ECMWF Global Data Monitoring Report

March 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	Feb	Mar	Ident	Time	Feb	Mar
42667	(00)	25	1	02365	(00)	14	27
64400	(00)	21	0	02365	(12)	14	26
64400	(12)	23	0	03743	(12)	26	37
64500	(12)	17	0	31300	(00)	0	22
67197	(00)	21	1	31369	(00)	0	22
67197	(12)	22	0	31510	(12)	0	22
68424	(00)	16	5	31538	(00)	0	21
71802	(00)	13	0	31538	(12)	0	29
71802	(12)	12	0	31770	(00)	0	22
89009	(12)	25	8	32477	(00)	0	18
-	-	-	-	32477	(12)	0	19
-	-	-	-	40375	(12)	10	23
-	-	-	-	40841	(12)	19	30
-	-	-	-	40948	(12)	14	27
-	-	-	-	42361	(00)	2	19
-	-	-	-	42369	(00)	2	29
-	-	-	-	42379	(00)	3	23
-	-	-	-	42397	(00)	0	20
-	-	-	-	42701	(00)	0	29
-	-	-	-	42874	(00)	0	19
-	-	-	-	43003	(00)	14	25
-	-	-	-	43041	(00)	0	14
-	-	-	-	43285	(00)	0	23
-	-	-	-	43346	(00)	0	20
-	-	-	-	48327	(00)	0	19
-	-	-	-	48407	(00)	0	16
-	-	-	-	48565	(00)	0	26
-	-	-	-	48568	(00)	0	25
-	-	-	-	60760	(12)	13	26
-	-	-	-	62414	(00)	13	25
-	-	-	-	67774	(00)	0	13
-	-	-	-	76405	(12)	5	26
-	-	-	-	76612	(00)	17	28
-	-	-	-	76692	(12)	0	19
-	-	-	-	78866	(12)	20	31
-	-	-	-	82026	(00)	10	30
-	-	-	-	82026	(12)	11	31
-	-	-	-	82193	(00)	18	31
-	-	-	-	82193	(12)	18	31
-	-	-	-	82411	(12)	0	26
-	-	-	-	84628	(12)	15	31
-	-	-	-	91557	(00)	6	21
-	-	-	-	91643	(00)	2	23
-	-	-	-	98646	(00)	16	30
-	-	-	-	98646	(12)	15	31

2.2 Drifting Buoys

Surface pressure observations from **1293** drifting buoys were received during the month.

