ECMWF Global Data Monitoring Report

July 2014

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 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, Operations Department
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	Jun	Jul	Ident	Time	Jun	Jul
16622	(12)	29	1	02935	(12)	0	20
16716	(00)	27	2	16622	(00)	0	26
16754	(12)	28	1	16716	(12)	8	29
38507	(12)	26	0	16754	(00)	0	20
41170	(00)	12	0	17064	(00)	0	24
42182	(12)	28	7	17064	(12)	0	25
43295	(00)	29	8	25400	(00)	17	29
48698	(12)	18	0	25400	(12)	15	31
62337	(12)	21	0	31168	(12)	0	31
62414	(12)	28	0	42369	(00)	17	28
65503	(12)	20	3	44212	(12)	0	31
71722	(00)	17	0	44231	(00)	8	31
71722	(12)	17	0	47058	(00)	0	14
71811	(00)	30	9	51243	(00)	15	30
71811	(12)	30	8	51243	(12)	15	31
71917	(00)	30	9	56492	(00)	15	30
71917	(12)	30	10	56492	(12)	15	31
71924	(00)	30	2	57245	(00)	15	30
71924	(12)	29	2	57245	(12)	15	31
80035	(12)	12	0	59023	(00)	15	30
82026	(00)	11	0	59023	(12)	15	31
82026	(12)	11	0	59293	(00)	15	30
-	-	-	-	59293	(12)	15	31
-	-	-	-	63450	(12)	14	26
-	-	-	-	64500	(00)	2	24
-	-	-	-	64500	(12)	11	25
-	-	-	-	68842	(12)	14	30
-	-	-	-	74004	(00)	9	30
-	-	-	-	74004	(12)	10	48
-	-	-	-	74626	(00)	2	59
-	-	-	-	76394	(12)	16	27
-	-	-	-	76595	(12)	15	29
-	-	-	-	76612	(12)	15	31
-	-	-	-	78583	(00)	0	17
-	-	-	-	78866	(00)	0	22
-	-	-	-	78954	(00)	0	28
-	-	-	-	78970	(00)	0	15
-	-	-	-	82107	(12)	0	21
-	-	-	-	82244	(00)	17	29
-	-	-	-	82532	(12)	7	23
-	-	-	-	82599	(00)	14	30
-	-	-	-	82599	(12)	15	30
-	-	-	-	82765	(12)	9	30
-	-	-	-	89512	(12)	0	14
-	-	-	-	89592	(12)	0	14
-	-	-	-	91334	(12)	12	28
-	-	-	-	94430	(00)	4	18

2.2 Drifting Buoys

Surface pressure observations from **1490** 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

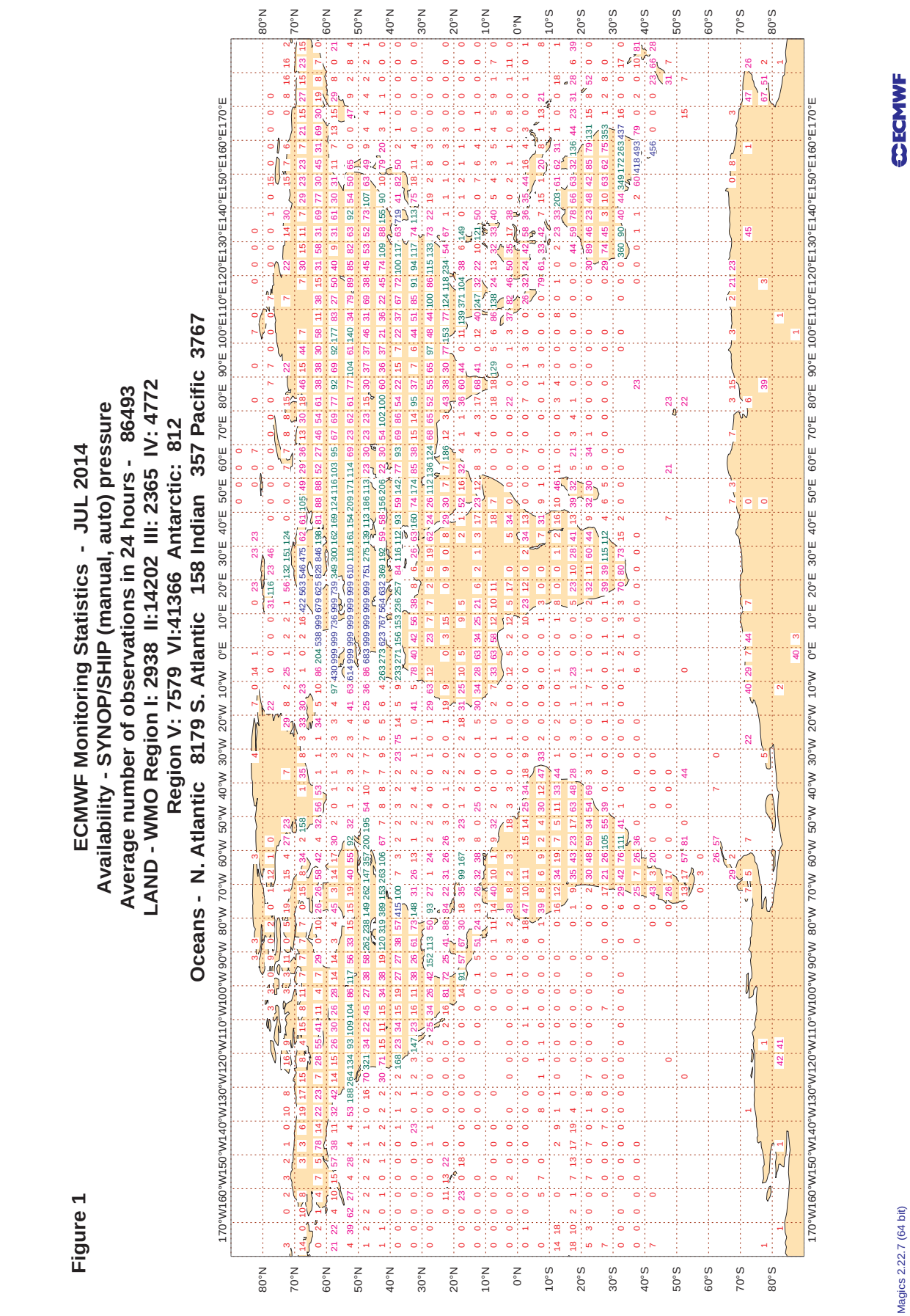


Figure 1

3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

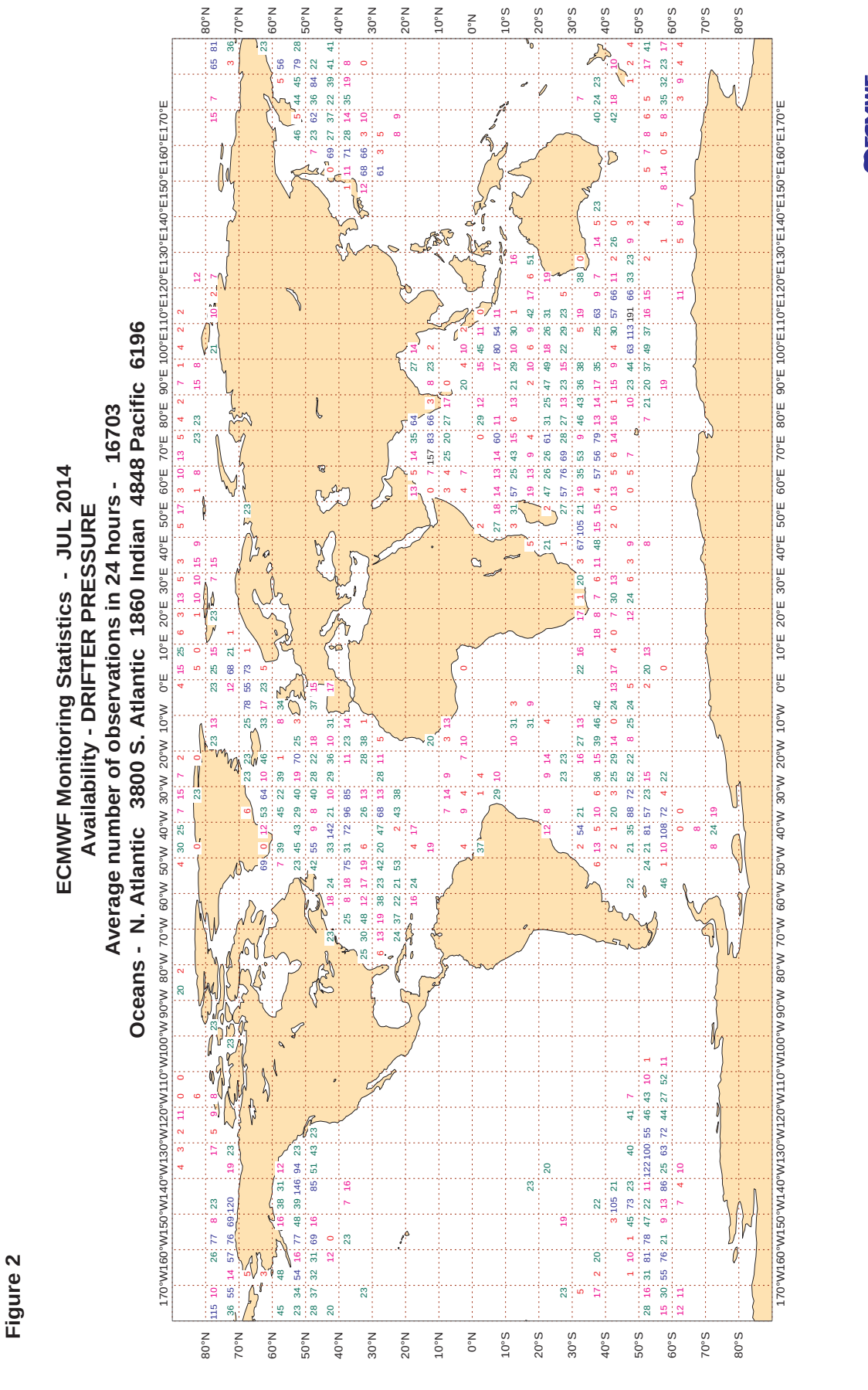


Figure 2

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

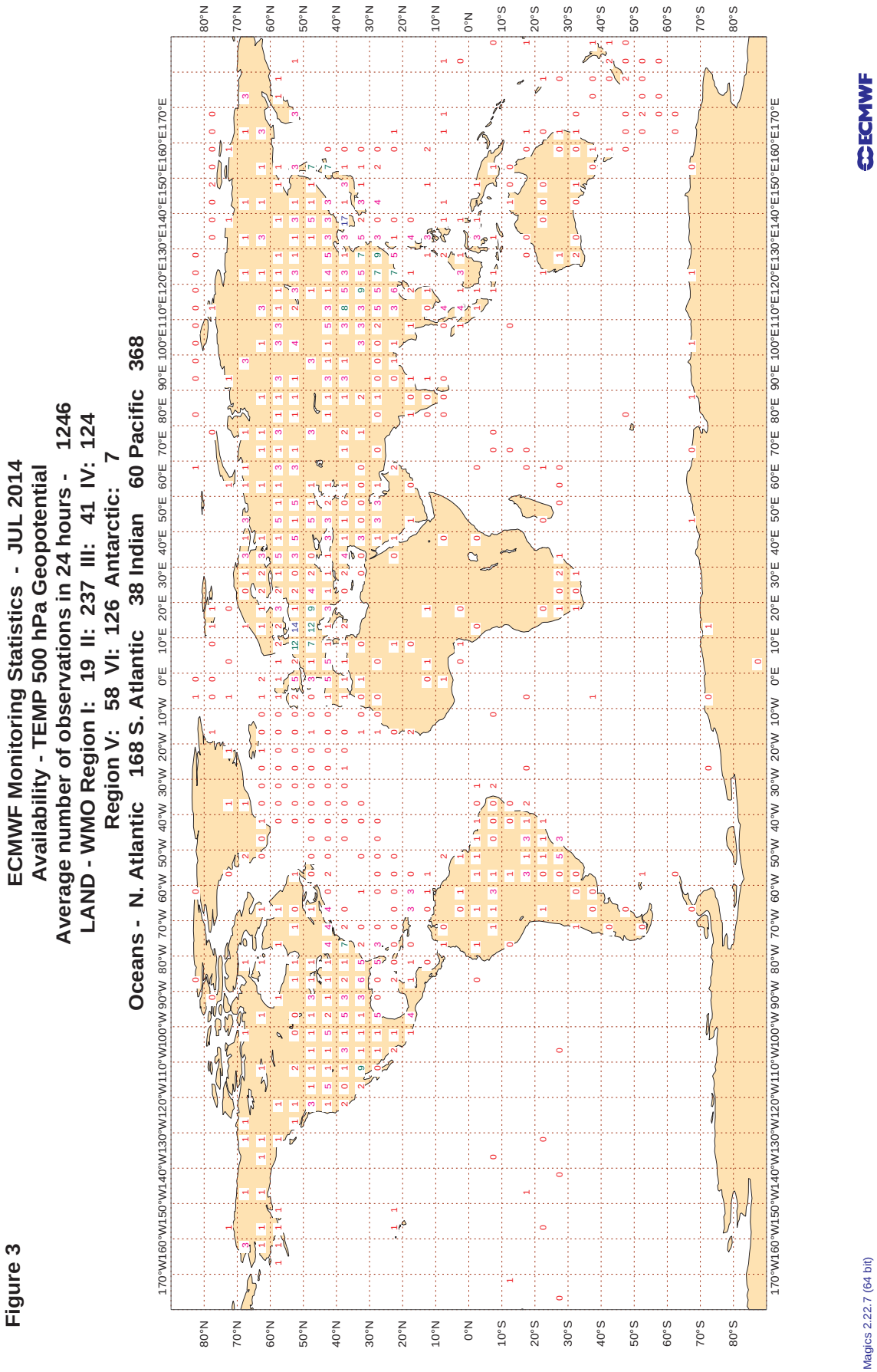


Figure 3

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

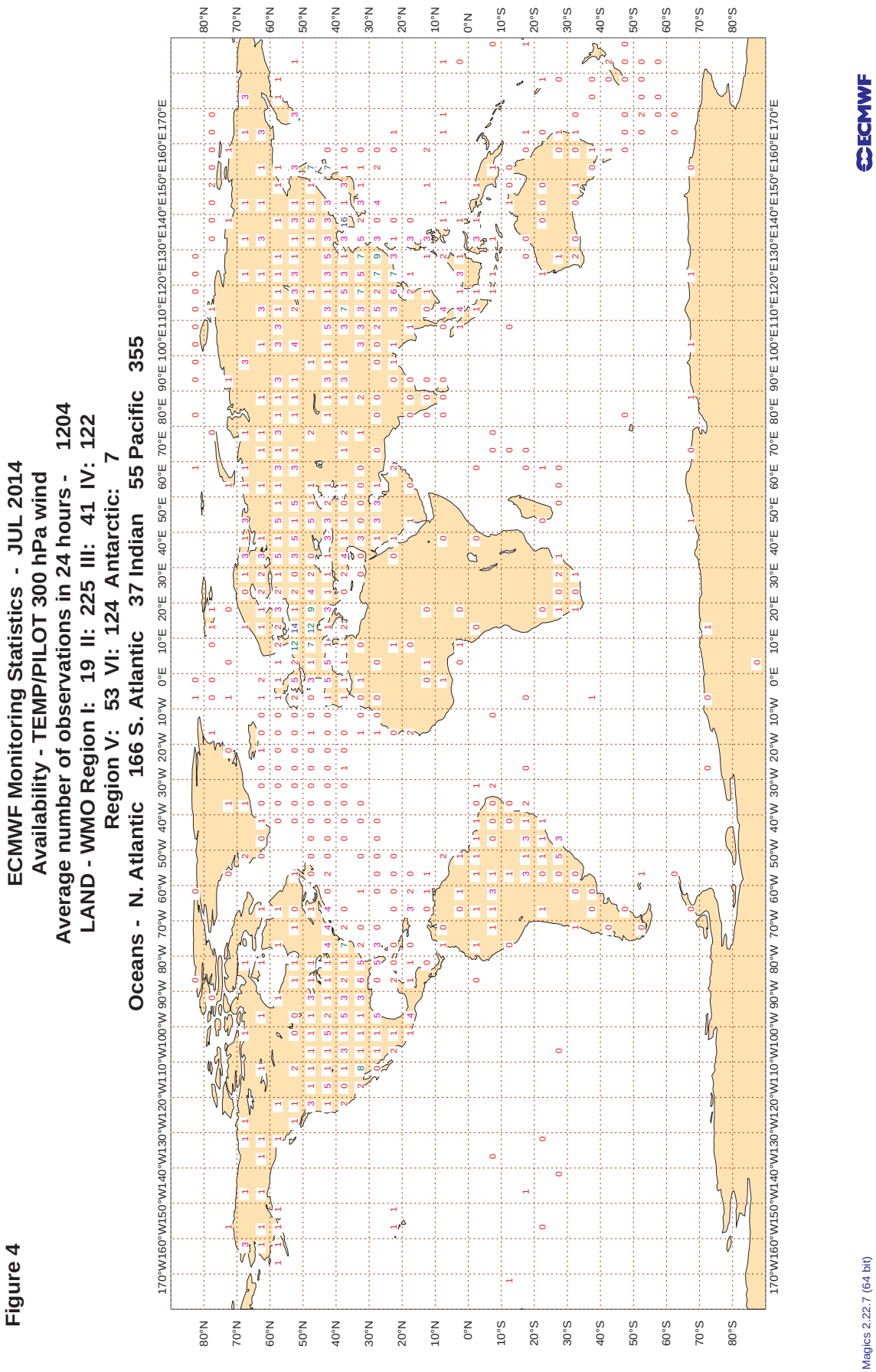


Figure 4

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

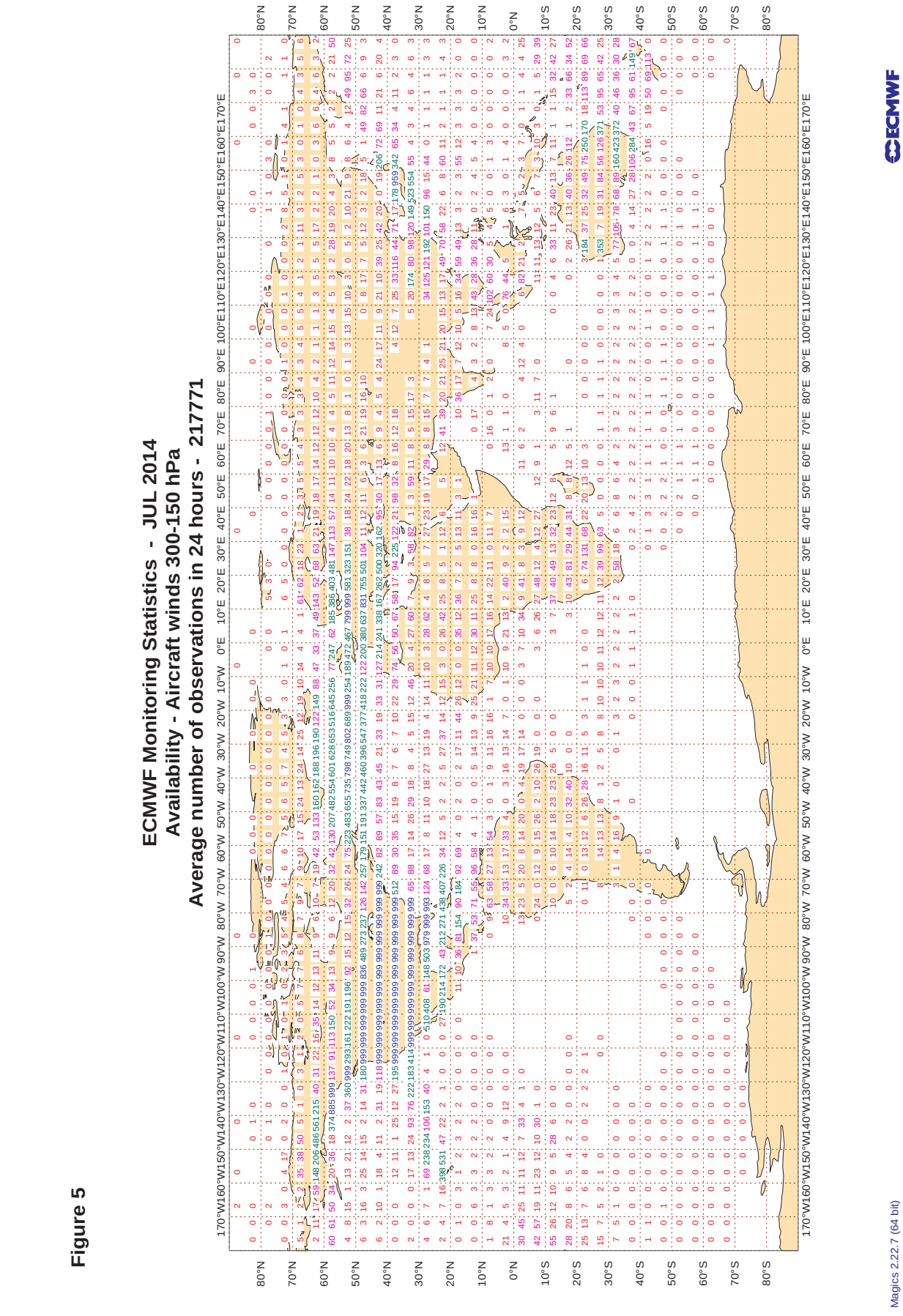


Figure 5

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

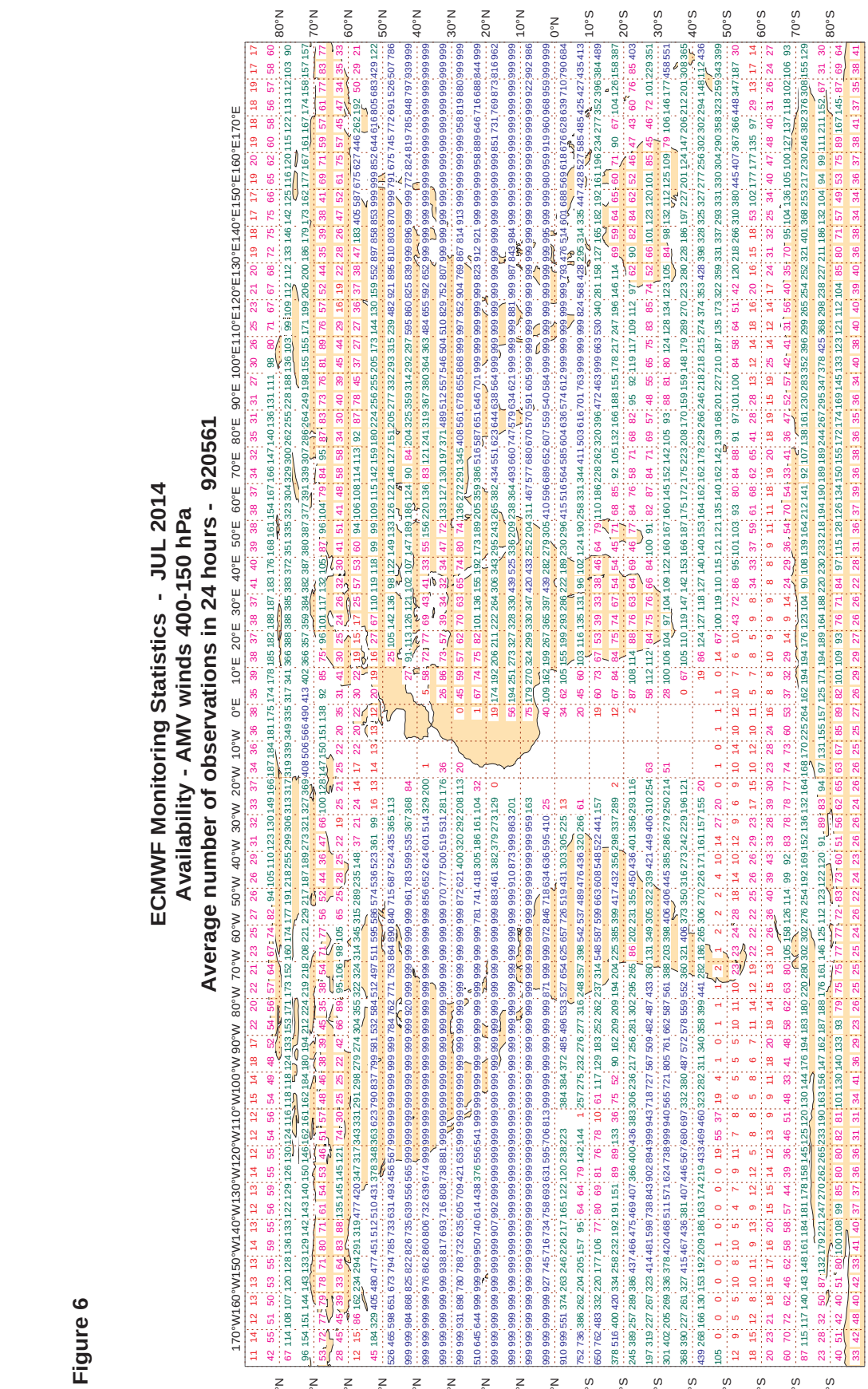
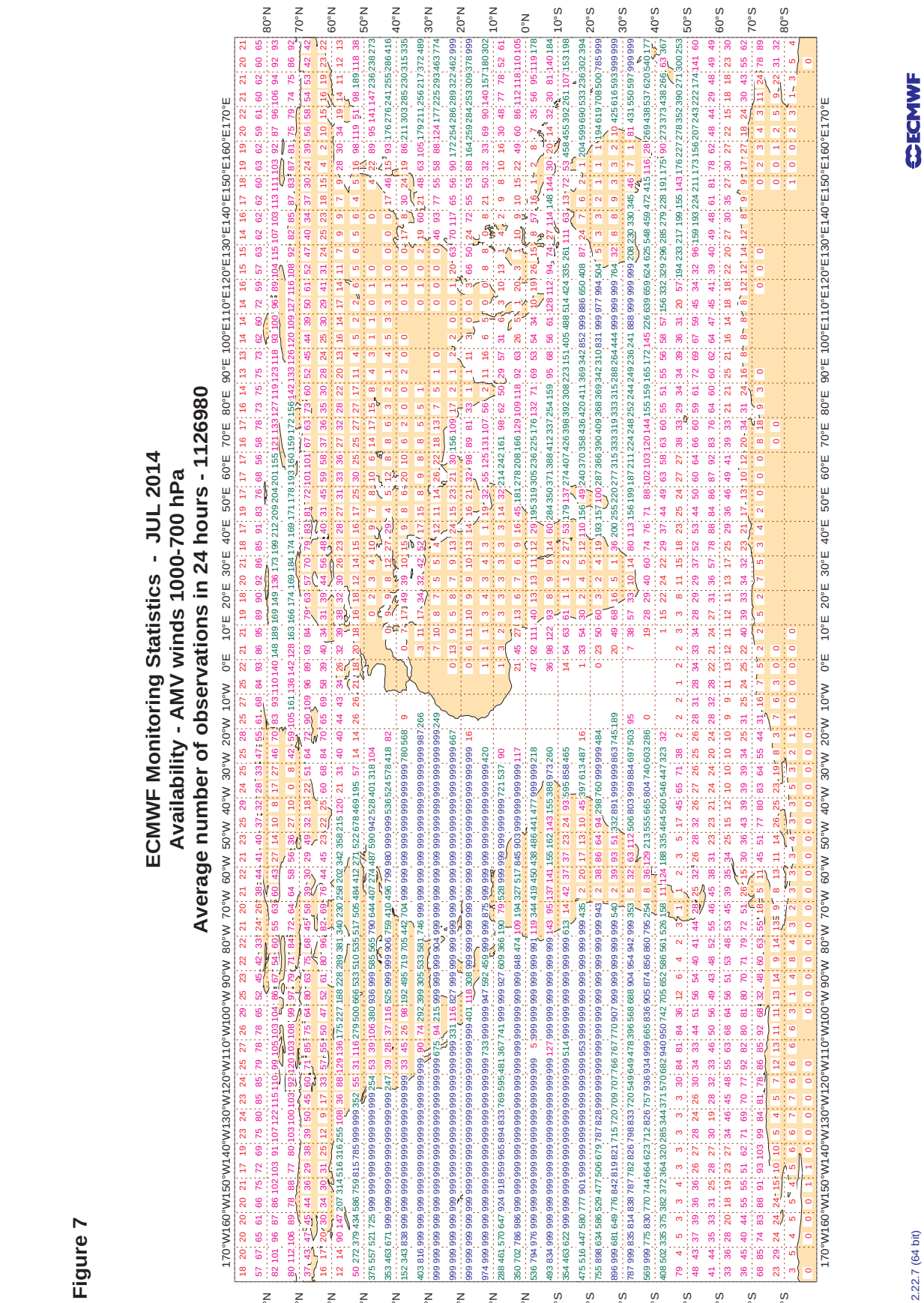


