



# ECMWF Global Data Monitoring Report

**March 2016**

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

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### Summary of Revisions (in reverse order)

- Revision 28 (June 18) - Monitoring of SYNOP and SYNOP-SHIPs now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart.
- Revision 27 (Mar 13) - Monitoring of Radiosondes and ASAPs now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart. Tables 24 and 25 are also added to show the identifiers of these BUFR observations separately.
- Revision 26 (Feb 15) - Selection criteria for SHIPs are modified as per SOT-7/Doc.9.1.1. Different criteria applied to Manual and Automatic SHIPs.
- Revision 25 (Dec 14) - Coverage chart for ATOVS AMSU-A for NOAA\_16 removed
- 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 percentage of rejection.

## 1 Introduction

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

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

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

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

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

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

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

## **2 Data summary - History of events**

### **2.1 Radiosondes**

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

Ident	Time	Feb	Mar	Ident	Time	Feb	Mar
44292	(12)	29	1	01400	(12)	12	25
48615	(00)	23	1	03354	(12)	13	25
48615	(12)	22	1	20046	(00)	16	29
64458	(00)	17	0	20046	(12)	15	31
64458	(12)	19	0	21946	(00)	20	31
68098	(12)	17	0	21946	(12)	20	31
82900	(12)	14	0	24125	(00)	17	31
83229	(12)	28	6	24125	(12)	18	31
89009	(12)	28	3	24343	(00)	14	30
89571	(12)	23	1	24343	(12)	14	30
-	-	-	-	30309	(00)	19	30
-	-	-	-	30309	(12)	18	31
-	-	-	-	41169	(00)	13	31
-	-	-	-	41256	(12)	8	19
-	-	-	-	42339	(12)	14	30
-	-	-	-	42379	(00)	20	32
-	-	-	-	42809	(12)	0	31
-	-	-	-	42867	(12)	0	21
-	-	-	-	43014	(00)	8	23
-	-	-	-	43041	(00)	18	30
-	-	-	-	43128	(00)	14	29
-	-	-	-	43279	(12)	11	24
-	-	-	-	43311	(00)	16	29
-	-	-	-	43599	(12)	0	17
-	-	-	-	47155	(00)	5	29
-	-	-	-	47155	(12)	8	30
-	-	-	-	60390	(12)	0	31
-	-	-	-	60571	(12)	0	31
-	-	-	-	60680	(12)	0	31
-	-	-	-	71924	(12)	19	31
-	-	-	-	72251	(12)	20	31
-	-	-	-	72393	(00)	19	30
-	-	-	-	74004	(12)	19	32
-	-	-	-	76595	(12)	12	28
-	-	-	-	76644	(12)	0	28
-	-	-	-	78583	(12)	14	31
-	-	-	-	78988	(12)	3	29
-	-	-	-	82107	(00)	0	29
-	-	-	-	82107	(12)	11	31
-	-	-	-	82281	(00)	12	30
-	-	-	-	82411	(00)	0	28
-	-	-	-	83378	(00)	13	31
-	-	-	-	83378	(12)	13	31
-	-	-	-	83554	(00)	14	28
-	-	-	-	83554	(12)	15	31
-	-	-	-	87344	(00)	0	28
-	-	-	-	87344	(12)	0	28
-	-	-	-	91643	(00)	6	29
-	-	-	-	91680	(12)	19	31
-	-	-	-	96011	(00)	0	22
-	-	-	-	96011	(12)	0	19
-	-	-	-	96471	(00)	15	28
-	-	-	-	96471	(12)	14	28
-	-	-	-	96509	(00)	14	27
-	-	-	-	96805	(00)	0	30
-	-	-	-	96805	(12)	0	29

## 2.2 Drifting Buoys

Surface pressure observations from **1458** 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

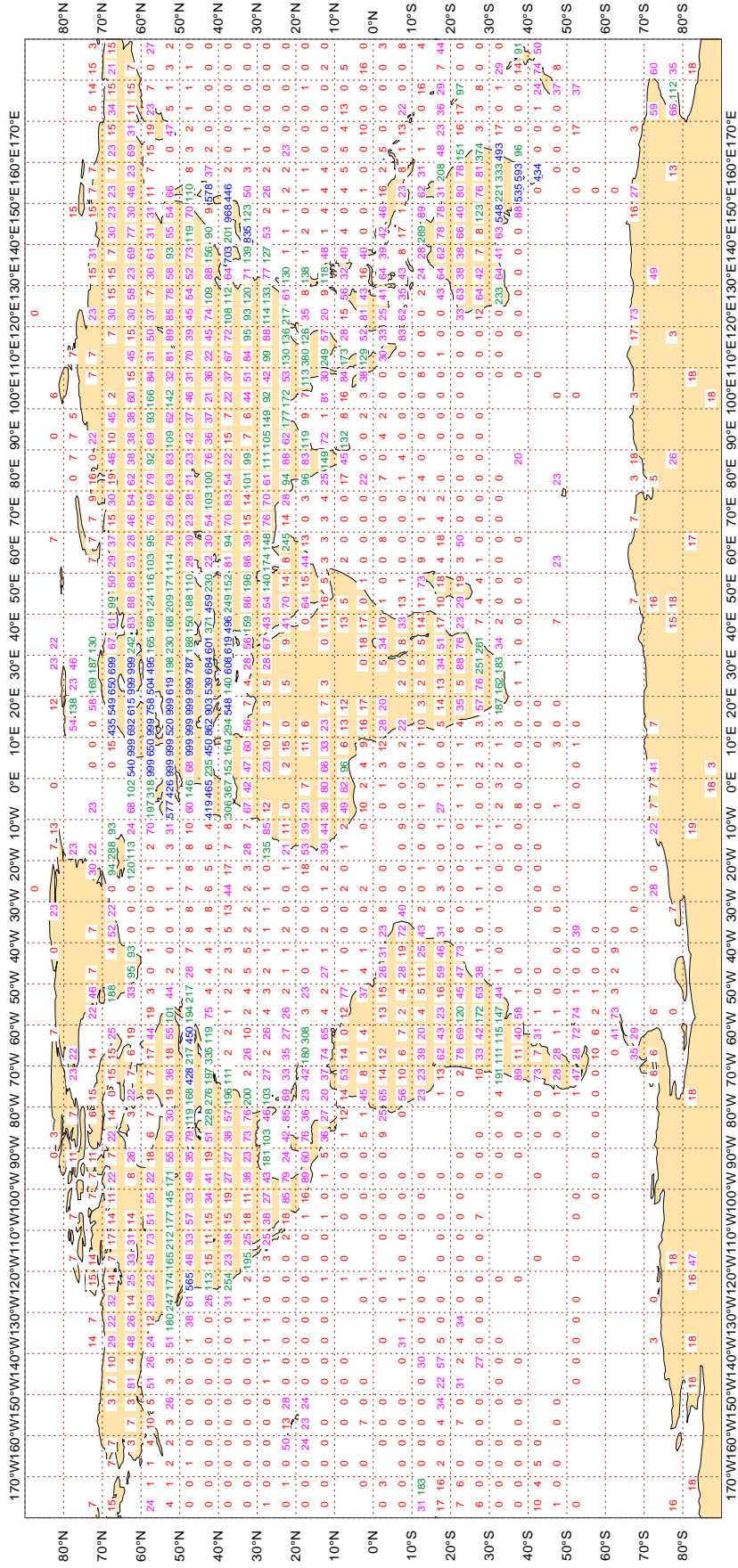
Table 12 provides quality statistics of aircraft wind observations stratified by airline carrier.



3.2.1 Figure 1 - Availability - SYNOP PRESSURE

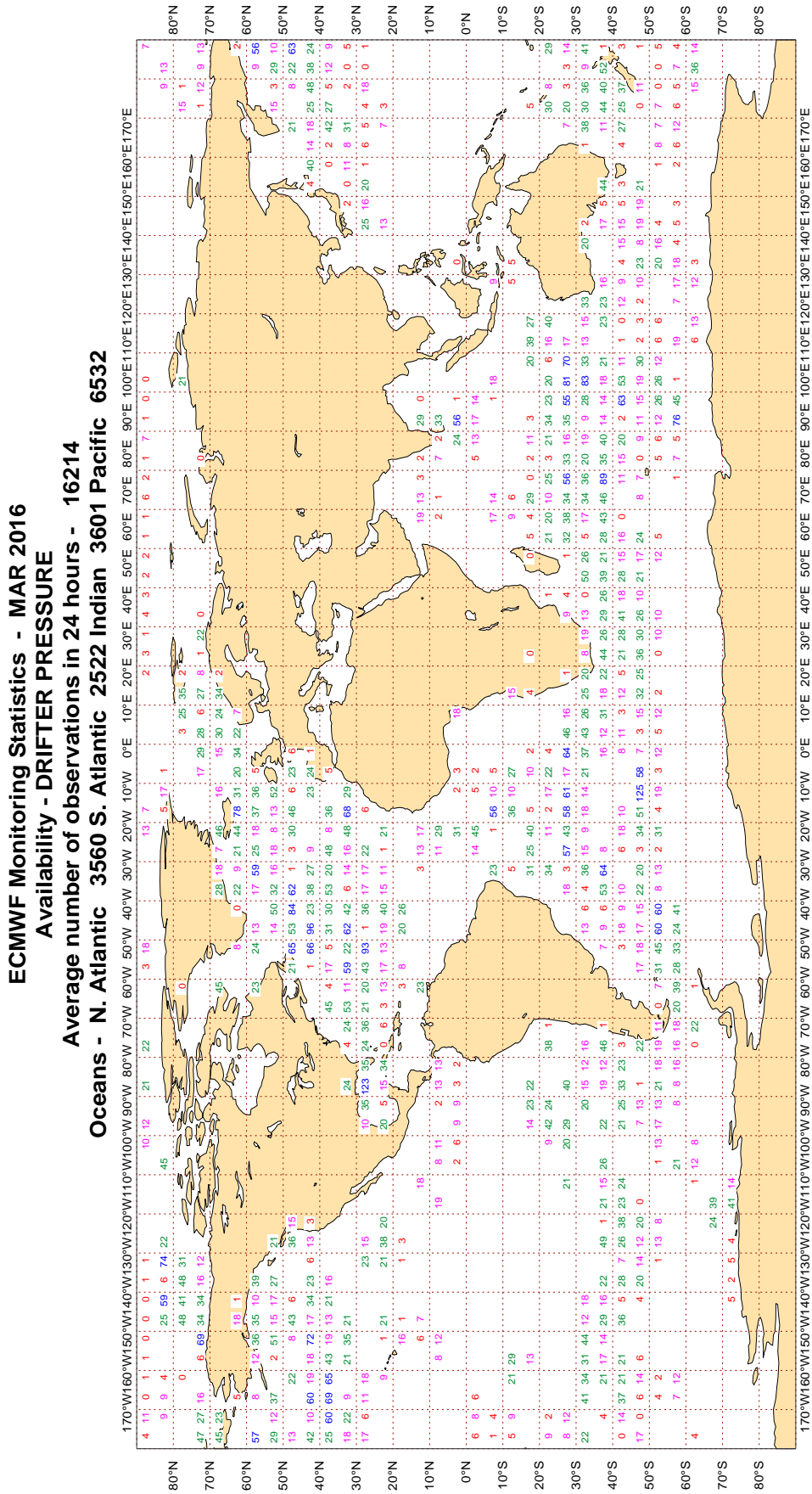
Figure 1

ECMWF Monitoring Statistics - MAR 2016  
 Availability - SYNOP/SHIP (manual, auto) pressure  
 Average number of observations in 24 hours - 96590  
 LAND - WMO Region I: 0 II: 0 III: 0 IV: 0  
 Region V: 0 VI: 0 Antarctic: 0  
 Oceans - N. Atlantic 52163 S. Atlantic 3219 Indian 11094 Pacific 30114



3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

Figure 2

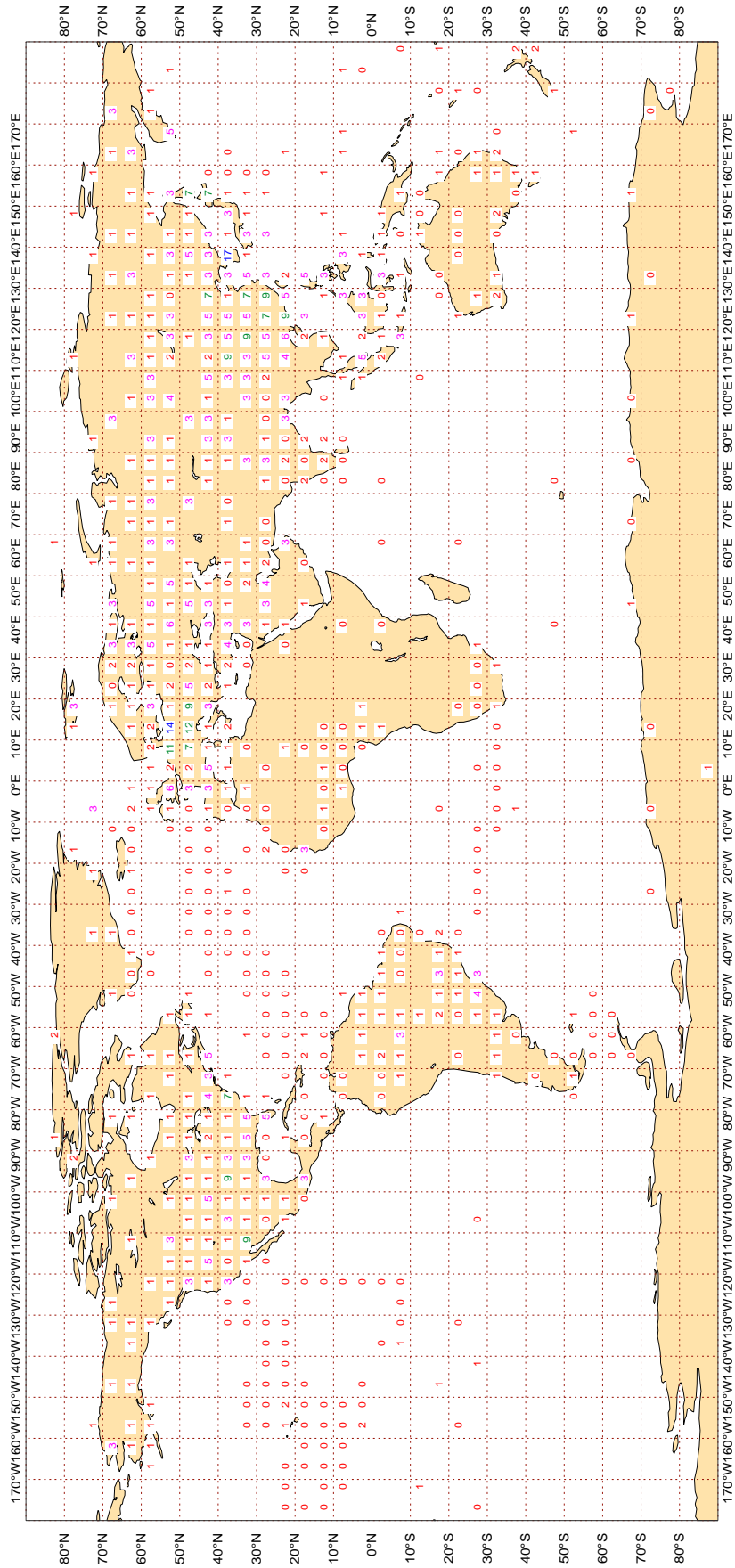


Magics 2.24.2 (64 bit)

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

Figure 3

ECMWF Monitoring Statistics - MAR 2016  
 Availability - TEMP 500 hPa Geopotential  
 Average number of observations in 24 hours - 1314  
 LAND - WMO Region I: 45 II: 506 III: 83 IV: 257  
 Region V: 134 VI: 260 Antarctic: 14  
 Oceans - N. Atlantic 8 S. Atlantic 2 Indian 0 Pacific 6



Magics 2.24.2 (64 bit)



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

Figure 4

ECMWF Monitoring Statistics - MAR 2016

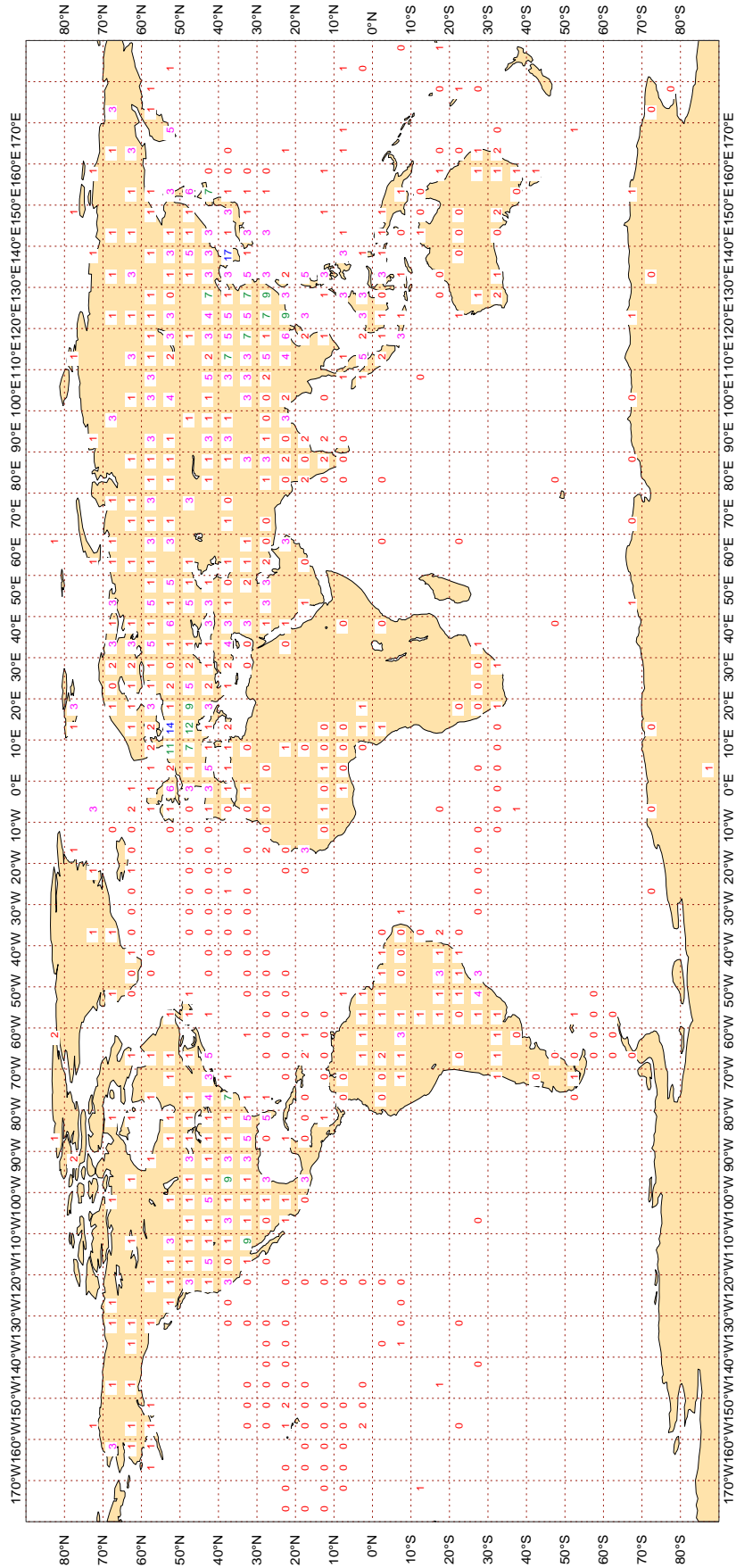
Availability - TEMP/PILOT 300 hPa wind

Average number of observations in 24 hours - 1277

LAND - WMO Region I: 45 II: 484 III: 82 IV: 254

Region V: 126 VI: 257 Antarctic: 14

Oceans - N. Atlantic 8 S. Atlantic 2 Indian 0 Pacific 5



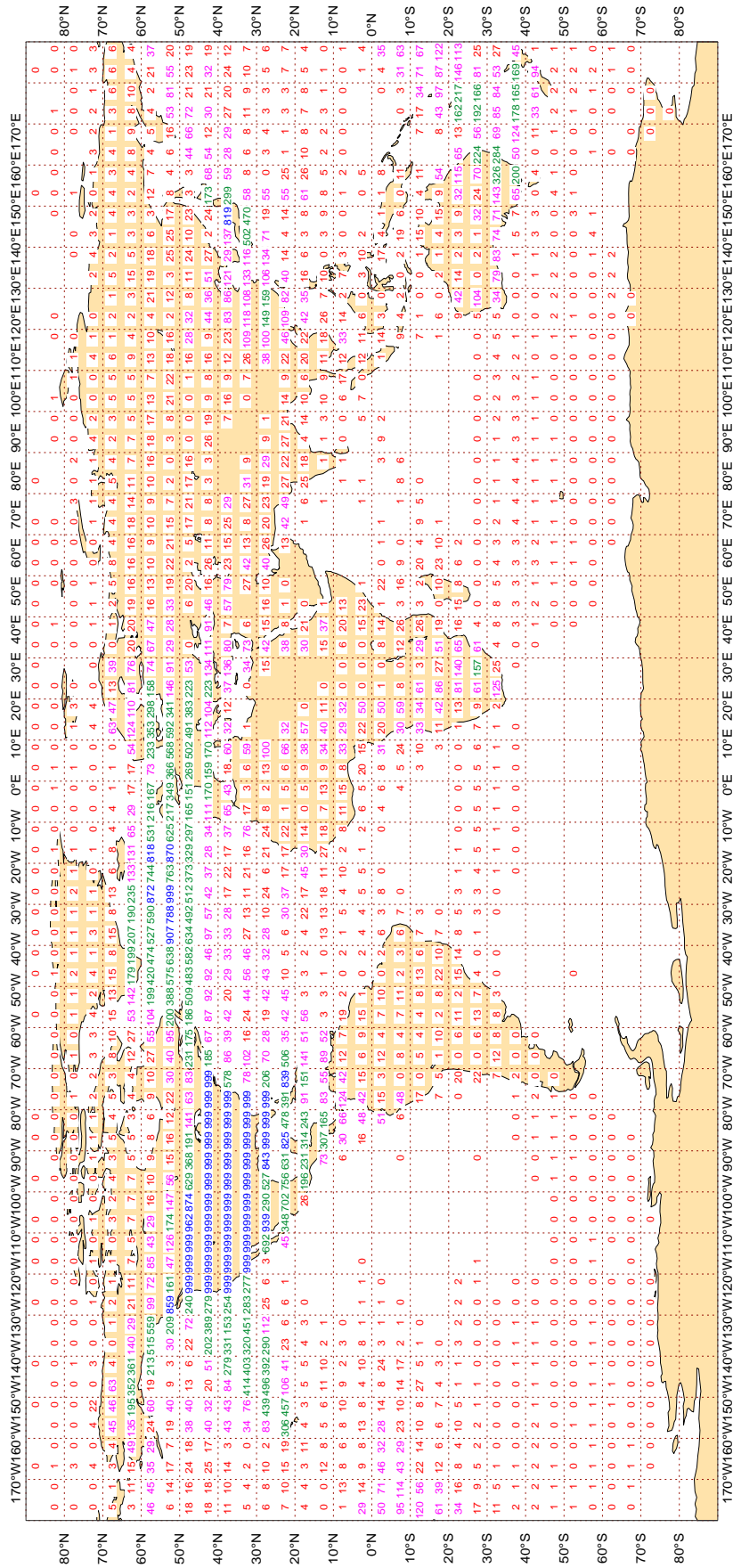
Magics 2.24.2 (64 bit)



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

Figure 5

ECMWF Monitoring Statistics - MAR 2016  
Availability - Aircraft winds 300-150 hPa  
Average number of observations in 24 hours - 215741



