



ECMWF Global Data Monitoring Report

December 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 15) - Monitoring of SYNOP and SYNOP-SHIPs now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart.
- Revision 27 (Feb 15) - Selection criteria for SHIPs are modified as per SOT-7/Doc.9.1.1. Different criteria applied to Manual and Automatic SHIPs.
- Revision 26 (Dec 14) - Coverage chart for ATOVS AMSU-A for Noaa_16 removed
- Revision 25 (Mar 13) - Monitoring of Radiosondes and ASAPs now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart. Tables 24 and 25 are also added to show the identifiers of these BUFR observations separately.
- Revision 24 (Aug 06) - North Atlantic Monitoring statistics replaced by EUCOS Area Monitoring Statistics (tables 13 to 23). Airep tables removed from this section.
- Revision 23 (Dec 00) - Coverage charts for Noaa_14 MSU replaced by ATOVS AMSU-A for Noaa_16.
- Revision 22 (Aug 99) - Coverage charts for TOVS thickness 300-100 hPa replaced by (A)TOVS AMSU-A and MSU (Noaa_15 and Noaa_14).
- Revision 21 (May 99) - Monitoring statistics ceased for Noaa_11 as satellite is no more available.
- Revision 20 (Sep 98) - Changes to tables and annex to remove all mention about data usage. Two more levels (50 and 850 hPa) added to the COSNA statistics for Sondes.
- Revision 19 (Jul 98) - From June 29th, 1998 ECMWF model assimilates temperature data instead of geopotential from radiosondes. As a consequence the number of used geopotential data drops to zero in tables 7, 10, 13 and 15.
- Revision 18 (Apr 98) - Changes to tables and annex to introduce the usage of accepted numbers and observations instead of 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	Nov	Dec	Ident	Time	Nov	Dec
-	-	-	-	01004	(00)	0	16
-	-	-	-	01010	(00)	18	29
-	-	-	-	04360	(12)	11	26
-	-	-	-	20674	(00)	0	22
-	-	-	-	20674	(12)	0	23
-	-	-	-	33008	(00)	1	30
-	-	-	-	42647	(00)	5	31
-	-	-	-	42647	(12)	6	31
-	-	-	-	42667	(00)	17	30
-	-	-	-	43333	(00)	9	31
-	-	-	-	43353	(00)	1	14
-	-	-	-	48407	(00)	5	22
-	-	-	-	68442	(12)	12	27
-	-	-	-	68512	(12)	14	30
-	-	-	-	70398	(00)	19	31
-	-	-	-	70398	(12)	18	31
-	-	-	-	72747	(00)	20	31
-	-	-	-	76405	(12)	0	18
-	-	-	-	76644	(00)	1	25
-	-	-	-	76654	(00)	11	27
-	-	-	-	78486	(00)	14	31
-	-	-	-	82193	(00)	20	31
-	-	-	-	82193	(12)	19	31
-	-	-	-	82400	(00)	0	14
-	-	-	-	82400	(12)	0	17
-	-	-	-	83208	(00)	0	22
-	-	-	-	83208	(12)	0	22
-	-	-	-	83554	(00)	14	27
-	-	-	-	83554	(12)	15	30
-	-	-	-	84628	(12)	16	31
-	-	-	-	89009	(00)	16	31
-	-	-	-	89009	(12)	19	31
-	-	-	-	89571	(12)	16	31
-	-	-	-	94510	(00)	19	30

2.2 Drifting Buoys

Surface pressure observations from 1912 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 - DEC 2016

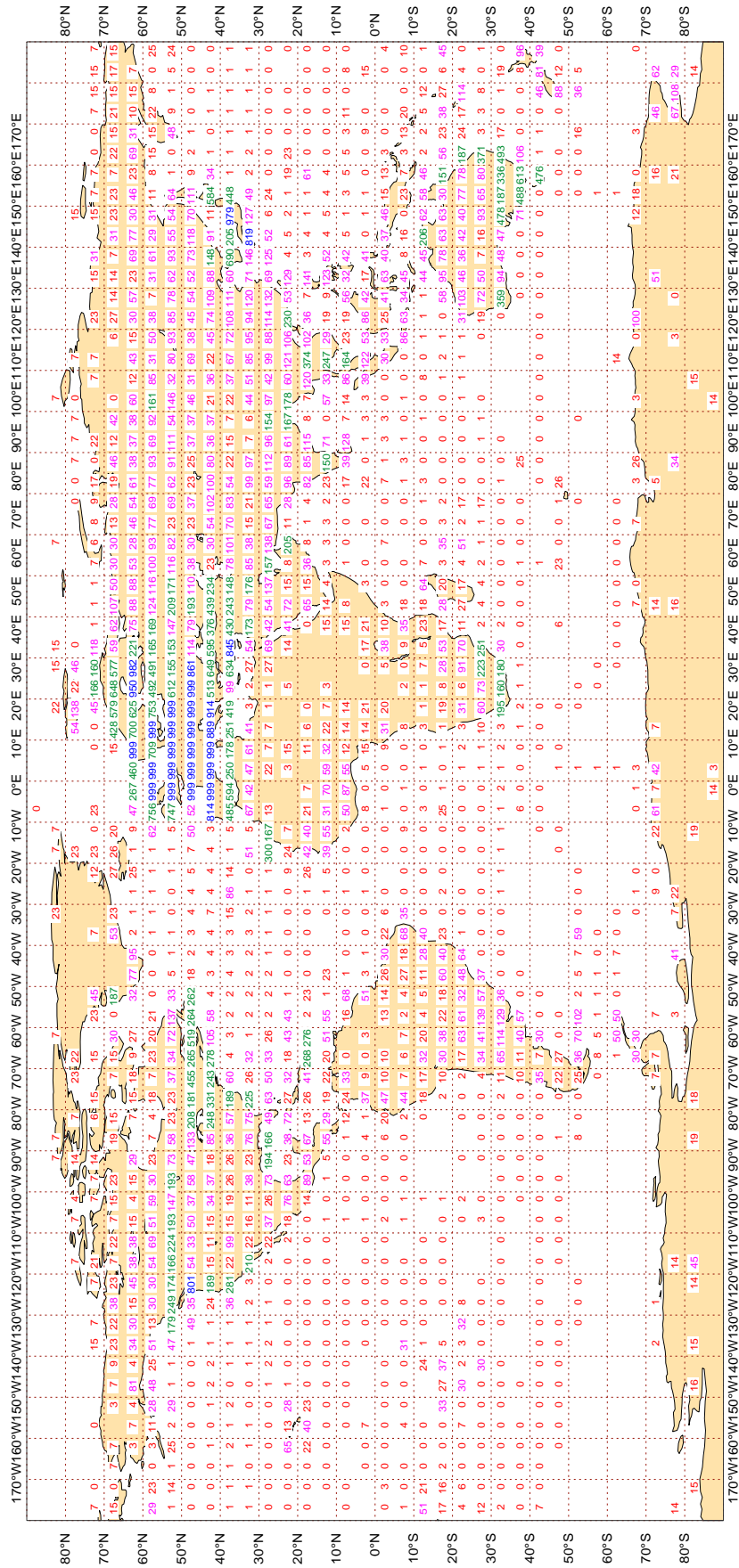
Availability - SYNOP/SHIP (manual, auto) pressure

Average number of observations in 24 hours - 121419

LAND - WMO Region I: 4273 II:18381 III: 2539 IV: 6801

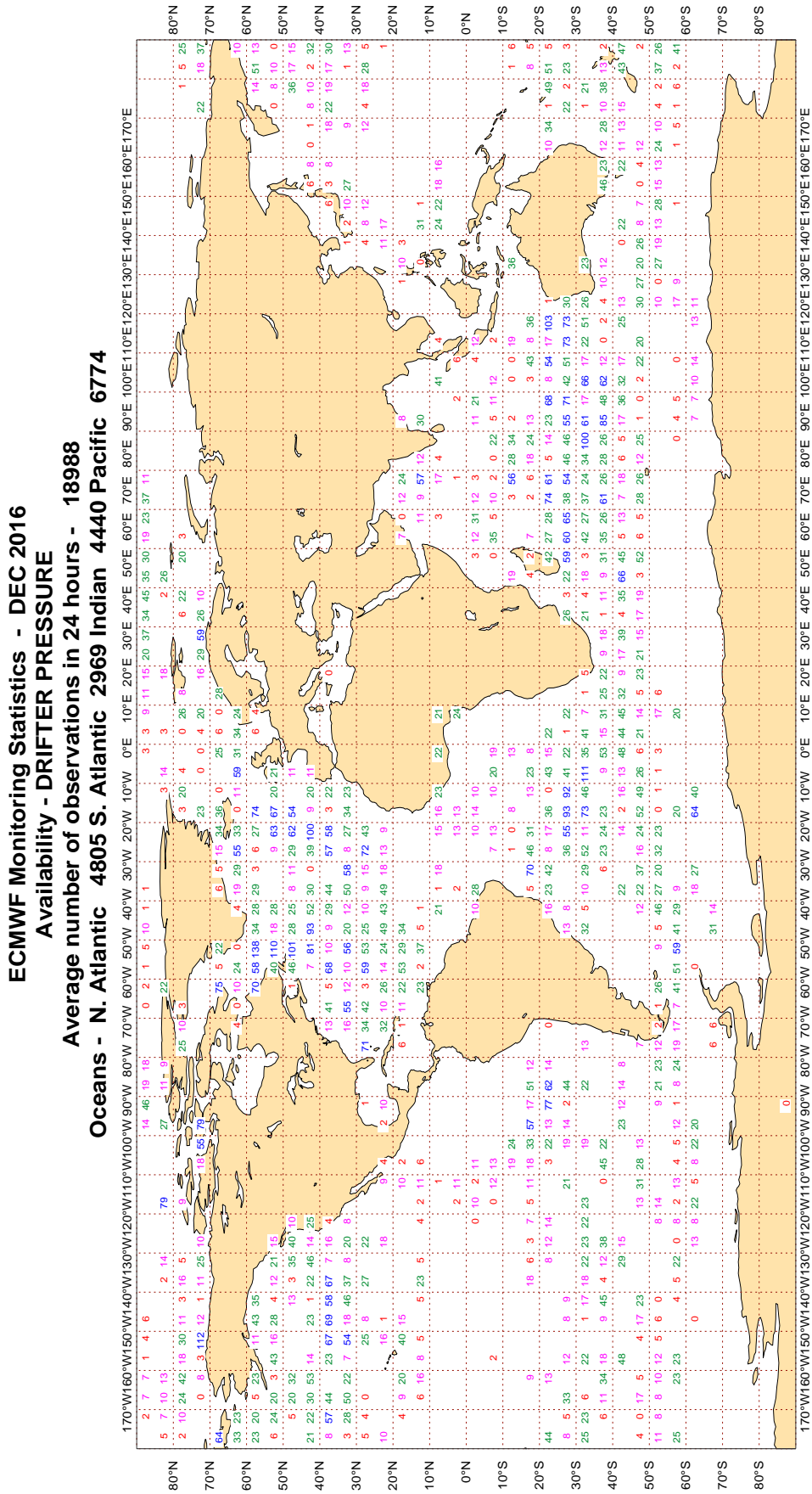
Region V: 8856 VI:66336 Antarctic: 1294

Oceans - N. Atlantic 7838 S. Atlantic 279 Indian 551 Pacific 4271



3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

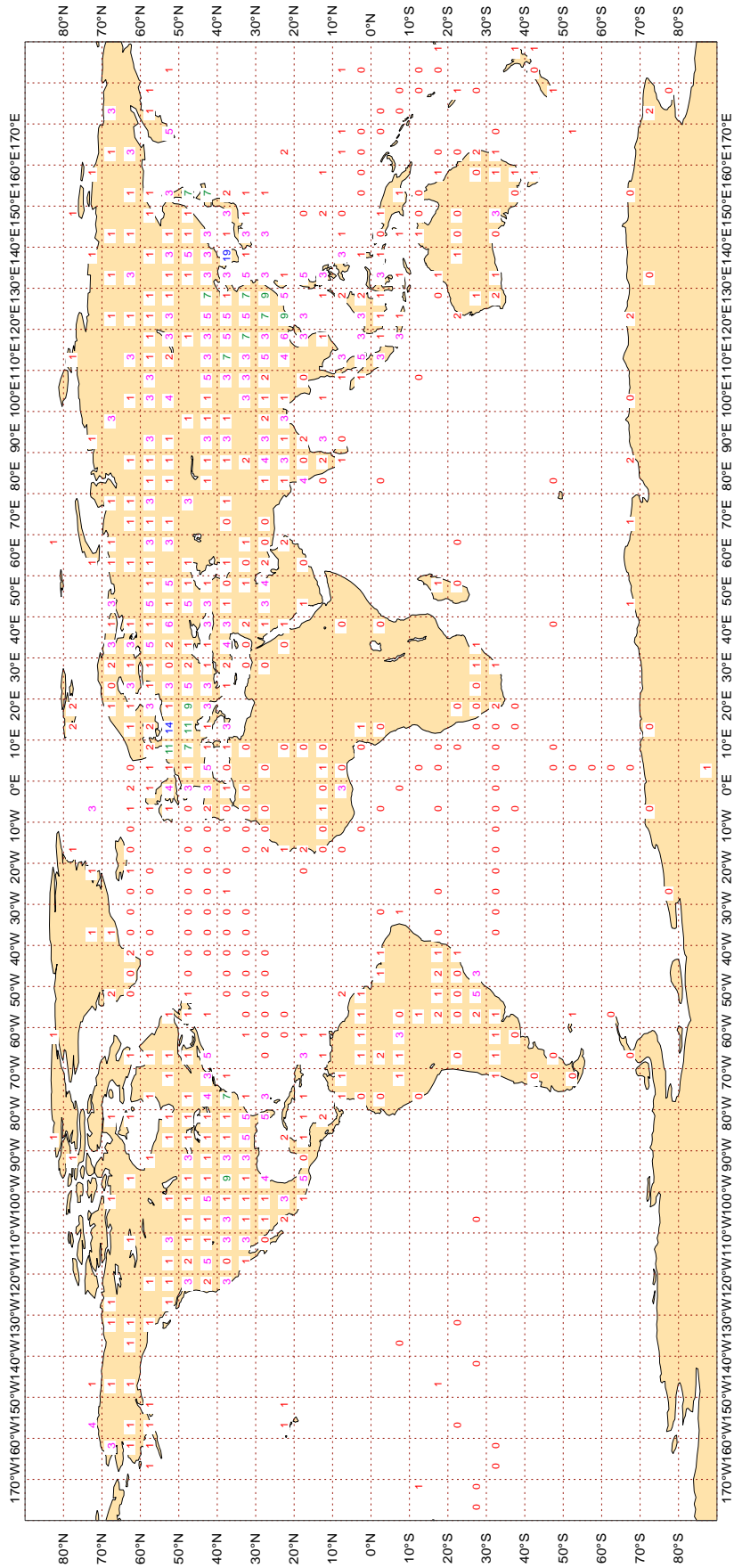
Figure 2



3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

Figure 3

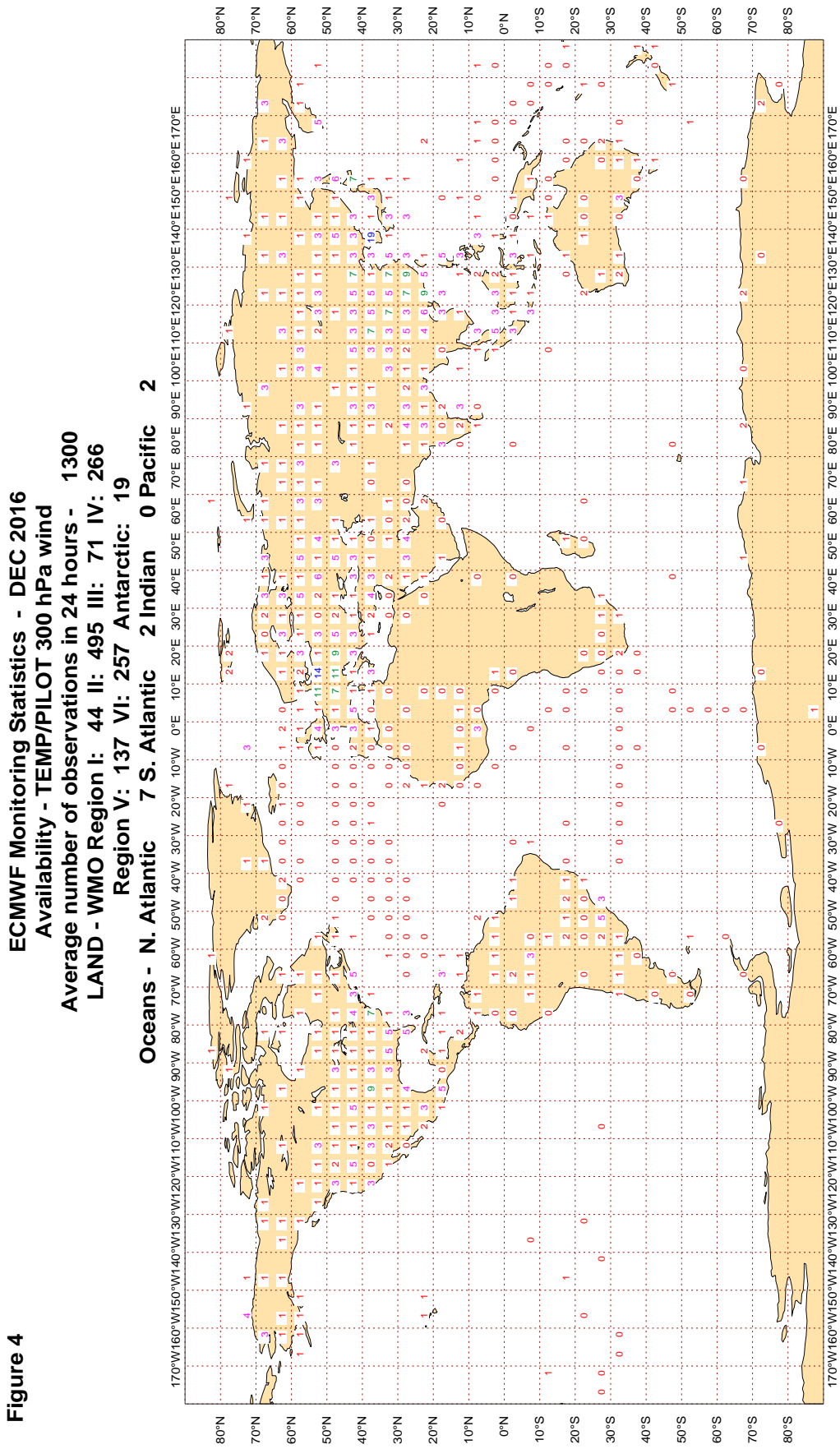
ECMWF Monitoring Statistics - DEC 2016
 Availability - TEMP 500 hPa Geopotential
 Average number of observations in 24 hours - 1315
 LAND - WMO Region I: 44 II: 501 III: 72 IV: 270
 Region V: 139 VI: 259 Antarctic: 19
 Oceans - N. Atlantic 8 S. Atlantic 2 Indian 0 Pacific 2



Magics 2.24.2 (64 bit)



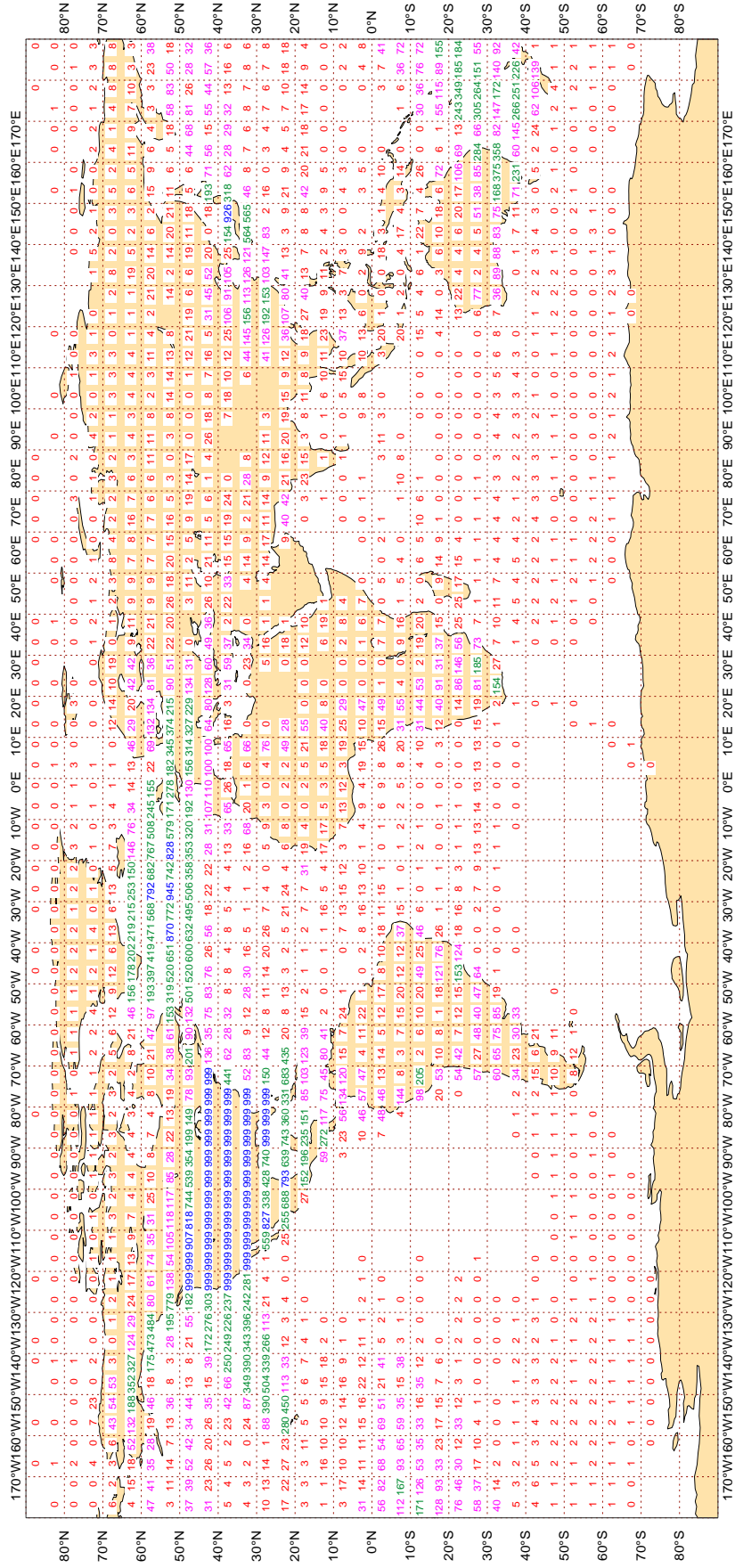
3.2.4 Figure 4 - Availability - TEMP/PILOT 300 hPa wind



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

Figure 5

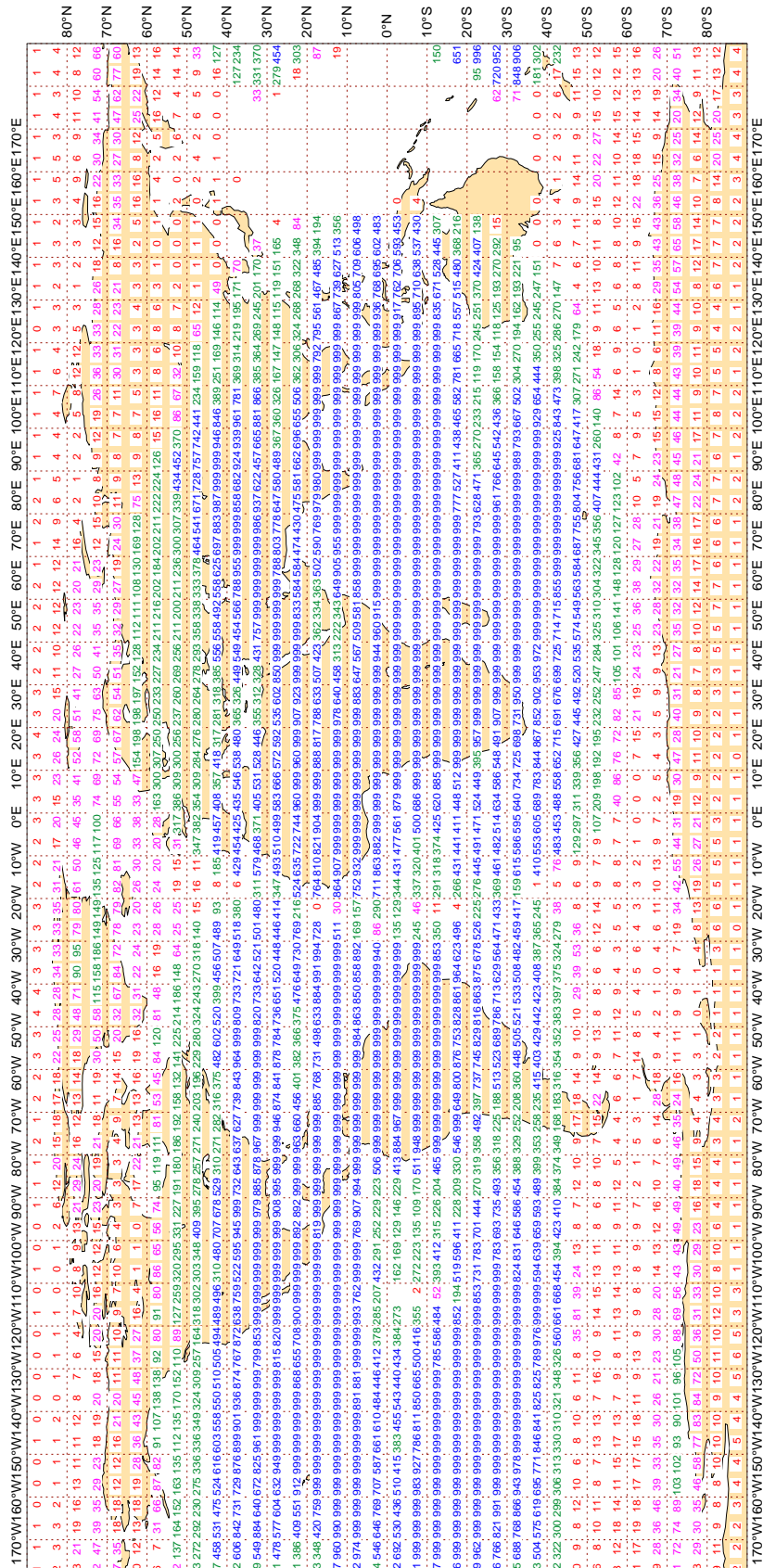
ECMWF Monitoring Statistics - DEC 2016
Availability - Aircraft winds 300-150 hPa
Average number of observations in 24 hours - 186573