Figure 6

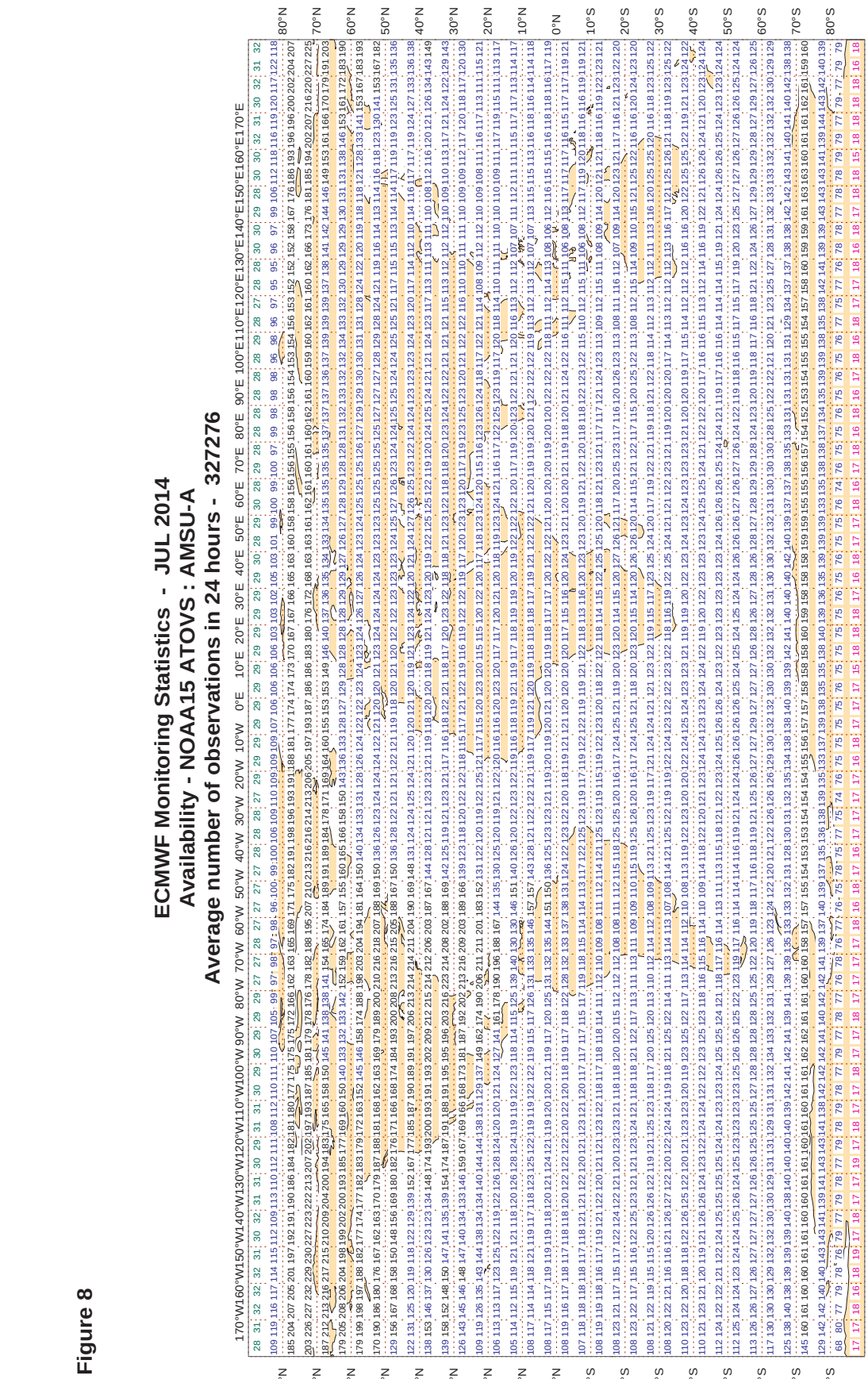
Magics 2.22.7 (64 bit)

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

Figure 7



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



3.2.9 Figure 9 - Availability - NOAA16 ATOVS : AMSU-A

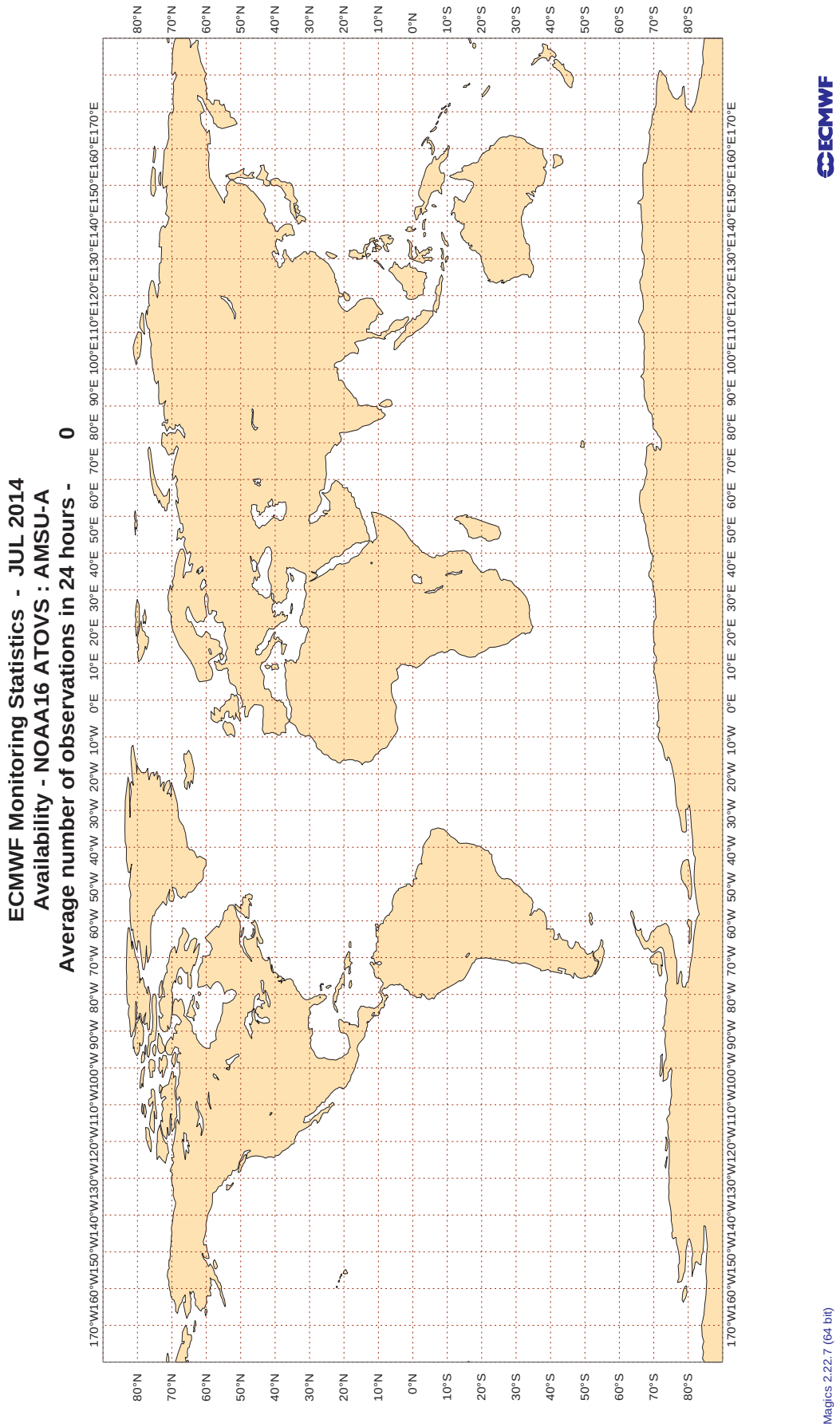
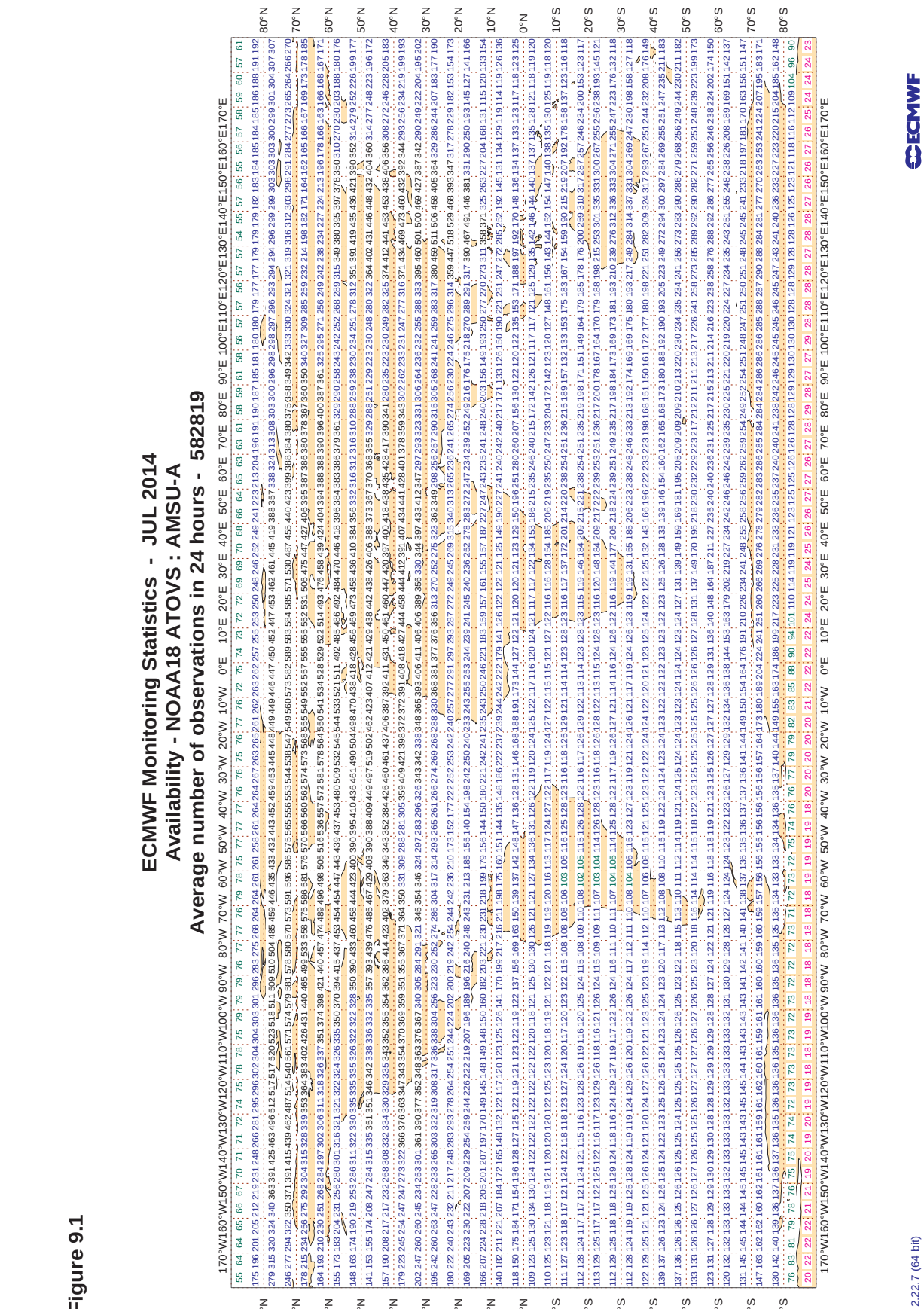
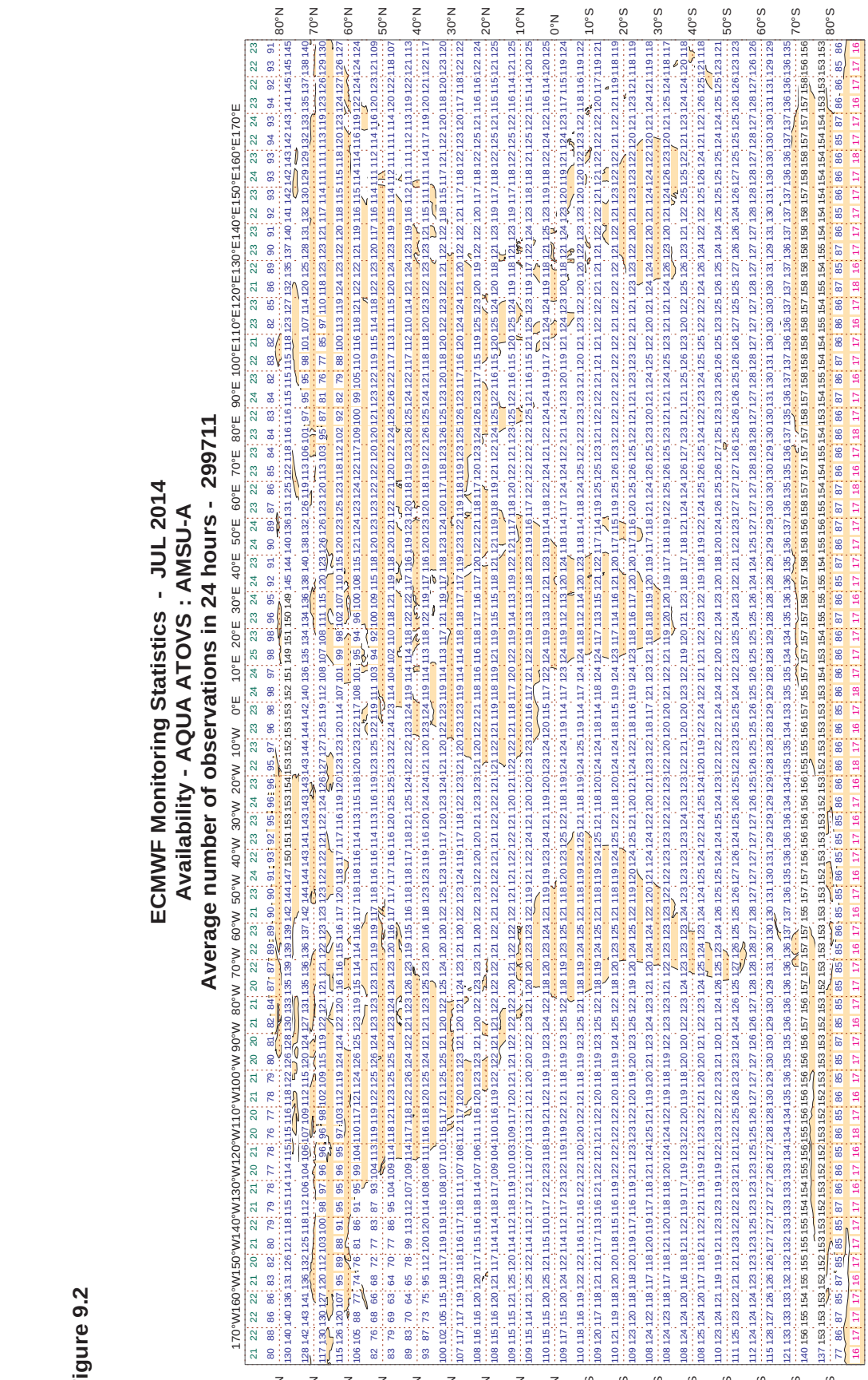


Figure 9

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



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



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

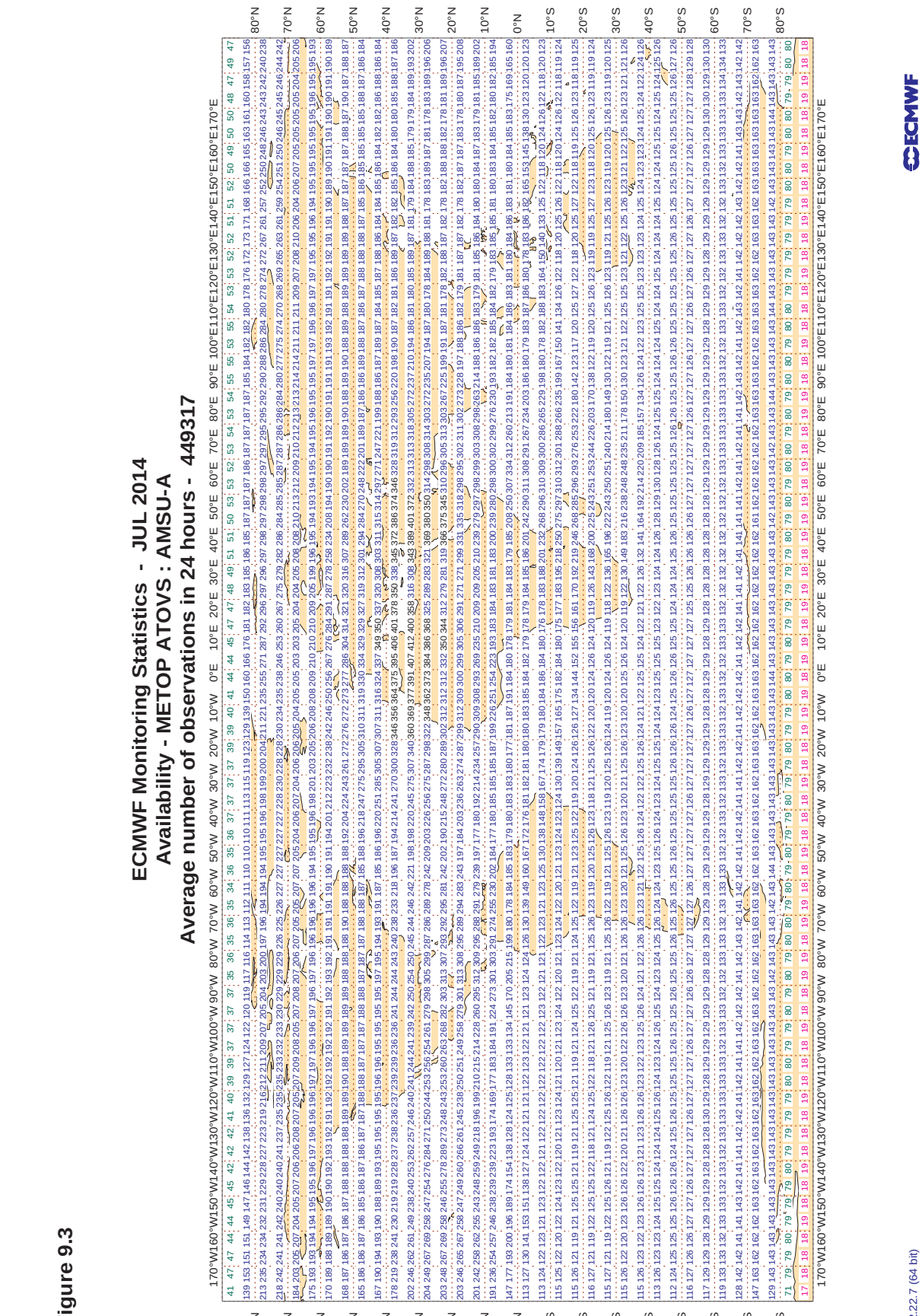


Figure 9.3

3.2.13 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                : JUL 2014
                    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 00, 06, 12 AND 18 UTC OBSERVATIONS
```

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	SD	BIAS	RMS
C6VG5	99	P	SUR	23	0	1.5	4.0	4.3
ICPO	99	P	SUR	22	0	2.4	4.9	5.5
VRIM5	99	P	SUR	24	0	1.9	4.1	4.5
VRZT5	99	P	SUR	28	10	1.9	-0.7	2.0

3.2.14 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                : JUL 2014
                    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 00, 06, 12 AND 18 UTC OBSERVATIONS
```

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

3.2.15 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                : JUL 2014
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD


SELECTION CRITERIA: NO. OF OBS.           >= 20 (WIND SPEEDS > 3M/S), AND ,
                    ABSOLUTE BIAS         >= 30 DEGREES, OR,
                    STANDARD DEVIATION    >= 80 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
45006	99	DIRN	SUR	20	0	0	24.8	32.1	40.6
45028	99	DIRN	SUR	21	0	0	60.4	52.0	79.7

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

```
          LIST OF SUSPECT STATIONS         : DRIFTER
                    MONITORING CENTRE      : ECMWF
                    ELEMENT MONITORED      : SURFACE PRESSURE (HPA)
                    AREA                   : GLOBAL
                    PERIOD                 : JUL 2014
                    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
23979	99	P	SUR	10	85	91	28	3.0	0.0	3.0
25523	99	P	SUR	79	101	98	98	0.0	0.0	0.0
26543	99	P	SUR	79	92	205	205	0.0	0.0	0.0
31262	99	P	SUR	-23	-43	118	118	0.0	0.0	0.0
48548	99	P	SUR	73	-160	217	38	7.5	-2.3	7.8
48549	99	P	SUR	71	-150	217	74	6.9	2.3	7.3
48557	99	P	SUR	74	-170	216	19	6.2	2.6	6.7
48560	99	P	SUR	74	-170	217	36	6.3	1.9	6.6

3.2.17 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                : JUL 2014
                    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
31053	99	SPEED	SUR	-32	-50	193	0	0	3.1	-7.8	8.3
62087	99	SPEED	SUR	55	7	55	0	0	1.3	-6.2	6.3

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

