ECMWF Global Data Monitoring Report

November 2013

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	Oct	Nov	Ident	Time	Oct	Nov
28951	(00)	26	0	27595	(12)	19	30
28951	(12)	26	0	28722	(00)	17	30
41316	(00)	29	4	28722	(12)	17	30
42027	(12)	31	6	31168	(00)	0	22
42314	(12)	28	5	34122	(00)	0	27
42339	(00)	31	4	34122	(12)	0	29
42647	(12)	29	5	34247	(00)	10	30
42867	(12)	30	7	34247	(12)	11	30
43128	(12)	28	6	38507	(00)	17	28
43279	(12)	30	6	40856	(00)	10	21
44277	(00)	31	7	42667	(00)	17	30
44288	(12)	29	0	42874	(00)	13	26
48327	(00)	27	0	43285	(00)	0	18
61052	(00)	15	1	43333	(00)	5	27
61052	(12)	14	1	43371	(00)	14	29
68816	(00)	21	0	47058	(00)	1	13
68816	(12)	19	1	60390	(00)	13	28
78583	(00)	15	0	60390	(12)	12	28
78866	(00)	14	0	68442	(12)	7	25
78954	(00)	15	0	76458	(00)	6	30
80001	(12)	24	5	76458	(12)	8	30
94998	(12)	23	0	78073	(12)	6	27
-	-	-	-	78988	(12)	0	30
-	-	-	-	82107	(00)	0	18
-	-	-	-	82107	(12)	0	19
-	-	-	-	82411	(00)	8	24
-	-	-	-	82705	(00)	5	26
-	-	-	-	82705	(12)	6	26
-	-	-	-	82917	(00)	13	25
-	-	-	-	83208	(00)	9	23
-	-	-	-	83208	(12)	8	24
-	-	-	-	89512	(12)	0	13
-	-	-	-	89571	(12)	0	21
-	-	-	-	89592	(12)	0	14
-	-	-	-	89662	(00)	3	23
-	-	-	-	89662	(12)	2	23
-	-	-	-	94374	(12)	0	13
-	-	-	-	96237	(00)	5	28
-	-	-	-	96237	(12)	5	31
-	-	-	-	98433	(12)	8	26

2.2 Drifting Buoys

Surface pressure observations from **1155** 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