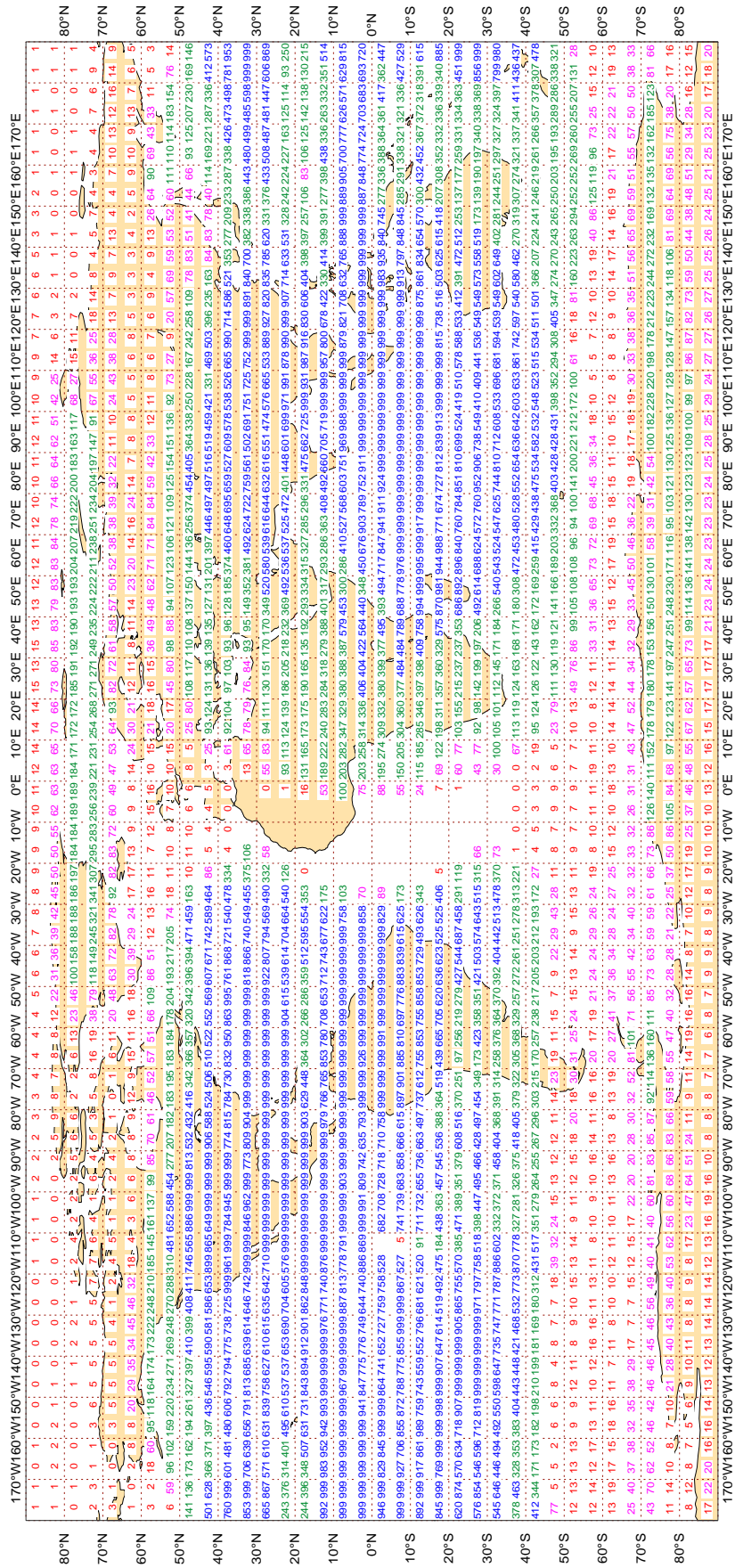
Magiccs 2.24.2 (64 bit)



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

Figure 6

ECMWF Monitoring Statistics - MAR 2016  
Availability - AMV winds 400-150 hPa  
Average number of observations in 24 hours - 860530

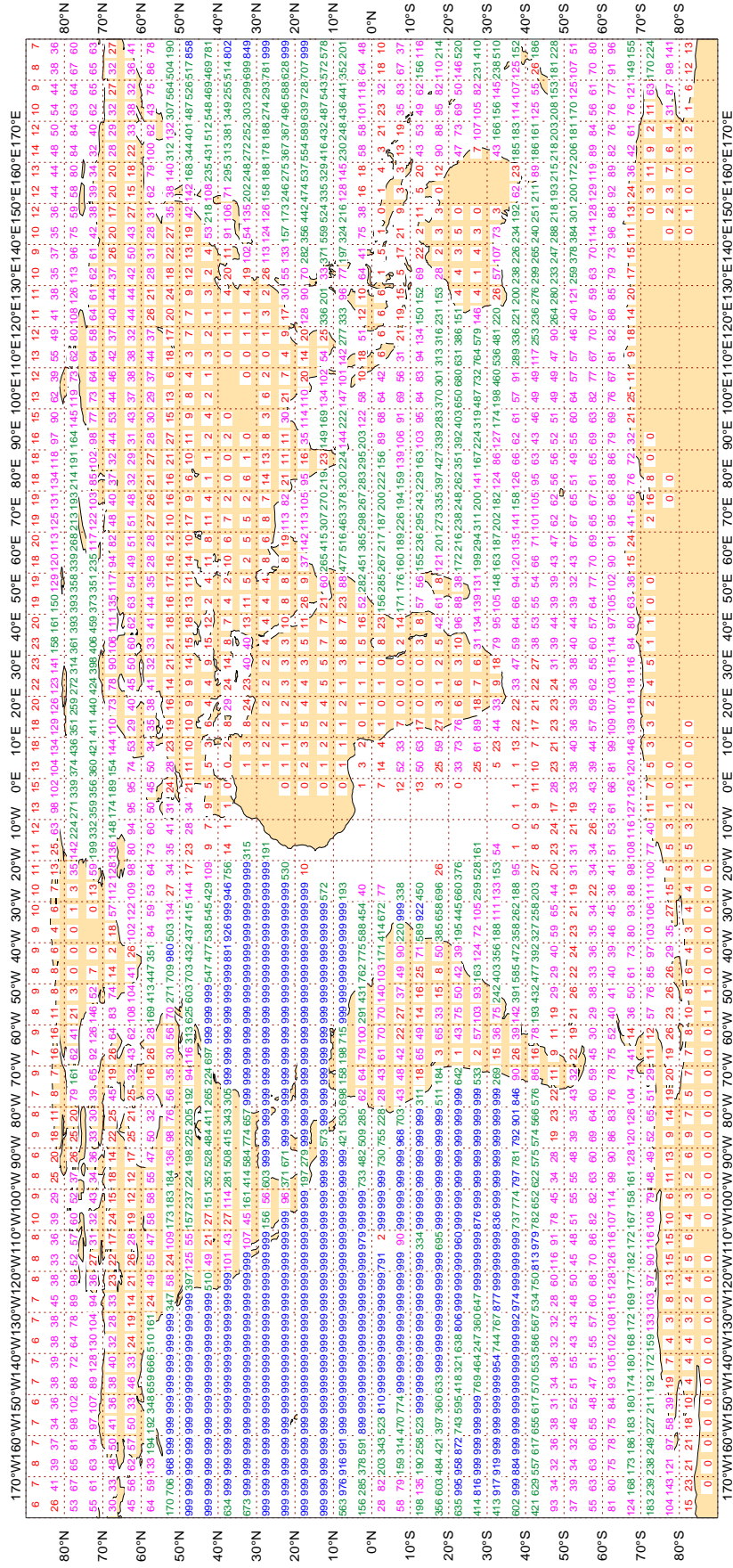


Majics 2.24.2 (64 bit)

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

Figure 7

ECMWF Monitoring Statistics - MAR 2016  
Availability - AMV winds 1000-700 hPa  
Average number of observations in 24 hours - 1103070



Magics 2.24.2 (64 bit)



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

Figure 8

ECMWF Monitoring Statistics - MAR 2016  
Availability - NOAA15 ATOVS : AMSU-A

Average number of observations in 24 hours - 332918

Table with 180 columns (representing 5-degree longitude bins from 170°W to 170°E) and 18 rows (representing 5-degree latitude bins from 80°N to 80°S). The table contains numerical data representing the average number of observations per 5-degree bin.

Magics 2.24.2 (64 bit)





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

Figure 9.1

ECMWF Monitoring Statistics - MAR 2016  
Availability - NOAA18 ATOVS : AMSU-A  
Average number of observations in 24 hours - 539157

Table with 180 columns representing longitude (170°W to 170°E) and 18 rows representing latitude (80°N to 80°S). The table contains numerical data representing the average number of observations in 24 hours for NOAA18 ATOVS AMSU-A in March 2016.

Magics 2.24.2 (64 bit)





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

Figure 9.3

ECMWF Monitoring Statistics - MAR 2016  
 Availability - METOP ATOVS : AMSU-A  
 Average number of observations in 24 hours - 438144

80°N	170°W	160°W	150°W	140°W	130°W	120°W	110°W	100°W	90°W	80°W	70°W	60°W	50°W	40°W	30°W	20°W	10°W	0°E	10°E	20°E	30°E	40°E	50°E	60°E	70°E	80°E	90°E	100°E	110°E	120°E	130°E	140°E	150°E	160°E	170°E													
80°N	41	46	45	44	44	43	42	41	41	40	38	38	37	37	37	38	38	40	41	44	44	46	48	50	52	51	52	53	54	55	55	54	55	54	54	54	52	51	53	50	49	49	48	48				
70°N	137	151	150	149	145	145	144	143	139	137	134	133	133	132	131	129	128	128	127	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125		
60°N	212	242	241	242	241	239	239	238	236	235	234	233	232	231	230	229	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228		
50°N	169	186	187	186	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	
40°N	165	187	188	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	
30°N	163	185	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	
20°N	161	184	185	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186
10°N	162	185	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	187	186	
0°N	136	145	141	138	132	127	125	126	129	127	125	126	129	133	133	135	147	173	210	201	205	181	178	184	186	183	178	181	185	187	183	183	183	183	183	183	183	183	183	183	183	183	183	183	183	183	183	183
10°S	112	124	123	122	121	121	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	
20°S	115	126	122	121	119	121	121	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122		
30°S	116	127	121	119	122	126	126	122	119	121	126	126	122	119	121	126	126	122	119	121	126	126	122	119	121	126	126	122	119	121	126	126	122	119	121	126	126	122	119	121	126	126	122	119	121	126	126	
40°S	115	126	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122		
50°S	114	126	125	127	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126		
60°S	115	127	127	129	130	130	128	127	127	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126		
70°S	117	130	130	131	133	132	131	130	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129		
80°S	128	142	142	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143			



Majics 2.24.2 (64 bit)

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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 AREA : GLOBAL  
 PERIOD : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 15(50), AND,  
 Manual (Automatic) ABSOLUTE BIAS >= 3(2) HPA, OR,  
 STANDARD DEVIATION >= 5(4) HPA, OR,  
 % GROSS ERROR >= 25(15)  
 (GROSS ERROR LIMIT = 15 HPA)

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

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	SD	BIAS	RMS
9V2737	99	P	SUR	17	0	0.9	-4.6	4.7
9V2781	99	P	SUR	30	0	2.3	3.8	4.5
9V2782	99	P	SUR	23	0	1.4	3.4	3.7
9V9290	99	P	SUR	29	0	3.2	4.4	5.5
AGRF	99	P	SUR	23	14	8.8	-5.7	10.5
AVLZ	99	P	SUR	17	0	1.3	4.0	4.2
AVWF	99	P	SUR	18	2	4.3	-10.9	11.7
C6AV5	99	P	SUR	30	0	1.7	3.7	4.1
C6FU7	99	P	SUR	19	0	7.2	3.8	8.1
C6JT	99	P	SUR	20	0	1.3	-3.3	3.6
C6LU4	99	P	SUR	23	0	2.2	4.8	5.3
C6YA7	99	P	SUR	47	0	1.1	3.0	3.2
DVRF	99	P	SUR	118	79	6.0	7.7	9.8
ICIC	99	P	SUR	16	0	6.0	0.2	6.0
KRAU	99	P	SUR	57	0	0.6	6.3	6.4
LAMP5	99	P	SUR	19	1	7.2	-4.0	8.2
LAPD7	99	P	SUR	18	1	1.5	4.5	4.7
ONDY	99	P	SUR	98	0	2.3	-5.3	5.8
OZ2049	99	P	SUR	38	0	1.0	-4.4	4.5
UBAU	99	P	SUR	36	0	1.9	3.5	4.0
UBRW	99	P	SUR	97	28	7.5	-2.1	7.8
UBVF4	99	P	SUR	57	0	0.5	-7.1	7.2
UCSJ	99	P	SUR	49	0	0.6	3.4	3.5
UGYU	99	P	SUR	19	0	0.4	-3.2	3.2
V7CY4	99	P	SUR	21	0	0.7	-3.1	3.2
V7FJ8	99	P	SUR	29	0	2.3	-3.2	4.0
V7YL7	99	P	SUR	16	0	2.0	-3.5	4.0
VRCX7	99	P	SUR	68	0	4.1	5.6	6.9
VRDU8	99	P	SUR	23	0	0.4	-4.2	4.3
VRDW2	99	P	SUR	42	0	1.0	4.1	4.2
VRFI7	99	P	SUR	23	0	1.0	3.8	4.0
VRFW9	99	P	SUR	25	0	1.3	9.9	10.0

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 (CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	SD	BIAS	RMS
VRGO7	99	P	SUR	23	0	2.5	-3.2	4.0
VRJH7	99	P	SUR	18	0	4.0	3.6	5.4
VRJL6	99	P	SUR	17	0	1.3	8.8	8.8
VRKE9	99	P	SUR	50	2	2.4	3.8	4.5
VROY7	99	P	SUR	24	0	1.4	-3.0	3.3
VRYO9	99	P	SUR	16	0	0.8	-3.7	3.8
VTGB	99	P	SUR	119	119	0.0	0.0	0.0
VTSJ	99	P	SUR	42	42	0.0	0.0	0.0
WMKN	99	P	SUR	74	0	2.4	-3.0	3.9

**3.2.13 Table 2 - Suspect ships and fixed marine platforms: Wind speed (m/s)**

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND SPEED (M/S)  
 AREA : GLOBAL  
 PERIOD : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 15(50), AND,  
 Manual (Automatic) ABSOLUTE BIAS >= 4(4) M/S, OR,  
 % GROSS ERROR >= 25(15)  
 (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)

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

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
46181	99	SPEED	SUR	29	0	0	3.3	4.5	5.6

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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 AREA : GLOBAL  
 PERIOD : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 15(50) (WIND SPEEDS > 3M/S), AND ,  
 Manual (Automatic) ABSOLUTE BIAS >= 30(25) DEGREES, OR,  
 STANDARD DEVIATION >= 70(50) DEGREES  
 (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)

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

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
42361	99	DIRN	SUR	112	0	0	22.3	30.8	38.0
46125	99	DIRN	SUR	84	0	0	30.4	40.8	50.9

**3.2.15 Table 4 - Suspect drifters: Surface pressure (HPA)**

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 AREA : GLOBAL  
 PERIOD : MAR 2016  
 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
13570	99	P	SUR	40	-15	259	0	6.3	-3.6	7.2
47503	99	P	SUR	58	-30	618	570	7.6	3.3	8.2
48513	99	P	SUR	74	165	667	232	8.2	0.3	8.2
48570	99	P	SUR	68	-176	706	299	8.2	-1.9	8.4
48643	99	P	SUR	70	-144	741	741	0.0	0.0	0.0
48652	99	P	SUR	71	-156	194	0	2.8	-10.4	10.8
64532	99	P	SUR	56	-9	175	0	0.6	-8.7	8.7
71580	99	P	SUR	-59	-55	166	162	0.0	14.8	14.8



**3.2.16 Table 5 - Suspect drifters: Wind speed (m/s)**

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND SPEED (M/S)  
 AREA : GLOBAL  
 PERIOD : MAR 2016  
 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
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**3.2.17 Table 6 - Suspect drifters: Wind direction (degrees)**

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 PERIOD : MAR 2016  
 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
23097	99	DIRN	SUR	15	69	121	0	0	51.4	-31.7	60.4
23099	99	DIRN	SUR	13	80	169	0	0	13.4	-21.0	24.9
23170	99	DIRN	SUR	15	74	43	0	0	29.2	23.5	37.5
23454	99	DIRN	SUR	10	73	59	0	0	57.1	-131.1	143.0
23492	99	DIRN	SUR	11	72	59	0	0	94.9	130.6	161.4
23494	99	DIRN	SUR	9	73	29	0	0	53.3	-20.3	57.0
23497	99	DIRN	SUR	11	72	47	0	0	36.7	-30.2	47.6
31001	99	DIRN	SUR	0	-35	37	0	0	34.5	24.7	42.4
31005	99	DIRN	SUR	-19	-35	127	0	0	21.5	22.2	30.9
31053	99	DIRN	SUR	-32	-50	293	1	0	26.8	-58.6	64.4
31260	99	DIRN	SUR	-16	-38	59	0	0	148.5	64.9	162.0
31374	99	DIRN	SUR	-25	-45	49	0	0	44.4	-38.3	58.7
31380	99	DIRN	SUR	-20	-40	39	0	0	37.5	-30.4	48.3
42361	99	DIRN	SUR	28	-93	658	1	0	22.8	29.8	37.5
42362	99	DIRN	SUR	28	-91	629	4	0	28.7	22.5	36.4
44059	99	DIRN	SUR	37	-76	462	0	0	15.0	-20.8	25.6
46125	99	DIRN	SUR	48	-123	519	0	0	21.5	41.6	46.8
52004	99	DIRN	SUR	-5	165	366	0	0	24.0	22.6	33.0

**3.2.18 Table 7 - Suspect radiosondes: Geopotential height (metres)**

LIST OF SUSPECT STATIONS : RADIOSONDES  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 AREA : GLOBAL  
 PERIOD : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: AT LEAST 3 LEVELS WITH  
 10 OBS AND 100 M WEIGHTED RMS

ONLY THE WORST LEVEL IS SHOWN (WITH UNWEIGHTED RMS)

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
04417	12	Z	1000	73	-38	30	29	0.0	-91.4	91.4
33393	00	Z	200	50	24	26	1	62.8	118.6	134.2
38064	00	Z	200	45	66	28	0	67.3	74.1	100.1
38064	12	Z	200	45	66	30	1	44.7	84.4	95.5
41977	00	Z	925	22	92	11	0	3.9	-75.1	75.2
42874	00	Z	100	21	82	23	0	40.1	96.4	104.4
43041	00	Z	30	19	82	18	1	10.6	188.3	188.6
43311	00	Z	100	11	73	28	0	60.2	107.6	123.3
43333	00	Z	30	12	93	25	0	58.5	207.4	215.5
43369	00	Z	50	8	73	18	0	5.1	128.6	128.7
65125	12	Z	925	9	7	16	0	6.2	47.8	48.2
76405	12	Z	400	24	-110	14	0	65.6	56.4	86.5
76654	12	Z	700	19	-104	21	1	29.3	25.9	39.1
78486	12	Z	250	18	-70	31	1	73.6	-21.0	76.5
83362	12	Z	250	-16	-56	21	0	93.7	80.0	123.2
89009	00	Z	1000	-90	0	30	28	8.4	-88.7	89.1
96147	00	Z	925	4	108	31	1	12.7	49.6	51.2
96147	12	Z	925	4	108	31	1	14.3	49.8	51.8
96481	00	Z	50	4	118	28	0	87.6	118.8	147.6
98223	00	Z	30	18	121	30	1	63.1	294.2	300.9
ASDE01	00	Z	1000	45	-52	14	0	22.6	-22.1	31.6
ASEU03	00	Z	1000	51	-12	11	0	5.8	-41.8	42.2

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

LIST OF SUSPECT STATIONS : RADIOSONDES  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 AREA : GLOBAL  
 PERIOD : MAR 2016  
 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
42399	00	V	250	27	89	14	0	-2.6	1.8	15.5
56964	00	V	200	23	101	24	1	-6.5	-0.9	15.3

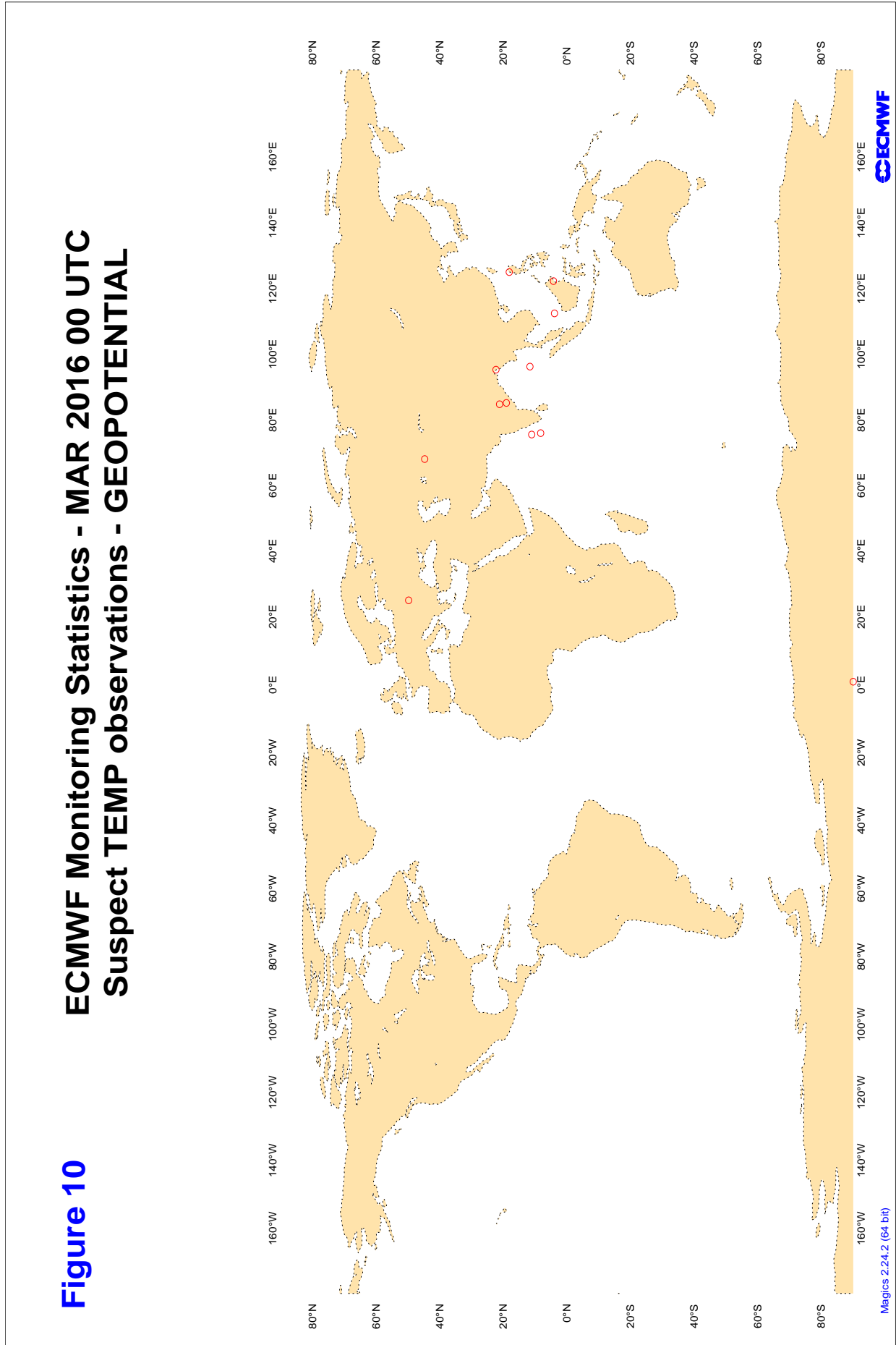
**3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)**

LIST OF SUSPECT STATIONS : RADIOSONDES  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 AREA : GLOBAL  
 PERIOD : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