3 Global monitoring statistics

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

3.1 Data Availability

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

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

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

3.2 Data Quality

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

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

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

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

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

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

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

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

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

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

3.2.1 Figure 1 - Availability - SYNOP PRESSURE

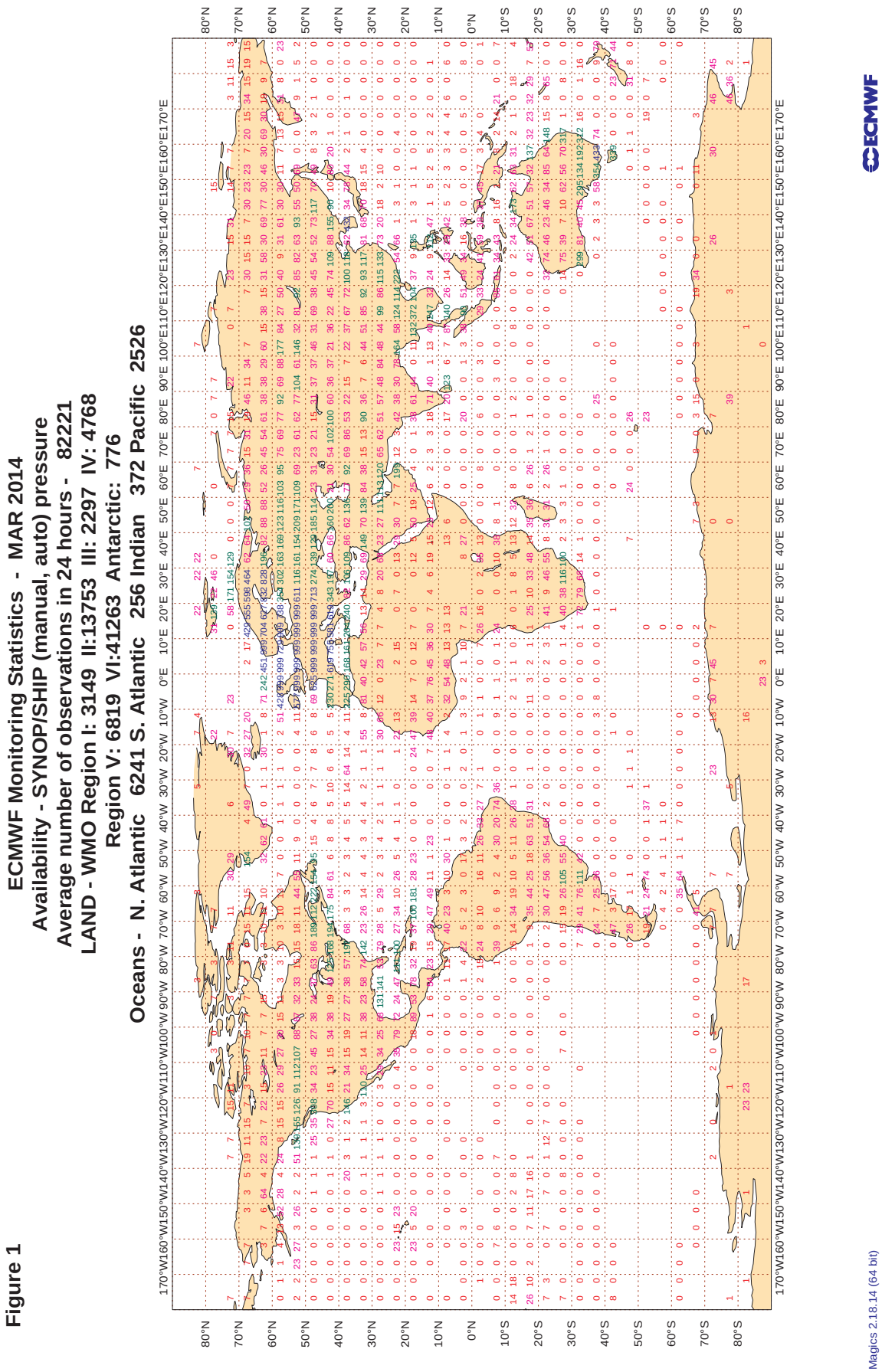


Figure 1

3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

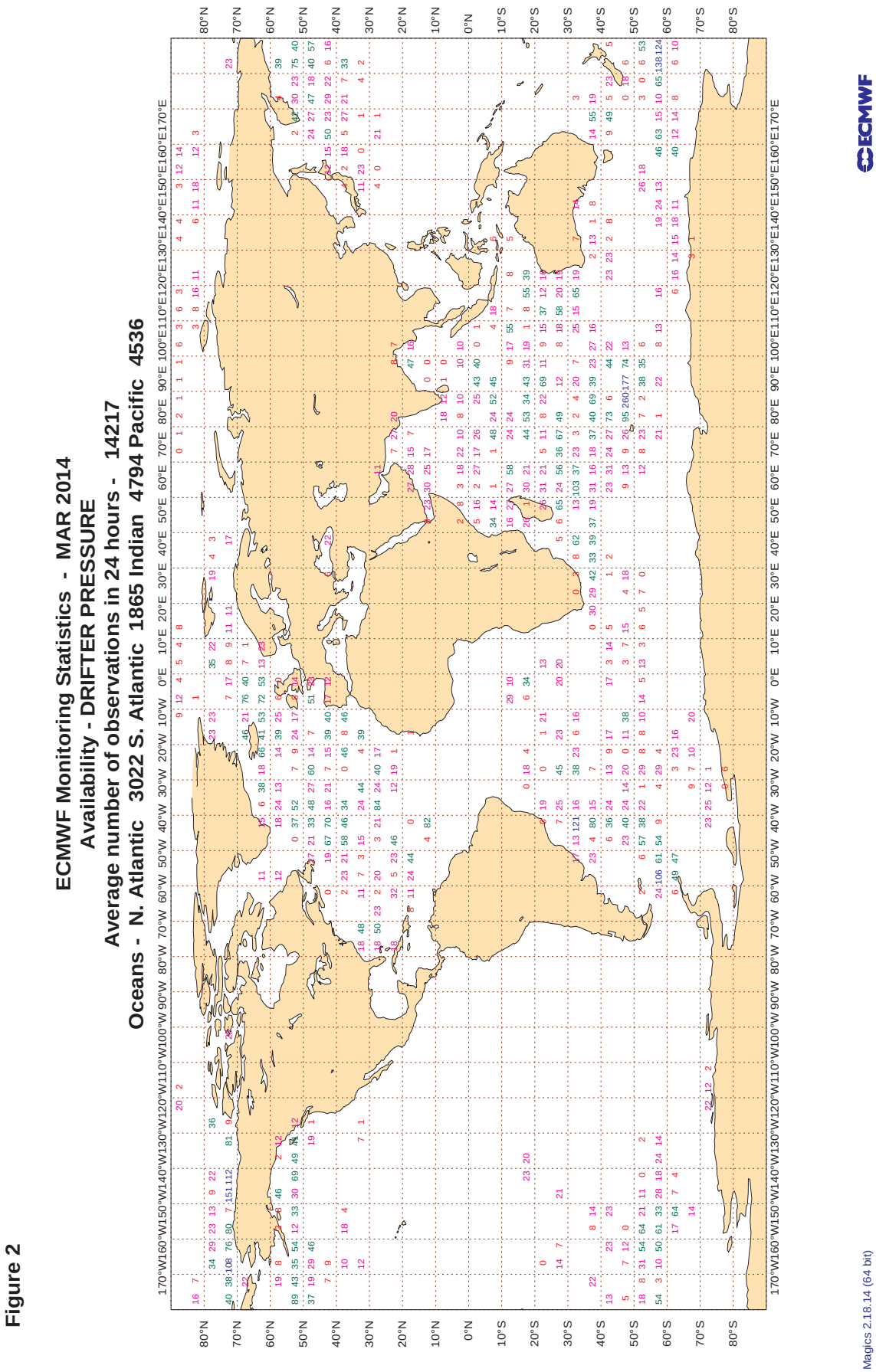


Figure 2

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

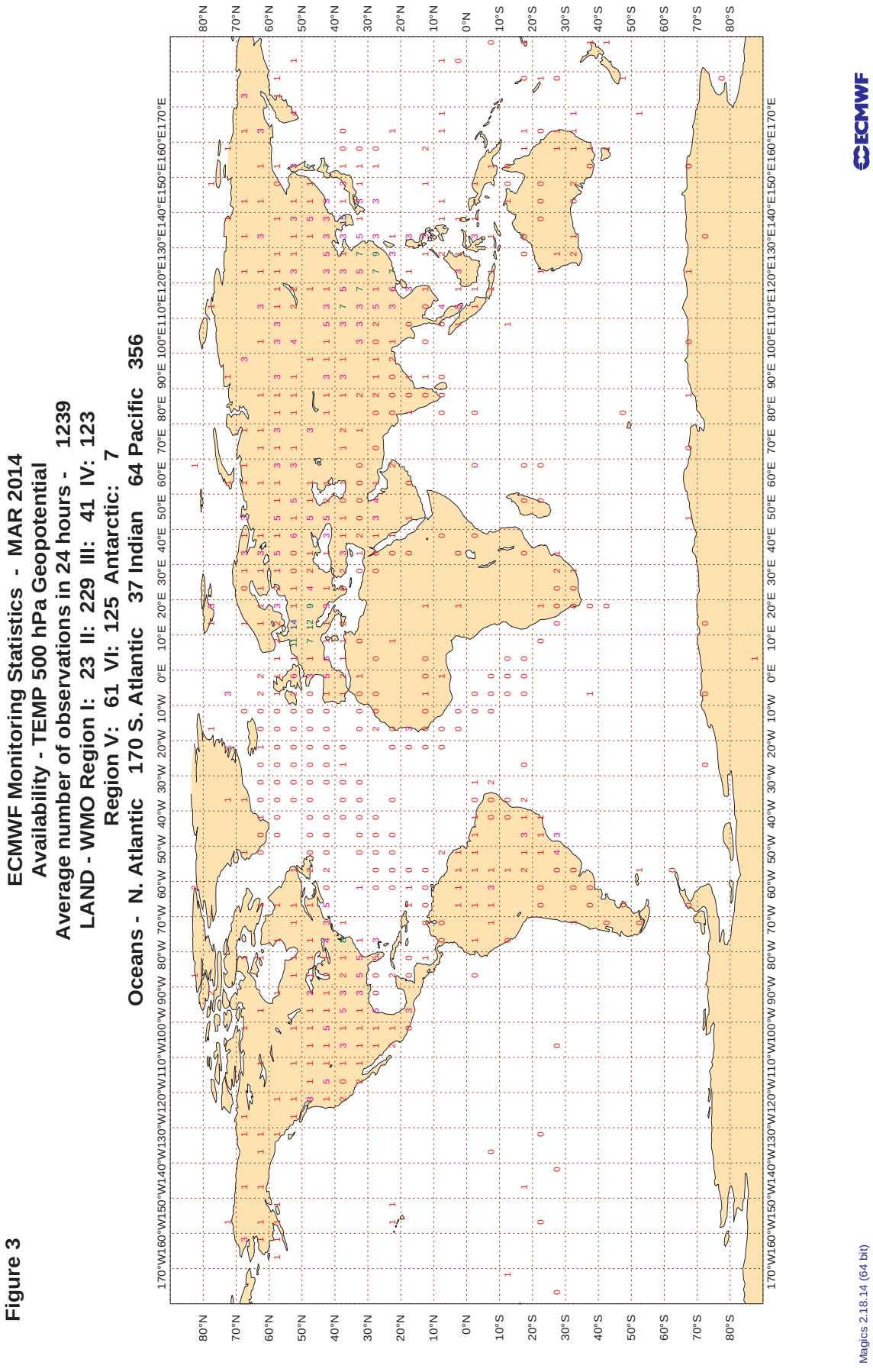


Figure 3

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

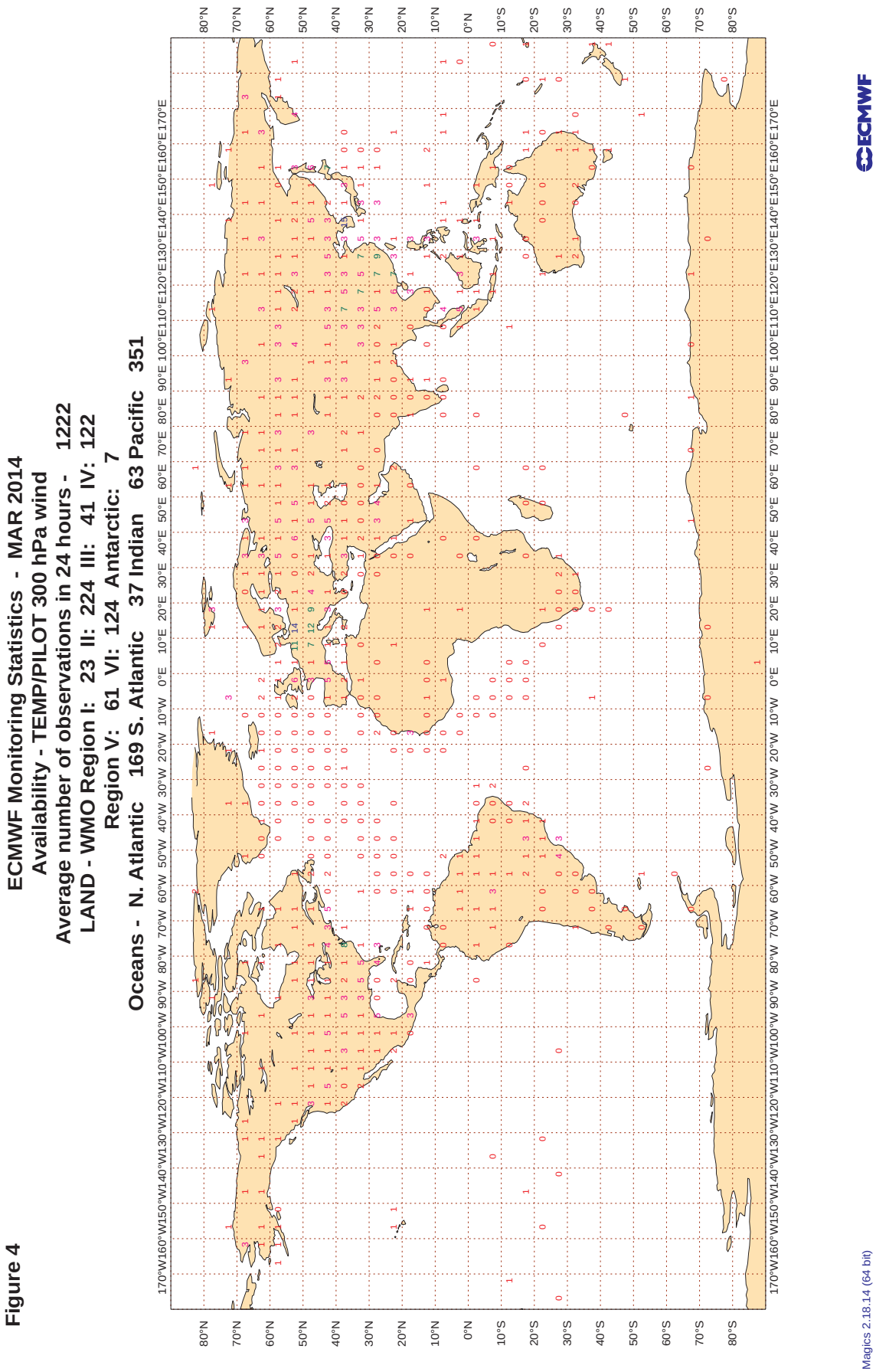


Figure 4

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

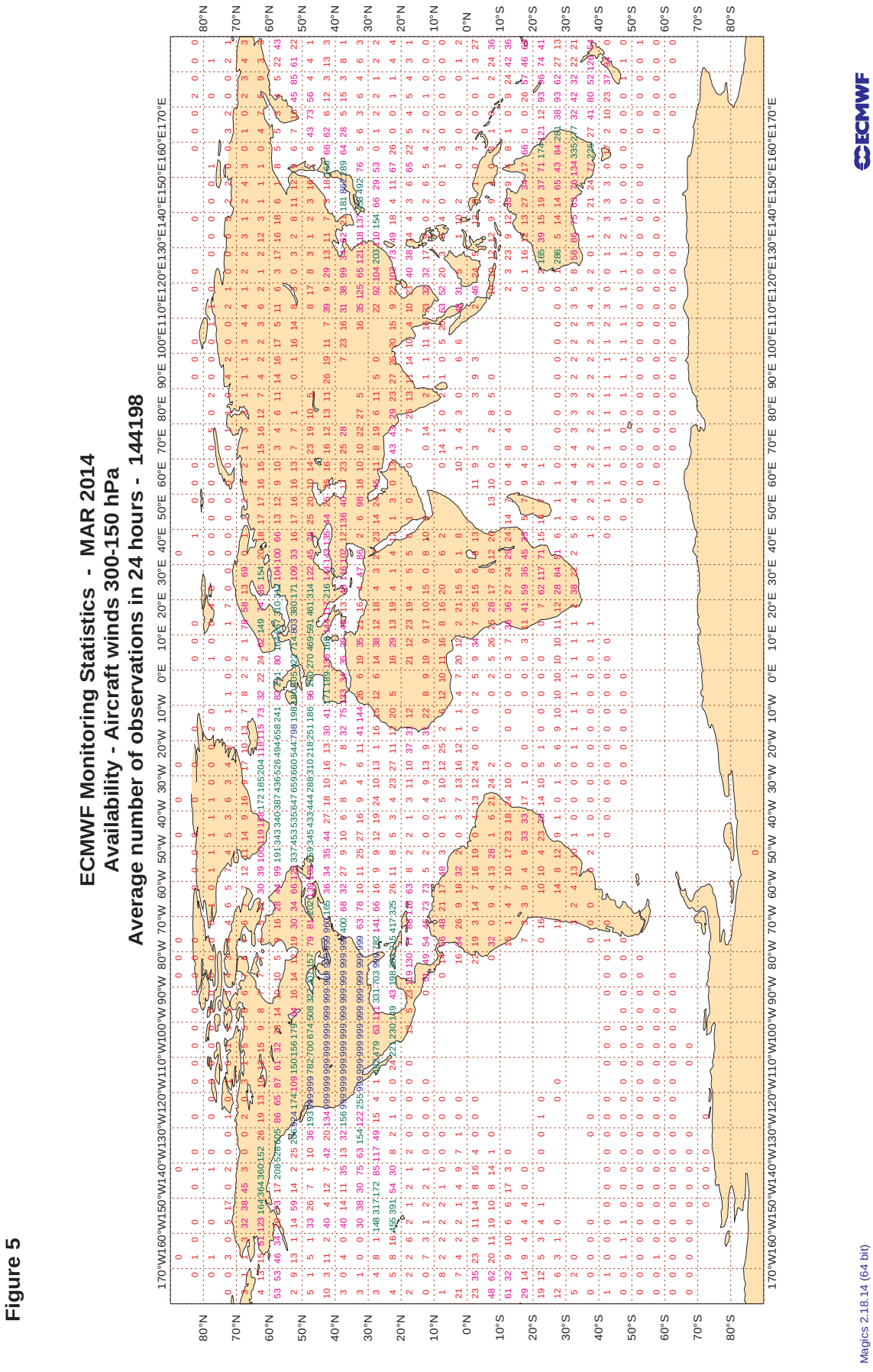


Figure 5

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

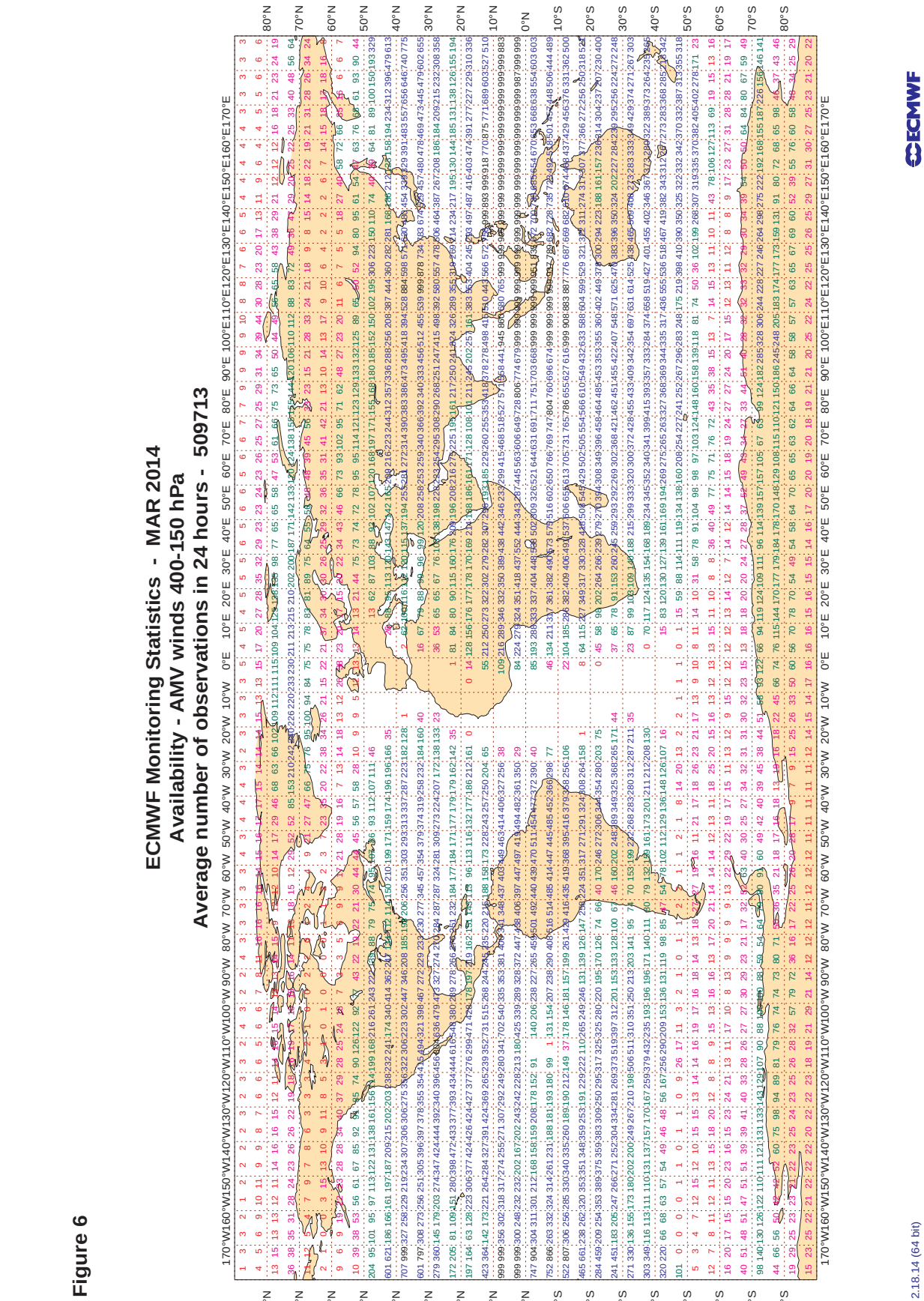


Figure 6

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

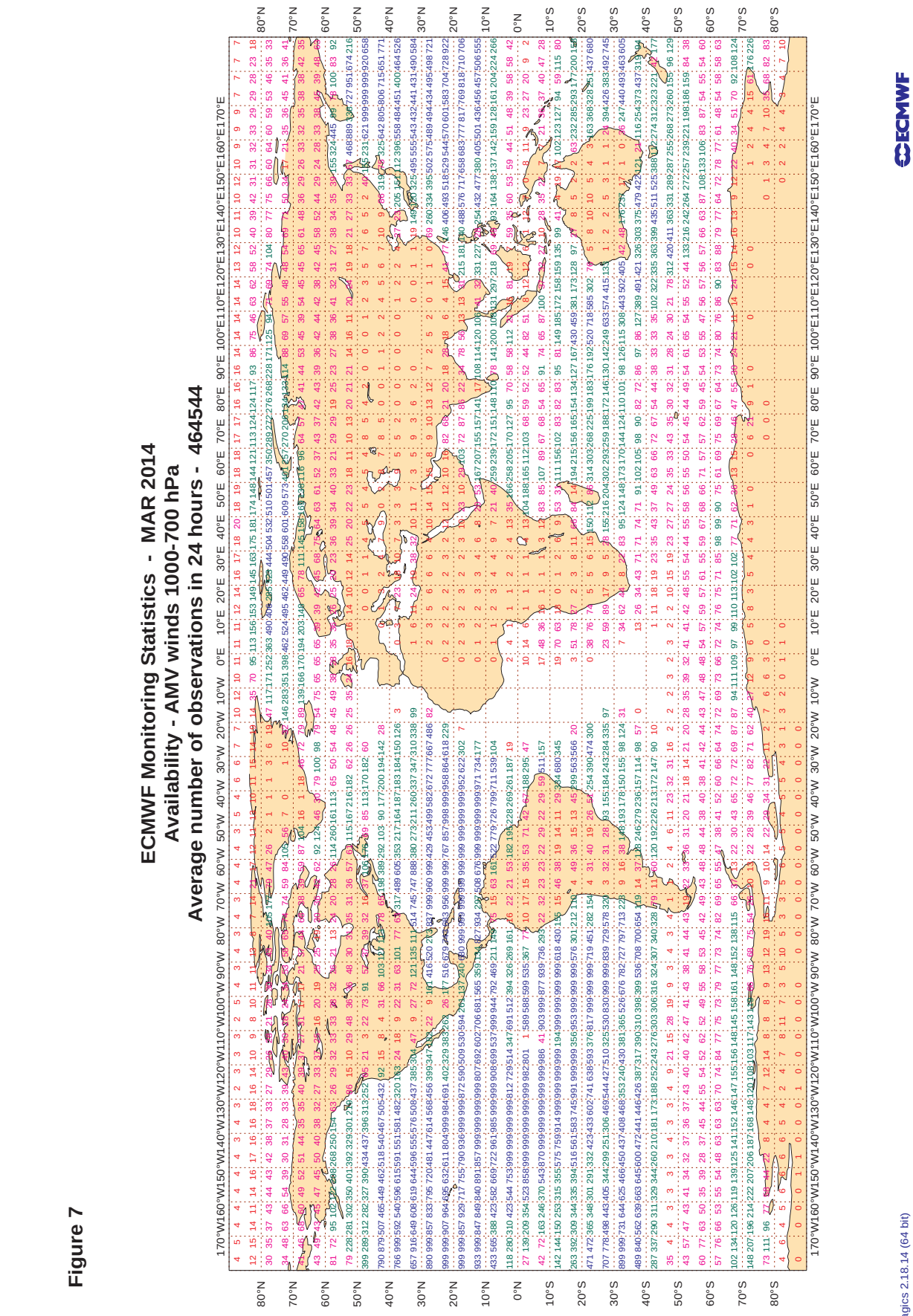


Figure 7

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

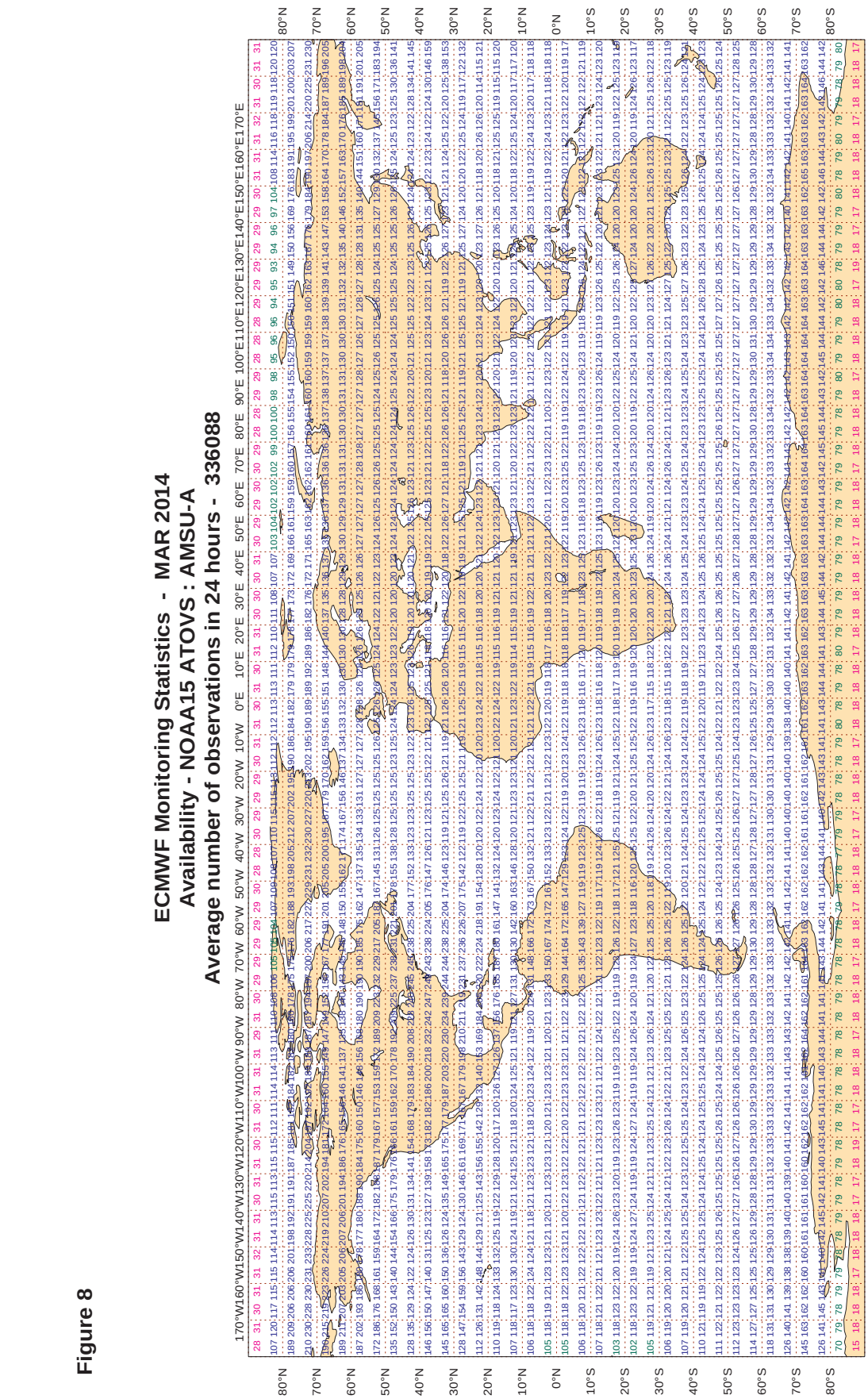


Figure 8

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

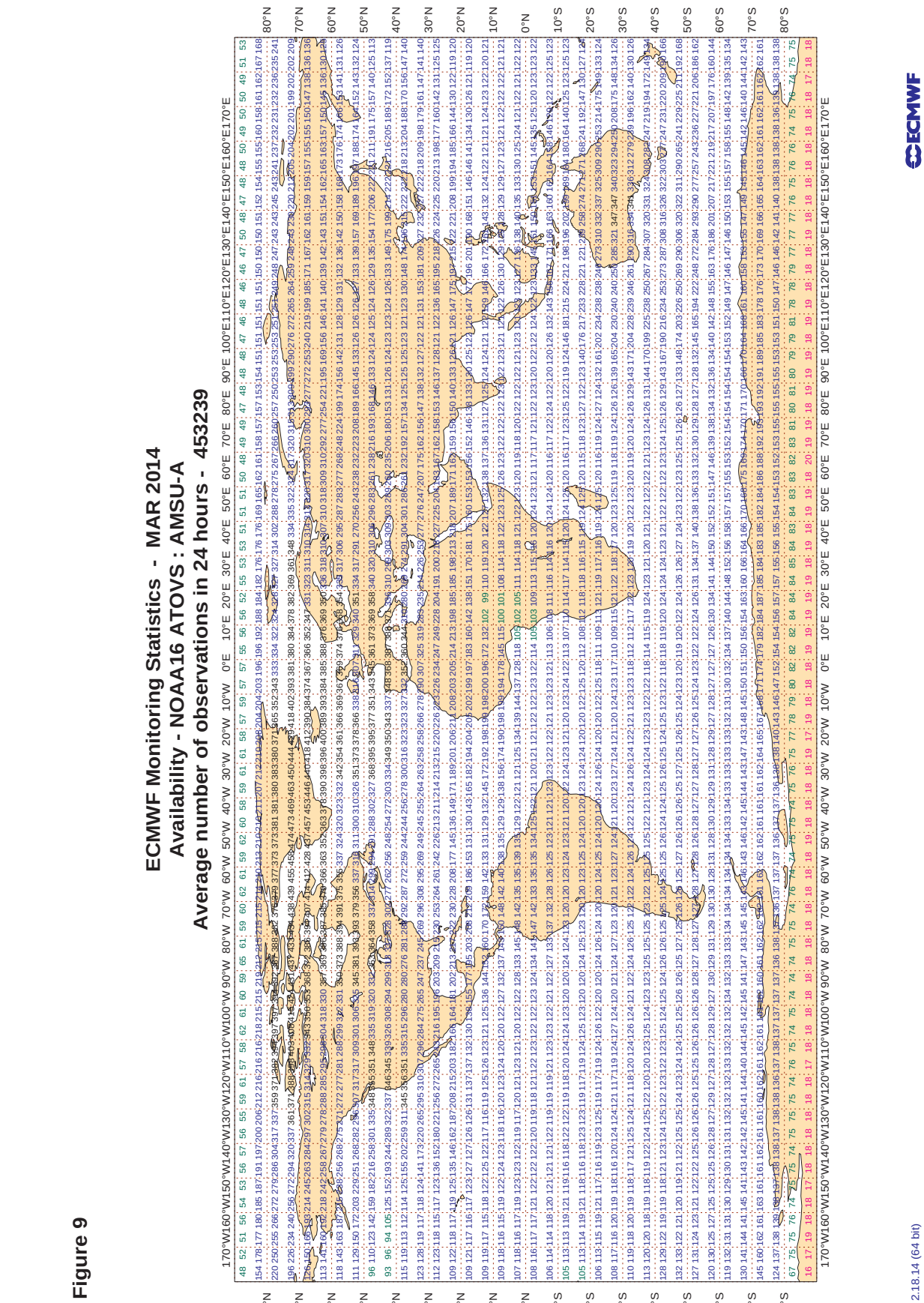


Figure 9

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

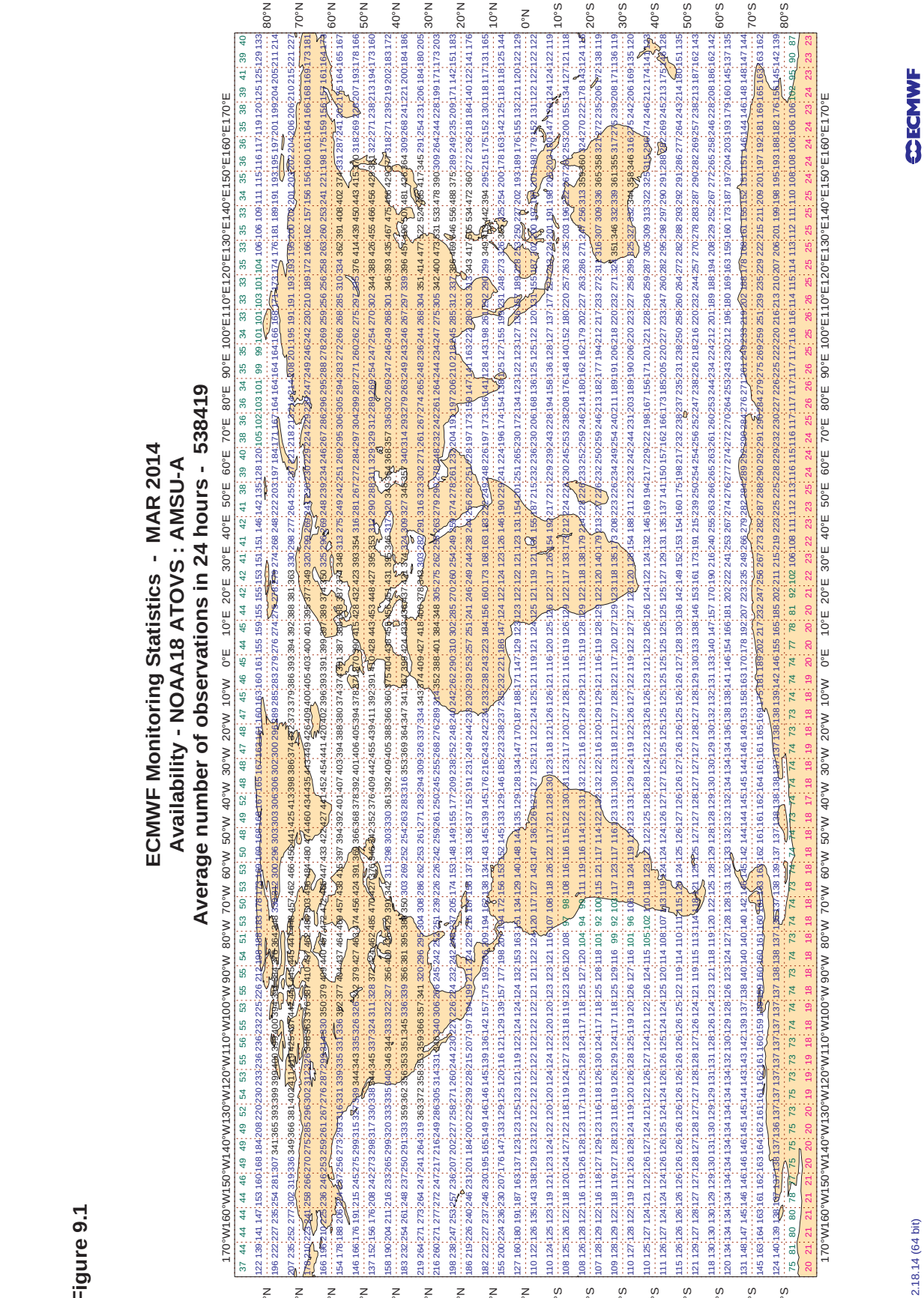


Figure 9.1

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

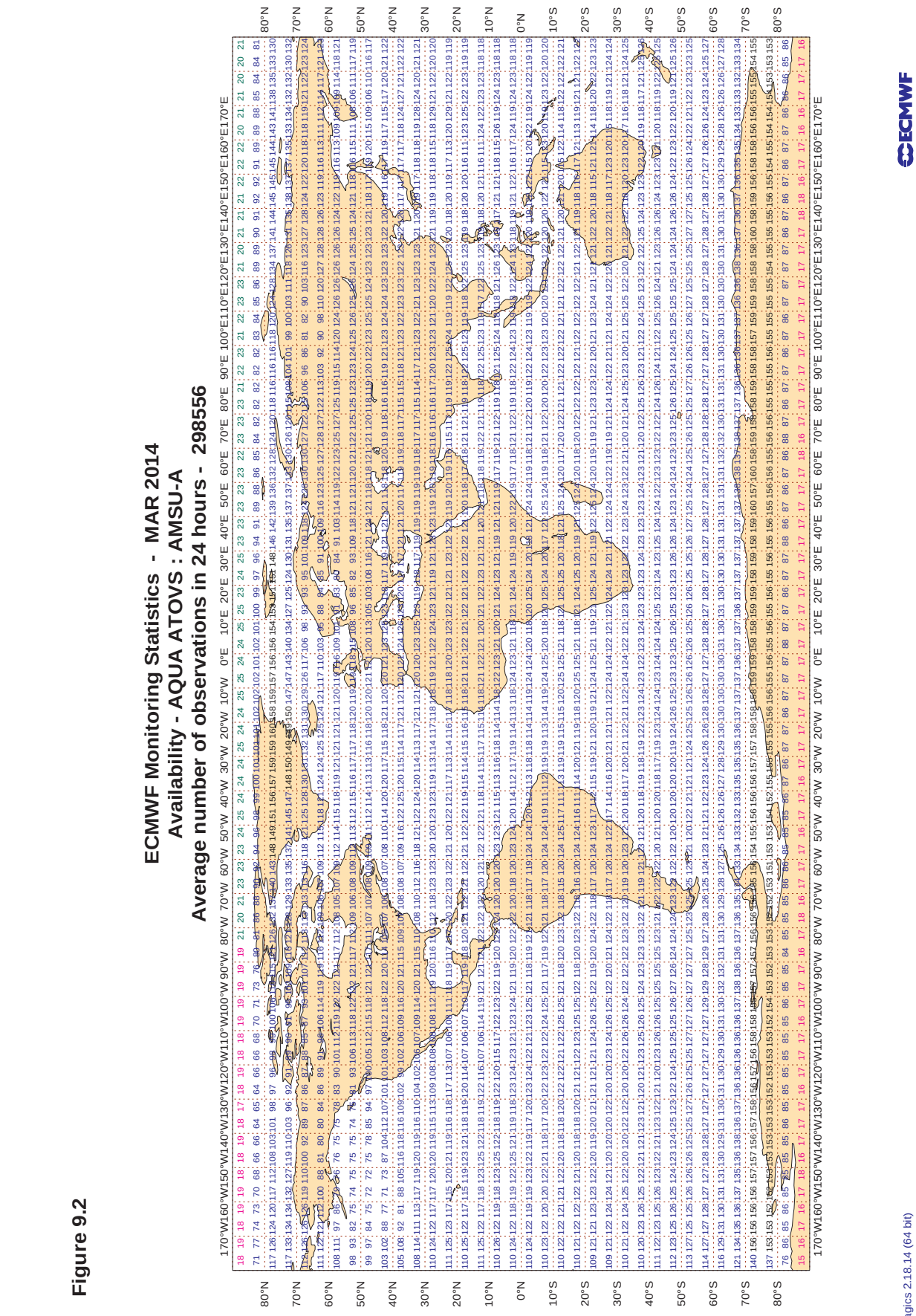
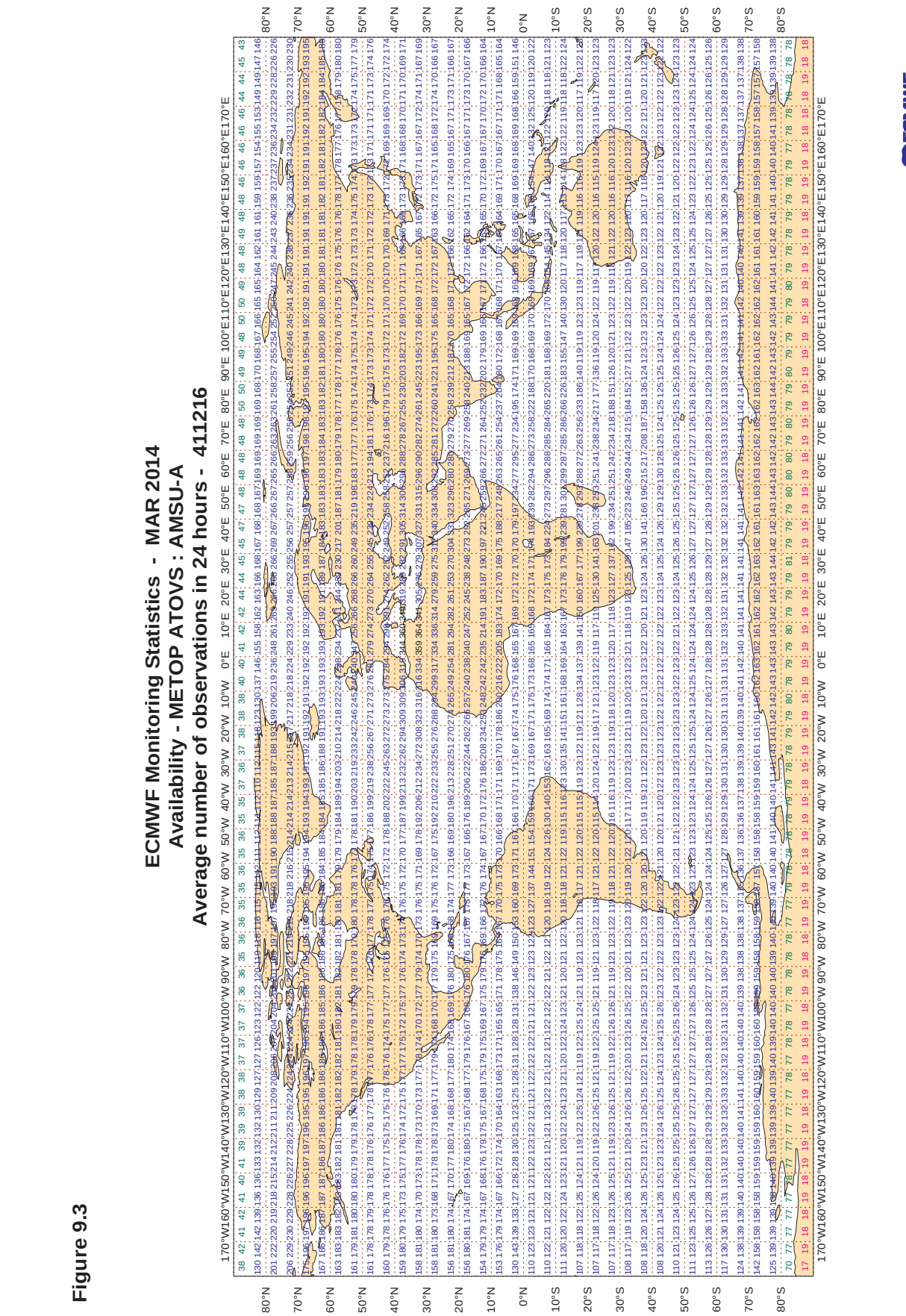