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

Figure 6

ECMWF Monitoring Statistics - DEC 2016
Availability - AMV winds 400-150 hPa
Average number of observations in 24 hours - 1082334



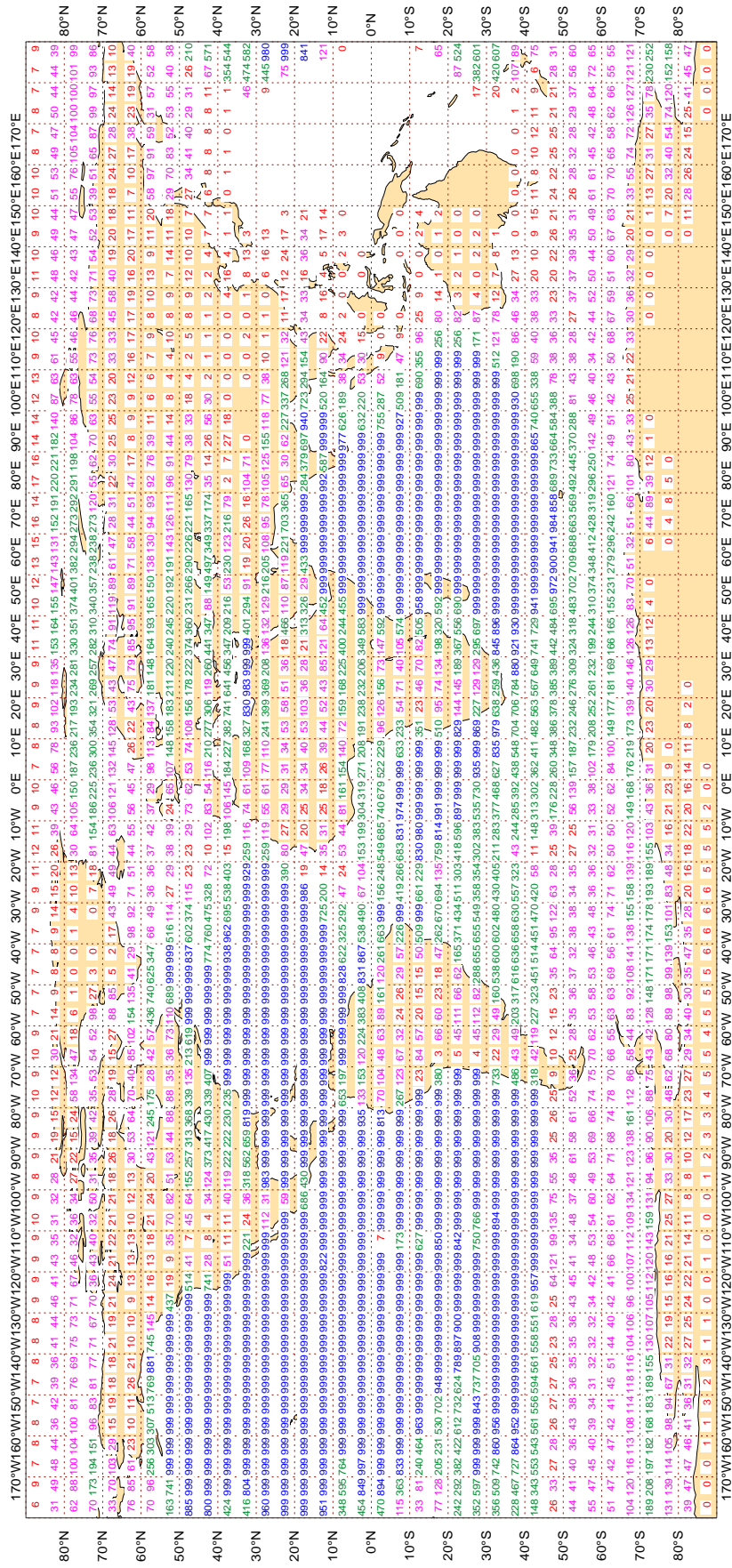
Majics 2.24.2 (64 bit)



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

Figure 7

ECMWF Monitoring Statistics - DEC 2016
Availability - AMV winds 1000-700 hPa
Average number of observations in 24 hours - 1595129



Magics 2.24.2 (64 bit)



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

Figure 8

ECMWF Monitoring Statistics - DEC 2016
Availability - NOAA15 ATOVS : AMSU-A
Average number of observations in 24 hours - 331231

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 70°S). The table contains numerical data representing the average number of observations per 24 hours for NOAA15 ATOVS AMSU-A in December 2016.

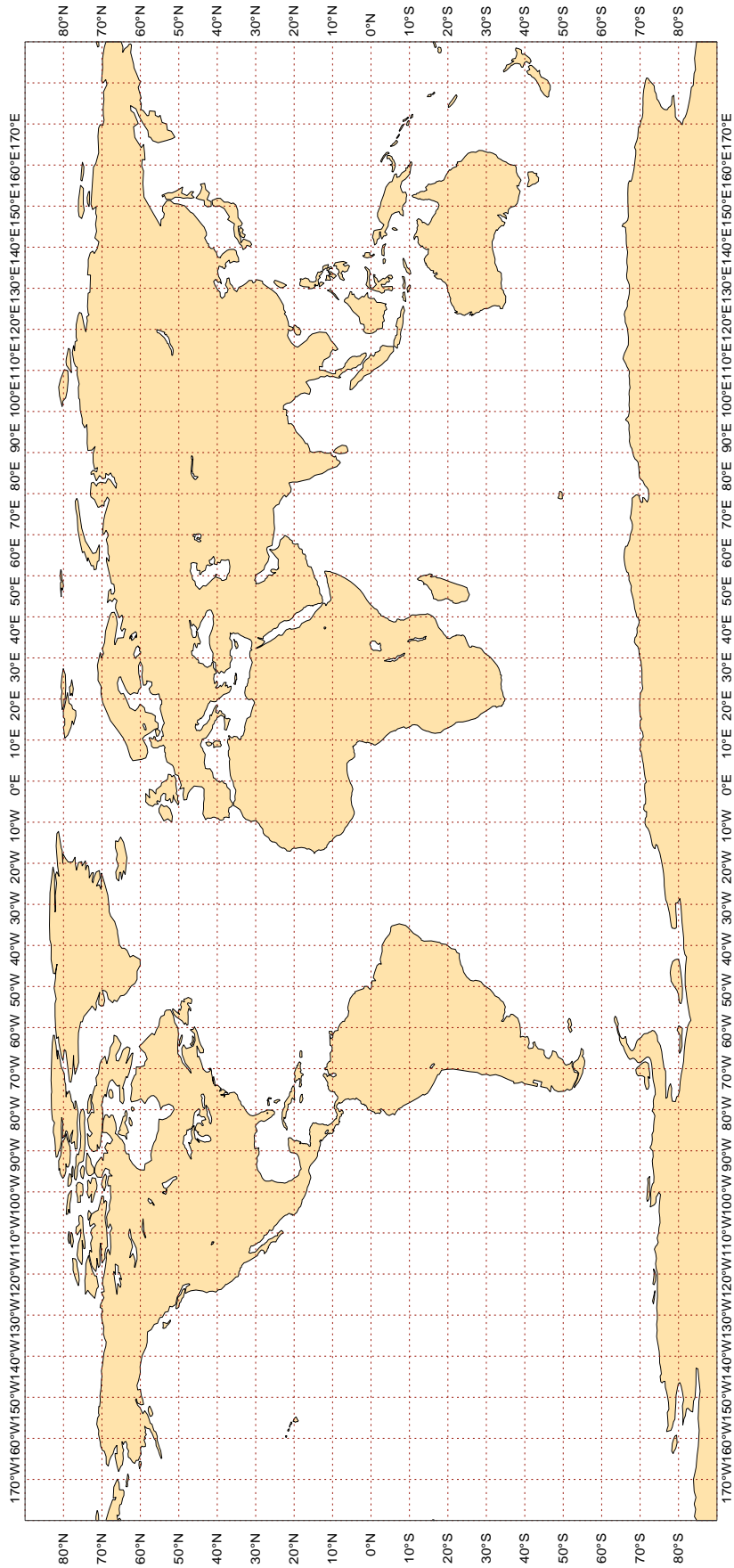


Majics 2.24.2 (64 bit)

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

Figure 9.2

ECMWF Monitoring Statistics - DEC 2016
Availability - AQUA ATOVS : AMSU-A
Average number of observations in 24 hours - 0



Magics 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 : DEC 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
7JXJ	99	P	SUR	19	0	2.3	-3.1	3.8
8884	99	P	SUR	28	0	3.6	3.8	5.2
9V2729	99	P	SUR	73	0	2.3	4.6	5.2
9V9128	99	P	SUR	27	0	2.0	4.0	4.5
9V9287	99	P	SUR	34	0	3.6	3.2	4.8
9V9374	99	P	SUR	29	0	3.8	3.5	5.2
A8KW2	99	P	SUR	15	0	2.9	4.5	5.3
A8WI3	99	P	SUR	18	0	0.7	-3.2	3.3
AGRF	99	P	SUR	106	0	2.2	-4.0	4.6
ASES01	99	P	SUR	48	0	3.8	-5.3	6.5
AUYN	99	P	SUR	22	0	2.5	5.5	6.0
BATFR10	99	P	SUR	38	0	3.1	-4.5	5.5
C6AX5	99	P	SUR	113	0	2.0	3.3	3.8
C6BQ4	99	P	SUR	16	0	1.2	-3.9	4.0
C6FV4	99	P	SUR	25	0	1.3	10.4	10.5
C6YM5	99	P	SUR	52	0	1.0	3.0	3.2
C6ZJ5	99	P	SUR	16	0	1.2	4.5	4.7
CBGR	99	P	SUR	110	0	2.5	-5.3	5.9
DVRF	99	P	SUR	102	0	2.5	-5.1	5.7
HRRF	99	P	SUR	105	0	2.5	-5.0	5.6
KRAU	99	P	SUR	38	0	1.1	5.6	5.7
LAPE7	99	P	SUR	77	0	0.9	6.8	6.8
LAQO7	99	P	SUR	28	0	1.2	3.3	3.5
MYRF	99	P	SUR	29	0	2.4	-5.3	5.8
ONAC	99	P	SUR	25	0	4.5	3.5	5.7
ONCE	99	P	SUR	15	0	1.2	-3.0	3.2
OZ2049	99	P	SUR	39	0	0.9	-5.3	5.4
UAEV	99	P	SUR	31	0	0.9	3.0	3.1
UCSJ	99	P	SUR	23	0	2.1	4.0	4.5
UCTS	99	P	SUR	55	0	3.1	-3.7	4.8
UDAD	99	P	SUR	30	15	5.9	5.7	8.2
UHOW	99	P	SUR	31	0	1.6	-7.8	8.0

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
VRFI7	99	P	SUR	92	0	1.1	4.7	4.9
VRFU8	99	P	SUR	28	0	2.0	-8.3	8.6
VRGH3	99	P	SUR	58	0	1.1	5.5	5.6
VRJT8	99	P	SUR	57	0	2.2	5.0	5.5
VRLZ3	99	P	SUR	27	0	0.9	-6.3	6.4
VRLZ4	99	P	SUR	15	0	2.9	4.2	5.1
VRNR5	99	P	SUR	15	0	1.0	12.4	12.4
VRYO2	99	P	SUR	20	0	3.2	-7.1	7.8
VTFG	99	P	SUR	76	0	3.6	6.1	7.1
WAIU	99	P	SUR	23	0	1.6	-6.5	6.7
WCX8812	99	P	SUR	44	0	0.9	-3.3	3.4
WCZ5535	99	P	SUR	30	0	0.9	-3.7	3.8
WDG2803	99	P	SUR	17	2	5.1	6.2	8.0
WRJP	99	P	SUR	31	0	3.2	-3.2	4.5
YJUP4	99	P	SUR	82	0	0.4	3.5	3.5

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 : DEC 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	197	0	0	3.7	5.9	6.9

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 : DEC 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	111	0	0	17.0	31.2	35.5
42365	99	DIRN	SUR	83	0	0	16.3	-33.6	37.3
44061	99	DIRN	SUR	15	0	0	19.1	-31.2	36.6
46118	99	DIRN	SUR	77	0	0	97.4	-12.6	98.2

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 : DEC 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
1700667	99	P	SUR	-17	73	217	112	4.4	-3.7	5.7
17667	99	P	SUR	-17	73	217	112	4.4	-3.7	5.7
2600545	99	P	SUR	67	-18	719	186	7.4	-1.7	7.6
2600568	99	P	SUR	86	64	704	597	8.4	-3.2	9.0
26545	99	P	SUR	67	-18	740	201	7.4	-1.7	7.6
26568	99	P	SUR	86	64	741	631	8.5	-3.2	9.1
3400512	99	P	SUR	-17	-135	692	0	0.3	-4.6	4.7
34512	99	P	SUR	-17	-135	692	0	0.3	-4.6	4.7
4100597	99	P	SUR	37	-58	103	4	4.8	-4.1	6.3
41597	99	P	SUR	37	-58	111	6	4.8	-4.1	6.3
4401607	99	P	SUR	60	-62	537	228	5.8	5.2	7.8
4401620	99	P	SUR	68	-59	611	109	6.2	1.4	6.3
4401630	99	P	SUR	58	-62	673	174	5.7	2.5	6.2
4601505	99	P	SUR	46	168	225	0	1.7	9.1	9.2
4700509	99	P	SUR	62	-25	311	61	7.2	-1.1	7.2
4700551	99	P	SUR	45	-52	702	384	8.5	0.0	8.5
47509	99	P	SUR	62	-25	327	66	7.3	-1.3	7.5
47551	99	P	SUR	45	-52	741	405	8.6	0.4	8.6
4800513	99	P	SUR	74	163	711	691	3.4	-10.2	10.7
4800628	99	P	SUR	68	-177	403	333	9.1	1.2	9.2
4800731	99	P	SUR	70	-97	2499	1454	8.3	-1.3	8.5
4800790	99	P	SUR	75	169	54	54	0.0	0.0	0.0
4801615	99	P	SUR	71	-129	344	275	9.2	2.5	9.5
48513	99	P	SUR	74	163	710	690	3.4	-10.2	10.7
48731	99	P	SUR	70	-97	2556	1475	8.3	-1.2	8.4
5301502	99	P	SUR	7	104	150	8	2.8	-5.8	6.4
5500584	99	P	SUR	-38	-171	101	24	2.6	-8.5	8.9
55584	99	P	SUR	-38	-171	114	33	2.6	-8.5	8.9
62123	99	P	SUR	56	2	27	0	0.7	-12.8	12.9
6300923	99	P	SUR	65	-37	79	55	2.5	-9.0	9.3
63923	99	P	SUR	65	-37	90	63	2.5	-8.8	9.2
6400553	99	P	SUR	80	1	103	28	2.3	-0.9	2.5

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)
 (CONTINUED)

WMO IDENT	OBS TIME	ELM	ME LAT	N LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
64553	99	P	SUR	80	1	110	31	2.3	-0.9 2.5

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 : DEC 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
3100260	99	SPEED	SUR	-16	-38	161	0	0	2.0	-6.3	6.6
31260	99	SPEED	SUR	-16	-38	164	0	0	2.1	-6.5	6.8
46181	99	SPEED	SUR	54	-129	852	0	0	3.8	5.8	7.0
6100002	99	SPEED	SUR	42	5	744	0	0	3.6	6.8	7.7
62123	99	SPEED	SUR	56	2	27	0	0	2.1	-8.1	8.3

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 PERIOD : DEC 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
0001003	99	DIRN	SUR	40	25	49	0	0	59.4	49.8	77.5
2300003	99	DIRN	SUR	-2	81	279	0	0	120.0	-104.6	159.2
23003	99	DIRN	SUR	-2	80	283	0	0	124.6	-99.4	159.4
23091	99	DIRN	SUR	18	90	83	0	0	13.4	24.9	28.3
23092	99	DIRN	SUR	18	90	91	0	0	43.7	-20.3	48.2
23094	99	DIRN	SUR	14	84	160	0	0	13.8	20.4	24.6
23451	99	DIRN	SUR	15	69	134	0	0	12.4	40.4	42.3
23453	99	DIRN	SUR	8	73	62	0	0	18.7	45.3	49.1
23454	99	DIRN	SUR	10	73	27	0	0	27.4	-26.7	38.2
23460	99	DIRN	SUR	7	88	105	0	0	22.0	34.6	40.9
23497	99	DIRN	SUR	11	72	78	0	0	51.1	29.2	58.9
3100374	99	DIRN	SUR	-25	-45	475	0	0	19.3	-25.2	31.7
3100380	99	DIRN	SUR	-20	-40	606	0	0	31.8	-31.9	45.0
3101000	99	DIRN	SUR	-24	-42	493	0	0	13.3	-27.2	30.2
31374	99	DIRN	SUR	-25	-45	488	0	0	19.4	-26.3	32.7
31380	99	DIRN	SUR	-20	-40	620	0	0	32.9	-32.1	46.0
42090	99	DIRN	SUR	18	-70	976	0	0	22.9	-23.6	32.9
42361	99	DIRN	SUR	28	-93	676	2	0	17.9	29.3	34.3
42365	99	DIRN	SUR	28	-89	444	0	0	19.9	-28.5	34.7
44061	99	DIRN	SUR	39	-77	66	0	0	18.2	-22.0	28.6
45142	99	DIRN	SUR	43	-79	232	0	0	15.0	-24.8	29.0
46118	99	DIRN	SUR	49	-123	461	0	0	95.7	-2.4	95.7
46132	99	DIRN	SUR	50	-128	635	0	0	21.0	27.9	34.9
5600053	99	DIRN	SUR	-6	43	185	0	0	73.8	47.7	87.8
56053	99	DIRN	SUR	-6	43	178	0	0	73.3	46.4	86.7
63119	99	DIRN	SUR	56	-3	20	0	0	53.9	-23.1	58.7

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 : DEC 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
04360	12	Z	925	66	-38	31	0	5.0	40.8	41.1
04360	00	Z	925	66	-38	32	0	5.7	40.1	40.5
21946	12	Z	50	71	148	18	0	54.6	-153.7	163.1
21946	00	Z	50	71	148	12	0	58.5	-185.7	194.7
22845	00	Z	50	62	39	26	0	55.4	-135.4	146.3
25123	00	Z	100	69	161	11	0	64.2	-121.0	137.0
31510	12	Z	70	50	127	19	1	32.3	-125.3	129.4
31510	00	Z	250	50	127	31	0	17.7	-66.7	69.0
34122	00	Z	30	52	39	12	0	109.6	-161.9	195.5
38064	12	Z	200	45	66	29	0	36.8	85.4	93.0
38064	00	Z	200	45	66	27	1	43.8	91.0	101.0
40437	00	Z	925	25	47	26	0	9.0	33.2	34.4
40437	12	Z	925	25	47	28	1	5.5	30.2	30.7
42299	00	Z	925	27	89	19	0	4.1	-42.4	42.6
42886	00	Z	30	22	84	21	0	49.7	177.9	184.7
43041	00	Z	50	19	82	25	0	18.4	140.1	141.3
43110	00	Z	50	17	73	29	0	14.8	137.2	138.0
43128	00	Z	50	17	78	22	0	32.2	138.1	141.8
43295	12	Z	50	13	78	20	0	12.8	164.7	165.2
43333	00	Z	30	12	93	21	0	47.2	196.1	201.7
43371	12	Z	70	8	77	10	0	7.4	138.2	138.4
47122	00	Z	1000	37	127	30	0	2.6	33.6	33.7
47122	12	Z	1000	37	127	31	0	4.6	35.6	35.9
47155	12	Z	1000	35	129	26	2	34.2	-61.4	70.3
65202	12	Z	150	7	3	15	14	0.0	268.6	268.6
76405	12	Z	1000	24	-110	20	4	32.8	-22.5	39.8

LIST OF SUSPECT STATIONS (CONTINUED)

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
96147	00	Z	925	4	108	24	1	15.4	53.1	55.3
96481	00	Z	1000	4	118	22	2	41.0	-6.3	41.5
98618	00	Z	150	10	119	30	3	85.5	83.5	119.5
ASEU02	00	Z	1000	49	-9	10	0	4.9	29.6	30.0

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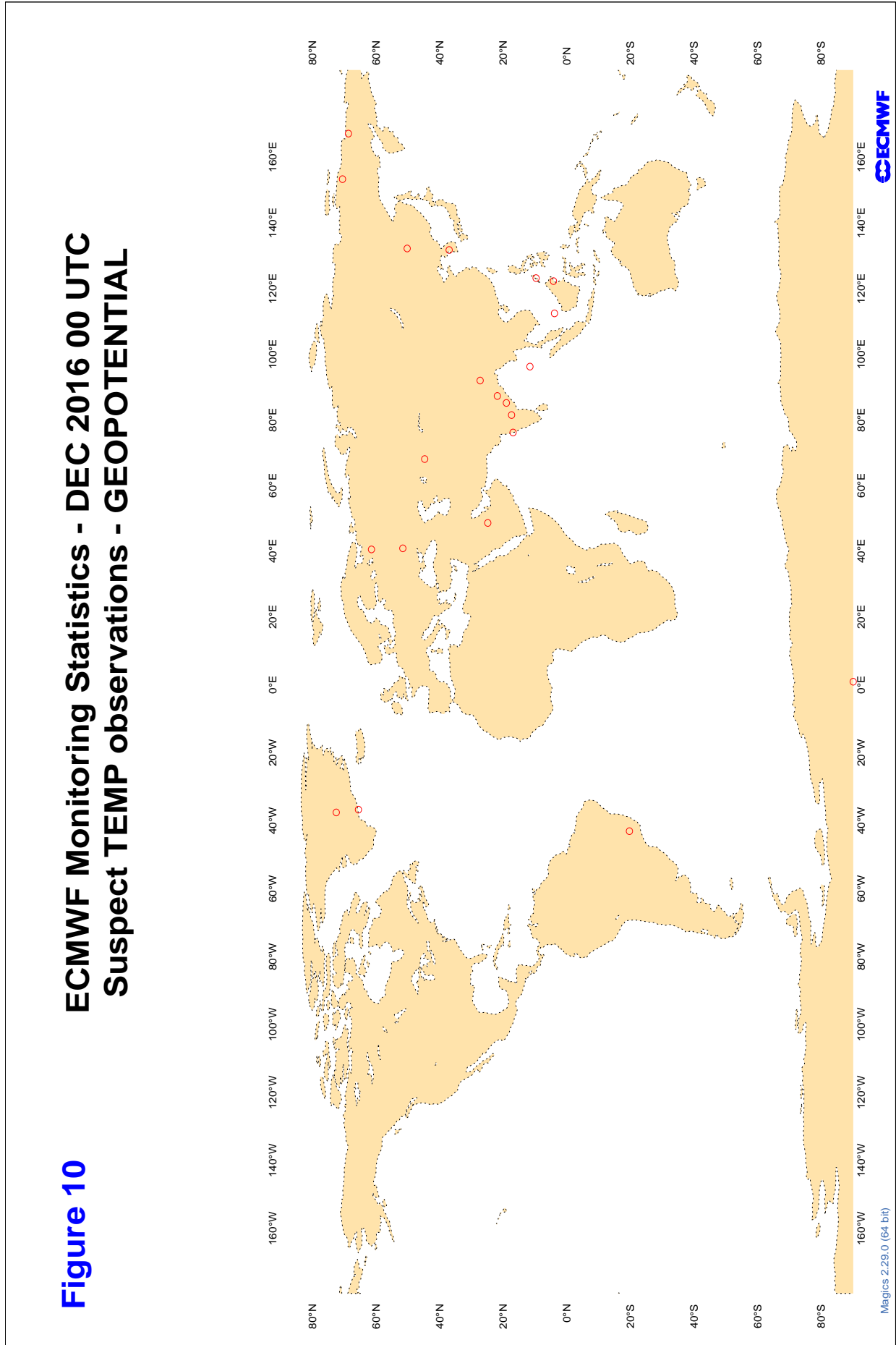
3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

