



ECMWF Global Data Monitoring Report

July 2017

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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	Jun	Jul	Ident	Time	Jun	Jul
17516	(00)	29	2	01001	(00)	14	31
42314	(00)	25	0	01001	(12)	15	31
43063	(00)	11	0	02185	(00)	12	31
43192	(00)	21	0	33008	(00)	17	31
61641	(00)	17	0	33041	(12)	0	31
61641	(12)	16	0	41217	(12)	16	27
64700	(00)	11	0	41256	(00)	0	14
64910	(00)	22	0	41256	(12)	0	11
71203	(00)	29	1	43014	(00)	14	31
71203	(12)	29	0	48327	(00)	7	27
76394	(12)	19	0	48407	(00)	3	18
76405	(00)	27	1	65578	(00)	16	29
82411	(00)	24	2	65578	(12)	17	29
82411	(12)	27	2	67083	(00)	17	30
83566	(00)	22	0	68442	(12)	22	46
83566	(12)	23	0	68592	(00)	25	55
96645	(00)	25	0	68592	(12)	24	62
96645	(12)	24	0	68816	(00)	14	56
98558	(00)	16	0	68816	(12)	9	54
-	-	-	-	68842	(00)	27	60
-	-	-	-	68842	(12)	30	59
-	-	-	-	68906	(00)	14	30
-	-	-	-	68906	(12)	15	30
-	-	-	-	68994	(00)	13	25
-	-	-	-	68994	(12)	12	26
-	-	-	-	71816	(00)	16	30
-	-	-	-	74005	(00)	9	23
-	-	-	-	76405	(12)	0	27
-	-	-	-	83649	(12)	19	30
-	-	-	-	89512	(12)	0	14
-	-	-	-	89592	(12)	0	14
-	-	-	-	89664	(00)	15	30
-	-	-	-	98444	(00)	11	29
-	-	-	-	98444	(12)	10	25

2.2 Drifting Buoys

Surface pressure observations from **1590** 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.

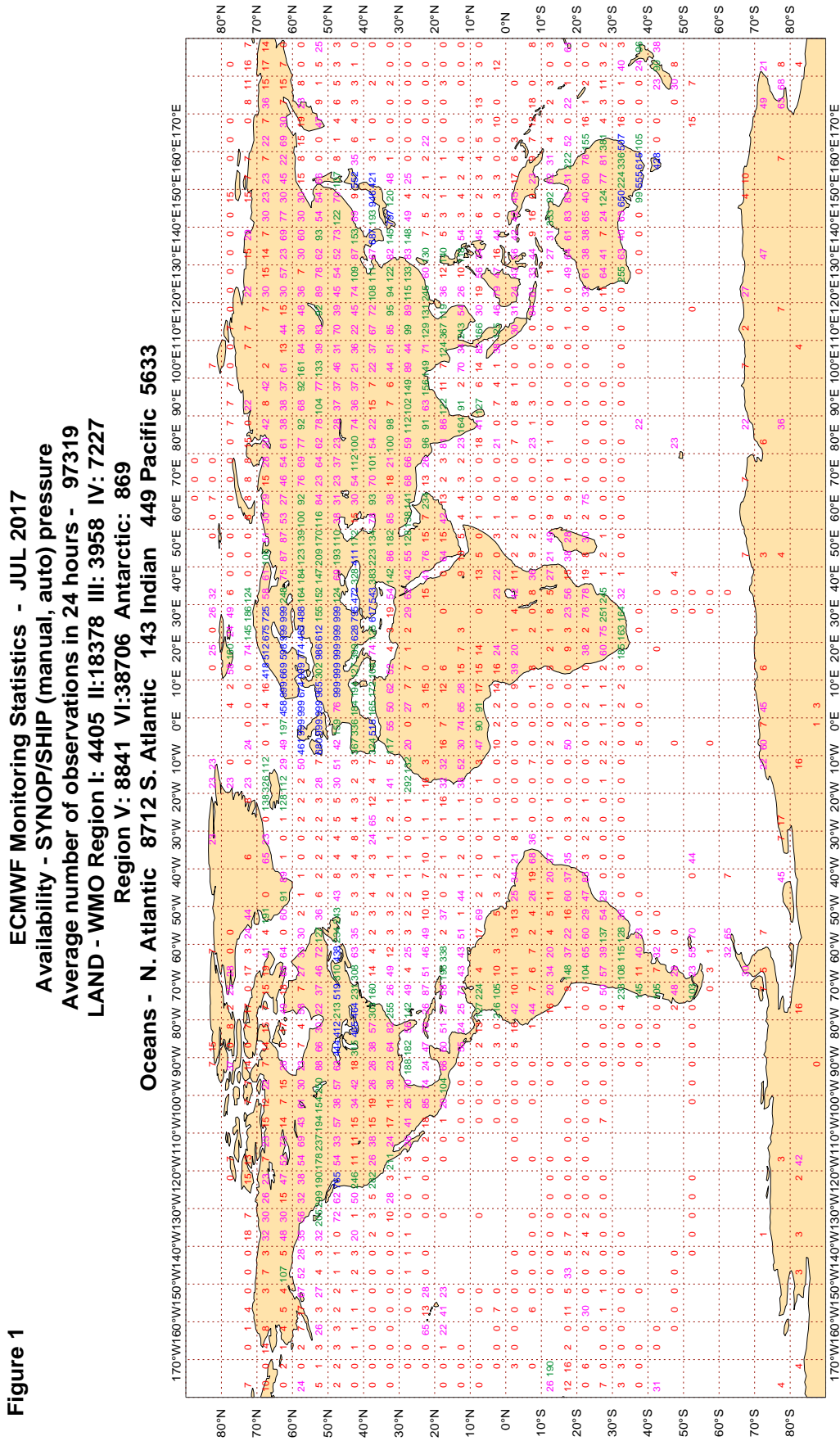
Tab	Parameter	Observation Time
10	Geopotential	00 and 12 UTC
11	Wind	00 and 12 UTC

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

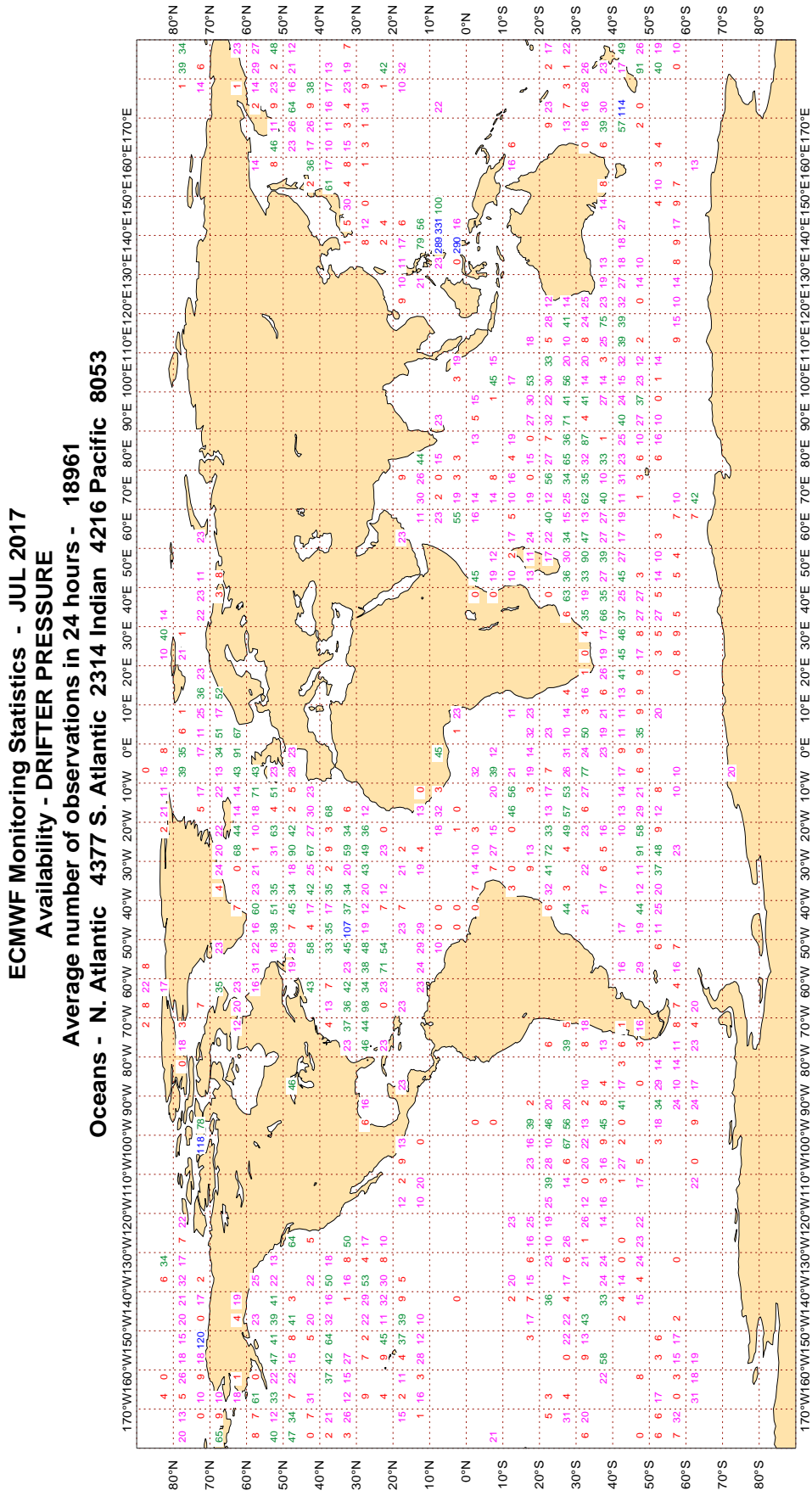
Table 12 provides quality statistics of aircraft wind observations stratified by airline carrier.

3.2.1 Figure 1 - Availability - SYNOP PRESSURE



3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

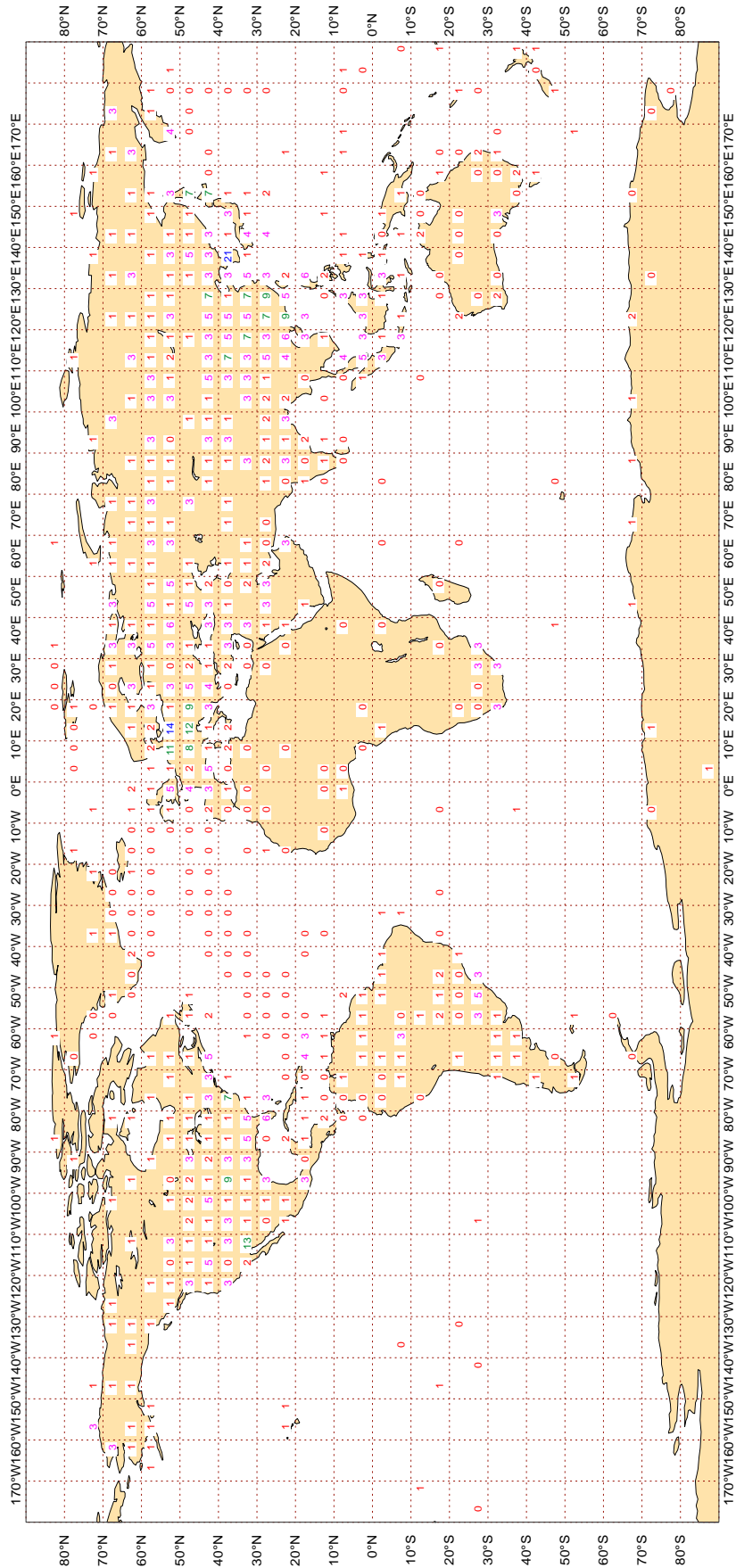
Figure 2



Magics 2.24.2 (64 bit)

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

Figure 3
 ECMWF Monitoring Statistics - JUL 2017
 Availability - TEMP 500 hPa Geopotential
 Average number of observations in 24 hours - 1316
 LAND - WMO Region I: 45 II: 494 III: 80 IV: 276
 Region V: 134 VI: 257 Antarctic: 16
 Oceans - N. Atlantic 14 S. Atlantic 0 Indian 0 Pacific 1

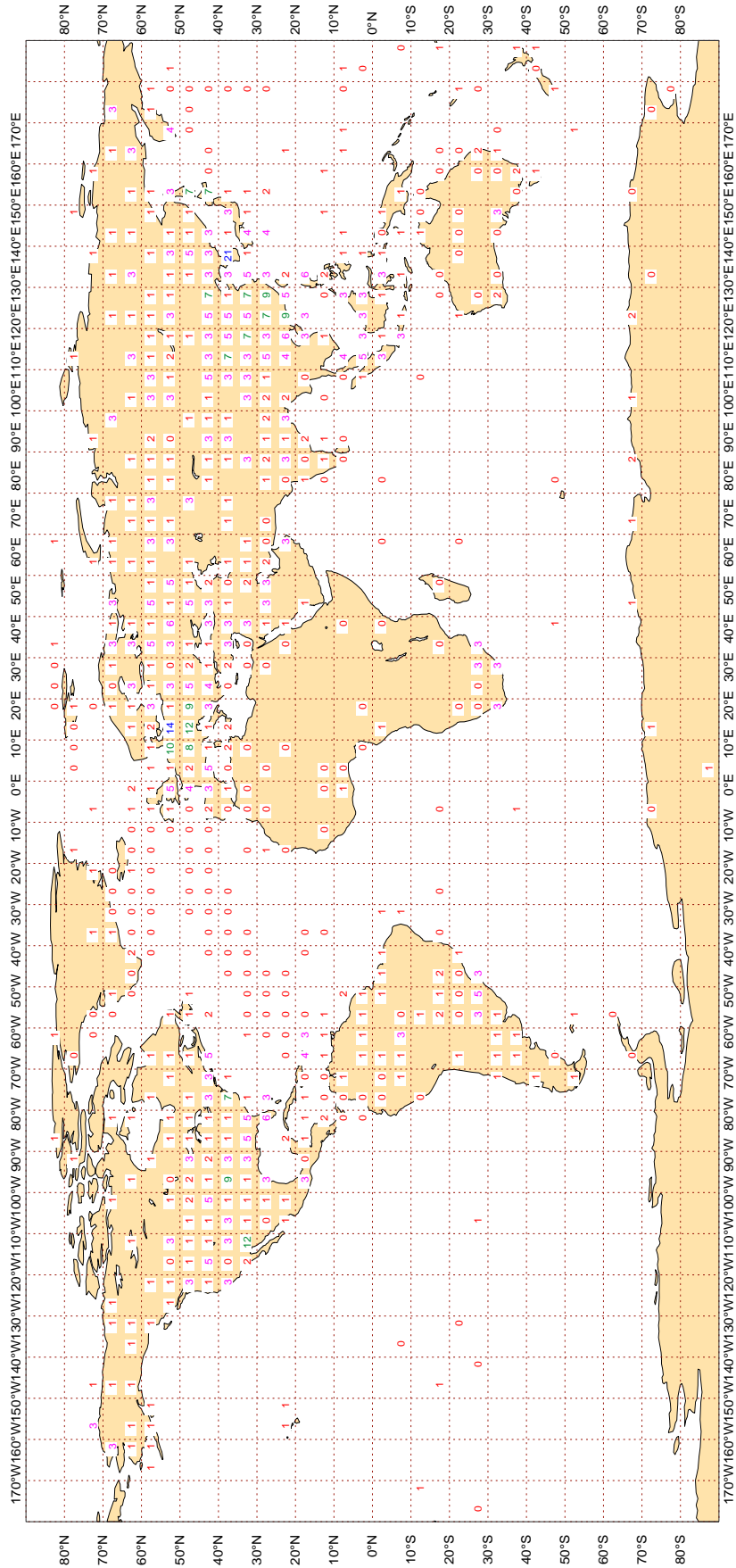


Magics 2.24.2 (64 bit)

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

Figure 4

ECMWF Monitoring Statistics - JUL 2017
 Availability - TEMP/PILOT 300 hPa wind
 Average number of observations in 24 hours - 1297
 LAND - WMO Region I: 44 II: 486 III: 79 IV: 272
 Region V: 132 VI: 253 Antarctic: 16
 Oceans - N. Atlantic 13 S. Atlantic 0 Indian 0 Pacific 1



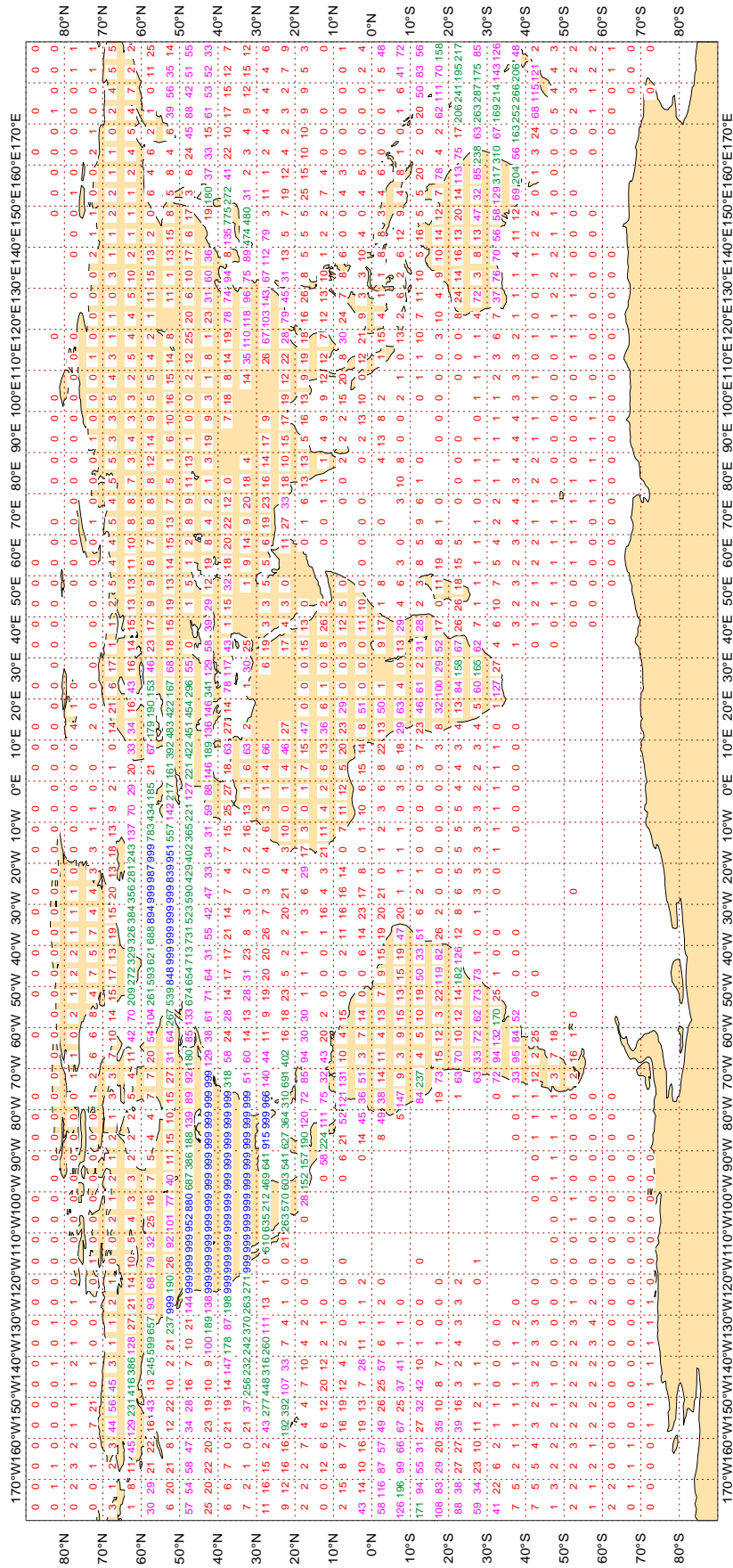
Magics 2.24.2 (64 bit)



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

Figure 5

ECMWF Monitoring Statistics - JUL 2017
Availability - Aircraft winds 300-150 hPa
Average number of observations in 24 hours - 190531



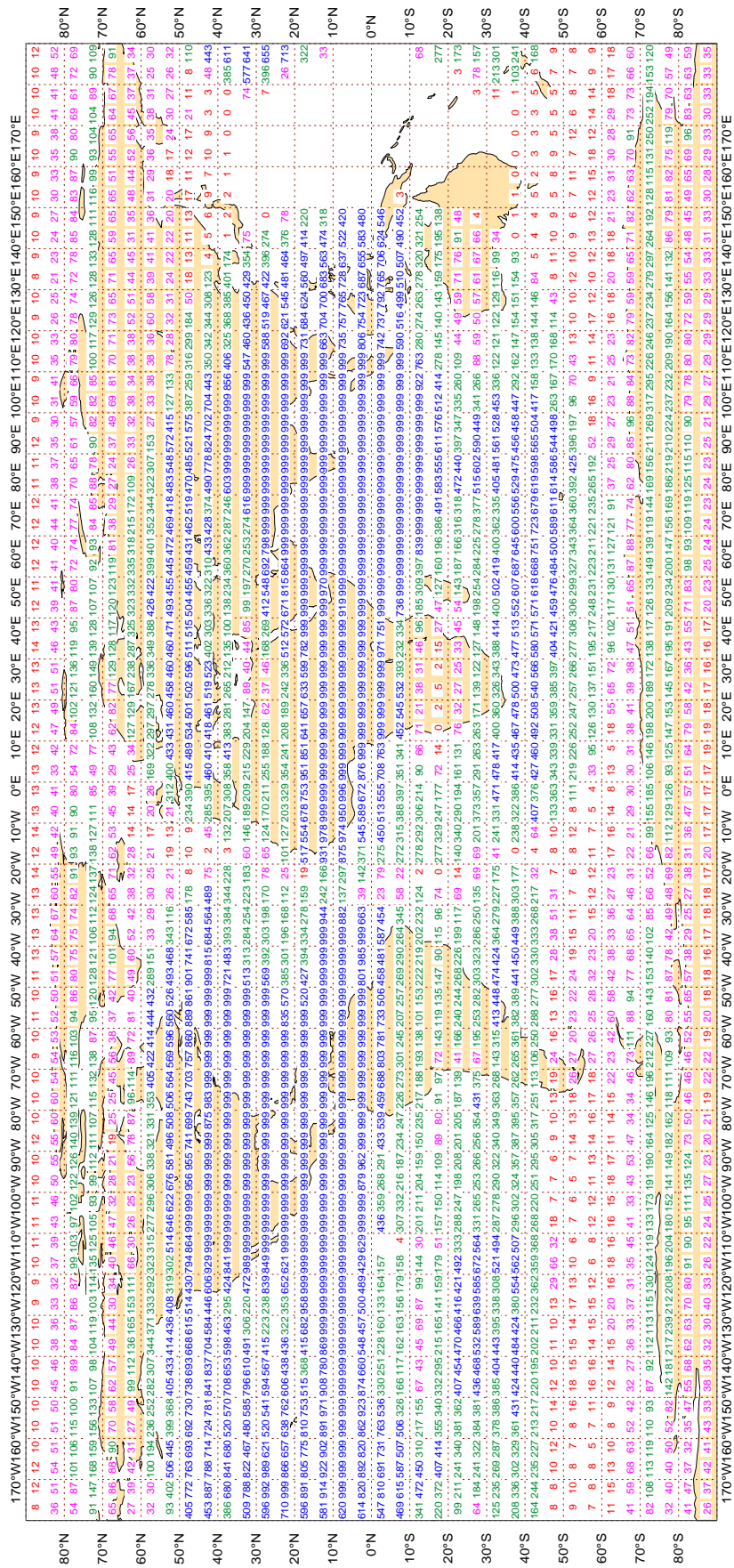
Majics 2.24.2 (64 bit)