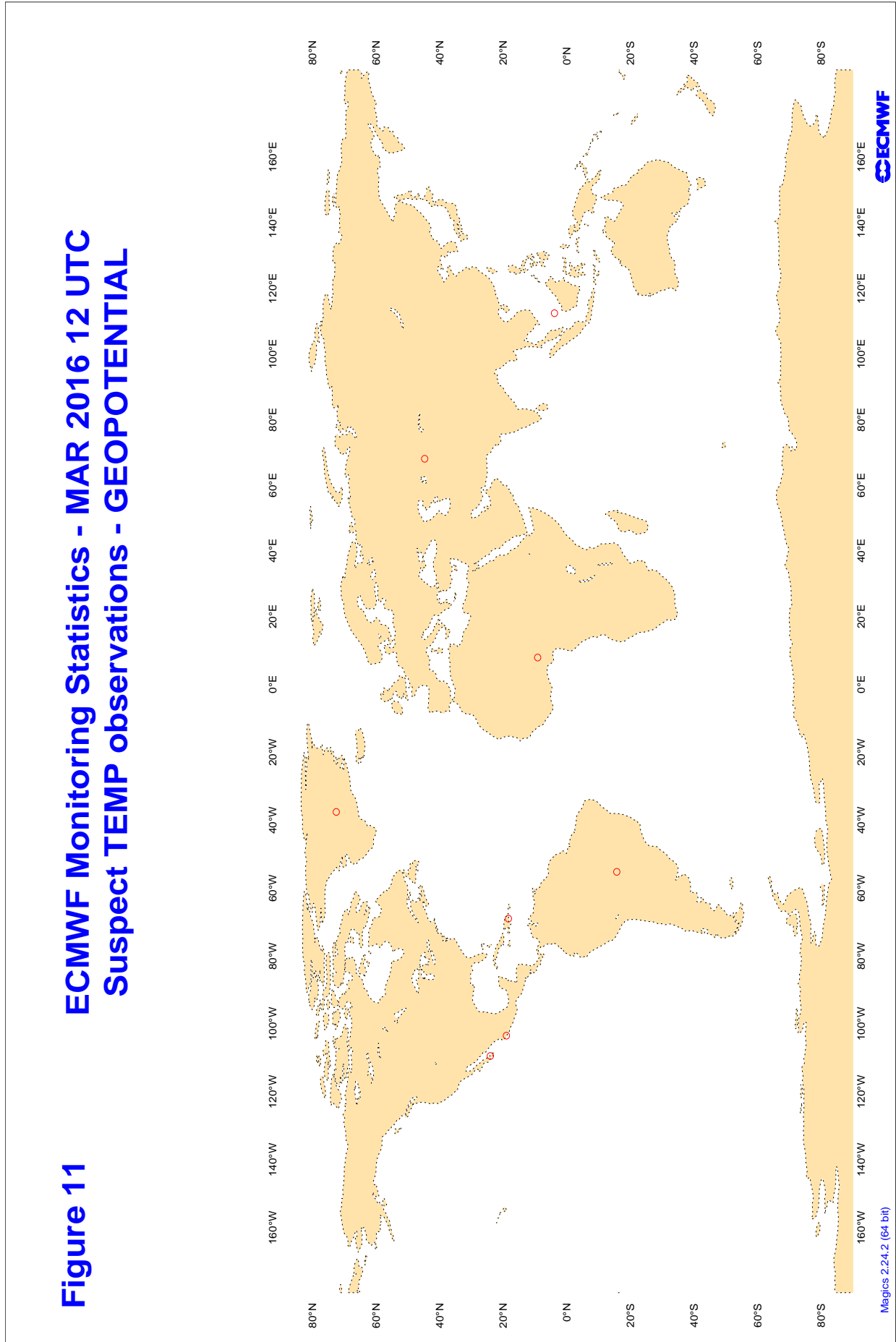
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS  $\geq$  5 M/S  
 NO. OF OBSERVATIONS  $\geq$  5, AND,  
 ABSOLUTE BIAS  $\geq$  10 DEGREES, WITH  
 STANDARD DEVIATION  $<$  30 DEGREES, AND,  
 VERTICAL SPREAD  $<$  10 DEGREES  
 (AVERAGE BETWEEN 500 AND 150 HPA)

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
57972	12	DD	26	113	31	10.1	0.9	4.0
57972	00	DD	26	113	29	11.0	2.0	5.1

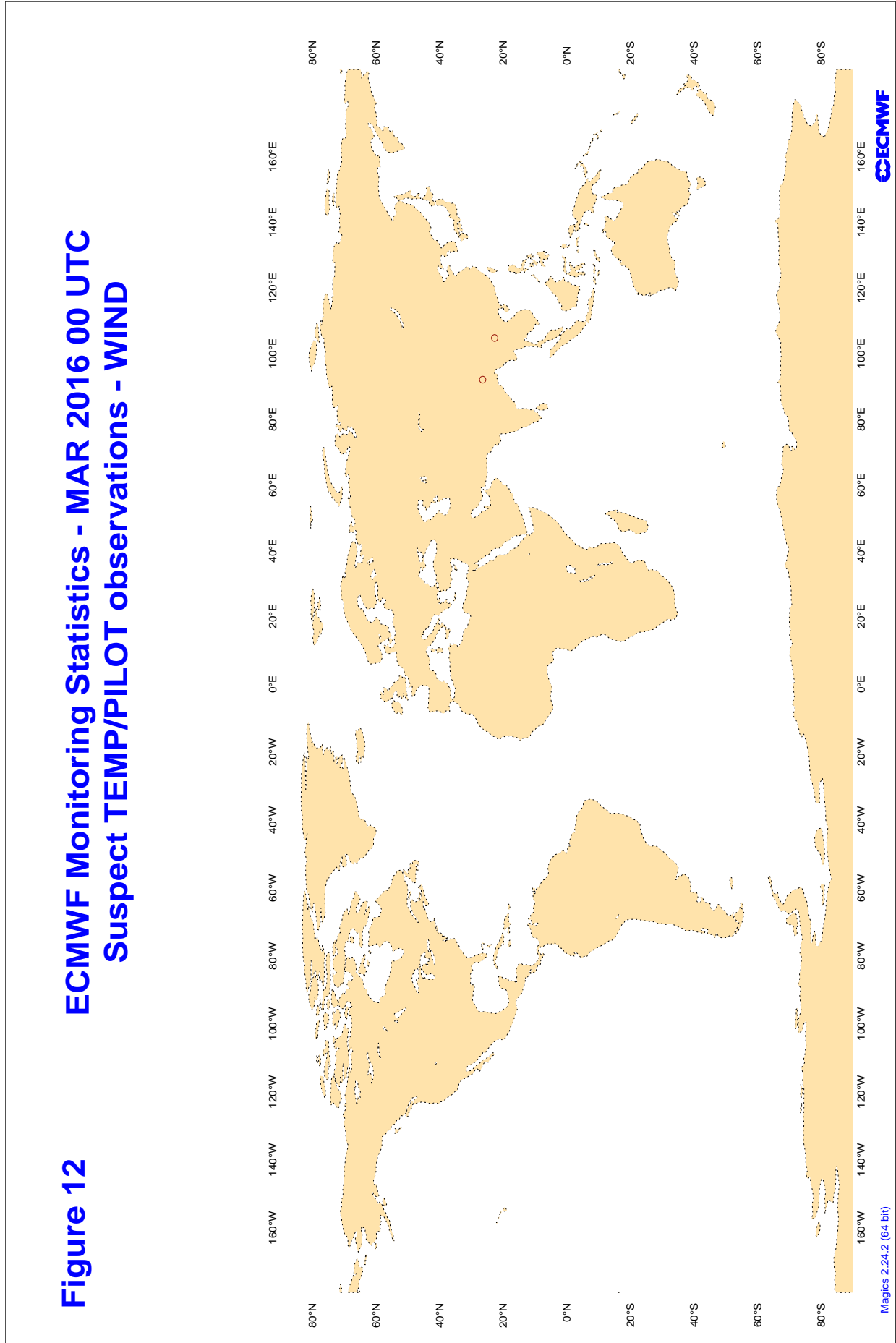
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



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

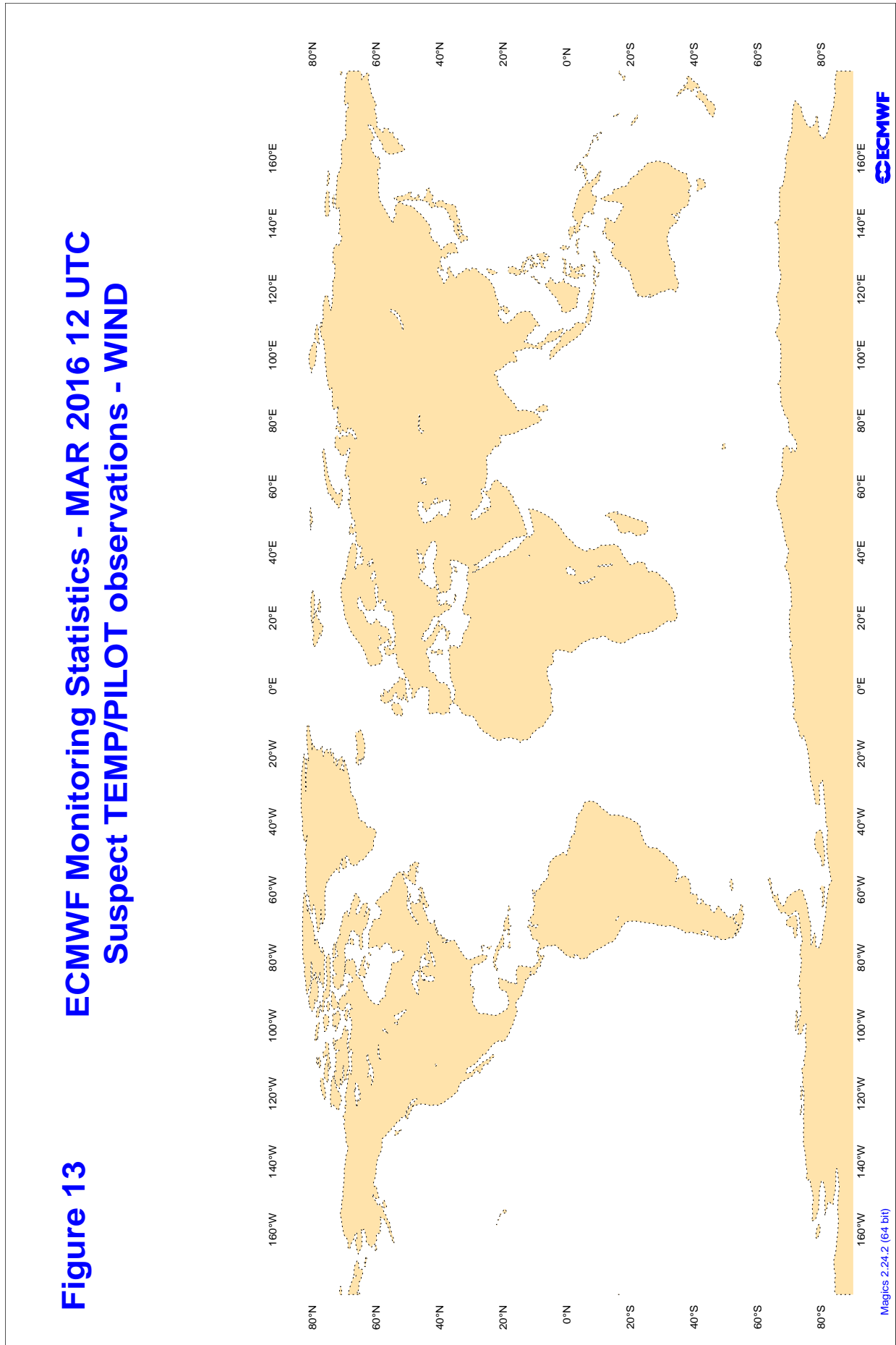


3.2.23 Figure 12 - Suspect TEMP/PILOT observations - wind : 00 UTC





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



**3.2.25 Table 10 - Radiosonde monitoring statistics (SHIPS): Geopotential height (metres)**

## RADIOSONDE MONITORING STATISTICS (SHIPS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 100 HPA  
 AREA : GLOBAL  
 PERIOD : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASDE01	12	Z	100	10	15.1	12.8
ASDE01	00	Z	100	14	18.3	-1.6
ASDE02	00	Z	100	10	23.0	22.6
ASDE02	12	Z	100	12	17.4	15.6
ASDE03	00	Z	100	7	14.3	8.5
ASDE03	12	Z	100	12	37.2	35.1
ASDE04	00	Z	100	8	28.0	13.7
ASDE04	12	Z	100	7	35.5	33.6
ASDE09	12	Z	100	5	37.9	35.7
ASDK01	00	Z	100	1	10.9	-10.9
ASDK02	00	Z	100	6	6.9	3.1
ASDK02	12	Z	100	7	12.5	10.6
ASDK1	00	Z	100	1	23.6	-23.6
ASDK2	00	Z	100	12	8.2	2.1
ASDK2	12	Z	100	5	11.9	10.2
ASES01	12	Z	100	26	28.4	27.0
ASEU02	12	Z	100	6	45.7	45.5
ASEU02	00	Z	100	5	37.7	36.0
ASEU03	00	Z	100	12	22.9	-21.7
ASEU03	12	Z	100	11	17.5	3.6
ASEU04	12	Z	100	13	27.2	13.6
ASEU04	00	Z	100	9	10.7	2.3
ASEU06	00	Z	100	6	34.5	9.4
ASEU06	12	Z	100	8	33.7	30.4
ASFR1	00	Z	100	13	12.2	9.1
ASFR1	12	Z	100	13	12.8	10.5
ASFR2	00	Z	100	7	13.7	13.3
ASFR2	12	Z	100	10	23.0	22.1
ASFR3	00	Z	100	12	14.6	12.5
ASFR3	12	Z	100	15	19.9	18.4
ASFR4	00	Z	100	15	19.1	17.6
ASFR4	12	Z	100	11	27.5	26.9
CXENR	12	Z	100	25	23.2	19.7
CXENR	00	Z	100	27	19.3	15.7
DBLK	12	Z	100	51	11.0	7.9
JGQH	12	Z	100	9	15.3	13.1
JGQH	00	Z	100	9	20.2	16.0
WTEC	12	Z	100	26	13.5	11.2
WTEC	00	Z	100	26	15.7	11.5

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

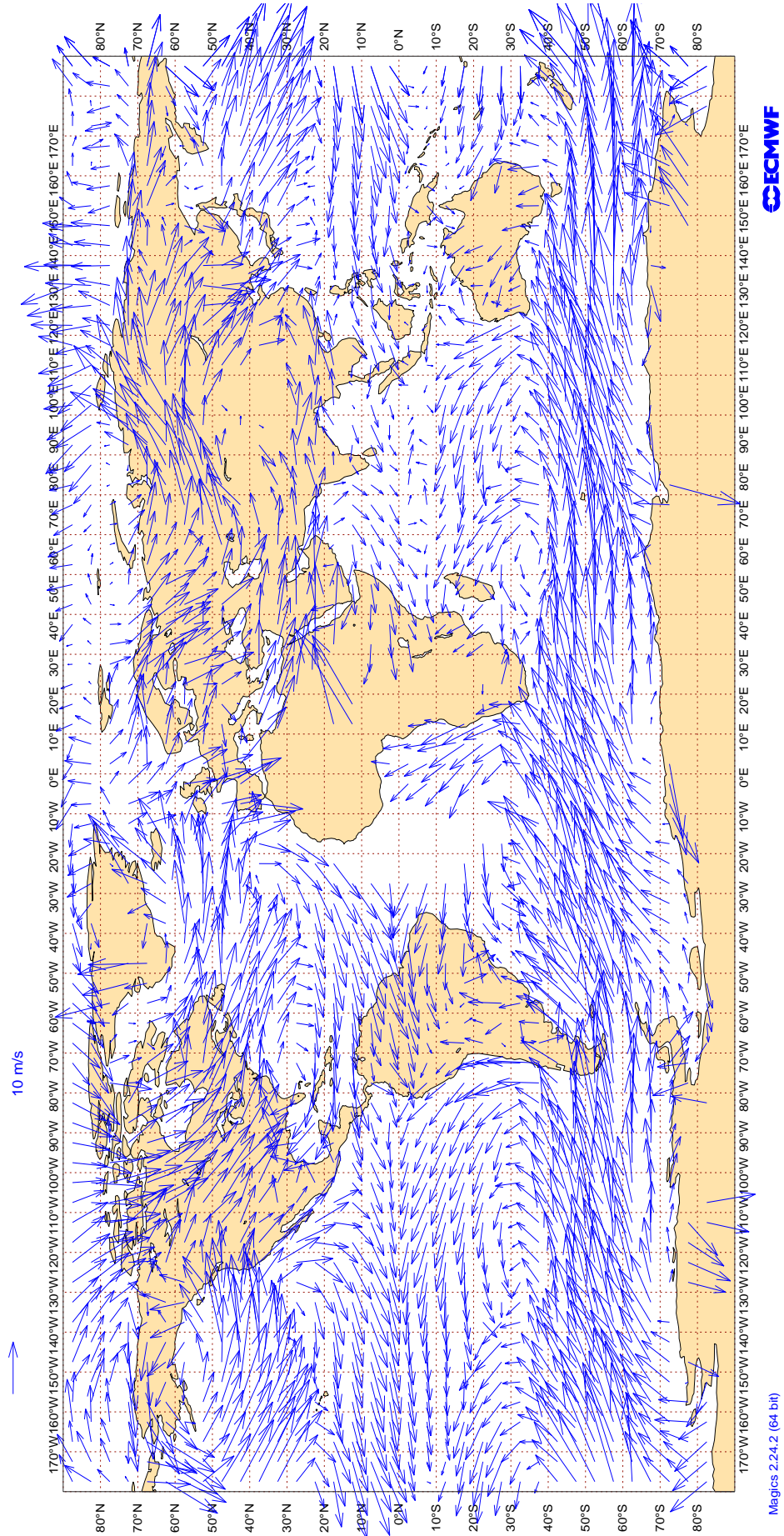
#### RADIOSONDE MONITORING STATISTICS (SHIPS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 100 HPA  
 AREA : GLOBAL  
 PERIOD : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

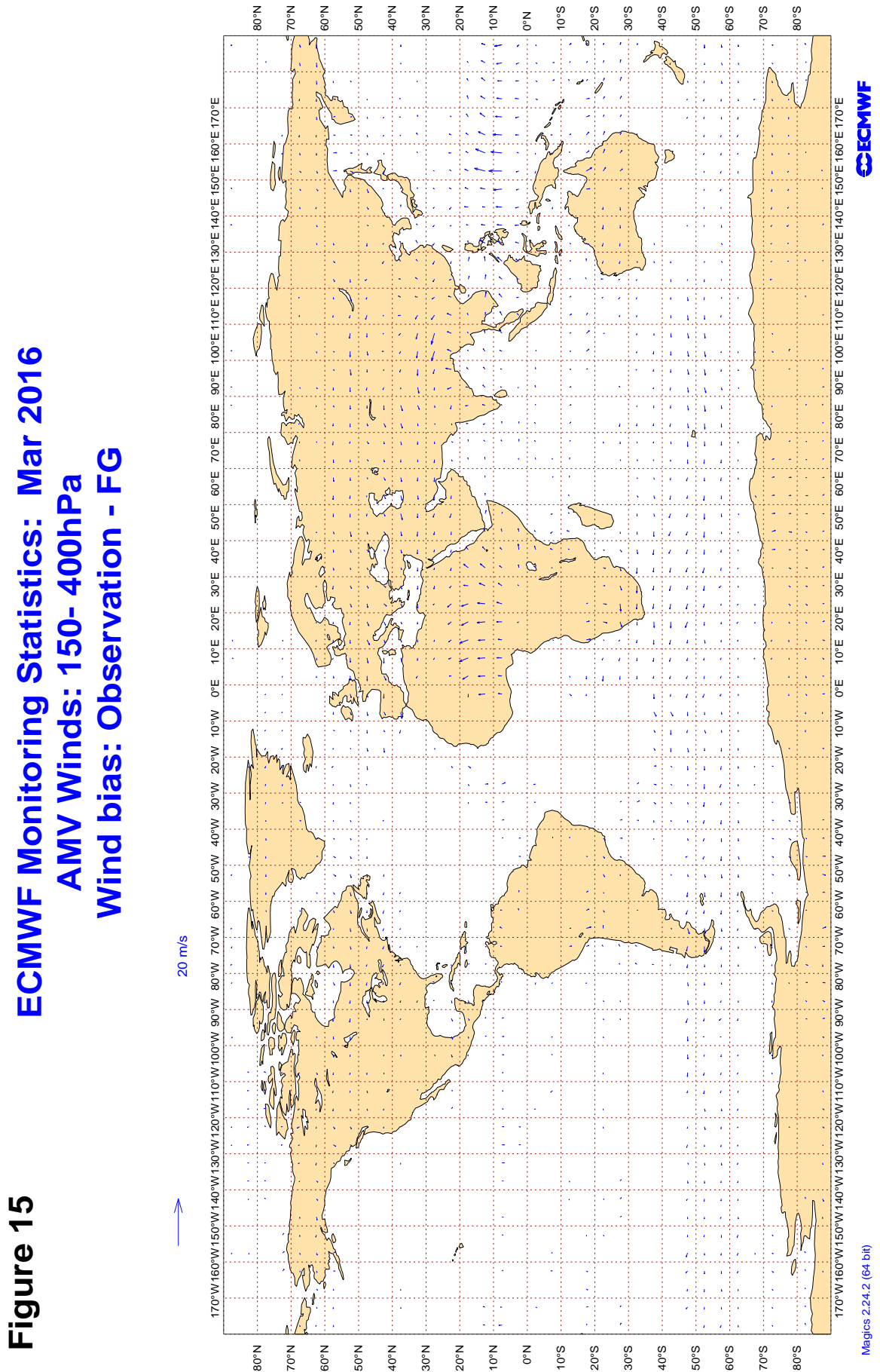
WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASDE01	12	V	100	8	2.6	-0.6	0.3
ASDE01	00	V	100	11	4.1	0.2	0.2
ASDE02	00	V	100	9	3.1	-1.0	-1.4
ASDE02	12	V	100	12	5.0	0.5	1.7
ASDE03	00	V	100	6	3.6	-0.1	1.7
ASDE03	12	V	100	8	4.7	2.3	-1.2
ASDE04	00	V	100	7	4.5	-0.3	0.3
ASDE04	12	V	100	7	5.4	0.5	1.5
ASDE09	12	V	100	4	3.0	-2.0	-0.5
ASDK01	00	V	100	1	5.1	3.2	-4.0
ASDK02	00	V	100	6	3.7	0.6	0.6
ASDK02	12	V	100	5	2.7	0.0	0.1
ASDK1	00	V	100	1	3.7	2.4	-2.8
ASDK2	00	V	100	5	4.0	1.0	0.3
ASDK2	12	V	100	5	2.5	-0.3	-0.5
ASES01	12	V	100	24	4.9	0.5	0.6
ASEU02	12	V	100	5	3.5	1.7	-0.2
ASEU02	00	V	100	5	3.3	-1.3	-2.1
ASEU03	00	V	100	11	2.3	0.2	1.1
ASEU03	12	V	100	7	3.6	-0.7	0.6
ASEU04	12	V	100	11	4.3	-2.3	-0.6
ASEU04	00	V	100	8	4.7	-1.0	2.2
ASEU06	00	V	100	3	8.9	-4.8	2.6
ASEU06	12	V	100	3	4.8	3.1	0.9
ASFR1	00	V	100	12	4.1	2.0	0.6
ASFR1	12	V	100	12	2.7	-0.2	0.4
ASFR2	00	V	100	6	3.0	0.8	1.5
ASFR2	12	V	100	8	4.7	-0.4	-0.6
ASFR3	00	V	100	12	3.4	0.9	1.4
ASFR3	12	V	100	12	4.1	0.4	-0.7
ASFR4	00	V	100	14	6.1	-1.1	0.5
ASFR4	12	V	100	11	3.8	0.8	-0.3
CXENR	12	V	100	25	6.6	-1.7	-1.2
CXENR	00	V	100	27	6.2	-1.4	0.2
DBLK	12	V	100	27	3.5	0.0	0.4
JGQH	12	V	100	7	5.0	0.7	-1.2
JGQH	00	V	100	8	5.7	0.7	-0.4
WTEC	12	V	100	14	5.6	0.1	2.0
WTEC	00	V	100	13	4.0	0.4	-0.7