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

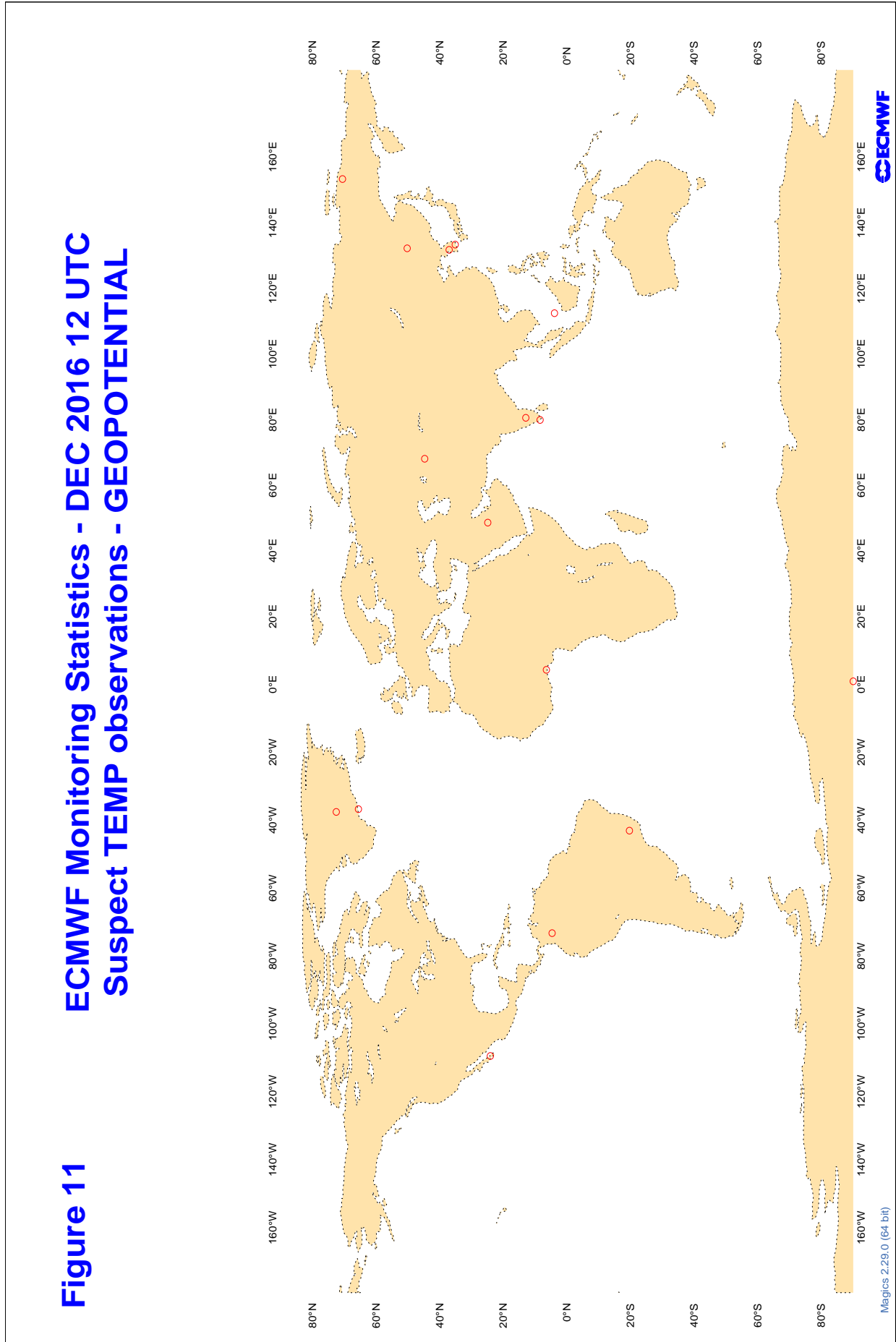
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS \geq 5 M/S
 NO. OF OBSERVATIONS \geq 5, AND,
 ABSOLUTE BIAS \geq 10 DEGREES, WITH
 STANDARD DEVIATION $<$ 30 DEGREES, AND,
 VERTICAL SPREAD $<$ 10 DEGREES
 (AVERAGE BETWEEN 500 AND 150 HPA)

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
57972	00	DD	26	113	30	10.1	1.0	3.7

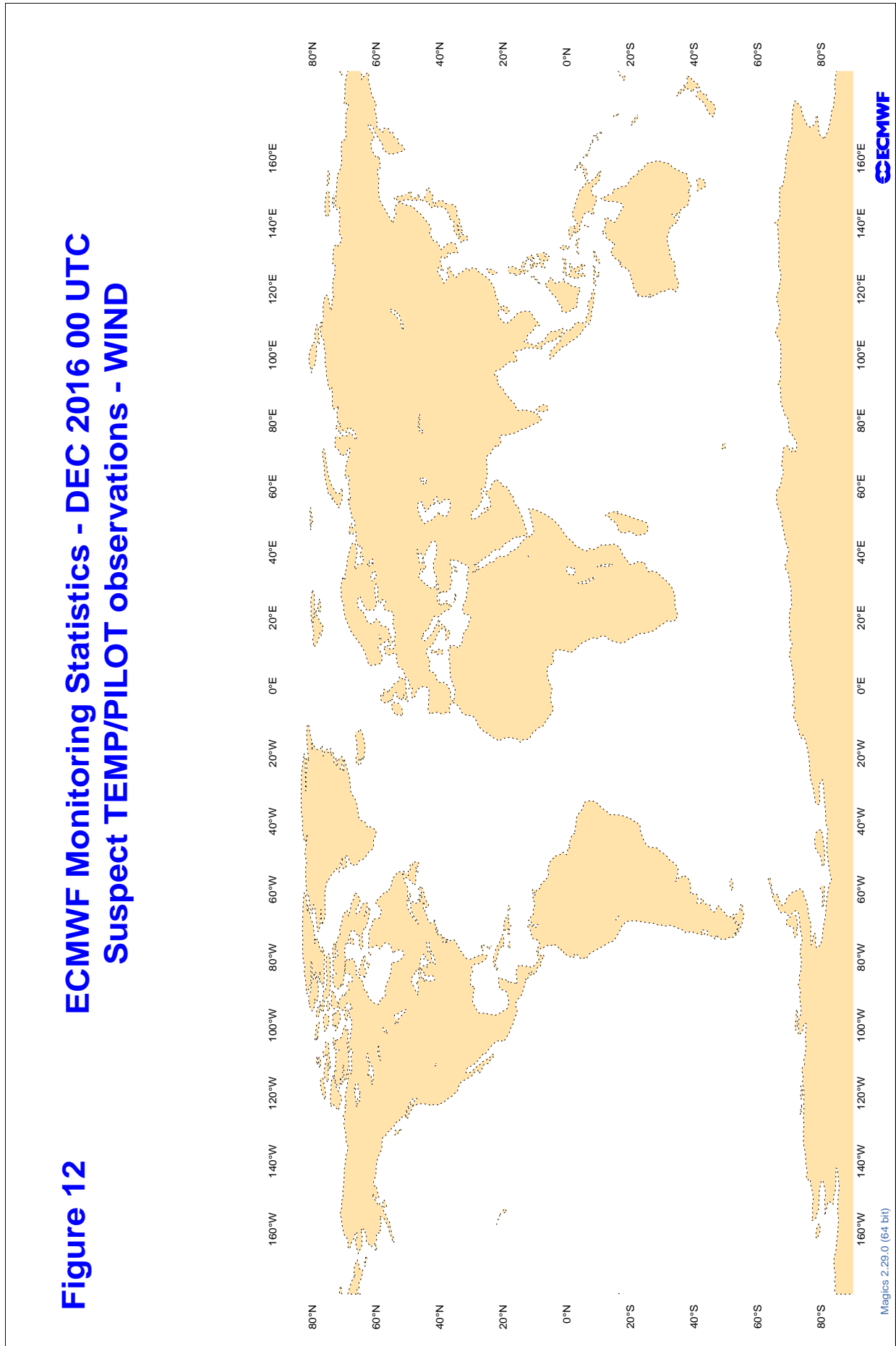
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



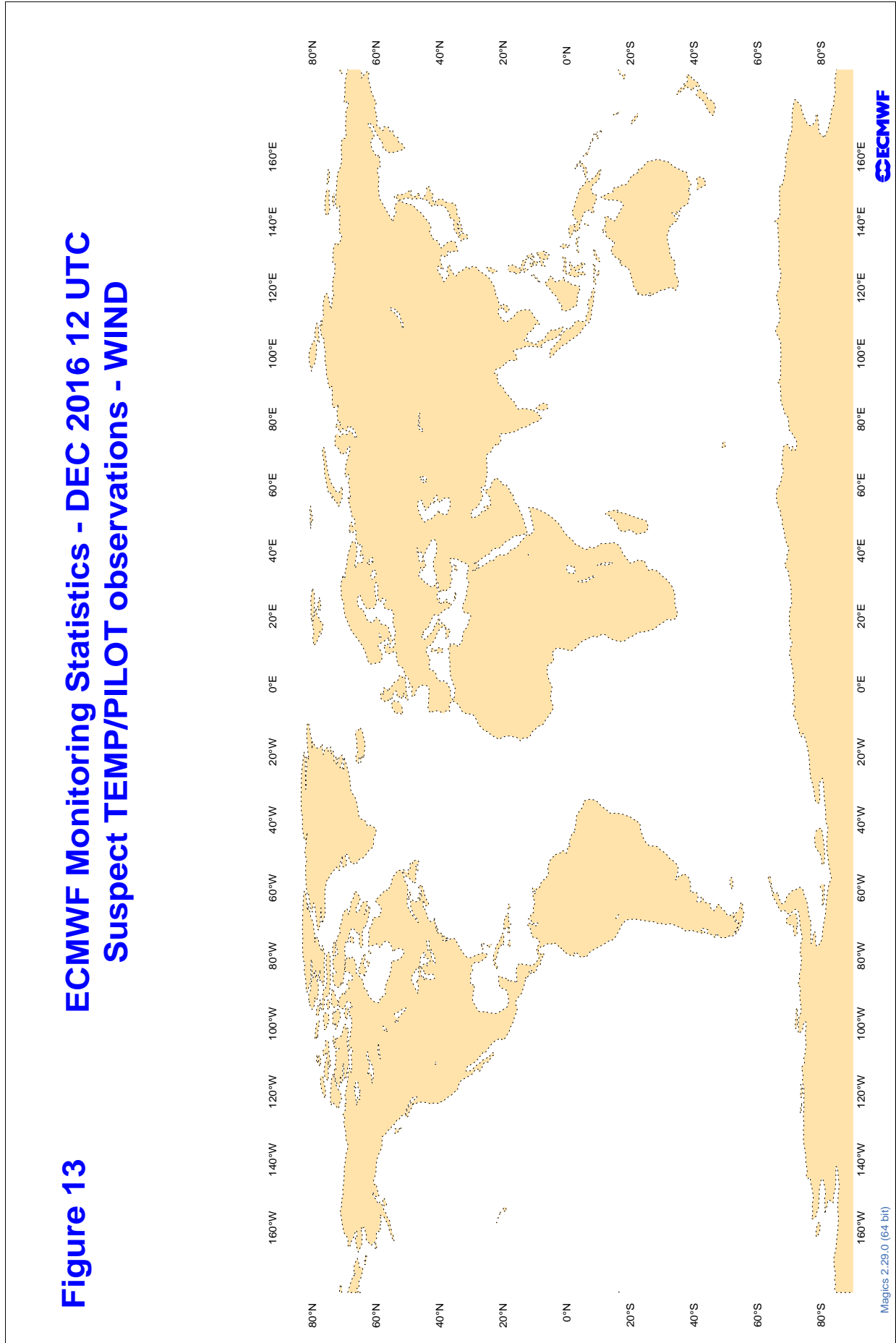
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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 : DEC 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASDE01	00	Z	100	3	19.1	-18.8
ASDE01	12	Z	100	3	3.0	1.9
ASDE02	12	Z	100	18	19.0	-1.0
ASDE03	00	Z	100	1	9.5	9.5
ASDE03	12	Z	100	0	0.0	0.0
ASDE09	12	Z	100	3	41.9	35.9
ASDK01	00	Z	100	3	16.7	10.6
ASDK01	12	Z	100	11	15.7	11.8
ASDK02	00	Z	100	10	17.7	16.4
ASDK02	12	Z	100	8	19.0	18.6
ASDK03	12	Z	100	15	24.7	22.7
ASDK03	00	Z	100	18	23.7	22.6
ASDK1	12	Z	100	9	17.3	5.8
ASDK1	00	Z	100	2	12.7	3.6
ASDK2	00	Z	100	5	13.0	11.6
ASDK2	12	Z	100	6	13.0	11.1
ASDK3	12	Z	100	10	22.4	20.8
ASDK3	00	Z	100	11	21.6	19.3
ASES01	12	Z	100	23	28.8	25.6
ASEU02	12	Z	100	11	40.1	39.2
ASEU02	00	Z	100	10	38.7	38.1
ASEU03	00	Z	100	8	17.4	5.2
ASEU03	12	Z	100	5	38.0	32.5
ASEU04	00	Z	100	4	11.8	5.8
ASEU04	12	Z	100	6	10.9	3.0
ASEU05	00	Z	100	2	31.2	31.2
ASEU05	12	Z	100	4	22.5	22.0
ASEU06	00	Z	100	6	45.8	-32.0
ASEU06	12	Z	100	5	26.5	2.1
ASFR1	12	Z	100	7	17.3	16.1
ASFR1	00	Z	100	12	15.6	10.2
ASFR3	12	Z	100	7	6.6	6.2
ASFR3	00	Z	100	13	13.8	11.0
ASFR4	00	Z	100	14	25.3	24.0
ASFR4	12	Z	100	15	29.2	27.4
DBLK	12	Z	100	40	12.2	8.0
JNSR	12	Z	100	28	12.2	8.6
JNSR	00	Z	100	18	18.9	15.6

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

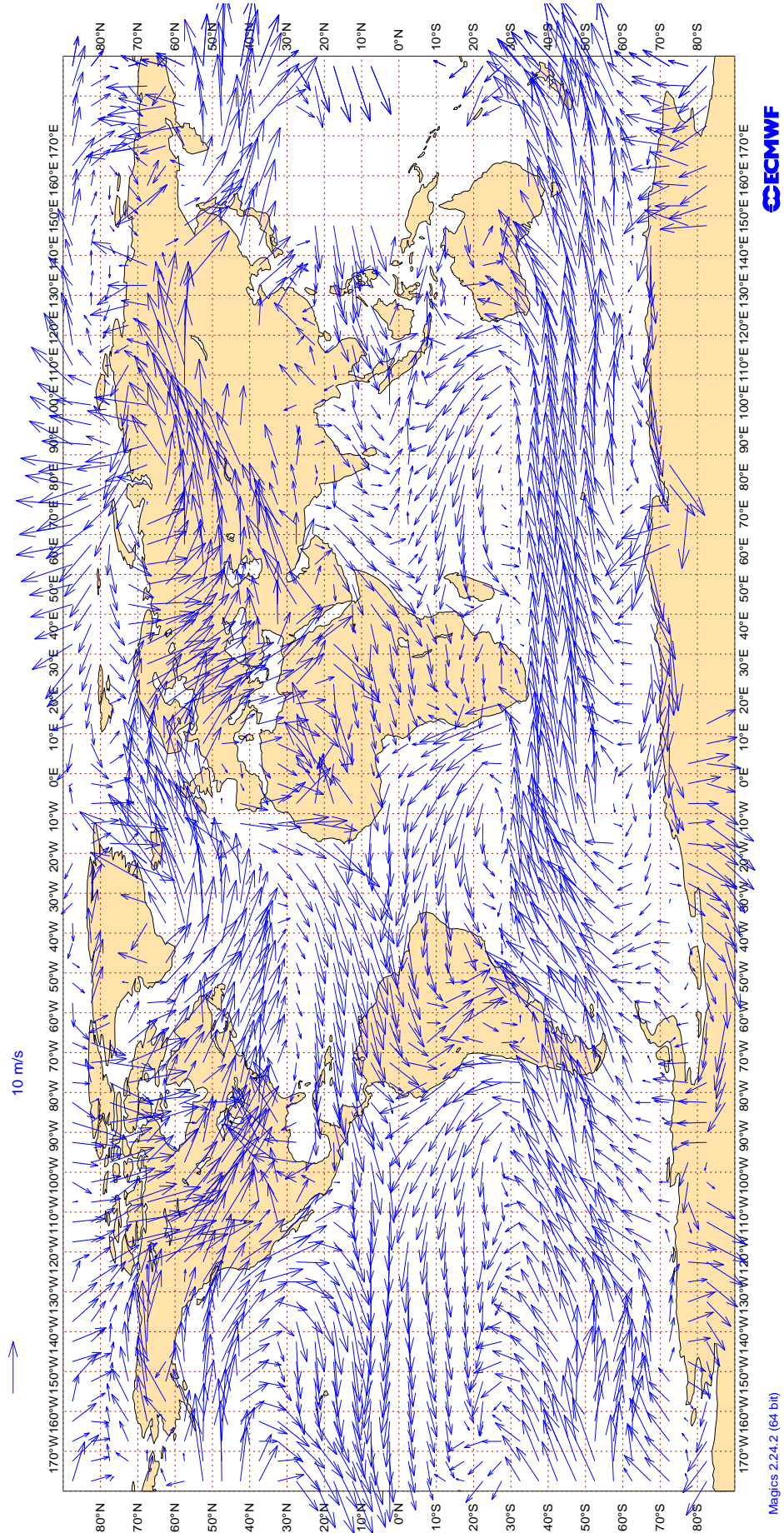
RADIOSONDE MONITORING STATISTICS (SHIPS)

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASDE01	00	V	100	2	3.5	1.7	-1.5
ASDE01	12	V	100	3	4.7	0.1	0.2
ASDE02	12	V	100	16	4.6	-0.4	-0.3
ASDE03	00	V	100	1	9.5	-8.8	3.6
ASDE03	12	V	100	0	0.0	0.0	0.0
ASDE09	12	V	100	3	3.8	0.8	-1.6
ASDK01	00	V	100	3	3.5	-1.8	1.7
ASDK01	12	V	100	9	3.3	1.9	0.1
ASDK02	00	V	100	9	4.1	-0.5	-0.1
ASDK02	12	V	100	8	4.9	-2.5	-1.1
ASDK03	12	V	100	10	3.9	-1.1	-0.1
ASDK03	00	V	100	11	4.1	0.1	-1.0
ASDK1	12	V	100	9	4.3	2.7	0.2
ASDK1	00	V	100	2	2.9	-0.2	2.9
ASDK2	00	V	100	5	4.6	0.4	-1.7
ASDK2	12	V	100	6	5.0	-2.8	-1.4
ASDK3	12	V	100	10	4.0	-1.1	-0.3
ASDK3	00	V	100	11	4.1	0.1	-1.1
ASES01	12	V	100	18	6.7	2.7	1.2
ASEU02	12	V	100	8	4.1	0.6	-0.4
ASEU02	00	V	100	9	4.8	-1.0	1.9
ASEU03	00	V	100	7	4.8	-0.2	1.1
ASEU03	12	V	100	5	3.4	-0.3	0.6
ASEU04	00	V	100	3	2.2	-1.0	0.4
ASEU04	12	V	100	6	5.8	0.7	0.1
ASEU05	00	V	100	1	2.7	-0.9	-2.5
ASEU05	12	V	100	3	4.3	-1.5	0.0
ASEU06	00	V	100	4	8.4	-4.6	3.5
ASEU06	12	V	100	5	7.8	-5.8	1.1
ASFR1	12	V	100	7	3.4	0.8	0.3
ASFR1	00	V	100	9	3.5	-2.1	1.1
ASFR3	12	V	100	7	4.0	-1.1	1.0
ASFR3	00	V	100	10	4.2	1.2	1.9
ASFR4	00	V	100	11	4.0	-1.3	1.3
ASFR4	12	V	100	12	4.8	-0.1	0.4
DBLK	12	V	100	22	3.7	0.7	-0.1
JNSR	12	V	100	24	4.5	0.6	1.0
JNSR	00	V	100	16	4.5	0.6	1.0

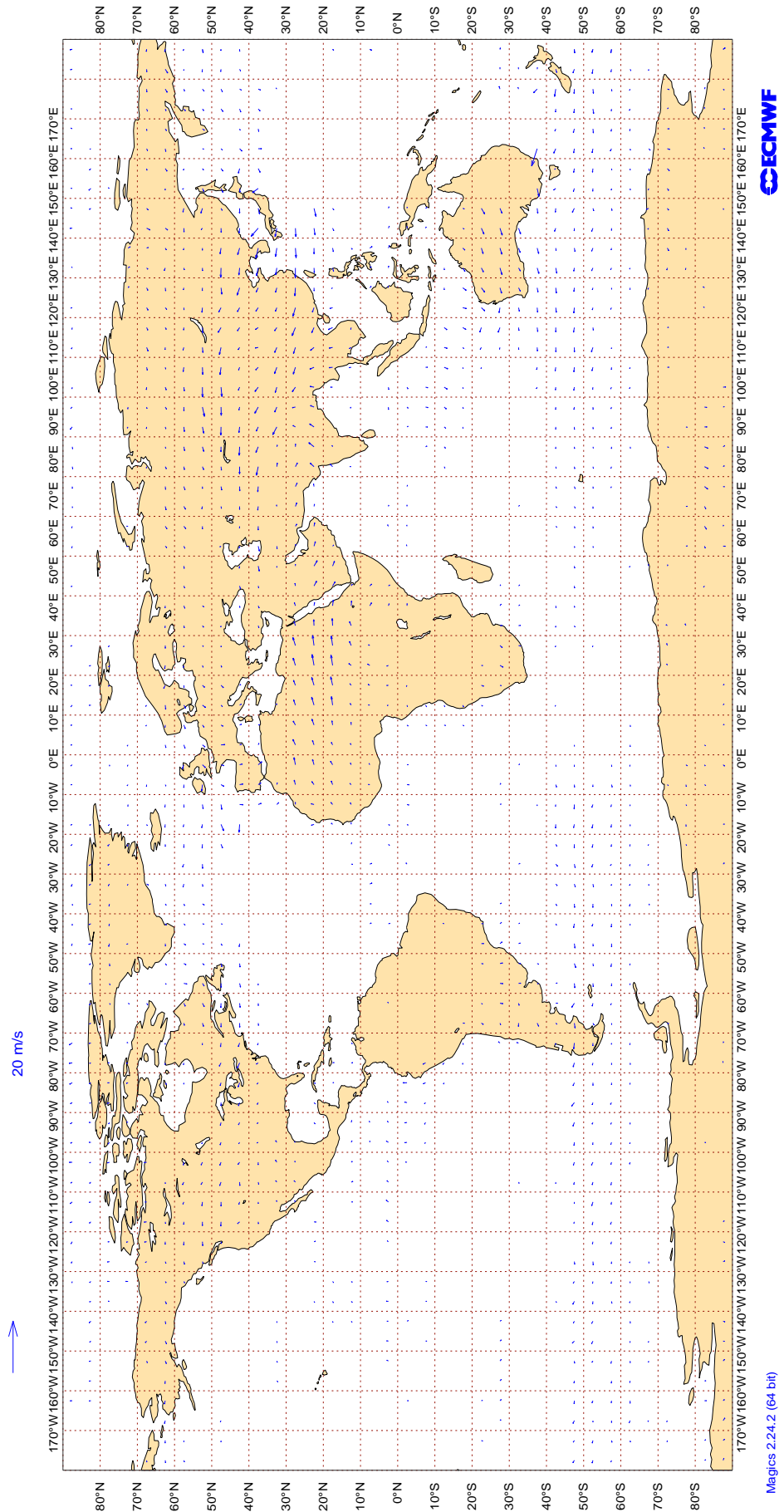
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

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



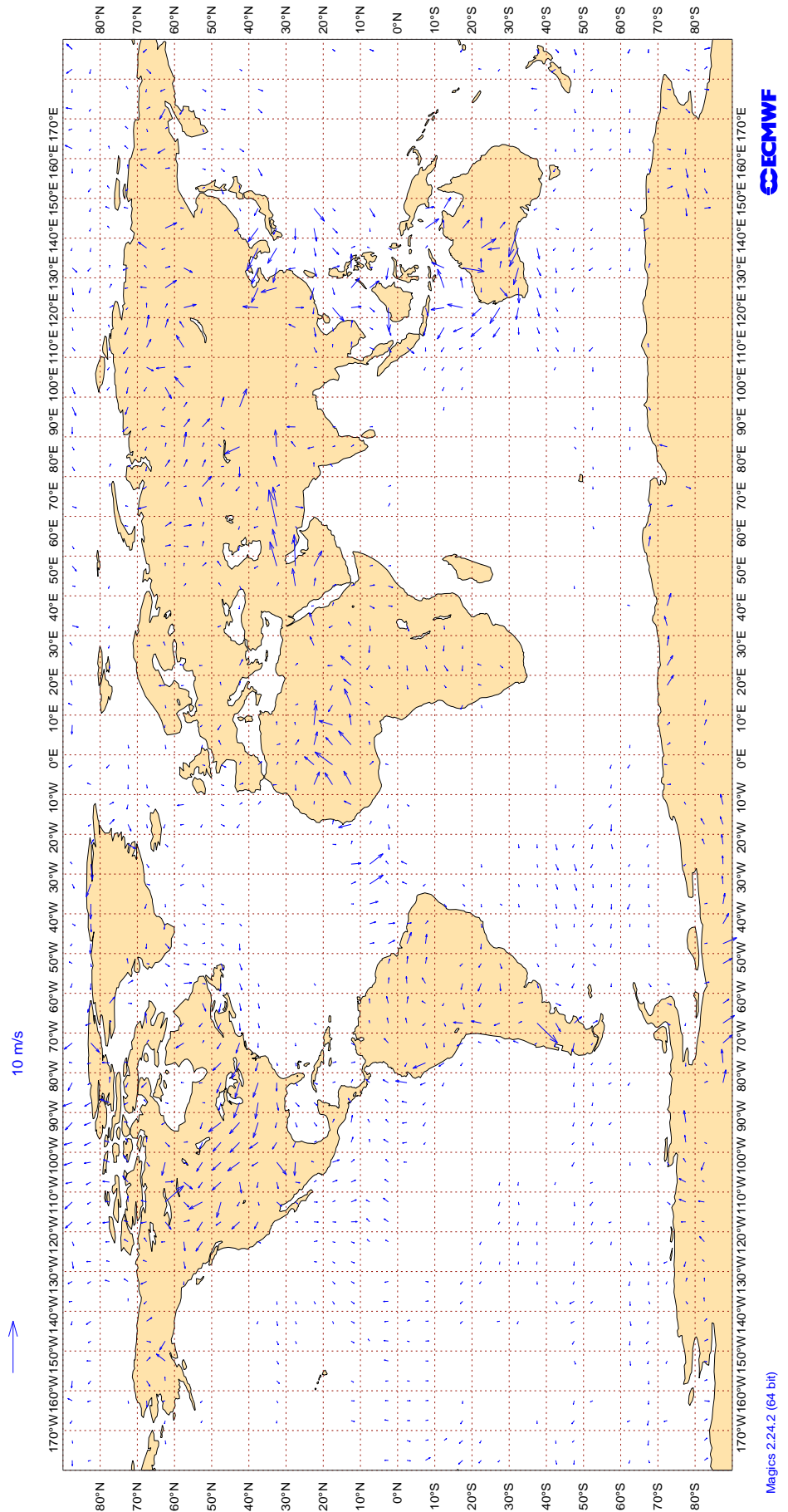
3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