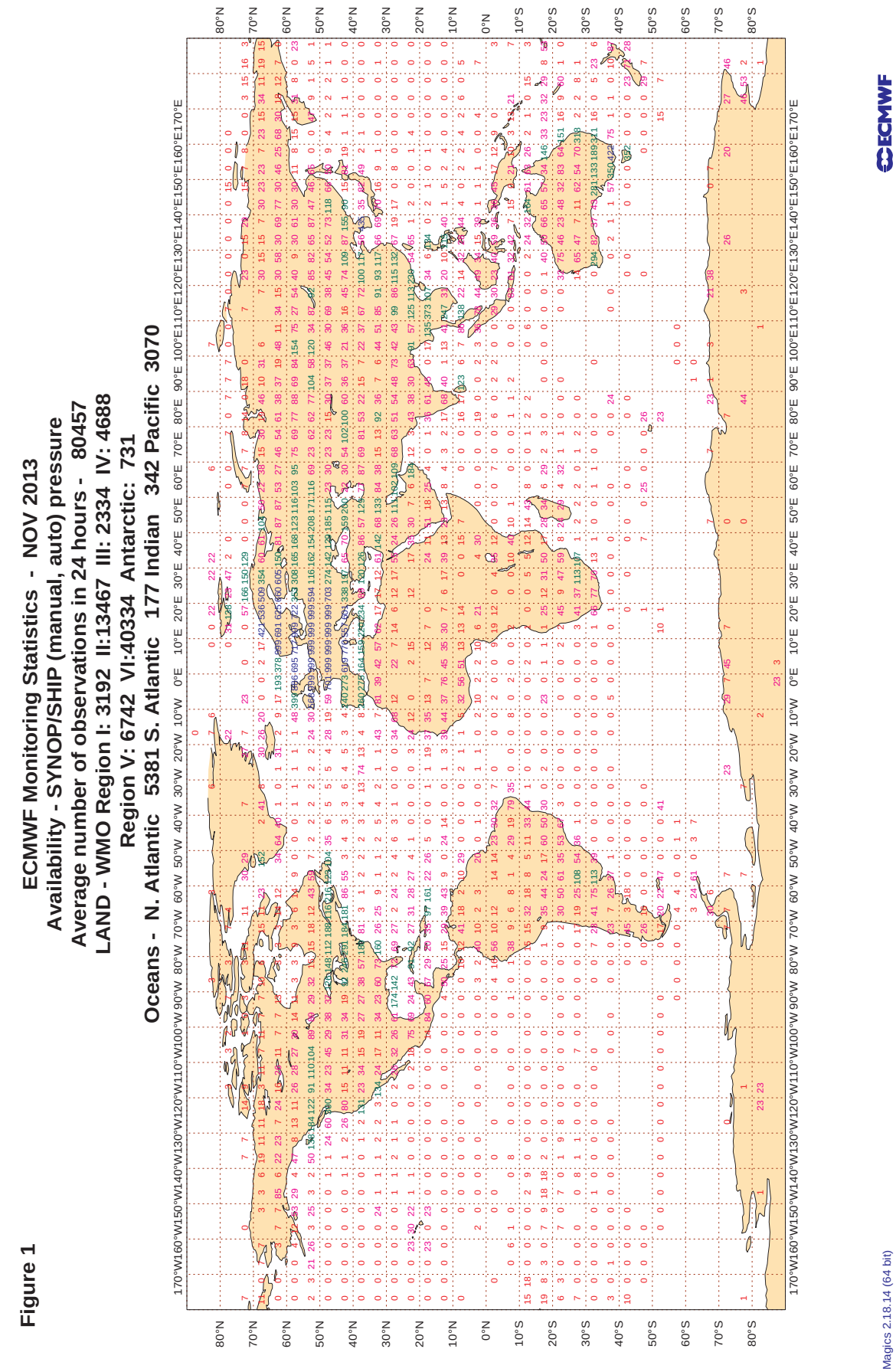


Figure 1

3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

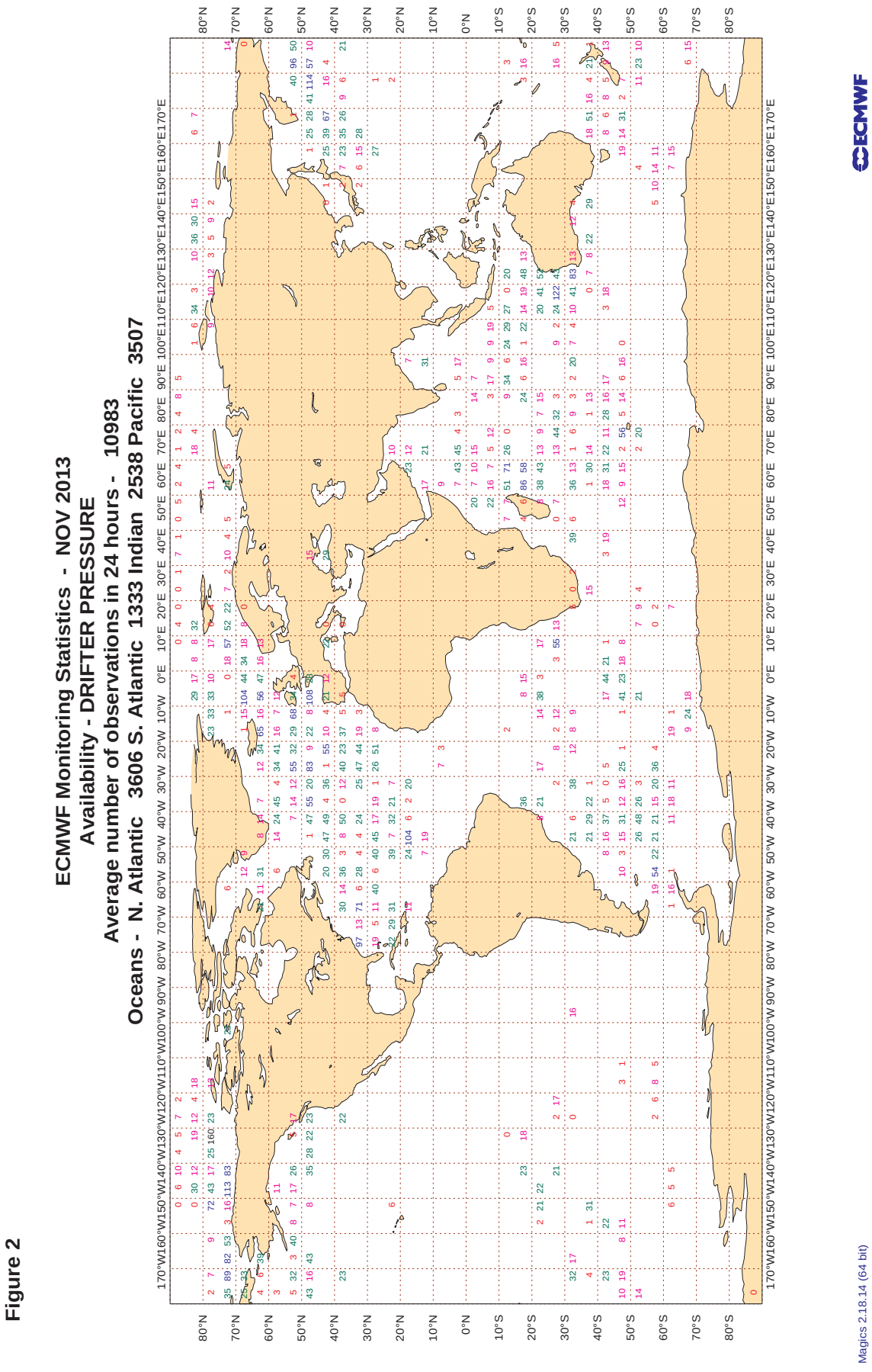


Figure 2

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

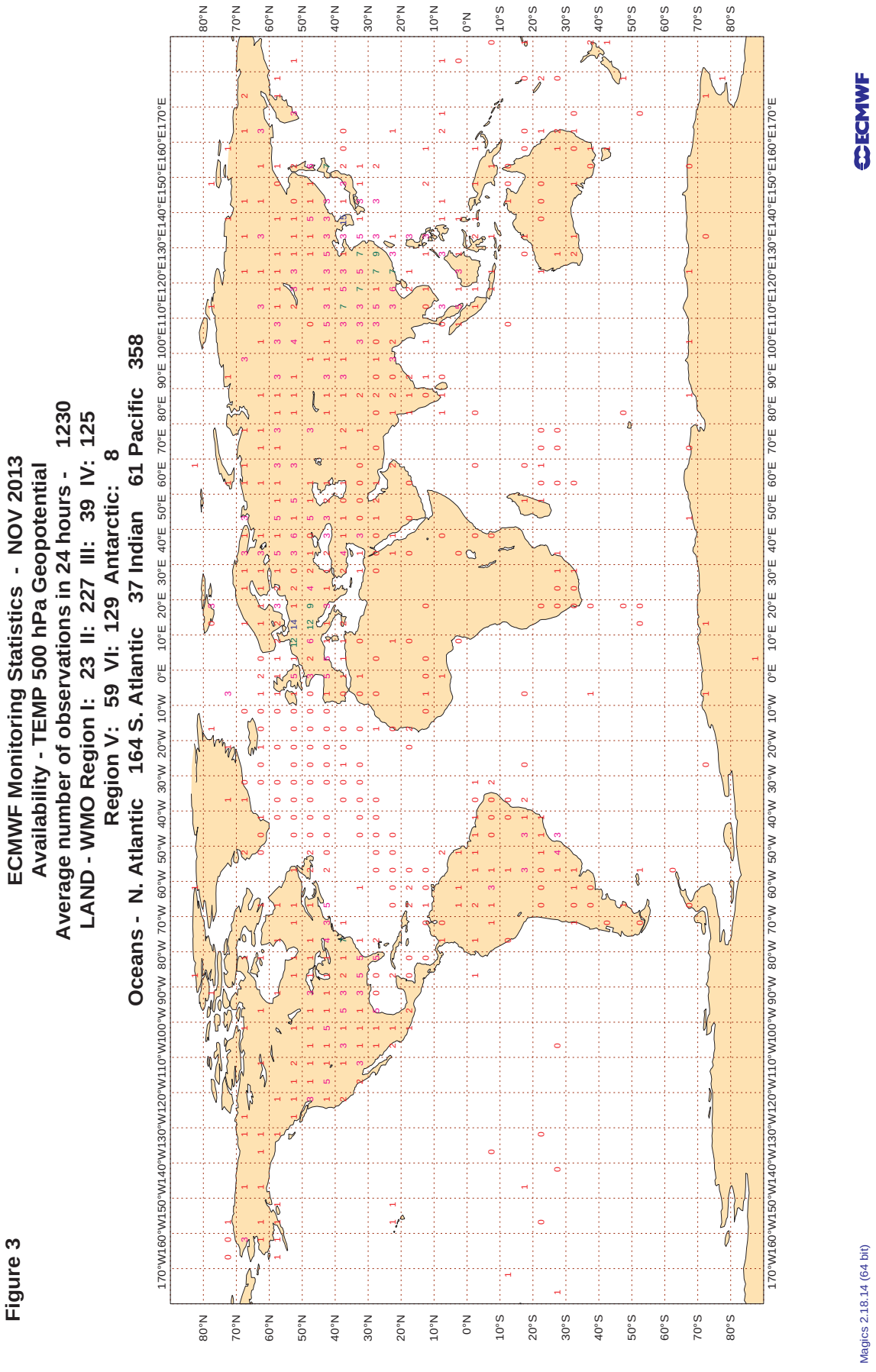


Figure 3

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

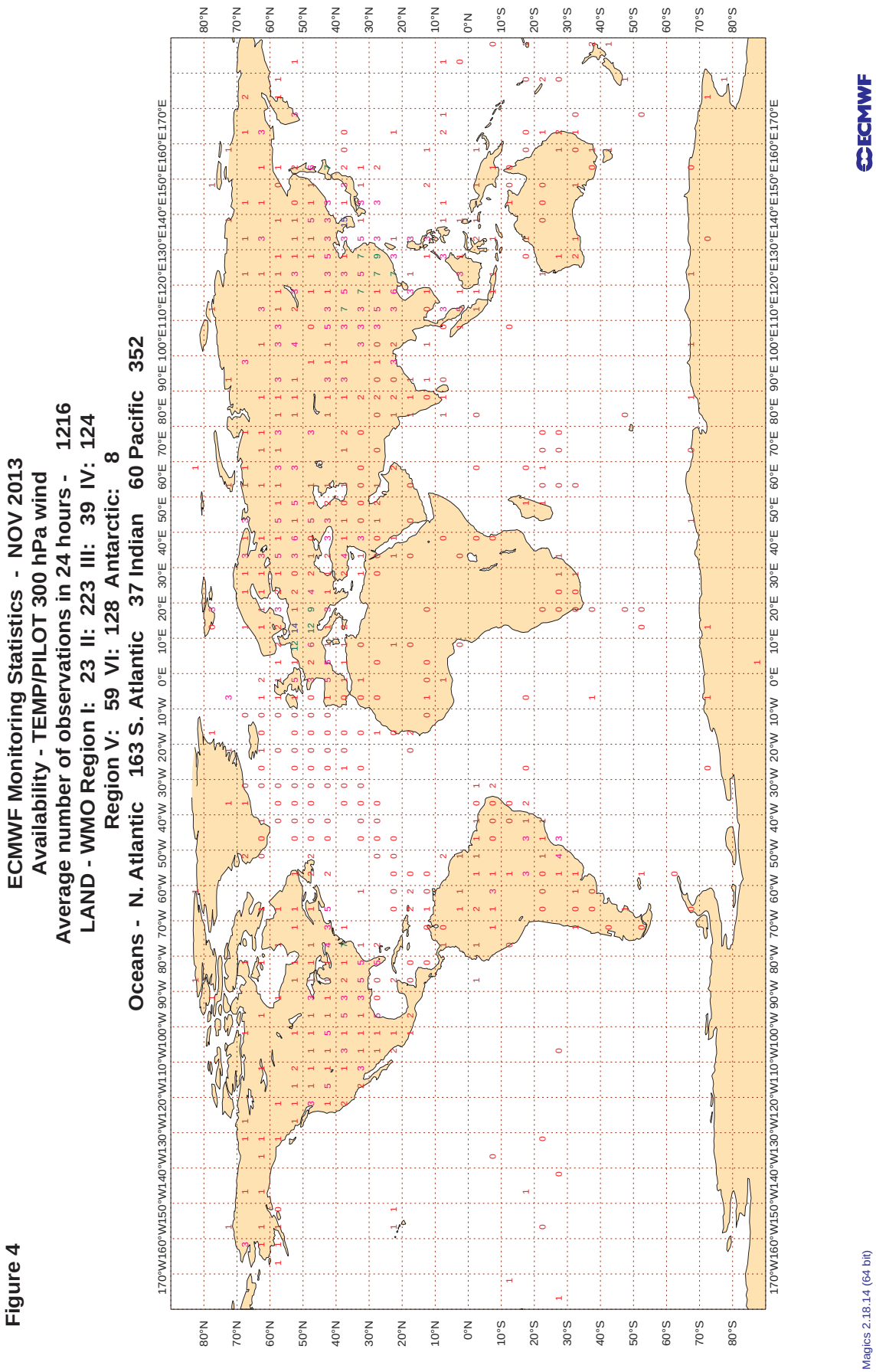


Figure 4

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

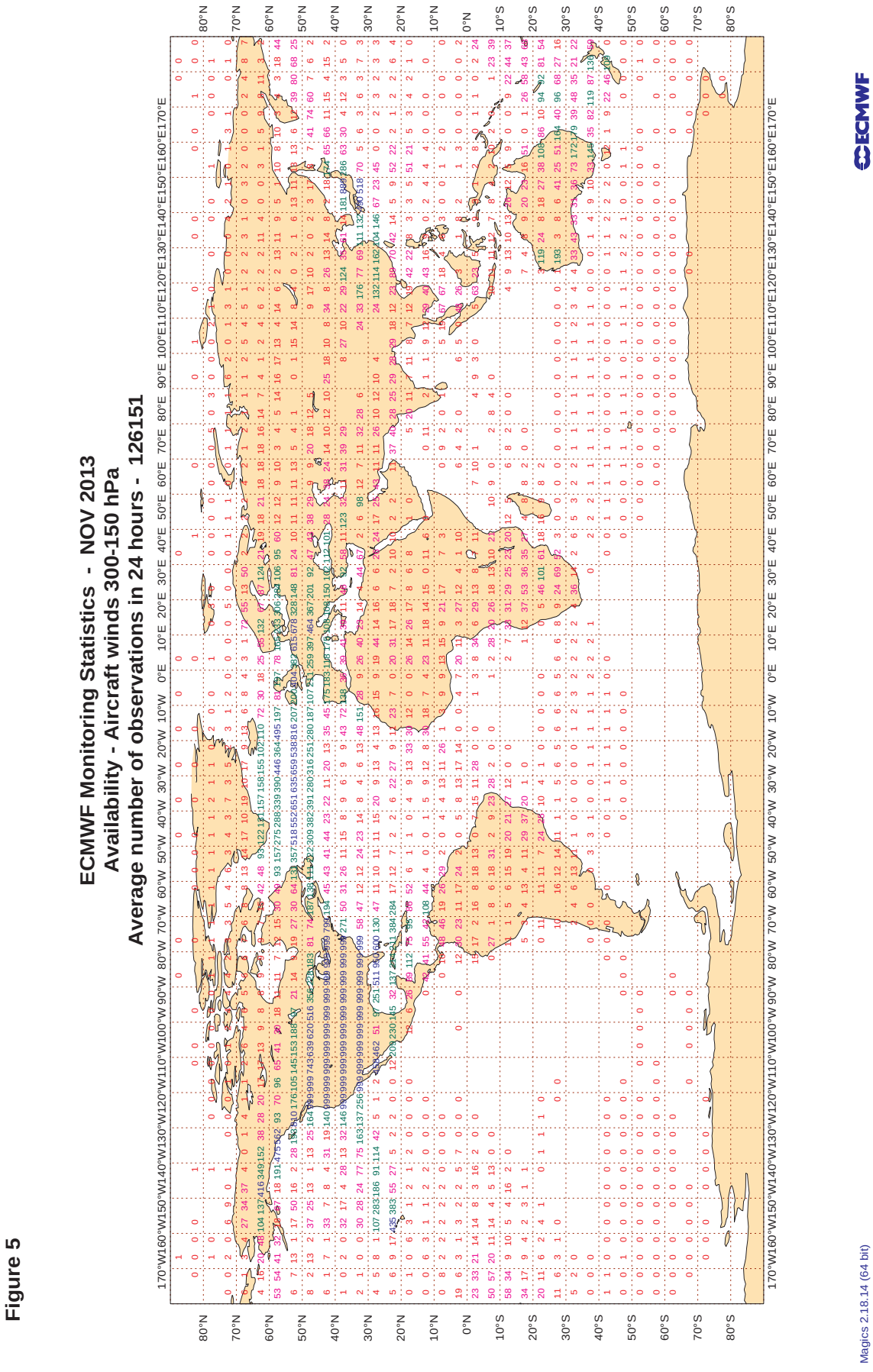


Figure 5

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

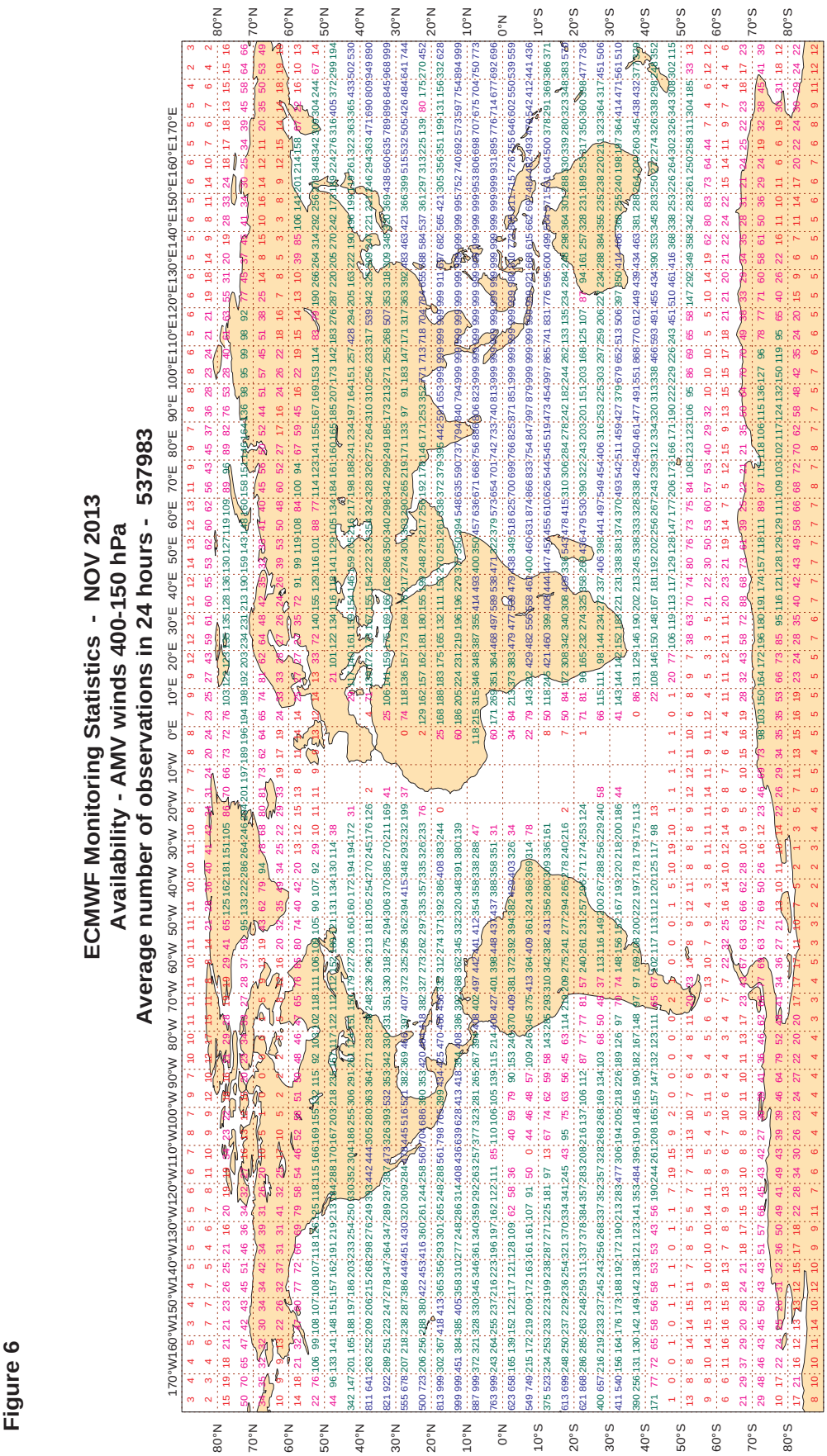


Figure 6

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

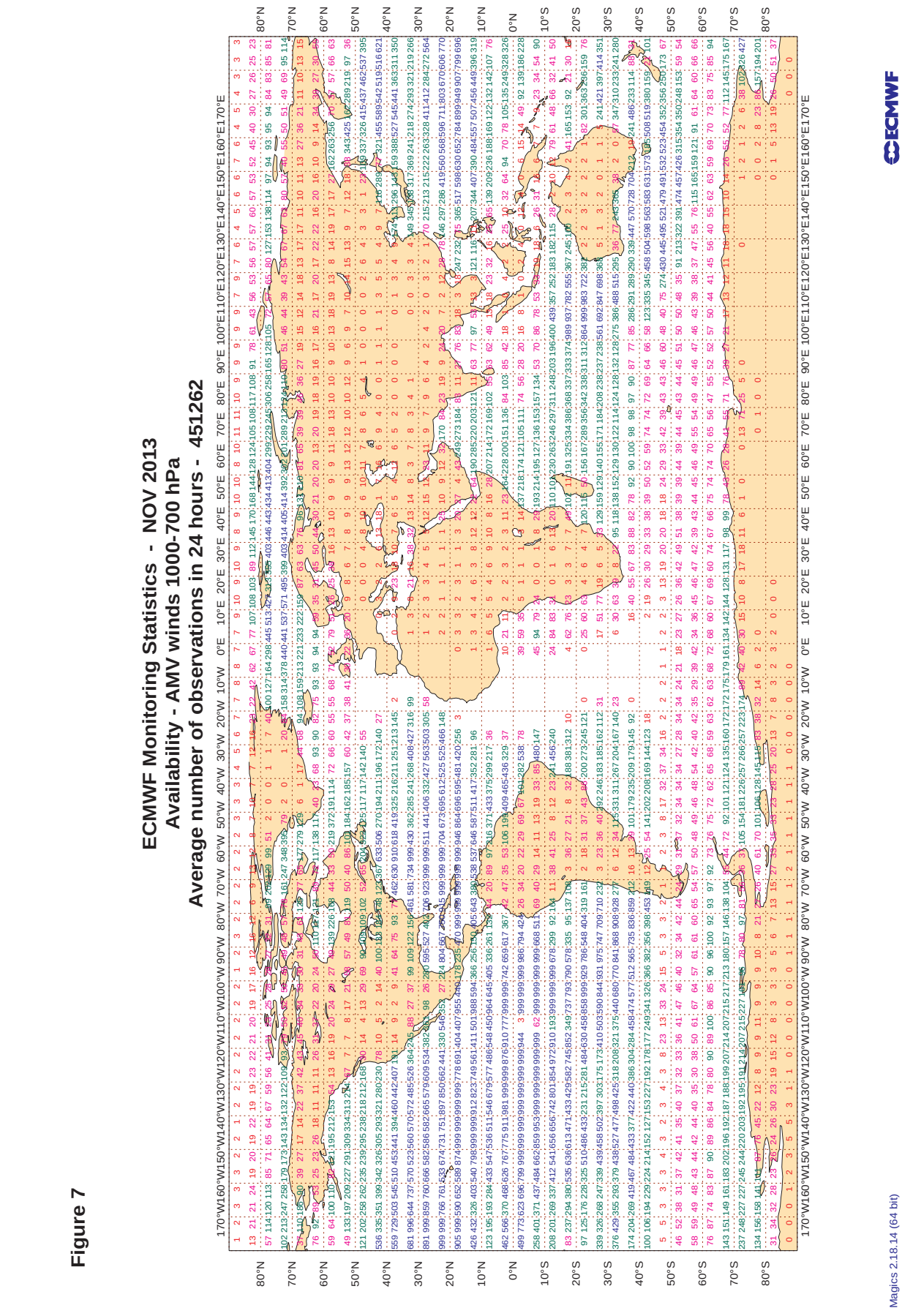
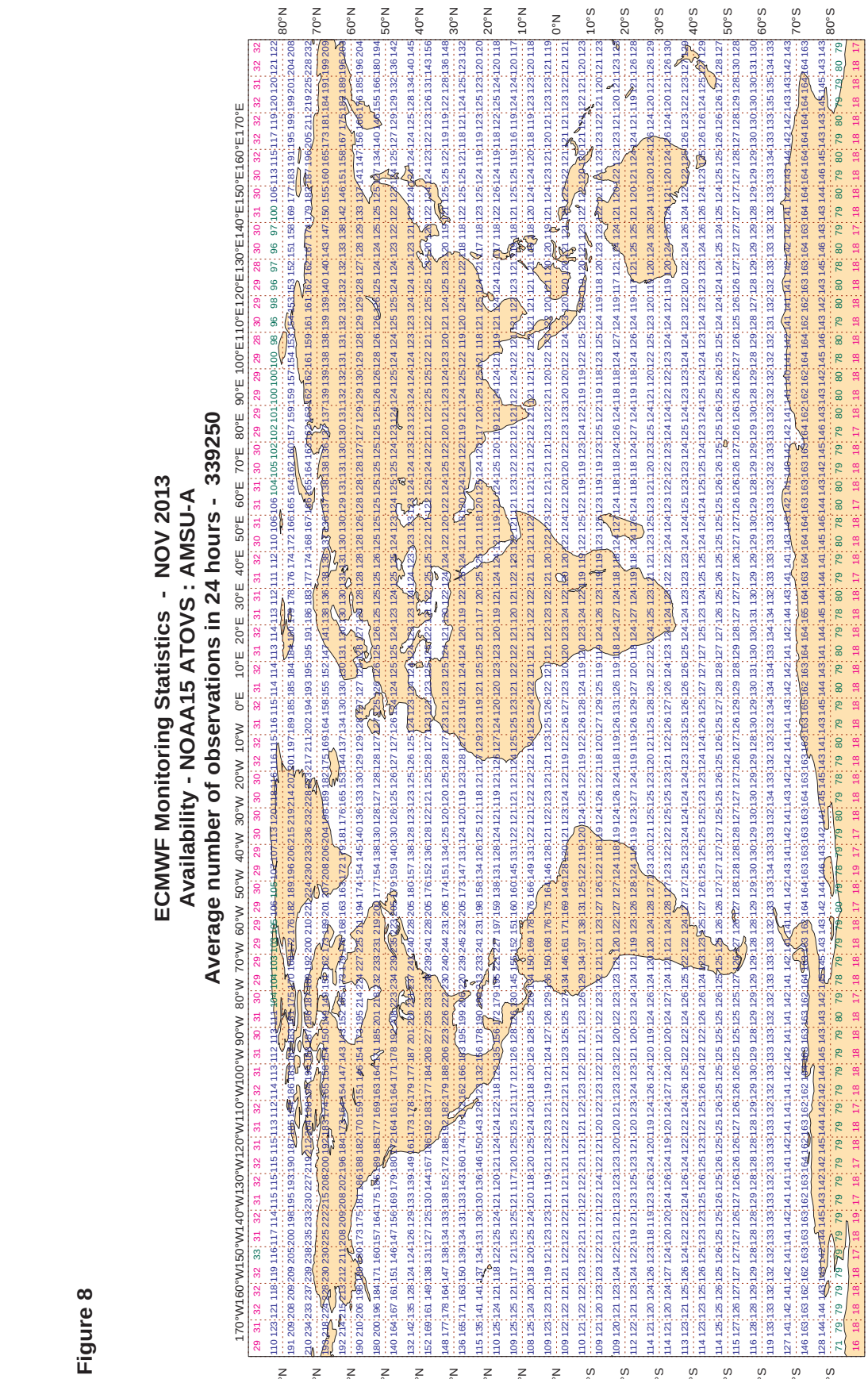


Figure 7

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



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

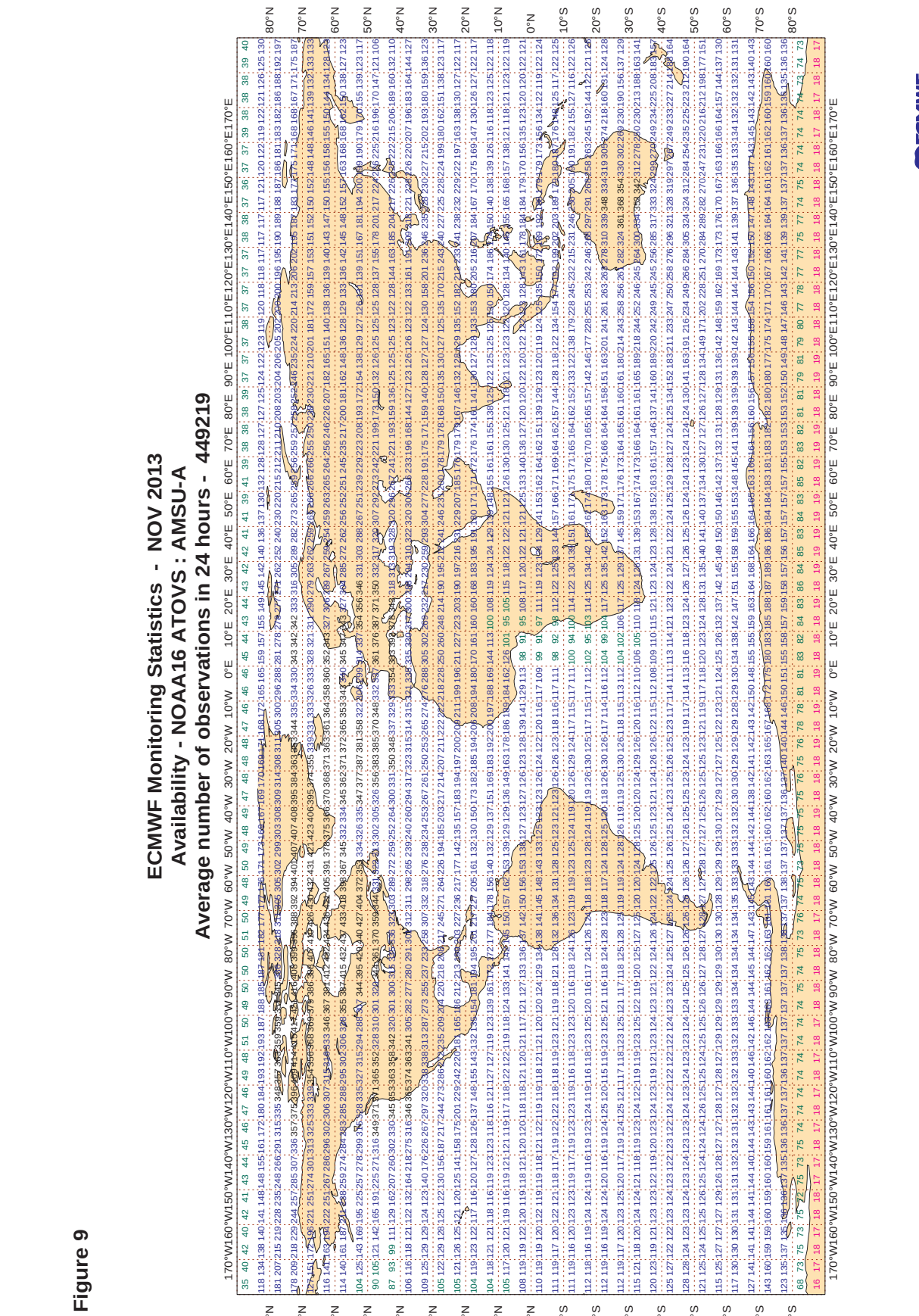
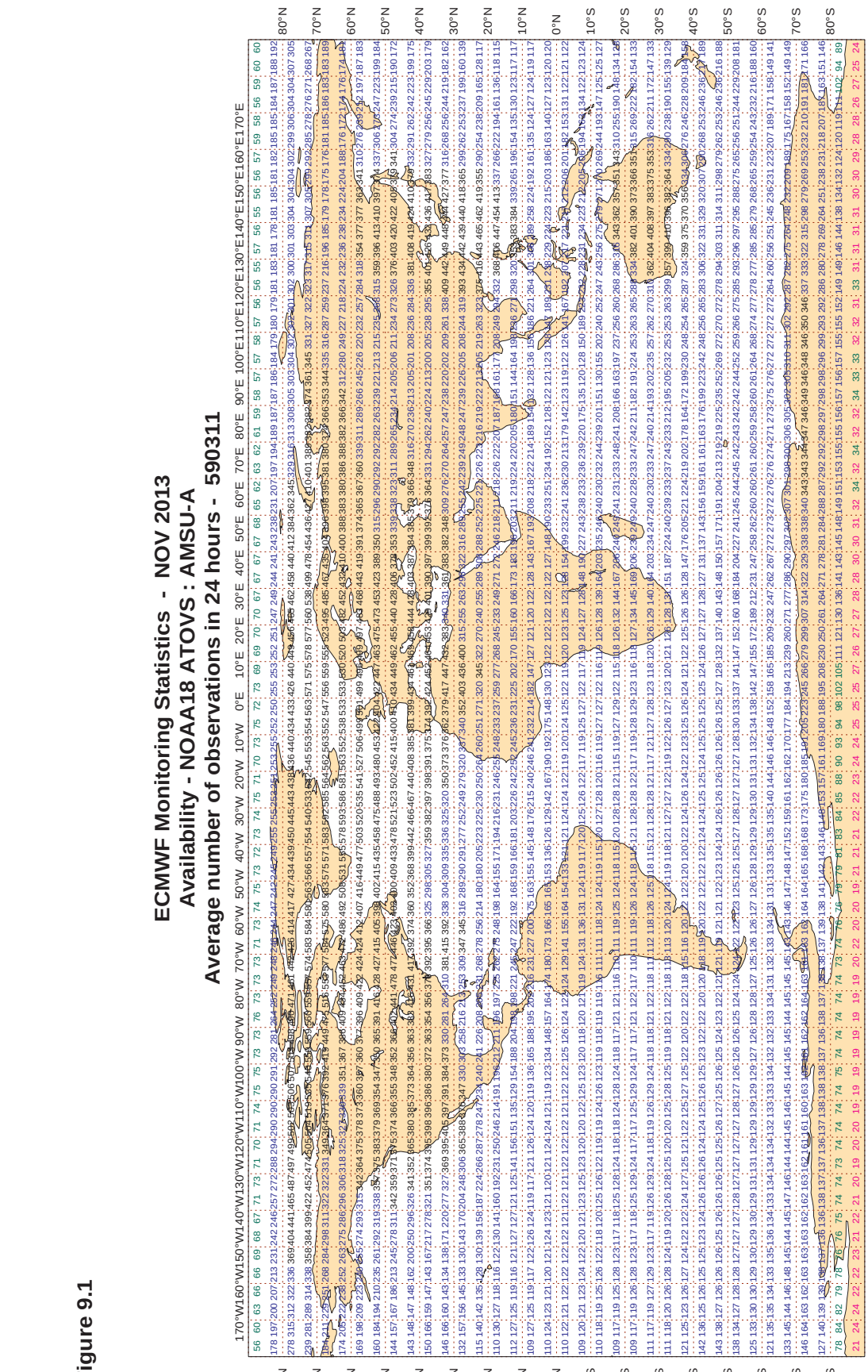


Figure 9

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



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

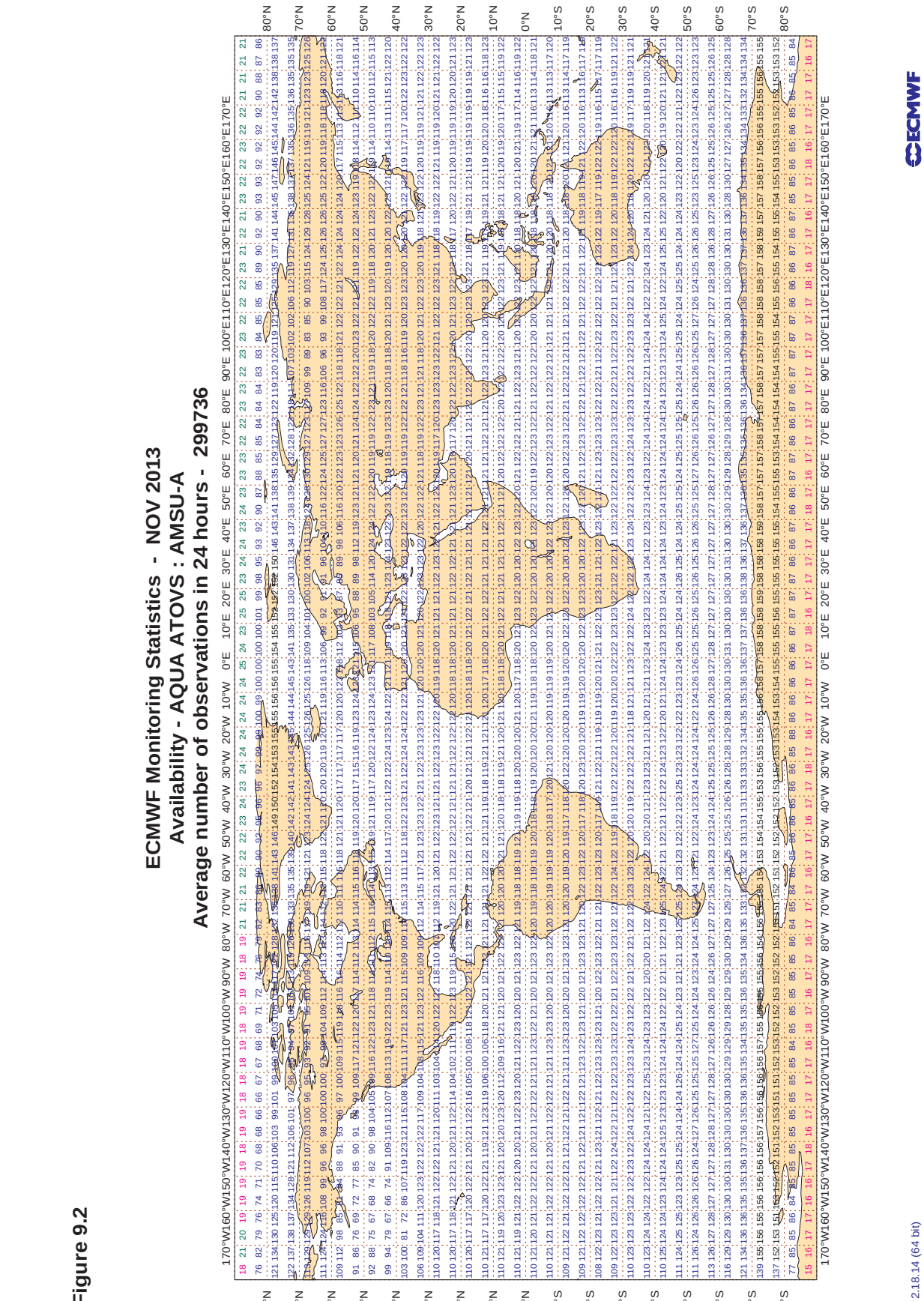


Figure 9.2

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

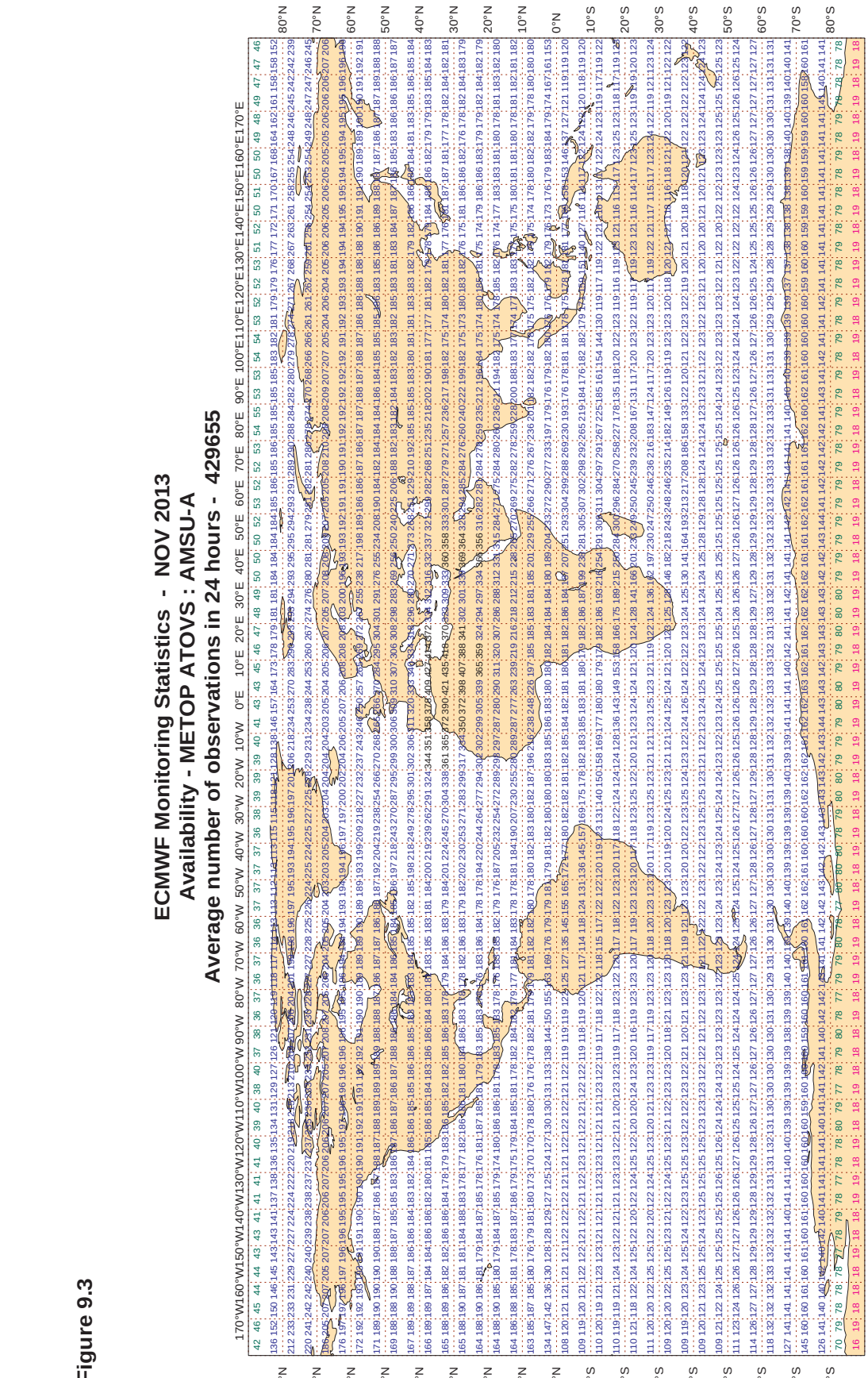


Figure 9.3

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

```
          LIST OF SUSPECT STATIONS        : SHIPS + FIXED MARINE PLATFORMS
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : SURFACE PRESSURE (HPA)
                    AREA                  : GLOBAL
                    PERIOD                : NOV 2013
                    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

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                : NOV 2013
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD


SELECTION CRITERIA: NO. OF OBS.           >= 20, AND,
                    ABSOLUTE BIAS         >= 5 M/S, OR,
                    % GROSS ERROR         >= 25
                    (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)


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

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

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

```
          LIST OF SUSPECT STATIONS        : SHIPS + FIXED MARINE PLATFORMS
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                    AREA                  : GLOBAL
                    PERIOD                : NOV 2013
                    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