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

Figure 6

ECMWF Monitoring Statistics - JUL 2017
 Availability - AMV winds 400-150 hPa
 Average number of observations in 24 hours - 952012



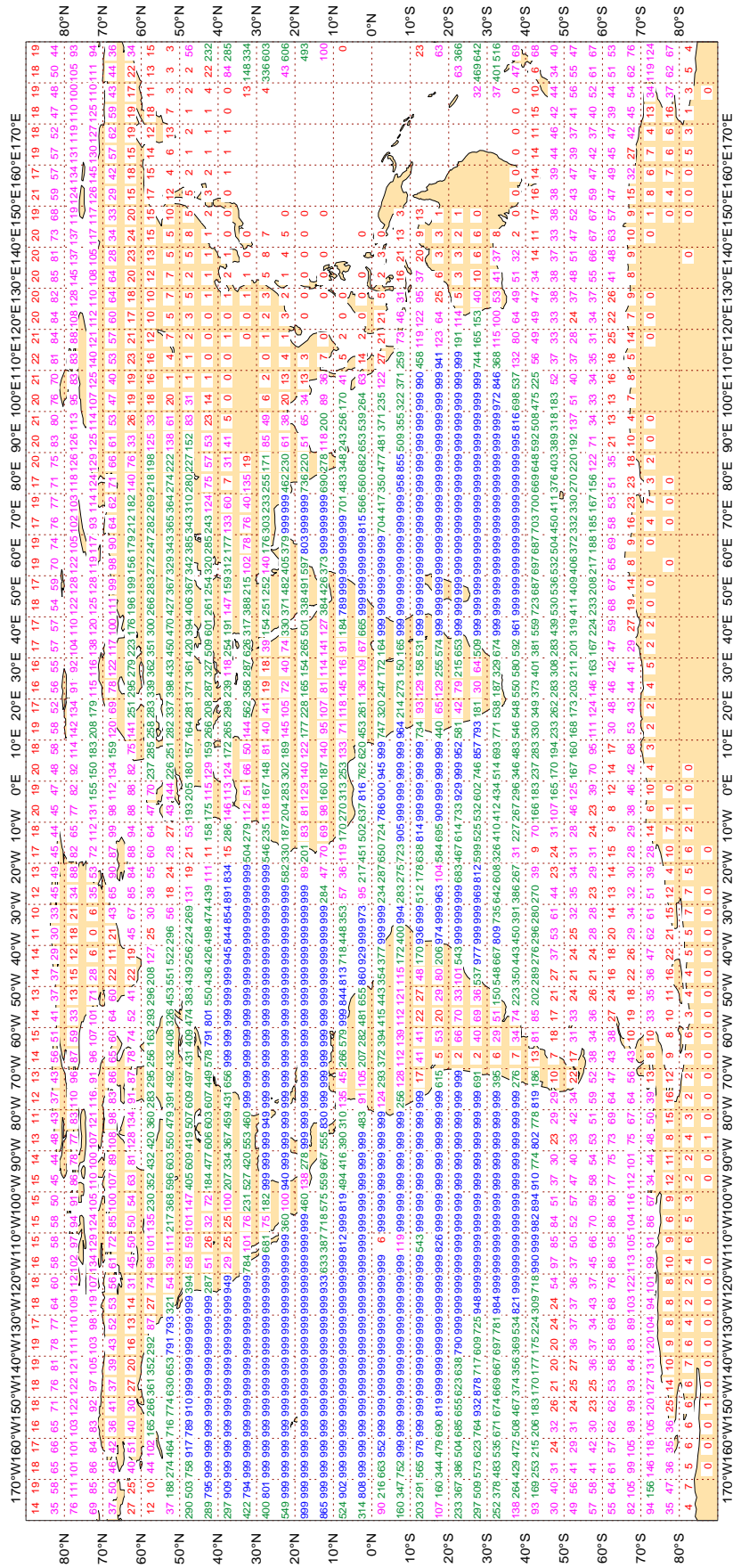
Majics 2.24.2 (64 bit)



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

Figure 7

ECMWF Monitoring Statistics - JUL 2017
Availability - AMV winds 1000-700 hPa
Average number of observations in 24 hours - 1401186



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

Figure 9.1

ECMWF Monitoring Statistics - JUL 2017
Availability - NOAA18 ATOVS : AMSU-A
Average number of observations in 24 hours - 512188

Table with 180 columns (representing 5-degree longitude bins from 170°W to 170°E) and 18 rows (representing 5-degree latitude bins from 80°N to 80°S). The table contains numerical data representing the average number of observations per 24 hours for NOAA18 ATOVS AMSU-A in July 2017.

Magics 2.24.2 (64 bit)



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

Figure 9.3

ECMWF Monitoring Statistics - JUL 2017
Availability - METOP ATOVS : AMSU-A
Average number of observations in 24 hours - 444081

Table with 17 columns representing longitude (170°W to 170°E) and 17 rows representing latitude (80°N to 80°S). The table contains numerical data representing the average number of observations in 24 hours for each geographic grid cell.

Majics 2.24.2 (64 bit)



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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)
 AREA : GLOBAL
 PERIOD : JUL 2017
 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
3FFA5	99	P	SUR	72	13	0.5	13.8	13.8
3FSV5	99	P	SUR	42	1	3.4	5.9	6.8
4XFB	99	P	SUR	18	0	1.2	4.0	4.2
9HJD9	99	P	SUR	53	0	0.9	-4.0	4.1
9V2774	99	P	SUR	33	0	1.9	4.0	4.4
A8HA7	99	P	SUR	32	2	1.1	-4.1	4.2
A8WI3	99	P	SUR	33	0	0.7	-3.0	3.1
AUXE	99	P	SUR	127	46	2.6	9.3	9.7
BPBE	99	P	SUR	27	25	0.0	14.8	14.8
C6BR3	99	P	SUR	95	0	3.5	10.3	10.9
C6BX8	99	P	SUR	39	0	0.7	4.4	4.4
C6FM9	99	P	SUR	31	0	0.7	5.4	5.4
C6TQ6	99	P	SUR	29	2	2.6	6.9	7.4
C6UC3	99	P	SUR	61	0	1.5	3.2	3.5
C6V2055	99	P	SUR	37	1	2.4	4.3	4.9
C6YA7	99	P	SUR	42	0	1.2	7.5	7.5
CTEC	99	P	SUR	34	0	0.9	-6.8	6.9
DFPH2	99	P	SUR	32	0	0.6	-5.7	5.8
LAQO7	99	P	SUR	61	0	7.3	2.6	7.7
ONAC	99	P	SUR	27	0	0.9	3.3	3.4
OZ2049	99	P	SUR	24	0	0.5	-5.0	5.0
S6LT6	99	P	SUR	17	0	1.5	3.7	4.0
UBM09	99	P	SUR	19	0	0.7	3.6	3.7
UCLD	99	P	SUR	70	0	2.4	-3.4	4.2
UGYU	99	P	SUR	40	0	1.2	-4.0	4.2
UHOW	99	P	SUR	64	2	3.4	-7.8	8.5
VNVZ	99	P	SUR	19	0	1.9	4.4	4.8
VREM6	99	P	SUR	81	0	1.7	3.2	3.7
VRFI7	99	P	SUR	93	0	1.9	5.2	5.5
VRIB2	99	P	SUR	19	0	3.1	9.5	10.0
VRID6	99	P	SUR	17	0	2.3	3.0	3.8
VRLA6	99	P	SUR	32	0	2.5	4.5	5.2

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
VRYO4	99	P	SUR	45	0	1.8	-3.0	3.5
WAIU	99	P	SUR	28	0	1.1	-5.6	5.7
WC5932	99	P	SUR	32	2	5.7	-11.5	12.8
WDB3161	99	P	SUR	62	0	2.3	4.2	4.8
WDG8555	99	P	SUR	22	0	0.7	5.3	5.3
WKPM	99	P	SUR	48	0	3.6	3.6	5.2
WSEP	99	P	SUR	17	0	1.2	4.8	4.9
WTDH	99	P	SUR	55	0	0.4	-4.2	4.3

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 : JUL 2017
 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
46027	99	SPEED	SUR	124	0	0	3.7	-4.8	6.1

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 : JUL 2017
 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
41062	99	DIRN	SUR	96	0	0	87.7	-20.5	90.1
42365	99	DIRN	SUR	36	0	0	14.1	-31.1	34.2
44037	99	DIRN	SUR	31	0	0	20.2	33.6	39.2
45166	99	DIRN	SUR	73	0	0	27.1	-47.0	54.2
46118	99	DIRN	SUR	87	0	0	43.1	35.9	56.1
46207	99	DIRN	SUR	92	0	0	12.6	44.1	45.8
62140	99	DIRN	SUR	39	0	0	47.7	-33.5	58.2

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 : JUL 2017
 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
1400525	99	P	SUR	-29	61	63	0	1.1	-7.2	7.3
14525	99	P	SUR	-29	61	55	0	1.1	-7.2	7.3
2301563	99	P	SUR	-10	92	329	86	1.0	0.8	1.3
2600568	99	P	SUR	81	26	665	54	4.2	6.9	8.1
26568	99	P	SUR	81	25	713	56	4.2	6.9	8.1
3401509	99	P	SUR	-32	-123	239	62	5.0	-2.3	5.5
4400670	99	P	SUR	45	-40	180	117	4.3	-5.4	6.9
44670	99	P	SUR	45	-40	303	199	4.1	-5.4	6.8
45509	99	P	SUR	45	-88	1471	1471	0.0	0.0	0.0
4800269	99	P	SUR	74	-104	576	52	6.0	-3.4	6.9
4800513	99	P	SUR	74	169	731	194	6.5	-1.1	6.6
48269	99	P	SUR	74	-104	649	64	6.0	-3.2	6.8
48513	99	P	SUR	74	169	730	194	6.5	-1.1	6.6
5301603	99	P	SUR	12	62	936	730	1.4	13.2	13.2
5401506	99	P	SUR	-60	-83	68	4	2.9	4.5	5.4
5600549	99	P	SUR	-29	90	78	0	1.4	5.6	5.8
5600942	99	P	SUR	-27	82	609	73	5.4	-5.2	7.5
56549	99	P	SUR	-29	90	87	0	1.4	5.6	5.8
56942	99	P	SUR	-27	82	695	82	5.4	-5.0	7.3
6203518	99	P	SUR	66	-30	718	11	5.6	6.1	8.3
6203519	99	P	SUR	61	-41	710	10	5.3	4.7	7.1
6400757	99	P	SUR	61	-29	636	636	0.0	0.0	0.0
64757	99	P	SUR	61	-29	695	695	0.0	0.0	0.0

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 : JUL 2017
 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
23454	99	SPEED	SUR	10	73	120	2	2	8.4	10.6	13.5

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 PERIOD : JUL 2017
 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
23093	99	DIRN	SUR	16	88	198	0	0	13.9	20.7	24.9
23451	99	DIRN	SUR	15	69	188	0	0	8.8	24.5	26.0
23456	99	DIRN	SUR	18	67	207	0	0	12.3	42.0	43.8
23497	99	DIRN	SUR	11	72	247	0	0	11.1	-20.1	23.0
3100231	99	DIRN	SUR	-27	-47	214	0	0	36.2	48.7	60.7
3100374	99	DIRN	SUR	-25	-45	198	0	0	12.6	-51.0	52.6
3100380	99	DIRN	SUR	-20	-40	493	1	0	25.3	-40.1	47.4
3101000	99	DIRN	SUR	-24	-42	550	0	0	37.9	-100.2	107.1
31231	99	DIRN	SUR	-27	-47	212	0	0	36.0	49.4	61.1
31374	99	DIRN	SUR	-25	-45	194	0	0	12.8	-50.8	52.4
31380	99	DIRN	SUR	-20	-40	493	1	0	23.9	-41.9	48.2
41062	99	DIRN	SUR	36	-75	695	3	0	80.6	-12.4	81.5
42361	99	DIRN	SUR	28	-93	383	0	0	21.5	26.2	33.9
42365	99	DIRN	SUR	28	-89	218	0	0	18.3	-29.9	35.0
44013	99	DIRN	SUR	42	-71	495	0	0	22.0	23.0	31.8
44037	99	DIRN	SUR	44	-68	183	0	0	16.0	31.3	35.2
44058	99	DIRN	SUR	38	-76	644	0	0	26.8	-25.6	37.1
45025	99	DIRN	SUR	47	-88	478	0	0	63.7	3.4	63.8
45026	99	DIRN	SUR	42	-87	559	0	0	33.9	-22.1	40.4
45154	99	DIRN	SUR	46	-83	544	0	0	20.4	24.4	31.8
45166	99	DIRN	SUR	45	-73	536	0	0	22.0	-42.8	48.1
45175	99	DIRN	SUR	46	-85	624	0	0	30.4	-20.6	36.7
46081	99	DIRN	SUR	61	-148	67	0	0	49.6	43.2	65.8
46087	99	DIRN	SUR	49	-125	289	0	0	22.0	28.6	36.1
46092	99	DIRN	SUR	37	-122	461	0	0	17.0	29.1	33.6
46118	99	DIRN	SUR	49	-123	732	0	0	43.8	33.1	54.9
46207	99	DIRN	SUR	51	-130	566	0	0	13.0	43.8	45.7
51003	99	DIRN	SUR	19	-161	678	0	0	22.5	23.0	32.1
5200003	99	DIRN	SUR	5	165	130	0	0	75.5	18.1	77.7
52003	99	DIRN	SUR	5	165	121	0	0	75.3	22.3	78.5
6101003	99	DIRN	SUR	40	25	90	0	0	40.1	23.2	46.3

LIST OF SUSPECT STATIONS : DRIFTER
 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
62140	99	DIRN	SUR	57	1	225	0	0	48.7	-38.5	62.1

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 : JUL 2017
 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	1000	66	-38	18	0	3.0	44.0	44.1
04360	00	Z	1000	66	-38	18	0	2.9	42.2	42.3
31873	12	Z	50	46	134	31	0	39.6	-137.5	143.1
33393	00	Z	200	50	24	20	0	52.7	66.4	84.8
33658	00	Z	200	48	26	28	0	42.8	69.7	81.8
38064	12	Z	70	45	66	25	1	106.5	113.2	155.4
38064	00	Z	70	45	66	23	1	72.6	114.4	135.5
38341	12	Z	70	43	71	30	0	89.3	78.2	118.7
40437	00	Z	925	25	47	27	0	3.7	33.7	33.9
42101	00	Z	30	30	76	17	1	96.3	195.8	218.2
42348	00	Z	50	27	76	10	1	15.2	165.5	166.2
42492	00	Z	50	26	85	16	0	87.2	191.7	210.6
42874	00	Z	30	21	82	15	1	96.1	239.0	257.6
42886	00	Z	30	22	84	30	0	26.7	209.1	210.8
43014	00	Z	30	20	75	22	0	17.3	213.7	214.4
43041	00	Z	30	19	82	13	0	32.5	218.6	221.0
43128	00	Z	30	17	78	21	0	66.0	258.5	266.8
43295	00	Z	30	13	78	13	0	30.4	191.1	193.5
47155	00	Z	1000	35	129	31	2	28.5	49.5	57.1
47155	12	Z	1000	35	129	28	8	20.3	-60.5	63.8
76526	00	Z	1000	23	-103	29	16	8.4	-87.6	88.0
78988	12	Z	1000	12	-69	31	0	28.9	19.7	35.0
78988	00	Z	1000	12	-69	29	0	29.6	11.4	31.7
89512	00	Z	70	-71	12	31	0	69.0	-107.0	127.3
89592	00	Z	50	-67	93	27	5	101.5	-253.2	272.8
89592	12	Z	50	-67	93	13	1	86.8	-218.5	235.1
96147	00	Z	925	4	108	29	1	7.0	48.2	48.7
96147	12	Z	850	4	108	19	2	17.2	49.7	52.6
97372	12	Z	500	-10	124	29	0	62.5	43.0	75.9

LIST OF SUSPECT STATIONS (CONTINUED)

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
98223	00	Z	30	18	121	22	1	58.2	269.9	276.1
98233	00	Z	1000	18	122	29	1	28.8	46.4	54.6
98753	00	Z	1000	7	126	13	0	15.2	25.4	29.6

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 : JUL 2017
 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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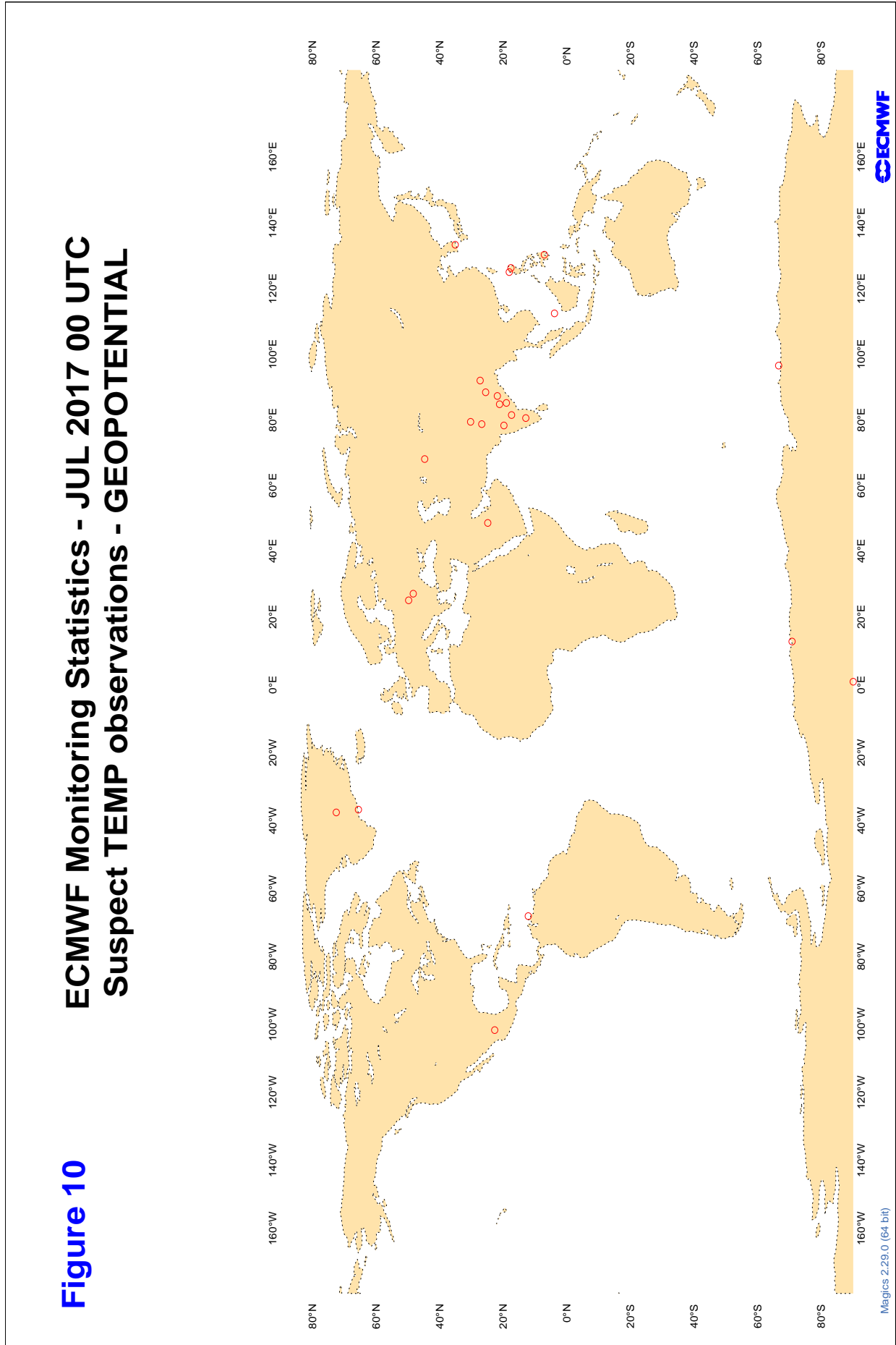
3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

LIST OF SUSPECT STATIONS : RADIOSONDES
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 AREA : GLOBAL
 PERIOD : JUL 2017
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

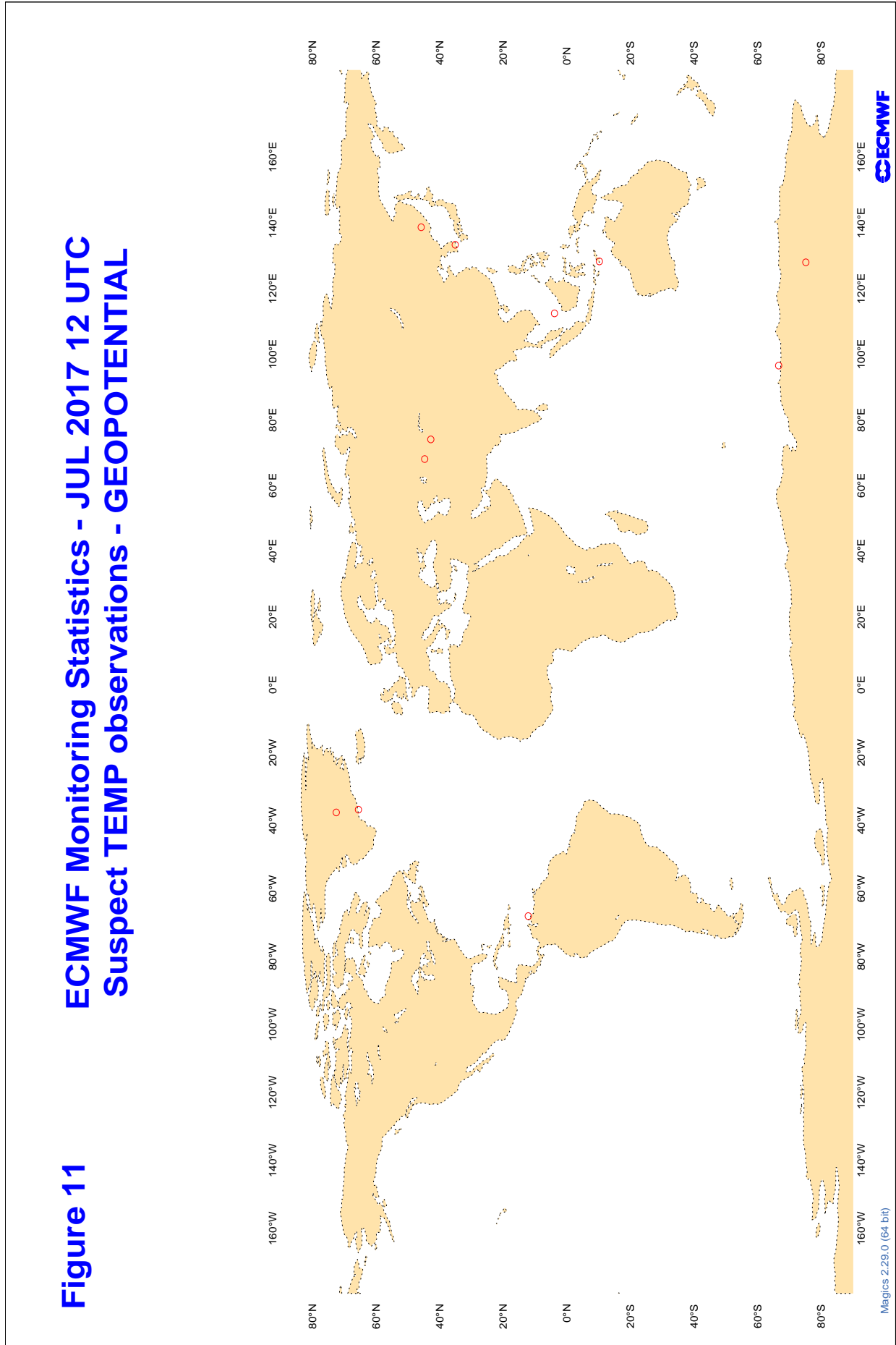
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS \geq 5 M/S
 NO. OF OBSERVATIONS \geq 5, AND,
 ABSOLUTE BIAS \geq 10 DEGREES, WITH
 STANDARD DEVIATION $<$ 30 DEGREES, AND,
 VERTICAL SPREAD $<$ 10 DEGREES
 (AVERAGE BETWEEN 500 AND 150 HPA)