Figure 15
ECMWF Monitoring Statistics: Dec 2016
AMV Winds: 150- 400hPa
Wind bias: Observation - FG



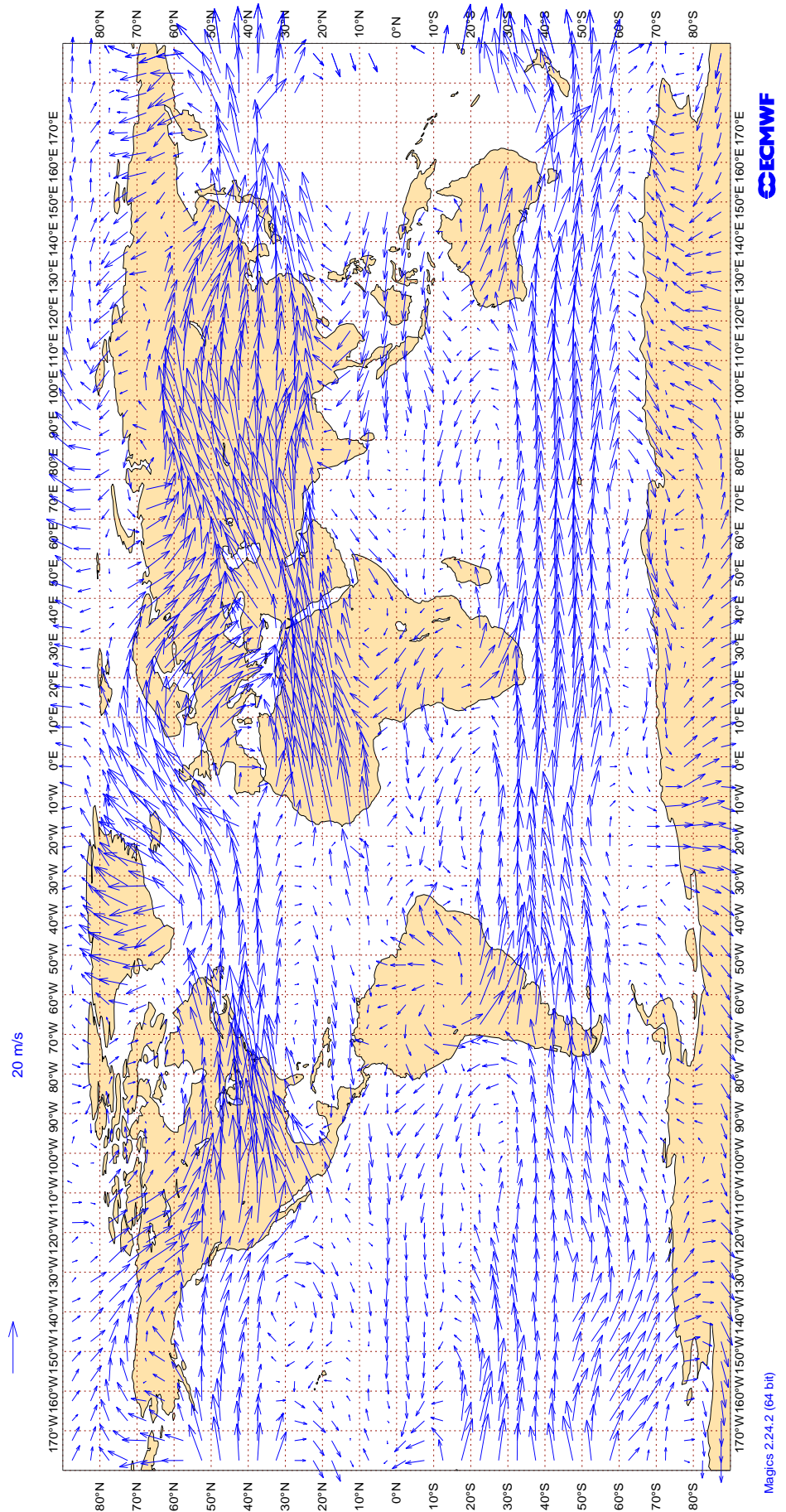
3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

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



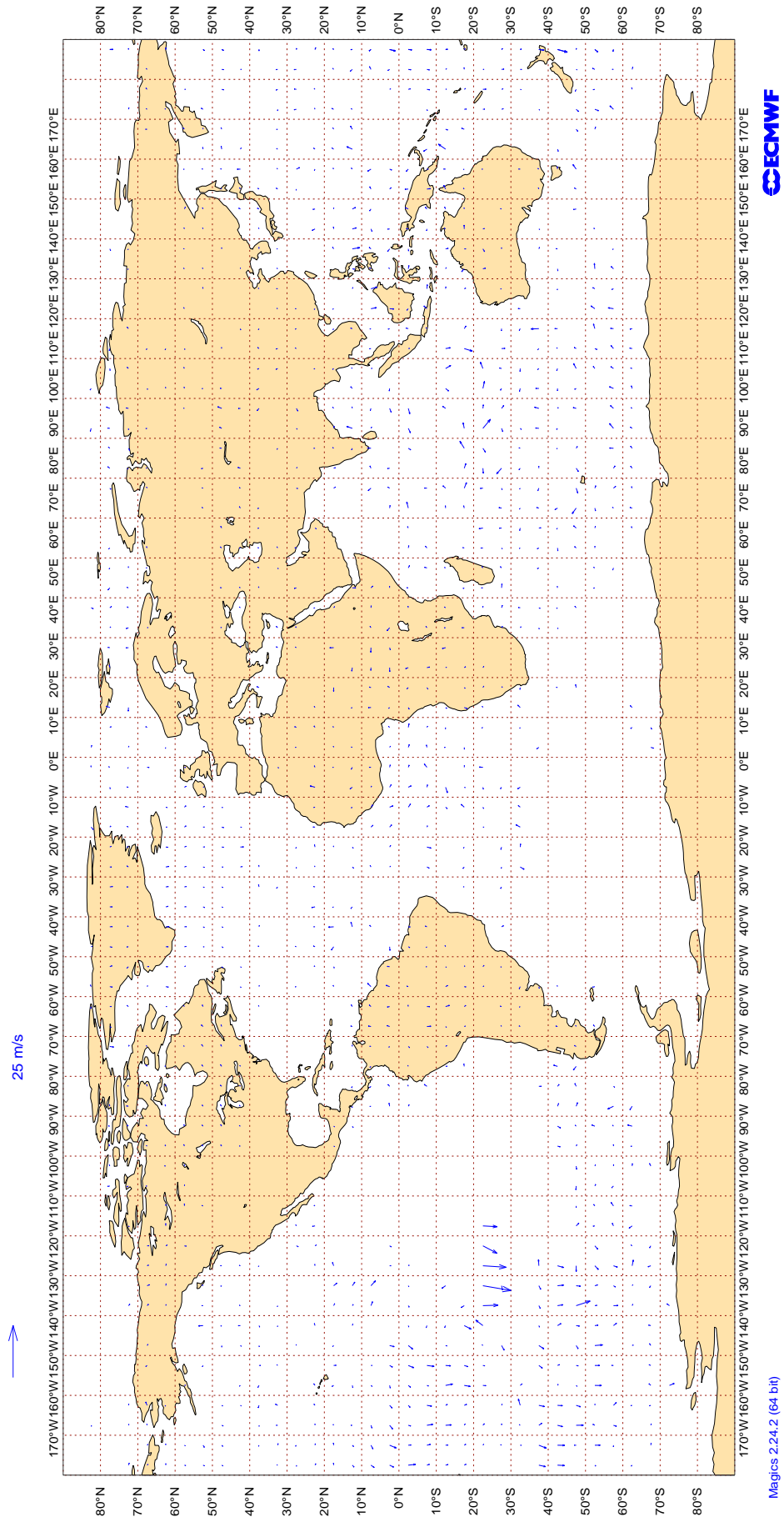
3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

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



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

Figure 18
ECMWF Monitoring Statistics: Dec 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 : DEC 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	64	0	0	4.1	-0.0
AAL	99	V	300-150	46527	1	0	5.3	0.2
AAR	99	V	300-150	345	0	0	5.1	-1.7
AAY	99	V	300-150	75	0	0	4.9	0.7
ABD	99	V	300-150	301	0	0	4.2	-0.5
ABW	99	V	300-150	919	0	0	4.3	-0.4
ABX	99	V	300-150	180	1	1	7.0	0.1
ACA	99	V	300-150	25539	7	0	8.4	0.2
ACI	99	V	300-150	2950	0	0	4.4	0.5
AEA	99	V	300-150	1224	8	0	6.8	0.3
AFL	99	V	300-150	2028	0	0	3.7	0.2
AFR	99	V	300-150	29042	0	0	4.3	0.2
AHY	99	V	300-150	288	25	0	15.2	0.4
AIC	99	V	300-150	1741	7	0	8.5	-0.1
AMX	99	V	300-150	2490	26	0	13.1	0.0
ANZ	99	V	300-150	22197	4	0	6.7	0.4
AOJ	99	V	300-150	81	9	0	15.0	0.2
ASA	99	V	300-150	4701	1	0	6.0	0.4
ASL	99	V	300-150	583	0	0	4.1	0.3
ASY	99	V	300-150	110	0	0	5.1	0.2
AUA	99	V	300-150	4188	0	0	5.0	-0.2
AUH	99	V	300-150	68	15	0	10.5	-0.9
AVA	99	V	300-150	388	18	0	11.4	0.5
AVN	99	V	300-150	108	2	2	4.4	0.7

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AXM	99	V	300-150	156	0	0	5.2	0.8
AZA	99	V	300-150	6127	0	0	4.4	0.3
AZG	99	V	300-150	206	0	0	3.8	-0.5
BAW	99	V	300-150	51432	5	0	7.1	0.1
BBR	99	V	300-150	138	1	2	9.2	-0.8
BEL	99	V	300-150	1976	0	0	4.2	0.2
BEN	99	V	300-150	20	0	0	5.4	0.1
BER	99	V	300-150	8468	0	0	4.2	0.4
BGH	99	V	300-150	27	0	0	4.2	-0.1
BLU	99	V	300-150	20	0	0	6.7	0.7
BLX	99	V	300-150	285	0	0	4.6	-0.4
BOX	99	V	300-150	651	0	0	4.1	-0.1
BOX	99	V	300-150	30	0	0	5.1	-0.0
BPA	99	V	300-150	70	0	0	7.8	1.4
BWJ	99	V	300-150	27	0	0	3.1	-0.3
CAL	99	V	300-150	556	0	0	4.7	0.1
CAZ	99	V	300-150	134	0	0	4.6	-0.8
CCA	99	V	300-150	1772	9	0	9.1	0.5
CES	99	V	300-150	1198	0	0	3.7	0.5
CFC	99	V	300-150	250	0	0	5.0	0.5
CFG	99	V	300-150	4551	0	0	4.9	-0.2
CHH	99	V	300-150	32	0	0	10.0	-0.6
CJT	99	V	300-150	144	0	0	5.3	-0.5
CKS	99	V	300-150	1845	0	0	5.0	-0.2
CLU	99	V	300-150	228	0	0	4.3	-0.1
CLX	99	V	300-150	3738	0	0	4.6	-0.5
CMB	99	V	300-150	490	0	0	4.8	-0.1
CNV	99	V	300-150	325	0	0	4.2	0.3
CPA	99	V	300-150	1197	0	0	4.0	0.3
CRK	99	V	300-150	882	0	0	4.1	0.7
CRL	99	V	300-150	592	0	0	4.2	0.3
CRV	99	V	300-150	81	0	0	5.6	0.8
CSN	99	V	300-150	823	15	0	9.0	-0.0
CTM	99	V	300-150	43	0	0	4.2	-0.6
DAH	99	V	300-150	784	0	0	4.1	0.4
DAL	99	V	300-150	56293	0	0	4.4	0.0
DHK	99	V	300-150	2326	0	0	4.8	-0.5
DJT	99	V	300-150	1351	0	0	4.8	-0.1
DLH	99	V	300-150	27734	0	0	4.3	0.0
DUB	99	V	300-150	42	0	0	3.6	0.1
EDC	99	V	300-150	51	0	0	5.1	0.6
EDG	99	V	300-150	33	0	9	8.8	-1.5
EDW	99	V	300-150	677	0	0	4.7	0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
EIN	99	V	300-150	13447	0	0	4.3	0.2
EJM	99	V	300-150	477	26	0	15.1	0.3
ELY	99	V	300-150	2370	0	0	4.2	-0.2
ESR	99	V	300-150	57	0	0	7.1	-0.2
ETD	99	V	300-150	3707	6	0	6.7	-0.2
ETH	99	V	300-150	1885	10	0	11.1	0.1
EVE	99	V	300-150	57	0	0	5.2	1.3
EWG	99	V	300-150	2298	0	0	4.8	0.1
FDX	99	V	300-150	5108	0	0	4.4	-0.1
FIN	99	V	300-150	569	0	0	3.7	0.3
FJI	99	V	300-150	6328	0	0	4.9	0.6
FPG	99	V	300-150	20	0	0	4.1	0.5
FWI	99	V	300-150	1738	0	0	4.4	0.5
FYL	99	V	300-150	36	0	0	4.5	-0.7
GCR	99	V	300-150	51	0	0	3.3	0.2
GEC	99	V	300-150	2622	0	0	4.1	-0.0
GES	99	V	300-150	73	14	0	14.2	0.8
GLO	99	V	300-150	69	3	0	9.6	0.9
GMA	99	V	300-150	85	14	0	11.4	-0.4
GOL	99	V	300-150	59	0	0	4.3	-0.2
GTI	99	V	300-150	2286	0	0	4.6	-0.4
GZP	99	V	300-150	24	0	0	2.4	-0.5
HAL	99	V	300-150	3506	0	0	4.8	0.9
HHG	99	V	300-150	22	0	0	2.8	0.3
HZM	99	V	300-150	84	0	0	3.1	0.5
HZS	99	V	300-150	104	0	0	4.2	0.3
HZS	99	V	300-150	42	0	2	3.4	-0.3
IBE	99	V	300-150	2502	0	0	4.7	0.3
ICL	99	V	300-150	613	0	0	5.1	-0.2
ICV	99	V	300-150	274	0	0	4.1	-0.5
IFA	99	V	300-150	61	43	0	21.8	-0.9
IJM	99	V	300-150	92	0	0	5.1	1.8
ISS	99	V	300-150	100	0	0	5.7	-0.3
JAF	99	V	300-150	1110	16	0	9.5	0.2
JAI	99	V	300-150	1190	0	0	4.2	0.5
JAS	99	V	300-150	154	31	0	12.1	1.0
JEF	99	V	300-150	46	0	2	3.1	0.2
JET	99	V	300-150	41	0	0	4.8	0.4
JJA	99	V	300-150	62	2	0	5.5	-0.2
JME	99	V	300-150	28	96	0	39.9	-2.0
JST	99	V	300-150	2602	3	0	11.6	0.6
KAC	99	V	300-150	1092	0	0	4.4	0.5
KAI	99	V	300-150	91	3	0	5.6	0.8

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
KAL	99	V	300-150	1698	0	0	4.2	0.3
KAY	99	V	300-150	70	0	0	4.7	0.2
KFE	99	V	300-150	22	0	0	4.6	0.4
KLM	99	V	300-150	18096	1	0	5.2	-0.0
KOC	99	V	300-150	39	0	0	4.9	-0.7
LAN	99	V	300-150	1726	17	0	11.6	0.2
LCO	99	V	300-150	96	0	0	4.1	0.3
LDM	99	V	300-150	37	16	0	16.5	-0.2
LEA	99	V	300-150	96	0	0	3.3	-0.9
LGT	99	V	300-150	49	0	0	6.1	-0.7
LOT	99	V	300-150	2081	19	0	17.4	-0.4
LUC	99	V	300-150	48	71	0	31.9	0.2
LXJ	99	V	300-150	59	10	2	12.2	0.8
MAS	99	V	300-150	310	0	0	3.8	0.1
MMD	99	V	300-150	202	0	0	4.2	0.4
MPH	99	V	300-150	562	0	0	4.9	-0.6
MSR	99	V	300-150	1276	0	0	4.5	0.2
NAX	99	V	300-150	7992	22	0	14.6	-0.1
NCA	99	V	300-150	298	0	0	4.6	-0.4
NJE	99	V	300-150	513	26	0	16.1	-0.1
NOS	99	V	300-150	747	0	0	7.5	-1.0
NWS	99	V	300-150	555	0	0	3.9	0.4
OAE	99	V	300-150	126	0	3	6.9	1.3
OPM	99	V	300-150	36	81	0	30.9	0.6
PAC	99	V	300-150	217	0	0	5.3	0.5
PAL	99	V	300-150	90	0	0	8.3	0.4
PIA	99	V	300-150	527	0	0	4.1	-0.1
PLM	99	V	300-150	37	0	0	9.1	1.6
PNC	99	V	300-150	65	0	0	5.3	-0.7
QAF	99	V	300-150	93	0	0	4.2	0.1
QFA	99	V	300-150	18547	0	0	4.9	0.7
QQE	99	V	300-150	30	0	0	3.5	-0.5
QTR	99	V	300-150	8593	0	0	4.2	-0.1
RAM	99	V	300-150	692	22	0	10.5	0.3
RCH	99	V	300-150	5811	0	0	5.2	0.3
RJA	99	V	300-150	1337	24	0	13.2	0.1
ROU	99	V	300-150	1322	0	0	4.6	0.0
RRR	99	V	300-150	24	0	0	4.5	-0.9
RZO	99	V	300-150	92	0	1	5.4	1.7
SAM	99	V	300-150	292	0	0	4.5	0.5
SAS	99	V	300-150	4431	0	0	3.6	-0.1
SEC	99	V	300-150	22	0	0	3.4	-0.8
SIA	99	V	300-150	2975	0	0	4.0	0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
SIO	99	V	300-150	42	0	0	4.9	0.3
SLM	99	V	300-150	166	0	0	4.1	0.2
SOL	99	V	300-150	26	0	0	11.0	-1.2
SOO	99	V	300-150	723	0	0	4.5	-0.5
SPA	99	V	300-150	130	0	0	4.3	0.6
SPU	99	V	300-150	74	0	0	4.7	-0.7
SQC	99	V	300-150	606	0	0	4.9	-0.5
SSG	99	V	300-150	30	0	0	4.3	0.8
SVA	99	V	300-150	3679	0	0	4.2	0.0
SVW	99	V	300-150	112	17	0	7.4	0.9
SWR	99	V	300-150	11199	0	0	4.3	0.3
TAM	99	V	300-150	446	0	0	3.9	0.3
TAP	99	V	300-150	975	0	0	4.5	0.0
TAR	99	V	300-150	307	0	0	4.2	0.0
TAY	99	V	300-150	635	0	0	4.4	0.2
TBJ	99	V	300-150	25	0	0	4.7	-1.1
TCV	99	V	300-150	31	3	0	5.3	0.5
TCX	99	V	300-150	2589	0	0	4.6	0.2
TFL	99	V	300-150	2179	20	0	10.6	-0.2
TGM	99	V	300-150	115	5	0	12.6	0.2
THA	99	V	300-150	186	0	0	4.3	0.0
THT	99	V	300-150	3738	0	0	4.7	0.7
THY	99	V	300-150	8134	0	0	4.3	0.2
TMN	99	V	300-150	84	2	0	5.4	0.6
TOM	99	V	300-150	5004	21	0	11.9	0.2
TPJ	99	V	300-150	26	88	0	27.7	-1.9
TSC	99	V	300-150	3486	0	0	4.1	-0.0
TUA	99	V	300-150	21	0	0	5.3	2.5
TVP	99	V	300-150	320	0	0	4.6	0.2
TWB	99	V	300-150	72	1	0	5.6	0.3
TWY	99	V	300-150	72	31	0	11.3	-0.2
UAE	99	V	300-150	10948	0	0	4.2	0.0
UAL	99	V	300-150	72258	2	2	6.3	0.2
ULC	99	V	300-150	106	28	0	18.2	0.7
UPS	99	V	300-150	4359	0	0	4.5	-0.0
VAL	99	V	300-150	62	0	0	4.0	-0.1
VCN	99	V	300-150	32	0	0	4.7	1.9
VIR	99	V	300-150	23212	7	0	7.6	0.0
VJT	99	V	300-150	766	57	0	24.7	0.1
VKG	99	V	300-150	656	0	0	4.2	0.3
VMP	99	V	300-150	25	68	0	4.1	1.1
VOZ	99	V	300-150	5831	0	0	4.8	0.6
WGT	99	V	300-150	46	0	0	4.8	-2.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
WJA	99	V	300-150	3020	1	0	5.7	-0.0
WOW	99	V	300-150	324	1	1	3.7	0.1
XAX	99	V	300-150	314	0	0	4.0	0.3
XLF	99	V	300-150	1396	0	0	4.6	0.5
YZR	99	V	300-150	63	0	0	3.9	-1.5

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 : DEC 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	50	30	27.8	-2.1
01001	00	Z	50	28	13.5	4.5
01028	00	Z	50	19	21.8	5.9
01028	12	Z	50	18	16.4	5.8
01400	12	Z	50	16	17.0	11.8
01400	00	Z	50	13	44.0	24.8
01415	00	Z	50	28	19.2	6.1
01415	12	Z	50	28	24.6	14.4
02365	12	Z	50	25	19.2	10.7
02365	00	Z	50	27	17.1	9.3
02591	12	Z	50	17	25.8	20.8
02591	00	Z	50	19	21.5	17.0
02836	12	Z	50	30	17.5	11.6
02836	00	Z	50	30	14.6	7.8
02963	12	Z	50	29	15.6	12.1
02963	00	Z	50	28	18.0	13.8
03005	12	Z	50	30	14.8	0.8
03005	00	Z	50	27	16.2	3.8
03238	12	Z	50	2	20.4	20.4
03238	00	Z	50	29	10.8	6.8
03808	12	Z	50	27	11.0	9.1
03808	00	Z	50	29	9.9	7.2
03918	12	Z	50	11	15.9	14.4
03918	00	Z	50	27	13.4	6.8
03953	12	Z	50	31	29.8	25.3
03953	00	Z	50	30	31.7	23.1
04018	00	Z	50	23	18.7	5.6
04018	12	Z	50	22	17.6	12.0
04220	00	Z	50	31	10.7	6.2
04220	12	Z	50	30	9.6	6.6
04270	00	Z	50	30	19.7	8.0
04270	12	Z	50	31	15.7	7.6
04320	12	Z	50	28	24.7	10.3
04320	00	Z	50	30	11.1	5.4
04339	00	Z	50	27	21.2	0.6
04339	12	Z	50	30	13.0	5.0
04360	00	Z	50	16	37.8	35.2
04360	12	Z	50	15	33.1	30.8
06011	12	Z	50	24	21.6	7.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	50	22	10.1	0.5
06260	00	Z	50	28	15.8	11.3
06260	12	Z	50	5	23.1	21.0
06610	12	Z	50	31	13.5	3.6
06610	00	Z	50	31	16.0	0.8
07110	00	Z	50	27	33.6	31.8
07110	12	Z	50	30	32.3	31.0
07510	00	Z	50	28	36.8	36.2
07510	12	Z	50	30	38.7	37.2
07645	12	Z	50	30	31.1	29.5
07645	00	Z	50	30	25.6	23.7
07761	00	Z	50	30	22.5	20.3
07761	12	Z	50	30	29.5	26.7
08001	00	Z	50	31	16.5	14.4
08001	12	Z	50	29	25.0	22.1
08221	00	Z	50	31	17.3	15.8
08221	12	Z	50	30	17.5	16.6
08302	00	Z	50	26	13.5	5.9
08302	12	Z	50	26	15.6	11.6
08508	12	Z	50	30	35.9	33.9
08522	12	Z	50	30	27.6	26.9
08579	12	Z	50	30	30.4	29.0
10035	00	Z	50	28	12.3	6.2
10035	12	Z	50	31	11.4	8.5
10393	12	Z	50	31	17.0	7.0
10393	00	Z	50	29	11.5	6.9
10410	12	Z	50	31	12.3	8.8
10410	00	Z	50	30	9.4	2.9
10739	00	Z	50	30	13.0	11.7
10739	12	Z	50	31	19.5	17.8
11035	12	Z	50	32	25.2	20.9
11035	00	Z	50	31	22.5	16.6
12982	00	Z	50	27	27.7	20.8
12982	12	Z	50	30	55.1	53.1
16080	12	Z	50	30	14.8	12.0
16080	00	Z	50	26	11.5	7.2
16245	12	Z	50	31	15.2	10.5
16245	00	Z	50	29	17.7	14.6
16320	12	Z	50	30	25.9	24.0
16320	00	Z	50	25	23.1	21.4
16429	00	Z	50	35	14.5	11.2
16429	12	Z	50	33	15.3	9.5
16622	00	Z	50	29	30.7	27.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	50	30	24.3	20.3
17607	12	Z	50	30	23.2	19.9
26435	00	Z	50	14	14.2	10.8
60018	00	Z	50	31	14.4	11.4
60018	12	Z	50	29	16.7	13.2
ASDE01	00	Z	50	1	18.1	-18.1
ASDE01	12	Z	50	1	42.9	42.9
ASDE03	00	Z	50	0	0.0	0.0
ASDE03	12	Z	50	0	0.0	0.0
ASDE09	12	Z	50	2	23.8	22.1
ASDK01	00	Z	50	2	18.4	10.0
ASDK01	12	Z	50	8	23.3	14.0
ASDK02	00	Z	50	5	26.8	24.9
ASDK02	12	Z	50	6	20.8	20.0
ASDK03	12	Z	50	9	29.9	28.5
ASDK03	00	Z	50	8	23.4	22.1
ASDK1	12	Z	50	8	23.4	8.8
ASDK1	00	Z	50	2	20.0	4.5
ASDK2	00	Z	50	5	21.7	19.7
ASDK2	12	Z	50	6	14.7	13.0
ASDK3	12	Z	50	10	29.3	28.1
ASDK3	00	Z	50	8	21.9	19.6
ASES01	12	Z	50	18	40.3	37.7
ASEU02	12	Z	50	8	52.4	51.9
ASEU02	00	Z	50	9	45.2	44.0
ASEU03	00	Z	50	6	18.8	11.0
ASEU03	12	Z	50	5	60.3	55.8
ASEU04	00	Z	50	2	12.7	9.2
ASEU04	12	Z	50	6	22.9	18.0
ASEU05	00	Z	50	0	0.0	0.0
ASEU05	12	Z	50	2	52.3	51.0
ASEU06	00	Z	50	4	21.2	-7.2
ASEU06	12	Z	50	3	35.9	34.0
ASFR1	12	Z	50	6	30.6	29.5
ASFR1	00	Z	50	9	28.1	25.0
ASFR3	12	Z	50	7	22.7	21.8
ASFR3	00	Z	50	11	27.2	26.2
ASFR4	00	Z	50	12	39.3	37.9
ASFR4	12	Z	50	14	51.4	49.6

