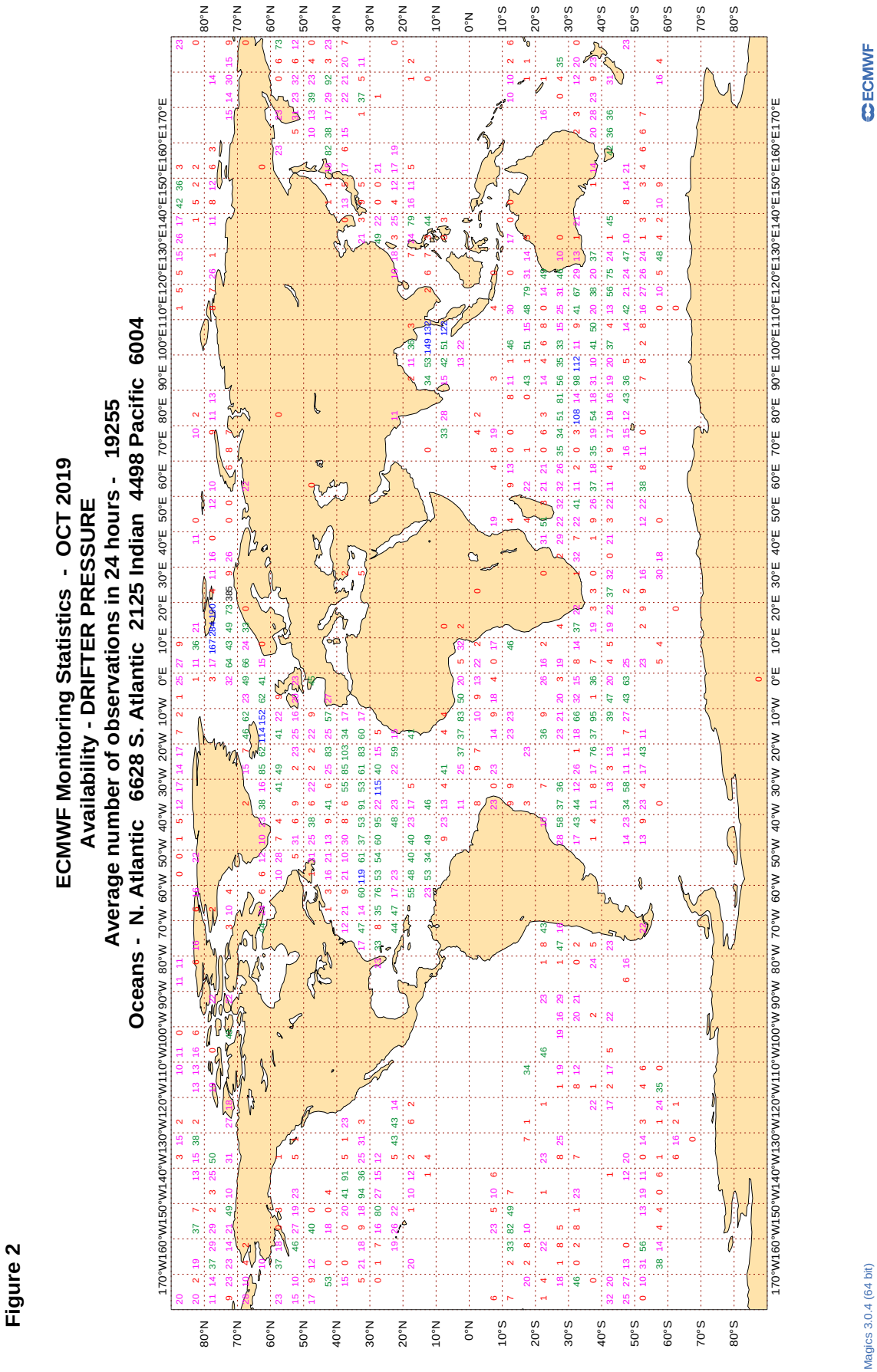


Figure 2

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

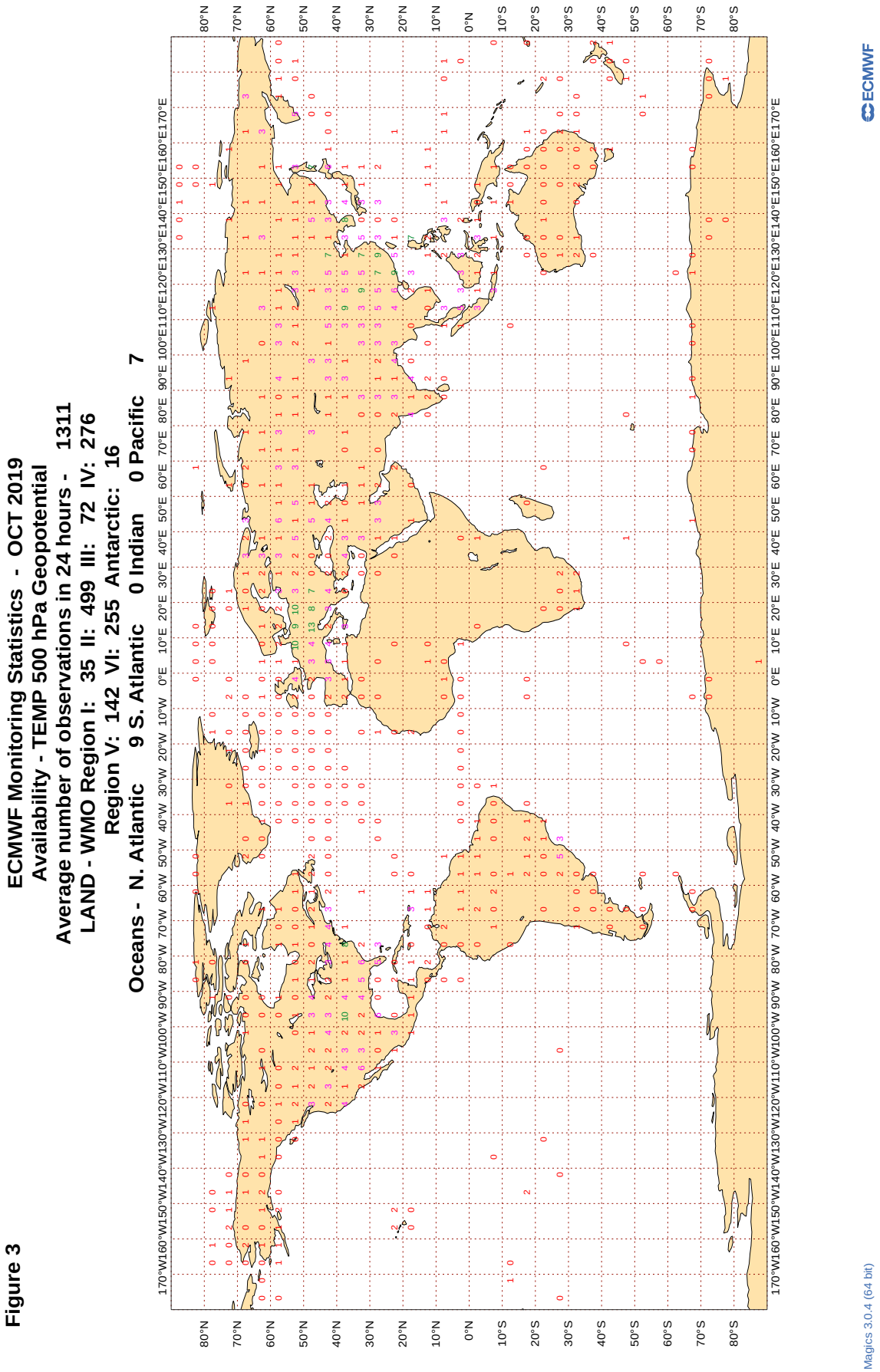


Figure 3

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

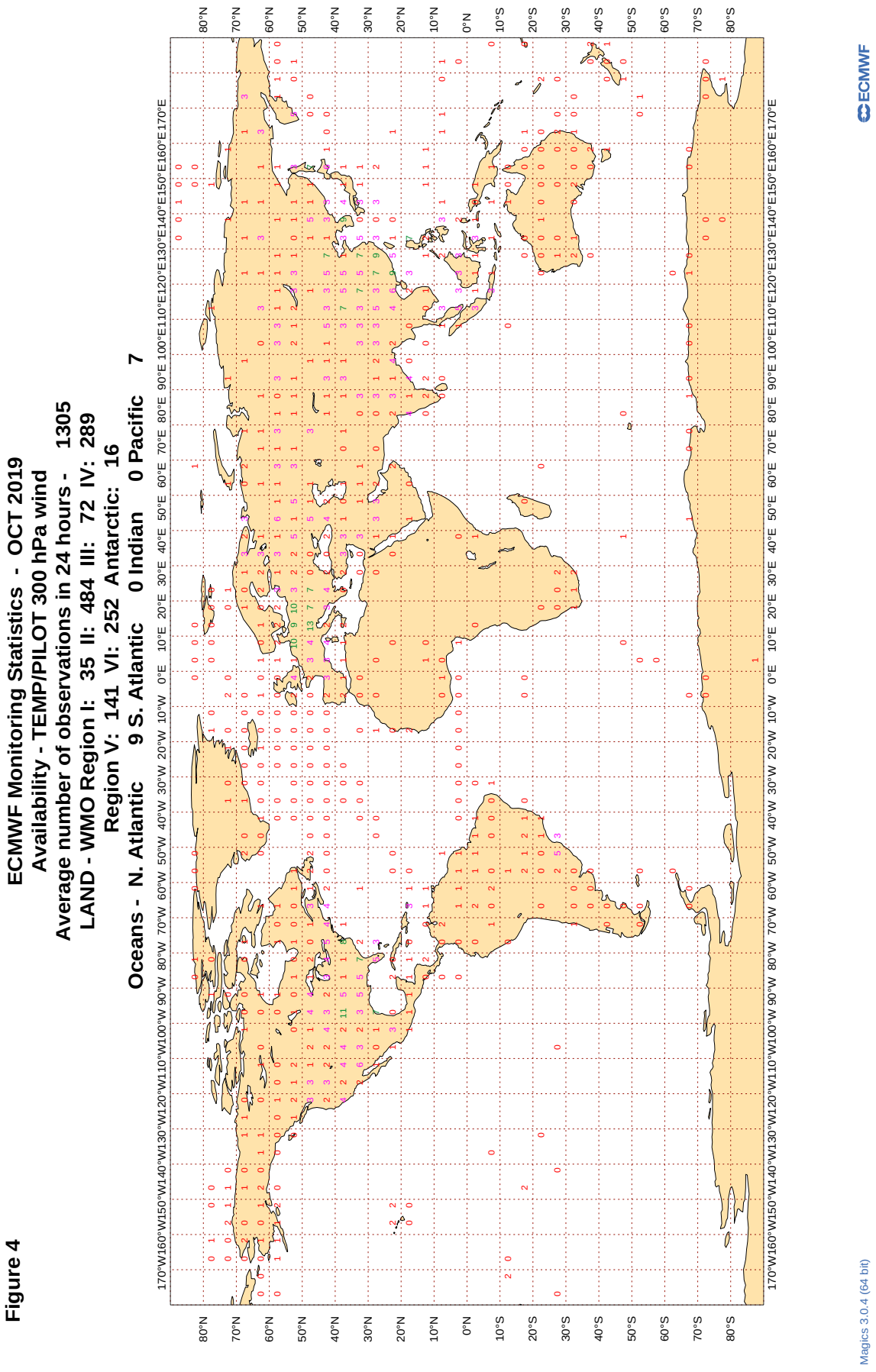


Figure 4

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

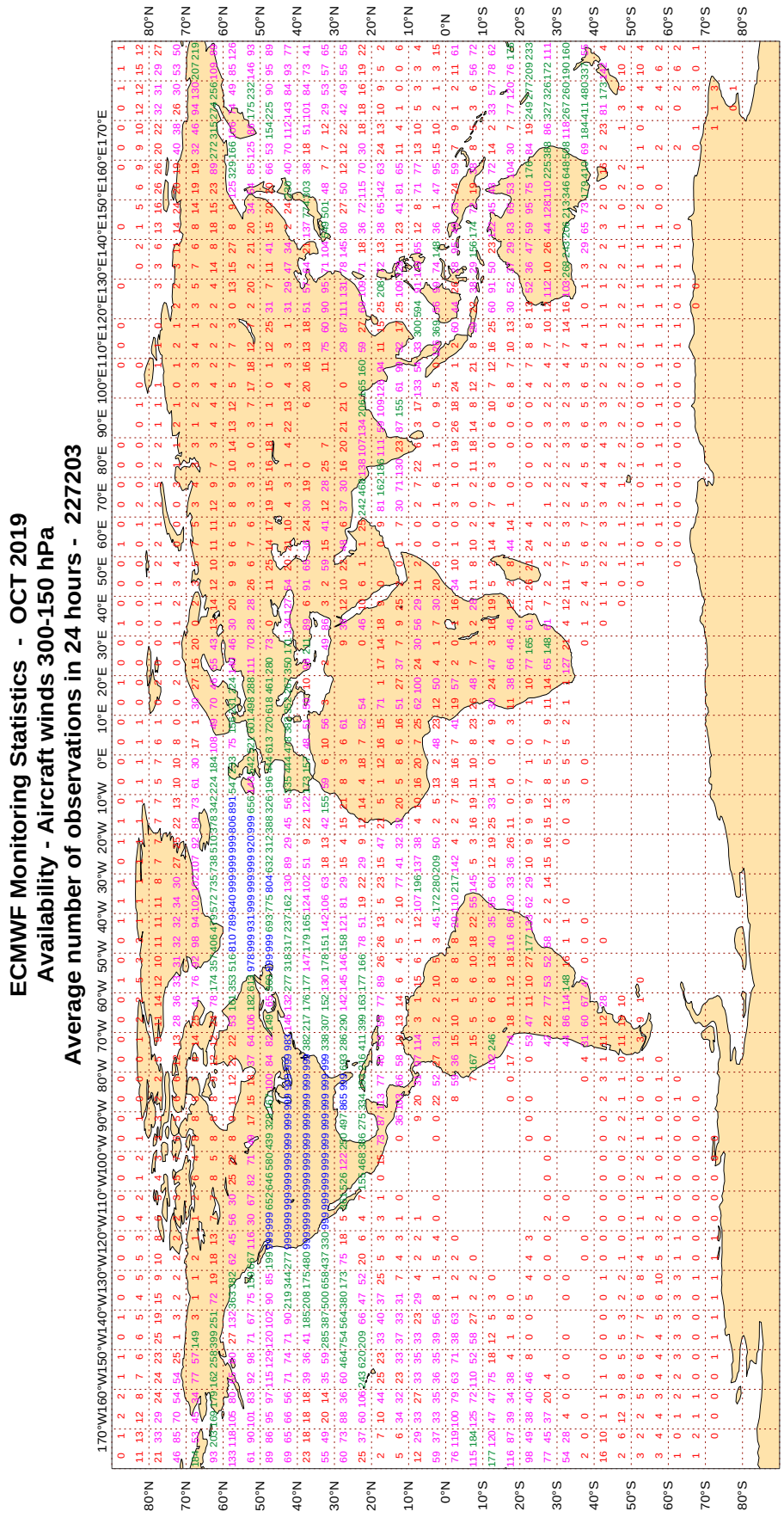


Figure 5

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

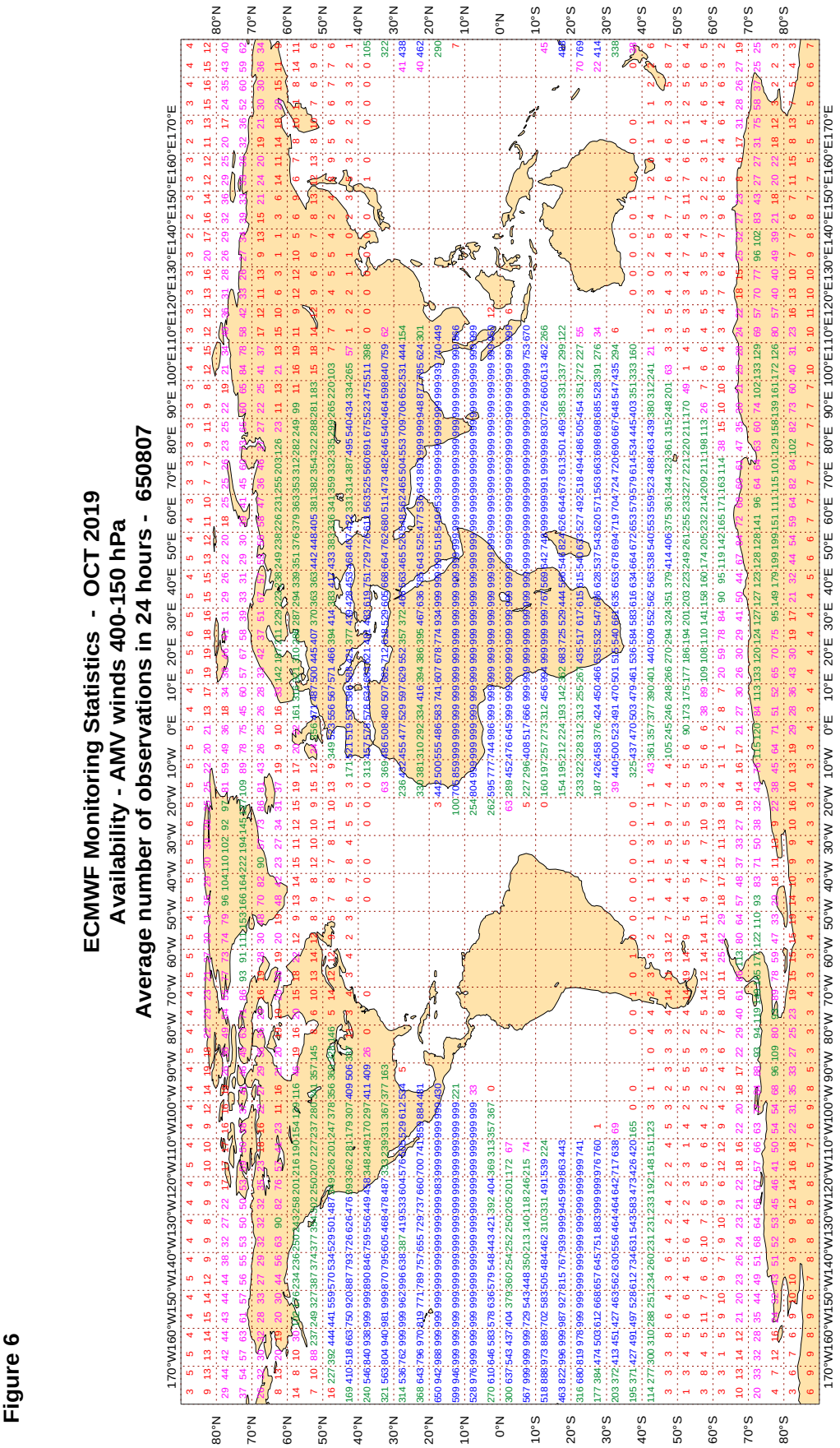


Figure 6

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

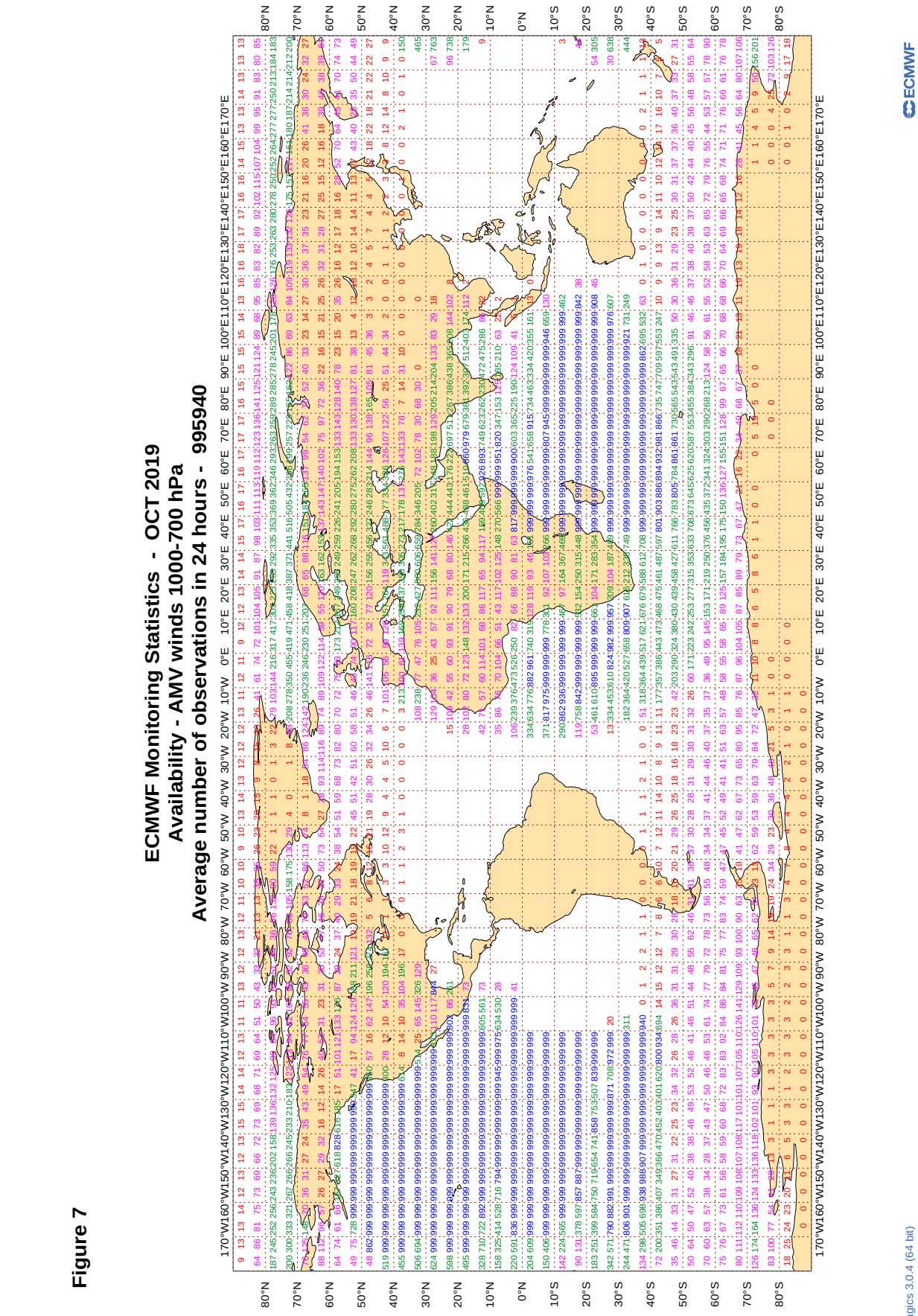


Figure 7

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

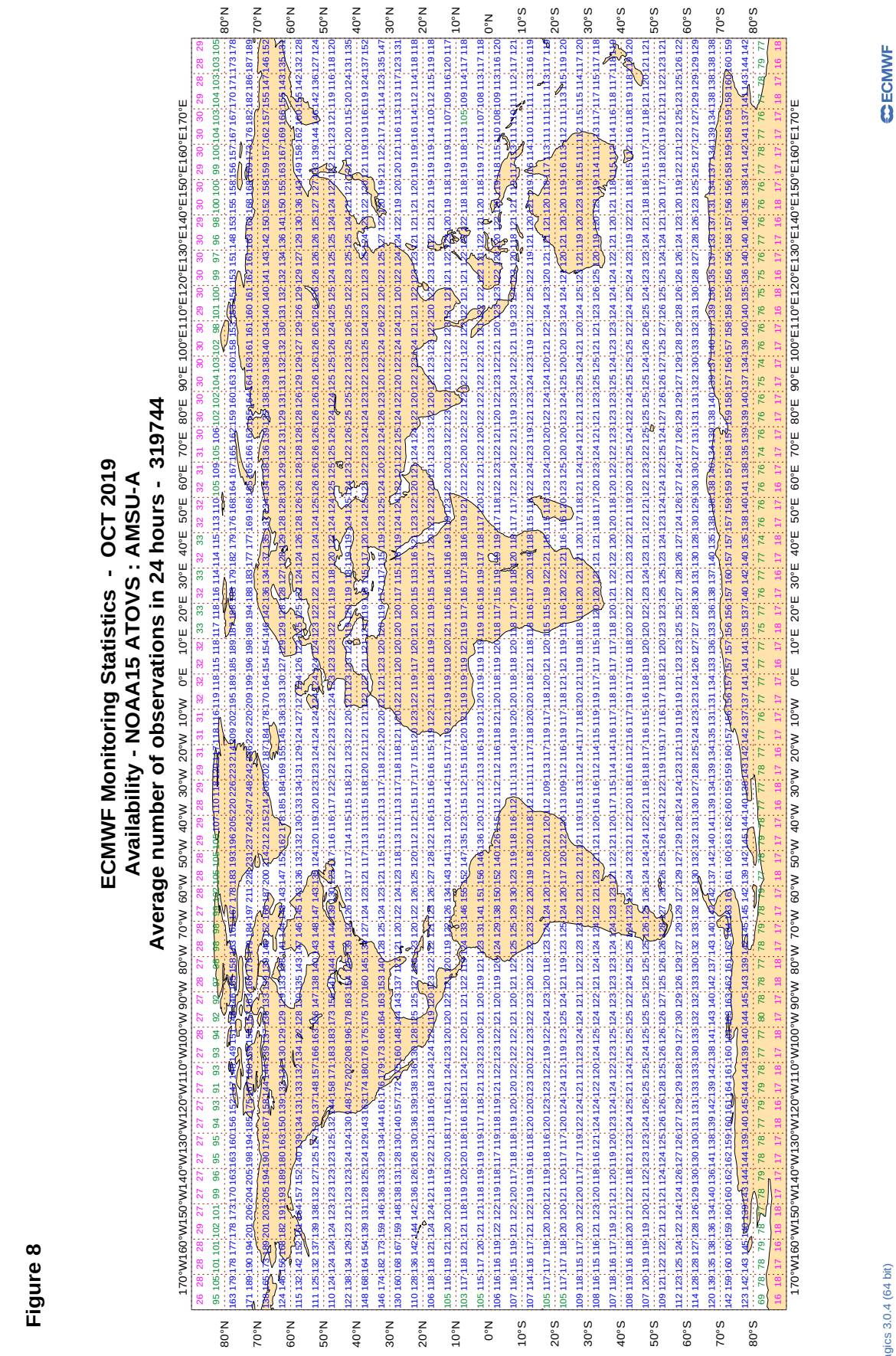
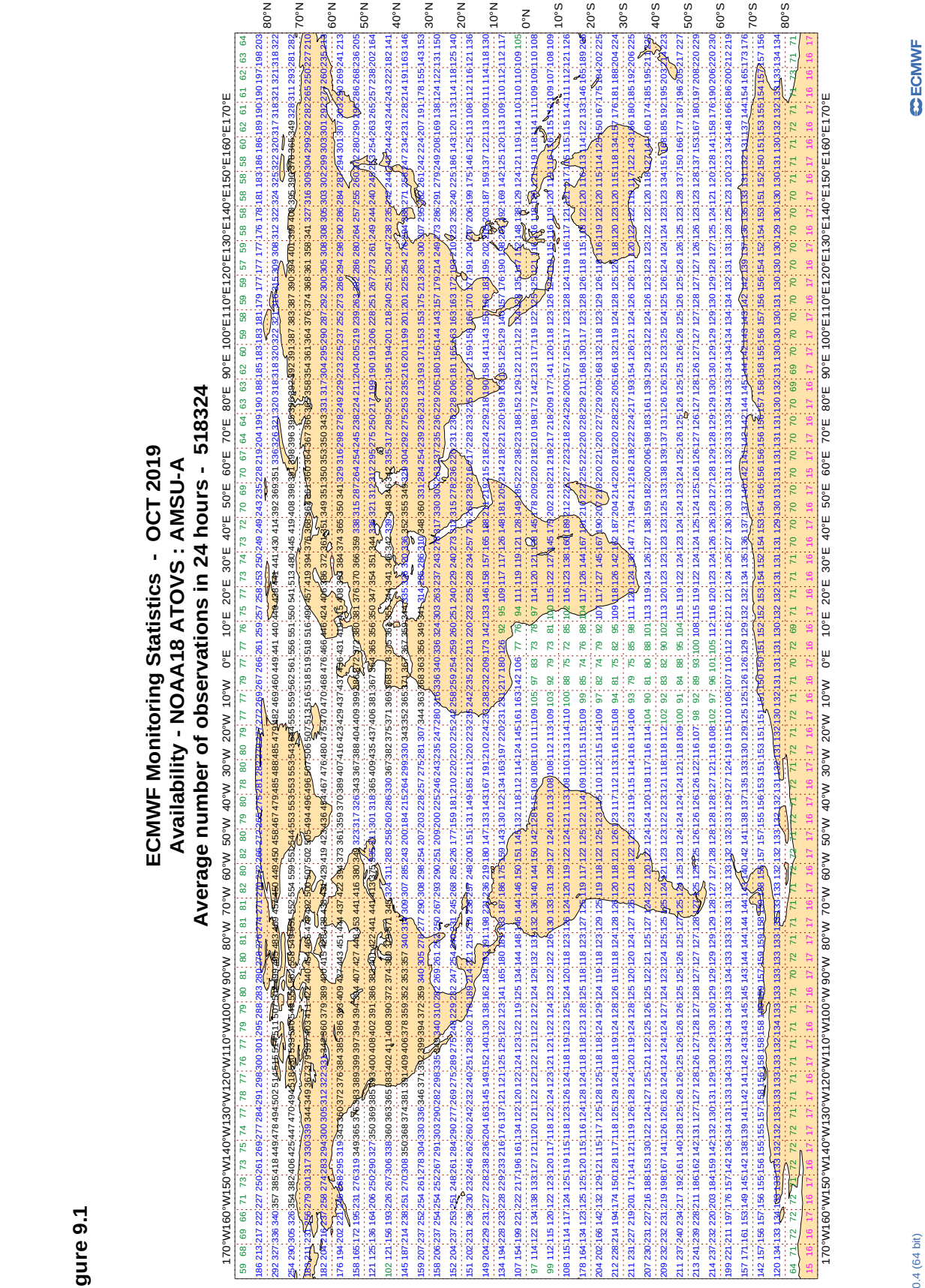