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
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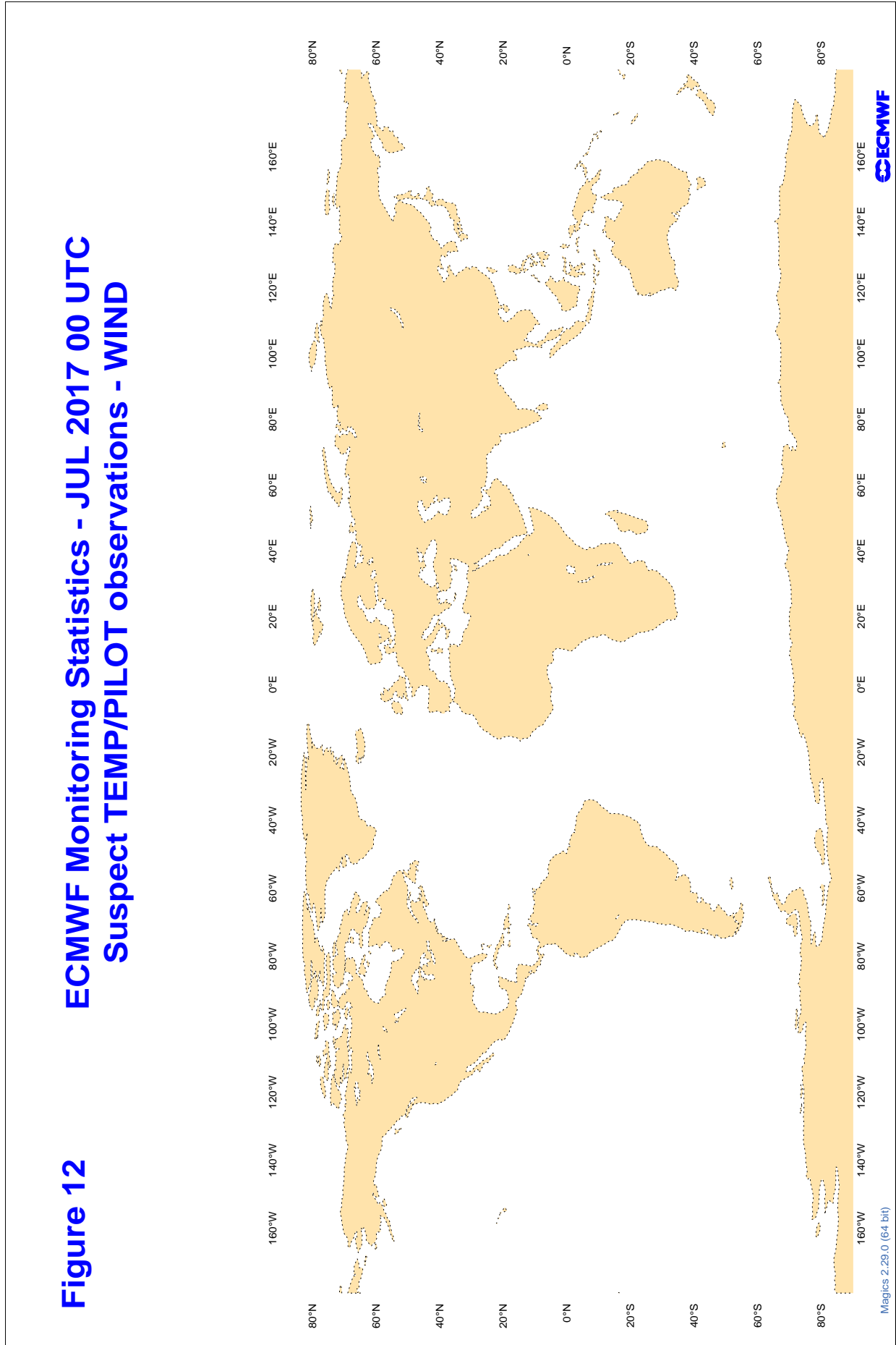
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



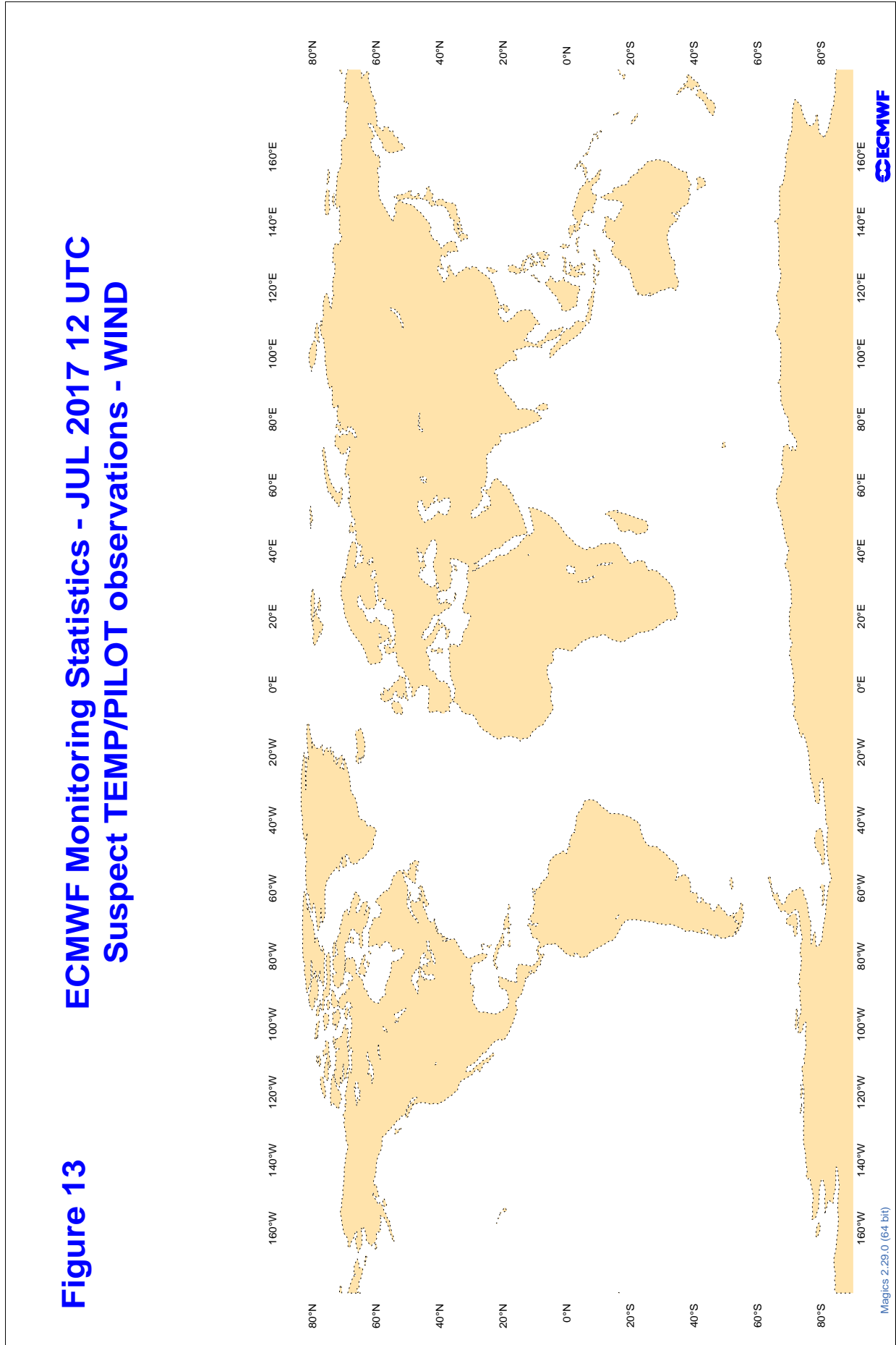
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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 : JUL 2017
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASDE01	12	Z	100	5	4.3	3.1
ASDE02	12	Z	100	23	25.8	15.5
ASDE02	00	Z	100	32	8.4	6.3
ASDE09	12	Z	100	4	13.8	11.3
ASDE9	12	Z	100	1	5.2	5.2
ASDK01	00	Z	100	4	4.3	4.0
ASDK01	12	Z	100	5	9.2	6.9
ASDK02	00	Z	100	14	6.3	1.3
ASDK02	12	Z	100	15	8.1	0.6
ASDK03	00	Z	100	4	18.6	18.5
ASDK03	12	Z	100	4	21.5	21.2
ASDK2	00	Z	100	4	6.8	4.7
ASDK2	12	Z	100	3	5.6	0.3
ASDK3	12	Z	100	4	15.0	13.5
ASDK3	00	Z	100	3	17.3	16.9
ASES01	12	Z	100	27	30.2	12.1
ASEU01	00	Z	100	7	42.8	18.3
ASEU01	12	Z	100	5	74.9	64.1
ASEU03	00	Z	100	3	3.9	-2.2
ASEU03	12	Z	100	4	24.0	23.6
ASEU04	00	Z	100	1	7.5	-7.5
ASEU05	00	Z	100	7	127.4	74.7
ASEU05	12	Z	100	7	35.2	32.2
ASEU06	00	Z	100	5	111.1	45.1
ASEU06	12	Z	100	10	28.4	27.1
ASFR1	12	Z	100	18	15.1	14.5
ASFR1	00	Z	100	11	21.8	21.2
ASFR3	00	Z	100	15	15.4	7.5
ASFR3	12	Z	100	20	21.4	18.1
ASFR4	12	Z	100	18	19.7	18.1
ASFR4	00	Z	100	21	22.1	19.7
DBLK	12	Z	100	34	9.7	3.4
DBLK	00	Z	100	28	4.9	0.2
JGQH	12	Z	100	15	8.3	2.2
JGQH	00	Z	100	18	7.7	2.4

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

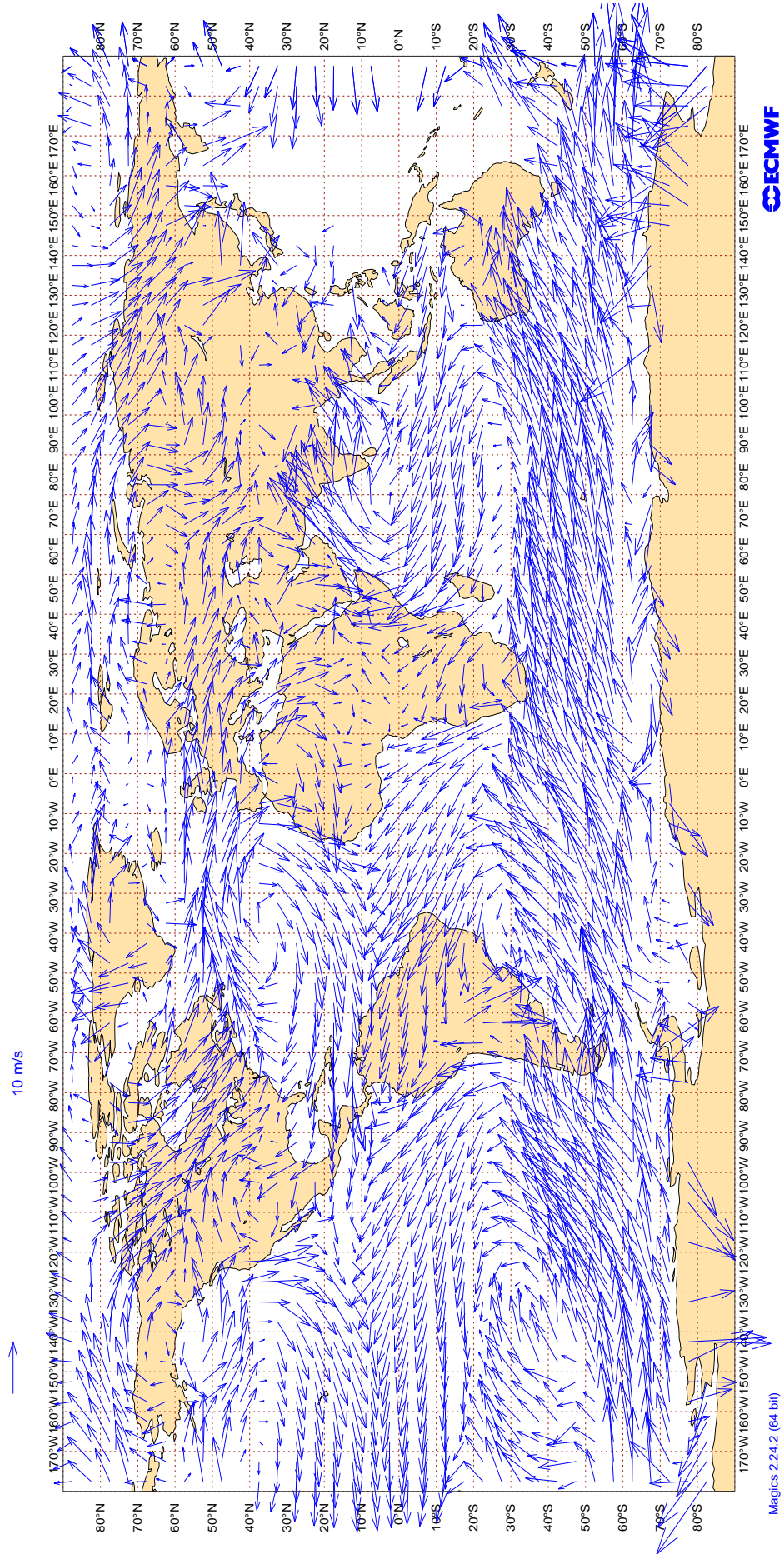
RADIOSONDE MONITORING STATISTICS (SHIPS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 100 HPA
 AREA : GLOBAL
 PERIOD : JUL 2017
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASDE01	12	V	100	4	3.2	0.7	1.5
ASDE02	12	V	100	20	4.4	-1.9	0.7
ASDE02	00	V	100	19	4.3	1.4	-0.2
ASDE09	12	V	100	4	3.3	0.7	0.1
ASDE9	12	V	100	1	3.7	1.9	-3.2
ASDK01	00	V	100	3	3.6	-0.6	2.0
ASDK01	12	V	100	5	4.2	-0.2	-1.3
ASDK02	00	V	100	11	2.7	-0.4	0.2
ASDK02	12	V	100	12	2.8	0.3	0.0
ASDK03	00	V	100	4	2.6	-0.3	-1.4
ASDK03	12	V	100	4	3.1	0.4	0.6
ASDK2	00	V	100	4	2.5	-0.2	-0.2
ASDK2	12	V	100	3	1.7	-0.3	0.8
ASDK3	12	V	100	4	2.6	0.2	0.2
ASDK3	00	V	100	3	2.9	0.5	-1.6
ASES01	12	V	100	24	3.3	-0.6	0.6
ASEU01	00	V	100	5	2.7	-0.6	0.6
ASEU01	12	V	100	4	3.5	-0.4	-0.4
ASEU03	00	V	100	3	3.2	0.1	2.1
ASEU03	12	V	100	3	4.8	-2.1	-1.1
ASEU04	00	V	100	1	0.7	0.4	-0.6
ASEU05	00	V	100	5	4.4	0.6	0.7
ASEU05	12	V	100	4	8.5	3.7	0.4
ASEU06	00	V	100	5	4.0	-0.8	2.7
ASEU06	12	V	100	6	4.1	-2.1	0.3
ASFR1	12	V	100	12	2.1	0.3	0.1
ASFR1	00	V	100	7	3.7	-0.2	2.1
ASFR3	00	V	100	11	2.7	0.9	0.3
ASFR3	12	V	100	16	3.5	0.0	0.1
ASFR4	12	V	100	13	2.7	-0.2	-0.8
ASFR4	00	V	100	13	3.0	0.4	0.0
DBLK	12	V	100	21	2.1	0.1	-0.7
DBLK	00	V	100	15	1.6	-0.3	-0.3
JGQH	12	V	100	14	3.4	0.7	0.1
JGQH	00	V	100	18	3.1	0.7	0.7

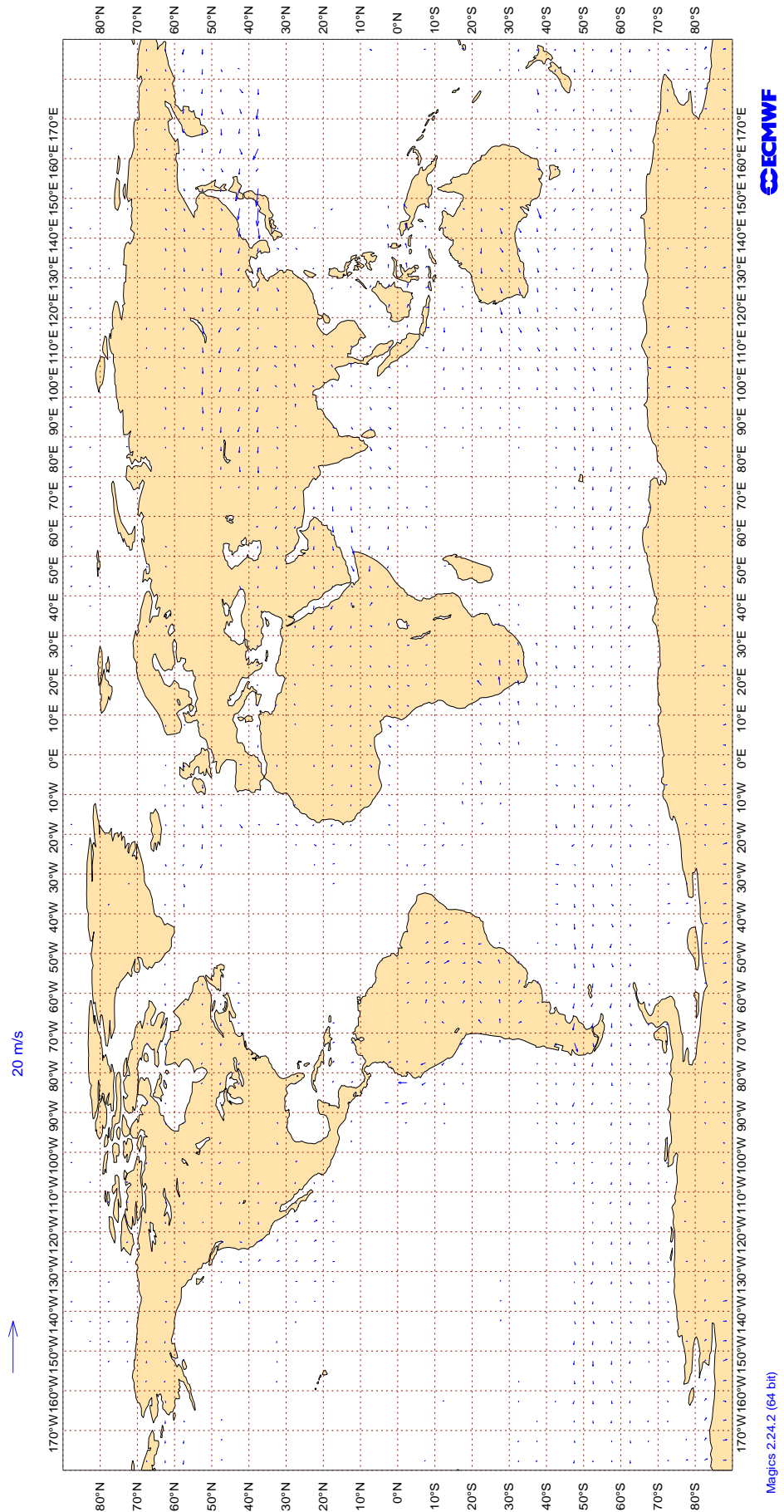
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

Figure 14
ECMWF Monitoring Statistics: Jul 2017
AMV Winds: 700-1000hPa
Mean Observed Wind



3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

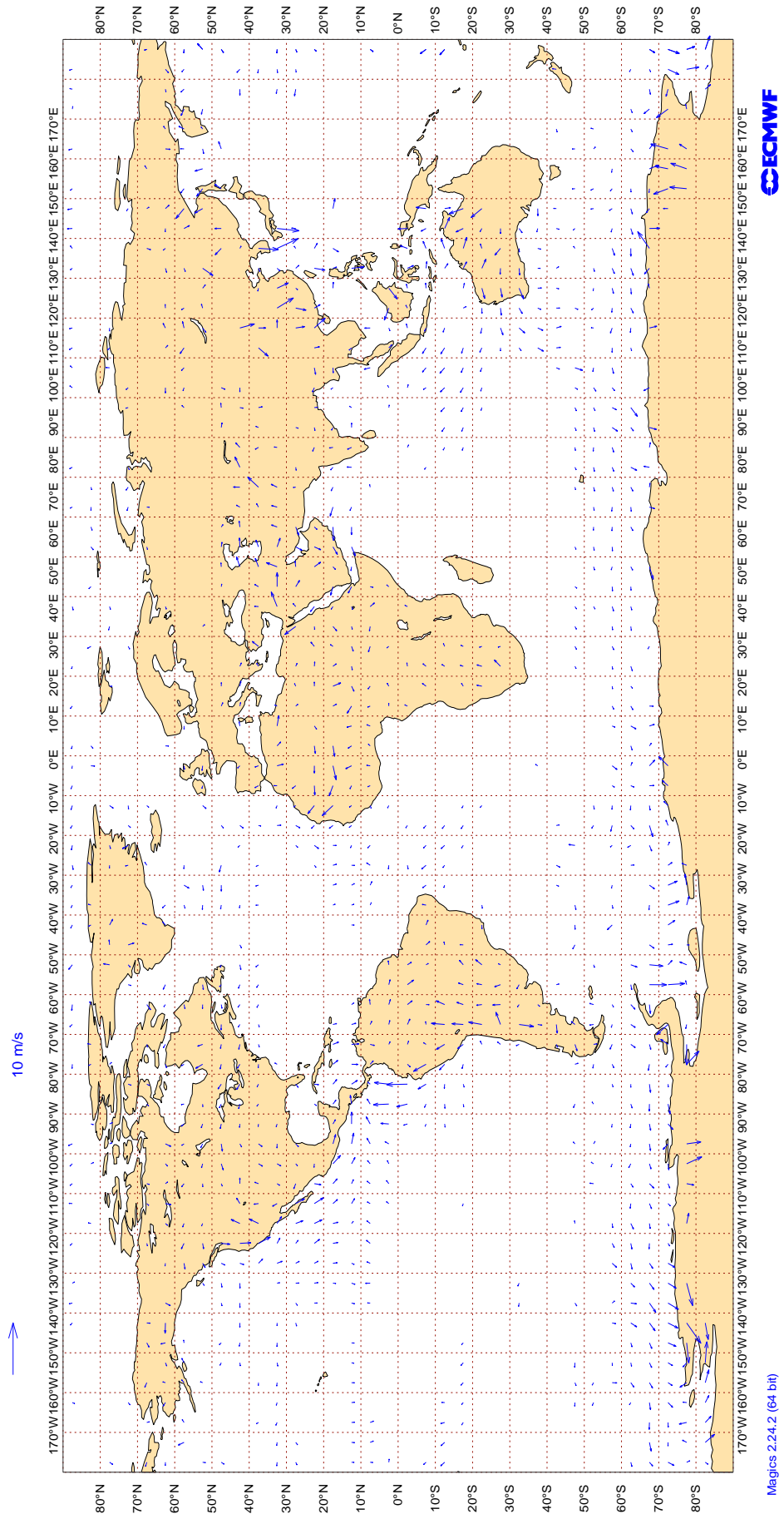
Figure 15
ECMWF Monitoring Statistics: Jul 2017
AMV Winds: 150- 400hPa
Wind bias: Observation - FG



3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

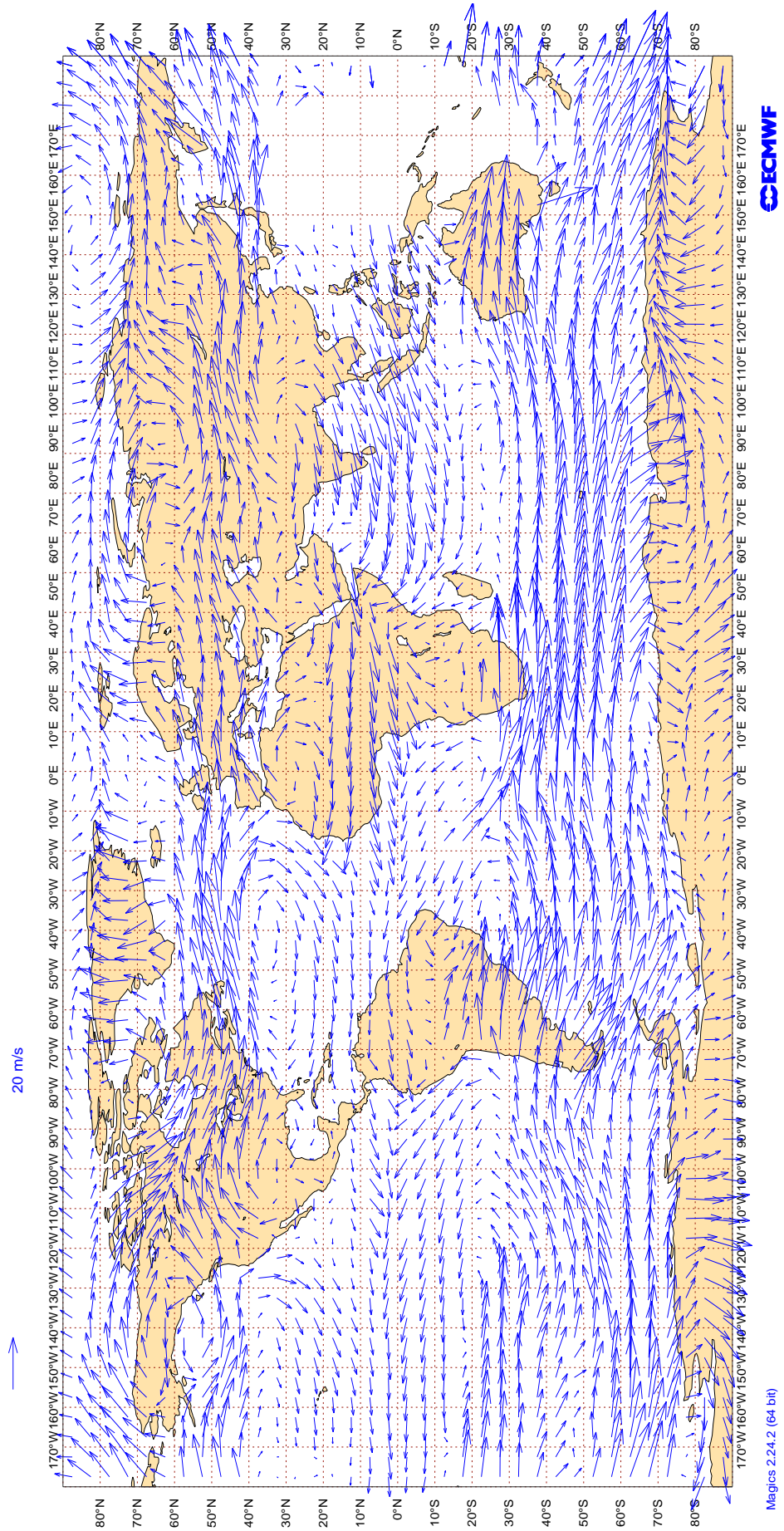
Figure 16

ECMWF Monitoring Statistics: Jul 2017
AMV Winds: 700-1000hPa
Wind bias: Observation - FG