3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

**Figure 14**  
**ECMWF Monitoring Statistics: Mar 2016**  
**AMV Winds: 700-1000hPa**  
**Mean Observed Wind**

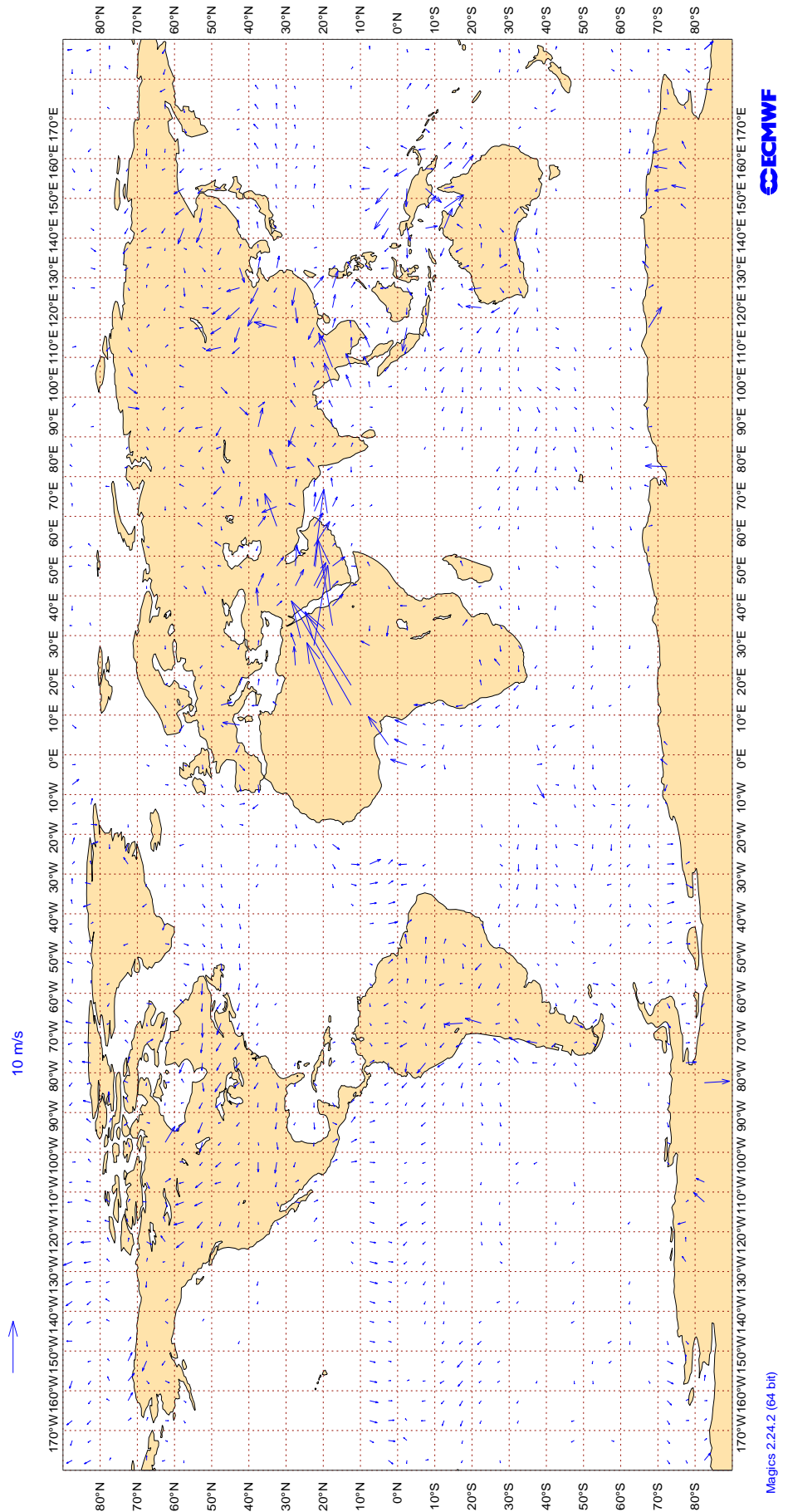


3.2.28 Figure 15 - SATOB Winds: 150- 400hPa



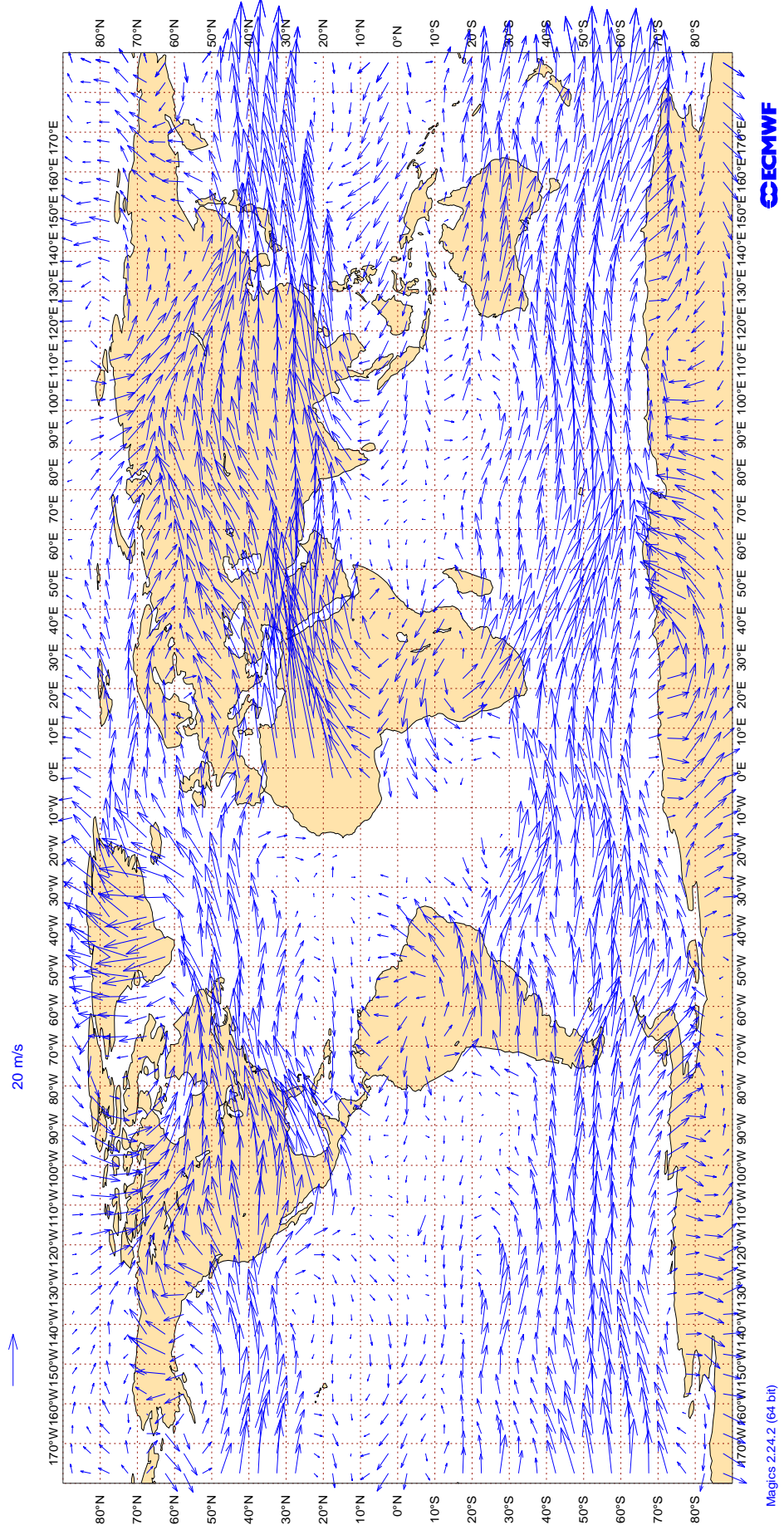
3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

**Figure 16**  
**ECMWF Monitoring Statistics: Mar 2016**  
**AMV Winds: 700-1000hPa**  
**Wind bias: Observation - FG**



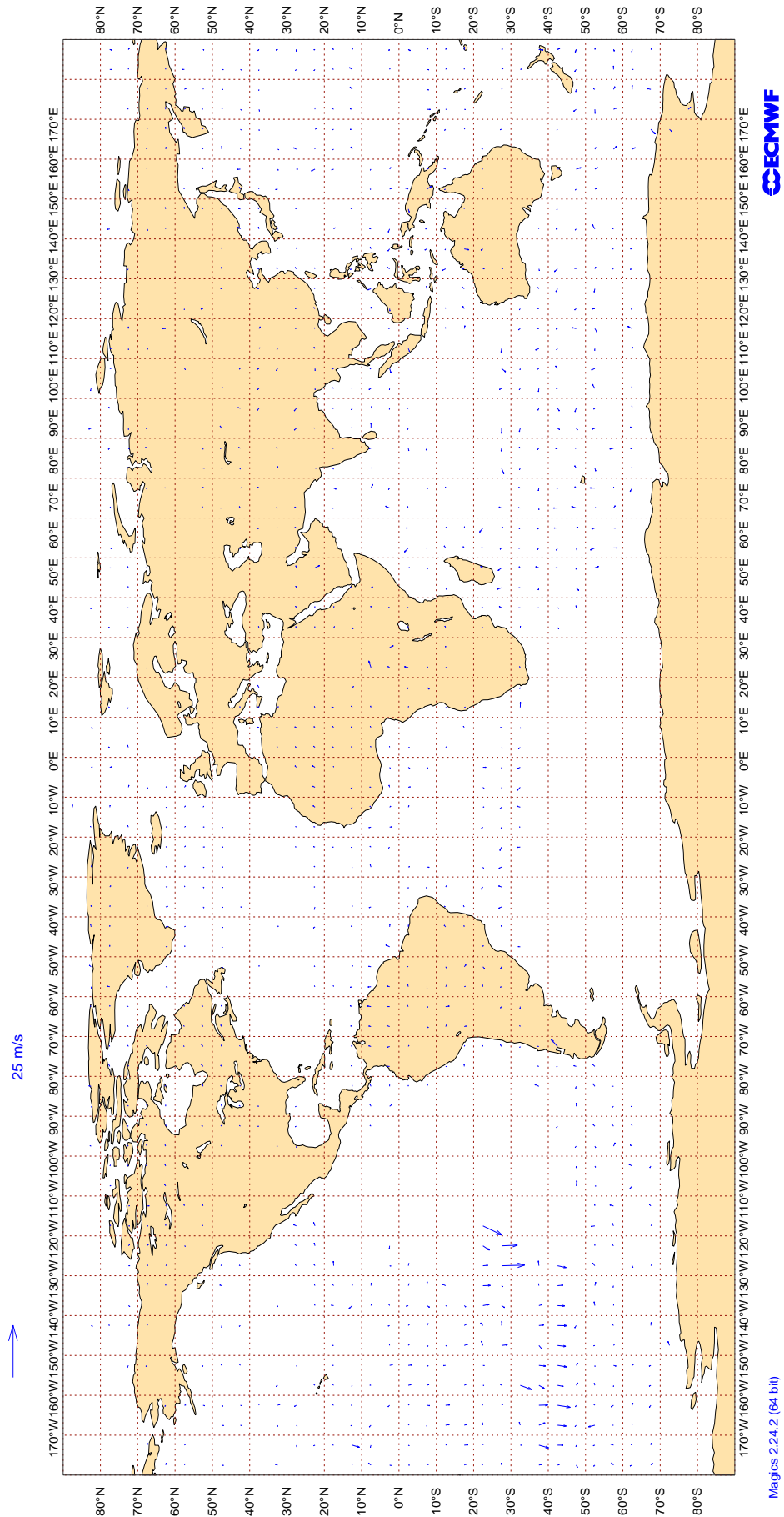
3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

**Figure 17**  
**ECMWF Monitoring Statistics: Mar 2016**  
**AMV Winds: 150- 400hPa**  
**Mean Observed Wind**



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

**Figure 18**  
**ECMWF Monitoring Statistics: Mar 2016**  
**Aircraft Winds: 150- 300hPa**  
**Wind bias: Observation - FG**





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

#### AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : VECTOR WIND (M/S)  
 AREA : GLOBAL  
 PERIOD : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20

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

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AAB	99	V	300-150	73	0	0	4.1	-0.2
AAL	99	V	300-150	45930	0	0	4.1	0.3
AAR	99	V	300-150	315	0	1	4.5	-1.3
AAY	99	V	300-150	186	1	1	5.3	0.5
ABW	99	V	300-150	898	0	0	3.8	-0.4
ABX	99	V	300-150	161	2	0	6.2	-0.8
ACA	99	V	300-150	24027	3	0	7.0	0.2
ACI	99	V	300-150	2290	0	0	5.2	0.6
AEA	99	V	300-150	471	3	0	7.2	0.4
AFL	99	V	300-150	2185	0	0	3.5	0.5
AFR	99	V	300-150	28557	0	0	3.8	0.2
AHY	99	V	300-150	213	25	0	13.5	-0.2
AIC	99	V	300-150	1447	0	0	3.4	-0.2
AMX	99	V	300-150	1977	18	0	12.7	-0.0
ANZ	99	V	300-150	17101	0	0	5.2	0.6
AOJ	99	V	300-150	42	0	0	4.2	0.0
ASA	99	V	300-150	7603	1	0	5.3	0.4
ASY	99	V	300-150	529	0	0	5.2	1.2
AUA	99	V	300-150	4233	0	0	4.4	-0.1
AUH	99	V	300-150	30	0	0	17.0	0.4
AVA	99	V	300-150	395	0	0	3.7	0.5
AVN	99	V	300-150	130	3	0	6.5	0.6
AXM	99	V	300-150	148	0	1	4.7	0.7
AZA	99	V	300-150	6096	0	0	4.0	0.3
AZG	99	V	300-150	35	0	0	4.1	0.3

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
BAH	99	V	300-150	43	0	0	3.1	-0.2
BAW	99	V	300-150	52009	2	0	5.3	0.2
BBR	99	V	300-150	32	0	3	10.5	-1.0
BEL	99	V	300-150	1064	0	0	3.6	0.3
BER	99	V	300-150	7315	0	0	3.8	0.4
BGH	99	V	300-150	42	0	0	3.5	-1.5
BLU	99	V	300-150	26	0	0	5.4	-0.6
BLX	99	V	300-150	199	0	1	5.1	-0.9
BMW	99	V	300-150	31	0	0	3.5	0.5
BND	99	V	300-150	24	0	0	4.2	0.6
BOX	99	V	300-150	586	0	0	3.5	0.3
BOX	99	V	300-150	122	0	0	3.6	-0.4
BPA	99	V	300-150	86	0	1	5.2	0.0
CAL	99	V	300-150	498	0	0	4.3	0.2
CAO	99	V	300-150	172	0	0	3.5	-0.3
CAZ	99	V	300-150	106	0	0	3.9	0.3
CCA	99	V	300-150	745	0	0	4.8	1.0
CEF	99	V	300-150	66	0	0	3.2	0.3
CES	99	V	300-150	1254	0	0	4.1	0.5
CFC	99	V	300-150	338	0	0	3.9	0.4
CFG	99	V	300-150	3871	0	0	4.2	0.0
CJT	99	V	300-150	126	0	0	4.5	-0.4
CKS	99	V	300-150	1972	0	0	5.0	0.2
CLE	99	V	300-150	20	0	0	4.0	0.1
CLX	99	V	300-150	3646	0	0	3.8	-0.2
CMB	99	V	300-150	588	0	0	4.3	-0.6
CNV	99	V	300-150	311	0	0	3.9	-0.4
CPA	99	V	300-150	210	0	0	3.2	0.0
CRL	99	V	300-150	841	0	0	4.0	0.4
CRV	99	V	300-150	68	0	0	5.7	0.2
CSN	99	V	300-150	818	0	0	5.9	0.2
CTM	99	V	300-150	22	0	5	2.9	-0.0
DAH	99	V	300-150	756	0	0	4.0	0.6
DAL	99	V	300-150	57959	0	0	4.1	0.1
DGX	99	V	300-150	20	0	0	3.9	0.7
DHK	99	V	300-150	1745	0	0	4.5	-0.3
DLH	99	V	300-150	31933	0	0	3.8	0.2
DUB	99	V	300-150	135	0	0	4.5	0.5
EAU	99	V	300-150	27	0	0	4.1	0.6
EDW	99	V	300-150	631	0	0	4.0	0.6
EIN	99	V	300-150	10490	0	0	3.8	0.3
EJM	99	V	300-150	481	26	0	16.6	0.0
ELY	99	V	300-150	2521	0	0	4.2	-0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
EMM	99	V	300-150	30	13	0	30.0	0.2
ETD	99	V	300-150	3503	5	0	6.6	-0.0
ETH	99	V	300-150	2136	14	0	9.3	0.2
EUW	99	V	300-150	33	0	0	3.3	-0.6
EVE	99	V	300-150	43	0	0	4.0	-0.2
EWG	99	V	300-150	1251	0	0	4.1	0.4
FDX	99	V	300-150	5539	0	0	3.9	0.2
FIN	99	V	300-150	1203	0	0	3.5	0.2
FJI	99	V	300-150	5075	0	0	5.2	0.7
FPG	99	V	300-150	41	0	0	3.3	-0.1
FWI	99	V	300-150	1421	0	0	3.7	0.3
FYG	99	V	300-150	64	0	0	3.5	0.3
GAF	99	V	300-150	80	0	0	3.1	0.3
GEC	99	V	300-150	2539	0	0	3.8	0.2
GES	99	V	300-150	70	37	0	23.2	-1.4
GLJ	99	V	300-150	22	36	0	31.2	-1.3
GLO	99	V	300-150	68	1	1	10.1	-0.6
GNJ	99	V	300-150	45	0	0	3.5	0.8
GOL	99	V	300-150	55	0	0	5.3	1.7
GRL	99	V	300-150	35	0	0	3.4	0.2
GTH	99	V	300-150	21	0	0	3.5	1.3
GTI	99	V	300-150	2590	0	0	4.1	-0.2
HAL	99	V	300-150	4323	0	0	5.3	0.9
HZM	99	V	300-150	71	0	0	3.4	-0.7
HZS	99	V	300-150	70	0	0	3.2	0.2
IAM	99	V	300-150	67	0	0	5.4	0.2
IBE	99	V	300-150	2549	0	0	3.9	0.2
ICE	99	V	300-150	23	0	57	11.4	-4.7
ICL	99	V	300-150	536	0	0	4.7	-0.3
ICV	99	V	300-150	457	0	0	3.8	-0.1
IFA	99	V	300-150	36	61	0	21.0	-0.7
IJM	99	V	300-150	38	3	0	16.0	1.1
JAF	99	V	300-150	1114	10	0	8.8	0.0
JAI	99	V	300-150	1969	0	0	3.7	0.3
JAS	99	V	300-150	116	9	0	12.0	0.2
JJA	99	V	300-150	84	0	0	5.2	-0.9
JST	99	V	300-150	3330	0	0	8.2	0.8
JUN	99	V	300-150	50	0	0	5.0	-0.8
KAC	99	V	300-150	480	0	0	4.1	0.4
KAI	99	V	300-150	62	2	0	5.2	0.0
KAL	99	V	300-150	1454	0	0	4.5	0.5
KAY	99	V	300-150	43	0	0	5.4	1.8
KIW	99	V	300-150	88	0	0	5.0	0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
KLM	99	V	300-150	17368	0	0	3.8	0.1
LAE	99	V	300-150	117	0	0	3.5	0.2
LAN	99	V	300-150	1805	8	0	10.7	0.3
LCO	99	V	300-150	109	0	0	4.1	-0.3
LDM	99	V	300-150	97	44	0	24.7	-0.6
LEA	99	V	300-150	23	0	0	3.0	0.3
LGT	99	V	300-150	38	0	0	4.3	-0.0
LMJ	99	V	300-150	29	0	0	3.5	0.4
LOT	99	V	300-150	2014	22	0	15.8	-0.2
LUC	99	V	300-150	22	45	0	26.3	-0.4
LXJ	99	V	300-150	73	1	0	13.2	-0.7
MAS	99	V	300-150	280	0	0	3.7	0.3
MMD	99	V	300-150	191	0	0	4.1	-0.4
MPH	99	V	300-150	449	0	0	4.3	-0.8
MSR	99	V	300-150	1006	0	0	3.9	0.0
NAX	99	V	300-150	5016	20	0	13.9	-0.2
NCA	99	V	300-150	304	0	0	4.0	-0.1
NJE	99	V	300-150	403	38	0	17.2	-0.2
NOS	99	V	300-150	585	0	0	5.3	0.0
NWS	99	V	300-150	277	0	0	3.7	0.3
OAE	99	V	300-150	233	1	0	4.7	-0.0
OPM	99	V	300-150	22	73	0	32.1	-0.4
ORB	99	V	300-150	196	0	0	3.3	0.3
PAC	99	V	300-150	199	0	0	4.6	0.7
PAL	99	V	300-150	139	1	2	5.9	-0.2
PIA	99	V	300-150	594	0	0	4.1	0.3
QAF	99	V	300-150	64	0	0	3.4	0.3
QFA	99	V	300-150	18816	0	0	5.2	0.5
QID	99	V	300-150	42	0	0	5.3	2.5
QQE	99	V	300-150	20	15	0	11.1	-0.4
QTR	99	V	300-150	5830	0	0	4.0	-0.1
RAM	99	V	300-150	116	30	0	12.3	0.2
RCH	99	V	300-150	6724	0	0	4.7	0.1
RJA	99	V	300-150	1115	16	0	13.4	0.1
RMA	99	V	300-150	37	0	0	2.5	-0.3
ROU	99	V	300-150	710	0	0	4.2	0.2
RRR	99	V	300-150	117	0	2	3.4	0.2
SAM	99	V	300-150	280	20	0	12.9	-0.2
SAS	99	V	300-150	3842	0	0	3.3	0.2
SHE	99	V	300-150	92	0	0	3.8	-0.5
SIA	99	V	300-150	2011	0	0	3.7	0.2
SIO	99	V	300-150	59	0	0	2.8	-0.3
SLM	99	V	300-150	65	2	2	4.8	0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
SOO	99	V	300-150	571	0	0	4.4	0.0
SPA	99	V	300-150	202	0	0	4.7	0.2
SQC	99	V	300-150	717	0	0	4.5	-0.7
SUI	99	V	300-150	22	0	0	4.8	3.5
SVA	99	V	300-150	3172	0	0	3.9	0.1
SVW	99	V	300-150	192	23	0	9.6	0.1
SWR	99	V	300-150	11977	0	0	3.8	0.3
TAM	99	V	300-150	507	0	1	3.5	0.4
TAP	99	V	300-150	299	0	0	3.9	-0.0
TAY	99	V	300-150	1572	0	0	4.3	0.3
TBJ	99	V	300-150	20	75	0	34.1	0.5
TCV	99	V	300-150	48	0	0	6.3	0.5
TCX	99	V	300-150	2807	0	0	3.8	0.3
TFL	99	V	300-150	1799	12	0	10.2	0.1
TGM	99	V	300-150	113	16	0	16.1	0.8
THA	99	V	300-150	190	0	0	3.8	0.4
THT	99	V	300-150	3114	0	0	4.8	0.3
THY	99	V	300-150	8314	0	0	4.0	0.2
TMN	99	V	300-150	94	0	0	7.9	0.2
TOM	99	V	300-150	5630	15	0	11.0	0.1
TPJ	99	V	300-150	20	15	0	19.3	1.1
TRK	99	V	300-150	67	0	0	3.5	-0.2
TSC	99	V	300-150	3109	0	0	3.6	0.0
TWB	99	V	300-150	69	3	0	10.0	-0.3
UAE	99	V	300-150	10616	0	0	4.0	0.0
UAL	99	V	300-150	72393	1	2	5.1	0.2
ULC	99	V	300-150	40	85	0	25.9	-0.0
UPS	99	V	300-150	5588	0	0	4.3	-0.0
VIR	99	V	300-150	23263	2	0	5.0	0.2
VJT	99	V	300-150	739	58	0	25.6	0.0
VKG	99	V	300-150	856	0	0	3.5	0.3
VMP	99	V	300-150	130	46	0	17.2	0.5
VOZ	99	V	300-150	4844	0	0	4.9	0.7
WGT	99	V	300-150	106	0	0	3.4	-0.0
WJA	99	V	300-150	1930	2	1	5.6	0.5
XAX	99	V	300-150	94	0	0	3.6	0.0
XLF	99	V	300-150	1450	0	0	3.6	0.4

## 4 EUCOS Area Monitoring Statistics

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

Tables 13, 14 (50 hPa level), 15, 16 (100 hPa level) 17, 18 (500 hPa level) 19 and 20 (850 hPa level) provide quality statistics for all TEMPSHIPS and PILOTSHIPS received during the month in the area 10°N - 90°N, 70°W - 40°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°N - 90°N, 70°W - 40°E. The statistics are in the same form as tables 4-6.