Figure 8

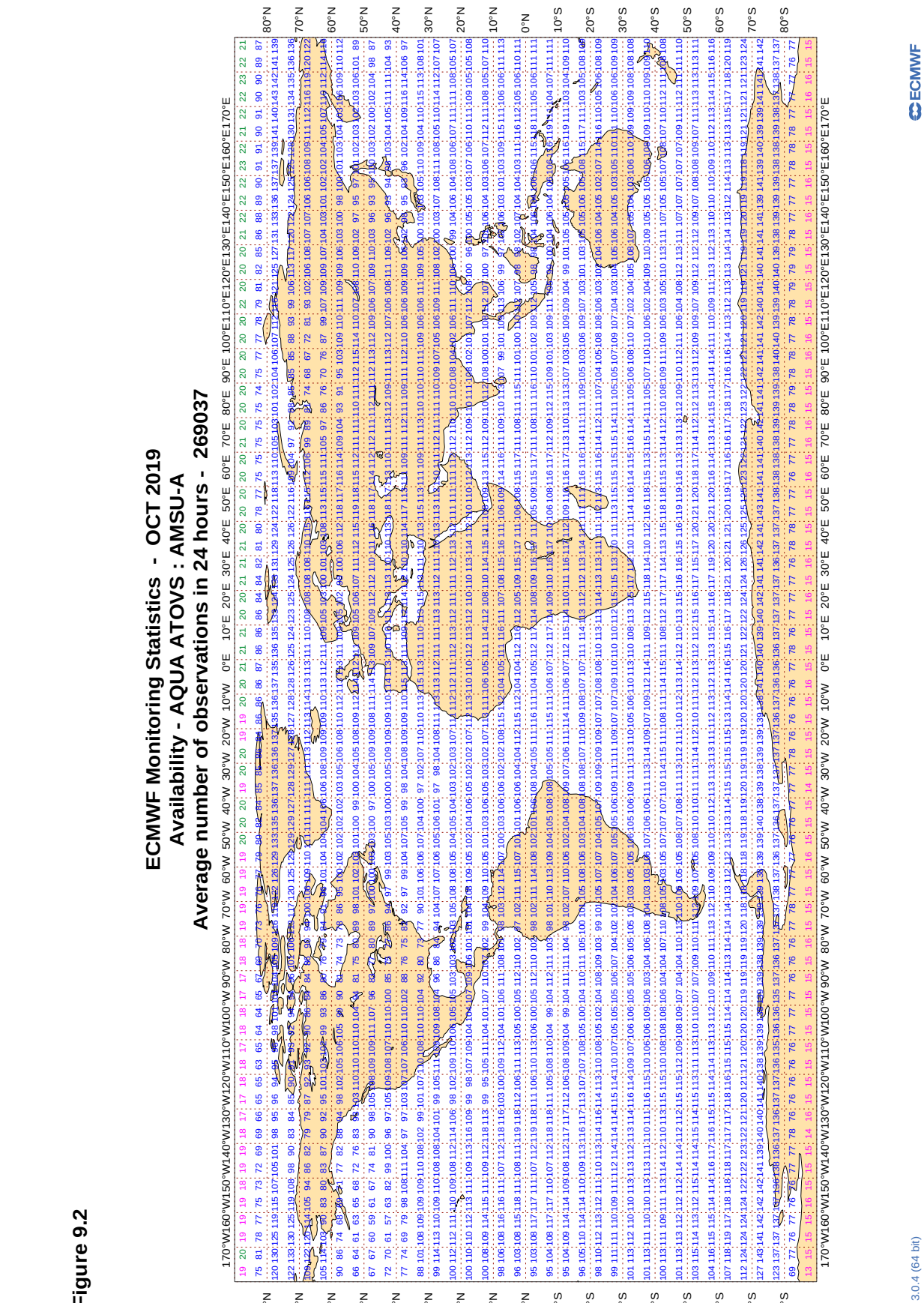
3.2.9 Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A

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

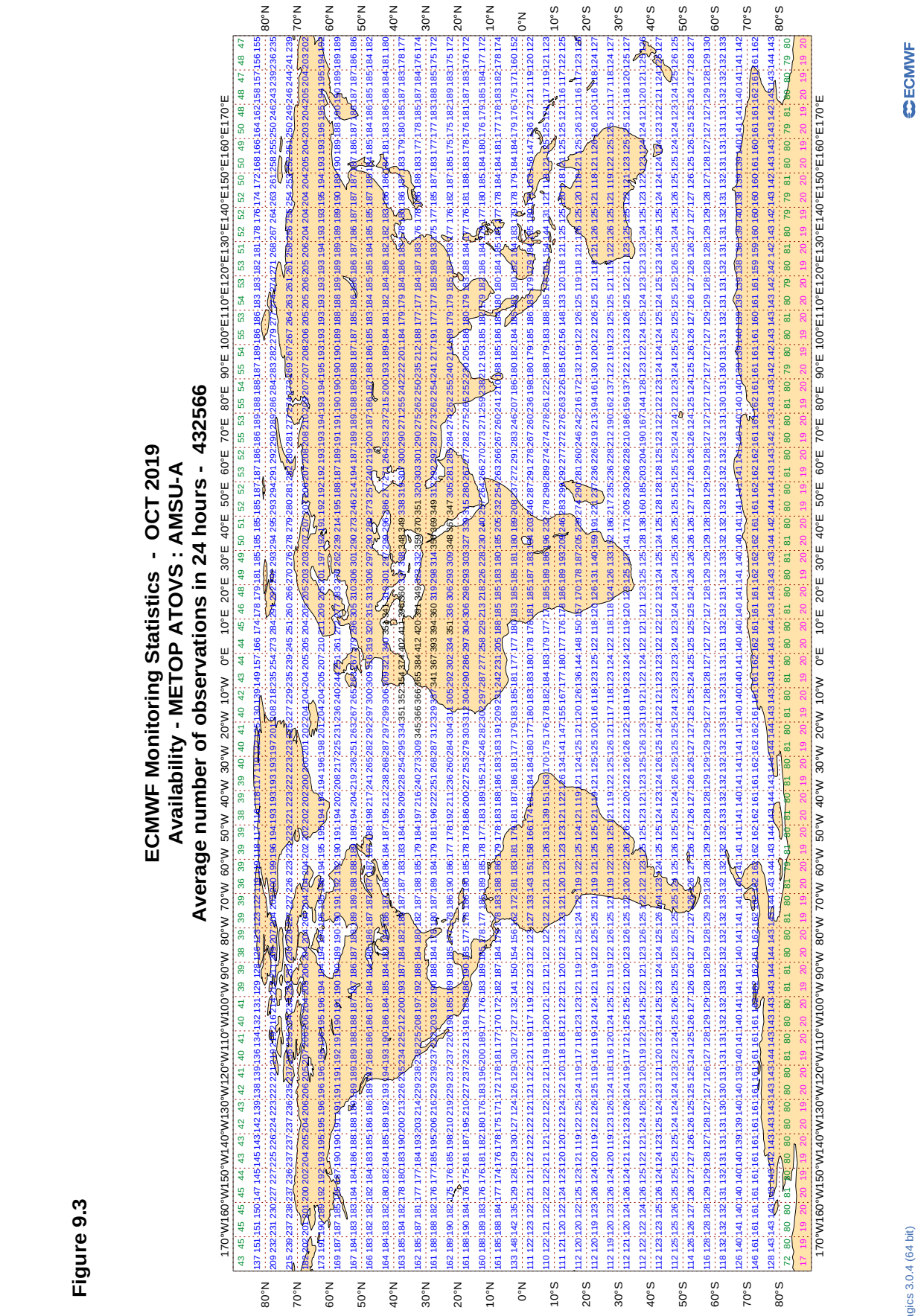


Figure 9.3

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                : OCT 2019
                    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
3EBL5	99	P	SUR	18	0	2.5	3.3	4.2
3ETA7	99	P	SUR	16	0	0.6	-3.8	3.8
44058	99	P	SUR	143	0	0.6	3.5	3.5
46183	99	P	SUR	123	0	1.0	3.0	3.2
4XFC	99	P	SUR	33	0	0.8	4.3	4.4
7KCR	99	P	SUR	24	0	0.7	5.3	5.3
9HJB9	99	P	SUR	17	0	0.6	4.1	4.1
9V2779	99	P	SUR	49	0	4.2	3.5	5.5
9V3532	99	P	SUR	17	0	7.0	-2.6	7.4
9V9498	99	P	SUR	27	0	1.9	4.2	4.6
9V9793	99	P	SUR	51	1	1.1	4.9	5.1
9VDD2	99	P	SUR	27	0	0.9	-5.1	5.2
A8OH5	99	P	SUR	17	0	2.4	4.1	4.7
A8VR3	99	P	SUR	38	0	1.6	-5.3	5.5
ATVK	99	P	SUR	16	3	6.2	3.4	7.1
AWUU	99	P	SUR	15	0	2.5	3.1	4.0
C6DP7	99	P	SUR	20	0	0.9	3.3	3.5
C6FM5	99	P	SUR	29	0	1.1	3.4	3.6
C6FV8	99	P	SUR	52	0	1.3	-5.1	5.3
C6LG6	99	P	SUR	53	0	0.7	-3.0	3.1
C6QM8	99	P	SUR	15	0	1.6	3.3	3.7
C6SE3	99	P	SUR	31	0	0.7	3.2	3.2
C6WW4	99	P	SUR	49	0	1.2	5.9	6.0
CQAI7	99	P	SUR	38	0	1.1	5.8	5.9
D5KR2	99	P	SUR	47	0	1.1	3.3	3.5
H3GS	99	P	SUR	20	0	1.2	-4.3	4.5
LAPE7	99	P	SUR	19	1	0.8	3.3	3.4
LAQL7	99	P	SUR	16	0	1.5	3.4	3.7
OUOW2	99	P	SUR	27	0	1.2	-5.1	5.2
OZBY2	99	P	SUR	22	0	2.1	4.4	4.9
PDHU	99	P	SUR	18	0	1.4	5.2	5.4
UBAU	99	P	SUR	82	0	2.2	3.2	3.8

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
UBSH5	99	P	SUR	29	0	0.7	-3.5	3.5
V7DI9	99	P	SUR	40	40	0.0	0.0	0.0
V7DQ4	99	P	SUR	75	3	5.8	1.1	5.9
V7FA7	99	P	SUR	28	0	0.4	3.3	3.3
VRBI2	99	P	SUR	19	0	1.4	11.4	11.4
VRCU7	99	P	SUR	18	0	2.2	-4.2	4.7
VRFN3	99	P	SUR	62	0	2.0	6.7	7.0
VRFX2	99	P	SUR	62	0	1.2	-3.6	3.8
VRIB3	99	P	SUR	51	0	3.6	-8.2	8.9
VRJS2	99	P	SUR	24	0	2.3	-3.8	4.5
VRMO4	99	P	SUR	16	0	0.8	-5.8	5.8
VRNF7	99	P	SUR	17	0	1.5	8.0	8.2
VRRI4	99	P	SUR	17	0	2.4	3.9	4.6
VRRQ5	99	P	SUR	18	3	2.3	10.9	11.2
VRYP3	99	P	SUR	38	0	1.4	3.4	3.7
VTGB	99	P	SUR	110	0	1.9	3.8	4.3
VTSG	99	P	SUR	22	0	0.5	12.0	12.0
VTWS	99	P	SUR	82	54	6.6	-6.1	9.0
WDF2960	99	P	SUR	47	0	1.6	3.3	3.7
WTOI	99	P	SUR	68	0	2.5	3.2	4.0

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                : OCT 2019
                    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                : OCT 2019
                    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
44072	99	DIRN	SUR	154	0	0	20.6	-75.2	77.9
45141	99	DIRN	SUR	65	0	0	14.4	33.8	36.8
45150	99	DIRN	SUR	66	0	0	15.6	85.2	86.6
45166	99	DIRN	SUR	32	0	0	13.7	-44.8	46.8
45168	99	DIRN	SUR	123	0	0	33.0	31.1	45.3
45176	99	DIRN	SUR	91	0	0	92.8	-19.5	94.8
66022	99	DIRN	SUR	125	0	0	58.0	42.5	71.9

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                 : OCT 2019
                    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
1601527	99	P	SUR	-20	113	739	513	0.9	-0.7	1.2
1601577	99	P	SUR	-49	82	741	4	2.5	4.6	5.2
1701533	99	P	SUR	-37	-12	242	0	0.6	-5.9	6.0
1701535	99	P	SUR	-37	-12	32	0	0.6	-6.0	6.0
1701536	99	P	SUR	-37	-12	130	0	0.6	-6.3	6.3
1701539	99	P	SUR	-37	-12	163	0	0.7	-6.0	6.0
2200184	99	P	SUR	34	126	181	91	0.3	0.3	0.4
3401557	99	P	SUR	-45	121	59	2	6.7	-0.2	6.7
4500001	99	P	SUR	48	-88	4416	4416	0.0	0.0	0.0
4500002	99	P	SUR	45	-86	3933	3933	0.0	0.0	0.0
4500003	99	P	SUR	45	-83	736	736	0.0	0.0	0.0
4500004	99	P	SUR	48	-87	4447	4447	0.0	0.0	0.0
4500005	99	P	SUR	42	-82	4458	4458	0.0	0.0	0.0
4500006	99	P	SUR	47	-90	741	741	0.0	0.0	0.0
4500007	99	P	SUR	43	-87	4403	4403	0.0	0.0	0.0
4500008	99	P	SUR	44	-82	4404	4404	0.0	0.0	0.0
4500012	99	P	SUR	44	-77	4422	0	0.6	-9.5	9.5
4500026	99	P	SUR	42	-87	2338	2338	0.0	0.0	0.0
4500029	99	P	SUR	43	-86	3074	3074	0.0	0.0	0.0
4500168	99	P	SUR	42	-86	4034	4034	0.0	0.0	0.0
4601674	99	P	SUR	53	159	90	90	0.0	0.0	0.0
4701658	99	P	SUR	72	-95	732	222	9.0	1.8	9.1
4701660	99	P	SUR	70	-102	707	664	2.9	-9.2	9.7
4800770	99	P	SUR	59	-33	662	662	0.0	0.0	0.0
4801612	99	P	SUR	81	-157	711	682	1.5	-13.1	13.2
6203579	99	P	SUR	65	-40	89	27	5.2	2.6	5.8
6301501	99	P	SUR	81	4	230	26	6.1	0.0	6.1
7401530	99	P	SUR	-37	-12	544	0	0.7	-6.1	6.1

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                : OCT 2019
                    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
3100231	99	SPEED	SUR	-27	-47	100	0	0	2.6	-6.0	6.5
4400069	99	SPEED	SUR	41	-73	1440	0	0	2.9	5.8	6.4

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

```
          LIST OF SUSPECT STATIONS        : DRIFTER
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                    PERIOD                : OCT 2019
                    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
0062087	99	DIRN	SUR	55	7	344	0	1	10.8	-59.1	60.1
0066022	99	DIRN	SUR	54	14	205	0	20	37.3	20.1	42.3
1500001	99	DIRN	SUR	-10	-10	706	0	39	55.3	-24.2	60.4
23093	99	DIRN	SUR	16	88	109	0	0	14.0	-30.3	33.4
23094	99	DIRN	SUR	14	84	156	0	0	23.5	-23.1	32.9
23451	99	DIRN	SUR	15	69	59	0	3	19.2	-69.7	72.3
23452	99	DIRN	SUR	12	69	76	0	0	17.8	24.9	30.6
23454	99	DIRN	SUR	10	73	28	0	0	21.3	22.6	31.1
23459	99	DIRN	SUR	14	87	68	0	0	17.6	-24.4	30.1
23491	99	DIRN	SUR	12	93	30	0	0	28.2	-21.8	35.6
23492	99	DIRN	SUR	11	72	87	0	1	20.9	-59.9	63.4
3100003	99	DIRN	SUR	-8	-31	257	0	0	9.0	26.7	28.2
3100053	99	DIRN	SUR	-23	-44	296	0	2	19.9	-27.0	33.6
4200085	99	DIRN	SUR	18	-67	3516	0	1	23.1	23.4	32.9
42085	99	DIRN	SUR	18	-67	1164	0	1	21.3	20.1	29.3
4400072	99	DIRN	SUR	37	-76	3276	0	6	15.9	-73.7	75.4
44063	99	DIRN	SUR	39	-76	886	0	1	23.5	-20.1	30.9
44072	99	DIRN	SUR	37	-76	766	0	7	17.6	-74.5	76.5
44139	99	DIRN	SUR	44	-57	685	0	0	11.9	-23.0	25.8
4500024	99	DIRN	SUR	44	-87	1034	0	0	18.2	25.1	31.0
4500166	99	DIRN	SUR	45	-73	382	0	1	12.1	-39.7	41.5
4500168	99	DIRN	SUR	42	-86	3362	0	3	29.6	34.2	45.2
4500186	99	DIRN	SUR	42	-88	1190	0	0	19.0	28.1	34.0
45024	99	DIRN	SUR	44	-87	234	0	0	20.0	24.9	31.9
45141	99	DIRN	SUR	61	-115	399	0	0	17.1	32.3	36.5
45149	99	DIRN	SUR	44	-82	654	0	0	16.6	30.2	34.5
45150	99	DIRN	SUR	62	-114	388	0	13	12.2	81.6	82.5
45166	99	DIRN	SUR	45	-73	128	0	1	14.3	-40.4	42.9
45168	99	DIRN	SUR	42	-86	692	0	2	29.9	31.4	43.4
45186	99	DIRN	SUR	42	-88	463	0	0	17.8	28.0	33.2
4600120	99	DIRN	SUR	48	-122	729	0	0	17.2	-22.9	28.6

```
LIST OF SUSPECT STATIONS        : DRIFTER
          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
46120	99	DIRN	SUR	48	-122	138	0	0	15.8	-24.5	29.1
6101003	99	DIRN	SUR	40	25	100	0	14	21.0	33.0	39.1
6200191	99	DIRN	SUR	41	-10	515	0	1	14.5	25.1	29.0
66022	99	DIRN	SUR	54	14	722	0	20	35.2	21.1	41.1

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                : OCT 2019
                    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	12	Z	1000	57	3	26	0	13.0	76.4	77.5
01400	00	Z	1000	57	3	25	0	5.6	78.0	78.2
06458	00	Z	850	51	5	28	2	35.5	11.9	37.4
20292	00	Z	200	78	104	27	1	94.3	24.6	97.5
20292	12	Z	250	78	104	28	2	82.3	3.6	82.4
24507	00	Z	70	64	100	28	3	138.5	-90.1	165.2
24507	12	Z	250	64	100	30	3	78.0	-39.7	87.5
28695	00	Z	200	55	73	29	1	55.1	92.8	107.9
28695	12	Z	200	55	73	27	0	58.4	93.8	110.5
31873	00	Z	150	46	134	24	1	87.3	-108.7	139.4
31873	12	Z	250	46	134	25	4	78.4	-104.2	130.4
33837	00	Z	200	46	31	10	0	34.3	83.2	90.0
37259	12	Z	30	43	47	22	0	124.6	237.7	268.4
42348	00	Z	50	27	76	22	0	135.1	59.3	147.5
42634	00	Z	850	23	70	28	0	6.9	48.0	48.5
65046	12	Z	925	12	9	12	0	2.8	38.9	39.0
76394	00	Z	200	26	-100	23	0	98.4	161.1	188.8
JNKN7J	12	Z	1000	50	-8	11	0	6.1	46.7	47.1

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                : OCT 2019
                    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
32389	12	V	300	56	161	31	0	-2.9	1.2	15.2
33791	12	V	200	48	33	20	0	-1.0	0.8	15.7

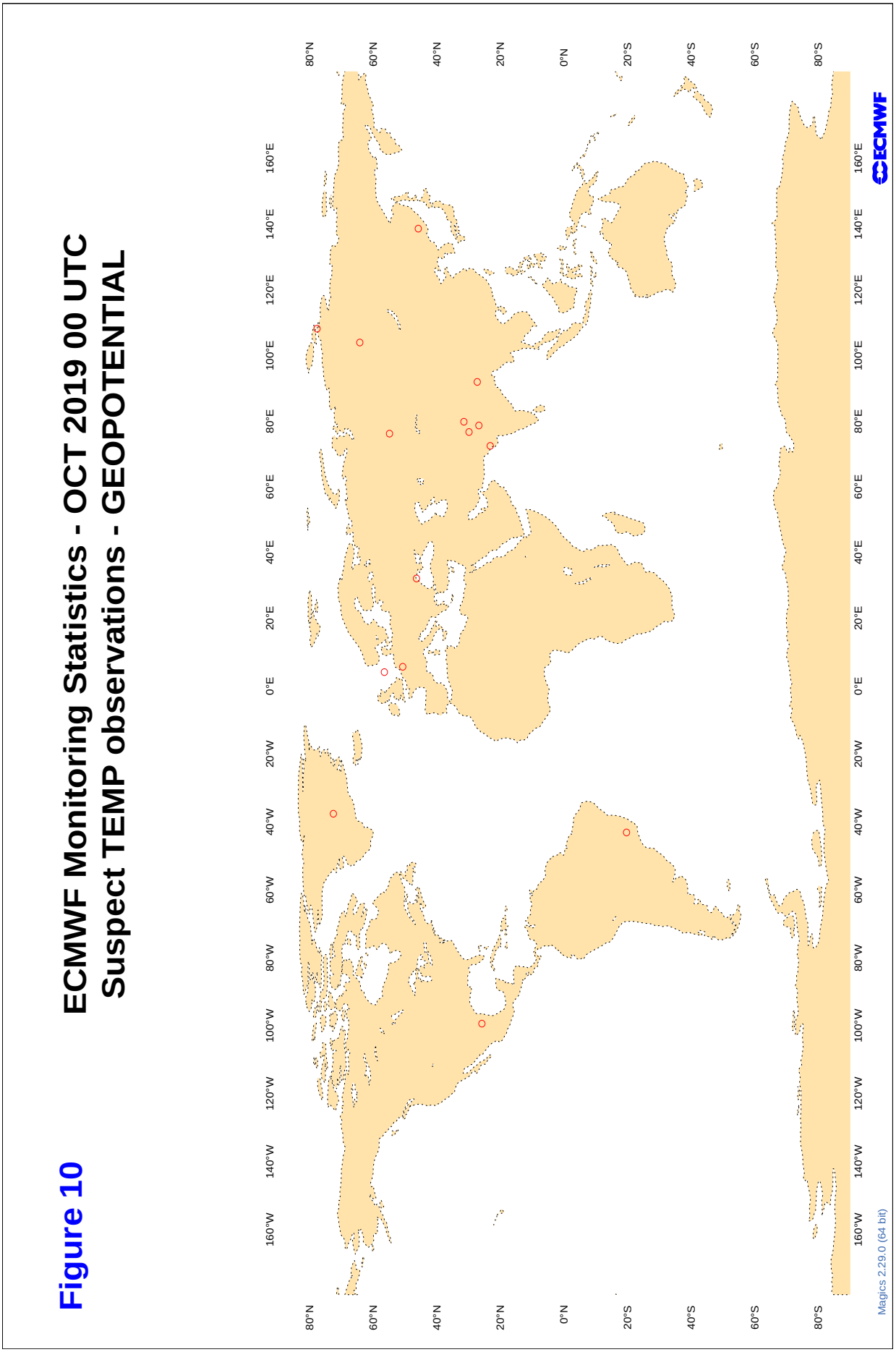
3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                    AREA                  : GLOBAL
                    PERIOD                : OCT 2019
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD

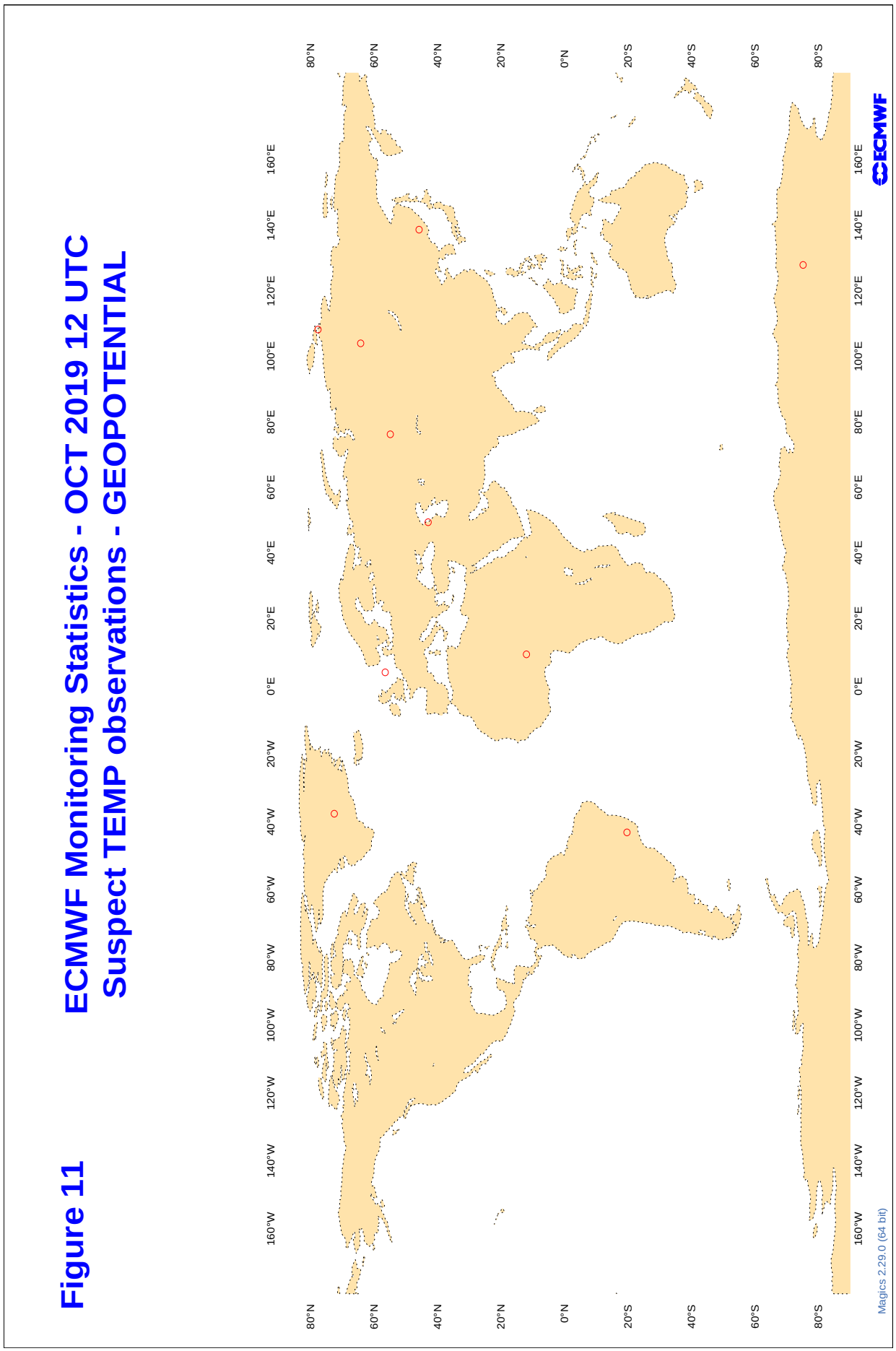

SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS >= 5 M/S
                    NO. OF OBSERVATIONS   >= 5, AND,
                    ABSOLUTE BIAS         >= 10 DEGREES, WITH
                    STANDARD DEVIATION    <  30 DEGREES, AND,
                    VERTICAL SPREAD       < 10 DEGREES
         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