3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

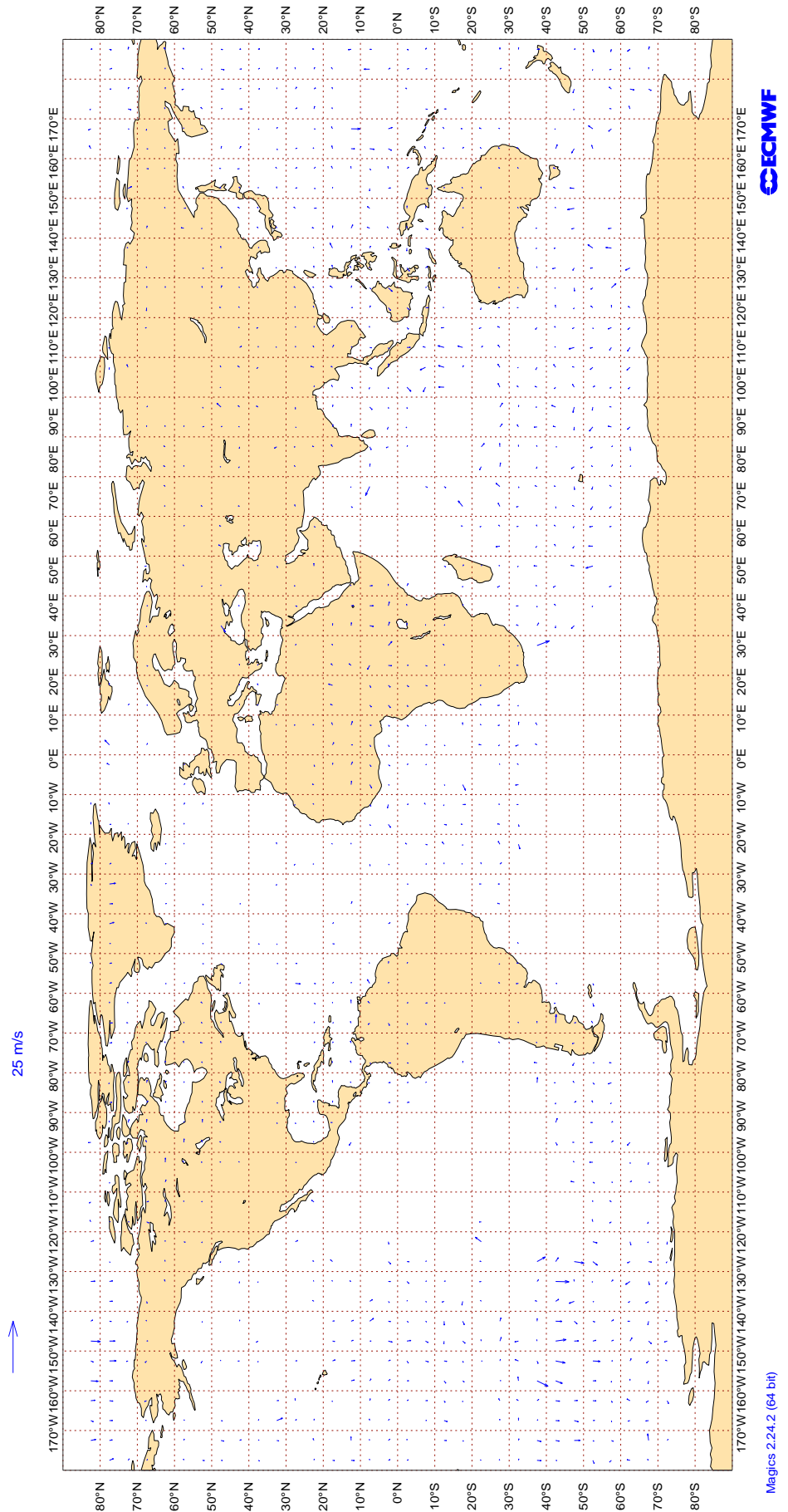
Figure 17
ECMWF Monitoring Statistics: Jul 2017
AMV Winds: 150- 400hPa
Mean Observed Wind



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

Figure 18

ECMWF Monitoring Statistics: Jul 2017
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 : JUL 2017
 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	78	0	0	5.0	-1.3
AAL	99	V	300-150	73375	1	0	4.5	0.3
AAR	99	V	300-150	296	0	0	4.3	-1.5
AAY	99	V	300-150	83	0	0	4.3	0.2
ABD	99	V	300-150	342	0	0	4.5	-0.3
ABW	99	V	300-150	993	0	0	3.8	-0.5
ABX	99	V	300-150	192	0	1	3.4	0.1
ACA	99	V	300-150	36694	1	0	5.2	0.3
ACI	99	V	300-150	2688	0	0	3.5	0.3
AEA	99	V	300-150	1568	1	0	4.5	0.3
AFL	99	V	300-150	2705	0	0	3.6	0.5
AFR	99	V	300-150	35308	0	0	3.9	0.3
AHY	99	V	300-150	286	4	0	7.3	0.2
AIC	99	V	300-150	1679	2	0	4.8	0.0
AMX	99	V	300-150	3416	6	0	7.9	0.2
ANZ	99	V	300-150	25096	1	0	4.4	0.5
ASA	99	V	300-150	1714	0	0	4.3	0.4
ASL	99	V	300-150	641	0	0	3.5	0.4
ASY	99	V	300-150	733	0	0	4.2	-0.1
AUA	99	V	300-150	5935	0	0	4.2	-0.2
AUH	99	V	300-150	37	0	0	3.0	0.8
AVA	99	V	300-150	381	4	0	8.2	0.2
AXM	99	V	300-150	200	0	0	6.3	0.6
AXY	99	V	300-150	105	0	0	4.6	0.9
AZA	99	V	300-150	10878	0	0	3.7	0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AZG	99	V	300-150	226	0	0	3.3	-0.3
BAW	99	V	300-150	55725	1	0	4.5	0.2
BBA	99	V	300-150	39	0	0	5.0	1.5
BBR	99	V	300-150	53	0	0	5.7	0.2
BEL	99	V	300-150	3031	0	0	3.4	0.4
BER	99	V	300-150	10790	0	0	3.5	0.4
BLU	99	V	300-150	20	0	0	3.7	1.8
BMW	99	V	300-150	76	0	0	3.4	-0.7
BOX	99	V	300-150	792	0	0	3.5	0.1
BOX	99	V	300-150	75	0	0	3.1	0.7
BRK	99	V	300-150	33	0	0	7.2	2.0
BVR	99	V	300-150	92	20	0	11.3	-0.3
CAL	99	V	300-150	226	0	0	3.5	0.7
CAZ	99	V	300-150	64	0	0	3.7	-0.6
CCA	99	V	300-150	1103	8	0	5.1	0.5
CEF	99	V	300-150	28	0	0	3.0	-0.1
CES	99	V	300-150	1588	0	0	3.4	0.4
CFC	99	V	300-150	347	0	0	4.2	0.5
CFG	99	V	300-150	5446	0	0	4.1	-0.3
CHH	99	V	300-150	150	0	3	6.1	-0.1
CHN	99	V	300-150	41	0	0	3.7	0.2
CJT	99	V	300-150	209	0	0	3.4	-0.0
CKS	99	V	300-150	1823	0	0	3.6	0.3
CLE	99	V	300-150	61	0	0	5.7	1.0
CLF	99	V	300-150	21	0	0	3.7	1.2
CLX	99	V	300-150	3947	0	0	4.2	-0.4
CMB	99	V	300-150	1143	0	0	3.8	0.2
CNV	99	V	300-150	300	0	0	3.7	0.6
CPA	99	V	300-150	1063	0	0	4.0	0.9
CRK	99	V	300-150	1071	0	0	3.5	0.5
CRL	99	V	300-150	1950	0	0	3.7	0.4
CSC	99	V	300-150	170	0	0	3.4	0.3
CSN	99	V	300-150	897	1	0	5.7	0.4
CTM	99	V	300-150	71	0	0	3.4	0.4
DAH	99	V	300-150	1136	0	0	3.7	0.5
DAL	99	V	300-150	92188	0	0	3.8	0.2
DCS	99	V	300-150	48	0	0	3.8	0.1
DGX	99	V	300-150	36	0	0	2.9	1.3
DHK	99	V	300-150	1826	0	0	4.1	-0.0
DJT	99	V	300-150	1792	0	0	4.5	0.5
DLH	99	V	300-150	37228	0	0	3.5	0.2
DUB	99	V	300-150	109	0	0	3.3	0.1
EAV	99	V	300-150	48	27	0	25.9	0.8

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
EDC	99	V	300-150	38	0	0	2.8	-0.3
EDG	99	V	300-150	51	0	0	3.3	1.4
EDW	99	V	300-150	2228	0	0	3.6	0.4
EIN	99	V	300-150	16042	0	0	3.6	0.3
EJM	99	V	300-150	926	5	0	7.8	0.5
ELY	99	V	300-150	3122	0	0	4.1	-0.1
ETD	99	V	300-150	3876	2	0	4.7	-0.1
ETH	99	V	300-150	2050	3	0	6.8	0.2
EWG	99	V	300-150	2579	0	0	3.5	0.2
EXP	99	V	300-150	53	0	0	3.7	2.3
EXS	99	V	300-150	69	0	0	3.4	0.6
EXU	99	V	300-150	30	0	0	2.8	1.2
FAM	99	V	300-150	46	0	0	3.6	0.0
FDX	99	V	300-150	6025	0	0	3.7	0.5
FIN	99	V	300-150	1040	0	0	3.3	0.4
FJI	99	V	300-150	6784	0	1	4.3	0.5
FLC	99	V	300-150	65	0	0	4.7	1.1
FWI	99	V	300-150	1904	0	0	3.1	0.3
FWK	99	V	300-150	32	0	0	2.6	0.3
FYL	99	V	300-150	40	0	0	5.3	-2.0
GAF	99	V	300-150	22	0	0	2.9	0.8
GAJ	99	V	300-150	60	0	0	3.3	0.8
GCR	99	V	300-150	127	0	0	3.6	0.2
GEC	99	V	300-150	2531	0	0	3.8	0.4
GES	99	V	300-150	64	27	0	12.7	0.5
GLO	99	V	300-150	56	0	2	9.3	0.6
GMA	99	V	300-150	21	0	0	2.7	-0.4
GRI	99	V	300-150	25	0	0	3.0	-1.4
GTH	99	V	300-150	149	0	1	4.0	-0.2
GTI	99	V	300-150	2803	0	0	4.0	0.1
HAL	99	V	300-150	4319	0	0	4.0	0.7
HFY	99	V	300-150	20	0	0	3.3	1.4
HRT	99	V	300-150	75	23	0	13.1	1.3
HZM	99	V	300-150	135	0	0	4.1	0.3
HZS	99	V	300-150	41	0	0	2.6	0.2
IAM	99	V	300-150	50	0	0	4.0	1.8
IBE	99	V	300-150	3753	0	0	3.8	0.5
IBK	99	V	300-150	90	0	1	5.7	0.5
ICE	99	V	300-150	54	2	30	10.2	-4.3
ICL	99	V	300-150	669	0	0	4.8	-0.2
ICV	99	V	300-150	444	0	0	3.9	-0.4
IFA	99	V	300-150	21	86	0	26.3	1.7
IJM	99	V	300-150	54	26	0	17.2	-2.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
 (CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
ISS	99	V	300-150	1091	0	0	3.8	-0.5
JAF	99	V	300-150	1158	1	0	5.0	-0.4
JAI	99	V	300-150	1182	0	0	3.5	0.2
JAS	99	V	300-150	168	21	1	12.8	-0.3
JET	99	V	300-150	99	0	0	3.2	0.1
JJA	99	V	300-150	44	0	0	5.8	1.3
JME	99	V	300-150	108	0	0	3.8	1.3
JST	99	V	300-150	3385	2	0	6.8	0.5
JTL	99	V	300-150	29	0	0	4.3	2.7
KAC	99	V	300-150	1112	0	0	3.7	0.5
KAI	99	V	300-150	124	0	0	3.7	-0.1
KAL	99	V	300-150	1229	0	0	3.8	0.8
KCE	99	V	300-150	39	0	0	2.6	-0.0
KFS	99	V	300-150	31	26	0	18.9	-0.4
KIW	99	V	300-150	82	0	0	4.7	0.4
KLM	99	V	300-150	19247	1	0	4.5	0.0
LAN	99	V	300-150	1893	5	0	7.6	0.4
LCO	99	V	300-150	161	0	0	4.4	-0.1
LDM	99	V	300-150	44	0	0	3.9	1.0
LEA	99	V	300-150	56	0	0	3.7	0.7
LOT	99	V	300-150	2490	6	0	11.5	-0.3
LUC	99	V	300-150	23	0	0	3.1	1.5
LXJ	99	V	300-150	239	4	0	6.9	-0.3
MAL	99	V	300-150	42	0	0	4.2	0.7
MAS	99	V	300-150	446	0	0	3.5	0.5
MJE	99	V	300-150	22	0	0	4.5	1.7
MJF	99	V	300-150	28	4	0	9.7	0.6
MLN	99	V	300-150	41	0	0	3.0	0.2
MMD	99	V	300-150	247	0	0	3.4	-0.1
MPH	99	V	300-150	608	0	0	3.6	-0.4
MSR	99	V	300-150	1374	0	0	3.6	0.4
NAS	99	V	300-150	468	0	0	4.5	0.7
NAX	99	V	300-150	8694	6	0	8.5	-0.1
NCA	99	V	300-150	250	0	0	4.0	-1.3
NJE	99	V	300-150	267	27	0	12.5	-0.4
NOS	99	V	300-150	302	0	0	5.1	-0.3
NWS	99	V	300-150	240	0	0	3.8	0.3
OAE	99	V	300-150	175	0	1	4.5	0.8
OPM	99	V	300-150	20	20	0	28.1	-0.7
PAC	99	V	300-150	230	0	0	3.6	0.1
PAL	99	V	300-150	102	2	0	7.1	-0.3
PAT	99	V	300-150	26	0	0	4.2	-0.7
PDY	99	V	300-150	37	0	0	3.0	-0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
PIA	99	V	300-150	459	0	0	3.8	0.3
PJZ	99	V	300-150	37	0	0	1.7	-0.0
PLF	99	V	300-150	60	0	0	2.9	0.1
PLM	99	V	300-150	168	0	0	4.1	-1.7
PVJ	99	V	300-150	46	0	0	4.0	1.3
QAF	99	V	300-150	40	0	0	2.9	0.5
QFA	99	V	300-150	17108	0	0	3.9	0.2
QQE	99	V	300-150	79	16	0	18.1	-0.2
QTR	99	V	300-150	9780	0	0	3.9	0.2
RAM	99	V	300-150	388	3	0	4.9	0.0
RCH	99	V	300-150	6026	0	0	4.3	0.4
RJA	99	V	300-150	1896	7	0	8.7	-0.3
RMA	99	V	300-150	21	0	0	4.1	1.2
ROJ	99	V	300-150	70	0	0	2.9	0.1
ROU	99	V	300-150	15835	0	0	4.3	0.0
ROY	99	V	300-150	22	0	0	3.6	-1.1
RRR	99	V	300-150	234	0	0	3.3	0.5
RZO	99	V	300-150	202	0	1	4.1	0.3
SAM	99	V	300-150	239	0	0	4.0	0.3
SAS	99	V	300-150	5403	0	0	3.3	0.3
SIA	99	V	300-150	3022	0	0	3.5	0.2
SIS	99	V	300-150	20	5	5	5.9	0.5
SJJ	99	V	300-150	20	0	0	7.1	0.9
SLM	99	V	300-150	170	0	0	2.9	0.2
SOO	99	V	300-150	498	0	0	4.1	0.3
SPA	99	V	300-150	71	0	0	3.4	0.3
SPI	99	V	300-150	47	0	0	4.2	1.1
SQC	99	V	300-150	535	0	0	4.1	-0.7
SUI	99	V	300-150	43	0	0	5.1	-0.2
SVA	99	V	300-150	3299	2	0	4.9	0.4
SVW	99	V	300-150	72	0	0	3.7	0.5
SWR	99	V	300-150	12086	0	0	3.6	0.4
TAM	99	V	300-150	343	0	0	2.8	0.2
TAP	99	V	300-150	1363	0	0	4.0	0.8
TAR	99	V	300-150	504	0	0	3.8	0.5
TAY	99	V	300-150	761	0	0	4.7	-0.4
TCV	99	V	300-150	80	0	0	5.1	0.7
TCX	99	V	300-150	8224	0	0	3.4	0.3
TFL	99	V	300-150	1830	5	0	6.3	-0.2
TGM	99	V	300-150	49	0	0	12.8	0.2
THA	99	V	300-150	201	0	0	3.4	0.6
THT	99	V	300-150	5066	0	0	3.7	0.4
THY	99	V	300-150	8449	0	0	3.9	0.3

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
TMN	99	V	300-150	69	0	28	5.1	0.1
TOM	99	V	300-150	7210	5	0	7.5	-0.0
TOW	99	V	300-150	89	0	0	2.6	-0.6
TRE	99	V	300-150	416	0	0	5.2	0.5
TSC	99	V	300-150	21258	0	0	3.6	0.2
TWB	99	V	300-150	55	2	4	7.2	1.3
TWY	99	V	300-150	326	25	0	12.9	0.5
UAE	99	V	300-150	11285	0	0	3.9	0.2
UAL	99	V	300-150	92576	1	1	4.6	0.2
ULC	99	V	300-150	129	55	0	11.0	-0.6
UPS	99	V	300-150	5127	0	0	4.2	0.2
UZB	99	V	300-150	125	7	0	13.6	-0.2
VCJ	99	V	300-150	25	0	0	3.4	-0.2
VIR	99	V	300-150	24999	2	0	5.2	-0.0
VJT	99	V	300-150	969	37	0	16.2	0.0
VMP	99	V	300-150	50	26	0	14.6	0.9
VOZ	99	V	300-150	7193	0	0	3.5	0.3
WDY	99	V	300-150	22	0	0	3.3	0.4
WGT	99	V	300-150	76	0	0	3.5	-0.2
WJA	99	V	300-150	5828	0	0	3.8	0.2
WOW	99	V	300-150	902	0	0	3.2	0.4
WWI	99	V	300-150	42	0	0	3.8	-0.2
XAX	99	V	300-150	382	0	0	3.8	0.3
XLF	99	V	300-150	2239	0	0	3.6	0.4

4 EUCOS Area Monitoring Statistics

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

Tables 13, 14 (50 hPa level), 15, 16 (100 hPa level) 17, 18 (500 hPa level) 19 and 20 (850 hPa level) provide quality statistics for all TEMPSHIPS and PILOTSHIPS received during the month in the area 10°N - 90°N, 70°W - 40°E and for TEMPS and PILOTS from selected land stations within the same area. The statistics are in the same form as tables 10 and 11.

Tables 21-23 provides quality statistics of pressure and wind for all DRIFTER reports received in the area 10°N - 90°N, 70°W - 40°E. The statistics are in the same form as tables 4-6.

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 50 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : JUL 2017
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	50	31	11.4	6.9
01001	00	Z	50	29	9.0	7.7
01028	12	Z	50	30	17.0	14.4
01028	00	Z	50	31	14.3	12.3
01400	00	Z	50	17	32.9	29.6
01400	12	Z	50	23	32.9	29.2
01415	00	Z	50	30	15.7	13.2
01415	12	Z	50	31	17.0	15.0
02365	00	Z	50	30	12.1	10.0
02365	12	Z	50	28	15.9	10.0
02591	00	Z	50	27	26.2	25.6
02591	12	Z	50	28	20.2	16.0
02836	12	Z	50	31	11.6	9.7
02836	00	Z	50	31	9.4	7.5
02963	12	Z	50	30	19.1	16.6
02963	00	Z	50	31	14.8	14.1
03005	00	Z	50	31	10.1	8.1
03005	12	Z	50	30	11.8	8.9
03238	12	Z	50	1	13.0	13.0
03238	00	Z	50	29	11.7	10.3
03808	12	Z	50	28	16.8	14.9
03808	00	Z	50	29	14.1	13.2
03918	12	Z	50	4	35.0	31.7
03918	00	Z	50	31	19.5	18.3
03953	00	Z	50	27	14.0	10.0
03953	12	Z	50	29	19.8	14.4
04018	12	Z	50	24	14.3	10.7
04018	00	Z	50	21	6.1	4.1
04220	00	Z	50	23	10.1	9.1
04220	12	Z	50	21	8.2	7.2
04270	00	Z	50	30	18.0	9.5
04270	12	Z	50	31	13.3	10.4
04320	00	Z	50	27	13.2	11.9
04320	12	Z	50	29	13.0	11.3
04339	00	Z	50	26	12.9	7.9
04339	12	Z	50	28	10.2	8.4
04360	12	Z	50	18	35.3	34.5
04360	00	Z	50	16	29.6	18.4
06011	00	Z	50	27	14.5	3.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	50	29	24.8	13.5
06260	00	Z	50	29	16.9	15.7
06260	12	Z	50	5	25.6	25.0
06610	12	Z	50	31	21.9	20.3
06610	00	Z	50	31	21.6	18.2
07110	00	Z	50	28	36.3	34.6
07110	12	Z	50	30	35.5	34.2
07510	12	Z	50	28	48.0	46.1
07510	00	Z	50	33	42.5	41.6
07645	12	Z	50	31	29.7	28.4
07645	00	Z	50	28	33.7	31.6
07761	12	Z	50	29	25.7	23.9
07761	00	Z	50	29	34.1	33.0
08001	12	Z	50	29	19.8	16.3
08001	00	Z	50	30	20.4	18.9
08221	00	Z	50	31	22.5	21.1
08221	12	Z	50	29	18.7	16.7
08302	00	Z	50	19	11.0	9.7
08302	12	Z	50	25	9.7	2.7
08508	12	Z	50	30	31.9	29.0
08522	12	Z	50	31	22.9	20.0
08579	12	Z	50	31	26.4	24.6
10035	00	Z	50	31	26.3	25.6
10035	12	Z	50	31	27.9	27.0
10393	12	Z	50	31	16.0	14.6
10393	00	Z	50	31	18.3	14.8
10410	12	Z	50	31	16.2	14.4
10410	00	Z	50	30	14.7	12.6
10739	00	Z	50	29	14.5	13.1
10739	12	Z	50	30	15.1	14.0
11035	00	Z	50	31	24.6	23.6
11035	12	Z	50	31	22.4	21.8
12982	12	Z	50	28	36.5	34.7
12982	00	Z	50	28	26.6	23.9
16080	12	Z	50	30	13.1	11.4
16080	00	Z	50	30	14.4	12.9
16245	00	Z	50	31	17.7	16.2
16245	12	Z	50	30	18.6	12.3
16320	00	Z	50	32	31.8	29.8
16320	12	Z	50	40	18.1	17.0
16429	00	Z	50	27	21.0	20.4
16429	12	Z	50	28	17.5	15.4
16622	00	Z	50	31	26.8	26.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	50	29	26.6	24.8
17607	12	Z	50	29	19.2	17.7
26435	00	Z	50	11	22.8	21.1
60018	00	Z	50	29	18.3	16.0
60018	12	Z	50	30	16.4	13.6
ASDE01	12	Z	50	5	18.0	17.4
ASDE02	12	Z	50	20	42.2	35.0
ASDE02	00	Z	50	24	24.4	21.6
ASDE09	12	Z	50	4	24.5	21.3
ASDE9	12	Z	50	1	7.4	7.4
ASDK01	00	Z	50	2	24.7	24.5
ASDK01	12	Z	50	5	23.7	22.9
ASDK02	00	Z	50	11	11.5	9.1
ASDK02	12	Z	50	10	15.3	11.0
ASDK03	00	Z	50	3	26.2	25.9
ASDK03	12	Z	50	4	27.8	27.5
ASDK2	00	Z	50	4	15.3	14.9
ASDK2	12	Z	50	2	17.3	8.4
ASDK3	12	Z	50	4	22.9	22.5
ASDK3	00	Z	50	3	28.2	26.9
ASES01	12	Z	50	23	47.7	31.6
ASEU01	00	Z	50	2	91.6	75.3
ASEU01	12	Z	50	4	100.3	85.4
ASEU03	00	Z	50	3	7.8	-4.3
ASEU03	12	Z	50	4	39.2	37.9
ASEU04	00	Z	50	1	8.4	-8.4
ASEU05	00	Z	50	4	160.3	116.3
ASEU05	12	Z	50	5	68.7	66.2
ASEU06	00	Z	50	5	104.5	48.7
ASEU06	12	Z	50	5	61.4	59.9
ASFR1	12	Z	50	16	28.0	26.3
ASFR1	00	Z	50	11	37.3	36.5
ASFR3	00	Z	50	12	24.3	16.2
ASFR3	12	Z	50	17	32.8	28.3
ASFR4	12	Z	50	15	32.2	31.0
ASFR4	00	Z	50	17	37.4	34.8
DBLK	12	Z	50	22	20.6	16.1
DBLK	00	Z	50	15	13.5	12.3