Figure 9.2

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



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                : MAR 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
62087	99	P	SUR	26	7	7.4	0.0	7.4
WCX7445	99	P	SUR	20	12	1.1	-3.4	3.6

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                : MAR 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
62087	99	SPEED	SUR	27	0	0	3.3	-7.4	8.1

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                : MAR 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
42369	99	DIRN	SUR	25	0	0	19.0	37.9	42.4
62086	99	DIRN	SUR	24	2	0	109.3	-29.6	113.2

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                : MAR 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
17666	99	P	SUR	-46	69	62	28	4.5	-3.6	5.8
31532	99	P	SUR	-34	-44	182	61	0.6	0.4	0.7
31534	99	P	SUR	-29	-40	243	77	0.4	-0.3	0.5
62087	99	P	SUR	55	7	186	57	7.4	0.1	7.4

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                : MAR 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	2.5	-7.1	7.5
44137	99	SPEED	SUR	42	-62	113	0	0	3.4	-8.0	8.7
62087	99	SPEED	SUR	55	7	194	0	0	3.3	-7.2	7.9

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

```
          LIST OF SUSPECT STATIONS         : DRIFTER
                    MONITORING CENTRE      : ECMWF
                    ELEMENT MONITORED      : WIND DIRECTION (DEGREES)
                    PERIOD                 : MAR 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	27	0	0	20.0	28.0	34.5
31052	99	DIRN	SUR	-8	-35	165	0	0	14.7	-23.3	27.6
42364	99	DIRN	SUR	29	-88	68	0	0	13.6	24.5	28.0
42365	99	DIRN	SUR	28	-89	94	0	1	30.8	-21.5	37.6
42369	99	DIRN	SUR	27	-90	173	0	3	20.3	30.2	36.3
42375	99	DIRN	SUR	29	-88	136	0	11	33.2	21.8	39.7
44043	99	DIRN	SUR	39	-76	52	0	0	20.8	-25.3	32.7
46076	99	DIRN	SUR	60	-148	133	4	9	33.5	24.3	41.4
46092	99	DIRN	SUR	37	-122	137	0	0	16.8	24.0	29.3
46131	99	DIRN	SUR	50	-125	116	0	6	19.7	-35.2	40.4
53005	99	DIRN	SUR	-8	80	70	0	4	29.8	51.7	59.6

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                : MAR 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
04417	12	Z	1000	73	-38	28	20	9.3	-86.9	87.4
04417	00	Z	1000	73	-38	30	19	32.0	-79.4	85.6
06458	00	Z	200	51	5	27	5	0.0	243.0	243.0
16716	00	Z	1000	38	24	27	0	6.1	-31.2	31.8
20046	00	Z	400	81	58	29	1	58.8	-17.0	61.2
22845	12	Z	200	62	39	31	0	66.3	92.5	113.8
22845	00	Z	200	62	39	30	1	55.4	75.2	93.4
40745	12	Z	50	36	60	23	3	38.3	333.0	335.2
40841	12	Z	50	30	57	25	3	34.1	322.5	324.3
42182	12	Z	70	29	77	11	1	113.5	178.7	211.7
42361	00	Z	300	26	78	11	0	97.4	6.3	97.6
42369	00	Z	150	27	81	10	1	146.9	33.9	150.8
42379	00	Z	150	27	83	12	1	104.8	97.0	142.8
42397	00	Z	200	27	88	10	0	75.5	86.2	114.6
42701	00	Z	150	23	85	19	1	98.2	13.5	99.1
43003	00	Z	500	19	73	25	0	25.6	-52.4	58.3
43285	00	Z	200	13	75	12	1	119.3	29.5	122.9
43333	00	Z	30	12	93	28	0	22.9	186.8	188.2
43346	00	Z	500	11	80	20	0	41.0	-52.9	66.9
43369	00	Z	50	8	73	24	0	11.8	140.1	140.6
47122	00	Z	30	37	127	29	0	44.8	202.3	207.2
97014	12	Z	1000	2	125	29	0	23.6	17.7	29.5
ASDE01	00	Z	1000	45	-53	10	0	11.7	34.8	36.7
ASDE01	12	Z	1000	45	-58	14	0	8.7	37.5	38.5

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                : MAR 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
04339	00	V	250	70	-22	12	0	-4.4	-0.7	15.2
33658	00	V	150	48	26	12	0	-0.8	9.8	16.5
42182	12	V	100	29	77	23	0	-10.1	-2.3	18.0
42701	00	V	100	23	85	18	0	-7.8	-3.3	16.0

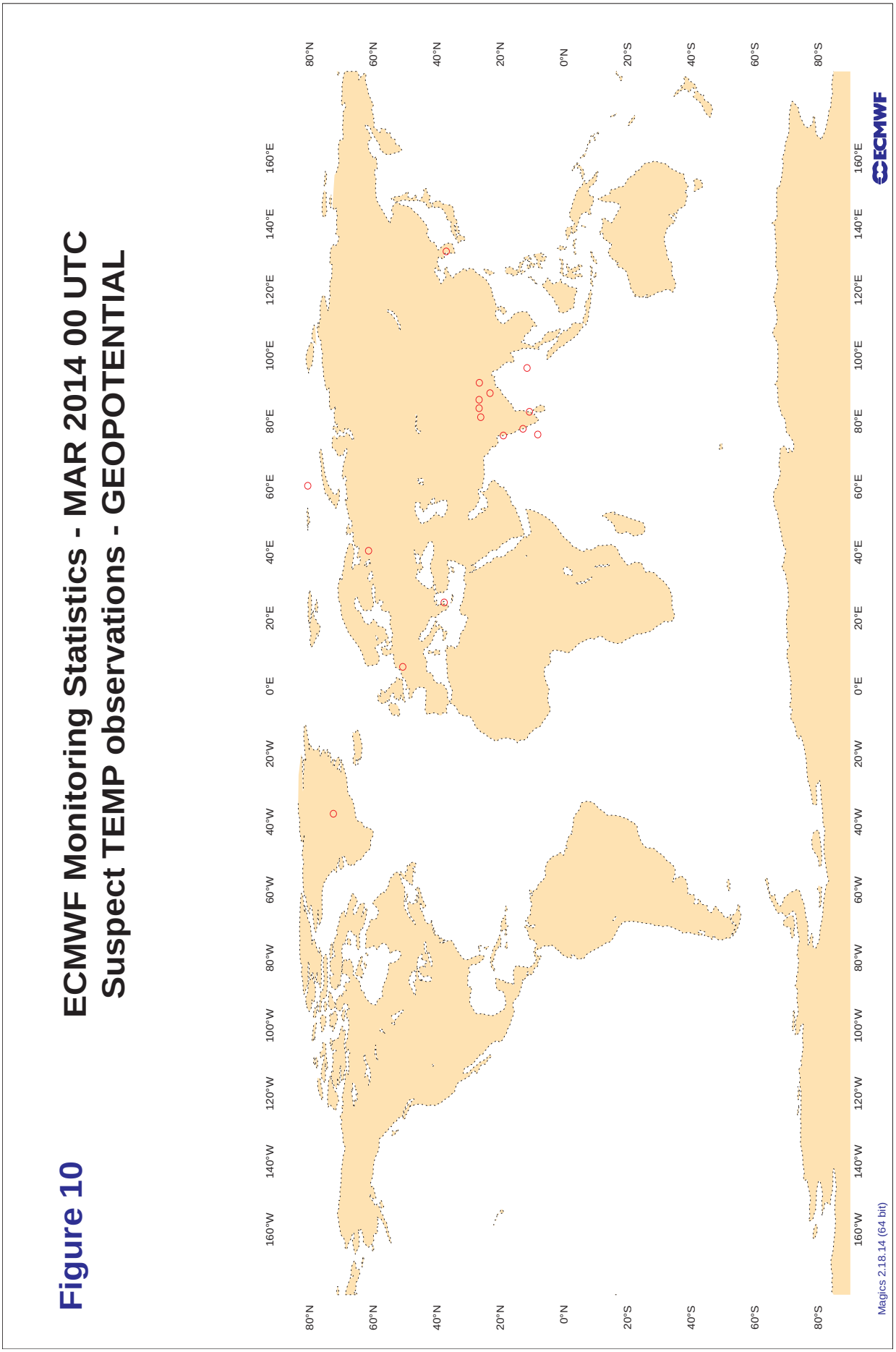
3.2.21 Table 9 - Suspect radiosondes: Wind direction (degrees)

```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                    AREA                  : GLOBAL
                    PERIOD                : MAR 2014
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD

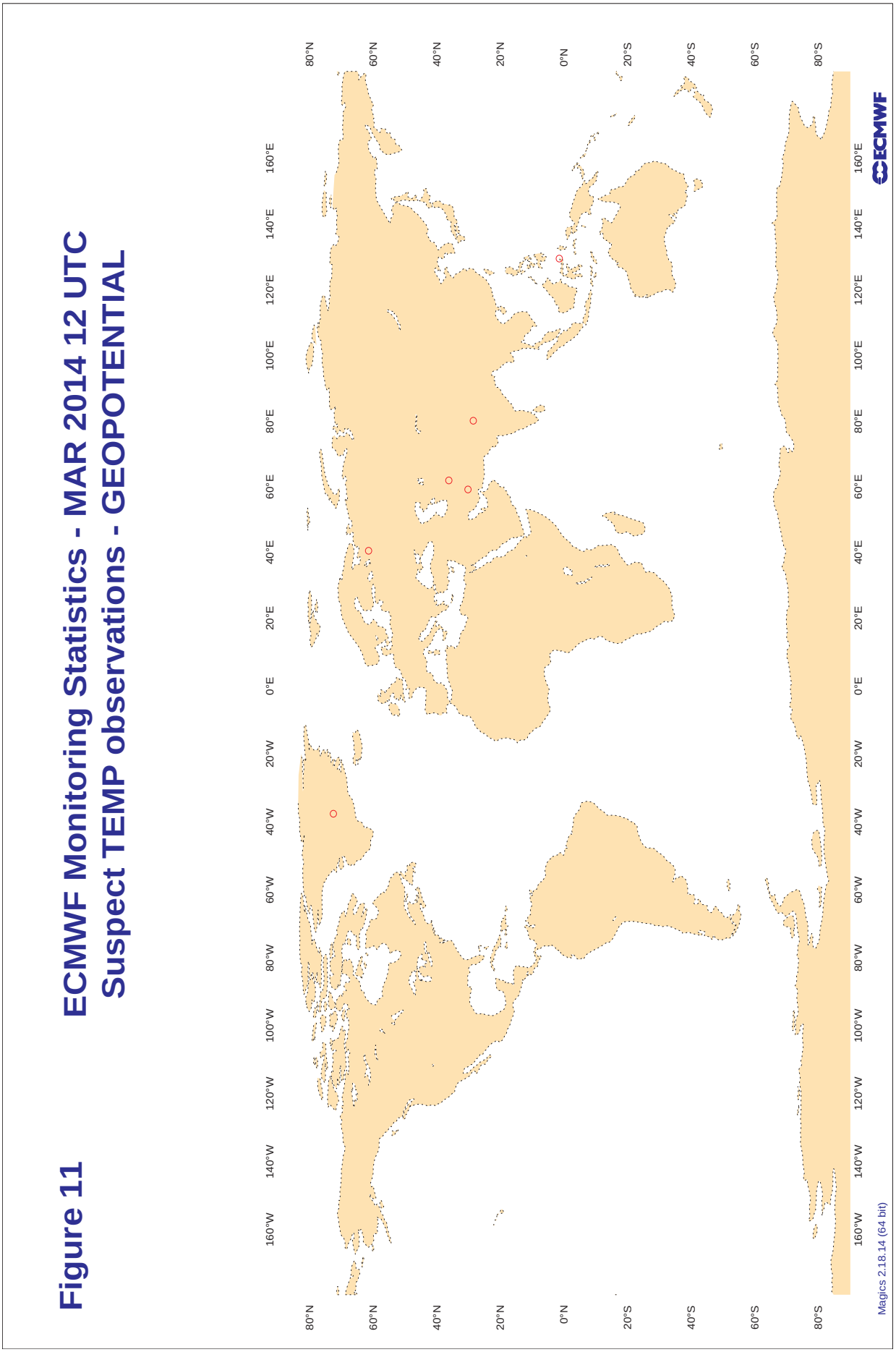

SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS >= 5 M/S
                    NO. OF OBSERVATIONS   >= 5, AND,
                    ABSOLUTE BIAS         >= 10 DEGREES, WITH
                    STANDARD DEVIATION    <  30 DEGREES, AND,
                    VERTICAL SPREAD       < 10 DEGREES
         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

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
42701	00	DD	23	85	25	-11.4	7.3	24.1

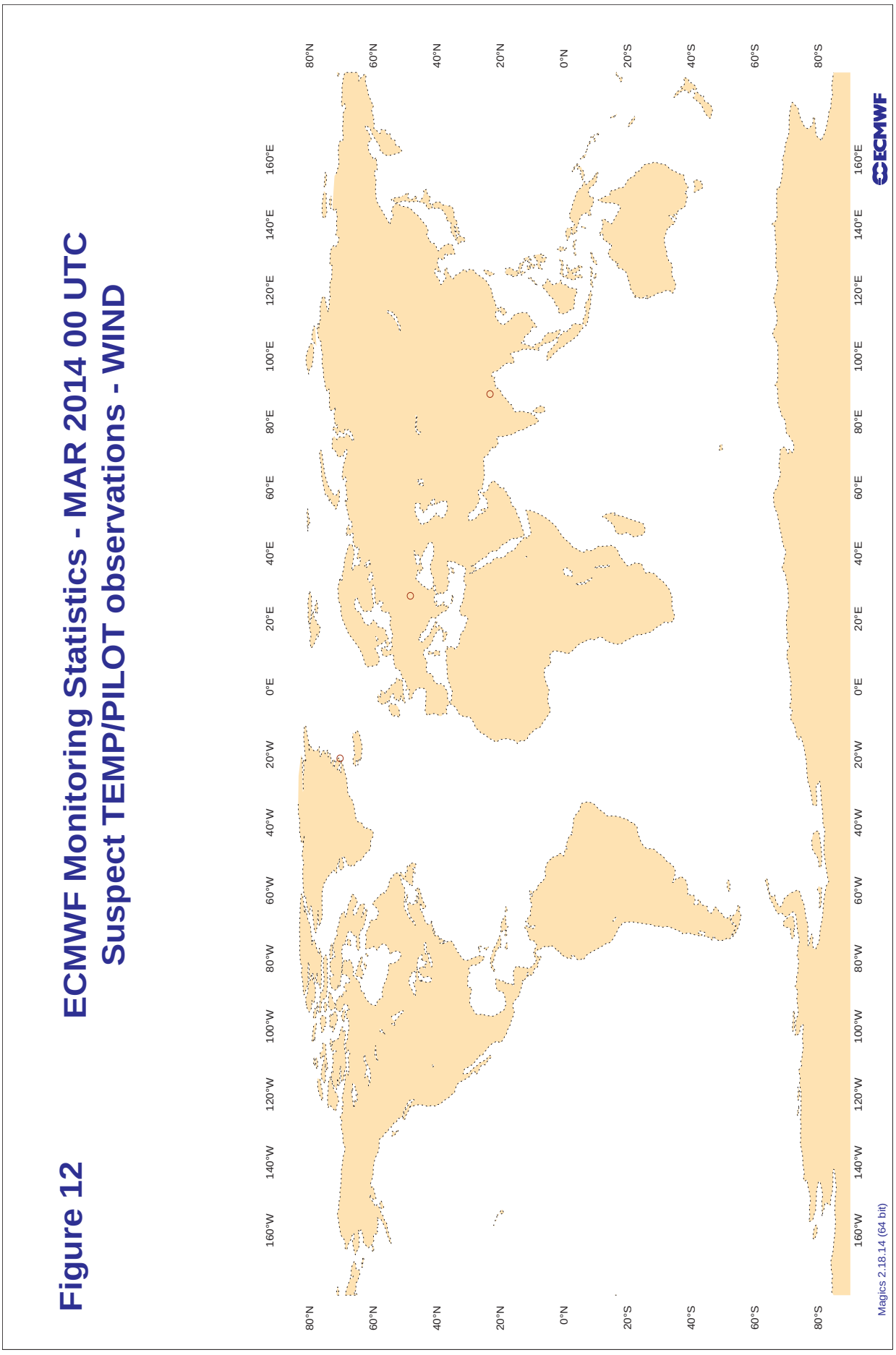
3.2.22 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



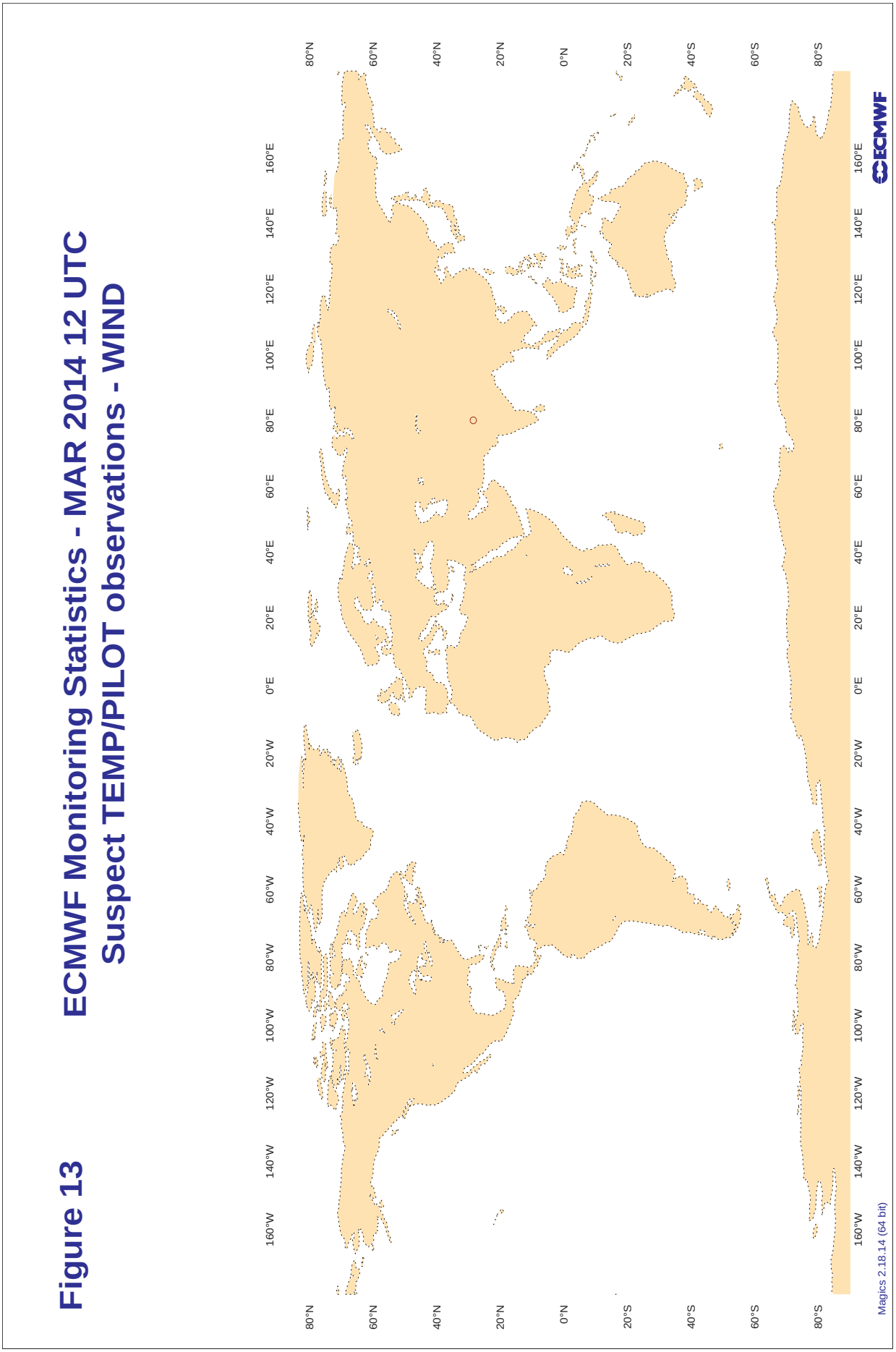
3.2.23 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASDE01	12	Z	100	9	47.6	46.7
ASDE01	00	Z	100	7	41.5	38.1
ASDE02	12	Z	100	22	32.4	26.5
ASDE03	12	Z	100	5	9.3	8.0
ASDE03	00	Z	100	6	13.1	13.0
ASDE04	12	Z	100	8	16.0	13.8
ASDE04	00	Z	100	8	12.2	5.4
ASDE09	12	Z	100	2	6.9	6.5
ASDK1	12	Z	100	0	0.0	0.0
ASDK1	00	Z	100	2	26.0	26.0
ASDK2	12	Z	100	8	51.3	47.4
ASDK2	00	Z	100	7	46.1	42.3
ASDK3	12	Z	100	13	27.8	24.3
ASDK3	00	Z	100	17	16.7	7.2
ASES1	12	Z	100	18	39.2	35.9
ASEU01	12	Z	100	12	24.4	22.8
ASEU02	00	Z	100	2	31.1	31.0
ASEU02	12	Z	100	3	38.8	38.4
ASEU03	12	Z	100	6	26.5	12.3
ASEU03	00	Z	100	3	18.6	17.9
ASEU04	12	Z	100	5	10.7	4.6
ASEU04	00	Z	100	5	19.6	-14.3
ASEU05	12	Z	100	11	32.7	30.9
ASEU05	00	Z	100	7	28.2	25.1
ASEU06	12	Z	100	3	54.3	54.3
ASEU06	00	Z	100	3	52.1	51.9
ASFR1	00	Z	100	12	24.5	22.2
ASFR1	12	Z	100	13	34.0	25.6
ASFR2	12	Z	100	9	25.6	22.1
ASFR2	00	Z	100	8	18.3	17.4
ASFR3	12	Z	100	7	14.2	11.9
ASFR3	00	Z	100	8	10.2	9.6
ASFR4	12	Z	100	17	18.1	16.6
ASFR4	00	Z	100	17	20.2	18.8
DBLK	12	Z	100	28	11.5	5.0
DBLK	00	Z	100	2	14.5	14.5
JGQH	12	Z	100	5	14.2	12.7
JGQH	00	Z	100	7	12.9	11.7

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASDE01	12	V	100	8	3.0	-1.0	-0.4
ASDE01	00	V	100	7	5.8	1.0	0.3
ASDE02	12	V	100	22	8.0	-2.9	0.4
ASDE03	12	V	100	5	2.3	-0.4	0.6
ASDE03	00	V	100	6	4.2	0.5	-0.9
ASDE04	12	V	100	8	4.0	-3.1	0.7
ASDE04	00	V	100	7	3.4	0.0	0.8
ASDE09	12	V	100	2	2.5	0.0	0.8
ASDK1	12	V	100	0	0.0	0.0	0.0
ASDK1	00	V	100	0	0.0	0.0	0.0
ASDK2	12	V	100	8	3.0	-0.1	-0.2
ASDK2	00	V	100	6	4.6	0.6	-2.4
ASDK3	12	V	100	13	2.8	0.4	-0.8
ASDK3	00	V	100	17	3.7	0.2	0.5
ASES1	12	V	100	17	5.1	0.0	0.6
ASEU01	12	V	100	12	3.5	2.2	0.8
ASEU02	00	V	100	2	4.2	1.9	3.0
ASEU02	12	V	100	3	3.5	-2.4	-1.1
ASEU03	12	V	100	5	5.6	1.2	0.6
ASEU03	00	V	100	2	5.5	-1.0	3.3
ASEU04	12	V	100	5	5.4	0.3	-0.8
ASEU04	00	V	100	5	2.4	0.9	-1.1
ASEU05	12	V	100	11	4.8	-1.0	0.4
ASEU05	00	V	100	5	2.6	-0.5	-0.2
ASEU06	12	V	100	3	4.3	-2.4	2.8
ASEU06	00	V	100	3	4.0	-3.0	1.5
ASFR1	00	V	100	11	5.0	-0.5	0.8
ASFR1	12	V	100	13	3.3	0.9	0.1
ASFR2	12	V	100	9	4.2	0.0	-2.3
ASFR2	00	V	100	8	2.2	0.3	1.1
ASFR3	12	V	100	7	3.9	-0.7	-0.5
ASFR3	00	V	100	7	3.5	1.0	1.9
ASFR4	12	V	100	16	4.5	-1.1	0.6
ASFR4	00	V	100	16	4.0	-0.8	0.9
DBLK	12	V	100	23	6.1	-0.2	0.7
DBLK	00	V	100	2	13.5	-12.8	-3.0
JGQH	12	V	100	5	5.1	-2.5	-1.3
JGQH	00	V	100	7	2.6	0.0	0.2