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD

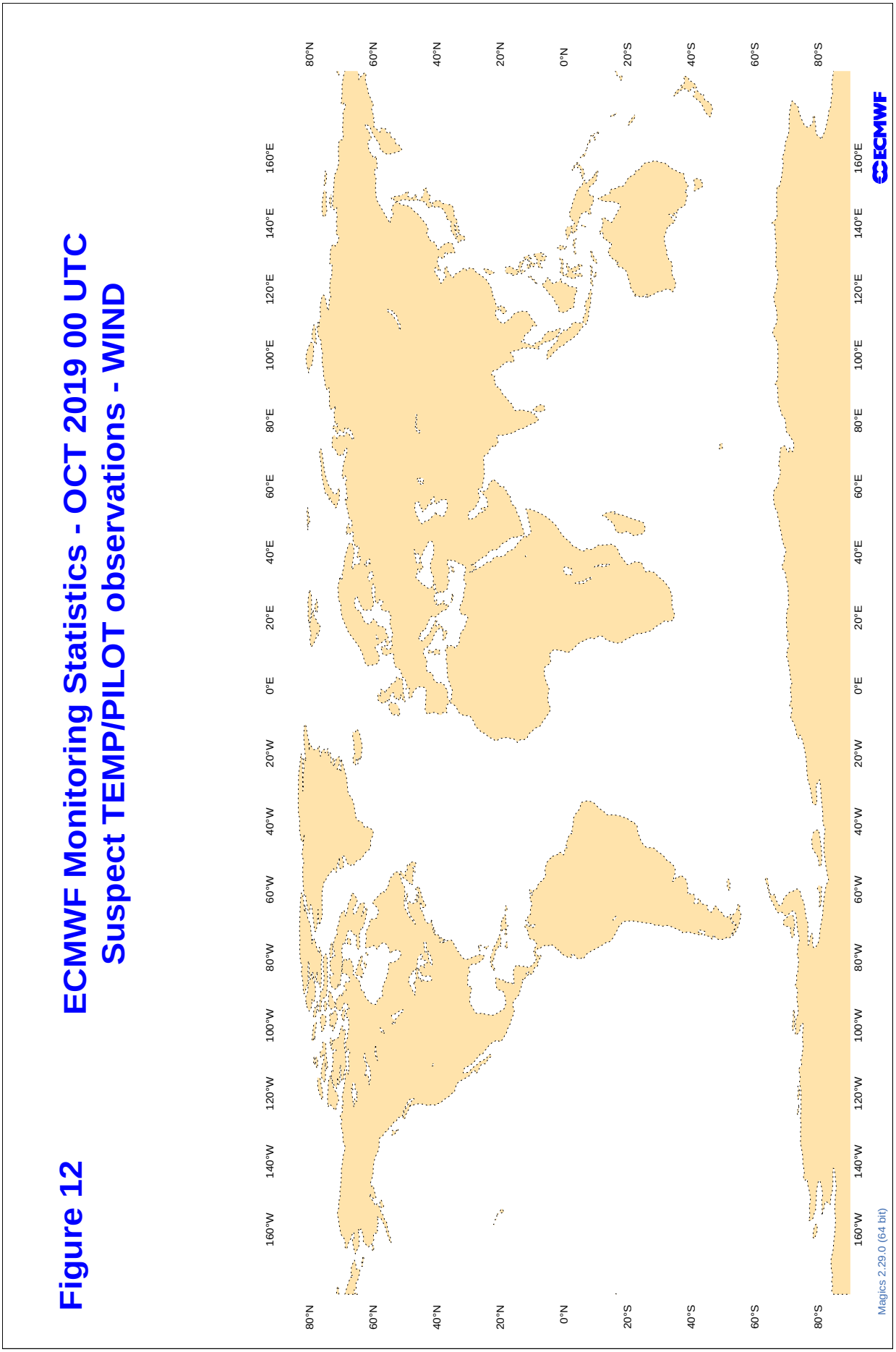
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



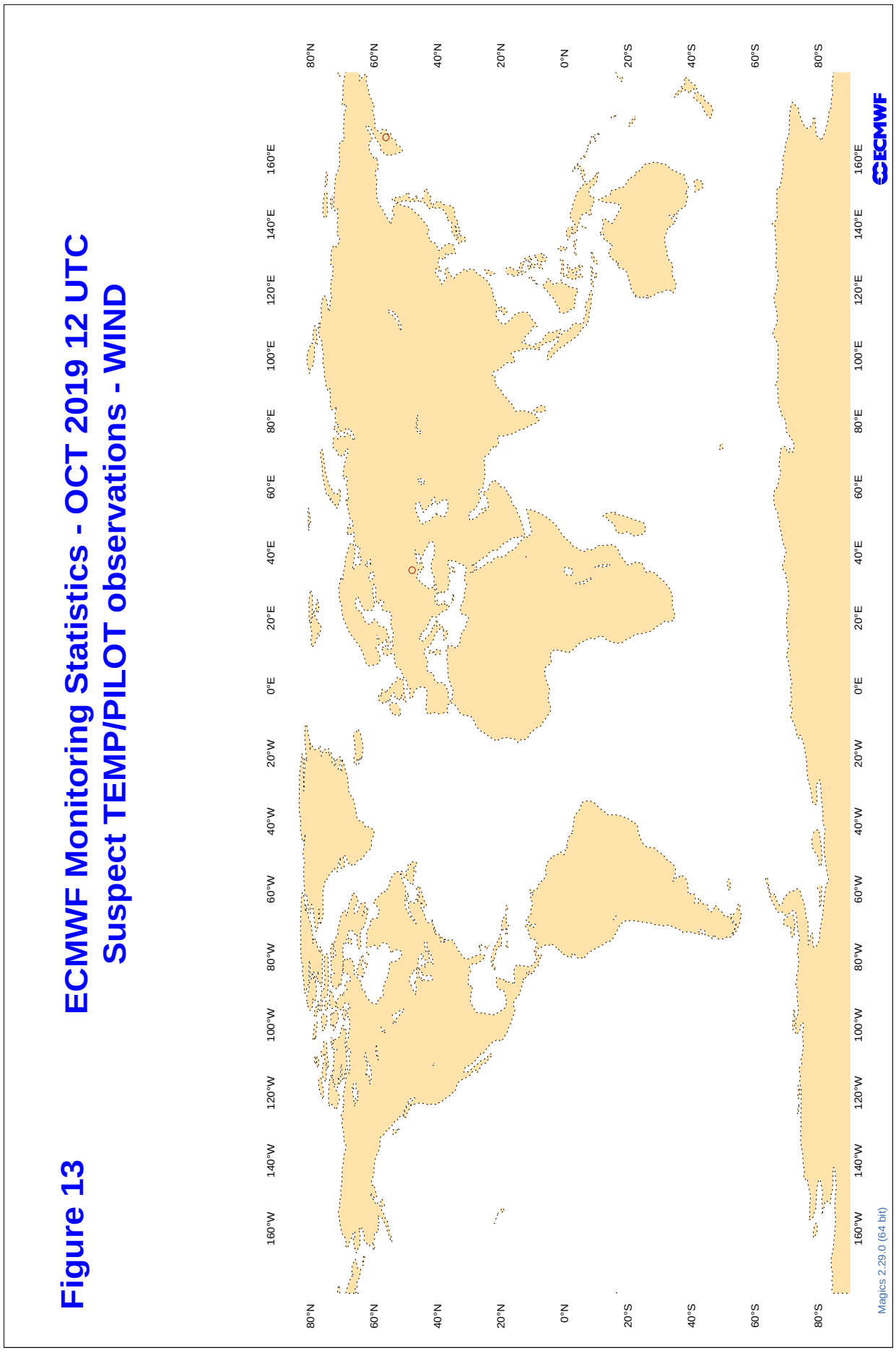
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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                : OCT 2019
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
5QPW8X	12	Z	100	11	21.2	19.4
5QPW8X	00	Z	100	12	22.0	20.7
7JUNA4	12	Z	100	5	29.8	29.1
7JUNA4	00	Z	100	4	26.2	18.5
ASDE09	12	Z	100	5	38.9	33.3
BPMWB2	00	Z	100	5	16.1	14.2
BPMWB2	12	Z	100	7	17.1	12.7
DBLK	12	Z	100	31	4.6	2.2
DBLK	00	Z	100	31	3.5	-0.7
FHM5UJ	00	Z	100	9	12.7	8.6
FHM5UJ	12	Z	100	15	20.3	12.5
HTXUH4	12	Z	100	6	11.3	7.8
HTXUH4	00	Z	100	6	9.0	6.8
JNKN7J	12	Z	100	10	59.1	58.8
JNKN7J	00	Z	100	7	37.3	36.7
JNSR	00	Z	100	31	6.3	-3.8
JNSR	12	Z	100	31	7.7	-4.1
KJJF9X	12	Z	100	7	22.2	18.9
KJJF9X	00	Z	100	6	12.7	11.5
KMPLHP	12	Z	100	7	23.1	13.7
KMPLHP	00	Z	100	6	56.2	13.3
VKB4L5	12	Z	100	7	31.8	29.7
VKB4L5	00	Z	100	5	39.4	38.3
WDK38H	12	Z	100	18	7.3	-5.9
XKQLWQ	12	Z	100	9	45.1	42.7
XQFJRG	12	Z	100	3	3.7	3.7
XQFJRG	00	Z	100	3	27.1	-21.2
YLV96W	12	Z	100	7	28.7	25.3
YLV96W	00	Z	100	7	22.6	15.3
ZSNO	12	Z	100	4	20.4	19.6
ZVQEQC	12	Z	100	7	14.2	13.9
ZVQEQC	00	Z	100	5	14.5	13.8