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 50 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : JUL 2017
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	50	31	3.1	1.0	-0.5
01001	00	V	50	29	2.8	0.6	-0.1
01028	12	V	50	29	2.3	-0.2	-0.4
01028	00	V	50	30	2.6	-0.2	-0.1
01400	00	V	50	12	3.1	0.4	-0.8
01400	12	V	50	15	4.0	1.0	0.5
01415	00	V	50	29	3.0	0.5	-0.1
01415	12	V	50	31	2.9	-0.2	0.0
02365	00	V	50	25	2.4	-0.4	0.0
02365	12	V	50	27	2.8	-0.1	-0.5
02591	00	V	50	24	2.9	0.1	-0.2
02591	12	V	50	28	3.2	0.2	0.1
02836	12	V	50	31	2.8	-0.1	-0.7
02836	00	V	50	29	2.8	-0.1	-0.2
02963	12	V	50	29	3.0	0.3	-0.3
02963	00	V	50	28	2.6	0.4	0.3
03005	00	V	50	29	2.3	-0.2	-0.3
03005	12	V	50	30	2.9	0.2	0.1
03238	12	V	50	1	7.5	7.3	-1.6
03238	00	V	50	28	2.8	-0.2	0.2
03808	12	V	50	27	3.3	1.0	-0.1
03808	00	V	50	28	3.5	0.5	-0.4
03918	12	V	50	4	2.6	-1.6	1.6
03918	00	V	50	30	3.6	0.2	-0.1
03953	00	V	50	27	3.5	-0.2	-0.1
03953	12	V	50	29	3.5	0.2	0.1
04018	12	V	50	24	2.1	0.7	-0.3
04018	00	V	50	18	2.2	0.7	0.0
04220	00	V	50	23	3.0	-0.4	0.2
04220	12	V	50	21	3.4	-1.3	0.3
04270	00	V	50	29	2.8	-0.3	0.1
04270	12	V	50	31	3.0	-0.2	0.1
04320	00	V	50	26	2.3	0.4	-0.3
04320	12	V	50	29	2.2	0.1	-0.4
04339	00	V	50	26	2.4	0.6	0.3
04339	12	V	50	28	2.1	0.3	0.0
04360	12	V	50	18	2.6	-0.1	-0.1
04360	00	V	50	16	3.0	0.5	0.3
06011	00	V	50	26	2.2	0.3	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	50	29	2.6	0.8	0.3
06260	00	V	50	28	3.4	1.3	0.3
06260	12	V	50	5	2.5	-0.4	-0.5
06610	12	V	50	31	3.4	0.4	0.5
06610	00	V	50	30	3.5	0.1	-0.5
07110	00	V	50	27	4.0	0.8	0.7
07110	12	V	50	30	3.7	0.9	0.5
07510	12	V	50	27	3.3	-0.3	-0.1
07510	00	V	50	30	3.3	0.7	0.5
07645	12	V	50	30	3.3	0.2	0.2
07645	00	V	50	28	3.8	1.0	0.0
07761	12	V	50	29	3.1	0.6	0.3
07761	00	V	50	28	3.6	0.6	0.4
08001	12	V	50	29	3.5	0.1	1.0
08001	00	V	50	26	3.3	0.8	0.7
08221	00	V	50	30	3.7	-0.3	1.0
08221	12	V	50	29	4.2	1.3	0.6
08302	00	V	50	19	3.6	0.1	0.7
08302	12	V	50	25	3.7	0.9	1.0
08508	12	V	50	29	2.6	0.5	0.4
08522	12	V	50	31	3.5	0.1	1.9
08579	12	V	50	31	3.6	1.2	1.3
10035	00	V	50	30	3.0	0.3	0.0
10035	12	V	50	30	3.4	0.7	-0.1
10393	12	V	50	31	3.4	0.6	0.7
10393	00	V	50	30	3.0	0.0	0.1
10410	12	V	50	31	3.0	0.8	0.1
10410	00	V	50	29	2.9	0.4	0.2
10739	00	V	50	28	3.2	0.1	0.7
10739	12	V	50	30	2.9	0.7	-0.1
11035	00	V	50	29	3.2	0.2	0.0
11035	12	V	50	31	3.4	0.9	0.4
12982	12	V	50	28	3.3	0.7	-0.3
12982	00	V	50	28	3.5	0.1	-0.5
16080	12	V	50	30	2.9	0.6	0.4
16080	00	V	50	29	3.7	0.9	-0.2
16245	00	V	50	30	4.0	0.1	0.3
16245	12	V	50	30	3.7	1.3	0.3
16320	00	V	50	26	4.3	0.9	0.5
16320	12	V	50	30	3.2	1.1	0.1
16429	00	V	50	25	4.2	1.4	0.7
16429	12	V	50	27	3.3	0.2	0.2
16622	00	V	50	30	4.1	0.4	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	50	27	3.7	1.4	0.0
17607	12	V	50	29	3.7	-0.1	-0.6
26435	00	V	50	11	3.5	0.6	-0.4
60018	00	V	50	28	4.0	-0.9	-0.1
60018	12	V	50	30	4.3	0.3	0.5
ASDE01	12	V	50	4	2.7	-0.3	-0.4
ASDE02	12	V	50	20	4.2	0.4	0.4
ASDE02	00	V	50	19	5.8	-1.7	-1.6
ASDE09	12	V	50	4	3.7	1.8	1.0
ASDE9	12	V	50	1	3.3	-0.6	3.2
ASDK01	00	V	50	2	3.2	-1.4	-1.1
ASDK01	12	V	50	5	2.3	-1.1	-0.4
ASDK02	00	V	50	11	3.1	1.2	0.5
ASDK02	12	V	50	9	3.1	1.8	1.0
ASDK03	00	V	50	3	3.1	-2.4	-0.9
ASDK03	12	V	50	4	3.8	0.9	-1.0
ASDK2	00	V	50	4	2.8	2.2	0.0
ASDK2	12	V	50	2	2.5	0.8	0.2
ASDK3	12	V	50	4	3.5	0.9	-0.8
ASDK3	00	V	50	3	2.5	-2.3	-0.1
ASES01	12	V	50	22	2.8	0.4	-0.1
ASEU01	00	V	50	1	3.5	-2.5	2.5
ASEU01	12	V	50	4	2.1	0.0	1.2
ASEU03	00	V	50	3	3.3	1.9	0.0
ASEU03	12	V	50	4	3.2	-0.6	-0.7
ASEU04	00	V	50	1	0.8	-0.8	-0.1
ASEU05	00	V	50	4	2.5	-1.0	1.4
ASEU05	12	V	50	4	13.0	5.1	2.2
ASEU06	00	V	50	5	2.1	1.4	0.2
ASEU06	12	V	50	5	3.6	1.8	2.0
ASFR1	12	V	50	11	2.9	-0.1	0.3
ASFR1	00	V	50	7	4.8	0.2	0.2
ASFR3	00	V	50	10	3.5	1.1	1.0
ASFR3	12	V	50	14	3.3	0.8	1.0
ASFR4	12	V	50	12	4.0	0.5	2.0
ASFR4	00	V	50	12	3.3	-0.9	-0.5
DBLK	12	V	50	21	2.9	0.5	-0.6
DBLK	00	V	50	15	2.6	0.3	-1.2

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 100 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : JUL 2017
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	100	31	6.5	-2.8
01001	00	Z	100	31	5.8	-3.6
01028	12	Z	100	31	6.3	0.0
01028	00	Z	100	31	6.2	-2.0
01400	00	Z	100	22	19.2	15.1
01400	12	Z	100	24	18.4	12.6
01415	00	Z	100	30	5.3	1.5
01415	12	Z	100	31	5.9	3.3
02365	00	Z	100	31	7.3	-4.1
02365	12	Z	100	30	9.6	-3.2
02591	00	Z	100	30	13.2	12.0
02591	12	Z	100	29	9.2	3.7
02836	12	Z	100	31	5.3	-3.2
02836	00	Z	100	31	6.6	-4.7
02963	12	Z	100	30	6.2	2.6
02963	00	Z	100	31	4.3	2.1
03005	00	Z	100	31	5.5	-4.0
03005	12	Z	100	31	5.2	-2.2
03238	12	Z	100	1	5.5	5.5
03238	00	Z	100	31	4.5	-1.5
03808	12	Z	100	29	5.5	2.7
03808	00	Z	100	30	3.9	0.5
03918	12	Z	100	4	19.9	14.8
03918	00	Z	100	31	7.1	6.0
03953	00	Z	100	28	7.1	-1.4
03953	12	Z	100	30	10.8	2.5
04018	12	Z	100	27	6.5	-0.7
04018	00	Z	100	24	9.0	-7.5
04220	00	Z	100	24	4.9	-2.6
04220	12	Z	100	21	4.8	-2.4
04270	00	Z	100	30	15.7	-0.9
04270	12	Z	100	31	7.4	-0.3
04320	00	Z	100	27	4.0	-0.5
04320	12	Z	100	29	4.2	-0.2
04339	00	Z	100	27	10.6	-2.7
04339	12	Z	100	29	4.6	-2.2
04360	12	Z	100	29	29.0	28.3
04360	00	Z	100	28	22.8	19.3
06011	00	Z	100	27	13.4	-6.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	100	29	13.5	-0.9
06260	00	Z	100	30	6.3	2.8
06260	12	Z	100	5	7.8	6.5
06610	12	Z	100	31	9.6	7.2
06610	00	Z	100	31	12.0	8.1
07110	00	Z	100	28	18.6	17.1
07110	12	Z	100	30	18.2	17.5
07510	12	Z	100	29	26.9	25.6
07510	00	Z	100	33	24.1	23.3
07645	12	Z	100	31	16.7	15.0
07645	00	Z	100	29	16.5	14.4
07761	12	Z	100	29	12.3	10.4
07761	00	Z	100	29	18.4	16.5
08001	12	Z	100	31	8.7	2.6
08001	00	Z	100	31	8.3	6.3
08221	00	Z	100	31	9.4	8.0
08221	12	Z	100	29	7.3	4.2
08302	00	Z	100	20	5.3	-2.6
08302	12	Z	100	27	11.3	-9.7
08508	12	Z	100	30	18.0	14.4
08522	12	Z	100	31	11.6	8.5
08579	12	Z	100	31	11.1	8.5
10035	00	Z	100	31	13.5	12.9
10035	12	Z	100	31	15.1	14.6
10393	12	Z	100	31	5.1	3.0
10393	00	Z	100	31	7.7	4.0
10410	12	Z	100	31	4.8	2.3
10410	00	Z	100	31	4.4	0.5
10739	00	Z	100	29	5.3	3.3
10739	12	Z	100	31	5.5	2.8
11035	00	Z	100	31	13.4	12.2
11035	12	Z	100	31	10.9	9.8
12982	12	Z	100	30	17.2	15.0
12982	00	Z	100	28	15.5	12.1
16080	12	Z	100	32	5.3	-1.8
16080	00	Z	100	31	4.6	1.4
16245	00	Z	100	31	10.0	5.7
16245	12	Z	100	30	9.9	2.1
16320	00	Z	100	38	22.3	19.5
16320	12	Z	100	41	11.2	9.5
16429	00	Z	100	31	12.3	11.2
16429	12	Z	100	30	8.6	6.9
16622	00	Z	100	31	15.4	14.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	100	29	18.6	17.2
17607	12	Z	100	31	4.6	1.1
26435	00	Z	100	15	8.1	6.4
60018	00	Z	100	30	8.1	3.8
60018	12	Z	100	30	8.1	2.6
ASDE01	12	Z	100	5	4.3	3.1
ASDE02	12	Z	100	23	25.8	15.5
ASDE02	00	Z	100	32	8.4	6.3
ASDE09	12	Z	100	4	13.8	11.3
ASDE9	12	Z	100	1	5.2	5.2
ASDK01	00	Z	100	4	4.3	4.0
ASDK01	12	Z	100	5	9.2	6.9
ASDK02	00	Z	100	14	6.3	1.3
ASDK02	12	Z	100	15	8.1	0.6
ASDK03	00	Z	100	4	18.6	18.5
ASDK03	12	Z	100	4	21.5	21.2
ASDK2	00	Z	100	4	6.8	4.7
ASDK2	12	Z	100	3	5.6	0.3
ASDK3	12	Z	100	4	15.0	13.5
ASDK3	00	Z	100	3	17.3	16.9
ASES01	12	Z	100	27	30.2	12.1
ASEU01	00	Z	100	7	42.8	18.3
ASEU01	12	Z	100	5	74.9	64.1
ASEU03	00	Z	100	3	3.9	-2.2
ASEU03	12	Z	100	4	24.0	23.6
ASEU04	00	Z	100	1	7.5	-7.5
ASEU05	00	Z	100	7	127.4	74.7
ASEU05	12	Z	100	7	35.2	32.2
ASEU06	00	Z	100	5	111.1	45.1
ASEU06	12	Z	100	10	28.4	27.1
ASFR1	12	Z	100	18	15.1	14.5
ASFR1	00	Z	100	11	21.8	21.2
ASFR3	00	Z	100	15	15.4	7.5
ASFR3	12	Z	100	20	21.4	18.1
ASFR4	12	Z	100	18	19.7	18.1
ASFR4	00	Z	100	21	22.1	19.7
DBLK	12	Z	100	34	9.7	3.4
DBLK	00	Z	100	28	4.9	0.2

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 100 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : JUL 2017
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	100	31	2.4	0.1	-0.6
01001	00	V	100	30	2.3	0.2	0.0
01028	12	V	100	31	2.4	0.4	0.0
01028	00	V	100	30	2.2	-0.1	0.1
01400	00	V	100	16	3.2	-0.4	1.4
01400	12	V	100	22	3.2	0.2	0.1
01415	00	V	100	29	2.5	-0.2	0.0
01415	12	V	100	31	3.2	0.0	0.3
02365	00	V	100	29	2.5	0.5	0.1
02365	12	V	100	30	3.3	-0.4	0.1
02591	00	V	100	29	2.8	1.0	-0.2
02591	12	V	100	29	2.5	0.0	-0.2
02836	12	V	100	31	3.1	0.9	0.0
02836	00	V	100	30	2.6	1.1	-0.2
02963	12	V	100	30	2.3	0.2	-0.1
02963	00	V	100	30	2.7	0.8	-0.2
03005	00	V	100	29	3.0	0.8	-0.7
03005	12	V	100	30	2.3	0.0	-0.4
03238	12	V	100	1	0.9	-0.9	-0.2
03238	00	V	100	30	4.0	0.3	-0.1
03808	12	V	100	29	3.1	0.2	0.6
03808	00	V	100	29	3.6	0.8	1.4
03918	12	V	100	4	4.6	-1.2	-0.2
03918	00	V	100	30	3.5	1.1	0.2
03953	00	V	100	28	3.2	0.5	0.6
03953	12	V	100	30	3.1	0.6	0.3
04018	12	V	100	27	3.0	0.2	0.1
04018	00	V	100	21	3.1	0.8	0.0
04220	00	V	100	23	2.8	-0.3	0.0
04220	12	V	100	21	3.9	0.7	1.3
04270	00	V	100	29	3.4	-0.1	0.3
04270	12	V	100	31	4.0	-0.2	-0.1
04320	00	V	100	26	2.3	-0.2	0.2
04320	12	V	100	29	2.6	0.5	-0.3
04339	00	V	100	26	2.4	-0.2	0.4
04339	12	V	100	29	3.0	-0.1	-0.4
04360	12	V	100	29	2.4	-0.1	-0.3
04360	00	V	100	28	2.9	-0.6	-0.2
06011	00	V	100	26	2.8	0.7	0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	100	29	2.3	0.3	-0.2
06260	00	V	100	29	3.5	0.5	0.4
06260	12	V	100	5	3.8	-0.3	2.1
06610	12	V	100	31	3.7	0.3	-0.2
06610	00	V	100	30	4.0	-0.6	0.7
07110	00	V	100	27	3.3	0.6	0.6
07110	12	V	100	30	2.8	0.0	-0.1
07510	12	V	100	28	2.9	0.2	0.6
07510	00	V	100	30	3.6	0.3	0.9
07645	12	V	100	30	3.3	0.8	-0.5
07645	00	V	100	28	4.1	-0.3	0.7
07761	12	V	100	29	4.2	-0.3	0.3
07761	00	V	100	28	4.2	0.6	-0.1
08001	12	V	100	31	2.9	0.1	0.2
08001	00	V	100	30	3.3	0.4	0.8
08221	00	V	100	30	3.6	0.8	0.9
08221	12	V	100	29	3.9	0.0	0.5
08302	00	V	100	20	4.8	0.9	0.3
08302	12	V	100	26	3.3	0.6	0.7
08508	12	V	100	30	3.3	0.4	0.3
08522	12	V	100	31	3.3	0.5	0.7
08579	12	V	100	31	3.1	-0.1	0.6
10035	00	V	100	30	2.6	0.4	-0.1
10035	12	V	100	31	3.6	0.7	-0.1
10393	12	V	100	31	3.4	1.1	0.0
10393	00	V	100	30	3.5	0.1	0.1
10410	12	V	100	31	3.3	0.1	0.0
10410	00	V	100	29	3.0	0.0	-0.1
10739	00	V	100	28	4.1	0.5	-0.6
10739	12	V	100	31	3.3	0.7	-1.0
11035	00	V	100	29	4.9	0.7	-0.5
11035	12	V	100	31	4.0	0.3	-0.6
12982	12	V	100	30	3.9	-0.3	-0.4
12982	00	V	100	28	3.5	0.8	0.5
16080	12	V	100	31	3.8	0.2	-0.3
16080	00	V	100	30	4.9	1.0	0.0
16245	00	V	100	30	4.8	1.5	-0.3
16245	12	V	100	30	4.6	0.1	0.6
16320	00	V	100	30	4.0	0.6	0.6
16320	12	V	100	31	4.7	0.6	0.3
16429	00	V	100	29	4.3	1.3	-0.1
16429	12	V	100	30	4.7	0.9	0.3
16622	00	V	100	30	4.1	-0.1	0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	100	27	3.7	0.2	-0.6
17607	12	V	100	31	3.9	0.4	-0.3
26435	00	V	100	15	2.3	0.5	0.0
60018	00	V	100	29	4.2	0.0	0.8
60018	12	V	100	30	3.7	0.1	-0.2
ASDE01	12	V	100	4	3.2	0.7	1.5
ASDE02	12	V	100	20	4.4	-1.9	0.7
ASDE02	00	V	100	19	4.3	1.4	-0.2
ASDE09	12	V	100	4	3.3	0.7	0.1
ASDE9	12	V	100	1	3.7	1.9	-3.2
ASDK01	00	V	100	3	3.6	-0.6	2.0
ASDK01	12	V	100	5	4.2	-0.2	-1.3
ASDK02	00	V	100	11	2.7	-0.4	0.2
ASDK02	12	V	100	12	2.8	0.3	0.0
ASDK03	00	V	100	4	2.6	-0.3	-1.4
ASDK03	12	V	100	4	3.1	0.4	0.6
ASDK2	00	V	100	4	2.5	-0.2	-0.2
ASDK2	12	V	100	3	1.7	-0.3	0.8
ASDK3	12	V	100	4	2.6	0.2	0.2
ASDK3	00	V	100	3	2.9	0.5	-1.6
ASES01	12	V	100	24	3.3	-0.6	0.6
ASEU01	00	V	100	5	2.7	-0.6	0.6
ASEU01	12	V	100	4	3.5	-0.4	-0.4
ASEU03	00	V	100	3	3.2	0.1	2.1
ASEU03	12	V	100	3	4.8	-2.1	-1.1
ASEU04	00	V	100	1	0.7	0.4	-0.6
ASEU05	00	V	100	5	4.4	0.6	0.7
ASEU05	12	V	100	4	8.5	3.7	0.4
ASEU06	00	V	100	5	4.0	-0.8	2.7
ASEU06	12	V	100	6	4.1	-2.1	0.3
ASFR1	12	V	100	12	2.1	0.3	0.1
ASFR1	00	V	100	7	3.7	-0.2	2.1
ASFR3	00	V	100	11	2.7	0.9	0.3
ASFR3	12	V	100	16	3.5	0.0	0.1
ASFR4	12	V	100	13	2.7	-0.2	-0.8
ASFR4	00	V	100	13	3.0	0.4	0.0
DBLK	12	V	100	21	2.1	0.1	-0.7
DBLK	00	V	100	15	1.6	-0.3	-0.3

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 500 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : JUL 2017
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	500	31	3.7	1.0
01001	00	Z	500	31	3.3	0.6
01028	12	Z	500	31	2.6	-0.4
01028	00	Z	500	31	4.3	-0.9
01400	00	Z	500	25	11.9	9.9
01400	12	Z	500	28	13.3	9.2
01415	00	Z	500	30	5.2	3.8
01415	12	Z	500	31	4.4	2.2
02365	00	Z	500	31	4.8	-0.4
02365	12	Z	500	30	3.8	-1.5
02591	00	Z	500	30	10.7	10.5
02591	12	Z	500	30	8.6	7.9
02836	12	Z	500	31	3.7	2.1
02836	00	Z	500	31	3.9	2.5
02963	12	Z	500	31	3.0	0.6
02963	00	Z	500	31	4.2	3.7
03005	00	Z	500	32	5.2	-3.0
03005	12	Z	500	31	4.9	-3.2
03238	12	Z	500	1	3.6	3.6
03238	00	Z	500	31	3.3	1.7
03808	12	Z	500	31	3.8	1.8
03808	00	Z	500	30	4.0	3.0
03918	12	Z	500	4	12.3	11.7
03918	00	Z	500	31	11.0	10.7
03953	00	Z	500	31	6.8	-2.7
03953	12	Z	500	31	7.7	-1.4
04018	12	Z	500	29	4.2	0.4
04018	00	Z	500	27	4.9	0.6
04220	00	Z	500	24	3.4	0.3
04220	12	Z	500	21	3.6	1.2
04270	00	Z	500	30	17.1	-0.8
04270	12	Z	500	31	5.8	-1.0
04320	00	Z	500	28	2.7	1.7
04320	12	Z	500	29	3.0	1.2
04339	00	Z	500	27	11.7	2.0
04339	12	Z	500	29	3.5	-0.5
04360	12	Z	500	29	38.4	38.2
04360	00	Z	500	29	36.9	36.7
06011	00	Z	500	28	8.4	-4.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	500	29	5.8	-2.9
06260	00	Z	500	31	5.6	2.7
06260	12	Z	500	5	3.6	1.0
06610	12	Z	500	31	3.7	2.7
06610	00	Z	500	31	7.3	6.5
07110	00	Z	500	28	8.7	5.4
07110	12	Z	500	30	7.2	6.2
07510	12	Z	500	32	12.9	11.6
07510	00	Z	500	33	13.4	12.7
07645	12	Z	500	31	9.9	9.0
07645	00	Z	500	29	9.1	8.2
07761	12	Z	500	31	19.6	6.1
07761	00	Z	500	30	7.9	5.1
08001	12	Z	500	31	7.9	7.2
08001	00	Z	500	31	8.4	7.8
08221	00	Z	500	31	7.1	6.4
08221	12	Z	500	29	5.8	4.6
08302	00	Z	500	21	2.7	0.0
08302	12	Z	500	27	4.7	-3.9
08508	12	Z	500	30	11.0	9.4
08522	12	Z	500	31	6.7	6.0
08579	12	Z	500	31	7.1	6.0
10035	00	Z	500	31	15.4	15.2
10035	12	Z	500	31	13.9	13.5
10393	12	Z	500	31	2.6	0.4
10393	00	Z	500	31	3.0	2.5
10410	12	Z	500	31	3.7	1.3
10410	00	Z	500	31	3.4	2.1
10739	00	Z	500	29	4.5	2.6
10739	12	Z	500	31	3.4	0.8
11035	00	Z	500	31	9.7	9.0
11035	12	Z	500	31	7.4	6.7
12982	12	Z	500	31	7.4	4.0
12982	00	Z	500	31	8.4	6.2
16080	12	Z	500	32	3.0	-1.7
16080	00	Z	500	31	4.5	1.2
16245	00	Z	500	31	3.5	2.4
16245	12	Z	500	31	12.8	1.4
16320	00	Z	500	38	20.5	17.3
16320	12	Z	500	42	12.3	10.8
16429	00	Z	500	32	8.3	7.2
16429	12	Z	500	30	5.6	3.9
16622	00	Z	500	31	11.5	10.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	500	30	8.5	7.5
17607	12	Z	500	31	4.0	3.6
26435	00	Z	500	15	7.2	6.1
60018	00	Z	500	30	2.3	-0.4
60018	12	Z	500	31	4.1	1.3
ASDE01	12	Z	500	6	3.2	1.5
ASDE02	12	Z	500	23	9.7	7.1
ASDE02	00	Z	500	32	3.9	2.7
ASDE09	12	Z	500	4	12.7	10.9
ASDE9	12	Z	500	1	13.2	13.2
ASDK01	00	Z	500	4	7.7	7.1
ASDK01	12	Z	500	5	8.4	7.8
ASDK02	00	Z	500	14	10.6	6.7
ASDK02	12	Z	500	15	5.3	1.0
ASDK03	00	Z	500	6	18.9	18.3
ASDK03	12	Z	500	4	17.3	15.8
ASDK2	00	Z	500	4	7.8	4.6
ASDK2	12	Z	500	3	3.8	-1.7
ASDK3	12	Z	500	4	9.5	7.8
ASDK3	00	Z	500	4	16.6	13.6
ASES01	12	Z	500	27	11.3	3.9
ASEU01	00	Z	500	7	7.4	1.4
ASEU01	12	Z	500	6	11.4	9.9
ASEU03	00	Z	500	5	5.6	-1.5
ASEU03	12	Z	500	5	3.2	2.0
ASEU04	00	Z	500	1	1.9	-1.9
ASEU05	00	Z	500	7	24.7	13.5
ASEU05	12	Z	500	7	36.2	19.3
ASEU06	00	Z	500	7	11.9	-1.4
ASEU06	12	Z	500	11	5.1	0.2
ASFR1	12	Z	500	18	6.4	0.1
ASFR1	00	Z	500	17	4.2	2.7
ASFR3	00	Z	500	16	10.4	-3.2
ASFR3	12	Z	500	22	7.7	4.9
ASFR4	12	Z	500	19	7.4	5.9
ASFR4	00	Z	500	24	6.3	3.2
DBLK	12	Z	500	34	3.1	-1.8
DBLK	00	Z	500	28	5.8	-3.2