```
          LIST OF SUSPECT STATIONS         : DRIFTER
                    MONITORING CENTRE      : ECMWF
                    ELEMENT MONITORED      : WIND DIRECTION (DEGREES)
                    PERIOD                 : JUL 2014
                    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
23098	99	DIRN	SUR	14	80	31	0	48	16.0	81.0	82.5
23451	99	DIRN	SUR	15	69	64	0	69	7.7	-89.3	89.6
23492	99	DIRN	SUR	11	72	49	0	4	26.1	-43.4	50.7
31051	99	DIRN	SUR	-25	-45	24	0	58	72.3	-26.6	77.1
41062	99	DIRN	SUR	36	-75	33	0	0	17.1	20.6	26.8
42364	99	DIRN	SUR	29	-88	24	0	46	17.7	42.5	46.0
44059	99	DIRN	SUR	37	-76	36	0	0	11.7	-24.4	27.0
44062	99	DIRN	SUR	39	-76	281	0	4	23.1	-21.1	31.3
44139	99	DIRN	SUR	44	-57	159	0	0	11.1	23.3	25.8
45006	99	DIRN	SUR	47	-90	121	0	4	23.2	20.1	30.7
52086	99	DIRN	SUR	-5	156	197	0	2	20.7	-20.6	29.2
53005	99	DIRN	SUR	-8	80	55	0	2	19.1	57.5	60.6
53040	99	DIRN	SUR	-8	95	193	0	99	0.0	83.0	83.0
53056	99	DIRN	SUR	-5	95	125	0	93	85.3	-34.2	91.8

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

```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
                    AREA                  : GLOBAL
                    PERIOD                : JUL 2014
                    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	850	57	3	31	0	12.7	27.4	30.2
04417	12	Z	925	73	-38	30	5	13.4	-73.9	75.1
04417	00	Z	1000	73	-38	28	26	0.0	-93.1	93.1
16716	12	Z	1000	38	24	29	0	10.4	-29.0	30.8
30230	00	Z	250	58	108	29	0	22.5	68.5	72.1
30230	12	Z	250	58	108	31	0	21.9	73.4	76.6
40841	12	Z	1000	30	57	29	7	48.1	-75.7	89.7
42182	00	Z	300	29	77	23	1	86.5	-16.4	88.0
42314	00	Z	30	27	95	23	0	27.1	203.3	205.1
42361	00	Z	300	26	78	10	0	75.9	-37.1	84.5
42369	00	Z	150	27	81	17	0	130.3	56.9	142.2
42410	00	Z	200	26	92	13	0	92.0	38.9	99.9
43003	00	Z	400	19	73	22	0	34.0	-64.8	73.2
43128	00	Z	30	17	78	10	0	57.3	218.5	225.9
43150	00	Z	50	18	83	10	0	35.0	159.5	163.3
43346	00	Z	500	11	80	26	4	50.4	-51.8	72.3
47122	00	Z	30	37	127	25	0	58.0	198.8	207.1
48097	00	Z	850	17	96	22	0	6.2	38.2	38.7
91680	12	Z	1000	-18	177	26	0	0.0	29.5	29.5
91680	00	Z	1000	-18	177	26	0	2.4	29.6	29.7
ASDE01	00	Z	1000	50	-16	11	0	6.3	39.7	40.2
ASDE01	12	Z	1000	51	-11	11	0	5.6	39.0	39.4
HOKI	12	Z	1000	-43	171	25	0	28.4	14.4	31.8
HOKI	00	Z	1000	-43	171	12	0	25.9	18.8	32.0

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

```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND (M/S)
                    AREA                  : GLOBAL
                    PERIOD                : JUL 2014
                    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
```

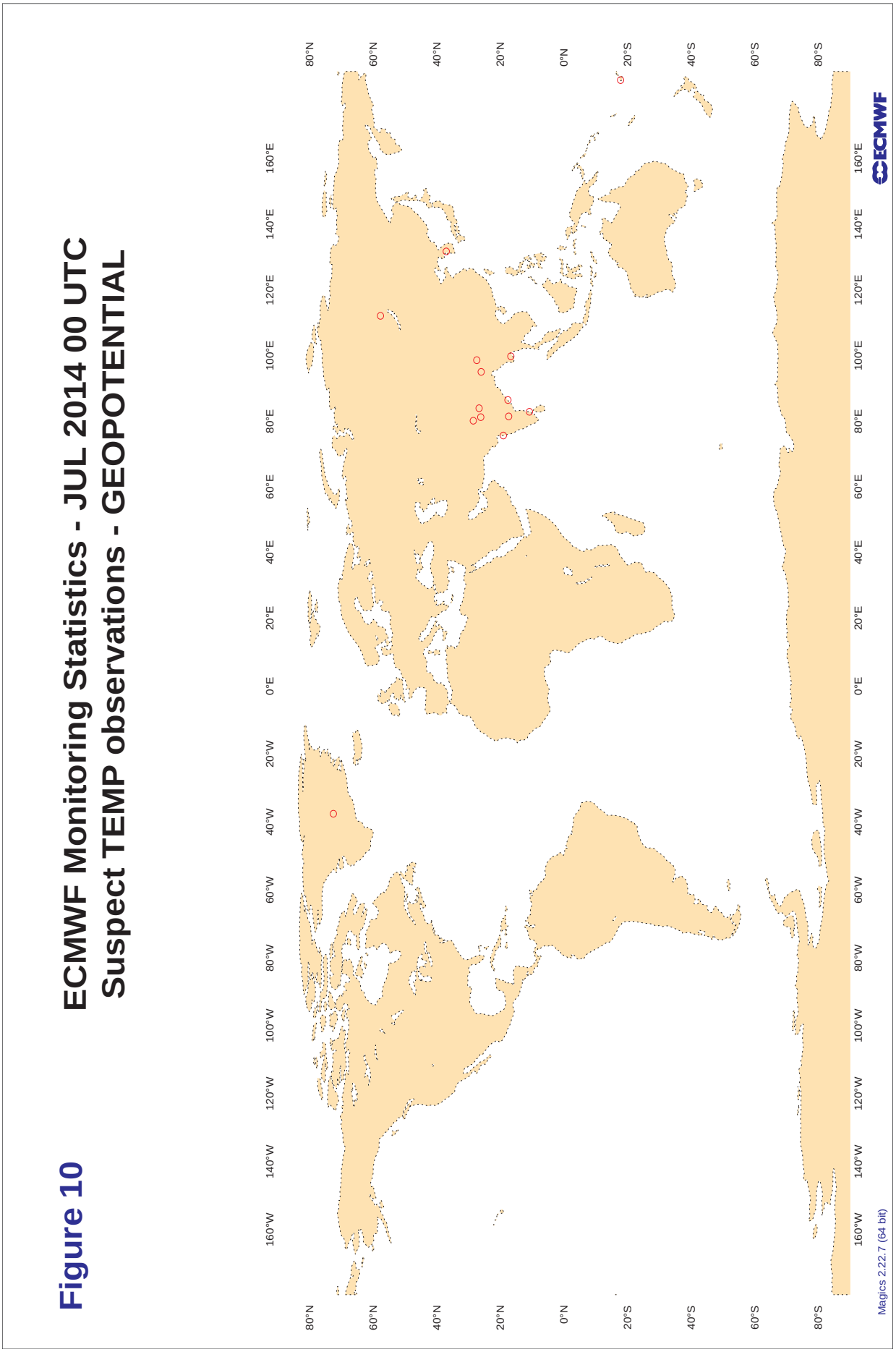
WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	UBIAS	VBIAS	RMS
25428	00	V	150	65	161	29	0	0.5	-0.2	15.6
42701	00	V	150	23	85	14	0	10.6	-3.7	17.6

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

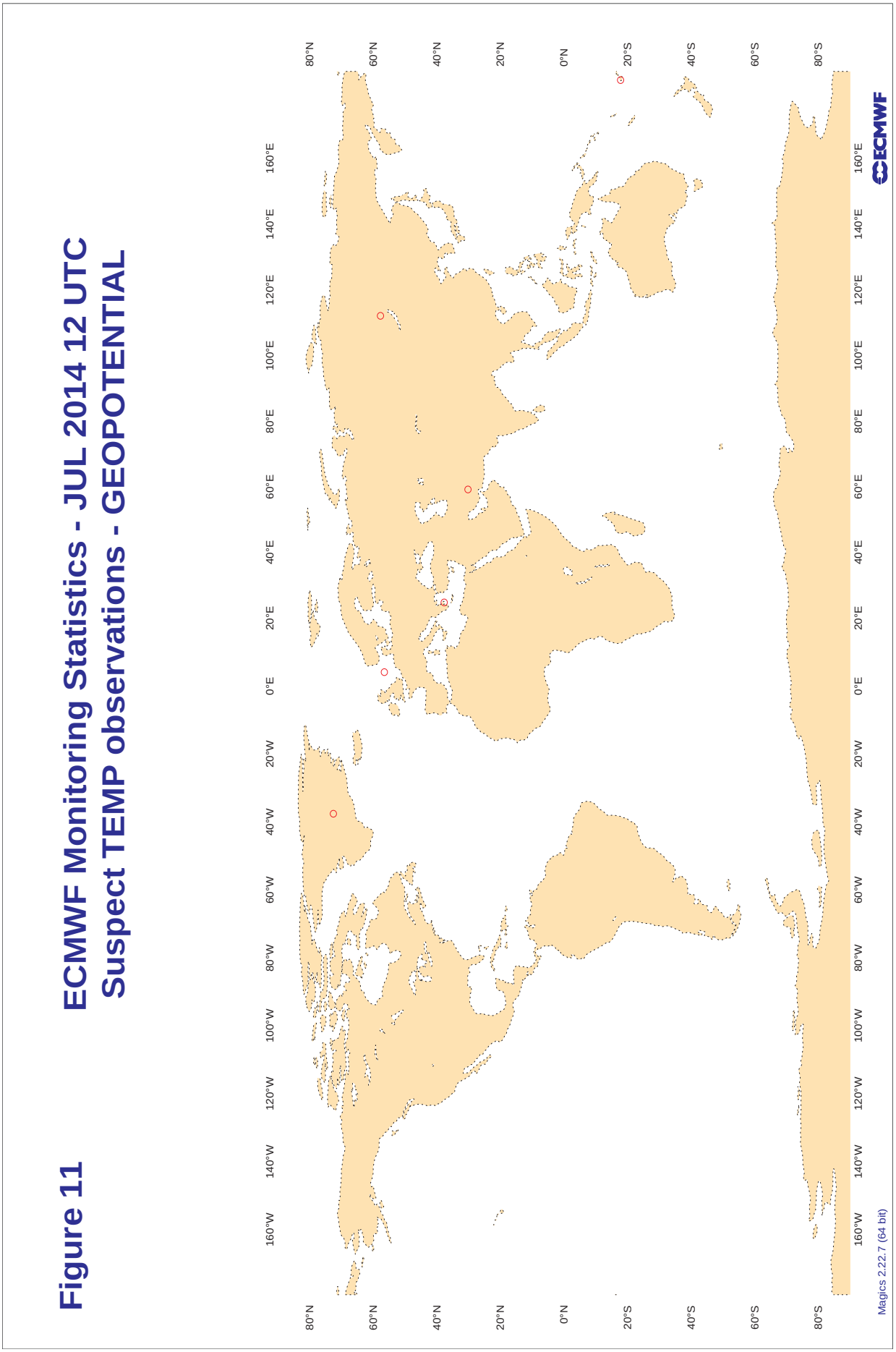
```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                    AREA                  : GLOBAL
                    PERIOD                : JUL 2014
                    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
37860	00	DD	41	50	8	14.7	4.7	18.8
78073	12	DD	25	-77	19	-11.6	5.9	15.8
78397	12	DD	18	-77	8	-19.0	6.6	15.7

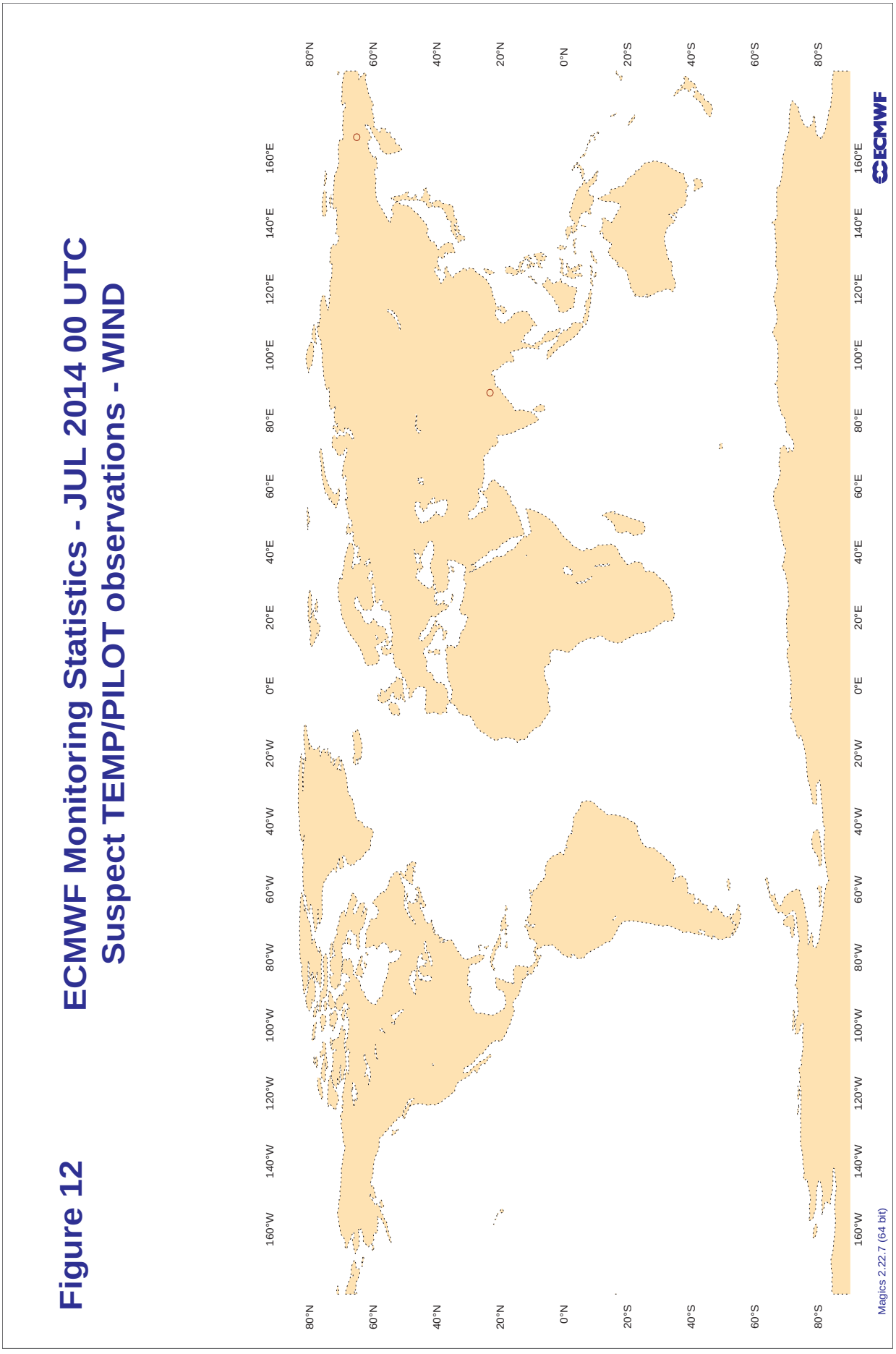
3.2.22 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



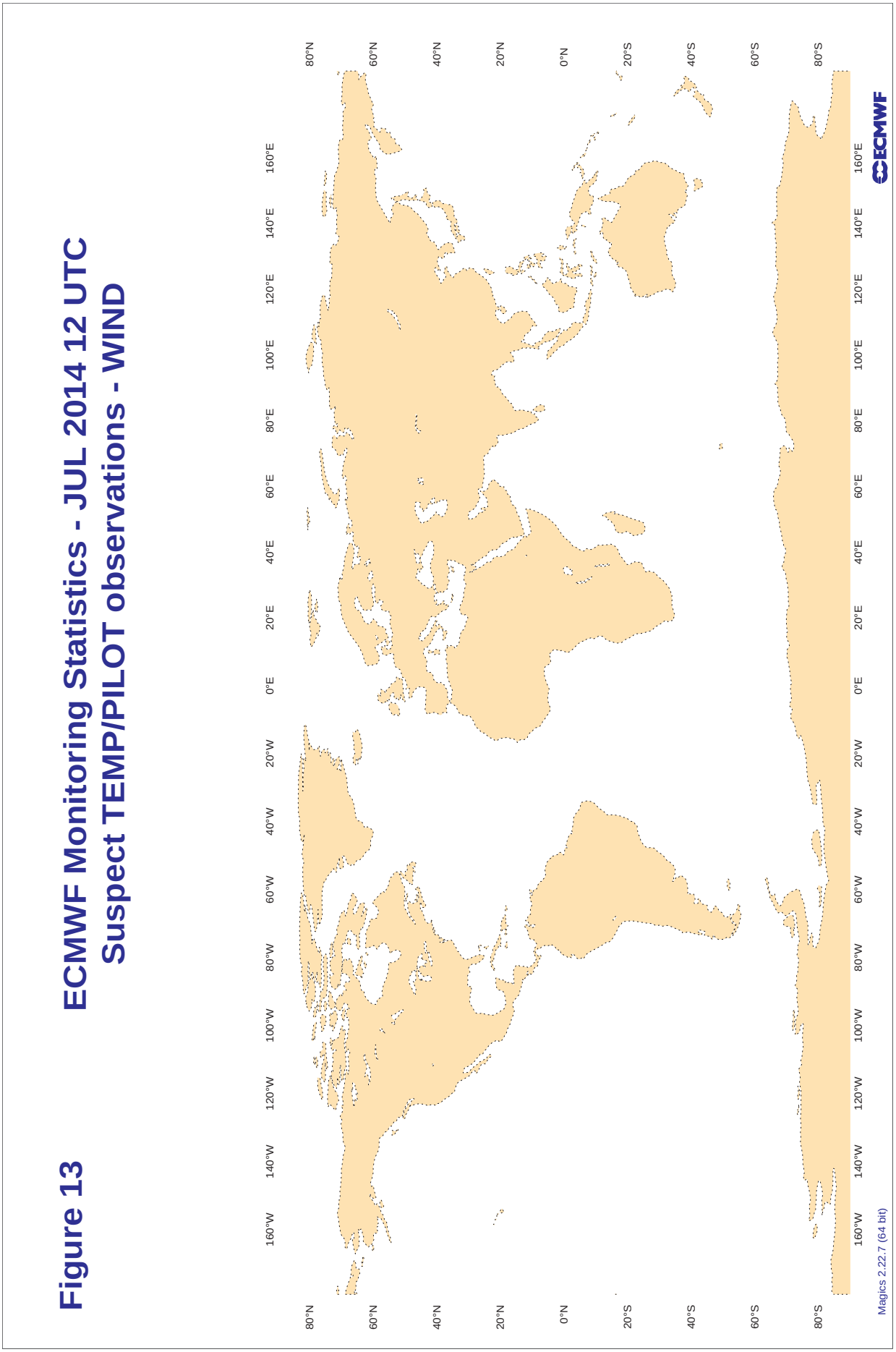
3.2.23 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



3.2.24 Figure 12 - Suspect TEMP/PILOT observations - wind : 00 UTC



3.2.25 Figure 13 - Suspect TEMP/PILOT observations - wind : 12 UTC



3.2.26 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                : JUL 2014
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASDE01	12	Z	100	10	56.9	55.6
ASDE01	00	Z	100	11	53.8	53.0
ASDE02	12	Z	100	18	21.2	20.5
ASDE02	00	Z	100	16	21.9	21.4
ASDE03	12	Z	100	13	22.9	19.4
ASDE03	00	Z	100	15	15.2	11.3
ASDE04	12	Z	100	7	15.1	7.2
ASDE04	00	Z	100	7	12.6	7.5
ASDE09	12	Z	100	1	13.1	13.1
ASDK1	12	Z	100	13	31.6	29.9
ASDK1	00	Z	100	12	25.6	24.0
ASDK2	12	Z	100	7	31.5	29.2
ASDK2	00	Z	100	6	73.5	45.6
ASDK3	00	Z	100	3	50.0	47.7
ASDK3	12	Z	100	0	0.0	0.0
ASES1	12	Z	100	20	46.2	43.0
ASEU01	12	Z	100	5	12.2	11.5
ASEU02	12	Z	100	6	52.0	51.7
ASEU02	00	Z	100	6	47.2	46.4
ASEU03	12	Z	100	9	20.1	18.8
ASEU03	00	Z	100	7	10.5	10.3
ASEU04	12	Z	100	6	12.2	6.3
ASEU04	00	Z	100	2	10.4	-8.1
ASEU05	12	Z	100	7	25.3	23.0
ASEU05	00	Z	100	8	22.9	21.1
ASEU06	12	Z	100	4	37.7	32.0
ASEU06	00	Z	100	5	39.9	39.8
ASFR1	12	Z	100	7	8.8	6.4
ASFR1	00	Z	100	13	16.9	15.5
ASFR2	12	Z	100	9	18.6	17.8
ASFR2	00	Z	100	10	20.4	18.6
ASFR3	12	Z	100	10	15.0	8.4
ASFR3	00	Z	100	13	11.2	8.2
ASFR4	12	Z	100	13	14.6	10.3
ASFR4	00	Z	100	11	14.4	12.1
ASUK02	12	Z	100	23	7.6	4.9
ASUK02	00	Z	100	22	7.8	2.4
DBLK	12	Z	100	25	13.4	11.5
DFCG	12	Z	100	16	52.7	26.4

RADIOSONDE MONITORING STATISTICS (SHIPS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
DFCG	00	Z	100	16	20.9	18.8
HAAST	12	Z	100	5	9.8	-1.2
HAAST	00	Z	100	2	8.2	7.2
HOKI	12	Z	100	24	31.2	29.9
HOKI	00	Z	100	10	44.3	43.5
JGQH	12	Z	100	9	10.4	7.0
JGQH	00	Z	100	10	11.0	8.0
JNSR	12	Z	100	7	8.3	-3.0
JNSR	00	Z	100	4	11.7	-10.3
NZLAU	00	Z	100	3	41.5	40.2

3.2.27 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                : JUL 2014
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASDE01	12	V	100	10	3.4	-0.2	-0.4
ASDE01	00	V	100	8	2.6	-0.9	0.2
ASDE02	12	V	100	18	2.5	0.3	-0.4
ASDE02	00	V	100	16	2.8	0.3	1.2
ASDE03	12	V	100	13	3.0	0.5	0.2
ASDE03	00	V	100	15	3.2	-1.2	0.7
ASDE04	12	V	100	6	2.7	-0.4	0.5
ASDE04	00	V	100	7	3.2	1.8	0.1
ASDE09	12	V	100	1	4.9	4.9	0.6
ASDK1	12	V	100	12	3.3	0.5	-0.4
ASDK1	00	V	100	12	2.7	-0.1	1.0
ASDK2	12	V	100	7	3.7	0.1	0.4
ASDK2	00	V	100	6	2.7	-0.1	0.3
ASDK3	00	V	100	3	2.7	0.9	-0.2
ASDK3	12	V	100	0	0.0	0.0	0.0
ASES1	12	V	100	19	4.5	0.1	1.1
ASEU01	12	V	100	5	3.8	-1.6	-0.3
ASEU02	12	V	100	6	3.1	0.7	-0.2
ASEU02	00	V	100	5	5.0	0.4	2.0
ASEU03	12	V	100	7	3.4	-1.2	-0.8
ASEU03	00	V	100	7	2.7	-1.4	0.3
ASEU04	12	V	100	5	2.4	0.2	-0.4
ASEU04	00	V	100	1	1.2	1.0	-0.6
ASEU05	12	V	100	7	3.7	-0.9	0.8
ASEU05	00	V	100	8	4.3	-0.4	1.2
ASEU06	12	V	100	4	3.6	1.4	-0.1
ASEU06	00	V	100	5	3.4	-0.2	-0.4
ASFR1	12	V	100	7	4.2	-0.9	-2.0
ASFR1	00	V	100	13	3.0	-0.1	0.7
ASFR2	12	V	100	9	2.6	0.8	0.3
ASFR2	00	V	100	10	5.2	0.3	0.3
ASFR3	12	V	100	10	2.9	0.6	0.0
ASFR3	00	V	100	12	2.9	0.7	-1.3
ASFR4	12	V	100	12	3.1	1.0	0.2
ASFR4	00	V	100	11	2.8	-0.3	0.9
ASUK02	12	V	100	21	2.5	-0.3	-0.2
ASUK02	00	V	100	20	1.9	0.1	-0.5
DBLK	12	V	100	25	2.9	0.5	0.2
DFCG	12	V	100	14	5.2	0.8	0.2

RADIOSONDE MONITORING STATISTICS (SHIPS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
DFCG	00	V	100	16	6.2	-0.6	-1.4
HAAST	12	V	100	2	10.9	-0.7	4.6
HAAST	00	V	100	1	7.4	-5.5	5.0
HOKI	12	V	100	22	4.5	0.1	-0.2
HOKI	00	V	100	7	6.3	-2.7	-0.5
JGQH	12	V	100	9	4.6	0.5	2.2
JGQH	00	V	100	10	3.8	-0.5	1.2
JNSR	12	V	100	4	4.9	1.6	-1.8
JNSR	00	V	100	3	4.9	-1.8	-1.7
NZLAU	00	V	100	2	8.4	-5.6	3.5