3.2.28 Figure 14 - SATOB Winds: 700-1000hPa

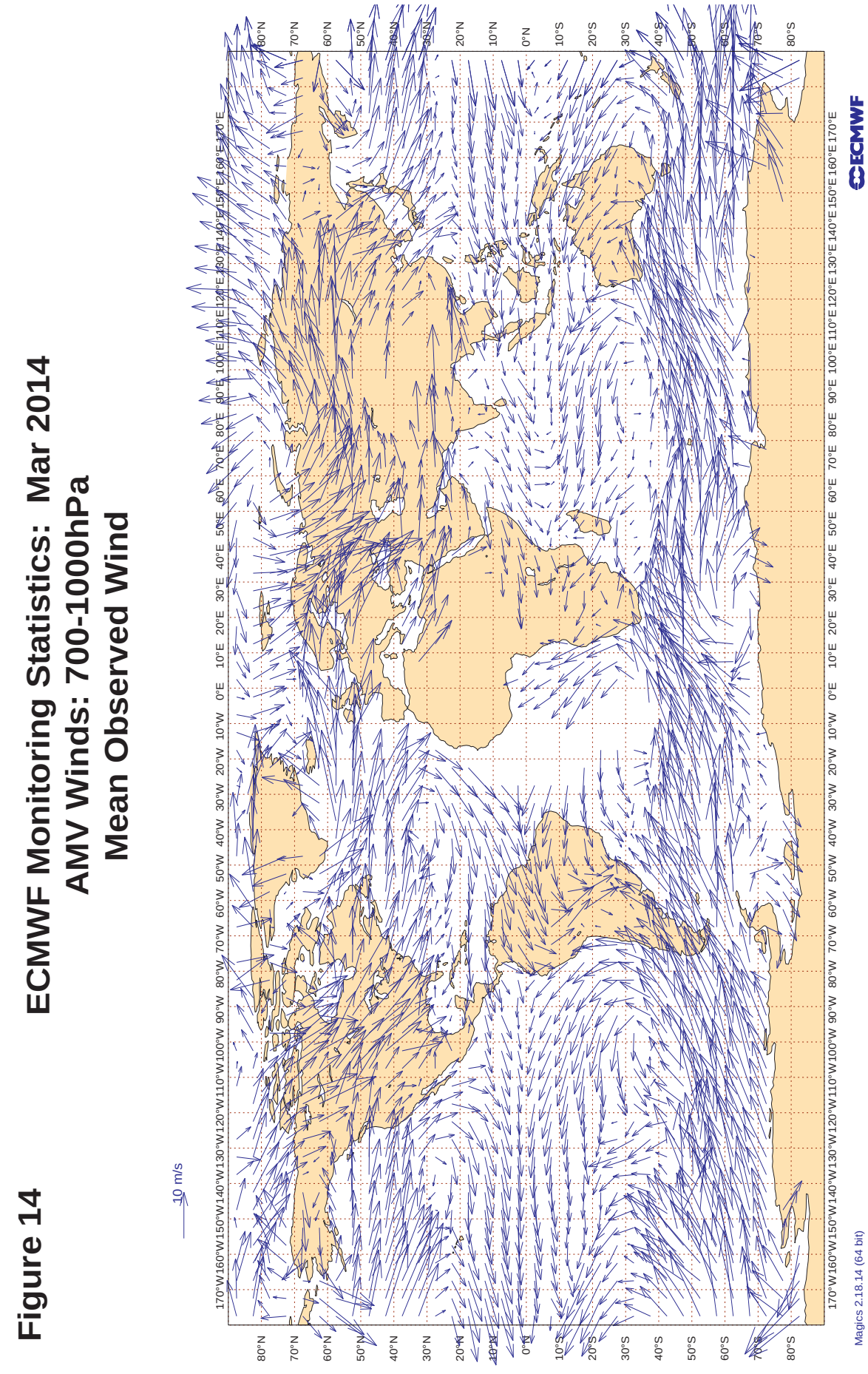


Figure 14

3.2.29 Figure 15 - SATOB Winds: 150- 400hPa

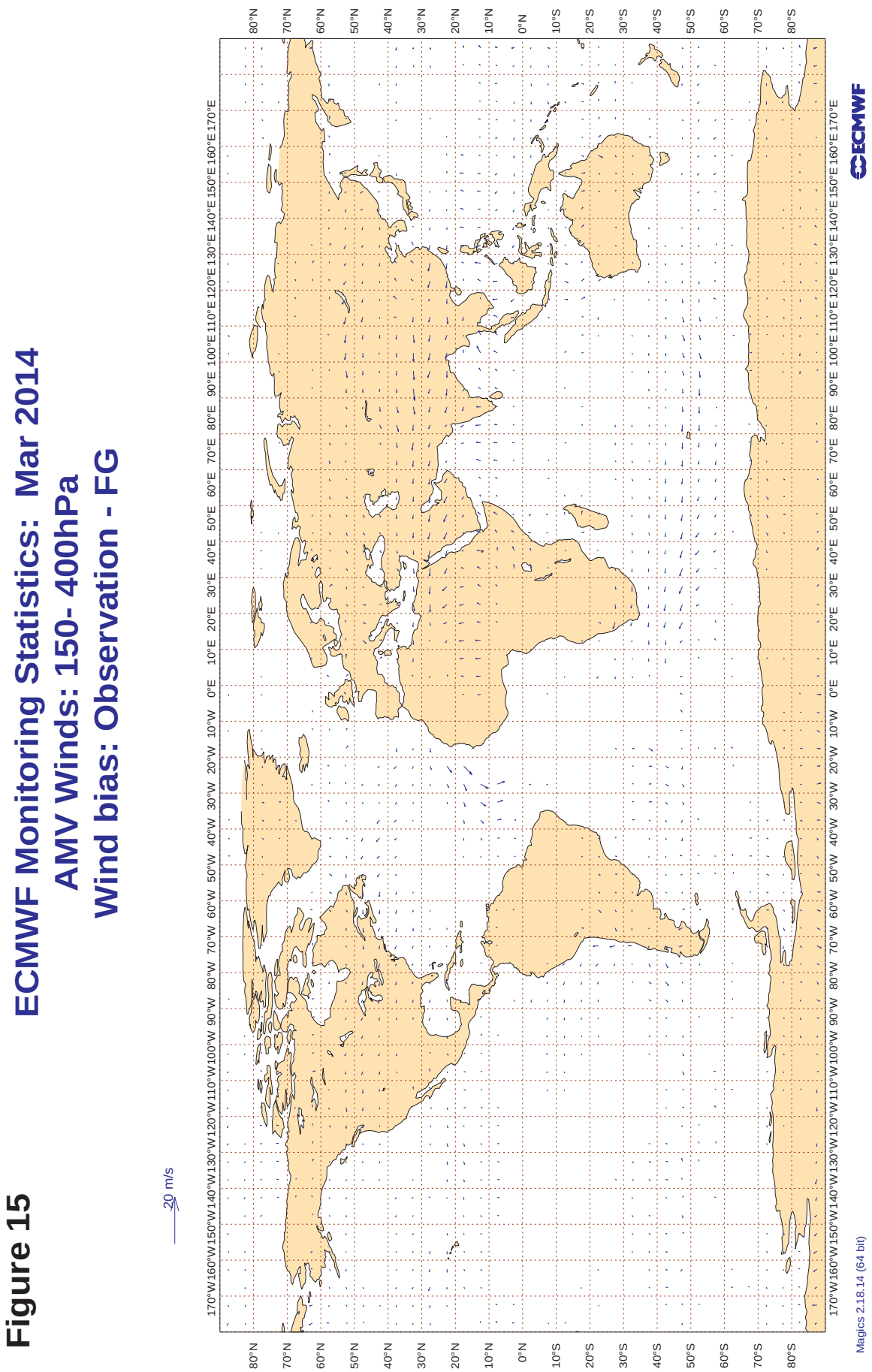


Figure 15

3.2.30 Figure 16 - SATOB Winds: 700-1000hPa

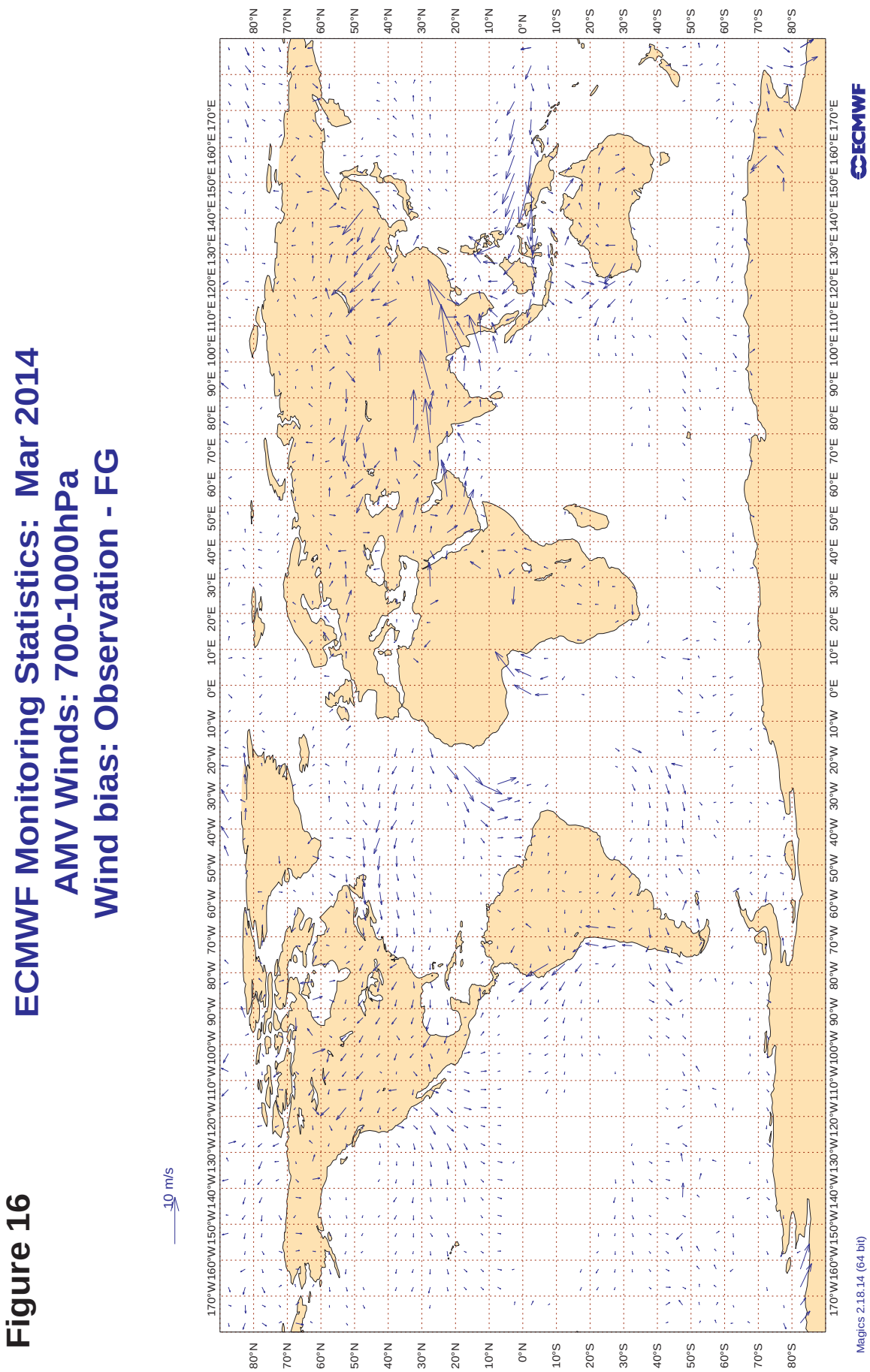


Figure 16

3.2.31 Figure 17 - SATOB Winds: 150- 400hPa

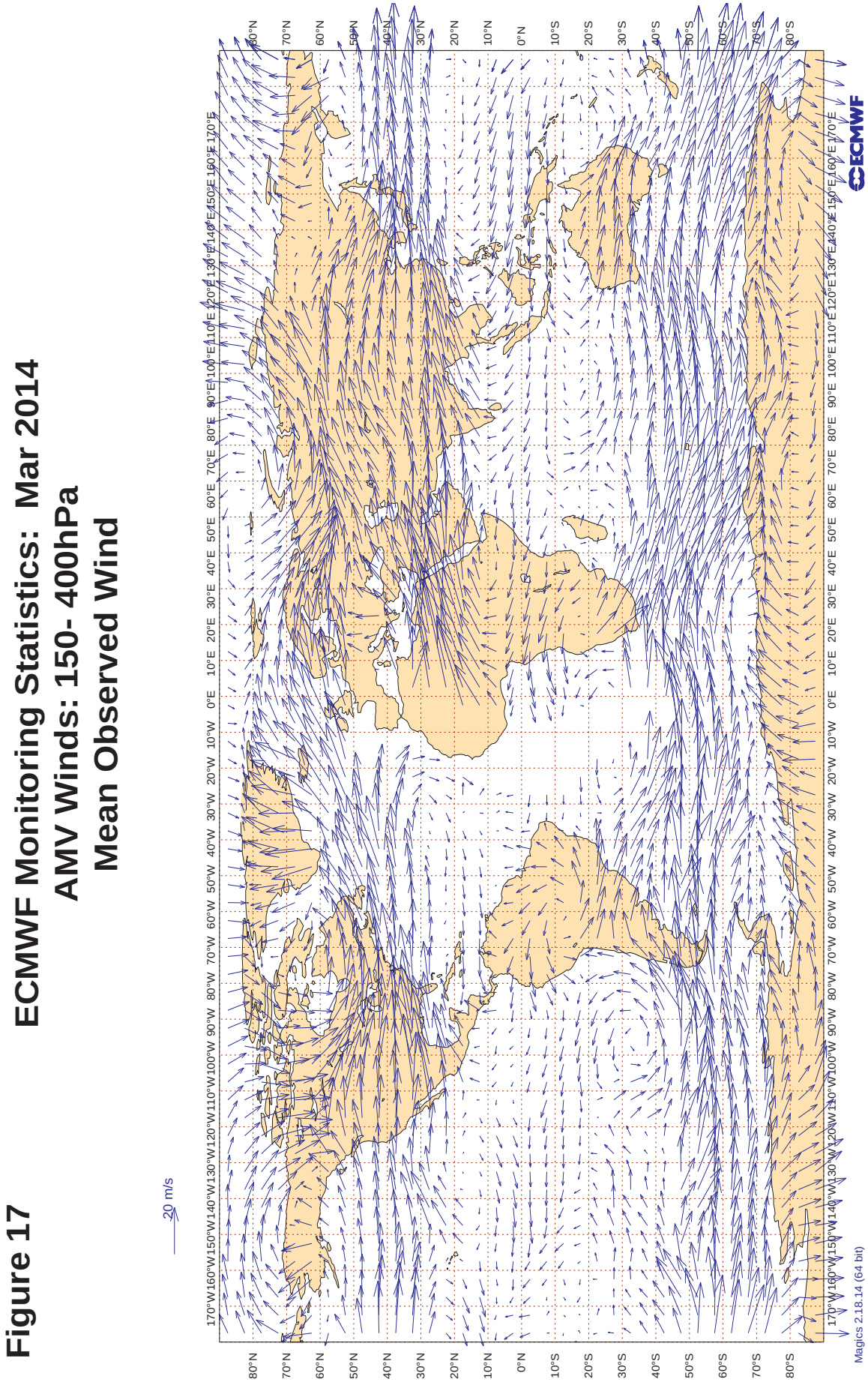


Figure 17

3.2.32 Figure 18 - AIRCRAFT Winds: 150- 300hPa

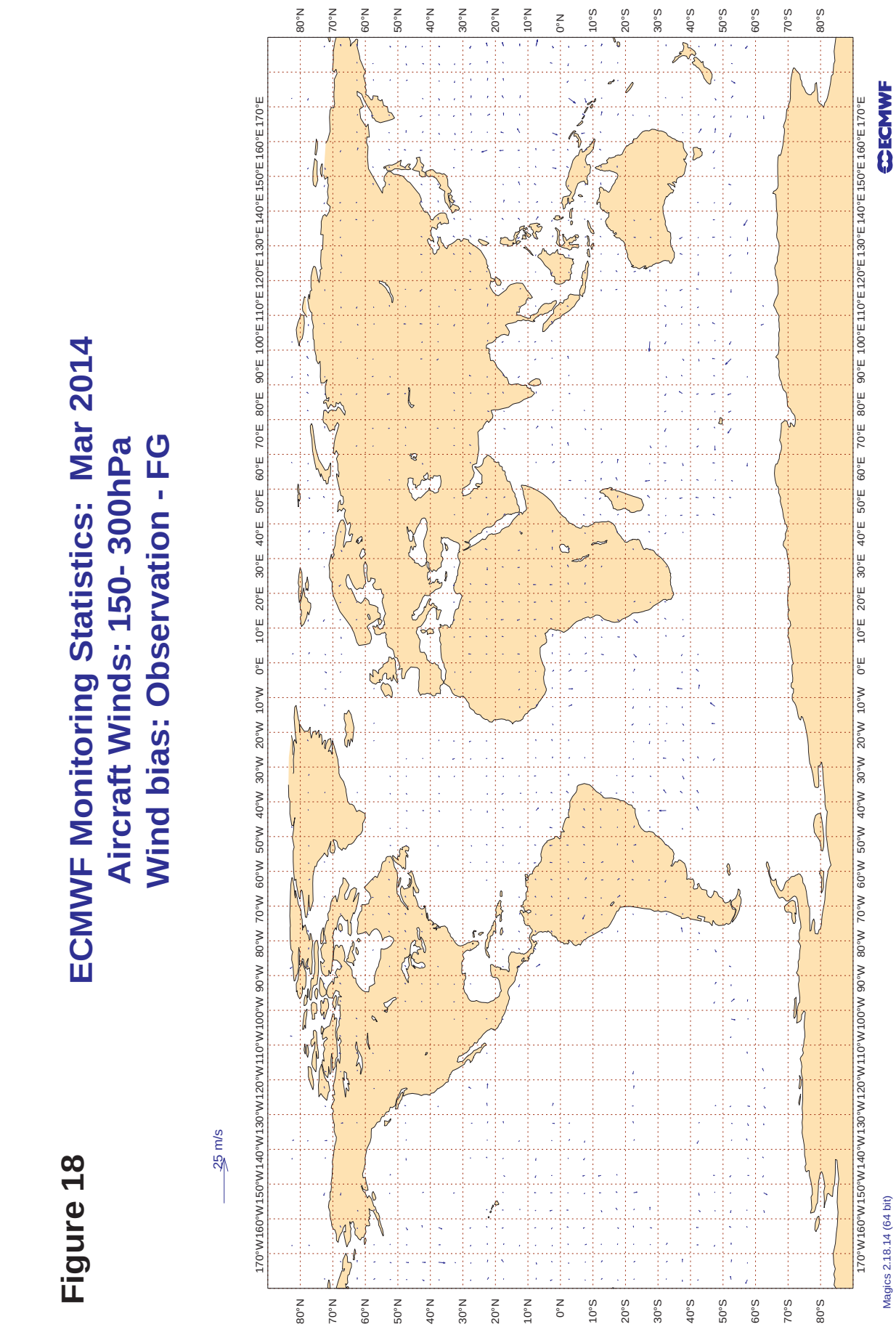


Figure 18

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 : MAR 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	5252	0	0	4.9	-0.9
AAR	99	V	300-150	24	0	0	4.0	-0.6
AAY	99	V	300-150	262	1	0	4.9	-0.5
ACA	99	V	300-150	3063	0	0	4.4	-0.3
ACI	99	V	300-150	487	0	0	4.0	0.5
AFL	99	V	300-150	868	1	0	4.2	0.6
AFR	99	V	300-150	3605	1	0	5.0	0.0
AIC	99	V	300-150	797	1	0	4.5	-0.4
AMX	99	V	300-150	300	35	0	14.8	-0.1
ANZ	99	V	300-150	2289	0	0	4.1	0.5
ASA	99	V	300-150	3433	1	0	5.3	0.4
ASY	99	V	300-150	152	0	0	4.9	1.0
AUA	99	V	300-150	1226	0	0	5.1	-1.8
AVL	99	V	300-150	26	0	0	6.4	-0.8
AVN	99	V	300-150	95	0	0	4.5	-0.5
AWE	99	V	300-150	2777	1	0	4.6	0.3
AXM	99	V	300-150	47	0	0	4.5	0.1
AZA	99	V	300-150	513	0	0	4.9	0.4
BAW	99	V	300-150	5297	1	0	4.9	-0.3
BEL	99	V	300-150	53	2	0	3.3	0.8
BER	99	V	300-150	2024	1	0	5.0	0.7
BLX	99	V	300-150	87	0	0	4.3	-1.4
BMW	99	V	300-150	30	0	0	3.9	-1.4
BOX	99	V	300-150	114	0	0	3.5	-0.1
CAL	99	V	300-150	61	2	0	4.0	-0.1
CFG	99	V	300-150	525	0	0	5.7	-0.7
CGC	99	V	300-150	34	68	0	25.6	0.4
CGD	99	V	300-150	28	32	0	24.2	1.1
CKS	99	V	300-150	499	0	0	4.9	0.4
CLX	99	V	300-150	546	0	0	4.9	0.3

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
CMB	99	V	300-150	39	0	0	4.5	0.4
CNV	99	V	300-150	73	1	0	5.7	0.7
CPA	99	V	300-150	67	3	0	5.7	-0.7
CSN	99	V	300-150	125	5	0	4.7	-0.4
DAH	99	V	300-150	159	1	0	4.9	0.2
DAL	99	V	300-150	12074	0	0	4.9	-0.8
DHK	99	V	300-150	389	0	0	4.6	0.2
DLH	99	V	300-150	5857	1	0	4.8	-0.3
EDW	99	V	300-150	58	0	0	3.8	0.3
EIN	99	V	300-150	1038	0	0	4.5	-0.1
EJM	99	V	300-150	115	15	0	11.1	-0.3
ELY	99	V	300-150	528	1	0	4.8	-0.1
ETD	99	V	300-150	119	1	0	3.8	-0.1
ETH	99	V	300-150	37	16	0	5.1	-0.7
FDX	99	V	300-150	1957	0	0	4.6	0.1
FIN	99	V	300-150	346	1	0	5.1	0.0
FJI	99	V	300-150	1059	0	0	4.2	0.0
FWI	99	V	300-150	73	1	0	3.8	0.9
GEC	99	V	300-150	589	1	0	4.2	0.3
GLJ	99	V	300-150	29	14	0	21.3	-0.6
GTI	99	V	300-150	463	0	0	4.6	-0.4
HAL	99	V	300-150	1341	0	0	5.9	0.8
IBE	99	V	300-150	240	1	0	5.8	0.6
ICL	99	V	300-150	64	2	0	4.8	1.1
ICV	99	V	300-150	24	0	0	5.4	3.1
JAF	99	V	300-150	116	18	0	8.9	-0.3
JAI	99	V	300-150	714	2	0	5.5	0.5
JAS	99	V	300-150	41	0	0	4.1	1.0
JST	99	V	300-150	837	1	0	5.4	0.5
KAI	99	V	300-150	38	3	0	5.0	1.8
KAL	99	V	300-150	243	0	0	5.2	1.0
KLM	99	V	300-150	2166	1	0	4.8	-0.7
LAN	99	V	300-150	100	0	0	4.1	0.6
LOT	99	V	300-150	330	24	0	12.9	-0.4
MAR	99	V	300-150	42	79	0	34.7	-0.4
MAS	99	V	300-150	86	0	0	3.9	-0.2
MGL	99	V	300-150	27	85	0	29.7	-10.4
MGS	99	V	300-150	25	0	0	7.2	-1.2
MMN	99	V	300-150	34	0	0	4.3	-0.6
MSR	99	V	300-150	290	0	0	4.3	-0.2
MYN	99	V	300-150	29	0	0	3.5	-1.7
NAX	99	V	300-150	42	21	0	14.0	0.3
NJE	99	V	300-150	47	62	0	20.9	-2.8