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 500 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : JUL 2017
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	500	31	2.2	0.1	-0.3
01001	00	V	500	30	1.9	0.1	0.1
01028	12	V	500	31	2.6	0.1	0.2
01028	00	V	500	30	2.2	0.7	0.3
01400	00	V	500	25	2.7	0.2	-0.3
01400	12	V	500	28	2.8	0.2	0.3
01415	00	V	500	29	3.3	-0.1	1.2
01415	12	V	500	31	3.0	-0.1	0.2
02365	00	V	500	29	2.8	0.0	0.3
02365	12	V	500	30	2.3	0.1	0.3
02591	00	V	500	29	2.5	0.3	-0.7
02591	12	V	500	30	2.7	0.1	-0.1
02836	12	V	500	31	2.2	0.6	-0.1
02836	00	V	500	30	2.9	-0.2	0.4
02963	12	V	500	31	1.9	0.1	0.2
02963	00	V	500	30	2.6	0.4	0.0
03005	00	V	500	30	2.6	-0.2	0.2
03005	12	V	500	31	3.3	0.7	0.1
03238	12	V	500	1	3.1	2.3	2.1
03238	00	V	500	30	3.3	1.1	0.4
03808	12	V	500	31	3.0	0.0	0.2
03808	00	V	500	29	2.9	0.3	-0.1
03918	12	V	500	4	2.1	-1.0	-0.4
03918	00	V	500	30	2.7	0.3	0.1
03953	00	V	500	30	3.2	-0.4	-0.3
03953	12	V	500	31	2.7	-0.1	0.4
04018	12	V	500	29	2.5	0.1	-0.5
04018	00	V	500	25	2.4	0.1	0.0
04220	00	V	500	23	2.5	-0.3	0.7
04220	12	V	500	21	2.6	0.1	-0.3
04270	00	V	500	29	2.6	0.2	0.2
04270	12	V	500	31	3.6	-0.5	-1.2
04320	00	V	500	27	2.3	0.3	0.2
04320	12	V	500	29	3.6	0.4	0.5
04339	00	V	500	26	2.0	0.0	-0.4
04339	12	V	500	29	1.8	-0.3	0.5
04360	12	V	500	29	3.4	0.1	0.1
04360	00	V	500	28	2.5	0.2	0.0
06011	00	V	500	27	2.2	-0.1	0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	500	29	2.8	0.5	0.4
06260	00	V	500	30	3.1	-0.1	0.8
06260	12	V	500	5	3.9	-0.9	0.4
06610	12	V	500	31	2.4	0.3	-0.3
06610	00	V	500	30	3.0	0.8	-0.1
07110	00	V	500	27	2.5	0.0	0.2
07110	12	V	500	30	3.0	0.2	0.2
07510	12	V	500	31	2.7	0.4	0.2
07510	00	V	500	30	3.3	0.4	0.7
07645	12	V	500	30	3.1	0.3	-0.1
07645	00	V	500	28	2.6	0.3	0.5
07761	12	V	500	30	2.5	0.3	0.1
07761	00	V	500	29	2.7	-0.4	-0.1
08001	12	V	500	31	3.3	0.0	0.3
08001	00	V	500	30	2.9	0.3	0.2
08221	00	V	500	30	3.0	0.2	0.7
08221	12	V	500	29	3.4	0.0	0.3
08302	00	V	500	21	2.9	0.3	0.0
08302	12	V	500	27	2.8	0.3	-0.2
08508	12	V	500	30	3.0	0.1	0.2
08522	12	V	500	31	2.3	0.3	0.2
08579	12	V	500	30	2.3	0.1	0.4
10035	00	V	500	30	2.7	0.3	-0.4
10035	12	V	500	31	2.9	1.0	-0.3
10393	12	V	500	31	2.5	-0.2	-0.1
10393	00	V	500	30	2.9	-0.1	0.0
10410	12	V	500	31	3.1	0.0	0.1
10410	00	V	500	29	2.8	0.0	-0.6
10739	00	V	500	28	2.9	0.4	0.0
10739	12	V	500	31	2.8	0.6	-0.2
11035	00	V	500	29	3.4	0.5	0.5
11035	12	V	500	31	3.0	0.0	0.3
12982	12	V	500	31	2.5	-0.1	0.1
12982	00	V	500	31	3.4	-0.1	0.2
16080	12	V	500	31	2.1	0.1	-0.3
16080	00	V	500	30	2.8	0.3	-0.7
16245	00	V	500	30	2.5	0.3	0.4
16245	12	V	500	31	2.3	0.2	-0.4
16320	00	V	500	30	2.3	0.6	-0.6
16320	12	V	500	31	2.4	0.4	0.3
16429	00	V	500	30	2.2	0.3	0.1
16429	12	V	500	30	2.6	0.3	-0.5
16622	00	V	500	30	3.0	0.3	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	500	28	2.4	0.6	-0.6
17607	12	V	500	31	2.4	0.4	-0.3
26435	00	V	500	15	2.5	0.1	-0.4
60018	00	V	500	29	2.7	-0.7	0.5
60018	12	V	500	31	2.6	0.2	-0.1
ASDE01	12	V	500	5	2.9	0.8	-1.4
ASDE02	12	V	500	21	3.1	0.3	0.2
ASDE02	00	V	500	19	2.5	0.8	0.6
ASDE09	12	V	500	4	2.0	-0.2	0.9
ASDE9	12	V	500	1	2.5	0.8	2.4
ASDK01	00	V	500	3	2.8	0.7	0.6
ASDK01	12	V	500	5	3.9	0.6	1.6
ASDK02	00	V	500	11	3.4	0.2	-0.7
ASDK02	12	V	500	12	1.9	0.7	-0.3
ASDK03	00	V	500	5	1.7	-0.2	0.1
ASDK03	12	V	500	4	2.1	1.1	0.6
ASDK2	00	V	500	4	1.5	0.6	-0.1
ASDK2	12	V	500	3	2.6	1.5	-0.7
ASDK3	12	V	500	4	3.1	1.3	1.5
ASDK3	00	V	500	4	1.2	0.1	0.1
ASES01	12	V	500	24	2.1	0.5	0.2
ASEU01	00	V	500	6	1.1	0.0	0.1
ASEU01	12	V	500	5	3.0	0.3	0.3
ASEU03	00	V	500	5	3.5	-0.6	1.5
ASEU03	12	V	500	5	1.7	0.1	0.3
ASEU04	00	V	500	1	3.2	-0.9	3.1
ASEU05	00	V	500	5	3.6	-0.7	0.6
ASEU05	12	V	500	7	4.2	0.7	1.8
ASEU06	00	V	500	7	2.6	-0.1	0.9
ASEU06	12	V	500	7	2.0	0.9	0.5
ASFR1	12	V	500	12	2.3	-0.5	0.1
ASFR1	00	V	500	10	2.4	-0.1	0.3
ASFR3	00	V	500	12	2.5	-0.5	-0.1
ASFR3	12	V	500	17	2.8	0.5	0.5
ASFR4	12	V	500	14	3.3	0.3	0.1
ASFR4	00	V	500	15	2.4	-0.7	-0.1
DBLK	12	V	500	22	1.8	-0.1	-0.4
DBLK	00	V	500	15	2.7	-0.6	-0.4

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 850 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : JUL 2017
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	850	31	2.6	-0.2
01001	00	Z	850	31	2.6	1.0
01028	12	Z	850	31	2.9	-0.6
01028	00	Z	850	31	2.9	0.2
01400	00	Z	850	25	17.4	3.9
01400	12	Z	850	28	13.7	8.4
01415	00	Z	850	30	4.5	4.1
01415	12	Z	850	31	3.8	3.0
02365	00	Z	850	31	2.1	0.7
02365	12	Z	850	30	1.9	0.1
02591	00	Z	850	30	9.0	8.8
02591	12	Z	850	30	8.4	8.1
02836	12	Z	850	31	3.4	2.8
02836	00	Z	850	31	4.3	3.6
02963	12	Z	850	31	3.8	3.1
02963	00	Z	850	31	4.4	4.1
03005	00	Z	850	32	2.2	-0.9
03005	12	Z	850	31	2.6	-1.3
03238	12	Z	850	1	1.7	1.7
03238	00	Z	850	31	4.5	3.9
03808	12	Z	850	32	2.5	1.2
03808	00	Z	850	30	2.9	2.3
03918	12	Z	850	4	10.7	10.6
03918	00	Z	850	31	11.4	11.2
03953	00	Z	850	31	2.7	-0.3
03953	12	Z	850	31	3.0	1.9
04018	12	Z	850	30	2.6	0.7
04018	00	Z	850	30	2.7	1.3
04220	00	Z	850	24	3.0	1.5
04220	12	Z	850	21	3.0	2.0
04270	00	Z	850	30	18.2	0.5
04270	12	Z	850	31	3.5	1.7
04320	00	Z	850	28	5.0	3.7
04320	12	Z	850	29	4.4	3.3
04339	00	Z	850	27	12.8	2.6
04339	12	Z	850	29	3.2	0.3
04360	12	Z	850	29	44.3	44.2
04360	00	Z	850	30	43.6	43.5
06011	00	Z	850	28	3.7	2.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	850	29	3.5	2.0
06260	00	Z	850	31	3.9	3.1
06260	12	Z	850	5	3.3	2.1
06610	12	Z	850	31	5.0	4.2
06610	00	Z	850	31	5.9	5.5
07110	00	Z	850	28	3.5	2.2
07110	12	Z	850	30	2.5	1.0
07510	12	Z	850	32	7.0	6.5
07510	00	Z	850	33	9.6	8.8
07645	12	Z	850	31	5.8	5.3
07645	00	Z	850	29	4.9	4.6
07761	12	Z	850	33	9.7	0.7
07761	00	Z	850	30	3.6	1.1
08001	12	Z	850	31	6.1	5.8
08001	00	Z	850	31	7.1	6.7
08221	00	Z	850	31	4.5	4.1
08221	12	Z	850	29	4.6	3.5
08302	00	Z	850	21	1.7	-0.5
08302	12	Z	850	27	3.9	-3.4
08508	12	Z	850	30	6.2	4.9
08522	12	Z	850	31	4.2	3.7
08579	12	Z	850	31	3.9	3.3
10035	00	Z	850	31	15.3	15.1
10035	12	Z	850	31	14.6	14.4
10393	12	Z	850	31	3.7	1.0
10393	00	Z	850	31	3.2	2.4
10410	12	Z	850	31	2.8	1.8
10410	00	Z	850	31	3.2	2.0
10739	00	Z	850	29	3.0	1.9
10739	12	Z	850	31	2.5	1.2
11035	00	Z	850	31	9.6	9.2
11035	12	Z	850	31	9.3	9.0
12982	12	Z	850	31	8.3	7.2
12982	00	Z	850	31	7.4	5.5
16080	12	Z	850	32	2.5	0.4
16080	00	Z	850	31	2.6	-0.5
16245	00	Z	850	31	2.3	1.1
16245	12	Z	850	31	14.0	2.2
16320	00	Z	850	39	20.8	17.5
16320	12	Z	850	42	13.9	12.6
16429	00	Z	850	32	6.4	5.3
16429	12	Z	850	30	4.5	2.9
16622	00	Z	850	31	11.1	10.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	850	30	6.9	6.2
17607	12	Z	850	31	3.3	2.9
26435	00	Z	850	15	3.8	3.6
60018	00	Z	850	30	3.5	-2.8
60018	12	Z	850	31	3.9	-2.8
ASDE01	12	Z	850	6	2.5	1.4
ASDE02	12	Z	850	23	2.4	0.7
ASDE02	00	Z	850	32	2.0	-0.6
ASDE09	12	Z	850	4	13.2	10.2
ASDE9	12	Z	850	1	19.2	19.2
ASDK01	00	Z	850	4	4.2	3.8
ASDK01	12	Z	850	5	9.9	8.8
ASDK02	00	Z	850	14	6.6	2.9
ASDK02	12	Z	850	15	4.9	1.4
ASDK03	00	Z	850	6	21.6	20.8
ASDK03	12	Z	850	4	25.4	25.0
ASDK2	00	Z	850	4	12.5	6.8
ASDK2	12	Z	850	3	6.6	6.4
ASDK3	12	Z	850	4	24.2	23.4
ASDK3	00	Z	850	4	23.8	22.2
ASES01	12	Z	850	27	4.0	-0.1
ASEU01	00	Z	850	7	5.9	0.6
ASEU01	12	Z	850	6	9.3	3.9
ASEU03	00	Z	850	5	8.5	-5.7
ASEU03	12	Z	850	5	8.5	-7.2
ASEU04	00	Z	850	1	1.8	-1.8
ASEU05	00	Z	850	8	11.5	3.3
ASEU05	12	Z	850	7	18.6	-8.3
ASEU06	00	Z	850	7	10.9	-10.1
ASEU06	12	Z	850	11	9.4	-8.0
ASFR1	12	Z	850	18	4.3	-2.9
ASFR1	00	Z	850	17	3.2	-1.3
ASFR3	00	Z	850	16	3.7	1.2
ASFR3	12	Z	850	22	4.4	2.2
ASFR4	12	Z	850	19	4.8	-2.3
ASFR4	00	Z	850	24	3.1	-1.6
DBLK	12	Z	850	34	3.1	-1.8
DBLK	00	Z	850	28	4.1	-2.4

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 850 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : JUL 2017
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	850	31	3.8	0.5	0.1
01001	00	V	850	30	2.4	0.7	-0.4
01028	12	V	850	31	2.3	0.1	0.0
01028	00	V	850	30	2.3	-0.1	0.2
01400	00	V	850	25	2.9	0.1	-0.3
01400	12	V	850	28	3.3	0.8	-0.2
01415	00	V	850	29	2.9	-0.3	-0.1
01415	12	V	850	31	2.7	-0.2	-0.3
02365	00	V	850	29	2.8	0.2	0.3
02365	12	V	850	30	2.5	-0.5	-0.3
02591	00	V	850	29	2.1	0.4	0.2
02591	12	V	850	30	2.5	-0.8	0.2
02836	12	V	850	31	2.7	0.9	0.2
02836	00	V	850	30	2.4	0.6	0.3
02963	12	V	850	31	2.6	-0.4	-0.2
02963	00	V	850	30	2.5	-0.8	-0.3
03005	00	V	850	30	2.2	0.5	-0.2
03005	12	V	850	31	2.9	0.0	-0.1
03238	12	V	850	1	1.6	0.7	1.4
03238	00	V	850	30	2.5	-0.1	0.0
03808	12	V	850	31	3.2	0.5	-0.4
03808	00	V	850	29	2.2	0.2	-0.1
03918	12	V	850	4	2.1	1.5	-0.4
03918	00	V	850	30	2.5	0.2	0.5
03953	00	V	850	30	2.9	0.9	0.5
03953	12	V	850	31	2.8	0.8	0.3
04018	12	V	850	29	3.3	0.8	0.2
04018	00	V	850	27	2.8	0.2	0.7
04220	00	V	850	23	3.4	-0.2	-0.3
04220	12	V	850	21	2.4	-0.3	0.1
04270	00	V	850	29	2.6	-0.5	0.1
04270	12	V	850	31	2.9	-0.4	-0.1
04320	00	V	850	27	3.0	0.9	0.1
04320	12	V	850	29	2.7	-0.5	0.0
04339	00	V	850	26	3.8	-0.6	-0.1
04339	12	V	850	29	3.1	0.9	-1.2
04360	12	V	850	29	4.7	0.9	0.1
04360	00	V	850	28	5.0	0.7	-0.4
06011	00	V	850	27	2.0	0.2	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	850	29	2.6	-0.2	-0.5
06260	00	V	850	30	3.3	-0.1	-0.8
06260	12	V	850	5	3.0	-0.2	0.1
06610	12	V	850	31	3.1	0.5	0.0
06610	00	V	850	30	2.8	0.8	0.0
07110	00	V	850	27	2.6	-0.3	0.3
07110	12	V	850	30	2.8	1.0	-0.1
07510	12	V	850	31	3.5	0.5	0.2
07510	00	V	850	30	3.5	0.0	0.0
07645	12	V	850	30	2.8	-0.3	-0.4
07645	00	V	850	28	3.1	-0.3	0.5
07761	12	V	850	30	3.1	-1.0	-0.6
07761	00	V	850	29	3.1	-0.9	-0.3
08001	12	V	850	31	2.3	-0.3	0.2
08001	00	V	850	30	2.6	0.4	0.3
08221	00	V	850	30	3.4	0.0	0.7
08221	12	V	850	29	2.7	-0.2	0.2
08302	00	V	850	21	2.3	0.0	0.2
08302	12	V	850	27	2.6	-0.2	0.3
08508	12	V	850	30	2.4	0.4	0.2
08522	12	V	850	31	3.1	0.5	0.2
08579	12	V	850	31	2.4	0.3	0.0
10035	00	V	850	30	2.6	0.1	0.0
10035	12	V	850	31	2.8	0.3	-0.1
10393	12	V	850	31	3.6	0.9	-0.1
10393	00	V	850	30	2.5	0.2	-0.3
10410	12	V	850	31	2.7	0.1	0.0
10410	00	V	850	29	2.9	0.8	-0.3
10739	00	V	850	28	3.1	0.8	0.0
10739	12	V	850	31	2.5	-0.2	0.4
11035	00	V	850	29	3.5	0.3	-0.6
11035	12	V	850	31	3.6	0.2	-1.2
12982	12	V	850	31	2.4	-0.6	0.2
12982	00	V	850	31	3.8	0.0	-0.2
16080	12	V	850	31	3.1	0.4	-0.3
16080	00	V	850	30	3.5	1.1	-1.0
16245	00	V	850	30	3.6	0.2	0.3
16245	12	V	850	31	2.7	-0.5	-0.1
16320	00	V	850	30	2.9	1.0	-0.7
16320	12	V	850	31	2.9	-0.2	-0.5
16429	00	V	850	30	2.9	0.3	0.9
16429	12	V	850	30	2.1	0.0	0.5
16622	00	V	850	30	3.2	0.7	-0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	850	28	2.3	0.2	0.0
17607	12	V	850	31	2.8	0.3	0.6
26435	00	V	850	15	2.8	-0.3	0.5
60018	00	V	850	29	3.4	1.1	0.8
60018	12	V	850	31	3.5	0.1	1.4
ASDE01	12	V	850	5	3.1	-0.2	-1.5
ASDE02	12	V	850	21	2.0	0.3	0.0
ASDE02	00	V	850	22	2.2	0.2	-0.3
ASDE09	12	V	850	4	2.1	-0.3	-0.3
ASDE9	12	V	850	1	2.8	-1.8	2.2
ASDK01	00	V	850	3	2.1	-0.9	0.3
ASDK01	12	V	850	5	2.7	1.7	0.2
ASDK02	00	V	850	11	2.5	-0.7	-0.4
ASDK02	12	V	850	12	3.4	-0.9	-0.5
ASDK03	00	V	850	5	1.4	-0.3	-0.2
ASDK03	12	V	850	4	1.7	0.9	-0.1
ASDK2	00	V	850	4	3.5	-0.7	-1.2
ASDK2	12	V	850	3	3.3	-0.8	-1.1
ASDK3	12	V	850	4	1.4	0.8	0.3
ASDK3	00	V	850	4	1.9	0.9	-0.8
ASES01	12	V	850	24	2.1	0.2	-0.1
ASEU01	00	V	850	6	2.8	-0.6	1.0
ASEU01	12	V	850	5	2.7	1.6	0.4
ASEU03	00	V	850	5	2.6	-0.2	0.8
ASEU03	12	V	850	5	2.5	0.7	-0.3
ASEU04	00	V	850	1	3.1	0.3	3.1
ASEU05	00	V	850	6	2.1	-0.4	-0.2
ASEU05	12	V	850	7	4.0	-0.7	1.4
ASEU06	00	V	850	7	1.8	-0.3	0.2
ASEU06	12	V	850	7	2.2	-0.2	0.6
ASFR1	12	V	850	12	2.8	-0.1	0.1
ASFR1	00	V	850	10	1.9	-0.2	0.1
ASFR3	00	V	850	12	2.3	0.6	0.1
ASFR3	12	V	850	17	2.3	-0.1	0.4
ASFR4	12	V	850	14	2.2	1.1	0.3
ASFR4	00	V	850	15	2.4	0.5	0.3
DBLK	12	V	850	22	2.5	0.1	0.0
DBLK	00	V	850	15	2.4	0.2	0.2