3.2.28 Figure 14 - SATOB Winds: 700-1000hPa

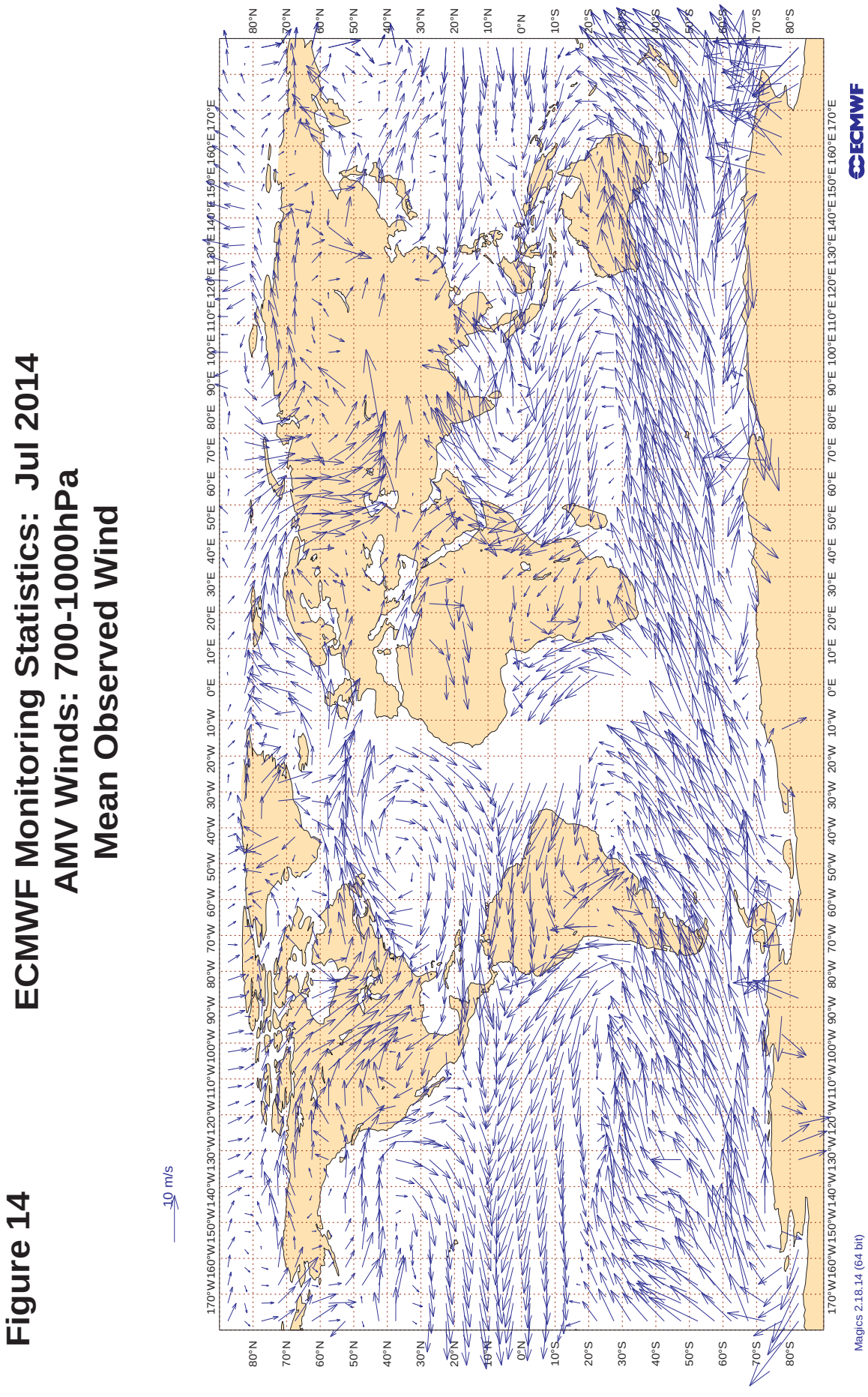


Figure 14

3.2.29 Figure 15 - SATOB Winds: 150- 400hPa

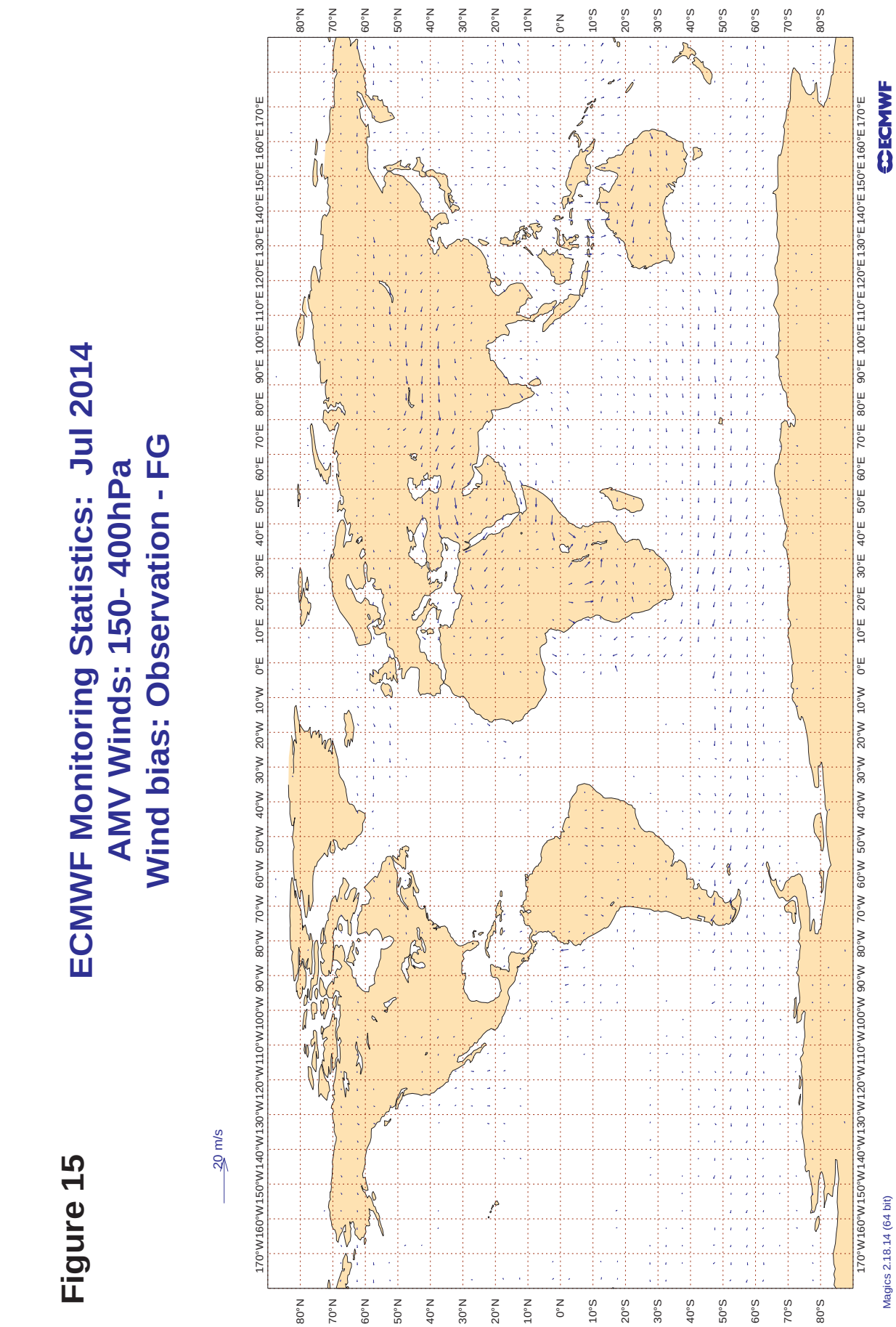


Figure 15

3.2.30 Figure 16 - SATOB Winds: 700-1000hPa

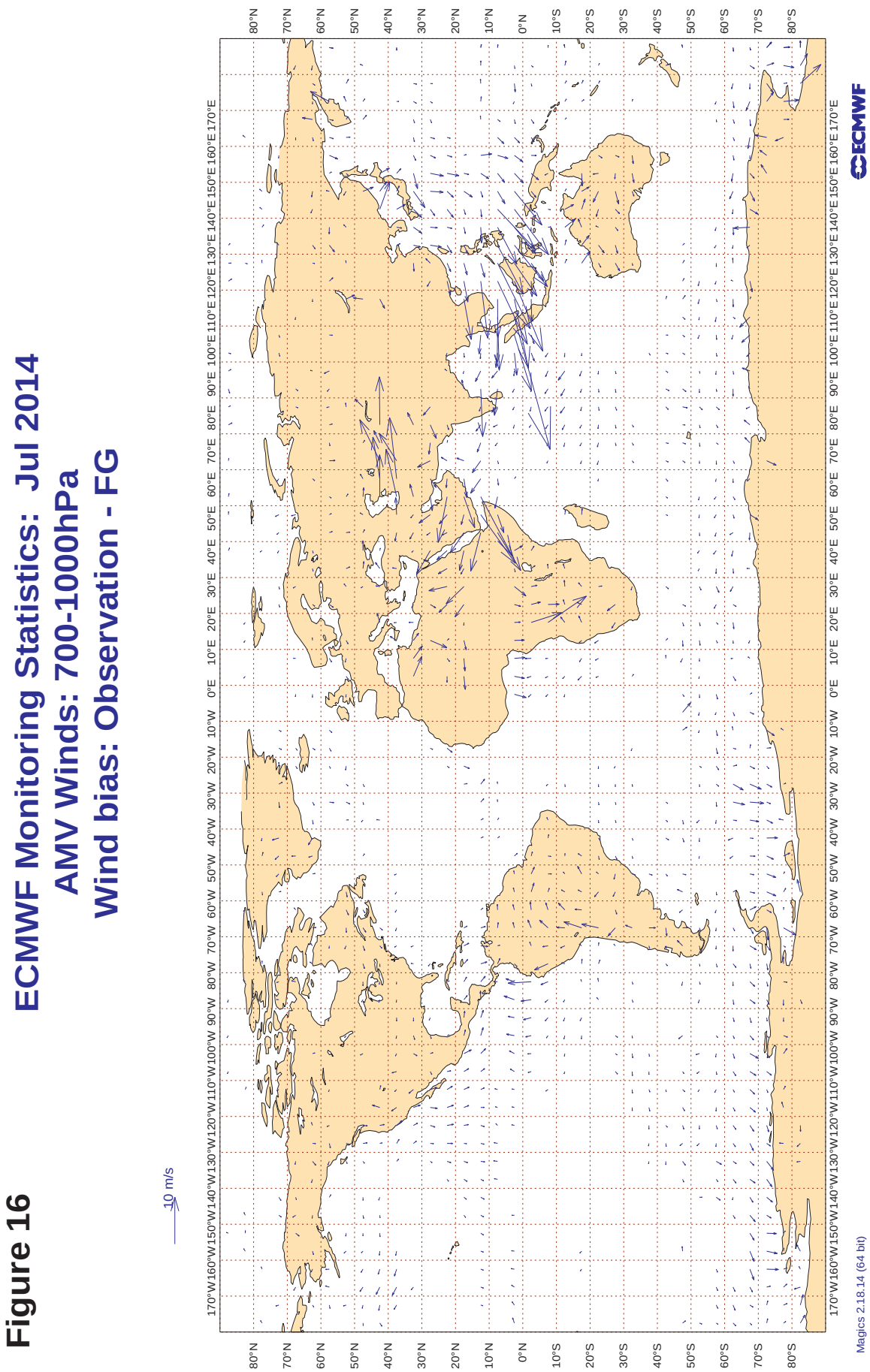


Figure 16

3.2.31 Figure 17 - SATOB Winds: 150- 400hPa

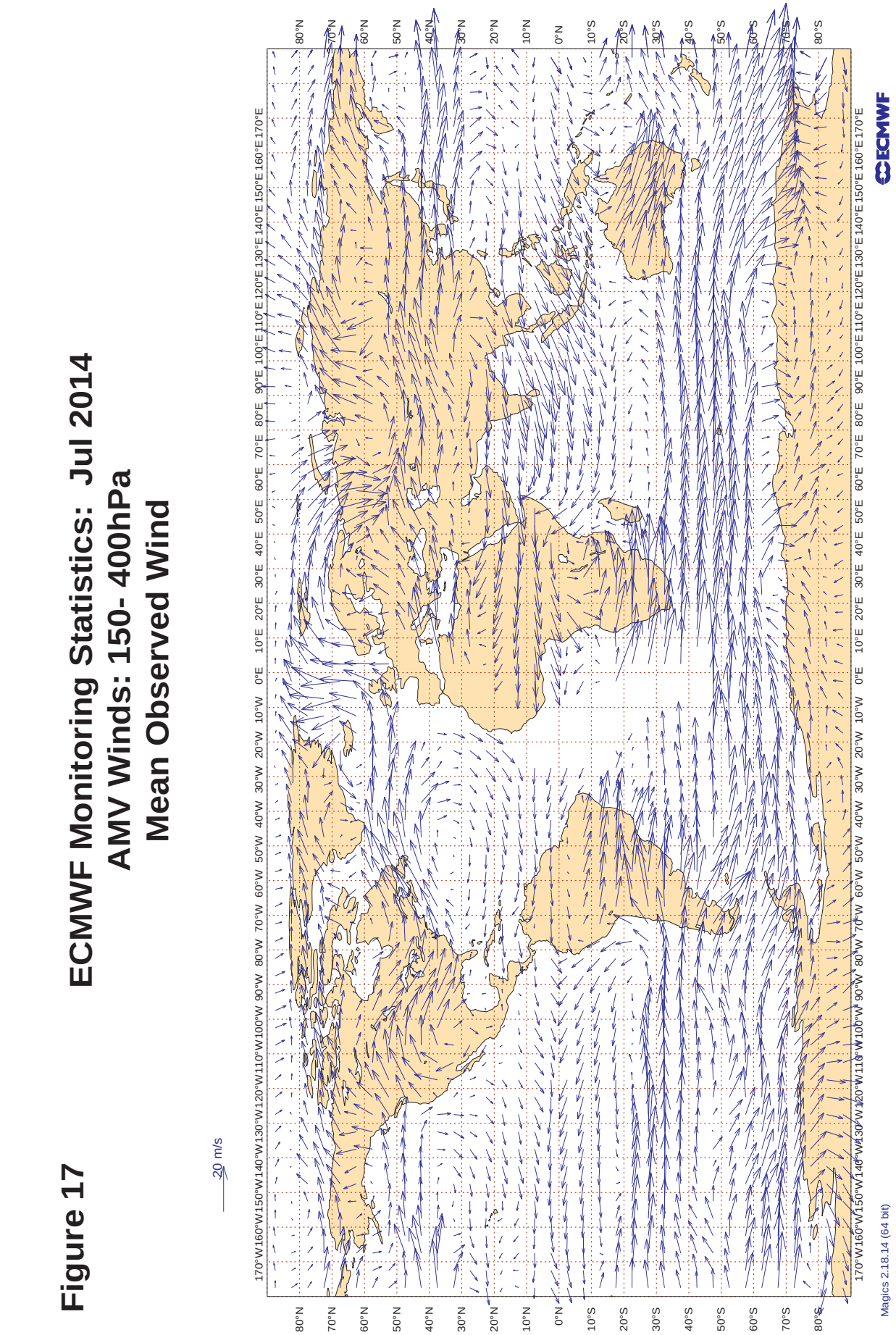


Figure 17

3.2.32 Figure 18 - AIRCRAFT Winds: 150- 300hPa

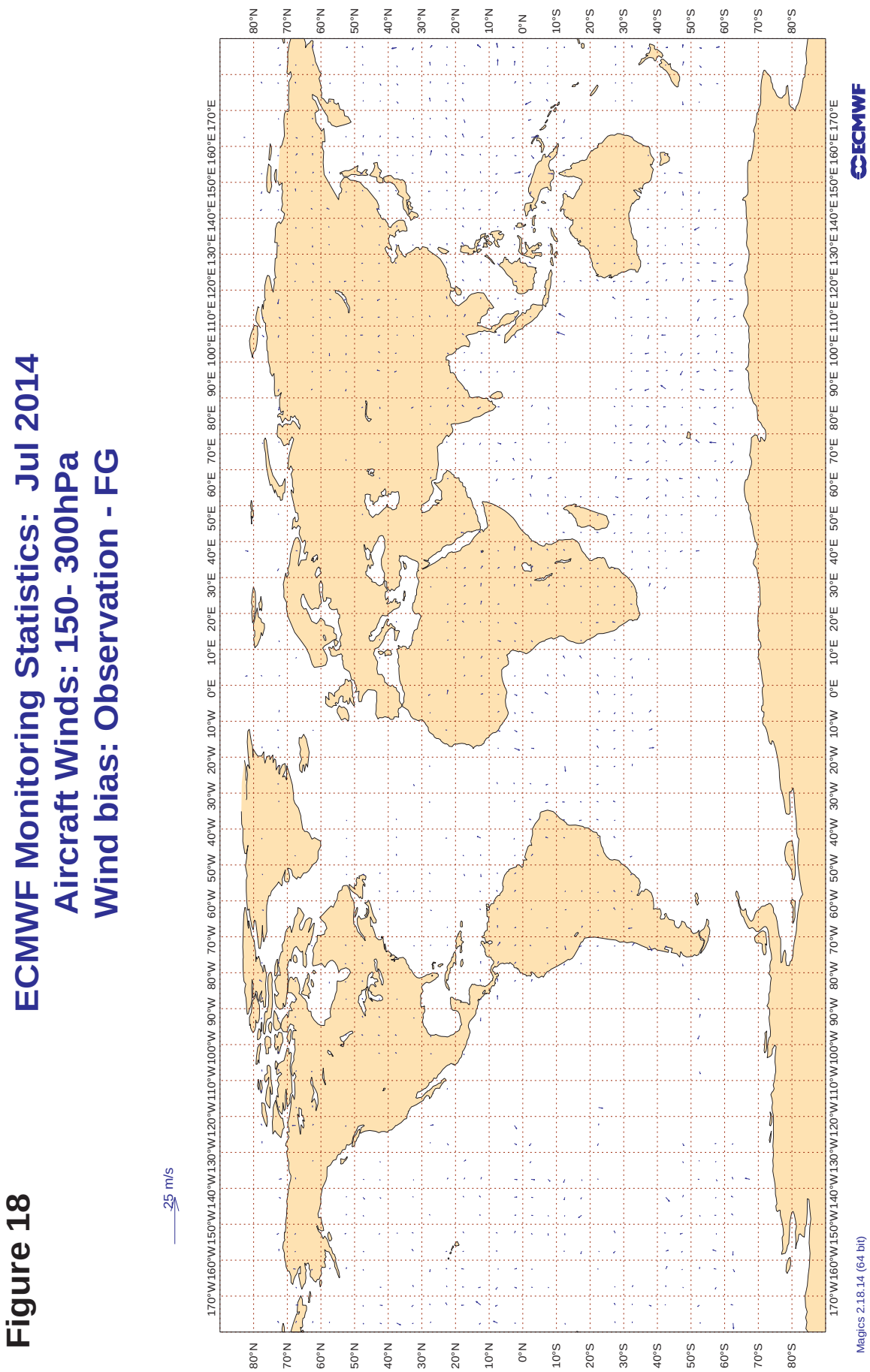


Figure 18

3.2.33 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 : JUL 2014
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	8089	0	0	4.5	-0.7
AAY	99	V	300-150	388	0	0	4.3	0.0
ABW	99	V	300-150	31	0	0	3.0	0.5
ACA	99	V	300-150	5575	0	0	4.5	-0.1
ACI	99	V	300-150	480	0	0	3.5	-0.2
AEA	99	V	300-150	44	0	0	3.2	0.3
AFL	99	V	300-150	926	1	0	3.7	0.4
AFR	99	V	300-150	5028	0	0	4.7	-0.2
AIC	99	V	300-150	711	0	0	3.9	0.1
AMX	99	V	300-150	301	11	0	11.7	0.0
ANZ	99	V	300-150	3117	0	0	3.8	0.5
ASA	99	V	300-150	2838	0	0	3.9	0.1
ASY	99	V	300-150	26	0	0	4.7	-1.1
ATN	99	V	300-150	22	0	5	4.2	0.0
AUA	99	V	300-150	2047	0	0	4.2	-0.7
AVN	99	V	300-150	82	0	0	6.5	-0.9
AWE	99	V	300-150	5170	0	0	4.2	0.4
AXM	99	V	300-150	41	0	0	5.6	1.6
AZA	99	V	300-150	949	0	0	4.5	0.6
BAW	99	V	300-150	6577	1	0	4.7	-0.3
BEL	99	V	300-150	373	0	0	4.1	-0.1
BER	99	V	300-150	2334	0	0	4.2	0.6
BOX	99	V	300-150	118	0	0	3.1	0.3
CAL	99	V	300-150	48	0	0	4.5	0.8
CFG	99	V	300-150	450	1	0	5.0	-1.2
CKS	99	V	300-150	502	0	0	4.2	0.8
CLX	99	V	300-150	497	0	0	4.5	-0.4
CMB	99	V	300-150	33	3	3	3.3	-0.3
CNV	99	V	300-150	68	0	0	3.2	-0.5
CPA	99	V	300-150	21	0	0	4.7	0.3
CRL	99	V	300-150	329	0	0	4.7	0.2
CSN	99	V	300-150	165	8	0	6.1	-0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
DAH	99	V	300-150	399	0	0	4.4	0.4
DAL	99	V	300-150	19494	0	0	4.3	-0.4
DHK	99	V	300-150	403	0	0	3.7	0.3
DLH	99	V	300-150	9039	0	0	4.3	-0.1
DUB	99	V	300-150	21	0	0	3.3	0.6
EDW	99	V	300-150	41	0	0	6.5	-0.5
EIN	99	V	300-150	2599	0	0	4.1	-0.4
EJM	99	V	300-150	62	19	0	20.2	-1.2
ELY	99	V	300-150	856	0	0	4.6	-0.3
ETD	99	V	300-150	81	2	1	4.8	0.4
ETH	99	V	300-150	37	3	0	5.5	-0.6
FDX	99	V	300-150	1907	0	0	3.7	0.2
FIN	99	V	300-150	217	1	0	7.1	-0.3
FJI	99	V	300-150	1165	0	0	3.7	-0.3
FWI	99	V	300-150	35	0	0	3.5	0.5
GEC	99	V	300-150	611	0	0	4.1	0.1
GTI	99	V	300-150	601	1	0	4.2	0.0
HAL	99	V	300-150	835	0	0	4.6	0.6
HOK	99	V	300-150	100	0	0	6.0	1.6
IBE	99	V	300-150	1741	0	0	4.0	0.5
ICV	99	V	300-150	53	0	0	3.0	0.2
JAF	99	V	300-150	96	4	0	11.1	-1.2
JAI	99	V	300-150	791	1	0	5.2	0.3
JST	99	V	300-150	826	0	0	4.6	0.6
KAC	99	V	300-150	29	0	0	4.6	-1.1
KAI	99	V	300-150	43	2	0	5.2	0.1
KAL	99	V	300-150	576	0	0	4.3	0.8
KLM	99	V	300-150	3453	0	0	4.3	-0.4
LAN	99	V	300-150	93	0	0	4.1	0.9
LOT	99	V	300-150	431	8	0	7.4	-0.3
MAS	99	V	300-150	102	0	0	4.5	0.9
MON	99	V	300-150	24	8	0	7.8	-0.7
MPH	99	V	300-150	25	0	0	4.3	-2.2
MSR	99	V	300-150	464	0	0	4.3	0.0
NAX	99	V	300-150	71	7	0	13.5	-0.4
NCA	99	V	300-150	20	0	0	4.7	-2.1
NJE	99	V	300-150	21	43	0	20.6	0.4
NWS	99	V	300-150	35	0	0	3.3	0.8
OAE	99	V	300-150	79	0	0	4.2	-0.4
OEI	99	V	300-150	26	50	0	25.5	0.0
PAL	99	V	300-150	193	0	1	6.7	-1.1
PIA	99	V	300-150	45	0	0	5.4	0.1
QFA	99	V	300-150	2044	0	0	3.5	-0.7

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
QTR	99	V	300-150	142	1	1	3.6	-0.1
RCH	99	V	300-150	953	0	0	5.0	-0.3
RJA	99	V	300-150	102	0	0	5.3	1.1
ROJ	99	V	300-150	29	0	0	3.1	-0.2
ROU	99	V	300-150	905	0	0	4.0	-1.0
SAM	99	V	300-150	81	1	0	9.3	-0.6
SAS	99	V	300-150	1768	0	0	3.8	0.0
SIA	99	V	300-150	341	0	0	4.3	0.0
SQC	99	V	300-150	72	0	0	4.3	0.2
SVA	99	V	300-150	625	0	0	4.2	0.3
SWR	99	V	300-150	1746	0	0	4.3	0.4
TAM	99	V	300-150	105	0	0	6.8	0.3
TAP	99	V	300-150	213	1	0	4.6	0.6
TCV	99	V	300-150	58	0	0	7.7	-0.3
TCX	99	V	300-150	181	0	0	3.8	0.9
TFL	99	V	300-150	138	1	0	5.5	-1.1
THA	99	V	300-150	98	0	0	3.3	0.8
THT	99	V	300-150	275	0	0	4.5	0.9
THY	99	V	300-150	857	0	0	3.7	0.2
TOM	99	V	300-150	1114	6	0	8.5	-0.9
TSC	99	V	300-150	706	0	0	5.1	0.2
TSO	99	V	300-150	315	0	0	4.2	0.0
UAE	99	V	300-150	777	0	0	3.8	-0.2
UAL	99	V	300-150	20493	0	0	4.5	-0.6
UPS	99	V	300-150	1191	0	0	4.3	0.1
VIR	99	V	300-150	2948	0	0	4.3	-0.2
VJT	99	V	300-150	28	75	0	22.8	0.3
VOZ	99	V	300-150	452	0	0	3.1	0.0
VPB	99	V	300-150	28	50	0	4.4	-1.6
WJA	99	V	300-150	374	1	0	3.8	0.0
XLF	99	V	300-150	169	0	0	3.7	1.1

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)