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
NVR	99	V	300-150	31	0	0	5.9	-0.6
NWS	99	V	300-150	105	2	0	4.1	-0.3
OAE	99	V	300-150	84	0	0	4.6	-0.8
PAL	99	V	300-150	304	1	0	7.6	-1.1
PAQ	99	V	300-150	23	0	0	9.7	3.5
PIA	99	V	300-150	118	2	0	5.8	-1.4
PIR	99	V	300-150	22	50	0	31.1	18.9
QFA	99	V	300-150	1785	0	0	4.2	-0.3
QTR	99	V	300-150	253	0	0	4.2	-0.4
RCH	99	V	300-150	900	0	0	5.1	0.0
RJA	99	V	300-150	101	0	0	6.0	0.5
RZO	99	V	300-150	22	0	0	6.0	0.6
SAS	99	V	300-150	1232	1	0	4.8	0.1
SIA	99	V	300-150	390	0	0	4.0	0.1
SIO	99	V	300-150	49	0	0	4.1	-1.4
SLM	99	V	300-150	39	5	0	3.8	-0.4
SOO	99	V	300-150	50	2	0	4.4	0.0
SQC	99	V	300-150	63	0	0	4.7	-1.8
SVA	99	V	300-150	654	0	0	5.0	-0.3
SWR	99	V	300-150	1276	1	0	5.2	0.3
TAM	99	V	300-150	121	2	0	5.4	0.5
TAP	99	V	300-150	119	1	1	5.0	1.2
TAY	99	V	300-150	68	1	0	5.1	-0.2
TCV	99	V	300-150	26	4	0	6.0	-1.6
TFL	99	V	300-150	112	3	0	5.5	-0.7
THA	99	V	300-150	101	0	0	3.3	0.5
THT	99	V	300-150	293	0	1	4.4	0.2
THY	99	V	300-150	384	1	0	4.1	0.7
TOM	99	V	300-150	429	14	0	10.3	-0.9
TSC	99	V	300-150	129	0	0	5.3	0.0
TSO	99	V	300-150	251	1	0	4.4	-0.1
UAE	99	V	300-150	736	0	0	4.5	-0.4
UAL	99	V	300-150	16508	1	0	5.2	-0.9
UPS	99	V	300-150	1143	0	0	5.0	0.4
VIR	99	V	300-150	2236	1	0	4.6	-0.4
VJT	99	V	300-150	61	74	0	28.1	-0.3
VMP	99	V	300-150	23	100	0	0.0	0.0
VOZ	99	V	300-150	306	0	0	4.4	0.2
VPB	99	V	300-150	26	4	0	4.8	-0.4
WGT	99	V	300-150	32	0	3	8.8	-2.2
WJA	99	V	300-150	609	1	0	5.6	0.6
XLF	99	V	300-150	38	0	0	3.4	0.3

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	50	30	12.4	-1.1
01001	00	Z	50	25	23.2	-3.8
01028	12	Z	50	29	12.1	4.5
01028	00	Z	50	30	15.6	0.3
01152	12	Z	50	30	26.6	-1.9
01152	00	Z	50	30	39.5	-11.4
01400	12	Z	50	27	20.7	10.4
01400	00	Z	50	25	18.8	12.6
01415	00	Z	50	28	28.4	-1.4
01415	12	Z	50	31	23.7	9.7
02365	00	Z	50	25	15.6	0.9
02365	12	Z	50	26	12.7	0.7
02591	12	Z	50	26	23.8	20.1
02591	00	Z	50	26	19.9	12.8
02836	12	Z	50	31	16.2	7.4
02836	00	Z	50	29	14.9	5.5
02963	12	Z	50	24	12.0	2.9
02963	00	Z	50	28	18.1	3.9
03005	12	Z	50	28	15.5	2.1
03005	00	Z	50	26	15.9	-2.0
03238	12	Z	50	6	25.7	14.2
03238	00	Z	50	26	16.5	1.6
03808	00	Z	50	29	11.9	6.8
03808	12	Z	50	29	16.7	11.4
03918	00	Z	50	29	13.4	8.0
03918	12	Z	50	14	22.8	17.6
03953	12	Z	50	24	18.7	11.4
03953	00	Z	50	27	17.2	14.1
04018	12	Z	50	26	24.5	0.9
04018	00	Z	50	30	30.1	-15.0
04220	12	Z	50	27	20.7	-14.4
04220	00	Z	50	28	24.9	-20.0
04270	00	Z	50	30	28.3	1.8
04270	12	Z	50	30	19.7	-1.4
04320	00	Z	50	30	24.1	-14.5
04320	12	Z	50	29	21.6	-12.1
04339	00	Z	50	25	24.6	3.3
04339	12	Z	50	28	16.9	10.2
04360	12	Z	50	15	12.4	4.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
04360	00	Z	50	14	18.9	14.7
06011	12	Z	50	29	29.4	16.2
06011	00	Z	50	28	31.6	-6.8
06260	12	Z	50	4	20.1	19.7
06260	00	Z	50	20	16.1	13.6
06610	00	Z	50	31	21.0	14.1
06610	12	Z	50	30	22.8	13.6
07110	00	Z	50	26	26.1	24.7
07110	12	Z	50	27	37.9	36.3
07510	00	Z	50	22	15.5	9.2
07510	12	Z	50	25	32.3	23.2
07645	12	Z	50	22	34.3	30.5
07645	00	Z	50	25	29.1	26.5
07761	00	Z	50	17	35.3	32.1
07761	12	Z	50	20	37.1	35.6
08001	12	Z	50	29	25.4	21.7
08001	00	Z	50	25	18.1	15.1
08221	00	Z	50	30	26.0	23.2
08221	12	Z	50	31	23.7	21.3
08302	12	Z	50	30	14.7	9.1
08302	00	Z	50	31	17.3	15.2
08508	12	Z	50	26	42.0	41.1
08522	12	Z	50	24	16.0	10.3
08579	12	Z	50	29	20.3	19.1
10035	12	Z	50	31	16.4	6.5
10035	00	Z	50	31	12.0	1.3
10393	00	Z	50	31	10.9	5.5
10393	12	Z	50	31	10.6	6.3
10410	00	Z	50	31	12.8	7.6
10410	12	Z	50	31	16.3	13.7
10739	12	Z	50	30	22.7	20.6
10739	00	Z	50	28	19.7	15.0
11035	00	Z	50	31	22.2	12.1
11035	12	Z	50	31	29.7	20.2
12982	00	Z	50	31	16.4	14.1
16044	00	Z	50	31	22.8	21.6
16044	12	Z	50	31	39.5	31.4
16080	12	Z	50	31	18.9	16.2
16080	00	Z	50	31	36.2	25.5
16245	12	Z	50	30	17.2	15.4
16245	00	Z	50	30	20.3	18.2
16320	00	Z	50	30	15.6	11.2
16320	12	Z	50	31	53.1	18.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	12	Z	50	31	17.5	13.8
16429	00	Z	50	31	21.3	19.6
16622	12	Z	50	25	33.5	32.1
16754	12	Z	50	29	30.8	27.4
17607	12	Z	50	19	20.3	-14.7
26435	00	Z	50	14	15.7	3.6
60018	12	Z	50	29	18.7	-2.5
60018	00	Z	50	31	13.2	7.2
ASDE01	12	Z	50	8	61.2	60.4
ASDE01	00	Z	50	7	46.2	40.0
ASDE03	12	Z	50	4	18.7	15.9
ASDE03	00	Z	50	6	23.1	22.2
ASDE04	12	Z	50	7	25.9	25.0
ASDE04	00	Z	50	7	13.4	10.3
ASDE09	12	Z	50	2	28.4	25.6
ASDK1	12	Z	50	0	0.0	0.0
ASDK1	00	Z	50	1	0.0	0.0
ASDK2	12	Z	50	8	55.5	47.5
ASDK2	00	Z	50	7	52.7	38.2
ASDK3	12	Z	50	17	36.6	32.6
ASDK3	00	Z	50	15	21.7	2.9
ASES1	12	Z	50	16	49.0	44.7
ASEU01	12	Z	50	12	34.2	31.5
ASEU02	00	Z	50	2	37.4	37.4
ASEU02	12	Z	50	3	49.1	48.0
ASEU03	12	Z	50	5	40.1	31.0
ASEU03	00	Z	50	5	19.7	16.7
ASEU04	12	Z	50	5	22.0	16.0
ASEU04	00	Z	50	4	29.5	-14.5
ASEU05	12	Z	50	11	38.5	37.0
ASEU05	00	Z	50	6	35.8	24.5
ASEU06	12	Z	50	3	66.6	66.2
ASEU06	00	Z	50	3	59.4	58.4
ASFR1	00	Z	50	11	34.7	32.9
ASFR1	12	Z	50	12	51.1	39.4
ASFR2	12	Z	50	9	38.1	35.7
ASFR2	00	Z	50	7	34.6	31.2
ASFR3	12	Z	50	5	12.7	9.8
ASFR3	00	Z	50	8	17.9	16.0
ASFR4	12	Z	50	16	32.6	14.3
ASFR4	00	Z	50	17	37.1	34.7

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	50	30	3.9	-0.2	-1.0
01001	00	V	50	23	3.4	1.0	-0.2
01028	12	V	50	29	4.4	-0.5	-0.7
01028	00	V	50	30	4.2	-0.1	-0.2
01152	12	V	50	30	6.2	-0.3	-0.9
01152	00	V	50	28	7.2	0.8	-0.5
01400	12	V	50	20	3.9	-0.2	-0.2
01400	00	V	50	15	4.1	2.0	0.2
01415	00	V	50	26	5.1	0.6	0.4
01415	12	V	50	31	5.3	-0.7	-0.9
02365	00	V	50	20	4.7	-0.8	-1.4
02365	12	V	50	24	4.0	0.8	-0.3
02591	12	V	50	23	4.1	0.3	-0.8
02591	00	V	50	24	4.7	0.0	0.0
02836	12	V	50	31	5.0	-0.1	-1.0
02836	00	V	50	29	5.0	-0.2	1.1
02963	12	V	50	23	5.4	-0.3	0.8
02963	00	V	50	27	5.5	0.2	-0.6
03005	12	V	50	28	4.5	0.9	0.9
03005	00	V	50	23	4.3	0.3	1.1
03238	12	V	50	6	4.5	-0.6	-1.5
03238	00	V	50	24	5.5	0.2	-0.5
03808	00	V	50	29	3.8	0.4	-0.4
03808	12	V	50	29	4.0	1.3	-0.1
03918	00	V	50	28	4.9	0.9	0.0
03918	12	V	50	14	3.9	1.2	0.2
03953	12	V	50	23	4.2	-0.4	-0.6
03953	00	V	50	25	3.1	0.4	-0.5
04018	12	V	50	26	5.2	-0.8	-0.8
04018	00	V	50	28	4.8	1.1	0.0
04220	12	V	50	27	3.3	-0.7	0.2
04220	00	V	50	27	3.3	0.1	-0.6
04270	00	V	50	29	4.8	0.0	0.1
04270	12	V	50	30	5.5	-0.8	0.6
04320	00	V	50	29	3.5	-0.3	-0.3
04320	12	V	50	29	3.9	0.4	-0.3
04339	00	V	50	9	7.5	1.6	-0.4
04339	12	V	50	7	7.6	1.8	-1.4
04360	12	V	50	15	5.5	-1.8	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
04360	00	V	50	13	3.1	-0.1	0.2
06011	12	V	50	29	8.5	1.6	-1.1
06011	00	V	50	26	5.4	1.4	0.9
06260	12	V	50	4	2.1	0.1	-0.2
06260	00	V	50	15	2.8	-0.4	0.8
06610	00	V	50	30	3.9	1.1	-0.1
06610	12	V	50	30	4.5	-0.1	0.0
07110	00	V	50	24	2.8	0.0	-0.1
07110	12	V	50	27	3.8	0.3	0.8
07510	00	V	50	22	3.1	0.0	-0.2
07510	12	V	50	25	3.4	0.3	-0.4
07645	12	V	50	22	3.6	0.7	0.2
07645	00	V	50	24	4.7	-0.2	-0.1
07761	00	V	50	17	3.3	-0.3	0.2
07761	12	V	50	20	3.5	0.8	-0.8
08001	12	V	50	28	4.0	-0.5	0.0
08001	00	V	50	23	3.0	0.2	0.1
08221	00	V	50	30	3.2	-0.1	0.7
08221	12	V	50	31	3.2	-0.7	-0.4
08302	12	V	50	30	3.5	0.2	0.3
08302	00	V	50	30	3.7	-0.2	1.0
08508	12	V	50	25	2.7	0.4	0.4
08522	12	V	50	24	3.5	0.5	-0.5
08579	12	V	50	29	3.4	-0.1	0.1
10035	12	V	50	31	4.1	0.5	-0.2
10035	00	V	50	27	3.5	1.2	-0.6
10393	00	V	50	29	3.8	0.5	0.4
10393	12	V	50	31	3.4	1.0	-0.2
10410	00	V	50	30	3.9	0.8	-0.2
10410	12	V	50	30	3.1	0.1	0.4
10739	12	V	50	30	3.3	0.2	0.7
10739	00	V	50	27	3.4	0.9	-0.2
11035	00	V	50	31	5.8	-0.1	1.8
11035	12	V	50	31	4.6	0.2	-0.2
12982	00	V	50	25	3.8	0.6	1.0
16044	00	V	50	27	3.6	0.0	-0.1
16044	12	V	50	31	3.3	0.6	-0.1
16080	12	V	50	31	3.3	0.1	0.6
16080	00	V	50	29	3.9	0.1	0.5
16245	12	V	50	30	3.3	0.7	-0.4
16245	00	V	50	28	4.1	0.3	1.2
16320	00	V	50	29	3.2	0.3	0.1
16320	12	V	50	31	3.6	-0.3	-0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	12	V	50	30	3.3	0.8	0.8
16429	00	V	50	30	3.4	0.7	0.2
16622	12	V	50	23	2.9	0.1	-0.1
16754	12	V	50	28	4.3	1.2	0.3
17607	12	V	50	19	4.3	0.9	-0.6
26435	00	V	50	13	3.6	-0.9	-0.5
60018	12	V	50	29	3.1	-0.1	0.6
60018	00	V	50	31	3.8	-0.2	0.4
ASDE01	12	V	50	6	3.7	-0.8	0.3
ASDE01	00	V	50	7	3.7	1.4	-0.8
ASDE03	12	V	50	3	2.2	-0.7	1.8
ASDE03	00	V	50	3	4.8	2.2	4.0
ASDE04	12	V	50	7	3.2	1.4	-1.8
ASDE04	00	V	50	6	2.4	-0.3	-0.2
ASDE09	12	V	50	2	1.4	-1.3	0.5
ASDK1	12	V	50	0	0.0	0.0	0.0
ASDK1	00	V	50	0	0.0	0.0	0.0
ASDK2	12	V	50	8	2.8	1.6	0.6
ASDK2	00	V	50	3	2.7	-0.7	0.0
ASDK3	12	V	50	17	4.0	0.6	-0.3
ASDK3	00	V	50	14	4.6	0.6	-1.0
ASES1	12	V	50	16	4.2	0.3	-1.4
ASEU01	12	V	50	12	2.5	0.2	0.6
ASEU02	00	V	50	2	1.6	-0.7	-0.8
ASEU02	12	V	50	3	3.5	-1.3	2.2
ASEU03	12	V	50	5	5.7	-1.4	2.8
ASEU03	00	V	50	3	4.1	-1.8	0.4
ASEU04	12	V	50	5	2.8	1.0	0.5
ASEU04	00	V	50	4	3.2	1.6	0.3
ASEU05	12	V	50	10	3.7	1.5	0.4
ASEU05	00	V	50	3	3.0	-1.3	-1.3
ASEU06	12	V	50	3	4.3	-2.8	-0.4
ASEU06	00	V	50	3	2.3	-1.8	0.2
ASFR1	00	V	50	10	3.5	0.8	-1.2
ASFR1	12	V	50	12	3.6	0.1	0.0
ASFR2	12	V	50	9	4.1	-0.6	-1.3
ASFR2	00	V	50	7	4.3	1.4	0.1
ASFR3	12	V	50	5	4.1	-2.1	1.9
ASFR3	00	V	50	8	3.2	-1.2	0.9
ASFR4	12	V	50	15	5.0	0.7	1.2
ASFR4	00	V	50	16	3.2	-0.1	0.0

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

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	100	30	11.1	0.8
01001	00	Z	100	30	17.7	-0.1
01028	12	Z	100	27	8.7	2.4
01028	00	Z	100	31	10.2	0.6
01152	12	Z	100	30	10.5	2.7
01152	00	Z	100	31	13.5	-4.9
01400	12	Z	100	32	14.8	7.2
01400	00	Z	100	29	14.3	10.3
01415	00	Z	100	30	21.4	-4.1
01415	12	Z	100	31	21.0	0.7
02365	00	Z	100	27	14.1	8.1
02365	12	Z	100	26	15.4	6.7
02591	12	Z	100	27	16.2	15.0
02591	00	Z	100	27	15.4	11.4
02836	12	Z	100	31	11.5	4.7
02836	00	Z	100	29	11.9	2.9
02963	12	Z	100	31	12.0	2.6
02963	00	Z	100	31	7.5	0.4
03005	12	Z	100	31	9.7	-1.7
03005	00	Z	100	31	10.2	-1.8
03238	12	Z	100	7	14.5	13.0
03238	00	Z	100	29	12.2	8.9
03808	00	Z	100	30	9.3	5.4
03808	12	Z	100	30	9.6	6.2
03918	00	Z	100	29	12.6	10.2
03918	12	Z	100	14	16.1	13.6
03953	12	Z	100	30	13.1	8.5
03953	00	Z	100	31	11.9	9.1
04018	12	Z	100	28	11.6	3.9
04018	00	Z	100	30	11.8	-1.2
04220	12	Z	100	27	14.4	-11.1
04220	00	Z	100	28	16.6	-13.0
04270	00	Z	100	30	23.3	2.0
04270	12	Z	100	30	16.8	-1.2
04320	00	Z	100	31	13.2	-4.2
04320	12	Z	100	30	15.4	-8.2
04339	00	Z	100	28	18.3	9.1
04339	12	Z	100	28	11.2	3.9
04360	12	Z	100	22	13.8	11.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
04360	00	Z	100	23	21.0	13.3
06011	12	Z	100	30	20.4	12.1
06011	00	Z	100	28	23.3	0.5
06260	12	Z	100	4	13.2	12.7
06260	00	Z	100	30	12.7	11.2
06610	00	Z	100	30	16.8	11.1
06610	12	Z	100	31	20.2	12.4
07110	00	Z	100	31	16.3	14.6
07110	12	Z	100	30	23.0	21.8
07510	00	Z	100	28	9.2	0.5
07510	12	Z	100	28	19.6	12.1
07645	12	Z	100	28	21.0	19.3
07645	00	Z	100	30	16.3	14.6
07761	00	Z	100	23	21.2	17.7
07761	12	Z	100	26	23.4	21.5
08001	12	Z	100	29	17.1	14.7
08001	00	Z	100	28	13.6	9.7
08221	00	Z	100	31	19.1	17.4
08221	12	Z	100	29	16.1	13.6
08302	12	Z	100	30	9.2	2.6
08302	00	Z	100	31	11.6	8.8
08508	12	Z	100	27	33.1	32.1
08522	12	Z	100	24	10.9	6.1
08579	12	Z	100	29	12.8	10.6
10035	12	Z	100	31	10.7	3.4
10035	00	Z	100	31	7.7	2.7
10393	00	Z	100	31	8.1	0.8
10393	12	Z	100	31	6.5	0.7
10410	00	Z	100	31	9.0	4.3
10410	12	Z	100	31	10.5	7.4
10739	12	Z	100	30	15.6	14.0
10739	00	Z	100	30	16.1	14.0
11035	00	Z	100	31	21.2	5.1
11035	12	Z	100	31	21.3	11.7
12982	00	Z	100	31	11.0	8.1
16044	00	Z	100	31	15.6	14.7
16044	12	Z	100	31	22.2	19.0
16080	12	Z	100	31	11.8	9.7
16080	00	Z	100	31	30.5	17.2
16245	12	Z	100	31	12.5	10.4
16245	00	Z	100	30	13.2	10.9
16320	00	Z	100	31	11.4	6.4
16320	12	Z	100	31	42.3	10.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	12	Z	100	31	11.5	7.9
16429	00	Z	100	31	16.0	14.0
16622	12	Z	100	28	23.4	21.7
16754	12	Z	100	30	20.4	16.1
17607	12	Z	100	31	16.4	-11.3
26435	00	Z	100	14	9.5	2.9
60018	12	Z	100	29	16.7	-4.8
60018	00	Z	100	31	9.7	2.9
ASDE01	12	Z	100	9	47.6	46.7
ASDE01	00	Z	100	7	41.5	38.1
ASDE03	12	Z	100	5	9.3	8.0
ASDE03	00	Z	100	6	13.1	13.0
ASDE04	12	Z	100	8	16.0	13.8
ASDE04	00	Z	100	8	12.2	5.4
ASDE09	12	Z	100	2	6.9	6.5
ASDK1	12	Z	100	0	0.0	0.0
ASDK1	00	Z	100	2	26.0	26.0
ASDK2	12	Z	100	8	51.3	47.4
ASDK2	00	Z	100	7	46.1	42.3
ASDK3	12	Z	100	13	27.8	24.3
ASDK3	00	Z	100	17	16.7	7.2
ASES1	12	Z	100	18	39.2	35.9
ASEU01	12	Z	100	12	24.4	22.8
ASEU02	00	Z	100	2	31.1	31.0
ASEU02	12	Z	100	3	38.8	38.4
ASEU03	12	Z	100	6	26.5	12.3
ASEU03	00	Z	100	3	18.6	17.9
ASEU04	12	Z	100	5	10.7	4.6
ASEU04	00	Z	100	5	19.6	-14.3
ASEU05	12	Z	100	11	32.7	30.9
ASEU05	00	Z	100	7	28.2	25.1
ASEU06	12	Z	100	3	54.3	54.3
ASEU06	00	Z	100	3	52.1	51.9
ASFR1	00	Z	100	12	24.5	22.2
ASFR1	12	Z	100	13	34.0	25.6
ASFR2	12	Z	100	9	25.6	22.1
ASFR2	00	Z	100	8	18.3	17.4
ASFR3	12	Z	100	7	14.2	11.9
ASFR3	00	Z	100	8	10.2	9.6
ASFR4	12	Z	100	17	18.1	16.6
ASFR4	00	Z	100	17	20.2	18.8