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 : DEC 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	50	30	4.9	1.0	-0.2
01001	00	V	50	27	4.6	-0.1	-1.0
01028	00	V	50	19	3.9	0.4	-2.0
01028	12	V	50	18	4.2	1.4	0.0
01400	12	V	50	13	4.0	1.7	-0.7
01400	00	V	50	8	4.3	-0.9	-2.0
01415	00	V	50	27	6.1	0.5	-0.1
01415	12	V	50	28	7.9	-0.9	0.7
02365	12	V	50	24	7.6	2.0	-0.6
02365	00	V	50	22	6.4	0.5	0.0
02591	12	V	50	16	5.6	0.4	-0.5
02591	00	V	50	17	5.7	0.0	0.7
02836	12	V	50	28	6.0	-1.2	-1.0
02836	00	V	50	29	4.9	0.1	1.5
02963	12	V	50	27	5.0	0.3	-0.2
02963	00	V	50	26	4.5	0.9	0.3
03005	12	V	50	30	4.5	1.3	0.2
03005	00	V	50	25	4.3	-0.1	-0.2
03238	12	V	50	2	5.9	4.6	-2.2
03238	00	V	50	27	5.9	2.1	-2.1
03808	12	V	50	27	4.4	0.5	-0.1
03808	00	V	50	27	4.3	0.4	0.3
03918	12	V	50	11	5.4	1.9	0.0
03918	00	V	50	25	4.5	0.9	0.5
03953	12	V	50	31	4.1	1.1	0.3
03953	00	V	50	29	4.2	0.3	0.2
04018	00	V	50	19	3.8	0.9	-0.4
04018	12	V	50	18	4.5	0.8	-0.7
04220	00	V	50	30	3.4	-0.2	0.3
04220	12	V	50	30	3.1	0.3	0.3
04270	00	V	50	29	5.1	-0.6	0.4
04270	12	V	50	31	5.4	1.5	-0.2
04320	12	V	50	28	4.3	1.0	0.1
04320	00	V	50	29	4.7	0.2	0.3
04339	00	V	50	26	4.0	0.2	-0.3
04339	12	V	50	29	4.7	0.6	-1.1
04360	00	V	50	15	3.5	0.6	-0.7
04360	12	V	50	15	3.3	0.2	0.4
06011	12	V	50	24	4.0	-0.1	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	50	21	3.8	0.3	-0.4
06260	00	V	50	27	4.7	0.4	-0.1
06260	12	V	50	5	3.1	1.1	-0.9
06610	12	V	50	31	3.9	1.1	0.6
06610	00	V	50	30	4.1	0.1	0.5
07110	00	V	50	27	4.2	0.1	0.1
07110	12	V	50	30	3.5	1.0	-0.1
07510	00	V	50	28	3.6	0.9	0.1
07510	12	V	50	30	3.2	0.9	-0.3
07645	12	V	50	30	3.2	1.1	0.0
07645	00	V	50	29	3.0	0.0	-0.3
07761	00	V	50	27	3.5	0.0	1.1
07761	12	V	50	30	3.8	0.5	0.9
08001	00	V	50	29	3.8	0.7	0.4
08001	12	V	50	27	3.1	0.8	-0.3
08221	00	V	50	29	4.0	0.8	0.1
08221	12	V	50	30	4.0	0.4	0.0
08302	00	V	50	21	3.6	0.2	-0.3
08302	12	V	50	25	3.3	0.4	0.8
08508	12	V	50	29	3.5	0.9	-0.1
08522	12	V	50	30	4.2	1.2	1.3
08579	12	V	50	30	3.6	0.9	0.0
10035	00	V	50	25	4.5	-0.5	0.3
10035	12	V	50	31	3.9	-0.3	-0.3
10393	12	V	50	31	4.9	-0.6	-1.1
10393	00	V	50	27	5.0	-0.1	-0.1
10410	12	V	50	31	4.2	1.9	0.3
10410	00	V	50	28	3.2	0.8	-0.3
10739	00	V	50	29	3.2	0.6	0.3
10739	12	V	50	31	4.2	1.4	0.4
11035	12	V	50	31	5.2	0.3	1.4
11035	00	V	50	30	5.9	-0.3	1.2
12982	00	V	50	27	4.8	-0.3	1.2
12982	12	V	50	29	4.3	0.6	-0.3
16080	12	V	50	30	3.3	0.5	0.8
16080	00	V	50	26	5.0	-0.1	1.9
16245	12	V	50	31	2.8	0.4	0.7
16245	00	V	50	28	3.3	0.7	1.1
16320	12	V	50	30	4.0	1.2	-0.3
16320	00	V	50	24	4.1	0.3	0.0
16429	00	V	50	28	3.4	0.6	0.7
16429	12	V	50	30	3.5	1.1	0.6
16622	00	V	50	27	4.9	0.1	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	50	28	4.0	1.7	0.5
17607	12	V	50	27	5.3	2.1	-0.8
26435	00	V	50	13	6.0	-0.7	0.4
60018	00	V	50	30	4.5	0.6	-0.1
60018	12	V	50	28	4.5	0.1	1.1
ASDE01	00	V	50	1	1.4	-0.8	1.2
ASDE01	12	V	50	1	3.0	-1.7	2.5
ASDE03	00	V	50	0	0.0	0.0	0.0
ASDE03	12	V	50	0	0.0	0.0	0.0
ASDE09	12	V	50	1	0.7	-0.2	0.7
ASDK01	00	V	50	2	2.1	0.6	1.8
ASDK01	12	V	50	7	4.7	0.3	1.4
ASDK02	00	V	50	5	3.9	-1.0	0.2
ASDK02	12	V	50	6	3.1	-1.3	0.7
ASDK03	12	V	50	8	10.1	-1.1	-0.4
ASDK03	00	V	50	7	4.5	-0.6	-1.2
ASDK1	12	V	50	7	4.5	0.5	1.1
ASDK1	00	V	50	2	2.1	0.9	1.9
ASDK2	00	V	50	5	3.2	0.1	1.2
ASDK2	12	V	50	6	4.0	-0.8	1.3
ASDK3	12	V	50	9	10.2	-0.5	-1.3
ASDK3	00	V	50	7	4.6	-0.5	-1.1
ASES01	12	V	50	17	4.8	0.3	-1.4
ASEU02	12	V	50	6	4.0	-1.5	1.5
ASEU02	00	V	50	6	4.5	0.4	0.2
ASEU03	00	V	50	6	3.6	0.9	1.0
ASEU03	12	V	50	4	3.9	1.3	1.2
ASEU04	00	V	50	2	3.3	0.5	-0.2
ASEU04	12	V	50	6	3.5	-0.2	0.0
ASEU05	00	V	50	0	0.0	0.0	0.0
ASEU05	12	V	50	2	0.9	-0.8	-0.4
ASEU06	00	V	50	3	4.2	-1.4	-1.1
ASEU06	12	V	50	2	4.4	2.7	-0.7
ASFR1	12	V	50	6	3.6	0.0	0.5
ASFR1	00	V	50	9	3.7	-0.1	-0.1
ASFR3	12	V	50	7	2.9	0.0	0.0
ASFR3	00	V	50	9	3.5	1.1	0.4
ASFR4	00	V	50	11	3.1	-0.1	-0.9
ASFR4	12	V	50	11	3.4	-1.2	-0.3

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	100	30	22.6	-3.0
01001	00	Z	100	29	11.4	0.4
01028	00	Z	100	19	16.8	1.6
01028	12	Z	100	19	13.0	0.9
01400	12	Z	100	19	14.5	7.6
01400	00	Z	100	17	32.2	17.2
01415	00	Z	100	29	20.5	-2.1
01415	12	Z	100	28	19.4	-4.5
02365	12	Z	100	29	12.9	5.0
02365	00	Z	100	30	11.6	-0.9
02591	12	Z	100	18	17.5	15.5
02591	00	Z	100	19	9.9	6.7
02836	12	Z	100	31	8.5	1.1
02836	00	Z	100	31	8.8	-2.7
02963	12	Z	100	31	9.6	6.0
02963	00	Z	100	31	6.4	2.7
03005	12	Z	100	32	9.9	-0.6
03005	00	Z	100	31	8.8	-2.9
03238	12	Z	100	4	9.5	9.2
03238	00	Z	100	31	15.7	10.5
03808	12	Z	100	30	5.3	2.9
03808	00	Z	100	30	5.2	2.8
03918	12	Z	100	11	12.7	10.1
03918	00	Z	100	30	13.1	6.1
03953	12	Z	100	31	17.5	12.2
03953	00	Z	100	30	25.0	13.2
04018	00	Z	100	26	10.0	3.6
04018	12	Z	100	25	10.3	5.7
04220	00	Z	100	31	6.1	0.1
04220	12	Z	100	31	6.8	1.6
04270	00	Z	100	30	14.8	1.2
04270	12	Z	100	31	11.1	4.2
04320	12	Z	100	28	24.6	7.8
04320	00	Z	100	30	8.3	4.8
04339	00	Z	100	29	19.7	1.0
04339	12	Z	100	30	9.6	2.7
04360	00	Z	100	20	37.3	35.8
04360	12	Z	100	18	35.1	33.5
06011	12	Z	100	26	15.4	-2.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	100	25	10.8	-3.6
06260	00	Z	100	29	9.4	5.4
06260	12	Z	100	5	16.6	16.0
06610	12	Z	100	30	8.6	0.4
06610	00	Z	100	31	11.1	0.8
07110	00	Z	100	29	20.8	19.5
07110	12	Z	100	30	21.0	19.6
07510	00	Z	100	28	20.2	19.0
07510	12	Z	100	31	29.2	27.6
07645	12	Z	100	31	21.2	19.7
07645	00	Z	100	31	13.8	12.2
07761	00	Z	100	30	11.9	9.3
07761	12	Z	100	31	18.2	15.3
08001	00	Z	100	31	10.7	8.9
08001	12	Z	100	31	15.9	13.0
08221	00	Z	100	31	10.0	8.5
08221	12	Z	100	30	11.3	9.9
08302	00	Z	100	28	12.4	-1.6
08302	12	Z	100	26	7.1	2.5
08508	12	Z	100	30	21.6	18.7
08522	12	Z	100	28	15.7	14.6
08579	12	Z	100	30	16.3	15.6
10035	00	Z	100	33	6.7	-0.9
10035	12	Z	100	31	8.4	4.2
10393	12	Z	100	31	12.9	2.5
10393	00	Z	100	31	8.3	1.1
10410	12	Z	100	31	8.2	3.1
10410	00	Z	100	30	7.6	-0.4
10739	00	Z	100	31	9.4	7.6
10739	12	Z	100	31	13.0	10.8
11035	12	Z	100	31	16.4	13.1
11035	00	Z	100	31	14.3	8.4
12982	00	Z	100	29	21.2	12.3
12982	12	Z	100	30	32.7	30.9
16080	12	Z	100	31	7.9	3.9
16080	00	Z	100	31	6.3	-1.1
16245	12	Z	100	31	8.7	3.6
16245	00	Z	100	30	9.0	5.4
16320	12	Z	100	31	17.7	15.8
16320	00	Z	100	28	14.1	12.0
16429	00	Z	100	35	10.6	3.2
16429	12	Z	100	34	9.9	3.2
16622	00	Z	100	31	21.7	16.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	100	30	15.7	10.9
17607	12	Z	100	31	13.5	9.6
26435	00	Z	100	15	6.5	1.9
60018	00	Z	100	31	8.3	2.2
60018	12	Z	100	30	9.7	6.7
ASDE01	00	Z	100	3	19.1	-18.8
ASDE01	12	Z	100	3	3.0	1.9
ASDE03	00	Z	100	1	9.5	9.5
ASDE03	12	Z	100	0	0.0	0.0
ASDE09	12	Z	100	3	41.9	35.9
ASDK01	00	Z	100	3	16.7	10.6
ASDK01	12	Z	100	11	15.7	11.8
ASDK02	00	Z	100	10	17.7	16.4
ASDK02	12	Z	100	8	19.0	18.6
ASDK03	12	Z	100	15	24.7	22.7
ASDK03	00	Z	100	18	23.7	22.6
ASDK1	12	Z	100	9	17.3	5.8
ASDK1	00	Z	100	2	12.7	3.6
ASDK2	00	Z	100	5	13.0	11.6
ASDK2	12	Z	100	6	13.0	11.1
ASDK3	12	Z	100	10	22.4	20.8
ASDK3	00	Z	100	11	21.6	19.3
ASES01	12	Z	100	23	28.8	25.6
ASEU02	12	Z	100	11	40.1	39.2
ASEU02	00	Z	100	10	38.7	38.1
ASEU03	00	Z	100	8	17.4	5.2
ASEU03	12	Z	100	5	38.0	32.5
ASEU04	00	Z	100	4	11.8	5.8
ASEU04	12	Z	100	6	10.9	3.0
ASEU05	00	Z	100	2	31.2	31.2
ASEU05	12	Z	100	4	22.5	22.0
ASEU06	00	Z	100	6	45.8	-32.0
ASEU06	12	Z	100	5	26.5	2.1
ASFR1	12	Z	100	7	17.3	16.1
ASFR1	00	Z	100	12	15.6	10.2
ASFR3	12	Z	100	7	6.6	6.2
ASFR3	00	Z	100	13	13.8	11.0
ASFR4	00	Z	100	14	25.3	24.0
ASFR4	12	Z	100	15	29.2	27.4

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 : DEC 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	100	30	3.5	0.5	-1.1
01001	00	V	100	28	4.0	0.6	-0.1
01028	00	V	100	19	3.3	0.3	-0.8
01028	12	V	100	19	4.8	-0.6	-2.1
01400	12	V	100	15	3.8	0.9	0.7
01400	00	V	100	13	4.4	0.5	0.4
01415	00	V	100	28	7.0	1.6	-1.2
01415	12	V	100	28	7.5	3.0	-2.2
02365	12	V	100	29	5.1	1.3	-0.6
02365	00	V	100	29	5.9	0.2	-0.3
02591	12	V	100	18	3.8	0.0	0.4
02591	00	V	100	18	5.4	-0.2	-1.6
02836	12	V	100	31	4.6	0.4	-0.9
02836	00	V	100	30	4.3	0.6	-0.6
02963	12	V	100	31	5.7	-0.7	1.0
02963	00	V	100	30	4.2	0.0	-0.4
03005	12	V	100	31	4.2	0.2	-0.6
03005	00	V	100	29	4.4	-0.2	-0.4
03238	12	V	100	4	2.5	0.4	0.3
03238	00	V	100	30	5.3	-0.6	0.5
03808	12	V	100	30	3.6	-0.2	-0.1
03808	00	V	100	29	3.0	0.7	0.1
03918	12	V	100	11	4.9	-1.0	-0.6
03918	00	V	100	27	4.2	-0.9	-0.1
03953	12	V	100	31	3.9	-0.8	0.4
03953	00	V	100	29	3.5	0.3	-0.3
04018	00	V	100	22	4.2	0.4	-0.6
04018	12	V	100	25	4.0	-0.6	0.0
04220	00	V	100	30	3.0	0.1	0.2
04220	12	V	100	30	3.1	-0.3	-0.4
04270	00	V	100	29	4.8	-0.6	1.0
04270	12	V	100	31	5.8	-0.2	0.1
04320	12	V	100	28	3.7	-0.2	-0.5
04320	00	V	100	29	3.9	-0.2	-0.4
04339	00	V	100	28	4.1	-0.4	-1.4
04339	12	V	100	30	3.1	0.3	-0.1
04360	00	V	100	18	2.9	0.4	-0.1
04360	12	V	100	18	4.2	0.1	-0.5
06011	12	V	100	26	3.7	0.7	-0.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	100	24	3.7	-0.7	-0.9
06260	00	V	100	28	3.5	-0.3	0.8
06260	12	V	100	5	5.0	0.5	0.0
06610	12	V	100	30	3.6	0.4	-0.4
06610	00	V	100	30	3.3	0.1	-0.4
07110	00	V	100	29	2.8	-0.4	0.6
07110	12	V	100	29	3.5	-0.4	0.1
07510	00	V	100	28	3.3	-0.9	-0.3
07510	12	V	100	30	3.1	0.8	-0.2
07645	12	V	100	31	3.4	-0.6	0.9
07645	00	V	100	30	3.3	-0.3	-1.0
07761	00	V	100	27	3.2	0.6	0.0
07761	12	V	100	31	2.6	0.2	0.4
08001	00	V	100	30	3.4	0.2	-0.2
08001	12	V	100	31	3.3	-0.4	-0.1
08221	00	V	100	30	3.1	-0.5	0.7
08221	12	V	100	30	2.9	0.9	0.2
08302	00	V	100	26	2.3	0.0	-0.2
08302	12	V	100	26	3.4	0.4	0.4
08508	12	V	100	29	4.5	0.4	-0.1
08522	12	V	100	28	4.8	0.3	-1.0
08579	12	V	100	30	3.0	-0.1	0.4
10035	00	V	100	27	4.1	0.2	-0.4
10035	12	V	100	31	4.0	-0.6	-0.2
10393	12	V	100	31	3.5	0.2	-0.5
10393	00	V	100	30	4.8	-0.2	-1.4
10410	12	V	100	31	3.8	1.5	0.4
10410	00	V	100	29	3.7	-0.4	-0.3
10739	00	V	100	29	3.8	0.3	-0.5
10739	12	V	100	31	3.9	0.5	0.7
11035	12	V	100	31	6.1	0.0	0.1
11035	00	V	100	31	4.7	0.3	-0.9
12982	00	V	100	28	4.7	-0.2	0.3
12982	12	V	100	28	4.4	0.6	-0.5
16080	12	V	100	31	3.8	0.0	1.2
16080	00	V	100	30	3.7	-0.1	0.6
16245	12	V	100	31	3.6	0.5	0.0
16245	00	V	100	29	3.3	0.2	-0.3
16320	12	V	100	31	3.9	1.0	0.4
16320	00	V	100	27	5.0	-0.3	0.1
16429	00	V	100	28	3.7	1.2	0.6
16429	12	V	100	31	3.3	0.6	-0.7
16622	00	V	100	29	7.0	-1.1	-0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	100	29	4.8	1.6	0.9
17607	12	V	100	31	3.7	0.8	0.4
26435	00	V	100	15	3.6	-0.3	0.5
60018	00	V	100	30	4.6	0.7	-0.2
60018	12	V	100	30	5.5	2.1	-0.5
ASDE01	00	V	100	2	3.5	1.7	-1.5
ASDE01	12	V	100	3	4.7	0.1	0.2
ASDE03	00	V	100	1	9.5	-8.8	3.6
ASDE03	12	V	100	0	0.0	0.0	0.0
ASDE09	12	V	100	3	3.8	0.8	-1.6
ASDK01	00	V	100	3	3.5	-1.8	1.7
ASDK01	12	V	100	9	3.3	1.9	0.1
ASDK02	00	V	100	9	4.1	-0.5	-0.1
ASDK02	12	V	100	8	4.9	-2.5	-1.1
ASDK03	12	V	100	10	3.9	-1.1	-0.1
ASDK03	00	V	100	11	4.1	0.1	-1.0
ASDK1	12	V	100	9	4.3	2.7	0.2
ASDK1	00	V	100	2	2.9	-0.2	2.9
ASDK2	00	V	100	5	4.6	0.4	-1.7
ASDK2	12	V	100	6	5.0	-2.8	-1.4
ASDK3	12	V	100	10	4.0	-1.1	-0.3
ASDK3	00	V	100	11	4.1	0.1	-1.1
ASES01	12	V	100	18	6.7	2.7	1.2
ASEU02	12	V	100	8	4.1	0.6	-0.4
ASEU02	00	V	100	9	4.8	-1.0	1.9
ASEU03	00	V	100	7	4.8	-0.2	1.1
ASEU03	12	V	100	5	3.4	-0.3	0.6
ASEU04	00	V	100	3	2.2	-1.0	0.4
ASEU04	12	V	100	6	5.8	0.7	0.1
ASEU05	00	V	100	1	2.7	-0.9	-2.5
ASEU05	12	V	100	3	4.3	-1.5	0.0
ASEU06	00	V	100	4	8.4	-4.6	3.5
ASEU06	12	V	100	5	7.8	-5.8	1.1
ASFR1	12	V	100	7	3.4	0.8	0.3
ASFR1	00	V	100	9	3.5	-2.1	1.1
ASFR3	12	V	100	7	4.0	-1.1	1.0
ASFR3	00	V	100	10	4.2	1.2	1.9
ASFR4	00	V	100	11	4.0	-1.3	1.3
ASFR4	12	V	100	12	4.8	-0.1	0.4

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 : DEC 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	500	30	11.3	1.0
01001	00	Z	500	30	10.4	5.0
01028	00	Z	500	20	7.1	1.7
01028	12	Z	500	20	6.7	0.1
01400	12	Z	500	21	9.0	5.7
01400	00	Z	500	20	19.3	9.4
01415	00	Z	500	29	6.3	4.4
01415	12	Z	500	28	6.3	4.3
02365	12	Z	500	29	5.6	3.2
02365	00	Z	500	30	5.7	2.0
02591	12	Z	500	18	10.5	9.6
02591	00	Z	500	19	9.1	8.8
02836	12	Z	500	31	4.5	-1.0
02836	00	Z	500	31	4.6	-0.5
02963	12	Z	500	31	5.2	3.7
02963	00	Z	500	31	4.2	3.6
03005	12	Z	500	32	4.8	0.0
03005	00	Z	500	31	5.9	-0.1
03238	12	Z	500	4	8.7	8.3
03238	00	Z	500	31	9.0	8.2
03808	12	Z	500	31	4.5	2.9
03808	00	Z	500	30	5.6	4.4
03918	12	Z	500	11	8.3	7.8
03918	00	Z	500	32	7.9	7.1
03953	12	Z	500	31	8.2	4.0
03953	00	Z	500	31	8.2	3.5
04018	00	Z	500	26	6.1	3.6
04018	12	Z	500	27	6.0	0.3
04220	00	Z	500	31	4.7	1.4
04220	12	Z	500	31	4.5	3.1
04270	00	Z	500	31	5.1	0.0
04270	12	Z	500	31	8.7	-0.2
04320	12	Z	500	28	26.0	8.4
04320	00	Z	500	30	7.3	4.3
04339	00	Z	500	30	20.1	3.2
04339	12	Z	500	30	9.5	7.1
04360	00	Z	500	26	40.1	39.7
04360	12	Z	500	26	40.2	39.6
06011	12	Z	500	29	9.0	-1.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	500	27	8.3	0.6
06260	00	Z	500	31	5.4	4.6
06260	12	Z	500	5	5.8	5.2
06610	12	Z	500	30	4.9	4.2
06610	00	Z	500	31	5.5	4.6
07110	00	Z	500	31	8.5	7.3
07110	12	Z	500	30	11.0	8.6
07510	00	Z	500	30	9.2	7.8
07510	12	Z	500	31	12.3	11.8
07645	12	Z	500	31	9.3	7.9
07645	00	Z	500	31	6.3	4.9
07761	00	Z	500	30	4.4	-1.4
07761	12	Z	500	31	5.2	2.3
08001	00	Z	500	31	8.0	7.1
08001	12	Z	500	31	9.1	8.4
08221	00	Z	500	31	6.1	5.5
08221	12	Z	500	30	6.2	5.6
08302	00	Z	500	28	10.8	-3.6
08302	12	Z	500	26	3.1	-0.8
08508	12	Z	500	30	15.4	12.6
08522	12	Z	500	28	13.2	11.2
08579	12	Z	500	30	11.2	10.1
10035	00	Z	500	34	4.6	1.8
10035	12	Z	500	31	5.7	3.9
10393	12	Z	500	31	3.9	1.6
10393	00	Z	500	31	3.9	0.6
10410	12	Z	500	31	4.2	0.6
10410	00	Z	500	31	3.0	0.3
10739	00	Z	500	31	9.3	8.7
10739	12	Z	500	31	10.1	9.7
11035	12	Z	500	32	9.6	8.1
11035	00	Z	500	31	7.4	5.7
12982	00	Z	500	31	16.3	3.4
12982	12	Z	500	30	9.4	6.7
16080	12	Z	500	31	3.9	-1.6
16080	00	Z	500	32	3.5	-1.9
16245	12	Z	500	31	8.3	-6.1
16245	00	Z	500	31	5.0	-2.6
16320	12	Z	500	31	7.4	5.5
16320	00	Z	500	30	21.0	-0.1
16429	00	Z	500	39	8.0	-5.5
16429	12	Z	500	35	5.8	-3.6
16622	00	Z	500	31	17.9	6.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	500	31	12.6	5.5
17607	12	Z	500	31	6.2	4.4
26435	00	Z	500	15	4.9	-0.7
60018	00	Z	500	31	5.6	0.8
60018	12	Z	500	30	3.9	1.2
ASDE01	00	Z	500	3	28.6	-28.1
ASDE01	12	Z	500	3	25.5	-24.8
ASDE03	00	Z	500	1	2.1	-2.1
ASDE03	12	Z	500	2	5.3	2.8
ASDE09	12	Z	500	3	23.9	21.5
ASDK01	00	Z	500	3	13.7	6.8
ASDK01	12	Z	500	11	9.9	5.8
ASDK02	00	Z	500	10	17.2	15.5
ASDK02	12	Z	500	8	14.2	12.5
ASDK03	12	Z	500	18	23.1	22.4
ASDK03	00	Z	500	21	24.3	23.7
ASDK1	12	Z	500	9	11.4	0.4
ASDK1	00	Z	500	2	17.0	3.9
ASDK2	00	Z	500	5	14.7	11.1
ASDK2	12	Z	500	6	14.3	12.9
ASDK3	12	Z	500	12	18.0	16.4
ASDK3	00	Z	500	13	23.2	22.1
ASES01	12	Z	500	27	8.6	4.4
ASEU02	12	Z	500	11	33.2	32.9
ASEU02	00	Z	500	10	34.5	33.9
ASEU03	00	Z	500	9	20.0	3.4
ASEU03	12	Z	500	7	26.1	11.6
ASEU04	00	Z	500	4	9.4	2.7
ASEU04	12	Z	500	6	5.7	-3.6
ASEU05	00	Z	500	2	17.3	17.3
ASEU05	12	Z	500	4	5.4	5.1
ASEU06	00	Z	500	8	57.5	-45.6
ASEU06	12	Z	500	7	43.5	-26.5
ASFR1	12	Z	500	7	3.6	-0.4
ASFR1	00	Z	500	12	9.6	-3.8
ASFR3	12	Z	500	8	4.7	0.6
ASFR3	00	Z	500	14	8.4	-2.7
ASFR4	00	Z	500	14	7.9	6.0
ASFR4	12	Z	500	16	11.7	8.4