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 :  50 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : JUL 2014
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	50	29	17.7	15.4
01001	00	Z	50	30	15.6	5.6
01028	00	Z	50	31	12.3	10.1
01028	12	Z	50	31	12.5	9.3
01152	00	Z	50	29	14.9	12.9
01152	12	Z	50	30	11.9	8.1
01400	12	Z	50	31	39.0	36.0
01400	00	Z	50	28	47.3	44.8
01415	00	Z	50	29	17.0	11.8
01415	12	Z	50	28	18.3	14.7
02365	12	Z	50	31	12.2	7.5
02365	00	Z	50	29	13.8	11.8
02591	00	Z	50	28	23.8	20.8
02591	12	Z	50	26	18.2	16.8
02836	12	Z	50	31	10.9	6.0
02836	00	Z	50	31	13.3	11.8
02963	12	Z	50	29	13.2	10.9
02963	00	Z	50	39	15.3	13.4
03005	12	Z	50	31	18.2	15.9
03005	00	Z	50	30	10.4	6.3
03238	00	Z	50	26	14.0	12.2
03238	12	Z	50	5	19.2	17.3
03808	00	Z	50	30	6.0	3.4
03808	12	Z	50	31	12.0	8.1
03918	12	Z	50	11	26.0	25.4
03918	00	Z	50	25	14.9	13.0
03953	12	Z	50	30	24.9	17.8
03953	00	Z	50	28	16.3	11.6
04018	12	Z	50	21	15.8	11.6
04018	00	Z	50	23	9.6	5.9
04220	12	Z	50	30	46.4	-9.5
04220	00	Z	50	29	26.5	-11.8
04270	12	Z	50	30	17.3	1.8
04270	00	Z	50	30	21.3	-11.8
04320	12	Z	50	30	22.1	-9.0
04320	00	Z	50	31	17.6	-14.5
04339	12	Z	50	31	32.5	18.2
04339	00	Z	50	29	13.8	10.7
04360	12	Z	50	4	17.0	16.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
04360	00	Z	50	0	0.0	0.0
06011	00	Z	50	28	26.0	8.4
06011	12	Z	50	29	29.2	17.8
06260	00	Z	50	22	18.4	12.4
06260	12	Z	50	6	16.9	15.9
06610	00	Z	50	30	15.5	6.6
06610	12	Z	50	31	46.8	29.3
07110	00	Z	50	27	23.7	21.3
07110	12	Z	50	27	27.3	22.8
07510	12	Z	50	22	16.8	6.4
07510	00	Z	50	22	12.9	-0.3
07645	00	Z	50	10	16.1	14.1
07645	12	Z	50	18	26.0	22.5
07761	12	Z	50	20	17.2	12.1
07761	00	Z	50	21	14.6	3.6
08001	12	Z	50	18	13.9	2.8
08001	00	Z	50	16	27.1	15.4
08221	12	Z	50	31	15.1	7.3
08221	00	Z	50	31	12.5	10.8
08302	00	Z	50	31	9.6	7.5
08302	12	Z	50	31	9.1	-4.6
08508	12	Z	50	30	36.5	34.3
08522	12	Z	50	31	17.2	15.1
08579	12	Z	50	29	19.5	16.5
08579	00	Z	50	4	9.2	8.9
10035	12	Z	50	31	15.1	12.0
10035	00	Z	50	30	12.6	9.8
10393	12	Z	50	30	11.0	4.9
10393	00	Z	50	30	9.9	3.1
10410	12	Z	50	30	15.5	10.4
10410	00	Z	50	29	10.8	3.6
10739	12	Z	50	31	22.8	21.0
10739	00	Z	50	28	20.0	16.4
11035	00	Z	50	31	16.7	3.9
11035	12	Z	50	31	9.8	3.5
12982	00	Z	50	28	22.9	17.0
16044	12	Z	50	30	23.7	19.9
16044	00	Z	50	31	18.2	16.4
16080	12	Z	50	29	18.2	13.9
16080	00	Z	50	31	15.1	10.1
16245	12	Z	50	30	14.4	7.0
16245	00	Z	50	31	10.1	4.4
16320	12	Z	50	31	11.0	3.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16320	00	Z	50	30	11.3	5.3
16429	00	Z	50	31	13.1	10.7
16429	12	Z	50	30	13.2	10.8
16622	00	Z	50	25	30.4	28.5
16622	12	Z	50	1	16.2	16.2
16754	12	Z	50	1	4.9	4.9
16754	00	Z	50	14	20.9	19.0
17607	12	Z	50	18	24.9	-24.2
26435	00	Z	50	14	12.5	10.6
60018	12	Z	50	27	11.9	-7.3
60018	00	Z	50	31	10.6	3.4
ASDE01	12	Z	50	10	67.4	66.0
ASDE01	00	Z	50	10	63.6	62.3
ASDE02	12	Z	50	18	30.2	29.4
ASDE02	00	Z	50	16	27.7	27.2
ASDE03	12	Z	50	13	33.7	29.9
ASDE03	00	Z	50	15	19.0	16.2
ASDE04	12	Z	50	6	20.0	14.7
ASDE04	00	Z	50	6	22.5	13.0
ASDE09	12	Z	50	1	25.4	25.4
ASDK1	12	Z	50	13	42.1	40.8
ASDK1	00	Z	50	11	30.9	27.9
ASDK2	12	Z	50	7	42.0	38.3
ASDK2	00	Z	50	5	98.3	70.6
ASDK3	00	Z	50	3	62.0	60.9
ASDK3	12	Z	50	2	33.9	33.7
ASES1	12	Z	50	20	55.7	52.0
ASEU01	12	Z	50	5	26.4	25.9
ASEU02	12	Z	50	5	63.8	63.0
ASEU02	00	Z	50	6	51.2	50.4
ASEU03	12	Z	50	10	32.0	29.6
ASEU03	00	Z	50	6	14.3	13.6
ASEU04	12	Z	50	6	26.0	20.0
ASEU04	00	Z	50	1	1.9	-1.9
ASEU05	12	Z	50	7	30.3	28.6
ASEU05	00	Z	50	8	24.6	22.1
ASEU06	12	Z	50	3	34.3	28.2
ASEU06	00	Z	50	5	47.0	46.4
ASFR1	12	Z	50	10	11.3	7.2
ASFR1	00	Z	50	13	27.6	25.5
ASFR2	12	Z	50	7	28.3	26.9
ASFR2	00	Z	50	10	125.7	68.5
ASFR3	12	Z	50	9	27.4	17.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASFR3	00	Z	50	12	20.7	18.8
ASFR4	12	Z	50	13	24.1	18.5
ASFR4	00	Z	50	11	27.7	23.9
DBLK	12	Z	50	25	18.2	16.9

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                : JUL 2014
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	50	29	2.7	0.4	0.1
01001	00	V	50	30	2.6	0.1	0.2
01028	00	V	50	31	2.3	0.3	-0.1
01028	12	V	50	31	2.3	0.1	-0.4
01152	00	V	50	29	2.5	0.3	-0.7
01152	12	V	50	30	2.4	0.7	-0.5
01400	12	V	50	28	2.9	-0.1	-0.5
01400	00	V	50	24	3.3	0.2	0.0
01415	00	V	50	28	3.2	0.0	-0.2
01415	12	V	50	28	2.7	-0.5	-0.3
02365	12	V	50	31	3.0	0.5	-0.4
02365	00	V	50	29	2.8	0.4	0.1
02591	00	V	50	28	2.9	0.0	0.0
02591	12	V	50	24	2.8	0.1	-0.1
02836	12	V	50	31	2.8	-0.8	0.0
02836	00	V	50	31	2.7	-0.8	0.3
02963	12	V	50	28	3.3	0.1	-1.1
02963	00	V	50	30	2.8	-0.2	-0.8
03005	12	V	50	31	3.3	0.3	-0.4
03005	00	V	50	28	3.3	-0.1	-0.6
03238	00	V	50	25	3.2	-0.1	0.9
03238	12	V	50	5	3.2	1.3	-1.2
03808	00	V	50	28	2.6	0.3	-0.3
03808	12	V	50	31	3.1	0.3	-0.6
03918	12	V	50	11	2.0	-0.4	0.5
03918	00	V	50	23	2.8	0.5	0.3
03953	12	V	50	30	2.7	0.5	-0.2
03953	00	V	50	27	2.8	0.7	-0.4
04018	12	V	50	20	3.5	0.0	-0.9
04018	00	V	50	20	2.6	-0.2	-0.3
04220	12	V	50	30	1.9	-0.2	0.0
04220	00	V	50	28	2.4	-0.4	1.0
04270	12	V	50	30	2.6	0.0	-0.6
04270	00	V	50	29	2.5	0.1	-0.2
04320	12	V	50	30	2.1	0.0	-0.3
04320	00	V	50	30	2.6	-0.2	0.0
04339	12	V	50	7	2.4	-0.1	0.8
04339	00	V	50	12	7.7	-4.0	2.5
04360	12	V	50	4	4.2	-0.9	2.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
04360	00	V	50	0	0.0	0.0	0.0
06011	00	V	50	27	2.5	0.1	-0.4
06011	12	V	50	29	1.8	0.1	0.2
06260	00	V	50	14	2.6	-0.4	0.2
06260	12	V	50	6	2.2	0.3	0.5
06610	00	V	50	29	2.9	-0.2	-0.7
06610	12	V	50	31	3.7	-0.5	0.9
07110	00	V	50	27	3.0	-0.3	-0.1
07110	12	V	50	26	3.4	-0.3	0.6
07510	12	V	50	22	3.5	1.2	-0.5
07510	00	V	50	22	4.3	1.0	-0.2
07645	00	V	50	9	4.4	-0.7	0.3
07645	12	V	50	18	3.2	0.9	0.3
07761	12	V	50	18	3.3	-0.1	0.5
07761	00	V	50	18	3.5	0.7	1.1
08001	12	V	50	17	3.4	0.1	-0.6
08001	00	V	50	13	2.7	-0.1	0.5
08221	12	V	50	31	3.2	0.4	0.8
08221	00	V	50	31	3.6	0.1	0.6
08302	00	V	50	29	2.7	-0.1	0.2
08302	12	V	50	30	3.1	0.4	0.0
08508	12	V	50	24	3.0	0.2	0.7
08522	12	V	50	31	3.3	0.6	0.1
08579	12	V	50	29	2.7	0.2	-0.2
08579	00	V	50	4	3.1	0.7	-0.3
10035	12	V	50	31	2.8	0.2	0.3
10035	00	V	50	29	3.6	1.3	0.5
10393	12	V	50	30	3.0	1.1	0.1
10393	00	V	50	28	3.0	0.0	0.6
10410	12	V	50	30	2.7	0.3	-0.5
10410	00	V	50	28	3.3	0.0	-0.8
10739	12	V	50	31	2.7	0.0	0.1
10739	00	V	50	26	3.4	0.1	0.6
11035	00	V	50	31	3.4	0.4	0.0
11035	12	V	50	31	3.3	0.5	-0.5
12982	00	V	50	28	3.2	-0.1	0.2
16044	12	V	50	29	4.1	2.0	-0.2
16044	00	V	50	30	3.2	0.4	1.1
16080	12	V	50	29	2.5	0.0	0.5
16080	00	V	50	29	3.4	0.1	0.1
16245	12	V	50	30	4.1	0.9	0.0
16245	00	V	50	28	3.4	0.4	0.6
16320	12	V	50	31	4.5	1.8	1.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16320	00	V	50	29	3.9	0.8	0.4
16429	00	V	50	31	4.3	0.7	-1.0
16429	12	V	50	30	3.8	0.7	0.5
16622	00	V	50	22	4.1	0.2	0.1
16622	12	V	50	1	1.8	0.8	1.6
16754	12	V	50	1	5.0	-3.6	-3.4
16754	00	V	50	13	3.7	0.7	-0.2
17607	12	V	50	17	3.8	1.4	-1.5
26435	00	V	50	13	2.6	0.7	0.9
60018	12	V	50	27	4.1	0.5	1.1
60018	00	V	50	30	3.3	0.0	0.0
ASDE01	12	V	50	10	2.6	0.4	0.5
ASDE01	00	V	50	8	3.1	-0.1	1.1
ASDE02	12	V	50	17	2.7	-0.1	-0.5
ASDE02	00	V	50	16	3.0	0.8	0.4
ASDE03	12	V	50	13	2.9	0.5	-0.5
ASDE03	00	V	50	15	2.9	-0.7	-0.6
ASDE04	12	V	50	5	2.4	0.5	1.4
ASDE04	00	V	50	6	4.2	1.1	-1.1
ASDE09	12	V	50	1	1.7	1.7	-0.3
ASDK1	12	V	50	11	2.5	-0.1	-0.2
ASDK1	00	V	50	10	3.3	-0.1	0.3
ASDK2	12	V	50	7	1.8	0.5	0.6
ASDK2	00	V	50	5	3.6	-0.9	1.2
ASDK3	00	V	50	3	3.2	2.3	1.5
ASDK3	12	V	50	2	4.1	0.6	0.7
ASES1	12	V	50	20	5.1	-0.6	1.2
ASEU01	12	V	50	5	2.4	1.5	0.9
ASEU02	12	V	50	5	3.2	0.7	1.8
ASEU02	00	V	50	5	3.1	-1.3	0.3
ASEU03	12	V	50	6	2.5	-0.5	0.4
ASEU03	00	V	50	6	2.3	-0.8	-1.5
ASEU04	12	V	50	5	3.1	1.8	0.1
ASEU04	00	V	50	1	3.9	-3.6	1.4
ASEU05	12	V	50	6	2.9	-0.2	1.0
ASEU05	00	V	50	6	2.8	-0.6	-0.1
ASEU06	12	V	50	1	5.9	-5.9	-0.1
ASEU06	00	V	50	4	2.7	-0.4	-0.7
ASFR1	12	V	50	10	3.8	-0.6	0.1
ASFR1	00	V	50	13	3.9	0.6	0.5
ASFR2	12	V	50	7	2.3	-0.4	0.8
ASFR2	00	V	50	10	2.8	0.0	0.9
ASFR3	12	V	50	9	3.6	-0.2	0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASFR3	00	V	50	12	2.7	0.5	0.2
ASFR4	12	V	50	13	3.5	0.3	0.8
ASFR4	00	V	50	10	4.3	0.3	-1.0
DBLK	12	V	50	25	2.5	-0.3	0.3

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                : JUL 2014
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	100	29	8.7	4.9
01001	00	Z	100	31	10.0	-0.1
01028	00	Z	100	31	9.2	7.3
01028	12	Z	100	31	8.3	4.8
01152	00	Z	100	30	10.1	8.8
01152	12	Z	100	30	7.9	3.3
01400	12	Z	100	31	32.2	29.2
01400	00	Z	100	29	40.2	38.3
01415	00	Z	100	30	9.9	6.5
01415	12	Z	100	28	11.4	7.1
02365	12	Z	100	31	6.9	2.2
02365	00	Z	100	29	9.9	7.4
02591	00	Z	100	31	18.2	14.8
02591	12	Z	100	29	15.0	14.0
02836	12	Z	100	31	7.4	1.3
02836	00	Z	100	31	9.6	8.3
02963	12	Z	100	32	7.8	4.3
02963	00	Z	100	39	9.0	6.3
03005	12	Z	100	31	10.9	8.2
03005	00	Z	100	31	6.9	2.3
03238	00	Z	100	27	12.6	11.5
03238	12	Z	100	5	10.8	10.7
03808	00	Z	100	30	6.1	2.5
03808	12	Z	100	31	7.1	2.6
03918	12	Z	100	11	17.3	15.4
03918	00	Z	100	26	13.2	11.2
03953	12	Z	100	31	16.6	10.4
03953	00	Z	100	31	12.6	9.3
04018	12	Z	100	25	10.8	6.9
04018	00	Z	100	25	7.6	1.9
04220	12	Z	100	31	33.7	-8.0
04220	00	Z	100	30	56.3	-18.6
04270	12	Z	100	31	14.2	-1.0
04270	00	Z	100	31	17.2	-9.6
04320	12	Z	100	30	14.9	-6.1
04320	00	Z	100	31	15.0	-12.7
04339	12	Z	100	31	24.1	9.5
04339	00	Z	100	30	10.3	3.8
04360	12	Z	100	25	20.8	18.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
04360	00	Z	100	25	11.8	8.7
06011	00	Z	100	29	18.1	5.1
06011	12	Z	100	29	20.6	10.1
06260	00	Z	100	29	11.6	7.8
06260	12	Z	100	6	13.1	12.3
06610	00	Z	100	30	12.4	9.4
06610	12	Z	100	31	27.3	17.5
07110	00	Z	100	31	12.1	10.7
07110	12	Z	100	30	16.2	12.6
07510	12	Z	100	26	8.3	-1.0
07510	00	Z	100	31	10.1	-4.9
07645	00	Z	100	21	11.2	8.3
07645	12	Z	100	23	16.9	14.7
07761	12	Z	100	26	12.8	5.3
07761	00	Z	100	25	8.9	-0.2
08001	12	Z	100	29	9.9	3.3
08001	00	Z	100	23	21.7	8.4
08221	12	Z	100	30	10.6	2.9
08221	00	Z	100	31	8.1	5.7
08302	00	Z	100	31	8.0	3.8
08302	12	Z	100	31	9.9	-7.7
08508	12	Z	100	31	28.4	26.6
08522	12	Z	100	31	12.7	10.3
08579	12	Z	100	29	11.7	8.5
08579	00	Z	100	4	8.6	8.1
10035	12	Z	100	31	8.2	3.4
10035	00	Z	100	30	9.5	6.0
10393	12	Z	100	31	7.1	-1.1
10393	00	Z	100	31	8.3	-2.3
10410	12	Z	100	30	9.9	4.0
10410	00	Z	100	29	7.9	1.2
10739	12	Z	100	31	12.8	11.4
10739	00	Z	100	30	16.0	12.9
11035	00	Z	100	31	15.2	-0.2
11035	12	Z	100	31	6.8	-2.3
12982	00	Z	100	30	19.9	10.0
16044	12	Z	100	31	14.9	12.5
16044	00	Z	100	31	13.6	12.2
16080	12	Z	100	30	10.3	5.7
16080	00	Z	100	30	10.5	5.2
16245	12	Z	100	31	10.1	1.6
16245	00	Z	100	30	7.6	2.5
16320	12	Z	100	31	8.9	2.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16320	00	Z	100	30	10.6	4.4
16429	00	Z	100	30	13.2	9.6
16429	12	Z	100	30	8.3	6.1
16622	00	Z	100	26	22.9	22.0
16622	12	Z	100	1	2.6	2.6
16754	12	Z	100	1	9.4	9.4
16754	00	Z	100	19	18.7	16.8
17607	12	Z	100	33	20.1	-19.3
26435	00	Z	100	15	6.5	3.5
60018	12	Z	100	28	11.2	-8.1
60018	00	Z	100	31	8.4	1.5
ASDE01	12	Z	100	10	56.9	55.6
ASDE01	00	Z	100	11	53.8	53.0
ASDE02	12	Z	100	18	21.2	20.5
ASDE02	00	Z	100	16	21.9	21.4
ASDE03	12	Z	100	13	22.9	19.4
ASDE03	00	Z	100	15	15.2	11.3
ASDE04	12	Z	100	7	15.1	7.2
ASDE04	00	Z	100	7	12.6	7.5
ASDE09	12	Z	100	1	13.1	13.1
ASDK1	12	Z	100	13	31.6	29.9
ASDK1	00	Z	100	12	25.6	24.0
ASDK2	12	Z	100	7	31.5	29.2
ASDK2	00	Z	100	6	73.5	45.6
ASDK3	00	Z	100	3	50.0	47.7
ASDK3	12	Z	100	0	0.0	0.0
ASES1	12	Z	100	20	46.2	43.0
ASEU01	12	Z	100	5	12.2	11.5
ASEU02	12	Z	100	6	52.0	51.7
ASEU02	00	Z	100	6	47.2	46.4
ASEU03	12	Z	100	9	20.1	18.8
ASEU03	00	Z	100	7	10.5	10.3
ASEU04	12	Z	100	6	12.2	6.3
ASEU04	00	Z	100	2	10.4	-8.1
ASEU05	12	Z	100	7	25.3	23.0
ASEU05	00	Z	100	8	22.9	21.1
ASEU06	12	Z	100	4	37.7	32.0
ASEU06	00	Z	100	5	39.9	39.8
ASFR1	12	Z	100	7	8.8	6.4
ASFR1	00	Z	100	13	16.9	15.5
ASFR2	12	Z	100	9	18.6	17.8
ASFR2	00	Z	100	10	20.4	18.6
ASFR3	12	Z	100	10	15.0	8.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASFR3	00	Z	100	13	11.2	8.2
ASFR4	12	Z	100	13	14.6	10.3
ASFR4	00	Z	100	11	14.4	12.1
DBLK	12	Z	100	25	13.4	11.5

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 100 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : JUL 2014
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	100	29	2.6	0.0	-0.6
01001	00	V	100	31	2.3	0.2	-0.1
01028	00	V	100	31	2.2	-0.2	-0.5
01028	12	V	100	31	2.3	-0.1	-0.4
01152	00	V	100	30	2.6	0.2	0.0
01152	12	V	100	30	2.5	0.0	-0.1
01400	12	V	100	27	2.5	0.9	0.1
01400	00	V	100	27	2.2	0.4	0.4
01415	00	V	100	28	2.8	-0.1	0.2
01415	12	V	100	28	2.5	0.5	0.6
02365	12	V	100	31	2.4	0.3	-0.6
02365	00	V	100	29	2.4	-0.2	0.4
02591	00	V	100	30	3.0	0.2	-0.6
02591	12	V	100	28	2.5	0.2	-0.3
02836	12	V	100	31	2.5	0.3	-0.3
02836	00	V	100	31	2.6	0.0	-0.3
02963	12	V	100	31	2.6	0.3	-0.5
02963	00	V	100	31	2.4	0.0	0.0
03005	12	V	100	31	2.9	1.2	-0.6
03005	00	V	100	29	2.4	-0.6	-0.4
03238	00	V	100	26	2.9	0.1	0.5
03238	12	V	100	5	1.8	0.1	0.0
03808	00	V	100	28	2.5	-0.5	0.5
03808	12	V	100	31	3.0	0.7	0.5
03918	12	V	100	11	3.2	-0.9	0.8
03918	00	V	100	24	3.0	-0.7	-0.5
03953	12	V	100	31	2.8	0.4	0.5
03953	00	V	100	31	2.6	0.4	-0.2
04018	12	V	100	23	2.7	0.6	-0.1
04018	00	V	100	23	2.0	0.2	0.1
04220	12	V	100	31	2.0	0.4	0.3
04220	00	V	100	29	1.9	0.1	-0.2
04270	12	V	100	31	2.7	0.4	0.5
04270	00	V	100	30	2.9	0.2	0.2
04320	12	V	100	30	2.1	0.3	0.3
04320	00	V	100	30	1.7	-0.1	0.0
04339	12	V	100	6	4.8	-2.3	1.1
04339	00	V	100	12	4.6	1.1	0.1
04360	12	V	100	25	2.4	-0.5	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
04360	00	V	100	25	2.5	-0.7	0.2
06011	00	V	100	28	2.4	0.0	0.5
06011	12	V	100	29	2.4	-0.1	-0.3
06260	00	V	100	29	2.8	0.3	0.2
06260	12	V	100	6	2.2	0.9	0.6
06610	00	V	100	29	3.3	-0.6	-0.7
06610	12	V	100	31	3.2	0.6	0.2
07110	00	V	100	29	3.0	0.6	0.5
07110	12	V	100	30	2.9	0.3	0.2
07510	12	V	100	24	3.5	1.2	-0.5
07510	00	V	100	28	3.3	0.4	-0.1
07645	00	V	100	17	3.5	0.4	-0.3
07645	12	V	100	20	3.2	0.3	0.2
07761	12	V	100	24	3.9	1.0	-0.1
07761	00	V	100	21	3.1	0.4	-0.4
08001	12	V	100	29	3.2	0.2	-0.2
08001	00	V	100	22	3.5	0.5	0.6
08221	12	V	100	30	3.6	-0.6	0.0
08221	00	V	100	31	3.9	0.7	0.9
08302	00	V	100	30	3.7	-0.2	0.7
08302	12	V	100	31	3.6	0.5	0.1
08508	12	V	100	27	2.8	-0.2	0.1
08522	12	V	100	31	3.5	0.9	-0.7
08579	12	V	100	28	3.3	-0.1	0.8
08579	00	V	100	4	3.3	-0.7	0.6
10035	12	V	100	31	2.6	-0.3	-0.7
10035	00	V	100	29	2.8	-0.1	-0.2
10393	12	V	100	31	2.6	0.4	0.0
10393	00	V	100	29	3.5	-0.5	-0.5
10410	12	V	100	30	2.6	0.5	-0.3
10410	00	V	100	28	2.7	0.4	0.1
10739	12	V	100	31	2.5	0.1	0.0
10739	00	V	100	29	3.1	0.2	0.4
11035	00	V	100	31	2.9	0.0	0.3
11035	12	V	100	31	3.4	-0.4	-0.2
12982	00	V	100	30	3.6	-0.2	0.3
16044	12	V	100	30	3.1	-0.2	-0.1
16044	00	V	100	30	3.5	0.3	-0.4
16080	12	V	100	29	3.9	0.5	-1.1
16080	00	V	100	29	3.8	-0.3	0.2
16245	12	V	100	30	4.4	0.1	-0.9
16245	00	V	100	28	4.2	0.0	-0.2
16320	12	V	100	31	4.7	0.3	0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16320	00	V	100	29	4.8	-1.0	-0.1
16429	00	V	100	30	5.7	0.6	0.8
16429	12	V	100	30	4.5	0.6	0.4
16622	00	V	100	25	4.5	-0.2	0.1
16622	12	V	100	1	4.0	3.0	2.6
16754	12	V	100	1	3.1	-3.0	0.7
16754	00	V	100	18	3.3	-0.7	0.1
17607	12	V	100	18	3.5	-0.5	-0.2
26435	00	V	100	15	2.9	-0.1	0.2
60018	12	V	100	28	3.0	0.3	-0.1
60018	00	V	100	31	3.7	-1.3	-0.3
ASDE01	12	V	100	10	3.4	-0.2	-0.4
ASDE01	00	V	100	8	2.6	-0.9	0.2
ASDE02	12	V	100	18	2.5	0.3	-0.4
ASDE02	00	V	100	16	2.8	0.3	1.2
ASDE03	12	V	100	13	3.0	0.5	0.2
ASDE03	00	V	100	15	3.2	-1.2	0.7
ASDE04	12	V	100	6	2.7	-0.4	0.5
ASDE04	00	V	100	7	3.2	1.8	0.1
ASDE09	12	V	100	1	4.9	4.9	0.6
ASDK1	12	V	100	12	3.3	0.5	-0.4
ASDK1	00	V	100	12	2.7	-0.1	1.0
ASDK2	12	V	100	7	3.7	0.1	0.4
ASDK2	00	V	100	6	2.7	-0.1	0.3
ASDK3	00	V	100	3	2.7	0.9	-0.2
ASDK3	12	V	100	0	0.0	0.0	0.0
ASES1	12	V	100	19	4.5	0.1	1.1
ASEU01	12	V	100	5	3.8	-1.6	-0.3
ASEU02	12	V	100	6	3.1	0.7	-0.2
ASEU02	00	V	100	5	5.0	0.4	2.0
ASEU03	12	V	100	7	3.4	-1.2	-0.8
ASEU03	00	V	100	7	2.7	-1.4	0.3
ASEU04	12	V	100	5	2.4	0.2	-0.4
ASEU04	00	V	100	1	1.2	1.0	-0.6
ASEU05	12	V	100	7	3.7	-0.9	0.8
ASEU05	00	V	100	8	4.3	-0.4	1.2
ASEU06	12	V	100	4	3.6	1.4	-0.1
ASEU06	00	V	100	5	3.4	-0.2	-0.4
ASFR1	12	V	100	7	4.2	-0.9	-2.0
ASFR1	00	V	100	13	3.0	-0.1	0.7
ASFR2	12	V	100	9	2.6	0.8	0.3
ASFR2	00	V	100	10	5.2	0.3	0.3
ASFR3	12	V	100	10	2.9	0.6	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASFR3	00	V	100	12	2.9	0.7	-1.3
ASFR4	12	V	100	12	3.1	1.0	0.2
ASFR4	00	V	100	11	2.8	-0.3	0.9
DBLK	12	V	100	25	2.9	0.5	0.2