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

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)
 AREA : 10N - 90N, 70W - 40E
 PERIOD : JUL 2017
 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
0000000	99	P	SUR	40	-35	1	0	0.0	-0.4	0.4
03380	99	P	SUR	54	0	748	0	0.3	0.1	0.3
1300001	99	P	SUR	11	-23	624	0	0.5	-0.1	0.5
1300869	99	P	SUR	22	-57	743	0	0.3	0.2	0.3
1300871	99	P	SUR	26	-67	658	0	0.3	0.5	0.6
1300872	99	P	SUR	34	-49	739	0	0.3	0.5	0.6
1301502	99	P	SUR	20	-62	738	0	0.3	0.5	0.6
13869	99	P	SUR	22	-57	743	0	0.3	0.2	0.3
13871	99	P	SUR	26	-67	658	0	0.3	0.5	0.6
13872	99	P	SUR	34	-49	740	0	0.3	0.5	0.6
1501529	99	P	SUR	27	-22	742	0	0.3	0.6	0.6
1501531	99	P	SUR	19	-30	742	0	0.3	0.4	0.5
1501533	99	P	SUR	14	-30	741	0	0.3	0.2	0.4
1501534	99	P	SUR	23	-28	742	0	0.3	0.3	0.4
2100942	99	P	SUR	22	-55	707	0	0.3	0.4	0.5
21942	99	P	SUR	22	-55	707	0	0.3	0.4	0.5
2500622	99	P	SUR	74	-4	743	0	1.8	-0.2	1.8
2500623	99	P	SUR	74	-16	716	0	0.4	-0.3	0.5
25622	99	P	SUR	74	-4	742	0	1.8	-0.2	1.8
25623	99	P	SUR	74	-16	715	0	0.4	-0.3	0.5
2600568	99	P	SUR	81	26	665	54	4.2	6.9	8.1
2601560	99	P	SUR	76	-5	743	0	0.3	0.3	0.4
26568	99	P	SUR	81	25	713	56	4.2	6.9	8.1
4100139	99	P	SUR	20	-38	726	0	0.2	-0.1	0.3
4100300	99	P	SUR	16	-57	744	0	0.3	0.4	0.5
4100506	99	P	SUR	29	-48	694	0	0.3	0.0	0.3
4100590	99	P	SUR	43	-21	730	0	0.3	-0.3	0.4
4100597	99	P	SUR	33	-55	743	0	0.3	0.2	0.4
4100707	99	P	SUR	14	-61	740	0	0.4	-1.0	1.0
4100729	99	P	SUR	35	-31	743	0	0.2	0.5	0.5
4100731	99	P	SUR	28	-70	743	0	0.3	0.2	0.4
4101700	99	P	SUR	39	-39	743	0	0.3	0.5	0.6
4101702	99	P	SUR	24	-52	742	0	0.3	0.5	0.5
4101703	99	P	SUR	24	-54	743	0	0.3	0.7	0.8
4101704	99	P	SUR	18	-67	743	0	0.3	0.7	0.8
4101705	99	P	SUR	30	-49	740	0	0.2	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
4101706	99	P	SUR	33	-40	742	0	0.3	-0.1	0.3
4101707	99	P	SUR	37	-33	743	0	0.2	0.0	0.2
4101708	99	P	SUR	34	-38	741	0	0.4	-0.4	0.6
4101709	99	P	SUR	42	-25	742	0	0.3	0.5	0.6
4101710	99	P	SUR	35	-46	612	0	0.3	0.1	0.3
4101711	99	P	SUR	32	-51	608	0	0.2	0.1	0.3
4101712	99	P	SUR	26	-59	566	0	0.3	0.0	0.3
4101713	99	P	SUR	28	-57	587	0	0.3	0.0	0.3
4101741	99	P	SUR	22	-55	742	0	0.3	0.7	0.7
4101742	99	P	SUR	21	-40	441	0	0.3	0.2	0.3
4101743	99	P	SUR	18	-42	429	0	0.3	0.6	0.7
4101744	99	P	SUR	14	-46	409	0	0.3	-0.6	0.7
4101746	99	P	SUR	11	-48	393	0	0.3	-0.2	0.4
41040	99	P	SUR	15	-53	1149	0	0.3	-0.5	0.6
41041	99	P	SUR	14	-46	1357	0	0.4	0.1	0.4
41043	99	P	SUR	21	-65	1367	0	0.3	-0.3	0.4
41044	99	P	SUR	22	-59	1386	0	0.4	0.1	0.4
41046	99	P	SUR	24	-68	1394	0	0.3	0.3	0.5
41048	99	P	SUR	32	-70	1381	0	0.4	-0.1	0.4
41049	99	P	SUR	28	-63	740	0	0.3	0.6	0.7
41052	99	P	SUR	18	-65	1929	0	0.4	-1.2	1.3
41053	99	P	SUR	19	-66	1862	0	0.4	-0.3	0.5
41056	99	P	SUR	18	-66	1856	0	0.4	0.0	0.4
41300	99	P	SUR	16	-57	744	0	0.3	0.4	0.5
41506	99	P	SUR	29	-48	694	0	0.3	0.0	0.3
41590	99	P	SUR	43	-21	730	0	0.3	-0.3	0.4
41597	99	P	SUR	33	-55	743	0	0.3	0.2	0.4
41707	99	P	SUR	14	-61	740	0	0.4	-1.0	1.0
41729	99	P	SUR	35	-31	744	0	0.2	0.5	0.5
41731	99	P	SUR	28	-70	743	0	0.3	0.2	0.4
42059	99	P	SUR	15	-68	1375	0	0.4	-0.2	0.5
42060	99	P	SUR	16	-63	1390	0	0.4	-0.1	0.4
42085	99	P	SUR	18	-67	1628	0	0.3	-0.7	0.8
42088	99	P	SUR	11	-61	1577	0	0.5	0.0	0.5
42090	99	P	SUR	18	-70	5	0	0.2	-0.2	0.3
44005	99	P	SUR	43	-69	779	0	0.5	0.0	0.5
4400510	99	P	SUR	49	-29	1457	0	0.4	0.4	0.6
4400513	99	P	SUR	54	-10	743	0	0.3	-0.3	0.4
4400517	99	P	SUR	26	-30	742	0	0.2	0.5	0.6
4400521	99	P	SUR	35	-25	728	1	0.2	-0.4	0.4
4400624	99	P	SUR	26	-62	333	0	0.3	-0.3	0.4
4400670	99	P	SUR	45	-40	180	117	4.3	-5.4	6.9
4400746	99	P	SUR	29	-25	743	0	0.2	0.6	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4400765	99	P	SUR	61	0	702	0	0.4	0.3	0.5
4400766	99	P	SUR	28	-18	639	7	0.3	0.2	0.4
4400768	99	P	SUR	25	-40	742	0	0.3	0.8	0.9
4400773	99	P	SUR	46	-5	744	0	0.4	0.9	1.0
4400776	99	P	SUR	27	-34	742	0	0.2	0.9	0.9
4400777	99	P	SUR	37	-49	742	0	0.7	-0.0	0.8
4400778	99	P	SUR	31	-20	741	0	0.2	0.7	0.7
4400779	99	P	SUR	54	-13	718	0	0.4	0.1	0.4
44008	99	P	SUR	41	-69	743	0	0.5	-0.4	0.7
4400839	99	P	SUR	25	-67	743	0	0.3	-0.1	0.3
4400848	99	P	SUR	25	-51	743	0	0.3	0.3	0.4
4400857	99	P	SUR	39	-16	740	0	0.3	0.5	0.6
4400874	99	P	SUR	29	-37	743	0	0.2	0.4	0.5
4400887	99	P	SUR	31	-42	742	0	0.2	0.0	0.2
4400891	99	P	SUR	33	-55	742	0	0.3	-1.1	1.1
4400896	99	P	SUR	25	-49	607	1	0.3	-0.5	0.6
4400901	99	P	SUR	54	-13	743	0	0.4	0.2	0.4
4400904	99	P	SUR	38	-19	743	0	0.2	-0.0	0.2
44011	99	P	SUR	41	-67	740	0	0.5	-0.8	0.9
4401500	99	P	SUR	35	-63	738	0	0.4	0.1	0.4
4401501	99	P	SUR	54	-17	743	0	0.4	0.2	0.4
4401503	99	P	SUR	30	-55	742	0	0.2	0.2	0.3
4401525	99	P	SUR	13	-60	636	0	0.4	-0.0	0.4
4401527	99	P	SUR	21	-58	738	0	0.3	0.3	0.5
4401528	99	P	SUR	31	-29	637	0	0.3	0.8	0.8
4401529	99	P	SUR	26	-67	737	0	0.3	0.2	0.3
4401530	99	P	SUR	34	-50	741	0	0.2	-0.4	0.4
4401531	99	P	SUR	26	-63	736	0	0.3	0.5	0.6
4401534	99	P	SUR	33	-67	219	0	0.3	-0.2	0.4
4401535	99	P	SUR	52	-19	241	0	0.4	0.3	0.5
4401536	99	P	SUR	49	-46	715	0	0.5	0.4	0.6
4401537	99	P	SUR	35	-30	720	0	0.2	-0.3	0.4
4401538	99	P	SUR	40	-26	593	0	0.3	-1.7	1.8
4401539	99	P	SUR	36	-46	739	0	0.2	0.1	0.3
4401540	99	P	SUR	31	-66	735	0	0.3	0.3	0.4
4401541	99	P	SUR	32	-64	738	0	0.3	0.1	0.3
4401542	99	P	SUR	33	-58	740	0	0.3	0.4	0.5
4401543	99	P	SUR	32	-66	742	0	0.3	-0.0	0.3
4401546	99	P	SUR	45	-29	740	0	0.3	0.7	0.7
4401547	99	P	SUR	27	-69	733	0	0.3	-0.3	0.5
4401548	99	P	SUR	51	-21	743	0	0.4	-0.0	0.4
4401550	99	P	SUR	43	-39	743	0	0.5	-0.1	0.5
4401551	99	P	SUR	34	-41	711	0	0.2	0.5	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401552	99	P	SUR	45	-29	721	0	0.3	0.2	0.4
4401553	99	P	SUR	54	-46	743	0	0.4	0.2	0.5
4401554	99	P	SUR	58	-31	743	0	0.5	0.4	0.6
4401555	99	P	SUR	55	-26	742	0	0.5	-0.2	0.5
4401556	99	P	SUR	39	-53	743	0	0.5	-0.2	0.5
4401557	99	P	SUR	44	-61	743	0	0.5	0.2	0.5
4401558	99	P	SUR	44	-54	742	0	0.5	-0.1	0.5
4401559	99	P	SUR	45	-40	741	0	0.5	-0.0	0.5
4401560	99	P	SUR	44	-45	742	0	0.5	0.1	0.5
4401561	99	P	SUR	44	-52	742	0	0.5	-0.0	0.5
4401562	99	P	SUR	40	-35	657	0	0.3	-0.2	0.3
4401563	99	P	SUR	39	-38	634	0	0.3	-0.2	0.3
4401601	99	P	SUR	57	-50	630	0	0.5	-0.0	0.5
4401602	99	P	SUR	45	-57	629	0	0.4	0.2	0.5
4401603	99	P	SUR	54	-37	641	0	0.4	0.2	0.5
4401605	99	P	SUR	53	-46	657	0	0.4	-0.2	0.5
4401606	99	P	SUR	50	-28	660	0	0.4	-0.2	0.5
4401609	99	P	SUR	43	-63	654	0	0.5	0.2	0.5
4401611	99	P	SUR	58	-60	117	0	0.4	0.3	0.5
4401612	99	P	SUR	40	-46	242	0	0.3	0.5	0.6
4401613	99	P	SUR	48	-37	631	0	0.4	0.2	0.5
4401616	99	P	SUR	45	-53	654	0	0.5	0.1	0.5
4401629	99	P	SUR	49	-42	614	0	0.4	1.4	1.5
4401631	99	P	SUR	53	-27	664	0	0.4	-0.1	0.4
4401633	99	P	SUR	44	-33	655	0	0.4	0.4	0.5
4401634	99	P	SUR	58	-15	629	0	0.4	-0.0	0.4
4401754	99	P	SUR	61	-6	699	0	0.3	0.3	0.4
4401756	99	P	SUR	62	-24	712	0	0.4	0.4	0.6
4401757	99	P	SUR	64	-1	716	0	0.3	0.6	0.7
4401758	99	P	SUR	64	0	481	0	0.3	0.5	0.6
44024	99	P	SUR	42	-66	446	0	0.3	-1.2	1.2
44027	99	P	SUR	44	-67	904	0	0.4	0.0	0.5
44032	99	P	SUR	44	-69	745	0	0.4	-0.3	0.5
44033	99	P	SUR	44	-69	743	0	0.4	-0.3	0.5
44034	99	P	SUR	44	-68	744	0	0.4	-0.4	0.6
44037	99	P	SUR	44	-68	290	0	0.5	-0.8	0.9
44139	99	P	SUR	44	-57	736	0	0.5	0.1	0.5
44150	99	P	SUR	43	-64	72	0	1.1	1.0	1.5
44258	99	P	SUR	45	-63	741	0	0.4	0.1	0.4
44510	99	P	SUR	49	-29	1457	0	0.4	0.4	0.6
44513	99	P	SUR	54	-10	743	0	0.3	-0.2	0.4
44517	99	P	SUR	26	-30	742	0	0.2	0.5	0.6
44521	99	P	SUR	35	-25	728	1	0.2	-0.4	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44624	99	P	SUR	26	-62	333	0	0.3	-0.3	0.4
44670	99	P	SUR	45	-40	303	199	4.1	-5.4	6.8
44746	99	P	SUR	29	-25	743	0	0.2	0.6	0.6
44765	99	P	SUR	61	0	703	0	0.4	0.3	0.5
44766	99	P	SUR	28	-18	633	3	0.3	0.2	0.4
44768	99	P	SUR	25	-41	742	0	0.3	0.8	0.9
44773	99	P	SUR	46	-5	744	0	0.4	0.9	1.0
44776	99	P	SUR	27	-34	742	0	0.2	0.9	0.9
44777	99	P	SUR	37	-49	743	0	0.7	-0.0	0.8
44778	99	P	SUR	31	-20	741	0	0.2	0.7	0.7
44779	99	P	SUR	54	-13	719	0	0.4	0.1	0.4
44839	99	P	SUR	25	-67	743	0	0.3	-0.1	0.3
44848	99	P	SUR	25	-51	743	0	0.3	0.3	0.4
44857	99	P	SUR	39	-16	741	0	0.3	0.5	0.6
44874	99	P	SUR	29	-37	743	0	0.2	0.4	0.5
44887	99	P	SUR	31	-42	743	0	0.2	0.0	0.2
44891	99	P	SUR	33	-55	743	0	0.3	-1.1	1.1
44896	99	P	SUR	25	-49	607	1	0.3	-0.5	0.6
44901	99	P	SUR	54	-13	743	0	0.4	0.2	0.4
44904	99	P	SUR	38	-19	743	0	0.2	-0.0	0.2
45138	99	P	SUR	50	-66	731	0	0.4	-0.2	0.5
4700540	99	P	SUR	61	-3	630	0	2.1	3.1	3.8
4700546	99	P	SUR	41	-31	583	0	0.4	0.5	0.7
4700551	99	P	SUR	54	-19	619	25	4.0	0.9	4.1
4700552	99	P	SUR	67	-63	617	0	0.5	-1.5	1.6
4700555	99	P	SUR	46	-29	633	0	0.3	0.2	0.4
4700557	99	P	SUR	53	-15	640	0	0.4	0.2	0.4
4700560	99	P	SUR	59	-9	372	0	0.3	0.4	0.5
4700562	99	P	SUR	60	-2	627	0	0.2	0.5	0.6
4700568	99	P	SUR	46	-10	611	0	0.3	0.5	0.6
4700574	99	P	SUR	42	-16	631	0	0.3	0.3	0.5
4701656	99	P	SUR	61	-65	624	0	0.5	-1.8	1.9
4701657	99	P	SUR	80	-65	578	0	0.5	-1.2	1.3
4701668	99	P	SUR	57	-60	116	0	0.4	0.5	0.6
4701669	99	P	SUR	58	-62	667	0	0.4	0.2	0.5
4701670	99	P	SUR	62	-65	117	0	0.5	-1.2	1.3
4701671	99	P	SUR	70	-67	113	0	0.3	-2.7	2.7
4701672	99	P	SUR	70	-67	118	0	0.3	-2.1	2.2
4701675	99	P	SUR	58	-62	742	0	0.4	0.2	0.4
47540	99	P	SUR	61	-3	706	0	2.2	3.1	3.8
47546	99	P	SUR	41	-31	663	0	0.4	0.5	0.7
47551	99	P	SUR	54	-20	695	26	3.9	1.0	4.1
47552	99	P	SUR	67	-63	709	0	0.5	-1.6	1.7

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
47555	99	P	SUR	46	-29	701	0	0.3	0.2	0.4
47557	99	P	SUR	53	-15	705	0	0.4	0.2	0.4
47560	99	P	SUR	59	-9	670	0	0.3	0.4	0.5
47562	99	P	SUR	60	-2	711	0	0.3	0.5	0.6
47568	99	P	SUR	46	-10	694	0	0.3	0.5	0.6
47574	99	P	SUR	42	-16	707	0	0.3	0.3	0.5
4800274	99	P	SUR	85	-44	650	0	0.5	0.4	0.6
4800276	99	P	SUR	84	-39	614	0	0.4	-0.2	0.5
4800280	99	P	SUR	86	-52	643	0	0.4	-0.0	0.5
4800508	99	P	SUR	79	-5	1870	1	0.3	0.0	0.3
4800600	99	P	SUR	56	-40	760	2	0.4	-0.2	0.5
4800631	99	P	SUR	84	-10	713	0	0.4	0.0	0.4
4800770	99	P	SUR	83	-21	614	0	0.4	-0.1	0.4
48274	99	P	SUR	85	-44	700	0	0.5	0.4	0.6
48276	99	P	SUR	84	-39	694	0	0.5	-0.2	0.5
48280	99	P	SUR	86	-51	693	0	0.5	-0.0	0.5
48508	99	P	SUR	79	-5	1870	1	0.3	0.0	0.3
48600	99	P	SUR	56	-40	760	2	0.4	-0.2	0.5
48770	99	P	SUR	83	-21	664	0	0.4	-0.1	0.5
6100001	99	P	SUR	43	8	744	0	0.5	0.4	0.6
6100002	99	P	SUR	42	5	744	0	0.3	0.2	0.4
61001	99	P	SUR	43	8	744	0	0.5	0.4	0.6
61002	99	P	SUR	42	5	744	0	0.3	0.2	0.4
6101001	99	P	SUR	38	24	192	0	0.5	0.7	0.8
6101003	99	P	SUR	40	25	169	0	0.5	0.4	0.6
6101007	99	P	SUR	36	25	191	0	0.8	1.0	1.3
6101008	99	P	SUR	37	22	153	0	0.4	0.5	0.6
6200091	99	P	SUR	53	-5	744	0	0.4	0.2	0.4
6200093	99	P	SUR	55	-10	744	0	0.4	-0.0	0.4
6200094	99	P	SUR	52	-7	744	0	0.3	0.2	0.4
62001	99	P	SUR	45	-5	740	0	0.4	0.2	0.4
6200513	99	P	SUR	60	-31	743	0	0.5	-0.3	0.5
6200554	99	P	SUR	38	-18	692	0	0.3	0.4	0.5
6200559	99	P	SUR	56	-11	736	0	0.4	-0.4	0.5
6200940	99	P	SUR	31	-24	742	0	0.3	0.3	0.4
6200941	99	P	SUR	19	-48	744	0	0.3	-0.1	0.3
62023	99	P	SUR	51	-8	739	0	0.3	0.4	0.5
62027	99	P	SUR	49	-2	177	0	0.5	0.2	0.5
62029	99	P	SUR	49	-13	1371	0	0.3	0.1	0.3
62030	99	P	SUR	50	-4	900	0	0.3	0.0	0.3
6203503	99	P	SUR	27	-26	740	0	0.2	0.3	0.4
6203504	99	P	SUR	28	-30	737	0	0.2	0.5	0.6
6203510	99	P	SUR	11	-49	742	0	0.4	-0.0	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6203518	99	P	SUR	66	-30	718	11	5.6	6.1	8.3
6203519	99	P	SUR	61	-41	710	10	5.3	4.7	7.1
6203522	99	P	SUR	65	-30	419	0	0.5	0.1	0.5
6203524	99	P	SUR	63	-29	707	0	0.5	0.6	0.7
6203526	99	P	SUR	68	-14	721	0	0.4	0.3	0.5
6203600	99	P	SUR	49	-26	743	0	0.4	0.0	0.4
6203601	99	P	SUR	48	-29	742	0	0.5	0.2	0.5
62050	99	P	SUR	50	-4	745	0	0.4	0.4	0.5
62095	99	P	SUR	53	-16	748	0	0.4	0.0	0.4
62102	99	P	SUR	58	2	747	0	0.4	0.4	0.5
62103	99	P	SUR	50	-3	747	0	0.4	0.7	0.8
62104	99	P	SUR	57	1	748	0	0.3	0.4	0.5
62105	99	P	SUR	56	-13	677	0	0.5	-0.1	0.5
62107	99	P	SUR	50	-6	1479	0	0.9	0.5	1.0
62111	99	P	SUR	58	0	748	0	0.4	1.6	1.6
62112	99	P	SUR	58	0	748	0	0.3	0.5	0.6
62113	99	P	SUR	58	0	748	0	0.3	0.5	0.6
62114	99	P	SUR	58	0	1477	0	0.4	0.5	0.6
62115	99	P	SUR	58	-3	747	0	0.3	0.4	0.5
62116	99	P	SUR	58	1	742	0	0.3	0.3	0.4
62117	99	P	SUR	58	0	721	0	0.3	0.4	0.5
62118	99	P	SUR	58	1	748	0	0.3	0.7	0.8
62119	99	P	SUR	57	2	747	0	0.4	0.3	0.5
62120	99	P	SUR	56	2	748	0	0.4	0.2	0.4
62121	99	P	SUR	54	3	651	0	0.4	0.4	0.5
62122	99	P	SUR	57	2	1478	0	0.3	0.4	0.5
62124	99	P	SUR	54	-4	748	0	0.3	0.3	0.4
62127	99	P	SUR	54	1	725	0	0.4	0.8	0.9
62128	99	P	SUR	59	1	747	0	0.4	0.5	0.6
62129	99	P	SUR	58	0	748	0	0.3	0.3	0.4
62130	99	P	SUR	59	1	748	0	0.3	0.3	0.4
62131	99	P	SUR	54	1	739	0	0.3	0.7	0.8
62132	99	P	SUR	56	2	748	0	0.4	0.7	0.8
62133	99	P	SUR	57	1	741	0	0.4	0.4	0.6
62134	99	P	SUR	58	1	748	0	0.3	0.6	0.6
62135	99	P	SUR	54	2	740	0	0.3	0.6	0.7
62136	99	P	SUR	54	3	748	0	0.3	0.8	0.9
62138	99	P	SUR	54	0	1477	0	0.4	1.0	1.1
62139	99	P	SUR	53	2	1478	0	0.3	0.6	0.7
62140	99	P	SUR	57	1	1476	0	0.3	0.4	0.5
62141	99	P	SUR	58	-4	744	0	0.4	-2.0	2.0
62143	99	P	SUR	58	2	740	0	0.4	0.9	1.0
62144	99	P	SUR	53	2	748	0	0.4	0.5	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62145	99	P	SUR	53	3	1469	0	0.4	0.7	0.8
62146	99	P	SUR	57	2	626	0	0.4	0.5	0.6
62148	99	P	SUR	54	2	747	0	0.4	1.2	1.3
62149	99	P	SUR	54	1	748	0	0.3	1.0	1.0
62150	99	P	SUR	54	1	748	0	0.4	1.6	1.6
62151	99	P	SUR	57	2	999	0	0.4	0.5	0.6
62152	99	P	SUR	57	2	748	0	0.3	0.6	0.7
62153	99	P	SUR	57	2	1462	0	0.3	0.5	0.6
62154	99	P	SUR	56	2	748	0	0.3	0.3	0.5
62155	99	P	SUR	58	1	658	0	0.3	0.6	0.7
62157	99	P	SUR	58	0	748	0	0.3	0.3	0.4
62160	99	P	SUR	57	2	1478	0	0.7	0.3	0.8
62161	99	P	SUR	58	1	747	0	0.3	0.2	0.4
62162	99	P	SUR	57	1	746	0	0.3	0.4	0.5
62163	99	P	SUR	48	-8	737	0	0.4	0.5	0.6
62164	99	P	SUR	57	1	747	0	0.4	0.6	0.7
62165	99	P	SUR	54	1	709	0	0.4	0.8	0.9
62168	99	P	SUR	58	1	664	0	0.3	0.4	0.5
62170	99	P	SUR	51	2	740	0	0.6	0.3	0.6
62296	99	P	SUR	53	2	747	0	0.3	0.4	0.5
62297	99	P	SUR	59	2	1478	0	0.3	0.4	0.5
62302	99	P	SUR	61	-2	737	0	0.3	0.2	0.3
62304	99	P	SUR	51	2	758	7	0.4	0.4	0.6
62305	99	P	SUR	50	0	744	1	0.4	0.4	0.5
62442	99	P	SUR	49	-16	741	0	0.3	0.0	0.3
62513	99	P	SUR	60	-31	743	0	0.5	-0.3	0.5
62554	99	P	SUR	38	-18	693	0	0.3	0.4	0.5
62559	99	P	SUR	56	-11	737	0	0.4	-0.4	0.5
62940	99	P	SUR	31	-24	742	0	0.3	0.3	0.4
62941	99	P	SUR	19	-48	744	0	0.3	-0.1	0.3
6300646	99	P	SUR	69	39	742	0	0.3	0.3	0.4
6301552	99	P	SUR	79	23	742	0	0.3	-0.1	0.3
6301553	99	P	SUR	81	22	742	0	0.4	0.2	0.4
6301554	99	P	SUR	66	7	742	0	0.3	-0.0	0.3
6301555	99	P	SUR	70	7	743	0	0.4	0.4	0.5
6301556	99	P	SUR	67	1	743	0	0.4	0.4	0.5
6301557	99	P	SUR	74	6	742	0	0.3	0.7	0.7
63055	99	P	SUR	61	2	667	0	0.3	0.2	0.4
63056	99	P	SUR	60	2	748	0	0.3	0.5	0.6
63057	99	P	SUR	59	2	738	0	0.3	0.2	0.4
63058	99	P	SUR	53	2	2228	0	0.3	0.6	0.7
63059	99	P	SUR	58	-1	748	0	0.3	0.7	0.8
63101	99	P	SUR	61	1	748	0	0.3	0.3	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
63102	99	P	SUR	61	1	747	0	0.3	0.3	0.5
63103	99	P	SUR	61	1	748	0	0.3	0.4	0.5
63104	99	P	SUR	61	2	748	0	0.3	0.7	0.8
63105	99	P	SUR	61	2	748	0	0.3	0.3	0.5
63108	99	P	SUR	61	2	694	0	0.3	0.2	0.4
63109	99	P	SUR	60	2	748	0	0.3	0.2	0.3
63110	99	P	SUR	60	2	747	0	0.3	0.1	0.3
63111	99	P	SUR	61	2	1448	0	0.4	0.0	0.4
63112	99	P	SUR	61	1	747	0	0.3	-0.0	0.3
63115	99	P	SUR	62	1	748	0	0.3	0.3	0.4
63117	99	P	SUR	61	1	1478	0	0.3	0.5	0.6
63118	99	P	SUR	58	1	1247	0	0.5	0.1	0.5
63120	99	P	SUR	54	2	748	0	0.4	0.7	0.8
63646	99	P	SUR	69	39	743	0	0.3	0.3	0.4
6400524	99	P	SUR	67	13	739	0	0.4	0.5	0.6
6400526	99	P	SUR	49	-45	668	0	0.5	0.1	0.5
6400528	99	P	SUR	70	37	743	0	0.3	0.2	0.4
6400551	99	P	SUR	52	-46	743	0	0.4	-0.2	0.5
6400562	99	P	SUR	64	-3	742	0	0.4	0.2	0.4
6400757	99	P	SUR	61	-29	636	636	0.0	0.0	0.0
6401501	99	P	SUR	67	3	711	0	0.3	0.4	0.5
6401550	99	P	SUR	68	12	742	0	0.3	0.1	0.3
6401555	99	P	SUR	68	-1	741	0	0.3	0.3	0.4
6401556	99	P	SUR	69	-3	744	0	0.4	0.1	0.4
6401557	99	P	SUR	65	-24	741	0	0.4	0.1	0.4
6401558	99	P	SUR	61	-10	743	0	0.3	0.5	0.5
6401559	99	P	SUR	63	-21	739	0	0.4	0.5	0.6
64041	99	P	SUR	61	-3	748	0	0.3	0.3	0.4
64045	99	P	SUR	59	-12	838	0	0.5	0.1	0.5
64046	99	P	SUR	61	-4	745	0	0.3	0.2	0.4
64524	99	P	SUR	67	13	739	0	0.4	0.5	0.6
64526	99	P	SUR	49	-45	668	0	0.5	0.1	0.5
64528	99	P	SUR	70	37	742	0	0.3	0.2	0.4
64551	99	P	SUR	52	-46	743	0	0.4	-0.2	0.5
64562	99	P	SUR	64	-3	742	0	0.4	0.2	0.4
64757	99	P	SUR	61	-29	695	695	0.0	0.0	0.0
6500514	99	P	SUR	64	-16	449	3	1.2	0.1	1.2
6500519	99	P	SUR	70	33	734	0	0.4	0.0	0.4
6500596	99	P	SUR	73	11	733	0	0.4	0.5	0.6
6500599	99	P	SUR	70	14	741	0	0.3	0.2	0.4
6500602	99	P	SUR	62	-12	741	0	0.3	0.5	0.6
6501551	99	P	SUR	57	-56	741	0	0.4	-0.1	0.5
6501552	99	P	SUR	54	-51	741	0	0.4	0.5	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6501553	99	P	SUR	55	-44	744	0	0.4	0.2	0.5
6501555	99	P	SUR	65	-52	741	0	0.5	-0.2	0.5
6501556	99	P	SUR	57	-43	743	0	0.4	0.2	0.5
65514	99	P	SUR	64	-16	449	3	1.2	0.1	1.2
65519	99	P	SUR	70	33	735	0	0.4	0.0	0.4
65596	99	P	SUR	73	11	734	0	0.4	0.5	0.6
65599	99	P	SUR	70	14	742	0	0.3	0.2	0.4
65602	99	P	SUR	62	-12	742	0	0.3	0.5	0.6