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	500	30	3.4	0.9	-0.6
01001	00	V	500	29	3.1	0.1	-0.3
01028	00	V	500	20	2.6	0.0	0.0
01028	12	V	500	20	3.6	0.7	0.2
01400	12	V	500	21	2.9	-0.4	0.1
01400	00	V	500	19	2.8	0.5	-0.8
01415	00	V	500	28	2.8	0.9	-0.2
01415	12	V	500	28	3.2	0.3	0.0
02365	12	V	500	29	3.3	0.6	-0.6
02365	00	V	500	29	3.8	0.9	-0.1
02591	12	V	500	18	3.1	0.0	-0.4
02591	00	V	500	18	2.7	0.1	0.8
02836	12	V	500	31	3.1	-0.4	-0.6
02836	00	V	500	30	2.8	0.6	-0.6
02963	12	V	500	31	3.0	0.5	-0.1
02963	00	V	500	30	2.7	0.0	-0.1
03005	12	V	500	31	3.7	-0.6	-0.5
03005	00	V	500	29	3.3	-0.4	0.3
03238	12	V	500	4	3.3	-1.7	0.2
03238	00	V	500	30	2.9	0.0	-0.6
03808	12	V	500	31	3.4	0.2	0.5
03808	00	V	500	29	3.4	0.2	-0.9
03918	12	V	500	11	3.7	1.4	-0.2
03918	00	V	500	29	3.7	0.0	-0.6
03953	12	V	500	31	3.2	0.3	0.0
03953	00	V	500	30	3.9	-0.1	-0.2
04018	00	V	500	24	4.5	0.2	1.0
04018	12	V	500	26	4.9	1.5	0.4
04220	00	V	500	30	2.6	-0.2	0.2
04220	12	V	500	31	3.3	-0.2	0.4
04270	00	V	500	30	3.7	0.2	0.7
04270	12	V	500	31	4.5	-0.9	0.7
04320	12	V	500	28	3.4	0.8	0.6
04320	00	V	500	29	2.8	-0.1	0.5
04339	00	V	500	29	3.5	0.3	-0.1
04339	12	V	500	30	3.5	0.5	0.5
04360	00	V	500	24	3.6	0.5	-0.2
04360	12	V	500	26	3.0	0.2	0.4
06011	12	V	500	29	3.8	-0.1	0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	500	26	3.5	0.4	-0.3
06260	00	V	500	30	2.6	-0.4	0.3
06260	12	V	500	5	1.8	0.0	-0.8
06610	12	V	500	30	3.7	-0.3	-0.4
06610	00	V	500	30	2.8	0.1	-0.7
07110	00	V	500	30	2.7	0.0	-0.1
07110	12	V	500	30	5.2	0.1	-0.9
07510	00	V	500	30	2.4	0.1	0.4
07510	12	V	500	31	2.6	0.5	-0.3
07645	12	V	500	31	2.8	-0.2	-0.2
07645	00	V	500	30	2.8	0.0	0.1
07761	00	V	500	27	2.4	0.4	-0.5
07761	12	V	500	31	2.5	0.0	-0.4
08001	00	V	500	30	3.0	-0.4	0.8
08001	12	V	500	31	3.0	0.4	-0.6
08221	00	V	500	30	2.6	-0.6	0.3
08221	12	V	500	30	2.7	-0.2	-0.5
08302	00	V	500	26	2.3	0.0	0.0
08302	12	V	500	26	2.8	0.1	0.1
08508	12	V	500	30	3.5	1.2	0.0
08522	12	V	500	28	4.0	-0.1	-0.9
08579	12	V	500	30	3.0	0.0	0.3
10035	00	V	500	30	3.0	0.2	-0.3
10035	12	V	500	31	2.5	0.4	0.2
10393	12	V	500	31	3.0	0.1	-1.0
10393	00	V	500	30	2.6	-0.1	-1.0
10410	12	V	500	31	2.3	0.3	-0.3
10410	00	V	500	30	2.4	0.0	-0.4
10739	00	V	500	29	2.9	-0.1	-0.4
10739	12	V	500	31	3.3	-0.3	-0.4
11035	12	V	500	31	2.8	-0.1	-0.7
11035	00	V	500	31	2.8	0.4	-0.9
12982	00	V	500	30	2.8	0.0	0.1
12982	12	V	500	30	3.1	0.5	-0.7
16080	12	V	500	31	2.4	0.5	-0.3
16080	00	V	500	30	2.4	0.0	0.2
16245	12	V	500	31	2.9	-0.2	-0.5
16245	00	V	500	30	2.2	-0.2	-0.1
16320	12	V	500	31	3.2	-0.6	0.3
16320	00	V	500	29	3.0	0.1	0.1
16429	00	V	500	29	2.5	-0.2	-0.2
16429	12	V	500	31	2.6	1.1	-0.1
16622	00	V	500	30	6.9	0.6	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	500	30	5.0	-0.1	0.6
17607	12	V	500	30	3.5	0.3	0.5
26435	00	V	500	15	2.9	-0.5	-0.5
60018	00	V	500	30	2.7	0.2	-0.3
60018	12	V	500	30	3.2	0.3	0.3
ASDE01	00	V	500	2	2.8	0.1	0.2
ASDE01	12	V	500	3	2.9	-0.5	0.2
ASDE03	00	V	500	1	5.9	-4.8	3.5
ASDE03	12	V	500	2	2.1	0.2	-1.9
ASDE09	12	V	500	3	3.2	0.5	-2.2
ASDK01	00	V	500	3	2.3	0.1	2.1
ASDK01	12	V	500	9	3.7	0.4	0.1
ASDK02	00	V	500	9	2.3	-0.4	0.6
ASDK02	12	V	500	8	2.5	-0.5	-0.8
ASDK03	12	V	500	12	2.9	1.4	0.2
ASDK03	00	V	500	12	3.8	-1.0	1.7
ASDK1	12	V	500	9	3.7	0.5	0.3
ASDK1	00	V	500	2	2.7	-0.7	2.4
ASDK2	00	V	500	5	2.2	-0.6	0.0
ASDK2	12	V	500	6	2.1	-0.5	0.0
ASDK3	12	V	500	12	3.1	1.7	0.5
ASDK3	00	V	500	13	4.0	-0.5	1.8
ASES01	12	V	500	22	3.0	-0.4	1.2
ASEU02	12	V	500	8	2.5	1.8	-0.2
ASEU02	00	V	500	9	2.0	-0.2	0.0
ASEU03	00	V	500	8	3.4	2.2	0.7
ASEU03	12	V	500	7	3.5	0.1	-0.3
ASEU04	00	V	500	3	4.8	2.1	-0.2
ASEU04	12	V	500	6	2.8	0.6	-0.4
ASEU05	00	V	500	1	1.5	0.1	-1.5
ASEU05	12	V	500	3	1.1	0.3	0.4
ASEU06	00	V	500	7	2.6	-0.2	0.9
ASEU06	12	V	500	7	3.0	1.0	-0.1
ASFR1	12	V	500	7	3.1	1.5	0.4
ASFR1	00	V	500	9	2.1	0.4	0.3
ASFR3	12	V	500	8	3.7	-0.6	0.7
ASFR3	00	V	500	11	3.3	0.2	0.4
ASFR4	00	V	500	11	2.9	0.1	1.3
ASFR4	12	V	500	13	3.2	0.0	-1.2

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	850	31	6.2	0.6
01001	00	Z	850	31	4.9	1.9
01028	00	Z	850	20	6.0	-1.7
01028	12	Z	850	22	6.6	-1.5
01400	12	Z	850	21	6.7	3.3
01400	00	Z	850	20	11.8	7.4
01415	00	Z	850	29	5.7	4.4
01415	12	Z	850	28	4.0	3.2
02365	12	Z	850	29	4.3	3.3
02365	00	Z	850	30	4.0	2.6
02591	12	Z	850	18	8.5	8.2
02591	00	Z	850	19	8.0	7.8
02836	12	Z	850	31	2.4	-0.4
02836	00	Z	850	31	2.5	-0.1
02963	12	Z	850	31	4.6	3.6
02963	00	Z	850	31	3.5	3.0
03005	12	Z	850	32	3.7	-2.3
03005	00	Z	850	31	3.5	-1.3
03238	12	Z	850	4	4.3	4.2
03238	00	Z	850	31	6.5	5.8
03808	12	Z	850	31	2.9	1.7
03808	00	Z	850	30	3.1	2.4
03918	12	Z	850	11	6.2	5.5
03918	00	Z	850	32	5.7	4.4
03953	12	Z	850	31	3.9	2.2
03953	00	Z	850	31	3.2	1.2
04018	00	Z	850	26	4.5	-0.6
04018	12	Z	850	27	5.6	-0.7
04220	00	Z	850	31	2.9	0.5
04220	12	Z	850	31	3.7	1.0
04270	00	Z	850	31	3.7	0.1
04270	12	Z	850	31	3.6	0.7
04320	12	Z	850	28	3.2	-0.3
04320	00	Z	850	30	5.1	-0.5
04339	00	Z	850	30	22.2	1.0
04339	12	Z	850	30	6.6	3.7
04360	00	Z	850	30	39.3	38.8
04360	12	Z	850	31	39.8	39.4
06011	12	Z	850	29	3.6	1.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	850	29	3.7	1.6
06260	00	Z	850	31	2.6	1.0
06260	12	Z	850	5	2.2	1.5
06610	12	Z	850	31	3.1	1.6
06610	00	Z	850	31	3.1	2.3
07110	00	Z	850	31	3.3	1.9
07110	12	Z	850	30	4.4	2.8
07510	00	Z	850	30	3.4	1.1
07510	12	Z	850	31	3.1	1.9
07645	12	Z	850	31	3.1	1.3
07645	00	Z	850	31	2.7	0.5
07761	00	Z	850	30	3.5	-2.9
07761	12	Z	850	31	2.8	-1.2
08001	00	Z	850	31	6.1	5.6
08001	12	Z	850	31	4.7	3.9
08221	00	Z	850	31	4.0	3.6
08221	12	Z	850	30	2.6	1.5
08302	00	Z	850	28	9.7	-4.1
08302	12	Z	850	26	4.7	-4.3
08508	12	Z	850	30	8.9	6.7
08522	12	Z	850	28	6.3	5.8
08579	12	Z	850	30	5.9	5.2
10035	00	Z	850	34	3.3	1.3
10035	12	Z	850	31	3.7	1.4
10393	12	Z	850	31	2.4	0.1
10393	00	Z	850	31	1.9	0.2
10410	12	Z	850	31	3.0	-2.1
10410	00	Z	850	31	2.6	-1.6
10739	00	Z	850	31	7.4	7.1
10739	12	Z	850	31	5.8	5.6
11035	12	Z	850	32	8.0	7.0
11035	00	Z	850	31	7.3	6.0
12982	00	Z	850	31	14.4	3.0
12982	12	Z	850	30	5.2	2.7
16080	12	Z	850	31	5.1	-4.6
16080	00	Z	850	32	5.4	-4.5
16245	12	Z	850	31	10.4	-9.1
16245	00	Z	850	31	6.8	-5.0
16320	12	Z	850	31	5.9	2.2
16320	00	Z	850	30	5.4	2.1
16429	00	Z	850	39	6.8	-5.2
16429	12	Z	850	36	5.8	-4.3
16622	00	Z	850	31	10.8	7.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	850	31	8.1	2.1
17607	12	Z	850	32	3.7	2.6
26435	00	Z	850	15	2.9	-0.9
60018	00	Z	850	31	3.5	-0.5
60018	12	Z	850	30	3.7	-2.0
ASDE01	00	Z	850	3	36.1	-36.0
ASDE01	12	Z	850	3	36.6	-36.0
ASDE03	00	Z	850	1	1.0	1.0
ASDE03	12	Z	850	2	3.7	-2.0
ASDE09	12	Z	850	3	20.8	18.5
ASDK01	00	Z	850	3	14.7	10.8
ASDK01	12	Z	850	11	9.6	6.4
ASDK02	00	Z	850	10	13.6	11.7
ASDK02	12	Z	850	8	10.9	8.2
ASDK03	12	Z	850	20	24.4	23.7
ASDK03	00	Z	850	21	25.6	25.3
ASDK1	12	Z	850	9	10.1	6.3
ASDK1	00	Z	850	2	17.7	13.5
ASDK2	00	Z	850	5	13.6	12.3
ASDK2	12	Z	850	6	14.2	12.2
ASDK3	12	Z	850	13	24.9	23.9
ASDK3	00	Z	850	13	27.3	26.7
ASES01	12	Z	850	27	6.1	-3.9
ASEU02	12	Z	850	11	28.1	27.6
ASEU02	00	Z	850	10	30.6	30.3
ASEU03	00	Z	850	9	22.1	5.4
ASEU03	12	Z	850	7	24.8	5.2
ASEU04	00	Z	850	4	5.4	2.0
ASEU04	12	Z	850	6	8.8	-6.3
ASEU05	00	Z	850	2	20.6	20.6
ASEU05	12	Z	850	4	1.3	-0.7
ASEU06	00	Z	850	8	46.6	-36.5
ASEU06	12	Z	850	8	48.9	-31.9
ASFR1	12	Z	850	7	7.5	-6.5
ASFR1	00	Z	850	12	7.0	-6.2
ASFR3	12	Z	850	8	2.4	-0.2
ASFR3	00	Z	850	14	3.9	-1.4
ASFR4	00	Z	850	14	5.2	2.0
ASFR4	12	Z	850	16	8.4	1.3

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 : DEC 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	850	29	3.7	0.8	0.0
01001	00	V	850	29	6.4	2.2	-0.6
01028	00	V	850	20	2.1	0.0	0.2
01028	12	V	850	20	3.0	1.1	-0.1
01400	12	V	850	21	3.5	-0.1	-0.5
01400	00	V	850	19	2.0	-0.2	0.6
01415	00	V	850	28	2.8	-0.1	0.0
01415	12	V	850	28	3.0	-0.1	1.1
02365	12	V	850	29	2.9	-0.4	0.0
02365	00	V	850	29	2.9	0.7	0.0
02591	12	V	850	18	2.9	-0.6	-0.3
02591	00	V	850	18	2.6	0.1	0.5
02836	12	V	850	31	3.3	0.3	-0.4
02836	00	V	850	30	2.7	-0.2	-0.2
02963	12	V	850	31	2.8	0.3	0.2
02963	00	V	850	30	2.9	-0.3	0.4
03005	12	V	850	31	3.5	0.3	0.6
03005	00	V	850	29	3.0	0.1	-0.4
03238	12	V	850	4	3.8	1.0	2.2
03238	00	V	850	30	3.0	0.0	0.0
03808	12	V	850	31	2.9	0.1	0.0
03808	00	V	850	29	2.5	0.1	0.1
03918	12	V	850	11	2.8	-1.3	0.7
03918	00	V	850	29	2.9	0.6	0.7
03953	12	V	850	31	2.8	-0.2	0.0
03953	00	V	850	30	3.1	0.0	0.1
04018	00	V	850	24	3.9	0.4	0.0
04018	12	V	850	26	3.0	-0.3	-0.3
04220	00	V	850	30	3.4	1.1	0.7
04220	12	V	850	31	3.3	0.0	0.4
04270	00	V	850	30	5.1	-0.1	0.5
04270	12	V	850	31	4.4	0.5	1.1
04320	12	V	850	28	3.7	-0.2	0.5
04320	00	V	850	29	3.5	-0.9	0.5
04339	00	V	850	29	5.5	0.4	1.6
04339	12	V	850	30	6.1	0.1	1.4
04360	00	V	850	27	5.8	2.8	0.9
04360	12	V	850	28	5.4	2.1	-0.2
06011	12	V	850	29	3.2	-0.1	-0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	850	28	3.1	-0.6	-1.0
06260	00	V	850	30	2.6	0.5	-0.4
06260	12	V	850	5	1.7	0.0	0.9
06610	12	V	850	31	2.3	-0.2	-0.7
06610	00	V	850	30	2.9	0.2	-1.0
07110	00	V	850	30	2.5	-0.3	0.1
07110	12	V	850	30	3.7	0.2	0.6
07510	00	V	850	30	3.7	-0.9	-0.3
07510	12	V	850	31	2.9	-0.2	0.1
07645	12	V	850	31	3.5	0.2	0.4
07645	00	V	850	30	3.7	-1.2	0.1
07761	00	V	850	27	3.4	0.5	-0.4
07761	12	V	850	31	3.6	-0.1	-0.4
08001	00	V	850	30	3.1	0.3	0.2
08001	12	V	850	31	3.0	0.4	0.1
08221	00	V	850	30	2.6	0.0	-0.4
08221	12	V	850	30	2.4	0.5	0.1
08302	00	V	850	26	2.9	0.1	0.1
08302	12	V	850	26	2.8	0.6	0.2
08508	12	V	850	30	3.6	-0.2	-1.1
08522	12	V	850	28	3.7	0.2	0.4
08579	12	V	850	29	2.4	-0.1	-0.5
10035	00	V	850	30	2.7	0.1	-0.7
10035	12	V	850	31	2.6	0.4	-0.1
10393	12	V	850	31	2.4	0.0	-0.2
10393	00	V	850	30	2.6	0.2	-0.3
10410	12	V	850	31	2.8	-0.6	-0.3
10410	00	V	850	30	2.2	0.1	0.4
10739	00	V	850	29	2.7	-0.3	-1.0
10739	12	V	850	31	2.7	-0.4	-0.3
11035	12	V	850	31	3.3	0.4	0.0
11035	00	V	850	31	3.2	-0.1	0.1
12982	00	V	850	31	2.9	0.5	-0.6
12982	12	V	850	30	3.1	-0.1	-0.5
16080	12	V	850	31	3.2	0.6	-0.1
16080	00	V	850	30	4.0	0.7	-0.5
16245	12	V	850	31	4.2	0.7	0.1
16245	00	V	850	30	4.4	0.6	0.1
16320	12	V	850	31	3.6	-0.1	-0.4
16320	00	V	850	29	3.2	1.0	-0.2
16429	00	V	850	29	2.5	0.4	-0.1
16429	12	V	850	31	2.7	-0.5	0.3
16622	00	V	850	30	2.9	0.1	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	850	30	3.4	-0.2	-0.9
17607	12	V	850	31	3.9	1.4	0.3
26435	00	V	850	15	2.5	-0.5	-0.1
60018	00	V	850	30	3.3	0.9	-0.2
60018	12	V	850	30	4.2	1.4	-0.3
ASDE01	00	V	850	2	1.6	0.4	-0.3
ASDE01	12	V	850	3	1.9	-0.3	0.8
ASDE03	00	V	850	1	4.2	4.1	-0.8
ASDE03	12	V	850	2	2.0	-1.8	-0.6
ASDE09	12	V	850	3	2.8	0.7	-2.1
ASDK01	00	V	850	3	1.6	0.4	0.5
ASDK01	12	V	850	9	3.6	-0.5	1.2
ASDK02	00	V	850	9	2.5	-0.9	-0.4
ASDK02	12	V	850	8	2.1	0.0	-0.2
ASDK03	12	V	850	13	4.0	-0.9	1.3
ASDK03	00	V	850	12	3.7	-0.4	0.9
ASDK1	12	V	850	9	3.3	-0.4	1.2
ASDK1	00	V	850	2	1.9	0.6	0.3
ASDK2	00	V	850	5	2.9	-0.5	-1.0
ASDK2	12	V	850	6	1.5	-0.6	-0.5
ASDK3	12	V	850	13	3.6	-0.6	1.5
ASDK3	00	V	850	13	3.5	0.2	0.9
ASES01	12	V	850	22	2.6	-0.5	-0.1
ASEU02	12	V	850	8	3.4	0.7	0.6
ASEU02	00	V	850	9	3.0	1.4	-0.9
ASEU03	00	V	850	8	3.3	0.8	-1.0
ASEU03	12	V	850	7	3.4	-1.0	-0.1
ASEU04	00	V	850	3	4.4	2.7	0.2
ASEU04	12	V	850	6	2.0	0.8	0.2
ASEU05	00	V	850	1	2.2	2.0	0.9
ASEU05	12	V	850	3	2.2	0.5	0.9
ASEU06	00	V	850	7	3.5	-0.2	0.8
ASEU06	12	V	850	8	2.6	-0.1	0.0
ASFR1	12	V	850	7	3.8	0.2	0.0
ASFR1	00	V	850	9	2.8	0.0	0.8
ASFR3	12	V	850	8	3.5	0.3	0.5
ASFR3	00	V	850	11	3.3	0.1	-0.1
ASFR4	00	V	850	11	3.1	-0.6	-0.2
ASFR4	12	V	850	13	3.9	0.5	-0.3

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 : DEC 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
0001001	99	P	SUR	38	24	157	0	0.5	0.0	0.5
0001003	99	P	SUR	40	25	79	0	0.8	-2.2	2.3
0001007	99	P	SUR	36	25	87	0	0.7	3.1	3.2
0061001	99	P	SUR	43	8	2	0	0.0	-0.1	0.1
012	99	P	SUR	73	29	1	1	0.0	0.0	0.0
03380	99	P	SUR	54	0	741	0	0.4	-0.2	0.5
1300001	99	P	SUR	11	-23	660	0	0.3	-0.0	0.3
1300515	99	P	SUR	27	-56	699	0	0.3	0.1	0.3
1300572	99	P	SUR	21	-50	741	0	0.3	0.0	0.3
1300633	99	P	SUR	27	-56	740	0	0.3	-0.8	0.8
1300665	99	P	SUR	17	-58	566	1	1.1	0.3	1.1
1300868	99	P	SUR	24	-24	738	0	0.3	0.3	0.5
1300869	99	P	SUR	20	-46	738	0	0.3	0.0	0.3
1300871	99	P	SUR	23	-49	699	0	0.5	0.5	0.7
1300872	99	P	SUR	30	-54	728	0	0.4	0.3	0.5
1301500	99	P	SUR	18	-59	738	0	0.3	-0.1	0.3
1301501	99	P	SUR	20	-37	733	0	0.3	0.3	0.4
1301502	99	P	SUR	23	-40	734	0	0.3	0.5	0.5
13515	99	P	SUR	27	-56	699	0	0.3	0.1	0.3
13572	99	P	SUR	21	-50	742	0	0.3	0.0	0.3
13633	99	P	SUR	27	-56	740	0	0.3	-0.8	0.8
13665	99	P	SUR	17	-58	570	1	1.1	0.3	1.1
13868	99	P	SUR	24	-24	743	0	0.3	0.3	0.5
13869	99	P	SUR	20	-46	743	0	0.3	0.0	0.3
13871	99	P	SUR	23	-49	711	0	0.5	0.5	0.7
13872	99	P	SUR	30	-54	742	0	0.4	0.2	0.5
2100942	99	P	SUR	29	-46	727	0	0.3	0.2	0.3
21942	99	P	SUR	29	-46	726	0	0.3	0.2	0.3
2500575	99	P	SUR	55	-45	723	0	1.1	-0.0	1.1
2500622	99	P	SUR	88	25	737	0	0.6	-0.4	0.8
2500623	99	P	SUR	89	-67	736	0	0.6	-0.0	0.6
25575	99	P	SUR	55	-45	742	0	1.1	-0.0	1.1
25622	99	P	SUR	88	25	742	0	0.6	-0.4	0.8
25623	99	P	SUR	89	-67	742	0	0.6	-0.0	0.6
2600537	99	P	SUR	74	32	681	0	0.8	-0.0	0.8
2600545	99	P	SUR	67	-18	719	186	7.4	-1.7	7.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
2600571	99	P	SUR	88	37	706	0	0.6	-0.4	0.8
2601560	99	P	SUR	88	39	724	0	0.6	0.5	0.8
2601561	99	P	SUR	88	28	728	0	0.6	0.7	1.0
26537	99	P	SUR	74	32	743	0	0.9	-0.0	0.9
26545	99	P	SUR	67	-18	740	201	7.4	-1.7	7.6
26571	99	P	SUR	88	37	742	0	0.6	-0.4	0.8
3101505	99	P	SUR	45	-64	13	0	0.4	-4.2	4.2
3101509	99	P	SUR	45	-64	14	0	0.0	-4.6	4.6
3301513	99	P	SUR	45	-64	13	0	0.3	-4.4	4.4
3301523	99	P	SUR	45	-64	1	0	0.0	-4.8	4.8
4100139	99	P	SUR	20	-38	328	0	0.3	-0.2	0.3
4100300	99	P	SUR	16	-57	744	0	0.3	0.4	0.5
4100506	99	P	SUR	29	-52	706	0	0.3	-0.1	0.3
4100590	99	P	SUR	40	-42	742	0	0.5	-0.5	0.8
4100594	99	P	SUR	40	-27	743	0	0.4	0.2	0.5
4100597	99	P	SUR	37	-58	103	4	4.8	-4.1	6.3
4100635	99	P	SUR	25	-67	717	0	0.3	0.4	0.5
4100706	99	P	SUR	33	-37	734	0	0.4	-0.0	0.4
4100707	99	P	SUR	14	-61	740	0	0.4	-0.8	0.9
4100729	99	P	SUR	42	-41	733	0	0.6	-0.0	0.6
4100731	99	P	SUR	30	-66	730	0	0.4	0.2	0.4
4100936	99	P	SUR	39	-41	77	0	0.8	-1.3	1.5
4100972	99	P	SUR	39	-30	704	0	0.5	0.0	0.5
4100975	99	P	SUR	27	-52	576	0	0.6	-0.2	0.7
4101700	99	P	SUR	39	-58	739	0	0.7	0.1	0.7
4101702	99	P	SUR	20	-45	733	0	0.3	0.3	0.4
4101703	99	P	SUR	18	-47	732	0	0.3	0.5	0.6
4101704	99	P	SUR	14	-52	738	0	0.3	0.7	0.8
4101740	99	P	SUR	12	-49	731	0	0.4	0.5	0.6
4101741	99	P	SUR	22	-42	728	0	0.2	0.6	0.6
41040	99	P	SUR	15	-53	733	0	0.4	-0.8	0.9
41041	99	P	SUR	14	-46	733	0	0.4	-0.6	0.7
41043	99	P	SUR	21	-65	1296	0	0.4	0.5	0.6
41044	99	P	SUR	22	-59	1332	0	0.4	-0.1	0.4
41046	99	P	SUR	24	-69	1388	0	0.4	-0.1	0.4
41048	99	P	SUR	32	-70	966	0	0.5	-0.7	0.8
41049	99	P	SUR	28	-63	740	0	0.4	-0.0	0.4
41052	99	P	SUR	18	-65	1928	0	0.4	-1.3	1.3
41053	99	P	SUR	19	-66	1881	0	0.4	-0.5	0.7
41056	99	P	SUR	18	-66	1783	0	0.4	-0.9	1.0
41139	99	P	SUR	20	-38	337	0	0.3	-0.2	0.3
41300	99	P	SUR	16	-57	744	0	0.3	0.4	0.5
41506	99	P	SUR	29	-52	706	0	0.3	-0.1	0.3