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

```
RADIOSONDE MONITORING STATISTICS (SHIPS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 100 HPA
         AREA                  : GLOBAL
         PERIOD                : OCT 2019
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
5QPW8X	12	V	100	10	2.9	0.3	1.2
5QPW8X	00	V	100	12	3.8	0.4	-0.4
7JUNA4	12	V	100	5	2.6	1.0	0.9
7JUNA4	00	V	100	4	1.3	-0.5	-0.1
ASDE09	12	V	100	5	3.6	1.0	1.4
BPMWB2	00	V	100	5	2.5	-0.9	-1.7
BPMWB2	12	V	100	7	3.7	1.8	-1.4
DBLK	12	V	100	31	1.8	0.1	0.3
DBLK	00	V	100	30	1.9	0.2	0.2
FHM5UJ	00	V	100	8	3.4	-0.7	0.5
FHM5UJ	12	V	100	15	3.4	1.0	0.8
HTXUH4	12	V	100	6	2.7	-0.4	0.5
HTXUH4	00	V	100	6	4.4	1.4	-1.5
JNKN7J	12	V	100	10	3.2	-0.3	-0.2
JNKN7J	00	V	100	7	2.7	0.8	-1.0
JNSR	00	V	100	29	2.9	-0.6	0.0
JNSR	12	V	100	31	3.6	-0.2	-0.9
KJJF9X	12	V	100	7	3.0	-1.0	-1.5
KJJF9X	00	V	100	6	3.1	0.4	-1.2
KMPLHP	12	V	100	7	5.5	-0.5	2.2
KMPLHP	00	V	100	6	3.7	0.3	1.4
VKB4L5	12	V	100	7	3.9	-1.0	-2.5
VKB4L5	00	V	100	5	4.1	0.6	-2.3
WDK38H	12	V	100	18	1.8	0.1	-0.3
XKQLWQ	12	V	100	9	2.6	-0.3	-0.6
XQFJRG	12	V	100	3	1.8	1.2	-0.8
XQFJRG	00	V	100	2	3.4	-1.4	-3.1
YLV96W	12	V	100	7	4.5	1.1	-0.5
YLV96W	00	V	100	7	3.7	-0.6	-0.7
ZSNO	12	V	100	4	2.5	0.5	1.0
ZVQEQC	12	V	100	7	4.7	-1.2	0.5
ZVQEQC	00	V	100	5	2.8	0.5	1.3

3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

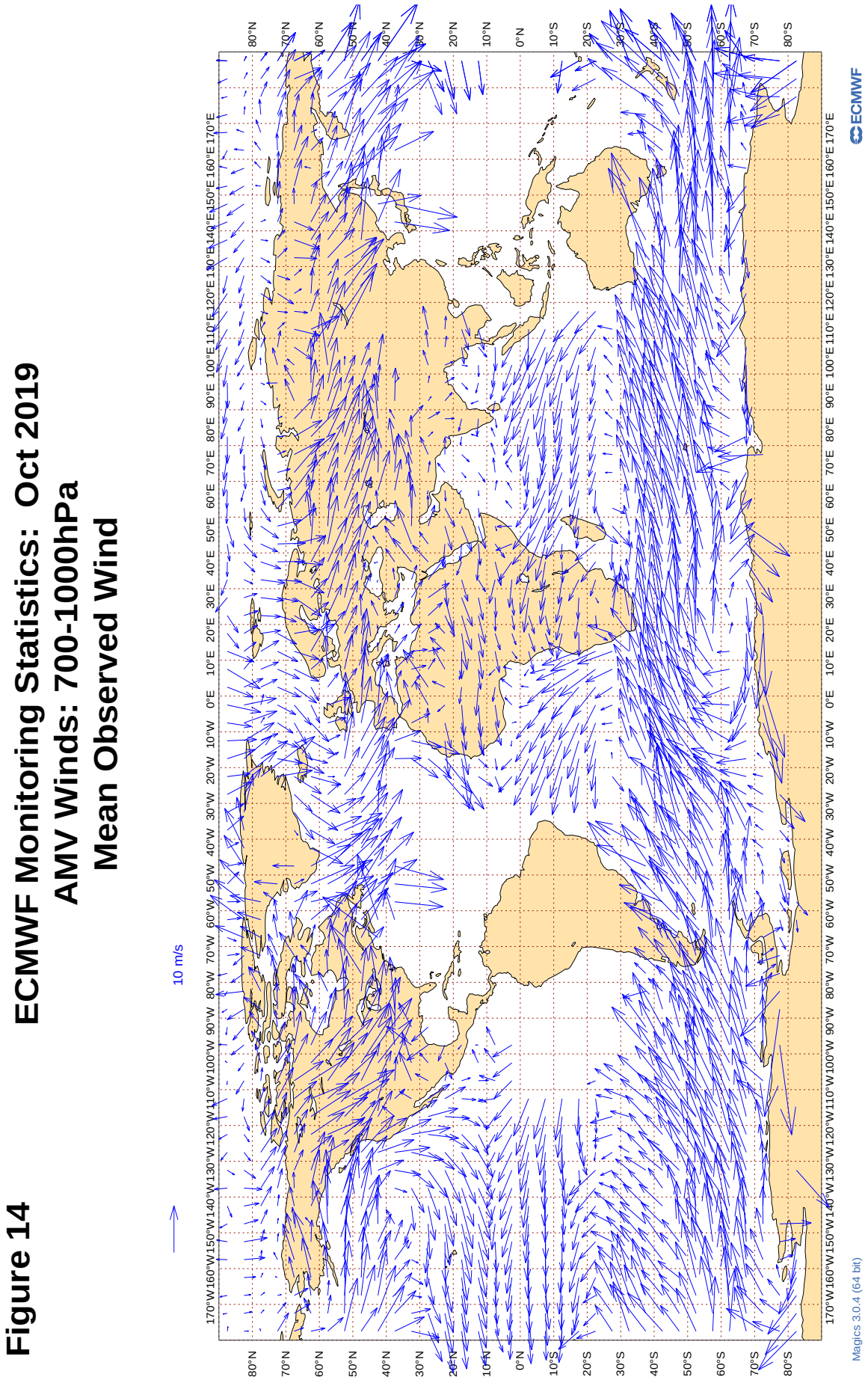


Figure 14

3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

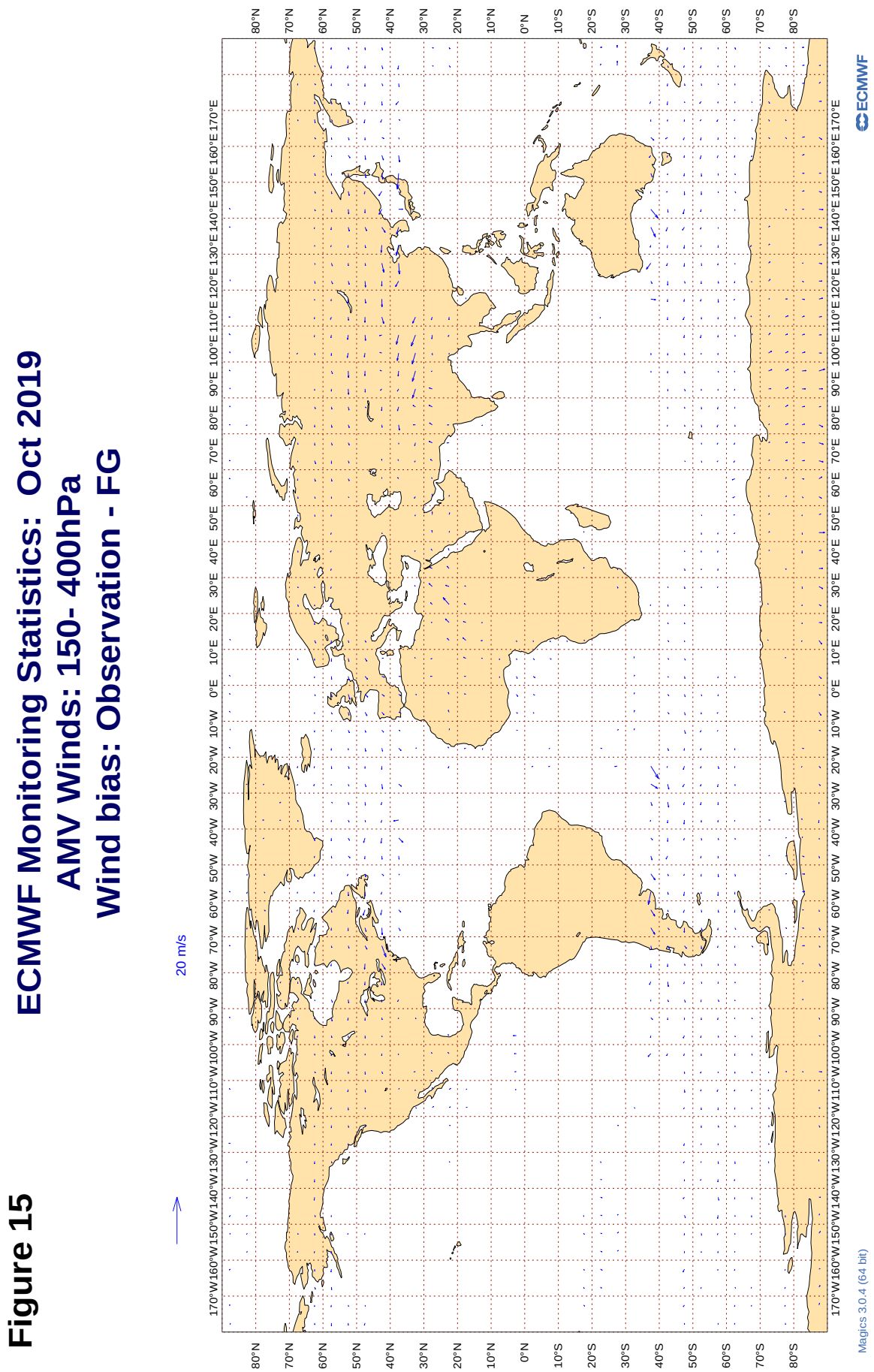


Figure 15

3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

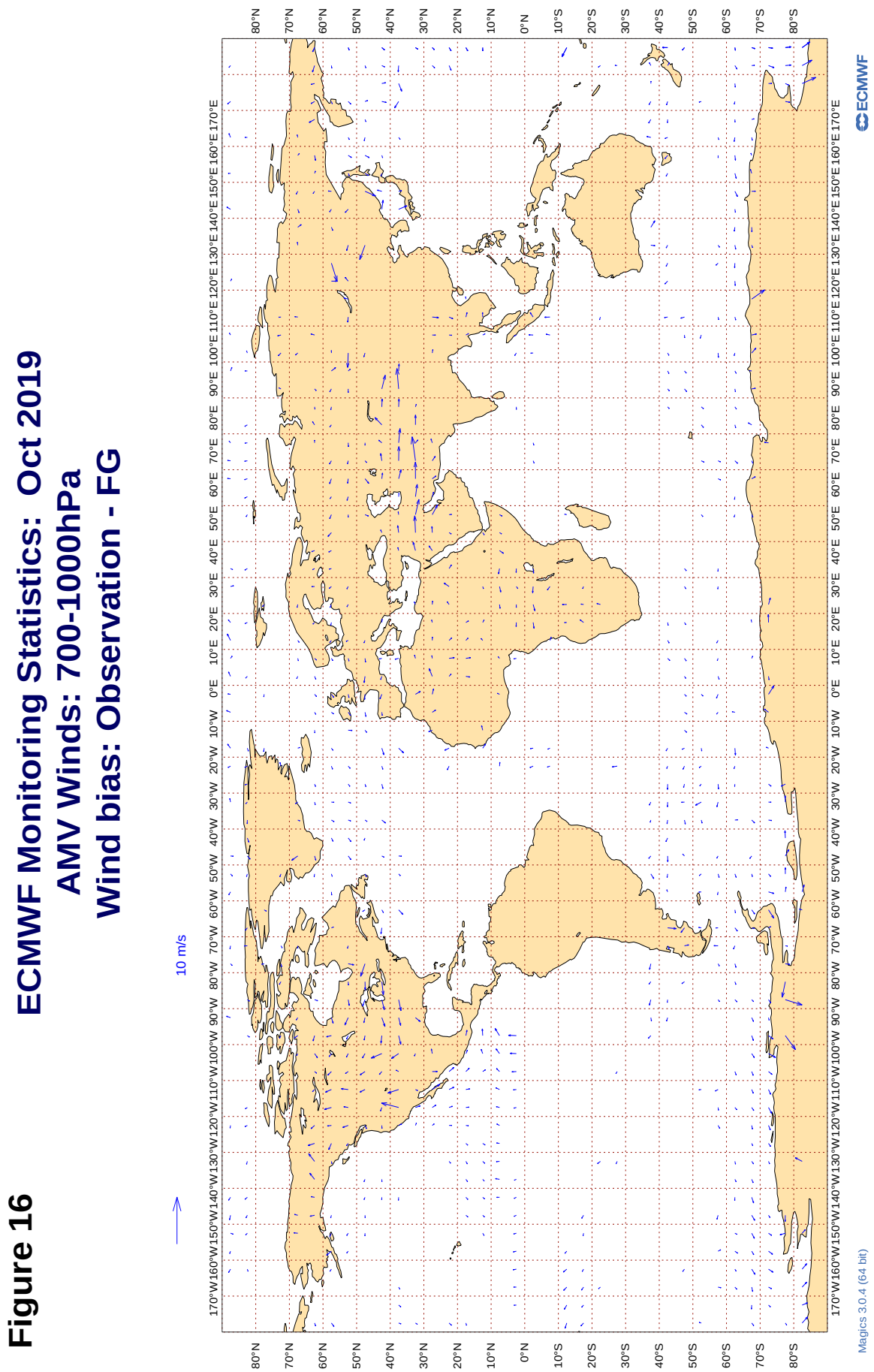


Figure 16

3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

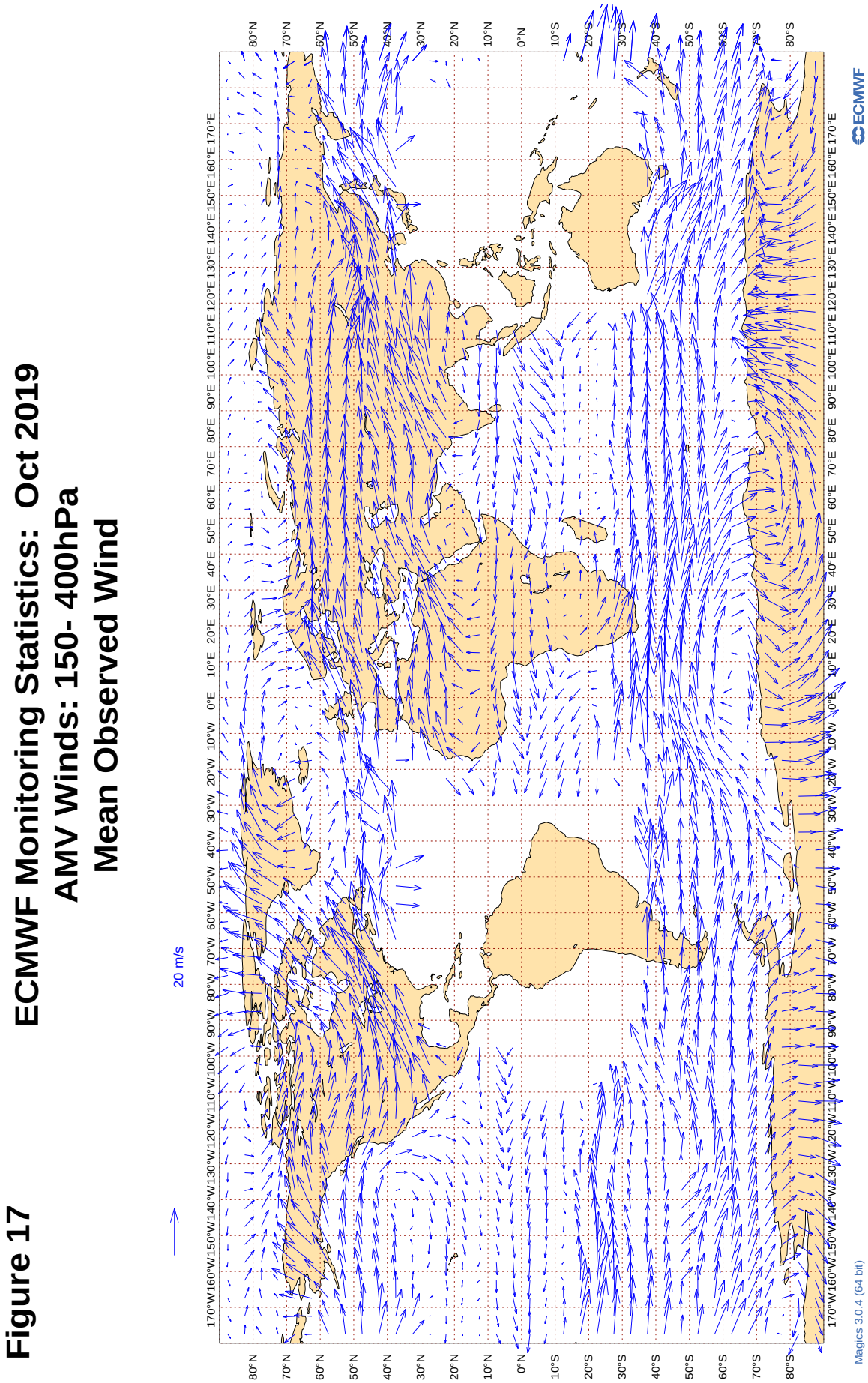


Figure 17

3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

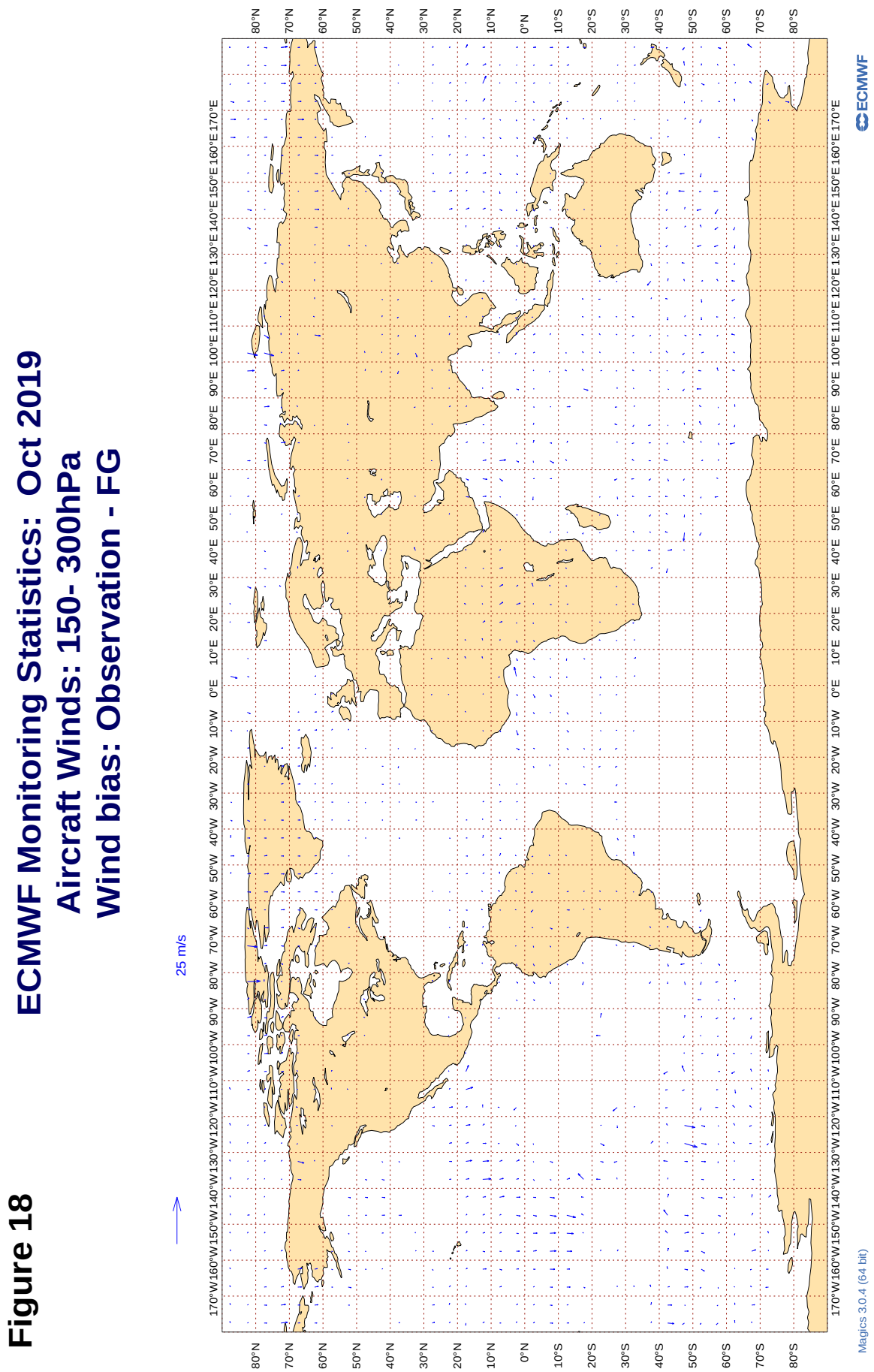


Figure 18

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 : OCT 2019
STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20

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

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AAL	99	V	300-150	58264	3	0	5.3	0.3
AAR	99	V	300-150	229	0	0	3.8	-1.3
ABD	99	V	300-150	553	0	0	4.0	-0.3
ABG	99	V	300-150	302	0	0	3.4	0.2
ABP	99	V	300-150	24	0	0	3.9	-0.1
ABW	99	V	300-150	702	0	0	3.4	-0.2
ACA	99	V	300-150	29604	3	0	6.0	0.2
ACI	99	V	300-150	2878	0	0	3.5	0.5
ADN	99	V	300-150	23	0	0	6.6	-1.0
AEA	99	V	300-150	841	9	1	9.1	-0.1
AFL	99	V	300-150	2410	0	0	3.3	0.4
AFR	99	V	300-150	28141	1	0	4.3	0.2
AHO	99	V	300-150	30	0	0	4.2	1.0
AHY	99	V	300-150	162	7	0	9.5	0.1
AIC	99	V	300-150	1739	0	0	6.7	0.2
AIZ	99	V	300-150	57	0	0	5.4	1.0
ALK	99	V	300-150	891	0	0	4.7	0.9
AMX	99	V	300-150	3593	12	0	9.0	-0.1
ANZ	99	V	300-150	30707	2	0	5.2	0.4
AOJ	99	V	300-150	158	0	0	3.8	0.1
ASA	99	V	300-150	70	0	1	5.4	-0.6
ASL	99	V	300-150	380	0	0	5.1	-0.0
ASY	99	V	300-150	522	0	0	3.8	0.6
ATC	99	V	300-150	99	4	0	11.4	-0.0
ATN	99	V	300-150	147	0	1	5.0	1.1
AUA	99	V	300-150	5752	0	0	4.0	-0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AUH	99	V	300-150	67	0	0	4.8	0.1
AUI	99	V	300-150	538	0	0	3.6	0.2
AVA	99	V	300-150	624	12	1	7.4	0.2
AWC	99	V	300-150	35	0	0	4.1	-0.3
AXM	99	V	300-150	175	0	0	4.7	1.2
AYY	99	V	300-150	42	0	0	4.2	0.3
AZA	99	V	300-150	8248	0	0	3.7	0.2
AZG	99	V	300-150	224	0	0	3.6	-0.1
BAF	99	V	300-150	61	0	0	3.2	0.4
BAW	99	V	300-150	52895	2	0	5.1	0.1
BBC	99	V	300-150	99	3	0	11.3	1.5
BCS	99	V	300-150	875	0	0	3.1	0.2
BEL	99	V	300-150	2410	0	0	3.3	0.3
BFY	99	V	300-150	20	0	0	3.8	0.7
BJN	99	V	300-150	65	0	0	3.3	1.0
BLU	99	V	300-150	34	0	0	3.6	-0.3
BMW	99	V	300-150	37	0	0	2.9	-0.1
BOS	99	V	300-150	1747	0	0	3.9	0.1
BOX	99	V	300-150	2442	0	0	3.5	0.1
BOX	99	V	300-150	52	0	0	3.3	0.3
BRK	99	V	300-150	29	0	0	4.4	-0.9
BVR	99	V	300-150	37	0	0	3.2	-0.0
CAL	99	V	300-150	382	0	0	4.1	0.6
CAT	99	V	300-150	78	0	0	7.3	-1.3
CAZ	99	V	300-150	106	0	0	3.6	-0.1
CCA	99	V	300-150	901	2	0	4.5	0.5
CEB	99	V	300-150	54	0	0	3.2	0.5
CEF	99	V	300-150	31	0	0	5.9	-1.3
CES	99	V	300-150	2054	2	0	4.8	0.6
CFC	99	V	300-150	194	0	0	4.0	0.5
CFG	99	V	300-150	3826	0	0	4.2	-0.1
CHH	99	V	300-150	286	2	0	6.8	0.4
CJT	99	V	300-150	176	0	1	4.2	-0.0
CKK	99	V	300-150	45	2	0	11.2	-0.0
CKS	99	V	300-150	1666	0	0	3.6	-0.2
CLU	99	V	300-150	526	0	0	3.6	-0.1
CLX	99	V	300-150	3050	0	0	3.9	-0.3
CMB	99	V	300-150	1502	0	0	3.9	0.1
CNK	99	V	300-150	59	0	0	3.2	-0.2
CNV	99	V	300-150	112	0	0	3.0	0.6
CPA	99	V	300-150	940	0	0	3.7	0.8
CPI	99	V	300-150	34	0	0	4.5	-0.9
CRL	99	V	300-150	1749	0	0	3.8	0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
CSC	99	V	300-150	256	0	0	3.7	0.5
CSN	99	V	300-150	697	3	0	6.6	0.6
CTM	99	V	300-150	33	0	0	2.6	0.6
CXB	99	V	300-150	38	0	0	3.4	-0.3
DAH	99	V	300-150	497	0	0	3.8	0.2
DAL	99	V	300-150	68642	0	0	3.5	0.1
DCM	99	V	300-150	29	0	0	4.8	1.3
DCW	99	V	300-150	23	0	0	3.3	-0.0
DHK	99	V	300-150	902	0	0	5.4	-1.2
DJT	99	V	300-150	2528	0	0	3.7	0.4
DLH	99	V	300-150	31548	0	0	3.5	0.1
DUB	99	V	300-150	118	0	0	3.7	0.5
EDC	99	V	300-150	127	0	0	4.1	-0.0
EDG	99	V	300-150	167	14	1	8.5	0.0
EDW	99	V	300-150	1490	0	0	4.0	0.0
EIN	99	V	300-150	17270	0	0	3.5	0.2
EJM	99	V	300-150	1000	0	0	3.7	0.2
ELY	99	V	300-150	3819	10	0	8.7	0.1
ETD	99	V	300-150	5294	2	0	6.4	0.4
ETH	99	V	300-150	3712	4	0	7.0	0.3
EUW	99	V	300-150	50	0	0	3.3	-0.2
EVE	99	V	300-150	84	0	0	4.8	0.1
EWG	99	V	300-150	4121	0	0	3.7	0.1
EXS	99	V	300-150	204	0	3	3.4	0.2
FBU	99	V	300-150	778	0	0	4.7	-0.3
FDX	99	V	300-150	7662	0	0	3.5	0.2
FIN	99	V	300-150	863	0	0	3.1	0.3
FJI	99	V	300-150	8032	0	0	3.9	0.5
FRH	99	V	300-150	243	0	0	4.6	-0.1
FWI	99	V	300-150	1294	0	0	4.1	0.0
FYG	99	V	300-150	26	0	0	4.5	-1.5
GAF	99	V	300-150	50	0	0	3.1	-0.1
GEC	99	V	300-150	2193	0	0	3.7	0.0
GES	99	V	300-150	236	0	2	4.5	0.3
GFA	99	V	300-150	309	0	0	4.5	0.5
GIA	99	V	300-150	386	0	0	4.6	0.3
GLJ	99	V	300-150	50	0	0	3.5	0.8
GLO	99	V	300-150	25	0	0	9.5	-0.2
GMA	99	V	300-150	21	0	0	2.4	0.4
GOL	99	V	300-150	100	0	1	5.4	-0.4
GTH	99	V	300-150	109	0	0	4.4	-0.0
GTI	99	V	300-150	3499	0	0	4.0	-0.2
HAL	99	V	300-150	4471	0	0	4.0	0.7

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
HDM	99	V	300-150	34	0	0	4.2	-1.2
HFM	99	V	300-150	139	0	0	4.0	0.2
HFY	99	V	300-150	79	0	0	4.7	-0.4
HRT	99	V	300-150	20	0	0	2.7	1.2
HWA	99	V	300-150	54	0	0	3.1	-0.2
HZS	99	V	300-150	31	0	0	3.7	0.9
IAE	99	V	300-150	41	0	0	3.9	0.5
IAM	99	V	300-150	62	0	0	3.2	0.8
IBE	99	V	300-150	4186	0	0	4.0	0.3
ICE	99	V	300-150	128	0	8	5.7	4.2
ICL	99	V	300-150	629	0	0	4.3	-0.3
ICV	99	V	300-150	254	0	0	4.3	-0.2
IJM	99	V	300-150	120	0	0	5.0	1.5
ISS	99	V	300-150	3006	0	0	3.7	0.2
IXR	99	V	300-150	48	0	0	3.2	0.3
JAF	99	V	300-150	800	10	0	9.0	-0.2
JAS	99	V	300-150	68	0	0	2.9	-0.3
JCO	99	V	300-150	63	0	0	3.2	0.2
JET	99	V	300-150	154	0	0	3.8	-0.2
JJA	99	V	300-150	62	0	2	4.6	0.8
JME	99	V	300-150	135	0	0	3.2	-0.3
JST	99	V	300-150	2811	1	0	7.5	0.4
JTS	99	V	300-150	38	0	0	4.4	-0.3
KAC	99	V	300-150	1165	0	0	3.5	0.4
KAI	99	V	300-150	38	0	0	6.1	0.9
KAL	99	V	300-150	1332	2	0	3.9	0.8
KAY	99	V	300-150	59	0	0	3.5	0.5
KFE	99	V	300-150	32	0	0	4.5	0.7
KIW	99	V	300-150	78	0	0	4.0	0.5
KLM	99	V	300-150	18340	3	0	4.9	0.0
KQA	99	V	300-150	194	10	0	12.3	0.8
KTK	99	V	300-150	499	0	0	3.4	0.7
LAN	99	V	300-150	2361	9	0	8.7	0.0
LCO	99	V	300-150	85	0	0	3.5	-1.0
LEA	99	V	300-150	152	0	0	5.1	-1.1
LGT	99	V	300-150	23	0	0	3.5	1.1
LHO	99	V	300-150	21	0	0	3.5	0.2
LMJ	99	V	300-150	40	0	0	3.7	0.1
LNI	99	V	300-150	280	0	0	5.0	0.3
LOT	99	V	300-150	4756	7	0	8.3	0.1
LUC	99	V	300-150	72	0	0	3.8	0.3
LWG	99	V	300-150	35	0	0	3.1	0.0
LXA	99	V	300-150	54	0	0	3.8	-0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
LXG	99	V	300-150	39	0	0	3.3	0.4
LXJ	99	V	300-150	253	0	0	4.1	0.3
MAS	99	V	300-150	572	0	0	3.7	0.5
MAU	99	V	300-150	283	0	0	5.4	1.7
MED	99	V	300-150	85	0	0	4.2	-0.2
MHV	99	V	300-150	52	0	0	4.6	-0.3
MJF	99	V	300-150	23	0	0	3.4	0.9
MLM	99	V	300-150	57	0	0	3.5	0.1
MMD	99	V	300-150	325	0	0	3.3	0.2
MMZ	99	V	300-150	29	0	0	5.0	-0.9
MPH	99	V	300-150	659	0	0	4.2	-1.0
MSR	99	V	300-150	1839	3	0	5.6	0.1
NAX	99	V	300-150	12714	10	0	8.7	0.0
NCA	99	V	300-150	152	0	0	3.6	-0.6
NJE	99	V	300-150	342	0	0	3.5	0.2
NOS	99	V	300-150	196	12	0	7.8	-0.8
NRS	99	V	300-150	8774	7	0	8.1	0.2
NSH	99	V	300-150	36	0	0	3.5	0.0
NWS	99	V	300-150	606	0	0	3.0	0.1
OAE	99	V	300-150	1606	0	0	3.8	-0.0
OLI	99	V	300-150	30	0	0	3.7	-1.0
OMA	99	V	300-150	525	2	0	9.3	1.1
PAC	99	V	300-150	155	0	1	3.7	0.2
PAL	99	V	300-150	438	0	0	4.3	0.7
PAO	99	V	300-150	23	0	22	5.8	0.4
PAT	99	V	300-150	35	0	0	3.4	0.1
PIA	99	V	300-150	114	0	0	3.2	0.0
PJS	99	V	300-150	20	0	0	4.7	2.8
PJZ	99	V	300-150	37	0	0	3.6	-0.3
PLF	99	V	300-150	32	0	0	2.5	0.3
PLM	99	V	300-150	111	0	0	8.1	-2.1
QAF	99	V	300-150	105	0	0	3.9	-0.3
QFA	99	V	300-150	19493	0	0	5.1	0.2
QQE	99	V	300-150	125	0	0	4.2	1.0
QTR	99	V	300-150	15011	0	0	4.5	0.3
RAM	99	V	300-150	521	18	0	8.3	0.4
RBA	99	V	300-150	38	3	0	4.5	1.2
RCH	99	V	300-150	5029	0	0	4.5	0.3
RDN	99	V	300-150	69	0	0	3.2	-0.0
RJA	99	V	300-150	1275	11	0	9.1	-0.1
RKS	99	V	300-150	33	0	0	3.6	-0.8
ROJ	99	V	300-150	53	0	0	2.9	0.4
ROM	99	V	300-150	29	0	0	4.1	1.3

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
ROU	99	V	300-150	6278	0	0	4.4	-0.1
RRR	99	V	300-150	181	0	0	3.9	0.8
RWD	99	V	300-150	40	0	0	3.4	0.2
RZO	99	V	300-150	256	0	3	4.2	0.2
SAM	99	V	300-150	476	0	0	3.8	0.2
SAS	99	V	300-150	4966	0	0	3.2	0.2
SAZ	99	V	300-150	28	0	0	2.8	-0.4
SCX	99	V	300-150	83	0	1	4.1	0.2
SEY	99	V	300-150	86	0	0	3.8	0.4
SIA	99	V	300-150	3628	0	0	3.7	0.0
SIO	99	V	300-150	35	0	0	4.4	-0.4
SIS	99	V	300-150	31	0	0	4.8	1.8
SJT	99	V	300-150	30	0	0	2.3	0.5
SLM	99	V	300-150	97	0	0	4.6	0.5
SOO	99	V	300-150	573	0	0	3.6	0.0
SPA	99	V	300-150	134	0	0	4.5	0.4
SSG	99	V	300-150	37	0	0	2.8	0.1
SVA	99	V	300-150	3921	0	0	5.5	0.5
SVW	99	V	300-150	189	0	0	3.6	-0.1
SWA	99	V	300-150	60	0	0	3.4	-0.3
SWR	99	V	300-150	11300	0	0	3.6	0.3
SYB	99	V	300-150	175	0	0	4.7	0.1
TAM	99	V	300-150	34	0	6	6.8	-1.3
TAP	99	V	300-150	1937	0	1	4.0	0.2
TAR	99	V	300-150	313	0	0	3.5	0.2
TAY	99	V	300-150	371	0	0	3.8	-0.3
TFF	99	V	300-150	83	0	1	4.9	0.4
TFL	99	V	300-150	1538	12	0	9.3	-0.3
TGW	99	V	300-150	51	6	0	13.2	1.3
THA	99	V	300-150	387	6	0	7.4	0.2
THT	99	V	300-150	3042	3	0	9.7	0.6
THY	99	V	300-150	9602	2	0	5.1	0.2
TMN	99	V	300-150	230	0	0	4.5	1.1
TOM	99	V	300-150	6465	11	0	8.6	0.0
TOW	99	V	300-150	67	0	0	3.4	-0.5
TPA	99	V	300-150	156	0	0	3.6	0.3
TSC	99	V	300-150	12031	0	0	3.7	0.2
TWB	99	V	300-150	36	0	3	4.2	0.7
TWY	99	V	300-150	446	0	0	3.3	0.2
UAE	99	V	300-150	15157	0	0	4.0	0.3
UAF	99	V	300-150	21	0	0	4.9	1.3
UAL	99	V	300-150	80328	2	2	5.8	0.2
ULC	99	V	300-150	139	0	0	3.7	0.7

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
UPS	99	V	300-150	4767	0	0	3.8	0.0
UZB	99	V	300-150	157	6	0	9.5	-0.1
VCG	99	V	300-150	97	0	0	3.3	0.3
VIR	99	V	300-150	22491	3	0	5.2	-0.0
VJT	99	V	300-150	1256	0	0	3.7	0.2
VKG	99	V	300-150	148	0	0	3.6	0.2
VMP	99	V	300-150	48	0	0	6.9	0.2
VOZ	99	V	300-150	7104	0	0	3.9	0.3
WGT	99	V	300-150	132	0	0	3.3	0.8
WJA	99	V	300-150	4560	2	0	5.8	0.1
XAX	99	V	300-150	41	0	0	4.2	1.4

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                : OCT 2019
         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	21.1	16.0
01001	12	Z	50	29	14.3	11.3
01028	00	Z	50	31	15.7	10.4
01028	12	Z	50	31	17.4	8.7
01400	00	Z	50	25	96.5	95.9
01400	12	Z	50	25	86.8	85.8
014007	12	Z	50	0	0.0	0.0
014008	12	Z	50	0	0.0	0.0
01415	12	Z	50	30	14.2	12.9
01415	00	Z	50	31	16.3	15.0
02365	12	Z	50	2	8.3	8.1
02365	00	Z	50	3	13.7	13.3
02591	00	Z	50	30	22.5	21.1
02591	12	Z	50	27	16.4	14.5
02836	12	Z	50	31	12.5	11.4
02836	00	Z	50	29	13.7	11.6
02963	12	Z	50	31	11.2	9.5
02963	00	Z	50	27	13.5	12.8
03005	00	Z	50	27	12.8	11.6
03005	12	Z	50	29	11.0	9.0
03238	00	Z	50	29	16.6	14.3
03808	00	Z	50	27	16.9	13.8
03808	12	Z	50	30	11.8	8.9
03918	12	Z	50	2	21.9	21.3
03918	00	Z	50	31	22.3	21.2
03953	12	Z	50	31	33.8	31.6
03953	00	Z	50	29	28.5	25.3
04018	00	Z	50	31	12.7	9.4
04018	12	Z	50	31	11.7	7.2
04220	00	Z	50	31	15.2	14.5
04220	12	Z	50	31	13.0	10.7
04270	12	Z	50	29	9.1	7.1
04270	00	Z	50	27	14.3	11.8
04320	00	Z	50	30	41.6	20.7
04320	12	Z	50	30	14.0	12.5
04339	12	Z	50	31	24.2	11.4
04339	00	Z	50	31	24.9	16.7
04360	00	Z	50	24	14.8	3.0
04360	12	Z	50	23	14.6	6.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	50	29	17.7	15.6
06011	12	Z	50	28	18.5	16.1
06260	00	Z	50	31	16.1	10.8
06260	12	Z	50	5	20.7	19.4
06610	12	Z	50	31	13.8	11.7
06610	00	Z	50	29	16.6	14.7
07110	00	Z	50	28	12.4	7.6
07110	12	Z	50	31	17.8	11.4
07510	00	Z	50	30	29.6	27.2
07510	12	Z	50	31	29.5	27.9
07645	00	Z	50	28	22.1	19.2
07645	12	Z	50	30	30.1	25.5
07761	00	Z	50	30	30.3	29.6
07761	12	Z	50	28	37.3	35.0
08001	00	Z	50	26	22.8	21.7
08001	12	Z	50	27	18.3	16.8
08221	12	Z	50	30	21.2	19.2
08221	00	Z	50	27	23.2	22.6
08302	12	Z	50	31	9.5	6.4
08302	00	Z	50	28	17.2	14.1
08508	12	Z	50	28	15.4	14.2
08522	12	Z	50	29	14.1	13.1
08579	12	Z	50	30	21.2	20.3
10035	12	Z	50	30	16.7	13.3
10035	00	Z	50	2	22.9	22.9
10393	12	Z	50	31	15.0	11.9
10393	00	Z	50	31	15.7	14.5
10410	00	Z	50	29	15.8	14.2
10410	12	Z	50	31	10.7	8.0
10739	00	Z	50	28	17.6	16.2
10739	12	Z	50	28	17.5	15.5
11035	00	Z	50	31	22.6	21.8
11035	12	Z	50	31	35.0	32.3
12982	00	Z	50	31	20.8	19.2
12982	12	Z	50	30	34.8	32.0
16080	00	Z	50	31	14.3	13.5
16080	12	Z	50	31	13.1	9.3
16245	12	Z	50	31	13.5	11.1
16245	00	Z	50	31	15.6	14.8
16320	00	Z	50	31	23.9	22.5
16320	12	Z	50	31	18.9	17.7
16429	00	Z	50	31	20.4	19.7
16429	12	Z	50	30	17.1	16.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16622	00	Z	50	30	36.3	35.6
16754	00	Z	50	27	26.4	25.6
17607	12	Z	50	29	18.0	15.4
26435	12	Z	50	15	7.2	6.0
5QPW8X	12	Z	50	10	30.0	28.9
5QPW8X	00	Z	50	12	34.0	32.9
60018	00	Z	50	29	21.2	20.7
60018	12	Z	50	31	13.5	11.6
7JUNA4	12	Z	50	4	57.3	56.5
7JUNA4	00	Z	50	4	32.9	26.8
ASDE09	12	Z	50	5	56.6	50.3
BPMWB2	00	Z	50	5	30.3	27.7
BPMWB2	12	Z	50	7	27.3	22.4
FHM5UJ	00	Z	50	9	22.7	19.8
FHM5UJ	12	Z	50	12	29.0	23.0
HTXUH4	12	Z	50	4	19.5	17.4
HTXUH4	00	Z	50	6	18.9	17.6
JNKN7J	12	Z	50	10	83.0	82.1
JNKN7J	00	Z	50	5	157.7	104.5
KJJF9X	12	Z	50	7	35.6	31.5
KJJF9X	00	Z	50	2	21.6	20.4
KMPLHP	12	Z	50	6	38.8	31.1
KMPLHP	00	Z	50	3	9.6	-7.4
VKB4L5	12	Z	50	6	35.8	33.7
VKB4L5	00	Z	50	5	46.9	45.0
WDK38H	12	Z	50	10	10.6	6.4
XKQLWQ	12	Z	50	9	62.6	59.2
XQFJRG	12	Z	50	3	21.7	20.9
XQFJRG	00	Z	50	2	28.9	-13.5
YLV96W	12	Z	50	7	54.3	50.8
YLV96W	00	Z	50	6	31.5	26.4
ZVQEQC	12	Z	50	7	25.8	25.3
ZVQEQC	00	Z	50	5	23.2	22.1

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 :  50 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : OCT 2019
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	50	24	3.5	-0.5	0.0
01001	12	V	50	29	3.0	-0.2	-0.5
01028	00	V	50	24	3.0	-0.2	-0.5
01028	12	V	50	31	2.6	0.9	0.0
01400	00	V	50	21	3.6	0.2	-0.2
01400	12	V	50	24	2.9	0.6	0.1
014007	12	V	50	0	0.0	0.0	0.0
014008	12	V	50	0	0.0	0.0	0.0
01415	12	V	50	30	3.6	1.0	-0.5
01415	00	V	50	22	4.3	0.5	1.0
02365	12	V	50	2	1.5	0.3	-0.2
02365	00	V	50	3	2.9	0.1	-1.3
02591	00	V	50	23	3.4	-0.2	0.7
02591	12	V	50	23	3.8	-0.4	-0.5
02836	12	V	50	31	2.7	-0.1	-0.2
02836	00	V	50	26	3.2	1.1	-0.1
02963	12	V	50	31	3.8	-0.1	0.7
02963	00	V	50	22	3.4	-0.4	-0.3
03005	00	V	50	22	2.8	-0.2	-0.2
03005	12	V	50	28	3.6	0.3	-0.1
03238	00	V	50	23	3.3	0.4	0.1
03808	00	V	50	18	3.9	-1.3	0.3
03808	12	V	50	30	4.0	0.8	-0.5
03918	12	V	50	1	3.2	-2.6	1.8
03918	00	V	50	23	3.9	1.1	-0.4
03953	12	V	50	31	3.3	0.6	0.3
03953	00	V	50	24	3.2	1.3	0.3
04018	00	V	50	28	3.0	0.3	-0.1
04018	12	V	50	31	3.2	-0.2	0.5
04220	00	V	50	25	3.3	-0.1	0.6
04220	12	V	50	31	3.2	0.2	-0.4
04270	12	V	50	29	3.2	0.2	0.1
04270	00	V	50	22	3.4	-0.4	0.0
04320	00	V	50	27	3.6	-0.3	-0.5
04320	12	V	50	30	3.3	0.5	-0.4
04339	12	V	50	31	3.2	0.6	-0.4
04339	00	V	50	26	4.7	0.1	0.4
04360	00	V	50	21	3.8	-0.8	0.0
04360	12	V	50	23	3.5	-0.8	0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	50	23	3.0	-0.4	-0.1
06011	12	V	50	28	3.5	-0.2	0.8
06260	00	V	50	25	3.4	-0.3	0.5
06260	12	V	50	4	1.9	0.5	-1.0
06610	12	V	50	31	3.7	0.1	-0.5
06610	00	V	50	27	3.6	0.4	-0.7
07110	00	V	50	23	2.8	-0.6	0.0
07110	12	V	50	31	3.6	0.9	-1.0
07510	00	V	50	23	3.5	0.9	-0.8
07510	12	V	50	31	4.0	0.2	-0.4
07645	00	V	50	23	3.5	0.7	0.3
07645	12	V	50	30	3.8	0.3	-0.4
07761	00	V	50	25	3.2	0.5	0.0
07761	12	V	50	28	3.1	0.1	0.2
08001	00	V	50	20	3.0	-0.5	-0.1
08001	12	V	50	26	3.6	0.1	0.1
08221	12	V	50	30	3.8	0.8	-0.5
08221	00	V	50	22	3.6	-0.8	-0.4