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

##### RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 50 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	50	27	21.4	16.8
01001	00	Z	50	28	19.1	9.0
01028	00	Z	50	28	10.9	4.7
01028	12	Z	50	30	18.2	13.3
01400	00	Z	50	22	25.9	22.6
01400	12	Z	50	24	42.5	28.1
01415	00	Z	50	28	14.5	9.2
01415	12	Z	50	30	20.9	18.6
02365	00	Z	50	30	11.9	2.2
02365	12	Z	50	27	12.8	7.3
02591	00	Z	50	32	13.6	8.9
02591	12	Z	50	32	21.2	18.1
02836	00	Z	50	36	7.1	-0.5
02836	12	Z	50	34	16.2	11.4
02963	00	Z	50	31	9.6	4.0
02963	12	Z	50	32	13.2	10.1
03005	12	Z	50	31	17.7	15.7
03005	00	Z	50	29	10.4	6.0
03238	12	Z	50	16	21.0	17.2
03238	00	Z	50	26	20.0	16.5
03808	00	Z	50	30	15.5	12.9
03808	12	Z	50	31	20.0	16.6
03918	00	Z	50	26	18.5	14.9
03918	12	Z	50	19	24.8	23.9
03953	12	Z	50	16	32.3	25.8
03953	00	Z	50	19	58.8	31.6
04018	00	Z	50	26	16.9	12.8
04018	12	Z	50	27	25.4	22.2
04220	12	Z	50	18	18.6	14.9
04220	00	Z	50	22	16.8	13.4
04270	12	Z	50	30	19.3	12.6
04270	00	Z	50	29	18.3	10.0
04320	12	Z	50	31	21.0	18.7
04320	00	Z	50	31	27.3	18.5
04339	12	Z	50	29	20.8	16.8
04339	00	Z	50	31	27.0	6.8
04360	12	Z	50	10	19.1	17.0
04360	00	Z	50	7	12.3	4.6
06011	00	Z	50	25	20.9	12.3

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	50	23	55.9	23.3
06260	00	Z	50	30	18.3	14.9
06260	12	Z	50	6	19.7	18.3
06610	12	Z	50	30	17.7	10.5
06610	00	Z	50	27	17.0	8.5
07110	00	Z	50	24	30.3	26.8
07110	12	Z	50	27	35.2	31.7
07510	12	Z	50	18	50.7	47.2
07510	00	Z	50	17	45.7	43.1
07645	00	Z	50	23	20.5	14.7
07645	12	Z	50	26	42.2	35.2
07761	12	Z	50	29	26.3	20.2
07761	00	Z	50	29	21.8	17.7
08001	12	Z	50	29	33.1	30.8
08001	00	Z	50	19	24.1	21.9
08221	12	Z	50	31	30.0	25.9
08221	00	Z	50	30	22.3	20.4
08302	12	Z	50	30	16.3	12.4
08302	00	Z	50	27	16.8	14.6
08508	12	Z	50	31	32.6	30.7
08522	12	Z	50	29	22.2	18.8
08579	12	Z	50	31	24.1	22.2
10035	12	Z	50	31	15.0	9.7
10035	00	Z	50	31	14.6	9.4
10393	12	Z	50	31	12.2	7.8
10393	00	Z	50	29	11.3	7.5
10410	12	Z	50	29	17.1	13.8
10410	00	Z	50	29	13.0	8.5
10739	00	Z	50	31	17.6	13.7
10739	12	Z	50	31	24.5	21.2
11035	00	Z	50	31	11.7	7.9
11035	12	Z	50	31	14.1	11.1
12982	12	Z	50	25	52.3	49.6
12982	00	Z	50	30	14.6	7.7
16044	12	Z	50	31	19.4	14.4
16044	00	Z	50	31	20.3	13.4
16080	12	Z	50	31	14.4	8.9
16080	00	Z	50	31	15.0	12.0
16245	12	Z	50	31	13.5	9.3
16245	00	Z	50	31	16.6	11.0
16320	00	Z	50	31	19.4	14.3
16320	12	Z	50	30	15.5	9.6
16429	12	Z	50	28	17.6	8.2



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	00	Z	50	28	17.8	13.7
16622	00	Z	50	26	36.5	32.4
16754	00	Z	50	27	26.8	25.5
17607	12	Z	50	19	18.6	-14.9
26435	00	Z	50	14	13.2	7.5
60018	00	Z	50	28	13.5	11.8
60018	12	Z	50	30	11.9	7.8
ASDE01	12	Z	50	6	33.4	30.0
ASDE01	00	Z	50	7	20.9	4.2
ASDE03	00	Z	50	4	26.1	20.1
ASDE03	12	Z	50	5	70.0	66.6
ASDE04	00	Z	50	7	37.7	17.8
ASDE04	12	Z	50	6	46.1	43.2
ASDE09	12	Z	50	2	64.8	64.7
ASDK01	00	Z	50	0	0.0	0.0
ASDK02	00	Z	50	4	18.3	16.0
ASDK02	12	Z	50	2	30.4	27.0
ASDK1	00	Z	50	0	0.0	0.0
ASDK2	00	Z	50	4	18.4	14.6
ASDK2	12	Z	50	2	32.5	26.5
ASES01	12	Z	50	23	30.3	28.8
ASEU02	12	Z	50	5	52.7	52.6
ASEU02	00	Z	50	5	45.4	44.1
ASEU03	00	Z	50	7	17.2	-16.1
ASEU03	12	Z	50	7	105.6	52.1
ASEU04	12	Z	50	11	42.3	22.9
ASEU04	00	Z	50	7	21.0	5.7
ASEU06	00	Z	50	3	28.8	-9.0
ASEU06	12	Z	50	5	47.5	46.0
ASFR1	00	Z	50	12	23.0	16.8
ASFR1	12	Z	50	12	22.2	20.6
ASFR2	00	Z	50	4	26.9	25.8
ASFR2	12	Z	50	8	43.9	42.1
ASFR3	00	Z	50	10	118.3	58.5
ASFR3	12	Z	50	12	35.1	32.0
ASFR4	00	Z	50	14	32.9	32.0
ASFR4	12	Z	50	11	45.4	44.3

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

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 50 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	50	25	3.4	0.2	-0.6
01001	00	V	50	27	3.7	-0.1	-0.8
01028	00	V	50	26	2.7	0.0	-0.2
01028	12	V	50	30	2.5	-0.4	0.2
01400	00	V	50	16	3.6	-0.6	-0.4
01400	12	V	50	18	3.6	0.7	-0.6
01415	00	V	50	27	3.4	0.4	0.4
01415	12	V	50	28	3.1	0.3	-1.0
02365	00	V	50	28	3.5	0.2	0.7
02365	12	V	50	26	3.2	0.1	-0.4
02591	00	V	50	28	2.6	0.0	-0.3
02591	12	V	50	30	3.0	0.0	-0.4
02836	00	V	50	29	3.5	0.1	0.1
02836	12	V	50	31	3.5	-0.3	-0.3
02963	00	V	50	27	3.0	0.3	0.3
02963	12	V	50	30	3.1	0.3	-0.4
03005	12	V	50	31	3.0	0.3	0.0
03005	00	V	50	28	2.4	-0.1	0.1
03238	12	V	50	16	3.6	0.5	1.1
03238	00	V	50	26	3.5	1.0	0.0
03808	00	V	50	28	3.7	-0.2	0.6
03808	12	V	50	31	3.4	0.6	0.6
03918	00	V	50	25	3.1	0.1	-0.3
03918	12	V	50	19	2.8	0.5	0.2
03953	12	V	50	16	3.4	0.9	0.5
03953	00	V	50	19	4.3	-0.7	0.9
04018	00	V	50	20	2.4	0.4	-0.3
04018	12	V	50	25	2.8	-0.2	0.2
04220	12	V	50	18	3.5	-0.6	-0.8
04220	00	V	50	21	3.1	-0.5	0.0
04270	12	V	50	30	3.8	-0.7	-0.4
04270	00	V	50	28	4.8	-0.9	0.6
04320	12	V	50	31	3.3	-0.1	-1.0
04320	00	V	50	30	3.6	0.4	-0.5
04339	12	V	50	29	3.3	0.0	0.0
04339	00	V	50	29	3.1	-0.4	-0.4
04360	12	V	50	10	3.1	0.5	0.3
04360	00	V	50	7	3.1	0.4	-0.5
06011	00	V	50	25	2.7	-0.1	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	50	23	3.1	0.0	0.1
06260	00	V	50	29	3.1	0.4	-0.4
06260	12	V	50	6	3.3	-0.2	0.1
06610	12	V	50	30	3.5	0.7	0.6
06610	00	V	50	26	4.3	0.3	1.7
07110	00	V	50	22	3.3	1.6	0.2
07110	12	V	50	25	2.8	0.3	0.1
07510	12	V	50	18	4.5	1.0	-0.3
07510	00	V	50	16	3.6	0.7	0.1
07645	00	V	50	22	5.3	0.0	1.2
07645	12	V	50	25	4.8	-0.4	0.4
07761	12	V	50	29	4.5	1.9	-0.3
07761	00	V	50	27	5.0	0.1	0.2
08001	12	V	50	22	5.3	-1.6	0.9
08001	00	V	50	14	3.8	1.2	0.1
08221	12	V	50	31	4.2	0.1	0.8
08221	00	V	50	28	3.8	0.7	-0.2
08302	12	V	50	29	5.1	0.6	0.3
08302	00	V	50	26	3.8	0.7	0.4
08508	12	V	50	29	3.6	0.2	0.1
08522	12	V	50	29	3.3	-0.3	1.0
08579	12	V	50	31	3.8	1.0	-0.1
10035	12	V	50	31	3.0	0.3	-0.5
10035	00	V	50	30	3.1	-0.4	0.3
10393	12	V	50	31	2.8	0.3	-0.3
10393	00	V	50	28	2.9	1.4	-0.1
10410	12	V	50	29	3.7	0.7	0.9
10410	00	V	50	28	3.4	-0.2	0.0
10739	00	V	50	30	3.0	-0.1	0.3
10739	12	V	50	31	3.3	0.5	-0.1
11035	00	V	50	29	3.5	-0.2	0.1
11035	12	V	50	31	3.0	-0.1	0.2
12982	12	V	50	22	3.9	1.2	0.9
12982	00	V	50	29	3.5	0.6	-0.8
16044	12	V	50	31	3.3	0.1	0.0
16044	00	V	50	29	3.7	2.0	-0.5
16080	12	V	50	31	3.7	1.1	-0.2
16080	00	V	50	30	4.6	0.6	0.1
16245	12	V	50	31	4.2	1.0	0.6
16245	00	V	50	28	4.9	1.5	0.8
16320	00	V	50	30	5.1	2.1	1.0
16320	12	V	50	30	4.5	1.2	-0.2
16429	12	V	50	28	5.6	0.4	0.7

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	00	V	50	25	5.7	2.5	1.7
16622	00	V	50	19	5.1	1.0	-0.5
16754	00	V	50	25	6.0	-0.2	-0.6
17607	12	V	50	18	6.4	2.2	2.2
26435	00	V	50	14	3.4	0.6	1.1
60018	00	V	50	27	3.8	0.7	0.7
60018	12	V	50	30	4.6	0.7	-0.4
ASDE01	12	V	50	6	4.6	1.8	0.5
ASDE01	00	V	50	7	3.6	-0.1	0.6
ASDE03	00	V	50	4	3.5	1.6	1.0
ASDE03	12	V	50	5	3.1	0.3	0.1
ASDE04	00	V	50	6	4.5	-1.0	-0.4
ASDE04	12	V	50	6	4.2	-2.2	-0.7
ASDE09	12	V	50	2	2.2	-0.9	1.2
ASDK01	00	V	50	0	0.0	0.0	0.0
ASDK02	00	V	50	4	5.3	-0.2	-0.4
ASDK02	12	V	50	2	2.7	2.6	-0.4
ASDK1	00	V	50	0	0.0	0.0	0.0
ASDK2	00	V	50	4	5.1	0.0	-0.6
ASDK2	12	V	50	2	2.5	2.1	0.2
ASES01	12	V	50	23	5.3	0.8	0.3
ASEU02	12	V	50	5	3.8	-0.8	2.3
ASEU02	00	V	50	5	2.7	-0.8	-2.0
ASEU03	00	V	50	6	4.3	-0.9	0.6
ASEU03	12	V	50	6	5.0	-0.4	3.5
ASEU04	12	V	50	11	2.5	-0.1	-0.4
ASEU04	00	V	50	6	3.3	-1.1	-0.4
ASEU06	00	V	50	2	1.6	0.5	1.2
ASEU06	12	V	50	4	4.3	1.1	3.4
ASFR1	00	V	50	12	3.9	0.9	0.1
ASFR1	12	V	50	11	4.2	3.0	0.1
ASFR2	00	V	50	4	2.3	1.1	-0.5
ASFR2	12	V	50	8	3.4	-0.3	-0.2
ASFR3	00	V	50	10	2.5	-0.4	-0.1
ASFR3	12	V	50	12	3.9	1.3	0.2
ASFR4	00	V	50	14	3.5	1.0	-0.9
ASFR4	12	V	50	11	3.1	0.2	-0.9

### 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 : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	100	29	11.2	6.9
01001	00	Z	100	29	12.8	0.5
01028	00	Z	100	28	5.4	-0.3
01028	12	Z	100	31	8.5	3.6
01400	00	Z	100	23	17.0	14.7
01400	12	Z	100	24	32.1	18.8
01415	00	Z	100	29	8.3	2.8
01415	12	Z	100	30	13.7	10.5
02365	00	Z	100	31	8.0	-2.2
02365	12	Z	100	27	8.5	1.6
02591	00	Z	100	32	9.6	7.0
02591	12	Z	100	33	13.6	12.1
02836	00	Z	100	36	5.4	-2.1
02836	12	Z	100	34	9.3	5.2
02963	00	Z	100	32	4.5	1.1
02963	12	Z	100	32	7.8	5.4
03005	12	Z	100	31	8.8	5.5
03005	00	Z	100	30	8.1	-1.2
03238	12	Z	100	17	13.1	8.4
03238	00	Z	100	28	10.4	7.1
03808	00	Z	100	31	10.5	5.2
03808	12	Z	100	31	10.4	7.4
03918	00	Z	100	31	11.6	9.1
03918	12	Z	100	21	14.1	12.4
03953	12	Z	100	29	20.3	16.3
03953	00	Z	100	31	37.5	17.9
04018	00	Z	100	27	8.0	3.2
04018	12	Z	100	28	11.1	8.1
04220	12	Z	100	18	11.3	8.4
04220	00	Z	100	22	9.8	7.0
04270	12	Z	100	30	12.5	4.3
04270	00	Z	100	29	10.3	2.8
04320	12	Z	100	31	11.2	8.3
04320	00	Z	100	31	18.4	9.9
04339	12	Z	100	30	12.1	7.6
04339	00	Z	100	31	26.9	0.1
04360	12	Z	100	17	15.5	12.1
04360	00	Z	100	15	10.5	5.5
06011	00	Z	100	28	13.8	1.0

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	100	26	34.3	9.3
06260	00	Z	100	31	11.6	8.9
06260	12	Z	100	6	13.6	12.9
06610	12	Z	100	31	11.1	3.5
06610	00	Z	100	31	12.3	4.1
07110	00	Z	100	30	15.7	12.0
07110	12	Z	100	29	21.7	18.5
07510	12	Z	100	27	32.2	31.3
07510	00	Z	100	26	26.0	23.7
07645	00	Z	100	28	14.3	-2.5
07645	12	Z	100	29	22.8	16.1
07761	12	Z	100	31	19.1	12.6
07761	00	Z	100	30	15.4	4.0
08001	12	Z	100	30	19.1	16.3
08001	00	Z	100	28	13.9	10.0
08221	12	Z	100	31	19.7	15.6
08221	00	Z	100	30	17.2	13.7
08302	12	Z	100	31	10.8	5.4
08302	00	Z	100	27	7.0	4.3
08508	12	Z	100	31	22.0	19.3
08522	12	Z	100	30	14.4	11.9
08579	12	Z	100	31	15.0	13.1
10035	12	Z	100	31	8.5	3.1
10035	00	Z	100	32	6.1	3.2
10393	12	Z	100	31	7.1	3.1
10393	00	Z	100	31	5.3	2.2
10410	12	Z	100	29	9.7	5.0
10410	00	Z	100	29	8.0	2.8
10739	00	Z	100	31	11.6	8.8
10739	12	Z	100	31	14.6	12.0
11035	00	Z	100	31	6.8	1.5
11035	12	Z	100	32	7.4	0.7
12982	12	Z	100	25	27.1	25.6
12982	00	Z	100	31	9.5	0.5
16044	12	Z	100	31	10.2	6.0
16044	00	Z	100	31	10.0	5.4
16080	12	Z	100	30	9.7	-0.4
16080	00	Z	100	31	6.8	-0.4
16245	12	Z	100	31	10.3	-0.1
16245	00	Z	100	31	10.8	0.9
16320	00	Z	100	31	10.7	2.8
16320	12	Z	100	29	8.9	-0.6
16429	12	Z	100	28	11.5	-0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	00	Z	100	30	9.3	4.0
16622	00	Z	100	31	28.7	24.0
16754	00	Z	100	28	19.0	14.9
17607	12	Z	100	35	15.9	-11.9
26435	00	Z	100	14	6.9	3.3
60018	00	Z	100	30	12.0	8.0
60018	12	Z	100	30	8.7	6.2
ASDE01	12	Z	100	10	15.1	12.8
ASDE01	00	Z	100	14	18.3	-1.6
ASDE03	00	Z	100	7	14.3	8.5
ASDE03	12	Z	100	12	37.2	35.1
ASDE04	00	Z	100	8	28.0	13.7
ASDE04	12	Z	100	7	35.5	33.6
ASDE09	12	Z	100	5	37.9	35.7
ASDK01	00	Z	100	1	10.9	-10.9
ASDK02	00	Z	100	6	6.9	3.1
ASDK02	12	Z	100	7	12.5	10.6
ASDK1	00	Z	100	1	23.6	-23.6
ASDK2	00	Z	100	12	8.2	2.1
ASDK2	12	Z	100	5	11.9	10.2
ASES01	12	Z	100	26	28.4	27.0
ASEU02	12	Z	100	6	45.7	45.5
ASEU02	00	Z	100	5	37.7	36.0
ASEU03	00	Z	100	12	22.9	-21.7
ASEU03	12	Z	100	11	17.5	3.6
ASEU04	12	Z	100	13	27.2	13.6
ASEU04	00	Z	100	9	10.7	2.3
ASEU06	00	Z	100	6	34.5	9.4
ASEU06	12	Z	100	8	33.7	30.4
ASFR1	00	Z	100	13	12.2	9.1
ASFR1	12	Z	100	13	12.8	10.5
ASFR2	00	Z	100	7	13.7	13.3
ASFR2	12	Z	100	10	23.0	22.1
ASFR3	00	Z	100	12	14.6	12.5
ASFR3	12	Z	100	15	19.9	18.4
ASFR4	00	Z	100	15	19.1	17.6
ASFR4	12	Z	100	11	27.5	26.9

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

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 100 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	100	29	3.4	-0.1	0.3
01001	00	V	100	28	3.9	-0.6	-0.4
01028	00	V	100	27	2.2	-0.3	-0.1
01028	12	V	100	30	3.0	0.3	0.0
01400	00	V	100	20	2.9	-0.4	0.4
01400	12	V	100	24	3.5	-0.1	0.7
01415	00	V	100	28	4.3	-0.9	-0.5
01415	12	V	100	30	3.0	0.4	0.1
02365	00	V	100	28	4.2	-0.1	0.1
02365	12	V	100	27	3.9	0.5	0.6
02591	00	V	100	30	3.0	-0.2	0.3
02591	12	V	100	31	4.2	0.4	1.0
02836	00	V	100	30	3.7	-0.1	-1.0
02836	12	V	100	31	4.0	-0.2	-1.1
02963	00	V	100	30	3.5	0.1	1.1
02963	12	V	100	31	3.1	0.1	0.2
03005	12	V	100	31	3.0	0.3	0.4
03005	00	V	100	28	2.9	-0.2	-0.4
03238	12	V	100	17	3.5	-0.4	-0.2
03238	00	V	100	27	4.0	0.0	0.0
03808	00	V	100	29	4.0	0.9	-0.2
03808	12	V	100	31	3.5	0.0	0.2
03918	00	V	100	28	3.1	-0.4	-0.4
03918	12	V	100	21	2.6	-0.5	-0.1
03953	12	V	100	29	4.1	-0.1	0.1
03953	00	V	100	30	3.4	0.9	0.1
04018	00	V	100	26	5.1	0.9	0.5
04018	12	V	100	28	4.2	0.8	0.5
04220	12	V	100	18	3.4	-0.5	-1.0
04220	00	V	100	21	2.5	-0.5	0.4
04270	12	V	100	30	3.8	0.8	0.2
04270	00	V	100	28	3.9	-0.6	-0.5
04320	12	V	100	31	4.6	0.4	-0.6
04320	00	V	100	30	4.2	-0.9	-0.5
04339	12	V	100	30	3.7	-0.3	0.6
04339	00	V	100	29	4.7	-0.5	0.3
04360	12	V	100	17	2.9	0.5	0.6
04360	00	V	100	14	3.3	-0.3	0.1
06011	00	V	100	27	3.5	0.2	-0.1