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
41590	99	P	SUR	40	-42	742	0	0.5	-0.5	0.8
41594	99	P	SUR	40	-27	743	0	0.4	0.2	0.5
41597	99	P	SUR	37	-58	111	6	4.8	-4.1	6.3
41635	99	P	SUR	25	-66	722	0	0.3	0.4	0.5
41706	99	P	SUR	33	-37	742	0	0.4	-0.0	0.4
41707	99	P	SUR	14	-61	741	0	0.4	-0.8	0.8
41729	99	P	SUR	42	-41	743	0	0.6	-0.0	0.6
41731	99	P	SUR	30	-66	742	0	0.4	0.2	0.4
41936	99	P	SUR	39	-41	77	0	0.7	-1.4	1.5
41972	99	P	SUR	39	-30	738	0	0.5	-0.0	0.5
41975	99	P	SUR	27	-52	576	0	0.6	-0.2	0.7
4201500	99	P	SUR	33	-67	420	0	0.5	0.2	0.6
42059	99	P	SUR	15	-68	1309	0	0.5	0.4	0.6
42085	99	P	SUR	18	-67	1767	0	0.4	-0.8	0.9
42087	99	P	SUR	11	-61	121	0	0.7	-0.2	0.8
42088	99	P	SUR	11	-61	1622	0	0.6	0.2	0.6
42090	99	P	SUR	18	-70	2257	0	0.5	0.0	0.5
44005	99	P	SUR	43	-69	939	0	0.7	-0.4	0.8
4400510	99	P	SUR	44	-52	1504	0	0.6	0.8	1.0
4400513	99	P	SUR	54	-10	698	1	0.5	-0.5	0.7
4400515	99	P	SUR	62	-7	535	1	1.4	0.7	1.5
4400517	99	P	SUR	27	-23	740	0	0.3	0.2	0.4
4400521	99	P	SUR	36	-30	736	0	0.6	-0.4	0.7
4400551	99	P	SUR	71	25	421	5	1.4	0.3	1.4
4400624	99	P	SUR	30	-58	722	0	0.3	-0.3	0.4
4400670	99	P	SUR	47	-55	709	0	0.6	0.4	0.7
4400746	99	P	SUR	33	-21	732	0	0.5	0.5	0.7
4400761	99	P	SUR	59	3	581	0	0.4	-0.3	0.5
4400765	99	P	SUR	51	-27	675	18	1.8	-0.3	1.8
4400766	99	P	SUR	38	-24	729	0	1.8	-0.3	1.8
4400768	99	P	SUR	29	-27	729	0	0.4	0.7	0.8
4400772	99	P	SUR	47	-24	734	0	1.0	-0.1	1.0
4400773	99	P	SUR	45	-6	736	0	0.3	0.6	0.7
4400775	99	P	SUR	35	-46	735	0	0.5	-0.0	0.5
4400776	99	P	SUR	32	-25	736	0	0.4	0.6	0.7
4400777	99	P	SUR	45	-52	731	0	0.7	0.2	0.7
4400778	99	P	SUR	39	-22	738	0	0.4	0.4	0.5
4400835	99	P	SUR	32	-46	708	0	0.4	-0.7	0.8
4400839	99	P	SUR	26	-40	715	0	0.2	-0.2	0.3
4400846	99	P	SUR	28	-30	737	0	0.3	0.5	0.6
4400848	99	P	SUR	26	-30	738	0	0.3	0.2	0.4
4400856	99	P	SUR	38	-39	731	0	0.7	0.4	0.8
4400857	99	P	SUR	40	-27	727	0	0.5	0.4	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4400863	99	P	SUR	31	-65	707	0	0.4	-0.8	0.9
4400866	99	P	SUR	70	20	725	0	1.6	-0.4	1.6
4400869	99	P	SUR	33	-21	626	0	0.7	0.9	1.1
4400874	99	P	SUR	32	-33	725	54	2.5	0.0	2.5
4400885	99	P	SUR	20	-62	718	0	0.3	-0.2	0.4
4400887	99	P	SUR	30	-51	714	0	0.3	-0.1	0.3
4400889	99	P	SUR	34	-42	716	0	0.4	-0.2	0.5
4400891	99	P	SUR	30	-58	714	0	0.3	-0.5	0.6
4400896	99	P	SUR	30	-35	736	0	0.6	-0.6	0.8
4400901	99	P	SUR	47	-27	737	0	0.7	0.0	0.7
4400902	99	P	SUR	43	-21	332	0	0.4	0.4	0.6
4400904	99	P	SUR	40	-26	736	0	0.4	-0.2	0.4
44011	99	P	SUR	41	-67	740	0	0.5	-0.8	1.0
4401500	99	P	SUR	35	-68	733	0	0.5	0.2	0.5
4401501	99	P	SUR	42	-47	736	0	0.6	0.1	0.7
4401502	99	P	SUR	29	-69	735	0	0.4	0.2	0.4
4401503	99	P	SUR	32	-55	738	0	0.4	0.2	0.5
4401526	99	P	SUR	38	-13	730	0	0.4	0.4	0.6
4401528	99	P	SUR	40	-54	737	0	0.5	0.2	0.6
4401529	99	P	SUR	21	-60	733	0	0.3	0.1	0.3
4401531	99	P	SUR	18	-58	735	0	0.3	0.6	0.7
4401533	99	P	SUR	14	-54	738	0	0.3	0.6	0.7
4401534	99	P	SUR	36	-58	736	0	0.7	-0.2	0.7
4401535	99	P	SUR	46	-36	366	0	0.6	0.1	0.6
4401536	99	P	SUR	50	-47	385	0	0.7	0.3	0.8
4401537	99	P	SUR	40	-38	387	0	0.5	-0.7	0.8
4401538	99	P	SUR	43	-30	368	0	0.4	-2.0	2.0
4401550	99	P	SUR	40	-41	697	0	0.9	0.0	0.9
4401551	99	P	SUR	32	-40	693	1	1.5	0.6	1.6
4401552	99	P	SUR	37	-56	690	0	0.7	0.0	0.7
4401553	99	P	SUR	56	-44	735	0	0.7	0.2	0.7
4401554	99	P	SUR	55	-39	730	0	0.7	0.4	0.8
4401555	99	P	SUR	47	-43	737	0	0.7	0.0	0.7
44016	99	P	SUR	53	-55	5257	370	3.4	1.1	3.5
4401601	99	P	SUR	57	-54	700	0	0.6	-0.0	0.6
4401602	99	P	SUR	50	-56	703	0	0.9	0.5	1.0
4401603	99	P	SUR	56	-45	706	0	0.7	0.4	0.8
4401604	99	P	SUR	56	-52	703	0	0.6	-0.1	0.6
4401605	99	P	SUR	56	-49	712	0	0.7	-0.3	0.7
4401606	99	P	SUR	55	-54	707	0	0.5	0.2	0.5
4401607	99	P	SUR	60	-62	537	228	5.8	5.2	7.8
4401608	99	P	SUR	60	-63	593	3	1.6	0.6	1.7
4401609	99	P	SUR	52	-56	707	0	1.6	0.0	1.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401612	99	P	SUR	47	-51	704	0	0.6	0.7	0.9
4401613	99	P	SUR	53	-53	712	12	0.6	0.7	1.0
4401616	99	P	SUR	53	-55	706	0	0.5	0.3	0.6
4401620	99	P	SUR	68	-59	611	109	6.2	1.4	6.3
4401622	99	P	SUR	55	-58	707	38	2.3	1.1	2.6
4401625	99	P	SUR	48	-52	697	0	0.7	0.6	0.9
4401627	99	P	SUR	59	-62	514	91	5.1	3.7	6.3
4401628	99	P	SUR	56	-59	712	20	3.3	0.9	3.4
4401630	99	P	SUR	58	-62	673	174	5.7	2.5	6.2
4401631	99	P	SUR	52	-52	707	0	0.4	0.1	0.5
4401633	99	P	SUR	52	-49	704	0	0.6	0.3	0.7
4401634	99	P	SUR	46	-45	713	0	0.5	-0.2	0.6
4401635	99	P	SUR	57	-61	695	96	3.3	1.2	3.5
4401636	99	P	SUR	59	-63	644	24	4.7	2.7	5.4
44018	99	P	SUR	42	-70	548	0	0.8	-0.2	0.8
44024	99	P	SUR	42	-66	876	0	0.5	-1.3	1.4
44027	99	P	SUR	44	-67	830	0	0.7	-0.2	0.7
44032	99	P	SUR	44	-69	665	0	0.7	-0.2	0.8
44033	99	P	SUR	44	-69	732	0	0.6	-0.3	0.7
44034	99	P	SUR	44	-68	711	0	0.7	-0.3	0.8
44137	99	P	SUR	42	-62	714	0	0.6	-0.1	0.6
44139	99	P	SUR	44	-57	702	0	0.7	0.2	0.7
44141	99	P	SUR	43	-58	249	0	0.9	0.9	1.2
44150	99	P	SUR	43	-64	685	0	0.6	0.1	0.6
44251	99	P	SUR	46	-53	709	0	0.9	0.3	1.0
44255	99	P	SUR	47	-57	20	0	0.2	1.0	1.0
44258	99	P	SUR	45	-63	713	0	0.6	-0.2	0.6
44510	99	P	SUR	44	-52	1504	0	0.6	0.8	1.0
44513	99	P	SUR	54	-10	701	1	0.5	-0.5	0.7
44515	99	P	SUR	62	-7	540	1	1.4	0.7	1.5
44517	99	P	SUR	27	-23	742	0	0.3	0.2	0.4
44521	99	P	SUR	36	-30	736	0	0.6	-0.4	0.7
44551	99	P	SUR	71	25	434	5	1.4	0.3	1.4
44624	99	P	SUR	29	-58	726	0	0.3	-0.3	0.4
44670	99	P	SUR	47	-55	739	0	0.6	0.4	0.7
44746	99	P	SUR	33	-21	740	0	0.5	0.5	0.7
44761	99	P	SUR	59	3	594	0	0.4	-0.3	0.5
44765	99	P	SUR	51	-27	678	18	1.8	-0.3	1.8
44766	99	P	SUR	38	-24	741	0	1.8	-0.3	1.8
44768	99	P	SUR	29	-27	742	0	0.4	0.7	0.8
44772	99	P	SUR	47	-24	741	0	0.9	-0.1	1.0
44773	99	P	SUR	45	-6	742	0	0.3	0.6	0.7
44775	99	P	SUR	36	-46	739	0	0.5	-0.0	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44776	99	P	SUR	32	-25	742	0	0.4	0.6	0.7
44777	99	P	SUR	45	-52	742	0	0.7	0.2	0.7
44778	99	P	SUR	39	-22	742	0	0.4	0.4	0.5
44835	99	P	SUR	32	-46	740	0	0.4	-0.7	0.8
44839	99	P	SUR	26	-40	741	0	0.3	-0.2	0.3
44846	99	P	SUR	28	-30	741	0	0.3	0.5	0.6
44848	99	P	SUR	26	-30	742	0	0.3	0.2	0.4
44856	99	P	SUR	38	-39	742	0	0.7	0.4	0.8
44857	99	P	SUR	40	-27	740	0	0.5	0.4	0.6
44863	99	P	SUR	31	-65	741	0	0.4	-0.8	0.9
44866	99	P	SUR	70	20	724	0	1.6	-0.4	1.6
44869	99	P	SUR	33	-21	631	0	0.7	0.9	1.1
44874	99	P	SUR	32	-33	740	56	2.5	0.0	2.5
44885	99	P	SUR	20	-62	739	0	0.3	-0.2	0.4
44887	99	P	SUR	30	-51	743	0	0.3	-0.1	0.4
44889	99	P	SUR	34	-42	741	0	0.4	-0.2	0.5
44891	99	P	SUR	30	-58	741	0	0.3	-0.5	0.6
44896	99	P	SUR	30	-35	736	0	0.6	-0.6	0.8
44901	99	P	SUR	47	-27	742	0	0.7	0.0	0.7
44902	99	P	SUR	43	-21	337	0	0.4	0.4	0.6
44904	99	P	SUR	40	-26	741	0	0.4	-0.2	0.4
4700509	99	P	SUR	62	-25	311	61	7.2	-1.1	7.2
4700539	99	P	SUR	43	-21	683	0	0.5	0.3	0.6
4700540	99	P	SUR	54	-21	701	0	0.7	0.8	1.0
4700546	99	P	SUR	45	-54	688	0	0.8	0.7	1.1
4700549	99	P	SUR	62	-7	634	0	0.8	-0.9	1.2
4700551	99	P	SUR	45	-52	702	384	8.5	0.0	8.5
4700552	99	P	SUR	67	-64	697	0	0.6	-2.0	2.1
4700555	99	P	SUR	44	-50	687	0	0.8	0.4	0.9
4700557	99	P	SUR	51	-18	703	0	0.5	0.1	0.5
4700560	99	P	SUR	50	-23	707	0	0.6	0.5	0.8
4700562	99	P	SUR	55	-21	716	0	0.7	0.3	0.8
4700568	99	P	SUR	46	-20	677	0	0.5	0.6	0.8
4700569	99	P	SUR	47	-22	615	0	0.5	-0.4	0.6
4700574	99	P	SUR	44	-48	694	0	0.7	0.2	0.7
4700589	99	P	SUR	67	-63	483	0	0.6	-2.4	2.5
4701657	99	P	SUR	80	-65	710	0	0.6	-1.3	1.4
47509	99	P	SUR	62	-25	327	66	7.3	-1.3	7.5
47539	99	P	SUR	43	-21	739	0	0.5	0.3	0.6
47540	99	P	SUR	54	-21	740	0	0.7	0.8	1.0
47546	99	P	SUR	45	-54	738	0	0.8	0.8	1.1
47549	99	P	SUR	62	-7	738	0	0.7	-0.9	1.2
47551	99	P	SUR	45	-52	741	405	8.6	0.4	8.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
47552	99	P	SUR	67	-64	743	0	0.6	-2.0	2.1
47555	99	P	SUR	44	-50	740	0	0.8	0.4	0.9
47557	99	P	SUR	51	-18	739	0	0.6	0.1	0.6
47560	99	P	SUR	50	-23	738	0	0.6	0.5	0.8
47562	99	P	SUR	55	-21	742	0	0.7	0.4	0.8
47568	99	P	SUR	46	-20	739	0	0.5	0.6	0.8
47569	99	P	SUR	47	-22	670	0	0.5	-0.4	0.7
47574	99	P	SUR	44	-48	738	0	0.7	0.2	0.7
47589	99	P	SUR	67	-63	506	0	0.6	-2.5	2.5
4800520	99	P	SUR	79	-14	64	0	0.7	0.1	0.7
4800600	99	P	SUR	83	-12	738	0	0.8	0.4	0.9
48520	99	P	SUR	79	-14	64	0	0.7	0.1	0.7
48600	99	P	SUR	83	-12	746	0	0.8	0.4	0.9
6100001	99	P	SUR	43	8	534	0	0.8	0.0	0.8
6100002	99	P	SUR	42	5	744	0	0.3	0.0	0.3
61001	99	P	SUR	43	8	534	0	0.8	0.0	0.8
61002	99	P	SUR	42	5	700	0	0.3	0.0	0.3
6200091	99	P	SUR	53	-5	277	0	0.7	-0.3	0.8
6200092	99	P	SUR	51	-11	93	0	2.0	1.6	2.5
6200093	99	P	SUR	55	-10	744	0	0.9	-0.9	1.3
6200094	99	P	SUR	52	-7	743	0	0.6	-0.2	0.6
62001	99	P	SUR	45	-5	743	0	0.4	0.0	0.4
6200513	99	P	SUR	61	-35	725	0	0.7	-0.3	0.7
6200554	99	P	SUR	41	-15	702	0	0.7	0.5	0.8
6200556	99	P	SUR	29	-27	706	0	0.4	-0.3	0.5
6200558	99	P	SUR	51	-13	657	0	0.5	0.2	0.6
6200559	99	P	SUR	46	-27	734	0	0.6	0.2	0.6
6200560	99	P	SUR	19	-50	739	0	0.3	0.4	0.5
6200714	99	P	SUR	38	-25	433	0	0.4	0.2	0.4
6200940	99	P	SUR	33	-15	709	0	0.4	0.1	0.4
6200941	99	P	SUR	24	-34	715	0	0.3	-0.2	0.3
62027	99	P	SUR	49	-2	156	0	0.9	0.0	0.9
62029	99	P	SUR	49	-12	1362	0	0.5	-0.1	0.5
6203503	99	P	SUR	30	-22	737	0	0.3	-0.0	0.3
6203504	99	P	SUR	35	-27	738	0	0.4	0.4	0.5
62050	99	P	SUR	50	-4	742	0	0.4	0.2	0.5
62082	99	P	SUR	55	6	3	0	0.2	0.1	0.2
62086	99	P	SUR	55	6	693	0	0.4	-0.1	0.4
62102	99	P	SUR	58	2	741	0	0.6	-0.1	0.6
62103	99	P	SUR	50	-3	743	0	0.4	0.5	0.6
62104	99	P	SUR	57	1	741	0	0.5	-0.2	0.6
62105	99	P	SUR	55	-13	679	0	1.0	-1.1	1.5
62107	99	P	SUR	50	-6	1470	8	0.7	0.3	0.8

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62111	99	P	SUR	58	0	740	0	0.8	0.9	1.2
62112	99	P	SUR	58	0	741	0	0.5	-0.0	0.5
62113	99	P	SUR	58	0	741	0	0.6	0.5	0.8
62114	99	P	SUR	58	0	1479	0	0.6	-0.2	0.7
62115	99	P	SUR	58	-3	740	0	0.7	-0.2	0.7
62116	99	P	SUR	58	1	738	0	0.7	-0.2	0.7
62117	99	P	SUR	58	0	741	0	0.5	0.1	0.5
62118	99	P	SUR	58	1	740	0	0.4	0.3	0.5
62119	99	P	SUR	57	2	741	0	0.6	0.3	0.7
62120	99	P	SUR	56	2	739	0	0.5	-0.4	0.7
62121	99	P	SUR	54	3	738	0	0.4	0.4	0.6
62122	99	P	SUR	57	2	1479	0	0.5	0.2	0.5
62123	99	P	SUR	56	2	27	0	0.7	-12.8	12.9
62124	99	P	SUR	54	-4	740	0	0.5	-0.1	0.5
62127	99	P	SUR	54	1	740	0	0.4	0.4	0.6
62128	99	P	SUR	59	1	741	0	0.6	-0.1	0.7
62129	99	P	SUR	58	0	741	0	0.6	0.3	0.7
62130	99	P	SUR	59	1	740	0	0.5	-0.2	0.6
62131	99	P	SUR	54	1	577	0	0.4	0.5	0.6
62132	99	P	SUR	56	2	740	0	0.6	0.5	0.8
62133	99	P	SUR	57	1	741	0	0.7	-0.2	0.7
62134	99	P	SUR	58	1	741	0	0.5	0.2	0.5
62135	99	P	SUR	54	2	741	0	0.4	0.2	0.5
62136	99	P	SUR	54	3	741	1	0.5	0.6	0.8
62137	99	P	SUR	57	2	711	0	0.4	-0.2	0.5
62138	99	P	SUR	54	0	1478	0	0.4	1.0	1.0
62139	99	P	SUR	53	2	1476	0	0.3	0.3	0.5
62140	99	P	SUR	57	1	1475	0	0.6	-0.2	0.6
62141	99	P	SUR	58	-4	724	0	0.7	-2.6	2.7
62143	99	P	SUR	58	2	737	0	0.7	0.6	0.9
62144	99	P	SUR	53	2	739	0	0.4	0.3	0.4
62145	99	P	SUR	53	3	1361	0	0.4	0.3	0.5
62146	99	P	SUR	57	2	741	0	0.8	0.4	0.9
62148	99	P	SUR	54	2	481	0	0.4	0.9	1.0
62149	99	P	SUR	54	1	740	0	0.4	0.6	0.7
62150	99	P	SUR	54	1	741	0	0.4	1.2	1.2
62151	99	P	SUR	57	2	1479	0	0.4	0.1	0.5
62152	99	P	SUR	57	2	741	0	0.5	0.6	0.8
62153	99	P	SUR	57	2	1475	0	0.4	0.0	0.4
62154	99	P	SUR	56	2	741	0	0.4	-0.0	0.4
62155	99	P	SUR	58	1	741	0	0.4	0.5	0.7
62157	99	P	SUR	58	0	741	0	0.5	0.1	0.5
62160	99	P	SUR	57	2	1475	0	0.5	-0.1	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62162	99	P	SUR	57	1	737	0	0.6	-0.3	0.6
62163	99	P	SUR	48	-8	740	0	0.4	0.2	0.5
62164	99	P	SUR	57	1	741	0	0.4	0.3	0.5
62165	99	P	SUR	54	1	741	0	0.4	0.4	0.5
62167	99	P	SUR	53	2	1433	0	0.4	0.2	0.4
62168	99	P	SUR	58	1	741	0	0.4	0.1	0.4
62170	99	P	SUR	51	2	740	0	0.4	0.2	0.5
62296	99	P	SUR	53	2	741	0	0.3	0.1	0.3
62297	99	P	SUR	59	2	1479	0	0.4	0.1	0.5
62302	99	P	SUR	61	-2	741	0	0.8	-0.1	0.8
62304	99	P	SUR	51	2	691	1	0.4	0.3	0.5
62305	99	P	SUR	50	0	831	0	0.4	0.3	0.5
62513	99	P	SUR	61	-35	740	0	0.7	-0.3	0.7
62554	99	P	SUR	41	-16	710	0	0.7	0.5	0.8
62556	99	P	SUR	29	-27	717	0	0.4	-0.3	0.5
62558	99	P	SUR	51	-13	662	0	0.5	0.2	0.6
62559	99	P	SUR	46	-27	741	0	0.6	0.2	0.6
62560	99	P	SUR	19	-50	743	0	0.3	0.4	0.5
62714	99	P	SUR	38	-25	438	0	0.4	0.2	0.4
62940	99	P	SUR	33	-15	740	0	0.4	0.1	0.4
62941	99	P	SUR	24	-34	740	0	0.3	-0.2	0.3
6300561	99	P	SUR	76	7	744	0	0.8	0.2	0.8
6300646	99	P	SUR	72	17	734	0	0.5	0.5	0.7
6300923	99	P	SUR	65	-37	79	55	2.5	-9.0	9.3
6301550	99	P	SUR	73	28	736	0	0.5	0.3	0.5
6301551	99	P	SUR	76	37	733	0	1.8	0.9	2.0
63055	99	P	SUR	61	2	740	0	0.8	0.3	0.8
63056	99	P	SUR	60	2	741	0	0.6	0.2	0.7
63057	99	P	SUR	59	2	741	0	0.5	-0.3	0.6
63058	99	P	SUR	53	2	2222	0	0.4	0.2	0.4
63059	99	P	SUR	58	-1	741	0	0.5	0.2	0.5
63101	99	P	SUR	61	1	741	0	0.7	-0.0	0.8
63102	99	P	SUR	61	1	739	0	0.8	0.4	0.9
63103	99	P	SUR	61	1	693	0	0.7	0.4	0.8
63104	99	P	SUR	61	2	735	0	0.7	-0.2	0.7
63105	99	P	SUR	61	2	741	0	0.6	-0.3	0.6
63108	99	P	SUR	61	2	735	0	0.8	0.3	0.8
63109	99	P	SUR	60	2	741	0	0.5	-0.3	0.6
63110	99	P	SUR	60	2	741	0	0.6	-0.5	0.8
63111	99	P	SUR	61	2	1475	0	0.7	-0.6	1.0
63112	99	P	SUR	61	1	741	0	0.6	-0.5	0.7
63115	99	P	SUR	62	1	741	0	0.6	-0.2	0.7
63117	99	P	SUR	61	1	1452	0	0.7	0.5	0.8