08302	12	V	50	31	4.0	0.5	0.0
08302	00	V	50	23	3.8	-0.6	-0.6
08508	12	V	50	28	3.5	0.1	0.7
08522	12	V	50	29	3.7	0.2	0.0
08579	12	V	50	30	3.5	0.3	0.3
10035	12	V	50	30	3.8	-0.1	0.1
10035	00	V	50	2	1.1	1.0	0.2
10393	12	V	50	31	3.1	-0.1	-0.7
10393	00	V	50	29	3.1	-0.7	0.4
10410	00	V	50	28	3.5	-0.5	-0.3
10410	12	V	50	31	3.3	0.2	0.2
10739	00	V	50	27	3.8	-0.1	-0.6
10739	12	V	50	28	3.4	-0.1	-0.8
11035	00	V	50	27	3.7	-0.1	-0.7
11035	12	V	50	30	3.8	0.4	-0.6
12982	00	V	50	25	3.4	-0.2	0.6
12982	12	V	50	30	2.9	0.1	-0.9
16080	00	V	50	26	3.5	-1.0	-0.4
16080	12	V	50	31	3.3	0.2	-0.2
16245	12	V	50	31	3.3	0.1	-0.4
16245	00	V	50	28	3.6	0.8	0.4
16320	00	V	50	26	3.6	0.3	-0.1
16320	12	V	50	31	4.1	-0.1	0.3
16429	00	V	50	27	3.8	0.5	-0.3
16429	12	V	50	29	4.0	-0.4	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16622	00	V	50	24	3.3	1.3	0.5
16754	00	V	50	23	3.5	-0.2	-0.6
17607	12	V	50	2	4.7	-1.4	0.7
26435	12	V	50	15	4.0	0.3	0.6
5QPW8X	12	V	50	8	3.8	0.0	-0.2
5QPW8X	00	V	50	11	4.3	-0.2	1.5
60018	00	V	50	23	2.5	-0.5	0.6
60018	12	V	50	30	3.5	0.5	-0.7
7JUNA4	12	V	50	4	3.9	1.6	1.0
7JUNA4	00	V	50	4	3.4	2.4	1.9
ASDE09	12	V	50	4	3.0	0.5	-1.6
BPMWB2	00	V	50	5	2.8	-1.3	-0.8
BPMWB2	12	V	50	7	2.9	0.2	0.5
FHM5UJ	00	V	50	8	3.2	-1.0	0.9
FHM5UJ	12	V	50	12	2.5	-0.5	0.2
HTXUH4	12	V	50	4	3.8	-1.2	-1.0
HTXUH4	00	V	50	3	3.7	1.8	0.7
JNKN7J	12	V	50	10	4.2	-0.2	0.0
JNKN7J	00	V	50	5	2.2	0.4	0.4
KJJF9X	12	V	50	7	4.9	1.4	-0.3
KJJF9X	00	V	50	2	3.0	-1.8	2.2
KMPLHP	12	V	50	6	4.0	0.8	2.0
KMPLHP	00	V	50	3	2.7	-1.0	0.1
VKB4L5	12	V	50	6	2.8	0.8	0.6
VKB4L5	00	V	50	4	3.8	2.3	1.5
WDK38H	12	V	50	3	3.0	-1.6	0.6
XKQLWQ	12	V	50	9	4.5	1.0	2.3
XQFJRG	12	V	50	3	3.6	2.0	0.5
XQFJRG	00	V	50	2	2.3	-1.0	0.9
YLV96W	12	V	50	7	4.0	0.1	0.9
YLV96W	00	V	50	6	3.0	-0.1	-0.2
ZVQEQC	12	V	50	7	4.1	-2.2	0.2
ZVQEQC	00	V	50	5	5.5	1.5	1.1

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                : OCT 2019
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	100	29	10.7	-0.2
01001	12	Z	100	29	7.2	-2.5
01028	00	Z	100	31	12.2	-1.8
01028	12	Z	100	31	15.1	-2.7
01400	00	Z	100	25	84.1	83.5
01400	12	Z	100	26	79.5	78.2
014007	12	Z	100	0	0.0	0.0
014008	12	Z	100	0	0.0	0.0
01415	12	Z	100	31	5.9	4.0
01415	00	Z	100	31	6.6	3.5
02365	12	Z	100	3	1.8	-0.6
02365	00	Z	100	3	1.5	1.3
02591	00	Z	100	31	12.8	11.8
02591	12	Z	100	30	10.3	7.0
02836	12	Z	100	31	4.4	1.6
02836	00	Z	100	31	5.5	1.0
02963	12	Z	100	31	5.1	1.0
02963	00	Z	100	31	5.4	3.8
03005	00	Z	100	28	6.0	1.5
03005	12	Z	100	31	5.5	0.0
03238	00	Z	100	30	9.8	4.6
03808	00	Z	100	31	9.5	5.2
03808	12	Z	100	32	5.4	1.0
03918	12	Z	100	2	8.5	8.3
03918	00	Z	100	31	11.2	8.6
03953	12	Z	100	31	16.4	14.6
03953	00	Z	100	29	14.7	11.6
04018	00	Z	100	31	5.8	1.3
04018	12	Z	100	31	6.2	-1.6
04220	00	Z	100	31	4.8	3.4
04220	12	Z	100	31	4.7	1.7
04270	12	Z	100	29	5.1	-0.8
04270	00	Z	100	28	6.0	0.4
04320	00	Z	100	30	37.9	9.2
04320	12	Z	100	30	5.3	2.3
04339	12	Z	100	31	21.7	4.2
04339	00	Z	100	31	20.2	4.9
04360	00	Z	100	24	10.7	-7.3
04360	12	Z	100	23	9.2	-4.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	100	30	9.5	5.6
06011	12	Z	100	29	9.5	6.2
06260	00	Z	100	31	10.7	0.6
06260	12	Z	100	6	8.9	3.0
06610	12	Z	100	31	6.4	3.8
06610	00	Z	100	31	7.9	4.9
07110	00	Z	100	30	9.9	-3.8
07110	12	Z	100	31	10.6	0.7
07510	00	Z	100	30	15.8	13.7
07510	12	Z	100	31	15.8	13.6
07645	00	Z	100	30	11.8	6.5
07645	12	Z	100	30	17.1	11.7
07761	00	Z	100	31	17.3	15.5
07761	12	Z	100	30	19.7	18.2
08001	00	Z	100	31	11.0	9.5
08001	12	Z	100	30	10.6	8.5
08221	12	Z	100	31	12.2	10.4
08221	00	Z	100	27	14.3	13.0
08302	12	Z	100	31	5.3	0.5
08302	00	Z	100	31	11.2	5.7
08508	12	Z	100	29	9.9	8.2
08522	12	Z	100	30	9.0	7.9
08579	12	Z	100	30	13.8	12.4
10035	12	Z	100	31	11.6	5.3
10035	00	Z	100	2	13.8	13.6
10393	12	Z	100	31	7.2	3.3
10393	00	Z	100	31	7.7	4.7
10410	00	Z	100	32	7.0	4.3
10410	12	Z	100	31	5.6	0.7
10739	00	Z	100	30	9.4	7.5
10739	12	Z	100	30	10.1	6.7
11035	00	Z	100	31	15.5	14.1
11035	12	Z	100	32	21.1	17.1
12982	00	Z	100	31	11.4	9.4
12982	12	Z	100	30	16.0	14.7
16080	00	Z	100	31	5.2	2.4
16080	12	Z	100	31	7.2	-0.6
16245	12	Z	100	31	5.7	-0.1
16245	00	Z	100	31	7.8	6.0
16320	00	Z	100	31	14.9	13.6
16320	12	Z	100	31	11.3	8.6
16429	00	Z	100	31	10.8	9.5
16429	12	Z	100	32	6.2	3.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16622	00	Z	100	31	26.0	25.4
16754	00	Z	100	28	16.4	15.4
17607	12	Z	100	29	7.3	4.0
26435	12	Z	100	15	2.6	-0.2
5QPW8X	12	Z	100	11	21.2	19.4
5QPW8X	00	Z	100	12	22.0	20.7
60018	00	Z	100	31	16.3	15.0
60018	12	Z	100	31	9.5	8.5
7JUNA4	12	Z	100	5	29.8	29.1
7JUNA4	00	Z	100	4	26.2	18.5
ASDE09	12	Z	100	5	38.9	33.3
BPMWB2	00	Z	100	5	16.1	14.2
BPMWB2	12	Z	100	7	17.1	12.7
FHM5UJ	00	Z	100	9	12.7	8.6
FHM5UJ	12	Z	100	15	20.3	12.5
HTXUH4	12	Z	100	6	11.3	7.8
HTXUH4	00	Z	100	6	9.0	6.8
JNKN7J	12	Z	100	10	59.1	58.8
JNKN7J	00	Z	100	7	37.3	36.7
KJJF9X	12	Z	100	7	22.2	18.9
KJJF9X	00	Z	100	6	12.7	11.5
KMPLHP	12	Z	100	7	23.1	13.7
KMPLHP	00	Z	100	6	56.2	13.3
VKB4L5	12	Z	100	7	31.8	29.7
VKB4L5	00	Z	100	5	39.4	38.3
WDK38H	12	Z	100	18	7.3	-5.9
XKQLWQ	12	Z	100	9	45.1	42.7
XQFJRG	12	Z	100	3	3.7	3.7
XQFJRG	00	Z	100	3	27.1	-21.2
YLV96W	12	Z	100	7	28.7	25.3
YLV96W	00	Z	100	7	22.6	15.3
ZVQEQC	12	Z	100	7	14.2	13.9
ZVQEQC	00	Z	100	5	14.5	13.8

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                : OCT 2019
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	100	24	2.5	-0.1	-0.3
01001	12	V	100	29	3.0	0.7	-0.1
01028	00	V	100	24	2.5	0.3	-0.3
01028	12	V	100	31	2.4	-0.6	0.3
01400	00	V	100	23	2.9	0.3	0.0
01400	12	V	100	26	2.8	0.5	0.9
014007	12	V	100	0	0.0	0.0	0.0
014008	12	V	100	0	0.0	0.0	0.0
01415	12	V	100	31	3.2	0.5	0.5
01415	00	V	100	30	3.3	1.1	-0.5
02365	12	V	100	2	2.5	0.6	-0.4
02365	00	V	100	3	1.8	0.8	0.8
02591	00	V	100	24	2.9	0.0	0.1
02591	12	V	100	30	3.0	-0.2	-0.8
02836	12	V	100	31	2.9	0.8	-0.3
02836	00	V	100	27	2.6	0.6	0.4
02963	12	V	100	31	3.3	0.7	0.0
02963	00	V	100	25	2.9	0.6	-0.3
03005	00	V	100	23	2.3	0.2	0.1
03005	12	V	100	31	3.4	0.3	0.7
03238	00	V	100	23	3.2	0.5	-0.3
03808	00	V	100	22	4.3	0.7	-0.8
03808	12	V	100	31	3.9	0.5	-0.6
03918	12	V	100	2	4.7	-3.2	3.4
03918	00	V	100	26	4.0	0.9	-0.5
03953	12	V	100	31	3.4	0.0	-0.8
03953	00	V	100	24	4.1	0.6	0.0
04018	00	V	100	30	3.0	-0.2	-0.5
04018	12	V	100	31	3.1	0.7	0.0
04220	00	V	100	28	3.2	-0.3	-0.2
04220	12	V	100	31	3.0	0.4	0.7
04270	12	V	100	29	3.4	0.6	-0.1
04270	00	V	100	27	3.5	0.0	0.1
04320	00	V	100	29	3.2	-0.1	-0.5
04320	12	V	100	30	3.9	0.0	-0.3
04339	12	V	100	31	3.3	0.3	0.5
04339	00	V	100	30	3.6	0.5	-0.2
04360	00	V	100	21	3.4	-0.1	0.3
04360	12	V	100	23	2.6	-0.1	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	100	28	2.8	0.5	-0.3
06011	12	V	100	29	3.4	0.2	-0.6
06260	00	V	100	25	3.7	-0.1	0.4
06260	12	V	100	6	4.3	2.5	-0.4
06610	12	V	100	31	4.4	0.8	-0.2
06610	00	V	100	29	3.8	-0.3	0.3
07110	00	V	100	25	2.9	-0.2	0.3
07110	12	V	100	31	3.8	-0.1	-0.4
07510	00	V	100	23	2.7	-0.3	-0.2
07510	12	V	100	31	4.0	0.0	-0.4
07645	00	V	100	24	5.1	-0.1	-0.8
07645	12	V	100	30	3.3	0.4	0.3
07761	00	V	100	26	3.7	0.9	0.1
07761	12	V	100	30	4.2	0.4	0.4
08001	00	V	100	24	4.0	-0.2	0.4
08001	12	V	100	30	3.2	0.1	0.6
08221	12	V	100	31	3.5	-0.4	0.0
08221	00	V	100	24	3.7	0.7	0.4
08302	12	V	100	31	3.7	0.4	0.3
08302	00	V	100	25	4.6	1.9	-1.4
08508	12	V	100	29	4.5	0.0	0.9
08522	12	V	100	30	3.7	0.4	-0.3
08579	12	V	100	30	3.3	0.0	0.2
10035	12	V	100	31	3.0	1.1	0.2
10035	00	V	100	2	1.9	1.3	1.0
10393	12	V	100	31	3.3	0.4	-0.7
10393	00	V	100	30	3.5	-0.4	-0.3
10410	00	V	100	30	3.3	-0.2	0.6
10410	12	V	100	31	3.2	0.9	-0.1
10739	00	V	100	29	3.7	-0.7	0.7
10739	12	V	100	30	3.6	-0.2	-0.5
11035	00	V	100	27	3.9	0.4	0.1
11035	12	V	100	31	3.0	0.1	-0.2
12982	00	V	100	26	4.0	-0.1	0.3
12982	12	V	100	30	3.6	0.6	0.1
16080	00	V	100	29	4.4	-0.1	0.2
16080	12	V	100	31	4.8	0.7	0.6
16245	12	V	100	31	4.2	-0.4	0.5
16245	00	V	100	29	3.6	0.5	-0.1
16320	00	V	100	27	3.4	0.8	-0.5
16320	12	V	100	31	3.9	0.0	0.6
16429	00	V	100	29	3.8	0.5	-0.1
16429	12	V	100	31	3.3	-0.1	-0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16622	00	V	100	27	3.4	0.6	-0.4
16754	00	V	100	24	3.5	1.1	0.2
17607	12	V	100	9	3.3	0.9	1.0
26435	12	V	100	15	2.7	-0.4	-0.6
5QPW8X	12	V	100	10	2.9	0.3	1.2
5QPW8X	00	V	100	12	3.8	0.4	-0.4
60018	00	V	100	24	3.9	0.2	-1.0
60018	12	V	100	30	4.5	-0.2	0.6
7JUNA4	12	V	100	5	2.6	1.0	0.9
7JUNA4	00	V	100	4	1.3	-0.5	-0.1
ASDE09	12	V	100	5	3.6	1.0	1.4
BPMWB2	00	V	100	5	2.5	-0.9	-1.7
BPMWB2	12	V	100	7	3.7	1.8	-1.4
FHM5UJ	00	V	100	8	3.4	-0.7	0.5
FHM5UJ	12	V	100	15	3.4	1.0	0.8
HTXUH4	12	V	100	6	2.7	-0.4	0.5
HTXUH4	00	V	100	6	4.4	1.4	-1.5
JNKN7J	12	V	100	10	3.2	-0.3	-0.2
JNKN7J	00	V	100	7	2.7	0.8	-1.0
KJJF9X	12	V	100	7	3.0	-1.0	-1.5
KJJF9X	00	V	100	6	3.1	0.4	-1.2
KMPLHP	12	V	100	7	5.5	-0.5	2.2
KMPLHP	00	V	100	6	3.7	0.3	1.4
VKB4L5	12	V	100	7	3.9	-1.0	-2.5
VKB4L5	00	V	100	5	4.1	0.6	-2.3
WDK38H	12	V	100	18	1.8	0.1	-0.3
XKQLWQ	12	V	100	9	2.6	-0.3	-0.6
XQFJRG	12	V	100	3	1.8	1.2	-0.8
XQFJRG	00	V	100	2	3.4	-1.4	-3.1
YLV96W	12	V	100	7	4.5	1.1	-0.5
YLV96W	00	V	100	7	3.7	-0.6	-0.7
ZVQEQC	12	V	100	7	4.7	-1.2	0.5
ZVQEQC	00	V	100	5	2.8	0.5	1.3

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                : OCT 2019
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	500	31	8.0	-5.4
01001	12	Z	500	30	9.3	-5.9
01028	00	Z	500	31	11.4	-3.0
01028	12	Z	500	31	14.9	-3.6
01400	00	Z	500	25	77.5	77.1
01400	12	Z	500	26	77.7	76.5
014007	12	Z	500	1	0.0	0.0
014008	12	Z	500	1	8.5	8.5
01415	12	Z	500	31	4.1	2.4
01415	00	Z	500	31	4.9	2.6
02365	12	Z	500	4	3.2	0.7
02365	00	Z	500	3	2.6	1.5
02591	00	Z	500	31	8.4	8.0
02591	12	Z	500	31	8.2	7.6
02836	12	Z	500	31	3.8	-1.0
02836	00	Z	500	31	2.8	-0.6
02963	12	Z	500	31	3.2	0.8
02963	00	Z	500	31	3.4	1.4
03005	00	Z	500	29	5.0	-2.5
03005	12	Z	500	31	4.0	-0.9
03238	00	Z	500	31	4.1	1.5
03808	00	Z	500	31	4.7	3.2
03808	12	Z	500	32	3.7	1.9
03918	12	Z	500	2	6.6	5.8
03918	00	Z	500	31	7.2	6.6
03953	12	Z	500	33	9.3	3.6
03953	00	Z	500	32	6.2	3.6
04018	00	Z	500	31	3.2	1.0
04018	12	Z	500	31	3.7	-0.2
04220	00	Z	500	31	3.6	2.1
04220	12	Z	500	31	3.9	1.7
04270	12	Z	500	31	4.7	-1.1
04270	00	Z	500	31	4.9	-0.5
04320	00	Z	500	30	3.8	0.5
04320	12	Z	500	30	4.1	1.6
04339	12	Z	500	31	23.2	3.9
04339	00	Z	500	31	20.9	2.0
04360	00	Z	500	24	10.8	-9.9
04360	12	Z	500	24	11.0	-9.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	500	31	7.1	5.2
06011	12	Z	500	30	6.8	5.3
06260	00	Z	500	32	8.1	-2.3
06260	12	Z	500	6	4.4	1.7
06610	12	Z	500	31	3.8	2.1
06610	00	Z	500	32	4.4	2.0
07110	00	Z	500	32	12.0	-6.8
07110	12	Z	500	31	6.1	-3.0
07510	00	Z	500	31	7.5	5.5
07510	12	Z	500	31	9.5	6.8
07645	00	Z	500	30	7.3	-0.8
07645	12	Z	500	31	6.4	2.7
07761	00	Z	500	31	5.8	3.3
07761	12	Z	500	30	6.3	5.0
08001	00	Z	500	31	5.5	4.3
08001	12	Z	500	31	5.8	4.7
08221	12	Z	500	31	9.0	8.1
08221	00	Z	500	27	7.2	6.9
08302	12	Z	500	31	3.9	-2.1
08302	00	Z	500	31	4.4	-1.7
08508	12	Z	500	29	5.6	4.9
08522	12	Z	500	31	6.9	6.3
08579	12	Z	500	30	11.2	10.9
10035	12	Z	500	31	9.6	3.2
10035	00	Z	500	2	11.3	11.3
10393	12	Z	500	31	2.6	0.0
10393	00	Z	500	31	3.1	0.7
10410	00	Z	500	32	3.1	-0.2
10410	12	Z	500	31	3.5	-1.5
10739	00	Z	500	31	5.6	4.9
10739	12	Z	500	30	5.3	4.7
11035	00	Z	500	31	9.9	9.6
11035	12	Z	500	31	11.3	7.7
12982	00	Z	500	31	6.4	4.8
12982	12	Z	500	31	7.1	4.6
16080	00	Z	500	31	3.1	-0.9
16080	12	Z	500	31	3.2	-1.4
16245	12	Z	500	32	3.8	-2.7
16245	00	Z	500	31	2.2	-0.9
16320	00	Z	500	31	9.6	6.5
16320	12	Z	500	31	11.8	7.1
16429	00	Z	500	31	4.6	3.4
16429	12	Z	500	32	5.4	3.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16622	00	Z	500	31	17.7	16.7
16754	00	Z	500	29	5.0	4.0
17607	12	Z	500	31	4.9	2.8
26435	12	Z	500	15	2.3	0.3
5QPW8X	12	Z	500	12	22.1	21.7
5QPW8X	00	Z	500	14	22.6	21.8
60018	00	Z	500	31	5.9	5.4
60018	12	Z	500	31	5.6	4.4
7JUNA4	12	Z	500	5	9.0	8.1
7JUNA4	00	Z	500	4	6.7	2.1
ASDE09	12	Z	500	7	25.2	22.2
BPMWB2	00	Z	500	5	5.4	2.7
BPMWB2	12	Z	500	7	7.2	3.0
FHM5UJ	00	Z	500	10	11.8	4.6
FHM5UJ	12	Z	500	15	20.9	12.7
HTXUH4	12	Z	500	8	9.7	5.3
HTXUH4	00	Z	500	10	10.9	7.3
JNKN7J	12	Z	500	12	45.9	45.8
JNKN7J	00	Z	500	8	41.7	41.3
KJJF9X	12	Z	500	6	7.0	2.9
KJJF9X	00	Z	500	6	4.6	2.7
KMPLHP	12	Z	500	7	22.7	6.1
KMPLHP	00	Z	500	6	28.7	9.5
VKB4L5	12	Z	500	7	30.5	29.4
VKB4L5	00	Z	500	5	30.8	30.1
WDK38H	12	Z	500	18	6.1	-4.9
XKQLWQ	12	Z	500	9	33.0	30.8
XQFJRG	12	Z	500	4	12.6	-12.2
XQFJRG	00	Z	500	3	28.8	-25.4
YLV96W	12	Z	500	7	9.0	0.5
YLV96W	00	Z	500	9	16.5	5.4
ZVQEQC	12	Z	500	7	9.9	9.6
ZVQEQC	00	Z	500	5	8.0	7.7

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                : OCT 2019
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	500	30	1.9	-0.3	0.3
01001	12	V	500	30	3.4	-0.9	0.2
01028	00	V	500	30	1.8	0.1	-0.3
01028	12	V	500	31	1.8	0.2	-0.3
01400	00	V	500	25	2.8	0.6	-0.1
01400	12	V	500	26	2.9	0.1	0.3
014007	12	V	500	1	3.7	-3.7	0.1
014008	12	V	500	1	4.2	-4.2	0.6
01415	12	V	500	31	2.9	0.4	-0.1
01415	00	V	500	30	3.1	0.0	0.8
02365	12	V	500	4	3.2	-1.7	0.0
02365	00	V	500	3	3.1	0.2	0.0
02591	00	V	500	30	4.0	0.6	0.5
02591	12	V	500	31	2.6	-0.1	0.3
02836	12	V	500	31	2.7	-0.1	-0.4
02836	00	V	500	30	2.3	0.0	-0.3
02963	12	V	500	31	2.8	0.0	0.4
02963	00	V	500	30	2.3	-0.3	0.0
03005	00	V	500	27	2.9	0.4	0.1
03005	12	V	500	31	3.8	-0.1	0.3
03238	00	V	500	29	2.8	0.7	-0.3
03808	00	V	500	30	3.2	0.0	-0.3
03808	12	V	500	31	3.0	0.1	-0.3
03918	12	V	500	2	3.0	-0.4	-0.6
03918	00	V	500	30	2.5	0.5	0.5
03953	12	V	500	31	3.6	0.3	0.4
03953	00	V	500	29	3.5	0.8	1.2
04018	00	V	500	30	2.7	0.2	-0.2
04018	12	V	500	31	2.7	0.3	-0.1
04220	00	V	500	29	2.4	0.2	0.1
04220	12	V	500	31	3.3	-0.3	-0.3
04270	12	V	500	31	2.8	-0.2	0.0
04270	00	V	500	30	3.2	-0.4	0.1
04320	00	V	500	29	2.7	0.2	0.1
04320	12	V	500	30	2.3	-0.1	0.0
04339	12	V	500	31	2.4	-0.3	-0.5
04339	00	V	500	30	2.3	-0.1	0.2
04360	00	V	500	23	3.4	0.0	0.1
04360	12	V	500	24	2.7	-0.6	0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	500	30	2.5	-0.3	-0.3
06011	12	V	500	30	3.3	0.4	-0.2
06260	00	V	500	30	3.5	0.8	-0.6
06260	12	V	500	6	4.0	1.3	0.2
06610	12	V	500	31	3.3	0.5	-0.5
06610	00	V	500	30	3.0	0.0	0.1
07110	00	V	500	30	3.5	-0.5	-0.1
07110	12	V	500	31	3.6	0.1	0.7
07510	00	V	500	29	2.5	0.4	0.5
07510	12	V	500	31	4.0	0.3	-0.5
07645	00	V	500	29	2.9	0.0	0.0
07645	12	V	500	31	3.8	-0.2	0.3
07761	00	V	500	30	2.4	0.1	-0.1
07761	12	V	500	30	2.3	0.2	-0.6
08001	00	V	500	30	3.2	0.0	0.3
08001	12	V	500	31	3.3	-0.4	0.2
08221	12	V	500	31	2.2	0.0	0.7
08221	00	V	500	27	3.1	0.3	-0.1
08302	12	V	500	31	2.9	-0.3	-0.4
08302	00	V	500	30	2.8	-0.7	-0.1
08508	12	V	500	29	2.9	0.4	0.7
08522	12	V	500	31	3.1	0.6	-0.4
08579	12	V	500	30	2.5	0.5	0.7
10035	12	V	500	31	2.3	-0.1	0.2
10035	00	V	500	2	1.3	-0.9	0.4
10393	12	V	500	31	2.7	-0.4	0.1
10393	00	V	500	30	2.8	1.0	0.2
10410	00	V	500	30	3.8	1.3	0.0
10410	12	V	500	31	3.1	0.7	0.5
10739	00	V	500	29	3.5	-0.3	-0.3
10739	12	V	500	30	2.6	0.6	0.1
11035	00	V	500	30	2.6	-0.2	0.8
11035	12	V	500	31	2.6	0.5	-1.0
12982	00	V	500	28	2.2	0.7	0.3
12982	12	V	500	31	2.1	0.2	0.0
16080	00	V	500	30	3.7	-1.0	-0.2
16080	12	V	500	31	4.2	0.5	-0.1
16245	12	V	500	31	2.9	-0.2	0.3
16245	00	V	500	30	3.1	0.0	0.3
16320	00	V	500	30	2.3	0.0	0.3
16320	12	V	500	31	2.6	0.3	-0.3
16429	00	V	500	30	2.6	0.4	0.1
16429	12	V	500	31	2.8	0.4	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16622	00	V	500	30	2.1	-0.1	0.6
16754	00	V	500	27	1.9	0.1	-0.2
17607	12	V	500	15	4.0	-1.0	-0.5
26435	12	V	500	15	2.4	0.2	-0.2
5QPW8X	12	V	500	12	3.0	0.5	1.4
5QPW8X	00	V	500	14	2.4	0.1	-0.4
60018	00	V	500	29	2.2	0.1	-0.1
60018	12	V	500	30	2.6	-0.1	-0.2
7JUNA4	12	V	500	5	2.1	0.0	-0.5
7JUNA4	00	V	500	4	3.1	1.1	0.7
ASDE09	12	V	500	7	2.8	1.9	1.3
BPMWB2	00	V	500	5	4.2	0.6	0.0
BPMWB2	12	V	500	7	3.8	1.6	0.3
FHM5UJ	00	V	500	9	2.1	-0.2	0.0
FHM5UJ	12	V	500	15	2.1	-0.1	0.7
HTXUH4	12	V	500	8	2.3	0.2	0.0
HTXUH4	00	V	500	10	2.2	0.4	0.0
JNKN7J	12	V	500	12	2.7	0.9	0.0
JNKN7J	00	V	500	8	4.4	2.6	0.5
KJJF9X	12	V	500	6	1.9	0.0	-0.8
KJJF9X	00	V	500	6	2.4	0.9	-0.5
KMPLHP	12	V	500	7	1.9	0.1	-0.8
KMPLHP	00	V	500	6	3.7	1.1	0.7
VKB4L5	12	V	500	7	3.9	-0.4	-0.3
VKB4L5	00	V	500	5	3.3	1.1	-0.4
WDK38H	12	V	500	18	3.0	-0.5	-0.2
XKQLWQ	12	V	500	9	2.9	-0.9	0.2
XQFJRG	12	V	500	4	1.8	0.2	-0.6
XQFJRG	00	V	500	3	3.6	1.7	0.0
YLV96W	12	V	500	7	3.0	1.1	-1.4
YLV96W	00	V	500	9	3.6	1.0	0.2
ZVQEQC	12	V	500	7	2.9	-0.2	-1.5
ZVQEQC	00	V	500	5	2.5	-1.7	0.2

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 850 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : OCT 2019