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

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	100	30	4.3	0.1	-0.8
01001	00	V	100	29	3.3	-0.2	0.2
01028	12	V	100	27	3.7	-0.1	-1.4
01028	00	V	100	31	3.3	-0.5	0.5
01152	12	V	100	30	4.7	-0.5	-1.1
01152	00	V	100	31	5.0	-0.1	-0.4
01400	12	V	100	31	4.7	0.7	-0.1
01400	00	V	100	28	3.8	0.3	0.1
01415	00	V	100	27	4.8	0.6	-0.2
01415	12	V	100	31	4.9	2.0	-0.1
02365	00	V	100	27	3.9	-0.7	0.1
02365	12	V	100	26	4.6	-0.8	-0.5
02591	12	V	100	27	3.8	0.6	-0.9
02591	00	V	100	27	2.9	-0.3	-0.2
02836	12	V	100	31	4.0	-0.4	-1.2
02836	00	V	100	29	3.9	0.7	-0.3
02963	12	V	100	28	5.2	-0.1	-0.5
02963	00	V	100	31	3.8	0.8	0.4
03005	12	V	100	31	3.9	-0.3	-0.6
03005	00	V	100	27	3.4	0.3	-0.3
03238	12	V	100	7	3.3	0.6	0.7
03238	00	V	100	27	3.5	0.5	-0.2
03808	00	V	100	29	3.3	0.6	-0.4
03808	12	V	100	29	4.4	0.3	0.0
03918	00	V	100	28	3.4	0.0	-0.1
03918	12	V	100	14	4.3	0.0	-0.3
03953	12	V	100	26	3.8	0.2	0.9
03953	00	V	100	30	3.9	0.3	-0.8
04018	12	V	100	28	5.2	0.1	-1.4
04018	00	V	100	28	5.2	-0.5	-1.1
04220	12	V	100	27	2.9	0.1	-0.3
04220	00	V	100	27	2.6	-0.5	0.5
04270	00	V	100	29	5.7	-1.2	-0.1
04270	12	V	100	30	4.4	-0.6	0.4
04320	00	V	100	30	2.7	-0.2	-0.1
04320	12	V	100	30	3.4	0.4	0.1
04339	00	V	100	8	3.0	-0.7	-0.6
04339	12	V	100	6	6.1	-1.1	2.1
04360	12	V	100	22	3.6	0.5	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
04360	00	V	100	22	3.0	-0.4	-0.3
06011	12	V	100	30	7.7	0.9	-0.6
06011	00	V	100	26	3.1	1.0	-0.6
06260	12	V	100	4	2.7	0.1	0.7
06260	00	V	100	30	3.5	0.2	0.1
06610	00	V	100	29	4.0	0.0	-0.1
06610	12	V	100	31	3.2	0.4	0.6
07110	00	V	100	29	3.6	-0.1	0.1
07110	12	V	100	30	3.3	-0.1	0.3
07510	00	V	100	24	3.0	0.1	-0.1
07510	12	V	100	28	4.0	0.4	0.5
07645	12	V	100	28	2.7	0.5	0.2
07645	00	V	100	24	3.7	1.0	0.7
07761	00	V	100	22	4.1	-0.6	-0.4
07761	12	V	100	26	3.4	0.6	-1.3
08001	12	V	100	29	3.7	-0.6	0.4
08001	00	V	100	27	2.9	0.2	-0.2
08221	00	V	100	31	5.2	0.7	1.2
08221	12	V	100	29	4.1	-0.9	0.0
08302	12	V	100	30	6.1	1.0	-0.5
08302	00	V	100	30	3.9	0.3	-0.2
08508	12	V	100	25	4.2	-1.5	-0.2
08522	12	V	100	24	3.9	0.4	-0.9
08579	12	V	100	29	3.7	0.1	-0.2
10035	12	V	100	31	3.7	-0.2	-0.6
10035	00	V	100	30	4.0	-0.5	-0.8
10393	00	V	100	29	2.5	0.1	0.2
10393	12	V	100	31	3.2	0.3	0.2
10410	00	V	100	30	3.5	0.5	-0.7
10410	12	V	100	30	2.8	0.0	0.8
10739	12	V	100	30	3.4	-0.6	0.6
10739	00	V	100	29	3.3	-0.4	-0.1
11035	00	V	100	31	4.3	0.4	-1.1
11035	12	V	100	31	3.3	0.5	0.3
12982	00	V	100	25	3.3	0.5	0.4
16044	00	V	100	29	3.9	0.5	0.5
16044	12	V	100	31	3.8	0.6	0.5
16080	12	V	100	31	3.9	0.3	0.7
16080	00	V	100	29	4.2	0.8	1.0
16245	12	V	100	31	3.2	0.6	-0.4
16245	00	V	100	28	4.6	1.5	-0.6
16320	00	V	100	30	4.1	0.6	-1.1
16320	12	V	100	31	4.5	0.2	0.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	12	V	100	31	4.2	0.7	0.5
16429	00	V	100	30	4.2	0.1	0.7
16622	12	V	100	27	4.2	-0.3	0.7
16754	12	V	100	30	5.0	1.3	0.2
17607	12	V	100	19	5.9	0.3	0.0
26435	00	V	100	14	3.5	0.4	1.3
60018	12	V	100	29	3.9	0.7	0.6
60018	00	V	100	31	3.4	-0.4	-0.3
ASDE01	12	V	100	8	3.0	-1.0	-0.4
ASDE01	00	V	100	7	5.8	1.0	0.3
ASDE03	12	V	100	5	2.3	-0.4	0.6
ASDE03	00	V	100	6	4.2	0.5	-0.9
ASDE04	12	V	100	8	4.0	-3.1	0.7
ASDE04	00	V	100	7	3.4	0.0	0.8
ASDE09	12	V	100	2	2.5	0.0	0.8
ASDK1	12	V	100	0	0.0	0.0	0.0
ASDK1	00	V	100	0	0.0	0.0	0.0
ASDK2	12	V	100	8	3.0	-0.1	-0.2
ASDK2	00	V	100	6	4.6	0.6	-2.4
ASDK3	12	V	100	13	2.8	0.4	-0.8
ASDK3	00	V	100	17	3.7	0.2	0.5
ASES1	12	V	100	17	5.1	0.0	0.6
ASEU01	12	V	100	12	3.5	2.2	0.8
ASEU02	00	V	100	2	4.2	1.9	3.0
ASEU02	12	V	100	3	3.5	-2.4	-1.1
ASEU03	12	V	100	5	5.6	1.2	0.6
ASEU03	00	V	100	2	5.5	-1.0	3.3
ASEU04	12	V	100	5	5.4	0.3	-0.8
ASEU04	00	V	100	5	2.4	0.9	-1.1
ASEU05	12	V	100	11	4.8	-1.0	0.4
ASEU05	00	V	100	5	2.6	-0.5	-0.2
ASEU06	12	V	100	3	4.3	-2.4	2.8
ASEU06	00	V	100	3	4.0	-3.0	1.5
ASFR1	00	V	100	11	5.0	-0.5	0.8
ASFR1	12	V	100	13	3.3	0.9	0.1
ASFR2	12	V	100	9	4.2	0.0	-2.3
ASFR2	00	V	100	8	2.2	0.3	1.1
ASFR3	12	V	100	7	3.9	-0.7	-0.5
ASFR3	00	V	100	7	3.5	1.0	1.9
ASFR4	12	V	100	16	4.5	-1.1	0.6
ASFR4	00	V	100	16	4.0	-0.8	0.9

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

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	500	30	7.7	2.8
01001	00	Z	500	31	15.2	2.0
01028	12	Z	500	27	8.6	4.8
01028	00	Z	500	31	8.0	3.6
01152	12	Z	500	30	9.0	5.6
01152	00	Z	500	31	8.0	5.2
01400	12	Z	500	32	10.4	6.1
01400	00	Z	500	29	11.9	8.1
01415	00	Z	500	30	8.5	5.7
01415	12	Z	500	31	10.5	8.5
02365	00	Z	500	27	9.6	7.5
02365	12	Z	500	26	8.7	6.5
02591	12	Z	500	27	13.0	12.5
02591	00	Z	500	27	12.7	11.9
02836	12	Z	500	31	5.8	3.4
02836	00	Z	500	31	6.1	4.5
02963	12	Z	500	31	5.7	2.9
02963	00	Z	500	31	7.2	4.3
03005	12	Z	500	31	6.4	2.7
03005	00	Z	500	34	4.5	2.1
03238	12	Z	500	7	11.0	9.4
03238	00	Z	500	30	9.8	8.6
03808	00	Z	500	30	6.8	4.6
03808	12	Z	500	30	7.1	5.5
03918	00	Z	500	29	10.0	8.9
03918	12	Z	500	14	13.1	12.3
03953	12	Z	500	31	9.0	6.3
03953	00	Z	500	31	11.2	9.7
04018	12	Z	500	29	7.1	4.7
04018	00	Z	500	30	7.1	4.9
04220	12	Z	500	28	4.8	-0.6
04220	00	Z	500	28	9.7	-0.8
04270	00	Z	500	31	11.4	3.3
04270	12	Z	500	30	7.4	0.5
04320	00	Z	500	31	8.9	6.0
04320	12	Z	500	30	6.4	3.5
04339	00	Z	500	29	7.5	3.0
04339	12	Z	500	30	6.6	1.1
04360	12	Z	500	25	8.6	4.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
04360	00	Z	500	28	8.7	5.3
06011	12	Z	500	30	33.3	14.5
06011	00	Z	500	31	9.5	5.2
06260	12	Z	500	4	11.9	11.1
06260	00	Z	500	31	8.6	6.9
06610	00	Z	500	31	9.6	9.0
06610	12	Z	500	31	8.8	8.3
07110	00	Z	500	31	7.1	5.5
07110	12	Z	500	31	9.6	8.1
07510	00	Z	500	31	5.3	-2.8
07510	12	Z	500	30	6.0	3.2
07645	12	Z	500	31	9.9	7.5
07645	00	Z	500	31	4.1	0.4
07761	00	Z	500	31	6.9	4.1
07761	12	Z	500	31	10.5	9.2
08001	12	Z	500	29	10.0	7.7
08001	00	Z	500	30	8.4	5.9
08221	00	Z	500	31	12.6	11.2
08221	12	Z	500	29	12.3	11.0
08302	12	Z	500	30	6.4	2.8
08302	00	Z	500	31	5.6	2.6
08508	12	Z	500	30	27.1	26.3
08522	12	Z	500	26	10.3	6.3
08579	12	Z	500	31	7.9	6.9
10035	12	Z	500	31	6.4	3.7
10035	00	Z	500	31	5.3	3.4
10393	00	Z	500	32	4.8	1.1
10393	12	Z	500	31	3.9	-1.2
10410	00	Z	500	31	5.0	3.3
10410	12	Z	500	31	6.0	4.6
10739	12	Z	500	30	13.4	12.8
10739	00	Z	500	30	13.1	12.1
11035	00	Z	500	31	8.0	4.2
11035	12	Z	500	31	16.6	6.3
12982	00	Z	500	31	6.9	5.0
16044	00	Z	500	31	9.4	8.0
16044	12	Z	500	31	9.6	8.7
16080	12	Z	500	31	5.7	3.3
16080	00	Z	500	31	27.2	10.3
16245	12	Z	500	31	6.8	4.6
16245	00	Z	500	30	6.5	4.0
16320	00	Z	500	31	8.0	3.5
16320	12	Z	500	31	13.4	3.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	12	Z	500	32	6.3	5.4
16429	00	Z	500	31	7.7	4.8
16622	12	Z	500	29	17.0	15.7
16754	12	Z	500	30	14.4	8.5
17607	12	Z	500	31	7.7	4.6
26435	00	Z	500	15	8.0	6.0
60018	12	Z	500	29	9.2	-5.2
60018	00	Z	500	31	8.5	-3.4
ASDE01	12	Z	500	14	42.3	35.5
ASDE01	00	Z	500	10	40.2	38.3
ASDE03	12	Z	500	5	8.1	7.7
ASDE03	00	Z	500	6	13.1	12.9
ASDE04	12	Z	500	10	8.8	1.4
ASDE04	00	Z	500	9	9.5	2.9
ASDE09	12	Z	500	2	5.2	-4.3
ASDK1	12	Z	500	1	0.0	0.0
ASDK1	00	Z	500	6	20.8	12.0
ASDK2	12	Z	500	9	42.9	40.6
ASDK2	00	Z	500	9	44.4	42.7
ASDK3	12	Z	500	13	10.9	7.7
ASDK3	00	Z	500	18	12.9	6.0
ASES1	12	Z	500	19	22.6	21.4
ASEU01	12	Z	500	12	14.4	13.5
ASEU02	00	Z	500	2	32.4	32.3
ASEU02	12	Z	500	3	29.4	29.1
ASEU03	12	Z	500	7	23.8	16.8
ASEU03	00	Z	500	5	21.4	18.5
ASEU04	12	Z	500	8	10.5	-7.2
ASEU04	00	Z	500	8	7.7	-4.1
ASEU05	12	Z	500	11	23.8	21.5
ASEU05	00	Z	500	7	27.0	26.1
ASEU06	12	Z	500	3	43.5	43.5
ASEU06	00	Z	500	5	52.6	52.4
ASFR1	00	Z	500	12	4.6	1.1
ASFR1	12	Z	500	13	8.7	5.1
ASFR2	12	Z	500	9	5.1	3.0
ASFR2	00	Z	500	8	5.1	0.1
ASFR3	12	Z	500	7	9.2	-5.9
ASFR3	00	Z	500	10	6.4	-5.4
ASFR4	12	Z	500	18	8.5	6.9
ASFR4	00	Z	500	17	5.3	3.4

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

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	500	30	4.0	0.0	-0.1
01001	00	V	500	31	3.3	-0.2	0.0
01028	12	V	500	27	3.0	-0.2	-0.3
01028	00	V	500	31	2.7	-0.2	-0.6
01152	12	V	500	30	2.9	0.1	-0.6
01152	00	V	500	31	2.9	0.6	-0.5
01400	12	V	500	31	2.7	0.7	-0.7
01400	00	V	500	29	4.2	0.9	0.5
01415	00	V	500	27	3.4	0.7	-0.8
01415	12	V	500	31	2.8	0.7	0.3
02365	00	V	500	27	4.7	0.5	0.5
02365	12	V	500	26	3.0	-0.1	-0.4
02591	12	V	500	27	2.9	-0.2	-0.2
02591	00	V	500	27	2.5	0.8	0.4
02836	12	V	500	31	3.1	0.3	0.3
02836	00	V	500	31	3.4	0.5	-0.1
02963	12	V	500	31	3.9	0.6	0.0
02963	00	V	500	31	2.8	-0.1	-0.5
03005	12	V	500	31	3.8	-0.2	0.0
03005	00	V	500	30	4.1	0.0	0.5
03238	12	V	500	7	3.4	0.1	-1.1
03238	00	V	500	28	3.9	0.9	-0.5
03808	00	V	500	29	3.6	-0.1	0.7
03808	12	V	500	30	3.5	-0.1	-0.1
03918	00	V	500	28	3.4	0.4	-0.1
03918	12	V	500	14	3.0	-0.2	0.3
03953	12	V	500	30	5.2	-0.6	-0.7
03953	00	V	500	31	4.0	0.1	0.0
04018	12	V	500	29	3.9	0.2	-0.1
04018	00	V	500	28	3.8	0.7	0.1
04220	12	V	500	28	3.0	0.1	-0.3
04220	00	V	500	27	2.3	-0.1	-0.4
04270	00	V	500	30	4.7	0.5	0.8
04270	12	V	500	30	3.7	-0.2	0.3
04320	00	V	500	30	3.3	-0.2	0.1
04320	12	V	500	30	3.1	-0.4	0.6
04339	00	V	500	11	4.5	-1.2	1.3
04339	12	V	500	7	5.2	0.0	-0.2
04360	12	V	500	25	3.6	0.6	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
04360	00	V	500	27	3.9	0.9	0.4
06011	12	V	500	30	7.8	1.5	-0.5
06011	00	V	500	29	3.5	-0.3	0.2
06260	12	V	500	4	3.1	1.4	-2.2
06260	00	V	500	31	2.3	0.1	0.3
06610	00	V	500	30	2.8	-0.1	-0.2
06610	12	V	500	31	2.4	-0.2	-0.3
07110	00	V	500	29	2.8	-0.5	0.7
07110	12	V	500	31	3.5	-0.3	0.2
07510	00	V	500	30	3.0	0.1	0.3
07510	12	V	500	30	3.3	0.0	0.6
07645	12	V	500	31	3.1	0.8	0.0
07645	00	V	500	28	3.1	0.1	-0.3
07761	00	V	500	29	2.9	-0.3	-0.1
07761	12	V	500	31	2.8	0.7	-0.1
08001	12	V	500	29	2.8	0.5	0.1
08001	00	V	500	30	3.0	-0.5	-0.2
08221	00	V	500	31	3.0	-0.1	-0.4
08221	12	V	500	29	3.1	-0.2	-0.1
08302	12	V	500	30	3.8	0.3	-0.3
08302	00	V	500	30	4.0	0.1	-0.4
08508	12	V	500	30	4.0	0.0	-0.4
08522	12	V	500	26	3.0	0.8	-0.2
08579	12	V	500	30	3.3	-0.6	-0.2
10035	12	V	500	31	2.3	-0.3	-0.1
10035	00	V	500	30	2.1	-0.4	-0.1
10393	00	V	500	29	2.5	-0.3	0.0
10393	12	V	500	31	2.6	-0.5	-0.1
10410	00	V	500	30	2.5	0.0	0.2
10410	12	V	500	31	2.8	0.4	-0.1
10739	12	V	500	30	2.2	-0.5	-0.2
10739	00	V	500	29	2.7	0.4	-0.3
11035	00	V	500	31	2.8	0.0	-0.6
11035	12	V	500	31	2.6	0.1	0.2
12982	00	V	500	25	3.2	0.1	0.6
16044	00	V	500	29	3.1	0.4	-0.5
16044	12	V	500	31	2.9	-0.1	-0.7
16080	12	V	500	31	3.0	-0.1	0.3
16080	00	V	500	30	2.8	0.0	-0.4
16245	12	V	500	31	2.9	-0.7	-0.2
16245	00	V	500	28	3.2	-0.3	0.2
16320	00	V	500	30	2.8	-0.4	0.4
16320	12	V	500	31	3.4	0.6	0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	12	V	500	31	3.9	0.4	0.5
16429	00	V	500	30	3.6	0.5	0.5
16622	12	V	500	28	3.9	-0.6	-0.2
16754	12	V	500	30	5.6	0.2	0.9
17607	12	V	500	19	3.5	0.5	-0.7
26435	00	V	500	15	3.0	-0.3	1.0
60018	12	V	500	29	2.8	0.8	0.1
60018	00	V	500	31	2.8	0.7	0.4
ASDE01	12	V	500	14	3.2	-0.4	-0.6
ASDE01	00	V	500	10	4.0	0.0	0.0
ASDE03	12	V	500	5	1.8	-0.7	0.1
ASDE03	00	V	500	6	2.2	0.3	-0.1
ASDE04	12	V	500	10	2.4	0.6	1.0
ASDE04	00	V	500	9	2.4	-0.1	-0.8
ASDE09	12	V	500	2	3.0	0.0	2.6
ASDK1	12	V	500	0	0.0	0.0	0.0
ASDK1	00	V	500	6	5.6	1.1	-0.4
ASDK2	12	V	500	9	4.3	-1.3	-0.4
ASDK2	00	V	500	9	3.3	1.1	0.2
ASDK3	12	V	500	13	2.5	0.8	-0.3
ASDK3	00	V	500	18	2.7	0.7	0.0
ASES1	12	V	500	19	2.6	0.4	-0.5
ASEU01	12	V	500	12	3.3	-0.8	-0.8
ASEU02	00	V	500	2	2.2	2.0	-1.0
ASEU02	12	V	500	3	2.4	0.5	-0.8
ASEU03	12	V	500	7	6.6	-2.4	0.5
ASEU03	00	V	500	4	1.7	1.2	0.7
ASEU04	12	V	500	8	4.0	-2.6	0.2
ASEU04	00	V	500	8	3.0	0.7	0.7
ASEU05	12	V	500	11	2.6	0.4	0.6
ASEU05	00	V	500	5	5.2	0.9	1.2
ASEU06	12	V	500	3	2.8	1.3	-1.0
ASEU06	00	V	500	5	3.2	1.7	0.1
ASFR1	00	V	500	11	3.3	-0.2	0.6
ASFR1	12	V	500	13	3.1	1.0	0.1
ASFR2	12	V	500	9	3.2	-0.1	0.5
ASFR2	00	V	500	8	2.4	0.5	1.1
ASFR3	12	V	500	7	5.2	-0.3	-1.5
ASFR3	00	V	500	10	2.4	0.5	-0.6
ASFR4	12	V	500	17	3.8	-0.3	-0.5
ASFR4	00	V	500	16	2.5	0.9	0.0

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	850	30	4.3	-0.8
01001	00	Z	850	31	14.8	-3.2
01028	12	Z	850	28	5.6	-0.2
01028	00	Z	850	31	4.0	0.7
01152	12	Z	850	30	5.4	2.9
01152	00	Z	850	31	4.1	2.0
01400	12	Z	850	32	7.4	1.4
01400	00	Z	850	29	6.8	2.3
01415	00	Z	850	30	4.3	3.3
01415	12	Z	850	31	4.8	3.1
02365	00	Z	850	27	5.0	3.7
02365	12	Z	850	26	4.1	1.5
02591	12	Z	850	27	10.3	10.0
02591	00	Z	850	27	8.3	7.8
02836	12	Z	850	31	2.5	0.0
02836	00	Z	850	31	3.0	1.3
02963	12	Z	850	31	2.4	-0.2
02963	00	Z	850	31	3.1	0.3
03005	12	Z	850	31	3.4	-0.4
03005	00	Z	850	34	3.2	-0.4
03238	12	Z	850	7	6.7	6.5
03238	00	Z	850	30	6.4	5.6
03808	00	Z	850	30	3.1	1.8
03808	12	Z	850	30	3.9	1.4
03918	00	Z	850	29	8.1	7.6
03918	12	Z	850	14	9.1	8.6
03953	12	Z	850	31	5.6	4.4
03953	00	Z	850	31	6.7	5.7
04018	12	Z	850	29	4.9	1.3
04018	00	Z	850	30	3.7	2.1
04220	12	Z	850	28	3.8	0.3
04220	00	Z	850	29	8.2	-0.3
04270	00	Z	850	31	4.1	-0.8
04270	12	Z	850	30	4.8	-0.4
04320	00	Z	850	31	6.3	5.0
04320	12	Z	850	30	5.4	3.8
04339	00	Z	850	30	5.4	-2.8
04339	12	Z	850	30	6.2	-2.9
04360	12	Z	850	26	5.8	-0.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
04360	00	Z	850	29	6.0	0.8
06011	12	Z	850	30	8.5	5.2
06011	00	Z	850	31	5.4	4.0
06260	12	Z	850	4	3.7	3.3
06260	00	Z	850	31	3.9	2.6
06610	00	Z	850	31	3.1	2.4
06610	12	Z	850	31	2.9	1.7
07110	00	Z	850	31	3.4	2.3
07110	12	Z	850	31	4.0	2.9
07510	00	Z	850	31	4.9	-4.0
07510	12	Z	850	30	2.7	-0.5
07645	12	Z	850	31	2.5	-0.9
07645	00	Z	850	31	5.3	-4.5
07761	00	Z	850	31	3.6	0.0
07761	12	Z	850	31	4.3	3.2
08001	12	Z	850	29	6.7	1.6
08001	00	Z	850	30	5.2	-0.1
08221	00	Z	850	31	5.7	5.2
08221	12	Z	850	29	7.7	7.1
08302	12	Z	850	30	3.3	-1.1
08302	00	Z	850	31	3.5	-1.5
08508	12	Z	850	30	20.6	19.8
08522	12	Z	850	26	3.7	2.7
08579	12	Z	850	31	3.8	3.4
10035	12	Z	850	31	3.9	0.2
10035	00	Z	850	31	3.5	0.0
10393	00	Z	850	32	3.1	-2.2
10393	12	Z	850	31	3.8	-3.5
10410	00	Z	850	31	2.3	-1.2
10410	12	Z	850	31	2.5	-1.5
10739	12	Z	850	30	8.3	8.0
10739	00	Z	850	30	9.8	9.6
11035	00	Z	850	31	4.6	-0.1
11035	12	Z	850	31	15.6	2.6
12982	00	Z	850	31	3.8	1.6
16044	00	Z	850	31	2.6	0.5
16044	12	Z	850	31	3.1	0.4
16080	12	Z	850	31	3.8	-1.5
16080	00	Z	850	31	3.6	-1.0
16245	12	Z	850	31	4.7	1.3
16245	00	Z	850	31	4.2	0.6
16320	00	Z	850	31	5.6	-0.7
16320	12	Z	850	31	6.3	-1.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	12	Z	850	32	4.2	3.2
16429	00	Z	850	31	4.3	2.6
16622	12	Z	850	29	13.5	12.7
16754	12	Z	850	31	11.0	5.7
17607	12	Z	850	31	3.2	1.7
26435	00	Z	850	15	4.1	2.4
60018	12	Z	850	29	11.0	-10.4
60018	00	Z	850	31	10.9	-10.3
ASDE01	12	Z	850	14	38.0	37.0
ASDE01	00	Z	850	10	37.7	35.6
ASDE03	12	Z	850	5	6.4	3.3
ASDE03	00	Z	850	6	8.8	8.2
ASDE04	12	Z	850	10	8.9	-4.3
ASDE04	00	Z	850	9	8.8	-3.6
ASDE09	12	Z	850	2	7.1	-6.9
ASDK1	12	Z	850	4	14.0	1.8
ASDK1	00	Z	850	10	13.5	1.8
ASDK2	12	Z	850	9	32.6	31.3
ASDK2	00	Z	850	9	32.6	31.8
ASDK3	12	Z	850	13	11.6	3.5
ASDK3	00	Z	850	18	11.5	2.7
ASES1	12	Z	850	20	12.9	12.1
ASEU01	12	Z	850	12	5.3	4.2
ASEU02	00	Z	850	2	24.6	24.4
ASEU02	12	Z	850	3	28.1	27.9
ASEU03	12	Z	850	7	19.0	16.0
ASEU03	00	Z	850	7	17.5	14.8
ASEU04	12	Z	850	8	10.2	-9.9
ASEU04	00	Z	850	9	8.2	-7.0
ASEU05	12	Z	850	11	20.4	18.8
ASEU05	00	Z	850	7	22.0	21.0
ASEU06	12	Z	850	3	35.5	35.5
ASEU06	00	Z	850	6	47.0	46.7
ASFR1	00	Z	850	12	5.1	-3.8
ASFR1	12	Z	850	13	5.2	-4.6
ASFR2	12	Z	850	10	5.5	-4.9
ASFR2	00	Z	850	8	7.4	-6.2
ASFR3	12	Z	850	7	12.0	-11.1
ASFR3	00	Z	850	10	11.7	-11.3
ASFR4	12	Z	850	18	14.2	-3.1
ASFR4	00	Z	850	17	4.5	-0.9