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 500 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : JUL 2014
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	500	29	8.5	5.5
01001	00	Z	500	31	7.8	3.3
01028	00	Z	500	31	8.0	7.1
01028	12	Z	500	31	7.8	5.1
01152	00	Z	500	30	9.2	8.4
01152	12	Z	500	30	8.1	6.4
01400	12	Z	500	31	33.3	30.2
01400	00	Z	500	30	33.6	33.0
01415	00	Z	500	30	6.4	5.4
01415	12	Z	500	28	10.1	8.2
02365	12	Z	500	31	5.8	4.2
02365	00	Z	500	29	6.8	4.9
02591	00	Z	500	31	16.5	14.4
02591	12	Z	500	30	15.6	14.9
02836	12	Z	500	31	5.0	4.3
02836	00	Z	500	31	7.2	6.8
02963	12	Z	500	32	6.6	4.8
02963	00	Z	500	39	8.2	7.0
03005	12	Z	500	31	5.3	1.0
03005	00	Z	500	31	5.3	0.9
03238	00	Z	500	27	11.8	11.0
03238	12	Z	500	6	8.6	6.6
03808	00	Z	500	31	4.7	3.1
03808	12	Z	500	31	5.3	3.8
03918	12	Z	500	11	10.5	9.5
03918	00	Z	500	26	11.4	11.2
03953	12	Z	500	31	9.4	6.9
03953	00	Z	500	31	8.9	7.5
04018	12	Z	500	25	4.8	2.8
04018	00	Z	500	27	4.5	1.2
04220	12	Z	500	31	17.3	6.2
04220	00	Z	500	31	17.3	5.5
04270	12	Z	500	31	9.4	5.7
04270	00	Z	500	31	6.5	0.7
04320	12	Z	500	31	6.9	4.2
04320	00	Z	500	31	5.2	1.5
04339	12	Z	500	31	10.6	2.6
04339	00	Z	500	30	7.2	-0.5
04360	12	Z	500	26	10.2	8.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
04360	00	Z	500	26	6.9	3.8
06011	00	Z	500	30	9.1	3.3
06011	12	Z	500	29	10.1	4.7
06260	00	Z	500	30	7.3	5.3
06260	12	Z	500	6	9.1	8.1
06610	00	Z	500	30	7.4	6.2
06610	12	Z	500	31	9.3	7.4
07110	00	Z	500	31	7.6	5.2
07110	12	Z	500	32	8.5	6.6
07510	12	Z	500	27	5.3	-0.6
07510	00	Z	500	31	7.6	-3.7
07645	00	Z	500	25	5.0	1.7
07645	12	Z	500	33	9.8	7.6
07761	12	Z	500	32	7.3	5.0
07761	00	Z	500	29	5.9	-1.3
08001	12	Z	500	29	6.4	3.4
08001	00	Z	500	24	19.7	8.6
08221	12	Z	500	30	9.4	7.7
08221	00	Z	500	31	10.4	9.2
08302	00	Z	500	31	5.3	3.4
08302	12	Z	500	31	4.7	-0.7
08508	12	Z	500	31	24.6	23.1
08522	12	Z	500	31	9.1	8.2
08579	12	Z	500	31	7.3	5.7
08579	00	Z	500	4	5.7	4.4
10035	12	Z	500	32	5.8	3.4
10035	00	Z	500	30	7.7	5.4
10393	12	Z	500	31	4.1	0.1
10393	00	Z	500	32	5.2	-1.0
10410	12	Z	500	30	5.8	2.8
10410	00	Z	500	29	4.6	2.2
10739	12	Z	500	31	12.3	11.6
10739	00	Z	500	30	12.9	11.1
11035	00	Z	500	31	16.3	-1.5
11035	12	Z	500	31	5.6	-1.1
12982	00	Z	500	31	17.4	7.7
16044	12	Z	500	31	7.9	6.5
16044	00	Z	500	31	6.1	4.4
16080	12	Z	500	30	7.4	2.1
16080	00	Z	500	30	6.4	2.8
16245	12	Z	500	31	5.4	-0.1
16245	00	Z	500	30	6.6	0.5
16320	12	Z	500	31	6.7	0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16320	00	Z	500	30	6.9	2.7
16429	00	Z	500	30	9.4	7.1
16429	12	Z	500	32	6.8	5.2
16622	00	Z	500	26	19.3	18.8
16622	12	Z	500	1	2.2	-2.2
16754	12	Z	500	1	0.7	0.7
16754	00	Z	500	20	13.7	11.4
17607	12	Z	500	33	5.1	3.1
26435	00	Z	500	15	6.4	5.8
60018	12	Z	500	29	8.5	-6.7
60018	00	Z	500	31	7.4	-4.6
ASDE01	12	Z	500	11	46.9	45.6
ASDE01	00	Z	500	11	49.2	48.5
ASDE02	12	Z	500	18	13.8	12.4
ASDE02	00	Z	500	16	16.0	15.4
ASDE03	12	Z	500	13	13.2	10.1
ASDE03	00	Z	500	16	9.7	5.7
ASDE04	12	Z	500	7	8.1	-3.7
ASDE04	00	Z	500	7	8.0	-0.9
ASDE09	12	Z	500	1	6.7	6.7
ASDK1	12	Z	500	14	21.7	20.2
ASDK1	00	Z	500	12	20.7	19.2
ASDK2	12	Z	500	7	16.4	11.3
ASDK2	00	Z	500	6	29.0	20.1
ASDK3	00	Z	500	4	31.6	20.6
ASDK3	12	Z	500	0	0.0	0.0
ASES1	12	Z	500	20	26.8	24.9
ASEU01	12	Z	500	5	6.0	5.1
ASEU02	12	Z	500	6	42.8	42.2
ASEU02	00	Z	500	7	39.6	38.8
ASEU03	12	Z	500	11	11.4	10.4
ASEU03	00	Z	500	9	8.2	6.9
ASEU04	12	Z	500	6	8.7	-5.8
ASEU04	00	Z	500	3	7.9	-6.9
ASEU05	12	Z	500	10	15.9	12.8
ASEU05	00	Z	500	9	20.0	17.4
ASEU06	12	Z	500	5	33.8	31.8
ASEU06	00	Z	500	6	35.8	35.7
ASFR1	12	Z	500	7	4.9	0.8
ASFR1	00	Z	500	14	6.7	0.7
ASFR2	12	Z	500	10	6.4	3.3
ASFR2	00	Z	500	11	6.9	0.4
ASFR3	12	Z	500	11	6.3	-0.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASFR3	00	Z	500	13	6.9	-1.7
ASFR4	12	Z	500	14	9.6	1.0
ASFR4	00	Z	500	13	6.8	0.4
DBLK	12	Z	500	25	8.6	7.4

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 500 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : JUL 2014
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	500	29	2.7	0.1	-0.1
01001	00	V	500	31	2.9	-0.3	-0.4
01028	00	V	500	31	2.1	-0.1	-0.3
01028	12	V	500	31	2.5	-0.4	-0.7
01152	00	V	500	30	2.0	-0.1	-0.1
01152	12	V	500	30	2.3	-0.1	0.0
01400	12	V	500	30	2.6	0.5	-0.2
01400	00	V	500	30	2.3	0.5	0.3
01415	00	V	500	29	2.3	0.0	0.1
01415	12	V	500	28	3.0	0.3	0.7
02365	12	V	500	31	2.1	0.4	-0.5
02365	00	V	500	29	2.1	0.1	0.5
02591	00	V	500	31	2.3	-0.3	0.3
02591	12	V	500	30	2.0	0.4	0.0
02836	12	V	500	31	2.4	0.1	0.0
02836	00	V	500	31	2.5	0.0	0.0
02963	12	V	500	31	2.4	0.6	0.3
02963	00	V	500	31	2.5	0.3	0.6
03005	12	V	500	31	2.6	0.0	0.0
03005	00	V	500	29	2.9	0.1	0.1
03238	00	V	500	26	2.5	0.1	0.8
03238	12	V	500	6	2.1	0.2	1.4
03808	00	V	500	28	3.0	0.4	-0.1
03808	12	V	500	31	3.5	0.6	0.3
03918	12	V	500	11	2.8	0.6	-1.0
03918	00	V	500	25	3.3	-0.4	0.2
03953	12	V	500	31	2.7	0.3	0.1
03953	00	V	500	31	3.1	-0.2	0.0
04018	12	V	500	25	3.9	-0.7	-0.1
04018	00	V	500	25	2.7	-0.2	-0.2
04220	12	V	500	31	2.1	0.1	-0.1
04220	00	V	500	30	2.1	-0.1	0.1
04270	12	V	500	31	2.4	0.1	-0.1
04270	00	V	500	30	2.9	0.7	-0.4
04320	12	V	500	31	2.1	-0.1	0.2
04320	00	V	500	30	2.3	0.1	-0.1
04339	12	V	500	7	5.7	-1.1	0.9
04339	00	V	500	17	4.5	0.1	-1.1
04360	12	V	500	26	2.2	-0.1	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
04360	00	V	500	26	2.3	-0.1	-0.5
06011	00	V	500	29	2.9	-0.1	-0.6
06011	12	V	500	29	2.6	-0.5	0.2
06260	00	V	500	30	2.9	-0.1	-0.1
06260	12	V	500	6	3.3	1.1	-1.0
06610	00	V	500	29	2.6	0.2	-0.4
06610	12	V	500	31	2.6	0.0	-0.4
07110	00	V	500	29	3.3	-0.1	0.0
07110	12	V	500	31	2.8	-0.3	-0.4
07510	12	V	500	27	3.1	0.0	0.4
07510	00	V	500	30	2.6	0.0	0.9
07645	00	V	500	22	3.5	1.4	0.1
07645	12	V	500	31	3.1	0.8	0.8
07761	12	V	500	30	3.5	-0.2	0.7
07761	00	V	500	25	3.7	-0.5	0.1
08001	12	V	500	29	2.7	0.4	0.8
08001	00	V	500	23	2.6	-0.3	-0.4
08221	12	V	500	30	2.9	-0.3	-1.0
08221	00	V	500	31	2.1	0.0	0.2
08302	00	V	500	30	3.1	0.7	0.2
08302	12	V	500	31	3.4	0.1	-0.3
08508	12	V	500	31	2.8	0.9	-0.2
08522	12	V	500	31	2.5	0.1	-0.7
08579	12	V	500	31	2.7	0.1	-0.4
08579	00	V	500	4	4.2	-2.6	1.5
10035	12	V	500	31	2.9	-0.3	0.1
10035	00	V	500	29	2.1	0.1	0.2
10393	12	V	500	31	2.5	0.2	0.2
10393	00	V	500	30	2.6	-0.3	0.3
10410	12	V	500	30	2.2	-0.4	-0.1
10410	00	V	500	28	2.4	-0.1	0.5
10739	12	V	500	31	2.8	-0.3	-0.5
10739	00	V	500	29	3.4	-0.3	0.2
11035	00	V	500	31	3.1	0.3	0.4
11035	12	V	500	31	3.2	0.6	0.1
12982	00	V	500	31	3.3	0.0	-0.4
16044	12	V	500	30	2.5	0.2	-0.2
16044	00	V	500	30	3.2	0.8	-0.1
16080	12	V	500	30	3.1	0.2	-0.7
16080	00	V	500	29	3.3	0.3	-0.6
16245	12	V	500	31	3.5	1.1	0.3
16245	00	V	500	28	2.5	0.1	0.1
16320	12	V	500	31	2.6	0.6	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16320	00	V	500	29	3.4	1.0	0.5
16429	00	V	500	30	3.5	1.1	0.5
16429	12	V	500	30	2.6	0.8	0.0
16622	00	V	500	26	2.0	0.2	-0.3
16622	12	V	500	1	3.9	0.8	-3.8
16754	12	V	500	1	3.5	2.6	2.3
16754	00	V	500	18	2.3	0.0	-0.3
17607	12	V	500	18	1.5	0.4	0.1
26435	00	V	500	15	1.9	0.9	0.4
60018	12	V	500	29	3.3	0.6	-0.2
60018	00	V	500	31	2.9	0.3	0.9
ASDE01	12	V	500	11	2.6	-0.7	0.7
ASDE01	00	V	500	11	2.1	0.0	-0.1
ASDE02	12	V	500	18	2.5	-0.1	0.0
ASDE02	00	V	500	16	2.6	0.2	-0.4
ASDE03	12	V	500	13	1.7	0.2	-0.3
ASDE03	00	V	500	16	2.1	0.6	0.1
ASDE04	12	V	500	7	2.5	0.1	0.7
ASDE04	00	V	500	7	2.1	-0.2	1.0
ASDE09	12	V	500	1	2.2	-1.6	1.5
ASDK1	12	V	500	14	2.3	-0.3	0.0
ASDK1	00	V	500	12	2.9	-1.0	0.2
ASDK2	12	V	500	7	3.0	-0.1	0.0
ASDK2	00	V	500	6	5.6	-1.3	1.6
ASDK3	00	V	500	4	1.2	-0.4	0.8
ASDK3	12	V	500	0	0.0	0.0	0.0
ASES1	12	V	500	20	2.8	-0.4	-1.2
ASEU01	12	V	500	5	3.8	-0.9	-1.2
ASEU02	12	V	500	6	3.5	0.9	0.4
ASEU02	00	V	500	6	1.8	0.4	0.7
ASEU03	12	V	500	11	3.1	-0.4	-0.5
ASEU03	00	V	500	9	2.6	-0.3	0.8
ASEU04	12	V	500	6	4.3	0.1	-0.5
ASEU04	00	V	500	3	1.4	-0.5	-0.4
ASEU05	12	V	500	10	2.1	-0.7	0.4
ASEU05	00	V	500	9	3.4	-1.0	1.2
ASEU06	12	V	500	5	3.0	-0.2	-1.1
ASEU06	00	V	500	6	2.6	0.4	-0.1
ASFR1	12	V	500	7	2.6	-1.3	-0.1
ASFR1	00	V	500	14	2.5	-0.1	0.2
ASFR2	12	V	500	10	2.1	0.9	0.6
ASFR2	00	V	500	11	2.2	0.1	0.5
ASFR3	12	V	500	11	3.0	0.3	-0.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASFR3	00	V	500	13	2.2	-0.1	-0.2
ASFR4	12	V	500	14	2.9	0.1	-0.4
ASFR4	00	V	500	13	2.6	0.3	0.2
DBLK	12	V	500	25	2.8	-0.3	-0.5

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 850 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : JUL 2014
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	850	29	6.0	1.9
01001	00	Z	850	31	5.5	1.8
01028	00	Z	850	31	3.2	2.1
01028	12	Z	850	31	4.7	3.2
01152	00	Z	850	30	3.7	2.8
01152	12	Z	850	30	4.9	4.2
01400	12	Z	850	31	30.2	27.4
01400	00	Z	850	31	27.2	26.9
01415	00	Z	850	30	4.1	3.4
01415	12	Z	850	28	4.8	4.2
02365	12	Z	850	31	4.8	3.4
02365	00	Z	850	29	2.6	1.4
02591	00	Z	850	31	10.9	10.3
02591	12	Z	850	30	13.8	13.6
02836	12	Z	850	31	4.2	3.3
02836	00	Z	850	31	4.0	3.4
02963	12	Z	850	32	4.2	3.2
02963	00	Z	850	39	3.2	2.7
03005	12	Z	850	31	2.2	0.1
03005	00	Z	850	31	2.8	-1.0
03238	00	Z	850	27	7.4	7.3
03238	12	Z	850	6	6.1	5.6
03808	00	Z	850	31	2.6	0.6
03808	12	Z	850	31	2.0	0.1
03918	12	Z	850	11	8.0	7.8
03918	00	Z	850	26	8.9	8.7
03953	12	Z	850	31	4.3	3.7
03953	00	Z	850	31	5.8	5.0
04018	12	Z	850	25	2.3	1.2
04018	00	Z	850	27	3.0	1.8
04220	12	Z	850	31	18.0	7.2
04220	00	Z	850	31	16.0	6.0
04270	12	Z	850	31	7.4	6.6
04270	00	Z	850	31	5.1	3.8
04320	12	Z	850	31	7.4	6.8
04320	00	Z	850	31	6.4	6.0
04339	12	Z	850	31	5.4	-0.2
04339	00	Z	850	30	5.6	-1.9
04360	12	Z	850	26	6.4	5.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
04360	00	Z	850	27	4.4	2.2
06011	00	Z	850	30	4.0	2.3
06011	12	Z	850	29	6.0	5.3
06260	00	Z	850	31	4.2	1.9
06260	12	Z	850	6	3.4	3.0
06610	00	Z	850	31	4.3	3.2
06610	12	Z	850	31	4.4	3.2
07110	00	Z	850	31	3.7	2.4
07110	12	Z	850	32	4.2	2.7
07510	12	Z	850	27	3.4	-0.8
07510	00	Z	850	31	4.5	-3.0
07645	00	Z	850	25	4.9	-3.4
07645	12	Z	850	33	2.5	0.2
07761	12	Z	850	33	3.6	0.2
07761	00	Z	850	29	4.3	-2.3
08001	12	Z	850	29	4.1	-0.5
08001	00	Z	850	24	18.1	3.4
08221	12	Z	850	30	4.9	4.1
08221	00	Z	850	31	4.8	3.9
08302	00	Z	850	31	3.1	0.4
08302	12	Z	850	31	2.6	-1.2
08508	12	Z	850	31	20.6	19.3
08522	12	Z	850	31	3.8	3.2
08579	12	Z	850	31	3.2	2.2
08579	00	Z	850	4	2.7	2.5
10035	12	Z	850	32	3.8	1.0
10035	00	Z	850	30	4.1	1.3
10393	12	Z	850	31	4.3	-3.2
10393	00	Z	850	32	4.3	-3.5
10410	12	Z	850	30	2.4	0.2
10410	00	Z	850	29	2.1	-0.2
10739	12	Z	850	31	9.8	9.6
10739	00	Z	850	31	10.4	9.7
11035	00	Z	850	31	16.5	-5.1
11035	12	Z	850	31	4.3	-0.9
12982	00	Z	850	31	17.2	7.0
16044	12	Z	850	31	4.2	3.4
16044	00	Z	850	31	4.2	2.7
16080	12	Z	850	31	4.3	-1.4
16080	00	Z	850	31	4.8	0.6
16245	12	Z	850	31	4.8	-2.1
16245	00	Z	850	30	4.9	-2.4
16320	12	Z	850	31	6.2	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16320	00	Z	850	30	6.3	-1.3
16429	00	Z	850	31	7.9	4.7
16429	12	Z	850	32	4.8	3.8
16622	00	Z	850	26	13.8	13.5
16622	12	Z	850	1	5.3	5.3
16754	12	Z	850	1	2.3	2.3
16754	00	Z	850	21	8.7	7.2
17607	12	Z	850	33	3.2	0.6
26435	00	Z	850	15	2.9	2.4
60018	12	Z	850	29	13.0	-12.3
60018	00	Z	850	31	12.5	-11.9
ASDE01	12	Z	850	11	41.3	40.9
ASDE01	00	Z	850	11	43.1	42.5
ASDE02	12	Z	850	18	7.8	7.1
ASDE02	00	Z	850	16	8.7	8.3
ASDE03	12	Z	850	13	6.5	2.3
ASDE03	00	Z	850	16	7.0	1.9
ASDE04	12	Z	850	7	13.5	-10.3
ASDE04	00	Z	850	7	10.7	-8.4
ASDE09	12	Z	850	1	2.8	-2.8
ASDK1	12	Z	850	14	17.6	15.7
ASDK1	00	Z	850	12	16.0	15.4
ASDK2	12	Z	850	7	16.1	7.6
ASDK2	00	Z	850	6	18.2	10.4
ASDK3	00	Z	850	4	35.3	17.8
ASDK3	12	Z	850	0	0.0	0.0
ASES1	12	Z	850	20	16.2	14.4
ASEU01	12	Z	850	5	4.5	0.2
ASEU02	12	Z	850	6	35.9	35.6
ASEU02	00	Z	850	7	35.5	35.1
ASEU03	12	Z	850	11	7.9	4.9
ASEU03	00	Z	850	9	3.8	3.1
ASEU04	12	Z	850	6	9.2	-8.5
ASEU04	00	Z	850	4	8.9	-4.9
ASEU05	12	Z	850	10	13.8	9.6
ASEU05	00	Z	850	9	15.2	11.8
ASEU06	12	Z	850	5	30.9	29.9
ASEU06	00	Z	850	7	34.9	34.9
ASFR1	12	Z	850	7	7.4	-6.7
ASFR1	00	Z	850	14	4.9	-3.9
ASFR2	12	Z	850	10	5.8	-5.2
ASFR2	00	Z	850	12	6.6	-6.4
ASFR3	12	Z	850	11	5.4	-4.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASFR3	00	Z	850	13	4.8	-4.2
ASFR4	12	Z	850	14	6.8	-4.2
ASFR4	00	Z	850	13	6.7	-5.6
DBLK	12	Z	850	25	4.3	3.1