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                 : NOV 2013
                    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
25605	99	P	SUR	80	128	210	27	3.4	-8.0	8.7
26542	99	P	SUR	82	61	210	167	6.8	-4.8	8.3
48524	99	P	SUR	73	-176	35	18	3.8	-10.5	11.2
48595	99	P	SUR	77	-163	83	56	0.5	-0.8	0.9
48652	99	P	SUR	71	-175	193	73	1.9	-0.3	1.9
48688	99	P	SUR	71	-169	196	80	3.9	-0.3	3.9
48692	99	P	SUR	69	180	186	61	6.1	-0.2	6.1
48697	99	P	SUR	73	-169	192	87	5.1	0.0	5.1
71671	99	P	SUR	-48	-117	49	0	7.6	3.3	8.3

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                : NOV 2013
                    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	195	6	0	4.8	-5.4	7.3

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

```
          LIST OF SUSPECT STATIONS        : DRIFTER
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                    PERIOD                : NOV 2013
                    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
13010	99	DIRN	SUR	0	0	138	0	22	19.4	68.9	71.5
14041	99	DIRN	SUR	-8	55	97	0	0	21.4	-20.5	29.7
23095	99	DIRN	SUR	11	94	59	0	0	25.0	27.1	36.9
23097	99	DIRN	SUR	15	69	63	0	0	16.6	27.7	32.3
31007	99	DIRN	SUR	0	-23	147	0	0	10.1	-20.8	23.2
31053	99	DIRN	SUR	-32	-50	65	6	86	8.4	89.5	89.9
42361	99	DIRN	SUR	28	-93	170	0	2	12.4	24.9	27.9
42364	99	DIRN	SUR	29	-88	178	0	0	13.8	22.8	26.7
42365	99	DIRN	SUR	28	-89	104	0	0	15.3	-25.6	29.8
44059	99	DIRN	SUR	37	-76	45	0	0	11.9	-23.8	26.6
45161	99	DIRN	SUR	43	-86	131	0	2	19.7	-32.1	37.7
46092	99	DIRN	SUR	37	-122	90	0	0	20.8	22.1	30.3
52087	99	DIRN	SUR	8	137	25	0	4	14.2	21.6	25.8
53005	99	DIRN	SUR	-8	80	62	0	60	34.1	23.4	41.4
53006	99	DIRN	SUR	-12	81	157	0	0	17.4	-21.0	27.3

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                : NOV 2013
                    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	00	Z	1000	73	-38	31	22	15.0	-79.4	80.8
04417	12	Z	1000	73	-38	29	25	13.9	-79.9	81.1
25703	12	Z	50	63	152	30	0	48.4	-142.5	150.5
40706	12	Z	70	38	46	29	8	51.9	125.8	136.1
40745	12	Z	50	36	60	26	1	50.1	312.1	316.1
40841	12	Z	50	30	57	23	5	54.8	332.0	336.5
42182	12	Z	200	29	77	27	4	122.3	-18.1	123.6
42361	00	Z	400	26	78	24	0	68.4	-41.7	80.1
42379	00	Z	500	27	83	19	0	42.4	-56.6	70.7
42701	00	Z	150	23	85	12	0	105.5	130.0	167.4
42874	00	Z	200	21	82	18	1	70.7	100.4	122.8
43003	00	Z	500	19	73	14	0	18.5	-67.5	70.0
43128	00	Z	30	17	78	12	0	50.0	182.9	189.6
43150	00	Z	30	18	83	16	0	26.8	162.5	164.7
43279	00	Z	50	13	80	22	0	9.1	137.8	138.1
43285	00	Z	200	13	75	12	3	110.0	85.5	139.3
68842	12	Z	1000	-34	26	25	0	25.5	21.6	33.4
80222	12	Z	1000	5	-74	28	0	10.8	-63.8	64.7
89009	00	Z	1000	-90	0	29	26	4.4	-95.3	95.4
89512	12	Z	70	-71	12	13	0	109.8	72.5	131.6
96315	00	Z	1000	5	115	30	0	14.0	-39.8	42.2
ASDE01	12	Z	500	45	-34	10	0	28.6	43.1	51.7
ASDE01	00	Z	1000	46	-30	11	0	3.7	34.9	35.1

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                : NOV 2013
                    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
```

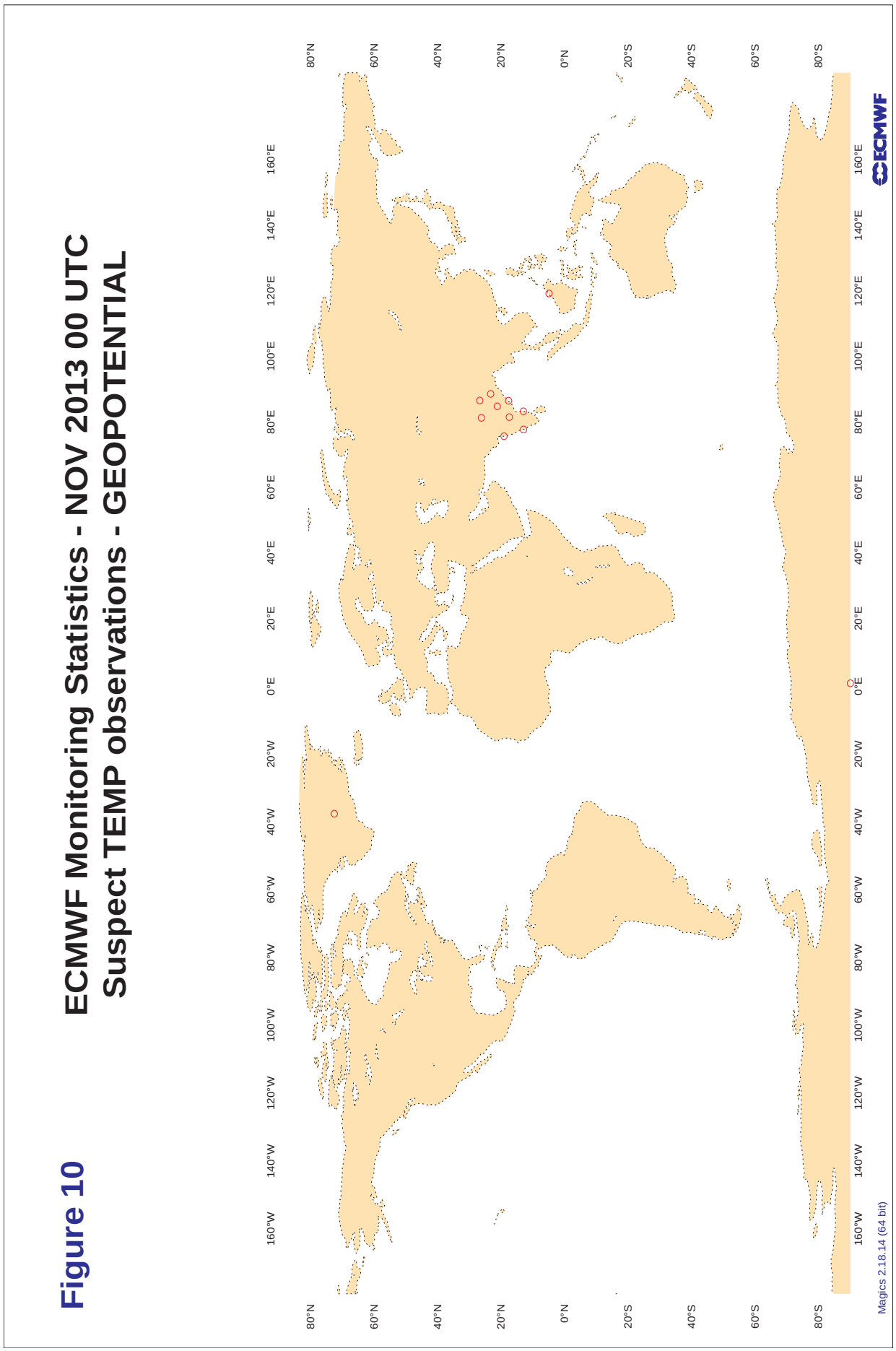
WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	UBIAS	VBIAS	RMS
42182	12	V	100	29	77	21	0	-10.6	-2.7	15.6
42701	00	V	150	23	85	11	0	-10.1	-14.8	22.8