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	850	30	4.4	0.1	0.4
01001	00	V	850	31	4.5	-1.1	1.2
01028	12	V	850	28	3.2	0.7	-0.8
01028	00	V	850	31	2.9	-0.2	-0.7
01152	12	V	850	30	4.1	-1.0	-0.9
01152	00	V	850	31	3.8	-0.4	-0.2
01400	12	V	850	31	2.6	0.2	-0.3
01400	00	V	850	29	2.6	-0.3	-0.2
01415	00	V	850	27	2.6	0.0	0.4
01415	12	V	850	31	3.6	0.6	-0.7
02365	00	V	850	27	2.9	-0.6	0.1
02365	12	V	850	26	3.1	-0.8	-0.4
02591	12	V	850	27	2.6	0.3	-0.4
02591	00	V	850	27	3.2	0.5	0.2
02836	12	V	850	31	3.4	0.2	-0.3
02836	00	V	850	31	3.3	-0.4	-0.6
02963	12	V	850	31	3.0	0.5	0.5
02963	00	V	850	31	2.7	0.0	0.0
03005	12	V	850	31	4.2	0.2	-0.9
03005	00	V	850	30	3.0	-0.6	-0.1
03238	12	V	850	7	2.8	-0.3	-1.4
03238	00	V	850	28	2.9	0.6	-0.2
03808	00	V	850	29	2.5	0.1	0.1
03808	12	V	850	30	3.6	0.3	0.6
03918	00	V	850	28	2.9	0.3	0.1
03918	12	V	850	14	3.5	0.7	0.7
03953	12	V	850	31	3.4	-0.4	1.1
03953	00	V	850	29	3.2	-0.4	-0.4
04018	12	V	850	29	3.0	0.6	-0.1
04018	00	V	850	28	3.2	-0.5	0.7
04220	12	V	850	28	3.3	0.1	-0.4
04220	00	V	850	28	3.6	0.2	0.0
04270	00	V	850	30	4.7	1.6	0.5
04270	12	V	850	30	4.7	1.3	0.6
04320	00	V	850	30	3.9	0.1	0.5
04320	12	V	850	30	4.0	-0.2	0.9
04339	00	V	850	15	7.2	2.1	-0.5
04339	12	V	850	8	10.4	3.6	1.6
04360	12	V	850	26	6.0	1.5	0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
04360	00	V	850	28	5.7	1.2	1.0
06011	12	V	850	30	5.3	0.0	-0.8
06011	00	V	850	29	3.3	-0.2	-0.6
06260	12	V	850	4	3.3	-1.8	-0.2
06260	00	V	850	31	2.8	0.7	0.3
06610	00	V	850	30	2.6	-0.2	-0.1
06610	12	V	850	31	2.7	0.1	0.3
07110	00	V	850	29	3.1	0.6	0.0
07110	12	V	850	31	3.3	0.1	0.1
07510	00	V	850	30	4.3	-0.5	-1.2
07510	12	V	850	30	4.0	0.3	-1.1
07645	12	V	850	31	3.5	0.4	-0.1
07645	00	V	850	28	3.0	-0.4	-0.4
07761	00	V	850	29	4.2	-0.2	-0.2
07761	12	V	850	31	4.0	0.6	0.3
08001	12	V	850	29	2.9	0.6	0.1
08001	00	V	850	30	2.2	-0.1	0.0
08221	00	V	850	31	3.5	0.0	-1.3
08221	12	V	850	29	2.7	-0.3	-0.8
08302	12	V	850	30	2.8	0.6	-0.2
08302	00	V	850	30	3.5	0.0	0.0
08508	12	V	850	30	3.5	-1.2	-1.1
08522	12	V	850	26	4.6	0.0	0.3
08579	12	V	850	31	3.1	0.7	-0.1
10035	12	V	850	31	2.6	0.2	-0.3
10035	00	V	850	30	2.4	0.2	0.1
10393	00	V	850	29	2.1	0.0	0.1
10393	12	V	850	31	2.6	-0.4	0.4
10410	00	V	850	30	2.2	-0.3	0.3
10410	12	V	850	31	2.4	-0.1	-0.2
10739	12	V	850	30	2.7	-0.7	-0.4
10739	00	V	850	29	2.0	-0.3	0.2
11035	00	V	850	31	2.3	0.2	-0.1
11035	12	V	850	31	2.7	0.6	1.2
12982	00	V	850	23	3.0	0.1	-0.6
16044	00	V	850	30	4.0	1.1	0.6
16044	12	V	850	31	3.3	1.2	0.5
16080	12	V	850	31	2.8	0.5	-0.6
16080	00	V	850	30	3.6	0.0	-0.8
16245	12	V	850	30	3.9	-0.2	-0.7
16245	00	V	850	28	4.0	0.5	-0.5
16320	00	V	850	30	3.7	-0.4	-0.4
16320	12	V	850	31	3.0	0.8	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	12	V	850	31	3.3	0.5	0.4
16429	00	V	850	30	2.3	0.1	0.0
16622	12	V	850	28	3.0	0.5	0.4
16754	12	V	850	31	4.6	-0.4	-0.1
17607	12	V	850	19	2.8	0.3	-0.5
26435	00	V	850	15	3.2	-0.3	0.5
60018	12	V	850	29	3.7	-0.2	-0.5
60018	00	V	850	31	4.1	0.3	-0.6
ASDE01	12	V	850	14	3.4	1.7	1.1
ASDE01	00	V	850	10	3.8	1.4	1.1
ASDE03	12	V	850	5	4.0	-1.2	-1.2
ASDE03	00	V	850	6	1.8	-0.1	0.1
ASDE04	12	V	850	10	3.5	0.9	0.0
ASDE04	00	V	850	9	2.8	0.3	0.2
ASDE09	12	V	850	2	1.6	-0.3	-0.1
ASDK1	12	V	850	2	2.2	-0.1	-0.6
ASDK1	00	V	850	8	3.1	0.3	1.4
ASDK2	12	V	850	9	2.8	-0.8	0.4
ASDK2	00	V	850	9	2.7	-0.1	1.4
ASDK3	12	V	850	13	2.9	-1.5	0.4
ASDK3	00	V	850	18	2.9	0.7	-1.0
ASES1	12	V	850	20	2.5	-0.4	0.2
ASEU01	12	V	850	12	3.3	-0.1	0.6
ASEU02	00	V	850	2	1.5	0.2	-0.6
ASEU02	12	V	850	3	4.0	-2.8	-0.5
ASEU03	12	V	850	7	5.2	-2.5	1.4
ASEU03	00	V	850	6	2.5	0.1	0.1
ASEU04	12	V	850	7	4.0	-1.0	0.0
ASEU04	00	V	850	9	3.4	-0.7	0.8
ASEU05	12	V	850	11	2.8	0.5	-1.0
ASEU05	00	V	850	5	3.4	1.8	0.4
ASEU06	12	V	850	3	3.3	-1.0	-1.4
ASEU06	00	V	850	5	1.4	-0.2	-0.4
ASFR1	00	V	850	11	2.7	0.1	0.5
ASFR1	12	V	850	13	2.3	-0.3	-1.2
ASFR2	12	V	850	10	3.1	1.1	0.5
ASFR2	00	V	850	8	3.3	0.4	1.4
ASFR3	12	V	850	7	2.8	0.5	0.4
ASFR3	00	V	850	10	3.8	-0.5	1.4
ASFR4	12	V	850	17	5.0	-1.5	-1.3
ASFR4	00	V	850	16	2.7	-0.1	0.8