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	850	31	6.7	-5.6
01001	12	Z	850	31	6.7	-5.6
01028	00	Z	850	31	10.6	-3.4
01028	12	Z	850	31	14.5	-4.2
01400	00	Z	850	25	78.6	78.3
01400	12	Z	850	26	77.8	76.7
014007	12	Z	850	1	4.8	-4.8
014008	12	Z	850	1	0.7	0.7
01415	12	Z	850	32	4.4	4.0
01415	00	Z	850	31	3.7	2.7
02365	12	Z	850	4	1.7	0.8
02365	00	Z	850	3	1.6	1.6
02591	00	Z	850	31	7.7	7.5
02591	12	Z	850	31	8.5	8.3
02836	12	Z	850	31	2.5	1.3
02836	00	Z	850	31	2.7	1.6
02963	12	Z	850	31	3.0	2.5
02963	00	Z	850	31	3.0	2.3
03005	00	Z	850	29	3.4	-1.8
03005	12	Z	850	31	3.3	-1.3
03238	00	Z	850	31	3.3	2.5
03808	00	Z	850	31	3.5	2.4
03808	12	Z	850	32	3.9	2.9
03918	12	Z	850	2	4.5	4.3
03918	00	Z	850	31	7.5	7.4
03953	12	Z	850	33	6.4	5.5
03953	00	Z	850	32	4.7	3.2
04018	00	Z	850	31	2.9	-0.5
04018	12	Z	850	31	2.0	0.3
04220	00	Z	850	31	3.0	2.0
04220	12	Z	850	31	3.4	2.1
04270	12	Z	850	31	5.0	0.7
04270	00	Z	850	31	3.3	-0.1
04320	00	Z	850	31	3.1	-0.4
04320	12	Z	850	30	3.7	0.4
04339	12	Z	850	31	26.0	5.2
04339	00	Z	850	31	22.0	2.5
04360	00	Z	850	24	10.5	-9.5
04360	12	Z	850	24	9.3	-8.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	850	31	6.0	5.4
06011	12	Z	850	31	5.9	4.7
06260	00	Z	850	32	7.6	-2.4
06260	12	Z	850	6	3.8	2.6
06610	12	Z	850	31	3.1	1.5
06610	00	Z	850	32	3.7	2.6
07110	00	Z	850	32	4.3	-3.4
07110	12	Z	850	31	2.8	-1.7
07510	00	Z	850	31	4.2	3.6
07510	12	Z	850	31	5.3	4.5
07645	00	Z	850	30	2.4	0.4
07645	12	Z	850	31	3.2	0.6
07761	00	Z	850	31	3.0	0.6
07761	12	Z	850	31	2.8	0.9
08001	00	Z	850	31	2.8	1.3
08001	12	Z	850	31	3.8	2.6
08221	12	Z	850	31	5.1	4.9
08221	00	Z	850	27	4.8	4.3
08302	12	Z	850	31	5.2	-4.8
08302	00	Z	850	31	5.4	-4.4
08508	12	Z	850	29	4.3	3.2
08522	12	Z	850	31	4.4	3.9
08579	12	Z	850	30	7.9	7.6
10035	12	Z	850	31	9.6	3.9
10035	00	Z	850	2	11.0	11.0
10393	12	Z	850	31	2.5	0.9
10393	00	Z	850	31	1.9	0.5
10410	00	Z	850	32	3.1	-2.3
10410	12	Z	850	31	3.4	-1.9
10739	00	Z	850	31	4.3	3.8
10739	12	Z	850	30	4.0	2.8
11035	00	Z	850	31	7.2	6.6
11035	12	Z	850	31	11.7	7.7
12982	00	Z	850	31	4.2	3.4
12982	12	Z	850	31	4.1	3.5
16080	00	Z	850	31	2.8	-0.8
16080	12	Z	850	31	3.5	-2.1
16245	12	Z	850	32	3.3	-2.6
16245	00	Z	850	31	2.3	-1.4
16320	00	Z	850	31	8.5	5.0
16320	12	Z	850	31	11.8	6.7
16429	00	Z	850	31	4.4	2.8
16429	12	Z	850	32	4.7	3.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16622	00	Z	850	31	15.0	14.6
16754	00	Z	850	30	3.1	1.1
17607	12	Z	850	31	3.8	3.0
26435	12	Z	850	15	1.7	0.4
5QPW8X	12	Z	850	13	24.2	23.0
5QPW8X	00	Z	850	14	25.6	24.9
60018	00	Z	850	31	2.6	0.6
60018	12	Z	850	31	2.9	2.1
7JUNA4	12	Z	850	5	4.7	2.1
7JUNA4	00	Z	850	4	6.0	3.2
ASDE09	12	Z	850	8	24.3	21.0
BPMWB2	00	Z	850	5	7.8	-4.7
BPMWB2	12	Z	850	7	6.3	-3.0
FHM5UJ	00	Z	850	10	11.3	7.2
FHM5UJ	12	Z	850	15	23.8	13.9
HTXUH4	12	Z	850	8	9.6	5.6
HTXUH4	00	Z	850	10	11.9	8.4
JNKN7J	12	Z	850	12	46.7	46.3
JNKN7J	00	Z	850	9	43.7	43.2
KJJF9X	12	Z	850	6	4.6	-1.0
KJJF9X	00	Z	850	6	3.1	0.9
KMPLHP	12	Z	850	6	5.8	1.2
KMPLHP	00	Z	850	6	16.2	7.2
VKB4L5	12	Z	850	7	30.9	30.2
VKB4L5	00	Z	850	6	32.7	31.6
WDK38H	12	Z	850	18	7.4	-6.8
XKQLWQ	12	Z	850	9	28.0	26.0
XQFJRG	12	Z	850	4	16.6	-16.2
XQFJRG	00	Z	850	3	32.5	-27.5
YLV96W	12	Z	850	8	5.0	-2.3
YLV96W	00	Z	850	9	17.2	5.3
ZVQEQC	12	Z	850	7	5.8	5.4
ZVQEQC	00	Z	850	5	3.8	3.4

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

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RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 850 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : OCT 2019
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	850	30	3.5	0.5	0.6
01001	12	V	850	30	4.4	1.1	0.8
01028	00	V	850	30	3.8	-0.3	-0.2
01028	12	V	850	31	2.8	-0.1	0.4
01400	00	V	850	24	2.8	-0.3	-0.5
01400	12	V	850	26	2.5	0.0	0.1
014007	12	V	850	1	1.3	0.9	-0.9
014008	12	V	850	1	0.2	0.2	0.1
01415	12	V	850	31	2.4	-0.5	0.4
01415	00	V	850	30	2.5	0.6	-0.2
02365	12	V	850	4	2.1	-0.1	0.5
02365	00	V	850	3	2.9	1.6	-0.2
02591	00	V	850	30	2.4	0.1	0.0
02591	12	V	850	31	2.3	0.4	-0.1
02836	12	V	850	31	2.7	0.7	-0.2
02836	00	V	850	30	2.3	0.7	-0.3
02963	12	V	850	31	2.1	-0.3	-0.3
02963	00	V	850	30	2.7	0.1	0.0
03005	00	V	850	27	2.8	-0.7	-0.3
03005	12	V	850	31	2.7	-0.2	0.9
03238	00	V	850	29	2.4	0.7	-0.2
03808	00	V	850	30	2.5	0.0	-0.5
03808	12	V	850	31	3.1	-0.3	-0.4
03918	12	V	850	2	1.6	0.0	-1.2
03918	00	V	850	30	1.9	-0.2	0.0
03953	12	V	850	31	2.6	0.1	0.5
03953	00	V	850	29	3.3	0.3	0.2
04018	00	V	850	30	3.0	-0.7	-0.3
04018	12	V	850	31	3.4	0.3	-0.2
04220	00	V	850	30	2.9	0.0	-1.0
04220	12	V	850	31	3.4	0.6	-0.5
04270	12	V	850	31	3.6	-1.1	-0.5
04270	00	V	850	30	4.8	0.1	-0.6
04320	00	V	850	29	3.5	0.0	0.4
04320	12	V	850	30	3.6	-1.0	0.1
04339	12	V	850	31	3.5	0.8	0.2
04339	00	V	850	30	3.1	0.0	-0.6
04360	00	V	850	23	6.0	0.6	0.3
04360	12	V	850	24	5.1	2.7	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	850	30	2.7	-0.4	0.3
06011	12	V	850	31	2.7	-0.1	-0.2
06260	00	V	850	30	2.4	0.3	-0.7
06260	12	V	850	6	2.6	0.4	0.0
06610	12	V	850	31	3.7	1.1	0.2
06610	00	V	850	30	3.5	1.4	0.4
07110	00	V	850	30	2.6	-0.3	-0.3
07110	12	V	850	31	3.7	-0.2	-0.9
07510	00	V	850	29	3.1	0.0	0.0
07510	12	V	850	31	3.4	-0.1	0.4
07645	00	V	850	29	3.1	-0.3	0.8
07645	12	V	850	31	3.0	-0.7	0.6
07761	00	V	850	30	3.2	-0.1	-0.5
07761	12	V	850	31	3.0	-0.3	-0.5
08001	00	V	850	30	2.8	1.0	-0.1
08001	12	V	850	31	2.8	0.0	0.6
08221	12	V	850	31	2.5	-0.2	0.3
08221	00	V	850	27	3.2	0.1	0.8
08302	12	V	850	31	3.3	0.0	0.5
08302	00	V	850	30	4.2	0.1	-0.2
08508	12	V	850	29	3.2	0.7	-0.3
08522	12	V	850	31	3.9	1.0	0.4
08579	12	V	850	30	2.6	0.1	-0.1
10035	12	V	850	31	2.3	-0.4	0.4
10035	00	V	850	2	2.2	0.6	-1.9
10393	12	V	850	31	2.9	0.2	0.3
10393	00	V	850	30	2.2	0.0	-0.6
10410	00	V	850	30	2.6	-0.2	-0.4
10410	12	V	850	31	3.0	0.2	0.3
10739	00	V	850	29	4.0	0.0	0.1
10739	12	V	850	30	3.0	0.3	0.5
11035	00	V	850	30	3.1	0.3	-0.5
11035	12	V	850	31	2.7	0.2	-0.5
12982	00	V	850	28	2.7	0.5	-0.1
12982	12	V	850	31	3.0	-0.2	0.9
16080	00	V	850	30	3.0	-0.1	-0.2
16080	12	V	850	31	3.5	0.0	0.1
16245	12	V	850	31	2.8	-0.1	-0.2
16245	00	V	850	30	2.7	0.4	0.3
16320	00	V	850	30	3.0	0.3	-0.6
16320	12	V	850	31	2.3	0.3	-0.4
16429	00	V	850	30	2.7	-0.2	0.2
16429	12	V	850	31	2.8	0.3	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16622	00	V	850	30	2.3	0.4	-0.3
16754	00	V	850	28	2.5	-0.2	-0.4
17607	12	V	850	31	3.7	0.6	1.1
26435	12	V	850	15	2.6	0.2	0.5
5QPW8X	12	V	850	13	4.0	1.2	0.6
5QPW8X	00	V	850	14	3.0	-0.3	1.3
60018	00	V	850	29	2.7	0.8	0.2
60018	12	V	850	30	3.2	-0.3	0.5
7JUNA4	12	V	850	5	2.5	-0.2	-0.6
7JUNA4	00	V	850	4	2.4	-1.7	0.6
ASDE09	12	V	850	8	2.0	0.6	-0.6
BPMWB2	00	V	850	5	3.1	0.5	-1.2
BPMWB2	12	V	850	7	2.5	0.2	0.0
FHM5UJ	00	V	850	9	2.3	-0.1	-0.5
FHM5UJ	12	V	850	15	2.0	0.1	-0.1
HTXUH4	12	V	850	8	2.9	0.6	-0.1
HTXUH4	00	V	850	10	3.9	-0.1	-1.0
JNKN7J	12	V	850	12	2.9	0.5	0.8
JNKN7J	00	V	850	9	3.2	-0.2	0.2
KJJF9X	12	V	850	6	2.2	0.6	0.9
KJJF9X	00	V	850	6	2.0	-0.4	0.3
KMPLHP	12	V	850	6	2.4	0.8	-0.4
KMPLHP	00	V	850	6	2.0	0.1	0.2
VKB4L5	12	V	850	7	2.1	0.6	0.2
VKB4L5	00	V	850	6	2.9	-0.3	-1.3
WDK38H	12	V	850	18	3.1	0.4	-0.4
XKQLWQ	12	V	850	9	3.7	1.1	0.5
XQFJRG	12	V	850	4	2.7	0.2	0.9
XQFJRG	00	V	850	3	3.5	0.2	-1.0
YLV96W	12	V	850	8	2.8	-0.3	0.5
YLV96W	00	V	850	9	3.5	0.0	0.2
ZVQEQC	12	V	850	7	3.3	0.5	-0.5
ZVQEQC	00	V	850	5	2.7	0.3	-0.8

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                : OCT 2019
         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
0062087	99	P	SUR	55	7	369	0	0.4	-0.4	0.6
0066022	99	P	SUR	54	14	246	0	0.4	-0.2	0.4
0066023	99	P	SUR	55	11	372	0	0.3	0.0	0.3
0066024	99	P	SUR	55	13	207	0	0.4	0.0	0.4
010	99	P	SUR	68	9	1	0	0.0	-1.0	1.0
03380	99	P	SUR	54	0	796	0	0.3	-0.1	0.3
0640046	99	P	SUR	60	-4	742	0	0.4	-0.1	0.4
1300001	99	P	SUR	11	-23	710	0	0.4	-0.2	0.4
1300008	99	P	SUR	15	-38	710	0	0.3	-0.2	0.3
1300130	99	P	SUR	28	-16	7	7	0.0	0.0	0.0
1300131	99	P	SUR	28	-17	736	0	0.4	-0.0	0.4
1301569	99	P	SUR	24	-39	741	0	0.3	-0.2	0.4
1301603	99	P	SUR	31	-59	730	0	0.8	0.0	0.8
1301605	99	P	SUR	28	-61	730	0	0.3	-0.0	0.3
1301607	99	P	SUR	24	-63	643	66	2.6	-1.2	2.9
1301608	99	P	SUR	27	-44	729	0	0.3	1.0	1.1
1301609	99	P	SUR	23	-68	729	0	0.3	0.4	0.5
1301610	99	P	SUR	19	-59	742	0	0.3	0.1	0.3
1301612	99	P	SUR	26	-47	743	0	0.3	-0.0	0.3
1301618	99	P	SUR	17	-35	743	0	0.3	0.2	0.3
1301619	99	P	SUR	28	-29	729	0	0.3	0.3	0.4
1301620	99	P	SUR	11	-39	742	0	0.4	0.2	0.4
1402559	99	P	SUR	28	-53	744	0	0.4	0.1	0.4
1501531	99	P	SUR	30	-57	741	0	0.3	-0.3	0.4
2501641	99	P	SUR	87	4	686	0	0.8	-0.2	0.8
2501643	99	P	SUR	88	-16	680	0	0.4	-0.1	0.5
2501644	99	P	SUR	88	8	679	0	0.5	-0.3	0.6
2501645	99	P	SUR	89	-24	679	0	0.4	-0.0	0.4
2501647	99	P	SUR	88	-25	735	0	0.4	0.1	0.4
2501651	99	P	SUR	89	-13	736	0	0.5	-0.4	0.6
2501653	99	P	SUR	87	5	679	0	0.5	0.2	0.5
2501661	99	P	SUR	83	9	744	0	0.6	-0.0	0.6
2601623	99	P	SUR	77	30	745	0	0.9	-0.1	0.9
2601625	99	P	SUR	77	17	743	65	3.5	2.2	4.2
4100040	99	P	SUR	15	-53	4460	0	0.3	-0.8	0.8
4100043	99	P	SUR	21	-65	4456	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
4100044	99	P	SUR	22	-59	4339	0	0.4	0.1	0.4
4100046	99	P	SUR	24	-68	4142	0	0.3	-0.3	0.4
4100048	99	P	SUR	32	-70	4383	0	0.3	-0.6	0.7
4100049	99	P	SUR	27	-63	4401	0	0.3	0.2	0.4
4100052	99	P	SUR	18	-65	3012	0	0.3	-1.0	1.1
4100053	99	P	SUR	18	-66	4454	0	0.3	-0.6	0.7
4100056	99	P	SUR	18	-65	4451	0	0.3	-0.8	0.9
4100139	99	P	SUR	20	-38	716	0	0.3	-0.3	0.4
4100300	99	P	SUR	16	-57	716	0	0.3	-0.0	0.3
4100597	99	P	SUR	35	-28	731	0	0.6	0.1	0.6
4100729	99	P	SUR	31	-31	734	0	0.4	0.1	0.4
4100730	99	P	SUR	31	-32	731	0	0.8	0.2	0.8
4101529	99	P	SUR	32	-60	743	0	0.4	-1.0	1.1
4101530	99	P	SUR	33	-28	712	0	0.3	0.5	0.6
4101531	99	P	SUR	36	-21	744	0	0.3	0.6	0.7
4101536	99	P	SUR	42	-25	737	0	0.4	0.2	0.5
4101537	99	P	SUR	35	-14	741	0	0.3	0.0	0.3
4101539	99	P	SUR	43	-26	743	0	0.4	0.1	0.5
4101554	99	P	SUR	29	-62	730	0	0.4	0.4	0.6
4101557	99	P	SUR	35	-28	744	0	0.4	0.2	0.5
4101558	99	P	SUR	25	-56	744	0	0.3	0.3	0.4
4101560	99	P	SUR	39	-30	743	0	0.5	0.5	0.7
4101562	99	P	SUR	29	-54	715	0	0.4	0.6	0.7
4101564	99	P	SUR	29	-41	728	0	0.3	0.0	0.3
4101565	99	P	SUR	27	-33	743	0	0.3	0.3	0.5
4101567	99	P	SUR	37	-50	744	0	0.4	0.3	0.5
4101568	99	P	SUR	37	-55	519	0	0.4	0.3	0.5
4101570	99	P	SUR	29	-61	742	0	0.4	0.2	0.4
4101572	99	P	SUR	50	-16	640	0	0.5	0.5	0.7
4101573	99	P	SUR	33	-39	744	0	0.5	0.2	0.5
4101598	99	P	SUR	16	-61	744	0	0.4	-0.5	0.6
4101603	99	P	SUR	15	-61	603	0	0.4	-0.2	0.4
4101604	99	P	SUR	10	-62	670	0	0.5	-0.1	0.5
4101606	99	P	SUR	43	-9	521	0	0.4	0.7	0.8
4101607	99	P	SUR	41	-14	744	0	0.3	0.3	0.4
4101609	99	P	SUR	39	-22	744	0	0.4	0.2	0.4
4101610	99	P	SUR	65	-8	744	0	0.4	0.3	0.5
4101613	99	P	SUR	34	-18	744	0	0.3	0.6	0.7
4101614	99	P	SUR	35	-21	744	0	0.3	0.1	0.3
4101615	99	P	SUR	14	-51	744	3	0.3	0.2	0.4
4101616	99	P	SUR	38	-24	744	1	0.4	0.0	0.4
4101617	99	P	SUR	33	-26	715	0	0.4	0.4	0.6
4101618	99	P	SUR	33	-24	744	0	0.3	0.3	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101620	99	P	SUR	51	-5	743	0	0.4	0.4	0.6
4101621	99	P	SUR	39	-31	744	1	0.5	0.3	0.5
4101622	99	P	SUR	68	-17	744	0	0.4	0.2	0.4
4101623	99	P	SUR	57	-51	744	0	0.4	0.0	0.4
4101627	99	P	SUR	63	-40	744	0	0.5	0.1	0.5
4101630	99	P	SUR	13	-51	744	0	0.3	0.0	0.3
4101660	99	P	SUR	63	-14	744	0	0.4	-0.2	0.5
4101662	99	P	SUR	64	-13	744	0	0.3	0.0	0.3
4101663	99	P	SUR	65	-24	744	0	0.4	-0.1	0.4
4101664	99	P	SUR	61	-27	744	0	0.5	-0.0	0.5
4101666	99	P	SUR	63	-8	504	0	0.3	-0.0	0.3
4101690	99	P	SUR	43	-50	706	0	0.7	0.2	0.7
4101700	99	P	SUR	34	-54	480	0	2.2	-2.0	2.9
4101702	99	P	SUR	37	-64	730	0	1.1	-0.2	1.1
4101705	99	P	SUR	29	-34	733	0	0.8	0.1	0.8
4101706	99	P	SUR	36	-27	730	0	0.4	-0.8	0.9
4101707	99	P	SUR	37	-32	738	0	0.7	-0.2	0.7
4101708	99	P	SUR	30	-55	728	1	1.3	-0.3	1.4
4101712	99	P	SUR	38	-34	732	0	0.8	0.1	0.8
4101713	99	P	SUR	33	-69	730	0	0.3	-0.1	0.3
4101714	99	P	SUR	29	-31	733	0	0.3	-0.1	0.3
4101715	99	P	SUR	29	-53	739	0	0.4	-0.5	0.7
4101716	99	P	SUR	28	-56	733	0	0.4	-0.7	0.8
4101717	99	P	SUR	27	-61	731	0	0.4	-0.2	0.4
4101718	99	P	SUR	30	-26	739	0	0.3	0.1	0.3
4101719	99	P	SUR	32	-60	739	0	0.4	0.0	0.4
4101720	99	P	SUR	44	-56	742	0	0.5	0.7	0.9
4101721	99	P	SUR	33	-41	741	0	1.0	0.8	1.3
4101742	99	P	SUR	32	-38	731	14	1.5	-0.1	1.5
4101743	99	P	SUR	33	-69	732	0	0.5	0.6	0.8
4101752	99	P	SUR	13	-56	737	0	0.4	0.0	0.4
4101753	99	P	SUR	23	-23	743	0	0.3	0.3	0.4
4101754	99	P	SUR	15	-50	742	0	0.3	0.0	0.3
4101755	99	P	SUR	22	-23	742	0	0.3	0.3	0.4
4101760	99	P	SUR	30	-51	744	0	0.4	0.2	0.4
4101765	99	P	SUR	61	-9	744	0	0.6	0.1	0.6
4101767	99	P	SUR	14	-36	744	0	0.3	0.2	0.4
4101771	99	P	SUR	73	4	744	0	0.4	0.1	0.4
4101772	99	P	SUR	77	13	744	0	0.9	0.1	0.9
41040	99	P	SUR	15	-53	1148	0	0.4	-0.4	0.5
41044	99	P	SUR	22	-59	1142	0	0.4	0.5	0.6
41046	99	P	SUR	24	-68	1080	0	0.4	0.3	0.5
41048	99	P	SUR	32	-70	1077	0	0.4	-0.2	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
41049	99	P	SUR	28	-63	1096	0	0.3	0.6	0.7
41052	99	P	SUR	18	-65	1065	0	0.4	-1.0	1.1
41053	99	P	SUR	19	-66	1599	0	0.4	-0.6	0.7
41056	99	P	SUR	18	-66	1577	0	0.4	-0.8	0.9
4200059	99	P	SUR	15	-67	3988	0	0.4	0.1	0.4
4200085	99	P	SUR	18	-67	4378	0	0.3	-0.7	0.8
42059	99	P	SUR	15	-68	1134	0	0.4	0.5	0.7
42085	99	P	SUR	18	-67	1596	0	0.4	-0.7	0.8
4400005	99	P	SUR	43	-69	743	0	0.5	0.2	0.5
4400008	99	P	SUR	41	-69	4411	0	0.6	0.1	0.6
4400011	99	P	SUR	41	-67	4391	0	0.5	-0.1	0.5
4400027	99	P	SUR	44	-67	741	0	0.5	-0.3	0.6
4400032	99	P	SUR	44	-69	743	0	0.5	-1.2	1.3
4400033	99	P	SUR	44	-69	734	0	0.5	-0.8	0.9
4400034	99	P	SUR	44	-68	743	0	0.5	-0.1	0.5
4400037	99	P	SUR	43	-68	708	0	0.4	-0.1	0.4
44005	99	P	SUR	43	-69	788	0	0.5	0.2	0.5
4400513	99	P	SUR	54	-10	648	0	0.4	-0.3	0.5
4400517	99	P	SUR	29	-67	744	0	0.3	0.0	0.3
4400521	99	P	SUR	29	-41	678	0	0.3	-1.0	1.1
4400777	99	P	SUR	30	-55	731	0	0.7	0.3	0.8
44008	99	P	SUR	41	-69	1805	0	0.7	0.6	0.9
4400857	99	P	SUR	31	-35	729	0	0.7	0.2	0.7
4400874	99	P	SUR	35	-25	651	2	2.1	-1.2	2.4
44011	99	P	SUR	41	-67	1686	0	0.7	0.3	0.7
4401531	99	P	SUR	39	-30	744	0	0.4	0.3	0.5
4401536	99	P	SUR	34	-22	734	0	0.3	0.5	0.6
4401537	99	P	SUR	28	-48	736	0	0.4	-1.1	1.1
4401539	99	P	SUR	31	-20	744	0	0.5	-0.3	0.6
4401540	99	P	SUR	32	-37	744	0	0.4	0.2	0.4
4401541	99	P	SUR	30	-40	744	0	0.3	-0.3	0.4
4401551	99	P	SUR	31	-29	431	0	0.9	0.2	0.9
4401556	99	P	SUR	24	-44	726	0	0.3	-0.1	0.3
4401557	99	P	SUR	30	-43	462	3	3.1	0.3	3.1
4401558	99	P	SUR	66	12	731	0	0.4	-0.0	0.4
4401559	99	P	SUR	46	-3	726	0	0.8	-0.3	0.9
4401561	99	P	SUR	28	-47	731	0	2.1	0.4	2.1
4401562	99	P	SUR	27	-34	731	0	0.3	-0.5	0.5
4401563	99	P	SUR	34	-54	733	0	0.4	-0.4	0.6
4401564	99	P	SUR	36	-24	735	0	0.4	0.3	0.6
4401565	99	P	SUR	61	-22	730	0	0.5	0.0	0.5
4401567	99	P	SUR	53	-20	734	0	0.5	0.2	0.5
4401568	99	P	SUR	54	-25	742	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
4401569	99	P	SUR	54	-28	741	0	0.4	-0.0	0.4
4401570	99	P	SUR	43	-14	737	0	0.3	-0.1	0.3
4401572	99	P	SUR	46	-36	740	0	0.4	0.2	0.5
4401573	99	P	SUR	54	-14	729	0	0.8	0.0	0.8
4401574	99	P	SUR	61	-36	742	0	0.5	0.2	0.6
4401576	99	P	SUR	40	-26	741	0	0.4	0.3	0.5
4401577	99	P	SUR	41	-36	741	0	0.5	0.2	0.5
4401578	99	P	SUR	45	-26	741	0	0.4	0.0	0.5
4401579	99	P	SUR	41	-37	739	0	0.4	0.0	0.5
4401580	99	P	SUR	47	-45	743	0	0.5	0.2	0.5
4401581	99	P	SUR	38	-46	740	0	0.6	0.2	0.6
4401582	99	P	SUR	44	-44	740	0	0.5	0.1	0.5
4401611	99	P	SUR	49	-43	733	0	0.4	0.1	0.4
4401613	99	P	SUR	29	-20	732	0	0.3	0.6	0.7
4401750	99	P	SUR	68	4	708	0	0.4	-1.4	1.5
4401751	99	P	SUR	63	0	732	0	0.4	0.1	0.4
4401753	99	P	SUR	66	2	389	0	0.4	0.7	0.8
4401799	99	P	SUR	21	-57	739	0	0.4	0.0	0.4
4401802	99	P	SUR	30	-21	500	104	3.2	-1.3	3.5
4401822	99	P	SUR	61	-68	736	0	0.5	0.4	0.6
4401825	99	P	SUR	45	-57	741	0	0.7	1.2	1.4
4401826	99	P	SUR	75	-69	701	0	0.5	0.4	0.7
4401827	99	P	SUR	44	-64	52	0	0.3	0.3	0.4
4401853	99	P	SUR	16	-61	443	27	2.9	-0.8	3.0
4401856	99	P	SUR	14	-59	744	0	0.4	-0.0	0.4
4401870	99	P	SUR	18	-18	744	0	0.4	0.4	0.6
4401872	99	P	SUR	21	-19	744	0	0.4	0.3	0.5
4401873	99	P	SUR	16	-18	744	0	0.4	0.5	0.6
4401893	99	P	SUR	48	-50	723	0	0.4	0.4	0.5
4401894	99	P	SUR	47	-48	730	0	0.4	0.5	0.6
44027	99	P	SUR	44	-67	805	0	0.5	-0.3	0.6
44032	99	P	SUR	44	-69	747	0	0.5	-1.2	1.3
44033	99	P	SUR	44	-69	738	0	0.5	-0.8	0.9
44034	99	P	SUR	44	-68	747	0	0.5	-0.1	0.5
44037	99	P	SUR	44	-68	712	0	0.4	-0.1	0.4
44137	99	P	SUR	42	-62	728	0	0.5	-0.2	0.5
44139	99	P	SUR	44	-57	733	0	0.4	-0.1	0.4
44150	99	P	SUR	43	-64	738	0	0.5	-0.0	0.5