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	100	26	3.1	-0.8	-0.2
06260	00	V	100	30	2.8	0.7	0.1
06260	12	V	100	6	2.1	0.3	-0.3
06610	12	V	100	31	4.5	-0.4	0.4
06610	00	V	100	30	4.3	-0.2	0.2
07110	00	V	100	25	3.3	0.1	-0.4
07110	12	V	100	29	3.3	-0.1	-0.3
07510	12	V	100	25	3.3	0.7	-0.7
07510	00	V	100	24	3.3	0.9	0.1
07645	00	V	100	25	5.8	1.6	-1.1
07645	12	V	100	27	2.9	1.1	0.3
07761	12	V	100	28	4.4	0.2	-0.6
07761	00	V	100	24	4.2	1.6	0.2
08001	12	V	100	29	3.5	-0.3	0.1
08001	00	V	100	26	4.2	0.2	0.7
08221	12	V	100	31	3.8	0.7	0.1
08221	00	V	100	28	4.6	0.3	0.1
08302	12	V	100	31	3.4	0.6	-0.2
08302	00	V	100	26	3.6	1.5	-0.6
08508	12	V	100	30	3.7	-1.0	-0.5
08522	12	V	100	30	4.3	1.0	0.6
08579	12	V	100	31	3.9	0.4	0.2
10035	12	V	100	31	3.0	0.1	0.3
10035	00	V	100	30	2.7	0.1	0.4
10393	12	V	100	31	3.3	1.0	0.3
10393	00	V	100	30	3.3	0.3	0.3
10410	12	V	100	29	3.0	0.6	-0.4
10410	00	V	100	28	3.4	1.2	-0.2
10739	00	V	100	30	3.5	0.1	0.1
10739	12	V	100	31	4.2	1.2	0.5
11035	00	V	100	31	3.1	-0.4	0.3
11035	12	V	100	31	2.7	0.5	-0.2
12982	12	V	100	25	3.2	0.7	-0.4
12982	00	V	100	31	3.5	0.3	-0.3
16044	12	V	100	31	3.0	0.2	-0.4
16044	00	V	100	30	3.3	-0.4	-0.2
16080	12	V	100	30	4.1	-0.1	1.0
16080	00	V	100	30	3.5	0.5	-0.6
16245	12	V	100	31	3.7	1.0	0.4
16245	00	V	100	30	4.1	1.0	0.3
16320	00	V	100	30	3.8	0.6	-1.0
16320	12	V	100	29	3.8	1.6	0.4
16429	12	V	100	28	5.5	0.8	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	00	V	100	29	3.5	0.6	-0.1
16622	00	V	100	25	4.8	-0.5	-0.3
16754	00	V	100	28	5.6	-0.3	-0.5
17607	12	V	100	21	4.3	1.8	-0.2
26435	00	V	100	14	2.8	0.6	0.2
60018	00	V	100	28	4.3	1.8	0.1
60018	12	V	100	30	4.9	1.8	1.1
ASDE01	12	V	100	8	2.6	-0.6	0.3
ASDE01	00	V	100	11	4.1	0.2	0.2
ASDE03	00	V	100	6	3.6	-0.1	1.7
ASDE03	12	V	100	8	4.7	2.3	-1.2
ASDE04	00	V	100	7	4.5	-0.3	0.3
ASDE04	12	V	100	7	5.4	0.5	1.5
ASDE09	12	V	100	4	3.0	-2.0	-0.5
ASDK01	00	V	100	1	5.1	3.2	-4.0
ASDK02	00	V	100	6	3.7	0.6	0.6
ASDK02	12	V	100	5	2.7	0.0	0.1
ASDK1	00	V	100	1	3.7	2.4	-2.8
ASDK2	00	V	100	5	4.0	1.0	0.3
ASDK2	12	V	100	5	2.5	-0.3	-0.5
ASES01	12	V	100	24	4.9	0.5	0.6
ASEU02	12	V	100	5	3.5	1.7	-0.2
ASEU02	00	V	100	5	3.3	-1.3	-2.1
ASEU03	00	V	100	11	2.3	0.2	1.1
ASEU03	12	V	100	7	3.6	-0.7	0.6
ASEU04	12	V	100	11	4.3	-2.3	-0.6
ASEU04	00	V	100	8	4.7	-1.0	2.2
ASEU06	00	V	100	3	8.9	-4.8	2.6
ASEU06	12	V	100	3	4.8	3.1	0.9
ASFR1	00	V	100	12	4.1	2.0	0.6
ASFR1	12	V	100	12	2.7	-0.2	0.4
ASFR2	00	V	100	6	3.0	0.8	1.5
ASFR2	12	V	100	8	4.7	-0.4	-0.6
ASFR3	00	V	100	12	3.4	0.9	1.4
ASFR3	12	V	100	12	4.1	0.4	-0.7
ASFR4	00	V	100	14	6.1	-1.1	0.5
ASFR4	12	V	100	11	3.8	0.8	-0.3

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

##### RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 500 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	500	29	6.2	1.7
01001	00	Z	500	30	7.7	2.5
01028	00	Z	500	29	5.3	0.7
01028	12	Z	500	31	5.0	1.4
01400	00	Z	500	23	11.7	10.3
01400	12	Z	500	25	21.5	13.2
01415	00	Z	500	29	5.4	4.3
01415	12	Z	500	30	6.9	5.4
02365	00	Z	500	31	5.0	3.4
02365	12	Z	500	28	5.2	3.6
02591	00	Z	500	32	10.1	9.5
02591	12	Z	500	33	10.1	9.6
02836	00	Z	500	36	3.8	1.9
02836	12	Z	500	34	4.9	3.7
02963	00	Z	500	32	4.4	3.3
02963	12	Z	500	32	5.4	4.2
03005	12	Z	500	31	6.1	4.1
03005	00	Z	500	31	6.8	-1.7
03238	12	Z	500	17	8.8	6.3
03238	00	Z	500	28	9.1	7.3
03808	00	Z	500	31	7.2	5.3
03808	12	Z	500	32	7.9	6.1
03918	00	Z	500	31	8.2	6.8
03918	12	Z	500	22	8.5	7.3
03953	12	Z	500	31	9.3	7.2
03953	00	Z	500	31	8.4	5.8
04018	00	Z	500	28	7.7	1.5
04018	12	Z	500	29	6.8	3.7
04220	12	Z	500	21	5.4	2.9
04220	00	Z	500	22	5.9	3.7
04270	12	Z	500	31	7.4	-0.1
04270	00	Z	500	30	7.0	0.4
04320	12	Z	500	31	9.3	7.0
04320	00	Z	500	30	9.3	5.8
04339	12	Z	500	30	7.3	5.4
04339	00	Z	500	31	25.8	-0.3
04360	12	Z	500	25	6.8	3.3
04360	00	Z	500	24	4.9	-0.9
06011	00	Z	500	31	7.1	1.8

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	500	28	24.8	8.6
06260	00	Z	500	31	7.4	5.7
06260	12	Z	500	6	5.6	5.2
06610	12	Z	500	31	6.2	3.3
06610	00	Z	500	31	6.9	5.3
07110	00	Z	500	31	7.0	2.9
07110	12	Z	500	29	9.9	7.7
07510	12	Z	500	33	13.1	11.3
07510	00	Z	500	30	9.4	7.6
07645	00	Z	500	31	7.0	-3.1
07645	12	Z	500	36	8.5	2.2
07761	12	Z	500	31	6.9	3.5
07761	00	Z	500	30	8.7	-3.2
08001	12	Z	500	30	10.1	9.4
08001	00	Z	500	29	10.2	9.6
08221	12	Z	500	31	9.6	8.3
08221	00	Z	500	30	6.3	5.1
08302	12	Z	500	31	4.1	0.2
08302	00	Z	500	28	4.0	-0.7
08508	12	Z	500	31	16.5	14.1
08522	12	Z	500	30	9.4	7.5
08579	12	Z	500	31	8.8	7.1
10035	12	Z	500	31	4.2	0.9
10035	00	Z	500	32	5.0	2.9
10393	12	Z	500	31	4.0	0.3
10393	00	Z	500	31	3.1	1.1
10410	12	Z	500	29	3.8	-0.5
10410	00	Z	500	29	3.4	1.5
10739	00	Z	500	31	8.5	8.0
10739	12	Z	500	32	8.7	7.9
11035	00	Z	500	32	5.0	-0.7
11035	12	Z	500	32	6.1	-1.7
12982	12	Z	500	29	8.9	5.9
12982	00	Z	500	30	5.2	2.4
16044	12	Z	500	32	5.0	1.9
16044	00	Z	500	31	6.5	1.7
16080	12	Z	500	30	8.6	-6.5
16080	00	Z	500	31	6.9	-4.3
16245	12	Z	500	31	9.5	-7.8
16245	00	Z	500	31	6.2	-3.8
16320	00	Z	500	31	7.3	-2.4
16320	12	Z	500	30	5.8	-2.7
16429	12	Z	500	31	9.0	-5.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	00	Z	500	30	5.8	-0.5
16622	00	Z	500	31	21.4	13.3
16754	00	Z	500	29	12.0	6.8
17607	12	Z	500	35	7.2	5.4
26435	00	Z	500	14	6.8	4.9
60018	00	Z	500	30	5.2	2.3
60018	12	Z	500	31	4.1	1.8
ASDE01	12	Z	500	10	22.3	-6.5
ASDE01	00	Z	500	15	27.5	-11.5
ASDE03	00	Z	500	8	10.3	5.8
ASDE03	12	Z	500	12	10.6	5.9
ASDE04	00	Z	500	8	28.6	9.2
ASDE04	12	Z	500	7	31.9	29.5
ASDE09	12	Z	500	5	14.5	11.8
ASDK01	00	Z	500	1	7.5	7.5
ASDK02	00	Z	500	6	5.9	5.0
ASDK02	12	Z	500	7	4.5	-0.4
ASDK1	00	Z	500	1	27.9	-27.9
ASDK2	00	Z	500	12	6.5	2.0
ASDK2	12	Z	500	5	3.0	-0.7
ASES01	12	Z	500	26	15.3	13.9
ASEU02	12	Z	500	6	34.1	33.6
ASEU02	00	Z	500	5	33.1	32.8
ASEU03	00	Z	500	13	33.9	-33.0
ASEU03	12	Z	500	12	29.9	-26.9
ASEU04	12	Z	500	13	7.5	-1.1
ASEU04	00	Z	500	10	6.9	-2.6
ASEU06	00	Z	500	7	40.3	10.6
ASEU06	12	Z	500	10	23.4	8.2
ASFR1	00	Z	500	13	5.9	-3.0
ASFR1	12	Z	500	14	6.9	-1.7
ASFR2	00	Z	500	9	11.6	11.0
ASFR2	12	Z	500	10	17.3	17.1
ASFR3	00	Z	500	13	6.8	1.4
ASFR3	12	Z	500	16	7.7	2.5
ASFR4	00	Z	500	15	5.3	1.8
ASFR4	12	Z	500	11	6.6	4.0

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

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 500 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	500	29	2.9	-0.1	-0.2
01001	00	V	500	29	2.8	0.3	-0.5
01028	00	V	500	28	2.3	0.0	0.2
01028	12	V	500	31	2.8	0.5	0.1
01400	00	V	500	22	2.0	-0.2	0.1
01400	12	V	500	25	2.7	-0.2	-0.5
01415	00	V	500	28	3.3	-0.4	0.1
01415	12	V	500	30	3.1	-0.2	0.0
02365	00	V	500	29	1.9	0.3	-0.5
02365	12	V	500	28	2.7	0.4	-0.5
02591	00	V	500	30	2.5	0.5	0.2
02591	12	V	500	31	2.4	-0.6	0.0
02836	00	V	500	30	2.5	-0.3	-0.6
02836	12	V	500	31	2.2	-0.2	-0.6
02963	00	V	500	30	2.5	-0.6	-0.3
02963	12	V	500	31	2.3	-0.1	-0.4
03005	12	V	500	31	3.4	0.8	-0.1
03005	00	V	500	29	3.5	-0.1	0.0
03238	12	V	500	17	2.8	0.6	0.3
03238	00	V	500	27	3.0	0.2	0.4
03808	00	V	500	29	2.7	0.2	0.3
03808	12	V	500	31	4.3	0.6	-0.6
03918	00	V	500	28	2.7	-0.3	-0.1
03918	12	V	500	21	4.0	0.1	0.2
03953	12	V	500	31	3.7	0.3	-0.2
03953	00	V	500	30	4.3	0.4	-0.8
04018	00	V	500	27	2.8	-0.1	-0.4
04018	12	V	500	29	3.1	0.3	-0.4
04220	12	V	500	21	3.6	-0.4	0.8
04220	00	V	500	21	3.1	0.3	0.2
04270	12	V	500	31	3.3	-0.3	-0.2
04270	00	V	500	29	3.9	-0.6	0.2
04320	12	V	500	31	3.3	-0.6	0.5
04320	00	V	500	29	2.6	0.3	1.0
04339	12	V	500	30	3.5	-0.8	-0.1
04339	00	V	500	29	2.9	0.2	-0.7
04360	12	V	500	25	2.4	0.5	0.1
04360	00	V	500	23	3.3	-0.1	0.4
06011	00	V	500	30	2.7	0.1	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	500	28	3.4	0.6	0.3
06260	00	V	500	30	2.8	-0.4	0.2
06260	12	V	500	6	2.3	0.1	-0.7
06610	12	V	500	31	3.0	0.8	0.2
06610	00	V	500	30	3.8	0.4	0.1
07110	00	V	500	28	3.2	0.6	0.1
07110	12	V	500	29	3.4	0.4	0.2
07510	12	V	500	31	3.4	-0.5	-0.4
07510	00	V	500	28	3.1	0.5	0.2
07645	00	V	500	29	3.3	0.6	0.3
07645	12	V	500	31	3.2	0.2	-0.3
07761	12	V	500	31	3.5	0.3	0.5
07761	00	V	500	29	3.4	0.9	-0.3
08001	12	V	500	30	2.6	0.6	0.5
08001	00	V	500	28	2.1	0.0	0.3
08221	12	V	500	30	3.7	1.0	-0.3
08221	00	V	500	28	3.1	0.6	-0.1
08302	12	V	500	31	3.0	-0.1	-0.3
08302	00	V	500	27	2.6	0.1	0.2
08508	12	V	500	30	3.2	0.5	0.1
08522	12	V	500	30	2.9	0.8	0.1
08579	12	V	500	31	2.8	1.2	-0.2
10035	12	V	500	31	2.7	0.2	0.1
10035	00	V	500	30	2.3	0.0	-0.3
10393	12	V	500	31	2.7	0.5	0.1
10393	00	V	500	30	2.5	-0.3	0.0
10410	12	V	500	29	2.5	0.6	-0.6
10410	00	V	500	28	3.5	-0.5	-0.1
10739	00	V	500	30	2.8	0.3	-0.6
10739	12	V	500	31	2.5	0.6	-0.2
11035	00	V	500	31	2.4	0.4	-0.1
11035	12	V	500	31	2.9	-0.3	-0.6
12982	12	V	500	29	3.5	0.8	-0.3
12982	00	V	500	30	4.2	0.4	0.7
16044	12	V	500	31	3.0	-0.3	-0.2
16044	00	V	500	30	3.6	0.5	-0.1
16080	12	V	500	30	2.9	-0.1	-1.0
16080	00	V	500	30	2.8	0.2	-0.9
16245	12	V	500	31	2.8	0.7	0.5
16245	00	V	500	30	3.8	1.0	0.4
16320	00	V	500	30	3.8	-0.1	0.6
16320	12	V	500	30	3.8	1.0	0.2
16429	12	V	500	31	3.8	-0.1	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	00	V	500	29	2.9	0.6	0.8
16622	00	V	500	28	5.2	0.9	0.8
16754	00	V	500	29	5.6	0.6	1.6
17607	12	V	500	21	2.3	-0.2	0.0
26435	00	V	500	14	2.7	0.9	0.0
60018	00	V	500	29	2.4	0.0	-0.2
60018	12	V	500	31	2.5	0.6	0.2
ASDE01	12	V	500	8	5.2	-0.7	-1.0
ASDE01	00	V	500	12	2.8	0.0	-0.4
ASDE03	00	V	500	7	3.4	-0.8	1.0
ASDE03	12	V	500	8	3.2	0.9	0.5
ASDE04	00	V	500	7	2.3	0.5	0.5
ASDE04	12	V	500	7	2.4	0.9	0.6
ASDE09	12	V	500	4	1.8	-0.2	-0.4
ASDK01	00	V	500	1	2.0	1.3	-1.5
ASDK02	00	V	500	6	2.8	0.1	-0.2
ASDK02	12	V	500	5	3.4	-0.3	1.5
ASDK1	00	V	500	1	7.0	4.9	-5.0
ASDK2	00	V	500	5	2.8	-0.2	-0.1
ASDK2	12	V	500	5	3.9	0.4	1.6
ASES01	12	V	500	24	3.1	0.2	0.8
ASEU02	12	V	500	5	2.4	0.1	-0.5
ASEU02	00	V	500	5	3.5	-1.1	-2.6
ASEU03	00	V	500	12	3.0	-0.7	0.5
ASEU03	12	V	500	12	3.0	-0.1	-0.3
ASEU04	12	V	500	11	3.9	0.3	0.0
ASEU04	00	V	500	9	3.1	-0.3	0.6
ASEU06	00	V	500	6	5.7	1.0	3.9
ASEU06	12	V	500	7	4.0	-0.6	-0.3
ASFR1	00	V	500	12	3.9	-0.1	1.0
ASFR1	12	V	500	13	4.7	0.1	1.4
ASFR2	00	V	500	8	2.8	0.6	0.4
ASFR2	12	V	500	8	3.6	-1.3	0.5
ASFR3	00	V	500	13	2.9	0.0	-0.5
ASFR3	12	V	500	13	2.9	0.5	-0.3
ASFR4	00	V	500	14	2.3	0.4	0.0
ASFR4	12	V	500	11	3.0	0.3	0.8



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

##### RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 850 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	850	29	5.3	-3.0
01001	00	Z	850	30	6.7	-0.9
01028	00	Z	850	30	3.8	-0.6
01028	12	Z	850	31	3.6	-0.6
01400	00	Z	850	23	9.1	6.9
01400	12	Z	850	26	19.5	10.7
01415	00	Z	850	29	4.2	3.8
01415	12	Z	850	30	4.2	3.5
02365	00	Z	850	31	5.9	5.4
02365	12	Z	850	28	4.7	3.9
02591	00	Z	850	32	9.1	8.8
02591	12	Z	850	33	9.4	9.1
02836	00	Z	850	36	3.1	2.6
02836	12	Z	850	34	3.5	2.8
02963	00	Z	850	32	4.1	3.5
02963	12	Z	850	32	4.3	3.5
03005	12	Z	850	31	4.7	0.6
03005	00	Z	850	31	5.0	-0.9
03238	12	Z	850	17	6.0	5.7
03238	00	Z	850	28	7.0	6.5
03808	00	Z	850	31	3.5	2.3
03808	12	Z	850	32	3.3	2.3
03918	00	Z	850	31	6.1	5.4
03918	12	Z	850	22	5.6	5.2
03953	12	Z	850	31	5.2	3.0
03953	00	Z	850	31	4.6	3.9
04018	00	Z	850	28	3.9	0.4
04018	12	Z	850	29	3.4	0.9
04220	12	Z	850	22	4.0	2.0
04220	00	Z	850	22	5.2	3.1
04270	12	Z	850	31	5.0	2.1
04270	00	Z	850	30	4.2	1.7
04320	12	Z	850	31	4.4	1.3
04320	00	Z	850	30	4.8	0.3
04339	12	Z	850	31	4.7	-0.4
04339	00	Z	850	31	4.7	-0.5
04360	12	Z	850	26	4.4	-1.0
04360	00	Z	850	25	5.1	-0.9
06011	00	Z	850	31	4.1	2.6

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	850	30	16.2	7.5
06260	00	Z	850	31	3.8	3.1
06260	12	Z	850	6	2.6	1.6
06610	12	Z	850	31	4.6	3.8
06610	00	Z	850	31	5.4	4.7
07110	00	Z	850	31	3.4	2.2
07110	12	Z	850	29	4.1	2.9
07510	12	Z	850	33	6.2	5.0
07510	00	Z	850	31	4.5	3.9
07645	00	Z	850	32	3.7	-1.6
07645	12	Z	850	36	6.3	-0.8
07761	12	Z	850	32	3.1	-1.4
07761	00	Z	850	30	3.4	-1.8
08001	12	Z	850	30	6.6	6.2
08001	00	Z	850	29	7.0	6.4
08221	12	Z	850	31	4.1	2.9
08221	00	Z	850	31	3.8	2.3
08302	12	Z	850	31	4.1	-3.1
08302	00	Z	850	28	3.9	-2.0
08508	12	Z	850	31	11.1	7.9
08522	12	Z	850	30	4.7	3.8
08579	12	Z	850	31	3.5	2.5
10035	12	Z	850	31	2.9	0.6
10035	00	Z	850	32	3.9	2.6
10393	12	Z	850	31	1.8	0.3
10393	00	Z	850	31	2.7	1.2
10410	12	Z	850	29	3.2	-1.7
10410	00	Z	850	29	2.6	-1.2
10739	00	Z	850	31	8.8	8.4
10739	12	Z	850	32	7.4	6.9
11035	00	Z	850	32	3.2	-1.0
11035	12	Z	850	32	2.9	-0.6
12982	12	Z	850	29	4.9	4.0
12982	00	Z	850	30	3.7	1.9
16044	12	Z	850	34	3.5	0.6
16044	00	Z	850	31	3.8	2.4
16080	12	Z	850	30	8.7	-7.1
16080	00	Z	850	31	6.9	-5.6
16245	12	Z	850	31	9.8	-8.8
16245	00	Z	850	31	5.9	-4.7
16320	00	Z	850	31	7.4	-3.7
16320	12	Z	850	31	6.3	-3.4
16429	12	Z	850	32	6.2	-4.8

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	00	Z	850	30	4.5	-1.6
16622	00	Z	850	31	14.7	10.8
16754	00	Z	850	29	6.2	2.8
17607	12	Z	850	35	3.7	1.8
26435	00	Z	850	15	2.6	0.7
60018	00	Z	850	30	4.3	-2.1
60018	12	Z	850	31	4.6	-3.5
ASDE01	12	Z	850	10	27.3	-14.8
ASDE01	00	Z	850	15	31.1	-16.7
ASDE03	00	Z	850	8	7.7	2.8
ASDE03	12	Z	850	12	9.7	-2.2
ASDE04	00	Z	850	8	22.6	14.4
ASDE04	12	Z	850	7	29.5	26.2
ASDE09	12	Z	850	5	8.9	5.0
ASDK01	00	Z	850	1	5.6	5.6
ASDK02	00	Z	850	6	5.2	0.9
ASDK02	12	Z	850	7	3.6	2.6
ASDK1	00	Z	850	1	2.3	2.3
ASDK2	00	Z	850	12	6.2	1.6
ASDK2	12	Z	850	5	7.0	4.1
ASES01	12	Z	850	26	10.3	8.5
ASEU02	12	Z	850	6	30.7	30.3
ASEU02	00	Z	850	5	28.5	28.3
ASEU03	00	Z	850	13	37.3	-36.8
ASEU03	12	Z	850	12	35.0	-34.4
ASEU04	12	Z	850	13	9.8	-8.6
ASEU04	00	Z	850	11	8.7	-6.9
ASEU06	00	Z	850	7	27.6	-5.9
ASEU06	12	Z	850	10	15.4	2.4
ASFR1	00	Z	850	14	7.1	-5.5
ASFR1	12	Z	850	14	6.7	-4.1
ASFR2	00	Z	850	9	9.9	9.7
ASFR2	12	Z	850	10	13.4	13.1
ASFR3	00	Z	850	13	4.2	-1.4
ASFR3	12	Z	850	17	6.6	-2.7
ASFR4	00	Z	850	15	5.5	-3.4
ASFR4	12	Z	850	11	5.0	-3.4