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

```
DRIFTER MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE      : ECMWF
         ELEMENT MONITORED      : SURFACE PRESSURE (HPA)
         AREA                   : 10N - 90N, 70W - 40E
         PERIOD                 : MAR 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	214	0	0.4	-0.2	0.4
12050	99	P	SUR	34	32	217	0	0.4	0.3	0.5
13001	99	P	SUR	11	-23	149	0	0.3	0.1	0.3
13008	99	P	SUR	15	-38	94	0	0.2	0.0	0.2
13600	99	P	SUR	26	-68	214	0	0.4	0.4	0.6
13659	99	P	SUR	25	-32	217	0	0.3	-0.1	0.3
13660	99	P	SUR	22	-48	217	0	0.6	-0.1	0.6
13662	99	P	SUR	26	-24	217	0	0.3	-0.1	0.3
13664	99	P	SUR	25	-29	214	0	0.3	0.3	0.4
13665	99	P	SUR	18	-70	89	0	1.2	-1.3	1.8
13972	99	P	SUR	15	-18	14	14	0.0	0.0	0.0
25622	99	P	SUR	86	-11	217	0	0.5	-0.2	0.5
26535	99	P	SUR	88	12	216	0	0.5	-0.3	0.6
26556	99	P	SUR	79	-14	217	0	0.8	-0.3	0.8
41040	99	P	SUR	15	-53	213	0	0.2	0.2	0.3
41041	99	P	SUR	14	-46	215	0	0.2	0.4	0.4
41043	99	P	SUR	21	-65	82	0	0.9	-0.2	0.9
41044	99	P	SUR	22	-59	214	0	0.3	0.1	0.3
41046	99	P	SUR	24	-68	216	0	0.3	0.0	0.3
41048	99	P	SUR	32	-70	214	0	0.9	-0.4	1.0
41049	99	P	SUR	28	-63	215	0	0.4	-0.1	0.4
41051	99	P	SUR	18	-65	84	0	0.3	-0.3	0.4
41052	99	P	SUR	18	-65	210	0	0.2	-0.7	0.7
41053	99	P	SUR	19	-66	201	0	0.3	-0.6	0.6
41056	99	P	SUR	18	-66	210	0	0.3	-0.6	0.7
41139	99	P	SUR	20	-38	158	0	0.3	-0.2	0.4
41300	99	P	SUR	16	-58	171	1	0.3	-0.5	0.6
41560	99	P	SUR	42	-19	213	0	0.4	0.7	0.8
41596	99	P	SUR	22	-46	215	0	0.2	-0.2	0.3
41632	99	P	SUR	19	-54	217	0	0.3	-0.1	0.3
41636	99	P	SUR	40	-61	132	0	0.7	-0.6	0.9
41705	99	P	SUR	27	-46	217	0	0.3	-0.2	0.3
41706	99	P	SUR	19	-56	217	0	0.3	-0.1	0.3
41707	99	P	SUR	19	-51	217	0	0.2	0.2	0.3
41708	99	P	SUR	20	-63	217	0	0.3	0.3	0.4
41709	99	P	SUR	21	-60	217	0	0.3	-0.1	0.3

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
41711	99	P	SUR	21	-53	217	0	0.3	0.0	0.3
41734	99	P	SUR	11	-44	391	0	0.2	0.5	0.6
41736	99	P	SUR	14	-44	434	0	0.2	0.6	0.7
41737	99	P	SUR	26	-38	186	0	0.3	0.6	0.6
41800	99	P	SUR	26	-39	203	0	0.3	0.5	0.6
41929	99	P	SUR	40	-43	211	0	0.5	-0.3	0.6
41957	99	P	SUR	34	-64	215	0	0.7	-0.4	0.8
41958	99	P	SUR	37	-48	214	0	0.4	-0.3	0.5
41969	99	P	SUR	40	-33	217	0	0.5	-0.6	0.8
41970	99	P	SUR	29	-58	209	0	0.3	0.0	0.3
41971	99	P	SUR	40	-51	203	0	0.4	-0.2	0.5
41972	99	P	SUR	32	-37	213	0	0.3	0.0	0.3
41999	99	P	SUR	32	-51	177	0	0.4	0.4	0.5
42059	99	P	SUR	15	-68	213	0	0.3	0.9	0.9
42060	99	P	SUR	16	-63	216	0	0.3	0.3	0.4
42085	99	P	SUR	18	-67	199	0	0.3	-0.5	0.6
44005	99	P	SUR	43	-69	74	0	0.7	-0.3	0.7
44027	99	P	SUR	44	-67	210	0	0.6	-0.5	0.8
44032	99	P	SUR	44	-69	203	0	0.6	-0.6	0.9
44034	99	P	SUR	44	-68	197	0	0.7	-0.4	0.8
44037	99	P	SUR	44	-68	127	0	0.6	-0.2	0.6
44137	99	P	SUR	42	-62	209	0	1.0	-0.1	1.0
44139	99	P	SUR	44	-57	210	0	0.7	-0.1	0.7
44141	99	P	SUR	43	-58	214	0	0.6	-0.2	0.6
44150	99	P	SUR	43	-64	212	0	0.5	-0.3	0.6
44251	99	P	SUR	46	-53	40	0	1.2	-0.2	1.2
44258	99	P	SUR	45	-63	212	0	0.6	-0.5	0.8
44514	99	P	SUR	41	-43	212	0	1.0	0.3	1.0
44516	99	P	SUR	35	-58	169	0	1.0	0.2	1.0
44546	99	P	SUR	45	-25	217	0	0.4	-0.2	0.4
44551	99	P	SUR	44	-5	123	0	2.5	-0.4	2.5
44554	99	P	SUR	40	-43	213	0	0.6	0.5	0.8
44602	99	P	SUR	54	-39	217	0	0.5	-0.1	0.5
44605	99	P	SUR	50	-23	217	0	0.5	-0.2	0.6
44607	99	P	SUR	46	-10	217	0	0.4	-0.2	0.4
44610	99	P	SUR	48	-32	217	0	0.7	0.3	0.8
44612	99	P	SUR	49	-42	214	0	0.5	-0.3	0.6
44613	99	P	SUR	45	-30	202	0	0.4	-0.5	0.6
44621	99	P	SUR	55	-41	217	0	0.5	0.2	0.6
44624	99	P	SUR	44	-14	216	0	0.4	0.0	0.4
44690	99	P	SUR	51	-41	215	0	0.5	-0.4	0.6
44724	99	P	SUR	55	-23	217	0	0.6	-0.6	0.9
44725	99	P	SUR	25	-29	183	0	0.3	0.1	0.3

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44740	99	P	SUR	29	-35	210	0	0.3	-0.1	0.3
44741	99	P	SUR	36	-25	217	0	0.3	0.1	0.3
44745	99	P	SUR	44	-50	217	0	0.6	0.0	0.6
44747	99	P	SUR	58	-44	190	0	0.7	-0.3	0.8
44763	99	P	SUR	58	-9	69	0	0.5	-0.3	0.5
44764	99	P	SUR	44	-30	48	0	0.3	-0.3	0.4
44765	99	P	SUR	48	-31	217	0	0.5	0.1	0.5
44767	99	P	SUR	27	-36	217	0	0.2	0.0	0.3
44770	99	P	SUR	50	-6	217	0	0.4	0.4	0.6
44771	99	P	SUR	57	-16	217	0	0.5	-0.1	0.5
44773	99	P	SUR	40	-19	196	0	0.3	0.1	0.4
44835	99	P	SUR	45	-50	190	0	0.6	-0.4	0.7
44836	99	P	SUR	45	-48	183	0	0.6	-0.1	0.6
44837	99	P	SUR	45	-46	183	0	0.6	-0.1	0.6
44839	99	P	SUR	45	-44	183	0	0.6	-0.2	0.6
44840	99	P	SUR	46	-36	176	0	0.6	-0.2	0.6
44846	99	P	SUR	38	-44	217	0	0.4	0.2	0.5
44847	99	P	SUR	38	-39	217	0	0.5	0.2	0.5
44848	99	P	SUR	37	-46	217	0	0.4	0.2	0.4
44849	99	P	SUR	38	-56	209	0	0.7	-0.2	0.7
44850	99	P	SUR	41	-49	183	0	0.5	0.4	0.6
44863	99	P	SUR	37	-37	208	0	0.4	-0.1	0.4
44868	99	P	SUR	33	-36	210	0	0.3	0.1	0.3
44869	99	P	SUR	27	-27	217	0	0.3	0.4	0.4
44870	99	P	SUR	39	-12	217	0	0.3	0.0	0.3
44874	99	P	SUR	44	-8	217	0	0.4	0.2	0.4
44875	99	P	SUR	30	-34	217	0	0.6	0.4	0.7
44876	99	P	SUR	41	-48	217	0	0.5	0.3	0.6
44877	99	P	SUR	49	-39	217	0	0.5	-0.3	0.6
44878	99	P	SUR	47	-42	217	0	0.5	-0.2	0.6
44879	99	P	SUR	49	-22	217	0	0.4	-0.2	0.5
44880	99	P	SUR	46	-51	217	0	0.6	-0.2	0.7
47564	99	P	SUR	64	-40	208	3	2.6	-1.5	3.0
48520	99	P	SUR	76	-19	217	0	0.6	0.1	0.6
61002	99	P	SUR	42	5	214	0	0.4	0.6	0.7
61690	99	P	SUR	43	35	214	0	0.7	0.4	0.8
61691	99	P	SUR	43	28	65	0	1.3	0.2	1.3
62001	99	P	SUR	45	-5	217	0	0.4	0.2	0.4
62023	99	P	SUR	51	-8	216	0	0.3	0.1	0.3
62027	99	P	SUR	49	-2	89	0	0.5	0.1	0.5
62030	99	P	SUR	50	-4	123	0	0.5	0.1	0.5
62050	99	P	SUR	50	-4	189	0	0.5	0.4	0.6
62086	99	P	SUR	55	6	200	0	0.4	-0.2	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62087	99	P	SUR	55	7	186	57	7.4	0.1	7.4
62092	99	P	SUR	51	-11	134	0	0.5	-0.3	0.5
62093	99	P	SUR	55	-10	217	0	0.5	0.0	0.5
62094	99	P	SUR	52	-7	217	0	0.4	0.1	0.4
62102	99	P	SUR	58	2	215	0	0.5	0.0	0.5
62103	99	P	SUR	50	-3	208	0	0.7	0.5	0.9
62104	99	P	SUR	57	1	214	0	0.5	0.0	0.5
62105	99	P	SUR	55	-13	217	0	0.5	0.1	0.5
62107	99	P	SUR	50	-6	216	0	0.4	0.5	0.6
62111	99	P	SUR	58	0	215	0	0.6	0.3	0.6
62112	99	P	SUR	58	0	212	0	0.4	0.3	0.5
62113	99	P	SUR	58	0	214	0	0.6	0.3	0.6
62114	99	P	SUR	58	0	212	0	0.6	-0.1	0.6
62115	99	P	SUR	58	-3	207	0	0.5	0.0	0.5
62116	99	P	SUR	58	1	215	0	0.6	0.1	0.6
62117	99	P	SUR	58	0	214	0	0.5	0.0	0.5
62118	99	P	SUR	58	1	214	0	0.3	-0.5	0.6
62119	99	P	SUR	57	2	44	0	0.3	0.3	0.5
62120	99	P	SUR	56	2	214	0	0.4	-0.1	0.4
62122	99	P	SUR	57	2	215	0	0.5	0.2	0.5
62123	99	P	SUR	56	2	215	0	0.5	0.0	0.5
62124	99	P	SUR	54	-4	212	0	0.4	-0.1	0.4
62127	99	P	SUR	54	1	213	0	0.4	0.4	0.5
62128	99	P	SUR	59	1	215	0	0.4	0.0	0.4
62129	99	P	SUR	58	0	213	0	0.5	0.2	0.6
62130	99	P	SUR	59	1	207	0	0.4	-0.2	0.4
62131	99	P	SUR	54	1	215	0	0.4	0.5	0.6
62132	99	P	SUR	56	2	58	0	0.5	0.4	0.6
62133	99	P	SUR	57	1	215	0	0.6	0.3	0.6
62134	99	P	SUR	58	1	79	0	0.4	0.2	0.5
62135	99	P	SUR	54	2	208	0	0.5	0.2	0.5
62136	99	P	SUR	54	3	201	0	0.5	0.6	0.8
62137	99	P	SUR	58	-4	195	0	0.4	0.3	0.5
62138	99	P	SUR	54	0	207	0	0.6	0.6	0.8
62139	99	P	SUR	53	2	201	0	0.3	0.2	0.4
62140	99	P	SUR	57	1	214	0	0.5	0.4	0.6
62141	99	P	SUR	57	1	215	0	0.4	0.0	0.4
62143	99	P	SUR	58	2	214	0	0.7	0.3	0.7
62144	99	P	SUR	53	2	215	0	0.4	0.5	0.6
62145	99	P	SUR	53	3	209	0	0.4	0.4	0.6
62146	99	P	SUR	57	2	213	0	0.5	0.1	0.6
62147	99	P	SUR	58	-1	173	0	0.4	0.0	0.4
62148	99	P	SUR	54	2	104	0	0.3	0.8	0.9

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62149	99	P	SUR	54	1	213	0	0.4	0.6	0.7
62150	99	P	SUR	54	1	213	0	0.7	0.5	0.9
62151	99	P	SUR	57	2	213	0	0.4	0.1	0.4
62152	99	P	SUR	57	2	215	0	0.4	0.5	0.6
62153	99	P	SUR	57	2	203	0	0.4	0.2	0.5
62154	99	P	SUR	56	2	214	0	0.4	-0.1	0.4
62155	99	P	SUR	58	1	215	0	0.3	0.4	0.6
62156	99	P	SUR	56	-3	183	0	2.0	1.1	2.3
62157	99	P	SUR	58	0	205	0	0.6	0.0	0.6
62159	99	P	SUR	61	-2	214	0	0.4	0.6	0.7
62161	99	P	SUR	58	1	207	0	0.5	0.0	0.5
62162	99	P	SUR	57	1	214	0	0.4	0.0	0.4
62163	99	P	SUR	48	-8	211	0	0.4	0.3	0.5
62164	99	P	SUR	57	1	215	0	0.4	0.5	0.6
62165	99	P	SUR	54	1	214	0	0.4	0.3	0.5
62166	99	P	SUR	53	3	207	0	0.3	1.0	1.0
62167	99	P	SUR	53	2	201	0	0.4	0.1	0.4
62168	99	P	SUR	58	1	214	0	0.4	0.1	0.4
62170	99	P	SUR	51	2	192	2	0.4	0.6	0.7
62296	99	P	SUR	53	2	207	0	0.3	0.0	0.3
62297	99	P	SUR	59	2	207	0	0.4	0.0	0.4
62301	99	P	SUR	52	-5	217	0	0.3	0.3	0.5
62303	99	P	SUR	52	-5	97	0	0.9	-0.4	1.0
62304	99	P	SUR	51	2	215	0	0.4	0.4	0.6
62305	99	P	SUR	50	0	216	0	0.4	0.4	0.6
62507	99	P	SUR	47	-7	217	0	0.4	0.3	0.5
62508	99	P	SUR	46	-2	217	0	0.5	0.6	0.7
62512	99	P	SUR	36	-25	216	0	0.3	0.0	0.3
62514	99	P	SUR	65	-12	217	0	0.6	0.1	0.6
62516	99	P	SUR	36	-13	217	0	0.3	0.2	0.4
62534	99	P	SUR	52	-18	217	0	0.5	-0.3	0.5
62553	99	P	SUR	60	-17	217	0	0.5	0.0	0.5
62556	99	P	SUR	23	-59	20	0	1.5	-1.4	2.0
62680	99	P	SUR	59	-17	217	0	0.5	-0.3	0.6
62681	99	P	SUR	49	-44	217	0	0.6	-0.5	0.8
62686	99	P	SUR	67	-9	99	0	0.7	-0.3	0.7
62687	99	P	SUR	69	-6	217	0	1.0	0.2	1.0
62695	99	P	SUR	41	-13	202	0	0.3	0.0	0.3
62713	99	P	SUR	30	-20	217	0	0.3	0.1	0.3
62714	99	P	SUR	32	-18	216	0	0.3	0.0	0.3
62729	99	P	SUR	47	-33	176	0	0.8	0.3	0.8
63055	99	P	SUR	61	2	215	0	0.5	0.0	0.5
63056	99	P	SUR	60	2	215	0	0.7	0.2	0.7

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
63057	99	P	SUR	59	2	214	0	0.4	-0.3	0.5
63058	99	P	SUR	53	2	351	0	0.4	0.4	0.6
63059	99	P	SUR	58	-1	37	0	0.3	0.4	0.5
63101	99	P	SUR	61	1	214	0	0.7	0.0	0.7
63102	99	P	SUR	61	1	207	0	0.5	0.1	0.6
63103	99	P	SUR	61	1	214	0	0.6	-0.7	0.9
63104	99	P	SUR	61	2	203	0	0.6	-0.1	0.6
63107	99	P	SUR	61	2	215	0	0.4	-0.2	0.5
63108	99	P	SUR	61	2	214	0	0.5	-0.1	0.5
63109	99	P	SUR	60	2	214	0	0.5	-0.3	0.6
63110	99	P	SUR	60	2	214	0	0.6	0.4	0.7
63111	99	P	SUR	61	2	203	0	0.6	-0.4	0.7
63112	99	P	SUR	61	1	213	0	0.5	-0.5	0.6
63113	99	P	SUR	61	2	90	0	0.6	0.2	0.7
63114	99	P	SUR	61	2	214	0	0.4	-0.2	0.5
63115	99	P	SUR	62	1	215	0	0.5	-0.2	0.5
63116	99	P	SUR	55	8	14	0	1.0	-1.3	1.6
63117	99	P	SUR	61	1	215	0	0.5	0.1	0.5
63118	99	P	SUR	61	-2	128	0	0.6	-0.3	0.7
63119	99	P	SUR	57	1	22	0	1.0	0.1	1.0
63120	99	P	SUR	54	2	200	0	0.3	0.9	1.0
63639	99	P	SUR	74	37	196	1	2.5	-0.9	2.6
63640	99	P	SUR	75	29	217	0	0.7	0.5	0.9
63642	99	P	SUR	71	-2	217	0	1.9	0.7	2.0
64041	99	P	SUR	61	-3	215	0	0.5	-0.1	0.5
64045	99	P	SUR	59	-12	215	0	0.5	0.0	0.5
64046	99	P	SUR	61	-4	214	0	0.6	-0.1	0.6
64049	99	P	SUR	57	1	208	0	0.7	0.2	0.8
64516	99	P	SUR	74	6	217	5	2.0	-0.4	2.0
64518	99	P	SUR	77	4	217	0	0.7	-0.4	0.8
64519	99	P	SUR	63	7	217	0	0.6	-0.6	0.8
64520	99	P	SUR	67	-3	217	0	0.6	-0.1	0.6
64521	99	P	SUR	76	3	217	0	2.9	-0.6	3.0
64525	99	P	SUR	64	-3	217	0	0.4	-0.1	0.4
64526	99	P	SUR	66	-20	6	0	0.2	-0.2	0.2
64607	99	P	SUR	69	-6	217	0	0.6	0.1	0.6
64611	99	P	SUR	60	-26	217	0	0.6	-0.4	0.7
64613	99	P	SUR	64	-5	217	0	0.4	-0.1	0.4
64614	99	P	SUR	63	-25	217	0	3.4	0.6	3.5
64615	99	P	SUR	63	-7	217	0	0.5	0.4	0.6
64616	99	P	SUR	61	-25	217	0	0.5	0.2	0.6
64620	99	P	SUR	58	-18	189	0	0.7	-0.2	0.8
64621	99	P	SUR	64	-4	217	0	0.4	0.1	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
64622	99	P	SUR	66	-10	217	0	0.5	0.1	0.5
64623	99	P	SUR	71	15	217	0	0.7	0.3	0.7
64663	99	P	SUR	67	-17	217	0	0.9	0.3	1.0
64664	99	P	SUR	68	-17	217	0	0.7	-0.1	0.7
64665	99	P	SUR	65	-10	181	0	1.4	0.6	1.6
64666	99	P	SUR	63	-7	217	0	0.4	0.2	0.5
64667	99	P	SUR	61	-33	178	0	0.9	-0.3	1.0
64668	99	P	SUR	63	-9	215	0	0.6	0.3	0.6
64669	99	P	SUR	63	-21	217	0	0.5	0.2	0.6
64670	99	P	SUR	63	-31	211	0	0.7	0.1	0.7
64691	99	P	SUR	59	-32	217	0	0.6	0.2	0.6
64692	99	P	SUR	63	-14	217	0	0.7	0.3	0.7
64693	99	P	SUR	63	-17	217	0	0.5	0.3	0.6
65592	99	P	SUR	60	-57	217	0	1.5	-0.5	1.5

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

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


TIME = 99 => AVERAGE OF ALL OBSERVATIONS


GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S
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WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
13001	99	SPEED	SUR	11	-23	149	0	0	0.9	0.5	1.0
13002	99	SPEED	SUR	20	-23	156	0	0	0.7	-0.1	0.7
13008	99	SPEED	SUR	15	-38	94	0	0	0.7	-0.3	0.8
41040	99	SPEED	SUR	15	-53	213	0	0	0.8	-0.1	0.8
41041	99	SPEED	SUR	14	-46	215	0	0	0.9	-0.3	0.9
41044	99	SPEED	SUR	22	-59	214	0	0	1.3	-0.1	1.3
41046	99	SPEED	SUR	24	-68	216	0	0	1.3	0.0	1.3
41048	99	SPEED	SUR	32	-70	214	0	0	1.5	-0.5	1.5
41049	99	SPEED	SUR	28	-63	215	0	0	1.5	0.5	1.6
41051	99	SPEED	SUR	18	-65	190	0	0	1.2	0.5	1.3
41052	99	SPEED	SUR	18	-65	210	0	0	1.0	0.3	1.1
41053	99	SPEED	SUR	19	-66	201	0	0	1.3	0.5	1.4
41056	99	SPEED	SUR	18	-66	210	0	0	1.0	0.7	1.3
41139	99	SPEED	SUR	20	-38	158	0	0	0.9	0.0	0.9
41300	99	SPEED	SUR	16	-58	168	1	1	1.2	-0.7	1.4
42059	99	SPEED	SUR	15	-68	213	0	0	0.8	0.1	0.8
42060	99	SPEED	SUR	16	-63	216	0	0	1.2	-0.1	1.2
42085	99	SPEED	SUR	18	-67	202	0	0	1.1	1.0	1.5
44005	99	SPEED	SUR	43	-69	83	0	0	1.8	0.5	1.8
44027	99	SPEED	SUR	44	-67	210	0	0	1.9	-0.1	1.9
44032	99	SPEED	SUR	44	-69	210	0	0	1.7	0.0	1.7
44033	99	SPEED	SUR	44	-69	210	0	0	1.4	1.2	1.9
44034	99	SPEED	SUR	44	-68	210	0	0	1.3	-0.1	1.3
44037	99	SPEED	SUR	44	-68	127	0	0	1.4	-0.1	1.4
44137	99	SPEED	SUR	42	-62	113	0	0	3.4	-8.0	8.7
44139	99	SPEED	SUR	44	-57	191	0	0	3.5	-0.7	3.6
44141	99	SPEED	SUR	43	-58	216	0	0	1.8	0.9	2.1
44150	99	SPEED	SUR	43	-64	213	0	0	1.4	0.7	1.5
44251	99	SPEED	SUR	46	-53	40	0	0	1.4	-1.5	2.0
44258	99	SPEED	SUR	45	-63	212	0	0	1.4	0.3	1.4
61002	99	SPEED	SUR	42	5	213	0	0	1.5	0.1	1.5
62001	99	SPEED	SUR	45	-5	217	0	0	1.4	0.0	1.4
62023	99	SPEED	SUR	51	-8	214	0	0	1.8	-0.5	1.8
62027	99	SPEED	SUR	49	-2	87	0	0	1.7	0.0	1.7

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62030	99	SPEED	SUR	50	-4	85	0	0	1.3	1.0	1.7
62050	99	SPEED	SUR	50	-4	92	0	0	1.1	-0.6	1.3
62086	99	SPEED	SUR	55	6	205	10	0	1.6	0.2	1.6
62087	99	SPEED	SUR	55	7	194	0	0	3.3	-7.2	7.9
62092	99	SPEED	SUR	51	-11	134	0	0	1.4	-0.2	1.4
62093	99	SPEED	SUR	55	-10	217	0	0	1.1	-0.2	1.1
62094	99	SPEED	SUR	52	-7	217	0	0	1.3	0.0	1.3
62102	99	SPEED	SUR	58	2	215	0	0	1.3	-0.3	1.4
62103	99	SPEED	SUR	50	-3	207	0	0	1.7	0.5	1.8
62104	99	SPEED	SUR	57	1	214	0	0	1.3	-0.4	1.3
62105	99	SPEED	SUR	55	-13	217	0	0	2.5	-0.2	2.5
62107	99	SPEED	SUR	50	-6	216	0	0	1.5	0.2	1.5
62111	99	SPEED	SUR	58	0	215	0	0	1.8	-0.1	1.8
62112	99	SPEED	SUR	58	0	212	0	0	2.1	-1.5	2.6
62113	99	SPEED	SUR	58	0	214	0	0	1.5	0.4	1.5
62114	99	SPEED	SUR	58	0	127	0	0	1.5	0.7	1.6
62117	99	SPEED	SUR	58	0	214	0	0	1.4	0.1	1.4
62118	99	SPEED	SUR	58	1	214	0	0	1.7	0.2	1.7
62119	99	SPEED	SUR	57	2	44	0	0	1.4	-0.8	1.6
62120	99	SPEED	SUR	56	2	214	0	0	1.4	0.2	1.4
62122	99	SPEED	SUR	57	2	215	0	0	1.1	-0.2	1.1
62123	99	SPEED	SUR	56	2	215	0	0	1.2	0.0	1.2
62127	99	SPEED	SUR	54	1	201	0	0	1.7	1.3	2.2
62128	99	SPEED	SUR	59	1	215	0	0	1.6	0.9	1.9
62129	99	SPEED	SUR	58	0	213	0	0	1.3	-0.2	1.3
62131	99	SPEED	SUR	54	1	215	0	0	2.2	-2.3	3.2
62132	99	SPEED	SUR	56	2	58	0	0	1.6	-1.3	2.1
62133	99	SPEED	SUR	57	1	161	0	0	1.3	0.0	1.3
62134	99	SPEED	SUR	58	1	79	0	0	1.2	0.1	1.2
62140	99	SPEED	SUR	57	1	3	0	0	1.3	-1.9	2.4
62143	99	SPEED	SUR	58	2	214	0	0	2.2	-1.2	2.5
62144	99	SPEED	SUR	53	2	215	0	0	2.6	-0.2	2.6
62145	99	SPEED	SUR	53	3	209	0	0	1.9	-0.4	1.9
62146	99	SPEED	SUR	57	2	213	0	0	3.4	-3.4	4.8
62148	99	SPEED	SUR	54	2	104	0	0	1.8	-1.0	2.1
62149	99	SPEED	SUR	54	1	213	0	0	1.3	0.3	1.3
62150	99	SPEED	SUR	54	1	213	0	0	1.4	-0.3	1.4
62152	99	SPEED	SUR	57	2	215	0	0	1.8	-1.8	2.5
62153	99	SPEED	SUR	57	2	203	0	0	2.4	-1.2	2.7
62154	99	SPEED	SUR	56	2	214	0	0	1.4	-0.4	1.5
62155	99	SPEED	SUR	58	1	215	0	0	1.2	0.3	1.2

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62163	99	SPEED	SUR	48	-8	211	0	0	1.1	0.4	1.2
62164	99	SPEED	SUR	57	1	215	0	0	1.5	-1.5	2.1
62165	99	SPEED	SUR	54	1	214	0	0	1.7	-0.7	1.8
62170	99	SPEED	SUR	51	2	192	0	0	1.8	-0.1	1.8
62301	99	SPEED	SUR	52	-5	217	0	0	1.2	0.4	1.3
62303	99	SPEED	SUR	52	-5	216	0	0	1.4	0.6	1.6
62304	99	SPEED	SUR	51	2	216	0	0	1.9	0.7	2.0
62305	99	SPEED	SUR	50	0	216	0	0	1.6	1.4	2.1
63055	99	SPEED	SUR	61	2	215	0	0	1.3	-1.1	1.7
63056	99	SPEED	SUR	60	2	215	0	0	1.2	0.1	1.3
63057	99	SPEED	SUR	59	2	214	0	0	1.9	0.0	1.9
63058	99	SPEED	SUR	53	2	177	0	0	1.4	0.5	1.5
63101	99	SPEED	SUR	61	1	211	0	0	1.5	-1.1	1.9
63103	99	SPEED	SUR	61	1	115	0	0	1.6	-0.7	1.8
63104	99	SPEED	SUR	61	2	203	0	0	1.4	-0.4	1.4
63106	99	SPEED	SUR	61	2	125	0	0	1.3	-0.6	1.4
63107	99	SPEED	SUR	61	2	181	0	0	1.4	-0.1	1.4
63108	99	SPEED	SUR	61	2	214	0	0	1.4	-0.1	1.4
63109	99	SPEED	SUR	60	2	207	0	0	1.4	0.4	1.5
63110	99	SPEED	SUR	60	2	214	0	0	1.4	-0.6	1.5
63112	99	SPEED	SUR	61	1	213	0	0	1.4	-0.8	1.6
63113	99	SPEED	SUR	61	2	90	0	0	1.5	-0.4	1.6
63114	99	SPEED	SUR	61	2	214	0	0	1.8	0.1	1.8
63115	99	SPEED	SUR	62	1	215	0	0	1.5	-0.8	1.7
63117	99	SPEED	SUR	61	1	215	0	0	1.6	-0.7	1.7
63119	99	SPEED	SUR	57	1	22	0	0	2.0	0.8	2.2
64041	99	SPEED	SUR	61	-3	147	0	0	1.6	-0.6	1.7
64045	99	SPEED	SUR	59	-12	214	0	0	1.5	0.6	1.6
64046	99	SPEED	SUR	61	-4	214	0	0	1.4	0.9	1.7
66021	99	SPEED	SUR	55	14	209	0	0	1.0	-0.3	1.1
66024	99	SPEED	SUR	55	13	212	0	0	1.1	-0.1	1.1

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 : MAR 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	149	0	0	7.7	9.1	11.9
13002	99	DIRN	SUR	20	-23	156	0	0	9.9	7.0	12.1
13008	99	DIRN	SUR	15	-38	94	0	0	9.4	-3.1	9.9
41008	99	DIRN	SUR	31	-81	158	0	1	19.3	5.3	20.0
41009	99	DIRN	SUR	29	-80	171	0	1	23.3	8.0	24.6
41013	99	DIRN	SUR	33	-78	205	0	1	17.1	3.9	17.5
41024	99	DIRN	SUR	34	-79	94	0	1	24.4	-0.9	24.4
41025	99	DIRN	SUR	35	-75	39	0	0	9.7	1.7	9.9
41029	99	DIRN	SUR	33	-80	124	0	5	18.8	1.7	18.9
41033	99	DIRN	SUR	32	-80	104	0	2	23.1	6.8	24.0
41036	99	DIRN	SUR	34	-77	203	0	2	12.9	6.4	14.4
41037	99	DIRN	SUR	34	-77	114	0	1	18.4	-4.0	18.9
41038	99	DIRN	SUR	34	-78	61	0	0	13.1	0.6	13.1
41040	99	DIRN	SUR	15	-53	213	0	0	12.9	-1.0	13.0
41041	99	DIRN	SUR	14	-46	214	0	0	8.0	-1.7	8.1
41044	99	DIRN	SUR	22	-59	135	0	0	17.0	-3.3	17.4
41046	99	DIRN	SUR	24	-68	182	0	0	14.7	-3.0	15.0
41047	99	DIRN	SUR	28	-72	197	0	1	16.9	0.1	16.9
41048	99	DIRN	SUR	32	-70	195	0	1	16.1	7.9	17.9
41049	99	DIRN	SUR	28	-63	185	0	0	20.4	8.8	22.2
41051	99	DIRN	SUR	18	-65	148	0	0	12.7	-10.2	16.3
41052	99	DIRN	SUR	18	-65	164	0	0	11.0	1.4	11.1
41053	99	DIRN	SUR	19	-66	162	0	0	14.7	-4.8	15.5
41056	99	DIRN	SUR	18	-66	159	0	0	13.3	6.7	14.8
41139	99	DIRN	SUR	20	-38	152	0	0	8.5	1.3	8.5
41300	99	DIRN	SUR	16	-58	145	1	1	10.7	2.7	11.0
42036	99	DIRN	SUR	29	-85	140	0	1	22.0	4.2	22.4
42056	99	DIRN	SUR	20	-85	189	0	1	11.4	-7.2	13.5
42057	99	DIRN	SUR	17	-82	188	0	0	9.9	-1.7	10.0
42058	99	DIRN	SUR	15	-75	215	0	0	5.7	-3.1	6.5
42059	99	DIRN	SUR	15	-68	212	0	0	8.1	-11.2	13.8
42060	99	DIRN	SUR	16	-63	175	0	0	14.3	-2.6	14.5

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
42085	99	DIRN	SUR	18	-67	146	0	0	12.2	-4.3	12.9
44005	99	DIRN	SUR	43	-69	83	0	1	10.1	3.1	10.5
44007	99	DIRN	SUR	44	-70	183	0	2	19.6	-1.2	19.6
44013	99	DIRN	SUR	42	-71	171	0	2	17.5	-0.5	17.5
44014	99	DIRN	SUR	37	-75	187	0	1	14.2	8.6	16.6
44017	99	DIRN	SUR	41	-72	193	0	0	16.4	5.6	17.4
44020	99	DIRN	SUR	41	-70	127	0	2	16.5	8.4	18.5
44022	99	DIRN	SUR	41	-74	61	0	0	13.0	2.1	13.1
44027	99	DIRN	SUR	44	-67	196	0	0	14.7	-0.6	14.7
44029	99	DIRN	SUR	43	-71	166	0	2	15.7	7.8	17.5
44030	99	DIRN	SUR	43	-70	172	0	1	15.8	4.4	16.4
44032	99	DIRN	SUR	44	-69	188	0	1	16.0	4.2	16.6
44033	99	DIRN	SUR	44	-69	170	0	0	14.8	5.4	15.7
44034	99	DIRN	SUR	44	-68	197	0	1	14.3	3.9	14.8
44037	99	DIRN	SUR	44	-68	124	0	0	12.9	2.4	13.1
44039	99	DIRN	SUR	41	-73	125	0	0	19.6	0.6	19.6
44040	99	DIRN	SUR	41	-74	114	0	1	19.2	1.9	19.3
44041	99	DIRN	SUR	37	-77	10	0	0	17.4	-14.3	22.5
44042	99	DIRN	SUR	38	-76	143	0	0	18.0	-7.9	19.6
44043	99	DIRN	SUR	39	-76	52	0	0	20.8	-25.3	32.7
44057	99	DIRN	SUR	40	-76	14	0	0	5.2	-13.7	14.6
44058	99	DIRN	SUR	38	-76	146	0	1	16.9	-8.9	19.1
44059	99	DIRN	SUR	37	-76	64	0	0	11.9	-18.6	22.1
44060	99	DIRN	SUR	41	-72	122	0	0	15.6	1.0	15.6
44061	99	DIRN	SUR	39	-77	4	0	0	11.2	-12.0	16.4
44062	99	DIRN	SUR	39	-76	100	0	0	21.5	-14.7	26.0
44063	99	DIRN	SUR	39	-76	126	0	0	21.1	-9.5	23.2
44064	99	DIRN	SUR	37	-76	161	0	1	19.4	3.1	19.6
44065	99	DIRN	SUR	40	-74	187	0	0	16.4	8.3	18.4
44066	99	DIRN	SUR	40	-73	187	0	0	13.6	7.3	15.4
44068	99	DIRN	SUR	37	-77	60	0	0	10.2	-8.9	13.6
44139	99	DIRN	SUR	44	-57	158	0	0	11.2	0.8	11.2
44141	99	DIRN	SUR	43	-58	195	0	0	17.9	5.1	18.6
44150	99	DIRN	SUR	43	-64	197	0	2	13.5	9.8	16.7
44251	99	DIRN	SUR	46	-53	39	0	3	21.7	-9.6	23.7
44258	99	DIRN	SUR	45	-63	190	0	0	15.4	3.0	15.7
62001	99	DIRN	SUR	45	-5	163	0	0	14.3	7.9	16.3
62023	99	DIRN	SUR	51	-8	198	0	0	14.8	-8.4	17.0
62027	99	DIRN	SUR	49	-2	60	0	0	33.2	8.7	34.3
62030	99	DIRN	SUR	50	-4	64	0	0	15.5	-8.5	17.7
62050	99	DIRN	SUR	50	-4	81	0	0	15.6	7.1	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
62092	99	DIRN	SUR	51	-11	116	0	0	15.3	-4.1	15.8
62093	99	DIRN	SUR	55	-10	216	0	0	11.8	-4.8	12.7
62094	99	DIRN	SUR	52	-7	191	0	0	12.1	1.0	12.2
62103	99	DIRN	SUR	50	-3	179	0	1	20.5	2.0	20.6
62105	99	DIRN	SUR	55	-13	187	0	0	9.8	1.5	9.9
62107	99	DIRN	SUR	50	-6	197	0	0	17.6	-3.8	18.0
62111	99	DIRN	SUR	58	0	193	0	0	13.5	-2.2	13.7
62112	99	DIRN	SUR	58	0	191	0	0	14.2	1.5	14.3
62114	99	DIRN	SUR	58	0	117	0	0	13.3	5.6	14.5
62117	99	DIRN	SUR	58	0	199	0	1	10.7	6.5	12.5
62163	99	DIRN	SUR	48	-8	191	0	0	13.2	4.8	14.1
62301	99	DIRN	SUR	52	-5	182	0	0	15.3	5.6	16.2
62303	99	DIRN	SUR	52	-5	177	0	0	16.8	-2.3	17.0
62305	99	DIRN	SUR	50	0	208	0	1	16.9	7.1	18.3
64041	99	DIRN	SUR	61	-3	146	0	0	10.2	7.8	12.8
64045	99	DIRN	SUR	59	-12	206	0	0	11.3	-0.8	11.3
64046	99	DIRN	SUR	61	-4	206	0	0	14.0	-4.5	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.