44258	99	P	SUR	45	-63	734	0	0.5	-0.1	0.5
44521	99	P	SUR	29	-41	677	0	0.3	-1.0	1.1
45138	99	P	SUR	50	-66	738	0	0.4	-0.2	0.4
4602501	99	P	SUR	70	2	739	0	0.4	0.1	0.4
4602502	99	P	SUR	70	3	744	1	0.5	0.3	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4602504	99	P	SUR	69	3	742	0	0.5	0.3	0.6
4700546	99	P	SUR	32	-59	708	2	2.2	-0.4	2.2
4701669	99	P	SUR	45	-16	734	0	0.6	-0.2	0.6
4800770	99	P	SUR	59	-33	662	662	0.0	0.0	0.0
4802505	99	P	SUR	83	-55	734	0	0.4	0.1	0.5
4802512	99	P	SUR	83	-65	734	0	0.5	-0.9	1.1
5301765	99	P	SUR	63	-12	743	0	0.8	0.4	0.9
6100001	99	P	SUR	43	8	717	0	0.5	0.3	0.5
6100002	99	P	SUR	42	5	718	0	0.5	-0.1	0.5
6100196	99	P	SUR	42	4	736	0	0.5	0.1	0.5
6100197	99	P	SUR	40	4	736	0	0.4	0.2	0.5
6100198	99	P	SUR	37	-2	736	0	0.3	0.4	0.5
6100280	99	P	SUR	41	1	736	0	0.4	0.1	0.4
6100281	99	P	SUR	40	0	736	0	0.5	0.2	0.5
6100417	99	P	SUR	38	0	736	0	0.4	0.4	0.5
6100430	99	P	SUR	40	2	736	0	0.4	0.1	0.4
6101003	99	P	SUR	40	25	223	0	0.4	0.7	0.8
6101005	99	P	SUR	38	26	225	0	0.5	0.7	0.9
6101007	99	P	SUR	36	25	39	0	0.4	-0.1	0.5
6101009	99	P	SUR	35	25	221	0	0.4	-0.8	0.9
6102507	99	P	SUR	33	28	85	0	0.2	0.2	0.2
6102508	99	P	SUR	34	26	159	0	0.3	-0.4	0.5
6200024	99	P	SUR	44	-3	640	0	0.5	0.0	0.5
6200025	99	P	SUR	44	-6	176	0	0.5	-0.1	0.5
6200082	99	P	SUR	44	-8	417	0	0.4	-0.1	0.4
6200083	99	P	SUR	43	-9	553	0	2.1	-0.1	2.1
6200084	99	P	SUR	42	-9	730	0	0.4	0.4	0.6
6200085	99	P	SUR	36	-7	736	0	0.3	0.2	0.4
6200091	99	P	SUR	53	-5	744	0	0.4	-0.2	0.5
6200092	99	P	SUR	51	-11	744	1	0.5	-0.3	0.5
6200093	99	P	SUR	55	-10	741	0	0.5	-0.2	0.6
6200094	99	P	SUR	52	-7	744	1	0.5	-0.0	0.5
6200095	99	P	SUR	53	-16	744	0	0.4	-0.4	0.6
62001	99	P	SUR	45	-5	798	0	0.4	0.1	0.4
6200191	99	P	SUR	41	-10	615	0	0.8	-0.4	0.8
6200192	99	P	SUR	40	-10	589	0	0.4	-0.4	0.5
6200200	99	P	SUR	36	-8	258	0	0.3	0.1	0.3
6201030	99	P	SUR	44	-4	584	0	0.4	-0.1	0.5
62023	99	P	SUR	51	-8	506	0	0.4	-0.2	0.4
6202613	99	P	SUR	20	-18	744	0	0.4	0.4	0.5
6202638	99	P	SUR	17	-44	744	0	0.3	-0.0	0.3
6202639	99	P	SUR	26	-43	744	0	0.3	0.2	0.4
6202640	99	P	SUR	21	-43	744	0	0.3	0.0	0.3

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6202641	99	P	SUR	16	-57	744	0	0.3	0.3	0.4
6202642	99	P	SUR	17	-53	744	0	0.3	-0.0	0.3
6202643	99	P	SUR	19	-48	744	0	0.3	-0.1	0.3
6202644	99	P	SUR	22	-43	744	0	0.4	0.0	0.4
6202647	99	P	SUR	15	-48	738	0	0.4	-0.0	0.4
6202670	99	P	SUR	58	-15	539	27	4.3	2.3	4.8
6202671	99	P	SUR	58	-16	551	16	3.2	2.5	4.0
6202672	99	P	SUR	61	-13	545	1	3.2	2.8	4.3
6202673	99	P	SUR	61	-25	550	0	2.1	0.6	2.2
6202674	99	P	SUR	60	-20	529	5	3.4	2.5	4.3
6202675	99	P	SUR	58	-18	716	0	0.4	0.1	0.5
6202676	99	P	SUR	63	-16	713	0	0.5	0.2	0.5
6202677	99	P	SUR	60	-19	731	0	0.4	0.0	0.4
6202678	99	P	SUR	59	-30	682	0	0.5	0.1	0.5
6202679	99	P	SUR	64	-35	715	0	0.4	0.4	0.6
6202680	99	P	SUR	61	-15	709	0	0.4	0.2	0.5
6202681	99	P	SUR	62	-14	706	0	0.4	0.1	0.4
6202682	99	P	SUR	62	-13	716	0	0.4	0.0	0.4
6202683	99	P	SUR	59	-14	686	0	0.4	0.3	0.5
6202684	99	P	SUR	63	-20	703	0	0.4	0.3	0.5
62029	99	P	SUR	49	-12	1216	0	0.4	-0.0	0.4
6203503	99	P	SUR	43	-11	727	0	0.3	-0.1	0.3
6203523	99	P	SUR	70	-1	699	0	0.4	-1.0	1.1
6203528	99	P	SUR	27	-26	695	0	0.3	-0.4	0.5
6203574	99	P	SUR	62	-41	737	0	0.5	0.4	0.6
6203576	99	P	SUR	63	-60	723	0	0.4	0.4	0.6
6203577	99	P	SUR	66	-17	19	2	1.4	-0.9	1.7
6203579	99	P	SUR	65	-40	89	27	5.2	2.6	5.8
6203580	99	P	SUR	68	-13	666	0	0.4	0.4	0.5
6203581	99	P	SUR	63	-7	675	0	0.4	0.0	0.4
6203582	99	P	SUR	60	-29	720	0	0.4	0.2	0.5
6203583	99	P	SUR	59	-28	694	0	0.6	-0.0	0.6
6203585	99	P	SUR	68	-18	730	0	0.4	0.5	0.6
6203586	99	P	SUR	67	-12	727	0	0.4	0.4	0.6
6203587	99	P	SUR	64	-10	677	0	0.4	-0.2	0.4
6203588	99	P	SUR	61	-23	708	0	0.4	0.6	0.7
6203601	99	P	SUR	32	-16	730	0	0.3	0.7	0.7
6203607	99	P	SUR	34	-25	739	0	0.3	0.2	0.4
6203608	99	P	SUR	48	-5	743	0	0.6	0.0	0.7
6203609	99	P	SUR	42	-17	740	0	0.4	-0.1	0.4
6203706	99	P	SUR	28	-64	744	0	0.5	0.1	0.5
6203707	99	P	SUR	29	-32	744	0	0.4	0.2	0.4
6203708	99	P	SUR	28	-38	744	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
6203710	99	P	SUR	63	-17	744	0	0.4	-0.1	0.4
6203715	99	P	SUR	73	29	744	0	0.4	0.1	0.4
6203718	99	P	SUR	72	20	418	0	0.4	-0.0	0.4
6203719	99	P	SUR	75	9	744	0	0.4	0.0	0.4
62050	99	P	SUR	50	-4	793	0	0.4	0.2	0.5
62081	99	P	SUR	51	-13	66	0	0.6	0.1	0.6
62091	99	P	SUR	53	-5	741	0	0.4	-0.2	0.5
62092	99	P	SUR	51	-11	741	1	0.4	-0.3	0.5
62093	99	P	SUR	55	-10	738	0	0.5	-0.2	0.6
62094	99	P	SUR	52	-7	741	1	0.5	-0.0	0.5
62095	99	P	SUR	53	-16	741	0	0.4	-0.4	0.6
62102	99	P	SUR	58	2	796	0	0.5	0.3	0.6
62103	99	P	SUR	50	-3	795	0	0.5	0.5	0.7
62104	99	P	SUR	57	1	796	0	0.4	0.0	0.4
62105	99	P	SUR	55	-13	1311	0	0.6	-0.2	0.6
62107	99	P	SUR	50	-6	1365	2	0.4	0.4	0.6
62112	99	P	SUR	58	0	794	0	0.3	0.4	0.5
62113	99	P	SUR	58	0	795	0	0.5	0.3	0.6
62114	99	P	SUR	58	0	1359	0	0.4	0.4	0.5
62115	99	P	SUR	58	-3	792	0	0.4	0.1	0.4
62116	99	P	SUR	58	1	794	0	0.4	0.1	0.5
62118	99	P	SUR	58	1	796	0	0.4	0.5	0.6
62119	99	P	SUR	57	2	796	0	0.5	0.2	0.5
62120	99	P	SUR	56	2	796	0	0.4	-0.0	0.4
62121	99	P	SUR	54	3	791	0	2.5	-0.2	2.5
62122	99	P	SUR	57	2	1363	0	0.4	0.2	0.5
62124	99	P	SUR	54	-4	796	0	0.4	0.2	0.4
62127	99	P	SUR	54	1	792	0	0.3	0.7	0.8
62129	99	P	SUR	58	0	794	0	0.5	0.3	0.6
62130	99	P	SUR	59	1	793	0	0.4	0.0	0.4
62131	99	P	SUR	54	1	796	0	0.4	0.6	0.8
62132	99	P	SUR	56	2	794	0	0.4	0.5	0.6
62133	99	P	SUR	57	1	796	0	0.5	0.2	0.5
62134	99	P	SUR	58	1	796	0	0.4	0.7	0.8
62135	99	P	SUR	54	2	557	0	0.4	0.5	0.7
62136	99	P	SUR	54	3	789	0	0.4	0.7	0.8
62138	99	P	SUR	54	0	1362	0	0.4	1.0	1.1
62140	99	P	SUR	57	1	1359	0	0.4	0.2	0.4
62141	99	P	SUR	58	-4	779	0	0.4	-2.2	2.2
62143	99	P	SUR	58	2	796	0	0.4	0.8	0.9
62144	99	P	SUR	53	2	796	0	0.4	0.4	0.6
62145	99	P	SUR	53	3	1363	0	0.4	0.5	0.6
62146	99	P	SUR	57	2	793	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
62148	99	P	SUR	54	2	796	0	0.4	0.7	0.8
62149	99	P	SUR	54	1	795	0	0.4	0.9	0.9
62150	99	P	SUR	54	1	67	0	0.3	1.7	1.7
62151	99	P	SUR	57	2	1362	0	0.3	0.4	0.5
62152	99	P	SUR	57	2	796	0	0.5	0.6	0.7
62153	99	P	SUR	57	2	1362	0	0.4	0.4	0.6
62154	99	P	SUR	56	2	796	0	0.4	0.1	0.4
62155	99	P	SUR	58	1	796	0	0.4	0.5	0.7
62157	99	P	SUR	58	0	794	0	0.4	0.1	0.4
62160	99	P	SUR	57	2	1362	0	0.4	0.5	0.6
62161	99	P	SUR	58	1	782	0	0.5	0.2	0.5
62162	99	P	SUR	57	1	796	0	0.4	0.1	0.4
62163	99	P	SUR	48	-8	762	0	0.4	0.3	0.5
62165	99	P	SUR	54	1	795	0	0.4	0.7	0.8
62168	99	P	SUR	58	1	796	0	0.4	0.2	0.4
62296	99	P	SUR	53	2	796	0	0.3	0.2	0.4
62297	99	P	SUR	59	2	1360	0	0.3	0.2	0.4
62302	99	P	SUR	61	-2	654	0	0.5	0.2	0.6
62304	99	P	SUR	51	2	491	0	0.5	1.0	1.1
62305	99	P	SUR	50	0	796	0	0.4	0.3	0.5
6301501	99	P	SUR	81	4	230	26	6.1	0.0	6.1
6301502	99	P	SUR	78	0	196	0	0.6	-0.3	0.7
6301503	99	P	SUR	83	40	12	6	1.4	9.2	9.3
6301504	99	P	SUR	81	36	544	12	2.8	0.6	2.8
6301505	99	P	SUR	80	-1	545	0	1.4	0.2	1.4
6301508	99	P	SUR	74	18	554	0	0.3	-0.1	0.3
6301509	99	P	SUR	74	18	542	0	0.3	-0.2	0.4
6301535	99	P	SUR	72	19	545	0	0.3	-0.1	0.3
6301536	99	P	SUR	74	18	552	0	0.3	0.1	0.3
6301537	99	P	SUR	74	18	543	0	0.3	0.0	0.3
6301538	99	P	SUR	77	14	736	0	0.3	0.0	0.3
6301539	99	P	SUR	77	11	720	0	2.8	0.8	2.9
6301540	99	P	SUR	77	11	735	0	0.4	0.1	0.4
6301541	99	P	SUR	77	10	737	0	0.8	0.2	0.9
6301542	99	P	SUR	77	11	736	0	0.4	-0.0	0.4
6301543	99	P	SUR	74	22	717	0	0.3	0.3	0.4
6301544	99	P	SUR	74	22	729	0	0.3	0.2	0.4
6301545	99	P	SUR	74	22	725	0	0.3	0.1	0.3
6301546	99	P	SUR	74	18	541	0	0.3	0.1	0.3
6301547	99	P	SUR	74	22	241	0	0.3	0.4	0.5
6301548	99	P	SUR	77	13	731	0	0.4	0.2	0.4
6301549	99	P	SUR	77	14	734	0	0.3	-0.2	0.4
6301558	99	P	SUR	66	-15	614	0	0.4	0.3	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6301562	99	P	SUR	56	-54	737	0	0.4	0.2	0.5
6301563	99	P	SUR	54	-52	646	17	2.6	1.3	2.9
6301564	99	P	SUR	64	-11	735	0	0.5	0.3	0.5
6301681	99	P	SUR	73	4	744	0	0.4	0.0	0.4
6301682	99	P	SUR	71	-3	742	0	1.0	0.8	1.2
6301683	99	P	SUR	77	13	727	0	0.4	-0.2	0.5
6301684	99	P	SUR	77	13	739	0	0.4	-0.1	0.4
6301685	99	P	SUR	77	14	735	0	0.3	-0.1	0.4
6301686	99	P	SUR	77	14	732	0	0.4	-0.1	0.4
6301687	99	P	SUR	77	14	736	0	0.3	0.0	0.3
6301688	99	P	SUR	74	22	736	0	0.3	0.2	0.3
6301689	99	P	SUR	77	14	731	0	0.4	-0.5	0.7
6301690	99	P	SUR	77	14	733	0	0.3	-0.2	0.4
63055	99	P	SUR	61	2	796	0	0.4	0.0	0.4
63056	99	P	SUR	60	2	796	0	0.4	0.4	0.6
63057	99	P	SUR	59	2	796	0	0.4	0.0	0.4
63058	99	P	SUR	53	2	2285	0	0.4	0.5	0.6
63059	99	P	SUR	58	-1	796	0	0.4	0.5	0.6
63101	99	P	SUR	61	1	796	0	0.5	0.2	0.5
63102	99	P	SUR	61	1	790	0	0.4	0.1	0.4
63103	99	P	SUR	61	1	796	0	0.4	0.2	0.5
63104	99	P	SUR	61	2	796	0	0.4	0.1	0.4
63108	99	P	SUR	61	2	796	0	0.5	0.0	0.5
63109	99	P	SUR	60	2	796	0	0.4	-0.2	0.4
63110	99	P	SUR	60	2	796	0	0.4	-0.1	0.4
63111	99	P	SUR	61	2	904	0	0.4	-0.1	0.4
63112	99	P	SUR	61	1	796	0	0.4	-0.2	0.5
63115	99	P	SUR	62	1	796	0	0.4	0.1	0.4
63117	99	P	SUR	61	1	1362	0	0.5	0.6	0.8
63118	99	P	SUR	57	2	1349	0	0.4	-0.1	0.4
63120	99	P	SUR	54	2	746	0	0.4	0.6	0.7
6401502	99	P	SUR	74	12	708	0	0.4	0.1	0.4
6401503	99	P	SUR	66	6	340	0	0.4	0.6	0.7
6401506	99	P	SUR	70	0	670	0	0.4	0.2	0.4
6401531	99	P	SUR	60	-35	740	0	0.4	0.1	0.5
6401539	99	P	SUR	52	-47	59	0	0.2	0.5	0.5
6401556	99	P	SUR	71	22	737	0	0.5	0.0	0.5
6401561	99	P	SUR	68	-1	729	0	0.6	-0.0	0.6
6401565	99	P	SUR	71	30	379	0	0.4	-0.1	0.4
6401568	99	P	SUR	63	-3	742	0	0.4	0.4	0.5
6401569	99	P	SUR	68	-1	740	0	0.3	0.2	0.4
6401570	99	P	SUR	71	16	731	0	0.6	-0.2	0.7
6401784	99	P	SUR	76	15	2951	0	0.4	-0.0	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6401785	99	P	SUR	76	15	731	0	0.3	0.1	0.3
6401786	99	P	SUR	76	15	732	0	0.4	0.2	0.4
6401787	99	P	SUR	76	15	727	0	0.4	0.2	0.4
6401788	99	P	SUR	76	15	731	0	0.3	0.0	0.3
6401789	99	P	SUR	74	22	729	0	0.3	0.0	0.3
6401795	99	P	SUR	74	22	725	0	0.3	0.2	0.4
6401796	99	P	SUR	74	22	733	0	0.3	0.1	0.3
6401797	99	P	SUR	74	22	728	0	0.3	0.1	0.3
6401798	99	P	SUR	74	22	727	0	0.3	0.3	0.4
6401799	99	P	SUR	77	14	736	0	0.3	-0.1	0.3
6401800	99	P	SUR	77	14	732	0	0.3	-0.1	0.3
6401801	99	P	SUR	77	12	733	0	0.4	-0.0	0.4
6401802	99	P	SUR	77	11	471	12	3.0	0.5	3.0
6401803	99	P	SUR	76	14	729	0	0.4	0.2	0.4
6401804	99	P	SUR	74	22	715	0	0.3	0.1	0.3
6401805	99	P	SUR	74	22	634	0	0.3	0.0	0.3
6401806	99	P	SUR	74	22	732	0	0.3	0.0	0.3
6401807	99	P	SUR	74	22	733	0	0.3	0.1	0.3
6401808	99	P	SUR	74	22	727	0	0.3	0.1	0.3
64041	99	P	SUR	61	-3	796	0	0.4	0.1	0.5
64045	99	P	SUR	59	-12	907	0	0.4	-0.2	0.5
64046	99	P	SUR	61	-4	793	0	0.3	0.0	0.3
6501556	99	P	SUR	73	10	738	0	0.3	0.1	0.3
66023	99	P	SUR	55	11	762	0	0.4	0.0	0.4

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

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          DRIFTER MONITORING STATISTICS (EUCOS)
                   MONITORING CENTRE     : ECMWF
                   ELEMENT MONITORED     : WIND SPEED (M/S)
                   AREA                  : 10N - 90N, 70W - 40E
                   PERIOD                : OCT 2019
                   STANDARD OF COMPARISON: FIRST-GUESS FIELD


TIME = 99 => AVERAGE OF ALL OBSERVATIONS


GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S
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WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
0062087	99	SPEED	SUR	55	7	372	0	0	1.5	1.4	2.1
0066022	99	SPEED	SUR	54	14	246	0	0	1.5	0.0	1.5
0066023	99	SPEED	SUR	55	11	373	0	0	1.6	2.0	2.6
0066024	99	SPEED	SUR	55	13	207	0	0	1.2	0.6	1.4
010	99	SPEED	SUR	68	9	1	0	0	0.0	-5.1	5.1
0640046	99	SPEED	SUR	60	-4	742	0	0	1.1	-0.9	1.4
1300001	99	SPEED	SUR	11	-23	710	0	0	1.0	0.4	1.0
1300002	99	SPEED	SUR	20	-23	711	0	0	0.8	0.2	0.8
1300008	99	SPEED	SUR	15	-38	710	0	0	0.8	0.4	0.9
1300131	99	SPEED	SUR	28	-17	687	0	0	1.9	1.5	2.4
4100026	99	SPEED	SUR	12	-38	275	0	0	1.0	0.3	1.1
4100040	99	SPEED	SUR	15	-53	4456	0	0	0.9	0.2	0.9
4100043	99	SPEED	SUR	21	-65	4457	0	0	1.1	-0.1	1.1
4100044	99	SPEED	SUR	22	-59	4336	0	0	1.5	0.0	1.5
4100046	99	SPEED	SUR	24	-68	4140	0	0	1.2	-0.0	1.2
4100048	99	SPEED	SUR	32	-70	4377	0	0	0.9	0.1	0.9
4100049	99	SPEED	SUR	27	-63	4399	0	0	1.1	0.0	1.1
4100052	99	SPEED	SUR	18	-65	3012	0	0	0.9	-0.3	1.0
4100053	99	SPEED	SUR	18	-66	4454	0	0	1.4	0.8	1.6
4100056	99	SPEED	SUR	18	-65	4451	0	0	1.1	-0.5	1.2
4100139	99	SPEED	SUR	20	-38	716	0	0	1.0	0.1	1.0
4100300	99	SPEED	SUR	16	-57	716	0	0	0.9	-0.2	0.9
41040	99	SPEED	SUR	15	-53	1148	0	0	0.9	-0.1	0.9
41043	99	SPEED	SUR	21	-65	1087	0	0	1.1	-0.1	1.1
41044	99	SPEED	SUR	22	-59	1141	0	0	1.5	-0.3	1.5
41046	99	SPEED	SUR	24	-68	1079	0	0	1.3	-0.1	1.3
41048	99	SPEED	SUR	32	-70	1083	0	0	1.0	0.0	1.0
41049	99	SPEED	SUR	28	-63	1094	0	0	1.2	-0.1	1.2
41052	99	SPEED	SUR	18	-65	1065	0	0	0.9	-0.1	1.0
41053	99	SPEED	SUR	19	-66	1599	0	0	1.4	0.4	1.4
41056	99	SPEED	SUR	18	-66	1577	0	0	1.1	-0.3	1.1
4200059	99	SPEED	SUR	15	-67	3987	0	0	0.9	0.7	1.1
4200085	99	SPEED	SUR	18	-67	4406	0	0	1.2	-0.1	1.2
42059	99	SPEED	SUR	15	-68	1139	0	0	1.0	0.5	1.1

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
42085	99	SPEED	SUR	18	-67	1608	0	0	1.2	0.2	1.3
4400005	99	SPEED	SUR	43	-69	743	0	0	1.3	-0.1	1.3
4400008	99	SPEED	SUR	41	-69	4409	0	0	1.5	0.6	1.6
4400027	99	SPEED	SUR	44	-67	741	0	0	1.4	0.2	1.5
4400032	99	SPEED	SUR	44	-69	743	0	0	1.2	-0.3	1.3
4400033	99	SPEED	SUR	44	-69	734	0	0	1.3	-0.3	1.3
4400034	99	SPEED	SUR	44	-68	743	0	0	1.4	-0.3	1.4
4400037	99	SPEED	SUR	43	-68	708	0	0	1.1	-0.1	1.1
44005	99	SPEED	SUR	43	-69	788	0	0	1.3	-0.1	1.3
44008	99	SPEED	SUR	41	-69	1811	0	0	1.5	0.0	1.5
44027	99	SPEED	SUR	44	-67	805	0	0	1.5	0.3	1.5
44032	99	SPEED	SUR	44	-69	747	0	0	1.3	-0.3	1.3
44033	99	SPEED	SUR	44	-69	738	0	0	1.3	0.0	1.3
44034	99	SPEED	SUR	44	-68	747	0	0	1.4	-0.3	1.4
44037	99	SPEED	SUR	44	-68	712	0	0	1.2	-0.1	1.2
44139	99	SPEED	SUR	44	-57	733	0	0	1.2	-0.1	1.2
44150	99	SPEED	SUR	43	-64	735	0	0	1.3	0.5	1.4
44258	99	SPEED	SUR	45	-63	734	0	0	1.5	0.5	1.6
45138	99	SPEED	SUR	50	-66	740	0	0	1.5	0.3	1.5
6100001	99	SPEED	SUR	43	8	717	0	0	1.7	-0.1	1.7
6100002	99	SPEED	SUR	42	5	433	6	0	1.6	-0.0	1.6
6100196	99	SPEED	SUR	42	4	686	0	0	1.9	-0.8	2.0
6100197	99	SPEED	SUR	40	4	730	0	0	1.1	-0.5	1.3
6100198	99	SPEED	SUR	37	-2	714	0	0	1.5	-0.4	1.6
6100280	99	SPEED	SUR	41	1	723	0	0	1.5	-0.6	1.6
6100281	99	SPEED	SUR	40	0	726	0	0	1.8	0.4	1.8
6100417	99	SPEED	SUR	38	0	734	0	0	1.3	-0.0	1.3
6100430	99	SPEED	SUR	40	2	721	0	0	1.4	-0.2	1.4
6101003	99	SPEED	SUR	40	25	223	0	0	2.5	-1.3	2.9
6101005	99	SPEED	SUR	38	26	225	0	0	1.1	-0.3	1.1
6101007	99	SPEED	SUR	36	25	40	0	0	1.2	-0.4	1.3
6101009	99	SPEED	SUR	35	25	222	0	0	1.2	1.2	1.7
6200024	99	SPEED	SUR	44	-3	633	0	0	1.7	-0.1	1.8
6200025	99	SPEED	SUR	44	-6	173	0	0	1.8	0.0	1.8
6200082	99	SPEED	SUR	44	-8	420	0	0	1.2	-0.4	1.3
6200083	99	SPEED	SUR	43	-9	716	0	0	1.3	-0.5	1.4
6200084	99	SPEED	SUR	42	-9	722	0	0	1.1	-0.2	1.2
6200085	99	SPEED	SUR	36	-7	734	0	0	1.3	-0.3	1.4
6200091	99	SPEED	SUR	53	-5	744	0	0	1.2	0.3	1.3
6200092	99	SPEED	SUR	51	-11	744	0	0	1.4	-0.3	1.5
6200093	99	SPEED	SUR	55	-10	741	0	0	1.2	-0.2	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
6200094	99	SPEED	SUR	52	-7	744	0	0	1.1	0.2	1.2
6200095	99	SPEED	SUR	53	-16	744	0	0	1.3	-0.8	1.5
62001	99	SPEED	SUR	45	-5	798	0	0	1.3	0.6	1.4
6200191	99	SPEED	SUR	41	-10	605	0	0	1.1	0.0	1.1
6200192	99	SPEED	SUR	40	-10	591	0	0	1.2	0.1	1.2
6200200	99	SPEED	SUR	36	-8	258	0	0	1.0	0.4	1.1
6201030	99	SPEED	SUR	44	-4	578	0	0	1.5	-0.1	1.5
62023	99	SPEED	SUR	51	-8	500	0	0	1.9	0.1	1.9
6202670	99	SPEED	SUR	58	-15	539	0	0	1.4	3.5	3.8
6202671	99	SPEED	SUR	58	-16	551	0	0	1.5	3.7	3.9
6202672	99	SPEED	SUR	61	-13	545	0	0	1.5	3.8	4.1
6202673	99	SPEED	SUR	61	-25	550	0	0	1.7	3.4	3.8
6202674	99	SPEED	SUR	60	-20	529	0	0	1.5	3.6	3.9
62029	99	SPEED	SUR	49	-12	1216	0	0	1.1	0.2	1.1
62050	99	SPEED	SUR	50	-4	795	0	0	1.3	0.5	1.4
62081	99	SPEED	SUR	51	-13	66	0	0	1.1	0.8	1.3
62091	99	SPEED	SUR	53	-5	741	0	0	1.3	0.3	1.3
62092	99	SPEED	SUR	51	-11	741	0	0	1.4	-0.3	1.5
62093	99	SPEED	SUR	55	-10	738	0	0	1.3	-0.1	1.3
62094	99	SPEED	SUR	52	-7	741	0	0	1.2	0.2	1.2
62095	99	SPEED	SUR	53	-16	741	0	0	1.4	-0.9	1.6
62102	99	SPEED	SUR	58	2	796	0	0	1.6	-1.0	1.9
62103	99	SPEED	SUR	50	-3	762	0	0	1.9	1.1	2.2
62104	99	SPEED	SUR	57	1	796	0	0	1.4	-0.6	1.5
62105	99	SPEED	SUR	55	-13	1311	0	0	1.2	0.1	1.2
62107	99	SPEED	SUR	50	-6	1365	0	0	1.7	1.0	2.0
62112	99	SPEED	SUR	58	0	794	0	0	1.2	-0.3	1.2
62113	99	SPEED	SUR	58	0	795	0	0	1.4	0.1	1.4
62114	99	SPEED	SUR	58	0	1359	0	0	1.3	0.4	1.3
62118	99	SPEED	SUR	58	1	796	0	0	1.3	0.6	1.5
62119	99	SPEED	SUR	57	2	796	0	0	1.6	-0.3	1.6
62120	99	SPEED	SUR	56	2	796	0	0	1.4	-0.3	1.4