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

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 850 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	850	29	3.0	-0.2	0.2
01001	00	V	850	29	4.8	1.3	-0.5
01028	00	V	850	28	2.4	0.5	0.2
01028	12	V	850	31	3.2	-0.1	-0.2
01400	00	V	850	22	2.1	-0.2	-0.2
01400	12	V	850	26	2.6	0.0	-0.1
01415	00	V	850	28	2.5	-0.6	0.4
01415	12	V	850	30	2.5	-0.4	-0.5
02365	00	V	850	29	2.9	0.0	-0.5
02365	12	V	850	28	2.2	0.2	0.3
02591	00	V	850	30	2.1	-0.2	-0.2
02591	12	V	850	31	2.7	0.3	-0.5
02836	00	V	850	30	2.9	0.4	0.2
02836	12	V	850	31	2.2	0.3	0.1
02963	00	V	850	30	2.3	0.1	-0.1
02963	12	V	850	31	2.6	-0.1	0.2
03005	12	V	850	31	3.8	-0.1	-0.4
03005	00	V	850	29	2.8	-0.2	-0.5
03238	12	V	850	17	2.2	-0.3	-0.1
03238	00	V	850	27	2.5	0.3	-0.1
03808	00	V	850	29	2.8	-0.1	-0.1
03808	12	V	850	31	2.9	0.6	0.4
03918	00	V	850	28	2.0	-0.2	0.2
03918	12	V	850	21	2.6	0.1	-0.2
03953	12	V	850	31	2.7	0.4	0.2
03953	00	V	850	30	2.9	0.2	0.2
04018	00	V	850	27	3.0	1.5	0.1
04018	12	V	850	29	4.0	-0.6	0.3
04220	12	V	850	22	4.7	-1.3	-0.4
04220	00	V	850	21	3.2	0.3	0.8
04270	12	V	850	31	6.9	0.0	-0.2
04270	00	V	850	29	4.5	0.0	0.4
04320	12	V	850	31	3.9	-1.0	0.9
04320	00	V	850	29	4.1	-0.7	0.3
04339	12	V	850	31	4.4	-0.2	-0.4
04339	00	V	850	29	3.7	0.0	0.1
04360	12	V	850	26	4.3	1.2	0.3
04360	00	V	850	24	5.7	0.9	0.7
06011	00	V	850	30	2.5	-0.1	-0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	850	30	3.1	-0.5	-0.5
06260	00	V	850	30	2.5	-0.5	-0.3
06260	12	V	850	6	3.8	0.5	-1.5
06610	12	V	850	31	4.0	0.2	-0.4
06610	00	V	850	30	3.7	0.9	0.3
07110	00	V	850	28	2.9	0.2	0.1
07110	12	V	850	29	2.7	-0.6	0.1
07510	12	V	850	31	4.2	1.1	-0.1
07510	00	V	850	29	3.5	-0.2	-0.5
07645	00	V	850	30	4.3	0.1	0.3
07645	12	V	850	31	3.8	0.3	0.3
07761	12	V	850	31	4.7	-0.2	0.0
07761	00	V	850	29	4.0	0.0	1.3
08001	12	V	850	30	2.3	-0.3	-0.2
08001	00	V	850	28	2.9	0.6	-0.1
08221	12	V	850	31	2.9	0.5	0.5
08221	00	V	850	29	3.8	0.3	0.4
08302	12	V	850	31	2.9	0.3	0.3
08302	00	V	850	27	3.8	-0.5	0.6
08508	12	V	850	30	3.3	0.1	-0.1
08522	12	V	850	30	4.3	-0.1	1.0
08579	12	V	850	31	2.6	0.0	0.1
10035	12	V	850	31	2.1	-0.5	-0.4
10035	00	V	850	30	1.9	0.0	0.4
10393	12	V	850	31	2.4	0.2	-0.3
10393	00	V	850	30	2.7	-0.7	-0.3
10410	12	V	850	29	2.3	0.2	-0.6
10410	00	V	850	28	2.7	0.1	-0.1
10739	00	V	850	29	2.8	0.3	0.1
10739	12	V	850	31	2.7	-0.3	-0.5
11035	00	V	850	31	3.3	0.1	-0.7
11035	12	V	850	31	3.1	0.7	-0.3
12982	12	V	850	29	2.5	0.0	-0.1
12982	00	V	850	30	3.4	0.1	-1.0
16044	12	V	850	31	3.7	0.5	-0.3
16044	00	V	850	30	3.8	0.7	0.6
16080	12	V	850	30	3.9	0.3	-1.0
16080	00	V	850	30	4.7	0.9	-1.1
16245	12	V	850	31	3.5	-0.1	0.5
16245	00	V	850	30	3.2	0.6	0.5
16320	00	V	850	30	4.4	-0.2	-1.2
16320	12	V	850	31	3.7	1.6	-0.8
16429	12	V	850	31	2.8	-0.4	0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	00	V	850	29	3.0	-0.1	0.6
16622	00	V	850	29	5.7	-0.1	0.5
16754	00	V	850	29	4.8	-0.3	0.0
17607	12	V	850	21	3.6	-0.4	1.1
26435	00	V	850	15	3.0	-0.3	0.5
60018	00	V	850	29	3.7	-0.2	1.0
60018	12	V	850	31	4.4	-0.3	1.9
ASDE01	12	V	850	8	3.1	1.0	-1.4
ASDE01	00	V	850	12	2.9	-0.6	0.4
ASDE03	00	V	850	7	2.2	0.6	0.5
ASDE03	12	V	850	7	3.9	0.7	-0.6
ASDE04	00	V	850	7	2.7	-0.7	-1.0
ASDE04	12	V	850	7	2.6	0.0	1.4
ASDE09	12	V	850	4	2.0	0.6	-0.7
ASDK01	00	V	850	1	1.8	-0.7	1.7
ASDK02	00	V	850	6	3.2	-1.3	0.4
ASDK02	12	V	850	5	3.1	-1.6	0.3
ASDK1	00	V	850	1	3.0	2.2	2.1
ASDK2	00	V	850	5	2.3	0.1	0.1
ASDK2	12	V	850	5	3.0	-1.0	0.2
ASES01	12	V	850	24	2.6	0.0	0.2
ASEU02	12	V	850	5	3.8	1.5	-2.1
ASEU02	00	V	850	5	2.2	0.9	-0.4
ASEU03	00	V	850	12	2.5	0.2	0.3
ASEU03	12	V	850	12	2.3	-0.1	-0.1
ASEU04	12	V	850	11	3.1	-0.4	-0.4
ASEU04	00	V	850	10	2.9	0.4	-0.6
ASEU06	00	V	850	4	3.7	0.6	0.0
ASEU06	12	V	850	7	3.8	0.5	-0.4
ASFR1	00	V	850	13	2.7	0.5	0.9
ASFR1	12	V	850	13	5.4	0.5	0.2
ASFR2	00	V	850	8	4.6	-0.9	2.8
ASFR2	12	V	850	8	3.3	0.7	0.1
ASFR3	00	V	850	13	3.3	0.1	-1.4
ASFR3	12	V	850	14	3.1	0.6	-0.1
ASFR4	00	V	850	14	2.8	-0.4	0.9
ASFR4	12	V	850	11	2.7	1.0	0.5

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

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 AREA : 10N - 90N, 70W - 40E  
 PERIOD : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
03380	99	P	SUR	54	0	743	0	0.3	-0.2	0.4
13008	99	P	SUR	15	-38	100	0	0.3	0.1	0.3
13515	99	P	SUR	28	-53	550	0	0.3	0.1	0.4
13517	99	P	SUR	19	-60	375	0	0.3	0.0	0.3
13519	99	P	SUR	20	-50	315	0	0.4	0.2	0.4
13530	99	P	SUR	13	-25	219	0	0.3	0.0	0.3
13570	99	P	SUR	40	-15	259	0	6.3	-3.6	7.2
13572	99	P	SUR	35	-19	498	0	0.2	0.1	0.3
13575	99	P	SUR	10	-23	509	0	0.3	0.7	0.8
13589	99	P	SUR	14	-34	96	0	0.3	0.5	0.6
13592	99	P	SUR	11	-31	305	0	0.3	0.2	0.4
13633	99	P	SUR	30	-26	521	0	0.5	-0.6	0.8
13659	99	P	SUR	36	-24	403	0	0.5	-0.0	0.5
13661	99	P	SUR	17	-45	743	0	0.3	-0.3	0.4
13665	99	P	SUR	24	-25	744	0	0.3	0.2	0.4
13868	99	P	SUR	32	-14	744	0	0.3	0.5	0.5
13869	99	P	SUR	24	-43	743	0	0.3	0.2	0.4
13871	99	P	SUR	29	-35	723	0	0.4	0.6	0.7
13872	99	P	SUR	25	-31	744	0	0.3	0.5	0.6
21942	99	P	SUR	31	-46	655	0	0.4	0.2	0.4
25575	99	P	SUR	66	-36	645	1	0.6	-0.1	0.6
25617	99	P	SUR	61	-41	392	0	3.0	-0.5	3.0
26537	99	P	SUR	74	4	738	0	0.9	0.0	0.9
26545	99	P	SUR	74	-6	740	63	5.6	1.6	5.8
26546	99	P	SUR	68	-25	730	79	5.1	-0.4	5.1
31603	99	P	SUR	32	34	1	0	0.0	-4.9	4.9
31863	99	P	SUR	25	-59	649	0	0.6	0.6	0.9
41040	99	P	SUR	15	-53	736	0	0.4	-0.6	0.7
41041	99	P	SUR	14	-46	747	0	0.3	-0.3	0.4
41043	99	P	SUR	21	-65	743	0	0.3	-0.3	0.4
41044	99	P	SUR	22	-59	739	0	0.3	-0.2	0.4
41046	99	P	SUR	24	-68	761	0	0.3	-0.0	0.3
41048	99	P	SUR	32	-70	762	0	0.5	-0.6	0.7
41049	99	P	SUR	28	-63	741	0	0.4	-0.2	0.5
41051	99	P	SUR	18	-65	1575	0	0.4	-0.1	0.4
41052	99	P	SUR	18	-65	744	0	0.3	-1.1	1.1

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
41053	99	P	SUR	19	-66	1935	0	0.4	-0.4	0.5
41056	99	P	SUR	18	-66	1779	0	0.4	-0.8	0.9
41139	99	P	SUR	20	-38	229	0	0.3	-0.0	0.3
41300	99	P	SUR	16	-58	11	0	0.6	-0.5	0.8
41506	99	P	SUR	36	-66	634	0	0.5	-0.4	0.7
41590	99	P	SUR	37	-67	696	0	0.5	-0.6	0.8
41594	99	P	SUR	33	-62	537	0	0.4	-0.0	0.4
41597	99	P	SUR	26	-57	744	0	0.4	0.2	0.4
41598	99	P	SUR	29	-64	743	0	1.4	-1.0	1.7
41635	99	P	SUR	21	-50	744	0	0.3	0.5	0.6
41706	99	P	SUR	37	-49	744	0	0.4	-0.1	0.4
41707	99	P	SUR	14	-61	744	0	0.3	-0.9	1.0
41708	99	P	SUR	15	-43	744	0	0.3	0.4	0.5
41711	99	P	SUR	33	-21	743	0	0.3	-0.0	0.3
41729	99	P	SUR	36	-58	743	0	0.7	-0.0	0.7
41731	99	P	SUR	28	-55	744	0	0.4	0.1	0.4
41970	99	P	SUR	31	-69	743	0	0.4	0.0	0.4
41972	99	P	SUR	35	-49	734	0	0.5	-0.1	0.5
41975	99	P	SUR	29	-26	603	0	0.3	0.1	0.3
42059	99	P	SUR	15	-68	741	0	0.4	-0.0	0.4
42060	99	P	SUR	16	-63	743	0	0.3	-0.0	0.3
42085	99	P	SUR	18	-67	1861	0	0.4	-0.7	0.8
44005	99	P	SUR	43	-69	776	0	0.7	-0.6	0.9
44008	99	P	SUR	41	-69	743	0	0.6	-0.7	0.9
44011	99	P	SUR	41	-67	744	0	0.7	-1.1	1.3
44018	99	P	SUR	42	-70	539	0	0.7	-0.3	0.7
44024	99	P	SUR	42	-66	797	0	0.7	-0.9	1.1
44027	99	P	SUR	44	-67	764	0	0.7	-0.2	0.7
44032	99	P	SUR	44	-69	737	0	0.6	-1.1	1.2
44033	99	P	SUR	44	-69	735	0	0.6	-1.1	1.3
44034	99	P	SUR	44	-68	743	0	0.6	-0.2	0.7
44037	99	P	SUR	44	-68	477	0	0.6	-0.2	0.6
44137	99	P	SUR	42	-62	940	0	0.8	-0.1	0.8
44139	99	P	SUR	44	-57	715	0	0.6	-0.1	0.6
44141	99	P	SUR	43	-58	709	0	0.6	-0.2	0.7
44150	99	P	SUR	43	-64	677	0	0.7	-0.1	0.7
44251	99	P	SUR	46	-53	724	0	0.6	0.1	0.6
44255	99	P	SUR	47	-57	422	0	0.7	-0.0	0.7
44513	99	P	SUR	53	-11	744	0	0.5	0.5	0.7
44515	99	P	SUR	53	-37	744	0	0.6	0.0	0.6
44516	99	P	SUR	44	-34	130	0	0.3	0.5	0.5
44517	99	P	SUR	41	-15	744	0	0.3	0.3	0.4
44521	99	P	SUR	43	-41	560	0	0.5	-0.8	1.0



DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44546	99	P	SUR	30	-49	743	0	0.3	-0.2	0.3
44547	99	P	SUR	64	-18	328	0	2.0	-0.6	2.1
44548	99	P	SUR	62	-23	382	0	0.5	0.0	0.5
44551	99	P	SUR	63	2	744	0	0.6	0.2	0.6
44557	99	P	SUR	43	-46	744	1	0.8	0.5	0.9
44558	99	P	SUR	31	-46	490	0	0.4	0.6	0.7
44608	99	P	SUR	49	-4	208	0	0.6	0.1	0.6
44613	99	P	SUR	26	-43	743	0	0.3	-0.1	0.3
44614	99	P	SUR	53	-14	738	0	0.6	-0.2	0.6
44624	99	P	SUR	26	-44	736	0	0.3	-0.2	0.3
44625	99	P	SUR	57	-33	743	0	0.6	0.2	0.6
44670	99	P	SUR	47	-50	742	0	0.8	0.2	0.8
44739	99	P	SUR	37	-38	743	0	2.4	-0.2	2.4
44740	99	P	SUR	30	-57	724	0	0.3	-0.3	0.5
44744	99	P	SUR	46	-26	479	0	2.6	-0.7	2.7
44746	99	P	SUR	35	-34	743	0	0.3	0.4	0.5
44747	99	P	SUR	48	-18	743	0	0.5	-0.0	0.5
44761	99	P	SUR	58	-15	744	0	0.4	-0.5	0.6
44764	99	P	SUR	57	-17	744	0	0.5	-0.4	0.7
44765	99	P	SUR	46	-44	712	0	0.8	0.2	0.8
44766	99	P	SUR	42	-48	743	0	0.7	-0.1	0.8
44768	99	P	SUR	38	-36	743	0	0.6	0.5	0.8
44769	99	P	SUR	37	-68	531	23	0.5	-0.3	0.6
44772	99	P	SUR	51	-42	743	0	0.5	-0.2	0.6
44773	99	P	SUR	51	-17	744	0	0.5	0.4	0.7
44775	99	P	SUR	31	-69	743	0	0.4	0.1	0.4
44776	99	P	SUR	38	-29	552	0	0.6	0.4	0.7
44777	99	P	SUR	42	-54	743	0	0.6	0.0	0.6
44778	99	P	SUR	36	-37	743	0	0.4	0.2	0.4
44779	99	P	SUR	46	-56	743	0	0.6	0.1	0.6
44835	99	P	SUR	34	-22	744	0	0.3	-0.2	0.4
44836	99	P	SUR	62	2	744	0	0.4	0.2	0.5
44837	99	P	SUR	22	-39	744	0	0.3	0.0	0.3
44839	99	P	SUR	33	-18	744	0	0.3	0.1	0.3
44846	99	P	SUR	36	-21	743	0	0.3	0.6	0.7
44848	99	P	SUR	35	-17	744	0	0.3	0.4	0.5
44856	99	P	SUR	46	-36	57	0	0.5	-0.1	0.5
44857	99	P	SUR	46	-41	57	0	0.5	-0.3	0.5
44858	99	P	SUR	44	-48	57	0	0.4	-0.7	0.8
44863	99	P	SUR	27	-55	743	0	0.3	-0.5	0.6
44866	99	P	SUR	67	-3	744	0	0.5	-0.2	0.5
44867	99	P	SUR	60	-16	744	0	0.4	-0.3	0.5
44868	99	P	SUR	26	-54	744	0	0.5	0.2	0.5

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44873	99	P	SUR	34	-41	744	0	0.5	0.8	1.0
44874	99	P	SUR	43	-40	743	0	0.5	-0.0	0.5
44875	99	P	SUR	37	-31	248	0	0.7	-0.1	0.7
44878	99	P	SUR	42	-9	743	0	0.4	0.5	0.7
44885	99	P	SUR	31	-15	744	0	0.3	0.0	0.3
44887	99	P	SUR	33	-43	744	0	0.4	-0.0	0.4
44888	99	P	SUR	43	-2	60	0	0.4	-0.3	0.5
44889	99	P	SUR	32	-51	744	0	0.4	-0.1	0.4
44890	99	P	SUR	27	-67	744	0	0.4	-0.1	0.4
44891	99	P	SUR	27	-55	744	0	0.3	-0.2	0.4
44896	99	P	SUR	36	-48	627	0	0.5	-0.5	0.7
44901	99	P	SUR	43	-51	743	1	0.6	0.0	0.6
44902	99	P	SUR	44	-47	743	0	0.6	0.2	0.7
44904	99	P	SUR	49	-39	741	0	0.6	-0.4	0.7
47503	99	P	SUR	58	-30	618	570	7.6	3.3	8.2
47509	99	P	SUR	83	-17	702	0	0.7	0.4	0.8
47539	99	P	SUR	42	-51	742	0	0.7	0.5	0.8
47540	99	P	SUR	47	-46	736	0	0.6	0.5	0.8
47546	99	P	SUR	46	-51	739	0	0.6	0.3	0.7
47549	99	P	SUR	43	-47	737	0	0.6	0.0	0.6
47551	99	P	SUR	57	-61	736	0	0.7	-1.5	1.7
47552	99	P	SUR	67	-63	711	0	0.4	-1.7	1.7
47555	99	P	SUR	47	-52	741	0	0.5	0.4	0.6
47557	99	P	SUR	46	-45	738	0	0.6	-0.0	0.6
47560	99	P	SUR	49	-39	741	0	0.5	0.5	0.7
47562	99	P	SUR	53	-47	741	0	0.6	0.3	0.7
47567	99	P	SUR	47	-48	742	0	1.1	1.7	2.0
47568	99	P	SUR	42	-49	703	0	0.8	0.8	1.1
47569	99	P	SUR	47	-41	698	0	0.6	0.1	0.6
47574	99	P	SUR	42	-50	740	0	0.6	0.1	0.6
47584	99	P	SUR	46	-50	742	0	0.6	0.2	0.6
47589	99	P	SUR	67	-63	735	0	0.6	-2.0	2.1
48568	99	P	SUR	61	-12	736	0	0.4	-0.6	0.7
61001	99	P	SUR	43	8	730	1	0.6	0.3	0.7
62001	99	P	SUR	45	-5	875	0	0.4	0.1	0.4
62027	99	P	SUR	49	-2	239	0	0.5	0.0	0.5
62030	99	P	SUR	50	-4	6	0	0.1	0.3	0.4
62050	99	P	SUR	50	-4	393	0	0.4	0.3	0.5
62081	99	P	SUR	51	-13	742	0	0.5	-0.2	0.5
62086	99	P	SUR	55	6	29	0	0.5	-0.5	0.7
62095	99	P	SUR	53	-16	7	0	0.2	0.2	0.2
62102	99	P	SUR	58	2	743	0	0.4	0.2	0.4
62103	99	P	SUR	50	-3	744	0	0.6	0.4	0.7

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62104	99	P	SUR	57	1	731	0	0.3	0.1	0.4
62105	99	P	SUR	55	-13	683	1	0.5	-0.2	0.6
62107	99	P	SUR	50	-6	1454	0	0.5	0.3	0.6
62111	99	P	SUR	58	0	624	0	0.4	1.3	1.3
62112	99	P	SUR	58	0	730	0	0.4	0.2	0.4
62113	99	P	SUR	58	0	730	0	0.6	0.3	0.6
62114	99	P	SUR	58	0	1455	0	0.4	0.2	0.5
62115	99	P	SUR	58	-3	742	0	0.4	0.1	0.5
62116	99	P	SUR	58	1	736	0	0.5	0.2	0.5
62117	99	P	SUR	58	0	717	0	0.3	0.3	0.4
62118	99	P	SUR	58	1	743	0	0.4	0.5	0.6
62119	99	P	SUR	57	2	738	0	0.4	0.0	0.4
62120	99	P	SUR	56	2	625	0	0.5	0.2	0.6
62121	99	P	SUR	54	3	739	0	0.7	0.6	0.9
62122	99	P	SUR	57	2	1481	0	0.4	0.0	0.4
62123	99	P	SUR	56	2	1481	0	0.4	0.2	0.4
62124	99	P	SUR	54	-4	743	0	0.4	-0.0	0.4
62127	99	P	SUR	54	1	743	0	0.4	0.5	0.7
62128	99	P	SUR	59	1	742	0	0.5	0.1	0.5
62129	99	P	SUR	58	0	730	0	0.5	0.1	0.5
62130	99	P	SUR	59	1	724	0	0.4	-0.1	0.5
62131	99	P	SUR	54	1	714	0	0.4	0.5	0.7
62132	99	P	SUR	56	2	730	0	0.4	0.3	0.6
62133	99	P	SUR	57	1	739	0	0.5	0.2	0.5
62134	99	P	SUR	58	1	743	0	0.4	0.3	0.5
62135	99	P	SUR	54	2	733	0	0.4	0.5	0.7
62136	99	P	SUR	54	3	743	0	0.5	0.7	0.8
62137	99	P	SUR	57	2	738	1	0.3	0.0	0.3
62138	99	P	SUR	54	0	1481	0	0.5	0.7	0.9
62139	99	P	SUR	53	2	1481	0	0.4	0.3	0.5
62140	99	P	SUR	57	1	1453	0	0.4	0.2	0.4
62141	99	P	SUR	56	-3	679	0	1.3	-1.0	1.6
62143	99	P	SUR	58	2	703	0	0.4	0.5	0.7
62144	99	P	SUR	53	2	739	0	0.4	0.2	0.5
62145	99	P	SUR	53	3	1481	0	0.4	0.4	0.5
62146	99	P	SUR	57	2	706	0	0.4	0.2	0.5
62148	99	P	SUR	54	2	739	0	0.4	0.7	0.8
62149	99	P	SUR	54	1	743	0	0.3	0.8	0.8
62150	99	P	SUR	54	1	737	0	0.4	1.3	1.3
62151	99	P	SUR	57	2	1453	0	0.4	0.2	0.4
62152	99	P	SUR	57	2	743	0	0.4	0.5	0.7
62153	99	P	SUR	57	2	1455	0	0.4	0.3	0.5
62154	99	P	SUR	56	2	731	0	0.4	-0.0	0.4

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62155	99	P	SUR	58	1	615	0	0.3	0.3	0.5
62157	99	P	SUR	58	0	743	0	0.4	0.1	0.4
62159	99	P	SUR	58	-4	323	0	0.4	-2.3	2.4
62160	99	P	SUR	57	2	1480	0	0.4	0.0	0.4
62161	99	P	SUR	58	1	652	0	0.5	-0.0	0.5
62162	99	P	SUR	57	1	713	0	0.4	0.0	0.4
62163	99	P	SUR	48	-8	742	0	0.4	0.0	0.4
62164	99	P	SUR	57	1	700	0	0.3	0.2	0.4
62165	99	P	SUR	54	1	721	0	0.4	0.5	0.6
62166	99	P	SUR	53	3	738	0	0.3	0.5	0.6
62167	99	P	SUR	53	2	1479	0	0.4	0.2	0.4
62168	99	P	SUR	58	1	713	0	0.4	0.0	0.4
62170	99	P	SUR	51	2	744	0	0.8	-0.4	0.9
62198	99	P	SUR	52	2	793	0	0.4	0.5	0.6
62296	99	P	SUR	53	2	647	0	0.4	0.0	0.4
62297	99	P	SUR	59	2	1444	0	0.4	0.1	0.4
62301	99	P	SUR	52	-5	744	0	0.6	0.1	0.6
62302	99	P	SUR	61	-2	742	0	0.5	-0.0	0.5
62303	99	P	SUR	52	-5	788	0	0.5	0.7	0.9
62304	99	P	SUR	51	2	822	2	0.5	0.3	0.5
62305	99	P	SUR	50	0	822	2	0.5	0.4	0.7
62513	99	P	SUR	58	-31	743	2	1.5	-0.4	1.6
62539	99	P	SUR	63	-17	743	0	0.6	-0.4	0.8
62553	99	P	SUR	59	-22	743	0	0.4	-0.1	0.4
62554	99	P	SUR	47	-19	743	0	0.5	0.2	0.5
62555	99	P	SUR	46	-8	744	0	0.5	0.5	0.7
62556	99	P	SUR	39	-29	743	0	0.5	0.0	0.5
62557	99	P	SUR	48	-22	743	0	0.4	0.1	0.5
62558	99	P	SUR	48	-28	57	0	0.4	-0.2	0.5
62559	99	P	SUR	47	-32	57	0	0.4	-0.1	0.5
62713	99	P	SUR	32	-59	740	0	0.3	-0.4	0.5
62714	99	P	SUR	35	-52	741	0	0.5	-0.4	0.7
62940	99	P	SUR	40	-32	744	0	0.5	-0.3	0.6
62941	99	P	SUR	32	-15	744	0	0.3	0.0	0.3
63055	99	P	SUR	61	2	743	0	0.5	-0.1	0.5
63056	99	P	SUR	60	2	742	0	0.5	0.3	0.6
63057	99	P	SUR	59	2	743	0	0.4	-0.2	0.4
63058	99	P	SUR	53	2	2213	0	0.4	0.4	0.5
63059	99	P	SUR	58	-1	743	0	0.3	0.4	0.6
63101	99	P	SUR	61	1	743	0	0.6	0.2	0.6
63102	99	P	SUR	61	1	741	0	0.5	0.0	0.5
63103	99	P	SUR	61	1	743	0	0.5	0.2	0.5
63104	99	P	SUR	61	2	743	0	0.4	0.1	0.4