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

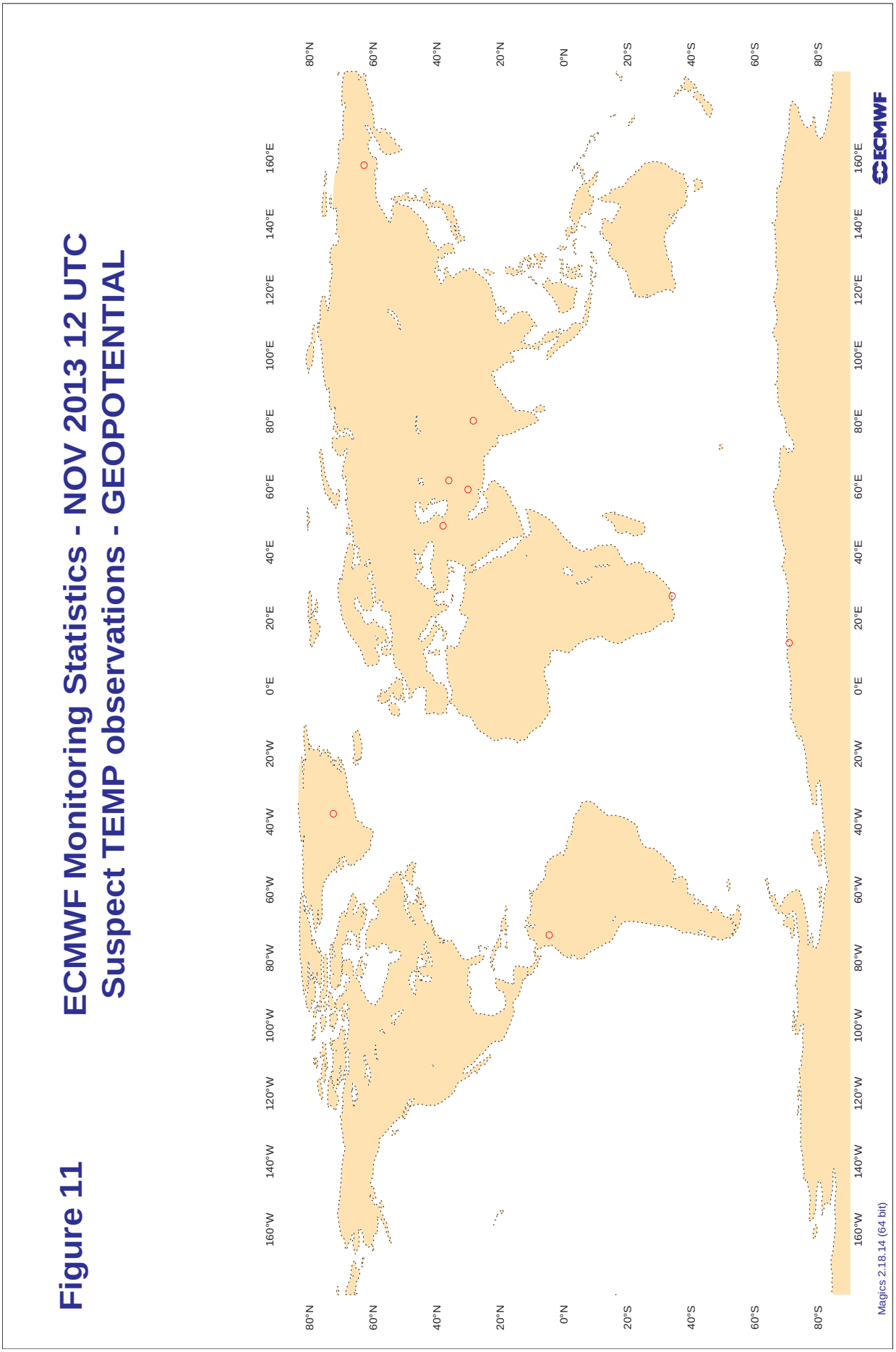
```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                    AREA                  : GLOBAL
                    PERIOD                : NOV 2013
                    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
78073	12	DD	25	-77	24	-20.2	8.0	18.4

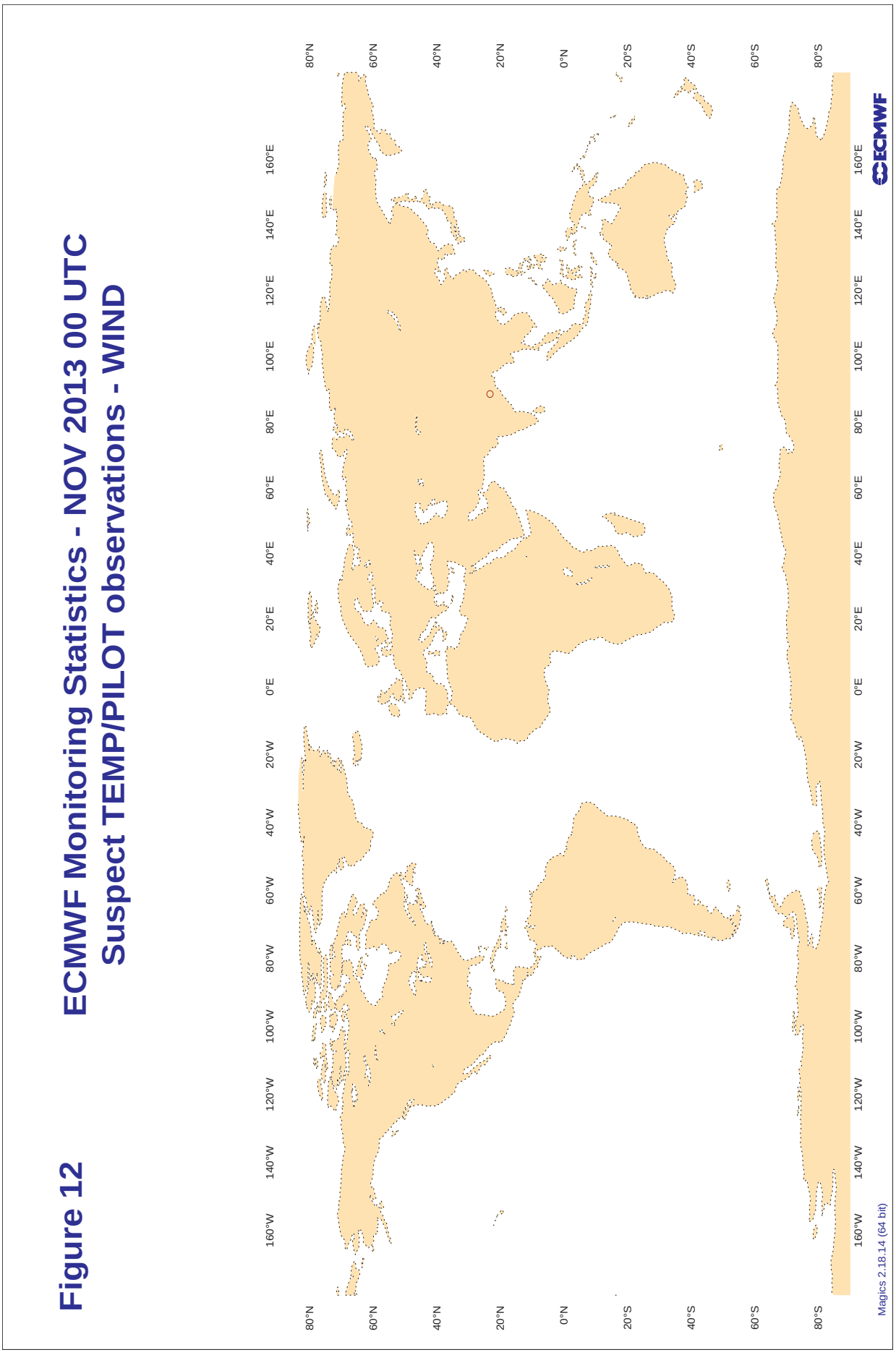
3.2.22 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



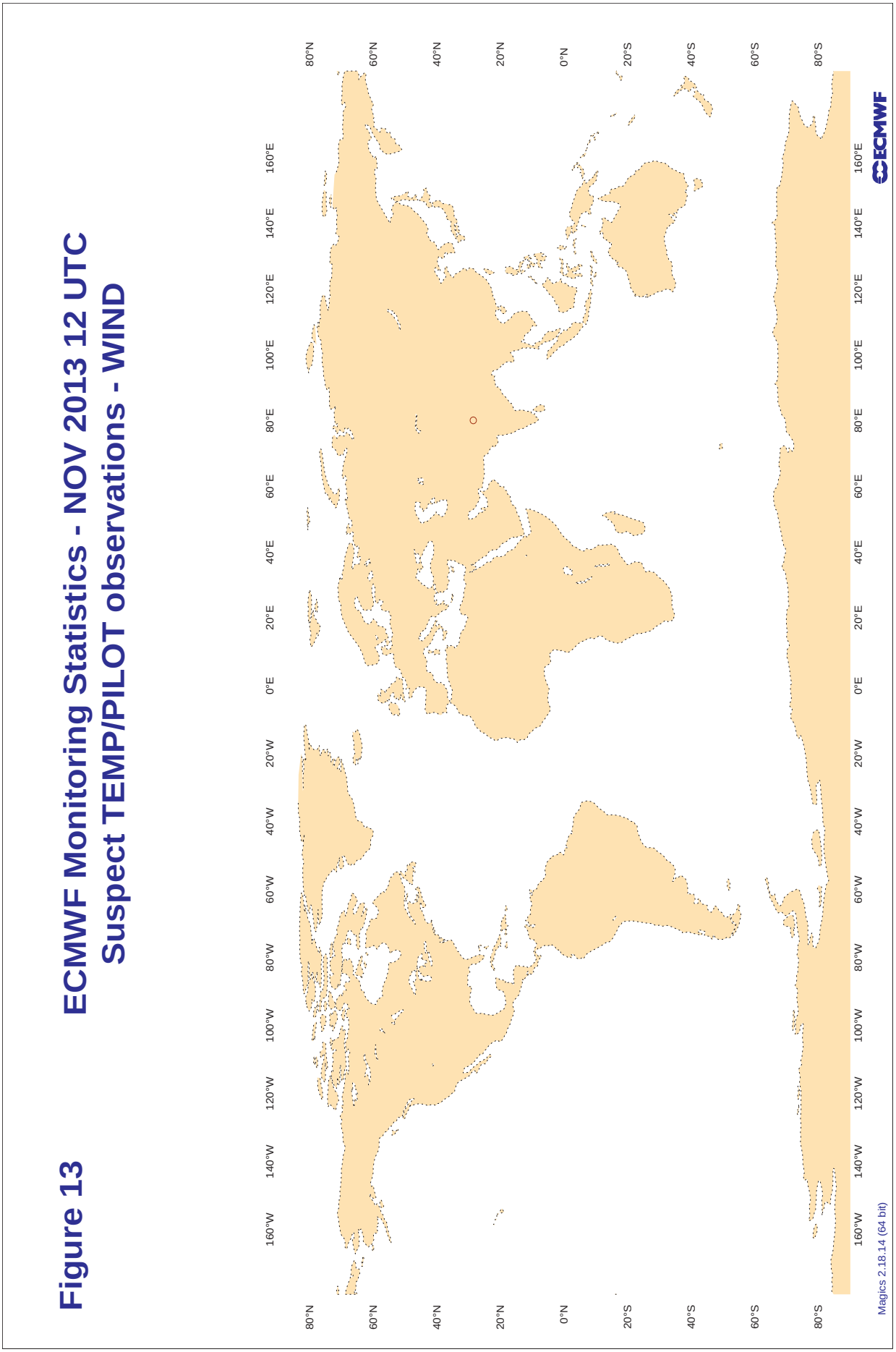
3.2.23 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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                : NOV 2013
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASDE01	12	Z	100	9	66.7	57.9
ASDE01	00	Z	100	9	47.9	47.2
ASDE02	12	Z	100	10	29.6	19.2
ASDE03	12	Z	100	8	29.1	20.8
ASDE03	00	Z	100	8	32.9	30.2
ASDE04	12	Z	100	16	9.4	5.9
ASDE04	00	Z	100	11	5.8	3.9
ASDE09	12	Z	100	1	2.7	2.7
ASDK1	00	Z	100	1	0.5	-0.5
ASDK1	12	Z	100	0	0.0	0.0
ASDK2	12	Z	100	4	55.8	55.0
ASDK2	00	Z	100	7	48.0	42.1
ASDK3	12	Z	100	4	30.5	25.2
ASDK3	00	Z	100	6	22.1	19.8
ASES1	12	Z	100	25	25.1	23.4
ASEU01	12	Z	100	7	30.0	29.1
ASEU02	12	Z	100	1	32.6	32.6
ASEU02	00	Z	100	0	0.0	0.0
ASEU04	12	Z	100	4	53.6	32.8
ASEU04	00	Z	100	1	2.4	-2.4
ASEU05	12	Z	100	7	40.7	35.7
ASEU05	00	Z	100	6	33.6	30.5
ASEU06	12	Z	100	6	48.4	48.0
ASEU06	00	Z	100	2	54.5	54.4
ASFR1	12	Z	100	11	27.8	24.9
ASFR1	00	Z	100	8	23.4	21.2
ASFR2	00	Z	100	9	26.2	25.1
ASFR2	12	Z	100	13	27.5	25.7
ASFR3	12	Z	100	10	15.8	13.1
ASFR3	00	Z	100	6	13.9	8.0
ASFR4	12	Z	100	7	32.2	30.7
ASFR4	00	Z	100	7	26.3	25.7
DBLK	12	Z	100	19	7.0	1.4
JGQH	12	Z	100	9	17.8	5.6
JGQH	00	Z	100	7	20.6	18.6

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                : NOV 2013
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASDE01	12	V	100	8	4.2	-1.3	0.1
ASDE01	00	V	100	9	3.9	-2.8	1.1
ASDE02	12	V	100	10	4.0	0.7	0.6
ASDE03	12	V	100	8	4.7	-1.4	-0.1
ASDE03	00	V	100	8	3.5	-0.3	-0.7
ASDE04	12	V	100	15	5.3	1.0	-0.9
ASDE04	00	V	100	11	3.4	-0.4	1.0
ASDE09	12	V	100	1	3.2	1.8	2.6
ASDK1	00	V	100	1	3.1	-1.8	-2.5
ASDK1	12	V	100	0	0.0	0.0	0.0
ASDK2	12	V	100	4	4.1	-3.1	1.0
ASDK2	00	V	100	7	3.4	-0.5	-0.4
ASDK3	12	V	100	4	5.0	0.1	0.9
ASDK3	00	V	100	6	3.1	0.1	-0.6
ASES1	12	V	100	25	5.7	2.5	1.2
ASEU01	12	V	100	7	4.9	0.0	0.1
ASEU02	12	V	100	1	1.4	1.0	1.0
ASEU02	00	V	100	0	0.0	0.0	0.0
ASEU04	12	V	100	4	2.1	-0.3	-0.5
ASEU04	00	V	100	1	4.4	2.2	-3.8
ASEU05	12	V	100	7	4.8	-0.2	-0.8
ASEU05	00	V	100	5	6.5	-1.5	2.1
ASEU06	12	V	100	6	4.7	-1.1	-0.3
ASEU06	00	V	100	2	1.7	0.5	-0.4
ASFR1	12	V	100	11	3.7	0.3	1.2
ASFR1	00	V	100	7	2.9	-0.8	0.3
ASFR2	00	V	100	9	3.3	1.2	-0.4
ASFR2	12	V	100	12	3.2	1.5	-1.0
ASFR3	12	V	100	10	3.6	-0.7	-0.6
ASFR3	00	V	100	6	3.5	-0.1	-1.5
ASFR4	12	V	100	7	3.1	-0.8	0.1
ASFR4	00	V	100	7	3.5	1.2	0.4
DBLK	12	V	100	19	3.8	0.4	1.1
JGQH	12	V	100	9	4.2	-0.2	2.0
JGQH	00	V	100	7	8.3	1.9	-0.5

3.2.28 Figure 14 - SATOB Winds: 700-1000hPa

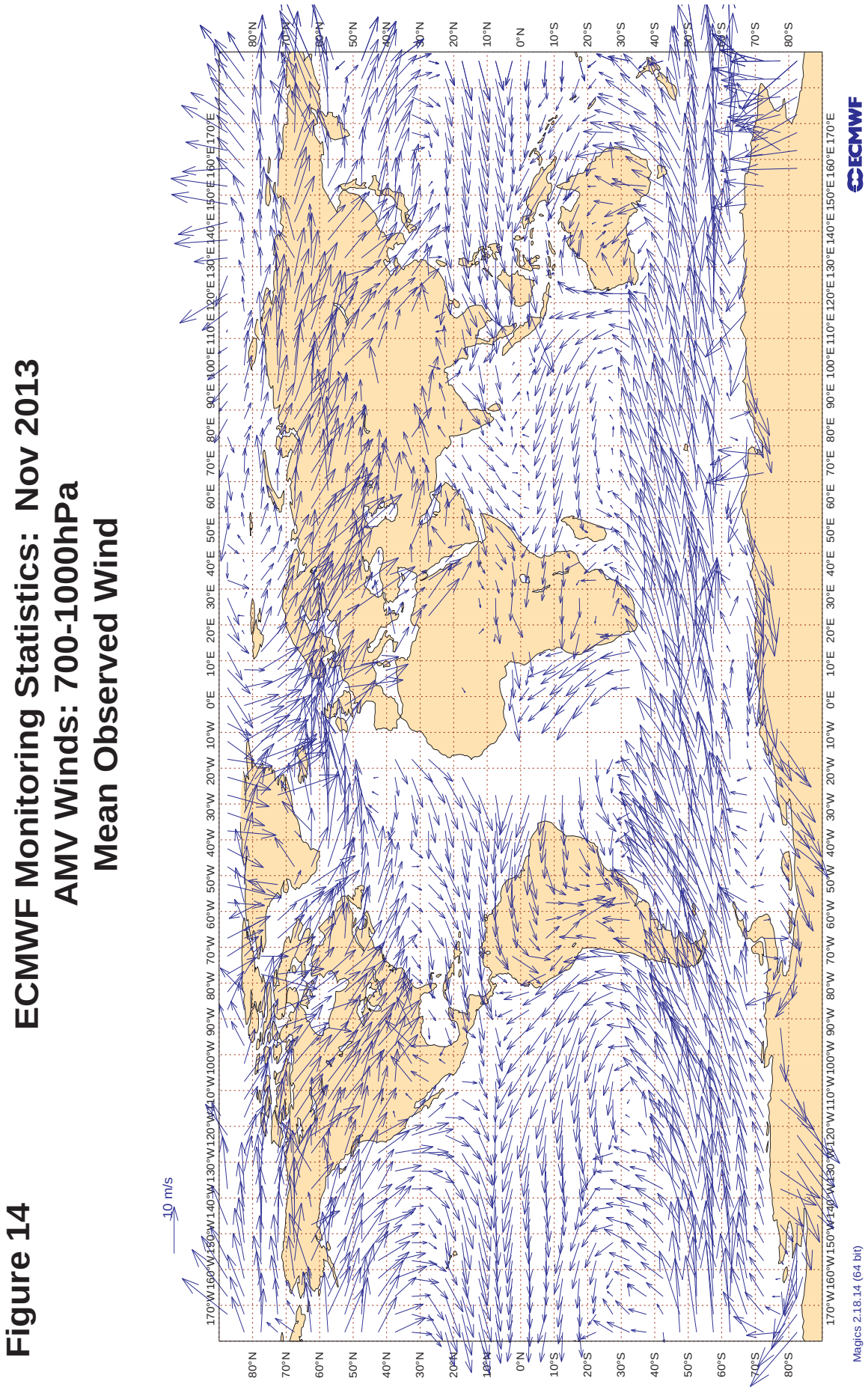


Figure 14

3.2.29 Figure 15 - SATOB Winds: 150- 400hPa

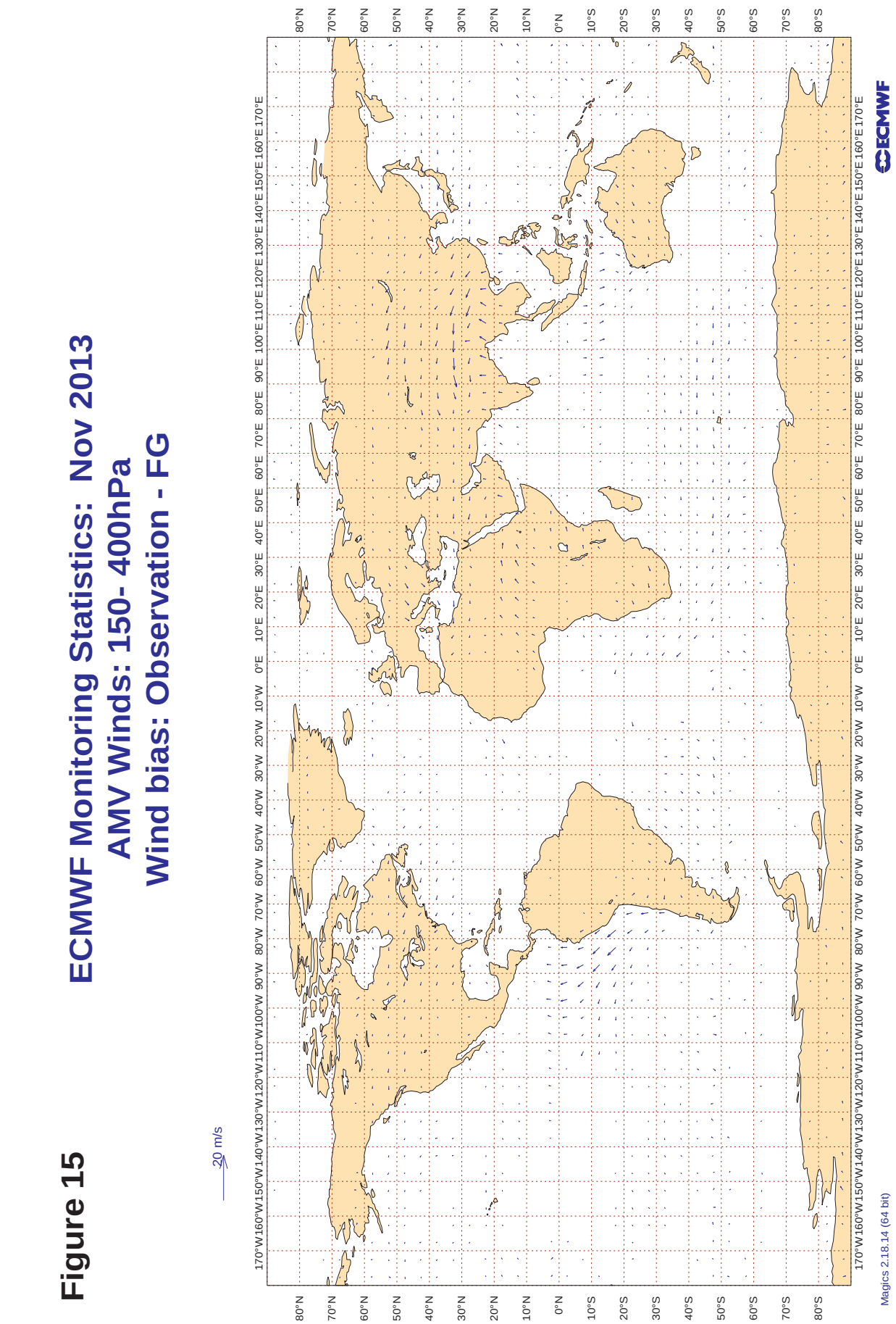


Figure 15

3.2.30 Figure 16 - SATOB Winds: 700-1000hPa

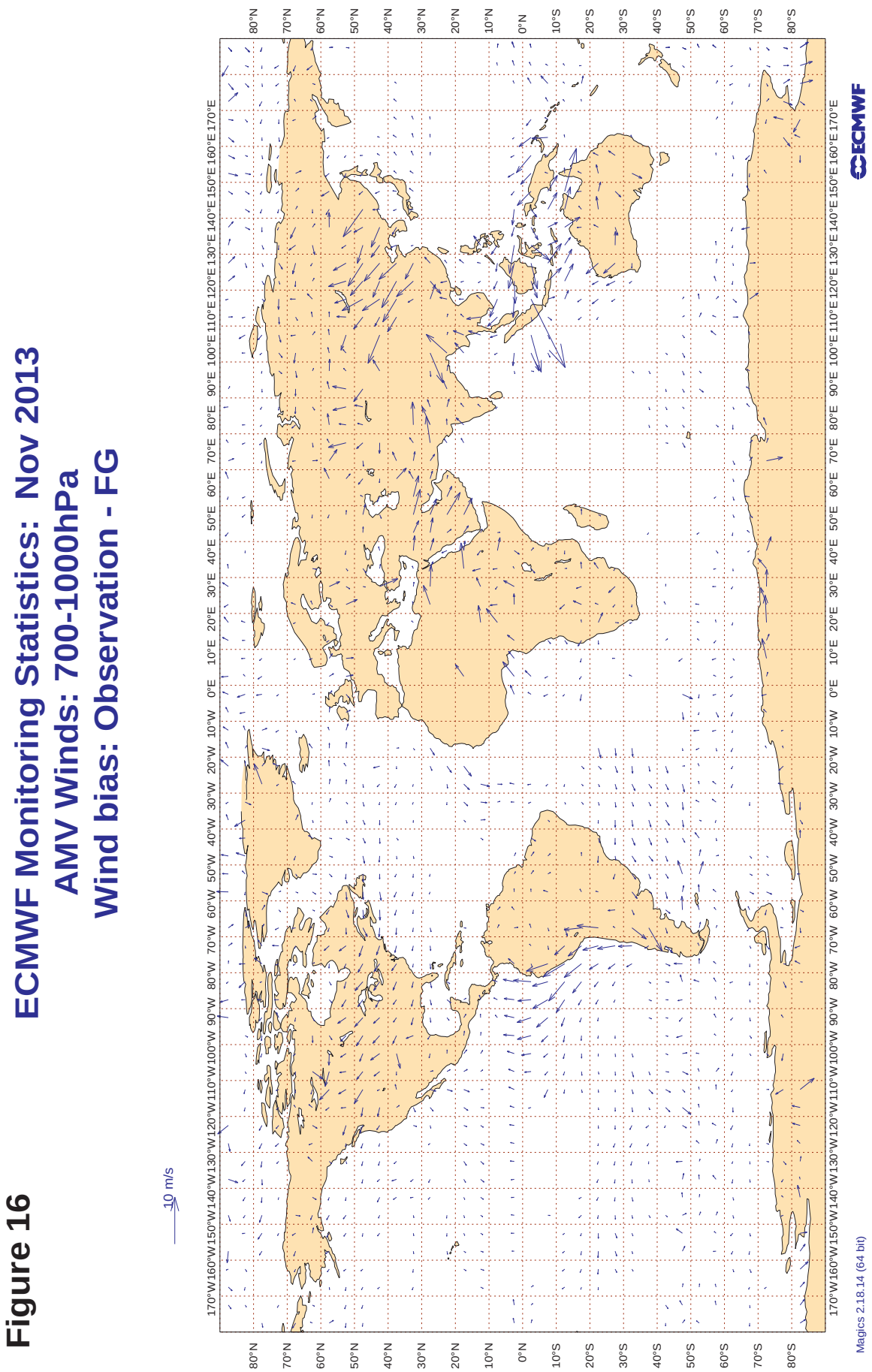


Figure 16

3.2.31 Figure 17 - SATOB Winds: 150- 400hPa

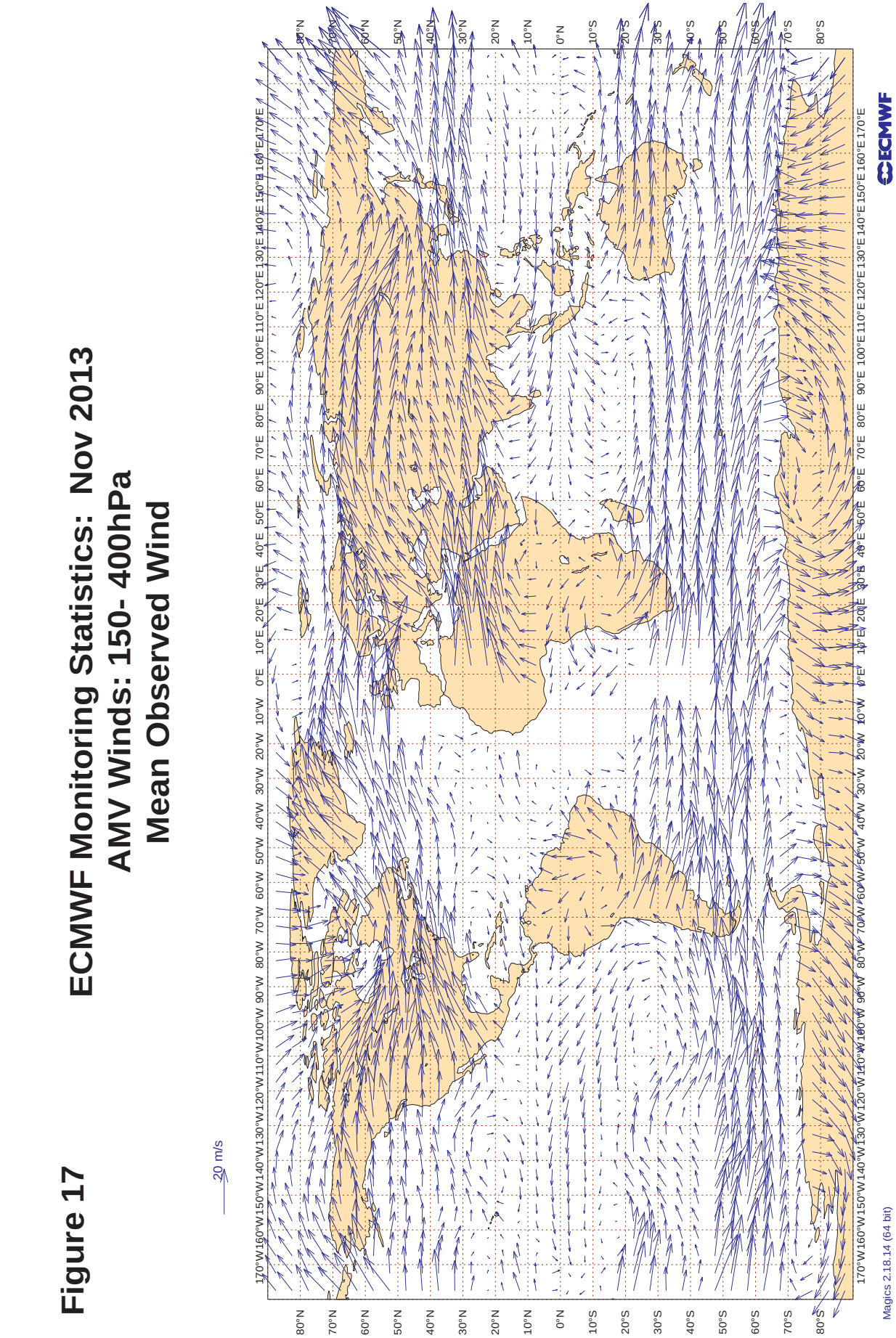


Figure 17

3.2.32 Figure 18 - AIRCRAFT Winds: 150- 300hPa

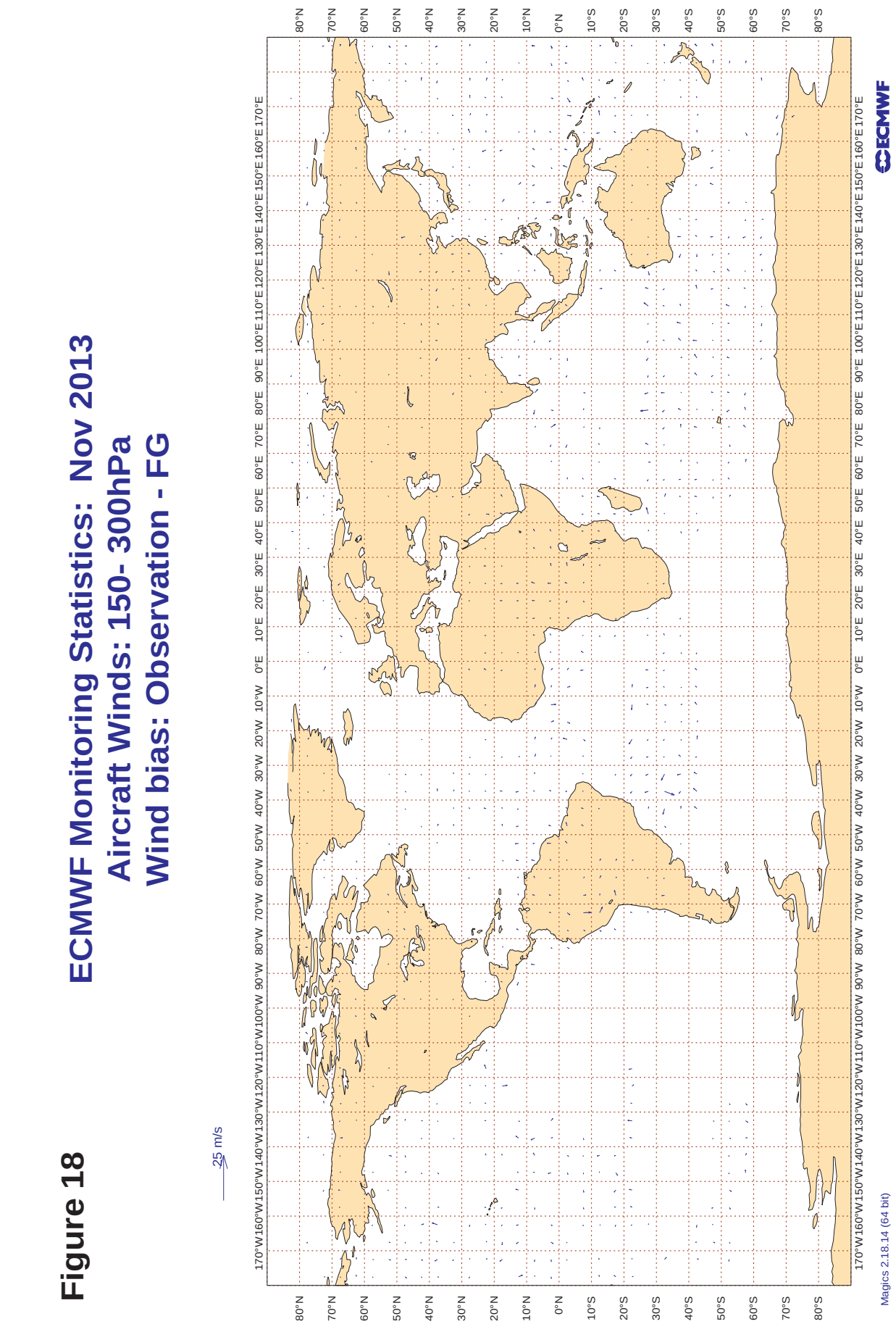


Figure 18

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

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
MONITORING CENTRE : ECMWF
ELEMENT MONITORED : VECTOR WIND (M/S)
AREA : GLOBAL
PERIOD : NOV 2013
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	4455	0	0	4.6	-0.8
AAR	99	V	300-150	20	0	0	8.9	1.7
AAY	99	V	300-150	168	1	0	7.5	0.2
ACA	99	V	300-150	1622	0	0	4.8	0.2
ACI	99	V	300-150	545	0	0	4.6	0.0
AFL	99	V	300-150	841	2	0	5.5	0.0
AFR	99	V	300-150	3594	1	0	4.7	-0.3
AIC	99	V	300-150	779	1	0	4.2	-0.2
AMX	99	V	300-150	140	16	0	10.1	-0.1
ANZ	99	V	300-150	2134	0	0	4.8	0.7
ASA	99	V	300-150	2925	0	0	5.4	0.3
ASY	99	V	300-150	33	0	0	4.6	1.6
ATN	99	V	300-150	31	0	0	7.8	-0.8
AUA	99	V	300-150	1064	0	0	4.9	-1.4
AUH	99	V	300-150	22	5	0	3.7	0.1
AVN	99	V	300-150	102	0	0	5.9	0.1
AWE	99	V	300-150	2266	1	0	4.9	0.3
AXM	99	V	300-150	20	0	0	3.9	0.9
AZA	99	V	300-150	491	0	0	4.7	-0.2
BAW	99	V	300-150	4729	1	0	4.8	-0.2
BEL	99	V	300-150	34	0	0	7.5	-0.6
BER	99	V	300-150	1844	0	0	4.4	0.3
BLX	99	V	300-150	27	0	0	6.0	-4.0
BOX	99	V	300-150	102	0	0	3.5	0.0
CAL	99	V	300-150	52	0	0	4.0	-0.1
CFC	99	V	300-150	39	3	0	8.3	-2.3
CGD	99	V	300-150	26	92	0	38.1	-1.1
CKS	99	V	300-150	272	0	0	4.7	-0.1
CLX	99	V	300-150	488	1	0	4.5	-0.6
CNV	99	V	300-150	45	0	0	5.2	1.4
CPA	99	V	300-150	68	0	0	6.3	-0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
CRL	99	V	300-150	23	0	0	6.1	0.0
CSN	99	V	300-150	121	2	0	6.4	0.0
DAH	99	V	300-150	125	0	0	5.7	0.0
DAL	99	V	300-150	11106	1	0	4.7	-0.7
DHK	99	V	300-150	552	0	0	4.2	0.6
DLH	99	V	300-150	4993	1	0	4.8	-0.5
EIN	99	V	300-150	978	1	0	4.3	0.0
EJM	99	V	300-150	26	31	0	15.1	-2.6
ELY	99	V	300-150	477	0	0	4.3	-0.2
ETH	99	V	300-150	25	0	0	7.8	0.7
FDX	99	V	300-150	1517	0	0	3.8	0.2
FIN	99	V	300-150	265	2	0	5.6	0.3
FJI	99	V	300-150	1531	0	0	4.6	0.1
FWI	99	V	300-150	112	2	0	4.6	0.4
GEC	99	V	300-150	692	1	0	4.2	-0.4
GTI	99	V	300-150	348	1	0	4.2	0.0
HAL	99	V	300-150	1197	0	0	5.4	-0.1
IBE	99	V	300-150	410	0	0	4.3	0.1
ICV	99	V	300-150	75	0	0	4.0	-0.6
IJA	99	V	300-150	29	0	0	3.5	0.4
JAI	99	V	300-150	720	2	0	5.1	0.3
JAS	99	V	300-150	25	100	0	0.0	0.0
JST	99	V	300-150	872	0	0	4.9	0.1
KAI	99	V	300-150	46	0	0	4.8	1.0
KAL	99	V	300-150	171	0	0	5.7	1.2
KLM	99	V	300-150	2149	0	0	4.8	-0.6
LAN	99	V	300-150	81	0	0	4.0	0.9
LCO	99	V	300-150	20	0	0	9.6	-3.5
LOT	99	V	300-150	83	40	0	8.2	-0.3
MAA	99	V	300-150	24	67	0	34.9	0.3
MAS	99	V	300-150	99	0	0	4.4	0.5
MMN	99	V	300-150	29	0	0	3.5	-1.4
MSR	99	V	300-150	360	2	1	4.4	0.2
NAX	99	V	300-150	77	25	0	15.1	0.3
NCA	99	V	300-150	23	0	0	4.6	-1.9
NJE	99	V	300-150	69	70	1	16.3	-6.2
NWS	99	V	300-150	36	3	0	3.8	0.6
OAE	99	V	300-150	64	0	2	5.9	-0.8
ORB	99	V	300-150	56	0	0	5.4	0.1
PAC	99	V	300-150	57	0	0	4.6	-1.3
PAL	99	V	300-150	295	3	1	8.8	-0.8
PAQ	99	V	300-150	28	0	0	9.2	1.3
PIA	99	V	300-150	89	4	0	6.8	-1.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
PIR	99	V	300-150	27	56	0	31.6	25.2
QFA	99	V	300-150	1447	0	0	4.8	-0.2
QTR	99	V	300-150	206	1	0	4.5	0.3
RCH	99	V	300-150	841	0	0	5.1	-0.2
RJA	99	V	300-150	108	1	0	4.1	0.4
RRR	99	V	300-150	30	0	0	4.7	0.0
RZO	99	V	300-150	22	5	0	6.3	0.2
SAS	99	V	300-150	1071	1	0	4.9	0.1
SIA	99	V	300-150	358	0	0	4.3	0.4
SOO	99	V	300-150	126	1	1	4.7	0.3
SQC	99	V	300-150	52	0	0	4.9	-0.2
SVA	99	V	300-150	572	0	0	4.6	0.0
SWR	99	V	300-150	1119	1	0	5.1	0.1
TAM	99	V	300-150	53	2	0	4.2	0.4
TAP	99	V	300-150	103	1	0	5.1	-0.3
TAY	99	V	300-150	82	1	1	5.5	-1.0
THA	99	V	300-150	129	0	0	4.4	0.5
THT	99	V	300-150	289	0	0	4.9	0.3
THY	99	V	300-150	356	1	0	3.6	0.4
TOG	99	V	300-150	20	0	0	4.7	0.7
TOM	99	V	300-150	305	19	0	10.4	-1.1
TSC	99	V	300-150	40	3	0	6.2	0.2
TSO	99	V	300-150	252	3	1	5.2	0.0
UAE	99	V	300-150	675	1	0	3.9	-0.3
UAL	99	V	300-150	13222	1	0	5.0	-0.8
UPS	99	V	300-150	1010	0	0	4.4	0.0
VIR	99	V	300-150	2226	1	0	5.0	-0.4
VJT	99	V	300-150	29	41	0	31.0	0.0
VOZ	99	V	300-150	229	0	0	4.9	-0.1
VPB	99	V	300-150	30	37	0	16.0	-1.9
VPC	99	V	300-150	34	18	0	21.5	0.3
VQB	99	V	300-150	33	94	0	5.1	0.4
WGT	99	V	300-150	34	0	0	6.6	0.7
WJA	99	V	300-150	317	0	0	6.1	0.2
XAL	99	V	300-150	27	41	0	27.3	-1.4
XLF	99	V	300-150	61	2	0	3.3	-0.4
YZR	99	V	300-150	37	5	0	5.6	-0.7

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                : NOV 2013
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	50	30	46.4	6.7
01001	12	Z	50	28	21.5	8.5
01028	12	Z	50	27	19.2	1.9
01028	00	Z	50	26	11.6	6.1
01152	12	Z	50	28	22.5	12.3
01152	00	Z	50	27	20.0	10.4
01400	00	Z	50	27	16.0	11.8
01400	12	Z	50	23	20.8	10.7
01415	12	Z	50	28	17.0	13.3
01415	00	Z	50	26	15.2	6.7
02365	12	Z	50	22	17.4	14.7
02365	00	Z	50	26	17.5	13.0
02591	00	Z	50	28	18.2	15.7
02591	12	Z	50	28	26.6	24.3
02836	12	Z	50	28	19.5	15.3
02836	00	Z	50	26	21.6	18.8
02963	12	Z	50	30	15.1	13.3
02963	00	Z	50	29	15.7	9.7
03005	12	Z	50	30	16.3	7.8
03005	00	Z	50	29	12.7	8.7
03238	00	Z	50	29	18.5	14.8
03238	12	Z	50	4	19.8	18.6
03808	12	Z	50	26	13.5	11.7
03808	00	Z	50	28	12.2	10.3
03918	00	Z	50	24	21.8	18.5
03918	12	Z	50	10	24.0	22.9
03953	00	Z	50	24	28.4	24.2
03953	12	Z	50	25	42.8	16.9
04018	00	Z	50	23	18.3	5.6
04018	12	Z	50	19	16.6	11.7
04220	12	Z	50	29	20.3	-10.0
04220	00	Z	50	28	28.3	-18.4
04270	00	Z	50	29	30.4	-18.8
04270	12	Z	50	26	31.0	-21.7
04320	12	Z	50	30	19.8	-13.5
04320	00	Z	50	27	14.7	-6.4
04339	12	Z	50	28	35.4	13.1
04339	00	Z	50	27	68.0	30.0
04360	00	Z	50	22	25.4	11.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
04360	12	Z	50	24	34.4	17.4
06011	12	Z	50	21	17.0	-1.3
06011	00	Z	50	20	21.6	-6.3
06260	00	Z	50	21	17.7	14.7
06260	12	Z	50	6	22.1	20.2
06610	00	Z	50	30	21.2	14.5
06610	12	Z	50	30	27.7	21.2
07110	00	Z	50	27	27.0	24.6
07110	12	Z	50	23	35.1	30.2
07510	12	Z	50	27	19.9	16.7
07510	00	Z	50	24	13.0	5.9
07645	12	Z	50	24	38.1	35.7
07645	00	Z	50	28	28.0	26.1
07761	12	Z	50	20	31.1	29.4
07761	00	Z	50	23	35.5	31.8
08001	00	Z	50	28	19.1	15.7
08001	12	Z	50	27	26.6	24.3
08221	00	Z	50	30	22.7	19.8
08221	12	Z	50	30	24.4	21.4
08302	12	Z	50	30	17.1	13.2
08302	00	Z	50	29	14.6	9.4
08508	12	Z	50	25	43.4	42.3
08522	12	Z	50	30	24.6	22.9
08579	12	Z	50	30	25.5	23.4
10035	12	Z	50	30	16.9	13.1
10035	00	Z	50	27	12.5	5.8
10393	00	Z	50	30	44.0	-4.9
10393	12	Z	50	29	12.2	7.6
10410	00	Z	50	30	10.2	4.9
10410	12	Z	50	30	18.1	16.2
10739	12	Z	50	30	27.5	24.6
10739	00	Z	50	28	19.8	17.5
11035	00	Z	50	28	13.7	10.6
11035	12	Z	50	30	13.3	10.7
12982	00	Z	50	27	25.3	12.4
16044	00	Z	50	28	22.9	19.1
16044	12	Z	50	29	27.3	19.1
16080	00	Z	50	30	23.2	13.8
16080	12	Z	50	30	33.5	20.5
16245	00	Z	50	29	18.4	13.9
16245	12	Z	50	29	17.7	14.8
16320	00	Z	50	30	13.4	10.8
16320	12	Z	50	29	14.5	8.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	00	Z	50	28	16.7	13.3
16429	12	Z	50	30	14.6	11.1
16622	00	Z	50	28	20.6	17.5
16754	00	Z	50	26	27.2	24.6
17607	12	Z	50	28	18.7	-17.5
26435	00	Z	50	13	8.7	0.6
60018	12	Z	50	29	14.1	7.4
60018	00	Z	50	27	14.6	9.4
ASDE01	12	Z	50	8	73.4	61.4
ASDE01	00	Z	50	8	55.7	54.5
ASDE03	12	Z	50	8	32.9	27.9
ASDE03	00	Z	50	8	38.6	35.8
ASDE04	12	Z	50	15	19.8	18.1
ASDE04	00	Z	50	9	12.0	9.3
ASDE09	12	Z	50	1	16.1	16.1
ASDK1	00	Z	50	1	7.9	7.9
ASDK1	12	Z	50	0	0.0	0.0
ASDK2	12	Z	50	4	71.3	70.9
ASDK2	00	Z	50	7	58.1	51.7
ASDK3	12	Z	50	4	49.9	46.7
ASDK3	00	Z	50	6	32.8	31.1
ASES1	12	Z	50	25	33.9	32.3
ASEU01	12	Z	50	6	43.3	41.8
ASEU02	12	Z	50	1	36.7	36.7
ASEU02	00	Z	50	0	0.0	0.0
ASEU04	12	Z	50	4	87.3	57.8
ASEU04	00	Z	50	1	0.2	0.2
ASEU05	12	Z	50	7	53.5	47.8
ASEU05	00	Z	50	5	39.4	38.1
ASEU06	12	Z	50	5	64.2	63.3
ASEU06	00	Z	50	2	58.6	57.6
ASFR1	12	Z	50	11	39.0	35.6
ASFR1	00	Z	50	4	33.6	32.2
ASFR2	00	Z	50	9	36.9	35.2
ASFR2	12	Z	50	11	51.6	49.6
ASFR3	12	Z	50	10	29.7	24.9
ASFR3	00	Z	50	6	21.4	19.9
ASFR4	12	Z	50	6	45.7	44.9
ASFR4	00	Z	50	6	44.0	42.0

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                : NOV 2013
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	50	29	4.0	0.4	-0.5
01001	12	V	50	28	5.0	-0.6	1.2
01028	12	V	50	27	3.4	0.7	0.5
01028	00	V	50	26	4.1	0.1	0.4
01152	12	V	50	28	7.7	0.0	0.9
01152	00	V	50	26	6.9	0.3	-0.3
01400	00	V	50	20	4.8	1.2	-0.7
01400	12	V	50	17	5.7	0.4	-0.3
01415	12	V	50	21	7.4	0.4	0.5
01415	00	V	50	20	7.3	0.1	2.2
02365	12	V	50	21	5.6	-0.3	0.1
02365	00	V	50	19	6.2	-1.6	-1.6
02591	00	V	50	27	3.6	-0.4	-0.8
02591	12	V	50	28	4.4	0.1	0.0
02836	12	V	50	26	6.6	-0.1	-0.6
02836	00	V	50	26	5.3	-0.6	1.0
02963	12	V	50	27	5.1	-0.5	-1.7
02963	00	V	50	27	5.3	-0.7	1.0
03005	12	V	50	30	5.2	0.2	0.4
03005	00	V	50	26	4.1	-0.2	-0.5
03238	00	V	50	29	4.2	-0.1	0.0
03238	12	V	50	4	3.7	-0.8	0.4
03808	12	V	50	26	4.4	-0.1	0.8
03808	00	V	50	28	5.1	-0.4	1.1
03918	00	V	50	24	4.2	-0.1	0.0
03918	12	V	50	9	3.5	0.2	0.3
03953	00	V	50	21	4.2	0.5	-1.2
03953	12	V	50	24	3.8	-0.2	-0.1
04018	00	V	50	19	5.3	0.4	-0.4
04018	12	V	50	19	5.1	-1.8	-0.5