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 850 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : JUL 2014
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	850	29	3.5	0.0	0.3
01001	00	V	850	31	3.2	0.2	-0.8
01028	00	V	850	31	2.1	-0.3	-0.8
01028	12	V	850	31	2.0	0.3	0.0
01152	00	V	850	29	2.5	0.0	0.3
01152	12	V	850	30	2.7	-0.8	0.2
01400	12	V	850	30	2.5	0.2	-0.3
01400	00	V	850	31	2.1	-0.1	0.2
01415	00	V	850	29	3.1	-0.8	1.1
01415	12	V	850	28	2.6	-0.1	0.0
02365	12	V	850	31	2.3	0.1	-0.6
02365	00	V	850	29	2.2	-0.4	-0.4
02591	00	V	850	31	2.7	0.3	-0.7
02591	12	V	850	30	2.4	0.2	0.0
02836	12	V	850	31	2.5	0.2	-0.4
02836	00	V	850	31	2.5	0.3	-0.1
02963	12	V	850	31	2.5	-0.5	-0.6
02963	00	V	850	31	2.1	-0.5	0.1
03005	12	V	850	31	3.0	0.3	0.3
03005	00	V	850	29	2.8	0.1	0.6
03238	00	V	850	26	2.4	0.4	0.8
03238	12	V	850	6	2.6	0.2	-1.0
03808	00	V	850	28	2.9	-0.8	0.7
03808	12	V	850	31	2.1	0.6	0.0
03918	12	V	850	11	3.2	0.3	-0.5
03918	00	V	850	25	2.7	0.4	0.3
03953	12	V	850	30	3.5	0.3	0.4
03953	00	V	850	31	2.5	0.0	-0.5
04018	12	V	850	25	2.6	0.1	0.3
04018	00	V	850	25	2.6	-0.6	-0.1
04220	12	V	850	31	2.6	-0.1	0.9
04220	00	V	850	30	2.3	0.0	0.7
04270	12	V	850	31	3.8	0.3	-0.1
04270	00	V	850	30	2.5	-0.4	-0.2
04320	12	V	850	31	2.9	-0.5	-0.7
04320	00	V	850	30	2.6	0.4	-0.2
04339	12	V	850	8	3.6	-2.4	-0.3
04339	00	V	850	14	4.7	-0.7	-0.4
04360	12	V	850	26	2.7	-0.6	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
04360	00	V	850	27	3.4	-0.7	-0.4
06011	00	V	850	29	2.5	0.0	0.1
06011	12	V	850	29	2.4	0.2	-0.3
06260	00	V	850	31	2.8	0.2	0.2
06260	12	V	850	6	2.1	-0.6	0.9
06610	00	V	850	30	3.2	0.8	0.0
06610	12	V	850	31	3.4	0.4	0.9
07110	00	V	850	29	2.9	-0.2	-0.4
07110	12	V	850	31	2.3	0.4	-0.4
07510	12	V	850	27	3.0	0.1	0.6
07510	00	V	850	30	3.7	0.8	-0.1
07645	00	V	850	22	3.9	0.6	0.4
07645	12	V	850	31	3.8	0.4	0.1
07761	12	V	850	31	4.3	-0.4	-0.2
07761	00	V	850	25	3.7	-0.6	0.8
08001	12	V	850	29	2.3	-0.4	0.2
08001	00	V	850	23	2.0	0.0	0.5
08221	12	V	850	30	2.1	0.3	-0.1
08221	00	V	850	31	3.5	0.9	-0.3
08302	00	V	850	30	3.0	-0.9	0.5
08302	12	V	850	31	3.0	0.7	0.0
08508	12	V	850	31	2.8	-0.5	-0.5
08522	12	V	850	31	2.7	-0.8	0.1
08579	12	V	850	30	2.2	0.1	-0.2
08579	00	V	850	4	2.3	0.3	-1.4
10035	12	V	850	31	2.5	-0.2	0.2
10035	00	V	850	29	3.2	-0.4	0.8
10393	12	V	850	31	2.7	0.3	0.0
10393	00	V	850	30	2.8	0.0	-0.2
10410	12	V	850	30	2.4	0.2	-0.1
10410	00	V	850	28	2.8	0.8	-0.6
10739	12	V	850	31	2.2	0.0	0.6
10739	00	V	850	30	3.2	1.2	-0.3
11035	00	V	850	31	3.2	-0.3	-0.5
11035	12	V	850	31	2.6	0.2	-0.2
12982	00	V	850	31	3.5	0.3	0.0
16044	12	V	850	31	3.6	0.3	-0.4
16044	00	V	850	30	3.0	-0.1	0.1
16080	12	V	850	31	3.3	0.1	-0.1
16080	00	V	850	30	3.1	0.7	0.7
16245	12	V	850	31	3.0	0.0	-0.1
16245	00	V	850	28	3.8	0.5	0.7
16320	12	V	850	31	2.5	0.9	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16320	00	V	850	29	3.3	-0.6	0.2
16429	00	V	850	30	2.0	-0.2	0.0
16429	12	V	850	30	2.6	-0.4	0.0
16622	00	V	850	26	3.1	-0.1	-0.7
16622	12	V	850	1	0.4	0.4	0.2
16754	12	V	850	1	6.5	-3.8	-5.3
16754	00	V	850	19	2.5	0.1	0.2
17607	12	V	850	18	2.9	0.7	-1.5
26435	00	V	850	15	2.4	0.0	0.1
60018	12	V	850	29	3.8	-0.5	0.8
60018	00	V	850	31	3.4	-0.2	0.1
ASDE01	12	V	850	11	2.6	1.1	-0.7
ASDE01	00	V	850	11	2.1	0.5	0.3
ASDE02	12	V	850	18	2.6	0.2	-0.1
ASDE02	00	V	850	16	2.2	0.3	-0.3
ASDE03	12	V	850	13	2.5	0.0	-0.3
ASDE03	00	V	850	16	2.6	-0.9	0.1
ASDE04	12	V	850	7	3.5	-0.5	-0.6
ASDE04	00	V	850	7	2.0	-0.8	-0.3
ASDE09	12	V	850	1	3.4	-2.3	2.5
ASDK1	12	V	850	14	2.6	-0.3	0.5
ASDK1	00	V	850	12	2.7	-0.4	0.2
ASDK2	12	V	850	7	3.2	0.4	0.8
ASDK2	00	V	850	6	2.4	0.6	1.4
ASDK3	00	V	850	4	2.4	-1.4	0.6
ASDK3	12	V	850	0	0.0	0.0	0.0
ASES1	12	V	850	20	2.6	0.7	-0.1
ASEU01	12	V	850	5	3.2	1.2	-0.1
ASEU02	12	V	850	6	3.6	0.6	-0.1
ASEU02	00	V	850	6	2.6	-0.1	0.0
ASEU03	12	V	850	11	2.9	1.0	-0.3
ASEU03	00	V	850	9	3.7	-0.4	0.3
ASEU04	12	V	850	6	2.4	0.8	-0.7
ASEU04	00	V	850	4	1.6	-0.1	0.2
ASEU05	12	V	850	10	2.5	0.0	-0.4
ASEU05	00	V	850	9	2.8	0.9	-1.0
ASEU06	12	V	850	5	4.1	1.6	-1.0
ASEU06	00	V	850	7	3.2	-1.6	0.2
ASFR1	12	V	850	7	3.8	-0.9	-1.2
ASFR1	00	V	850	14	2.4	-0.1	1.2
ASFR2	12	V	850	10	2.2	0.1	0.0
ASFR2	00	V	850	12	1.5	-0.3	-0.1
ASFR3	12	V	850	11	3.4	0.1	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASFR3	00	V	850	13	2.5	0.1	0.9
ASFR4	12	V	850	14	2.2	-0.4	0.0
ASFR4	00	V	850	13	2.2	-0.8	0.2
DBLK	12	V	850	25	3.0	0.6	-0.6

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                 : JUL 2014
         STANDARD OF COMPARISON: FIRST-GUESS FIELD


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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
03380	99	P	SUR	54	0	217	0	0.3	0.0	0.3
12050	99	P	SUR	34	32	187	0	0.3	0.6	0.7
13001	99	P	SUR	11	-23	149	0	0.4	-0.2	0.4
13008	99	P	SUR	15	-38	87	0	0.2	-0.1	0.3
13633	99	P	SUR	38	-31	211	0	0.6	-0.1	0.6
13659	99	P	SUR	24	-39	217	0	0.2	0.1	0.2
13660	99	P	SUR	29	-52	217	0	0.7	-0.3	0.8
13662	99	P	SUR	22	-32	217	0	0.3	0.1	0.3
13664	99	P	SUR	24	-32	217	0	0.9	0.5	1.0
13667	99	P	SUR	11	-18	190	0	0.4	-0.5	0.6
25619	99	P	SUR	84	33	217	0	0.4	-0.4	0.6
25624	99	P	SUR	87	33	217	0	0.4	-0.2	0.4
26535	99	P	SUR	82	19	217	0	3.1	-1.8	3.6
26556	99	P	SUR	79	-14	127	0	0.5	-0.6	0.8
41040	99	P	SUR	15	-53	217	0	0.3	0.0	0.3
41041	99	P	SUR	14	-46	208	0	0.3	0.1	0.3
41043	99	P	SUR	21	-65	216	0	0.3	0.5	0.6
41044	99	P	SUR	22	-59	215	0	0.2	-0.1	0.3
41046	99	P	SUR	24	-68	222	0	0.3	-0.4	0.5
41048	99	P	SUR	32	-70	214	0	0.4	-0.4	0.6
41049	99	P	SUR	28	-63	212	0	0.4	-0.4	0.5
41051	99	P	SUR	18	-65	119	0	0.3	-0.4	0.5
41052	99	P	SUR	18	-65	225	0	0.5	-0.5	0.7
41053	99	P	SUR	19	-66	226	0	0.3	-0.5	0.6
41056	99	P	SUR	18	-66	224	0	0.3	-0.7	0.7
41139	99	P	SUR	20	-38	167	0	0.3	-0.1	0.3
41560	99	P	SUR	40	-22	214	0	0.2	0.7	0.7
41562	99	P	SUR	36	-68	202	0	0.4	0.2	0.4
41564	99	P	SUR	38	-45	204	0	0.3	0.3	0.4
41596	99	P	SUR	20	-52	217	0	0.2	0.1	0.3
41597	99	P	SUR	17	-43	133	0	0.3	0.5	0.6
41598	99	P	SUR	20	-41	140	0	0.3	-0.2	0.4
41599	99	P	SUR	15	-45	132	0	0.3	0.4	0.5
41600	99	P	SUR	13	-47	126	0	0.3	0.6	0.7
41632	99	P	SUR	21	-55	217	0	0.2	0.1	0.2
41705	99	P	SUR	29	-49	217	0	0.2	0.0	0.2

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
41706	99	P	SUR	21	-69	217	0	0.3	-0.1	0.3
41707	99	P	SUR	20	-57	210	0	0.2	0.3	0.4
41708	99	P	SUR	24	-64	205	0	0.3	0.4	0.5
41709	99	P	SUR	25	-66	217	0	0.3	0.1	0.3
41711	99	P	SUR	25	-58	217	0	0.3	0.1	0.3
41736	99	P	SUR	17	-60	434	0	0.2	0.3	0.4
41737	99	P	SUR	26	-42	200	0	0.4	0.5	0.6
41800	99	P	SUR	25	-43	216	0	0.5	0.4	0.6
41929	99	P	SUR	40	-40	194	0	0.3	-0.1	0.3
41936	99	P	SUR	28	-69	197	0	0.3	-0.4	0.5
41938	99	P	SUR	30	-70	216	0	0.4	-0.1	0.4
41957	99	P	SUR	39	-34	60	0	0.2	-0.1	0.2
41969	99	P	SUR	34	-20	217	0	0.2	-0.2	0.3
41970	99	P	SUR	28	-65	209	0	0.3	0.3	0.4
41971	99	P	SUR	37	-37	217	0	0.2	0.1	0.2
41972	99	P	SUR	31	-35	205	0	0.2	0.2	0.3
41975	99	P	SUR	31	-63	209	0	0.3	0.1	0.3
41999	99	P	SUR	31	-51	167	0	0.3	0.2	0.3
42059	99	P	SUR	15	-68	216	0	0.4	0.1	0.4
42060	99	P	SUR	16	-63	217	0	0.3	-0.3	0.4
42085	99	P	SUR	18	-67	190	0	0.3	-0.5	0.6
44005	99	P	SUR	43	-69	248	0	0.6	-0.6	0.8
44024	99	P	SUR	42	-66	210	0	0.6	-0.6	0.9
44027	99	P	SUR	44	-67	225	0	0.4	-0.6	0.7
44032	99	P	SUR	44	-69	217	0	0.5	-0.7	0.9
44033	99	P	SUR	44	-69	216	0	0.6	-0.6	0.9
44034	99	P	SUR	44	-68	217	0	0.6	-0.6	0.8
44037	99	P	SUR	44	-68	211	0	0.6	-0.5	0.8
44137	99	P	SUR	42	-62	221	0	0.4	0.2	0.4
44139	99	P	SUR	44	-57	186	0	0.3	0.2	0.4
44141	99	P	SUR	43	-58	212	0	0.3	0.3	0.5
44150	99	P	SUR	43	-64	214	0	0.4	-0.1	0.4
44175	99	P	SUR	47	-62	157	0	0.3	0.0	0.3
44176	99	P	SUR	48	-65	183	0	0.5	0.0	0.5
44251	99	P	SUR	46	-53	213	0	0.4	0.3	0.4
44258	99	P	SUR	45	-63	213	0	0.5	-0.1	0.5
44505	99	P	SUR	48	-52	435	0	0.3	0.5	0.6
44514	99	P	SUR	42	-46	215	0	0.6	0.4	0.8
44516	99	P	SUR	32	-55	164	0	0.3	0.3	0.4
44546	99	P	SUR	37	-23	210	0	0.2	0.0	0.2
44554	99	P	SUR	37	-37	211	0	0.3	0.0	0.3
44558	99	P	SUR	40	-57	216	0	0.4	0.5	0.6
44560	99	P	SUR	43	-59	214	0	0.6	0.4	0.7

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44562	99	P	SUR	41	-58	209	0	0.5	0.3	0.6
44602	99	P	SUR	54	-37	217	0	0.3	-0.2	0.4
44605	99	P	SUR	47	-10	217	0	0.3	-0.2	0.4
44610	99	P	SUR	52	-20	217	0	0.3	0.3	0.4
44612	99	P	SUR	52	-45	217	0	0.4	-0.1	0.4
44613	99	P	SUR	42	-23	215	0	0.2	-0.2	0.3
44614	99	P	SUR	52	-33	211	0	0.6	0.4	0.7
44615	99	P	SUR	64	-35	217	0	0.4	-0.6	0.7
44620	99	P	SUR	58	-37	217	0	0.5	0.2	0.5
44621	99	P	SUR	56	-37	212	0	0.4	0.3	0.5
44622	99	P	SUR	51	-26	217	0	0.3	0.2	0.4
44624	99	P	SUR	40	-12	216	0	0.3	0.1	0.3
44625	99	P	SUR	52	-27	217	0	0.3	0.2	0.4
44690	99	P	SUR	51	-27	217	0	0.3	-0.3	0.4
44724	99	P	SUR	62	-15	217	0	0.3	-0.5	0.6
44725	99	P	SUR	22	-51	217	0	0.2	0.2	0.3
44739	99	P	SUR	48	-48	217	0	0.4	0.5	0.6
44740	99	P	SUR	26	-39	217	0	0.2	-0.1	0.2
44745	99	P	SUR	40	-40	217	0	0.4	0.2	0.5
44747	99	P	SUR	58	-35	193	0	0.4	-0.2	0.4
44765	99	P	SUR	46	-22	217	0	0.3	0.2	0.3
44767	99	P	SUR	28	-50	217	0	0.2	0.1	0.2
44771	99	P	SUR	57	-13	217	0	0.3	0.0	0.3
44773	99	P	SUR	30	-18	217	0	0.2	0.3	0.4
44835	99	P	SUR	42	-48	217	0	0.4	-0.2	0.5
44836	99	P	SUR	51	-46	217	0	0.4	-0.1	0.4
44837	99	P	SUR	47	-34	217	0	0.3	-0.1	0.3
44839	99	P	SUR	45	-33	217	0	0.3	0.0	0.3
44840	99	P	SUR	47	-29	217	0	0.3	0.1	0.3
44846	99	P	SUR	38	-35	215	0	0.2	0.6	0.6
44847	99	P	SUR	38	-42	216	0	0.4	0.3	0.5
44848	99	P	SUR	40	-43	217	0	0.4	0.3	0.5
44850	99	P	SUR	44	-29	189	1	2.2	0.5	2.3
44863	99	P	SUR	37	-36	217	0	0.2	0.1	0.3
44866	99	P	SUR	58	-48	217	0	0.4	-0.4	0.6
44867	99	P	SUR	55	-49	216	0	0.4	-0.5	0.6
44868	99	P	SUR	29	-36	217	0	0.2	0.1	0.3
44869	99	P	SUR	27	-37	104	0	1.8	-1.1	2.1
44871	99	P	SUR	52	-50	216	0	0.3	-0.2	0.4
44872	99	P	SUR	52	-54	216	0	0.4	-0.6	0.7
44874	99	P	SUR	44	-12	217	0	0.3	0.3	0.4
44875	99	P	SUR	30	-37	217	0	0.9	0.3	1.0
44876	99	P	SUR	41	-44	216	0	0.3	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
44877	99	P	SUR	44	-32	217	0	0.3	0.0	0.3
44878	99	P	SUR	45	-40	217	0	0.3	0.1	0.3
44879	99	P	SUR	49	-7	217	0	0.3	0.0	0.3
44880	99	P	SUR	46	-53	217	0	0.3	-0.1	0.3
44885	99	P	SUR	39	-45	217	0	0.3	-0.1	0.3
44886	99	P	SUR	36	-48	202	0	0.3	0.1	0.3
44887	99	P	SUR	39	-54	217	0	0.3	0.2	0.4
44888	99	P	SUR	41	-44	217	0	0.4	-0.1	0.4
44889	99	P	SUR	36	-48	196	0	0.3	0.0	0.3
44890	99	P	SUR	35	-54	217	0	0.3	0.0	0.3
44891	99	P	SUR	40	-42	217	0	0.3	-0.1	0.3
44892	99	P	SUR	38	-69	217	0	0.4	-0.1	0.4
44896	99	P	SUR	35	-47	213	0	0.3	-0.2	0.3
45138	99	P	SUR	50	-66	212	0	0.5	-0.1	0.5
47501	99	P	SUR	85	-43	217	0	0.4	-0.2	0.4
47502	99	P	SUR	85	-31	217	0	0.4	-0.1	0.4
47577	99	P	SUR	85	-47	217	0	0.5	-0.4	0.6
47578	99	P	SUR	84	-34	217	0	0.6	-0.6	0.9
47579	99	P	SUR	80	2	217	0	1.4	-0.6	1.5
47580	99	P	SUR	80	2	215	0	0.7	-0.2	0.8
48520	99	P	SUR	76	-19	217	0	0.4	-0.1	0.4
48568	99	P	SUR	89	-39	217	0	0.4	-0.2	0.4
61001	99	P	SUR	43	8	217	0	0.4	0.0	0.4
61002	99	P	SUR	42	5	214	0	0.4	0.3	0.4
62001	99	P	SUR	45	-5	427	0	0.3	0.3	0.4
62023	99	P	SUR	51	-8	211	0	0.4	0.1	0.4
62027	99	P	SUR	49	-2	92	0	0.5	0.1	0.5
62029	99	P	SUR	49	-13	266	0	0.4	0.0	0.4
62030	99	P	SUR	50	-4	361	0	0.3	0.1	0.3
62081	99	P	SUR	51	-13	218	0	0.3	0.1	0.3
62086	99	P	SUR	55	6	11	0	0.2	-0.1	0.3
62087	99	P	SUR	55	7	213	0	0.4	-0.1	0.4
62091	99	P	SUR	53	-5	40	0	0.3	0.0	0.3
62092	99	P	SUR	51	-11	216	0	0.3	-0.1	0.4
62093	99	P	SUR	55	-10	216	0	0.3	0.0	0.3
62094	99	P	SUR	52	-7	217	0	0.3	0.1	0.4
62095	99	P	SUR	53	-16	344	1	1.0	-0.1	1.0
62102	99	P	SUR	58	2	217	0	0.3	0.2	0.4
62103	99	P	SUR	50	-3	216	0	0.4	0.5	0.6
62104	99	P	SUR	57	1	217	0	0.3	0.3	0.4
62105	99	P	SUR	55	-13	429	0	0.4	0.1	0.4
62107	99	P	SUR	50	-6	431	0	0.3	0.5	0.6
62111	99	P	SUR	58	0	216	0	0.6	0.2	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62112	99	P	SUR	58	0	217	0	0.3	0.6	0.7
62113	99	P	SUR	58	0	217	0	0.4	0.3	0.5
62114	99	P	SUR	58	0	316	0	0.3	0.4	0.5
62115	99	P	SUR	58	-3	43	0	0.3	0.3	0.4
62116	99	P	SUR	58	1	217	0	0.4	0.3	0.5
62117	99	P	SUR	58	0	216	0	0.3	0.3	0.4
62118	99	P	SUR	58	1	217	0	0.3	-0.4	0.4
62119	99	P	SUR	57	2	202	0	0.3	0.3	0.4
62120	99	P	SUR	56	2	217	0	0.3	0.3	0.4
62121	99	P	SUR	54	3	217	0	0.3	0.5	0.6
62122	99	P	SUR	57	2	316	0	0.3	0.3	0.4
62123	99	P	SUR	56	2	308	0	0.3	0.3	0.5
62124	99	P	SUR	54	-4	210	0	0.3	0.1	0.3
62127	99	P	SUR	54	1	204	0	0.3	0.7	0.8
62128	99	P	SUR	59	1	217	0	0.3	0.4	0.5
62129	99	P	SUR	58	0	217	0	0.4	0.2	0.4
62130	99	P	SUR	59	1	217	0	0.3	0.2	0.3
62131	99	P	SUR	54	1	217	0	0.3	0.6	0.6
62132	99	P	SUR	56	2	213	0	0.3	0.4	0.5
62133	99	P	SUR	57	1	153	0	0.4	0.4	0.5
62134	99	P	SUR	58	1	217	0	0.3	0.4	0.5
62135	99	P	SUR	54	2	205	0	0.4	0.5	0.7
62136	99	P	SUR	54	3	180	0	0.3	0.6	0.7
62137	99	P	SUR	57	2	216	0	0.3	0.1	0.3
62139	99	P	SUR	53	2	312	0	0.3	0.4	0.5
62140	99	P	SUR	57	1	316	0	0.3	0.3	0.5
62141	99	P	SUR	54	-11	241	0	0.7	-0.3	0.8
62143	99	P	SUR	58	2	217	0	0.3	0.5	0.6
62144	99	P	SUR	53	2	216	0	0.3	0.6	0.7
62145	99	P	SUR	53	3	316	0	0.3	0.6	0.7
62146	99	P	SUR	57	2	217	0	0.3	0.1	0.3
62147	99	P	SUR	58	-1	214	0	0.3	0.4	0.5
62148	99	P	SUR	54	2	174	0	0.4	0.6	0.7
62149	99	P	SUR	54	1	211	0	0.5	0.5	0.8
62150	99	P	SUR	54	1	73	0	0.8	0.3	0.9
62151	99	P	SUR	57	2	316	0	0.3	0.2	0.4
62152	99	P	SUR	57	2	217	0	0.3	0.6	0.7
62153	99	P	SUR	57	2	315	0	0.3	0.3	0.4
62154	99	P	SUR	56	2	217	0	0.3	0.2	0.3
62155	99	P	SUR	58	1	196	0	0.3	0.4	0.5
62156	99	P	SUR	57	2	309	0	0.3	0.1	0.3
62157	99	P	SUR	58	0	210	0	0.3	0.2	0.4
62160	99	P	SUR	57	2	206	0	0.4	-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
62161	99	P	SUR	58	1	210	0	0.3	0.0	0.3
62162	99	P	SUR	57	1	215	0	0.3	0.5	0.6
62163	99	P	SUR	48	-8	208	0	0.3	0.3	0.4
62164	99	P	SUR	57	1	217	0	0.3	0.6	0.6
62165	99	P	SUR	54	1	210	0	0.4	0.6	0.7
62166	99	P	SUR	53	3	125	0	0.4	1.0	1.0
62167	99	P	SUR	53	2	312	0	0.3	0.4	0.5
62168	99	P	SUR	58	1	214	0	0.3	0.3	0.4
62170	99	P	SUR	51	2	213	0	0.4	0.0	0.4
62296	99	P	SUR	53	2	164	0	0.4	0.2	0.4
62297	99	P	SUR	59	2	316	0	0.3	0.3	0.4
62298	99	P	SUR	49	-9	217	0	0.3	0.4	0.5
62301	99	P	SUR	52	-5	216	0	0.3	0.1	0.4
62304	99	P	SUR	51	2	308	2	0.5	0.5	0.7
62305	99	P	SUR	50	0	264	1	0.6	0.3	0.7
62442	99	P	SUR	49	-16	92	0	0.2	0.1	0.2
62500	99	P	SUR	59	-32	214	0	1.0	0.4	1.1
62508	99	P	SUR	45	-2	217	0	0.3	0.6	0.7
62514	99	P	SUR	66	-10	217	0	0.3	0.0	0.3
62516	99	P	SUR	35	-17	217	0	0.2	0.3	0.3
62534	99	P	SUR	59	-10	185	0	0.3	-0.3	0.4
62535	99	P	SUR	52	-25	217	0	0.3	0.0	0.3
62536	99	P	SUR	56	-29	217	0	0.3	-0.4	0.5
62537	99	P	SUR	58	-28	216	0	0.3	-0.3	0.4
62538	99	P	SUR	60	-31	217	0	0.4	0.0	0.4
62553	99	P	SUR	61	-3	217	0	0.3	0.0	0.3
62680	99	P	SUR	64	-10	205	0	0.3	-0.3	0.4
62681	99	P	SUR	50	-41	217	0	0.4	-0.5	0.6
62687	99	P	SUR	71	4	216	0	0.3	-0.1	0.3
62695	99	P	SUR	33	-15	217	0	0.2	0.3	0.3
62713	99	P	SUR	26	-28	217	0	0.2	0.1	0.3
62714	99	P	SUR	27	-24	216	0	0.2	0.1	0.2
62729	99	P	SUR	49	-31	207	0	0.4	-0.2	0.4
62940	99	P	SUR	37	-39	217	0	0.2	0.2	0.3
62941	99	P	SUR	38	-31	217	0	0.3	0.2	0.3
63055	99	P	SUR	61	2	217	0	0.4	0.0	0.4
63056	99	P	SUR	60	2	217	0	0.3	0.4	0.5
63057	99	P	SUR	59	2	210	0	0.3	0.1	0.3
63058	99	P	SUR	53	2	391	0	0.5	0.4	0.7
63059	99	P	SUR	58	-1	217	0	0.3	0.6	0.7
63101	99	P	SUR	61	1	217	0	0.3	0.3	0.4
63102	99	P	SUR	61	1	217	0	0.4	0.0	0.4
63103	99	P	SUR	61	1	217	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
63104	99	P	SUR	61	2	217	0	0.3	0.2	0.4
63105	99	P	SUR	61	2	217	0	0.3	0.2	0.3
63107	99	P	SUR	61	2	217	0	0.3	0.1	0.3
63108	99	P	SUR	61	2	217	0	0.4	-0.1	0.4
63109	99	P	SUR	60	2	217	0	0.3	0.1	0.3
63110	99	P	SUR	60	2	217	0	0.4	0.6	0.8
63111	99	P	SUR	61	2	282	0	0.3	0.0	0.3
63112	99	P	SUR	61	1	217	0	0.3	-0.1	0.3
63113	99	P	SUR	61	2	217	0	0.3	0.1	0.4
63114	99	P	SUR	61	2	309	0	0.5	0.2	0.5
63115	99	P	SUR	62	1	217	0	0.3	0.1	0.3
63116	99	P	SUR	61	1	213	0	0.4	0.0	0.4
63117	99	P	SUR	61	1	316	0	0.4	0.4	0.5
63118	99	P	SUR	61	-3	208	0	0.3	0.2	0.4
63119	99	P	SUR	58	-1	2	0	0.1	0.9	0.9
63544	99	P	SUR	85	14	93	0	1.6	0.1	1.6
63545	99	P	SUR	87	7	217	0	0.3	-0.3	0.4
63546	99	P	SUR	86	8	217	0	0.5	-0.6	0.8
63640	99	P	SUR	76	28	217	0	0.3	0.0	0.3
63642	99	P	SUR	67	-2	217	0	2.5	0.9	2.6
64041	99	P	SUR	61	-3	217	0	0.3	0.3	0.4
64045	99	P	SUR	59	-12	429	0	0.3	0.1	0.3
64046	99	P	SUR	61	-4	216	0	0.5	0.4	0.6
64049	99	P	SUR	57	2	215	0	0.3	0.2	0.3
64516	99	P	SUR	73	5	217	0	0.3	-0.2	0.4
64520	99	P	SUR	69	-6	217	0	0.3	-0.2	0.3
64521	99	P	SUR	75	-1	217	0	0.3	-0.1	0.4
64525	99	P	SUR	66	-1	217	0	0.3	0.0	0.3
64607	99	P	SUR	72	2	217	0	0.3	-0.1	0.3
64613	99	P	SUR	67	2	217	0	0.3	0.0	0.3
64614	99	P	SUR	65	-27	217	0	0.4	-0.1	0.4
64615	99	P	SUR	70	2	217	0	0.3	0.4	0.5
64616	99	P	SUR	63	-22	217	0	0.4	0.2	0.4
64622	99	P	SUR	65	-10	217	0	0.3	0.0	0.3
64623	99	P	SUR	76	16	217	0	0.3	-0.2	0.4
64664	99	P	SUR	68	-15	217	0	0.4	0.1	0.4
64665	99	P	SUR	65	1	217	0	0.3	0.2	0.3
64666	99	P	SUR	64	0	217	0	0.3	0.2	0.4
64667	99	P	SUR	60	-38	217	0	0.4	0.1	0.4
64668	99	P	SUR	68	0	216	0	0.3	0.2	0.4
64669	99	P	SUR	65	-23	217	0	0.4	0.1	0.4
64670	99	P	SUR	62	-52	215	0	0.4	0.0	0.4
64691	99	P	SUR	65	-36	203	0	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
64692	99	P	SUR	64	-14	217	0	0.4	0.3	0.5
64693	99	P	SUR	63	-21	217	0	0.4	0.2	0.4
65595	99	P	SUR	61	-50	217	0	0.4	-0.7	0.8
65596	99	P	SUR	62	-53	217	0	0.4	0.3	0.5
65597	99	P	SUR	60	-38	217	0	0.3	-0.4	0.5
65598	99	P	SUR	52	-50	204	0	0.3	-0.2	0.4