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
63105	99	P	SUR	61	2	739	0	0.4	-0.0	0.4
63108	99	P	SUR	61	2	742	0	0.6	-0.2	0.6
63109	99	P	SUR	60	2	743	0	0.5	-0.1	0.5
63110	99	P	SUR	60	2	743	0	0.4	-0.1	0.4
63111	99	P	SUR	61	2	1463	0	0.5	-0.4	0.6
63112	99	P	SUR	61	1	739	0	0.4	-0.3	0.5
63114	99	P	SUR	61	2	1447	0	0.4	-0.4	0.5
63115	99	P	SUR	62	1	743	0	0.5	0.0	0.5
63117	99	P	SUR	61	1	1481	0	0.7	0.5	0.9
63118	99	P	SUR	62	1	738	0	0.5	-0.3	0.6
63119	99	P	SUR	58	0	71	0	0.8	-0.5	1.0
63120	99	P	SUR	54	2	743	0	0.4	0.4	0.5
63561	99	P	SUR	72	1	682	0	0.6	-0.0	0.6
63646	99	P	SUR	64	2	57	0	0.5	0.3	0.6
64041	99	P	SUR	61	-3	743	0	0.5	0.0	0.5
64045	99	P	SUR	59	-12	1431	0	0.4	0.1	0.4
64046	99	P	SUR	61	-4	744	0	0.4	0.1	0.4
64519	99	P	SUR	78	12	743	0	0.6	0.2	0.7
64521	99	P	SUR	74	11	520	1	3.2	1.1	3.4
64523	99	P	SUR	71	7	521	95	2.3	-0.7	2.4
64524	99	P	SUR	67	13	743	0	0.4	0.4	0.6
64525	99	P	SUR	65	-37	313	0	1.1	0.5	1.2
64526	99	P	SUR	60	-52	737	0	1.2	-0.2	1.2
64528	99	P	SUR	68	11	744	0	0.5	0.4	0.7
64530	99	P	SUR	76	10	744	0	0.6	0.3	0.7
64532	99	P	SUR	56	-9	175	0	0.6	-8.7	8.7
64534	99	P	SUR	62	-13	17	17	0.0	0.0	0.0
64538	99	P	SUR	67	-32	7	7	0.0	0.0	0.0
64547	99	P	SUR	68	1	744	0	0.6	0.2	0.6
64549	99	P	SUR	65	-25	743	0	0.5	-0.3	0.6
64551	99	P	SUR	56	-35	744	0	0.6	-0.2	0.6
64553	99	P	SUR	66	5	744	0	0.5	-0.1	0.5
64554	99	P	SUR	65	-24	743	0	0.5	0.3	0.6
64555	99	P	SUR	60	-6	744	0	0.4	0.3	0.5
64560	99	P	SUR	63	-22	743	0	0.5	0.1	0.5
64562	99	P	SUR	63	-20	744	0	0.6	-0.1	0.6
64606	99	P	SUR	72	26	744	0	0.5	0.5	0.7
64623	99	P	SUR	69	-12	535	0	1.6	-0.3	1.6
64666	99	P	SUR	73	-7	409	0	0.8	0.3	0.8
64667	99	P	SUR	61	-1	672	0	0.6	-0.1	0.6
64694	99	P	SUR	63	-31	743	0	1.0	-0.3	1.0
64748	99	P	SUR	87	-55	725	0	0.6	-0.1	0.6
64749	99	P	SUR	86	-22	739	0	0.6	-0.3	0.7

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
65514	99	P	SUR	52	-48	744	0	0.7	0.2	0.7
65515	99	P	SUR	57	-40	375	24	4.2	-1.1	4.3
65519	99	P	SUR	56	-27	744	0	0.6	0.4	0.7
65596	99	P	SUR	56	-19	742	0	0.6	0.3	0.7
65599	99	P	SUR	52	-29	743	0	0.5	-0.0	0.5
65601	99	P	SUR	59	-54	743	0	0.7	-0.1	0.7
65602	99	P	SUR	57	-36	744	0	0.6	-0.7	0.9

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

##### DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND SPEED (M/S)  
 AREA : 10N - 90N, 70W - 40E  
 PERIOD : MAR 2016  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
13002	99	SPEED	SUR	20	-23	248	0	0	1.0	0.1	1.0
13008	99	SPEED	SUR	15	-38	100	0	0	1.0	-0.2	1.0
31603	99	SPEED	SUR	32	34	1	0	0	0.0	0.4	0.4
41026	99	SPEED	SUR	12	-38	62	0	0	0.9	-0.0	0.9
41040	99	SPEED	SUR	15	-53	736	0	0	0.9	-0.1	0.9
41041	99	SPEED	SUR	14	-46	747	0	0	0.8	-0.2	0.8
41043	99	SPEED	SUR	21	-65	743	0	0	0.9	-0.2	0.9
41044	99	SPEED	SUR	22	-59	739	0	0	1.0	0.0	1.0
41046	99	SPEED	SUR	24	-68	761	0	0	1.1	0.1	1.1
41048	99	SPEED	SUR	32	-70	762	0	0	1.2	-0.3	1.3
41049	99	SPEED	SUR	28	-63	741	0	0	1.2	0.1	1.2
41051	99	SPEED	SUR	18	-65	1575	0	0	1.1	-0.5	1.2
41052	99	SPEED	SUR	18	-65	744	0	0	1.0	-0.5	1.1
41053	99	SPEED	SUR	19	-66	1935	0	0	1.4	0.2	1.4
41056	99	SPEED	SUR	18	-66	1783	0	0	1.2	-0.6	1.3
41139	99	SPEED	SUR	20	-38	229	0	0	1.1	-0.1	1.1
41300	99	SPEED	SUR	16	-58	11	1	9	1.0	-0.2	1.0
42059	99	SPEED	SUR	15	-68	741	0	0	0.8	-0.2	0.8
42060	99	SPEED	SUR	16	-63	743	0	0	1.1	0.3	1.2
42085	99	SPEED	SUR	18	-67	1877	0	0	1.4	-0.2	1.4
44005	99	SPEED	SUR	43	-69	777	0	0	1.6	0.1	1.7
44008	99	SPEED	SUR	41	-69	743	0	0	1.7	-0.2	1.7
44018	99	SPEED	SUR	42	-70	539	0	0	1.5	-0.1	1.5
44024	99	SPEED	SUR	42	-66	801	0	0	1.6	-0.1	1.6
44027	99	SPEED	SUR	44	-67	764	0	0	1.6	0.4	1.7
44032	99	SPEED	SUR	44	-69	737	0	0	1.6	0.1	1.6
44033	99	SPEED	SUR	44	-69	736	0	0	2.2	0.8	2.3
44034	99	SPEED	SUR	44	-68	743	0	0	1.7	-0.1	1.7
44037	99	SPEED	SUR	44	-68	477	0	0	1.6	0.3	1.6
44137	99	SPEED	SUR	42	-62	940	0	0	1.8	0.6	1.9
44139	99	SPEED	SUR	44	-57	718	0	0	1.4	0.1	1.4
44141	99	SPEED	SUR	43	-58	715	0	0	1.7	0.7	1.8
44150	99	SPEED	SUR	43	-64	683	0	0	1.8	0.3	1.8
44251	99	SPEED	SUR	46	-53	729	0	0	1.7	-0.2	1.7

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44255	99	SPEED	SUR	47	-57	423	0	0	1.6	0.5	1.6
61001	99	SPEED	SUR	43	8	730	0	0	2.1	-0.0	2.1
62001	99	SPEED	SUR	45	-5	874	0	0	1.2	-0.1	1.2
62027	99	SPEED	SUR	49	-2	215	0	0	1.5	0.5	1.6
62050	99	SPEED	SUR	50	-4	393	0	0	1.1	0.2	1.1
62081	99	SPEED	SUR	51	-13	742	0	0	1.1	-0.0	1.1
62086	99	SPEED	SUR	55	6	30	0	0	1.3	1.3	1.9
62102	99	SPEED	SUR	58	2	743	0	0	1.4	-0.0	1.4
62103	99	SPEED	SUR	50	-3	744	0	0	1.8	1.2	2.1
62104	99	SPEED	SUR	57	1	731	0	0	1.1	-0.2	1.2
62105	99	SPEED	SUR	55	-13	633	0	0	1.4	0.5	1.5
62107	99	SPEED	SUR	50	-6	1452	0	0	1.8	0.8	1.9
62111	99	SPEED	SUR	58	0	624	0	0	1.3	-0.1	1.3
62112	99	SPEED	SUR	58	0	730	0	0	1.8	-0.6	1.9
62113	99	SPEED	SUR	58	0	730	0	0	3.1	-2.3	3.9
62114	99	SPEED	SUR	58	0	1455	0	0	1.4	0.6	1.5
62117	99	SPEED	SUR	58	0	717	0	0	1.2	0.1	1.2
62118	99	SPEED	SUR	58	1	743	0	0	1.3	0.4	1.3
62119	99	SPEED	SUR	57	2	738	0	0	1.2	-0.6	1.4
62120	99	SPEED	SUR	56	2	723	0	0	1.1	-0.1	1.1
62121	99	SPEED	SUR	54	3	739	0	0	1.3	-0.3	1.3
62122	99	SPEED	SUR	57	2	1481	0	0	1.3	-0.3	1.4
62123	99	SPEED	SUR	56	2	1481	0	0	1.1	0.0	1.1
62127	99	SPEED	SUR	54	1	743	0	0	2.7	-1.5	3.1
62128	99	SPEED	SUR	59	1	742	0	0	1.5	0.6	1.6
62129	99	SPEED	SUR	58	0	730	0	0	1.3	-0.3	1.3
62131	99	SPEED	SUR	54	1	714	0	0	1.9	-0.9	2.1
62132	99	SPEED	SUR	56	2	730	0	0	1.9	-1.1	2.2
62133	99	SPEED	SUR	57	1	739	0	0	1.2	-0.2	1.2
62134	99	SPEED	SUR	58	1	743	0	0	1.4	-0.0	1.4
62140	99	SPEED	SUR	57	1	1309	0	0	1.2	-0.1	1.2
62143	99	SPEED	SUR	58	2	703	0	0	1.8	-0.7	1.9
62144	99	SPEED	SUR	53	2	739	0	0	2.0	-0.9	2.2
62145	99	SPEED	SUR	53	3	1477	0	0	1.8	-0.9	2.0
62146	99	SPEED	SUR	57	2	606	0	0	2.1	-0.9	2.2
62148	99	SPEED	SUR	54	2	738	0	0	1.5	-0.3	1.5
62149	99	SPEED	SUR	54	1	743	0	0	1.4	0.3	1.4
62150	99	SPEED	SUR	54	1	737	0	0	2.2	-1.0	2.4
62152	99	SPEED	SUR	57	2	743	0	0	1.5	-0.8	1.7
62153	99	SPEED	SUR	57	2	1455	0	0	2.3	-2.3	3.2
62154	99	SPEED	SUR	56	2	731	0	0	1.1	-0.3	1.2



## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62155	99	SPEED	SUR	58	1	527	0	0	1.2	-0.2	1.2
62163	99	SPEED	SUR	48	-8	742	0	0	1.1	-0.0	1.2
62164	99	SPEED	SUR	57	1	700	0	0	1.4	-1.2	1.9
62165	99	SPEED	SUR	54	1	721	0	0	1.6	-0.9	1.8
62170	99	SPEED	SUR	51	2	744	0	0	1.7	1.8	2.5
62198	99	SPEED	SUR	52	2	793	0	0	1.5	1.4	2.1
62301	99	SPEED	SUR	52	-5	744	0	0	1.7	0.0	1.8
62303	99	SPEED	SUR	52	-5	788	0	0	1.5	0.8	1.6
62304	99	SPEED	SUR	51	2	824	0	0	1.8	2.0	2.7
62305	99	SPEED	SUR	50	0	793	0	0	1.7	0.6	1.8
63055	99	SPEED	SUR	61	2	743	0	0	1.6	-0.7	1.8
63056	99	SPEED	SUR	60	2	743	0	0	1.5	0.0	1.5
63057	99	SPEED	SUR	59	2	743	0	0	1.8	0.5	1.8
63058	99	SPEED	SUR	53	2	740	0	0	1.2	0.0	1.2
63101	99	SPEED	SUR	61	1	739	0	0	1.7	-0.6	1.8
63104	99	SPEED	SUR	61	2	740	0	0	1.9	-0.1	1.9
63105	99	SPEED	SUR	61	2	738	0	0	1.9	-0.4	2.0
63106	99	SPEED	SUR	61	2	673	0	0	1.8	-0.3	1.8
63107	99	SPEED	SUR	61	2	739	0	0	1.9	-0.1	1.9
63108	99	SPEED	SUR	61	2	743	0	0	1.9	-0.0	1.9
63109	99	SPEED	SUR	60	2	692	0	0	1.7	0.2	1.7
63110	99	SPEED	SUR	60	2	743	0	0	1.5	-0.2	1.5
63112	99	SPEED	SUR	61	1	739	0	0	1.7	-0.5	1.8
63113	99	SPEED	SUR	61	2	739	0	0	1.7	-0.2	1.7
63114	99	SPEED	SUR	61	2	1447	0	0	2.1	0.1	2.2
63115	99	SPEED	SUR	62	1	742	0	0	1.9	-0.5	2.0
63117	99	SPEED	SUR	61	1	1481	0	0	1.8	-0.2	1.8
63119	99	SPEED	SUR	58	0	71	0	0	2.4	0.0	2.4
64041	99	SPEED	SUR	61	-3	721	0	0	1.4	-0.4	1.4
64046	99	SPEED	SUR	61	-4	739	0	0	1.5	0.4	1.6
66021	99	SPEED	SUR	55	14	733	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 : MAR 2016  
 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
13002	99	DIRN	SUR	20	-23	241	0	0	19.1	4.8	19.7
13008	99	DIRN	SUR	15	-38	99	0	0	10.0	4.5	11.0
41001	99	DIRN	SUR	35	-73	749	0	0	17.2	8.1	19.0
41002	99	DIRN	SUR	32	-75	663	1	0	18.2	-9.7	20.6
41004	99	DIRN	SUR	33	-79	633	0	0	23.6	9.6	25.4
41008	99	DIRN	SUR	31	-81	536	0	0	33.1	6.8	33.8
41009	99	DIRN	SUR	29	-80	588	0	0	27.2	2.8	27.3
41010	99	DIRN	SUR	29	-79	481	0	0	20.5	6.8	21.6
41013	99	DIRN	SUR	33	-78	892	0	0	23.5	10.3	25.7
41024	99	DIRN	SUR	34	-79	464	0	0	21.3	-0.8	21.3
41025	99	DIRN	SUR	35	-75	661	0	0	22.3	-2.2	22.4
41026	99	DIRN	SUR	12	-38	62	0	0	11.3	1.9	11.5
41029	99	DIRN	SUR	33	-80	469	0	0	18.2	-1.9	18.3
41033	99	DIRN	SUR	32	-80	491	0	0	23.7	1.6	23.8
41037	99	DIRN	SUR	34	-77	553	0	0	26.4	-5.9	27.1
41038	99	DIRN	SUR	34	-78	625	0	0	22.2	-5.4	22.8
41040	99	DIRN	SUR	15	-53	688	0	0	10.4	-0.9	10.4
41041	99	DIRN	SUR	14	-46	737	0	0	9.6	2.4	9.9
41043	99	DIRN	SUR	21	-65	662	0	0	13.2	3.2	13.6
41044	99	DIRN	SUR	22	-59	657	0	0	12.3	-1.7	12.4
41046	99	DIRN	SUR	24	-68	656	0	0	13.4	-1.0	13.5
41047	99	DIRN	SUR	28	-72	608	0	0	15.2	-1.3	15.2
41048	99	DIRN	SUR	32	-70	648	0	0	19.7	16.8	25.9
41049	99	DIRN	SUR	28	-63	606	0	0	18.4	10.1	21.0
41051	99	DIRN	SUR	18	-65	1533	0	0	11.0	-11.8	16.2
41052	99	DIRN	SUR	18	-65	727	0	0	10.7	2.5	11.0
41053	99	DIRN	SUR	19	-66	1613	0	0	14.4	-1.1	14.5
41056	99	DIRN	SUR	18	-66	1697	0	0	12.3	0.5	12.3
41139	99	DIRN	SUR	20	-38	187	0	0	16.7	3.2	17.0
41300	99	DIRN	SUR	16	-58	9	1	0	8.4	-4.2	9.4
42013	99	DIRN	SUR	27	-83	782	0	0	24.4	0.1	24.4
42022	99	DIRN	SUR	28	-84	884	0	0	27.9	1.8	28.0

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
42023	99	DIRN	SUR	26	-83	867	0	0	27.4	-0.8	27.4
42036	99	DIRN	SUR	29	-85	578	0	0	29.4	3.6	29.6
42056	99	DIRN	SUR	20	-85	668	0	0	9.6	3.7	10.3
42057	99	DIRN	SUR	17	-82	723	0	0	10.3	-0.3	10.3
42058	99	DIRN	SUR	15	-75	744	0	0	6.4	2.6	7.0
42059	99	DIRN	SUR	15	-68	732	0	0	10.0	-2.6	10.3
42060	99	DIRN	SUR	16	-63	702	0	0	9.8	2.2	10.0
42085	99	DIRN	SUR	18	-67	1706	0	0	15.7	3.5	16.1
44005	99	DIRN	SUR	43	-69	678	0	0	15.0	6.1	16.2
44007	99	DIRN	SUR	44	-70	615	0	0	18.5	7.0	19.8
44008	99	DIRN	SUR	41	-69	612	0	0	13.0	10.8	16.9
44013	99	DIRN	SUR	42	-71	633	0	0	28.7	1.9	28.8
44014	99	DIRN	SUR	37	-75	557	0	0	19.9	7.4	21.3
44017	99	DIRN	SUR	41	-72	640	0	0	18.0	3.5	18.4
44018	99	DIRN	SUR	42	-70	454	0	0	15.4	0.6	15.4
44020	99	DIRN	SUR	41	-70	608	0	0	17.1	3.1	17.4
44024	99	DIRN	SUR	42	-66	708	0	0	16.1	3.7	16.5
44025	99	DIRN	SUR	40	-73	623	0	0	16.6	6.4	17.8
44027	99	DIRN	SUR	44	-67	693	0	0	19.9	7.8	21.3
44029	99	DIRN	SUR	43	-71	3	0	0	141.9	62.8	155.2
44030	99	DIRN	SUR	43	-70	583	0	0	19.9	6.8	21.0
44032	99	DIRN	SUR	44	-69	613	0	0	21.4	8.2	22.9
44033	99	DIRN	SUR	44	-69	587	0	0	23.6	2.1	23.7
44034	99	DIRN	SUR	44	-68	645	0	0	14.3	2.4	14.5
44037	99	DIRN	SUR	44	-68	425	0	0	13.4	5.8	14.5
44039	99	DIRN	SUR	41	-73	533	0	0	22.7	2.5	22.8
44041	99	DIRN	SUR	37	-77	237	0	0	12.9	3.3	13.3
44042	99	DIRN	SUR	38	-76	511	0	0	22.6	-11.7	25.4
44043	99	DIRN	SUR	39	-76	148	0	0	15.6	-15.2	21.8
44057	99	DIRN	SUR	40	-76	317	0	0	16.7	-12.0	20.6
44058	99	DIRN	SUR	38	-76	701	0	0	17.3	-5.1	18.1
44059	99	DIRN	SUR	37	-76	462	0	0	15.0	-20.8	25.6
44060	99	DIRN	SUR	41	-72	543	0	0	17.5	1.2	17.5
44061	99	DIRN	SUR	39	-77	65	0	0	10.6	-16.8	19.9
44062	99	DIRN	SUR	39	-76	508	0	0	20.5	-3.6	20.8
44063	99	DIRN	SUR	39	-76	144	0	0	17.2	-11.6	20.7
44065	99	DIRN	SUR	40	-74	591	0	0	18.4	8.4	20.2
44137	99	DIRN	SUR	42	-62	898	0	0	15.6	3.7	16.0
44139	99	DIRN	SUR	44	-57	668	0	0	13.9	13.7	19.5
44141	99	DIRN	SUR	43	-58	678	0	0	12.6	3.0	13.0
44150	99	DIRN	SUR	43	-64	643	0	0	17.0	3.2	17.3

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
44251	99	DIRN	SUR	46	-53	670	0	0	11.9	10.2	15.7
44255	99	DIRN	SUR	47	-57	358	0	0	15.7	6.5	17.0
62001	99	DIRN	SUR	45	-5	839	0	0	10.5	8.2	13.3
62027	99	DIRN	SUR	49	-2	187	0	0	32.5	-0.5	32.5
62050	99	DIRN	SUR	50	-4	347	0	0	11.1	-0.8	11.1
62081	99	DIRN	SUR	51	-13	704	0	0	13.6	8.4	16.0
62103	99	DIRN	SUR	50	-3	667	0	0	17.6	0.3	17.6
62105	99	DIRN	SUR	55	-13	580	0	0	13.5	2.4	13.8
62107	99	DIRN	SUR	50	-6	1318	0	0	16.9	-1.4	17.0
62111	99	DIRN	SUR	58	0	488	0	0	11.6	2.5	11.8
62112	99	DIRN	SUR	58	0	556	0	0	13.0	4.1	13.6
62114	99	DIRN	SUR	58	0	1281	0	0	12.7	-1.2	12.7
62117	99	DIRN	SUR	58	0	611	0	0	11.1	4.6	12.0
62163	99	DIRN	SUR	48	-8	678	0	0	9.8	1.2	9.8
62301	99	DIRN	SUR	52	-5	519	0	0	19.8	-6.7	20.9
62303	99	DIRN	SUR	52	-5	633	0	0	15.3	2.8	15.6
62305	99	DIRN	SUR	50	0	689	0	0	13.8	3.7	14.2
64041	99	DIRN	SUR	61	-3	568	0	0	12.4	18.8	22.5
64046	99	DIRN	SUR	61	-4	619	0	0	17.9	-3.7	18.2

**4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations**

ASDE02	ASDE04	ASDK01	ASDK02	ASES01	ASEU02	ASEU04	DBLK	01001
01004	01010	01028	01241	01400	01415	01492	02185	02365
02527	02591	02836	02935	02963	03953	06260	08001	08023
08221	08302	08430	10035	10113	10184	10238	10304	10393
10410	10618	10739	10868	10954	10962	60018		

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

ASDE01	ASDE02	ASDE03	ASDE04	ASDE09	ASDK01	ASDK02	ASES01	ASEU02
ASEU03	ASEU04	ASEU06	ASFR1	ASFR2	ASFR3	ASFR4	DBLK	01492
06447	14420	17196	43599	47155	94767			

## 5 Annex - Explanations of figures and tables

### 5.1 General

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

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

### 5.2 Data Availability

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

### 5.3 Data Quality

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

It should be noted that:

- (i) all results are based on software that may undergo further development;
- (ii) although the quality of the ECMWF first-guess fields is of a generally high standard this is only true to a limited extent in the tropics, where small-scale processes such as convection are of much greater importance than in mid-latitudes, and the observations will sometimes not be representative of the scales of motion given by the first-guess;
- (iii) the first-guess fields themselves will vary in accuracy depending on the density and quality of data, particularly in the upstream regions and over Antarctica and the southern hemisphere mid-latitudes. Direct comparisons between stations (or airlines) should preferably be restricted to observations in a reasonably homogeneous climatic region.

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

standard pressure level are shown. Units of RMS, standard deviation and bias are hPa in tables 1 and 4, m in table 7 and  $\text{ms}^{-1}$  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	$35\text{ms}^{-1}$
925	$35\text{ms}^{-1}$
850	$35\text{ms}^{-1}$
700	$40\text{ms}^{-1}$
500	$45\text{ms}^{-1}$
400	$50\text{ms}^{-1}$
300	$60\text{ms}^{-1}$
250	$60\text{ms}^{-1}$
200	$50\text{ms}^{-1}$
150	$50\text{ms}^{-1}$
100	$45\text{ms}^{-1}$



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

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

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

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

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

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

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

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