04220	12	V	50	29	3.6	0.6	0.0
04220	00	V	50	28	4.0	0.2	-0.6
04270	00	V	50	29	7.0	0.3	0.9
04270	12	V	50	26	8.9	2.5	-0.4
04320	12	V	50	30	4.7	1.0	-0.2
04320	00	V	50	27	3.1	-0.3	-0.5
04339	12	V	50	8	6.7	3.3	-2.7
04339	00	V	50	4	5.4	1.6	-2.3
04360	00	V	50	22	6.4	-0.6	-1.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
04360	12	V	50	24	4.8	0.4	0.2
06011	12	V	50	21	5.1	-0.3	-0.5
06011	00	V	50	20	3.7	0.4	-1.2
06260	00	V	50	11	3.5	0.3	0.8
06260	12	V	50	5	4.3	-0.2	-1.2
06610	00	V	50	29	4.7	0.1	-0.1
06610	12	V	50	30	4.6	2.1	-0.2
07110	00	V	50	27	4.0	-0.1	-0.4
07110	12	V	50	23	3.8	0.7	1.0
07510	12	V	50	27	3.1	-0.5	0.2
07510	00	V	50	24	4.8	1.6	1.5
07645	12	V	50	24	4.5	1.3	0.8
07645	00	V	50	27	4.4	0.4	0.4
07761	12	V	50	20	5.5	0.9	1.3
07761	00	V	50	23	5.1	-0.6	-1.3
08001	00	V	50	27	4.8	-0.5	-0.3
08001	12	V	50	23	4.4	0.1	1.1
08221	00	V	50	30	5.0	1.2	-0.6
08221	12	V	50	30	3.8	0.7	0.7
08302	12	V	50	28	4.8	-0.1	0.4
08302	00	V	50	29	4.6	0.9	1.5
08508	12	V	50	23	4.0	-0.4	0.3
08522	12	V	50	30	3.1	0.3	-0.3
08579	12	V	50	30	4.5	-0.7	0.6
10035	12	V	50	30	3.3	0.0	-0.3
10035	00	V	50	26	4.2	0.7	-0.5
10393	00	V	50	30	4.6	0.6	-0.1
10393	12	V	50	29	3.9	0.2	0.8
10410	00	V	50	30	5.0	-0.1	0.9
10410	12	V	50	30	3.7	0.0	-0.6
10739	12	V	50	30	3.9	0.7	-0.1
10739	00	V	50	28	4.3	1.5	0.5
11035	00	V	50	28	3.7	0.6	0.0
11035	12	V	50	30	3.6	0.2	-0.4
12982	00	V	50	26	3.2	0.2	0.8
16044	00	V	50	26	4.6	0.0	0.2
16044	12	V	50	29	3.2	0.5	-0.2
16080	00	V	50	30	3.6	0.3	0.6
16080	12	V	50	30	4.4	0.8	-0.8
16245	00	V	50	28	4.4	-0.3	0.0
16245	12	V	50	29	4.2	1.1	0.9
16320	00	V	50	29	3.9	1.1	0.0
16320	12	V	50	29	4.2	1.1	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	00	V	50	26	4.5	0.1	-1.0
16429	12	V	50	30	4.9	1.1	1.3
16622	00	V	50	25	4.2	-0.4	0.2
16754	00	V	50	25	4.4	-0.1	-0.5
17607	12	V	50	20	3.8	-0.2	-0.4
26435	00	V	50	8	3.2	-0.5	0.2
60018	12	V	50	28	3.8	0.0	0.9
60018	00	V	50	27	3.3	0.3	-0.2
ASDE01	12	V	50	8	4.4	-0.4	1.2
ASDE01	00	V	50	7	6.0	-0.2	0.8
ASDE03	12	V	50	7	4.5	1.2	1.0
ASDE03	00	V	50	7	3.2	0.4	-0.6
ASDE04	12	V	50	14	4.5	0.6	-0.6
ASDE04	00	V	50	9	4.0	-0.6	0.1
ASDE09	12	V	50	1	3.4	0.9	-3.3
ASDK1	00	V	50	1	0.9	-0.8	-0.4
ASDK1	12	V	50	0	0.0	0.0	0.0
ASDK2	12	V	50	4	4.4	-2.8	-1.0
ASDK2	00	V	50	6	2.8	-1.9	0.8
ASDK3	12	V	50	4	5.5	1.9	1.5
ASDK3	00	V	50	6	6.5	-0.9	-2.0
ASES1	12	V	50	25	4.0	-0.4	-0.4
ASEU01	12	V	50	6	3.3	-0.5	-1.0
ASEU02	12	V	50	1	2.7	-0.6	2.6
ASEU02	00	V	50	0	0.0	0.0	0.0
ASEU04	12	V	50	4	5.5	1.6	0.6
ASEU04	00	V	50	1	2.8	2.3	1.6
ASEU05	12	V	50	7	4.8	-1.7	-0.3
ASEU05	00	V	50	4	4.2	1.1	-0.1
ASEU06	12	V	50	5	3.8	-2.0	2.0
ASEU06	00	V	50	2	5.3	2.4	3.9
ASFR1	12	V	50	11	4.2	-0.4	0.1
ASFR1	00	V	50	4	3.4	0.2	-1.0
ASFR2	00	V	50	9	5.1	0.8	0.0
ASFR2	12	V	50	11	4.2	0.4	-1.3
ASFR3	12	V	50	10	3.8	-0.7	0.1
ASFR3	00	V	50	6	2.4	-1.0	-0.2
ASFR4	12	V	50	6	3.7	-0.9	0.0
ASFR4	00	V	50	6	2.7	0.2	-0.2

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 100 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : NOV 2013
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	100	30	40.3	1.4
01001	12	Z	100	28	16.9	1.7
01028	12	Z	100	28	16.6	-1.2
01028	00	Z	100	26	6.8	1.4
01152	12	Z	100	29	11.7	3.9
01152	00	Z	100	27	14.6	4.8
01400	00	Z	100	27	11.7	7.4
01400	12	Z	100	26	19.2	3.5
01415	12	Z	100	30	17.7	4.1
01415	00	Z	100	28	14.4	3.7
02365	12	Z	100	26	16.1	9.8
02365	00	Z	100	25	16.4	13.0
02591	00	Z	100	29	14.9	13.5
02591	12	Z	100	29	18.3	16.5
02836	12	Z	100	30	13.4	11.2
02836	00	Z	100	28	14.2	11.8
02963	12	Z	100	30	11.0	8.0
02963	00	Z	100	30	10.2	6.0
03005	12	Z	100	31	10.3	2.3
03005	00	Z	100	30	9.4	5.2
03238	00	Z	100	29	15.8	13.5
03238	12	Z	100	4	12.1	11.9
03808	12	Z	100	30	10.7	7.8
03808	00	Z	100	29	11.0	8.7
03918	00	Z	100	27	15.4	13.0
03918	12	Z	100	11	20.3	19.0
03953	00	Z	100	28	19.3	15.6
03953	12	Z	100	30	37.5	10.3
04018	00	Z	100	25	11.7	3.2
04018	12	Z	100	23	12.1	5.5
04220	12	Z	100	30	19.0	-10.2
04220	00	Z	100	29	26.3	-12.4
04270	00	Z	100	30	27.0	-18.5
04270	12	Z	100	29	21.8	-12.4
04320	12	Z	100	30	17.1	-12.6
04320	00	Z	100	28	13.6	-7.9
04339	12	Z	100	28	25.6	5.1
04339	00	Z	100	27	53.1	19.6
04360	00	Z	100	24	22.7	14.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
04360	12	Z	100	28	24.7	9.9
06011	12	Z	100	23	12.4	-6.3
06011	00	Z	100	21	17.4	-8.3
06260	00	Z	100	30	13.6	10.4
06260	12	Z	100	6	17.4	15.1
06610	00	Z	100	29	14.8	10.3
06610	12	Z	100	30	18.5	11.0
07110	00	Z	100	30	17.4	15.4
07110	12	Z	100	30	22.6	17.9
07510	12	Z	100	29	11.9	7.9
07510	00	Z	100	30	9.1	-0.9
07645	12	Z	100	27	20.6	17.3
07645	00	Z	100	30	17.3	13.9
07761	12	Z	100	24	20.6	18.6
07761	00	Z	100	26	22.3	19.1
08001	00	Z	100	29	13.1	8.9
08001	12	Z	100	30	20.4	18.1
08221	00	Z	100	30	15.3	12.8
08221	12	Z	100	29	19.3	14.9
08302	12	Z	100	30	10.5	4.6
08302	00	Z	100	29	8.0	3.4
08508	12	Z	100	26	31.2	30.2
08522	12	Z	100	30	16.1	14.8
08579	12	Z	100	30	16.4	14.3
10035	12	Z	100	30	9.5	5.3
10035	00	Z	100	29	7.0	2.9
10393	00	Z	100	30	22.6	-5.0
10393	12	Z	100	30	7.2	0.5
10410	00	Z	100	30	8.9	2.9
10410	12	Z	100	30	10.0	7.6
10739	12	Z	100	30	18.3	15.8
10739	00	Z	100	29	15.4	13.9
11035	00	Z	100	30	10.6	4.1
11035	12	Z	100	30	10.5	3.1
12982	00	Z	100	28	20.1	7.5
16044	00	Z	100	30	16.0	12.5
16044	12	Z	100	30	20.7	11.7
16080	00	Z	100	30	21.7	10.2
16080	12	Z	100	30	29.5	12.8
16245	00	Z	100	29	15.9	10.9
16245	12	Z	100	30	12.1	8.2
16320	00	Z	100	30	9.0	3.4
16320	12	Z	100	29	10.8	1.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	00	Z	100	29	11.1	7.4
16429	12	Z	100	30	9.2	4.8
16622	00	Z	100	30	16.3	12.0
16754	00	Z	100	26	17.0	13.7
17607	12	Z	100	36	14.8	-12.9
26435	00	Z	100	15	4.4	1.3
60018	12	Z	100	29	8.5	1.2
60018	00	Z	100	29	7.5	0.0
ASDE01	12	Z	100	9	66.7	57.9
ASDE01	00	Z	100	9	47.9	47.2
ASDE03	12	Z	100	8	29.1	20.8
ASDE03	00	Z	100	8	32.9	30.2
ASDE04	12	Z	100	16	9.4	5.9
ASDE04	00	Z	100	11	5.8	3.9
ASDE09	12	Z	100	1	2.7	2.7
ASDK1	00	Z	100	1	0.5	-0.5
ASDK1	12	Z	100	0	0.0	0.0
ASDK2	12	Z	100	4	55.8	55.0
ASDK2	00	Z	100	7	48.0	42.1
ASDK3	12	Z	100	4	30.5	25.2
ASDK3	00	Z	100	6	22.1	19.8
ASES1	12	Z	100	25	25.1	23.4
ASEU01	12	Z	100	7	30.0	29.1
ASEU02	12	Z	100	1	32.6	32.6
ASEU02	00	Z	100	0	0.0	0.0
ASEU04	12	Z	100	4	53.6	32.8
ASEU04	00	Z	100	1	2.4	-2.4
ASEU05	12	Z	100	7	40.7	35.7
ASEU05	00	Z	100	6	33.6	30.5
ASEU06	12	Z	100	6	48.4	48.0
ASEU06	00	Z	100	2	54.5	54.4
ASFR1	12	Z	100	11	27.8	24.9
ASFR1	00	Z	100	8	23.4	21.2
ASFR2	00	Z	100	9	26.2	25.1
ASFR2	12	Z	100	13	27.5	25.7
ASFR3	12	Z	100	10	15.8	13.1
ASFR3	00	Z	100	6	13.9	8.0
ASFR4	12	Z	100	7	32.2	30.7
ASFR4	00	Z	100	7	26.3	25.7

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                : NOV 2013
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	100	30	4.4	-0.5	-0.9
01001	12	V	100	27	4.0	0.2	-0.7
01028	12	V	100	28	3.5	0.4	-0.3
01028	00	V	100	26	2.9	0.0	0.1
01152	12	V	100	29	5.9	-0.3	-0.3
01152	00	V	100	27	5.4	-1.7	-0.4
01400	00	V	100	27	4.0	-0.8	-0.2
01400	12	V	100	26	4.3	0.8	0.3
01415	12	V	100	21	7.4	0.6	-1.5
01415	00	V	100	20	8.1	2.1	0.4
02365	12	V	100	25	4.3	0.6	0.1
02365	00	V	100	25	7.2	0.4	1.1
02591	00	V	100	29	3.8	-0.1	0.0
02591	12	V	100	29	3.4	-0.8	0.3
02836	12	V	100	29	5.1	0.2	-0.4
02836	00	V	100	28	6.6	-1.6	0.0
02963	12	V	100	30	4.5	-0.4	0.1
02963	00	V	100	30	4.3	0.1	-0.8
03005	12	V	100	30	5.4	-0.5	-0.2
03005	00	V	100	28	4.6	0.1	-0.8
03238	00	V	100	29	4.7	0.1	-0.3
03238	12	V	100	4	3.6	-0.2	0.1
03808	12	V	100	30	4.8	0.3	0.7
03808	00	V	100	29	3.9	-0.2	0.7
03918	00	V	100	27	4.9	0.7	-0.5
03918	12	V	100	11	5.0	-1.1	-0.8
03953	00	V	100	27	4.7	1.3	-0.3
03953	12	V	100	27	4.5	-0.6	0.8
04018	00	V	100	24	4.7	0.5	-0.8
04018	12	V	100	23	4.3	-0.1	-1.1
04220	12	V	100	30	3.7	0.6	-0.1
04220	00	V	100	29	4.5	-0.8	0.0
04270	00	V	100	30	4.8	0.2	0.0
04270	12	V	100	29	7.0	-0.4	0.4
04320	12	V	100	30	3.3	0.3	-0.3
04320	00	V	100	28	3.0	-0.3	-0.8
04339	12	V	100	8	7.7	-0.8	1.6
04339	00	V	100	5	8.2	-4.7	0.6
04360	00	V	100	24	3.9	-0.1	-0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
04360	12	V	100	28	3.6	1.0	-0.1
06011	12	V	100	23	4.2	0.9	0.5
06011	00	V	100	21	4.1	-1.0	-1.2
06260	00	V	100	27	4.1	0.3	0.1
06260	12	V	100	6	3.4	0.1	0.1
06610	00	V	100	28	5.4	0.5	-1.1
06610	12	V	100	30	6.1	0.9	0.1
07110	00	V	100	30	4.1	0.3	0.7
07110	12	V	100	29	4.0	0.5	0.1
07510	12	V	100	28	3.6	0.7	0.1
07510	00	V	100	30	4.3	0.8	-0.1
07645	12	V	100	27	4.5	1.0	0.6
07645	00	V	100	29	4.9	0.4	0.5
07761	12	V	100	24	5.6	-0.4	-0.4
07761	00	V	100	25	6.2	0.7	0.0
08001	00	V	100	29	4.3	1.0	0.3
08001	12	V	100	29	4.5	-0.4	0.5
08221	00	V	100	30	4.7	1.3	0.4
08221	12	V	100	29	4.9	-0.1	-1.0
08302	12	V	100	30	5.0	-0.4	0.0
08302	00	V	100	29	5.6	0.7	0.4
08508	12	V	100	22	5.0	-1.3	0.4
08522	12	V	100	30	4.3	0.3	-0.4
08579	12	V	100	30	3.6	0.3	-0.7
10035	12	V	100	30	3.8	-1.2	0.3
10035	00	V	100	29	3.5	-0.2	-0.4
10393	00	V	100	30	3.2	-0.4	-0.3
10393	12	V	100	30	4.2	0.0	0.4
10410	00	V	100	30	4.2	-0.8	0.4
10410	12	V	100	30	3.8	-0.2	0.1
10739	12	V	100	30	3.5	0.1	0.6
10739	00	V	100	29	4.7	0.2	-0.2
11035	00	V	100	30	3.3	0.0	0.0
11035	12	V	100	30	4.4	0.2	-1.0
12982	00	V	100	27	3.8	0.1	-1.2
16044	00	V	100	30	4.0	-0.6	-0.2
16044	12	V	100	30	3.6	0.8	-0.2
16080	00	V	100	29	5.2	1.0	-0.5
16080	12	V	100	30	4.0	0.6	0.2
16245	00	V	100	28	6.0	-0.4	0.8
16245	12	V	100	30	4.2	1.7	0.2
16320	00	V	100	30	4.4	-0.1	-0.8
16320	12	V	100	29	4.6	0.3	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	00	V	100	28	5.6	2.1	0.1
16429	12	V	100	30	4.8	-0.4	-0.1
16622	00	V	100	29	6.0	-1.2	0.4
16754	00	V	100	26	4.9	0.6	1.1
17607	12	V	100	20	4.5	1.9	-0.7
26435	00	V	100	14	4.0	0.2	-0.5
60018	12	V	100	29	4.2	0.1	-0.1
60018	00	V	100	29	5.2	0.5	0.2
ASDE01	12	V	100	8	4.2	-1.3	0.1
ASDE01	00	V	100	9	3.9	-2.8	1.1
ASDE03	12	V	100	8	4.7	-1.4	-0.1
ASDE03	00	V	100	8	3.5	-0.3	-0.7
ASDE04	12	V	100	15	5.3	1.0	-0.9
ASDE04	00	V	100	11	3.4	-0.4	1.0
ASDE09	12	V	100	1	3.2	1.8	2.6
ASDK1	00	V	100	1	3.1	-1.8	-2.5
ASDK1	12	V	100	0	0.0	0.0	0.0
ASDK2	12	V	100	4	4.1	-3.1	1.0
ASDK2	00	V	100	7	3.4	-0.5	-0.4
ASDK3	12	V	100	4	5.0	0.1	0.9
ASDK3	00	V	100	6	3.1	0.1	-0.6
ASES1	12	V	100	25	5.7	2.5	1.2
ASEU01	12	V	100	7	4.9	0.0	0.1
ASEU02	12	V	100	1	1.4	1.0	1.0
ASEU02	00	V	100	0	0.0	0.0	0.0
ASEU04	12	V	100	4	2.1	-0.3	-0.5
ASEU04	00	V	100	1	4.4	2.2	-3.8
ASEU05	12	V	100	7	4.8	-0.2	-0.8
ASEU05	00	V	100	5	6.5	-1.5	2.1
ASEU06	12	V	100	6	4.7	-1.1	-0.3
ASEU06	00	V	100	2	1.7	0.5	-0.4
ASFR1	12	V	100	11	3.7	0.3	1.2
ASFR1	00	V	100	7	2.9	-0.8	0.3
ASFR2	00	V	100	9	3.3	1.2	-0.4
ASFR2	12	V	100	12	3.2	1.5	-1.0
ASFR3	12	V	100	10	3.6	-0.7	-0.6
ASFR3	00	V	100	6	3.5	-0.1	-1.5
ASFR4	12	V	100	7	3.1	-0.8	0.1
ASFR4	00	V	100	7	3.5	1.2	0.4

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                : NOV 2013
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	500	30	28.1	2.6
01001	12	Z	500	28	16.1	-3.7
01028	12	Z	500	28	17.9	-0.9
01028	00	Z	500	27	5.3	1.6
01152	12	Z	500	29	7.2	3.9
01152	00	Z	500	27	9.2	4.4
01400	00	Z	500	27	11.3	5.9
01400	12	Z	500	26	16.4	-0.2
01415	12	Z	500	30	7.6	5.2
01415	00	Z	500	28	6.8	3.7
02365	12	Z	500	26	8.3	3.2
02365	00	Z	500	26	6.4	4.7
02591	00	Z	500	29	12.0	11.2
02591	12	Z	500	29	13.9	13.3
02836	12	Z	500	30	7.0	4.1
02836	00	Z	500	28	7.0	5.3
02963	12	Z	500	30	6.2	4.1
02963	00	Z	500	30	7.2	3.9
03005	12	Z	500	30	7.6	0.7
03005	00	Z	500	30	6.2	1.6
03238	00	Z	500	29	10.4	9.1
03238	12	Z	500	4	12.5	12.4
03808	12	Z	500	30	7.8	4.9
03808	00	Z	500	29	6.1	4.7
03918	00	Z	500	27	12.1	10.7
03918	12	Z	500	10	12.7	11.6
03953	00	Z	500	30	11.5	10.1
03953	12	Z	500	30	12.7	10.6
04018	00	Z	500	28	4.9	1.7
04018	12	Z	500	25	7.3	3.2
04220	12	Z	500	30	14.9	1.2
04220	00	Z	500	29	16.7	1.4
04270	00	Z	500	30	8.9	-6.9
04270	12	Z	500	30	24.0	0.6
04320	12	Z	500	30	5.1	-0.5
04320	00	Z	500	28	5.7	1.2
04339	12	Z	500	30	10.4	0.2
04339	00	Z	500	30	18.2	3.9
04360	00	Z	500	29	9.4	5.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
04360	12	Z	500	30	9.1	4.3
06011	12	Z	500	25	22.7	7.8
06011	00	Z	500	21	16.3	0.1
06260	00	Z	500	30	8.8	6.8
06260	12	Z	500	6	12.0	9.9
06610	00	Z	500	30	8.5	6.9
06610	12	Z	500	30	10.1	5.2
07110	00	Z	500	30	7.9	2.8
07110	12	Z	500	30	5.9	2.6
07510	12	Z	500	31	6.3	1.0
07510	00	Z	500	30	7.8	-3.6
07645	12	Z	500	29	7.4	4.3
07645	00	Z	500	31	6.5	0.8