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

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND SPEED (M/S)
 AREA : 10N - 90N, 70W - 40E
 PERIOD : JUL 2017
 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
1300001	99	SPEED	SUR	11	-23	624	0	0	1.6	0.5	1.7
1300002	99	SPEED	SUR	20	-23	671	0	0	0.9	0.4	1.0
4100026	99	SPEED	SUR	11	-38	277	0	0	1.4	0.9	1.6
4100139	99	SPEED	SUR	20	-38	726	0	0	1.0	0.1	1.0
4100300	99	SPEED	SUR	16	-57	744	0	0	0.9	-0.4	1.0
41026	99	SPEED	SUR	11	-38	277	0	0	1.4	0.9	1.7
41040	99	SPEED	SUR	15	-53	1604	0	0	0.9	0.1	0.9
41041	99	SPEED	SUR	14	-46	1360	0	0	1.0	-0.0	1.0
41043	99	SPEED	SUR	21	-65	1380	0	0	1.0	-0.4	1.1
41044	99	SPEED	SUR	22	-59	1385	0	0	1.1	-0.4	1.1
41046	99	SPEED	SUR	24	-68	1393	0	0	0.9	-0.3	1.0
41048	99	SPEED	SUR	32	-70	1380	0	0	1.1	-0.2	1.1
41049	99	SPEED	SUR	28	-63	740	0	0	1.1	-0.5	1.2
41052	99	SPEED	SUR	18	-65	1929	0	0	1.0	-0.6	1.2
41053	99	SPEED	SUR	19	-66	1862	0	0	1.4	0.3	1.5
41056	99	SPEED	SUR	18	-66	1860	0	0	1.2	-0.8	1.4
41300	99	SPEED	SUR	16	-57	744	0	0	0.9	-0.3	1.0
42059	99	SPEED	SUR	15	-68	1388	0	0	0.8	0.2	0.8
42060	99	SPEED	SUR	16	-63	1402	0	0	1.3	-0.1	1.3
42085	99	SPEED	SUR	18	-67	1628	0	0	1.4	-0.3	1.4
42088	99	SPEED	SUR	11	-61	1577	0	0	1.3	-1.9	2.3
42090	99	SPEED	SUR	18	-70	5	0	0	0.8	0.5	0.9
44008	99	SPEED	SUR	41	-69	743	0	0	1.5	-0.6	1.7
44024	99	SPEED	SUR	42	-66	446	0	0	1.1	-0.9	1.4
44032	99	SPEED	SUR	44	-69	745	0	0	1.4	-0.9	1.7
44033	99	SPEED	SUR	44	-69	743	0	0	1.4	-0.5	1.5
44034	99	SPEED	SUR	44	-68	744	0	0	1.4	-1.3	1.9
44037	99	SPEED	SUR	44	-68	289	0	0	1.2	-0.2	1.2
44139	99	SPEED	SUR	44	-57	738	0	0	1.3	0.0	1.3
44258	99	SPEED	SUR	45	-63	741	0	0	1.6	-0.5	1.7
45138	99	SPEED	SUR	50	-66	734	0	0	1.7	-0.3	1.8
6100001	99	SPEED	SUR	43	8	744	0	0	1.7	-0.3	1.7
6100002	99	SPEED	SUR	42	5	744	0	0	1.1	0.1	1.1
61001	99	SPEED	SUR	43	8	744	0	0	1.8	-0.6	1.9

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
61002	99	SPEED	SUR	42	5	744	0	0	1.2	-0.4	1.3
6101001	99	SPEED	SUR	38	24	192	0	0	1.8	-1.0	2.1
6101003	99	SPEED	SUR	40	25	169	0	0	1.7	-1.2	2.1
6101007	99	SPEED	SUR	36	25	191	0	0	1.3	-0.3	1.3
6101008	99	SPEED	SUR	37	22	153	0	0	1.5	-1.0	1.8
6200091	99	SPEED	SUR	53	-5	744	0	0	1.3	-0.4	1.4
6200093	99	SPEED	SUR	55	-10	744	0	0	1.1	-0.2	1.1
6200094	99	SPEED	SUR	52	-7	744	0	0	1.1	-0.1	1.1
62001	99	SPEED	SUR	45	-5	740	0	0	1.0	0.7	1.3
62023	99	SPEED	SUR	51	-8	739	0	0	1.4	0.2	1.4
62027	99	SPEED	SUR	49	-2	176	0	0	1.2	0.3	1.3
62050	99	SPEED	SUR	50	-4	745	0	0	1.2	0.2	1.3
62095	99	SPEED	SUR	53	-16	748	0	0	1.0	0.2	1.0
62102	99	SPEED	SUR	58	2	747	0	0	1.2	0.0	1.2
62103	99	SPEED	SUR	50	-3	747	0	0	1.4	0.9	1.7
62104	99	SPEED	SUR	57	1	748	0	0	1.1	-0.3	1.2
62105	99	SPEED	SUR	56	-13	649	0	0	1.0	0.6	1.1
62107	99	SPEED	SUR	50	-6	1479	0	0	1.4	0.8	1.6
62111	99	SPEED	SUR	58	0	748	0	0	1.3	-0.2	1.3
62112	99	SPEED	SUR	58	0	748	0	0	1.9	-1.0	2.2
62113	99	SPEED	SUR	58	0	748	0	0	1.3	0.2	1.3
62114	99	SPEED	SUR	58	0	1477	0	0	1.2	0.4	1.3
62117	99	SPEED	SUR	58	0	721	0	0	1.1	0.1	1.1
62118	99	SPEED	SUR	58	1	748	0	0	1.2	0.5	1.3
62119	99	SPEED	SUR	57	2	747	0	0	1.4	-0.4	1.5
62120	99	SPEED	SUR	56	2	748	0	0	1.2	0.1	1.2
62121	99	SPEED	SUR	54	3	651	0	0	1.3	-0.0	1.3
62122	99	SPEED	SUR	57	2	1478	0	0	1.1	0.1	1.1
62128	99	SPEED	SUR	59	1	317	0	0	1.0	0.1	1.0
62129	99	SPEED	SUR	58	0	748	0	0	1.1	-0.0	1.1
62131	99	SPEED	SUR	54	1	739	0	0	1.8	-0.2	1.8
62132	99	SPEED	SUR	56	2	748	0	0	1.9	-1.1	2.2
62133	99	SPEED	SUR	57	1	741	0	0	1.1	0.2	1.1
62134	99	SPEED	SUR	58	1	748	0	0	1.2	0.0	1.2
62140	99	SPEED	SUR	57	1	311	0	0	1.1	0.2	1.1
62143	99	SPEED	SUR	58	2	740	0	0	1.7	-0.7	1.9
62144	99	SPEED	SUR	53	2	748	0	0	1.8	-0.5	1.9
62145	99	SPEED	SUR	53	3	1469	0	0	1.5	0.5	1.5
62146	99	SPEED	SUR	57	2	626	0	0	1.3	0.1	1.3
62148	99	SPEED	SUR	54	2	747	0	0	1.5	-0.1	1.5
62149	99	SPEED	SUR	54	1	748	0	0	1.5	0.3	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
62150	99	SPEED	SUR	54	1	748	0	0	2.2	-0.7	2.3
62152	99	SPEED	SUR	57	2	748	0	0	1.5	-0.6	1.6
62153	99	SPEED	SUR	57	2	1462	0	0	2.1	-1.1	2.4
62154	99	SPEED	SUR	56	2	748	0	0	1.2	-0.3	1.2
62155	99	SPEED	SUR	58	1	656	0	0	1.2	0.1	1.2
62163	99	SPEED	SUR	48	-8	737	0	0	1.1	0.3	1.2
62164	99	SPEED	SUR	57	1	747	0	0	1.3	-0.8	1.5
62165	99	SPEED	SUR	54	1	710	0	0	1.4	-0.3	1.4
62170	99	SPEED	SUR	51	2	738	0	0	1.8	1.5	2.4
62304	99	SPEED	SUR	51	2	750	0	0	1.8	1.1	2.1
62305	99	SPEED	SUR	50	0	744	0	0	1.5	1.0	1.8
62442	99	SPEED	SUR	49	-16	735	0	0	1.0	0.1	1.0
63055	99	SPEED	SUR	61	2	667	0	0	1.2	-1.1	1.6
63056	99	SPEED	SUR	60	2	748	0	0	1.2	-0.1	1.2
63057	99	SPEED	SUR	59	2	735	0	0	1.6	-0.3	1.6
63058	99	SPEED	SUR	53	2	1481	0	0	1.4	0.0	1.4
63101	99	SPEED	SUR	61	1	748	0	0	1.2	-0.3	1.3
63103	99	SPEED	SUR	61	1	748	0	0	1.3	-0.2	1.3
63104	99	SPEED	SUR	61	2	747	0	0	1.1	-0.2	1.2
63105	99	SPEED	SUR	61	2	748	0	0	1.2	-0.0	1.2
63106	99	SPEED	SUR	61	2	747	0	0	1.2	0.0	1.2
63108	99	SPEED	SUR	61	2	694	0	0	1.4	-0.0	1.4
63109	99	SPEED	SUR	60	2	730	0	0	1.1	0.1	1.1
63110	99	SPEED	SUR	60	2	747	0	0	1.2	-0.2	1.2
63112	99	SPEED	SUR	61	1	747	0	0	1.2	-0.4	1.2
63113	99	SPEED	SUR	61	2	748	0	0	1.2	-0.3	1.3
63115	99	SPEED	SUR	62	1	748	0	0	1.1	-0.3	1.1
63117	99	SPEED	SUR	61	1	1478	0	0	1.2	-0.2	1.2
64041	99	SPEED	SUR	61	-3	748	0	0	1.1	-0.1	1.1
66021	99	SPEED	SUR	55	14	737	0	0	1.3	0.3	1.3
66022	99	SPEED	SUR	54	14	1049	0	0	1.4	-0.1	1.4
66024	99	SPEED	SUR	55	13	734	0	0	1.4	-0.1	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 : JUL 2017
 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	393	0	0	38.6	-4.5	38.8
1300002	99	DIRN	SUR	20	-23	669	0	0	9.1	0.9	9.1
4100026	99	DIRN	SUR	11	-38	229	0	0	20.6	3.8	21.0
41001	99	DIRN	SUR	35	-73	1227	0	0	18.6	6.8	19.8
4100139	99	DIRN	SUR	20	-38	726	0	0	9.9	5.4	11.2
41002	99	DIRN	SUR	32	-75	599	0	0	19.6	5.9	20.4
4100300	99	DIRN	SUR	16	-57	732	0	0	11.0	-13.0	17.1
41004	99	DIRN	SUR	33	-79	1049	0	0	23.2	3.3	23.5
41008	99	DIRN	SUR	31	-81	620	0	0	24.4	10.3	26.5
41009	99	DIRN	SUR	29	-80	945	0	0	26.6	6.7	27.4
41010	99	DIRN	SUR	29	-79	1047	0	0	27.6	7.6	28.6
41013	99	DIRN	SUR	33	-78	1112	0	0	19.0	5.5	19.8
41024	99	DIRN	SUR	34	-79	545	0	0	18.2	-13.9	22.9
41025	99	DIRN	SUR	35	-75	608	0	0	18.9	0.6	18.9
41026	99	DIRN	SUR	11	-38	228	0	0	22.3	2.7	22.5
41029	99	DIRN	SUR	33	-80	695	0	0	22.9	-8.8	24.6
41033	99	DIRN	SUR	32	-80	546	0	0	21.3	-4.4	21.7
41037	99	DIRN	SUR	34	-77	637	0	0	19.4	5.3	20.1
41038	99	DIRN	SUR	34	-78	570	0	0	20.3	3.8	20.6
41040	99	DIRN	SUR	15	-53	1550	0	0	16.3	-8.1	18.2
41041	99	DIRN	SUR	14	-46	1346	0	0	12.9	-7.0	14.7
41043	99	DIRN	SUR	21	-65	1337	0	0	13.0	-4.8	13.9
41044	99	DIRN	SUR	22	-59	1358	0	0	10.9	1.4	11.0
41046	99	DIRN	SUR	24	-68	1357	0	0	10.6	3.9	11.3
41047	99	DIRN	SUR	28	-72	944	0	0	15.5	-8.3	17.6
41048	99	DIRN	SUR	32	-70	1031	0	0	13.4	-6.5	14.9
41049	99	DIRN	SUR	28	-63	534	0	0	14.9	4.3	15.5
41052	99	DIRN	SUR	18	-65	1872	0	0	13.5	7.8	15.6
41053	99	DIRN	SUR	19	-66	1436	0	0	17.5	6.6	18.7
41056	99	DIRN	SUR	18	-66	1729	0	0	15.3	4.5	16.0
41062	99	DIRN	SUR	36	-75	695	3	0	80.6	-12.4	81.5
41063	99	DIRN	SUR	35	-76	786	0	0	21.4	-6.5	22.3

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
41064	99	DIRN	SUR	34	-77	627	0	0	16.5	-8.2	18.4
41300	99	DIRN	SUR	16	-57	726	0	0	10.9	-13.0	17.0
42013	99	DIRN	SUR	27	-83	409	0	0	27.7	-4.2	28.0
42023	99	DIRN	SUR	26	-83	375	0	0	21.1	0.9	21.2
42036	99	DIRN	SUR	29	-85	256	0	0	21.9	0.4	21.9
42056	99	DIRN	SUR	20	-85	1058	0	0	16.2	2.2	16.3
42057	99	DIRN	SUR	17	-81	1451	0	0	12.5	4.1	13.2
42058	99	DIRN	SUR	15	-75	1374	0	0	6.0	6.1	8.6
42059	99	DIRN	SUR	15	-68	1387	0	0	8.9	6.2	10.8
42060	99	DIRN	SUR	16	-63	1313	0	0	12.0	6.0	13.4
42085	99	DIRN	SUR	18	-67	1530	0	0	15.6	11.8	19.6
42088	99	DIRN	SUR	11	-61	648	0	0	27.6	-5.5	28.1
42090	99	DIRN	SUR	18	-70	4	0	0	19.0	-27.1	33.1
44007	99	DIRN	SUR	44	-70	485	0	0	21.7	7.2	22.9
44008	99	DIRN	SUR	41	-69	474	0	0	20.3	19.5	28.1
44009	99	DIRN	SUR	39	-75	492	0	0	29.5	9.9	31.1
44013	99	DIRN	SUR	42	-71	495	0	0	22.0	23.0	31.8
44014	99	DIRN	SUR	37	-75	548	0	0	20.0	2.6	20.2
44022	99	DIRN	SUR	41	-74	165	0	0	33.5	2.2	33.5
44024	99	DIRN	SUR	42	-66	298	0	0	12.2	10.0	15.8
44025	99	DIRN	SUR	40	-73	528	0	0	20.8	5.3	21.4
44029	99	DIRN	SUR	43	-71	624	0	0	21.5	13.5	25.4
44030	99	DIRN	SUR	43	-70	429	0	0	20.3	9.6	22.4
44032	99	DIRN	SUR	44	-69	336	0	0	17.6	19.9	26.6
44033	99	DIRN	SUR	44	-69	287	0	0	22.2	4.6	22.7
44034	99	DIRN	SUR	44	-68	326	0	0	20.3	13.7	24.5
44037	99	DIRN	SUR	44	-68	183	0	0	16.0	31.3	35.2
44039	99	DIRN	SUR	41	-73	297	0	0	24.5	8.1	25.8
44040	99	DIRN	SUR	41	-74	174	0	0	21.0	1.2	21.0
44041	99	DIRN	SUR	37	-77	141	0	0	24.4	-11.3	26.8
44042	99	DIRN	SUR	38	-76	590	0	0	32.2	-13.6	34.9
44043	99	DIRN	SUR	39	-76	595	0	0	29.1	-11.4	31.3
44057	99	DIRN	SUR	40	-76	227	0	0	22.4	2.5	22.5
44058	99	DIRN	SUR	38	-76	644	0	0	26.8	-25.6	37.1
44061	99	DIRN	SUR	39	-77	31	0	0	32.5	13.8	35.3
44062	99	DIRN	SUR	39	-76	607	0	0	37.1	-19.7	42.0
44063	99	DIRN	SUR	39	-76	506	0	0	31.8	-12.1	34.0
44065	99	DIRN	SUR	40	-74	501	0	0	24.0	6.0	24.8
44066	99	DIRN	SUR	40	-73	537	0	0	20.5	5.5	21.2
44069	99	DIRN	SUR	41	-73	567	0	0	19.0	-0.6	19.0
44072	99	DIRN	SUR	37	-76	811	0	0	23.9	-17.3	29.5

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44139	99	DIRN	SUR	44	-57	553	0	0	30.7	4.8	31.1
44258	99	DIRN	SUR	45	-63	422	0	0	15.7	5.4	16.6
45003	99	DIRN	SUR	45	-83	419	0	0	21.8	2.3	22.0
45005	99	DIRN	SUR	42	-82	800	0	0	26.6	7.2	27.6
45008	99	DIRN	SUR	44	-82	603	0	0	32.4	8.3	33.5
45012	99	DIRN	SUR	44	-77	446	0	0	27.9	7.1	28.8
45132	99	DIRN	SUR	43	-81	462	0	0	24.7	4.8	25.2
45135	99	DIRN	SUR	44	-77	602	0	0	20.0	2.2	20.1
45137	99	DIRN	SUR	46	-81	506	0	0	21.5	13.8	25.6
45138	99	DIRN	SUR	50	-66	505	0	0	16.3	5.0	17.0
45139	99	DIRN	SUR	43	-80	265	0	0	26.9	0.2	26.9
45142	99	DIRN	SUR	43	-79	503	0	0	25.2	-2.5	25.3
45143	99	DIRN	SUR	45	-81	650	0	0	23.0	8.4	24.5
45147	99	DIRN	SUR	42	-83	343	0	0	27.1	2.6	27.3
45149	99	DIRN	SUR	44	-82	396	0	0	29.9	2.3	30.0
45151	99	DIRN	SUR	45	-79	237	0	0	20.2	0.5	20.2
45152	99	DIRN	SUR	46	-80	445	0	0	27.2	-2.5	27.4
45154	99	DIRN	SUR	46	-83	544	0	0	20.4	24.4	31.8
45159	99	DIRN	SUR	44	-79	172	0	0	20.8	12.0	24.0
45162	99	DIRN	SUR	45	-83	383	0	0	34.1	-1.8	34.2
45163	99	DIRN	SUR	44	-84	424	0	0	28.0	1.4	28.1
45164	99	DIRN	SUR	42	-82	378	0	0	27.6	-8.6	28.9
45165	99	DIRN	SUR	42	-83	697	0	0	27.5	17.7	32.7
45166	99	DIRN	SUR	45	-73	536	0	0	22.0	-42.8	48.1
45167	99	DIRN	SUR	42	-80	667	0	0	22.6	-14.0	26.6
45169	99	DIRN	SUR	42	-82	693	0	0	26.0	-10.0	27.9
45175	99	DIRN	SUR	46	-85	624	0	0	30.4	-20.6	36.7
45176	99	DIRN	SUR	42	-82	728	0	0	28.1	-13.1	31.0
45178	99	DIRN	SUR	45	-73	583	0	0	32.1	-8.1	33.1
6200091	99	DIRN	SUR	53	-5	526	0	0	17.6	2.8	17.8
6200093	99	DIRN	SUR	55	-10	627	0	0	12.6	0.0	12.6
6200094	99	DIRN	SUR	52	-7	611	0	0	13.9	1.8	14.0
62001	99	DIRN	SUR	45	-5	619	0	0	13.4	4.7	14.2
62023	99	DIRN	SUR	51	-8	647	0	0	15.0	10.4	18.2
62027	99	DIRN	SUR	49	-2	150	0	0	15.9	-9.7	18.6
62050	99	DIRN	SUR	50	-4	635	0	0	15.1	2.9	15.4
62095	99	DIRN	SUR	53	-16	660	0	0	11.4	6.6	13.2
62103	99	DIRN	SUR	50	-3	656	0	0	16.9	9.7	19.5
62105	99	DIRN	SUR	56	-13	551	0	0	12.5	5.4	13.6
62107	99	DIRN	SUR	50	-6	1340	0	0	15.7	3.1	16.0
62111	99	DIRN	SUR	58	0	606	0	0	12.8	-3.6	13.3

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND DIRECTION (DEGREES)

(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62112	99	DIRN	SUR	58	0	588	0	0	13.1	2.0	13.3
62114	99	DIRN	SUR	58	0	1232	0	0	12.6	-1.6	12.7
62117	99	DIRN	SUR	58	0	594	0	0	12.1	2.9	12.4
62163	99	DIRN	SUR	48	-8	567	0	0	20.5	0.5	20.5
62305	99	DIRN	SUR	50	0	678	0	0	17.7	8.9	19.8
62442	99	DIRN	SUR	49	-16	659	0	0	10.5	-6.2	12.2
64041	99	DIRN	SUR	61	-3	618	0	0	10.2	7.8	12.8

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASDE01	ASDE02	ASDE09	ASDE09	ASDK01	ASDK02	ASDK03	ASES01	ASEU01
ASEU03	ASEU04	ASEU05	ASEU06	ASFR1	ASFR3	ASFR4	DBLK	01001
01004	01010	01028	01241	01400	01415	02185	02365	02527
02591	02836	02963	03005	03238	03354	03502	03808	03882
03918	03953	04220	04270	04320	04339	04360	06011	06260
06610	07110	07145	07510	07645	07761	08001	08023	08190
08221	08302	08430	08522	08579	10035	10113	10184	10238
10304	10393	10410	10548	10618	10739	10771	10868	10954
10962	11010	11035	11120	11240	11520	11747	11952	12120
12374	12425	12843	16045	16080	16113	16144	16245	16320
16429	16546	16622	16716	16754	17351	17607	33008	40179
43599	47102	47104	47138	47155	47169	47186	60018	61901
61980	61998	68442	68592	68816	68842	76743	78897	78954
81405	85442	85469	85586	85799	85934	88889	89002	89564
89571	89611	89642	89859	91592	91925	91938	91948	91958
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	96996					

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

ASDE01	ASDE02	ASDE09	ASDE09	ASDK01	ASDK02	ASDK03	ASES01	ASEU01
ASEU03	ASEU04	ASEU05	ASEU06	ASFR1	ASFR3	ASFR4	DBLK	17607
33008	47155	76743	94767					

5 Annex - Explanations of figures and tables

5.1 General

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

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

5.2 Data Availability

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

5.3 Data Quality

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

It should be noted that:

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

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

standard pressure level are shown. Units of RMS, standard deviation and bias are hPa in tables 1 and 4, m in table 7 and 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.