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
63118	99	P	SUR	62	1	737	0	0.7	-0.6	1.0
63119	99	P	SUR	56	-3	21	0	0.7	-0.7	1.0
63120	99	P	SUR	54	2	739	0	0.4	0.5	0.6
63561	99	P	SUR	76	7	743	0	0.8	0.2	0.8
63646	99	P	SUR	72	17	741	0	0.5	0.5	0.7
63923	99	P	SUR	65	-37	90	63	2.5	-8.8	9.2
6400524	99	P	SUR	67	13	730	0	0.6	0.2	0.7
6400526	99	P	SUR	61	-58	719	0	1.0	0.3	1.0
6400528	99	P	SUR	72	25	737	0	0.5	0.2	0.6
6400530	99	P	SUR	80	15	573	0	0.8	0.1	0.8
6400547	99	P	SUR	73	8	736	0	0.6	0.3	0.7
6400551	99	P	SUR	61	-28	736	0	0.8	-0.1	0.8
6400553	99	P	SUR	80	1	103	28	2.3	-0.9	2.5
6400562	99	P	SUR	60	-27	729	24	4.2	-1.4	4.4
6400666	99	P	SUR	68	-21	736	0	0.7	0.5	0.8
6400757	99	P	SUR	77	-12	690	0	0.7	-0.3	0.8
6400973	99	P	SUR	83	40	442	0	0.6	-0.0	0.6
6401500	99	P	SUR	66	-35	389	0	0.9	0.6	1.1
6401550	99	P	SUR	62	3	730	0	0.5	0.5	0.7
6401551	99	P	SUR	60	-23	735	1	3.8	0.7	3.8
6401552	99	P	SUR	60	-36	734	0	0.7	1.0	1.2
6401554	99	P	SUR	62	-3	736	0	0.5	0.2	0.5
6401555	99	P	SUR	60	-7	733	0	0.5	0.6	0.7
6401556	99	P	SUR	63	-14	737	0	0.6	0.4	0.8
64041	99	P	SUR	61	-3	741	0	0.7	-0.5	0.8
64045	99	P	SUR	59	-12	1288	0	0.7	-0.3	0.7
64046	99	P	SUR	61	-4	740	0	0.5	-0.1	0.5
64524	99	P	SUR	67	13	741	0	0.6	0.2	0.7
64526	99	P	SUR	61	-58	730	0	1.0	0.3	1.0
64528	99	P	SUR	72	25	741	0	0.5	0.2	0.6
64530	99	P	SUR	80	15	581	0	0.8	0.1	0.8
64547	99	P	SUR	73	8	743	0	0.6	0.3	0.7
64551	99	P	SUR	61	-28	742	0	0.8	-0.1	0.8
64553	99	P	SUR	80	1	110	31	2.3	-0.9	2.5
64562	99	P	SUR	60	-26	741	24	4.2	-1.4	4.4
64666	99	P	SUR	68	-21	742	0	0.7	0.5	0.8
64757	99	P	SUR	77	-12	741	0	0.8	-0.3	0.8
64973	99	P	SUR	83	40	465	0	0.7	0.0	0.7
6500514	99	P	SUR	55	-19	735	0	0.7	0.1	0.8
6500515	99	P	SUR	62	-23	728	1	1.2	-0.2	1.2
6500519	99	P	SUR	70	-1	732	0	0.5	0.2	0.6
6500596	99	P	SUR	65	-5	726	0	0.6	0.4	0.7
6500599	99	P	SUR	62	-2	735	0	0.5	0.3	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6500602	99	P	SUR	55	-26	734	0	0.6	0.2	0.7
6501551	99	P	SUR	58	-54	732	0	0.7	-0.0	0.7
6501552	99	P	SUR	57	-52	733	0	0.7	0.4	0.8
6501553	99	P	SUR	57	-54	733	0	0.6	0.4	0.8
6501555	99	P	SUR	65	-52	729	0	0.5	-0.6	0.8
6501556	99	P	SUR	58	-51	731	0	0.8	0.3	0.8
6501557	99	P	SUR	62	-28	735	0	0.7	0.5	0.8
6501558	99	P	SUR	58	-55	735	0	0.6	0.4	0.7
65514	99	P	SUR	55	-19	741	0	0.7	0.1	0.7
65515	99	P	SUR	62	-22	740	1	1.2	-0.2	1.2
65519	99	P	SUR	70	-1	741	0	0.5	0.2	0.6
65596	99	P	SUR	65	-5	742	0	0.6	0.4	0.7
65599	99	P	SUR	62	-2	740	0	0.5	0.3	0.6
65602	99	P	SUR	55	-26	741	0	0.6	0.2	0.7

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 : DEC 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
0001001	99	SPEED	SUR	38	24	157	0	0	1.5	-1.1	1.9
0001003	99	SPEED	SUR	40	25	79	0	0	2.1	-1.8	2.8
0001007	99	SPEED	SUR	36	25	87	0	0	1.5	-1.1	1.9
0061001	99	SPEED	SUR	43	8	2	0	0	0.2	-2.5	2.6
012	99	SPEED	SUR	73	29	1	0	0	0.0	-5.4	5.4
1300001	99	SPEED	SUR	11	-23	660	0	0	1.0	0.8	1.3
1300002	99	SPEED	SUR	20	-23	347	0	0	0.9	0.0	0.9
13002	99	SPEED	SUR	20	-23	362	0	0	0.9	0.1	0.9
4100026	99	SPEED	SUR	12	-38	318	0	0	0.9	-0.1	0.9
4100139	99	SPEED	SUR	20	-38	328	0	0	0.9	-0.2	0.9
4100300	99	SPEED	SUR	16	-57	744	0	0	0.9	-0.5	1.0
41026	99	SPEED	SUR	12	-38	329	0	0	1.0	-0.1	1.0
41040	99	SPEED	SUR	15	-53	733	0	0	0.8	-0.2	0.8
41041	99	SPEED	SUR	14	-46	733	0	0	1.0	-0.1	1.0
41043	99	SPEED	SUR	21	-65	1312	0	0	1.0	-0.3	1.1
41044	99	SPEED	SUR	22	-59	1329	0	0	1.0	-0.0	1.0
41046	99	SPEED	SUR	24	-69	1388	0	0	1.1	-0.6	1.2
41048	99	SPEED	SUR	32	-70	966	0	0	1.3	0.0	1.3
41049	99	SPEED	SUR	28	-63	740	0	0	1.2	-0.0	1.2
41052	99	SPEED	SUR	18	-65	1928	0	0	1.0	-0.8	1.2
41053	99	SPEED	SUR	19	-66	1881	0	0	1.4	0.6	1.5
41056	99	SPEED	SUR	18	-66	1783	0	0	1.3	-1.0	1.6
41139	99	SPEED	SUR	20	-38	337	0	0	1.0	-0.2	1.0
41300	99	SPEED	SUR	16	-57	744	0	0	0.9	-0.5	1.1
42059	99	SPEED	SUR	15	-68	1333	0	0	0.9	-0.0	1.0
42085	99	SPEED	SUR	18	-67	1771	0	0	1.2	-0.3	1.2
42088	99	SPEED	SUR	11	-61	1622	0	0	1.5	-2.5	2.9
42090	99	SPEED	SUR	18	-70	2257	0	0	1.2	-0.4	1.2
44005	99	SPEED	SUR	43	-69	940	0	0	1.3	0.1	1.3
44018	99	SPEED	SUR	42	-70	548	0	0	1.5	-0.0	1.5
44024	99	SPEED	SUR	42	-66	899	0	0	1.7	0.1	1.7
44027	99	SPEED	SUR	44	-67	830	11	0	1.5	0.6	1.6
44032	99	SPEED	SUR	44	-69	692	0	0	1.5	0.1	1.5
44033	99	SPEED	SUR	44	-69	734	0	0	1.5	0.2	1.5

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
44034	99	SPEED	SUR	44	-68	719	0	0	1.5	-0.2	1.5
44037	99	SPEED	SUR	44	-68	545	3	0	1.8	0.3	1.8
44137	99	SPEED	SUR	42	-62	726	0	0	1.5	0.3	1.5
44139	99	SPEED	SUR	44	-57	715	0	0	1.5	0.0	1.5
44141	99	SPEED	SUR	43	-58	249	0	0	1.9	-0.0	1.9
44150	99	SPEED	SUR	43	-64	698	0	0	1.7	-0.3	1.7
44251	99	SPEED	SUR	46	-53	717	0	0	1.6	0.3	1.7
44255	99	SPEED	SUR	47	-57	20	0	0	3.1	-3.2	4.5
44258	99	SPEED	SUR	45	-63	721	0	0	1.5	0.6	1.6
6100001	99	SPEED	SUR	43	8	417	0	0	1.5	-0.5	1.6
6100002	99	SPEED	SUR	42	5	744	0	0	3.6	6.8	7.7
61001	99	SPEED	SUR	43	8	417	0	0	1.8	-1.3	2.2
61002	99	SPEED	SUR	42	5	700	0	0	1.3	-0.5	1.4
6200091	99	SPEED	SUR	53	-5	277	0	0	1.0	0.4	1.1
6200092	99	SPEED	SUR	51	-11	93	0	0	1.0	-0.5	1.1
6200093	99	SPEED	SUR	55	-10	744	0	0	1.2	-0.4	1.3
6200094	99	SPEED	SUR	52	-7	743	0	0	1.2	0.1	1.2
62001	99	SPEED	SUR	45	-5	743	0	0	1.1	0.5	1.2
62027	99	SPEED	SUR	49	-2	157	0	0	1.1	0.6	1.3
62029	99	SPEED	SUR	49	-12	1362	0	0	1.1	0.3	1.1
62050	99	SPEED	SUR	50	-4	742	0	0	1.1	0.4	1.2
62082	99	SPEED	SUR	55	6	3	0	0	0.8	0.7	1.1
62086	99	SPEED	SUR	55	6	711	0	0	1.4	0.6	1.5
62102	99	SPEED	SUR	58	2	741	0	0	1.4	-0.5	1.5
62104	99	SPEED	SUR	57	1	741	0	0	1.5	-0.8	1.7
62105	99	SPEED	SUR	55	-13	623	0	0	1.7	0.3	1.7
62107	99	SPEED	SUR	50	-6	1468	0	0	1.7	1.0	2.0
62111	99	SPEED	SUR	58	0	739	0	0	1.7	0.3	1.7
62112	99	SPEED	SUR	58	0	741	0	0	2.3	-1.1	2.6
62113	99	SPEED	SUR	58	0	741	0	0	1.8	0.9	2.0
62114	99	SPEED	SUR	58	0	1479	0	0	1.7	0.9	1.9
62117	99	SPEED	SUR	58	0	741	0	0	1.5	0.1	1.5
62118	99	SPEED	SUR	58	1	740	0	0	1.6	1.0	1.9
62119	99	SPEED	SUR	57	2	741	0	0	1.6	0.2	1.6
62120	99	SPEED	SUR	56	2	739	0	0	1.3	0.4	1.4
62121	99	SPEED	SUR	54	3	662	0	0	1.2	-0.3	1.2
62122	99	SPEED	SUR	57	2	1477	0	0	1.1	-0.2	1.1
62123	99	SPEED	SUR	56	2	27	0	0	2.1	-8.1	8.3
62128	99	SPEED	SUR	59	1	741	0	0	1.9	1.0	2.1
62129	99	SPEED	SUR	58	0	489	0	0	1.4	0.3	1.4
62131	99	SPEED	SUR	54	1	577	0	0	1.5	-0.2	1.5

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
62132	99	SPEED	SUR	56	2	740	0	0	1.6	-1.2	2.0
62133	99	SPEED	SUR	57	1	741	0	0	1.3	-0.1	1.3
62134	99	SPEED	SUR	58	1	741	0	0	1.5	0.2	1.5
62140	99	SPEED	SUR	57	1	1475	0	0	1.3	0.1	1.3
62143	99	SPEED	SUR	58	2	737	0	0	2.4	-0.9	2.6
62144	99	SPEED	SUR	53	2	739	0	0	1.8	-0.5	1.9
62145	99	SPEED	SUR	53	3	1361	0	0	1.4	0.4	1.4
62146	99	SPEED	SUR	57	2	741	0	0	1.3	-0.0	1.3
62148	99	SPEED	SUR	54	2	481	0	0	1.3	-0.4	1.3
62149	99	SPEED	SUR	54	1	740	0	0	1.1	0.2	1.1
62150	99	SPEED	SUR	54	1	741	0	0	1.4	-0.5	1.5
62152	99	SPEED	SUR	57	2	741	0	0	1.8	-1.5	2.3
62153	99	SPEED	SUR	57	2	1475	0	0	3.2	-3.1	4.5
62154	99	SPEED	SUR	56	2	738	0	0	1.4	-0.1	1.4
62155	99	SPEED	SUR	58	1	721	0	0	1.6	0.7	1.8
62163	99	SPEED	SUR	48	-8	740	0	0	1.1	0.2	1.1
62164	99	SPEED	SUR	57	1	741	0	0	1.7	-1.8	2.5
62165	99	SPEED	SUR	54	1	741	0	0	2.0	-1.1	2.3
62170	99	SPEED	SUR	51	2	740	0	0	1.5	1.5	2.1
62304	99	SPEED	SUR	51	2	688	0	0	1.5	1.1	1.9
62305	99	SPEED	SUR	50	0	831	0	0	1.7	1.3	2.2
63055	99	SPEED	SUR	61	2	740	0	0	1.5	-1.0	1.8
63056	99	SPEED	SUR	60	2	741	0	0	1.5	0.1	1.5
63057	99	SPEED	SUR	59	2	741	0	0	2.3	0.2	2.3
63058	99	SPEED	SUR	53	2	1481	0	0	1.1	0.0	1.1
63101	99	SPEED	SUR	61	1	738	0	0	1.9	-1.9	2.7
63103	99	SPEED	SUR	61	1	693	0	0	1.9	0.4	2.0
63104	99	SPEED	SUR	61	2	735	0	0	1.5	-0.5	1.6
63105	99	SPEED	SUR	61	2	741	0	0	1.7	-0.3	1.7
63106	99	SPEED	SUR	61	2	710	0	0	1.6	-0.1	1.6
63108	99	SPEED	SUR	61	2	736	0	0	1.7	0.4	1.7
63109	99	SPEED	SUR	60	2	739	0	0	1.6	0.5	1.7
63110	99	SPEED	SUR	60	2	741	0	0	1.5	-0.4	1.5
63112	99	SPEED	SUR	61	1	741	0	0	1.5	-0.5	1.6
63113	99	SPEED	SUR	61	2	741	0	0	1.6	-0.7	1.8
63115	99	SPEED	SUR	62	1	741	0	0	1.5	-0.4	1.6
63117	99	SPEED	SUR	61	1	1452	0	0	1.5	-0.6	1.6
63119	99	SPEED	SUR	56	-3	21	0	0	2.8	-1.3	3.1
64041	99	SPEED	SUR	61	-3	741	0	0	1.6	-0.0	1.6
64045	99	SPEED	SUR	59	-12	1288	0	0	3.6	-0.9	3.7
64046	99	SPEED	SUR	61	-4	173	0	0	1.3	0.2	1.3

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
66021	99	SPEED	SUR	55	14	517	0	0	4.3	-1.5	4.5
66022	99	SPEED	SUR	54	14	528	0	0	1.3	-0.6	1.4
66024	99	SPEED	SUR	55	13	743	0	0	1.3	0.4	1.4

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 : DEC 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
1300001	99	DIRN	SUR	11	-23	656	0	0	8.8	2.5	9.1
1300002	99	DIRN	SUR	20	-23	317	0	0	12.2	2.1	12.3
13002	99	DIRN	SUR	20	-23	323	0	0	11.4	1.0	11.5
4100026	99	DIRN	SUR	12	-38	317	0	0	12.0	-4.5	12.8
4100139	99	DIRN	SUR	20	-38	287	0	0	11.1	-3.1	11.5
41002	99	DIRN	SUR	32	-75	661	0	0	23.0	10.2	25.1
4100300	99	DIRN	SUR	16	-57	737	0	0	10.6	6.4	12.4
41004	99	DIRN	SUR	33	-79	762	0	0	26.0	8.3	27.3
41008	99	DIRN	SUR	31	-81	603	0	0	28.3	10.4	30.1
41013	99	DIRN	SUR	33	-78	1184	0	0	19.9	11.1	22.8
41024	99	DIRN	SUR	34	-79	554	0	0	25.3	-2.7	25.4
41025	99	DIRN	SUR	35	-75	690	0	0	18.9	-2.3	19.0
41026	99	DIRN	SUR	12	-38	322	0	0	12.6	-4.5	13.4
41029	99	DIRN	SUR	33	-80	590	0	0	33.7	0.8	33.7
41033	99	DIRN	SUR	32	-80	504	0	0	29.7	2.3	29.8
41037	99	DIRN	SUR	34	-77	673	0	0	21.9	-2.5	22.0
41038	99	DIRN	SUR	34	-78	566	0	0	37.6	-0.2	37.6
41040	99	DIRN	SUR	15	-53	731	0	0	8.6	0.6	8.6
41041	99	DIRN	SUR	14	-46	732	0	0	9.6	4.2	10.5
41043	99	DIRN	SUR	21	-65	1195	0	0	12.0	9.5	15.3
41044	99	DIRN	SUR	22	-59	1236	0	0	11.2	3.6	11.8
41046	99	DIRN	SUR	24	-69	1050	0	0	11.4	5.0	12.5
41047	99	DIRN	SUR	28	-72	1091	0	0	10.4	5.2	11.6
41048	99	DIRN	SUR	32	-70	899	0	0	16.3	10.7	19.5
41049	99	DIRN	SUR	28	-63	657	0	0	17.9	6.3	19.0
41052	99	DIRN	SUR	18	-65	1887	0	0	11.7	4.2	12.4
41053	99	DIRN	SUR	19	-66	1433	0	0	16.6	1.2	16.6
41056	99	DIRN	SUR	18	-66	1695	0	0	12.8	2.9	13.1
41064	99	DIRN	SUR	34	-77	656	0	0	17.1	-7.0	18.4
41139	99	DIRN	SUR	20	-38	281	0	0	11.6	-3.9	12.3
41300	99	DIRN	SUR	16	-57	736	0	0	10.5	6.5	12.3
42013	99	DIRN	SUR	27	-83	424	0	0	13.2	-3.5	13.7

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
42022	99	DIRN	SUR	28	-84	995	0	0	14.6	-1.5	14.7
42023	99	DIRN	SUR	26	-83	977	0	0	12.4	3.4	12.8
42036	99	DIRN	SUR	29	-85	633	0	0	15.1	-1.0	15.1
42056	99	DIRN	SUR	20	-85	1304	0	0	10.1	4.1	10.9
42058	99	DIRN	SUR	15	-75	736	0	0	7.6	3.0	8.2
42059	99	DIRN	SUR	15	-68	1333	0	0	8.8	0.8	8.9
42085	99	DIRN	SUR	18	-67	1673	0	0	14.9	7.4	16.6
42088	99	DIRN	SUR	11	-61	1333	0	0	13.6	-15.6	20.7
42090	99	DIRN	SUR	18	-70	976	0	0	22.9	-23.6	32.9
44005	99	DIRN	SUR	43	-69	896	0	0	12.4	17.4	21.3
44007	99	DIRN	SUR	44	-70	743	0	0	29.6	6.1	30.2
44013	99	DIRN	SUR	42	-71	802	0	0	12.8	6.7	14.4
44014	99	DIRN	SUR	37	-75	648	0	0	16.5	-0.7	16.5
44017	99	DIRN	SUR	41	-72	701	0	0	13.2	9.1	16.0
44018	99	DIRN	SUR	42	-70	516	0	0	15.0	8.9	17.4
44020	99	DIRN	SUR	41	-70	410	0	0	17.9	11.0	21.0
44022	99	DIRN	SUR	41	-74	434	0	0	17.6	9.3	19.9
44024	99	DIRN	SUR	42	-66	794	0	0	13.8	4.5	14.5
44025	99	DIRN	SUR	40	-73	800	0	0	15.6	-1.4	15.7
44027	99	DIRN	SUR	44	-67	743	11	0	31.2	5.2	31.6
44029	99	DIRN	SUR	43	-71	944	0	0	14.7	1.3	14.7
44030	99	DIRN	SUR	43	-70	672	0	0	19.8	2.1	19.9
44032	99	DIRN	SUR	44	-69	651	0	0	17.7	0.3	17.7
44033	99	DIRN	SUR	44	-69	634	0	0	18.4	0.1	18.4
44034	99	DIRN	SUR	44	-68	657	0	0	15.5	4.3	16.1
44037	99	DIRN	SUR	44	-68	497	3	0	26.5	5.9	27.1
44039	99	DIRN	SUR	41	-73	397	0	0	16.7	1.3	16.8
44041	99	DIRN	SUR	37	-77	276	0	0	15.7	1.2	15.7
44042	99	DIRN	SUR	38	-76	832	0	0	18.5	-14.6	23.5
44043	99	DIRN	SUR	39	-76	155	0	0	18.3	-15.1	23.7
44058	99	DIRN	SUR	38	-76	801	0	0	18.6	-17.8	25.8
44061	99	DIRN	SUR	39	-77	66	0	0	18.2	-22.0	28.6
44062	99	DIRN	SUR	39	-76	847	0	0	26.3	-10.7	28.4
44063	99	DIRN	SUR	39	-76	154	0	0	16.5	-12.7	20.8
44065	99	DIRN	SUR	40	-74	698	0	0	15.5	1.1	15.5
44072	99	DIRN	SUR	37	-76	861	0	0	20.6	-12.4	24.0
44137	99	DIRN	SUR	42	-62	679	0	0	17.1	-0.9	17.1
44139	99	DIRN	SUR	44	-57	656	0	0	15.0	9.4	17.7
44141	99	DIRN	SUR	43	-58	230	0	0	17.0	7.6	18.7
44150	99	DIRN	SUR	43	-64	608	0	0	16.4	2.4	16.5
44251	99	DIRN	SUR	46	-53	682	0	0	18.8	7.2	20.2

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44255	99	DIRN	SUR	47	-57	10	0	0	11.5	2.4	11.8
44258	99	DIRN	SUR	45	-63	634	0	0	15.9	2.0	16.1
45005	99	DIRN	SUR	42	-82	8	0	0	10.2	12.1	15.8
45012	99	DIRN	SUR	44	-77	482	0	0	15.1	4.2	15.7
45132	99	DIRN	SUR	43	-81	204	0	0	16.5	-11.2	19.9
45135	99	DIRN	SUR	44	-77	6	0	0	9.8	-27.5	29.1
45137	99	DIRN	SUR	46	-81	64	0	0	21.6	-8.4	23.2
45139	99	DIRN	SUR	43	-80	268	0	0	16.0	-17.6	23.8
45142	99	DIRN	SUR	43	-79	232	0	0	15.0	-24.8	29.0
45143	99	DIRN	SUR	45	-81	119	0	0	17.7	-13.9	22.5
45147	99	DIRN	SUR	42	-83	395	0	0	13.8	-4.6	14.5
45159	99	DIRN	SUR	44	-79	258	0	0	15.8	-11.6	19.6
6200091	99	DIRN	SUR	53	-5	276	0	0	9.8	-0.2	9.8
6200092	99	DIRN	SUR	51	-11	93	0	0	11.3	3.1	11.7
6200093	99	DIRN	SUR	55	-10	734	0	0	9.3	-2.2	9.6
6200094	99	DIRN	SUR	52	-7	693	0	0	14.6	4.7	15.3
62001	99	DIRN	SUR	45	-5	518	0	0	15.7	5.7	16.8
62027	99	DIRN	SUR	49	-2	129	0	0	15.5	1.4	15.5
62029	99	DIRN	SUR	49	-12	1274	0	0	13.4	8.6	15.9
62050	99	DIRN	SUR	50	-4	609	0	0	15.4	3.9	15.9
62105	99	DIRN	SUR	55	-13	620	0	0	13.0	4.2	13.6
62107	99	DIRN	SUR	50	-6	1294	0	0	23.5	3.0	23.7
62111	99	DIRN	SUR	58	0	674	0	0	13.7	-1.0	13.8
62112	99	DIRN	SUR	58	0	664	0	0	12.1	3.1	12.5
62114	99	DIRN	SUR	58	0	1381	0	0	9.9	0.7	9.9
62117	99	DIRN	SUR	58	0	675	0	0	10.2	5.7	11.7
62163	99	DIRN	SUR	48	-8	632	0	0	15.9	3.1	16.2
62305	99	DIRN	SUR	50	0	742	0	0	19.2	7.2	20.5
63119	99	DIRN	SUR	56	-3	20	0	0	53.9	-23.1	58.7
64041	99	DIRN	SUR	61	-3	709	0	0	9.0	8.5	12.4
64045	99	DIRN	SUR	59	-12	1156	0	0	10.3	3.5	10.8
64046	99	DIRN	SUR	61	-4	147	0	0	12.1	-5.5	13.3

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASDE01	ASDE02	ASDE03	ASDE09	ASDE09	ASDK01	ASDK02	ASDK03	ASES01
ASEU02	ASEU03	ASEU04	ASEU05	ASEU06	ASFR1	ASFR3	ASFR4	DBLK
01001	01004	01010	01028	01241	01400	01415	01492	02185
02365	02527	02591	02836	02935	02963	03005	03238	03354
03502	03743	03808	03882	03918	03953	06260	06610	08001
08023	08190	08221	08302	08430	10035	10113	10141	10184
10238	10304	10393	10410	10548	10618	10739	10771	10868
10954	10962	16045	16080	16245	16320	16429	16546	17607
33008	43599	47155	60018	61901	76903	89002	89564	89571
89611	93112	93417	93817	93844	93997	94120	94150	94170
94203	94294	94299	94302	94312	94326	94332	94374	94403
94430	94461	94510	94578	94610	94637	94638	94653	94659
94672	94711	94767	94776	94802	94821	94866	94910	94975
94995	94996	94998	95527					

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

ASDE01	ASDE02	ASDE03	ASDE09	ASDE09	ASDK01	ASDK02	ASDK03	ASES01
ASEU02	ASEU03	ASEU04	ASEU05	ASEU06	ASFR1	ASFR3	ASFR4	DBLK
10141	17607	33008	47155	76903	94653			

5 Annex - Explanations of figures and tables

5.1 General

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

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

5.2 Data Availability

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

5.3 Data Quality

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

It should be noted that:

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

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

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

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

The corresponding limits for wind (table 8) are:

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

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

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

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

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

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

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

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

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