07761	12	Z	500	30	11.0	8.7
07761	00	Z	500	30	7.5	3.9
08001	00	Z	500	30	10.2	6.6
08001	12	Z	500	30	10.2	7.9
08221	00	Z	500	30	10.9	9.7
08221	12	Z	500	29	14.0	13.0
08302	12	Z	500	30	7.7	1.3
08302	00	Z	500	30	6.1	0.9
08508	12	Z	500	28	23.3	22.3
08522	12	Z	500	30	10.8	10.0
08579	12	Z	500	30	10.6	8.9
10035	12	Z	500	30	7.6	3.8
10035	00	Z	500	30	5.3	2.9
10393	00	Z	500	30	5.1	1.6
10393	12	Z	500	30	4.0	-0.5
10410	00	Z	500	30	3.4	1.4
10410	12	Z	500	30	4.5	1.4
10739	12	Z	500	30	13.0	11.9
10739	00	Z	500	29	12.0	10.5
11035	00	Z	500	31	4.9	2.2
11035	12	Z	500	30	5.4	1.7
12982	00	Z	500	29	17.4	6.8
16044	00	Z	500	30	9.5	7.8
16044	12	Z	500	30	19.6	9.1
16080	00	Z	500	30	16.3	6.6
16080	12	Z	500	30	25.1	9.8
16245	00	Z	500	29	8.3	4.6
16245	12	Z	500	30	6.5	3.4
16320	00	Z	500	30	6.5	0.4
16320	12	Z	500	29	7.1	0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	00	Z	500	29	9.0	7.0
16429	12	Z	500	30	6.7	3.8
16622	00	Z	500	30	13.4	11.2
16754	00	Z	500	27	9.6	7.1
17607	12	Z	500	35	6.0	2.7
26435	00	Z	500	15	5.5	2.4
60018	12	Z	500	29	5.6	-1.7
60018	00	Z	500	29	5.4	-2.7
ASDE01	12	Z	500	10	51.7	43.1
ASDE01	00	Z	500	11	39.0	38.8
ASDE03	12	Z	500	9	25.5	19.8
ASDE03	00	Z	500	10	35.3	32.2
ASDE04	12	Z	500	18	7.2	-1.9
ASDE04	00	Z	500	13	6.3	-0.6
ASDE09	12	Z	500	1	5.9	-5.9
ASDK1	00	Z	500	1	0.3	0.3
ASDK1	12	Z	500	0	0.0	0.0
ASDK2	12	Z	500	4	33.9	33.1
ASDK2	00	Z	500	9	38.3	32.5
ASDK3	12	Z	500	4	12.9	12.3
ASDK3	00	Z	500	7	15.3	10.0
ASES1	12	Z	500	25	11.1	10.5
ASEU01	12	Z	500	8	19.1	17.9
ASEU02	12	Z	500	1	33.2	33.2
ASEU02	00	Z	500	0	0.0	0.0
ASEU04	12	Z	500	7	11.7	-6.3
ASEU04	00	Z	500	2	3.3	0.6
ASEU05	12	Z	500	7	28.3	27.0
ASEU05	00	Z	500	7	28.1	27.8
ASEU06	12	Z	500	7	39.6	39.0
ASEU06	00	Z	500	4	43.2	42.9
ASFR1	12	Z	500	12	5.5	0.7
ASFR1	00	Z	500	8	6.4	-0.2
ASFR2	00	Z	500	11	7.9	6.2
ASFR2	12	Z	500	15	9.0	2.2
ASFR3	12	Z	500	10	8.2	-6.7
ASFR3	00	Z	500	6	9.7	-7.0
ASFR4	12	Z	500	7	9.6	3.5
ASFR4	00	Z	500	7	6.9	6.2

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                : NOV 2013
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	500	30	3.5	-0.5	0.3
01001	12	V	500	28	3.3	-0.6	-0.5
01028	12	V	500	28	3.6	-0.9	0.0
01028	00	V	500	27	3.8	-0.9	-0.9
01152	12	V	500	29	4.1	0.2	0.2
01152	00	V	500	27	3.8	-0.3	-0.3
01400	00	V	500	27	2.8	-0.3	0.4
01400	12	V	500	26	3.2	0.6	-0.1
01415	12	V	500	21	3.5	0.3	0.9
01415	00	V	500	20	4.2	0.9	0.4
02365	12	V	500	26	3.1	-0.1	-0.4
02365	00	V	500	26	3.6	-0.1	0.7
02591	00	V	500	29	3.1	-0.1	-0.2
02591	12	V	500	29	3.5	0.1	-0.9
02836	12	V	500	30	3.3	-0.2	-0.6
02836	00	V	500	28	3.5	0.3	-0.3
02963	12	V	500	30	3.9	1.1	0.3
02963	00	V	500	30	3.4	-0.2	0.4
03005	12	V	500	30	3.4	0.7	0.0
03005	00	V	500	28	3.6	0.2	0.0
03238	00	V	500	29	2.5	0.6	0.9
03238	12	V	500	4	1.8	0.9	-0.1
03808	12	V	500	30	2.7	0.8	0.4
03808	00	V	500	29	2.6	0.0	0.2
03918	00	V	500	27	3.4	-0.8	-0.6
03918	12	V	500	10	3.8	-0.6	-0.2
03953	00	V	500	29	3.3	0.3	-0.1
03953	12	V	500	30	3.9	-0.3	0.2
04018	00	V	500	27	3.7	-0.3	-0.9
04018	12	V	500	25	4.0	-0.7	0.1
04220	12	V	500	30	4.3	-0.4	0.3
04220	00	V	500	29	3.2	-0.4	-0.2
04270	00	V	500	30	3.4	-0.5	0.5
04270	12	V	500	30	3.4	-0.2	0.0
04320	12	V	500	30	2.5	0.1	1.0
04320	00	V	500	28	3.1	0.6	0.7
04339	12	V	500	6	4.3	1.6	0.3
04339	00	V	500	5	4.7	3.0	-0.8
04360	00	V	500	29	4.0	-0.8	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
04360	12	V	500	30	4.7	-0.2	0.1
06011	12	V	500	25	3.7	-1.1	0.2
06011	00	V	500	21	3.8	0.3	0.4
06260	00	V	500	30	3.1	-0.5	-0.4
06260	12	V	500	6	2.8	-0.5	0.1
06610	00	V	500	29	4.0	0.2	0.6
06610	12	V	500	30	3.4	0.7	0.7
07110	00	V	500	30	3.1	-0.2	0.4
07110	12	V	500	30	3.8	0.1	-0.5
07510	12	V	500	30	3.5	-0.3	-0.5
07510	00	V	500	30	3.7	0.0	0.3
07645	12	V	500	29	3.5	0.5	0.0
07645	00	V	500	30	4.4	0.0	-0.5
07761	12	V	500	30	3.9	0.0	-0.5
07761	00	V	500	30	3.1	0.2	-0.2
08001	00	V	500	30	3.4	-0.1	-0.6
08001	12	V	500	30	3.3	-0.1	0.3
08221	00	V	500	30	3.0	0.3	-0.1
08221	12	V	500	29	4.8	0.4	-0.5
08302	12	V	500	30	4.0	-0.3	-1.1
08302	00	V	500	30	3.6	-0.1	0.3
08508	12	V	500	28	3.6	0.4	-1.0
08522	12	V	500	30	2.9	0.0	-0.4
08579	12	V	500	30	2.6	-0.3	0.3
10035	12	V	500	30	3.0	0.1	-0.2
10035	00	V	500	29	2.6	-0.2	-0.3
10393	00	V	500	30	3.0	0.6	-0.8
10393	12	V	500	30	3.3	0.8	-0.6
10410	00	V	500	30	2.7	-0.3	0.0
10410	12	V	500	30	2.5	-0.3	0.4
10739	12	V	500	30	3.9	-0.5	1.0
10739	00	V	500	29	3.5	0.6	0.5
11035	00	V	500	30	3.3	0.6	0.2
11035	12	V	500	30	3.1	-0.1	0.7
12982	00	V	500	29	3.0	-0.2	0.2
16044	00	V	500	29	3.9	0.1	-1.2
16044	12	V	500	30	3.6	0.3	-0.5
16080	00	V	500	30	3.7	0.0	-0.4
16080	12	V	500	29	3.4	0.0	-0.9
16245	00	V	500	28	5.1	0.3	0.9
16245	12	V	500	30	5.3	0.6	-0.1
16320	00	V	500	30	3.2	0.0	0.4
16320	12	V	500	29	4.6	0.6	-0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	00	V	500	28	3.1	-0.1	-0.3
16429	12	V	500	30	3.8	0.7	0.1
16622	00	V	500	28	4.0	0.7	-0.5
16754	00	V	500	27	3.5	-0.3	0.0
17607	12	V	500	20	4.0	0.1	-0.6
26435	00	V	500	15	2.6	-0.2	1.0
60018	12	V	500	29	3.0	-0.1	-0.3
60018	00	V	500	29	3.4	0.5	-0.8
ASDE01	12	V	500	10	5.9	1.9	1.9
ASDE01	00	V	500	11	4.0	0.3	0.9
ASDE03	12	V	500	9	2.4	0.5	0.7
ASDE03	00	V	500	10	2.7	1.2	0.0
ASDE04	12	V	500	17	3.5	1.2	0.3
ASDE04	00	V	500	13	2.3	0.3	0.6
ASDE09	12	V	500	1	2.8	0.8	-2.7
ASDK1	00	V	500	1	5.9	-4.2	4.2
ASDK1	12	V	500	0	0.0	0.0	0.0
ASDK2	12	V	500	4	2.5	1.4	1.2
ASDK2	00	V	500	9	2.8	0.3	-0.3
ASDK3	12	V	500	4	4.0	0.3	1.9
ASDK3	00	V	500	7	4.3	-1.0	-1.8
ASES1	12	V	500	25	3.1	-0.1	-0.7
ASEU01	12	V	500	8	2.5	0.4	0.6
ASEU02	12	V	500	1	3.0	3.0	-0.5
ASEU02	00	V	500	0	0.0	0.0	0.0
ASEU04	12	V	500	7	2.6	-0.1	0.4
ASEU04	00	V	500	2	1.5	-0.4	1.4
ASEU05	12	V	500	7	2.7	-0.5	0.2
ASEU05	00	V	500	6	4.3	1.8	-0.8
ASEU06	12	V	500	7	3.1	0.4	0.5
ASEU06	00	V	500	4	1.8	-1.3	-0.3
ASFR1	12	V	500	12	4.0	-0.1	-0.1
ASFR1	00	V	500	8	3.2	0.8	0.5
ASFR2	00	V	500	11	3.5	1.3	-0.1
ASFR2	12	V	500	14	2.9	0.9	-0.9
ASFR3	12	V	500	10	3.4	0.0	-1.0
ASFR3	00	V	500	6	2.8	0.5	-0.6
ASFR4	12	V	500	7	3.5	-1.4	0.4
ASFR4	00	V	500	7	3.5	0.4	0.5

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 850 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : NOV 2013
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	850	30	6.6	-3.0
01001	12	Z	850	28	16.0	-5.2
01028	12	Z	850	28	16.3	-1.9
01028	00	Z	850	27	4.1	0.8
01152	12	Z	850	30	6.1	2.8
01152	00	Z	850	27	5.6	1.8
01400	00	Z	850	27	7.7	3.5
01400	12	Z	850	26	17.2	-2.9
01415	12	Z	850	30	3.7	2.7
01415	00	Z	850	28	3.9	2.1
02365	12	Z	850	26	3.9	1.1
02365	00	Z	850	27	3.5	1.8
02591	00	Z	850	29	8.5	8.3
02591	12	Z	850	29	10.2	9.9
02836	12	Z	850	30	3.4	1.1
02836	00	Z	850	28	3.3	1.8
02963	12	Z	850	30	2.8	-0.1
02963	00	Z	850	30	2.2	-0.3
03005	12	Z	850	30	4.2	-0.1
03005	00	Z	850	30	3.3	-0.7
03238	00	Z	850	29	7.4	6.7
03238	12	Z	850	4	7.8	7.4
03808	12	Z	850	30	2.9	1.1
03808	00	Z	850	29	2.8	1.5
03918	00	Z	850	27	9.0	8.5
03918	12	Z	850	10	9.5	9.3
03953	00	Z	850	30	4.8	4.2
03953	12	Z	850	30	9.0	5.5
04018	00	Z	850	28	3.8	1.8
04018	12	Z	850	26	3.2	0.8
04220	12	Z	850	30	14.5	5.1
04220	00	Z	850	29	17.2	6.8
04270	00	Z	850	30	3.6	-2.6
04270	12	Z	850	30	7.2	1.0
04320	12	Z	850	30	3.8	0.9
04320	00	Z	850	28	5.3	1.6
04339	12	Z	850	30	5.4	-3.4
04339	00	Z	850	30	6.4	-1.4
04360	00	Z	850	30	4.1	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
04360	12	Z	850	30	6.7	-0.9
06011	12	Z	850	25	8.0	5.1
06011	00	Z	850	21	6.3	2.1
06260	00	Z	850	30	4.8	2.9
06260	12	Z	850	6	4.5	2.8
06610	00	Z	850	30	4.4	2.1
06610	12	Z	850	30	3.5	2.1
07110	00	Z	850	30	3.1	1.2
07110	12	Z	850	30	3.5	1.4
07510	12	Z	850	31	2.7	0.2
07510	00	Z	850	30	3.7	-1.7
07645	12	Z	850	29	2.4	-1.4
07645	00	Z	850	31	4.7	-3.8
07761	12	Z	850	30	5.5	3.5
07761	00	Z	850	30	4.1	0.5
08001	00	Z	850	30	4.9	-0.1
08001	12	Z	850	30	4.2	1.2
08221	00	Z	850	30	5.4	4.7
08221	12	Z	850	29	8.0	7.6
08302	12	Z	850	30	3.3	-0.3
08302	00	Z	850	30	3.5	-0.7
08508	12	Z	850	28	19.4	18.5
08522	12	Z	850	30	6.3	6.0
08579	12	Z	850	30	6.3	5.0
10035	12	Z	850	30	4.0	0.7
10035	00	Z	850	30	3.3	-0.6
10393	00	Z	850	30	3.6	-3.1
10393	12	Z	850	30	3.5	-3.0
10410	00	Z	850	30	2.8	-2.4
10410	12	Z	850	30	1.9	-1.0
10739	12	Z	850	30	9.0	8.6
10739	00	Z	850	29	6.9	6.4
11035	00	Z	850	31	4.3	-2.3
11035	12	Z	850	30	3.6	-1.6
12982	00	Z	850	29	16.3	4.7
16044	00	Z	850	30	3.0	0.3
16044	12	Z	850	30	16.4	3.5
16080	00	Z	850	30	15.2	1.3
16080	12	Z	850	30	20.9	3.9
16245	00	Z	850	30	5.1	1.7
16245	12	Z	850	30	3.4	0.8
16320	00	Z	850	30	6.4	-2.4
16320	12	Z	850	30	6.5	-1.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	00	Z	850	29	5.5	4.5
16429	12	Z	850	30	3.8	3.2
16622	00	Z	850	30	9.9	7.7
16754	00	Z	850	28	6.4	4.2
17607	12	Z	850	35	3.5	2.2
26435	00	Z	850	15	3.0	1.1
60018	12	Z	850	29	7.2	-6.6
60018	00	Z	850	29	8.4	-8.1
ASDE01	12	Z	850	10	31.0	30.2
ASDE01	00	Z	850	11	35.4	35.3
ASDE03	12	Z	850	9	23.8	17.0
ASDE03	00	Z	850	10	29.4	26.6
ASDE04	12	Z	850	18	9.6	-7.5
ASDE04	00	Z	850	14	8.8	-5.9
ASDE09	12	Z	850	1	3.5	-3.5
ASDK1	00	Z	850	1	5.5	-5.5
ASDK1	12	Z	850	1	14.9	14.9
ASDK2	12	Z	850	4	27.2	24.9
ASDK2	00	Z	850	9	32.1	25.4
ASDK3	12	Z	850	4	15.0	14.1
ASDK3	00	Z	850	7	13.1	6.8
ASES1	12	Z	850	25	4.7	3.6
ASEU01	12	Z	850	8	13.9	13.4
ASEU02	12	Z	850	1	32.3	32.3
ASEU02	00	Z	850	1	24.5	24.5
ASEU04	12	Z	850	7	11.3	-7.3
ASEU04	00	Z	850	4	3.7	-2.9
ASEU05	12	Z	850	7	23.8	23.1
ASEU05	00	Z	850	7	21.2	20.8
ASEU06	12	Z	850	7	32.2	31.8
ASEU06	00	Z	850	4	36.5	36.2
ASFR1	12	Z	850	12	4.9	-3.8
ASFR1	00	Z	850	8	8.0	-5.3
ASFR2	00	Z	850	12	4.3	0.9
ASFR2	12	Z	850	15	6.5	-3.5
ASFR3	12	Z	850	10	13.0	-12.5
ASFR3	00	Z	850	6	10.2	-9.2
ASFR4	12	Z	850	8	5.5	-2.4
ASFR4	00	Z	850	7	3.2	1.2

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                : NOV 2013
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	850	30	4.3	1.3	0.0
01001	12	V	850	27	4.4	0.3	0.4
01028	12	V	850	28	3.3	0.7	-0.4
01028	00	V	850	27	3.9	0.3	0.6
01152	12	V	850	30	4.2	-0.1	0.6
01152	00	V	850	27	5.0	0.3	0.3
01400	00	V	850	27	2.5	0.1	-0.4
01400	12	V	850	26	2.1	0.2	-0.3
01415	12	V	850	21	2.8	0.3	0.3
01415	00	V	850	20	3.0	-0.4	-0.3
02365	12	V	850	26	3.1	-0.5	0.2
02365	00	V	850	27	2.8	-0.5	0.5
02591	00	V	850	29	2.7	-0.2	0.6
02591	12	V	850	29	2.1	-0.2	-0.5
02836	12	V	850	30	2.6	0.0	0.1
02836	00	V	850	27	3.9	0.2	0.3
02963	12	V	850	30	2.6	0.3	0.5
02963	00	V	850	30	2.6	-0.1	0.1
03005	12	V	850	30	3.6	1.1	-0.8
03005	00	V	850	28	2.9	0.7	-0.1
03238	00	V	850	29	2.2	0.0	0.1
03238	12	V	850	4	3.0	0.7	-0.1
03808	12	V	850	30	2.7	0.6	0.2
03808	00	V	850	29	3.1	-0.3	-0.4
03918	00	V	850	27	2.5	0.0	-0.4
03918	12	V	850	10	2.4	-0.2	-0.5
03953	00	V	850	30	2.8	-0.3	-0.2
03953	12	V	850	30	3.1	-0.3	-0.2
04018	00	V	850	27	3.9	0.8	-0.9
04018	12	V	850	26	3.3	0.5	0.2
04220	12	V	850	30	3.3	0.6	-0.2
04220	00	V	850	29	3.2	-0.5	-0.8
04270	00	V	850	30	5.0	0.8	0.2
04270	12	V	850	30	4.5	0.9	0.0
04320	12	V	850	30	4.1	-0.5	1.0
04320	00	V	850	28	3.7	-0.5	0.7
04339	12	V	850	7	5.9	4.7	-0.5
04339	00	V	850	7	6.1	4.4	0.0
04360	00	V	850	30	4.9	0.3	1.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
04360	12	V	850	30	5.1	1.1	1.3
06011	12	V	850	25	2.7	-0.1	-0.1
06011	00	V	850	21	3.0	-0.3	0.1
06260	00	V	850	30	2.9	-0.3	0.0
06260	12	V	850	6	3.1	-0.7	-1.2
06610	00	V	850	29	3.3	0.9	0.4
06610	12	V	850	30	3.7	-0.2	0.3
07110	00	V	850	30	2.9	0.6	0.1
07110	12	V	850	30	2.4	0.2	-0.8
07510	12	V	850	30	2.9	0.3	-0.4
07510	00	V	850	30	3.1	0.8	-0.6
07645	12	V	850	29	5.2	0.4	0.0
07645	00	V	850	30	4.1	0.3	0.9
07761	12	V	850	30	3.6	0.6	0.0
07761	00	V	850	30	4.8	0.2	-0.1
08001	00	V	850	30	2.8	0.3	0.3
08001	12	V	850	30	2.5	-0.6	0.3
08221	00	V	850	30	3.4	0.0	0.9
08221	12	V	850	29	3.3	0.5	0.4
08302	12	V	850	30	4.6	0.4	1.7
08302	00	V	850	30	4.2	0.2	1.3
08508	12	V	850	28	2.5	-0.4	-0.3
08522	12	V	850	30	4.1	-0.7	0.5
08579	12	V	850	30	3.6	0.4	-0.5
10035	12	V	850	30	2.4	-0.1	0.2
10035	00	V	850	29	2.5	-0.2	-0.7
10393	00	V	850	30	2.6	0.3	-0.4
10393	12	V	850	30	3.1	0.2	-0.7
10410	00	V	850	30	2.4	-0.4	0.2
10410	12	V	850	30	2.3	0.4	-0.6
10739	12	V	850	30	2.8	-0.9	-0.1
10739	00	V	850	29	3.1	0.5	0.0
11035	00	V	850	30	3.5	0.4	0.3
11035	12	V	850	30	3.0	0.1	-0.2
12982	00	V	850	29	3.3	0.9	-1.0
16044	00	V	850	29	5.1	0.4	1.2
16044	12	V	850	30	4.3	0.9	1.1
16080	00	V	850	30	4.2	0.5	-0.7
16080	12	V	850	30	4.0	0.9	-0.2