62122	99	SPEED	SUR	57	2	1363	0	0	1.3	-0.3	1.3
62129	99	SPEED	SUR	58	0	794	0	0	1.2	-0.3	1.2
62131	99	SPEED	SUR	54	1	796	0	0	2.2	-0.6	2.3
62132	99	SPEED	SUR	56	2	793	0	0	2.5	-2.6	3.6
62133	99	SPEED	SUR	57	1	796	0	0	1.6	0.2	1.6
62134	99	SPEED	SUR	58	1	796	0	0	1.2	-0.0	1.2
62140	99	SPEED	SUR	57	1	1359	0	0	1.4	0.0	1.4
62143	99	SPEED	SUR	58	2	796	0	0	1.8	-0.7	2.0
62144	99	SPEED	SUR	53	2	796	0	0	1.7	-0.8	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
62145	99	SPEED	SUR	53	3	1363	0	0	1.6	0.1	1.6
62146	99	SPEED	SUR	57	2	793	0	0	1.4	-0.4	1.5
62148	99	SPEED	SUR	54	2	796	0	0	1.4	-0.6	1.5
62149	99	SPEED	SUR	54	1	795	0	0	2.3	-0.8	2.4
62150	99	SPEED	SUR	54	1	67	0	0	3.0	-3.0	4.2
62152	99	SPEED	SUR	57	2	729	6	1	1.5	-1.3	2.0
62153	99	SPEED	SUR	57	2	1362	0	0	2.3	-1.0	2.5
62154	99	SPEED	SUR	56	2	796	0	0	1.3	-0.8	1.5
62155	99	SPEED	SUR	58	1	752	0	0	1.3	-0.1	1.3
62163	99	SPEED	SUR	48	-8	762	0	0	1.1	0.1	1.1
62165	99	SPEED	SUR	54	1	795	0	0	1.6	-0.6	1.7
62305	99	SPEED	SUR	50	0	793	0	0	1.7	1.4	2.2
63055	99	SPEED	SUR	61	2	796	0	0	1.2	-0.7	1.4
63056	99	SPEED	SUR	60	2	796	0	0	1.2	-0.2	1.2
63057	99	SPEED	SUR	59	2	796	0	0	1.4	0.2	1.4
63058	99	SPEED	SUR	53	2	1473	0	0	1.2	-0.3	1.3
63101	99	SPEED	SUR	61	1	796	0	0	1.3	-0.5	1.4
63103	99	SPEED	SUR	61	1	796	0	0	1.5	-0.4	1.6
63104	99	SPEED	SUR	61	2	796	0	0	1.2	-0.3	1.3
63108	99	SPEED	SUR	61	2	796	0	0	1.7	-0.3	1.7
63109	99	SPEED	SUR	60	2	771	0	0	1.3	-0.2	1.3
63110	99	SPEED	SUR	60	2	796	0	0	1.4	-0.6	1.5
63112	99	SPEED	SUR	61	1	796	0	0	1.2	-0.7	1.4
63113	99	SPEED	SUR	61	2	499	0	0	1.1	-0.3	1.2
63115	99	SPEED	SUR	62	1	796	0	0	1.2	-0.6	1.3
63117	99	SPEED	SUR	61	1	1362	0	0	1.3	-0.5	1.4
64041	99	SPEED	SUR	61	-3	794	0	0	1.3	-0.4	1.3
64045	99	SPEED	SUR	59	-12	907	0	0	1.2	0.5	1.3
64046	99	SPEED	SUR	61	-4	796	0	0	1.1	0.4	1.1
66022	99	SPEED	SUR	54	14	902	0	0	1.5	-0.0	1.5
66023	99	SPEED	SUR	55	11	762	0	0	1.5	1.3	2.0
66024	99	SPEED	SUR	55	13	744	0	0	1.3	0.8	1.5

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

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          DRIFTER MONITORING STATISTICS (EUCOS)
                   MONITORING CENTRE     : ECMWF
                   ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                   AREA                  : 10N - 90N, 70W - 40E
                   PERIOD                : OCT 2019
                   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
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WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
0640046	99	DIRN	SUR	60	-4	674	0	0	12.1	3.3	12.6
1300001	99	DIRN	SUR	11	-23	399	0	0	15.8	7.5	17.5
1300002	99	DIRN	SUR	20	-23	686	0	0	9.1	2.1	9.4
1300008	99	DIRN	SUR	15	-38	684	0	0	9.8	5.6	11.3
1300131	99	DIRN	SUR	28	-17	414	0	1	16.6	5.3	17.5
4100001	99	DIRN	SUR	35	-73	3818	0	0	13.8	5.4	14.8
4100002	99	DIRN	SUR	32	-75	4018	0	1	12.0	6.5	13.6
4100004	99	DIRN	SUR	33	-79	3560	0	0	14.4	7.0	16.0
4100008	99	DIRN	SUR	31	-81	608	0	0	16.6	-6.4	17.8
4100009	99	DIRN	SUR	29	-80	3356	0	0	16.2	4.4	16.7
4100010	99	DIRN	SUR	29	-78	2931	0	1	11.4	11.2	16.0
4100013	99	DIRN	SUR	33	-78	3580	0	0	14.9	7.2	16.5
4100024	99	DIRN	SUR	34	-78	649	0	0	19.9	-2.3	20.0
4100025	99	DIRN	SUR	35	-75	3633	0	0	19.0	6.5	20.1
4100026	99	DIRN	SUR	12	-38	250	0	0	14.1	4.6	14.8
4100029	99	DIRN	SUR	33	-80	614	0	1	20.5	-12.2	23.8
4100033	99	DIRN	SUR	32	-80	613	2	0	21.4	-14.8	26.0
4100037	99	DIRN	SUR	34	-77	668	0	0	17.0	-12.5	21.1
4100038	99	DIRN	SUR	34	-78	661	0	0	17.8	-2.5	18.0
4100040	99	DIRN	SUR	15	-53	4294	0	0	12.8	4.7	13.7
4100043	99	DIRN	SUR	21	-65	3134	0	0	16.4	-2.2	16.6
4100044	99	DIRN	SUR	22	-59	2684	0	1	20.7	4.3	21.2
4100046	99	DIRN	SUR	24	-68	2469	0	0	19.3	6.6	20.4
4100047	99	DIRN	SUR	28	-71	3068	0	7	15.2	-0.8	15.2
4100048	99	DIRN	SUR	32	-70	3747	0	0	12.6	9.1	15.5
4100049	99	DIRN	SUR	27	-63	2794	0	0	20.0	5.4	20.7
4100052	99	DIRN	SUR	18	-65	2451	0	0	14.2	8.8	16.7
4100053	99	DIRN	SUR	18	-66	1701	0	0	18.6	1.3	18.7
4100056	99	DIRN	SUR	18	-65	3331	0	0	17.7	5.5	18.5
4100064	99	DIRN	SUR	34	-77	671	0	0	13.1	-15.6	20.4
41001	99	DIRN	SUR	35	-73	932	0	0	13.7	4.3	14.3
4100139	99	DIRN	SUR	20	-38	628	0	0	12.2	3.9	12.8

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
41002	99	DIRN	SUR	32	-75	978	0	1	12.5	7.0	14.4
4100300	99	DIRN	SUR	16	-57	676	0	0	15.0	1.4	15.1
41004	99	DIRN	SUR	33	-79	873	0	0	14.6	4.7	15.3
41008	99	DIRN	SUR	31	-81	641	0	0	16.4	-7.1	17.8
41009	99	DIRN	SUR	29	-80	967	0	0	16.3	2.9	16.5
41010	99	DIRN	SUR	29	-79	707	0	1	11.5	11.0	15.9
41013	99	DIRN	SUR	33	-78	1000	0	0	15.2	5.5	16.2
41024	99	DIRN	SUR	34	-79	654	0	0	20.7	-1.9	20.8
41025	99	DIRN	SUR	35	-75	977	0	1	18.5	6.7	19.6
41029	99	DIRN	SUR	33	-80	718	0	1	19.9	-12.5	23.5
41033	99	DIRN	SUR	32	-80	606	2	0	21.8	-15.6	26.8
41037	99	DIRN	SUR	34	-77	671	0	0	17.5	-12.6	21.5
41038	99	DIRN	SUR	34	-78	660	0	0	18.2	-2.0	18.3
41040	99	DIRN	SUR	15	-53	1075	0	0	13.4	6.1	14.7
41043	99	DIRN	SUR	21	-65	735	0	0	16.8	-3.5	17.1
41044	99	DIRN	SUR	22	-59	598	0	1	21.1	3.0	21.3
41046	99	DIRN	SUR	24	-68	632	0	0	19.7	6.7	20.8
41047	99	DIRN	SUR	28	-72	838	0	0	16.1	-2.8	16.3
41048	99	DIRN	SUR	32	-70	936	0	0	12.9	7.7	15.0
41049	99	DIRN	SUR	28	-63	653	0	0	21.0	4.3	21.5
41052	99	DIRN	SUR	18	-65	852	0	0	14.5	7.7	16.4
41053	99	DIRN	SUR	19	-66	707	0	1	20.5	0.3	20.5
41056	99	DIRN	SUR	18	-66	1133	0	0	17.4	6.1	18.4
41064	99	DIRN	SUR	34	-77	677	0	0	14.0	-16.2	21.4
4200013	99	DIRN	SUR	27	-83	1085	0	4	18.0	-7.7	19.5
4200022	99	DIRN	SUR	28	-84	1267	0	0	15.9	5.0	16.7
4200023	99	DIRN	SUR	26	-83	1172	0	0	15.4	-7.2	17.0
4200026	99	DIRN	SUR	25	-83	998	0	0	12.4	4.6	13.2
4200036	99	DIRN	SUR	29	-85	3737	0	0	14.0	11.6	18.2
4200056	99	DIRN	SUR	20	-85	3932	0	1	14.4	3.2	14.8
4200057	99	DIRN	SUR	17	-81	3713	0	0	17.5	3.1	17.8
4200058	99	DIRN	SUR	15	-75	3967	0	0	11.1	3.0	11.5
4200059	99	DIRN	SUR	15	-67	3975	0	0	11.0	-8.5	13.9
4200085	99	DIRN	SUR	18	-67	3516	0	1	23.1	23.4	32.9
42013	99	DIRN	SUR	27	-83	1055	0	4	18.0	-9.1	20.2
42022	99	DIRN	SUR	28	-84	1213	0	0	16.4	4.0	16.9
42023	99	DIRN	SUR	26	-83	1054	0	0	15.5	-7.3	17.2
42026	99	DIRN	SUR	25	-84	951	0	0	12.5	4.9	13.4
42036	99	DIRN	SUR	29	-85	1611	0	0	14.4	10.6	17.9
42056	99	DIRN	SUR	20	-85	1609	0	1	14.9	3.4	15.3
42057	99	DIRN	SUR	17	-81	994	0	0	18.6	5.2	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
42058	99	DIRN	SUR	15	-75	1028	0	0	11.3	-2.0	11.5
42059	99	DIRN	SUR	15	-68	1131	0	0	11.5	-11.6	16.4
42085	99	DIRN	SUR	18	-67	1164	0	1	21.3	20.1	29.3
4400005	99	DIRN	SUR	43	-69	590	0	0	14.1	7.3	15.9
4400007	99	DIRN	SUR	44	-70	554	0	0	15.0	0.1	15.0
4400008	99	DIRN	SUR	41	-69	3765	0	1	14.1	6.2	15.5
4400009	99	DIRN	SUR	38	-75	647	0	0	13.7	15.7	20.8
4400013	99	DIRN	SUR	42	-71	628	0	0	17.3	8.3	19.2
4400014	99	DIRN	SUR	37	-75	584	0	0	14.2	4.8	15.0
4400018	99	DIRN	SUR	42	-70	636	0	0	12.9	8.6	15.5
4400020	99	DIRN	SUR	41	-70	342	0	1	15.3	1.0	15.3
4400022	99	DIRN	SUR	41	-74	696	0	0	15.0	4.2	15.5
4400025	99	DIRN	SUR	40	-73	670	0	0	13.4	2.5	13.7
4400027	99	DIRN	SUR	44	-67	605	0	0	13.2	0.4	13.2
4400029	99	DIRN	SUR	43	-71	589	0	0	12.4	1.3	12.5
4400030	99	DIRN	SUR	43	-70	572	0	0	14.6	4.1	15.2
4400032	99	DIRN	SUR	44	-69	585	0	0	14.5	4.0	15.0
4400033	99	DIRN	SUR	44	-69	534	0	0	17.5	-1.5	17.6
4400034	99	DIRN	SUR	44	-68	578	0	1	12.0	3.8	12.6
4400037	99	DIRN	SUR	43	-68	582	0	0	12.1	3.0	12.5
4400040	99	DIRN	SUR	41	-74	492	0	0	17.3	-3.7	17.7
4400042	99	DIRN	SUR	38	-76	5213	0	1	21.9	-2.0	22.0
4400058	99	DIRN	SUR	38	-76	1417	0	2	24.0	-5.7	24.7
4400062	99	DIRN	SUR	39	-76	2701	0	2	24.9	-14.0	28.6
4400063	99	DIRN	SUR	39	-76	4029	0	1	23.4	-18.7	30.0
4400064	99	DIRN	SUR	37	-76	3423	0	0	19.1	-15.5	24.6
4400065	99	DIRN	SUR	40	-74	3681	0	0	14.4	4.9	15.3
4400066	99	DIRN	SUR	40	-73	3882	0	0	13.8	5.5	14.9
4400072	99	DIRN	SUR	37	-76	3276	0	6	15.9	-73.7	75.4
4400073	99	DIRN	SUR	43	-71	164	0	0	13.7	10.6	17.3
44005	99	DIRN	SUR	43	-69	614	0	0	14.5	6.7	16.0
44007	99	DIRN	SUR	44	-70	615	0	0	15.2	-0.0	15.2
44008	99	DIRN	SUR	41	-69	1529	0	1	12.9	3.8	13.5
44009	99	DIRN	SUR	39	-75	662	0	0	13.0	14.8	19.7
44013	99	DIRN	SUR	42	-71	655	0	0	17.3	7.6	18.9
44014	99	DIRN	SUR	37	-75	601	0	0	14.3	4.0	14.8
44018	99	DIRN	SUR	42	-70	687	0	0	13.5	8.7	16.1
44020	99	DIRN	SUR	42	-70	129	0	0	17.3	-1.7	17.4
44022	99	DIRN	SUR	41	-74	259	0	1	16.0	5.0	16.8
44025	99	DIRN	SUR	40	-73	730	0	0	13.9	2.2	14.1
44027	99	DIRN	SUR	44	-67	640	0	0	13.3	-0.1	13.3

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
44029	99	DIRN	SUR	43	-71	593	0	0	13.7	1.3	13.8
44030	99	DIRN	SUR	43	-70	565	0	1	15.9	4.3	16.5
44032	99	DIRN	SUR	44	-69	574	0	0	14.6	4.1	15.1
44033	99	DIRN	SUR	44	-69	518	0	0	17.5	-1.3	17.6
44034	99	DIRN	SUR	44	-68	574	0	1	12.1	3.6	12.6
44037	99	DIRN	SUR	44	-68	573	0	0	12.6	2.9	13.0
44040	99	DIRN	SUR	41	-74	267	0	0	18.1	-3.5	18.5
44042	99	DIRN	SUR	38	-76	922	0	1	23.2	-3.9	23.5
44058	99	DIRN	SUR	38	-76	588	0	2	24.6	-5.2	25.2
44062	99	DIRN	SUR	39	-76	743	0	2	24.8	-14.5	28.7
44063	99	DIRN	SUR	39	-76	886	0	1	23.5	-20.1	30.9
44064	99	DIRN	SUR	37	-76	822	0	0	19.8	-17.3	26.2
44065	99	DIRN	SUR	40	-74	989	0	1	13.2	3.0	13.6
44066	99	DIRN	SUR	40	-73	1609	0	0	15.3	2.8	15.5
44069	99	DIRN	SUR	41	-73	633	0	1	17.2	2.0	17.3
44072	99	DIRN	SUR	37	-76	766	0	7	17.6	-74.5	76.5
44073	99	DIRN	SUR	43	-71	168	0	0	14.0	11.7	18.2
44139	99	DIRN	SUR	44	-57	685	0	0	11.9	-23.0	25.8
44150	99	DIRN	SUR	43	-64	620	0	0	13.6	-4.0	14.1
44258	99	DIRN	SUR	45	-63	579	0	0	13.4	-7.8	15.5
4500003	99	DIRN	SUR	45	-83	676	0	0	23.6	2.0	23.7
4500005	99	DIRN	SUR	42	-82	3838	0	0	15.9	7.8	17.7
4500008	99	DIRN	SUR	44	-82	4011	0	0	14.8	5.0	15.7
4500012	99	DIRN	SUR	44	-77	3747	0	0	15.1	10.5	18.4
4500162	99	DIRN	SUR	45	-83	144	0	0	16.2	3.5	16.5
4500163	99	DIRN	SUR	44	-84	1451	0	0	15.7	2.9	15.9
4500165	99	DIRN	SUR	42	-83	2061	0	4	28.7	6.6	29.4
4500166	99	DIRN	SUR	45	-73	382	0	1	12.1	-39.7	41.5
4500169	99	DIRN	SUR	42	-82	2962	0	3	35.5	-4.6	35.8
4500175	99	DIRN	SUR	46	-85	3500	0	12	44.0	-17.2	47.3
4500176	99	DIRN	SUR	42	-82	1355	0	39	47.5	-13.4	49.3
45003	99	DIRN	SUR	45	-83	701	0	0	23.4	1.7	23.5
45005	99	DIRN	SUR	42	-82	1052	0	0	16.4	6.3	17.6
45008	99	DIRN	SUR	44	-82	1863	0	0	16.0	3.6	16.4
45012	99	DIRN	SUR	44	-77	1633	0	0	15.8	4.8	16.5
45132	99	DIRN	SUR	43	-81	638	0	0	17.1	-3.7	17.5
45135	99	DIRN	SUR	44	-77	618	0	0	18.2	4.2	18.7
45137	99	DIRN	SUR	46	-81	661	0	0	14.9	-5.3	15.8
45138	99	DIRN	SUR	50	-66	572	0	1	14.6	1.3	14.7
45139	99	DIRN	SUR	43	-80	504	0	0	17.3	-2.2	17.5
45142	99	DIRN	SUR	43	-79	620	0	2	17.8	-6.1	18.8

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
45143	99	DIRN	SUR	45	-81	665	0	0	16.0	3.2	16.3
45149	99	DIRN	SUR	44	-82	654	0	0	16.6	30.2	34.5
45151	99	DIRN	SUR	45	-79	564	0	0	17.5	2.4	17.6
45152	99	DIRN	SUR	46	-80	405	0	1	19.3	2.1	19.4
45154	99	DIRN	SUR	46	-83	555	0	0	16.6	2.8	16.9
45159	99	DIRN	SUR	44	-79	528	0	0	16.7	4.2	17.3
45162	99	DIRN	SUR	45	-83	87	0	0	17.4	4.0	17.9
45163	99	DIRN	SUR	44	-84	575	0	0	15.9	2.5	16.1
45165	99	DIRN	SUR	42	-83	395	0	4	28.7	5.1	29.2
45166	99	DIRN	SUR	45	-73	128	0	1	14.3	-40.4	42.9
45169	99	DIRN	SUR	42	-82	637	0	4	35.5	-5.8	36.0
45175	99	DIRN	SUR	46	-85	708	0	10	43.6	-19.3	47.7
45176	99	DIRN	SUR	42	-82	536	0	38	46.9	-12.8	48.6
6100198	99	DIRN	SUR	37	-2	327	0	3	15.7	-1.2	15.8
6100281	99	DIRN	SUR	40	0	326	0	4	25.1	-1.1	25.1
6100417	99	DIRN	SUR	38	0	453	0	0	16.6	-1.2	16.7
6200024	99	DIRN	SUR	44	-3	358	0	0	21.3	11.5	24.2
6200025	99	DIRN	SUR	44	-6	44	0	0	18.5	0.5	18.5
6200082	99	DIRN	SUR	44	-8	346	0	0	15.9	10.2	18.9
6200083	99	DIRN	SUR	43	-9	565	0	0	13.0	2.8	13.3
6200084	99	DIRN	SUR	42	-9	534	0	0	14.7	0.6	14.7
6200085	99	DIRN	SUR	36	-7	539	0	0	15.5	0.6	15.6
6200091	99	DIRN	SUR	53	-5	680	0	0	13.1	0.3	13.2
6200092	99	DIRN	SUR	51	-11	697	0	0	13.0	5.3	14.1
6200093	99	DIRN	SUR	55	-10	701	0	0	10.2	1.1	10.3
6200094	99	DIRN	SUR	52	-7	701	0	0	11.0	-1.1	11.0
6200095	99	DIRN	SUR	53	-16	695	0	0	11.3	-3.1	11.8
62001	99	DIRN	SUR	45	-5	658	0	0	15.4	4.5	16.0
6200191	99	DIRN	SUR	41	-10	515	0	1	14.5	25.1	29.0
6200192	99	DIRN	SUR	40	-10	473	0	0	16.2	-3.7	16.6
6200200	99	DIRN	SUR	36	-8	132	0	1	15.3	3.1	15.6
6201030	99	DIRN	SUR	44	-4	359	0	1	21.0	2.5	21.1
62023	99	DIRN	SUR	51	-8	471	0	0	12.7	8.3	15.2
6202670	99	DIRN	SUR	58	-15	499	0	0	26.0	3.2	26.2
6202671	99	DIRN	SUR	58	-16	503	0	0	15.0	-4.0	15.5
6202672	99	DIRN	SUR	61	-13	475	0	0	18.6	-3.5	18.9
6202673	99	DIRN	SUR	61	-25	452	0	1	23.9	-12.4	26.9
6202674	99	DIRN	SUR	60	-20	447	0	1	40.0	-14.0	42.4
62029	99	DIRN	SUR	49	-12	1173	0	1	11.5	4.5	12.3
62050	99	DIRN	SUR	50	-4	692	0	0	14.9	2.2	15.1
62081	99	DIRN	SUR	51	-13	60	0	0	7.5	6.8	10.1

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
62091	99	DIRN	SUR	53	-5	675	0	0	14.2	-0.2	14.2
62092	99	DIRN	SUR	51	-11	691	0	0	12.9	4.6	13.7
62093	99	DIRN	SUR	55	-10	691	0	0	10.6	0.7	10.6
62094	99	DIRN	SUR	52	-7	695	0	0	11.1	-1.6	11.2
62095	99	DIRN	SUR	53	-16	684	0	0	11.8	-4.0	12.5
62103	99	DIRN	SUR	50	-3	692	0	0	14.7	0.6	14.7
62105	99	DIRN	SUR	55	-13	1206	0	0	11.9	6.8	13.7
62107	99	DIRN	SUR	50	-6	1297	0	0	16.9	3.0	17.2
62112	99	DIRN	SUR	58	0	716	0	0	11.5	-3.3	12.0
62114	99	DIRN	SUR	58	0	1244	0	0	11.6	0.5	11.7
62163	99	DIRN	SUR	48	-8	701	0	0	11.4	0.0	11.4
62305	99	DIRN	SUR	50	0	734	0	0	15.8	4.0	16.2
64041	99	DIRN	SUR	61	-3	719	0	0	11.3	10.5	15.4
64045	99	DIRN	SUR	59	-12	827	0	0	14.1	5.5	15.2
64046	99	DIRN	SUR	61	-4	711	0	0	11.9	0.4	11.9

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASDE09	BPMWB2N	DBLK	FHM5UJH	HTXUH4H	JNKN7JF	KJJF9XN	KMPLHPW	VKB4L5Q
WDK38HS	XKQLWQB	XQFJRGX	YLV96WM	ZVQEQCM	5QPW8XG	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	06060	06260	06458	06610	07110
07145	07510	07645	07761	08001	08023	08190	08221	08302
08383	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	15614	16045	16080	16113	16144	16245	16320	16429
16546	16622	16716	16754	17030	17064	17095	17220	17240
17281	17516	17607	22008	23205	23472	23884	26038	26435
26850	27707	27713	29612	33008	33041	37789	40179	40186
45004	47102	47104	47138	47155	47169	47186	47401	47412
47418	47582	47600	47646	47678	47741	47778	47807	47827
47909	47918	47945	47971	47991	48698	60018	60155	60390
60571	60630	60656	60680	61052	61901	61980	61998	63741
67083	68263	68424	68442	68512	68538	68816	68842	70026
70133	70200	70219	70231	70261	70308	70316	70326	70350
70361	70398	71043	71081	71082	71109	71119	71603	71722
71802	71811	71815	71816	71823	71836	71845	71867	71906
71907	71908	71909	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	72694	72712	72747	72764
72768	72776	72786	72797	73033	73110	74389	74494	74560
76225	76405	76458	76526	76612	76644	76679	76692	76743
76805	76903	78897	81405	82765	82983	83525	83649	85442
85469	85586	85799	85934	87155	87344	87418	87576	87623
87715	87860	88889	89002	89062	89564	89571	89592	89611
89625	89642	89662	89859	91212	91285	91592	91610	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

	ASDE09	BPMWB2N	DBLK	FHM5UJH	HTXUH4H	JNKN7JF	KJJF9XN	KMPLHPW
VKB4L5Q	WDK38HS	XKQLWQB	XQFJRGX	YLV96WM	ZVQEQCM	5QPW8XG	7JUNA4N	01001
01010	01028	01241	01400	01415	01492	02836	02963	06610
07110	07145	07510	07645	07761	17607	40186	47155	61998
72413	73033	73110	76743	76903	89642	89859	93817	94653
94767								

5 Annex - Explanations of figures and tables

5.1 General

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

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

5.2 Data Availability

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

5.3 Data Quality

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

It should be noted that:

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

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

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

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

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

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

The corresponding limits for wind (table 8) are:

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

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

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

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

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

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

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

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

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