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

```
          DRIFTER MONITORING STATISTICS (EUCOS)
                   MONITORING CENTRE     : ECMWF
                   ELEMENT MONITORED     : WIND SPEED (M/S)
                   AREA                  : 10N - 90N, 70W - 40E
                   PERIOD                : JUL 2014
                   STANDARD OF COMPARISON: FIRST-GUESS FIELD


TIME = 99 => AVERAGE OF ALL OBSERVATIONS


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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
13001	99	SPEED	SUR	11	-23	149	0	0	1.5	1.0	1.8
13002	99	SPEED	SUR	20	-23	165	0	0	0.8	0.0	0.8
13008	99	SPEED	SUR	15	-38	87	0	0	1.0	-0.4	1.0
41040	99	SPEED	SUR	15	-53	217	0	0	0.8	0.4	0.9
41041	99	SPEED	SUR	14	-46	208	0	0	0.7	0.1	0.8
41043	99	SPEED	SUR	21	-65	216	0	0	1.0	-0.2	1.1
41044	99	SPEED	SUR	22	-59	215	0	0	0.8	-0.1	0.8
41046	99	SPEED	SUR	24	-68	222	0	0	1.2	0.0	1.2
41048	99	SPEED	SUR	32	-70	214	0	0	1.3	0.1	1.3
41049	99	SPEED	SUR	28	-63	212	0	0	1.0	-0.1	1.0
41051	99	SPEED	SUR	18	-65	317	0	0	1.0	0.1	1.0
41052	99	SPEED	SUR	18	-65	225	0	0	0.7	0.0	0.8
41053	99	SPEED	SUR	19	-66	226	0	0	1.2	-0.2	1.2
41056	99	SPEED	SUR	18	-66	224	0	0	0.9	0.1	0.9
41139	99	SPEED	SUR	20	-38	167	0	0	0.7	-0.1	0.7
42059	99	SPEED	SUR	15	-68	216	0	0	1.0	-0.3	1.0
42060	99	SPEED	SUR	16	-63	217	0	0	1.3	0.1	1.3
42085	99	SPEED	SUR	18	-67	190	0	0	0.9	1.0	1.3
44005	99	SPEED	SUR	43	-69	204	0	0	1.6	-1.0	1.8
44024	99	SPEED	SUR	42	-66	210	0	0	1.4	-0.9	1.6
44032	99	SPEED	SUR	44	-69	217	0	0	1.7	-1.1	2.0
44033	99	SPEED	SUR	44	-69	216	0	0	1.7	-0.9	1.9
44034	99	SPEED	SUR	44	-68	217	0	0	1.4	-1.5	2.1
44037	99	SPEED	SUR	44	-68	211	0	0	1.2	-0.7	1.4
44137	99	SPEED	SUR	42	-62	221	0	0	1.3	-0.4	1.3
44139	99	SPEED	SUR	44	-57	186	0	0	1.0	-0.8	1.3
44141	99	SPEED	SUR	43	-58	212	0	0	1.1	-0.7	1.3
44150	99	SPEED	SUR	43	-64	214	0	0	1.5	-1.5	2.1
44175	99	SPEED	SUR	47	-62	156	0	0	1.8	-2.4	3.0
44251	99	SPEED	SUR	46	-53	213	0	0	1.1	-1.2	1.6
44258	99	SPEED	SUR	45	-63	214	0	0	1.5	-1.7	2.2
45138	99	SPEED	SUR	50	-66	212	0	0	1.7	0.3	1.8
61001	99	SPEED	SUR	43	8	217	0	0	2.1	0.0	2.1
61002	99	SPEED	SUR	42	5	212	0	0	1.5	-0.7	1.6

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
62001	99	SPEED	SUR	45	-5	427	0	0	1.0	0.3	1.1
62023	99	SPEED	SUR	51	-8	204	0	0	1.6	0.1	1.6
62027	99	SPEED	SUR	49	-2	83	1	1	0.9	0.2	0.9
62029	99	SPEED	SUR	49	-13	266	0	0	1.0	0.5	1.1
62030	99	SPEED	SUR	50	-4	238	0	0	1.0	1.0	1.5
62081	99	SPEED	SUR	51	-13	218	0	0	1.0	0.4	1.1
62086	99	SPEED	SUR	55	6	11	0	0	1.0	-0.1	1.0
62087	99	SPEED	SUR	55	7	55	0	0	1.3	-6.2	6.3
62091	99	SPEED	SUR	53	-5	40	0	0	2.8	1.0	3.0
62092	99	SPEED	SUR	51	-11	216	0	0	1.0	0.0	1.0
62093	99	SPEED	SUR	55	-10	216	0	0	0.9	-0.1	0.9
62095	99	SPEED	SUR	53	-16	324	0	0	1.2	0.2	1.3
62102	99	SPEED	SUR	58	2	217	0	0	1.5	0.2	1.6
62103	99	SPEED	SUR	50	-3	216	0	0	1.4	0.3	1.4
62104	99	SPEED	SUR	57	1	217	0	0	1.3	-0.1	1.3
62105	99	SPEED	SUR	55	-13	429	0	0	1.1	0.6	1.2
62107	99	SPEED	SUR	50	-6	431	0	0	1.3	0.6	1.4
62111	99	SPEED	SUR	58	0	216	0	0	1.3	-0.4	1.4
62112	99	SPEED	SUR	58	0	217	0	0	1.5	-0.9	1.7
62113	99	SPEED	SUR	58	0	217	0	0	1.4	0.1	1.4
62114	99	SPEED	SUR	58	0	316	0	0	1.3	0.3	1.4
62117	99	SPEED	SUR	58	0	216	0	0	1.3	0.0	1.3
62118	99	SPEED	SUR	58	1	217	0	0	1.4	-0.1	1.4
62119	99	SPEED	SUR	57	2	202	0	0	1.3	-0.1	1.3
62120	99	SPEED	SUR	56	2	217	0	0	1.2	0.3	1.2
62121	99	SPEED	SUR	54	3	1	0	0	0.0	-1.1	1.1
62122	99	SPEED	SUR	57	2	316	0	0	1.4	-0.2	1.4
62123	99	SPEED	SUR	56	2	308	0	0	1.2	0.3	1.2
62127	99	SPEED	SUR	54	1	184	0	0	1.7	0.9	1.9
62128	99	SPEED	SUR	59	1	217	0	0	1.9	0.7	2.0
62129	99	SPEED	SUR	58	0	217	0	0	1.4	-0.1	1.4
62131	99	SPEED	SUR	54	1	217	0	0	1.9	-1.2	2.2
62132	99	SPEED	SUR	56	2	213	0	0	1.8	-0.7	1.9
62133	99	SPEED	SUR	57	1	210	0	0	1.4	0.0	1.4
62134	99	SPEED	SUR	58	1	217	0	0	1.5	0.0	1.5
62143	99	SPEED	SUR	58	2	217	0	0	1.6	-0.5	1.6
62144	99	SPEED	SUR	53	2	216	0	0	1.7	-0.2	1.7
62145	99	SPEED	SUR	53	3	316	0	0	1.5	-0.5	1.6
62146	99	SPEED	SUR	57	2	217	0	0	2.0	-1.5	2.4
62148	99	SPEED	SUR	54	2	174	0	0	1.4	-0.2	1.4
62149	99	SPEED	SUR	54	1	211	0	0	1.3	0.3	1.4

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62150	99	SPEED	SUR	54	1	73	0	0	1.4	-0.3	1.5
62152	99	SPEED	SUR	57	2	217	0	0	1.3	-0.4	1.3
62153	99	SPEED	SUR	57	2	315	0	0	1.5	-0.5	1.5
62154	99	SPEED	SUR	56	2	217	0	0	1.2	0.1	1.3
62155	99	SPEED	SUR	58	1	196	0	0	1.2	-0.1	1.2
62163	99	SPEED	SUR	48	-8	209	0	0	1.0	0.4	1.1
62164	99	SPEED	SUR	57	1	217	0	0	1.5	-0.6	1.6
62165	99	SPEED	SUR	54	1	210	0	0	1.3	-0.2	1.3
62170	99	SPEED	SUR	51	2	212	0	0	1.7	1.0	2.0
62298	99	SPEED	SUR	49	-9	217	0	0	1.2	-0.5	1.3
62301	99	SPEED	SUR	52	-5	209	0	0	1.1	0.5	1.2
62304	99	SPEED	SUR	51	2	307	0	0	2.0	1.3	2.4
62305	99	SPEED	SUR	50	0	262	0	0	1.6	1.1	2.0
62442	99	SPEED	SUR	49	-16	92	0	0	1.1	0.6	1.3
63055	99	SPEED	SUR	61	2	217	0	0	1.2	-0.4	1.3
63056	99	SPEED	SUR	60	2	216	0	0	1.3	0.3	1.3
63057	99	SPEED	SUR	59	2	210	0	0	1.8	0.2	1.8
63058	99	SPEED	SUR	53	2	220	0	0	1.6	0.1	1.6
63101	99	SPEED	SUR	61	1	213	0	0	1.2	-0.1	1.2
63103	99	SPEED	SUR	61	1	217	0	0	1.3	1.2	1.8
63104	99	SPEED	SUR	61	2	217	0	0	1.2	0.3	1.2
63105	99	SPEED	SUR	61	2	217	0	0	1.2	0.4	1.2
63106	99	SPEED	SUR	61	2	204	0	0	1.1	0.1	1.1
63107	99	SPEED	SUR	61	2	21	0	0	1.2	0.0	1.2
63108	99	SPEED	SUR	61	2	217	0	0	1.2	0.3	1.3
63109	99	SPEED	SUR	60	2	212	0	0	1.4	0.6	1.5
63110	99	SPEED	SUR	60	2	217	0	0	1.5	0.1	1.5
63112	99	SPEED	SUR	61	1	217	0	0	1.0	-0.1	1.0
63113	99	SPEED	SUR	61	2	217	0	0	1.1	0.1	1.1
63114	99	SPEED	SUR	61	2	316	0	0	1.2	0.2	1.2
63115	99	SPEED	SUR	62	1	217	0	0	1.1	-0.1	1.1
63117	99	SPEED	SUR	61	1	316	0	0	1.1	0.2	1.1
63119	99	SPEED	SUR	58	-1	2	0	0	1.3	-2.7	3.0
64041	99	SPEED	SUR	61	-3	217	0	0	1.0	-0.1	1.0
64045	99	SPEED	SUR	59	-12	429	0	0	1.0	0.6	1.2
64046	99	SPEED	SUR	61	-4	216	0	0	1.1	0.5	1.2
66021	99	SPEED	SUR	55	14	214	0	0	1.7	0.0	1.7
66022	99	SPEED	SUR	54	14	235	0	0	1.4	0.1	1.4
66024	99	SPEED	SUR	55	13	215	0	0	1.4	-0.6	1.5

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

```
DRIFTER MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE      : ECMWF
         ELEMENT MONITORED      : WIND DIRECTION (DEGREES)
         AREA                   : 10N - 90N, 70W - 40E
         PERIOD                 : JUL 2014
         STANDARD OF COMPARISON: FIRST-GUESS FIELD


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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
13001	99	DIRN	SUR	11	-23	74	0	1	21.1	3.4	21.3
13002	99	DIRN	SUR	20	-23	158	0	0	9.3	7.4	11.9
13008	99	DIRN	SUR	15	-38	87	0	0	9.5	1.1	9.5
41002	99	DIRN	SUR	32	-75	188	0	0	16.4	-8.4	18.5
41004	99	DIRN	SUR	33	-79	183	0	0	16.6	7.8	18.3
41008	99	DIRN	SUR	31	-81	175	0	0	23.2	4.3	23.6
41009	99	DIRN	SUR	29	-80	179	0	3	29.1	-7.0	29.9
41010	99	DIRN	SUR	29	-79	166	0	0	23.1	0.3	23.1
41024	99	DIRN	SUR	34	-79	153	0	1	15.5	-8.8	17.8
41025	99	DIRN	SUR	35	-75	46	0	11	14.3	-5.2	15.3
41029	99	DIRN	SUR	33	-80	169	0	2	18.2	-10.6	21.0
41033	99	DIRN	SUR	32	-80	115	0	0	22.4	-11.7	25.3
41036	99	DIRN	SUR	34	-77	173	2	1	16.9	1.6	17.0
41037	99	DIRN	SUR	34	-77	157	0	0	20.8	-6.6	21.8
41038	99	DIRN	SUR	34	-78	161	0	2	17.7	-5.6	18.6
41040	99	DIRN	SUR	15	-53	217	0	0	7.1	-6.7	9.8
41041	99	DIRN	SUR	14	-46	208	0	0	7.7	0.4	7.7
41043	99	DIRN	SUR	21	-65	206	0	0	12.5	0.2	12.5
41044	99	DIRN	SUR	22	-59	210	0	0	10.0	-2.5	10.3
41046	99	DIRN	SUR	24	-68	200	0	0	10.2	-1.3	10.3
41047	99	DIRN	SUR	28	-72	148	0	0	18.2	-11.6	21.5
41048	99	DIRN	SUR	32	-70	171	0	0	18.8	8.1	20.5
41049	99	DIRN	SUR	28	-63	137	0	0	15.6	3.8	16.1
41051	99	DIRN	SUR	18	-65	317	0	0	10.1	-14.1	17.3
41052	99	DIRN	SUR	18	-65	225	0	0	8.6	2.1	8.8
41053	99	DIRN	SUR	19	-66	216	0	0	10.5	-5.8	12.0
41056	99	DIRN	SUR	18	-66	224	0	0	9.6	-4.1	10.4
41062	99	DIRN	SUR	36	-75	33	0	0	17.1	20.6	26.8
41139	99	DIRN	SUR	20	-38	167	0	0	9.4	7.4	12.0
42036	99	DIRN	SUR	29	-85	88	0	0	15.0	-4.4	15.6
42056	99	DIRN	SUR	20	-85	181	0	0	17.3	1.9	17.4
42057	99	DIRN	SUR	17	-82	207	0	0	8.7	-7.8	11.7

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
42058	99	DIRN	SUR	15	-75	216	0	0	6.3	-0.9	6.4
42059	99	DIRN	SUR	15	-68	214	0	0	9.3	-0.8	9.3
42060	99	DIRN	SUR	16	-63	205	0	0	11.3	-2.6	11.6
42085	99	DIRN	SUR	18	-67	190	0	0	9.6	0.4	9.6
44005	99	DIRN	SUR	43	-69	161	0	0	11.6	11.5	16.4
44007	99	DIRN	SUR	44	-70	143	0	1	16.9	7.8	18.6
44013	99	DIRN	SUR	42	-71	167	0	0	18.4	10.9	21.4
44014	99	DIRN	SUR	37	-75	136	0	0	17.9	6.1	18.9
44020	99	DIRN	SUR	41	-70	192	0	0	13.0	4.1	13.6
44022	99	DIRN	SUR	41	-74	36	0	0	9.2	-11.5	14.7
44024	99	DIRN	SUR	42	-66	138	0	0	12.8	10.3	16.4
44029	99	DIRN	SUR	43	-71	232	0	0	16.2	7.2	17.8
44030	99	DIRN	SUR	43	-70	143	0	1	12.0	4.7	12.9
44032	99	DIRN	SUR	44	-69	158	0	0	16.5	4.0	17.0
44033	99	DIRN	SUR	44	-69	110	0	1	24.0	4.6	24.4
44034	99	DIRN	SUR	44	-68	142	0	0	14.4	11.3	18.3
44037	99	DIRN	SUR	44	-68	152	0	0	10.6	12.4	16.3
44039	99	DIRN	SUR	41	-73	199	0	3	17.4	-0.2	17.4
44040	99	DIRN	SUR	41	-74	84	0	1	18.0	3.9	18.4
44041	99	DIRN	SUR	37	-77	4	0	0	8.3	-8.8	12.1
44042	99	DIRN	SUR	38	-76	304	0	3	21.2	-14.0	25.4
44043	99	DIRN	SUR	39	-76	218	0	3	15.9	-18.8	24.6
44057	99	DIRN	SUR	40	-76	73	0	4	20.8	-18.1	27.5
44058	99	DIRN	SUR	38	-76	293	0	0	16.5	-3.3	16.8
44059	99	DIRN	SUR	37	-76	36	0	0	11.7	-24.4	27.0
44060	99	DIRN	SUR	41	-72	119	0	0	14.7	2.4	14.9
44061	99	DIRN	SUR	39	-77	8	0	0	14.7	-18.4	23.6
44062	99	DIRN	SUR	39	-76	281	0	4	23.1	-21.1	31.3
44063	99	DIRN	SUR	39	-76	278	0	2	21.4	-16.6	27.1
44064	99	DIRN	SUR	37	-76	300	0	1	24.2	-3.7	24.5
44066	99	DIRN	SUR	40	-73	182	0	0	13.7	-0.5	13.7
44068	99	DIRN	SUR	37	-77	52	0	4	14.9	-13.6	20.2
44137	99	DIRN	SUR	42	-62	195	0	0	12.8	16.6	21.0
44139	99	DIRN	SUR	44	-57	159	0	0	11.1	23.3	25.8
44141	99	DIRN	SUR	43	-58	194	0	0	12.0	16.3	20.2
44150	99	DIRN	SUR	43	-64	166	0	0	13.5	15.9	20.9
44175	99	DIRN	SUR	47	-62	116	0	0	19.5	1.3	19.6
44251	99	DIRN	SUR	46	-53	186	0	0	11.3	16.3	19.8
44258	99	DIRN	SUR	45	-63	161	0	0	15.3	-2.2	15.5
45003	99	DIRN	SUR	45	-83	136	0	0	21.3	8.1	22.8
45005	99	DIRN	SUR	42	-82	129	0	2	27.8	5.8	28.4

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
45008	99	DIRN	SUR	44	-82	105	0	0	21.5	5.6	22.2
45012	99	DIRN	SUR	44	-77	110	0	0	24.9	7.9	26.2
45132	99	DIRN	SUR	43	-81	149	0	1	19.9	-1.6	19.9
45135	99	DIRN	SUR	44	-77	157	0	0	18.9	0.7	18.9
45137	99	DIRN	SUR	46	-81	161	0	1	20.7	10.9	23.4
45138	99	DIRN	SUR	50	-66	152	0	0	21.2	3.8	21.5
45139	99	DIRN	SUR	43	-80	64	0	2	25.7	13.9	29.3
45142	99	DIRN	SUR	43	-79	142	0	1	20.2	-11.7	23.3
45143	99	DIRN	SUR	45	-81	177	0	0	20.6	13.3	24.5
45147	99	DIRN	SUR	42	-83	132	0	2	19.6	4.0	20.0
45149	99	DIRN	SUR	44	-82	141	0	0	23.7	-6.3	24.5
45151	99	DIRN	SUR	45	-79	70	0	0	15.2	4.8	15.9
45152	99	DIRN	SUR	46	-80	92	0	0	16.2	0.7	16.3
45154	99	DIRN	SUR	46	-83	141	0	0	20.0	5.8	20.8
45159	99	DIRN	SUR	44	-79	125	0	0	21.8	9.8	23.9
45162	99	DIRN	SUR	45	-83	9	0	0	15.4	20.3	25.5
45163	99	DIRN	SUR	44	-84	22	0	5	30.9	14.4	34.1
45167	99	DIRN	SUR	42	-80	161	0	1	23.3	-16.2	28.3
62001	99	DIRN	SUR	45	-5	315	0	0	12.8	4.6	13.6
62023	99	DIRN	SUR	51	-8	174	0	0	12.7	-6.2	14.2
62027	99	DIRN	SUR	49	-2	66	1	2	32.0	10.1	33.5
62029	99	DIRN	SUR	49	-13	191	0	0	17.6	2.5	17.8
62030	99	DIRN	SUR	50	-4	127	0	0	14.8	-12.7	19.5
62081	99	DIRN	SUR	51	-13	178	0	0	10.3	7.0	12.5
62091	99	DIRN	SUR	53	-5	27	0	22	16.5	-4.7	17.1
62092	99	DIRN	SUR	51	-11	195	0	0	12.8	-4.4	13.5
62093	99	DIRN	SUR	55	-10	185	0	1	14.6	-4.5	15.3
62095	99	DIRN	SUR	53	-16	249	0	0	12.2	5.3	13.3
62103	99	DIRN	SUR	50	-3	194	0	0	22.2	6.2	23.0
62105	99	DIRN	SUR	55	-13	350	0	0	14.9	1.4	14.9
62107	99	DIRN	SUR	50	-6	367	0	2	17.0	0.9	17.0
62111	99	DIRN	SUR	58	0	143	0	0	16.3	-2.1	16.4
62112	99	DIRN	SUR	58	0	139	0	0	14.8	1.6	14.9
62114	99	DIRN	SUR	58	0	236	0	0	14.6	0.6	14.6
62117	99	DIRN	SUR	58	0	142	0	0	13.5	1.4	13.5
62163	99	DIRN	SUR	48	-8	175	0	1	15.2	8.0	17.1
62298	99	DIRN	SUR	49	-9	183	0	0	12.3	1.0	12.4
62301	99	DIRN	SUR	52	-5	130	0	0	16.7	10.7	19.8
62305	99	DIRN	SUR	50	0	208	0	0	20.5	9.2	22.4
62442	99	DIRN	SUR	49	-16	60	0	0	13.5	2.8	13.8
63119	99	DIRN	SUR	58	-1	2	0	0	1.6	-17.2	17.2

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
64041	99	DIRN	SUR	61	-3	165	0	0	13.5	11.8	17.9
64045	99	DIRN	SUR	59	-12	371	0	1	12.1	0.8	12.1
64046	99	DIRN	SUR	61	-4	136	0	0	14.3	-3.4	14.7

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.