16245	00	V	850	28	5.2	1.5	-0.2
16245	12	V	850	30	3.1	0.1	-0.3
16320	00	V	850	30	4.0	0.8	-0.7
16320	12	V	850	30	4.7	2.0	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	00	V	850	28	3.4	0.8	0.8
16429	12	V	850	30	2.8	-0.2	0.3
16622	00	V	850	28	3.3	1.0	-0.5
16754	00	V	850	28	3.4	0.5	0.3
17607	12	V	850	20	3.4	1.4	-0.3
26435	00	V	850	15	2.1	-0.1	0.0
60018	12	V	850	29	3.6	0.8	-0.1
60018	00	V	850	29	3.9	0.5	-1.4
ASDE01	12	V	850	10	2.9	0.6	-0.2
ASDE01	00	V	850	11	3.3	-0.1	0.0
ASDE03	12	V	850	9	2.2	1.1	-0.1
ASDE03	00	V	850	10	3.1	0.6	-0.6
ASDE04	12	V	850	18	3.4	0.2	0.3
ASDE04	00	V	850	13	2.9	0.4	0.3
ASDE09	12	V	850	1	5.3	-5.1	-1.4
ASDK1	00	V	850	1	4.0	-3.9	-0.7
ASDK1	12	V	850	0	0.0	0.0	0.0
ASDK2	12	V	850	4	3.0	0.1	-0.4
ASDK2	00	V	850	7	3.3	-0.3	-0.8
ASDK3	12	V	850	4	3.7	0.5	-0.8
ASDK3	00	V	850	7	3.6	-1.4	0.3
ASES1	12	V	850	24	3.3	0.3	-0.5
ASEU01	12	V	850	8	3.5	1.5	0.6
ASEU02	12	V	850	1	2.8	-0.9	-2.6
ASEU02	00	V	850	1	14.1	-3.5	-13.7
ASEU04	12	V	850	7	2.3	0.2	-0.6
ASEU04	00	V	850	4	2.6	0.1	-1.2
ASEU05	12	V	850	7	2.5	1.4	0.1
ASEU05	00	V	850	6	3.0	-1.6	0.6
ASEU06	12	V	850	7	3.2	0.5	-0.3
ASEU06	00	V	850	4	1.9	-0.5	0.4
ASFR1	12	V	850	12	3.0	-0.2	-0.1
ASFR1	00	V	850	8	3.6	1.9	-1.0
ASFR2	00	V	850	12	2.6	-0.1	-0.6
ASFR2	12	V	850	14	2.1	-0.2	-0.5
ASFR3	12	V	850	10	2.3	0.6	0.0
ASFR3	00	V	850	6	2.8	-0.8	1.2
ASFR4	12	V	850	8	4.2	-0.1	-0.6
ASFR4	00	V	850	7	3.2	-0.3	-1.4

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                 : NOV 2013
         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
08559	99	P	SUR	37	-9	4	0	0.5	-0.2	0.5
12050	99	P	SUR	34	32	210	0	0.3	0.2	0.4
13001	99	P	SUR	11	-23	111	0	0.4	-0.1	0.4
13008	99	P	SUR	15	-38	96	0	0.3	-0.2	0.4
13577	99	P	SUR	29	-48	400	0	0.4	-0.2	0.4
13600	99	P	SUR	23	-49	210	0	0.4	0.7	0.8
13659	99	P	SUR	27	-26	210	0	0.4	-0.1	0.4
13660	99	P	SUR	23	-39	209	0	0.4	0.1	0.4
13661	99	P	SUR	23	-34	69	3	0.3	-0.1	0.3
13662	99	P	SUR	27	-29	209	0	0.4	-0.1	0.4
13664	99	P	SUR	26	-24	208	0	0.4	0.1	0.4
13665	99	P	SUR	18	-44	210	0	1.2	-0.3	1.2
13666	99	P	SUR	16	-31	210	0	0.4	0.3	0.5
25616	99	P	SUR	83	-2	32	0	0.3	-0.5	0.6
25617	99	P	SUR	80	-6	209	0	0.7	-0.4	0.8
26556	99	P	SUR	79	-14	210	0	0.6	-0.4	0.7
41040	99	P	SUR	15	-53	208	0	0.4	0.3	0.5
41041	99	P	SUR	14	-46	208	0	0.4	0.1	0.4
41043	99	P	SUR	21	-65	207	0	0.4	0.1	0.4
41044	99	P	SUR	22	-59	209	0	0.3	0.0	0.3
41046	99	P	SUR	24	-68	208	0	0.3	0.1	0.4
41048	99	P	SUR	32	-70	208	0	0.6	-0.6	0.8
41049	99	P	SUR	28	-63	209	0	0.4	0.0	0.4
41051	99	P	SUR	18	-65	193	0	0.3	0.4	0.5
41052	99	P	SUR	18	-65	71	0	0.6	-0.2	0.6
41053	99	P	SUR	19	-66	191	0	0.3	-0.6	0.7
41056	99	P	SUR	18	-66	194	0	0.5	-0.5	0.7
41139	99	P	SUR	20	-38	132	0	0.3	-0.2	0.4
41300	99	P	SUR	16	-58	148	2	0.6	-0.2	0.7
41560	99	P	SUR	46	-33	210	0	0.4	0.4	0.6
41562	99	P	SUR	34	-68	207	0	0.3	0.2	0.4
41564	99	P	SUR	23	-70	198	0	0.3	0.4	0.5
41596	99	P	SUR	20	-43	210	0	0.3	-0.2	0.4
41599	99	P	SUR	19	-66	210	0	0.3	0.1	0.3
41616	99	P	SUR	33	-32	99	0	0.2	0.0	0.2
41632	99	P	SUR	16	-46	210	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
41633	99	P	SUR	28	-51	189	0	0.3	-0.3	0.4
41634	99	P	SUR	28	-63	410	0	0.3	0.0	0.3
41636	99	P	SUR	36	-69	210	0	0.7	-0.3	0.8
41705	99	P	SUR	24	-43	209	0	0.4	-0.1	0.4
41706	99	P	SUR	15	-50	210	0	0.3	-0.2	0.4
41707	99	P	SUR	18	-50	210	0	0.4	0.0	0.4
41708	99	P	SUR	14	-52	210	0	0.3	0.2	0.4
41709	99	P	SUR	14	-50	210	0	0.4	-0.2	0.4
41711	99	P	SUR	13	-48	210	0	0.3	0.0	0.3
41739	99	P	SUR	26	-68	210	0	0.3	-0.2	0.4
41929	99	P	SUR	42	-44	207	0	0.5	-0.1	0.5
41932	99	P	SUR	32	-66	207	0	0.3	-0.4	0.5
41957	99	P	SUR	33	-69	209	0	0.3	-0.4	0.5
41958	99	P	SUR	35	-59	209	0	0.4	-0.3	0.5
41969	99	P	SUR	42	-59	210	0	0.5	-0.6	0.8
41970	99	P	SUR	32	-59	209	0	0.3	0.0	0.3
41971	99	P	SUR	35	-57	210	0	0.4	-0.2	0.5
41972	99	P	SUR	35	-45	208	0	0.4	0.1	0.4
41999	99	P	SUR	27	-55	177	0	0.5	0.2	0.5
42059	99	P	SUR	15	-68	209	0	0.4	0.7	0.8
42060	99	P	SUR	16	-63	208	0	0.3	0.1	0.3
42085	99	P	SUR	18	-67	183	0	0.3	-0.6	0.6
44024	99	P	SUR	42	-66	122	0	0.5	-0.6	0.8
44027	99	P	SUR	44	-67	210	0	0.6	-0.4	0.8
44032	99	P	SUR	44	-69	193	0	0.5	-0.5	0.7
44034	99	P	SUR	44	-68	196	0	0.6	-0.4	0.7
44037	99	P	SUR	44	-68	178	0	0.6	-0.1	0.6
44137	99	P	SUR	42	-62	200	0	0.5	-0.1	0.5
44139	99	P	SUR	44	-57	205	0	0.4	0.0	0.4
44141	99	P	SUR	43	-58	203	0	0.4	-0.1	0.4
44150	99	P	SUR	43	-64	198	0	0.5	0.0	0.5
44251	99	P	SUR	46	-53	198	0	0.6	0.3	0.6
44258	99	P	SUR	45	-63	207	0	0.6	-0.3	0.7
44514	99	P	SUR	46	-44	207	0	0.7	0.6	0.9
44516	99	P	SUR	39	-56	175	0	0.4	0.0	0.4
44546	99	P	SUR	48	-43	210	0	0.5	-0.3	0.6
44549	99	P	SUR	55	-29	91	2	3.5	-0.6	3.5
44550	99	P	SUR	51	-26	209	0	0.5	0.2	0.6
44551	99	P	SUR	43	-22	210	0	0.3	-0.1	0.4
44554	99	P	SUR	44	-53	210	0	0.7	0.4	0.8
44602	99	P	SUR	56	-40	210	0	0.6	-0.1	0.6
44603	99	P	SUR	55	-11	109	0	0.4	-0.3	0.5
44605	99	P	SUR	50	-32	210	0	0.5	-0.4	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44606	99	P	SUR	33	-41	210	0	0.4	-0.3	0.4
44607	99	P	SUR	44	-25	182	3	3.8	-0.9	3.9
44609	99	P	SUR	45	-49	146	8	0.4	-0.4	0.6
44611	99	P	SUR	49	-27	210	0	0.4	-0.2	0.4
44613	99	P	SUR	42	-47	210	0	0.5	-0.2	0.5
44616	99	P	SUR	65	4	210	0	0.5	-0.2	0.5
44617	99	P	SUR	44	-46	158	0	0.5	0.2	0.5
44623	99	P	SUR	56	-16	8	0	0.3	-0.5	0.6
44624	99	P	SUR	48	-27	210	0	0.5	-0.2	0.5
44627	99	P	SUR	47	-3	83	0	0.7	-0.3	0.7
44690	99	P	SUR	63	-60	210	0	0.6	-0.2	0.7
44691	99	P	SUR	61	-64	210	36	2.8	0.2	2.8
44723	99	P	SUR	60	-12	188	0	0.4	0.3	0.5
44724	99	P	SUR	54	-25	210	0	0.4	-0.4	0.6
44725	99	P	SUR	32	-15	210	0	1.2	-0.3	1.2
44726	99	P	SUR	49	-9	210	0	0.5	-0.5	0.7
44728	99	P	SUR	51	-5	41	0	2.8	0.4	2.8
44730	99	P	SUR	51	-13	210	0	2.4	0.5	2.5
44740	99	P	SUR	33	-34	210	0	0.3	-0.1	0.3
44741	99	P	SUR	38	-29	210	0	0.3	0.2	0.3
44746	99	P	SUR	61	3	19	0	0.2	-0.2	0.3
44760	99	P	SUR	54	-13	210	0	0.4	-0.2	0.5
44762	99	P	SUR	51	-16	183	0	0.5	-0.1	0.5
44763	99	P	SUR	55	-24	210	0	0.4	0.0	0.4
44764	99	P	SUR	44	-46	210	0	0.5	-0.3	0.6
44765	99	P	SUR	44	-47	210	0	0.6	-0.2	0.7
44767	99	P	SUR	32	-26	210	0	0.3	0.0	0.3
44769	99	P	SUR	35	-66	210	0	0.3	-0.1	0.3
44770	99	P	SUR	47	-30	210	0	0.5	0.1	0.5
44771	99	P	SUR	55	-30	210	0	0.5	-0.2	0.6
44773	99	P	SUR	39	-48	210	0	0.4	0.1	0.4
44774	99	P	SUR	48	-8	210	0	1.0	0.2	1.0
44775	99	P	SUR	53	-21	210	0	0.4	-0.4	0.6
44777	99	P	SUR	54	-13	34	0	0.6	-0.6	0.8
44778	99	P	SUR	41	-11	207	0	0.3	-0.4	0.5
44780	99	P	SUR	58	-11	7	0	0.2	0.2	0.3
44863	99	P	SUR	40	-41	210	0	0.5	0.1	0.5
44865	99	P	SUR	36	-20	210	0	0.9	0.9	1.3
44868	99	P	SUR	38	-43	207	0	0.4	0.1	0.4
44869	99	P	SUR	31	-24	210	0	0.3	0.3	0.4
44870	99	P	SUR	41	-35	210	0	0.4	-0.1	0.4
44871	99	P	SUR	68	15	6	0	0.2	-0.1	0.3
44872	99	P	SUR	45	-8	132	0	1.1	0.8	1.3

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44873	99	P	SUR	46	-8	210	0	0.6	0.5	0.8
44874	99	P	SUR	48	-40	210	0	0.4	0.1	0.4
44875	99	P	SUR	33	-28	210	0	0.7	0.6	0.9
44924	99	P	SUR	44	-36	206	0	0.6	0.4	0.8
44926	99	P	SUR	33	-54	40	0	0.5	0.1	0.5
47501	99	P	SUR	81	-2	83	1	1.7	-0.7	1.9
47564	99	P	SUR	82	-10	210	0	0.7	-0.5	0.8
47565	99	P	SUR	82	-5	210	0	0.6	-0.2	0.6
48520	99	P	SUR	76	-19	210	0	0.6	0.2	0.7
48533	99	P	SUR	83	-7	90	0	0.6	-0.3	0.6
48662	99	P	SUR	54	-38	210	0	0.6	0.5	0.7
48663	99	P	SUR	54	-12	104	0	0.4	-0.1	0.4
61001	99	P	SUR	43	8	181	1	0.8	-0.5	0.9
61002	99	P	SUR	42	5	184	0	0.6	-0.3	0.6
61523	99	P	SUR	42	8	206	0	0.7	-0.2	0.7
61687	99	P	SUR	44	33	63	0	0.6	0.5	0.8
61688	99	P	SUR	44	33	63	0	0.5	0.5	0.8
61690	99	P	SUR	44	33	63	0	0.6	0.4	0.7
61691	99	P	SUR	42	31	207	0	0.3	0.3	0.5
62001	99	P	SUR	45	-5	210	0	0.4	0.3	0.5
62023	99	P	SUR	51	-8	210	0	0.8	0.1	0.8
62027	99	P	SUR	49	-2	88	0	0.5	0.0	0.5
62029	99	P	SUR	49	-12	132	0	0.4	0.0	0.4
62050	99	P	SUR	50	-4	207	0	0.6	0.2	0.6
62081	99	P	SUR	51	-13	173	0	0.8	-0.2	0.8
62082	99	P	SUR	55	6	1	0	0.0	-0.5	0.4
62086	99	P	SUR	55	6	12	0	0.2	-0.2	0.3
62091	99	P	SUR	53	-5	207	0	0.6	-0.2	0.6
62093	99	P	SUR	55	-10	210	2	0.6	-0.2	0.6
62094	99	P	SUR	52	-7	210	0	0.5	0.0	0.5
62095	99	P	SUR	53	-16	199	4	0.7	0.1	0.7
62102	99	P	SUR	58	2	210	0	0.4	-0.1	0.4
62103	99	P	SUR	50	-3	174	0	0.5	0.4	0.6
62104	99	P	SUR	57	1	210	0	0.4	-0.2	0.4
62105	99	P	SUR	55	-13	210	0	0.4	0.1	0.4
62107	99	P	SUR	50	-6	210	0	0.4	0.4	0.5
62111	99	P	SUR	58	0	210	0	0.5	0.2	0.5
62112	99	P	SUR	58	0	210	0	0.4	0.2	0.4
62113	99	P	SUR	58	0	210	0	0.6	0.2	0.7
62114	99	P	SUR	58	0	210	0	0.5	0.0	0.5
62116	99	P	SUR	58	1	210	0	0.4	-0.1	0.4
62117	99	P	SUR	58	0	210	0	0.3	0.1	0.3
62118	99	P	SUR	58	1	122	0	0.3	-0.5	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62119	99	P	SUR	57	2	210	0	0.5	0.3	0.6
62120	99	P	SUR	56	2	210	0	0.6	0.0	0.6
62121	99	P	SUR	54	3	210	0	0.4	0.3	0.5
62122	99	P	SUR	57	2	209	0	0.5	0.1	0.5
62123	99	P	SUR	56	2	210	0	0.4	-0.1	0.4
62127	99	P	SUR	54	1	203	0	0.3	0.3	0.5
62128	99	P	SUR	59	1	209	0	0.5	0.1	0.5
62129	99	P	SUR	58	0	203	0	0.6	0.1	0.6
62131	99	P	SUR	54	1	210	0	0.3	0.3	0.4
62132	99	P	SUR	56	2	209	0	0.5	0.2	0.5
62133	99	P	SUR	57	1	210	0	0.4	0.0	0.4
62134	99	P	SUR	58	1	209	0	0.3	0.2	0.4
62140	99	P	SUR	57	1	210	0	0.5	0.0	0.5
62142	99	P	SUR	53	2	210	0	0.3	0.1	0.3
62143	99	P	SUR	58	2	210	0	0.7	0.4	0.8
62144	99	P	SUR	53	2	210	0	0.6	0.5	0.8
62145	99	P	SUR	53	3	210	0	0.4	0.6	0.7
62146	99	P	SUR	57	2	210	0	0.5	0.1	0.5
62149	99	P	SUR	54	1	210	0	0.4	0.5	0.6
62150	99	P	SUR	54	1	210	0	0.7	0.2	0.8
62152	99	P	SUR	57	2	210	0	0.5	0.6	0.7
62153	99	P	SUR	57	2	209	0	0.4	0.1	0.4
62154	99	P	SUR	56	2	210	0	0.4	-0.1	0.4
62155	99	P	SUR	58	1	118	0	0.4	0.3	0.5
62163	99	P	SUR	48	-8	210	0	0.4	0.3	0.5
62164	99	P	SUR	57	1	210	0	0.4	0.2	0.4
62165	99	P	SUR	54	1	210	0	0.5	0.4	0.6
62170	99	P	SUR	51	2	200	0	0.5	0.5	0.7
62301	99	P	SUR	52	-5	210	0	0.4	0.2	0.4
62303	99	P	SUR	52	-5	204	0	0.8	0.1	0.8
62304	99	P	SUR	51	2	194	1	0.5	0.4	0.6
62305	99	P	SUR	50	0	206	0	0.8	0.3	0.9
62386	99	P	SUR	55	6	1	0	0.0	-0.3	0.3
62442	99	P	SUR	49	-17	208	0	1.0	0.0	1.0
62503	99	P	SUR	47	-8	183	0	1.3	0.4	1.4
62504	99	P	SUR	54	-18	116	0	0.9	0.5	1.0
62507	99	P	SUR	49	-16	210	0	0.4	0.2	0.4
62508	99	P	SUR	45	-11	208	0	0.7	0.6	0.9
62512	99	P	SUR	36	-23	210	0	0.3	0.1	0.3
62514	99	P	SUR	62	-19	210	0	0.5	-0.2	0.6
62515	99	P	SUR	51	-14	210	0	0.4	-0.1	0.4
62516	99	P	SUR	37	-17	210	0	0.3	0.1	0.4
62520	99	P	SUR	21	-49	210	0	0.3	0.2	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62522	99	P	SUR	46	-8	210	0	0.4	-0.2	0.4
62533	99	P	SUR	51	-24	6	0	0.2	0.1	0.2
62534	99	P	SUR	52	-30	210	0	0.4	-0.3	0.5
62553	99	P	SUR	61	-27	210	0	1.4	0.2	1.4
62556	99	P	SUR	25	-35	210	0	0.8	0.0	0.8
62678	99	P	SUR	58	-46	210	0	1.4	-0.2	1.4
62680	99	P	SUR	57	-26	210	0	0.4	-0.3	0.5
62681	99	P	SUR	63	-60	210	0	0.6	-0.3	0.7
62684	99	P	SUR	75	11	210	0	0.5	-0.4	0.7
62686	99	P	SUR	59	-14	210	0	0.7	-0.3	0.8
62687	99	P	SUR	61	-5	210	0	0.4	-0.1	0.4
62695	99	P	SUR	44	-16	210	0	0.3	0.0	0.3
62712	99	P	SUR	42	-24	210	0	0.4	0.2	0.4
62713	99	P	SUR	34	-25	207	0	0.2	0.1	0.3
62714	99	P	SUR	34	-29	207	0	0.3	0.1	0.3
63055	99	P	SUR	61	2	210	0	0.4	0.0	0.4
63056	99	P	SUR	60	2	209	0	0.7	0.1	0.7
63057	99	P	SUR	59	2	210	0	0.3	-0.4	0.5
63101	99	P	SUR	61	1	210	0	0.6	-0.1	0.6
63103	99	P	SUR	61	1	210	0	0.5	-0.6	0.8
63104	99	P	SUR	61	2	210	0	0.5	-0.3	0.6
63105	99	P	SUR	61	2	7	0	0.3	-0.1	0.3
63107	99	P	SUR	61	2	210	0	0.4	-0.3	0.5
63108	99	P	SUR	61	2	210	0	0.5	-0.1	0.5
63109	99	P	SUR	60	2	189	0	0.3	-0.3	0.4
63110	99	P	SUR	60	2	210	0	0.4	0.4	0.6
63112	99	P	SUR	61	1	210	0	0.4	-0.5	0.6
63113	99	P	SUR	61	2	32	0	0.7	0.2	0.7
63114	99	P	SUR	61	2	210	0	0.4	-0.4	0.5
63115	99	P	SUR	62	1	209	0	0.6	0.1	0.6
63117	99	P	SUR	61	1	210	0	0.7	0.2	0.7
63119	99	P	SUR	58	0	16	0	1.2	-0.5	1.3
63544	99	P	SUR	85	15	210	0	0.5	-0.1	0.5
63552	99	P	SUR	78	8	127	3	3.5	-1.7	3.9
63635	99	P	SUR	76	10	119	0	4.1	-2.3	4.7
63636	99	P	SUR	80	10	210	5	1.6	0.1	1.6
63639	99	P	SUR	72	29	210	0	0.5	-0.2	0.5
63640	99	P	SUR	73	16	210	0	0.9	0.3	1.0
63642	99	P	SUR	73	1	210	0	0.6	0.0	0.6
64041	99	P	SUR	61	-3	209	0	0.5	-0.1	0.5
64045	99	P	SUR	59	-12	210	0	0.4	0.0	0.4
64046	99	P	SUR	61	-4	210	0	0.8	0.1	0.8
64516	99	P	SUR	71	10	210	0	0.5	-0.2	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
64517	99	P	SUR	65	-53	210	2	1.5	-0.3	1.5
64518	99	P	SUR	72	11	210	0	0.5	-0.2	0.6
64519	99	P	SUR	63	-8	210	0	0.5	-0.2	0.5
64520	99	P	SUR	66	-2	210	0	0.6	-0.1	0.6
64521	99	P	SUR	73	7	210	0	0.6	-0.1	0.6
64522	99	P	SUR	63	-3	210	0	0.5	-0.1	0.5
64525	99	P	SUR	65	-7	210	0	0.6	-0.2	0.6
64526	99	P	SUR	67	-7	210	0	0.6	0.0	0.6
64527	99	P	SUR	60	-49	210	0	0.9	-0.3	0.9
64532	99	P	SUR	83	2	210	0	0.6	-0.2	0.7
64606	99	P	SUR	67	-7	210	0	0.5	-0.2	0.5
64607	99	P	SUR	66	-1	210	0	0.7	0.0	0.7
64609	99	P	SUR	67	0	210	0	0.7	-0.1	0.7
64610	99	P	SUR	63	5	177	12	1.7	-0.6	1.8
64611	99	P	SUR	62	-24	140	1	2.8	-0.6	2.9
64613	99	P	SUR	63	-9	210	0	0.5	0.2	0.5
64614	99	P	SUR	61	-21	210	0	0.5	0.0	0.5
64615	99	P	SUR	61	-11	127	0	0.5	0.3	0.6
64616	99	P	SUR	63	-17	127	0	0.5	0.2	0.6
64619	99	P	SUR	64	-18	119	7	1.8	-0.8	2.0
64620	99	P	SUR	55	-40	210	1	1.9	-0.2	1.9
64621	99	P	SUR	66	-7	210	0	0.6	0.0	0.6
64622	99	P	SUR	67	-11	210	0	0.6	-0.1	0.6
64623	99	P	SUR	72	2	210	0	0.9	0.4	1.0
64662	99	P	SUR	68	-18	8	0	0.3	-0.7	0.8
64663	99	P	SUR	68	-13	8	0	0.8	0.1	0.8
64664	99	P	SUR	68	-15	8	0	0.5	-0.5	0.7
64665	99	P	SUR	66	-9	8	0	0.9	-0.2	0.9
64666	99	P	SUR	66	-10	8	0	0.5	0.0	0.5
65592	99	P	SUR	64	-36	210	0	0.8	-0.1	0.8
65594	99	P	SUR	71	-65	56	0	1.8	-0.3	1.8

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                : NOV 2013
                   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
08559	99	SPEED	SUR	37	-9	4	0	0	0.5	4.9	4.9
13001	99	SPEED	SUR	11	-23	111	0	0	1.1	0.8	1.3
13002	99	SPEED	SUR	20	-23	49	0	0	1.1	0.4	1.2
13008	99	SPEED	SUR	15	-38	96	0	0	1.0	0.2	1.0
41040	99	SPEED	SUR	15	-53	208	0	0	1.3	0.3	1.3
41041	99	SPEED	SUR	14	-46	208	0	0	1.1	0.1	1.1
41044	99	SPEED	SUR	22	-59	209	0	0	1.3	-0.3	1.3
41046	99	SPEED	SUR	24	-68	208	0	0	1.2	0.0	1.2
41048	99	SPEED	SUR	32	-70	208	0	0	1.0	-0.1	1.0
41049	99	SPEED	SUR	28	-63	209	0	0	1.3	0.1	1.3
41051	99	SPEED	SUR	18	-65	191	0	0	1.7	-1.1	2.0
41052	99	SPEED	SUR	18	-65	196	0	0	1.3	-0.8	1.5
41053	99	SPEED	SUR	19	-66	191	0	0	1.8	0.0	1.8
41056	99	SPEED	SUR	18	-66	194	0	0	1.4	-0.4	1.4
41139	99	SPEED	SUR	20	-38	132	0	0	1.9	-0.3	1.9
41300	99	SPEED	SUR	16	-58	148	0	0	1.1	-1.2	1.6
42059	99	SPEED	SUR	15	-68	209	0	0	1.1	0.3	1.2
42060	99	SPEED	SUR	16	-63	208	0	0	1.2	0.0	1.2
42085	99	SPEED	SUR	18	-67	184	0	0	1.3	0.6	1.4
44024	99	SPEED	SUR	42	-66	185	0	0	1.6	-0.6	1.7
44027	99	SPEED	SUR	44	-67	210	0	0	1.4	0.4	1.5
44032	99	SPEED	SUR	44	-69	193	0	0	1.5	0.0	1.5
44033	99	SPEED	SUR	44	-69	167	0	0	1.5	0.7	1.7
44034	99	SPEED	SUR	44	-68	196	0	0	1.4	0.0	1.4
44037	99	SPEED	SUR	44	-68	178	0	0	1.6	0.0	1.6
44137	99	SPEED	SUR	42	-62	206	0	0	1.6	0.6	1.7
44139	99	SPEED	SUR	44	-57	207	0	0	1.5	-0.1	1.5
44141	99	SPEED	SUR	43	-58	204	0	0	1.7	0.2	1.7
44150	99	SPEED	SUR	43	-64	203	0	0	1.5	-0.3	1.6
44251	99	SPEED	SUR	46	-53	199	0	0	1.4	-0.7	1.6
44258	99	SPEED	SUR	45	-63	209	0	0	1.5	0.2	1.5
61001	99	SPEED	SUR	43	8	179	0	0	2.5	0.1	2.5
61002	99	SPEED	SUR	42	5	185	0	1	1.8	0.8	1.9
62001	99	SPEED	SUR	45	-5	210	0	0	1.2	0.3	1.3

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
62023	99	SPEED	SUR	51	-8	208	0	0	1.5	-0.3	1.5
62027	99	SPEED	SUR	49	-2	89	0	0	1.3	0.2	1.3
62029	99	SPEED	SUR	49	-12	132	0	0	1.6	-0.7	1.8
62050	99	SPEED	SUR	50	-4	207	0	0	1.3	0.3	1.3
62081	99	SPEED	SUR	51	-13	172	0	0	1.3	-0.2	1.3
62086	99	SPEED	SUR	55	6	15	1	7	0.8	0.3	0.8
62091	99	SPEED	SUR	53	-5	207	0	0	1.4	-0.8	1.6
62093	99	SPEED	SUR	55	-10	210	0	0	1.4	-0.7	1.6
62094	99	SPEED	SUR	52	-7	210	0	0	1.3	0.2	1.3
62102	99	SPEED	SUR	58	2	210	0	0	1.4	-0.6	1.5
62103	99	SPEED	SUR	50	-3	174	0	0	1.8	0.9	2.0
62104	99	SPEED	SUR	57	1	210	0	0	1.3	-0.7	1.5
62105	99	SPEED	SUR	55	-13	210	0	0	1.1	-0.3	1.2
62107	99	SPEED	SUR	50	-6	210	0	0	1.6	0.3	1.6
62111	99	SPEED	SUR	58	0	210	0	0	1.6	-0.4	1.7
62112	99	SPEED	SUR	58	0	210	0	0	2.2	-1.5	2.7
62113	99	SPEED	SUR	58	0	210	0	0	1.5	-0.7	1.6
62114	99	SPEED	SUR	58	0	210	0	0	1.4	-0.2	1.4
62116	99	SPEED	SUR	58	1	210	0	0	1.4	-0.9	1.7
62117	99	SPEED	SUR	58	0	210	0	0	1.2	-0.6	1.4
62118	99	SPEED	SUR	58	1	122	0	0	1.2	-0.6	1.4
62119	99	SPEED	SUR	57	2	210	0	0	1.4	-0.3	1.5
62120	99	SPEED	SUR	56	2	210	0	0	1.2	-0.2	1.2
62121	99	SPEED	SUR	54	3	9	0	0	0.8	-0.5	1.0
62122	99	SPEED	SUR	57	2	209	0	0	1.3	-0.4	1.4
62123	99	SPEED	SUR	56	2	210	0	0	1.3	0.2	1.3
62128	99	SPEED	SUR	59	1	209	0	0	1.3	0.0	1.3
62129	99	SPEED	SUR	58	0	203	0	0	1.4	-0.9	1.6
62131	99	SPEED	SUR	54	1	210	0	0	1.5	-2.0	2.5
62132	99	SPEED	SUR	56	2	209	0	0	2.2	-1.9	2.9
62133	99	SPEED	SUR	57	1	210	0	0	1.2	-0.8	1.4
62134	99	SPEED	SUR	58	1	209	0	0	1.4	-1.0	1.7
62142	99	SPEED	SUR	53	2	210	0	0	1.4	-0.3	1.4
62143	99	SPEED	SUR	58	2	210	0	0	2.3	-1.7	2.9
62144	99	SPEED	SUR	53	2	210	0	0	1.5	-0.6	1.6
62145	99	SPEED	SUR	53	3	210	0	0	1.4	-0.9	1.6
62146	99	SPEED	SUR	57	2	210	0	0	3.5	-3.1	4.6
62149	99	SPEED	SUR	54	1	210	0	0	1.2	-0.1	1.2
62150	99	SPEED	SUR	54	1	210	0	0	2.6	-1.6	3.0
62152	99	SPEED	SUR	57	2	210	0	0	1.8	-1.6	2.4
62153	99	SPEED	SUR	57	2	209	0	0	2.1	-0.9	2.3

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
62154	99	SPEED	SUR	56	2	210	0	0	1.2	-0.8	1.5
62155	99	SPEED	SUR	58	1	118	0	0	1.3	-0.4	1.3
62163	99	SPEED	SUR	48	-8	210	0	0	1.1	0.0	1.1
62164	99	SPEED	SUR	57	1	210	0	0	1.6	-1.5	2.2
62165	99	SPEED	SUR	54	1	210	0	0	1.5	-1.2	2.0
62170	99	SPEED	SUR	51	2	199	1	0	1.9	0.4	1.9
62301	99	SPEED	SUR	52	-5	210	0	0	1.2	0.6	1.3
62303	99	SPEED	SUR	52	-5	36	0	0	1.2	1.2	1.7
62304	99	SPEED	SUR	51	2	192	0	0	1.9	1.6	2.4
62305	99	SPEED	SUR	50	0	207	0	0	1.7	1.6	2.4
62386	99	SPEED	SUR	55	6	1	0	0	0.0	-0.8	0.8
62442	99	SPEED	SUR	49	-17	35	0	0	1.6	0.3	1.6
63055	99	SPEED	SUR	61	2	210	0	0	1.7	-2.4	2.9
63056	99	SPEED	SUR	60	2	209	0	0	1.3	-0.4	1.4
63057	99	SPEED	SUR	59	2	210	0	0	1.9	-0.7	2.0
63101	99	SPEED	SUR	61	1	210	0	0	1.4	-1.3	1.9
63103	99	SPEED	SUR	61	1	151	0	0	1.3	-1.0	1.6
63104	99	SPEED	SUR	61	2	209	0	0	1.4	-0.8	1.6
63105	99	SPEED	SUR	61	2	7	0	0	0.8	0.0	0.8
63106	99	SPEED	SUR	61	2	171	0	0	1.5	-0.9	1.7
63107	99	SPEED	SUR	61	2	210	0	0	1.5	-0.5	1.5
63108	99	SPEED	SUR	61	2	210	0	0	1.5	-0.2	1.6
63109	99	SPEED	SUR	60	2	185	0	0	1.6	-0.2	1.6
63110	99	SPEED	SUR	60	2	210	0	0	1.5	-1.2	1.9
63112	99	SPEED	SUR	61	1	210	0	0	1.3	-0.9	1.6
63113	99	SPEED	SUR	61	2	32	0	0	1.6	-0.4	1.7
63114	99	SPEED	SUR	61	2	210	0	0	1.6	-0.6	1.7
63115	99	SPEED	SUR	62	1	209	0	0	1.4	-0.8	1.6
63117	99	SPEED	SUR	61	1	136	0	0	1.7	-3.0	3.4
63119	99	SPEED	SUR	58	0	16	0	0	2.1	2.8	3.5
64041	99	SPEED	SUR	61	-3	208	0	0	1.4	-0.6	1.5
64045	99	SPEED	SUR	59	-12	210	0	0	1.5	0.1	1.5
64046	99	SPEED	SUR	61	-4	210	0	0	1.7	0.2	1.7
66021	99	SPEED	SUR	55	14	201	0	0	1.0	0.4	1.1
66022	99	SPEED	SUR	54	14	187	0	0	0.9	0.7	1.1
66024	99	SPEED	SUR	55	13	95	0	0	1.1	0.0	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 : NOV 2013
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
08559	99	DIRN	SUR	37	-9	4	0	0	12.2	23.6	26.6
13001	99	DIRN	SUR	11	-23	92	0	0	16.0	8.7	18.2
13002	99	DIRN	SUR	20	-23	39	0	0	28.3	11.5	30.5
13008	99	DIRN	SUR	15	-38	88	0	0	13.9	-2.2	14.1
41002	99	DIRN	SUR	32	-75	186	0	1	12.3	7.3	14.3
41008	99	DIRN	SUR	31	-81	173	0	0	14.5	8.4	16.8
41009	99	DIRN	SUR	29	-80	184	0	0	14.7	1.5	14.8
41012	99	DIRN	SUR	30	-81	181	0	0	20.5	5.2	21.1
41013	99	DIRN	SUR	33	-78	192	0	0	18.6	11.5	21.9
41024	99	DIRN	SUR	34	-79	113	0	0	19.1	0.8	19.1
41025	99	DIRN	SUR	35	-75	161	0	4	18.2	10.0	20.7
41029	99	DIRN	SUR	33	-80	108	0	0	23.0	-0.1	23.0
41033	99	DIRN	SUR	32	-80	119	0	0	18.6	1.7	18.7
41036	99	DIRN	SUR	34	-77	186	0	1	23.3	11.4	25.9
41037	99	DIRN	SUR	34	-77	114	0	0	23.2	2.2	23.3
41038	99	DIRN	SUR	34	-78	122	0	0	21.5	2.9	21.8
41040	99	DIRN	SUR	15	-53	198	0	1	13.0	0.6	13.0
41041	99	DIRN	SUR	14	-46	195	0	0	14.5	1.6	14.6
41044	99	DIRN	SUR	22	-59	171	0	0	14.9	1.8	15.0
41046	99	DIRN	SUR	24	-68	178	0	1	16.1	-3.9	16.6
41047	99	DIRN	SUR	28	-72	183	0	1	13.6	-0.2	13.6
41048	99	DIRN	SUR	32	-70	200	0	0	12.7	7.7	14.8
41049	99	DIRN	SUR	28	-63	194	0	1	14.6	8.6	17.0
41051	99	DIRN	SUR	18	-65	175	0	0	13.7	-7.4	15.5
41052	99	DIRN	SUR	18	-65	178	0	0	12.1	1.8	12.2
41053	99	DIRN	SUR	19	-66	137	0	3	21.7	-4.5	22.2
41056	99	DIRN	SUR	18	-66	169	0	0	15.2	4.9	16.0
41139	99	DIRN	SUR	20	-38	119	0	1	11.5	1.9	11.6
41300	99	DIRN	SUR	16	-58	126	0	1	11.0	0.6	11.0
42022	99	DIRN	SUR	28	-84	188	0	0	12.8	7.1	14.6
42036	99	DIRN	SUR	29	-85	199	0	0	10.3	3.8	11.0
42056	99	DIRN	SUR	20	-85	182	0	0	19.5	-5.8	20.3

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
42057	99	DIRN	SUR	17	-82	178	0	1	13.1	3.6	13.5
42058	99	DIRN	SUR	15	-75	183	0	0	9.5	-1.5	9.6
42059	99	DIRN	SUR	15	-68	205	0	0	12.8	-12.0	17.5
42060	99	DIRN	SUR	16	-63	181	0	0	13.6	-4.2	14.2
42085	99	DIRN	SUR	18	-67	149	0	1	19.3	0.2	19.3
44007	99	DIRN	SUR	44	-70	41	0	0	13.0	5.2	14.0
44013	99	DIRN	SUR	42	-71	185	0	0	14.0	2.2	14.2
44017	99	DIRN	SUR	41	-72	188	0	0	14.0	4.6	14.7
44020	99	DIRN	SUR	41	-70	54	0	0	17.3	-6.1	18.3
44022	99	DIRN	SUR	41	-74	66	0	0	10.2	1.2	10.3
44024	99	DIRN	SUR	42	-66	166	0	1	12.0	2.6	12.3
44027	99	DIRN	SUR	44	-67	195	0	0	15.3	0.1	15.3
44029	99	DIRN	SUR	43	-71	180	0	0	16.6	9.0	18.8
44030	99	DIRN	SUR	43	-70	166	0	0	15.6	8.6	17.8
44032	99	DIRN	SUR	44	-69	172	0	0	15.5	4.2	16.1
44033	99	DIRN	SUR	44	-69	139	0	0	14.6	3.4	15.0
44034	99	DIRN	SUR	44	-68	179	0	0	13.3	2.6	13.5
44037	99	DIRN	SUR	44	-68	166	0	0	12.2	3.2	12.6
44039	99	DIRN	SUR	41	-73	177	0	0	14.9	10.3	18.1
44040	99	DIRN	SUR	41	-74	133	0	0	12.7	7.0	14.5
44041	99	DIRN	SUR	37	-77	4	0	0	3.0	-0.6	3.1
44042	99	DIRN	SUR	38	-76	150	0	0	18.3	5.7	19.1
44043	99	DIRN	SUR	39	-76	141	0	0	15.1	-12.6	19.7
44057	99	DIRN	SUR	40	-76	74	0	0	14.5	0.9	14.5
44058	99	DIRN	SUR	38	-76	152	0	0	17.1	-11.5	20.6
44059	99	DIRN	SUR	37	-76	45	0	0	11.9	-23.8	26.6
44060	99	DIRN	SUR	41	-72	160	0	0	12.9	3.5	13.3
44061	99	DIRN	SUR	39	-77	3	0	0	5.9	-18.4	19.4
44062	99	DIRN	SUR	39	-76	161	0	0	20.6	-13.6	24.7
44063	99	DIRN	SUR	39	-76	157	0	0	16.4	-6.2	17.5
44064	99	DIRN	SUR	37	-76	160	0	1	15.8	1.3	15.8
44065	99	DIRN	SUR	40	-74	199	0	0	11.5	8.4	14.3
44066	99	DIRN	SUR	40	-73	199	0	0	12.1	2.8	12.4
44137	99	DIRN	SUR	42	-62	193	0	0	17.5	6.3	18.5
44139	99	DIRN	SUR	44	-57	192	0	0	12.5	11.4	16.9
44141	99	DIRN	SUR	43	-58	188	0	0	15.9	9.7	18.6
44150	99	DIRN	SUR	43	-64	177	0	0	16.3	9.9	19.1
44251	99	DIRN	SUR	46	-53	186	0	0	14.5	8.2	16.7
44258	99	DIRN	SUR	45	-63	182	0	0	10.3	2.5	10.6
45003	99	DIRN	SUR	45	-83	128	0	0	18.6	7.5	20.0
45005	99	DIRN	SUR	42	-82	187	0	0	11.0	12.0	16.2

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
45008	99	DIRN	SUR	44	-82	131	0	1	12.8	10.9	16.8
45012	99	DIRN	SUR	44	-77	202	0	0	13.2	9.0	16.0
45132	99	DIRN	SUR	43	-81	201	0	1	14.9	2.0	15.0
45135	99	DIRN	SUR	44	-77	201	0	0	11.3	5.6	12.7
45137	99	DIRN	SUR	46	-81	166	0	0	14.6	10.8	18.1
45142	99	DIRN	SUR	43	-79	186	0	0	13.1	-5.5	14.3
45143	99	DIRN	SUR	45	-81	103	0	1	21.5	-5.4	22.1
45147	99	DIRN	SUR	42	-83	190	0	0	11.9	-1.6	12.0
45149	99	DIRN	SUR	44	-82	170	0	0	10.6	-1.7	10.7
45151	99	DIRN	SUR	45	-79	163	0	0	12.4	-14.2	18.8
45154	99	DIRN	SUR	46	-83	13	0	0	13.1	-20.6	24.4
45159	99	DIRN	SUR	44	-79	185	0	0	15.9	18.2	24.2
45162	99	DIRN	SUR	45	-83	23	0	0	14.8	12.7	19.4
62001	99	DIRN	SUR	45	-5	206	0	0	12.2	2.4	12.4
62023	99	DIRN	SUR	51	-8	183	0	0	12.8	-4.5	13.5
62027	99	DIRN	SUR	49	-2	78	0	1	31.8	-2.6	31.9
62029	99	DIRN	SUR	49	-12	111	0	0	11.4	6.0	12.9
62050	99	DIRN	SUR	50	-4	195	0	0	14.7	-3.8	15.2
62081	99	DIRN	SUR	51	-13	154	0	0	13.3	3.4	13.8
62091	99	DIRN	SUR	53	-5	193	0	0	12.3	-1.0	12.4
62093	99	DIRN	SUR	55	-10	186	0	0	14.0	-0.9	14.0
62094	99	DIRN	SUR	52	-7	187	0	0	13.9	-1.6	13.9
62103	99	DIRN	SUR	50	-3	165	0	1	18.4	-0.9	18.4
62105	99	DIRN	SUR	55	-13	176	0	0	12.8	3.3	13.3
62107	99	DIRN	SUR	50	-6	191	0	0	16.7	-2.2	16.8
62111	99	DIRN	SUR	58	0	200	0	1	10.6	-6.5	12.5
62112	99	DIRN	SUR	58	0	203	0	1	10.1	1.2	10.2
62114	99	DIRN	SUR	58	0	206	0	0	11.1	6.3	12.8
62117	99	DIRN	SUR	58	0	205	0	0	9.6	9.1	13.2
62163	99	DIRN	SUR	48	-8	204	0	0	14.6	9.5	17.4
62301	99	DIRN	SUR	52	-5	167	0	0	12.2	3.9	12.8
62303	99	DIRN	SUR	52	-5	21	0	0	8.7	-4.9	10.0
62305	99	DIRN	SUR	50	0	189	0	1	14.4	4.6	15.1
62442	99	DIRN	SUR	49	-17	25	0	0	16.3	-13.4	21.1
63119	99	DIRN	SUR	58	0	16	0	13	24.8	-15.5	29.2
64041	99	DIRN	SUR	61	-3	200	0	0	10.3	8.1	13.1
64045	99	DIRN	SUR	59	-12	209	0	0	15.9	-1.4	15.9
64046	99	DIRN	SUR	61	-4	196	0	0	14.1	-1.8	14.2

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.